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BELL & HOWELL

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

December 2, 1980 Volume 1001 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 17, 1980.

Board of Appeals Decisions Rendered in the Month of October 1980

Affirmed	182
Affirmed in part	73
Reversed	16
Total	271

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,078,352, Re. S.N. 130,032, Filed Mar. 13, 1980, Cl. 52/693, TRUSS WEB CONNECTOR, James Knowles, Owner of Record: *½ to Jack N. Schmitt, Birmingham, Mich.,* Attorney or Agent: Arnold G. Gulko, Ex. Gp.: 254

4,097,933, Re. S.N. 165,365, Filed Jul. 2, 1980, Cl. 2/105, GARMENTS FORMED OF HELICALLY JOINED PIECES, Harry R. DePolo, Owner of Record: *Inventor,* Attorney or Agent: Robert E. Burns, et al., Ex. Gp.: 353

4,108,233, Re. S.N. 167,089, Filed Jul. 9, 1980, Cl. 157/1.37, TIRE AND CENTER SUPPORT ASSEMBLING APPARATUS, Terry G. Baer, et al., Owner of Record: *Caterpillar Tractor Company, Peoria, Ill.,* Attorney or Agent: Ralph E. Walters, et al., Ex. Gp.: 323

4,109,412, Re. S.N. 167,192, Filed Jul. 9, 1980, Cl. 46/216, TRACKWAY AND POWERED VEHICLE WITH CHANGEABLE COVERS, Makoto Saito, Owner of Record: *Tomy Kogyo Company, Inc., Tokyo, Japan,* Attorney or Agent: James D. Halsey, et al., Ex. Gp.: 333

4,123,802, Re. S.N. 166,539, Filed Jul. 7, 1980, Cl. 2/144, FOLDED TIE LINER, Myron H. Ackerman, Owner of Record: *Inventor,* Attorney or Agent: Philip K. Fitzsimmons, Ex. Gp.: 353

4,165,128, Re. S.N. 173,803, Filed Jul. 30, 1980, Cl. 297/367, INERTIALLY LOCKED HINGE FOR MOTOR VEHICLE SEAT, Willibald Strowick, et al., Owner of Record: *Keiper Automobiltechnik GmbH and Co. KG, Remscheid-Hasten, Germany,* Attorney or Agent: Lloyd M. Forster, Ex. Gp.: 355

PATENT NOTICES

Certificates of Correction for the Week of Dec. 2, 1980

3,729,116	4,192,959	4,206,175	4,213,771
3,907,694	4,193,201	4,206,252	4,213,953
4,121,429	4,193,831	4,206,442	4,214,001
4,150,837	4,194,052	4,206,653	4,216,153
4,152,366	4,195,138	4,208,514	4,216,254
4,154,088	4,195,654	4,209,377	4,217,128
4,159,280	4,196,002	4,209,505	4,217,279
4,166,832	4,196,411	4,209,532	4,217,599
4,169,725	4,196,567	4,210,461	4,217,682
4,179,961	4,196,861	4,210,538	4,218,248
4,180,382	4,197,726	4,210,559	4,219,113
4,181,135	4,198,265	4,211,040	4,219,337
4,186,101	4,200,257	4,211,086	4,219,676
4,187,240	4,201,456	4,211,251	4,220,058
4,187,336	4,202,791	4,211,886	4,220,166
4,188,363	4,204,401	4,212,717	4,220,167
4,189,263	4,205,276	4,212,806	4,220,485
4,192,340	4,205,379	4,213,223	4,220,582

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6-132,451. Light-Scattering Disc Collector. Filed Mar. 21, 1980.

Patent application 6-136,210. Field Test Unit for Windscreen Optical Evaluation. Filed Apr. 1, 1980.

Patent application 6-140,529. Symmetrical 1:1 Photographic Objective Lens. Filed Apr. 15, 1980.

Patent application 6-140,530. Cable Protection From Rodents. Filed Apr. 15, 1980.

Patent application 6-140,640. A Solvent Mixture for Dissolving and Removing Epoxy Resinous Compounds. Filed Apr. 15, 1980.

Patent application 6-141,500. Analysis of Lubricating Oils for Iron Content. Filed Apr. 18, 1980.

Patent application 6-141,501. Fast Operating Switchable Operational Amplifier Driven Circuits. Filed Apr. 18, 1980.

Patent 4,201,611. Carbon/Carbon Composite for Re-Entry Vehicle Applications. Filed Apr. 17, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,876. Fluorine Containing Polyethers. Filed Dec. 8, 1976. Patented May 6, 1980. Not available NTIS.

Patent 4,203,642. Adjustable Connector. Filed May 25, 1979. Patented May 20, 1980. Not available NTIS.

Patent 4,203,654. Line-of-Sight Stabilization Reflector Assembly. Filed Nov. 21, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,205,124. Low Gamma Photographic Developer. Filed June 12, 1979. Patented May 27, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent 4,208,861. Mechanical Shaker Assembly for Continuous Harvesting of Fruit. Filed Sept. 26, 1978. Patented June 24, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-001,033. Improved Structural Silicon Nitride Materials Containing Rare Earth Oxide. Filed Jan. 4, 1979.

Patent application 6-002,140. High-Temperature, High-Pressure Bonding of Nested Tubular Metallic Components. Filed Jan. 9, 1979.

Patent application 6-008,622. Method of Manufacturing a Niobium-Aluminum-Germanium Superconductive Material. Filed Feb. 1, 1979.

Patent application 6-018,198. Improvements in Geothermal Electric Power and Silica Production. Filed Mar. 6, 1979.

Patent application 6-021,293. Generating End Plug Potentials in Tandem Mirror Plasma Confinement by Heating Thermal Particles So as to Escape Low Density End Stoppering Plasmas. Filed Mar. 16, 1979.

Patent application 6-022,894. Production of Field-Reversed Mirror Plasma With a Coaxial Plasma Gun. Filed Mar. 22, 1979.

Patent application 6-022,897. Pre-Treatment for Molybdenum or Molybdenum-Rich Alloy Articles To Be Plated. Filed Mar. 22, 1979.

Patent application 6-030,974. Decomposition of Silane on Tungsten or Other Materials. Filed Apr. 18, 1979.

Patent application 6-037,247. Method of Forming Single Crystals of Beta Silicon Carbide. Filed May 9, 1979.

Patent application 6-040,810. Chemical Vapor Deposition of Sialon. Filed May 21, 1979.

Patent application 6-047,444. Fe-Based Long Range Ordered Alloys. Filed June 11, 1979.

Patent application 6-047,445. Coated Woven Materials and Method of Preparation. Filed June 11, 1979.

Patent application 6-047,597. Silicon-Nitride and Metal Composite. Filed June 11, 1979.

Patent application 6-048,332. Method of Winning Aluminum Metal From Aluminous Ore. Filed June 14, 1979.

Patent application 6-052,180. Delta Ferrite-Containing Austenitic Stainless Steel Resistant to the Formation of Undesirable Phases Upon Aging. Filed June 26, 1979.

Patent application 6-052,278. Thermal Decomposition of Silane To Form Hydrogenated Amorphous Si. Filed June 26, 1979.

Patent 4,166,760. Plasma Confinement Apparatus Using Solenoidal and Mirror Coils. Filed Oct. 4, 1977. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,169,036. System for Loading Slab-Gel Holders for Electrophoresis Separation. Filed Mar. 24, 1978. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,172,742. Alloys for a Liquid Metal Fast Breeder Reactor. Filed Jan. 6, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,175,954. Self-Disintegrating Raney Metal Alloys. Filed July 24, 1978. Patented Nov. 27, 1979. Not available NTIS.

Patent 4,179,349. Portable Probe To Measure Sensitization of Stainless Steel. Filed Sept. 26, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,180,428. Method for Making Hot-Pressed Fiber-Reinforced Carbide-Graphite Composite. Filed June 23, 1978. Patented Dec. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent 4,202,890. 4-Carboxy-Phthalato(1,2-Diaminocyclohexane)-Platinum(II) and Alkali Metal Salts Thereof With Cyclophosphamide and Hydroxyurea in Alleviating 1210 Murine Leukemia. Filed Dec. 22, 1978. Patented May 13, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-137,045. Laser Beam Linear Adjustable Integrating Mirror. Filed Apr. 3, 1980.

Patent application 6-141,076. Temperature Stabilization Circuit for Charge Coupled Photodiode Array. Filed Apr. 17, 1980.

Patent application 6–142,794. Localized Anodic Thinning. Filed Apr. 22, 1980.

Patent application 6–143,562. Semiconductor Composition. Filed Apr. 25, 1980.

Patent application 6–143,694. Graded Gap Semiconductor Detector. Filed Apr. 25, 1980.

Patent application 6–143,695. Growth Technique for Preparing Graded Gap Semiconductors and Devices. Filed Apr. 25, 1980.

Patent application 6–150,874. Semiconductor Laser Alignment Device. Filed May 19, 1980.

Patent 4,192,012. Crosstie Memory Bit Stretcher Detector. Filed Nov. 8, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,192,819. Method for Producing Hydrazines by Reacting Chloramine With Ammonia or Amines. Filed Aug. 18, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,194,021. Microwave InP/SiO_2 Insulated Gate Field Effect Transistor. Filed May 21, 1979. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,171. Zinc Oxide on Silicon Device for Parallel In, Serial Out, Discrete Fourier Transform. Filed July 7, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,195,221. Scanning Focused Local Oscillator Optical Heterodyne Imaging System. Filed July 3, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,311. Coherence Length Gated Optical Imaging System. Filed Aug. 28, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,202,042. Digital To Analog Interface for Simultaneous Analog Outputs. Filed July 5, 1977. Patented May 6, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA Code GP–2, Washington, D.C. 20546

Patent application 6–135,058. Electrically Conductive Palladium Containing Polyimide Films. Filed Mar. 28, 1980.

Patent application 6–145,107. Heat Sealable, Flame and Abrasion Resistant Coated Fabric. Filed Apr. 30, 1980.

Patent application 6–145,206. Cavity-Backed, Micro-Strip Dipole Antenna Array. Filed Apr. 30, 1980.

Patent application 6–145,209. Fully Plasma-Sprayed Compliant Backed Ceramic Turbine Seal. Filed Apr. 30, 1980.

Patent application 6–150,040. Coherently Pulsed Laser Source. Filed May 15, 1980.

Patent 4,200,721. Heat Resistant Polymers of Oxidized Styrylphosphine. Filed May 19, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,201,468. Method and Apparatus for Doppler Frequency Modulation of Radiation. Filed Nov. 3, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,622. Method of Mitigating Titanium Impurities Effects in p-Tyne Silicon Material for Solar Cells. Filed Jan. 31, 1979. Patented May 6, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738–5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372–6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St, Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 6, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus: Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-25-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides: Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-27-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	4-16-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-78
DESIGNS, GROUP 290—Vacant. Industrial Arts; Household, Personal and Fine Arts.	10-10-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-4-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-24-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during September 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,102,270 to 3,105,236, inclusive
Plant Patents ..... Numbers 2,277 to 2,286, inclusive

REISSUES

DECEMBER 2, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,440

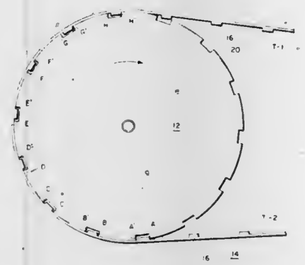
SYNCHRONOUS BELT AND PULLEY DRIVE

Joseph O. Jeffrey, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Original No. 4,047,444, dated Sep. 13, 1977, Ser. No. 722,237, Sep. 10, 1976. Application for reissue May 30, 1978, Ser. No. 911,019

Int. Cl.[3] **F16H** *7/00*

U.S. Cl. 74—229 **2 Claims**



12. A synchronous belt and pulley drive comprising:

a driver toothed pulley and a driven toothed pulley, said pulleys being spaced from each other, and having spaced tooth gaps therein;

a toothed belt running over and engaging said pulleys and being constructed of elastomeric material at least on a surface thereof, said belt having a taut strand and a slack strand with its teeth equally spaced with the spacing defined by the tension applied thereto, the spacing of said teeth being greater than the width of said teeth to provide extensive frictional contact with the outer peripheries of said pulleys;

the spacing of the tooth gaps of said driveR pulley being equal to the spacing of the belt teeth corresponding to the design tension in the taut strand of said belt and the spacing of the tooth gaps of said driven pulley being equal to the spacing of the belt teeth corresponding to the lesser tension in the slack strand of said belt; pI said pulley tooth gaps being of larger size than said belt teeth in order to permit the belt to wrap said pulleys without interference on the bottom and sides of the tooth gaps.

Re. 30,441

BOWLING SCORING APPARATUS AND PROGRAMMING SYSTEM THEREFOR

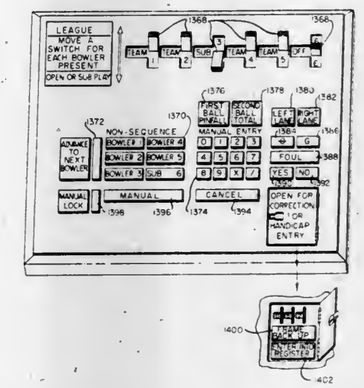
Eugene E. Reynolds, Skokie, Ill., assignor to Brunswick Corporation, Chicago, Ill.

Original No. 3,488,055, dated Jan. 6, 1970, Ser. No. 243,525, Dec. 10, 1962. Continuation of Ser. No. 243,525, Dec. 10, 1962, abandoned. Application for reissue Dec. 29, 1978, Ser. No. 974,627

Int. Cl.[3] **A63D** *5/04;* **G06F** *15/44*

U.S. Cl. 273—54 C **33 Claims**

16. In an apparatus for computing scores of a bowling game wherein balls are rolled by each of a plurality of players during each of successive scoring frames to earn cumulative score values based upon *each player's* pinfall resulting from the rolling of said balls *by the respective player*, means for selectir predetermined players *to bowl in a sequence*, means for computing and registering the score of selected players, means for entering pinfall information into the apparatus, means for automatically conditioning the apparatus to compute and register the score of the next selected player *in said sequence based on the next selected player's pinfall* as each player completes a frame, and *manual* means for overriding said selecting means whereby to condition the apparatus to compute *and register* the frame score of a particular [bowler] *player based on the particular player's pinfall, to allow the particular player to bowl out of*



said sequence, said automatic conditioning means [conditioning] *without manual intervention automatically causing* the apparatus to compute and register the score of the next selected [bowler] *player in said sequence based on said next selected player's pinfall as a result of operation of said manual means so as to cause automatic return of said apparatus to said sequence* following the computation of the particular [bowler] *player's* score.

Re. 30,442

PROCESS FOR PRODUCING STABILIZED HIGH STRENGTH UREA-ALDEHYDE INSULATING FOAMS

William P. Moore, Jr., Hopewell, Va., assignor to Ashland Oil, Inc., Ashland, Ky.

Original No. 4,129,533, dated Dec. 12, 1978, Ser. No. 861,170, Dec. 16, 1977. Division of Ser. No. 836,492, Sep. 26, 1977, Pat. No. 4,097,419. Application for reissue Jan. 17, 1979, Ser. No. 4,017

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.[3] **C08G** *12/12;* **C08L** *1/02*

U.S. Cl. 260—17.3 **4 Claims**

5. An improved process for producing stable urea-aldehyde polymers, having properties of high structural strength and low free formaldehyde content, from two separate storable fluids, said process comprising: blending aqueous alkyl or aryl, dialdehydes containing between two and eight molecular carbons with partially cured aqueous urea-formaldehyde resin, containing between 1.2 and 1.7 mols of formaldehyde per mol of urea and about 50 percent total solids, so that the molecular aldehyde moieties supplied by the dialdehydes are between 0.1 and 1.0 times the number of aldehyde moieties supplied by formaldehyde, and the molecular ratio of total aldehyde moieties to urea is between 1.6 and 2.2; and curing and drying the blended fluids at a pH between 2 and 5 until the polymer hardens.

PATENTS

GRANTED DEC. 2, 1980

ERRATA

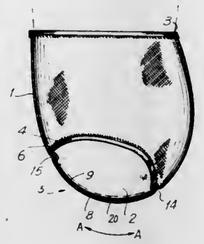
For CLASS	See PATENT NO.
434–035	4,236,324
434–045	4,236,325
368–073	4,236,375
060–641	4,236,383
085–072	4,236,429
440–112	4,236,478
030–276	4,236,531
081–431	4,236,555
222–529	4,236,629
414–694	4,236,643
024–205.13 R	4,236,683
493–440	4,236,704
229–036	4,236,740
564–018	4,237,066
564–205	4,237,067
564–194	4,237,068
564–258	4,237,069
564–423	4,237,070
568–401	4,237,071
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424–304	4,237,163
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424–308	4,237,165
424–310	4,237,166
424–311	4,237,167
424–326	4,237,168
424–330	4,237,169
426–021	4,237,170
426–127	4,237,171
370–027	4,237,463

PATENTS

GRANTED DECEMBER 2, 1980

GENERAL AND MECHANICAL

4,236,257
WOMEN'S UNDERGARMENTS INCLUDING VENTILATED CROTCH ASSEMBLY
Harvey F. Williams, New Rochelle, N.Y.; Raymond C. Cole, Hillsdale, and James G. Donaghy, Flanders, both of N.J., assignors to International Platex, Inc., Stamford, Conn.
Filed Apr. 10, 1978, Ser. No. 895,216
Int. Cl.[3] A41B *9/04, 9/00*
U.S. Cl. 2—406 **9 Claims**



1. A female undergarment, having a panty portion adapted to be in intimate contact with the female torso from at least the waist to the thighs,

said panty portion including a front panel adapted to cover the pelvic zone of a wearer and a rear panel adapted to cover the buttocks of a wearer, upper thigh portions at least a portion of which define the leg openings of said undergarment, and a crotch covering portion,

said crotch covering portion including a crotch assembly having a first surface ara and a second surface area, in superimposition one to the other,

said first and second surface areas of non-thermoplastic, moisture absorbent fibers with each surface area having a plurality of openings therethrough defining an open network of substantially uniform array on each surface area,

said first surface area openings network providing a system having a lesser degree of openness than the network of said second surface area and means to affix said crotch assembly to said upper thigh covering portion so as to position a major portion of said first surface area in direct proximity to and slightly spaced apart from the crotch area of the wearer, at least a major portion of said crotch assembly adapted to maintain a spatial relationship in response to body dynamics.

4,236,258
AUTOMATIC SWIMMING POOL COVER
Roger J. Batstone, Germantown, Md., assignor to French Masterpieces, Incorporated, Germantown, Md.
Filed Apr. 17, 1979, Ser. No. 30,915
Int. Cl.[3] E04H *3/16, 3/18*
U.S. Cl. 4—501 **9 Claims**

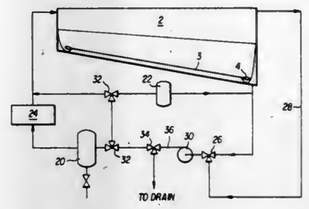
1. An automatic cover for a liquid storage container comprising:

a cover disposed within said storage container;

a membrane connected to an upper portion of said storage container and connected along the peripheral portion of said membrane to said cover, said membrane and said cover separating said storage container into a liquid storage compartment and a liquid balancing compartment;

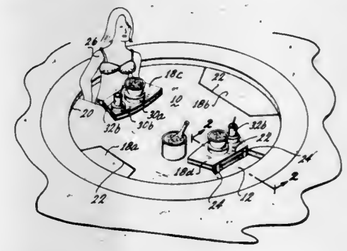
pressurized means connected to said peripheral portion of said membrane for controlling the shape and dimension of said cover; and

means for feeding balancing liquid to and for withdrawing balancing liquid from said liquid balancing compartment in such a manner that hydrostatic pressure on said storage container is maintained within a predetermined range



wherein said pressurized means comprises at least one compartment member connected along a substantial portion of said peripheral portion of said membrane.

4,236,259
SPA COVER
Gary R. Wendt, Santa Ana, Calif., assignor to Wendy S. Crane, Santa Ana, Calif., a part interest
Filed Mar. 3, 1980, Ser. No. 126,353
Int. Cl.[3] E04H *3/16, 3/18*
U.S. Cl. 4—498 **14 Claims**



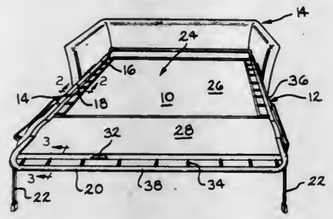
1. In a spa cover of the type including a sheet of a substantially rigid floating insulative material of such size and shape as to cover substantially the entire surface of the water in a spa to prevent heat loss from the water to the air above the water, the improvement comprising:

a panel including a portion of the edge of the spa cover, so attached to the remainder of the spa cover as to permit said panel to be doubled back on top of the remainder of the spa cover to provide at the edge of the spa cover access for a person to the water in the spa, to avoid having to remove the entire spa cover from the spa, thereby conserving the heat of the spa when the spa is used by only a limited number of persons.

4,236,260
SOFA SLEEPER WITH POLYPROPYLENE DECK ASSEMBLY
Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.
Filed May 29, 1979, Ser. No. 43,148
Int. Cl.[3] A47C *17/13;* B23P *11/02*
U.S. Cl. 5—13 **1 Claim**

1. In a sofa sleeper mechanism which includes an open foldable frame having relatively movable head, intermediate and foot sections movable to side-by-side, generally horizontal bed-forming positions, a deck assembly mounted on said frame so as to form a yieldable support surface for a mattress or the like in the bed-forming position of the frame, said assembly

comprising a unitary sheet constructed principally of woven, heat treated polypropylene fibers, and yieldable means



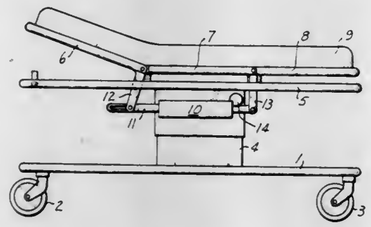
mounted on said frame and attached to said sheet so as to maintain said sheet in a substantially taut horizontal position in the bed-forming position of said frame.

4,236,261

PIVOT TOP FOR STRETCHER OR THE LIKE

David F. Huempfner, Two Rivers, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 9, 1979, Ser. No. 19,043
Int. Cl.³ A61G 7/10
U.S. Cl. 5—68 **10 Claims**



1. A stretcher or the like comprising: a top section pivotally connected to a base; stop means on the stretcher to limit the downward travel of the top section at a plurality of positions; a variable length screw actuator on the stretcher joined to the top section for angularly moving the top section; said screw actuator including a nonthreaded run off section which functions as a clutch; and a slide joint on the stretcher for varying the effective length of the actuator, whereby the actuator can disengage coupling pressure with the top section at a plurality of top section positions with a common actuator length.

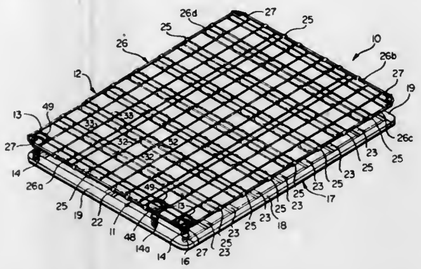
4,236,262

SUPPORT GRID AND SPRING UNIT FOR A BOX SPRING FOUNDATION UNIT

Rex S. Spiller, Sheboygan, Wis., assignor to Spiller Spring Company, Sheboygan, Wis.

Filed Jan. 31, 1979, Ser. No. 7,938
Int. Cl.³ A47C 23/04, 23/145
U.S. Cl. 5—267 **32 Claims**

1. A grid for engaging and supporting a plurality of coil springs in a predetermined spatial relationship to provide a spring unit adapted for use in a box spring foundation unit or the like, said grid comprising a first group of longitudinally extending wires and a second group of wires extending transversely to said first group, said second group of wires being connected to said first group at their crossings and defining a plurality of generally rectangular seats adapted to receive and retain the top coils of said coil springs so that said springs are maintained in said predetermined spatial arrangement, said seats being arranged in rows and columns, and the transverse width of each seat being greater than the diameter of the top coils of said coil springs so that said top coils do not overlap and are confined between the longitudinally extending portions of their respective seats when engaged therewith, and the length and width of said grid having predetermined dimensions such that the dimensions of the foundation unit in which said grid is employed are substantially equal to the standard dimensions for such a unit, whereby different numbers of coil springs may be engaged with selected seats of said grid so that the firmness of the foundation unit can be varied.

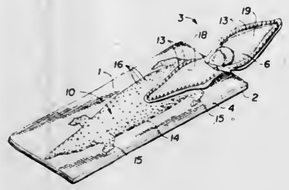


4,236,263

SLEEPING BAG FOR CHILDREN

Lannie Allee, 411 East Seminary St., Greencastle, Ind. 46135

Filed Feb. 21, 1979, Ser. No. 13,582
Int. Cl.³ A47G 9/08
U.S. Cl. 5—413 **6 Claims**



1. A sleeping bag having an upper side and an under side, each with an inner and outer surface, said bag being provided with an opening at one end, said underside including a pillow at the open end of the bag and said upperside including a flap at the open end of the bag, said flap being foldable back onto the upper side, said bag bearing indicia representing the body of a creature, and the pillow and the flap cooperating together to form the head of said creature, the indicia representing the mouth parts and teeth of the creature being located on the flap and pillow and aligned with the open end of the bag, so that a user entering the bag through the open end crawls past the teeth into the mouth of the indicia-represented creature.

4,236,264

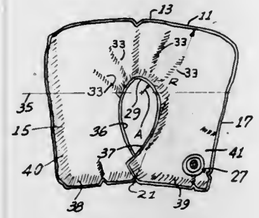
RETAINED COMPRESSIBLE PILLOW SUPPORT

Agnita Britzman, 1015 E. Fourth St., Long Beach, Calif. 90802

Filed Sep. 9, 1977, Ser. No. 831,969
Int. Cl.³ A47G 9/00; B63C 9/16
U.S. Cl. 5—435 **12 Claims**

1. A retained compressible pillow support comprising:
a flexible closed tubular envelope, generally horseshoe shaped, and formed with a return including a transversely extending flexible back wall and a flexible curved front wall defining a yoke, said envelope being formed with hollow transversely spaced apart legs projecting forwardly from opposite sides of said yoke, the free extremities of said legs being spaced apart from each other when the pillow support is unfilled, and having respective inner walls connected to said yoke and extending longitudinally to transverse free end walls, and having outer walls leading from the transverse outer ends of said back wall, to said free end walls, said legs being of substantially uniform

width from said yoke to said free end walls, said envelope being further formed such that upon being filled with a compressible filler, the tubular walls thereof will be distended causing said back wall to distend transversely while said yoke restricts transverse distension at the front of said return, thus causing said front wall to draw the forward extremitites of said legs to urge them inwardly toward one another to define, together with said yoke, an



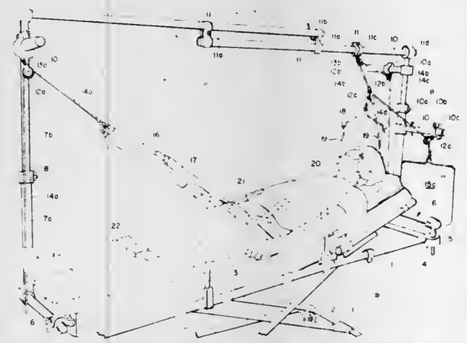
oblong aperture extending longitudinally between said legs and having a maximum width equal to the width of said yoke, whereby in use said legs may be grasped and the forward extremities thereof drawn apart for receipt of a user's extremity therebetween, and upon release of said legs, said front wall at said yoke cooperates with said back wall and filler to urge the free extremities of said legs inwardly into mutual engagement.

4,236,265

PORTABLE TRACTION APPARATUS

James Carradine, 2331 A, 17th Ave., San Francisco, Calif. 94116

Filed Mar. 9, 1979, Ser. No. 18,997
Int. Cl.³ A61F 5/04; A61G 7/10
U.S. Cl. 5—508 **3 Claims**



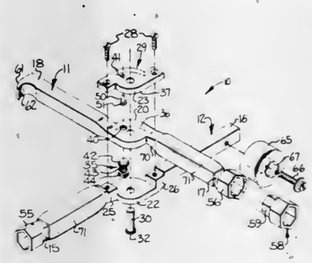
1. A traction apparatus mounted upon and forming a part of a movable bed frame supported on wheels and having a head end and a foot end oppositely spaced thereon comprising:
horizontal cross-frame support members fixedly positioned on said head end and said foot end;
a vertical stanchion fixedly positioned upon each of said frame support members;
a first transverse member slidably mounted upon the stanchion at the foot end of said bed;
a second transverse member slidably mounted on the stanchion at the head end of said bed;
a third transverse member slidably mounted on the stanchion at the head end of said bed above said second transverse member;
a longitudinal member mounted across said stanchion at the top thereof;
a first pulley mounted on said first transverse member;
spring means positioned between said first pulley and said first transverse member;
a first rope engaging said first pulley;
a weight suspended from a first end of said first rope;
means for engaging the waist of a person fastened to the second end of said first rope;
a second pulley mounted on said longitudinal member adjacent said head end of said bed;
spring means positioned between said second pulley and said longitudinal member;
a third pulley mounted on said third transverse member;
spring means positioned between said third pulley and said third transverse member;
a second rope engaging said second and third pulleys;
a weight suspended from the first end of said second rope;
a fourth pulley suspended from the other end of said second rope;
a fifth pulley mounted on said second transverse member;
a third rope engaging said fourth and said fifth pulleys;
a weight suspended from the first end of said third rope;
means for engaging the head and neck of a person fastened to the other end of said third rope;
whereby the body of said person may be maintained in traction while said bed is moved.

4,236,266

COLLAPSIBLE AUTOMOTIVE TOOL

Frank E. Hannah, Rte. 1, Box 591, Canton, and Ronnie L. Hannah, 820 Chestnut Park Dr., Waynesville, both of N.C.

Filed Jan. 31, 1979, Ser. No. 8,069
Int. Cl.³ B25B 13/00
U.S. Cl. 7—100 **9 Claims**



1. A collapsible automotive tool characterized by the ability to perform a number of mechanical operations which are commonly associated with the removal and replacement of an automobile tire and wheel assembly, and comprising
a pair of elongate arms, each having opposite ends to define a total of four arm ends, with one of said arms including a generally flat medial portion and the other of said arms including a slot-like opening receiving said medial portion of said one arm therethrough;
means for pivotally interconnecting said arms at substantially the longitudinal center of each arm so that said arms are disposed in a crossing relationship and are selectively pivotable within a common plane for movement between a generally parallel closed position and a perpendicular open position, said interconnecting means comprising a pin extending transversely across said opening of said other arm and through said medial portion of said one arm;
wrench implement means for releasably engaging a threaded fastener and mounted to a first one of said arm ends, so that the fastener can be rotated by pivoting the arms to their open position and rotating the tool about the longitudinal axis of said first arm end; and
a hammer head mounted to a second one of said arm ends and facing in alignment with said common plane and perpendicular to its associated arm, whereby said arms

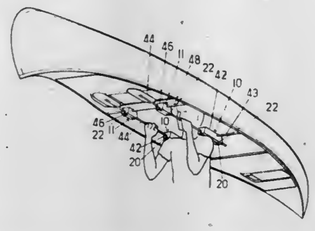
can be placed in the closed position and so that the arm ends opposite said hammer head collectively function as a handle to facilitate use of said tool as a hammer.

4,236,267

CANOE AND PADDLE SUPPORT

Michael Lewis, 2754 Hula Dr., Verona, Wis. 53593, and Allan L. Jenkins, 4018 Meyer Ave., Madison, Wis. 53711

Filed Mar. 12, 1979, Ser. No. 19,703
Int. Cl.³ B63B *17/00*
U.S. Cl. 9—1.7 **11 Claims**



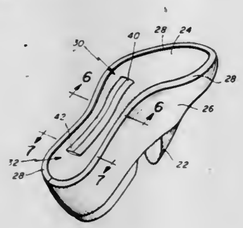
1. A canoe and paddle support for use in combination with a canoe having laterally extending thwarts and a canoe paddle having an extended handle to provide a support for carrying the canoe and the paddle, comprising a body having:
(a) a lateral slot adapted to receive and removably retain a thwart of the canoe,
(b) a longitudinal slot adapted to receive and removably retain the canoe paddle and having an approximately perpendicular orientation relative to the lateral slot, whereby the paddle may be held approximately longitudinal with respect to the center line of the canoe when the thwart is retained in the lateral slot, and
(c) a carrying surface facing downwardly and away from the canoe when the thwart is engaged in the lateral slot, the paddle is engaged in the longitudinal slot, and the canoe is inverted for carrying, whereby the carrying surface will provide a support surface for engagement by the shoulder of a person in supporting relation, and whereby the body will support the canoe on the shoulder of the person for carrying.

4,236,268

TECHNIQUE AND ARTICLES FOR FORMING SHOE SHANKS

Robert W. Bradley, Marblehead; Donald L. Bray, Beverly, and Raymond L. Peterson, Beverly Farms, all of Mass., assignors to Bush Universal, Inc., Woburn, Mass.

Division of Ser. No. 681,562, Apr. 29, 1976, Pat. No. 4,081,917.
This application Oct. 14, 1977, Ser. No. 842,242
Int. Cl.³ A43D *0/00*
U.S. Cl. 12—146 S **29 Claims**



1. A method for stiffening the shank region of the shoe insole comprising:
applying a shank strip to the insole, said shank strip including a flexible sleeve containing a flexible matrix of externally activatable thermosetting resin, said sleeve and matrix being flexible and deformable, as a unit, to enable the shank strip to be applied to the shank region of the insole and to substantially conform to the shank region of the insole while in an unactivated condition;
urging said shank strip into engagement with the shank region of the insole to cause the shank strip to substantially conform to the contour of the shank region of the insole; and
activating the resin in situ on the insole to form a reinforcing shoe shank.

4,236,269

VERTICAL AXIS BRUSH

Thomas S. Block, Muskegon, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

Filed May 2, 1979, Ser. No. 35,393
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—180 **25 Claims**



1. A segmented vertical axis brush for use with a floor treating machine, said brush comprising:
a brush holder plate having an integral peripherally extending, depending skirt, said plate further having a central, rotary axis;
a plurality of brush members, each brush member including a base element and a plurality of bristles held by said base element; and
mounting means circumferentially spaced around said central axis and on said brush holder plate and extending downwardly therefrom for radially receiving and detachably yet positively mounting said brush members to said plate in a snap fit fashion, each of said brush members when mounted, engaging an inner peripheral surface of said skirt and extending radially outwardly from said central rotary axis of said brush holder plate whereby said brush members may be mounted and removed from said plate without the use of tools.

4,236,270

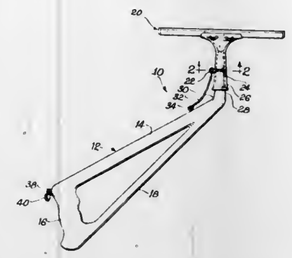
WINDOW CLEANING DEVICE

Michael J. Mavis, P.O. Box 23331, San Diego, Calif. 92123

Filed Jul. 2, 1979, Ser. No. 54,144
Int. Cl.³ A47L *1/08*
U.S. Cl. 15—245 **1 Claim**

1. A squeegee assembly comprising a tubular handle section provided with a gripping portion integral therewith at one end thereof, said parts being angled in respect to each other; a tapered portion integral with the other end of the handle section, said tapered portion also being angled in respect to the handle section whereby the gripping portion and the tapered portion extend in substantially opposite directions in a substantially parallel space relationship to each other; a squeegee

rotatably mounted on the tapered portion; a slot cut transversally through a portion of the squeegee handle and a pin



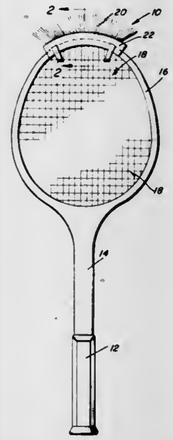
mounted through the slot and slidably retained in an orifice in the tapered portion.

4,236,271

BRUSH ATTACHMENT FOR TENNIS RACKET

Ronald T. Martino, 5305 Ehrlich Rd., Tampa, Fla. 33624

Filed Apr. 17, 1979, Ser. No. 30,904
Int. Cl.³ A47L *25/00*; A63B *49/00*
U.S. Cl. 15—246 **3 Claims**



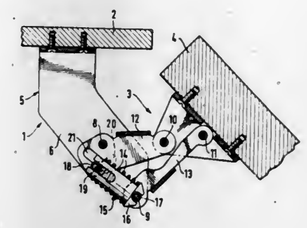
1. A brush attachment for tennis rackets comprising: a body portion formed from a resilient material for allowing said body portion to conform to the arcuate shape of a tennis racket bow; a plurality of bristles extending from said body portion; attachment means connected to said body for attaching said body to the bow of a tennis racket; wherein a longitudinally extending channel is formed in said body portion for partially surrounding a tennis racket bow when the body portion is held in engagement therewith, said channel being formed on the side of said body portion opposite that from which said bristles extend.

4,236,272

HINGE COMPRISING A COMPRESSION SPRING, WHICH IS ADAPTED TO BALANCE THE WEIGHT OF A HINGED LEAF

Wilhelm Gronbach, Dr. Fritz-Huber-Str.73, 8090 Wasserburg-/Inn, and Alfons Gnann, Max Redelstein-Str.30, 7955 Ochsenhausen, both of Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,925
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733927
Int. Cl.³ E05D *11/08, 11/10*
U.S. Cl. 16—142 **5 Claims**



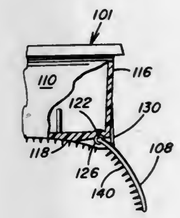
1. A hinge for balancing the weight of a hinged leaf, such as a flap, lid or door, and for opposing a torque exerted on such leaf, said hinge comprising:
a stationary member having two limbs;
a moveable hinge member connected to the hinged leaf;
a control lever having a first portion pivotally connected to said stationary member and a second portion pivotally connected to said movable hinge member;
a first cam slot formed in said stationary member;
a second cam slot formed in said control lever and having a portion thereof overlapping said first cam slot during movement of said control lever;
a slidable pin mounted for movement in said cam slots;
spring means for balancing the weight of the hinged leaf comprisng a prestressed compression spring and a spring guide for said compression spring, said compression spring having one end bearing on said stationary member and one end bearing on said slidable pin, said spring guide having one end supported by said limbs of said stationary member and one end supported by said slidable pin; said first cam slot being shaped to control the force exerted by said compression spring, through said slidable pin and said control lever, on said movable hinge member.

4,236,273

SPRING-LIKE HINGE

James A. McCaffrey, Norcross, Ga., assignor to Diversified Plastics Products Inc., Norcross, Ga.

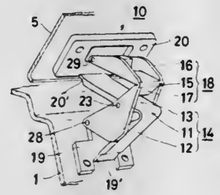
Division of Ser. No. 885,314, Mar. 10, 1978, Pat. No. 4,143,800.
This application Oct. 13, 1978, Ser. No. 951,127
Int. Cl.³ E05D *9/00*
U.S. Cl. 16—150 **7 Claims**



1. A hinge having spring-like activation comprising:

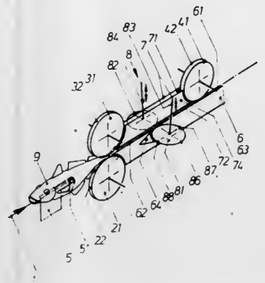
A. a first plastic surface constructed of a resilient flexible material;
B. a pair of prongs extending axially outwardly from opposite edges of said first surface near an end thereof;
C. a second surface;
D. bearing means for receiving said prongs such that said first surface can rotate with respect to said second surface; and
E. an extension integrally formed with said second surface, extending beyond an edge of said second surface and coplanar with said second surface, an edge of said extension being adapted to engage said first surface whereby, upon engagement of said first surface and said edge of said extension, said first surface is forced in a direction away from said extension under a maximum spring-like force applied generally perpendicular to said first surface.

4,236,274
PANTOGRAPHIC OPEN-CLOSE DEVICE
Kazuaki Omote, Yokohama, and Koji Watanabe, Niiza, both of Japan, assignors to Nissan Motor Company, Limited and Nifco Inc., both of Yokohama, Japan
Filed Apr. 26, 1979, Ser. No. 33,379
Claims priority, application Japan, Apr. 28, 1978, 53-56111[U]
Int. Cl.³ E05D *7/00*
U.S. Cl. 16—150 **7 Claims**



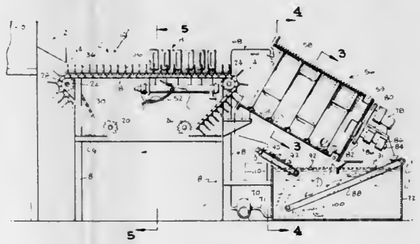
1. A plastic pantographic open-close device, comprising a first contraction-expansion piece formed of a pair of arms connected to each other through the medium of an elbow portion, a second contraction-expansion piece formed of a pair of arms connected to each other through the medium of an elbow portion, one of the arms of the first contraction-expansion piece and one of the arms of the second contraction-expansion piece pivotally fastened independently of each other and arranged in a crossing state, a first base plate secured to a main body containing an opening and connected one of the arms of the first contraction-expansion piece and one of the arms of the second contraction-expansion piece through the medium of respective connection means, a second base plate secured to an open-close member serving to open and close the opening of the main body and connected to the other arm of the first contraction-expansion piece and the other arm of the second contraction-expansion piece through the medium of respective connection means, the first contraction-expansion piece, the second contraction-expansion piece, the first base plate, the second base plate and their respective connection means jointly forming a pantographic mechanism, whereby the elbow portions and the connection means accumulate, from the resiliency of the plastic material of which the device is made, a force capable of expanding the pantographic mechanism notwithstanding the total of frictional force generated by the pivotally fastened portions when the pantographic mechanism is folded down to have the open-close member close the opening of the main body and the force thus accumulated serves to energize the pantographic mechanism in the direction of expansion when the open-close member is separated from the opening of the main body.

4,236,275
PROCESS FOR THE FILLETING OF FISH
Henri Westerdahl, Ronne, Denmark, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lubeck, Fed. Rep. of Germany
Filed Dec. 6, 1978, Ser. No. 966,815
Int. Cl.³ A22C *25/16*
U.S. Cl. 17—46 **4 Claims**



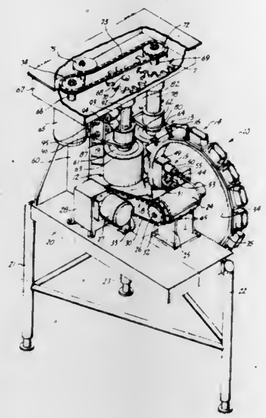
1. A method of mechanically filleting unbeheaded fish, or beheaded fish with the collar bones still adhering to the body to be filleted, comprising the steps of conveying a fish with its tail end leading through a succession of cutting knives, performing belly filleting cuts, back filleting cuts and rib cuts on said fish, performing said rib cuts by rib knives which are displaceable in a direction perpendicular to their cutting planes, and thereafter severing the fillets from the fish by displacing said rib knives in a direction to cut the fish adjacent the collar bones and in a direction inclined towards the roof of the skull leaving the collar bone and/or the head on the remaining bone skeleton.

4,236,276
BIVALVE MOLLUSK SHUCKING APPARATUS AND METHOD
Robert Van Twuyver, and James M. Johnson, both of Ipswich, Mass., assignors to Northeast Shipley Company, Ltd., Ipswich, Mass.
Filed Feb. 3, 1977, Ser. No. 765,522
Int. Cl.³ A22C *29/04*
U.S. Cl. 17—48 **16 Claims**



1. A system for effecting the opening of the shell of bivalve mollusks comprising means for applying liquid nitrogen to the external surface of the shell of a bivalve mollusk without freezing the flesh on the interior of the shell and heat applying means for immediately thereafter applying a high temperature media to the external surface of the shell.

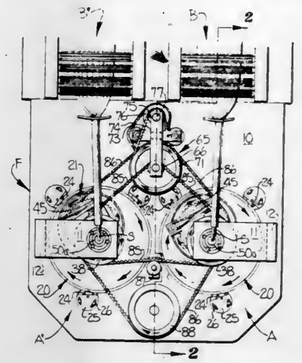
4,236,277
CRUSTACEAN SHELLING APPARATUS
Norman A. Rudy, Bellingham, and Lloyd C. Fredrickson, Lindon, both of Wash., assignors to Amfac Foods, Inc., Portland, Oreg.
Filed May 14, 1979, Ser. No. 38,459
Int. Cl.³ A22C *29/02*
U.S. Cl. 17—73 **12 Claims**



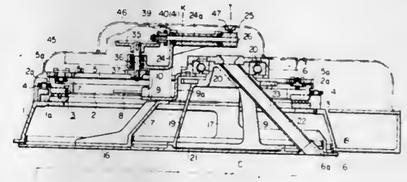
1. A crustacean processing apparatus for separating the meat portion of a crustacean body part from the shell portion thereof, comprising:
first and second counterrotatable rollers having upright axes of rotation substantially parallel to one another; support means to which said rollers are mounted; roller drive means for driving said rollers in counterrotating directions, said rollers being contiguously positioned adjacent one another to thereby form a nip between said rollers wherein a crustacean body part may be grasped and separated into a meat portion and a shell portion;
a cupped wheel assembly for conveying crustacean body parts to a position centered on and immediately adjacent said nip of said rollers, said wheel assembly including a substantially circular wheel means and a plurality of cups attached thereto and opening radially outwardly therefrom, said wheel means having a substantially horizontal axis of rotation and being centered on said nip of said rollers; wheel assembly drive means operable to rotate said wheel means about its axis, and;
a pressurized water feed means for pushing said crustacean body parts radially outwardly from said cups and into said nip upon said cups being rotated to a position adjacent said nip.

4,236,278
PLANETARY COILER ESPECIALLY USEFUL FOR COILING TEXTILE STRAND MATERIAL
Donald L. Hoover, 4428 Coachwood La., Gastonia, N.C. 28052
Filed Oct. 10, 1978, Ser. No. 949,501
Int. Cl.³ B65H *54/80*
U.S. Cl. 19—159 R **14 Claims**

1. A planetary coiler for strand material comprising
a stabilizing plate member mounted for rotation about a fixed axis,
a coiler member rotatable about a predetermined axis in eccentric relation to said fixed axis of said stabilizing plate member,
means operably connected to said coiler member for imparting rotation thereto about said predetermined axis and for moving said coiler member in an orbital path substantially concentric with said axis of said stabilizing plate member, and
means mounting said coiler member in driving relation to said stabilizing plate member so that said coiler member drives said stabilizing plate member in rotation upon orbital movement of said coiler member about said axis of said stabilizing plate member.

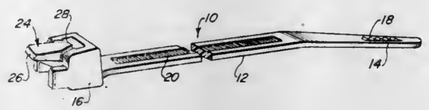


4,236,279
PLANETARY COILER
Kouichi Kawaura, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan
Filed Dec. 20, 1978, Ser. No. 971,500
Claims priority, application Japan, Dec. 28, 1977, 52/159591; Jan. 6, 1978, 53/000776
Int. Cl.³ B65H *54/80*
U.S. Cl. 19—159 R **6 Claims**



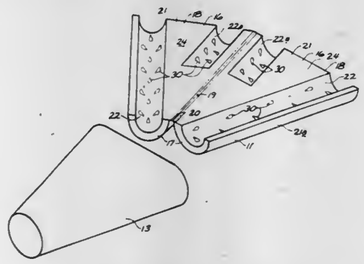
1. A planetary coiler comprising a stationary frame, a rotary disc rotatably mounted on said stationary frame, a sliding supporting member slidably mounted on said rotary disc, a coiler plate rigidly supported by said sliding supporting member at a position slightly below the bottom peripheral edge of said stationary frame, said coiler plate provided with a circular aperture with an eccentric center located away from the center of said coiler plate, a supporting element rotatably mounted on said sliding supporting member at a position below said sliding supporting member, a turn plate rigidly mounted on said supporting element at a position slidably engaging in said circular aperture of said coiler plate, a pair of calender rollers rotatably mounted on said sliding supporting member, said turn plate being provided with a silver guide tube, an annular gear having inner and outer teeth and being mounted on said rotary disc, planetary gear drive means engaged with said inner teeth of said annular gear and with a gear of said turn plate, transmission means for transmitting rotation of said annular gear to said calender roller, and drive means for rotating said rotary disc and annular gear.

4,230,280
RELEASABLE TIE
Walter J. Kreiseder, Kildeer, Ill., assignor to Courtesy Mold and Tool Corporation, Wheeling, Ill.
Filed Feb. 22, 1979, Ser. No. 14,069
Int. Cl.[3] B65D *63/00*
U.S. Cl. 24—16 PB 10 Claims



1. A molded one-piece plastic strap clamp for binding members together comprising a base portion having a free end, said base portion having opposite sides, a plurality of teeth formed on one side of the base portion intermediate the ends, and a body formed at the other end of the base portion, said body having an opening therethrough for receiving said free end, said opening being transverse to the axis of the base portion, said free end being insertable into said opening in a locking direction and forming a loop to receive the members to be bound, with the plurality of teeth being on the side of the base portion away from the members to be bound, latch means on said body including a latch pivotally supported on said body and at least one lock tooth on said latch complementary to said teeth on said base portion and extending into said opening and adapted to engage with a tooth on said base portion for preventing movement of said base portion in a release direction, said latch formed integrally with said body and extending outwardly therefrom generally parallel to the base portion in the nonuse condition so as to be readily accessible by the user, said latch being deflected about its pivot line on the body to release the lock tooth from engagement with a selected tooth on the base portion to permit the base portion to be moved in said release direction, said base portion being easily releasable from the body and said strap clamp being reusable.

4,236,281
ROPE ATTACHING DEVICE
Charles F. Bottum, Rte. 3, Box 522-L, Coeur d'Alene, Id. 83814
Filed Jan. 22, 1979, Ser. No. 5,283
Int. Cl.[3] F16G *11/00*
U.S. Cl. 24—115R 13 Claims



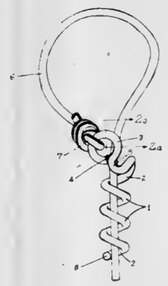
1. A rope attaching device, comprising: a rope splicer body extending from a front end to a rear end in which the body has a pair of symmetrical body sections with first complementary concave channels formed therein between the front end and the rear end defining a rope passageway through the body to receive a rope section therein when the two sections are placed together;

said pair of symmetrical sections having second complementary concave channels formed therein extending from the front and toward the rear end at a converging angle with respect to the first complementary concave channels to form a rope end receptacle to receive a rope end therein and form a rope loop between the rope end and the rope section forward of the front end when the two sections are placed together;

said rope splicer body comprising a plurality of pointed rope gripping elements projecting into the concave channels to penetrate the rope section and the rope end to firmly grip the rope section and the rope end in said channels; and

sheath means complementary to the exterior shape of the rope splicer body when the sections are placed together to encase the splicer body and securely hold the section firmly together and prevent the sections from separating.

4,236,282
HELICAL COIL ROPE FASTENING DEVICE
Howard F. Harvey, Jr., 416 Third Ave., W., Hendersonville, N.C. 28739
Filed May 18, 1978, Ser. No. 907,329
Int. Cl.[3] F16G *11/00*
U.S. Cl. 24—132 C 3 Claims



1. A fastener for rope and the like comprising:

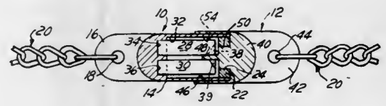
a plurality of aligned integrally joined coils extending around a common axis;

one side of a depression forming shoulder integral with one end of said integral coils;

a closed eye integral with the other side of said shoulder through which said rope is attached;

said coils having a spacing therebetween for receiving said rope after said rope has been extended through said coils along said common axis back around the outside of said coils, over said shoulder, and finally consecutively wrapped through said aligned coils securely fastening said rope.

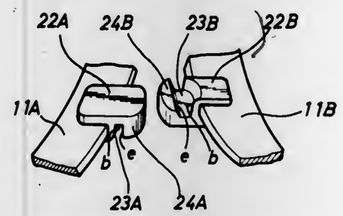
4,236,283
COUPLING
Andre Marosy, 16249 Hilton, Southfield, Mich. 48075
Continuation-in-part of Ser. No. 905,514, May 15, 1978. This application Nov. 27, 1978, Ser. No. 963,979
Int. Cl.[2] A44B *17/00*
U.S. Cl. 24—201 A 17 Claims



1. A coupling comprising a male and a female member, said male member comprising an end having a generally T-shaped member and said female member comprising a housing having a cavity closed by an end plate, a slot through said end plate accepting said T-shaped member of said male member, and spring bias means within said cavity urging said T-shaped

member in rotation relative to said slot for locking said T-shaped member in said cavity below said end plate out of registry with said slot, and a groove in the inner face of said end plate accepting a corresponding portion of said T-shaped member therein in relative position out of registry with said slot, wherein said T-shaped member comprises a substantially rectangular tongue member supported by a cylindrical base and the end plate of said female member comprises a circular aperture having a diameter slightly larger than the diameter of said cylindrical base, and wherein said spring bias means comprises a pair of substantially co-planar separate spring blades extending longitudinally in said housing and having an end fastened at the bottom of said cavity in said housing, each of said spring blades having a free end extending proximate said end plate substantially in registry with said slot, an inclined tapered camming surface at said spring blade free end facilitating introduction of said tongue member between said free ends and deflecting one of said spring blades in one direction and the other of said spring blades in an opposite direction for causing one of said spring blades to enage said tongue member on one side and the other to engage said tongue member on the other side when deflected in said opposite directions with said tongue member introduced through said slot.

4,236,284
SOLID SLIDE FASTENER CAPABLE OF EFFECTING STRONG UNION
Minoru Kamiya, 46-3, 2-chome, Minami Otsuka, Toshima-ku, Tokyo, Japan
Filed Mar. 15, 1978, Ser. No. 886,825
Claims priority, application Japan, Sep. 26, 1977, 52-115322
Int. Cl.[3] A44B *19/06, 19/26*
U.S. Cl. 24—205.13 R 4 Claims



1. A firm grip slide fastener comprising:

a first flexible tape and a second flexible tape generally co-planar with and in opposed relation to the first tape;

a plurality of independent rigid fastening elements secured to an edge of said first tape to form a first row of fastening elements;

a plurality of independent rigid fastening elements secured to an edge of said second tape to form a second row of fastening elements;

each fastening element of said first row having a head at an outer end thereof and a groove inwardly of said head, said groove opening in a first direction transverse to the plane of said first tape;

each fastening element of said second row having a head at an end thereof and a groove inwardly of the head, said groove opening in a second direction opposite to said first direction and transverse to the plane of said second tape;

said grooves of the fasteners of the first row receiving the heads of the fasteners of the second row, and said grooves of the fasteners of the second row receiving the heads of the fasteners of the first row to lock the rows together against separation by a pull exerted outwardly in the plane of said tapes;

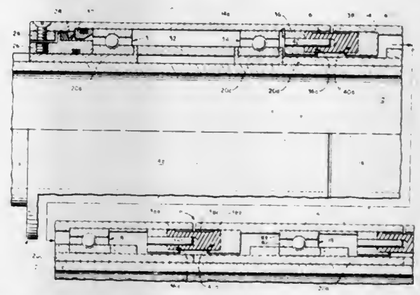
slider means for interlocking said rows of fasteners, said slider means comprising

means for sequentially moving each element of one row with respect to opposed elements of the other row to a position in a plane parallel with and over-lapping the opposed element of the second row, by flexing at least one of said tapes,

means for locking said elements together by moving the element of at least one row in a direction toward and perpendicular to said parallel overlapping elements of the other row to lock the elements of the first row to the elements of the second row,

said fastening elements of each row being spaced apart, and said fastening elements of said first row being staggered with respect to the fastening elements of said second row so that the fastening elements of said rows interfit with each other, each fastening element comprising a pair of grooves one on each side of each element, said grooves defining oppositely facing flanges of said heads, the flanges of each element of each row engaging in the grooves of adjacent elements of the other row.

4,236,285
CURVED ROLL HAVING SEALED TORSIONAL COUPLING BETWEEN ROLL SECTIONS
James O. Gallant, Rehobeth, Mass., assignor to SW (Delaware), Inc., Providence, R.I.
Filed Jan. 13, 1978, Ser. No. 869,137
Int. Cl.[3] D06C *3/06*
U.S. Cl. 26—103 3 Claims



1. A curved roll having an axle, a series of bearings received on said axle and axially spaced apart therealong, roll sections rotatably supported on said bearings, spacer means arranged along said axle extending between said bearings, and couplings joined between pairs of adjacent roll sections, said roll having the improvement comprising

A. means forming a circumferential channel within each coupled roll section and rotating with that roll section, said channel means being spaced from and axially facing a proximate axial end of the roll section,

B. torque-transferring means within each coupled roll section and rotating with that roll section, said torque-transferring means axially projecting adjacent a proximate end of the roll section in the direction toward said end, and

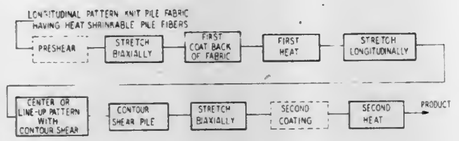
C. a resiliently-flexible tubular coupling element axially spanning between two adjacent coupled roll sections, each said coupling element having a tubular central portion axially intermediate two tubular end portions and being seated and radially compressively engaged only at each said end portion within said circumferential channels on the two coupled roll sections and being in torque-transferring engagement with said torque-transferring means on the coupled roll sections.

4,236,286

MANUFACTURE OF KNITTED SYNTHETIC FUR FABRIC

Norman C. Abler, Menomonee Fall; Earlyn E. Zimmerman, Jefferson, and Wayne A. Swihart, Elkhorn, all of Wis., assignors to Borg Textile Corporation, Oak Brook, Ill.

Filed Jun. 1, 1978, Ser. No. 911,467
Int. Cl.³ D06C *23/00*
U.S. Cl. 28—160 **12 Claims**



1. A process for making a knitted pile fabric which has been contour sheared yet which has at least two different lengths of fibers in the pile thereof, said process comprising the steps of:

(A) tensioning both transversely and longitudinally a previously dimensionally unstabilized knitted pile starting fabric to an extent sufficient to expand the length thereof from 0 to about 30% and to change the width thereof from about −30% to +30%, said fabric being characterized by having:

(1) the backing thereof comprised of yarn having a denier ranging from about 150 to 600,

(2) the pile thereof comprised of fibers extending from about ¼ to 2 inches in height over said backing, said pile being comprised on a 100 weight percent total pile basis of from about 10 to 90 weight percent of heat shrinkable fibers, with the balance up to 100 weight percent thereof being thermally stable fibers, said heat shrinkable fibers being heat shrinkable to a heat shrinking temperature applied for a heat shrinking time,

(3) a weight ratio of pile fiber to backing yarn ranging from about 2.5:1 to 16:1,

(4) from about 8 to 24 wales per inch and from about 17 to 42 courses per inch,

(B) uniformly applying to the surface of the backing of said fabric a first coating composition, while said fabric is so tensioned, said first coating composition comprising an organic polymeric material which:

(1) has a glass transition temperature not above about 0° C.,

(2) is capable of bonding to said fabric after application to said backing thereof when such are heated together to a first temperature which is below said heat shrinking temperature,

(3) dimensionally stabilizes said fabric, after being heated to said first temperature for a time sufficient to achieve said bonding, to an extent sufficient to prevent said fabric from recovering from its so tensioned configuration beyond a predetermined transverse width, when said tensioning is subsequently removed,

(C) heating said coated fabric backing to said first temperature for a time sufficient to achieve said bonding while said fabric is so tensioned,

(D) removing said tensioning,

(E) simultaneously

(1) passing the resulting fabric longitudinally through a contour shearing zone extending transversely across said fabric with the pile side of said fabric being towards the contours of the shearing elements in said contour shearing zone, the transverse width of said contour shearing zone being equal to said predetermined transverse width, thereby to achieve predetermined contours in the pile of such said fabric,

(2) longitudinally tensioning and transversely aligning the respective so sheared contours of said fabric with said contour shearing zone to achieve a predetermined registration between contours in said contour shearing zone and said pile, thereby to achieve a predetermined relationship between such contour in the pile side of such fabric and such fibers in the pile side thereof, and

(3) contour shearing said pile of said resulting fabric, and

(F) simultaneously

(1) heating the so contour sheared fabric to a said heat shrinking temperature for said heat shrinking time,

(2) tensioning transversely and longitudinally said so contour sheared fabric to the respective extents defined above in step (A) for said heat shrinking time, and

(3) maintaining said contour sheared pile free from contact with any solid object for said heat shrinking time.

4,236,287

METHOD OF MAKING A RUGGEDIZED HIGH CURRENT DENSITY CATHODE

Bernard Smith, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 25, 1979, Ser. No. 51,934
Int. Cl.³ H01J *9/12*
U.S. Cl. 29—25.18 **9 Claims**

1. Method of making a high current density cathode capable of operating at current densities of $2A/cm^2$ to $30A/cm^2$ in the temperature range of 900 degrees C. to 1125 degrees C., said method including the steps of

A. machining a porous high purity pellet containing copper in its pores and also containing about 0.6 to 2 weight percent of an activator to the desired cathode shape without reducing the pores of the emitter pellet, wherein said pellet is selected from the group consisting of a tungsten pellet, a tungsten iridium pellet, a tungsten rhenium pellet and a tungsten osmium pellet, and wherein the activator is selected from the group consisting of hafnium and zirconium,

B. firing the pellet at 1800 degrees C. in a non-oxidizing atmosphere selected from the group consisting of an inert gas and dry hydrogen to remove the copper filler material,

C. impregnating the pellet with $Ba_5Sr(WO_6)_2$ at about 1900 degrees C. in a dry inert gas atmosphere, wherein said $Ba_5Sr(WO_6)_2$ impregnant is made by mixing stoichiometric amounts of barium carbonate, strontium carbonate, and tungsten trioxide according to the equation $5BaCO_3+SrCO_3+2WO_3 \rightarrow Ba_5Sr(WO_6)_2+6CO_2$, ball milling the mixture overnight, and then firing in an air oven at 1475 degrees C. for 2 hours, and

D. firing the impregnated emitter in a dry hydrogen atmosphere at about 1840 degrees C. for about 2.5 to 5 minutes.

4,236,288

METHOD OF FABRICATING HEAT TRANSFER CONDUITS

Peter Rohner, Isernhagen, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshuette AG, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,706
Int. Cl.³ F28D *15/00*; B21D *53/02*; F25B *15/00*
U.S. Cl. 29—157.3 H **3 Claims**

1. A method of fabricating a plurality of heat transfer conduits comprising the steps of:

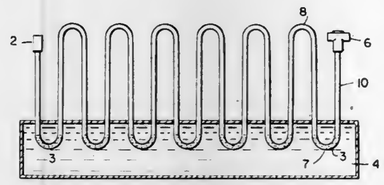
evacuating an elongated metal pipe;

inserting a predetermined quantity of heat transfer fluid within such evacuated pipe, and providing airtight seals at the opposite ends thereof;

further comprising the steps of:

winding the elongated sealed pipe to form vertical convolutions;

heating the lower vertical portions of such convolutions so that the liquid phase of the heat transfer fluid is redistributed in a predetermined manner in said lower vertical portions; and



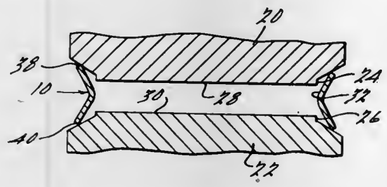
providing vacuum-tight seals between adjacent convolutions of said metal pipe in at least selected upper vertical portions of said convolutions.

4,236,289

APPARATUS AND METHOD FOR FABRICATING PULLEYS

William G. Oldford, Lexington, Mich., assignor to Huron Tool & Manufacturing Division of U.S. Industries, Inc., Lexington, Mich.

Division of Ser. No. 813,165, Jul. 5, 1977, Pat. No. 4,138,776.
This application Jan. 22, 1979, Ser. No. 5,167
Int. Cl.³ B21K *1/42*
U.S. Cl. 29—159 R **5 Claims**



1. Apparatus for forming a pulley comprising:

first forming means for receiving and supporting a circumferential edge portion of a cylindrical pulley rim blank;

second forming means axially opposed to said first forming means for engaging another circumferential edge portion of said pulley rim blank;

said first and second forming means being generally cylindrical and having an annular shoulder portion on an axially opposed end thereof to engage and accurately locate the interior surface of said rim blank with respect to said forming means; and

said first and second forming means being relatively movable along the axis of said pulley rim blank so as to cause said circumferential edge portions to be convergingly deformed.

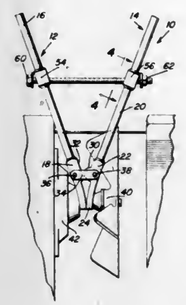
4,236,290

FAN PULLER

Billie J. McPherson, P.O. Box 597, Medina, Tenn. 38355

Filed Feb. 27, 1979, Ser. No. 15,734
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—239 **1 Claim**

1. A tool for exerting a force between two elements mounted on a common shaft, said tool comprising: a first lever having a handle portion and a head portion; a second lever having a handle portion and a head portion; and hinge means for hingedly connecting said first lever to said second lever in opposed, spaced relation allowing limited longitudinal movement of said first lever with respect to said second lever; said hinge means including at least one longitudinally extending connector plate which extends between and is pivotally mounted to each of said first and second levers and a cam lobe mounted on one of said first and second levers for contacting the other of said first and second levers, said cam lobe being positioned between the said pivotal mounts of said lontitudinally extending connector plate; further wherein each of said heads includes a bifurcated tip for contacting and partially surrounding said shaft, each of said bifurcated tips extending laterally of its respective lever, said bifurcated tips being thereby positioned in a mutually diverging relationship; and a mechanical advantage means extending between the handle portions of said levers for providing a mechanism for causing displacement of said levers, said mechanical advantage means including a threaded bar extending through each end of said handle portions and a complementary threaded nut attached to each end of said bar.

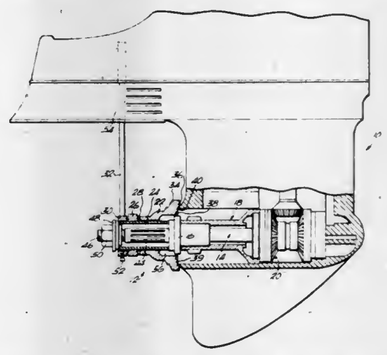


4,236,291

BEARING CARRIER PULLER FOR OUTBOARD MOTORS

Randall G. Barrow, 343 Marianna Ave., North Fort Myers, Fla. 33903

Filed Aug. 20, 1979, Ser. No. 68,149
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—256 **5 Claims**



1. A bearing carrier puller for use in removing a bearing carrier in assembly with a propeller shaft and reverse gear from a chamber in a lower unit of a housing of a motor such as an outboard motor, the bearing carrier puller comprising a block having an inner end for seated engagement over an existing annular mouth opening from the chamber in general axial alignment with a through hole in said block, an exteriorly threaded annular sleeve extending loosely axially through said through hole and being of a length to extend from a first end for seated engagement against an existing thrust hub portion of the propeller shaft to a second end terminating a predeter-

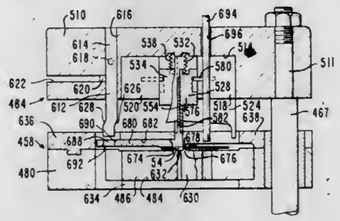
mined distance short of a terminal end of a screw threaded end portion of an existing propeller carrying portion of the shaft extending therethrough, whereby a washer and lock nut may be engaged on the threaded end to clamp said sleeve against the thrust hub; an actuating nut, screw threaded on said sleeve outwardly of an outer end of said block, a ring, slip fitted over said threaded sleeve outwardly of said nut, means to fix said ring to said sleeve, and an elongated member fixed to and extending generally outwardly from said ring and being of a length so as to abut an existing fixed housing portion of the motor to arrest rotational movement of said sleeve when said means to fix are engaged and said actuating nut is properly turned to impart longitudinal outward movement to said sleeve.

4,236,292

METHOD OF POSITIONING, GAPPING AND APPLYING STOP TO SLIDE FASTENER

David A. Orr; Hiren S. Gala, both of Erie, and George J. Scagnelli, Meadville, all of Pa., assignors to Textron Inc., Providence, R.I.

Filed May 26, 1978, Ser. No. 909,863
Int. Cl.³ B29D *5/00*
U.S. Cl. 29—408 **5 Claims**



1. A method of gapping and applying a bottom stop to a section of a slide fastener chain comprising

advancing the section of slide fastener chain into a common base assembly extending beneath both a bottom stop applying machine and a gapping punch assembly which is adjacent to the bottom stop applying machine,

lowering the gapping punch assembly,

positioning and clamping the section of slide fastener chain in the base assembly underneath the gapping punch assembly during the lowering of the gapping punch assembly so as to also position and hold the slide fastener chain with respect to the bottom stop applying machine,

said positioning and clamping including moving a positioning member transverse to the longitudinal dimension of the slide fastener chain from a retracted position to an advanced position to position fastening elements of the section of slide fastener chain within a channel extending in the common base,

gapping the slide fastener chain by engaging a gapping punch in the gapping punch assembly with a selected number of fastening elements in the section of slide fastener chain during the lowering of the punch assembly but after the positioning and clamping of the section of slide fastener chain,

applying a bottom stop to the section of slide fastener chain after the positioning and clamping of the section of slide fastener chain,

raising the gapping punch assembly,

retracting the positioning member after the gapping and applying a bottom stop,

removing the section of slide fastener chain from the base assembly after the gapping and the applying of the bottom stop, and

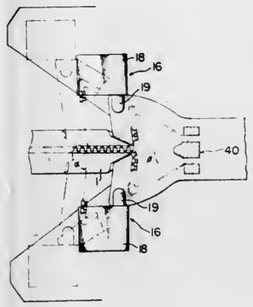
said retracting of the positioning member permitting the bottom stop to pass freely over the channel.

4,236,293

METHOD AND APPARATUS FOR FORMING SPACE SECTIONS IN A SLIDE FASTENER

Toyoo Morita, and Hiroshi Oura, both of Kurobe, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,616
Claims priority, application Japan, Dec. 30, 1977, 52/158063
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—408 **9 Claims**



1. A method for forming a space section in a slide fastener having plastic interlocking elements with leg portions fixedly secured to a carrier tape, the elements in the prospective space section including a first element next to an element ahead of it, and a last element next to an element behind it, said method comprising:

(a) pressing the elements within the prospective space section at the leg portions thereof to deform the elements;

(b) holding the deformed elements in a fixed position; and

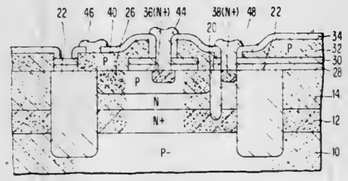
(c) displacing the carrier tape by gripping it at a point ahead of said first element, and moving said gripped point of the tape rearwardly at an oblique displacement angle with respect to the held elements, and at a constant abstracting angle, until the carrier tape has been abstracted from said last element.

4,236,294

HIGH PERFORMANCE BIPOLAR DEVICE AND METHOD FOR MAKING SAME

Narasipur G. Anantha, Hopewell Junction; Harsaran S. Bhatia, Wappingers Falls, and James L. Walsh, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 844,769, Oct. 25, 1977, Pat. No. 4,160,991.
This application Mar. 16, 1979, Ser. No. 21,124
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—578 **11 Claims**



1. A method for fabricating a high performance semiconductor device with small emitter-base spacing comprising:

providing a silicon semiconductor body having regions of monocrystalline silicon isolated from one another by isolation regions;

forming a base region in certain of said regions which contain a subcollector region;

providing a mask over said body covering those regions designated to be the emitter and collector reach-through regions;

forming a doped polysilicon layer through said mask wherein the said polysilicon layer makes ohmic contact to said base region;

forming openings in said polysilicon layer over said designated regions;

forming a layer of insulating material over said polysilicon layer;

removing said mask where said emitter and collector reach-through are to be formed;

forming said emitter in said base region and collector reach-through to said subcollector; and

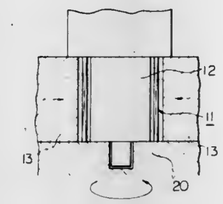
forming electrical contacts to said emitter and collector reach-through regions, and said polycrystalline silicon layer being the electrical contact to said base region.

4,236,295

METHOD OF MAKING ROTOR COIL OF CORELESS MOTOR

Yoshimitsu Nakamura, Settsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 11, 1978, Ser. No. 904,866
Claims priority, application Japan, May 18, 1977, 52-57873
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—598 **1 Claim**



1. A method of making a cylindrical rotor coil for use in a coreless electric motor, comprising the steps of

forming a substantially cylindrical coil from an insulation coated conductive wire, and applying pressure to said cylindrical coil in radial directions against at least one of the inner and outer peripheries of said coil while maintaining flat die surfaces in abutting relationship with both axial ends of said coil, to generally flatten the portions of said wire defining said peripheries and to radially compress together the turns of said coil for reducing the radial thickness of said coil, wherein at least one of said flat die surfaces comprises a filing die having file teeth at least in an area abutting said one axial end of said cylindrical coil and said exposing step comprises moving the filing die along said one axial end of the coil after said force applying step so as to grind off at least the insulating coating of said wire on said one axial end of the coil.

4,236,296

ETCH METHOD OF CLEAVING SEMICONDUCTOR DIODE LASER WAFERS

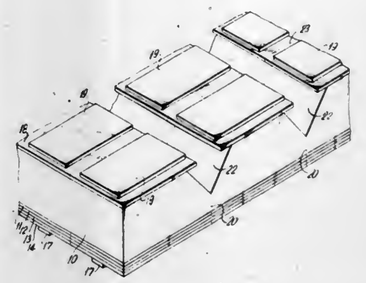
Geoffrey R. Woolhouse, White Plains, N.Y.; Harold A. Huggins, Hartsdale, N.Y.; Stephen I. Anderson, Yorktown Heights, N.Y., and Frederick R. Scholl, Riverdale, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 13, 1978, Ser. No. 951,074
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—569L **12 Claims**

6. A method of cleaving a wafer into bars of diodes, said wafer comprising a substrate, at least a portion of which is metallized, and a plurality of semiconductor layers deposited on at least a portion of the opposite surface, at least one of which layers, when appropriately biased, generates coherent electromagnetic radiation, which method comprises:

(a) forming an array of exposed lines on the metallized substrate by photolithography to locate lasing ends of the devices;

(b) etching through the exposed metallized portion to expose portions of the underlying substrate;



(c) etching a V-groove into the substrate at the exposed portions to a depth of about 1 to 2 mils less than the thickness of the wafer; said V-groove terminating at a point before reaching the said one layer and

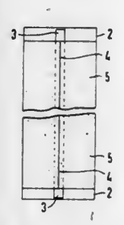
(d) mechanically cleaving the wafer including the said one layer along the etched V-grooves to form bars of diodes, thereby generating substantially damage-free lasing facets along the plane of cleaving, the bars of diodes being of substantially equal width.

4,236,297

METHOD OF MANUFACTURING A SUPERCONDUCTOR

Peter Lanig, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,797
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734410
Int. Cl.³ H01L *39/24*
U.S. Cl. 29—599 **8 Claims**



1. A method of manufacturing a superconductor with at least one strand of a superconductive compound which is formed from at least two components, comprising:

(a) winding an intermediate conductor product with these components on a winding core;

(b) separately winding a coherent graphite structure as a separator at least between adjacent surface parts of said intermediate conductor product;

(c) subsequently thereto, performing a heat treatment for forming the superconductive compound; and

(d) finally, unwinding the superconducting body so produced from the winding core for further processing.

4,236,298

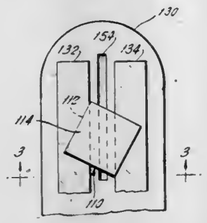
METHOD OF TRIMMING THERMISTOR OR OTHER ELECTRICAL COMPONENTS AND THE CONTACTS THEREOF

Milton Schonberger, 195 Fern St., Westwood, N.J. 07675

Continuation-in-part of Ser. No. 879,193, Feb. 21, 1978, abandoned. This application Jan. 25, 1979, Ser. No. 6,362

Int. Cl.³ H01C *17/22*

U.S. Cl. 29—610R **23 Claims**



1. A method of forming contacts on a surface of an electric component, comprising the steps of:

forming a through gap in a substrate;

providing an electric component having a layer of contact material extending over a surface thereof; applying the electric component to the substrate such that a portion of the surface of the layer of contact material is placed over the substrate gap, with the layer of contact material extending across the entire width of the gap;

operating through the gap, from the side of the substrate away from the electric component, removing the part of the layer of contact material over the gap from the electric component, thereby dividing the layer of contact material into two parts to form two separated contacts.

4,236,299

METHOD AND DEVICE FOR WINDING SPIRAL FINS ONTO OVAL TUBING

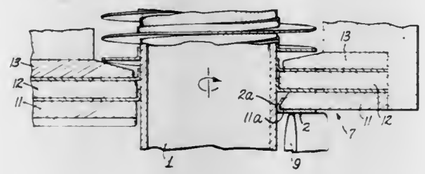
Alfred Joekel, Essen-Werden; Hans Langen, and Peter Denner, both of Ratingen, all of Fed. Rep. of Germany, assignors to Balke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Division of Ser. No. 569,887, Apr. 21, 1975, Pat. No. 4,107,832, which is a continuation-in-part of Ser. No. 451,589, Mar. 15, 1974, abandoned. This application Jul. 10, 1978, Ser. No. 923,169

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1973, 2313436; Jul. 31, 1974, 2436768

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—727 **16 Claims**



1. A device for the production of finned heat transfer tubing of oval cross section, designed for winding a continuous strip of sheet metal onto a length of oval tubing having a major diameter which is at least fifty percent larger than its minor diameter, in order to form a continuous spiral fin thereon, the device comprising in combination:

means for journalling and rotating said length of oval tubing about its longitudinal axis;

means for supplying to at least one winding point on the circumference of said tubing, in a transverse tangential direction thereto, a continuous strip of ductile sheet metal having an on-edge height which is at least ten times greater than its gauge;

means for shaping said metal strip, or strips, respectively, prior to arrival at the winding point, into a hook-like cross-sectional profile, so as to give the metal strip a contact edge with a laterally extending flange portion which is bent substantially more than 90 degrees, to form an acute angle with the remainder of the strip;

starting attachment means defined between the tubing and the metal strip for transmitting the rotary motion of the tubing to the strip as a winding and feeding motion;

means for axially advancing said winding point or points, respectively, relative to the rotating tubing, in a fixed relationship to said rotary motion, so as to wind the metal strip or strips into a spiral fin enveloping the tubing;

means for axially and radially guiding the arriving metal strip or strips, respectively, at the associated winding point in an on-edge relationship to the surface of the tubing, by guidingly engaging both sides of the strip as well as the outwardly open groove formed by said laterally extending flange portion; and

means for ironing said flange portion of the metal strip against the tubing surface, following bending of the strip around the surface curvature.

4,236,300

ARMATURE WINDING MACHINE

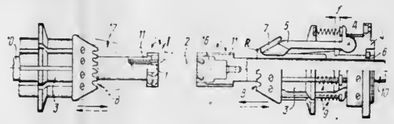
Viktor M. Kartavtsev, ulitsa Lavreneva, 17, kv. 71; Grigory Y. Posleider, ulitsa 40 let Oktyabrya, 43/2, kv. 9; Vladimir S. Bytsak, ulitsa Georgia Dimitrova, 28, kv. 71, all of Kherson, and Pavel I. Bukhteev, Festivalnaya ulitsa, 13, korpus 3, kv. 233, Moscow, all of U.S.S.R.

Continuation-in-part of Ser. No. 806,859, Jun. 15, 1977, abandoned. This application Jan. 31, 1979, Ser. No. 8,077

Claims priority, application U.S.S.R., Jun. 15, 1976, 2363454

Int. Cl.³ H02K *15/09*

U.S. Cl. 29—736 **2 Claims**



1. A winding machine for the manufacture of an armature winding for an electrical machine on an armature core having a longitudinal axis, opposed butt ends, and armature slots extending between said butt ends, comprising:

drive means including a driving shaft;

a device actuated by said drive means comprising a chuck for clamping the armature core;

a conductor installing mechanism actuated by said drive means and comprising two moving heads, said heads being arranged coaxially at opposite butt ends of said armature core: means for imparting a reciprocating motion to said heads along the axis of the armature core; each of said heads having a shell with a central bore and a circular radial groove on the side facing a corresponding butt end of said armature core;

a plurality of levers each having a rounded working part for installing the conductor, said levers being accommodated within said circular radial groove;

a bushing corresponding to each head for positioning said lever with respect to the armature slots, said bushing being slidably mounted for movement within said central bore of said shell of the head and in engagement with said drive shaft, said bushing having a tapered surface;

a tapered ring affixed to said tapered surface with radial butt end slots facing said armature core, surfaces of the butt end slots being in alignment with the working surfaces of said levers; and

a device disposed between said armature core and said heads of said conductor installing mechanism for distributing the conductors among the respective armature slots and shaping the end winding parts thereof adjoining said butt ends of said armature core.

4,236,301

APPARATUS FOR MOUNTING DEVICES ON A SUBSTRATE

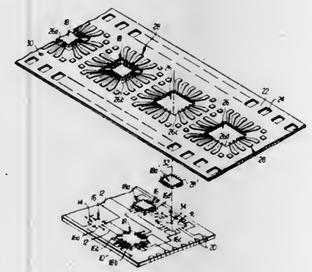
Joseph Hug, Ormesson; Pierre Sigel, Villeneuve-le-Roi; Raymond Delorme, Bagnolet; Maurice DeVoille, Sevran, and Henri Grosjean, Le Plessis Trevise, all of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Division of Ser. No. 874,652, Feb. 2, 1978. This application Dec. 4, 1978, Ser. No. 966,318

Claims priority, application France, Feb. 4, 1977, 77 03271

Int. Cl.³ B23P *21/00, 23/00*

U.S. Cl. 29—740 **17 Claims**



1. Apparatus for mounting a plurality of devices onto a substrate, each of the devices being characterized within a first plurality of types according to its function and within a second plurality of categories in accordance with its dimensions, the substrate having a plurality of predetermined positions each for receiving a device of selected type and category, the devices being carried by and transported to the substrate by a flexible supporting element, said apparatus comprising:

a chassis,

a first plurality of cutting tools mounted on said chassis, each for cutting a device from its support element;

a second plurality of attaching tools mounted on said chassis, each for attaching a device to a preselected position of the substrate;

said first plurality of cutting tools and second plurality of attaching tools being arranged on said chassis with respect to a first reference line;

means on said chassis for conveying devices of each type to a corresponding cutting tool and devices of each category to a corresponding attaching tool;

a movable table on said chassis having a plate for supporting the substrate;

moving means for moving said table and said plate with respect to said first reference line; and

control means operably connected to said moving means, said cutting tools and said attaching tools for controlling said moving means to move said table and said plate so as to be correctly positioned with respect to a corresponding one of said cutting tools and a corresponding one of said attaching tools, and for actuating said corresponding one cutting tool and said corresponding one attaching tool when the preselected position of the substrate is accurately aligned with respect to each of said corresponding one cutting tool and said corresponding one attaching tool.

4,236,302

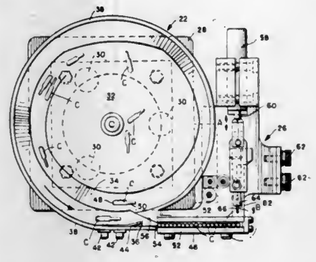
ELECTRICAL CONTACT FEEDING AND ATTACHMENT APPARATUS

Guenter Kuehling, Berwyn, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 25, 1978, Ser. No. 936,956

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—753 **31 Claims**



1. A crimping machine for selectively feeding electrical contacts of any one of a variety of contact conformations seriatim from a supply of said contacts and crimping each fed contact to the terminal end of an electrical conductor, comprising:

a base;

receptacle means on said base for holding the supply of contacts of selected conformation in an array of loose contacts;

crimping means, including a crimping station, for crimping at least a portion of a contact onto the electrical conductor when the contact is at the crimping station;

feeding means for selectively feeding a random oriented contact from said receptacle means along a path to the crimping means;

interchangeable modular orienting and advancing means, including a common support structure, located along said path between the receptacle means and the crimping means for receiving the randomly fed contacts, orienting the contacts and advancing the contacts one at a time toward the crimping means; and

means mounting the common support structure of said modular orienting and advancing means on said base for ready removal therefrom whereby the entire modular orienting and advancing means is bodily removable and interchangeable for accommodating the variety of contact conformations.

4,236,303

WIRE UNWRAP ASSEMBLY FOR USE ON AUTOMATIC WIRING MACHINES

George J. Sprenkle, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 2, 1979, Ser. No. 54,271

Int. Cl.³ B21F *21/00*; B23P *19/04*

U.S. Cl. 29—762 **9 Claims**

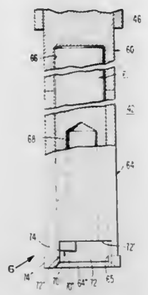
1. A wire unwrap assembly for use on an automatic wiring machine for unwrapping a wire coil from a post, which includes an unwrap tool comprising:

a tool holder having an aperture at one extremity thereof,

a tip having one of its extremities rigidly fixed within the tool holder aperture and having a bore of predetermined depth terminating at its other extremity, said tip including a coplanar tooth-like member projecting from the surface of the last mentioned extremity,

a tool sleeve for partially enclosing said tip, the inner surface of said tool sleeve being contiguous with the outer surface of said tip, one extremity of said sleeve extending beyond said tip and providing a counterbore, said sleeve having a slot in a side wall thereof, said slot extending from the

outermost surface of said one extremity of said sleeve to the point at which said tooth-like member of said tip is exposed within said slot, said tooth-like member being



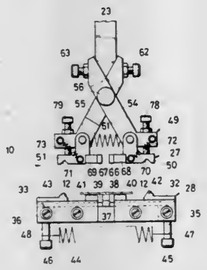
disposed adjacent a preselected one of the longitudinal walls which define said slot, said sleeve further including a generally transverse-oriented tapered groove in its surface in proximity to said tooth-like member.

4,236,304

DEVICE FOR SPREADING APART A PAIR OF TAPES

Toyoo Morita, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,612
Claims priority, application Japan, Dec. 30, 1977, 52/158064
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—768 **10 Claims**



1. A device for spreading a pair of stringer tapes apart at an element-free gap, comprising:

(a) a frame having a table for supporting thereon the pair of tapes along a longitudinal path;

(b) a pair of first grip members slidably mounted on said table and movable away from each other in a direction transverse to said path, and adapted to engage one side of the tapes at the element-free gap, respectively;

(c) a shaft movably supported on said frame and drivable toward said first grip members;

(d) a pair of second grip members operatively coupled with said shaft and facing said first grip members for engaging the other side of the tapes at the element free gap respectively, said second grip members being movable away from each other along said direction; and

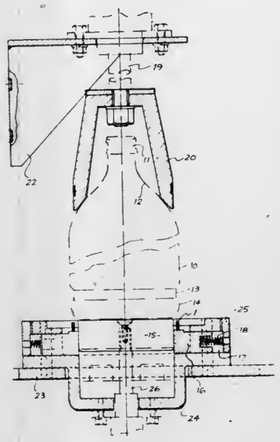
(e) means on said shaft for converting the motion of said shaft toward said table into the motion of said second grip members away from each other along said direction while said second grip members are pressed against said first grip members with the pair of tapes held therebetween.

4,236,305

APPARATUS FOR FITTING A RESILIENT RING ON A BOTTLE

Ross W. Hetherington, Heathcote; Kenneth J. Armstrong, Bexley; Leonard Ireland, Mullaloo; John Canty, Kareela, and Ernest R. Banfield, Peakhurst, all of Australia, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,533
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—774 **6 Claims**



1. Apparatus for fitting a resilient ring over shoulder means of a bottle and onto a bail band indent thereof, the apparatus comprising:

(a) support means for supporting the resilient ring in a fitting position,

(b) locating means for receiving and locating the resilient ring and the bottle in axially aligned juxtaposition to each other,

(c) ram means for press fitting the ring over the shoulder means by relative displacement of the bottle and the support means with the ring thereon,

(d) the support means having biasing means for radially inwardly biasing the support means and the support means being formed and positioned for engaging the shoulder means of the bottle under the biasing of the biasing means while the support means supports the ring as it is deformed to pass over the shoulder means and onto the bail band indent,

(e) said locating means comprising a displaceable circular platform for supporting the bottle and normally extending upwardly within and above the support means, the ram means being operable to engage the bottle at a location remote from its shoulder for displacing the bottle downwardly while supported on the downwardly displaceable platform.

4,236,306

METHOD FOR MOUNTING DEVICES ON A SUBSTRATE

Joseph Hug, Ormesson; Pierre Sigel, Villeneuve-le-Roi; Raymond Delorme, Bagnolet; Maurice DeVoille, Sevran, and Henri Grosjean, Le Plessis Trevise, all of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Filed Feb. 2, 1978, Ser. No. 874,652
Claims priority, application France, Feb. 4, 1977, 77 03271
Int. Cl.³ B23P *21/00, 23/00*
U.S. Cl. 29—827 **14 Claims**

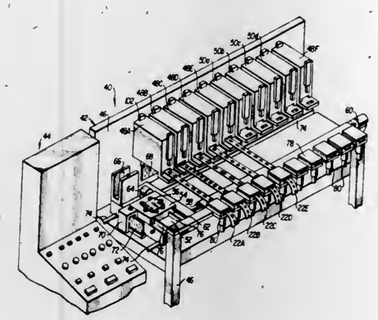
1. A method of automatically mounting on a supporting substrate, integrated circuit devices of different types and categories having external conductors, said method comprising the steps of:

(A) defining a first reference system on the substrate, said first reference system including a plurality of positions, at which the devices are to be attached to the substrate;

(B) selecting an appropriate device to be attached at each of said plurality of positions;

(C) disposing said devices at different stations wherein at each station the devices are connected to a supporting element through their external conductors;

(D) defining a second reference system independent of said first reference system, said second reference system including a plurality of stations at which the devices are disposed before they are mounted upon the substrate;



(E) imparting relative movement between said first reference system of the substrate and said second reference system to align each position on the substrate with a corresponding station and a corresponding device disposed thereon;

(F) separating each of said selected device from its said supporting element at the corresponding station and disposing it on said substrate at said appropriate position; and

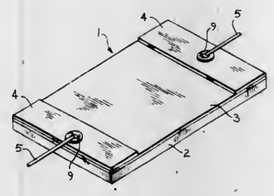
(G) attaching each device to the substrate at the position to which the device has been aligned.

4,236,307

METHOD OF MAKING A NITROGEN DIOXIDE SENSING ELEMENT

Jeannine O. Colla, Whitefish Bay, and Paul E. Thoma, Burlington, both of Wis., assignors to Johnson Controls Inc., Milwaukee, Wis.

Division of Ser. No. 774,765, Mar. 7, 1977, Pat. No. 4,142,400.
This application Nov. 2, 1978, Ser. No. 956,884
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **15 Claims**



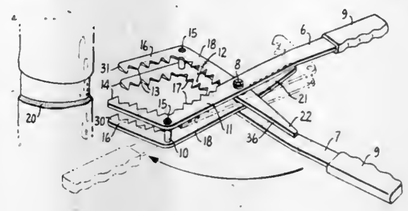
1. A method of making an element capable of sensing the presence of nitrogen dioxide in the environment, comprising the steps of heating a film of an electrically non-conductive polyaromatic polymer to a temperature in the range of 540° C. to 750° C. in a non-oxidizng atmosphere to pyrolyze the polymer and render said polymer semi-conductive, and attaching electrical leads at spaced locations to said pyrolyzed film.

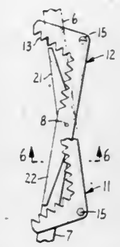
4,236,308

SELF-CLEANING TREE GIRDLING DEVICE

Edric W. Vredenburg, Sr., P.O. Box 135, Fortine, Mont. 59918

Filed May 23, 1979, Ser. No. 41,600
Int. Cl.³ A01G *3/03*
U.S. Cl. 30—121 **2 Claims**





1. A tree girdling device having a pair of dual levers hingeably connected together by a hinge located intermediate the ends of said dual levers, each dual lever having a pair of levers in spaced relation with each other and connected together by a connecting means and having a handle at one end of one lever of each pair of levers for moving said dual levers about the hinge, said levers having their other ends formed with tree encircling elements, each tree encircling element having a first portion continuing the lever with a second terminal portion extending at approximately 90° to the first portion and toward an opposite like portion on the other lever, each of the portions having cutter elements to cut the bark of a tree, the other lever of each pair of levers having a rearwardly extending portion having a length less than the distance between said connecting means and said hinge, the rearwardly extending portion of one dual lever being movable between the spaced levers of the other dual lever to remove any material held between the spaced levers of said dual levers.

4,236,309

FLEXIBLE LINE TRIMMER WITH LINE FEEDING APPARATUS

James S. Cayou, Hurst, Tex., assignor to K & S Industries, Inc., Fort Worth, Tex.

Filed Feb. 27, 1978, Ser. No. 881,174
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 **10 Claims**

1. An apparatus for cutting vegetation with a rotating non-metallic flexible line comprising:

a rotary drive means for rotating a free end of the line;

a housing having a bottom and connected with the rotary drive means for rotation therewith;

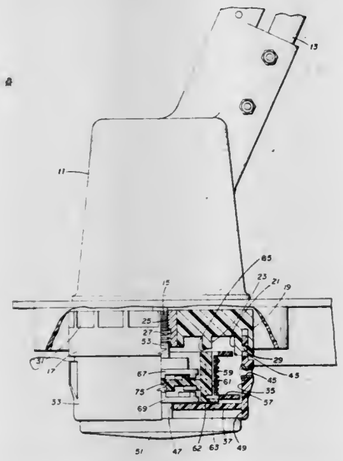
a spool hub carried inside the housing at the bottom;

a spool adapted to be wound with the line and carried by the hub for rotational movement therewith;

an outer gear, positioned inside the hub, having an upper ring with downwardly facing teeth and spaces therebetween, and a lower ring connected to the upper ring for movement therewith, having teeth facing upward with spaces therebetween, the teeth of the lower ring being in the same vertical planes as the teeth of the upper ring;

an inner gear, positioned between the upper and lower rings, having upper teeth and spaces therebetween on its upper side adapted to engage the teeth of the upper ring, and lower teeth and spaces therebetween on its lower side adapted to engage the teeth of the lower ring, each upper tooth being formed above one of the spaces on the lower side; the inner gear and the outer gear being axially and rotatably moveable with respect to each other; the distance between the teeth of the upper and lower rings being substantially equal to the thickness of the inner gear less the height of one of its teeth;

an actuator button located below the bottom of the housing and axially moveable with respect to the housing between a lower and an upper position;



an actuator member bearing against the button and extending through the bottom of the housing into contact with one of the gears for axially moving one of the gears with respect to the other gear when the button is moved from its lower position, thereby removing the upper teeth of the inner gear from engagement with the teeth of the upper ring to allow the gears to rotate with respect to each other until the lower teeth of the inner gear engage the teeth of the lower ring; and

bias means for urging the actuator member downward, causing the lower teeth of the inner gear to disengage the teeth of the lower ring, allowing rotation of the gears with respect to each other until the upper teeth of the inner gear again engage the teeth of the upper ring.

4,236,310

PORTABLE WORKING IMPLEMENT

Erich Müller, Waiblingen, Fed. Rep. of Germany, assignor to Andreas Stihl, Waillengen, Fed. Rep. of Germany

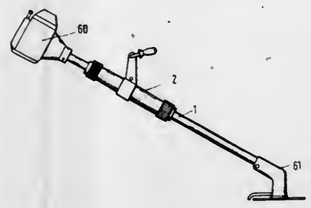
Filed Sep. 25, 1978, Ser. No. 945,635

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743043

Int. Cl.³ A01D *55/18;* **B27B** *17/02*

U.S. Cl. 30—276 **19 Claims**

1. A portable working implement for agriculture and forestry, especially brush cutter, which is provided with a handle intermediate its ends and includes: a cutting tool connected to one end of said implement, a motor drivingly connected to said cutting tool, a first implement part subjected to vibrations caused by the working of said motor, a second implement part arranged at the side of said handle and connected to said first implement part through the interposition of at least one elastic insulating element, and adjusting means associated with said insulating element for adjusting the rigidity characteristic of said insulating element, said insulating element being fastened on said first implement part and on said second implement part, and an abutment part surrounding said insulating element and



engaged by said insulating element over different lengths in conformity with the set stiffness or rigidity.

4,236,311

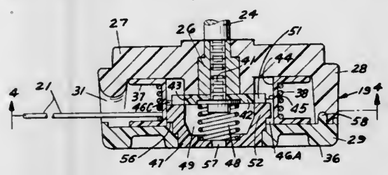
VEGETATION CUTTING APPARATUS

Albert W. Mitchell, Houston, Tex., assignor to Emerson Electric Company, St. Louis, Mich.

Continuation-in-part of Ser. No. 802,211, May 31, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,109

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **17 Claims**



1. An apparatus for cutting vegetation, comprising:

(a) a circular head rotatable about an axis of rotation with a drive connection extending from a first face and a second face having a smooth surface free of projections and recesses capable of trapping appreciable vegetation and said second face in contact with vegetation being cut;

(b) a spool carried by said head between said first and second faces and mounted for rotation independently thereof;

(c) a flexible non-metallic cutting line having a first end extending radially outwardly of said head into a cutting plane residing substantially perpendicular to the axis of rotation of said head;

(d) said cutting line having a second end secured to said spool and a supply of said cutting line coiled on said spool;

(e) locking means on said head and adjusted between first and second positions by an actuating member conforming to said smooth surface of said second face and moving coaxially within said head along the rotational axis, said actuating member carried on the second face of said head for rotation therewith, said locking means in a first position securing said spool against rotation relative to said head and in a second position releasing said spool to rotate freely through a predetermined angular displacement and thereby extend a certain length of cutting line from said head into the cutting plane whereat said locking means are returned to the first position; and

(f) and said actuating member is a button movable manually axially within said second face of said head.

4,236,312

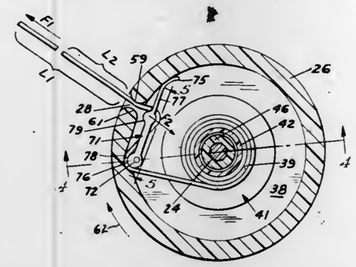
APPARATUS FOR CUTTING VEGETATION

Gary H. Foster, and Marco H. Lombard, both of Houston, Tex., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 16, 1979, Ser. No. 12,628

Int. Cl.³ A01D *55/18;* **A01G** *3/06*

U.S. Cl. 30—276 **4 Claims**



1. An apparatus for cutting vegetation, comprising:

(a) a head rotatable about an axis of rotation and said head having a peripheral aperture;

(b) said head carrying an annular cavity to provide a storage area for a cutting line;

(c) spool means mounted in said cavity and journaled therein for rotation about the rotational axis of said head;

(d) a flexible non-metallic cutting line disposed in a coiled portion about said spool means with one end secured thereto and with a free end of said cutting line extending radially outwardly through said aperture into a cutting plane;

(e) a cam lock carried by said head adjacent said aperture and adapted for movement toward an abutment on said head in response to centrifugal force, said cutting line extending between said cam lock and said abutment and secured against extension into the cutting plane during rotation of said head at a first angular velocity, said cam lock provided by an elongated cam member having an opening therethrough and partially encircled by said cutting line passing through said opening for extension through said aperture into the cutting plane, and said abutment is a curved surface whereby said cutting line is secured in a curved portion against slidable movement therebetween;

(f) biasing means connected to said cam lock for separating said cam lock and abutment by a force acting counterdirectionally to centrifugal force; and

(g) said cam lock and said biasing means cofunctioning during rotation of said head at any angular velocity greater than the first angular velocity whereby said cutting line upon any significant wear or loss at its free end is extended immediately from said head to the predetermined maximum length in said free end traversing the cutting plane during head rotation.

4,236,313

APPARATUS FOR AND METHOD OF EVALUATING SOLAR EXPOSURE

Roy N. Griffin, Jr., 466 Knoll Dr., Los Altos, Calif. 94022

Filed Dec. 26, 1979, Ser. No. 107,448

Int. Cl.³ G01C *1/00*

U.S. Cl. 33—1 DD **12 Claims**

1. An apparatus for use in determining the amount of direct solar exposure at a particular point between sunrise and sunset for different points in any one of a number of different geographic locations, for any day of the year, said apparatus comprising:

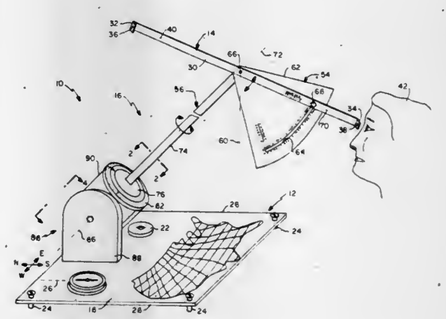
(a) a support base including means for maintaining the base at a required fixed orientation relative to its surroundings for the particular point selected;

(b) means including indicia contained on and displayed by said support base for conveying the necessary information to provide said specific orientation;

(c) an elongated solar pointing device adapted for placement in a pointing position with the sun; and

(d) an arrangement connected with said base for supporting said pointing device for movement in its solar pointing position at any time during movement of the sun from sunrise to sunset and so long as said base is maintained at its required orientation regardless of the point selected, the geographic location or the time of the year, whereby to determine the path taken by the sun during said movement and therefore the amount of direct solar exposure of the point selected, said arrangement including

(i) first, season adjusting means supporting said solar pointing device for movement about a first axis in order to place said device in an adjustably fixed, season related position relative to said axis depending upon the day of year, said season adjusting means including indicia setting forth the months of the year and an indexing mark in order to place the pointing device in the desired season related position,



(ii) second, time adjusting means supporting said solar pointing device and said season adjusting means for movement about a second axis in order to place said device in an adjustably fixed, time related position relative to said second axis, depending on the time of day between sunrise and sunset, said time adjusting means including indicia setting forth the different hours of the day between sunrise and sunset and an indexing mark in order to place the pointing device in the desired time related position, and

(iii) third, latitude adjusting means supporting said solar pointing device, said season adjusting means and said time adjusting means for movement about a third axis in order to place said device in an adjustably fixed, latitude related position relative to said third axis depending upon the latitude of the geographic location of the selected point, said latitude adjusting means including indicia setting forth latitude and an indexing mark in order to place the pointing device at the appropriate latitude and indicia contained on and displayed by said base for conveying the necessary information to provide the appropriate latitude.

4,236,314
ELECTROMECHANICAL FILLING-LEVEL MEASUREMENT

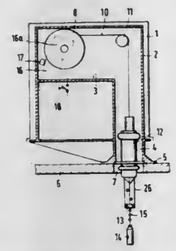
Klaus Schmidt, Schopfheim, and Klaus Grass, Murg, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,105

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 7730802[U]; Oct. 5, 1977, 7730819[U]

Int. Cl.³ G01B *3/10*

U.S. Cl. 33—126.6 **13 Claims**



1. In an electromechanical filling level measuring apparatus for the intermittent measurement of the filling level in a container including a spool, a measuring tape that is wound on the spool and to the lower end of which a sensing weight is secured, an electric motor for driving the spool, switching means for the reversal and for the switching off of the electric motor that respond respectively when the sensing weight encounters the surface of the filling medium during paying-out of the measuring tape and when an upper limiting position is reached during the winding-in of the measuring tape, a detector device for determination and indication of the length of the measuring tape paid out or wound in, a through-guide member, a housing fitted to the top of the container, the housing being divided by a barrier wall into (a) a measuring tape chamber containing the measuring tape spool, that is in communication with the interior of the container by way of the through-guide member for the measuring tape, and (b) a chamber containing the electric motor, the switching means and the detector device, the through-guide member being on the underside of the housing and including a fixed guide sleeve, a tube through which the measuring tape passes and a spring, the tube being mounted for limited vertical movement against the force of the spring, and a carrier for the tube being fastened to the end of the measuring tape, the improvement wherein the tube consists of metal and extends out of the upper end of the guide sleeve into the measuring tape chamber and an inductive proximity switch so arranged within the range of movement of the metal tube as to respond to its passage.

4,236,315
SENSOR ASSEMBLY FOR WHEEL ALIGNMENT SYSTEM

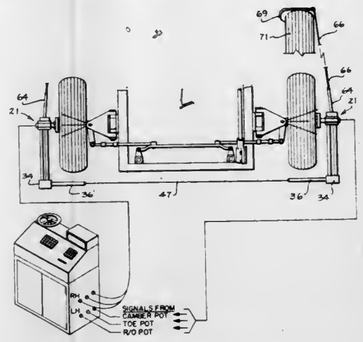
Donald B. Curchod, Saratoga, and Wilhelm Borner, Cupertino, both of Calif., assignors to Nortron Corporation, Sunnyvale, Calif.

Filed Sep. 13, 1978, Ser. No. 941,756

Int. Cl.³ G01B *7/315*

U.S. Cl. 33—203.18 **5 Claims**

1. In a wheel alignment system of a type having a transducer support assembly, means carrying said assembly from a wheel to be aligned and serving to permit the wheel to rotate on its axis independently of said assembly and sensing means serving to provide an electrical indication of the angle of toe of the wheel, said sensing means comprising elongate means carried by and disposed to extend forwardly alongside the wheel to a position beyond the leading portion of a tire carried by said wheel, a potentiometer carried at the distal end of said elongate means, an elongate lever arm coupled at one end to move the wiper of said potentiometer, said lever arm being movable between advanced and retracted positions to vary the output of said potentiometer, and means serving to yieldingly apply tension to the distal end of said lever arm for operating said wiper to provide an electric signal representative of the angle between said lever arm and said elongate means in response to



steering movements of said wheel said lever arm being readily flexible for movement in a vertical plane while being substantially rigid in a generally horizontal plane for operating said wiper, the flexibility of said lever arm serving to isolate movements of the distal end of said lever arm from the proximal end thereof as the wheel is rotated.

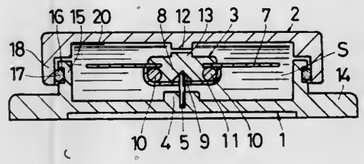
4,236,316
VESSEL ADAPTABLE TO THE EXPANSION AND/OR CONTRACTION OF FLUID THEREIN

Kazuo Suzuki, 9-9 Tamagawa 4 chome, Setagaya-ku Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,282

Int. Cl.³ G01C *17/08*

U.S. Cl. 33—364 **3 Claims**



1. A magnetic needle assembly including a vessel comprised of a body and a lid and a needle member characterized in that said vessel body is a hollow body open at one end, said lid slidably interfits with said body to close said one end forming a chamber, a fluid within said chamber, said needle member being immersed in said fluid, a rectangular packing groove formed on the peripheral surface of one of the interfitting surfaces of the lid and the vessel body, an O-ring in said packing groove compressed by the peripheral surface of the other of said interfitting surfaces to seal said chamber, said vessel being capable of varying the volume of said chamber by displacement of said lid to accommodate expansion and contraction of said fluid.

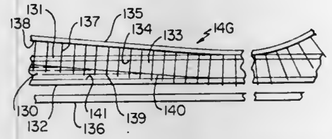
4,236,317
METHOD AND APPARATUS FOR ELECTROSTATICALLY FORMING A LAYER OF MATERIAL FROM A SLURRY THEREOF

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Continuation-in-part of Ser. No. 849,097, Nov. 7, 1977, Pat. No. 4,189,845, which is a continuation-in-part of Ser. No. 809,945, Jun. 24, 1977, Pat. No. 4,135,307, which is a division of Ser. No. 695,092, Jun. 11, 1976, Pat. No. 4,050,162, which is a continuation-in-part of Ser. No. 541,218, Jan. 15, 1976, Pat. No. 3,977,937, which is a continuation-in-part of Ser. No. 405,023, Oct. 10, 1973, Pat. No. 4,060,449. This application Oct. 16, 1979, Ser. No. 85,216

Int. Cl.³ F26B *3/34*

U.S. Cl. 34—1 **18 Claims**



1. In a method of forming a layer of material against one side of a movable conveying means from a slurry of a liquid and said material by an electrostatic action, the improvement comprising the steps of disposing a plurality of needle-like projections in said slurry to assist said electrostatic action in forming said layer of material from said slurry against said conveying means, and causing said projections to always completely project through said layer as said layer is being formed against said one side of said conveying means to the desired thickness thereof.

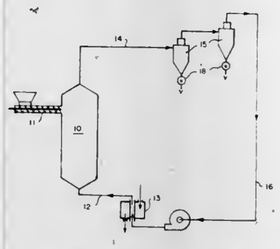
4,236,318
METHODS AND APPARATUS FOR HEATING PARTICULATE MATERIAL

Harold Heard, and Charles R. Wilt, Jr., both of Pittsburgh, Pa., assignors to Salem Corporation, Pittsburgh, Pa.

Filed Mar. 13, 1979, Ser. No. 20,168

Int. Cl.³ F26B *3/08, 3/10*

U.S. Cl. 34—10 **8 Claims**



1. The method of heating and drying a solid particulate material comprising the steps of:

(a) delivering a solid particulate material to be heated to a fluidizing or heating chamber;

(b) fluidizing and heating said solid particulate material with an upwardly flowing stream of oxygen-free gas at a temperature sufficient to raise the temperature of the particulate material to a preselected level and at a flow rate sufficient to fluidize and/or transport the particulate material;

(c) removing said heated particulate material from the fluidized bed or transport stream;

(d) reheating the oxygen-free gas in a heat exchanger; and

(e) recycling said oxygen-free gas into said fluidizing chamber whereby solid particulate material is continuously fluidized, heated and transported out of said fluidized bed.

4,236,319
WARP SHEET SPLITTING DEVICE FOR A DRYING CHAMBER IN A YARN SIZING PROCESS

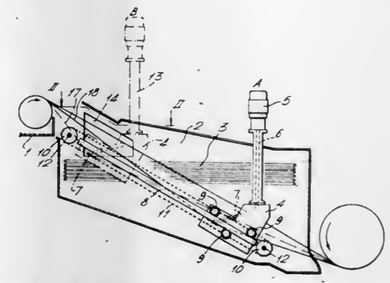
Keith R. Gillespy, Bolton, England, assignor to Platt Saco Lowell Limited, England

Filed May 31, 1978, Ser. No. 911,656

Claims priority, application United Kingdom, Jun. 2, 1977, 23332/77

Int. Cl.³ F26B *7/00*

U.S. Cl. 34—12 **9 Claims**



1. Apparatus for drying a warp sheet of yarns in a sizing process, including

a drying chamber through which the warp sheet may be passed so as to be acted upon by a drying medium, said chamber having a first spacial region substantially devoid of any drying medium and a second spacial region for containing a drying medium,

a condenser within said chamber intermediate said first and second spacial region whereby drying medium from said second region may be condensed and thus be prevented from migrating to said first region,

a warp splitting device within said chamber comprising a carriage and a plurality of warp splitting bars insertable into said carriage, and

carriage traversing means for traversing said carriage between said first region, whereat said bars may be inserted into said carriage in safety to split said warp sheet into sheets of lesser density while in isolation from said drying medium, and said second region, whereat said drying medium may effect drying of said split warp sheets.

4,236,320
METHOD AND APPARATUS FOR CONDITIONING AND DRYING LAUNDRY

Karl Schwadike, Leverkusen; Dieter Meyer, Düsseldorf, and Rolf Puchta, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,698

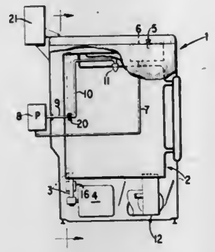
Claims priority, application Fed. Rep. of Germany, May 29, 1978, 2823351

Int. Cl.³ F26B *3/04;* D06B *1/02*

U.S. Cl. 34—19 **13 Claims**

1. A method for simultaneously conditioning and drying laundry in an automatic clothes drier wherein a liquid conditioner is sprayed from a storage vessel onto laundry in the drum of the drier during a drying process comprising alternating moving and standstill phases, the liquid conditioner being

sprayed during at least a part of standstill phases from a nozzle arranged inside the drum and rotating with the drum and



directed to the spatial center of the drum, and the nozzle being at the highest point of the drum during the spraying.

4,236,321

DRYING CHAMBER

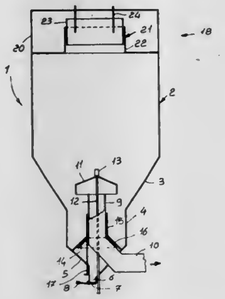
Carlo Palmonari, Via Grimaldi, 5, and Gabriele Gavioli, Via Panigale, 6, both of Bologna, Italy

Filed Apr. 16, 1979, Ser. No. 30,595

Claims priority, application Italy, Apr. 19, 1978, 3397 A/78

Int. Cl.³ F26B *17/10*

U.S. Cl. 34—57 E **3 Claims**



1. A drying apparatus for the production of dry material from a liquid suspension thereof comprising a cylindrical drying chamber with vertical axis and having a lower frusto-conical portion tapering downwards to a coaxial cylindrical portion, a conical portion extending downwards from said cylindrical portion and provided with a discharge door, an exhaust flue axially extending through said frusto-conical and cylindrical portion and having an upper inlet opening above which a hood element is arranged, a pipe for supplying the liquid suspension axially extending through said flue and hood element and communicating with an injector vertically positionable above said hood element, an annular chamber arranged above the cylindrical chamber and coaxially thereto and having an outer cylindrical wall with an opening for tangential connection of an air inlet and an inner cylindrical wall consisting of a fixed part and a movable part telescopically guided inside said fixed part to define an adjustable air passage between said movable part and the top of said annular chamber, the apparatus further comprising valve means arranged at said opening for gradually controlling the air flow therethrough.

4,236,322

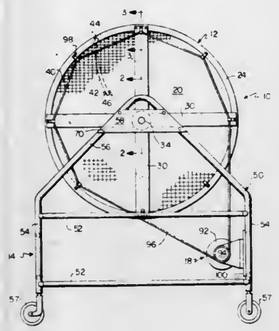
APPARATUS FOR AND METHOD OF DRYING ITEMS BY OPEN AIR AND SOLAR ENERGY

Allen M. Hastings, 4700 Fawnwood Cove, Austin, Tex. 78735

Filed Mar. 15, 1979, Ser. No. 20,720

Int. Cl.³ F26B *11/02, 17/24*

U.S. Cl. 34—130 **7 Claims**



1. A clothes dryer which empolys open air and solar energy for tumble drying clothes comprising

a rotatable, closed drum for receiving clothes having first and second end surfaces and a lateral surface, each of said first and second end surfaces and said lateral surface having a plurality of orifices for permitting open air and solar energy to enter and moisture to exit said drum to dry the clothes, and having access door means attached to said drum and movable between open and closed positions for permitting access to the interior of said drum;

frame means on which said drum is mounted for exposing said drum to open air and solar energy;

bearing means coupled to said drum and said frame for rotatably supporting said drum on said frame for rotation about a rotational axis; and

driving means coupled to said frame and said drum for rotating said drum, said driving means having

a motor having a pulley coupled thereto and driven thereby,

belt guide means fixedly and directly coupled to one end of said drum adjacent to said lateral surface, and

a belt directly coupling said pulley to said belt guide means to transmit rotary power from said motor to said drum.

4,236,323

HEATING APPARATUS FOR FALSE TWIST YARN CRIMPING MACHINE

Peter Dammann, Remscheid, and Benno Frank, Wuppertal-Elberfeld, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 88,088

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933087

Int. Cl.³ F26B *13/02*

U.S. Cl. 34—152 **17 Claims**

1. A yarn heating apparatus for use in a false twist yarn crimping machine or the like and comprising

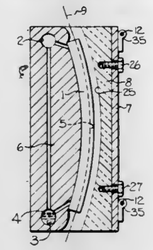
a heat insulating housing having a front face and an elongate channel in said front face, said channel having a generally U-shaped cross-sectional configuration which defines a bottom wall and opposite, generally parallel side walls,

an elongate heater plate disposed along said bottom wall in said channel so as to be in spaced relation from said front face of said housing,

heating means operatively connected to said heater plate for elevating the temperature thereof,

an elongate cover including an insert, said insert having a length conforming to the length of said channel and having a generally rectangular cross-sectional configuration and parallel side edges which are spaced apart a distance which closely approaches the distance between said side walls of said channel,

means mounting said cover to said housing for movement between a closed position wherein said insert is disposed



within said channel, and an open position spaced from said housing, said mounting means including hinge means for sequentially guiding said cover for movement within a plane parallel to said side walls of said channel to withdraw said insert from said channel and then guiding the cover for movement in a lateral direction when said cover is moved from said closed to said open position, and for moving said cover in a reverse sequence of like movements when the same is moved from said open to said closed position.

4,236,324

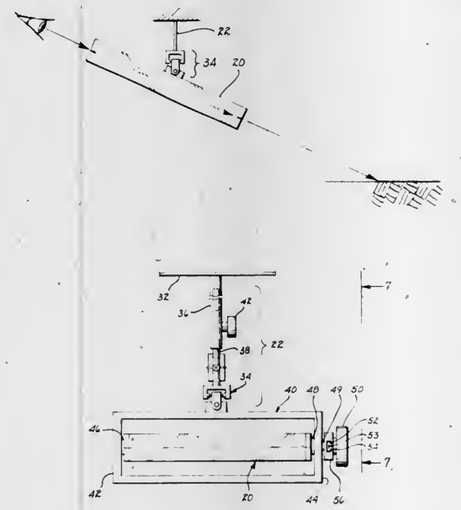
AIRCRAFT GLIDE PATH TEACHING AID

Roy Jones, 661 W. Park Ave., Chandler, Ariz. 85224

Filed Jul. 10, 1978, Ser. No. 922,985

Int. Cl.³ G09B *9/08*

U.S. Cl. 434–35 **3 Claims**



1. A teaching aid for teaching student pilots to maintain an aircraft on a predetermined glide path during letdown for a landing, said teaching aid comprising:

a. a sight tube for viewing the point of landing along a glide path angle, said sight tube comprising a tube having a rectangular cross-section and cross hairs for defining the predetermined glide path angle to indicate any vertical deviation of the aircraft off the predetermined glide path and wherein a cross hair of said cross hairs is disposed at each end of said sight tube;

b. a suspension member for supporting said sight tube in the forward line of vision of the student pilot, said suspension means including:

i. opposed end pieces;

ii. shaft means for supporting said sight tube from said end pieces;

iii. knob means for pivotally repositioning said sight tube about a horizontal axis of the aircraft and with respect to said suspension member; and

iv. means for indicating the degree of pivotal repositioning of said sight tube with respect to horizontal, said indicating means including indicia and a shroud having a window for uncovering one of said indicia in response to rotation of said knob;

c. angle adjustment means for setting said sight tube at an angle with respect to horizontal, which angle is commensurate with a predetermined glide path angle; and

d. means for adjusting the height of said sight tube commensurate with the eye level of the student pilot;

whereby, deviation of the aircraft off the glide path is immediately visually apparent to the student pilot.

4,236,325

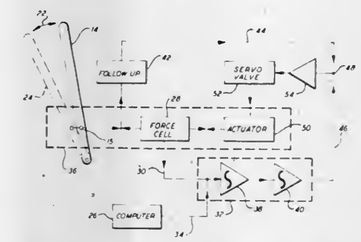
SIMULATOR CONTROL LOADING INERTIA COMPENSATOR

John D. Hall, Johnson City, and Alfred S. Williams, Jr., Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,428

Int. Cl.³ G09B *9/08*

U.S. Cl. 434–45 **2 Claims**



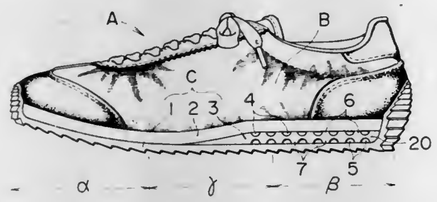
1. In a simulator control loading system which includes a control member, a control member actuator, linkage elements therebetween, a force cell for providing a control force signal substantially representative of the total forces on the control member and including the mechanical inertia effects of the linkage elements, command means for providing a command signal representative of desired control member forces for realistic control member performance simulation, and summing means for summing said control force signal and said command signal to produce a difference signal representative of their difference for use in deriving a drive signal for actuating the actuator to produce said desired control member forces in said control member, an improvement for canceling the effect of the mechanical inertia of the linkage elements, comprising the following additional apparatus:

(a) sensing means connected to the linkage elements for producing a movement signal representative of their movement;

(b) conversion means responsive to said sensing means for converting said movement signal into an inertial force signal representative of the linkage element inertial force portion of the total forces on the control member;

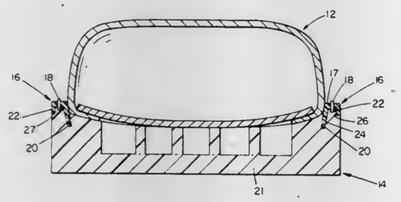
(c) combining means for combining said inertial force signal with the control force signal such that said inertial force signal is subtracted from the control force signal from said force cell to thereby cancel the inertial effect of the linkage elements.

4,236,326
SPORT SHOE SOLE
Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Kobe, Japan
Filed Apr. 14, 1978, Ser. No. 896,477
Int. Cl.³ A43B *13/20, 21/28*
U.S. Cl. 36—29 **2 Claims**



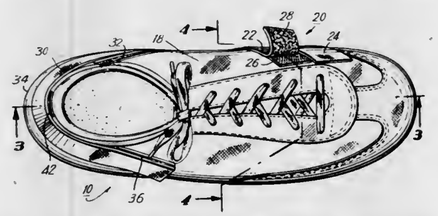
1. A sole for use with sport shoes comprising a rigid abrasion-resistant ground sole, the ground sole having a heel portion, an arch portion, and a toe portion, a resilient and elastic interlayer body bonded to said ground sole, and a resilient and elastic interlayer sole bonded to said interlayer body, said interlayer body being extended over and bonded to the heel portion and the shoe arch portion of the ground sole and having uniform thickness at the heel portion and decreasing into a wedge shape toward the top of the shoe arch portion, the interlayer body being provided with a plurality of parallel, transversely extending grooves on the surface of said interlayer body from its one side to its opposite side, the cross section of each groove being semicircular so as to have uniform distribution of stress, preferred absorbing power of impact load, and a durable shape, the resilience of the interlayer body and the interlayer sole and the air in the grooves permitting preferred absorption of impact load exerted against the heel portion of the sole at the time of landing and good restoration and long durability of arched shapes.

4,236,327
WELT
Robert D. Gorsche, North Conway, and Oscar H. Cloutier, Madison, both of N.H., assignors to Jones & Vining, Incorporated, Braintree, Mass.
Filed Feb. 28, 1979, Ser. No. 16,290
Int. Cl.³ A43C *13/08;* A43B *13/04*
U.S. Cl. 36—14 **13 Claims**



1. A unit sole construction, comprising
a sole body of molded, rubbery material, having a central top surface for receipt of an upper and a peripheral top surface for receipt of a welt, and
a welt extending along the perimeter of said body, said welt comprising
an exposed upper wall portion arranged to cover said peripheral top surface of said sole, and
a tongue portion extending from said wall portion into said body,
a tongue being embedded in said body so as to be wholly surrounded by said rubbery material to secure said welt thereto prior to attachment of said upper to said surface,
said welt being free of encroachment onto said central top surface of said sole, so as to avoid reduction of bonding area between said upper and said sole, said welt being free of stitching to said upper.

4,236,328
SHOE WITH ADJUSTABLE ORTHOPEDIC APPLIANCE
Bruce W. Friedlander, 129 Joralemon St., Brooklyn, N.Y. 11201
Filed Nov. 16, 1979, Ser. No. 94,964
Int. Cl.³ A43B *23/28, 5/04;* A61F *13/06*
U.S. Cl. 36—58.5 **4 Claims**

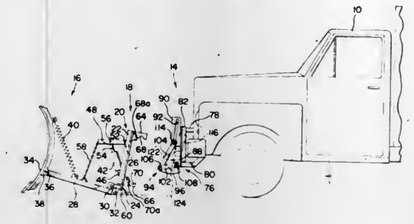


1. A shoe with adjustable orthopedic appliance which comprises a shoe, said shoe having a sole portion, a heel portion, an insole and an upper portion, a first adjustable length sling on the outside surface of the inner side of the upper portion of said shoe, said first sling extending external to said upper portion from approximately the center of said insole, and upwardly to a first adjustable anchor on the front part of said upper portion of said shoe, and a second adjustable length sling on the outside surface of the inner and outer sides of the upper portion of said shoe, said second sling extending from proximately the center of said insole external to said upper portion and upwardly and rearwardly to a second adjustable anchor on the outside surface of the inner side of the upper portion of said shoe, and from said second anchor to and around the rear of the upper portion of said shoe above the heel portion to a third adjustable anchor on the outside surface of the outer side of said upper portion of said shoe, whereby said first sling urges the inner side of a foot inserted into said shoe upwardly, and whereby said second sling urges the inner side of said foot upwardly and rearwardly.

4,236,329
DETACHABLE BLADE MOUNTING DEVICE
Vernon L. Hetrick, North Olmsted, Ohio, assignor to Meyer Products, Inc., Cleveland, Ohio
Filed Jul. 12, 1979, Ser. No. 56,823
Int. Cl.³ E01H *5/08;* A01B *51/00*
U.S. Cl. 37—42 R **19 Claims**

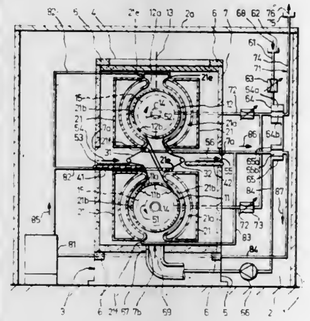
1. A device for mounting a snow plow blade onto a vehicle comprising: first frame means for said snow plow blade, said first frame means having upper and lower latching surface means vertically spaced apart a fixed distance; second frame means on said vehicle, upper and lower latching member means on said second frame means corresponding respectively to said upper and lower latching surface means; means including toggle linkage means supporting one of said latching member means for displacement between latched and unlatched positions relative to said second frame means, said upper and lower latching member means in said unlatched position being spaced apart a distance less than said fixed distance and in said latched position engaging the corresponding latching surface

means, said toggle linkage means having an over-center position with respect to said upper and lower latching member means when said one latching member means is in said latched position, means for moving said toggle linkage means to dis-



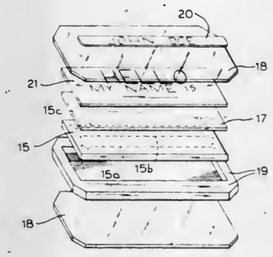
place said one latching member means between said latched and unlatched positions, and means for maintaining said toggle linkage means in said over-center position when said one latching member means is displaced to said latched position.

4,236,330
IRONING INSTALLATION AND METHOD OF OPERATING THE SAME
Robert Theiler, L'Oree du bois, 68360 Soultz, France
Filed Jan. 18, 1979, Ser. No. 4,738
Claims priority, application Switzerland, Jan. 24, 1978, 723780/78
Int. Cl.² D06F *69/02*
U.S. Cl. 38—8 **7 Claims**



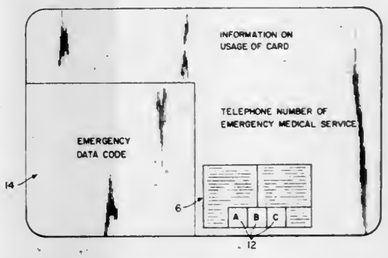
1. An ironing installation comprising:
an ironing machine, said ironing machine including at least one rotatably mounted roll, a pair of heating elements having heating surfaces cooperating with said at least one rotatably mounted roll and serving to heat the textile pieces which are to be ironed and to press such textile pieces against such roll, the heating surface of each heating element enclosing a sector angle of said roll of at least 120°, said roll having an outer surface provided with holes, a casing at least partly enclosing said roll and said heating elements;
a suction device provided with a suction line operatively associated with the outer surface of the roll provided with said holes;
a first heat exchanger having two passageways for two flow media whose thermal energy is to be exposed to a heat exchange action;
an air infeed line;
one of said two passageways of said heat exchanger defining a first passageway forming part of said air infeed line;
said air infeed line containing an air inlet, a pump and at least one outlet mouth;
said outlet mouth opening into the casing of the ironing machine at the neighborhood of the roll and the heating element; and
the other passageway of the heat exchanger being incorporated into the suction line.

4,236,331
MAGNETIC BADGE ASSEMBLY
Ralph W. Mattson, 511 Walnut St., Batavia, Ill. 60510
Filed Nov. 24, 1978, Ser. No. 963,448
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—1.5 **12 Claims**



1. A self-adhering badge assembly, comprising:
a pair of separable substantially flat badge panels adapted to be placed in face-to-face clamping assembly alignment with a selected area of an article of clothing clamped between the panels and thereby supporting the badge assembly in place on the article of clothing;
each of said panels having a similar substantially flat core comprising magnetic material providing alternating polarity at each of opposite side edge portions of the panel;
the poles of one of said panels being in complementary orientation relative to the poles of the other of said panels in the clamping assembly and attaining efficient magnetic attraction of each panel for the other panel;
and one of said panels being adapted to lie in exposed relation at the outer side of said area of the article of clothing and having an outer face provided with means for displaying badge indicia.

4,236,332
MEDICAL HISTORY CARD
John M. Domo, Cleveland, Ohio, assignor to Melchior P. Beller, Lakewood, Ohio
Filed Dec. 29, 1978, Ser. No. 974,331
Int. Cl.³ G09F *3/02*
U.S. Cl. 40—2.2 **2 Claims**



1. A wallet size medical record card to be carried on the person of an individual, comprising:
(a) a card having a window therethrough with microfilm positioned in said window and a transparent plastic material laminated to said card and said microfilm;

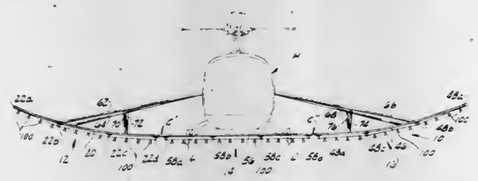
(b) an identification data portion on said card comprising data identifying the individual carrying said card;
(c) an emergency data code portion on said card including a list of medical conditions, each said medical condition having listed therewith an indicium for indicating said medical condition;
(d) a first data portion on said microfilm readable by the human eye without magnification means and a second data portion on said microfilm readable by the human eye only with magnification means;
(e) said second data portion including a medical history of the individual carrying said card and said first data portion comprising those of said indicia of said emergency data code portion corresponding to those of said list of medical conditions which the individual carrying said card has whereby in a medical emergency those of said list of medical conditions which the individual has can be read on said microfilm without the need to magnify the data on said microfilm.

4,236,333

SIGN STRUCTURE

Richard C. Kohm, 3847 French Ct., St. Louis, Mo. 63116, and C. Thomas Foster, 77 Crandon, No. 9D, Key Biscayne, Fla. 33149

Filed Dec. 6, 1978, Ser. No. 966,928
Int. Cl.³ G09F *21/06*
U.S. Cl. 40—212 **14 Claims**



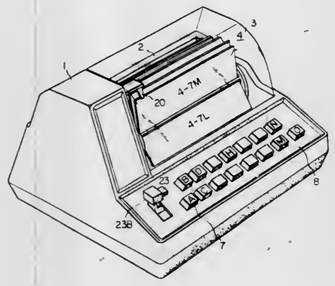
1. A sign structure comprising:
a first end section including first and second parallel, spaced, elongated support members, and a plurality of parallel, spaced, elongated stabilizer members perpendicular to said first and second support members and fixedly connected thereto;
an intermediate section including third and fourth parallel, spaced, elongated support members, and a plurality of parallel, spaced elongated stabilizer members perpendicular to said third and fourth support members and fixedly connected thereto;
a second end section including fifth and sixth parallel, spaced, elongated support members, and a plurality of parallel, spaced, elongated stabilizer members perpendicular to said fifth and sixth support members and fixedly connected thereto;
a separate grid assembly attached to each of said first end, intermediate and second end sections, each of said grid assemblies including a plurality of parallel, spaced, elongated grid members extending parallel with said stabilizer members and a plurality of parallel, spaced elongated grid members extending parallel with said support members, thereby defining a matrix of elongated grid member intersections;
means for releasably connecting said first support member to said third support member; means for releasably connecting said second support member to said fourth support member; means for releasably connecting said third support member to said fifth support member; and means for releasably connecting said fourth support member to said sixth support member;
whereby, after connection of said support members, said first, third, and fifth support members are located coaxially, and said second, fourth and sixth support members are located coaxially.

4,236,334

ROTARY TYPE INFORMATION RETRIEVING MACHINE

Yoshimi Kimura, Nagareyama, Japan, assignor to Kabushiki Kaisha Fuji Seisakusho, Nagareyama, Japan

Filed Sep. 6, 1978, Ser. No. 939,976
Claims priority, application Japan, Sep. 8, 1977, 52/108044
Int. Cl.³ B42F *17/34*
U.S. Cl. 40—378 **1 Claim**



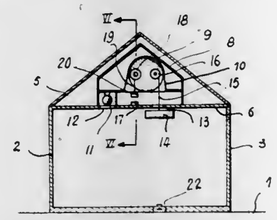
1. In a rotary type information retrieving machine having a rotary shaft; a plurality of information cards arranged in any designated sequence and hangingly supported around said rotary shaft; a rotating motor for transmitting rotational force to said rotary shaft; a plurality of information retrieving keys corresponding in number to said information cards, said keys being arranged regularly on a key board; a rotational angle selection switch comprising a panel of fixed contacts and a movable contact rotating in asssociation with said rotary member and information cards; and a gear train provided to transmit rotational force from said motor to said rotary shaft, the improvement comprising: a rotational angle changing mechanism for said rotational angle selection switch constructed with:
a manipulating lever (23A) which is swingably supported on a shaft (29);
a contact (15) provided at one end part of said lever (23A) in constant contact with a normally closed contact (NC) by a spring (25);
a holder (28) enclosing said lever (23A) and pivoted for pivotal movement at a pivotal point (30) thereof together with said lever (23A);
a projection (27) provided on one part of said lever (23A) to be engaged with and disengaged from recesses (27) to secure a position of said holder (28) and lever (23A) as displaced;
stop means (31) to restrict swinging motion of said holder (28);
a linking member (32) connected at one end thereof with said pivotal point (30) for said holder; and
another linking member (34) connected at one end thereof with the other end of said linking member (32) through a pivotal point (33) thereof, and, at the other end thereof, with said fixed contacts panel (35) which is oscillatably supported on a shaft (11A) for said rotary member,
said fixed contacts panel (35) being angularly displaced around said shaft (11A) by depressing said lever (23A) against force of the spring (25) to disengage the projection (26) from one of the recesses (27) to change the contact (15) on said lever (23A) contacted with said normally closed contact (NC) over to a normally open contact (NO), then oscillating said lever (23A) together with said holder (28) until said holder comes in contact with said stop (31), at which said projection (26) is engaged with the other recess (27), whereby said fixed contacts panel (35) is caused to displace at a predetermined angle due to interlocked motion of said linking members (32, 34) along with the oscillating motion of said lever (23A).

4,236,335

DISPLAY DEVICE

Jean Colonneau, 156, rue du Grand Parc, St. Sebastien de Morsent, France

Filed Oct. 18, 1978, Ser. No. 952,615
Claims priority, application France, Oct. 26, 1977, 77 32248
Int. Cl.³ G09F *13/00, 27/00*
U.S. Cl. 40—442 **9 Claims**



1. A display device comprising:
(a) a housing; and
(b) first and second electric circuits, associated with said housing, said first electric circuit comprising a first switch, illumination means for illuminating the exterior of said housing, and a motor of a first tape recorder; said second electric circuit comprising a second switch, second illumination means for illuminating the interior of said housing, and a motor of a second tape recorder; each of said first and second electric circuits being adapted to be connected to an electric current supply; and
(c) receiving means, associated with said housing, adapted to receive a mechanical alarm clock comprising a movement winder and an alarm winder, said clock having a counterweight attached to hang from each of said winders, said receiving means being arranged such that each of said counterweights abuts against a corresponding switch in each of said circuits when said mechanical alarm clock is inserted in said receiving means and said counterweights descend as a result of the movement of each said winders; and
(d) wherein said first and second switches are arranged beneath said receiving means such that each of said counterweights abuts against a corresponding one of said switches as said counterweights descend in response to movement by each of said winders.

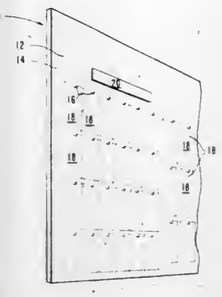
4,236,336

NOTIONS DISPLAY HEADING FOR PERFORATED BOARD

Robert Strom, Queens, N.Y., assignor to Textron Inc., Providence, R.I.

Filed Dec. 26, 1978, Ser. No. 973,363
Int. Cl.³ G09F *7/06*
U.S. Cl. 40—622 **4 Claims**

1. A notions device comprising:
a display heading surface adapted to receive identifying indicia thereon relating to articles sold on a notions counter,
peripheral sides extending rearwardly from said display heading surface,
an abutting surface extending perpendicularly outwardly from said peripheral sides to define a mounting surface spaced from said display heading surface,
a plurality of spaced recesses in said abutting surface,
a perforated board having a plurality of spaced apertures therethrough, and
a plurality of fastening elements respectively secured to said plurality of spaced recesses, each fastening element having hook members projecting through selected apertures on said perforated board whereby said recesses permit flush



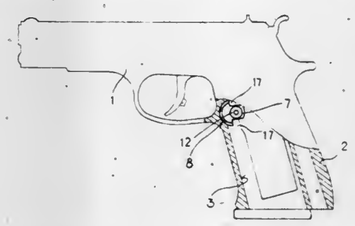
mounting between said abutting surface and said perforated board with said display heading surface being spaced from said perforated board.

4,236,337

REVERSIBLE SLIDING MAGAZINE LATCH FOR PISTOLS

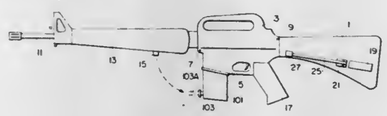
Pier C. Beretta, Gardone V.T., Italy, assignor to Fabrica d'Armi Pietro Beretta S.p.A., Gardone V.T., Italy

Filed Sep. 18, 1978, Ser. No. 943,116
Claims priority, application Italy, Oct. 24, 1977, 5235 A/77
Int. Cl.³ F41C *25/06*
U.S. Cl. 42—7 **4 Claims**



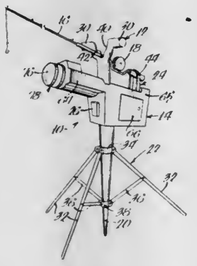
1. A sliding magazine latch for pistols having a handle and a magazine, said latch being positioned in a seat provided in the handle of said pistol, so as to be transversely oriented with respect to the magazine, which latch comprises:
(a) a U-shaped body member with first and second terminal projections;
(b) a push button positioned externally of said first projection;
(c) a rib positioned internally of said second projection for blocking said magazine;
(d) sliding surfaces positioned on the side of both said first and second projections and associated with corresponding shoulders provided in the side surfaces of the handle of said pistol;
(e) spring loaded means positioned at the base of said body member between a pair of shoulders provided at the base of the seat of said latch to permit operative displacements thereof, said spring-loaded means and said sliding surfaces being combined to permit the assembly of said body member when pressure is exerted thereon in a direction contrary to that exerted on the push button for the actuation of the latch.

4,236,338
MAGAZINE SPRING ADJUSTMENT APPARATUS
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731
Filed Feb. 27, 1979, Ser. No. 15,861
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—90 **8 Claims**



1. Apparatus for adjusting stress in an adjustable-stress spring within a cartridge magazine, comprising: a base; means on said base to support said magazine; and power-driven mechanism on said base positionally adapted to exert thrust in a predetermined direction against adjusting means on said magazine thereby adjusting stress in said spring.

4,236,339
SIGNALING FISHING STAND
Lorell White, 5747 S. Honore, Chicago, Ill. 60636
Filed Mar. 14, 1979, Ser. No. 20,525
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 **6 Claims**



1. A fishing stand adapted to hold a conventional fishing rod or pole, comprising means for cradling the fishing pole on the stand, means for detecting the movement of the pole caused by a fish striking the pole and for giving a signal to the fisherman of the fish striking the fishing pole, said means for detecting and signaling comprising an inverted U-shaped member for engaging the handle of said pole, at least one lever pivotally mounted to said stand, a power source, a light, a horn, a light switch and a horn switch, said means for detecting and signaling selectively operating through either one of said light and horn switches, or both, to connect one of said light and horn, or both, to said power source to give a signal, one end of said lever being pivotally mounted to said inverted U-shaped member and the other end of said lever operating one of said light or horn switches, the other of said light and horn switches being operated by said inverted U-shaped member.

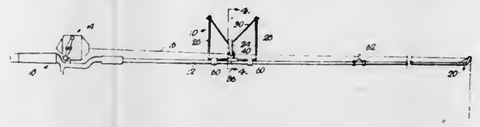
4,236,340
FISHING ROD INDICATOR ASSEMBLY
James C. Cunningham, 2413 W. 25th St. Dr., Topeka, Kans. 66611
Filed Jun. 11, 1979, Ser. No. 47,567
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 **8 Claims**

1. A fishing rod indicator assembly adapted for use with an elongated fishing rod having a fishing line trained along the length thereof and a baited hook on said line, said assembly comprising:

support structure for mounting onto said rod intermediate the ends thereof and including at least one elongated mounting arm extending generally transversely of said rod;

a weight;

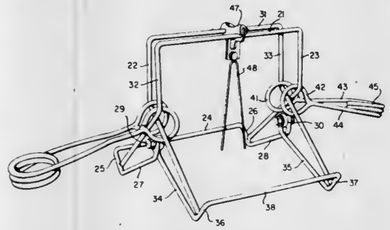
means mounting said weight on said arm for allowing shiftable movement of the weight between a first position adjacent said rod and a second, gravity-induced position spaced from the rod; and means for releasably locking said



weight in said first position, said weight including line-engaging means for drawing a portion of said fishing line away from said rod when said weight is in said second position thereof,

said weight, in said second position thereof and in engagement with said drawn portion of said fishing line, being shiftable towards said rod in response to the bite of a fish on said baited hook for signaling the existence of said bite.

4,236,341
ANIMAL TRAP
Reino Torkko, Longlac, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada
Filed Mar. 1, 1979, Ser. No. 16,537
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—88 **2 Claims**



1. An animal trap comprising:

(a) a first frame member made of strong metal rod, generally rectangular in shape and defining a striker bar and an anvil bar connected by side bars,

(b) said frame member also having extending bars fixedly connected to the frame at the junction points of the anvil bar and the side bars, extending at a slight angle to the side bars, and ending in end connections,

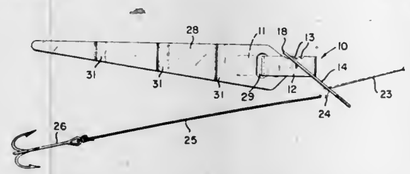
(c) a second frame member similar to the first having similar extending bars ending in end connections,

(d) said first and second frame members connected together at the end connections such that their side bars pass each other in close proximity defining X-shaped structures at each end of the trap and such that relative motion may occur from an upper "set" position where the two striker bars lie close to each other to a lower "sprung" position where each striker bar approaches closely to the anvil bar of the other frame member,

(e) a metal rod spring device formed of one or more spring coils connected by arms to two rings, said rings encircling the said X-shaped structure at one end of the trap and said spring biased such that when the trap is in the set position the rings tend to force the striker bars apart towards the anvil bars, and

(f) a trigger device connected to the striker bars to hold them together at the set position and having a trigger release adapted to be operative by an animal passing through the trap to set off the trap causing the striker bars to strike down towards the anvil bars.

4,236,342
COMBINED FISH LURE, BAIT HOLDER AND ARTIFICIAL BAIT
Carman R. Saia, Bellingham, Wash., assignor to Kasabell Industries, Bellingham, Wash.
Filed Feb. 16, 1979, Ser. No. 12,649
Int. Cl.³ A01K *85/00, 85/01*
U.S. Cl. 43—17.6 **7 Claims**



1. A combined fish lure and bait holder comprising:

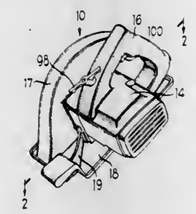
a bait holder formed of a strip of resilient spring-like material folded intermediate its length to provide two laterally spaced legs adapted to clamp and hold a bait inserted therebetween,

a flat plate of greater length than width having two slots therein at one end, each slot receiving one of the laterally spaced legs of the bait holder therethrough, the slots spaced a distance apart so that as the plate is moved along the length of the laterally spaced legs from the fold thereof toward their respective free ends, the spacing of the slots causes the side legs of the bait holder to move toward one another to clamp and hold the bait therebetween,

an opening along the lengthwise mid-line of the plate receiving a length of fishline leader therethrough, and

a fishline leader extending through the opening of the plate having a fastening end for attaching to a fishline and a hook end provided with hook means, the configuration of the plate causing the lure, bait holder and bait held thereby to zigzag back and forth as well as rotate as they are pulled through the water.

4,236,343
TOY POWER TOOL
John R. Wildman, North Riverside, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 9, 1979, Ser. No. 10,834
Int. Cl.³ A63H *33/30*
U.S. Cl. 46—39 **6 Claims**



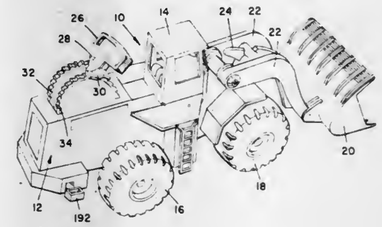
1. A toy power tool, comprising:

a housing in the shape of a power tool including means for grasping by the user;

sound generator means mounted within said housing for producing an audible signal simulating the sound of a power tool, said sound generator means including a drive means, a rotatable flywheel, a rotating element having a plurality of teeth driven by said flywheel, and a wafer normally biased out of engagement with the rotating element but movable into engagement with the teeth on said rotating element for producing a cutting sound; and

a control element mounted on the housing for engaging a workpiece and being normally biased to extend out of the housing, said control element being movable relative to said housing upon engaging the workpiece and upon movement of the housing relative to the workpiece and including means for moving said wafer into engagement with the teeth of said rotating element upon said movement relative to the workpiece.

4,236,344
TOY WITH SPRING-OPERATED SPEED REGULATED MOTOR MECHANISM
William J. Kelly, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 4, 1978, Ser. No. 966,166
Int. Cl.³ A63H *17/12*
U.S. Cl. 46—40 **12 Claims**



1. In a toy, the combination comprising:

a supporting structure;

a component attached to said structure for movement relative thereto;

handle means movably mounted on said supporting structure;

a member mounted for slidable movement within said structure, said member being operatively connected to said component to effect movement of the component;

spring means operatively interconnecting said handle means and said member for sliding said member in a first direction to a predetermined position in response to movement of said handle means;

means for retaining said member in said predetermined position against the force of said spring means whereby said spring means may be cocked; and

speed regulating means operatively coupled to said member for controlling the rate of movement of said member in a direction opposite to said first direction upon release of said retaining means for controlling the speed of movement of said component.

4,236,345
TOY ASSEMBLY WITH SELECTIVE PROPULSION OF SUBCOMPONENT PARTS
Tsutomu Inoue, Ichikawa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jun. 4, 1979, Ser. No. 45,385
Int. Cl.³ A63H *29/16*
U.S. Cl. 46—44 **16 Claims**

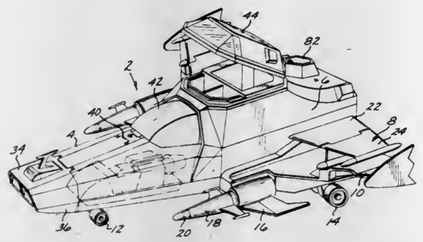
1. A mobile toy assembly comprising;

a small vehicle member;

a body member configured to simulate a rocket ship and having a nose section of such a dimension to house the small vehicle member and capable of opening to provide an access for insertion and removal of the small vehicle member;

at least one projectile member removably attached to the body member;

means for generating an air pressure;
conduit means connected to at least the nose section and the projectile member, and



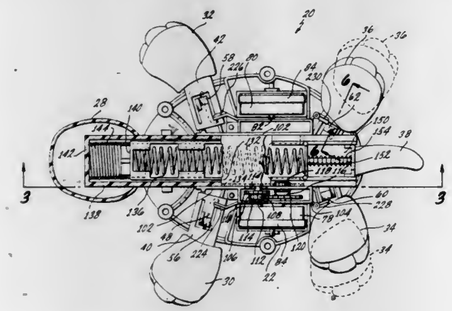
means for selectively directing the air pressure to one of the projectile members and the small vehicle positioned in the nose section to propel the same away from the body member.

4,236,346

TOY HAVING A SEEMINGLY RANDOM MOVEMENT

Noriaki Iwao, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,413
Claims priority, application Japan, Aug. 25, 1978, 53-116336[U]
Int. Cl.³ A63H *11/10*
U.S. Cl. 46—104 **12 Claims**



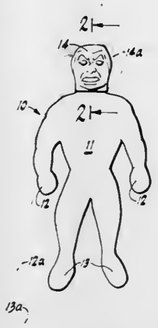
1. A toy which comprises:
a base,
a plurality of movable extensions independently movably mounted on said base such that each of said extensions is movable on said base between a retracted position and an extended position,
a plurality of holding means operatively associated with said plurality of said movable extensions, each of said holding means operatively connected to one of said extensions and reversibly holding said extension in said retracted position on said base,
releasing means mounted on said base and having a plurality of operational modes wherein in each of said operational modes one or more of said holding means is activated allowing said movable extension associated with said activated holding means to move from said retracted position to said extended position.

4,236,347

FLEXIBLE DOLL CLOSURE AND HEAD MOUNTING

Thomas J. Fauls, West Orange, N.J., assignor to Mego Corp., New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,628
Int. Cl.³ A63H *3/00*
U.S. Cl. 46—156 **6 Claims**



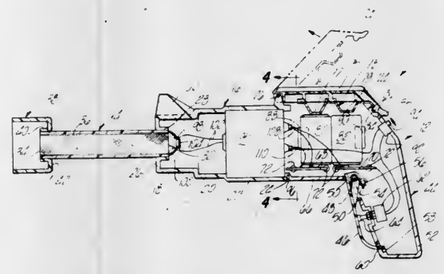
1. In a figure toy, a closure means and head mounting in which the body portion comprises a molded skin of resiliently elastic material filled with a viscous fluid, and terminates in a wide portion, and the head is a separate hollow member interfitting with said neck portion, and closure means and head mounting comprising an elongated hollow cylindrical member having a plurality of external longitudinally spaced and circumferentially extending flanges, and providing a large diameter filling passage which is closed at the upper end thereof when filling is completed, at least one pair of said flanges centrally of the cylindrical member providing an annular recess for clampingly securing and sealably engaging said neck portion of the skin, and another pair of said flanges at end portions of said cylindrical member cooperating with means at respective ends of a cylindrical bore in said head to provide an interlock between the body portion and head restricting head movement to free rotary movement with respect to said neck portion.

4,236,348

TOY SPACE GUN

Steven M. DuLac, 23138 W. LeBost Dr., Novi, Mich. 48050

Filed Feb. 26, 1979, Ser. No. 14,824
Int. Cl.³ A63H *33/26*
U.S. Cl. 46—228 **4 Claims**



1. A toy gun comprising a hollow body of opaque construction and defining a firing chamber,
an elongated hollow barrel of opaque construction extending axially from said body and having an internal end opening into said chamber, said barrel being optically transparent through its axial length and having an internal surface of optically reflective material,

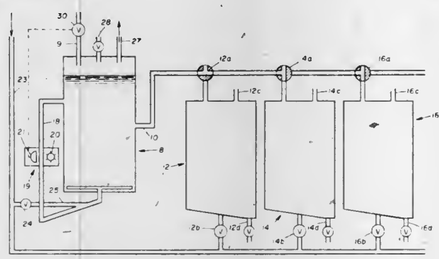
outwardly concave reflective means mounted within said chamber to enclose said internal end of said barrel,
a lamp carried by said concave reflective means adjacent said internal barrel end such that light generated by said lamp is substantially isolated from said chamber by said reflective means and is substantially entirely projected through said barrel,
a trigger mounted on said body and including operator responsive switch means extending from within said chamber, and
power means disposed within said chamber and connected to said lamp and said switch means for generating light energy at said lamp for remote projection through said barrel.

4,236,349

ALGAE BIOPOLYMER PRODUCTION

Joseph S. Ramus, Gloucester, N.C., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,698
Int. Cl.³ A01G *7/00*
U.S. Cl. 47—1.4 **12 Claims**



1. In a process for the production of biopolymer by cultivation of algae in an aqueous culture in the presence of assimilable carbon and incident light energy wherein biopolymer production is enhanced by creating a nitrogen deficiency in said culture to shift from a growth phase favoring cell division to a senescent phase favoring biopolymer production, the improvement comprising:
(a) carrying out said growth phase in a first stage operated in a continuous mode in which fresh nitrogen-containing nutrient medium is supplied to said culture to sustain exponential cell growth, and
(b) concomitantly with the supply of fresh nutrient medium to said first stage, transferring a portion of said culture to a second stage which is separate from said first stage and in which assimilable carbon is supplied to said culture while the supply of nitrogen is limited to create a nitrogen deficiency in said second stage to enhance biopolymer production while continuing to supply fresh nitrogen-containing nutrient medium to said first stage to continue said growth phase.

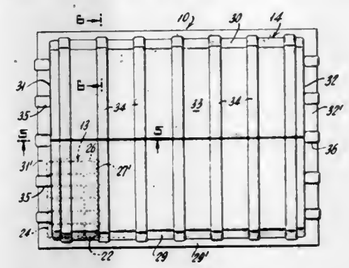
4,236,350

SEEDLING TRAY ASSEMBLY AND GREENHOUSE

Arthur Hasselbach, Sr., P.O. Box 369, Cranbury, N.J. 08512

Filed Aug. 21, 1978, Ser. No. 935,366
Int. Cl.³ A01G *9/00*
U.S. Cl. 47—17 **3 Claims**

1. A seedling tray comprising a base having a bottom, side walls and end walls, a flat sheet of water impervious material disposed within said base and spaced from the bottom thereof and a seedling holding grid overlying and resting on said sheet of material, said grid having longitudinal and transverse intersecting wedge shaped partitions to provide upwardly diverging tapered compartments for holding the seedlings, said base including means formed in the bottom, side and end walls for supporting said sheet of material in spaced relationship to the bottom to provide space for receiving and redirecting excess water to water drainage openings, said drainage openings adjoining the bottom wall, said flat sheet of material having



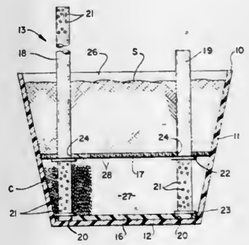
upwardly formed criss-crossed embossments to provide for the temporary accumulation of and distribution of water beneath said seedling holding grid whereby water is uniformly distributed among the grid compartments.

4,236,351

PLANTER WITH TUBULAR AIR HOLE MEMBER

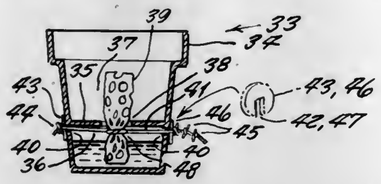
Elmer L. Smith, 6090 Cedarwood Rd., Mentor-on-the-Lake, Ohio 44060

Continuation-in-part of Ser. No. 801,530, May 31, 1977, Pat. No. 4,173,098. This application Nov. 30, 1978, Ser. No. 964,927
Int. Cl.³ A01G *25/00*
U.S. Cl. 47—79 **4 Claims**



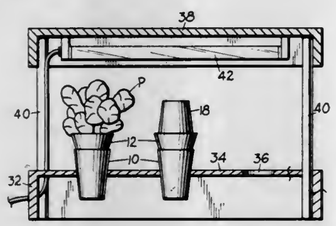
1. A removable planter insert structure for a receptacle open at the top and having an imperforate bottom, said insert structure comprising a horizontal perforated wall member adapted to be disposed within a receptacle and spaced above the bottom thereof to divide the receptacle into upper and lower compartments;
said wall member having aperture means therein;
tubular means having a cross section such as to slideably interfit said aperture means and to project upwardly through said aperture and above said horizontal wall;
said tubular means having spacer means for limiting the extent to which said tubular means can project through said aperture means and for supporting said wall member a determined distance above the bottom of a receptacle;
said tubular means being perforated below said spacer means to allow air and water to pass radially therethrough;
said upper compartment adapted to hold soil to a level below the upper ends of said tubular means whereby when excess water from said soil passes through said perforated horizontal wall and collects in said lower compartment, said tubular members provide means for air circulation and evaporation within said lower compartment and said perforated wall portion provides means for humid air to aerate said soil and keep it moist.

4,236,352
PLANT WATERING DEVICE
William B. Heaney, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Oct. 18, 1978, Ser. No. 952,476
Int. Cl.³ A01G *27/00*
U.S. Cl. 47—80 **2 Claims**



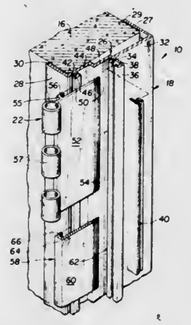
1. A plant watering device, comprising in combination, a quantity of earth in a container for plants to be rooted therein, a quantity of water below said container, a spongy material extending from said earth down to said water and manually adjustable constricting means to control water volume traveling through said material by a capillary action, wherein said container comprises an upper compartment of a pot having a horizontal partition so to form a chamber therebelow for said water, small opening through said partition and through which said material extends, wherein said means further comprises holes in diametrically opposite side walls of said chamber above a water level thereof, a cord looped once and loose tied at its center around said material while opposite ends of said cord extend outwardly of said holes and are secured.

4,236,353
PLANT GROWING AND DISPLAY ASSEMBLY
Gordon U. Sorenson, 14934 S. E. Wanda Dr., Milwaukie, Oreg. 97222
Continuation of Ser. No. 880,885, Feb. 24, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,719
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—81 **3 Claims**



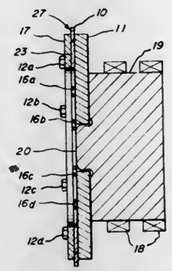
1. A plant growing and display assembly comprising
(a) a transparent, open top first container arranged to hold a supply of water,
(b) said first container being tapered to a smaller dimension from top to bottom,
(c) a transparent, open top second container arranged to hold a supply of plant growth material and plants,
(d) said second container being tapered to a smaller dimension from top to bottom and being of a selected larger diameter than said first container whereby to seat in said first container in a releasable wedging fit with a lower portion of said second container extending down into said first container but terminating above the bottom of said first container,
(e) said second container having an aperture adjacent to a lower portion thereof,
(f) a wick extending through said aperture and having an end portion thereof immersed in the water supply in said first container and another end portion thereof extending up in said second container in a location to feed water to a plant in the plant growth material,
(g) and a transparent open top third container of substantially the same size and taper as said first container,
(h) said third container being inverted and having a releasable wedging fit in said second container and forming a terrarium effect for plants in said second container.

4,236,354
DOOR FRAME ASSEMBLY
Alexander E. Passovoy, Oakland, Calif., assignor to Anodex, San Ramon, Calif.
Filed Jun. 1, 1979, Ser. No. 44,612
Int. Cl.³ E06B *1/04*
U.S. Cl. 49—504 **8 Claims**



1. Apparatus for providing a door frame in an opening formed in a wall to accommodate a door, said apparatus comprising:
a frame member including a central web adapted to span the width of the wall and a pair of side flanges extending from the lateral edges of the web and adapted to fit over the edges of the wall circumscribing the opening, said web including a planar section extending from one lateral edge to approximately the center of the web and terminating in a first transversely opening groove in the plane of said planar portion, said web further including a second transversely opening groove proximate the second lateral edge and parallel to the first groove but offset therefrom toward the wall;
at least two hinge members each having a planar hinge plate which includes one edge providing a tongue adapted to engage and mate with the first groove in the frame member and a projecting tongue underlying the hinge plate and adapted to engage the second groove in the frame member so that the hinge members can be located where desired and attached to the frame member after installation of the frame member in the opening; and
a plurality of cover plate sections each including a generally planar portion having a lateral edge providing a tongue adapted to mate with and engage the first groove in the frame member and a projecting tongue underlying the planar portion and adapted to engage the second groove in the frame member, said cover plate sections adapted to be cut to fit the gaps between hinge plates and the ends of the frame member so that the space between hinge plates is covered to provide an aesthetically pleasing door frame.

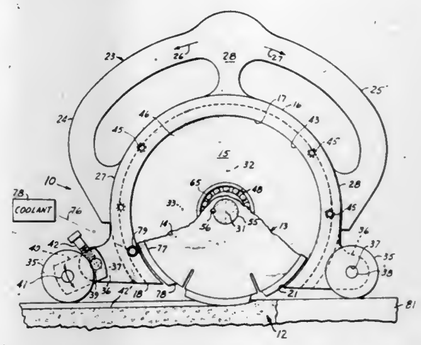
4,236,355
PRECISION GRINDING WHEEL MOUNT
Douglas J. Hennenfent, Minneapolis; Robert A. Johnson, Minnetonka, and Allan L. Holmstrand, Bloomington, all of Minn., assignors to Control Data Corporation, Minneapolis, Minn.
Filed Jul. 24, 1978, Ser. No. 927,321
Int. Cl.³ B24B *41/00*
U.S. Cl. 51—168 **2 Claims**



1. A grinding wheel mount assembly having a substantially flat surface, said surface to be fastened for load bearing to a faceplate carried on the end of a spindle mounted for rotation, said faceplate including a substantially flat surface to which the assembly's flat surface is to be fastened, a centering feature precisely centered on the spindle's axis of rotation within the flat surface of the faceplate, and a plurality of attachment holes surrounding the centering feature for fasteners fastening the assembly to the faceplate, wherein the assembly comprises:
(a) a flexible grinding wheel having an annular hub having a plurality of axially directed spaced apart holes therein, and an annular band of abrasive disposed about the rim of the hub and firmly bonded thereto, said wheel having sides parallel to each other, and having each side of the abrasive band very slightly below the adjacent plane of the hub;
(b) a clamping plate in the shape of annular ring whose interior opening is at least the same size as the hub's central opening, having an external diameter at least that of the hub's outer diameter, having a plurality of axially directed holes substantially the size of those in the hub passing between the two faces of the plate and spaced to conjoin with those in the hub when properly oriented therewith, and having a flat side perpendicular to the axis;
(c) a mounting disc having (i) the substantially flat surface of the assembly, (ii) a centrally located centering feature within said surface shaped to closely mate with the faceplate's centering feature to prevent relative radial movement between the mounting plate and the faceplate when so mated, (iii) a plurality of axially directed holes located to conjoin with the faceplate's attachment holes when so mated to permit fasteners to pass therethrough to fasten the flat surface of the assembly to the faceplate, and (iv) a plurality of holes located to conjoin with the holes in the hub when the hub is properly oriented therewith; and
(d) a plurality of cylinder type fasteners passing sequentially through first the clamping plate and then the hub into the mounting disc to firmly clamp the grinding wheel between the flat side of clamping plate and the flat surface of the mounting disc concentrically with both.

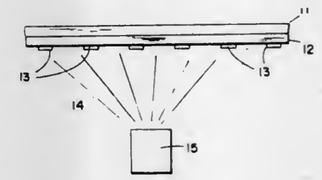
4,236,356
CUTTING SAW AND CONCRETE GROOVER
John D. Ward, 997 E. Athens St., Altadena, Calif. 91001
Filed Jan. 5, 1979, Ser. No. 1,050
Int. Cl.³ B24B *23/00*
U.S. Cl. 51—176 **29 Claims**

1. In apparatus for cutting material with a circular saw blade, the improvement comprising in combination:
a housing including a curved top for partially accommodating the saw blade, and a bottom having an opening permitting partial protrusion of the saw blade from the housing;
means for enabling manual propulsion of the housing along said material, including a curved handle on said top extending in parallel to said partially accommodated and protruding saw blade between diametrically opposed locations on said top;



means connected to the housing and the saw blade for rotating said partially accommodated and protruding saw blade; and
means connected to the housing for guiding the saw blade in cutting engagement with said material and for maintaining the housing including said bottom in spaced relationship to said material during cutting with the saw blade.

4,236,357
ETCHED METAL ABRASIVES
John J. Frantzen, Roseville, Minn., assignor to Minnesota Micro Metal, Inc., St. Paul, Minn.
Filed May 8, 1979, Ser. No. 37,391
Int. Cl.² B24D *3/06*
U.S. Cl. 51—309 **2 Claims**



1. A method of forming abrasive material comprising the steps of:
applying an etching resist material to the surface of a smooth metal laminate sheet having a relatively low carbon steel base layer and a relatively high carbon steel top layer, said resist material being applied as a multiplicity of discreet elements on said top layer,
etching away the said top layer in the areas not protected by the elements of resist so as to leave protrusions of high carbon steel extending outward from said low carbon base layer,
removing the etching resist material, and
hardening said protrusions by heat treating the protrusions.

4,236,358

ADJUSTABLE MANHOLE COVER SUPPORT STRUCTURE

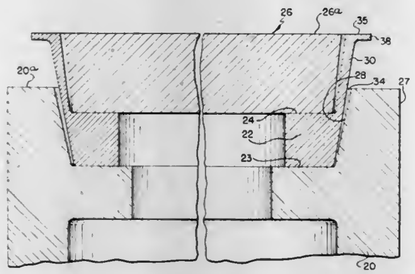
Harold M. Bowman, Fairview Park, Ohio, assignor to National Utility Products Company, Cleveland, Ohio

Continuation of Ser. No. 689,088, May 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 494,817, Aug. 5, 1974, Pat. No. 3,968,600, which is a continuation of Ser. No. 286,115, Sep. 5, 1972, abandoned. This application Aug. 16, 1978, Ser. No. 934,213

The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.

Int. Cl.[3] **E02D** *29/14*

U.S. Cl. 52—19 **12 Claims**



1. A manhole cover support structure to vertically adjust and support a manhole cover in a manhole frame, wherein the manhole frame is supported in a manhole housing and has an upwardly facing shoulder circumscribed by an upwardly projecting collar-like portion defining the manhole opening, said shoulder including a generally upwardly facing, circular-like, in plan surface area, a generally circular, in plan manhole cover normally engaged with and supported on said surface area of said shoulder, with said cover substantially completely filling said opening, except for predetermined generally unobstructed lateral clearance between said cover and the confronting interior surface of said collar-like portion, an adjusting and restraining member comprising a cover adjusting insert portion resting on said surface area of said shoulder and having a circular-like, in plan upper cover supporting surface on which said cover rests in adjusted, elevated position relative to the shoulder of said frame, the outer peripheral edge of said cover spaced laterally from said interior surface of said collar-like portion in said adjusted, elevated position of said cover, and a relatively thin lateral support ring portion integrally formed with and projecting rigidly upwardly from said cover support insert portion and disposed in the last mentioned lateral space between said interior surface of said collar-like portion and said outer edge of said cover, to restrain the cover against lateral movement relative to the frame, the full weight of said cover being supported directly by said upper cover supporting surface of said cover adjusting insert portion in said adjusted elevated position of said cover, and wherein said interior surface of said collar-like portion of said frame slopes downwardly and inwardly terminating at its lower edge at the outer periphery of said shoulder, said collar-like portion having a substantially horizontal top surface, said adjusting insert portion having an outer side surface which tapers inwardly in a downward direction and which last mentioned side surface is disposed in confronting generally closely spaced relation to said interior surface, and said support ring portion including a defining wall structure which on its outer side surface is tapered inwardly in a downward direction and generally complementary to the taper on said outer side surface of said adjusting insert portion, the last mentioned side surface forming a continuation of said outer side surface of said support ring portion and being tapered continuously throughout the vertical extent of said insert portion, said support ring portion having an inner downwardly and inwardly sloped defining side surface, which merges with the outer periphery of said upper cover supporting surface, and said cover comprising an outer defining side surface which is sloped generally complementary to said sloped inner defining side surface of said support ring portion, said cover and support ring portion confronting side surfaces being disposed in generally laterally spaced relation to one another, the diameter of said surface area of said shoulder and of said upper cover supporting surface being substantially identical, the diameter of the bottom surface of said insert portion being substantially identical to said diameter of said upper cover supporting surface, and with the top surfaces of said cover and said support ring portion being disposed at substantially the same elevation and with said top surface of said support ring portion being disposed in elevated condition relative to said top surface of said collar-like portion.

4,236,359

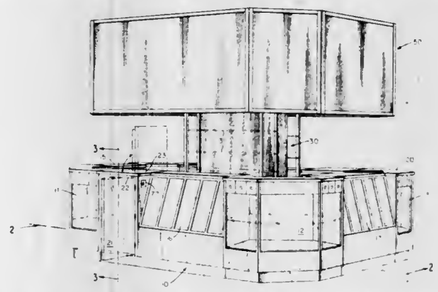
SELF SECURING MERCHANDISING KIOSK

Anthony Y. Woolford, P.O. Box 522, Amherst, N.H. 03102

Filed Feb. 1, 1979, Ser. No. 8,251

Int. Cl.[2] **E04B** *1/346*

U.S. Cl. 52—66 **8 Claims**



1. In a merchandising kiosk having a base shell totally enclosing a working area and adapted to accommodate therein at least one person, said base including: (1) peripheral cabinets adapted to outwardly display merchandise through windows, the tops of which cabinets end in a continuous counter around said base shell, (2) said continuous center, and (3) an entrance door, the improvements comprising:

A canopy having a raised and a lowered position and being at least peripherally coextensive with the inner circumference of said base shell, said canopy in said lowered position being adapted to match with the top of said base shell and form a secure area within, and in said raised position to be above the level of the head of said person standing therein;

Said canopy being supported for raising and lowering by at least two spaced apart posts within the central portion of said working area, said posts being extensible from a collapsed position to effect said raised position;

And said posts being encased at least in part in a vertical display unit about which said person may work.

4,236,360

MULTIPLE-PANE WINDOW COMPRISING A FLUID FILTER CURTAIN

Andre' Parrier; Jean Parrier, and Henri Parrier, all of 41, rue Marius Poncet, 69390 Saint-Genis-les-Ollieres, France

Filed Aug. 17, 1978, Ser. No. 934,508

Claims priority, application France, Aug. 26, 1977, 77 26774

Int. Cl.[3] **G02B** *5/24;* **E06B** *7/12*

U.S. Cl. 52—171 **10 Claims**

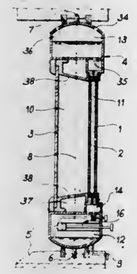
1. A window comprising a rectangular frame constituted by two vertical uprights and two horizontal cross-members consisting respectively of a top cross-member and a bottom cross-member and at least two flat, smooth and parallel window panes secured to said frame along their edges, said frame and said two window panes being so arranged as to define a leak-tight space, and further comprising:

a bottom reservoir housed within said bottom cross-member and adapted to receive a first fluid,

a first distribution chamber housed within said bottom cross-member and adapted to extend along the entire length of those edges of the window panes which are in contact with the bottom cross-member, said first distribution chamber being adapted to communicate with said leak-tight space through a plurality of ducts disposed in uniformly spaced relation along the entire length,

a lift and force pump associated with control means and having an inlet which opens into said bottom reservoir and an outlet which opens into said first distribution chamber, said pump being placed within said bottom cross-member,

a controllable discharge valve placed within said bottom cross-member and capable of establishing a communication between said bottom reservoir and said first distribution chamber,



a top reservoir housed within said top cross-member and provided with means for establishing a communication with that portion of said leak-tight space which is located in the vicinity of said top cross-member and capable of receiving a second fluid, the density of the first fluid being higher than that of the second fluid, the two fluids being such as to have different optical indices,

each cross-member and each upright is provided on the internal face directed towards the window panes with a lip, said lip having a thick portion in the vicinity of the upright or of the cross-member and a portion of reduced thickness extending between said window panes, the edge of each of the two window panes being clamped between one face of said portion of reduced thickness and an external packing-piece, said two packing-pieces being each secured by clamping against one of the two faces of the upright or of the cross-member which is parallel to said window panes, the ducts extending through said lip and seals and being interposed between the faces of the portion of reduced thickness and the window panes and between the packing-pieces and said panes.

4,236,361

PREFABRICATED BUILDING COMPONENTS

Joseph Boden, 341 Timer View Dr., Oak Brook, Ill. 60521

Filed Jun. 12, 1978, Ser. No. 914,970

Int. Cl.[3] **E04C** *2/22*

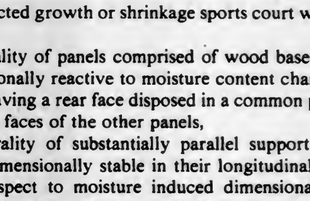
U.S. Cl. 52—204 **8 Claims**

1. A prefabricated wall unit for use in building construction comprising:

(a) at least two elongated concrete reinforced support columns, said columns being in spaced parallel relation and each defining a compartment adapted to receive said concrete reinforcement, said columns further including means for joining adjacent wall units together,

(b) a wire mesh disposed between said columns in the plane defined by said columns, the ends of said mesh being embedded in the concrete,

(c) foam insulating material molded to the wire mesh and filling substantially the entire space between said columns to a thickness of at least approximately the thickness of said columns, said insulation being rigid and lightweight,



(d) said unit including additional support columns located intermediate the first two columns, and a metal frame structure attached to said additional columns, said frame permitting the field installation of windows and doors by attachment to said frame.

4,236,362

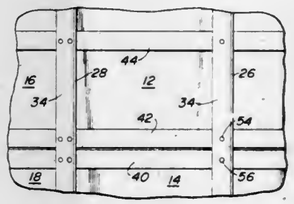
WALL SYSTEM

Ray E. Omholt, c/o American Sportsurfacing Co., Inc. Strafford Office Bldg. No. 2 Suite 218, Wayne, Pa. 19087

Filed Aug. 31, 1978, Ser. No. 938,295

Int. Cl.[3] **E04B** *5/52;* **A63J** *3/00*

U.S. Cl. 52—228 **12 Claims**



1. A restricted growth or shrinkage sports court wall system comprising:

(a) a plurality of panels comprised of wood based material dimensionally reactive to moisture content changes, each panel having a rear face disposed in a common plane with the rear faces of the other panels,

(b) a plurality of substantially parallel support members more dimensionally stable in their longitudinal direction with respect to moisture induced dimensional changes than said panels in said longitudinal direction, said support members being substantially rigid in a plane perpendicular to said common plane, said support members being secured to associated panels, and

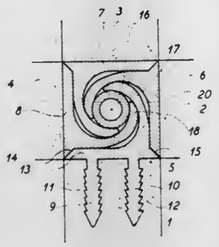
(c) means to restrain moisture induced movement of said panels in a direction generally parallel to said common plane and transverse to said longitudinal direction, said restraning means including a plurality of flat stress straps dimensionally inert with respect to environmental moisture changes, said stress straps being secured to associated panels in a plane parallel to said common plane in said transverse direction and being located between said associated panels and said support members, and fasteners passing into said panels and through intersecting portions of said stress straps and said support members.

4,236,363

ASSEMBLY ELEMENT SETS

Knud Vinther, and Jette V. Vinther, both of DK-8355 Ny, Solbjerg, Denmark

Filed Apr. 10, 1978, Ser. No. 894,914
Claims priority, application Denmark, Apr. 13, 1977, 1625/77
Int. Cl.³ E04B *2/62, 2/74*
U.S. Cl. 52—285 **11 Claims**



1. A set of at least three elongated assembly rails for engaging each other along an axial line, at least one of said rails being adapted to have a plate affixed thereto,

each of said rails having at least one axially extending end portion comprising a base part and a resilient hook-shaped part,

the base part of each adjacent rail having a pair of radially directed surfaces adapted to mate with the corresponding radially directed surfaces of the base parts of the adjacent rails, and the other hook-shaped parts thereof all being substantially equal in size and forming a cylindrical hole around said axial line and

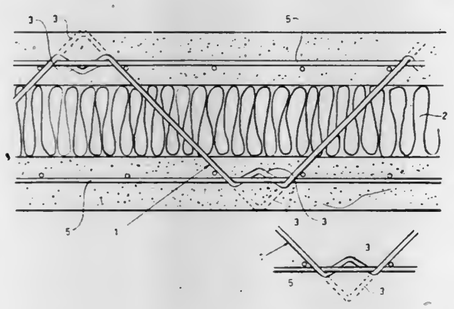
a locking member disposed in said hole for urging the portions of said hook-shaped parts adjacent said hole against each other, said locking member exerting a camming action which thereby forces said radially directed surfaces together, whereby said rails are stabilized in a locking relationship.

4,236,364

REINFORCED BUILDING COMPONENT

Arnold Larsson, and Assar Elwing, both of Linkoping, Sweden, assignors to AB Östgöta-Byggen, Linkoping, Sweden

Filed Jun. 5, 1978, Ser. No. 912,279
Claims priority, application Sweden, Apr. 24, 1978, 7804662
Int. Cl.² E04B *1/16*
U.S. Cl. 52—383 **1 Claim**



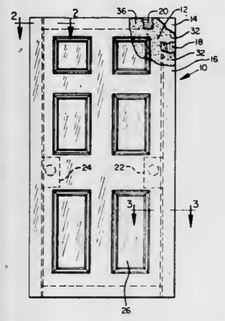
1. A reinforced building component comprising a slab, a reinforcement which includes a number of juxtaposed wires bent in zigzag shape, said zigzag wires having central parts located within the slab, while the crests of the wires extend outside both sides of the slab, a lattice lying outside said slab and including interconnected transverse and longitudinal wires, said zigzag wires having their crests bent over to clampingly engage the wires of said lattice to connect the zigzag wires to the lattice wires mechanically.

4,236,365

RIGID BUILDING COMPONENT AND METHOD OF MANUFACTURE

Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Processes, Oregon Ltd., Corvallis, Oreg.

Division of Ser. No. 832,207, Sep. 12, 1977, Pat. No. 4,148,857.
This application Aug. 25, 1978, Ser. No. 936,811
Int. Cl.² E06B *3/70*; B32B *3/02*
U.S. Cl. 52—455 **3 Claims**



1. A rigid building component comprising:

a core of consolidated and compacted coarse wooden particles disposed between a pair of substantially parallel densified outer skins of cellulosic fibers firmly bonded to said core, said coarse wooden components including adhesive material coated thereupon and dispersed throughout said rigid building component for adhering said particles into a solid structure,

and an interior solid wood edge frame positioned within said coarse wooden particles around the peripheral edge of said building component, said edge frame extending completely around said building component and comprising a pair of stiles on either side of said building component joined by a pair of rails at the upper and lower edges of said building component, each of said stiles and rails comprising a board of predetermined thickness having flat sides substantially parallel to said outer skins, the coarse wooden particles between the sides of said boards and said outer skins being compacted to have a density substantially greater than the density of said wooden particles located centrally of said building component within said solid wood edge frame to provide solid durable wooden edges adjacent said edge frame around the periphery of said building component.

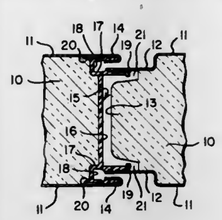
4,236,366

PREFABRICATED WALL PANEL

Willem Rijnders, Alblasserdam, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Dec. 11, 1978, Ser. No. 968,425
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2754814
Int. Cl.³ E04C *1/30*
U.S. Cl. 52—580 **6 Claims**

1. A prefabricated wall panel comprising a central core of insulating material, two substantially parallel facing sheets on the opposite faces of said core, said core having a lateral projection of a thickness less than said core along one side edge of said panel, each of said facing sheets having free edges along said one edge extending in spaced relationship to said lateral projection to define a pair of grooves along said one edge, each of said grooves being defined on its inner side by said lateral projection and on its outer side by the free edge of one of said facing sheets, the opposite side edge of said panel having a connecting member, said connecting member having a pair of outer laterally projecting tongues, the edges of the adjacent facing sheets being bent around said outer projecting tongues, said connecting member also having a pair of inner laterally projecting tongues spaced inwardly of said outer projecting



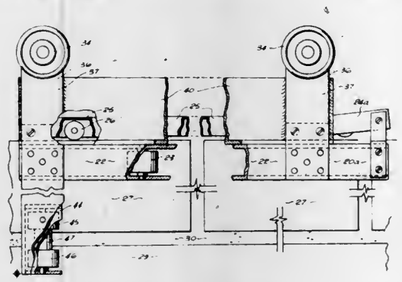
tongues, the space between and inner projecting tongue and an adjacent outer projecting tongue being sufficient to receive the free edge portions of the sheets of an adjacent identical wall panel, the inner laterally projecting tongues being spaced from one another by a distance to receive the lateral projection of the core of an adjacent identical wall panel, and said inner tongues being positioned and dimensioned to be receivable in the grooves of said adjacent panel.

4,236,367

BRICKLAYING APPARATUS

Mieczylaw Wilczynski, 47 Boronia Rd., Greenacre 2190, Australia

Filed Aug. 24, 1978, Ser. No. 936,346
Claims priority, application Australia, Aug. 26, 1977, PD1408
Int. Cl.³ E04G *21/22*
U.S. Cl. 52—749 **17 Claims**



1. An apparatus for facilitating the laying of a course of bricks comprising:

first and second lateral alignment means disposed parallel to each other and extending longitudinally of the apparatus, each said alignment means comprising:

a plurality of rollers for engaging a respective opposite side face of the course at a plurality of points disposed in a straight line along a length of a course, and

means located at a forward end portion of a respective alignment means adapted to engage a respective opposite side face of the course at at least one point disposed outwardly of said course in relation to a straight line; and

support means adapted to engage the upper surface of said course.

4,236,368

CARTON CLOSING AND SEALING APPARATUS FOR LINED CARTONS AND METHOD OF CLOSING SAME

Robert W. Nerenberg, Middletown, and James H. Shiverdecker, Dayton, both of Ohio, assignors to The Interstate Folding Box Company, Middletown, Ohio

Filed Jan. 2, 1979, Ser. No. 338
Int. Cl.³ B65B *7/08, 7/18, 7/24*
U.S. Cl. 53—491 **15 Claims**



1. Apparatus for closing and sealing taper top cartons having front, rear and opposing end walls, a closure flap hingedly connected to the upper edge of the rear wall, the carton including a tubular liner having its open mouth projecting beyond the upper end of the carton body, the upper portions of the end walls being scored to define sets of bellows-like gussets, said apparatus comprising conveying means for advancing the cartons in a path of travel with the opposing carton end walls defining the leading and trailing ends of the cartons, deflecting means for simultaneously deflecting inwardly the opposing sets of bellows-like gussets and the opposite ends of the liner mouth, guide means for concurrently displacing toward each other the upper ends of the front and rear walls so as to juxtapose the uppermost ends of the front and rear walls and flatten the liner mouth therebetween, liner supporting means defining a folding edge for the flattened liner mouth, sweep means positioned to fold the liner mouth over said folding edge to form a reversely folded double thickness liner mouth, pressing means for pressing the folded liner mouth, infolding means for concurrently infolding said closure flap and said reversely folded liner mouth over the upper edge of said front wall, and attachment means for securing the folded closure flap to the front wall of the carton.

4,236,369

ROW CROP ATTACHMENT

Frans J. G. C. Decoene, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

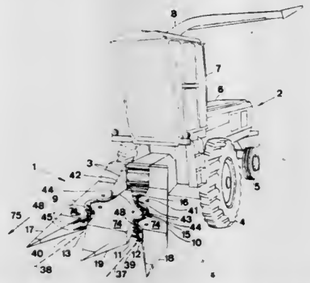
Filed Nov. 1, 1978, Ser. No. 956,717
Claims priority, application United Kingdom, Nov. 9, 1977, 46542/77
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—60 **24 Claims**

1. A row crop attachment for a harvesting machine comprising:

first and second guide members each having a first guide surface, the first guide surface of said first and second guide members being spaced apart and defining therebetween an elongated stalkway terminating at a rear discharge opening;

a plurality of conveyor elements rotatably affixed to said guide members, each conveyor element including a plurality of outwardly extending crop engaging members, said conveyor elements being positioned along the length of said stalkway such that said crop engaging members cyclically extend into said stalkway and crop stalks entering said stalkway are moved along the length of said stalkway

toward said discharge opening in response to being alternately engaged by each of the conveyor elements;
drive means to positively rotate said conveyor elements in timed relation;
said conveyor elements being alternately staggered on said



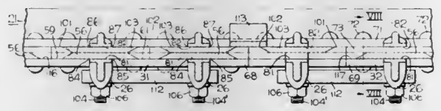
first and second guide members along the length of said stalkway;
said stalkway being of a serpentine configuration including concave portions; and
said conveyor elements are affixed to said first and second guide members adjacent said concave portions.

4,236,370

MOWER WITH TWO SICKLE BARS

J. Lyle Shaver, Blue Springs, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 25,563, Mar. 30, 1979, abandoned, which is a continuation of Ser. No. 802,478, Jun. 1, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,182
Int. Cl.[3] A01D *53/12*
U.S. Cl. 56—297 6 Claims



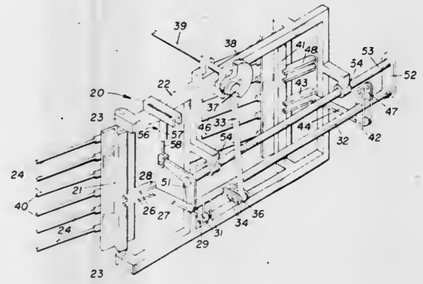
1. A mowing device comprising in combination:
a frame structure adapted for forward travel over ground having a standing crop thereon,
a stationary cutter bar secured to and extending transversely along the front end of said frame structure;
a plurality of substantially uniform length standard knife guards mounted in transverse alignment on said cutter bar and projecting forwardly therefrom, each of said standard guards having an upward facing horizontal ledger surface terminating in first and second shearing edges at its transversely opposite ends,
first and second conversely reciprocating sickle bars disposed in generally parallel relation to and forwardly of said cutter bar, said sickle bars being in transverse alignment and having inboard ends terminating in an end to end relationship at a midportion of said cutter bar, the transverse space between said inboard ends varying during reciprocation of said sickle bars,
knife elements mounted on the upper surfaces of said first and second sickle bars and cooperable with said first and second edges of said standard guards for cutting crop,
an extension bar mounted above and secured to one of said sickle bars at its inboard end and having a portion extending in overlying relation to the inboard end of the other sickle bar,
a plurality of inverted knife elements mounted on the bottom surface of said extension bar in overlying relation to said transverse space between said first and second sickle bars, and
a plurality of special knife guards mounted on said central portion of said cutter bar in transverse alignment with each other and with said standard guards and projecting forwardly from said cutter bar, each of said special knife guards having upper and lower vertically spaced horizontal ledger surfaces, with shearing edges at transversely opposite sides thereof, said inverted knife elements cooperating with said shearing edges of said upper ledger surfaces to cut crop in said transverse space between the inboard ends of said first and second sickle bars during reciprocation of the latter, said transverse space between said sickle bars being covered by said inverted knife elements in all positions of reciprocation of said sickle bars.

4,236,371

PICKING DEVICE FOR HARVESTING MACHINES

Gerald L. Claxton, Fresno, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Oct. 2, 1978, Ser. No. 948,093
Int. Cl.[3] A01D *46/00*
U.S. Cl. 56—330 36 Claims



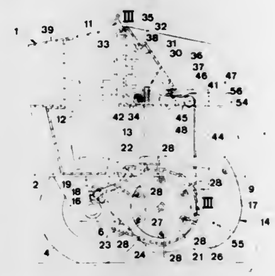
1. The method of operating the striker rods of a harvesting machine, the machine being adapted to straddle and move along a row of plants and having first and second opposed and elongated striker rods mounted on the machine and being pivotal about vertical axes so that the rods and tips thereof can be moved inwardly towards and outwardly from the centerline of the machine, the method comprising:
continuously oscillating each of the striker rods about its vertical axes with a constant force of oscillation and through a constant arcuate stroke inwardly and outwardly from the centerline of the machine as the machine moves along the row of plants,
sensing the amount of force exerted by each of the striker rods against the plants as the striker rods move inwardly towards the centerline of the machine and strike the plants,
shifting the stroke of the first striker rod tip away from the centerline of the machine while maintaining the constant force of ocillation and the constant stroke thereof when the force exerted by the first striker rod on the plants exceeds a desired reference level, and continuing to shift such stroke away from the centerline of the machine until the force exerted by the first striker rod on the plant no longer exceeds such reference level.

4,236,372

AGRICULTURAL HARVESTING MACHINES WITH CROP PICK-UP MECHANISMS

James A. Munro, Aylesbury, and Alan P. Lummis, Tring, both of England, assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 28, 1979, Ser. No. 70,297
Claims priority, application United Kingdom, Sep. 5, 1978, 35628/78
Int. Cl.[3] A01D *39/00*
U.S. Cl. 56—364 3 Claims



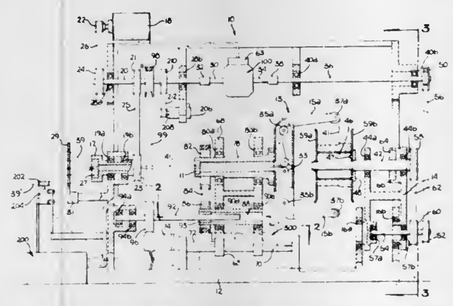
1. An agricultural harvesting machine comprising a frame, a crop pick-up mechanism mounted on the frame for flotational movement with respect thereto, and counterbalancing means operable to counterbalance at least a portion of the weight of the pick-up mechanism, the counterbalancing means comprising a combined sheave structure rotatably mounted on the frame and having a first sheave coaxial with the axis of rotation, and a second sheave connected for rotational movement with the first sheave and having a non-uniform radius relative to the axis of rotation, resilient means coupled between the frame and the sheave structure, and first and second interconnecting means interconnecting the combined sheave structure with the pick-up means and the resilient means, respectively, the first and second interconnecting means extending around the first and second sheaves, respectively, of the combined sheave structure and the arrangement being such that as the sheave structure rotates, the moment about the axis of rotation of the sheave structure produced by the resilient means is always substantially equal to the moment about the same axis produced by the weight of the pick-up means irrespective of the position of the latter relative to the frame.

4,236,373

TRAVERSE CONTROL SYSTEM

Ben Bravin, Los Angeles, Calif., assignor to Dynamex Corporation, Long Beach, Calif.

Division of Ser. No. 944,149, Sep. 30, 1978. This application Jul. 2, 1979, Ser. No. 53,690
Int. Cl.[3] D07B *3/08, 7/10;* B65H *54/02*
U.S. Cl. 57—71 6 Claims



1. In a wire twisting and winding apparatus having a frame, a reel shaft rotatably mounted on said frame, a reel spindle drivably coupled to said reel shaft and adapted to receive a take-up reel having left and right flanges, a flyer rotatably mounted on a flyer carriage, said flyer carriage being reciprocally mounted on said frame, means for reciprocally driving said flyer carriage between left and right reversal means movably mounted on said frame in spatial relation to said flyer carriage, said reversal means being coupled to said flyer carriage drive means and adapted to cause the reversal of the drive direction thereof, and means affixed to said flyer carriage for activating said left and right reversal means alternately as said flyer carriage traverses reciprocally, an improved control means for automatically adjusting the positions of said reversal means comprising:
(a) left and right drive means coupled to said left and right reversal means respectively for moving the same relative to said flyer carriage;
(b) left and right zone sense means mounted on said frame in spatial relation to said left and right reversal means respectively and said flyer carriage, said zone sense means being adapted to provide, when activated by said activation means, an indication that said flyer carriage is within predetermined left and right zones with respect to said left and right reversal means respectively;
(c) first means coupled to a strand of wire being drawn into said apparatus, said first means being responsive to the velocity of said wire strand and adapted to output an analogous representation of a wire velocity increase or decrease;
(d) logic means coupled to said left and right zone sense means, said first responsive means and said left and right drive means, said logic means being adapted to activate said left drive means in first and opposite directions whenever said wire velocity increases or decreases respectively and said flyer carriage is within said left zone, and to activate said right drive means in first and opposite directions whenever said wire velocity increases or decreases respectively and said flyer carriage is within said right zone,
whereby, said first direction of said left and right drive means is selected to drive said left reversal means to the right and said right reversal means to the left respectively, thereby adjusting the positions of said reversal means with respect to said flyer carriage so as to eliminate increases and decreases in said velocity of said wire strand due to accumulations and recesses respectively of said wire adjacent said flanges of said take-up reel, and each traverse of said flyer carriage substantially corresponds to the distance between said flanges of said reel.

4,236,374

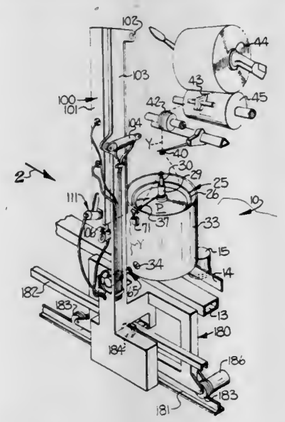
YARN TAKE-UP AND SUPPLY MECHANISM FOR USE WITH TEXTILE MACHINES

Lothar Marbacher, Krefeld, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 3,997
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 2802205
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.[3] D01H *15/00, 1/10*
U.S. Cl. 57—279 21 Claims

2. In a textile yarn processing machine, such as a two-for-one twister or the like, having a plurality of spindle assemblies each including a driven rotating rotor mechanism, a stationary carrier mechanism for carrying a hollow supply package of yarn, and an elongate yarn passageway passing downwardly through the top of said carrier mechanism along the axis of said spindle assembly and radially outwardly through said rotor mechanism for receiving the yarn from the supply package therethrough and then upwardly along the outside of said carrier mechanism for forming a rotating balloon of yarn dur-

ing yarn processing, and having selectively-operable pneumatic threading mechanisms for being operated to automatically thread yarn withdrawn from the supply package through said passageway during threading-up of said spindle assembly by creating a suction through the yarn entry portion of said passageway and a positive air stream through the yarn exit portion of said passageway; the combination therewith of a yarn take-up and supply mechanism for cooperation with said threading mechanisms and being characterized by a construction for receiving a free end of the yarn as it emerges from the supply package, taking-up a loop of a predetermined length of the yarn and completely releasing the free end and taken-up length of the yarn to the textile machine in a substantially tension-free condition at the yarn entry portion of said passageway through said spindle assembly for receipt by said threading mechanisms for threading-up of said textile yarn processing machine, said yarn take-up and supply mechanism comprising:



housing means;

clamping means carried by said housing means for receiving the free end of yarn extending from the supply package in said spindle assembly of said textile machine and for clamping the free end of the yarn;

driven take-up means carried by said housing means for engaging the yarn inwardly of the clamped free end and for moving away a predetermined distance to carry the yarn and form a loop of predetermined length of the yarn;

means carried by said housing means for releasing said clamping means and the free end of yarn for presentation to the textile machine at the area of the yarn entry portion of said passageway of said spindle assembly of said textile machine; and

means carried by said housing means for releasing the loop of yarn from said take-up means for presentation in a substantially tension-free condition to the textile machine.

4,236,375

ELECTRONIC WATCH

Shojiro Komaki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

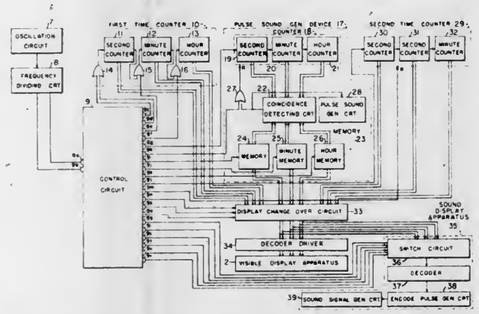
Filed Sep. 16, 1977, Ser. No. 834,004

Claims priority, application Japan, Sep. 20, 1976, 51-112760

Int. Cl.³ G04C *21/12*

U.S. Cl. 58—23 R **5 Claims**

1. An electronic watch comprising: an oscillator circuit for developing an oscillating output signal; a dividing circuit for dividing the oscillator output signal to develop a time standard signal; a present time counter circuit receptive of the time standard signal for developing a count representative of present time and responsive to a correction pulse for correcting the developed count; a pulse sound generator comprised of a second time counter circuit for developing a count representative of time, a memory circuit having contents representative of a predetermined time, a coincidence detecting circuit for developing a coincidence signal when the contents of said second time counter circuit and the contents of said memory circuit coincide, and a sound generating circuit for developing sound pulses in response to the coincidence signal; a chronograph counter responsive to control signals for operating in a chronograph mode; visual display means for visually displaying time; display switching circuit means for switching between said present time counter circuit, said memory circuit and said chronograph counter for applying the contents of the selected one thereof to said visual display means for visually displaying present time, the predetermined time and a time interval measured by said chronograph counter; and control circuit means operable for developing and applying selected



ones of the above-mentioned control signals and the correction pulse for controlling operation of the electronic watch, wherein said control circuit means is effective for applying a control signal to said second time counter circuit to operate said second time counter circuit in a counting mode to continually count, and wherein said pulse sound generator includes resetting means for applying the coincidence signal from said coincidence detecting circuit to reset said second time counter circuit each time coincidence is detected between the contents of said second time counter circuit and said memory circuit whereby said sound generating circuit repetitively generates a sound each time the coincidence signal is developed after successive time intervals determined by the content of said memory circuit.

4,236,376

ARRANGEMENT FOR REGULATING SUPERCHARGER AIR PRESSURE

Ulrich Henke, Alsdorf, and Reinhard Meyer, Grevenbroich, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

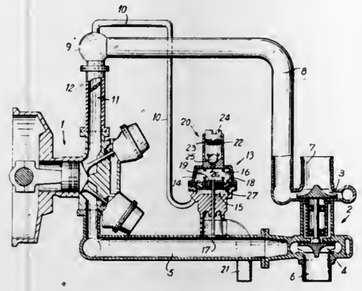
Filed May 10, 1979, Ser. No. 37,755

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822207

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—602 **2 Claims**

1. An arrangement for regulating the supercharger air pressure in a combustion engine operated with exhaust gas supercharge and equipped with an exhaust gas turbosupercharger, comprising: a supercharger and an exhaust gas turbine, said regulating arrangement comprising a first valve controlling an exhaust gas bypass to said exhaust gas turbine; said first valve having a pressure unit and diaphragm means dividing said pressure unit into two chambers; one side of said diaphragm means being charged with supercharger air pressure; a first spring for loading the other side of said diaphragm means; calibrated opening means passing through said diaphragm means for interconnecting said two chambers; and a second valve for connecting one of said chambers holding said first



spring to atmosphere, said second valve comprising a nonreturn ball valve.

4,236,377

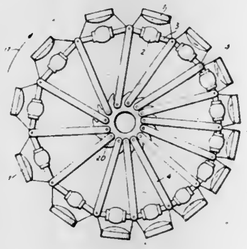
HEAT EXPANSION MACHINE

Friedrich Weinert, 219-19 131st Ave., Jamaica, N.Y. 11413

Filed Apr. 3, 1978, Ser. No. 893,047

Int. Cl.³ F03G *7/02*

U.S. Cl. 60—641 **4 Claims**



1. A gravity motor utilizing a heat expansion mechanism comprising a frame, a rotational shaft supported by the frame, a drive gear connected to said rotational shaft, said drive gear having a plurality of teeth around the outer periphery thereof, a plurality of drive bars, the drive bars at one end thereof being pivotally secured to the drive gear around the circumference of the drive gear to permit pivoting of the drive bars within a predetermined range limited by two teeth of the drive gear and the other end of each of the drive bars extending radially outwardly therefrom, and a plurality of expansion means, at least one expansion means being respectively situated between the drive bars to change the distance between the drive bars, whereby when one or more expansion means is actuated continuously on one side of the motor by heating or cooling the expansion means, the motor becomes successively unbalanced between the two sides to thereby move continuously.

4,236,378

SECTORAL COMBUSTOR FOR BURNING LOW-BTU FUEL GAS

Robert L. Vogt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1978, Ser. No. 882,073

Int. Cl.³ F02C *7/18*

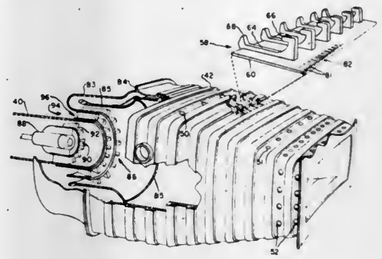
U.S. Cl. 60—757 **11 Claims**

1. A combustion chamber operable to burn low-BTU fuel gas in a gas turbine comprising:

an outer shell wall of corrugated construction;

a liner wall comprising a plurality of liner panels each having an upstream end supported in overlapping relationship with the downstream end of an adjacent liner panel, said liner wall housed coaxially within said shell wall and having an outer surface and an inner surface, said shell wall and said liner wall each having a cross section of a shape substantially equal to an annular sector of said gas turbine;

said liner wall defining internally thereof a combustion zone and further defining between said liner wall and said shell wall a coolant channel for the flow of air in countercurrent relationship to flow in said combustion zone for cooling said liner wall outer surface;



liner attachment means for supporting said liner wall from said shell wall said liner attachment means including a plurality of panel supports comprising an elongated rib or bulb rigidly attached to said inner wall and aligned approximately parallel to the direction of the countercurrent coolant flow in said coolant channel;

air supply means for introducing combustion air to said combustion zone; and

fuel supply means for introducing fuel gas and liquid fuel to said combustion zone.

4,236,379

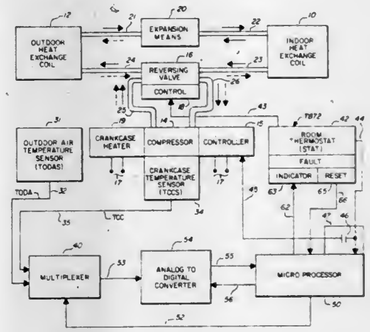
HEAT PUMP COMPRESSOR CRANKCASE LOW DIFFERENTIAL TEMPERATURE DETECTION AND CONTROL SYSTEM

Dale A. Mueller, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 4, 1979, Ser. No. 868

Int. Cl.³ F04B *49/10*; F25B *49/00*

U.S. Cl. 62—126 **8 Claims**



1. A compressor crankcase low differential temperature detection and control system (hereinafter "control system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling an enclosure wherein said system comprises refrigerant compression means including crankcase heating means, refrigerant compression control means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said control system comprising:

outdoor air temperature sensing means (hereinafter "TODAS") having an output indicative of outdoor air temperature (hereinafter "TODA");

compressor crankcase temperature sensing means (hereinafter "TCCS") having an output indicative of the temperature (hereinafter "TCC") of the crankcase of said refrigerant compression means;

enclosure temperature sensing means (hereinafter "STAT") having an output indicative of a demand for heating or cooling of the enclosure; and

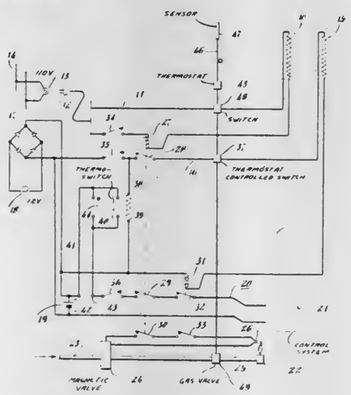
controller means having operative connections to said TODAS, TCCS, and STAT so as to receive the outputs thereof, said controller means including circuit connect-disconnect means selectively interconnecting said STAT output to said refrigerant compression control means whereby, when said STAT output is connected thereto, said compression means is enabled to operate in response to a demand from said STAT for heating or cooling and, when said STAT output is disconnected therefrom, said compression means is inhibited from operating, said controller means being effective to inhibit said compression means from operating whenever the value of TCC minus TODA is less than a preselected amount, and said controller means being further characterized by permitting operation of said compression means whenever TODA is greater than a predetermined value.

4,236,380

CONTROL SYSTEM FOR AUTOMATIC DELAYED OPERATION OF A GAS OPERATED ABSORPTION REFRIGERATOR

Peter E. Blomberg, Stockholm, and Magnus C. W. Lindmark, Stocksund, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jun. 14, 1979, Ser. No. 48,666
Claims priority, application Sweden, Jun. 14, 1978, 7806849
Int. Cl.[3] F25B *15/00, 27/00*
U.S. Cl. 62—148 **5 Claims**



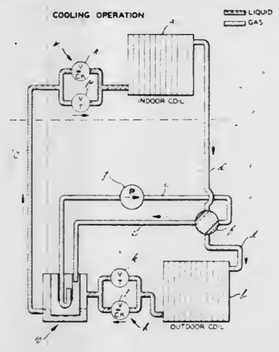
1. A control system for a gas-operated absorption refrigerator provided in a vehicle, such as a trailer, motor home or the like, said refrigerator being connected to a motor-driven generator and having a heating cartridge and means for alternate operation by electricity or gas comprising: a first electric circuit having said heating cartridge therein and including a thermostatically controlled switch and a magnetic coil, a second electric circuit having a safety device for said gas supply and being provided with a contact wherein when said magnetic coil is energized said coil holds said contact in said second electric circuit in an open condition, and an electric control circuit having a control system therein, said safety device for the gas supply in said second electric circuit maintaining said gas burner operative when in a closed condition, said control system functioning in such a manner that the gas burner is automatically operated if the first circuit with the heating cartridge is opened, and means for delayed closing of said electric control circuit through said control system when said first circuit through said heating cartridge has been opened.

4,236,381

SUCTION-LIQUID HEAT EXCHANGER HAVING ACCUMULATOR AND RECEIVER

Sadik S. Imral, St. Louis, and Asadulla R. Khan, Ballwin, both of Mo., assignors to Intertherm Inc., St. Louis, Mo.

Filed Feb. 23, 1979, Ser. No. 14,577
Int. Cl.[3] F25B *29/00*
U.S. Cl. 62—324R **2 Claims**



1. For use in a vapor compression heat pump system having indoor and outdoor refrigeration coils coupled by a liquid refrigerant line having a pair of throttling assemblies and by a suction refrigerant line having a compressor and a reversing valve,

a suction-liquid heat exchanger comprising

an outer high-pressure vessel having for coupling in the liquid refrigerant line between such pair of throttling assemblies,

a first lower port spaced upwardly from the vessel lower end, and

a second upper port displaced upward from the first port, in combination with

an inner liquid-accumulating closed vessel extending downward within the outer vessel to a lower end at a level below the outer vessel lower port, and having, for coupling in the suction line,

an upper inlet, and

a suction outlet tube having an open end spaced above the lower end of the inner vessel,

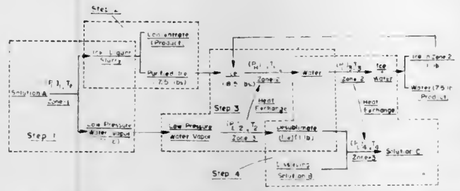
whereby, upon coupling the inner vessel in the suction line and the outer vessel in the liquid line, with its lower port coupled by one throttling assembly to the indoor coil and its upper port by the other throttling assembly to the outdoor coil, on cooling operation when liquid line refrigerant flow is from the upper port to the lower port, the liquid refrigerant level in the outer vessel is normally above the level of the lower end of the inner vessel and substantial heat is exchanged, though less than on heating operation.

4,236,382

SEPARATION OF AN AQUEOUS SOLUTION BY THE IMPROVED VACUUM FREEZING HIGH PRESSURE ICE MELTING PROCESS

Chen-Yen Cheng, 9605 La Playa St., NE., Albuquerque, N. Mex. 87111; Sing-Wang Cheng, Fourth Floor, No. 1 of Lane 479, Fu-Hsing N. Rd.,, Taipei, Taiwan, and Wu-Cheng Cheng, 9605 La Playa St., NE., Albuquerque, N. Mex. 87111

Filed Feb. 26, 1979, Ser. No. 15,343
Int. Cl.[2] B01D *9/04*
U.S. Cl. 62—537 **6 Claims**



1. A process of subjecting an aqueous mixture to freezing and melting operations that comprises:

1. a first step of simutaneously flash vaporizing and freezing an aqueous mixture derived from the feed mixture (A-solution) in a first zone (Zone-1) under a reduced pressure to thereby form a low pressure water vapor and a mass of ice;

2. a second step of simultaneously melting a mass of ice derived from the ice formed in Step 1 and the ice obtained in Step 3 in a second zone inside of a heat conductive conduit (Zone-2) and desublime the low pressure water vapor obtained in Step 1 in a third zone outside of the heat conductive conduit (Zone-3) to thereby simultaneously form a melt phase in the second zone and a desublimate in the third zone by

(a) admitting the low pressure water vapor from Zone-1 to Zone-3 under a pressure lower than the triple point pressure of water, and

(b) maintaining the ice under a sufficiently high pressure such that the melting temperature of the ice is lower than the desublimation temperature of water vapor,

the heat released in the desublimation operation being utilized

in the high pressure melting of ice;

3. a third step of simultaneously dissovling the desublimate in a dissolving solution (B-Solution) in Zone-3 and solidifying water in Zone-2 to thereby form a C-solution and ice in the two zones respectively by

(a) pressure isolating Zone-3 from Zone-1,

(b) bringing a quantity of the dissolving solution in contact with the desublimate in Zone-3, and

(c) reducing the pressure in Zone-2 so that the freezing temperature in Zone-2 is higher than the dissolution temperature in Zone-3,

the heat released in the freezing of water in Zone-2 being utilized

in supplying the heat needed in dissolving the desublimate in Zone-3.

4,236,383

SOLAR ENERGY RECEIVER FOR A STIRLING ENGINE

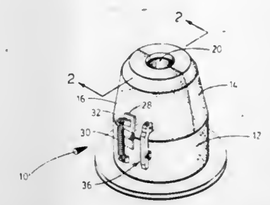
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and M. Kudret Selcuk, La Canada, Calif.

Filed Apr. 6, 1979, Ser. No. 27,559
Int. Cl.[3] F03G *7/02*
U.S. Cl. 60—641 **10 Claims**

1. In combination with a Stirling engine characterized by a heat exchanger, a receiver comprising:

A. means including an enclosure defining a cavity having an acceptance aperture for a concentrated beam of solar radiation and an internally reflective surface for flux distribution within said cavity; and

B. flux density reduction means for reducing the density of



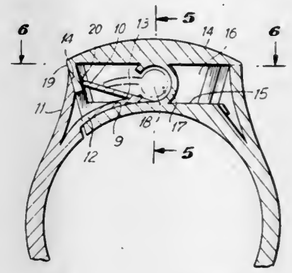
radiation flux within the cavity including means for initiating an enlargement of said acceptance aperture in the presence of temperatures elevated above a selected magnitude.

4,236,384

LOCKING ASSEMBLY FOR ARTICLE OF JEWELRY

Arthur R. Daub, 59 Burns Ave., Hicksville, N.Y. 11801

Filed Sep. 1, 1978, Ser. No. 939,128
Int. Cl.[3] A44C *5/00*
U.S. Cl. 63—7 **6 Claims**



1. An assembly for use as an article of jewelry having an associated ornamental portion affixed to said article, said article comprising first and second arcuate portions hingedly connected to one another at first ends thereof; means affixed at a second end of said first arcuate portion for engaging locking means on said second arcuate portion when said second end is advanced to a closed position with respect to said second arcuate portion; said locking means being disposed within an interior space formed between said ornamental portion and a top section of said second arcuate portion; key means adapted to fit into said interior space to cause release of said means affixed at said second end of said first arcuate portion from said locking means, thereby to enable said article to assume an open position by pivotal movement of said hingedly connected first arcuate portion, said means affixed to said first arcuate portion comprising a leaf spring member, said second end portion of said first arcuate portion including a generally Y shaped working portion comprising a first leg having said leaf spring member mounted at the terminus thereof, said leaf spring member having a normal position with its free end biased away from said first leg, and a second leg having a terminus, and abutment means extending below said ornamental means and being partially disposed across an entrance portion of said interior space, said abutment means having an inner surface adapted to engage said free end of said leaf spring member after said leaf spring member enters said interior space, and an outer surface against which said terminus of said second leg abuts to complete locking of said first arcuate portion to said ornamental portion.

4,236,385

EARRING

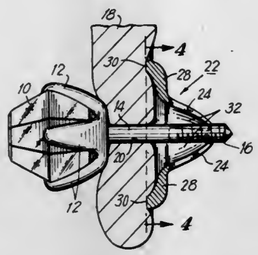
Alvin Block, Bedford, N.Y., assignor to Intimate Jewels Inc., Katonah, N.Y.

Continuation of Ser. No. 875,246, Feb. 6, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,652

The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.

Int. Cl.³ A44C 7/00

U.S. Cl. 63—12 **3 Claims**



1. An earring for pierced ears which comprises an ornament, a rectilinear cylindrical post, said post extending from attachment to said ornament, at least a portion of the outer surface of said post having a helical threading, and a clutch, said clutch having a central opening about which are radially arrayed a plurality of spaced apart springy fingers, said fingers extending to terminal attachment to an annular disc-shaped base, so that said clutch is engageable by said post by extending said post axially initially through the middle of said annular base and then through the opening in said clutch whereby the tips of said springy fingers engage and pass over the convolutions of the threading, and so that said clutch may be disengaged from said post only by rotating said clutch to unscrew the tips of said fingers through the convolutions of the threading, said fingers extending outwards from the plane of the base and being curved, so that said fingers are springy, said curved springy fingers defining a cup-shaped extension from the base, said extension defining a concave recess, at least a portion of the threaded portion of said post extending through said concave recess, and a circular lip, said lip depending from the perimeter of said base and being of thicker cross-sectional dimension than said base, the free end of said lip terminating with a substantially flat planar surface for contact with and for pressing into the earlobe of said pierced ear, said surface being parallel to the plane of said base.

4,236,386

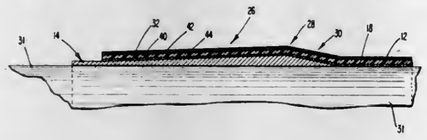
FIBER REINFORCED COMPOSITE SHAFT WITH METALLIC CONNECTOR SLEEVES MOUNTED BY A POLYGONAL SURFACE INTERLOCK

Derek N. Yates, Los Gatos, and John C. Presta, San Jose, both of Calif., assignors to Celanese Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,557

Int. Cl.³ A44C 13/00; B65H 81/00; F16L 9/00

U.S. Cl. 64—1 S **10 Claims**



1. A method of forming a tubular fiber reinforced composite shaft comprising the steps of:

providing a metal sleeve having a plurality of circumferentially straight surface segments on the outer periphery thereof;

positioning said metal sleeve upon a segment of a mandrel;

applying fibrous material bearing a non-solidified resinous material to said mandrel and over said circumferentially straight surface segments of said sleeve;

solidifying said resinous material with portions thereof lying flush against said circumferentially straight surface segments to create a torsion transmitting connection with said metal sleeve; and

removing said mandrel.

6. A tubular fiber reinforced composite shaft comprising:

a shaft body comprising a plurality of integrally bonded circumferential plies of solidified fiber reinforced resinous material; and

a metal sleeve mounted in at least one end of said shaft body, said sleeve including a plurality of circumferentially straight surface segments on the outer periphery thereof;

said fibrous material lying flush against said straight surface segments to form a torsion transmitting connection therebetween.

4,236,387

ENERGY STORING DEVICE

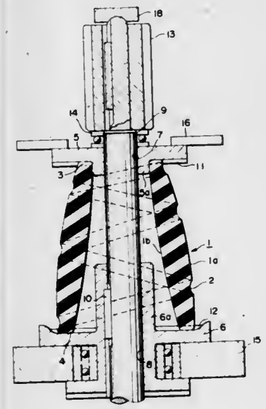
Suehiro Takatsu, c/o Takatsu Seisakusho, 22, 3-chome, Nanabancho, Minato-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jan. 26, 1979, Ser. No. 6,747

Claims priority, application Japan, Jan. 30, 1978, 53-9169

Int. Cl.³ F16D 3/28

U.S. Cl. 64—11 R **3 Claims**



1. An energy storing device comprising an elastic energy storing cylinder of a diameter gradually increasing from one end thereof to the other which has a spiral groove in the outer surface thereof, first and second flanges fitted into both end portions of said cylinder so that they cannot be rotated relative to said cylinder, a spindle passed through said cylinder and said flanges so that it is rotatable and slidable with respect to said first flange but non-rotatable with respect to said second flange, and a gear non-rotatably fitted around one end of said spindle.

4,236,388

SEPARABLE THREE-SECTION TELESCOPIC DRIVE SHAFT

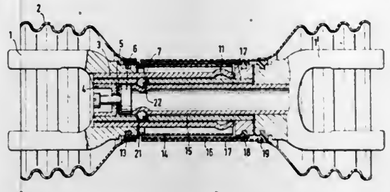
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,701

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1978, 2803822

Int. Cl.³ E21B 17/07; F16D 3/06

U.S. Cl. 64—23 **5 Claims**



1. Separable three-section telescopic drive shaft for the transmission of torque, such as used for driving agricultural implements, wherein said drive shaft is extendible between a retracted position and an extended position and comprises an axially extending inner section, an outer section laterally enclosing said inner section in the retracted position, and an intermediate section spaced between said inner section and said outer section in the retracted position, at least said outer and intermediate sections being tubular, and means for limiting the axial movement of said intermediate section relative to said inner and outer section, wherein the improvement comprises that said intermediate section has at least one cut-out formed therethrough, said means for limiting axial movement comprises a locking ball radially movably supported is said cut-out, said locking ball having a diameter greater than the wall thickness of said intermediate section, each of said inner section and said outer section having a recess therein located in the path of axial travel of said locking ball as said shaft moves between the retracted and extended positions, the depth of the recesses in said inner and outer sections being less than the radius of said locking ball, said locking ball serving to secure said intermediate section alternately to one of said inner section and outer section, and means for clamping said inner section and intermediate section together when said locking ball is seated in said cut-out and said recess in said inner section.

4,236,389

CIRCULAR KNITTING MACHINE FOR STOCKINGS OR THE LIKE, HAVING RAISING CAMS WHICH CAN BE MOVED BOTH RADIALLY AND ANGULARLY

Giovanni Chietti, Florence, Italy, assignor to Macchine Tessili Circolari MATEC S.p.A., Italy

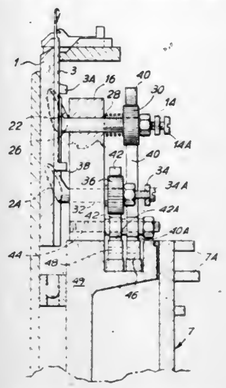
Filed Dec. 14, 1978, Ser. No. 969,428

Claims priority, application Italy, Dec. 16, 1977, 9660 A/77

Int. Cl.³ D04B 15/68

U.S. Cl. 66—42R **11 Claims**

1. An apparatus for selectively raising needles in a needle cylinder of a circular knitting machine comprising a control butt associated with each of the needles at least at one level thereof for raising each of the needles, a rotatable member arranged concentrically about at least a part of said needle cylinder, a raising cam member for engaging said butts of selected needles being independently positionable radially and axially of said needle cylinder for movements between a position in engagement with said butts of selected needles and a position totally out of engagement with said needles, means for rotatably and axially supporting said raising cam member adjacent said needle cylinder and control means operatively connected to said rotatable member and being engageable with said raising cam member for rotatably and axially moving said raising cam member in response to the rotation of said rotatable member.



4,236,390

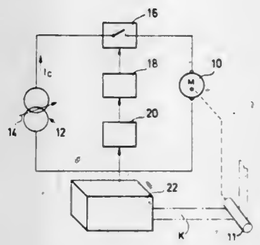
KNITTING MACHINE

Jochen Blank, Pluederhausen, and Dieter Bobe, Filderstadt, both of Fed. Rep. of Germany, assignors to Terrot Strickmaschinen GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,073

Int. Cl.² D04B 15/88, 35/10

U.S. Cl. 66—149 R **8 Claims**



1. Apparatus for controlling the material tension in a knitting machine, particularly a circular knitting machine, having a knitting device with at least two operating modes, and means to take off the knitted material under tension, the apparatus comprising:

a d.c. motor to drive the material take-off means, the torque of the motor being proportional to the average motor armature current and effecting a proportional tension in the material through the material take-off means;

first means for generating a direct current of controlled magnitude;

second means for interrupting the controlled-magnitude direct current according to one at least two predetermined pulse duty factors to produce a pulsed current yielding a different average current for each of the two pulse duty factors;

third means for applying the pulsed current to the d.c. motor as the motor armature current to effect a different constant tension in the material for each different pulsed current; and

fourth means responsive to each of at least two of the operating modes of the knitting device for controlling the second means to interrupt the controlled-magnitude current according to a predetermined one of the pulse duty factors for each of the two operating modes, whereby the the material is maintained at a different predetermined con-

stant tension for each of the two operating modes of the knitting device.

4,236,391

STEAMER FOR A CONTINUOUSLY THROUGHPASSING TEXTILE WEB

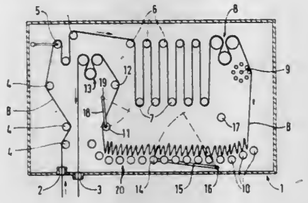
Johann Stöbi, Uzwil, Switzerland, assignor to Maschinenfabrik Benninger AG, Uzwil, Switzerland

Filed Jan. 25, 1980, Ser. No. 115,757

Claims priority, application Switzerland, Feb. 6, 1979, 1141/79

Int. Cl.[3] D06B *3/10*

U.S. Cl. 68—5 D **8 Claims**



1. A steamer for treating a continuously through-passing textile web, comprising:

a substantially closed housing having an inlet means and an outlet means for the web and through which travels the web undergoing treatment;

a group of deflection rolls arranged within the housing for the substantially zig-zag guiding of the web in an open width condition through the housing in a predetermined direction of travel;

means for guiding and transport of the web deposited thereon in a plaited condition arranged after the deflection rolls in the direction of travel of the web through the housing;

said means for guiding and transport of the web comprising at least one guide element;

means for moving the guide element from externally of the steamer housing between a first work position and a second work position;

said guide element in its first work position constituting part of the means for guiding and transport of the web; and

said guide element in its second work position being arranged above said means for the transport and guiding of the web and supporting the web in spaced relationship from the guiding and transport means.

4,236,392

CONTINUOUS PROCESSING APPARATUS FOR TREATMENT OF KNIT FABRIC MATERIAL

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Nov. 15, 1979, Ser. No. 94,456

Claims priority, application Japan, Nov. 27, 1978, 53-146314

Int. Cl.[3] D06B *3/24*

U.S. Cl. 68—5 E **1 Claim**

1. A continuous processing apparatus for carrying out continuous hydro-thermic treatment of a tubular knit fabric material, said apparatus comprising:

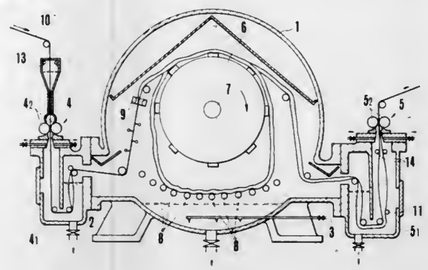
a high pressure steamer drum body having a fabric material inlet, a middle part, and a fabric material outlet;

a driving drum rotatably disposed in said middle part;

a plurality of fabric material receiving rolls which are arranged beneath said driving drum to guide and convey said fabric material in a spiral manner around said driving drum;

a pot eye which is disposed close to said fabric material inlet, said pot eye being arranged to wring said tubular knit fabric material, which enters said pot eye in a flattened state, into a rope-like shape;

an air pressure supply means disposed close to said fabric material outlet, said air pressure supply means being arranged to supply air pressure to the inside of said rope-like shape of the fabric material to swell it into a tubular shape; and



a fabric material flattening and spreading means which is disposed closer to said outlet than said air pressure supply means and is arranged to spread out said tubular knit fabric material into a flattened shape spreading in the direction of the breadth thereof.

4,236,393

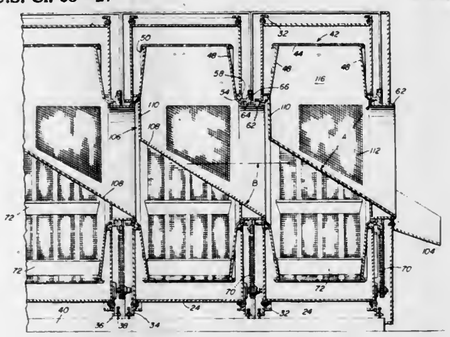
CONTINUOUS TUNNEL BATCH WASHER

James M. Katzfey, Kenner, La., assignor to Pellerin Milnor Corporation, Kenner, La.

Filed Jul. 19, 1979, Ser. No. 59,272

Int. Cl.[3] D06F *21/04, 31/00*

U.S. Cl. 68—27 **9 Claims**



1. A longitudinally extending continuous tunnel batch washer comprising a plurality of longitudinally aligned modules with inlet means at one end of the washer for feeding articles to be laundered into the washer and discharge means at the opposite end of the washer, each module including a stationary casing and a rotatably supported drum within the casing with the drum being supported for oscillatory and rotary movement about a horizontal axis, each drum including spaced end walls, each end wall of each drum including a large opening, means forming a connection between the openings to provide communication between adjacent modules, and each drum including a transfer chute mounted therein retaining articles to be laundered during oscillation and transferring the article from one drum to an adjacent successive drum during unidirectional rotation, said chute including an inclined wall having a discharge end connected to a portion of the periphery of the opening in one end wall of the drum and an end wall connecting the opposite end of the inclined wall to the opening in the opposite end wall of the drum with the end wall of the chute occupying a small portion of the opening in the end wall of the drum to reduce interference with incoming articles, said inclined wall of the chute being spirally configured circumferentially of the drum with at least one side edge of the inclined wall being spaced from the periphery of the drum.

4,236,394

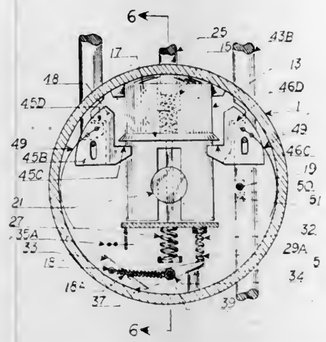
PADLOCKS AND LOCKS IN GENERAL

Richard P. Harrington, and Russell J. Harrington, both of 1930 3rd St., Alexandria, La. 71301

Filed Feb. 13, 1978, Ser. No. 877,226

Int. Cl.[2] E05B *37/06*

U.S. Cl. 70—25 **10 Claims**



1. A combination lock comprising a looped shackle movable between a first locked position, a second unlocked holding position and a third fully released position after zero, or some other preselected number on the dial face has been rotated to an index mark on front side of the case, said holding means being a guided pin engaged with a slot in long leg of the shackle releasable into an apeture on under side of the dial; locking means movable into and out of engagement with provided notches in legs of the shackle; said locking means being composed of solid latching hooks at the top end, with unlocking lugs at the bottom end, having sides provided with lost motion slots therein to accomodate stationary pivot pins secured to parts of the case, fence means including a fence for moving the locking means out of locking engagement with said notches of the shackle; a calibrated dial rotatable on a common axis with a plurality of locking tumblers mounted axially on a centrally located shaft perpendicular to face of the dial; means for sequentially rotating said tumblers to and fro for aligning the gates of all the tumblers with the fence, for movement of said fence into said gates for moving the locking means out of engagement with said notches of the shackle, said gates being located on the perifery of outer disks of the tumblers, frictionally held to inner hubs of the tumblers to allow provided driving means between the dial and tumbler hubs to new selected positions relative to gates of the dial; means for dialing and activating a master tumbler means for stopping all the disks of the said locking tumblers for slipping all of the said hubs to a preselected number on the dial face; and means for releasing the said disks preparatory to rotating with the fence for opening of the lock; means for pivoting the locking means into deeper engagement with notches in the shackle legs if and as the shackle is vigorously pulled outward of the case while the locking means is engaged with notches of the shackle leg; and means for wedging the locking means tighter into notches of the shackle legs if the shackle is forcefully pulled outward against inner surface of the case when the locking means is engaged with the shackle notches as aforesaid; means for detecting each circumferentially spaced graduation on the dial face as the dial is rotated and means for effecting a discernable pause at each such graduation, thus diminishing meed for close scrutiny of the dial face in so doing; means for blocking the dial from rotation prior to contact of the fence with disk rims of the tumblers thus foiling all attempts by pick-locks for feeling or listening out positions of tumbler disk gates relative to the fence; means for providing a guided mounting slide plate with a preloaded safety compression spring operable between an unlatching bar secured to said slide plate and an actuating finger plunger passing through a hole in an upturned end of said slide plate and confined therein by a flange at inside end of the plunger, said spring being only partly compressed, will compress further when internal parts are not properly positioned to function, thus serving to protect internal mechanism of the lock from damage; a portion of the upturned slide plate is then turned inward to form a flat pedestal upon which the fence means is mounted; compressive spring return means are provided at the opposite end of the slide plate; which return spring functions between a spring well cup secured to back case plate aligned with the end of a master combination means actuating rod (secured to the said plunger at top end of the case) which spring then activates a master actuating means near bottom end of the case, said rod being rotatable and axially guided by hole through the locking tumbler shaft mounting post; means are provided for bringing a provided compression spring in to alignment with the afore mentioned master actuating knob on an arm; and means for lifting the master fence pin and rotating a provided sleeve independantly rotatable on the master fence pin; after said means has moved said lift arm a given distance up the said ramp the said sleeve being rotatable by a provided pin secured into the said master fence pin activates a toggle spring for rotating said sleeve clockwise leaving the drive pin and master fence lift arm behind, due to a lost motion rectangular slot in which the said pin operates, through said means a set of locking tumbler disk stopping hooks are resiliently brought to bear against the locking tumbler disks; after the said disk stopping hooks have served to slip the disks to a preselected position as aforesaid; means are provided for reactivating said toggle spring to throw the toggle spring in the opposite direction for withdrawing the said hooks from engagement with the gates of said disks; means for providing enlarged portions of the shackle legs outside of and close to the case when the shackle is in its locked position for the purpose of foiling attemps by pick-locks to gain access to internal parts of the lock through use of any type or thickness of tool or instrument for the purpose of unlatching the hooks, which in conjunction with shape and location of the hook ends and unlocking lugs at lower end of the latching members make such an accomplishment vertually impossible; means whereby latching of the shackle holding hooks function independantly one from the other, thus in the event a pick-lock devises means for disengaging one hook from the shackle, the other hook is not effected thereby.

4,236,395

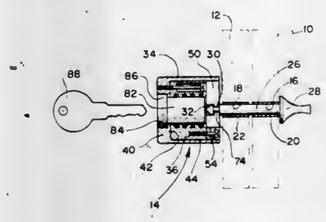
BOLT TYPE LOCK

Mauricio V. Avaiusini, 2031 S. 331st, Federal Way, Wash. 98003

Filed Mar. 5, 1979, Ser. No. 17,366

Int. Cl.[3] E05B *67/36*

U.S. Cl. 70—34 **6 Claims**



1. A bolt type lock comprising:

a bolt member comprising an elongated shank, a first abutment at one end of the shank, and a girth groove formed in an opposite end portion of said shank; and

a second abutment which is detachably connectable to the girth groove end of the shank, said second abutment com-

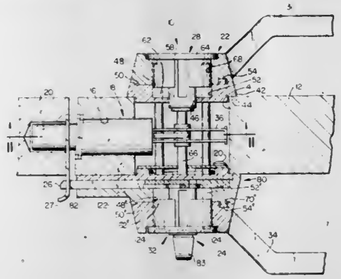
prising a pair of clasp members, pin means pivotally connecting the clasp members together for angular movement together and apart, and jaw means on said clasp members adapted for entering into said girth groove and grasping the bolt shank at the location when said clasp members are swung together about the girth groove portion of the shank, and key operated means lockable into a position about the clasp members when they are together about the girth groove portion of the bolt shank, so that said clasp members cannot be moved apart free from engagement with the bolt shank until and unless the key operated means is unlocked and removed from a position about the clasp members, said key operated means comprising an outer housing member defining an inner cavity which is open at one end and is bounded at its opposite end by an end wall, and an annular inner member within said cavity to which said clasp members are attached by means of said pin means, said annular inner member and said clasp members being telescopically received within the inner cavity of the outer housing member.

4,236,396

RETROFIT LOCK

Walter E. Surko, Jr., Southington, and LeRoy Hart, Farmington, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 16, 1978, Ser. No. 950,319
Int. Cl.[2] E05B *3/00, 9/00, 59/00;* **E05C** *1/16*
U.S. Cl. 70—107 **18 Claims**



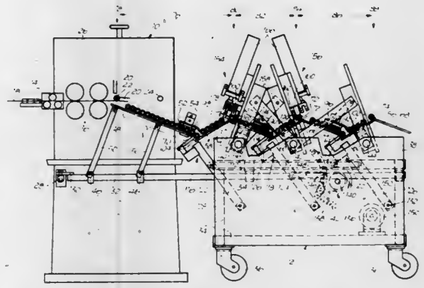
18. A lockset for a door having a transverse bore therethrough and another bore opening through one edge of the door and communicating with the transverse bore, said lockset comprising a dead bolt and a latch bolt, one of the bolts comprising said dead bolt and said latch bolt being adapted for mounting in said other bore for movement between projected and retracted positions relative to the one edge, the other of said bolts being adapted for mounting in side-by-side relation to said one bolt and generally adjacent a face of the door for movement between projected and retracted positions relative to the one edge, a first latch bolt operator, a first housing for supporting said first latch bolt operator on one face of the door and in alignment with the transverse bore to move relative to the door and the first housing, a second latch bolt operator, a second housing for mounting said second latch bolt operator on another face of the door opposite the one face and in alignment with the transverse bore to move relative to the door and the second housing, said latch bolt being movable to a retracted position in response to movement of either of the latch bolt operators, and a first dead bolt operating unit operably connected to said dead bolt for moving said dead bolt between projected and retracted positions in response to operation of said first dead bolt operating unit, the improvement comprising said first dead bolt operating unit being mounted in fixed position on said first housing, said first latch bolt operator being journalled on said first dead bolt operating unit for angular movement relative thereto, and said first housing cooperating with said first latch bolt operator to define an envelope containing said first dead bolt operating unit.

4,236,397

METHOD OF AND APPARATUS FOR PRODUCING COIL SPRINGS WITH EYELETS

Gerhard Lange, Reutlingen, Fed. Rep. of Germany, assignor to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG), Reutlingen, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,122
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741534
Int. Cl.[3] B21F *35/02, 3/02*
U.S. Cl. 72—137 **23 Claims**



1. In a process for producing coil springs formed of wire and having eyelets, in which a spring body is wound from a length of wire in a winding station, said eyelets being formed on each end of the spring body in two forming stations, spring bodies, prior to the formation of the eyelets, being transferred from the winding station into a first forming station for forming one eyelet, the spring body provided with one eyelet being thereafter transferred from the first forming station to a second forming station for forming the other eyelet, the improvement comprising the steps of:

successively arranging a plurality of spring bodies between two successive forming stations with the axes of said spring bodies parallel to each other,

transferring a transport group of spring bodies comprising at least some of said spring bodies in a step-like manner at right angles to the direction of their axes in a straight line,

stepwise maintaining the transport group of spring bodies by separating the spring body of said transport group arriving at one of said forming stations and supplying a further spring body to said transport group,

wherein the transport group is formed only by some of the successively arranged spring bodies and transferring the transport group generally upwardly and wherein a supply group is formed from some of the remaining spring bodies and transferring the supply group by gravity, and

step-wise maintaining the supply group by separating the spring body of said supply group at a transport group and by supplying a further spring body one-by-one directly from the winding station to a rear end of said supply group without passing through an intermediate hopper or container.

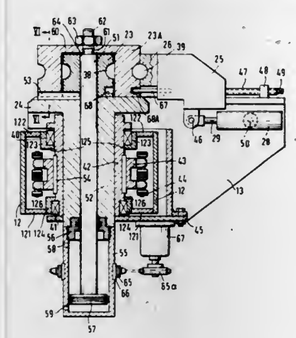
4,236,398

TUBE BENDING MACHINE

Rigobert Schwarze, Olpener Str. 460–474, 5000 Cologne 91, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,293
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746721
Int. Cl.[3] B21D *7/04*
U.S. Cl. 72—157 **8 Claims**

1. A tube bending machine comprising elongated support means; a bending table mounted on said support means tiltable about an axis; template means mounted on said bending table for tilting with the latter about said axis, said template means comprising at least two coaxially arranged templates of different diameters movable relative to each other along said axis, one of said templates being an inner bending template and the other being an outer bending template at least partly surrounding said inner bending template; means for shifting said outer bending template in axial direction relative to said inner bending template, said shifting means comprising a lifting shaft extending along said axis through said inner template and being movable in direction of said axis for lifting said outer template above said inner template; clamping means on said bending table for clamping a portion of a tube to be bent against the respective template; guide means including releasable collet means for guiding a tube to be bent in longitudinal direction towards said template means; and means for moving said guide means in a direction transverse to said longitudinal direction.

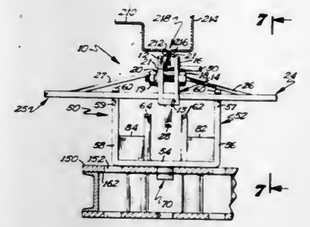


4,236,400

VEHICLE ANCHORING APPARATUS

Gerald A. Specktor, 409 Cleveland Ave. South, St. Paul, Minn. 55105

Division of Ser. No. 722,825, Sep. 13, 1976, Pat. No. 4,138,877, which is a continuation of Ser. No. 550,378, Feb. 18, 1975, abandoned. This application Jan. 8, 1979, Ser. No. 1,804
Int. Cl.[3] B21D *1/12, 11/22*
U.S. Cl. 72—461 **20 Claims**



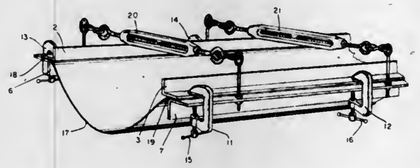
1. Apparatus for anchoring a vehicle to a support surface comprising, in combination: an elongated member for attachment to a portion of the vehicle, with the elongated member having an axis and including at least two abutment wings integrally attached to and projecting from the elongated member, with the wings being located on opposite sides of the axis; stop member for abutting with the abutment wings without physical connection for allowing the wings to slide in a vertical direction on the stop member for accepting a counterforce from the elongated member in a substantially horizontal manner through the abutment wings to the stop member to substantially reduce the necessity for use of supporting apparatus in straightening the frame of the vehicle; and means for attaching the stop member to the support surface.

4,236,399

METHOD OF FORMING A PARABOLIC TROUGH

Orlan G. Williams, 3800 S. Decatur Blvd., #36, Las Vegas, Nev. 89103, and Robert L. Skaggs, 1106 Commanche Way, Boulder City, Nev. 89005

Filed Oct. 2, 1978, Ser. No. 947,358
Int. Cl.[3] B21D *11/20*
U.S. Cl. 72—295 **9 Claims**



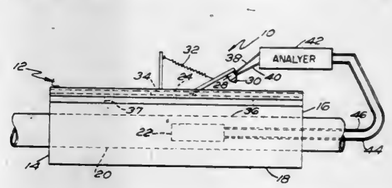
1. A method of forming a parabolic trough from an elongated strip of sheet aluminum or aluminum alloy comprises applying forces inducing equal bending moments to each lengthwise edge of the strip until the sheet has achieved a predetermined parabolic cross-section having a rim angle of at least 70°, said forces being the sole forces applied to the strip during bending, and heating the strip to a temperature above 400°F. to substantially stress-relieve the metal while maintaining the strip in parabolic configuration.

4,236,401

FREQUENCY RESPONSE TESTER

Henry P. Bakewell, Jr., Old Saybrook, and Marguerite A. Johnson, Mystic, both of Conn., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 24, 1979, Ser. No. 42,173
Int. Cl.[3] G01L *25/00;* **H04R** *29/00*
U.S. Cl. 73—1 DV **7 Claims**



1. An apparatus for determining the frequency response of an acoustic sensor of an acoustic line array comprising:

a generally elongated box having two opposite ends and the bottom thereof open and the top thereof having a longitudingal slot, said elongated box further adapted to enclose a portion of the acoustic line array including the acoustic sensor under test;

a slider means for applying a measured force upon the acoustic sensor of said acoustic line array, said slider means being slidable over the top of said elongated box; and

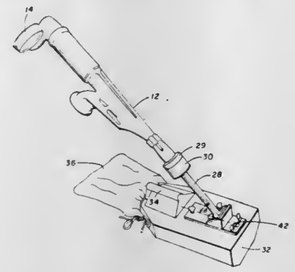
analyzer means for measuring the response of said acoustic sensor to the measured force as a function of frequency.

4,236,402

METHOD AND APPARATUS FOR TESTING ROCK TENACITY

Robert C. McGuire, Dublin, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 19, 1979, Ser. No. 31,575
Int. Cl.³ G01N *3/30, 3/48*
U.S. Cl. 73—12 **19 Claims**



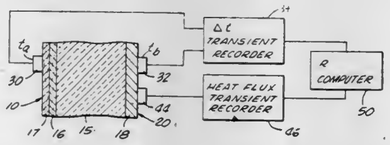
1. Method for performing strength tests on material to be mined, comprising the steps of:
(a) preparing a flat surface on the material to be tested,
(b) forming a groove in the flat surface,
(c) impacting the flat surface with a test device spaced apart from but in close proximity to the groove at a predetermined angle toward the groove and at a predetermined force which is at least as great as that necessary to break out material located between the impact point and groove,
(d) repeating step (c) at a predetermined distance from the first impact, at substantially the same force and at substantially the same angle and distance from the groove,
(e) repeating steps (c) and (d), if necessary, until optimum spacing is determined by observing the amount of material broken out between adjacent impact points.

4,236,403

MEANS AND TECHNIQUES USEFUL IN ESTABLISHING R VALUES IN INSULATION

Heinz F. Poppendiek, La Jolla, Calif., assignor to Thermonetics Corporation, San Diego, Calif.

Filed Jun. 14, 1978, Ser. No. 915,524
Int. Cl.³ G01N *25/18*
U.S. Cl. 73—15 A **2 Claims**



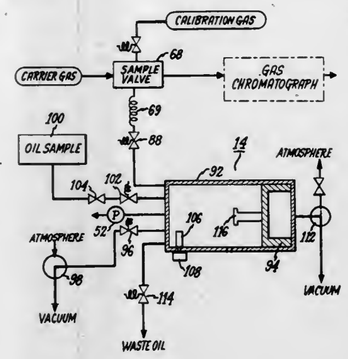
1. A method for establishing the R value of heat insulation which is located in situ in a wall of a building structure that is subjected to varying temperature conditions over a cyclical period during which heat flow through said wall is first in one direction and then later in an opposite direction which is opposite to said first direction, establishing a first series of values representing the difference in temperature at different successive times during such cyclical period when said heat flow is in said one direction and in said opposite direction, establishing a second series of values representing heat flow in the wall at said same difference successive times in said one direction and in said opposite direction, and combining said first and said second series of values to establish said R value.

4,236,404

DEVICE FOR MONITORING DISSOLVED GASES IN ELECTRICAL INSULATING LIQUIDS SUCH AS TRANSFORMER OILS

Marshall D. Ketchum, and Alexander J. Yerman, both of Scotia, N.Y., assignors to General Electric Company

Filed Aug. 31, 1976, Ser. No. 719,339
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—19 **10 Claims**



1. A monitoring device for monitoring dissolved gases in the electrical insulating liquid of an electrical apparatus comprising:
(a) valve means connected to an electrical apparatus to allow release of a portion of the electrical insulating liquid in such apparatus,
(b) a sample means connected to said valve for receiving a predetermined amount of electrical insulating liquid from the electrical apparatus,
(c) a gas extraction chamber connected to said sample means,
(d) means to evacuate said gas extraction chamber,
(e) means for moving said predetermined amount of liquid from said sample means to said gas extraction chamber,
(1) said gas extraction chamber evacuating said liquid to extract a portion of gases dissolved in said liquid,
(f) a gas chromatograph for receiving said extracted gases and analyzing the constituent parts thereof,
(g) sample valve means between said gas extraction chamber and said gas chromatograph for injecting a predetermined quantity of extracted gases into said gas chromatograph, and
(h) recording means for recording the results of said gas chromatograph analysis of said extracted gases.

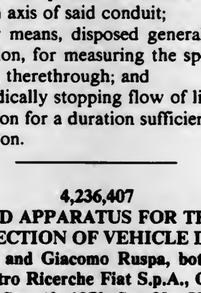
4,236,405

PENDULUM DENSIMETER

Klaus Lunstroth, 4746 Pease St., Houston, Tex. 77023

Continuation-in-part of Ser. No. 688,266, May 20, 1976, Pat. No. 4,136,551. This application Jan. 2, 1979, Ser. No. 404
Int. Cl.³ G01N *9/10*
U.S. Cl. 73—32 R **7 Claims**

1. A device for measuring the specific gravity of a fluid comprising,
a circular disk having an axis and a bore therethrough and along said axis,
a shaft extending through said bore and said disk being rotatably mounted thereon,
said disk including two circular holes therein with both positioned on one side of a diameter of the disk for displacing the center of buoyancy of the disk from said axis,
a material mounted in said disk for displacing the center of gravity of said disk from said center of buoyancy and from said axis, and



means for measuring the angular position of said disk relative to said shaft.

4,236,406

METHOD AND APPARATUS FOR SONIC VELOCITY TYPE WATER CUT MEASUREMENT

Philip W. Reed, and John D. Alexander, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Dec. 11, 1978, Ser. No. 967,938
Int. Cl.³ G01N *29/02*
U.S. Cl. 73—61.1 R **14 Claims**

9. In apparatus for determining quantitative and volumetric data of an oil-water mixture flowing in a conduit, the improvement comprising:
a metering section disposed in said conduit laterally offset from the main axis of said conduit;
sonic flowmeter means, disposed generally axially in said metering section, for measuring the speed of sound in a liquid flowing therethrough; and
means for periodically stopping flow of liquid through said metering section for a duration sufficient to allow oil and water separation.

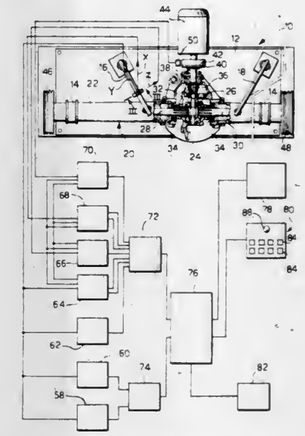
4,236,407

PROCESS AND APPARATUS FOR THE QUALITY CONTROL INSPECTION OF VEHICLE DRIVING AXLES

Alessandro Alpini, and Giacomo Ruspa, both of Turin, Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Sep. 19, 1979, Ser. No. 77,063
Claims priority, application Italy, Oct. 19, 1978, 69400 A/78
Int. Cl.³ G01M *13/02*
U.S. Cl. 73—118 **13 Claims**

1. A quality control inspection process for a vehicle driving axle of the type comprising a differential unit with a driving gear and a cooperating driven gear which are mounted in respective bearings and are arranged to transmit drive to a differential gear of the unit, and two drive half-shafts driven from said differential gear, the inspection process comprising the steps of:
mechanically coupling the driving axle to be inspected to a support structure,
rotating the said driving gear of the differential unit,
applying a resisting torque to the ends of the drive-shafts remote from the differential unit,
obtaining at different values angular velocities for each direction of rotation of the said driving gear, electrical signals indicative of the acceleration transmitted from the



axle to the support structure in terms of the components of this acceleration taken along three mutually orthogonal directions,
processing the said electrical signals so as to obtain a series of comparison parameters,
comparing the values of the said parameters obtained with corresponding predetermined reference values, and
deriving from the said comparison an indication of any functional anomalies of the said driving and driven gears of the differential unit and/or of their respective bearings.

4,236,408

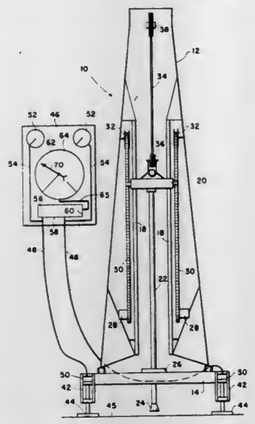
DRILLING RIG LOAD INDICATOR

Stuart E. Corry, Hallett, Okla., assignor to The Geolograph Company, Oklahoma City, Okla.

Filed Jun. 4, 1979, Ser. No. 45,393
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **2 Claims**

1. A drilling rig load indicator of the type used on mobile drilling rigs which are provided with a drill string and drill bit to drill a bore into the earth, means for applying a downward force upon said string and bit, means for applying a lifting force to raise said string and bit, a plurality of hydraulic jacks which provide means to support and level said drilling rigs, and being further provided with a hydraulic pressure source which operates said jacks; said drilling rig load indicator being composed of a hydraulic totalizer, said totalizer having an input side in fluid communication by means of conduits with said hydraulic jacks and having an output side which represents the summation of the loads upon said jacks; and a pressure indicator, said pressure indicator being connected to said output side of said hydraulic totalizer and being adapted to visually display the summation of the loads upon said jacks; wherein said drilling rig load indicator is provided with a plurality of hydraulic pressure gauges, each of said pressure gauges being connected to said conduits and being adapted to visually display the load upon one of said jacks; and wherein said pressure indicator is provided with an adjustable rotating pointer and a dial face, said dial face being provided with two adjoining sectors, whereby, the point of adjoinment of said sectors represents a

"zero" position, and from said "zero" position to the end of one of said sectors represents the amount of said downward



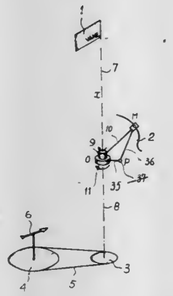
force, and from said "zero" position to the end of the second of said sectors represents the amount of said lifting force.

4,236,409

DEVICE FOR INDICATING OPTIMUM SAIL POSITION

Roland Brachet, Domaine d'Arnaga, Callian, France (83810)

Filed Oct. 20, 1978, Ser. No. 952,979
Claims priority, application France, Dec. 7, 1977, 77 36802
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—178 R **14 Claims**



1. An indicator for indicating the optimum angular position of a given sail for use on a vessel, said sail being adapted to be rotated in various positions relative to a wind, whereby the wind characteristics of said sail relative to the direction of said wind may be represented by a polar curve comprising a laminar zone, a disengagement zone, a transition zone, and a checking zone, said indicator comprising:

(a) display means for displaying the optimum angular position of said sail relative to said wind;

(b) evalution means for determining the position of said sail which corresponds to a value on said polar curve between the end of said laminar zone and the beginning of said checking zone as a function of the direction of said wind;

(c) indication means for indicating the direction of said wind to said evaluation means; and

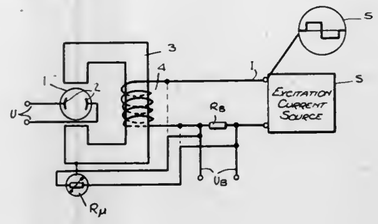
(d) driving means for driving said display means to display said optimum position whereby said driving means is adapted to drive said display means so as to display twice the value indicated by said evaluation means.

4,236,410

TEMPERATURE-COMPENSATED ELECTROMAGNETIC FLOWMETER

Eggert Appel, Dransfeld; Gottfried Geisler, Göttingen; Wilfried Kiene, Hann Munden, and Peter Nissen, Rosdorf, all of Fed. Rep. of Germany, assignors to Fischer & Porter Co., Warminster, Pa.

Filed Nov. 2, 1978, Ser. No. 956,896
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2756873
Int. Cl.³ G01F *1/60*
U.S. Cl. 73—861.12 **2 Claims**



1. A temperature-compensated electromagnetic flowmeter comprising:

A. a flow tube through which the fluid to be metered is conducted;

B. a pair of diametrically-opposed electrodes mounted on said tube;

C. an electromagnet establishing a magnetic field in said tube to be intercepted by the fluid passing therethrough to induce a signal voltage in said electrodes, said electromagnet being constituted by a magnetizable core having a coil wound thereon to which is applied periodic direct-current pulses to cause an excitation current to flow through said coil, the permeability of said core being temperature-dependent whereby the signal voltage yielded by said electrodes which is dependent on the strength of said magnetic field and is a function of the flow rate of said fluid is subject to a temperature-dependent error; and

D. compensation means responsive to changes in the temperature in the core of the electromagnet to render said signal independent of said error to produce an output signal that accurately reflects said flow rate, said compensation means including a reference resistor connected in series with said coil to produce a reference voltage that varies in accordance with the intensity of said excitation current to effect correction of said signal voltage, and a temperature-dependent resistor in thermal contact with said core and in shunt relation with said reference resistor to modify said reference voltage to compensate for the effect of temperature on said core.

4,236,411

ELECTROMAGNETIC FLOWMETER

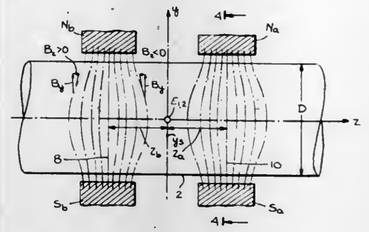
Broder Ketelsen, Settmarshausen, Fed. Rep. of Germany, assignor to Fischer & Porter Co., Warminster, Pa.

Filed Mar. 8, 1979, Ser. No. 18,832
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 **6 Claims**

1. An electromagnetic flowmeter comprising:

A a flow tube having a pair of diametrically-opposed electrodes mounted thereon, and

B an electromagnet assembly for establishing a magnetic field in the tube which is intercepted by the fluid to be metered to induce a signal in said electrodes which depends on flow rate, X being the diametrical axis connecting the electrodes, Z being the longitudinal axis of the tube and Y being a transverse axis mutually perpendicular to axes X and Z, said assembly being constituted by two pairs of electromagnets, each pair being disposed at diametrically-opposed positions on the tube exterior to produce a magnetic field whose lines of flux are substantially parallel to the Y-axis, the two pairs being disposed on either side of a plane defined by the X and Y axes to create a combined



magnetic field having a magnetic flux component whose magnitude in said plane is relatively weak and increases as one moves in either direction along said Z-axis and then decreases, thereby defining a flux magnitude pattern having a saddle-shaped formation.

4,236,412

PRESSURE TRANSMITTING APPARATUS

Alma L. Myrick, P.O. Box 119, Texarkana, Ark. 75502

Filed Feb. 27, 1979, Ser. No. 15,793
Int. Cl.³ G01L *7/16*
U.S. Cl. 73—706 **3 Claims**

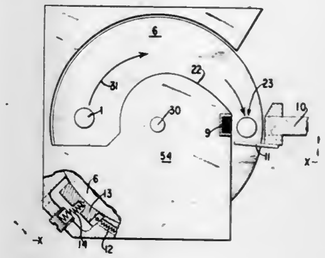
1. Apparatus for transferring pressure from a flow line having a first fluid therein to a standby line having one end in communication with said flow line, said standby line having a closed column of a second fluid and a pressure indicating means therein, said apparatus comprising a stainless steel piston mounted for limited axial movement in said standby line when subjected to pressure, said piston being disposed between said flow line and said indicating means, said standby line comprising a sleeve having said piston mounted therein, and means for limiting the axial movement of said piston in said sleeve to a short distance, said limiting means comprising inwardly extending shoulders adjacent the ends of said sleeve, the diameter of said piston being slightly less than the inside diameter of said sleeve, the outer surface of said piston and the inner surface of said sleeve being smooth, substantially cylindrical and of substantially constant diameter, and said second fluid being disposed between said piston and said sleeve to serve as a lubricating and sealing means therebetween, whereby pressure in said flow line is transferred to said piston to effect limited movement thereof and to subject said second fluid and said fluid indicating means to said pressure.

4,236,413

TESTING APPARATUS FOR TABLET-SHAPED SPECIMENS

Jürgen Schmid, Köngen, and Winfried Eggert, Oberstadion, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,440
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 7808575[U]
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—821 **2 Claims**



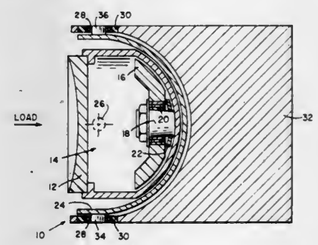
1. An apparatus for the combined measurement of the thickness and the compression strength of tablet-shaped specimens comprising a conveyor including a rotatable disc, feeding means for orienting said specimens on said conveyor, a specimen measuring station located on said conveyor downstream from said feeding means and equipped with means for thickness and compression strength measurement, said station including cleaning means for removing and cleaning from said station substantially all remnants of specimens from the compression strength measurement means, said measurement and cleaning means being serially activated, said measuring station further including a stop member adapted to stop said specimen on said conveyor at said station, and said conveyor also including a resiliently mounted brake adapted to stop the conveyor when said specimen reaches said stop member and then remove the conveyor backwards a small distance sufficient to clear said specimen from said stop member.

4,236,414

HIGH-G GIMBAL PLATFORM

Aubrey Rodgers, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 2, 1979, Ser. No. 41
Int. Cl.³ G01C *19/16, 19/26*
U.S. Cl. 74—5.1 **5 Claims**



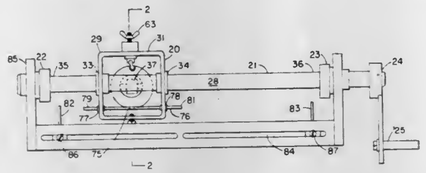
1. A platform assembly disposed for surviving a high-g launch phase comprising:

(a) a platform;

(b) a pair of gimbal members carried in gimballed relation with said platform, said gimbal members being in concentric gimballed relation therebetween;

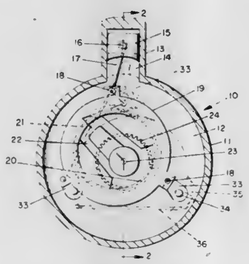
(c) complaint support means for support of said pair of gimbal members;
(d) a rotor carried supported in one of said gimbal members; and,
(e) complaint restraining means disposed between said rotor and said one gimbal member.

4,236,415
TRAVERSE MECHANISM AND METHOD
George J. Musial, W. Boxford, Mass., assignor to Gear/tronics Corporation, North Billerica, Mass.
Filed Jun. 19, 1979, Ser. No. 49,957
Int. Cl.³ F16H *25/12*
U.S. Cl. 74—25 **12 Claims**



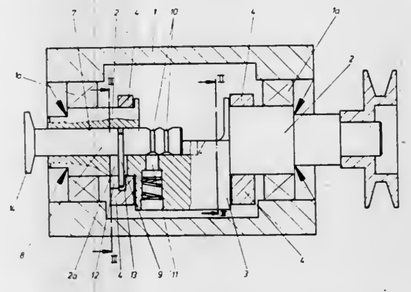
1. A traverse mechanism of the type including a carriage mounted to move longitudinally back and forth relative to an elongated rotating shaft a swivel mounted on said carriage, said swivel including a yoke and a shank with the shank rotatable around its axis in, and spring biased in the carriage, a friction roll journalled in the yoke of the swivel in frictional contact with the rotating surface of the shaft and there being stops to limit the path of the carriage by skewing the roll at each opposite end of the path said mechanism being characterized by
the shank of said swivel extending in a plane normal to the longitudinal axis of said shaft and being non-concurrent with said longitudinal axis to position said swivel yoke and friction roll alongside said shaft
means, associated with said swivel yoke and shank, for enabling said roll to swing in an arc in a plane parallel to the longitudinal of said shaft and
spring means in said carriage for resiliently urging said yoke and friction roll into frictional contact with the surface of said shaft.

4,236,416
POWER TRANSMISSION
Jose M. Barcita, 2809 Oakland Ave., Richmond, Va. 23228
Filed Sep. 28, 1978, Ser. No. 946,732
Int. Cl.² F16H *37/12*; G05G *1/00*
U.S. Cl. 74—52 **6 Claims**



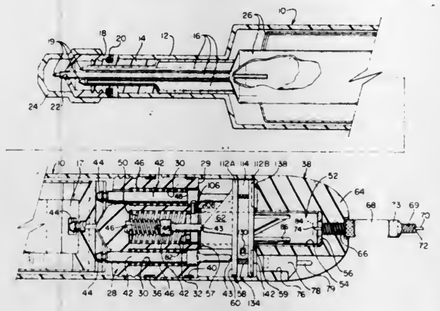
1. A power transmission comprising a power shaft, means rotatably mounting said power shaft to rotate on a fixed axis, an eccentric secured on said power shaft to rotate therewith, a power transmission ring having a circular internal bearing surface bearing on said eccentric, said eccentric being rotatably mounted within said bearing surface, support means for confining said power transmission ring to non-rotative motion as said eccentric rotates within said power transmission ring, reciprocating means, connecting rod means interconnecting said power transmission ring and said reciprocating means for converting reciprocating motion of said reciprocating means to non-rotary planetary motion of said power transmission ring and vice-versa, said connecting rod means being pivotally connected to said reciprocating means and to said transmission ring, said support means comprising a plurality of cranks equally spaced about said power transmission ring and mounted to rotate in parallel with each other, each of said cranks having a crankpin journaled in said ring in parallel to said power shaft and a crankshaft, and bearing means rotatably supporting said crankshaft to rotate about a fixed axis which is parallel to said power shaft, and means interconnecting the crankshafts of said plurality of cranks for transmitting the force applied to one of the cranks to the other of said plurality of cranks.

4,236,417
UNBALANCE OSCILLATION GENERATOR
Franz Riedl, Munich, Fed. Rep. of Germany, assignor to Wacker Werke GmbH & Co. KG, Munich, Fed. Rep. of Germany
Filed Mar. 9, 1978, Ser. No. 885,011
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710349
Int. Cl.³ F16H *33/10*
U.S. Cl. 74—87 **6 Claims**



1. As unbalance oscillation generator with constant direction of rotation and with variable resultant centrifugal force, includes: a housing, an unbalance shaft rotatably journalled in said housing and provided with an unbalance weight comprising a first part nonrotatably connected to said unbalance shaft for rotation therewith and also comprising a second part rotatably arranged on said unbalance shaft and movable into and arrestable in at least two angularly spaced positions relative to each other while the resultant of the two unbalance forces generated by the two parts varies in said at least two angularly spaced positions, a control pin projecting from said unbalance shaft in radial direction, an adjusting rod extending through a section of said unbalance shaft in the longitudinal direction thereof and having said control pin connected thereto, said adjusting rod being movable selectively into a first position corresponding to one of said angularly spaced positions of said second part of positively coupling said unbalance shaft to said second part by means of said pin to obtain a maximum centrifugal force and also being movable into a second position corresponding to the other one of said angularly spaced positions of said second part to disengage said positive coupling and in cooperation with said first and second part to obtain a centrifugal force less than said maximum centrifugal force, said second part having a circumferential groove and a recess communicating with said groove but offset relative to the latter in the longitudinal direction of said unbalance shaft, said recess being engaged by said control pin in a first position of said adjusting rod, and said groove being engaged in a second position of said adjusting rod.

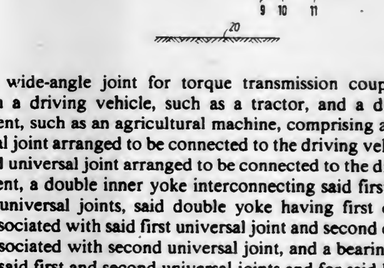
4,236,418
MULTI-ELEMENT WRITING INSTRUMENT
Victor Lum, 54 Outlook Dr., Lexington, Mass. 02173
Division of Ser. No. 831,610, Sep. 8, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,467
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—88 **4 Claims**



1. A motion conversion mechanism comprising:
first and second cams having a common axis and being nested with respect to each other in a manner permitting relative motion therebetween;
said first cam including a coaxially disposed cylindrical surface and a camming groove forming a continuous path around the periphery of said cylindrical surface, said path including excursions of a predetermined magnitude in a direction parallel to said axis;
means for mounting said first cam exclusively for linear motion in an axial direction;
means for mounting said second cam exclusively for angular motion about said axis;
at least one camming pin carried by said second cam;
means for radially biasing said camming pin into engagement with said groove; and
a plurality of steps positioned at selected points in said groove, each of said steps including a surface providing an abrupt transition between an upper depth level and a lower depth level of said groove, said step surfaces being oriented to inhibit said camming pin from traversing said steps opposite to a predetermined path direction, the groove depth between successive steps ramping up from said lower to said upper level in said predetermined path direction;
whereby an external force applied axially to said first cam causes said second cam to rotate in a predetermined angular direction, and an external torque applied to said second cam in said predetermined angular direction causes said first cam to move axially.

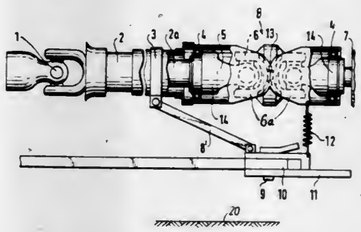
4,236,419
CLOTHES HOIST ELEVATING MEANS
Ronald J. Calvert, Edwardstown, Australia, assignor to Hills Industries Limited, Edwardstown, Australia
Filed Dec. 12, 1977, Ser. No. 859,588
Claims priority, application Australia, Dec. 15, 1976, PC8497
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—89.15 **8 Claims**

1. Elevating means for raising the elevating standard of a clothes hoist having a fixed lower standard and an upper elevating standard, comprising:
an abutment block in the fixed lower standard, said abutment block having slot surfaces including a pair of diametrically opposite parallel surfaces defining a non-circular slot extending through it,
a toothed nut of smaller diameter than the lower standard, contained within the lower standard for rotation about the polar axis of the lower standard, and supported by the abutment block,
the lower standard being a continuous tubular member but having an aperture extending through the wall thereof, adjacent but above the toothed nut,
a cover secured to said wall over said aperture, a bearing in the cover, a driving shaft journalled for rotation in the



bearing about an axis at right angles to the polar axis of the lower standard, a handle on the outer end and a pinion on the inner end of the driving shaft, said pinion meshing with said toothed nut,
a worm extending through said abutment block, said worm having a pair of diametrically opposite parallel faces engaging said parallel surfaces of the abutment block slot so as to inhibit rotation of the worm, and means on the upper end of the worm supporting said upper elevating standard,
said worm being threadably engaged by said toothed nut such that rotation of said toothed nut causes raising of the worm and thereby raising of the upper elevating standard.

4,236,420
WIDE-ANGLE JOINT
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 837,012, Sep. 27, 1977, abandoned. This application Nov. 7, 1979, Ser. No. 91,954
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644671
Int. Cl.³ F16H *35/00*; F16D *3/18*
U.S. Cl. 74—380 **2 Claims**



1. A wide-angle joint for torque transmission couplings between a driving vehicle, such as a tractor, and a driven implement, such as an agricultural machine, comprising a first universal joint arranged to be connected to the driving vehicle, a second universal joint arranged to be connected to the driven implement, a double inner yoke interconnecting said first and second universal joints, said double yoke having first outer limbs associated with said first universal joint and second outer limbs associated with second universal joint, and a bearing for each of said first and second universal joints and for said limbs associated therewith, externally situated guide means compris-

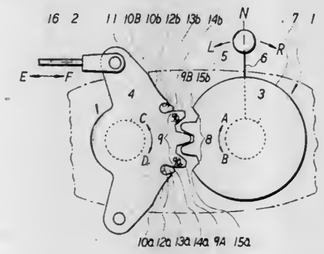
ing two gear segment pairs disposed in meshed engagement for executing a joint rolling movement in a single tilting or swiveling plane, a first said gear segment pair supported on said first outer limbs and a second said gear segment pair supported on said second outer limbs, and attachment means for connecting the driving vehicle to the driven implement spaced laterally outwardly from said first and second vehicle joints, wherein the improvement comprises an elongated spring secured at one end to the exterior of said double yoke and extending laterally outwardly therefrom transversely of the axes of said first and second universal joints and attached at its opposite end to said attachment means for rotatably maintaining the tilting plane of said two gear segment pairs at an angle of more than 0° and less than 90° relative to the surface on which the driving vehicle is supported and over which it travels pulling said driven implement and the point of attachment of said spring to the exterior of said double yoke being non-rotatable relative to said two gear segment pairs.

4,236,421

MESHING MECHANISM FOR INTERMITTENT TRANSMISSION

Masanao Baba, Takarazuka, Japan, assignor to Nippon Cable System, Inc., Hyogo, Japan

Filed Oct. 18, 1978, Ser. No. 952,448
Claims priority, application Japan, Apr. 8, 1978, 53-46474
Int. Cl.[2] F16H *57/04*; F16N *7/12*
U.S. Cl. 74—467 **3 Claims**



1. An intermittent transmission meshing mechanism prevented from depletion of lubricant comprising a toothed drive member rotatably mounted on a casing; a toothed driven member to be intermittently driven by the rotation of said drive member, said drive member having a toothed portion and a circular outer periphery continuous with the toothed portion, said driven member having a toothed portion meshable with said drive member toothed portion and an arcuate locking face formed on at least one side of and substantially continuous with said driven member toothed portion; and an oil retaining member on said driven member between the toothed portion thereof and the locking face or on the locking face, said oil retaining member having a projection projecting toward said drive member, so that when an end of the circular outer periphery of said drive member adjacent its toothed portion comes into sliding contact with the toothed portion or the locking face of said driven member, said oil retaining member slightly presses against and applies lubricant to the end.

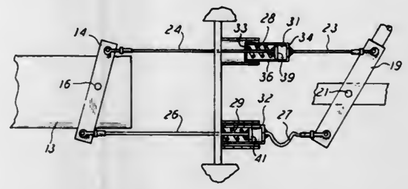
4,236,422

FLUID PUMP CONTROL SYSTEM FOR A TRACTOR

Gary L. Cochran; Charles D. Wilson, and Maurice Klee, all of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Continuation of Ser. No. 860,151, Dec. 14, 1977, abandoned.
This application Aug. 1, 1979, Ser. No. 62,639
Int. Cl.[3] G05G *1/00*
U.S. Cl. 74—470 **5 Claims**

1. A fluid pump control for a tractor having a controlled fluid pump, comprising a pivotally mounted control member maneuverable by the operator, a force-responsive member pivotally mounted and operatively associable with said pump for setting said pump in variable selectable positions of operation including a neutral position, each of said members having two oppositely extending movable ends, two compression springs disposed intermediate said members to have one spring respectively intermediate each respective two of said movable ends, four connectors spearately operatively associated between respective ones of the four of said movable ends and respective ones of said springs at effective opposite ends of each of said springs for transmitting movement of said members toward each other only through said springs, a fixed stop disposed off one end of each of said springs for limiting move-



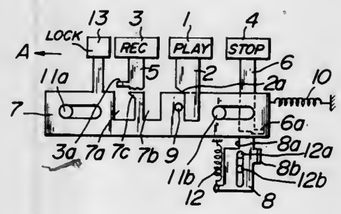
ment of each of said springs beyond said one stop, a movable abutment disposed at the other end of each of said springs to operatively relate with said springs and being freely movable relative to each other, said springs being disposed between said stop and abutment and being the only elements between said stop and abutment to yieldingly urge said abutment away from said stop, each said abutment being respectively connected with said connectors to have said springs apply force on said two connectors connected with said force-responsive member operatively associated with said pump and thereby position the latter said member in one of said variable selectable positions and later return to a pump neutral position after release of the control member.

4,236,423

OPERATION MECHANISM FOR TAPE RECORDER

Toshihiro Nakao, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1978, Ser. No. 945,847
Claims priority, application Japan, Sep. 28, 1977, 52/130022[U]
Int. Cl.[3] G05G *1/02*; G11B *15/18*; G05G *5/08*
U.S. Cl. 74—483 PB **3 Claims**



1. An operation mechanism for a tape recorder comprising a recording operation member for placing the tape recorder in a recording operational state, a reproducing operation member in the region of said recording operation member for placing the tape recorder in a reproducing operational state, a stop operation member for releasing the tape recorder from the operational states effected by said recording and said reproducing operation members, each of said recording, said reproducing and said stop operation members being movable in a certain direction, and an engaging member which is movable in a direction transverse to said certain direction for engaging

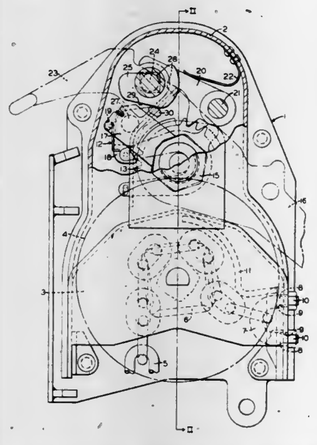
said recording operation member to prevent said recording operation member from being operated when said reproducing operation member is operated and said engaging member is in a lock position, and for allowing said recording operation member to be operated when said reproducing operation member is operated and said engaging member is in either one of a recording position and a follow-up recording position.

4,236,424

HAND BRAKE FOR RAILWAY VEHICLES

Wajih Kanjo, Midlothian; Richard J. Housman, Dolton, and Scott L. Natschke, Kankakee, all of Ill., assignors to American Standard Inc., Chicago, Ill.

Filed Feb. 8, 1979, Ser. No. 10,447
Int. Cl.[3] G05G *1/08*
U.S. Cl. 74—505 **4 Claims**



1. A ratchet operated hand brake device for railway vehicles equipped with brake rigging effective when subjected to tension for effecting a brake application, said hand brake device comprising:

(a) a casing conveniently mountable on the vehicle;

(b) a tension chain having one end anchored by a U-bolt secured to said casing by a pair of parallel legs, the other end of said chain being connectable to apparatus to which tension is to be applied such as the brake rigging, for example;

(c) a winding drum rotatable in said casing in one direction for winding the chain onto said drum and placing tension thereon, and being rotatable in an opposite direction for releasing said tension from said chain;

(d) ratchet means operably disposed in said casing and including a common ratchet wheel engageable by an operating pawl assembly and a holding pawl, said ratchet wheel having a pinion formed thereon and rotatable therewith in mesh with a gear formed on said drum;

(e) an operating handle carrying said operating pawl assembly at one end and effective, when rotated in one direction out of a normal inoperative position, for causing engagement of said operating pawl with said ratchet wheel and effecting rotation thereof and of said pinion in a corresponding direction for rotating said drum in its said one direction;

(f) said operating handle being returnable to its said normal position by rotation thereof in an opposite direction relative to its rotation in said one direction during which time said operating pawl ratchets relative to said ratchet wheel and said holding pawl engages the ratchet wheel for holding it against rotation; and

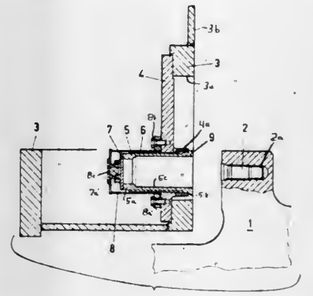
(g) a release handle including cam means engageable with both said holding pawl and said operating pawl, said cam means being effective, upon rotation of said release handle, for sequentially disengaging said operating pawl and said holding pawl, in the order named, from the ratchet wheel and consequently releasing tension from said chain.

4,236,425

BALANCING ARRANGEMENT FOR ROTATING MACHINERY

Hans Bellati, Wettingen, Switzerland, and Heinz Brünner, Waldshut, Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Jul. 5, 1978, Ser. No. 921,908
Claims priority, application Switzerland, Jul. 8, 1977, 8469/77
Int. Cl.[3] F16F *15/28*
U.S. Cl. 74—573 R **6 Claims**



1. A balancing arrangement for rotating machinery, comprising:

a rotatable member;

at least one balancing weight opening carried by the rotating member;

housing means for enclosing the rotating member having an interior pressure other than atmospheric pressure and having at least one opening to provide access both to the rotatable member and to at least one balance weight opening;

cover means for covering the at least one opening in the housing; and

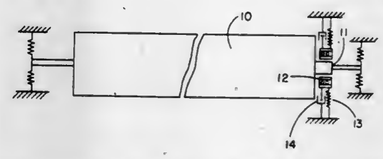
pressure lock means for permitting access to the at least one balancing weight opening while maintaining the interior pressure of the housing, the pressure lock means being carried by the cover means.

4,236,426

METHOD AND ARRANGEMENT FOR THE TRAVERSING OF THE CRITICAL ROTATIONAL SPEEDS OF ELONGATE ROTORS

Peter Meinke, Grossinzemoos, and Gernot Zippe, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to G K T Gesellschaft fur Kernverfahrenstechnik mbH, Jülich and M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1977, Ser. No. 816,800
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632586
Int. Cl.[3] F16F *15/22*; H02K *5/24*
U.S. Cl. 74—574 **32 Claims**



1. In a method for the traversing of the critical rotational

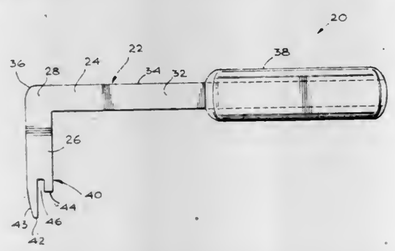
speeds of elongate rotors, the improvement comprising alternately coupling in and uncoupling to said rotor at least one critical frequency altering means positioned substantially at an end of the elongate rotor, which is held by at least one stationary support member and encompasses but does not contact nor influence the rotor during noncritical running speeds of the rotor, directly responsive to radial rotor movement and due to variation in the flexural axis of the rotor upon approach of the rotor speed to the critical rotational speeds thereof, said critical frequency altering means being coupled to said rotor at a critical rotational speed and producing a change in at least the frequencies of the critical rotational speeds, their amplitudes, or the critical rotational speeds and their amplitudes.

4,236,427

TOGGLE LATCH OPENING AND CLOSING TOOL

Larry H. Becnel, West Covina, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Filed Mar. 19, 1979, Ser. No. 21,520
Int. Cl.³ B25B *27/00*
U.S. Cl. 81—3 R **6 Claims**



1. An improved toggle latch opening and closing tool, said tool comprising, in combination:

a generally L-shaped shank comprising first and second diverging legs generally prependicularly joined together at one end of each of said legs, said second leg being rectangular in cross section; and

handle means attached to said first leg adjacent the free end of said leg, the free end of the second of said legs being extended along the shorter sides of said cross section and part of the longer sides of said cross section to form a bifurcation comprising spaced generally parallel inner and outer tines, the inner tine being relatively closer to said handle and shorter than the outer tine, adapted to releasably engage the edge of a toggle latch handle and to be slideably engaged in a toggle latch handle for opening and closing said latch.

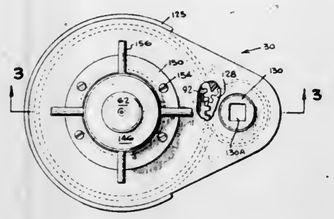
4,236,428

CANOPY CUTTING DEVICE

William C. Feamster, III, 4013 Nina Dr., Chesapeake, Va. 23321

Filed Mar. 7, 1978, Ser. No. 884,245
Int. Cl.³ B23B *3/24*
U.S. Cl. 82—4 R **3 Claims**

1. A cutting device for machining canopies and the like in constricted spaces, said device comprising a stub shaft mountable coaxially with respect to the canopy to be machined and having a threaded free end, a bearing mounted on said stub shaft for axial movement with respect thereto, a housing including a base plate fixedly connected to said bearing for axial movement therewith, a ring gear mounted on said bearing for rotation about said bearing, a cutting tool mounted on said ring gear, a pinion gear mounted for rotation on said housing and engageable with said ring gear, means for driving said pinion gear and means for advancing said cutting tool along said axis during rotation of the tool carrier including a feed nut rotatably mounted on said housing and threadably engageable with the threaded free end of said stub shaft to thereby advance the housing and the cutting tool as a unit along said axis as the feed



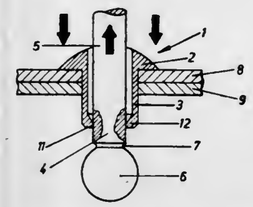
nut is rotated about the stub shaft thereby permitting removal of a canopy or the like.

4,236,429

BLIND RIVET

Gernot Dolch, Romerstrasse 216, 6900 Heidelberg 1, Fed. Rep. of Germany

Continuation of Ser. No. 622,578, Oct. 15, 1975, abandoned.
This application Dec. 30, 1976, Ser. No. 755,664
Int. Cl.³ F16B *13/06*
U.S. Cl. 85—72 **5 Claims**



1. A blind rivet type fastening device comprising:

a thermo plastic hollow rivet and an integrally formed plastic setting mandrel made of the same material as the hollow rivet, said hollow rivet having an unbroken, continuous wall, hollow tubular cylindrical shank having a set head at one end of the tubular shank, said setting mandrel having a cylindrical draw shank telescopically received within said tubular rivet shank and being spaced from the tubular rivet shank by a cylindrical gap, and an enlarged mandrel head having a diameter larger than the internal diameter of the tubular rivet shank, said mandrel head extending axially beyond said tubular shank;

a first frangible break joint extending radially inwardly from the end of the tubular shank towards the draw shank, bridging said space by a bead portion which establishes a readially inwardly tapered end of a blind bore establishing said cylindrical gap, said first joint and bead portion being an integral connection between the tubular shank and the draw shank of the mandrel;

a second frangible break joint axially beyond said tubular shank and located between said draw shank and said mandrel head whereby axial force exerted on the mandrel draw shank to pull the mandrel head into the tubular shank will first break the first break joint by shear forces without imposing fracturing stress on the second break joint to permit axial movement of the mandrel and pull the mandrel head into the tubular shank to form the tubular shank into a closure head having outwardly bulging contour corresponding to the contour of the mandrel head whereby said bead portion being a thickened end of the shank grips around and hugs the mandrel head; and

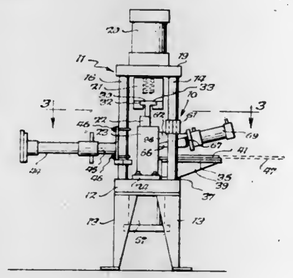
further axial force will break the second break joint to disconnect the draw shank from the mandrel head and permit withdrawal of the draw shank from the tubular rivet shank to leave the hollow tubular rivet shank unoccupied between its set head and said enlarged mandrel head.

4,236,430

SWING-AWAY HOLD-DOWN CONSTRUCTION FOR BAR OR BILLET SHEAR

James A. Hitt, Lakeview, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,034
Int. Cl.³ B23D *33/02*; B26D *7/02*
U.S. Cl. 83—461 **9 Claims**



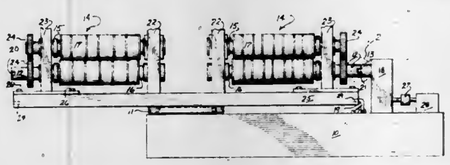
5. A hold-down construction for a shear for shearing workpieces from an elongated metal member comprising an elongated beam having first and second ends and a central portion therebetween, first means on said first end for pivotally mounting said beam on a first portion of said shear, second means on said second end for selectively fastening said beam to a second portion of said shear, hold-down means for engaging said elongated member, means for mounting said hold-down means on said central portion, whereby said elongated beam with said hold-down means thereon may be swung about said first portion when said second means is unfastened, said first portion of said shear comprising a first post on said shear, a first reduced size portion on said first post, a first bore on said first end of said elongated beam for receiving said first reduced size portion in mating relationship, said second portion of said shear comprising a second post on said shear, a second reduced size portion on said second post, said elongated beam including a block which is separable from the remainder thereof and coacts therewith to define a second bore at said second end for receiving said second reduced size portion in mating relationship, and fastening means for fastening said block to said remainder of said beam in clamping relationship with said second reduced size portion.

4,236,431

MULTIPLE HEAD SLITTER

Charles B. Gawlik, Chicago, Ill.; James D. Hall, South Bend, Ind., and Douglas S. Matsunaga, Vernon Hills, Ill., assignors to Braner Enterprises, Inc., Schiller Park, Ill.

Filed Jan. 18, 1979, Ser. No. 4,351
Int. Cl.³ B23D *19/06*; B26D *1/24*
U.S. Cl. 83—479 **4 Claims**



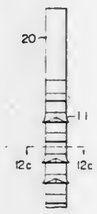
1. A multiple head slitter having a material pass line and including a frame, a plurality of slitter heads, each slitter head including a pair or arbors, means carried by said frame for supporting said slitter heads for rotation about a common vertical axis with the arbors of the slitter heads passing in a generally horizontal plane, each slitter head including an inboard bearing housing located adjacent said axis of rotation and an outboard bearing housing spaced generally radially relative to said axis from said inboard bearing housing with said pair of arbors thereof journaled between said housings, whereby a selected slitter head can be positioned with its pair of arbors extending across said material pass line, the improvement wherein said one arbor of the selected slitter head includes an extending end portion projecting outwardly from one of said outboard bearing housing and inboard bearing housing of the slitter head, driving means carried by said frame for rotating said one arbor when engaged with said extending end portion thereof, one of said arbor extending end portion and said driving means including a projecting part means for fitting in rotating locking engagement into said slotted part, said driving means being fixedly located relative to said axis of rotation of the slitter heads wherein upon rotation of the slitter heads about the axis of rotation said projecting part means will be fitted into said slotted part at alignment of said arbor extended end portion with the driving means to permit the driving means to rotate said arbor extended end portion and the arbor thereof.

4,236,432

FRET SAW BLADE HAVING SAW-TEETH PROVIDED WITH SETS AND AN AUTOMATIC FRET SAWING MACHINE HAVING THE FRET SAW BLADE

Hideo Kawakami; Masami Endo, both of Numazu, and Fumio Yamazaki, Fuji, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,173
Claims priority, application Japan, Sep. 17, 1977, 52-111952
Int. Cl.³ B27B *19/10*
U.S. Cl. 83—848 **1 Claim**



1. In a fret saw blade used for a numerically controlled automatic fret sawing machine and adapted to cut wood material, said fret saw blade having a shank, saw-teeth having non deformed cutting edges and at least one saw-tooth having a cutting edge the center of which is deformed to form sets, the improvement in which the cutting edge of said deformed saw-tooth is constructed to have a V-shaped groove extending substantially the full width of the saw tooth in order to form narrow sharp ends at both ends of the V-shaped groove projecting substantially horizontally beyond the side surfaces of said shank, whereby said fret saw blade can cut a wood material along a predetermined profile by preventing the deviation of said saw blade caused by fiber orientation of the wood material from said profile.

4,236,433

ELECTRIC STRING INSTRUMENT

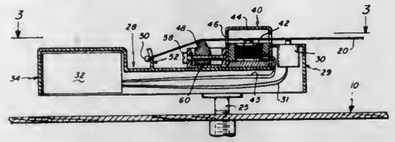
Stephen Holland, 80 Madison Ave., Watertown, Mass. 02172

Filed Apr. 2, 1979, Ser. No. 25,784
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **15 Claims**

1. A stringed musical instrument comprising;

a body having a neck,

a plurality of strings,
means mounting the strings to the body at the neck to thus support one end of each string,
a pickup means associated with a string for receiving a signal proportional to the vibration of the string,
amplifier means receiving said signal,
driver means also associated with the string and driven from said amplifier means for causing a sustaining vibration of the string,



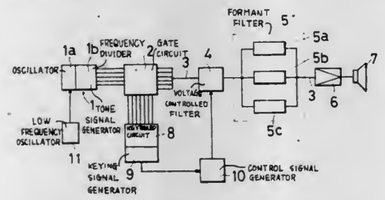
common support means for the pickup means, amplifier means and driver means and including means defining a anchor means for the opposite ends of the strings to maintain the strings in tension and means defining a bridge disposed spaced along the strings from the anchor means, and means securing the common support means from the instrument body.

4,236,434

APPARATUS FOR PRODUCING A VOCAL SOUND SIGNAL IN AN ELECTRONIC MUSICAL INSTRUMENT

Koji Nishibe, Saitama, Japan, assignor to Kabushiki Kaisha Kawai Sakki Susakusho, Hamamatsu, Japan

Filed Apr. 19, 1979, Ser. No. 31,482
Claims priority, application Japan, Apr. 27, 1978, 53-4929553; Apr. 28, 1978, 53/5081553; Apr. 28, 1978, 53/5081653
Int. Cl.[3] G10H *1/00, 1/12, 5/00*
U.S. Cl. 84—1.19 **9 Claims**



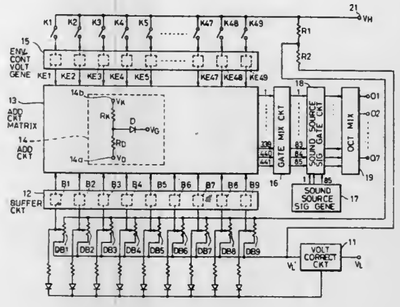
1. An electronic musical instrument for producing a vocal sound signal comprising musical tone signal generator means, a passing circuit connected to said musical tone signal generator means to pass a musical tone signal produced thereby, key means for selecting the musical tone signal to be fed from the musical tone signal generator means to said passing circuit, formant filter means connected in said passing circuit and including a plurality of filters connected in parallel to one another, and means coupled to said key means and to said formant filter means for producing in said passing circuit, after said formant filter means, two output signals in sequence, upon operation of said key means, one of said output signals being a vowel sound and the other of said output signals being a consonant sound whereby a vocal sound is obtained by the combination of the consonant and vowel sounds in sequence.

4,236,435

KEYING SYSTEM IN AN ELECTRONIC MUSICAL INSTRUMENT

Minoru Kakita, Hino, and Tsuneo Kosugi, Hachiohji, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 15, 1978, Ser. No. 906,347
Claims priority, application Japan, May 16, 1977, 52-56137
Int. Cl.[3] G10H *1/06*
U.S. Cl. 84—1.22 **5 Claims**



1. A keying system in an electronic musical instrument having a keyboard with keys which respectively correspond to letter names, the system comprising: means for generating harmonic level control voltages for controlling the levels of harmonics, inclusive of the first harmonic; means corresponding to the keys of the keyboard of the musical instrument being responsive to manipulation of said keys for generating envelope control voltages, the number of envelope control voltages corresponding to the number of keys; means for generating a medium voltage of a value between the maximum value of said envelope control voltages and the minimum value of said harmonic level control voltages; addition means comprising circuits each of which adds an envelope control current and a harmonic level control current to produce an output current, wherein the envelope control current is proportional to the voltage difference between each of said envelope control voltages and said medium voltage, and the harmonic level control current is proportional to the voltage difference between each of said harmonic level control voltages and said medium voltage; mixing means for respectively mixing output currents from the addition means corresponding to depressed keys having the same letter names with one another from the output currents of said addition means to produce gate control voltages which are respectively proportional to the sums of said output currents corresponding to depressed keys having the same letter names; a sound-source circuit for generating sound-source signals of frequencies of harmonics, inclusive of the fundamental tone, corresponding to the keys; and means for respectively gating the sound-source signals of the frequencies of the letter names corresponding to said gate control voltages among the signals from said sound source circuit, through the use of the gate control voltages of said mixing means.

4,236,436

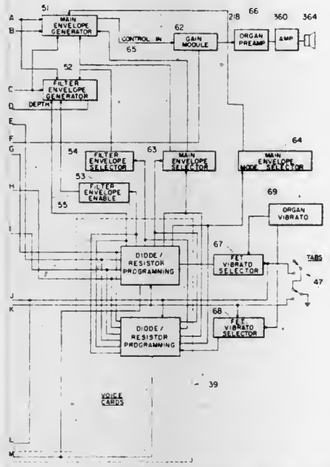
ELECTRONIC MUSIC SYNTHESIZER

Ralph N. Dietrich, Georgetown; John W. Robinson, and Stephen L. Howell, both of Jasper, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Nov. 8, 1978, Ser. No. 958,731
Int. Cl.[3] G10H *1/057, 1/08, 1/12*
U.S. Cl. 84—1.26 **23 Claims**

1. A music synthesizer comprising:
tone generator means for producing a plurality of tones,

keyboard controlled means for selecting one of said tones when a key of said keyboard is actuated,
footage generating means connected to said tone generator means for generating a plurality of tones octavely related to said selected tone,
a connector element having a plurality of output terminals and at least one input terminal, said footage generating means placing said tones generated thereby respectively on said connector element terminals,
a multiple element programmable electronic circuit module removably connected to said connector element and having a plurality of input terminals which contact the output



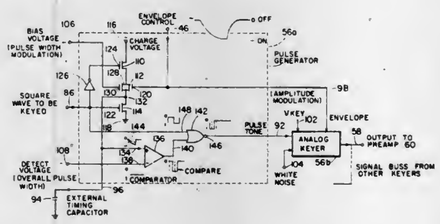
terminals of said connector element and an output terminal which contacts the input terminal of said connector element when said module is connected thereto,
a resistive circuit means on said module connected to the terminals of said module for resistively summing the octavely related tones to produce a composite tone having a particular wave shape on the output terminal of said module, and
programmable circuit means connected to said connector element input terminal for modifying said composite tone to produce a synthesized tone having predetermined static and dynamic frequency and amplitude characteristics.

4,236,437

ORGAN BRASS PULSE KEYER

Stephen L. Howell; John W. Robinson, both of Jasper, Ind., and Donald Kube, San Jose, Calif., assignors to Kimball International, Inc., Jasper, Ind.

Filed Mar. 26, 1979, Ser. No. 23,699
Int. Cl.[3] G10H *1/02*
U.S. Cl. 84—1.26 **14 Claims**



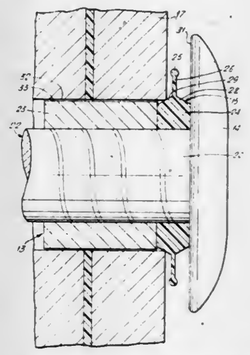
1. In an electronic organ, a circuit for producing a pulse train having a time varying duty cycle comprising:
a source of keyer potential having an envelope with predetermined attack and decay characteristics,
a source of square wave tone signal,
a timing circuit including a capacitor and having a time constant,
electronic switch means connected to said timing circuit for charging and discharging said capacitor on respective alternate half cycles of said tone signal, said switch means including variable impedance means having a control terminal connected to said source of keying potential for varying the time constant of said timing circuit in accordance with said keying potential,
comparator means including a first input connected to said capacitor, a second input connected to a reference potential, and an output, said comparator means comparing the voltage on said capacitor with said reference potential and producing a triggering signal on said output whenever the voltage on said capacitor one of exceeds or falls below said reference potential, and
means connected to said comparator output and to said tone signal for gating said tone signal with said triggering signal to produce an output pulse train having a time varying duty cycle.

4,236,438

SEAL FOR HEADED PIN FASTENER MEMBER

Hugh K. McGauran, Harlow, and Frederick A. Summerlin, Wheathampstead, both of England, assignors to Aerpat A.G., Weidstrasse, Switzerland

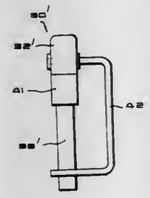
Filed Dec. 12, 1978, Ser. No. 968,736
Claims priority, application United Kingdom, Dec. 13, 1977, 51833/77; Jan. 25, 1978, 3010/78; May 18, 1978, 51833/78
Int. Cl.[3] F16B *43/00*
U.S. Cl. 85—1 JP **2 Claims**



1. A resilient seal for sealing between the head end of a headed pin fastener member and an apertured workpiece in which the pin is to be installed, which seal comprises:
an outer annular part for sealing between the pin head and the workpiece around the aperture;
and an inner annular part for fitting around the pin adjacent to the head;
said inner annular part projecting beyond the thickness of the outer annular part in a direction perpendicular thereto and being tapered on the face thereof which is towards the outer annular part to provide wedging engagement between the pin and the aperture wall when the pin is inserted into the aperture so as to initially retain the pin in the aperture;
said inner annular part also projecting on both sides of the outer annular part and being tapered on said face at both sides of said outer annular part so that the seal is substantially symmetrical whereby the seal can be assembled on the pin either way round;
the seal further comprising a frangible weakened portion

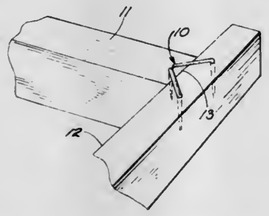
connecting said outer annular part to said inner annular part, said weakened portion being imperforate and continuous and having a lesser thickness than the said outer annular part, whereby said frangible weakened portion, when the pin head is drawn towards the workpiece, breaks and thereby enables the outer annular part to remain around the aperture as aforesaid whilst the inner annular part enters completely within the aperture.

4,236,439
LOCKABLE PIN
Kishio Imai, Itami, Japan, assignor to Sanyo Kiki Kabushiki Kaisha, Itami, Japan
Filed Aug. 11, 1978, Ser. No. 932,764
Claims priority, application Japan, Aug. 11, 1977, 52-96666; Aug. 11, 1977, 52-96667
Int. Cl.[2] F16B *19/00*
U.S. Cl. 85—5 CP **1 Claim**



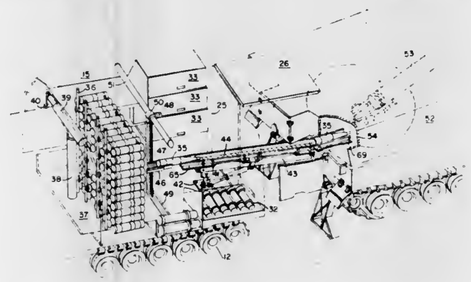
1. A lockable pin comprising a pin body having a head portion fixedly connected to a stem portion at an upper portion thereof, said stem portion being insertable through a transverse bore formed in a shaft to be locked, an elastic member disposed around said stem portion and having one end thereof fixed to said upper portion of said stem portion of said pin body, and a locking element pivotally attached to said head portion, the arrangement being such that by depressing said pin body as a whole against the elastic force of said elastic member with said elastic member between said head portion and an outer peripheral surface of said shaft, the locking element is directly fitted in an annular groove formed in said shaft at its end.

4,236,440
TRUSS STAPLE
Terry M. Haber, 2212 DuPont, Suite R, Irvine, Calif. 92715
Filed Aug. 31, 1978, Ser. No. 938,377
Int. Cl.[3] F16B *15/00*
U.S. Cl. 85—49 **2 Claims**



1. A truss staple comprising an integral metal wire formed into a general V-shape with the vertex of the V bent downwardly 90° to define a front punching element and the diverging arms of the V terminating in downturned ends defining spaced rear punching elements generally parallel to each other and to said front punching element, the end points of said front punching element and rear punching elements defining the vertices of a right isosceles triangle whereby first and second work members intersecting at right angles to define a joint can be fastened with said staple by forcing one of said punching elements into one member on one side of the joint and the remaining two punching elements in the other of said members on the other side of said joint so that said members are stabilized against lateral and swinging movements relative to each other at said joint.

4,236,441
FIELD ARTILLERY AMMUNITION SUPPORT VEHICLE
John Turner; Richard A. Koster, and Seymour Bassman, all of York, Pa., assignors to Harsco Corporation, Harrisburg, Pa.
Filed Apr. 24, 1979, Ser. No. 32,908
Int. Cl.[3] F41H *7/02*
U.S. Cl. 89—40 F **10 Claims**

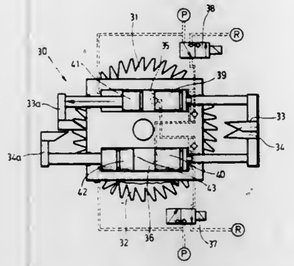


1. A field artillery ammunition support vehicle having a self-propelled armored tracked chassis and a forward driving position comprising:
an armored enclosed housing mounted on the chassis behind the driving position;
a rear wall for said housing away from the driving position;
an armored door in said rear wall, spaced side walls and a front wall for said housing;
compartments disposed within said housing along said side walls for receiving propellant charges;
door closing said compartments;
a plurality of adjacent cells disposed within and adjacent a side wall to adjacent the other side wall of said housing and spaced from said front wall for receiving at least one projectile in each of said cells;
an elevator movably mounted within said housing adjacent said cells for receiving at least one projectile from a selected one of said cells;
a horizontally disposed conveyor mounted within said housing and between said elevator and said door for moving projectiles from said elevator through said door;
reversible power means driving said elevator, and reversible power means driving said conveyor.

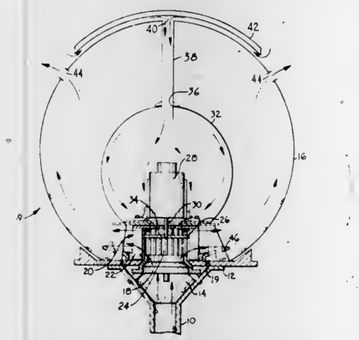
4,236,442
DIGITALLY COMPATIBLE SERVOMOTOR
Ludwig Botzler, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany
Filed Dec. 18, 1978, Ser. No. 970,739
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757612
Int. Cl.[3] F15B *9/10*
U.S. Cl. 91—375 R **10 Claims**

1. A digitally compatible servomotor comprising, stepping motor means (**30**), servocylinder means (**12**) including first and second chamber means, piston means (**11**) axially slidable in said first chamber means of said servocylinder means, threaded spindle means (**13**) operatively engaging said piston means (**11**), control disk means (**14**, **15**, **16**) operatively arranged in said second chamber means of said servocylinder means in axial alignment with said threaded spindle means, one end of said threaded spindle means being rigidly connected to said control disk means, connector means (**24**) operatively connecting said

stepping motor means (**30**) to said control disk means, said stepping motor means comprising two oppositely toothed operatively interconnected ratchet wheel means, and hydraulically operable claw means operatively arranged for driving said ratchet wheel means and for locking said ratchet wheel means in a rest position.

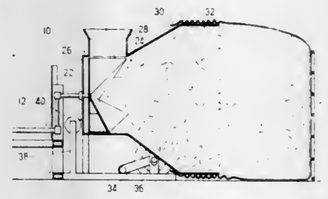


4,236,443
CHIMNEY STACK EXHAUST UNIT
George W. Schossow, 2316 Lilac La., White Bear Lake, Minn. 55110
Continuation of Ser. No. 894,726, Apr. 10, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 64,185
Int. Cl.[3] E04F *17/02*
U.S. Cl. 98—58 **8 Claims**



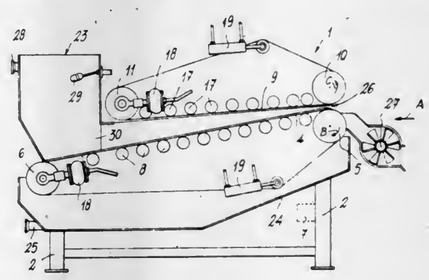
1. A chimney stack exhaust unit comprising:
(a) a first, generally closed, spherical housing having a top portion and a bottom portion, said housing including a first opening in said bottom portion adapted to fit over a chimney stack mouth, plurality of second, outlet openings spaced annularly about said top portion of the housing, and a third opening in said top portion;
(b) a squirrel cage fan mounted generally horizontally within the first housing above and adjacent to the first opening, whereby rotation of the fan draws exhaust air upwardly through the stack and forces said exhaust air outwardly and upwardly in a swirling motion around the inside walls of the first housing;
(c) an electric motor mounted within the first housing above the fan, and means connecting said motor and the fan whereby the fan may be driven by the motor;
(d) a second, generally closed housing having top and bottom portions mounted within the first housing and enclosing the motor, said second housing including a blower opening in said bottom portion directly above the fan, and an upper opening in said top portion; and
(e) a conduit extending between the upper opening in the second housing and the third opening in the first housing, whereby rotation of the fan draws air from outside the first housing into its third opening, downwardly through the conduit, into the second housing via its upper opening, and outwardly into the first housing via the lower opening in the second housing.

4,236,444
FORAGE PRESS
Leroy J. Seffrood, Rte. #1, South Wayne, Wis. 53587
Filed Apr. 16, 1979, Ser. No. 30,108
Int. Cl.[3] A01F *25/16;* **B65G** *3/04*
U.S. Cl. 100—65 **10 Claims**



1. A forage press for use in filling a collapsible forage receptacle comprising:
a tapered injection chamber adapted to be inserted into the forage receptacle;
a press chamber connected to the injection chamber;
a feed chute connected to the press chamber so that forage may be supplied therethrough to the press chamber;
a drive connection adapted to be connected to an external source of power; and
a press wheel located in the press chamber and connected to the drive connection so as to be driven thereby to rotate about an axis, the press wheel being of a generally circular shape and being divided into a plurality of sectors, each of the sectors being canted at an oblique angle relative to the rotational axis and to the plane of rotation of the press wheel so as to press forage through the injection chamber into the forage receptacle as the press wheel is rotated.

4,236,445
CONTINUOUS BELT FILTER PRESS
Raffaello Sernagiotto, Via Sant 'Anna 9, Casteggio (Pavia), and Emilio Sernagiotto, Via Bobbio 36, Voghera (Pavia), both of Italy
Filed May 3, 1979, Ser. No. 35,892
Claims priority, application Italy, May 4, 1978, 23012 A/78
Int. Cl.[3] B30B *9/24*
U.S. Cl. 100—118 **7 Claims**



1. A continuous filter press for treating general products, particularly grapes and dregs of pressed grapes, comprising: a vat for the collection of liquid; a pair of moving belts arranged in overlapping relationship, at least the lower belt of the pair of belts having openings for the percolation of the liquid and collection of the liquid in said vat; a loading hopper overhanging a portion of said lower belt; means for varying the angle of

convergence between said pair of belts; and side sealing means disposed along the edges of each of said belts, said sealing means being adjustable in height in order to follow the convergence between said pair of belts.

4,236,446

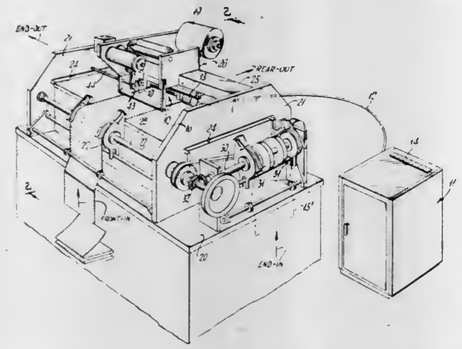
CHECK-DIGIT PRINTING MEANS

Vincent Lovrich, Waldwich, and George J. Sundell, River Edge, both of N.J., assignors to Autographic Business Forms, Inc., Mahwah, N.J.

Continuation-in-part of Ser. No. 879,595, Feb. 21, 1978, abandoned. This application Dec. 19, 1978, Ser. No. 971,107

Int. Cl.³ B41L *45/00;* **G08C** *25/00*

U.S. Cl. 101—79 **26 Claims**



1. In a document printer with means for feeding successive documents to be successively serial-number printed in successive printing cycles, said printer including a sequentially indexible numerical print head and means synchronized with the printing cycle for numerically indexing said head in predetermined equal successive increments from one to the next printing cycle, the improvement which comprises indexible decimal check-digit print means carried by said printer and including means synchronized with said printing cycle for check-digit imprinting of each successive document in accordance with the indexed position of said check-digit print means, and further means synchronized with said printing cycle for changing the indexed position of said check-digit print means in accordance with each successive index increment required by a particular weighted-modulus system of computing check-digits, said further means including decimal-indexing drive means for said check-digit printing means, an indexible cyclic storage device having a number of discrete storage units per cycle corresponding to the particular modulus number involved, said storage device producing ann output reflecting the currently indexed storage condition thereof, a plurality of control devices having control connection to said storage device and settable uniquely for each digit position within the serial-number capacity of said print head, said control devices being preset to determine different unit-indexing control of said storage device in accordance with the requirements of the particular weighted-modulus system, means responsive to the instantaneous serial-number setting of said print head and determining which digit position of the serial number undergoes a single-digit change other than to zero for each successive printing cycle, said last-defined means producing for each printing cycle an output connection to that particular control device which is uniquely set for the particular digit position undergoing the single-digit change other tnan to zero, and a control connection from said storage device to said decimal-indexing drive means, whereby said check-digit printing means may be reset in synchronism with said printing cycle for check-digit printing in accordance with the currently indexed condition of said storage device.

4,236,447

PRINTING COLUMN NUMBER LIMITING DEVICE

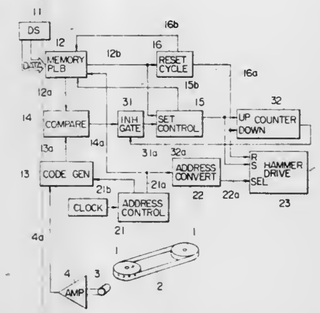
Kazuo Matsuzaki; Shigenobu Katagiri, and Hiroshige Nakano, all of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 950,109

Claims priority, application Japan, Oct. 8, 1977, 52/121239

Int. Cl.³ B41J *1/20*

U.S. Cl. 101—93.14 **8 Claims**



1. In a printer having a type carrier, a data storage means having stored therein a printing data code, a sensor to determine the instantaneous position of type on said carrier and a comparator for comparing said printing data code with the instantaneous position of said type and generating a drive signal to a hammer drive mechanism to effectuate a printing operation, said printer having a control system for limiting the number of printing operations which may be effectuated at any one time, the improvement comprising:

reset means for generating reset signals to terminate a printing operation;

reversible counter means for maintaining a count value therein, said reversible counter means increasing said count value in response to each said drive signal and decreasing said count value in response to each said reset signal; and

means for inhibiting said drive signals when the value in said counter means is in excess of the maximum permissible number of simultaneous printing operations.

4,236,448

VIBRATION DAMPING MECHANISM IN A ROTARY PRINTING PRESS

Erich G. Wieland, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,550

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2835960

Int. Cl.³ B41F *5/00;* **F16G** *1/26;* **B41F** *13/00*

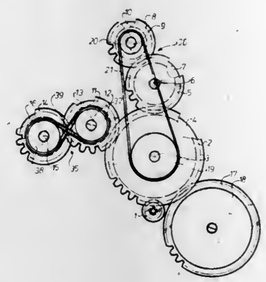
U.S. Cl. 101—216 **7 Claims**

1. A vibration damping assembly for damping vibration in a gear drive of a rotary printing press, the printing press having at least first and second rotating cylinders, each of the cylinders having a gear secured thereto, the gear carried by each cylinder being in engagement with the gear of an adjacent cylinder to form the gear drive of the printing press, to drive the cylinders at a first speed ratio, the vibration damping assembly comprising:

a first belt pulley secured to the first cylinder;

a second belt pulley secured to the second cylinder; and

a drive belt connecting said first and second belt pulleys, said first and second belt pulleys being of a size to have a speed



ratio less than the speed ratio of the corresponding cylinders.

4,236,449

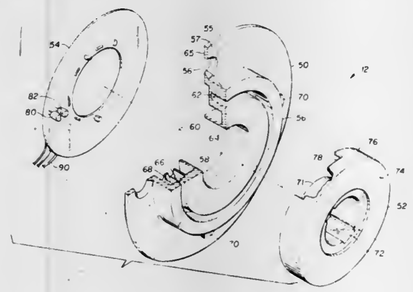
PASTER PILOT SENSOR FOR PRESS

Earl T. Price, San Jose, Calif., assignor to Earl T. Price, San Jose, Calif.

Filed May 29, 1979, Ser. No. 43,525

Int. Cl.³ B65H *19/16, 25/04, 25/10, 25/28*

U.S. Cl. 101—228 **3 Claims**



1. In a continuous paper feed printing press having a paper feeder with a rotary hub and a stationary mount, a pilot sensor for generating a signal indicative of hub rotation speed and position comprising:

an annular stator for mounting to said stationary mount about said hub, said stator including means defining an annular slot concentric with respect to a central axis through said stator, said slot-defining means comprising an inner ring and an outer ring, means defining a cavity in said inner ring at an outwardly disposed margin and said slot and having a first opening to said slot, and means defining a second cavity in said outer ring at an inwardly disposed margin of said slot and having a second opening to said slot such that said first opening opposes said second opening on a radius through said central axis;

a rotor including means for fixedly mounting said rotor to said hub, said rotor comprising an annular disk portion extending radially of a central axis and an annular lip portion adjoining said annular section, said lip portion extending parallel to said axis and concentrically about said axis, said lip portion being adapted to be placed within said stator slot at any relative rotational angle when said rotor is mounted to said hub and when said stator is affixed to said stationary mount for blocking said first opening from said second opening, said rotor further including means defining an aperture circumferentially in said lip portion of a predetermined circumferential extent and of a predetermined radial location relative to said predetermined hub angular position, said aperture being operative to unblock said first opening from said second opening for a predetermined angular displacement of said hub;

an optical radiation source disposed within one of said cavities for directing radiation from one of said openings to the other one of said openings; and

an optical radiation detector disposed in the other one of said cavities for receiving and sensing optical radiation from said optical radiation source whenever said aperture unblocks said first opening from said second opening for producing a signal indicative of rotational speed and rotational position of said hub.

4,236,450

INSTALLATION FOR THE CONTINUOUS CLEANING OF A WIPING ROLLER OF A MACHINE FOR COPPER-PLATE PRINTING

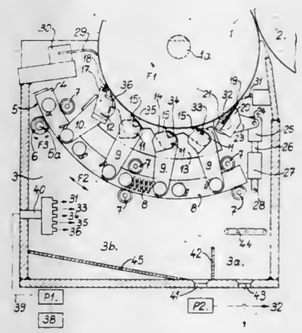
Antonio Bonomi, Lausanne, Switzerland, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed Sep. 9, 1977, Ser. No. 831,916

Claims priority, application Switzerland, Sep. 17, 1976, 11801/76

Int. Cl.³ B41F *35/00*

U.S. Cl. 101—425 **8 Claims**



1. In a printing apparatus having a rotatable wiping cylinder and a receptacle for cleaning fluid, the receptacle being arranged to receive a portion of the periphery of the wiping cylinder without the wiping cylinder dipping into cleaning fluid within the receptacle, a plurality of cleaning members in said receptacle arranged below the axis of the wiping cylinder spaced downstream in the direction of rotation of the wiping cylinder and disposed for engaging the periphery of the wiping cylinder, and a plurality of rows of nozzles disposed along each of said cleaning members upstream thereof in said direction of rotation for each continuously wetting the periphery of said wiping cylinder with cleaning fluid at each corresponding zone of contact of each corresponding cleaning member with said periphery of the wiping cylinder, means to supply cleaning fluid to said nozzles, a main cleaning scraper in said plurality of cleaning members disposed for engaging the periphery of the wiping cylinder upstream of said plurality of cleaning members relative the direction of rotation of the wiping cylinder, the main cleaning scraper subtending an acute angle with the periphery of the wiping cylinder located downstream of the main cleaning scraper in the direction of rotation of the wiping cylinder, the nozzles of a row of nozzles between the main cleaning scraper and a cleaning member of said plurality immediately downstream of said main cleaning scraper having orifices for directing cleaning fluid in the direction of the apex of said acute angle, and a row of nozzles upstream of said main cleaning scraper for directing cleaning fluid in the direction of said acute angle.

4,236,451

SELF-PROPELLING PROJECTILE FOR FIREARMS

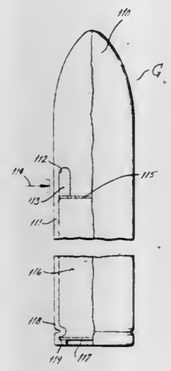
Giovanni Galluzzi, Lecco, Italy, assignor to Giulio Fiocchi, S.p.A., Lecco, Italy

Continuation of Ser. No. 816,915, Jul. 19, 1977, abandoned, and Ser. No. 626,352, Oct. 28, 1975, abandoned. This application Aug. 17, 1978, Ser. No. 934,606

Claims priority, application Italy, May 31, 1971, 25246 A/71; Nov. 30, 1971, 31868 A/71

Int. Cl.[2] F42b 5/02

U.S. Cl. 102—38 RA 3 Claims



1. A self-propelling projectile comprising a projectile body having a solid forward or nose portion of ogival form and a rearward cylindrical, casing-forming portion, said solid forward portion and said rearward casing-forming portion being integral, being of one-piece character, said casing-forming portion being hollow to define the relatively thin side wall of a chamber, the base of said nose portion defining the forward limit of said chamber, said casing-forming portion being normally opened at its nose-remote end portion, means for closing the nose-remote portion of said casing-forming portion for enclosing said chamber, a propellent charge provided in said chamber, there being a normally rearwardly opening, annular recess in the base of said nose, said recess being continuous and opening toward said chamber for normal communication therewith, the opposite or forward end of said recess being closed, the outer side of said annular recess constituting a continuous forward extension of said casing-forming portion side wall and being of substantially line thickness thereof whereby said recess is presented in the radially outward portion of said nose base, a priming mixture disposed in said recess, a disc disintegratable member extending transversely of said chamber in abutting relationship to the base of said nose portion and closing the normally open rearward end of said priming mixture-containing recess for confining said mixture therein, the portion of said nose inwardly of said recess being solid, whereby the relative location of the said recess and the relative thinness of said side wall presents the priming mixture for ignition by said percussion.

4,236,452

MOBILE APPARATUS FOR CONTINUOUSLY RENEWING TRACK

Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Australia

Filed May 8, 1979, Ser. No. 37,101

Claims priority, application Austria, Jun. 28, 1978, 4714/78

Int. Cl.[3] E01B 29/02, 27/11, 29/05

U.S. Cl. 104—2 7 Claims

1. A mobile apparatus for continuously replacing old rails and ties of an existing railroad track by new rail and ties, which comprises a train of cars mounted for mobility on the existing track and including cars for transporting the old and new ties, and a work car having a forward end and a rear end, the forward end of the work car being arranged adjacent a last one of the train cars and the work car carrying equipment adapted to work in a trackless section adjacent the track from which the rails and ties have been removed, the work car equipment including means for removing the old ties, means for laying the new ties, means for smoothing ballast between the tie removing and laying means, and guide means for raising and spreading apart the old rails, the work car being a semi-trailer and



including two selectively usable undercarriages for supporting the rear end of the work car, one of the undercarriages being an off-track track-laying bogie supporting the work car on the trackless track section and the other undercarriage being a vertically movable on-track bogie, and a selectively usable undercarriage for supporting the forward end of the work car, the forward undercarriage being a vertically movable on-track bogie, and means for selectively linking the forward end of the work car to the last train car or to the forward undercarriage for support of the forward work car end.

4,236,453

MOBILE RAIL WELDING MACHINE

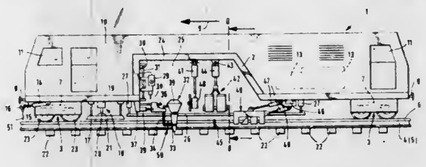
Heinrich Cöllen, Grevenbroich, Fed. Rep. of Germany, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Australia

Filed Nov. 13, 1978, Ser. No. 960,096

Claims priority, application Austria, Dec. 28, 1977, 9353/77

Int. Cl.[3] E01B 29/42, 31/18

U.S. Cl. 104—15 10 Claims



1. A mobile rail welding machine mounted on a track for mobility in an operating direction, the track being comprised of rails consisting of rail sections having abutting ends and ties supporting the rail sections, which comprises the combination of

(a) a heavy frame supported on the track rails for movement in the operating direction,

(b) a hydraulically driven flash butt welding device for welding the abutting rail section ends of a selected one of the rails mounted on the frame,

(c) a "Thermit" welding unit for welding the abutting rail section ends of a selected one of the rails mounted on the frame whereby the abutting rail section ends may be selectively flash butt welded or "Thermit" welded, and

(d) a weld burr removal device adjustably mounted on the frame for selectively removing weld burrs at either one of the rails.

4,236,454

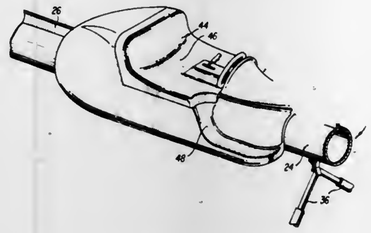
MOUNTAIN MONORAIL SLIDE

Alve J. Erickson, 17 Pleasant St., Milford, N.H. 03055, and Robert D. Thulman, 10596 E-1 Twin Rivers Rd., Columbia, Md. 21044

Filed Mar. 9, 1978, Ser. No. 884,963

Int. Cl.[3] A63G 21/04

U.S. Cl. 104—69 11 Claims



1. An amusement ride comprising a single continuous track having a tubular body with a circular cross section adapted to be disposed on nonlevel terrain to form a descending tortuous path; means for supporting said track in spaced relation to the underlying terrain; at least one gravity vehicle comprising a passenger-carrying space and having front and rear pairs of running wheels riding directly on said tubular track body; said front pair of wheels being toed out between one and four degrees; the center of gravity of said vehicle lying above the center of said tubular track body; said vehicle further comprising means for retaining said vehicle on said track and passenger-actuated brake means for selectively gripping a portion of said track between a movable brake shoe and an opposing member to control the speed of said vehicle along said track; said ride further comprising means for positively controlling the rotational orientation of said vehicle on said track including a continuous longitudinal rib extending radially outwardly from said tubular track body; and means on said vehicle for continuously engaging the opposite sides of said rib.

4,236,455

METHOD AND APPARATUS FOR GENERATING LINEAR ELECTROMAGNETIC TRAVELLING FIELDS FOR DRIVING AND INCREASING THE ADHESIVE LOAD OF RAILWAY MOTORED VEHICLES

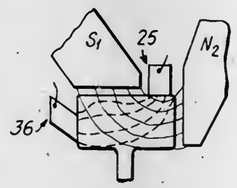
Jose P. dos Santos, Av. Joao Crisostomo, 70, 40, Lisbon 1, Portugal

Continuation-in-part of Ser. No. 497,057, Aug. 13, 1974, abandoned. This application May 4, 1976, Ser. No. 683,230

Claims priority, application Portugal, Aug. 14, 1973, 60388

Int. Cl.[3] B61B 13/08

U.S. Cl. 104—290 23 Claims



1. A method of improving the drive of a vehicle travelling on steel support and guide rails, said method comprising increasing the adhesive load of the vehicle on the rails, to correspondingly permit increase of the tractive and braking forces, by generating traveling magnetic fields in the rails by a system of linear inductors in elongated array along the rails and so arranged as to have lines of force which lie in planes perpendicular to the direction of travel of the magnetic field and pass transversely through the rails.

4,236,456

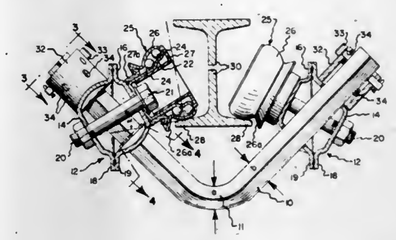
TROLLEY SUSPENSION

Kenneth D. Schreyer, Clarence; Earl T. Leverentz, N. Tonawanda, and Thomas R. Nusz, Amherst, all of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,678

Int. Cl.[3] B61B 3/00; E01B 25/22; E05D 13/02

U.S. Cl. 105—154 12 Claims



1. An overhead rolling trolley device adapted to ride upon upper planar trolley wheel tracking surfaces of opposite side flanges of a support beam;

said trolley device comprising a generally V-shaped load support bar having a cross-section of several sides and including at its lower apex end a saddle portion for suspending a load and carrying at each of the opposite legs thereof a trolley wheel support housing;

support beam engaging wheels mounted upon each of said housings at opposite sides of said support bar legs;

said support housings being fixed against rotation about said support bar legs having a mating configuration therewith to allow for longitudinally adjustable relation thereon to adapt said device to be adjustable to operate efficiently on tracking surfaces of different width and slope configurations; and

locking means inter-engaging said housings and said support bar legs to maintain said housings at prescribed positions longitudinally on said legs.

4,236,457

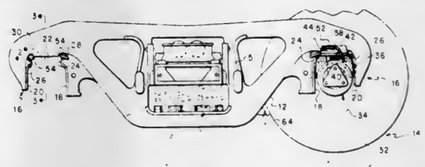
STEERABLE RAILWAY TRUCK ADAPTER PAD CENTERING MEANS

Geoffrey W. Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 27, 1978, Ser. No. 964,030

Int. Cl.[3] B61F 5/30, 5/38

U.S. Cl. 105—218 R 11 Claims



1. In a railway car truck side frame for a radially steerable railway car truck having means to mount a bolster in a center portion thereof, pedestal jaw on opposed end portions thereof for mounting wheel assemblies comprised of axles with wheels thereon, axle bearing assemblies bearing adapters securely attached to and mounted above said bearings, and resilient bearing adaptor pads mounted between said bearing adapters; an improvement in said side frame comprising:

an adapter pad centering means, including an adapter pad stop on said side frame at each pedestal jaw on the outermost sides of said pedestal jaw openings at the roof thereof wherein each of said adapter pad stops has an abutment extending transverse to said side frame, said abutments

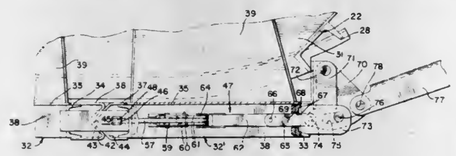
being in a spaced relation to the opposed side of the respective pedestal jaw such that when an adapter pad is positioned within the pedestal jaw an upper portion thereof is restrained from significant outward movement in the longitudinal direction of said side frame while a lower portion of said adapter pad is not restrained from this longitudinal movement thereby permitting temporary displacement in this outward direction of an associated bearing adapter axle bearing and axle by deformation of said truck without causing permanent displacement of said adapter pad toward an outwardly disposed position within said pedestal jaw.

4,236,458

DOOR LOCKING AND ACTUATING MECHANISM FOR HOPPER CAR

Eugene I. Varda, Saint John, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 26, 1978, Ser. No. 972,858
Int. Cl.³ B61D *3/00, 7/00, 9/00*
U.S. Cl. 105—308 R **20 Claims**



1. A railway hopper car having an underframe,
a hopper structure supported on said underframe,
walls on said hopper structure defining at their lower ends a discharge opening,
a pair of doors pivotably connected to said hopper structure for outward movement from a closed position below said discharge opening to an open position, the improvement of a door actuating and locking arrangement comprising:
a pair of arms each pivotally connected to said car on opposite sides of said discharge opening,
each of said arms including a cam follower supported thereon,
a pair of actuating links each pivotally connected to one of said arms and to one of said doors,
each of said doors having inner longitudinal nose portions sealingly engaging each other in the closed position of said doors,
a locking mechanism including keeper means mounted on one end of one of said doors and overlapping an end of said other door,
a latch member slidingly mounted on said other door,
means biasing said latch member into locking engagement with said keeper means in the closed position of said doors, and
said latch member operatively connected with said actuating link whereby during engagement of said cam with an associated door opening mechanism, said arm and actuating link are pivoted outwardly and said latch member and keeper means are disengaged whereby said doors are moved to said open position.

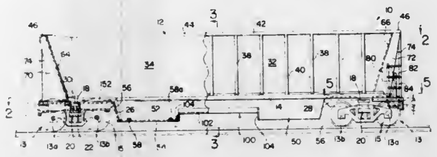
4,236,459

DEPRESSED CENTER CAR

Anthony Teoli, Pointe Claire, Canada, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 699,312, Jun. 24, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,509
Int. Cl.³ B61D *17/00*
U.S. Cl. 105—406 R **9 Claims**

1. In an open top gondola railway car having a generally permanently closed bottom with horizontal plate portions and at least one depressed generally curved portion in cross-section, a plurality of drain holes in said curved portion and wheeled multi-axle trucks adjacent each end thereof, said horizontal plate portions of said bottom extending over wheels of said trucks and said curved portion of said bottom extending downwardly between said trucks, the improvement comprising:
an upwardly directed stepped portion intermediate the ends of said curved portion of said bottom, and



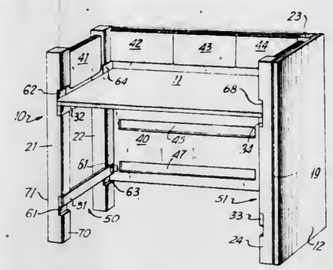
openings having a smoothly curved perimeter in said horizontal plate portions over at least some wheels of said trucks so as to provide an increase in the clearance distance between said wheels and said plate portions during location of said car over any severe convex or concave contoured portions of track.

4,236,460

FOLDABLE FURNITURE SYSTEM

Felice Poupko, 22 Earl St., Waterbury, Conn. 06710

Filed Nov. 9, 1978, Ser. No. 959,316
Int. Cl.³ A47B *3/00*
U.S. Cl. 108—41 **7 Claims**



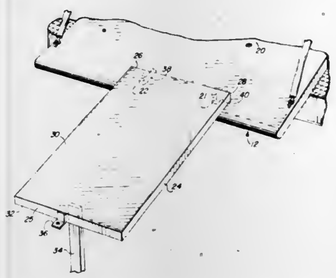
1. A multifunctional furniture unit comprising a frame and two side panel members, said frame comprising:
first, second, third and fourth elongated stile members which are parallel to each other;
a rear panel attached at its opposite sides to said second and third stile members respectively, said rear panel having at least one elongated slot within which a panel of a second furniture unit is placed, said slot being in a plane which is perpendicular to said elongated stiles;
means to pivotally attach said second and third stile members to said rear panel portion;
a first and a second side rail means non-pivotally connected to said stile members at opposite ends of said side rail means, with said first side rail means having said first and second stile members connected thereto and said second rail means having said second and third stile members connected thereto;
means to non-pivotally attach said first and second side rail means between respectively said first and second and said third and fourth stile members;
said unit also comprising a first and a second side panel member removably and pivotally connected to said frame at respectively said first and fourth stile members to provide functional surfaces.

4,236,461

REMOVABLE AND FOLDABLE VEHICLE TABLE

Lester T. Barksdale, P.O. Box 856, Lake Panasoffkee, Fla. 33538

Filed Mar. 7, 1979, Ser. No. 18,444
Int. Cl.³ A47B *23/00*
U.S. Cl. 108—44 **8 Claims**



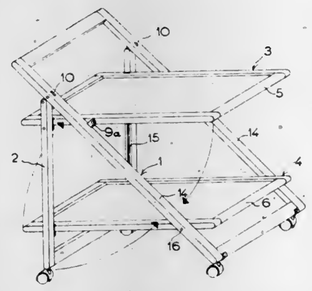
1. A foldable and removable table for use with vehicles of the type having a hinged panel permitting entry into the vehicle, said table comprising:
a cornered table member having a flat supporting surface;
a pair of hooks, each hook adapted to removably engage said vehicle panel in a corresponding hole therein, each hook being coupled with said table member at spaced corners thereof;
means, including one of said hooks, for permitting rotation of said table about one of said corners;
a leg foldably fastened to said table member on a side opposite said supporting surface and foldable to a storage position flush with said side;
fastening means for holding said table member in a storage position parallel with said vehicle panel and with said opposite side adjacent said panel; wherein
rotation of said table member about said one corner and one of said hooks permits said table to be moved from a storage position flush with said panel to an open position for use as a table; and wherein
the other of said hooks is dimensioned so as to engage a third hole in said vehicle panel when said table member is rotated to said open position.

4,236,462

FOLDING TEA TROLLEY

Marc A. Berthier, 141 Bd. Saint-Michel, 75005 Paris, and Alain Y. Chauvel, 49 rue des Rigoles, 75020 Paris, both of France

Filed Aug. 16, 1978, Ser. No. 934,064
Claims priority, application France, Jul. 24, 1978, 78 22066
Int. Cl.³ A47B *3/00*
U.S. Cl. 108—111 **4 Claims**



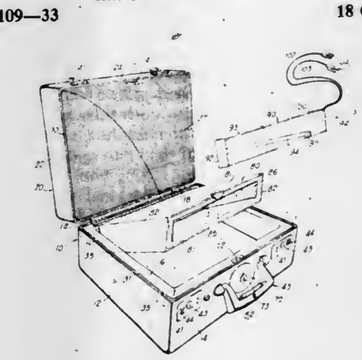
1. A folding trolley comprising a planar front frame of substantially rectangular shape and including a pair of side members, a planar rear frame substantially inverted U-shape and including a further pair of side members, said side members of said rear frame being pivotally connected at one end thereof to said side members of said front frame for movement between an open position in which said rear frame is at an angle to said front frame and a folded position in which said rear frame is parallel to said front frame adjacent one surface of said front frame, a lower tray, means pivotally connecting said lower tray to said front frame between said side members of said front frame for movement between a folded position in which said lower tray is substantially coplanar with said front frame and an open position at an angle to said front frame, means providing a support between said rear frame and said lower tray, an upper tray, means pivotally connecting said upper tray between the side members of said front frame in spaced relation to said lower tray for movement between a folded position in which the trolley is folded into three parallel planes wherein the front frame contains the lower tray in its plane and the rear frame and said upper tray are situated on opposite sides of and substantially parallel to said front frame and an open position in which said upper tray is substantially parallel to said lower tray in its open position and releasable attachment means between said upper tray and said rear frame for releasably holding said upper tray in its open position, said upper tray in said open position having a front portion projecting forwardly from the frames completely free of obstruction of the front portion, whereby access to the front portion of the upper tray is facilitated during use, further whereby said upper tray and said lower tray are rotatable in opposite directions between said open and said folded positions, and wherein said means providing support between said rear frame and said lower tray comprises a sliding connection between said rear frame and said lower tray and wherein said sliding connection comprises groove means formed in said rear frame and groove engaging means on said lower tray.

4,236,463

TAMPER PROOF CASE FOR THE PROTECTION OF SENSITIVE PAPERS

Randy L. Westcott, 6927D Roswell Rd., NW., Atlanta, Ga. 30328

Filed May 14, 1979, Ser. No. 38,916
Int. Cl.³ E05G *3/00*
U.S. Cl. 109—33 **18 Claims**



1. A case for the protection of secret documents comprising:
(a) a closure having opposed body portions defining an interior and an access opening for access into said interior, said closure being provided with a hole communicating with the interior and through which gases may readily escape when said closure is closed;
(b) a liner disposed within the interior of said closure, said liner having, itself, an open interior and an access opening communicating with said open interior, through which documents may be inserted and removed from said open interior, said open interior of said liner and said interior of said closure communicating so that gases from said inte-

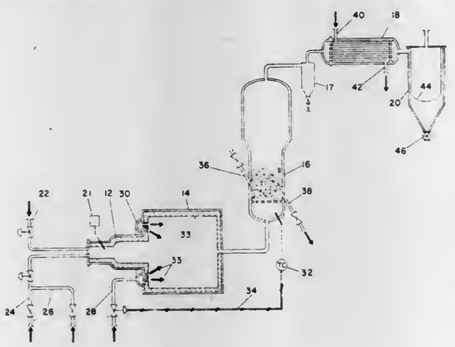
rior of said liner may pass through said interior of said closure and out of said hole;
(c) a pyrotechnic charge within said liner;
(d) switch means on said closure actuatable upon a change in the physical condition of said closure;
(e) igniter means in close proximity to said pyrotechnic charge and electrically connected to said switch means for igniting said pyrotechnic charge when said igniter means is actuated;
(f) a source of current carried by said closure and electrically connected to said switch means and to said igniter means for actuating said igniter means when said switch means is actuated; and
(g) control means for said switch means for rendering said switch means actuateable or nonactuatable.

4,236,464

INCINERATION OF NOXIOUS MATERIALS

Roger E. Anderson, Rancho Cordova, and Eugene M. Vander Wall, Citrus Heights, both of Calif., assignors to Aerojet-General Corporation, LaJolla, Calif.

Filed Mar. 6, 1978, Ser. No. 883,504
Int. Cl.³ F23G 7/04
U.S. Cl. 110—238 **1 Claim**



1. A system for incineration of materials containing halogen or acidic gas constituents comprising:
a combustion chamber lined with a ceramic material to minimize combustion gas corrosion;
a cooling chamber also lined with a ceramic material to minimize combustion gas corrosion for receiving and cooling gases from said combustion chamber;
means for injecting coolant fluid into said cooling chamber along both a first path for mixing with and cooling gases from said combustion chamber, and a second path for containing said combustion gases to further minimize contact and corrosion of said cooling chamber;
a non-recirculating type fluidized bed scavenging reactor for receiving said cooled combustion gases such that said gases fluidize particulate bed material in said reactor; and
means for receiving, cooling and filtering combustion gases from said fluidized bed reactor.

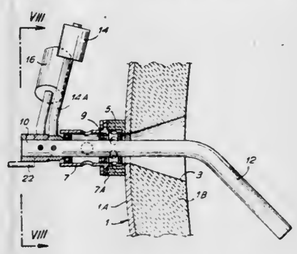
4,236,465

MATERIAL LEVEL CHECKING APPARATUS FOR USE IN A ROTARY INCINERATING FURNACE

Silvano Matteini, Via Bellosguardo 4A, Florence, Italy

Filed Jan. 16, 1979, Ser. No. 3,973
Int. Cl.³ F23G 5/06
U.S. Cl. 110—246 **4 Claims**

1. A material level checking apparatus for mounting to the sidewall of a rotary refuse incinerating furnace comprising:
an element mounted for rotation through the sidewall of said furnace, said element rotating along an axis radial to the axis of rotation of said furnace;
an appendix disposed on said element and extending within the interior of said furnace;
weight means disposed on the other end of said element and external to said furnace, said weight means having a mass sufficient to cause said element and said appendix to rotate upon the rotation of said furnace;
first and second stop means disposed proximate to said element, said stop means limiting the rotation of said element between first and second angular positions;
said element contacting said first stop means when said



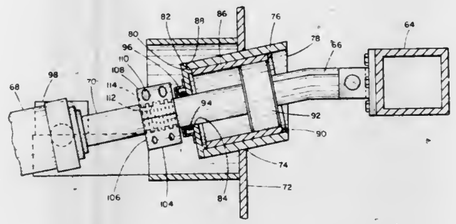
element is moved in a downward direction due to the rotation of said furnace;
said element rotating from said first stop means to said second stop means when said element is moved upwardly due to the rotation of said furnace and when said appendix is out of contact with said material in said furnace; and
said element being prevented from rotating from said first stop means to said second stop means upon being moved upwardly due to the rotation of said furnace when said appendix is in contact with said material in said furnace to thereby indicate the level of said material.

4,236,466

MECHANICAL ACTUATION OF FURNACE GRATE BEAMS

John C. Bergh, Elkhart, Ind., assignor to Wheelabrator-Frye Inc., Hampton, N.H.

Filed Jan. 2, 1979, Ser. No. 83
Int. Cl.³ F23H 7/08
U.S. Cl. 110—281 **7 Claims**



1. In a combustion furnace having a grating, portions of which are movable for advancement of combustible material over the surfaces of the grating and through the furnace, means for actuating said movable grating portions in reciprocal movement comprising an elongate rod-like member extending through an opening through a wall of the furnace having an outer end portion external of the furnace wall and an inner end portion extending into the furnace, and an operative connection between the inner end portion of said rod-like member and the movable grating portions, a means external of the furnace for mechanical actuation of said rod-like member in reciprocal movement, and an operative connection between said actuating means and said rod-like member, a tubular member mounted to extend from beyond the furnace wall and through said opening in sealing relation with the furnace wall, said

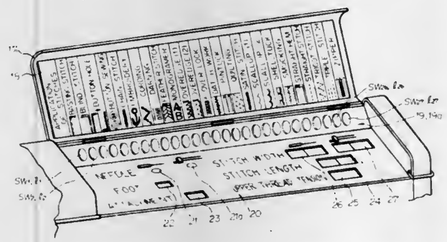
tubular member having a passage extending therethrough of greater cross section than the cross section of the rod-like member, said tubular member being closed at the outer end portion except for an opening for passage of the rod-like member therethrough, and a piston plug rigid with said rod-like member slidably engaged within the tubular member during reciprocal movement to guide the rod-like member in reciprocal movement.

4,236,467

SEWING MACHINE WITH DISPLAY UNITS WHICH DISPLAY GUIDANCE DATA GUIDING THE USER IN MANUAL ADJUSTMENT OF OPERATING VARIABLES IN AUTOMATIC RESPONSE TO USER SELECTION OF STITCH TYPE

Yoshikazu Tanaka, Hachioji, and Yasukata Eguchi, Kunitachi, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed May 5, 1978, Ser. No. 903,176
Claims priority, application Japan, May 6, 1977, 52-51817; May 25, 1977, 52-59840
Int. Cl.² D05B 3/02
U.S. Cl. 112—158 F **7 Claims**



1. A sewing machine comprising a machine housing, stitch forming instrumentalities provided in the machine housing for changing the relative positions of the needle and the sewn material to form stitches, stitch selector means operable by the user of the machine for indicating what type of stitches are to be produced by the stitch forming instrumentalities, manually operated adjusting means for adjusting operating variables of the sewing machine, display means operative upon receipt of control signals for effecting a visible display of guidance information informing the operator of what manual adjustments must be performed using the manually operated adjusting means, and control circuit means responding to the stitch selector means by applying to the display means control signals causing the display means to display guidance information pertaining to the selected type of stitches.

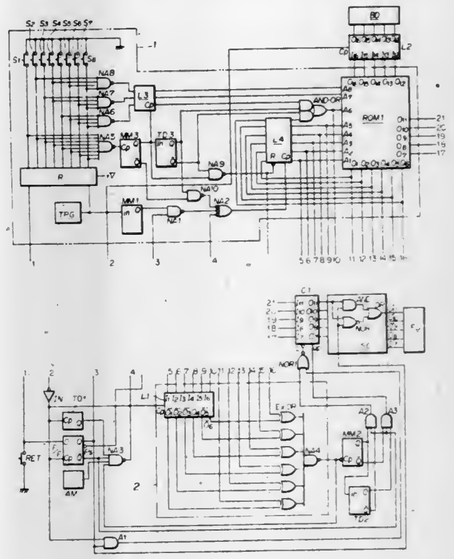
4,236,468

ELECTRONIC SEWING MACHINE WITH BACK STITCHING SYSTEM

Yasukata Eguchi, Kunitachi, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 863,143, Dec. 21, 1977, abandoned.
This application Jan. 2, 1979, Ser. No. 486
Claims priority, application Japan, Dec. 27, 1976, 51-156462
Int. Cl.³ D05B 3/02, 27/00
U.S. Cl. 112—158 E **4 Claims**

1. In a sewing machine, an arrangement for forming patterns made up of stitches, comprising, in combination a static memory (ROM1) having a plurality of outputs and a plurality of address signal inputs and comprised of a plurality of storage units connected to said inputs and outputs and addressable by address signals applied to the address signal inputs of the memory; stitch-forming means (BD), (FD) provided with a plurality of stitch control signal inputs connected to outputs of the memory and operative for producing any of a plurality of different stitches in dependence upon the signals produced at the outputs of the memory; addressing means (L4) operative when activated for applying to the address signal inputs of the memory next-address signals derived from the signals produced at the outputs of the memory; synchronizing means (TPG) operative for activating the addressing means in synchronism with the operation of the stitch-forming means; and back stitching means manually operated to change the next-address signals in accordance to the required back stitches, said



back stitching means including a manually operated switch (RET), a free running oscillator (AM) rendered effective by operation of said manually operated switch to activate said addressing means irrespectively of said stitch forming means, and comparator means (2) comparing said next-address signals produced before the manually operated switch is operated and those produced after the manually operated switch, so as to make effective the stitch control output signals of said static memory in relation to the stitch-forming means (FD).

4,236,469

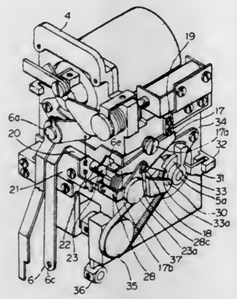
SEWING MACHINE WITH FEED DOG DROPPING CONTROL SYSTEM

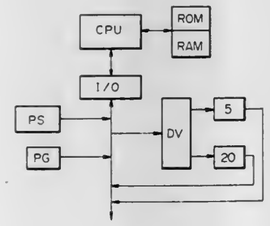
Hideaki Takenoya, Hachioji, and Hachiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,685
Claims priority, application Japan, Jan. 26, 1978, 53-8268[U]; Jul. 27, 1978, 53-102407[U]; Oct. 26, 1978, 53-131014[U]
Int. Cl.³ D05B 3/02, 27/00
U.S. Cl. 112—158 E **7 Claims**

1. A sewing machine, comprising: stitch forming means for changing positions of the needle and the fabric to be sewn; electrically driven means for driving the needle and the feed dog; electronic control means including a static memory storing means for providing stitch control signals adapted for controlling said electrically driven means; pattern selecting means operated by reading out said stitch control signals from said static memory storing to drive said electrically driven means in accordance with a selected pattern; and feed control means for controlling the position of the feed dog including an operating member adapted for moving the feed dog between operative and inoperative positions, said electrically driven means including a pulse motor for controlling a horizontal

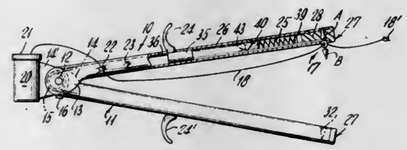
feeding amount of the feed dog and having an outwardly extending shaft, and a clutch solenoid operatively connected thereto, said clutch solenoid being operatively connected to





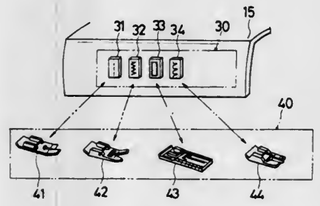
said operating member and being energized in response to a corresponding stitch signal from said static memory storing means.

4,236,470
PORTABLE STITCHING DEVICE
Thomas K. Stenson, 140 Pelham Rd., New Rochelle, N.Y. 10805
Filed Jan. 17, 1979, Ser. No. 4,271
Int. Cl.³ B65H *54/62*
U.S. Cl. 112—169 **11 Claims**



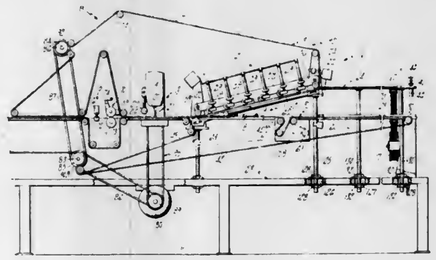
1. A manually operable portable stitching device, comprising two arms projecting from a location of articulating connection of said arms at a given angle therebetween in an unsqueezed open position, a shuttle needle having a central eye for passage of filament and pointed at its longitudinal ends, said needle having first and second peripheral shoulders near but on opposite sides of said eye, said arms each having a needle-receiving opening adapted to accommodate one of the pointed ends of said needle, said needle-receiving openings being at corresponding locations in the respective projecting ends of said arms, the orientation of said openings being such that when one end of the needle is carried at one of said openings its other end is aligned for insertion into and reception in the other of said openings upon articulated movement of said arms into a contiguous relationship with each other in a squeezed closed position, said device further including releasable needle-retaining means at each opening for selective retention and release of the needle when a needle end is received in the opening, each of said arms including a latch means releasably biased by a spring means into engagement with the adjacent shoulder of a needle end, and each of said arms further including a selectively operable release mechanism for the latch of the involved arm, and manually operable actuating means associated with said release mechanisms and selectively operable in both said open and closed arm positions for moving said latch means away from said needle shoulder so that said needle end is released from said opening.

4,236,471
COLOR COOLED PRESSER FEET
Toshiaki Okamato, Okazaki, and Hideo Nawa, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 6, 1979, Ser. No. 17,962
Claims priority, application Japan, Mar. 31, 1978, 53-43165[U]
Int. Cl.³ D05B *29/12*
U.S. Cl. 112—240 **5 Claims**



1. A sewing machine for stitching an ornamental stitch produced by an ornamental stitching pattern control arrangement provided therein comprising:
a stitching pattern selection means mounted on said sewing machine including a plurality of manipulating selection buttons classified in accordance with the color thereof; and
presser means including a plurality of presser foot members having color indications corresponding with the colors of said selection buttons for indication of stitching pattern according to color indication.

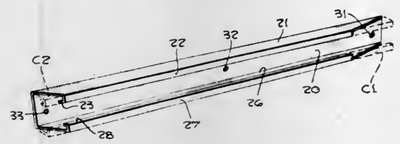
4,236,472
SEWING MACHINE MATERIAL PREASSEMBLY SYSTEM
John L. Rockerath, and Harold J. Schreck, both of Utica, N.Y., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.
Division of Ser. No. 738,746, Nov. 3, 1976, Pat. No. 4,111,138, which is a division of Ser. No. 619,968, Oct. 6, 1975, Pat. No. 4,009,672. This application Mar. 6, 1978, Ser. No. 883,584
Int. Cl.² D05B *27/00*
U.S. Cl. 112—304 **5 Claims**



2. In a sewing maching system having a belt conveyor with longitudinally extending conveyor belts for conveying a material blank longitudinally forwardly through successive material

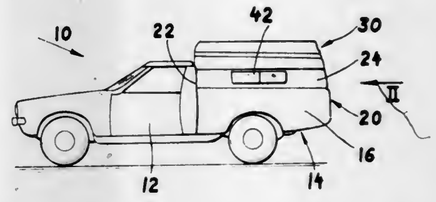
folding and sewing stations for successively prefolding and sewing the material blank respectively, and material folding and sewing apparatus at the folding and sewing stations for respectively prefolding the material blank and sewing the prefolded material blank as the material blank is conveyed longitudinally forwardly through the folding and sewing stations by the belt conveyor, the improvement wherein the material folding apparatus comprises an edge folding device for automatically prefolding an outer longitudinally extending lateral edge of a material blank as the material blank is conveyed longitudinally forwardly through the edge folding device, the edge folding device having a longitudinally extending base underlying and supporting at least one longitudinally extending conveyor belt and for supporting a lateral edge section of a material blank overlying said one conveyor belt as the blank is conveyed longitudinally forwardly through the edge folding device by the belt conveyor, a longitudinally forwardly extending and laterally inwardly tapering edge folder for folding the lateral edge of the material blank upwardly and laterally inwardly relative to the base as the material blank is conveyed longitudinally forwardly through the edge folding device, and at least two longitudinally spaced and longitudinally extending forwardly cantilevered guide members overlying the base and said one conveyor belt and with the forward guide member having a lateral edge extending longitudinally in predetermined spaced relationship along and within the edge folder to provide a fold edge for folding thereabout the lateral edge of the material blank upwardly and laterally inwardly relative to the base with the edge folder and each cantilevered guide member forming resilient means for resiliently retaining the material blank in engagement with said one conveyor belt for being longitudinally conveyed forwardly thereby through the folding device.

4,236,473
METHOD OF MAKING METAL BEAM FOR GEODESIC DOME STRUCTURE
Wesley D. Belt, 10553 Rountree Rd., Los Angeles, Calif. 90064
Filed Apr. 13, 1979, Ser. No. 29,643
Int. Cl.³ B21D *47/01*
U.S. Cl. 113—116 HA **3 Claims**



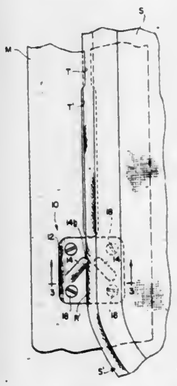
1. In the art of constructing a geodesic dome from flat triangular wall sections which are joined together at an exterior angle of more than 180 degrees, and where each wall section includes three beams incorporated within corresponding side edges thereof, the method of making one of said beams comprising the steps of:
selecting a generally rectangular sheet of metal;
bending the metal sheet along a parallel pair of longitudinal lines to provide a flat central base section and a pair of flat side walls which are parallel to each other but are not perpendicular to the base section, one of said side walls being inwardly inclined and the other being outwardly inclined;
curling the outer extremities of both of said side walls inwardly towards said base section;
cutting each end of the beam along a plane that is perpendicular to said side walls and at an acute angle to the plane of said base section so that the curled extremities of said side walls are shorter than said base section, and so that the ends of three similar beams can be butted together to form a triangle; and
forming a plurality of holes in said base section to facilitate fastening it in back-to-back relation to the base section of another similar beam that is incorporated within the side edge of an adjoining wall section.

4,236,474
BOATS
David P. Buirski, Cape Town, and Peter H. Hedley, Hermanus, both of South Africa, assignors to Cat-A-Van Associates, Baltimore, Md.
Filed Oct. 12, 1978, Ser. No. 950,800
Claims priority, application South Africa, Oct. 14, 1977, 77/6123
Int. Cl.³ B63B *1/00*
U.S. Cl. 114—56 **15 Claims**



1. A convertible boat/canopy which is adapted to be selectively utilized as a boat or as a vehicle canopy comprising a body defined by a first wall forming a top wall of the canopy and a bottom wall of the boat, two longitudinal walls defining opposite sides of said boat/canopy, two end walls defining opposite ends of said boat/canopy, and one of said end walls carrying means for operating as a baffle plate when said boat/canopy is utilized as a boat and for operating as a closure element which is also positionable between spacer elements of a vehicle when said boat/canopy is utilized as a vehicle canopy.

4,236,475
SAIL FEEDER
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.
Filed Aug. 2, 1979, Ser. No. 62,925
Int. Cl.³ B63H *9/08*
U.S. Cl. 114—90 **8 Claims**



1. In a sailboat mast provided with a slot for receiving the bolt rope incorporated into the luff edge of a sail, said slot having an enlarged entrance near the foot of the mast, the improvement comprising a sail feeder positioned below the slot entrance, said sail feeder including a rigid plate secured to the mast and a pair of short, generally cylindrical legs having corresponding first ends which are cut on a bias relative to the

leg axes, said corresponding leg first ends being positioned flush against said plate at laterally spaced locations thereon, said spacing being greater than the diameter of the sail bolt rope, said legs also being oriented so that they are upwardly angled relative to the plate and the mast and toed-in toward one another so that the legs are oriented at an angle of 35° to 65° relative to the plate and their corresponding second ends are spaced apart a distance less than the diameter of the sail bolt rope, said second leg ends being positioned at equal distances on opposite sides of the extended center line of the slot entrance, and means for rigidly securing said leg first ends to said plate so that when the luff edge of the sail is engaged in the sail feeder with the sail bolt rope slidably received between said plate and said legs, the sail bolt rope is aligned with the slot entrance so that, when the sail bolt rope is pulled along the slot in the mast, the sail feeder automatically aligns incremental lengths of the bolt rope with the slot entrance.

4,236,476

ARTICULATE MAST FOOTING ARRANGEMENT, IN PARTICULAR FOR WIND SURFBOARDS

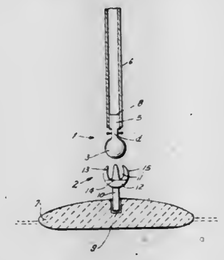
Alexander Solf, Westfalenweg 330, 5600 Wuppertal 1, Fed. Rep. of Germany, and Christian Mrozek, Karlsruhe, Fed. Rep. of Germany, assignors to Alexander Solf, Wuppertal, Fed. Rep. of Germany

Filed Dec. 23, 1977, Ser. No. 863,691

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658414; Oct. 13, 1977, 2746095; Dec. 13, 1977, 2755429

Int. Cl.[2] B63B *15/00*

U.S. Cl. 114—91 **3 Claims**



1. A connecting arrangement for connecting two elements with one another, particularly a mast and a boat body of a wind surfboard, comprising a male member connected with one of the elements and having a spherical section and a cylindrical bolt carrying said spherical section; a female member connected to another of the elements and having a cup portion which includes a shell section and a plurality of fingers extending from said shell section and receives and engages said spherical section of said male member only by snap action so that said spherical section of said male member is retained in but rotatable relative to said cup portion of said female member, at least one of said members connected with a respective one of the elements being rotatable within a horizontal plane; and means for rotatably connecting said one member with said respective one of said elements, including two grooves formed in said bolt of said male member and two resiliently yieldable rings engaged in said grooves and extending outwardly beyond an outer surface of said bolt.

4,236,477

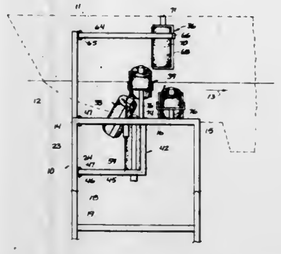
BOAT HULL CLEANING DEVICE

Thomas E. Norris, Spokane, Wash., and Bertle Spence, Moscow, Id., assignors to Water Front Products, Inc., Oakesdale, Wash.

Filed Jun. 4, 1979, Ser. No. 45,015

Int. Cl.[3] B63B *59/08*

U.S. Cl. 114—222 **13 Claims**



1. A device for cleaning the hull of a boat while moving the boat in a forward direction along a prescribed path through the device, comprising:

an open framework having opposed transverse ends joined by longitudinal sides;

a bottom brush arm pivotably mounted to one end of the framework and extending therefrom along the path to an outer end thereof, the bottom brush arm being pivoted about an axis transverse to and directly below the prescribed path;

a bottom brush yoke mounted to the outer end of the bottom brush arm for pivotal movement thereon about an axis substantially parallel to the prescribed path;

a bottom brush rotatably mounted to the bottom brush yoke for rotation thereon about a rotational axis transverse to the prescribed path;

a pair of elongated side brush arms each pivotably mounted to said one end of the framework about upright axes transverse to the prescribed path, said side brush arms being individually located at opposite sides of the path and extending along the path to the outer ends thereof;

side brush yokes individually mounted to the outer ends of the respective side brush arms for pivotal movement thereon about axes substantially parallel to the prescribed path;

side brushes mounted to the side brush yokes for rotational movement thereon about upright axes substantially transverse to the prescribed path; said side brushes being longitudinally spaced from said bottom brush;

a pair of intermediate brush arms each pivotably mounted at said one end of the framework and extending along the path between the bottom brush arm and each of said side brush arms to outer ends thereof longitudinally staggered with respect to the outer ends of the bottom and side brush arms, said intermediate brush arms being pivoted about axes substantially transverse to and situated below the prescribed path;

intermediate brush yokes mounted to the outer ends of the intermediate brush arms for pivotal movement about axes substantially parallel to the prescribed path;

intermediate brushes mounted to the intermediate brush yokes for rotation thereon about axes transverse to the prescribed path;

wherein the bottom, intermediate and side brushes overlap one another transversely across the prescribed path;

means for rotating the bottom, intermediate and side brushes about their respective rotational axes;

individual biasing means between the framework and each of the respective bottom, intermediate and side brush arms for yieldably urging the individual arms toward the prescribed path; and

means for moving a boat in a forward direction along the prescribed path past the bottom, intermediate and side brushes.

4,236,478

DRIVE INSTALLATION IN BOATS

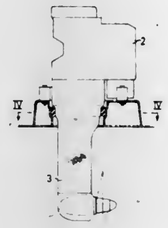
Staffan T. Mansson, Hjalteby, Sweden, assignor to Ab Volvo Penta, Gothenburg, Sweden

Filed Oct. 17, 1977, Ser. No. 842,960

Claims priority, application Sweden, Nov. 4, 1976, 7612301

Int. Cl.[3] B63H *1/14, 5/06*

U.S. Cl. 440—112 **16 Claims**



7. A bed member for mounting a drive leg through a hole in the bottom of a boat, comprising a generally horizontal annular upper panel portion having an inner edge and an outer edge, a continuous outer wall portion integral with said panel portion extending downwardly from said outer edge and a continuous inner wall portion integral with said panel portion extending downwardly and inclinedly inwardly from said inner edge to define first and second downwardly extending sections for receiving such leg therethrough, and a sharply inwardly tapering wall section joining the lower portion of said first section and the upper portion of said second section.

4,236,479

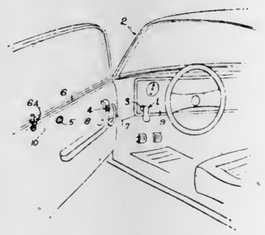
HEADLIGHTS REMINDER

Lila A. Walker; Richard A. Walker, and Craig A. Walker. all of 17966 Sencillo La., San Diego, Calif. 92128

Filed Mar. 19, 1979, Ser. No. 21,471

Int. Cl.[3] B60Q *9/00;* **G01D** *3/08*

U.S. Cl. 116—28 R **5 Claims**



1. In a driver operated automotive vehicle having a manually operated control means for switching headlights on and off and a manually operated control means for opening the driver side exit door of said vehicle, a device for reminding the driver of the status of said means for switching when said driver attempts to operate said means for opening which comprises:

an attachment fastenable to the exposed surface of said means for switching said attachment being dimensioned and positioned so that said driver cannot actuate said means for switching without touching the attachment, and first means for fastening the attachment to said exposed surface comprising:

a first interlocking element bonded to one side of the attachment;

a second interlocking element cooperating with said first interlocking element to create a manually brekable interconnection, said second element being bonded to said exposed surface; and

second means for fastening the attachment to or near said means for opening positioned and dimensioned so that the driver cannot actuate said means for opening without touching the attachment, said second means comprising:

a third interlocking element of the same type as the second interlocking element, said third element being bonded to or near said means for opening and cooperating with said first interlocking element to create a manually breakable interconnection.

4,236,480

INDICATOR DIAL AND METHOD OF MAKING SAME

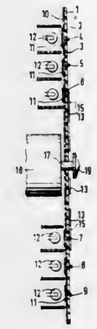
Friedrich Gröhl, Nierstein, Fed. Rep. of Germany, assignor to VDO Adolf Schindling A.G., Frankfurt am-Main, Fed. Rep. of Germany

Filed Dec. 8, 1978, Ser. No. 967,641

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1978, 2805159

Int. Cl.[3] G09F *9/307;* **G01D** *11/28*

U.S. Cl. 116—286 **6 Claims**



1. An indicator dial, comprising:

a transparent plate having a front side toward a viewer and a rear side facing away from a viewer with a coating of a first, opaque dye material covering the rear side and having at least one selected area free of the dye material;

a second, translucent dye coat of a color contrasting with the first dye coat covering the selected area on the rear side, and defining at least one illuminable indication area for providing a visual indication of a physical function when the indication area is illuminated from the side of the plate facing away from the viewer;

scale symbols of a color contrasting with the first dye coat applied on the front side of the plate in the at least one illuminable indication area; partitioned lamp means at the rear side of the plate, positioned to direct light to the at least one illuminable indication area for illumination of the area; and an aperture in the dial for an indicator shaft.

4,236,481

MEASURING INSTRUMENT

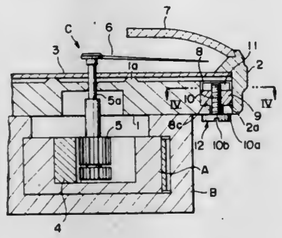
Tadao Nakaya, and Takashi Kobashi, both of Utsunomiya, Japan, assignors to Kabushiki Kaisha Mitutoyo Seisakusho, Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,472

Claims priority, application Japan, May 22, 1978, 53-68887[U]

Int. Cl.³ G01B *5/02, 5/06, 5/08*

U.S. Cl. 116—292 **10 Claims**



1. A measuring instrument comprising a tubular outer frame rotatably fitted around a circular inner frame, said outer frame having an inner peripheral face,

a pointer rotatably supported by said inner frame,

a scale plate attached to said outer frame for indicating the position of said pointer,

said inner frame having a rear surface facing away from said scale,

an elastic element having a portion thereof adjacent said inner peripheral face of said outer frame, and

manually manipulable screw means to compress said elastic element in the direction of the axis of said inner frame, for causing said elastic element to expand laterally into engagement with said inner peripheral face to restrict rotation of the outer frame with respect to the inner frame, said screw means having a manipulator exposed on the rear surface of said inner frame.

4,236,482

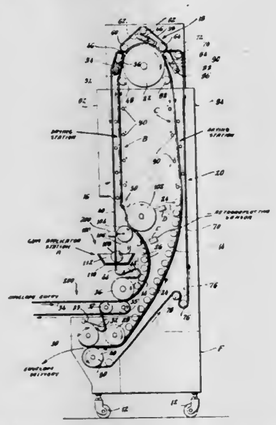
APPARATUS FOR APPLYING SEALING MATERIAL TO ENVELOPES

David L. Gingerich, San Bruno, Calif., and Robert Cohn, Omaha, Nebr., assignors to Champion International Corporation, Stamford, Conn.

Filed Jun. 9, 1978, Ser. No. 914,035

Int. Cl.³ B05B *5/00*

U.S. Cl. 118—642 **7 Claims**



1. In an apparatus including roller means for applying sealing material to the facing closure flap and an adjacent body portion of an envelope, and means for drying said sealing material applied to said envelope, the improvement comprising:

means for conveying a series of said envelopes past said sealing material applicator means and said drying means,

said conveying means having an envelope inlet and envelope exit and including

a main endless belt forming a lower support surface for said series of envelopes,

a first conveyor belt system having a run disposed in overlapping relation to a portion of a run of said endless belt for forming said inlet and receiving said series of envelopes therebetween, the overlapped runs of said endless belt and said first conveyor belt system passing between the nip of said sealing material application roller means and past said drying means to partially dry the sealing material applied by said roller means,

a second conveyor belt system having a run disposed in overlapping relationship with a portion of the opposite run of said endless belt for forming said exit and receiving therebetween from the overlapped runs of said first conveyor belt system and said endless belt partially dried envelopes, the overlapped runs of said second conveyor belt system and said endless belt conveying said envelopes past said drying means to completely dry said sealing material, and

a third conveyor belt system having a run disposed in overlapping relationship with a portion of said endless belt, and with each of said conveyor belt systems being guided through an endless run about a plurality of pulleys, with the axes of rotaton of said pulleys being in parallel relationship such that the runs are nontwisted, and with said third conveyor belt system being disposed between and in contacting relationship with said first and second conveyor belt systems, whereby said conveyor belt systems are positioned such that there is a substantially continuous coplanar overlap with said endless belt from said inlet to said exit of said apparatus, thereby providing for the secure conveyance of envelopes.

4,236,483

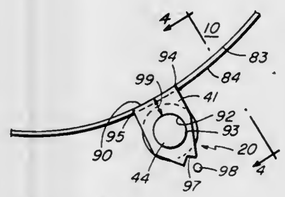
METERING ROLL WITH FIXED SLIDERS

Austin E. Davis; Raymond G. Cormier, both of Nashua; Leo O. Lutz, Hollis; Henry T. Pauk, and Harry E. Lones, both of Nashua, all of N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Jul. 9, 1979, Ser. No. 56,128

Int. Cl.³ B05C *1/08*

U.S. Cl. 118—647 **6 Claims**



1. In a copying apparatus having

a rotating drum having a reusable photosensitive surface,

a developing station for contacting liquid toner to said drum surface to develop an electrostatic image, and

a transfer station for transferring said developed image to a transfer material,

apparatus for controlling the thickness of said liquid toner on said drum prior to said transfer station, comprising:

a metering roll,

means for biasing said metering roll toward said drum, and

means for controlling the minimum distance from said drum photosensitive surface to said metering roll comprising:

a positionably fixable element fixed against rotation about an axis parallel to the axis of rotation of said rotating drum,

means for securing said element in an operative fixed position between said drum and said metering roll,

said element in said operative position having a first nonrotating surface against which said rotating drum surface can rotate in sliding frictional contact and a second nonrotating surface against which said metering roll can rotate in sliding, frictional contact, the distance between said first and second surfaces controlling the minimum distance between said roll and said drum photosensitive surface.

4,236,484

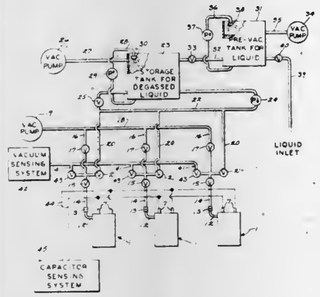
APPARATUS FOR PROCESSING AN ELECTRICAL APPARATUS

John Lapp, Franklin, Wis., and John R. Willy, Greenwood, S.C., assignors to McGraw-Edison Company, Elgin, Ill.

Division of Ser. No. 801,637, May 31, 1977, Pat. No. 4,187,327, which is a continuation of Ser. No. 612,028, Sep. 10, 1975, abandoned. This application Feb. 22, 1979, Ser. No. 14,226

Int. Cl.³ H01G *13/04*

U.S. Cl. 118—663 **6 Claims**



1. In an apparatus for processing an electrical apparatus having an outer casing containing a dielectric material and electrically conductive layers, comprising degassing means for degassing a dielectric liquid, vacuum means for evacuating the interior of the casing, vacuum sensing means for measuring the sub-atmospheric pressure developed by said vacuum means, liquid supply means for introducing the degassed dielectric liquid into the casing, and pressure means for applying a super-atmospheric pressure to the liquid in the casing to thereby impregnate the dielectric liquid into the dielectric material.

4,236,485

TONER CONCENTRATION CONTROL DEVICE

Sumitaka Inukai, Yokohama, and Takashi Azuma, Ebina, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 2, 1979, Ser. No. 63,264

Claims priority, application Japan, Aug. 2, 1978, 53-94332

Int. Cl.³ G03G *15/06, 15/09*

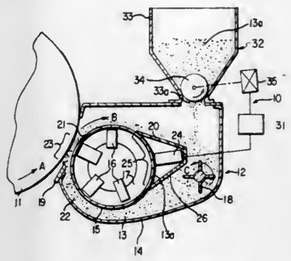
U.S. Cl. 118—690 **3 Claims**

1. A toner concentration control device comprising:

supplying means for supplying a fresh toner to a developing device for causing an electrostatic image on the surface of a photosensitive body to be developed with a developer comprising toner and carrier;

conveying means having a conveying surface for conveying the developer through a developing state;

detecting means for optically detecting an amount of the toner separated from the carrier of the developer and attached on the conveying surface to produce a corresponding signal; and



means for controlling the supplying amount of the toner to the developing device based on said corresponding signal.

4,236,486

TONER CONCENTRATION CONTROL DEVICE

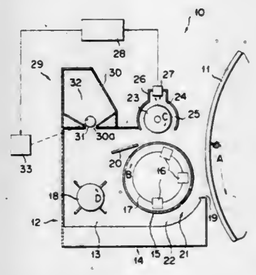
Chosin Nakamine, Yokohama, and Norihito Fuzii, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 20, 1979, Ser. No. 22,178

Claims priority, application Japan, Mar. 27, 1978, 53-39190[U]

Int. Cl.³ B05C *11/00;* **G03G** *15/00*

U.S. Cl. 118—691 **8 Claims**



1. A toner concentration control device comprising:

supplying means for supplying a fresh toner to a developing device for causing an electrostatic image on the surface of a photosensitive body to be developed by a magnetic brush of a developing agent comprising a toner and a carrier;

probe means adapted to be rotated in contact with the magnetic brush after development and having on the outer peripheral surface thereof an electroconductive nonmagnetic surface for picking up the toner from the magnetic brush, the electroconductive surface of said probe means having a plurality of parallel grooves provided in a direction of rotation of said probe to provide a toner pick up surface;

detecting means for optically detecting an amount of toner picked up on the toner pick up surface of said probe to produce a corresponding signal; and

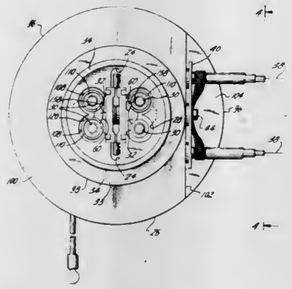
means for comparing the signal from said detecting means with a reference value and controlling an amount of fresh toner from said supplying means to maintain constant a toner concentration in the developing agent in said developing device.

4,236,487

CRYSTAL PLATING APPARATUS

Alan Kaplan, West Caldwell, N.J., assignor to Emkay Manufacturing Company, East Hanover, N.J.

Filed Apr. 30, 1979, Ser. No. 34,780
Int. Cl.³ C23C *13/08, 13/02*
U.S. Cl. 118—723 **14 Claims**



1. A crystal plating device comprising:
(a) a base having a power circuit and an oscillating circuit therein;
(b) a chamber formed in the base;
(c) a sealed top enclosing the chamber;
(d) at least one pair of filament posts affixed to the base disposed within the chamber and in the power circuit;
(e) a filament connected across the filament posts;
(f) a crystal holder removably connected with the base;
(g) a crystal in the oscillating circuit and carried by the crystal holder; and
(h) a pump connected to the base to vacuum pump the chamber whereby energizing the circuits will oscillate the crystal and evaporate the filament to plate the crystal and produce the desired frequency therefor.

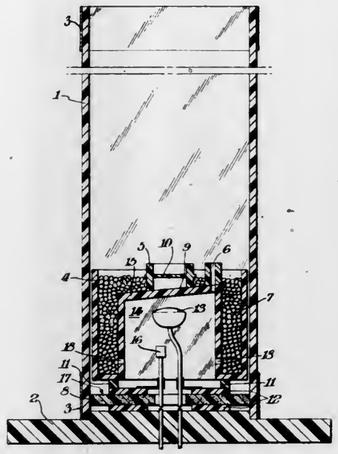
4,236,488

SEPARABLE MULTI-COMPONENT AQUARIUM FILTERING AND CLEANING DEVICE

Linda W. Olds, and Merton R. Olds, both of 14 Weldin Park La., Weldon Park, Wilmington, Del. 19803, assignors to Linda W. Olds; Merton R. Olds, both of Wilmington, Del. and John L. Williamson, Boling Brook, Ill.

Filed Aug. 23, 1978, Ser. No. 935,905
Int. Cl.³ A01K *64/00*
U.S. Cl. 119—5 **5 Claims**

1. An aquarium comprising a container having a bottom wall and a side wall extending upwardly, therefrom, a floatable unit inside the container normally at the bottom thereof having an exterior configuration that closely conforms to the interior configuration of the container, a pocket formed on the underside of the floatable unit, means providing a source of air in communication with the pocket, a portion of the floatable unit defining an opening capable of being plugged located near the top of the floatable unit and normally providing an exit for the air but when plugged allowing the air to collect in the pocket whereby the floatable unit rises to the top of the container, and a cleaning unit connected to the floatable unit for movement therewith, the cleaning unit including a cleaning element in



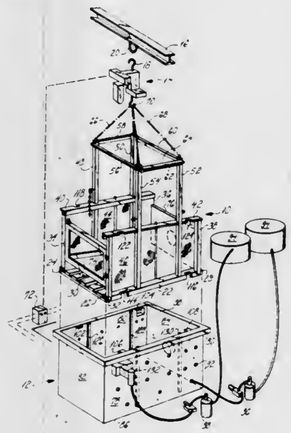
contact with the inside surface of the container side wall during movement of the floatable unit within the container.

4,236,489

ANIMAL POOL WITH LIFT PLATFORM

James A. Carra, 1590 Sunrise Hwy., Copiaque, N.Y. 11726

Filed May 5, 1978, Ser. No. 903,250
Int. Cl.³ A01K *29/00;* **A61D** *11/00*
U.S. Cl. 119—158 **1 Claim**



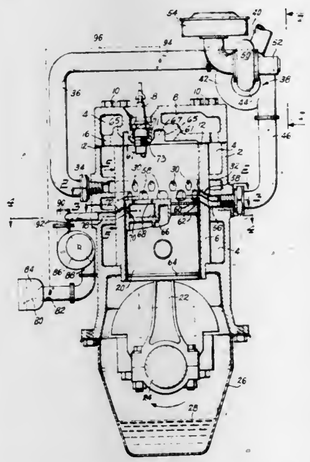
1. An animal pool comprising;
a substantially rectangular tank having an open top, first and second tank sidewalls and first and second tank end walls;
a substantially horizontal lift platform having frame members for the floor and vertical corner supports and adapted to be raised or lowered through said open top to enter and exit said tank;
said lift platform further comprising a floor, first and second sidewalls and first and second end doors;
each of said end doors of said lift platform being rotatable about a vertical axis from a closed to an open position;
hoist means extending upwardly from said lift platform to raise and lower said lift platform;
hoist supports for said hoist means;
an electrically controlled hoist mechanism for said hoist means;
chain means interconnecting said hoist mechanism and said lift platform;
horizontal hold means including inwardly projecting flanges and notches formed on said tank and said lift to cooperatively prevent relative horizontal movement of said lift platform, said notches receiving said projecting flanges to prevent said movement;
said flanges being located at the top of said tank and said notches being located on said lift platform;
bearing guide means for guiding said lift platform within said tank during vertical movement of said platform, said bearing guide means including vertical guide bars on the inside surface of said tank sidewalls and vertical supports of said platform cooperating therewith during vertical movement of said platform; and
liquid spray means for placing liquid and spraying liquid in said tank.

4,236,490

INTERNAL COMBUSTION ENGINE

Jerome B. Correll, New Orleans, La., assignor to A. C. Engines, Inc., Metairie, Ind.

Continuation-in-part of Ser. No. 596,417, Jul. 16, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,441
Int. Cl.² F02B *19/10, 3/00*
U.S. Cl. 123—260 **30 Claims**



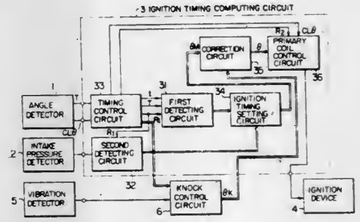
1. In a two stroke internal combustion engine having a cylinder with a piston reciprocally mounted therein, the improvement comprising:
said piston having portions defining a precombustion chamber for containing a precombustion mixture, said chamber having an ejection opening therein;
a spark plug, mounted in the engine so as to project in a first direction, completely through said opening and into the precombustion chamber when the piston is near top dead center position, to ignite said mixture at a position within said chamber; and,
a wall of said engine defining, along with the piston in said position, a combustion chamber in communication with the ejection opening and positioned with respect to the opening in a direction opposite to said first direction,
whereby flame ejected from the precombustion chamber through said opening is received in the combustion chamber.

4,236,491

IGNITION TIMING CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Tadashi Hattori, Okazaki; Kenji Goto, Susono; Daisaku Sawada, Susono; Takashi Shigematu, Susono; Hiroaki Yamaguchi, Anjo; Minoru Nishida, Okazaki, and Teruyoshi Ito, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya; Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, all of, Japan

Filed Feb. 28, 1979, Ser. No. 16,301
Claims priority, application Japan, Mar. 2, 1978, 53-24077
Int. Cl.³ F02P *5/14, 3/08*
U.S. Cl. 123—425 **4 Claims**



1. An apparatus for controlling timing of ignition sparks supplied to an internal combustion engine having an output shaft rotated by the combustion of mixture comprising:
first position detecting means for producing a first position signal in synchronized relation with the arrival of said output shaft at a predetermined reference position;
computing means for computing an ignition spark angle relative to the timing of said first position signal in response to operating conditions of said internal combustion engine;
igniting means for supplying said internal combustion engine with an ignition spark in synchronized relation with the arrival of said output shaft at said ignition spark angle;
second position detecting means for producing a second position signal in synchronized relation with the arrival of said output shaft at a position where a pressure of combustion caused by said ignition spark attains substantially a maximum value;
knock detecting means for producing knock signals having magnitudes proportional to respective intensities of knocks of said internal combustion engine;
first integrating means for integrating said knock signals;
second integrating means for integrating said knock signals;
interval control means for limiting the operations of said first integrating means to respective first and second predetermined intervals which are present before and after said second position signal, respectively;
dividing means for dividing a second output of said second integrating means by a first output of said first integrating means; and
correcting means for correcting said ignition spark position in response to an output of said dividing means.

4,236,492

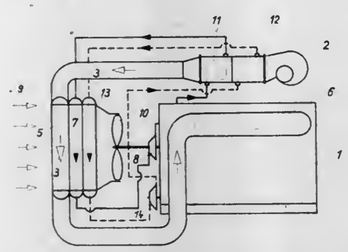
INTERNAL COMBUSTION ENGINE HAVING A SUPERCHARGER AND MEANS FOR COOLING CHARGED AIR

Paul Tholen, Im Lüh, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,791
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655017
Int. Cl.³ F02B *29/04*
U.S. Cl. 123—119 CD **10 Claims**

1. An arrangement comprising in combination: an internal combustion engine; a supercharger for supplying charged air

to said internal combustion engine; at least two means for cooling said charged air having different temperature levels and being interposed between said supercharger and said internal combustion engine as well as communicating with same and being located in the charged air flow path, said means for cooling charged air comprising an air cooled supercharger intercooler and at least two liquid cooled supercharger intercoolers each having a different temperature level as well as being arranged ahead of said air cooled supercharger inter-



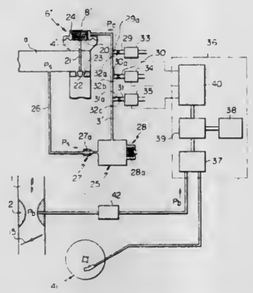
cooler in the direction of charged air flow, and an air cooled heat exchanger operatively connected to said liquid cooled intercoolers and located in the flow of said cooling air from siad air cooled supercharger intercooler; and means for drawing cooling air into said arrangement, said means for cooling charged air being arranged in succession in the stream of said charged air in such a way that the temperature of said charged air decreases in the direction of flow thereof, and the temperature of said cooling air increases in the direction of flow thereof.

4,236,493

EGR CONTROL SYSTEM

Ken Nakamura, Kawasaki; Yasuo Nakajima, Yokosuka; Hiromichi Ofuji, Yokohama, and Eiji Murata, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 30, 1979, Ser. No. 43,831
Claims priority, application Japan, Jun. 1, 1978, 53/66458
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **8 Claims**



1. An exhaust gas recirculation control system for an internal combustion engine, comprising:

an exhaust gas recirculation passage means for passing therethrough a portion of the exhaust gas issued from the internal combustion engine;

a source of vacuum;

an exhaust gas recirculation control valve including a control vacuum chamber communicating with said source of vacuum, said exhaust gas recirculation control valve being constructed and arranged such that it varies the degree of flow resistance in said exhaust gas recirculation passage means in response to a control vacuum within said control vacuum chamber;

a control passage means for providing communication between said source of vacuum and said control vacuum chamber;

said control passage means being formed with a plurality of holes which are spaced with each other in a longitudinal direction of said control passage means;

a valve system including a plurality of ON-OFF valves to open and close said holes, said valve system having 2^n different states, where: n denotes the number of said plurality of ON-OFF valves; and

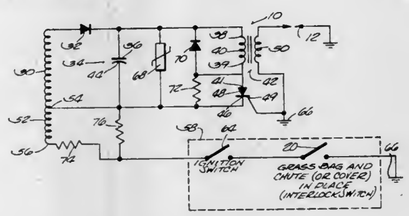
control means adapted to energize said plurality of ON-OFF valves selectively in accordance with operating conditions of the internal combustion engine.

4,236,494

ELECTRONICALLY CONTROLLED C.D. IGNITION AND INTERLOCKING SHUT-OFF SYSTEM

Harold W. Fairchild, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 21, 1978, Ser. No. 944,335
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—630 **7 Claims**



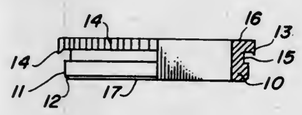
1. A lawn mower comprising an electronically controlled C.D. ignition and interlocking shut-off system including a charge capacitor, an ignition coil including a primary winding, a thyristor including an anode connected to one end of said primary winding, and including a cathode, and a gate connected to ground, said thyristor being rendered conductive when a trigger pulse is applied to said gate to allow discharge of said capacitor through said primary winding, a trigger coil adapted to generate trigger pulses applied to said thyristor gate, and having a first end connected to said thyristor cathode and having a second end, and a plurality of interlocking switch means electrically connected in series relation between said second end of said trigger coil and ground, each of said switch means being selectively movable to an open position for interrupting current flow and preventing application of a trigger pulse to said gate, thereby selectively preventing discharge of said charge capacitor through said primary winding.

4,236,495

SELF LOCKING VALVE SEAT INSERT

Jose Rosan, Jr., Newport Beach, Calif., assignor to Rosan, Inc., Newport Beach, Calif.

Filed Oct. 13, 1978, Ser. No. 950,973
Int. Cl.³ F01L *3/22*
U.S. Cl. 123—188 S **2 Claims**



1. A cylinder head and valve seat insert in combination comprising;

a cylinder head of material softer than the valve seat insert;

a valve seat insert for installation therein which includes a pilot flange, a locking flange means containing a cutting edge on its lower face and the valve seat means on its upper face, the circumference of said locking flange containing longitudinal serration means;

an annular groove formed below said locking flange by the cutting shoulder;

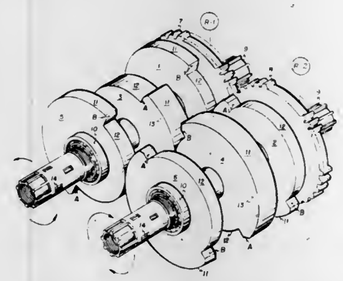
a ring of metal composed of chips and metal cut from said cylinder head by the locking flange, tightly compressed into said annular groove locking the valve seat into the cylinder head.

4,236,496

ROTARY ENGINE

Louie A. Brownfield, 3690 Ridgeway Dr., Los Alamos, N. Mex. 87545

Filed Jul. 24, 1978, Ser. No. 927,477
Int. Cl.³ F02B *53/08*
U.S. Cl. 123—212 **8 Claims**



1. A rotary internal combustion engine comprising, in combination, first and second identical, parallel and adjacent rotary units contained within a housing, each unit cooperating with the said housing and with the rotors to form individual variable volume intake-compressor wheel and power wheel chambers, each rotary unit having a shaft on which is mounted two bearings and three wheels, the outer two wheels acting as an air-fuel intake-compressor and a center power wheel, all of said wheels being of cylindrical shape and each having a lobe comprising an 180° arc of the circumference of the wheel thereby forming a leading and trailing lip, said lobes of the outer wheels being situated 180° opposite the lobe on its center wheel, the lobes of the first rotary unit being 180° opposite the lobes of the second rotary unit, and

(a) means for feeding an air-fuel mixture to the said intake-compressor wheel chambers,

(b) means for transferring the compressed air-fuel mixture from the intake-compressor wheel chambers to combustion chambers located on each side of the center power wheel chamber,

(c) means for igniting the compressed air-fuel mixture contained in the combustion chambers,

(d) means for transferring energy of the ignited fuel mixture from the combustion chamber to the center power wheel chamber,

(e) means for exhausting the expended gases from the center power wheel chamber,

(f) means for intermeshing lobes of the rotary units in a predetermined relationship to each other allowing each of the said units to rotate and provide mechanical energy, and

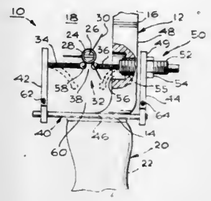
(g) means for liquid cooling the engine.

4,236,497

ARCHERY BOW WITH ARROW REST

Fernando V. Troncoso, Jr., 1851 S. Orange Ave., Monterey Park, Calif. 91754

Filed Jan. 11, 1979, Ser. No. 2,692
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **6 Claims**



1. An improved archery assembly, said assembly comprising, in combination:

a. an archery bow having an arrow shelf and sidewall defining an arrow window;

b. an archery arrow; and,

c. an improved arrow rest disposed in said window and supporting said arrow for shooting from said bow, said rest including:

i. a flexible resilient pair of rest arms comprising coiled wire springs aligned generally horizontally in said window, spaced above said shelf, defining a gap therebetween and releasably holding said arrow over said gap for free unimpeded flight of said arrow in said space below said resilient arms upon shooting of said bow, and

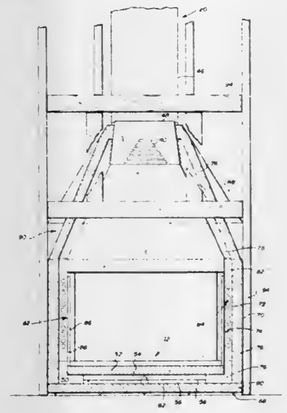
i.i. support means interconnecting said resilient pair of rest arms with said bow, said support means including a connector which secures one of said arms to said sidewall, and a bracket which secures the other of said arms to said bow, said bracket including an element lateral of said window.

4,236,498

SEE THROUGH FIREPLACE

James R. Taliaferro, Springtown, Tex., assignor to Best Metal Products, Dallas, Tex.

Filed Jun. 8, 1978, Ser. No. 913,847
Int. Cl.³ F24B *1/18*
U.S. Cl. 126—120 **6 Claims**



1. A zero clearance dual opening hearth fireplace adapted to be capable of installation in contact with combustible material, comprising:

a firebox disposed over a hearth and formed of two upstanding side walls and front and rear panels, each of said panels defining an opening for providing front and rear access to the hearth;

a hood for connection with the chimney defining a flue internally thereof, said hood disposed above the hearth and connected to said firebox for venting said firebox into a chimney; and

said walls and said hood having a triple insulated structure comprising an outer casing, an intermediate casing and an inner casing, said outer casing being separated from said intermediate casing by insulation material and said intermediate casing being separated from said inner casing by an air passageway, said insulation having sufficient thickness such that the temperature of said outside casing does not exceed 115° F. during combustion, wherein metal heat shields are mounted to the inside casing along the side walls of the firebox.

4,236,499

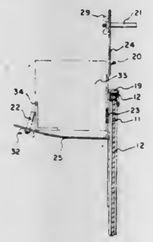
FIRE BOARD

Arthur Simeone, 66 Partridge La., Cherry Hill, N.J. 08033

Filed Jan. 18, 1979, Ser. No. 4,361

Int. Cl.³ F24C *15/10*

U.S. Cl. 126—140 **22 Claims**



1. A fire board for covering a fireplace, said fireplace including a firebox opening and resting against the face of the fireplace opening comprising

(a) at least one sheet of metal which covers an area larger in all dimensions than the fireplace opening,

(b) a frame means following the periphery of the metal sheet,

(c) at least one inverted U shaped clamp means fitting over the frame means and the sheet,

(d) a guide means on the U clamp means capable of holding and allowing a strap to slide up and down vertically on the side of the sheet nearest the fireplace opening,

(e) an L shaped adjustable strap sliding vertically in the guide means extending upwardly above the top of the fire board between the fireplace face and horizontally into the fireplace opening,

(f) a vertical stop extending vertically from the horizontal extension of the L strap to engage the inside of the firebox and,

(g) a knob means extending horizontally from the vertically section of the L strap suitable to be grasped by the hand for vertical sliding of the L strap.

4,236,500

LOG-BURNING STOVE

James R. Choate, P.O. Box 2409, Rochester, N.H. 03867

Continuation of Ser. No. 789,517, Apr. 21, 1977, Pat. No. 4,131,104. This application Apr. 13, 1978, Ser. No. 896,203

Int. Cl.³ F23M *5/00*

U.S. Cl. 126—145 **18 Claims**

1. A stove which comprises in combination:

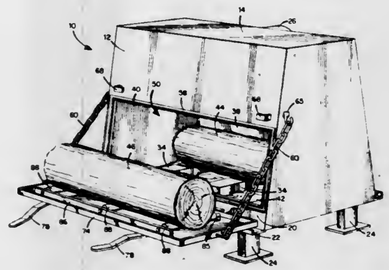
(a) a shell surrounding a combustion chamber;

(b) a flue for the discharge of gaseous combustion products from the combustion chamber;

(c) an entrance door in the shell extending substantially across the width of the stove, the door adapted to be placed between an open and a closed position;

(d) a plurality of refractory plate elements within the shell, which elements define a combustion chamber, the plate elements of a size to permit the insertion of the plate elements through the entrance door and including at least a single back, top, and two opposing side plate elements, the back and side elements in contacting relationship to form a peripheral refractory wall of the combustion chamber;

(e) the top refractory plate element having a width less than that of the top of the side plate elements and positioned at each end on the upper top edge of said side plate elements to define an upper plenum chamber and a lower combustion chamber, with an elongated flow passageway extending substantially the length of the combustion chamber for the passage of gaseous combustion products from the lower combustion chamber through the flow passageway to the upper plenum chamber into the flue, the top refractory plate element resting at each end on the top edge of the said side plate elements, and wherein said top refractory plate element is adjustable to permit the said flow passageway to be positioned between the front and the back of the combustion chamber;



(f) plate clamp means to retain each of the side plates in position within the shell; and

(g) draft control means to permit and control the entrance of air into the combustion chamber.

4,236,501

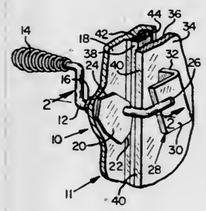
DUAL ACTION SAFETY LATCH FOR STOVE DOOR

Harold C. Bitler, Springfield, Oreg., assignor to Fisher Stove Works, Eugene, Oreg.

Filed Mar. 5, 1979, Ser. No. 17,464

Int. Cl.³ F24C *15/04*; E05C *3/04, 3/02*

U.S. Cl. 126—197 **9 Claims**



1. A latch mechanism for a solid-fuel burning stove and the like having a door movable between a closed position where it closes a doorway opening to the interior of said stove and an open position away from said doorway opening, said latch comprising:

(a) dog means for releasably holding said door in said closed position;

(b) limit means associated with said dog means for requiring a first movement and a distinct second movement of said dog means before said door can be fully moved to said open position, said second movement being possible only upon movement of said door to a partially opened position intermediate said open and closed positions; and

(c) retention means cooperating with said dog means for limiting movement of said door upon said first movement of said dog means to said partially opened position, said partially opened position admitting combustion-supporting air into said interior of said stove.

4,236,502

PORTABLE HEATING SYSTEM

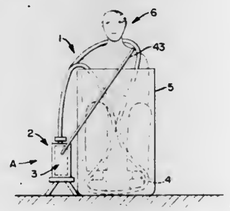
Hans Kühl, Kornbergweg 12, D-7310 Plochingen, Fed. Rep. of Germany

Filed Jun. 15, 1977, Ser. No. 806,853

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626947

Int. Cl.² A61F *7/06*

U.S. Cl. 126—208 **34 Claims**



1. A portable heating system for individuals, which system includes a means for heating a quantity of fluid, an energy source means for supplying a fuel to said heating means, and means operatively connected with said heating means for emitting a quantity of heat, characterized in that the energy source means, the heating means and the heat emitting means are constructed as a structural unit, a portable housing means is provided for accommodating both the energy source means and the heating means, the heating emitting means are insertable into a sheath surrounding an individual so as to provide for thermal requirements of the individual, and in that the heating emitting means is formed essentially of a flexible hose through which the fluid circulates, the flexible hose being connected to the heating means and forming a hermetically sealed system therewith so that a flow gradient is created whereby the fluid flows through the heating system without the provision of a fluid pump.

4,236,503

GRATE WITH ADJUSTABLE VENTS

Wayne T. Kemp, Kutztown, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 30, 1978, Ser. No. 956,549

Int. Cl.³ F24C *15/10*

U.S. Cl. 126—215 **7 Claims**

4. A gas-fueled appliance comprising:

at least one burner;

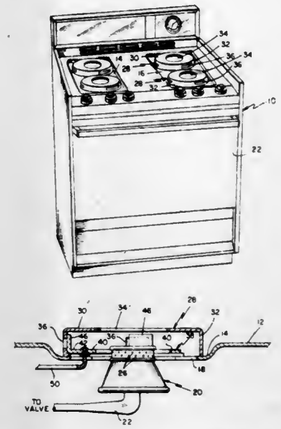
piping means for supplying fuel to the burner to produce a flame when ignited together with resultant combustion flue products;

valve means connected to said piping means and adjustable to vary flow of fuel to the burner and consequently vary the size of the burner flame and the amount of combustion flue products produced;

a gate mounted over said burner for supporting a utensil to be heated and having walls which provide substantially complete enclosure of said burner when a utensil is in position on the grate;

said grate having adjustable venting means for permitting escape of combustion flue products from within the grate through a plurality of vents; and

said adjustable venting means comprises adjustment means for varying the size of said vents in accordance with variations in the size of said burner flame comprising a



ring encircling the burner and rotatable about its axis within the grate, a plurality of arms corresponding in number to the number of vents extending radially from said ring, and shutter elements carried by the ends of said arms and adapted to move with said ring into and out of closing relation to a respective one of said vents.

4,236,504

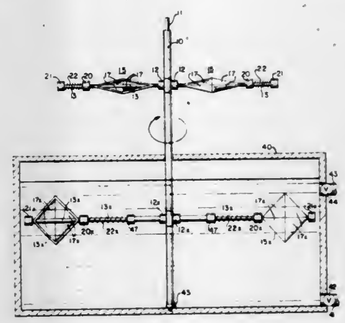
IMPELLERS AND APPARATUS FOR USE THEREWITH

Floyd S. Cornelison, Jr., 16 Stone Hill Rd., Wilmington, Del. 19803

Filed May 14, 1979, Ser. No. 38,455

Int. Cl.³ F24C *9/00*

U.S. Cl. 126—247 **12 Claims**



1. In combination

a shaft,

a plurality of rods extending radially and horizontally from said shaft,

collapsible cups on said rods fixed at one end and having exposed areas in facing relation to a fluid,

a weight responsive to centrifugal force connected to the other end of each of said cups, and

resilient means connected to said weight for initial positioning of said cups in a predetermined condition of exposed area,

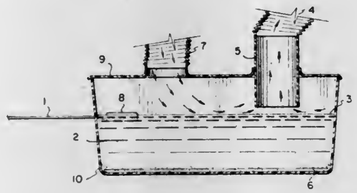
said weights acting with said springs for changing the condition of said cups to change the exposed areas thereof.

4,236,505

FORCED DROPLET HUMIDIFIER

Daniel J. Tarullo, 71 Coventry Ct., Voorheesville, N.Y. 12186, assignor to Daniel J. Tarullo, Voorheesville, N.Y.

Filed Apr. 4, 1979, Ser. No. 15,815
Int. Cl.[3] F24H *1/00*
U.S. Cl. 126—350 B **3 Claims**



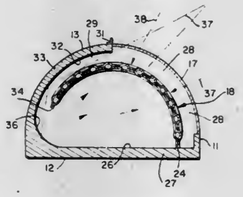
1. A forced droplet humidifier comprising a main body having a float valve to regulate the water supply and level, a removable cover for said body having two openings therein, one for a hot air supply and one for a suction tube, the suction tube being adjustably mounted in a collar so that the bottom of the tube is elevated above the water level to receive water droplets and vapor into the suction tube by the force air operation of a furnace.

4,236,506

SOLAR ENERGY COLLECTOR

Charles F. Roark, 24 Maple La., Brownsburg, Ind. 46112

Continuation of Ser. No. 715,448, Aug. 18, 1976, Pat. No. 4,132,222. This application Dec. 29, 1978, Ser. No. 974,353
The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—439 **4 Claims**



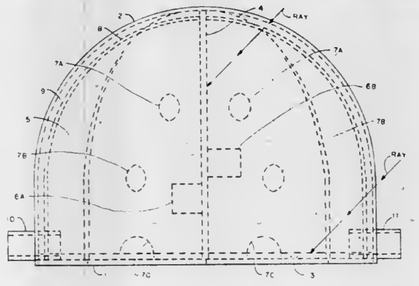
1. A solar energy collector comprising:
an absorber panel having a flow inlet adjacent a first end and a flow outlet adjacent a second end, said absorber panel further having an inlet manifold region in communication with said flow inlet and an outlet manifold region in communication with said flow outlet and a plurality of passageways for conveying a working fluid, each of said passageways providing flow communication between said inlet manifold region and said outlet manifold region, said absorber panel being part-cylindrical about a horizontal axis and including two opposite edges, every one of said passageways being substantially parallel to said horizontal axis; and
an enclosure surrounding said absorber panel and including a base portion and two enclosing portions, one of said enclosing portions being substantially transparent, one of said edges of said absorber panel being associated with said base portion at a location spaced apart from said substantially transparent portion, the opposite one of said edges being within said enclosure and spaced apart from said enclosing portions and said base portion and accommodating light transmission from outside said enclosure through said transparent portion and around said edge to the interior of said enclosure under said panel.

4,236,507

DOME SOLAR AIR HEATER

Ogden W. Vincent, 2166 La Miel Way, Campbell, Calif. 95008

Filed Oct. 17, 1977, Ser. No. 842,927
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—450 **10 Claims**



1. A dome-like solar heater comprising:
(a) a base having a generally round shape, said base being a structural member, means to hold said base in relation to the earth in such a direction as to receive solar rays, means to insulate said base so as to reduce the passage of heat to the atmosphere, a dark coating being applied to the top of said base for the purpose of absorbing solar rays and producing heat, thereby heating air or gas within said solar heater,
(b) a collector means positioned in the center of said base for the purpose of collecting solar rays and producing heat, said collector means being a plurality of fins which are coated with a dark radiation-absorbing coating, said fins further including holes to allow passage of air or gas therethrough, the outline of said fins being the general shape of said dome-like structure,
(c) a transparent inner cover being supported by said plurality of fins and attached to said base, said inner cover having a gas seal to prevent gas passage therefrom,
(d) a transparent outer cover being supported by said plurality of fins and attached to said base, the shape of said outer cover being a dome-like surface, said outer cover being spaced a small distance from said inner cover so as to have a dead air layer inbetween for insulation, said outer cover providing a gas seal to prevent gas passage therefrom, and
(e) an insulated input pipe being attached to said inner cover, and an insulated output pipe being attached to the opposite side of said inner cover, means to introduce air or gas into the space between said inner cover and said fins and through said output pipe.

4,236,508

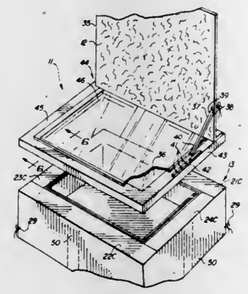
SOLAR COOKER AND METHOD OF ASSEMBLY

Barbara P. Kerr, Tempe, Ariz., assignor to Elsa D. Cole, Tempe, Ariz., a part interest

Filed Dec. 11, 1978, Ser. No. 968,303
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—451 **10 Claims**

1. A solar oven comprising:
a first box having an open top,
a second box having an open top of a smaller size than said first box and arranged within and spacedly positioned from the bottom, sides and ends of said first box,
the inside surface of said second box having a heat absorbing surface,

topper spacer means closing the space between said first and second boxes at their open tops,
said topper spacer means comprising two pairs of U-shaped clamps for positioning over the edges of the periphery of the tops of said first and second boxes to cover the space therebetween and hold the boxes in a given position relative to the other,
each clamp of each pair comprising a pair of legs interconnected by a bight,
the legs of said first pair of clamps fitting over the opposed surfaces of different juxtapositioned ends of the first and second boxes,
the legs of the second pair of spacers fitting over the opposed surfaces of a different juxtapositioned side of the first and second boxes,
the bights of the clamps covering the spaces between said first and second boxes at their open tops,
a transparent enclosing means comprising a cap lid resting above the edges of the open tops of said first and second boxes and on the topper spacers for closing the open top end of said second box,
said enclosing means comprising a pair of spaced transparent plates having a closed air space therebetween, and
a reflective means of substantially the same size as the opening of said first box hingedly attached to said cap lid for selective movement relative thereto, and



detachable brace means arranged to extend between said reflective means and said top of said cap lid for holding said reflective means in one of a plurality of angular positions relative to the top of said cap lid for directing solar rays into the opening of said second box.

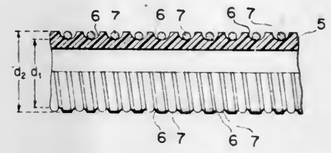
8. A method for assembling a solar oven comprising the steps of:
placing an open top box within a second open top box in spaced arrangement therewith with the peripheries of the opening of said boxes being coplanar,
covering the inside surface of said second box with a heat absorbing material,
filling the space between said boxes with an insulating material,
placing clamp means over the peripheral edges of said first and second boxes for closing the space between the boxes and for holding them in a fixed position one relative to the other,
placing a transparent cap lid, enclosing member comprising a pair of spaced plates enclosing an air space therebetween across the open end of the boxes,
hingedly mounting a reflective surface of a similar size to the opening of said second box on the top periphery of the cap lid for reflecting solar rays into said first box, and
selectively moving said reflective surface to orient it to the sun.

4,236,509

CURVING DEVICE IN AN ENDOSCOPE

Nagashige Takahashi, Tokiwadai Green Haitsu 602, No. 28-10, Tokiwadai 3-chome, Itabashi-ku, Tokyo, and Nobuhiro Noda, No. 1480-33, Kawashima,, Ranzan-machi, Hiki-gun, Saitama, both of Japan

Filed Nov. 18, 1977, Ser. No. 852,640
Claims priority, application Japan, Dec. 28, 1976, 51/177350[U]
Int. Cl.[3] A61B *1/00*
U.S. Cl. 128—4 **4 Claims**



1. In an endoscope of the type comprising a flexible end section which is inserted into a part to be examined, a manual operating section for controlling the curving of said flexible end section, a flexible connecting pipe connecting said flexible end section to said manual operating section and connecting means in said flexible pipe coupling said manual operating section and flexible end section, the improvement in a curving device for said flexible end section comprising:
a guide tube having a smooth interior surface and having a groove in the exterior surface thereof, said groove being shaped such that a wire can be fitted into said groove and wrapped around the tube in the form of a coil;
a hard wire wrapped around said tube and fitted within and in direct contact with the surface of said groove along the length of said tube and forming a coil, the diameter of said wire being substantially equal to the depth and smaller than the width of said groove so that said wire is slidable across the width of said groove during flexing of said tube.

4,236,510

ULTRASONIC TOOTH CLEANING APPARATUS

Edward E. Hatter, 31377 E. Nine Dr., Laguna Niguel, Calif. 92677; Richard H. Taylor, 13691 Gershon Pl., Santa Ana, Calif. 92705, and Richard D. McGunigle, 1135 Picaaho Dr., La Habra Heights, Calif. 90631

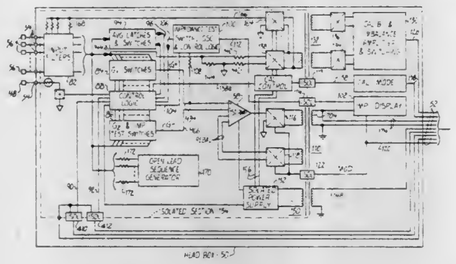
Filed Feb. 21, 1979, Ser. No. 12,984
Int. Cl.[3] A61H *1/00*
U.S. Cl. 128—24 A **22 Claims**



1. A hand-held ultrasonic tooth-cleaning apparatus having a radiating surface for insertion into an oral cavity to transmit ultrasonic energy from the radiating head to the teeth through a liquid sonic couplant to effect cleaning by cavitation action, said apparatus comprising:
A. a vibrating member including:
1. a body member;
2. a probe coupled to said body member;
(a) said probe defining a radiating surface disposed substantially parallel to the longitudinal axis of said vibrating member;
B. means disposed externally of the mouth for generating ultrasonic energy at a frequency and amplitude sufficient to establish cavitation within said liquid couplant adjacent said teeth; and

C. means for attaching said ultrasonic generator means to said vibrating member for establishing propagation of ultrasonic energy in said body and said probe in a transverse mode with respect to the longitudinal axis of said body and said probe said radiating surface being positioned at a point of maximum displacement on said probe to maximize the intensity of acoustic energy at said radiating surface.

4,236,511
ELECTROENCEPHALOGRAPH
Phillip J. Loeb, Skokie, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Jun. 9, 1978, Ser. No. 914,273
Int. Cl.[3] A61N *5/04*
U.S. Cl. 128—731 **6 Claims**



1. In an EEG system having a plurality of patient electrodes each having an identifiable symbol and selectably connectable in pairs to provide the inputs for channels in a multi-channel recorder means for recording traces corresponding to signals developed in said channel, each of said channels having an identifying symbol, amplification means for amplifying analog signals selectively connected to said plurality of electrodes and to said recorder means, selecting means for selecting the gain of said amplification means for each of said channels, said gain being represented by a numerical value, keyboard means including a plurality of channel select keys, digital display means including a group of seven-segment display devices, interconnecting means interconnecting said keyboard means and said digital display means energized by actuation of any one or more of said channel select keys for displaying information on said digital display means, said interconnecting means including means energized by actuation of said channel select keys for displaying on said digital display means said numerical value representing the selected gain numerical value of said amplifier for the channel corresponding to the actuated channel select keys.

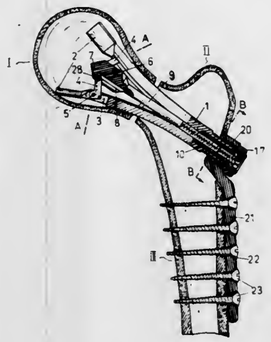
4,236,512
CONNECTOR FOR FRACTURED BONES
Jacob Aginsky, 18 Rachel St., Haifa, Israel
Filed Jan. 22, 1979, Ser. No. 5,103
Claims priority, application Israel, Feb. 12, 1978, 54025
Int. Cl.[3] A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 BA **4 Claims**

3. A connector for treatment of a fractured femur neck comprising:

a sheath adapted to be inserted with its leading or front end through a bore made in the trochanter region, into the cavity of the femur head, the sheath being of a length sufficient to protrude out of said bore by a short length of its trailing or rear end, said front end being shaped to form at least three resilient tongues adapted to be forcefully expanded in an outward direction toward the cavity walls, the rear of said sheath being provided with external screw threads interrupted by two longitudinally extending flat surfaces on opposite sides and extending along the sheath for a length not less than the length of the thread,

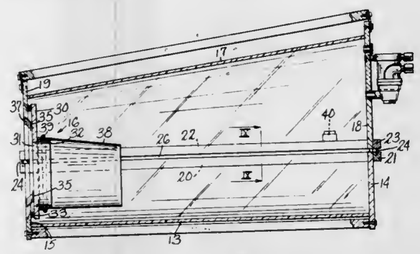
expander means adapted to be operated from the rear end of said sheath for either expanding of reclosing said tongues,

a shaft fixator comprising a flat plate provided with perforations for attaching said plate to the femur shaft by means of screws, said plate being integrally connected to a shaft fixator socket provided with an opening, the rear portion



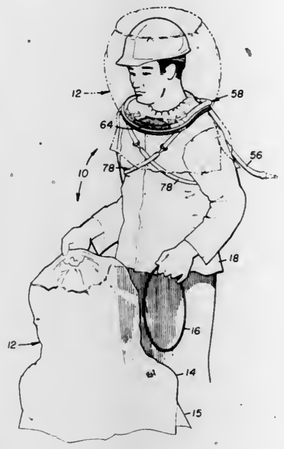
of which is cylindrical while the front portion is oblong corresponding to the shape of the rear end of said sheath and being of sufficient size to receive an internally threaded nut, the axis of said socket opening and said plate surface adjacent the femur shaft forming an angle of 116° to 136°, said socket being adapted to be moved along said sheath and to be biased against the outer bone surface by means of said internally threaded nut movable on said screw threaded sheath end.

4,236,513
PULSED OXYGEN CHAMBER
Rocco W. LoPiano, 26 Journal Sq., Jersey City, N.J. 07306
Filed Apr. 18, 1979, Ser. No. 31,053
Int. Cl.[3] A61M *13/00*
U.S. Cl. 128—184 **3 Claims**



1. A closable chamber for use in gas treatment of a human limb comprising separable lower and upper portions and a ring-sleeve assembly, the lower portion including an elongated upwardly facing trough having a closed end wall and a partially cut away end wall, the upper portion including an elongated downwardly facing trough having a closed end wall and a partially cut away end wall, each of the upper portion end walls being complementary to the respective lower portion end walls and the cut away walls having beveled edges which cooperate to define a substantially circular opening, the lower and upper portions having matching peripheral edges, upwardly and downwardly facing, respectively, and a vertically compressible sealing gasket being located between said edges, and the ring-sleeve assembly being provided with means engageable with the beveled edges of the circular opening and a horizontally compressible sealing gasket engageable with the cut away walls.

4,236,514
RESPIRATION SYSTEM
Anthony L. Moretti, San Rafael, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed Jun. 25, 1979, Ser. No. 51,372
Int. Cl.[3] A62B *17/04*
U.S. Cl. 128—201.23 **14 Claims**



1. A respiration system comprising:

a flexible, substantially air impervious cape member having opposed first and second surfaces and defining an aperture and a first orifice, said aperture and said orifice each passing between said surfaces;

a ring structure of sufficient size to surround said aperture and said first orifice, when said ring structure is disposed along one of said surfaces, to define an inner portion of said cape member;

attachment means for attaching said ring structure to one of said surfaces, said ring structure and attachment means co-operating to hold said inner portion in a radially outwardly extending ruff configuration with respect to said first orifice; and,

an air impervious head enclosure being sealingly affixed to said cap member to surround said ruff configuration.

4,236,515
EQUIPMENT SETS AND SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES EMPLOYING PARALLEL SECONDARY LIQUID TUBING
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Feb. 28, 1979, Ser. No. 16,225
Int. Cl.[3] A61M *5/14*
U.S. Cl. 128—214 G **21 Claims**

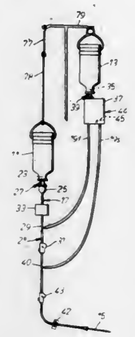
1. A set for the sequential administration of medical liquids to a patient, said set comprising:

a primary tube for the flow of a primary liquid therethrough and including a primary valve for controlling the flow of liquid through said primary tube,

a secondary tube having first and second parallel branches for the parallel flow of a secondary liquid therethrough,

a common tube having its distal end connected in fluid communication with the proximal ends of said primary tube and said first branch of said secondary tube, the proximal end of said second branch of said secondary tube connected in fluid communication to said common tube at a location on said common tube proximal to said connection of said first branch to said common tube said proximal end of said second branch being open for the flow of liquid therefrom to form a primary liquid flow path comprising said primary tube and said common tube and a secondary liquid flow path comprising the combined flow of secondary liquid through a first flow path defined by the portions of said secondary tube common to both branches, said first branch and said common tube and a second flow path defined by the portions of said secondary tube common to both branches, said second branch and said common tube,

a first flow control means on said common tube between the distal end thereof and said connection to said second



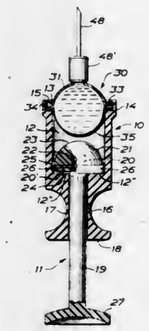
branch of said secondary tube for adjusting the flow rate of said primary and secondary liquid therethrough,

a second flow control means in said second flow path for adjusting the flow rate of said secondary liquid therethrough, and,

an air barrier in said second flow path substantially impervious to air while said set is in use and preventing the flow of air therethrough,

whereby said secondary liquid flows through said secondary liquid flow path at a rate controlled by said first and second flow control means and said primary liquid flows through said primary liquid flow path at a rate independent of the flow rate of said secondary liquid.

4,236,516
SYRINGE AND DISPOSABLE CONTAINER THEREFOR
Nils B. Nilson, Finnstugatan 30, Mjölby, Sweden (S-59500)
Continuation of Ser. No. 684,020, May 7, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,267
Int. Cl.[3] A61M *5/24*
U.S. Cl. 128—216 **18 Claims**



1. A syringe comprising an elongated barrel having an open

discharge end, a plunger reciprocably mounted in the barrel, a container, means for removably engaging the container to the discharge end of the barrel to form the end wall thereof, said engaging means including a circumferential flange on said container, said flange having at least a flexible periphery for being flexed by the end of the barrel when the container is being engaged as the end wall thereof and for retaining said container as the end wall of the barrel by the tendency of at least said flexible periphery of the flange to restore to its unflexed state, and means on said barrel at said open end for flexing at least said flexible periphery and permitting restoration of said flange toward its unflexed state, said container having a substantially rigid first wall portion at the exterior side of the end wall and having an inside surface, and a flexible second wall portion at the interior side of the end wall and introvertible upon the inside surface of the first wall portion, said plunger having an end surface facing the container and designed to contact said second wall portion and to introvert the flexible wall portion upon the rigid wall portion during reciprocable movement of the plunger, said end surface being shaped to substantially conform to the shape of said inside surface of said first wall portion, and a nozzle on said first wall portion for attaching a hypodermic needle thereto.

4,236,517

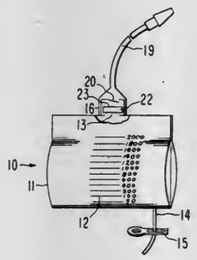
PATIENT-CARE APPARATUS WITH CHEMOPROPHYLACTIC SYSTEM

Jimmy B. Langston, San Jose; Harold Leeper, Mountain View, and Patrick S. Wong, Palo Alto, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 804,962, Jun. 9, 1977, Pat. No. 4,193,403. This application Sep. 24, 1979, Ser. No. 78,503

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—275 **6 Claims**



1. A patient-care apparatus comprising:

(a) container for collecting and holding a biological fluid;

(b) an inlet port in the container for establishing fluid passage between the interior and the exterior of the container;

(c) an exterior housing in communication with the container, said housing having an internal space formed by a wall surrounding the inlet port and having means for engaging and releasing the housing from the container; and,

(d) a dispensing device in the housing, said device consisting of a shaped body sized and adapted for placement in the housing and having a surface exposed to the housing, the body formed of a polymeric material containing paraformaldehyde which is converted to formaldehyde when the apparatus is in use and released by the surface for substantially controlling the presence of pathogen therein.

4,236,518

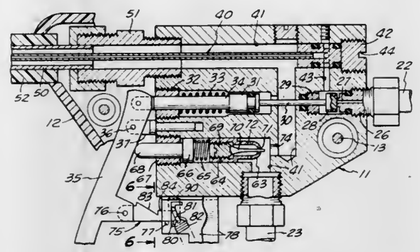
CRYOGENIC DEVICE SELECTIVELY OPERABLE IN A CONTINUOUS FREEZING MODE, A CONTINUOUS THAWING MODE OR A COMBINATION THEREOF

James K. Floyd, La Canada, Calif., assignor to Gyne-Tech Instrument Corporation, Burbank, Calif.

Filed Apr. 14, 1978, Ser. No. 896,495

Int. Cl.³ A61F *7/00*; **A61B** *17/36*

U.S. Cl. 128—303.1 **44 Claims**



6. A cryogenic device selectively operable in a continuous freezing mode and in a continuous warming mode at the user's option, comprising:

means providing a pressurized gas expansion chamber having a first gas expansion orifice opening thereinto from a high pressure source of gas, said expansion chamber being supplied with high pressure gas solely via said first orifice during both the freezing and the warming operating modes of said device;

exhaust passage means leading from said expansion chamber to the atmosphere and including (a) exhaust valve means movable between open and closed positions and (b) second gas expansion orifice means of substantially smaller predetermined flow capacity than said first expansion orifice and at a rate effective to bleed pressurized gas to the atmosphere from said expansion chamber when said exhaust valve means is in the closed position thereof at a rate such that the flow of said pressurized gas through said expansion chamber is effective to maintain said expansion chamber is a warming mode so long as said exhaust valve means is in said closed position; and

the expansion of said pressurized gas into said expansion chamber through said first orifice means being effective to maintain said chamber in a freezing mode so long as said exhaust valve means remains open.

4,236,519

CORNEAL PUNCH

Joseph A. La Russa, 451 Rutledge Dr., Yorktown Hgts., N.Y. 10598; Richard C. Troutman, 860 United Nations Plaza, New York, N.Y. 10021, and Anthony R. Attler, 74 Price St., Dobbs Ferry, N.Y. 10522

Filed Apr. 6, 1978, Ser. No. 893,938

Int. Cl.³ A61B *17/32*

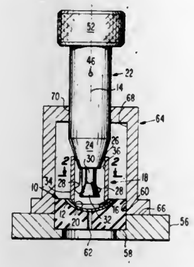
U.S. Cl. 128—305 **6 Claims**

1. A corneal punch for cutting a portion of the cornea of an eye, comprising:

a sleeve with an outer portion that has a conical taper, said sleeve being adapted for insertion within a hollow cylindrical blade that has a cutting edge at its distal end, said insertion causing the proximal end of said blade to contact said tapered portion along a circle;

a plurality of radially adjustable spring members that extends from a central hole at an end of said sleeve; and

a shaft within said sleeve that has a portion that extends from said central hole, said extending portion having the shape



of a right truncated cone that pushes said members into contact with the interior surface of said blade.

4,236,520

FLUID DRAIN OR INJECTION TUBE FOR AN ANIMAL'S UDDER

Mark L. Anderson, R.R. 2, Elmwood, Wis. 54740

Filed Dec. 4, 1978, Ser. No. 965,923

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—348 **3 Claims**



1. A fluid drain or injection tube of smooth plastic material for insertion in a teat of an animal's udder, comprising an elongated laterally bendable, rigid tubular body with a closed end and an open opposite end, and with an axial bore in said body terminating at said closed end and open at said open end, said body comprising:

a first cylindrical section terminating in a rounded tip at said closed end to facilitate entry into a teat of an udder, with axially elongated and axially spaced slot-like openings on opposite sides of said cylindrical section communicating with said bore to pass fluid into and out of said bore,

an intermediate tapered imperforate section of enlarged diameter axially aligned with and integral with said first cylindrical section, said tapered imperforate section having two oppositely tapered portions, the first tapered portion extending axially outwardly from said enlarged diameter to a further enlarged diameter and the second tapered section extending axially inwardly from said further enlarged diameter to said enlarged diameter in reentrant fashion for retaining the same in said teat,

a body section of greater enlarged diameter then said further enlarged diameter adjacent to said intermediate tapered imperforate section serving as a stop element to limit axial insertion of said body into said teat, said body section having a second cylindrical section at said open end of said body serving as a handle to facilitate insertion of said body into said teat and removal therefrom,

said bore having,

a first cylindrical portion in said first cylindrical section,

a second cylindrical portion in said second cylindrical section wider in diameter than said first cylindrical portion for receiving a cylindrical end of a medicament applicator, and

a tapered portion in said intermediate section for frictionally gripping a tapered end of said medicament applicator when inserted into said body through said open end thereof; and

a plug connected by an integral flexible strap to said body for insertion into said second cylindrical portion to close the same and retaining fluid in said teat.

4,236,521

PROBE

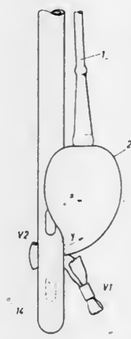
Friedrich G. Lauterjung, Schallstrasse 6, 5000 Cologne 41, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,373

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721548

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—348 **18 Claims**



1. A probe means, particularly for enteral feeding of living creatures extending from the outside in an inserted condition in the creatures, comprising

a hollow probe tube defining an insertion end,

a balloon constituting an end portion of said probe tube being coordinated to said insertion end of said probe tube and communicating therewith for filling the balloon, said balloon being adapted to be filled with liquid through said probe tube,

a separate pilot probe along said probe tube constituting exclusively means for initially inserting said balloon in a push-in path and said insertion end of said probe tube partially into the living creature,

means for emptying said balloon in an inserted condition detached completely from said pilot probe,

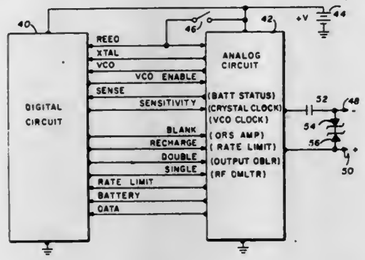
said pilot probe extending up to said end portion of said probe tube, grasping said balloon at a portion other than an end of said balloon, said pilot probe non-fluidly communicating with said balloon, and being completely separable from said balloon, said pilot probe further being removable from the living creature without said balloon, the latter remaining in communication with the outside via said probe tube.

4,236,522

ASYNCHRONOUS/DEMAND MADE PROGRAMMABLE DIGITAL CARDIAC PACEMAKER

Ray S. McDonald, St. Paul, and Martin A. Rossing, Anoka, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,963
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **10 Claims**



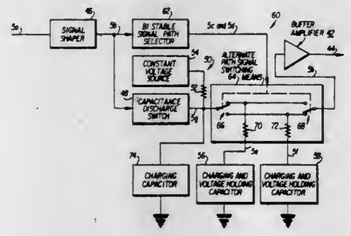
1. In a programmable cardiac pacemaker pulse generator having programmable memory means storing data bit words for controlling modes of operation or parameters of said pulse generator including the demand or the asynchronous modes which includes a pair of output terminals, at least one of which is adapted to be electrically coupled to the heart; resettable pulse generating means for providing a cardiac stimulating pulse to said terminals a certain escape interval time after being reset and for thereafter being reset; sense amplifier means for sensing electric signals applied to said terminals from the heart, which electric signals manifest natural heart activity, and for providing a signal to reset said pulse generating means whenever said sensed electric signals occur after the provisions of a refractory signal; and refractory means for providing said refractory signal a certain refractory time after said pulse generating means is reset, the improvement comprising: selecting means responsive to said programmable memory means for providing said reset signal each time said sense signal occurs after a programmed refractory time, manifested by a refractory signal, said refractory time being capable of being programmed by an N data bit word to 2^N-1 programmed refractory times less than said certain escape interval time, whereby the demand mode is programmed, and further capable of being programmed by said N data bit word to be at least as great as said certain escape interval time whereby said asynchronous mode is programmed.

4,236,523

FREQUENCY TO VOLTAGE CONVERTER FOR CARDIAC COMMUNICATION SYSTEM

Stanley L. Gruenenwald, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 958,202
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT **16 Claims**



1. In a system operatively connected to a heart, a demodulator for converting the frequency of a frequency modulated alternating signal carrying information related to coronary function to a corresponding voltage, said demodulator comprising:

a voltage output point;

means for generating trigger signals at intervals proportional to the period of the alternating signal;

means for initially discharging a capacitance in response to a trigger signal;

means for charging a capacitance through a resistance from a substantially constant voltage source;

a pair of charging and voltage holding capacitors; and

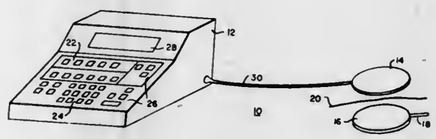
means for alternately selecting between a pair of signal path conditions in response to the trigger signals, one of said signal path conditions being characterized by one of said charging and voltage holding capacitors being connected both to said means for initially discharging a capacitance and to said means for charging a capacitance and the other of said charging and voltage holding capacitors being connected to said voltage output point, and the other of said signal path conditions being characterized by said other of said charging and voltage holding capacitors being connected both to said means for initially discharging a capacitance and to said means for charging a capacitance and said one of said charging and voltage holding capacitors being connected to said voltage output point.

4,236,524

PROGRAM TESTING APPARATUS

Richard M. Powell, Minneapolis, and Katherine H. Anderson, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Mich.

Filed Nov. 6, 1978, Ser. No. 958,064
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT **5 Claims**



1. Apparatus for determining whether a programmable pacing generator has been successfully programmed, said pacing generator including memory means for receiving and storing signals indicative of the parameters and/or modes of operation to control the application of its stimulating pulses to a patient's heart, means responsive to the storage of the encoded signals within the memory means to provide an indication thereof, and generator means responsive to the indication for generating test pulses in addition to the stimulating pulses, indicative of the successful programming of said pacing generator, said apparatus comprising:

(a) keyboard means for receiving and entering by operator manipulation parameters and/or modes of operation in which to program said pacing generator;

(b) transmitter means responsive to the mode of operation and/or parameters entered via said keyboard means for encoding and transmitting corresponding signals to said pacing generator;

(c) means coupled to the patient's body for sensing the patient's heart activity signals including the stimulating pulses and test pulses; and

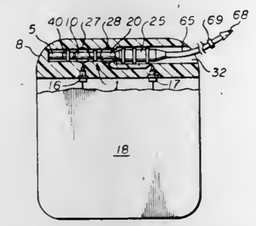
(d) means responsive to the transmission of the encoded signals to said pacing generator for initiating the detection of the characteristics of the test pulse and for determining whether the detected characteristics meet given criteria and if so, for providing a manifestation that said pacing generator has been successfully programmed.

4,236,525

MULTIPLE FUNCTION LEAD ASSEMBLY

James E. Sluetz, Lake Jackson, and Richard V. Calfee, Houston, both of Tex., assignors to Intermedics, Inc., Freeport, Tex.

Filed Nov. 22, 1978, Ser. No. 963,128
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—419 P **9 Claims**



1. Apparatus for connecting a body implantable tissue stimulator and lead assembly, comprising

at least two distal electrodes on said lead assembly for electrical stimulation or sensing,

at least two coaxial proximal connectors on said lead assembly axially spaced apart and electrically connected to said distal electrodes for connecting said distal electrodes with said tissue stimulation means,

a female connector assembly on said body implantable tissue stimulator adapted to electrically connect said proximal connector to said stimulator,

insulator means intermediate adjacent ones of said coaxial proximal connectors having fluid sealing ribs cooperating with said female connector assembly for maintaining fluid isolation between said connectors.

4,236,526

METHOD OF SCREENING FOR SICKLE CELL DISEASE BY DETECTION OF PORPHYRINS AND PORPHYRIN METABOLITES IN HUMAN DENTITION

Patricia A. Richard, 412 Gulf St., Milford, Conn.

Filed Jan. 31, 1978, Ser. No. 873,979
Int. Cl.² A61B *5/00*
U.S. Cl. 128—633 **14 Claims**

1. A clinical method for detecting the presence of porphyrins and porphyrin metabolites associated with sickle cell disease, in a patient whose systemic manifestations do not indicate occurrence of congenital erythropoietic porphyria, comprising:

(a) cleaning the teeth of said patient,

(b) exposing the outer surface of said cleaned teeth in vivo to a source of excitation spectra light,

(c) detecting fluorescence, whereby the presence of said porphyrins or porphyrin metabolites is determined by emission of characteristic fluorescence which can be observed visually, and

(d) determining the presence of sickle cell disease based on the results of said detection.

4,236,527

CARDIAC OUTPUT DETECTION BY MULTIPLE FREQUENCY THERMODILUTION

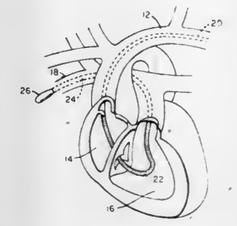
Ronald S. Newbower, Acton, and James H. Philip, Chestnut Hill, both of Mass., assignors to Massachusetts General Hospital, Boston, Mass.

Filed Oct. 20, 1978, Ser. No. 953,124
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—692 **14 Claims**

1. Apparatus for cardiac thermodilution measurement comprising:

means for applying a traceable signal by injection of thermal energy for dilution in the blood flow in a location upstream of a heart output conduit;

means for varying the magnitude of the traceable signal as a function of time at at least two frequencies thereby varying the amount of thermal energy applied to the blood flow;



means for detecting said traceable signal as blood flow temperature downstream of the heart ventricle at the first of said at least two frequencies; and

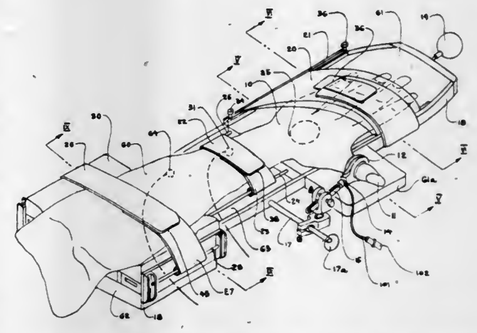
means for separately detecting at least the second of said at least two frequencies in said traceable signal as blood flow temperature downstream of the ventricle of said heart.

4,236,528

APPARATUS AND METHOD FOR THE QUANTITATIVE MEASUREMENT OF THE ISOMETRIC CONTRACTION OF THE ADDUCTOR POLLICIS MUSCLE

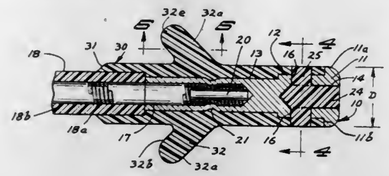
Anna Stanec, and George Stanec, both of 15 Secor Rd., Scarsdale, N.Y. 10583

Filed Dec. 28, 1978, Ser. No. 974,076
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—741 **12 Claims**



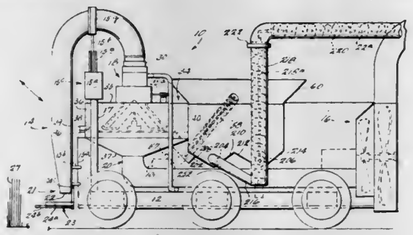
1. Apparatus for engaging a hand and thumb on the forearm of a human subject or the like and for measuring quantitative changes in isometric tension in the associated adductor pollicis muscle in response to stimulation of the associated ulnar nerve, said apparatus comprising engaging means for engaging and immobilizing said hand, thumb holding means having an opening alignable generally perpendicular to the thusly engaged hand for receiving and holding said thumb, transducer means operatively associated with said thumb holding means for converting isometric tension developed in said adductor pollicis muscle in response to said ulnar nerve stimulation into an electrical signal, and adjustable positioning means to adjust the positioning of said thumb holding means and the alignment of said opening so that said thumb can be immobilized in fully abducted position and so that said transducer means can measure the isometric tension in the the adductor pollicis muscle.

4,236,529
TINED LEAD
Richard L. Little, Minneapolis, Minn., assignor to Daig Corporation, Minnetonka, Minn.
Filed Feb. 21, 1979, Ser. No. 13,129
Int. Cl.³ A61N 1/04
U.S. Cl. 128—785 **14 Claims**



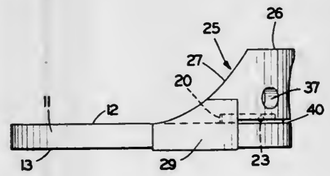
1. For a lead that conducts electrical pulses to body tissue, an electrode having a central axis, a rear end portion; and a tip having a front tip surface adapted to be placed in electrical conductive relationship to body tissue and tined means joined to the electrode for attachment to trabeculations to aid in retaining the tip in electrical conductive relationship to body tissue, the tined means including a tine inclined relative the electrode to extend outwardly therefrom in a direction from the tip surface toward the rear end portion, one dimension of the tine in a plane perpendicular to the direction of extension of the tine away from the electrode being substantially greater than a second dimension of the tine in the same plane that is at right angles to said one dimension, and a tubular portion surrounding the electrode and having a front end portion disposed adjacent the front tip surface and a rear end portion disposed adjacent the electrode rear end portion and more remote from the tip front surface than the tine, the tine being integrally joined to the tubular portion intermediate its front and rear end portions to extend outwardly thereof in a direction away from the tip surface.

4,236,530
GRAIN THRASHER
John L. B. Johnson, Rte. 1, Groom, Tex. 79039
Filed Dec. 22, 1978, Ser. No. 972,233
Int. Cl.³ A01E 7/02
U.S. Cl. 130—27 R **9 Claims**



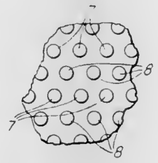
1. An improved thrashing machine for thrashing a variety of crops comprising a main frame including at least front and rear axles together with wheels for supporting the thrashing machine, motor means for powering the thrashing machine, steering means for controlling the movement of the thrashing means, means defining a first flow path having a first stage for initially moving the crop being cut and a second stage for moving only chaff and weeds, means defining a second flow path for moving only the harvested crop, said first flow path means including vacuum means for producing a suction type air flow along first flow path means, said first stage including crop collection means for cutting and initially receiving the crop, a thrashing assembly for receiving the cut crop and for separating the crop being harvested from chaff and weeds cut therewith, said thrashing assembly including a hollow housing structure having top, side and bottom wall members defining a thrashing chamber therein, said crop collection means being movably connected to the topwall member thereby defining the inlet to said thrashing chamber, interior and exterior rotatably supported, conically-shaped, thrashing members spaced from one another and being centrally positioned within the thrashing chamber to receive between them the cut crop entering through the inlet so that the suction air flow passes between the two thrashing members, means for moving at least one of said thrashing members so that the distance therebetween is variable and separate drive means for rotating each of the thrashing members, harvested crop collection means for catching the harvested crop flowing from said thrashing members, said harvested crop collection means being positioned within said thrashing chamber and movably attached to the sidewalls thereof so as to be radially spaced from said thrashing members, support and drive means for both supporting and moving said harvested crop collection means, said second stage of said first flow path beginning in the space defined between said thrashing members and said harvested crop collection means, said second stage including at least the bottom wall of said thrashing chamber, means defining an outlet opening therein, and first conduit means connected between the outlet opening in the bottom wall of said thrashing chamber and said vacuum means, first discharge means connected to said vacuum means for discharging chaff from said thrashing machine, said second flow path including second vacuum means for creating a vacuum type suction in the second stage of said first flow path, initial storage means for sequentially collecting and discharging measurable quantities of the harvested crop, second conduit means for withdrawing the harvested crop from said harvested crop collection means, said second conduit means connected to initial storage means, and third conduit means connecting said second vacuum means and said initial storage means, said thrashing machine further including primary storage means for receiving the harvested crop discharged from said initial storage means, means for moving the harvested crop discharged from said initial storage means to said primary storage means and second discharge means for discharging the harvested crop from said primary storage means.

4,236,531
ROTARY BLADE HOLDER
Timothy J. McCullough, Box 295, Lake Rd., Vermilion, Ohio 44089
Filed Jul. 30, 1979, Ser. No. 61,593
Int. Cl.³ A22C 17/12; B26B 15/00
U.S. Cl. 30—276 **9 Claims**



1. A blade holder construction for a meat-cutting tool including:
(a) an annular-shaped metal ring split at one point on its periphery;
(b) an interior, annular groove formed in the ring for rotatably mounting a complementary shaped cutting blade therein;
(c) a pair of axially extending arcuate flanges formed integrally with the metal ring and located on opposite sides of the split;
(d) a pair of plastic arcuate-shaped lugs molded on the ring flanges and projecting upwardly from and circumferentially along a portion of the ring on both sides of the split for attaching the blade holder to a power-driven handle;
(e) a semicircular recess formed in each of the plastic lugs in juxtaposition to each other to form a generally circular-shaped gear-receiving recess; and
(f) a radially extending mounting hole formed in each of the lugs adapted to receive attachment screws therein.

4,236,532
SMOKING ROD WRAPPER
Alfred D. Schweizer; William G. Erskine, both of Geneva, and Daniel Turpin, Nyon, all of Switzerland, assignors to Gallaher Limited, Belfast, Northern Ireland
Filed Sep. 11, 1978, Ser. No. 940,996
Claims priority, application United Kingdom, Sep. 16, 1977, 38710/77
Int. Cl.³ A24B 15/42; A24C 5/60; A24D 1/02
U.S. Cl. 131—9 **22 Claims**

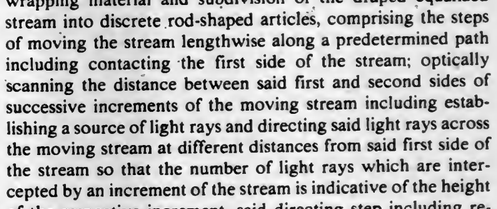


22. A smoking rod of the kind comprising a filler of smoking material surrounded by a combustible tubular wrapper, the improvement wherein the filler is upgraded by the provision on the inner surface of the wrapper of a screen printed deposition of a series of discrete dots of an ink containing at least one additive selected from the group consisting of a smoke producing agent, a smoke nucleation agent, a flavouring agent, and a physiologically active agent, which will in use, upon approach of the hot burning tip of the smoking rod, be transferred and contribute to the main stream smoke drawn through the rod to enhance the satisfaction to the smoker, wherein the dots are printed over a selected area of the wrapper to provide a greater concentration of the additive at that end of the rod to be the lit end of the rod.

4,236,533
NOVEL CIGARETTE PROCESS AND PRODUCT PRODUCED THEREFROM
Maximilian de Clara, Munich, Fed. Rep. of Germany, assignor to TKR Tabak Forschnugs-GmbH & Co., Munich, Fed. Rep. of Germany
Filed Apr. 13, 1979, Ser. No. 29,857
Int. Cl.³ A24B 15/28
U.S. Cl. 131—17 R **9 Claims**

1. A tobacco composition comprising tobacco and an active agent comprising a mixture of auric oxide, silver nitrate or sulfate, platinum tetrachloride and cerium salts selected from the group consisting of carbonates, sulfates and nitrates in an effective amount to reduce the raw condensate nicotine and polycyclic aromatic hydrocarbons content which are normally produced by the combustion of the tobacco in the tobacco smoke.

4,236,534
METHOD AND APPARATUS FOR MONITORING THE HEIGHT OF A STREAM OF TOBACCO OR THE LIKE
Uwe Heitmann, Schwarzenbek; Wolfgang Steiniger, Börnsen; Uwe Holznagel, Glinde; Hartmut Kaebernick; Joachim Pfannmüller, both of Hamburg, and Joachim Reuland, Neu Börnsen, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 821,179, Aug. 2, 1977, Pat. No. 4,190,061. This application Aug. 15, 1978, Ser. No. 933,789
Int. Cl.³ A24C 5/14, 5/39
U.S. Cl. 131—21 B **5 Claims**



1. A method of measuring the height of a stream, especially a relatively narrow stream, which consists of tobacco particles or the like, which has a first side and an uneven second side located opposite the first side, which contains a surplus of particles and from which the surplus is about to be removed prior to draping of the resulting equalized stream into a web of wrapping material and subdivision of the draped equalized stream into discrete rod-shaped articles, comprising the steps of moving the stream lengthwise along a predetermined path including contacting the first side of the stream; optically scanning the distance between said first and second sides of successive increments of the moving stream including establishing a source of light rays and directing said light rays across the moving stream at different distances from said first side of the stream so that the number of light rays which are intercepted by an increment of the stream is indicative of the height of the respective increment, said directing step including reflecting the non-intercepted rays back across the moving stream; and generating signals denoting the number of reflected rays.

4,236,535

APPARATUS FOR CONVOLUTING ADHESIVE-COATED UNITING BANDS AROUND ROD-SHAPED ARTICLES

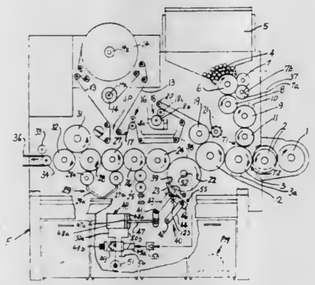
Rolf Schmidt, Glinde, and Herbert Berlin, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,860

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752173

Int. Cl.³ A24C *5/47*

U.S. Cl. 131—21 R **10 Claims**



1. In a machine for convoluting adhesive-coated uniting bands around groups of coaxial rod-shaped articles having a predetermined diameter, the combination of a rotary draping device; a rolling device; means for heating at least one of said devices; displacing means actuatable to move one of said devices between a first position in which said one device is nearer to the other of said devices and said devices define a gap having a width slightly less than said predetermined diameter, and a second position in which said one device is more distant from said other device; means for delivering groups of articles and non-convoluted uniting bands to said draping device in parallelism with the axis of said draping device and ahead of said gap, as considered in the direction of rotation of said draping device, in said first position of said one device whereby the groups of articles are caused to rotate about their axes and the uniting bands are convoluted therearound during travel through said gap; and means for actuating said displacing means so as to move said one device to said second position in response to a reduction of operating speed of the machine to a predetermined minimum speed.

4,236,536

METHOD FOR WRAPPING CIGARS OR LIKE ARTICLES IN AN OUTER ENVELOPE OF NATURAL TOBACCO

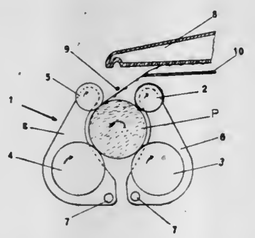
Pierre Waegaert, Bordeaux, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumette, France

Filed Mar. 23, 1978, Ser. No. 889,204

Claims priority, application France, Mar. 31, 1977, 77 09684

Int. Cl.³ A24C *1/04, 1/28, 1/30*

U.S. Cl. 131—33 **2 Claims**



1. In the method of wrapping cigars or like articles in an outer envelope of natural tobacco leaf, the improvement which comprises cutting out at least one first wrapper from a half of a non-stripped, at least partially spread out tobacco leaf lying on one side of the midrib of said leaf; turning the leaf over onto its other face; spreading out the uncut half-leaf; cutting out at least one second wrapper from said uncut half-leaf, said first and second wrappers being aligned with their raised portions facing in opposite directions; feeding said aligned wrappers into a cigar rolling machine operable to wrap cigar wrappers about an unwrapped cigar core, so that the raised portions of said first wrapper face the outer surface of the core when being wrapped around said core; and prior to feeding said second wrapper into said machine, reversing the direction of rolling so that the raised portions of said second wrapper also face the outer surface of the core being wrapped.

4,236,537

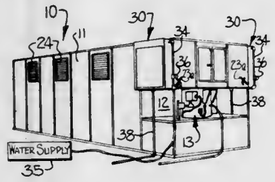
ORDERING SYSTEM FOR TOBACCO BULK CURING BARN

Gary H. Fisher, Rockingham, N.C., assignor to Industrial Sheet Metal & Mechanical Corp., Rockingham, N.C.

Filed May 3, 1978, Ser. No. 902,275

Int. Cl.³ A24B *3/02*

U.S. Cl. 131—134 **2 Claims**



1. In a method for bulk curing tobacco wherein the tobacco is supported in a relatively compact mass within the curing chamber of a bulk curing barn, said method comprising the steps of directing air in a recirculating flow repeatedly passing into and through the curing chamber and into contact with the compact mass of tobacco positioned therein while controllably heating the air to cure and dry the tobacco located in the curing chamber, the combination therewith of a method for quickly and controllably restoring moisture to the cured and dried tobacco prior to removal of the tobacco from the curing chamber to thus facilitate subsequent handling of the tobacco, said method comprising the steps, performed upon the completion of the curing and drying of the tobacco in the curing chamber, of continuing to direct air in a recirculating flow repeatedly passing into and through the curing chamber of the curing barn and into contact with the compact mass of cured and dried tobacco positioned therein while also drawing air from outside the curing barn into the barn and through a porous pad wetted with water to humidify the air on entering the curing barn, and directing the thus humidified outside air into the recirculating flow of air through the curing chamber to thus quickly and controllably increase the humidity level within the curing chamber and thereby restore moisture to the tobacco and facilitate subsequent handling thereof.

4,236,538

SMOKING ARTICLES

Norman Foster, Southampton, and Alan G. Stephenson, Ringwood, both of England, assignors to British-American Tobacco Company Limited, London, England

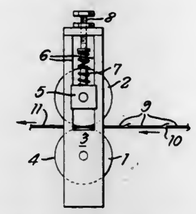
Filed Sep. 28, 1977, Ser. No. 837,538

Claims priority, application United Kingdom, Oct. 4, 1976, 41102/76; Nov. 26, 1976, 49446/76; Jan. 25, 1977, 2985/77

Int. Cl.³ A24B *3/00, 3/14*

U.S. Cl. 131—149 **14 Claims**

1. A method of lap joining pieces of natural tobacco, wherein the said pieces are placed in overlapping relationship and the overlapping portions thereof are cohered to each other, without adhesive to effect the joining, by the application to them of pressure.



4,236,539

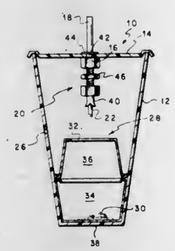
SMOKING APPARATUS

John S. Mosby, Jr., 2008 Christie La., Carrollton, Tex. 75006, assignor to John S. Mosby, Jr. and L. Gregg Sealy, both of Dallas, Tex.

Filed Sep. 27, 1978, Ser. No. 946,198

Int. Cl.³ A24D *1/12, 1/30*

U.S. Cl. 131—175 **8 Claims**



1. A smoking apparatus comprising, in combination:
a conventional drink container;
a cover for covering the conventional drink container of a type normally suitable for such a conventional drink container, forming a hole therethrough;
a mouthpiece positioned to appear to be for drinking from the conventional drink container of a type normally suitable for such a conventional drink container and cover;
a plumbing insert for holding a cigarette or the like in a downward direction inside of the conventional drink container;
a plumbing insert for holding the mouthpiece, going through the hole in the cover, the lip of the plumbing insert resting on top of the cover; and
a plumbing fitting connecting the two inserts together, whereby the plumbing insert for holding the cigarette or the like and the mouthpiece are so connected that a continuous passageway is formed from a cigarette or the like held in the insert through the mouthpiece whereby the cigarette or the like can be smoked while it is in the conventional drink container by puffing on the mouthpiece.

4,236,540

PLIABLE AND RESTORABLE HAIRSETTER

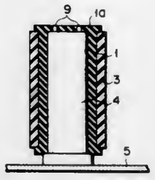
Shoji Takagi, Toyoake, and Nobuo Ito, Nagoya, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 808,386, Jun. 20, 1977, abandoned. This application Apr. 20, 1979, Ser. No. 31,965

Claims priority, application Japan, Jul. 5, 1976, 51-89648[U]

Int. Cl.² A45D *2/00*

U.S. Cl. 132—40 **9 Claims**



1. A home hairsetter comprising:
a hollow cylindrical body having a hair-curling section on the outer periphery; and
a heating apparatus adapted to be fitted into the cylindrical body for heating the cylindrical body, said heating apparatus being removed from the cylindrical body while said body is used to set hair;
said body being made of elastic material including silicon rubber and being restorable, and being so pliable that when used to set hair with a head load exerted thereon which is more approximately 2 kg, said body flattens so that it gently touches the user's head when the user's head is in a prone position.

4,236,541

APPARATUS FOR WASHING AND DRYING FOOD PRODUCTS

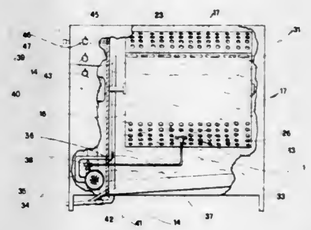
Tullio Cipriani, Parma, Italy, assignor to Hoonet s.a.s. di Indro Paolo Dall' & C, Varese, Italy

Filed May 3, 1979, Ser. No. 35,552

Claims priority, application Italy, May 4, 1978, 40068 A/78

Int. Cl.³ B08B *3/02, 3/06*

U.S. Cl. 134—104 **8 Claims**



1. Apparatus for washing and drying food products, in particular vegetables and fruit, comprising: a first stationary container equipped with first and second means for discharge of water; a second container housed in said first container and equipped with a door for the charge and discharge of the food products; a plurality of through holes provided in the side surface of said inside container; stationary ejection means to create a swirling and turbulent flow of water to carry out the washing stage, said ejection means being connected to a source of water under pressure and being housed in said first stationary container but outside said second container near the side surface thereof, which injection means are directed towards the inside of the second container; blocking means for fixing said second container with respect to said first container dur-

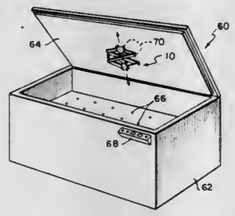
ing the washing stage; control means to rotate, after having disconnected the said blocking means, said second container around a stationary axis, after the washing stage and after the water discharge, for a centrifugal drying of said products; said first water discharge means being suitable to maintain in said stationary container during the washing stage a constant predetermined water level; said second discharge means being suitable to regulate the change of water during the washing stage and to discharge the water from the apparatus after the last washing.

4,236,542

ROTATING FASTENER MECHANISM FOR HOLDING A WORKPIECE IN A WASHING APPARATUS

Charles E. Fishburn, Indianapolis, Ind., assignor to National Printing Plate Company, Inc., Indianapolis, Ind.

Filed Dec. 26, 1978, Ser. No. 972,980
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—153 **17 Claims**



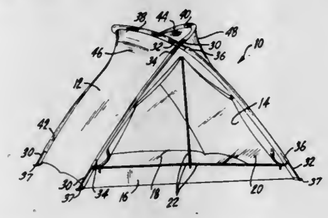
3. Apparatus for washing a workpiece comprising a compartment within which the workpiece is situated for washing, means for providing a liquid spray, means for sealing said compartment, a rotatable mechanism for holding said workpiece carried within said compartment and including a plurality of arm members connected together to permit expansion and contraction of the mechanism and carrying workpiece retaining means capable of a variably spaced interval by such expansion and contraction, said arm members including first and second inner arm members pivotally coupled to each other at their respective centers, said first inner arm member having pivotally coupled to each of its ends third and fourth outer arm members and said second inner arm member having pivotally coupled to each of its ends fifth and sixth outer arm members, said third and fifth outer arm members and said fourth and sixth outer arm members respectively being pivotally connected together at their outer ends, and means for rotating said mechanism whereby said liquid spray is uniformly applied to various portions of said workpiece.

4,236,543

PORTABLE TENT

Charles W. Moss, Mill St., Rockport, Me. 04806

Filed Jun. 26, 1979, Ser. No. 52,441
Int. Cl.³ A45F *1/16*
U.S. Cl. 135—3 R **13 Claims**



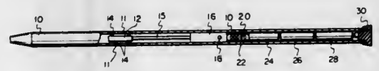
1. A portable shelter comprising a flexible covering having opposing side walls held tense to provide the shape of the shelter by two resiliently flexible pole members held in a flexed condition by peripheral portions of said side walls, each said pole member having the end portions thereof held respectively by front and rear peripheral portions of the same side wall to hold the pole member in an inverted generally U-shape tensing said side walls horizontally and the central portion thereof held by the upper peripheral portion of the other side wall to hold the pole member in a bowed shape tensing said other side wall vertically, said fabric covering further including a top wall interconnecting the upper portions of said side walls.

4,236,544

SAFETY-ENHANCING WALKING STICK

Takeshi Osaka, No. 379-2, Kitairiso, Sayama-shi, Saitama-ken, Japan

Filed Dec. 28, 1978, Ser. No. 973,809
Claims priority, application Japan, Feb. 24, 1978, 53-19762
Int. Cl.³ A45B *3/04*
U.S. Cl. 135—66 **11 Claims**



1. A safety-enhancing walking stick to provide a flashing light warning signal, comprising:
- a tubular casing having a least one portion which is translucent;
- a light source for providing flashes of light, disposed within said tubular casing adjacent to said portion of said tubular casing which is translucent;
- electronic circuit means disposed within said tubular casing, and coupled to said light source for periodically actuating said light source to provide said flashes of light;
- a battery disposed within said tubular casing for supplying power to said electronic circuit means;
- switch means for selectively connecting said battery to said electronic circuit means; and
- means for detecting the level of ambient light, said detecting means being coupled to said electronic circuit means for controlling said flashes of light produced by said light source.

4,236,545

USE OF RADIATION-INDUCED POLYMERS AS FRICTION REDUCING AGENTS

Bruce L. Knight, Findlay, Ohio; John S. Rhudy, and William B. Gogarty, both of Littleton, Colo., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 739,686, Nov. 8, 1976, abandoned, and a continuation-in-part of Ser. No. 303,742, Nov. 6, 1972, abandoned. This application Dec. 30, 1977, Ser. No. 866,073
Int. Cl.² F17D *1/17*
U.S. Cl. 137—13 **29 Claims**

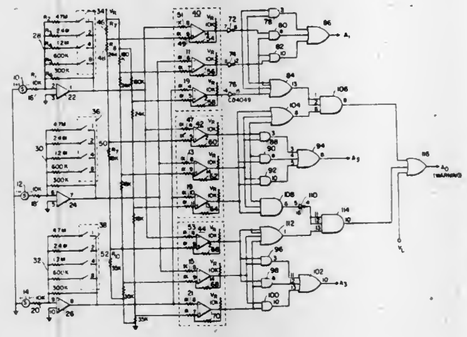
1. A process for reducing the fluid flow friction loss of a fluid comprised of a water phase being transported through a conduit, the process comprising admixing with the water phase a polymer obtained as a product of high energy ionization radiation polymerication of an adqeous solution consisting essentially of about 40 to about 90% of water and about 10 to about 60% by weight of at least one monomer selected from the group consisting of acrylamide, methacrylamide, acrylic acid, methacrylic acid, alkali metal acrylate, alkali metal methacrylate and mixtures thereof, the radiation intensity being about 250 to about 1,000,000 rads/hr and the radiation dose being about 500 rads to about 300,000 rads, the polymer being present in sufficient concentration and having sufficient property to reduce the fluid flow friction loss, and thereafter transporting the fluid in the conduit.

4,236,546

ELECTRONIC BREATHING MIXTURE CONTROL

Claude E. Manley, LaPlata; John J. Pennella, Pomfret; Donald J. Deaton, Rison; Alan L. Crandall, Indian Head, and James P. Hersey, Bryans Rd., all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 953,510
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—88 **8 Claims**



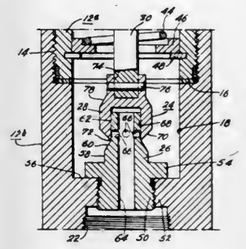
1. An electronic breathing mixture control system comprising:
- a first gas source;
- a gas mix chamber containing a multiple gas mixture including said first gas;
- multiple gas sensors disposed within said gas mixture chamber wherein said gas sensors are responsive to said first gas;
- amplifiers coupled to each of said first gas sensors for producing signals proportional to the partial pressure of said first gas within said gas mix chamber;
- comparator means coupled to said amplifiers for determining whether said amplified sensor signals fall within predetermined ranges corresponding to ranges of partial pressure of said first gas;
- first logic means coupled to said comparator means for producing a first set of logic signals, wherein a selected one of said first logic signals is generated whenever a predetermined number of said amplified sensor signals simultaneously fall within a selected one of said ranges;
- second logic means coupled to said comparator means for producing a second logic signal whenever any one of said amplified sensor signals falls within a range different from that of any one of said other amplified sensor signals by more than a selected number of ranges;
- third logic means coupled to said first and said second logic means for producing a third set of logic signals wherein said third set of logic signals is responsive to selected combinations of said first and said second sets of logic signals, thereby determining whether a valid logic condition exists and, if so, which of said predetermined ranges of partial pressure of said first gas is present in said gas mix chamber;
- indicator means coupled to said third logic means for indicating the status thereof; and
- valve means coupled to said third logic means for allowing communication between said first gas source and said gas mix chamber, whereby said valve means is opened and closed responsive to whether said first gas partial pressure is less than or greater than a predetermined level.

4,236,547

SELF-CLEANING VALVE PLUG AND SEAT ASSEMBLY

Bohdan A. Harasewych, Flourtown, Pa., assignor to Ogontz Controls Company, Willow Grove, Pa.

Filed Apr. 9, 1979, Ser. No. 28,075
Int. Cl.³ F16K *29/00, 31/00*
U.S. Cl. 137—243 **9 Claims**



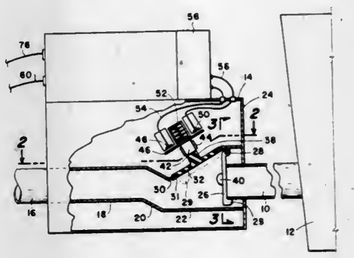
1. A self-cleaning valve plug and seat assembly comprising a seat member and a valve plug, said seat member comprising a cylindrical skirt portion and a substantially frusto-conical seating surface coaxial with said skirt portion and converging toward and intersecting said skirt portion at an obtuse angle, a fluid passage extending through said seat member, and at least one port in said skirt portion connecting with said fluid passage; said valve plug comprising a cylindrical bore extending partway thereinto to permit sliding telescoping movement of said valve plug along the exterior of said seat member skirt portion, said plug having a circular cutting edge adjacent the open end of said bore, said cutting edge being formed by a surface of revolution and having an axis concentric with the axis of said plug bore and converging toward and intersecting said plug bore at an acute angle, and means for moving said plug toward and away from said seat member seating surface, said plug uncovering said valve member port in the open position of said assembly, said plug covering said port and said cutting edge engaging said seating surface in fluid-tight sealing relation in the closed position of said assembly.

4,236,548

APPARATUS FOR PROVIDING INSTANT HOT WATER

E. W. Howard, 1221 S. Wood Dr., Okmulgee, Okla. 74447

Filed Jun. 1, 1979, Ser. No. 44,455
Int. Cl.³ F24H *1/10, 1/14*
U.S. Cl. 137—335 **3 Claims**



1. A control system for providing instant hot water at a hot water tap comprising a control unit adapted to be interposed in the fluid line between the source of water supply and the hot water tap and a heating unit interposed in said fluid line between the control unit and the hot water tap; said heating unit comprising a closed heating chamber, a pipe arranged within said chamber and constituting a portion of the fluid line between the control unit and the hot water tap, and heating means within said heating chamber for heating said pipe; said

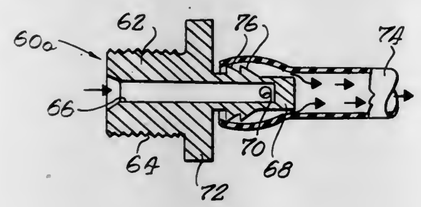
control unit comprising a fluid passageway therethrough constituting a portion of the fluid line between the source of supply and the heating unit, a flapper chamber formed in said passageway, an inlet pipe from said source of supply having an inlet end disposed within said flapper chamber, a flapper pivotally mounted in said flapper chamber, and disposed over the inlet end of said inlet pipe when no water is passing through said control unit, a flat surface on said flapper chamber disposed within the swinging path of movement of said flapper when caused to move by the passage of water through said control unit, a diaphragm received within an opening in said flat surface and adapted to be contacted by said flapper when water is passing through said unit, electrical means mounted within said control unit adjacent said diaphragm and external of said flapper chamber, said electrical means being energized by said diaphragm when said diaphragm is contacted by said flapper, said heating means being activated in response to the energizing of said electrical means.

4,236,549

BLEEDER KIT FOR BLEEDING A MASTER CYLINDER

Donald F. Salzmann, Northbrook, Ill., assignor to Autoline Supply Company, Chicago, Ill.

Filed May 12, 1978, Ser. No. 905,184
Int. Cl.³ B60T *17/00*
U.S. Cl. 137—343 **7 Claims**



1. A bleeder kit for use in bleeding a master cylinder of the type employed in a vehicle brake system, the master cylinder including a housing defining a fluid reservoir accessible from externally of the housing and adapted to contain a quantity of brake fluid which may have gas bubbles entrained therein, said housing further defining a working chamber adapted to receive fluid from the reservoir and having at least one outlet communicating with the working chamber, and means cooperable with said working chamber and adapted to effect pressurizing of brake fluid disposed therein, said bleeder kit comprising,

at least one adaptor valve comprising a unitary valve body having an internal flow passage and being adapted to be mounted on said housing so that said internal flow passage is in communication with said housing outlet, said unitary valve body having a connector end in which is formed a substantially transverse cross passage intersecting said flow passage and opening externally of said connector end,

a flexible fluid bleeder tube having an end adapted to be received axially over said connector end of said valve in snug fitting relation thereon and having an internal configuration adapted to normally close off said external opening of said cross passage, said bleeder tube having sufficient length to extend from said valve to said reservoir when said valve is mounted on said housing,

bracket means adapted for mounting on said housing and having means facilitating cooperation with said bleeder tube to position an end thereof opposite said valve so as to discharge fluid from said tube into said reservoir,

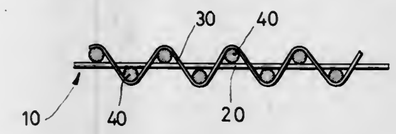
said valve when mounted on said housing and having said end of said bleeder tube received over said connector end being cooperative with said tube to facilitate flow of brake fluid from said working chamber through said tube into said reservoir upon actuation of said pressurizing means and being adapted to prevent fluid flow in an opposite direction through said external opening in said connector end of said valve, repeated pressurizing of said working chamber being operative to unidirectionally circulate said brake fluid from said working chamber to said reservoir during which gas bubbles entrained in the brake fluid are forced out of the fluid.

4,236,550

ELASTIC MUSLIN BANDAGE

Franz Braun, and Ewald Schäfer, both of Wolfstein, Fed. Rep. of Germany, assignors to Karl Otto Braun KG, Wolfstein, Fed. Rep. of Germany

Filed Feb. 1, 1978, Ser. No. 874,158
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706787
Int. Cl.³ D03D *15/08*
U.S. Cl. 139—421 **18 Claims**



1. In an elastic muslin bandage consisting of warp threads and weft threads, the improvement comprising that said warp threads consist essentially of first threads and second threads, that said first threads consist essentially of elastic fibers, that said second threads consist essentially of non-elastic fibers and that said weft threads consist essentially of non-elastic fibers, said warp threads being arranged with said first and second threads in a recurrent sequence in accordance with the following:

(a) first threads consisting of at least one of textured polyfilic polyamide fiber, spun polyurethane fiber and rubber fiber;

(b) second threads consisting of at least one of a spun crepe fiber having an S-twisting direction and a size Nm 34/1, Nm 40/1, Nm 50/1, Nm 60/1, Nm 70/1, and a fine elastic twisted crepe fiber of size Nm 60/2, Nm 70/2, Nm 100/2, Nm 140/2, said spun crepe fiber and said fine elastic twisted crepe fiber consisting of at least one of the fibers cotton or cellulose;

(c) first threads consisting of at least one of textured polyfilic polyamide fiber, spun polyurethane fiber and rubber fiber;

(d) second threads consisting of a twisted crepe fiber having a Z-twisting direction.

4,236,551

METHOD OF AND APPARATUS FOR COOLING ROLLED WIRE

Walter Worgt; Gerhard Pechau; Ewald Wyzgol, and Manfred Franz, all of Magdeburg, German Democratic Rep., assignors to VEB Schwermaschinenbau-Kombinat Ernst Thälmann Magdeburg, Magdeburg, German Democratic Rep.

Filed Sep. 29, 1978, Ser. No. 947,076
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2120163
Int. Cl.³ B21F *21/00*; C21D *9/52, 9/56*
U.S. Cl. 140—1 **11 Claims**

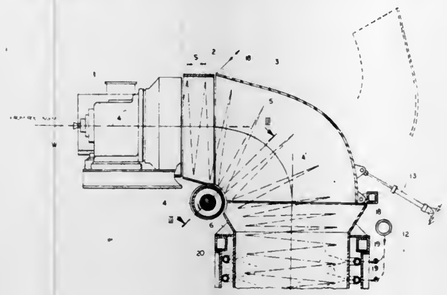
1. An apparatus for treating a wire immediately after hot-formation thereof, said apparatus comprising:

an upright cooling tube having an upper end and a lower end;

coiling means for forming said wire into a continuously advancing helix having a succession of turns;

guide means between said coiling means and said upper end for feeding said continuously advancing helix into said upper end and thereby causing said helix to drop vertically in said tube;

cooling means in said tube for spraying said helix therein with a fluid cooling medium and thereby cooling said helix; and



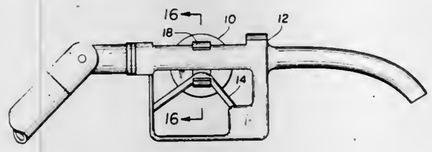
conveyor means at said lower end for receiving the cooled helix and conducting same away from said lower end.

4,236,552

GASOLINE PUMP CLIP CAP

Eric R. Rayboy, 1051-G NW. 80 Ter., Margate, Fla. 33063

Filed May 3, 1979, Ser. No. 35,713
Int. Cl.³ B65B *3/04*; G05G *5/06*
U.S. Cl. 141—98 **5 Claims**



1. A gas pump clip cap comprising:

(a) A gas cap of standard configuration, said gas cap having a U-shaped channel or flange mounted on its rear or handle portion; and

(b) a C-shaped clip mounted onto said flange; whereby said gas pump clip cap can function to both seal the filler pipe of an automobile gas tank and, when removed from said filler pipe, said clip of said gas pump clip cap can function to maintain the handle of a gasoline pump in an operable position.

4,236,553

BEVERAGE PORTION CONTROLLER

Arthur M. Reichenberger, 1916 N. 21st Pl., Phoenix, Ariz. 85006

Filed Jul. 3, 1979, Ser. No. 54,469
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—198 **10 Claims**

1. In a beverage dispenser including:

a nozzle for discharging liquid,

a cup supporting means positioned below said nozzle for receiving a cup having a rim;

a solenoid controlled valve for controlling the discharge of said liquid from said nozzle;

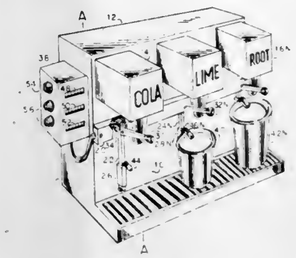
probe means engageable with the rim of said cup for making electrical contact with said liquid dispensed into said cup; and

control circuit means electrically connecting said probe means and said solenoid control valve for actuating said valve to stop the dispensing of said liquid into said cup when said liquid attains a pre-determined level in said cup;

improvements therein for automatically positioning said conductive probe means to accommodate cups of varying heights, said improvements comprising:

a probe and switch support housing carrying said probe means;

said probe means being slideably mounted for reciprocal vertical movement; and



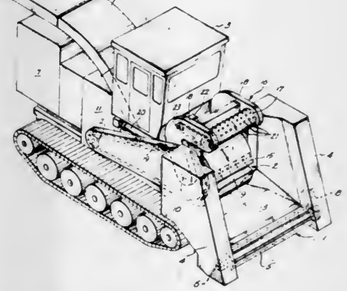
switch means, fro activating said solenoid control valve to initiate the dispensing of said liquid into said cup.

4,236,554

LAND CLEARING MACHINE

Thomas W. Nicholson, Bellevue, Wash., assignor to Nicholson Manufacturing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 869,267, Jan. 13, 1978, abandoned. This application Jul. 21, 1978, Ser. No. 926,760
Int. Cl.³ A01G *23/08*; B02C *18/22*
U.S. Cl. 144—34 R **25 Claims**



1. A land clearing machine for felling and chipping trees comprising:

a vehicle;

a tree-felling cutterhead carried by and projecting forward from said vehicle and rotatable about a generally horizontal axis extending transversely of said vehicle;

a tree-chipping cutterhead carried by said vehicle a substantial distance rearward of said tree-falling cutterhead and rotatable about a generally horizontal axis extending transversely of said vehicle;

a tree-supporting generally horizontal apron mounted on said vehicle and extending fore-and-aft between said tree-felling cutterhead and said tree-chipping cutterhead;

tree-feeding means carried by said vehicle generally above said apron for feeding trees rearward along said apron from said tree-felling cutterhead to said tree-chipping cutterhead; and

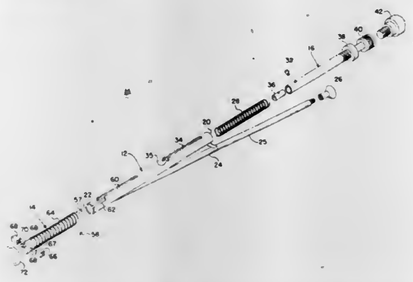
separate drive means for rotating said respective cutterheads about their axes independent of each other.

4,236,555

STAND-UP SCREWGUN

George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 23, 1979, Ser. No. 59,867
Int. Cl.[3] B27B *7/00*
U.S. Cl. 81–431 8 Claims



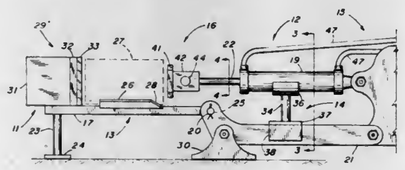
1. An attachment for a rotary power tool which permits the installation of threaded fasteners from a standing position said attachment comprising a longitudinal body portion consisting of an open tubular section which has a tubular bearing member situated between an upper and a lower end; a converging feed tube for delivering fasteners successively to the lower end of said body portion; an extendable and retractable drive rod having a fastener-engaging driver portion, an enlarged bearing surface portion with a predetermined outer diameter, and a rotational drive receiving portion; a drive rod slide collar which surrounds a portion of the drive rod and is retained for extendable and retractable telescopic sliding movement therewith within the upper end of the body portion; means for biasing the slide collar to its extended position; an axially extendable and retractable collapsible nosepiece having means to removably retain it in telescopic sliding engagement with the lower end of the body portion and an inner diameter slightly larger than the predetermined diameter of the bearing surface; means for biasing the collapsible nosepiece to its extended position; means for assembling the attachment with a power tool; whereby as axial pressure is applied to the power tool, the biasing means for both the slide collar and nosepiece are overcome and the fastener-engaging driver portion engages a drive means on the head of the fastener to rotationally drive it into a workpiece.

4,236,556

WOOD SPLITTER ATTACHMENT

Robin C. Smith, P.O. Box 1154, Truckee, Calif. 95734

Filed May 14, 1979, Ser. No. 38,776
Int. Cl.[3] B27L *7/00*
U.S. Cl. 144—193 A 8 Claims



1. A wood splitter attachment for use with a backhoe or the like having a stabilizer and a stabilizer-positioning hydraulic ram normally pivotally interconnected by a ram to stabilizer pivot pin, said attachment comprising:

a. an elongated fore and aft framework;

b. means for attaching the forward end of said framework to the stabilizer after the stabilizer and the ram are disconnected by removal of the pivot pin, said attaching means being effective to position said framework and the stabilizer in fore and aft alignment;

c. a wedge-shaped wood splitting anvil mounted on the after portion of said framework with the tip of said wood splitting anvil directed towards the forward end of said framework;

d. a ram support extending vertically between the hydraulic ram and the stabilizer, said ram support comprising a vertical post, cradle means on the upper end of said vertical post for supporting the ram, and channel means on the lower end of said vertical post in engagement with the stabilizer enabling said ram support to be positioned at a selected fore and aft location on the stabilizer; and,

e. a push plate pivotally mounted on the forward end of the ram plunger, said push plate being urgeable by the ram plunger against a piece of wood interposed between said push plate and said wedge-shaped anvil with a force sufficient to split the wood.

4,236,557

METHOD FOR MANUFACTURING WOOD MOULDINGS

Mark O. Marquardt, Amherst, Canada, assignor to Conduit-Amherst Limited, Mississauga, Canada

Filed Feb. 22, 1979, Ser. No. 13,897
Int. Cl.[3] B27D *1/10;* B27M *3/08*
U.S. Cl. 144—315 R 2 Claims

1. A method of converting a longitudinally elongated moulding rip having a portion containing a flaw such as a knot which is unacceptable in clear grade mouldings, into a substantially flawless premium length clear grade moulding, the rip having first and second flawless portions of substantially matching grain and a length less than a premium length, on either side of the portion containing the flaw, comprising the steps of;

(a) cutting said rip transversely of its longitudinally elongated extent at both ends of the portion containing the flaw to provide smooth complementary first and second scarf joint faces on the ends of the first and second flawless portions respectively disposed adjacent the portion containing the flaw,

(b) removing the portion containing the flaw from between said first and second scarf joint faces,

(c) bonding said first and second scarf joint faces of said first and second flawless portions to one another to form a scarf joint connecting said first and second flawless portions to form a rip having a premium length,

(d) working the rip to produce a profiled moulding having a substantially flawless clear grade surface finish.

4,236,558

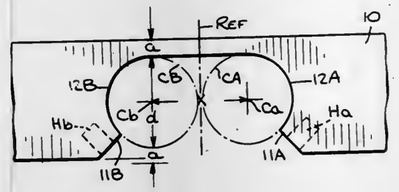
WOODWORKING TECHNIQUE FOR FORMING CORNERS

Irving Sabo, Box 32, Green Farms, Conn. 06436

Filed May 8, 1979, Ser. No. 37,048
Int. Cl.[3] B27H *1/00*
U.S. Cl. 144—318 8 Claims

1. A woodworking technique for forming angled corners in straight pieces of wood, the technique comprising the steps of:

A. producing a cut-out on the inner side of the piece which is symmetrical with respect to a transverse reference line and is constituted by a converging entry zone whose opposing flat sides have complementary angles, each equal to one-half the angle of the corner to be produced, the entry zone leading into an oblong interior zone whose opposing arcuate sides follow the curvatures of a pair of circles;



B. steaming the wood section of the piece which bridges the arcuate sides to render it yieldable; and

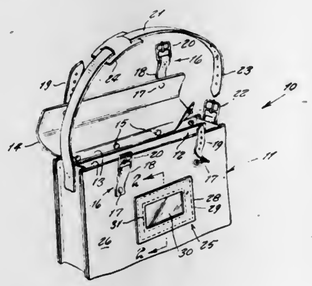
C. bending the piece to cause the arcuate sides to meet and the flat sides to abut at the reference line to define a circular leg-receiving socket surrounded by wood.

4,236,559

WINDOW SCHOOL BAG

Ellard Archbold, 82 Hendricks Ave., 2nd Floor, Staten Island, N.Y. 10301

Filed Aug. 6, 1979, Ser. No. 63,992
Int. Cl.[3] A45C *3/02*
U.S. Cl. 150—1.6 1 Claim



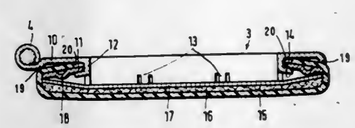
1. A window school bag, comprising in combination, a bag member, a partition forming a plurality of compartments inside said bag member, a cover snapped over a top opening of said bag member, a shoulder strap, fitted with adjustable pad, being attached across opposite ends of said bag member, and a window on a front side of said bag member for displaying a bus pass and other identification cards; said window comprising a frame fitted with a transparent plastic pane, said frame being stitched on an outer surface of said bag member front side, and a horizontal slot through said front side for access of said card into a pocket formed between said front side and said pane; said slot being near an upper end of said pocket, and an upper horizontal edge of said slot being serrated with depending teeth so as to block accidental entry of said card from said pocket and outwardly through said slot.

4,236,560

FRAME FOR A CASE, WALLET OR SIMILAR DEVICE

Axel Reischauer, Kirschweiler, Fed. Rep. of Germany, assignor to Gold- und Silber- Scheideanstalt Oberstein Franz Reischauer, Idar-Oberstein, Fed. Rep. of Germany

Filed Feb. 2, 1979, Ser. No. 8,473
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805564
Int. Cl.[3] A45C *1/00*
U.S. Cl. 150—46 3 Claims



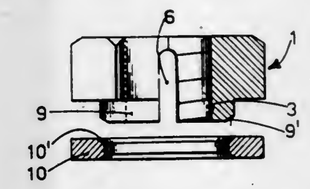
1. A frame for a case, wallet or similar device, comprising a main frame member (**10**) including a main leg, a radially outer rim (**19**) extending away from said main leg substantially at a right angle relative to said main leg, a radially inner rim (**12**) also extending away from said main leg substantially at a right angle and in the same direction as said radially outer rim, said radially inner rim (**12**) being longer than said radially outer rim (**19**), securing means (**14**) in said radially inner rim arranged to be bent radially outwardly, substantially flat insert means (**11**) fitting around said radially inner rim (**12**) and having a reinforcing groove (**18**) therein, cover means having an edge wrapped to substantially overlay one surface of said flat insert means, said one surface facing toward said main leg and toward said radially outer rim of said main frame member, said securing means (**14**) being so dimensioned that when said securing means are bent radially outwardly against said insert means, said insert means pinch said edge of said cover means against said main leg and against said radially outer rim thereby pinching the edge of the cover means along two parallel lines running all around said cover edge.

4,236,561

SELF-LOCKING NUT

Giulio Monticelli, Via Savona, 134 Milan, Italy

Continuation of Ser. No. 848,038, Nov. 3, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,776
Claims priority, application Italy, Nov. 12, 1976, 29269 A/76
Int. Cl.[2] F16B *39/36*
U.S. Cl. 151—19 R 1 Claim



1. A self-locking nut adapted to receive a male threaded member comprising a body having a polygonal outer surface, a circular neck portion extending downwardly from said body, said circular neck portion having a diameter less than the distance between opposite faces of the polygonal body outer surface whereby an annular offset is formed where the circular neck portion meets the body, an axial hole extending vertically through the body and the circular neck portion, the wall of said axial hole being threaded throughout its axial length, at least one vertical longitudinal slot being formed in the body and neck portion, said slot extending completely through the vertical side of the body and neck portion to connect with the axial hole, and a resilient contraction ring engaging the neck portion to cause the size of the threaded hole to decrease to

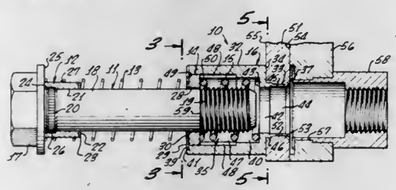
thereby provide increased friction between the threads on the mating parts to provide a desired locking action, the peripheral development for the inner edge of the opening in the contraction ring being larger than the outer peripheral development of the circular neck, the interference between the circular neck and the inner edge of the contraction ring being in the range of 0.2–0.5% of the major diameter of the threading, the thickness of said contraction ring being slightly greater than the neck length, said contraction ring having a non-circular internal surface that contacts said circular neck at spaced regions on said circular neck, thereby to promote resilient deformation of said contraction ring.

4,236,562

RATCHET BOLT ASSEMBLY

Jorge W. Molina, Torrance, Calif., assignor to Deutsch Fastener Corp., El Segundo, Calif.

Filed Dec. 11, 1978, Ser. No. 968,492
Int. Cl.³ F16B *41/00*
U.S. Cl. 151—69 **12 Claims**



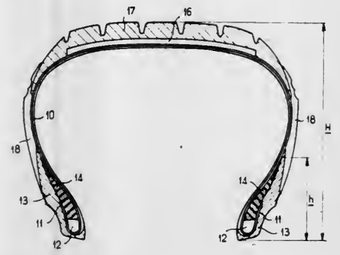
1. A self-locking fastener device comprising
a bolt having
a head,
a shank extending from said head,
and threads on the outer end of said shank,
a first ratchet member adjacent said head,
said first ratchet member being rotatable with said shank and having teeth facing toward said outer end of said shank,
a retaining member having means for attachment to a workpiece,
a second ratchet member,
said second ratchet member having an opening receiving said shank inwardly of said threads,
means for retaining said second ratchet member on said shank with freedom for axial movement relative to said shank inwardly of said threads, while permitting relative rotation of said shank and said second ratchet member,
said second ratchet member having teeth facing toward and engageable with said teeth of said first ratchet member,
said second ratchet member being retained by said retaining member with freedom for limited axial movement thereof between a first position relatively adjacent said head of said bolt and a second position relatively remote therefrom, while being prevented from substantial rotation relative to said retaining member,
a first spring biasing said second ratchet member toward said first position,
and a second spring engaging said bolt and exerting a force biasing said bolt toward a retracted position and said second ratchet member toward said second position,
said first spring being stronger than said second spring whereby said second ratchet member is maintained in said first position upon axial advancement of said bolt until said first ratchet member engages said second ratchet member, and thereafter said second ratchet member is moved by said first ratchet member toward said second position.

4,236,563

PNEUMATIC TIRE WITH ANISOTROPIC FILLER STRIP

Daniel Moers, Montpellier, and Michel Balland, Rosny-sous-Bois, both of France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Filed Jul. 10, 1978, Ser. No. 923,211
Claims priority, application France, Jul. 11, 1977, 77 21399
Int. Cl.³ B60C *15/06, 9/08*
U.S. Cl. 152—354 R **3 Claims**



1. A pneumatic tire having:
(a) a radial carcass provided with a reinforced crown,
(b) a pair of beads each including at least one bead-wire, and
(c) a filler strip located between each said bead-wire and said crown, and wherein each said filler strip has a cross-section which tapers in a direction towards said crown and which is made from a rubbery mixture reinforced with short fibres, said mixture consisting of 10 to 75 parts by weight of said fibres to 100 parts by weight of said rubber and wherein each said filler strip extends in a direction of the side wall associated therewith to a height of between 0.2 and 0.5 times the cross-sectional height of the tire, the fibres reinforcing the mixture of the strip being, at least in part, orientated in the radial direction of the tire whereby the mixture of the strip has a ratio of anisotropy at least equal to 2:1.

4,236,564

RUBBER-FREE PHENOL-FORMALDEHYDE ADHESIVE FOR BONDING BRIGHT STEEL TO RUBBER

Edward F. Kalafus, Akron, and Satish C. Sharma, Mogadore, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed May 10, 1979, Ser. No. 37,604
Int. Cl.³ B60C *1/00*; C08L *61/06*; B29H *17/00*
U.S. Cl. 152—359 **1 Claim**

1. In a tire containing reinforcing elements having a bright steel surface bonded to a vulcanized rubber by a rubber-free adhesive composition wherein the vulcanized rubber contains from a small but effective amount to improve adhesion to 30 phr of a phenolic resin adhesion promoter and from a small but effective amount to improve adhesion to 60 phr of silica, the improvement characterized by the adhesive comprising a cured phenolic resin formed by the reaction of a phenol and formaldehyde wherein the resin in its uncured state is selected from the class consisting of heat reactive phenolic resin, and heat reactive phenolic resin in combination with non-heat reactive phenolic resin, wherein the ratio of the phenol to formaldehyde in the resin is from 1:1 to 1:6.

4,236,565

VALVE FOR PNEUMATIC TIRES

Kiyoshi Iwabuchi, Tokyo, Japan, assignor to Dai-Ich Seiko Co., Ltd., Kawaguchi, Japan

Filed Aug. 11, 1977, Ser. No. 823,738
Claims priority, application Japan, Oct. 16, 1976, 51-139374
Int. Cl.² B60C *23/10*
U.S. Cl. 152—427 **1 Claim**



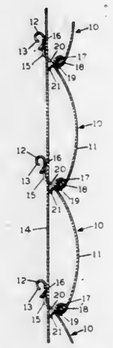
1. In a valve for a pneumatic tire for mounting on a tire rim through an opening provided through the tire rim at a site where the tire rim is circular and generally convex radially outwards as viewed in longitudinal cross-section and where the tire rim is generally concave radially outwards as viewed in transverse radial cross-section;
wherein the valve includes:
a tubular stem having a bore with a generally coaxially annular constriction therein providing a valve seat;
an annular sealing disk generally coaxially secured on the tubular stem to radiate outwardly therefrom at one end thereof so that radially inside the rim the tubular stem may be sealingly secured to an air-containing body, with an outer end portion of the tubular stem projecting out through said tire rim opening;
a first radial enlargement and a second radial enlargement being provided in tandem on said stem, the first one being disposed nearer said annular sealing disk and being designed to abut the rim at least generally perimetrically of said opening, and the second one being threadably mounted on the exterior of the stem and being designed to be threaded towards said first radial enlargement after the tubular stem outer end portion has been projected out through said rim opening in order to trap the rim between said first and second radial enlargements and thus secured the valve to the rim;
a valve body including a flange portion provided as an enlargement on a rod portion, and an annular packing ring, said valve body being slidably received in the bore of said tubular stem with said flange being located axially inwards of said valve seat, said rod passing axially out of said tubular stem beyond said valve seat and said annular packing ring being generally coaxially received on said rod between said flange and said valve seat, so that when said valve rod is pushed axially inwards said valve is open between said rod and said seat past said flange and said annular packing ring, but when said flange is pushed axially outwards, said flange urges said annular packing ring into sealing relation between said valve seat and said flange;
enlargement means being provided on said valve rod axially beyond said tubular valve stem, which is engageable with said tubular valve stem to limit axially inward travel of said valve rod by abutment of said enlargement means with said tubular valve stem,
the improvement wherein:
said tubular valve stem is an integrally molded member made of synthetic plastics material said bore of which is provided with a non-circular transverse cross-sectional shape of at least generally constant size in at least a portion thereof extending axially inwards of said valve seat so as to provide at least one radially inwardly opening, axially extending relatively grooved site angularly adjacently alternating with at least one relatively radially inwardly protuding site; and
said flange of said valve body having a radially outerperipheral surface of a non-circular section that is at least generally complementary to said shape of said stem bore portion and at least one relative protuberance receiving said relatively groove site of said stem bore portion, the valve body thus being intercalated with the tubular valve stem for non-rotative axial sliding with respect thereto;
said first radial enlargement on said tubular valve stem being integrally provided as a stepped portion thereon;
said stepped portion of said tubular valve stem being delineated axially outwardly by an annular shoulder which at least generally matches said circular convexity and radially outward concavity of the rim at said site.

4,236,566

EXTERNAL VENETIAN BLIND

Erich E. Hensel, Wassenaar, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Nov. 22, 1978, Ser. No. 963,126
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752388
Int. Cl.³ E06B *3/48, 9/00*
U.S. Cl. 160—130 **7 Claims**



1. An external venetian blind having a plurality of slats and at least two flexible lifting elements with each lifting element passing freely through an opening in each slat, said blind being of the type that in its closed position the slats partially overlap; characterized in that said slats include a main portion and an offset edge portion, said offset edge portion including a substantially planar portion adjacent said main portion, said offset edge portion extending upwardly from the main portion in the closed position of the blind, said offset edge portion being overlapped by the main portion of the slat thereabove in the closed position of the blind, and said openings for said lifting elements being located at least in part in the main portion of said slats.

4,236,567

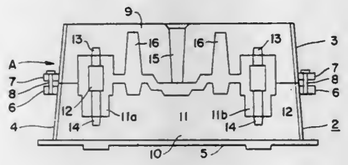
FASTENING MEMBER FOR SECURING THE SLATS OF A VENETIAN BLIND TO A SUPPORT ELEMENT AND METHOD FOR ASSEMBLY

Kurt H. Frentzel, Zevenhoven, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Jun. 2, 1978, Ser. No. 911,824
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1977, 2725600
Int. Cl.³ E06B *9/38*
U.S. Cl. 160—178 R **9 Claims**

1. In a fastening member for fastening the slats of a venetian blind to a flexible support member which slats have openings therein for receipt of said fastening member, the fastening member comprising a portion extending through an opening of a slat the improvement comprising said fastening member being generally "U" shaped in configuration, the outer ends of the legs of said "U" having outwardly extending abutments, the overall dimension of said fastening member in a direction

measured from the outer terminus of one abutment to the outer terminus of the other abutment being greater than the opening in said slat, all cross-sections of said fastening member taken at



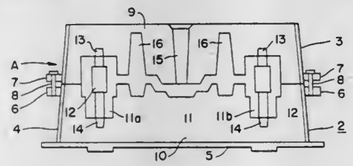
right angles to said direction being of such shape and size as to permit said fastening member to be passed in said direction entirely through the opening in said slat.

4,236,568

METHOD OF CASTING STEEL AND IRON ALLOYS WITH PRECISION CRISTOBALITE CORES

David L. Larson, Chagrin Falls, Ohio, assignor to Sherwood Refractories, Inc., Cleveland, Ohio

Filed Dec. 4, 1978, Ser. No. 966,070
Int. Cl.³ B22C *1/00*
U.S. Cl. 164—41 **16 Claims**



1. A foundry sand casting process for casting steel and iron alloys comprising shaping a flowable refractory mixture comprising refractory particles, a mineralizer and an organic binder to form a green silica core with a longitudinal hole therein, said refractory particles comprising at least 50 percent by weight of refractory grains with a particle size from 50 to 150 microns and at least 20 percent by weight of fine vitreous silica particles with a particle size up to 20 microns, including at least 15 percent by weight of silica particles with a particle size less than 10 microns, the mineralizer providing devitrifying metallic ions in an amount equal to at least 0.03 percent of the weight of the refractory particles, said core comprising a hollow silica rod with a wall thickness not in excess of 1 centimeter and less than the thickness of the surrounding portions of the metal casting to be cast and with a length at least 10 times said wall thickness; heating the green silica core to remove combustibles and firing it to cause extensive devitrification of the silica particles in the bond region between the refractory grains and to form a rigid fired core containing at least 90 percent by weight of silica including at least 15 percent by weight of insituformed crystalline silica, said fired core having a porosity of at least 25 volume percent, a modulus of rupture of at least 80 kilograms per square centimeter at 25° C., and a modulus of rupture of at least 60 kilograms per square centimeter at 1500° C., the silica grains of said fired core comprising at least 80 percent by weight of vitreous silica and at least 5 percent by weight of cristobalite concentrated near the outer surface portions of the grains; cooling the fired core below 200° C. and below the alpha-beta inversion temperature; locating the cool fired silica core within the mold cavity of a sand mold; causing a molten ferrous alloy to flow into the mold cavity and around the cool fired core; causing gases from the hollow core to move radially inwardly as the core is heated by contact with the molten alloy; and allowing the cast alloy to cool in said sand mold and to solidify around the silica core in said cavity.

4,236,569

FOUNDRY PROCESSES AND COMPOSITIONS

David Epstein, and John Bugg, both of London, England, assignors to The White Sea & Baltic Company Limited, London, England

Continuation-in-part of Ser. No. 761,756, Jan. 24, 1977, Pat. No. 4,111,253, which is a continuation-in-part of Ser. No. 282,633, Aug. 21, 1972, abandoned. This application May 19, 1978, Ser. No. 907,438
The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.
Int. Cl.³ B22C *1/22*
U.S. Cl. 164—43 **12 Claims**

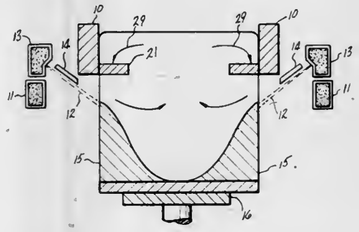
1. In a method of making a foundry mould or core which comprises forming a fluid mixture that is stable against collapse before setting and that comprises a foundry sand and a foamed aqueous phase comprising resin condensate, surfactant foaming agent and an acid curing agent, pouring the fluid mixture into a mould or core box which is immobile and allowing the mixture to set without vibration of the mould or core box or ramming of the fluid mixture or other consolidation techniques; the improvement which comprises the steps of preparing the fluid mixture by blending the sand and foamed aqueous phase comprising the resin condensate and foaming agent and thereafter adding and mixing the acid curing agent into said foamed fluid mixture wherein the foaming agent is selected from the group consisting of fatty amido alkyl betaines, substituted imidazolines, and lauryl ether sulphates.

4,236,570

INGOT SHAPE CONTROL BY DYNAMIC HEAD IN ELECTROMAGNETIC CASTING

Gerhart K. Gaule, Elberon, N.J.; John C. Yarwood, Madison, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 8, 1979, Ser. No. 1,730
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—49 **22 Claims**



1. In an apparatus for electromagnetic forming of molten metals or alloys into a casting of desired shape having at least one portion of small radius of curvature comprising:
- means for providing said molten metals or alloys;
- means comprising a hot-top for receiving said molten metals or alloys, said hot-top including at least one corner and having approximately the same cross-section as said casting;
- means comprising an electromagnetic casting station for forming said molten metals or alloys as they emerge from said hot-top into said casting; the improvement comprising:
- means associated with said hot-top adapted for increasing the dynamic pressure of said molten metals or alloys at said hot-top corner by preferentially directing molten metal or alloy flow toward said hot-top corner.

21. In a process for electromagnetic forming of molten metals or alloys into a casting of desired shape having at least one portion of small radius of curvature comprising:
- providing an electromagnetic casting station;

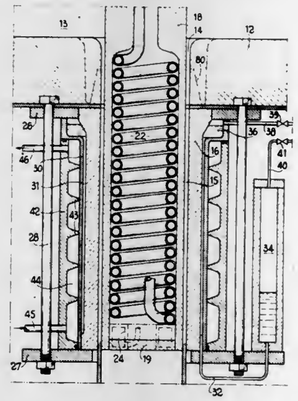
- pouring said molten metal or alloy into said electromagnetic casting station;
- forming said molten metal or alloy in said electromagnetic casting station to form said casting; the improvement comprising:
- increasing the dynamic pressure of said molten metals or alloys at said portion of small radius of curvature by preferentially directing said molten metal or alloy flow toward said portion of small radius of curvature as said molten metal or alloy is poured,
- whereby a casting of desired shape having said at least one portion of small radius of curvature is formed.

4,236,571

PROCESS AND INSTALLATION FOR THE CONTINUOUS CASTING OF TUBULAR PRODUCTS

Michel Pierrel, and Rio Bellocci, both of Pont-a-Mousson, France, assignors to Pont-a-Mousson S.A., Nancy, France

Filed Jan. 23, 1979, Ser. No. 5,895
Claims priority, application France, Jan. 27, 1978, 78 02277
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—85 **9 Claims**



1. A process for continuously casting a tubular product, and more particularly a thin-walled tube, from metal in an annular die space defined between a mould and a core of graphite and having an upper input end and a lower output end, comprising continuously supplying the die space with liquid metal under pressure, while maintaining the metal in contact with the core in a liquid state while facilitating the solidification of the metal in contact with the mould by cooling the whole length of the mould and heating the major part of the length of the core while maintaining cool an end portion of the core, which end portion is adjacent the output end of the die space and within the die space, thereby producing in the annular die space a solidification front of the liquid metal which extends from a region of the wall of the mould located in the vicinity of the input end of the die space and converges from said region of the wall of the mould toward the wall of the core and reaches a point of the core substantially at but no lower than the output end of the die space, contact of the core with the solidified part of the cast metal ceasing at substantially said output end of the die space.

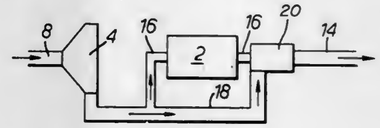
3. An installation for continuously casting a tubular product and more particularly a thin-walled tube, from metal, comprising a mould and a core of graphite which define therebetween an annular die space having an input end and an output end, the core terminating substantially at said output end of the die space, a pouring basin located at the input end of the die space, and rollers located adjacent the output end of the die space for guiding and extracting the solidified tubular product issuing from the die space, means disposed around the mould and defining a jacket of liquid metal and means disposed around the jacket of liquid metal and defining a jacket of water, which jackets cool the mould, a heating device located inside the core and extending from a level adjacent the inlet end of the die space substantially throughout the length of the core but stopping short of the lower end of the core and short of said output end of the die space, and means disposed between the lower end of the heating device and the lower end of the core for maintaining the lower end portion of the core cool.

4,236,572

FLUID COOLED HEAT EXCHANGER SYSTEM

Horace G. Turner, Chandler's Ford, and Peter J. Taylor, Fareham, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Aug. 25, 1978, Ser. No. 936,786
Claims priority, application United Kingdom, Sep. 6, 1977, 37065/77
Int. Cl.³ G05D *15/00*
U.S. Cl. 165—38 **5 Claims**



1. A fluid cooled heat exchanger system comprising a heat exchanger, first conduit means connected to the heat exchanger, a pump for pumping a cooling fluid to the heat exchanger via the first conduit means, second conduit means for receiving fluid from the pump that is in excess of the heat exchanger requirements, and a valve which is so connected to the first and second conduit means that fluid that has passed through the heat exchanger via the first conduit means mixes in the valve with fluid that has by-passed the heat exchanger via the second conduit means, and the valve having a movable valve element which is moved off a valve seat by an amount dependent upon the flow of fluid in the second conduit means whereby the flow of fluid through the heat exchanger is maintained substantially constant, and in which the movable valve element is a spool with seats over a tubular inlet receiving the fluid from the heat exchanger.

4,236,573

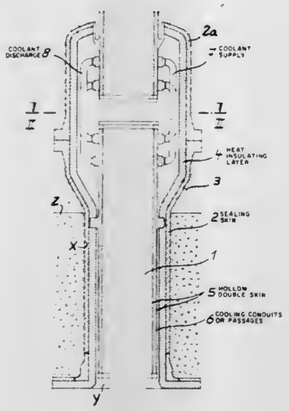
HIGH-TEMPERATURE GAS EXIT FROM A PRE-STRESSED PRESSURE CONTAINER

Rolf Dörling, and Hans Hemshemeier, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,833
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750968
Int. Cl.³ F28F *13/00*
U.S. Cl. 165—54 **2 Claims**

1. A high temperature gas exit conduit in the form of a pipe bundle means in combination with and extending through an opening in a wall of a pre-stressed, concrete pressure container, the combination comprising:
- a surface defined by the opening, said surface extending through the thickness of the wall;
- a casing surrounding the bundle and in sealing engagement with the entire surface of the opening, said casing having a portion extending past the wall;
- cooling pipe means disposed both between the surface of the opening and the casing on that portion of the casing extending past the wall;
- a layer of thermal insulation lining the entire inner surface of the casing and surrounding the pipe bundle, and

additional cooling means, independent of said cooling pipe means, and surrounding and in close proximity to the pipe



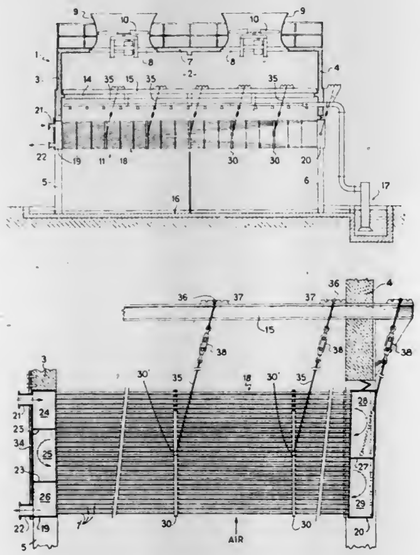
bundle means, said additional cooling means being in spaced relation to the layer of thermal insulation.

4,236,574

HEAT EXCHANGER, IN PARTICULAR FOR AN ATMOSPHERIC COOLING TOWER

Jacques G. P. E. Bosne, Viroflay, France, assignor to Hamon-Sobelco, S.A., Brussels, Belgium

Filed Apr. 5, 1978, Ser. No. 893,788
Claims priority, application France, Oct. 7, 1977, 77 30221
Int. Cl.³ F28F *5/00, 9/00*
U.S. Cl. 165—67 **4 Claims**



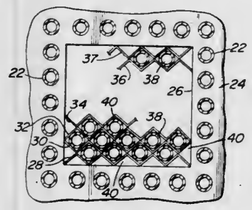
1. A heat exchanger for exchanging heat between a first fluid and at least a second fluid, of the type comprising a horizontal battery of tubes of substantial length supported at intervals by spacer devices, said first fluid circulating through said tubes and said second fluid passing through said battery transversely with respect to the tubes, wherein said battery is suspended in at least a part of its length from suspension members to which said spacer devices are suspended, lower hooking points on the spacer devices for said suspension members, upper hooking points for said suspension members, said upper hooking points offset toward the other end of the battery relative to the vertical from lower hooking points on the spacer devices, wherein the tubes of said battery are rectilinear and the battery has included first and second header means one at each end of the tubes of said battery, said first header fixed on said support structure, and said battery including the second header is suspended freely in the remainder of its length, further wherein said suspension members are oriented in the longitudinal direction of the battery, and wherein said upper hooking points are offset toward said second header relative to the vertical from said lower hooking devices.

4,236,575

TUBE BUNDLE SUPPORT PLATE

LeRoy J. Raseley, Saylorsburg; Leslie L. Forster, Easton, both of Pa., and Edward F. Hay, Belvidere, N.J., assignors to Ecolaire Incorporated, Malvern, Pa.

Filed Sep. 24, 1979, Ser. No. 78,619
Int. Cl.³ F28B *1/02, 9/04;* **F28F** *9/00*
U.S. Cl. 165—113 **4 Claims**



1. Apparatus for use in a heat exchanger such as a condenser comprising a tube bundle support plate, said plate having a large number of holes therethrough, each of said holes being adapted to support a heat exchange tube, the central area of said plate having an opening substantially larger than one of said holes, a grid means supported by said plate in or adjacent said opening for supporting a plurality of heat exchange tubes intended to extend through said opening, said grid means being constructed so as to provide for a plurality of unobstructed gas flow passages through said opening.

4,236,576

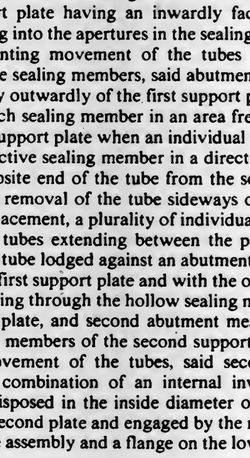
HEAT EXCHANGERS WITH TUBE BUNDLES

Karl-Heinz Deuse, and Witold Drobka, both of Berlin, Fed. Rep. of Germany, assignors to Borsig GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 68,886
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840221
Int. Cl.³ F28F *9/02;* **F28D** *7/00*
U.S. Cl. 165—134 R **7 Claims**

1. A heat exchanger for heat-transfer between substances of high pressure difference, said heat exchanger including a shell; a region through which a pertaining cooler substance is conveyed; an inlet for said cooler substance; a bundle of tubes arranged in a cooler substance compartment; and riser conduit means operatively connectible to said shell and communicating with said compartment, with the substance to be cooled being passed through the pertaining tubes having a predetermined high temperature at the pertaining inlet end of said heat exchanger and a high temperature at the pertaining outlet end thereof; a tube bottom arranged at said heat exchanger inlet end, said tube bottom being of predetermined thickness; and a device including a supportgrating arranged in the vicinity of said tube bottom, operatively connectible to said shell, and extending at least nearly perpendicular to said tube bottom in said region through which said cooler substance is conveyed, said heat exchanger comprising:

a tube top arranged at said heat exchanger outlet end, said tube top having an effective thickness which is greater than the pertaining predetermined thickness of said tube bottom;



an effective quantity of cooling channels arranged in said tube top and extending parallel to one another between pertaining tubes of said tube bundle;

recess means for communicating said cooler substance with said cooling channels; and

conduit means adapted to communicate said channels with said riser conduit means.

4,236,577

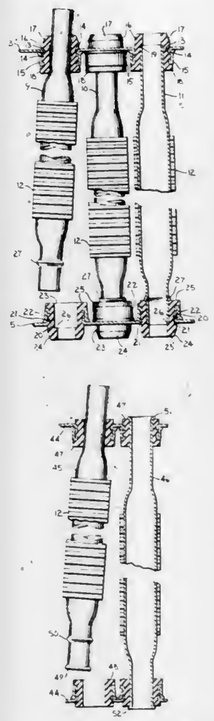
SEPARATELY REMOVABLE TUBES IN HEAVY DUTY HEAT EXCHANGER ASSEMBLIES

Gene T. Neudeck, Franklin, Wis., assignor to McQuay-Perfex, Inc., Milwaukee, Wis.

Filed Jun. 16, 1978, Ser. No. 916,000
Int. Cl.³ F28F *9/06*
U.S. Cl. 165—175 **2 Claims**

1. In a tube assembly for heavy duty heat exchangers having individually removable tubes, first and second support plates longitudinally spaced from each other and having a series of longitudinally aligned apertures therein, a hollow generally resilient sealing member securely disposed in each aperture in the support plates and the sealing members in the apertures in the first support plate having an inwardly facing abutment means projecting into the apertures in the sealing members and normally preventing movement of the tubes longitudinally outwardly of the sealing members, said abutment means being disposed slightly outwardly of the first support plate to permit stretching of each sealing member in an area free of the backing of the first support plate when an individual tube is pushed through a respective sealing member in a direction outwardly to free the opposite end of the tube from the second support plate and effect removal of the tube sideways of the heat exchanger for replacement, a plurality of individually removable heat exchanger tubes extending between the plates with the one end of each tube lodged against an abutment in the sealing members in the first support plate and with the opposite end of the tubes extending through the hollow sealing members in the second support plate, and second abutment means assembled with the sealing members of the second support plate to limit longitudinal movement of the tubes, said second abutment means being a combination of an internal inwardly facing annular ledge disposed in the inside diameter of each sealing member in the second plate and engaged by the respective end of a tube or tube assembly and a flange on the lower portion of each tube which engages the inner side of each sealing member of the second plate.

2. In a heavy duty heat exchanger having separately removable tubes, a pair of header plates longitudinally spaced from each other and having a plurality of longitudinal aligned apertures therein, a sealing member disposed in each aperture, fluid circulating tubes having their opposite end portions located in the oppositely disposed sealing members, flange means on each



tube engaging a sealing member to limit movement of the tubes in opposite longitudinal directions, and the flange means on each tube being a first flange engaging the outer end of a sealing member, and a second flange on the same end of the tube as the first named flange and longitudinally spaced from the first named flange and engaging the inner end of the said sealing member, the said flanges limiting movement of each tube in opposite longitudinal directions.

4,236,578

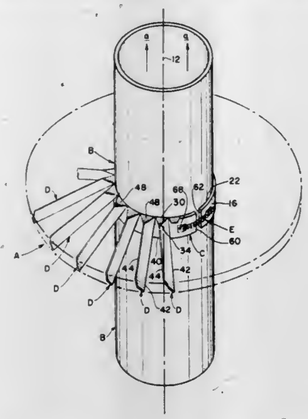
HEAT EXCHANGE ENHANCEMENT STRUCTURE

Frank Kreith, Boulder, Colo., and Richard C. Cornelison, Hiram, Ohio, assignors to Condar, Co., Hiram, Ohio

Filed May 4, 1978, Ser. No. 902,848
Int. Cl.³ F28F *1/20*
U.S. Cl. 165—181 **14 Claims**

1. A free convection type heat exchange enhancement structure comprising: an elongated flat mounting portion having opposite side edges; a plurality of fins integral with said mounting portion and extending outwardly from at least one of said side edges thereof; each said fin having a longitudinal fin axis, opposite fin faces, opposite fin edges and a substantially uniform width along its length; each said fin adjacent said one side edge of said mounting portion having a plurality of straight line bends therein about which each said fin is positioned extending transversely of the plane of said mounting portion

and turned about said axis through an angle substantially less than 90° for positioning said flat faces with the projected area thereof toward said opposite side edges of said mounting portion being substantially greater than the thickness of each said fin but substantially less than the width of each said fin; each



said fin, prior to bending thereof about said plurality of straight line bends, having said fin edges thereof inclined substantially out of perpendicular relationship to said one side edge of said mounting portion; and, each said fin being bent about each said bend in the same direction with respect to said mounting portion.

4,236,579

MODIFIED LIGNOSULFONATES AS ADDITIVES IN OIL RECOVERY PROCESSES INVOLVING CHEMICAL RECOVERY AGENTS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 30, 1978, Ser. No. 910,926
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **10 Claims**

1. In a method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein an aqueous surfactant solution is injected into the injection well in order to drive the oil to the production well wherein it is produced the improvement which comprises:

injecting into the injection well in admixture with the surfactant lignosulfonates alkoxylated with an amount of ethylene oxide or propylene oxide effective to reduce the extent of adsorption of the surfactant on the formation matrix below that of lignosulfonate not alkoxylated and to render any insoluble lignosulfonates soluble in the aqueous surfactant solution wherein the alkoxylated lignosulfonate is present in an amount effective for reducing the extent of adsorption of the surfactant by the formation matrix.

4,236,580

METHOD AND APPARATUS FOR SONICALLY EXTRACTING OIL WELL LINERS

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Apr. 4, 1978, Ser. No. 893,339
Int. Cl.² E21B *31/00*
U.S. Cl. 166—301 **7 Claims**

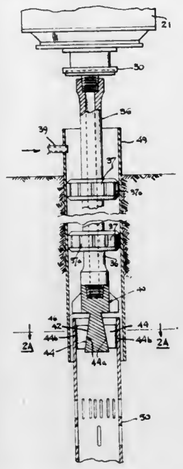
1. A method for removing an oil well liner lodged at the bottom of an oil well casing comprising the steps of:

lowering an elastic elongated column having a clamping tool at the bottom end thereof through said casing until said clamping tool is within said liner.

tightly clamping said tool to said liner,

coupling high level sonic energy to said column to cause longitudinal vibration thereof, said sonic energy being coupled through said tool to said liner,

while the sonic energy is being continually coupled to said liner, simultaneously and continuously applying varying



amounts of vertical bias force to said liner through said column, said bias force being changed from time to time, and

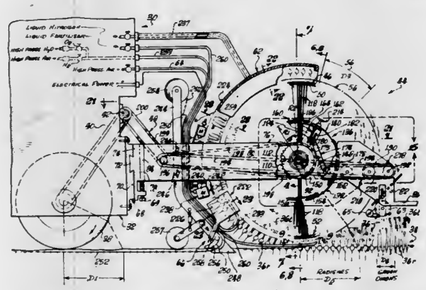
when said liner is freed from the formation drawing it out from said well.

4,236,581

HARVESTING MACHINE

Joseph E. Beckett, 4201 Bonita Rd. #140, Bonita, Calif. 92002

Filed Nov. 4, 1977, Ser. No. 848,762
Int. Cl.³ A01D *25/04*
U.S. Cl. 171—56 **34 Claims**



1. A machine for harvesting root row crops comprising plants having tops exposed above the ground, said harvesting machine comprising:

a vehicle movable along the plant rows,

a harvesting wheel rotatably mounted on said vehicle in a normally generally vertical longitudinal plane for movement with the vehicle along an individual plant row,

means for effecting rotation of said wheel in timed relation to movement of said vehicle along the plant rows,

said wheel including a pair of axially confronting plant gripping means about the wheel perimeter which are relatively movable locally toward one another to closed plant gripping positions and away from one another to open plant releasing positions and which rotate with the wheel through a plant receiving zone at the bottom of the wheel, then upwardly through a transfer zone to and finally through an upper plant releasing zone back to said receiving zone,

said gripping means comprise two continuous circular rows of immediately adjacent opposing plant top gripping elements which are independently movable in closing movement toward one another and opening movement away from one another, and link means interconnecting adjacent gripping elements of each of said rows to form a continuous belt to provide a continuous sequence of such independent closing and opening movement of the gripping elements, and

means for effecting local opening and closing movement of said gripping means as said wheel turns in a manner such that said gripping means rotate through said receiving zone in open position to receive said plant tops between the gripping means and then close upon entering said transfer zone to grip the intervening plant top, extract the gripped plant from the soil, and transfer the extracted plants through said transfer zone to said plant releasing zone, and said gripping means reopen upon entering said releasing zone to release the extracted plants from said wheel,

said means for effecting opening and closing movement of said gripping means comprises means for effecting closing movement of the opposing gripping elements toward one another in succession as said gripping elements rotate from said receiving zone to said transfer zone and opening movement of the opposing gripping elements away from one another in succession as said gripping elements rotate from said transfer zone to said plant releasing zone,

said means for effecting opening and closing movement of said gripping elements comprising spring means for yieldably biasing said gripping elements in one direction of their opening and closing movement and cam means for moving said gripping elements in the opposite direction,

said spring means comprising spring fingers fixed to said wheel at one end and mounting said gripping element at the other end

and stressed to urge said gripping elements in said one direction of their opening and closing movement,

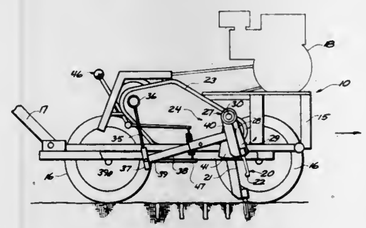
said cam means being engageable with said fingers in succession as said wheel turns for moving said gripping elements in said opposite direction.

4,236,582

POWERED GROUND AERATOR

Paul F. Hastings, N. 5509 Market St., Spokane, Wash. 99207

Filed Feb. 12, 1979, Ser. No. 11,510
Int. Cl.³ A01B *45/02*
U.S. Cl. 172—22 **14 Claims**



1. A power aerator for forming a succession of holes along the ground surface while moving in a forward path, comprising:

a wheel supported frame;

power means mounted on the frame and including:

(a) a drive shaft journalled on the frame for rotation about a crank axis perpendicular to the forward path;

(b) an eccentric crank member mounted at one end of the drive shaft;

(c) an eccentric pivot on the eccentric crank member defining an eccentric pivot axis spaced from and parallel to the crank axis;

aerating means including a ground-penetrating member for displacing soil to form a hole in the ground surface, operatively connected to the power means for transmitting driving power to move the ground penetrating member vertically in relation to the ground surface to successively penetrate the ground surface;

wherein the ground penetrating member is mounted to the eccentric crank member for free pivotal movement about the eccentric pivot axis;

linkage means operatively connecting the ground-penetrating member and frame for imparting a horizontal oscillating motion to the ground penetrating member along an upright plane parallel to the forward path in response to operation of the power means including:

(a) a rocker arm mounted to the frame for pivotal movement thereon about an idler axis; and

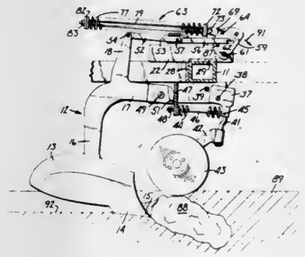
(b) a cross bar rigidly connected to the ground penetrating member at one end and pivotably connected to the rocker arm at a remaining end for pivotal movement about a cross bar pivot axis spaced from the idler axis.

4,236,583

TOGGLE LINK TRIP AND RESET MECHANISM FOR EARTHWORKING TOOL

Cletus J. Geurts, Ridgeland, Wis., assignor to Geurts Inc., Minneapolis, Minn.

Filed Jan. 11, 1979, Ser. No. 2,699
Int. Cl.³ A01B *61/04*
U.S. Cl. 172—266 **45 Claims**



36. A trip mechanism comprising: a frame, a standard movably mounted on said frame, movable control means mounted on the frame, toggle link means movably mounted on the control means and standard, said control means having first means engagable with the toggle link means to move and hold the toggle link means in the over-center extended position, and second means engagable with the toggle link means to move the toggle link means toward a folded position thereby allowing the standard to move up from the earthworking position, and biasing means connected to the control means to bias the toggle link means to the over-center extended position and the standard to an earthworking position.

4,236,584

REAR FURROW WHEEL LOCKING STRUCTURE FOR DISK TILLERS AND THE LIKE

Henning Isachsen, St. Catherines, Canada, assignor to Deere & Company, Moline, Ill.

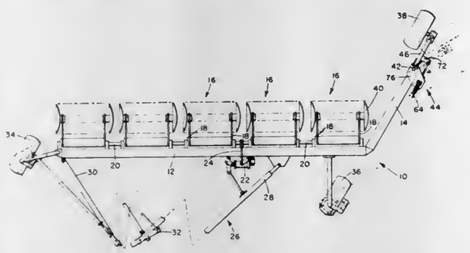
Filed Apr. 12, 1979, Ser. No. 29,214
Int. Cl.³ A01B *5/06, 73/00*
U.S. Cl. 172—385 **8 Claims**

1. In an agricultural implement having a frame member, a support member carrying a ground-engaging wheel adapted to support the frame member, said support member pivotally connected with the frame member for swinging movement

about an upright axis and an improved means between the frame member and support member for securing one said member in either a first or second position relative to the other said member comprising:

an elongated link means carried by said one member;

guide means carried by said other member and supporting the link means for reciprocable movement between a first and second position as the one member moves between its first and second position relative to the other member;



first locking means between the link means and the other member for engagably locking the link means in its first position and the one member in its first position relative to the other member;

second locking means between the link means and the other member for engagably locking the link means in its second position and the one member in its second position relative to the other member; and

means cooperative with the first and second locking means for selectably urging either of said first or second locking means into engagement with said link means.

4,236,585

FOLD-BACK IMPLEMENT FRAME HAVING ANGLE ADJUSTMENT

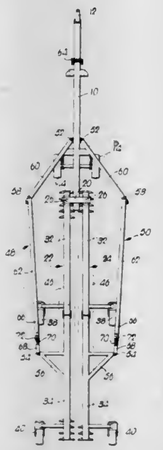
Raymond A. Adee, Newton, and Ellis E. Adee, Minneapolis, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jul. 26, 1978, Ser. No. 927,957

Claims priority, application Australia, Apr. 28, 1977, 24682/77

Int. Cl.³ A01B *5/06, 73/00, 21/08*

U.S. Cl. 172—587 **18 Claims**



1. A horizontally folding implement including:

a central, fore-and-aft extending tongue supported for over-the-ground travel in the direction of its longitudinal axis;

a pair of vertical pivots associated with said tongue adjacent one end of the latter and on laterally opposite sides of said axis;

a pair of beams supported for over-the-ground travel and connected with said tongue by said pivots for horizontal swinging movement between laterally projected working positions and generally fore-and-aft extended transport positions;

means for releasably holding said beams in said working positions; and

a series of tools carried by each of said beams, respectively,

said pivots being connected with their corresponding beams intermediate the opposite ends of the beams so that each beam has a portion thereof extending inwardly beyond the corresponding pivot when the beams are in said working positions,

each of said series of tools including one or more tools along said portion of the corresponding beam,

said portions of the beams and the tools in said series along said portions being disposed to permit said swinging movement through an arc greater than ninety degrees without interference.

4,236,586

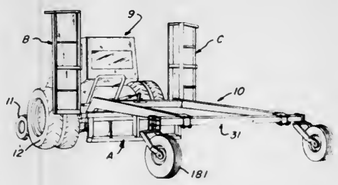
LAND LEVELING APPARATUS WITH SECTION BLADE ASSEMBLY

Benjamin A. Shader, Golden, and Bruce H. Mayeda, Longmont, both of Colo., assignors to The Eversman Mfg. Company, Denver, Colo.

Filed Jan. 16, 1978, Ser. No. 869,852

Int. Cl.³ E02F *3/76*

U.S. Cl. 172—779 **19 Claims**



13. In land leveling apparatus, the combination comprising:

a sectional blade assembly including:

a central blade section;

two side blade sections pivotally connected at opposite ends of said central blade section to swing between a lowered position extending laterally out from an end of said central blade section and a raised position extending up from said central blade section;

drive means for moving said side blade sections between said lowered and raised positions including a power-actuated linkage means coupled between said central blade section and said side blade sections with a lock arrangement for retaining said side blade sections in the lowered position; and

lower level adjustment means coupled between each of said side blade sections and said central blade section at a lower rear position.

4,236,587

GROUND-WORKING APPARATUS AND HITCH ASSEMBLY THEREFOR

Benjamin A. Shader, Golden, and Bruce H. Mayeda, Longmont, both of Colo., assignors to The Eversman Mfg. Company, Denver, Colo.

Division of Ser. No. 869,852, Jan. 16, 1978. This application Apr. 23, 1979, Ser. No. 32,281

Int. Cl.³ E02F *3/76*

U.S. Cl. 172—779 **14 Claims**

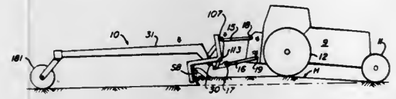
13. In a ground-working assembly including a trailing attachment with a ground-working tool and a tow vehicle for said attachment having front and rear wheels, an upper link pivotally connected at a forward end portion to said tow vehicle for pivotal up-and-down movement relative to the tow vehicle, and lower link means pivotally connected at a forward end portion to said tow vehicle for pivotal up-and-down movement relative to the tow vehicle, the combination comprising:

a leveling frame extending rearwardly from the tool with a rear ground-engaging member supporting the attachment at the rear thereof for vehicular movement; and

a hitch assembly for said attachment including:

first connecting means between said upper link and the attachment including a first pivot about which said upper link and attachment are pivotally movable up and down during vehicular movement, and

second connecting means between said lower link means and said attachment including lower hitch arm means and a second pivot below said first pivot about which said attachment and said lower hitch arm means are



pivotally movable up and down during vehicular movement, said lower hitch arm means having a forward end portion connected to said lower link means and a rear end portion connected to said attachment, the connection at said rear end portion including said second pivot to provide a leveling linkage between the pivotal connections at the forward end portions of said upper link and lower link means together with said first and second pivots whereby the tool moves vertically independently of the vertical movement of the rear wheels of the tow vehicle and in relation to a ground plane contacted by the front wheels of the tow vehicle and the rear ground-engaging member during the vehicular movement of the tow vehicle and trailing attachment,

said second connecting means including a third pivot between said forward end portion of said lower hitch arm means and said rear end portion of said lower link means about which said lower link means and said lower hitch arm means are pivotally movable up and down during vehicular movement.

4,236,588

HAMMER DRILL WITH A LOCKABLE TOOL HOLDER

Karl Möldan, Munich, and Wilm Krueger, Gröbenzell, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

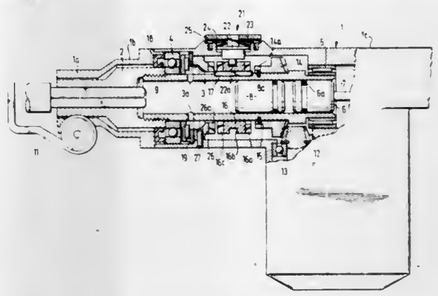
Filed Jun. 8, 1978, Ser. No. 913,542

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728961

Int. Cl.³ B23B *45/02, 45/04;* **F16H** *25/12*

U.S. Cl. 173—48 **10 Claims**

1. Hammer drill comprising a housing having a front end and a rear end, tool holder means located within said housing and having an axis of rotation extending in the direction of the rear end to the front end of said housing, said tool holder means having a front end facing in the same direction as the front end of said housing and a rear end spaced axially from the front end of said tool holder means and located closer to the rear end of said housing, said tool holder means arranged to receive the shank end of a tool, first means disposed in said housing for rotating said tool holder means, second means disposed in said housing for applying percussion force to said tool mounted in said tool holder means, said first means includes a drive wheel positioned in said housing for rotation about the axis of rotation of said tool holder means, a coupling member located within said housing and encircling the axis of rotation of said tool holder means, said coupling member secured to said tool holder means for rotation therewith and said coupling member being axially displaceable along the axis of rotation of said tool holder means, an adjustment member mounted on said housing and connected to said coupling member for axially displacing said coupling member between a first position in engagement with said first means for rotating said tool holder means, a second position axially displaced from engagement with said first means for affording idle rotation of said tool holder means and a third position spaced axially from the first and second positions with said coupling member in locked engagement with said housing so that only said second means is effective for imparting percussion force to a tool received in said tool holder means wherein the improvement comprises that said second means is separate from said first means and is capable of imparting percussion force in each of the first and third positions of said coupling member, said coupling member has a first



end face and a second end face in axially spaced relation to said first end face and each extending transversely of the axial direction of said tool holder means, first interengagement means on said first end face and a second interengagement means on said second end face of said coupling member, said drive wheel having third interengagement means for engagement with said first interengagement means, said housing at a position spaced in the direction of the axis of rotation of said tool holder means from said drive wheel having fourth interengagement means thereon for engagement with said second interengagement means on said coupling member, and said coupling member being axially displaceable between said drive wheel and said fourth interengagement means on said housing so that in the first position said first and third interengagement means are engaged and in the third position said second and fourth interengagement means are engaged.

4,236,589

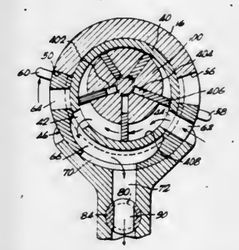
VACUUM MOTOR

Vern Griffith, P.O. Box 402433, Miami Beach, Fla. 33140

Filed Dec. 26, 1978, Ser. No. 973,083

Int. Cl.³ B23B *45/04*

U.S. Cl. 173—169 **7 Claims**



1. A vacuum driven motor comprising a housing including a stator with a cylindrical rotor chamber, a cylindrical rotor eccentrically journaled for rotation within the stator chamber

said rotor having an axially projecting portion extending outwardly of the stator, said rotor including a plurality of circumferentially spaced radially extending slits and a rotor vane radially slidably captivated in each slit between the stator and the rotor, said stator including a liner means of sleeve form between the rotor and the stator, said sleeve having a first and second circumferentially spaced, radially extending through opening for fluid flow into and out of the space between said rotor and said sleeve, said through opening being circumferentially spaced a first predetermined distance from one another, said housing having an acurate slot extending a distance greater than said first predetermined distance, a circumferentially movable arcuate control member slidably captivated in said slot, said member having a first and second circumferentially spaced radially extending passageway and with an intermediately arcuate through mouth of a circumferential span less then said first perdetermined distance, the control member passageways being spaced a distance greater than said first predetermined distance and said slidable member being arcuately movable slidably in the slot for circumferential movement of the member relative to the sleeve to register selectively one of the sleeve openings with the arcuate mouth and one of the passageways of the slidable member with one of the sleeve openings with the other of the passageways of the slidable member being closed to complete a passageway communicating with a suction source on one side of a vane between the sleeve openings and a passageway communicating with ambient pressure on the other side of the said vane between the sleeve openings, said vanes being equi-spaced from one another a distance less than said predetermined distance.

4,236,590

BALANCE WITH COMPENSATED LOADING AND REFERENCE SYSTEMS

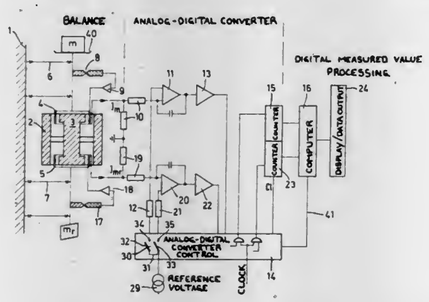
Erich Knothe, Bovenden, and Franz-Josef Melcher, Hardegsen, both of Fed. Rep. of Germany, assignors to Sartorius GmbH, Göttingen, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,830

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803682

Int. Cl.³ G01G *19/00, 7/00*

U.S. Cl. 177—200 **9 Claims**



1. In a balance with an electromagnetically compensated loading system and an electromagnetically compensated reference system, wherein signals which arise or are derived in a load pathway are compared for measurement with signals which appear or are derived in a reference pathway, the improvement comprising means for coincidentally processing the signals from said pathways for digitization, beginning simultaneously and ending simultaneously, and including a respective analog-to-digital converter connected in said load pathway and in said reference pathway, and a reference voltage source, each of said converters being connected to said reference voltage source.

4,236,591

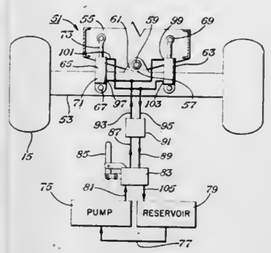
OFF-ROAD VEHICLE THAT BOTH OSCILLATES AND ARTICULATES

Lloyd A. Molby, Box 7788, Longview, Tex. 75602

Filed Aug. 17, 1978, Ser. No. 934,586

Int. Cl.³ B60G *19/10*

U.S. Cl. 180—41 **1 Claim**



1. In an off-road vehicle that includes:

a. a frame carrying a prime mover and driving means, an operator's console and controls for controling movement of said vehicle and power means for operating attachments;

b. a plurality of four wheels carrying said frame;

c. means for steering said vehicle;

the improvement comprising means for effecting both articulation and oscillation of said vehicle and including:

d. having said frame formed in two sections including a first section and a second section with an articulation joint including a vertical axis interconnection and at least one steering ram disposed laterally from said axis interconnection and between the sections for enabling the operator control of the articulation of said vehicle; each section being carried by two of said four wheels; said first section being a front section with a front frame member, said two wheels carrying said front section being laterally connected by a front axle;

e. attachment means on said first section for mounting an attachment for performing work by said vehicle;

f. leveling means on said first section and operable to effect a predetermined angular position with respect to said front axle; said leveling means including a pivotal interconnection between said front axle and said front frame member near their respective midpoints; said leveling means thereby effecting oscillation of said vehicle and enabling effecting a more nearly level platform as signaled by the operator for most effective operation of said attachment;

g. controls disposed in said control console and connected with said leveling means and said power means for enabling operator control of said oscillation such that said first section can be kept at substantially the operators desired angular position;

h. hydraulic reservoir;

i. said power means including a hydraulic pump connected with said hydraulic reservoir via conduits;

j. a pair of hydraulic rams physically connected with said front axle and said front frame member respectively, on respective right and left sides of said pivotal interconnection at respective predetermined distances;

k. a hydraulic flow control valve included in said controls for controlling flow of hydraulic fluid to and from said hydraulic rams as the operator may direct; said hydraulic flow control valve being connected by high pressure fluid conduit with said hydraulic rams and said hydraulic pump and by fluid conduit with said hydraulic reservoir; said distances and said hydraulic rams being selected such that said front frame member can be tilted to obtain said predetermined angular position with respect to said axle; and

l. a lock valve being interposed between said hydraulic flow control valve and said hydraulic rams for providing a positive liquid lock for retention of said front frame member in a predetermined attained position and preventing leaking of hydraulic fluid from hydraulic rams holding it in said position until said lock valve is unlocked by said hydraulic flow control valve and hydraulic pressure from said pump.

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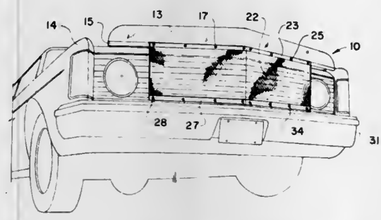
PROTECTIVE STRUCTURE FOR VEHICLES

John H. Ziegler, Longmont, Colo., assignor to Autotron Products, Inc., Longmont, Colo.

Filed Jan. 10, 1977, Ser. No. 758,290

Int. Cl.³ B60J *1/20;* **B60K** *11/04*

U.S. Cl. 180—68 P **7 Claims**



1. A structure for protecting the frontal area of a vehicle having an upper forward facing frontal area and a lower forward frontal area, the structure comprising:

an elongated, substantially flat, planar air deflector member having upper and lower portions and an air deflecting surface, and being adapted to be transversely mounted adjacent to the upper frontal area of a vehicle;

releasable fastener means disposed upon the lower portion of the air deflector member;

a pliable cover having upper and lower edges and carrying along the upper edge thereof releasable fastener means complementary to the releasable fastener means disposed along the lower portion of the air deflector member;

securing means positioned along the lower edge of the pliable cover and adapted to be releasably attached to the lower portion of the frontal area of a vehicle immediately below the pliable cover, said securing means tensioning the pliable cover between the air deflector member and the lower portion of the frontal area of a vehicle immediately below the pliable cover; and

bracket mounting means extending from the air deflector member and adapted to be fixedly attached to an adjacent upper frontal area of a vehicle and to independently support the air deflector member to a vehicle;

whereby the air deflector member may be conveniently and attractively mounted to a vehicle at a point adjacent the upper forward frontal area of said vehicle, said air deflector member serving as an upper support for the pliable cover.

4,236,593

AIR CUSHION VEHICLE FLEXIBLE SKIRTS

Raymond L. Wheeler, Cowes, England, assignor to British Hovercraft Corporation, Yeovil, England

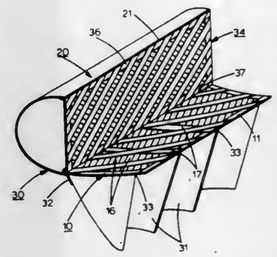
Continuation of Ser. No. 817,863, Jul. 21, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,403

Claims priority, application United Kingdom, Jul. 22, 1976, 30487/76

Int. Cl.³ B60V *1/16*

U.S. Cl. 180—128 **6 Claims**

1. An air cushion for a vehicle having a rigid body structure, means on the vehicle for forming a cushion of pressurised air between the underside of the rigid body structure and a surface over which the vehicle is supported during operation, cushion sealing means extending downwardly from said rigid body structure to encompass said cushion of pressurised air, said cushion sealing means including a flexible skirt assembly of two-part configuration in which an upper part is formed by an inflatable bag member attached to the vehicle hard structure along inner and outer fixing lines which are spaced apart and one of which is situated outboard of the other with respect to the air cushion, said bag member comprising an outwardly disposed section formed from reinforced flexible impermeable sheet material extending generally downwardly from attachment to said vehicle body structure at said outer fixing line to terminate at a lower edge, and an inwardly disposed section



formed by two criss-crossed sets of discrete ribbons, each of said ribbons comprising a fabric formed of reinforced flexible impermeable material extending between attachment with the lower edge of said outwardly disposed section and attachment at said inner fixing line on said vehicle body structure, the ribbons of each set being disposed in parallel, spaced apart relationship throughout their length whereby apertures defined by longitudinal edge portions of said discrete ribbons place the space enclosed by the bag member and the rigid body structure in communication with the air cushion.

4,236,594

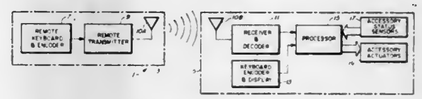
SYSTEM FOR AUTOMATICALLY CONTROLLING AUTOMOTIVE STARTING AND ACCESSORY FUNCTIONS

David C. Ramsperger, Phoenix, Ariz., assignor to Skip D. McFarlin, Phoenix, Ariz., a part interest

Filed Aug. 21, 1978, Ser. No. 935,387

Int. Cl.³ F02N *11/08*

U.S. Cl. 180—167 **5 Claims**



1. A system for automatically starting an engine of an automobile in response to a start command, said system comprising in combination:

(a) command means for entering said start command into said automatic starting system;

(b) status means for producing an engine status signal if said engine is running;

(c) means responsive to a first control signal for energizing a starter motor of said automobile;

(d) first control means responsive to said command means for generating said first control signal, thereby causing said energizing means to energize said starter motor, said first control means including;

(i) means coupled to said command means for enabling said first control means to generate said first control signal in response to said start command if said engine status signal is not present;

(ii) first timing means for producing a first timing signal a first predetermined time after said first control signal is generated;

(iii) means responsive to said first timing signal and said

engine status signal for stopping said first control signal, thereby de-energizing said starter motor if said engine is not running after said first predetermined time; (iv) second control means responsive to said first timing signal for enabling said first control means to generate said first control signal a predetermined number of times in response to said start command if said engine status signal is not present after said first predetermined time has elapsed;

(v) counting means for counting a number of times said first control signal is generated in order to determine the number of attempts made by said start command, wherein said enabling of said first control means by said second control means is conditioned upon said number of attempts being less than said predetermined number;

(e) means for pumping said accelerator in response to a second control signal wherein said first control means further includes means for generating said second control signal to cause said accelerator pumping means to pump said accelerator;

wherein said first control means further includes second timing means for producing a second timing signal a second predetermined amount of time after said stopping of said first control signal, said second control means being also responsive to said second timing signal, said second means causing said first control means to generate said first control signal if said engine is not running, said number of times is less than a predetermined number, and said second predetermfined amount of time has elapsed after said stopping of said first control signal; and

(f) a remote transmitter located externally of said automobile, a receiver located in said automobile and coupled to said start command entering means, and remote start command entering means connected to said remote transmitter for causing said remote transmitter to transmit said start command to said receiver, said receiver including means for detecting said transmitted start command and entering said transmitted start command to said system;

whereby, said first control means attempts to restart said engine a plurality of times in response to said start command if the earlier attempts fail to start said engine in response to said start command.

4,236,595

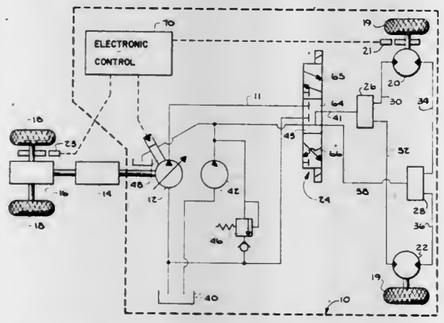
AUXILIARY DRIVE SYSTEM

Richard A. Beck, West LaFayette, and Glen T. Presley, Angola, both of Ind., assignors to Parno Corp., Brookston, Ind.

Filed Aug. 17, 1979, Ser. No. 67,396

Int. Cl.³ B60K *25/04*; F16H *39/46*

U.S. Cl. 180—243 **11 Claims**



1. A hydraulic auxiliary drive system for the steerable non-driven wheels of a vehicle in assistance with the main drive wheels, comprising:

two hydraulic motors connected in a parallel hydraulic circuit, each motor driving a non-driven wheel;

speed sensing means on the main drive wheels and the non-driven wheels;

a variable displacement pressure compensated pump supplying said motors including a control servo cylinder acting against a spring means, the servo controlling the displacement of the pump, a sensing line connecting the pump discharge with the servo cylinder;

a power means contacting the spring means for proportionally adjusting the loading on said spring means in accordance with the level of an electrical signal received by said power means;

an electronic control means connected to the sensing means for receipt of signals indicating the relative speeds of the driven and non-driven wheels so that when a certain percentage of slip is sensed between the driven and non-driven wheels the control means transmits a proportional electrical signal to the power means to increase the loading on the spring means which in turn increases the pressure compensating level and torque output of said motors.

4,236,596

HYDROSTATIC-TRANSMISSION CONTROL SYSTEM, ESPECIALLY FOR LIFT AND OTHER INDUSTRIAL VEHICLES

Theodor Abels, Aschaffenburg-Nilkheim, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

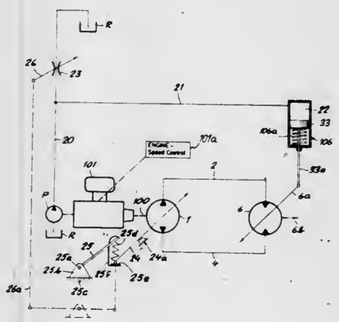
Continuation-in-part of Ser. No. 688,774, May 21, 1976, Pat. No. 4,108,265. This application Dec. 23, 1977, Ser. No. 863,622

Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522719

The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.

Int. Cl.³ B60K *17/10*

U.S. Cl. 180—307 **2 Claims**



1. A drive comprising:

a hydrostatic transmission including:

a variable-displacement pump,

a setting member operatively connected to said pump for varying the displacement thereof,

at least one variable displacement hydraulic motor having a displacement controlling element and hydraulically connected to said pump so as to be driven thereby,

a motor-setting unit including a cylinder, a piston displaceable in said cylinder and connected to said element and a spring bearing upon said piston;

an internal-combustion engine connected to said pump for driving same;

a constant displacement auxiliary pump connected to said engine and driven thereby;

means forming a hydraulic-fluid path including a throttle leading from said auxiliary pump to a reservoir;

a line connecting said path between said auxiliary pump and said throttle with said cylinder; and

control means including said auxiliary pump, said fluid path, said line and means connected to said setting member for operating same to exclusively control the transmission ratio by varying the displacement of said variable-displacement pump at low to average output speeds of the transmission and for enabling said motor-setting unit to exclusively control said transmission ratio for high output speeds of the transmission.

4,236,597

SOUND-ABSORBING DEVICE, ESPECIALLY FOR DAMPING OF NOISES EXPANDING IN AIR DUCTS

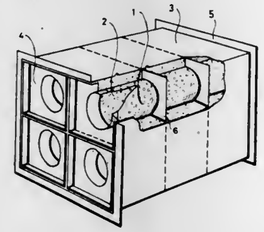
Sandor Kiss, and Zsolt Nagy, both of Budapest, Hungary, assignors to Fütöber Epületgepeszeti Termekeket Gyarto Vallalat, Budapest, Hungary

Filed Apr. 7, 1978, Ser. No. 894,375

Claims priority, application Hungary, Apr. 8, 1977, FU-354

Int. Cl.³ F04F *17/04*; F01N *1/24*

U.S. Cl. 181—224 **1 Claim**



1. A sound-absorbing device for use in the transmission of ventilating air, comprising:

a prismatic elongated casing having a pair of end walls and a plurality of angularly adjoining longitudinal walls;

at least one air-flow duct of round cross section extending between said end walls and terminating therein while passing through said casing in all around spaced relation from said longitudinal walls; and

a mass of sound-absorbing material without parallel surfaces filling said casing between said end walls and around said duct, said sound-absorbing material having a thickness around said duct as measured in each plane perpendicular thereto which varies continuously about the periphery of the duct, said casing having a square cross section in said planes and said duct having a circular cross section in said planes and being conical from one of said end walls to the other, a plurality of such ducts being provided in spaced-apart relation within said casing and being all spaced from said longitudinal walls, said sound absorbing-material surrounding each duct in each such plane, said sound-absorbing material being subdivided by plates in said casing perpendicular to said ducts.

4,236,598

ROTATING SELF-CLEANING SOUND ABSORBER FOR DUCTS

Leslie S. Wirt, Newhall, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jun. 6, 1978, Ser. No. 913,045

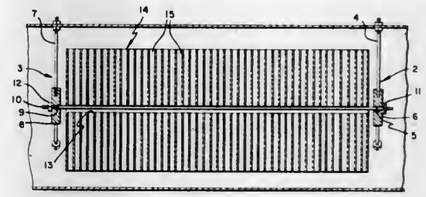
Int. Cl.³ F01N *1/02, 1/18, 3/02*

U.S. Cl. 181—231 **6 Claims**

1. In combination with a duct for the flow of a gas therethrough, a self-cleaning sound absorption structure located within said duct, comprising:

an elongated resonant absorber member having an exterior sound receiving surface spaced from the interior wall of said duct, said surface having apertures which present a substantially unrestricted path into said absorber member for contaminants impinging on said surface; and

means for rotatably mounting said absorber member about its major axis within said duct to allow said contaminants to freely exit from said apertuers as said absorber member



rotates, thereby cleaning said absorber member of said contaminants.

4,236,599

STOOLS

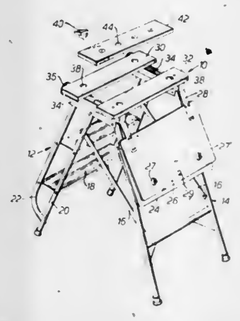
Brian A. Luff, and Ronald P. Hickman, both of Jersey, Channel Islands, assignors to Inventec Licensing BV, Lomboklaan, Netherlands

Filed Nov. 28, 1978, Ser. No. 964,357

Claims priority, application United Kingdom, Nov. 28, 1977, 49477/77

Int. Cl.³ A47C *13/00*; B25M *1/00*

U.S. Cl. 182—33 **29 Claims**

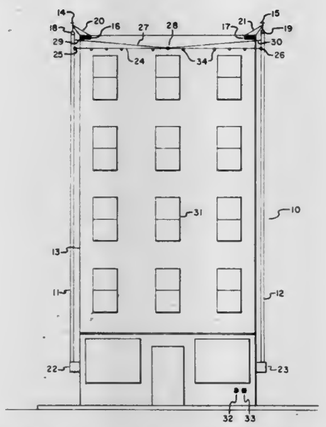


1. In a combined step stool and vise unit having a supporting structure including at least one step and a top structure supported thereon, the improvement comprising:

means for providing a vise-unit mode of use of said top structure, said means including (1) first and second elongate members having opposed elongate edges, said elongate members providing an upwardly facing working surface at least when said top structure is in said vise-unit mode of use, and (2) means for urging said elongate members transversely towards and away from each other so as to permit gripping of a workpiece therebetween at least when said top structure is in said vise-unit mode of use; and

means for providing a seat-unit mode of use of said top structure, said means including (1) means for normally defining an upwardly facing, substantially continuous, seat-forming surface when said top structure is in said seat-unit mode of use and (2) means for permitting movement of at least a part of said seat-forming surface out of seat-forming relation to said supporting structure for permitting conversion of said top structure from said seat-unit mode of use to said vise-unit mode of use.

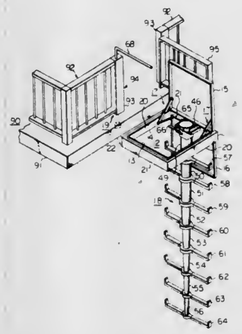
4,236,600
VERTICAL HORIZONTAL RESCUE SYSTEM
William Wooten, 238 Moye Ave., Biloxi, Miss. 39532
Filed Jul. 7, 1978, Ser. No. 922,650
Int. Cl.³ A62B *1/06*
U.S. Cl. 182—43 **3 Claims**



1. A vertical horizontal rescue system comprising:
(a) at least one pair of vertically oriented spaced apart cable means;
(b) adjustable pulley means adapted to receive said cable means and for mounting upon an elevated structure so as to allow said cable means to be vertically suspended therefrom and rotated therethrough;
(c) winch means operably attached to the bottom portion of said cable means and adapted for attachment to the bottom of an elevated structure in line with said adjustable pulley means whereby said cable means can be vertically actuated to go upwards and downwards along an elevated structure on which the present system is installed; and
(d) horizontally positioned cable means operably attached to and suspended between said vertical cable means, said horizontally positioned suspended cable means being provided with a series of spaced apart enlarged portions so as to prevent a harness snap attached thereto from sliding across said cable means a predetermined length of travel.

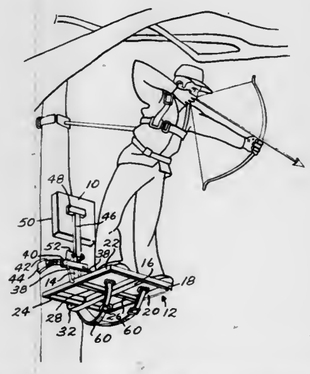
4,236,601
TURNING TYPE EMERGENCY ESCAPE
Hiromitsu Naka, Tokyo Kenkyusho of Kabushiki Kaisha Naka Gijutsu Kenkyusho, No. 39, Oaza Shinmachi, Yashio-shi, Saitama-ken, Japan
Filed Dec. 27, 1978, Ser. No. 974,112
Claims priority, application Japan, Nov. 2, 1978, 53-135416
Int. Cl.³ E06C *9/10, 5/04*
U.S. Cl. 182—76 **8 Claims**

8. A turning type emergency escape system for installation in a multi-story building having a veranda on at least some of the stories, said escape system comprising:
a plurality of escape devices, one for each veranda, and each having:
a stowage box having means for rotatably mounting said box on a veranda;
an evacuation passage defined in said stowage box;
an upper cover closing the upper opening of said evacuation passage;
a lower cover closing the lower opening of said evacuation passage;
a cover interlocking mechanism interlocking said upper and lower covers for simultaneously opening and closing the two covers;
an extensible evacuation means in said stowage box and extendable to the next lower veranda on the building;
a turning mechanism connected to said stowage box for rotating said stowage box between retracted and protruded positions, said turning mechanism including an operating handle secured at the lower end to said rotary stowage box for rotatably mounting the rotary stowage box on the corresponding veranda;



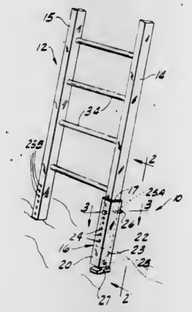
a locking mechanism for locking said rotary stowage box to the veranda when the rotary stowage box is in said protruded position; and
a common turning rod interconnecting the operation handles of the turning mechanisms associated with the respective floors of the multi-story building, and handles secured to said common turning rod at the respective floors, and a common connecting rod interconnecting the locking levers of said rotation mechanisms on the respective floors of the building.

4,236,602
TREE STAND AND SEAT
Paul Leggett, 914 Woodville Dr., Jackson, Miss. 39212
Filed Aug. 18, 1978, Ser. No. 935,494
Int. Cl.² A45F *3/26*
U.S. Cl. 182—187 **22 Claims**



1. A combination stand and seat structure attachable to a vertically extending object comprising:
frame means;
means for removably attaching said frame means to said object;
a stand;
stand attaching means for pivotably attaching said stand to said frame means;
a seat;
a seat attaching means for pivotably attaching said seat to said frame means; and
means for selectively adjusting the pitch of said seat relative to said frame means, said pitch adjusting means being pivotably attached to said frame means.

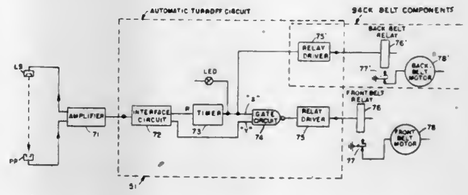
4,236,603
LADDER LEVELING DEVICE
Charles D. Talley, 7905 Joel, Affton, Mo. 63123
Filed Nov. 9, 1978, Ser. No. 959,098
Int. Cl.³ E06C *7/44*
U.S. Cl. 182—204 **12 Claims**



1. An adjustable device for leveling a ladder including a ladder having two spaced stiles connected by a plurality of spaced ladder rungs therebetween, each of said stiles having front and rear faces, a ground engaging end portion and at least one bore extending through the stile adjacent to the ground engaging lower end portion thereof and in a direction extending from the front face to the rear face, the adjustable device comprising an elongated channel shaped ladder extending member defined by two spaced opposed side walls and a connecting wall extending therebetween, said channel shaped member being of a size to cooperatively engage and embrace a selected one of the ladder stiles adjacent to the ground engaging end portion thereof to form an aligned extension of the stile, a plurality of spaced apertures in each of said opposite side walls of the channel shaped member, each of the apertures in one of said side walls being in lateral alignment with a corresponding aperture in the other of said opposite side walls to form pairs of aligned apertures, each of the said pairs of aligned apertures being selectively registrable with the bore in the stile in different positions of the channel shaped member on the stile, and a pin member insertable through a selected aperture pair on the channel shaped member and through the bore in the stile in registration therewith to hold the channel shaped member in a desired position of adjustment and extension on said stile.

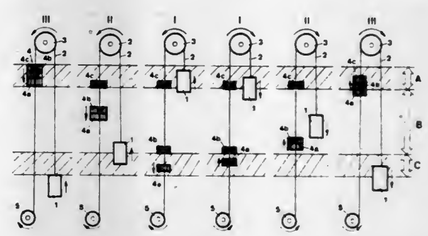
4,236,604
START/STOP CONTROL OF CONVEYING MEANS
Robert A. Warner, Elgin, Ill., assignor to Tri-Tronics Company, Inc., Oak Brook, Ill.
Filed Mar. 30, 1979, Ser. No. 25,725
Int. Cl.³ G61D *15/00*
U.S. Cl. 186—61 **8 Claims**

1. In a checkout system for retail stores in which products upon arrival at the delivery end of a conveying means are removed by the checkout clerk, one by one, for check out,
a start/stop arrangement for said conveying means,
said arrangement including at said delivery end of the conveying means, a beam of radiation and sensing means cooperating with said beam for detecting the crossing of said beam by a product upon its arrival at said delivery end, and also including a start/stop control circuit connected to and controlled by said sensing means,
said control circuit providing two alternative paths for controlling said conveying means from said sensing means, one of said paths being effective responsive to the detection by said sensing means of the arrival of a product at, and the removal of a product from, said point, for automatically, and substantially instantaneously, stopping and



starting said conveying means, respectively, and the other of said paths including timing means and being effective responsive to no such product being detected by said sensing means within a predetermined time for automatically bringing about the delayed stopping of said conveying means.

4,236,605
VARIABLE COUNTERWEIGHT SYSTEM
Charles Lindbergh, 10 S. Basilica, Charleston, S.C. 29406
Filed Aug. 15, 1978, Ser. No. 933,886
Int. Cl.³ B66B *17/12*
U.S. Cl. 187—94 **12 Claims**



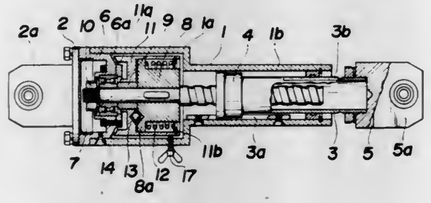
1. A variable counterweight system comprising a load which is subjected to varying static and dynamic forces during movement, a counterweight assembly adapted to counteract the varying forces acting on the load during its movements, movement means interconnecting the load and counterweight assembly and being fixedly attached to the load, said counterweight assembly including plural separate counterweight segments, one segment only being fixedly attached to the movement means and the remaining segments of the counterweight assembly being movably connected with said movement means, and spaced rigid interceptor means separate from the movement means and fixedly positioned relative to the path of movement of the movement means for supporting said remaining segments along the path of movement of the movement means and acting on said remaining segments one at a time in succession during movement of the movement means in one direction to completely isolate each segment from the load thereby varying the effectiveness of the counterweight assembly as a function of its position in relation to the load.

4,236,606

FRICTION BRAKING TYPE VIBRATION DAMPER

Katsuaki Sunakoda, Shimookamoto 3779-8, Kawachi-machi, Kawachi-gun, Tochigi-ken, Japan, and Yoshikazu Ito, 3747-2, Shimookamoto, Kiwachi-machi, Kawachi-gun, Tochigi-ken, Japan

Filed Nov. 1, 1978, Ser. No. 956,575
Claims priority, application Japan, Dec. 13, 1977, 52-148798
Int. Cl.[3] F16D *63/00*
U.S. Cl. 188—1 B 6 Claims



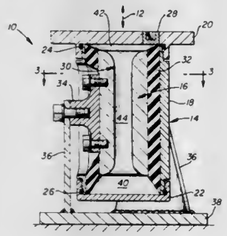
1. A friction braking type vibration snubber comprising a pair of supporting members fitted to make axially reciprocating motions relative each other, one of said members having a friction braking surface; a rotatable flywheel having a first surface, means for converting the relative axial motion of said pair of supporting members to rotary motions of said flywheel, a movable wheel having a second surface facing said first surface and rotatable relative to and with said flywheel and movable in the axial direction toward and away from said braking surface, and means for rotationally interconnecting said movable wheel and said flywheel and for moving said movable wheel axially away from said flywheel and toward engagement with said braking surface upon a difference in rotational speed between said movable wheel and flywheel, said means for interconnecting and moving comprising generally opposed recesses of generally conical cross-section defined in said first and second facing surfaces and at least one ball inserted between said opposed recesses to transmit the rotary motions of said flywheel to said movable wheel to rotate it, said at least one ball allowing the delayed rotations of said movable wheel to said flywheel and said delayed rotations bringing about the direct contact of said movable wheel with said friction braking surface.

4,236,607

VIBRATION SUPPRESSION SYSTEM

Dennis R. Halwes, Arlington, and William A. Simmons, Fort Worth, both of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Feb. 26, 1979, Ser. No. 15,230
Int. Cl.[3] F16F *9/10*
U.S. Cl. 188—1 B 20 Claims



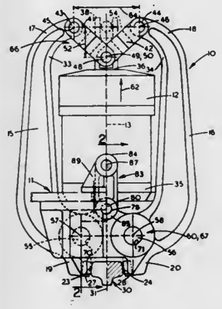
1. A vibration damper, comprising:
a housing having an inner chamber;
a piston in said housing having a cross-sectional dimension to substantially fill the inner chamber and forming spaced apart chambers on opposite ends of said piston in the housing;
a passage extending through said piston to interconnect the spaced apart chambers;
resilient mounting means bonded between the outside surface of said piston and the walls of the inner chamber, said mounting means forming a seal between the spaced apart chambers; and
a tuning mass, including a liquid, substantially filling said passage and the spaced apart chambers.

4,236,608

COMPACT CALIPER BRAKE

Jacob Kobelt, 6110 Oak St., Vancouver, British Columbia, Canada (V6M 2W2)

Filed Oct. 30, 1978, Ser. No. 955,963
Int. Cl.[3] B61H *7/12*
U.S. Cl. 188—43 13 Claims



1. A caliper brake assembly having: a frame; a pair of caliper arms hinged for rotation about respective hinge axes and having outer ends adapted to carry brake shoes for forcing against braking surfaces disposed between the shoes; an extensible and retractable actuator connected to the frame and having an axis of extension and retraction disposed longitudinally of the caliper arms and within a plane passing between hinge axes of the caliper arms; toggle means cooperating with the actuator and the caliper arms to apply a force to the caliper arms as the actuator is actuated; the brake assembly being further characterized by:
(a) swivel mounting means cooperating with the caliper arms or the actuator to permit relative swinging between the hinge axes of the caliper arms and the axis of the actuator about a swivel axis disposed parallel to the hinge axes of the caliper arms,
so as to permit limited lateral shifting of the brake shoes to accommodate asymmetrical disposition of the braking surfaces.

4,236,609

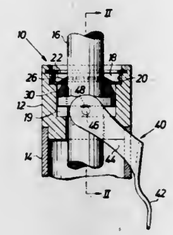
RELEASABLE LOCKING DEVICE FOR PIPES, SHAFTS AND THE LIKE

John Carlsson, Oskarshamn, Sweden, assignor to Stiftelsen Kalmarsundsgruppen, Kalmar, Sweden

Filed Nov. 27, 1978, Ser. No. 963,929
Claims priority, application Sweden, Dec. 14, 1977, 7714229
Int. Cl.[2] B65H *59/10*
U.S. Cl. 188—67 9 Claims

1. A telescopeable assembly comprising an outer tubular member receiving an inner member for relative axial displacement therebetween, a locking device rigidly connected with said outer member for locking said members in any selected relative position, an operating means for manually actuating said locking device to thereby place said locking device into either a locking position in which it engages said inner member so that the members are fixed in a desired adjusted position

relative to each other, or a free position, in which both members are mutually freely displaceable, wherein said locking device comprises the combination of (a) a locking element in the form of an annular washer surrounding the inner member and having radially directed resilient teeth permanently upstanding obliquely from the plane of the washer and adapted for engaging with said inner member in said locking position,



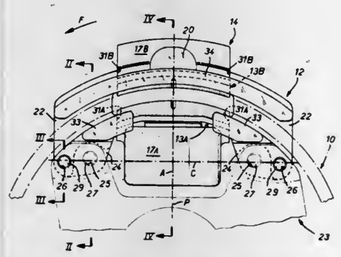
(b) a lifting annulus located adjacent the teeth of the washer and surrounding the inner member, and (c) a pivotable cam member mounted adjacent the lifting annulus and responsive to actuation of said operating means for urging said lifting annulus into contact with said teeth and bending them against their resilience to a free position further out of the plane of the washer and out of their locking engagement to place the locking device in its said free position.

4,236,610

CALIPER BRAKE WITH AXIALLY ELONGATE CYLINDRICAL BRAKING MEMBER

Rene Billet, Lamorlaye, France, assignor to Societe Anonyme Francaise du Ferodo, France

Filed Jan. 23, 1979, Ser. No. 5,722
Claims priority, application France, Jan. 27, 1978, 78 02269
Int. Cl.[3] F16D *53/00*
U.S. Cl. 188—76 7 Claims



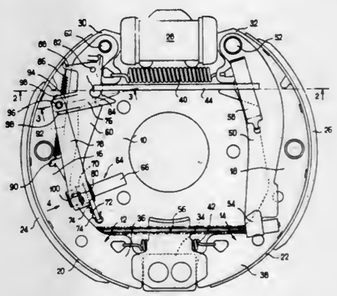
1. A caliper brake comprising a fixed support, a rotatable braking member of generally axially elongate cylindrical configuration, brake pads disposed respectively inside and outside the cylindrical braking member, a C-shaped caliper member disposed radially of and straddling said cylindrical braking member and said brake pads inside and outside thereof, said caliper member including a first arm having force-applying means for urging a first of said brake pads towards the cylindrical braking member and a second arm cooperable with a second of said brake pads so that in response to the operation of said force-applying means said caliper member transmits a corresponding force to said second brake pad whereby said brake pads grip said cylindrical braking member along a generally radial gripping axis passing through central zones of said brake pads; wherein the improvement comprises said fixed support having two legs disposed respectively on opposite sides of an axial gripping plane containing the gripping axis, said legs each having a circumferential bearing surface for each of said brake pads for circumferentially maintaining said brake pads during braking and two fastener apertures for receiving fastener means for fastening said fixed support to a support member, at least one of said fastener apertures in one of said legs having a portion thereof lying on a circle concentric with the axis of the cylindrical braking member along which also lie portions of the circumferential bearing surfaces associated with the associated said brake pad.

4,236,611

BRAKE SHOE ADJUSTING STRUCTURE FOR A DRUM BRAKE

Jean-Claude Claverie, Coubron, France, assignor to Societe Anonyme DBA, Paris, France

Filed Apr. 4, 1979, Ser. No. 27,187
Int. Cl.[3] F16D *65/56*
U.S. Cl. 188—79.5 P 12 Claims



1. A drum brake comprising two lined shoes which can be urged into frictional engagement with a rotary drum by brake applying means situated between the first ends of the shoes, a fixed fulcrum block situated between the other two ends of the shoes, a spacer mounted between an adjusting lever pivoted on a first one of the shoes and the second shoe, said adjusting lever including a free end, an elongated extensible member situated between the free end of the adjusting lever and the first shoe, said extensible member defining an axis; the extensible member comprising a first element prevented from rotating and a second element, rotation of which causes the member to extend; adjusting means being provided to rotate the second element when the wear on the linings of the shoes exceeds a predetermined value, characterized in that the adjusting means comprise a counter-link pivoted on said adjusting lever and yieldably biased by resilient means into pivotal contact with said spacer, movement of said spacer upon a brake application causing pivotal movement of said counter-link relative to said adjusting lever, a link engaging said counter-link at a pivot and extending between said counter-link and said extensible member, said link terminating in a one end adjacent the free end of said adjusting lever, means for guiding the movement of said one end of said link relative to said free end of said adjusting lever in translation substantially perpendicular to said axis of said extensible member, a one-way coupling drivingly connecting said link to said second element; whereby relative movement of said pair of brake shoes, and said spacer and adjusting lever, upon a brake application causes pivotal movement of said counter-link; said counter-link driving said link to rotate said second element if the lining wear has exceeded said predetermined value.

4,236,612

FRICTION PAD ASSEMBLIES FOR RAIL VEHICLE BRAKES

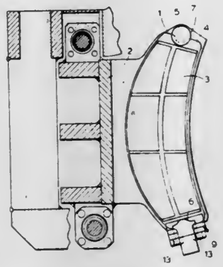
John P. Bayliss, Redditch, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 26, 1979, Ser. No. 23,678

Claims priority, application United Kingdom, Apr. 8, 1978, 13858/78

Int. Cl.³ F16D *65/04*

U.S. Cl. 188—242 **4 Claims**



1. A friction pad assembly for a rail vehicle brake comprising a pad of friction material, a rigid backing plate carrying said pad, a shoe upon which said backing plate is detachably mounted, an abutment on said shoe for engagement by said backing plate, a keeper for holding said backing plate in engagement with said abutment, wherein said keeper comprises a stop member adapted to be detachably secured to an end of said shoe and provided with an opening, in combination with a relatively movable resilient abutment member which is secured to said stop member and projects through said opening in said stop member to engage at a free end thereof with an adjacent end of said backing plate, and said abutment member includes a portion which is spaced from said stop member and is of an area greater than said opening to transmit to said stop member any force on said pad which is in excess of the resilient loading of said abutment member.

4,236,613

COUPLING MEMBER

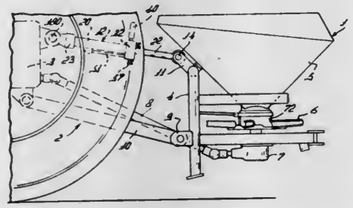
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed May 15, 1978, Ser. No. 905,966

Claims priority, application Netherlands, May 9, 1977, 7705056

Int. Cl.³ F16F *9/44*

U.S. Cl. 188—300 **9 Claims**



1. An elongated coupling member of adjustable length for use as a stay or strut, comprising a cylinder and a piston movable within said cylinder, the outer ends of the member mounting couplings and said piston being mounted on a rod, said rod extending through opposite ends of said cylinder and at both sides of said piston, chambers within said cylinder at each opposite side of said piston and the two chambers forming part of a closed hydraulic circuit, the movement of said piston and rod being accompanied by movement of fluid through duct means interconnecting one chamber to the other and a change in the length of said coupling member, valve means in said duct means normally preventing fluid flow and retaining a preselected length of said member, said duct means comprising an overload channel that communicates fluid from one chamber to the other chamber through a check valve upon overload, indicating means in said circuit that signals the fluid pressure in the circuit and said one chamber when the valve means is closed, and the load being sustained by said coupling member, a further channel interconnecting said chambers with one another through at least one further valve to permit adjustment of the length of said member.

4,236,614

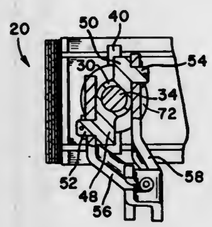
DRUM BRAKE HAVING PARKING MECHAISM

Donald D. Johannesen, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 890,752, Mar. 27, 1978, abandoned. This application Nov. 16, 1979, Ser. No. 95,014

Int. Cl.³ F16D *51/22, 51/24*

U.S. Cl. 188—326 **3 Claims**



1. In a drum brake assembly having a brake drum rotatable about an axis and a pair of brake shoes which are movable radially by a hydraulic actuator from a non-braking position to a braking position in engagement with the drum during a service brake application, an extendible assembly having a longitudinal axis and engageable with the pair of brake shoes to substantially define the non-braking position, and a pair of levers secured to the extendible assembly, the pair of levers being pivotal in opposite directions relative to the extendible assembly to move the pair of brake shoes from the non-braking position to the braking position during a parking brake application, the extendible assembly including a pair of projections extending radially therefrom in opposite directions from the extendible assembly to define mountings which are radially offset from each other relative to the drum axis and axially offset from each other in a direction parallel of the drum axis, the mountings pivotally securing the pair of levers to the extendible assembly such that the pair of levers are pivotally secured on opposite sides of the extendible assembly at axially spaced locations.

4,236,615

PACKING CASE HAVING EXPANSIBLE COMPARTMENTS

Esther Ginat, 20 Bruria St., Tel Aviv, Israel

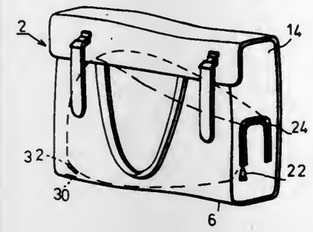
Continuation of Ser. No. 831,991, Sep. 9, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 973,810

Claims priority, application Israel, Aug. 2, 1977, 52723

Int. Cl.³ A45F *3/00*

U.S. Cl. 190—52 **6 Claims**

1. A packing case having an outer wall enclosure defining a main internal compartment therein; said outer wall enclosure being formed with an opening lined with a fastener device for closing same; and an expansible partition of flexible material secured along its peripheral edges to the outer wall enclosure and normally disposed within said main compartment so as to form an auxiliary compartment separate from but expansible within said main compartment and closable by said fastener device, said outer wall enclosure including a top wall, a bottom wall, two side walls, and two end walls, said opening being formed in and within the perimeter of one of said end walls, said partition being dimensioned such that the expansible auxiliary compartment defined thereby is expansible within the main compartment to substantially the full volume of the main compartment.



4,236,616

CURRENT COLLECTOR SHOE

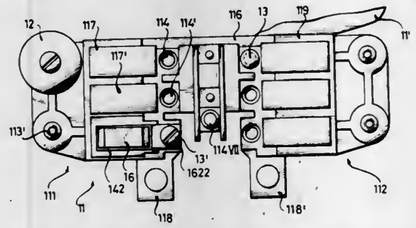
Willi Hillmann, Kamen, Fed. Rep. of Germany, assignor to Paul Vahle KG, Kamen, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,536

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831882

Int. Cl.³ B60L *5/06*

U.S. Cl. 191—59.1 **12 Claims**



1. A current collector shoe traveling along a multi-pole slide wire comprising: sliding contacts projecting sideways, breakout means on lengthwise sides of said shoe, cassettes insertable from either sides, said sliding contacts being spring mounted in said cassettes.

4,236,617

VEHICLES

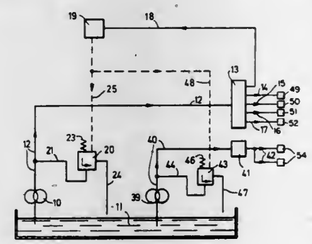
Eric A. Whateley, Huddersfield, England, assignor to David Brown Gear Industries Limited, Huddersfield, England

Filed May 1, 1978, Ser. No. 901,823

Claims priority, application United Kingdom, Nov. 11, 1977, 46963/77

Int. Cl.³ F16D *33/00, 67/00;* **B60K** *41/22*

U.S. Cl. 192—3.3 **16 Claims**



1. In a vehicle including a power transmission mechanism comprising variable-ratio gearing driven by way of a hydrodynamic torque converter having a hydraulically-engaged lock-up clutch which is temporarily disengaged while a ratio is being established in said gearing; friction clutch and/or brake means for establishing a ratio in said gearing; friction brake means for bringing the vehicle to rest; at least one of said ratio-establishing friction clutch and/or brake means and said friction brake means bringing the vehicle to rest being hydraulically engaged and forming part of a hydraulic circuit comprising a pump capable of supplying oil under pressure in the circuit and a relief valve interposed between the pump and that one of said ratio-establishing friction clutch and/or brake means and said friction brake means for bringing the vehicle to rest forming part of said circuit, said relief valve being urged in the closing direction by resilient means, and said relief valve also being interconnected with said lock-up clutch so as to be subject to pilot pressure in said closing direction while said lock-up clutch is engaged.

4,236,618

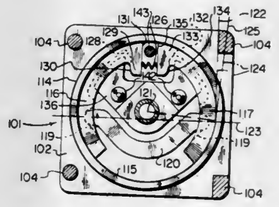
TORQUE TRANSMITTING AND BLOCKING DEVICE

Joe E. West, 11426 Goodnight La., Dallas, Tex. 75229

Filed Oct. 13, 1977, Ser. No. 841,809

Int. Cl.² F16D *67/00*

U.S. Cl. 192—8 R **31 Claims**



1. Apparatus for selectively transmitting torque from a torque input means to a torque output means, and for blocking transmission of torque from said output means to said input means, comprising:

a drum having a cylindrical inner surface;

a pair of shoes positioned within said drum, each of said shoes having an arcuate surface bearing against the inner surface of said drum;

a spanner bar extending between said shoes and engaging their inner surfaces at points lying on the same side of the axis of said drum said spanner bar being so positioned with respect to the drum axis that a perpendicular struck from its centerline at the intersection of the centerline with the inner drum surface forms an angle with a drum inner surface tangent struck from the same point which is in the lock angle range for the materials employed to form the drum and shoe surfaces;

said shoes being displaceable toward each other at their ends lying on the side of the drum axis opposite their points of engagement with said spanner bar;

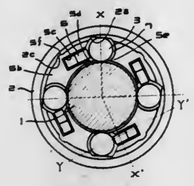
said shoes having among them at least two force transmitting surfaces oriented generally radially of said drum;

force transmitting means engagable with each of said surfaces;

one of said force transmitting surfaces being oriented such that a force applied generally orthogonally therethrough by said force transmitting means sets both of said shoes in jamming relationship with the inner surface of said drum; and

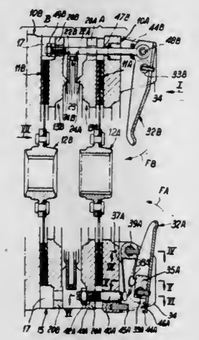
the other of said force transmitting surfaces being oriented such that a force applied generally orthogonally therethrough by said force transmitting means slidingly rotates said shoes within said drum without jamming thereagainst.

4,236,619
ONE-WAY CLUTCH
Masao Kuroda, Mie, Japan, assignor to NTN Toyo Bearing Company, Limited, Osaka, Japan
Filed Oct. 25, 1978, Ser. No. 954,595
Claims priority, application Japan, Oct. 26, 1977, 52-144345
Int. Cl.³ F16D *41/06*
U.S. Cl. 192—45 **8 Claims**



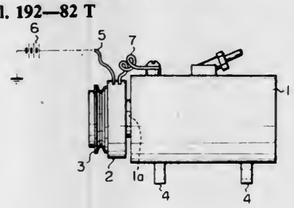
1. A one-way clutch of the type in which rollers are disposed respectively in a plurality of wedge-shaped spaces defined between an outer ring provided with a plurality of clutch slopes on its inner periphery and the cylindrical outer surface of a shaft or inner ring, said rollers being lightly pressed against the wedge surfaces by spring members, the improvement wherein said clutch slopes on the inner peripheral surface of the outer ring are located at an axially central location of the outer ring, the outer ring is formed at its opposite ends with enlarged interior diameter portions with bearing rings being fixedly fitted therein, said bearing rings bearing radial loads on their inner peripheries and axial loads on the end surfaces, said bearing rings also serving as sealing plates for preventing the leakage of grease contained in the clutch and the entry of dirt into the clutch, said rollers being lightly, tangentially pressed against the clutch slopes by the S-shaped spring members so positioned in a retainer installed in the clutch so that their S-shaped projections lie in planes parallel to the longitudinal axes of the respective rollers.

4,236,620
DOUBLE CLUTCH ASSEMBLY
Carlo Beccaris, Santena, Italy, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Jul. 10, 1978, Ser. No. 923,293
Claims priority, application France, Jul. 13, 1977, 77 21605
Int. Cl.³ F16D *21/02*
U.S. Cl. 192—48.8 **13 Claims**



1. A clutch of the kind comprising two clutch assemblies; each of said clutch assemblies including a reaction plate adapted to be fixed for rotation with a shaft, a friction disc mounted for axial movement relative to said reaction plate and adapted to be fixed for rotation with another shaft, a pressure plate mounted for axial movement relative to said reaction plate and fixed for rotation therewith, a Belleville type spring washer bearing along one of its peripheries against a support surface and the other of its peripheries urging said pressure plate toward an engagement position in which said friction disc is gripped axially between said pressure plate and said reaction plate; said spring washers of said clutch assemblies axially acting in opposite directions, an annular spacer axially separating said spring washers from each other, means for axially fixing said annular spacer relative to said reaction plate of one of said clutch assemblies in at least one axial direction, said support surfaces for said spring washers being formed on said annular spacer in axially spaced relation to each other; the improvement comprising said annular spacer defining a part separate and distinct from said means for axially fastening said annular spacer relative to said reaction plate of one of said clutch assemblies, said last mentioned means comprising an annular retaining means, said annular spacer bearing through one of said spring washers against said annular retaining means, said annular retaining means being disposed axially beyond said one spring washer in relation to said annular spacer.

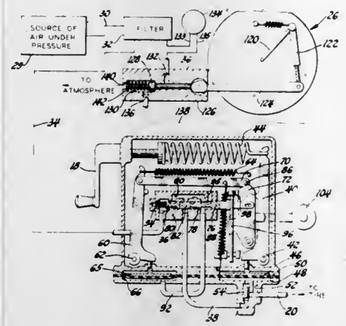
4,236,621
APPARATUS FOR PROTECTING A COMPRESSOR FROM BREAKDOWN
Takamitu Mukai; Tomoo Fujii, and Hiroya Kouno, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan
Filed Apr. 25, 1979, Ser. No. 33,136
Claims priority, application Japan, Apr. 28, 1978, 53-58500[U]
Int. Cl.³ F16D *19/00*
U.S. Cl. 192—82 T **6 Claims**



1. An apparatus for protecting a vehicle air conditioning compressor, having therein sliding parts to be lubricated during the operation of said compressor, against breakdown due to seizure of the sliding parts, said compressor being connected to a vehicle engine system via an electromagnetic clutch excited from a vehicle battery, comprising means for preventing said electromagnetic clutch from being excited prior to occurrence of the seizure of said sliding parts of said compressor, said preventing means being a thermally meltable conductor provided in a grounded circuit of an electric excitation circuit for said electromagnetic clutch, said thermally meltable conductor comprising a lead wire disposed adjacent to a body of said compressor, said lead wire having a resilient portion formed into a coil spring for urging said lead wire away from said body when said conductor is melted.

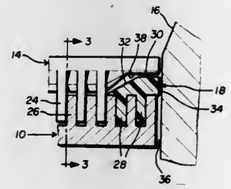
4,236,622
COIN OPERATED TIRE INFLATING APPARATUS
James G. Stevenson, 40890 Grand River, Novi, Mich. 48050
Filed Mar. 12, 1979, Ser. No. 19,769
Int. Cl.³ G07F *17/06*
U.S. Cl. 194—87 **5 Claims**

1. In an inflating apparatus, the combination comprising:
a first conduit and means for delivering air thereto under pressure;
a second conduit for delivering air under pressure to an inflatable object;
valve means connected between the first conduit and the second conduit, said valve means being movable to a first position for passing air from the first conduit to said second conduit, from a second position in which the valve means are operative to prevent passage of such air;
a coin-operated means having an opening for receiving a coin; and
a pneumatic operator connected to the valve means for



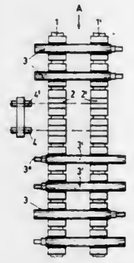
preventing movement thereof from said second position to said first position, and being so connected to the coin-operated means as to be responsive to a motion of the coin with respect to said coin-operated means to pneumatically actuate the first valve means to permit said air under pressure to pass from the first conduit toward said second conduit.

4,236,623
ESCALATOR SAFETY DEVICE
Duane B. Ackert, 25100 Meadowbrook, Novi, Mich. 48050
Filed Dec. 11, 1978, Ser. No. 968,651
Int. Cl.³ B65G *9/12*
U.S. Cl. 198—333 **1 Claim**



1. In escalator construction of the type characterized by step plates adapted to move longitudinally between a pair of stationary longitudinally extending skirt members which function as vertical barriers along the two lateral sides of the escalator, a small clearance gap being provided between each lateral edge of the step plates and the associated skirt member, each of the step plates being provided with a plurality of parallel closely spaced longitudinally extending grooves in its upper surface, the improvement which comprises:
a pair of step plate guide strips adapted to be applied to the upper surface of each step plate at its opposite lateral edges, each guide strip beingdimensioned to extend substantially the full longitudinal length of the step plate and to extend inwardly from the lateral edge of the step plate a sufficient width to overlap a plurality of the grooves, the under side of said guide strips having a plurality of longitudinally extending downwardly projecting ribs dimensioned to fit into said grooves between upstanding ribs of the step plate to aid in locating and stabilizing said guide strip on the step plate, means for securing said guide strip to said step plate, said guide strips projecting upwardly from the top surface of the step plate with the upper surface of each of said guide strips being contoured to slope upwardly at a shallow angle from the horizontal and the laterally inward edge toward the laterally outward edge to form a ramp-like face for at least a substantial part of the lateral width of said strip, wherein the guide strip width is dimensioned so that the clearance gap between the lateral outward edge of the guide strip and the skirt is less than that between the lateral edge of the step plate and the skirt, said strips being fabricated of a plastic material having a low coefficient of friction and a very smooth upper surface to which sticky semi-melted plastic materials will not readily adhere.

4,236,624
APPARATUS FOR ORIENTATING ELONGATED ARTICLES, SUCH AS BODIES OF WRITING PENS
Ugo Buzzi, Arzo Ti, Switzerland, assignor to Albe S.A., Agno, Switzerland
Filed Dec. 5, 1978, Ser. No. 966,560
Claims priority, application Switzerland, Dec. 28, 1977, 16098/77
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—399 **5 Claims**

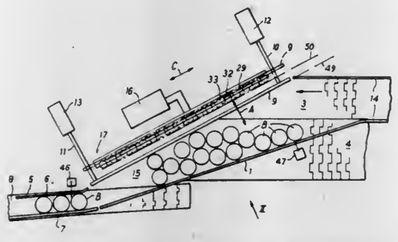


1. Apparatus for similarly orienting elongated similar rod-like articles whose ends are of different configuration from each other, comprising a step-by-step conveyor which holds the articles individually in parallel relationship, inverting mechanism adapted to receive articles moving in a direction parallel to their length off the conveyor, means for rotating the inverting mechanism 180° about an axis perpendicular to the length of the articles, to turn the articles end for end, first pusher means adapted to push articles lengthwise off the conveyor into said inverting mechanism, said first pusher means being so shaped as to contact the ends of only those articles which are incorrectly oriented and to miss the ends of the articles which are correctly oriented thereby to leave on the conveyor those articles which are correctly oriented, and second pusher means adapted to return the inverted articles from said inverting mechanism to said conveyor.

4,236,625
ARTICLE HANDLING APPARATUS
Stanley Smith, and John R. Harries, both of Worcester, England, assignors to Metal Box Limited, Reading, England
Filed Nov. 27, 1978, Ser. No. 963,758
Claims priority, application United Kingdom, Dec. 1, 1977, 50178/77
Int. Cl.³ B65G *47/22*
U.S. Cl. 198—454 **11 Claims**

4. Apparatus for relieving jams which may occur among articles moving along a convergent path of travel comprising a side guide unit adapted to be disposed contiguous to and in part defining a convergent path of travel for a plurality of article, said side guide unit including an elongated side guide rail and an elongated joggling member, said elongated side guide rail and elongated joggling member having respective longitudinal axes, said elongated side guide rail and said elongated joggling

member being disposed adjacent each other with their longitudinal axes in general parallel relationship, first means responsive to article jamming for reciprocating said elongated jogging member generally parallel to its longitudinal axis, and second means responsive to article jamming for moving said elongated side guide rail transverse to its longitudinal axis.



4,236,626

WALKING BEAM CONVEYOR

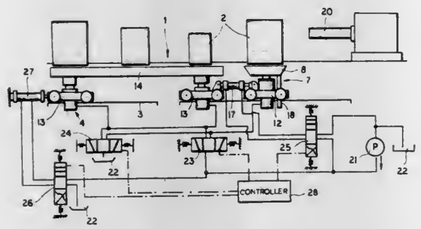
Oskar Noe, Mülheim an der Ruhr, Fed. Rep. of Germany, assignor to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Duisburg, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,608

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809955

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—488 **5 Claims**



1. A walking-beam conveyor for conveying objects such as sheet-metal coils, said conveyor comprising:

a pair of generally parallel horizontally extending and generally fixed beams;

at least one horizontally extending movable beam generally parallel to and between said fixed beams and having a main portion and an end portion having respective upper sides;

a horizontally extending support underneath said portions;

a main carriage supporting said main portion on said support for horizontal displacement thereon;

an end carriage independent of said main carriage and supporting said end portion for horizontal displacement on said support;

means for horizontally reciprocating said portions of said movable beam jointly through respective predetermined horizontal strokes;

means for vertically reciprocating said main portion;

means operatively engaged horizontally between said end carriage and said main carriage for horizontally displacing said end portion independently of and relative to said main portion; and

means for vertically displacing said end portion independently of and relative to said main portion through a predetermined vertical distance substantially greater than said vertical stroke.

4,236,627

CUTTING MACHINE

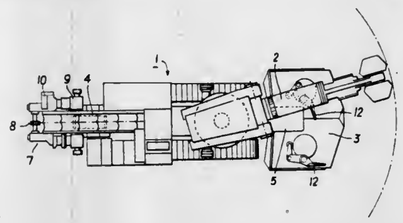
Siegfried Sigott, Zeltweg; Peter Kogler, Knittelfeld; Otto Schetina, and Alfred Zitz, both of Zeltweg, all of Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Aug. 31, 1976, Ser. No. 719,157

Claims priority, application Austria, Sep. 2, 1975, 6770/75

Int. Cl.³ B65G *65/02*

U.S. Cl. 198—514 **5 Claims**



1. A cutting machine comprising conveying machinery formed of an endless conveyor extending between a rear deflector wheel and a front deflector wheel; a loading ramp having movable loading arms which continuously shift the cut material in upward direction of the loading ramp to the conveyor, the rear deflector wheel of the conveyor being driven by a squirrel-cage motor and the drive of the loading arms being derived, via the conveyor from the front deflector wheel; a slipper clutch interpositioned within the drive between the motor and the loading arms, the slide torque of said slipper clutch, as reduced to the motor shaft exceeding, the breakdown torque of the squirrel-cage motor.

4,236,628

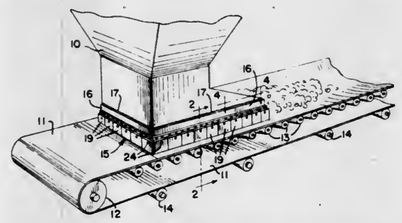
CONVEYOR SKIRT BOARD AND HOLDER

Richard Stahura, Indiana, Pa., assignor to Martin Engineering, Neponset, Ill.

Continuation of Ser. No. 878,236, Feb. 16, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,163

Int. Cl.³ B65G *47/04*

U.S. Cl. 198—525 **10 Claims**



1. A skirt board installation for a conveyor having a travelling belt including a mounting plate secured on the vertical walls of a conveyor loading chute, a plurality of skirt board sections capable of contacting said belt, means individually and adjustably mounting said skirt board sections on said mounting plate to permit adjustment of each section toward said belt and to retard movement of each section away from said belt, and said skirt board sections each including generally vertical slides and guideways along their adjoining edges allowing for said adjustment and said movement.

4,236,629

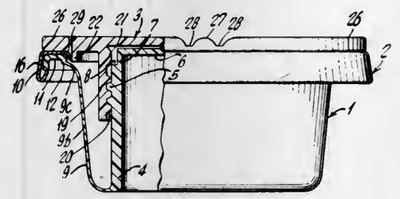
NESTABLE POURING SPOUT ASSEMBLY

Davis B. Dwinell, Warren, N.J., assignor to American Flange & Manufacturing Co. Inc., Linden, N.J.

Filed Oct. 2, 1978, Ser. No. 947,942

Int. Cl.³ B65D *25/44*

U.S. Cl. 222—529 **4 Claims**



1. In container closure construction a nestable integrally molded plastic pouring spout having a downwardly opening annular sealing channel peripherally disposed at one end, said sealing channel having a top wall, an outer wall, and an inner wall, a relatively flexible spout outer wall extending downwardly from said sealing channel inner wall, a relatively rigid exteriorly threaded spout inner wall connected to the lowermost end of said spout outer wall and concentrically nested therewithin with said spout in stored position, an imperforate sealing membrane closing off the distal end portion of said spout inner wall, an annular metal crimping ring at least partially overlying said top, inner, and outer walls of said spout sealing channel, an integrally molded plastic cap having a top and an internally threaded depending skirt threadedly engaged on said spout, said cap top extending circumferentially of said skirt so as to close off the annular void between said nested inner and outer walls, means depending from the periphery of said cap top tightly engaging said crimping ring with said spout in stored position and gripping means on said cap for raising said spout to extended pouring position by reversing said spout outer wall from a downwardly extending direction to an upwardly extending direction.

4,236,630

EXTENSIBLE TELESCOPIC COAL BUNKER FOR SUBSURFACE MINING

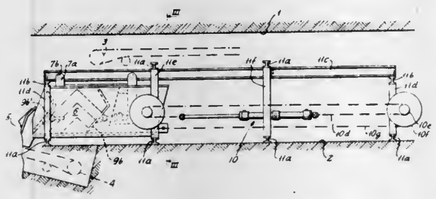
Günter Sander, Bottrop, and Roland Günther, Wesel, both of Fed. Rep. of Germany, assignors to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 803,255, Jun. 3, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 943,975

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626408

Int. Cl.³ B65G *3/04*

U.S. Cl. 198—577 **11 Claims**



1. A bunker assembly for receiving and discharging bulk materials, particularly coal for subsurface mine hauling, comprising: an assemblage of nested telescopic container members, including at least one stationary member and a plurality of movable members, said container members being formed in graduated sizes with each container member being adapted to be fitted into a next larger adjacent container member, said movable members being telescopically movable relative to said stationary member and to each other to expand and contract the volume of said assemblage; means for feeding material into said assemblage and means for discharging material from said assemblage; frame means for fixedly supporting said assemblage within a subsurface mine location; and reversible drive means mounted upon said frame means for effecting reversible telescopic movement of said movable container members to vary the volume of said assemblage, said drive means comprising gear wheel means and pulley means rotatably fixed relative to each other, cable means in driving engagement with said pully means and having said movable container members connected thereto, gear chain means in driving engagement with said gear wheel means to effect rotation thereof, and reversible hydraulic cylinder means having said gear chain means connected thereto and operating to effect reversible rotation of said gear wheel means, said hydraulic cylinder means thereby operating to reversibly drive said movable container members to expand and contract the volume of said assemblage.

4,236,631

CONVEYOR UNIT

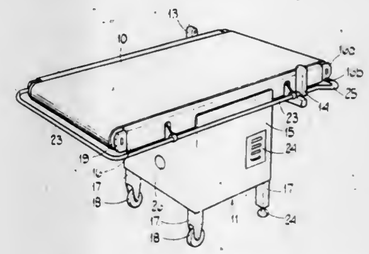
David Bowen, Birmingham, and David Boot, West Midlands, both of England, assignors to The Lucas Electrical Company, Ltd., Birmingham, England

Continuation of Ser. No. 576,657, May 12, 1975, abandoned. This application Oct. 19, 1976, Ser. No. 733,775

Claims priority, application United Kingdom, May 18, 1974, 22274/74

Int. Cl.³ B65G *41/00*

U.S. Cl. 198—583 **13 Claims**



1. A conveyor unit comprising a conveyor, a mobile support carrying said conveyor, a conveyor drive carried by said mobile support, a control for said conveyor drive, said control including means for sensing the presence of an article on a predetermined region of said conveyor, so that said conveyor drive is started and stopped in dependence upon signals from said sensing means, at least one service connection carried by said mobile support, and connection means carried by said mobile support at the ends and at the sides of said conveyor unit for quick connection and disconnection of another such conveyor unit selectively at either end and at either side therof, said connection means including a location bar surrounding said conveyor, said location bar having a downwardly-cranked end portion adjacent one end of the conveyor unit, wherein said mobile support includes a notched portion adjacent said downwardly-cranked end portion of said location bar, means defining a notch in said notched portion being arranged to engage a location bar on an adjoining, similar conveyor unit.

4,236,632

MAGNETIC CONVEYOR BELT

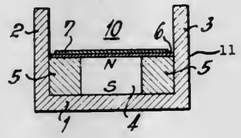
Heinrich Spodig, Netteberge 84, 4711 Bork, Fed. Rep. of Germany

Continuation of Ser. No. 458,351, Apr. 5, 1974, abandoned. This application Dec. 29, 1976, Ser. No. 755,205

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1973, 2318900

Int. Cl.[3] B65G *15/58*

U.S. Cl. 198—690 11 Claims



1. A magnetic conveyor belt comprising:

(a) a belt supporting structure comprising a magnetically conductive iron rail of U-shaped cross section having a base web portion and first and second side legs;

(b) a plurality of permanent magnets disposed along the length of said rail in spaced fashion with the same pole of each magnet resting against the web of said iron rail;

(c) means supporting a conveyor belt for travel directly above the top surface of said permanent magnets at which surface the other pole of each of said magnets is present; and

(d) the top of said conveyor belt being substantially below the height of said side legs of said U-shaped iron rail to result in a magnetic field extending over a large volumetric space between said side legs and said top surface, in which space objects being carried on the belt will be located, to thereby result in magnetic lines of force intersecting objects carried on said conveyor belt thereby permitting bulky objects to be reliably carried.

4,236,633

PROCESS FOR STORAGE

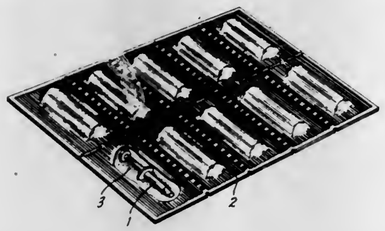
Lennart S. Ernerot, Södertälje, Sweden, assignor to Astra Lakemedel Aktiebolag, Södertälje, Sweden

Filed Aug. 25, 1978, Ser. No. 936,772

Claims priority, application Sweden, Sep. 6, 1977, 7709970

Int. Cl.[3] B65D *81/24*

U.S. Cl. 206—213.1 11 Claims



1. Package for the protection of oxidizable compounds selected from the group consisting of adrenaline, noradrenaline and derivatives thereof which are present in pharmaceutically active solutions containing a local anesthetically active compound, which solutions are stored in a container which is further enclosed in an oxygen gas impervious outer package containing hydrogen gas and a catalyst which catalyzes the reaction of hydrogen and oxygen into water present in the space between said container and said outer package.

4,236,634

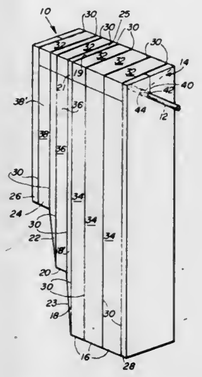
GARMENT STORAGE BAG

Gertrude B. Benedict, 2546 Edison, Detroit, Mich. 48206

Filed Feb. 16, 1979, Ser. No. 12,844

Int. Cl.[3] B65D *85/18*

U.S. Cl. 206—287 8 Claims



1. A garment storage sectional container including a plurality of sectional structures of varying length in open communication with each other supported by a longitudinally extending support rod, comprising:

a frame means for supporting the sectional structures above the support rod;

said sectional structure further comprising a plurality of top members open at their ends supported by the frame means; and

said structure further comprising a plurality of lower sections open at their ends supported by the top members.

4,236,635

FILING SHEET FOR MICROSCOPE SLIDES

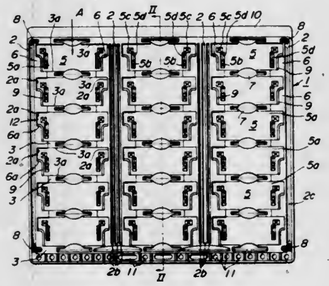
Naokuni Namiki, Hoya, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,751

Claims priority, application Japan, Jun. 2, 1978, 53-75673[U]; Jun. 2, 1978, 53-75674[U]

Int. Cl.[3] B65D *1/24, 5/50, 85/62*

U.S. Cl. 206—456 12 Claims



1. A filing sheet for microscope slides, wherein a number of microscope slides are held in laterally and vertically spaced relationship on the same plane of an integral sheet, comprising:

a unitary plastic sheet having a plurality of rectangular recesses depressed from the outer periphery and spaced apart by longitudinal partition walls and lateral partition walls in lateral and longitudinal relationship, each of said rectangular recesses being defined by a pair of longitudinal partition walls and a pair of lateral partition walls for receiving a microscope slide;

microscope slide-retaining means projected inwardly into said rectangular recess from a shorter pair of opposing side walls which define said rectangular recess and having a space for inserting a microscope slide between the end of said slide-retaining means and an opposite lateral partition wall and being arranged so as to be inclined downwardly toward the bottom of the recess such that said slide is retained beneath said retaining means;

an air-ventilation opening provided on a side portion of the plane of said rectangular recesses under said slide-retaining means;

fingertip recesses provided in borderlines of adjacent rectangular recesses and protruded downwardly from the plane of said rectangular recess;

upraised projection means arranged on the bottom of each of said rectangular recesses for abutting said microscope slide and for holding said microscope slide in contact with said microscope slide-retaining means and being located on the periphery of said slide adjacent said side walls;

spacer means protruded downwardly from portions of the back surface of a bottom wall of said rectangular recess and being located on the periphery of said slide adjacent said side walls so as not to disturb viewing of a microscope slide; and

a plurality of lateral partition walls projected inwardly toward said fingertip recess and having a substantially same protrusion height with the microscope slide retaining means.

4,236,636

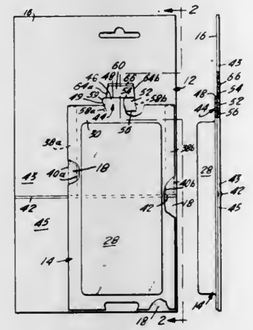
BLISTER PACKAGE

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed May 18, 1979, Ser. No. 40,100

Int. Cl.[3] B65D *83/00, 65/16, 75/58*

U.S. Cl. 206—461 10 Claims



1. A recloseable blister package having an opening end defined thereon comprising: a backing board; and a blister member, with a product-holding portin defined therein, secured to one surface of said backing board, said blister member having a peripheral flange extending thereabout, with a flexible locking tab projecting, at least in part, outwardly beyond the edge of a portion of said flange at one end of said blister corresponding to said opening end of said package, said tab being bonded in surface contact to an underlying, displaceable, securing segment of said backing board, said package, when opened, having an aperture in said backing board in registry with said tab, said tab being adapted to be pushed through said aperture to effect locking reclosure of said package.

4,236,637

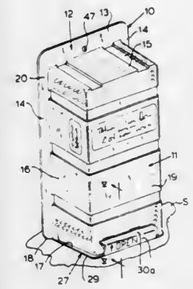
COTTON SWAB VENDER

J. Fred Castner, Sr., P.O. Box 7156, San Diego, Calif. 92107, and John F. Castner, Jr., Torrance, Calif., assignors to J. Fred Castner, Sr., San Diego, Calif.

Filed Jun. 18, 1979, Ser. No. 49,631

Int. Cl.[3] B65D *83/02, 85/20*

U.S. Cl. 206—467 18 Claims



1. A package for marketing and vending products carried on strips stacked in the package which comprise a tray-like blister with a front face, a top end, a bottom wall and side walls for housing the strips, a backing covering and sealed to said blister extending above the top end of the blister and having an aperture therein adapted to receive a hook to hang the package from a wall, said package having a dispensing outlet at the bottom wall of the blister, and a flap on said backing folded over said outlet and across the bottom wall of the blister, a tongue portion on said flap foldable over the front face of the blister, tongue retaining grooves in the blister having openings into the front face of the blister and said flap forming a flat bottom wall under the bottom wall of the blister supporting said package in an upright position when said tongue is tucked into said groove openings whereby said flap is held in a closed position over said outlet by tucking the tongue thereof into said groove openings and is pulled to an open position exposing the dispensing outlet.

4,236,638

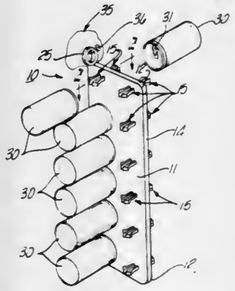
EMPTY BEVERAGE CAN CARRIER

Dwight N. Griffith, 4451 N. 15 Rd., Mesick, Mich. 49668

Filed Jul. 25, 1979, Ser. No. 60,262

Int. Cl.[3] B65D *67/02, 85/62*

U.S. Cl. 206—493 7 Claims



1. A carrier and storage device for empty beverage cans comprising:

a substantially planar body of rigid material having two opposite, flat sides;

a plurality of elastically deformable, spaced projections integral with and extending horizontally from each of said sides;

each of said projections being insertable into the opening of an empty beverage can whereby said can is temporarily secured to the body by the compression of the projection as it passes through the opening followed by expansion of the projection after insertion.

4,236,639

METHOD OF AUTOMATICALLY SORTING THIN SHEET ARTICLES

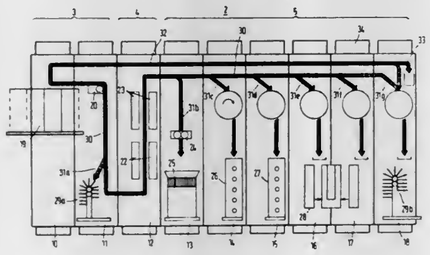
Horst Boettge, Gartenberg; Wilhelm Mitzel, Neu-Keferloh; Herbert Bernardi, Haag; Josef Geier, Munich; Norbert Osswald, Hochbruck; Gerd von Aschwege, and Robert Schaetz, both of Munich, all of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,011

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729830

Int. Cl.[3] B07C *5/342*

U.S. Cl. 209—534 **42 Claims**



1. A method of automatically sorting thin sheets, such as paper bank notes, in packets, having a stack of the sheets which may include regular and irregular sheets bound by an associated band carrying specific information, of the type having the steps of withdrawing each sheet from the stack, testing each sheet according to different criteria, assigning a regular or irregular category to each sheet on the basis of a test result of the testing, directing each sheet to one of a plurality of respective target locations which is associated with at least one category assigned to the respective sheet, and separately directing the band to one of the target locations, comprising:

(a) mechanically separating the stacks and the bands;

(b) mechanically conveying the bands separately from the stacks;

(c) conveying each of the sheets over a sheet feed path to one of the target locations and conveying the band over a band feed path to a dwell position within the band feed path;

(d) maintaining the band at the dwell position within the band feed path for a period of time approximately corresponding to the time period for directing each sheet of the stack associated therewith to the respective target locations;

(e) collectively depositing the band of each packet having no irregular sheets; and

(f) mechanically reuniting sheets categorized as irregular with the band of the stack associated therewith.

4,236,640

SEPARATION OF NAHCOLITE FROM OIL SHALE BY INFRARED SORTING

John H. Knight, Aurora, Colo., assignor to The Superior Oil Company, Houston, Tex.

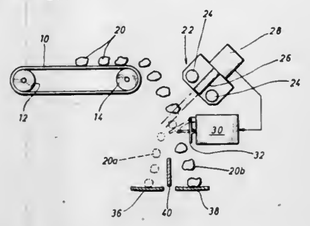
Filed Dec. 21, 1978, Ser. No. 971,647

Int. Cl.[3] B07C *5/342;* **C01D** *7/22;* **C10G** *32/02*

U.S. Cl. 209—587 **10 Claims**

1. A process for separating nahcolite-containing ore particles from oil shale particles in a mixture of particles of nahcolite-bearing oil shale ore, comprising the steps of:

irradiating the mixture of ore particles with infrared electromagnetic energy;



sensing the intensity of the electromagnetic energy reflected from the particles at a selected wavelength between about 0.7 and about 40 microns; and

sorting the particles responsive to the sensed reflected energy to separate the nahcolite-containing ore particles from the oil shale particles.

4,236,641

FRAME FOR SECURING ELECTRICAL, MECHANICAL OR PNEUMATIC DEVICES HAVING A BASE MEMBER FITTED WITH HOOKING MEANS

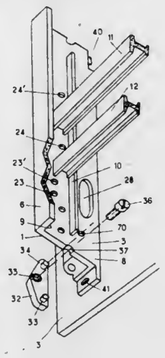
Jacques Marcenne, Poitiers, France, assignor to La Telemecanique Electrique, France

Filed Mar. 14, 1978, Ser. No. 886,506

Claims priority, application France, Mar. 14, 1977, 77 07531

Int. Cl.[2] A47F *7/00*

U.S. Cl. 211—87 **6 Claims**



1. A mounting for fixing electrical, mechanical or pneumatic equipment contained in boxes having base plates and means for hooking said base plates on carrier rails having parallel edges, said mounting including two uprights mounted on a wall, said carrier rails forming cross-pieces mounted parallel to each other between said two uprights, each cross-piece being a portion of section in the general shape of a T, having two end faces each having at least one perforation which is parallel to the longitudinal direction of the section, wherein each upright includes a plane leg at right angles to said direction and first and second parallel wings pointing towards the other upright and positioned at increasing distances from the wall, first and second sets of holes in said leg, the first and second sets of holes being respectively distributed on first and second lines arranged between the said first and second wings and parallel thereto, said lines of holes being so positioned that, when fixing parts are put through the holes of the first set and into the perforations of a cross-piece, the top surface of the said cross-piece is applied against the surface of the second wing and when the fixing parts are put into the holes of the second set and into the perforations of a cross-piece, the bottom surface of the base of the said cross-piece is applied against the surface of the first wing.

4,236,642

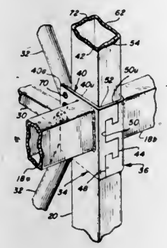
CONNECTOR ASSEMBLY FOR A STORAGE RACK

Herbert H. Klein, Arlington Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Mar. 2, 1978, Ser. No. 882,734

Int. Cl.[3] A47F *5/00*

U.S. Cl. 211—207 **20 Claims**



1. A connector assembly for connecting a pair of generally elongated horizontal beams of adjacent storage rack sections to an upright imperforate post, comprising:

a first generally planar support plate extending entirely across and fixedly secured to an end of one of said beams, said first support plate being positioned generally perpendicular to the length of said beam;

a second generally planar support plate extending entirely across and fixedly secured to an end of the other of said beams, said second support plate being positioned generally perpendicular to the length of said other beam;

a first set of gripping fingers extending longitudinally from said first support plate in a direction generally towards the second beam;

a second set of gripping fingers extending longitudinally from the second support plate in a direction generally towards the first beam for interlockingly engaging and gripping said first set of fingers to substantially prevent said connector assembly from being pulled apart when said beams are under load;

said first and second set of fingers each having a generally planar back surface lying in generally coplanar relationship to each other for abuttingly engaging and substantially lying flush against a common outer face of said imperforate post; and

removable fastening means extending between and connecting said first and second support plates for compressively fastening said first and second support plates to said imperforate post.

4,236,643

VEHICLE STABILIZER ASSEMBLY

Floyd A. Schmitz, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 14, 1978, Ser. No. 942,326

Int. Cl.[3] B60S *9/00*

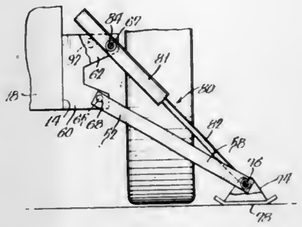
U.S. Cl. 414—694 **9 Claims**

1. A stabilizer assembly for a vehicle having a frame comprising:

bracket means including a pair of spaced apart plates rigidly secured to and extending laterally outward from said frame, said plates defining an opening therebetween, and each plate having apertures defining first and second pivot axes extending across said opening;

a stabilizer arm having a fixed end pivoted on said first pivot axis for movement between a ground engaging support position and a generally upright transport position, and a movable end opposite said fixed end;

fluid ram means having pivot pins extending outwardly in opposite directions from an intermediate portion of said fluid ram means and received into said apertures defining said second pivot axis, so that said fluid ram means is pivotally trunnion mounted in said opening, said fluid ram means also having a free end; and



connection means operatively connecting a free end of said fluid ram means to said movable end of said stabilizer arm for moving said stabilizer arm between said support and transport positions.

4,236,644

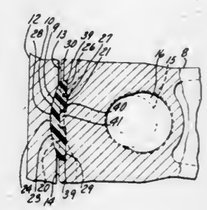
WEARPLATE FOR THE BUTT END OF A COUPLER SHANK

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 891,743, Mar. 30, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,931

Int. Cl.[3] B61G *7/10*

U.S. Cl. 213—62 R **9 Claims**



1. A car coupler, comprising:

(a) a coupler head with coupler means;

(b) a shank extending from the coupler head and terminating at a butt end having a configured recess disposed therein and extending inwardly of the shank in the direction of the coupler head;

(c) a replaceable wearplate disposed in the recess and having a spherical, convex outer surface which projects outwardly of the butt end of the shank and covers and seats against a concave surface of an adjacent front follower, the wearplate being a polyethylene having an ultra high molecular weight of from 2,000,000 to 10,000,000, the wearplate being generally shaped like the cap of a mushroom and having a short-length circumferential edge which is inclined at an angle to the center axis of the wearplate so that lines containing the edge converge in a direction away from the butt end of the shank and coupler head; and

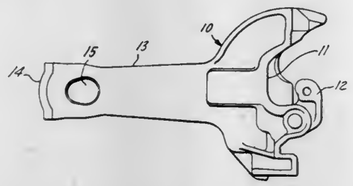
(d) means coacting between the shank and wearplate for frictionally holding the wearplate in the recess, including in the recess a matingly inclined cylindrical inner periphery which frictionally engages the circumferential edge of the wearplate.

4,236,645

WEARPLATE FOR A COUPLER SHANK PINHOLE

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Mar. 30, 1978, Ser. No. 891,742
Int. Cl.³ B61G *9/20*
U.S. Cl. 213—69 **7 Claims**



1. A car coupler, comprising:
(a) a shank having a butt end adjacent which is located a pinhole that extends transversely through the shank for receiving a pivot pin on which the shank is pivotally mounted, the pinhole including an elongated recess which is disposed in the backside of the pinhole closest the butt end of the shank and which extends longitudinally of the pinhole, the recess, relative to the butt end, having a concave inner periphery which has a simple radius of curvature, the recess having a pair of opposing ends defining a first pair of abutments continuously therealong and a pair of longitudinally extending opposing sides defining a second pair of abutments continuously therealong; and
(b) a replaceable wearplate disposed in the recess between the butt end of the shank and pivot pin extending through the pinhole, the wearplate being resilient so that opposing longitudinal sides thereof are capable of being resiliently deflected towards each other so that the wearplate can be inserted in the pinhole and sprung into the recess, the wearplate being at least a segment of a hollow cylinder, the convex outer periphery of which has a simple radius of curvature which is substantially equal to the radius of curvature of the concave inner periphery of the recess, the wearplate having a pair of opposing ends which contact along their entire extent the first pair of abutments to restrict longitudinal movement of the wearplate within the recess, and a pair of longitudinally extending opposing marginal sides which contact along their entire extent the second pair of abutments to restrict rotational movement of the wearplate within the recess about the longitudinal axis of the pinhole, the wearplate having a uniform thickness between opposing marginal sides thereof.

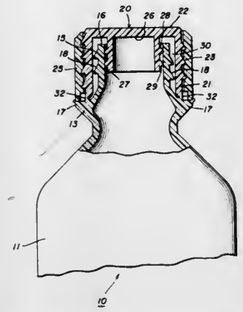
4,236,646

CLOSURE FOR PHARMACEUTICAL CONTAINERS

Rudolf V. Ganz, Jr., Ebmatingen, Switzerland, and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 956,832, Nov. 2, 1978, abandoned. This application Oct. 19, 1979, Ser. No. 86,545
Int. Cl.³ B65D *41/32*
U.S. Cl. 215—232 **10 Claims**

1. An improvement in a hermetically sealed container for storing and dispensing sterile liquids, said container including a bottle with a neck defining an externally threaded dispensing outlet, said bottle having a transverse abutment means on the neck surrounding the outlet, said improvment comprising, in combination:
a cup-shaped overcap having a cylindrical side wall and a top wall over the dispensing outlet, with said overcap being hermetically bonded to the bottle neck;
wiper seal means carried by said overcap and engaging the dispensing outlet to prevent liquid flow out of the dispensing outlet until the overcap is removed; and



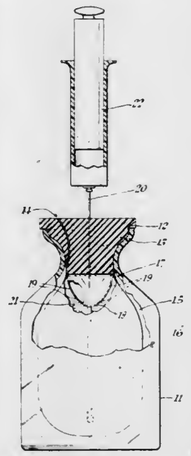
an outer ring threadedly interfitting over said overcap and adapted for downward rotation to abut said abutment means and jack said overcap off said bottle neck.

4,236,647

CONTAINER FOR STERILE LIQUIDS

Paulson A. Kotturan, 520 N. 72nd Ave., Hollywood, Fla. 33024

Filed Jan. 15, 1979, Ser. No. 3,776
Int. Cl.³ B65D *39/00*
U.S. Cl. 215—247 **4 Claims**



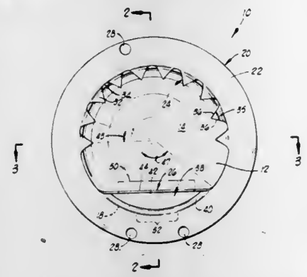
1. A container, comprising:
an outer rigid container having an opening therein,
a resilient stopper means for plugging said opening in said outer container,
a flexible bag held within said rigid container, and
a means for allowing the outer atmosphere to flow between the outer environment and the area between said outer container and said bag, and
a shield means extending between said stopper and said bag, said shield means having a multiplicity of openings therein.

4,236,648

SAFETY PRESSURE RELIEF APPARATUS

Loren E. Wood; Calvin C. Forsythe, both of Tulsa; John L. Strelow, Broken Arrow; Edward H. Short, III; Jerome D. Allen, both of Tulsa, and Miner E. Clift, Broken Arrow, all of Okla., assignors to Black, Sivalls & Bryson, Houston, Tex.

Filed Mar. 5, 1979, Ser. No. 17,198
Int. Cl.³ B65D *25/00*
U.S. Cl. 220—89 A **22 Claims**



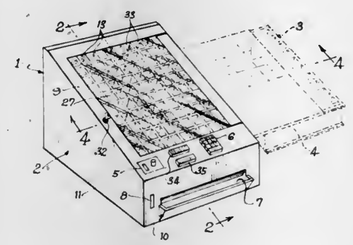
1. A safety pressure relief apparatus comprising:
a reverse buckling rupture disk including a concave-convex portion connected to an annular flat flange portion by a curved transition connection; and
a support member having an annular flat flange portion engaging said annular flat flange portion of said rupture disk for supporting said transition connection thereof, said support member including a partially circular cutting edge positioned interiorly of said transition connection and also including a non-cutting interior edge, said cutting and non-cutting interior edges forming an opening in said support member so that when said concave-convex portion of said rupture disk reverses itself, said cutting edge partially severs said disk whereby a partially severed portion of said disk bends about an integral unsevered portion of said disk and passes through said opening in said support member.

4,236,649

COMPACT VENDING MACHINE

Van N. Fellner, 26661 Byron Ave., Granada Hills, Calif. 91344, and Frank Ruskin, 1390 Newton St., Los Angeles, Calif. 90021

Filed Apr. 6, 1979, Ser. No. 27,906
Int. Cl.³ G07F *11/38*
U.S. Cl. 221—90 **5 Claims**



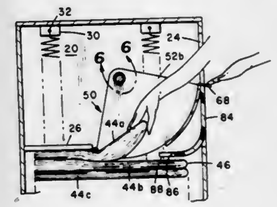
1. A vending machine which comprises:
a generally horizontal base plate having a plurality of openings cut therethrough;
a plurality of doors for closing each of the openings independently of one another;
latching means for holding each door in a closed position across each opening;
a removable loading magazine having, in its upright position, side walls, a transparent bottom and a plurality of partitions between said walls forming an array of open slots, each slot being dimensioned and shaped to hold a sellable item which comes to rest above one of the doors as the magazine is mounted upside down above said base plate;
a chute under said openings shaped and dimensioned to funnel said item falling through any one of said openings toward a distribution station;
a box-like frame for mounting the base plate in a generally horizontal position above the chute; and
means for selectively and randomly releasing said latching means for holding.

4,236,650

SINGLE COPY PERIODICAL DISPENSER

Frank W. Medley, III, 5121 Regent Dr., Nashville, Tenn. 37220

Filed Jun. 20, 1979, Ser. No. 50,307
Int. Cl.³ B65G *59/02*
U.S. Cl. 221—226 **10 Claims**



1. A dispensing apparatus for dispensing individual ones of a stack of flexible, layered articles including a first article, and adjacent articles comprising a housing, an access opening defined in said housing, said opening being adapted to permit individual withdrawal of said articles by an operator, magazine means for locating said first article in a position adjacent to said access opening and scoop means pivotally mounted adjacent to said access opening, said scoop means being pivotable from a closed position closing said access opening, passing between said first article and said adjacent articles, to an open position permitting access to said first article through said access opening and preventing access to adjacent articles.

4,236,651

DISPENSER DEVICE WITH VALVE PISTON PUMP

Walter Meyer, Triengen, and Anton J. Bara, Büron, both of Switzerland, assignors to Trisa Bürstenfabrik A.G., Triengen, Switzerland

Continuation of Ser. No. 801,421, May 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 704,939, Jul. 13, 1976, Pat. No. 4,068,974. This application Aug. 17, 1979, Ser. No. 67,288
Claims priority, application Switzerland, Jun. 8, 1976, 7184/76
Int. Cl.³ B67B *7/24;* **B67D** *5/42*
U.S. Cl. 222—82 **24 Claims**

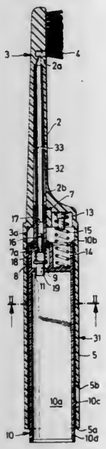
1. A dispenser device for dosed dispensing of a fluent material, comprising:
reservoir means for containing the fluent material;
a piston pump having a cylinder part and a piston part which are movable relative to one another for selectively performing a suction stroke and a dispensing pumping stroke;
a valve arrangement having an inlet valve and an outlet valve;
said outlet valve being arranged in the piston part and said inlet valve being arranged in the cylinder part;
each valve having a closure member, the two closure members being connected with one another by a valve stem for common actuation in the same direction;
said two closure members together with the valve stem forming a valve body;

each closure member coacting with a valve seat arranged at the cylinder part and the piston part, respectively;

a first spring means, arranged between the closure member of the inlet valve and one end of the piston part, for bearing at one end against said closure member of the inlet valve and at the other end against said one end of the piston part;

said first spring means, in the rest condition of the piston pump, maintaining said outlet valve closed and being compressed after closing of the inlet valve for keeping the inlet valve closed;

said reservoir means having an outlet opening means for forming the valve seat of the inlet valve;



said cylinder part of the piston pump being in fluid flow connection with the reservoir means and having a cylinder chamber communicating with said outlet opening means;

said valve body being coupled with the piston part of the piston pump and being displaceable relative thereto against the pressure of said first spring means during said dispensing pumping stroke; and

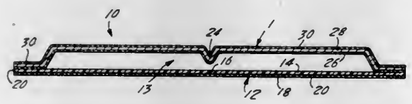
a second spring means acting between said piston part and said cylinder part for resiliently moving the piston part and the cylinder part relative to one another during the suction stroke.

4,236,652

DISPENSER PACKAGE

Gordon H. Beguhn, Westport, Conn., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 20, 1979, Ser. No. 22,113
Int. Cl.³ B65D *35/00*
U.S. Cl. 222—92 **14 Claims**



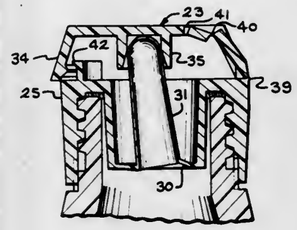
1. A dispensing package for a flowable product comprising a flexible top member having at least one layer and secured to a rigid or semi-rigid base member at marginal edge portions to form a pocket, for containment of a flowable product, said base member comprising an outer layer having a cut score area and an imperforate, uniaxially oriented polymeric film attached to the outer surface of the second layer, the imperforate film being oriented to the extent that it exhibits a tear strength differential between the orientation direction and the direction perpendicular to the orientation direction, the oriented film being so positioned on said rigid or semi-rigid member that the orientation direction of the film extends substantially parallel to the cut score area, whereby said score area and said imperforate film rupture to open the package upon bending the base member in a direction toward the pocket.

4,236,653

CHILD-RESISTANT DISPENSING CLOSURE

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Jul. 30, 1979, Ser. No. 61,832
Int. Cl.³ B65D *47/08*
U.S. Cl. 222—153 **12 Claims**



1. A child-resistant dispensing closure for a container, said closure and said container having means for retaining said closure on said container, said closure consisting of

(a) a cup-shaped body consisting of an annular skirt and a generally disc-shaped top,

(b) means providing a central dispensing opening in said top,

(c) a generally saucer-shaped lid having means on its underside that is adapted to close said dispensing opening when said lid is in closing position closely overlying said top, said lid being of such size and shape that no part of said lid over-hangs said top of said body in such position,

(d) a flexible hinge web connecting said lid to said body at adjacent edges thereof, said web having a length sufficient to provide for (1) angular movement of said lid relative to said body from such closing position with said closing means closing said opening providing means and (2) lateral translatory movement relative to said body from such closing position a distance sufficient that the lower edge of said lid over-hangs the edge of said top of said body, and

(e) co-operating child-resistant catch means on said lid and said body consisting of horizontal lips on said body and on said lid which are engaged when said lid is in such closing position overlying said body and which are disengagable by engaging the over-hanging edge of said lid after moving said lid from such closing position laterally relative to said body.

4,236,654

APPARATUS FOR BLOWING INSULATING MATERIAL INTO AN ATTIC, WALL CAVITY OR WET SPRAYING AGAINST A SURFACE

Frank A. Mello, Richmond, Calif., assignor to Mello Manufacturing, Inc., Richmond, Calif.

Filed Nov. 7, 1977, Ser. No. 849,320
Int. Cl.³ B65G *53/40*
U.S. Cl. 222—238 **2 Claims**

1. In a device of the type described:

(a) a hopper for receiving a cellulose material and having vertical spaced apart side walls with an outlet opening in one of the walls and disposed adjacent one end of said hopper;

(b) a beater and cellulose feeder rotatably mounted on a horizontal axis in said hopper and positioned near the hopper side wall not having the outlet opening therein;

(c) an auger rotatably mounted in said hopper on a horizontal axis positioned below the axis of said beater, said auger placed adjacent to the hopper side wall having the outlet opening therein, and the axis of said auger paralleling the axis of said beater;

(d) said hopper having a bottom wall with a longitudinally extending first portion underlying said beater, concave in cross section to form a trough whose axis coincides with said beater axis so that the beater in operation will continually remove cellulose material from the trough and force it toward said auger; said bottom wall also having a longitudinally extending second trough-like portion underlying said auger which is concave in cross section and whose axis coincides with said auger axis, the second trough being at a lower position than said first trough, said bottom wall having a longitudinally extending middle portion convex in cross section and lying between said first and second concave portions;

(e) said beater having paddles and means for rotating said beater for causing the paddles to sweep the interior of said first concave portion of cellulose and to throw the cellulose over the convex middle portion and into said auger;

(f) said auger having spaced apart and radially extending blades whose faces extend at a 45° angle and forming a helical beater which fluffs the cellulose material received from said beater, and means for rotating said auger for

causing its blades to sweep the interior of said second trough clean of cellulose and to keep the cellulose fluffy while moving it toward the opening in the hopper side wall, the portion of said auger disposed opposite said outlet opening having longitudinally extending and radially projecting paddles for receiving the fluffed cellulose and for sweeping the interior of said second concave portion clean of cellulose and moving it while still in a fluffed condition through the outlet opening; and

(g) a cellulose material fluffer rotatably mounted in said hopper above said auger, the axis of said fluffer lying substantially in the same horizontal plane as the beater axis and parallel therewith for receiving cellulose material laterally thrown by said beater for further fluffing the cellulose material and directing it downwardly onto said auger where the cellulose material is continually fluffed and fed along the auger to the wall opening where the longitudinal paddles will propel the fluffed cellulose through the wall opening; and

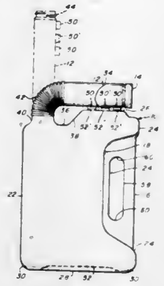
(h) a safety grill mounted in said hopper above said beater and fluffer and lying in a substantially horizontal plane for preventing an operator's hands from contacting any of the rotating parts, said grill also being used in initially breaking up a bale of cellulose material as it is forced downwardly through said grill by an operator.

4,236,655

CONTAINER WITH FLEXIBLE NOZZLE

Romilly H. Humphries, Dover, Mass., assignor to S.A.Y. Industries, Inc., Leominster, Mass.

Filed Sep. 5, 1978, Ser. No. 939,855
Int. Cl.³ B65D *23/10, 25/46*
U.S. Cl. 222—465 **5 Claims**



1. A container for fluids comprising:

a single piece, integrally formed, thin-walled, self-supporting member defining a non-collapsible rigid hollow body of fixed shape having rigid continuous substantially flat side walls and self-supporting opposite top and bottom end walls, the bottom end wall being a rigid substantially flat surface,

an elongated tubular nozzle integral with and extending from the top end wall, said nozzle adapted to be moved between storage and pouring positions, said nozzle having a flexible segment and said nozzle adapted to remain in a substantially rigid position extending outwardly from the container when in a pouring position and adapted to be flexed to other pouring positions under the influence of an external force,

said top end wall having the shape of a stepped configuration such that when the nozzle is in its storage position the portion of the top end wall over which the free end of the nozzle extends in a storage position is further from the opposing bottom end wall than the portion from which the nozzle extends, so that the sharpness of the bend in the nozzle required to store it over the end wall is reduced and so that the major portion of the nozzle is substantially parallel to the bottom end wall when the nozzle is in said storage position,

means for securing the nozzle in the storage position adjacent the top end wall and

means forming a handle in said sidewalls.

4,236,656

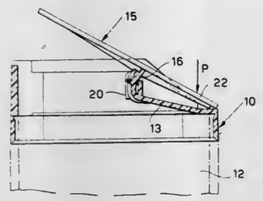
DISPENSING LID FOR A CONTAINER OF LOOSE SOLID PRODUCTS

Emilio Perrella, Viale S. Carlo 13, Segrate (Milan), Italy

Filed Sep. 21, 1978, Ser. No. 944,313
Claims priority, application Italy, Feb. 16, 1978, 20330 A/78
Int. Cl.³ B65D *47/08*
U.S. Cl. 222—517 **2 Claims**

1. A closure lid for open ended containers of loose solid particles molded of a single unitary piece of plastics material comprising a fully open base portion which is adapted to be attached to said open end of a container, a dispensing opening, a drawer for closing said dispensing opening, said drawer having a molded position and an operative position, said drawer being movable between an open position and a closed position when in said operative position, said drawer having a closure portion and a tail portion, an integral flexible hinge portion attached at one end perpendicular to said drawer between said closure portion and said tail portion and as its other end to a portion of the lid forming the bottom wall of a recessed portion of the lid disposed adjacent said tail portion to

receive said tail portion when it is depressed to open said closure portion, said recess being open at its outer extremity, a transverse wall disposed at the juncture of said hinge portion and said bottom wall, said transverse wall being integrally attached at its ends to the side walls of said recessed portion and extending substantailly parallel to and substantially half the length of said hinge portion when in the closed position, said transverse wall being spaced from said hinge portion in the closed position a predetermined distance so that it contacts said hinge portion in the open position to resiliently urge said



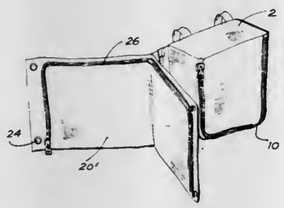
drawer towards the closed position, snap-latching means comprising tabs on said hinge portion extending toward said side walls, wings extending from said walls to engage said tabs when said drawer is in operating position to retain and pre-load said hinge in the operating position, the lid being molded with the drawer extending substantially parallel to and the hinge portion extending substantially perpendicular to the central axis of the lid so that when the drawer is in the operating position the hinge portion is pre-loaded to resiliently urge said drawer towards the closed position.

4,236,657

BACKPACK

Ronald G. Brunton, Flat 15, 71 Ryde Rd., Hunters Hill, Australia (2110)

Filed Feb. 21, 1979, Ser. No. 16,602
Claims priority, application Australia, Feb. 28, 1979, PD3545
Int. Cl.[3] A45F *3/04, 4/02*
U.S. Cl. 224—153 **13 Claims**



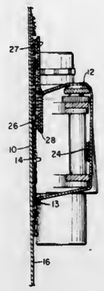
1. A traveller's pack comprising a backpack having a face for contacting the wearer's back and shoulder straps secured to said face, said pack having at least one straight side and an elongate leaf which leaf has a substantially central minor axis such that the leaf includes two superimposable halves, said leaf being connected along said minor axis to said straight side of the pack, each of the halves of the leaf being arrangeable in both a packing position in which they lie extended for supporting articles to be packed or unpacked and a stowed position in which they are wrapped around the back pack and each other and are secured in that position to the back pack.

4,236,658

SYSTEM FOR HOLDING ARTICLES TO OBJECTS

Robert A. Kallman, Brooklyn, N.Y., assignor to Kallman Research Corporation, Weatogue, Conn.

Filed May 4, 1978, Ser. No. 902,797
Int. Cl.[3] A45C *1/04*
U.S. Cl. 224—250 **5 Claims**



1. A system for holding an article to an object comprising:
an elongated first strip for attachment to said object, said first strip having fastening material of a first type thereon along a substantial portion of its length,
an elongated second strip having one end attached at a point along the length of said first strip with its other end being free, said second strip having a first face which is more proximate to the fastening material of the first type of the first strip and a second face which is remote from the fastening material of the first type when the two strips are juxtaposed, said article to be held to be located between said first and second strips with said second strip to be wrapped around said article with said first face of said second strip engaging the article,
a piece of fastening material attached to and facing outwardly from said second face of said second strip adjacent said other end and of a second type which is complementary to said first type of said first strip and which is to be attached thereto, said piece having a first portion which is fixed to said second face of said second strip adjacent said other end and a free hanging tab portion which extends toward the central portion of said second strip, both of which portions are to be attached to the fastening material on said first strip when said other end of said second strip is folded around the article to be held with said tab portion being bent away from said second strip and having its free end extending in a direction opposite to said other end of said second strip whereby said tab portion extends the area of attachment of said first and second strips and serves to prevent peeling of the second strip from the first strip.

4,236,659

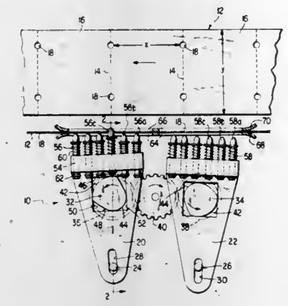
TRANSPORT MECHANISM FOR STATIONARY ENCODERS

Richard A. Edwards, Alameda, Calif., assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed May 3, 1979, Ser. No. 35,794
Int. Cl.[3] G03B *1/22*
U.S. Cl. 226—58 **7 Claims**

1. A mechanism for feeding tag stock perforated at varying predetermined lengths and having drive holes at said perforations, said mechanism comprising:
(a) guide means for supporting said tag stock;
(b) first and second spaced-apart carrier arms mounted for oscillatory swinging and reciprocating movement beneath said supported tag stock, each of said carrier arms having cam follower means thereon;
(c) a set of spaced-apart pins, each slidably mounted in one end of each of said carrier arms, each of said pins in each

of said sets being spring-urged away from said ends toward said tag stock; and
(d) first and second cam means rotatably driven at the same speed and in the same direction in engagement with said cam follower of said first and second carrier arms respectively, whereby upon rotation of said first and second cam



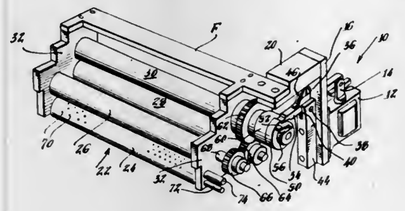
means each of said sets of pins is alternately brought into contact with said tag stock whereupon a pin in each of said sets will alternately engage a hole in registry therewith to sequentially advance said tag stock a desired increment of distance, there being a pin of one of said sets in driving engagement with a hole in said tag stock at all times.

4,236,660

SOLENOID CLUTCH MECHANISM

Tom T. Kanemura, Redwood City, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 26, 1979, Ser. No. 6,743
Int. Cl.[3] B65H *17/30, 17/22*
U.S. Cl. 226—95 **4 Claims**



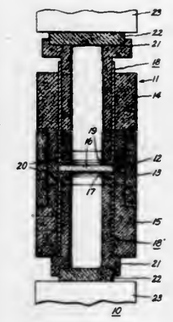
1. In a web feeding apparatus including a pair of rollers for intermittently advancing a sheet-like web therebetween, one of said rollers being adapted to be driven, a clutch mechanism for intermittently connecting a continuously rotating drive means to said one roller comprising:
a solenoid having a reciprocable plunger,
a pivotable arm connected at one end to said plunger,
said drive means including
continuously driven rotatable shaft means,
rotatable cam means mounted on said shaft means having a shoulder normally in abutment with the other end of said pivotable arm, gear means between said cam means and said one roller for rotating said one roller upon rotation of said cam means, and
driving connection means between said shaft means and cam means for rotatably driving said cam means from said shaft means upon pivoting of said arm, said driving connection means including an elongated coiled spring, with one end of said spring being connected to said cam means, and with the opposed end of said spring being connected to a point on said shaft means radially outward from the rotational axis thereof, such that when said arm is in abutment with said shoulder on said cam means, said cam means remains stationary while said shaft means continuously rotates and whereby said cam means is rotatably driven by said shaft means when said arm is pivoted, by said plunger, out of abutment with said shoulder on said cam means in response to an electrical signal to said solenoid.

4,236,661

THERMOCOMPRESSION METHODS OF FORMING SODIUM-SULFUR CELL CASINGS

Bruce S. Dunn, Saratoga Springs, and Theodore M. Evenden, Pattersonville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,175
Int. Cl.[3] B23K *20/14*
U.S. Cl. 228—184 **4 Claims**



1. A method of forming a sodium-sulfur cell casing which comprises providing a cylindrical die, centering an electrically insulating ceramic ring within the die, situating a metallic washer against each opposite major surface of the ceramic ring, providing a pair of open ended metallic containers each having an inward flange at one end thereof with the flange of each container positioned against each opposite washer, positioning a ring within each container against the interior surface of each flange, fitting a plunger within each container and pressing against its respective ring, fitting an end piece partially within the outer edge of each plunger, subjecting simultaneously each flange to a pressure in the range of 50 to 500 kg/cm^2 for a period of time from five minutes to ninety minutes, and subjecting simultaneously the die in an inert atmosphere to a temperature in the range from 550° C. to 625° C.

4,236,662

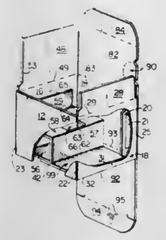
CONTAINER HAVING AN INTERNAL SUPPORT PLATFORM AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 9, 1979, Ser. No. 28,222
Int. Cl.[3] B65D *5/50, 5/10*
U.S. Cl. 229—39 B **26 Claims**

1. A unitary blank adapted to be formed into a carton having an internal platform for supporting an article comprising:
a front panel, first and second side panels and a rear panel hingedly connected along parallel fold lines;
a glue flap hingedly extending along a fold line from one of said rear panels and said side panels;
a bottom closure flap hingedly extending along a fold line from the bottom of at least one of said front and rear panels;
at least one top closure flap hingedly extending along a fold line from the top of one of said panels;
a series of four consecutively arranged platform panels hingedly connected along parallel fold lines,
said series comprising

a first platform panel hinge[illegible]ding along a fold line from one of said side pa[illegible]l,
a second platform panel hingedly extending along a fold line from said first platform panel,
a main platform panel hingedly extending along a fold line



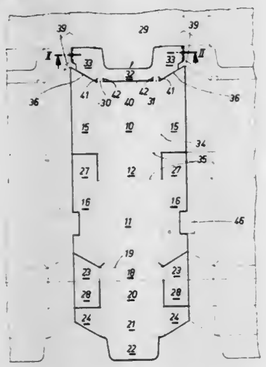
from said second platform panel and having an article receiving aperture therein, and
a third platform panel hingedly extending along a fold line from said main platform panel, and
a bottom flap panel extending from a fold line from the bottom of the other of said side panels.

4,236,663

HINGE-LID PACK, MORE PARTICULARLY FOR CIGARETTES

Hermann Krautter, Laudenbach, and Heinz Focke, Verden, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 22,564
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 7720179[U]; Mar. 28, 1978, 2813390
Int. Cl.[2] B65D *85/10*
U.S. Cl. 229—44 CB **5 Claims**



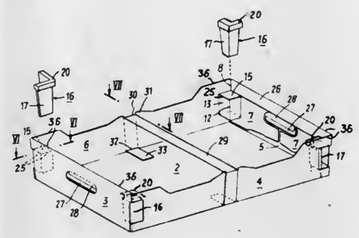
1. A hinge-lid pack, more particularly for cigarettes, comprising a unitary blank having a lid hinged to a rear wall, the lid engaging in the closed position around a collar connected to a front wall, the collar being set back inwardly near the front wall by a Z fold formed from an intermediate strip, characterised in that opposite a top edge of the front wall (**10**) most of the intermediate strip (**44**) is separated by a transverse parting cut (**40**) in such a manner that a Z fold is formed only in the region of residual connections (**30, 31**) between the collar (**29**) and the front wall (**10**), and outside the Z fold the intermediate strip (**44**) engages directly and in the unfolded state with the inside of the front wall (**10**).

4,236,664

STACKABLE TRANSPORT CONTAINER

Ludwig Hartelmüller, Erlaufstrasse 22, Südstadt A-2344, Austria

Filed May 15, 1979, Ser. No. 39,166
Claims priority, application Austria, Jun. 28, 1978, 4684/78; Oct. 19, 1978, 7525/78
Int. Cl.[3] B65D *57/00*
U.S. Cl. 229—49 **11 Claims**



1. A stackable transport container comprising a one-piece container blank which can be flattened when not in use, having a quadrilateral bottom and four walls extending from the bottom in an upward and outwardly inclined direction to define a container space widening in an upward direction, stack supports formed of portions of the container blank wall portions which are adapted to be pushed into the container space and pushed back out of the container space, being provided at four corners of the container space in the erected condition of the container and having their upper edges located at a level that is lower than the upper edges of the adjacent portions of the walls of the container, said stack supports being formed of quadrilateral container blank portions which are in connection with the adjacent wall portions of the container along folding lines, all of said folding lines being located in a vertical position in the erected condition of the container and diverging from each other toward the upper edges of the stack support, said blank portions of each container space corner defining together with the imaginary extensions of the side walls of the container in the erected condition of the container a cavity that tapers in a downward direction and that extends from the upper end of the stack support to its lower end, the upper end of said cavity being open, and an insert member of rigid material being provided for each of said container space corners that is inserted in or removed from the cavity of each stack support, said insert member, when inserted in the cavity, resting on the bottom of the container and having a base body and a supporting surface extending above the upper edge of the stack support but being located at a level that is lower than the upper edges of the adjacent portions of the side walls of the container, so that, in use, with an upper container being stacked on a lower container, said supporting surface supports the bottom of an immediately overlying container within a stack and the upper edges of the walls of the lower container prevent the upper container from lateral sliding movement relative to the lower container, the surfaces of each insert member contacting the walls of said stack supports, and each insert member, when in position, gripping an inwardly folded flap of the container and thereby locking the container blank in the erected position thereof.

4,236,665

MAIL BOX POST BRACKET

Carl R. Glass, 1036 Partin Dr., Kissimmee, Fla. 32741

Filed May 10, 1979, Ser. No. 37,611
Int. Cl.[3] B65D *91/00*
U.S. Cl. 232—39 **6 Claims**

1. The combination, with the mail box having a base and side flanges extending downwardly on opposite sides of the base, of a post bracket assembly comprising:

a pair of substantially identical upper and lower plate members;
each of the plate members having a substantially rectangular main body section with an outer surface and an inner surface, and side walls and end walls extending from the inner surface;
a plurality of housings on the inner surface, including a central housing and enlarged housings at each end wall;
the central housing including sides and ends each having an inside surface;
the end housings having interior ends and sides with the sides connected to the end walls of the plate members, the end housings having inside surfaces;
a plurality of vertical splines on the inside surfaces;



longitudinal reinforcing ribs extending between the ends of the central housing and the end housings;
transverse reinforcing ribs extending between the longitudinal ribs and the side walls of the plate members;
elongated outer post members engaged frictionally in the end housings and an elongated center post engaged frictionally in the central housing with the plate members facing one another;
decorative scroll members secured to the post; and
one of the plate members being embedded in the earth, and the side flanges of the mail box being secured to the side walls of the other plate member with the base of the mail box engaged against the outer surface thereof.

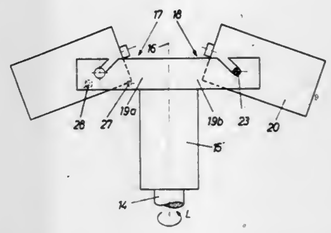
4,236,666

LABORATORY CENTRIFUGE

Hans-Peter Aeschlimann, Neckarsteinach; Volker Schmidhuber, Bammental, and Werner Kappes, Eberbach, all of Fed. Rep. of Germany, assignors to Dr. Molter GmbH, Bammental, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,184
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810765
Int. Cl.[3] B04B *9/12;* **G01N** *33/48*
U.S. Cl. 233—26 **11 Claims**

1. In a laboratory centrifuge for producing suspensions, carrying out washing processes and the like, the centrifuge including a shaft mounted in a housing for rotation about a generally vertical central axis and drivable selectively in either of two opposing directions, L and R, by a motor, said shaft including at its upper end a shaft head onto which magazines for receiving sample containers or similar objects are pivotally mounted, said shaft head including means whereby said magazines may be locked in a slightly tilted "decanting" orientation upon rotation in one direction and may be released to swing to a generally horizontal "centrifuge" orientation upon rotation in the other direction, the improvement characterized in that:
(a) said shaft head carrying the magazines is directly coupled to said shaft;
(b) at least one pair of brackets is located opposite each other, each bracket having a pair of arms projecting outwardly, the brackets arranged symmetrically to said central axis;
(c) each bracket arm further comprises an axle on which one of said magazines is eccentrically and pivotably mounted relative to a vertical centroidal axis therethrough, such that said magazine at rest hangs in said decanting orientation, and is swingable when rotated to said centrifuge orientation;



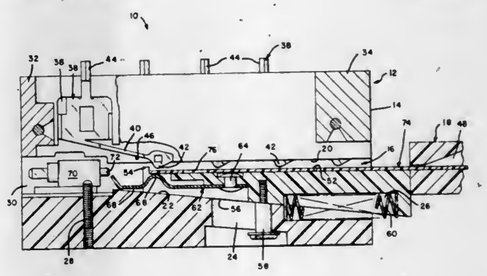
(d) each pair of bracket arms defines between them a distance in the horizontal direction greater than the width of said magazine in said direction by a distance, s, each magazine being drivable said distance, s, on said axle between a locked position abutting a first of said pair of bracket arms and a release position abutting said second of said pair of bracket arms;
and (e) locking means (i) automatically operable when said shaft is rotated in said direction R, and said magazine in decanting orientation is driven in direction L to said lock position, to lock said magazine in said decanting orientation, and (ii) automatically operable when said shaft is rotated in said direction L, to drive said magazine on said axle in direction R, to release position whereby, with continued shaft rotation in direction L, said magazine is then able to swing outward to said centrifuge orientation.

4,236,667

LOW INSERTION FORCE CARD READER

Daniel J. Crowley, Harrisburg, and Jon D. Stine, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 20, 1979, Ser. No. 59,352
Int. Cl.[3] G06K *7/06, 13/20, 13/24*
U.S. Cl. 235—443 **12 Claims**



1. A card reader for reading an encoded card, said card reader comprising:
a housing having a profiled passageway therein having an opening to a frontal side of the housing, said passageway

being defined by a top wall having card reading means therein, and bottom guide means slanted downward from a backward region of said passageway toward said frontal opening;

transporting means receivable within said passageway having a complimentarily slanted bottom surface for engagement with said slanted passageway bottom guide means, and having a top surface receiving the card thereon and being displaced a distance below said passageway top wall at said passageway opening, and said transporting means being moveable backwardly and upwardly into said passageway along said passageway bottom guide means toward said backward region, whereby,

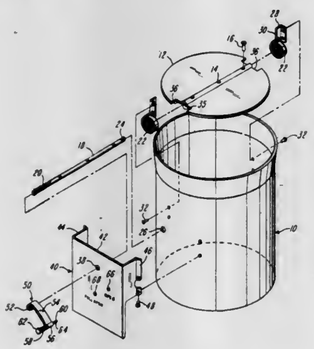
the encoded card upon said transporting means top surface is transposed toward said passageway top wall and into a reading relationship with said card reading means in said top wall.

4,236,668

THERMAL DAMPER ASSEMBLY HAVING POSITION CONTROLS

John Prikkel, III, 2952 Ensley Ave., Dayton, Ohio 45414

Filed Jul. 21, 1978, Ser. No. 927,135
Int. Cl.³ F23N *3/00*; F23L *3/00*; G05D *23/00*
U.S. Cl. 236—1 G **6 Claims**



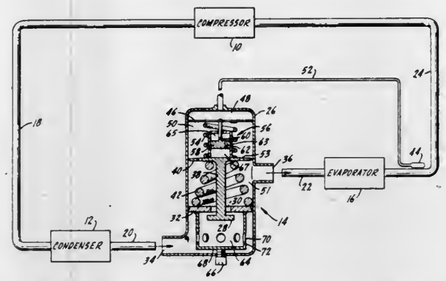
1. A thermally responsive damper assembly adapted for mounting in a flue which vents gases from a region in which combustion is to occur comprising, in combination, generally cylindrical duct means for mounting in communication with said flue, a damper plate having a generally circular periphery interrupted by diametrically disposed notches, a pair of thermally responsive coil elements disposed inboard of said duct means, one disposed in each of said notches, means for drivingly connecting an inner convolution of each of said coil elements to said damper plate, and means for drivingly connecting an outer convolution of each of said coil elements to said duct means so that all rotation resulting from thermal expansion or contraction of said coil elements is transmitted to said damper plate, said coil elements supporting said damper plate in said duct means, said coil elements positioning said damper plate in a duct means closing position when exposed to room temperatures, said means for drivingly connecting an outer convolution of each of said coil elements to said duct means including means engagable with said damper plate for preventing an over travel of said damper plate beyond a duct means opening position.

4,236,669

THERMOSTATIC EXPANSION VALVE WITH LEAD-LAG COMPENSATION

Kenneth J. Kountz, Hoffman Estates, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,847
Int. Cl.³ G05D *27/00*
U.S. Cl. 236—92 B **7 Claims**



1. A thermostatic expansion device for use in refrigeration systems comprising:

valve means adapted to control the flow of liquid refrigerant from a condenser to an evaporator of the refrigeration system;

pressure-responsive means operatively connected to said valve means for responding to a differential pressure representative of refrigerant superheat changes at the outlet of said evaporator so as to open and close said valve means;

temperature-responsive means operatively connected to said pressure-responsive means for responding to a temperature of the refrigerant at the outlet of the evaporator; and

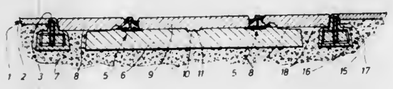
lead-lag compensation means being further connected to said pressure-responsive means for permitting a rapid movement of said valve means upon the occurrence of a sudden change either in the temperature of the refrigerant at the outlet of the evaporator or in the pressure at the inlet of the evaporator thereby maintaining a constant superheat at the outlet of the evaporator so as to effect stability of the refrigeration system, said lead-lag compensation means including a dash-pot formed of a damper piston connected to a rod and a fluid-filled cylinder, and a coil spring disposed in a surrounding relationship around said cylinder.

4,236,670

ARRANGEMENT AT A RAILROAD CROSSING

Sten Limmergard, Alvesta, and Stig Thim, Växjöboth of Sweden, assignors to A-Betong AB, Växjö, Sweden

Filed Oct. 4, 1978, Ser. No. 948,561
Claims priority, application Sweden, Oct. 7, 1977, 7711266
Int. Cl.³ E01C *9/04*
U.S. Cl. 238—8 **4 Claims**



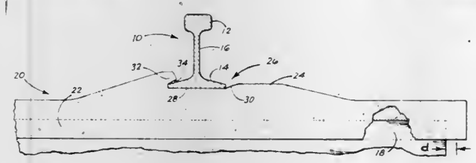
1. Arrangement at a crossing between a road and a railway, where the road is interrupted at two opposite edges, between which is positioned at least one railroad track, said arrangement comprising a row of sleepers for supporting the rails of the track and arranged substantially perpendicular to the rails, said sleepers resting on a foundation, first slabs being located in the area between the rails and the respective edge of the road, and a second slab positioned between the rails, said slabs having top surfaces substantially level with top surfaces of the rails and top surfaces of the road, said sleepers having top sides provided with two first supporting surfaces with locking means each provided to support and position one of the rails, two second supporting surfaces and locking means, each being integral with said sleepers and positioned on the outside of one of said first supporting surfaces and each in the form of a sector of a cylinder turned upwardly and with its axis extending perpendicular to the longitudinal direction of the sleeper, a central supporting surface with locking means integral with said sleeprs and between said first surfaces; and elongated supporting elements to rest on the foundation and provided wth a first edge to which the road structure adjoins and a second edge opposite to the first edge with a supporting surface; said first slabs each being provided at its underside with a first resting surface adapted to cooperate with the cylindrical resting surfaces of said sleepers in order to form a supporting bearing allowing the respective first slab to pivot, and a resting surface provided to cooperate with the supporting surface on the respective elongated element, and said second slab being provided at its underside with a resting surface adapted to cooperate with said central supporting surfaces and locking means of said sleepers for supporting and locking said second slab.

4,236,671

RAILROAD RAIL HOLDER

Ralph P. Winans, P.O. Box 194, Dallesport, Wash. 98617

Filed Jan. 15, 1979, Ser. No. 3,547
Int. Cl.³ E01B *3/00, 9/00*
U.S. Cl. 238—39 **5 Claims**



1. A rail holder for securing a railroad rail to its supporting ties, wherein the rail includes a base having side margins, the holder comprising:

(a) a cap having a top plate and a depending peripheral skirt, the cap being dimensioned to seat gravitationally over the top of a tie with the depending peripheral skirt lapping the sides and ends of the tie in a longitudinally restricted but slidable fit,

(b) the top plate of the cap having on its upper surface a rail seat dimensioned to receive the base of a rail, and

(c) on one side of the rail seat an inwardly and upwardly extending detent dimensioned and positioned for engaging and retaining a side margin of the base of a rail,

(d) a plurality of the holders being adapted for opposite placement on adjacent ties, with their respective detents engaging the opposite side margins of the base of a rail.

4,236,672

NOZZLE FOR STEAMING RETORTABLE POUCHES

George G. Koeberle, Arcadia, Calif., assignor to Angelus Sanitary Can Machine Company, Los Angeles, Calif.

Filed Apr. 16, 1979, Ser. No. 30,615
Int. Cl.³ B65B *31/04*
U.S. Cl. 239—139 **6 Claims**

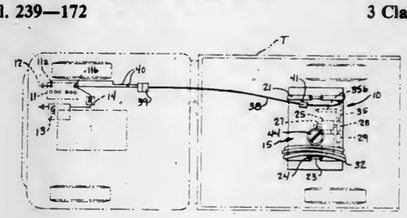
1. A steam nozzle comprising a pipe having a first end for discharge and a second end, means in said nozzle forming an orifice at said second end and sealing off said second end, a jacket around said pipe and said means, said orifice intercommunicating between said jacket and said second end, a steam inlet for said jacket for supplying steam under pressure to said jacket, said orifice, said pipe and said jacket being dimensioned so that steam pressure drops upon passage through said orifice, the pressure of steam emitted from said first end being substantially less than the pressure at said steam inlet and the steam in said jacket maintaining the steam in said pipe at substantially higher temperature than the temperature of said steam in said jacket.

4,236,673

PORTABLE POWER OPERATED CHEMICAL SPRAY APPARATUS

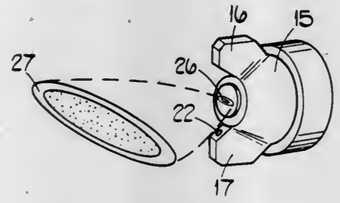
Steven R. Lake, R.R. 3, Earlville, Ill. 60518

Filed Aug. 31, 1979, Ser. No. 71,779
Int. Cl.³ E01H *11/00*
U.S. Cl. 239—172 **3 Claims**



1. A portable power operated chemical spray apparatus for use with a motor vehicle having a vehicle electrical power system, the spray apparatus comprising a generally cylindrical supply tank, a tank cradle including a generally flat base plate having a length less than the length of the tank and upstanding end plates adjacent opposite ends of the base plate each having a concave upper edge shaped to receive the cylindrical side wall of the tank, a pair of generally circular metal straps each secured to the upper edge of a respective one of the end plates, each strap extending around the cylindrical side wall of the tank at locations spaced inwardly of the ends of the tank and having upturned end portions adjacent the top of the tank spaced apart a distance sufficient to receive a hand therebetween, strap end connector means extending between the upturned end portions of each strap at a position spaced above the tank for interconnecting the upturned end portions on each strap in spaced relation to each other and providing handle therebetween, a pump having an electric drive motor mounted on the upper side of said base plate inwardly of the periphery thereof and adjacent the underside of the tank and having a pump inlet and a pump outlet, means connecting the pump inlet to the tank, an elongated flexible spray hose, first hose connector means connecting one end of the spray hose to the pump outlet, a spray head means and second hose connector means connecting the other end of the hose to the spray head, and means for electrically connecting the electric drive motor to the vehicle electrical pump system for energization thereby.

4,236,674
SPRAY NOZZLE
George Dixon, Walsall, England, assignor to Binks Bullows Limited, West Midlands, England
Filed Jan. 8, 1979, Ser. No. 1,589
Claims priority, application United Kingdom, Jan. 10, 1978, 972/78
Int. Cl.³ B05B *1/28, 7/06*
U.S. Cl. 239—296 2 Claims

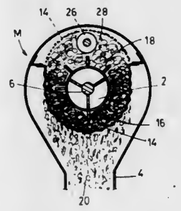


1. In a spray nozzle for spraying a liquid in a flat, fan-shaped spray pattern, the nozzle including a body with a central liquid aperture having an outlet end and a cap surrounding said body at the outlet end thereof, the body having passage means adapted to direct compressed air into an annular cavity which is formed between the cap and the body and which includes an air outlet surrounding the outlet end of the liquid aperture for causing compressed air to atomize liquid flowing from the liquid outlet, the improvement comprising a generally elliptical outlet end on the body defining a generally elliptical liquid outlet orifice and a generally elliptical air outlet aperture in the cap concentric with and surrounding the elliptical outlet end of the body for causing an annular elliptical pattern of compressed air to concentrically surround and impinge upon the elliptical pattern of liquid flowing from said liquid outlet orifice and directly atomize the liquid into a generally flattened, fan-shaped spray pattern with reduced consumption of air and less noise.

4,236,675
PROCESS AND APPARATUS FOR PRODUCING STOCKPILEABLE ASPHALTIC CONCRETE
Theodore S. Bladykas, 1493 Poulson St., Wantagh, N.Y. 11793
Filed Sep. 19, 1977, Ser. No. 834,520
Int. Cl.³ B02C *23/18*
U.S. Cl. 241—65 6 Claims

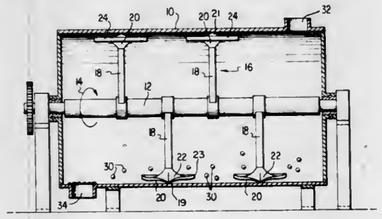
1. Apparatus for producing stockpileable asphaltic concrete from hot-mix asphaltic concrete, comprising:
a coolant tank for containing a coolant bath: means for dispersing the hot-mix asphaltic concrete into the coolant tank which comprises:
a supply hopper having an output port with a shearing edge;
a vaned projecting drum rotatably mounted below the output port of the supply hopper so that at least a portion of the projecting drum is above the level of the coolant bath;
a dispersing drum rotatably mounted and spaced from the vaned projecting drum so that at least a portion of the dispersing drum is above the level of the coolant bath and its axis of rotation is substantially parallel with the axis of rotation of the vaned projecting drum; and
means for driving the vaned projecting drum and the dispersing drum in opposite rotational directions; and
means for discharging the particles of asphaltic concrete from the coolant tank.

4,236,676
PAPER SORTING APPARATUS
Alexander Bialski, Loretteville; Camillo Gentile, Mississauga, and Ola Sepall, Quebec, all of Canada, assignors to Reed Ltd., Toronto, Canada
Division of Ser. No. 766,144, Feb. 7, 1977, Pat. No. 4,124,168.
This application Jul. 31, 1978, Ser. No. 929,593
Int. Cl.³ B02C *13/10*
U.S. Cl. 241—74 7 Claims



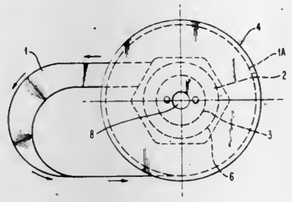
1. A mill for fragmenting paper comprising:
an elongated impeller;
foraminous means spaced from said impeller forming an enclosure about it;
means for introducing paper mixture into the space between the impeller and the enclosure;
means for procuring relative rotation of the impeller and the enclosure to churn the paper mixture within said space without cutting it, and
a plurality of blunt-edged fins projecting radially from and axially along the impeller in spaced relation to said enclosure for capturing the paper mixture aforesaid and for scrubbing it during such rotation directly against the foraminous means forming such enclosure to reduce at least one of the components of the paper mixture to fragments; said foraminous means being free from obstructions which would effect shearing or inhibit churning and scrubbing of the paper mixture and serving also to provide openings for the elimination of paper fragments thus formed, the space between said foraminous means and the outer ends of said fins being entirely open to permit such uninhibited scrubbing.

4,236,677
APPARATUS FOR TREATING BULK MATERIAL IN BATCHES
Wilhelm Lödige, Elsenerstr. 9c; Fritz Lödige, Leuschnerstr. 12; Joseph Lucke, Im Lohfeld 14, and Roland Lucke, Karl-Arnold-Allee 3, all of D-4790 Paderborn, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 958,811, Nov. 8, 1978, abandoned, which is a continuation of Ser. No. 841,528, Oct. 12, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,607
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646512
Int. Cl.³ B02C *17/16*
U.S. Cl. 241—172 1 Claim



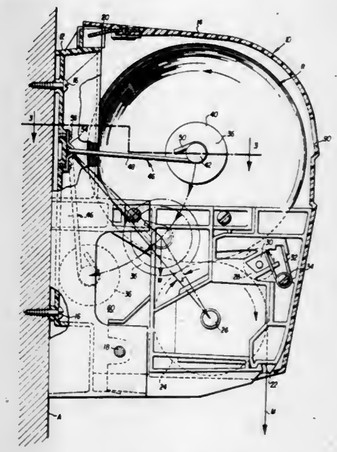
1. An apparatus for treating bulk material, said apparatus comprising a generally cylindrical container having a generally horizontal axis, a shaft having an axis common with said generally horizontal axis and being rotatably journalled in said container, drive means for rotating said shaft, a plurality of shovel units mounted on said shaft for rotation with said shaft within said container, each of said shovel units including a radially extending arm having an inner end fixedly secured to said shaft and an outer end carrying a shovel element, each of said shovel elements including a forward pointed tip closely spaced from an inner surface of said container, each shovel element having a circumferentially extending central portion extending rearwardly from said tip and being substantially uniformly spaced from said container inner surface, each of said shovel elements having a generally planar peripheral edge terminating in a trailing edge and generally curving radially inwardly and in opposite axial directions from said tip, striking elements in the form of balls loosely disposed within said container for use in preventing caking and incrustation of bulk material on the inner surface of said container, said balls being of a minimum size to prevent wedging of said balls between said shovel elements and said container, each of said shovel elements having an axial extent greater than the spacing of said arms along said shaft wherein upon each rotation of said shaft all areas of said container inner surface between remote ones of said shovel elements has a shovel element presented thereto, and each of said shovel elements having a radially inner surface curving radially inwardly from said tip in circumferential and axial direction for imparting to said balls and bulk material being treated a tangential and radial motion away from said inner surface of said container.

4,236,678
ENDLESS RIBBON CARTRIDGE
Gerald C. Sienkiewicz; Donal J. McQuade, both of Raleigh, and Herbert G. Leonard, Louisburg, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 3, 1979, Ser. No. 746
Int. Cl.³ B65H *17/48*
U.S. Cl. 242—55.19 A 3 Claims



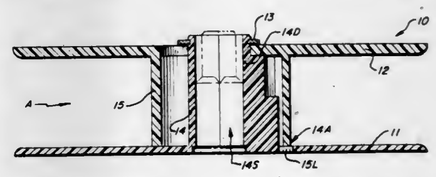
1. An improved cassette apparatus for an endless loop of wound web material in which a freely rotatable spool bearing said wound web is housed within a casing and provided with means for allowing said ribbon to be withdrawn from the innermost coil of said winding on said spool and rewound on the outermost coil thereof, the improvements comprising:
said freely rotatable spool is provided with a first polygonally shaped flange of smaller maximum exterior dimension than the minimum internal diameter of said coil and said flange is located adjacent to one edge surface of said wound coil, said flange being encircled by said coil; and
a second flange on said spool facing the opposite edge surface of said coil and being provided with a circularly shaped flange surface on which the innermost coil of said ribbon is wound.

4,236,679
FLEXIBLE SHEET MATERIAL ROLL DISPENSING
Paul W. Jespersen, Houston, Tex., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Jun. 21, 1979, Ser. No. 50,517
Int. Cl.³ B65H *19/06*
U.S. Cl. 242—55.53 12 Claims



1. In a dispenser for flexible sheet material having at least one roll of sheet material and mechanism to pass sheet material from the roll out of the dispenser, a method for promoting feeding of sheet material from the roll and out of the dispenser comprising the steps of:
resting the roll surface on a feed roller;
passing sheet material from the roll between the roll surface and the feed roller to rotate the roll and feed roller incident withdrawal of material from the roll;
guiding downward movement of the roll through an arc spaced from the axis of the feed roller as the roll diameter diminishes incident depletion of material on the roll to increase driving pressure between the roll and feed roller surfaces; and
passing the essentially depleted roll past the feed roller surface of discard.

4,236,680
TAKE-UP REEL
John U. Thompson, Arlington Heights, Ill., assignor to Oce'-Industries, Inc., Chicago, Ill.
Filed Nov. 22, 1976, Ser. No. 743,646
Int. Cl.³ B65H *75/28*
U.S. Cl. 242—74.1 6 Claims



1. A slip-lock take-up reel for roll film and the like comprising a drive flange having an axial core defining a drive socket, a driven flange having an axial core surrounding the first core to serve as a spool and interengaging means guiding the flanges for relative rotary movement about an axis of the socket, the reel being characterized in that the driven flange core has a feed passage for a film end of a roll film that is to be wound upon the spool in an annular space defined between the flanges, and the drive flange core has drive cam means eccentric to the

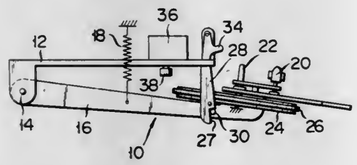
axis to undergo rotary movement relative to the driven flange between a slip position wherein the drive cam means presents a relieved portion thereof in radially spaced relation to the feed passage region of the driven flange core for allowing movement of the film end through the feed passage and a lock position wherein the drive cam means presents a raised portion thereof radially adjacent a circumferentially spaced region of the driven flange core, said reel in response to rotation of the drive flange in a film take-up direction acting to grip the film end between the cores in interference fit relation and thereby lock the flanges for joint rotary movement during the film take-up mode and the rewind mode.

4,236,681

TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1979, Ser. No. 57,320
Claims priority, application Japan, Jul. 31, 1978, 53-93309
Int. Cl.[3] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **3 Claims**



1. A tape recorder comprising a movable chassis, a capstan and a flywheel fixed to said capstan carried by said movable chassis, said movable chassis being movable between a raised and a lowered position and when in said raised position setting up a sound reproducing/recording state, a fixed chassis, a motor having an output shaft disposed on said fixed chassis, and a motor pulley fixed to said output shaft, said flywheel being at a distance from said motor pulley when said movable chassis is in said lowered position in which it is in a stop state, and said flywheel being pressed against said motor pulley to be connected directly with said motor when said movable chassis is raised to set up the sound reproducing/recording state, whereby the motor will generate a driving torque for the capstan.

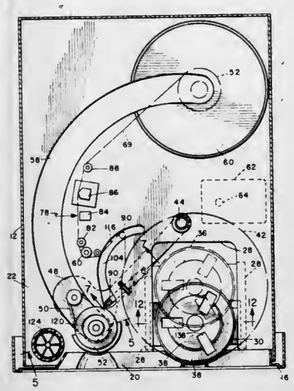
4,236,682

SLOT LOADED, LOW PROFILE MAGNETIC TAPE DRIVE

William M. Barton, Jr., San Diego, Calif., assignor to Cipher Data Products Incorporated, San Diego, Calif.

Filed Aug. 15, 1979, Ser. No. 66,792
Int. Cl.[3] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **17 Claims**

1. A magnetic tape drive unit, comprising;
a housing having a base plate secured substantially horizontally therein;
said base plate having a front portion with a supply hub mounted thereon for receiving a supply reel of tape;
a tape take-up reel having support means mounted on said plate;
actuating means coupled to said support means to move said take-up reel between a loading position at the side of the supply hub and an operating position at the rear of the housing;
a tape utilization assembly including at least a tape reading head mounted on said base plate between the loading and operating positions of the take-up reel, to receive the tape thereon as the take-up reel moves from the loading position to the operating position;



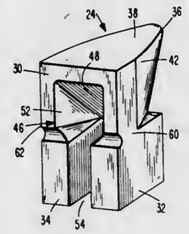
and drive means connected to said supply hub and take-up reel for selective rotation thereof.

4,236,683

COUPLING ELEMENT FOR SLIDE FASTENER AND METHOD OF MANUFACTURE

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.

Filed May 24, 1976, Ser. No. 689,414
Int. Cl.[2] A44B *19/02*
U.S. Cl. 24—205.13 R **9 Claims**



1. A synthetic polymer coupling element for a slide fastener comprising
an interlocking head,
a pair of generally parallel legs extending downward from opposite sides of the head,
said head and said pair of legs being initially formed in a flowable synthetic polymer resin blank wherein one of said initially formed head and said initially formed pair of leg portions has an excess of flowable resin, and
said excess material being laminarly extruded through portions of the legs adjacent to the head to orient the polymer in the portions of the legs adjacent the head.

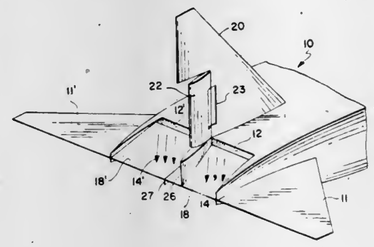
3. A chain for a slide fastener comprising
a pair of carrier tapes;
a pair of pluralities of synthetic polymer interlocking coupling elements;
each of the coupling elements having a pair of parallel spaced elongated legs secured to and extending perpendicular to the inner edges of the tapes;
further each of the coupling elements having a head supported by the pair of legs spaced from the respective inner edges of the tapes;
each head having a side cross section with a generally triangular shape defined by a top surface of the head generally parallel to the inner edges of the tape, and a pair of bottom surfaces of the head extending in equal and opposite angles away from the respective inner edges of the tapes;
further each head having a tapered locking protrusion on the front thereof and having a locking recess in the back thereof for receiving the locking protrusion of a mating head portion;
each of said locking protrusions being defined by the respective top surface, one of the respective pair of bottom surfaces, and a pair of converging side surfaces;
each of said locking recesses being defined at the top by the other of the respective pair of bottom surfaces, at the sides by converging inside surfaces, and the bottom of each recess opening into the space between the respective pair of legs;
said pair of bottom surfaces of each head converging at a point adjacent a front of the respective pair of legs; and
each of the pairs of legs having sections adjacent the respective heads with reduced cross section wherein the synthetic polymer is oriented longitudinally relative to the legs.

4,236,684

THRUST AUGMENTED SPIN RECOVERY DEVICE

Bobby L. Berrier, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 727,503, Sep. 28, 1976. This application Apr. 27, 1979, Ser. No. 34,104.
Int. Cl.[3] B64C *15/02*
U.S. Cl. 244—52 **4 Claims**



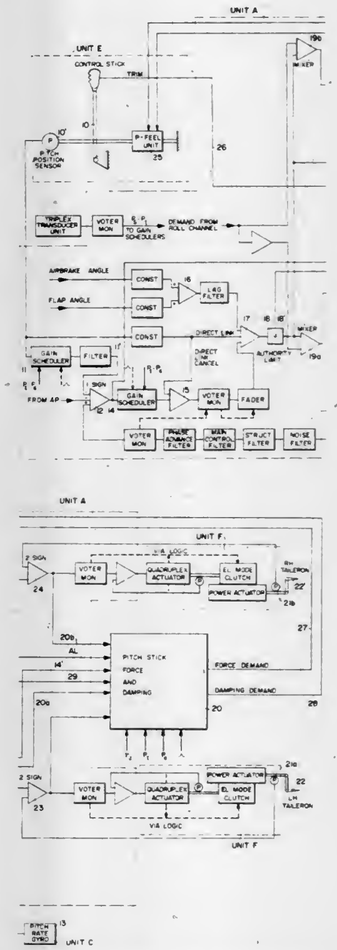
1. The combination of a twin engine jet propelled aircraft having a vertical tail and rudder yaw control surfaces and wherein the jet thrust is discharged in the rear portion of the aircraft, the improvement therewith comprising:
a pair of adjacent horizontally disposed rectangular nozzles for discharging the jet thrust from the aircraft;
individual nozzle wedges disposed in each of said nozzles and serving to divide each nozzle exit area into a pair of separate rectangular exits disposed one above and one below each said wedge;
a single vertical tail rigidly attached to the aircraft, a rudder hingedly attached to said vertical tail and extending rearward to orient the lower edge thereof directly over the path of the jet thrust stream;
a rudder tab of substantially planar shape disposed at the lower edge of said rudder and disposed substantially within the same plane as said rudder and extending downward therefrom substantially intermediate the nozzle pair to a position adjacent the individual nozzle wedges;
a bottom splitter plate vertically disposed beneath and intermediate the individual nozzle wedges serving to maintain the exhaust stream exiting beneath each said wedge of the individual nozzles separated;
whereby, as said rudder tab is deflected cooperatively with said rudder, said rudder tab interacts with the jet exhaust stream exiting above the nozzle wedges to deflect it to a sideward direction relative to the aircraft and thereby impart a yawing force upon the aircraft and create supercirculation about said rudder, wherein said rudder interacts with the airflow passing thereover to create an additional yawing force upon the aircraft.

4,236,685

STEERING MECHANISM WITH AN ACTIVE FORCE FEEDBACK, ESPECIALLY FOR AIRCRAFT

Gerhard K. Kissel, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,748
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807902
Int. Cl.[3] G05D *1/08*; G64C *13/04*
U.S. Cl. 244—223 **6 Claims**



1. The steering mechanism with an active force feedback, especially for an aircraft, comprising a manual steering means, automatic steering means, signal providing means including pitch position sensor means (**10'**) operatively connected to said manual steering means to provide a pilot trim control signal, pitch rate gyro means (**13**) providing a gyro feedback signal, signal processing means including differential amplifier means (**12**) operatively connected to said pitch position sensor means and to said pitch rate gyro means for providing a difference output signal, force control and damping circuit means (**20**),

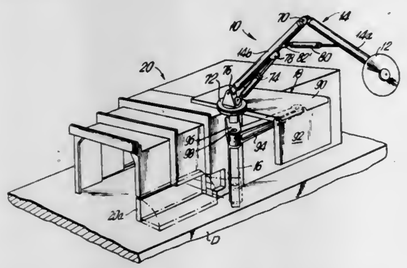
authority limit circuit means (18) operatively connecting said difference output signal of said differential amplifier means (12) to said force control and damping circuit means (20), and means directly connecting the output of said differential amplifier means to said force control and damping circuit means, further circuit means (19a, 19b, 23, 24) operatively connecting said authority limit circuit means (18) to said automatic steering means, said signal providing means comprising means for supplying an additional input signal or signals to said force control and damping circuit means (20), and feedback circuit means for supplying output signals from said force control and damping circuit means (20) to said manual steering means.

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SHIP COMPATIBLE LAUNCH, RETRIEVAL AND HANDLING SYSTEM FOR (VTOL) AIRCRAFT

Richard W. Barthelme, Blue Point; John B. Leonard, Northport, both of N.Y., and John N. Biercuk, Fair Lawn, N.J., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 7, 1978, Ser. No. 940,379
Int. Cl.[2] B64F *1/12*
U.S. Cl. 244—116 **6 Claims**



1. A handling system for VTOL aircraft comprising:
platform means for holding said aircraft;
articulatible boom means including a pair of arm elements having a capture drogue at the free end thereof for said aircraft;
control means for moving said boom means between a catching position wherein said drogue is stabilized with respect to free space and a landing position wherein said drogue is stabilized with respect to said platform and said aircraft is positioned on said platform, said control system including input means comprising rate and/or acceleration sensors mounted on said capture drogue; position sensors for measuring the relative angles between said arm elements and said platform means and between said arm elements and said drogue; output means comprising actuators for moving said arm elements and drogue, and automatic stabilization and control means for operating said output means in response to said input means; said boom means and drogue being operative to guide said aircraft between said positions while said aircraft is supported by its engine thrust.

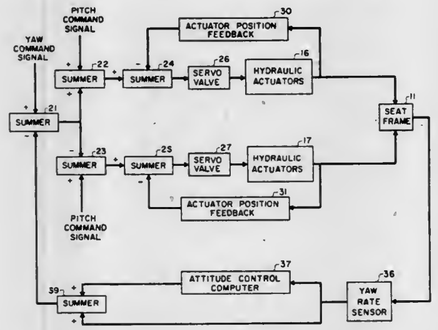
4,236,687

EJECTION SEAT WITH PITCH, ROLL AND YAW CONTROL

W. James Stone, Ridgecrest, Calif., and Lovic P. Thomas, Valparaiso, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 24, 1979, Ser. No. 42,170
Int. Cl.[3] B64D *25/10*
U.S. Cl. 244—122 AD **11 Claims**

1. An aircraft ejection seat, comprising:
a first gimbal system mounted on the bottom of said aircraft ejection seat;
a first means for producing thrust mounted on said first gimbal system;
a second gimbal system mounted on said aircraft ejection seat;
a second means for producing thrust mounted on said second gimbal system;
means for controlling the directions of the thrusts of said first and second means for producing thrust and connected thereto comprising;
first and second actuators connected between said aircraft ejection seat and said first means for producing thrust;
third and fourth actuators connected between said aircraft ejection seat and said second means for producing thrust;
a first summer having first and second inputs and an output, said first input responsive to a yaw command signal;



feedback means for providing a negative yaw feedback signal connected to said second input of said first summer;
a second summer connected to said first summer and to a pitch command signal, said second summer configured to have an output equal to the sum of the output of said first summer and the pitch command signal;
first positioning means for controlling the positions of said first and second actuators and connected to said second summer;
a third summer connected to said first summer and responsive to the pitch command signal, said third summer configured to have an output equal to the pitch command signal minus the output of said first summer; and
second positioning means for controlling the positions of said third and fourth actuators and connected to said third summer.

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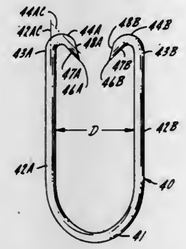
ANCHORING DEVICES

John J. Wilk, 608 Longwood Ct., Glenwood, Ill. 60425

Filed Jan. 15, 1979, Ser. No. 3,368
Int. Cl.[3] F16B *15/00*
U.S. Cl. 248—71 **7 Claims**

1. An anchor useful for attaching articles to a wood member of predetermined width comprising:
a support section including an arcuate portion;
a pair of arms extending from said support section, each arm extending to an end away from said support section;
a retainer at each of said ends of said arms being affixed so that as said arms are pushed onto a wood member of predetermined width, said retainers force said pair of arms apart and when said arms are pulled off a wood member of predetermined width, said retainers tend to grip the wood member of predetermined width;
wherein said arms are spaced apart from one another by a distance substantially equal to the width of the wood member of predetermined width;
wherein said retainers define a plane with which said retainers are substantially aligned;

wherein said retainers extend toward each other and toward said support section such that when viewed from a line of sight perpendicular to said plane formed by said retainers, the connection between each of said arms and each of said retainers is substantially arcuate, the angles formed by the axis of each of said retainers and the axis of each of said respective arms is substantially 45° and said arms are substantially parallel;
wherein the contact point of said retainers with the wood member of predetermined width when said arms are



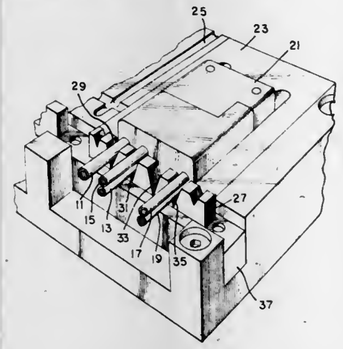
pushed onto and around the wood member of predetermined width is such that said contact point when viewed from a line of sight perpendicular to said plane formed by said retainers is formed by a rounded lower wall which extends away from said support and a flat upper wall which extends away from said support section and away from said other retainer; and,
wherein said support section defines a plane, said support section plane forming substantially a 45° angle with said plane defined by said retainers.

4,236,689

CONNECTOR MOLD WITH FLEXIBLE WIRE GUIDE

Alan R. Hass, Albion, Ind., assignor to Lyall Electric, Inc., Albion, Ind.

Filed Jun. 11, 1979, Ser. No. 47,320
Int. Cl.[3] B22D *19/04*
U.S. Cl. 249—204 **9 Claims**



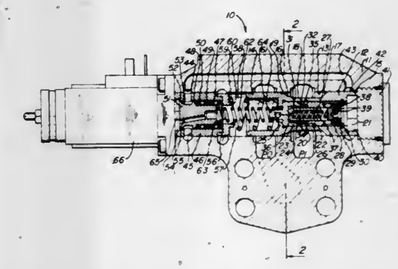
1. A flexible insert arrangement for an electrical connector mold for closing an otherwise open mold end from which electrical leads extend, the same insert adapted for use with a variety of lead numbers and sizes, the arrangement comprising:
a first generally flat rectangular body of resilient material having a plurality of lead accepting notches along one edge thereof;
means for deforming the first rectangular body to temporarily displace resilient material to form about the leads to complete the formation of an insulating material accepting connector forming cavity; and
an additional generally flat rectangular body of resilient material having a plurality of teeth along one edge thereof alignable with corresponding lead accepting notches of the first rectangular body, the means for deforming including means for aligning the teeth and lead accepting notches and for forcing the first body and the additional body toward one another interlocking the teeth and lead accepting notches with leads captured therebetween.

4,236,690

ELECTROHYDRAULIC FLOW CONTROL APPARATUS

Robert Smilges, Paris, France, and Richard Wigmore, Brighton, England, assignors to Abex Corporation, New York, N.Y.

Continuation of Ser. No. 801,280, May 27, 1977. This application Jan. 22, 1979, Ser. No. 5,543
Int. Cl.[3] F16K *11/10*
U.S. Cl. 251—30 **1 Claim**



1. A flow control valve having a metering orifice opening in proportion to an electric current comprising: a body, a fluid inlet in the body, a fluid outlet in the body, a bore in the body which connects the fluid inlet and outlet, a metering spool mounted in the bore, a land in the bore between the fluid inlet and outlet, a control surface on the spool co-operative with the land to form an orifice between the fluid inlet and outlet wherein the size of the orifice is dependent upon the relative linear position of the metering spool and land, a source of fluid under pressure in said inlet, a control chamber at one end of the metering spool passage means for providing pilot fluid from the fluid inlet to the control chamber, means for maintaining a constant rate of pilot fluid flow, said pilot fluid in the control chamber biasing the metering spool to open the orifice, means connecting the other end of the metering spool to low (tank) pressure, spring means at said other end of the metering spool opposing the force of the pilot fluid and biasing the spool to close the orifice, a second valve for controlling the pressure of the pilot fluid in the control chamber to set the position of the metering spool and the orifice size, means connecting the control chamber with the valve, wherein the second valve includes a movable control spool and a seat, said second valve forming a second variable orifice the opening of which is determined by the relative positions of the control spool and seat, a solenoid having a movable plunger tending to close the second valve, means for adjusting the force of the plunger acting on the second valve in response to an elecrical input to the solenoid, a feedback spring positioned between the metering spool and the control spool tending to open the second valve, wherein the force of the plunger sets the size of the second orifice which sets the pressure of the pilot fluid, the pilot fluid in the control chamber moves the metering spool to open the first orifice and the resulting movement of the metering spool biases the feedback spring against the valve control spool to overcome the solenoid plunger force and open the second valve to thereby limit the pressure of the pilot fluid and stop the movement of the metering spool when the force of the feedback spring on the control spool equals the force of the solenoid plunger, a stop member mounted in the bore between the metering spool and the second valve, the stop member having a second axial bore, the spring means engages said stop

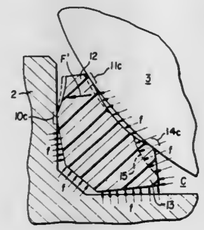
member and the feedback spring passes through the second axial bore without engaging the stop member.

4,236,691

BALL VALVE TO RELIEVE CAVITY PRESSURE

Joseph B. Wright, Northboro, Mass., assignor to Jamesbury Corporation, Worcester, Mass.

Filed Nov. 29, 1978, Ser. No. 964,653
Int. Cl.³ F16K *5/06*
U.S. Cl. 251—315 **3 Claims**



1. A ball valve capable of relieving cavity pressure, comprising:
- a housing with a cavity and having an inlet and an outlet port;
- a ball in said cavity and having a port formed therethrough for alignment with the inlet and outlet ports;
- a valve seat ring positioned on each side of the ball between the ball and the housing, each said seat ring being generally kidney shaped in transverse cross section, with the radially inner peripheral part thereof defining a lip portion and the radially outer peripheral part thereof defining a heel portion, the lip portion and heel portion each having a ball contact zone and a housing contact zone, the housing contact zone of the lip portion being located radially inward of the heel portion, that part of the lip portion which faces the housing between the housing contact zone and the radially innermost part of the lip portion being tapered toward the ball axis defining a clearance space with the housing, and in the absence of cavity pressure the lip portion being in contact with both the ball and housing and the heel portion being in contact with the housing but spaced from the ball, and in the presence of cavity pressure the lip portion being in contact with both the housing and ball and the heel portion being in contact with the ball but spaced from the housing, so that in the presence of cavity pressure, cavity pressure forces act on the radially outer part of the seat ring between the lip ball contact zone and the lip housing contact zone; and
- vent means on the heel portion to establish communication from the cavity to that part of the seat ring which faces the ball between the heel ball contact zone and the lip ball contact zone, to permit cavity pressure forces to be applied to such part which will collectively result in a resolved force sufficient to deflect the lip portion away from the ball and vent cavity pressure when it reaches a predetermined level, the clearance space which is provided at that part of the lip portion facing the housing enabling the lip to deflect and venting to occur from either the upstream or downstream side of the ball.

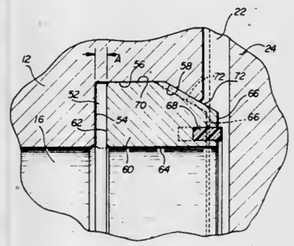
4,236,692

CONTROLLED FLOATING SEAT FOR GATE VALVES

Alton M. Williamson, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 20, 1979, Ser. No. 31,725
Int. Cl.³ F16K *3/00*
U.S. Cl. 251—328 **1 Claim**

1. In an expanding gate valve having a valve body providing a fluid flow passage therethrough, a valve chamber in the body communicating with the flow passage, and an expanding type gate assembly in the valve chamber movable in a collapsed condition between open and closed positions and disposed in an expanded condition when in the open and closed positions, the improvement comprising:
- an annular groove extending around the flow passage directly in said valve body, said groove opening to the valve chamber and having a bottom surface spaced from the valve chamber;
- an outer surface of said groove having a generally cylindrical portion spaced from the valve chamber and a frusto-conical portion adjoining said cylindrical portion, sad frusto-conical portion terminating adjacent the valve chamber and inclining inwardly toward the flow passage as it extends toward the valve chamber;
- an annular valve seat in said groove having a sealing surface facing the gate assembly for sealing contact therewith when the gate assembly is in its expanded condition, said valve seat having a base for contact with the bottom surface of the groove to limit movement of said seat away from the valve chamber;



- an outer side of said valve seat having a generally cylindrical surface adjacent said base and contacting the cylindrical portion of said groove, said cylindrical surface being of lesser width dimension in the direction of the axis of the flow passage than the width dimension of said cylindrical portion of the groove to permit movement of said seat in the groove toward and away from the valve chamber; and
- a frusto-conical surface on said outer side of the valve seat between said cylindrical surface and said sealing surface, said frusto-conical surface extending a distance of at least one-third the thickness of said seat between the sealing surface and base surface thereof, and having a cone angle of from about one degree to about ten degrees, said frusto-conical surface contacting the frusto-conical portion of said groove to limit movement of the valve seat toward the valve chamber such that the gate assembly is substantially clear of said sealing surface of the valve seat when in the collapsed condition, said valve seat being metallic and having a shrink fit within said groove.

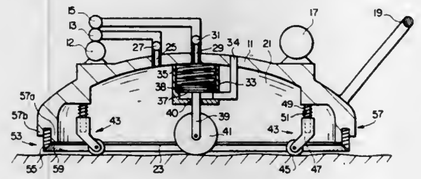
4,236,693

PORTABLE WINCH APPARATUS

Elmer R. McCrea, 3561 Farm Hill Blvd., Redwood City, Calif. 94061

Filed Jul. 21, 1977, Ser. No. 817,792
Int. Cl.³ B66D *3/26*
U.S. Cl. 254—323 **6 Claims**

1. Portable winch apparatus comprising:
- a substantially rigid, hollow housing, open on the bottom, capable of maintaining a high vacuum when the housing bottom is pressed against a substantially planar, non-porous, rigid surface so as to form a closed chamber;
- resilient seal means, attached to the housing on the bottom thereof, for defining substantially a plane to support the housing, when the housing is pressed against a substantially planar surface, while maintaining a vacuum in the closed chamber thus defined;
- a vacuum pump to evacuate the closed chamber;
- valve means for releasing a vacuum from the closed chamber;
- at least one retractable wheel with associated wheel shaft, mounted inside and depending downward from the housing which, in the unretracted position, makes contact with the ground and allows the housing to be rolled about and



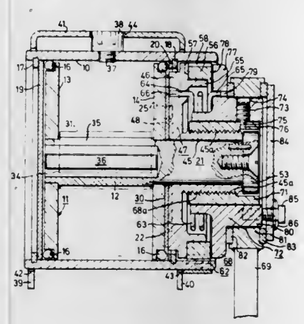
which, in the retracted position, allows the housing to make contact with the ground;
- wheel retraction means, operatively associated with the housing, and with the retractable wheel, for raising and lowering the wheel relative to the housing;
- supplementary balance apparatus; and
- a powered winch, rigidly attached to the housing.

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MANUAL WINCH WITH SAFETY CLUTCH, ESPECIALLY AS A POWER SOURCE IN NURSING FOR LIFTING PATIENTS

Nils L. O. Kristensson, Stockholm, Sweden, assignor to Landstingens Inkopscentral Lic, Ekonomisk Forening, Solna, Sweden

Filed Dec. 6, 1978, Ser. No. 967,144
Claims priority, application Sweden, Dec. 8, 1977, 7713950
Int. Cl.³ B66D *1/00*
U.S. Cl. 254—365 **3 Claims**



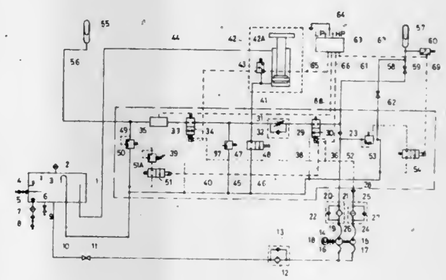
1. A winch for raising and lowering a load comprising: a winding reel for winding and unwinding a flexible load-supporting member, said reel including a barrel and two circular end walls connected to the barrel and an axially projecting shaft extension; an internally cylindrical housing surrounding said reel; means mounting the circumferences of said circular end walls for rotation against the inside of said housing; means locking said reel against axial displacement within said housing; a sleeve rotatable on said shaft extension, said sleeve having a circular flange portion provided with an axially facing annular abutment surface and said sleeve having an externally threaded portion; a hub having an internal thread engaged with the external thread on said sleeve and rotatable in either direction relative to said sleeve and said hub having an annular abutment surface facing said annular abutment surface on said sleeve; an annular friction collar rotatably mounted between said annular abutment surfaces and having opposite axially facing surfaces facing the respective abutment surface on said sleeve and on said hub; a helical torsion tension spring connected between said circular flange portion and said respective circular end wall for producing engagement of said annular abutment surfaces with said opposite axially facing surfaces of said friction collar with a predetermined amount of friction; a holding catch cooperating with said friction collar to prevent rotation of said reel in an unwinding direction and to permit rotation of said reel in the opposite direction; clutch means for connecting and disconnecting said circular flange portion with one of said circular end walls of said reel in a manner such that when said reel is unloaded and non-rotating said hub and said friction collar, clamped together by said spring, and said sleeve can rotate in the unwinding direction; whereby when rotation in a winding direction is imparted to said hub, the latter threads on to said shaft extension in a direction toward said reel, so that said hub will press said friction collar harder between said abutment surfaces and thereby provide transmission of torque due to friction to the reel via the collar, the latter thereby turning freely in relation to said catch; and whereby rotation imparted to said hub in the opposite direction results in a momentary easing of the pressure on said friction collar and consequently permits rotation of said reel under the action of the load on the flexible load-supporting member until the relative screwing movement caused thereby between said reel and said hub has returned said abutment surfaces into engagement against said collar with such pressure that said collar once again participates in the power transmission, and brakes or terminates rotation of said reel in the unwinding direction, the collar being subjected to such alternating pressures as long as said hub is rotated in the unwinding direction and the load-supporting member is loaded.

4,236,695

SEA SWELL COMPENSATION

Archibald J. S. Morrison, 3 Lyle Rd., Greenock PA16 7QT., Scotland

Filed Oct. 20, 1978, Ser. No. 952,993
Claims priority, application United Kingdom, Oct. 27, 1977, 44693/77; Nov. 2, 1977, 45494/77; Nov. 8, 1977, 46333/77; Feb. 16, 1978, 6141/78
Int. Cl.³ B66D *1/48*
U.S. Cl. 254—277 **10 Claims**



1. A sea swell and shock load compensator comprising a hydraulically-operated means for heaving in and paying out a hoist rope, a high pressure hydraulic system for supplying hydraulic fluid to the means so as to enable the means to heave in the hoist rope when carrying a load under a given maximum load, and a low pressure hydraulic system for supplying hydraulic fluid to the means so as to enable the means to heave in the hoist rope when carrying a load under a given lesser load, the hydraulic systems being pressurised by gas-loaded accumu-

lators, and selection means for selectively connecting the hydraulic systems with the hydraulically-operated means.

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MULTICAPSTAN TRACTION UNIT

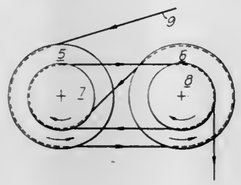
Raymond J. Hicks, Powys, Wales, and John T. H. Webb, Sunningdale, England, assignors to Wharton Engineers (Elstree) Limited, London, England

Filed Jan. 18, 1978, Ser. No. 870,538

Claims priority, application United Kingdom, Jan. 20, 1977, 2399/77

Int. Cl.³ B66D *1/76*

U.S. Cl. 254—297 **25 Claims**



1. A traction unit which comprises two pairs of two capstans for handling a common line, the capstans of each pair having a common axis and the axes of each pair being in separate and spaced apart parallel relationship to each other, one capstan of each pair of capstans being larger in diameter than the other capstan of that pair, cycloidal gears being provided between the capstans of each pair of the capstans to effect opposite rotation between the capstans in each pair, with one of the capstans of one pair being coupled to another capstan of the other pair of capstans to coordinate the rotation of said capstans.

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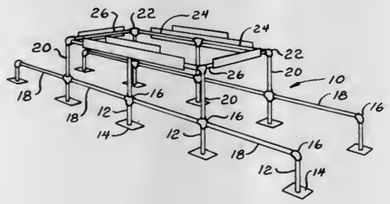
CART STORAGE DEVICE

Alfred T. Savino, 5900 W. Sixty-Fifth St., Chicago, Ill. 60638

Filed Oct. 6, 1978, Ser. No. 949,072

Int. Cl.³ E04H *17/00*

U.S. Cl. 256—1 **8 Claims**



1. A facility for installation in parking lots, or the like, for storage of shopping carts and comprising:

two first parallel arrays of vertically extending posts, each parallel array having a plurality of posts extending in spaced apart relation in the array and including two terminal posts located at the ends of the array, the posts of the first arrays having one end thereof rigidly anchored to the parking lot and terminating in a free end and extending substantially vertically away from the parking lot surface;

coupling means affixed to the free ends of the vertically extending posts;

horizontally extending elements being anchored within the coupling means at the terminals of the vertically extending posts of the first parallel arrays and extending along each said array to define laterally spaced-apart protective rails in combination with the arrays;

two second parallel arrays of vertically extending posts with the posts of the second arrays having one end thereof rigidly anchored in the coupling means affixed to the free ends of the posts of the first arrays of vertically extending posts and terminating in free ends and extending away from said coupling means;

coupling elements affixed to the free ends of the posts in the second parallel arrays;

horizontally extending connecting elements being anchored within the coupling elements of the vertically extending posts of the second parallel arrays and extending along each second parallel array to define laterally spaced-apart rails in planar conjunction with the horizontally extending elements anchored to the first parallel arrays of posts; and

cross members extending between the end posts of the second parallel arrays of vertically extending posts to provide side-to-side stability of the assembly for rigidity of the complete structure and whereby a shopping cart entrance area defined by the parking lot surface and the terminal posts at the corresponding ends of said two first parallel arrays is provided with clearance for the stored shopping carts to be moved therethrough.

4,236,698

RAILING FOR BUILDING WORKS AND THE LIKE

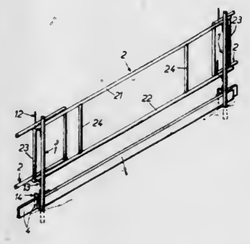
Jean Compte, Samois sur Seine, France, assignor to Campenon-Bernard Cetra, Clichy, France

Filed Mar. 30, 1979, Ser. No. 25,637

Claims priority, application France, Mar. 31, 1978, 78 09620

Int. Cl.² E04H *17/16*

U.S. Cl. 256—23 **4 Claims**



1. A railing assembly for building works and the like comprising:

(a) posts and a railing frame,

(b) said railing frame including a hand rail and an intermediate rail connected together by cross-bars,

(c) said cross-bars being secured at the ends of said rails to form a rigid structure,

(d) said posts including a pole and two hooks which are laterally spaced along the pole and are effective to hang said railing frame to said posts,

(e) said hooks having upwardly directed free end portions which are spaced outwardly from the pole to form an inner width that is larger than twice the width of said rails whereby two overlapping railing frames can be hanged to each post even if said posts are out of line.

4,236,699

APPARATUS FOR WET-POST TREATMENT OF METALLIZED IRON ORE

William L. Davis, Jr., Bakersfield, Calif., assignor to Hicap Engineering & Development Corporation, Salt Lake City, Utah

Filed Jul. 10, 1978, Ser. No. 923,166

Int. Cl.³ C21D *9/00*

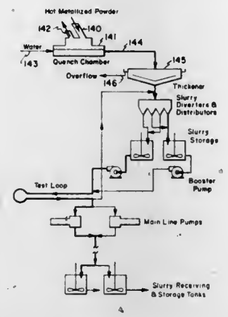
U.S. Cl. 266—114 **3 Claims**

1. Apparatus for wet-post treating of a hot metallized iron

ore product produced by direct reduction apparatus and methods to prevent re-oxidation thereof comprising,

a water quench chamber;

means for moving hot metallized produce into said quench chamber;



pump means for moving a slurry of metallized product and water from said wet quench chamber; (and)

circulation means for keeping the metallized product suspended in said slurry; and

storage means for receiving and storing indefinitely said slurry of metallized product under water.

4,236,700

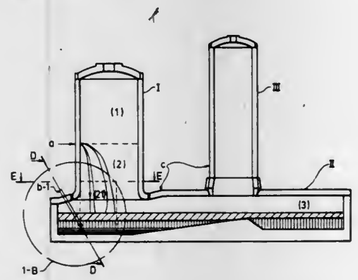
DEVICE FOR SUSPENSION SMELTING OF FINELY-DIVIDED OXIDE AND/OR SULFIDE ORES AND CONCENTRATES

Simo A. I. Makipirtti, Nakkila, and Jussi J. Kayhko, Pori, both of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Division of Ser. No. 753,575, Dec. 22, 1976, Pat. No. 4,139,371, which is a continuation-in-part of Ser. No. 588,602, Jun. 20, 1975, abandoned. This application Oct. 13, 1978, Ser. No. 951,063

Int. Cl.³ F27B *3/24*

U.S. Cl. 266—161 **2 Claims**



1. A suspension smelting furnace for the suspension smelting of a finely divided material selected from at least one of the group comprising oxide and sulfide ores and concentrates, especially iron-rich copper and nickel concentrates, and comprising a horizontal lower furnace, to which the lower ends of at least one vertical reaction shaft and at least one rising shaft are connected, a lower portion of said reaction shaft encompassing a suspension reduction zone and an upper portion of said reaction shaft encompassing a suspension oxidation zone above said suspension reduction zone, and means at an upper end of the suspension oxidation zone for producing a suspension of a feed mixture containing the finely-devided material with gas and for directing a suspension of the finely divided material and gas downwards in and through the suspension oxidation and the suspension reduction zones, devices located at the lower end of the suspension reduction zone for sulfidizing or reducing the suspension, a melt reduction zone within the lower furnace under the suspension reduction zone into which most of the suspension is discharged, and devices in the rising shaft for withdrawing any remaining suspension from upper part of the rising shaft; means for injecting an oxidizing gas horizontally into a matte phase under a slag layer in a melt reaction zone in the lower furnace below the lower end of the reaction shaft in order to produce raw metal from valuable metals present in the melt; and means for withdrawing such raw metal and waste slag from the lower furnace.

4,236,701

DEVICE FOR FIXING A PLANAR WORK PIECE

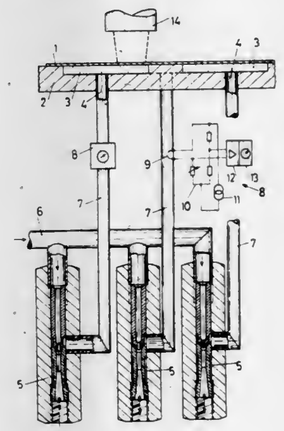
Herbert E. Mayer, Eschen, Liechtenstein, assignor to CENSOR patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

Filed Dec. 11, 1978, Ser. No. 968,196

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848684

Int. Cl.³ B25B *11/00*

U.S. Cl. 269—21 **2 Claims**



1. An improved apparatus for fixing a planar work piece in position, particularly a semiconductor used in processing cycles for the production of integrated circuits, said apparatus being defined by a supporting plane; a number of apertures disposed in said supporting plane, each of said apertures are under reduced pressure by means of individual tubes; gage means being provided for measuring the flow rate of a fluid running through said individual tubes; and said work piece being urged against said supporting plane by means of said reduced pressure, said improvement comprises: providing a number of independent reduced pressure generating devices, each connected with one of said individual tubes, the outputs of said gage means being connected with a comparator, and an output signal of said comparator being criterion for the correct position of said work piece.

4,236,702

PICTURE FRAME MAKING TOOL

Burton G. Keddie, 1705 Wedgewood West, Elm Grove, Wis. 53122

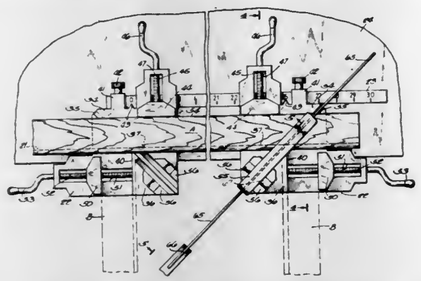
Filed Dec. 6, 1978, Ser. No. 966,845

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—41 **9 Claims**

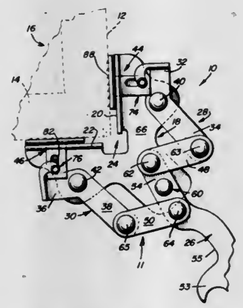
1. A picture frame making tool comprising two frame rail clamps, each having a fixed jaw and a movable jaw, a scale bar on which said clamps are mounted for at least one to be moved relative to the other to establish them in a spaced apart relation determinable by reference to measurement indicia on the scale bar, means for locking the clamps against movement relative to

said scale bar, each of said fixed jaws having a shoulder adapted to be received in the picture receiving groove of a frame rail whereby the rail is clamped at its outside edge by the movable jaw and at the inside edge of its picture receiving groove by the fixed jaw, said scale bar being calibrated to read



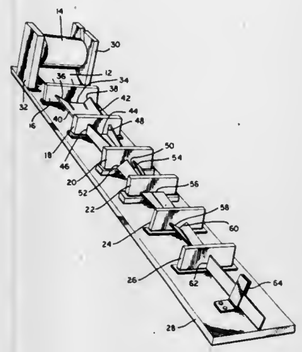
in units of length related to the distance between the corners of the picture receiving groove, each frame rail clamp further comprising a saw guide adapted to guide a saw for a miter cut at the ends of a clamped picture frame rail, said saw guide being disposed on said clamp in offset relation to said shoulder a distance equal to approximately one-half the kerf of the saw.

4,236,703
CONTROLLED PRESSURE DRAW CLAMP
Cleatus G. Stevenson, Box 436, Ashland, Mont. 59003
Filed Aug. 21, 1979, Ser. No. 68,433
Int. Cl.[3] B25B *1/20*
U.S. Cl. 269—41 **11 Claims**



1. In a handle-locking clamp device having a guide body to which an operating handle is pivotally connected, a pair of jaw levers pivotally mounted on the guide body respectively connected by links to the operating handle and a pair of angularly related jaw elements engageable with a workpiece and respectively connected to the jaw levers, the improvement residing in means mounting each of said jaw elements on the guide body for limited displacement, and lost-motion connecting means interconnecting said jaw levers with the jaw elements, respectively, for transmitting clamping forces to the jaw elements, each of said jaw elements having pressure distributing means displaceable relative to said guide body and the jaw lever associated therewith for preventing localized concentration of clamping pressure applied to the workpiece.

4,236,704
PAPER FOLDING APPARATUS
Cyril F. Bell, 4886 Candlewood La., Stone Mountain, Ga. 30088
Filed Apr. 9, 1979, Ser. No. 28,339
Int. Cl.[3] B65H *45/22*
U.S. Cl. 270—94 **2 Claims**



1. Apparatus for longitudinally folding a paper web, said apparatus comprising:

means for holding and longitudinally dispensing a paper web from a roll;

a plurality of discrete die means for longitudinally passing said paper web through die openings in each of said die means, said die openings being in axial alignment with said longitudinally dispensed paper web, and said die openings being shaped such that distinct folds are progressively made in said paper web as said paper web is passed through said die means;

wherein said paper web has a substantially horizontal folding plane, a central portion and longitudinal edges and wherein said plurality of discrete die means comprises:

a first die having slots therein for passing said paper web therethrough, said slots being shaped to fold the edges of said paper web approximately 45° from said plane inwardly toward each other,

a second die having slots therein for passing said paper web therethrough, said slots being shaped to fold the edges of said paper web approximately 90° from said plane inwardly toward each other;

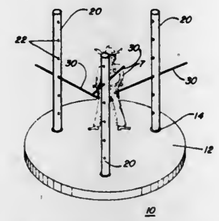
a third die having slots therein for passing said paper web therethrough, said slots being shaped to fold the edges of said paper web approximately 135° from said plane inwardly toward each other;

a fourth die having a slot therein for passing said paper web therethrough, said slot being shaped to fold the edges of said paper web approximately 180° from said plane inwardly toward each other so that said edges overlie said central portion of said paper web to thereby form a folded paper web having longitudinal folded edges;

a fifth die having slots therein for passing said folded paper web therethrough, said slots being shaped to fold said folded edges approximately 45° from said plane inwardly toward each other; and

a sixth die having a slot therein for passing said folded paper web therethrough, said slot being shaped to fold said folded edges approximately 90° from said plane inwardly toward each other such that said folded edges overlie each other.

4,236,705
SCULPTURE HOLDING APPARATUS
Mary D. McCarty, Meridian, Id., assignor to Fun Sculpture, Inc., Boise, Id.
Filed Aug. 28, 1978, Ser. No. 937,076
Int. Cl.[3] B23Q *3/02*
U.S. Cl. 269—100 **2 Claims**



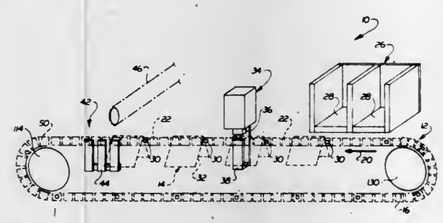
1. Apparatus for supporting an unhardened sculpture comprising:

a substantially circular base provided with a planar top surface having an unobstructed center portion including three post receiving apertures spaced equidistantly from one another adjacent its periphery;

three vertically extending posts, circular in cross section, each rotatably seated in one of said apertures, each of said posts including a plurality of horizontal openings cylindrically cut therethrough and vertically spaced from one another; and

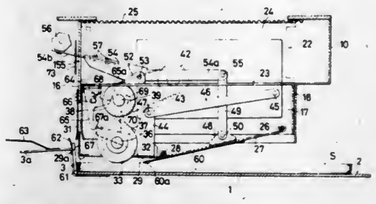
a plurality of cylindrical support members, each of said members adapted to horizontally extend through and slidingly engage one of said openings, for holding the sculpture in place.

4,236,706
SIGNATURE CONVEYOR FOR USE WITH INSERTER AND STITCHER
James R. Schlough, Easton, Pa., assignor to Harris Corporation, Melbourne, Fla.
Filed Apr. 18, 1979, Ser. No. 31,203
Int. Cl.[3] B42B *1/02*
U.S. Cl. 270—53 **12 Claims**



1. An assembly for transporting a signature folded along a line to form two leaves, said assembly comprising a signature support means for moving said signature support along a path, said signature support having a pair of sloping faces which meet to form an apex which is parallel with said path, guide means for varying the orientation of said signature support as it moves along said path between an upright position in which the signature support is centered below the fold of the signature with one leaf of the signature resting on one face of the support and the other leaf resting on the other face of the support and a tilted position in which only a first leaf of the signature rests on a face of the support, a support member having a face extending in the direction of said path, and the second leaf of the signature resting on said face of said support member when said signature support is in the tilted position.

4,236,707
PNEUMATIC SHEET FEEDER
Sakae Fujimoto, Chofu, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Jun. 22, 1978, Ser. No. 918,076
Claims priority, application Japan, Jun. 30, 1977, 52-78349; Jun. 30, 1977, 52-78350; Jun. 30, 1977, 52-78351; Jun. 30, 1977, 52-78352; Jul. 8, 1977, 52-81747; Jul. 8, 1977, 52-81748
Int. Cl.[3] B65H *3/08, 3/06*
U.S. Cl. 271—11 **29 Claims**



4. A suction sheet feeder comprising:

a sheet receptacle on which a stack of sheets is placed,

a vacuum casing disposed above the receptacle and defining a vacuum chamber having a bottom opening,

at least one movable bottom plate adapted to close the bottom opening of the vacuum chamber and having air suction openings formed therein for applying a suction to a sheet in the stack, said movable bottom plate including a first bottom plate having its rear end pivotally mounted on a substantially horizontal first shaft which is disposed on the rear portion of the vacuum casing and adapted to close the rear half of the bottom opening, and a second bottom plate having its rear end pivotally mounted on a substantially horizontal second shaft disposed on the front portion of the first bottom plate and adapted to close the front half of the bottom opening, the second bottom plate being formed with said air suction openings,

an air suction device operable to draw air from the vacuum chamber to establish selectively a negative pressure within the chamber for raising the bottom plate when a sheet is held attracted thereto,

feed means operable to feed the sheet which is held attracted to the bottom plate under the negative pressure, and

drive means operable to selectively operate the feed means.

25. A suction sheet feeder comprising:

a sheet receptacle on which a stack of sheets is placed,

a vacuum casing disposed above the receptacle and defining a vacuum chamber having a bottom opening,

at least one movable bottom plate adapted to close the bottom opening of the vacuum chamber and having air suction openings formed therein for applying a suction to a sheet in the stack,

an air suction device operable to draw air from the vacuum chamber to establish selectively a negative pressure within the chamber for raising the bottom plate when a sheet is held attracted thereto,

feed means operable to feed the sheet which is held attracted to the bottom plate under the negative pressure,

drive means operable to selectively operate the feed means, and

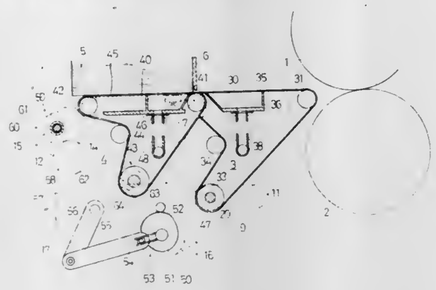
locking means for locking said movable bottom plate at a predetermined position so that the sheets, which are being fed, are not held between the movable bottom plate and the receptacle when the sheets fed by said feed means and the negative pressure within the chamber is released, said locking means including a locking claw pivotally connected with the vacuum casing, an engaging element secured to the bottom plate and a ring carrying at least one unlock pin and adapted to rotate as the drive means is energized.

4,236,708

PNEUMATIC SHEET FEEDING APPARATUS

Masaharu Matsuo, No. 17-3, Higashi Komagata 3-chome, Sumida-ku, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,538
Claims priority, application Japan, Feb. 27, 1978, 53/20890
Int. Cl.[3] B65H *3/12, 7/16*
U.S. Cl. 271—12 7 Claims



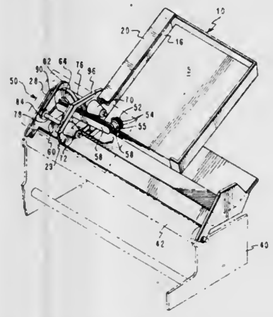
1. A sheet feeding apparatus comprising:
(a) a support;
(b) gate means mounted on said support, said gate means bounding a receptacle space and partly defining a gap, said space being adapted to hold a stack of sheets, and said gap limiting the number of sheets capable of being withdrawn simultaneously from said space in a predetermined direction;
(c) first conveying means for conveying a sheet from said space to said gap in said predetermined direction, said conveying means including
(1) a first suction box offset from said receptacle space in a direction transverse to said predetermined direction,
(2) a first perforated belt guided in a closed loop on said support, a portion of said first belt being interposed between said receptacle space and said suction box,
(3) shifting means for cyclically shifting said portion of said first belt between an operative position of simultaneous engagement with the sheet to be conveyed and said first suction box and a retracted position offset from said operative position in said transverse direction wherein said first belt is substantially cut out of engagement with the stack of sheets,
(4) first drive means for cyclically accelerating and decelerating said first belt in said closed loop between a minimum speed when said first belt portion is in said retracted position and a maximum speed when said first belt portion is in said operative position, wherein said first belt portion is moved by said first drive means in said predetermined direction at said minimum speed when said first belt portion is shifted to said operative position from said retracted position by said shifting means and said first belt portion is moved by said first drive means in said predetermined direction at said maximum speed when said first belt portion is shifted to said retracted position from said operative position by said first drive means,
(5) first suction means for cyclically drawing air from said suction box when said portion of said first belt is in said operative position until said sheet is conveyed by said portion of said first belt to said gap; and
(d) second conveying means for conveying said sheet from said gap in said predetermined direction, said second conveying means including
(1) a second suction box;
(2) a second perforated belt guided in a closed loop on said support, a portion of said second belt extending away from said gap in said predetermined direction in engagement with said second suction box,
(3) second drive means for driving said second belt continuously at a speed substantially equal to said maximum speed, and
(4) second suction means for cyclically drawing air from said second suction box when said portion of said first belt is being shifted from said operative position thereof to said retracted position wherein the sheet is transferred from said first to said second perforated belt when both said first and said second perforated belts travel at substantially equal speeds.

4,236,709

CARTRIDGE SHEET FEED ATTACHMENT

Ronald E. Hunt, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,462
Int. Cl.[3] B65H *3/30*
U.S. Cl. 271—21 8 Claims



1. Sheet feed apparatus comprising:
a sheet stack receptacle holding a stack of sheets in a position in which they are gravitationally urged in the direction in which they are to be fed;
first and second stack restraining means against which said gravitationally urged sheets abut;
means for moving the uppermost sheet from said stack transversely of said direction of feed to a position beyond said first restraining means;
means for freeing said sheet from said second restraining means; and
means for driving said sheet in said direction of feed.

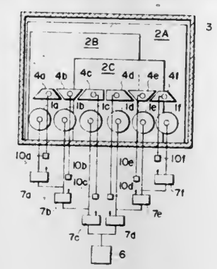
4,236,710

SHEET SUPPLYING APPARATUS

Takeshi Nakamura, and Hiroshi Kushima, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 18, 1978, Ser. No. 907,224
Claims priority, application Japan, May 24, 1977, 52-60148
Int. Cl.[3] B65H *3/03, 7/16*
U.S. Cl. 271—108 4 Claims

1. In a sheet supplying apparatus of the type comprising suction disks for sucking and retaining a sheet, a pressure reducing source for applying a suction pressure to said suction disks, and driving means for driving said suction disks, to thereby supply sheets different in size one after another having no particular ordering of size from the topmost to the bottommost wherein the improvement is characterized in that a plurality of suction disks for retaining a sheet are arranged along a lateral direction of said sheets, and an edge detection means separate and distinct from the suction disks is provided for detecting only an edge of a sheet to be taken out and for disabling each of said suction disks beyond the edge of said sheet to be taken out, wherein said edge detection means comprises a plurality of edge detectors corresponding to each of said suction disks, each edge detector disabling its corresponding suction disk upon detecting the edge of the sheet to be taken out, wherein said suction disks are connected in series so that



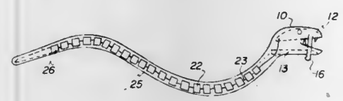
the disabling of one suction disk will result in the disabling of any further suction disks located beyond one suction disk.

4,236,711

MAGICIAN'S WALKING CANE SNAKE

Karl Klingbeil, Rte. 2, Tigertown, Wis. 54486

Filed Aug. 9, 1979, Ser. No. 65,042
Int. Cl.[3] A63J *21/00;* A45B *9/00*
U.S. Cl. 272—8 R 4 Claims



1. A snake shaped magician's cane convertible from a rigid to a non-rigid mode comprising in combination: a body having a central core formed from a plurality of disc elements interconnected by a cable extending through the centers of said discs so that the flat sides of said discs are juxtaposed one to the other, skin means having a memory overlying said core whereby said skin means forms a continuous shroud over said core having a tail at one extremity and a neck at another extremity, and latching means integral with a terminal portion of the cane formed as a snake's head and connected to said cable whereby when said latching means are deployed said cane takes a rigid form and when said latching means are disengaged said cane is non rigid and said memory of said skin means causes said cane to form a substantially coiled snake configuration.

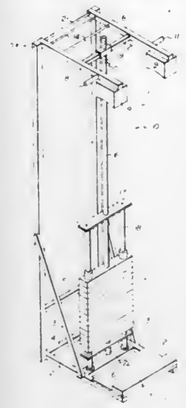
4,236,712

STANDING CALF EXERCISE MACHINE

Lloyd J. Lambert, Jr., c/o President, Dynamics Health Equipment Manufacturing Co., Inc., 1538 College Ave., South Houston, Tex. 77587

Filed Jan. 31, 1979, Ser. No. 7,959
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—118 5 Claims

1. A standing calf machine comprising a base framework, a pair of vertically upstanding rod members extending from and supported by one end of said base framework, a pivotable shaft extending between termini of said rod members remote from said base framework, a pair of elongate parallel bar members extending over said base framework and attached to said pivotable shaft and having downwardly depending shoulder pads remote from said pivotable shaft, a rod extending between said bar members between said shoulder pads and said pivotable shaft, a cylindrical rod member slideably extending downwardly therethrough and provided with means for selectively fastening said last mentioned rod together, said cylindrical rod member terminating in a weight stack having holes therethrough complemental with holes on said cylindrical rod member whereby insertion of a pin therethrough selects the magnitude of weight to be used, said weights constrained in a weight cage defined by upper and lower cross bars transverse to said cylindrical rod member which slideably extends therethrough,



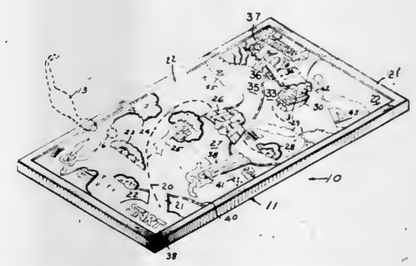
said cross bars interconnected at extremities thereof by a pair of cylindrical rods spaced from, shorter than, and parallel to said cylindrical rod member, said lower cross bar affixed to said base framework.

4,236,713

FROG GAME

Joseph A. Moreno, P.O. Box 568, Saegertown, Pa. 16433

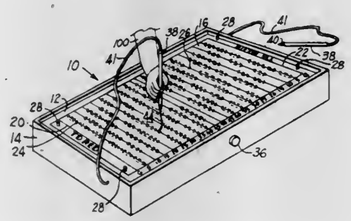
Filed Feb. 26, 1979, Ser. No. 14,972
Int. Cl.[3] A63F *9/14*
U.S. Cl. 273—1 M 1 Claim



1. A game board and character combination comprising,
a generally rectangular board having obstacles thereon,
a first playing piece in the form of a frog and a second playing piece in the form of a snake,
a path extending around said board at simulated ground level,
said frog having a flat lower surface with parallel runners on the bottom,
a first magnet embedded in said frog,
said first magnet having a first polarity at the top and a second polarity at the bottom,
said first polarity adapted to slide over said board,
said magnets being in the form of circular discs,
the polarity of the top of said first magnet and the polarity of the top of said second magnet being alike,
whereby the field of said first magnet repels the field of said second magnet,
said snake having a curl in its tail adapted to be grasped by a hand, and a body,
and a second magnet embedded in the head of said snake adjacent its nose,

said board having a top surface having said path therein,
said body and tail being integral with each other,
obstacles in the form of bridges at said ground level and logs on said board extending above said path,
said first piece being adapted to rest on said path and said second piece being adapted to move adjacent to said first piece whereby said second magnet repels from first magnet and forces the said frog to move over said board surface along said path,
said permanent magnets being so oriented that the like poles in the snake will repel the like poles in the frog,
said board having a transparent cover disposed in a plane spaced above said path, and adapted to have said snake be moved thereover.

4,236,714
GAME APPARATUS
Carl L. Locke, 2413 W. 6th St., Irving, Tex. 75060
Filed Jan. 29, 1979, Ser. No. 7,553
Int. Cl.[3] A63F *7/06*
U.S. Cl. 273—94 R **9 Claims**

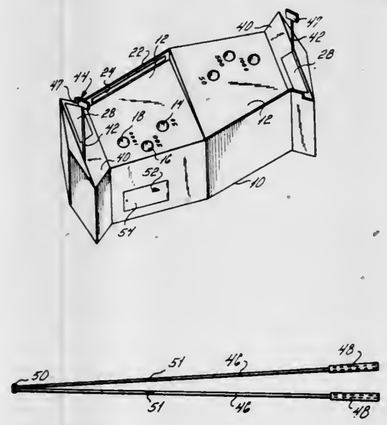


1. A game apparatus to be used with an electrical power supply, comprising in combination:
an electrically conducting game board;
an electrically insulating cover suitable for substantially covering the playing area of the game board, the cover forming a plurality of openings over the playing area when in place, wherein the game board with the cover in place simulates a playing field;
an electrically operable alarm device driven by the electrical power supply;
at least one movable playing piece having an electrically conducting base suitable for making electrical contact with the game board through the openings formed in the cover wherein the base of the at least one playing piece, the game board, and the alarm device are electrically connected to operate the alarm device when the base of the at least ne playing piece makes electrical contact with the game board, and to not operate the alarm device when base of the at least one playing piece touches the cover without making electrical contact with the game board; and
a marker suitable for marking on the cover associated with the at least one playing piece wherein the route followed by the playing piece while it is on the cover is marked on the cover, wherein the electrically conducting base of the playing piece comprises a spring coiled around the marker and extending beyond the tip of the marker whereby the spring must be compressed in order for the marker to mark on the cover.

4,236,715
AMUSEMENT DEVICE OF COATED PAPER AND ADHERABLE OBJECT OF OIL-EXTENDED RADIAL TELEBLOCK COPOLYMER
Terence C. Middlebrook, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sep. 19, 1978, Ser. No. 943,826
Int. Cl.[3] A63B *63/00, 69/40;* A63F *7/30*
U.S. Cl. 273—95 R **6 Claims**

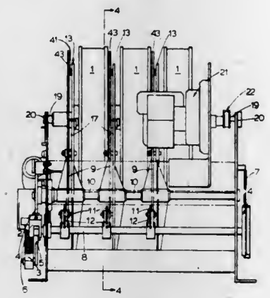
1. An amusement device comprising (1) a shaped object prepared from a blended mixture of butadiene-styrene radial teleblock copolymers and hydrocarbon oil and (2) a target material of sufficient size for the shaped object to adhere thereon, said target material comprised of a material to which said shaped object adheres on impact chosen from a paper base coated with a compound selected from among zinc sulfide, zinc-cadmium sulfide, zinc-magnesium oxide, zinc selenide, cadmium selenide, zinc silicate, calcium-strontium sulfide, indium trisulfide, gallium triselenide, antimony trisulfide, red lead (Pb_3O_4), titanium dioxide, zinc titanate, and zinc oxide.

4,236,716
TWO-PLAYER PIVOTED ROD BALL DROP GAME
Melvin O. Douglas, Jr., 20-21K Richman Plaza, Bronx, N.Y. 10453
Filed Apr. 25, 1979, Ser. No. 33,314
Int. Cl.[3] A63F *7/02, 7/24, 7/26*
U.S. Cl. 273—110 **4 Claims**



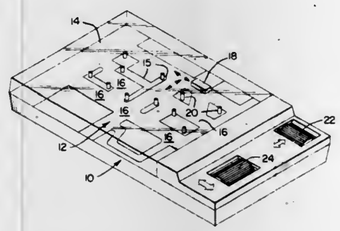
1. Game apparatus comprising
a box-like housing having a top providing two oblong playing fields extending from opposite sides of the transverse center thereof,
each field having a lateral sloping gradually downwardly and oppositely toward a side wall of the housing exposed by such slope,
a plurality of scoring holes in each field on the higher areas thereof,
a pair of cue sticks located above each of said fields, and
means hinging together each of said pair of said cue sticks, and connecting each of said pair in a respective field,
said cue sticks having corresponding transverse shallow grooves for holding a ball thereon along the length of the sticks, so that the ball may be attempted to be dropped in one of said holes.

4,236,717
GAME MACHINES
Michael Wichinsky, Las Vegas, Nev., assignor to Bell-Fruit Manufacturing Co. Limited, Nottingham, England
Filed Oct. 5, 1978, Ser. No. 948,657
Claims priority, application United Kingdom, Oct. 11, 1977, 42198/77
Int. Cl.[3] A63F *5/04*
U.S. Cl. 273—143 R **12 Claims**



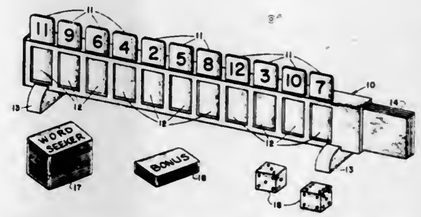
1. A gaming machine comprising a set of co-axial rotatable reels each of which carries a plurality of symbols around its periphery; a display window in which each of said reels displays at least one symbol when stationary; a lever operated mechanism which includes a lever operable by a player and through which the work done by a player in operating said lever is transferred to the reels so as to spin them; electrical powered drive means including (a) an electrical motor driven shaft on which the reels are rotatably mounted and individual slipping clutches through which the reels are frictionally coupled to said shaft so as to be spun thereby so that the reels are spun by the lever operated mechanism and continue to be spun by the electrical powered drive means; and stop means associated with the lever and electrical powered drive means and which operates either to stop or release the reels for spinning.

4,236,718
AMUSEMENT DEVICE
Takashi Kaga, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan
Filed Dec. 30, 1976, Ser. No. 755,946
Claims priority, application Japan, Jan. 22, 1976, 51-6189[U]
Int. Cl.[3] A63F *9/06*
U.S. Cl. 273—153 R **1 Claim**



1. An amusement device, comprising:
a playing surface provided with a path;
an object provided with a magnet for movement along said playing surface;
a first member mounted to move in one direction below said playing surface;
a second member mounted to move in another direction below said playing surface;
means connecting said first and second members permitting each of said members to move independently of the other;
a magnet, means mounting said magnet to said first and second members;
means controlling the movement of said first and second members;
wherein said means connecting said first and second members comprises a slot provided within one of said members, a groove provided in the other of said members, and an element having a portion thereof extending through said slot into said groove;
wherein said means moving said first and second members comprises control knobs mounted for rotation, continuous flexible bands mounted for movement in directions corresponding to the direction of movement of said members, said control knobs engaging said bands such that as the knobs are manually turned, said bands rotate, and means connecting said members to said bands such that as said bands rotate said members move; and
wherein said bands are provided with continuous racks of teeth, said control knobs are provided with shafts provided with teeth engaging said racks of said bands, and said means connecting said members to said bands comprise abutments formed on said bands extending into slots formed at the ends of said members.

4,236,719
COMPETITIVE WORD GAME
Thomas R. Kerr, P.O. Box 1911, St. Augustine, Fla. 32084
Filed Aug. 20, 1979, Ser. No. 68,121
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—265 **6 Claims**



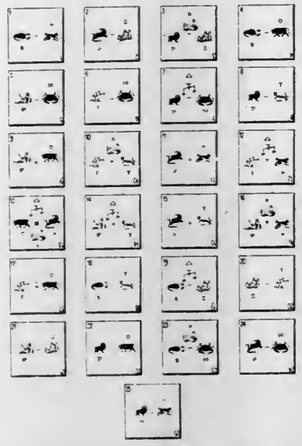
1. A game involving the spelling of words and played competitively by two to four participants, comprising:
(a) a series of elongated word cards, each having a word printed on the front face thereof,
(b) multi-apertured holders adapted to insertively accommodate a number of said word cards,
(c) elongated blank cards adapted to cover said word cards,
(d) a multitude of flat elongated shutters adapted to be vertically positioned to separately occlude individual apertures of said holders, said shutters having numerical indicia adjacent the uppermost ends thereof,
(e) a first series of playing pieces serving to expedite the playing of the game,
(f) a second series of playing pieces which facilitate score-keeping, and
(g) number-selecting means,
the spacing of the letters comprising the word on each word card being such that each letter is centered behind an aperture of said multi-apertured holder when said word card is inserted into said holder.

4,236,720

TILE OR CARD GAME

Jean-Claude M. J. Belony, 2803 Keith St., Marlow Heights, Md. 20031

Filed Feb. 23, 1979, Ser. No. 14,724
Int. Cl.³ A63F 9/20
U.S. Cl. 273—292 **23 Claims**



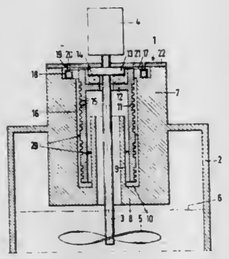
1. A game apparatus for playing a game having the mode N-S, wherein N and S are integers, said apparatus comprising at least one set of playing pieces, each playing piece divided into a plurality of sections and each section bearing one of a number of preselected designs, with no piece bearing more than one of a particular design, said at least one set comprising a first plurality of two-section pieces, a second plurality of three-section pieces and a third plurality of four-section pieces, each piece also associated with a number, the number associated with each piece, number of sections and designs being selected so that the sum of the numbers associated with N pieces having one and only one design in common is S.

4,236,721

SEALING BUSHING

Theodorus A. F. Pennock, The Hague, Netherlands, assignor to B.V. Neratoom, The Hague, Netherlands

Filed Feb. 22, 1979, Ser. No. 14,325
Claims priority, application Netherlands, Mar. 1, 1978, 7802284
Int. Cl.² F16J 15/42
U.S. Cl. 277—14 V **9 Claims**



1. A sealing bushing for a member rotatable about a vertical axis and extending through a wall of a housing, said bushing including a fixed sleeve connected to the wall; a shaft of the rotatable member, the fixed sleeve concentrically surrounding said shaft; a rotatable sleeve having its upper end fixedly connected to said shaft and being concentrically received in said fixed sleeve, the connection between the upper end of the rotatable sleeve and said shaft being impermeable to liquid and gas, and the outer circumference of the rotatable sleeve connected to the shaft and the inner circumference of the fixed sleeve connected to the wall being dimensioned to define a small radial clearance between them; and means for maintaining a sealing liquid under pressure to a desired level in said small clearance during the rotation of said member, wherein the improvement comprises:

an annular chamber defined between the rotatable sleeve and the fixed sleeve adjacent the upper end of said small clearance;

a movable sealing member positioned in said space; and

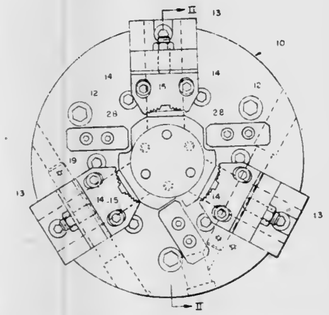
a second small clearance above said chamber between the rotatable sleeve connected to the shaft and the wall of the housing, which second clearance can be sealed by said movable sealing member.

4,236,722

DOUBLE ACTING CAM OPERATED CHUCK COLLET

Merle Felker, Traverse City, Mich., assignor to Sheffer Collet Company, Traverse City, Mich.

Filed May 16, 1979, Ser. No. 39,389
Int. Cl.³ B23B 31/16
U.S. Cl. 279—118 **11 Claims**



1. A chuck having a main body portion and a plurality of jaw support rockers arranged in a circle concentric with the axial center of said chuck; first means pivotally mounting each of said rockers adjacent the outer radial edge of said chuck for radial pivotal movement; each of said rockers having a leg extending axially rearwardly therefrom; a radially extending lever for each of said rockers; second means mounting each of said levers adjacent its radially outer end for pivotal movement axially of said chuck; an actuator member mounted for axial movement and connected to the radial inner end of each of said levers; each of said rockers having an arm extending axially and rearwardly from said first pivotal mounting means; each lever having a camming finger engaging a leg of one of said rockers; when the rocker is in work clamping position said point of contact between said leg and camming finger and the point of connection between the inner end of said lever and said actuator and the point of pivotal mounting of said lever being substantially aligned and forming a mechanical lock against work release movement of said rockers.

4,236,723

HIP CART

John A. Lemmon, 3049 Halcyon Ct., Berkeley, Calif. 94705

Filed Oct. 6, 1978, Ser. No. 949,353
Int. Cl.³ B62B 1/12
U.S. Cl. 280—1.5 **6 Claims**

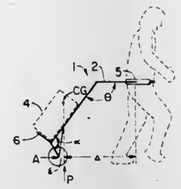
1. A cart comprising:

(a) a load support frame having a proximal end and a distal end and comprised of two generally upright, spaced, parallel, adjustable-length rods and a plurality of lateral spacers fixedly mounted between said upright rods;

(b) means for supporting a load on said frame;

(c) a pair of wheels mounted by an axle on the distal end of said frame;

(d) a pair of spaced parallel rigid arms adjustably mounted at the proximal end of said frame at an adjustable angle θ to said frame, said arms having a proximal end and a distal end;



(e) means for connecting the proximal ends of said arms to the waist of a person,

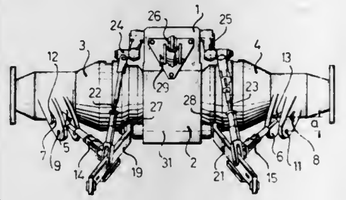
so that for a given load, the lengths of said rods as well as said angle θ may be adjusted to cause the center of gravity of said cart plus its load to lie vertically above a point located between said axle and said person, to cause said arms to extend in a generally horizontal direction, and to cause the lateral distance between said point and said axle to be small relative to the lateral distance between said point and said person.

4,236,724

STABILIZER FOR TRACTOR HITCH

Dieter Schillings, Neuss, Fed. Rep. of Germany, assignor to International Harvester Company, Chicago, Ill.

Filed Dec. 1, 1978, Ser. No. 965,541
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 7737875[U]
Int. Cl.³ B60D 7/00
U.S. Cl. 280—460 A **2 Claims**



1. A stabilizer for the lower link of a tractor hitch comprising:

a stabilizer bar pivotally connected to said tractor;

a bore in said stabilizer bar;

an annular sleeve defining inwardly projecting collars inserted in said bore;

a duct formed adjacent said bore;

an inwardly drawn torus formed in said sleeve complementary to said duct;

a clamping pin positioned within and engageable with both said duct and said torus to clamp said sleeve to said stabilizer;

a cylindrical bushing extending through said sleeve and projecting beyond each side thereof;

a rubber element carried between and conforming to said sleeve and said bushing;

a pair of plates attached to said link and spaced apart a distance substantially equal to the length of said bushing; and

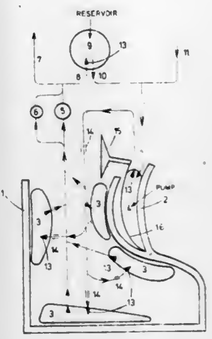
a pin insertable through said plates and said bushing to effect an articulation and pivotal connection between said link and said stabilizer bar.

4,236,725

DYNAMIC DEVICE FOR HOLDING THE FOOT AND THE LEG IN POSITION IN A RIGID STRUCTURE

Jean-Roger Bataille, 20, rue du Commandant Rene Mouchotte, Paris, France

Filed Oct. 23, 1978, Ser. No. 953,602
Claims priority, application France, Oct. 28, 1977, 77 32577
Int. Cl.³ A63C 9/086
U.S. Cl. 280—611 **13 Claims**



1. A device for fixing the foot and the leg to a utilization member, comprising;

a base member detachably connected to the utilization member,

framework means extending from the base member and adapted to receive the person's foot,

expandable chock means mounted to the interior of the framework to engage and clamp the foot,

and pump means carried by the framework and in communication with the chock means to cause expansion of the chock means,

said pump means comprising a feeler member at the top of the framework adapted for engagement with the leg above the foot and supported to receive leg forces in a direction substantially parallel to the base member,

the motions of the leg onto the feeler member operating the pump means to expand the chock means for fixing the foot and the leg in position within the framework.

4,236,726

HYDRAULIC SUSPENSION SYSTEM FOR AN INDIVIDUAL VEHICLE WHEEL

Theodore C. Henter, Jr., 1372 - 49 Ave., NE., St. Petersburg, Fla. 33703

Continuation-in-part of Ser. No. 823,057, Aug. 9, 1977, Pat. No. 4,133,555. This application Jan. 8, 1979, Ser. No. 2,047
Int. Cl.³ B60G 11/26
U.S. Cl. 280—709 **4 Claims**

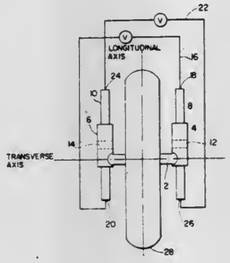
1. In a vehicle having a wheel mounted for rotation upon a transversely extending axle, the improvement of a suspension system between said wheel and a frame which is operable to maintain said axle perpendicular to the longitudinal plane of rotation for said wheel, regardless of axle movement with respect to said frame, wherein said improvement comprises:

(A) a first cylinder affixed to first end of said axle, a second cylinder affixed to the second end of said axle, wherein said wheel is mounted between said first and second ends and each of said cylinders extend vertically and are mutually parallel to themselves and said longitudinally extending plane;

(B) wherein each of said cylinders includes therewith a

double acting piston, and each piston is interconnected to said vehicle frame through a piston rod, wherein there is defined an upper and a lower pressure chamber within each cylinder each of said piston rods extend both upwardly and downwardly outside of each of said cylinders, and the distal ends of each piston rod are respectively connected to said vehicle frame; and

(C) cross-over means supply a pressure medium from the upper side of one cylinder-piston unit to the lower side of the cylinder-piston unit on the opposite side of said wheel,



each of said piston rods including means for fluid communication to said crossover means, whereby vertical movement of said transverse axis is permitted, yet said axle is not permitted to become skewed with respect to said longitudinal plane of rotation for said wheel, since a vertical movement of the axle causes a pressure medium transfer from the upper of one cylinder, to the bottom of the cylinder at the opposite side of said axle, whereby the wheel is maintained in an alignment with respect to a longitudinal plane of said vehicle regardless of relative axle movement.

4,236,727

SAFETY TOE UNITS FOR SKI BINDINGS

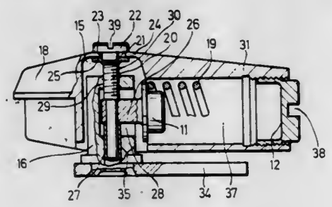
Ralf Storandt, Leonberg, Fed. Rep. of Germany, assignor to Vereinigte Baubeschelagfrabriken Gretsch & Co. GmbH, Leonberg, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,086

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757393

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—629 **28 Claims**



1. A safety toe unit for a ski binding, the toe unit comprising a base portion, a toe clamp mounted from said base portion and comprising at least a body portion and a horizontally disposed ledge fixed relative to the body portion for locating the upper surface of the sole of a ski boot, said toe clamp having first and second abutment surfaces and the base portion having first and second complementary abutment surfaces, respectively cooperable with respective ones of said first and second abutment surfaces to define first and second pivot axes substantially vertically disposed one to either side of the longitudinal axis of the toe unit, spring means operative between first and second spring abutments associated with the toe clamp and base portion respectively for biasing the said abutment surfaces on the toe clamp and the base portion into contact with each other, the unit being adapted to allow sideways displacement of the toe clamp relative to the base portion about either of said first and second pivot axes against the force of said spring means, a vertically disposed adjustment screw for adjusting the vertical position of the toe clamp relative to the base portion, and means locating the first and second spring abutments and the toe clamp including said ledge for joint movement relative to the base portion on adjustment of said vertically disposed adjustment screw.

4,236,728

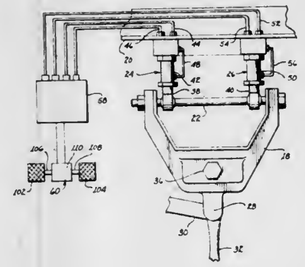
APPARATUS FOR CASTER ADJUSTMENT

Jene A. Policy, 2927 N. 39th Ave., Phoenix, Ariz. 85019, and Peter A. Giuliano, 3012 W. Heatherbrae Dr., Phoenix, Ariz. 85017

Filed Nov. 13, 1978, Ser. No. 960,481

Int. Cl.³ B60P *1/00*

U.S. Cl. 280—661 **14 Claims**



1. Apparatus employed in combination with each front wheel of a vehicle for adjusting the angle of caster of the front wheel while the vehicle is in motion; said apparatus comprising in combination:

(a) a control arm for supporting in part the knuckle spindle for the wheel;

(b) means for repositioning said control arm to define the caster of the wheel at any angle between a predetermined maximum angle of positive caster and a predetermined maximum angle of negative caster, said repositioning means being attached to said control arm as a part thereof during normal operation of the vehicle; and

(c) means for actuating said repositioning means under control of the driver irrespective of whether the vehicle is stationary or in motion;

whereby, the angle of caster may be varied to suit changing road and driving conditions.

4,236,729

SEATBELT SYSTEM

Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1979, Ser. No. 37,160

Claims priority, application Japan, Aug. 18, 1978, 53-114161[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **12 Claims**

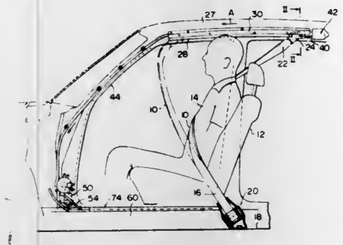
1. A seatbelt system which can automatically fasten and unfasten a belt about a passenger comprising:

a flexible tape provided with a plurality of openings along its length which is coupled to one end of said passenger restraining belt;

a toothed sprocket wheel provided for engaging with said plurality of openings in said flexible tape;

a driving means for driving said sprocket wheel and for causing said belt to approach or recede from a passenger via said flexible tape;

a receiver region formed in a space defined by an upper portion of an inner rocker panel and an inner surface of a joint of welding between the inner rocker panel and an outer rocker panel; and



a divider provided in the receiver region for dividing the receiver region into a compartment for inserting wire harnesses and a compartment for inserting said flexible tape.

4,236,730

SEATBELT SYSTEM

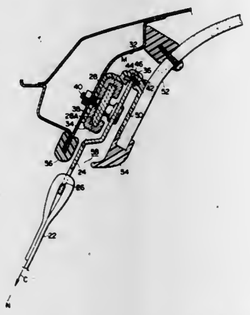
Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1979, Ser. No. 37,153

Claims priority, application Japan, Dec. 11, 1978, 53-172001

Int. Cl.³ A62B *35/00*; B62D *21/18*

U.S. Cl. 280—804 **9 Claims**



1. A seatbelt system comprising a guide rail which is fastened to an interior of a motor vehicle body, a runner piece which is supported by said guide rail and which moves along said guide rail in a direction of the length of said guide rail, an anchor plate which is coupled to said runner piece at one end portion and which anchors one end of a passenger restraining belt at a belt anchoring portion of said anchor plate and a driving mechanism which causes said anchor plate to move along said guide rail, said seatbelt being characterized in that a central portion of said anchor plate is bent such that the one end portion and the belt anchoring portion of said anchor plate are parallel but not in line and the belt anchoring portion of said anchor plate is positioned beneath the guide rail so that said belt anchoring portion of said anchor piece and a portion of said runner piece which is directly supported by said guide rail lie on a straight line which coincides with a line of action of belt tension applied to said passenger restraining belt during a vehicular emergency.

4,236,731

CONTINUOUS STATIONERY ASSEMBLY AND METHODS OF MAKING BINDERS, FOLDER COVERS AND THE LIKE FROM THE ASSEMBLY

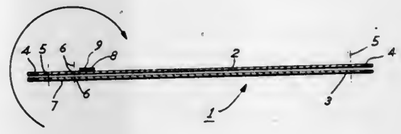
Per Hektoen, Osteras, Norway, assignor to Moore Business Forms, Limited, London, England

Filed Feb. 22, 1979, Ser. No. 14,218

Claims priority, application United Kingdom, Feb. 23, 1978, 07264/78

Int. Cl.³ B41L *1/20*

U.S. Cl. 282—11.5 A **8 Claims**



1. An improved, continuous stationary assembly having an assembly length in a longitudinal direction and an assembly width in a transverse direction perpendicular to said longitudinal direction adapted to be passed longitudinally, in continuous form, through a print unit to have information applied thereto and also adapted to be readily made into a binder, folder cover and the like comprising:

at least two continuous webs, superimposed one on top of the other, so that one web is a front web and the other web is a rear web;

each of the webs having: two longitudinally extending side edges and a web width in the transverse direction defined between the two side edges, the web width of one of said webs matching said assembly width, two longitudinally extending side marginal portions each defined adjacent a side edge and extending longitudinally therealong, a longitudinally extending line of marginal feed apertures in one side marginal portion, a longitudinally extending line of tear off perforations adjacent said one side marginal portion and extending therealong disposed nearer the other side marginal portion than the line of marginal feed apertures;

said front web and said rear web superimposed one on top of the other with the line of marginal feed apertures of the front web superimposed on top of the line of marginal feed apertures of the rear web and the line of tear off perforations of the front web superimposed on top of the line of tear of perforations of the rear web;

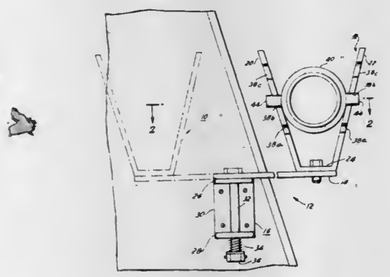
a longitudinal extending line of adhesive being applied to and between the front and rear webs to secure the front and rear webs together, with the line of adhesive being disposed adjacent to the lines of tear off perforations and nearer the other side marginal portions than the lines of tear off perforations; and

a longitudinally extending line of weakening in each of the front and rear webs, with the lines of weakening being disposed adjacent to the line of adhesive, nearer the other side marginal portions than the line of adhesive and being superimposed one on top of the other such that the rear web is foldable about and relative to the lines of weakening over the front web so as to form a binder, folder cover and the like and such that a longitudinal marginal portion of the webs, which is defined as the portions of the webs between the lines of weakening and the lines of tear off perforations and which contains the line of adhesive, constitutes a flap extending between the webs for supporting an insert sheet when the rear web is folded about the front web so as to form a binder, folder cover and the like.

4,236,732
HEAT-SENSITIVE RECORD MATERIAL
Takeshi Murakami, Osaka; Yoshitaka Oeda, Nara; Hiroo Hayashi, Kyoto, and Teruo Nakamura, Mabikino, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Japan
Filed Oct. 12, 1977, Ser. No. 841,396
Claims priority, application Japan, Oct. 16, 1976, 51-123980
Int. Cl.³ B41L 1/20; B32B 5/16
U.S. Cl. 282—27.5 9 Claims

1. In a heat-sensitive record material comprising a base sheet having a color developing layer which includes finely divided particles comprising colorless chromogenic material and finely divided particles comprising acceptor which is reactive with said colorless chromogenic material to develop a color the improvement in at least one of said two kinds of finely divided particles further including a heat fusible material comelted with said colorless chromogenic material or said acceptor to form a co-melt material, said heat fusible material having a melting point within the range of 60° C. to 200° C. and being capable of dissolving at least one of said colorless chromogenic material and said acceptor therein when melted.

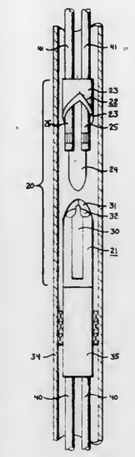
4,236,733
FIRE HOSE COUPLING DEVICE
Thomas P. Zambrano, 892 Palerno Rd., St. Augustine, Fla. 32084
Filed Sep. 11, 1979, Ser. No. 74,310
Int. Cl.³ F16L 55/00
U.S. Cl. 285—23 6 Claims



1. A fire hose coupling device for fixedly positioning and holding in place a set of opposed lugs on one coupling member of a firehose connection to permit a quick coupling or uncoupling of the firehose connection, the device comprising:
a channel member mounted on a fixed support;
said member having a pair of legs connected to a base portion;
each of said legs having along at least corresponding side edges at least one cut out portion whereby the opposed lugs of one member are fixedly held in position permitting the other member of the connection to be rotated with respect to the first member.

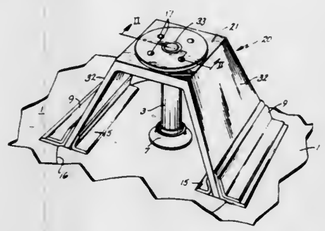
4,236,734
WELL TUBING COUPLING SYSTEM
Mansour Ahangarzadeh, Bedford, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Jul. 20, 1978, Ser. No. 926,277
Int. Cl.² F16L 39/00
U.S. Cl. 285—26 12 Claims

1. A round tubular well flow conductor coupling system comprising: first fluid coupling means having longitudinal flow passages; second fluid coupling means adapted to be releasably coupled with said first fluid coupling means having longitudinal fluid flow passages sized and positioned to communicate with said flow passage means in said first coupling means and being connectible with a flow conductor; a longitudinally extending guide arm having an inside longitudinal guide surface secured on and extending longitudinally beyond the free end of one of said fluid coupling means; and a longitudinally extending outside guide surface shaped to mate with said guide



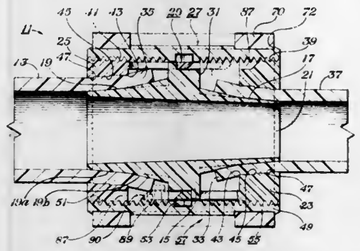
arm guide surface defined along the other of said fluid coupling means aligned parallel with and laterally spaced from said longitudinal flow passages means in said fluid coupling means.

4,236,735
FITMENT FOR A VESSEL
John D. Allen, 5005 Zahm Rd., Belding, Mich. 48809
Filed May 1, 1978, Ser. No. 901,416
Int. Cl.³ F16L 13/04
U.S. Cl. 285—114 13 Claims



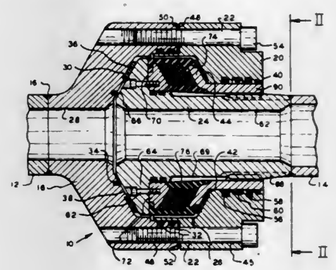
1. A fitment for a vessel wall having filaments and a bonding matrix for binding the filaments together, said fitment comprising:
a top wall for receiving a flange of a hose or the like to be coupled to the vessel wall, said top wall having a pair of generally opposing rectilinear sides, said top wall having a pipe opening;
a pair of generally planar, trapezoidally shaped support legs extending downwardly from said generally opposing sides to form an obtuse angle between said top wall and each of said legs and supporting said top wall at a position spaced from the vessel wall, the area between said legs being readily accessible and laterally bounded by substantially only said legs thereby facilitating connection of said support legs to the vessel wall and facilitating cleaning of the vessel wall and said fitment in the area between said legs; and
a pipe means for carrying a substance from said pipe opening to the vessel wall and into the interior of the vessel, said pipe means being attached to said top wall at said pipe opening.

4,236,736
HOSE COUPLING
Robert V. Anderson, Fort Worth, Tex., assignor to Turnbuckle Products Corporation, Fort Worth, Tex.
Filed May 1, 1978, Ser. No. 901,493
Int. Cl.³ F16L 33/22, 41/00
U.S. Cl. 285—150 40 Claims



1. In an accessory for a resilient hose in which an end of the hose is to be connected with a supplementary fitting, the improvement comprising:
a. a centerpiece sealingly connected with the supplementary fitting and having a bore penetrating longitudinally therethrough and having concentric about the adjacent at least one end of the bore an inverted frusto conical section adapted to sealingly receive on its exterior frusto conical surface the interior of the end of the hose and to support the end against a longitudinal tightening force by a gripper means;
b. at least one gripper means disposed concentrically about said inverted frusto conical section in receiving position with sufficient annular clearance to receive the end of the hose for insertion over said inverted frusto conical section; said gripper means having a plurality of shoulders of respectively monotonically decreasing radii longitudinally thereof from its end facing said centerpiece toward its other end, each shoulder having its same radius over a predetermined distance longitudinally, such that the distance between said shoulder and said exterior frusto conical surface decreases as said gripper means is moved longitudinally of said centerpiece so as to embed in and grip the resilient hose and retain it in place on said centerpiece when said gripper means is moved longitudinally of said inverted frusto conical surface with the hose in place; said gripper means having a first portion of a longitudinal moving means for moving said gripper means longitudinally of said inverted frusto conical section responsive to relative rotational motion between said gripper means and a surrounding turnbuckle means;
c. turnbuckle means surrounding said gripper means; said turnbuckle means having a second portion of said longitudinal moving means for moving said gripper means longitudinally of said inverted frusto conical section responsive to relative rotational motion between said gripper means and said turnbuckle means; said turnbuckle means having a second portion of longitudinal moving means complementarily engaging said first portion of said longitudinal moving means; said centerpiece being contained within said turnbuckle means so as to prevent relative longitudinal motion therebetween and permitting relative rotational motion therebetween; and
d. rotation prevention means cooperating with said gripper means and said turnbuckle means such that said gripper means is prevented from rotating with respect to said turnbuckle means; said rotation prevention means being adapted to accommodate relative longitudinal movement between said gripper means and said centerpiece;
such that after the end of the hose is inserted interiorly of said gripper means and over said inverted frusto conical section, said turnbuckle means can be rotated to move said gripper means longitudinally thereof and grippingly embed in and hold the end of the hose sealingly connected with said inverted frusto conical section.

4,236,737
CONDUIT SWIVEL JOINT
John T. Herbert, Horton, and Larry R. Nixon, Michigan Center, both of Mich., assignors to Aeroquip Corporation, Jackson, Mich.
Filed Sep. 28, 1978, Ser. No. 946,707
Int. Cl.³ F16D 3/12; F16L 19/04, 21/00, 27/00
U.S. Cl. 285—234 10 Claims

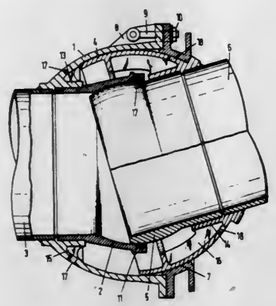


1. A conduit swivel joint comprising, in combination, a first body having an axial passage, a second body having an axial passage coaxial with said first body passage, conduit attachment means defined on said bodies for attaching conduits thereto in communication with the associated passage, and support means interconnecting said bodies for relative rotative movement about the passage axes thereof comprising a pair of annular axially spaced collars having an elastomeric material bonded thereto, a plurality of annular ring members in axially spaced relationship embedded into said elastomeric material intermediate said collars, said support means permitting limited relative rotative movement by deformation of said elastomer material and including rotational bearing means permitting bearing supported relative rotative movement of said bodies, and torque regulating means mounted upon said first body regulating the torque required to produce bearing supported relative rotative movement of said bodies after the initial rotative deformation of said elastomer material.

4,236,738
BALL JOINT FOR TWO PIPE ENDS
Martinus Poot, Vlaardingen, Netherlands, assignor to Machinefabriek Kreber B.V., Vlaardingen, Netherlands
Filed Apr. 11, 1978, Ser. No. 895,362
Claims priority, application Netherlands, Apr. 15, 1977, 7704152
Int. Cl.³ F16L 27/04
U.S. Cl. 285—263 4 Claims

1. A joint for connecting the ends of a pair of pipes comprising a first assembly secured to the end of one said pipes comprising an inner ring member having an outer spherical surface, and an outer ring member extending axially over and spaced radially from first ring member and having an outer spherical surface, a second assembly secured to said other pipe comprising an inner annular body member having an inner spherical surface corresponding to the surface of said inner ring member and an outer annular body member extending axially over and radially spaced from said inner body member and having an inner spherical surface corresponding to the outer surface of said outer ring, said ring members and said body members being insertable within the other with the corresponding surfaces in slidable engagement and defining an annular chamber therebetween and seal means positioned between said inner ring member and said inner body member, apertures formed in at least one of said outer ring member and outer body member opening said annular chamber to atmosphere, and an annular

clamp having a spherical inner surface corresponding to the surface of said outer ring member and means for securing of said clamp to said outer body member to wedge said outer ring member and outer body member against axial movement, and



to cause the slidably engaging surfaces of said inner ring member and said inner body member to sealingly engage said seal means to form a sealed connection against the pressure of the fluid in said pipes.

4,236,739

THREAD INSERTER AND BRAKING MECHANISM FOR A KNOTTING APPARATUS USED ON SPOOLING MACHINES

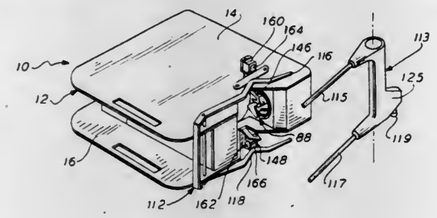
Kresimir Mista, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,586

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741786

Int. Cl.³ B65H *69/04*

U.S. Cl. 289—2 **6 Claims**



1. In a knotting apparatus for spooling machines having, a housing affixed to said spooling machines and operatively coupled thereto, thread lifting means, thread guides, and a pair of binding heads, the improvement comprising:

(a) thread inserter and braking means having a pair of arms disposed external to and on either side of said housing means perpendicular to the run of the threads and operatively coupled to said spooling machine, said thread inserter and braking means inserting a pair of threads by interacting therewith and exerting a pressure thereagainst, into said thread guides; and

(b) braking means disposed on either side of said housing for cooperating with said thread inserter and braking means and retaining said thread therebetween overcoming pressure exerted against said threads by said lifting means until said threads are released from said binding heads and the threads are tightly knotted.

4,236,740

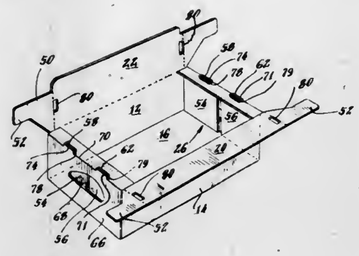
FILE BOX

John F. Sorenson, St. Paul, and Frank W. Locke, Minneapolis, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 9, 1979, Ser. No. 55,971

Int. Cl.³ B65D *5/30, 5/22*

U.S. Cl. 229—36 **6 Claims**



1. A box comprising:

a bottom wall having a first and second pair of opposed, parallel edges,

a side wall connected to each of the first pair of opposed edges of said bottom wall,

an end wall connected to each of the second pair of opposed edges of said bottom wall, each of said end walls including

a pair of abutting end panels, each of said abutting end panels being connected to an edge of one said side walls, and a third end panel connected to one of said second pair of opposed edges of said bottom wall overlapping said pair of abutting end panels,

a top flap for forming a top wall for said box connected to an edge of each of said side walls,

the third end panel of each end wall including an opening,

each of said top flaps including a bendable tab extension extending from opposite ends thereof received within said opening in each of said third panels of each end wall, and

said end panels having means therebetween for locking said end panels together,

said locking means including

an upright tab on the top edge of each of said pair of abutting end panels,

a pair of spaced openings for receiving said upright tabs cut in said third end panel along a foldline spaced intermediate spaced transverse edges thereof, and

each of said top flaps including

an opening cut therein adjacent each end thereof for also receiving an upright tab of one of said pair of abutting end panels.

4,236,741

METHOD AND MEANS FOR DISPOSING OF ANIMAL WASTE

Harry W. Emme, Jensen Beach, Fla., assignor to Clifton T. Hunt, Jr., Charlotte, N.C., a part interest

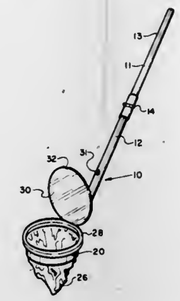
Filed Dec. 8, 1978, Ser. No. 967,881

Int. Cl.³ A01K *29/00*

U.S. Cl. 294—1 BB **6 Claims**

1. Apparatus for disposing of animal waste comprising a handle, a support frame fixed to one end of the handle, a disposable bag having a closed end and an open end carried by said frame, means releasably supporting the bag with its open end around the frame and its closed end beneath the frame, said handle including an operative end portion and a free end portion, means pivotally connecting the said portions of the handle at their proximate ends, said means releasably supporting the bag comprising a rim extending above the support frame and about the open end portion of a bag carried by said frame and a retaining ring extending about the rim and frictionally pressing the open end portion of the bag against the outer

surface of the rim, a cover pivotally mounted on the handle and movable into closed position covering the open end of the



bag, and means for moving the cover into open position responsive to unfolding the handle toward its extended position.

4,236,742

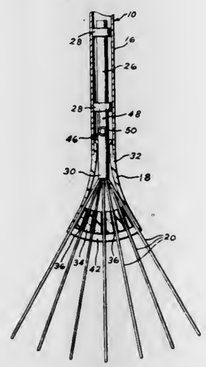
RETRACTABLE RAKE

Otis Florence, 809 Iroquois Ave., Louisville, Ky. 40214

Filed Jun. 4, 1979, Ser. No. 45,271

Int. Cl.³ A47F *13/06*

U.S. Cl. 294—24 **9 Claims**



1. A retractable rake comprising:

a. an elongated handle having an upper handgrip portion and a lower hollow shank portion;

b. the said shank portion having an enlarged hollow head fitted on the lower end thereof, the head having a partition with a series of diverging, elongated slots therein for receiving flexible tines therethrough;

c. the shank portion supporting therein a movable plunger that carries a plurality of flexible tines that in a first extended position diverge outwardly from the enlarged head so the tips are widely spaced from each other and they are disposed generally within a common plane, the said elongated slots serving to reinforce the tines against flexing in their first extended position;

d. and manual actuator means joined to the plunger and accesssible on the outside of the shank portion for retracting the plunger into the shank portion so as to retract the flexible tines and telescope them into a second retracted position substantially into the head and shank portion.

4,236,743

BOTTLE CARRIER

Earl W. Fox, 336 W. Valencia, Apt. B, Burbank, Calif. 91506

Filed Sep. 21, 1979, Ser. No. 77,558

Int. Cl.³ A47J *45/00*

U.S. Cl. 294—27 H **7 Claims**



1. A bottle carrier comprising:

a pair of handle parts defining a recess conforming substantially to the neck and lip of a bottle to be carried and an entrance portion;

means pivotally connecting said handle parts together whereby said entrance portion varies in size as a function the angle between said handle parts;

said entrance portion having a size larger than the largest size of the lip and neck portion of the bottle only at a limited angle range;

said handle parts including grip portions which cooperate when said handle parts are pivoted together to define a grip for carrying by hand; and

said handle part grip portions being spaced too great for carrying apart when said handle parts are pivoted to said limited angle range.

4,236,744

GRIPPING-LIFTING APPARATUS

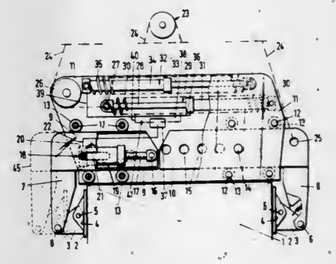
Jannes Reinders, Loppersum, Netherlands, assignor to Jannes Reinders & Noord-Nederlandache Machinefabriek B. V., Netherlands

Filed Oct. 26, 1978, Ser. No. 954,861

Claims priority, application Netherlands, Oct. 31, 1977, 7711930

Int. Cl.³ B66C *1/42*

U.S. Cl. 294—88 **7 Claims**



1. An apparatus for hoisting a load comprising:

a hoisting hook,

a frame,

at least two gripping arms mounted on the frame and each having a gripping jaw for gripping a load between them,

means for mounting at least one said gripping arm on the frame for movement relative to the other gripping arm,

means connecting the hoisting hook to said gripping arms for causing movement of said gripping jaws towards each other during hoisting movement of said hoisting hook comprising:

a first hydraulic piston-cylinder assembly mounted on the frame and having resilient means for urging the piston thereof to a retracted position,

a second hydraulic piston-cylinder assembly mounted on the frame and comprising means for actuating the movably mounted gripping arm,

means connecting said hoisting hook and said first assembly for extending said first assembly upon hoisting movement of said hoisting hook, and

hydraulic means for connecting said first and second assemblies.

4,236,745

RETRACTABLE STREAMLINING DEVICE FOR VEHICLES

Grover M. Davis, 502 Second Ave., Audubon, Iowa 50025

Filed Jan. 29, 1979, Ser. No. 7,439

Int. Cl.³ B62D *23/00*

U.S. Cl. 296—1 S **7 Claims**



1. A streamlining apparatus for trucks or the like comprising:

a first member adapted to be operatively pivotally attached to a top rear portion of a truck body along a first axis;

a second member adapted to be operatively pivotally attached to a lower rear portion of a truck body along said first axis, said first and second members being pivotable between a first position parallel to the forward direction of a truck and a second position transverse to the forward direction of a truck;

a first arcuate element;

means for pivotally attaching said first arcuate element along a second axis to said first and second members whereby said first arcuate element is pivotable between a first position wherein the first arcuate element lies generally in a first plane containing said first and second axes and a second position wherein said first arcuate member is disposed substantially at a right angle with respect to said first plane;

a first flexible sheet adapted for attachment to a rear side of a truck body, said first flexible sheet being connected to said first arcuate element whereby said first flexible sheet can be selectively moved to cover a portion of the rear of a truck body for streamlining purposes;

a third member adapted to be operatively pivotally attached to a top rear portion of a truck body along a third axis;

a fourth member adapted to be operatively pivotally attached to a lower rear portion of a truck body along said third axis, said third and fourth members being pivotable between a first position parallel to the forward direction of a truck and a second position transverse to the forward direction of a truck;

a second arcuate element;

means for pivotally attaching said second arcuate element along a fourth axis to said third and fourth members whereby said second arcuate element is pivotable between a first position wherein the second arcuate element lies generally in a second plane containing said third and fourth axes and a second position wherein said second arcuate element is disposed substantially at a right angle with respect to said second plane, said first and second arcuate elements being in juxtaposition when in their respective second positions and the first and second members are in the respective second positions thereof; and

a second flexible sheet adapted for attachment to a rear side of a truck body, said second flexible sheet being connected to said second arcuate element whereby said second flexible sheet can be selectively moved to cover another portion of the rear of a truck body for streamlining purposes.

4,236,746

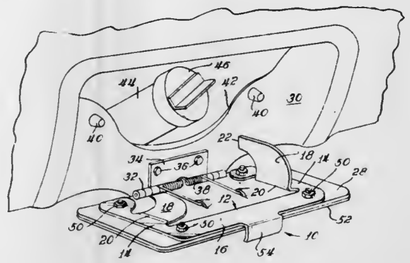
STOP FOR VEHICLE LICENSE PLATE MOUNTING BRACKET

Richard LaVoie, 1N411 Park Blvd., Glen Ellyn, Ill. 60137

Filed Apr. 27, 1979, Ser. No. 33,874

Int. Cl.³ B62D *25/00*

U.S. Cl. 296—1 C **7 Claims**



1. A stop for holding a normally vertically oriented spring hinge mounted vehicle license plate mounting bracket in a substantially horizontal position against spring pressure, the mounting bracket being spring biased toward the normal vertical position with one side confronting the body of the vehicle and the other side having a license plate affixed thereto, and being hinged to facilitate pivoting from the vertical position to the horizontal position, the stop comprising:

a flat frame adapted to be fastened to said one side of the license plate mounting bracket, said frame comprising a pair of spaced, parallel frame legs and a yoke strip connecting said frame legs to form an inverted "U"-shaped frame,

means for securing said frame to the mounting bracket, and

at least one wing located between said frame legs and having a hinged and a free end, and being secured by a hinge at said hinged end to said frame, said wing and said hinge normally lying in the plane of said frame, whereby when the license plate mounting bracket is withdrawn from the vertical position to the horizontal position, said wing may be pivoted about said hinge to engage said free end with the body of the vehicle and maintain the license plate mounting bracket in the horizontal position.

4,236,747

TRANSPORT VEHICLE

Roger D. Ratliff, 883 S. Irving Heights, Irving, Tex. 75060

Filed Nov. 13, 1978, Ser. No. 960,019

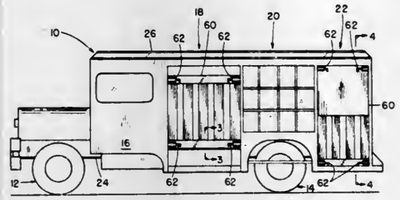
Int. Cl.³ B60R *7/00*

U.S. Cl. 296—24 R **13 Claims**

1. A versatile arrangement for a transport vehicle to allow different types of cargo to be carried thereby, comprising:

(a) a plurality of cargo bays arranged along the length of the vehicle with each cargo bay extending transversely across the width of the vehicle, and at least one cargo bay having a removable centrally located partition member extending along the longitudinal length of the vehicle, and the floor in said bay being divided into first and second floor panels, one on each side of said centrally located partition member, with each floor panel being angularly adjustable to enable the inner central portion of the floor panel to be lowered relative to the remaining portion thereof when

the partition member is in place in the cargo bay such that cargo which leans inwardly because of the angularly positioned floor panels can be supported by the central partition member, and when the central partition member



is removed the floor panels can be angularly adjusted to provide a level floor surface across the width of the cargo bay, whereby different types of freight can be carried by the vehicle in a versatile manner.

4,236,748

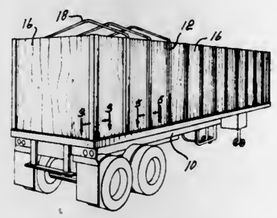
STAKE FOR TRUCK BED, TRAILER OR TRUCK STRUCTURE

Denis L. Cloutier, 632 - 2nd Ave., Beauceville-Est, Quebec, Canada (G0S 1A0), and Fernand Cloutier, 120 Verdier St., St-Joseph de Beauce, Quebec, Canada (G0S 2V0)

Filed Feb. 23, 1979, Ser. No. 14,484

Int. Cl.³ B60P *7/06*

U.S. Cl. 296—43 **8 Claims**



1. A stake adapted to be inserted at its lower end into four-sided pockets spaced around the periphery of a vehicle flatbed and having channel means for receiving wall forming panels, said stake comprising a single piece, extruded elongated hollow body of generally right triangular cross-sectional configuration having two right angle walls and a substantially diagonal wall joining said two right angle walls along respective apex edges thereby defining three apex edges each adapted to fit a corner of said pocket, said channel means integrally formed with said body and projecting laterally from one of said two right angle walls, extending longitudinally of said body from one end thereof and terminating short of the other end thereof to abut against said flatbed while said body extends within said pocket.

4,236,749

ICEBOX FOR A RECREATIONAL VEHICLE

Steven M. Schluns, Box 141, O'Neill, Nebr. 68763

Filed Mar. 26, 1979, Ser. No. 23,603

Int. Cl.³ B60H *3/04*

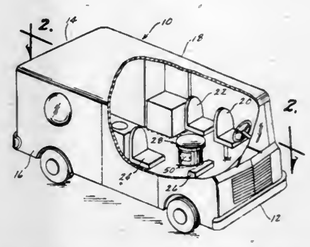
U.S. Cl. 296—156 **4 Claims**

1. In combination,

a recreational vehicle including an interior compartment having forward and rearward ends and opposite sides,

an icebox in said interior compartment, said icebox comprising an upright sidewall means having upper and lower ends, a tabletop, mounted on the upper end of said sidewall means, and an access door provided in said sidewall means,

means for substantially centrally positioning and rotatably mounting said icebox relative to said sides of said interior compartment and spaced from both the forward and rearward ends of the interior compartment so that said icebox is readily accessible from all sides thereof.



4,236,750

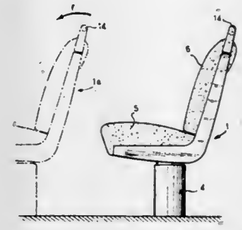
SEAT FOR A PUBLIC TRANSPORT VEHICLE

Victor Moritz, Louveciennes, France, assignor to Societe Orleanaise de Literie et de Mecanique, Paris, France

Filed May 29, 1979, Ser. No. 43,044

Int. Cl.³ A47C *4/52;* **B60R** *21/10*

U.S. Cl. 297—183 **3 Claims**



1. A seat for a public transport vehicle, the seat comprising:

a frame,

a backrest and a seat cushion supported by the frame;

a handle,

pivot means for pivotably supporting the handle on the frame above the backrest for pivotal movement in either direction about an axis parallel to the plane of the backrest, and

easily rupturable means for preventing pivoting of the handle about said axis under normal conditions of use, said easily rupturable means being adapted to rupture when an abnormally high force is applied to the handle, to permit the handle to pivot about said axis.

4,236,751

VEHICLE SAFETY SEAT BOTTOM

Werner Strien, Stuttgart-Heumaden, Fed. Rep. of Germany, assignor to Recaro GmbH & Co., Kirchheim, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,951

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 7728111[U]

Int. Cl.² B60R *21/10*

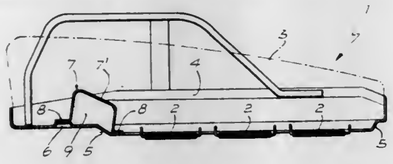
U.S. Cl. 297—216 **8 Claims**

1. In a vehicle seat having a bottom upholstery support and a seat bottom upholstery arranged on said bottom upholstery support upon which a seat user is adapted to sit, the improvement comprising:

support means secured transversely of said bottom upholstery support and projecting upwardly therefrom beneath said seat bottom upholstery, for preventing the user from

sliding forwardly on the seat bottom when the vehicle is sharply decelerated;

wherein said bottom upholstery support includes front and rear halves, said support body means being arranged substantially centrally of said front half;



said support means having substantially vertically oriented forwardly and rearwardly facing surfaces, said forwardly facing surface being spaced from the front edge of the base of the bottom upholstery support; and

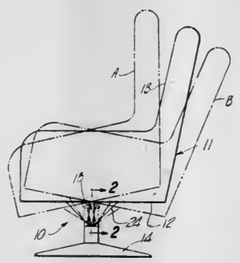
said bottom upholstery support further includes a step over which said support body means is secured and from which said support body means projects.

4,236,752

ROCKER SWIVEL ASSEMBLY FOR CHAIRS

Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed May 4, 1979, Ser. No. 36,072
Int. Cl.³ A47C *3/18*
U.S. Cl. 297—303 **10 Claims**



1. In a chair having a seat and a support located below the seat, a rocker swivel assembly operable to mount the seat on the support for both rocking and swiveling movement, said assembly comprising a torsion bar unit having a center section and a pair of end sections, means securing said end sections to the underside of said seat, means rotatably mounting said center section on said support and maintaining said center section against rocking relative to said support, whereby on rocking of said seat relative to said support said end sections of said torsion bar are angularly moved relative to said center section, and bearing means acting directly between said seat and said center section to transfer a portion of the downward seating load directly to said center section.

4,236,753

SEAT RECLINING APPARATUS

Hideyuki Ooshiro, Toyota, and Masakazu Chiba, Susono, both of Japan, assignors to Shiroki Kinzoku and Toyota Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed Feb. 15, 1979, Ser. No. 12,404
Claims priority, application Japan, Mar. 20, 1978, 53-34686[U]; Dec. 4, 1978, 53-165980[U]
Int. Cl.³ A47C *1/026*
U.S. Cl. 297—364 **3 Claims**

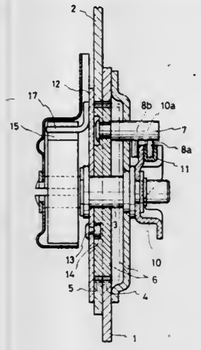
1. In a seat reclining mechanism having:

(i) a first arm having a first internal gear secured thereto,

(ii) a second arm having a second internal gear secured thereto,

(iii) a pivot having an axis and on which said first and second arms are disposed in mutually rotatable manner with said first and second internal gears concentric with said pivot axis,

(iv) an external gear slidable axially on said pivot and concentric with said first and second internal gears and adapted to engage with both and either one of said internal gears about the entire circumference thereof,



the improvement which comprises:

(a) a plurality of operation elements secured on said external gear and extending axially therefrom,

(b) a cam engaging with said operation elements and arranged to act axially of the pivot, and

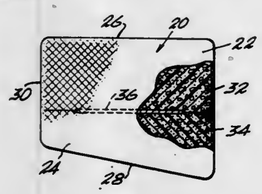
(c) an operation member fast with said cam, for moving said cam to cause axial shifting of said rods and the external gear.

4,236,754

PILLOW FOR RECLINER CHAIR

Eugene J. Ehlers, 9 Enchanting Blvd., Naples, Fla. 33942

Filed Oct. 2, 1978, Ser. No. 947,843
Int. Cl.³ A47C *7/50, 23/00*
U.S. Cl. 297—423 **1 Claim**



1. For use with a recliner chair of the type having a seat cushion with a forward face and a leg pad adapted to be moved into spaced relation from the seat cushion when the chair is in a reclining position with a leg pad face spaced from the seat cushion face a predetermined distance, a pillow comprising a body having an upper surface of a length slightly greater than the distance between the confronting faces of the seat cushion and leg rest pad and said pillow comprising a body of compressible material jacketed within an outer casing;

said body includes an upper portion and a lower portion and a reinforcing means in the form of a rigid sheet embedded between said upper and lower portions;

said pillow includes an inner face adapted to confront the seat cushion face and an outer face adapted to confront the leg rest face and the distance between said pillow face is somewhat greater than the predetermined distance and wherein one of said faces of said pillow and cushion is longer than the other face, the width of said reinforcing means being less than the distance between said inner face and said outer face;

said body being of rubbery material;

said upper surface beging about 22 inches by 8½ inches; and

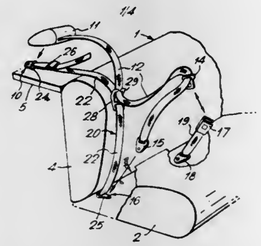
said outer case being foreshortened with respect to the normal dimensions of said cushion, whereby said cushion is compressed when inserted.

4,236,755

SHOULDER HEIGHT ADJUSTER FOR SEAT BELT SYSTEMS

John M. Pollitt, Stranraer, Scotland, and Frederick Nicod, Carlisle, England, assignors to Kangol Magnet Limited, Carlisle, England

Filed Feb. 22, 1979, Ser. No. 14,027
Claims priority, application United Kingdom, Feb. 22, 1978, 7086/78
Int. Cl.³ A47C *31/00*; B60R *35/00*
U.S. Cl. 297—483 **15 Claims**



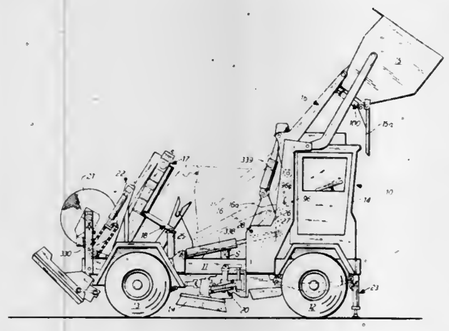
1. A safety belt system for restraining an occupant in a vehicle seat, the system comprising a shoulder belt extending in use diagonally across the front of the occupant from an upper first position above the user's shoulder at one side of the seat to a second lower position at the other side of the seat, elongate means, means fixing said elongate means in position so as to be independent of said shoulder belt, and connector means carried by said elongate means and connectible with said shoulder belt at a position thereon between said first position and said shoulder.

4,236,756

STREET SWEEPER HAVING AN ELEVATING HOPPER WITH SUPPORTING OUTRIGGERS

Donald L. Hildebrand, Union, and Ernest F. Prescott, Elgin, both of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Dec. 4, 1978, Ser. No. 966,494
Int. Cl.³ B60P *1/04*; E01H *1/04*
U.S. Cl. 298—11 **11 Claims**



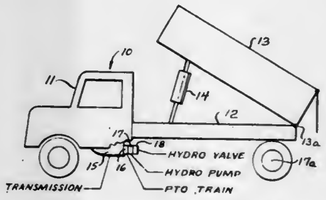
1. A street sweeper having a frame, a cab positioned at a forward end of the frame, a hopper for receiving sweepings carried on the frame behind the cab, linkage for enabling the hopper to be moved over the cab to a forward dumping position, outriggers positioned at a forward end of the sweeper, hydraulic circuit means, valve means, and ram means collectively cooperable together and sequentially operable to initially move the outriggers into ground engagement to provide additional support for the hopper when in said forward dumping position and then operable to actuate said linkage to move said hopper over the cab for dumping.

4,236,757

HYDRAULIC SYSTEM CONTROL MEANS

Ted W. Gregory, Mundelein, Ill., assignor to Arens Controls, Inc., Evanston, Ill.

Filed Sep. 29, 1978, Ser. No. 947,207
Int. Cl.³ B60P *1/16*
U.S. Cl. 298—22 C **14 Claims**



10. Push-pull control means movable in either direction from a neutral position for controlling a bowden cable, comprising: a body having a bore therethrough; a shaft axially movable within said body in either direction from a neutral position and having a manually accessible end, a control handle on said manually accessible end; and latch means carried by said body and arranged for releasably locking said inner member in a neutral position with respect to said tubular member for precluding inadvertent axial displacement of said shaft from said neutral position, said shaft at said neutral position having a peripheral recess, said latch means having a portion resiliently urged into said peripheral recess, said latch means portion being symmetrical axially of said shaft, said latch means further having a portion extending exterially of said body for manual movement out of said peripheral recess to permit manual movement of said shaft in either direction from said neutral position.

4,236,758

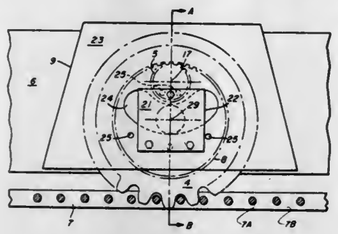
RACK DRIVE FOR A DRUM CUTTER MINING MACHINE

Hans Groger, Essen-Steele-Horst, Fed. Rep. of Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Mar. 24, 1978, Ser. No. 889,706
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714532
Int. Cl.³ E21C *27/24, 27/36*
U.S. Cl. 299—42 **6 Claims**

1. In a drum cutter mining machine of the type traversed along a track device extending over the distance traversed by the mining machine for movement thereof along the face of an underground mine, said drum cutter mining machine including a prime mover coupled to rotate a drive gearwheel about a first axis, the combination therewith of apparatus to couple said drive gearwheel with a rack device at the side of the mining machine opposite the mine face, said apparatus including a hollow gearwheel including internal gear teeth drivingly cou-

pled to said drive gearwheel for rotation by said prime mover about a second axis spaced from said first axis, said hollow



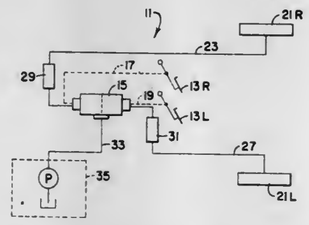
gearwheel further including external gear teeth to mesh with teeth of said rack device.

4,236,759

HYDRAULIC SAFETY VALVE

George P. Lysenko, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 4, 1979, Ser. No. 27,056
Int. Cl.³ F16K *15/04*; B60T *13/00*
U.S. Cl. 303—6 A **3 Claims**



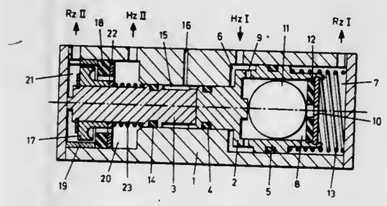
1. In a hydraulic system including a main hydraulic unit receiving hydraulic fluid from a reservoir, actuation means for actuating said main hydraulic unit, at least one remotely located fluid-responsive subsystem, at least one hydraulic line communicating said subsystem to said main hydraulic unit, said main hydraulic unit being in continuous fluid communication with said subsystems such that actuation of said main hydraulic unit by said actuation means causes the actuation of said subsystems by causing the injection of a discreet volume of fluid into said hydraulic line communicating said subsystem to said main hydraulic unit and deactivation of said main hydraulic unit retrieves said discreet volume of fluid from said hydraulic line to deactivate said subsystem, wherein the improvement comprises: a safety valve interrupting said hydraulic line in the proximity of said main hydraulic unit including a housing defining a generally cylindrical shaped chamber, said chamber having a first opening at one end of said chamber extending through said housing to said chamber and having a diameter less than said chamber such that the diameter transition of said chamber to said first opening is generally symmetric and non-dramatic creating a surface having a generally sloped cross-sectional contour, said first opening connecting with said hydraulic line leading to said subsystem, said chamber having a second opening at the opposing end of said chamber extending through said housing to said chamber; a generally spherical shaped member contained within said chamber having a diameter less than said chamber and greater than said first opening, said spherical member sized to permit the assumption of a mating relationship with said surface such that said first opening can be blocked; a cap fixably mounted in said second opening, said cap having a generally cylindrical passageway extending longitudinally therethrough, said passageway having a longitudinal axis parallel to and radially removed from said longitudinal axis of said chamber, said passageway connecting with said hydraulic line extending from said main hydraulic unit, said chamber having a generally vertical orientation such that said first opening is elevated with respect to said second opening and sized to contain said discreet volume of hydraulic fluid between said spherical member and said first opening.

4,236,760

BRAKE-FORCE REGULATOR FOR DUAL-CIRCUIT BRAKE SYSTEMS

Lucas H. Haar, Niddatal, and Ernst-Dieter Schäfer, Bad Nauheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,659
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814414
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—6 C **31 Claims**



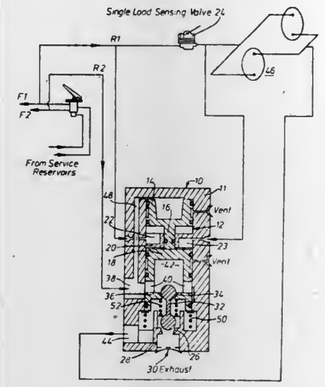
1. A brake-force regulator for a dual-circuit brake system comprising:
- a housing having a longitudinal multiple-step bore therein;
- a first stepped piston slidably sealed to the inner surface of said bore;
- a second stepped piston slidably sealed to the inner surface of said bore, the end of the smaller diameter portion of said second piston directly abutting the end of the smaller diameter portion of said first piston under influence of a spring;
- a first inlet chamber coupled to a master cylinder disposed adjacent a first annular surface between the larger diameter portion and the smaller diameter portion of said first piston;
- a second inlet chamber coupled to said master cylinder disposed adjacent a second annular surface between the larger diameter portion and the smaller diameter portion of said second piston;
- a first outlet chamber coupled to one of said brake circuits disposed adjacent the end of the larger diameter portion of said first piston;
- a second outlet chamber coupled to the other of said brake circuits disposed adjacent the end of the larger diameter portion of said second piston;
- a first valve associated with said first piston to connect said first inlet chamber to said first outlet chamber;
- a second valve associated with said second piston to connect said second inlet chamber to said second outlet chamber; and
- a first stop disposed transverse of said bore against which said second piston bears, said second piston keeping said second valve open when said second piston bears against said stop.

4,236,761

DUAL CIRCUIT BRAKING SYSTEM EMPLOYING SINGLE LOAD SENSING VALVE IN ONE CIRCUIT AND RELAY VALVE IN OTHER CIRCUIT

Wilbur M. Page, Lincoln, England, assignor to Clayton Dewandre Company Limited, Lincoln, England

Filed Nov. 24, 1978, Ser. No. 963,318
Int. Cl.³ B60T *13/00*
U.S. Cl. 303—6 C **5 Claims**



1. A fluid-pressure operated dual circuit braking system in which each circuit serves a rear axle brake and at least one front axle brake and comprising a load sensing valve incorporated in one circuit and a relay valve to which a modulated pressure is applied for controlling applied braking pressure in the other circuit, the relay valve having a piston which is responsive on opposite sides to the respective unmodulated pressure in the two circuits and which piston is normally in balance, the arrangement being such that in the event of a failure in the circuit incorporating the load sensing valve, the piston moves to a position in which it causes the unmodulated pressure in the said other circuit to be conducted directly to brakes on the rear axle, the first mentioned piston being a balancing piston and the relay valve also having an operating piston which is movable in response to the modulated pressure to actuate a valve member controlling the admission of pressure fluid to the brakes on the rear axle, and to which the said movement of the balancing piston is transmitted upon failure of the said one circuit, the pressure fluid control valve member which has the shape of a dumbbell being carried by the operating piston, and biased into contact, at one end, with a control valve seat on the operating piston, the control valve being actuated to admit pressure fluid to the brakes upon movement of the operating piston to bring the other end of the dumbbell valve member into engagement with an exhaust seating thereby closing off an exhaust connection with the brakes.

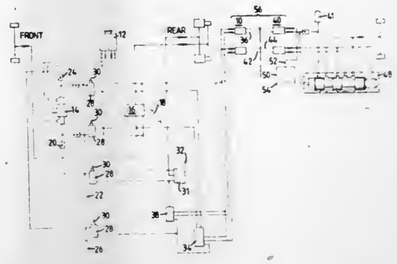
4,236,762

FULL POWER HYDRAULIC BRAKING SYSTEMS FOR TRACTOR-TRAILER COMBINATIONS

Michael J. Hawker, Lincoln, England, assignor to Clayton Dewandre Company Limited, Lincoln, England

Filed Dec. 4, 1978, Ser. No. 966,210
Int. Cl.³ B60T *13/00*
U.S. Cl. 303—7 **2 Claims**

1. A full power hydraulic braking system for tractor-trailer combinations comprising a tractor braking circuit and a trailer braking circuit inter-connected by releasable hydraulic couplings, the tractor circuit including two brake circuits fed from a hydraulic pump, each embodying flow and return lines and a pressure storage unit, a dual brake valve metering pressure fluid from the pressure storage units in dependence upon applied pedal effort and a relay valve triggered by the outputs of the brake valve and metering pressure fluid to the brakes, the trailer circuit including a pressure storage unit, wherein an expansion chamber is connected into the trailer circuit so as to receive any fluid leaking into the return lines from the pressure storage unit of the trailer circuit when the hydraulic couplings



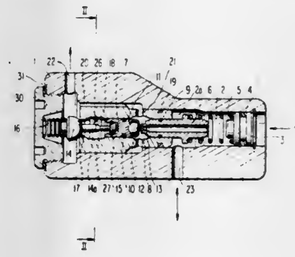
are uncoupled and to retain such fluid until the pump can return it to one of the pressure storage units when the hydraulic couplings are coupled.

4,236,763

BRAKE VALVE ESPECIALLY FOR MOTOR VEHICLES

Reinhard Resch, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,379
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802029
Int. Cl.³ B60T *15/06*
U.S. Cl. 303—54 **12 Claims**



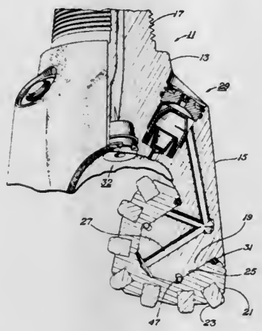
1. A brake valve, comprising a control piston actuatable at will for shifting a double valve means by way of a spring, said double valve means being operable upon actuation of the control piston to close a flow connection between a brake circuit means and a pressureless brake medium reservoir and being operable during further movement to open up an inlet between a pressure storage device containing a brake medium under pressure and the brake circuit means, characterized in that the double valve means includes a valve member and a valve piston, said valve member is constructed as a closure member having an at least partially spherical sealing area and a stem extending from the sealing area, means are provided for connecting an end of the stem remote from the sealing area to the valve piston so as to fix the closure member to the valve piston in a longitudinal direction but permit the closure member to be radially freely movable with respect to the valve piston whereby the valve member is centered with respect to an associated valve seat.

4,236,764

EARTH BORING DRILL BIT WITH SNAP RING CUTTER RETENTION

Edward M. Galle, Friendswood, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 846,642, Oct. 28, 1977, abandoned.
This application Jan. 26, 1979, Ser. No. 6,706
Int. Cl.³ F16C *17/12*
U.S. Cl. 308—8.2 **4 Claims**



1. In combination with an earth boring bit having at least one cantilevered bearing shaft rotatably supporting a sealed and lubricated cutter, an improved cutter retention means comprising:

friction bearing means between said cutter and shaft, including an inwardly facing thrust surface on the shaft;

one of said cutter and shaft having an assembly groove and the other having a registering, retainer groove;

a snap ring positioned in the registering grooves;

the retainer groove having a depth less than the cross-sectional thickness of the ring;

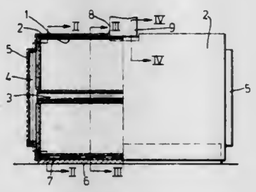
the assembly groove having a depth at least equal to the cross-sectional thickness of the ring, an outer sidewall and an inner sidewall, with the inner sidewall having a frusto-conical surface inclined at a selected angle α relative to a plane perpendicular to the axis of the shaft to engage the snap ring and generate a force component oblique to said axis and urge the snap ring into the retainer groove when the cone is thrust inward and away from said thrust surface.

4,236,765

ROTATABLE AND SUPPORTING MECHANISMS

Enrique Pedro-Palomer, 10 to 12, Calle Idumea, Barcelona, Spain

Filed Jan. 18, 1978, Ser. No. 870,435
Claims priority, application Spain, Jan. 18, 1977, 455.146; Aug. 25, 1977, 461.891
Int. Cl.³ F16C *7/04, 35/00*
U.S. Cl. 308—9 **1 Claim**



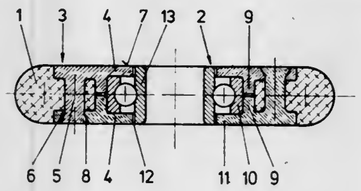
1. A rotary supporting mechanism comprising a pair of hollow bodies arranged one inside the other, there being a quantity of liquid between the two bodies, one of the said bodies remaining fixed while the other is movable rotationally and in an up-and-down direction with respect to the body which remains fixed, the liquid between the bodies absorbing loads applied to said movable body, the rotational axis of the movable body being arranged horizontally, and the hollow bodies comprising a pair of cylindrical bodies, the inner body being movable and buoyantly floating in the liquid contained in the outer body, the movable body rotating freely on a shaft whose ends are located in vertical guides formed in the ends of the fixed body, whereby the movable body, without ceasing to rotate, carries out an up-and-down motion, counteracting in this manner the weight of a load which slides tangentially over the surface of the said movable body, there being an upper opening in the surface of the fixed body by which the load contacts the cylindrical periphery of the movable body.

4,236,766

ROLLER HAVING SUPPORTING BODY BETWEEN OUTER TREAD BODY AND INNER BEARING

Hans Meining; Egon Pfaller, both of Dittelbrunn; Otmar Winkler, and Hilmar Kittel, both of Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,949
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 7735148[U]; Jul. 20, 1978, 7821746[U]
Int. Cl.³ F16C *35/04*
U.S. Cl. 308—15 **21 Claims**



1. A roller comprising

a tread body made of an elastic material,

a supporting body, and

a rolling-element bearing having an outer ring and an inner ring disposed in said supporting body, said supporting body interconnecting said tread body and said bearing without axial play and including

two half shells, at least one of said shells having a plurality of pins distributed over a surface thereof and projecting axially of the tread body, said shells each having an axially projecting ring-shaped lug, the lugs of the two shells encircling and engaging opposite outer surfaces of the outer ring of the rolling-element bearing, said shells having radially inner rims engaging opposite sides of said outer ring, the other of said shells having apertures receiving said pins for connecting said other shell to said one shell.

4,236,767

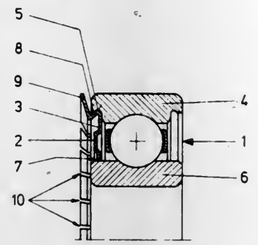
DEVICE FOR SEALING AND MOUNTING A ROLLING-ELEMENT BEARING

Kurt Feldle, Würzburg, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 8, 1978, Ser. No. 967,886
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 7738870[U]
Int. Cl.³ F16C *33/78*
U.S. Cl. 308—187.1 **12 Claims**

1. A device for sealing and mounting a rolling-element bearing having first and second bearing rings in a housing or on a shaft, comprising:

a sheet-metal disk secured to one of said first and second bearing rings and having an annular portion extending toward the other of said first and second bearing rings and forming a seal therewith, said disk having a connector



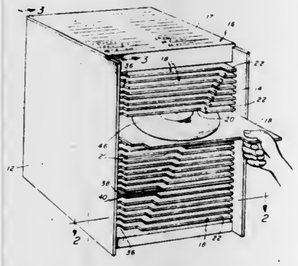
section for connecting it to said one ring and a second annular portion, said second annular portion having a diverging surface extending axially outward of said bearing at least before the rolling-element bearing is installed.

4,236,768

RECORD ALBUM FILING CABINET

James V. Morrone, 25 Sea Foam Ave., Winthrop, Mass. 02152

Filed Mar. 5, 1979, Ser. No. 17,482
Int. Cl.³ A47B *81/00*
U.S. Cl. 312—10 **10 Claims**



1. A cabinet for filing phonograph records or the like comprising a body having sidewalls and a top, and a plurality of shelves positioned between the sidewalls in spaced parallel relation to each other a distance apart greater than the record thickness, each of said shelves having notch means providing access to an exposed edge of the record or record jacket, and means slideably supporting the shelves to permit the shelves to each be manually withdrawn to expose a record without jacket.

4,236,769

ROTATING DISPLAY STAND

Martin L. Mueller, 4929 E. Lake Shore Dr., Wonder Lake, Ill. 60097

Filed Mar. 8, 1979, Ser. No. 18,783
Int. Cl.³ A47F *5/02*
U.S. Cl. 312—135 **27 Claims**

1. An apparatus for displaying and vending articles comprising:

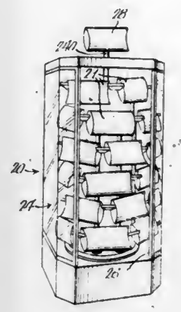
a base;

a plurality of article holding means disposed above said base for holding and displaying a plurality of said articles, each said article holding means having at least one cylindrical driven surface;

drive rod means mounted on said base for rotation relative thereto;

drive means on said base for rotating said drive rod means; and

friction engaging means secured to said drive rod means for rotation therewith and for engaging said cylindrical driven surface of each said article holding means whereby rotation of said drive rod means simultaneously rotates said friction engaging means against said cylindrical driven surface of each said article holding means to rotate



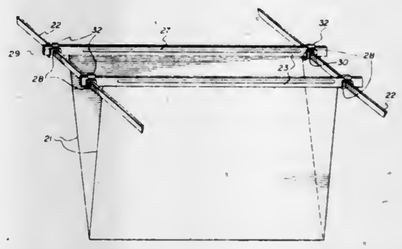
each said article holding means relative to said base and whereby, when a torque is applied to any one of said article holding means to arrest the rotation thereof during removal of an article, said friction engaging means slips relative to said one article holding means and continues to rotate the remainder of said article holding means.

4,236,770

GLIDE INSERT FOR HANGING FILE FOLDER SYSTEM

David C. Moore, Aurora; Edward W. Cooper, Scarborough, and Archibald Porteous, Willowdale, all of Canada, assignors to ACCO International Inc., Wheeling, Ill.

Filed Apr. 16, 1979, Ser. No. 30,320
Claims priority, application Canada, Apr. 26, 1978, 302031
Int. Cl.³ A47B *63/00*; B24F *13/06*
U.S. Cl. 312—184 **7 Claims**



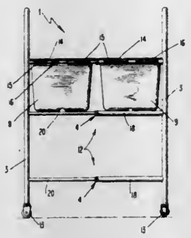
1. A plastic insert for hanger bars of file folder suspension systems which hanger bars include an elongated slit aperture adjacent each end, said plastic insert comprising:

a plate-like disc having a generally inverted U-shape, said disc having an upper base portion and two downwardly projecting leg portions, the edges of said disc having thickening ridges around the periphery of said U-shape;

a leg projecting upwardly from substantially the center of said upper base portion, said upwardly projecting leg terminating in a crown with said crown having projections at each side of said leg, said projections having bottom edges parallel to said base portion;

said upwardly projecting leg being adapted to be inserted through the aperture in the hanger bar and to retain said plastic insert in position with respect to the hanger bar.

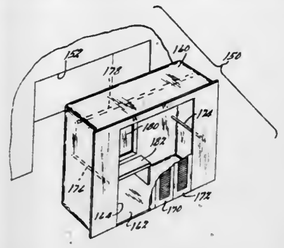
4,236,771
PORTABLE DISPOSABLE BASIN APPARATUS
Geraldine Y. Summers, 721 - 22nd St., Newport News, Va. 23607
Filed Jan. 12, 1979, Ser. No. 3,398
Int. Cl.³ A47B *77/06;* **A47K** *1/04;* **A47F** *3/14*
U.S. Cl. 312—228 **9 Claims**



1. A portable basin apparatus for servicing incapacitated persons with materials and utensils at a place remote from the source of said materials and utensils, comprising:
a. an expendable basin including an integral flange horizontally extending from said basin at the top edge thereof for removebly supporting said basin in a frame, said basin being molded of a substantially rigid, insulating material in a form permitting the nesting of a plurality of said basins for storage; and
b. a wheeled, collapsible frame for supporting said basin, said frame comprising:
1. a pair of one-piece, tubular, vertically disposed side supports each having a front leg and a back leg, said legs being joined at the top thereof in a substantially U-shape;
2. a wheel mounted on the end of each said leg;
3. horizontally disposed, rigid braces secured to and interconnecting the front and back legs of each said side support, one said rigid brace being proximate said wheels of each said side support and one said rigid brace being proximate the top of each said side support;
4. horizontally disposed, telescopically collapsible braces secured to and interconnecting the front legs of said side supports, and the back legs of said side supports, front and back collapsible braces being substantially in the same plane proximate said wheels and front and back collapsible braces being substantially in the same plane proximate the top of said side supports forming a rim for supporting said basin; and
5. releasable lock means attached to each said telescopically collapsible brace for securing each said brace in an extended position to form said frame for receiving said basin and for permitting collapse of said frame for storage after disposal of said basin.

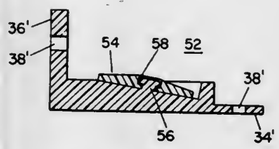
4,236,772
STORAGE SYSTEM
Artel R. Henson, Bloomfield Hills, Mich., assignor to Disco Engineering, Inc., Bloomfield Hills, Mich.
Division of Ser. No. 761,646, Jan. 24, 1977, Pat. No. 4,095,860. This application Jun. 16, 1978, Ser. No. 917,771
Int. Cl.³ A47B *87/00*
U.S. Cl. 312—242 **21 Claims**

1. A storage system comprising a prefabricated closet structure adapted to be mounted as a substantially unitized assembly within a complementary-shaped recess, said closet structure defining an access opening which is normally closed by at least



one door and including a mirror and an integrally constructed stool interiorly of said closet structure.

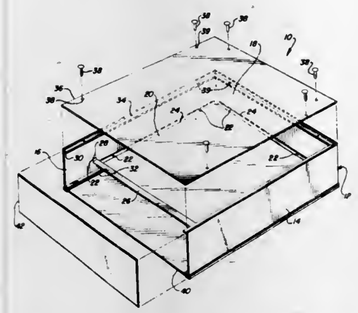
4,236,773
LOW FRICTION DRAWER SUPPORT
Paul M. Mertes, 15528 Don Metz St., Mission Hills, Calif. 91344
Filed Feb. 12, 1979, Ser. No. 11,177
Int. Cl.³ F16C *29/02, 21/00*
U.S. Cl. 312—341 R **15 Claims**



1. A high strength drawer support and low friction slide and roller comprising:
a roller member in the form of a disk, the upper surface of said disk having a relatively flat conical bearing surface, said bearing surface making an angle of more than 60 degrees and less than 85 degrees with the axis of said disk, said bearing surface extending for the greater portion of the distance from the axis of said disk to the rim of said disk;
a housing structure for said roller member, said housing structure including means for supporting said roller member with its axis tilted with respect to the vertical and the bearing surface substantially horizontal, and said housing structure making surface-to-surface engagement with the lower side of said disk at substantial supporting areas spaced around the axis of said disk;
said housing structure including means for securing to a cabinet or other furniture with the bearing surface of said roller member oriented substantially horizontally to engage the lower outer edge of a drawer; and
means for securing said roller member in said housing structure.

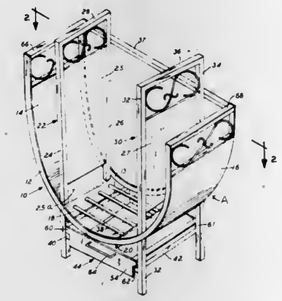
4,236,774
ELECTRONIC APPARATUS CABINET ASSEMBLY
Raul Diaz, Baltimore, Md., assignor to Norlin Industries, Inc., Deerfield, Ill.
Filed Mar. 28, 1979, Ser. No. 24,508
Int. Cl.³ A47B *81/06;* **H05K** *5/00*
U.S. Cl. 312—351 **5 Claims**

1. A cabinet assembly for housing electronic apparatus comprising:
a generally U-shaped structure having a pair of opposed side walls and an end wall extending transversely therebetween, said walls coooprating for defining top and bottom ends of predetermined configuration and dimensions;
a deck member secured between said side and end walls near the bottom end of said structure for supporting an item of electronic apparatus thereon;
a lid member having a configuration substantially conforming to said predetermined configuration and having dimensions slightly less than said predetermined dimensions;
a mounting rail extending interiorly about said side and end walls near the top end of said structure and adapted for supporting said lid member;



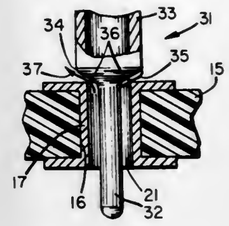
means forcing said lid member into compression against said mounting rail; and a strip of RFI sealing material disposed between said mounting rail and said lid member and extending upwards from the interstice formed between said walls and lid member onto the top surface of said lid and the exterior surfaces of said walls for forming an RFI seal of high integrity.

4,236,775
STORAGE HOLDER FOR FIREWOOD AND THE LIKE
Elwood W. Haynes, 6306 Pizzaro St., Duluth, Minn. 55807
Filed Jun. 8, 1979, Ser. No. 46,648
Int. Cl.³ A47F *7/00;* **A47B** *88/00, 83/00*
U.S. Cl. 312—351 **7 Claims**



1. A storage holder for firewood and the like comprising:
(a) a cradle having arcuate first and second opposed end walls spaced at the lower ends to form an opening therebetween,
(b) a first pair of spaced legs carried by and extending below said first end wall,
(c) a second pair of spaced legs carried by and extending below said second end wall,
(d) an intermediate wall extending between each of said first and second spaced legs,
(e) a receptacle,
(f) means for slidably supporting said receptacle below said opening,
(g) means extending between the lower ends of said end walls at said opening for limiting the size articles that can pass through said opening into said receptacle.

4,236,776
ELECTRICAL CONTACT WITH IMPROVED MEANS FOR SOLDER WICKING AND DEGASSING
Roger D. Wellington, Cumberland, R.I., assignor to Augat Inc., Attleboro, Mass.
Filed Aug. 24, 1978, Ser. No. 936,485
Int. Cl.³ H05K *1/12*
U.S. Cl. 339—17 R **4 Claims**

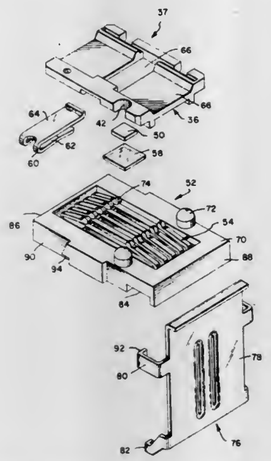


4. An electronic interconnection panel board having a plurality of holes therethrough, said panel board comprising:
electrically conductive plating material lining said holes thereby effectively reducing their diameters;
a plurality of socket contacts, one of which is mounted in at least some of said plated holes in said panel board, each said contact comprising:
a cylindrical body having one open end and one closed end;
an elongated pin axially projecting from said closed end;
a conical transitional surface between said body and said pin;
a plurality of ribs substantially parallel to and projecting outwardly from said transitional surface, said pin extending through said plated hole; and
solder adhered to said plating material and said elongated pin and substantially filling the space therebetween;
whereby said ribs on said transitional surface engage the surface of the rim of the plating material in each of said holes, thereby providing escape paths for gases between said ribs and between said transitional surface and said rim.

4,236,777
INTEGRATED CIRCUIT PACKAGE AND MANUFACTURING METHOD
Joseph F. Merlina, Harrisburg; John P. Redmond, Mechanicsburg; George Ulbrich, and Richard M. Wagner, both of Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 27, 1979, Ser. No. 61,553
Int. Cl.³ H05K *1/11*
U.S. Cl. 339—17 CF **8 Claims**

1. Electrical contacting means for establishing electrical contact with the terminal areas of an integrated circuit chip, said terminal areas being at precisely predetermined locations on one surface of said chip, said contacting means comprising:
an insulating substrate of molded polymeric material having a flat surface,
a plurality of conductors in said substrate, each of said conductors having an upper surface which is coplanar with said flat surface and having a body portion which is beneath, an contained in said substrate, said conductors being of electrodeposited conductive metal,
a chip-receiving zone located centrally on said flat surface, each of said conductors having an inner end in said chip-receiving zone, said conductors extending from said chip-receiving zone and having outer end portions which are remote from said chip-receiving zone, and
each of said conductors having a contact promontory on its inner end, each of said promontories extending above said upper surface of its respective conductor and having a

substantially hemispherical surface, said promontories being precisely located relative to each other at locations corresponding to the locations of said terminal areas, each of said promontories being integrally electrolytically deposited with its respective conductor whereby,



upon placement of said one surface of said chip on said promontories with said promontories against said terminal areas of said chip, said conductors are placed in electrical contact with said terminal areas.

4,236,778

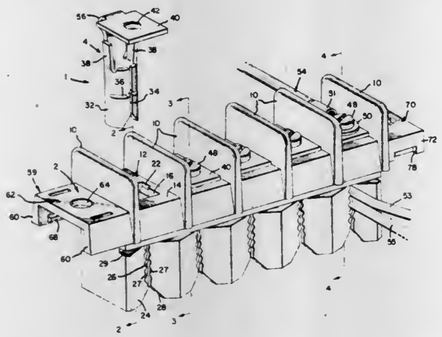
TERMINAL BLOCK

Richard L. Hughes, Clemmons; Melvin A. Soderstrom, Advance; Vasantrai A. Vachhani, and Lawrence P. Weisenburger, both of Kernersville, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 47,840, Jun. 12, 1970, abandoned. This application Jul. 30, 1979, Ser. No. 61,722

Int. Cl.³ H01R *9/24, 13/585*

U.S. Cl. 339—97 P **5 Claims**



1. A barrier block for commoning electrical wires or for providing a junction point for incoming and outgoing wires, comprising:

a housing having individual partition walls with adjacent pairs of said walls being interconnected by an integral web,

an electrical terminal mounted on a respective web having a vertical hollow cylindrical barrel provided with a longitudinal slot divided into one or more pairs of opposed wire engaging and gripping jaws,

each said terminal having a second wire receiving contact seated on a respective said web and connected to said barrel by an integral loop,

strain relief flanges integral with said partition walls and having sides projecting diagonally toward each other, and defining therebetween a vertical wire receiving slot in alignment with said barrel slot, said sides having opposed wavy outer edges providing a series of wire receiving concavities.

4,236,779

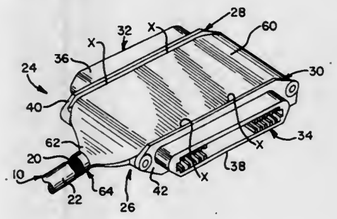
EMI SHIELDED CABLE AND CONNECTOR ASSEMBLY

Paul R. Tang, Broomfield, Colo., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 1, 1978, Ser. No. 901,380

Int. Cl.³ H01R *3/06*

U.S. Cl. 339—143 R **14 Claims**



1. A shielded connector assembly comprising:

a connector member including an electrically conductive housing, a plurality of contact elements, a mating portion for engaging a compatible connector member, and a conductor receiving terminal portion;

a shielded electrical cable interconnected with said connector member and including a plurality of conductors and electrically isolated inner and outer EMI shielding layers surrounding said conductors, said conductors being terminated to said contact elements in said connector terminal portion;

means for electrically connecting said inner shielding layer with one of said contact elements;

shielding means electrically interconnecting said outer shielding layer and said electrically conductive housing and substantially surrounding said terminal portion for continuously shielding said connector means from electromagnetic interference; and

means for mechanically securing said shielding means to said cable.

4,236,780

MULTI-WAY TERMINAL BLOCK

Paul Stenz, Detmold, and Hans-Herbert Kordt, Osterode, both of Fed. Rep. of Germany, assignors to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 26,258

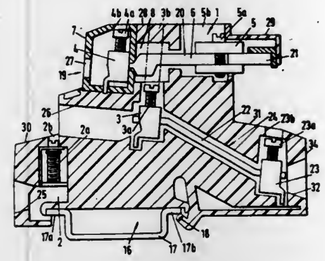
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 7811450[U]

Int. Cl.³ H01R *9/26*

U.S. Cl. 339—198 G **9 Claims**

1. A triple rail mounted terminal block with terminals for a neutral conductor, a protective conductor and a phase conductor, all arranged in a terminal housing, having an upper surface and a front face, said terminals being arranged in respective superimposed planes, conductor insertion openings terminating at said front face of said terminal block and access openings for tools for actuating said terminals terminating on said upper surface of said terminal block, the actuating member of a said terminal located in the intermediate plane being disposed, considered from said front face of said terminal block, offset into the interior of said terminal block beyond said actuating

member of the terminal in the upper plane, and its tool access opening is a passage which extends past the current conductor



of the terminal located in the upper plane and is isolated therefrom.

4,236,781

ILLUMINATION SYSTEM FOR SPECIMEN

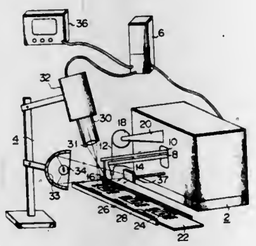
Yoshiaki Arimura, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 770,792, Feb. 22, 1977, abandoned. This application Feb. 14, 1979, Ser. No. 11,992

Claims priority, application Japan, Feb. 23, 1976, 51-18018

Int. Cl.³ G02B *21/06*

U.S. Cl. 350—81 **11 Claims**



10. A bonding machine for connecting pattern pads of an IC chip having a substantially mirror surface portion and coarse surface portions to external lead wires of an IC chip mounting frame, using bonding wires, the machine comprising:

a capillary under which the IC chip is placed and the tip of which is movable between the pattern pads of the IC chip and the external lead wires of an IC chip mounting frame and provided with a welding metal ball to be bonded to the pattern pads and the external lead wires;

means for supplying said capillary with a metal wire;

a heater for heating the metal wire supplied to the tip of said capillary to provide a welding metal ball;

a microscope so positioned as to have its optical axis inclined to the surface of the IC chip;

an illumination apparatus for illuminating the IC chip, including light projecting means for projecting a bundle of light rays and a light diffusion plate disposed close to the IC chip for converting the bundle of light rays from the light projecting means into diffused light and projecting the diffused light onto the IC chip; and

means for guiding the IC chip mounting frame with a number of IC chips mounted and placing one of IC chips at such a predetermined position under said capillary that most light rays reflected from the mirror portion of the IC chip are directed outside an objective lens of said microscope and light rays scattered from the coarse surface portions of the IC chip are projected onto the objective lens of the microscope.

4,236,782

DEVICE FOR MODULATING OPTICAL RADIATION BY A VARIABLE MAGNETIC FIELD

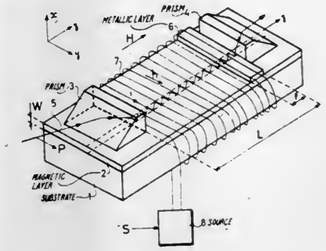
Jean-Paul Castera, and Georges Hepner, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 30, 1978, Ser. No. 921,226

Claims priority, application France, Jul. 8, 1977, 77 21189

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.13 **10 Claims**



1. A device for modulating optical radiation by a variable magnetic field, said device comprising a wave guide formed by a thin magnetic layer and a substrate, said magnetic layer being deposited on said substrate with a constant thickness and being capable of propagating first and second modes of radiated energy; said device further comprising means for exciting energy of said first mode in said magnetic layer, means for inducing a variable magnetic field parallel to the direction of propagation of said energy to enable at least a fraction of said energy to be converted from said first mode to said second mode, mode absorbing means arranged on said magnetic layer for selectively transmitting the energy of one of said first and second modes and means arranged for extracting from said magnetic layer the energy supplied in one of said modes by said mode absorbing means.

4,236,783

ELECTRICALLY-CONTROLLED OPTICAL BRANCH CONNECTION

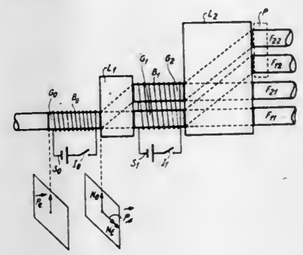
Georges Hepner, and Jean-Paul Castera, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 5, 1978, Ser. No. 967,255

Claims priority, application France, Dec. 9, 1977, 77 37228

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.13 **13 Claims**



1. An electrically controlled optical branch connection for optical fibres comprising an input fibre and at least two output fibres and a plurality of adjacent basic cells, each of which cells comprises at least one radiation guide coupled to said input fibre capable of introducing under electrical control, a change in the direction of polarization of an input optical radiation linearly polarized, the radiation having thus one of two possible directions of polarization, and a birefringent plate having a length, capable of ensuring the propagation of linerly polarized radiation along one of two directions according to the direc-

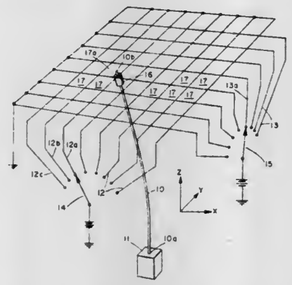
tion of polarization of the radiation transmitted thereto, the radiation emerging from said plate after porpagation along one and the other directions being spatially separated by a distance proportion to said length, said guide and said plate being fixed one relative to the other and said two possible directions of polarization at the output of said guide respectively corresponding to said two propagation directions in said plate.

4,236,784

DISCRETELY POSITIONED MAGNETIC FIBER OPTIC SCANNER

John P. Palmer, Pomona, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Filed Apr. 6, 1979, Ser. No. 27,551
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.20 **13 Claims**



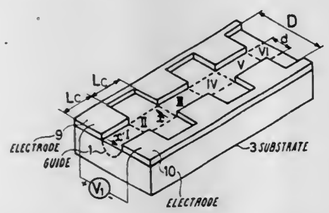
1. A magnetic fiber optic scanner comprising:
a flexible optical fiber having one end fixedly supported and an opposite end that is unsupported and free to move;
means mounted on said fiber near said unsupported end for there producing a first magnetic field;
an array of electrical conductors extending substantially perpendicular to said fiber adjacent to said unsupported end; and
means for generating current through selectable ones of said conductors to produce localized second magnetic fields that interact with the first magnetic field and cause the unsupported end of said optical fiber to move in discrete increments.

4,236,785

NON LINEAR THIN LAYER OPTICAL DEVICE

Michel Papuchon; Brigitte Puech, and Michel Werner, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 14, 1978, Ser. No. 886,594
Claims priority, application France, Mar. 23, 1977, 77 08628
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.14 **7 Claims**



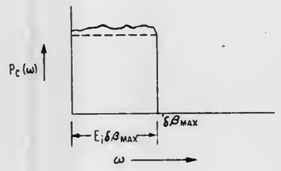
1. A non-linear optical device for generating a non-linear interaction between optical radiations propagated along a direction z in an homogeneous thin layer of ferro-electric material, said device comprising a thin layer made of ferro-electric domains and a first pair of electrodes deposited on said layer; said electrodes being arranged opposite one another and having a periodic shape delimiting a succession of odd and even zones of length L on said layer in said direction z, L being equal to an odd multiple of the coherence length of said interaction; the ferro-electric domains of the successive zones having been alternately polarised in opposite directions; so that the non-linear coefficient of said material alternately has opposite signs in the successive zones.

4,236,786

METHOD OF EFFECTING COUPLING OF SELECTED MODES IN AN OPTICAL WAVEGUIDE

Donald B. Keck, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 13, 1978, Ser. No. 969,233
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.15 **13 Claims**



1. For an optical waveguide supporting light transmission in a plurality of bound modes, said modes each corresponding to a propagation constant β, the difference between the propagation constant of adjacent modes being $\delta\beta$, and further a plurality of unbound modes in which light is attenuated, the method of effecting coupling of light among only said bound modes, comprising the steps:
selecting an arbitrarily large fraction E_i of the largest propagation constant difference $\delta\beta_{max}$ between adjacent bound modes; and
varying at least one of the following properties of the waveguide:
curvature of the axis of the waveguide,
fluctuation in waveguide diameter, and
fluctuation in the indices of refraction of the waveguide, at at least one location along the length of the waveguide in accordance with the expression

$$\left|\frac{K(E_i\delta\beta_{max}z)}{E_i\delta\beta_{max}z}\right|^t$$

where K is a specific function the inverse transform of which is substantially zero for a value $E_i\beta$ which is arbitrarily close to $\delta\beta_{max}$, t is at least 1, and z represents distance along the waveguide.

4,236,787

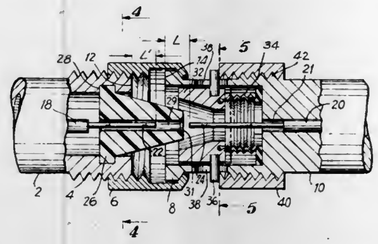
OPTICAL FIBER CONNECTOR

Frederick D. Iacono, Crestwood, and Louis Danielle, Yonkers, both of N.Y., assignors to Kings Electronics Co., Inc., Tuckahoe, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,299
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.21 **8 Claims**

1. A connector for optical fiber cables comprising male and female connector sections fixedly supporting opposed ends of the cables: to be connected in which said female section includes an externally threaded cylindrical casing and said male section includes a cylindrical casing having at one end a rotatable internally threaded cylindrical ring adapted to engage said externally threaded casing for pulling said sections into tight

contact, the improvement comprising a frusto-conical elastic member having a central opening therethrough adapted to receive one end of an optical fiber cable, the base of said frusto-conical elastic member being radially supported within the casing of said female section with its tapered end projecting beyond the female section in the direction of the male section, means within said male section holding the end of a second optical fiber cable in alignment with the central opening in said frusto-conical elastic member, the respective ends of said fiber



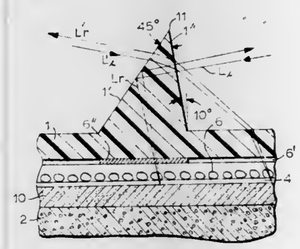
optical cables being so positioned within said male and female sections that when said sections are pulled into tight contact, the end of said second optical fiber cable enters the central opening of said frusto-conical elastic member to a depth placing it in close contact with the end of the first optical fiber cable, and means supported by said male section for radially compressing said frusto-conical elastic member inwardly about the adjacent ends of the two optical fiber cables after the male and female sections are in tight contact with each other.

4,236,788

DIRECTION-INDICATING SURFACE MARKER STRIP FOR ROADWAYS AND THE LIKE

Charles W. Wyckoff, 85 Pine St., Needham, Mass. 02194

Filed Oct. 23, 1978, Ser. No. 953,947
Int. Cl.³ G02B 5/12
U.S. Cl. 350—97 **8 Claims**



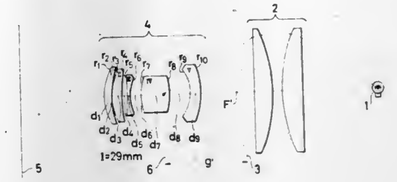
1. A direction-indicating surface marker strip for securing to a surface-to-be-marked, having, in combination, a thin upper light-transmitting layer comprising a plurality of longitudinally spaced saw-tooth asymmetrical prisms each having upwardly and downwardly inclining faces adjusted to provide for critical angle downward internal reflection of light entering one of the faces, and refraction to the space between successive prisms of light entering the other face; a thin lower layer of retroreflective material secured to the upper layer; and means disposed in the areas below the prisms for imbuing the light entering the retroreflective material in said areas as a result of said downward internal reflection, with a predetermined color as it is returned by retroreflection and internal reflection back through said one face.

4,236,789

PROJECTION OPTICAL SYSTEM

Yu Yamada, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1977, Ser. No. 823,428
Claims priority, application Japan, Aug. 12, 1976, 51-96558
Int. Cl.² G02B 15/04
U.S. Cl. 350—183 **6 Claims**



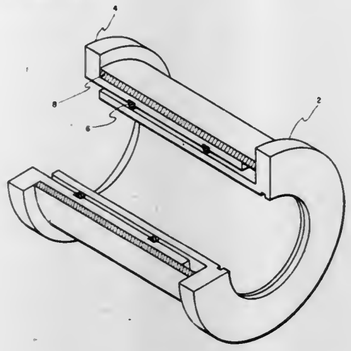
1. A projection optical system comprising the following components arranged in sequence from a light source:
a condenser lens system for causing convergence of light from the light source and then directing the light in a predetermined direction;
a record carrier for illumination by the light from the condenser lens system; and
a projecting lens assembly defining an optical axis and including a pair of interchangeable projecting lenses of different focal lengths interchangeably arranged on the optical axis for causing light coming through the record carrier to converge onto a projection plane;
said projection lens having a longer focal length in said lens assembly being a telephoto type lens and the projection lens having a shorter focal length being a Gauss type, said projection lenses being located and constructed so as to make the position of the pupil point of the lens having the longer focal length near the record carrier almost equal to the position of the pupil point of the lens having the shorter focal length on the record carrier;
said telephoto type lens, from the direction of the projecting plane, including two positive meniscus lenses having their convex faces directed to the projecting plane, a concavo-concave lens, a convexo-convex lens and a negative meniscus lens having its convex face directed to the record carrier.

3. A projection optical system comprising the following components arranged in sequence from a light source:
condenser lens system for causing convergence of light coming from the light source and then directing the light in a predetermined direction;
a record carrier for illumination by the light from the condenser lens system; and
a projecting lens assembly defining an optical axis and including a pair of interchangeable projecting lenses of different focal lengths interchangedably arranged on the optical axis of the optical system for causing the light through the record carrier to converge onto a projection plane, one of said projection lenses having a longer focal length in said lens assembly and one of said lenses having a shorter focal length;
said projecting lens assembly having a diaphragm said projection lens having the longer focal length having means for making the position of the pupil point thereof near the record carrier relative to the postion of the diaphragm of the lens having a longer focal length in order to make the position of the lens having a ionger focal length equal to the position of the lens having a shorter focal length.

4,236,790
TEMPERATURE COMPENSATED POSITIONING DEVICE

Ronald D. Smith, Oriskany, N.Y.

Filed May 15, 1978, Ser. No. 905,822
Int. Cl.³ G02B *7/02*
U.S. Cl. 350—253 **6 Claims**



1. A temperature compensated positioning device for automatically maintaining a first surface and a second surface in a precise dimensional relationship with respect to one another over a desired temperature range which comprises:

a stationary member attached to said first surface;

a movable member attached to said second surface, said movable member being partially positioned within said stationary member to have freedom of axial movement;

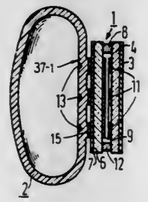
a temperature compensating non-metallic material contiguous to the axial length of said stationary member affixed at one end to said stationary member and affixed at its opposite end to said movable member, said temperature compensating material changing in dimensions as a function of temperature whereby the changes in dimensions cause axial movement of said movable member with respect to said stationary member; and

support means comprising at least one "O" ring positioned between said stationary member and said movable member to provide radial centering and support so that said compensating material is not required to carry any structural loads.

4,236,791
LIQUID CRYSTAL ILLUMINATOR HAVING ELLIPOIDAL LIGHT GUIDE

Hans Krüeger, and Werner Glaubitz, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,553
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724748
Int. Cl.³ G01F *1/133*
U.S. Cl. 350—345 **1 Claim**

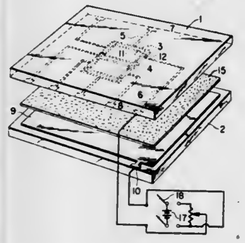


1. An optical element comprising a fluorescent body system which is made of a material having an index of refraction of greater than one, has the form of a hollow ellipsoid of revolution, contains fluorescent particles and possesses at least one output coupling zone, said body system having at least two integral fluorescent body portions with one of the body portions having the output coupling zone, the remaining body portions being offset from the one body portion and being interconnected thereto by a smooth curved surface, said remaining body portions being operable for the interception of incident radiation remote from said coupling zone and for the guidance of resultant optical radiation to said output coupling zone.

4,236,792
ELECTROCHROMIC DISPLAY AND METHOD FOR MAKING SAME

Saadi J. Bissar, Waterbury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 28, 1978, Ser. No. 973,832
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **32 Claims**



1. A process for making an electrochromic display comprising the steps of:

(a) providing a front substrate having transparent electrodes and image-forming electrochromic layers thereon;

(b) providing a rear substrate for carrying a counter electrode, the front and rear substrates being positioned in spaced working relation;

(c) forming a counter electrode on said rear substrate by

1. forming a layer of tungsten trioxide on said substrate;

2. converting a major portion of said tungsten trioxide layer to alkali tungstate to provide a first mixture of alkali tungstate and tungsten trioxide;

3. heating the first mixture to a sufficiently high temperature for a selected time to form a second mixture comprising a major portion of alkali tungsten bronze and a controlled minor portion of tungsten trioxide, the alkali tungsten bronze being in the high temperature heat treated condition which exhibits high electronic mobility for counter electrode purposes;

(d) filling the space between the substrates with electrolyte containing sufficient cationic coloring centers to impart coloration to said electrochromic layers; and

(e) sealing the front and rear substrates together.

4,236,793
OPHTHALMIC REFRACTING DEVICE

Donald B. Whitney, Southbridge; Bernard Grolman, Worcester, and William Richards, Medway, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

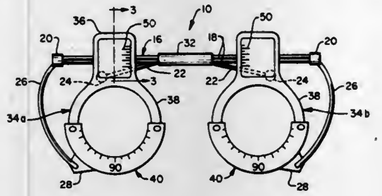
Continuation-in-part of Ser. No. 891,774, Mar. 30, 1978, abandoned. This application Sep. 25, 1978, Ser. No. 945,168
Int. Cl.³ A61B *3/04;* **G02C** *7/08;* **G03B** *1/00*
U.S. Cl. 351—21 **2 Claims**

1. A refracting fixture comprising the combination of:

a main supporting bar;

a pair of trial lens holders suspended right-angularly from said bar, said holders being individually adjustable along a portion of the length of said bar and in directions across said bar, means for maintaining said right-angular disposition of said holders at all positions of adjustment along and across said bar;

means for manually detachably connecting said bar and trial lens holders to a spectacles frame with said holders disposed forwardly of lens supporting rims of said frame, said connecting means including locaters on said fixture for engaging uppermost brow portions of said spectacles frame to establish parallelism of said fixture and frame when said bar and trial lens holders are connected thereto

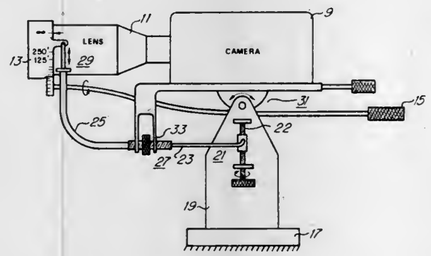


and clamping arms terminated with V-grooved clamping block for terminally engaging portions of said frame below said brow portions to retain said locaters in place against said brow portions when said connection of said bar and trial lens holders is made, said locaters comprising a pair of rollers carried by wires extending from said main supporting bar and said clamping arms being proximally fixed to said main supporting bar with respective extensions thereof directed arcuately downwardly away from said bar to said clamping blocks.

4,236,794
SELF-FOCUSING CAMERA APPARATUS AND METHOD

Gary B. Gordon, 21112 Bank Mill Rd., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 901,564, May 1, 1978, Pat. No. 4,152,061. This application Mar. 5, 1979, Ser. No. 17,448
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **5 Claims**



1. Camera focusing apparatus for a camera having an adjustable-focus lens operated from a position above a horizontal object plane, the apparatus comprising:

mounting means disposed to support the camera for altering the pointing direction thereof at least in a vertical plane;

angle-sensing means coupled to the camera for producing an output representative of the camera-pointing direction within a vertical plane with respect to level orientation of the camera;

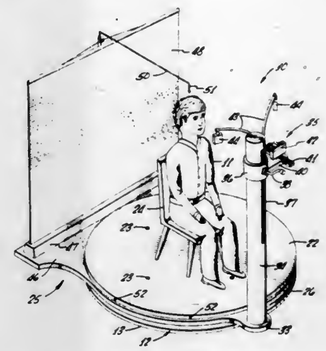
scaling means for altering said output by a constant of proportionality to provide an altered output which is representative of the height of the camera above the object plane; and

actuating means for converting said altered output to focus-adjusting motion of the lens of the camera.

4,236,795
PRECISION PHOTOGRAPHIC DOCUMENTATION APPARATUS

Richard E. Kephart, Balboa Island, Calif., assignor to H. George Brennan, Newport Beach, Calif.

Filed Jan. 18, 1979, Ser. No. 4,399
Int. Cl.³ G03B *29/00, 15/00, 17/00*
U.S. Cl. 354—80 **11 Claims**



1. Apparatus for use in photographing a subject comprising:

a stationary plaform for supporting said subject in the center thereof;

a turntable mounted beneath said platform for rotation about an axis aligned with said center of said platform;

a vertical post mounted adjacent one side edge of said turntable for rotation around said platform;

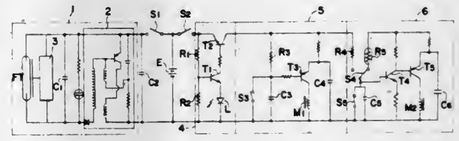
means for mounting a camera on said post; and

a vertical photographic backdrop mounted on an opposite side edge of said turntable for rotation around said platform with said camera mounting means on an opposite side of said subject.

4,236,796
PHOTOGRAPHIC CAMERA PROVIDED WITH FLASH MEANS

Toshio Hayashi, and Toshinori Imura, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 14, 1979, Ser. No. 12,197
Claims priority, application Japan, Feb. 21, 1978, 53-19460
Int. Cl.³ G03B *7/16, 9/08, 9/40, 15/05*
U.S. Cl. 354—145 **13 Claims**



11. A flash means for cameras, comprising a power supply means; a flash tube; a first capacitor connected to said flash tube for firing said flash tube upon discharge of said first capacitor; an oscillating type electronic boosting circuit having input terminals connected to said power supply means for being electrically suppled therefrom and output terminals connected to said first capacitor to impress thereon a high voltage through oscillating operation thereof such that said first capacitor is charged to a voltage level ready for firing said flash tube for causing it to emit a sufficient amount of light for taking the desired photographic picture; a second capacitor connected to said power supply means in parallel with said first capacitor and said electronic voltage boosting circuit and connected between said power supply means and said input terminals of

said electronic voltage boosting circuit; and a voltage detecting means for detecting whether the voltage level of said power supply means has recovered to a predetermined level during the course of the charging of said first capacitor, said predetermined level being such that said first capacitor has been charged to the voltage level ready for firing said flash tube for causing it to emit a sufficient amount of light for taking the desired photographic picture.

4,236,797

MIRROR MECHANISM FOR A MONOCULAR REFLEX CAMERA

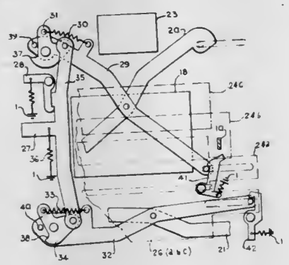
Rolf Noack, Dresden; Karl Krömer, Radebeul, and Hans Zimmet, Dresden, all of German Democratic Rep., assignors to VEB Pentacon Dresden Kamera- und Kinowerke, Dresden, German Democratic Rep.

Filed May 17, 1979, Ser. No. 39,980

Claims priority, application German Democratic Rep., Jun. 19, 1978, 206097

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—152 **3 Claims**



1. A lamellar focal-plane shutter for monocular mirror reflex cameras having a swivelling viewfinder mirror movable between a first viewing position in the optical path of the camera and a second position clear of said path for exposure and shutter blades which return automatically to their starting positions after each exposure operation, comprising:

(a) a drive member for returning said shutter blades and movable between a rest position and a tensioned position,

(b) a first spring attached to said drive member for tensioning upon cocking of the camera,

(c) a first detent lever for holding said drive member in a tensioned position,

(d) means on said shutter for actuating said detent lever when the shutter arrives at its closed position,

(e) a pivoted lever for driving said reflex mirror from its first position to its second position,

(f) a second spring connected to said pivoted lever to urge the reflex mirror towards its second position,

(g) a second detent lever for holding said pivoted lever in a cocked position against the action of said second spring, and

(h) an arm disposed on said drive member and engageable with said pivoted lever to drive the latter during a return movement of the drive member to its rest position,

whereby on release of said drive member the latter moves under the tension of said first spring to drive simultaneously said shutter blades into their starting positions and to drive said pivoted lever against the action of said second spring permitting the reflex mirror to return to its first position.

4,236,798

FILM PACK

Robert A. Sylvester, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1979, Ser. No. 84,474

Int. Cl.³ G03B *17/50, 19/10, 17/26*

U.S. Cl. 354—181 **9 Claims**



7. In a film magazine including a housing for receiving a stack of photographic film units and a movable member movable between a first position in the stack and a second position in which the movable member is removed from the stack; the improvement comprising:

means for guiding said movable member from its second position to a position in the stack between the top film unit and the next film unit, and

means on said movable member for engaging the top film unit and moving that unit from the stack upon movement of said movable member from its position in the stack toward its second position.

4,236,799

UNWINDING-MECHANISM RELEASING DEVICE FOR USE IN A CAMERA

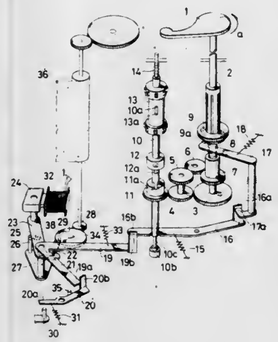
Takumi Kobayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1978, Ser. No. 911,579

Claims priority, application Japan, Jun. 1, 1977, 52-64221

Int. Cl.³ G03B *1/24, 17/42*

U.S. Cl. 354—209 **1 Claim**



1. An unwinding-mechanism releasing device for use in a camera of the type having a clutch mechanism interposed between a winding mechanism and a sprocket, said mechanism being brought into engaged and disengaged conditions, and a locking member movable between a first position and a second position in which it retains said clutch mechanism in a disengaged condition, and an electromagnet for releasing a shutter, the improvement comprising:

first biasing means for biasing said locking member toward said second position;

a pivotably mounted operating member pivotable between a releasing position in which it retains said locking member in its first position and a locking position in which said locking member is permitted to assume said second position, said operating member being retained in said locking position by said electromagnet until the end of the shutter operation at which time the electromagnet is operated to

permit movement of said operating member from its locking position to its release position;

gear means rotatable during shutter operation and having a pin thereon which, when said gear means is permitted to rotate, will abut said operating member at the end of rotation of said gear means to thereby urge said operating member to its locking position;

a control member pivotably mounted coaxially with said operating member and pivotable between a first position in which rotation of said gear means is permitted and a second position in which an end portion of said control member engages and prevents rotation of said gear means;

means for biasing said control member toward its second position;

abutment means on said control member for engaging said operating member so that said control member will be moved to its first position by said operating member when said operating member moves to its release position;

retaining means movable between a first position, in which it holds said operating member in its release position, and a second position in which it releases said operating member, said retaining means being biased toward its first position; and

means for moving said retaining means to its second position at the termination of lifting movement of a mirror, thereby mechanically releasing said operating member to thereby permit said operating member, when released by said electromagnet, to move to said release position under the force of said first biasing means, thereby moving said control member to its first position and permitting rotation of said gear means, said abutment means engaging said operating member at the completion of shutter operation to thereby move said operating member back to its locking position.

4,236,800

CAMERA FILM STOP POSITION ADJUSTING MECHANISM

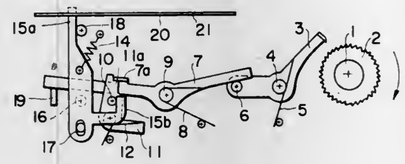
Mitsuo Satoh, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,701

Claims priority, application Japan, Aug. 22, 1978, 53/115095[U]

Int. Cl.³ G03B *1/14*

U.S. Cl. 354—213 **7 Claims**



1. A film stop position adjusting mechanism comprising:

a stop lever (**3**) engagable with a ratchet gear (**2**) and adapted to stop the feeding of a film having a protrusion;

a ratchet releasing lever (**7**) for holding said stop lever (**3**) at a release position, said ratchet releasing lever having a bent portion (**7***a*);

a locking lever (**11**) having a step (**11***a*) engaging said bent portion (**7***a*) of said ratchet releasing lever to lock said ratchet releasing lever;

a detection lever having a protrusion (**15***a*) insertable into a perforation of said film to detect a film stop position, and an arm (**15***b*) having a straight edge portion and

said locking lever (**11**) provided with a pin (**10**) whose position can be adjusted by rotation, said pin engaging with said arm (**15***b*) of said detection lever adapted to detect a film stop position by insertion of said protrusion (**15***a*) into a film perforation, and wherein said film stop position is adjusted by changing the timing at which said step (**11***a*) is disengaged from said bent portion (**7***a*).

4,236,801

EXPOSURE FACTOR SWITCHING CIRCUIT

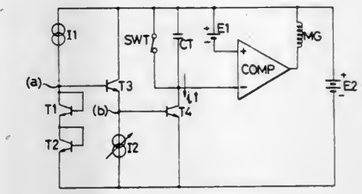
Satoshi Takami, Eiza, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,422

Claims priority, application Japan, Feb. 17, 1978, 53-19390[U]

Int. Cl.³ G03B *9/08;* **H03K** *5/13;* **H01H** *47/32*

U.S. Cl. 354—234 **9 Claims**



1. For an exposure factor switching circuit for a camera with an exposure control circuit having an emitter follower transistor applying a voltage through at least one transistor which is driven by a current flowing in the emitter thereof, a time constant circuit controlling a shutter control magnet with an integration voltage due to a collector current of a second transistor, the output of said emitter follower transistor being applied to the base of said second transistor, the improvement comprising; a bias current supplying circuit comprising a plurality of transistors, one transistor of said plurality of transistors being emitter coupled to an exposure factor switch, said bias current supply coupled to the emitter of said emitter follow transistor, and wherein said switch is operated to selectively activate said plurality of transistors to vary the emitter current of said emitter follower transistor.

4,236,802

SAFETY DEVICE FOR CAMERA

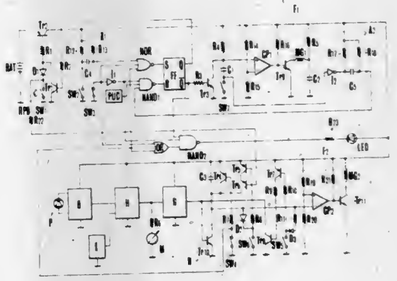
Masanori Uchidoi, Yokohama; Masaharu Kawamura, Kawasaki; Yoshihiro Shigeta, Tokyo; Yoji Sugiura; Hiroshi Yamamoto, both of Yokohama, and Nobuo Tezuka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,800

Claims priority, application Japan, Sep. 14, 1978, 53-113047

Int. Cl.³ G03B *17/38, 17/18*

U.S. Cl. 354—268 **12 Claims**



1. A safety device for a camera having a count switch to be switched over out of a first state into a second state with shutter release operation and a timing circuit for starting clock operation when the count switch has assumed the second state comprising:

means (NOR) for detecting the state of the count switch so as to prevent the release operation when the count switch

has assumed the second state before the release operation is initiated.

4,236,803

LENS FOR A CAMERA PROVIDED WITH CODE PATTERNS

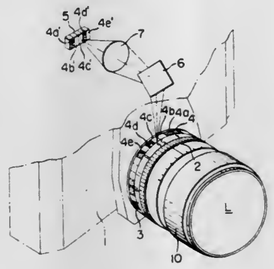
Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 12, 1979, Ser. No. 56,857

Claims priority, application Japan, Jul. 12, 1978, 53/83943; Jul. 12, 1978, 53/83944

Int. Cl.³ G03B *7/093, 17/00, 17/18*

U.S. Cl. 354—286 **15 Claims**



9. A lens for use with a camera body having an optical system for imaging a predetermined position of the outer peripheral portion of the lens within the camera body, and a processing device for reading the lens information by a signal from photoelectric converter means provided at the image forming position of said optical system, said lens including;

n bits of code patterns provided at the predetermined position of the outer peripheral portion of the lens, said patterns representing the lens information.

4,236,804

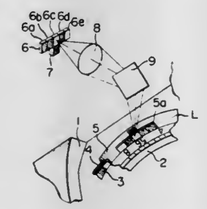
LENS INFORMATION INTRODUCING DEVICE HAVING CORRECTED EXTRANEOUS LIGHT

Kenji Toyoda, Kawasaki, and Jun Shimomura, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 19, 1979, Ser. No. 59,037

Int. Cl.³ G03B *7/093, 17/00, 17/18*

U.S. Cl. 354—286 **8 Claims**



1. A lens information introducing device in a camera, comprising:

a digital code pattern provided on a lens, said pattern being photoelectrically legible;

optical means for introducing said code pattern into a camera body and imaging the same at a predetermined position;

photoelectric converter means disposed at said predetermined position, said photoelectric converter means being effective to photoelectrically converting the image of said code pattern formed by said optical means; and

shaping means for comparing the photoelectrically converted signal by said photoelectric converter means with a standard signal and producing the lens information indicated by said code pattern as a digital signal, said standard signal depending on the brightness of illuminating light onto said code pattern.

4,236,805

DEVELOPING APPARATUS FOR THE DRY DEVELOPMENT OF PHOTOSENSITIVE SHEET MATERIAL

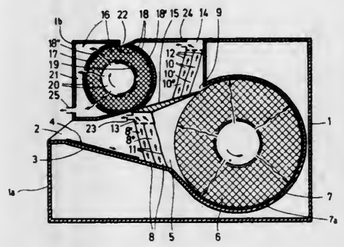
Walter Fries, Hofbachstr, 12, 59 Siegen 21, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,758

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820133

Int. Cl.³ G03D *7/00*

U.S. Cl. 354—300 **8 Claims**



1. In a device for developing an exposed sheet with a gas or vapor in a dry developing process, the improvement which comprises in combination:

a housing formed with a developing chamber, a first transport means in said developing chamber, and means for contacting said sheet in said developing chamber with a developing agent, said developing chamber having an inlet and an outlet for said sheets;

a first shielding chamber at said inlet in said housing and a second shielding chamber at said outlet in said housing for blocking the escape of said agent from said developing chamber, each of said shielding chambers being formed with a plurality of curtains defining between them respective compartments successively traversed by the sheet, and means for evacuating the compartments of each of said shielding chambers; and

means defining a degassing chamber in said housing downstream of said second shielding chamber in the direction of movement of said sheet, said degassing chamber being provided with second transport means for advancing said sheet therethrough, such degassing chamber being subdivided by said second transport means into a superatmospheric pressure zone and subatmospheric pressure zone, said zones being in communication with one another through said second transport means, each of said transport means being a respective drum composed of porous material, the drum of said developing chamber being supplied with said agent and the drum of said degassing chamber being supplied with a degassing medium.

4,236,806

DENTAL FILM PACKET AND PROCESSOR THEREFOR

Howard W. Hoadley, 9143 Petit Ave., Sepulveda, Calif. 91343

Filed Jan. 21, 1976, Ser. No. 650,954

Int. Cl.³ G03D *9/02;* **G03B** *41/16;* **G03C** *5/16, 1/48*

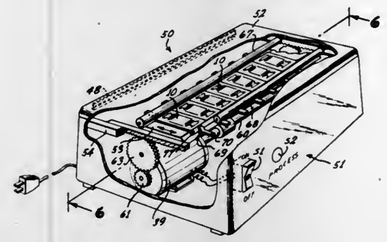
U.S. Cl. 354—303 **9 Claims**

1. A processor for developing a film chip having emulsion coatings on both surfaces thereof and enclosed in a packet together with a pair of pods containing a viscous developer solution on one end of the film chip and a pair of pods containing a viscous fixer solution on the other end thereof, said processor comprising:

a first releasing means and a spaced apart second releasing means;

transport means for said packet disposed between said first and second releasing means, said packet held on the transport means with the pair of pods on the respective ends thereof adjacent said first and second releasing means; and

control means operable to move said transport means and thereby said packet in one direction past said first releasing means to release the developer solution contained in the pair of pods on one end of said packet and to cause said developer solution to be evenly spread in a thin layer over the emulsion coatings on said film chip and then to move said packet in the opposite direction past said second releasing means to release the fixer solution contained in the pair of pods on the other end of said packet and to cause said fixer solution to be evenly spread in a thin layer over the emulsion coatings on said film chip.



4,236,807

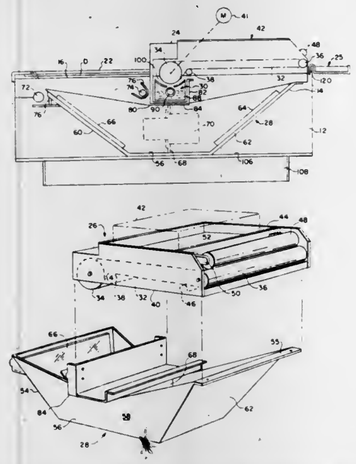
MODULAR ELECTROPHOTOGRAPHIC COPYING MACHINE

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Feb. 12, 1979, Ser. No. 11,307

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **5 Claims**



1. An electrophotographic copying machine for producing a copy of a document comprising:

(a) a modular enclosing external cabinet assembly;

(b) a self-contained mechanical assembly module enclosed within said external cabinet assembly for receiving an image of a document, converting said image into a latent electrostatic image, and then ejecting therefrom on a sheet of paper a toned image of said latent electrostatic image, said mechanical assembly further including a supporting frame, a plurality of electrophotographic belt supporting rollers mounted on the frame, an electrophotographic belt mounted on said plurality of rollers to define a pair of generally parallel reaches, a drive motor operably connected to one of said rollers, a charging device mounted on said supporting frame disposed adjacent the belt in the vicinity of the lower reach thereof, and

(c) a self-contained optical assembly module removably mounted in said external cabinet assembly for projecting an image to the mechanical assembly module, and said optical module comprising an open-top housing of frusto conical configuration and seating an optical projection system therein, said housing including opposite wall means including notch means opening upwardly thereof, and

(d) a self-contained toner assembly module removably mounted relative to said optical assembly module for toning the latent assembly electrostatic image formed within the mechanical assembly module, the said toner assembly being removably seated within said notch means nested within said housing in noninterferent relationship with said optical projection system, said toner supply module comprising a container support seated in said notch means, a container having a slotted top wall, accommodated within the container support, a supply of liquid toner in the container and a feed roller within the container for leading liquid toner through said slotted top, said slotted top of said container being located in proximity to the lower reach of said electrophotographic belt when the container is seated in said container support, and

(e) an image transfer device, including a transfer roller mounted on said supporting frame for transferring the toned image to a carrier sheet for delivery thereof to the exterior of said cabinet assembly.

4,236,808

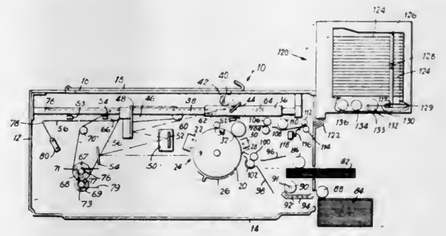
COPIER SCAN AND COLLATOR BACK BAR CONTROL

Robert J. Tusso, Old Saybrook; Peter Feher, East Hartford, both of Conn.; Max Schultes, Old Tappan, N.J., and Dietmar Eberlein, New City, N.Y., assignors to Savin Corporation, Valhalla, N.Y.

Filed Jan. 11, 1979, Ser. No. 2,670

Int. Cl.³ G03G *15/28*

U.S. Cl. 355—8 **11 Claims**



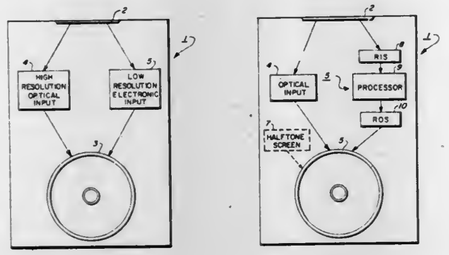
10. Apparatus including in combination, a copier adapted to make copies of different lengths, a collator having bins for receiving copies from said copier, said collator including a back bar, means mounting said back bar for movement to adjust the size of said bins, means responsive to movement of a sheet of copy material through the machine for measuring the length of a copy made by said machine and means responsive to said measuring means for moving said back bar to adjust said bins to the size of said copy.

4,236,809

LOW RESOLUTION CORRECTION APPARATUS AND METHOD FOR ELECTROPHOTOGRAPHIC COPIERS

Dorian Kermisch, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 4, 1979, Ser. No. 71,829
Int. Cl.[3] G03G *15/01*
U.S. Cl. 355—4 **17 Claims**



1. Electrophotographic reprographic apparatus comprising
a photoconductive member mounted for cyclic movement relative to corona generating means for charging the surface of the member and exposure means for exposing the charged surface of electromagnetic radiation for creation of latent electrostatic images,
a platen for supporting an original to be reproduced,
optical exposure means for exposing the charged member to an optical image of an original at the platen including lamp means for illuminating an original at the platen and lens means for projecting an image of an illuminated original to the charged member to create an optical latent electrostatic image and
raster exposure means for exposing the charged member to a raster image of the same original at the platen including raster input scanning means for generating electrical raster image signals representative of an image of the original, processor means coupled to the raster input scanning means for generating correction signals corresponding to the raster image signals and raster output scanning means for moving a spot of illumination in a raster pattern over the charged surface and for modulating the intensity of the spot in response to the correction signals to create a raster latent electrostatic image,
said optical and raster latent images being created during the same cycle of the photoconductor member and being in registration with each other.

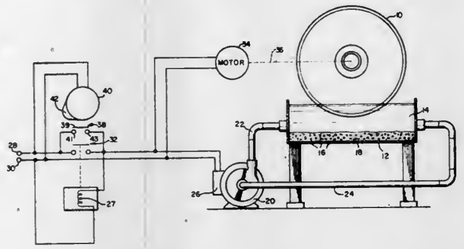
4,236,810

MEANS FOR INHIBITING THE SEPARATION OF TONER PARTICLES FROM DISPERSANT IN A COPY MACHINE

Samuel J. Paul, Ardsley, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,265
Int. Cl.[3] G03G *15/10*
U.S. Cl. 355—10 **7 Claims**

1. In a copy machine including a reservoir containing a liquid developer consisting of toner particles in a dispersant, a source of voltage, a power-on switch coupled to said voltage source, a timer relay adapted to maintain said power-on switch closed for a predetermined period of time after actuation of said switch, a copier drum, first motor means coupled to said switch for rotating said copier drum in response to each actuation of said switch, a pump and interconnecting tubes coupled to said reservoir, second motor means coupled between said switch and said pump for activating said pump to circulate said liquid developer through said interconnecting tubes and said reservoir for said predetermined period of time, an improvement for inhibiting the separation of toner particles from said dispersant during periods of non-use comprising:
second switch means coupled to said power-on switch, timing motor means coupled to said source of voltage, and



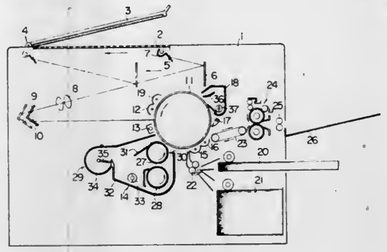
means coupled to said timing motor for periodically actuating said second switch whereby said first and second motor means will be actuated to rotate said copier drum and to activate said pump thereby circulating said liquid developer.

4,236,811

ELECTROPHOTOGRAPHIC COPYING APPARATUS

Akira Hirose, Tokyo; Keiji Sugita, Yokohama, and Yasuzi Takagi, Matsudo, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Dec. 28, 1978, Ser. No. 973,802
Claims priority, application Japan, Jan. 7, 1978, 53-618
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 R **2 Claims**



1. In an electrophotographic copying machine having a movable photoconductor, a contact glass adapted for supporting an original spaced from the photoconductor, imaging means between the contact glass and the photoconductor for focusing an image of an original document to be copied onto the photoconductor, a developing station in the path of motion of the photoconductor for developing the image, and a pressure plate movable toward and away from the contact glass for holding an original document to be copied, having a light-reflecting surface on a side thereof facing the contact glass, the improvement comprising:
detection means associated with the pressure plate for sensing the position of the pressure plate with respect to the contact glass;
quenching means facing the photoconductor at a position upstream of the developing station in the direction of movement of the photoconductor; and
control means connected between said detection means and said quenching means for activating said quenching means when the pressure plate is in a position away from the contact glass.

4,236,812

IMAGE RECORDING METHOD FOR ELECTROPHOTOGRAPHIC FILM

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation of Ser. No. 688,623, May 21, 1976, abandoned, which is a continuation of Ser. No. 389,149, Aug. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 260,782, Jun. 8, 1972, abandoned. This application Mar. 7, 1979, Ser. No. 18,295
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 E **11 Claims**

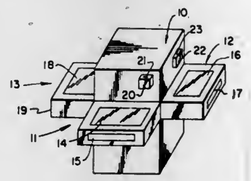
1. In a method for recording an image of a scene or the like on an electrophotographic member which has a coating of photoconductive material and an ohmic base and including the steps of charging the coating in darkness to a certain surface charge potential at which the coating is to be discharged, selectively discharging the charged coating after reaching said certain potential by immediately exposing the same to light from a scene projected thereon and applying toner after exposure is completed to the selectively discharged coating to form a visible image of the scene, the invention comprising the steps of:
A. measuring the intensity of the light produced by the scene which is to be projected onto the coating,
B. measuring the instantaneous surface charge potential of said coating during the charging simultaneously with the measurement of the light intensity,
C. comparing, simultaneously, both the measured light intensity and the changing instantaneous surface charge potential of the coating to provide a varying comparison signal,
D. providing reference values of charge potential representative of charge potential values predetermined to be substantially optimum for good quality imaging over a series of light intensity values,
E. optionally fixing either one or the other of the functions of charge potential and the time of exposure, and varying that function which is not fixed, the variation being responsive to the relationship as represented by the said comparison signal and
F. discontinuing that function which is varied in response to the relationship represented by the comparison signal at the time that the comparison signal reaches a reference value for the particular measured light intensity.

4,236,813

MULTIPLEX PHOTOCOPIER SYSTEM HAVING PLURAL SCANNERS WITHOUT MEMORY

Alfred B. Levine, 2924 Terrace Dr., Chevy Chase, Md. 20015

Continuation-in-part of Ser. No. 36,099, May 4, 1979, which is a division of Ser. No. 925,290, Jul. 17, 1978, which is a continuation-in-part of Ser. No. 775,480, Mar. 8, 1977, abandoned, which is a continuation of Ser. No. 718,260, Aug. 27, 1976, Pat. No. 4,182,568. This application May 15, 1979, Ser. No. 39,107
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 R **7 Claims**



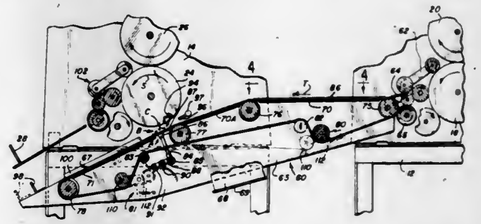
7. A multiplexing electrostatic photocopier comprising:
a plurality of independently operable scanning stations, each adapted to randomly receive optically reproduceable images to be copied,
a common high speed electrostatic developing mechanism responsive to said plurality of scanning stations for producing copies of said images,
and control means for multiplexing said common electrostatic developing mechanism with said plurality of stations to selectively respond to different ones of said stations in time sequence in a predetermined order.

4,236,814

TRANSPORT SYSTEM FOR ADVANCING COPY SHEETS THROUGH TANDEM DUPLICATING SYSTEM

Kenneth J. Tonkin, Glenview, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Jun. 13, 1979, Ser. No. 48,082
Int. Cl.[3] G03B *27/32, 27/52*
U.S. Cl. 355—26 **14 Claims**



1. In a duplicating system having a first print station for applying an image to a first side of a copy sheet and a second print station for applying an image to a second side of the same copy sheet, the copy sheet having a leading edge and a trailing edge, and an improved paper transport means for transporting the copy sheet from the first print station to the second print station, the first print station including a sheet-ejector for introducing the copy sheet to the transport means and the second print station including a sheet receiver for receiving the copy sheet from the transport means, the improvement comprising:
(a) a sheet conveyor mounted between the first print station and the second print station for receiving a copy sheet ejected by the ejector means and engaging only the second side thereof, the sheet conveyor having a surface movable in one direction for transporting the copy sheet from the first print station to the second print station; and
(b) a sheet transfer means responsive to arrival of the copy sheet at the second print station for transferring the trailing edge of the copy sheet to the sheet receiver of the second print station with the second side of the copy sheet oriented to have an image applied thereto.

4,236,815

ADJUSTABLE WIDTH PUNCH MARKING APPARATUS WITH INTERCHANGEABLE SPACER INSERTS

Richard D. Anderson, Maple Grove, and John A. Wedel, Minneapolis, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

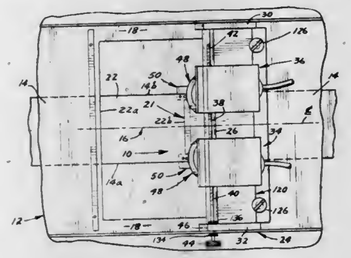
Filed Aug. 6, 1979, Ser. No. 63,675
Int. Cl.[3] G03B *29/00, 27/52*
U.S. Cl. 355—29 **13 Claims**

1. In a photographic printer in which a photographic print paper strip is transported along a paper path and is exposed to light from a photographic film original at a print mask location, adjustable indicia producing apparatus for providing indicia at selected locations of the print paper and being adjustable to accommodate print paper strips of different widths, the adjustable indicia producing apparatus comprising:
guide means positioned proximate the print mask location and defining a guide path transverse to the paper path;

first and second carriage means movable along the guide path on opposite sides, respectively, of a center line of the paper path;

carriage positioning means for moving the first and second carriage means along the guide path essentially symmetrically about a center line of the paper path;

insert means for insertion between the first and second carriage means and for engagement with the first and second



carriage means thereby defining a spacing between the first and second carriage means for a desired print paper width; and

first indicia producing means carried by the first carriage means for providing indicia at selected longitudinal positions as the print paper is advanced along the paper path, the first indicia producing means having a position transverse to the paper path which is established by engagement of the first carriage means with the insert means.

4,236,816

ELECTRONIC AUTOMATIC TIMING DEVICE FOR PHOTOGRAPHIC ENLARGEMENTS OR REPRODUCTIONS BY PROJECTION OR CONTACT

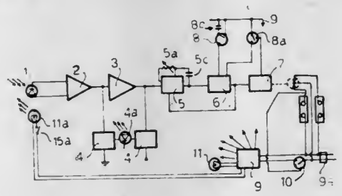
Eugenio Costa, C.so Re Umberto, 17, Torino 10121, Italy

Filed Oct. 4, 1977, Ser. No. 839,250

Claims priority, application Italy, Oct. 4, 1976, 69378 A/76

Int. Cl.³ G03B *27/78*

U.S. Cl. 355—68 **6 Claims**



1. A device for controlling the exposure of photographic prints to be used in connection with a separate enlarger or contact printer and a darkroom safelight, comprising

a photometric element for receiving reflected light from a chosen area of the illuminated surface of the image to be printed,

a light source for projecting light over said area,

level sensing means,

means responsive to the output of said photometric element, while the latter receives reflected light from said illuminated surface, for providing buffering and amplification to said photometric element's output signal and for commanding through said level sensing means an alert display to light up as soon as said photometric element's output signal is too high or too low for said responsive means to work linearly with said photometric element, and

means for activating the enlarger or contact printer and safelight for a time dependent on the amount of the reflected light received by said photometric element during exposure.

4,236,817

PHOTOGRAPHIC COPYING MACHINE WITH EXCHANGEABLE FORMAT MASKS

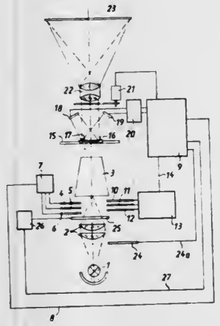
Franz Hofstetter, Hebertshausen, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,308

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833423

Int. Cl.³ G03B *27/72*

U.S. Cl. 355—68 **9 Claims**



1. An improved photographic copying machine of the type provided with means for positioning an original to be copied including format mask means for establishing a variable-area format-mask frame for originals to be copied, exposure means for exposing the original to be copied to copying light, variable projection means for projecting a copying-light image of the original into a predetermined plane where copying medium is to be situated, and exposure-duration control means operative for automatically implementing the exposure duration of the original and copying medium, the improvement comprising frame-area measuring means operative for ascertaining the size of the variable format-mask frame and modifying the operation of the exposure-duration control means in dependence thereon by photometrically evaluating light transmitted through the format-mask frame in the absence of an original to be copied.

4,236,818

EXPOSURE TIME CONTROL FOR PHOTOGRAPHIC PRINTER

Jess F. Fauchier, II, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Sep. 7, 1979, Ser. No. 74,399

Int. Cl.³ G03B *27/73*

U.S. Cl. 355—77 **18 Claims**

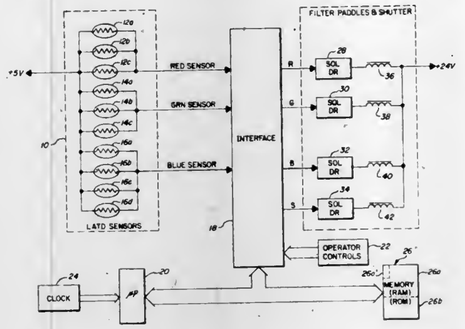
1. A method of controlling red, green and blue exposure time in a photographic printer based upon red, green and blue large area transmission density (LATD) sensor readings, the method comprising:

making red, green and blue LATD sensor readings prior to initiation of an exposure cycle;

calculating red, green, and blue initial exposure times based upon the LATD sensor readings;

initiating an exposure cycle;

making LATD sensor readings during the exposure cycle; and



modifying red, green and blue exposure times during the exposure cycle as a function of the LATD sensor readings made during the exposure cycle.

4,236,819

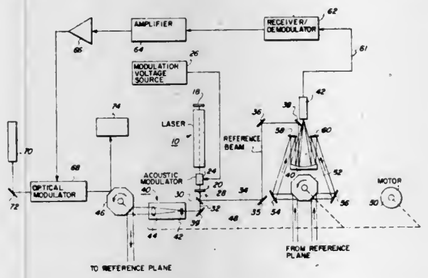
IMAGERY WITH CONSTANT RANGE LINES

Leland D. Green, Sierra Madre, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1974, Ser. No. 494,009

Int. Cl.³ G01C *3/08;* **H04N** *7/00*

U.S. Cl. 356—5 **1 Claim**



1. Apparatus for producing a range contour map of an area consisting of spaced constant range lines with equal range differences between adjacent lines, comprising:

a mode-locked laser producing a beam of pulsed light of highly stable pulse repetition frequency,

means for splitting said beam into first and second beams,

means for scanning said area with said first beam,

a photodetector for converting an optical signal at its input into an electrical signal at its output,

means for applying light reflected from said area as a result of said scanning to the input of said photodetector,

means for applying said second beam to the input of said photodetector,

a radio receiver tuned to a harmonic of said pulse repetition frequency and containing demodulating means for producing at its output a signal representing the amplitude modulation of a radio frequency signal at its input,

means for applying the output signal of said photodetector to the input of said receiver, and

means synchronized with said scanning means for making a visual recording of the output of said receiver, said recording constituting said contour map.

4,236,820

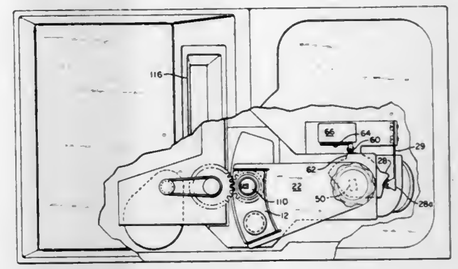
CUVETTE AND STANDARD HOLDER FOR OXIMETERS

Terence Walker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 12, 1979, Ser. No. 11,460

Int. Cl.³ G01N *21/55, 21/13, 33/72*

U.S. Cl. 356—41 **5 Claims**



1. In apparatus for reflective oximetry for determination of the percentage of oxygen saturation of whole blood wherein a sample of blood is placed in a cuvette and supported on means such that light of known wavelengths may be directed through an optical aperture onto the optical surface of the cuvette and the light reflected therefrom is measured and compared to reflected light from a reflectance standard and the percentage of oxygen concentration calculated therefrom, the improvement comprising:

apparatus for supporting said cuvette and said reflectance standard for light reflection measurements including;

arm means journaled for rotary motion in a substantially horizontal plane on said oximetry apparatus to at least two positions contiguous said optical aperture;

platform means having a cuvette station and a reflectance standard station disposed in said arm means displaced from said journal and relatively adjacent said optical aperture, said platform being loosely retained in said arm so as to bear directly on said oximetry apparatus adjacent said optical aperture;

means for orienting said platform means in said arm with respect to the vertical center of said optical aperture;

leg means disposed on the underside of said platform means, said leg means adapted to determine a reference plane in said platform parallel to the plane of said optical aperture when said legs bear on said oximetry apparatus;

a bearing surface surrounding said cuvette station, said bearing surface disposed in a plane at a predetermined distance from and parallel to said reference plane;

cuvette retaining means disposed in said platform adjacent said cuvette mounting station for seating said cuvette on said bearing surface at said mounting station; and

a light reflection standard disposed in said platform means adjacent said cuvette station and substantially equidistant said journal as said cuvette station.

4,236,821

METHOD AND APPARATUS FOR TESTING OPTICAL RETRODIRECTIVE PRISMS

Jurgen R. Meyer-Arendt, Forest Grove, Oreg., assignor to McHenry Systems, Inc., Donald, Oreg.

Filed Aug. 10, 1979, Ser. No. 65,531

Int. Cl.³ G01B *9/00;* **G01N** *21/01*

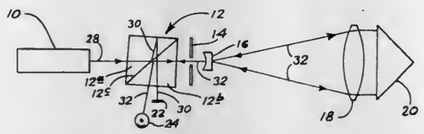
U.S. Cl. 356—124 **18 Claims**

1. Apparatus for testing optical retrodirective prisms for light reflection efficiency, comprising:

(a) light generating means for generating a beam of light,

(b) optical beam splitter means in the path of the beam to generate a signal beam and a reference beam, positioned at a predetermined angle other than 45° with reference to the axis of said beam of light,

(c) aligned pinhole means, lens means and a retrodirective prism positioned in the path of the separated signal beam for reflection by the prism of the signal beam back substantially parallel to its initial path, through the lens means, pinhole means and beam splitter, and



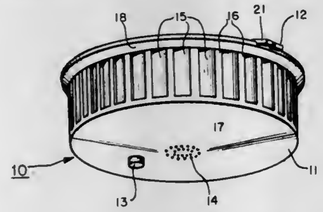
(d) light intensity measuring means positioned in the path of the reflected signal beam for measuring the intensity thereof, and hence the efficiency of the prism.

4,236,822

FIRE DETECTOR HOUSING

Michael G. Jaretsky, Sparta, N.J., and Michael Lax, New York, N.Y., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Jan. 22, 1979, Ser. No. 5,110
Int. Cl.³ G08B *17/10*
U.S. Cl. 356—256 **7 Claims**



1. A fire detector housing having a peripheral area including a plurality of vanes spaced around the peripheral area to admit gases and smoke particles into the housing, each vane being aligned at an acute angle relative to a tangent at the peripheral area, such that the vanes both provide an effective entrance area for the gases and smoke particles and prevent passage of such combustion products directly through the housng in a straight line, in which the vanes are disposed in a circular pattern, and the vanes collectively define a window area, the acute angle of the vanes ensuring that gases are readily admitted over substantially more than half the window area.

4,236,823

DIFFRACTOMETER FOR MEASURING SIGNAL DEPTH AND WIDTH

William R. Roach, Rocky Hill, and Ping Sheng, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,110
Claims priority, application United Kingdom, Sep. 18, 1978, 37195/78
Int. Cl.³ G01B *9/02, 11/22*
U.S. Cl. 356—351 **10 Claims**

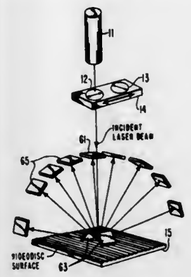
1. Depth estimating apparatus for use with a structure having successively spaced apart depressions of a given cross-sectional shape, said apparatus comprising:

means for illuminating said depressions on said surface with a coherent beam of light, the structure of the depressions in the region illuminated by said light beam serving as a diffraction grating for diffracting light from said illuminated region in a diffraction pattern having a zero order and higher orders;

means for detecting the light power diffracted from the illuminated region in the higher diffraction orders; and

means, interposed between said illuminating means and said detecting means, for polarizing the light detected in a first direction and in a second direction orthogonal to said first direction;

said detecting means providing a first output of the light



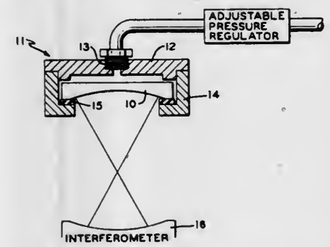
power for said first polarization and a second output of the light power for said second polarization, the ratio of said light power outputs being indicative of the depression depth.

4,236,824

METHOD FOR CORRECTION OF FORGED OPTICAL ELEMENTS

Rogers H. Anderson, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 21, 1979, Ser. No. 50,838
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—359 **8 Claims**



1. Apparatus for correction of forged halide optical elements comprising:

an enclosed chamber for supporting a forged halide optical element within the chamber, the chamber having resilient gas tight sealing and support means for the optical element, the chamber having an opening therein for direct viewing of the optical element supported therein;

means including controllable gas pressure regulator means for connecting a source of pressurized gas to said enclosed chamber so that a controllable gas pressure can be applied in said chamber, said gas pressure being thereby applied to the inner face of the supported optical element to cause deformation thereof to achieve a desired correction of said element; and,

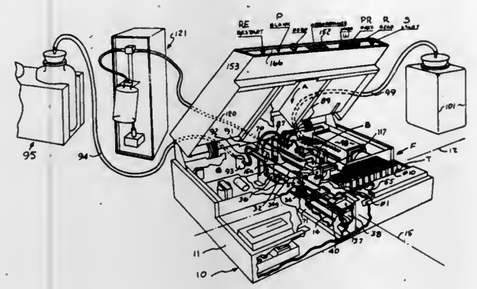
interferometer means positioned to view said optical element through said chamber opening to determine when the desired correction is achieved.

4,236,825

AUTOMATIC MONOCHROMATIC LIGHT ABSORBANCE MEASUREMENT ANALYZER

Saul R. Gilford, Oberlin; Robert J. Emary, Wakeman, and Glen A. Carey, North Ridgeville, all of Ohio, assignors to Gilford Instrument Laboratories, Inc., Oberlin, Ohio

Filed Aug. 1, 1978, Ser. No. 929,987
Int. Cl.³ G01N *21/25*
U.S. Cl. 356—414 **8 Claims**



1. An apparatus for monochromatically measuring a fluid sample in a cuvette comprising: vessel means each containing at least one cuvette into which is disposed a fluid sample to be analyzed: transfer means for carrying said vessel means to a processing path: conveying means including a drive belt mechanism disposed along said path; first block means connectable with said belt mechanism being movable therewith and operable to move the transfer means in a direction perpendicular to said processing path and to locate said transfer means at one end of said path: means connectable with said first block means and engageable with said transfer means for releasably locking said transfer means at said one end of said path: second block means actuatable by said first block means and movable along said path effective to move the vessel means individually off said means and along the processing path to a first predetermined position thereon: reagent additive means for adding reagent to each cuvette as it is disposed at said first predetermined position on said trackway: analyzing means disposed at said predetermined position alongside the trackway for taking a monochromatic measurement of the fluid sample and reagent solution in each cuvette; and means for positioning each of the cuvettes one at a time in timed sequence opposite the analyzing means to enable the analyzing means to take a monochromatic measurement of the solution in each cuvette.

4,236,826

APPARATUS FOR OPTICALLY MEASURING A PROPERTY OF AN OBJECT

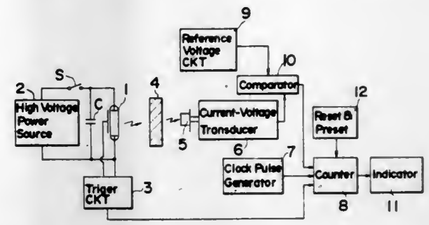
Akio Yamanishi, Tondabayashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 1, 1979, Ser. No. 16,561
Claims priority, application Japan, Mar. 7, 1978, 53/26202
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—432 **18 Claims**

1. An apparatus for optically measuring a property of an object comprising:

means for producing a flash of light, the intensity of which decays as a function of time, said function including at least a region wherein the light intensity decays in an exponential function of time;

means for receiving light of the light producing means via the object and for producing an output which changes in response to the change in intensity of the received light;



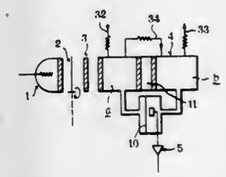
means for detecting a time when the output of said light receiving and output producing means reaches a predetermined level.

4,236,827

OPTO-ACOUSTIC GAS ANALYZER

Atushi Horiba; Osamu Saitoh, and Kozo Ishida, all of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Dec. 4, 1978, Ser. No. 966,052
Int. Cl.³ G01N *21/34*
U.S. Cl. 356—437 **1 Claim**



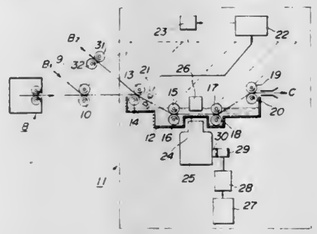
1. An opto-acoustic gas analyzer comprising a black body light source, a chopper means in the path of the light emitted from said light source for intermittently intercepting the light from said light source, a separate positive interference filter in the path of the light from said chopper and having a plurality of film layers for filtering from the light wavelengths of light other than the wavelengths of light absorbed by the gas for which analysis is being conducted, and an opto-acoustic detector for receiving the filtered light from said positive interference filter and having two compartments therein which are aligned in the direction of the passage therethrough of light from said light source, a filter means between said two compartments for filtering from the light passing therethrough at least some of the light having wavelengths in the range of wavelengths absorbed by the gas for which the analysis is being conducted, means for passing the gas to be analyzed into one of said compartments and from said one compartment to the other compartment and out of the other compartment, and a separate chamber connected to said two compartments and said detector further having pressure change detecting means in said separate chamber and producing an electric signal corresponding to such changes.

4,236,828

METHOD FOR CALIBRATING DENSITOMETER OF CATAPHORETIC APPARATUS AND CALIBRATION FILM FOR USE IN SUCH CALIBRATING METHOD

Nobutaka Kaneko, and Ryo Fujimori, both of Hachioji, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,788
Claims priority, application Japan, May 26, 1977, 52-60527
Int. Cl.³ G01N *21/06*
U.S. Cl. 356—444 **5 Claims**



1. A method for calibrating a densitometer of an automatic cataphoresis apparatus including a vessel for containing a clarifying liquid for clarifying a sample bearing film, a photoelectric device for detecting a cataphoretic fractionate image on the sample bearing film situated at a measuring position in the clarifying liquid to produce an electrical signal relating to a density of the cataphoretic fractionate image, a measuring circuit for receiving said electrical signal; means for feeding the sample bearing film to said measuring position and means for discharging the sample bearing film from the measuring position, said method comprising:

introducing a calibration film having standard patterns of known density sandwiched between upper and lower flexible and transparent sheets and an identifying mark into the densitometer by means of said feeding means, but through a path different from the path through which the sample bearing film is introduced,

detecting the calibration film with the aid of the identification mark to set it at the measuring position,

detecting photoelectrically the standard patterns on the calibration film by means of the photoelectric device to produce a standard electrical signal which is used to calibrate the measuring circuit, the photoelectric device in a direction perpendicular to the traveling direction of the film during moving calibration, and

discharging the calibration film from the densitometer by means of said discharging means through the same path as that of the sample bearing film.

4,236,829

SOLID-STATE IMAGE SENSOR

Takao Chikamura, Osaka; Shinji Fujiwara, Minooshi; Yasuaki Terui, Neyagawa, and Masakazu Fukai, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 24, 1979, Ser. No. 6,129
Claims priority, application Japan, Jan. 31, 1978, 53-10110; Feb. 1, 1978, 53-10987; Jun. 19, 1978, 53-74446
Int. Cl.³ H01L *29/161, 27/14, 29/78*
U.S. Cl. 357—16 **11 Claims**

1. A solid-state image sensor, comprising:

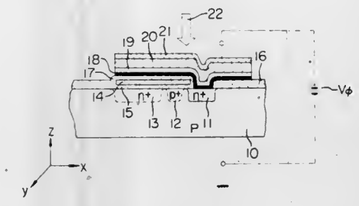
a semiconductor substrate having a region of a first conductivity type and one or more regions of a second opposite conductivity type, said regions extending to a major surface of said substrate;

an insulating layer formed over said major surface of said semiconductor substrate leaving exposed one portion of said region of said second conductivity type;

a first electrode disposed on said insulating layer and extending to overlie and make electrical contact with said region of said second conductivity type;

an n-type semiconductor layer overlying said insulating layer and overlying and in electrical contact with said first electrode;

a film disposed on said n-type semiconductor layer so as to form a heterojunction therewith and comprising $(Zn_{1-x}Cd_xTe)_{1-y}(In_2Te_3)_y$, where $0<x<1$ and $0<y<0.3$;



a second electrode formed on said $(Zn_{1-x}Cd_xTe)_{1-y}(In_2Te_3)_y$ film and electrically connected to said semiconductor substrate;

a charge transfer or switching element formed in one portion of said semiconductor substrate separate from and adjacent to said region of said second conductivity type, and

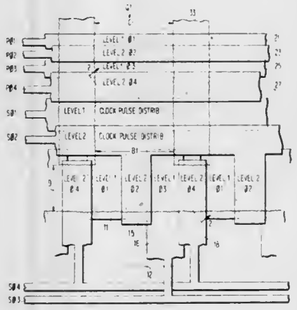
a gate electrode for entering the charge stored in said region of said second conductivity type into said charge transfer or switching element.

4,236,830

CCD PARALLEL-SERIAL AND SERIAL-PARALLEL CHARGE TRANSFER METHOD AND APPARATUS

Eugene S. Schlig, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,590
Int. Cl.³ H01L *29/78*; G11C *19/28*
U.S. Cl. 357—24 **15 Claims**



1. A charge coupled device, comprising:

a semiconductor substrate;

a plurality of parallel electrodes positioned over said substrate and arranged in insulated overlapping relation and responsive to parallel transfer voltage signals for moving a plurality of charge packets along parallel charge transfer channels thereof in said substrate;

a plurality of serial electrodes positioned over said substrate and arranged in insulated overlapping relation and responsive to serial transfer voltage signals for moving a plurality of charge packets in a serial direction along a serial charge transfer path in said substrate;

interface electrode means disposed between said plurality of serial electrodes and a last parallel electrode of said plurality of parallel electrodes and responsive to at least one of said serial transfer voltage signals for passing charge packets from the parallel charge transfer channels of the last parallel electrode to the serial charge transfer path of the plurality of serial electrodes over corresponding interface channels in said substrate; and

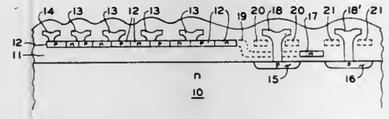
isolation means for defining a parallel channel width for each of said parallel charge transfer channels and for defining an interface channel width for each of the interface channels, the interface channel width being substantially as great as the distance between the outer lateral edges of at least two of the overlapping serial electrodes.

4,236,831

SEMICONDUCTOR APPARATUS

Thomas E. Hendrickson, Wazata, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 27, 1979, Ser. No. 61,215
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **14 Claims**



1. A semiconductor device having therein a plurality of photodiodes connected in series, said device comprising:

a semiconductor material body having a major surface;

an insulating means disposed on said semiconductor material body major surface comprising at least a first layer of insulating material having a surface portion;

a first polycrystalline semiconductor material layer disposed on said first insulating material layer surface portion, said polycrystalline semiconductor material layer comprising a plurality of regions of a first conductivity type and a plurality of regions of a second conductivity type with members of said first and second pluralities of polycrystalline semiconductor material layer regions alternating in position with one another such that a member from either of said first and second pluralities of polycrystalline semiconductor material layer regions is immediately adjacent to at most a pair of members from the opposite plurality, except for two end members each of which are immediately adjacent to only one member from an opposite plurality, there being a semiconductor pn junction between those said polycrystalline semiconductor material layer regions which are immediately adjacent as aforesaid; and

electrical shorting means between each said polycrystalline semiconductor material layer region and at most one of any said polycrystalline semiconductor material layer regions which are immediately adjacent as aforesaid.

4,236,832

STRAIN INSENSITIVE INTEGRATED CIRCUIT RESISTOR PAIR

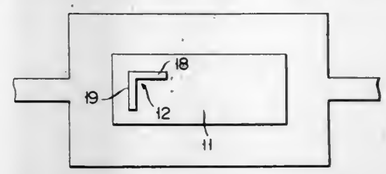
Shigeru Komatsu, Yokohama; Satoshi Takahashi, Tokyo; Kouji Suzuki, and Masao Wakatsuki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 29, 1978, Ser. No. 920,358
Claims priority, application Japan, Jun. 29, 1977, 52-76465; Jul. 14, 1977, 52-83591; Jul. 14, 1977, 52-83593; Jul. 14, 1977, 52-83595
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—51 **10 Claims**

1. A semiconductor integrated circuit device comprising:

a silicon semiconductor substrate of N-conductivity type having a least one main surface of a substantial (100), (511), (811), or (911) crystal face;

a P-conductivity type resistor unit formed in said main surface, said resistor unit including (1) a first P-conductivity type resistor extending in a first direction in said main surface and having a first end and a second end, and (2) a second P-conductivity type resistor extending in a second direction in said main surface perpendicular to said first direction and having a first end solely connected to said second end of said first P-conductivity type resistor and a second end, said first and second P-conductivity type resistors having the same resistance; and



a functional element formed in said main surface apart from said resistor unit and connected to said second end of said second P-conductivity type resistor.

4,236,833

SCREW MACHINE FOR PROCESSING MATERIALS OF SOLID, PASTY AND LIQUID CONSISTENCY

Josef A. Blach, Wilhelmstr. 24, D 7144 Asperg, Fed. Rep. of Germany

Filed Jan. 18, 1979, Ser. No. 4,491
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 2802125; Jun. 24, 1978, 2827877
Int. Cl.³ B29B *1/10*
U.S. Cl. 366—85 **6 Claims**

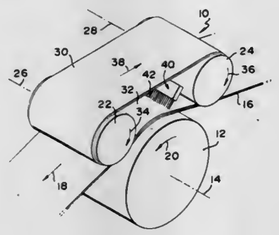
1. Screw machine for processing materials of solid, liquid and pasty consistency, comprising a housing and at least two screw shafts mounted for rotation in a cavity of said housing, means for rotating the screw shafts, the cross-section of said cavity having at least in a selected longitudinal area of the two screw shafts the shape of two overlapping circles concentric to the screw shaft axes, the improvement comprising at least one first circular ring mounted on a first of said screw shafts and a first circular ring mounted on the second of said screw shafts, each of said first circular rings being concentric to the axis of the screw shaft carrying the first circular ring and having a radius that is only slightly smaller than the radius of the cross-sectional circle of the housing cavity pertaining to the respective screw shaft, the first circular ring of the second screw being offset in axial direction relative to the first circular ring of the first screw shaft, at least one second circular ring mounted on the second screw shaft opposite the first circular ring of the first screw shaft, and at least one second circular ring mounted on the first screw shaft opposite the first circular ring of the second screw shaft, each of said second circular rings being concentric to the axis of the screw shaft carrying the second circular ring and having an outer diameter equal to the difference between twice the distance between the screw shaft axes and the outer diameter of the first circular ring disposed opposite to the respective second circular ring.

4,236,834

ELECTROTHERMAL PRINTING APPARATUS

Cameron H. Hafer, and Clayton V. Wilbur, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,710
Int. Cl.³ B41J *3/04*
U.S. Cl. 400—120 **14 Claims**



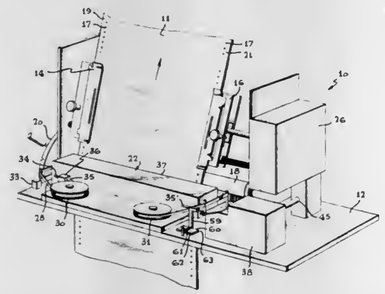
1. A thermal printing arrangement comprising the combination of a thin, electrically resistive element, thermally sensitive printable media disposed in adjacent, heat transfer relation with the resistive element, circuit means for applying a potential difference across discrete areas of the thickness of the resistive element, the resistive element heating at the discrete areas in response to the potential difference and the thermally sensitive printable media undergoing changes in the coloration thereof at discrete areas adjacent the discrete areas of the resistive element in response to said heating, means for moving the printable media and means for moving the resistive element together with the printable media while printing so that a portion of the resistive element having heated discrete areas remains in adjacent, heat transfer relation with the printable media for a selected period of time as the printable media moves.

4,236,835

PRINTER SYSTEM WITH COMPRESSED PRINT CAPABILITY

David W. Mayne, San Juan Capistrano, and Raymond F. Melissa, Costa Mesa, both of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed Dec. 18, 1978, Ser. No. 970,622
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—121 **4 Claims**



1. A dot matrix printer capable of printing given characters in either of at least two different widths comprising the combination of:

means for feeding a printable medium incrementally through a printing line;

a reciprocable hammer bank disposed along said printing line and having a plurality of hammers spaced along the length thereof, each of the hammers including means for imprinting a dot when the hammer is impulsed toward the printing line position, said hammer bank being reciprocable along a selected length of printing line;

means coupled to reciprocate said hammer bank bidirectionally;

means for dividing the printing line into a dot matrix comprised of dot columns spaced along the width thereof and dot rows defining the height thereof, the reciprocable hammer bank sweeping through a different dot row with each reciprocation thereof;

means for determining the dot row through which the hammer bank is reciprocating;

means for generating synchronizing signals indicating the dot columns addressed by the hammers as the hammer bank reciprocates;

means for storing at least two different sets of modulation bits for each of a plurality of different possible characters to be printed, a first of the two different sets of modulation bits for each character comprising a dot matrix of first size and a second of the two different sets of modulation bits for each character comprising a dot matrix of second size different from the first size;

means for receiving indications of characters to be printed and an indication of desired character width;

means responsive to the indications of characters to be printed and the indication of desired character width for selecting one of the two different sets of modulation bits for each character to be printed from the means for storing in accordance with the indication of desired character width;

means responsive to the means for determining for selecting a row of modulation bits from the selected set of modulation bits for each character to be printed corresponding to the dot row through which the hammer bank is reciprocating;

means for selecting the bit in a selected dot column position for each selected row of modulation bits in accordance with the synchronizing signals and comprising a circuit arranged to repeatedly sequence in response to the synchronizing signals through a first or a second predetermined number of dot column positions in accordance with the indication of desired character width;

means for selecting the bits in certain of the selected dot column positions in accordance with the synchronizing signals to define selected character columns being addressed by the hammers and comprising a circuit arranged to repeatedly sequence in response to the synchronizing signals through a first or a second predetermined number of character column positions in accordance with the indication of desired character width;

means for applying said bits in certain of the selected dot column positions to impulse the hammers of the hammer bank;

the bit in a selected dot column position being selected for each of the characters to be printed in response to each synchronizing pulse; and

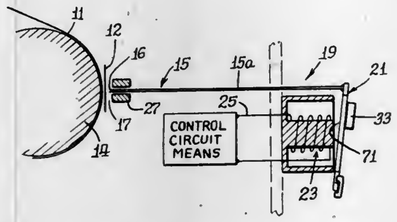
the means for selecting the bits in certain of the selected dot column positions further comprising means for sequencing through a first or a second predetermined number of values in accordance with the indication of desired character width, and means for comparing the output of said circuit arranged to repeatedly sequence with the output of the means for sequencing through a first or a second predetermined number of values and selecting the bit of a selected dot column position whenever a comparison occurs.

4,236,836

DOT IMPACT PRINTER AND ACTUATOR THEREFOR

Ingard B. Hodne, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Mar. 30, 1979, Ser. No. 25,378
Int. Cl.³ B41J *3/10*
U.S. Cl. 400—124 **2 Claims**



1. In a dot matrix printer for printing a line of dots, the combination comprising:

a plurality of straight print wires aligned in a substantially horizontal line and spaced from each other in a horizontal direction and each having a print end, the other end having a bent portion

a laterally movable guide means for shifting laterally said print ends within at least one matrix,

a plurality of stationary electromagnetic actuators for said print wires arranged in upper and lower rows,

a plate armature on each of said actuators having an operative connecting portion fastened to another end of the print wire to shift its associated straight print wire to a printing position,

a flexible connecting means joining each of said bent portion of said print wires to its actuating armature and allowing shifting of its associated print end across the entire matrix by said guide means, by permitting rotational freedom for said print wires about said respective bent portions

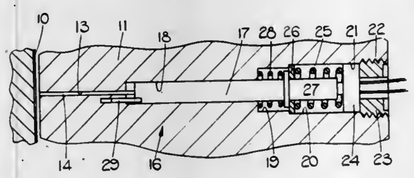
and an integral return spring portion on each of said armatures to provide a return spring force to return said print wires from said print medium, means to shift said print ends in first one direction across at least a portion of one matrix and then to return said print ends in the opposite direction while selected ones of said actuators are actuated to print dots in said horizontal line, and means carrying the paper vertically to position said print ends opposite another level in said matrices for printing second level dots in said matrices.

4,236,837

OPERATING MECHANISM FOR A DOT MATRIX PRINTER

Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 10, 1979, Ser. No. 28,896
Claims priority, application United Kingdom, Apr. 14, 1978, 14677/78
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **3 Claims**



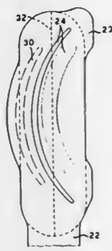
1. An operating mechanism for a dot matrix printer comprising a housing defining a stepped bore, an armature slidable within a first part of the bore, a pin secured to the armature for movement therewith, an abutment defined on the armature, a preloaded spring located within an enlarged second portion of the bore and surrounding the armature for acting on the armature, an abutment ring surrounding the armature and engaged by one end of the preloaded spring to urge the abutment ring into contact with a step defined at one end of the second portion of the bore, said step acting to limit the extension of the preloaded spring, and electromagnetic means which when energized moves the armature against the action of said spring, the armature when the electromagnetic means is de-energized, moving under the action of said spring so that the pin moves toward a paper, the extent of travel of the armature under the action of the spring being limited whereby the inertia only of the armature and pin causes the impact of the pin with the paper.

4,236,838

TYPE-CARRIER DISK WITH FLEXIBLE TONGUES

Giampaolo Guerrini, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 594,360, Jul. 9, 1975, abandoned. This application Apr. 15, 1977, Ser. No. 787,845
Claims priority, application Italy, Jul. 15, 1974, 69242 A/74
Int. Cl.³ B41J *1/38*
U.S. Cl. 400—144.3 **5 Claims**



1. A type-carrier disk that is one of a series of type-carrier disks for a printing typewriter or similar machine including a selection shaft for the selection of the types of said disks, wherein each disk of said series carries a different font of type characters and includes a central part attachable to the selection shaft and a plurality of flexible radial tongues fixed to the central part at equidistant angular positions therearound, and wherein each of said tongues terminates at a free end in an enlarged base for carrying said characters and may flex independently from other tongues for the printing of the characters carried thereby, wherein the characters of said series of disks having the same meaning are carried by bases having same circumferential positions on said series of disks, and further wherein each of said bases is so configured in shape as to be different from the bases having different circumferential positions and identical to the bases having a same circumferential position to outline the envelope of the shape of a particular character of each of the different fonts, said configuration also being substantially the minimum size possible to accommodate said particular characters of each of said fonts near to the central part, whereby each disk in said series is of identical overall shape and has a minimum radius.

4,236,839

DEVICE FOR ADJUSTING THE HEIGHT OF A RIBBON GUIDE

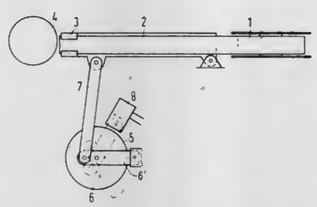
Wolfgang Mueller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,502

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1977, 2743256

Int. Cl.³ B41J *1/32*

U.S. Cl. 400—216.1 **4 Claims**



1. In a printing device having a printing station and a ribbon guide for supporting a laterally moving ribbon at said printing station, a device for selectively varying the position of said ribbon guide among a plurality of discrete positions comprising:

a stepping motor having a drive shaft;

a connector pivotally attached to said ribbon guide;

a means directly drivingly linking said connector and said drive shaft for translating rotary motion of said drive shaft to reciprocal vertical motion of said connector and guide;

a means for sensing the position of said ribbon guide; and

a logic control circuit connected to said position sensing means for operating said motor supplying pulse trains thereto of selected length for producing corresponding vertical motion to position said ribbon guide, said circuit including a means for generating said pulse train and a means for determining the rotary direction of operation of said stepping motor, said control circuit operable in a first mode enabling said pulse generating means for a pre-determined period for alternatingly moving said ribbon guide through opposite pre-determined distances, or operable in a second mode for enabling said pulse generating means for a period which ends when a selected position is sensed by said position sensing means.

4,236,840

INTERNAL RESERVOIRED SOAP DISPENSING ANIMAL WASHER

Michael D. Kennedy, 5 Beals St., Brookline, Mass. 02146

Filed Feb. 5, 1979, Ser. No. 9,310

Int. Cl.³ A46B *11/06*

U.S. Cl. 401—42 **7 Claims**

1. A dispensing brush comprising:

(a) a brush head with a forward wall, a rear wall, side walls, a top surface and a bottom surface;

(b) means for connecting to a supply of water penetrating said rear wall;

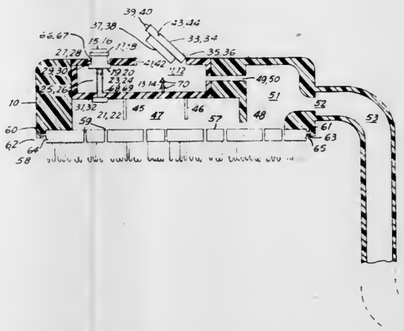
(c) a deflecting regulator wall projecting downwardly from the underside of said top surface a given distance short of said bottom surface, said deflecting regulator wall, said rear wall and said side walls defining a back pressure chamber;

(d) an intermediate surface positioned between said top surface and said bottom surface and substantially parallel thereto defining reservoir means between said top surface, said intermediate surface and said side walls and a mixing chamber between said intermediate surface, said bottom surface and said side walls;

(e) a plurality of bristles projecting downwardly from said bottom surface and a plurality of apertures extending through said bottom surface adjacent the basis of said bristles;

(f) conduit means connecting said back pressure chamber and said reservoir means and said given distance short of said bottom surface defining an opening between said back pressure chamber and said mixing chamber;

(g) valve means between said reservoir means and said mixing chamber;



(h) aperture means in said top surface for introducing dispensable material into said reservoir means; and

(i) said reservoir means further comprising first and second chambers defined by an intermediate wall located in said reservoir means and substantially parallel to said side walls.

4,236,841

SUSPENSION SYSTEM FOR WRITING IMPLEMENTS

John H. Jongeward, 709 8th St., Yuma, Ariz. 85364

Continuation-in-part of Ser. No. 848,111, Nov. 3, 1977, abandoned. This application Apr. 5, 1979, Ser. No. 27,506

Int. Cl.³ B43K *23/02*

U.S. Cl. 401—131 **10 Claims**



1. An overhead suspension system for writing implement, said system comprising in combination:

(a) a pulley device for supporting the writing implement;

(b) a counterweight for providing a retraction force acting upon the writing implement;

(c) a cord having a first section affixed to said counterweight and extending into operative engagement with said pulley device, a second section extending from operative engagement with said pulley device into slidable engagement with said counterweight and a third section extending from slidable engagement with said counterweight to a point of attachment on the writing implement;

(d) said counterweight including:

i. a passageway having an ingress for slidably receiving said second section and an egress for slidably receiving said third section; and

ii. slot means interconnecting with said passageway for accommodating lateral extension of said third section from said passageway to restrain spinning of said counterweight about said cord sections by the interference between said third section and the walls of said slot means;

iii. means for attaching said first section to said counterweight to a point laterally displaced from the ingress to said passageway to provide a moment arm operating in conjunction with any tension of said first and second sections and urge untwisting of said first and second sections about one another;

whereby, said counterweight restrains twisting of said cord while providing a retraction force for the writing implement.

4,236,842

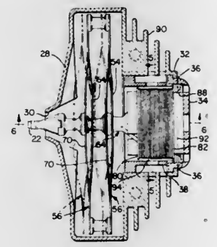
HAMMER SUPPORT FOR ROTARY PRINTING APPARATUS

George H. Dick, Highland Park, and John A. Smith, Round Lake Beach, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Aug. 3, 1978, Ser. No. 930,809

Int. Cl.³ B41J *3/10*

U.S. Cl. 400—144.2 **6 Claims**



1. In a printing apparatus including a paper supporting means, a plurality of printing dies, movable support means for the dies operating to selectively locate dies in position adjacent the paper, a reciprocally driven, longitudinally extending hammer having a central axis, said hammer defining means for providing die impressions on the paper, and drive means for the hammer, the improvement comprising a support for said hammer, said support comprising a fixture defining an opening freely receiving the hammer for movement of the hammer within the opening without contact with the fixture, a plurality of spring arm means disposed in spaced, substantially parallel relationship with one another and extending transversely of the fixture, means securing each said arm means to the fixture, and means securing said hammer to an intermediate portion of each said arm means, said spring arm means providing a constant force normally urging said hammer toward a position of rest in said fixture, said drive means selectively providing a drive force for advancing the hammer outwardly along its axis from the rest position, in opposition to the spring force of said arm means, said arm means maintaining a fixed spatial relationship between the axis of the hammer and said fixture, the spring force of said arm means being utilized for providing return movement of the hammer to the rest position when said drive force is removed, and wherein each said arm means includes a central arm defining said intermediate portion and outer arms, said hammer being secured to a central arm of each said arm means, said central arm extending across said opening defined by the fixture, said outer arms of each said arm means being secured to the fixture at locations spaced radially outwardly from said central axis, the central arm and outer arms of each arm means extending to common, opposite outer end positions, and including means attaching the common, opposite outer ends of each arm means to each other, said outer arms comprising a pair of outer arms located on opposite sides of said central arm, and including spacers separating the common, opposite outer ends of the arm means, said common, opposite outer ends being attached to said spacers, and including a shaft supporting said hammer at one end, a spacer supported on the shaft, each central arm defining an opening which receives said shaft, said spacer being positioned between said central arms for thereby holding the central arms in a predetermined spaced relationship, and including a seat located in said fixture, said hammer engaging said seat when in said position of rest, said central arms being normally maintained in positions a greater distance from said seat than said outer arms, operation of said drive means forcing said central arms outwardly a greater distance from said seat.

4,236,843

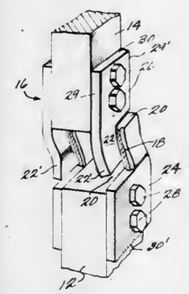
SIGN POST COUPLINGS

Douglas B. Chisholm, 1906 Memory Ct., Vienna, Va. 22180

Filed Apr. 21, 1978, Ser. No. 898,892

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—2 **29 Claims**



1. An upright assembly comprising

(a) a generally vertical upright member,

(b) a generally vertical base member,

(c) at least one web comprising (i) means defining at least one linear generally vertical groove therein, (ii) means defining a through-extending opening adjacent at least one end of said groove and generally transverse thereto, said opening defining a first portion of said web on one side thereof, and a second portion of said web on the other side thereof, so that the portions of the web on either side of said opening will separate under impact loading,

(d) means for attaching said first web portion to one of said members, and

(e) means for attaching said second web portion to the other of said members.

4,236,844

JOINT SUPPORT STRUCTURE

Erwin Mantele, Tuttlingen, Fed. Rep. of Germany, assignor to Gebr. Berchtold, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,384

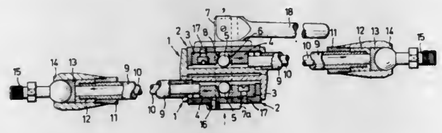
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717828

Int. Cl.³ F16C *11/06*

U.S. Cl. 403—55 **15 Claims**

1. A joint support structure comprising means forming at least one housing having therein at least one chamber, said housing embodying one wall portion which is axially movable to and from an opposite wall portion of said chamber, means one end portion of which projects in said housing to be exposed to the interior of said chamber and the opposite end portion of which projects outwardly of said housing for application thereof to selectively clamp a related joint element to a

defined seat, motion transmitting means in said chamber including at least a portion thereof which is arranged to turn about a pivot axis, in response to movement of said movable wall portion towards said opposite wall portion of said cham-



ber, to move in a direction laterally of the direction of movement of said movable wall portion and produce a bias of said projecting means from said housing to clamp the related joint element to its defined seat.

4,236,845

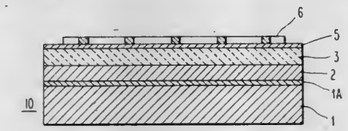
SOCKET ASSEMBLY FOR A BALL AND SOCKET COUPLING

Lawther O. Smith, Doylestown, Pa.; Timothy L. Howard, Beach Haven, N.J., and Kalman Broitman, Dresher, Pa., assignors to Gas Spring Corporation, Montgomeryville, Pa.

Continuation of Ser. No. 953,763, Oct. 23, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,316

Int. Cl.³ F16C *11/00*; F16D *1/12*

U.S. Cl. 403—144 **6 Claims**



1. A socket assembly for a ball and socket coupling comprising a socket body having a ball-receiving socket which includes a cylindrical portion having a central axis, a pair of slots which extend through the socket body and open into the cylindrical portion of the socket at locations diametrically opposite each other and outwardly from the seated position of a ball received in the socket, each slot having a flat surface which generally faces the seated position of the ball and converges inwardly toward the axis of the cylindrical portion of the socket and thus lies obliquely to said axis, and a generally C-shaped spring clip received on the socket body, the clip having opposed end portions which extend through the slots in the socket body and part way into the socket far enough to engage a ball received therein and prevent it from being pulled out of the socket and which lie generally obliquely to the axis of the socket.

4,236,846

TUBE JOINT

Peter Barton, Birmingham, England, assignor to B. C. Barton & Son Limited, West Midlands, England

Filed Nov. 28, 1978, Ser. No. 964,411

Claims priority, application United Kingdom, Mar. 4, 1978, 08705/78

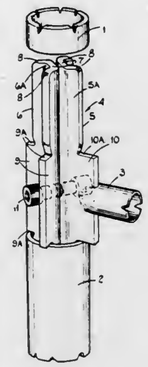
Int. Cl.³ F16B *7/00*

U.S. Cl. 403—298 **10 Claims**

1. A tube joint comprising a pair of tubes extending in different directions, and connecting means for disposition between the tubes, the connecting means comprising:

a pair of generally plate-like parts each having a base portion and at least one longitudinally extending wing projecting from the base portion, each wing having an end portion extending from one end of the base portion towards the other end thereof and at least one of the wings also having a lateral projection extending laterally beyond said end portion and disposed between said end portion and said other end of the base portion, said parts being adapted to be disposed with the base portions in juxtaposed back-to-back relationship, in which disposition the end portions of the respective wings form a spigot formation for fitting closely within one of said tubes extending in one direction while the lateral projection lies outside said one tube, disposed for having the other of said tubes, extending in a different direction from said one tube, secured thereto;

abutment means on the parts to limit the insertion of the spigot formation into said one tube; and



a locking screw on each of said parts, the locking screws on the two parts being arranged so as to be in alignment when the parts are disposed so that the spigot formation is formed, whereby the locking screws may be screwed against one another in use to urge the respective end portions of said parts outwardly into frictional locking engagement with the interior surface of said one tube.

4,236,847

METAL CORNER FITTINGS FOR PICTURE FRAMES

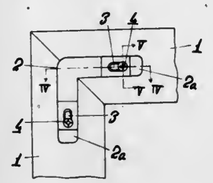
Hiroaki Yasuda, 17-go, 9-ban, Kumoi-cho, Nishinomiya, Hyogo Prefecture, Japan

Filed Jan. 12, 1979, Ser. No. 3,478

Claims priority, application Japan, Mar. 27, 1978, 53/39947; Jun. 1, 1978, 53/75305; Aug. 14, 1978, 53/111756; Sep. 27, 1978, 53/133417

Int. Cl.² G09F *1/12*

U.S. Cl. 403—402 **6 Claims**



1. A metal corner fitting for a wooden picture frame, comprising:

two leg pieces attached to each other to form an L and having a portion of the top surface a flat plane surface, shaped so that the surface opposite the top surface at least at the ends of said leg pieces being at an angle α to said portion of the top surface; said leg pieces further having slits therethrough, with the axes of said slits being inclined slightly through said leg pieces from the perpendicular to said portion of the top surface away from the ends of said leg pieces for allowing screws to be driven therethrough for assembling said picture frame.

4,236,848

FURNITURE CONNECTOR

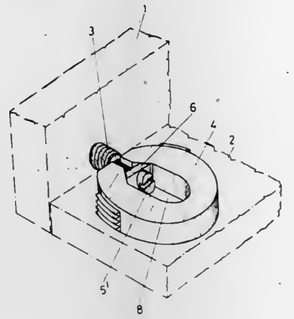
Erich Röck, Höchst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed May 4, 1978, Ser. No. 902,815

Claims priority, application Austria, May 13, 1977, 3432/77

Int. Cl.² B25G *3/00*

U.S. Cl. 403—406 **9 Claims**



1. A furniture connector for connecting two furniture parts aligned and abutted at a right angle to each other, said furniture connector comprising:

a dowel-like housing having a central axis, said housing having axially extending therethrough an opening, said housing adapted to be fitted within a bore in a first furniture part and including a portion adapted to be positioned adjacent a second furniture part to be connected to the first furniture part, said portion of said housing being axially divided by at least one separating slot extending through said portion from said opening to the outer surface of said housing;

an elongated expansion member having an axis and extending through said portion of said housing, said expansion member having head means within said opening for rotation of said expansion member and thread means adapted to be threadably anchored in the second furniture part upon rotation of said head means and for thereby moving said housing and the first furniture part axially of said expansion member toward the second furniture part;

said axes of said housing and said expansion member extending at a right angle to each other; and

clamping means, positioned to be urged by said head means upon rotation thereof, for causing said housing, upon movement thereof toward the second furniture part, to expand outwardly against a wall of the bore formed in the first furniture part, in separate directions extending on opposite sides of said expansion member and diverging outwardly from said axis thereof.

4,236,849

METHOD OF GROUTING A DRILL HOLE

Henry K. Kennedy-Skipton, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 826,190, Aug. 19, 1977, Pat. No. 4,157,264. This application Mar. 26, 1979, Ser. No. 24,080

Claims priority, application United Kingdom, Sep. 15, 1976, 38190/76

Int. Cl.³ E02D *3/12*; E21D *20/02*

U.S. Cl. 405—261 **8 Claims**

1. A method of grouting a drillhole with a hardened calcium sulphate hemihydrate plaster comprising forming a set-inhibited slurry composition containing calcium sulphate hemihydrate, water and dissolved set-inhibiting agent, said set-inhibiting agent being selected from the group consisting of water-soluble polymers and copolymers of acrylic acid, and water-soluble salts of said polymers and copolymers, said polymers and copolymers having molecular weights within the range 2,000 to 75,000 and mixing with said slurry in a drillhole a promoter reactable with said set-inhibiting agent, said promoter comprising at least one salt selected from the group consisting of the water-soluble salts of iron, copper and aluminium, whereby the effect of the set-inhibiting agent is neutralized and the setting of the composition is induced.

4,236,850

SHIELD TIMBERING FRAME FOR TIMBERING MINES

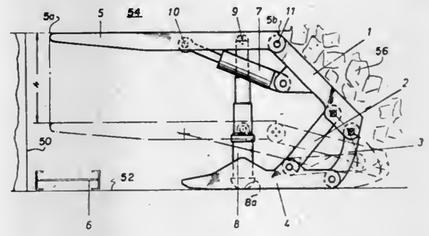
Manfred Koppers, and Ludwig Pawelski, both of Duisburg, Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,334

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757885

Int. Cl.³ E21D *15/44*

U.S. Cl. 405—291 **7 Claims**



1. A shield timbering frame for timbering mines adapted to be located adjacent a mining face, comprising, a horizontal floor-engaging skid, a breaking shield extending obliquely over said skid and having a lower end and an opposite upper end, a pair of lemniscate guide rods having their one ends connected to said breaking shield at longitudinally spaced locations adjacent said lower end of said breaking shield and having an opposite end connected to said skid at longitudinally spaced locations adjacent the inner end of said skid, a roof cap member having an inner end pivoted to the upper end of said breaking shield and having an opposite outer end adapted to extend toward the mining face, at least one hydraulic ram engaged on said skid and pivotally connected to said roof cap at a spaced location from said inner end which is pivoted to said upper end of said breaking shield, said ram being made up of at least three telescopically interengaged, extensible and retractable parts, said ram extending perpendicularly from said skid, and pressure valve means associated with said ram to provide a substantially equal support pressure by said ram on said roof cap in an uppermost position and in a plurality of positions below said uppermost position, said ram extending perpendicularly from said skid in all positions of said roof cap.

4,236,851

DISC HANDLING SYSTEM AND METHOD

Peter R. Szasz, Menlo Park, Calif., assignor to Kasper Instruments, Inc., Sunnyvale, Calif.

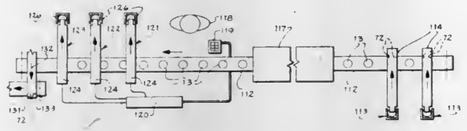
Continuation of Ser. No. 778,723, Mar. 17, 1977, abandoned, which is a continuation of Ser. No. 628,496, Nov. 3, 1975, abandoned. This application Jan. 5, 1978, Ser. No. 867,326

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—72 **16 Claims**

1. In a disc transport system for handling and transporting discs a cyclically moving carrier, a first station for disposing discs onto said carrier, said first station including a member having an elongate surface with a portion overhanging said carrier and with ports for discharging gas downwardly at an angle with respect to that surface for lifting and carrying discs in spaced relation to and along that surface to a position over-

lying said carrier to be discharged onto said carrier, and a second station for retrieving discs from said carrier, said second station including a member having an elongate surface



with a portion overhanging said carrier and with ports for discharging gas downwardly at an angle with respect to that surface for lifting discs from said carrier and carrying them in spaced relation to and along that surface to another location.

4,236,852

APPARATUS FOR THE LOOSENING AND LIFTING OF AERATED PULVERIZED MATERIAL AT AN INCREASED PRESSURE FROM A SILO

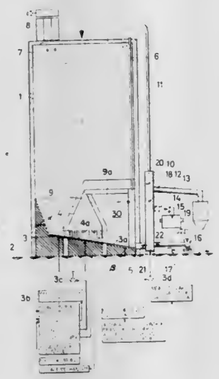
Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters Ag.

Continuation of Ser. No. 790,961, Apr. 26, 1977, abandoned. This application Nov. 1, 1978, Ser. No. 956,800

Claims priority, application Fed. Rep. of Germany, May 6, 1976, 2619993

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—90 **3 Claims**



1. A silo for storing, fluidizing and discharging particulate material, comprising:

an upright silo having a side wall and a bottom, said side wall having a discharge opening therethrough at the bottom;

a discharge chamber in the silo on the silo bottom, at one side of the silo between the silo contents and the discharge opening, serving to separate the discharge opening from the silo contents and being in communication with the discharge opening and with the silo interior, said discharge chamber defining an enclosed flow passage from the silo interior to the discharge opening;

an upright lifting tank adjacent the silo at one side thereof and having a top and a bottom and being in communication at its bottom with the discharge opening, the bottom of the lifting tank being substantially at the level of the silo bottom, and said lifting tank having an elevated spout above the level of said discharge opening; and

aeration means connected with the silo bottom in communication with the silo interior and the discharge chamber interior, to fluidize the silo contents at least at the bottom of the silo and cause them to flow into the discharge chamber, said discharge chamber enabling a substantially constant positive pressure to be attained at the discharge opening, dependent at least partially upon the level of material in the discharge chamber and being substantially independent of the level of material and pressure in the silo interior, the positive pressure which is attained at the discharge opening by said aeration means enabling the material to be lifted in the lifting tank to and through the discharge spout by only the pressure existing in the discharge chamber;

wherein a second elevated discharge opening is in the lifting tank above the discharge spout, for discharging the material at an even higher elevation, and auxiliary blower means communicates with the bottom of the lifting tank to lift material to the second discharge opening.

4,236,853

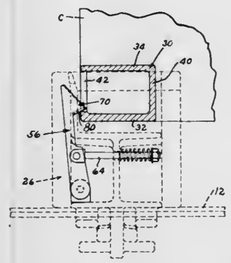
PLATED CONTAINER PEDESTAL LOCKING MEMBER

Joseph F. Niggemeier; David A. Stoller, and William J. Xander, all of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,024

Int. Cl.³ B61D *17/10*

U.S. Cl. 410—77 **4 Claims**



3. A container support for use on the deck of a railway flat car including a generally horizontal seat to support the lower corner of a container and a pair of connected walls arranged in a right angular relation to form side and end walls extending upwardly from the seat to restrain the container against horizontal movement, said support further comprising an intermediate wall extending longitudinally of the car below said horizontal seat; said side wall having a slot located above said horizontal seat; a releasable locking lever on each container support; means mounting the locking lever upon said side wall below said slot for generally pivotal movement adjacent the side wall about a generally horizontal axis extending longitudinally of the car; the upper portion of said locking lever having a protuberance extending within the slot and adapted to extend within an elongate container opening for restraining the container against upward movement at a lifting force below a predetermined minimum lifting force range; resilient means urging the upper portion of the locking lever and protuberance inwardly into the container opening; said protuberance having a lower cam surface for contacting said arcuate concave edge defining the lower portion of the elongate container opening, said lower cam surface being inclined upwardly with respect to the horizontal and being generally arcuate and convex in cross section to fit against the adjacent concave edge of the wall defining the lower portion of the elongate container opening in a generally nested relation; said protuberance being inclined with respect to the horizontal and being generally arcuate and convex in cross section to fit against the adjacent concave edge of the wall defining the lower portion of the elongate container opening when the container is lifted from the support; said protuberance further having a downwardly inclined upper cam surface adapted to contact the container upon lowering of a container onto the container support for urging the protuberance outwardly against the bias of said resilient means, the protuberance being urged within the container opening by the resilient means upon seating of the container on the support; and an upward movement of the container being restrained by the lower cam surface on said protuberance until a predetermined minimum force range is obtained, whereupon said protuberance is urged outwardly to release the container; the improvement wherein said protuberance has a coating of cadmium thereon whereby to reduce said predetermined force range required to remove the container from said pedestal to within sixteen hundred (1600) to twenty-two hundred (2200) pounds.

4. A container support according to claim **3** wherein said resilient means comprises a rod pivotally connected at one end to said resilient means below said seat, said rod passing through an opening in said intermediate wall, and including a compression spring mounted thereon and held in place by said intermediate wall and fastening means at the opposite ends thereof.

4,236,854

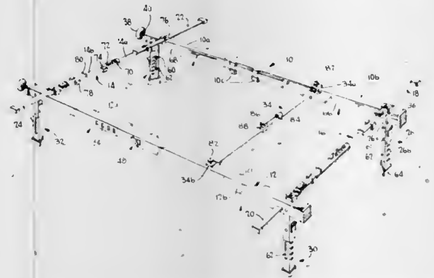
PORTABLE CARGO BRACE

Robert Rogers, 13204 Bellevue St., Silver Spring, Md. 20904

Filed Apr. 18, 1978, Ser. No. 897,484

Int. Cl.³ B60P *7/08*; B61D *45/00*; B65J *1/24*

U.S. Cl. 410—121 **12 Claims**



1. A cargo brace for retaining a cargo load in a cargo area comprising

(a) bracing means for contacting at least two walls of said cargo area to secure said cargo brace within said cargo area comprising a pair of side rails disposed in generally parallel fashion for preventing cargo from contacting oppositely disposed side walls of said cargo area, and a pair of lateral members interconnecting said pair of side rails for spacing said side rails from each other and for preventing cargo from contacting oppositely disposed end walls of said cargo area, and

(b) a plurality of support legs attached to said bracing means for bearing against a floor of said cargo area to support said bracing means above the floor and to secure the cargo brace within the cargo area.

4,236,855

APPARATUS FOR AND METHOD OF SEQUENTIALLY TRANSPORTING, ACCUMULATING AND STACKING A PREDETERMINED NUMBER OF GROUPS OF INDIVIDUAL SIMILAR FLAT ARTICLES AND THEREAFTER DEPOSITING THE ENTIRE STACK ON A CONVEYOR

Roland W. Wagner, and Clarence W. Heim, Jr., both of Cincinnati, Ohio, assignors to Warrick Equipment Corp., Cincinnati, Ohio

Filed Sep. 8, 1978, Ser. No. 940,477

Int. Cl.³ B65G *57/03*

U.S. Cl. 414—42 **19 Claims**

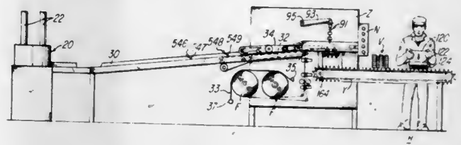
1. A device for sequentially accumulating in vertically stacked relationship and thereafter releasing the entire stack of a predetermined number of groups of individual flat articles, comprising:

means accumulating and advancing a plurality of flat, similar articles in end-to-end coplanar abutting relationship;

means successively subdividing a predetermined number of the foremost of said articles into individual groups;

means advancing the articles of each individual group onto a movable carrier means for and which is unique to each individual group of articles;

a vertically movable support means including a pair of complementary carrier member receptive platforms each of which are selectively movable from fully extended fully elevated positions to fully extended fully lowered positions, and thence from fully extended fully lowered positions to fully retracted fully lowered positions, and thence to fully retracted fully elevated positions in coplanar



relationship with the other of said platforms when at a fully extended fully elevated position;

means advancing said carrier means and the group of articles thereon to a position above and in vertical alignment with a fully extended platform of the vertically movable support means;

means lowering each carrier means and the group of articles thereon onto a platform of said support means and the preceding groups of articles deposited thereon until a predetermined number of individual groups of articles have been stacked upon said support means; and

means for removing, as a unit, the entire stack of groups of articles from said support means, while depositing said stack onto an output conveyor.

4,236,856

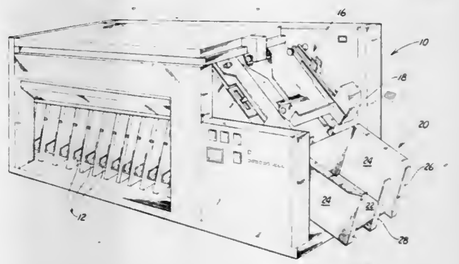
SHEET STACKING APPARATUS

Hans C. Mol, Wilton, and Michael A. Brown, Norwalk, both of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

Filed Jun. 13, 1979, Ser. No. 48,296

Int. Cl.³ B65H *31/36, 33/06*

U.S. Cl. 414—54 **6 Claims**



1. Sheet stacking apparatus capable of stacking bundles of aligned sheets of paper in alternate offset relation or alternate skewed relation, comprising:

a storage bin for receiving a multiplicity of aligned bundles of paper sheets, said storage bin having a bottom wall, a pair of side walls, front stoppng members adjacent each of said side walls, and an adjustable central post situated between said front stopping members; and

means for feeding said aligned bundles of sheets along alternate side walls of said storage bin, and wherein said post may be positioned closer than said front stopping member to said feeding means to effect alternate offset stacking or

further away than said front stopping members from said feeding means to effect alternate skewed stacking.

4,236,857

APPARATUS FOR THE CONTINUOUS UNLOADING OF SHIPS

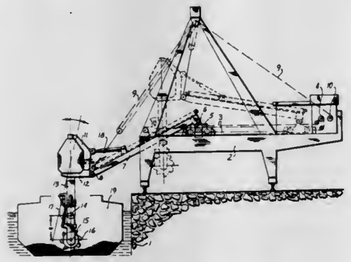
Josef Willi, Fischamend, Austria, assignor to Wiener Bruckenbau und 1 Eisenkonstruktions Atkiengesellschaft, Vienna, Austria

Filed Sep. 20, 1978, Ser. No. 944,240

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742499

Int. Cl.³ B65G *63/00*

U.S. Cl. 414—139 **19 Claims**



1. In an apparatus for the continuous unloading of ships, having a traveling crane and a boom disposed thereon for raising and lowering a feeding unit for bulk material that is to be unloaded and a bucket elevator fed by the feeding unit, the improvement wherein the bucket elevator comprises a main frame pivotally connected to the boom, a lower section including pulley means rotatable about a pulley axis and having the feeder unit connected thereto to form a feed assembly, means releasably connecting the lower section at a given point to the main frame, an endless bucket train coactive with the pulley means and having at least one releasable coupling to engage and disengage same therefrom, wherein the feed assembly is removable from the main frame upon the uncoupling of the bucket train and the releasing of the lower section from the main frame and replaceable by another such assembly including a lower section having the same distance between the pulley axis and the given point.

4,236,858

SHEET COLLATING AND STACKING DEVICE

Frank Hoese, Grossinzemoos, Fed. Rep. of Germany; Gerd von Aschwege, New York, N.Y., and Herbert Bernardi, Arget, Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

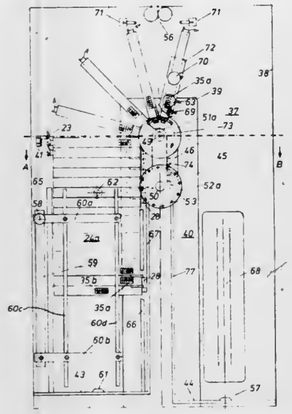
Filed Jun. 5, 1978, Ser. No. 912,216

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726130

Int. Cl.³ B65G *1/00*

U.S. Cl. 414—331 **16 Claims**

1. A distributing apparatus for continuously collecting sheet-like information carriers in numbered trays united in a magazine which are successively guided past a loading station, moving along an arcuately and narrowly curved guide opposite the loading station, opening up automatically, and, after leaving the curved guide, closing automatically, the cover of each tray being formed by the bottom of the tray lying on top of it, characterized in that the distributing apparatus comprises a receiving unit (**43**), a driving unit (**45**) and a delivery unit (**44**) whereby coded and transportable magazines (**24**) having a given number of lockable and coded trays (**1–21**) connected to each other by a movable connection are continuously received from a waiting position, and whereby the trays (**1–21**) of the magazines are unlocked, guided on a guide one after the other past the loading station (**56**), loaded, locked again, and delivered to a remote station from the distributing apparatus for subsequent processing, the trays each having a lock for positively locking each tray to a succeeding tray in the magazine



and wherein a record is drawn up during the loading of the magazines and is delivered to the remote station which receives the magazines.

4,236,859

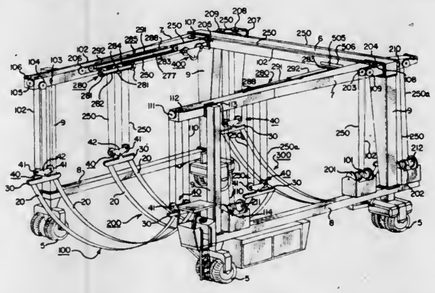
MOBILE HOIST

Richard A. Stearn; Gerald P. Lamer, and Norbert W. Lenius, all of Sturgeon Bay, Wis., assignors to Marine Travelift, Inc., Sturgeon Bay, Wis.

Filed May 22, 1978, Ser. No. 908,277

Int. Cl.³ B60P *3/10*

U.S. Cl. 414—460 **12 Claims**



1. A mobile hoist for lifting and carrying loads comprising
a frame freely movable upon a supporting surface and having spaced parallel support members carried above the supporting surface;
a pluraliy of vertically movable load supporting slings carried by said support members with each one of said plurality extending therebetween,
one of said plurality of load supporting slings being laterally movable upon said support members relative to another of said plurality of load supporting slings for effecting varying weight distribution of a load being supported thereby,
said one of said plurality of vertically movable load suporting sling which is laterally movable upon said support member relative to another of said plurality of vertically movable load supporting slings being operatively connected to one of said other plurality of load supporting slings by a common cable means for effecting vertical movement of both of said load supporting slings and equalizing the force applied between said load supporting slings when engaging a load to be lifted and carried by said hoist,
another one of said plurality of vertically movable load supporting slings being operatively connected to a second cable means for effecting vertical movement thereof independent of the vertical movement of said load supporting means coupled together by said common cable, and
traveler means operatively positioned between said plurality of load supporting slings for moving said one of said plurality of load supporting slings laterally relative to another of said plurality of load supporting means.

4,236,860

APPARATUS FOR LIFTING A WHEELCHAIR ONTO THE ROOF OF AN AUTOMOBLE

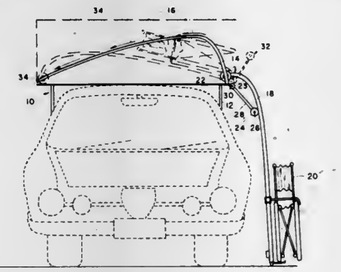
David Gottlieb, 15 Devora Hanevia St., and Eliezer Zer, 6 Amos St., both of Bnei Brak, Israel

Filed Feb. 23, 1978, Ser. No. 880,572

Claims priority, application Israel, Feb. 24, 1977, 51534

Int. Cl.³ B60R *9/00*

U.S. Cl. 414—462 **27 Claims**



1. A device for selectably positioning an invalid's mobility aid appliance onto an automobile comprising:
support apparatus mountable onto the roof of the automobile;
transfer apparatus, mounted onto the support apparatus for selectably transporting a mobility aid appliance between a storage position and a utilization adjacent to the automobile; and
a cover member having a top and enclosed sides fixed thereto extending along the entire periphery thereof, articulately mounted onto the support apparatus so as to assume a raised orientation with one end tilted upwardly during the transport of the mobility aid appliance between storage and utilization positions and a lowered orientation when the mobility aid appliance is stored therebelow, said cover member being disposed exclusively above the automobile roof during storage and transport of said mobility aid appliance.

4,236,861

SCISSORS LIFT WITH PIPE HANDLER

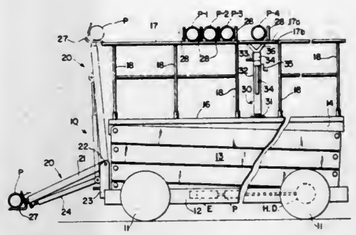
John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.

Filed Sep. 25, 1978, Ser. No. 945,325

Int. Cl.³ B66F *11/04*

U.S. Cl. 414—540 **24 Claims**

1. In combination,
a vehicle including a chassis, ground engaging means including drive means for supporting and moving the chassis, a workman's platform having a floor and means for supporting said workman's platform from said chassis at selected heights relative to said chassis,
first article engaging and lifting means on said vehicle for engaging an article substantially at ground level, for lifting said article to an elevated position at least as high as the platform, and for depositing said article on the platform, means on said platform for storing a plurality of articles deposited thereon, and



second article engaging and lifting means on said platform for engaging an article thereon and for lifting said article to an elevation above said storing means.

4,236,862

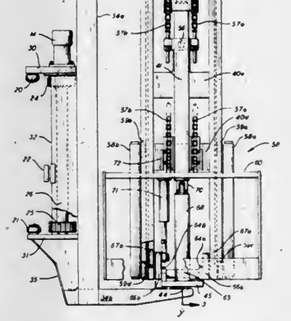
MATERIAL HANDLING APPARATUS

Edward J. McCormick, Greene, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,082

Int. Cl.³ B60P *1/34*; B66F *9/14*

U.S. Cl. 414—633 **9 Claims**



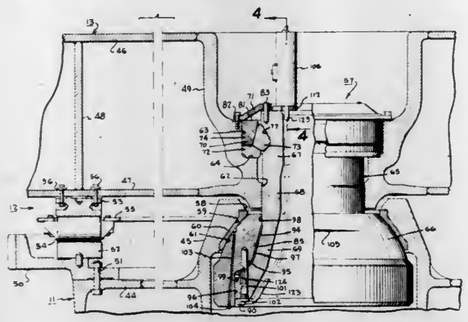
1. A mast assembly for a lift truck, comprising, in combination: a rigid mast having a carriage movable along said mast; mast support means including upper and lower support arms; first bearing means pivotally connecting said mast adjacent its upper end to said upper support arm for limited two-dimensional rotation of said upper end relative to said upper support arm; a tilt plate assembly having a rigid arm pivotally connected to said mast; second bearing means pivotally connecting said tilt plate assembly to said lower support arm for limited two-dimensional rotation of said tilt plate assembly relative to said lower arm; crank means journalled on said tilt plate assembly and carrying roller means, said roller means engaging said mast; means for rotating said crank means to tilt said mast; and rotational drive means for rotating said mast about an axis defined by said first and second bearing means.

4,236,863

CENTER PIN ASSEMBLY FOR POWER SHOVELS

George B. Baron, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 22, 1978, Ser. No. 973,397
Int. Cl.[3] E02F *3/00*
U.S. Cl. 414—687 37 Claims



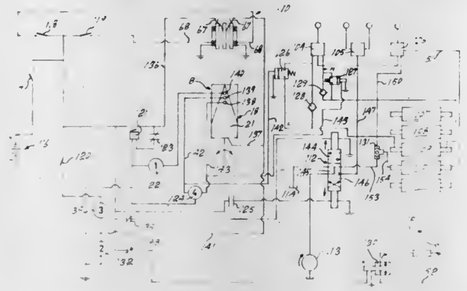
1. In a power shovel having a lower frame and an upper frame rotatably mounted on said lower frame, a center pin assembly for carrying radial and axial loads imposed on said upper frame comprising a pin disposed on the axis of rotation of said upper frame, rigidly secured to one of said frames and operatively connected to the other of said frames through a ball and socket connection, said ball and socket connection having a socket opening away from the frame to which said pin is secured.

4,236,864

SAFETY CONTROL SYSTEM FOR THE BOOM OF A CRANE

Raymond Couture, 222 Pente du Moulin, Beauceville, Beauce County, Quebec, Canada, and Raynald Couture, 307, Gagnon St., Lac Etchemin, Bellechasse County, Quebec, Canada (G0R 1S0)

Filed Nov. 9, 1978, Ser. No. 959,335
Int. Cl.[3] B66C *23/00;* B66F *9/00;* E02F *3/00;* B66C *13/48*
U.S. Cl. 414—699 9 Claims



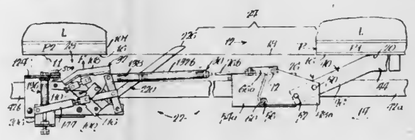
1. A safety control system for the boom of a crane, said system comprising a boom elevation actuator and a boom swinging actuator connected to the boom and operatively varying the elevation and the swing angle of the boom respectively, manual controls connected to said boom elevation and boom swinging actuators, a 3-way solenoid valve operatively connecting said actuators to an hydraulic fluid supply and to said manual controls and selectively displaceable between an enabling position allowing operation of said actuators by said manual controls, a disabling position allowing no operation of said actuators by said manual controls, and a partial enabling position allowing sole lowering of the boom, a boom elevation sensor unit sand a boom swinging sensor unit operatively connected to the boom and each producing an energizing output in response to safe boom elevational movement and to safe swinging of the boom respectively, a first relay connected to said sensor units and to said 3-way solenoid valve and operating the latter to the all enabling position thereof in response to simultaneous production of said energizing outputs by said sensor units, a second relay connected to said 3-way solenoid valve and selectively operating the latter to the partial, boom lowering, enabling position thereof to selectively lower the boom concurrently with all disabling of said manual controls, the manual control means connected to said second relay and selectively energizing the latter solely for boom lowering upon displacement of said 3-way valve to said partial enabling position.

4,236,865

METHOD FOR CONTROLLING THE FLOW OF ARTICLES AND PALLETS IN A CONVEYOR SYSTEM

Frederick E. Ullman, 245 Green Bay Rd., Glencoe, Ill. 60022

Filed Jun. 12, 1978, Ser. No. 914,341
Int. Cl.[3] B65G *13/075*
U.S. Cl. 414—786 5 Claims



2. A method of controlling the flow of loaded pallets in a pallet flow system having a downstream unloading station and an upstream braking station, comprising the steps of:

conveying a first pallet to the unloading station;

sensing the presence of said first pallet at the unloading station;

conveying a second pallet to said braking station;

applying a braking force along the underside of said second pallet at said braking station in response to the presence of said first pallet at the unloading station to safely stop said second pallet substantially without shifting or spilling the load of said second pallet; and, concurrently,

preventing said second pallet from contacting said first pallet at said unloading station;

holding said second pallet while said first pallet is at said unloading station;

removing said first pallet from said unloading station;

sensing the removal of said first pallet from said unloading station; and, thereafter,

releasing said braking force from said second pallet; and

conveying said released second pallet downstream to said unloading station,

wherein said braking force is first applied along the underside of said second pallet at a location spaced upstream from the leading edge of said second pallet.

4,236,866

SYSTEM FOR THE OBTAINMENT AND THE REGULATION OF ENERGY STARTING FROM AIR, SEA AND RIVER CURRENTS

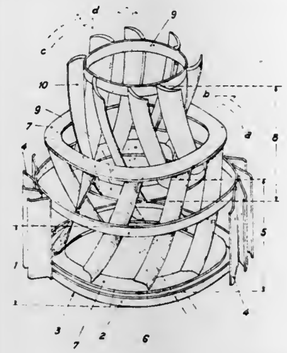
Valentin Zapata Martinez, No. 3 Lerida St., Madrid, Spain (20)

Filed Feb. 2, 1977, Ser. No. 764,998
Claims priority, application Spain, Dec. 13, 1976, 454.192
Int. Cl.[3] F03D *3/04*
U.S. Cl. 415—2R 5 Claims

1. A system for obtaining and regulating energy from fluid currents, such as wind air currents, said system comprising:

a generally circular outer deflector supported for circumferential rotation, said deflector including first and second groups of circumferentially spaced deflector vanes oriented such that a fluid current directed onto said deflector vanes will orient said deflector with a circumferential space between said first and second groups of vanes facing said current said deflector being for deflecting and directing said currents in one specific direction for powering said system;

a generally circular intermediate turbine supported for circumferential rotation coaxially within said deflector, said turbine including a plurality of turbine vanes having a varying vertical and horizontal angular orientation along their surface to receive said current which is directed in said one specific direction by said deflector to cause rotation of said turbine in a first direction, whereby said current will be deflected inwardly and upwardly of said turbine; and



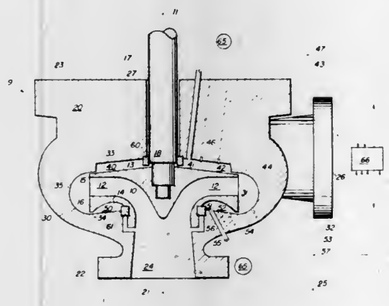
a generally circular inner diffuser supported for circumferential rotation coaxially within said turbine, said diffuser including a plurality of diffuser vanes generally angularly oriented opposite to the orientation of said turbine vanes to receive said current to cause rotation of said diffuser in a second direction opposite to said first direction and said current being directed inward and upward therefrom to be expelled coaxially out the top of said system.

4,236,867

FRICTION REDUCING ARRANGEMENT FOR HYDRAULIC MACHINES

Joseph H. Morris, Queenstown, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1979, Ser. No. 61,777
Int. Cl.[3] F01D *11/00*
U.S. Cl. 415—26 11 Claims



10. A rotary hydraulic machine comprising:

a housing having a vertical axis and passage means for movement of pumped fluid therethrough;

a rotor rotationally mounted in said housing about said vertical axis, said rotor having axially spaced upper and lower rotor surfaces with means defining fluid flow channels extending therebetween;

an upper annular space defined between said upper rotor surface and said housing and a lower annular space defined between said lower rotor surface and said housing, said upper and lower annular spaces being declined radially from said housing axis, whereby said upper and lower annular spaces each include a lower cavity portion and an upper cavity portion said upper cavity portion extending between said lower cavity portion and said housing axis; and

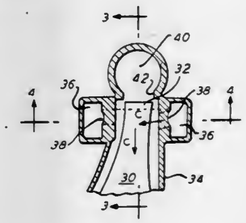
means supplying pressurized fluid to said annular spaces for controlling the level of pumped fluid in said annular spaces.

4,236,868

TANGENTIAL RIF TURBINE WITH PARTICLE REMOVING MEANS

Hans D. Linhardt, Newport Beach, Calif., assignor to Airco, Inc., Montvale, N.J.

Filed Jul. 19, 1978, Ser. No. 926,042
Int. Cl.[3] F01D *25/32, 9/02*
U.S. Cl. 415—121 A 8 Claims



1. A radial inflow turbine for recovery of power from a stream of expandable gases while removing particles from the gas comprising:

a turbine housing,

a turbine wheel contained within said housing and adapted to rotate therein about an axis of rotation, said turbine wheel having a plurality of turbine blades located at a predetermined radius from said axis of rotation,

a plurality of inlet nozzles disposed in a circle adjacent said blades and having about the same radius as the radius of said blades, said nozzles located lateral to the midplane of rotation of said turbine wheel, said nozzles and said turbine wheel adapted to direct said gas through a sharp turn of about 90° after leaving said nozzles, and

an annular plenum chamber coaxially encircling said turbine blades and having a radius larger than the radius of said blades, said annular plenum being in communication with said blades and adapted to receive particles centrifuged from said expandable gas as it passes from said nozzle toward said blades.

4,236,869

GAS TURBINE ENGINE HAVING BLEED APPARATUS WITH DYNAMIC PRESSURE RECOVERY

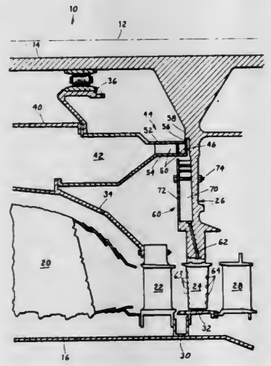
Vincent P. Laurello, Guilford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,192
Int. Cl.[2] F01D *5/18*
U.S. Cl. 416—95 7 Claims

1. In a gas turine of the type having a compressor section having a flow path from which a fluid working medium such as air is discharged at an elevated pressure to a combustion section where the working medium is combined with a fuel in a combustion process and the products of combustion are directed at high velocity onto a plurality of turbine blades distributed about the periphery of a turbine rotor in a turbine

section, improved apparatus for ducting the working medium to the plurality of turbine blades for cooling and other purposes comprising:

first conduit means receiving a portion of the working medium from the flow path in the compressor section and having a discharge end located adjacent the turbine rotor and forming a tangential accelerator discharging the working medium substantially tangentially of an annular region of the rotor in the direction of rotor rotation and at a higher velocity than the velocity of the rotor in the annular region at operating speed, whereby a relative velocity exists between the discharged working medium and the rotor, and the temperature of the working medium is reduced by the higher velocity for greater cooling effect, the accelerator including a plurality of tangentially directed outlets arranged in an annular array adjacent said annular region of the rotor; and



second conduit means connected with the turbine rotor for rotation with the turbine blades and leading to the turbine blades at the periphery of the rotor, the second conduit means having inlets directed generally tangentially of the rotor and positioned radially outward from the outlets of the tangential accelerator and said annular region of the rotor at the same axial station as the accelerator outlets to receive the working medium discharged at high velocity from the tangential accelerator, the tangentially directed inlets connecting to a downstream portion of the second conduit means extending radially outward on the rotor from the annular region and having diverging walls forming diffusing means for diffusing the working medium received at the higher velocity and recovering the dynamic pressure of the working medium whereby static pressure is improved in the second conduit means.

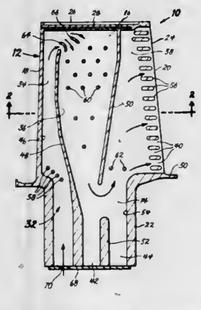
4,236,870

TURBINE BLADE

Elias Hucul, Jr., Wallingford, Conn., and Robert E. Gladden, Burlington, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,194
Int. Cl.[2] F01D *5/18*
U.S. Cl. 416—97 R **8 Claims**

1. A turbine blade having a hollow elongated body including longitudinally extending leading and trailing edges and having a root portion at its inner end and a blade portion extending from said root portion and terminating at a closed tip at its outer end, said body having walls defining a triple-pass fluid passageway including three series connected passage sections providing a reversing fluid flow path through said body from said inner end to said trailing edge, said walls including a leading edge wall defining said leading edge, opposing side walls extending between said leading and trailing edges, and rib walls connected to and extending transversely between said side walls, said rib walls including a forward rib wall spaced rearwardly from said leading edge wall and extending in a generally longitudinally inclined direction within said blade portion from said inner end toward said leading edge wall and in the direction of said outer end, said forward rib wall having a terminal end longitudinally spaced from said closed tip, said leading edge wall and said forward rib wall partially defining a forward passage section therebetween opening through said inner end and extending through said root portion and into said blade portion in the region of said leading edge and terminating within said blade portion at an outer turning region proximate said closed tip, one part of said leading edge wall defining the portion of said forward passage section within said blade portion having an abrupt forward offset relative to another part of said leading edge wall defining the portion of said forward passage section within said root portion, said forward offset occurring proximate the junction of said root and blade portions, said forward passage section having an abruptly enlarged cross-sectional area at the junction of said root and blade portions and generally converging within said blade portion and toward said outer turning region, said rib walls including a rear rib wall spaced rearwardly from said forward rib wall and extending in a generally longitudinally inclined direction



from said closed tip toward said forward rib wall and in the general direction of said inner end, said rear rib wall having a terminal end proximate the junction of said root and blade portions, said forward rib wall and said rear rib wall partially defining a midchord passage section communicating with said forward passage section at said outer turning region between the terminal end of said forward rib wall and said closed tip, said midchord passage section converging within said blade portion and in the direction of said inner end, said rear wall rib, and said trailing edge partially defining a rear passage section within said blade portion in the region of said trailing edge and terminating at said closed tip, said rear passage section communicating with said midchord passage section at an inner end, said rear passage section converging within said body portion and in the direction of said closed tip, said body including a longitudinally spaced series of partitions connected to and extending between said side walls generally adjacent said trailing edge and defining a longitudinal series of slots opening through said trailing edge and communicating with said rear passage section, said body having a plurality of pedestal members connected to and extending between said side walls within said forward passage section and proximate the junction of said root and blade portions.

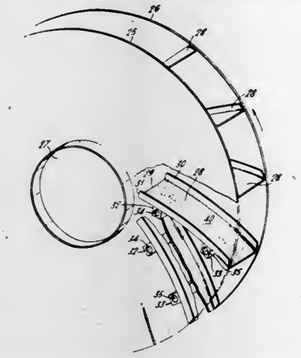
4,236,871

CENTRIFUGAL FAN IMPELLERS WITH BLADES SECURED BETWEEN PLATES

Peter B. Hirst, Billingshurst, and Anthony J. Duthie, Horsham, both of England, assignors to Johnston Brothers (Engineering) Limited, Redhill, England

Filed Jan. 3, 1978, Ser. No. 866,785
Int. Cl.[3] F04D *29/28*
U.S. Cl. 416—186 R **1 Claim**

1. A fan impeller comprising a back plate, a front plate, and a plurality of metal blades lying between the front plate and the back plate wherein each blade is of channel section having a base and two sides, the base of each blade lying normal to the planes of the front plate and the back plate, one side of each blade lying along the back plate, the other side of each blade lying along the front plate, and both sides of each blade extending from the base in the direction of rotation of the impellers in use, the inside working surface defined by the base and sides of each blade being hardened to a minimum hardness of Rockwell C55, the working surface of the base of each blade being con-



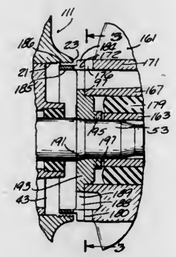
vexly curved in the longitudinal direction of the blade, and wherein two bars are provided for each blade fixedly attached to the surface of the base of the respective blade remote from sides of the blade and extending between the front and back plates, the bars being spaced apart along the base of the blade and extending perpendicular to the front plate and back plate, the front plate the back plate and the blades being retained in assembled relation solely by bolts passing through the plates and through bores formed in the bars, the bolts fixedly attaching the bars to the front plate and the back plate.

4,236,872

MARINE PROPELLER FISH LINE AND WEED CUTTER

Silas L. Metcalf, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 10, 1978, Ser. No. 923,177
Int. Cl.[3] B63H *1/26*
U.S. Cl. 416—146 R **20 Claims**



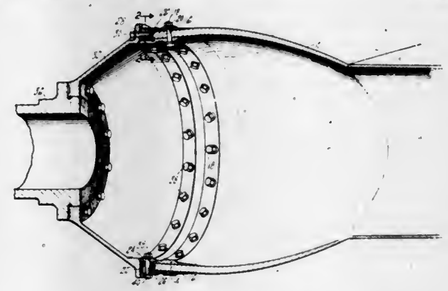
1. A marine propulsion device comprising a lower unit including a gear case including a hollow interior having at the rearward end thereof an inwardly extending inner circular surface defining an opening through which exhaust gases and engine cooling water are discharged from said lower unit, a propeller shaft rotatably journaled in said gear case and including a portion extending rearwardly of said gear case, a propeller including a hub mounted on said propeller shaft rearward portion for common rotation of said hub with said propeller shaft, a forward portion adjacent said rearward end of said gear case, and a propeller blade extending radially outwardly from said hub, a thrust washer carried by said propeller shaft in forward thrust transmitting engagement therewith and in forward thrust receiving engagement with said hub, and means for cutting fish lines and weeds including a sleeve supported by said thrust washer and extending into an area adjacent said inner circular surface of said gear case, said sleeve having a rearward cutting surface closely adjacent said forward portion of said propeller for cutting fish lines and weeds therebetween.

4,236,873

WIND TURBINE BLADE RETENTION DEVICE

Robert Sherman, West Hartford; Edward A. Rothman, South Glastonbury, and William Mandelbaum, Bloomfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 20, 1978, Ser. No. 944,222
Int. Cl.[3] B64C *11/04;* **F03D** *11/04*
U.S. Cl. 416—204 R **6 Claims**



1. A retention for a rotor blade, said blade having a load transmitting spar with a hollow cylindrical inboard shank contiguous therewith comprising:

a first cylindrical metallic sleeve member adapted to abut said shank about the inner periphery thereof, said first sleeve member extending slightly beyond the end of said shank, a second cylindrical metallic sleeve member adapted to abut said shank about the outer periphery thereof, said second sleeve member extending slightly beyond the end of said shank and having a radially inward extending flange portion abutting the extension of said first sleeve member adjacent the end of said shank, means for bonding said first and second sleeve members to said shank along the abutting surfaces thereof,

a first plurality of bolt means located about the periphery of said shank, each of said bolt means extending radially through said sleeve members and said shank and securing said shank between said sleeve members,

and a second plurality of bolt means located at a point slightly beyond the end of said shank, each of said second bolt means extending radially through and securing said first and second sleeve members in such manner that mechanical loading is transferred from said first to said second sleeve members through said second bolt means while said shank remains bonded to both said sleeve members.

4,236,874

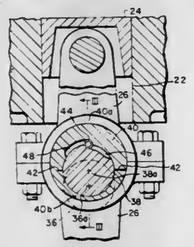
DUAL CAPACITY COMPRESSOR WITH REVERSIBLE MOTOR AND CONTROLS ARRANGEMENT THEREFOR

Francis J. Sisk, Washington Township, Fayette County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 873,291, Jan. 30, 1978, abandoned. This application Mar. 2, 1979, Ser. No. 16,638
Int. Cl.[3] F04B *35/00, 49/00;* **F16H** *21/20;* **F16C** *3/28*
U.S. Cl. 417—315 **3 Claims**

1. In a dual capacity hermetic refrigerant compressor of the reciprocating piston type:

a rotary crankshaft having an eccentric crankpin rotating therewith;
an eccentric ring having an inner and outer circumference mounted on said crankpin and rotatable relative thereto;
a connecting rod having a strap end encompassing the outer circumference of said eccentric ring in rotatable relation and its other end connected to reciprocate a piston in a cylinder as the crankshaft rotates;
means limiting the rotation of said ring relative to said crankpin between one end point and an opposite angularly displaced end point, said ring at said one-end point adding the maximum eccentricity of said ring to the eccentricity of said crankpin, said ring at said opposite end point adding only a part of the maximum eccentricity of said ring to the eccentricity of said crankpin, so that with said ring at said one end point the stroke length of said rod is at a



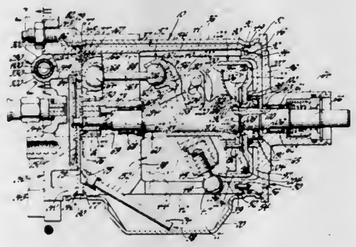
maximum and at said other end point the stroke length is reduced therefrom;
reversible motor means for rotating said crankshaft, said motor operating in one direction effecting the angular displacement of said ring relative to said crankpin to said one end point, and in the opposite direction effecting the angular displacement of said ring relative to said pin to said opposite end point;
said rotation limiting means comprises key means located at the interface of said ring inner circumference and the crankpin outer circumference; and
said crankpin includes a relieved area along an arcuate portion of its circumference, and said ring includes a relieved area along an arcuate portion of its inner circumference, and said key means is interposed in the space between said relieved areas.

4,236,875

PRESSURE OPERATED HYDRAULIC CONTROL VALVE

Richard E. Widdowson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 896,741, Apr. 17, 1978, abandoned. This application Oct. 4, 1979, Ser. No. 81,867
Int. Cl.³ F04B *1/28;* F16K *31/12*
U.S. Cl. 417—222 **7 Claims**



1. A pressure operated hydraulic control valve assembly for controlling a compressor of an automative air conditioning system, the compressor having an hydraulically operated modulating means for varying the output thereof, and pump means for supplying hydraulic control fluid to said modulating means, said valve assembly comprising a housing, a tubular bellows cover and a cylindrical valve body, said bellows cover and said housing each having a closed end and an open end, the closed end of said bellows cover insertable sealingly into a fixed position in one end of said housing with its open end disposed inwardly, a sealed bellows seated in the closed end of said bellows cover and including a free end projecting toward the open end of said cover, said bellows having a predetermined cell control pressure, said valve body sealingly insertable in said housing with an end head portion telescopically received in a press-fit sufficiently within the open end of said cover to define a pressure control cell of predetermined size enclosing said bellows, a stepped axial bore through said valve body defining first and second diameter bores, said first diameter bore being adjacent the free end of said bellows and said second bore adjacent the closed end of said housing, a valve sleeve received in a press fit within said second bore sufficiently with respect to said valve body and the closed end of said housing to define an outlet cavity and an inlet cavity, respectively; said valve sleeve formed with an axial bore therethrough forming a valve seat between said inlet and outlet cavities, an actuating pin member reciprocatingly, sealingly received in the first diameter bore of said valve body, said actuating pin member having a stem portion passing through the axial bore of said valve sleeve in non-fluid blocking relation therewith, ball valve means positioned in said inlet cavity adjacent said valve seat, said actuating pin member extending through said first and second diameter bores into engagement with the free end of said bellows at one end thereof and said ball valve means at the other end thereof, said ball valve means operative to open and close communication between the inlet and outlet cavities in response to reciprocating movement of said pin member, aperture means in said housing and said bellows cover adapted to communicate a suction control pressure from said compressor to said bellows pressure control cell, first resilient means urging said bellows into engagement with the closed end of said cover and away from said pin member, second resilient means biasing said ball valve means in a direction to close communication between said inlet and outlet cavities, inlet port means in said housing adapted to place said inlet cavity in communication with said pump means, outlet port means in said housing adapted to place said outlet cavity in communication with said modulating means, whereby to vary the supply of control fluid from said inlet cavity to said outlet cavity during control of said compressor, said first resilient means acting to collapse said bellows and release said pin member so that said second resilient means may urge said ball valve means to adjustably close communication between said inlet and outlet cavities to control said compressor in one manner when the suction control pressure from the compressor exceeds the predetermined cell control pressure, and said bellows expanding to act against said first and second resilient means to force said ball valve means away from said valve seat to adjustably open communication between said inlet and outlet cavities to control said compressor in another manner when the suction control pressure from said compressor is less than said predetermined cell control pressure.

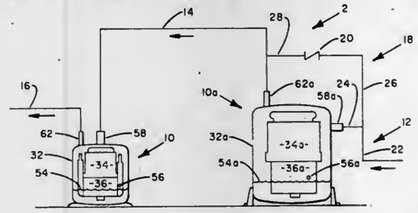
4,236,876

MULTIPLE COMPRESSOR SYSTEM

Bruce A. Fraser, Manlius, and Donald Yannascoli, Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,974
Int. Cl.³ F04B *23/04*
U.S. Cl. 417—250 **5 Claims**

1. A multi-compressor system comprising:
a first stage motor-compressor unit including a first shell,
a first supply of lubricant disposed therein,
first compressor means for compressing a vapor,
first motor means for driving the first compressor means, and
a first lubricant overflow passage communicating the interior of the first compressor means with the first lubricant supply for passing lubricant therefrom into the first compressor means when the first lubricant supply reaches a predetermined level;
a second stage motor-compressor unit including a second shell
a second supply of lubricant disposed therein,
second compressor means for compressing the vapor,
second motor means for driving the second compressor means, and
a second lubricant overflow passage communicating the interior of the second compressor means with the second lubricant supply for passing lubricant therefrom into the second compressor means when the second lubricant supply reaches a predetermined level;
a low pressure line including
a first section for transmitting vapor from a source thereof,
a second section connected to the first section for transmitting vapor therefrom and extending substantially at a right angle thereto, and



means connecting the second section to the first shell wherein vapor passes therein from the second section;
an intermediate pressure line for transmitting vapor from the first shell to the second shell;
a high pressure line for transmitting vapor from the second shell; and
a bypass line connecting the low pressure line with the intermediate pressure line for selectively bypassing the first shell and including
a first bypass section connected to the first section of the low pressure line for transmitting vapor therefrom and extending substantially collinear therewith,
means connecting the first bypass section with the intermediate pressure line wherein vapor passes thereto from the first bypass section, and
valve means for preventing vapor flow from the intermediate pressure line to the low pressure line via the bypass line.

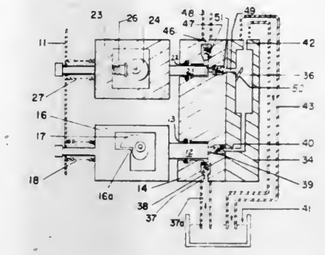
4,236,877

HIGHLY ACCURATE LOW VOLUME METERING PUMP

Russell R. Curtis, Westfield, Ind., assignor to Curtis-Dyna Products Corporation, Westfield, Ind.

Division of Ser. No. 892,700, Apr. 3, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 31,049
Int. Cl.³ F04B *1/00;* F01B *31/14*
U.S. Cl. 417—265 **1 Claim**

1. A dual, piston-type pump assembly comprising a support bracket, two pistons supported for reciprocal parallel motion on said bracket, electrical power means and motion transmission means supported on said bracket for reciprocating said pistons, a first block supported on said bracket having two parallel vertically spaced cavities therein within which said pistons move, said cavities, each terminating in passages opening on an outer marginal surface of said block, the passage communicating with the lowermost of said cavities being check-valve controlled to form a discharge passage for the lowermost cavity, the passage communicating with the uppermost of said cavities being check-valve controlled to form a suction passage for the uppermost cavity, a second block mounted with a face thereof contiguous with said outer marginal surface of said first block, a cavity in said second block providing a gas-liquid separation chamber, and vertically spaced apertures in said second block communicatng with said chamber and registering with said passages in said first block, the passage controlling check valves for said passages to said



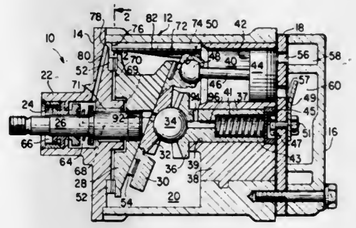
parallel cavities being disposed at the interface of said first and second blocks for controlling the flow therein, and further check-valve controlled passages in said first block providing a suction line to the lowermost one of said piston cavities and a discharge line from the uppermost one of said piston cavities.

4,236,878

LUBRICATION SYSTEM FOR COMPRESSOR UNIT

Kiyoshi Terauchi, Isesaki, Japan, assignor to Sankyo Electric Company Limited, Isesaki, Japan

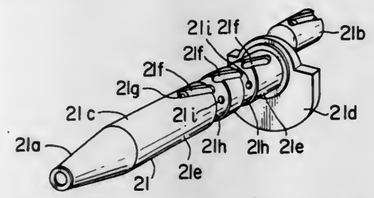
Filed Sep. 29, 1978, Ser. No. 946,967
Int. Cl.³ F04B *1/14*
U.S. Cl. 417—269 **8 Claims**



1. In a compressor including a compressor housing, a cylinder head having a suction chamber and a discharge chamber, a cylinder block mounted within said housing and having a plurality of cylinders, a plurality of piston means respectively slidably fitted within said cylinders to compress a refrigerant fluid, suction and discharge valve means for controlling the flow of fluid between said suction chamber and said cylinders and between said discharge chamber and said cylinders, a front housing on said compressor housing rotatably bearing a drive shaft for driving the compressor, means for converting the rotation of said drive shaft into reciprocating motion for imparting reciprocating motion to said piston means, a shaft seal assembly mounted on said drive shaft and within a shaft seal cavity formed in the front housing, means for effecting lubricating oil communication between said shaft seal cavity and the interior of said compressor housing, an oil deflector depending from the inner wall of said compressor housing, said front housing including an oil opening disposed adjacent said oil deflector and a passageway formed therein effecting oil communication between said oil opening and said shaft seal cavity, the improvement which comprises: a flange member extending from the depended end of said oil deflector along the inner wall of said compressor housing, said flange member forming with said oil deflector a groove in which oil directed to said oil opening by said oil deflector is collected and stored so that substantially all the directed oil flows into said oil

opening without again flowing down along the inner surface of said compressor housing.

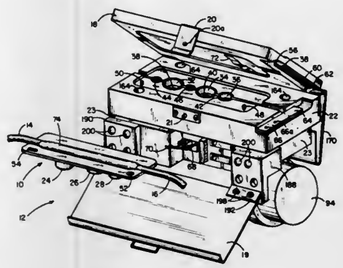
4,236,879
HERMETIC MOTOR-COMPRESSOR
Nobuo Abe, Tochigi, Japan, assignor to Hitachi, Ltd., Japan
Filed Apr. 18, 1978, Ser. No. 897,503
Claims priority, application Japan, Apr. 20, 1977, 52-44475
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—368 **1 Claim**

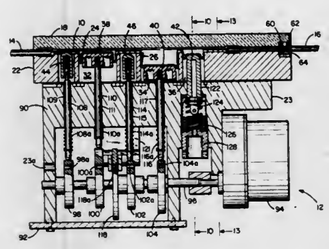


1. A hermetic motor-compressor of a relatively small capacity, comprising a compressor assembly including a compression mechanism section and a driving electric motor section which are confined in a closed container, and an essentially vertical rotor shaft operatively connecting said compression mechanism and said driving electric motor section, said rotor shaft being formed from a single steel pipe which has been plastically worked to have an eccentric section at one end, an oil pump section at the other end and an intermediate journal section and being provided with a separate balance weight, said compressor assembly further having a bearing section adapted for cooperating with said rotor shaft, characterized by comprising a plurality of oil grooves press-formed from the outside of said rotor shaft in the outer peripheral surface of said rotor shaft, so that the lubricating oil sucked up by said pump section is delivered to said oil grooves through at least one oil passage bore formed through the wall of said journal section of said rotor shaft and distributed to said bearing section to lubricate the latter, the outer diameter of said rotor shaft being reduced at a portion or portions of said journal section between adjacent oil grooves to form at least one annular groove constituting an oil holding section, said oil holding section having such a width or length in the axial direction of said rotor shaft that the annular groove of said oil holding section extends beyond and partly overlaps the upper end of the lower oil groove and the lower end of the upper oil groove, whereby the lubricating oil is delivered from one oil groove to the other through said oil holding section to lubricate the whole part of said bearing section, and wherein at least one gas purging port is provided for expelling the gas introduced through said oil passage bore along with the lubricating oil, said gas purging port being formed through the wall of said rotor shaft in the annular groove of said oil holding section.

4,236,880
NONPULSATING IV PUMP AND DISPOSABLE PUMP CHAMBER
G. Kent Archibald, St. Paul, Minn., assignor to Archibald Development Labs, Inc., White Bear Lake, Minn.
Filed Mar. 9, 1979, Ser. No. 19,223
Int. Cl.³ F04B *43/08, 21/00*
U.S. Cl. 417—478 **42 Claims**

1. A pump comprising:
a disposable pump chamber having an inlet, an outlet, and first and second flexible rolling diaphragm pumping chambers connected between the inlet and outlet;
a pump housing for receiving the disposable pump chamber;
a first cylinder in the housing positioned to receive the first flexible rolling diaphragm;
a second cylinder in the pump housing positioned to receive the second flexible rolling diaphragm;
a first piston movable in the first cylinder;
a second piston movable in the second cylinder;
first valve means for controlling fluid flow between the inlet and the first flexible rolling diaphragm pumping chamber;
second valve means for controlling the fluid flow between

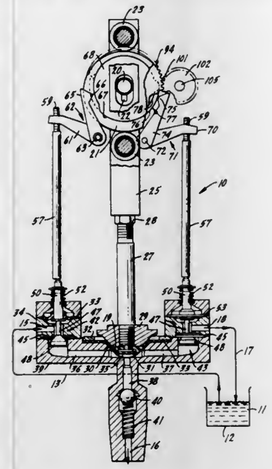




the first flexible rolling diaphragm pumping chamber and the second flexible rolling diaphragm chamber; and
drive means for causing relative motion of the first cylinder and first piston and relative motion of the second cylinder and second piston to vary the volumes of the first and second flexible rolling diaphragm pumping chambers.

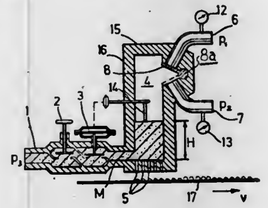
4,236,881
LIQUID METERING PUMP
Robert K. Pfleger, Forest Lake, Minn., assignor to Ecodyne Corporation, Lincolnshire, Ill.
Filed May 3, 1978, Ser. No. 902,513
Int. Cl.³ F04B *7/00*
U.S. Cl. 417—502 **22 Claims**

1. A pump for metering controllable quantities of liquid comprising:
A. a body having a pump chamber, a liquid inlet conduit and a liquid return conduit connecting said chamber to a source of said liquid, and a liquid discharge conduit connecting said chamber to an outlet for metered liquid:
B. a reciprocating member in said chamber which moves in one direction to create a suction for drawing liquid from said source through said inlet conduit into said chamber and moves in the opposite direction to create pressure for pumping such liquid out of said chamber through said return conduit and said discharge conduit;
C. a first reciprocating poppet valve which is power driven to open said inlet conduit when said member moves in said one direction and which is moved to close said inlet conduit when said member moves in said opposition direction;
D. a second reciprocating poppet valve which is power driven to open said return conduit when said member moves in said opposite direction, and which is moved to close said return conduit when said member moves in said one direction, said second poppet valve being connected to a pivoted lever having a cam follower lug; and
E. means for controlling the output of said pump by controlling the length of time said second poppet valve opens said return conduit, comprising a rotating cam having an edge that pivots said lever and thereby opens said second poppet valve when said edge is in contact with said lug, the length of time said second poppet is open being controlled



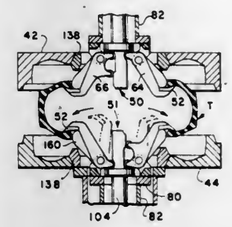
by means for moving said edge out of contact with said lug, comprising a projection on said rotating cam located in a plane perpendicular to said edge, and an adjustable cam for contacting said projection and moving said edge axially out of contact with said lug, said projection and said adjustable cam being shaped like circular arcs.

4,236,882
APPARATUS FOR PRODUCING DROPS OR PORTIONS OF LIQUID AND VISCOUS MATERIALS AND FOR PRODUCING PELLETS THEREFROM
Otto Weinhold, Vienna, Austria, assignor to Sandco Ltd., Ottawa, Canada
Division of Ser. No. 815,011, Jul. 12, 1977, Pat. No. 4,156,495, and Ser. No. 589,083, Jun. 23, 1975, abandoned. This application Mar. 9, 1979, Ser. No. 19,242
Claims priority, application Austria, Jun. 24, 1974, 5186/74
Int. Cl.³ B29F *3/06;* **B29C** *23/00;* **B29D** *31/00*
U.S. Cl. 425—6 **10 Claims**



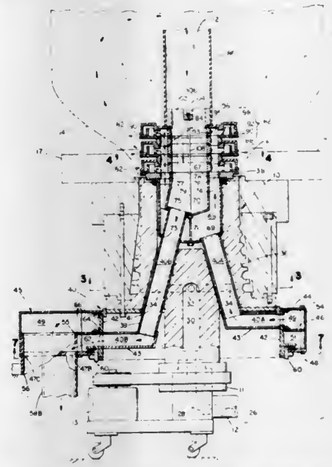
1. Apparatus for producing discrete drops of a liquid material, comprising the combination of, means forming a chamber closed on all sides for holding a body of the liquid material and a body of gas above the liquid level, nozzle means through which said material can be dispensed in a controlled manner from said chamber against a predetermined pressure, means connected to said chamber forming a source of pressurized gas at a pressure greater than said predetermined pressure and suction means for gas at a pressure less than said predetermined pressure, said pressurizing gas being adapted to elevate the pressure of said body of gas sufficiently to cause said material to be discharged through said nozzle means and said suction means being effective to reduce the pressure of said body of gas sufficiently to prevent the discharge of material through said nozzle means and cause the liquid to move back into the nozzle means, and cyclic operating means for producing a continuous series of cycles each of which comprises a first step during which said pressurizing gas is connected to said body of gas and causes a controlled portion of the material to be discharged through said nozzle means and a second step which connects said suction means to said body of gas and reduces the pressure of said body of gas sufficiently to stop the flow of material through said nozzle means.

4,236,883
TIRE PRESS
Leonard G. Turk, Akron, and George E. Enders, Salem, both of Ohio, assignors to NRM Corporation, Akron, Ohio
Filed Jul. 5, 1979, Ser. No. 54,869
Int. Cl.² B29H *5/02*
U.S. Cl. 425—32 **50 Claims**



1. In a tire press having relatively movable top and bottom mold sections, a center mechanism comprising a segmented annular ring for each mold section, means for engaging each ring with the axial interior of the respective bead of a green tire radially to center such bead to its respective mold section before the beads contact the mold sections and the press closes, and actuator means for collapsing the segments of said rings radially to clear the inner diameter of such beads.

4,236,884
INTERNAL AIR COOLING OF TUBULAR PLASTIC FILM
Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.
Filed Sep. 5, 1975, Ser. No. 610,631
Int. Cl.³ B29D *23/04*
U.S. Cl. 425—72 R **6 Claims**



1. A rotary film blowhead fed centrally with thermoplastic

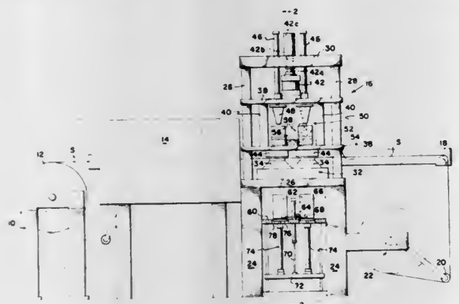
material for making tubular film comprising film cooling means with interior cooling rings and air supply connectors, said blowhead being rotatably connected to a stationary extruder, characterized in that the individual co-rotating air supply connectors are connected to stationary air flow means by segmented relatively rotatable air distributing rings which are sealed by sealing elements and of which the portion connected to the air flow means is stationary.

4,236,885

CONTAINER LINING

George A. West, Clare; William F. Kent, Beaverton; George L. Pickard, Beaverton, and Wilbur P. Winton, Beaverton, all of Mich., assignors to Leesona Corporation, Beaverton, Mich.

Division of Ser. No. 939,875, Sep. 5, 1978, Pat. No. 4,207,280.
This application Nov. 7, 1979, Ser. No. 92,172
Int. Cl.³ B29C *17/04, 27/16*
U.S. Cl. 425—514 **4 Claims**



1. Apparatus for applying a liner of thermoplastic sheet material to the interior of an open ended container comprising opposed die members having aligned passages therethrough and cooperating shearing surfaces adjacent the peripheries of the opposed ends of said passages, said die members being movable relative to one another between spaced open position and overlapped shearing position, sheet support means for supporting a web of thermoplastic sheet material extending between said die members when said members are in their open position, reciprocable container support means for advancing an open ended container through the passage in one die member into a ready position adjacent said web, plug assist means movable through the passage in said other die member for deforming the web of sheet material into lining relationship with the interior of the container at said ready position, die actuating means for moving said die members to said shearing position to shear the container lining portion of the web from the remainder of the web, and container ejecting means for moving said support means to pass the lined container through the opening thus sheared in said web through the passage in said other die member to an eject position.

4,236,886

METHOD AND APPARATUS FOR THE PRODUCTION OF COALDUST

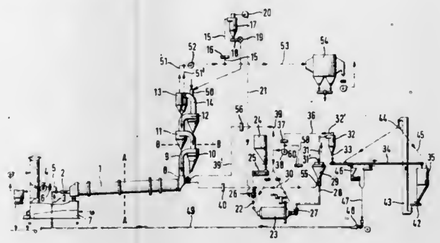
Jakob Ansen, Cologne; Heinz Hoppen, Overath-Steinenbrück, and Helmut Duill, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,952
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745425
Int. Cl.³ F27B *15/00*
U.S. Cl. 432—14 **23 Claims**

1. A method for the preparation of coal for the firing of a calcination installation having a preheating stage, a calcination stage and a sintering stage for the production of cement clinker comprising the steps of:

mixing the coal with an inert input gas having a predetermined temperature and composition;

pulverizing the coal,



separating the pulverized coal into at least a stream of coaldust and a stream of exhaust gas bearing a selected residual of coaldust,

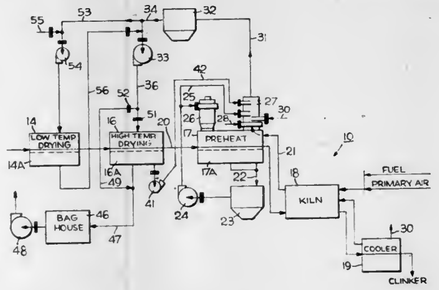
blowing the exhaust gas into the calcination stage.

4,236,887

METHOD AND APPARATUS FOR HANDLING AND UTILIZING SYSTEM OFF-GAS IN A PYRO-PROCESSING SYSTEM

Glenn A. Heian, Franklin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 21, 1979, Ser. No. 41,240
Int. Cl.³ F27B *15/00*
U.S. Cl. 432—14 **26 Claims**



20. In a process for treating wet agglomerate cement material in pyro-processing material-treating system in which the material to be treated is progressed by grate means through a low-temperature drying chamber having a negative-pressure wind box in which off-gas passing through the material bed on the grate means in the preheat chamber is collected, a high-temperature drying chamber having a negative-pressure wind box, a preheat chamber having a negative-pressure wind box, a kiln and a cooling chamber comprising the steps of:

drawing preheat off-gas from the negative-pressure wind box of the preheat chamber;

elevating the temperature of a portion of the preheat off-gas from the negative-pressure wind box of the preheat chamber;

passing that portion of the temperature elevated preheat off-gas back into the preheat chamber;

directing kiln off-gas passing through the preheat chamber through a quench chamber;

passing excess preheat off-gas to the quench chamber to assist in modifying the temperature of the kiln off-gas directed into the quench chamber;

adding ambient air into the quench chamber to assist in modifying the temperature of the kiln off-gas;

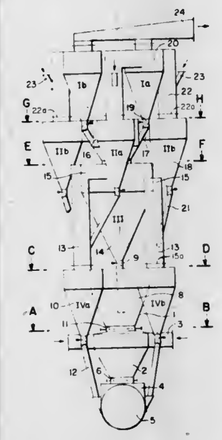
passing the quenched kiln off-gas to the drying chamber as down-draft drying heat.

4,236,888

HEAT EXCHANGER WITH PRELIMINARY CALCINING

Heinz Jäger, Nevelstr. 40, 4630 Bochum, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,575
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741307
Int. Cl.³ F27B *7/02*
U.S. Cl. 432—106 **4 Claims**



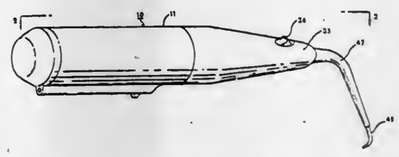
1. Heat exchanger for rotary kiln installations wherein cement klinker or the like is burned and wherein precalcining of raw dust or powder is effected in the heat exchanger through supplying fuel thereto, comprising a preheater for preheating the raw dust or powder having a plurality of interconnected cyclones at different elevations with introduction of raw dust or powder into a cyclone of higher elevation and flow of the raw dust or powder in contact with hot gases issuing from a rotary kiln having an inlet head for the introduction of the preheated dust or powder and an outlet for the discharge of klinker, a calcining device having as a lower stage mixing chamber and an upper stage calcining chamber, burner means for the introduction of fuel to the calcining device, a cooler for cooling klinker from the rotary kiln, said calcining device connected in a riser pipeline extending from the rotary kiln to the preheater directly above the inlet head of the rotary kiln, said calcining device including said lower stage constructed as a vertical mixing chamber with its lower open end disposed directly above the inlet head of the rotary kiln, means for varying the cross-sectional area of flow between the mixing chamber and the inlet head for waste gas from the rotary kiln and with tangentially disposed inlet unions for waste gas from the klinker cooler, and an upper stage constructed as a calcining chamber having means for supplying raw dust or powder thereto disposed above and in open communication with the mixing chamber, means for varying the cross-sectional area between the calcining chamber and mixing chamber to control flow of dust therethrough, said calcining chamber having outlet means comprising a plurality of tangentially disposed discharge channels for the discharge of gas into a plurality of cyclones.

4,236,889

DENTAL CLEANING DEVICE

Winston F. Wright, 2660 Fair Cir., Reno, Nev. 89503

Filed May 17, 1979, Ser. No. 39,831
Claims priority, application United Kingdom, Mar. 28, 1978, 12007/78
Int. Cl.³ A61C *17/00*
U.S. Cl. 433—86 **8 Claims**



1. A self-contained, portable dental cleaning device comprising an elongated housing which comprises a first chamber containing a pump connected to an electrical motor and means for supplying energy to said motor, a switch means mounted on said device for manual control of the speed of rotation of said motor, a second chamber being adapted to contain a slurry substance, a vertical partition separating said first chamber from said second chamber, said partition including two apertures, an inlet conduit connecting said second chamber with said pump and an outlet conduit connecting said pump to one end of an elongated tube disposed in said second chamber, the opposite end of said tube being connected to a discharge nozzle extending outwardly from said second chamber, each of said conduits being in a sealing engagement with said partition, said second chamber having an opening for introduction of a dental cleaning slurry and a cap for tightly closing said opening.

4,236,890

PROCESS FOR PRODUCING TRANSFER PRINTED COTTON AND COTTON BLENDS

Eugene J. Blanchard, New Orleans; Gloria A. Gautreaux, and Robert J. Harper, Jr., both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 7, 1978, Ser. No. 913,418
Int. Cl.³ D06P *1/16, 1/58, 3/60, 3/84*
U.S. Cl. 8—410 **3 Claims**

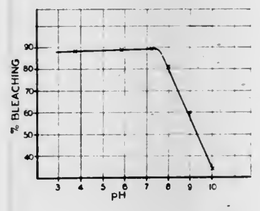
1. A process for improving the affinity of cellulose-containing fabrics for disperse dyestuffs, the process comprising
(a) screen printing a textile in the desired area with a formulation consisting of
(1) about 5–20%, by weight, of hexamethoxymethyl melamine crosslinking agent,
(2) about from 0.05% to 0.2%, by weight, of p-toluene sulfonic acid,
(3) about from 0.05% to 0.2% of 2-amino-2-methyl-1-propanol,
(4) about 0.5% of triethylamine
(5) about from 1.25% to 5% of butoxy triglycol and
(6) about 0.5% of carboxy vinyl polymeric thickener,
(b) drying the fabric, which is wet on the surface only,
(c) heat transfer printing the fabric with paper that contains disperse dyestuffs.

4,236,891

PROCESS FOR TEXTILE BLEACHING WITH DIBASIC MAGNESIUM HYPOCHLORITE

Michael Scardera, Hamden, and Garrett B. Schifilliti, Oakville, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 5, 1979, Ser. No. 9,316
Int. Cl.³ D06L *3/08;* **C11D** *3/395*
U.S. Cl. 8—108 A **7 Claims**



1. A process for bleaching textiles which comprises contacting said textiles with an aqueous solution of dibasic magnesium hypochlorite, the pH of said aqueous solution being maintained at from about 3.5 to about 7.5 by the addition of an acid compound.

4,236,892

SEPARATION AND QUANTITATION OF COPROPORPHYRINS AND UROPORPHYRINS

Olga Duron, El Monte, Calif.; Richard J. Griffin, deceased, late of Lakewood, Colo., and by United Bank of Denver, N. A., personal representative, Denver, Colo., assignors to Whale Scientific, Inc., Commerce City, Colo.

Filed Dec. 1, 1978, Ser. No. 965,429
Int. Cl.³ G01N *31/06, 31/08, 33/72, 21/64*
U.S. Cl. 23—230 B **11 Claims**

1. In the method for selective separation and quantitation of coproporphyrin and uroporphyrin in urine by ion exchange wherein a buffered urine sample is passed through an ion exchange resin and followed by washing non-adsorbed materials from the column, the steps comprising:
eluting and collecting the adsorbed coproporphyrin present on the ionic exchange resin with a first normality of HCl;
eluting and collecting the adsorbed uroporphyrin present on the ion exchange resin with a second normality of HCl differing from the first normality of HCl; and
individually measuring the concentrations of the adsorbed coproporphyrin and uroporphyrin so collected against a known standard.

4,236,893

METHOD FOR THE ASSAY OF CLASSES OF ANTIGEN-SPECIFIC ANTIBODIES

Thomas K. Rice, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 9, 1979, Ser. No. 28,348
Int. Cl.³ G01N *33/54;* **H01L** *41/00*
U.S. Cl. 23—230 B **19 Claims**

1. A quantitative method for determining at least one class of antigen-specific antibodies comprising the steps of:
(1) contacting a liquid sample suspected of containing an antibody with the surface of a piezoelectric oscillator having a layer of antigen for which said antibody is specific adsorbed thereon;
(2) washing and drying said oscillator;
(3) measuring the resonance frequency of said oscillator;
(4) contacting said surface of said oscillator with a liquid reagent containing a predetermined amount of a material reactive with a particular class of said antibody;
(5) washing and drying said oscillator; and
(6) measuring the change in resonance frequency of said oscillator from said first measurement.

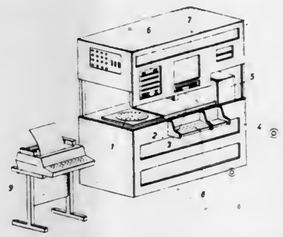
12. A diagnostic test kit for the quantitative determination of at least one class of antigen-specific antibodies comprising:
a piezoelectric oscillator having a layer of antigen for which said antibody is specific adsorbed thereon; and
a reagent containing a predetermined amount of a material reactive with a particular class of said antibody.

4,236,894

READOUT CIRCUIT IN AN AUTOMATIC CHEMICAL TESTING APPARATUS

David E. Sommervold, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Continuation of Ser. No. 920,949, Jun. 30, 1978, abandoned.
This application Aug. 30, 1979, Ser. No. 71,338
Int. Cl.³ G01N *21/75, 33/48*
U.S. Cl. 23—230 R **12 Claims**



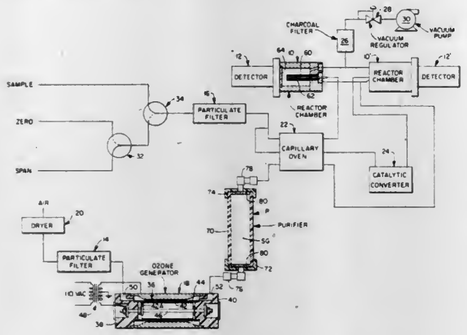
7. A method of operating a chemical analyzer in which a sample to be tested and reagents are mixed, and a voltage is obtained based on the spectral characteristics of said mixture, said method comprising the steps of:
converting said voltage to a digital signal at the beginning, the end and at a plurality of independent times between the beginning and end of a measurement period;
storing values related to said digital signals;
determining a value from a subset of said stored values; and
determining the results of said test in response to said determined value.

4,236,895

ANALYTICAL APPARATUS AND METHOD EMPLOYING PURIFIED OZONE

Quade R. Stahl, Springfield, Va., assignor to Meloy Laboratories, Inc., Springfield, Va.

Filed Jun. 11, 1979, Ser. No. 47,570
Int. Cl.³ G01N *21/76*
U.S. Cl. 23—232 R **13 Claims**



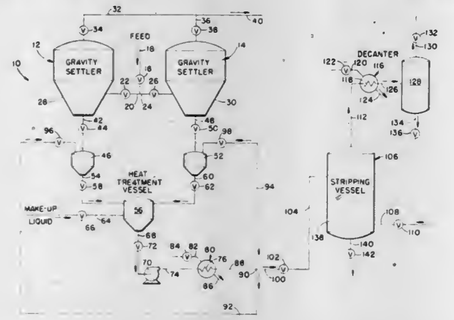
6. In an analytical method in which ozone is generated in an ozone generator and in which the generated ozone reacts in a reactor chamber to produce chemiluminescence, the improvement comprising purifying the output of the ozone generator, and supplying the purified ozone to the reactor chamber.

4,236,896

SLURRY REMOVAL PROCESS

Alan J. Morris, and Theodore A. Rado, both of Oklahoma City, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Feb. 9, 1978, Ser. No. 876,254
Int. Cl.³ F17D *1/16*
U.S. Cl. 23—293 R **14 Claims**



1. In the process for removing a slurry containing suspended solids or insolubles from a process vessel maintained at elevated operating temperature and elevated operating pressure, the improvements which comprise:

passing the slurry from the process vessel to a temperature treatment vessel;

maintaining the pressure in the temperature treatment vessel substantially equal to the pressure in the process vessel;

mixing a make-up liquid with the slurry in the temperature treatment vessel;

withdrawing slurry from the temperature treatment vessel;

reducing the temperature of the withdrawn slurry;

returning a first portion of the cooled slurry to the temperature treatment vessel to cool the slurry contained therein; and

passing a second portion of the cooled slurry through pressure reducing means to flash the second portion of the cooled slurry to a preselected pressure to provide a lower temperature, lower pressure slurry.

4,236,897

FUEL PELLETS

Ian F. Johnston, 1682 Marguerite Ave., Corona Del Mar, Calif. 92625

Continuation-in-part of Ser. No. 900,240, Apr. 26, 1978, abandoned. This application Sep. 18, 1978, Ser. No. 943,393
Int. Cl.³ C10L *5/02*; C10F *7/06*; C10L *5/14*
U.S. Cl. 44—10 A **21 Claims**

1. A fuel pellet comprising from about 90 to about 99 percent by weight natural cellulosic material, and from about 1 to about 10 percent by weight particulate, synthetic polymeric thermoplastic material, the synthetic thermoplastic material being distributed as discrete particles throughout the fuel pellet, the thermoplastic material being solid at room temperature, being at least substantially minus 5 mesh, and having an injection molding temperature of at least 95° C., the cellulosic material having a free moisture content of from about 5 to about 15% by weight, and being at least substantially minus 5 mesh.

3. The fuel pellet of claim 1 including at least about one percent by weight calcium.

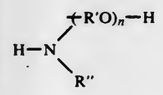
4,236,898

FRICTION MODIFIER FOR GASOLINE

Bryan T. Davis, West Bloomfield, and James B. Retzloff, Royal Oak, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed May 3, 1979, Ser. No. 35,792
Claims priority, application Finland, May 12, 1978, 781503
Int. Cl.³ C10L *1/24*
U.S. Cl. 44—66 **6 Claims**

1. As a composition of matter, a liquid hydrocarbon fuel for use in a spark-ignited internal combustion engine comprising a major amount of normally liquid hydrocarbon of the gasoline boiling range and a friction-reducing amount of an additive selected from sulfurized fatty acid esters, sulfurized fatty acid amides and sulfurized fatty acid ester-amides of an alkanol amine, said amine having the formula



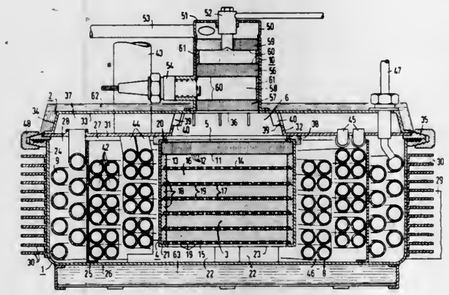
wherein R′ is divalent aliphatic hydrocarbon radical containing 2–4 carbon atoms, n is an integer from 1 to 10, and R″ is selected from hydrogen and the group —R′O)$_n$—H.

4,236,899

GAS GENERATOR FOR CATALYTICALLY REACTING LIQUID, HYDROCARBON CONTAINING FUEL TO BE EVAPORATED WITH AN OXYGEN CONTAINING GAS AT ELEVATED TEMPERATURE TO FORM A FUEL GAS, PARTICULARLY FOR SUPPLYING INTERNAL-COMBUSTION ENGINES

Peter Gulden, Erlangen; Friedrich Kozdon, Spardorf; Eugen S. de Bucs; Walter Küsebauch, both of Erlangen; Helmut Forster, Neunkirchen; Mathias Schnicke, Uttenreuth; Heinz Christoph; Berthold Pfadenhauer, both of Nuremberg, and Gerald Edinger, Berlin, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 779,901, Mar. 21, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 943,762
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1976, 2614670
Int. Cl.³ C10B *1/00*; C10G *9/04*
U.S. Cl. 48—89 **31 Claims**



1. A gas generator for catalytically reacting liquid hydrocarbon containing fuel to be evaporated with a gas containing oxygen at elevated temperatures to form a fuel gas comprising:

a. a heat resistant housing including a lower cup-shaped part and a removable lid;

b. a replaceable cartridge disposed centrally in said housing spaced from the sides and bottom thereof, comprising:

(i) a tubular casing having an open inlet and an open outlet and;

(ii) a first plate containing a plurality of holes;

(iii) a second plate containing a plurality of holes;

(iv) means supporting said first plate at the inlet end of said casing and said second plate at the outlet end of said casing, said plates thereby defining a reaction chamber; and

(v) a packed bed of catalyst disposed within said casing between said first and second plates.

c. means disposed in said lid adapted to have the reaction media consisting of the liquid hydrocarbon fuel and gas containing oxygen supplied thereto for conducting said reaction media to the inlet end of said tubular casing, said inlet end of said tubular casing being in sealing contact with said means for supplying and forming a mixing chamber at said inlet end; and

d. means for removing the fuel gas from said housing whereby, when said catalyst is no longer effective, replacement thereof requires only removing said lid and replacing said cartridge, removal of said cartridge also permitting access to said housing for cleaning thereof.

4,236,900

ELECTROSTATIC PRECIPITATOR APPARATUS HAVING AN IMPROVED ION GENERATING MEANS

Richard A. Fitch, La Jolla; James E. Drummond, Coronado, and Alfred A. Mondelli, Del Mar, all of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 877,123, Feb. 13, 1978, abandoned, which is a continuation of Ser. No. 754,236, Dec. 27, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,826
Int. Cl.² B03C *3/12, 9/02*
U.S. Cl. 55—138 **37 Claims**



1. A multi-stage system for removing particles from a gaseous medium carrying the same, comprising:

a flow channel through the system through which the gaseous medium passes in a downstream direction;

a first precipitating stage within said channel comprising an electrostatic precipitator of the type which has at least one charged wire within said channel for producing a corona discharge for charging particles within the gaseous medium, and at least one collecting plate spaced from said wire for collecting the charged particles;

a second precipitating stage within said channel, said second stage being located only downstream of said first stage and comprising at least one conductive shell means, each shell means having a corona discharge means located therewithin, adjacent collecting plate means associated with and spaced from each said shell means, the space between said shell means and said associated collecting plate means defining a pathway within said channel through which the medium passes, said shell means being spaced and charged to a sufficient potential to maintain a strong generally uniform electric field between each of said shell means and said associated collecting plate means, each of said shell means having a plurality of openings therein through which ions generated by said corona discharge means can pass and enter said pathway to charge the particles within the medium, said openings being sufficiently large to pass enough ions therethrough to charge the particles while not being so large so as to significantly disrupt the generally uniform electric field, said electric field driving said charged particles toward said associated collecting plate means where they are collected thereon.

4,236,901
AIR CLEANER WITH SECONDARY AIR FILTER ELEMENT

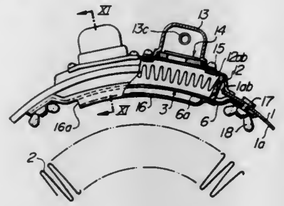
Yasutosi Kato, Anjo; Hideo Kamo, Chiryu; Tadashi Ogawa, Kariya; Kazuhiko Ito, Toyota; Katsuziro Sato, Toyota, and Tatsuo Asai, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 816,470, Jul. 18, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,337

Claims priority, application Japan, Aug. 6, 1976, 51-105755[U]

Int. Cl.[2] B01D *50/00*

U.S. Cl. 55—276 3 Claims



1. An air cleaner for an engine, comprising:
a generally cylindrical air filter element case having an air inlet through which air is to be admitted in use, a primary air outlet and a secondary air outlet opening;
a generally cylindrical primary air filter element encased in said case and generally concentrically disposed and interposed therein between said air inlet and said primary air outlet, so that air admitted through said inlet and discharged through said primary air outlet passes through and is filtered by said primary air filter element;
a housing provided as an outward protrusion on said case, covering said secondary air outlet opening and communicating therethrough with the inside of said case functionally upstream of said primary air filter element, said secondary air outlet opening defining an air inlet means for said housing so that some of the air admitted through said inlet in use may pass from said case, through said secondary air outlet opening or air inlet means and into said housing without passing through said primary air filter element;
means defining an air outlet from said housing which also serves as a secondary air outlet from said case;
a secondary air filter element disposed in said case and at least partially in said housing thereof and being interposed between said air inlet and said secondary air outlet, so that air admitted through said inlet and discharged through said secondary air outlet passes through and is filtered by said secondary air filter element;
said secondary air filter element including an air filter medium through which air may pass in being filtered thereby, and a container made of resilient material, perimetrically bounding said air filter medium and holding said air filter medium therein;
a retaining member on said case for air-tightly and detachably-retaining said secondary air filter element in place, said retaining member including outwardly-bowed curved surface means engaging said secondary air filter element and pressing said secondary air filter element centrally outwardly causing it to extend arcuately in a generally concentric sense relative to the general cylindricality of said case and causing there to be a greater clearance radially between the primary air filter element and the secondary air filter element than would exist were the secondary air filter element less arcuate than said retaining member presses it to become; said retaining member having opening means therethrough in order to permit air to have access therethrough to said secondary air filter element;
said case having a generally cylindrical sidewall having said secondary air outlet opening therethrough;
said housing having a generally arcuate outer wall that is generally arcuate generally concentrically with said case sidewall;
said housing arcuate outer wall having at least one generally cup-shaped valve housing provided thereon as a radially outward protrusion therefrom;
said secondary outlet being provided through said cup-shaped valve housing;
a reed valve assembly disposed in said cup-shaped valve housing of said casing and interposed between said secondary air filter element and said secondary air outlet; and
a noise-decreasing silencer cover which is medially-bowed-outwards arcuate in cross-section correspondingly with said retaining member, and being secured in radially inner facially covering relation to said retaining member, said silencer cover including two angularly opposite ends, with one of these said ends being open and the remainder of said silencer cover being closed.

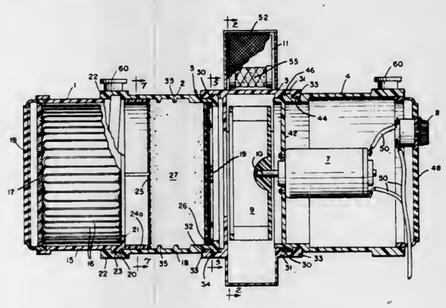
4,236,902
MODULAR AIR PURIFYING DEVICE

Roy A. Fricke, 1034 Ashland Ave., River Forest, Ill. 60305

Filed Nov. 15, 1978, Ser. No. 961,019

Int. Cl.[3] B01D *50/00*

U.S. Cl. 55—279 9 Claims



1. A modular air purifying device including, in combination:
blower means operatively disposed within a blower casing;
motor drive means operatively connected to said blower means for rotatably driving said blower means;
air neutralizer section means comprising an air neutralizer casing therein containing a body of granules of chemical neutralizing compound for removing and absorbing undesired irritants, gases, vapors, and airborne solids from said air as it passes therethrough,
said air neutralizer section means operably positioned adjacent said blower means in axial alignment therewith,
air filter section means operably positioned adjacent said air neutralizer section means and comprising a coil of folded fibrous filter for filtering particulate material from said air as it passes therethrough,
means to compress said granules by applying an axial force on said granules therewithin in compact aggregation and to preclude loose spots, pockets and voids from occurring within said body of granular material, and to thereby more effectively expose said drawn air to an optimal amount of said granules to in turn more effectively absorb said undesired irritants, gases, vapors and airborne solids from said air as it passes therethrough while simultaneously preventing said granules from noisily moving within said neutralizer section upon activation of said motor drive and blower means,
both said air neutralizer section means and said air filter section means each being removably mounted for engagement with one another as well as interchangeable engagement with said blower means separately, such that upon activation of said motor drive means, said blower means rotates to draw air into and through first said filter section means and in turn said air neutralizer section means to provide purified air which is in turn exhausted from said blower means.

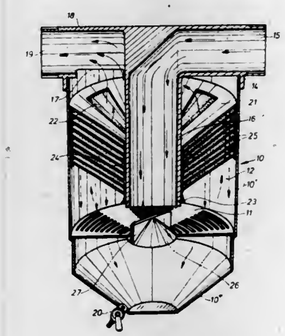
4,236,903
AIR CLEANER

Sven O. Malmsten, Raberga, Vintrosa, Sweden (S-71015)

Filed Jul. 17, 1978, Ser. No. 925,529

Int. Cl.[3] B01D *50/00*

U.S. Cl. 55—325 3 Claims



1. An air cleaner for the removal of contaminants in a flow of contaminated air through said air cleaner, said air cleaner comprising:
a container having an elongated centrally located inlet tube and an outlet opening, said contaminated air flowing into said inlet tube and clean air flowing out of said outlet opening;
dividing means for dividing said container into air and substance chambers, said air chamber for containing said contaminated air and said substance chamber for containing contaminants removed from said air, said dividing means comprising a plate with a plurality of arcuate perforations extending radially thereon and a conical portion located thereon so that said contaminated air flows from said inlet tube onto the apex of said conical portion; and
separating means for removing said contaminants from said contaminated air, said separating means comprising a plurality of funnel-shaped discs located in said air chamber and coaxially around said inlet tube, each of said discs having means defining openings therethrough, said means defining openings being non-aligned with adjacent discs.

4,236,904
METHOD FOR MONITORING OPTICAL FIBER DRAWING

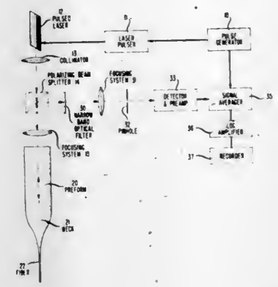
Paul D. Lazay, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 11, 1979, Ser. No. 47,640

Int. Cl.[3] C03B *37/02*

U.S. Cl. 65—2 9 Claims

1. A method for drawing optical fiber comprising
drawing the fiber from a reservoir of material, the method CHARACTERIZED BY the steps of: launching pulses of electromagnetic energy to which the material and the fiber are transparent into the reservoir to couple the pulses into the drawn fiber, resulting in pulses travelling through the fiber away from the reservoir; and detecting electromagnetic energy scattered back through the fiber and the reservoir.



4,236,905
METHOD FOR CONTINUOUSLY MONITORING THE COMPOSITION OF GLASS PARTICULATE DURING THE PRODUCTION OF OPTICAL FIBER

Franklin W. Dabby, Woodbridge, and Ronald B. Chesler, Cheshire, both of Conn., assignors to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Jul. 13, 1979, Ser. No. 57,457

Int. Cl.[3] C03B *20/00, 37/07, 37/075*

U.S. Cl. 65—3 A 6 Claims

1. In a process for the production of optical fiber which comprises preparing a preform by depositing and sintering borosilicate particles on a cylindrical glass rod, heating said preform to the drawing temperature and drawing said preform into optical fiber, the improvement comprising continuously monitoring the boron oxide content of the borosilicate particles as they are deposited via infra-red spectrophotometry.

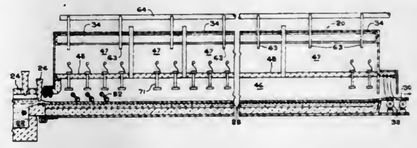
4,236,906
REDUCING TIN DRIP WITH SULFUR CONTAINING GAS

Merritt J. Hummel, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 62,831

Int. Cl.[3] C03B *18/20*

U.S. Cl. 65—27 9 Claims



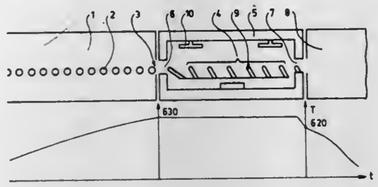
1. A method for reducing tin drip in a glass forming process in which the glass passes through a forming chamber containing a bath of tin comprising contacting tin on said chamber roof with a gas containing sulfur in order to convert said tin to a tin-sulfur compound by reaction with said gas containing sulfur.

4,236,907

METHOD FOR BENDING GLASS SHEETS AND APPARATUS THEREFOR

Henri Mairlot, Chatelet, Belgium, assignor to Saint-Gobain Industries, Aubervilliers, France

Filed Apr. 9, 1979, Ser. No. 28,175
Claims priority, application France, Apr. 7, 1978, 78 11165
Int. Cl.³ C03B *23/025*
U.S. Cl. 65—104 **20 Claims**



1. An improved method for bending of sheets of glass of the type which includes heating a glass sheet, advancing the heated glass sheet to a plurality of curved rods, imparting a predetermined curvature to the glass sheet, and tempering the curved glass sheet, the improvement wherein:

(a) the glass sheet is heated in an oven prior to imparting a curvature thereto to a first temperature range slightly greater than the temperature necessary for commencing the tempering step; and

(b) generally maintaining the glass sheet in said first temperature range while imparting said predetermined curvature thereto and until the tempering step is commenced.

10. An improved glass bending apparatus of the type having a plurality of curved rods having a centrally arched portion each pivotable about an axis passing through its two ends to provide an envelope of a predetermined curvature for imparting a curvature to a sheet of heated glass being advanced thereof, a rotatable tubular sleeve disposed about each rod, a plurality of graphite bearing rings disposed at spaced locations between each rod and sleeve for supporting each of the rotatable tubular sleeves about one of the curved rods, the improvement comprising:

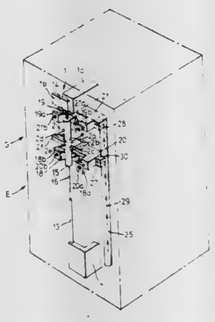
(a) means for injecting a fluid through the rods at a temperature substantially below the temperature of the heated glass, so that the graphite bearing rings are maintained in a substantially non-oxidizing environment.

4,236,908

SEALING GLASS ENVELOPES

Brian E. Head, Bexley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 14, 1979, Ser. No. 39,067
Int. Cl.³ C03B *23/08*
U.S. Cl. 65—108 **4 Claims**



1. A method of fusing an article in a controlled atmosphere in a sealed enclosure comprising the steps of placing said article in said enclosure adjacent a solid reflector, directing radiant heat energy at said article to be fused and a front reflecting surface of said reflector to fuse said article, and releasing a jet of inert gas onto a back surface of said reflector remote from said article to minimize contamination of said reflector by said fused article and to cool said reflector.

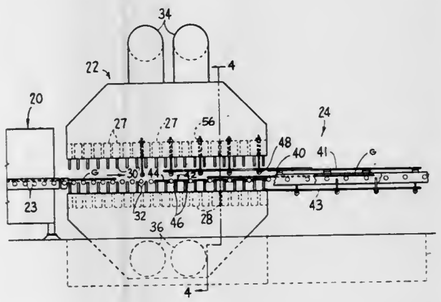
2. Apparatus for fusing an article comprising a sealed enclosure which can be opened, means for supporting said article within said enclosure, a solid reflector disposed in said enclosure adjacent a position to be occupied by said article, radiant heating means for directing radiant heat onto said article and a front reflecting surface of said reflector to fuse said article, and a gas supply port opening in the vicinity of said position and connected to an inert gas supply to release a jet of inert gas onto a back surface of said reflector remote from said article to minimize contamination of said reflector by said fused article and to cool said reflector.

4,236,909

PRODUCING GLASS SHEETS HAVING IMPROVED BREAK PATTERNS

Dean L. Thomas, Glenshaw; Robert G. Frank, Murrysville, and George R. Claassen, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 18, 1979, Ser. No. 40,603
Int. Cl.³ C03B *27/04*
U.S. Cl. 65—115 **9 Claims**



1. Apparatus for heat-strengthening glass sheets, particularly those having a shorter dimension of at least two feet (60 cm) so that the resulting heat-strengthened glass sheet when installed in a building is retained in a window frame when fractured rather than developing a break pattern that causes pieces to separate from the remainder of the sheet when breakage occurs, said apparatus comprising a tunnel-type furnace and a glass sheet cooling station arranged in end to end relation, means for conveying a series of glass sheets along an essentially horizontal path through said furnace and said cooling station, said cooling station comprising a set of nozzles disposed on each side of said path along the length of said cooling station and baffle means disposed between a downstream portion only of each of said sets of nozzles and said path to provide essentially continuous walls extending transversely of said path beyond the lateral edges of glass sheets moving between said walls longitudinally of a downstream portion of said cooling station.

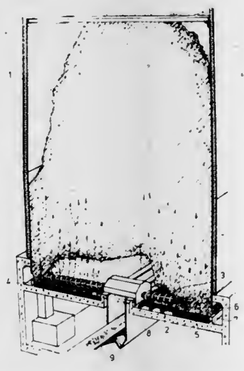
6. A method of fabricating a heat-strengthened glass sheet having a break pattern on fracture that permits the fractured glass sheet to remain within an installation frame comprising heating said sheet to a temperature sufficient for tempering, force cooling said heated glass sheet sufficiently to develop a temperature gradient from its major surfaces to the center of its thickness that is steeper than the temperature gradient produced by natural cooling, and before the glass sheet cools to the strain point at the center of its thickness, discontinuing said force cooling and retarding the rate of glass sheet cooling at the major surfaces to a rate less than the rate of cooling the edge surfaces of said glass sheet by supporting said glass sheet immediately after said force cooling with its major surfaces facing continuous walls closely spaced relative to said major surfaces while the edge surfaces face the space between said walls until said sheet develops a more uniform surface compression stress pattern over the entire extent of said glass sheet within an edge portion that is relatively highly stressed in compression.

4,236,910

METHOD OF BIOLOGICALLY DECOMPOSING ORGANIC MATERIAL, AND APPARATUS FOR CARRYING OUT THE METHOD

Åke Norin, Eskilstuna, and Tore Nordlund, Torshälla, both of Sweden, assignors to Armerad Betong Vagforbattringar AB, Stockholm, Sweden

Filed Jan. 12, 1979, Ser. No. 3,395
Int. Cl.³ C05F *11/06, 7/00*
U.S. Cl. 71—9 **5 Claims**



1. An apparatus for biologically decomposing organic material by the action of microorganisms thereon in the presence of a medium containing an oxygen-gas, said apparatus comprising

(a) a vessel having four upstanding side walls to laterally contain a mass of organic material,

(b) a first inlet adjacent the top of said vessel for the introduction of organic material,

(c) an outlet adjacent the bottom of said vessel for the removal of treated organic material,

(d) a second inlet adjacent the bottom of said vessel for the introduction of a medium containing oxygen gas,

(e) at least one rotatably screw located in a horizontal plane within the interior of said vessel adjacent the bottom thereof but at a higher level than said second inlet, each said screw being adapted to cut material from the bottom of the organic mass that gravitates downwardly through said vessel and to convey the cut material to said outlet,

(f) a layer of coarse particulate covering said second inlet and extending in a generally first horizontal plane,

(g) means for moving each said rotatable screw back and forth between two non-adjacent side walls of said vessel in a second horizontal plane that is parallel to said first horizontal plane and above it,

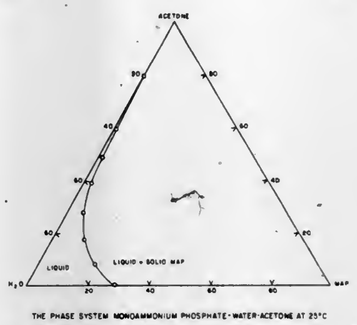
(h) a horizontally extending space between the upper surface of said layer of particulate material and the lower sweep of said at least one rotatable screw, said space communicating with said outlet and which, when the apparatus is in use, is filled with finely divided organic material cut by said at least one screw in the form of a layer, which together with the said layer of coarse particulate material contributes to uniformly distributing the oxygen-gas containing medium over the cross sectional area of the vessel.

4,236,911

PURIFICATION AND CONVERSION OF PHOSPHORIC ACID TO AMMONIUM PHOSPHATES

John F. McCullough; Leslie R. Tate and John F. Phillips Jr. all of, Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Nov. 8, 1979, Ser. No. 92,771
Int. Cl.³ C01B *15/16*
U.S. Cl. 71—34 **10 Claims**



THE PHASE SYSTEM MONOAMMONIUM PHOSPHATE-WATER-ACETONE AT 25°C

1. A process for purifying wet-process phosphoric acid, which process employs the use of acetone and a source of ammonia, and which process comprises the following steps:

(1) introducing into first reacting means streams comprising acetone from later-mentioned filtering means, condensing means, and distillation means, a stream of phosphoric acid and a stream of a source of ammonia to produce a resulting reaction slurry therein;

(2) maintaining a temperature in said first reacting means above 50° C. and maintaining the material therein for a period of time ranging from about 45 minutes to about 120 minutes;

(3) removing at least a portion of said slurry from said first reacting means and introducing same into first filtering means wherein the solids are separated from the liquid in said reaction slurry formed in said first reacting means supra;

(4) recovering said separated solids from said first filtering means and washing same with acetone to effect the removal of the residual mother liquor phosphoric acid adhering to the surfaces thereof;

(5) removing the wash effluent comprising acetone and residual phosphoric acid mother liquor from said first filtering means and introducing same into said first reacting means;

(6) removing the recovered separated solids from said first filtering means and introducing same into drying means, wherefrom is recovered a resulting dried solid fertilizer product and wherefrom is evolved offgases containing residual acetone;

(7) introducing said acetone containing offgases from said first drying means into condensing means to effect the condensation and recovery of said acetone therein and subsequent introduction of said recovered condensed acetone into said first reacting means;

(8) removing the filtrate from said first filtering means and introducing same into a second reacting means together with a stream of ammonia to produce therein a slurry, said ammonia introduced into said second reacting means being so proportioned as to provide therein a mixture of ammonium phosphate having a mole ratio NH_3:P_2O_5 of about 2;

(9) removing from said second reacting means at least a portion of the resulting slurry formed therein and introducing same into second filtering means;

(10) recovering the solids of ammonium phosphate from said second filtering means and introducing same into drying

means wherefrom is recovered dried solid ammonium phosphate fertilizer product and an offgas containing residual acetone;

(11) introducing said residual acetone containing offgases into condensing means wherefrom the resulting recovered condensed acetone is introduced into said first reacting means;

(12) removing the filtrate from said second filtering means and introducing same into distillation means wherefrom is recovered distilled acetone, which distilled acetone is subsequently introduced into said first reacting means.

4,236,912

QUINOLINYLOXYPHENOXY AND QUINOLYINYLTHIOPHENOXY ALKANOIC ACIDS AND DERIVATIVES THEREOF AND METHODS OF HERBICIDAL USE

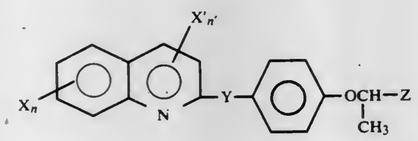
Howard Johnston, Walnut Creek; Lillian H. Troxell, Antioch, both of Calif., and Jon S. Claus, Arlington Heights, Ill., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1979, Ser. No. 17,753

Int. Cl.³ A01N *43/42*; C07D *215/22, 215/36*

U.S. Cl. 71—94 **34 Claims**

1. A compound of the formula:



wherein

X and X′ are independently F, Cl, Br, I, CF_3—, CH_3O—, $—NO_2$, or $—N(R')_2$; with the proviso that both cannot be CF_3—, CH_3O—, $—NO_2$, or $—NR'_2$;

n is 0, 1 or 2;

n′ is 0 or 1;

Y is O or S;

Z is $—CO_2H$, $—CO_2M$, $—CO_2R$, —COSR, $—CONR'_2$, $—CSNH_2$, —CN, $—CH_2OR'$ or $—CH_2O_2CR'$;

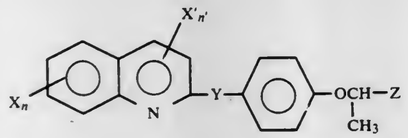
M is Na, K, Mg, Ca or $—N(R'')_4$;

R″ is H, C_1–C_4 alkyl or C_2–C_3 hydroxyalkyl;

each R′ is independently H or C_1–C_4 alkyl; and

R is C_1–C_8 alkyl or C_3–C_6 alkoxyalkyl.

11. A composition comprising an inert agricultural carrier and a herbicidally effective amount in the range of from about 0.003 percent by weight to about 95 percent by weight of a compound having the formula:



wherein

X and X′ are independently F, Cl, Br, I, $—CF_3$, CH_3O—, $—NO_2$, or $—N(R')_2$; with the proviso that both cannot be $—CF_3$, CH_3O—, $—NO_2$, or $—NR'_2$;

n is 0, 1 or 2;

n′ is 0 or 1;

Y is O or S;

Z is $—CO_2H$, $—CO_2M$, $—CO_2R$, —COSR, $—CONR'_2$, $—CSNH_2$, —CN, $—CH_2OR'$ or $—CH_2O_2CR'$;

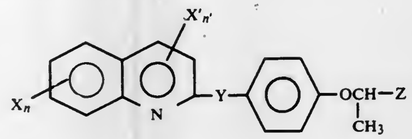
M is Na, K, Mg, Ca or $—N(R'')_4$;

R″ is H, C_1–C_4 alkyl or C_2–C_3 hydroxyalkyl;

each R′ is independently H or C_1–C_4 alkyl; and

R is C_1–C_8 alkyl or C_3–C_6 alkoxyalkyl.

21. The method of controlling undesired plant growth which comprises applying to the locus of said plants a herbicidally effective amount in the range of from 0.01 to 20 lbs/acre of a compound having the formula:



wherein

X and X′ are independently F, Cl, Br, I, $—CF_3$, CH_3O—, $—NO_2$, or $—N(R')_2$; with the proviso that both cannot be $—CF_3$, CH_3O—, $—NO_2$, or $—NR'_2$;

n is 0, 1 or 2;

n′ is 0 or 1;

Y is O or S;

Z is $—CO_2H$, $—CO_2M$, $—CO_2R$, —COSR, $—CONR'_2$, $—CSNH_2$, —CN, $—CH_2OR'$ or $—CH_2O_2CR'$;

M is Na, K, Mg, Ca or $—N(R'')_4$;

R″ is H, C_1–C_4 alkyl or C_2–C_3 hydroxyalkyl;

each R′ is independently H or C_1–C_4 alkyl; and

R is C_1–C_8 alkyl or C_3–C_6 alkoxyalkyl.

4,236,913

GASEOUS ATMOSPHERE FOR ELECTRIC ARC FURNACES

Ivy C. Austin, 34184 Ecorse Rd., Romulus, Mich. 48174

Filed Jun. 11, 1979, Ser. No. 47,347

Int. Cl.³ C21C *5/52*

U.S. Cl. 75—10 R **9 Claims**

1. In a process for the manufacture of steel or copper in an electric arc furnace wherein either molten steel and other iron alloys or copper is refined by the generation of heat produced by an electric arc formed between a plurality of electrodes and the surface of the molten metal, the process being conducted in an inert atmosphere, the improvement which comprises:

refining the molten metal in an inert atmosphere selected from the group consisting of carbon dioxide, argon, a mixture of carbon dioxide and argon, a mixture of nitrogen and carbon dioxide and mixtures thereof.

4,236,914

DESULFURIZATION COMPOSITION FOR MOLTEN PIG IRON

Minoru Kitamura, 20-25 Kitaguchi-cho, Nishinomiya-shi, Hyogo-ken; Tsutomu Hayashi, 1217-95 Kitano, Noguchi-cho; Takeharu Moritsugi, 1261-31 Kitano, Noguchi-cho, both of Kakogawa-shi, Hyogo-ken, and Mitsuyoshi Saruwatari, No. 993, 0aza-Ichino, Oomuta-shi, Fukuoka-ken, all of Japan

Filed Aug. 15, 1979, Ser. No. 66,697

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 **5 Claims**

1. A desulfurizing composition which is fed into molten iron with a nitrogen containing inert gas and which comprises 0.3 to 10 wt. % of a carbon source selected from the group consisting of graphite, coke, anthracite, charcoal and carbon black; 1 to 10 wt. % of a magnesium compound calculated as MgO; and calcium carbide as a residual component.

4,236,915

PROCESS FOR OXYGEN SPRINKLE SMELTING OF SULFIDE CONCENTRATES

Paul E. Queneau, Cornish, N.H. 03746, and Reinhardt Schuhmann, Jr., 1206 Hayes St., West LaFayette, Ind. 47906

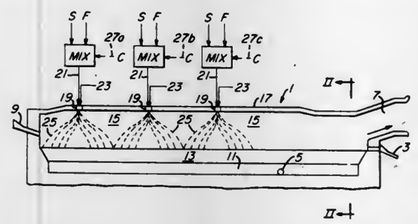
Filed Dec. 21, 1978, Ser. No. 971,995

Int. Cl.³ C22B *15/04*

U.S. Cl. 75—74 **14 Claims**

1. In the method for producing a metal matte from a nonferrous metal-containing sulfide mineral concentrate in a horizontal reverberatory furnace wherein a molten charge of metal matte and a slag are present, beneath an enclosed hot atmosphere, and exhaust gases, metal matte and slag are separately discharged therefrom, the improvement comprising:

sprinkling a mixture of said sulfide concentrate, flux and an oxygen-rich gas into an enclosed hot sulfur dioxiderich atmosphere so as to effect oxidation of the sulfide concentrates therein prior to contact of said concentrates with the molten slag; a major portion of said sulfide concentrate, flux and oxygen-rich gas mixture being injected through a plurality of vertically disposed burners on said furnace into said enclosed sulfur dioxide-rich hot atmosphere as a plurality of paraboloidal suspensions, so as to effect substantially uniform heat and mass distribution over a major portion of said horizontal furnace.



4,236,916

METHOD FOR THE CONTINUOUS RECOVERY OF TIN FROM IRON RICH CONCENTRATES

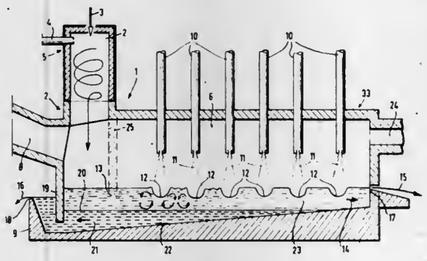
Gerhard Melcher, and Horst Weigel, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 952,963

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1977, 2747586

Int. Cl.³ C22B *25/00*

U.S. Cl. 75—85 **16 Claims**



1. A method for the continuous recovery of metallic tin with a low iron content from a complex tin ore having a relatively high iron content comprising:

adding fluxing agents in sufficient amounts to form a silicate type slag with said ore,

smelting the ore and the fluxing agents in an atmosphere ranging from neutral to weakly reducing to form a smelt and said silicate slag,

selectively reducing the smelt to separate out tin in liquid phase at a temperature range and compositional range at which metallic tin separates out without reduction of iron silicates present, and

conveying the tin rich phase and the iron silicate phase in layers in countercurrent contact with each other,

the selective reducing taking place by means of blowing with high speed jets wherein the gas velocity is in the range from Mach 1 and Mach 3.

4,236,917

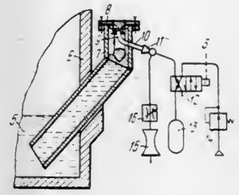
METHOD OF GAS-DYNAMIC STIRRING OF LIQUID MOLTEN METALS AND APPARATUS FOR PERFORMING SAME

Boris S. Dolzhenkov, ulitsa Aerodromnaya, 87, kv. 2; Igor A. Partin, ulitsa Svobody, 230, kv. 164, both of Kuibyshev; Leonid A. Loginov, ulitsa Mariny Raskovoi, 30, kv. 65, Moscow; Genrikh I. Kabakov, ulitsa 1905 goda, 2 proseka, 9, Moskovskaya oblast, Odintsovsky raion, poselok Zhavoronki; Jury N. Lanin, ulitsa Fizkulturnaya, 13, kv. 66, Kuibyshev; Sergei G. Turanin, ulitsa Gvardeiskaya, 19, kv. 134, Kuibyshev; Viktor I. Plokhov, ulitsa Stroitelei, 20, kv. 75, Kuibyshev; Sergei S. Semin, ulitsa Svobody, 184, kv. 63, Kuibyshev; Gershon D. Dymov, ulitsa Respublikansakaya, 59, kv. 26, Kuibyshev, and Gennady V. Cherepok, prospekt Metallurgov, 73, kv. 54, Kuibyshev, all of U.S.S.R.

Filed Jul. 21, 1978, Ser. No. 927,597

Int. Cl.³ C22B *9/00*; C21C *7/00*

U.S. Cl. 75—93 R **3 Claims**



1. In a method of gas-dynamic stirring of molten metals, including alternatingly withdrawing metal portions from the molten metal body into the tube of a pump by suction and expelling these metal portions back into the molten metal body by the action thereupon of compressed-gas pulses, the improvement comprising, directly prior to the supplying of said compressed-gas pulse into the tube of the pump, cutting off the action of the suction, to provide for free descent of the lifted metal portion by gravity forces.

4,236,918

RECOVERY OF ELEMENTAL SULFUR AND METAL VALUES FROM TAILINGS FROM COPPER RECOVERY PROCESSES

Kartik A. Narain, Tucson, Ariz., assignor to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 894,515, Apr. 10, 1978, Pat. No. 4,138,248. This application Jan. 15, 1979, Ser. No. 4,808

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.³ C22B *15/10, 11/08, 34/34*

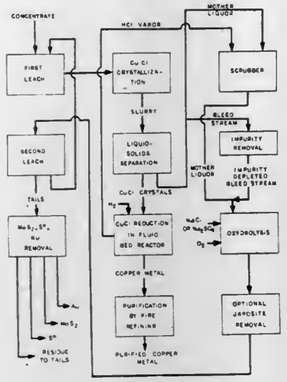
U.S. Cl. 75—101 R **41 Claims**

1. In the process for recovering copper from copper sulfide concentrates in which the concentrate is leached in a main leach circuit to produce a leach solution comprising cuprous chloride, cupric chloride, ferrous chloride and soluble metal impurities, the solution further processed for copper recovery, the improvement by which elemental sulfur, copper and molybdenum in the tailings from the main leach are selectively separated and recovered which sequentially comprise the following:

(a) removing elemental sulfur from the tailings;

(b) recovering copper from the residue from the sulfur solvent leach of step (a) by leaching the sulfur depleted

residue with ferric chloride to selectively solubilize copper; and



(c) recovering molybdenum from the residue from the ferric chloride leach of step (b).

4,236,919

MAGNETIC ALLOY

Kimiyuki Kamino, Tokyo, Japan, assignor to Mitsubishi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1978, Ser. No. 972,472
Claims priority, application Japan, Jun. 6, 1978, 53/73197
Int. Cl.³ C22C *38/18*
U.S. Cl. 75—126 H **2 Claims**

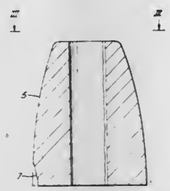
1. A magnetic alloy of the Fe-Cr-Co type consisting essentially of, by weight, 5 to 30%Co, 15 to 35%Cr, 0.1 to 10%Ti, 0.1 to 10%V, 0.005 to 0.03%C, 0 to 0.1%Al, and the balance being Fe.

4,236,920

STEEL ALLOY

Väino Lampe; Staffan H. Gunnarsson, and Karl-Erik Johansson, all of Hagfors, Sweden, assignors to Uddeholms Aktiebolag, Hagfors, Sweden

Filed Apr. 11, 1979, Ser. No. 29,104
Claims priority, application Sweden, May 2, 1978, 7804997
Int. Cl.³ C22C *39/20*
U.S. Cl. 75—128 A **11 Claims**



1. Steel alloy in particular for parts exposed to heavy stresses and wear by objects of high temperatures, consisting essentially of the following chemical composition in percentage by weight:
C—0.9-3
Si—0.3-2.5
Mn—0.5-4
Cr—15-25
Ni—1.5-8
Mo—0.2-1.8
W—0.5-2.0
V—1.5-4
Balance iron and impurities in normal contents.

4,236,921

HEAT RESISTANT ALLOY CASTINGS

Bruce A. Heyer, Mahwah, and Donald L. Huth, Ringwood, both of N.J., assignors to Abex Corporation, New York, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,968
Int. Cl.³ C22C *19/00*
U.S. Cl. 75—134 F **1 Claim**

1. A casting of heat resistant alloy having improved resistance to thermal fatigue and consisting essentially of:
Carbon 0.45
Manganese 1.25 max.
Silicon 3.5 max.
Chromium 25
Nickel 35
Cobalt 15
Tungsten 4.5
Titanium 0.35
Iron Balance, substantially.

4,236,922

DENTAL ALLOY OF BISMUTH-TIN WITH ADDITIONS OF AG, SB AND CU

Rudy Michl, Schaan, and Peter Dorsch, Vaduz, both of Liechtenstein, assignors to Etablissement Dentaire Ivoclar, Schaan, Liechtenstein

Filed Mar. 16, 1978, Ser. No. 974,658
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712517
Int. Cl.³ C22C *33/00*
U.S. Cl. 75—134 D **24 Claims**

1. A dental alloy consisting essentially of 30 to 74 weight percent bismuth, 19 to 69.9 percent weight and either:
A. Silver in the amount of 0.1 to 5 weight percent;
B. Silver and antimony in the combined amount of 0.1 to 7 weight percent, the proportion of silver being not more than about 5% by weight said alloy containing up to 1 weight 1 percent copper.

4,236,923

METHOD OF METALLURGICALLY JOINING A FITTING TO A SHAFT

Akio Takahashi, Toyota; Chiaki Tsumuki, Aichi, and Hitoshi Nakamura, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 14, 1978, Ser. No. 960,622
Claims priority, application Japan, Jan. 31, 1978, 53-9527
Int. Cl.³ B22F *3/00, 7/08*
U.S. Cl. 75—208 R **14 Claims**

1. A method of joining a shaft to a fitting member comprising, molding a fitting member from wear-resistant iron base sinterable alloy powder which yields a liquid phase and shrinks during sintering; assembling said fitting member to a separately produced shaft; and then sintering the assembly of fitting member and shaft at a temperature to cause the fitting member to shrink and to yield a liquid phase of the fitting member to metallurgically bond the fitting member to the shaft.

8. A method of joining a shaft to a fitting member, comprising forming a wear-resistant iron base sinterable alloy powder product which yields a liquid phase and shrinks in sintering; pre-sintering the product at a temperature not yielding a liquid phase to form a fitting member; assembling the fitting member to a separately produced shaft; and thereafter sintering the assembly of shaft and fitting member at a temperature higher than the liquid phase—yielding point of the fitting member to cause the member to shrink and to yield a liquid phase to bond the assembly together.

4,236,924

PRODUCTION OF SINGLE PHASE ALLOY PARTS BY REDUCTION OF OXIDES

Murray Robbins, Berkeley Heights, and Annemarie Staudinger, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 12, 1979, Ser. No. 2,988
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—211 **12 Claims**

1. A method of producing an article by steps comprising:
(a) pressing a metal oxide mixture into a compact, and directly thereafter
(b) reducing said compact at an elevated temperature by means of a reducing atmosphere, and
(c) quenching said compact,
thereby yielding an alloy compact having a density greater than 90 percent of maximum alloy density, and comprising less than 5 percent of multiple phases,
THE INVENTION CHARACTERIZED by forming said metal oxide mixture by steps comprising agglomerating a mixture of metal salts from a liquid solution, and decomposing said salts to form an agglomerated metal oxide mixture, each oxide species subsisting as regions having dimensions less than 1 micron in the metal oxide agglomerates so formed, with the oxides being of such composition so as to be reducible to a single phase alloy at the reduction temperature, and with said alloy having an immiscibility region below the reduction temperature.

2. A method of producing an article by steps comprising:
(a) pressing a metal oxide mixture into a compact, and
(b) reducing said compact at an elevated temperature by means of a reducing atmosphere, and
(c) quenching said compact,
thereby yielding an alloy compact having a density greater than 90 percent of maximum alloy density, and comprising less than 5 percent of multiple phases,
THE INVENTION CHARACTERIZED by forming said metal oxide mixture by steps comprising agglomerating a mixture of metal salts from a liquid solution, and decomposing said salts to form an agglomerated metal oxide mixture, each oxide species subsisting as regions having dimensions less than 1 micron in the metal oxide agglomerates so formed, with the oxides being of such composition os as to form a nonstoichiometric and substantially mutually insoluble metal oxide mixture that is reducible to a single phase alloy at the reduction temperature, and with said alloy having an immiscibility region below the reduction temperature.

4,236,925

METHOD OF PRODUCING SINTERED MATERIAL HAVING HIGH DAMPING CAPACITY AND WEARING RESISTANCE AND RESULTANT PRODUCTS

Jin Onuki, Hiktachi; Masateru Suwa, Tokai; Ko Soeno, Hitachi: Akio Okayama, Hitachi; Masatoshi Tsuchiya, Hitachi, and Hisakiti Onodera, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 10, 1978, Ser. No. 932,641
Claims priority, application Japan, Aug. 10, 1977, 52-95115
Int. Cl.³ B22F *3/00, 5/00*
U.S. Cl. 75—229 **7 Claims**

1. A method of producing a sintered material comprising the steps of:
mixing a powdery metal selected from the group consisting of lead, graphite and magnesium with a powdery matrix metal selected from the group consisting of iron, copper, aluminum, cast iron and alloys thereof;
compression-molding the powdery metal mixture;
sealing the compression-molded powdery metal mixture within a vessel;
subjecting the vessel and the compression-molded powdery metal sealed therein to plastic treatment so that lead, graphite or magnesium is dispersed uniformly in the form of spindles in the matrix metal; and
sintering the thus treated metal composition by heating to a temperature above a recrystallization point of the matrix metal.

2. A method of producing sintered material comprising the steps of:
mixing 5-30 wt. % of powdery lead with the remainder of a powdery matrix metal selected from the group consisting of iron, copper, aluminum, cast iron and alloys thereof;
compression-molding the powdery metal mixture;
sealing the compression-molded powdery metal mixture within a vessel;
subjecting the vessel and the compression-molded powdery metal sealed therein to plastic treatment so that lead is dispersed uniformly in the form of spindles in the matrix metal; and
sintering the thus treated metal composition by heating to a temperature above a recrystallization point of the matrix metal.

4,236,926

HARD METAL BODY

Leif S. Lindholm, Hägersten, and Jan N. Lindström, Norsborg, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Sep. 28, 1978, Ser. No. 946,652
Claims priority, application Sweden, Sep. 28, 1977, 7710826
Int. Cl.³ B22F *3/00;* **C22C** *29/00*
U.S. Cl. 75—238 **12 Claims**

1. A sintered hard metal body composed of at least one carbide as tungsten carbide and a binder phase consisting essentially of cobalt and/or nickel, the hard metal body being provided with a boronized surface zone having a thickness of 1-100 μm characterized in that the hard metal contains small additions of up to about 5 percent by volume of the hard metal body of cubic carbides as VC, TiC, TaC, Mo_2C, ZrC, NbC and/or Cr_3C_2, the content of binder phase is 6-40% of the volume of the body, and the mean grain size of the tungsten carbide is 0.2-1.5 μm.

10. A process for boronizing the surface of a cemented carbide body, the said body containing at least one carbide as tungsten carbide, from 6 to 40% by volume of the body of a binder phase consisting essentially of cobalt and/or nickel, and small additions of up to about 5 percent by volume of the hard metal body of cubic carbides as VC, TiC, TaC, Mo_2C, ZrC, NbC and/or Cr_3C_2, the mean grain size of the tungsten carbide being 0.2 to 1.5 μm, comprising contacting the said cemented carbide body at a temperature of from about 750° to 1000° C. with a first gaseous mixture of a boron trihalide and a hydrogen halide, to form a thin boronized layer on said body and thereafter increasing the amount of the hydrogen halide to form a second gaseous mixture to complete boronizing of said hard metal body to a thickness of from 1 to 100 μm.

4,236,927

METHOD FOR THE MANUFACTURE OF IRON-CONTAINING SINTERED ELECTRODES

Horst Bühl, Weinstadt, and Manfred Gutjahr, Oberboihingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 25, 1978, Ser. No. 936,929
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738456
Int. Cl.³ B22F *5/00, 3/00, 1/00*
U.S. Cl. 75—246 **55 Claims**

1. A method for manufacturing iron-containing sintered electrodes for alkaline accumulators, in which iron powder is

sintered with the use of a filler, comprising the steps of intimately mixing with each other the iron powder and at least one reducible iron compound, sintering the powder mixture into a stable body, and reducing the reducible iron compound into highly active iron.

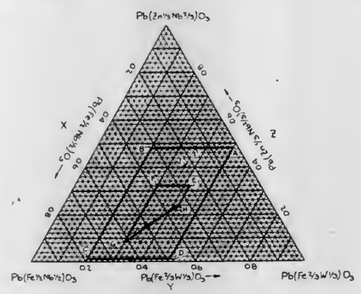
55. An iron containing sintered electrode comprising a stable body formed by intimately mixing iron powder and at least one powdered reducible iron compound, sintering the resulting powder mixture and reducing the iron compound to a highly active iron within said stable body.

4,236,928

CERAMIC COMPOSITIONS

Masatomo Yonezawa; Kazuaki Utsumi, and Tomeji Ohno, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1979, Ser. No. 88,534
Claims priority, application Japan, Oct. 24, 1978, 53-130789
Int. Cl.³ C04B *35/00*; H01B *3/02*
U.S. Cl. 106—39.5 **3 Claims**



1. A ceramic composition consisting essentially of $[Pb(Fe_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3]_x$ $[Pb(Fe_{\frac{2}{3}}W_{\frac{1}{3}})O_3]_y$ $[(Pb(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3]_z$ wherein $x+y+z=1.00$ and the proportions x, y and z fall within the respective ranges of:

$0.02 \leqq x \leqq 0.79$,
$0.20 \leqq y \leqq 0.50$, and
$0.01 \leqq z \leqq 0.48$.

4,236,929

RAPID STRENGTH DEVELOPMENT IN COMPACTING GLASS BATCH MATERIALS

Stanley A. Byers; James R. McKee, Sr., and Marvin C. Gridley, all of Muncie, Ind., assignors to Ball Corporation, Munci, Ind.

Filed Jun. 15, 1979, Ser. No. 49,026
Int. Cl.³ C03C *3/04*
U.S. Cl. 106—52 **16 Claims**

1. A method of forming discrete bodies of glass batch materials having high crush strength within about 10 minutes or less after their formation which comprises forming a mixture of glass batch materials including sand, admixing an alkali metal salt therewith, said salt being a member selected from the group consisting of sodium carbonate, potassium carbonate, and sodium sulfate, adding between about 4 to about 10 weight percent water to moisten and hydrate the alkali metal salt, compacting the moistened batch materials to form distinct units, and subjecting said units after their compaction to ambient cooling air currents at a rate sufficient to contact substantially all the distinct units.

15. A hard, freshly formed, compact unit of glass batch material made by the process of forming a mixture of glass batch materials, admixing an alkali metal salt therewith, adding sufficient water to hydrate the alkali metal salt, compacting the hydrated batch material to form a distinct, compact unit, and subjecting said unit after its formation to ambient cooling air currents to contact substantially all said unit.

4,236,930

OPTICAL WAVEGUIDE AND METHOD AND COMPOSITIONS FOR PRODUCING SAME

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20034, and Theodore A. Litovitz, 904 Devere Dr., Silver Spring, Md. 20903

Division of Ser. No. 635,728, Nov. 26, 1975, Pat. No. 4,110,093, which is a continuation-in-part of Ser. No. 559,512, Mar. 18, 1975, abandoned, and Ser. No. 462,481, Apr. 22, 1974, Pat. No. 3,938,974. This application Jun. 19, 1978, Ser. No. 917,100
Int. Cl.³ C03C *3/08, 13/00, 15/00*
U.S. Cl. 106—54 **22 Claims**

1. A glass article having a least dimension of 4 millimeters and having a composition consisting essentially of the following components on a mole percent bases:

48–64%	SiO_2
28–42%	B_2O_3
4–9%	R_2O

said composition having the following parameters: ρ0.2–0.8 where ρ is defined as the ratio A_2O/R_2O for A_2O and R_2O in mole percent, A_2O is the sum of the concentrations in mole percent of K_2O, Rb_2O and Cs_2O, and R_2O is the sum of the concentrations in mole percent of Na_2O, K_2O, Rb_2O, and Cs_2O, said composition exhibiting an equilibrium volume fraction of about 50% at a temperature within the range of 500° to 575° C. whereby said article withstands conventional acid leaching without cracking.

4,236,931

GAS-PERMEABLE REFRACTORY PARTS

Jean-Pierre Kiehl, Lyon; Jean-Pierre Remi, Bron, and Jacques R. P. Schoennahl, Libos, Fumel, all of France, assignors to Societe Europeenne des Produits Refractaires, Neuilly-sur-Seine, France

Filed Jun. 12, 1979, Ser. No. 47,823
Claims priority, application France, Jun. 26, 1978, 78 19001
Int. Cl.³ C04B *35/02, 21/12*
U.S. Cl. 106—64 **5 Claims**

1. Gas-permeable parts having a permeability of from 50 to 600 Nanoperms and retaining a high mechanical strength when heated between their hydraulic setting temperature and their ceramization temperature, which parts are comprised by weight of:

(A) 60 to 90% of granules of a grain size from 5 mm to 0.2 mm formed from a material selected among the group consisting of a chamotte containing at least 42% of Al_2O_3, mullite, fired gibbsite containing more than 90% Al_2O_3, sintered or fused cast corundum containing more than 95% Al_2O_3, natural chromite, sintered MgO, zircon sand and stabilized zirconia, bonded by

(B) 10 to 40% of a cement or binder consisting by weight of:

(a) 10 to 30% of a calcium aluminate,

(b) 14 to 54% of a constituent having a particle size comprised between 100 A and 0.1 micron and selected from a material selected among the group consisting of silica, alumina and chromic oxide Cr_2O_3, and

(c) 14 to 54% of alumina having a particle size comprised between 1 and 100 microns.

4,236,932

METHOD AND APPARATUS FOR PRODUCING A HYDRAULIC BINDER

Horst Herchenbach, Troisdorf, Fed. Rep. of Germany, and Bartl Lechner, Kufstein, Austria, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 27,035
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815161
Int. Cl.³ C04B *7/44*
U.S. Cl. 106—100 **11 Claims**

1. A method for the production of a hydraulic binder of the type used for plaster and masonry mortar in a cement producing installation wherein raw material is processed sequentially through a preheating zone and a heated clinker calcining zone having a raw material inlet and discharging heated exhaust gases into said preheating zone, which comprises:

removing a predetermined portion of the material being processed from at least one point between the preheating zone and the clinker calcining zone while the material has a predetermined condition of activation at a temperature of at least 450° C.

4,236,933

PROCESS FOR PHTHALOCYANINE GREEN PIGMENT

Salvatore F. Torre, South Plainfield, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 10, 1979, Ser. No. 74,182
Int. Cl.³ C08K *5/34*
U.S. Cl. 106—288 Q **8 Claims**

1. A green shade copper phthalocyanine pigment composition comprising a green copper phthalocyanine pigment having at least 15 halogen atoms per molecule, about 5 to 10% by weight, based on the weight of the pigment, of a non-pigmentary water soluble blue sulfonated copper phthalocyanine dye wherein the sulfonated dye contains at least about 1.8 sulfonic acid groups per molecule, and at least a complexing amount of an N-alkyltrimethylammonium chloride, wherein the alkyl group contains about 8 to 18 carbon atoms, to complex the sulfonic acid groups of the dye.

7. A process for the preparation of a green shade copper phthalocyanine pigment composition which comprises: (1) forming a dispersion of a green copper phthalocyanine pigment containing at least 15 halogen atoms per molecule in water; (2) adding thereto about 5 to 10 percent by weight, based on the dry weight of said green pigment, of a water soluble blue sulfonated copper phthalocyanine dye wherein the sulfonated dye contains at least about 1.8 sulfonic acid groups per molecule and at least a complexing amount of an N-alkyltrimethylammonium chloride compound, wherein the alkyl group contains about 8 to 18 carbon atoms, and sufficient sulfuric acid to render the pH below about 4; (3) heating said mixture at a temperature of about 90–95° C for a time sufficient for compelxation of said sulfonated copper phthalocyanine dye with said N-alkyltrimethylammonium chloride; and (4) isolating said green pigment composition from said mixture.

4,236,934

NONLEAFING ALUMINUM FLAKE PIGMENTS

Harry E. Bell, East Brunswick, N.J., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Feb. 28, 1979, Ser. No. 16,707
Int. Cl.³ B02C *15/00*; C09C *1/62*
U.S. Cl. 106—290 **20 Claims**

1. In a process for producing a substantially nonleafing aluminum flake by milling particulate aluminum to flake form in the presence of a milling agent, the improvement which comprises using a milling agent comprising isostearic acid.

12. A substantially nonleafing aluminum flake pigment comprising aluminum flake particles having a surface layer comprising an isostearic acid milling agent residue.

4,236,935

METHOD FOR REMOVING ORGANIC ACID SOIL FROM SURFACES

Daniel Schoenholz, Basking Ridge; Arthur W. Petersen, Chatham Township, Morris County, and Marcus A. Northup, Jr., Morristown, all of N.J., assignors to Church & Dwight Co., Inc., Piscataway, N.J.

Division of Ser. No. 679,333, Apr. 22, 1976, Pat. No. 4,193,886. This application Sep. 28, 1979, Ser. No. 80,053
Int. Cl.³ B08B *3/10*
U.S. Cl. 134—2 **8 Claims**

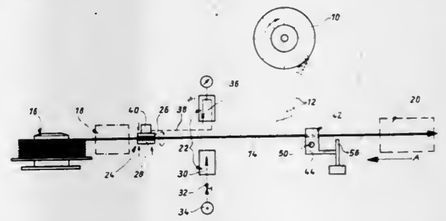
1. A method for the removal of soil containing free or combined organic acids from surfaces comprising applying to soil containing free or combined organic acids an effective amount of a composition comprising (A) at least one polyhydric alcohol or a lower aliphatic ether or ester thereof having at least 2 free hydroxy groups, (B) 1.0 to 500% by weight of at least one alkali metal bicarbonate based on the weight of the polyhydric alcohol and (C) 5.0 to 1000% by weight of at least one alkali metal salt of a weak organic acid based on the weight of the polyhydric alcohol, heating the composition to a temperature of 250° to 550° F. and removing the soil residue.

4,236,936

METHOD FOR CLEANING ARTICLES BY SPRAYING

Ernst Schuh, Lugstr. 26, 7120 Bietigheim-Bissingen, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,485
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—7 **12 Claims**



1. A method of spraying surfaces of articles which travel through a spray zone of spraying apparatus for cleaning said surfaces, the method comprising measuring the surface temperature of the articles, produced by the impact energy of the particles of the spray medium, after passage of the articles through the spray zone, and thereafter, in accordance with the temperature measured, displacing the articles in the spray zone in a direction transverse to their direction of travel until they have substantially the maximum surface temperature attainable.

4,236,937

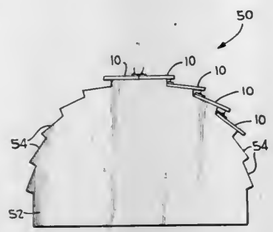
SOLAR COLLECTOR DEVICE

Manfred G. Wihl, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Filed May 24, 1978, Ser. No. 908,959
Int. Cl.² H01L *31/04*
U.S. Cl. 136—246 **6 Claims**

1. A solar collector device which includes a substrate and at least one photovoltiac cell mounted on said substrate, said substrate comprising an elongated base member having a generally semi-circular cross-section and including a multiplicity of separate generally planar elongated platform areas formed in the curved periphery thereof so as to form doubly descending columns with adjacent areas of each column being in differ-

ent planes, each said photovoltaic cell mounted on said substrate being mounted on one of said platform areas, and each



said photovoltaic cell being of such a size as to tangentially extend beyond the platform area upon which it is mounted.

4,236,938

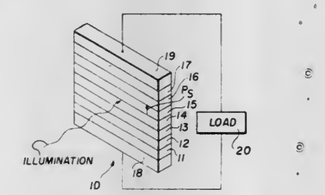
EFFICIENT HIGH VOLTAGE PHOTOVOLTAIC CELLS

Philip S. Brody, Brookmont, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 784,761, Apr. 15, 1977, Pat. No. 4,160,927, which is a division of Ser. No. 533,365, Dec. 16, 1974, Pat. No. 4,051,465, which is a continuation-in-part of Ser. No. 411,853, Nov. 1, 1973, Pat. No. 3,855,004. This application Jul. 25, 1979, Ser. No. 60,525

Int. Cl.[3] H01L *31/00*

U.S. Cl. 136—254 **11 Claims**



1. A high efficiency photovoltaic cell comprised of a plurality of single crystal laminar ferroelectric material layers stacked between two electrodes, each said layer having two opposing faces and said layers being stacked with respective faces of adjacent layers facing each other, each said layer being remanently polarized in the same direction perpendicular to said faces, said layers being exposed to incident light whereby said light is converted to electrical energy by said photovoltaic cell.

4,236,939

SEMI-FINISHED STEEL ARTICLE AND METHOD FOR PRODUCING SAME

Debanshu Bhattacharya, Matteson, Ill.; Dennis T. Quinto, St. John, and Michael O. Holowaty, Crown Point, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Jan. 24, 1979, Ser. No. 5,965

Int. Cl.[3] C22C *38/60*

U.S. Cl. 148—2 **6 Claims**

1. A method for producing a free-machining, elongated, semi-finished, tellurium-containing steel shape with substantially reduced surface cracking due to lead telluride, said method comprising the steps of:

providing a bath of molten steel having a composition consisting essentially of, in wt.%:

carbon	0.06–1.
manganese	0.30–1.6
sulfur	up to 0.35
bismuth	0.10–0.40
tellurium	machinability increasing amounts up to 0.06
lead	up to 0.15
silicon	up to 0.30
phosphorous	up to 0.12
iron	essentially the balance;

casting said molten steel into an elongated solid shape;

the combined lead plus bismuth content being at least 0.25 wt.%,

said steel being provided with sufficient manganese and bismuth so that, in said solid shape, said tellurium is combined substantially with said manganese and/or said bismuth as micro-inclusions of MnTe and/or Bi_2Te_3 and said bismuth is also present as microinclusions of elemental bismuth, there being substantially no FeTe present in said solid shape;

heating said elongated steel shape to a hot deforming temperature, without burning the steel shape;

and hot deforming said elongated shape while the latter is at a temperature above about 920° C. (1700° F.) and below 1150° C. (2100° F.), without surface removal between said heating step and said hot deforming step, to produce an elongated, deformed, semi-finished steel shape having a surface substantially free of surface cracking prior to any surface conditioning thereof;

said steel, in said solid shape, being devoid of microinclusions of lead telluride in amounts sufficient to produce substantial surface cracking during said hot deforming step at a temperature below 1150° C. (2100° F.).

4,236,940

WEAR RESISTANT TITANIUM ALLOY COATING

Brian A. Manty, Lake Park; Herbert R. Liss, Stuart, and Henry Lada, Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 884,294, Mar. 6, 1978, abandoned. This application Jun. 12, 1979, Ser. No. 47,666

Int. Cl.[3] C23B *5/52*

U.S. Cl. 148—6.2 **5 Claims**

1. The method of providing a wear and corrosion resistant coating on a titanium alloy substrate, comprising:

exposing clean substrate;

applying as a first layer an acid chromate solution to the clean substrate to form a chromium conversion coating thereon;

depositing as a second layer a chromium base coating on the chromium conversion coated substrate; and

heat treating the coated substrate at about 700°–820° (1300°–1500° F.) for 1–300 hours to metallurgically bond the coatings and substrate, without completely interdiffusing said second layer chromium base coating into the substrate, to preserve the wear resisting properties of the second layer surface.

4,236,941

METHOD OF PRODUCING HEAT TREATMENT ATMOSPHERE

Ray F. Main, Jr., Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

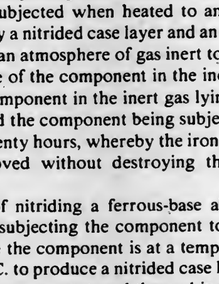
Continuation of Ser. No. 836,580, Sep. 26, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,240

Int. Cl.[3] C21D *1/34*

U.S. Cl. 148—16.5 **4 Claims**

1. A method of producing a gaseous composition suitable for use as an atmosphere in heat treating metals, said composition being produced by a partial oxidation reaction between air and ethanol, said method comprising

reacting a gaseous mixture consisting essentially of air and ethanol, the weight ratio of air to ethanol being between 1.0 and 3.0, said mixture being heated at a temperature between 1400° F. and 1850° F. in a bed of particles providing a surface conducive to said reaction, said reaction being for a period of time to form a substantially soot-free gaseous product containing substantially no oxygen and comprising hydrogen, carbon monoxide, carbon dioxide, methane, and water, said product containing at least 5 percent by volume methane and at least 3 percent by volume carbon dioxide,



cooling the product gas to a temperature below 100° F. to minimize soot formation, and removing any water that condenses and

introducing said product gas into a furnace containing metal to be treated and maintained at a temperature at which metal is suitably heat treated, whereby said product gas undergoes further reaction within said furnace that lowers the methane and carbon dioxide concentrations to produce a nonoxidizing atmosphere suitable for heat treating said metal.

4,236,942

METHOD FOR THE GASEOUS NITRIDING OF FERROUS-BASED COMPONENTS

Frederick V. Rudd, Blackburn, England, and Tom Bracewell, deceased, late of Blackpool, England (by Bertha Bracewell, administratrix), assignors to British Leyland UK Limited, London, England

Filed May 23, 1978, Ser. No. 908,892

Claims priority, application United Kingdom, May 31, 1977, 23011/77

Int. Cl.[3] C23C *9/14*

U.S. Cl. 148—16.6 **9 Claims**

1. A method of nitriding a ferrous-base alloy component which comprises subjecting the heated component, which has previously been subjected when heated to an atmosphere of ammonia, whereby a nitrided case layer and an iron nitride skin was produced, to an atmosphere of gas inert to the component at the temperature of the component in the inert gas, the temperature of the component in the inert gas lying between 450° C. and 600° C. and the component being subjected to the inert gas for at least twenty hours, whereby the iron nitride skin is at least partly removed without destroying the nitrided case layer.

8. A method of nitriding a ferrous-base alloy component which comprises subjecting the component to an atmosphere of ammonia while the component is at a temperature between 450° C. and 600° C. to produce a nitrided case layer and an iron nitride skin on the component, and then subjecting the component to an atmosphere of gas inert to the component at the temperature of the component in the inert gas, the temperature of the component in the inert gas lying between 450° C. and 600° C. and the component being subjected to the inert gas for at least twenty hours, whereby the iron nitride skin is at least partly removed without destroying the nitrided case layer.

4,236,943

PRECIPITATION HARDENABLE IRON-NICKEL-CHROMIUM ALLOY HAVING GOOD SWELLING RESISTANCE AND LOW NEUTRON ABSORBENCE

Michael K. Korenko, Richland, Wash.; Howard F. Merrick, Suffern, N.Y., and Robert C. Gibson, Ringwood, N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1978, Ser. No. 917,832

Int. Cl.[2] C22C *19/05*

U.S. Cl. 148—32.5 **7 Claims**

1. An iron-nickel-chromium age-hardenable alloy characterized in having a compact morphology of the gamma-double prime phase enveloping the gamma-prime phase and consisting essentially of about 40 to 50% nickel, 7.5 to 14% chromium, 1.5 to 4% niobium, 0.25 to 0.75% silicon, 1 to 3% titanium, 0.1 to 0.5% aluminum, 0.02 to 0.1% carbon, 0.002 to 0.015% boron and the balance iron.

4,236,944

CAST IRON ESPECIALLY SUITED FOR INGOT MOLDS

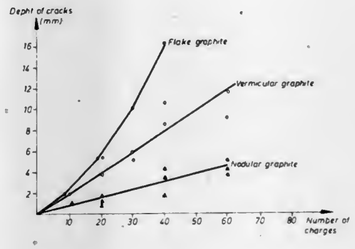
Melih Yaman; Kjell Gustavsson, and Örjan Hammer, all of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 18, 1978, Ser. No. 952,400

Claims priority, application Sweden, Oct. 24, 1977, 7711918

Int. Cl.[3] C22C *37/04*

U.S. Cl. 148—35 **3 Claims**



1. An ingot mold formed of a cast iron consisting essentially of 3.7 to 4.0% C, not more than 1.6% Si, 0.40 t 0.80% Mn, 0.010 to 0.045% P, not more than 0.010% S, 0.020 to 0.050% Mg, the balance Fe with normally appearing impurities, the said elements being adjusted to provide a specific carbon equivalent in the range 3.2 to 3.6% calculated as C_{eqv}=% C+0.65% Si+0.35% P−35% Mg, the ingot mold structure containing an amount of not more than 5% of volume of carbide, an amount not more than 25% of volume of ferrite, at least $\frac{2}{3}$ of total graphite volume of spheroidal graphite and the balance pearlite.

4,236,945

PHOSPHORUS-IRON POWDER AND METHOD OF PRODUCING SOFT MAGNETIC MATERIAL THEREFROM

Orville W. Reen, New Kensington, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 27, 1978, Ser. No. 963,717

Int. Cl.[3] H01F *1/02*

U.S. Cl. 148—105 **4 Claims**

1. A phosphorus-iron powder for use in the pressing and sintering, at less than 2% linear shrinkage, of soft magnetic parts while retaining the magnetic properties of the parts, comprising a substantially phosphorus free powder containing at least 98% iron blended with a sufficient quantity of ferrophosphorus powder having an average particle size of at least 10 micron and a phosphorus content of from 18 to 30%, to arrive at a phosphorus content for the mixture in the range of

from about 0.40 to 1.25% and less than 0.01% carbon or copper impurities in the mixture.

3. In a process for producing a phosphorus bearing soft magnetic material while retaining the magnetic properties of the parts, which process includes the steps of: blending powder containing at least 98% iron with ferrophosphorus powder having a phosphorus content of from 18 to 30%, into a mixture containing from about 0.40 to 1.25% phosphorus and less than 0.01% carbon or copper impurities, pressing the blended mixture to a green density of at least 6.0 grams per cubic centimeter, and sintering the mixture in a nonoxidizing atmosphere at a temperature of at least 1900° F., wherein the improvement comprises the step of blending ferrophosphorus powder having an average particle size in excess of 10 micron, whereby part linear shrinkage during sintering is less than 2%.

4,236,946

AMORPHOUS MAGNETIC THIN FILMS WITH HIGHLY STABLE EASY AXIS

Joseph A. Aboaf, Peekskill; Jerome J. Cuomo, Lincolndale; Amitava Gangulee, Croton-on-Hudson, and Robert J. Kobliska, Mount Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1978, Ser. No. 886,020

Int. Cl.³ C21D *1/04*

U.S. Cl. 148—108 **45 Claims**

1. A sputtered thin film of noncrystalline amorphous magnetic material consisting of Fe, B and from zero to ten percent of a transition metal selected from the group consisting of Cr, Mo, V, Ti, Cu, Pd, Pt, Re, Ru, Ta, Zr, Hf, Rh, Y, and Al, said thin film having been annealed in an external magnetic field below the Curie Temperature and the crystallization temperature to stabilize the magnetic easy axis, said thin film possessing a low H_c of about one Qersted and below for domains with magnetization in the plane, having a well defined easy axis in that the value of H_k exceeds the value of H_c, and said stabilized magnetic easy axis remaining unchanged in direction in the absence of heating above the Curie point with a high permeability of above 1000 from DC to high frequencies on the order of 1000 megahertz.

4,236,947

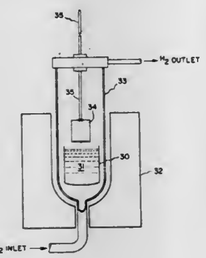
FABRICATION OF GROWN-IN P-N JUNCTIONS USING LIQUID PHASE EPITAXIAL GROWTH OF SILICON

Bantval J. Baliga, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 21, 1979, Ser. No. 40,643

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 **8 Claims**



1. A method of forming a high quality p-n junction in silicon epitaxially-grown on a substrate, with a graded p-type region situated between said junction and said substrate, said method comprising:

maintaining at silicon epitaxial growth temperature a tin melt saturated with silicon containing n-type dopant atoms;

heating a silicon substrate wafer of p-type conductivity to a temperature above the growth temperature;

immersing the substrate wafer heated above the growth temperature into the melt heated to the growth temperature; and

reducing the melt temperature at a controlled rate to induce epitaxial growth of silicon on the substrate wafer.

4,236,948

PROCESS FOR DOPING SEMICONDUCTOR CRYSTALS

Klaus Seibold, Hanau, and Gunther Schlamp, Steinbach, both of Fed. Rep. of Germany, assignors to Demetron Gesellschaft fur Elektronik Werkstoffe mbH, Hanau, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 18,881

Int. Cl.³ H01L *21/225*

U.S. Cl. 148—188 **18 Claims**

1. In a process for doping a semiconductor crystal with a solution containing a substance able to form a silicon dioxide film, a p- or n-doping material and an organic solvent by applying this solution to the surface of the semiconductor crystal whereby after drying and calcining there will be formed a cohesive and firmly adhering layer from which layer the doping material will diffuse into the semiconductor crystal during calcination, the improvement comprising employing as the component forming the silicon dioxide layer an acidified solution having a pH 2 to 6 of partially hydrolyzed alkyl polysilicate, aryl polysilicate or mixed alkyl aryl polysilicate.

4,236,949

PROCESS FOR PREPARING A HERMETICALLY SEALED ASSEMBLY

David A. Horsma, Palo Alto, and Stephen H. Diaz, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 717,696, Aug. 25, 1976, abandoned. This application Sep. 25, 1978, Ser. No. 945,427

Claims priority, application United Kingdom, Aug. 27, 1975, 35338/75

Int. Cl.² H02G *15/08*

U.S. Cl. 156—49 **49 Claims**



1. A process for preparing an assembly comprising a substrate and a covering which is hermetically sealed around the substrate which process comprises the steps of:

placing a dimensionally recoverable covering member having at least one open end about the substrate which is sought to be hermetically sealed;

causing said dimensionally recoverable covering member to recover and to seal hermetically about the substrate;

detecting increased air pressure in the interior of the assembly between the covering member and substrate at a point which is remote from said open end by the employment of a detection device which communicates with said point whereby the formation of the hermetic seal is signalled by said detection device.

4,236,950

ROAD MARKING MACHINE AND METHOD

Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland

Filed Oct. 26, 1977, Ser. No. 845,834

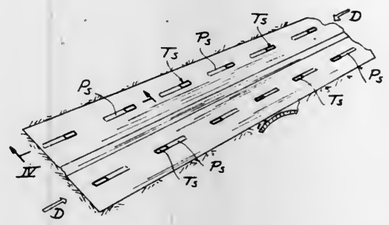
Claims priority, application Italy, Oct. 27, 1976, 28747 A/76

Int. Cl.² E01F *9/08;* **E01C** *23/16;* **B32B** *31/24;* **B05C** *5/00*

U.S. Cl. 156—71 **14 Claims**

1. A road marking machine, particularly for forming a traffic regulating line, comprising a chassis movable along a road to

be marked; first applying means on said chassis operative for applying a plurality of first separate strips onto a road to be marked, so that when said chassis moves along the road the first strips applied onto the road follow one after another, said first applying means being adapted to so apply said first separate strips to the road that each two adjacent first strips applied to the road are spaced one from each other along the movement of the chassis so as to constitute therebetween an elongated gap on the road; and second applying means on said chassis adapted for applying at least one second strip different from said first strips in said gap between said two adjacent first strips so that said second strip is aligned with said first strip along the direction of the movement of the chassis and at least partially covers said gap on the road to thereby constitute together with said first strips a traffic regulating line, said second means being adapted to spray a predetermined substance of said second strip onto the road and into the gap between said first strips.



11. A method of marking a road, particularly with a traffic regulating line, comprising the steps of applying to a road to be marked a first sequence of first strips following one after another, so that each two adjacent first strips are in alignment with and spaced from each other by an elongated gap; and applying directly to the road a second sequence of second strips different from said first strips and following one after another, so that at least one second strip is applied to the road into said elongated gap between said two adjacent first strips to be aligned with said first strips along the direction which the machine takes along the road and to at least partially cover said gap and to thereby constitute together with said first strips a traffic regulating line, said step of applying said second strip constituting the step of spraying a substance of the second strip onto the road in the gap between said two adjacent first strips.

4,236,951

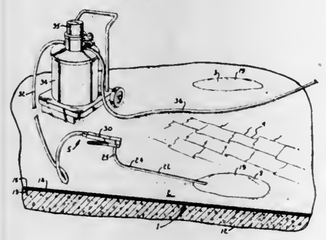
METHOD OF TREATING BLISTERS IN ASPHALTIC MEMBRANE COVERED ROOFS

Ludwig C. Krchma, 1168 E. 66th St., Kansas City, Mo. 64113, and Paul L. Morris, 8815 W. 104th St., Overland Park, Kans. 66212

Filed Dec. 27, 1977, Ser. No. 864,852

Int. Cl.³ B32B *35/00;* **B05D** *3/12, 1/26*

U.S. Cl. 156—71 **3 Claims**



1. A method of healing blisters in a multi-ply asphaltic membrane covered roof having a top coat and roofing felt ply therebeneath with the blister voids extending beneath the roofing felt ply, and inhibiting the further formation of such blisters therein, said method including the step of:

(a) applying over the entire membrane area containing said blisters a quantity of liquid petroleum hydrocarbon at a rate to total approximately 4 to 5 ounces by weight per square foot of surface area of membrane treated, said hydrocarbon having no more than 4.0% normal heptane insoluble compounds, a viscosity from 25 SSu to 400 SSU at 210° F., a minimum viscosity-gravity constant of 0.92, a specific gravity of 60/60 exceeding 0.95, an initial flash point (Cleveland Open Cup) approximately over 250° F., and a maximum saturate constituent limit of 35%; said hydrocarbon being miscible with asphaltic components of said membrane to penetrate same;

(b) applying said hydrocarbon at ambient air temperatures above about 60° F., and

(c) maintaining said hydrocarbon on said membrane area to penetrate said top coat and roofing felt, whereby the rate of healing proceeds more quickly than the rate of separation.

4,236,952

PRODUCTION OF SHEET MATERIALS

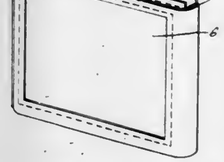
Janusz J. H. Krause, and Colin Stanier, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 1, 1978, Ser. No. 965,393

Claims priority, application United Kingdom, Dec. 29, 1977, 54141/77

Int. Cl.² B32B *7/08, 31/16;* **D05B** *93/02*

U.S. Cl. 156—93 **12 Claims**



1. A method of joining together a sheet or sheets of an organic polymer which polymer is not normally melt-processable, the method comprising the steps of

(a) contacting a strip of melt-processable organic polymer with the faces of the sheet or sheets in the region of juxtaposed edges of the sheet or sheets,

(b) stitching the strip to the sheet or sheets by means of a thread in the region of both of the juxtaposed edges of the sheet or sheets, and

(c) heating the strip in order to fuse the strip and/or the thread to seal the holes created by the stitching step, and, where the strip has not previously been fused to the faces of the sheet or sheets, in order to fuse the strip to the faces of the sheet or sheets.

4,236,953

PROCESS FOR PRODUCING THERMOPLASTIC MULTI-WALLED PIPES

Keiichi Takahashi, Ichikawa, Japan, assignor to Tokan Kogyo Co., Ltd, Tokyo, Japan

Division of Ser. No. 800,427, May 25, 1977, Pat. No. 4,157,194. This application Nov. 21, 1978, Ser. No. 962,781

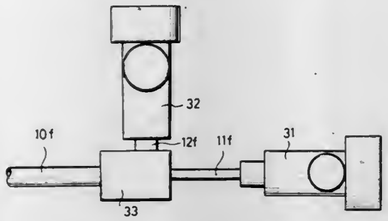
Claims priority, application Japan, May 27, 1976, 51/67004; Jun. 6, 1976, 51/71575; Jul. 1, 1976, 51/77054; Jul. 1, 1976, 51/77055; Jul. 6, 1976, 51/79518; Feb. 18, 1977, 52/16117

Int. Cl.² B29D *23/04;* **F16L** *39/00, 47/02*

U.S. Cl. 156—244.13 **8 Claims**

1. A process for producing joinable thermoplastic multi-

walled pipes each of said thermoplastic multi-walled pipes having at least two tubular members different in inside diameter and arranged concentrically with a hollow portion therebetween, a plurality of longitudinally extending ribs spacing adjacent ones of said tubular members, and the bond per unit area being weaker at the portion where the rib contacts the inner tubular member than at the portion where the rib contacts the outer tubular member, said process comprising the steps of extruding molten thermoplastic resin from a first extruder provided with a die similar in cross section to an innermost tubular member thereby obtaining a first formed product having a cross section of said innermost tubular member; there-



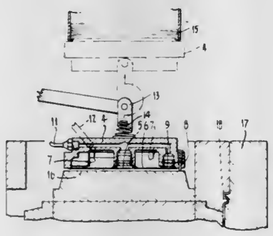
after separately extruding molten thermoplastic resin over said innermost tubular member from a second extruder longitudinally spaced from said first extruder in the direction of extrusion of the first formed product provided with a die similar in cross section to the combined form of outer one of said tubular members and ribs of said multi-walled pipe thereby obtaining a second formed product having a cross section of the combined form of said outer tubular member and ribs of the multi-walled pipe; and joining the second formed product to the first formed product concentrically with each other in bonds between said ribs and said inner tubular member which are weaker per unit area than the connections between said ribs and said outer tubular member.

4,236,954

LABEL APPLICATOR

Frederick H. Edwards, Mentone, Australia, assignor to Vinyl Clad Proprietary Limited, Victoria, Australia

Filed Jan. 18, 1979, Ser. No. 4,590
Claims priority, application Australia, Jan. 19, 1978, PD 3071
Int. Cl.³ C05G *15/00*
U.S. Cl. 156—352 **9 Claims**



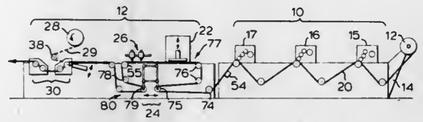
1. In a label applicator having a label pickup member operable to receive a label from a supply thereof and transfer such label to another member, means for holding such label on said pickup member during its transfer, and means for releasing such label from said pickup member upon completion of such transfer, the improvement comprising sensing means carried by said pickup member for sensing the presence on said pickup member of a label, said sensing means being so positioned on said pickup member with reference to the size and shape of such label as to be exposed to and engageable with said another member should such label occupy any position in said pickup member other than a predetermined position.

4,236,955

PRINTING AND DIE-CUTTING APPARATUS

Allan R. Prittie, 12 Blackdown Crescent, Islington, Ontario, Canada

Filed Oct. 31, 1977, Ser. No. 847,241
Claims priority, application Canada, Oct. 29, 1976, 264629
Int. Cl.³ B26D *5/34*; B32B *31/18*
U.S. Cl. 156—353 **5 Claims**



1. In combination:

a web-treating apparatus for treating a continuous web, and from which the web issues at a steady speed, and a web-handling apparatus for performing an operation on said web, the operation requiring the web to be stationary during the operation, the web bearing longitudinally spaced register marks, the web-handling apparatus comprising:

first means for carrying out said operation,

second means for positively and periodically advancing the web past said first means when the latter is not acting upon the web, including at least one drive roller positively engaging the web, and control means for positively rotating and braking said at least one drive roller,

sensing means mounted adjacent to where the register marks on the web pass, the sensing means being selectively adjustable in the direction of web movement and including an upstream sensor which upon detecting a register mark signals said control means to begin to slow down from its normal web-advance speed, and a downstream sensor which upon detecting a register mark signals said control means to stop the movement of the web, whereby the stopped position of the web with respect to said first means can be adjusted by adjusting the position of said downstream sensor,

the web from the web-treating apparatus moving along a path which includes a first leg passing by said first means and in which said operation can be carried out, a second leg upstream of said first leg, said second leg being looped around a first end roller that is displaceable to lengthen and shorten said second leg, a third leg downstream of said first leg, said third leg being looped around a second end roller that is displaceable to lengthen and shorten said third leg,

said first and second end rollers being linked together by a swingable, pivoted linkage in such a way that displacement of the first end roller to lengthen its respective leg entails displacement of the second end roller to shorten its respective leg, and vice versa,

the web speed issuing from the web-treating apparatus being monitored by an electronic tachometer, the output of which is a voltage which is a function of the input web speed, the pivotal linkage controlling the setting of a potentiometer through a lost-motion arrangement which leaves the potentiometer at a given setting unless the linkage arc begins to shift angularly, such shifting causing a change in the potentiometer setting, the potentiometer being used as a fine-tuning over-ride to control means governing the average web speed along the first leg of the web path in such a way that any wandering of the linkage arc will cause a shift of the potentiometer setting which will change the speed of said last-mentioned means to

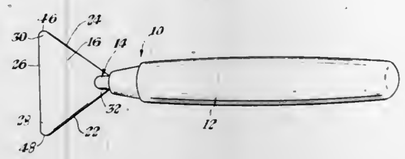
bring the linkage arc back in the other direction, said control means being responsive to said voltage.

4,236,956

FLOOR LAYING TOOL

Donald A. Harrison, P.O. Box 3214, Tequesta, and Howard A. Lanier, 1002 Hawie St., Jupiter, both of Fla. 33458

Filed Dec. 11, 1978, Ser. No. 968,078
Int. Cl.³ B44C *7/06*
U.S. Cl. 156—527 **3 Claims**



2. A tool for laying vinyl, comprising:

a handle with a longitudinal center line,

a shaft connected to the handle including a first portion connected to the handle and a second portion projecting away from the longitudinal center line of said handle, said second portion having a distal end spaced from the longitudinal center line of said handle,

a flat, generally triangular-shaped plate connected to said distal end of said second portion of said shaft, said triangular-shaped plate having at least two rounded corners, said plate having a forward distal straight edge transversely positioned with respect to the longitudinal centerline of said handle,

said straight edge having a rounded corner of said triangular-shaped plate at each end,

said triangular-shaped plate having a third corner, said triangular-shaped plate connected to said distal end of said second portion of said shaft adjacent said third corner,

said two rounded corners having dull edges to crease the vinyl flooring into corners between a baseboard and a subflooring without cutting the vinyl flooring,

said straight edge having a sharp cutting edge, said triangular-shaped plate having a lower flat surface area for pressing of the vinyl against the subfloor, and

said triangular-shaped plate positioned at an angle to said handle with the phantom extension of said longitudinal center line of said handle and the plane of the plate intersecting.

4,236,957

DISSOLUTION OF METALS UTILIZING AN AQUEOUS H_2SO_y—H_2O_2-MERCAPTO CONTAINING HETEROCYCLIC NITROGEN ETCHANT

Silvester P. Valayil, Youngstown, and Moenes L. Elias, Canfield, both of Ohio, assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Jun. 25, 1979, Ser. No. 51,762
Int. Cl.³ C09K *13/06*; C23F *1/00, 3/02*
U.S. Cl. 156—666 **21 Claims**

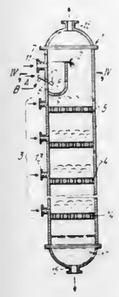
1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of a heterocyclic nitrogen compound additive containing at least one free mercapto group substitution.

4,236,958

APPARATUS FOR ELIMINATING RESIDUAL SOLVENT FROM CRUMBLED POLYMER

Nison I. Gelperin, 2 Obydensky pereulok, 10, kv. 5; Leonid M. Polotsky, Leninsky prospekt, 64, kv. 170, both of Moscow, and Nikolai A. Konovalenko, ulitsa Lenina, 27/40, kv. 46, Efremov Tulskoi oblasti, all of U.S.S.R.

Filed May 8, 1979, Ser. No. 37,017
Int. Cl.³ B01D *1/14*
U.S. Cl. 159—16 S **3 Claims**



1. In apparatus for eliminating residual solvent from crumbled polymer comprising: a vertical column; a plurality of substantially horizontal perforated contact trays vertically arranged with respect to each other within said column and dividing the latter into a corresponding plurality of intercommunicating compartments through which an aqueous suspension along with polymer crumb is adapted to pass; and means for feeding live steam into said vertical column for interacting with the polymer crumb as the latter passes through said compartments, the improvement comprising:

means for producing polymer crumb and aqueous suspension including a chamber located within an upper portion of said vertical column and an overflow baffle defining at least one side of the chamber located vertically over the uppermost one of said contact trays;

a water supply nozzle fluidly communicating with said chamber; and

a conventional injector-type crumb former fluidly communicating with said chamber.

4,236,959

METHOD OF PRODUCING FIBER PULP BY GRINDING FIBROUS MATERIAL IN A STEAM ENVIRONMENT

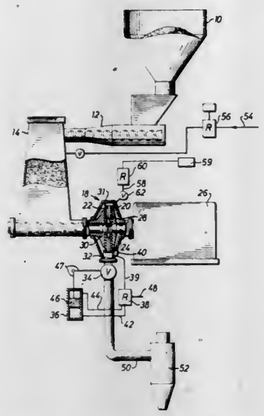
Rolf B. Reinhall, Killingevagen 16, Lidingo, Sweden

Continuation of Ser. No. 739,432, Nov. 8, 1976, abandoned, which is a continuation of Ser. No. 561,250, Mar. 24, 1975, abandoned, which is a continuation of Ser. No. 500,369, Aug. 26, 1974, abandoned, which is a continuation of Ser. No. 316,290, Dec. 18, 1972, abandoned. This application Aug. 21, 1978, Ser. No. 935,744
Claims priority, application Sweden, Dec. 20, 1971, 16359/71
The portion of the term of this patent subsequent to Nov. 12, 1991, has been disclaimed.
Int. Cl.² D21B *1/14*
U.S. Cl. 162—23 **3 Claims**

1. In the method of producing fiber pulp from moisture-containing fibrous vegetable material wherein the fibrous material is introduced in a steam environment of predetermined superatmospheric pressure and corresponding temperature into a central portion of a grinding interspace defined between a pair of facially opposed grinding discs which rotate relative to one another within a surrounding closed casing to propel the mixture of pressurized steam and ground material radially outwards within the interspace and into the surrounding casing from which the ground material and residual steam is removed

under a controlled rate of discharge in response to fluctuations in a predetermined discharge pressure within the casing, the improvement in said method resulting in increased heat economy and improved pulp quality, comprising:

contacting the mixture of steam and ground material upon its emergence from said interspace with a noncondensable gas, other than the steam, of lower pressure than said steam environment to reduce the partial pressure of the steam while maintaining the predetermined total pressure within the casing with consequent expansion of the steam to cause it to become momentarily superheated and unsaturated, thereby exerting a cooling effect on the ground material by evaporation of moisture and thereby minimizing hydrolysis of the pulp material.

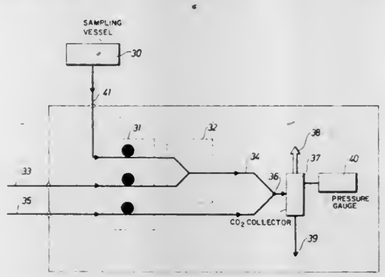


4,236,960

PROCESS FOR CONTROLLING THE DEGREE OF CAUSTICIZATION IN THE PREPARATION OF WHITE LIQUID FROM THE CHEMICALS RECOVERED FROM BLACK LIQUOR

Bengt G. Hultman, and Erik A. Berglund, both of Domsjo, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Jun. 27, 1979, Ser. No. 52,523
Claims priority, application Sweden, Jul. 18, 1978, 7807910
Int. Cl.[3] D21C *11/04*
U.S. Cl. 162—30 K **13 Claims**



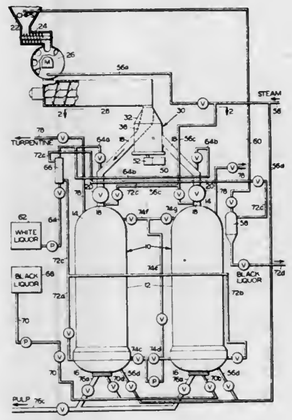
1. A process for controlling the degree of causticization of white liquor in its preparation from green liquor by the addition of calcium oxide, which comprises determining the sodium carbonate concentration of green liquor fed to the causticization; determining the sodium carbonate concentration of white liquor resulting from the causticization; and controlling the degree of causticization within a predetermined range according to both sodium carbonate concentrations so as to maintain the degree of causticization of the white liquor within the range despite variations in sodium carbonate concentration of the green liquor and variations in calcium oxide content of the calcium oxide added for causticization, said determining steps including acidifying samples of the green and white liquors and measuring the amount of carbon dioxide liberated upon the acidification to thereby determine the sodium carbonate concentration of the green and white liquors as carbonate ion concentration.

4,236,961

PULPING LIGNOCELLULOSE IN CONTINUOUS PRESSURIZED BATCH DIGESTERS

Frank B. Green, 10835 SW. Muirwood Dr., Portland, Oreg. 97225

Filed Jul. 25, 1979, Ser. No. 917,015
Int. Cl.[3] D21C *7/06, 7/12;* C21C *7/14*
U.S. Cl. 162—52 **3 Claims**



1. The process for the batch production of cellulosic pulps by the chemical digestion of pieces of lignocellulose which comprises:

(a) providing a pressurizeable batch reaction vessel defining a vertical path along which the lignocellulose progresses from top to bottom,

(b) pressurizing the vessel with steam to substantially the predetermined digestion pressure and temperature,

(c) while maintaining the vessel at substantially digestion pressure and temperature charging the vessel with flows of presteamed lignocellulose pieces and both hot fresh and hot spent digestion liquors for a predetermined charging period,

(d) the fresh liquor flow containing digestion chemicals in the predetermined amount being charged to the vessel at a substantially constant rate commensurate with the rate of charging the lignocellulose pieces,

(e) the spent liquor flow being charged to the vessel at a variable rate sufficient to maintain during the charging period a substantially constant rate of liquor rise within the vessel and to keep the lignocellulose pieces substantially submerged in the liquor, thereby compensating for variations in water extraneously introduced into the digester from steam condensation and lignocellulose water content,

(f) digesting the lignocellulose in the vessel for the predetermined digestion period at the digestion pressure and temperature,

(g) when the lignocellulose in the lower part of the digester has been digested for said digestion period, continuously withdrawing the resulting pulp from the bottom of the vessel over a withdrawing period substantially equal to the vessel-charging period, thereby insuring subjection of the top and bottom portions of the lignocellulose charge to equal durations of pulping treatment within the vessel, and

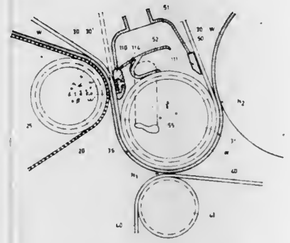
(h) while withdrawing the pulp from the vessel, diffusing cold spent digestion liquor from a stock thereof into a plurality of vertically and radially spaced diffusion zones in the bottom of the vessel at a diffusion rate predetermined to pass the displacement liquor radially through the zones during a time interval substantially equal to the time required for vertical travel of the pulp through the vertical zones.

4,236,962

METHOD AND APPARATUS FOR SEPARATING A WEB FROM A FORMER WIRE AND TRANSFERRING THE WEB TO A PRESS FELT

Matti Kankaanpää, Espoo, Finland, assignor to Valmet Oy, Finland

Filed Jun. 14, 1979, Ser. No. 48,602
Claims priority, application Finland, Jun. 16, 1978, 781934
Int. Cl.[3] D21F *2/00*
U.S. Cl. 162—204 **9 Claims**



1. A method for separating a web from a former wire of a former section of a paper making machine and transferring the same to a transfer felt which also functions as a press felt, comprising the steps of:

guiding the web carrying former wire over a first sector of a reverser roll so that the web is subjected to a centrifugal force over the first sector which tends to separate the web from the former wire;

guiding the transfer felt so that a surface thereof engages the web over at least a portion of the first sector of the reverser roll such that the transfer felt changes direction over a substantial angle while in contact with the web as the same travels on the reverser roll;

applying external suction to the web through the transfer felt over at least a portion of said first sector of the reverser roll for creating a pressure differential across the web to subject the same to a force acting in substantially the same direction as the centrifugal force, said suction being applied to the web by a vacuum device located in the area of the reverser roll, said device being provided with sealing strips which sealingly engage the surface of the transfer felt which does not engage the web;

whereby the web separates from the former wire at a point on the first sector of the reverser roll and is transferred and adheres to the transfer felt;

guiding the transfer felt around a sector of a grooved press roll substantially immediately after the web is transferred from the wire to the felt under the combined action of the centrifual and suction forces acting thereon; and

subjecting the grooved press roll to external suction in a manner such that the suction is applied through the grooves of the press roll to the web.

9. A method of separating a web from a former wire of a former section of a paper making machine and transferring the same to a transfer felt which preferably comprises a press felt, comprising the steps of:

guiding the web carrying former wire over a first sector of a reverser roll wherein the direction of travel of the web carrying wire substantially changes so that the web while being carried by the wire over said first sector is subjected to a centrifugal force over the first sector which tends to separate the web from the former wire;

guiding the transfer felt so that a surface thereof engages the web over at least a portion of the first sector of the reverser roll such that the transfer felt changes direction over a substantial angle while in contact with the web as the same travels on the reverser roll and wherein upon guiding the transfer felt into engagement with the web, a sandwich structure comprising the former wire, the web and the transfer felt is formed, the sandwich structure extending over a second sector of said reverser roll contained within said first sector thereof;

pressing the transfer felt against the web over a third sector of the reverser roll by means of a shoe device;

applying external suction to the web through the transfer felt over said third sector of the reverser roll through openings formed in the shoe device, for creating a pressure differential across the web to subject the same to a force acting in substantially the same direction as the centrifugal force, said shoe device being provided with sealing strips which sealingly engage the surface of the transfer felt which does not engage the web;

whereby the web separates from the former wire at a point on the first sector of the reverser roll and is transferred and adheres to the transfer felt;

guiding the web carrying transfer felt subsequent to the point of separation of the web from the wire to a first press nip defined by a suction press roll and a grooved roll, the latter operating within its own press felt so that water is removed from the web at the first press nip towards both the suction and grooved rolls; and

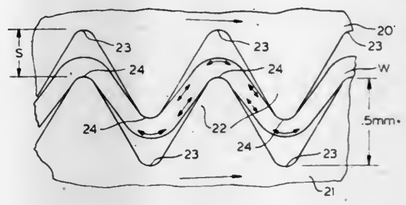
guiding the web transfer felt on the suction roll surface from the first press nip to a second press nip defined by the suction press roll and a smooth-surfaced roll, the web being continuously subjected to suction during such travel by the suction press roll and water being removed from the web at the second press nip towards the suction roll; the web then separating from the transfer felt and adhering to and traveling over the surface of the smooth-surfaced roll whereupon it is removed therefrom for further treatment.

4,236,963

APPARATUS FOR TEXTURING UNTEXTURED DRY TISSUE WEB

Leroy H. Busker, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 800,737, May 26, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 962,634
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.[3] D21F *7/00*
U.S. Cl. 162—271 **9 Claims**



1. In combination with a continuous strip of low bulk about 85% to 97% dry originally untextured tissue sheet web of about 0.115 mm thickness formed from a water slurry of tissue quality cellulose fibers hydrogen bonded by drying of the web

to said about 85% to 97% dry condition, apparatus for texturing said tissue sheet web into bulky, soft sanitary tissue:

said apparatus comprising cooperating grooved rotary texturing rolls each of which has generally radially projecting texturing ribs separated by grooves, the ribs on each of the rolls being the same and there being from 4 to 30 equally spaced ribs per centimeter measured across said ribs, each of said ribs having a line contact crest;

said rolls being oriented in nip relation with the texturing ribs and grooves of each roll partially interdigitated with the ribs and grooves of the other of said rolls;

said dry tissue sheet web under tension running longitudinally through the rib and groove nip of said rolls at a substantially common linear speed with rotation of said rolls;

said partially interdigitated ribs of each roll being spaced apart from the ribs of the other roll a distance greater than the thickness of said dry tissue sheet web, so that there is complete freedom from any squeezing of said web between any surface of the ribs;

said rib crests being oriented by their spaced interdigitated relation, so that they thrust a limited distance into the opposite faces of the tensioned running dry tissue sheet web and effect just enough progressive limited wave-stretch deformation of the dry tissue sheet web areas engaged by and thrust by the rib crests in successive opposite directions out of the original plane of the tensioned web to cause mechanical breaking of the hydrogen bond of and partial loosening of fibers at both faces of the dry tissue sheet web, resulting in fluffy surface texture on the dry tissue sheet web and imparting desired tissue bulk and softness to the web while retaining satisfactory web integrity, and elasticity and breaking length characteristics in the textured web;

and said rib crests separating in the rotation of said rolls after said limited wave-stretch deformation of the web by said crests so that said textured dry tissue sheet web is released from said crests and said web areas permitted to return elastically toward said original plane of the web.

4,236,964

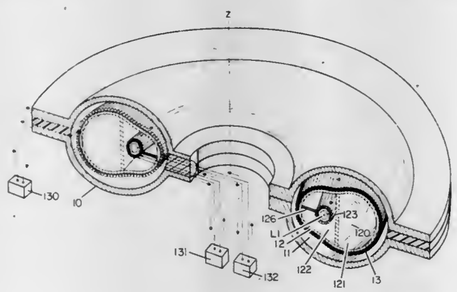
CONFINEMENT OF HIGH TEMPERATURE PLASMAS

Robert W. Bass, Provo; Helaman R. P. Ferguson, Orem, both of Utah; Harvey J. Fletcher, Coltsneck, N.J.; John H. Gardner, Provo, Utah; B. Kent Harrison, Provo, Utah, and Kenneth M. Larsen, Provo, Utah, assignors to Brigham Young University, Provo, Utah

Continuation-in-part of Ser. No. 300,781, Oct. 25, 1972, abandoned. This application Oct. 18, 1974, Ser. No. 515,859

Int. Cl.[2] G21B *1/00*

U.S. Cl. 176—3 **10 Claims**



1. Apparatus for confining a high temperature plasma which comprises

envelope means shaped to form a toroidal hollow chamber containing a plasma comprising a selected gas at a predetermined small fraction of atmospheric density and at a predetermined elevated temperature, and

magnetic field lines generating means for confining, within said chamber, said plasma in a smooth toroidal shape without cusps having a non-convex poloidal cross-section by a smooth magnetic surface comprising a set of magnetic field lines tangent to the surface of said plasma, in which said set of magnetic field lines is characterized by having no field line of zero strength at any point, by having a selected finite even non-zero number N and not more than N closed toroidal axially symmetric magnetic field lines, and by having a zero rotational transform angle, said magnetic field line generating means including

first current means to effect a poloidal flow of current transversely around and exteriorly of said plasma, in order to tend to displace said magnetic field lines inwardly toward the longitudinal axis of said plasma and thereby compress said plasma about its longitudinal axis, as well as to curve said magnetic field lines about the toroidal axis of said plasma,

second current means to effect a toroidal flow of current longitudinally of said plasma and exteriorly thereof adjacent the side of said plasma having a relatively small radius in comparison to the diametrically opposite large radius side of said plasma, thereby to further curve selected ones of said magnetic field lines at a selected region on the surface of said plasma in a direction away from said toroidal axis and toward the longitudinal axis of said plasma so that the poloidal cross-section of said plasma is non-convex, and

third current means positioned exteriorly of both said plasma and said second current means to effect toroidal flow of current longitudinally of said plasma and in a direction opposite to the direction of the flow of current effected by said second current means, thereby to prevent movement of said plasma in a direction toward the large radius side of said plasma, and where the values of the currents in said first, second and third current means are selected so that said plasma is bounded by only a single such smooth magnetic surface having static structural stability, said smooth magnetic surface being the product of the interaction of two separate and distinct families of magnetic surfaces produced by said currents in said first, second and third current means.

4,236,965

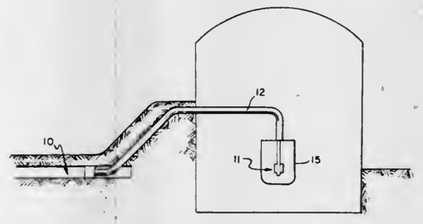
TARGET ASSEMBLY

Richard A. Lewis, Falls Church, Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 8, 1978, Ser. No. 958,863

Int. Cl.[3] G21G *1/10*

U.S. Cl. 176—11 **6 Claims**



1. A target assembly capable of producing neutrons when bombarded with a high power, high current proton beam comprising a plurality of pins composed of a neutron emissive target material, the pins being disposed so that their axes parallel the beam path and being distributed axially in a plurality of layers containing an equal number of pins, the pins in each layer being offset from the pins in all other layers, the number and size of the pins being such that the entire cross sectional area of the proton beam is covered by the pins.

4,236,966

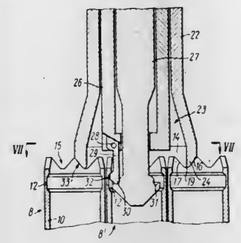
NUCLEAR REACTOR

Nikolai I. Savin, ulitsa Zvezdinka, 3, kv. 71; Dmitry A. Khramov, ulitsa Kultury, 3, kv. 425; Vladimir J. Filippov, ulitsa Piskunova, 32, kv. 14, and Valery V. Bugrov, ulitsa Kirova, 22, kv. 57, all of Gorky, U.S.S.R.

Filed Oct. 7, 1977, Ser. No. 840,396

Int. Cl.[3] G21C *19/20*; B66C *17/08, 1/10*

U.S. Cl. 176—30 **1 Claim**



1. An improved nuclear reactor of the type having

a vessel;

a coolant filling said vessel;

a core accommodated in said vessel;

a plurality of fuel assemblies accommodated in said core, wherein said fuel assemblies are intended to be handled and transferred and have a longitudinal axis; the improvement

wherein the heads of said fuel assemblies are formed, each having an internal hollow, said heads being shaped as prisms comprising faces and edges, said faces having end faces;

a refuelling device intended to transfer said fuel assemblies, mounted on said vessel, said refuelling device comprising a tubular guide member having a circular cross-section mounted on said vessel, said tubular guide member having a tapered end face shaped as a truncated cone having a vertex facing toward said head of said fuel assembly to be handled, a gripping means arranged in said guide member and having an end face, a working member secured on said end face of said gripping means, a drive mechanically coupled to said gripping means and said guide member to set them in motion;

said end faces of said heads of said fuel assemblies being provided with a plurality of cutouts each having first sides and second sides, the number of said plurality of cutouts being equal to the number of fuel assemblies adjacent to said fuel assembly to be handled and defining an equal number of upraised teeth, said cutouts being arranged symmetrically with respect to said edges of said faces of said heads and the apices of said teeth being located at the edges of said heads;

the sides of said cutouts facing said fuel assembly being handled in each one of said fuel assemblies adjacent to said fuel assembly being handled, all forming parts of the surface of a second truncated cone coaxial with the longitudinal axis of the fuel assembly being handled; and the vertex of said second truncated cone facing away from the head of the fuel assembly being handled, wherein prior to the handling and transferring operation the diameter of the lower circular edge of said first truncated cone of said guide member is greater than the diameter of an imaginary circle which is formed by the intersection of said sides of said cutouts facing said fuel assembly being handled, whereby the fuel assemblies adjacent to the one being handled are moved aside by cooperation of said first and second truncated cones and are held in position and prevented from vertical displacement.

4,236,967

GRIPPING MEANS FOR FUEL ASSEMBLIES OF NUCLEAR REACTOR

Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29; Oleg N. Vjugov, ulitsa Novaya, 24, kv. 2; Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46, and Tsolak G. Shkhian, naberezhnaya Zhdanova, 6, kv. 16, all of Gorky, U.S.S.R.

Filed Jan. 3, 1978, Ser. No. 866,711

Int. Cl.[2] G21C *19/20*; B66C *17/08, 1/10*

U.S. Cl. 176—30 **1 Claim**



1. Apparatus for gripping fuel assemblies of a nuclear reactor, which fuel assemblies include heads and internal grooves provided in said heads, said apparatus having a longitudinal axis and comprising:

a cylindrical tube;

a gripping means having a longitudinal axis, accommodated in said tube, and longitudinally movable therein, said gripping means comprising,

a housing;

a slider accommodated in said housing and movable relative to said housing;

longitudinal slots provided in the body of said slider and having first end faces, the first end faces of said longitudinal slots being slanted with respect to said longitudinal axis;

gripping jaws having tails on one end and teeth on the other end of each of said gripping jaws;

said tails being pivotably mounted on said housing; and

moving means for moving said gripping means relative to said tube between a first position wherein said gripping means is accommodated within said tube, and a second position wherein a portion of said gripping means, including said gripping jaws, are positioned outside of said tube, along the longitudinal axis of said tube;

means for moving said slider relative to said housing when said gripping means is at said second position, thereby pivoting said gripping jaws between a position wherein said teeth of said gripping jaws are accommodated within said longitudinal slots of said slider, and a position wherein said gripping jaws open so that said teeth are receivable in said internal groove of said fuel assembly head.

4,236,968

DEVICE FOR REMOVING HEAT OF DECOMPOSITION IN A STEAM POWER PLANT HEATED BY NUCLEAR ENERGY

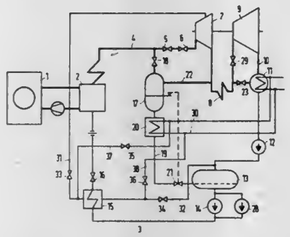
Ekke Werker, Langensendelbach, and Werner Emsperger, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Jan. 3, 1978, Ser. No. 866,235

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1977, 2700168

Int. Cl.[2] G21C *9/00*

U.S. Cl. 176—38 **2 Claims**



1. Device for removing heat of decomposition in a steam power plant heated by nuclear energy and having a steam generator with a water-steam separating tank connected downstream of the steam generator in travel direction of the steam generated thereby comprising a start-up circulatory loop for the steam power plant connected to the steam generator and including the water-steam separating tank therein, said start-up circulatory loop being formed of a feedwater line and an outlet line from the water-steam separating tank and further including an externally cooled heat exchanger connected therein for removing after-heat, said heat exchanger being a preheater for the steam generator connected in said feedwater line upstream of said steam generator, first line means for delivering turbine exhaust steam to said heat exchanger, second line means for delivering steam condensate thereto, first and second valve means, respectively, connected in said first and second line means, respective coolant connecting lines connected to said first and second line means between said valve means, respectively, and said heat exchanger, and additional value means respectively connected in said connecting lines for selectively connecting said heat exchanger to a coolant source.

4,236,969

SYSTEM FOR COOLING SET OF FUEL ASSEMBLIES ARRANGED IN REACTOR VESSEL

Alexandr G. Ljubivy, prospekt Gagarina, 200, kv. 172; Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29; Tsolak G. Shkhian, naberezanaya Zhdanova, 6, kv. 16, and Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46, all of Gorky, U.S.S.R.

Continuation of Ser. No. 790,975, Apr. 26, 1977, abandoned. This application Nov. 2, 1978, Ser. No. 957,025

Int. Cl.[2] G21C *15/00*

U.S. Cl. 176—61 **1 Claim**

1. A system for cooling a set of fuel assemblies of a nuclear reactor, comprising:

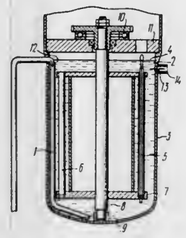
a vessel containing the set of fuel assemblies;

a pipeline for supplying coolant to the lower part of said vessel so that the coolant fills the vessel to a first predetermined level above the active portion of the fuel assemblies;

a hollow cylindrical member extending vertically upward from a central portion of the bottom of said vessel to a height above said first predetermined level, a first part of the interior of said cylindrical member being in communication with a first portion of the interior of said vessel located above said first predetermined level, and a second part of the interior being in communication with a second portion of the interior of said vessel located near the bottom of said vessel;

a first portion of said pipeline extending inside said hollow cylindrical member and having an end located at a second predetermined level located between the active portion of the fuel assemblies and the first predetermined level;

a second portion of said pipeline being positioned outside said vessel and extending to a level below the active portion of the fuel assemblies, the relationship between said hollow cylindrical member and said first portion of said pipeline being such that coolant supplied said vessel through said pipeline enters said hollow cylindrical member from the end of said first portion of said pipeline and leaves said hollow cylindrical member through said second part in communication with the second portion of the interior of said vessel.



4,236,970

STRUCTURAL UNIT FORMED OF A COOLANT PUMP AND A STEAM GENERATOR, ESPECIALLY FOR NUCLEAR REACTOR PLANTS SECURED AGAINST RUPTURE

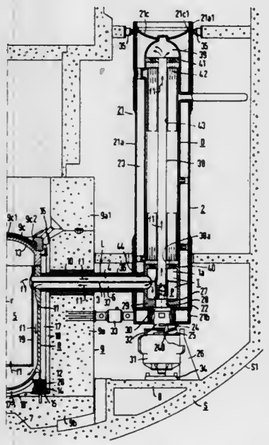
Elmar Harand, Höchstadt, and Eberhard Michel, Nuremberg, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Feb. 14, 1978, Ser. No. 877,741

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1977, 2706164

Int. Cl.[2] G21C *13/02*

U.S. Cl. 176—87 **13 Claims**



1. In combination, a coolant pump and a steam generator formed together into a structural unit, the steam generator being a straight-tube steam generator having a central ascending pipe, a tube bundle having a central passageway through which said ascending pipe extends, an upper primary-side inlet chamber communicating with said tube bundle at an upper end thereof, a lower primary chamber communicating with said tube bundle at a lower end thereof, said central ascending pipe communicating with said inlet chamber for feeding primary medium thereto from which the primary medium flows back through said tube bundle to said lower primary chamber, said ascending pipe having an axial elongation, the coolant pump having an impeller and a guidance device surrounding said impeller, said ascending pipe-elongation having a construction corresponding to that of said guidance device, partition means for dividing said lower primary chamber into a suction space and an outlet chamber space, said pump having a suction side connected through said suction space of said lower primary chamber to a hot line string of a double line connected to the steam generator, said outlet chamber space of said lower primary chamber being connected to a cold line string of said double line.

4,236,971

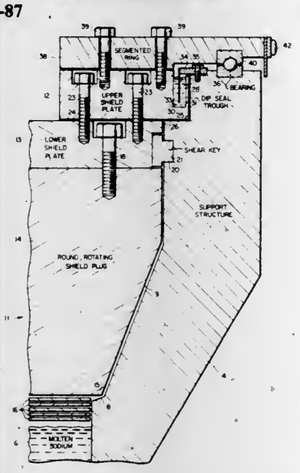
APPARATUS FOR SEALING A ROTATABLE SHIELD PLUG IN A LIQUID METAL NUCLEAR REACTOR

Robert K. Winkleblack, San Jose, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 10, 1978, Ser. No. 885,439

Int. Cl.[2] G21C *13/06*

U.S. Cl. 176—87 **11 Claims**



1. An apparatus for sealing a rotatable shield plug in a liquid metal nuclear reactor, comprising:

(a) a rotatable shield plug assembly having a dip-ring seal, said seal providing a fluid/solid barrier between the liquid metal in the reactor and the atmosphere;

(b) a static seal for the rotatable shield plug assembly, said static seal being located between the dip-ring seal and the liquid metal in the reactor;

(c) a bearing attached to and supporting the plug for rotation with respect to a wall of the reactor;

(d) a lifting ring assembly overlying the shield plug assembly and the bearing, said lifting ring assembly being supported for rotation by the bearing; and

(e) a plurality of bolts engaging the ring assembly and the shield plug in a first position and in a second position, in the first position said bolts disengage the static seal and transfer the weight of the shield plug assembly onto the bearing for rotation of the shield plug with respect to the wall of the reactor and in the second position said bolts transfer the weight of the shield plug back to the reactor wall for operation at power and cause engagement of the static seal, thereby isolating the dip-ring seal from the liquid metal.

4,236,972

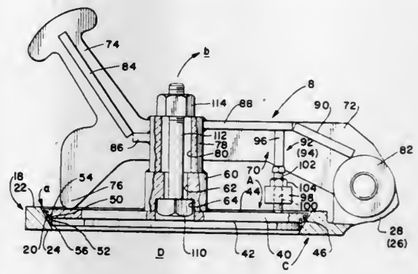
FABRICATED OPENING COVER AND COVER ASSEMBLY

Patsie C. Campana, 2614 Sherwood Dr., Lorain, Ohio 44053

Filed Oct. 23, 1978, Ser. No. 953,431

Int. Cl.[3] C10B *25/16, 25/20, 25/14*

U.S. Cl. 202—242 **9 Claims**



1. In combination with a coke oven, a fabricated cover for selectively sealingly covering an opening communicating with the coke oven; wherein said opening includes a rim area disposed therearound, said rim area defining an opening peripheral surface including an opening beveled surface tapering inwardly from the outermost end toward the innermost end thereof, said cover comprising:

a cover body fabricated from mild steel plate to include generally opposed inner and outer faces, said cover having a cover peripheral surface, an annular thin sealing edge rigidly mounted on said cover so as to extend outwardly therefrom in a direction away from said cover body inner face peripherally therearound adjacent said cover peripheral surface; said cover peripheral surface including a secondary sealing portion spaced from said sealing edge and located outwardly therefrom between said sealing edge and said outer face of said cover body; and when said cover is positioned for closing the coke oven opening, said sealing edge engaging the beveled surface around the opening to support said cover and to form a primary seal, said secondary sealing portion being spaced from said sealing edge outwardly thereof and toward said cover body outer face and positioned in closely spaced parallel relationship to the adjacent portion of the opening peripheral surface to provide an annular channel forming a secondary seal so that tar, pitch, residue and other by-products of a coking operation in said coke oven which may by-pass said primary seal accumulate in said annular channel to form a secondary seal for said cover.

4,236,973

METHOD OF REMOVING CONTAMINANTS FROM WATER

Lanny A. Robbins, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

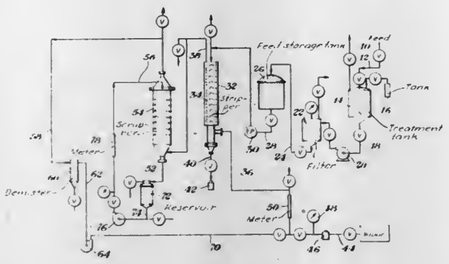
Continuation-in-part of Ser. No. 910,175, May 30, 1978, abandoned. This application May 14, 1979, Ser. No. 39,073

Int. Cl.[3] C02B *1/04*

U.S. Cl. 203—10 **42 Claims**

1. A process for removing at least one organic material selected from the group consisting essentially of chlorinated phenols, phthalate esters, phosphate esters, phosphorothioate esters, chlorinated benzenes, chlorinated biphenyls, polynuclear aromatics, nitrobenzenes, alkyl nitrobenzenes, chloroalkenes, chlorocycloalkenes and chloro-ethers from water contaminated therewith, said organic material having a normal boiling point in excess of 200° C. and a relative volatility with respect to water of at least about one; said process comprising passing a current of vapor, sufficient to vaporize at least a

portion of said organic material, through a moving stream of said contaminated water; and then separating vapor containing



the organic material from the water to produce water having a reduced concentration of the organic material.

4,236,974

PROCESS AND APPARATUS FOR PURIFYING WASTE WATERS

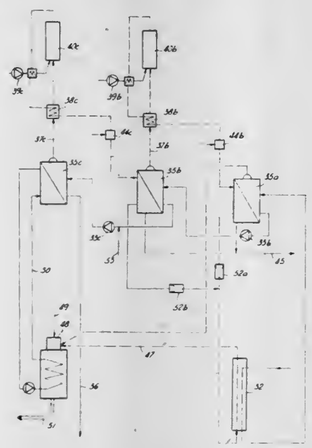
Hans Kühnlein, Füllinsdorf, Switzerland, assignor to Hch. Bertrams Aktiengesellschaft, Basel, Switzerland

Continuation of Ser. No. 804,746, Jun. 8, 1977, abandoned. This application Feb. 22, 1979, Ser. No. 14,167

Claims priority, application Switzerland, Jun. 18, 1876, 7806/76

Int. Cl.³ B01D *3/00;* **C02F** *1/04*

U.S. Cl. 203—11 **4 Claims**



1. An apparatus for purifying waste water contaminated with high- and low-boiling point organic impurities which comprises a stripping system for separating said waste water into waste vapor and waste water such that the waste water contains about 2 percent of low-boiling point impurities in the form of combustible hydrocarbons and high-boiling point impurities, a combustion chamber into which said waste vapor is introduced and combusted into clean fumes, a forced-circulation evaporation system comprising first, second and third stages for further concentrating said waste water into a fluid concentrate of high boiling point impurities and a waste vapor containing low boiling point impurities in gaseous form together with steam, a waste-vapor outlet from the first stage being connected with said combustion chamber, first and second oxidation chambers into which waste vapors from said second and third stages are introduced and oxidized into purified waste vapor respectively, means for introducing pressurized air into the oxidation chambers, means for introducing waste vapor from said second and third stages into first and second heat exchangers respectively, means for introducing the purified waste said first and second oxidation chambers into said first and second heat exchangers respectively, to raise the temperature of the waste vapor to the starting oxidation temperature in the respective oxidation chambers, means for introducing the waste water to be purified into the stripping system, means for conveying the waste-water impurities from the stripping system to the three-stage evaporation system, and means means for introducing said purified waste vapor from said first and second heat exchangers into said first and second stages respectively, to condense said purified waste vapors into purified waste water, and means for removing said purified waste water from said first and second stages.

3. A process for heat purifying waste water contaminated with high- and low-boiling point organic impurities which comprises introducing said waste water into a stripping column so as to separate said waste water into waste vapor containing low-boiling point impurities and waste water containing about 2 percent of low-boiling point impurities in the form of combustible hydrocarbons and high-boiling point impurities, said waste vapor containing said low-boiling point impurities being supplied to a combustion chamber operating at a temperature in the range of from 900° to 1200° C. producing substantially clean combustion gases, said waste water being introduced into a forced-circulation evaporation system comprising first, second and third evaporation stages so as to further concentrate said waste water such that it leaves said evaporation stages as a concentrate of high-boiling point impurities in a fluid condition and waste vapors containing said low boiling point impurities in gaseous form together with steam, wherein the waste vapors from the first stage are fed directly to a combustion chamber where combustion takes place at 900° to 1200° C., thereby completely oxidizing all of the organic impurities therein, the waste vapors from the second and third stages being heated to about 600° C. while simultaneously introducing pressurized air at 600° C. and the waste vapor from said second and third stages into first and second oxidation chambers, respectively, where temperatures of about 800° C. are obtained by means of spontaneous combustion to thereby bring about complete combustion or oxidation of the organic, low-boiling point impurities present, said heat for heating the waste vapors from the second and third stages being derived from heat exchange with the purified hot waste vapors of the respective oxidation chambers, introducing the resulting steam-gas flow free of organic materials comprising purified waste vapors together with resulting combustion gases from said first and second oxidation chambers into said first and second stages respectively, to produce a condensate of pure water while a portion of the steam remains uncondensed, the overall process being such that the concentrate leaving the third evaporation stage contains concentrated high-boiling point impurities, the entire evaporation and oxidation process taking place under pressure of about 3–20 atmospheres, gauge, said stripping column being operated with the uncondensed remainder of the steam and the oxidizing gas from the evaporation system.

4,236,975

RECOVERY OF METHYL HEPTAFLUOROBUTYRATE FROM WATER BY DISTILLATION

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 867,078, Jan. 5, 1978, Pat. No. 4,156,791, which is a continuation of Ser. No. 695,217, Jun. 11, 1976, abandoned. This application Dec. 21, 1978, Ser. No. 972,108

Int. Cl.² B01D *3/36;* **C07C** *69/62*

U.S. Cl. 203—14 **5 Claims**

4. The process of separating a mixture containing water and methyl heptafluorobutyrate which comprises the steps of:

(a) distilling a mixture comprising water and methyl heptafluorobutyrate to produce an overhead water/methyl heptafluorobutyrate azeotrope,

(b) condensing said azeotrope,

(c) cooling said azeotrope to effect a phase separation into a light, predominantly aqueous liquid phase, and a heavy predominantly organic liquid phase, and

(d) returning said heavy predominantly organic liquid phase to said distillation step (a) until the water content of the original admixture is substantially exhausted,

thereby obtaining a substantially pure methyl heptafluorobutyrate.

4,236,976

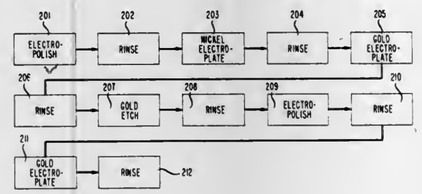
PREVENTING STAINS ON MULTIPLE-ELECTROPLATED ARTICLES

Paul A. Kohl, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1979, Ser. No. 92,472

Int. Cl.³ C25D *5/02, 5/34, 5/52*

U.S. Cl. 204—15 **11 Claims**



1. A method of manufacturing an article comprising the steps in sequence of:

(a) electroplating a first metal onto a first substrate material in a first region of the article; and

(b) electroplating a lustrous metal onto a second substrate material in a second region of the article;

wherein said first metal is the same as, or different than, said lustrous metal, and wherein said first substrate material is the same as, or different than, said second substrate material,

CHARACTERIZED by steps comprising removing electroless deposits of said first metal from said second substrate material in said second region of the article after said electroplating of said first metal and before said electroplating of said lustrous metal.

4,236,977

METHOD FOR PREPLATING STEEL SURFACES

Nazzareno Azzerri, Pomezia, and Giovanni Milanese, Genoa, both of Italy, assignors to Italsider, S.p.A., Genoa, Italy

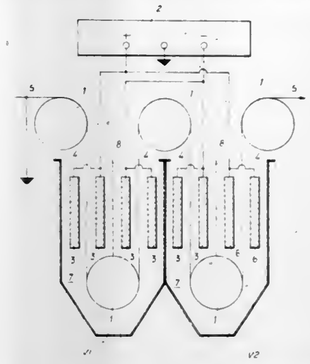
Continuation-in-part of Ser. No. 806,508, Jun. 14, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,931

Claims priority, application Italy, Jun. 24, 1976, 50110 A/76

Int. Cl.³ C25D *5/36*

U.S. Cl. 204—29 **3 Claims**

1. A method for raising the susceptibility to plating of steel articles by pre-plating comprising, passing a steel object through an electrolytic cell containing in a first part thereof an aqueous neutral solution in which the steel object is an anode passing the steel object through a second part of said cell containing said solution solution in which said steel object has current of cathodic polarity applied thereto so that it functions as a cathode, said second part of the cell having soluble anode electrodes made of a metal chosen from the group consisting of tin, zinc, copper, nickel manganese and iron, applying said current at a density effective to preplate said steel object with cations supplied by said soluble anode electrodes, said solution having a concentration of essentially 0.5 to 2.4 M in sodium sulfate with a pH between 6 and 8, said current density being



between 15 and 60 Amps./dm.², and the temperature of the solution ranging between 30° to 60° C.

4,236,978

STABLE LEAD DIOXIDE ANODE AND METHOD FOR PRODUCTION

Raymond D. Prengaman, Arlington, and Herschel B. McDonald, Red Oak, both of Tex., assignors to RSR Corporation, Dallas, Tex.

Filed Feb. 8, 1980, Ser. No. 119,743

Int. Cl.³ C25B *1/30, 11/02, 11/12, 11/16*

U.S. Cl. 204—57 **11 Claims**

1. A method for producing a stable lead dioxide coated insoluble anode, which comprises:

(a) covering a graphite substrate with a nonconductive tight-fitting inert cloth;

(b) electrodepositing a hard, dense lead dioxide layer on the covered graphite substrate from an electrolyte in which the lead level is maintained above about 40 g/l until the mesh material is completely coated with a layer of lead dioxide.

4,236,979

COMPOSITE DIAPHRAGMS AND PROCESS FOR ELECTROLYZING ALKALI METAL CHLORIDE

Oronzio de Nora; Luigi Giuffre, and Giovanni Modica, all of Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 13,830, Feb. 22, 1979, Pat. No. 4,186,076. This application Feb. 22, 1979, Ser. No. 50,983

Int. Cl.³ C25B *1/34, 13/04, 13/08*

U.S. Cl. 204—98 **16 Claims**

1. An electrolytic process for the electrolysis of a solution of an alkali metal halide comprising providing an electrolyte containing an alkali metal halide in an electrolytic cell with an anode and a cathode separated by a porous, electrolyte permeable composite diaphragm comprising a chemically inert fibrous porous matrix or substrate impregnated with a copolymer of divinylbenzene and at least one member of the group consisting of 2-vinylpyridine and 4-vinylpyridine, passing an electrolysis current through the anode, cathode and electrolyte and recovering electrolysis products from the cell.

4,236,980

PROCESS FOR ALKALI METAL CHLORIDE ELECTROLYSIS

Nikolaj Medic, Kelkheim; Theodor Auel, Ilvesheim; Dieter Bergner, Kelkheim, and Jürgen Russow, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,124

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845943

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **4 Claims**

1. Process for the electrolysis of an aqueous alkali metal chloride solution which is contaminated by cations of polyvalent metals, in an electrolysis cell whose anode and cathode compartments are separated by a perfluorinated cation exchange membrane, which comprises adding to the alkali metal chloride solution an aliphatic polybasic phosphonic acid or the alkali metal salt thereof.

4,236,981

HYDROMETALLURGICAL PROCESS FOR TREATING NICKEL MATTES

Jean-Michel Demarthe, Viroflay; Louis Gandon, Rambouillet, and Monique Goujet, Versailles, all of France, assignors to Societe Metallurgique le Nichel-S.L.N., Paris, France

Division of Ser. No. 849,603, Nov. 8, 1977, Pat. No. 4,173,502, which is a continuation of Ser. No. 649,744, Jan. 16, 1976, abandoned. This application Jul. 5, 1979, Ser. No. 54,888

Claims priority, application France, Jan. 16, 1975, 75 01264; Dec. 12, 1975, 75 38166

Int. Cl.³ C25C *1/08;* **C22G** *23/04, 3/00;* **C01G** *53/04*

U.S. Cl. 204—113 **13 Claims**

1. A process of recovering high purity nickel from an aqueous solution containing sulfate ions and nickel, lead, iron, chromium, arsenic and aluminum chlorides, comprising:

(a) exposing the solution which has a concentration of nickel of at least 100 g/l to partial electrolysis employing a soluble nickel anode to obtain a deposit of elemental nickel containing elemental lead and an aqueous phase containing nickel, iron, chromium, arsenic aluminum and sulfate ions;

(b) contacting the aqueous phase of (a) with an organic phase comprising at least one diester of orthophosphoric acid whereupon the nickel and sulfate ions remain in the aqueous phase and the other ions pass into the organic phase;

(c) recovering the nickel from the aqueous phase of (b); and

(d) recovering the nickel from the deposit of (a).

4,236,982

ELECTROLYSIS OF LEAD AZIDE

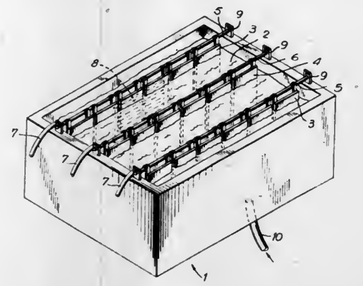
Jack R. Polson, Burlington, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 14, 1979, Ser. No. 75,565

Int. Cl.³ C25C *1/18*

U.S. Cl. 204—116 **17 Claims**

1. A process for producing metallic lead by the electrolysis of lead azide which comprises subjecting lead azide dissociated in an aqueous alkaline electrolyte in an electrolysis apparatus



to electrolysis whereby the lead contained therein plates out at the cathode in the electrolysis apparatus.

4,236,983

PROCESS AND APPARATUS FOR ELECTROLYSIS OF HYDROCHLORIC ACID

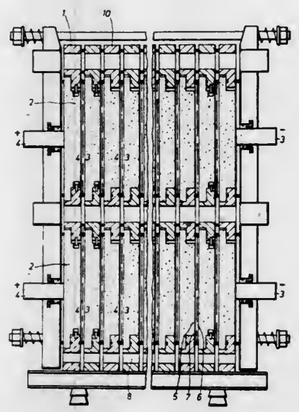
Franz-Rudolf Minz, Dormagen, and Herbert Wiechers, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 24,748

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816152

Int. Cl.³ C25B *1/02, 1/26, 9/00*

U.S. Cl. 204—129 **6 Claims**



1. In the production of chlorine and hydrogen from hydrochloric acid by electrolysis in an electrolysis apparatus comprising multi-stages arranged in at least an upper and a lower stage and a plurality of vertically arranged bipolar electrodes in each stage, a diaphragm arranged between each two electrodes to divide the electrolysis chambers formed between them into an anolyte chamber and a catholyte chamber, and outlet and inlet devices for the electrolyte in each stage, the improvement which comprises electrolyzing the hydrochloric acid in at least two successive stages, and degassing the hydrochloric acid after leaving one stage and before introducing it into the next stage.

4. In a hydrochloric acid electrolysis cell comprising a plurality of vertically arranged bipolar electrodes, a diaphragm arranged between each two electrodes to divide the electrolysis chamber formed between them into an anolyte chamber and a catholyte chamber, and outlet and inlet devices for the electrolytes, the improvement which comprises additional inlet and outlet devices provided in a horizontal plane perpendicular to the electrode surface thereby dividing each electrolysis cell into a plurality of superposed stages, the height of the partial electrode surface in each stage ranging from about 40 to 80 cm.

4,236,984

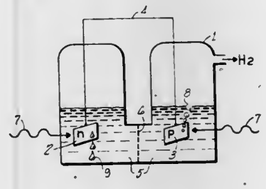
HYDROGEN GAS GENERATION UTILIZING A BROMIDE ELECTROLYTE, AN AMORPHOUS SILICON SEMICONDUCTOR AND RADIANT ENERGY

Daniel H. Grantham, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 956,760, Nov. 1, 1978. This application Nov. 21, 1979, Ser. No. 96,596

Int. Cl.³ C25B *1/02, 1/00;* **H01L** *31/04*

U.S. Cl. 204—129 **12 Claims**



1. A process for producing hydrogen gas from an electrolyte solution in an electrolytic cell, wherein the improvement comprises utilizing a solution of a bromide compound as the electrolyte in conjunction with radiant energy and an n-type semiconducting amorphous silicon photo anode to at least partially power the electrolytic cell.

4,236,985

METHOD FOR MACHINING WORKS OF CURRENT-CONDUCTING MATERIAL WITH CURRENT-CONDUCTING ABRASIVE TOOLS

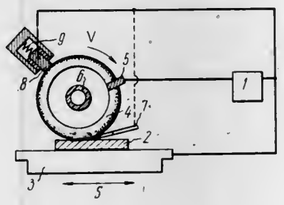
Eduard Y. Grodzinsky, ulitsa Marii Ulyanovoi, 11, kv. 117; Roalda B. Isakova, ulitsa Vavilova, 70, korpus 3, kv. 237; Lidia S. Zubatova, ulitsa Ljublinskaya, 111, stroenie 1, kv. 120; Anna T. Makonovitskaya, ulitsa Malysheva, 19, kv. 288, and Aron K. Grinberg, ulitsa Dorozhnaya 34, kv. 25, all of Moscow, U.S.S.R.

Filed May 1, 1979, Ser. No. 35,096

Claims priority, application U.S.S.R., May 3, 1978, 2607711

Int. Cl.³ B23P *1/04, 1/10;* **C25F** *3/02, 7/00*

U.S. Cl. 204—129.43 **2 Claims**



1. A method for machining works of a current-conducting material with current-conducting abrasive tools in a liquid medium with a conductance of 10^{-4} to $2 \cdot 10^{-2}$ $ohm^{-1} \cdot cm^{-1}$, whereby voltage pulses are applied to the tool and the work, the improvement residing in that the working is carried out with a pulse duration of 0.5 to 10 msec, a pulse repetition frequency of 10 to 500 Hz and an amplitude of pulses ranging from a minimum of 3 V to a maximum which is below a level required for a breakdown of the liquid medium between the tool and the work.

4,236,986

APPLYING ANNEALING SEPARATORS TO ORIENTED GRAIN ELECTRICAL STEEL SHEET

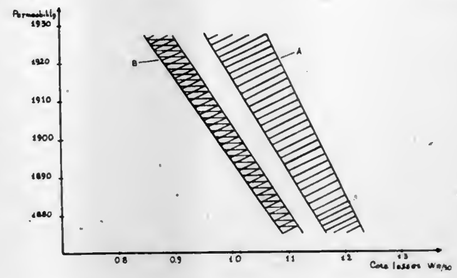
Nereo Vantini, and Paolo Marini, both of Rome, Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Jun. 7, 1979, Ser. No. 46,422

Claims priority, application Italy, Jun. 9, 1979, 49791 A/78

Int. Cl.³ C25D *13/02, 13/10, 13/16*

U.S. Cl. 204—181 N **7 Claims**



1. In a process for the production of oriented grain electrical steel sheet which comprises, after preliminary treatment and cold rolling to the final thickness required, the steps of subjecting the cold rolled sheet to a continuous decarburization treatment, coating the decarburized sheet with a composition of annealing separator, coiling the strip covered in this way and dried, into coils, and subjecting these coils to an annealing treatment at high temperature in a bell furnace; the improvement comprising in sequence the following steps:

preparing a dispersion of annealing separator in a non-aqueous based dispersion medium, said annealing separator and dispersion medium having a predetermined water content;

placing in this dispersion a pair of electrodes, said electrodes having their upper edge less than 100 mm from the free surface of the dispersion;

continuously immersing in this dispersion the decarburized steel strip, making it pass between the paired electrodes;

applying to said steel strip and said electrodes opposite polarities of an electrical field within the range of 30 to 600 V/cm;

applying to the surface of the steel strip, removed from the dispersion and coated with a continuous layer of the composition of annealing separator during its passage between the said electrodes, a gas stream; and

coiling without further treatment the strip into coils for annealing in the bell furnace.

4,236,987

ELECTRODE HAVING MEMBRANE WITH ION SELECTIVE PROPERTIES

Johannes G. Schindler, Marburg an der Lahn, and Wilfried Schael, Bad Homburg von der Hohe, both of Fed. Rep. of Germany, assignors to Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG, Bad Homburg von der Hohe, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,167

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750807

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—195 M **8 Claims**

1. An ion selective electrode, being selective with respect to predetermined alkali or alkaline-earth metal ions comprising:

(a) a membrane comprising

(i) a carrier membrane composed of a non-ion selective carrier material and

(ii) an ion selective material in intimate contact with said carrier, said ion selective material comprising at least one predetermined molecular species exhibiting ion selectivity with respect to predetermined alkali or alka-

line-earth metal ions said molecular species being selected from the group consisting of open chain, branch chain or cyclic siloxanes comprising a plurality of Si-O-Groups, the oxygen atoms of said siloxanes having



hydrophilic properties and said siloxanes being substituted by lipophilic moieties, further including

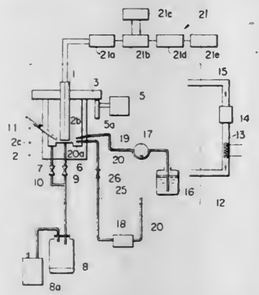
(b) electrical conducting means in intimate contact with said membrane.

4,236,988

APPARATUS FOR MEASURING ION ACTIVITIES

Nobuyoshi Suzuki, Hachiouji, and Shigeru Yoshinari, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 15,440
Claims priority, application Japan, Mar. 10, 1978, 53-27462
Int. Cl.³ G01N *27/28*
U.S. Cl. 204—195 R **5 Claims**



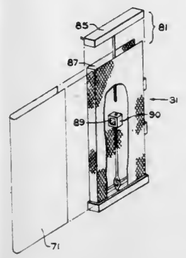
1. An apparatus for measuring ion activities comprising an electrode assembly, a sample cup having a circumferential wall whose top surface is designed as a standard plane for properly positioning said electrode assembly, a support which serves for holding said electrode assembly and is arranged on the circumferential wall of said sample cup, a mechanism for moving up and down said electrode assembly by way of said support, a pipette for injecting a constant volume of sample fluid into said sample cup, a draining system for sucking liquid from said sample cup and discarding said liquid and a thermostatted chamber accommodating at least said electrode assembly, said sample cup and said sample injecting pipette, and so operating as to inject a sample fluid into said sample cup, lower said electrode assembly for bringing said sample fluid into contact with said electrode assembly, move up and down said electrode assembly for assuring intimate contact between said electrode assembly and said sample fluid, measure ion activities in said sample fluid, inject a reference solution into said sample cup after measurements of ion activities in said sample fluid, wash said electrode assembly and said sample cup with said reference solution, discard said reference solution, inject the reference solution once again and measure ion activities therein, and determine correct ion activities in said sample fluid on the basis of the ion activities measured in said sample fluid and those in said reference solution.

4,236,989

ELECTROLYTIC CELL

Lois A. Dahlberg, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 7, 1978, Ser. No. 922,716
Int. Cl.³ C25B *13/02, 13/04, 11/03*
U.S. Cl. 204—252 **7 Claims**



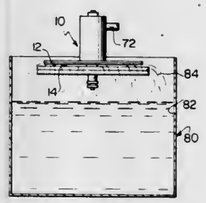
1. An electrolytic cell comprising an anode and cathode electrode pair of intermeshed vertical electrode surfaces with a synthetic separator therebetween, at least one member of said electrode pair having a continuous electrodic surface with horizontally disposed fluid impermeable members at the top and bottom of said continuous electrodic surface and synthetic separator being sealably mounted at said impermeable members.

4,236,990

TREATER WITH SELF-CLEANING ELECTRODES

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed May 29, 1979, Ser. No. 42,775
Int. Cl.³ C25B *9/00;* C02F *1/46;* C25B *11/02*
U.S. Cl. 204—275 **7 Claims**



1. A device for electrically treating a liquid comprising:

a pair of electrode plates;

means mounting said plates in closely spaced, facing relationship to one another so as to define a relatively flat, restricted passage for liquid between the plates,

said passage having a discharge outlet at the periphery of said plates;

means defining an inlet to said passage inboard of said periphery of the plates and through which liquid may be introduced to the passage; and

means for supplying liquid to said inlet at a pressure that will maintain said passage filled with a pressurized liquid sheet flowing toward and exiting from said outlet, whereby the sheet cleans said plates while being treated thereby,

one of said plates having its periphery set inwardly with respect to that of the other plate,

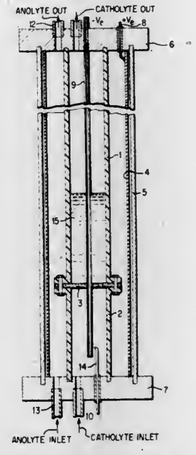
said other plate having a continuous marginal groove located inboard of its periphery but outboard of the periphery of said one plate for causing said liquid sheet to assume an umbrella-like configuration as it is discharged from said outlet.

4,236,991

ELECTROCHEMICAL CELLS

John R. Backhurst, Allendale; Martin Fleischmann, Chandlersford; Francis Goodridge, and Raymond E. Plimley, both of Newcastle-upon-Tyne, all of England, assignors to National Research Development Corporation, London, England

Division of Ser. No. 828,431, Aug. 29, 1977, which is a continuation of Ser. No. 288,387, Sep. 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 24,195, Mar. 31, 1970, which is a continuation-in-part of Ser. No. 639,803, May 19, 1967. This application Jul. 13, 1979, Ser. No. 57,368
Claims priority, application United Kingdom, May 24, 1966, 23070/66
Int. Cl.³ C25B *9/00*
U.S. Cl. 204—272 **2 Claims**



1. An electrode arrangement for an electrochemical cell comprising at least one electrode chamber having a porous base, said chamber having a space beneath said porous base and containing a layer of discrete particulate solids above said base, said solids being at least one member of the group consisting of (a) conducting particles and (b) non-conducting particles coated with conducting material, means for introducing liquid electrolyte to the space beneath said porous base and causing said electrolyte to flow through said base, the base being arranged to cause electrolyte flow through said layer of particles to be substantially uniform, means to control said flow so as to cause the particles to be levitated, such that the layer is expanded to form and maintain a fluidised bed of said particles within said chamber, and at least one current-carrying member extending into said chamber to contact said fluidised bed, whereby said fluidised bed forms an extended area electrode for the cell.

4,236,992

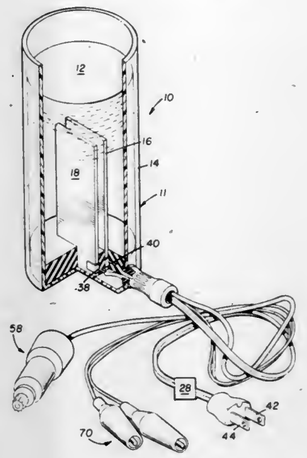
HIGH VOLTAGE ELECTROLYTIC CELL

Constantinos D. Themy, 4984 S. 360 West, Murray, Utah 84106

Filed Aug. 6, 1979, Ser. No. 64,073
Int. Cl.³ C25B *1/26, 1/02*
U.S. Cl. 204—278 **10 Claims**

1. An electrode useful for extended periods of time at voltages above 20 volts, comprising:

a laminated body of a platinum group metal foil bonded to an intermediate layer of tantalum, niobium or alloys thereof, said intermediate layer being bonded to a substrate of titanium or alloys thereof, said platinum group metal being platinum, rhodium, iridium, ruthenium or alloys thereof, said laminated body having a first bonding alloy zone at at least most of an interface between said platinum group metal foil and said intermediate layer, a second bonding alloy zone at at least most of an interface between said intermediate layer and said substrate, and a smooth continuous outer surface on said platinum group metal foil



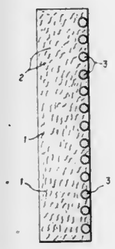
which is substantially unaltered by said bonding alloy zones.

4,236,993

ELECTRODE FOR WATER ELECTROLYSIS

Rene Muller, Fislisbach, and Samuel Stucki, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Nov. 29, 1979, Ser. No. 98,688
Claims priority, application Switzerland, Jan. 17, 1979, 434/79; Jan. 17, 1979, 435/79
Int. Cl.³ C25B *11/06, 11/12, 11/14, 11/10*
U.S. Cl. 204—294 **12 Claims**



1. An electrode for water electrolysis which comprises:

a solid solution of graphite and polytetrafluorethylene impregnated with a catalyst mixture of platinum metal oxides, said solid solution being pressed and sintered on a reinforcing net of metal cloth.

4,236,994

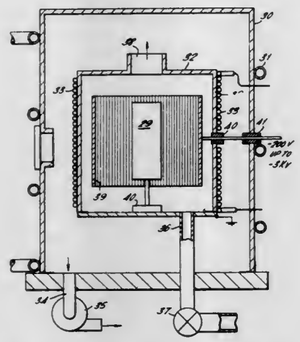
APPARATUS FOR DEPOSITING MATERIALS ON SUBSTRATES

Ronald A. Dugdale, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Division of Ser. No. 540,391, Jan. 13, 1975, abandoned. This application Aug. 16, 1978, Ser. No. 934,019
Claims priority, application United Kingdom, Jan. 24, 1974, 3315/74
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **5 Claims**

1. Apparatus for depositing material on a substrate by a sputter deposition process and comprising an enclosure for

containing an ionizable gaseous environment at a predetermined pressure, an anode and a cathode located in the enclosure, the cathode having at least a part thereof of the material to be deposited on the substrate, means for applying an electrical potential to the anode and the cathode in order to ionize gas in the enclosure and generate a glow discharge in which positive ions in the gas bombard the cathode and thereby sputter



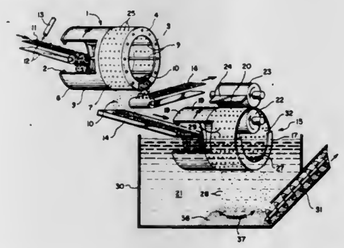
atoms of the material from the cathode, the cathode, in operation, being so positioned relative to the substrate that the sputtered material passes through the gas and deposits on the substrate, and heating means, disposed adjacent to the enclosure walls, for heating the enclosure walls so as to heat the gas through which the sputtered atoms pass and thereby suppress homogeneous nucleation of the sputtered atoms in the gas.

4,236,995

PROCESS FOR RECOVERING BITUMEN FROM TAR SAND

Jan Kruyer, Edmonton, Canada, assignor to Kruyer Tar Sand Development, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 913,593, Jun. 8, 1978. This application May 10, 1979, Ser. No. 37,897
Claims priority, application Canada, Feb. 10, 1976, 245340
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **35 Claims**



1. A method for recovering bitumen from oil sand comprising:

(a) providing an oil sand slurry in which bitumen and solids are dispersed in water with the bitumen having a viscosity of between about 0.1 and 10,000 poises,

(b) temporarily supporting the slurry with an apertured barrier having an oleophilic surface, said barrier being partly immersed in a heated water bath to permit a separation of slurry solids from bitumen, the solids dropping through the apertures while the bitumen adheres to and coats the oleophilic surface of the barrier and the walls of apertures within the barrier,

(c) forcing the bitumen adhering to the oleophilic barrier surface through the apertures with a transfer roller after the barrier has been removed from the bath; and

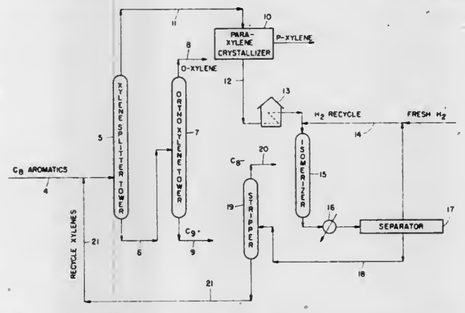
(d) recovering the bitumen from the surface of the barrier to which it has been transferred and out of the apertures, while it is out of the bath.

4,236,996

XYLENE ISOMERIZATION

Samuel A. Tabak, Wenonah, and Roger A. Morrison, Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 914,645, Jun. 12, 1978, Pat. No. 4,188,282. This application May 25, 1979, Ser. No. 43,395
The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.
Int. Cl.³ C10G *35/04*
U.S. Cl. 208—134 **10 Claims**



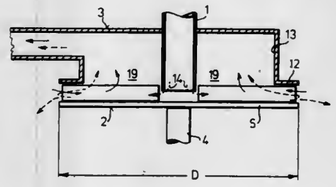
1. In a process for isomerizing the xylene content of a charge mixture of eight carbon atom aromatic hydrocarbon compounds which mixture contains xylene and ethylbenzene by contact at conversion conditions with a catalyst comprising a zeolite having a silica/alumina ratio greater than 12 and a constraint index of 1 to 12, the improvement which comprises using as said catalyst a steamed zeolite and maintaining a conversion temperature of about 700° F. to about 1000° F.; said zeolite having been steamed prior to said contact under a temperature and pressure and for a period of time such that the steamed zeolite requires an increased reaction temperature of at least 50° F. to equal the ethylbenzene conversion by the unsteamed zeolite.

4,236,997

AIR SEPARATOR APPARATUS

Josef A Wessel, Am Sonnenhof 154, 8131 Aüfkirchen, Fed. Rep. of Germany; Manfred Müller; Otto Heinemann, both of Ennigerloh, Fed. Rep. of Germany, and Norbert Bredenholler, Oelde, Fed. Rep. of Germany, assignors to Josef Wessel, Aüfkirchen and Polysius AG, Beckum, both of, Fed. Rep. of Germany

Filed Apr. 12, 1979, Ser. No. 29,457
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 2817725
Int. Cl.³ B07B *7/083*
U.S. Cl. 209—144 **23 Claims**



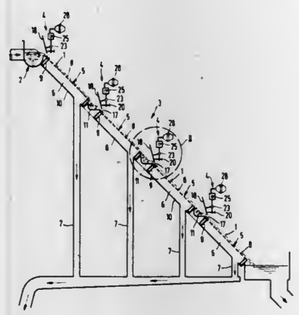
1. An air separator comprising at least one stationary extraction housing having a peripheral wall and being open at one end; a rotor adjacent said open end of said housing having one face of said rotor confronting said housing; means for charging said one face of said rotor centrally through said housing with material to be separated; a plurality of circumferentially spaced feed passages on said face of said rotor communicating with said charging means and extending substantially radially thereof beyond the peripheral wall of said housing to form spaces between adjacent passages; means for drawing extraction air through said spaces into and out of said housing; and stationary means adjoining said passages and overlying those portions of said passages which extend beyond said peripheral wall of said housing and axially delimiting said spaces to form extraction openings between adjacent passages.

4,236,998

PROCESS AND APPARATUS FOR PURIFYING A FIBROUS SUSPENSION

Karel A. G. Heys, Gennep, Netherlands, assignor to Feldmühle Aktiengesellschaft, Viersen, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,499
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809142
Int. Cl.³ B07B *1/04, 1/36;* D21D *5/04*
U.S. Cl. 209—246 **19 Claims**



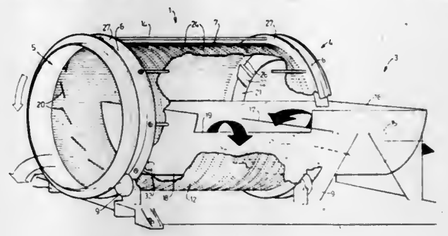
1. Process for removing impurities, such as printing inks, binders, fibre fragments and pigments, from a fibrous suspension of waste paper containing water, comprising passing the fibrous suspension downwardly over an inclinded sieve from an upper end to a lower end and removing the impurities through the sieve with a proportion of the water from the fibrous suspension, wherein the improvement comprises interrupting the downward flow of the fibrous suspension over the inclined sieve at least once between the upper end and lower end and directing the interrupted downward flow into a groove-like trough in the downward flow path over the sieve and shaping the surfaces of the trough in the direction between the upper end and lower end for subjecting the fibrous suspension flowing into the trough to a swirling motion about an axis extending transversely of the direction between the upper and lower ends for homogenizing the flow entering the trough and returning the homogenized fibrous suspension from the trough onto the sieve for downward flow thereover below the trough.

4,236,999

SEPARATION OF SOLIDS FROM LIQUIDS BY SCREENING

George Burgess, Milford, and Ernest W. Pitches, Orewa, both of New Zealand, assignors to Contra-Shear Holdings Limited, Auckland, New Zealand

Continuation of Ser. No. 833,466, Sep. 12, 1977, abandoned. This application Nov. 27, 1978, Ser. No. 964,055
Claims priority, application New Zealand, Sep. 17, 1976, 182084
Int. Cl.³ B07B *1/24*
U.S. Cl. 209—250 **29 Claims**



1. An apparatus for the separation of solids and liquids from a suspension by screening, said apparatus comprising:

a screening drum having a hollow interior and a screening wall which has a plurality of screening wires spaced apart in a parallel arrangement about the periphery of the drum and lying subtantially axially along the drum;

mounting means whereby said drum is mounted to be rotatable in one direction about its axis which lies in a substantially horizontal direction plane;

driving means to rotate the drum; and

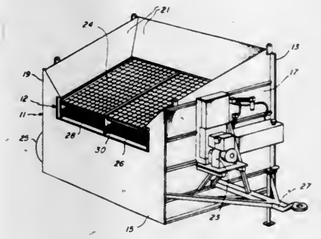
inlet means to introduce a flow of the suspension into the interior of the drum and to direct substantially all of this flow against an inner surface of the wall of the drum so that the flow of the suspension where it strikes the drum wall is in a direction opposing the direction of movement of the wall of the drum as caused by said rotation of the drum.

4,237,000

SHAKER ASSEMBLY FOR SCREENING AND SCALPING

James L. Read, and William K. Morgan, both of Halifax, Mass., assignors to F. T. Read & Sons, Inc., Rockland, Mass.

Filed Mar. 5, 1979, Ser. No. 17,757
Int. Cl.³ B07B *1/48*
U.S. Cl. 209—319 **4 Claims**



1. In a shaker assembly for separating fine material from coarse material comprising longitudinal side plates, structural cross beams joining the side plates, a screen assembly spanning the space between the side plates and supported by the cross beams, and means for shaking the plates, cross beams and screen assembly, the improvement of:

an upper screen assembly supported on an upper level of

cross beams and a split lower screen assembly supported on a lower level of cross beams; and

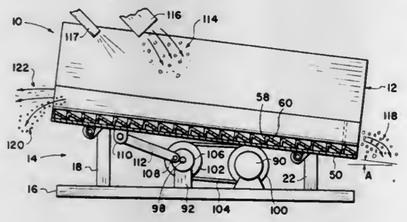
at least one rigid longitudinal center plate generally parallel to and between the side plates and joining the upper and lower levels of structural cross beams such that forces applied to the screen assembly are transmitted through the center plate to the joined cross beams.

4,237,001

ORE CLASSIFIER

Leon Walker, Welch, Okla., and Howard S. Berry, Rte. 1, Blue Jacket, Okla. 74333, assignors to Howard S. Berry, Blue Jacket, Okla.

Filed Apr. 30, 1979, Ser. No. 34,246
Int. Cl.³ B03B *5/04, 5/26*
U.S. Cl. 209—442 **6 Claims**



6. An ore classifier comprising:

a frame member;

an elongated inclined trough movably secured to the frame member and having a corrugated floor;

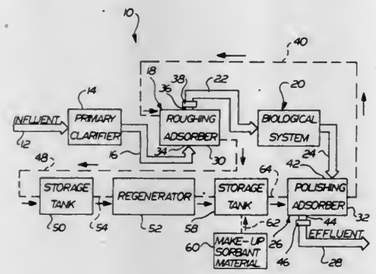
a pair of oppositely disposed longitudinal jet passageways, one disposed along each edge of the trough in restricted communication with the floor of the trough, said passageways being open at the upper ends and closed at the lower ends; and means to vibrate the trough with respect to the frame member.

4,237,002

MULTI SORPTION PROCESS AND SYSTEM

George E. Strudgeon, Erie, Pa., and Aloysius X. Hiltgen, Inverness, Fla., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Jan. 24, 1979, Ser. No. 6,421
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—163 **7 Claims**



1. A process for treating a liquid containing impurities which inhibit the biological treatment of the liquid, said process comprising the steps of:

a. providing at least a first sorbent treatment zone and a second sorbent treatment zone in which the first sorbent treatment zone includes a first column containing a bed of granular solid activated carbon and the second sorbent treatment zone includes a second column containing a bed of granular solid activated carbon;

b. treating the liquid in the first sorbent treatment zone with granular activated carbon which has been previously used to treat the liquid in the second sorbent treatment zone by passing the liquid upwardly through the bed of activated carbon contained in the first column;

c. treating the liquid in a biological treatment system;

d. treating the liquid received from said biological treatment system in the second sorbent treatment zone with fresh granular activated carbon by passing the liquid downwardly through the bed of activated carbon contained in the second column;

e. removing the granular activated carbon from the first zone;

f. reactivating the granular activated carbon removed from the first zone; and

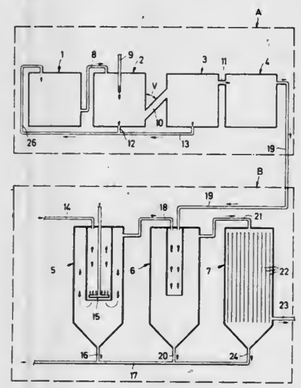
g. transferring the granular activated carbon from the second sorbent treatment zone to the first sorbent treatment zone after using the granular activated carbon in the second sorbent treatment zone and upon a breakthrough of the granular activated carbon in one of the sorbent treatment zones.

4,237,003

PROCESS FOR BIOLOGICAL PURIFICATION OF LIQUID WASTES

Refaat M. El-Sayed, Näsbydalsvägen 14, Täby, Sweden (18 331)

Filed May 9, 1978, Ser. No. 904,241
Claims priority, application Sweden, May 9, 1977, 7705386
Int. Cl.³ C02F *3/04*
U.S. Cl. 210—606 **10 Claims**



1. A process for the biological purification of liquid wastes wherein the wastes are contacted with active micro-organisms in a biological bed in order to achieve a degradation of organic impurities present in the wastes, which comprises:

(a) cultivating Gram-positive bacteria in an aerobic environment rich in nutrient thereby producing a suspension of extra-cellular enzymes and bacteria;

(b) separating the bacteria from the suspension by transferring the suspension into an environment poor in nutrient, wherein the bacteria enter into a dead phase and settle and whereby intra-cellular enzymes contained within the bacteria are separated from the suspension;

(c) adding the suspension of extra-cellular enzymes to the liquid wastes;

(d) conducting purification of the liquid wastes in the biological bed under substantially anaerobic conditions and in the presence of the extra-cellular enzymes so as to cause degradation of the wastes by means of anaerobic microorganisms; and

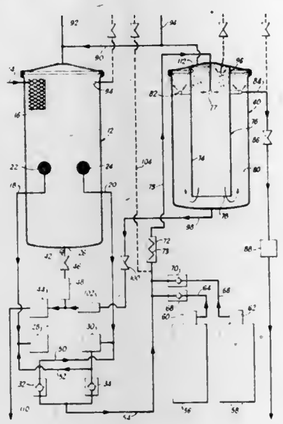
(e) removing purified liquid wastes from the biological bed.

4,237,004

METHOD FOR TREATING WASTE WATER

Robert C. Helke, Walworth, Wis., assignor to Le Mere Industries, Inc., Walworth, Wis.

Filed Oct. 2, 1978, Ser. No. 947,655
Int. Cl.³ C02F *1/24*
U.S. Cl. 210—704 **12 Claims**



1. A method of treating waste water comprising:

collecting waste waters including solid and liquid wastes in a first vessel;

separating a portion of the relatively large solid particles having a predetermined minimum particle size from said waste waters;

removing a portion of said liquid waste from said first vessel;

adding a solids coagulant, effective in coagulating solid particles, and a chlorine containing disinfectant to said removed waste;

conveying at least a portion of said removed waste to a second vessel comprising a multicompartment vessel having a plurality of interconnected chambers including a first chamber and a second chamber and further including the steps of introducing said waste water, said coagulant, and said disinfectant into said first chamber to cause a major portion of the solids contained within said waste water to be coagulated and bubbled to an upper portion of said first chamber, and introducing additional waste water onto said layer of coagulated solid particles accumulated in the upper portion of said first chamber to filter said waste water through said coagulated solids within said first chamber of said second vessel and circulating said waste water into said second chamber for further coagulation and disinfection where the velocity of waste water flow is lowered from said first chamber to said second chamber, wherein a minor portion of the solids contained within said waste water floats to an upper portion of said second chamber thereby providing a purer water in said second chamber than in said first chamber of said multicompartmental vessel; and

removing the treated waste water from said second chamber.

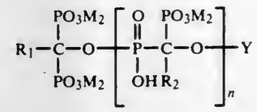
4,237,005

METHOD OF BREAKING OIL-IN-WATER EMULSIONS

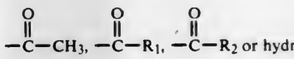
Larry W. Becker, Wilmington, Del., assignor to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 941,537, Sep. 11, 1978, Pat. No. 4,190,615.
This application Jun. 4, 1979, Ser. No. 45,544
Claims priority, application Canada, Mar. 28, 1979, 324395
Int. Cl.³ B01D *17/04*
U.S. Cl. 210—43 **7 Claims**

1. A method of breaking an oil-in-water emulsion comprising adding thereto an effective amount for the purpose of an aqueous solution of effective oligomeric phosphonate having the structural formula:



where R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; x is from 6 up to and including 13; Y is



M is a water soluble cation; and n is 1 or greater so long as the oligomeric phosphonate is water soluble.

2. A method according to claim 1, wherein n is from about 1 to about 16.

7. A method according to claim 2, wherein the oil-in-water emulsion is industrial oil-containing wastewater.

4,237,006

CYCLONE SEPARATOR

Derek A. Colman, Lordswood, and Martin T. Thew, Bitterne, both of England, assignors to National Research Development Corporation, London, England

Filed May 24, 1979, Ser. No. 42,227
Claims priority, application United Kingdom, May 31, 1978, 25956/78
Int. Cl.³ B04C *5/081*
U.S. Cl. 210—84 **19 Claims**

17. A method for removing a less dense liquid phase from a relatively large volume of more dense liquid phase, comprising:

injecting a mixture of the two phases through a plurality of substantially spaced tangential feeds into the internally generally cylindrical first portion of a cyclone separator which also has, axially adjacent to the cylindrical first portion but for an annular transitional internal surface means providing a step, and coaxial with said cylindrical first portion, an internally generally cylindrical second portion open at its far end distally of said cylindrical first portion to provide a denser-phase outlet, this cylindrical second portion being characterized by the absence of feed inlets except over said step from said cylindrical first portion, the cylindrical first portion having an axial overflow outlet for the less dense phase at its far end distally of the cylindrical second portion; and

axially adjacent to said cylindrical second portion but for an annular transitional internal surface means providing a second step, and coaxial therewith, an internally generally cylindrical third portion open at its far end thereby providing a denser phase outlet from said cylindrical third portion, said cylindrical third portion being characterized by the absence of feed inlets except over said second step from said cylindrical second portion;

the internal shape of said separator being governed by the following relationships:

$10 \leqq l_2/d_2 \leqq 25$

$0.04 \leqq 4A_i/\pi d_1^2 \leqq 0.10$

$0.1 \leqq d_0/d_2 \leqq 0.25$

$d_1 > d_2$

$d_2 > d_3$.

wherein:

d_0 = the internal diameter of said axial overflow outlet,

d_1 = the internal diameter of said cylindrical first portion,

d_2 = the internal diameter of said cylindrical second portion,

d_3 = the internal diameter of said cylindrical third portion,

l_2=the internal length of said cylindrical second portion, and

A_f=the total cross sectional area of all of said feeds into said cylindrical first portion measured at points of entry normal to inlet flow

collecting less dense phase leaving the cyclone separator via the axial overflow outlet for the less dense phase;

the pressure of injection at said feeds being greater than the pressure at said axial overflow outlet and greater than the pressure at said denser-phase outlet.

4,237,007

APPARATUS AND METHOD FOR THE THERMAL REGENERATION OF MATTER IN WATER TREATMENT PLANTS

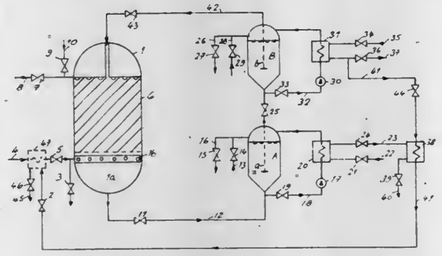
Kurt Marquardt, Holzgerlingen, Fed. Rep. of Germany, assignor to EVT Energie- und Verfahrenstecknik GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,800

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738120

Int. Cl.³ B01D *15/02*

U.S. Cl. 210—181 **1 Claim**



1. Water treatment apparatus including an operating column for containing particulate treatment matter and treatment means for regenerating said matter, said treatment means including a regeneration column, a supply conduit having an inlet connected to the operating column and an outlet communicating with the regeneration column, a return conduit having an inlet communicating with the regeneration column and an outlet connected to the operating column, means for supplying aqueous transport liquid under pressure for transporting spent matter from the operating column through the supply conduit for delivery to the regeneration column, and means for supplying aqueous transport liquid under pressure for transporting matter regenerated in the regeneration column through the return conduit to the operating column, wherein the improvement comprises said treatment means further including:

a closed heating circulation loop connected to the regeneration column;

pumping means in said heating circulation loop for circulating aqueous transport liquid from the regeneration column through said loop;

heat exchanger means in said heating circulation loop for heating the aqueous transport liquid being circulated through the loop to a temperature sufficient to provide a predetermined regeneration temperature in said regeneration column;

a cooling column located between the regeneration column and the inlet to said return conduit; and

means for supplying a flow of aqueous cooling liquid to said cooling column for cooling heated matter from the regeneration chamber before said regenerated matter is transported back to the operating column, wherein

said cooling and regeneration columns comprise upper and lower zones, respectively, in a single vessel, and said treatment means further comprises a ring-shaped distribution means disposed in said vessel between the upper cooling zone and the lower regeneration zone, said heating circulation loop having an inlet connected at a take-off point on one side of the distribution means and an outlet connected at a reintroduction point on the opposite side of the distribution means from the take-off point,

said means for supplying a flow of aqueous cooling liquid is connected to the vessel above the cooling zone for flow downward through the cooling zone, and

said treatment means further comprises:

a second heat exchanger means in said heating circulation loop located upstream of said first-mentioned heat exchanger means and

a conduit having an inlet connected to said vessel below the regeneration zone and an outlet connected to said second heat exchanger means for delivering aqueous regeneration waste liquid for preheating the aqueous liquid withdrawn from the take-off point of said distribution means before its entry into said first-mentioned heat exchanger means.

4,237,008

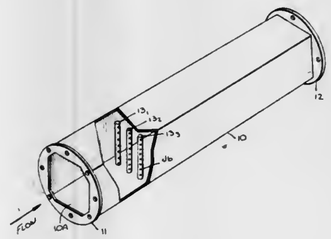
GRAVITY FLOW DISINFECTION CONTACTOR

Brian Ratigan, Philadelphia, Pa.; Karl E. Longley, San Antonio, Tex., and Robert N. Roop, Buckingham, Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 11, 1979, Ser. No. 2,769

Int. Cl.³ C02B *1/18, 1/36*

U.S. Cl. 210—205 **4 Claims**



1. A gravity flow disinfection contactor comprising:

A. a conduit for conducting a water stream to be treated along the axis of the conduit, said conduit having a rectangular cross section and a cross-sectional diffusion plane adjacent the inlet thereto; and

B. an array of at least three diffusion tubes disposed at evenly-spaced positions within said plane across said conduit to bridge the side walls thereof, said tubes each having a row of equi-spaced orifices drilled therethrough to define diametrically opposed jet openings to produce jet emissions in opposing directions at right angles to the conduit axis, said orifices having a relatively small diameter, the spacing between said orifices in each row thereof being equal to about three time the orifice diameter, the spacing between the tubes in said array being equal to about ten times the opening diameter; and

C. means to supply a disinfectant solution to said tubes to create a dense cross fire of disinfectant jets dispersed throughout said plane, said jets being intercepted and deflected by the cross flowing water stream passing through said conduit to quickly interact therewith, the Reynolds number of the jets being greater than 5,000 to ensure turbulence, the velocity of the jets being at least twice the velocity of the cross flowing water stream.

4,237,009

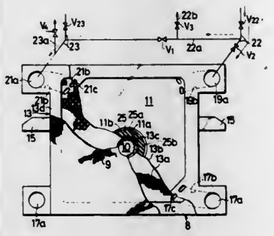
FILTRATION-COMPRESSION TYPE FILTER PRESS

Tetsuya Kurita, Takarazuka, Japan, assignor to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 857,757, Dec. 5, 1977, abandoned. This application Nov. 28, 1978, Ser. No. 964,165

Int. Cl.³ B01D *25/12*

U.S. Cl. 210—227 **2 Claims**



1. A filtration type filter press comprising compression filter plates suitably disposed between a fixed end plate and a movable end plate and each comprising a base plate centrally formed with an opening larger than a slurry feed port and a filtration-compression diaphragm, the diaphragm including two flexible fluid-tight sheets fitted to the front and rear surfaces of the base plate and having uneven surfaces with a filter cloth piece applied thereto, the diaphragm being integrally formed with a cylindrical portion interconnecting the sheets and extending through the opening in the base plate to define the slurry feed port, the filter plate including a pressure chamber formed between the base plate and each of the sheets and having at least a pressure fluid feed main channel communicating with the pressure chamber and a filtrate outlet channel opened to the filter surface of the diaphragm, the filter plate further comprising a displacement preventing ring made of metal fitting in the base plate opening around the cylindrical portion of the diaphragm, an annular groove formed in the outer periphery of said ring engaging an annular projection on the opening-defining inner periphery of the base plate to hold the ring against axial displacement, said ring being divided into segments both radially and transversely of its axis along the annular groove, said segments being fastened to each other by bolts.

4,237,010

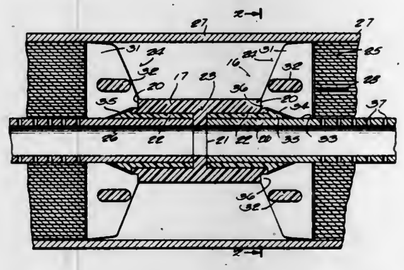
INTERCONNECTOR FOR FILTRATION MODULES

Robert D. Zimmerly, Kenosha, Wis., assignor to Ladish Co., Cudahy, Wis.

Filed Feb. 23, 1979, Ser. No. 14,441

Int. Cl.³ B01D *35/00*

U.S. Cl. 210—232 **3 Claims**



1. An interconnector for filtration modules having axially extending tubes, said interconnector comprising inner and outer bonded together coaxial rubber sleeves, the inner sleeve comprising two sleeve portions of rubber of a lower indentation hardness than the outer sleeve and having end portions adapted for sealing engagement with said tubes, the outer sleeve comprising rubber of a higher indentation hardness than the inner sleeve portions for impact resistance, said outer sleeve having an inwardly projecting annular inwardly extending rib forming a washer of said higher indentation hardness rubber against which proximate ends of adjacent tubes abut and are separated by said washer, said washer having sufficient softness to be compressed slightly by axial pressure exerted thereon by said tubes to provide end seals for the axially extending tubes and wherein the outer sleeve has an indentation hardness of approximately 49 to 55 on the type D Durometer scale and the inner sleeve portions and said annular rib have an indentation hardness of approximately 60 to 70 on the type A Durometer scale.

4,237,011

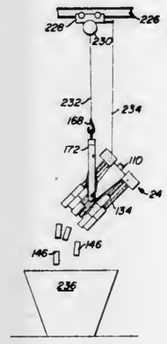
QUICK CHANGE CARTRIDGE FILTER

William A. Acosta, 4101 Laurel Dr., Lafayette Hill, Pa. 19444

Filed Feb. 10, 1977, Ser. No. 767,251

Int. Cl.³ B01D *27/00, 35/00*

U.S. Cl. 210—237 **35 Claims**



8. A filter system comprising a tank and filter cage assembly, said filter cage assembly being removably mounted in said tank, said filter cage assembly comprising a plurality of replaceable filters, said tank having a channel for incoming fluid to be filtered, said channel projecting into said tank, said tank further having an exhaust channel for filtered fluid, said exhaust channel projecting into said tank, said cage assembly having notches therein, said notches being of the same shape as said channels, but being slightly larger in dimension than said channels, with said channels and notches cooperating to form guides in placing said cage assembly into said tank, said filter cage assembly having a chamber therein for receiving filtered fluid, said chamber having an outlet therefrom, and means on said filter cage assembly for removing said assembly from said tank.

4,237,012

BOOM FOR CONTAINING AND COLLECTING OIL SPILLS ON THE SURFACE OF A BODY OF WATER

Ernest Favre, 1725 Ecuvillens, Switzerland

Filed Sep. 6, 1978, Ser. No. 940,145

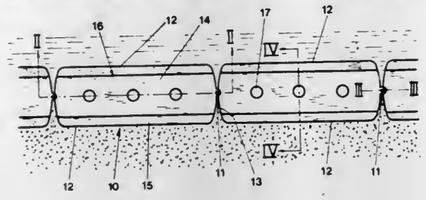
Claims priority, application Switzerland, Apr. 24, 1978, 4363/78

Int. Cl.³ F02B *15/04*

U.S. Cl. 210—242.3 **6 Claims**

1. A boom for collecting oil from the surface of a body of water, the boom comprising a plurality of elongated tanks and means pivotally linking said tanks together end-to-end to form a continuous boom, each tank having longitudinally extending imperforate side walls and end walls, and a bottom defining an oil receiving cavity open at the top, at least one hole in the

bottom through which water can enter and leave the cavity, said hole communicating directly with said body of water, and flotation means for supporting the tank in a partially immersed, upright condition in the body of water with upper edges of said



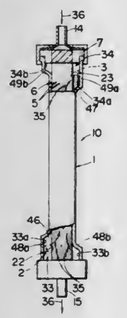
walls slightly above the surface of said water, whereby oil lifted by wave action over the upper edges of the walls will be collected in said tanks and displace water from said tanks through said holes in the bottoms of said tanks.

4,237,013

HOLLOW FIBER PERMEABILITY APPARATUS

Masahiro Yamazaki, Kamakura; Yoshihiro Makuta, Kawasaki; Yasushi Joh, and Noriaki Kaneko, both of Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 791,236, Apr. 27, 1977, abandoned.
This application Mar. 19, 1979, Ser. No. 21,885
Claims priority, application Japan, Aug. 12, 1976, 51-96271
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.2 **11 Claim...**



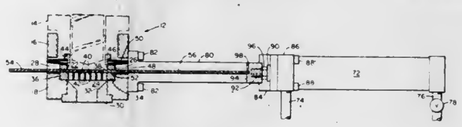
1. In a hollow fiber permeability apparatus comprising a housing having a permeating region, a bundle of permeable-wall hollow fibers disposed in parallel in said permeating region, means for supplying a first fluid flowing between the exteriors of said fibers, and another means for passing a second fluid through the interiors of fibers such that materials selectively permeate through the walls of said fibers, said permeating region having a flattened cross-section in the direction substantially perpendicular to the lengthwise direction of said fibers, first and second enlarged cross-section portions molded integrally with said housing at the opposite ends thereof, each of said enlarged cross-section portions defining compartments between said bundle and a wall of said housing, an inlet opening defined by said first enlarged cross-section portion for introducing said first fluid into said housing, and an outlet opening defined by said second enlarged cross-section portion for removal of said first fluid from said housing, tubular elements molded integrally with said housing and communicating with said inlet opening and said outlet opening for delivering said first fluid and for removal of said first fluid, the improvement wherein each of said enlarged cross-section portions are formed along substantially the whole lengths of both longer sides of the flattened cross-section of said permeating region and along at least one shorter side of said flattened cross-section, said tubular elements being formed adjacent said shorter sides of said flattened cross-section, and said tubular elements defining passages disposed substantially in parallel with said longer sides of said flattened cross-section, at least the major portion of the bundle surfaces positioned immediately opposite the interior walls defined by said first enlarged cross-section portion being exposed to said first fluid exiting from the passage of the tubular element delivering the first fluid whereby the first fluid has unimpeded entry between the fibers from said first enlarged cross section portion, said first enlarged cross-section portion comprising separate portions including two parts formed on opposite longer sides of said hollow fiber bundle, the volume ratio of one said part to the other said part ranging from 0.2 to 0.8, said second enlarged cross-section portion comprising separate portions including two parts formed on opposite sides of said hollow fiber bundle, the volume ratio of one said part to the other said part ranging from 0.2 to 0.8, said one part of said first enlarged cross-section portion being located at the same side of the permeating region as the other part of said second enlarged cross-section portion with the other part of the first cross-section portion being located at the same side of the permeating region as the first part of said second enlarged cross-section portion, said first fluid comprising a liquid, the volume ratio of said hollow fibers swelled with said liquid relative to the volume of said permeating region to be charged with said hollow fibers being in the range of 25 to 60 percent, and wherein said means for passing said second fluid through the interiors of said fibers includes a first cap with inlet means for said second fluid, said first cap being mounted at one end of said housing, and a second cap with outlet means for said second fluid, said second cap being mounted at the other end of said housing.

4,237,014

FLOWABLE MATERIAL PASSAGE WITH INTERPOSABLE SLIDE MEMBER

Delano B. Trott, Rowley, Mass., assignor to Beringer Co., Inc., Marblehead, Mass.

Filed Mar. 12, 1979, Ser. No. 19,159
Int. Cl.³ B01D *31/28;* **B29F** *3/00*
U.S. Cl. 210—330 **15 Claims**



1. Means for filtration of a flowable material comprising, in combination,

a body defining upstream and downstream passages and having a transverse filter channel and a closed annular flat first sealing surface defining a first opening communicating between one of said passages and said channel,

a seal member having a closed annular flat second sealing surface directly opposing said first sealing surface and defining a second opening opposing said first opening, said second opening communicating between the other of said passages and said channel,

a filter movable through the filter channel and comprising a flat bearing plate in slidable contact with one of said sealing surfaces and a filter sheet between the bearing plate and the other of said sealing surfaces,

means to move the filter from a first position to a second position relative to said openings, and

means urging the seal member and said filter toward one another and adapted to produce a sealing force therebetween which is constant and uniformly distributed over the contacting surfaces thereof at all positions of the filter in said movement, the bearing plate having a pattern of perforations covered by said filter sheet and dimensioned relative to the sealing surfaces so that at all positions of the filter in said movement, flow of material into said channel

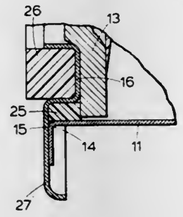
through the perforations at the sealing surfaces is prevented and a substantially uniform and constant configuration of the filter is in communication with said passages.

4,237,015

FILTER UNITS

Robert Fearnhead, Worsley, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed May 1, 1979, Ser. No. 34,991
Claims priority, application United Kingdom, May 6, 1978, 18112/78
Int. Cl.³ B01D *27/08*
U.S. Cl. 210—444 **1 Claim**



1. A fluid filter unit comprising:

a canister;

a filter element housed within the canister;

an end plate located in the mouth of the canister for permanently retaining the element in the canister and providing means for detachably mounting the filter element into a fluid flow path;

a closing ring means joined to the end plate and having outer peripheral portions forming a seam joint with the mouth of the canister;

and a preformed elastomeric sealing ring located under axial and radial compression in a space defined by the internal surface of the canister mouth, the closing ring means and the end plate, said sealing ring thereby closing a leakage path past the radially outer periphery of the end plate to both the radially inner and outer peripheries of the closing ring.

4,237,016

TEXTILE CONDITIONING COMPOSITIONS WITH LOW CONTENT OF CATIONIC MATERIALS

Arthur L. Rudkin, Hitchin; John H. Clint, and Kenneth Young, both of Whitley Bay, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 27, 1978, Ser. No. 955,300
Claims priority, application United Kingdom, Nov. 21, 1977, 48376/77; Feb. 27, 1978, 7687/78; Apr. 3, 1978, 12926/78; May 30, 1978, 48376/77
Int. Cl.³ D06M *13/44, 15/02*
U.S. Cl. 252—8.8 **7 Claims**

1. A textile conditioning composition comprising:

(a) from about 0.3% to about 4% of a cationic surfactant selected from the group consisting of:

(1) non-cyclic quaternary ammonium salts having at least one C_{12-30} alkyl chain in the molecule,

(2) C_{8-25} alkyl imidazolinium salts, and

(3) mixture thereof;

(b) from about 2% to about 10% of a substantially water-insoluble nonionic textile conditioning agent selected from the group consisting of:

(1) C_{10-26} fatty acid esters of mono- or polyhydroxy alcohols containing 1 to 12 carbon atoms,

(2) esters of fatty alcohols having from 12 to 24 carbon atoms in the alkyl chain and mono- or polycarboxylic acids having from 1 to 8 carbon atoms in the alkyl chain, whereby the total number of carbon atoms in the ester is equal to or greater than 16, and

(3) mixtures thereof; and

(c) from about 0.05% to about 0.5% of a polymeric cationic salt comprising guar gum which has been rendered cationic by attaching a cationic group to it at one or more of its reactive hydroxyl or carboxyl sites;

wherein the weight ratio of (a)+(c) to (b) is less than 10:1.

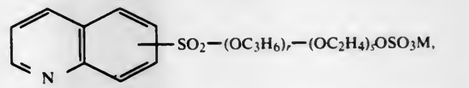
4,237,017

STEAM FLOODING HYDROCARBON RECOVERY COMPOSITION

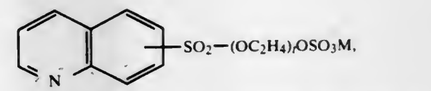
Joseph C. Allen, Bellaire, Tex., and John W. Porter, Metairie, La., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 826,446, Aug. 22, 1977, Pat. No. 4,133,384.
This application Jan. 4, 1979, Ser. No. 870
Int. Cl.³ E21B *43/24, 43/22*
U.S. Cl. 252—8.55 D **2 Claims**

1. A fluid comprising a mixture of steam and carbon dioxide containing from about 5 to about 40 percent by volume of carbon dioxide and from about 0.01 to about 0.10 weight percent of an interfacial tension reducer selected from the group consisting of a compound of the formula:



wherein r is an integer of from 2 to about 5, s is an integer of from 8 to about 60, wherein the sum of r plus s is not more than 55 and M is selected from the group consisting of hydrogen, sodium, potassium and the ammonium ion, and a compound of the formula:



wherein t is an integer of from 8 to about 40, and M has the same meaning as previously described.

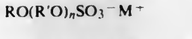
4,237,018

SURFACTANT FLOODING OIL RECOVERY PROCESS

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 7, 1979, Ser. No. 37,182
The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **7 Claims**

1. In a method of recovering petroleum from a subterranean permeable, petroleum-containing formation, said formation containing water having a salinity of at least 20,000 parts per million total dissolved solids, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with the formation, comprising injecting an aqueous, saline, surfactant-containing fluid into the formation via the injection well to displace petroleum toward the production well, from which it is recovered to the surface of the earth, said fluid containing from 0.05 to 10.0 percent of a surfactant having the following formula:



wherein R is an alkyl group, linear or branched, having from 9 to 25 carbon atoms, or an alkylaryl group, containing at least one alkyl constituent, linear or branched, containing from 9 to

15 carbon atoms, R' is ethylene or a mixture of ethylene and higher molecular weight alkylene with relatively more ethylene than higher molecular weight alkylene, n is a number including fractional numbers from 2 to 9, wherein the value of n is selected to achieve a fluid interfacial tension value less than 200 millidynes per centimeter, and M^+ is sodium, potassium, lithium or ammonium, the improvement for increasing the phase stability and injectability of the surfactant fluid, and improving its low surface tension oil displacement effectiveness, which comprises:

shearing the surfactant fluid at the surface at a shear rate of at least 150 reciprocal seconds for a period of time of at least 0.1 minutes, said shear rate and shear time being sufficient to reduce the turbidity of the fluid prior to injecting it into the formation via the injection well.

4,237,019

1-THIOCYANATO-8-SUBSTITUTED NAPHTHALENE COMPOUNDS AND THEIR USE AS BIOCIDES

Michael Singer, and Bernard Tury, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

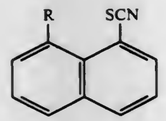
Filed Dec. 8, 1978, Ser. No. 968,433

Claims priority, application United Kingdom, Dec. 23, 1977, 53749/77

Int. Cl.³ C10M *1/20, 1/30, 1/38, 1/32*

U.S. Cl. 252—47.5 **12 Claims**

1. 1-Thiocyanato-8-substituted naphthalene compounds of the formula:



where R is alkyl, alkoxy, aryl, aryloxy, hydroxy, halogen, nitro, cyano, sulphonic acid, primary, secondary or tertiary amino, carbamoyl or sulphamoyl, and wherein the naphthalene nucleus may carry other substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, halogen, nitro, amino, acylamino, sulphonic acid, sulphamoyl and thiocyanato.

4,237,020

LUBRICATING AND FUEL COMPOSITIONS CONTAINING SUCCINIMIDE FRICTION REDUCERS

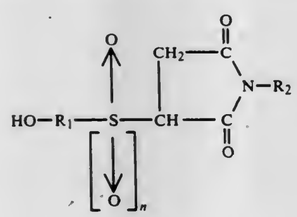
Andrew G. Papay, Manchester, and Joseph P. O'Brien, Kirkwood, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Filed Aug. 20, 1979, Ser. No. 67,999

Int. Cl.³ C10M *1/38*

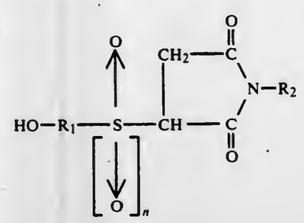
U.S. Cl. 252—47.5 **10 Claims**

1. A lubricating oil composition comprising an oil lubricating viscosity and containing a friction-reducing amount of an oil-soluble additive having the formula



wherein R_1 is a divalent aliphatic hydrocarbon group containing 1 to about 6 carbon atoms, R_2 is an aliphatic hydrocarbon group containing about 10–36 carbon atoms, and n is 0 or 1.

10. A liquid hydrocarbon fuel suitable for use in an internal combustion engine containing a friction-reducing amount of a fuel-soluble additive having the formula



wherein R_1 is a divalent aliphatic hydrocarbon group containing 1 to about 6 carbon atoms, R_2 is an aliphatic hydrocarbon group containing about 10–36 carbon atoms, and n is 0 or 1.

4,237,021

METAL WORKING EMULSION

Sune Andlid, and Lennart Linden, both of Karlshamn, Sweden, assignors to Karlshamns Oljefabriker, Karlshamn, Sweden

Filed Mar. 5, 1979, Ser. No. 17,084

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.5 **21 Claims**

1. A metal working emulsion with good stability and unlimited dilutability for deforming metalworking, including machining by detachment of cuttings, deepdrawing and rolling, comprising an oil phase which is dispersed in a continuous water phase;

the oil phase comprising

0.5–50 parts by weight of triglyceride oil,

0.1–10 parts by weight of fatty acid monoglyceride,

0.05–10 parts by weight of fatty acid, and

0.05–10 parts by weight of alkanolamine or fatty amine;

and the water phase comprising

0.05–3 parts by weight of alkali soaps of fatty acids, and

45–98 parts by weight of water.

4,237,022

TARTARIMIDES AND LUBRICANTS AND FUELS CONTAINING THE SAME

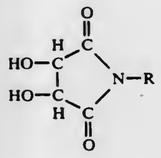
Daniel E. Barrer, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 924,016, Jul. 12, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,595

Int. Cl.³ C10M *1/32;* **C01L** *1/22;* **C07D** *207/02*

U.S. Cl. 252—51.5 A **39 Claims**

1. A composition of matter comprising one or more tartarimides represented by the formula



wherein R is an aliphatic-based or alicyclic-based radical of about 5 to about 150 carbon atoms or is R'OR'' in which R' is a divalent alkylene radical of 2 to 6 carbon atoms, and R'' is a hydrocarbyl radical of about 5 to about 150 carbon atoms, or R.

4,237,023

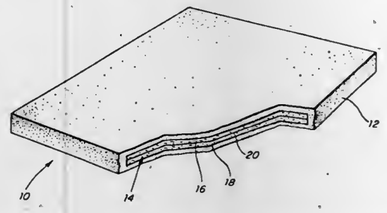
AQUEOUS HEAT-STORAGE COMPOSITIONS CONTAINING FUMED SILICON DIOXIDE AND HAVING PROLONGED HEAT-STORAGE EFFICIENCIES

Timothy E. Johnson, Newton Center, Mass., and John Giuffrida, Annandale, N.J., assignors to Massachusetts Institute of Technology, Cambridge and Cabot Corporation, Boston, both of, Mass.

Continuation-in-part of Ser. No. 961,161, Nov. 16, 1978, abandoned. This application Mar. 20, 1979, Ser. No. 22,232

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 **21 Claims**



1. In an aqueous heat-storage composition containing a phase-change material which absorbs and stores heat as it is heated above its phase-change temperature and releases stored heat as it is cooled below its phase-change temperature and a stabilizing agent to prolong heat-storage efficiency as the composition is repeatedly cycled through its phase-change temperature:

the improvement wherein said stabilizing agent comprises fumed silicon dioxide uniformly dispersed throughout said composition in a stable dispersion thereof.

4,237,024

DISHWASHING COMPOSITION AND METHOD OF MAKING THE SAME

Walter J. Fedechko, Williamstown, N.J., assignor to Certified Chemicals, Inc., Cinnaminson, N.J.

Filed Jun. 16, 1978, Ser. No. 916,407

Int. Cl.² C11D *7/54, 7/56*

U.S. Cl. 252—99 **21 Claims**

1. A method of making an agglomerated dishwashing composition comprising the steps of:

(a) forming a composition mixture by mixing an aqueous solution of sodium hypochlorite at a rate of about 4 to about 25% per minute based on the total weight of any substantially dry ingredients in an amount sufficient to yield about 0.25 to about 1.6% available chlorine in the composition with at least one alkaline sequestrant builder salt, a water soluble carrier material and an alkali metal silicate having a SiO_2 to M_2O ratio of about 1:1 to about 3.22:1 wherein M is at least one alkali metal;

(b) agitating the composition mixture after adding the ingredients set forth in step (a) for a sufficient time to form agglomerated granules of the composition mixture; and

(c) conditioning the agglomerated granules by reducing the moisture content of agglomerated granules by about 0.25–5%.

4,237,025

PRODUCT COMPRISING LIME OR LIMESTONE AND GRAHAM'S SALT OR $M_xP_nO_{(3N+1)}$

Maher E. Tadros, Ellicott City, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Division of Ser. No. 901,164, Apr. 28, 1978. This application Sep. 25, 1978, Ser. No. 945,654

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—192 **4 Claims**

1. A new composition of matter consisting of lime or limestone and Graham's salt or a water soluble polymer of the formula $M_xP_nO_{(3n+1)}$, wherein M is a cation, n is a positive integer greater than 1, x is $(n+2)/y$, and y is the valence of M.

4,237,026

LIQUID CRYSTALLINE CARBOXYLIC ACID ESTERS

Rudolf Eidenschink; Joachim Krause, both of Dieburg, and Ludwig Pohl, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

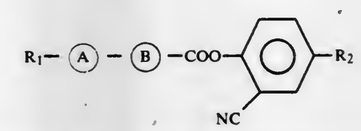
Filed Dec. 5, 1979, Ser. No. 100,599

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853728

Int. Cl.³ C09K *3/34;* **C02F** *1/13;* **C07C** *121/64*

U.S. Cl. 252—299 **8 Claims**

1. A liquid crystalline carboxylic acid ester of the formula



in which one of A or B is 1,4-disubstituted phenyl and the other is trans-1,4-disubstituted cyclohexane and R_1 and R_2 are independently each alkyl of 1–10 carbon atoms.

5. In a liquid crystalline dielectric comprising two liquid crystal components, the improvement wherein at least one component is a compound of claim 1.

4,237,027

NOVEL BLACK LIGHT EMITTING LUMINOPHORS

Patrick Dougier, Marly-le Roi; Claude Fouassier, Gradignan, and Bertrand Latourrette, Gagny, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 2, 1979, Ser. No. 81,128

Claims priority, application France, Oct. 3, 1978, 78 28184

Int. Cl.³ C09K *11/46*

U.S. Cl. 252—301.4 H **3 Claims**

1. A luminophor having the formula:

$$Sr_{1-x}Eu_x^{2+}SiF_6.2H_2O,$$

wherein $0<x\leqq 0.5$ said luminophor emitting a sharp line emission spectrum centered at about 3600 Å when excited by ultraviolet radiation having a wavelength of 2537 Å.

4,237,028

APPARATUS FOR PRODUCING EMULSIONS

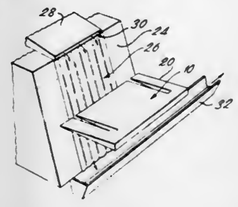
John F. Hughes, Southampton, and John M. C. Roberts, Camberly, both of England, assignors to National Research Development Corporation, London, England

Filed Aug. 29, 1978, Ser. No. 937,844

Claims priority, application United Kingdom, Sep. 8, 1977, 37556/77

Int. Cl.³ B05B *5/02;* **B01F** *3/08;* **B01J** *13/00*

U.S. Cl. 252—359 B **15 Claims**



1. Apparatus for producing an emulsion of a disperse phase material in a continuous phase material, the material being provided in fluid form, said apparatus comprising:

atomiser electrode means;
means enabling the electrode means to receive a flow of the disperse phase material;
carrier means providing an electrically conductive surface spaced apart from the electrode means;
coating means enabling the conductive surface to receive a coating of the continuous phase material, such that the material forms a thin layer, and
means for collecting the emulsion thus formed,
the electrode means being effective when raised to a suitable electric potential relative to the conductive surface to cause the formation of atomised droplets of the disperse phase material and the carrier means being so arranged and disposed that the coating of continuous phase material is progressively advanced in a path such that the droplets are entrained by the coating to form an emulsion.

4,237,029

CATALYST COMPRISING INTENSELY MIXED TRIARYL PHOSPHITE, ALUMINUM TRIHALIDE, TITANIUM TRIHALIDE COMPONENT

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1979, Ser. No. 7,454
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **18 Claims**

1. A catalyst which forms on intensively mixing together TiX_3, AlX_3, and a triaryl phosphite wherein X is halide to form a first milled, dry component which first component is subjected to a heat treatment consisting essentially of raising the temperature of said first component while retaining said first component in the dry state and then combined with a cocatalyst organoaluminum compound of the formula R_nAlX_{3-n} in which R' is a hydrocarbon group containing from 1 to about 20 carbon atoms, X is a halogen atom and n is an integer of 1 to 3.

4,237,030

CATALYST FOR PURIFYING EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Tsuchio Bunda, Okazaki; Noboru Yamamoto, and Shigeo Soejima, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi and Nippon Gaishi Kabushiki Kaisha, Nagoya, both of, Japan

Continuation of Ser. No. 655,894, Feb. 6, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 923,202
Claims priority, application Japan, Mar. 13, 1975, 50-30698
Int. Cl.³ B01J *21/02, 21/04, 21/12, 23/42*
U.S. Cl. 252—432 **6 Claims**

1. A catalyst for purifying exhaust gas from an internal combustion engine comprising: a catalyst carrier characterized by having a total pore volume of 0.05–0.50 cc/g, and an average pore diameter of 0.05–0.05μ, and consisting mainly of over 80% by weight of α-alumina and less than 20% by weight of sintering promoter; and a catalyst consisting essentially of platinum catalyst material.

4,237,031

CRYSTALLIZED SILICA-ALUMINA COGEL AND CATALYST EMPLOYING THE SAME

Hamid Alifandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 935,628, Aug. 21, 1978, Ser. No. 3,793, Jan. 1, 1979, and Ser. No. 3,879, Jan. 17, 1979. This application Feb. 5, 1979, Ser. No. 9,487
Int. Cl.³ B01J *27/24, 27/02, 29/06;* C01B *33/26*
U.S. Cl. 252—438 **8 Claims**

1. An ammoniated silia-alumina gel having an SiO_2/Al_2O_3 molar ratio more than 1 and less than 3 and containing less than 0.3 equivalents of NH_4 cations per mole of Al_2O_3 in the gel and rare earth cations and a crystalline phase having "d" spacings according to Table 1.

4,237,032

CATALYSTS

William D. J. Evans, Newton; Robert J. Larbey, Bassingbourn, and Thomas I. Stewart, Melbourn, all of England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Jun. 6, 1978, Ser. No. 912,966
Claims priority, application United Kingdom, Jun. 8, 1977, 23913/77
Int. Cl.³ B01J *23/10, 23/64, 23/84, 23/58*
U.S. Cl. 252—462 **7 Claims**

1. A supported catalyst suitable for catalyzing oxidation and reduction processes in a gas and capable of removing oxygen from a gas containing an excess of oxygen and restoring at least a part of such removed oxygen to a gas having an oxygen deficiency, comprising (A) a substrate; (B) a washcoat as a support on said substrate comprising at least one refractory metal oxide and nickel and cerium as base metal components; and (C) a catalytically active coating attached to said substrate by said washcoat, said catalytically active coating comprising at least one of the precious metals platinum, rhodium, ruthenium, palladium, iridium, osmium, gold and silver.

4,237,033

PRETREATMENT OF MICROCARRIERS FOR CELL CULTURE

Edgar M. Scattergood, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 885,137, Mar. 10, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,302
Int. Cl.³ C08L *89/00*
U.S. Cl. 260—6 **6 Claims**

1. A process of treating microcarrier beads to enhance their suitability as a surface for cell culture which comprises soaking the beads in heated fetal calf serum prior to culturing cells on the beads.

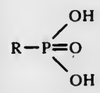
4,237,034

POLYAMIDE COMPOSITIONS CONTAINING CARBOXYLIC ACID METAL SALT AND ORGANOPHOSPHONIC ACID

Jiri Tomka, Harrogate, and Jack M. Ginn, St. Albans, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 463,144, Apr. 22, 1974, abandoned. This application May 6, 1976, Ser. No. 683,826
Claims priority, application United Kingdom, May 14, 1973, 22783/73; Sep. 20, 1973, 44131/73
Int. Cl.³ C08L *77/00, 77/02*
U.S. Cl. 260—18 N **21 Claims**

1. A method of producing an aliphatic polycarbonamide composition comprising intimately blending an organophosphonic acid of general formula



where R is an inert organic radical and a metal compound selected from the group consisting of metal salts of staturated or unsaturated carboxylic acids, metal oxides or hydroxides, with a polyamide under melt conditions, wherein the metal is selected from the group consisting of metals of groups 2A, 2B, 3B, 7A and 8 of the Periodic Table of Elements, as tabulated on page 30 of Advanced Inorganic Chemistry by Cotton and Wilkinson published in 1962 by Interscience Publishers, the concentration of organophosphonic acid is such as to give between 0.025 mole and 120 mole of phosphorus per 10^6 gram of the polycarbonamide composition and the concentration of metal compound present is such as to give between 0.025 mole and 120 mole of metal per 10^6 gram of the polycarbonamide composition.

4,237,035

EPOXY RESIN FROM BY-PRODUCT TAR FROM RESORCINOL PROCESS AND USE THEREOF

Shuichi Kanagawa; Kazunori Kawakami, both of Osaka, and Akira Shintani, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 29, 1979, Ser. No. 42,956
Claims priority, application Japan, Jun. 2, 1978, 53-66999
Int. Cl.³ C08G *59/06*
U.S. Cl. 260—28 R **6 Claims**

1. An epoxy resin obtained by reacting a by-product tar, which is produced as by-product in manufacturing resorcinol or resorcinol and hydroquinone via the hydroperoxide of m-diisopropylbenzene or of a combination of m- and p-diisopropylbenzenes and which contains m-substituted phenolic constituents or a combination of m- and p-substituted phenolic constituents as major constitutents, or a polymerization product of said by-product tar with an epihalohydrin in the presence of an alkali.

4,237,036

POLYMERIZABLE PREMIX COMPOSITION FOR PREPARATION OF POLYURETHANE SURFACES

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company; San Francisco, Calif.

Filed Jun. 6, 1979, Ser. No. 46,133
Int. Cl.³ C08L *91/00*
U.S. Cl. 260—28 R **5 Claims**

1. A method for improving the storage stability of a polymerizable mixture comprising a high molecular weight diol component, a low molecular weight chain stiffener component and an asphalt component which comprises at least substantially increasing said stability by admixing into said mixture an effective amount to improve storage stability of at least one aliphatic polyamide resin having a molecular weight in the range of from about 3000 to 9000 and a softening point below 150° C., said resin being the condensation product of (1) at least one aliphatic polycarboxylic acid having a carboxyl group content in the range 2 to 8 and a carbon atom content in the range 10 to 72 and (2) at least one polyamine of the formula $(H(HN—R—NH)_xH$, wherein R is an alkylene radical having a carbon atom content in the range 2 to 5 and x is an integer in the range 1 to 5.

4,237,037

POWDER COATING COMPOSITION COMPOSED OF ETHYLENE RESIN MIXTURE AND HYDROCARBON WAX

Takao Takahashi, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Apr. 3, 1979, Ser. No. 26,699
Claims priority, application Japan, Apr. 7, 1978, 53/40217
Int. Cl.³ C08L *23/08*
U.S. Cl. 260—28.5 AV **8 Claims**

1. A powder coating composition comprising
(A) 70 to 97% by weight of an ethylene resin mixture composed of
(A-1) an ethylene copolymer having an ethylene content of at least 70 mole percent ethylene, a melt index of 1 to 50 and containing at least one comonomer selected from the group consisting of alpha-olefins other than ethylene, dienes, vinyl acetate, vinyl alcohol, acrylic acid, methacrylic acid and functional derivatives of methacrylic acid, and
(A-2) a graft copolymer of polyethylene having grafted thereto an unsaturated carboxylic component, the amount of said unsaturated carboxylic component being 0.001 to 2% based on the weight of the ethylene resin mixture (A), and
(B) 3 to 30% by weight of a hydrocarbon wax having a number average molecular weight of about 400 to about 3,000 and a density of not less than 0.9 g/cm³, said wax having an acid value of up to about 5 when modified by oxidation or graft-modified.

4,237,038

CATHODICALLY DEPOSITABLE RESINS AND PROCESS OF PREPARING SAME

Georgios Pampouchidis, and Helmut Hönig, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Oct. 12, 1978, Ser. No. 950,599
Claims priority, application Austria, Oct. 24, 1977, 7567/77
Int. Cl.³ C08K *3/06;* C08G *18/77;* C25D *13/06*
U.S. Cl. 260—29.2 TN **18 Claims**

1. Thermosetting binders characterized in that aqueous solutions thereof formed by neutralization with acids are cathodically depositable in an electrodeposition system comprising the reaction product of
(A) hydroxyl group containing polymerization products of monomers including alkyl esters of acrylic and methacrylic acids and hydroxyalkyl(ene) esters of acrylic and methacrylic acids having a hydroxyl number of at least 40 mg KOH/g; and
(B) compounds carrying per molecule an average of 0.8 to 1.5 free isocyanate groups and at least one tertiary basic aliphatically bound nitrogen atom; said reaction product having an NCO-value of substantially zero and containing basic functionality neutralizable with an inorganic or organic acid to provide an aqueous solution of said binders.

13. Aqueous compositions suitable for cathodic deposition in an electrodeposition system comprising the neutralized product of the reaction product of
(A) hydroxyl group containing polymerization products of monomers including alkyl esters of acrylic and methacrylic acids and hydroxyalkyl(ene) esters of acrylic and methacrylic acids having a hydroxyl number of at least 40 mg KOH/g; and
(B) compounds carrying per molecule an average of 0.8 to 1.5 free isocyanate groups and at least one tertiary basic aliphatically bound nitrogen atom;
said reaction product having an NCO-value of substantially zero.

4,237,039

SALTS OF ARYLALKANOIC ACIDS AS CORROSION INHIBITORS FOR POLY(ARYLENE SULFIDE)S

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 18, 1978, Ser. No. 970,684
Int. Cl.³ C08L *81/04*
U.S. Cl. 260—29.2 R **14 Claims**

1. A poly(arylene sulfide) coating composition which comprises
(a) an arylene sulfide polymer,
(b) an ammonium or alkali metal salt of an arylalkanoic acid, and
(c) an aqueous medium.

4,237,040

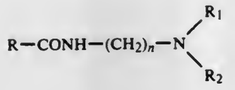
SUSPENSION AGENT FOR SYNTHETIC RESIN POWDERS

Anton Capelle, Delden, Netherlands, and Heinz Scholten, Haltern, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 658,579, Feb. 17, 1976, abandoned. This application Jan. 26, 1979, Ser. No. 6,874
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1975, 2507504
Int. Cl.³ C08L *23/04, 33/24*
U.S. Cl. 260—29.2 N **10 Claims**

1. An aqueous dispersion wherein there is contained:
I. a suspension agent in a concentration of about 1–7.5 percent by weight comprising a mixture of

(A) about 95–40 molar percent of an aminoamide of the general formula



wherein

R represents a saturated or unsaturated hydrocarbon group having 13–19 carbon atoms,

n represents an integer of between 2 and 6, and

R_1 and R_2 represent alkyl groups having 1–3 carbon atoms; and

(B) about 5–60 molar percent of an acid salt of said aminoamide; and

II. a concentration of about 25–50 percent by weight synthetic resin powders selected from the group consisting of polyvinyl resins and polyamide resins for spot coating garment interlinings having melting points not more than about 140° C.

4,237,041

PROCESS FOR PREPARING FILM-FORMING COMPOSITION

Sakhib M. O. Aliev, ulitsa Barinova, 12, blok 4, kv. 31; Vagab S. Aliev, ulitsa Nizami, 66, blok 5, kv. 40; Magira A. K. Agaeva, ulitsa Barinova, 12, blok 4, kv. 31; Tofik A. Gadzhiev, ulitsa Malygina, 17, kv. 16; Vagif B. G. O. Guseinov, ulitsa Meskheti, 4, kv. 2, and Zemfira A. B. K. Ismailova, ulitsa Bakikhanova, 26, kv. 14, all of Baku, U.S.S.R.

Filed Dec. 12, 1977, Ser. No. 859,869

Int. Cl.³ C08K *5/01*

U.S. Cl. 260—33.6 UA **17 Claims**

1. A process for preparing a film-forming composition comprising co-oligomerization of arylalkenes with conjugated dienes at a weight ratio therebetween of from 1:1 to 4:1, respectively at a temperature ranging from 60° to 140° C. in a medium of a non-toxic hydrocarbon solvent selected from the group consisting of

(a) a petroleum fraction boiling within the range of 160° to 220° C. consisting of naphthenes, paraffins and aromatic hydrocarbons;

(b) a hydrogenate of a petroleum fraction boiling within the range of 160° to 220° C. obtained by catalytic hydrogenation at a temperature of 160°–180° C.; and

(c) naphthene hydrocarbons;

in the presence of a co-oligomerization initiator selected from the group consisting of organic peroxides and organic hydroperoxides; and in the presence of a molecular-weight control agent selected from the group consisting of

(i) products of diene condensation of conjugated dienes with cyclodienes,

(ii) a dehydrogenate of said products of diene condensation, and

(iii) a fraction with a boiling range between 160° and 220° C. recovered from liquid products of pyrolysis of gasoline at a temperature of 750°–850° C.,

whereby solvent removal and subsequent dissolution of the resulting co-oligomer is avoided.

4,237,042

POLYOLEFINS STABILIZED AGAINST LIGHT-INDUCED DEGRADATION

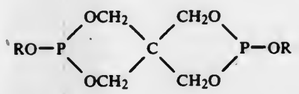
Joseph A. Stretanski, Clinton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 13, 1978, Ser. No. 951,230

Int. Cl.¹ C08K *5/52*

U.S. Cl. 260—45.8 R **11 Claims**

1. A light stable composition comprising a poly-α-olefin and from about 0.1 to 2.0 percent by weight thereof of a light stabilizer combination of (a) n-hexadecyl 3,5-di-t.butyl-4-hydroxybenzoate and (b) a dialkyl pentaerythrityl diphosphite represented by the formula:



wherein R is alkyl of 8 to 20 carbon atoms.

4,237,043

ORGANOTIN COMPOUNDS, THE PREPARATION AND USE THEREOF

Helmut Korbanka, Adelsried, and Franz Scheidl, Gersthofen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

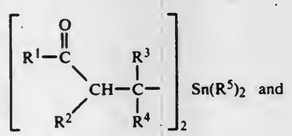
Filed Aug. 8, 1978, Ser. No. 931,897

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735810

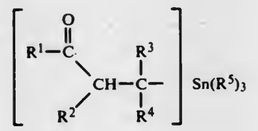
Int. Cl.³ C07F *7/22*

U.S. Cl. 260—45.75 S **5 Claims**

1. Mixture of organotin compounds having the formula



I



II

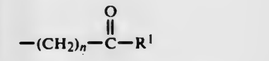
in which

R^1 is OH, $—NH_2$, an alkylamino or arylamino, O-alkyl or O-aryl, both the latter two being unsubstituted or substituted by aryl or alkyl said aryl or alkyl being unsubstituted or substituted by a member selected from the group consisting of halogen, hydroxy, thioether, ether, and carboxyl;

R^2 to R^4 are identical or different and each are

(a) 0 to 2 hydrogen atoms, or

(b) alkyl having from 1 to 30 carbon atoms, with the proviso that at least one is a



group, where R^1 is as defined above and

n an integer of from 1 to 15;

R^5 is $—S—(CH_2)m—CO_2—$alkyl, —S—alkyl, $—O_2C—$alkyl or $—O_2C—CH=CH—CO_2—$alkyl, m being 1 or 2 and the alkyl optionally contains —O—, —S— or $—CO_2$ groups and OH substituents;

and the R^1 to R^5 corresponding to one another in the components I and II of the mixture always being identical.

4,237,044

ANTIBODIES AGAINST CREATINEKINASE-M8 AND PROCESS FOR THE PRODUCTION THEREOF

Uwe Würzburg; Norbert Hennrich; Hans-Dieter Orth, and Hermann Lang, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 737,264, Nov. 1, 1976, abandoned. This application May 8, 1979, Ser. No. 37,191

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2548962

Int. Cl.³ A61K *39/395;* **C07G** *7/00;* **G01N** *33/68*

U.S. Cl. 260—112 B **18 Claims**

1. Antibodies having a molecular weight of 130,000–210,000 and a sedimentation constant between 6S and 8S; and being capable of effecting in creatinekinase-MM (CK-MM) and creatinekinase-MB (CK-MB) complete inhibition of enzymatic activity of the M subunit without inhibiting the enzymatic activity of the B subunit and without precipitation; wherein complete inhibition of the enzymatic activity of said M subunit of creatinekinase leaves less than 5 U./l. of said enzymatic activity intact, and non-inhibition of said enzymatic activity of said B subunit is less than 10 U./l., and wherein said antibodies are substantially free of creatinekinase-BB (CK-BB) isoenzyme activity; wherein said antibodies are prepared by the steps of activating a CK-MM antigen from skeletal muscle of humans, monkeys, pigs or cattle by an activator for —SH groups selected from the group consisting of N-acetylcysteine, mercaptoethanol, dithioerythritol, glutathione, cysteine, dithiothreitol, S-(2-aminoethyl)-isothiouronium bromide hydrobromide and thioglycolic acid or a divalent metal ion activator selected from the group consisting of magnesium, manganese, calcium and cobalt, or a mixture of activators; inoculating a goat with the thus-activated CK-MM antigen; withdrawing blood from the goat; and isolating said antibodies from the withdrawn blood.

4,237,045

N-SUBSTITUTED CYCLOPEPTIDE DERIVATIVES AND PREPARATION THEREOF

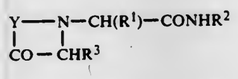
Amedeo Failli, St. Laurent; Hans U. Immer, Mount Royal, and Manfred K. Gotz, Hudson, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,827

Int. Cl.³ C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **2 Claims**

1. A process for preparing a compound of formula I



in which R^1 is lower alkyl, R^2 is lower alkyl or cyclo(lower)alkyl, R^3 is an amino acid side chain selected from hydrogen and lower alkyl and Y is a peptide residue of the formula $NHCH(R^4)CH—NHCH(R^5)CO—NHCH(R^6$-$)CO—NHCH(R^7)CO—NHCH(R^8)CO$ wherein R^4 is hydrogen, lower alkyl or benzyl; R^5, R^6, and R^7 each independently is hydrogen or lower alkyl and R^8 is hydrogen, lower alkyl or 2-(methylthio)ethyl, which comprises: condensing together an aldehyde of formula R^1CHO in which R^1 is as defined herein, an isonitrile of formula R^2NC in which R^2 is as defined herein and a peptide of formula $H_2N-CH(R^3)—CO—Y—OH$ in which R^3 and Y are as defined herein.

4,237,046

POLYPEPTIDES AND METHODS OF PREPARATION

Miklos Bodanszky, 18035 Fernway Rd., Shaker Heights, Ohio 44122

Filed Apr. 27, 1979, Ser. No. 34,283

Int. Cl.³ C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **16 Claims**

1. A new polypeptide selected from the group consisting of those of the following general formulae:

(a) X-Met-Ala-Val-Lys-Lys-Tyr-Leu-Asn-Ser-Y-Leu-Z-X_1 wherein X is hydrogen, Gln, or pyroglutamyl; X_1 is OH or NH_2; Y is Val or Ile; and Z is Asn or Thr; and

(b) $(X)_{0-1}$-Met-Ala-Val-$(Lys)_{0-1}$-X_1 wherein X and X_1 are as described above.

4,237,047

PEPTIDE DERIVATIVE

Shumpei Sakakibara, Suita, Japan, assignor to Ajinomoto Company, Incorporated, Tokyo, Japan

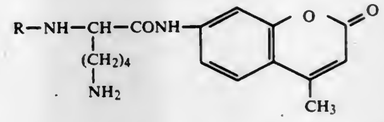
Filed Jul. 27, 1979, Ser. No. 61,422

Claims priority, application Japan, Aug. 10, 1978, 53-97579

Int. Cl.³ C07C *103/52;* **C07D** *311/06*

U.S. Cl. 260—112.5 R **6 Claims**

1. A peptide derivative having the formula



wherein R is a radical selected from the group consisting of hydrogen, glutamyl, isoleucyl-glutamyl, phenylalanyl-glutamyl, lysyl, glutamyl-lysyl, phenylalanyl-glutamyl-lysyl, leucyl, and valyl-leucyl.

4,237,048

MONOAZO DYESTUFF CONTAINING DI-CYANO SUBSTITUENTS ORTHO TO THE AZO GROUP

Alois Gottschlich, and Klaus Leverenz, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

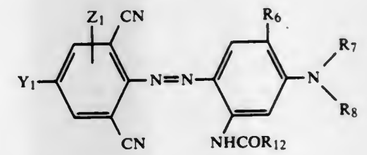
Division of Ser. No. 361,603, May 18, 1973, Pat. No. 3,962,209, which is a continuation of Ser. No. 28,247, Apr. 17, 1970, abandoned, which is a continuation of Ser. No. 615,898, Feb. 14, 1967, abandoned. This application Jan. 15, 1976, Ser. No. 649,253

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1966, 48454; Jan. 12, 1967, 51232

Int. Cl.² C09B *29/08, 29/26, 29/36*

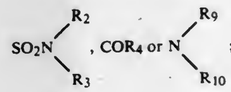
U.S. Cl. 260—207.1 **5 Claims**

1. Azo dyestuff of the formula



where

Y_1 is NO_2, CF_3, phenyl, OR_1', SO_2R_1,



R_{12} is NH_2, OCH_3, OC_2H_3, C_2H_5, CH_2OH, CH_2Cl, C_2H_4Cl or CH_2OCOCH_3;
R_6 is H, CH_3, OCH_3, or OC_2H_5;
R_7 and R_8 each are H, C_{1-4} alkyl, $—CH_2C_6H_5$, or substituted C_{1-4} alkyl wherein the substituents are OH, CN, OCH_3, Cl, $COOCH_3$, $COOC_2H_5$, $OCOCH_3$, $OCOOCH_3$ or OC_2H_4OH;
Z_1 is H or Cl;
R_1 is CH_3, C_2H_5, or phenyl; R_1' is CH_3, C_2H_5, C_2H_4OH; $C_2H_4OCOCH_3$, $C_2H_4OCH_3$ or CH_2COOCH_3;
R_2 and R_3 are H or CH_3;
R_4 is H, OH, R_1, OR_1 or



R_9 is formyl; alkyl carbonyl with 1–4 carbons in the alkyl group; substituted alkyl carbonyl with 1–4 carbons in the alkyl group wherein the substituents are OH, Cl, CN, NH_2, $OCOCH_3$ or $OCOC_2H_5$; phenyl carbonyl; substituted phenyl carbonyl wherein the phenyl radical is substituted with CH_3, Cl, NO_2 or OCH_3; benzyl carbonyl; methyl sulfonyl; phenyl sulfonyl; tolyl sulfonyl; amino carbonyl; amino carbonyl containing CH_3 or C_2H_5 substituents; alkoxy carbonyl wherein the alkyl member contains 1 to 2 atoms; benzyloxy carbonyl; phenylsulfonyl; methylsulfonyl or phenyloxycarbonyl; and
R_{10} is H, alkyl with 1–4 carbon atoms or cyclohexyl.

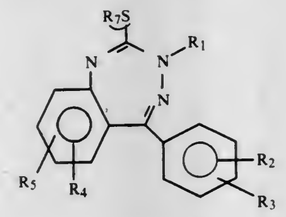
4,237,049

METHOD FOR PREPARING 6-PHENYL-TRIAZOLO OR IMIDAZOLO-(1,3,4)-BENZOTRIAZEPINES AND THE NOVEL INTERMEDIATES USED THEREWITH

Thomas C. Britton, and Donald L. Trepanier, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 818,683, Jul. 25, 1977, Pat. No. 4,144,233, and a continuation-in-part of Ser. No. 769,125, Feb. 16, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,914
Int. Cl.³ C07D *255/04*
U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula



wherein R_1 represents lower alkyl; R_2, R_3, R_4 and R_5 independently represent hydrogen, lower alkyl, lower alkoxy, halo, or loweralkylthio; and R_7 represents a lower alkyl or benzyl.

4,237,050

PROCESS FOR THE PREPARATION OF WATER-SOLUBLE PHTHALOCYANINE DYESTUFFS

Hartmut Springer, Königstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,158
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1978, 2824211; Feb. 20, 1979, 2906442
Int. Cl.³ C09B *47/08*
U.S. Cl. 260—242.2 **12 Claims**

1. In a process for the preparation of a water-soluble phthalocyanine dyestuff by reacting a phthalocyanine-sulfonic acid chloride or a phthalocyanine-sulfonic acid chloride containing sulfo groups, with a primary or secondary amine which contains one or several β-substituted ethylsulfonyl groups or one or several vinylsulfonyl groups, or with said amine and also a second primary or secondary amine of the aliphatic, heterocyclic or aromatic series, the improvement which comprises so reacting in the presence of a pyridine-sulfonic acid or a pyridine-carboxylic acid compound.

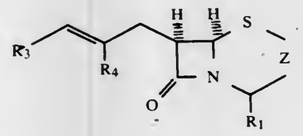
4,237,051

STEREOSPECIFIC PRODUCTION OF 6- OR 7-CARBON-SUBSTITUTED-β-LACTAMS

Stuart W. McCombie, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

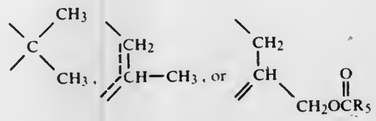
Filed Apr. 19, 1979, Ser. No. 31,286
Int. Cl.³ C07D *499/00, 501/02*
U.S. Cl. 260—245.2 R **11 Claims**

1. A process for the preparation of a β-lactam of the formula:

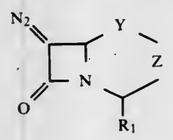


(I)

wherein
R^1 is cyano or $COOR_2$ wherein R^2 is a readily removable ester-forming moiety, hydrogen or an alkali-metal cation;
R^3 and R^4 are independently hydrogen, lower alkyl, aryl or aralkyl;
Z is a group of the formula

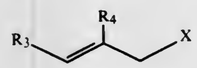


wherein R_5 is hydrogen, lower alkyl or aralkyl; and the dotted line indicates the optional presence of a double bond; which comprises
(1) reacting a diazo-β-lactam of the formula



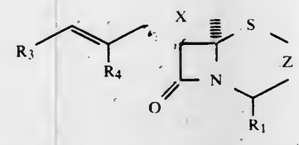
(II)

wherein Y is a sulfur or oxygenated sulfur atom, and Z, R_1, R_3, and R_4 are as hereinbefore defined; with an allyl halide of the formula



(III)

wherein R_3 and R_4 are as hereinbefore defined and X is bromo or iodo;
in the presence of a catalytic amount of metallic copper or a copper salt; and where Y is an oxygenated sulfur atom, followed by transformation of the resultant oxygenated sulfur intermediate to a compound wherein Y is a sulfur atom; and
(2) subjecting the resultant intermediate of the formula



(IV)

wherein X, Z, R_1, R_3, and R_4 are as hereinabove defined, to reduction with a trialkyl stannane to afford the compound of formula I.
11. The compound which is 6β-(aminomethyl)penicillanic acid.

4,237,052

METHOD FOR THE PREPARATION OF BITUMENS MODIFIED BY POLYMERS

Fredj Fitoussi, St. Genis Laval, and Paul Maldonado, St. Symphorien D'Ozon, both of France, assignors to Elf Union, Paris, France

Filed Feb. 15, 1979, Ser. No. 12,459
Claims priority, application France, Mar. 3, 1978, 78 06160
Int. Cl.² C08L *91/00*
U.S. Cl. 260—28.5 AS **12 Claims**

1. A process for the preparation of a bitumen-polymer composition comprising grafting, by heating in the presence of a catalyst, at a temperature of 180° C. for 3 hours, 5 to 10 parts of a dihalopolybutadiene polymer on to 100 parts of the bitumen, said polymer serving as a receptive structure for block polymers and to elastomers co-vulcanizable with the grafted bitumen.

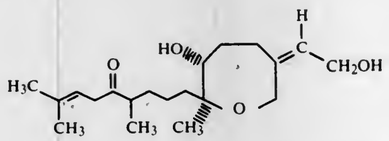
4,237,053

TOTAL SYNTHESIS OF THE UTERO-EVACUANT SUBSTANCE D,L-ZOAPATANOL

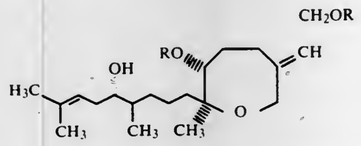
Vinayak V. Kane, Princeton, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 20, 1978, Ser. No. 971,471
Int. Cl.³ C07D *313/04*
U.S. Cl. 260—333 **6 Claims**

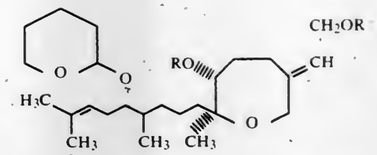
1. The process for the preparation of a compound of the formula



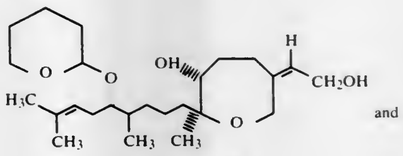
which comprises reacting a compound of the formula



with dihydropyran in the presence of p-toluenesulfonic acid to form a compound of the formula

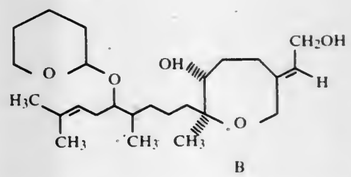


reacting the product formed with tetrabutylammonium fluoride to form a mixture of compounds of the formula



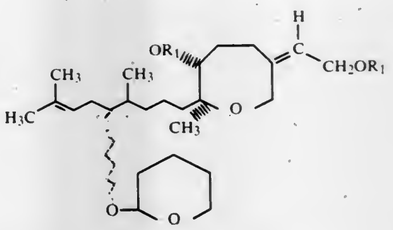
and

A

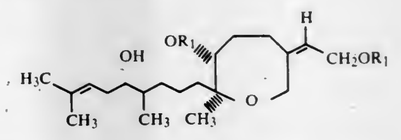


B

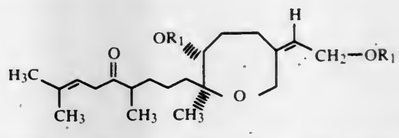
separating the compounds in the mixture, and then reacting compound A with an esterifying agent selected from a lower alkyl anhydride and a lower alkyl halide to form an ester of the formula



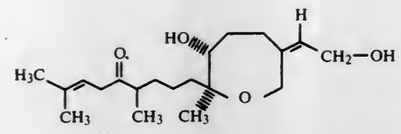
treating the product formed with an acid selected from acetic acid, p-toluenesulfonic acid and camphorsulfonic acid to form an alcohol of the formula



treating the alcohol formed with chromium trioxide/pyridine to form a ketone of the formula



and reacting the product formed with tetrabutylammonium hydroxide to form a compound of the formula



wherein R is a t-butyldiphenylsilyl group and R_1 is lower alkanoyl having 2–5 carbon atoms.

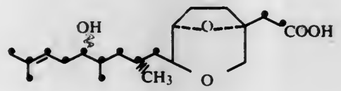
4,237,054

TOTAL SYNTHESIS OF (1RS,4SR,5RS)-4-(4,8-DIMETHYL-5-HYDROXY-7-NONENYL)-4-METHYL-3,8-DIOXABICYCLO[3.2.1] OCTANE-1-ACETIC ACID

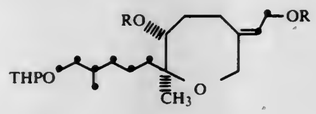
Robert H. K. Chen, Belle Mead, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed May 18, 1979, Ser. No. 40,346
Int. Cl.³ C07D *319/00*
U.S. Cl. 260—340.6 **11 Claims**

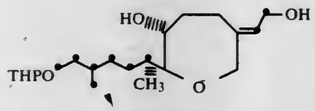
1. The process for the preparation of a compound of the formula



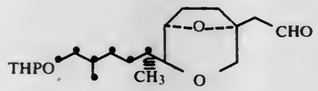
which comprises treating a compound of the formula



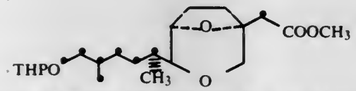
with a base to form a diol of the formula



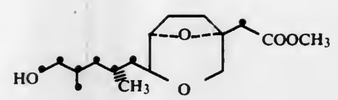
reacting the diol with an oxidizing agent to form an aldehyde of the formula



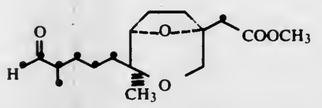
reacting the aldehyde with Jones reagent followed by treatment with diazomethane to form an ester of the formula



hydrolyzing the product formed with an acid to form an alcohol of the formula



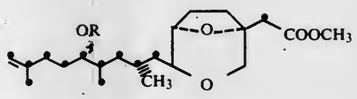
oxidizing the alcohol to form an aldehyde of the formula



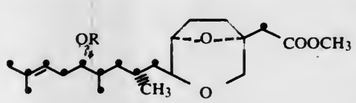
reacting the aldehyde with 3-methyl-3-butenyl magnesium bromide followed by reaction with an acid anhydride of the formula

$(R)_2O$

to form an ester of the formula

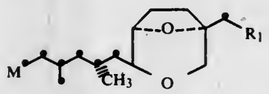


isomerizing the ester to form an isomer of the formula



and reacting the isomer with a base, wherein R is lower alkanoyl having 2–5 carbon atoms and THP represents a tetrahydropyranyl group.

8. A compound of the formula



wherein M is a tetrahydropyran-2-yloxy group or an hydroxy group and R_1 is a —$COOCH_3$ or CHO group.

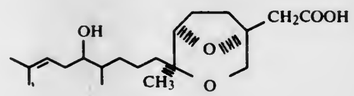
4,237,055

SYNTHESIS OF 1RS,4SR,5RS-4-(4,8-DIMETHYL-5-HYDROXY-7-NONEN-1-YL)-4-METHYL-3,8-DIOXABICYCLO[3.2.1]OCTANE-1-ACETIC ACID

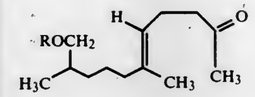
Zoltan G. Hajos, Princeton, and Michael P. Wachter, Bloomsbury, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 18, 1979, Ser. No. 49,760
Int. Cl.³ C07D *319/00*
U.S. Cl. 260—340.6 **14 Claims**

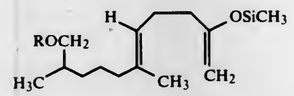
1. The process for the preparation of a compound of the formula



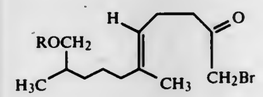
which comprises reacting a compound of the formula



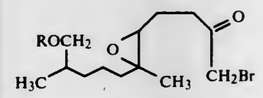
with lithium diisopropylamide followed by reaction with trimethylsilyl chloride in the presence of a base to form a compound of the formula



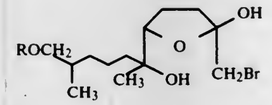
reacting the product formed with a brominating agent to form a compound of the formula



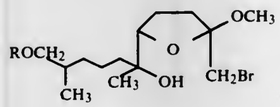
reacting the brominated product with a peracid to form a compound of the formula



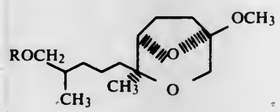
reacting the epoxide formed with acid to form a 5-membered ring hemiketal of the formula



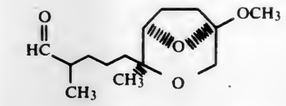
reacting the hemiketal with an alkylating agent to form a bromohydroxy acetal of the formula



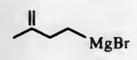
cyclizing the bromo tertiary alcohol to form a bicyclic oxido-oxepane of the formula



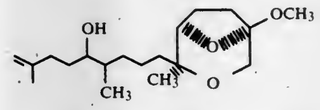
oxidizing the alcohol with an oxidizing agent to form an aldehyde of the formula



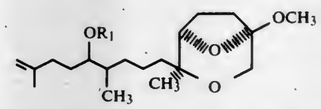
reacting the aldehyde with a Grignard reagent of the formula



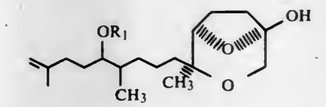
to form a compound of the formula



esterifying the alcohol formed with an esterifying agent to form an ester of the formula



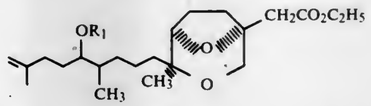
hydrolyzing the ketal with a hydrolyzing agent to form a hemiketal of the formula



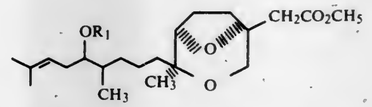
reacting the hemiketal formed with a compound of the formula

$(C_6H_5)_3P{=}CHCO_2C_2H_5$

to form a compound of the formula

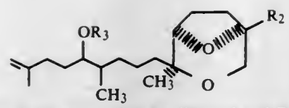


reacting the product formed with an isomerizing agent to form a compound of the formula



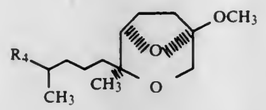
and reacting the product formed with an aqueous alcoholic base, wherein R is a benzyl or a t-butyldiphenylsilyl group and R_1 is lower alkanoyl.

12. A compound of the formula



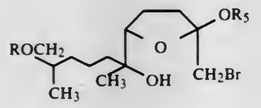
wherein R_3 is hydrogen or lower alkanoyl and R_2 is hydroxy, methoxy or carboethoxymethylene.

13. A compound of the formula



wherein R_4 is CH_2OH, CHO or $C_6H_5CH_2OCH_2$.

14. A compound of the formula



wherein R is benzyl or t-butyldiphenylsilyl and R_5 is hydrogen or methyl.

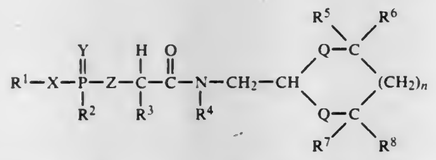
4,237,056

CYCLIC ACETAL-METHYL-CARBAMOYL-METHYL ESTERS OF PHOSPHONIC AND PHOSPHORIC ACID

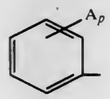
Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jul. 26, 1979, Ser. No. 61,132
Int. Cl.³ C07D *319/04, 317/10*
U.S. Cl. 260—340.7 **16 Claims**

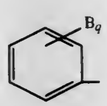
1. A compound of the formula



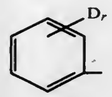
wherein X,Y and Z are each independently selected from the group consisting of oxygen and sulfur and Q is oxygen; R^1 is selected from the group consisting of alkyl, and



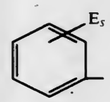
wherein A may be different at different positions and is selected from the group consisting of alkyl, alkoxy, alkylthio, halogen, nitro and cyano, and p is an integer from 0 to 5; R^2 is selected from the group consisting of alkyl, alkoxy, alkylthio, amino, alkylamino, dialkylamino and



wherein B may be different at different positions and is selected from the group consisting of alkyl, alkoxy, alkylthio, halogen, nitro and cyano, and q is an integer from 0 to 5; R^3 is selected from the group consisting of hydrogen, alkyl and



wherein D may be different at different positions and is selected from the group consisting of alkyl, alkoxy, alkylthio, halogen, nitro and cyano, and r is an integer from 0 to 5; R^4 is selected from the group consisting of hydrogen, alkyl, cycloalkyl and



wherein E may be different at different positions and is selected from the group consisting of alkyl, alkoxy, alkylthio, halogen, nitro and cyano, and s is an integer from 0 to 5; R^5, R^6, R^7, and R^8 are each independently selected from the group consisting of hydrogen and alkyl; and n is an integer from 0 to 3.

4,237,057

SYNTHESIS OF QUINONE PYRANO-GAMMA-LACTONE ANTIBIOTICS AND ANTIFUNGAL AGENTS

George A. Kraus, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 25, 1979, Ser. No. 42,314
Int. Cl.³ C07D *493/04*
U.S. Cl. 260—343.3 R **10 Claims**

1. A method of preparing quinone pyrano-gamma-lactones, said method comprising,

reacting, under anhydrous conditions, a two position functionally substituted 1,4 naphthoquinone with a two substituted acid labile alkoxy furan, said two position functionally substituted moiety of said 1,4 naphthoquinone being one which can be reduced to an alcoholic functional group to provide a first synthesis intermediate,

adding an acid stable alkylating agent in the presence of a base to said first synthesis intermediate to alkylate and protect the 1,4 position keto groups of said naphthoquinone,

reducing with a hydride the functional groups of said two position functionally substituted moiety to provide a second synthesis intermediate having alcoholic functional groups at said two position,

treating said second synthesis intermediate with a deblocking agent to remove the alkyl group from the alkoxy furan and thereafter treating with a Lewis base an internal cyclization agent to provide ring formation between said alcoholic functional group and said furan ring, and

thereafter, oxidatively dealkylating said 1,4 positions to provide a quinone pyrano-gamma-lactone.

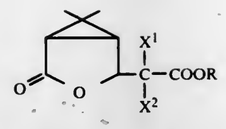
4,237,058

BICYCLIC LACTONE DERIVATIVES

Kiyoshi Kondo; Toshiyuki Takashima, and Minoru Suda, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 1, 1979, Ser. No. 90,218
Int. Cl.³ C07D *307/93*
U.S. Cl. 260—343.3 R **1 Claim**

1. A compound of the formula



wherein X^1 and X^2 are the same or different and each is a halogen atom, a trichloromethyl group, or a trifluoromethyl group, and R is an alkyl group of 1 to 4 carbon atoms.

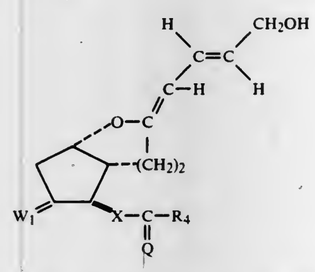
4,237,059

2-DECARBOXY-2-HYDROXYMETHYL-TRANS-2,3,4,5-TETRADEHYDRO-9-DEOXY-5,9α-EPOXY-PGF$_1$ COMPOUNDS

Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 936,295, Aug. 23, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,461
Int. Cl.³ C07D *311/02*
U.S. Cl. 260—345.2 **8 Claims**

1. A 4Z compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;

wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and

wherein R_4 is

(1) $—CR_5R_6—C_gH_{2g}—CH_3$

(2) $—CR_5R_6—Z$-(Ph)

(3) cis$—CH_2—CH═CH—CH_2CH_3$

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $—CR_5R_6—$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between $CR_5R_6—$ and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_7$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and

wherein X is

(1) trans$—CH═CH—$,

(2) cis$—CH═CH—$,

(3) $—C≡C—$, or

(4) $—CH_2CH_2—$;

including the lower alkanoates thereof.

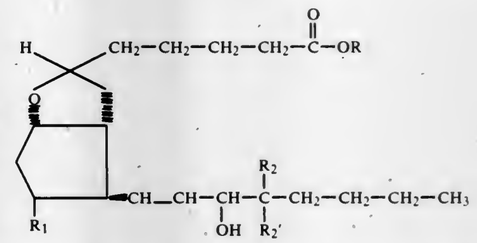
4,237,060

PROSTACYCLIN ANALOGS

George W. Holland, and Perry Rosen, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 23, 1979, Ser. No. 23,116
Int. Cl.³ C07D *307/935*
U.S. Cl. 260—346.22 **17 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl; R_1 is lower alkyl; R_2 is hydrogen, lower alkyl or fluoro; and R_2' is fluoro, trifluoromethyl or lower alkyl; and the dotted bond is optionally hydrogenated and with the proviso that when R_2 is fluoro, R_2' is lower alkyl or fluoro

and their optical antipodes or racemates.

4,237,061

ORGANOMETALLIC INTERCALATES

Jack W. Johnson, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 2, 1979, Ser. No. 191
Int. Cl.² C07F *7/00, 15/06*
U.S. Cl. 260—429.3 **13 Claims**

1. A composition of matter comprising an intercalation host and an intercalated guest, said host represented by $M(H_{1-y}A_yXO_4)_2.nH_2O$, where M is at least one tetravalent metal cation selected from the group consisting of zirconium, titanium, hafnium, cerium, thorium, tin, lead and germanium, A is at least one monovalent cation selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, ammonium and substituted ammonium of the formula $RR'R''R'''N^+$, where R, R', R'', and R''' are selected from the group consisting of hydrogen and hydrocarbon radicals, X is at least one element selected from the group consisting of phosphorus, arsenic and vanadium, "y" ranges from 0 to 1 and "n" ranges from 0 to 6 and said guest is an organometallic cation comprised of a transition metal selected from Groups IB to VIIB and VIII, Rows **4**, **5** and **6** of the Periodic Table of Elements and from 2 to 6 ligands bonded thereto, said ligands being independently selected from the group consisting of unsaturated hydrocarbons, organophosphites, organophosphines, organoarsines, organic isocyanides, carbon monoxide, nitric oxide, hydride, halide, pseudohalide, alkyl and aryl.

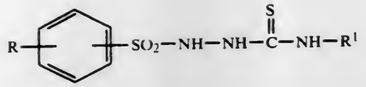
4,237,062

SULFONYLTHIOSEMICARBAZIDES, METAL COMPLEXES THEREOF, AND SOLUTIONS CONTAINING SUCH COMPOUNDS FOR USE IN EXTRACTION OF METAL VALUES

Ernest B. Spitzner, Minneapolis, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

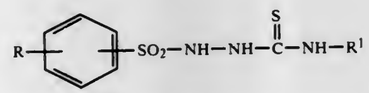
Filed May 21, 1979, Ser. No. 40,624
Int. Cl.³ C07F *3/06, 1/08, 15/04;* **C07C** *159/00*
U.S. Cl. 260—438.1 **20 Claims**

1. Compounds of the structure:



wherein R is a linear or branched chain alkyl group containing at least 8 carbon atoms, and R^1 is selected from the group consisting of alkyl, aryl, alkaryl and aralkyl, in which the alkyl groups are linear or branched chain containing from 1 to 20 carbon atoms, said compounds being further characterized as having solubilities of at least 2% by weight in essentially water-immiscible, liquid hydrocarbon solvents.

9. A composition of matter consisting essentially of a solution of a sulfonylthiosemicarbazide in an essentially water-immiscible, liquid hydrocarbon solvent, said solution containing at least 2% by weight of said sulfonylthiosemicarbazide, said sulfonylthiosemicarbazide being selected from compounds of the structure:



wherein R is a linear or branched chain alkyl group containing at least 8 carbon atoms and R^1 is selected from the group consisting of alkyl, aryl, alkaryl and aralkyl, in which the alkyl groups are linear or branched chain containing from 1 to 20 carbon atoms.

18. The composition of claim **9**, wherein said composition additionally contains an amount of a metal complex of said sulfonylthiosemicarbazide and a metal ion selected from the group consisting of Cu^{++}, Ni^{++}, Co^{++}, Co^{+++}, and Zn^{++}.

4,237,063

SYNTHESIS GAS CONVERSION

Weldon K. Bell, Pennington, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 896,542, Apr. 14, 1978, abandoned. This application May 23, 1979, Ser. No. 41,956

Int. Cl.[3] **C07C** *1/02, 1/04, 27/06*

U.S. Cl. 260—449 R **7 Claims**

1. A method for the conversion of synthesis gas, which comprises a mixture of gaseous carbon oxides and hydrogen, to alcoholic products and hydrocarbons whereby water gas shift activity is increased, which comprises passing said synthesis gas at conversion conditions over a catayst comprising an effective amount of alumina and a metal cyano cuprate having the formula:

$$A_xB_y[Cu(CN)_4]$$

where the charge on the $[Cu(CN)_4]$ anion of said cuprate is -3; where A and B are the same or different and are selected from the group consisting of zinc, iron, cobalt, nickel, ruthenium, thorium, rhodium, zirconium, hafnium, chromium, iridium, osmium, copper, rhenium, tungsten, titanium, manganese, molybdenum, lanthanum, cerium, uranium, hydrogen, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, and barium; and where x multiplied by the valence state of A plus y multiplied by the valence state of B equals $+3$.

4,237,064

PROCESS FOR PREPARING QUATERNARY AMMONIUM COMPOSITIONS

Richard A. Reck, Hinsdale, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 8, 1978, Ser. No. 940,532

Int. Cl.[3] **C07C** *141/04;* **C07F** *9/09*

U.S. Cl. 260—459 A **21 Claims**

1. A process for preparing a quaternary ammonium methylsulfate-containing composition from a tertiary amine selected from the group consisting of tertiary ammonium compounds containing one or two long-chain aliphatic groups, and mixtures thereof, comprising reacting said tertiary amine with dimethyl sulfate,

(a) in a reaction medium selected from the group consisting of compounds which have a melting point from about 0° C. to about 100° C., and which contain an ester linkage derived from a fatty acid which contains from about 8 to about 22 carbon atoms and a di- or polyhydric alcohol which contains from about 2 to about 6 carbon atoms,

(b) at a temperature above the melting point of the reaction medium and below the degradation temperature of the desired quaternary ammonium methyl sulfate;

(c) for a length of time sufficient to convert at least a portion of the tertiary amine to the desired quaternary ammonium methylsulfate.

3. A process for preparing a quaternary ammonium dimethyl phosphate-containing composition from a tertiary amine selected from the group consisting of tertiary ammonium compounds containing one or two long-chain aliphatic groups, and mixtures thereof, comprising reacting said tertiary amine with trimethyl phosphate,

(a) in a reaction medium selected from the group consisting of compounds which have a melting point from about 0° C. to about 100° C., and which contain an ester linkage derived from a fatty acid which contains from about 8 to about 22 carbon atoms and a di- or polyhydric alcohol which contains from about 2 to about 6 carbon atoms,

(b) at a temperature above the melting point of the reaction medium and below the degradation temperature of the desired quaternary ammonium dimethyl phosphate;

(c) for a length of time sufficient to convert at least a portion of the tertiary amine to the desired quaternary ammonium dimethyl phosphate.

4,237,065

PROCESS FOR THE PREPARATION OF N-PHOSPHONOMETHYL GLYCINE

Rodolphe Ehrat, Dinhard, Switzerland, assignor to Biological Chemical Activities Patents SA B.C.A.P., Luxembourg, Luxembourg

Filed Oct. 15, 1979, Ser. No. 84,532

Claims priority, application Switzerland, Oct. 27, 1978, 11133/78

Int. Cl.[3] **C07F** *9/38*

U.S. Cl. 260—502.5 **10 Claims**

1. A process for the preparation of N-phosphonomethyl glycine, wherein glycine is dissolved in an alcoholic solution of formaldehyde and a tertiary base, to the so obtained completed solution a dialkyl phosphite is added, the reaction mixture is subjected to an alkaline hydrolysis followed by an acidification whereupon the desired N-phosphonomethyl glycine is obtained by precipitation.

4,237,066

PREPARATION OF LOWER ALKYL THIOSEMICARBAZIDES

Danny B. Barton, Kansas City, Mo., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1978, Ser. No. 955,283

Int. Cl.[3] **C07C** *159/00*

U.S. Cl. 564—18 **6 Claims**

1. A process for the production of a lower alkyl-thiosemicarbazide comprising distilling off water from an aqueous solution containing hydrazine and an N-lower alkyldithiocarbamic acid quaternary ammonium salt at about 85° to 110° C. and under a pressure of about 700 to 900 mm Hg for a time less than about 2 hours but sufficient to remove substantially the stoichiometric amount of hydrogen sulfide thereby to effect pyrolysis while distilling off water, lower alkyl amine and hydrogen sulfide, and cooling the distilland to form crystals of lower alkyl-thiosemicarbazide.

4,237,067

PROCESS FOR THE MANUFACTURE OF α,β-UNSATURATED N-SUBSTITUTED CARBOXYLIC ACID AMIDES

Erich Küster, Krefeld; Bernhard Goossens, Velbert; Eduard Barthell, Krefeld, and Kurt Dahmen, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen & Cie., Krefeld, Fed. Rep. of Germany

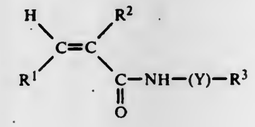
Filed May 3, 1979, Ser. No. 35,756

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819735; Aug. 21, 1978, 2836520

Int. Cl.[3] **C07C** *102/00*

U.S. Cl. 564—205 **11 Claims**

1. A process for the manufacture of an α,β-unsaturated N-substituted carboxylic acid amide of the formula



in which

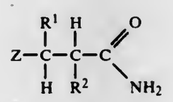
R^1 and R^2 are independently is H or CH_3,

Y is a divalent organic radical having 2–30 carbon atoms,

R^3 is H or a radical of the formula $-N(R^4)(R^5)$, and

R^4 and R^5 each independently is an alkyl radical having 1 to 4 carbon atoms,

comprising reacting an α,β-substituted carboxylic acid amid of the formula



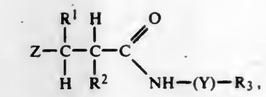
in which

Z is a hydroxy group or an alkoxy radical having 1 to 4 carbon atoms,

with an amine of the formula

$H_2N-(Y)-R_3$

at a temperature of about 100° to 200° C. with the elimination of ammonia thereby to form an N-substituted β-hydroxycarboxylic or β-alkoxycarboxylic acid amide of the formula



and heating such amide in the presence of a catalyst thereby to produce the corresponding α,β-unsaturated carboxylic acid amide.

4,237,068

PRIMARY AMINOACYLANILIDES

Robert N. Boyes, Auburn; Benjamin R. Duce, Westborough; Emil R. Smith, Shrewsbury, and Eugene W. Byrnes, Holden, all of Mass., assignors to Astra Pharmaceutical Products, Inc., Worcester, Mass.

Division of Ser. No. 651,420, Jan. 22, 1976, which is a continuation-in-part of Ser. No. 442,775, Feb. 15, 1974, abandoned, and Ser. No. 424,116, Dec. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 321,590, Jan. 8, 1973, and Ser. No. 321,800, Jan. 8, 1973, abandoned, each is a continuation-in-part of Ser. No. 167,031, Jul. 28, 1971, abandoned, said Ser. No. 442,775, is a division of Ser. No. 321,590, , which is a continuation-in-part of Ser. No. 167,031,.

This application Aug. 1, 1978, Ser. No. 929,916

Int. Cl.[3] **A61K** *31/165;* **C07C** *103/38, 103/375, 103/50*

U.S. Cl. 260—562 N **14 Claims**

1. The compound 2-amino-2′,6′-propionoxylidide, and the pharmaceutically acceptable salts thereof.

4. The compound 2-amino-2′-ethyl-6′-methylpropionanilide, and the pharmaceutically acceptable salts thereof.

14. The compound 3-amino-2-methyl-2′,6′-propionoxylidide and the pharmaceutically acceptable salts thereof.

4,237,069

PRODUCTION OF ALPHA-HYDROXY OXIMES

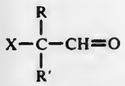
Harry E. Ulmer, Chesapeake, Va., and Chempolil T. Mathew, Randolph, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 2, 1979, Ser. No. 54,205

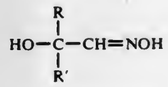
Int. Cl.[3] **C07C** *131/00*

U.S. Cl. 564—258 **11 Claims**

1. A process for producing an alpha-hydroxy-oxime which comprises reacting an alpha-halo-aldehyde of the formula



in aqueous media with an hydroxylamine-generating reagent at a pH between about 2 and about 9 to form the corresponding alpha-hydroxy-oxime of the formula



with R and R′ each being independently H, alkyl, aryl, alkylaryl or any of them substituted with hydroxy, Cl or Br and X being Cl or Br.

4,237,070

NOVEL PROCESS FOR PREPARING ANILINE BY CATALYTIC REACTION OF VINYL CYCLOHEXENE AND NITROBENZENE

John A. Patterson, Fishkill, N.Y.; Wheeler C. Crawford, Houston, and James R. Wilson, Missouri City, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,041
Int. Cl.[3] C07C *85/11*
U.S. Cl. 260—580 18 Claims

1. The method which comprises

passing a charge stream containing vinyl cyclohexene and $R'NO_2$, wherein R' is alkyl, cycloalkyl, aryl, aralkyl, or alkaryl, into contact at hydrogen transfer conditions with a supported catalyst bearing (i) a Group VIII noble metal and, per mole of Group VIII noble metal, (ii) 1–20 moles of Group I B metal, present as oxide, and (iii) 0–20 moles of Group VI B metal present as oxide, thereby forming a product stream containing $R'NH_2$; and recovering said product stream containing $R'NH_2$.

4,237,071

OLEFIN OXIDATION PROCESS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 811,425, Jun. 29, 1977, Pat. No. 4,152,354. This application Dec. 29, 1978, Ser. No. 974,465
Int. Cl.[3] C07C *45/34*
U.S. Cl. 568—401 8 Claims

1. In a process for the conversion of the olefinic carbon-carbon double bonds of an olefinic hydrocarbon reactant to ketone carbonyl groups by contacting an olefinic hydrocarbon selected from the group consisting of (a) acyclic olefinic compounds containing 3–20 carbon atoms per molecule and having 1, 2, or 3 olefinic carbon-carbon double bonds per molecule and (b) cyclic olefinic compounds containing 5–20 carbon atoms per molecule and having 1, 2, or 3 olefinic carbon-carbon double bonds per molecule with a reaction system comprising:

oxygen;

a diluent comprising at least two liquid phases including an aqueous phase and an organic phase;

a catalyst comprising:

(1) palladium,

(2) copper, and

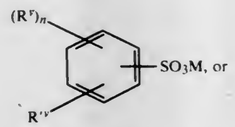
(3) an alkali metal or alkaline earth metal chloride; and a surfactant selected from the group of:

(1) quaternary ammonium salts of the general formula $(R'''')_4N^+X^-$,

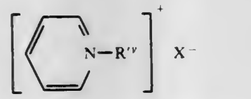
(2) alkali metal alkyl sulfates of the general formula $R''OSO_3M$,

(3) alkali metal salts of alkanoic acids of the general formula $R''CO_2M$,

(4) alkali metal salts of alkaryl sulfonic acids of the general formula



(5) 1-alkyl pyridinium salts of the general formula



wherein R'''' is an alkyl radical of from 1 to 20 carbon atoms and wherein the total number of carbon atoms in said quaternary ammonium salt is from about 8 to about 30 carbon atoms; X^- is selected from the group consisting of Br^-, Cl^-, I^-, F^-, $R''''CO_2^-$, QSO_3^-, BF_4^-, HSO_4^- wherein Q is an aryl or alkaryl radical of 6 to 10 carbon atoms; R'^v is an alkyl radical of from 10 to about 20 carbon atoms; M is an alkali metal; R^v is an alkyl radical of 1 to 4 carbon atoms and wherein n is 0 or an integer of from 1 to 4,

whereby the reaction is conducted under such conditions of temperature and pressure that oxidation of the olefinic hydrocarbon reactant takes place, the improvement comprising using as said organic phase an alcohol having 3 to about 12 carbon atoms.

4,237,072

PREPARATION OF OPTICALLY ACTIVE CITRONELLAL

Paul Aviron-Violet, Saint-Genis Laval, and Tuan-Phat Dang, Lyon, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 30, 1978, Ser. No. 920,981
Claims priority, application France, Jul. 4, 1977, 77 21377
Int. Cl.[3] C07C *47/20*
U.S. Cl. 568—459 18 Claims

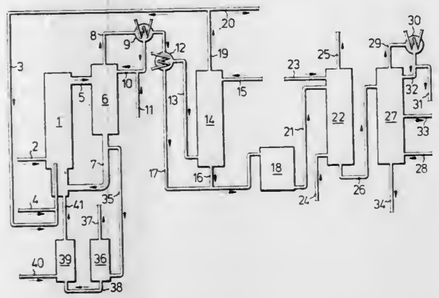
1. A process for the preparation of optically active citronellal by the asymmetrical hydrogenation of neral or geranial, comprising treating neral or geranial with hydrogen in a liquid reaction medium in the presence of an amount sufficient to catalyze the conversion of said neral or geranial to said optically active citronellal of an optically active catalyst consisting essentially of a complex which is soluble in the reaction medium and formed from a rhodium derivative and a chiral phosphine under a hydrogen pressure and at a temperature sufficient for hydrogenating the neral or geranial into the citronellal and for a period of time sufficient to convert substantially all of the neral or geranial into the citronellal.

4,237,073

PROCESS FOR THE MANUFACTURE OF ACETALDEHYDE

Walter Steppich, Wiesbaden, and Rudolf Sartorius, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 20, 1979, Ser. No. 50,313
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827380
Int. Cl.[3] C07C *47/07*
U.S. Cl. 568—401 5 Claims



1. In a process for the manufacture of acetaldehyde which includes reacting ethylene and oxygen in a reactor in the presence of an aqueous solution of palladium and copper chloride at a temperature of 100° to 150° C. and a pressure of 1.0 to 6.0 atmospheres to form a gaseous mixture, continuously regenerating a portion of said solution by heating said solution outside of the reactor, cooling the gaseous mixture to form a condensed and noncondensed portion, recycling the condensed portion to the reactor, adding water to either the condensed portion or directly to the reactor in an amount approximately equal to the amount of water present in the noncondensed portion, washing the noncondensed portion with water to form an aqueous acetaldehyde solution, separating the aqueous acetaldehyde solution by an extractive distillation step using water as an extraction agent and further separating the bottoms product of said extractive distillation step by a second distillation step to obtain substantially pure acetaldehyde as an overhead product and waste water as a bottoms product, the improvement comprising recycling a portion of the waste water to satisfy the water demand required to wash the noncondensed portion of the gaseous mixture and discharging any residual waste water.

4,237,074

ISOMERIZATION OF DICHLOROBUTENES

Higashi Ito, and Seiichi Watanabe, both of Ohmimachi, Japan, assignors to Denkyi Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 941,685, Sep. 12, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,257
Claims priority, application Japan, Sep. 30, 1977, 52-116879; Sep. 30, 1977, 52-116880
Int. Cl.[3] C07C *17/00*
U.S. Cl. 570—236 5 Claims

1. In an isomerization reaction between 3, 4-dichlorobutene-1 and 1, 4-dichlorobutene-2 in the presence of a catalyst at 80° to 130° C., the improvement comprising:

conducting the isomerization reaction in the presence of a cuprous chloride-1,3-diphenylguanidine or cuprous chloride-di-o-tolylguanidine catalyst or mixtures thereof.

4,237,075

FORMAMIDE CATALYSTS FOR REACTING PHOSPHORUS HALIDES WITH THIOLS

Stanley T. D. Gough, Whitehouse Station, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 653,069, Jan. 28, 1976, abandoned, which is a continuation of Ser. No. 536,512, Dec. 26, 1974, abandoned. This application Jun. 5, 1979, Ser. No. 45,800
Int. Cl.[3] C07F *9/16, 9/165, 9/40, 9/46*
U.S. Cl. 260—976 6 Claims

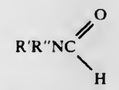
1. In the process for preparing esters of phosphorous acid, phosphonous acid, or phosphinous acid, which process comprises:

(A) reacting a compound having the formula R_nPCl_{3-n}, wherein R is alkyl (C_1–C_6), alkoxy (C_1–C_6), or alkylthio (C_1–C_6) and n is 0–2; with

(B) an alkanethiol (C_1–C_6);

(C) at a temperature of between about 15° C. and about 100° C;

(D) the improvement comprising virtually eliminating the induction period of the reaction by carrying out said process in the presence of a catalyst comprising a formamide having the formula:



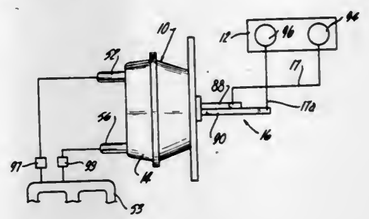
wherein R' and R'' are the same or different and are H or alkyl (C_1–C_3).

4,237,076

TWO STAGE VACUUM BREAK

Benjamin C. Benjamin, Flint, and Leon F. LaVene, Durand, both of Mich., assignors to Schmelzer Corporation, Durand, Mich.

Division of Ser. No. 776,533, Mar. 11, 1977, Pat. No. 4,181,065. This application Mar. 29, 1979, Ser. No. 24,967
Int. Cl.[3] B01D *47/00;* F01B *19/00*
U.S. Cl. 261—23 A 4 Claims



1. A charge forming system for an internal combustion engine comprising; a carburetor, a choke valve in the carburetor, said choke valve normally being urged to a closed position, a fluid motor connected to the choke valve and adapted to move it from a closed position toward an open position at a controlled rate, said fluid motor including a primary housing, an auxiliary housing disposed in said primary housing, a diaphragm, said diaphragm having a primary portion supporting said auxiliary housing for movement in said primary housing and forming a first vacuum chamber at one side and a first atmospheric pressure chamber at the other side of said auxiliary housing and primary diaphragm portion, said diaphragm having an auxiliary portion in said auxiliary housing forming a second vacuum chamber at one side and a second atmospheric pressure chamber at the other side of said auxiliary portion of said diaphragm, said first and second atmospheric pressure chambers being in constant communication with each other and said first and second vacuum chambers being isolated from each other, an output member connected to said choke valve and to said auxiliary portion of said diaphragm, resilient means urging said diaphragm and operatively connected choke valve to a closed position, said first vacuum chamber being connected to a first source of manifold vacuum pressure and said second vacuum chamber being connected to a second source of manifold vacuum pressure, means associated with said sources to communicate vacuum pressure to a selected one of said first and second vacuum chambers to move said output member and operatively connected choke valve from a closed position to an intermediate open position and to the other of said vacuum chambers to move said output member and choke valve from said intermediate open position toward a fully open position, a second choke valve normally being urged to a closed position, and an additional output member connected to said second choke valve and to said auxiliary housing for movement of said second choke valve to an open position upon establishment of vacuum pressure in said first vacuum chamber, said output members being disposed in parallel adjacent relation to each other for movement simultaneously and independently of each other.

4,237,077

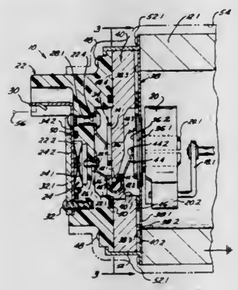
AUTOMATIC CHOKE SYSTEM

Peter G. Berg, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 29, 1978, Ser. No. 937,896
Int. Cl.[3] F02M *1/12*
U.S. Cl. 261—39 E 13 Claims

1. In combination with an internal combustion engine having air-fuel portions which warm above a selected temperature during engine operation and assure full vaporization of the fuel in an air-fuel mixture being furnished to the engine and which tend to cool below that temperature within a delay period after

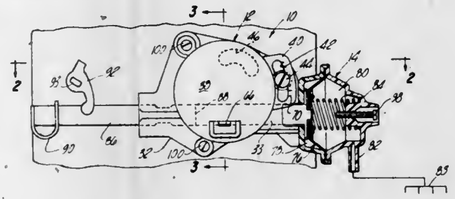
termination of engine operation, an electrical power source, and a carburetor having an air-fuel induction passage furnishing an air-fuel mixture to the engine and having an unbalance-mounted, air-movable choke valve mounted for variable movement across the passage to control air flow through the passage, a choke control system comprising thermostatic spring means urging the choke valve toward a closed position in the passage with a force increasing as a function of decreases in the temperature of the spring means from a predetermined level to provide a fuel enriched air-fuel mixture to the engine on a first initiation of engine operation, electrical heater means operable from said power source during operation of the engine, and heat storing and transferring means disposed between the heater means and spring means for receiving and storing heat from the heater means and for transferring such heat to the spring means to reduce the choke valve closing force of the spring means and permit sufficient opening of the valve by the flow of air through the passage against the valve to substantially eliminate such fuel enrichment after said engine portions have become heated to said selected temperature, said heat storing and transferring means having sufficient heat storage capacity to continue to transfer heat to the spring means for a time after termination of engine operation so that for a major



part of said delay period the spring means are maintained at a temperature preventing any substantial fuel enrichment of the air-fuel mixture on a restarting of the engine, said heater means comprising a first heater device operable on initiation of engine operation, a second heater device, and thermally responsive switch means actuable above a predetermined ambient temperature to operate the second heater device, said heat storing and transferring means having one side lying along said spring means to transfer heat to the spring means, having a first surface portion with a selected spacing from said one side having said first heater device secured in heat-transfer relation thereto defining a first heat-transfer path of a selected length between the first heater device and the spring means for initiating heat transfer to the spring means with a selected delay after the initiation of engine operation when ambient temperature is below said predetermined ambient temperature, and having a second surface portion with a relatively much smaller spacing from said one side having said second heater device secured in heat transfer relation thereto defining a second, relatively much shorter heat-transfer path between the second heater device and the spring means for initiating heat-transfer to the spring means promptly after the initiation of engine operation when ambient temperature is above said predetermined ambient temperature.

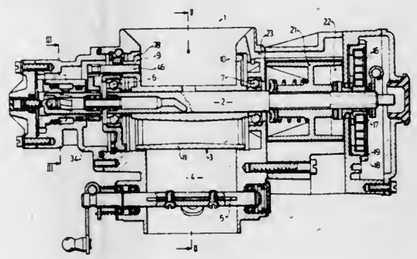
4,237,078
CARBURETOR CHOKE CONTROL
Benjamin C. Benjamin, Flint, Mich., assignor to Schmelzer Corporation, Durand, Mich.
Filed Jun. 11, 1979, Ser. No. 47,361
Int. Cl.³ F02M *1/12*
U.S. Cl. 261—39 B **7 Claims**

1. A choke control mechanism for regulating the choke of a carburetor on an internal combustion engine comprising; a housing formed of plastic material and forming adjacent closed cavities in said housing, a bimetal coil in one of said cavities having one end connected to said choke and the other end connected to a metal plate member, said plate member being disposed in said housing for limited rotation to coil or uncoil said bimetal coil, an arm connected to said plate member and protruding from said cavity to the exterior of said housing for rotating said plate member to selected positions while said housing remains stationary, an electric heating element within said housing and positioned on said metal plate member adjacent to said bimetal coil, circuit means connected to said heater means for heating the latter, said circuit means including one terminal in fixed position on the exterior of said housing during



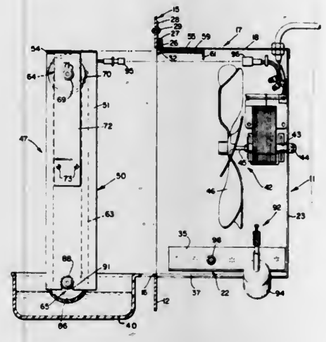
rotation of said plate relative to said housing and electrically connected to said metal plate member, a fastening means forming part of said circuit means for releasably holding said arm in selected positions and grounding said plate member electrically to said carburetor, said bimetal coil being operative to urge said choke to a closed position when the engine is relatively cold and not operating with a force inversely proportional to engine temperature and to urge said choke to an open position in response to heat from said engine and from said heating element, a diaphragm supported in the other of said cavities and responsive to a source of vacuum created when said engine is operating to move said choke valve from said closed position to a partially open position in opposition to the closing force of said bimetal coil.

4,237,079
FUEL SUPPLY DEVICE
Max Greiner, Gerlingen; Klaus J. Peters, Affalterbach; Peter Schelthas, Stuttgart; Peter Stiefel, Ditzingen, and Hermann Nusser, Asperg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Continuation of Ser. No. 901,673, May 1, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,437
Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720335
Int. Cl.³ F02M *9/08*
U.S. Cl. 261—44 A **6 Claims**



1. A fuel supply system for a mixture-compressing, externally ignited internal combustion engine having an air intake manifold for conducting a flow of combustion air, an arbitrarily activatable throttle member in said air intake manifold, an air metering member in said air intake manifold upstream of said throttle member for metering the quantity of air aspirated by said internal combustion engine, a fuel metering device for delivering a metered quantity of fuel proportional to the aspirated air quantity to said air metering member for mixing with said quantity of aspirated air, an air line connected to said air intake manifold upstream of said air metering member and to said fuel metering device for adding air to the metered fuel delivered to said air metering member and a filter having a fine-meshed web disposed upstream of the connection between said air line and said fuel metering device, said filter being adapted for filtering the flow of air therethrough and being impervious to fuel so as to prevent the reverse flow of fuel.

4,237,080
HUMIDIFIER ASSEMBLIES
Richard D. Elliott, Marietta, Ohio, assignor to Skuttle Mfg. Co., Marietta, Ohio
Filed Jan. 11, 1979, Ser. No. 2,794
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—80 **8 Claims**

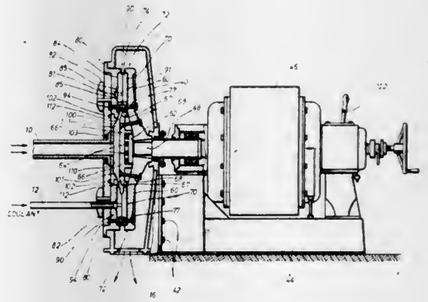


1. A removable humidifier subassembly comprising a frame having a front member and parallel side members, generally parallel upper and lower rollers extending between said side members, motor means on the outer side of one of the side members for driving the upper roller, means in the lower ends of the side members mounting the ends of the lower roller for free rotation, an endless pad of water pickup material mounted on said rollers and adapted to be driven by the motor operated upper roller, and said front member being apertured sufficiently to allow passage of air therethrough and through the pad intermediate said rollers, and substantially horizontal slide members on the upper end of said frame extending oppositely laterally outwardly from the upper ends of said side members above the level of said upper roller adapted for slidable interfit with sockets in a supporting housing for removably mounting the subassembly in said housing.

4,237,081
METHOD FOR PREPARATION OF FIBRILS
Clarence R. Murphy, Houston, Tex.; Robert E. Boehme, deceased, late of Houston, Tex.; by Helen J. Boehme, legal representative, Kalamazoo, Mich., and by Joseph P. Phelp, executor, Norristown, Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Apr. 3, 1978, Ser. No. 892,799
Int. Cl.³ C08G *51/21*; B24D *3/00*
U.S. Cl. 264—9 **6 Claims**

1. A process for the continuous manufacture of olefin polymer fibrils in a disc mill provided with one stationary disc and one rotatable disc, each of which carries a plurality of protuberances on its working face, said discs being closely positioned to each other to define an annular working cavity therebetween, said mill being further provided with a central liquid reservoir adapted to feed liquid to the annular working cavity, said process consisting essentially of:

a. Feeding a hot viscous olefin polymer solution into said central liquid reservoir;
b. Maintaining the temperature in said central liquid reservoir sufficiently high to maintain substantially all of the olefin polymer in solution;
c. Rotating said rotatable disc so as to feed hot olefin polymer solution from said central reservoir into said working cavity and through a plurality of tortuous liquid paths defined by the protuberances of the disc faces whereby the olefin polymer solution is broken up into a plurality of uniaxially oriented streams and attenuated to uniaxially orient the solute olefin polymer molecules in said streams;
d. Feeding sufficient coolant liquid into said working cavity to cool the olefin polymer solution to a temperature sufficiently low so that substantially all of the solute olefin polymer is precipitated in the form of uniaxially oriented olefin polymer fibrils;
e. Discharging from said working cavity a mixture of uniaxially oriented olefin polymer fibrils, olefin polymer solvent, and coolant liquid; and
f. Recovering the olefin polymer fibrils from the mixture discharged in step (e);



the olefin polymer solution employed in step (a) being at a temperature of at least 100° C. and having a viscosity of at least 50 centipoises; said olefin polymer having an intrinsic viscosity of at least 3.5 and being selected from the group consisting of:

a. An olefin polymer selected from the group consisting of:
   (1) an ethylene homopolymer,
   (2) A copolymer containing at least 90 weight % of polymerized ethylene and the balance a polymerized olefin hydrocarbon containing at least 4 carbon atoms,
   (3) a propylene homopolymer, and
   (4) a copolymer containing at least 50 weight % of polymerized propylene and the balance polymerized ethylene;
b. A mixture of olefin polymers of (a), and
c. A mixture of polymers containing at least 20 weight % of an olefin polymer of (a) and up to 80 weight % of a diluent polymer that is soluble at 100° C. in the solvent employed in step (a);

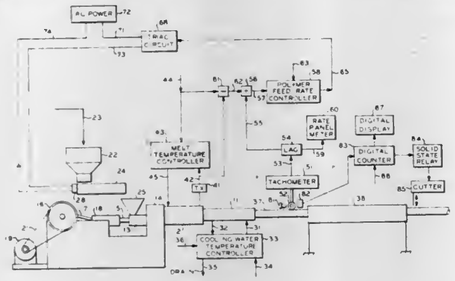
the solvent included in the polymer solution employed in step (a) being a hydrocarbon or a chlorinated hydrocarbon, being a liquid at ambient temperature and having an atmospheric boiling point of at least about 150° C.; and the coolant liquid employed in step (d) being water or the solvent included in the polymer solution employed in step (a).

4,237,082

AUTOMATIC CONTROL OF EXTRUSION RATE

Ronald J. LaSpisa, Bartlesville, Okla., and Richard F. Giles, Pinch, W. Va., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 666,283, Mar. 12, 1976, Pat. No. 4,120,630. This application Oct. 4, 1978, Ser. No. 948,605
Int. Cl.[3] B29F *3/08*
U.S. Cl. 264—40.6 6 Claims



2. A method comprising feeding particles into a plasticization zone; heating said particles in said plasticization zone to provide molten material; passing the thus produced molten material through a long land die and removing heat from said material passing through said long land die to produce an extrudate having at least the outer portions thereof solidified upon leaving said long land die; utilizing automatic sensing means to measure the actual rate of extrusion of said extrudate and to establish a first signal representative thereof; utilizing means to establish a second signal representative of the desired rate of extrusion of said extrudate; utilizing automatic control means to establish, responsive to said first and second signals, a control signal having a predetermined relationship to the magnitude and sign of the difference between said actual rate of extrusion and said desired rate of extrusion; utilizing automatic control means for varying, responsive to said control signal, the rate at which said particles are fed into said plasticization zone; utilizing automatic sensing means to measure the actual temperature of the molten material at the inlet of said long land die and to establish a third signal representative thereof; utilizing means to establish a fourth signal representative of the desired temperature for the molten material at the inlet of said long land die; and utilizing automatic control means to manipulate, responsive to the difference between said third and fourth signals, the heating of the particles in said plasticization zone.

4,237,083

PROCESS OF MANUFACTURING A MICROPOROUS SHEET MATERIAL

James Young; Charles H. Geissel, both of Corvallis, and Piotr Zenczak, Philomath, all of Oreg., assignors to Evans Products Company, Portland, Oreg.

Continuation of Ser. No. 865,413, Dec. 29, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,900
Int. Cl.[3] B29D *27/00*
U.S. Cl. 264—41 14 Claims

1. A process of manufacturing a microporous sheet comprising: plasticating a blend comprising a polyolefin selected from the group consisting of homopolymers and copolymers of ethylene, propylene and buylene, and mixtures thereof; finely divided silica; and a substantially water-insoluble plasticizer selected from the group consisting of dialkyl phthalates and dialkyl adipates having between about two to eleven carbon atoms in the oxo-alcohol moiety; forming a sheet from the plasticated blend; and contacting the sheet with water for a period of time sufficient to remove an amount of the plasticizer from the sheet sufficient to render the sheet microporous.

4,237,084

METHOD OF PRODUCING INTERNAL BOUNDARY LAYER CERAMIC COMPOSITIONS

David A. Payne, Champaign; Sang M. Park, Urbana, both of Ill., and Otto C. Jahnke, El Cajon, Calif., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Mar. 26, 1979, Ser. No. 23,708
Int. Cl.[3] H01B *3/12*; C04B *35/46, 35/64*
U.S. Cl. 264—61 5 Claims

1. A method of producing a fine-grained ceramic composition comprising the steps of:

(a) calcining at a temperature of about 1000–1400° C. about 90–99.99% by weight of a fine particle size polycrystalline alkaline earth metal titanate with about 0.01 to 10% by weight of a hexavalent metal oxide having the formula $(MO_3)(Bi_2O_3)_x$, where M is tungsten or molybdenum and x is 0.0–7, whereby said titanate is rendered semiconducting;

(b) mixing the product of step (a) with about 0.01–35% by weight of a lead germanate composition having the formula $(PbO)_x(GeO_2)_{y-z}(SiO_2)_z$, where x is 1–6, y is 1–3, and z is 0.0–0.75y; and

(c) firing the mixture of step (b) at a temperature of about 850–1300° C. to provide by liquid-phase sintering an insulating boundary layer of said lead germanate composition about the grains of said semiconducting alkaline earth metal titanate.

4,237,085

METHOD OF PRODUCING A HIGH DENSITY SILICON CARBIDE PRODUCT

Richard H. Smoak, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,403
Int. Cl.[2] C04B *35/56*
U.S. Cl. 264—65 12 Claims

1. A method of sintering under substantially pressureless conditions a mixture consisting of particulate silicon carbide containing less than about 6.0 percent by weight carbon in the form of elemental carbon or a carbon source material comprising the steps of:

a. forming a compact of said mixture, and

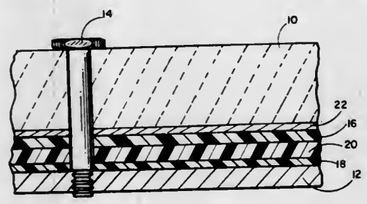
b. sintering said compact in an atmosphere containing boron to produce a sintered product having a density greater than about 85 percent of theoretical.

4,237,086

METHOD FOR RELEASABLY MOUNTING A SUBSTRATE ON A BASE PROVIDING HEAT TRANSFER AND ELECTRICAL CONDUCTION

Richard W. Gehle, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 821,034, Aug. 1, 1977, abandoned. This application Feb. 22, 1979, Ser. No. 13,952
Int. Cl.[3] B29H *21/04*
U.S. Cl. 264—130 9 Claims



1. A method of mounting a substrate for microelectronic circuitry on a base wherein a releasable attachment is formed between an attachment surface of said substrate and a related attachment surface of said base, wherein said attachment surfaces of said substrate and of said base are of electrically conductive material, said method comprising:

treating at least one of said attachment surfaces with a surface modifier to form a film of a fluoropolymer release agent maintained on said at least one of said attachment surfaces wherein said film is thick enough to have anti-sticking properties but no thicker than about 1000 angstroms;

disposing a layer of an adhesive, catalytically polymerizable, and conformable material filled with an electrically conductive material between said substrate and base attachment surfaces; and

applying opposing forces to said substrate and said base in a manner which applies pressure to said conformable material and causes said conformable material to flow into and fill voids and irregularities in said attachment surfaces, thereby mating said attachment surfaces to each other for relatively high thermal conductivity and relatively low electrical resistance between said surfaces.

4,237,087

METHOD OF EMBOSSING WOOD COMPOSITION BOARD

Donald B. Jones, Leola, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Oct. 5, 1979, Ser. No. 82,013
Int. Cl.[3] B32B *3/26*
U.S. Cl. 264—134 3 Claims

1. A method for embossing filled particle-board or fiberboard comprising:

(a) applying a water-borne basecoat composition comprising an acrylic emulsion resin, a urea resin, and an acid catalyst to the filled surface of said particleboard or fiberboard;

(b) curing the water-borne basecoat composition;

(c) forming a mirror image of a pattern to be embossed on a metal embossing plate; and

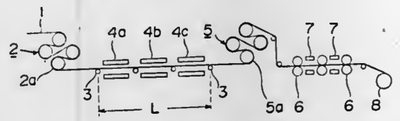
(d) embossing the base-coated particle-board or fiberboard with said metal embossing plate at a press temperature equal to or above 350° F. and a pressure equal to or above 1,500 psi whereby, when the embossing plate is removed, the cured water-borne base-coat does not separate from the particleboard or fiber-board.

4,237,088

STRETCHING OF POLYETHYLENE TEREPHTHALATE FILMS

Shohei Yoshimura, and Tutomu Isaka, both of Inuyama, Japan, assignors to Toyobo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 878,938, Feb. 16, 1978, Pat. No. 4,134,957, which is a continuation of Ser. No. 640,797, Dec. 15, 1975, abandoned, and a continuation-in-part of Ser. No. 420,442, Nov. 30, 1973, abandoned, which is a continuation of Ser. No. 191,856, Oct. 22, 1971, abandoned. This application Oct. 12, 1978, Ser. No. 950,696
Claims priority, application Japan, Oct. 26, 1970, 45/94093
Int. Cl.[3] B29C *17/02*
U.S. Cl. 264—235.8 15 Claims



9. In a method for further stretching a biaxially oriented polyethylene terephthalate film in one direction, the improvement which comprises conveying said film to a stretching zone, further stretching the film in one direction at a stretching ratio greater than one and not more than three while being maintained at a temperature of 80° to 200° C. in the stretching zone having a length in the direction of stretching which is greater than the breadth of said film, said temperature being maintained in said film throughout the entire extent of said stretching zone, to give a stretched film having a uniform thickness which is substantially the same, or greater than, the thickness of the unstretched film, with all of the material originally present in the unstretched film being present in the stretched film, conveying the stretched film from the stretching zone to a heat-setting zone, and heating the stretched film in said heat-setting zone at a temperature above the second order transition point of the film but below the melting point thereof, the heat-setting step being conducted at a tension no greater than that required to avoid a slackening of the film, the ratio of the length of the stretching zone to the breadth of the film being greater than 1 to 500.

4,237,089

METHOD OF REDUCING INTERNAL STRESSES AND IMPROVING THE MECHANICAL PROPERTIES OF INJECTION MOLDED THERMOPLASTIC RESINS

Josef Kubat, and Jan K. Djurner, both of Gothenburg, Sweden, assignors to Sunds AB, Helsingborg, Sweden

Continuation of Ser. No. 748,916, Dec. 9, 1976, abandoned. This application Jul. 19, 1978, Ser. No. 926,212
Int. Cl.[3] B29F *1/00*
U.S. Cl. 264—328.1 8 Claims

1. In a method of injection molding a thermoplastic resin under conditions of melt temperature, mold temperature, injection time, holding time, and cooling time appropriate for said thermoplastic resin, the improvement comprising carrying out the injection molding at injection and holding pressures from 250–800 MPa, whereby the molded thermoplastic resin has reduced internal stresses and an essentially reduced tendency to mold shrinkage, warping, crazing and cracking, post-shrinkage and time-dependent deformation.

4,237,090

METHOD FOR INHIBITING CORROSION IN AQUEOUS SYSTEMS

James R. DeMonbrun, Knoxville; Charles R. Schmitt, and James M. Schreyer, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 15, 1978, Ser. No. 960,982
Int. Cl.[3] C02F *1/50, 5/12*; C23F *11/06, 11/18*
U.S. Cl. 422—13 5 Claims

1. In a system wherein an aqueous liquid is in contact only with a metallic material selected from the group consisting of aluminum and aluminum alloys, the method for retarding corrosion of said metallic material, comprising:

(a) incorporating in said system:

(1) 2–10 ppm by weight of tolytriazole,

(2) an effective amount of a biodegradable organic biocide;

(3) 500–1000 ppm by weight of sodium metasilicate,

(4) 500–2000 ppm by weight of sodium nitrite, and

(5) 500–2000 ppm by weight of sodium tetraborate, all of these concentrations being based on the weight of water in said system, and

(b) maintaining the pH of the resulting solution at a value in the range of 7.5 to 8.0 by the addition of boric acid.

4,237,091

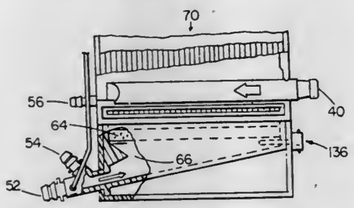
TEMPERATURE PROBE

Donn D. Lobdell, Golden; Stephen J. Herman, Evergreen, and Robert L. Anderson, Boulder, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Jun. 21, 1978, Ser. No. 917,469
Int. Cl.[3] A61M *1/03*
U.S. Cl. 422—46 1 Claim

1. A disposable blood oxygenator, comprising:

a venous blood inlet chamber comprised of a first plastic housing and a venous blood inlet connected thereto,
bubble generating means for forming oxygen bubbles in the blood in said blood inlet chamber,
a gas exchange column means extending upwardly above said blood inlet chamber for transporting said bubbles while gas is exchanged with the blood,
heat exchange means downstream of said inlet chamber for exchanging heat between the blood and another fluid,
defoaming means connected to and communicating with the outlet of said gas exchange means for breaking up bubbles,
a blood reservoir chamber connected to and below said defoaming means for collecting oxygenated and heated blood, said reservoir chamber comprising a plastic housing, and
blood temperature measuring means for monitoring the temperature of the blood in said inlet or reservoir chambers, each said means comprising,
a tubular metallic heat-conductive member with one sealed end and one open end, said sealed end extending



through a wall of said chamber, and the interior of said tubular member being adapted to receive an elongated temperature probe, said probe, being supported by a cylindrical member, and
a molded plastic plug for supporting said tubular metallic member, said plug extending through and sealed to the plastic chamber wall, said tubular metallic member extending through and sealed to said plug, and said plug having means for retaining said probe in said heat-conductive member, said retaining means cooperating with said cylindrical member of said probe such that protuberances extending from said plug or said cylindrical member cooperate with helical slots on the other member,
whereby blood temperature can be measured before or after its passage through said heat and gas exchange means by temperature probes that can be quickly twisted into sterile, secure, heat-sensing communication with the blood and quickly disengaged when the oxygenator has been used and is ready for disposal.

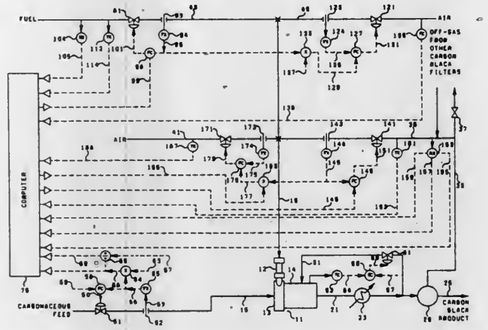
4,237,092

METHOD AND APPARATUS FOR PRODUCING CARBON BLACK

Robert J. Lewis, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 2, 1978, Ser. No. 946,654
Int. Cl.³ C09C *1/48;* G01N *31/00*
U.S. Cl. 422—62 **12 Claims**

1. In an apparatus for producing carbon black comprising:
a carbon black reactor having a reaction chamber, a combustion chamber, and a combustion tunnel, said combustion tunnel opening into said combustion chamber for introducing hot combustion gases into said combustion chamber, said combustion chamber opening into the carbon black reaction chamber for introducing hot combustion gases and a carbonaceous feed into said carbon black reaction chamber;
means for supplying a carbonaceous feed to said combustion chamber, the contacting of said carbonaceous feed with said hot combustion gases in said combustion chamber and said carbon black reaction chamber converting said carbonaceous feed to carbon black and gas;
means for separating said carbon black from said gas;
means for supplying said carbon black and said gas from said carbon black reaction chamber to said means for separating said carbon black from said gas;
means for supplying at least a portion of the gas which has been separated from said carbon black from said means for separating said carbon black from said gas to said combustion tunnel as a recycle gas;
means for supplying fuel to said combustion tunnel; and
means for supplying an oxygen containing gas to said combustion tunnel, the combustion of said recycle gas and said fuel with said oxygen containing gas supplying said hot combustion gases;
the improvement comprising:



means for controlling the flow rate of said fuel to said combustion tunnel;
means for controlling the flow rate of said recycle gas to said combustion tunnel; and
means for controlling the flow rate of said oxygen containing gas to said combustion tunnel so as to maintain a desired ratio of said oxygen containing gas to said fuel and a desired ratio of said oxygen containing gas to said recycle gas, the rate of flow of said fuel and the rate of flow of said recycle gas to said combustion tunnel being controlled so as to maintain the ratio of the volume of said hot combustion gases introduced into said combustion chamber to the volume of said carbonaceous feed introduced into said combustion chamber substantially constant at a desired temperature for said hot combustion gases introduced into said combustion chamber.

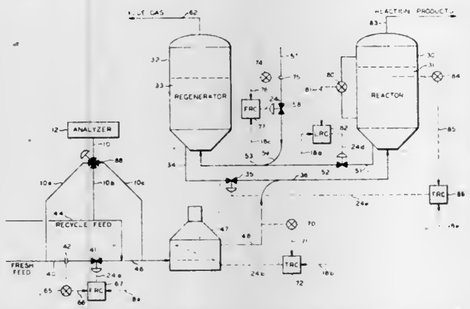
4,237,093

HYDROCARBON CRACKING

Raymond D. McCoy, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 514,933, Oct. 15, 1974, Pat. No. 4,132,629.
This application Dec. 27, 1978, Ser. No. 973,657
Int. Cl.³ G01N *21/00;* G05D *7/00*
U.S. Cl. 422—62 **4 Claims**

1. Apparatus comprising:
a reactor;
means for passing a feedstock to said reactor;
means for removing reaction products from said reactor;
a sample valve means for taking a liquid sample of said feedstock;
a liquid chromatographic analyzer means for analyzing said sample and producing an analysis signal representative of the content of said sample, said liquid chromatographic analyzer means having a packed chromatographic column, a chromatographic detector means, and a backflush valve means operably connected to said sample valve means, said column and said detector;
means for accepting said analysis signal and generating therefrom a first signal representative of the ratio of heavy aromatics to total aromatics within said sample; and
means for controlling at least one reaction condition within said reactor in response to said first signal.
2. Apparatus comprising:
a catalytic reactor;
means for passing a feedstock to said catalytic reactor;
means for removing reaction products from said catalytic reactor;
means for heating said feedstock prior to the introduction of said feedstock into said catalytic reactor;
means for generating a first signal representative of the ratio of heavy aromatics to total aromatics within said feedstock;
means for establishing a second signal representative of the desired flow rate of said feedstock in response to said first signal;
means for establishing a third signal representative of the actual flow rate of said feedstock;



means for comparing said second signal and said third signal and for establishing a fourth signal responsive to the difference between said second signal and said third signal;
means for manipulating the flow rate of said feedstock in response to said fourth signal to thereby manipulate the catalyst to feedstock ratio in said catalytic reactor;
means for establishing a fifth signal representative of the desired temperature of said feedstock in response to said first signal;
means for establishing a sixth signal representative of the actual temperature of said feedstock;
means for comparing said fifth signal and said sixth signal and for establishing a seventh signal responsive to the difference between said fifth signal and said sixth signal; and
means for manipulating the heat supplied from said means for heating said feedstock in response to said seventh signal, to thereby control the extent to which said feedstock is vaporized and also control the amount of heat carried to said catalytic reactor by said feedstock.

4,237,094

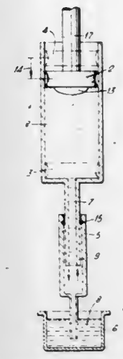
APPARATUS FOR PRECISE MUTUAL DILUTION AND DOSAGE OF LIQUIDS

Osmo A. Suovaniemi; Pertti Ekholm, both of Helsinki, and Esko Kaukanen, Espoo, all of Finland, assignors to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi, Helsinki, Finland

Filed Jan. 5, 1979, Ser. No. 1,396
Claims priority, application Finland, Jan. 10, 1978, 780069
Int. Cl.³ G01N *1/14*
U.S. Cl. 422—100 **5 Claims**

1. Apparatus for the precise dilution of liquid comprising:
a first cylinder;
an intake and exhaust tube, coupled for liquid communication to said first cylinder;
piston means coupled to said first cylinder to cause intake and exhaust of liquid into and out of said first cylinder through said intake and exhaust tube;

a second cylinder having a smaller cross-sectional area than said first said cylinder;
at least a portion of said intake and exhaust tube being slidably disposed within said second cylinder, to define a piston within said second cylinder;
liquid intake and exhaust means coupled to said second cylinder to thereby permit the intake and exhaust of said liquid into said first and second cylinders; and



said piston means in said first cylinder and said intake and exhaust tube disposed in said second cylinder being operable independently of each other, said intake and exhaust tube of said first cylinder forming the piston of said second cylinder to intake and exhaust liquid into and out of said second cylinder when said intake and exhaust tube is moved relative to said second cylinder.

4,237,095

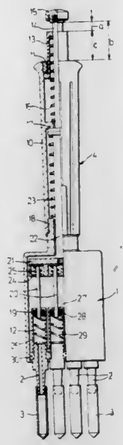
TIP VESSEL FOR USE IN CONNECTION WITH A DOSAGE PIPETTE

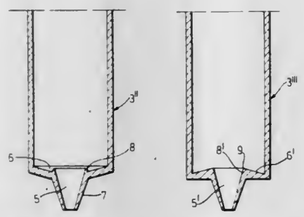
Osmo A. Suovaniemi; Jukka Tervamäki, and Aarre Kukka, Helsinki, all of Finland, assignors to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi, Helsinki, Finland

Filed Apr. 20, 1979, Ser. No. 31,940
Claims priority, application Finland, Apr. 25, 1978, 781282; Nov. 7, 1978, 783383
Int. Cl.³ B01L *3/02;* G01N *1/10, 1/14*
U.S. Cl. 422—100 **4 Claims**

1. A pipette tip vessel adapted for frictional connection to the outer conical surface of the tip cone of a pipette, said tip vessel including
an outer cylindrical wall having first and second ends, said first end forming a first input opening which is adapted to frictionally engage the outer conical surface of said tip cone;
a first annular portion extending substantially inwardly from an area adjacent said second end of said cylindrical wall, said annular portion defining a second input aperture; and
a frustoconical member having its base attached about the periphery of said second input aperture and extending outwardly therefrom with the apex end of said frustoconi-

cal member defining an output aperture, said base including a raised inwardly directed portion disposed about said



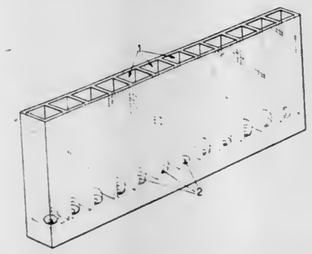


second input aperture and extending into the interior of said tip vessel.

4,237,096
DEVICE FOR MULTIPLE ANALYSES

Michel Popoff, Plaisir; Marie-Jose Brochon, Fontenay sous Bois, and Georges Brault, Savigny sur Orge, all of France, assignors to Institut Pasteur, Paris, France

Filed Jul. 6, 1978, Ser. No. 922,340
Claims priority, application France, Jul. 6, 1977, 77 20846
Int. Cl.[2] G01N *1/00*
U.S. Cl. 422—102 **14 Claims**

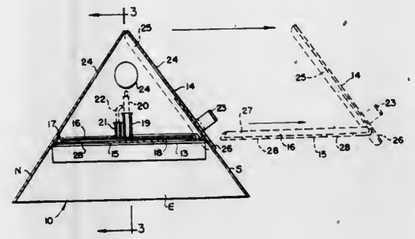


1. Device for use in carrying out simultaneously multiple analysis reactions in a liquid medium, said device comprising a compartment adapted to receive the liquid, separate analysis compartments, a distributing channel communicating said liquid receiving compartment with said analysis compartments, valve-forming means provided in each analysis compartment capable of isolating liquid contained in the analysis compartment from liquid remaining in the distribution channel, each valve-forming means being constituted by a movable solid element positioning itself in resting position so as to close the communication between the analysis compartment and the distribution channel, and opening this same communication under the effect of movement of the liquid on introduction of the liquid into the liquid receiving compartment.

4,237,097
INCENSE BURNER

Raleigh McDuffie, 11240 Kennebec, Detroit, Mich. 48205

Filed May 14, 1979, Ser. No. 39,232
Int. Cl.[3] A62B *7/08;* F23D *3/16*
U.S. Cl. 422—126 **8 Claims**



1. An incense burner comprising a hollow housing of pyramid shape having pairs of opposed triangular side walls converging to an apex, adapted for mounting upon a support surface;

a vent aperture within at least one side wall adjacent said apex;

one side wall being cut away from said apex downwardly defining a triangular opening in said side wall;

a pair of opposed guide rails mounted on the interior of the opposed side walls adjacent said triangular opening;

a triangular door having a handle overlying said one side wall at a corresponding inclination as a continuation thereof and normally overlapping and closing said triangular opening;

a horizontally disposed drawer of rectangular shape along one edge secured to said door at an acute angle thereto and slidably supported upon said rails;

a candle holder mounted upon said drawer adapted to support a candle;

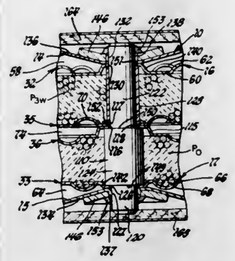
and an incense holder mounted upon said drawer closely adjacent said candle adapted to support a stick of combustible incense closely adjacent said candle; whereby, as the candle gradually burns down, its flame is adapted to ignite said stick of incense, with the products of combustion escaping through said vent aperture.

4,237,098
CATALYTIC CONVERTER WITH HOUSING-BED-PLENUM REINFORCING AND SPACING MEANS

David E. Roberts, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1979, Ser. No. 33,041
Int. Cl.[3] B01J *8/04;* F01N *3/28, 3/34, 7/18*
U.S. Cl. 422—171 **2 Claims**

1. In a catalytic converter for internal combustion engine exhaust gases and of the type having a sheet metal housing enclosing a pair of sheet metal catalyst pellet beds with a stud extending through aligned openings in the members of the housing and both the inner and outer members of each bed to reinforce all these members and also maintain a certain spacing between the members of each bed and wherein the inner bed members also cooperate to form a plenum between the beds: the improvement comprising in combination, a neck integral with one of the inner bed members and extending about its opening and formed over the edge of the opening in the other inner bed member whereby the inner bed members are fixed together in alignment prior to their assembly in the converter, first spacer means integral with the stud for abutting oppositely facing inner sides of the members of one of the beds to thereby maintain a predetermined spacing therebetween, one end of the stud extending outward through the opening in the outer member of said one bed and also through the opening in one of the housing members, the other end of the stud extending outward through the opening in both of the inner bed members and also through both the opening in the outer member of the

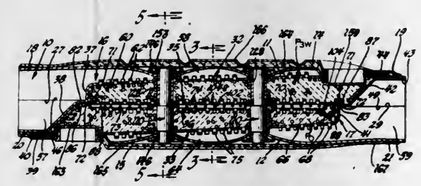


other bed and the opening in the other housing member, and second spacer means received about the stud and abutting at one end thereof with the inner side of the outer member of said other bed and at the opposite end thereof cooperating with said first spacer means to sandwich both the inner bed members therebetween to thereby maintain a predetermined spacing between the members of said other bed and whereby on external clamping of the housing members to the outer bed members at the stud, such clamping and spacing is permanently retained by fixing the housing members to the ends of the stud.

4,237,099
CATALYTIC CONVERTER WITH DUAL CATALYST PELLET BEDS AND PLENUM THEREBETWEEN

William L. Alley, Flushing; David E. Roberts; Charles J. Root, both of Flint, and Michael R. Foster, Columbiaville, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1979, Ser. No. 33,050
Int. Cl.[3] B01J *8/04;* F01N *3/28, 3/34*
U.S. Cl. 422—171 **3 Claims**

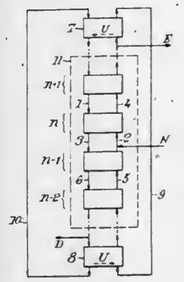


1. In a catalytic converter for internal combustion engine exhaust gases and of the type having a sheet metal housing comprised of a pair of housing shell members cooperatively enclosing and also providing an inlet and an outlet for a pair of sheet metal catalyst pellet beds wherein each of the beds has a perforated outer bed member cooperating with one of the housing shell members so that the inlet and outlet are directly open within the housing to the perforated area of the respective outer bed members and wherein the outer bed members have corresponding flanges extending on opposite sides thereof between the inlet and outlet sandwiched between and welded to corresponding flanges on the housing shell members and wherein each of the beds also has a perforated inner bed member for cooperating with its outer bed member to retain the pellets therebetween while permitting gas flow therethrough and for also cooperating with the inner bed member of the other bed to form a plenum for gas flow between the beds and wherein an air passage extends through the housing to the plenum to deliver air thereto: the improvement comprising in combination, a shoulder integral with and extending across each of the outer bed members outward of its perforated area and between its flanges, mating peripheral flanges on the inner bed members having portions along opposite sides thereof clamped but slidably movable between the welded flanges of the outer bed members while the remaining portions of the mating inner bed member flanges are thereby caused to bear on only their inner bed side against the respective shoulders on the outer bed members whereby the inner bed members cooperate with the respective outer bed members to completely separate the pellets in the beds while relative expansion with heat is permitted between the inner bed members and the outer bed members and also between the inner bed members and the housing shell members.

4,237,100
ISOTOPIC ENRICHMENT OF URANIUM WITH RESPECT TO AN ISOTOPE

Pierre Delvalle, Juvisy sur Orge, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 444,932, Feb. 22, 1974, Pat. No. 4,012,480. This application Jan. 25, 1977, Ser. No. 762,788
Claims priority, application France, Feb. 27, 1973, 73.06881
The portion of the term of this patent subsequent to Mar. 5, 1994, has been disclaimed.
Int. Cl.[2] C01G *43/00;* B01D *59/22, 15/04*
U.S. Cl. 423—6 **10 Claims**



1. Apparatus for producing, from a source of uranium containing at least two distinct isotopes, a product containing uranium enriched with respect to said source in one of said isotopes comprising

an exchange cascade for effecting isotope enrichment comprising a plurality of sequentially connected stages for effecting isotope exchange with a U III-rich effluent stage at one end and a U IV-rich effluent stage at another end, said cascade containing a first phase and a second distinct phase, at least one of said phases being liquid, said first phase containing U III and said second phase containing U IV, each of said stages having means for contacting said first and second phases together to enrich the U IV in the lighter of said isotopes while enriching the U III in the heavier of said isotopes, all surfaces of said stages making contact with said first phase being electrically insulating, said cascade including means for producing countercurrent flow of said distinct phases with respect to each other,

an oxidizing reflux connected to said U III-rich effluent stage comprising

means for receiving said first phase flowing out of said U III-rich effluent stage,

means for oxidizing U III derived from said first phase to form U IV and introducing said formed U IV into said second phase, and

means for causing the flow of said second phase with U IV introduced thereinto into said U III-rich effluent stage,

a reducing reflux connected to said U IV-rich effluent stage comprising
means for receiving said second phase flowing out of said U IV-rich effluent stage,
means for reducing U IV derived from said second phase to form U III and introducing said formed U III into said first phase, and
means for causing the flow of said second phase with U III introduced thereinto into said U IV-rich effluent stage,
an inlet connected to said cascade for admitting a source of uranium, and
an outlet connected to said cascade for delivering a product enriched in one of said isotopes with respect to said source.

9. A process for producing, from a source of uranium containing at least two isotopes, a product containing uranium enriched with respect to said source in one of said isotopes, comprising the steps
providing from said source U III in a first phase and U IV in a second phase, one of said phases being liquid and the other being solid,
contacting said first and second phases under conditions such that oxidation of U III does not occur, said contacting effecting exchange of isotopes between U III and U IV to enrich the U IV in the lighter of said isotopes,
extracting U IV from said second phase after said contacting,
reducing said extracted U IV to U III, said reduction being carried out in a liquid phase,
transferring said reduced U III into said first phase which has been first depleted in uranium,
extracting U III from said first phase after said contacting,
oxidizing said U III so extracted to U IV,
transferring said oxidized U IV into said second phase which has first been depleted in uranium, and
withdrawing a product containing uranium enriched in one of said isotopes with respect to said source.

4,237,101

PROCESS FOR TREATING SOLID CARBONACEOUS FOSSIL FUELS AND THE PRODUCTS THUS PREPARED

John W. Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.

Division of Ser. No. 593,712, Jul. 7, 1975, Pat. No. 4,084,938, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Apr. 14, 1978, Ser. No. 896,241
Int. Cl.[2] C10L *9/10*; C10B *57/00*
U.S. Cl. 423—20 **30 Claims**

1. A process for treating solid fossil fuels comprising
intimately contacting solid fossil fuel in particulate form selected from the group consisting of coal, lignite, peat and admixtures thereof with a liquid aqueous medium containing a catalytically effective amount of a catalyst,
the solid fossil fuel having active sites therein which react with the liquid aqueous medium in the presence of the said catalyst to produce soluble organic compounds,
the particles of the solid fossil fuel being intimately contacted with the liquid aqueous medium in the presence of the said catalyst until the said active sites thereof react to produce therein organic compounds which are soluble in a (1) liquid organic solvent, (2) aqueous acidic medium, or (3) aqueous basic medium,
the catalyst being prepared by a process comprising
admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,
the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,
the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,
the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,
reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,
admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and
agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles,
separating the resultant treated particles of solid fossil fuel from the aqueous medium containing the said catalyst, and
thereafter extracting soluble organic compounds from the treated particles of solid fossil fuel with at least one liquid extractant for the said soluble organic compounds selected from the group consisting of
(a) liquid organic solvent,
(b) an aqueous acidic medium, and
(c) an aqueous basic medium.

4,237,102

PROCESS FOR OBTAINING PURE ALUMINA BY THE HYDROCHLORIC ATTACK OF ALUMINOUS ORES AND EXTRACTION OF THE IMPURITIES BY MEANS OF A SULPHURIC TREATMENT

Joseph Cohen, and Alain Adjemian, both of Aix-en-Provence, France, assignors to Aluminum Pechiney, Lyon, France

Filed May 8, 1979, Ser. No. 35,440
Claims priority, application France, May 18, 1978, 78 15369
Int. Cl.[3] C01F *7/22, 7/26*
U.S. Cl. 423—126 **5 Claims**

1. A process for obtaining pure alumina from calcined or uncalcined ore containing impurities of metals selected from the group consisting of iron, titanium, sodium, potassium, magnesium, and calcium comprising:
(a) attacking the ore with hot hydrochloric acid to provide a residue and a liquor containing dissolved aluminum chloride and impurities,
(b) separating the attacking liquor from the residue,
(c) washing the separated residue with aqueous medium to extract water solubles,
(d) recycling the wash liquor from step (c) to constitute a part of the liquor used to attack the ore in step (a),
(e) concentrating the liquor separated from the residue in step (b) until at most 75% of the alumina is precipitated as aluminum chloride hexahydrate,
(f) separating the precipitated aluminum chloride hexahydrate from the remaining liquor containing in solution dissolved aluminum chloride and impurities;
(g) introducing gaseous HCl into the liquor separated from the precipitated aluminum chloride hexahydrate in step (f) to precipitate residual aluminum chloride hexahydrate from the solution,
(h) separating the aluminum chloride hexahydrate precipitate in step (g) from the hydrochloric liquor which still contains dissolved impurities,
(i) recycling the aluminum chloride hexahydrate separated in step (h) to the liquor separated from the residue in step (b),
(j) mixing the hydrochloric acid liquor from step (h) with sulphuric acid liquor and HCl,
(k) heating the mixture of step (j) to concentrate the mixture and release HCl,
(l) absorbing the HCl released from the mixture in step (k)
(m) washing the aluminum chloride hexahydrate separated from the liquor in step (f) with the HCl liquor from the absorption step (l)
(n) separating the wash liquor from the aluminum chloride hexahydrate washed in step (m),
(o) recycling the wash liquor from step (n) to make up a part of the hydrochloric acid liquor for attacking the ore in step (a) and
(p) thermally decomposing the separated aluminum chloride hexahydrate from step (n) to produce pure alumina.

4,237,103

METHOD FOR DISPOSAL OF SODIUM WASTE MATERIAL

Glen V. Prible, Malvern, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 29, 1978, Ser. No. 920,394
Int. Cl.[3] C01B *33/32*
U.S. Cl. 423—207 **15 Claims**

1. A method for disposal of sodium containing waste material comprising:
(a) simultaneously introducing sodium containing waste material and silica bearing material into an incinerator, at least a portion of the incinerator being lined with a refractory material which tends to react with free sodium and deteriorate, the ratio by weight of the sodium and silica in the thus introduced materials being in the range of 0.4 to 0.8;
(b) combusting the sodium containing waste material and silica bearing material to provide a combustion product including a sodium silicate compound whereby deterioration of refractory materials in the incinerator by reaction with free sodium is reduced.

4,237,104

FLUE GAS TREATMENT FOR SULFUR DIOXIDE REMOVAL

Peter Urban, Northbrook, Ill.; John C. Stauter, Edmond, Okla., and William K. Tolley, Arlington Heights, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 30, 1979, Ser. No. 34,806
Int. Cl.[3] C01B *17/00*
U.S. Cl. 423—242 **7 Claims**

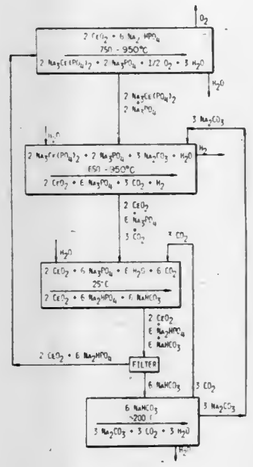
1. In a process for the absorptive removal of sulfur dioxide from a gaseous mixture by contacting said gaseous mixture in a scrubbing zone with a scrubbing liquor comprising a buffered solution of an alkali metal sulfite and bisulfite, the alkalinity of said scrubbing liquor being maintained by the addition thereto of an aqueous alkaline reagent solution comprising sodium carbonate or sodium bicarbonate having a relatively high pH with respect to said scrubbing liquor, said aqueous alkaline reagent solution having dissolved therein an undesirable quantity of silica contaminant which, upon the addition of said aqueous alkaline reagent solution to said scrubbing liquor tends to precipitate from solution and form deleterious deposits which interfere with the functioning of said process, the improvement which comprises the addition of a water soluble acid salt of a metal selected from the group consisting of iron, cobalt, nickel, copper and aluminum to said aqueous alkaline reagent solution prior to the addition of said aqueous alkaline reagent solution to said scrubbing liquor thereby effecting a chemical reaction between said silica and said acid salt to obtain a silicon containing material having a minimum deleterious effect when precipitated and relatively minor interference with the functioning of said process.

4,237,105

THERMOCHEMICAL CYCLIC SYSTEM FOR SPLITTING WATER AND/OR CARBON DIOXIDE BY MEANS OF CERIUM COMPOUNDS AND REACTIONS USEFUL THEREIN

Carlos E. Bamberger, Oak Ridge, and Paul R. Robinson, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 20, 1979, Ser. No. 50,379
Int. Cl.[3] C01B *1/02*
U.S. Cl. 423—306 **9 Claims**



1. A method for producing a trialkali metal cerous phosphate comprising reacting ceric oxide with a compound selected from the group consisting of monobasic alkali metal phosphates, dibasic alkali metal phosphates, alkali metal pyrophosphates, and alkali metal metaphosphates at a temperature above about 650° C. to cause the formation of a trialkali metal cerous phosphate.

2. A method for producing hydrogen comprising reacting a trialkali metal cerous phosphate with a first reactant selected from the group consisting of trialkali metal phosphates and cerous phosphates and a second reactant selected from the group consisting of alkali metal carbonates and alkali metal bicarbonates in the presence of water at a temperature above about 650° C. to cause the formation of gaseous hydrogen.

3. A cyclic process for producing hydrogen comprising the steps of
(a) reacting ceric oxide with a compound selected from the group consisting of monobasic alkali metal phosphates, dibasic alkali metal phosphates, alkali metal pyrophosphates, and alkali metal metaphosphates to yield oxygen, water and a solid product,
(b) reacting the thus-produced solid product with a reactant selected from the group consisting of alkali metal carbonates and alkali metal bicarbonates in the presence of water to yield ceric oxide, trialkali metal phosphate, hydrogen and carbon dioxide,
(c) reacting the thus-produced trialkali metal phosphate with water and carbon dioxide to yield alkali metal bicarbonate and monobasic or dibasic alkali metal phosphate,
(d) recycling ceric oxide produced in step (b) to step (a), and
(e) recycling monobasic or dibasic alkali metal phosphate produced in step (c) to step (a).

4,237,106
PRODUCTION OF SOLID AMMONIUM POLYPHOSPHATE BY CONTROLLED COOLING

Gordon C. Hicks, Sheffield, and George H. Megar, Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 629,281, Nov. 6, 1975, now Defensive Publication No. T950,011. This application Apr. 9, 1976, Ser. No. 675,586

Int. Cl.³ C01B *15/16, 25/26*

U.S. Cl. 423—315 **2 Claims**

1. An improved process for the solidification of ammonium polyphosphate melts high in nonortho species into strong, nontacky particles of ammonium polyphosphate eminently suitable for fertilizer material, which comprises introducing wet-process phosphoric acid containing 54 to 72 percent by weight P_2O_5 into inline reactor means, said inline reactor means comprising a common pipe-type reactor; simultaneously introducing a stream of ammonia into said inline reactor means in quantities sufficient to maintain therein a mole ratio of NH_3:H_3PO_4 in the range from about 0.8 to 1.0; simultaneously introducing a stream of water into said inline reactor means in quantities sufficient to maintain a reaction temperature of about 500° to about 600° F.; contacting said wet-process acid with said streams of ammonia and water in said common pipe reactor at about atmospheric pressure and forming at temperatures in the range of about 500° to about 600° F. in said inline reactor means a resulting melt of ammonium polyphosphate containing upwards to about 60 percent of the P_2O_5 values therein as polyphosphate; exhausting water vapor formed by heat of said ammoniation reaction in said inline reactor means and excess ammonia vapor into means for recovery of said ammonia vapor; introducing said melt into a first-stage pugmill cooler open to ambient atmospheric pressure, in which the melt is worked mechanically and the temperature of said melt is decreased to a range of about 300° to about 350° F. by simultaneously introducing either a stream of air or a stream of particles of recycled fines from a later-mentioned crushing step, or both; simultaneously introducing a second stream of ammonia into said cooler to increase the NH_3:H_3PO_4 mole ratio of said ammonium polyphosphate melt to about 1.0 to 1.2; withdrawing the resulting cooled melt from the end of said cooler; introducing said withdrawn melt onto second-stage cooler means, said second-stage cooler means open to ambient atmospheric pressure and comprising an endless metal belt, the surface of which is cooled with streams of water maintained at various temperatures from about 50° to about 180° F.; withdrawing solidified ammonium polyphosphate material from the end of said second-stage cooler means; introducing said withdrawn material into a common crusher; withdrawing crushed material from said crusher; introducing said crushed material into sizing means; returning particles of predetermined size from said sizing means into said first-stage cooler means and withdrawing from said sizing means particles of ammonium polyphosphate as product, said process characterized by the fact that the crystalline material is formed in sufficiently large crystal size and quantity to solidify any amorphous matter in the product withdrawn from said second-stage cooler, and said product withdrawn from said second-stage cooler containing in the range from about 30 to about 55 percent of its total P_2O_5 content as polyphosphate.

4,237,107
CELLULAR CARBON BEADS AND PROCESS FOR FABRICATION

Jacques Gillot, Grand-Lancy; Stuart F. Exell, Geneva, and Benno Lux, Veyrier, all of Switzerland, assignors to Battelle Memorial Institute, Switzerland

Continuation of Ser. No. 728,406, Sep. 30, 1976, abandoned, which is a division of Ser. No. 453,083, Mar. 20, 1974, abandoned. This application Jun. 21, 1978, Ser. No. 917,582

Claims priority, application Switzerland, Mar. 20, 1973, 4071/73; Mar. 20, 1973, 4072/73

Int. Cl.³ C01B *31/00, 31/02*

U.S. Cl. 423—445 **10 Claims**

1. A process for the manufacture of spherical cellular beads of carbon consisting of a plurality of interior and peripheral cells wherein peripheral walls of said peripheral cells form the spherical external surface, said peripheral walls having a thickness of between 50–500 microns, said bead having an internal central part confined within said peripheral walls comprising cells with approximately uniform dimensions and surrounded by the peripheral walls in which the dimensions of the cells, as well as the volume fraction they occupy progressively decreases from the inside to the peripheral cells comprising the steps of:

(a) preparing a mixture which comprises:

(1) at lease one organic polymer precursor material, which is capable of being transformed into a rigid thermoset polymer which is selected from the group consisting of phenoplast resins, thermoset polyurethane resins, and mixtures of polymers of furfuryl alcohol and polyurethane resins; and

(2) dividing this mixture into particles;

(c) introducing and suspending the particles in a fluidized bed comprising at least one pulverulent inert solid material, the bed being subjected to an agitating motion, while the suspended particles are prevented from touching one another by said pulverulent material;

(d) heating the separated particles in the bed for a period of time in the order of 30 minutes so as to cause liberation of expansion gases to effect their expansion at a rate to form individual spherical cellular beads with non-coalesced cells internal of the beads in which the volume fraction the internal cells occupy progressively decreases from the inside to the peripheral cells with peripheral walls of a thickness between 50–500 microns and through which the expansion gases are vented and said heating effecting hardening of the beads while still separated one from another; and then

(e) carbonizing said hardened beads by progressively heating to a temperature lying between 1000° C. and 1200° C., for a time comprising between 1 and 24 hours, under a nonoxidizing atmosphere to form said spherical cellular beads of carbon and while carbonizing venting gaseous materials therein through said peripheral walls and the beads remain intact.

4,237,108
PROCESS FOR PRODUCING CARBON FABRIC

Mototada Fukuhara, and Ken-ichi Morita, both of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 834,308, Sep. 19, 1977, abandoned. This application Oct. 9, 1979, Ser. No. 82,527

Claims priority, application United Kingdom, Dec. 9, 1976, 51434/76

Int. Cl.³ D01F *9/12*

U.S. Cl. 423—447.4 **10 Claims**

1. A process for producing a carbon fabric comprising the steps of:

subjecting an acrylonitrile polymer fiber to thermal setting treatment at a temperature of from 100° to 350° C. under a tension of at least 0.01 gram/denier in hot air or steam to obtain a fiber having a fusing temperature of at least 310° C., a shrinkage of not larger than 5 percent and a tensile strength of at least 3.5 grams/denier,

weaving or knitting the thermally set fiber into a woven or knitted fabric exhibiting a free areal shrinkage of not more than 50 percent, and then,

heating for stabilization of the fabric in an active gas atmosphere maintained at a temperature of from 200° to 350° C. under conditions such that the fabric is permitted to shrink by at least 80 percent of the free areal shrinkage, said active gas being selected from the group consisting of air and other oxygen-containing gases, nitric oxide, ozone and sulphur dioxide, and

carbonizing the heat-stabilized fabric in an inactive gas atmosphere.

4,237,109
PROCESS FOR PRODUCING CARBON FABRIC

Toru Hiramatsu, and Ken-ichi Morita, both of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 040,398, May 18, 1978, abandoned, which is a continuation of Ser. No. 834,307, Sep. 9, 1977, abandoned. This application Dec. 11, 1979, Ser. No. 102,577

Claims priority, application United Kingdom, Dec. 17, 1976, 52915/76

Int. Cl.³ D01F *9/22*

U.S. Cl. 423—447.5 **11 Claims**

1. An improvement in a process for producing a carbon fiber wherein a precursor fabric of an acrylonitrile polymer fiber is heated in an oxidizing gas atmosphere maintained at a temperature of from 200° to 400° C., said gas being selected from the group consisting of air, nitric oxide, ozone and sulfur dioxide; and then, the fabric is carbonized in a non-oxidizing gas atmosphere maintained at a temperature of at least 700° C.; said acrylonitrile polymer being polyacrylonitrile or a copolymer comprised of, based on the weight of the copolymer, at least 94% by weight of acrylonitrile and not more than 6% by weight of at least one other copolymerizable monoethylenically unsaturated monomer; the improvement comprising:

using, as the precursor fabric, a fabric (i) exhibiting a free areal shrinkage of no more than 50%, (ii) containing at least one transition metal or transition metal-containing compound selected from the group consisting of manganese, chromium, a manganese-containing compound and a chromium-containing compound, and (iii) being comprised of an acrylonitrile polymer fiber, which (a) has an intrinsic viscosity of from 1.4 to 2.3, (b) contains not more than 0.1%, based on the weight of the dry fiber, of a residual solvent, (c) has been drawn at a total drawing ratio of at least 6 based on its original length and (d) has a fusing temperature of at least 310° C.; and said fabric (iv) having a weight per unit area, satisfying the formula:

$$50 \times \frac{C^4 \cdot D^{1/1.6}(1-S)}{Y} \leqq E \leqq 300 \times \frac{C^{1/1.6}(1-S)}{Y}$$

wherein E is weight per unit area (g/m^2) of the fabric, C is weave factor, D is average fineness in deniers, divided by 1000, of the bundle of fibers, used as the weft and warp for the formation of the fabric, S is areal shrinkage of the fabric represented by the equation:

$$S=(S_1-S_2)/S_1$$

where S_1 and S_2 are areas of the fabric as determined before and after the oxidation and carbonization, respectively, and Y is carbonization yield;

said improvement further comprising carrying out said heating of the precursor fabric under conditions such that the fabric is permitted to shrink by at least 80% of the free areal shrinkage.

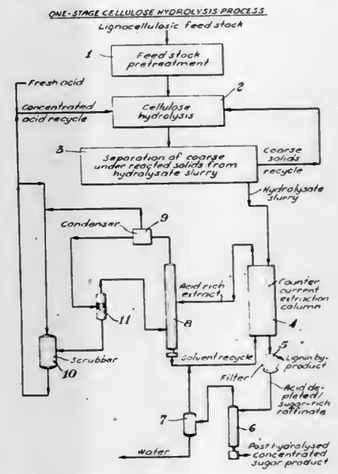
4,237,110
PROCESS FOR SEPARATING AND RECOVERING CONCENTRATED HYDROCHLORIC ACID FROM THE CRUDE PRODUCT OBTAINED FROM THE ACID HYDROLYSIS OF CELLULOSE

Allen V. Forster; Lyle E. Martz, and Douglas E. Leng, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 30, 1979, Ser. No. 34,784

Int. Cl.² C01B *7/08;* **C13K** *1/04*

U.S. Cl. 423—488 **9 Claims**



1. A process for separating and recovering concentrated hydrochloric acid from the crude product produced from the acid hydrolysis of a cellulose-containing material, the crude product comprising concentrated hydrochloric acid and the sugars produced from the acid hydrolysis of the cellulose-containing material, into a first fraction comprising the concentrated hydrochloric acid and a second fraction comprising the sugars, the process comprising:

(1) contacting the crude product with an organic solvent consisting essentially of at least one C_5-C_9 alcohol such that the organic solvent is enriched with the concentrated hydrochloric acid,

(2) separating the enriched organic solvent from the concentrated hydrochloric acid depleted crude product, and

(3) recovering the concentrated hydrochloric acid from the enriched organic solvent.

4,237,111
METHOD OF MANUFACTURING MELTED IRON OXIDE

Oddmund Wallevik, Porsgrunn, and Erik Dessen, Skien, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Oct. 17, 1978, Ser. No. 952,136

Claims priority, application Norway, Nov. 15, 1977, 773905

Int. Cl.³ C01G *49/02*

U.S. Cl. 423—632 **4 Claims**

1. A method of manufacturing molten iron oxide which may contain minor amounts of other oxides which comprises inserting a mold of sheet iron in a crucible induction furnace, ramming magnetite between the mold and furnace wall, sintering the magnetite at a temperature of 1600°–1900° C. to form a furnace lining by inserting iron or steel material into the mold within the furnace and heating within said temperature range to melt the iron or steel material, pouring out the major amount of the thus-melted iron or steel material, converting the remaining melt within the furnace to iron oxide by adding a charge of iron oxide to the furnace, adjusting the temperature of the mixture such that a mixture of solid and melted material

is formed within the furnace by regulating the electrical power supply, stirring said mixture sufficiently to render the temperature of the mixture uniform throughout and then pouring a major amount of the iron oxide melt thus-formed and thereafter charging the furnace with more iron oxide material and repeating the above procedure of producing the molten iron oxide until the lining has to be changed.

4,237,112

MEDICATED HAIR AND SCALP CONDITIONER

Zbigniew J. Selega, Mt. Prospect; Ezzat N. Khalil, Oak Park, and Gloria M. McKavanagh, Chicago, all of Ill., assignors to Johnson Products Co., Inc., Chicago, Ill.

Filed May 25, 1979, Ser. No. 42,720
Int. Cl.[3] A61K *7/06, 33/04*
U.S. Cl. 424—70 **4 Claims**

1. A non-settling, anhydrous medicated hair and scalp conditioning composition consisting essentially of about 50 to about 94 weight percent petrolatum, about 0.5 to about 5 weight percent mineral wax, at least about 0.5 weight percent polyoxyethylene (8) dilaurate, about 0.15 to about 2.25 weight percent sulfur as a medicament and about 1 to about 30 weight percent of an organically modified hectorite clay gellant which consists of hectorite modified by propylene carbonate, stearalkonium chloride or dimethyl-di-(hydrogenated tallow) ammonium chloride and an organic liquid selected from the group consisting of mineral oil, castor oil, isopropyl myristate, isopropyl palmitate, a mixture of lanolin oil and isopropyl palmitate, and a mixture of propylene glycol dicaprylate and propylene glycol dicaprate, said composition having one apparent phase.

4,237,113

BIOLOGICALLY ACTIVE INSECTICIDE CONTAINING POLYMERIC FORMULATION

Nathan F. Cardarelli, 3261 Brenner Rd., Barberton, Ohio 44203

Continuation-in-part of Ser. No. 916,570, Jun. 19, 1978, Pat. No. 4,166,111. This application Jan. 22, 1979, Ser. No. 5,173
Int. Cl.[3] A01N *57/00, 57/26, 47/10*
U.S. Cl. 424—78 **23 Claims**

1. A slow release insecticide-containing polymer composition for distribution upon a non-water surface, comprising:

100 parts by weight of a polymer selected from the group consisting of an ethylene-propylene copolymer, an ethylene-vinyl acetate copolymer, and combinations thereof, said ethylene-vinyl acetate copolymer having a weight average molecular weight of from about 40,000 to about 400,000 and the amount of said ethylene in said copolymer ranging from about 60 to about 95 percent by weight, said ethylene-propylene copolymer having a weight average molecular weight of from about 50,000 to about 250,000, and the amount of said ethylene in said copolymer ranging from about 30 to about 80 percent by weight; and

a non-volatile insecticide, said insecticide selected from the group consisting of O,O-diethyl-O-(2-isopropyl-6-methyl-5-pyrimidinyl)phosphorathioate and 2-(1-methylethoxy)-phenol methylcarbamate, the amount of said insecticide ranging from about 0.2 to about 40 parts by weight.

4,237,114

METHOD AND COMPOSITION FOR THE LONG TERM CONTROLLED RELEASE OF A NON-PERSISTENT ORGANOTIN PESTICIDE FROM AN INERT MONOLITHIC THERMOPLASTIC DISPENSER

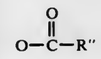
Nathan F. Cardarelli, Barberton, Ohio, assignor to Environmental Chemicals, Inc., Wauconda, Ill.

Continuation-in-part of Ser. No. 916,570, Jun. 19, 1978, Pat. No. 4,166,111. This application Jan. 22, 1979, Ser. No. 5,174
The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.
Int. Cl.[3] A01N *55/04*
U.S. Cl. 424—78 **70 Claims**

1. A composition for destroying aquatic pests over a period of time, comprising:

100 parts by weight of a polymer matrix selected from the group consisting of an ethylene-vinyl acetate copolymer, and ethylene-propylene copolymer, and combinations thereof, the amount by weight of said ethylene constituent in said ethylene-vinyl acetate copolymer ranging from about 60 percent to about 95 percent, said ethylene-vinyl acetate copolymer having a molecular weight of from about 40,000 to about 400,000, the amount by weight of said ethylene constituent and said ethylene-propylene copolymer ranging from about 30 percent to about 80 percent, the weight average molecular weight of said ethylene-propylene copolymer ranging from about 50,000 to about 250,000;

from about 25 to about 75 parts by weight per 100 parts of said copolymer matrix of a toxicant, said toxicant having the formula R_3S_nX, where R is selected from the group consisting of an alkyl group having from 1 to 8 carbon atoms, or an aryl group, and a substituted aryl group wherein said substituted group is an alkyl or an ester containing from 1 to 6 carbon atoms; X is selected from the group consisting of a halogen, an oxide, an alkoxy OR^1 where R^1 is an alkyl having from 1 to 12 carbon atoms, or an



group where R″ is an alkyl having from 1 to 12 carbon atoms; and

from about 15 to about 70 parts by weight per 100 parts of said polymer matrix of a moderate to low solubility porosity inducing agent, said porosity inducing agent selected from the group consisting of a non-alkaline earth salt, and a non-alkaline earth oxide, said porosity inducing agent having a solubility in water of 0.1 grams or less per 100 grams of water.

4,237,115

METHOD OF IMMUNIZATION AGAINST ENTEROTOXOGENIC INFECTION BY *ESCHERICHIA COLI*

Charles C. Brinton, Jr., Pittsburgh, Pa., assignor to Bactex, Inc., Pittsburgh, Pa.

Filed Nov. 23, 1977, Ser. No. 854,343
Int. Cl.[3] A61K *39/02*
U.S. Cl. 424—92 **12 Claims**

6. A method of protecting newborn piglets against neonatal porcine colibacillosis caused by a member of a predetermined first group of strains of piliated *E. coli* which comprises

(a) administering pre-partum to pregnant sows a composition comprising pili derived from at least one member of a second group of strains of piliated *E. coli* organisms wherein cells of organisms of said first group are agglutinable by serum containing antibodies against pili from said strains which may be the same as or different from strains of said second group; said first group consisting of strains which may be the same as or different from the strains of said second group;

(b) administering colostrum or milk derived postpartum from the aforesaid sows to newborn piglets.

4,237,116

COMBINATION OF THIOPEPTIN AND RUMENSIN TO IMPROVE RUMINANT FEED EFFICIENCY

James Gillin, Westfield, and David P. Jacobus, Princeton, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 19, 1979, Ser. No. 31,660
Int. Cl.[3] A61K *35/00, 37/00*
U.S. Cl. 424—117 **2 Claims**

1. A method for increasing the feed efficiency of ruminant animals which comprises orally administering to said ruminant as a part of said ruminant's feed a combination of 8.25 parts per million of thiopeptin, and 16.5 parts per million of rumensin.

4,237,117

METHOD FOR THE TREATMENT OF BENIGN PROSTATIC HYPERTROPHY

Tiberio Bruzzese, and Lorenzo Ferrari, both of Milan, Italy, assignors to Spa-Societa Prodotti Antibiotici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 957,870, Nov. 6, 1978, abandoned. This application Oct. 5, 1979, Ser. No. 82,403
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—122 **5 Claims**

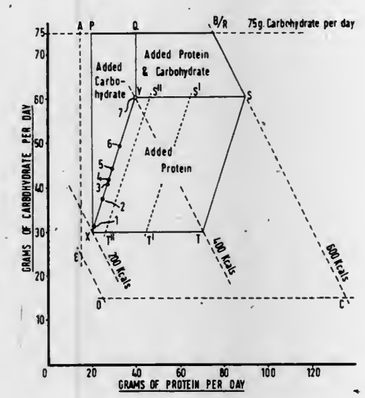
1. A method for the treatment of benign prostatic hypertrophy in human males, comprising administering an active compound selected from the group consisting of partricin, C_1-C_6 alkyl ester of partricin and C_1-C_6 alkyl ester of N-mono- and N,N-disubstituted partricin, the N-substituents being C_1-C_6 alkyl or carboxylic acyl, to a human male in need of said treatment in an amount sufficient to alleviate benign prostatic hypertrophy.

4,237,118

DIETARY SUPPLEMENT AND DIETARY METHODS EMPLOYING SAID SUPPLEMENT FOR THE TREATMENT OF OBESITY

Alan N. Howard, 10 Topcliffe Way, Cambridge, England

Continuation-in-part of Ser. No. 338,257, Mar. 5, 1973, Pat. No. 4,009,265. This application May 14, 1976, Ser. No. 686,594
Claims priority, application United Kingdom, Mar. 6, 1972, 10439/72; May 16, 1975, 21029/75
Int. Cl.[3] A0N *59/20;* A01N *59/16;* A61K *33/18*
U.S. Cl. 424—140 **30 Claims**



1. A dietary supplement, containing minerals and vitamins, for use in a conjunction with skimmed milk to provide a complete low-calorie diet for the treatment of obesity in man, in which the amount of said supplement which contains a datum level of 18 mg ±9 mg iron also contains at least 182 mg sodium, at least 308 mg potassium and at least 64 mg magnesium, as well as vitamin A in an amount of at least 750 μg retinol equivalents, at least 100 i.u. Vitamin D, at least 0.76 mg thiamine, at least 14 mg nicotinic acid and at least 18 mg ascorbic acid, and in which the total calorie content (if any) of that amount of supplement is not greater than 200 Kcals.

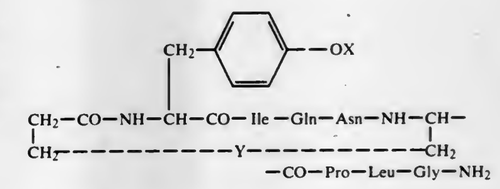
4,237,119

LONG-ACTING OXYTOCIN ANALOGS FOR USE IN INDUCING AND ACCELERATING LABOR IN MAMMALS, PARTICULARLY FARM ANIMALS

Joseph H. Cort, Prague; Tomislav Barth, Roztoky u Praha; Karel Jost, Prague, and Zdenek Veznik, Brno, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 931,134, Aug. 4, 1978, abandoned, which is a continuation of Ser. No. 813,665, Jul. 7, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,062
Int. Cl.[3] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 **4 Claims**

1. A method for inducing tetany-free labor in mammals which comprises administering an effective amount of a compound of the formula



where X is H or CH_3 and Y is CH_2S or SCH_2.

4,237,120

ANTIBACTERIAL AGENT BM123-GAMMA, PHARMACEUTICALLY ACCEPTABLE SALTS, COMPLEXES AND ALKYLATED DERIVATIVES AS ANIMAL FOOD ADDITIVES

Donald L. Ingle, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 874,432, Feb. 2, 1978, abandoned. This application Aug. 28, 1979, Ser. No. 70,458
Int. Cl.[3] A61K *31/71*
U.S. Cl. 424—181 **29 Claims**

1. A method for improving feed efficiency and enhancing the growth rate of meat animals comprising administering orally to the animals an effective amount of an antibacterial ingredient of antibiotic trans-BM123γ, an antibiotic trans-BM123γ salt, an antibiotic trans-BM123γ alkyl sulfate complex, an antibiotic trans-BM123γ dioctyl sulfosuccinate complex, an antibiotic trans-BM123γ syntan complex, an antibiotic trans-BM123γ pamoate complex, an antibiotic trans-BM123γ alkylated derivative, and mixtures thereof in any proportion.

4,237,121

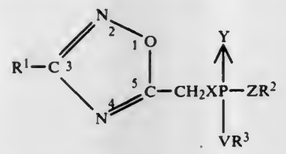
SUBSTITUTED OXADIAZOLES AND THEIR USE AS CORN ROOT WORM INSECTICIDES

William F. King, Novato, and Ronald E. Wheeler, Martinez, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 943,078, Sep. 18, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,560
Int. Cl.[3] A01N *57/00, 57/26*
U.S. Cl. 424—200 **4 Claims**

1. A method for killing corn root worms which comprises

applying to the soil habitat of the corn root worms an insecticidally effective amount of a compound of the formula



wherein R^1, R^2 and R^3 are alkyl of 1 to 4 carbon atoms; and X, Y, Z and V are sulfur or oxygen.

4,237,122

IMIDAZOLIDINEDIONE COMPOUNDS, AND THEIR PRODUCTION AND USE

Shuichiro Asao, Ashiya; Shigeo Yamamoto, Ikeda; Yoshio Hisada, Kawanishi; Yoshinori Nakayama, Takarazuka, and Chiyozo Takayama, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

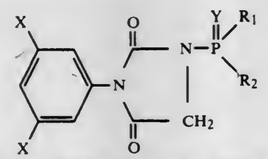
Filed Jun. 15, 1979, Ser. No. 48,745

Claims priority, application Japan, Jun. 22, 1978, 53-76109; Dec. 28, 1978, 53-163012

Int. Cl.[3] **A01N** *57/16;* **C07D** *233/40*

U.S. Cl. 424—200 **13 Claims**

1. A compound of the formula:



PS wherein X is a chlorine atom or a bromine atom, Y is an oxygen atom or a sulfur atom, and R_1 and R_2 are each a C_1-C_4 alkyl group, a C_1-C_4 alkoxy group, a C_1-C_4 alkylthio group, an ar(C_1-C_4)alkylthio group, a C_1-C_4 alkoxy(C_2-C_4)alkoxy group, a phenyl group, a phenoxy group, a C_1-C_4 alkylthiophenoxy group, a C_1-C_8 alkylamino group, a C_2-C_8 alkenylamino group or a cyano(C_1-C_4)alkylamino group.

10. A method for controlling insects, acarids, nematodes or fungi which comprises applying an effective amount of the compound according to claim 1 to the insects, acarids, nematodes or fungi.

4,237,123

OXYIMINO-SUBSTITUTED CYCLOPROPANECARBOXYLATE PESTICIDES

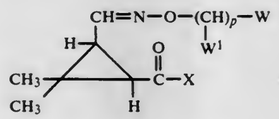
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 25, 1979, Ser. No. 51,668

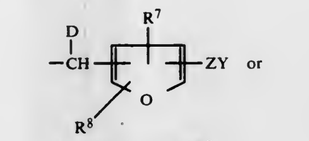
Int. Cl.[3] **A01N** *53/00, 57/20;* **C07C** *131/02;* **C07D** *307/54*

U.S. Cl. 424—200 **16 Claims**

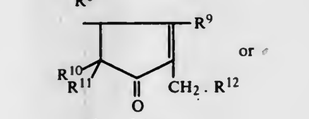
1. A cyclopropane compound having the formula



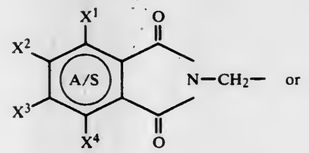
wherein W is thienyl, furfuryl, $-CO_2R^1$, $-CONR^1R^2$, $-SO_3R^1$, $-SO_2NR^1R^2$, $-PO(OR^1)_2$, $-NO_2$, $-CN$, $-OR^1$, $-SR^1$, $-S(O)R^1$, $-S(O)_2R^1$, $-NR^1R^2$, $-N(O)R^1R^2$ or $-(OCH_2CH_2)_q-OR^1$ in which q is an integer of 1 to 4, R^1 and R^2 each independently is a hydrogen atom, an alkyl group containing from 1 to 8 carbon atoms optionally substituted by one or more halogen atoms, a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms, a cycloalkyl group containing from 3 to 7 ring carbon atoms, an alkenyl group containing from 3 to 4 carbon atoms optionally substituted by one or more halogen atoms or an alkynyl group containing from 3 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms or R^1 and R^2 taken together is an alkylene or oxalkylene group containing from 4 to 6 carbon atoms, or when one of R^1 and R^2 is furfuryl or thienyl then the other is a hydrogen atom; p is an integer of 1 or 2; when p is 1 then W^1 is an alkyl group containing from 1 to 4 carbon atoms or when p is 2 then W^1 is a hydrogen atom; X is a group of the formula



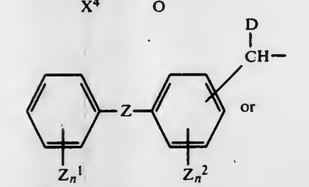
I



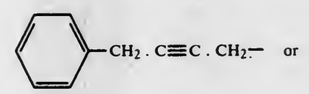
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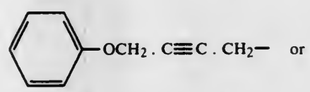
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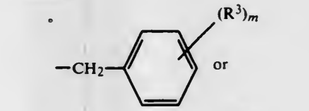
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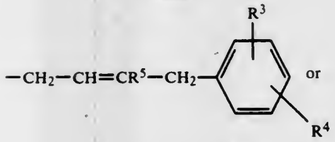
V



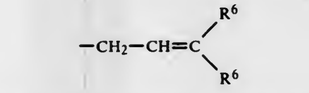
VI



VII

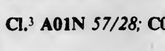


VIII



IX

wherein Y represents hydrogen or an alkyl, alkenyl or alkynyl group or an aryl or furyl group which is unsubstituted or substituted in the ring by one or more alkyl, alkenyl, alkoxy or halogeno groups, R^7 and R^8, which may be the same or different, each represent hydrogen or an alkyl or alkenyl group, R^9 represents hydrogen or a methyl group, R^{10} and R^{11} represent hydrogen or an alkyl group, R^{12} represents an organic radical having carbon-carbon unsaturation in a position α to the CH_2 group to which R^{12} is attached, A/S indicates an aromatic ring or a dihydro or tetrahydro analogue thereof, X^1, X^2, X^3 and X^4, which may be the same or different, each represents hydrogen, halogen or a methyl group, D represents H, —CH, —C≡CH or



in which R^{13} and R^{14} may be the same or different, each represent a hydrogen atom or an alkyl group containing from 1 to 10 carbon atoms, Z represents $—CH_2$, —,—O—, —CO— or —S—, Z^1 and Z^2, which may be the same or different, each represents halogen or an alkyl group containing 1 to 4 carbon atoms and n is 0, 1 or 2, R^3 and R^4 each independently is a hydrogen atom, a halogen atom having an atomic number of from 9 to 35, inclusive, an alkyl group containing from 1 to 4 carbon atoms or a nitro group, R^5 is a hydrogen atom or a halogen atom having an atomic number of from 9 to 35, inclusive, each R^6 is independently a halogen atom having an atomic number of from 9 to 35, inclusive; and m is an integer of from 1 to 5 with the proviso that when D is —CN, —C≡CH or



then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.

13. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of an oxyimino-substituted cyclopropane carboxylate according to claim 1.

4,237,124

COMBATING PESTS WITH O-ETHYL-S-N-PROPYL-N-ALKYLAMINO-METHYLIDENE THIOLPHOSPHORIC ACID DIESTER-IMIDES

Hellmut Hoffmann, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

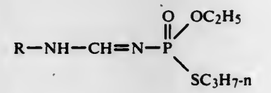
Filed Jul. 2, 1979, Ser. No. 54,062

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831934

Int. Cl.[3] **A01N** *57/28;* **C07F** *9/24*

U.S. Cl. 424—211 **8 Claims**

1. An O-ethyl-S-n-propyl-N-alkylamino-methylidene-thiolphosphoric acid diester-imide of the formula



in which R is alkyl.

6. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematicidally effective amount of a compound according to claim 1.

4,237,125

1α-HYDROXY-24-DEHYDROVITAMIN D_3 PHARMACEUTICAL COMPOSITIONS AND USES THEREOF

Kiyoshi Bannai; Norio Ohnuma; Seiichi Ishizuka, all of Hino; Junji Kubo, Hachioji, and Tatuyuki Naruchi, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 17, 1978, Ser. No. 906,785

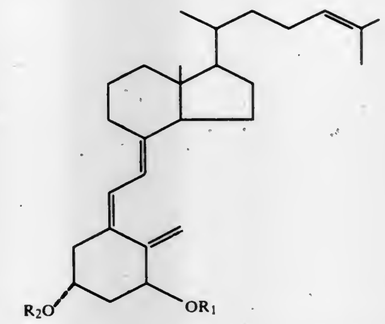
Claims priority, application Japan, May 24, 1977, 52-59454

Int. Cl.[3] **A61K** *51/39;* **C07J** *9/00*

U.S. Cl. 424—236 **7 Claims**

1. 1α-Hydroxy-24-dehydrovitamin D_3 or its derivatives having a protected hydroxyl group of the formula

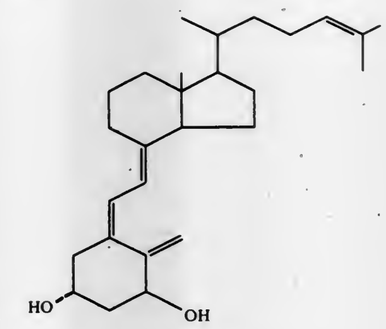
(1a)



wherein R_1 and R_2 are identical or different, and each represents a hydrogen atom, a carboxylic acid residue or a group which forms an ether linkage with a hydroxyl group.

3. A pharmaceutical composition for enhancing the calcium absorption from the intestinal tract or the calcium bone resorption of warm-blooded animals comprising a therapeutically effective amount of 1α-hydroxy-24-dehydrovitamin D_3 of the formula

(1a)



4,237,126

2β, 16β-BIS-PIPERIDINO-ANDROSTANES

Ian C. Carlyle, Hamilton; Thomas Sleigh, Wishaw, and David S. Savage, Glasgow, all of Scotland, assignors to Akzona Incorporated, Asheville, N.C.

Filed Aug. 20, 1979, Ser. No. 67,878

Claims priority, application United Kingdom, Sep. 5, 1978, 35667/78

Int. Cl.[3] **A61K** *31/58*

U.S. Cl. 424—241 **30 Claims**

1. A pharmaceutically acceptable acid addition salt of the 16β-mono-quaternary ammonium derivative of either a 3α,17β-di-lower aliphatic ester of 2β,16β-dipiperidino-3α,17β-

dihydroxy-5α-androstane or a 3α-lower aliphatic ester of 2β,16β-dipiperidino-3α-hydroxy-5α-androstane.

27. A pharmaceutical composition useful as a neuromuscular blocking agent comprising

(a) a neuromuscular blocking effective amount of a pharmaceutically acceptable acid addition salt of the 16β-monoquaternary ammonium derivative of either a 3α,17β-di-lower aliphatic ester or a 3α-lower aliphatic ester of 2β,16β-dipiperidino-3α-hydroxy-5α-androstane, and

(b) water.

4,237,127
1,2,4,5-TETRAZINES

John H. Parsons, Saffron Walden, England, assignor to Fisons Limited, London, England

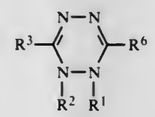
Filed May 21, 1979, Ser. No. 40,877

Claims priority, application United Kingdom, May 25, 1978, 22306/78

Int. Cl.[3] **C07D** *257/02;* **A01N** *43/64*

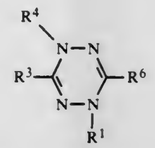
U.S. Cl. 424—244 **14 Claims**

1. A method of combatting acarids, their eggs or their larvae, which comprises applying to a site either infested or liable to infestation with them an effective amount of one or more substituted tetrazines of the formula:



(I)

or of the formula:



(II)

wherein R^1, R^2 and R^4, which may be the same or different, each represent hydrogen, phenyl, alkyl or 1 to 6 carbon atoms or alkenyl or alkynyl of 3 to 6 carbon atoms, each of which phenyl, alkyl, alkenyl or alkynyl groups may be unsubstituted or substituted by one or more halogen atoms, hydroxy groups, cyano groups, carboxy groups, alkoxycarbonyl groups of 2 to 5 carbon atoms or alkoxy groups of 1 to 4 carbon atoms; or R^1 and R^2 together represent a single bond; R^3 represents alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, phenyl, or phenylalkyl of 7 to 10 carbon atoms, each of which may be unsubstituted or substituted by one or more halogen atoms, alkyl or alkoxy groups of 1 to 6 carbon atoms, nitro groups, cyano groups, mercapto groups or alkylmercapto groups of 1 to 4 carbon atoms; and R^6 represents a phenyl group substituted in at least the 2-position by fluorine, chlorine, bromine or iodine.

4,237,128
7-[2-(2-AMINO-4-THIAZOLYL)-2-[(1-CARBOXY-1,1-DIALKYL)ALKOXYIMINO]ACETAMIDO]CEPHEM SULFOXIDES

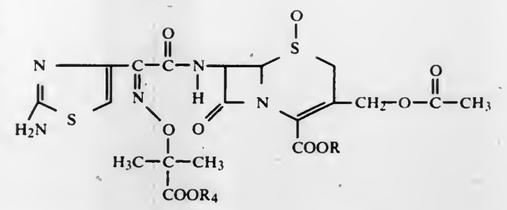
Christopher M. Cimarusti, Hamilton; William H. Koster, East Amwell Township, Hunterdon County, and Richard B. Sykes, Rocky Hill, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 12, 1979, Ser. No. 29,417

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/34*

U.S. Cl. 424—246 **5 Claims**

1. A compound of the formula:



including its imino tautomeric form wherein the



group is in the syn configuration; the sulfoxide is in the β-configuration; R is hydrogen, sodium or potassium; and R_4 is hydrogen, sodium or potassium.

4. An antibacterial pharmaceutical composition comprising a pharmaceutically acceptable carrier and one or more antibacterially active compounds of claim **1**.

4,237,129
DERIVATIVES OF THIAZOLIDINECARBOXYLIC ACIDS AND RELATED ACIDS

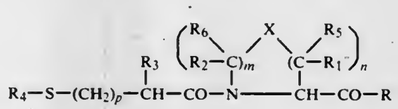
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 907,452, May 22, 1978, Pat. No. 4,192,878, which is a continuation-in-part of Ser. No. 836,107, Sep. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,281, Dec. 3, 1976, abandoned. This application Jun. 28, 1979, Ser. No. 53,135

Int. Cl.[3] **A61K** *31/54;* **C07D** *279/06, 279/12*

U.S. Cl. 424—246 **14 Claims**

14. A method for reducing blood pressure which comprises administering a composition comprising a compound of the formula



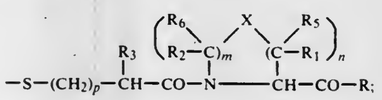
wherein

R is hydroxy or lower alkoxy;

R_1, R_2, R_5 and R_6 each is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl or mercapto-lower alkylene;

R_4 is hydrogen, lower alkanoyl, benzoyl or



X is S, SO or SO_2;

m is 1, 2 or 3; n is 0, 1 or 2 and m+n is 3;

p is 0 or 1;

and basic salts thereof; wherein the terms lower alkyl, lower alkoxy and lower alkylene refer to groups having 1 to 7 carbon atoms and the term lower alkanoyl refers to groups having up to 7 carbon atoms.

4,237,130
2,3-DIHYDRO-6,7-DISUBSTITUTED-5-(SUBSTITUTED SULFONYL)BENZOFURAN-2-CARBOXYLIC ACIDS

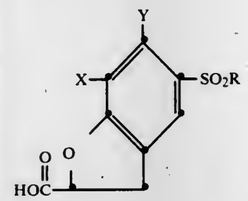
Edward J. Cragoe, Jr., and William F. Hoffman, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 21, 1979, Ser. No. 50,853

Int. Cl.[3] **A61K** *31/535;* **C07D** *307/84*

U.S. Cl. 424—248.5 **13 Claims**

1. A compound of the formula:



wherein

X is halo, methyl or hydrogen

Y is halo, methyl or hydrogen

X and Y can be combined to form a hydrocarbylene radical of from 3 to 4 carbon atoms;

R is selected from the group consisting of

2-thienyl, 3-thienyl, 5-methyl-2-thienyl

3-methyl-2-thienyl,

4-methyl-2-thienyl, 2-methyl-3-thienyl

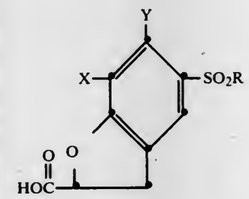
4-methyl-3-thienyl, 5-methyl-3-thienyl

5-acetamido-1,3,4-thiadiazolyl, 5-ethyl-1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 2-furanyl,

3-furanyl, 5-methyl-2-furyl, phenyl or substituted phenyl wherein the substituent is halo, methyl; trifluoromethyl or methoxy, benzyl or substituted benzyl wherein the substituent is halo, methyl, methoxy or trifluoromethyl and

the non-toxic pharmaceutically acceptable salt, lower alkyl ester and amino, loweralkylamino, diloweralkylamino, piperidino or morpholino derivative thereof.

13. A method of treatment of edema associated with hypertension comprising the administration of a therapeutically effective amount in unitary dosage of a compound having the formula of:



wherein

X is halo, methyl or hydrogen

Y is halo, methyl or hydrogen

X and Y can be combined to form a hydrocarbylene radical of from 3 to 4 carbon atoms;

R is selected from the group consisting of

2-thienyl, 3-thienyl, 5-methyl-2-thienyl,

3-methyl-2-thienyl, 4-methyl-2-thienyl,

2-methyl-3-thienyl,

4-methyl-3-thienyl, 5-methyl-3-thienyl,

5-acetamido-1,3,4-thiadiazolyl, 5-ethyl-1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 2-furanyl,

3-furanyl, 5-methyl-2-furyl, phenyl or substituted phenyl wherein the substituent is halo, methyl; trifluoromethyl or methoxy, benzyl or substituted benzyl wherein the substituent is halo, methyl, methoxy or trifluoromethyl, and

the non-toxic pharmaceutically acceptable salt, lower alkyl ester and amino, loweralkylamino, diloweralkylamino, piperidino or morpholino derivative thereof.

4,237,131
PROSTAGLANDIN ANALOGUES

Gordon Wootton, Sawbridgeworth, and Richard W. Moore, Harlow, both of England, assignors to Beecham Group Limited, Great Britain

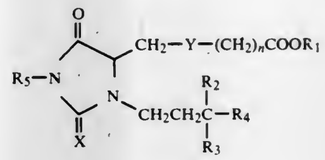
Filed Jun. 14, 1979, Ser. No. 48,516

Claims priority, application United Kingdom, Jun. 15, 1978, 27017/78

Int. Cl.[3] **C07D** *413/06;* **A61K** *31/415*

U.S. Cl. 424—248.51 **32 Claims**

1. A compound selected from the group consisting of a hydantoin of the formula:



wherein

X is O or S;

Y is $-CH_2CH_2-$, $-CH=CH-$ or $-C\equiv C-$;

n has a value of from 1 to 5 inclusively;

R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, phenyl, benzyl or tolyl;

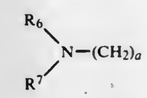
R_2 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 is hydroxy, alkanoyloxy of 1 to 4 carbon atoms or benzyloxy;

R_4 is alkyl of 1 to 9 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, or alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 5 to 8 carbon atoms; and

R_5 is

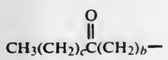
(i)



in which a has a value of from 0 to 3 inclusively and each of R_6 and R_7 taken independently of the other is hydrogen, alkyl of 1 to 4 carbon atoms or phenylalkyl of 7 to 10 carbon atoms or R_6 and R_7 taken together, together with the nitrogen atom to which they are joined are pyrrolidino, piperidino, morpholino or 4-alkylpiperazino wherein alkyl has from 1 to 4 carbon atoms;

(ii) allyl or propargyl;

(iii)



in which c+b has a value of from 1 to 5 and b is at least 1; or

(iv) R_8—S— in which R_8 is alkyl of 1 to 6 carbon atoms, unsubstituted phenyl or phenyl substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or nitro,

and the alkali metal, alkaline earth metal, ammonium and substituted ammonium salts thereof when R_1 is hydrogen.

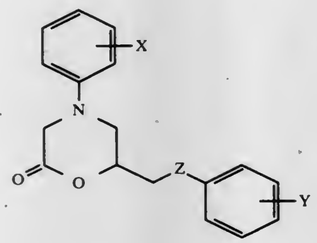
32. A method for the treatment of humans or animals of conditions responsive to natural prostaglandins, which comprises administering to to a human or animal in need thereof an effective amount of a compound according to claim **1**.

4,237,132
MORPHOLINONE DERIVATIVES AND METHOD OF USE

Hiromu Murai; Katsuya Ohata; Hiroshi Enomoto; Shoichi Chokai; Mitsuhiro Maehara; Katsuhide Saito, and Takayuki Ozaki, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

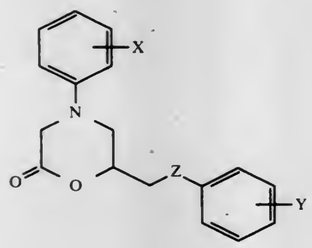
Filed Jun. 4, 1976, Ser. No. 692,879
Claims priority, application Japan, Jun. 6, 1975, 50-68925; Jun. 6, 1975, 50-68926
Int. Cl.³ C07D *265/32;* A61K *31/535*
U.S. Cl. 424—248.52 15 Claims

1. A compound selected from the group consisting of a morpholinone of the formula:



wherein
Z is oxygen or sulfur;
X is hydrogen, halogen, lower alkyl, lower alkoxy, carboxyl, or carbo(lower alkoxy) or carbamoyl;
Y is hydrogen, halogen or lower alkyl when Z is sulfur; and
Y is hydrogen, halogen, lower alkyl, lower alkoxy, benzyloxy, hydroxy, carboxy, carbo(lower alkoxy) or cyano when Z is oxygen;
and the pharmaceutically acceptable salts thereof when X or Y is carboxyl or X is carbamoyl.

15. A method of reducing serum cholesterol and triglycerides, which comprises administering to an animal or human in need thereof an amount of a compound selected from the group consisting of a morpholinone of the formula:



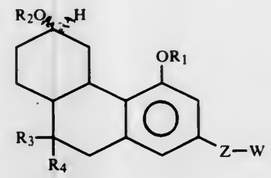
wherein
Z is oxygen or sulfur;
X is hydrogen, halogen, lower alkyl, lower alkoxy, carboxyl, or carbo(lower alkoxy) or carbamoyl;
Y is hydrogen, halogen or lower alkyl when Z is sulfur; and
Y is hydrogen, halogen, lower alkyl, lower alkoxy, benzyloxy, hydroxy, carboxy, carbo(lower alkoxy) or cyano when Z is oxygen;
and the pharmaceutically acceptable salts thereof when X or Y is carboxyl or X is carbamoyl effective to reduce serum cholesterol and triglycerides.

4,237,133
1,9-DIHYDROXYOCTAHYDROPHENANTHRENES

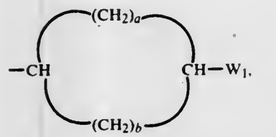
Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, and Lawrence S. Melvin, Jr., both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 851,503, Nov. 14, 1977, Pat. No. 4,188,495. This application Sep. 24, 1979, Ser. No. 78,473
Int. Cl.³ C07D *295/14;* C07C *101/19;* A61K *31/22, 31/535*
U.S. Cl. 424—248.52 10 Claims

1. A compound selected from the group consisting of those having the formula



wherein
R_1 is hydrogen, benzyl, benzoyl, alkanoyl of 1 to 5 carbon atoms or $—CO—(CH_2)_p—NR'R''$ wherein p is 0 or an integer from 1 to 4; each of R′ and R″ when taken individually is hydrogen or alkyl of 1 to 4 carbon atoms; R′ and R″ when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from piperidino, pyrollo, pyrrolidino, morpholino and N-alkylpiperazino having from 1 to 4 carbon atoms in the alkyl group;
R_2 is selected from hydrogen, alkanoyl of 1 to 6 carbon atoms and benzoyl;
R_3 is selected from hydrogen, methyl and ethyl;
R_4 is selected from hydrogen, alkyl of 1 to 6 carbon atoms and benzyl;
Z is selected from:
(a) alkylene having from one to nine carbon atoms;
(b) $-(alk_1)_m-X-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;
m and n are each 0 or 1;
X is selected from O, S, SO and SO_2; and
W is selected from hydrogen, methyl, pyridyl, piperidyl, phenyl, monochlorophenyl, monofluorophenyl and



wherein W_1 is selected from hydrogen, phenyl, monochlorophenyl and monofluorophenyl; a is an integer from 1 to 5 and b is 0 or an integer from 1 to 4, with the proviso that the sum of a and b is not greater than 5 with the proviso that when R_1 is hydrogen, benzyl, benzoyl or said alkanoyl, W is pyridyl or piperidyl.

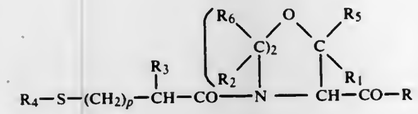
10. A process for producing analgesia in a mammal which comprises administering to the mammal an analgesia-producing quantity of a compound of claim 1.

4,237,134
DERIVATIVES OF THIAZOLIDINECARBOXYLIC ACIDS AND RELATED ACIDS

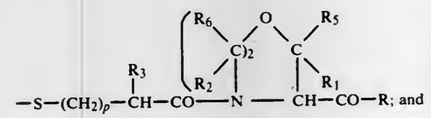
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 907,452, May 22, 1978, Pat. No. 4,192,878, which is a continuation-in-part of Ser. No. 836,107, Sep. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,281, Dec. 3, 1976, abandoned. This application Jun. 28, 1979, Ser. No. 53,020
Int. Cl.³ C07D *413/12, 265/30;* A61K *31/535*
U.S. Cl. 424—248.52 10 Claims

10. A method for reducing blood pressure which comprises administering a composition comprising a compound of the formula



wherein
R is hydroxy or lower alkoxy;
R_1, R_2, R_5 and R_6 each is hydrogen or lower alkyl;
R_3 is hydrogen, lower alkyl or mercapto-lower alkylene;
R_4 is hydrogen, lower alkanoyl, benzoyl or



p is 0 or 1;
or a basic salt thereof; wherein the terms lower alkyl, lower alkoxy and lower alkylene refer to groups having 1 to 7 carbon atoms and the term lower alkanoyl refers to groups having up to 7 carbon atoms; and a pharmaceutically acceptable vehicle therefor.

4,237,135
2-(4-ETHYL-1-PIPERAZINYL)-4-PHENYLQUINOLINE, PROCESS FOR PREPARATION THEREOF, AND COMPOSITION THEREOF

Hitoshi Uno, Takatsuki; Yasutaka Nagai, Muko; Tadahiko Karasawa, Toyonaka, and Kiyoshi Furukawa, Ibaraki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 22, 1979, Ser. No. 22,779
Claims priority, application Japan, Mar. 29, 1978, 53-37029
Int. Cl.³ A61K *31/495;* C07D *401/04*
U.S. Cl. 424—250 9 Claims

1. 2-(4-Ethyl-1-piperazinyl)-4-phenylquinoline.

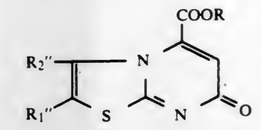
4. A pharmaceutical composition comprising an antidepressant effective amount of 2-(4-ethyl-1-piperazinyl)-4-phenylquinoline or a pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier.

4,237,136
PHARMACEUTICAL COMPOSITIONS AND METHODS OF USING THIADIAZOLO PYRIMIDINONE COMPOUNDS

Siegfried Herrling, Dohlenweg 33, Stolberg, Fed. Rep. of Germany (5190)

Filed Jun. 3, 1977, Ser. No. 803,296
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625117; Jun. 4, 1976, 2625118
Int. Cl.³ A61K *31/505;* C07D *513/04*
U.S. Cl. 424—251 34 Claims

1. A pharmaceutical drug composition useful as an immunostimulant for a mammal comprising a pharmaceutically acceptable carrier and, in an amount effective to cause an immune response in the mammal, the compound of the formula



in which
R is hydrogen or C_1 to C_5 alkyl;
R_4'' and R_2'' which are the same or different, are selected from the group consisting of hydrogen, C_1 to C_5 alkyl, benzyl, phenyl ethyl, phenyl, thienyl, pyridyl, C_5 to C_7 cycloalkyl and benzyl, phenyl ethyl, phenyl, thienyl or pyridyl substituted by a halogen, alkyl or alkoxy with C_1–C_4 in the alkyl, with the proviso that R_1'' and R_2'' cannot represent at the same time hydrogen, C_1 to C_5 alkyl, unsubstituted phenyl or a heterocyclic group; or a pharmaceutically acceptable salt of such a compound.

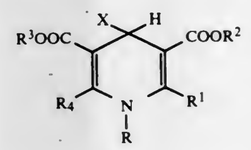
7. The method of inducing an immune response in a warm-blooded mammal which comprises administering to the mammal an effective amount to induce an immune response of a composition of claim 1.

4,237,137
SILA-SUBSTITUTED 1,4-DIHYDROPYRIDINE DERIVATIVES AND THEIR MEDICINAL USE

Reinhold Tacke; Anke Bentlage, both of Braunschweig; Robertson Towart, Wuppertal, and Wulf Vater, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

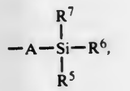
Filed Aug. 8, 1979, Ser. No. 64,936
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837477
Int. Cl.³ C07D *403/04;* A61K *31/44*
U.S. Cl. 424—251 15 Claims

1. A compound of the formula



(I)

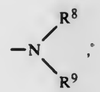
in which
R denotes a hydrogen atom or an alkyl or benzyl radical,
R^1 and R^4 are identical or different and denote a hydrogen atom or an alkyl or trifluoromethyl radical and
R^2 and R^3 are identical or different and denote a radical of the general formula



(Ia)

in which
A denotes an optionally C_1–C_4-alkyl-substituted C_1–C_6-alkylene radical and
R^5, R^6 and R^7 are identical or different and each denotes an alkyl, cycloalkyl or phenyl radical, and these radicals are, in turn, optionally substituted by alkyl, alkoxy, halogen or trifluoromethyl, or
one of the substituents R^2 or R^3 denotes a straight-chain or branched alkyl, cycloalkyl, alkenyl or alkynyl radical, and the alkyl radical, in turn, is optionally substituted by alk-

oxy or halogen, or by a phenyl radical which in turn optionally carries one or more substituents selected from trifluoromethyl, alkyl, alkoxy, halogen, nitro and alkylmercapto, or denotes an alkyl radical which is substituted by a group of the general formula



(Ib)

in which

R^8 and R^9 are identical or different and each denote a hydrogen atom or an alkyl, aryl or aralkyl radical, and

X denotes an alkyl, cycloalkyl, cycloalkenyl, aralkyl or aryl, and the aryl radical is optionally substituted by 1, 2 or 3 identical or different substituents selected from nitro, cyano, halogen, trifluoromethyl, amino, alkyl, alkoxy, and trifluoromethoxy or by SO_n-alkyl (n is 0, 1 or 2), or denotes an optionally alkyl-, alkoxy- or halogen-substituted quinolyl, isoquinolyl, pyridyl, pyrimidyl, thienyl, furyl or pyrryl radical, each of said alkyl, alkenyl, alkynyl, alkoxy, alkylmercapto and alkylsulphonyl groups having up to 7 carbon atoms, each of said cycloalkyl groups having 3 to 7 ring carbon atoms, each of said cycloalkenyl groups having 5 to 7 ring carbon atoms, each aryl group being mono- or bi-cyclic carbocyclic aryl having 6 to 10 carbon atoms and each aralkyl group being mono- or bi-cyclic carbocylic aryl having 6 to 10 carbon atoms in the aryl portion and 1 to 4 carbon atoms in the alkyl portion.

8. A method of combating circulatory diseases in warm-blooded animals which comprises administering to the said animals an active compound according to claim **1** either alone or in admixture with a diluent or in the form of a medicament.

4,237,138

ANTIHYPERTENSIVE 4-AMINO-2-[4-(SUBSTITUTED-ALKOXY)PIPERIDINO)]-QUINAZOLINES

Simon F. Campbell, Deal; John C. Danilewicz, Ash, Nr. Canterbury, and Colin W. Greengrass, Sandwich, all of England, assignors to Pfizer Inc., New York, N.Y.

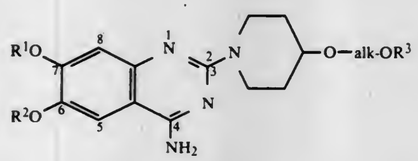
Continuation-in-part of Ser. No. 960,628, Nov. 14, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,003

Claims priority, application United Kingdom, Nov. 16, 1977, 47583/77; Denmark, Oct. 4, 1978, 4403/78; United Kingdom, Jan. 31, 1979, 03398/79

Int. Cl.[3] **A61K** *31/505;* **C07D** *401/04*

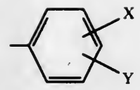
U.S. Cl. 424—251 **11 Claims**

1. A compound selected from the group consisting of those of the formula



(I)

and the pharmaceutically-acceptable acid addition salts thereof, wherein R^1 and R^2 are selected from the group consisting of C_{1-4} alkyl and $-CH_2CF_3$; alk is selected from the group consisting of ethylene, monophenyl substituted ethylene, mono- and dimethyl substituted ethylene, and monophenyl-monomethyl substituted ethylene; and R^3 is selected from the group consisting of hydrogen, C_{1-4} alkyl, C_3–C_6 cycloalkyl, and



wherein each of X and Y is selected from the group consisting of hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, halogen, CF_3, $-CONR^4R^5$ and $-SO_2NR^4R^5$ wherein each of R^4 and R^5 is selected from the group consisting of hydrogen and C_{1-4} alkyl.

10. A pharmaceutical composition comprising an antihypertensive amount of a compound of claim **1** together with a pharmaceutically acceptable diluent or carrier.

4,237,139

4-(3-(4-QUINOLYL)PROPYL)PIPERIDINES, THEIR PREPARATION AND THEIR USE AS MEDICINES

Alain A. Champseix, Forges les Bains; Claude G. A. Gueremy, Houilles, and Gerard R. Le Fur, Villeneuve la Garenne, all of France, assignors to Pharmindustrie, Gennevilliers, France

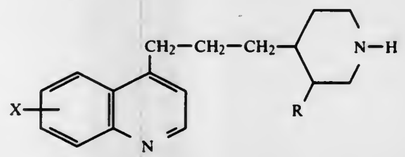
Continuation-in-part of Ser. No. 806,418, Jun. 14, 1977, abandoned. This application Dec. 12, 1978, Ser. No. 968,718

Claims priority, application France, Jun. 18, 1976, 76 18555; Aug. 3, 1978, 78 22968

Int. Cl.[3] **A61K** *31/47;* **C07D** *211/32, 401/06*

U.S. Cl. 424—258 **15 Claims**

1. A method for the treatment of a mammal afflicted with a disturbance in the functioning of serotoninergical systems which comprises administering to said mammal a therapeutically effective amount of a compound of the formula



(I)

wherein R is hydrogen, alkyl having 1 to 4 carbon atoms or alkenyl having 2 to 4 carbon atoms;

X is hydrogen or halogen, alkyl, alkoxy or alkylthio having 1 to 4 carbon atoms, trifluoromethyl, nitro, hydroxy, amino or amino substituted by one or two alkyl groups having 1 to 4 carbon atoms, by acyl having 1 to 4 carbon atoms or by alkylsulphonyl group having 1 to 4 carbon atoms, or a pharmaceutically acceptable salt thereof in a pharmaceutically acceptable carrier therefor.

4,237,140

ANALGESIC MIXTURE OF NALBUPHINE AND ACETAMINOPHEN

John R. Dudzinski, East Northport, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 18, 1979, Ser. No. 40,281

Int. Cl.[2] **A61K** *31/165, 31/485*

U.S. Cl. 424—260 **12 Claims**

1. A pharmaceutical composition consisting essentially of (a) nalbuphine or a pharmaceutically suitable acid addition salt thereof and (b) acetaminophen in a weight ratio of (a) to (b) of from about 1:2 to about 1:70.

4,237,141

DERIVATIVES OF α-METHYL-β-AMINOPROPIOPHENONE AND USE THEREOF

Akira Shiozawa, Tokyo; Shuji Kurashige, Urawa; Hiroaki Hamano, Higashimurayama; Yasuhiko Furuta, Tokyo; Masako Ikeda, Mitaka; Hiroshi Miyazaki, Kawasaki; Chiyoko Aoyagi, Urawa, and Yasuo Ishii, Kashiwa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

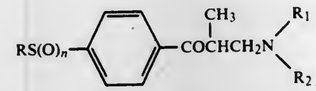
Filed May 26, 1978, Ser. No. 910,024

Claims priority, application Japan, Jun. 2, 1977, 52/63969; Jun. 2, 1977, 52/63970

Int. Cl.[3] **C07D** *295/10;* **A61K** *31/445*

U.S. Cl. 424—267 **7 Claims**

1. α-methyl-β-aminopropiophenone derivatives represented by the following general formula:



wherein $RS(O)_n$-represents methylthio, ethylthio, methylsulfonyl or n-butyl-sulfonyl and



represents piperidino as well as their non-toxic salts.

4,237,142

COMBATING FUNGI WITH 2-CARBAMOYLOXY-3,3-DIMETHYL-1-PHENOXY-1-(1,2,4-TRI AZOL-1-YL)-1-BUTANES

Karl H. Büchel; Wolfgang Krämer, both of Wuppertal, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

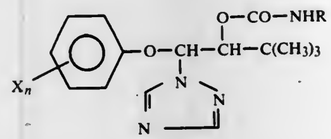
Filed Dec. 20, 1978, Ser. No. 971,291

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800544

Int. Cl.[3] **A01N** *43/64;* **C07D** *249/08*

U.S. Cl. 424—269 **9 Claims**

1. A 2-carbamoyloxy-3,3-dimethyl-1-phenoxy-1-(1,2,4-triazol-1-yl)-butane of the formula



in which

R is halogenoalkyl with up to 4 carbon atoms and up to 5 halogen atoms, alkoxycarbonyl with 1–4 carbon atoms in the alkyl part, alkoxyalkyl with 1 to 4 carbon atoms in each alkyl part, alkylsulphonyl-alkenyl-carbamoyl with 1 to 4 carbon atoms in the alkyl part and 2 to 4 carbon atoms

X each independently is halogen, amino, cyano, nitro, alkyl with up to 4 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, halogen-alkyl with up to 2 carbon atoms and up to 5 halogen atoms, alkoxy with 1 to 2 carbon atoms, phenyl, phenoxy, phenyl or phenoxy substituted by halogen, amino, cyano, nitro or alkyl with 1 to 2 carbon atoms, or phenyl-alkyl with 1 or 2 carbon atoms in the alkyl part which is optionally substituted in the phenyl by halogen, nitro or cyano, and

n is 0, 1, 2, 3, 4 or 5.

7. A fungicidal composition containing as active ingredient a fungicidally effective amount of a compound according to claim **1** in admixture with a diluent.

4,237,143

COMBATING FUNGI WITH 2-METHYLENE-3-SUBSTITUTED-4,5-BIS-TRIFLUORO-METHYL IMINO-THIAZOLIDINES

Klaus Grohe, Odenthal; Hans-Joachim Scholl, Cologne; Volker Paul, Solingen; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

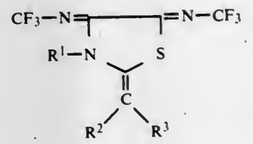
Filed Feb. 5, 1979, Ser. No. 9,564

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808227

Int. Cl.[3] **C07D** *277/04*

U.S. Cl. 424—270 **7 Claims**

1. A compound of the formula



in which

R^1 represents an alkyl, alkenyl or alkynyl radical with up to 6 carbon atoms, which radical can be substituted by cyano or an alkoxy or alkylmercapto group with in either case up to 3 carbon atoms, or represents cycloalkyl with 5 to 6 carbon atoms, which is optionally substituted by alkyl with 1 to 3 carbon atoms, or represents aryl with up to 10 carbon atoms or aralkyl with up to 10 carbon atoms in the aryl part and 1 or 2 carbon atoms in the alkyl part, the aryl radicals mentioned being optionally substituted by halogen, cyano, nitro or alkyl, alkoxy or alkylmercapto with in each case up to 3 carbon atoms, or represents an amino group $-NR^4R^5$, wherein

R^4 and R^5 each independently represents alkyl with 1 to 12 carbon atoms or, together with the connecting nitrogen atom and optionally one or more further hetero-atoms selected from oxygen, sulphur and nitrogen, form a heterocyclic ring with 5 to 7 ring atoms,

R^2 represents hydrogen, cyano or an acyl group with a total of up to 10 carbon atoms, and

R^3 represents cyano, or represents an acyl group with a total of up to 10 carbon atoms, alkylsulphonyl with up to 6 carbon atoms or arylsulphonyl with up to 10 carbon atoms in the aryl part, which aryl part is optionally substituted by alkyl with up to 3 carbon atoms and/or nitro and/or halogen, or represents an amide or thioamide group comprising the radical $CO—NR^6R^7$ or $CS—NR^6R^7$, in which

R^6 represents hydrogen or alkyl with up to 4 carbon atoms, and

R^7 represents alkyl with up to 6 carbon atoms, cycloalkyl with 5 or 6 carbon atoms or phenyl, which phenyl can be substituted by halogen, nitro or alkyl, alkoxy or alkylmercapto with in each case up to 4 carbon atoms, or

R^2 and R^3, together with the connecting carbon atom, represent an α-cycloalkanone ring system with 5 or 6 carbon atoms which is optionally substituted by alkyl with up to 3 carbon atoms.

5. A fungicidal composition containing as active ingredient a fungicidally effective amount of a compound according to claim **1** in admixture with a diluent.

4,237,144

2,3-DIHYDRO-2,6,7-TRISUBSTITUTED-5-ACYLBENZOFURANS

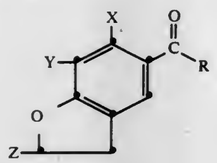
Edward J. Cragoe, Jr., and William F. Hoffman, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 21, 1979, Ser. No. 50,852

Int. Cl.³ A61K *31/425;* **C07D** *285/10, 307/83*

U.S. Cl. 424—270 **11 Claims**

1. A compound of the formula:



wherein

X is halo or methyl;

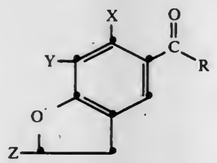
Y is halo, methyl or hydrogen;

X and Y can be combined to form a hydrocarbylene radical of from 3 to 4 carbon atoms;

R is selected from the group consisting of 2-thienyl, 3-thienyl, 5-methyl-2-thienyl, 1,2,5-thiadiazolyl, 3-methyl-1,2,5-thiadiazolyl, 2-furyl, 5-methyl-2-furyl, phenyl, p-methoxyphenyl, p-chlorophenyl, benzyl and p-chlorobenzyl and

Z is acetyl, aminomethyl, formyl or hydroxymethyl.

11. A method of treatment of edema associated with hypertension comprising the administration to a patient of from 0.01 mg. to 10 mg./kg. of body weight of the patient of a compound having the formula:



wherein

X is halo or methyl;

Y is halo, methyl or hydrogen;

X and Y can be combined to form a hydrocarbylene radical of from 3 to 4 carbon atoms;

R is selected from the group consisting of 2-thienyl, 3-thienyl, 5-methyl-2-thienyl, 1,2,5-thiadiazolyl, 3-methyl-1,2,5-thiadiazolyl, 2-furyl, 3-furyl, 5-methyl-2-furyl, phenyl, p-methoxyphenyl, p-chlorophenyl, benzyl and p-chlorobenzyl and

Z is acetyl, aminomethyl, formyl or hydroxymethyl.

4,237,145

METHOD OF PREPARING FOODSTUFFS CONTAINING COAGULATING PROTEINS AND A DEVICE FOR PERFORMING THE METHOD

Per O. G. Risman, Huskvarna, and Nils E. Bengtsson, Mölnlycke, both of Sweden, assignors to Husqvarna Aktiebolag, Huskvarna, Sweden

Filed Jan. 29, 1979, Ser. No. 7,420

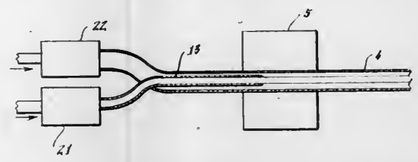
Claims priority, application Sweden, Feb. 3, 1978, 7801280

Int. Cl.³ A23L *3/30*

U.S. Cl. 426—241 **7 Claims**

1. Method of preparing foodstuffs from a mass containing protein which coagulate during heating to impart hard consistency to the product, comprising the steps: pumping a paste of the mass enclosed in a tube transparent to microwaves to move the mass forward and to form it to an extrusion mass, exposing the extrusion mass to microwaves in at least one TM_{021} applicator and discharging the exposed mass from the tube and transporting it therefrom in solid state, said step of exposing comprising exposing the extrusion mass in the TM_{021} applicator to give maximum heat intensity in the center of a cross section through the extrusion mass and minimum intensity in the periphery of the cross section, and further comprising supplying a lubricant to the contact surface between the extrusion mass and the inner wall of the tube.

5. An apparatus for preparing foodstuffs comprising a tube transparent to microwave energy, means for pumping foodstuffs through said tube, a TM_{021} applicator comprising a



substantially cylindrical cavity, said tube passing generally axially through said cavity, a microwave source coupled to said cavity to expose foodstuffs in said tube to microwave energy, said tube having an inner cross sectional radius such that a given frequency of the microwave source the conditions for producing TM_{021} resonance in the cavity are satisfied, and means at each end of said cavity for radially adjusting the position of said tube, and further comprising means coupled to said tube for applying a lubricant to the contact surface between the inner walls of said tube and any foodstuffs therein.

4,237,146

FREEZER SOFT INTERMEDIATE-MOISTURE FOOD DRESSING

Marvin L. Kahn, Williamsville, and Kuttikandathil E. Eapen, Kenmore, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Division of Ser. No. 917,379, Jun. 20, 1978, Pat. No. 4,154,863, Ser. No. 871,995, Jan. 24, 1978, and Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652. This application Mar. 26, 1979, Ser. No. 24,130

Int. Cl.³ A23L *1/24*

U.S. Cl. 426—330 **12 Claims**

1. A microbiologically stable food dressing comprising water, sugar, flavoring and at least one of fructose and unsaturated fat, wherein the product is substantially non-crystalline at freezer temperatures and comprises about from 15 to 55% water, sugar in a ratio to water of about from 0.8–2:1 and a minor but effective amount of flavoring, provided that the solutes content is adequate to provide the product with a water activity of about 0.8 to 0.9, the amount of fat is less than the amount of water containing at least 10% fat wherein from 50% to 100% of said fat is unsaturated, and in said sugar the amount of dextrose plus fructose is at least about 50% based upon the total sugar content.

4,237,147

STABILIZED AMORPHOUS CALCIUM CARBONATE

Helmut L. Merten, Ladue, and Gerald L. Bachman, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 112,446, Feb. 3, 1971, abandoned. This application Jan. 4, 1974, Ser. No. 431,002

Int. Cl.³ A23L *2/40*

U.S. Cl. 426—590 **8 Claims**

1. A dry carbonated beverage concentrate for preparing a carbonated beverage by admixture with water comprising:

a. amorphous calcium carbonate, substantially devoid of calcium hydroxide, and

b. an anhydrous, nontoxic acid in an amount in excess of the amount theoretically required to completely evolve the carbon dioxide from the amorphous calcium carbonate.

4,237,148

METHOD OF VAPORIZING ALLOYS OF METALS HAVING DIFFERENT VAPOR PRESSURES

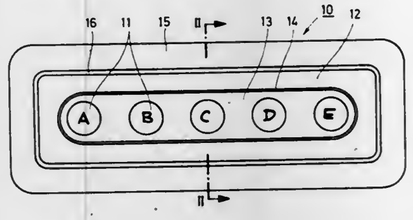
Hans Aichert, Hanau am Main; Otto-Horst Hoffman, Rodenbach, and Herbert Stephan, Bruchköbel, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Köln, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 964,093

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826165

Int. Cl.² C23C *13/02*

U.S. Cl. 427—42 **3 Claims**



1. Method for vaporizing oxidation and corrosion inhibiting alloys including alloys from the group of CoCrAlY and NiCoCrAlY containing metals having different vapor pressures from elongated vaporizing crucibles which are fed with alloy to be vaporized in rod form at several points distributed over the length of the crucible by direct bombardment of the alloy bath surface with electron beams periodically deflected according to a pattern for the vapor deposition of a coating of the alloy material on a plurality of metal substrates positioned in a vacuum coating chamber above the vaporizing crucible which comprises regulating the proportional composition of the alloy to be vaporized differently over the length of the vaporizing crucible such that the alloy component with the lowest boiling point or with the highest vapor pressure is in a smaller proportion in the alloy to be vaporized which is fed to the center of the vaporizing crucible than in the alloy fed to the ends of the vaporizing crucible.

4,237,149

METHOD OF MANUFACTURING MOLDED AND IMPREGNATED PARTS

Hans Denk, Gauting, and Reiner Habrich, Heimstetten near Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,103

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738890

Int. Cl.² B05D *5/12;* **B29B** *3/00;* **H02G** *13/08*

U.S. Cl. 427—58 **8 Claims**

1. A method for casting-in or impregnating electrical components and for casting with epoxy resin compositions, comprising applying to a mold or component to be impregnated a reactive epoxy resin composition, comprised of an epoxy resin and a tertiary amine, at a temperature in the range of from about 120° C. to about 180° C., and hardening said resin composition at a temperature in the range of from about 80° C. to about 110° C., wherein said epoxy resin composition hardens more slowly in the temperature range of from about 120° C. to about 180° C. than at temperatures in the range of from about 80° C. to about 110° C.

4,237,150

METHOD OF PRODUCING HYDROGENATED AMORPHOUS SILICON FILM

Harold J. Wiesmann, Wantagh, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 18, 1979, Ser. No. 30,974

Int. Cl.³ C01B *33/02*

U.S. Cl. 427—74 **7 Claims**

1. A method of producing hydrogenated amorphous silicon which comprises thermally decomposing a silicohydride gas by directing a stream of said silicohydride gas against a tungsten or carbon foil heated to a temperature of about 1400°–1600° C. and in a vacuum of about 10^{-6} to 10^{-4} torr, to form a gaseous mixture of atomic hydrogen and atomic silicon, and depositing said gaseous mixture onto a substrate independent of and situated a distance from said heated tungsten or carbon foil, to form a film of hydrogenated amorphous silicon on said substrate.

4,237,151

THERMAL DECOMPOSITION OF SILANE TO FORM HYDROGENATED AMORPHOUS SI FILM

Myron Strongin, Center Moriches; Arup K. Ghosh, Rocky Point; Harold J. Wiesmann, Wantagh, all of N.Y.; Edward B. Rock, Oxford, United Kingdom, and Harry A. Lutz, III, Midlothian, Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D. C. 20545

Filed Jun. 26, 1979, Ser. No. 52,278

Int. Cl.³ C01B *33/02*

U.S. Cl. 427—74 **5 Claims**

1. A method of producing hydrogenated amorphous silicon which comprises thermally decomposing a silicohydride gas in a tungsten tube heated to a temperature of about 1700°–2300° C. and under a vacuum of about 10^{-8} to 10^{-4} torr to form a gaseous mixture of atomic hydrogen and atomic silicon, and depositing said gaseous mixture onto a substrate situated outside said heated tungsten tube by directing a stream of said gaseous mixture at said substrate, to form a film of hydrogenated amorphous silicon on said substrate.

4,237,152

PROCESS FOR IMPROVING THE RESISTANCE OF ASPHALT PAVEMENT SURFACES TO CORROSION, DETERIORATION AND DISINTEGRATION

Domingos Loricchio; Orlando M. Lomonaco, and Luiz M. Lomonaco, all of Brazil

Continuation of Ser. No. 552,048, Feb. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 418,774, Nov. 23, 1973, abandoned. This application Apr. 4, 1977, Ser. No. 784,606

Claims priority, application Brazil, Nov. 29, 1972, 8378

Int. Cl.² B05C *1/16;* **B05D** *5/10;* **E01C** *5/00*

U.S. Cl. 427—136 **12 Claims**

1. A process for improving the resistance of the surface of an asphalt pavement to corrosion, deterioration and disintegration which consisting of the step of applying directly to the pavement a liquid composition consisting of at least one cured resin, a solvent for said resin and having dispersed therein finely divided particles of solid inorganic substances having a hardness between about 8.5 and 9.5 on the Mohs scale, said composition being applied to the pavement in a quantity sufficient to form a coating on the pavement which is firmly anchored thereto due to the impregnation of the pavement by the resin.

7. A process according to claim 1, wherein said resin is at least one member selected from the group consisting of phenol-formaldehyde resins, epoxy-modified phenol-formaldehyde resins, poly(methylmethacrylate) resins, polyester resins, poly(vinyl chloride) resins and polystyrene resins.

4,237,153

METHOD OF STRIPPING AND REPAINTING ETHYLENE-PROPYLENE-NON-CONJUGATED-DIENE RUBBER PARTS

Ronald S. Hendricks, Ada, Okla., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 621,721, Oct. 14, 1975, abandoned. This application Nov. 4, 1976, Ser. No. 738,932

Int. Cl.[2] B08B *3/08, 3/10*

U.S. Cl. 427—140 **6 Claims**

1. A method of removing paint from and repainting ultra violet light-benzophenone treated ethylene-propylene-non-conjugated diene rubber parts consisting essentially of:

A. immersing the parts in 100 parts of a solution consisting essentially of:

(a) from about 50 to 99 parts of sulfuric acid

(b) from about 0.1 parts to 10 parts of a surfactant

(c) from about 0.9 to 40 parts of water

B. maintaining the parts in the solution at a temperature of 100° F. to 200° F. for from 10 to 40 minutes

C. removing the parts from the solution

D. rinsing the solution from the parts with water

E. drying the parts

F. repainting the parts in the absence of an ultra violet light benzophenone treatment after the immersion.

4,237,154

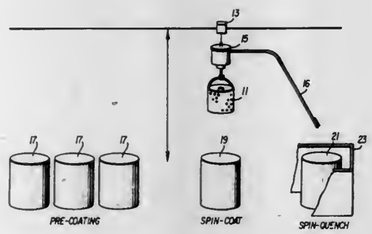
IMPROVED GALVANIZING METHOD [AND APPARATUS]

William H. Garrison, P.O. Box 9256, Bellevue Station, Richmond, Va. 23227

Filed Aug. 16, 1979, Ser. No. 66,969

Int. Cl.[3] C23C *1/02*

U.S. Cl. 427—241 **7 Claims**



1. A method of spin-galvanizing articles comprising the steps of:

placing said articles in a perforate container;

suspending said container from a reversible fluid motor, said motor being suspended from a travelling crane;

transporting said reversible fluid motor and perforate container by said travelling crane above a work path where at selected locations along the work path said perforate container is lowered into and raised from pre-coating tanks while being spun first in one direction, stopped, and spun in a reverse direction about a vertical axis;

transporting said reversible fluid motor and said perforate container to a selected position along the work path where said perforate container is lowered into a molten zinc bath while spinning said perforate container and said articles first in one direction, stopping, and then spinning in a reverse direction about a vertical axis to coat articles on all sides and edges;

raising said perforate container from said zinc bath while continuing to spin said perforate container first in one direction, stopping, and then spinning in a reverse direction about said vertical axis to remove excess zinc therefrom before undesired zinc build-up occurs;

rapidly transporting said reversible fluid motor and said perforate container with the zinc-coated articles to a selected position along the work path where the container is continually spun first in one direction, stopped, and spun in a reverse direction as it is lowered into a quench tank while said articles are still at sufficiently high temperature that said articles do not stick together;

raising said perforate container from said quench tank while continuing to spin said perforate container and said zinc coated articles first in one direction, stopping and then spinning in a reverse direction about a vertical axis until dry to free said articles from water staining; and,

transporting said reversible fluid motor and said perforate container with the zinc-coated articles above a work path to a selected location where said zinc coated articles are removed from said perforate container.

4,237,155

ARTICLES AND METHODS FOR TREATING FABRICS

Nabil G. Kardouche, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

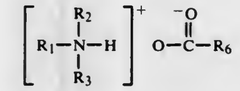
Continuation-in-part of Ser. No. 925,594, Jul. 17, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,801

Int. Cl.[3] B05D *3/12*

U.S. Cl. 427—242 **19 Claims**

1. An article of manufacture adapted for providing fabric softening within an automatic clothes dryer, said article comprising:

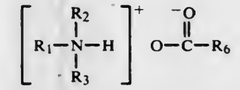
(a) a fabric softening amount of a fabric softening composition comprising from about 5% to about 100% of a carboxylic acid salt of a tertiary amine having the formula



wherein R_1 is a long chain aliphatic group containing from 12 to 22 carbon atoms and R_2 and R_3 can be the same or different from each other and are selected from the group consisting of aliphatic groups containing from 1 to 22 carbon atoms, hydroxyalkyl groups of the formula $-R_4OH$ wherein R_4 is an alkylene group of 1 to 3 carbon atoms, and alkyl ether groups of the formula $R_5O(C_nH_{2n}O)_m-$ wherein R_5 is selected from the group consisting of alkyl and alkenyl of from 1 to 20 carbon atoms and hydrogen, n is 2 or 3 and m is from 1 to 20, and wherein R_6 is selected from the group consisting of unsubstituted alkyl, alkenyl, aryl, alkaryl and aralkyl of 11 to 21 carbon atoms, and substituted alkyl, alkenyl, aryl, alkaryl, and aralkyl of from 11 to 21 carbon atoms wherein the substituents are selected from the group consisting of halogen, carboxyl, and hydroxyl, said composition having a melting point between about 35° C. and about 100° C.; and

(b) a dispensing means which provides for release of said softening composition to fabrics within an automatic laundry dryer at dryer operating temperatures.

11. A method for imparting a softening and antistatic effect to fabrics in an automatic clothes dryer comprising tumbling said fabrics under heat in said dryer with an effective amount of a fabric softening composition comprising from 5% to 100% of a tertiary amine salt of the formula



wherein R_1 is a long chain aliphatic group containing from 12 to 22 carbon atoms R_2 and R_3 can be the same or different from each other and are selected from the group consisting of aliphatic groups containing from 1 to 22 carbon atoms, hydroalkyl groups of the formula $-R_4OH$ wherein R_4 is an alkylene

group of 1 to 3 carbon atoms, and alkyl ether groups of the formula $R_5O(C_nH_{2n}O)_m-$ wherein R_5 is selected from the group consisting of alkyl and alkenyl of from 1 to 22 carbon atoms and hydrogen, n is 2 or 3 and m is from 1 to 20, and wherein R_6 is selected from the group consisting of unsubstituted alkyl, alkenyl, aryl, alkaryl and aralkyl of 11 to 21 carbon atoms, and substituted alkyl, alkenyl, aryl, alkaryl, and aralkyl of from 11 to 21 carbon atoms wherein the substituents are selected from the group consisting of halogen, carboxyl, and hydroxyl, said composition having a melting point between about 35° C. and about 100° C.

4,237,156

FLUORINATED POLY(ARYLENE SULFIDES)

Harold D. Boultinghouse, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 17, 1978, Ser. No. 961,896

Int. Cl.[2] B32B *27/06;* **B05D** *3/04*

U.S. Cl. 427—255.1 **6 Claims**

1. A process for treating a poly(arylene sulfide) surface which consists essentially of contacting said surface with a fluorine-containing gas under a temperature and for a period of time sufficient to render said surface water-wettable and receptive to a second material including adhesives, coatings, paints and the like.

4,237,157

PROCESS FOR MAKING FIRE RETARDANT POLYPROPYLENE

Henry Hancock, 5 Laurel Trail, Kinnelon, N.J. 07405

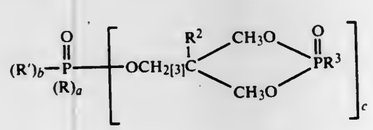
Division of Ser. No. 829,890, Sep. 1, 1977, Pat. No. 4,139,476. This application May 5, 1978, Ser. No. 903,035

Int. Cl.[2] C09K *3/28*

U.S. Cl. 427—352 **8 Claims**

1. A method for making a flame retardant polypropylene comprising:

a. providing an aqueous bath comprising 25 to 75% of a phosphonate ester of the following formula:



(I)

wherein a is 0, 1 or 2, b is 0, 1 or 2, c is 1, 2 or 3 and a+b+c is 3; R and R′ are the same or dissimilar and are alkyl, alkoxy, aryl, aryloxy, alkaryl, alkaryloxy, aralkyl, aryloxyakloxy, or aralkoxy, wherein the alkyl portion of these groups may contain hydroxyl but no halogen and the aryl portion may contain chlorine bromine and hydroxyl groups; R^2 is alkyl, hydroxyalkyl, or aryl; R^3 is lower alkyl (C_1–C_4); and about 1 to 10% of a penetrant for the polypropylene;

b. passing the polypropylene through the bath so as to pick up the bath composition; and

c. removing substantially all the water from the fabric which comprises:

(i) extracting the latent bath composition from the polypropylene and then

(ii) drying the polypropylene in an oven.

4,237,158

1-SUBSTITUTED ARALKYL IMIDAZOLES AND THEIR USE AS FUNGICIDES

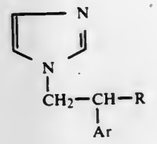
George A. Miller, Maple Glen, and Ronald P. Owen, Warminster, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 642,041, Dec. 8, 1975, Pat. No. 4,105,762, which is a continuation-in-part of Ser. No. 547,291, Feb. 5, 1975, abandoned. This application Nov. 12, 1976, Ser. No. 741,442

Int. Cl.[3] C07D *233/60;* **A01N** *9/22*

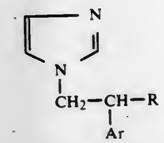
U.S. Cl. 424—273R **13 Claims**

1. A chemical compound selected from the group consisting of an imidazole derivative having the formula



and the active acid addition salts thereof wherein Ar is a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl, and R is a member selected from the group consisting of (C_1–C_{10}) alkyl, cycloalkyl, alkenyl, cycloalkenyl and aralkyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl, provided that when Ar is unsubstituted phenyl then R is (C_4–C_{10}) alkyl, cycloalkyl, alkenyl, cycloalkenyl and arylalkyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl,

10. A method for controlling phytopathogenic fungi which comprises applying to a plant, to plant seeds or to the plant habitat an effective amount of a compound of the formula:



and the active acid addition salts thereof wherein Ar is a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl, and R is a member selected from the group consisting of (C_1–C_{10}) alkyl, (C_3–C_7) cycloalkyl, (C_2–C_{12}) alkenyl, (C_5–C_7) cycloalkenyl and (C_7–C_9) aralkyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, methylphenyl, ethylphenyl, methoxyphenyl, ethoxyphenyl, nitrophenyl and trihalomethylphenyl.

4,237,159

NOVEL ANTI-INFLAMMATORY COMPOSITION

Laurence B. Katz, A901 Presidential Apts., City Line Ave. & Presidential Blvd., Philadelphia, Pa. 19131

Filed Nov. 19, 1979, Ser. No. 95,235

Int. Cl.[3] A61K *31/40*

U.S. Cl. 424—274 **4 Claims**

1. A pharmaceutical composition useful for treating inflammation in humans and animals which comprises indomethacin and cinanserin in oral dosage form, each dosage unit of which

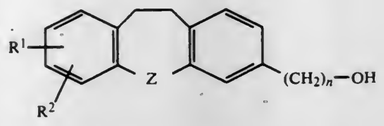
contains from 20 to 200 mg. of indomethacin and from 5 to 100 mg. of cinanserin.

4,237,160
3-HYDROXYMETHYLDIBENZO[B,F]THIEPINS AS PROSTAGLANDIN ANTAGONISTS

Pierre A. Hamel, Laval, and Joshua Rokach, Chomedey-Laval, both of Canada, assignors to Merck Sharp & Dohme (I.A.) Corp., Rahway, N.J.

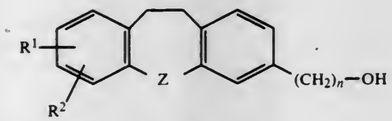
Filed Nov. 27, 1979, Ser. No. 97,755
Int. Cl.³ A61K *31/38;* **C07D** *337/14*
U.S. Cl. 424—275 **22 Claims**

1. A compound of the formula:



or an ester or acetal thereof, wherein
n is an integer from 1 to 4;
Z is thio, sulfinyl, or sulfonyl;
R^1 and/or R^2 is hydrogen, halogen including chloro, bromo, fluoro and iodo, amino, C_1 to C_4 alkyl, C_1 to C_4 alkanoyl, hydroxyl, C_1 to C_4 alkoxy, thiol, C_1 to C_4 alkylthio, C_1 to C_4 alkylsulfinyl, C_1 to C_4 alkylsulfonyl, trifluoromethyl, trifluoromethylthio, cyano, nitro, and C_1 to C_4 alkyl or dialkylamino, aralkyl including benzyl and phenethyl, hydroxyalkyl as CH_3CHOH; and
the dotted line indicates either an olefinic bond or saturation at the 10-, 11-position.

17. A composition for treating undesirable contractile activity of prostaglandins consisting essentially of a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound of the formula:



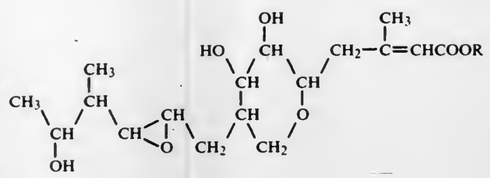
or an ester or acetal thereof, wherein
n is an integer from 1 to 4;
Z is thio, sulfinyl, or sulfonyl;
R^1 and/or R^2 is hydrogen, halogen including chloro, bromo, fluoro and iodo, amino, C_1 to C_4 alkyl, C_1 to C_4 alkanoyl, hydroxyl, C_1 to C_4 alkoxy, thiol, C_1 to C_4 alkylthio, C_1 to C_4 alkylsulfinyl, C_1 to C_4 alkylsulfonyl, trifluoromethyl, trifluoromethylthio, cyano, nitro, and C_1 to C_4 alkyl or dialkylamino, aralkyl including benzyl and phenethyl, hydroxyalkyl as CH_3CHOH; and
the dotted line indicates either an olefinic bond or saturation at the 10-, 11-position.

4,237,161
ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, Great Britain

Division of Ser. No. 873,394, Jan. 30, 1978, Pat. No. 4,166,863, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901. This application Aug. 7, 1978, Ser. No. 931,385
Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 86471/77
Int. Cl.³ A61K *31/35*
U.S. Cl. 424—283 **8 Claims**

5. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need thereof an antibacterially effective amount of a compound of the formula:



wherein R is
(a) alkyl of 1 to 20 carbon atoms substituted with halo, hydroxy, alkanoyloxy of 1 to 6 carbon atoms, amino, alkylamino or dialkylamino wherein each alkyl group contains 1 to 6 carbon atoms;
(b) alkenyl of 2 to 8 carbon atoms substituted with halo, carboxy, alkoxycarbonyl wherein alkoxy contains 1 to 6 carbon atoms, carbamoyl, hydroxy, alkanoyloxy of 1 to 6 carbon atoms, amino, alkylamino or dialkylamino wherein each alkyl group contains 1 to 6 carbon atoms; or
(c) alkynyl of 2 to 8 carbon atoms substituted with halo, carboxy, alkoxycarbonyl wherein alkoxy contains 1 to 6 carbon atoms, carbamoyl, hydroxy, alkanoyloxy of 1 to 6 carbon atoms, amino, alkylamino or dialkylamino wherein each alkyl group contains 1 to 6 carbon atoms,

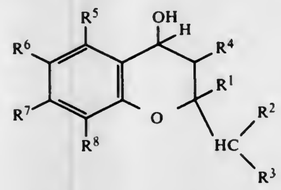
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4,237,162
COMBATING ARTHROPODS WITH 2-AND 4-SUBSTITUTED-CHROMANES

Hans-Joachim Kabbe, Leverkusen; Arno Widdig, Odenthal; Wilhelm Stendel, Wuppertal, and Peter Roessler, Berg.Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,286
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745305
Int. Cl.³ C07D *311/38;* **A61K** *31/35*
U.S. Cl. 424—283 **6 Claims**

1. A chromane derivative of the formula



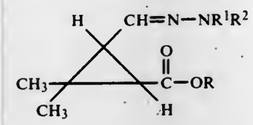
in which
R^1 to R^3, which need not be identical, each represents hydrogen, or carboxyl, or an alkyl, alkenyl, cycloalkyl, phenyl, phenylalkyl or alkoxycarbonyl radical, any of these groups being optionally substituted by halogen, cyano, C_1- C_6-alkyl, C_1-C_6-alkoxy, (C_1-C_6-alkoxy)carbonyl, (C_1-C_6-alkoxy) carbonyl (C_1-C_6-alkyl), phenyl or a carboxylic acid group,
R^4 represents phenyl, and
R^5 to R^8, which need not be identical, each represents hydrogen, halogen, hydroxyl, nitro, cyano, carboxyl, an alkyl, alkenyl, cycloalkyl, phenyl, phenylalkyl, alkoxy, phenylalkoxy, phenoxy, alkoxycarbonyl, alkylamino or dialkylamino radical, amino or acylamino, and two of the radicals, which are in the o-position to one another, can represent tetramethylene or the radical —CH=CH—CH=CH—.

4,237,163
HYDRAZONO-SUBSTITUTED CYCLOPROPANECARBOXYLATE PESTICIDES

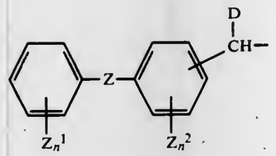
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 11, 1979, Ser. No. 47,408
Int. Cl.³ A01N *37/34, 53/00;* **C07C** *69/743, 121/66*
U.S. Cl. 424—304 **5 Claims**

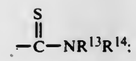
1. A cyclopropane compound of the formula



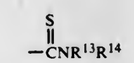
wherein R^1 and R^2 each is a methyl group and R is a group of the formula



in which D is H, —CN, —C≡CH or



R^{13} and R^{14} each independently is a hydrogen atom or an alkyl group; Z is $—CH_2—$, —O—, —CO— or —S—; Z^1 and Z^2 each independently is halogen or an alkyl group containing from 1 to 4 carbon atoms, and n is 0, 1 or 2, with the proviso that when D is —CN, —C≡CH or



then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.

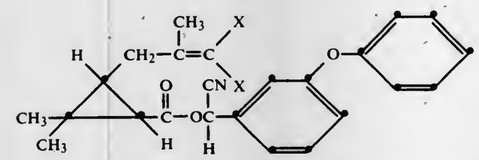
5. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of an hydrazono-substituted cyclopropane carboxylate according to claim **1**.

4,237,164
CYCLOPROPANECARBOXYLATE PESTICIDES

James E. Powell, Ripon, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed May 14, 1979, Ser. No. 39,099
Int. Cl.³ A01N *37/34, 53/00;* **C07C** *69/743, 121/75*
U.S. Cl. 424—304 **5 Claims**

1. A (1R,cis) compound of the formula



wherein X is chlorine or bromine, with the priviso that the alcohol moiety is in the R,S-racemic or the S-optical configuration.

5. A method of controlling pests which comprises applying to the pests or their habitat a pest controlling effective amount of a compound according to claim **1**.

4,237,165
TREATMENT OF CARBOHYDRATE METABOLISM DISORDERS

Jacques Duhault, Chatou, France, assignor to Science Union et Cie, Suresnes, France

Continuation-in-part of Ser. No. 523,273, Nov. 13, 1974, abandoned. This application Jun. 4, 1976, Ser. No. 692,653
Int. Cl.³ A61K *31/235*
U.S. Cl. 424—308 **10 Claims**

1. A method of treating a human patient in need of a reduction in levels of blood sugar, which consists in administering to said human patient an effective amount therefor of a compound selected from the group consisting of
(A) 1-(3-trifluoromethylphenyl)-2-(β-hydroxy-ethyl) amino propane;
(B) 1-(3-trifluoromethylphenyl)-2-(β-benzoyloxy-ethyl) amino propane;
(C) optical isomers thereof, and
(D) physiologically acceptable acid addition salts thereof.

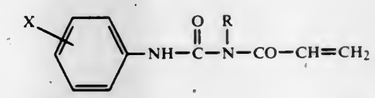
6. A method for reducing blood sugar levels and improving tolerance to ingested glucose as indicated by the glucose tolerance test which consists in administering to the patient in need of same an effective amount therefor of a compound selected from the group consisting of 1-(3-trifluoromethylphenyl)-2-(β-benzoyloxy-ethyl)-aminopropane,
optical isomers thereof, and physiologically acceptable acid addition salts thereof.

4,237,166
1-ACRYLOYL-3-(SUBSTITUTED) PHENYL UREAS

John W. Williams, Waukegan, and Frank C. Becker, Gurnee, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

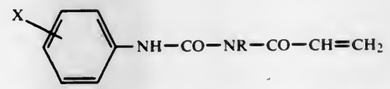
Continuation-in-part of Ser. No. 875,253, Feb. 6, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,414
Int. Cl.³ A01N *37/10, 37/34, 47/28;* **C07C** *101/00*
U.S. Cl. 424—310 **15 Claims**

1. The process of protecting substrates against attack by common fungi consisting essentially in applying to said substrates an antifungally effective amount of a compound of the formula



wherein X is, COOalk wherein R is hydrogen or alk, and alk is a loweralkyl of 1-3 carbons.

11. A urea of the formula



wherein X is COOalk wherein R is hydrogen or alk, and alk stands for an alkyl group of 1-3 carbons.

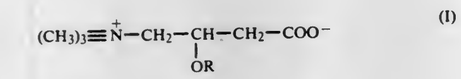
4,237,167

ACYL-CARNITINES IN A THERAPEUTICAL METHOD FOR TREATING CHRONIC URAEMIC PATIENTS UNDERGOING REGULAR DIALYSIS AND LIQUID COMPOSITION FOR USE THEREIN

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

Filed May 15, 1979, Ser. No. 39,233
Claims priority, application Italy, May 15, 1978, 49355 A/78
Int. Cl.[3] A61K *31/32*
U.S. Cl. 424—311 10 Claims

1. A therapeutical method for treating chronic uraemic patients under regular dialysis treatment, which comprises orally administering to said patients, both on the days of the haemodialysis sessions and on the days between one session and the next one, from 3 to 6 grams/day of an acyl-carnitine of general formula



(I)

wherein R represents acetyl, propionyl, butyryl, hydroxy butyryl, hexanoyl, octanoyl, decanoyl, palmitoyl, stearoyl, acetoacetyl, succinyl, isovaleryl and crotonyl or a pharmaceutically acceptable salt thereof.

4,237,168

N-(4-CHLORO-2-METHYLPHENYL)-N-HYDROXY METHANIMIDAMIDE AND ITS PESTICIDAL USE

Walter Reifschneider, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 11, 1979, Ser. No. 47,512
Int. Cl.[3] A01N *37/52*; C07C *131/00*
U.S. Cl. 424—326 3 Claims

1. N-(4-chloro-2-methylphenyl)-N'-hydroxy methanimidamide.

4,237,169

INHIBITION OF PROLACTIN RELEASE BY AN AMINOBENZYLCYCLOALKANOL

Eric L. Lien, Paoli, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,257
Int. Cl.[3] A61K *31/135*
U.S. Cl. 424—330 1 Claim

1. A method for lowering blood serum prolactin levels in warm-blooded animals which comprises administering to a warm-blooded animal in need of a lowered serum prolactin level an amount of 1-cis-2-(α-dimethylamino-m-hydroxybenzyl)-cyclohexanol, or a pharmacologically acceptable acid addition salt thereof, effective to bring about said lowering of the serum prolactin level.

4,237,170

HIGH FIBER WHITE BREAD

Morton Satin, Dollard des Ormeaux, Canada, assignor to Multimarques Inc., Montreal, Canada

Continuation-in-part of Ser. No. 920,387, Jun. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 755,021, Dec. 28, 1976, abandoned. This application Dec. 3, 1979, Ser. No. 99,982
Int. Cl.[3] A21D *2/36*
U.S. Cl. 426—21 12 Claims

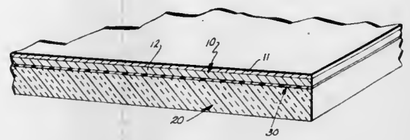
1. A composition for use in making a high fiber content white bread comprising 100 parts by weight flour and about 5 to 20 parts by weight field pea hull fibers having particle sizes in the range which pass a 20 mesh screen but do not pass an 80 mesh screen, said pea hulls being selected from the group consisting of yellow and green pea hulls and mixtures thereof.

4,237,171

INSULATED AND MOISTURE ABSORBENT FOOD CONTAINER AND METHOD OF MANUFACTURE

Fred C. Laage, 7149 Wildermere Dr., Rockford, Mich. 49341, and Patrick A. Loftus, Grand Rapids, Mich., assignors to Fred C. Laage, Rockford, Mich.

Filed Feb. 21, 1979, Ser. No. 13,123
Int. Cl.[3] B65D *81/26*
U.S. Cl. 426—127 20 Claims



1. A method for packaging a hot food having a first portion thereof of a constituency which gives off condensing moisture while in heated condition and an other portion of a constituency that is capable of absorbing said moisture with a negative affect on texture and appeal of said hot food comprising:

providing a covered container having an inner food containing layer of absorbent paperboard adhered to an outer layer of resinous foam insulating material enclosing said inner layer, wherein the inner paperboard layer has an absorbent porous surface and has sufficient thickness and rigidity to lend body and strength to the container, and wherein said outer foam layer is suffciently thick to insulate and prevent moisture leakage from said container; and

placing said hot food in said covered container on said inner layer so that said absorbent paperboard absorbs a substantial amount of said moisture given off by said first portion thereby substantially lessening the moisture absorbed by said other portion to prevent the said other portion from becoming soggy,

said resinous foam material preventing said moisture absorbed by said paperboard from leaking through said container while at the same time retaining heat in said container.

14. In a hot food package comprising a covered container containing hot food having a first portion thereof of a constituency which while in heated condition gives off condensing moisture and an other portion of a constituency that is capable of absorbing said moisture with a negative affect on texture and appeal of said hot food; the improvement comprising said covered container being constructed of an inner food contacting layer of absorbent paperboard adhered to a outer layer of resinous foam insulating material enclosing said inner layer, wherein said paperboard layer has an absorbent porous exposed inner surface and has sufficient thickness and rigidity to lend body and strength to the container, yet is sufficiently thin that it can be bent from flat sheet into the shape of a container, and wherein said outer foam layer is sufficiently thick to insulate and prevent moisture leakage, yet is sufficiently thin that it will bend without excessive fracturing when said paperboard is bent;

said absorbent paperboard absorbing a substantial amount of said moisture given off by said first portion of said food thereby substantially lessening the moisture absorbed by said other portion to prevent the said other portion from becoming soggy,

said resinous foam material preventing said moisture absorbed by said paperboard from leaking through said container while at the same time retaining heat in said container.

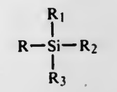
4,237,172

SEALING LEAKS BY POLYMERIZATION OF VOLATILIZED AMINOSILANE MONOMERS

Joseph J. Packo, 2504 Pebble Beach Dr., Austin, Tex. 78747, and Donald L. Bailey, Traverse City, Mich., assignors to Joseph J. Packo, Austin, Tex.

Filed Dec. 4, 1978, Ser. No. 966,327
Int. Cl.[3] B32B *35/00*
U.S. Cl. 428—63 14 Claims

1. A method of forming a seal at the situs of a leak located in a vessel by polymerizing an organic monomer at said situs, comprising introducing a sealant consisting essentially of an aminosilane monomer into the interior of said vessel, said aminosilane monomer being readily volatilizable at the ambient temperature of said vessel and having the formula:



wherein R is H, halogen or R', and R' is alkyl of 1-4 carbons;
R_1 is halogen, R', —OR, —NHR' or —N(R')$_2$;
R_2 is halogen, R', —OR, —NHR' or —N(R')$_2$; and
R_3 is —NHR' or —N(R')$_2$;
said aminosilane monomer being introduced to said vessel under sufficient pressure and for a sufficient period of time to effect contact of said leak situs with said monomer in the vapor state and to effect polymerization of said monomer at said leak situs and sealing of the leak.

13. A sealed vessel obtained by the method of claim 1.

4,237,173

WHITE SIDEWALL TIRE

Tiong H. Kuan, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Apr. 26, 1979, Ser. No. 33,342
Int. Cl.[3] B32B *3/00*
U.S. Cl. 428—65 1 Claim

1. A pneumatic tire characterized in the sidewall is coated with:

(a) a catalyzed reaction product of 100 parts of:

(1) a prepolymer of a hydrogenated diphenylmethane diisocyanate-terminated polytetrahydrofuran containing from 2 to 6% by weight of isocyanate groups;

(2) a chain extending diol having a 2 to 6 carbon atom chain; and

(3) a chain extending and crosslinking triol having a molecular weight of from 130 to 11,000;

wherein the ratio of NCO groups of (1) to the total OH groups of (2) and (3) has a value of from 100:80 to 100:97;

(b) reinforced by the addition of from 4 to 10 parts of a titanium dioxide pigment.

4,237,174

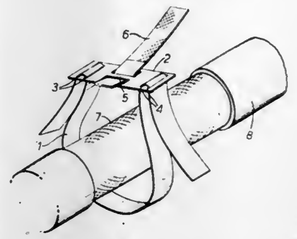
WRAP-AROUND DEVICES

Bruno J. F. Lagardere, 12 ter, rue Raymond Houdoux, 95540 Mery sur Oise, France, and Richard C. Sovish, rue du Coteau, 10 1420 Braine l'Alleud, Belgium

Filed Dec. 20, 1978, Ser. No. 971,260
Claims priority, application United Kingdom, Dec. 23, 1977, 53703/77
Int. Cl.[2] F16L *25/02*; H01B *7/00*; B29C *27/02*
U.S. Cl. 428—99 27 Claims

1. A wrap-around device which comprises heat recoverable sheet material and mechanical retaining means adapted to cooperate and engage opposed edge regions of the sheet material so that the surface of the device after recovery about a substrate lies substantially flush with the substrate without protuberances from its outer surface, the mechanical retaining means being provided with means for receiving and engaging an electrical component to electrically connect the component to the substrate.

25. A method of forming a wrap-around connection to a substrate comprising wrapping a length of heat recoverable sheet material about the substrate, engaging opposed edge



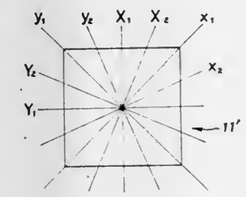
regions of said sheet material with mechanical retaining means, said mechanical retaining means being provided with receiving means for an electrical component, positioning an electrical component in said receiving means, and heating said sheet material to cause recovery and electrically connect said electrical component to said substrate.

4,237,175

CARBON-FILAMENT REINFORCED GEAR

Tuguo Kobayashi, 24-8, Horifune 3-chome, Kita-ku, Tokyo, Japan

Filed Jun. 9, 1978, Ser. No. 914,125
Claims priority, application Japan, Jun. 10, 1977, 52-67778
Int. Cl.[3] B32B *5/12*
U.S. Cl. 428—192 9 Claims



1. A method for preparing a carbon filament reinforced gear material of laminated structure having layers of carbon filaments, comprising the steps of:

loosening the woven fabrics, each of which including warps and wefts being composed of multicarbon filaments bundled into strands by means of a first binding agent;

brushing said woven fabrics in the lengthwise and cross-wise or oblique direction while applying thereto a second binding agent so that the filaments in each of the strands may be substantially equidistantly separated from one another to make thinner and finer fabrics, said warps and wefts of said woven fabrics being angularly spaced by approximately 90 degrees;

laminating a first said woven fabric with a second said woven fabric wherein said second woven fabric being angularly shifted by approximately 45 degrees relative to said first woven fabric;

laminating a third said woven fabric with said first and second said woven fabrics wherein said third woven fabric being angularly shifted by approximately 22.5 degrees relative to said first woven fabric;

laminating at least a fourth said woven fabric with said first, second and third said woven fabrics wherein said fourth woven fabric being angularly shifted by approximately 67.5 degrees relative to said first woven fabric;

repeating the laminating steps until the desired thickness of the gear material is obtained; and

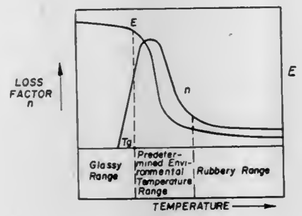
applying heat and pressure to the laminated fabrics so as to set the binding agents thereby to prepare the laminated gear material.

4,237,176

MOLDABLE SOUND CONTROL COMPOSITE

Walter H. Brueggemann, Chagrin Falls, Ohio, and Charles L. Meteer, Bridgeport, Conn., assignors to Ferro Corporation, Cleveland, Ohio

Filed May 27, 1976, Ser. No. 690,796
Int. Cl.[2] C04B *43/00;* **C08L** *67/00*
U.S. Cl. 428—212 **2 Claims**



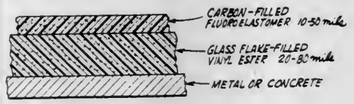
1. A moldable sound control composite adapted to form a molded structural article by itself, free of any accompanying support, and combining damping, barrier performance, and structural strength, said composite being further adapted for use within a predetermined environmental temperature range, said composite comprising in weight percent a blend of from about 10% to about 60% of a primary organic polymeric resinous material that is non-viscoelastic within said temperature range to impart structural strength, from about 40% to about 90% of a secondary organic resinous polymeric material that is viscoelastic within said temperature range to provide damping performance, and from about 10% to about 60% of a filler material adapted to density the composite and impart barrier performance, said composite having a specific gravity within the range of about 1.0 to about 7.0 and, by virtue of said blend, a glass transitional temperature range generally corresponding to said predetermined environmental temperature range and a maximum loss factor, n, falling within said environmental temperature range, said primary non-viscoelastic organic resinous material being a cross-linked polyester resin, and said secondary viscoelastic organic resinous material being selected from the group consisting of linear polyester resins, polyethylene, polystyrene, and elastomers.

4,237,177

CORROSION-RESISTANT COATED ARTICLES

William R. Slama, North Olmsted; Robert B. Washburn, and Dale J. Semanisin, both of Cleveland, all of Ohio, assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 3, 1978, Ser. No. 957,084
Int. Cl.[3] B05D *7/00, 1/02*
U.S. Cl. 428—215 **11 Claims**



1. A coated article resistant to corrosion and/or deterioration which comprises:

a substrate;

a primer coating layer in contact with the surface of said substrate, said primer coating layer being a polymer formed from a thermosetting polymeric material;

one or more inner coating layers, the first of said inner coating layers being in bonded contact with said primer coating layer and each succeeding inner coating layer being in bonded contact with the preceding inner coating layer, each of said inner coating layers being an admixture of a polymer formed from a thermosetting polymeric material and a reinforcing filler material, and each of said inner coating layers having a thickness from about 20 to about 80 mils; and

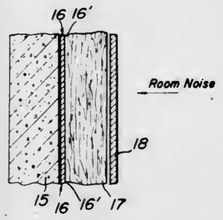
an outer coating layer in chemically bonded contact with the outermost of said inner coating layers, said outer coating layer being an admixture of a fluroelastomer and a reinforcing filler material.

4,237,178

SOUND PROOF MATERIALS FOR BUILDINGS

Tadashige Mazaki, Tokyo, Japan, assignor to Hideo Sakai, Tokyo, Japan

Filed May 29, 1979, Ser. No. 43,016
Claims priority, application Japan, Jun. 16, 1978, 53-72047
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—242 **4 Claims**



1. A sound proof material for buildings comprising a glass cloth and a lead coating formed on at least one side of said glass cloth, said material being prepared as a flexible noise separating member by mixing powdery lead of finer particle size with an impregnating resin, a solvent, a plasticizer and the like and applying them on said glass cloth, and wherein a glasswool or rockwool layer is further adhered to an outer surface of said lead coating as a noise absorption member.

4. A sound proof material for buildings comprising a glass cloth and a lead coating formed on at least one side of said glass cloth, said material being prepared as a flexible noise separating member by mixing powdery lead of finer particle size with an impregnating resin, a solvent, a plasticizer and the like and applying them on said glass cloth, and wherein said material is prepared by providing an impregnating resin consisting of about 50 volume % of vinyl chloride resin, about 40 volume % of vinyl acetate resin and about 10 volume % of butadiene-styrene rubber, adding about 6 kg of toluene as a solvent, about 3 kg of aluminum hydroxide as an additive, about 2 kg of phosphoric acid ester as a plasticizer and about 13 kg of powdery lead having a particle size of about 100–350 mesh based on 4 kg of said impregnating resin, and applying them on at least one side of a glass cloth made from glass yarns with a filament diameter of 0.16 mm and having a warp density of 32/25 mm and a weft density of 22/25 mm.

4,237,179

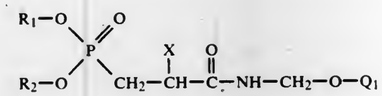
PROCESS FOR FIREPROOFING CELLULOSE-CONTAINING FIBER MATERIAL DYED WITH COPPER-COMPLEX AZO DYES

Detlef Mentzel, Wehr, Fed. Rep. of Germany, and Hans-Rudolf Frei, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 15, 1977, Ser. No. 824,478
Claims priority, application Switzerland, Aug. 27, 1976, 10885/76
Int. Cl.[2] D06P *1/10, 5/06, 5/08;* **C09D** *5/18*
U.S. Cl. 428—276 **13 Claims**

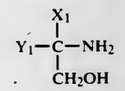
1. Process for fireproofing cellulose containing textile fiber material dyed with copper-complex azo dyes or with azo dyes treatable with copper or after-coppered, which process comprises applying to the fiber material an aqueous preparation comprising

(a) 250 to 450 g of a phosphorus compound of the formula



wherein Q_1 is hydrogen, alkyl or alkenyl having at most 4 carbon atoms, R_1 and R_2 are each alkyl, halogenoalkyl or alkenyl each having at most 4 carbon atoms, and X is hydrogen or methyl,

(b) 10 to 20 g of an alkanolamine of the formula



wherein X_1 is alkyl, hydroxyalkyl or halogenoalkyl each having 1 to 4 carbon atoms, or hydrogen, and Y_1 is alkyl, hydroxyalkyl or halogenoalkyl each having 1 to 4 carbon atoms, phenyl, benzyl, or cyclohexyl, with the alkanolamine being in the form of a watersoluble acid addition salt of inorganic acids, or aliphatic mono- or dicarboxylic acids having at most 4 carbon atoms, or of an alkanecarboxylic acid having 1 to 3 carbon atoms, and

(c) 1 to 6 g of a water-soluble copper salt of an inorganic acid or of an alkanecarboxylic acid having 1 to 3 carbon atoms, and

(d) 0 to 60 g of an aminoplast pre-condensate or an etherified aminoplast pre-condensate;

and thereupon drying the fiber material and subjecting it to a heat treatment at a temperature from 140° to 200° C.

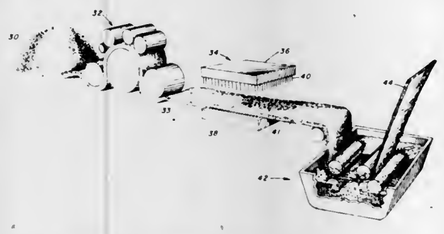
11. Dyed fiber material bearing thereon a fireproof finish obtained by the process according to claim 1.

4,237,180

INSULATION MATERIAL AND PROCESS FOR MAKING THE SAME

Michael C. Jaskowski, 226 Mt. Lebanon Blvd., Mt. Lebanon, Pa. 15234

Continuation of Ser. No. 647,580, Jan. 8, 1976, abandoned. This application Aug. 11, 1977, Ser. No. 823,754
Int. Cl.[3] D04H *1/08, 1/14*
U.S. Cl. 428—280 **9 Claims**



1. An insulating material comprising,

a layer of an intimate admixture of inorganic fibrous material and heat sensitive, organic synthetic fibrous material,

said organic fibrous material including fibers having a length of less than ⅛ inch,

said heat sensitive organic fibrous material being sprayed by air-flocculation into mixture with said inorganic fibrous material so that said organic fibrous material is intimately dispersed within said entire layer of said intimate admixture,

said organic fibrous material being arranged in said entire layer of material in a concentration by volume with said inorganic fibrous material in the range between about 2 to 10%,

said heat sensitive, organic synthetic fibrous material being randomly arranged throughout said admixture such that when heated to an elevated temperature in the range between about 212° to 300° F. shrinks to at least 40% in length and thereby mechanically interlocks said inorganic fibrous material to form a bonded insulating composite body, and

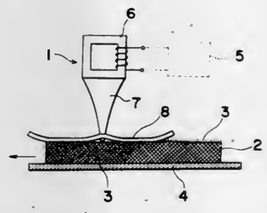
a plurality of interstices being dispersed throughout said bonded insulating composite body by the interlocking arrangement of said inorganic fibrous material with said heat sensitive, organic synthetic fibrous material.

4,237,181

METHOD OF MANUFACTURING A FLEXIBLE POLYURETHANE FOAM PRODUCT

Nato Tanabe, Takatsuki; Kenzoh Okada, and Norio Maeda, both of Neyagawa, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Okayama, Japan

Filed Jun. 30, 1978, Ser. No. 921,171
Claims priority, application Japan, Jul. 4, 1977, 52-80282
Int. Cl.[3] B32B *5/18, 3/26, 31/16*
U.S. Cl. 428—307 **6 Claims**



6. An article of manufacture manufactured by applying a mass of thermally fusible particles of a bonding agent in a predetermined pattern on one surface of a sheet of flexible polyurethane foam having an open-celled structure; causing the bonding particles to permeate into the open-celled structure of the polyurethane foam sheet by the application of high frequency vibrations to the bonding particles so as to be uniformly distributed in said open-celled structure; wherein said applied vibrations have a frequency and an amplitude within the range of 1,000 to 50,000 Hz and 5 to 100 μm, respectively; applying heat to cause the permeated bonding particles to be fixed in said open-celled structure of the polyurethane foam sheet; and fusion-bonding surface covering sheets onto the opposed surfaces of the polyurethane foam sheet with the bonding particles contained therein.

4,237,182

METHOD OF SEALING INTERIOR MINE SURFACE WITH A FIRE RETARDANT HYDROPHILIC POLYURETHANE FOAM AND RESULTING PRODUCT

Glenn E. Fulmer, Clarksville, and Robert M. Murch, Brinklow, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Nov. 2, 1978, Ser. No. 956,812
Int. Cl.[3] B32B *3/26, 5/18*
U.S. Cl. 428—310 **22 Claims**

11. A fire-retarding coated mine interior comprising a mine interior surface having deposited thereon a fire-retarding polyurethane foam mine sealant prepared by

a. mixing a foam-forming mine sealant composition comprising

(1) hydrophilic polyoxyalkylene urethane prepolymer,

(2) water in an amount of at least 20 moles of water for every mole of NCO groups in the prepolymer, and
(3) at least a three-part fire-retarding additive mixture comprising
(i) a phosphorous fire-retardant compound,
(ii) alumina trihydrate carried in the water phase, and
(iii) a water-dispersible and combustible organic carbon compound having from 0.1 to 1.0 hydroxyl group for every carbon atom present in said carbon compound, said carbon compound being carried in the water phase and being present from about 5 to about 30 parts by weight based on 100 parts by weight of the prepolymer, provided that when said carbon compound is wood cellulose it is present from about 2 to about 10 parts by weight of the prepolymer, and said carbon compound not functioning as a gelatinizing agent at the concentration employed, and

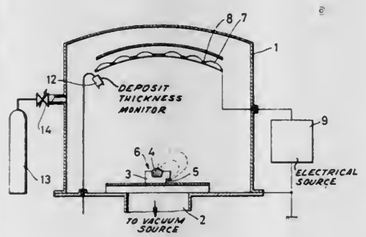
b. spraying the mixture onto the mine interior surface.

4,237,183

PROCESS FOR THE SURFACE TREATMENT OF A SYNTHETIC RESIN LENS AND THE PRODUCT THEREOF

Junichi Fujiwara, Yachimata, and Kazuo Nakamura, Tokyo, both of Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Chigasaki, Japan

Continuation of Ser. No. 714,262, Aug. 13, 1976, abandoned. This application Apr. 7, 1978, Ser. No. 894,249
Claims priority, application Japan, Aug. 25, 1975, 50-102088
Int. Cl.[2] B05D *5/06*
U.S. Cl. 428—336 **6 Claims**



1. A process for the surface treatment of a synthetic resin lens comprising applying to the surface of a lens body made of synthetic resin a coating film of glass by a high-vacuum electric-field vapor deposition treatment including the steps of mounting the resin lens body in a treating chamber, introducing an evaporation source in the chamber, evacuating the chamber to a comparatively high vacuum of about from 1×10^{-4} to 2×10^{-5} torr and generating between the lens body and the evaporation source an electric field of about 50 to 100 volts/cm, the evaporation source being formed as a crucible containing the glass with an electron gun for irradiation thereof.

4,237,184

STRATIFIED PROTECTING COATING FOR WEARING PIECES AND HARD METAL CUTTING TOOLS

Denis R. Gonseth, Founex, and Charles Hauser, Genolier, both of Switzerland, assignors to Stellram S.A., Nyon, Switzerland

Filed Jun. 15, 1979, Ser. No. 48,888
Claims priority, application Switzerland, Jun. 22, 1978, 787/78
Int. Cl.[2] B32B *7/02, 15/18*
U.S. Cl. 428—336 **13 Claims**

1. A hard metal wearing piece, especially for tools, which is covered at least on the places subjected to wear with a stratified protecting coating comprising at least five superimposed layers, at least two of them having different compositions, the layer which is in contact with the surface of the piece consisting in a carbide layer, the external layer consisting in a boride or a carbide layer, and the intermediary layers being layers of carbide, nitride, oxide, boride or of mixed compounds thereof.

4,237,185

RADIATION CURABLE TRANSPARENTIZING RESIN SYSTEMS, METHODS AND PRODUCTS

Louis J. Lombardi, Neenah, Wis., and Roy J. Coyne, Oak Lawn, Ill., assignors to The Richardson Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 831,805, Sep. 9, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,168
Int. Cl.[2] G03C *1/68;* **C08F** *2/50;* **B32B** *29/06*
U.S. Cl. 428—337 **23 Claims**

1. A transparentized cellulosic product comprising: a cellulosic stock material having a preselected initial strength and stiffness, said cellulosic stock material having been transparentized in the absence of a solvent by radiation curing of a solventless, radiation-curable resin system while that resin system is within said cellulosic stock material, said stock material having been treated with said resin system to include the resin system within the stock material to an extent sufficient that the stock is transparentized when subjected to actinic radiation, said sufficient extent being limited in order to form a transparentized cellulosic product having a strength and stiffness substantially the same as said initial strength and stiffness, said solventless, radiation-curable resin system including an acrylate monomer, a photosensitizer and an acrylate oligomer, said acrylate oligomer being a diacrylate oligomer derivative of an aliphatic/bisphenol-A diepoxide blend.

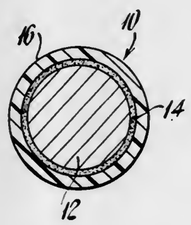
17. A method for producing transparentized cellulosic material having approximately the same strength and stiffness of the original untransparentized cellulosic stock material comprising: selecting a cellulosic stock material; treating the stock in the absence of a solvent by including therewithin a solventless, radiation-curable resin system to an extent sufficient that the stock is transparentized when subjected to actinic radiation, said sufficient extent being limited in order to form a transparentized cellulosic product without significantly reducing said original strength and stiffness, said solventless, radiation-curable resin system is formulated by mixing together an acrylate monomer, a photosensitizer, and an acrylate oligomer, said acrylate oligomer being a diacrylate oligomer derivative of an aliphatic/bisphenol-A diepoxide blend; and curing the resin-treated cellulosic stock material for transparentizing the same to a generally transparent product having a strength and stiffness approximately the same as said strength and stiffness of the untransparentized cellulosic stock material.

4,237,186

THERMOPLASTIC RESIN-COATED METALLIC SUBSTRATE AND THE METHOD OF PRODUCING THE SAME

Glen E. Ingraham, Lebanon, N.J., assignor to Colorguard Corporation, Raritan, N.J.

Continuation of Ser. No. 546,701, Feb. 3, 1975, abandoned. This application Jul. 28, 1978, Ser. No. 928,911
Int. Cl.[2] B32B *15/00*
U.S. Cl. 428—379 **38 Claims**



1. A protectively coated wire comprising a metallic wire

substrate and bonded to said substrate a polyamide resin hot melt adhesive, said polyamide hot melt adhesive comprising the condensation product of alkylene diamines of the formula:

$$H_2N(CH_2)_xNH_2,$$

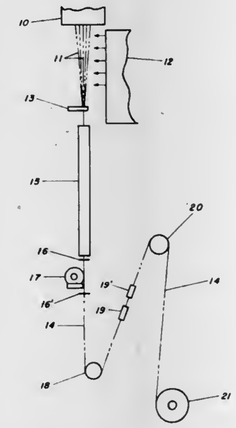
wherein x is an integer of from 2 to 20; and polymeric fat acids having a dimeric fat acid content greater than about 90 percent by weight; the molar equivalent of amine employed being about equal to the molar equivalent of carboxyl groups present in said fat acid; said condensation product having a softening point of 112° C. to 138° C. and a tensile strength of from 400 pounds per square foot to 600 pounds per square foot; and a second ply in a thickness of at least 0.015 inch of an extrudable thermoplastic resin adhering to said substrate by means of said adhesive.

4,237,187

HIGHLY ORIENTED, PARTIALLY DRAWN, UNTWISTED, COMPACT POLY(ε-CAPROAMIDE) YARN

James C. Raybon, Jr.; Malcolm O. Darby, and Thomas V. Derrick, Jr., all of Columbia, S.C., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 26, 1979, Ser. No. 15,515
Int. Cl.[3] D02G *3/00*
U.S. Cl. 428—399 **1 Claim**



1. A highly oriented-as-spun, partially drawn, untwisted, compact, interlaced multifilament poly(ε-caproamide) yarn characterized by a denier as high as 400, approximately 8 to 28 entanglements per meter of yarn, a residual draw ratio required to produce a yarn with 45 percent elongation of at most 1.3, an elongation at break of between about 45 and 70 percent, a boil shrinkage at 100° C. of approximately 7 to 8 percent, and a tenacity of about 3.8 to 4.6 grams per denier.

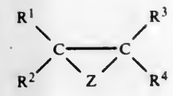
4,237,188

EPOXIDE OR EPISULFIDE POLYMER-BASED HOT MELT METAL WORKING LUBRICANTS

Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 26, 1979, Ser. No. 15,398
Int. Cl.[3] B32B *15/18, 27/38;* **C10M** *3/32*
U.S. Cl. 428—418 **7 Claims**

1. A metal workpiece having on the surface thereof a film of a composition which provides lubricity thereto and which comprises at least one polymer of at least one monoepoxide or monoepisulfide, said monoepoxide or monoepisulfide having the formula



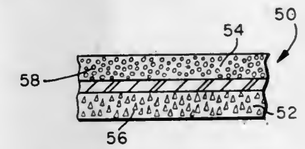
wherein R^1 is a substantially aliphatic hydrocarbon-based radical, each of R^2, R^3 and R^4 is individually hydrogen or a substantially aliphatic hydrocarbon-based radical, Z is oxygen or sulfur, and the total number of aliphatic carbon atoms in R^1, R^2, R^3 and R^4 is from about 6 to about 23; said composition melting within the range of about 30° to about 150° C.

4,237,189

POLYMODAL MAGNETIC RECORDING MEDIA PROCESS FOR MAKING AND VERIFYING THE SAME AND COMPOSITIONS USEFUL THEREIN

Robert J. Deffeyes, 804 Red Oak La., Arlington, Tex. 76012, assignor to Robert J. Deffeyes, Arlington, Tex.

Filed Oct. 31, 1973, Ser. No. 411,253
Int. Cl.[2] H01F *10/02*
U.S. Cl. 428—457 **15 Claims**



1. In an article comprising a ferromagnetic composition adapted to be processed in a magnetic field to receive a pattern which pattern can be sensed by a magnetic reading head, the improvement wherein said ferromagnetic composition comprises at least two different populations of ferromagnetic material intermixed within a matrix, each of said populations forming means to store, independently from one another, magnetically-recorded information and wherein a first said population is so selected that it can be magnetically switched at a magnetic field intensity at which a second said population of said composition is not affected and wherein a non integrated dM/dt curve of the magnetic populations will exhibit a valley between two adjacent peaks equal to at least one-half the average distance from the base line to top of said peaks.

4,237,190

PROPYLENE/POLYSTYRENE COMPOSITION AND SUBSTRATES COATED WITH SUCH COMPOSITIONS

Theodore L. McGee, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

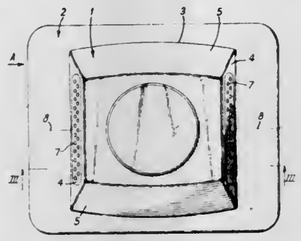
Division of Ser. No. 836,835, Sep. 26, 1977, Pat. No. 4,183,845. This application Jun. 22, 1979, Ser. No. 51,068
Int. Cl.[3] B32B *23/08*
U.S. Cl. 428—513 **7 Claims**

1. A substrate coated with a film of an extruded coating composition comprising a polymer blend of polystyrene and a polypropylene having a melt flow rate, as determined by ASTM-1238-G, within the range of about 30 to about 40 grams per ten minutes, the ratio of polypropylene to polystyrene in the blend being within the range of about 5:1 to 2:1 , said coated substrate being obtained by extruding said polymer blend at a melt temperature of about 475° F. to about 575° F. onto said substrate and contacting said coated substrate with a chill roll maintained at a temperature of about 120° F. to 200° F. to effect adhesion and solidification of said extrudate on said substrate.

4,237,191
BONDED ROAD STUDS

John M. Horne, Yatton, England, assignor to Berger Traffic Markings Ltd., Bristol, England

Filed Aug. 11, 1978, Ser. No. 933,037
Claims priority, application United Kingdom, Aug. 23, 1977, 35338/77
Int. Cl.[2] G08G 1/00
U.S. Cl. 428—542 8 Claims

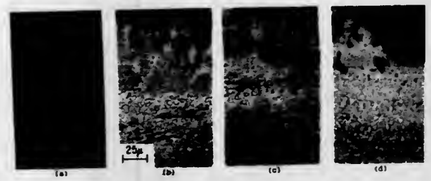


1. A non-depressible bonded road stud which comprises an upstanding body portion including two opposite substantially upright side faces which are fitted with reflecting lenses, a basal plinth portion extending laterally away from the periphery of the body portion on all sides thereof and including an upper surface which slopes outwardly and downwardly away from the periphery of the body portion; and wherein the upper surfaces of the plinth adjacent the lens-carrying side faces of the body portion comprise ridges which are substantially centred with respect to the side faces and the said upper surfaces are cambered to slope away from both sides of the ridges.

4,237,193
OXIDATION CORROSION RESISTANT SUPERALLOYS AND COATINGS

Melvin R. Jackson, and John R. Rairden, III, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 738,649, Nov. 4, 1976, Pat. No. 4,117,179. This application Jun. 16, 1978, Ser. No. 916,222
Int. Cl.[2] B32B 15/20
U.S. Cl. 428—678 6 Claims



1. An article of manufacture having improved high temperature oxidation and corrosion resistance comprising: (a) a superalloy substrate containing a carbide reinforcing phase, and (b) a coating consisting of chromium, aluminum, carbon and at least one element selected from iron, cobalt or nickel, subject to the proviso that the coatings contain an amount of carbon (1) sufficient to saturate any solid state phases of the coating composition, (2) sufficient to essentially equilibrate the chemical potential of carbon in the coating with that in the substrate with minimum interaction, and (3) insufficient to form substantial quantities of carbides in the coating composition.

4,237,192
ZINC PLATED STEEL PLATE AND CAN PRODUCED FROM THE SAME

Takehiko Ito; Yusuke Hirose, and Hideaki Ishida, all of Ichikawa, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1979, Ser. No. 7,827
Int. Cl.[3] B32B 15/08
U.S. Cl. 428—659 4 Claims



1. A zinc-plated steel plate having improved solderability prepared by plating a steel plate with zinc from a zinc bath containing at least 0.1% by wt of aluminum, removing the oxides from the surface of the thus-plated steel plate such that the surface, up to a depth of 200 Angstroms, is substantially free from oxides to such a degree that the ratio of the aluminum ion detection intensity ($I_{Al}+$)/zinc ion detection intensity ($I_{Zn}+$) is not higher than 20 at the maximum as measured by a microanalyzer, and coating the thus-treated surface with an anti-rust film selected from the group consisting of an acryl type resin, petroleum type wax and an alkyd type resin to such an extent that the film has a thickness of 1.0–20 microns.

4,237,194
CONDUCTIVE POLYANALINE SALT-LATEX COMPOSITIONS, ELEMENTS AND PROCESSES

Donald A. Upson, Webster, and David J. Steklenski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,690
Int. Cl.[3] B32B 3/00; H01B 1/00
U.S. Cl. 428—424.2 8 Claims

1. In an element comprising a support having thereon a conductive layer comprising a coalesced, cationically stabilized latex and a semiconductor, the improvement wherein said latex and said semiconductor are chosen so that said semiconductor is associated with said latex before coalescing and said semiconductor is a polyaniline acid addition salt.

5. An element according to claim 1 wherein the polyaniline of said polyaniline salt is selected from the group consisting of:
N-{p-[4-(p-methoxyanilino)anilino]phenyl}-1,4-benzoquinone imine and
N-{p-[p-(anilino)anilino]phenyl}-1,4-benzoquinone diimine.

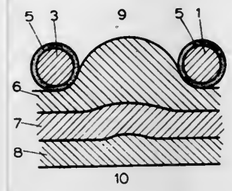
4,237,195
POROUS ELECTRODE

Marinus Alfenaar, Schinnen, Netherlands, assignor to Electrochemische Energieconversie N.V., Mol, Belgium

Filed Jun. 20, 1978, Ser. No. 917,361
Claims priority, application Netherlands, Jun. 24, 1977, 7706998
Int. Cl.[3] H01M 4/64, 4/86
U.S. Cl. 429—44 18 Claims

1. A porous electrode comprising a porous layer containing

carbon and a non-polar resin and an electrically conductive fluid-permeable screen or grid acting as a collector, wherein



the entire surface of the collector material is covered with an electrically conductive collector-covering resin layer.

4,237,196
SODIUM ION-CONDUCTING GLASS ELECTROLYTE FOR SODIUM-SULFUR BATTERIES

Gunter Gütmann, Esslingen; Holger Kistrup, Stuttgart; Friedrich G. K. Baucke, Mainz, and Gerd Müller, Ergolding, all of Fed. Rep. of Germany, assignors to Deutsche Automobilgesellschaft mbH, Hanover and Jenaer Glaswerk Schott & Gen., Mainz, both of, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,952
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811688
Int. Cl.[3] H01M 10/39
U.S. Cl. 429—50 7 Claims

1. A battery electrolyte formed by sodium ion conducting glass for use in sodium-sulfur batteries, having the composition

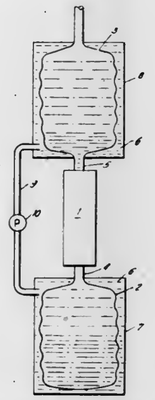
$$xNa_2O.ySiO_2.zAl_2O_3$$

in which x/y lies between 0.52 and 0.92 and x/z lies between 2 and 20.

4,237,197
ELECTROCHEMICAL SYSTEM

Thomas G. Hart, Royal Oak, Mich., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Continuation-in-part of Ser. No. 744,712, Nov. 24, 1976, Pat. No. 4,096,393. This application Apr. 3, 1978, Ser. No. 892,691
Int. Cl.[3] H01M 2/38
U.S. Cl. 429—81 10 Claims

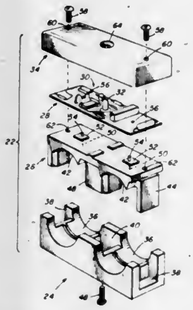


1. A zinc halogen electrochemical system comprising a housing containing at least two electrodes, two electrolyte reservoirs, a first reservoir having flexible walls, conduit means connecting said housing and said reservoir, means to vary the pressure on the outside of said flexible walls of said first electrolyte reservoir relative to the pressure on the outside of flexible walls of the second electrolyte reservoir, and means to circulate electrolyte through the electrode area and between said housing and said first reservoir.

4,237,198
ELECTRICAL DEVICE WITH BI-LEVEL BATTERY STATE-OF-CHARGE INDICATOR

Richard L. Eby, Marshfield, and Lester E. Wilson, Bedford, both of Mass., assignors to Anderson Power Products, Inc., Boston, Mass.

Filed Sep. 6, 1979, Ser. No. 72,879
Int. Cl.[3] H01M 10/48
U.S. Cl. 429—93 4 Claims



1. A battery cable clamp comprising:
(1) first and second mating yoke means each having a pair of cable receiving saddles that define two generally circular cable openings when the first and second yoke means are mated together.
(2) means for releaseably holding said first and second in mated relation;
(3) first and second electrically conductive cable insulation piercing means mounted on said first yoke means so that electrical contact is made with both cables when the cables are positioned in the cable receiving saddles in the first and second yoke means and the two yoke means are mated together;
(4) means mounted on said first yoke means for providing a first indication when a voltage applied to said first and second cable insulation piercing means reaches a preselected, first voltage level;
(5) means for maintaining said first indication until the applied voltage reaches a preselected, second and lower voltage level;
(6) means for providing a second indication when the applied voltage reaches said preselected, second and lower voltage level; and,
(7) means for continuing the second indication until the applied voltage again reaches said preselected, first voltage level.

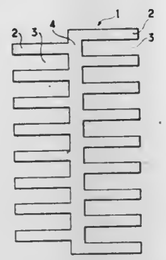
4,237,199
CYLINDRICAL ELECTRIC CELL

Guy Gelin, Neuville de Poitou, France, assignor to Saft Leclanche, Romainville, France

Filed Dec. 31, 1979, Ser. No. 108,756
Claims priority, application France, Jan. 12, 1979, 79 00725
Int. Cl.[3] H01M 6/10
U.S. Cl. 429—94 2 Claims

1. A cylindrical electric cell whose positive electrode is in contact with the cylindrical outer wall of the cell and separated from the negative electrode by a porous separator and whose negative electrode is constituted by a sheet of metal wound round an elastically deformable current collector in the form of a cylinder whose directrix is a substantially circular

curve with two distinct ends, wherein at least one of those two portions of said current collector cylinder which are close to said ends are cut into matching shapes so that they fit into each other, the protruding parts of one portion being accomodated



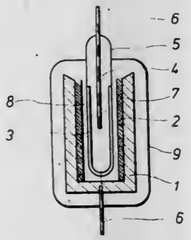
in the recessed parts of the other portion, and wherein said metal sheet is divided into at least two parts separated by at least one cut occupying a plane passing through the axis of the cell.

4,237,200

ELECTROCHEMICAL STORAGE CELL

Gert Weddigen, Heidelberg, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,276
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754454
Int. Cl.³ H01M *10/39*
U.S. Cl. 429—102 **9 Claims**



1. Electrochemical storage cell with at least one anode chamber containing alkali metal as the anolyte and at least one cathode chamber containing as catholyte at least one chalcogen in dissolved or melted form, as well as carbon- or graphite felt, with the anode chamber and the cathode chamber separated from each other by an alkali-ion-conducting solid electrolyte, the improvement which comprises incorporating in the felt a layer of porous felt in which the fibers of the layer of felt has exposed on its surface in island-fashion, an alkali-ion-conducting substance selected from the group consisting of beta-aluminum oxide, boron silicate glass and sodium-zirconium-phosphorus silicate having the formula $Na_{1-x}Zr_2P_{3-x}Si_xO_{12}$.

4,237,201

IONIC CONDUCTIVITY MATERIALS, SUITABLE FOR CONSTITUTING SOLID ELECTROLYTES FOR DRY CELLS AND BATTERIES

Jean Rouxel, and Luc Trichet, both of Nantes, France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly sur Seine, France

Continuation-in-part of Ser. No. 768,813, Feb. 16, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,724
Claims priority, application France, Feb. 12, 1976, 76 04598
Int. Cl.² H01M *6/18*
U.S. Cl. 429—104 **19 Claims**

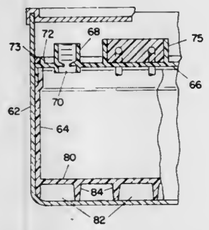
1. A composition having high ionic conductivity and minimal electronic conductivity comprising a stable, intercalatable chalcogenide having a wide energy gap between the bond band and the conduction band and having intercalated therein an equiatomic amount of an alkali metal ion and a metal ion having a valence state of one less than that of the metal of said chalcogenide.

4,237,202

AIRCRAFT BATTERY

David L. Karpal, Redlands, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Nov. 13, 1978, Ser. No. 959,855
Int. Cl.² H01M *2/02*
U.S. Cl. 429—120 **4 Claims**



1. An aircraft battery having an external metallic housing, a casing of thin-walled polypropylene material configured to fit tightly within the metallic housing for containing the chemical reactants therein; and

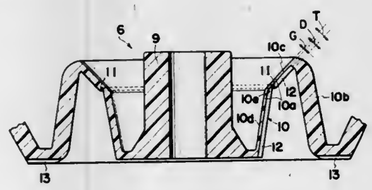
means for insulating a portion of the interior of the casing from the housing.

4,237,203

RUPTURABLE SAFETY SEALING GASKET OF CELL

Takashi Tsuchida, Kosai; Kenichi Shinoda, Toyohashi; Kohei Yamamoto, Kosai, and Toshio Suzuki, Shimozuma, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 965,708
Claims priority, application Japan, Nov. 30, 1977, 52-143621
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—122 **2 Claims**



1. A rupturable safety sealing gasket for a cell, said gasket comprising:

a circumferential marginal portion adapted to be constricted between a free end of a metal casing and a peripheral edge of a terminal plate;

an annular center portion through which a metal collector rod is adapted to extend;

an intermediate portion integrally connecting said marginal portion with said center portion;

said intermediate portion including an inwardly projecting annular thin wall surrounding said center portion with a first annular space therebetween and an inwardly projecting annular thick wall having a thickness greater than said annular thin wall and integrally connected to said thin wall at an inner end thereof, said annular thick wall surrounding said annular thin wall to define a second annular space therebetween;

said annular thin wall including a first inner frusto-conical section and a second outer frusto-conical section integrally formed with each other, said first inner frusto-conical section having an imaginary apex angle greater than an imaginary apex angle of said second outer frusto-conical section;

said annular thin wall having in the outer surface thereof a substantially axially extending groove; and

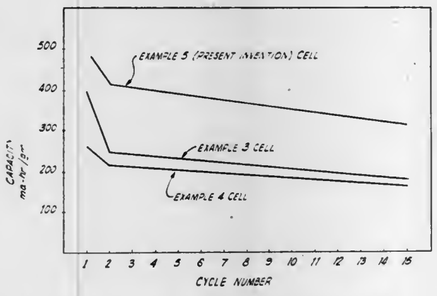
said annular thin wall having in said outer surface thereof, at the juncture of said first and second frusto-conical sections, an annular circumferentially extending groove which intersects said axial groove.

4,237,204

MOLYBDENUM SULFIDE CATHODE STRUCTURE

Arthur H. Thompson, New Providence; Charles R. Symon, Rahway, and Allan J. Jacobson, Princeton, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 29, 1979, Ser. No. 88,828
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—194 **7 Claims**



1. An electric current-producing cell, comprising:

(a) an anode having as its anode-active material one or more metals selected from the group consisting of the Periodic Table Group Ia metals, Group Ib metals, Group IIa metals and Group IIb metals;

(b) a cathode, comprising:

(i) metalized containment means having a plurality of apertures therein, said apertures having an average cross-sectional dimension of about 1 to about 100 microns; and

(ii) cathode-active molybdenum sulfide contained within said metalized containment means; and,

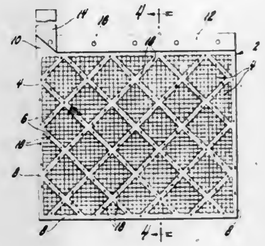
(c) an electrolyte which is chemically inert with respect to said anode and said cathode and which permits the migration of ions between said anode and said cathode.

4,237,205

POCKET GRID FOR ALKALINE BATTERY PLATES

Robert C. Matter, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1979, Ser. No. 86,737
Int. Cl.³ H01M *4/72*
U.S. Cl. 429—234 **5 Claims**



1. A laminated grid for supporting the active material of pasted alkaline storage battery plates comprising:

at least two thermoplastic networks forming the principal faces of the grid and comprising a plurality of intersecting gridwires defining openings therebetween;

a plurality of elongated welds extending as narrow channels across said faces and bonding said networks together, said channels being defined by walls formed by the fusion and exudation of said thermoplastic from said networks at said welds and serving to divide said networks into a plurality of gridwire pockets; and

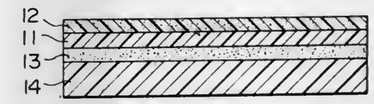
a metal coating on said gridwires and walls sufficient to distribute battery current substantially uniformly across said faces and throughout said active material.

4,237,206

PHOTOGRAPHIC PAPER BASE WITH SEPERATE REFLECTIVE LAYER

Yoshihiro Fujita, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 20, 1978, Ser. No. 971,444
Claims priority, application Japan, Dec. 21, 1977, 52-154227
Int. Cl.³ G03C *1/86*
U.S. Cl. 430—11 **3 Claims**



1. A photographic element comprising a paper base, a white adhesive layer disposed on the paper base, a resin layer containing a light reflective material disposed on the white adhesive layer, and a photographic emulsion layer on which an image is formed by printing and development disposed on the resin layer.

4,237,207

PHOTOCHROMIC COMPOSITION CONTAINING INDOLINE SPIROBENZOPYRAN AND COPOLYMER OF PVC AND IMAGED PRODUCT THEREOF

Claude G. Ceintrey, Neuville, France, assignor to La Cellophane, Paris, France

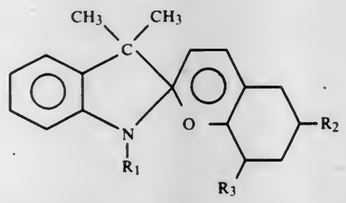
Continuation of Ser. No. 866,349, Jan. 3, 1978, abandoned, which is a continuation of Ser. No. 676,872, Apr. 14, 1976, abandoned. This application Jul. 20, 1979, Ser. No. 59,229

Claims priority, application France, Apr. 24, 1975, 75 12750; Apr. 28, 1975, 75 13161

Int. Cl.³ G03C *1/52*

U.S. Cl. 430—17 **11 Claims**

1. A photosensitive composition capable of producing a colored image by imagewise exposure of ultraviolet radiation, said image being stable against exposure to light, darkness, and heat, consisting essentially of a photochromic spiropyran compound which is converted by exposure to radiation having a wavelength whose order of magnitude is between 2000 A to about 4000 A and is selected from the group consisting of indoline spirobenzopyran compounds of formula (I):



(I)

in which R_1 is an alkyl group of 1 to 10 carbon atoms or a phenyl group;

R_2 is H, OH, Cl, Br, NO_2, methoxy or ethyoxy; and R_3 is H, Cl, Br, NO_2, methoxy or ethoxy with the proviso that at least one of R_2 and R_3 is a chromophoric substituent; said spiropyran compound being uniformly dispersed in, as a binder, vinyl chloride resin comprising a vinyl chloride copolymer containing at least 50 percent, by weight, of vinyl chloride units.

4,237,208

SILANE ELECTRON BEAM RESISTS

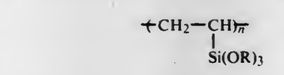
Nitin V. Desai, Somerset, and Eugene S. Poliniak, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,961

Int. Cl.² G03C *5/00;* **C08F** *2/46, 30/08;* **C08G** *77/00*

U.S. Cl. 430—270 **7 Claims**

1. A medium for electron beam recording which comprises a film of a polymer having a repeating unit of the formula



wherein R is an alkyl or acyl group and n is an integer, an electrically conductive layer and a support.

4,237,209

EROSION LITHOGRAPHY WITH HIGH-ASPECT NOZZLE

David W. Oliver, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 9, 1979, Ser. No. 37,258

Int. Cl.³ G03C *5/00;* **B24B** *7/00*

U.S. Cl. 430—317 **9 Claims**

1. The method of making a precise bonded grid on a cathode, comprising the steps of:

(a) forming an insulator layer on said cathode,

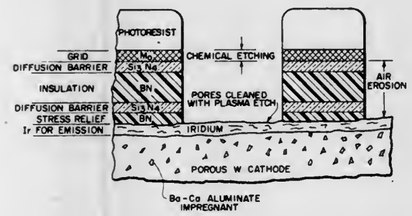
(b) forming a metal layer for the grid, on the insulator layer,

(c) forming a photo-resist layer on the metal layer,

(d) exposing the photo-resist layer with means to form a grid pattern, followed by a developing process which selectively removes part of the photo-resist layer to expose openings of said grid pattern,

(e) removing the metal layer in said openings,

(f) using air blasting with an abrasive powder to remove the insulator layer in said openings, with the photo-resist and the metal layer acting together as a mask;



the improvement wherein for step (f) a special elongated nozzle and scanning provides substantially uniform abrasion over the entire exposed surface of said insulator layer, wherein the nozzle has an exit which is relatively long in one dimension and narrow in the orthogonal dimension to provide a substantially uniform velocity of the abrasive powder along the long dimension, and the scanning of the grid-cathode structure with respect to the nozzle comprises successive passes in a direction generally perpendicular to the long dimension of the projection of the nozzle.

4,237,210

AQUEOUS PHOTORESIST METHOD

Robert S. Dougherty, Tustin, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,793

Int. Cl.³ C23F *1/02;* **G03C** *5/00, 5/24*

U.S. Cl. 430—318 **7 Claims**

1. A method of producing an etch resistant photoresist pattern on a substrate from a casein-based photoresist solution consisting essentially of the following steps:

(a) applying a casein-based photoresist solution to a substrate to form a photoresist film of a thickness when dried of at least 4.0 micrometers;

(b) air drying said photoresist film on said substrate to form a photoresist;

(c) exposing said dried photoresist film to actinic radiation through a photomask;

(d) developing said exposed photoresist film with water having a hardness content below 150 mg. calcium carbonate equivalent per liter to wash away the unexposed areas of said film thereby leaving a pattern of photoresist film on said substrate which is etch resistant.

4,237,211

PHOTOCHROMIC AZIRIDINE RECORDING MEDIA

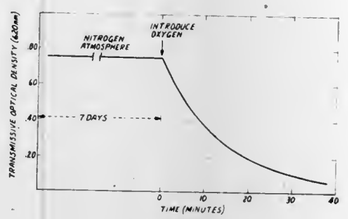
Dan L. Fanselow, White Bear Lake, MN, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

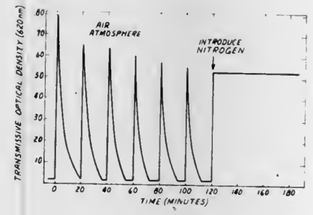
Continuation of Ser. No. 811,255, Jun. 29, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 973,931

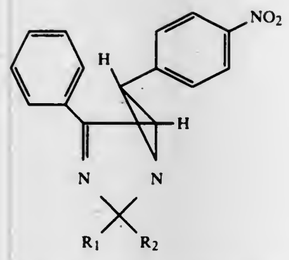
Int. Cl.³ G03C *1/52*

U.S. Cl. 430—338 **10 Claims**

1. A thermally stable, optically erasable recording medium comprising a substrate having on at least one surface thereof a thin, homogeneous, transparent, non-dendritic vapor-deposited film of at least one photochromic aziridine of the formula







wherein R_1 and R_2 separately are hydrogen, phenyl, lower alkyl, or ortho or para lower alkyl or lower alkoxy-substituted phenyl or together are alkylene having 4 to 7 carbon atoms; and overlying said film a substantially oxygen-impermeable barrier coating, said coating being reasonably transparent to actinic radiation and capable of inhibiting crystal growth of said aziridine.

4,237,212

PROCESS FOR FORMING IMAGES

Eiichi Inoue, Tokyo; Misturu Takeda, Machida, and Fumio Shimada, Tokyo, all of Japan, assignors to Dai Nippon Insatu Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 825,109, Aug. 16, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,849

Claims priority, application Japan, Aug. 17, 1976, 51-97468

Int. Cl.³ G03C *5/24*

U.S. Cl. 430—346 **12 Claims**

1. An image-forming process which comprises

(1) irradiating at least 100 mJ/cm^2 of imagewise ultraviolet rays an image-forming agent selected from the group consisting of polyacids of molybedenum and tungsten, alkali metal salts and ammonium salts of said polyacids and amine complexes and metal complexes of said polyacids, said image-forming agent being provided in layer form on at least one surface of a substrate and co-existing with a reducing agent, thereby to cause the same to undergo reduction and coloring in the form of the image,

(2) irradiating the entire expanse of the image-forming agent surface thus obtained including colored parts and yet uncolored parts with long wavelength light rays which are absorbable by only the colored parts thereby to form a colored image wherein only the colored parts selectively have remarkably increased optical densities, and

(3) contacting residual image-forming agent remaining in non-image parts with an alkaline substance whereby said

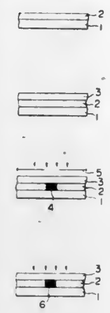


image-forming agent is caused to lose its image-forming capability.

4,237,213

IMAGE FORMING METHOD

Ichiro Endo, Yokohama; Hajime Kobayashi, Mitaka; Yasuhiro Yano, Tokyo, and Takao Muramatsu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,087, Jan. 27, 1977, abandoned. This application Oct. 3, 1978, Ser. No. 948,238

Claims priority, application Japan, Jan. 30, 1976, 51/8978; Jan. 30, 1976, 51/8979

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—353 **5 Claims**

1. In the process for forming a negative silver image employing a dry silver photosensitive member by imagewise exposing said member to form a latent silver image and heat developing the latent silver image to form a negative silver image, said photosensitive member having a tendency to deteriorate in image-forming ability upon storage, the improvement comprising in sequence:

(a) forming a photosensitive member comprising an organic silver salt, a halide and a binder,

(b) storing said photosensitive member prior to use for at least about several weeks and thereafter

(c) adding a reducing agent to said member to foster heat development during a period from prior to image exposing to simultaneously with heat-developing.

4,237,214

PROCESS FOR FORMING CONTRASTY IMAGE

Hiroyuki Mifune; Shunji Takada; Yoshitaka Akimura, and Nobuyuki Tsujino, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 861,087, Dec. 15, 1977, abandoned. This application Jul. 5, 1979, Ser. No. 54,762

Claims priority, application Japan, Dec. 21, 1976, 51-154493

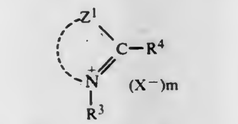
Int. Cl.³ G03C *5/30*

U.S. Cl. 430—441 **13 Claims**

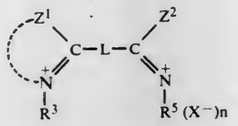
1. A process for forming a negative photographic image which comprises developing with a developing solution containing at least one para dihydroxy benzene compound as a developing agent an imagewise exposed photographic light-sensitive material comprising a support having thereon at least one layer of a negative image providing monodispersed silver halide photographic emulsion comprising substantially surface latent image type monodispersed silver halide grains, wherein the average grain size of the silver halide grains is 0.7 micron or less, with the silver halide photographic emulsion containing a binder in an amount of 250 g or less per mol of silver halide, and at least one hydrographic colloid layer containing a compound represented by the following general formula (I):

$R^1NHNHCOR$ (I)

wherein R^1 represents an aryl group and R^2 represents a hydrogen atom, a phenyl group or an unsubstituted alkyl group having 1 to 3 carbon atoms, in the presence of a compound represented by the following general formula (II) or (III), said compound of the general formula (II) or (III) being in the light-sensitive material, a developer solution or in a processing bath used after exposure but prior to development



(II)



(III)

wherein Z^1 and Z^2, which may be the same or different, each represents an atomic group necessary to complete a thiazole ring or a selenazole ring; R^3 and R^5, which may be the same or different, each represents an alkyl group or an alkenyl group; R^4 represents a hydrogen atom or an alkyl group; and R^3 and R^4 may combine to form a ring; L represents a sulfur atom or a divalent hydrocarbon group having 1 to 12 carbon atoms; X^- represents an acid anion; m represents 0 or 1; n represents 0, 1 or 2 and when an inner salt or inner salts are formed m represents 0 or n represents 0 or 1.

4,237,215

HEAT-DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Shinpei Ikenoue, and Takao Masuda, both of Asaki, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 522,963, Nov. 11, 1974, abandoned. This application Apr. 20, 1978, Ser. No. 898,043

Claims priority, application Japan, Feb. 19, 1974, 49/19760; Nov. 9, 1974, 49/126658

Int. Cl.[2] G03C *1/02*

U.S. Cl. 430—619 **33 Claims**

1. In a method of preparing a heat developable light-sensitive material comprising on a support at least one layer containing (a) an organic silver salt; (b) a light-sensitive silver halide; (c) a reducing agent; and (d) a binder; the improvement which comprises increasing the sensitivity of and improving the gradation of said light-sensitive material by decomposing a N-halo compound in the presence of the organic silver salt (a) and an alcohol for reaction with the organic silver salt (a) to produce the light-sensitive silver halide (b) before applying the layer on the support.

4,237,216

PHOTOSENSITIVE PATTERNABLE COATING COMPOSITION CONTAINING NOVOLAK TYPE MATERIALS

Eugene R. Skarvinko, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,742

Int. Cl.[3] G03C *1/68;* **C08F** *8/00*

U.S. Cl. 430—280 **19 Claims**

1. A photoprocessable patternable coating composition consisting essentially of:

(A) the reaction product from a mixture consisting essentially of:

(1) at least one epoxidized nonlinear novolak having at least about six terminal epoxy groups; with

(2) at least about 0.9 moles of at least one monoethylenically unsaturated carboxylic acid per epoxide equivalent weight of said novolak;

(B) at least one polyethylenically unsaturated compound; and

(C) at least one photoinitiator.

4,237,217

SILVER HALIDE EMULSION CONTAINING TWO-EQUIVALENT MAGENTA COUPLER

Atsuaki Arai, Minami-ashigara; Keisuke Shiba, Shizuoka; Minoru Yamada, Minami-ashigara; Nobuo Furutachi, Minami-ashigara, and Kotaro Nakamura, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

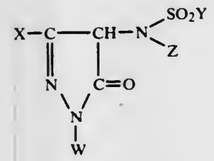
Continuation of Ser. No. 585,899, Jun. 11, 1975, abandoned. This application Nov. 17, 1977, Ser. No. 853,051

Claims priority, application Japan, Jun. 11, 1974, 49-66378

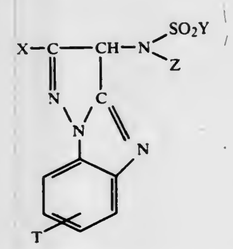
Int. Cl.[3] G03C *7/00, 1/40*

U.S. Cl. 430—387 **34 Claims**

1. A two-equivalent magenta image forming coupler whose coupling position is substituted with a sulfonamido group, whercin said coupler is represented by the general formula (I)



or by the general formula (II)



wherein W represents a hydrogen atom or a group having 1 to 35 carbon atoms selected from the group consisting of a straight chain or branched chain alkyl group; an alkenyl group; a cycloalkyl group; a substituted alkyl, substituted alkenyl or substituted cycloalkyl group, each containing one or more of a halogen atom a nitro group, a cyano group, an aryl group, an alkoxy group, an aryloxy group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfo group, a sulfamoyl group, a carbamoyl group, an acylamino group, a ureido group, a heterocyclic group, an arylsulfonyloxy group and an oxo group as a substituent; an aryl group; a substituted aryl group containing one or more of an alkyl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an acylamino group, a carbamoyl group, an alkylcarbamoyl group, a dialkylcarbamoyl group, an arylcarbamoyl group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfonamido group, an arylsulfonamido group, a dialkylsulfamoyl group, an alkylarylsulfamoyl group, an alkylthio group, an arylthio group, a cyano group, a nitro group, a carboxy group, a sulfo group, and a halogen atom as a substituent; a heterocyclic group containing one or more of a nitrogen atom, an oxygen atom and a sulfur atom as a hetero atom; a substituted heterocyclic group containing the above described hetero atoms and substituted with the substituents above described for the aryl group; a carbamoyl group; and a thiocarbamoyl group;

T represents a hydrogen atom, a halogen atom or a group having 1 to 22 carbon atoms selected from the group consisting of alkyl, alkoxy, aryloxy, alkoxycarbonyl, acylamino, carbamoyl, alkylsulfonyl, arylsulfonyl, alkylsulfonamido, arylsulfonamido, dialkylsulfamoyl, alkyl-arylsulfamoyl, alkylthio, arylthio, carboxy, sulfo, aryl, heterocyclic or cyano;

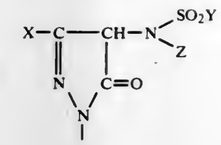
X represents a group having 1 to 35 carbon atoms selected from the group consisting of the same alkyl, substituted alkyl, aryl, substituted aryl, heterocyclic or substituted heterocyclic groups as described for W; a hydrogen atom; a halogen atom; an alkoxycarbonyl group; an aryloxycarbonyl group; an aralkyloxycarbonyl group; a hydroxy group; an alkoxy group; an aryloxy group; a mercapto group; an alkylthio group; an arylthio group; a carboxy group; an amino group; an alkylamino group; a cycloalkylamino group, an N,N-dialkylamino group; an N-alkyl-N-arylamino group; an N-arylamino group; an amido group; an N-alkylacylamino group; an N-arylacylamino group; a ureido group; an N-arylureido group; an N-alkylureido group; an alkoxycarbonylamino group; an aryloxycarbonylamino group; a thioureido group; an N-alkylthioureido group; an N-arylthioureido group; an alkoxythiocarbonylamino group; an aryloxythiocarbonylamino group; a carbamoyl group; a sulfamoyl group; a piperidino group; a pyrrolidino group; a guanidino group; an N-alkylguanidino group; and an N-arylguanidino group;

Y represents a group having 1 to 40 carbon atoms selected from the group consisting of a straight chain or branched chain alkyl group; an alkenyl group; an alkyl group substituted with one or more of a halogen atom, a nitro group, a carboxy group, an alkoxy group, an alkylamido group, an arylamido group, a sulfamoyl group, a carbamoyl group, an N-alkylamino group, an N,N-dialkylamino group, an N-arylamino group, an alkylthio group, and arylthio group as substituents; an aryl group; an aryl group substituted with one or more of a halogen atom, a nitro group, a cyano group, an alkyl group, an aralkyl group, an alkenyl group, an alkoxy group, an aryloxy group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an acyloxy group, an alkylamido group, an arylamido group, a diacylamino group, a sulfamoyl group, a sulfonamido group, an alkoxycarbonylamino group; an aryloxycarbonylamino group; a thioureido group, an alkoxythiocarbonylamino group; an aryloxythiocarbonylamino group; a carbamoyl group, an N-alkylamino group, an N,N-dialkylamino group, an N-arylamino group, an alkylthio group, an arylthio group, a sulfo group, a sulfinyl group and a carbonyl group as substituents; a heterocyclic group containing one or more of a nitrogen atom, an oxygen atom and a sulfur atom as a hetero-atom; and a substituted heterocyclic group containing the above described hetero atoms and substituted with the substituents above described for the aryl group; and

Z represents a hydrogen atom or the same alkyl, substituted alkyl, aryl, substituted aryl, heterocyclic or substituted heterocyclic groups as described for Y; or represented by the general formulas (IIIa) to (IIId)

$Cp—W'—Cp$ (IIIa)

wherein W' represents a divalent moiety of the groups hereinbefore described for W; and Cp, which may be the same or different, each represents a moiety of the general formula (Ia)

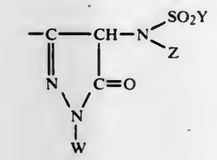


(Ia)

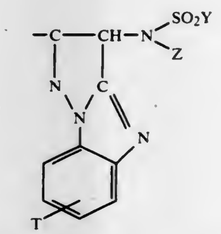
wherein X, Z and Y are as hereinbefore described;

$Cp—X'—Cp$ (IIIb)

wherein X' represents a divalent moiety of the groups hereinbefore described for X; and Cp, which may be the same or different, each represents a moiety of the formula (Ib) or (IIa)



(Ib)

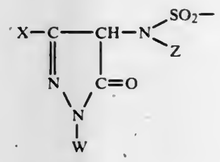


(IIa)

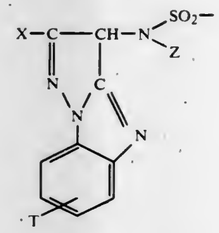
wherein T, W, Y and Z are as hereinbefore described;

$Cp—Y'—Cp$ (IIIc)

wherein Y' represents a divalent moiety of the groups hereinbefore described for Y; and Cp, which may be the same or different, each represents a moiety of formula (Ic) or (IIb)



(ic)

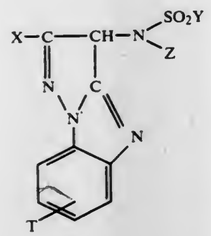


(IIb)

wherein T, W, X and Z are as hereinbefore described;

$Cp—T'—Cp$ (IIId)

wherein T' represents a divalent moiety of the groups hereinbefore described for T; and Cp, which may be the same or different, each represents a moiety of the formula (IIc)



(IIc)

wherein X, Y and Z are as hereinbefore described.

29. A method of forming a color image comprising developing an exposed photographic light-sensitive silver halide material comprising a support having thereon at least one silver halide emulsion layer with a photographic developer solution containing a primary aromatic amine developing agent in the presence of the two-equivalent magenta image forming coupler as set forth in claim 1.

4,237,218

MICRO-CARRIER CELL CULTURE

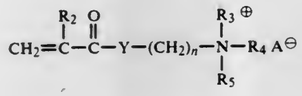
James F. Monthony, Albany; Norman D. Schwartz, El Cerrito; Donald F. Hollis, Oakland, and Gian D. Polastri, San Francisco, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Feb. 9, 1979, Ser. No. 10,648

Int. Cl.³ A01N *1/02*; C08F *18/00*

U.S. Cl. 435—2 **5 Claims**

1. A method for growing attachment-dependent cells comprising the steps of providing a suspension comprising cell carriers, an inoculum of said cells and nutrient-containing growth medium, and agitating sufficiently to keep said suspension in motion at a temperature between 20° C. and 45° C., said cell carriers comprising an insoluble cationic copolymer having a charge density of 0.050–0.150 meq/ml formed from the copolymerization of a) a hydrophilic monomer; b) a cross-linking monomer selected from the group consisting of di- and poly vinyls; and c) a cationic monomer of the formula:



4,237,219

RADIOIMMUNOASSAY ASSAY AND REAGENTS FOR MB ISOENZYME OF CK

Robert Roberts, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Filed Oct. 27, 1977, Ser. No. 846,095

Int. Cl.³ C12Q *1/66, 1/50*

U.S. Cl. 435—7 **15 Claims**

1. A competitive displacement radioimmunoassay method for quantitative determination of the concentration of a B subunit-containing isoenzyme of human creatine kinase in a sample, said method comprising:

(1) incubating said sample with a pre-determined stoichiometric excess quantity of antibodies to purified BB creatine kinase to form a first reaction mixture comprising (a) the product of antigen-antibody association of B subunit-containing isoenzymes in the sample with antibodies to purified BB creatine kinase, and (b) unreacted antibodies to purified BB creatine kinase;

(2) incubating the reaction mixture of step (1) with stoichiometric excess of radioisotopically labelled, purified B subunit-containing isoenzymes of creatine kinase to form a second reaction mixture comprising the association product of step (1) and the product of antigen-antibody association of said labelled isoenzymes with said unreacted antibodies in said first reaction mixture; and

(3) removing unreacted labelled isoenzymes from said second reaction mixture and ascertaining the concentration of B subunit-containing isoenzymes in said sample on the basis of the extent of antigen-antibody association between said antibodies and said labelled isoenzyme.

4,237,220

PROCESS FOR PREPARING 9α-HYDROXY-4-ANDROSTENE-3,17-DIONE

Klaus Kieslich, Berlin, Fed. Rep. of Germany, assignor to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,740

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2850047

Int. Cl.³ C12P *33/06*

U.S. Cl. 435—58 **1 Claim**

1. A process for preparing 9α-hydroxy-4-androstene-3,17-dione, comprising,

fermenting 4-androstene-3,17-dione with a culture of *Corynespora cassicola* ATCC 16,718.

4,237,221

PROCESS FOR OBTAINING MALTOSE PHOSPHORYLASE AND β-PHOSPHOGLUCOMUTASE AND METHOD OF DETERMINING α-AMYLASE USING SAME

Helmgard Gauhl, and Hans Seidel, both of Tutzing, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,723

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2748036

Int. Cl.³ C12N *9/12*; C12Q *1/32, 1/40, 1/48*

U.S. Cl. 435—15 **10 Claims**

1. Process for obtaining an enzyme preparation comprising at least one member selected from the group consisting of maltose phosphorylase and β-phosphoglucomutase from micro-organisms, which process comprises extracting said enzyme preparation from a micro-organism selected from the group consisting of *Lactobacillus brevis* DSM 20054, NCIB 8836, 8561 and 8562, *Lactobacillus plantarum* DSM 20174 and 43, *Lactobacillus reuteri* DSM 20016, *Lactobacillus fermentum* DSM 20052, *Streptococcus spec.* DSM 1118, DSM 1119, DSM 1120 and DSM 1121.

4,237,222

LACTATE OXIDASE PROCESS FOR THE MANUFACTURE THEREOF AND ANALYTICAL METHOD AND KIT FOR THE USE OF THE SAME

Hideo Misaki; Yoshifumi Horiuchi; Kazuo Matsuura, and Saburo Harada, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 18, 1979, Ser. No. 49,560

Claims priority, application Japan, Jun. 17, 1978, 53-73619

Int. Cl.² C12Q *1/26*; C12N *9/04*

U.S. Cl. 435—25 **10 Claims**

1. An enzyme lactate oxidase having at least the following substrate specificity and enzyme action:

substrate specificity: L-lactic acid

enzyme action: catalyzes the reaction

$$\text{L-lactic acid} + O_2 \rightarrow \text{pyruvic acid} + H_2O_2.$$

4,237,223

SHEET FOR PICKING OFF MICROORGANISMS

Harald Metz, Bickenbach, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Apr. 20, 1979, Ser. No. 31,802

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817503

Int. Cl.³ C12Q *1/24*

U.S. Cl. 435—30 **12 Claims**

1. A method of determining the presence of microorganisms on a surface which comprises

contacting the surface to be tested for the presence of microorganisms with an adhesive side of a sheet consisting essentially of a porous, flexible support material having an adhesive surface on at least one side such that when contacted with a microorganism-containing surface, the microorganisms will be adhered thereto; removing the sheet from this surface; placing the sheet on a sterile culture medium for microorganisms, the side placed on the medium being that opposite the side which was in contact with the test surface; incubating the sheet; and analyzing the incubated sheet for the presence of microorganisms.

5. A sheet for picking off microorganisms from a surface which comprises a porous, flexible support material having an adhesive surface on at least one side and which is sterile throughout, said adhesive surface being such that when contacted with a microorganism-containing surface, the microorganisms will be adhered thereto, wherein the porosity of the support material is such that microorganisms cannot pass through the support material but a culture meduim for microorganisms can pass through.

4,237,224

PROCESS FOR PRODUCING BIOLOGICALLY FUNCTIONAL MOLECULAR CHIMERAS

Stanley N. Cohen, Portola Valley, and Herbert W. Boyer, Mill Valley, both of Calif., assignors to Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Continuation-in-part of Ser. No. 959,288, Nov. 9, 1978, which is a continuation-in-part of Ser. No. 687,430, May 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 520,691, Nov. 4, 1974. This application Jan. 4, 1979, Ser. No. 1,021

Int. Cl.³ C12P *21/00*

U.S. Cl. 435—68 **14 Claims**

1. A method for replicating a biologically functional DNA, which comprises:

transforming under transforming conditions compatible unicellular organisms with biologically functional DNA to form transformants; said biologically functional DNA prepared in vitro by the method of:

(a) cleaving a viral or circular plasmid DNA compatible with said unicellular organism to provide a first linear segment having an intact replicon and termini of a predetermined character;

(b) combining said first linear segment with a second linear DNA segment, having at least one intact gene and foreign to said unicellular organism and having termini ligatable to said termini of said first linear segment, wherein at least one of said first and second linear DNA segments has a gene for a phenotypical trait, under joining conditions where the termini of said first and second segments join to provide a functional DNA capable of replication and transcription in said unicellular organism;

growing said unicellular organisms under appropriate nutrient conditions; and

isolating said transformants from parent unicellular organisms by means of said phenotypical trait imparted by said biologically functional DNA.

4,237,225

PROCESS FOR PREPARING TUNICAMYCIN

Robert L. Hamill, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 1, 1978, Ser. No. 965,547

Int. Cl.³ C12P *19/60*

U.S. Cl. 435—75 **5 Claims**

1. A method for preparing tunicamycin which comprises cultivating *Streptomyces chartreusis* NRRL 3882 in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic conditions until a substantial amount of tunicamycin is produced; separating tunicamycin from co-produced antibiotic A-23187; and isolating tunicamycin.

4,237,226

PROCESS FOR PRETREATING CELLULOSIC SUBSTRATES AND FOR PRODUCING SUGAR THEREFROM

Hans E. Grethlein, Hanover, N.H., assignor to Trustees of Dartmouth College, Hanover, N.H.

Filed Feb. 23, 1979, Ser. No. 14,474

Int. Cl.³ C13K *1/02*; C12P *7/18, 7/24*; C12R *1/885*

U.S. Cl. 435—99 **34 Claims**

1. A process for pretreating a cellulosic substance, that comprises: preparing a slurry of the cellulosic substance; adding an acid to the slurry to serve as a catalyst; heating the slurry to a reaction temperature at which the cellulose structure of the cellulosic substance is modified by interaction with the acid to a form which is significantly more susceptible to hydrolysis than the untreated substance; maintaining the reaction temperature of the slurry with the acid therein at said temperature for a time period that is long enough for most of the cellulosic substance therein to be modified to said form, said time period being short enough to prevent formation of significant amounts of glucose from cellulose and/or significant recrystallization of the cellulose structure; and quenching the slurry to reduce to insignificance the reaction between the acid and the thusly modified cellulosic substance.

14. A process for pretreating a cellulosic substance, that comprises forming an aqueous slurry containing the cellulosic substance; heating the slurry to a reaction temperature in the range from about 180° C. to 300° C. for a period of time respectively in the range from about five minutes to a fraction of a minute; and quenching the slurry.

4,237,227

PROCESS FOR PREPARING D-N-CARBAMOYL-α-AMINO ACIDS

Hideaki Yamada, Kyoto; Satomi Takahashi, Takatsuki, and Koji Yoneda, Amagasaki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1977, Ser. No. 862,853

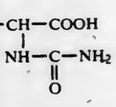
Claims priority, application Japan, Dec. 30, 1976, 51/157713

The portion of the term of this patent subsequent to Jun. 13, 1992, has been disclaimed.

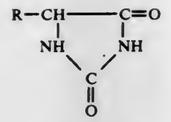
Int. Cl.³ C12P *13/02*

U.S. Cl. 435—108 **8 Claims**

1. A process for preparing D-N-carbamoyl-α-amino acids having the following general formula:



wherein R is an alkyl group, a substituted alkyl group, an aralkyl group, or a substituted aralkyl group, which comprises subjecting 5-substituted hydantoins having the following general formula:



wherein R is as defined above, to the action of an enzyme which is in the form of a cultured broth containing microorganisms, or cells or treated cells of said microorganisms, wherein said microorganisms are selected from the group consisting of microorganisms belonging to genus, Achromobacter, Aerobacter, Aeromonas, Agrobacterium, Alcaligenes, Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Enterobacter, Erwinia, Escherichia, Klebsiella, Microbacterium, Micrococcus, Protaminobacter, Proteus, Sarcina, Serratia, Xanthomonas, Actinomyces, Actinoplanes, Mycobacterium, Nocardia, Streptomyces, Aspergillus, Paecilomyces, Penicillium, Candida, Pichia, Rhodotorula or Torulopsis, in an aqueous medium of pH 7 to 10, said enzyme being capable of hydrolyzing said 5-substituted hydantoins so as to substantially produce only D-forms of N-carbamoyl-α-amino acids, and recovering said D-N-carbamoyl-α-amino acids from the medium.

4,237,228

METHOD OF PRODUCING L-ISOLEUCINE USING *BREVIBACTERIUM FLAVUM*

Nelli I. Zhdanova, Leningradskoe shosse, 112, korpus 3, kv. 748; Tatyana V. Leonova, ulitsa Svobody, 81, korpus 5, kv. 852, and Ljudmila F. Kozyreva, 4 Novopodmoskovny pereulok, 4, kv. 80, all of Moscow, U.S.S.R.

Filed Jun. 22, 1978, Ser. No. 917,989

Claims priority, application U.S.S.R., Jun. 29, 1977, 2501219

Int. Cl.³ C12P *13/06*; C12N *15/00*; C12R *1/13*

U.S. Cl. 435—116 **10 Claims**

1. A method of producing L-isoleucine by direct fermentation of a producing strain comprising:

(A) providing a nutrient medium consisting essentially of sources of carbon, nitrogen, mineral salts, vitamins, and water, with the proviso that precursors of L-isoleucine and amino acids are absent;

(B) cultivating the strain of Brevibacterium flavum VNII Genetika 10-89 deposited under the number CMIM B-1507 in said medium under aerobic conditions until L-isoleucine is accumulated in an amount of at least 17 grams per liter; and

(C) recovering the accumulated L-isoleucine from said medium.

4,237,229

IMMOBILIZATION OF BIOLOGICAL MATERIAL WITH POLYURETHANE POLYMERS

Frank J. Hartdegen, Columbia, and Wayne E. Swann, Pasadena, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 644,025, Dec. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 585,674, Jun. 10, 1975, abandoned. This application Nov. 9, 1977, Ser. No. 849,990

The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.

Int. Cl.² C07G *7/02*

U.S. Cl. 435—182 **73 Claims**

1. A process for immobilizing a biological material selected from the group consisting of: (a) a protein; (b) a coenzyme having at least one primary or secondary amino group per molecule; (c) an admixture of said coenzyme and an enzyme; and (d) an antibiotic having at least one primary or secondary amino group per molecule, the process comprising:

A. contacting the group member and an excess of an isocyanate-capped liquid polyurethane prepolymer in the absence of water to form a resulting mixture where said prepolymer is the reaction product of a polyether polyol with sufficient polyisocyanate to provide at least two free NCO groups per molecule of the prepolymer;

B. shaping the resulting mixture; and

C. curing the shaped resulting mixture by contacting it with a curing agent to form a cured shaped article comprising the immobilized biological material.

4,237,230

NOVEL LACTASE

Takao Iida; Sho Ozaki, both of Shiga, and Toshihiko Kotaka, Otsu, all of Japan, assignors to Daiwa Kasei Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 884,421, Mar. 8, 1978, abandoned. This application Jun. 26, 1979, Ser. No. 52,444

Claims priority, application Japan, May 31, 1977, 52-64347

Int. Cl.³ C12N *9/38*

U.S. Cl. 435—207 **4 Claims**

1. A lactase having a molecular weight of about 3×10^5, an optimum pH value of about 6.0, an optimum temperature of about 60° C. and at least 1 of the ratio of the activity for hydrolyzing lactose to the activity for hydrolyzing o-nitrophenyl-β-D-galactopyranoside.

4,237,231

METHOD OF PURIFYING GLUCOSE ISOMERASE AND A COMPOSITION FOR STORING SAME

Denise M. Jackson, Chicago, and Yoshihisa Tsuda, Highland Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 13, 1979, Ser. No. 93,570

Int. Cl.³ C12N *9/92*

U.S. Cl. 435—234 **13 Claims**

1. A process for purifying the enzyme glucose isomerase which comprises:

(a) treating an enzyme solution with acid to a pH from about 3.5 to about 5.0 and collecting the proteinaceous solids;

(b) extracting the proteinaceous solids with a buffer whose solution is at pH 6–8 and collecting the solution;

(c) dissolving therein sufficient salt to attain from about 40% to about 50% of its saturation point and collecting the solution; and

(d) dissolving additional salt in an amount sufficient to attain from about 41% to about 60% of its saturation point and collecting solids containing purified enzyme.

4,237,232

METHOD OF PURIFYING DISTILLERS SOLUBLES AND USE OF THE PURIFIED MATTER

Kiyoshi Yoshizawa, Tokyo; Kikuo Nojiro, Machida; Masamitsu Itoh, Hatoyama; Hiroshi Kiuchi, Sayama, and Kazuo Horii, Otani-Omiya, all of Japan, assignors to National Tax Administration Agency and Kibun Company Limited, both of Tokyo, Japan

Division of Ser. No. 762,680, Jan. 26, 1977. This application May 2, 1978, Ser. No. 902,225

Claims priority, application Japan, May 6, 1976, 51/50746; May 6, 1976, 51/50747; May 6, 1976, 51/50748; Jun. 17, 1976, 51/70428; Sep. 2, 1976, 51/104235

Int. Cl.³ C12N *1/00, 1/20, 1/14, 1/16*

U.S. Cl. 435—243 **5 Claims**

1. In a fermentation medium for the propagation of cells for use as food products, comprising fermentation medium ingredients selected from the group consisting of sugars, polypeptone, amino acid, ions of potassium and phosphate, and mixtures thereof, the improvement wherein

said fermentation medium further comprises a growth factor of molecular weight of 10^3–10^5 derived from distillers solubles by pretreatment with

(1) a centrifugal separation to a degree of above 50,000 (g×minute), or

(2) a filtration with addition of filter aid,

followed by collection of liquid containing molecular

weight range of 10^3–10^5 by subjecting the obtained clarified liquid to a molecular sieve treatment.

4,237,233

METHOD FOR CULTIVATING BASIDIOMYCETES

Chikao Yoshikumi, Kunitachi; Toshihiko Wada, Mibu; Hiromitsu Makita, Tokyo; Kinzaburo Suzuki, Mibu; Azuma Okubo, Mibu; Takishi Nakanoya, Mibu; Katsunori Miura, Mibu, and Tadao Sagi, Mibu, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1977, Ser. No. 819,401

Claims priority, application Japan, Aug. 3, 1976, 51-93074; Aug. 30, 1976, 51-103380

Int. Cl.³ C12N *1/14*

U.S. Cl. 435—254 **7 Claims**

1. In the method of cultivating a Basidiomycetes fungus in a fermentor under aeration and agitation at a temperature of 25°±2° C. by using an aqueous culture medium containing a saccharide as a carbon source and at least one nutrient source selected from the group consisting of yeast extract, peptone, casamino acid and meat extract and being prone to foaming in the initial stage of cultivation, the improvement wherein the initial charge of said culture medium is less than about 70% of the capacity of the fermentor, initially allowing said culture medium in the fermentor to foam and adding additional charges of said culture medium or a nutrient component selected from the group consisting of yeast extract, peptone, casamino acid and meat extract until at least about eighty-five percent of the fermentor's capacity is occupied by the aqueous culture medium with the proviso that each additional charge is supplied at a point in the course of cultivation when said foaming has subsided.

4,237,234

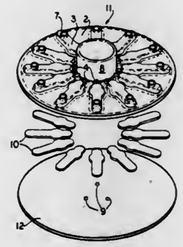
DEVICE FOR USE IN THE STUDY OF BIOCHEMICAL OR ENZYMATIC REACTIONS PRODUCED BY LIVING ORGANISMS

Henry E. Meunier, 24 ave. Alsace-Lorraine, Grenoble, France (38000)

Filed Oct. 30, 1978, Ser. No. 955,921

Int. Cl.³ C12M *1/20*

U.S. Cl. 435—301 **18 Claims**



1. A device for the study of biochemical or enzymatic reactions produced by living organisms, comprising a sandwich of two plastic sheets sealed to each other, the first sheet of said sandwich being dimensioned and contoured so as to provide a central open area having upstanding walls, defining a central receptacle, said central receptacle being closed at its bottom by the substantially planar second of said sheets, the said sandwich having internal thereof a plurality of radially-extending cavities providing individual reaction chambers, said reaction chambers having apertures therein at their radially outwardly-extending portions, wherein said apertures are so formed in said reaction chambers as to have upwardly-extended walls to prevent escape of the contents from said reaction chambers, said reaction chambers being in communication with said central receptacle internal of said sandwich, and wherein said chambers are in communication with said central receptacle by means of further cavities providing capillaries of reduced cross-section with respect to said reaction chambers arranged between said reaction chambers and said central receptacle and providing communication between the bottom of said central receptacle and said radially-extending reaction chambers.

4,237,235

URETHANIC POLYMERIZATION BY CHELATING AGENTS ACTING AS CATALYSTS OR COCATALYSTS

Rosalba Mazzucco, Corso Vinzaglio, 3, Torino, Italy

Filed Aug. 21, 1978, Ser. No. 935,379

Int. Cl.³ C08G *18/18, 18/22, 18/14, 18/48*

U.S. Cl. 521—118 **9 Claims**

1. In a method of producing urethane polymers by reacting isocyanate with hydroxylic polyether compound in the presence of a catalytic amount of chelating agent catalysts or cocatalysts; the improvement in which said catalysts or cocatalysts are complexes of said chelating agents with metallic ions and do not react with the reactive components, said chelating agents being mono- or polycarboxylic amino acids or metallic salts thereof.

4,237,236

PLASTICS MATERIAL AND METHOD OF PRODUCING SAID MATERIAL

Berthold Newitzki, Friedrichsdorf, Fed. Rep. of Germany, assignor to Firma Erich Rühl Chemische Fabrik und Chemikalien-Grosshandel, Friedrichsdorf, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 46,012

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825295

Int. Cl.³ C08J *9/04*

U.S. Cl. 521—123 **3 Claims**

1. A non-combustible material which does not develop toxic fumes when subjected to heat, based upon phenol resins and furfuryl alcohol, characterised by having been obtained by reacting a mixture of

(a) 62 to 76 percent by weight aluminium oxide or aluminium hydroxide;

(b) 12 to 16 percent by weight phenol resin; and

(c) 11.5 to 17.5 percent by weight furfuryl alcohol with

(d) a sulphonic acid in such an amount that the proportion by weight of sulphonic acid groups amounts to about 1/10th to 1/20th of the amount by weight of the aluminium oxide, with subsequent hardening.

4,237,237

HYDROPHOBIC POLYURETHANE FOAMS, THEIR MANUFACTURE AND USE

Wolfgang Jarre, Ludwigshafen, and Rolf Wurmb, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 932,355, Aug. 9, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,541

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738268

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—128 **4 Claims**

1. Hydrophobic polyurethane foams, which have densities of from 4 to 15 g/liters and in which the number of closed cells is from 2 to 30%, and the number of open cells from 98 to 70%, based on the total number of cells, and which are prepared by reacting organic polyisocyanates, polyhydroxy compounds, catalysts and water, with or without blowing agents, lipophilic compounds, chain extenders, assistants and additives, the starting components being reacted in such amounts that

(a) the ratio of all hydrogen atoms capable of undergoing a Zerewitinoff reaction—there hydrogen atoms being bonded to the polyhydroxy compound and water and to the lipophilic compound and chain extender if used—to the NCO groups of the polyisocyanate is from 1.3 to 10:1, and

(b) the ratio of hydrogen atoms capable of undergoing a Zerewitinoff reaction—these hydrogen atoms being bonded to the polyhydroxy compound and to the lipophilic compound and chain extender if used—to the NCO groups of the polyisocyanate is from 0.7 to 1.3:1.

4,237,238

POLYISOCYANURATE FOAMS BASED ON ESTERIFIED DMI OXIDATION RESIDUE ADDITIVE

David T. DeGuiseppi, Wallingford, and Richard A. Kolakowski, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 3, 1979, Ser. No. 81,325
Int. Cl.³ C08G *18/24, 18/42*
U.S. Cl. 521—131 **7 Claims**

1. In a cellular polymer in which the major recurring polymer unit is isocyanurate which polymer comprises the reaction product obtained by bringing together in the presence of a blowing agent, an organic polyisocyanate, a trimerization catalyst and a minor amount of a polyol the improvement which comprises employing as the polyol component from about 0.1 hydroxyl equivalent to about 0.5 hydroxyl equivalent per equivalent of said polyisocyanate of a polyol mixture prepared by the transesterification, with a glycol of molecular weight from about 60 to about 400, of a residue remaining after dimethyl terephthalate and methyl p-toluate have been removed from a dimethyl terephthalate esterified oxidate reaction product the major portion of said residue comprising a mixture of methyl and benzyl esters of benzene and biphenyl di- and tricarboxylic acids.

4,237,239

RETICULATED POLYVINYL CHLORIDE PLASTISOL FOAMS

George L. Lilley, Manheim, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 953,362, Oct. 23, 1978. This application Nov. 5, 1979, Ser. No. 91,351
Int. Cl.³ C08J *9/30, 9/38;* B29D *27/04*
U.S. Cl. 521—134 **4 Claims**

1. A composition for producing a reticulated polyvinyl chloride plastisol foam consisting essentially of (a) a polyvinyl chloride plastisol comprising dispersion grade polyvinyl chloride resin particles, a plasticizer, a stabilizer, and a frothing agent; and

(b) dry blend grade polyvinyl chloride resin particles dispersed in the plastisol of (a) which particles have the ability to take in plasticizer by absorption and to become solvated at a temperature within a range of about 130° to about 180° F. which temperature is below the gelation temperature of said plastisol after said plastisol has been frothed, the resulting solvated dry blend grade polyvinyl chloride particles having a melt temperature greater than the gelation temperature but less than the melt temperature of said plastisol froth.

4,237,240

PROCESS FOR THE MANUFACTURE OF FLEXIBLE POLYURETHANE FOAMS WITH HIGH LOAD-BEARING AND HIGH ENERGY-ABSORPTION CAPACITY

Wolfgang Jarre, Ludwigshafen; Peter Weyland, Frankenthal, and Gerhard Mueller, Munich, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,311
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—159 **7 Claims**

1. A process for the manufacture of flexible polyurethane foams from organic polyisocyanates, polyols, catalysts, foaming agents, and optionally chain extenders, auxiliaries and additives, wherein a mixture of diphenylmethane diisocyanates and polyphenylene polymethylene polyisocyanates having a diphenylmethane diisocyanate content of 55 to 85 percent by weight based on the weight of the isocyanate mixture is used as organic polyisocyanates; that polyester polyols or mixtures of polyester polyols and polyether polyols with a polyester polyol content of 60 to approximately 100 percent by weight based on the total weight of said polyol mixture are used as polyols; and that water or optionally, mixtures of water and low-boiling, halogenated hydrocarbons are used as blowing agents.

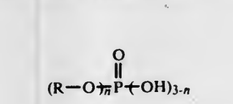
4,237,241

COATING COMPOSITIONS INCLUDING HYDROXY PHOSPHATE CATALYST

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 22, 1978, Ser. No. 945,027
The portion of the term of this patent subsequent to Jan. 1, 1980, has been disclaimed.
Int. Cl.³ C08L *63/00, 61/20*
U.S. Cl. 525—110 **10 Claims**

1. A thermosetting coating composition comprising a film forming component and an amine aldehyde compound, which composition cures by reaction between said amine aldehyde compound and hydroxy functionality present on said film forming material, which hydroxy functionality is either initially present, generated in situ, or both initially present and generated in situ, the improvement comprising including in said composition a catalyst for said reaction comprising at least one hydroxy functional organophosphate ester having the formula:



wherein n=1 to 2 and R is selected from the group consisting of mono- or dihydroxy alkyl, cycloalkyl or aryl radicals.

4,237,242

USES OF CHELATED METAL CATALYSTS FOR ACID/EPOXY POLYMER SYSTEMS

Lawrence S. Frankel, Jenkintown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 650,819, Jan. 20, 1976, Pat. No. 4,131,715. This application Jul. 26, 1978, Ser. No. 928,326
Int. Cl.³ C08L *33/02*
U.S. Cl. 525—119 **7 Claims**

1. A composition comprising a linear addition copolymer, derived from a monomer mixture containing from 5 to 45% by weight of one or more, -ethylenically unsaturated carboxylic acids, the T_g of the copolymer being from −45° C. to 20° C., the copolymer being capable of forming a thermoset resin by reaction with a resin-forming epoxy compound containing a plurality of epoxide groups, and a catalyst in the amount of 0.04% to 10% by weight based on the weight of the addition copolymer, the catalyst being a transition metal chelate stable at ambient temperatures up to about 22° C. and which decomposes to release the chelated metal when heated to temperatures of about 100° C., any quantity of organic solvent present being from 0% to 10% of the combined weight of copolymer and solvent, and which composition contains a resin-forming a polyepoxy compound.

4,237,243

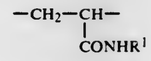
USE OF CROSS-LINKED POLYMERS TO INCREASE THE VISCOSITY IN COSMETIC, PHARMACEUTICAL AND TECHNICAL COMPOSITIONS

Jochen M. Quack, Kelkheim; Alwin Reng, Frankfurt am Main; Juliane Balzer, Frankfurt am Main; Friedrich Engelhardt, Frankfurt am Main, and Joachim Ribka, Offenbach am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

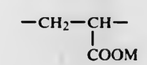
Filed Feb. 9, 1979, Ser. No. 10,519
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806098
Int. Cl.³ C08F *8/12, 8/28, 8/44*
U.S. Cl. 525—154 **8 Claims**

1. Cosmetic, pharmaceutical and technical compositions containing as a thickening agent cross-linked polymers whose polymer chains show the following composition:

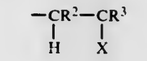
k-p molar % of groups of the formula



p molar % of groups of the formula



from 0 to 45 molar % of groups of the formula



and

from 0.1 to 20 molar % of a cross-linking agent, wherein

R^1 represents as a statistical mean value from 0 to 100 molar % of hydrogen and from 100 to 0 molar %, each calculated on the proportion of (k-p) molar %, of CH_2OH groups,

R^2 and R^3 are hydrogen, or one of the radicals R^2 and R^3 is methyl, the other being hydrogen,

X is cyano, alkoxycarbonyl with from 1 to 8 carbon atoms altogether, whose alkoxy radical may also be substituted by —OH, alkanoyloxy with from 2 to 6 carbon atoms, alkanoylamino with 2 to 8 carbon atoms which—if they have at least 4 carbon atoms—may also be cyclic and then form a pyrrolidone or caprolactam ring, phenyl, carboxyl or trialkoxysilyl with 1 to 2 carbon atoms in the alkoxy groups,

M is an alkali metal cation, and

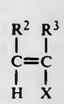
k stands for the range of from 99.9 to 50,

p stands for the range of from 5 to k,

said products being prepared by copolymerizing, calculated on the total molar amount of all monomers,

k molar % of acrylamide, k being defined as above,

from 0 to 45 molar % of a compound of the formula I


(I),

in which R^2, R^3 and X are defined as above, and from 0.1 to 20 molar % of a cross-linking agent in the presence of a radical initiator in a water-miscible alkanol solution, subjecting the polymer paste obtained to strong shearing forces until a uniform flow behavior of the suspension is achieved, mixing said polymer suspension under the action of strong shearing forces with p molar % of an alkali metal hydroxide of the formula MOH, p being defined as above, heating the mixture at a temperature of from 30° to 150° C. up to the saponification of p molar % of amide groups to form —COOM— groups, and either isolating the copolymer obtained or methylolating the same, after removing the ammonia, in a lower alkanol with from 0 to (k-p) molar % of paraformaldehyde, k and p being defined as above, at a temperature of from 10° C. to the boiling point of the lower alkanol employed.

4,237,244

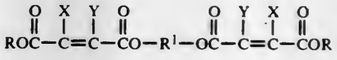
MOLDING COMPOSITION BASED ON UNSATURATED POLYESTERS

Hannes von Harpe; Ludwig Bottenbruch; Bernd Peltzer, and Hansjochen Schulz-Walz, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 3, 1979, Ser. No. 751
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800468; Nov. 28, 1978, 2851337
Int. Cl.³ C08F *8/46;* C08L *7/00, 23/46, 47/00*
U.S. Cl. 525—171 **6 Claims**

1. Hardenable molding compositions comprising

(a) from 5 to 77 parts, by weight, of a "terminally unsaturated" urethane group-free polyester of the formula



wherein

R^1 represents the difunctional radical reduced by two hydroxyl groups of a polyester which does not contain any α,β-ethylenically unsaturated groups; and X, Y and R represent hydrogen or C_1–C_6 alkyl,

(b) from 20 to 80 parts by weight of a vinyl or vinylidene compound copolymerizable therewith; and

(c) from 3 to 25 parts, by weight, of an elastomeric polymer having a glass transition temperature of from 90° to +10° C.,

a second phase in the form of particles having an average diameter of from 0.1 to 100 μm formed during hardening.

4,237,245

HYDROGENATED BLOCK COPOLYMERS OF BUTADIENE CONTAINING A BLOCK OF 1,4 AND A BLOCK OF 1,2-MICROSTRUCTURE

Adel F. Halasa, Bath; David W. Carlson, and James E. Hall, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 20, 1979, Ser. No. 68,308
Int. Cl.³ C08F *8/04*
U.S. Cl. 525—272 **3 Claims**

1. A thermoplastic elastomeric composition comprising the hydrogenated product of a diblock copolymer having one block predominantly of 1,4-polybutadiene and containing no more than 15 percent by weight of 1,2-microstructure and a second block of 1,2-polybutadiene containing at least 95 percent by weight of 1,2-microstructure, the molecular weight of said 1,2-polybutadiene block representing at least 10 percent of the total molecular weight of said copolymer, the unsaturation in said original diblock copolymer being at least 85 percent hydrogenated.

4,237,246

COPOLYMERS OF 1,3-CYCLODIENES, MONOVINYLAROMATIC COMPOUNDS AND POLYVINYLAROMATIC HYDROCARBONS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

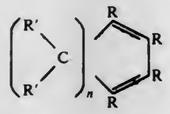
Continuation-in-part of Ser. No. 438,244, Jan. 31, 1974, abandoned. This application Jul. 15, 1976, Ser. No. 705,481

Int. Cl.[3] **C08F** *4/48, 2/06, 8/04, 32/04*

U.S. Cl. 525—332 **20 Claims**

1. A method for the production of a 1,3-cyclodiene monovinylaromatic thermoplastic copolymer having essentially a zero percent gel content comprises the steps of:

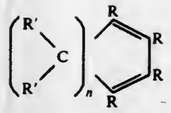
polymerizing a 1,3-cyclodiene represented by the general formula



wherein n is an integer from 1 to 2, each R is selected from the group consisting of hydrogen, methyl and ethyl radicals, each R′ is selected from the group consisting of hydrogen, linear or branched alkyl, cycloalkyl and aryl radicals such that the maximum number of carbon atoms per R′ is about 6 and the total number of carbon atoms in the 1,3-cyclodiene is in the range of from about 5 to 20;

a monovinylaromatic compound wherein the total number of carbon atoms per molecule is in the range of from about 8 to 14; and

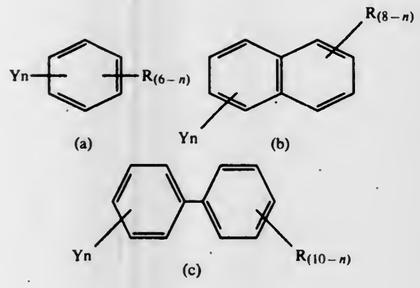
a polyvinylaromatic compound represented by the general formulas selected from the group consisting of



wherein n is an integer from 1 to 2, each R is selected from the group consisting of hydrogen, methyl and ethyl radicals, each R′ is selected from the group consisting of hydrogen, linear or branched alkyl, cycloalkyl and aryl radicals such that the maximum number of carbon atoms per R′ is about 6 and the total number of carbon atoms per 1,3-cyclodiene molecule is in the range of from about 5 to 20;

units of a monovinylaromatic compound wherein the total number of carbon atoms per unit is in the range of from about 8 to 14; and

units of a polyvinylaromatic hydrocarbon represented by the general formulas selected from the group consisting of



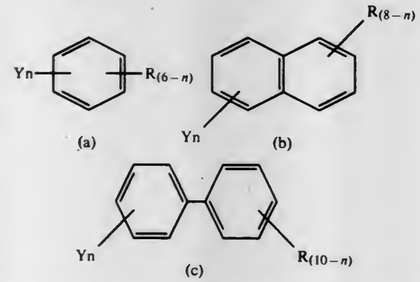
wherein Y is a vinyl radical, each R is selected from the group consisting of hydrogen and lower alkyls with the total of said R groups containing up to 12 carbon atoms and n is an integer of 2 to 3;

wherein said polymerization is carried out in the presence of an organolithium initiator represented by the general formula RLi_x wherein x is an integer from 1 to 4, R is a hydrocarbon radical selected from the group consisting of aliphatic, cycloaliphatic and aromatic radicals and the valence of R is equal to the integer x; and

wherein the amount of polyvinylaromatic hydrocarbon incorporated in the copolymer is in the range of from about 0.02 to 2 parts by weight per hundred parts by weight monomer.

14. A thermoplastic copolymer comprising:

units of a 1,3-cyclodiene represented by the general formula



wherein Y is a vinyl radical, each R is selected from the group consisting of hydrogen and lower alkyls with the total of said R groups containing up to 12 carbon atoms and n is an integer of 2 to 3;

wherein the amount of polyvinylaromatic hydrocarbon incorporated in the copolymer is in the range of from about 0.02 to 2 parts by weight per hundred parts by weight monomer.

4,237,247

CHLORINATED POLYETHYLENE COMPOSITION AND PROCESS FOR CURING CHLORINATED POLYETHYLENE

Yasuo Matoba, Suita; Akira Hashimoto, Itami, and Mikio Sugahara, Kawanishi, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Division of Ser. No. 781,300, Mar. 25, 1977, Pat. No. 4,165,416. This application Apr. 21, 1978, Ser. No. 898,914

Claims priority, application Japan, Aug. 2, 1976, 51-92638; Aug. 24, 1976, 51-101377; Aug. 24, 1976, 51-101378; Jan. 1, 1977, 52-6962

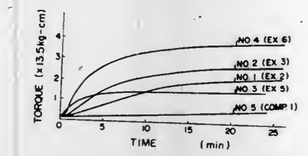
Int. Cl.[3] **C08F** *8/34*

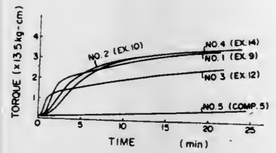
U.S. Cl. 525—335 **12 Claims**

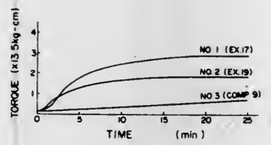
1. A curable chlorinated polyethylene composition free from hexamethylphosphoric triamide complex comprising:

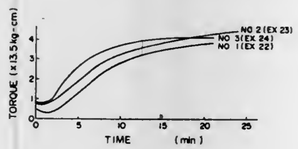
(A) chlorinated polyethylene having a chlorine content of about 20 to 50%, said polyethylene having a molecular weight of about 20,000 to 500,000,

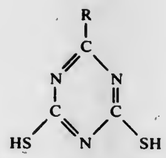
(B) a mercaptotriazine cross-linking agent of the formula







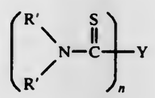




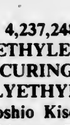
wherein R is a member selected from the group consisting of a mercapto group, alkylamino groups with the alkyl moiety containing 1 to 8 carbon atoms, dialkylamino groups with the alkyl moiety containing 1 to 8 carbon atoms, cycloalkylamino groups with the cycloalkyl moiety containing 6 to 8 carbon atoms, dicycloalkylamino groups with the alkyl moiety containing 6 to 8 carbon atoms, arylamino groups, N-aryl-N-alkylamino groups with the alkyl moiety containing 1 to 8 carbon atoms and alkoxy groups containing 1 to 8 carbon atoms,

(C) a cross-linking accelerator selected from the group consisting of

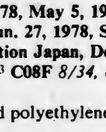
dithiocarbamic compounds of the formula



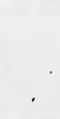
wherein Y is a member selected from the group consisting of $—(S)_x—$ where x is an integer from 1 to 8, $—SM_1$ where M_1 is an alkali metal atom, $—SM_2S—$ where M_2 is a bivalent metal atoms,



where M_3 is a trivalent metal atom, and



where M_4 is a tetravalent metal atom; n is 2 in the case of $—S)_x$, 1 in the case of $—SM_1$, 2 in the case of $—SM_2S—$, 3 in the case of



and 4 in the case of

and the plurality of R's, which may be the same or different, are each groups selected from the class consisting of C_1–C_{12} alkyl groups, C_3–C_{12} cycloalkyl groups, C_7–C_{12} aralkyl groups and C_6–C_{12} aryl groups, which two R's taken together with the same N atom to which they are attached may form a nitrogen-containing ring; and

(D) an acid acceptor of metal compounds.

4,237,248

CHLORINATED POLYETHYLENE COMPOSITION AND PROCESS FOR CURING CHLORINATED POLYETHYLENE

Yasuo Matoba, Suita; Yoshio Kise; Nobuo Yamada, both of Amagasaki; Akira Hashimoto, Itami, and Tetsuya Nakata, Ibaraki, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Division of Ser. No. 683,678, May 5, 1976, Pat. No. 4,174,341. This application Jun. 27, 1978, Ser. No. 919,677

Claims priority, application Japan, Dec. 19, 1975, 50-152393

Int. Cl.[3] **C08F** *8/34, 8/40*

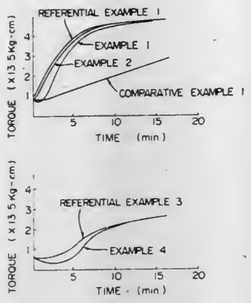
U.S. Cl. 525—335 **6 Claims**

1. A curable chlorinated polyethylene composition comprising:

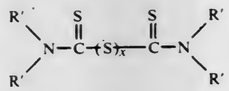
(A) chlorinated polyethylene having chlorine content of about 25 to 45%

(B) a complex formed between hexamethylphosphoric triamide and a member selected from the group consisting of carboxylic acids, cyanuric acid, unsubstituted phenols, phenols substituted with alkyl of 1 to 8 carbon atoms,

hydroxyl, halogen, lower alkoxy or formyl, alcohols and metal salts, and



(C) a thiuram sulfide of the formula



wherein R′ represents an alkyl group containing 1 to 5 carbon atoms, two R′ groups bonded to the same nitrogen atom may together form an alkylene linkage, and x is a positive number of 1 to 4, and sulfur.

4,237,249

PROCESS FOR THE PREPARATION OF CROSSLINKED COPOLYMERS, THE PROCESS PRODUCTS OBTAINED, AND THEIR USE IN TEXTILE PRINTING

Juliane Balzer; Friedrich Engelhardt, both of Frankfurt am Main; Joachim Ribka, Offenbach am Main-Bürgel, and Wolfram Schidlo, Diedenbergen, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,608

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754058

Int. Cl.³ C08F *8/28, 8/12, 8/44*

U.S. Cl. 525—369 **8 Claims**

1. The process for the preparation of a crosslinked copolymer composition comprising

(a) polymerizing in the presence of a radical initiator in a water-miscible alkanol solution k mole percent acrylamide with 0 to 45 mole percent of a compound of the formula



and 0.1 to 20 mole percent of a crosslinking agent wherein k is 99.9 to 50, R^2 and R^3 are hydrogen or methyl with the proviso that only one of R^2 and R^3 may be simultaneously methyl, and X is a member selected from the group consisting of cyano, carboxyl, alkoxy carbonyl having a total of 1 to 9 carbon atoms, alkoxy carbonyl with hydroxy substituted alkoxy moiety having 2 to 8 carbon atoms in the hydroxy substituted alkoxy; alkanoyloxy having a total of 2 to 6 carbon atoms, alkanoylamino having a total of 2 to 8 carbon atoms, cyclic alkanoylamino having a total of 4 to 8 carbon atoms, phenyl and trialkoxysilyl having 1 to 2 carbon atoms in the alkoxy;

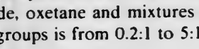
(b) subjecting the polymer paste from (a) to strong shearing forces until a uniform flow behavior of the suspension is achieved; and

(c) mixing the suspension from (b) with the action of strong shearing forces with p mole percent of a hydroxide of the formula MOH wherein p is 5 to k and M is an alkali metal; and

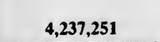
(d) saponifying the polymer mixture from (c) at 30° to 150° C. until p mole percent of amide moieties are saponified to —COOM;

(e) removing by-product ammonia;

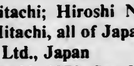
whereby the resulting polymer has the composition of k-p mole percent of



p mole percent



0 to 45 mole percent



and 0.1 to 20 mole percent of said crosslinking agent; wherein R^1 is in the statistical mean, 0 to 100% hydrogen and 100 to 0% —CH_2OH— and k, p, R^2, R^3, x and M have the aforesaid meaning.

4,237,250

POLYURETHANES CONTAINING ARYL SULFONIC ACID ALKYL ESTER GROUPS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,616

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2735047

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—440 **16 Claims**

1. Polyurethanes having a molecular weight above 12,000 and containing arylsulfonic acid alkyl ester groups produced by reacting at from 0° to 190° C.

(a) aromatic polyisocyanatosulfonic acids with

(b) oxiranes or oxetanes wherein the equivalent ratio of isocyanate groups (including dimerized isocyanate) to sulfonic acid groups is from 0.1:1 to 1:1 and the equivalent ratio of epoxide, oxetane and mixtures thereof groups to sulfonic acid groups is from 0.2:1 to 5:1.

4,237,251

POLYESTERAMIDES AND PROCESS FOR PRODUCING THE SAME

Toshiaki Ishimaru, Hitachi; Hiroshi Nishizawa, Kitaibaraki, and Yuichi Osada, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Jan. 11, 1979, Ser. No. 2,752

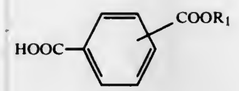
Claims priority, application Japan, Jan. 12, 1978, 53-2452; Feb. 27, 1978, 53-21713; Feb. 27, 1978, 53-21714; Mar. 1, 1978, 53-23401; Mar. 29, 1978, 53-36980

Int. Cl.³ C08G *63/76;* **C08L** *67/02*

U.S. Cl. 525—440 **22 Claims**

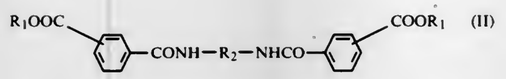
1. A process for producing a polyesteramide which comprises

(i) reacting one or more aromatic monoalkyl dicarboxylates of the formula:



(I)

wherein R_1 is alkyl; with one or more aromatic diisocyanates in the presence or absence of one or more monoalkyl dicarboxylates and/or one or more diisocyanates to produce an aromatic dialkyl diamidedicarboxylate of the formula:



(II)

wherein R_1 is as defined above; and R_2 is a divalent aromatic residue, or to produce a mixture (III) of dialkyl diamidedicarboxylates containing the aromatic dialkyl diamidedicarboxylate of the formula (II), and

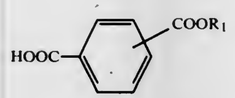
(ii) reacting the aromatic dialkyl diamidedicarboxylate of the formula (II) or a mixture (III) of dialkyl diamidedicarboxylates containing the aromatic dialkyl diamidedicarboxylate of the formula (II) with one member selected from the group consisting of

(a) one or more polyhydric alchols,

(b) one or more polyhydric alcohols and one or more polyvalent carboxylic acids or esters thereof, and

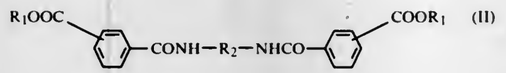
(c) one or more polyhydric alcohols and a linear polyester.

17. A polyesteramide obtained by reacting in the first step one or more aromatic monoalkyl dicarboxylates of the formula:



(I)

wherein R_1 is alkyl; with one or more aromatic diisocyanates in the presence or absence of one or more monoalkyl dicarboxylates and/or one or more diisocyanates to produce an aromatic dialkyl diamidedicarboxylate of the formula:



(II)

wherein R_1 is as defined above; and R_2 is a divalent aromatic residue, or to produce a mixture (III) of dialkyl diamidedicarboxylates containing the aromatic dialkyl diamidedicarboxylate of the formula (II), and reacting in the second step the aromatic dialkyl of diamidedicarboxylate of the formula (II) or a mixture (III) of dialkyl diamidedicarboxylates containing the aromatic dialkyl diamidedicarboxylate of the formula (II) with one member selected from the group consisting of

(a) one or more polyhydric alcohols,

(b) one or more polyhydric alcohols and one or more polyvalent carboxylic acids or esters thereof, and

(c) one or more polyhydric alcohols and a linear polyester.

4,237,252

HEAT ACTIVATABLE ONE-PART LIQUID RESIN SYSTEMS

Richard G. Newell, Woodbury, and Harold E. Rude, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 28, 1979, Ser. No. 52,848

Int. Cl.³ C08G *18/16, 18/58, 18/32*

U.S. Cl. 525—454 **13 Claims**

1. A heat curable, one-part, liquid resin composition comprising

I. A latent catalyst which comprises rupturable, impermeable microcapsules ranging in size from about 0.1 to 20 microns having

(1) shell walls of a crosslinked interfacial polyurethane-polyether reaction product of an aromatic polyisocyanate having an equivalent weight of up to about 380 and a functionality of from about 2 to 6, glycerol and a cycloaliphatic polyepoxide having an equivalent weight of from about 70 to 220 and a functionality of from about 2 to 3, and

(2) liquid fills comprising a Lewis acid-glycerol complex,

II. a cationically curable monomer composition, and

III. a Lewis base scavenger having a pK_b of from about 6 to 11,

there being from 1 to 20 parts of I and 80 to 99 parts of II in the one-part system, the sum of I and II being 100 parts, and there being 0.1 to 35 mole percent of III, based on the moles of Lewis acid in the microcapsules.

4,237,253

COPOLYMERS, THEIR PROCESS OF PREPARATION, AND COSMETIC COMPOUNDS CONTAINING THEM

Bernard Jacquet, Antony; Claude Mahieu, Paris, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

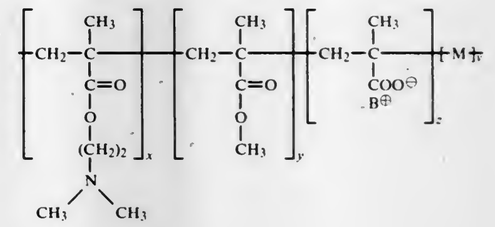
Filed Apr. 18, 1978, Ser. No. 897,435

Claims priority, application France, Apr. 21, 1977, 77 12048; Mar. 14, 1978, 78 07308

Int. Cl.³ C08F *2/00, 4/04, 220/36, 220/54*

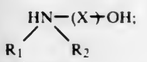
U.S. Cl. 526—75 **17 Claims**

1. Copolymers characterized by the fact that they correspond to the following general formula:



where:

B represents Na, K, NH_4,



or 2-amino-2-methyl propanal-1

R_1 and R_2, identical or different, represent an atom of hydrogen or the radical—(X)—OH;

X represents an alkylene radical, branched or unbranched, having from 1 to 3 atoms of carbon or an alkylene radical, branched or unbranched, substituted by at least one hydroxymethyl radical;

M represents a type of at least one unsaturated monomer taken from the group consisting of the acrylamides or methacrylamides substituted on the nitrogen by an alkyl

radical, branched or unbranched, the acrylates or methacrylates of monoalkyl ether of ethylene glycol or of polyethylene glycol, and N-vinylpyrrolidone;

x is from 22% to 64% in moles,

y is from 13% to 71% in moles,

z is from 6% to 23% in moles, and

v is from 0% to 22% in moles,

x+y+z+v being equal to 100%.

4,237,254

PROCESS FOR PRODUCING OLEFIN POLYMERS

Sadao Kitagawa, Yokohama; Isao Okada, Yokohama; Teruo Saito, Yokohama; Shoichi Masukawa, Amimachi; Yoshihisa Watanabe, Amimachi, and Makoto Imanari, Amimachi, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Apr. 25, 1978, Ser. No. 899,999

Claims priority, application Japan, Apr. 30, 1977, 52-50272; Jan. 9, 1978, 53-960

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—122 **8 Claims**

1. A process for producing steroregular olefin polymers comprising causing an ethylenically unsaturated monomer comprising at least one olefin monomer having at least three carbon atoms to contact with a catalyst system comprising a combination of a catalyst component IA and a catalyst component III,

the catalyst component IA being a solid product obtained by contacting the following constituents (a), (b) and (c) together:

(a) a solid reaction product obtained by reacting magnesium hydroxyhalide with an organoaluminum compound at a temperature of about 0° to 200° C. for about 30 minutes to 10 hours, in an amount of 0.3 to 20 moles of said organoaluminum compound per mole of said magnesium hydroxyhalide so that the reaction of said organoaluminum compound and magnesium hydroxyhalide is substantially complete, said organoaluminum compound having the formula R_nAlX_{3-n} wherein R represents a hydrocarbon residue having from 1 to 20 carbon atoms, X represents a halogen atom and n represents a number satisfying the formula: $0.1 < n \leqq 1.5$,

(b) an electron donor which is a carboxylic acid ester, and

(c) a halogen compound of titanium,

the ratio of constituents (a):(b):(c) being 100 g.:0.05 to 1.0 mole:0.005 to 100 moles; and

the catalyst component II being an organometal compound of a metal of Groups I through III of the periodic table.

4,237,255

SUSPENSION STABILIZER FOR P-METHYLSTYRENE SUSPENSION POLYMERIZATION

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,926

Int. Cl.³ C08F *2/20*

U.S. Cl. 526—201 **1 Claim**

1. In the aqueous suspension polymerization of p-methylstyrene, in which a difficultly soluble phosphate is used as a suspension stabilizer, the improvement which comprises adding to the aqueous suspension, as an extender, sulfonated poly(p-methylstyrene).

4,237,256

PROCESS FOR PRODUCING AN ACRYLONITRILE POLYMER MELT

Toshiyuki Kobashi; Masahiko Ozaki, and Noboru Abe, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jul. 25, 1978, Ser. No. 927,910

Claims priority, application Japan, Aug. 11, 1977, 52-96801

Int. Cl.³ C08F *20/44, 4/30, 220/14*

U.S. Cl. 526—229 **7 Claims**

1. In a process for producing an acrylonitrile polymer melt in a substantially clear, ungelled and melted state by polymerizing acrylonitrile alone or a monomer mixture composed mainly of acrylonitrile and, as a further component, at least one other ethylenically unsaturated compound, in a system in which water is present in an amount in the range of from 3 to 50% by weight based on the total amount of the monomer(s) and water, at a temperature above 120° C. and under a pressure which is at least autogeneous pressure, the improvement which comprises using a persulfate as the polymerization initiator, and carrying out the polymerization continuously, while subjecting the polymerization system to sufficient stirring to prevent gelation and coloration.

4,237,257

PROCESS FOR PRODUCING LOW MOLECULAR WEIGHT STYRENE SERIES POLYMERS

Yasuo Moriya, and Takeshi Komai, both of Aichi, Japan, assignors to Nippon Oil and Fats Co., Tokyo, Japan

Filed Jul. 7, 1978, Ser. No. 922,753

Claims priority, application Japan, Jul. 9, 1977, 52-82389; Sep. 2, 1977, 52-104720

Int. Cl.³ C08F *12/08*

U.S. Cl. 526—230.5 **11 Claims**

1. A process for preparing a polymer having a number average molecular weight of less than 5000, which consists essentially of polymerizing styrene monomer and up to less than 50 mole percent of a different vinyl monomer which is copolymerizable with said styrene monomer, in the presence of from 3 to 10 percent by weight, based on the weight of said monomers, of organic peroxide polymerization initiator whose decomposition temperature for 10 hour half-life in 0.1 molar solution in benzene is from 40° to 70° C., at a polymerization temperature which is from 20° to 30° C. higher than said decomposition temperature of said initiator, until said polymer is formed, and then recovering said polymer.

4,237,258

PROCESS FOR PREPARING VULCANIZABLE ACRYLIC ELASTOMERS

Giuseppe Cantalupo, Busto Arsizio; Sergio De Servi, Legnano, and Agostino Lepori, Fagnano Olona, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Apr. 13, 1979, Ser. No. 29,940

Claims priority, application Italy, Apr. 14, 1978, 22324 A/78

Int. Cl.³ C08F *222/02, 224/00*

U.S. Cl. 526—273 **13 Claims**

1. Process for the preparation of vulcanizable acrylic elastomers by polymerization, at 40°–80° C. and in the presence of a radical-yielding initiator, of a mixture of monomers consisting prevailingly of an alkyl acrylate in which the alkyl has from 1 to 8 carbon atoms, characterized in that the mixture of monomers subjected to polymerization contains, besides the alkyl acrylate, the following comonomers:

(a) 0.5–2% by weight of an ethylenically unsaturated monomer containing halogen and having one of the following general formulae: $R—COOR_1$; $R_1—COOR_2$; or $R_2—O—R_1$ wherein R is chloro- or bromoalkyl C_{1-3}; R_1 is alkenyl C_{2-3}; and R_2 is chloro- or bromoalkyl C_{1-4};

(b) 0.5–2% by weight of an ethylenically unsaturated monomer containing an epoxy group and selected from the group consisting of vinyl glycidyl ether, allyl glycidyl ether, methallyl glycidyl ether, glycidyl acrylate and glycidyl methacrylate;

(c) 0.1–1% by weight of at least one ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acid and fumaric acid; and

(d) 0–0.1% by weight of a polyene having at least two non-conjugated double bonds;

all of the above percentages being referred to the total of the mixture of the monomers.

4,237,259

ORGANIC MATERIALS HAVING META, PARA-ISOPROPYLIDENE DIPHENOXY UNITS AND METHOD

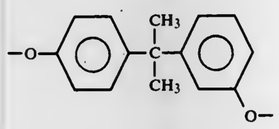
Donald E. Keeley, Menlo Park, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 6, 1978, Ser. No. 966,896

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—204 **6 Claims**

1. Thermoplastic polycarbonates having improved flow characteristics and chemically combined units of the formula,



4,237,260

PLASTER CONSISTENCY REDUCER

Robert G. Lange, Villa Park, Ill., and Harley L. Schlotthauer, Okeene, Okla., assignors to United States Gypsum Company, Chicago, Ill.

Continuation of Ser. No. 893,853, Apr. 6, 1978, Pat. No. 4,184,887. This application Jun. 18, 1979, Ser. No. 49,866

Int. Cl.³ C08G *6/00, 10/04*

U.S. Cl. 528—230 **4 Claims**

1. A plaster consistency reducing agent for reducing the amount of water required to be mixed with a dry plaster composition to form a pourable aqueous slurry consisting essentially of a potassium salt of naphthalene sulfonic acid condensate having a molecular weight between about 300 and 3,000, the potassium being present in an amount of about 0.10% to about 30% by weight expressed as K_2O, by weight of the condensate.

4,237,261

PROCESS FOR CONTINUOUSLY PRODUCING POLYESTER AND SPUN FIBER

Hideo Kawamura; Ichiro Fukami; Shuhei Wada, and Fusayuki Yoshikawa, all of Okazaki, Japan, assignors to Nippon Ester Co., Ltd., Okazaki, Japan

Filed Sep. 17, 1979, Ser. No. 75,877

Int. Cl.³ C08G *63/22*

U.S. Cl. 528—272 **11 Claims**

1. In a continuous process for producing polyester which comprises continuously polymerizing bis-β-hydroxyethyl terephthalate and/or a lower polymer thereof using a plurality of vacuum polymerization reactors equipped with a stirrer and disposed in series, the improvement which comprises automatically and continuously measuring the stirring power or stirring axis reaction force of at least the final polymerization reactor from which a polymer having a limiting viscosity (η) of 0.25 or more is removed, and controlling the vacuum in the polymerization reactors according to changes in the stirring power or reaction force so that the stirring power or reaction force value is kept at a prescribed level, by which the degree of polymerization of the polymer removed from the polymerization reactors is controlled.

4,237,262

CURABLE ALIPHATIC EPOXY-POLIMIDE COMPOSITIONS

Robert J. Jones, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 14, 1979, Ser. No. 12,098

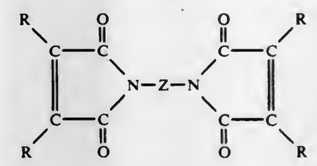
Int. Cl.³ C08G *73/10, 59/40*

U.S. Cl. 528—322 **21 Claims**

1. A low temperature curable composition comprising:

(a) at least one curable polyimide prepolymer formed at a temperature sufficient to cause thermal reaction between heated components of a mixture of:

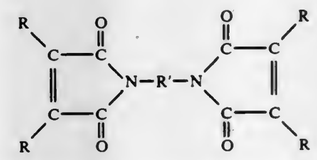
(i) at least one aliphatic bismaleimide of the formula:



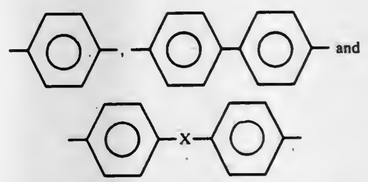
wherein Z is a polyaliphatic ether in which each aliphatic group individually contains from one to about six carbon atoms, and in which each R is independently selected from the group consisting of hydrogen, an aliphatic group containing one or two carbon atoms, a benzenoid radical and a halogen;

(ii) at least one aromatic polyamine; and

(iii) at least one aromatic bismaleimide of the formula:

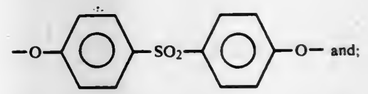


wherein each R is independently selected from the group consisting of hydrogen, an aliphatic group containing one or two carbon atoms, a benzenoid radical and a halogen and wherein R′ is a bifunctional benzenoid radical selected from the group consisting of:



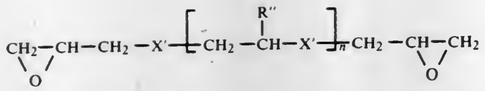
and

wherein X is selected from the group consisting of: —O—, —S—, $—SO_2—$, $—CH_2—$, $—C_2H_4—$, —CO—, $—C_3H_6—$, and



and;

(b) at least one epoxy resin of the formula:



wherein X' is selected from the group consisting of: —O—, —S—, —CH_2— and —CH_2CH_2—; R'' is selected from the group consisting of: —H, and —CH_3; and n is from 0 to about 20.

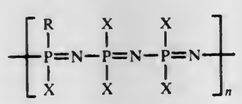
4,237,263

POLY(MONOALKYL GROUP CONTAINING ORGANOPHOSPHAZENES) AND METHOD FOR THEIR PREPARATION

Harry R. Allcock, and Robert J. Ritchie, both of State College, Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 21, 1979, Ser. No. 40,802
Int. Cl.³ C08G *83/00*
U.S. Cl. 528—399 **7 Claims**

1. A polyphosphazene polymer containing units represented by the structure:



wherein R is alkyl containing from 1 to 10 carbon atoms; wherein X is selected from the group consisting of chlorine and —OR' radicals in which R' is the same as R or is selected from the group consisting of substituted alkyl radicals and substituted or unsubstituted aryl radicals and wherein n is from 3 to 15,000.

4,237,264

PROCESS FOR THE PREPARATION OF POLYURETHANES WHICH ARE DISPERSIBLE IN WATER

Klaus Noll, Cologne; Klaus Nachtkamp, Bergisch-Gladbach, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 8, 1977, Ser. No. 849,690
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651506
Int. Cl.³ C08G *18/12, 18/32;* C08L *75/08, 75/12*
U.S. Cl. 528—67 **10 Claims**

1. A process for the preparation of water dispersible, substantially linear polyurethanes characterized by a content of from 0.5 to 10%, by weight, of ethylene oxide units built into terminal polyether chains and from 0.1 to 15 milliequivalents of ionic groups per 100 grams of polyurethane, said process comprising reacting:

(a) an organic diisocyanate,

(b) an organic compound, which behaves as a difunctional material in the reaction with the diisocyanate and which contains isocyanate reactive hydrogen atoms,

(c) a first hydrophilic material selected from the group consisting of

(i) monoisocyanates which contain hydrophilic chains containing ethylene oxide (i.e., —CH_2—CH_2—O—) units,

(ii) compounds which are monofunctional in the isocyanate polyaddition reaction, which contain isocyanate reactive hydrogen atoms, and which contain ethylene oxide units, and

(iii) mixtures thereof, and

(d) a second hydrophilic material selected from the group consisting of

(i) mono- and/or diisocyanates which contain ionic groups and/or groups capable of conversion into ionic groups,

(ii) compounds which are mono- and/or difunctional in the isocyanate polyaddition reaction, which contain isocyanate reactive hydrogen atoms and which contain ionic groups and/or groups capable of conversion into ionic groups.

4,237,265

PROCESS FOR CATALYST REMOVAL FROM POLYPHENYLENE ETHER REACTION SOLUTIONS

John D. Eliassen, Norwalk, Conn.; Gim F. Lee, Jr., Albany, and James Watson, Jr., New City, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 8, 1975, Ser. No. 611,266
Int. Cl.³ C08G *65/46*
U.S. Cl. 528—496 **11 Claims**

1. In a process for the liquid-liquid separation of a copper-amine catalyst from a polyphenylene ether resin organic reaction solution wherein a catalyst extracting agent is added to said polyphenylene ether organic reaction solution to form a mixture that includes polyphenylene ether resin, organic solvent and extractable copper-amine catalyst, the improvement which comprises:

(a) extracting said mixture that includes polyphenylene ether resin, organic solvent and extractable copper-amine catalyst with an aqueous liquid extractant by cocurrent or countercurrent liquid-liquid extraction in an extractor in such a manner that a continuous aqueous phase is maintained and a discrete organic phase containing polyphenylene ether resin in solution is contacted by said continuous aqueous phase;

(b) withdrawing from the upper part of said extractor an organic phase containing polyphenylene ether resin in solution that is substantially free of copper-amine catalyst; and

(c) thereafter separating said polyphenylene ether resin from said organic phase to obtain polyphenylene ether resin that is substantially free of copper-amine catalyst.

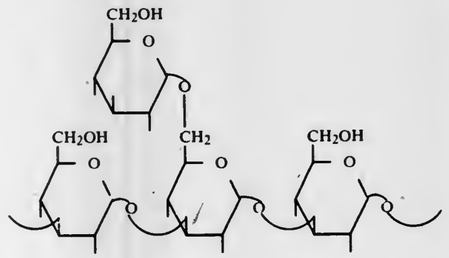
4,237,266

GLUCAN HAVING ANTITUMOR ACTIVITY

Mamoru Sugiura, Azatogen, Oazakochino, Konan-shi, Aichi-ken, Japan; Hiroyuki Ohno, Takatsuki, Japan; Yutaro Sasaki, Hirakata, Japan, and Kazuaki Hama, Ibaraki, Japan, assignors to Mamoru Sugiura, Aichi and Hitoshi Itoh, Mie, both of, Japan

Filed Oct. 24, 1978, Ser. No. 954,242
Claims priority, application Japan, Oct. 24, 1977, 52-126743
Int. Cl.³ C08B *37/00*
U.S. Cl. 536—1 **1 Claim**

1. A glucan having a basic repeating unit structure



and an estimated molecular weight of about two million.

4,237,267

DISULFIDE COMPOUNDS OF A CARRIER, HAVING S—S EXCHANGE REACTIVITY

Tsuneo Okuyama, Yokohama; Tadashiro Fujii, Mishima; Nobuaki Nakagawa, and Kikuo Kotani, both of Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

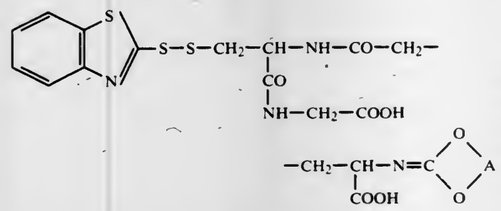
Filed Apr. 30, 1979, Ser. No. 34,861
Claims priority, application Japan, Apr. 28, 1978, 53-49958; Dec. 28, 1978, 53-164909
Int. Cl.³ C07C *43/305, 513/00;* C07D *519/00*
U.S. Cl. 536—1 **3 Claims**

1. A disulfide compound of a carrier, having S—S exchange reactivity, of the formula

R—S—S—X_1—X_2—A [I]

wherein R is 2-benzothiazolyl [or 2-pyridyl-N-oxide], X_1 is a spacer group directly bound to the —S—S— and comprises a plurality of carbon atoms in a straight or branched chain, X_2 is an imide or amide bonding group, and A is an insoluble carrier selected from the group consisting of beads gel agarose residue, gamma-aminopropylated nylon beads residue and a residual group of partially reduced polyacrylonitrile porous granules or fibers.

2. A disulfide compound of the formula



wherein A is beads gel agarose residue.

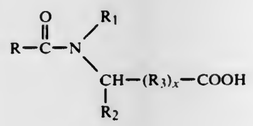
4,237,268

ESTERS OF ACYLATED AMINOCARBOXYLIC ACID CONTAINING COMPOUNDS

Klaus Walz, and Ergun Tamer, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

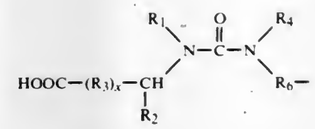
Filed Jul. 18, 1978, Ser. No. 925,885
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1977, 2732557
Int. Cl.³ C07H *13/02, 11/00;* C07C *101/30, 125/06*
U.S. Cl. 536—4 **4 Claims**

1. A surface-active ester of a polyhydroxy compound selected from the group consisting of glycerol, erythritol, sorbitol, erythrose, arabinose, xylose, glucose, fructose, galactose, mannose, maltose, polyvinyl alcohols, sucrose, tetralose, raffinose and, alkyl or hydroxyalkyl-glycosides, and an acylaminocarboxylic acid of the formula



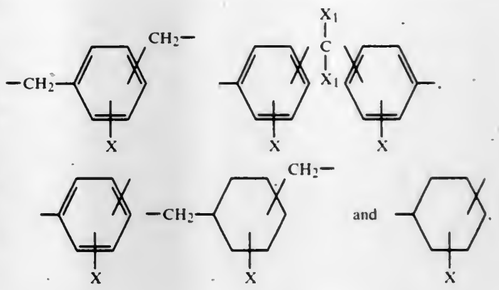
in which

R represents H, C_1-C_4-alkyl, C_1-C_{22}-alkoxy, C_3-C_{22}-alkenoxy, aryl, aralkyl, aroxy, aralkoxy or the radical



R_1, R_4 and R_5 represent H, C_1-C_{22}-alkyl, C_3—C_{22}-alkenyl, cycloalkyl, aryl or aralkyl, or

R^6 represents C_2-C_8-alkylene or a radical of the formula

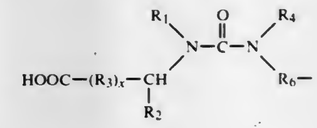


R_2 represents H, COOH, COO C_1-C_4-alkyl or C_1-C_6-alkyl,

R_3 represents C_1-C_{10}-alkylene and

x represents 0 or 1,

wherein at least one of the radicals R_1 to R_5 contains at least 6 carbon atoms, and wherein the alkyl, alkenyl and cyclic radicals may be substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1-C_4-alkoxy and the cyclic radicals may also be substituted by C_1-C_4-alkyl, the total number of carbon atoms being 20 to 60 when R_5 is



and being 12 to 30 when R_5 is H, C_1-C_{22}-alkenyl, cycloalkyl, aryl or aralkyl.

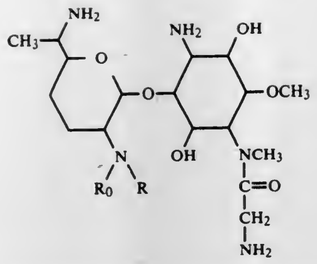
4,237,269

DERIVATIVES OF FORTIMICIN A

Kenichi Mochida, Hiratsuka; Moriyuki Sato; Shigeo Yoshiie, both of Machida, and Yasuki Mori, Kawasaki, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 20, 1978, Ser. No. 971,435
Claims priority, application Japan, Dec. 21, 1977, 52/153000
Int. Cl.³ A61K *31/71;* C07H *15/22*
U.S. Cl. 536—17 R **3 Claims**

1. 2'-N-substituted derivatives of fortimicin A, represented by the formula:



wherein R_0 represents a lower alkyl group having 1 to 4 carbon atoms and R represents a group represented by



or $—CHR_{11}R_{12}$ wherein R_1 is an alkyl group having 1 to 8 carbon atoms, aminoalkyl group having 2 to 8 carbon atoms, hydroxyalkyl group having 1 to 5 carbon atoms, N-alkylaminoalkyl group having 2 to 12 carbon atoms, aminohydroxyalkyl group having 2 to 8 carbon atoms and wherein the amino group and hydroxy group are bonded to different carbon atoms, or N-alkylaminohydroxyalkyl group having 2 to 8 carbon atoms and R_{11} and R_{12} may be the same or different and are a hydrogen atom, alkyl group having 1 to 8 carbon atoms, aminoalkyl group having 1 to 8 carbon atoms, hydroxyalkyl group having 1 to 5 carbon atoms, carbamoylaminoalkyl group having 2 to 9 carbon atoms, N-alkylaminoalkyl group having 2 to 12 carbon atoms, aminohydroxylalkyl group having 2 to 8 carbon atoms and wherein the amino group and hydroxy group are bonded to different carbon atoms, arylalkyl group having 7 to 12 carbon atoms, N-alkylaminohydroxyalkyl group having 2 to 8 carbon atoms or aryloxyalkyl group having 7 to 12 carbon atoms or R_{11} and R_{12} form a cyclohexyl group and the pharmaceutically acceptable acid addition salts thereof.

4,237,270

DERIVATIVES OF CARBOXYALKYL IMINO- AND THIOXO-BARBITURIC ACIDS

Miroslav Semonský; Rudolf Kotva; Antonin Černý; Jiří Krepelka; Vojtěch Pujman; Oskar Andrysek, all of Prague, Czechoslovakia, and Hana Veselá, deceased, late of Prague, Czechoslovakia (by Jiří Vesely, heir), assignors to SPOFA, United Pharmaceutical Works, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 658,080, Feb. 13, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,220

Claims priority, application Czechoslovakia, Feb. 17, 1975, 101675-75

Int. Cl.³ C07D *239/54*

U.S. Cl. 536—18 **6 Claims**

1. 2-Imino-5-(4-carboxybutyl)barbituric acid.

4,237,271

CROSSLINKED STARCH HALOHYDRINS AND THEIR NITROGEN-CONTAINING SUBSTITUTION PRODUCTS

Warren E. Rayford, and Robert E. Wing, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 24, 1979, Ser. No. 32,850

Int. Cl.³ C08B *31/00, 33/00*

U.S. Cl. 536—47 **13 Claims**

1. A water-insoluble, 3-halo-2-hydroxypropyl ether of ungelatinized crosslinked starch having a degree of substitution of said ether of at least 0.1.

4. A method of preparing a water-insoluble 3-halo-2 hydroxypropyl ether of ungelatinized crosslinked starch having a degree of substitution of said ether of at least 0.1 comprising the step of reacting a granular, crosslinked starch having a moisture content of 5–18% based upon its dry weight with a sufficient amount of an epihalohydrin in the presence of a strong acid catalyst.

4,237,272

DERIVATIVES OF FORTIMICIN A

Kenichi Mochida, Hiratsuka; Moriyuki Sato; Shigeo Yoshiie, both of Machida, and Yasuki Mori, Kawasaki, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

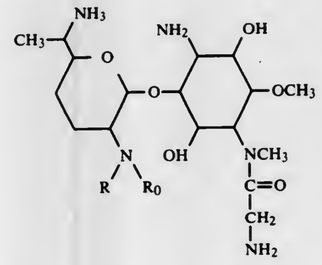
Filed Dec. 20, 1978, Ser. No. 971,438

Claims priority, application Japan, Dec. 21, 1977, 52/153001

Int. Cl.³ A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **4 Claims**

1. 2'-N-substituted derivatives of fortimicin A represented by the formula:



wherein R_0 represents a hydrogen atom or R_0 forms, together with a nitrogen atom and R, a substituted or unsubstituted 2-pyrrolidonyl group, wherein the substituents are 1~2 hydroxyl or amino groups and are bonded to the 3- or 4-position of the pyrrolidonyl group, and R represents $—COR_1$, $—CH_2R_1'$, $—CH(R_1')_2$ or an amidino group, wherein R_1 is an amino group, hydroxyaminoalkyl group wherein the hydroxy group and amino group are bonded to different carbon atoms or carbamoylaminoalkyl group wherein the alkyl groups are lower alkyl groups and R_1' is a diaminoalkyl group, dihydroxyalkyl group, hydroxyaminoalkyl group wherein the hydroxy group and amino group are bonded to different carbon atoms, or guanidinoalkyl group wherein the alkyl groups are lower alkyl groups, and the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,237,273

BIS(NITROSOUREIDO)-POLYOL DERIVATIVES

Tibor Horvath; Endre Csanyi; Sandor Eckhardt, and Emilia Kiraly nee Vida, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Jul. 17, 1978, Ser. No. 925,822

Claims priority, application Hungary, Dec. 29, 1977, GO 1386

Int. Cl.³ A61K *31/70;* **C07H** *5/06*

U.S. Cl. 536—53 **18 Claims**

9. 1,6-Bis[3-(2-chloroethyl)-N-nitrosoureido]-1,6-dideoxy-D-mannitol.

4,237,274

PROCESS FOR THE PREPARATION OF SOLUTIONS OF CELLULOSE DERIVATIVES WHICH CAN BE COAGULATED AND SPUN TO FORM REGENERATED CELLULOSE BODIES

Roberto Leoni, Milan; Alberto Baldini, Garlasco, and Gianfranco Angelini, Buscate, all of Italy, assignors to SNIA VISCOSA Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Feb. 23, 1979, Ser. No. 14,632

Claims priority, application Italy, Feb. 24, 1978, 20540 A/78

Int. Cl.³ C08B *16/00;* **C08L** *1/02*

U.S. Cl. 536—56 **23 Claims**

1. A process for the preparation of solutions of cellulose derivatives from which regenerated cellulose bodies may be prepared by coagulation and regeneration, characterized in that a methylol derivative of cellulose is prepared, which derivative contains more than 2 units for formaldehyde per anhydroglucosidic unit, and said derivative is dissolved in an organic spinning solvent selected from the group consisting of polar aprotic solvents containing N-substituted amide moieties in their structure, pyridine, and formamide.

4,237,275

PROCESS FOR PRODUCING HYDRAZONE DERIVATIVES OF PYRIDINALDEHYDES

Rolf Bader, Riehen, Switzerland, and Dieter Reinehr, Kandern, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

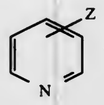
Filed May 29, 1979, Ser. No. 42,828

Claims priority, application Switzerland, Jun. 8, 1978, 6287/78

Int. Cl.³ C07D *213/53*

U.S. Cl. 542—417 **12 Claims**

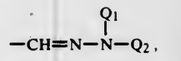
1. A process for producing a compound of the formula I



(I)

wherein

Z is



Q_1 is hydrogen or alkyl having 1–4 C atoms, and

Q_2 is phenyl which can be substituted by halogen, alkyl or alkoxy each having 1–4 C atoms, or is naphthyl,

which comprises the steps of:

reacting in an inert organic solvent an at least stoichiometric amount of an aminomethylpyridine and of a compound of the formula II



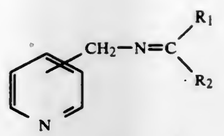
(II)

wherein

R_1 is hydrogen or alkyl having 1–8 C atoms,

R_2 is alkyl having 1–8 C atoms, or R_1 or R_2 together are alkylene having 4–8 C atoms,

to produce a compound of the formula



(III)

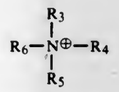
wherein R_1 and R_2 are as defined for formula II,

isomerizing said compound III in said solvent at a temperature from 0° to 80° C., in the presence of at least 0.1 mole %, relative to the amount of said compound III, of a catalyst of the formula IV

$$(X)^{n\oplus}(OY)_n^{\ominus} \qquad \text{(IV)}$$

wherein

X is an alkali metal ion or alkaline earth metal ion, or the ammonium group

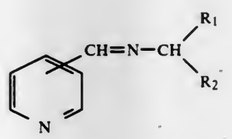


wherein R_3 to R_6 each independently of the other, are unsubstituted straight-chain or branched-chain alkyl having 1–20 C atoms or alkyl having 1–20 C atoms substituted by phenyl or naphthyl,

Y is hydrogen or alkyl having 1–12 C atoms, and

n is the charge of the alkali metal ion or alkaline-earth metal ion,

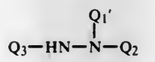
to produce a compound of formula V



(V)

wherein R_1 and R_2 are as defined in formula II, and,

finally converting said compound V, in the presence of at least a stoichiometric amount of an inorganic acid and in an aqueous medium or in in the presence of a catalytic amount of an organic acid and in an inert organic solvent, and in the presence of a compound of the formula VI



(VI),

wherein Q_2 is as defined for formula I,

Q_1' is hydrogen, alkyl having 1–4 C atoms or $—SO_3^{\oplus}M^{\ominus}$,

Q_3 is hydrogen or $—SO_3^{\oplus}M^{\ominus}$, and

$M^{\oplus}$ is an alkali metal cation,

into a compound of the formula I.

4,237,276

BICYCLIC LACTONE INTERMEDIATES FOR 16-SUBSTITUTED PROSTAGLANDINS

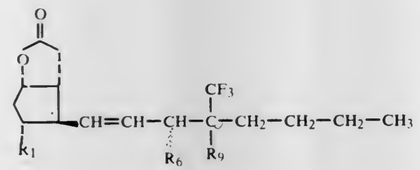
George W. Holland, North Caldwell; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 847,881, Nov. 2, 1977, which is a continuation-in-part of Ser. No. 745,257, Dec. 8, 1976, Pat. No. 4,112,225, which is a continuation-in-part of Ser. No. 683,576, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 480,458, Jun. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Jun. 19, 1979, Ser. No. 50,267

Int. Cl.[3] C07D *307/93*

U.S. Cl. 542—426 6 Claims

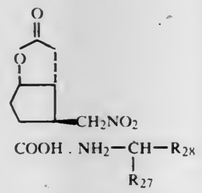
1. A compound of the formula:



wherein R_1 is $-COOR_1'$; lower alkyl or CH_2OR_1'; R_1' is hydrogen or lower alkyl; R_6 is hydroxy or hydroxy protected with a hydrolyzable ether or ester group; R_9 is hydrogen, lower alkyl or fluoro;

or enantiomers or racemates thereof.

5. An optically active salt of the formula



wherein R_{27} is



tolyl, naphthyl or phenyl, or naphthyl or phenyl substituted with amino, nitro or halo; R_{29} is tolyl, naphthyl or phenyl, or naphthyl or phenyl substituted with amino, nitro or halo; R_{28} is CH_2R_{31}; and R_{31} is hydrogen, lower alkyl, hydroxy or lower alkoxy

or its optically active compounds.

4,237,277

2-DECARBOXY-2-HYDROXYMETHYL-9-DEOXY-5,9α-EPOXY-4,5,-DIDEHYDRO-PGF$_1$ COMPOUNDS

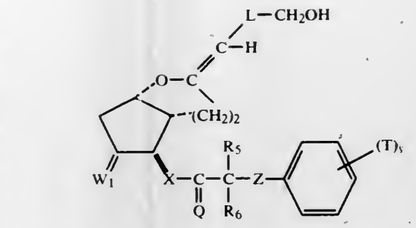
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,899, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,452

Int. Cl.[3] C07D *311/02*

U.S. Cl. 542—426 41 Claims

1. A compound of the formula



wherein W_1 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, α—CH_2OH:β—H;

wherein L is $-(CH_2)_d-C(R_2)_2$,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro;

wherein Q is oxo, α—H:β—H, α—OH:β—R_8 or α—R_8-:β—OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive:

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—);

wherein Z represents an oxa atom (—O—), a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the phenyl ring;

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —CH≡C—, or

(4) $-CH_2CH_2-$;

including the lower alkanoates thereof.

4,237,278

AMINO DERIVATIVES OF 2-METHYL-5-(2-HYDROXYSTYRYL)-1,3,4-THIADIAZOLE

Peter C. Thieme, Wachenheim; Fritz-Frieder Frickel, Ludwigshafen; Helmut Hagen, Frankenthal; Albrecht Franke, Wachenheim; Dieter Lenke, Ludwigshafen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

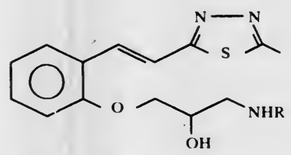
Filed Apr. 17, 1979, Ser. No. 30,842

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818765

Int. Cl.[3] A61K *31/425;* C07D *23/00, 23/14*

U.S. Cl. 542—429 6 Claims

1. A compound of the general formula (I)



(I)

where R is hydrogen, alkyl of 1 to 8 carbon atoms, which is unsubstituted or substituted by hydroxyl, alkoxy of 1 to 3 carbon atoms or cycloalkyl with 3 to 8 carbon atoms in the ring, alkenyl or alkynyl of 2 to 8 carbon atoms, or cycloalkyl or cycloalkenyl with 3 to 8 carbon atoms in the ring, the cycloalkyl rings being unsubstituted or mono- or di-substituted by alkyl of 1 to 3 carbon atoms, and its addition salts with acids.

4,237,279

CRYSTALLINE 3-HYDROXYCEPHALOSPORIN SOLVATES

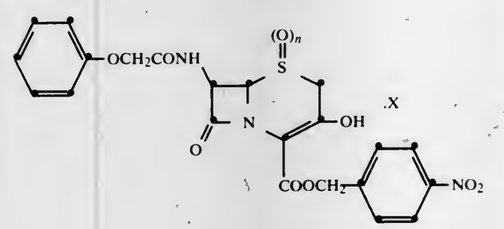
Jack W. Fisher, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 8,468, Feb. 1, 1979, abandoned. This application Jul. 27, 1979, Ser. No. 61,208

Int. Cl.[3] C07D *501/20*

U.S. Cl. 544—16 7 Claims

1. A cephalosporin solvate of the formula



wherein n is 1 or 0; and X is CH_3COOH, CH_3CH_2COOH or CH_3OH when n is 1, and X is CH_3COOH, CH_3CH_2COOH or ½ CH_2Cl_2 when n is 0.

4,237,280

INTERMEDIATE FOR CEPHALOSPORIN TYPE COMPOUND

Isamu Saikawa; Shuntaro Takano, both of Toyama; Kaishu Momonoi, Shinminato; Isamu Takakura, Toyama; Chiaki Kutani, Funabashi; Kiyoshi Tanaka, Oshimamachi, and Kenshin Hayashi, Tonami, all of Japan, assignors to Toyama Chemical Company, Limited, Tokyo, Japan

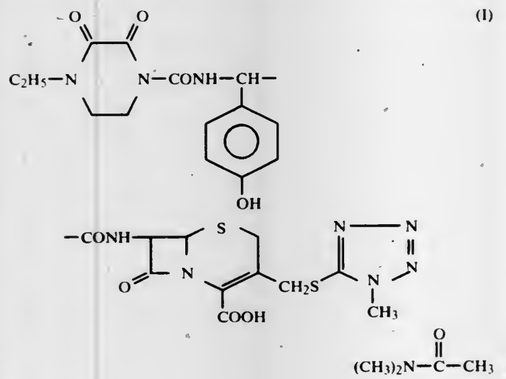
Filed Sep. 25, 1978, Ser. No. 945,346

Claims priority, application Japan, Sep. 27, 1977, 52-115126; Sep. 27, 1977, 52-115127

Int. Cl.[3] C07D *501/36*

U.S. Cl. 544—27 2 Claims

1. The N,N-dimethylacetamide adduct of 7-[D(−)-α-(4-ethyl-2,3-dioxo-1-piperazinecarboxamido)-α-(4-hydroxyethyl-)acetamido]-3-[5-(1-methyl-1,2,3,4-tetrazolyl)thiomethyl]-Δ^3-cephem-4-carboxylic acid represented by the formula (I),



(I)

4,237,281

DYESTUFFS CONTAINING AMINO OR IMINO GROUPS

William E. Long, Brentwood, England, assignor to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

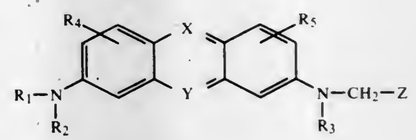
Filed Feb. 23, 1979, Ser. No. 14,780

Claims priority, application United Kingdom, Oct. 13, 1978, 40401/78

Int. Cl.[3] C07D *241/46, 265/38, 279/36*

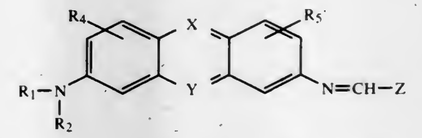
U.S. Cl. 544—99 9 Claims

1. A compound of the general formula



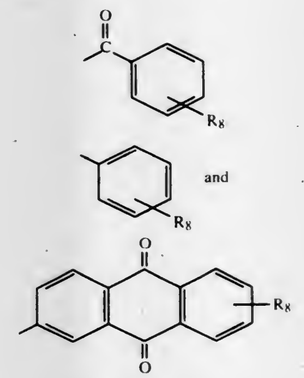
(1)

or of the general formula



(2)

wherein X is N, Y is $S^{\oplus}$, $O^{\oplus}$, N or $N^{\oplus}R_7$ where R_7 is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 4 carbon atoms, halogen, hydroxy or carbonyl, R_1, R_2 and R_3 each represent a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms, or R_1 and R_2 together with the nitrogen atom complete a heterocyclic 5- or 6-membered ring, or one of R_1 and R_2 can be hydrogen and the other of R_1 and R_2 can be phenyl, Z is a member selected from the group of the formulae



and

wherein R_8 comprises a ballasting group of at least 10 carbon atoms, and R_4 and R_5 each represent alkyl of 1 to 4 carbon atoms, amino or halogen or form an annelated benzene ring.

4,237,282

UREA DERIVATIVE AND USE AS POLYURETHANE CATALYST

George P. Speranza, and Robert L. Zimmerman, both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 952,027, Oct. 16, 1978. This application May 22, 1979, Ser. No. 41,359
Int. Cl.[3] C07D *265/30*
U.S. Cl. 544—168 1 Claim

1. N-(3-dimethylaminopropyl)-N'-(3-morpholinopropyl-)urea.

4,237,283

COMPOSITIONS CONTAINING THIOCYANIC ACID AND HEXAMETHYLENE-TETRAMINE PRODUCTION PROCESS

Robert Engl, Wasserburg, and Hans Richter, Reitmehring, both of Fed. Rep. of Germany, assignors to Meggle Milchindustrie GmbH & Co., Reitmehring, Fed. Rep. of Germany

Division of Ser. No. 849,262, Nov. 7, 1977, Pat. No. 4,188,386. This application Aug. 15, 1979, Ser. No. 66,855
Int. Cl.[3] C07D *487/18*
U.S. Cl. 544—186 13 Claims

12. A process for the production of a dry composition containing hexamethylenetetramine and thiocyanic acid comprising

(a) reacting hexamethylenetetramine with an alkali or alkaline earth metal thiocyanate in the aqueous phase in the presence of acid at a pH no less than about 5.0;

(b) combining the aqueous solution product obtained in said reaction, without isolation of reaction product, with a physiologically harmless carrier substance substantially inert towards the reaction compounds and the products thereof in an amount such that the ultimate dry composition contains from about 10 to about 60% by weight carrier; and

(c) drying said combined carrier and aqueous solution at a temperature which does not exceed the boiling point of water in said solution.

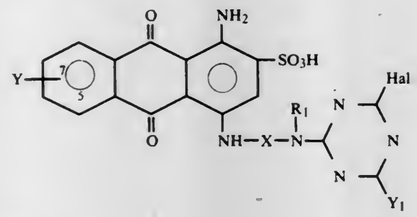
4,237,284

ANTHRAQUINONE REACTIVE DYES

Roland Mislin, Saint-Louis, France, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 14, 1978, Ser. No. 942,446
Claims priority, application Switzerland, Sep. 20, 1977, 11470/77; Dec. 23, 1977, 15954/77
Int. Cl.[3] C07D *251/42, 295/10, 251/50*
U.S. Cl. 544—189 21 Claims

1. A reactive dye compound of formula I,

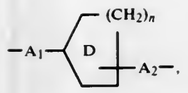


I

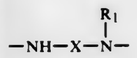
in which

Y is hydrogen or sulpho,

X is a straight chain or branched (C_{2-6}) alkylene group or



in which each of A_1 and A_2, independently, is a direct bond or a (C_{1-4})alkylene group, n is 1 or 2 and the ring D is optionally substituted by up to three (C_{1-4})alkyl groups, with the proviso that when n is 2, the group



is the radical of an unsymmetrical diamine,

R_1 is hydrogen; (C_{1-4})alkyl; (C_{2-4})alkyl substituted in the β-, γ- or δ-position by hydroxy and/or carboxy; or (C_{5-6})cycloalkyl or (C_{1-4})alkyl-substituted (C_{5-6})cycloalkyl

Y_1 is Hal, $—NR_2R_3$, OR_4 or SR_4

each Hal is fluorine or chlorine, either, each of R_2 and R_3, independently, is hydrogen; (C_{1-4})alkyl; β-, γ- or δ-hydroxy-substituted (C_{2-4}) alkyl; cyclohexyl; phenyl; phenyl substituted by 1 or 2 substituents selected from the group consisting of fluorine, chlorine, bromine, (C_{1-4})alkyl, (C_{1-4})alkoxy, sulpho and carboxyl; naphthyl; naphthyl substituted by 1 or 2 substituents selected from the group consisting of sulpho and carboxyl; or sulpho- or carboxyl-substituted (C_{1-4})alkyl,

or R_2 and R_3 together with the nitrogen atom to which they are bound form a piperidine or morpholine ring,

R_4 is (C_{1-4})alkyl; β-, γ- or δ-hydroxy-substituted (C_{2-4})alkyl; phenyl; or phenyl substituted by 1 or 2 substituents selected from the group consisting of fluorine, chlorine, bromine, (C_{1-4})alkyl, (C_{1-4})alkoxy, sulpho and carboxyl,

which compound is in free acid or water-soluble salt form.

4,237,285

PROCESS FOR THE PRODUCTION OF CONCENTRATED CYANURIC ACID SLURRIES

John A. Bartoszek, and Louis C. Hirdler, both of Lake Charles, La., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 6, 1979, Ser. No. 46,393
Int. Cl.[2] C07D *251/32*
U.S. Cl. 544—192 11 Claims

1. A process for the production of concentrated cyanuric acid slurries which comprises:

(a) feeding urea to a hot solvent to pyrolyze said urea to produce a reaction mixture comprised of solid particles of cyanuric acid in said solvent,

(b) agitating said reaction mixture at a first agitation rate during said pyrolysis to form a suspension of said solid particles of cyanuric acid in said solvent,

(c) reducing said first agitation rate to permit settling of said solid cyanuric acid particles from said suspension to form a concentrated lower slurry phase and an upper solvent phase, where said concentrated lower slurry phase comprises from about 40 to about 70 percent by weight of cyanuric acid, and

(d) separating said concentrated lower slurry phase from said upper solvent phase.

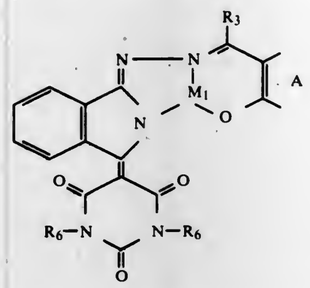
4,237,286

METAL COMPLEXES OF AZOMETHINES

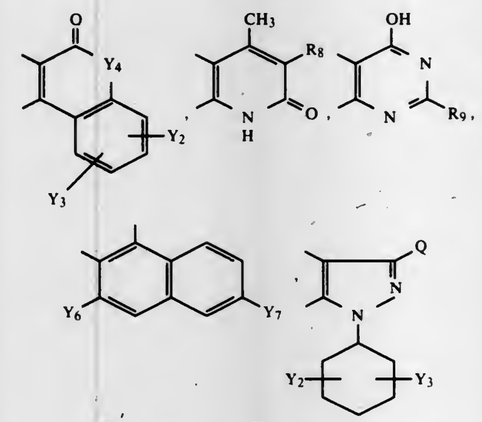
François L'Eplattenier, Therwil; Andre Pugin, and Jost von der Crone, both of Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 773,990, Mar. 3, 1977, Pat. No. 4,132,708, which is a division of Ser. No. 545,457, Jan. 30, 1975, Pat. No. 4,022,770. This application Oct. 26, 1978, Ser. No. 955,042
Claims priority, application Switzerland, Feb. 6, 1974, 1625/74
Int. Cl.[3] C07D *401/12, 403/14;* D06P *1/10*
U.S. Cl. 544—225 2 Claims

1. An azomethine metal complex of the formula



in which R_3 is alkyl of 1 to 4 carbon atoms; M_1 is Ni, Cu, or Zn; R_6 is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, phenyl substituted by halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms; A is a radical of the formulae



in which Q is methyl, alkoxycarbonyl with 2 to 5 carbon atoms or carbamoyl, R_8 is cyano, or carbamoyl; R_9 is hydrogen, or hydroxy, Y_2 and Y_3 are hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or nitro, Y_4 is oxygen, sulfur or —NH—; Y_6 is hydrogen, carboxy, carbamoyl, alkoxycarbamoyl of 2 to 6 carbon atoms, alkylcarbamoyl of 2 to 6 carbon atoms, phenylcarbamoyl, phenylcarbamoyl substituted in the phenyl moiety by halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms; Y_7 is hydrogen, halogen, methoxy, nitro or cyano.

4,237,287

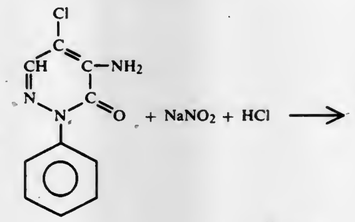
PROCESS FOR OBTAINING 4,5-DICHLORO-2-PHENYL-3(2H)-PYRIDAZINONE FROM 5-CHLORO-4-AMINO-2-PHENYL-3(2H)-PYRIDAZINONE

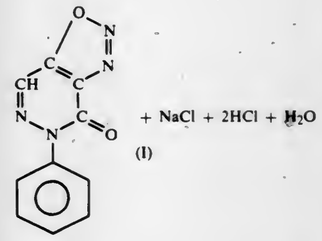
Raimondo Motta, Milan, Italy, assignor to Oxon Italia S.p.A., Milan, Italy

Filed Jul. 10, 1979, Ser. No. 56,399
Claims priority, application Italy, Jul. 28, 1978, 83624 A/78
Int. Cl.[3] C07D *237/14, 237/22, 498/04*
U.S. Cl. 544—241 3 Claims

1. Process for obtaining 4,5-dichloro-2-phenyl-3(2H)-pyridazinone from 5-chloro-4-amino-2-phenyl-3(2H)-pyridazinone, characterized in that the 5-chloro-4-amino-2-phenyl-3(2H)-pyridazinone is diazotized in a first stage in accordance with the following reaction:

(1)



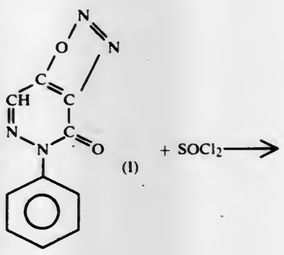


+ $NaCl + 2HCl + H_2O$

(I)

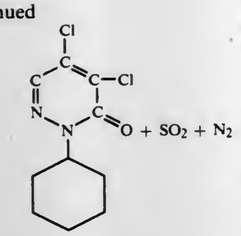
the compound (I) being obtained by dilution with water and filtration, and in that in a second stage the said compound (I) is reacted with thionyl chloride in accordance with the following reaction:

(2)



(I) + $SOCl_2$ →

-continued



the 4,5-dichloro-2-phenyl-3(2H)-pyridazinone being obtained by dilution with water and filtration.

4,237,288

DECAFFEINATION OF FATTY MATERIALS

Dean F. Rushmore, Marysville, Ohio, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 17, 1979, Ser. No. 39,956

Int. Cl.³ C07D *473/12*

U.S. Cl. 544—275 **4 Claims**

1. A process for the removal of caffeine from a solution of caffeine in a fatty medium which comprises contacting the solution with a hydrophilic, phenol/formaldehyde polymeric resin having phenolic functional groups and separating the resin from solution having a reduced caffeine content.

4,237,289

2,7-DIAMINO-8-METHYL-5-SUBSTITUTED PYRIDO{2,3-d}PYRIMIDIN-6/ONES

Robert W. Morrison, Jr.; William R. Mallory, and Virgil L. Styles, all of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 926,072, Jul. 19, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,354

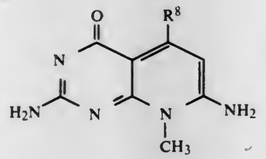
Claims priority, application United Kingdom, Jul. 20, 1977, 30380/77

Int. Cl.³ C07D *471/04*; A61K *31/505*

U.S. Cl. 544—279 **7 Claims**

1. A compound of the formula (XVII) or a tautomer or salt thereof,

(XVII)



wherein R^8 is lower alkyl, phenyl, phenyl substituted by one or more hydroxy or lower alkoxy, or pyridyl.

4,237,290

PROCESS FOR MAKING ASYMMETRICAL DISULFIDES

Paul Dubs, Zug, and Heiner Küntzel, Dübendorf, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 726,100, Sep. 24, 1976, Pat. No. 4,130,562. This application May 16, 1978, Ser. No. 906,524

Claims priority, application Switzerland, Oct. 1, 1975, 12728/75; Jul. 20, 1976, 9280/76

Int. Cl.³ C07D *277/16, 241/18*

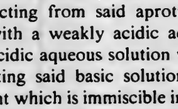
U.S. Cl. 544—335 **1 Claim**

1. A process for making disulfides having the formula:

$$R_1—(Y)_n—S—S—R_2$$

which process comprises reacting in an inert solvent at a temperature between −20° C. and 50° C. a sulfonium salt of the general formula:

(VII)



with the mercaptan of the general formula:

A—SH (VIII)

whereby in the one reaction component A represents a group $R_1(Y)_n$ and in the other reaction component A represents a group R_2; R_1 is an optionally C_{1-6} alkyl-substituted phenyl or furyl group or an optionally C_{1-6} alkyl-substituted, 5-membered or 6-membered heterocyclic group which contains one or more nitrogen atoms and/or one or more sulfur atoms; Y is an optionally mono- or di-C_{1-6}-alkyl or C_{2-6}-alkenyl-substituted mono- or di-substituted methylene group, n stands for 0–5 with the proviso that n stands for 2–5 when R_1 represents the phenyl or furyl group, R_2 represents a lower alkyl or alkenyl group containing up to 6 carbon atoms; R represents a C_{1-6}-alkyl group and $Z^{\ominus}$ represents an anion selected from the group consisting of tri (lower alkyl) oxonium salt, hexachloroantimonate, perchlorate, nitrate, arylsulphonate and alkyl sulphonate.

4,237,291

PROCESS FOR THE ISOLATION OF ERGOT ALKALOIDS FROM CULTURE SUSPENSIONS

Werner Grawert; Ludwig Schiedt, both of Radebeul; Brigitte Neumann, Dresden; Karlheinz Heidenbluth, Radebeul; Christoph Dauth, Radebeul; Rudolf Schirutschke, Radebeul, and Monika Müller, Radebeul, all of German Democratic Rep., assignors to VEB Arzneimittelwerk Dresden, Radebeul, German Democratic Rep.

Filed Dec. 20, 1978, Ser. No. 971,219

Claims priority, application German Democratic Rep., Dec. 20, 1977, 202798

Int. Cl.³ C07D *519/02*

U.S. Cl. 544—346 **10 Claims**

1. A process for isolating ergot alkaloids from a raw culture suspension, comprising stirring said suspension with an absorbent clay selected from the group consisting of fuller's earth, bentonite and a bleaching earth; mechanically filtering said suspension, thereby isolating a filtration residue including said absorbent clay; drying said residue in a fluidized drying bed at a temperature of about 80°–90° C. for about 20 to 40 minutes until an exhaust temperature of about 50°–70° C. is achieved; treating the dried residue by extraction with an aprotic organic solvent; extracting from said aprotic organic solvent basic compounds with a weakly acidic aqueous solution; treating said weakly acidic aqueous solution with base to form a basic solution; treating said basic solution by extraction with an organic solvent which is immiscible in water; and isolating said ergot alkaloids from said water-immiscible organic solvent.

4,237,292

METAL COMPLEXES OF AZOMETHINES

François L'Eplattenier, Therwil; Andre Pugin, and Jost von der Crone, both of Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

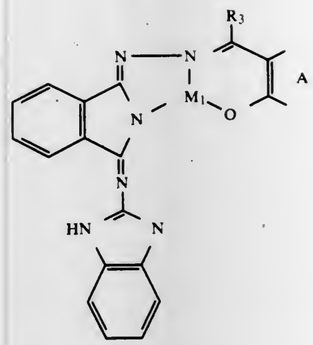
Division of Ser. No. 773,990, Mar. 3, 1977, Pat. No. 4,132,708, which is a division of Ser. No. 545,457, Jan. 30, 1975, Pat. No. 4,022,770. This application Oct. 26, 1978, Ser. No. 955,043

Claims priority, application Switzerland, Feb. 6, 1974, 1625/74

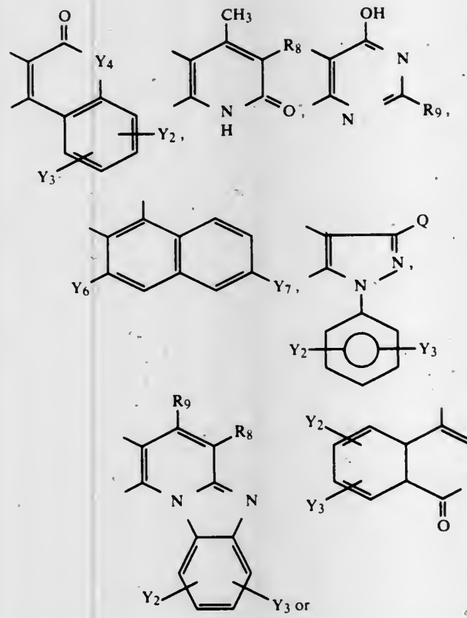
Int. Cl.³ C07D *401/12, 403/14*; D06P *1/10*

U.S. Cl. 546—7 **2 Claims**

1. An azomethine metal complex of the formula



in which R_3 is alkyl of 1 to 4 carbon atoms, M_1 is Ni, Cu, or Zn; and A is a radical for the formulae



in which Q is methyl, alkoxycarbonyl with 2 to 5 carbon atoms or carbamoyl, R_8 is cyano, or carbamoyl, R_9 is hydrogen, or hydroxy, Y_2 and Y_3 are hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or nitro, Y_4 is —NH—, Y_6 is hydrogen, carboxy, carbamoyl, alkoxycarbamoyl of 2 to 6 carbon atoms, alkylcarbamoyl of 2 to 6 carbon atoms, phenylcarbamoyl, phenylcarbamoyl substituted in the phenyl moiety by halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, Y_7 is hydrogen, halogen, methoxy, nitro or cyano.

4,237,293

METAL COMPLEXES OF AZOMETHINES

Francois L'Eplattenier, Therwil; Andre Pugin, and Jost von der Crone, both of Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

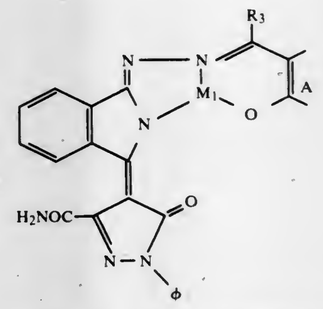
Division of Ser. No. 773,990, Mar. 3, 1977, Pat. No. 4,132,708, which is a divisIon of Ser. No. 545,457, Jan. 30, 1975, Pat. No. 4,022,770. This application Oct. 26, 1978, Ser. No. 955,043

Claims priority, application Switzerland, Feb. 6, 1974, 1625/74

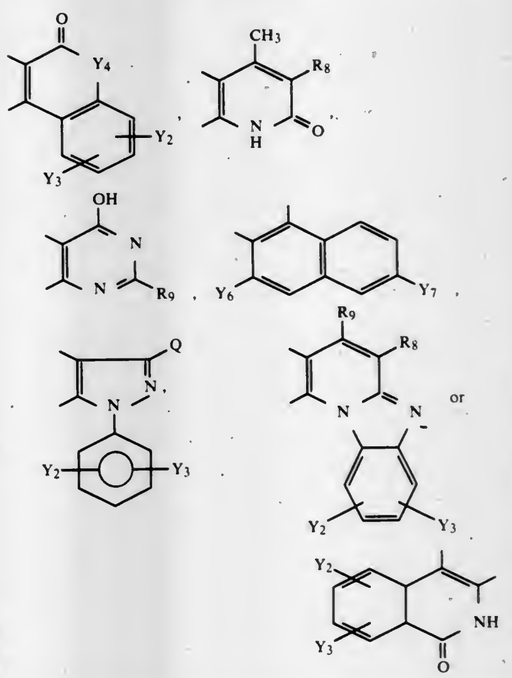
Int. Cl.³ C07D *401/12, 403/14*; D06P *1/10*

U.S. Cl. 546—7 **4 Claims**

1. An azomethine metal complex of the formula



in which R_3 is alkyl of 1 to 4 carbon atoms, M_1 is Ni, Cu, Co or Zn, A is a radical for the formulae



in which Q is methyl, alkoxycarbonyl with 2 to 5 carbon atoms or carbamoyl, R_8 is cyano, or carbamoyl, R_9 is hydrogen, or hydroxy, Y_2 and Y_3 are hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or nitro, Y_4 is —NH—, Y_6 is hydrogen, carboxy, carbamoyl, alkoxycarbamoyl of 2 to 6 carbon atoms, alkylcarbamoyl of 2 to 6 carbon

atoms, phenylcarbamoyl, phenylcarbamoyl substituted in the phenyl moiety by halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, Y_7 is hydrogen, halogen, methoxy, nitro or cyano.

4,237,294

2,2,6,6-TETRAMETHYLPIPERIDINE DERIVATIVES

Nobuo Soma, Tokyo; Syoji Morimura, Kanagawa; Takao Yoshioka, Tokyo, and Tomoyuki Kurumada, Tokyo, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan and Ciba-Geigy Corporation, New York, N.Y.

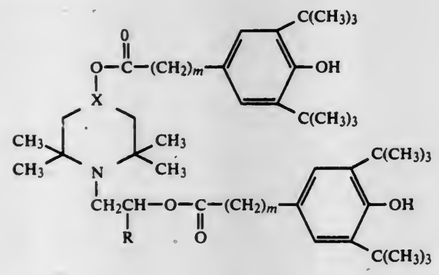
Filed Jun. 18, 1979, Ser. No. 49,816

Claims priority, application Japan, Jul. 3, 1978, 53-80639

Int. Cl.³ C07D *401/04, 405/104*

U.S. Cl. 546—20 **3 Claims**

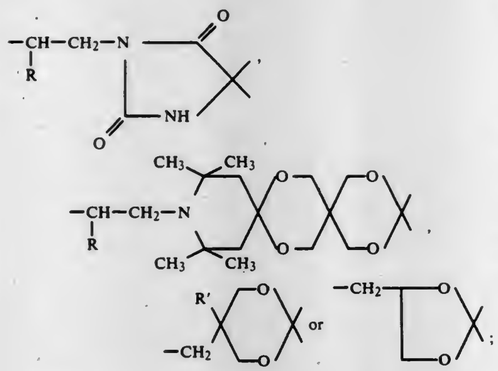
1. A 2,2,6,6-tetramethylpiperidine compound having the formula



(I)

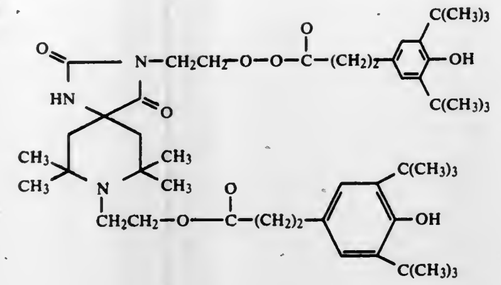
wherein:

X represents a group of formula



R represents a hydrogen atom;
represents an ethyl group; and
m represents 2.

2. A compound as claimed in claim 1 having the formula



4,237,295

PROCESS FOR THE PRODUCTION OF 17-HYDROXYSPARTEINE BY OXIDATION OF SPARTEINE WITH A PERMANGANATE

Bernd Hachmeister, Hanover, Fed. Rep. of Germany, assignor to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,693

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825117

Int. Cl.³ C07D *471/22*

U.S. Cl. 546—63 **10 Claims**

1. A process for the production of 17-hydroxysparteine, comprising the step of oxidizing sparteine in an aqueous acid solution in the presence of a water soluble permanganate.

4,237,296

QUATERNARY TROPANE ETHERS

Fulvio Gadient, Birsfelden, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 810,496, Jun. 27, 1977, abandoned, which is a continuation of Ser. No. 652,808, Jan. 27, 1976, abandoned, which is a continuation of Ser. No. 452,978, Mar. 20, 1974, abandoned. This application Jan. 29, 1979, Ser. No. 7,229

Claims priority, application Switzerland, Mar. 26, 1973, 4335/73

Int. Cl.³ C07D *451/06*

U.S. Cl. 546—126 **1 Claim**

1. A compound selected from the group consisting of 6,11-dihydro-2-methoxy-11-(3-tropanyloxy)-dibenzo[b,e]thiepine methobromide; 2-chloro-6,11-dihydro-11-(3-tropanyloxy)-dibenzo[b,e]thiepine methobromide; and 11-(8-ethyl-3-nortropanyloxy)-6,11-dihydrodibenzo[b,e]thiepine methobromide.

4,237,297

PIPERIDINE CONTAINING MALONIC ACID DERIVATIVES

Jean Rody, Riehen, and Friedrich Karrer, Zofingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

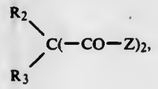
Continuation of Ser. No. 963,537, Nov. 24, 1978. This application Nov. 5, 1979, Ser. No. 91,630

Claims priority, application Switzerland, Dec. 2, 1977, 14769/77

Int. Cl.³ C07D *401/12*

U.S. Cl. 546—189 **5 Claims**

1. A compound of the formula I



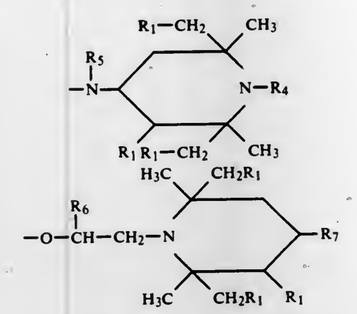
(I)

wherein

R_2 is C_1-C_{12}alkyl, C_3-C_4alkenyl, benzyl, or phenyl which is unsubstituted or substituted by C_1-C_8alkyl or C_1-C_8alkoxy, or is cyano,

R_3 is C_1-C_{12}alkyl, C_3-C_4alkenyl or benzyl, and

Z is a group of the formula II or III



(II)

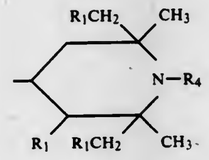
(III)

wherein

R_1 is hydrogen or C_1-C_4alkyl,

R_4 is hydrogen, O·, —OH, alkyl of 1 to 12 carbon atoms, alkenyl of 3 or 4 carbon atoms, propargyl, benzyl or a group of the formula $—CH_2—CH(OR_9)—R_8$, wherein R_8 is hydrogen, methyl, or phenyl, and $R_9$is hydrogen or a group A—CO—; or R_4 represents a group A—CO— and in both cases A represents alkyl of 1 to 18 carbon atoms, alkenyl of 2 or 3 carbon atoms, cyclohexyl, phenyl, benzyl, a phenyl, phenylmethyl or phenylethyl group which is substituted by 1 or 2 alkyl groups, each containing 1 to 4 carbon atoms, and by a hydroxyl group, or represents alkylamino of 1 to 12 carbon atoms, dialkylamino of 2 to 16 carbon atoms, anilino, alkoxy of 1 to 12 carbon atoms, benzyloxy or phenoxy,

R_5 is hydrogen, alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 4 carbon atoms, propargyl, cycloalkyl of 5 to 12 carbon atoms, aralkyl of 7 to 14 carbon atoms which can be substituted by OH, or represents a group of the formula IV



(IV)

R_6 is hydrogen, methyl, ethyl or phenyl,

R_7 represents hydrogen, $—OR_{10}$ or $—N(R_{11})(R_{12})$, and R_{10} represents alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 4 carbon atoms, benzyl, 2-cyanoethyl, an aliphatic, cycloaliphatic, aromatic or araliphatic carboxylic acyl group of not more than 18 carbon atoms which can be substituted in the aromatic moiety by halogen, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms and/or hydroxyl, R_{11} represents alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 4 carbon atoms or phenylalkyl of 7 to 9 carbon atoms, and R_{12} has the same meaning as R_{11} or represents an aliphatic, cycloaliphatic, aromatic or araliphatic carboxylic acyl group of not more than 18 carbon atoms which can be substituted in the aromatic moiety by halogen, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms and/or hydroxyl,

and the salts thereof.

5. Bis-[2-(2,2,6,6-tetramethyl-1-piperidinyl)-ethyl] dibenzylmalonate according to claim 1.

4,237,298

AROMATIC ACETIC ACID DERIVATIVES HAVING SULFUR ATOM AT ALPHA-POSITION AND PROCESS FOR THEIR PREPARATION

Genichi Tsuchihashi, Tama, and Katsuyuki Ogura, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

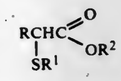
Division of Ser. No. 773,114, Feb. 28, 1977, Pat. No. 4,144,248. This application Dec. 5, 1978, Ser. No. 966,750

Claims priority, application Japan, Mar. 4, 1976, 51/22672; Mar. 4, 1976, 51/22673; Dec. 27, 1976, 51/156356

Int. Cl.³ C07D *333/24, 307/16, 295/14;* C07C *149/40*

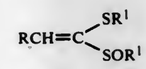
U.S. Cl. 546—238 **7 Claims**

4. A process for preparing an α-(alkylthio)acetic acid derivtive of the formula



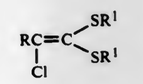
(IIIa)

wherein R represents a thienyl furyl or aryl group, and R^1 and R^2 represent an alkyl group, which comprises reacting a ketene mercaptal S-oxide of the formula



(I)

wherein R and R^1 are as defined above, with an acid chloride to form an α-chloroketene mercaptal of the formula



(II)

wherein R and R^1 are as defined above, and reacting the α-chloroketene mercaptal with an alcohol of the formula

R^2OH

wherein R^2 is as defined above, in the presence of an acid catalyst.

4,237,299

PROCESS FOR THE RECOVERY OF PYRIDINE AND 3-METHYLPYRIDINE

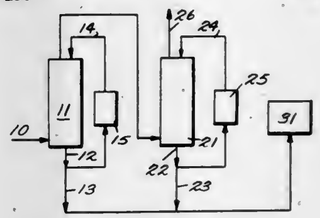
Helmut Beschke, Hanau; Franz-Ludwig Dahm, Alzenau; Heinz Friedrich, and Gerd Schreyer, both of Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 6, 1976, Ser. No. 748,041

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2554946

Int. Cl.³ C07D *213/12*

U.S. Cl. 546—250 **10 Claims**



1. In a process for recovering pyridine and 3-methylpyridine prepared by the catalytic reaction of acrolein or a mixture of

acetaldehyde and acrolein with ammonia at a temperature of at least 300° C. and then cooling the gas mixture formed and working up the condensate separated in the cooling the improvement comprising in a first step cooling the gaseous mixture from at least 300° C. to a temperature between 40° and 80° C. and then in a second cooling step cooling to a temperature of from 10° C. to below 40° C.

4,237,300

CERTAIN 6-SUBSTITUTED-2-PYRIDINAMINES

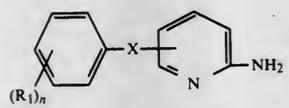
Richard J. Bochis, East Brunswick, and Peter Kulsa, Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 912,594, Jun. 5, 1978, Pat. No. 4,177,274, which is a division of Ser. No. 718,652, Aug. 26, 1976, Pat. No. 4,096,264, which is a continuation-in-part of Ser. No. 639,034, Dec. 9, 1975, abandoned. This application Nov. 9, 1979, Ser. No. 92,876

Int. Cl.³ C07D *213/02*

U.S. Cl. 546—297 **4 Claims**

1. A compound having the formula:



wherein
X is sulfur, sulfinyl or sulfonyl;
R_1 is trifluoromethyl; and
n is 0, 1 or 2.

4,237,301

TWO STAGE PROCESS FOR PREPARING 2,6-PYRIDIN-DICARBOXYLIC ACID

Giovanni Ghelli, Savona; Enrico Bruschi, and Gino Agnese, both of Genoa, all of Italy, assignors to Luigi Stoppani S.p.A., Milan, Italy

Filed Nov. 30, 1978, Ser. No. 965,037

Int. Cl.³ C07D *213/79*

U.S. Cl. 546—327 **9 Claims**

1. A two-stage process for preparing 2,6-pyridinedicarboxylic acid by oxidation of 2,6-dimethyl-pyridine, the process comprising the steps of:

in the first stage, providing a first reactant which is a solution of 2,6-dimethyl-pyridine in about 50–80% by weight sulphuric acid so that after oxidation from about 3–20 moles of free acid per mole of 2,6-pyridinedicarboxylic acid are formed; providing a second reactant which is a solution of a soluble salt of hexavalent chromium having a concentration based on CrO_3 of from about 40–65% by weight to provide from about a 10–100% stiochiometric excess; reacting the two reactants in a homogeneous phase at a temperature of from about 70°–115° C. by gradually introducing the two reactants into an initial reaction foot during an initial introduction time of from about 2–3 hours and then allowing the reaction to continue for from about 3–0.5 hours whereby an intermediate molar addition compound is formed between 2,6-pyridine dicarboxylic acid and chromic anhydride with the removal of one molecule of water; cooling and separating the addition compound;

in the second stage, hydrolyzing the intermediate molar addition compound obtained in the first stage at a temperature of from about 100°–50° C. with water in an amount of from about 5–15 times the weight of the dry intermediate compound for from about 0.5–4 hours, the concentration of CrO_3 in the hydrolysis solution not exceeding about 7% by weight; cooling to precipitate 2,6-pyridinedicarboxylic acid; and separating the precipitate from the hydrolysis solution.

4,237,302

DICHLOROACETYLIMINO HERBICIDE ANTAGONISTS AS PLANT PROTECTION AGENTS

Otto L. Hoffman, Shawnee, and Joel L. Kirkpatrick, Overland Park, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sep. 29, 1978, Ser. No. 946,975

Int. Cl.³ C07D *285/12, 277/42, 277/82;* A01N *43/82*

U.S. Cl. 548—139 **9 Claims**

1. 2-Dichloroacetylimino-3-methyl-1,3,4-thiadiazol-4-ine.

3. 2-Dichloroacetylimino-3,5-dimethyl-1,3,4-thiadiazol-4-ine.

4,237,303

REMOVAL OF OXAZOLE FROM ACRYLONITRILE

Sterling C. Gatling, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 922,630, Jul. 5, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,892

Int. Cl.³ C07D *263/32;* C07C *121/32*

U.S. Cl. 548—235 **15 Claims**

1. A process for removal of oxazole from oxazole-containing acrylonitrile comprising contacting the acrylonitrile with a cation exchange resin which resin prior to contact with the acrylonitrile, contains less than about 40 percent water based on the combined weight or resin and water and at least a portion of which resin is in the acid form.

4,237,304

OXAZOLINIUM SALTS AND METHOD OF PREPARATION

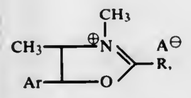
William Dowd; Richard C. Krauss, and Edward R. Freiter, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 611,109, Sep. 8, 1975. This application Oct. 26, 1978, Ser. No. 955,039

Int. Cl.³ C07D *263/12, 263/14*

U.S. Cl. 548—239 **7 Claims**

1. The threo isomer of an oxazolinium salt corresponding to the formula



in which R is a methyl or ethyl group, Ar is a phenyl or inertly-substituted phenyl wherein the inert substituent is selected from 1 to 4 carbon alkyl, methoxy and chloro group and $A^{\ominus}$ is an inert neutralizing anion of a strong inorganic protic acid.

4. A process for preparing a threo compound defined by claim **1** comprising the step of reacting by contacting an O,N-diacylated product of an erythro isomer of a 1-aryl-1-hydroxy-2-methylaminopropane with an anhydrous or substantially anhydrous strong inorganic protic acid wherein the diacyl groups are those from the acylating reagent group of ketene, acetic acid, propionic acid, butenoic acid, octanoic acid; acetyl chloride, propanoyl chloride, benzoyl chloride; acetic anhydride, propionic anhydride, benzoic anhydride, phthalic anhydride; and the methyl or ethyl ester of one of acetic acid, propionic acid, butyric acid and hexanoic acid.

4,237,305

SUBSTITUTED PHENYLACETIC ACID COMPOUNDS AND PROCESS FOR PREPARATION THEREOF

Takashi Kamiya, Suita; Masashi Hashimoto, Toyonaka; Osamu Nakaguti, Nagaicho-Higashi; Teruo Oku, Osaka, and Hidekazu Takeno, Kita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

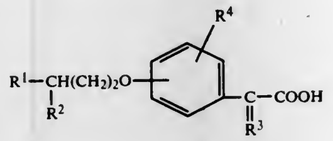
Filed Mar. 30, 1977, Ser. No. 782,968

Claims priority, application Japan, Mar. 30, 1976, 51/35600

Int. Cl.³ C07C *125/065*

U.S. Cl. 560—29 **7 Claims**

1. A compound of the formula:



wherein
R^1 is an alkoxycarbonyl or, substituted or unsubstituted aralkoxycarbonyl,
R^2 is alkoxycarbonylamino,
R^3 is oxo, hydroxyimino or aroyloxyimino, and
R^4 is hydrogen or halogen.

4,237,306

THALLIUM(III) REAGENTS SUPPORTED ON MONTMORILLONITE CLAY MINERALS AND OXYTHALLATION PROCESSES FOR UTILIZING SAME

John F. White, Ridgewood; Edward C. Taylor, and Chih-Shu Chiang, both of Princeton, all of N.J., assignors to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 838,312, Sep. 30, 1977, Pat. No. 4,172,955, which is a division of Ser. No. 718,068, Aug. 26, 1976, Pat. No. 4,607,823. This application May 10, 1979, Ser. No. 38,030

Int. Cl.³ C07C *9/76*

U.S. Cl. 560—105 **4 Claims**

1. In an oxythallation process for the oxidative rearrangement of an alkyl aryl ketone to the corresponding methyl aryl alkanoate by reaction with an electrophilic thallium (III) salt, the improvement comprising the use of a supported thallium reagent containing from about 0.5 to 50% by weight thallium at least 70% of which is in the +3 oxidation state, said supported reagent obtained by contacting a thallium (III) salt selected from the group consisting of thallium (III) trinitrate, thallium (III) sulfate, thallium (III) perchlorate, thallium (III) acetate, thallium (III) phosphate and thallium (III) trifluoroacetate with a montmorillonite clay mineral having a surface area greater than about 200 m^2/g in a mixture of methanol and trimethylorthoformate.

4,237,307

15-DEOXY-16-HYDROXY-16-METHYL-Δ19-PROSTAGLANDINS OF THE E AND F SERIES

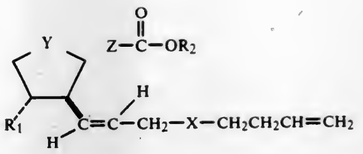
Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 7, 1979, Ser. No. 46,727

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—121 **5 Claims**

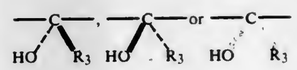
1. An optically active compound of the formula:



wherein
Y is



X is



R_1 is selected from the group consisting of hydrogen and hydroxyl;
R_2 is selected from the group consisting of hydrogen and C_1 C_6 alkyl;
R_3 is methyl;
Z is selected from the group consisting of a divalent moiety of the formulae: $-(CH_2)_n-$, $-(CH_2)_mOCH_2-$ and $-(CH_2)_mSCH_2-$ wherein n is 5 to 7, and, m is 3 to 5 and the racemic mixture thereof; and when R_1 is hydrogen, the pharmaceutically acceptable salts thereof.

4,237,308

PROCESS FOR PREPARING 2-CYCLOPENTENONE DERIVATIVE AND PERFUME COMPOSITION CONTAINING THE DERIVATIVE

Sigeru Torii; Hideo Tanaka, and Yuichi Kobayashi, all of Okayama, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

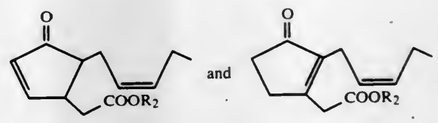
Filed Jun. 8, 1978, Ser. No. 913,691

Claims priority, application Japan, Aug. 12, 1977, 52-97173

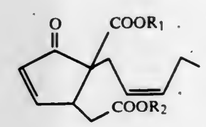
Int. Cl.³ C07C *67/738*

U.S. Cl. 560—122 **1 Claim**

1. A process for preparing a mixture of 2-cyclopentenone derivatives represented by the formulae:



wherein R_2 is lower straight-chain or branched-chain alkyl, alkenyl or aralkyl, comprising decarboxylating 5-(cis-2-pentenyl)-2-cyclopentenone derivative represented by the formula:



wherein R_1 is branched-chain alkyl, and R_2 is as defined above in the presence of sodium chloride.

4,237,309

METHOD FOR THE PREPARATION OF PHENOLIC ACETATES AND PARAFORMALDEHYDE

James E. Lyons, Wallingford; George Suld, Springfield, and Robert W. Shinn, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 3, 1978, Ser. No. 957,612
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.[3] C07C *67/39, 69/157*
U.S. Cl. 560—131 9 Claims

1. A process for the oxidation of methyl benzenes to form a phenolic acetate and formaldehyde or paraformaldehyde which comprises reacting said methyl benzene with air or oxygen and acetic anhydride in the presence of an acid catalyst and benzaldehyde, in amounts of from about 0.01–1.0 moles based on the methyl benzene, at temperatures of from about 80° C. to 150° C. and pressures of at least about 1 atmosphere, wherein the amount of acetic anhydride present is insufficient to form methylene diacetate, thereby selectively forming said phenolic acetate, together with free formaldehyde or paraformaldehyde, and wherein the flow rate of air or oxygen is sufficient to provide the continuous removal of said formaldehyde or paraformaldehyde as it is formed.

4,237,310

CO-OXIDATION OF METHYL BENZENES AND BENZALDEHYDE TO PHENOLICS AND FORMALDEHYDE

George Suld, Springfield; James E. Lyons, Wallingford, and Robert W. Shinn, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 3, 1978, Ser. No. 957,614
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.[3] C07C *67/39, 69/157*
U.S. Cl. 560—131 9 Claims

1. A process for the oxidation of methyl benzenes under mild reaction conditions to form phenolic acetates and methylene diacetate which comprises contacting said methyl benzenes with air or oxygen, and acetic anhydride, in the presence of a strong acid catalyst and benzaldehyde at temperatures of from about 80° C. to 150° C. and pressures of at least 1 atmosphere, and recovering the phenolic acetate and methylene diacetate, said benzaldehyde being present in amounts of from about 0.01–1.0 mole based on the methyl benzene.

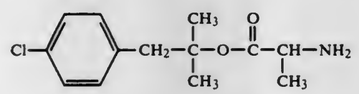
4,237,311

2-METHYL-1-(SUBSTITUTED)PHENYL-2-PROPYL ESTERS OF 2-AMINOPROPANOIC ACID

Ulf M. A. Lindberg; Svante B. Ross, both of Södertälje; Seth-Olov Thorberg, Järna, and Sven O. Ö gren, Södertälje, all of Sweden, assignors to Astra Läkemedel Aktiebolag, Södertälje, Sweden

Continuation of Ser. No. 757,484, Jan. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 554,497, Mar. 3, 1975, abandoned. This application Aug. 10, 1978, Ser. No. 932,669
Claims priority, application Sweden, Mar. 11, 1974, 7403176
Int. Cl.[3] C07C *101/19;* A61K *31/22*
U.S. Cl. 560—173 5 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid-addition salt thereof.

4,237,312

OXIDATION PROCESS INCLUDING RECOVERY AND RECYCLE OF CATALYST

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 2, 1979, Ser. No. 26,388
Int. Cl.[3] C07C *67/05*
U.S. Cl. 560—246 19 Claims

1. A process for the production of diacycloxy olefins which comprises:

(a) oxidizing at least one acyclic conjugated diolefin with molecular oxygen under oxidation reaction conditions in carboxylic acid reactant media employing a catalyst system comprising (A) at least one copper or antimony compound, (B) at least one alkali metal compound, (C) a halide ion-source wherein said halide is bromide or chloride, thereby preparing a product reaction mixture comprising at least one diacycloxy olefin, catalyst residues, unreacted diolefin, residual oxygen, and residual carboxylic acid media,

wherein said acyclic conjugated diolefin is selected from unsubstituted and substituted diolefins of 4 to 16 carbon atoms wherein the substituents are selected from the group consisting of halogen, cyano, —COOR′, and hydrocarbyl radicals, wherein R′ is hydrogen or an alkyl or aryl radical; and

said carboxylic acid media is selected from the group consisting of mono- and dicarboxylic aliphatic, cycloaliphatic, and aromatic acids, corresponding anhydrides, and mixtures, having 2 to 18 carbon atoms per molecule;

wherein said (A) where copper is selected from the group consisting of copper chlorides, bromides, oxides, carbonates, carboxylates, nitrates, orthophosphates, sulfates, and mixtures; and where antimony is selected from the group consisting of the chlorides, bromides, oxides, carboxylates, nitrates, sulfates, and mixtures;

said (B) is selected from the group consisting of the halides, nitrates, carboxylates, oxides, hydroxides, carbonates, orthophosphates, and sulfates, of lithium, sodium, potassium, rubidium, and cesium, and mixtures;

and said (C) halide-source is a said (A) or (B) where said (A) or (B) is the halide, alkaline earth metal halides, or diolefin;

(b) venting said product reaction mixture of any light unreacted components including residual oxygen, leaving a stripped reaction mixture,

(c) fractionating said stripped reaction mixture, thereby distilling off streams comprising said residual carboxylic acid media, and unreacted diolefin not vented, leaving a remaining reaction mixture comprising diacyloxy olefin product and catalyst residues,

(d) extracting said remaining reaction mixture with an effective amount of a solvent in which said diacyloxy olefin product exhibits a high degree of solubility, and said catalyst residues exhibit a low solubility, thereby forming an extract containing said diacyloxy olefin product, and a extraction residue containing said catalyst residues, wherein said solvent is normally liquid and consists of aliphatic halohydrocarbons or unsubstituted or alkyl-substituted aromatic solvents, or mixtures thereof,

(e) recycling said separated carboxylic acid media from said step (c) to said step (a),

(f) recycling extraction residue containing said catalyst residues to said step (a),

(g) separating said diacyloxy olefin product from said extract, leaving a recovered solvent, and

(h) recycling said recovered solvent to said step (d).

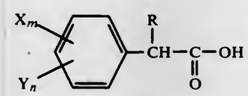
4,237,313

RACEMIZATION OF OPTICALLY ACTIVE α-SUBSTITUTED-α-PHENYLACETIC ACID DERIVATIVES

Akio Higo, Osaka, and Yukio Suzuki, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 30, 1979, Ser. No. 34,696
Claims priority, application Japan, Apr. 28, 1978, 53/52101
Int. Cl.[2] C07B *20/00*
U.S. Cl. 562—401 8 Claims

1. A process for racemization of optically active phenylacetic acid derivatives, which comprises heating an optically active phenylacetic acid derivative of the general formula (I):



(I)

wherein X and Y, which may be the same or different, each represents a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, a halogen-substituted lower alkyl group or a halogen-substituted lower alkoxy group, or X and Y may jointly form an alkylenedioxy group; m and n, which may be the same or different, each represents an integer of 1 to 5, and the sum of m and n does not exceed 5; and R represents an isopropyl group or a cyclopropyl group, to a temperature of at least 150° C. in the presence or absence of an inert solvent.

4,237,314

PHENYL ACETIC ACID PREPARATION

Ming N. Sheng, and Jar-Lin Kao, both of Cherry Hill, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 6, 1979, Ser. No. 73,050
Int. Cl.[3] C07C *57/30*
U.S. Cl. 562—496 6 Claims

1. The method preparing phenyl acetic acid which consists of preparing a reaction mixture consisting essentially of benzene, acetic acid, and a catalyst system of the tellurium halide type, said catalyst system consisting essentially of the combination of a tellurium compound and halogen compound, the unit atom ratio of halogen to tellurium being within a range from about 3 to about 20 and causing molecular oxygen to react with said reaction mixture within a range from 100° C. to 200° C., and at an oxygen pressure within a range from 4 psig to 200 psig for from 2 to 72 hours to prepare phenyl acetic acid.

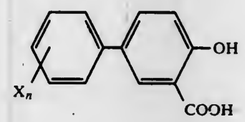
4,237,315

PREPARATION OF 5(HALOPHENYL)SALICYLIC ACID COMPOUNDS

Ulf H. Dolling, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 2, 1979, Ser. No. 90,792
Int. Cl.[3] C07C *65/00*
U.S. Cl. 562—469 7 Claims

1. A method of preparing compounds of the formula:



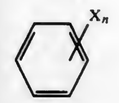
(I.)

where

n is 1 or 2; and

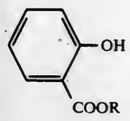
X is chloro or fluoro comprising the steps of:

(a) combining, in the presence of a palladium catalyst system, and at a temperature of from 80° to 150° C. and a pressure of from atmospheric to 750 p.s.i.g., a halobenzene compound of the formula:



where X is chloro or fluoro and n is 1 or 2,

with a salicylic acid ester of the formula:



where R is C_{1-4} alkyl;

wherein said palladium catalyst system comprises:

A. a catalyst portion comprising:

(1) palladium together with

(2) $C_{1-2}COO^-$ ligands and halo ligands selected from the group consisting of bromo, chloro, and fluoro, such that the molar weight percent, based on total ligand molar weight, of the $C_{1-2}COO^-$ ligands is from 30 to 60%; wherein the $C_{1-2}COO^-$ ligands are provided as palladium or alkali metal, acetate or propionate, and said halo ligands are provided as the appropriate halo salt of palladium, lithium, sodium, or tetra (alkyl) ammonium;

wherein the ratio of the total molor weight amount of the ligands to the molar weight amount of palladium utilized, is from 4:1 to 10:1; and

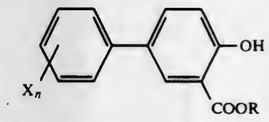
(3) from 10 to 100 parts of a reaction promoting acid, per part, on a molar basis, of palladium catalyst; and

B. a catalyst regeneration portion comprising:

(1) from 0.1 to 8.0 parts of phosphomolybdenovanadic acid per part, on a molar basis, of palladium catalyst; and

(2) at least 20 parts of a solubilizing agent selected from the group consisting of ethylene carbonate, propylene carbonate, and sulfolane, per part, on a molar basis, of palladium catalyst;

to give a compound of the formula:



(b) hydrolyzing the product of Step (a) to give the compound of Formula I.

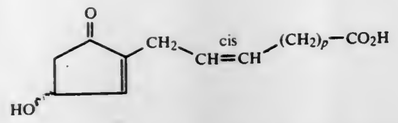
4,237,316

NOVEL 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-ONES, 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-OLS, AND VARIOUS 2-SUBSTITUTED-CYCLOPENTENONES

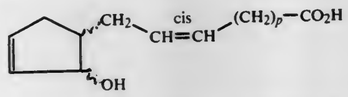
Karel F. Bernady, Somerville, N.J.; Middleton B. Floyd, Jr., Suffern; John F. Poletto, Nanuet, both of N.Y.; Robert E. Schaub, Upper Saddle River, and Martin J. Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 355,101, Apr. 27, 1973, abandoned. This application Sep. 25, 1975, Ser. No. 616,790
Int. Cl.[3] C07C *51/353*
U.S. Cl. 562—503 1 Claim

1. The process of preparing compounds of the formula:



wherein p is an integer from 2 to 6, inclusive, which comprises isomerizing compounds of the formula:



wherein p is as hereinabove defined in an aqueous medium at a pH of from about 9.0 to about 11.5 at a temperature of from about 10° C. to about 50° C. for a period of time sufficient for a substantial degree of isomerization to take place.

4,237,317

PROCESS FOR PRODUCING SEBACIC ACID

Kazunori Yamataka; Yuuji Matsuoka, and Toshiro Isoya, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,703

Claims priority, application Japan, Jul. 20, 1977, 52-86007; Jul. 20, 1977, 52-86008; Aug. 23, 1977, 52-100131; Dec. 2, 1977, 52-144673; May 24, 1978, 53-61122

Int. Cl.[2] C07C *51/00, 55/20*

U.S. Cl. 562—590 **36 Claims**

1. A process for producing sebacic acid from adipic acid which comprises:

half esterifying adipic acid with methanol to produce monomethyl adipate,

conducting electrolytic condensation of the monomethyl adipate in a methanol solution containing an alkali metal salt of monomethyl adipate to give an electrolytic solution containing dimethyl sebacate,

recovering dimethyl sebacate from the electrolytic solution by extracting the alkali metal salt of monomethyl adipate from the electrolytic solution with water after removal of the methanol by distillation and treating the electrolytic solution with an anion exchanger packed in a fixed bed to separate the monomethyl adipate therefrom, the water extraction and the anion exchange treatment being carried out successively or simultaneously,

and hydrolyzing the resulting dimethyl sebacate to produce sebacic acid.

4,237,318

MANUFACTURE OF AQUEOUS METHANOLIC SOLUTION OF SODIUM FORMATE

Werner Ostertag, Gruenstadt; Gerd Wunsch, Speyer; Volker Kiener, Weisenheim; Eckhard Hetzel, Frankenthal; Siegfried Schreiner, Ludwigshafen; Bernd Leutner, Frankenthal; Hans-Ulrich Schlimper, Speyer, and Erfried Voelkl, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 888,929, Mar. 22, 1978, abandoned. This application Jun. 5, 1979, Ser. No. 45,746

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, P2716032

Int. Cl.[3] C01B *17/66;* **C07C** *53/06*

U.S. Cl. 562—609 **3 Claims**

1. A process for the manufacture of an aqueous methanolic solution of sodium formate which solution can be used to produce anhydrous sodium dithionite which comprises: reacting carbon monoxide with an aqueous sodium hydroxide solution which contains based on the amount of water from 60 to 80% by weight of sodium hydroxide and from 10 to 40% by weight of methanol, at a temperature of from 80° to 120° C. under a pressure of from 10 to 40 bars.

4,237,319

PROCESS FOR LIQUID-PHASE OXIDATION OF M-DIISOPROPYLBENZENE

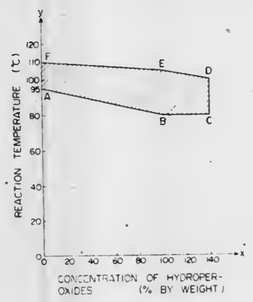
Hirohiko Nambu, Ohtake; Isao Hashimoto, Waki, and Ichiro Imai, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,072

Claims priority, application Japan, Oct. 31, 1977, 52/129664

Int. Cl.[3] C07C *179/035, 177/047*

U.S. Cl. 568—571 **7 Claims**



1. In a process for producing m-diisopropylbenzene dihydroperoxide by oxidizing m-diisopropylbenzene in the liquid phase with molecular oxygen under alkaline conditions at a pressure of from atmospheric pressure to about 10 kg/cm^2; the improvement comprising carrying out the oxidation reaction at a reaction temperature y in the range of from 80° C. to 110° C. until the concentration x of hydroperoxides in the oxidation product, in percent by weight, calculated as m-diisopropylbenzene monohydroperoxide, reaches at least 120 but not more than 140, while maintaining the relationship between x and y within the shaded area ABCDEF shown in FIG. 1, and lowering the reaction temperature by at least about 3° C. from the initial reaction temperature (when x=0) when x becomes greater than 100.

4,237,320

1,3-BIS-ARYL-2-OXYALKYLATED-GLYCEROL ETHERS

Heinz Krapf, Grünstadt; Knut Oppenlaender, Ludwigshafen, and Guenter Uhl, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

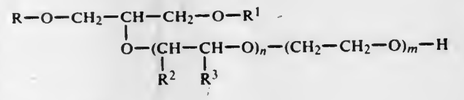
Filed Aug. 27, 1979, Ser. No. 69,920

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839463

Int. Cl.[3] C07C *43/164;* **C09D** *11/02*

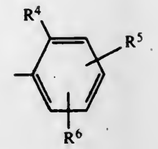
U.S. Cl. 568—609 **1 Claim**

1. An oxyalkylated 1,3-bis-aryl-glycerol ether of the formula

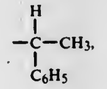


(I)

where R and R^1 are



α-naphthyl or β-naphthyl
and R^4, R^5 and R^6 are —H, C$_1$–C$_{12}$-alkyl or



R^2 is —CH$_3$ or —C$_2$H$_5$, R^3 is —H or —CH$_3$, n is from 0 to 10 and m is from 8 to 50.

4,237,321

2,4,5-TRICHLOROPHENOL PROCESS

Eric Cuthbertson, Newcastle upon Tyne, England, assignor to Sterling Drug Inc., New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,101

Claims priority, application United Kingdom, Dec. 6, 1977, 50773/77

Int. Cl.[2] C07C *39/32, 37/00*

U.S. Cl. 568—776 **9 Claims**

1. A method of making 2,4,5-trichlorophenol by chlorinating 2,5-dichlorophenol, characterized by reacting, at a temperature in the range from about −10° C. to about the reflux temperature of the reaction mixture, 2,5-dichlorophenol with about a stoichiometrically equivalent amount of chlorine in the presence of from about one to about five parts by weight of a liquid inert polar aprotic reaction medium having a dielectric constant from about 8 to about 35, and, when the reaction medium has a dielectric constant below 30, from about 0.5% to about 10% by weight of a Lewis acid catalyst based on the weight of the 2,5-dichlorophenol.

4,237,322

PROCESS FOR PREPARATION OF 1,5-DIMETHYLBICYCLO[3,2,1]OCTAN-8-OL

Albertus J. Mulder, and Aaldert J. de Jong, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 8, 1979, Ser. No. 37,195

Claims priority, application Netherlands, May 12, 1978, 7805142

Int. Cl.[3] C07C *35/24*

U.S. Cl. 568—820 **10 Claims**

1. A process for the preparation of 1,5-dimethylbicyclo-[3,2,1]octan-8-ol which comprises reacting 1,5-dimethyl-1,5-cyclooctadiene with a carboxylic acid of the general formula R—COOH selected from the class consisting of:

(a) carboxylic acids having a pK value below about 4 wherein R in the general formula above is hydrogen, a carboxyl group, or an aliphatic, cycloaliphatic or aromatic group of up to 8 carbon atoms substituted with one or more halogen atoms, carboxyl, hydroxyl, cyano or nitro groups and

(b) carboxylic acids having a pK value above about 4 wherein R in the general formula above is an unsubstituted aliphatic, cycloaliphatic or aromatic group of up to 8 carbon atoms; said reaction with carboxylic acids in subclass (b) being further carried out in the presence of an acid catalyst thereby forming an ester of 1,5-dimethylbicyclo[3,2,1]octan-8-ol and the carboxylic acid employed followed by hydrolysis or alcoholysis of the ester to yield 1,5-dimethylbicyclo[3,2,]1]octan-8-ol.

4,237,323

METHOD FOR PREPARING α-NAPHTHOL

Sakhib M. O. Aliev, ulitsa Barinova, 12, blok 4, kv. 31; Vagab S. Aliev, ulitsa Nizami, 66, blok 5, kv. 40; Novruz I. O. Guseinov, poselok N. Akhmedly 1730 proezd, 13, kv. 96; Vagif A. O. Nagiev, ulitsa Neftepererabotchikov, 170, kv. 181, and Nuri T. O. Sultanov, ulitsa Pushkina, 12/14, kv. 21, all of Baku, U.S.S.R.

Filed Jun. 8, 1979, Ser. No. 46,647

Int. Cl.[3] C07C *37/04*

U.S. Cl. 568—738 **8 Claims**

1. A method for preparing α-naphthol comprising sulphonation of naphthalene with an equimolar amount of concentrated sulphuric acid at a temperature within the range of from 30° to 85° C. for a period of from 60 to 120 minutes in the presence of acetic anhydride taken in an amount of from 0.5 to 1.5 mole per one mole of naphthalene, fusion of the resulting naphthalene-α-sulphonic acid with an alkali taken in an amount of 3–4 moles per mole of the naphthalene-α-sulphonic acid at a temperature of from 180° to 285° C. for 10 to 30 minutes, mixing the resulting melt consisting of an alkali metal α-naphtholate and an alkali metal sulphite with a polar solvent, acidification of the resulting mixture with a mineral acid taken in an equivalent amount relative to the amount of said alkali metal α-naphtholate, followed by isolation of α-naphthol from the resulting suspension.

4,237,324

PRODUCTION OF MONOGLYCOLS FROM ALKYLENE CARBONATES

Dale A. Raines, Wheatridge, Colo., and Oliver C. Ainsworth, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 22, 1979, Ser. No. 5,065

Int. Cl.[3] C07C *31/20*

U.S. Cl. 568—858 **4 Claims**

1. A process for the production of a monoglycol by hydrolyzing an alkylene carbonate which comprises reacting at least about stoichiometric amounts of water and an alkylene carbonate at a temperature of from about 80° C. to about 200° C., in the presence of alumina as catalyst.

4,237,325

METHOD OF CONDUCTING REACTIONS IN A TRICKLE-TYPE REACTOR

Günter Brandes, Hamburg; Johannes Wöllner, Kapellen Krs. Moers; Wilhelm Neier, and Werner Webers, both of, Orsoy, all of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 545,641, Jan. 30, 1975. This application Oct. 23, 1978, Ser. No. 953,507

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1974, 2404329

Int. Cl.[3] C07C *29/17*

U.S. Cl. 568—896 **10 Claims**

1. In a process for carrying out a hydration reaction between a gaseous olefin and water where in an on-stream period the reactants pass downwardly in contact with a fixed bed of particulate olefin hydration catalyst having an average particle size no greater than about 2 mm in a trickle-type reaction zone, the improvement which comprises prior to instituting the on-stream period removing air from said reaction zone by passing a gas devoid of free oxygen downwardly through said reaction zone and said catalyst bed, interrupting the flow of said gas devoid of free oxygen and flooding the reaction zone by introducing a liquid to flow upwardly through said catalyst bed and cover same and then removing said liquid from said reaction zone and substantially simultaneously introducing said gaseous olefin and water into said reaction zone to flow downwardly through said catalyst bed, under hydration conditions, thereby instituting the on-stream period.

4,237,326

METHOD OF INHIBITING POLYMERIZATION OF STYRENE

Nobuhiko Fuga, Tateno; Kunio Uchimura, Ami, and Hideyuki Takahashi, Yokkaichi, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed May 30, 1979, Ser. No. 43,661

Int. Cl.³ B01D *3/34;* **C10G** *9/16;* **C07C** *7/20, 15/46*

U.S. Cl. 585—4 **6 Claims**

1. A method of inhibiting the polymerization of styrene, which comprises: mixing styrene with a minor, but effective proportion of an inhibitor selected from the group consisting of 2-methylbenzoquinone-4-oxime, 2,3,5-trimethylbenzoquinone-4-oxime, and mixtures thereof.

4,237,327

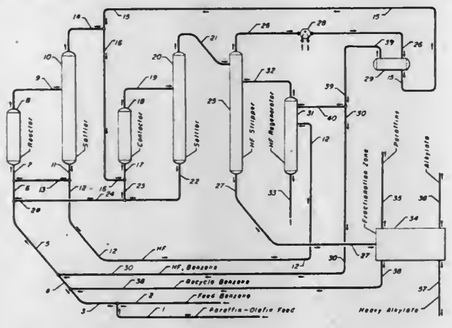
PROCESS FOR HF-CATALYZED ALKYLATION OF AROMATIC HYDROCARBONS

George R. Winter, III, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 9, 1979, Ser. No. 83,058

Int. Cl.³ C07C *2/66*

U.S. Cl. 585—450 **3 Claims**



1. In a process for the production of linear alkylaromatic hydrocarbons which comprises the steps of:

(a) contacting a liquid-phase feed stream comprising benzene and an aliphatic monoolefinic hydrocarbon having from 7 to 20 carbon atoms per molecule with liquid-phase HF within a reaction zone maintained at alkylation promoting conditions;

(b) separating an effluent removed from the reaction zone in a first settling zone maintained at quiescent conditions into a first hydrocarbon stream comprising benzene and a linear alkylaromatic hydrocarbon and a first liquid-phase HF stream;

(c) passing a portion of the first liquid-phase HF stream into an HF regeneration zone comprising a first fractionation column wherein high-boiling impurities are concentrated into a first bottoms stream and from which there is removed a first overhead vapor stream comprising HF and benzene;

(d) contacting the first hydrocarbon stream with liquid-phase HF in a contacting zone;

(e) separating an effluent removed from the contacting zone in a second settling zone maintained at quiescent conditions into a second hydrocarbon stream comprising benzene, the linear alkylaromatic hydrocarbon and dissolved HF and a second liquid-phase HF stream; and,

(f) passing the second hydrocarbon stream into a second fractionation column operated at conditions effective to separate the second hydrocarbon stream into a second overhead vapor stream comprising benzene and HF and a second bottoms stream comprising the linear alkylaromatic hydrocarbon; the improvement which comprises passing the first overhead vapor stream produced in the HF regeneration zone into the second fractionation column at an upper intermediate point.

4,237,328

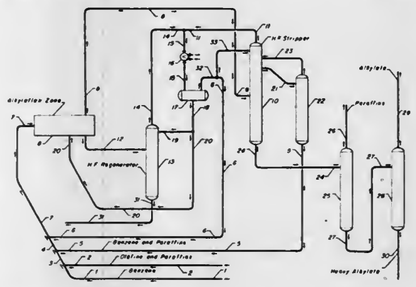
PROCESS FOR HF-CATALYZED ALKYLATION OF AROMATIC HYDROCARBONS

George R. Winter, III, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 9, 1979, Ser. No. 83,135

Int. Cl.³ C07C *2/66*

U.S. Cl. 585—456 **8 Claims**



1. In a process for the production of linear alkylaromatic hydrocarbons which comprises the steps of:

(a) contacting a liquid-phase hydrocarbon mixture comprising benzene, an aliphatic monoolefinic hydrocarbon having from about 7 to 20 carbon atoms per molecule and a normal paraffinic hydrocarbon having the same number of carbon atoms per molecule as the aliphatic monoolefinic hydrocarbon with liquid-phase HF within an alkylation zone maintained at alkylation-promoting conditions;

(b) withdrawing from the alkylation zone a liquid-phase hydrocarbon stream comprising benzene, the normal paraffinic hydrocarbon, an alkylaromatic hydrocarbon and dissolved HF;

(c) passing the liquid-phase hydrocarbon stream into a first fractionation column from which there is removed a first overhead vapor stream comprising HF and benzene and a first bottoms stream comprising the alkylaromatic hydrocarbon and the normal paraffinic hydrocarbon; the improvement which comprises:

(i) passing the liquid-phase hydrocarbon stream into the first fractionation column at a first intermediate point;

(ii) removing a sidecut liquid stream comprising benzene, HF, and the normal paraffinic hydrocarbon from the first fractionation column at a higher second intermediate point and passing the sidecut liquid stream into a second fractionation column operated at conditions effective to produce a second overhead vapor stream which comprises benzene and HF and a second bottoms stream which comprises benzene and which has a normal paraffinic hydrocarbon concentration above 4.0 mole percent;

(iii) passing the second overhead vapor stream into the first fractionation column at a third intermediate point;

(iv) passing the second bottoms stream into the alkylation zone; and,

(v) passing the first bottoms stream into a fractionation zone in which the product alkylaromatic hydrocarbon is recovered.

4,237,329

PROCESS FOR THE PRODUCTION OF ALKYLBENZENES

Setsuo Kamiyama, Kawagoe; Yukio Nagashima, Ooi; Hiroshi Furukawa, Ooi, and Katsumi Kaneko, Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 867,165, Jan. 5, 1978. This application Apr. 13, 1979, Ser. No. 29,629

Claims priority, application Japan, May 16, 1978, 53/57152

Int. Cl.³ C07C *5/22*

U.S. Cl. 585—474 **9 Claims**

1. A process for the production of ethylbenzene, which comprises reacting benzene with a mixture of substantially C_9-C_{10} aromatic hydrocarbons comprising polymethylbenzene, and ethyltoluene and/or diethylbenzene, in the presence of an acid leached hydrogen form mordenite catalyst having a silica (SiO_2)/alumina (Al_2O_3) molar ratio of 15 to 21 and a sodium content of 0.05 weight % or less as Na_2O and in the presence of hydrogen.

4,237,330

ISOLATION OF BUTADIENE FROM A C_4-HYDROCARBON MIXTURE

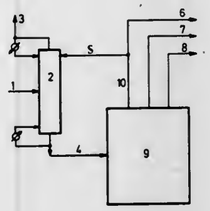
Alfred Lindner, Bobenheim-Roxheim; Klaus Volkamer, Frankenthal, and Ulrich Wagner, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,029

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833195

Int. Cl.³ C07C *7/00*

U.S. Cl. 585—807 **7 Claims**



1. A process for isolating butadiene by means of selective solvent from a C_4-hydrocarbon mixture which contains butadiene, small amounts of oxygen, hydrocarbons which are more soluble than butadiene in the selective solvent and hydrocarbons which are less soluble than butadiene in the selective solvent, which process comprises:

a. subjecting the C_4-hydrocarbon mixture to distillation in a distillation zone upstream of an extractive distillation zone, said C_4-hydrocarbon mixture being fed into the upstream distillation zone in a middle region extending from the middle of the distillation zone to the extent of about 80% into both the upper and lower halves of the upstream distillation zone,

b. obtaining as overhead product from the distillation zone a mixture of oxygen and C_4-hydrocarbons containing from 1 to 18 mole percent of oxygen,

c. taking off as bottom product a C_4-hyrocarbon mixture essentially free from oxygen,

d. subjecting the bottom product to extractive distillation using one extractive distillation zone or two successive extractive distillation zones, the same selective solvent being used in both, and

e. separating the bottom product by extractive distillation into a distillate containing the less soluble hydrocarbons, a stream of butadiene and a stream containing the more soluble hydrocarbons.

4,237,331

OLEFIN OXIDATION PROCESS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 895,339, Apr. 11, 1978. This application Oct. 26, 1979, Ser. No. 88,717

Int. Cl.³ C07C *7/152*

U.S. Cl. 585—845 **10 Claims**

1. A process for separating isobutylene from a C_4 stream containing isobutylene and linear mono-olefins by selectively oxidizing the linear olefins to leave isobutylene which comprises contacting:

(a) said C_4 stream with

(b) oxygen in

(c) a reaction diluent comprising at least two liquid phases wherein at least one liquid phase is an aqueous phase, and in the presence of

(d) a catalyst comprising a palladium component, a copper component, and a boron-containing material that provides a catalytically active boric acid under the conditions employed in the reaction, and

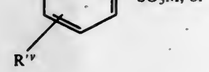
(e) a surfactant selected from the group of:

(1) quaternary ammonium salts of the general formula $(R''')_4N^+X^-$,

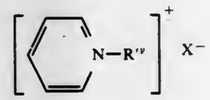
(2) alkali metal alkyl sulfates of the general formula $R''OSO_3M$,

(3) alkali metal salts of alkanoic acids of the general formula $R''CO_2M$,

(4) alkali metal salts of alkaryl sulfonic acids of the general formula



(5) 1-alkyl pyridinium salts of the general formula



wherein R''' is an alkyl radical of from 1 to 20 carbon atoms and wherein the total number of carbon atoms in said quaternary ammonium salt is from about 8 to about 30 carbon atoms; X^- is selected from the group consisting of Br^-, Cl^-, I^-, F^-, $R'''CO_2^-$, QSO_3^-, BF_4^-, HSO_4^-, wherein Q is an aryl or alkaryl radical of 6 to 10 carbon atoms; R'' is an alkyl radical of from 10 to about 20 carbon atoms; M is an alkali metal; R'' is an alkyl radical of 1 to 4 carbon atoms and wherein n is 0 or an integer of from 1 to 4,

under oxidation conditions sufficient to oxidize the linear monoolefins of (a) to carbonyl compounds, and then

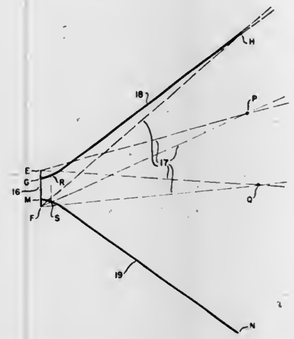
separating the oxidation products resulting from the oxidation of the linear mono-olefins from the unreacted isobutylene.

4,237,332

NONIMAGING RADIANT ENERGY DIRECTION DEVICE

Roland Winston, Chicago, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,923
Int. Cl.[3] H01L *31/04;* G02B *5/10*
U.S. Cl. 136—259 14 Claims



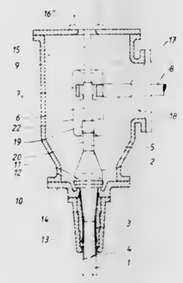
1. A device for directing and transducing energy comprising: an energy transducer, a first reflective wall of a particular contour, which contour coincides with nonlinear lines of flow of geometrical vector flux of a virtual radiant energy emitter of finite dimension radiating according to Lambert's law within a restricted angle not greater than 90 degrees were said virtual emitter positioned to coincide with said transducer.

4,237,333

HIGH VOLTAGE INSULATED CABLE TERMINATIONS

Ake Classon, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Aug. 28, 1978, Ser. No. 937,590
Claims priority, application Sweden, Sep. 2, 1977, 7709880
Int. Cl.[3] H02G *15/24*
U.S. Cl. 174—21 R 15 Claims



1. Cable termination apparatus for connecting at least one high voltage cable to at least one pressure-gas-insulated conductor, comprising:

a cable conductor surrounded by a cable insulation of solid insulating material;

a metal enclosure filled with pressure gas and receiving an end of said cable conductor;

a contact socket fixed to the end of said cable conductor for interconnecting the high voltage cable and the pressure-gas-insulated conductor;

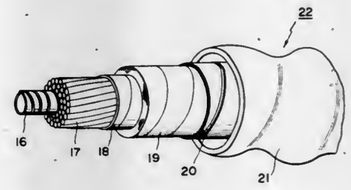
a pull rod oriented substantially along the axial extension of said end of the high voltage cable, one end of said pull rod being fixed in relation to said metal enclosure, the other end of said pull rod being fixed to said contact socket.

4,237,334

LAMINATED INSULATING PAPER AND OIL-FILLED CABLE INSULATED THEREBY

Takeshi Kojima, Chigasaki; Sakae Kinoshita, Yamato, and Kenzo Takeuchi, Tokyo, all of Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kanagawa, Japan

Filed Jul. 31, 1978, Ser. No. 929,370
Claims priority, application Japan, Aug. 6, 1977, 52-94385; Nov. 7, 1977, 52-133291; Mar. 1, 1978, 53-23185
Int. Cl.[3] H01B *9/06;* B32B *9/04, 15/08*
U.S. Cl. 174—25 R 12 Claims



1. A laminated electrical insulating wrapping material comprising a plastic film of a cross-linked silicone grafted polyolefin and a cellulose paper or papers laminated to at least one side of said film, said laminated insulating material produced by the process comprising:

(a) melt-extruding an un-cross-linked silicone grafted polyolefin to form a softened film;

(b) superimposing said paper or papers onto one side of said softened film;

(c) applying pressure to said superimposed paper and softened film to form a laminate; and

(d) cross-linking said laminated silicone grafted polyolefin film by reaction with water in the presence of a silanol condensation catalyst and forming a chemical bond between the silyl groups of said silicone grafted polyolefin film and the hydroxyl groups of said cellulose paper.

4. A process for producing a laminated electrical insulating material comprising:

(a) melt-extruding an un-cross-linked silicone grafted polyolefin to form a softened film;

(b) superimposing a cellulose paper or papers onto one side of said softened film;

(c) applying pressure to said superimposed paper and softened film to form a laminate; and

(d) cross-linking said laminated silicone grafted polyolefin film by reaction with water in the presence of a silanol condensation catalyst and forming a chemical bond between the silyl groups of said silicone grafted polyolefin film and the hydroxyl groups of said cellulose paper.

8. In an oil-filled electrical cable comprising an electric conductor, an insulating layer of wound laminated insulating paper applied over the electric conductor, an insulating oil impregnated in the insulating layer, and a metal sheath applied over the insulating layer, the improvement wherein:

the laminated insulating paper comprises a plastic film formed of a cross-linked silicone grafted polyolefin film and cellulosic paper or papers laminated to at least one side thereof and produced by the process comprising,

(a) melt-extruding an un-cross-linked silicone grafted polyolefin to form a softened film;

(b) superimposing said paper or papers onto one side of said softened film;

(c) applying pressure to said superimposed paper and softened film to form a laminate; and

(d) cross-linking said laminated silicone grafted polyolefin film by reaction with water in the presence of a silanol condensation catalyst and forming a chemical bond

between the silyl groups of said silicone grafted polyolefin film and the hydroxyl groups of said cellulose paper.

4,237,335

MULTIPLE JOINT BOX UTILIZING A THERMOPLASTIC CLAMPING SLEEVE PRINCIPLE

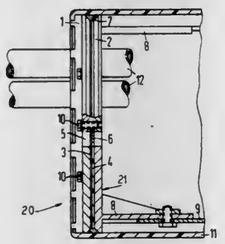
Wolfgang Giebel, Traubing; Herbert Krause, Munich, and Hans-Juergen Meltsch, Germering, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

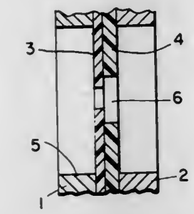
Filed Jul. 24, 1978, Ser. No. 927,358

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2736039

Int. Cl.³ H02G *15/013*

U.S. Cl. 174—92 **4 Claims**





1. A distribution sleeve which has a tubular sleeve having a longitudinal slit with wedge-shaped sealing elements along the slit and sealing members at both ends of the tubular sleeve, the improvements comprising each of the sealing members being a separate unit comprising a pair of rigid disks, at least two elastic circular plates, and means for interconnecting the disks together with the plates being interposed and clamped therebetween, each of said plates having a different thickness, said disks and plates each having a plurality of apertures aligned with each other to form a plurality of cable inlets with each of the apertures of the elastic circular plates of a cable inlet having a smaller diameter than the apertures of the rigid disks for the same inlet, the apertures in one of said elastic plates being smaller than the apertures in the other elastic plate, and each of said disks being provided with a peripheral bevel coacting to form a circular groove, and means for forming a peripheral seal between the sealing member and the tubular sleeve being received in said groove.

4,237,336

DEVICE FOR PASSING ELECTRICAL AND POWER INSTALLATION CONDUCTORS THROUGH PROTECTIVE SHELL SEPARATING CLEAN ZONE FROM CONTAMINATED ONE AND METHOD OF ASSEMBLING SAME

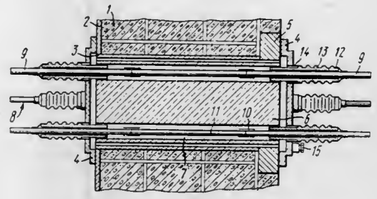
Nikolai S. Kostjukov, Profsojuznaya ulitsa, 93, korpus 1, kv. 115; Nikolai V. Minakov, 9 ulitsa Sokolinoi gory, 7, kv. 100, and Vladimir A. Knyazev, Reutovskaya ulitsa, 8, korpus 3, kv. 41, all of Moscow, U.S.S.R.

Filed Sep. 14, 1978, Ser. No. 942,318

Claims priority, application U.S.S.R., Jan. 16, 1978, 2561803

Int. Cl.² G21C *13/04;* **H01B** *17/30*

U.S. Cl. 174—151 **8 Claims**



1. A device for passing electrical and power installation conductors through a protective shell separating a clean zone from a contaminated one, comprising:

a metal shield attached to said protective shell on the contaminated zone side;

a hollow metal casing made in the form of a tube embedded in the body of said protective shell;

end flanges of said hollow metal casing;

a first insulating through element arranged within said hollow metal casing made of inorganic material having a high absorption capacity to induced radiation and having at least one through hole;

a conductor passed through said hole and having one end in said clean zone and one end in said contaminated zone;

at least one section of said conductor in the form of a rod on the contaminated zone side;

a thermocompensating multi-strand section of said conductor coupled electrically to said section of the conductor made of a rod;

a second insulating through element formed of inorganic insulating material fitted on each said conductor end;

seal fittings fixed to the second insulating through elements and rigidly linking the second insulating through elements with said end flanges and said conductor ends.

4,237,337

CABLE WITH WIRE FOR SLITTING A PROTECTIVE SHEATH AND PROCESS OF MANUFACTURING SAME

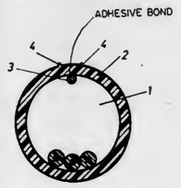
Hans R. Serrander, Johanneshov, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 1, 1978, Ser. No. 911,489

Claims priority, application Sweden, Jun. 9, 1977, 7706752

Int. Cl.³ H01B *7/00, 13/14*

U.S. Cl. 174—70 R **8 Claims**



1. A cable comprising a core having at least one individually insulated conductor, an outer sheathing on said core, a wire for tearing the outer sheathing, said wire being interposed between the inner surface of the sheathing and the outer surface of the core, and an adhesive means joining said wire to at least one of said surfaces; the sheathing being substantially uniform in thickness throughout its extent inclusive of the location of said wire.

6. A process of manufacturing a cable comprising mounting a tear wire on a core having at least one individually insulated conductor therein, applying a heat-sensitive adhesive to said wire, applying an outer sheathing onto said core and wire in a heated condition to render the adhesive adherent to cause the wire to be adhered at least to one of the inner surface of the sheathing and the outer surface of the core, and allowing the sheathing and adhesive to cool whereupon the wire is bonded in the cable by the adhesive, and the cooled adhesive no longer has adhesive capability apart from the bonding of the wire in the cable.

4,237,338

COORDINATED COMMUNICATION SYSTEM FOR TRANSMITTING DATA AND METHOD OF OPERATING THE SAME

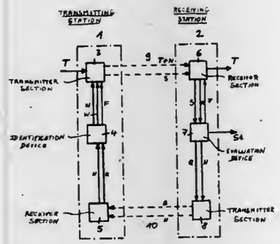
Siegfried Hecht, Heidelberg, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 15, 1979, Ser. No. 20,826

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812668

Int. Cl.³ G08C *25/00;* **H04L** *25/02*

U.S. Cl. 178—23 A **4 Claims**



1. A method of transmitting telegrams between a transmitting station and a receiving station, each having a transmitter section and a receiver section, comprising the steps of:

providing at the transmitting station an identification device having a list of names for marking the transmitted telegrams;

providing at the receiving station an evaluation device having knowledge of the list of names and their sequence for detecting and identifying such names in the transmitted telegrams;

applying by means of the identification device of the transmitting station to the telegrams to be transmitted a respective name from said list of names;

transmitting the telegrams with their names from the transmitting station to the receiving station;

detecting by means of the evaluation device in the receiving station the names and their sequence in the incoming telegrams;

requesting, upon reception at the receiving station of a telegram which is garbled or lost, by means of the receiving station, and while identifying the name of the garbled or lost telegram, the transmitting station to again transmit such telegram; and

controlling the receiving station, by means of said evaluation device, such that telegrams which have been properly received in the interim are not evaluated until the arrival of the previously lost or garbled telegram.

4,237,339

AUDIO TELECONFERENCING

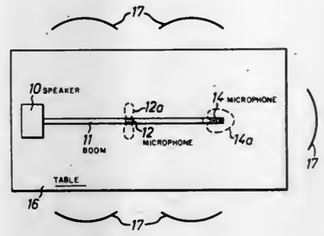
John G. Bunting, Ipswich; Robin C. Cross, Felixstowe; David R. Guard; Ian S. Groves, both of Ipswich; Edward G. T. Johnson, Woodbridge, and Alan E. Stevens, Ipswich, all of England, assignors to The Post Office, London, England

Filed Oct. 18, 1978, Ser. No. 953,280

Claims priority, application United Kingdom, Nov. 3, 1977, 45775/77

Int. Cl.³ H04M *1/20;* **H04R** *3/02*

U.S. Cl. 179—1 CN **19 Claims**



1. An electro-acoustic terminal unit for use in an audio teleconferencing system comprising:

an electro-acoustic transducer,

one or more acousto-electric transducers, each having a sensitivity which is directionally dependent and exhibits at least one null or substantially null position, the acousto-electric transducer or transducers being horizontally separated from and so located and orientated relative to the electro-acoustic transducer that the null position is directed towards the electro-acoustic transducer, and a means for rigidly mounting said transducers to provide said horizontal separation.

4,237,340

CROSSOVER NETWORK FOR OPTIMIZING EFFICIENCY AND IMPROVING RESPONSE OF LOUDSPEAKER SYSTEM

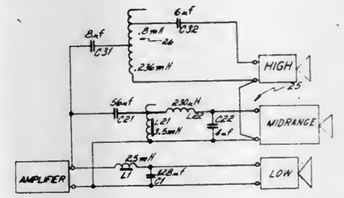
Paul W. Klipsch, Hope, Ark., assignor to Klipsch and Associates, Inc., Hope, Ark.

Division of Ser. No. 802,734, Jun. 2, 1977, Pat. No. 4,138,594.

This application Oct. 5, 1978, Ser. No. 948,976

Int. Cl.² H04R *3/14, 3/04*

U.S. Cl. 179—1 D **5 Claims**



1. In a loudspeaker system having low, midrange, and high frequency loudspeakers and an LC crossover network, wherein at least one of said loudspeakers is less efficient than other of said loudspeakers, the improvement in said LC crossover network, comprising:

an autotransformer included in said LC crossover network and connected between an amplifier and said at least one less efficient loudspeaker for boosting the audio frequency input to said at least one less efficient loudspeaker,

whereby the output of said at least one less efficient loudspeaker is increased to enable use of said at least one less efficient loudspeaker with said other loudspeakers and

whereby the overall loudspeaker system operates at optimum efficiency.

4,237,341

PORTABLE SELF-CONTAINED AMPLIFIER AND LOUDSPEAKER APPARATUS

Paul E. Richards, 12908 Piccadilly Cir. #2, Shawnee Mission, Kans. 66215

Filed Sep. 25, 1978, Ser. No. 945,640
Int. Cl.³ H04R *27/04*
U.S. Cl. 179—1 MG **15 Claims**



1. An amplifier and loudspeaker apparatus adapted to be carried on the body of a person using a sound source generating electrical signals comprising the combination of:

a housing having an internal sound chamber occupied by an air column;

a pair of loudspeaker units secured to said housing in fixed spaced apart relationship, each of said loudspeaker units facing in opposite directions so that said air column moves in unison with said loudspeakers;

said housing having a sound opening midway between said loudspeakers for radiating acoustical energy via said air column;

an electronic component package including electrical amplification components secured to said housing within said internal sound chamber and disposed between said loudpseaker units; and

means operably connecting said electrical amplification components to said sound source and to said loudspeaker units for energizing said loudspeaker units and moving said air column so as to generate acoustical energy in a predetermined propagation pattern from said housing opening and from said loudspeaker units in response to amplified sound source electrical signals;

said pair of loudspeakers are intentionally connected out-of-phase acoustically whereby sound energy is radiated externally of said housing via said sound opening in response to the back stroke of said pair of loudspeakers.

4,237,342

TELEPHONE HOOK-UP BOX

Harry J. Eller, 216 Birch Hill Dr., Rochester, Mich. 48063; Donald G. Eller, 39336 Farmhill Dr., Sterling Heights, Mich. 48078; Edward R. Dudek, 31465 Beechwood, Warren, Mich. 48093, and Edward C. Goodwin, 1161 Devonshire, Grosse Pointe Park, Mich. 48230

Filed Jun. 4, 1979, Ser. No. 44,892
Int. Cl.³ H04M *1/18*
U.S. Cl. 179—1 PC **10 Claims**

1. A telephone hook-up box comprising:

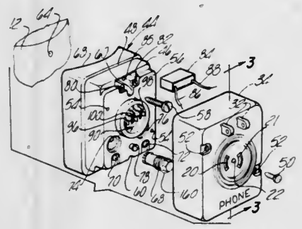
a molded body element;

a pair of strip metal line contact-terminal elements and a strip metal ground contact-terminal element, each of said line and ground contact-terminal elements being molded within said body element and each including integrally formed pairs of spring fingers comprising contact sets extending into a bore formed in said body element, said spring fingers being formed along side an intermediate section of each of said contact terminal elements;

each contact-terminal element further including a terminal tab portion extending into an opening formed in said front face of said body element to enable an electrical connection to be made therewith adjacent said front face of said body element;

said ground contact-terminal element further including a transverse section having opposite ends forming contact seats, said transverse section offset away from said front face of said body element and including an integral offsetting portion intermediate said front face of said body element to offset said transverse section and said contact seat ends from said line terminal tab portions, each of said opposite ends extending beneath a respective one of said line contact-terminal element terminal tab portions;

a pair of threaded bores extending into said body element



away from said body element front face into registry with a respective one of said contact seat end portions and said line contact-terminal tab portions;

a circular hole aligned with said threaded bore formed in each of said terminal tab portions of said line contact-terminal element, said front face of said body element being formed with a counterbore aligned therewith;

whereby line protectors may be threaded into said molded threaded bores providing an electrical contact with the upper surface of said contact element and with said contact seat end portion to provide grounding overload protection for said telephone load lines;

a cover mounted over said front face of said body element, said cover being formed with a pair of arcuate opening slots and a central opening therebetween, said arcuate slots being aligned with respective one of each of said line contact-terminal element contact sets, said central opening aligned with said intermediate ground contact set.

4,237,343

DIGITAL DELAY/AMBIENCE PROCESSOR

Stephen L. Kurtin, 3835 Kingswood Rd., Sherman Oaks, Calif. 91403, and Edward C. Kelm, 1136 Wellington Ave., Pasadena, Calif. 91103

Filed Feb. 9, 1978, Ser. No. 876,540
Int. Cl.³ H04R *5/00;* **H04H** *7/00*
U.S. Cl. 179—1 J **26 Claims**

1. A signal processor which comprises:

(a) means for coupling a pair of analog input signals to the inputs of a corresponding pair of channels:

(b) means for converting analog signals coupled to the input of each of said channels into digital form;

(c) random access memory means for storing each of said digital signals at a different one of a plurality of addresses;

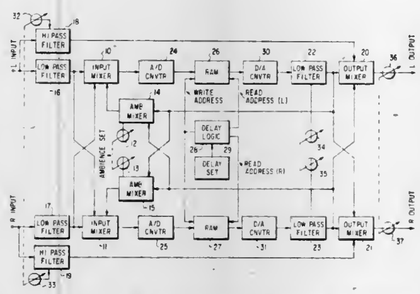
(d) means for retrieving said stored signals from said memory at said addresses after predetermined periods of time, said periods of time not being the same for all channels;

(e) means for generating said addresses for storing and retrieving said digitized signals in said memory which comprises:

(i) a stack in a loop circuit comprised of a counter and a plurality of registers, each of said registers being coupled to the next higher register in said stack, the highest register in said stack being coupled to said counter, said counter being coupled to the lowest register in said stack;

(ii) pulsing means for advancing said counter; and

(iii) means for coupling a transfer pulse to each of said registers and said counter after said counter has advanced a predetermined number of counts, said transfer pulse causing said information in said stack and loop circuit to recirculate;



(f) means for converting said stored signals retrieved from said memory into analog amplitudes;

(g) means for coupling amplitudes proportional to said analog amplitudes derived from signals coupled to the input of each of said channels to the input of the corresponding channel; and

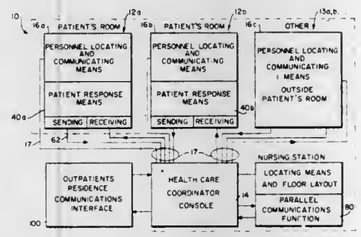
(h) means for coupling amplitudes proportional to said analog amplitudes derived from signals coupled to the input of at least one of said channels to the input of the other of said channels.

4,237,344

RAPID RESPONSE HEALTH CARE COMMUNICATIONS SYSTEM

John R. Moore, San Francisco, Calif., assignor to Hospital Communication Systems, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 851,412, Nov. 14, 1977, abandoned. This application Apr. 20, 1979, Ser. No. 31,924
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 A **14 Claims**



1. A rapid-response health care communication system for a health care facility having a plurality of rooms for patient care comprising:

a central health-care console adapted for use by a health care coordinator, said console having a plurality of personnel location display means for displaying the location of various types of health care personnel in the facility;

a personnel location designating means at a plurality of preselected locations in the health care facility including said patient rooms connected to said personnel location display means, each of said designation means including a plurality of designator switches, each of said designator switches corresponding to one of a plurality of types of health care personnel, said designator switches selectively operable by the health care personnel at each location to cause a corresponding one of said personnel location display means to provide an indication to the health care coordinator of the type of health care personnel at each of said location designation means;

coordinator/personnel intercommunications-means extending between said central console and each location; said coordinator personnel intercommunication means having a coordinator communication-interface at said central console and a personnel communication-interface at said locations whereby the coordinator and personnel at a selected location may communicate with one another; and

coordinator/patient intercommunication-means extending between said central console and each patient room, aid coordinator/patient intercommunication-means having a coordinator communication-interface at said central console and a patient communication-interface at each of said patient rooms whereby the hospital health care coordinator at the central console and the patient at the patient room may communicate with one another;

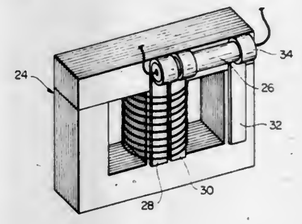
whereby the health care coordinator, in response to a request by a patient through the coordinator/patient intercommunication-means, may determine the location of selected types of health care personnel from said display means, communicate with selected ones of the health care personnel through the coordinator/personnel intercommunicationmeans, and direct the selected health care personnel to the patient room location.

4,237,345

TRANSFORMER WITH INTEGRAL REED CONTACT

Berton E. Dotter Jr., Belmont, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Jan. 15, 1979, Ser. No. 3,280
Int. Cl.³ H01H *51/00;* **H04M** *3/22*
U.S. Cl. 179—16 E **4 Claims**



1. In a telephone system including a transmission line and a transmitter receiver, a circuit for detecting dial pulses comprising a transformer having a plurality of windings and a core on which said windings are mounted and magnetically coupled, means connecting the transmission line to a winding, means connecting the transmitter receiver to a winding, a magnetically operated reed switch, and means for mounting and magnetically coupling said reed switch to said core whereby said reed switch operably responds to said dial pulses, said means for mounting and magnetically coupling said reed switch comprising a plurality of planar strips of magnetic material, said planar strips being adjustably positioned in juxtaposition with said core for variably coupling magnetic flux from said core to said reed switch, each of said strips including a rolled end portion for supportably receiving said reed switch.

4,237,346

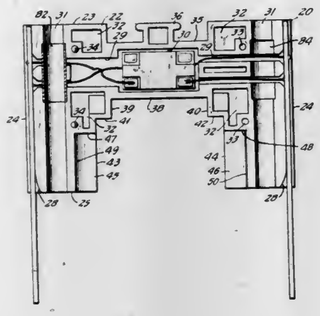
BRIDGE LIFTER MODULE

Paul V. De Luca, and Michael C. Fasano, both of Port Washington, N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,688
Int. Cl.³ H04M *13/00*
U.S. Cl. 179—35 **3 Claims**

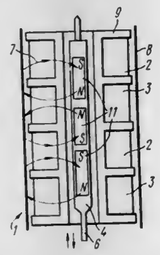
1. A bridge lifter module for use in conjunction with a tele-

phone connector block having a plurality of exposed electrically conductive spring fingers, comprising: a casing element including first and second synthetic resinous generally planar members disposed in abutted relation to define an internal recess therebetween, an encapsulated bridge lifter circuit element secured within said recess and having leads projecting outwardly thereof to a pair of exposed surfaces of said planar



members, a pair of flexible elongated contact members mounted upon said exposed surfaces, each contact member having a pair of oppositely disposed electrically conductive surfaces thereon, each of said conductive surfaces communicating with one of said leads, said contact members extending outwardly of said housing element in a single direction, and having free ends thereon for engagement between said spring fingers of said connector block to be retained thereby.

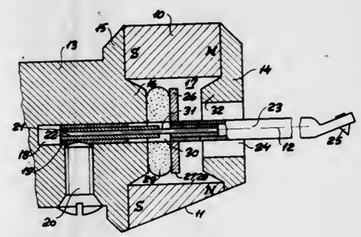
4,237,347
ELECTRODYNAMIC TRANSDUCER WITH LONGITUDINALLY MOVING MAGNET
Valentin M. Burundukov, and Sergei V. Burundukov, both of ulitsa Entuziastov, 14a-14, Chelyabinsk, U.S.S.R.
Filed Mar. 14, 1978, Ser. No. 886,549
Int. Cl.[2] H04R *11/08, 11/04*
U.S. Cl. 179—100.41 M **42 Claims**



1. An electrodynamic transducer converting mechanical oscillations into electric signals and vice versa, comprising:
(a) a coil having n pairs of sections, the members of each pair being wound in opposite directions;
(b) a magnet subdivided into separate parts and being placed into said coil and arranged for movement in a longitudinal direction;
(c) like poles of two adjacent ones of said separate parts of said magnet being arranged facing each other, said like poles being located in one of said members of said pairs of said sections of said coil; and
(d) an actuator mechanically coupled to said magnet.

4,237,348
Patent Not Issued For This Number

4,237,349
COMPACT MOVING-COIL PICKUP OF LOW WEIGHT AND HIGH QUALITY
Bjarne S. Hansen, Fredensborg, and Robert Gudmandsen, Taastrup, both of Denmark, assignors to Ortofon Manufacturing A/S, Valby, Denmark
Filed Dec. 28, 1978, Ser. No. 973,922
Claims priority, application Japan, Dec. 29, 1977, 52-160954
Int. Cl.[3] H04R *9/12*
U.S. Cl. 179—100.41 D **8 Claims**

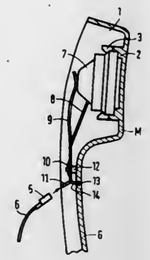


1. A moving-coil pickup comprising a relatively flat armature including at least one winding, a stylus arm to which said armature is fixed, and at least one permanent magnet for producing a magnetic field in which said armature is tiltably mounted, wherein said at least one permanent magnet comprises at least one part of a relatively short tube at least partly enclosing, and being substantially coaxial with, the armature.

4,237,350
TELEPHONE HANDSET
Hugo Ruzic, Leonberg, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 9, 1979, Ser. No. 10,858
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 7804970
Int. Cl.[3] H04M *1/02, 1/03*
U.S. Cl. 179—103 **7 Claims**

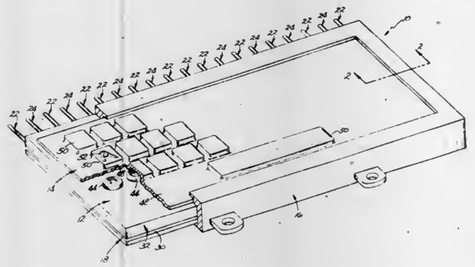
1. A telephone handset with a two-part plastic housing divided in the longitudinal direction, comprising:

lower part means having receptacles for receiving electroacoustic transducers, said receptacles being formed by annular rib means moulded thereto;



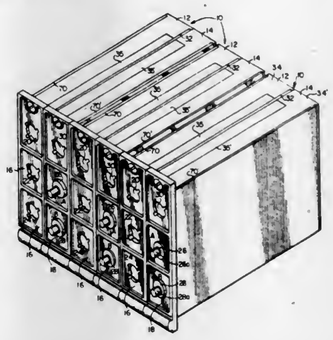
engaging hook means on said annular rib means for gripping said transducers;
peg means moulded to said lower part means; and contact spring means positioned on said peg means.

4,237,351
KEYBOARD APPARATUS
Henry J. Boulanger, Cumberland, R.I., and Richard E. Puccini, Taunton, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 2, 1978, Ser. No. 947,686
Int. Cl.[3] H01H *9/02*
U.S. Cl. 200—5 A **14 Claims**



1. A switch assembly comprising electrically conductive switch members mounted on housing means to permit relative movement of a pair of the members between an open circuit position in which the members of the pair are spaced from each other and a closec circuit position in which the members of the pair are engaged with each other, characterized in that the housing means comprises thin, flexible, electrically insulating sheet material which is of substantially uniform material thickness throughout its extent having substantially flat and relatively flexible web portions of the thin sheet material arranged to interconnect relatively more rigid cupped portions of the thin sheet material and having selected ones of said web and cupped portions of the sheet material engaging the switch members of the pair and cooperating to normally maintain the pair of members between said portions of the sheet material in one of said circuit positions while permitting selective flexing of web portions of the sheet material to cause selective movement of the pair of switch members to the other of said circuit positions.

4,237,352
PATCH MODULE FOR CONNECTING TO OFF-LINE TRANSMISSION LINES OF A SWITCHABLY SELECTED PAIR OF TRANSMISSION LINES
Lewis J. Seiden, Tappan, N.Y., assignor to T-Bar Incorporated, Wilton, Conn.
Filed Apr. 6, 1979, Ser. No. 27,797
Int. Cl.[3] H01R *19/52*
U.S. Cl. 200—51.03 **11 Claims**



1. A patch module permitting selective on-line connection between either alternative first sets of transmission lines and a single second set of transmission lines and providing patch connection into an off-line first set, comprising:
a housing providing a support frame for the module components;
input coupling means into the module housing for each of the three sets of transmission lines;
a set of stationary off-line patch terminals supported by the housing; and
selector switch means selectively connecting one of the alternative first sets of transmission lines on-line to the single second set of transmission lines and the other first set to the off-line patch terminals in one condition and in the alternate switch condition connecting the other first set on-line to the second set of transmission lines and the one to the off-line patch terminals.

4,237,353
TELESCOPIC SPRING OPERABLE AS AN ELECTRIC SWITCH
Andreas U. Nemenz, Rutesheim, Fed. Rep. of Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany
Filed Nov. 24, 1978, Ser. No. 963,277
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 7736254[U]
Int. Cl.[3] H01H *3/12, 35/38;* **F16F** *9/50*
U.S. Cl. 200—52 R **17 Claims**

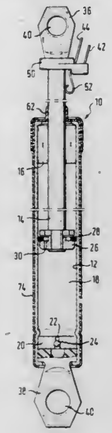
1. A telescopic spring operable as an electric switch comprising;
(a) an outer spring member formed with a cavity therein;
(b) an inner spring member connected to said outer spring member for movement inward and outward of said cavity between two terminal positions,
(1) a first portion of said inner spring member being located in said cavity in said two terminal positions; and
(2) a second portion of said inner spring member projecting outward from said cavity in said two terminal positions,

(3) said second spring member portion having an electrically conductive portion;

(c) fastening means for fastening said outer spring member and said second portion of said inner spring member to respective objects;

(d) yieldably resilient means in said cavity biasing said inner spring member outward of said cavity;

(e) a contact element carried by one of said spring members outside said cavity, said electrically conductive portion of said inner spring member being engaged by said contact



element during one portion of the movement of said inner spring member between terminal positions;

(f) insulating means carried by the other of said spring members outside said cavity for insulating said contact element from said electrically conductive portion during another portion of the movement of said inner spring member between said terminal positions; and

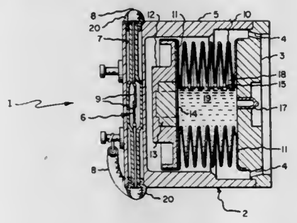
(g) two electrical connectors disposed outside said cavity for connection to electrical leads and conductively connected to said contact element and said electrically conductive portion, respectively.

4,237,354

PRESSURE CHANGE RESPONSIVE DEVICE

John D. Rockenfeller, Grand Island, and Thomas E. Llewellyn, Lockport, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Dec. 21, 1978, Ser. No. 971,861
Int. Cl.³ H01H *35/32*
U.S. Cl. 200—83 C **13 Claims**



1. A pressure responsive apparatus capable of withstanding high pressures relative to the normal pressure range within which said apparatus is operative without experiencing losses in operability, sensitivity or calibration, said apparatus including:

(a) a hermetically sealed container having at least one elastically flexible portion which permits said container to contract and expand in proportion to externally applied pressure within said normal pressure range, correspondingly to define a minimum volume corresponding to the highest pressure in said range and a maximum volume corresponding to the lowest pressure in said range;

(b) a substantially incompressible liquid in the interior of said sealed container, said liquid occupying a volume which is less than said minimum volume whereby to permit said container to be subjected to a test pressure greater than said highest pressure while preventing said container from collapsing beyond the point at which said flexible portion of said container exceeds its elastic limit; and

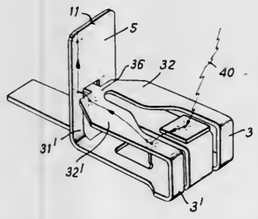
(c) means operatively associated with said container for responding to the expanded/contracted condition of said container within said normal pressure range.

4,237,355

BLOWING ELEMENT

Louis Fechant, Le Vesinet; Jean-Pierre Guery, Poissy, and Gabriel Martin, Houilles, all of France, assignors to La Telemecanique Electrique, Nanterre, France

Filed Jan. 25, 1978, Ser. No. 872,188
Claims priority, application France, Jan. 25, 1977, 77 02009
Int. Cl.² H01H *33/18*
U.S. Cl. 200—147 R **5 Claims**



1. In a blowing element for use with an arc contact assembly having a movable contact, a support in the shape of a 'U' with two parallel arms and a common stem, a fixed contact button disposed on an external free arm thereof in the neighbourhood of said stem, said blowing element having the shape of a 'U' analogous to that of the support to which it is connected electrically and mechanically, said blowing element including two lateral portions surrounding the fixed contact button, these members being disposed in an arc extinction chamber provided with wings, the improvement that a first arm of the blowing element of which a surface is disposed substantially at the level of the plane of the fixed contact without touching the neighbouring arm of the support, has a tongue at its free extremity and a recess surrounding said fixed contact and narrowing up to the region of the tongue, a second arm of the blowing element being coupled electrically and mechanically to that arm of the support not carrying said fixed contact, the blowing element having a third arm, fast to the extremity of the second arm, including an opening and rising perpendicularly to the first and second arms such that its extremity is substantially above the plane of the first arm in order to enter into the arc extinction chamber, of which it constitutes a first wing, and such that said tongue enters into said opening.

4,237,356

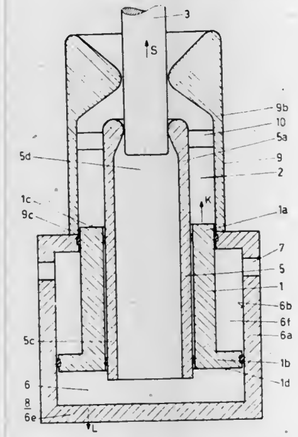
ELECTRICAL COMPRESSION SWITCH WITH CONTACT MOVEMENT ASSISTOR

Klaus Ragaller, Neuenhof, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Apr. 13, 1977, Ser. No. 787,215
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **9 Claims**

1. In an electrical compression switch, the combination

comprising means forming a switch contact chamber containing a pressurized gaseous arc quenching medium and a pair of contacts one of which is a pin contact and the other a tubular nozzle contact for receiving said pin contact, a tubular nozzle member made of insulating material surrounding said pin contact in engagement therewith and also surrounding said tubular nozzle contact in spaced relation to establish a compression chamber therebetween for the arc quenching medium, means forming an expansion chamber for the arc quenching medium within said switch chamber adjacent said tubular nozzle member of insulating material, a tubular differential diameter piston surrounding said tubular nozzle contact, the peripheral surface at the larger diameter end of said tubular piston and having the larger end surface area being slidable in a gas-sealed manner along the wall of said quenching medium expansion chamber and the opposite smaller diameter end of



said tubular piston having the smaller end surface area being slidable with its internal and external surfaces in a gas-sealed manner along the external surface of said tubular nozzle contact and the internal surface of said tubular nozzle member of insulating material respectively, and means for effecting movement of said pin contact and said differential piston considered as one unit relative to said nozzle contact, said tubular nozzle member of insulating material and said quenching medium expansion chamber considered as another unit to effect disengagement of said switch contacts and separation between said pin contact and said tubular nozzle member of insulating material as well as relative movement between said differential piston and said tubular nozzle member of insulating material in such direction as to decrease the volume of said compression chamber for the arc quenching medium and thereby increase the pressure of the quenching medium on the arc drawn between said contacts, and assist in switch contact movement.

4,237,357

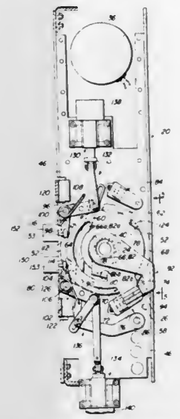
OPERATING MECHANISM FOR A HIGH-VOLTAGE SWITCH

John C. Opfer, Deerfield, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Apr. 4, 1979, Ser. No. 26,867
Int. Cl.³ H01H *3/30*
U.S. Cl. 200—153 SC **8 Claims**

4. An improved switch operator of the type having (a) an output member connectable to the switch, the output member being movable in a first direction to a first position from a second position to operate the switch, and being movable in a second direction to the second position from the first position to operate the switch in an opposite sense; (b) stored energy means for moving the output member in the first and second directions by the discharge thereof, the stored energy means being chargeable, when the output member is held in the second position, for subsequent discharge to move the output member in the first direction and being chargeable, when the output member is held in the first position, for subsequent discharge to move the output member in the second direction; and (c) selectively energizable means for charging the stored energy means; wherein the improvement comprises:

first means responsive to failure of the output member to be held in the first position following its movement in the first direction by the discharge of the stored energy means for energizing the charging means, thereby recharging the



stored energy means to move the output member in the first direction and to maintain the output member in the first position until it is held thereat; and

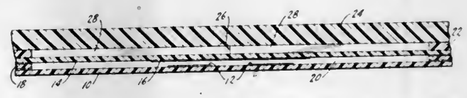
second means responsive to failure of the output member to be held in the second position following its movement in the second direction by the discharge of the stored energy means for energizing the charging means, thereby recharging the stored energy means to move the output member in the second direction and to maintain the output member in the second position until it is held thereat.

4,237,358

ISOLATION MEMBRANE SWITCH

Willis A. Larson, Crystal Lake; Steven D. Vannice, Marengo, and Joseph E. Jesson, Lake Villa, all of Ill., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed May 7, 1979, Ser. No. 36,353
Int. Cl.³ H01H *3/02, 3/12*
U.S. Cl. 200—159 B **5 Claims**



1. In a membrane switch, a substrate, a plurality of first conductors formed on said substrate, a flexible switch membrane, a plurality of second conductors formed on said switch membrane, a spacer positioned between said substrate and switch membrane, openings in said spacer in register with aligned first and second conductors, a pressure reduction membrane overlying and in contact with the exterior of said switch membrane, said pressure reduction membrane being at least partially slit in areas in register with said spacer openings, and an isolation membrane overlying said pressure reduction membrane, the application of pressure to said isolation membrane in areas in alignment with said spacer opening causing said switch membrane to move toward said substrate through a spacer opening to effect contact between aligned first and second conductors.

4,237,359

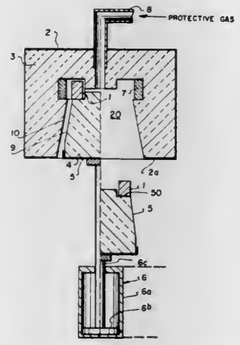
METHOD AND APPARATUS FOR THE ELECTROINDUCTION HEATING OF METAL WORKPIECES

Günther Röth, Remscheid, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Continuation of Ser. No. 701,129, Jun. 30, 1976, abandoned. This application Dec. 23, 1977, Ser. No. 863,702

Int. Cl.³ H05B *6/02, 6/26;* C21D *1/74*

U.S. Cl. 219—10.41 **14 Claims**



1. A method of heating metal workpieces by induction so as to minimize scale formation and decarburization, said method comprising the steps of:

providing relative vertical movement between a workpiece surrounded by air and a heat-resistant hood defining a cavity open at the bottom of the air, said relative vertical movement causing said workpiece to be within the upper part of said cavity and closely surrounded above and on the sides by said hood,

filling substantially all of the remainder of said cavity below said workpiece with non-conductive, solid, heat-resistant material to displace substantially all of the air originally within said hood but leaving an air passage from said upper part of said cavity down through the lowermost part of said cavity to the surrounding air; and

inductively heating said workpiece.

4,237,360

INDUCTION HEAT SEALING

Elmer E. Pohlenz, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 6, 1978, Ser. No. 958,055

Int. Cl.³ H05B *6/10;* B65B *7/28*

U.S. Cl. 219—10.41 **7 Claims**

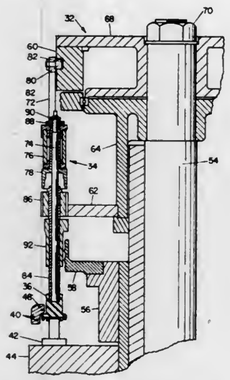
1. A method of induction heat sealing metal closures on containers comprising:

providing unsealed container-closure assemblies each of which includes a container having an open end with an upwardly facing sealing surface therearound and a metal closure member spanning the open end of the container and disposed against the sealing surface and with at least one of said closure member and said sealing surface having a heat seal resin thereon;

feeding the unsealed container-closure assemblies into a sealing machine comprising a rotating turret having a plurality of spindles therein with each spindle having a non-metal rotating head thereon for engaging the closure member on an underlying container supported by a resilient support means and rotating the container-closure assembly about the vertical axis of the container as the assembly is rotated about the axis of the turret, said sealing machine having an induction heating coil disposed at least partway around the turret closely adjacent to the rotating heads to provide a magnetic field in the area of the heads;

engaging the non-metal head against the top of the closure assembly to press the metal closure member against the sealing surface on the container and precisely position the contact area between the closure and the sealing surface of the container as it rotates through the magnetic field;

rotating the container-closure assemblies through the magnetic field to heat the closure member at its contact with



the container sealing surface and heat said resin while minimizing heating of said member beyond such area of contact; and

removing the container-closure assemblies from the magnetic field to cool the heat seal resin and seal each closure member to its container.

4,237,361

BUILDUP WELDING OF INCLINED SURFACES

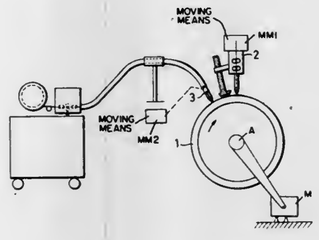
Wolfgang Zwintscher, Soest; Horst Kittel, Hamm-Pelkum, and Hinrich Ruge, Hamm, all of Fed. Rep. of Germany, assignors to August Thyssen Aktiengesellschaft, Duisburg-Hamborn, Fed. Rep. of Germany

Continuation of Ser. No. 679,331, Apr. 22, 1976. This application Mar. 29, 1978, Ser. No. 891,344

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1975, 2519274

Int. Cl.³ B23K *9/04, 9/18*

U.S. Cl. 219—76.1 **5 Claims**



1. For a workpiece having an inclined or vertical region defined by at least one edge, a method of building up the region of the workpiece by deposition on it of weld metal by fusion arc welding comprising: the steps of building up an elongated barrier along the one edge of said region by depositing weld material with a first arc welding device producing an arc of sufficiently low power that the molten weld material can form a barrier on the region without mechanical run-off preventing aids while leaving the end of the region otherwise free of extensions, and then building up a part of the region against said barrier by depositing weld metal with a second welding device having a higher power arc.

4,237,362

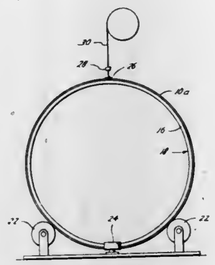
METHOD OF PRODUCING HARDFACED PLATE

Roman F. Arnoldy, Houston, Tex., assignor to Tapco International, Inc., Houston, Tex.

Filed Sep. 28, 1978, Ser. No. 946,677

Int. Cl.³ B23K *9/04*

U.S. Cl. 219—76.14 **13 Claims**



1. A method of producing hardfaced plate comprising,

disposing a sheet-like plate of relatively ductile and weldable material and having a thickness of up to about ½" about a cylindrical supporting surface,

then welding hardfacing material to the plate's surface, the distance between the plate and the cylindrical supporting surface being such that upon the welding of the hardfacing material to the plate surface, the plate is supported by the cylindrical supporting surface in a rigid cylindrical shape thereby avoiding sustantial distortion of the plate during the welding and maintaining stickout at a substantially constant distance, the supporting surface dissipating welding heat effective to prevent the plate from being overheated and excessively melted to dilute the hardfacing material, and

removing the plate from the cylindrical supporting surface after the welding of the hardfacing material to the plate's surface.

4,237,363

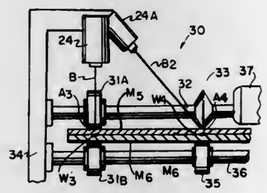
BEAM WELDING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 572,143, Apr. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 523,865, Nov. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 506,887, Sep. 17, 1974, abandoned. This application Feb. 4, 1977, Ser. No. 765,597

Int. Cl.³ B23K *26/08, 15/00*

U.S. Cl. 219—121 LM **4 Claims**



1. A method of welding comprising:

driving first and second members between powered endless surface means into abutment with each other with at least portions of the abutting portions of each member engaged by said endless surface means and wherein portions of the materials of said engaged portions of said first and second members are heat softenable and are of a characteristic such that said heat softenable portions will become welded together when compressed and heated to a weldable condition and are thereafter cooled to a set condition,

generating an intense beam of radiation and directing said radiation beam against a surface of at least one of said members along an axis which intersects the other member near the interface of the abutment of the two members,

transferring heat from said beam to condition abutting portions of the materials of said first and second members in the vicinity of said endless surface means for welding and intermittently operating an auxiliary clamping means to engage and disengage said first and second members so as to intermittently apply compressive force thereto and to cause portions of the materials of the two members to intermingle with each other, and

solidifying the intermingled materials of said first and second members to effect a fusion welding to the two members together in the vicinity where said beam intersects said one member.

3. A method of welding comprising:

driving first and second members between powered endless surface means into abutment with each other with at least portions of the abutting portions of each of said members engaged by said endless surface means and wherein portions of the materials of the engaged portions of said first and second members are heat softenable and are of a characteristic such that said heat softenable portions will intermingle with each other and become welded together when heated to a weldable condition and thereafter cooled to a set condition,

generating an intense beam of radiation and directing said radiation beam against said endless surface means to heat said endless surface means and transfer heat therefrom to said first and second members,

causing portions of the materials of said first and second members engaged between and heated by said endless surface means to become heat softened and to intermingle with each other, and

solidifying the intermingled materials of said first and second members to effect a fusion welding of the two members together in the vicinity of said endless surface means.

4,237,364

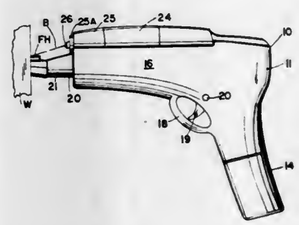
WELDING TOOL AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 825,698, Aug. 18, 1977. This application Sep. 9, 1977, Ser. No. 831,778

Int. Cl.³ B23K *26/02*

U.S. Cl. 219—121 LC **7 Claims**



1. A tool for welding a workpiece in a selected area comprising:

a support defining a housing including a handle portion for holding and directing said housing in a given direction,

welding radiation generating means supported within said housing and operable, when energized, to generate and direct a narrow beam of intense radiation longitudinally through said housing along a fixed path in a given direction,

an opening at one end of said housing through which the radiation beam passes,

first means supported by said housing and extending in said given direction for supporting the end of said housing a predetermined distance from the surface of an article to be welded by said intense radiation beam,

second means at the end of said first means for prepositioning said tool with respect to a workpiece in a manner to indicate and define the location of the surface of said workpiece to be welded which will be intersected by the beam generated by said radiation generating means and passed through said opening,

said first and second means having a common axis which is offset from said opening,

said second means engaging said workpiece to be welded in a conforming manner to align the radiation beam with a preselected area of the workpiece to be welded, and

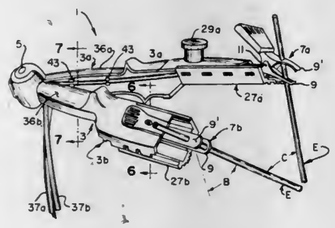
switching means controlling the generation of said radiation beam whereby, when said second means is predeterminately engaged against the surface of a workpiece to be welded, radiation may be controllably generated by said radiation generating means and will intersect a predetermined area of said workpiece.

4,237,365

COMBINATION ARC BRAZING AND WELDING ELECTRODE HOLDER

William S. Lambros, St. Louis, and James I. Metzger, Jr., Manchester, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 6, 1978, Ser. No. 966,787
Int. Cl.³ B23K *9/28;* H05B *7/101*
U.S. Cl. 219—139 **18 Claims**



15. A combination arc brazing and arc welding electrode holder comprising a handle having two parts, each of said handle parts carrying an electrode holding clamp, each of said clamps comprising a pair of hinged jaws pivotally movable toward and away from one another and a spring for resiliently biasing said jaws closed for gripping an electrode, each of said clamps having an electrical lead connected thereto, said leads being carried within the respective handle part on which its clamp is mounted, one of said clamps together with its power lead being removable from their respective handle part for attachment to a workpiece to be welded so as to constitute a grounding lead, and, when installed on its handle part, said one clamp being usable as an electrode holder for holding one of a pair of brazing arc electrodes and for supplying power thereto via its said lead.

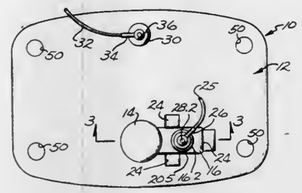
4,237,366

HEATED AUTOMOBILE MIRROR

Peter G. Berg, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 19, 1979, Ser. No. 21,379
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—219 **10 Claims**

1. A defogging mirror unit comprising a thermally conducting heat-distributing plate material formed to provide a recess in part of the plate material to be accessible from one side of the plate material, an electrical resistance heater of a material of positive temperature coefficient of resistivity having one side thereof mounted on said one side of the plate material within the recess in thermally and electrically conducting relation to the plate material, means electrically connected to the opposite side of the resistance heater for connecting the heater in an electrical circuit to energize the heater, a reflecting member having a reflecting surface, and means securing the



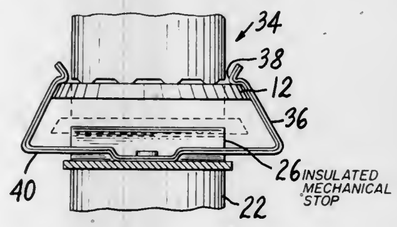
reflecting member in heat transfer relation to said one side of the plate material extending over the recess for enclosing the heater therebetween in heat-transfer relation to the plate material for heating the plate material to distribute heat from the heater to the reflecting member for defogging the reflecting surface thereof.

4,237,367

NO-RELIGHT CIGAR LIGHTER SOCKET

Walter Pecota, Parsippany, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Dec. 6, 1978, Ser. No. 967,058
Int. Cl.³ F23Q *7/24*
U.S. Cl. 219—265 **5 Claims**



1. A no-relight cigar lighter socket comprising:

(a) a socket housing;

(b) an electrically conducting stud secured to and electrically insulated from the socket housing;

(c) a bimetallic clamp means affixed to said stud, said bimetallic clamp means being capable of retaining an electrically-conducting burner cup of a cigar lighter at a first extended position when the same is inserted therein;

(d) an electrically insulated stop member affixed to said electrically-conducting stud for limiting the maximum insertion of said electrically-conducting burner cup of said cigar lighter;

(e) said electrically-insulated stop member limiting the maximum extension of said electrically-conducting burner cup to a second extended position in response to force urging further extension;

(f) said bimetallic clamp means being operative to connect electrical heating power to said electrically-conducting burner cup in said first extended position whereby an electric lighting element in said electrically conducting burner cup is heated;

(g) said bimetallic clamp means being adapted to release said electrically conducting burner cup upon said electrically conducting burner cup attaining a predetermined temperature; and

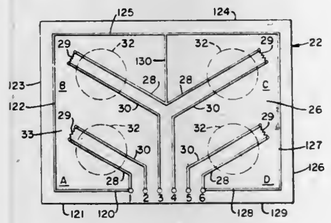
(h) said bimetallic clamp means having means for providing mechanical clearance between said electrically-conducting burner cup and said bimetallic clamp means when said electrically-conducting burner cup is urged from its first extended position toward its second extended position whereby there is electrical contact between said bimetallic clamps and said electrically-conducting burner cup only when said electrically-conducting burner cup is in said first extended position.

4,237,368

TEMPERATURE SENSOR FOR GLASS-CERAMIC COOKTOP

Stanley B. Welch, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 2, 1978, Ser. No. 912,162
Int. Cl.³ H05B *3/00*
U.S. Cl. 219—449 **8 Claims**



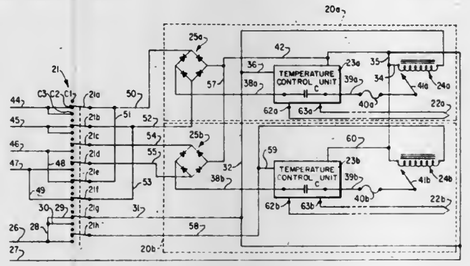
1. A flat surface heating unit comprising a utensil-supporting cover plate of heat conductive material and having a resistance characteristic dependent on the temperature of the plate, a heating element disposed beneath said plate and adapted to be energized for heating said plate, a pair of elongated spaced conductors affixed to the underside of said plate for measuring the change in resistance of a heated region of the plate, means including a resistive element connected across distal ends of said elongated spaced conductors for testing the continuity of said spaced conductors, and means for operably connecting said heating element so as to be controlled in response to the measured change of resistance of said plate, the resistance of the heated region of said plate being measured and the continuity of said conductors being tested at proximal ends of said elongated spaced conductors.

4,237,369

WILD STRESS RELIEF POWER SUPPLY APPARATUS

Robert H. Jones, P.O. Box 1518, Stouffville, Ontario, Canada (L0H 1L0)

Filed Jan. 31, 1979, Ser. No. 8,041
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—503 **6 Claims**



1. Power supply apparatus for selectively energizing first and second electrical resistance heating elements, comprising

power supply transformer means for transforming an electrical supply current;

said power supply transformer means comprising first and second secondary winding means in series with one another for delivering electrical power from said power supply transformer means;

first, second and third conductors for connection to said first and second heating elements;

first and second connecting means for connecting said first and second conductors to respective opposite ends of said secondary winding means;

third connecting means for connecting said third conductor between said first and second secondary winding means;

first and second temperature sensing means for providing first and spaced temperature signals corresponding to the temperatures of zones heated by said first and second heating elements, respectively;

first and second temperature responsive control means for providing power supply control signals in response to said first and second temperature signals, respectively;

first and second control signal responsive means for varying the current flow through said first and second connecting means in response to the power supply control signals;

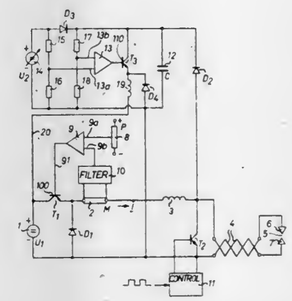
switch means for connecting said first and second temperature responsive control means to said first and second control signal responsive means, respectively, to control the latter independently of one another, in a first switch position and for connecting said first temperature responsive control means to both of said first and second control signal responsive means, to effect common control of the latter, and disconnecting said second temperature responsive control means from said second control signal responsive means in a second switch position; whereby said apparatus can be operated to deliver electrical power in a first operational mode form both of said secondary winding means in a single heating circuit, in a second operational mode from said first and second secondary winding means in two respective heating circuits and in a third operational mode from one of said first and second secondary winding means in a single heating circuit.

4,237,370

PULSE GENERATOR FOR METAL MACHINING BY ELECTRIC DISCHARGES

Werner Ullmann, Muralto-Locarno, Switzerland, assignor to Elmapa N.V., Willemstad, Netherlands Antilles

Filed Jun. 2, 1978, Ser. No. 911,988
Claims priority, application Switzerland, Jun. 3, 1977, 6878/77
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 P **9 Claims**



1. A generator for generating pulses for metal machining by electric discharges across a work gap defined by a pair of electrodes, comprising:

means providing a low-ohm and low-loss primary current circuit for producing and transmitting pulse shapes to the pair of electrodes;

said primary current circuit containing a power source fur-

nishing a voltage having a value which is only that much greater than the operating voltage of a pulse flowing through the work gap as is needed for positively overcoming voltage losses arising at the primary current circuit;

a signal generator connected in circuit with the primary current circuit for producing a signal pulse corresponding to a desired current pulse shape;

said primary current circuit containing switch means for regulating the current flow in the primary current circuit and measuring feeler means;

a comparator for controlling said switch means as a function of the desired pulse shape generated by the signal generator and the value of the current flowing through the primary current circuit and tapped-off by the measuring feeler means;

said primary current circuit further comprising magnetic energy storage means and additional switch means connected parallel to said work gap for producing a voltage whose value is greater than the voltage of the power source;

said primary current circuit being structured such that there is only present stray capacitance; and

means for preventing the presence of too great a voltage; at the energy storage means comprising: a voltage source for providing a reference voltage; a comparator for comparing the reference voltage provided by the voltage source with an actual voltage appearing at the energy storage means; and semi-conductor switch means controlled by said comparator to enable discharge of excessive voltage in the presence of too high a voltage at the energy storage means.

4,237,371

ROTARY MACHINE ELECTRONICS SUPERVISORY AND CONTROL APPARATUS

Maurice LeBouder, Nimes, France, assignor to Fernotex Fernost-Testihandel, Austria

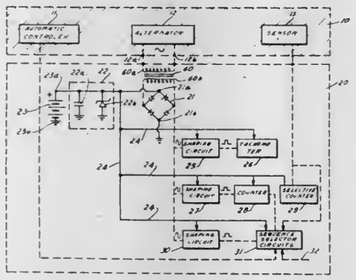
Continuation-in-part of Ser. No. 692,316, Jun. 3, 1976, Pat. No. 4,152,580. This application Apr. 10, 1978, Ser. No. 894,898

Claims priority, application France, Jun. 20, 1975, 75 20181

The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.

Int. Cl.³ G07C *3/04*

U.S. Cl. 235—92 PD **6 Claims**



1. A rotary machine supervisory and/or control apparatus comprising low power alternator means, having an output, and being driven by the rotary machine for supplying alternating current at said output, electronic signal shaping circuit means connected to said alternator means output for converting the waves of the alternating current supplied by the alternator means into rectangular pulses, electronic pulse counter means for counting and recording said pulses during predetermined periods, and rectifier means connected to said alternator means output for supplying a low voltage direct current to all the electronic components of the apparatus.

4,237,372

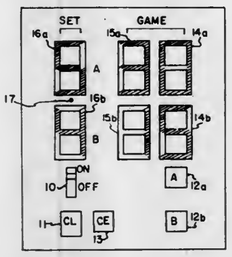
SCOREKEEPING DEVICE FOR TENNIS AND SIMILAR GAMES

Victoria H. Zevgolis, Hopewell, Va., and Harry E. Kitchen, Gaithersburg, Md., assignors to Sportsonic, Inc., Alexandria, Va.

Filed Jun. 14, 1978, Ser. No. 915,463

Int. Cl.³ G08B *23/00*; H03K *21/22*

U.S. Cl. 235—92 GA **10 Claims**



1. A device for calculating, storing and displaying the scores for tennis and similarly-scored games, comprising:

data entry means,

one bidirectional counter for each player for storing score results, wherein said bidirectional counter is responsive to said data entry means and to encoder means, and wherein said bidirectional counter counts in one direction for normal scoring situations, and counts in the opposite direction for special scoring situations and for returning to the immediately prior value of said score results,

encoder means responsive to said bidirectional counter and to said data entry means for providing command data to determine subsequent contents of said bidirectional counter, wherein said encoder means recognizes a condition in which a special scoring mode must be invoked, and

indicator means responsive to said bidirectional counter, for indicating said score results.

4,237,373

MAGNETIC TAPE RUNNING STATE AND TAPE RUN AMOUNT DISPLAY DEVICE

Masanao Okatani; Hiroshi Onishi; Yosbiaki Ishibashi; Reisuke Sato; Hisashi Suganuma; Tomohisa Yokogawa; Yoshiharu Ueki; Haruo Kama; Tadashi Kosuga, and Tadashi Ogawa, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 29, 1978, Ser. No. 937,899

Claims priority, application Japan, Aug. 30, 1977, 52/103985; Aug. 30, 1977, 52/103987

Int. Cl.³ G06M *3/06*

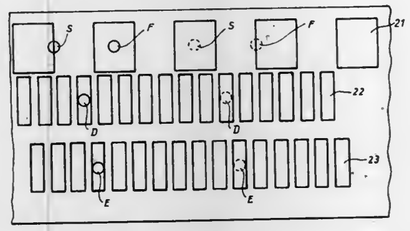
U.S. Cl. 235—92 EV **12 Claims**

1. A tape running state and tape run amount display device comprising:

(a) up-down counter means responsive to a clock input signal having a pulse generated in correspondence with the run of said tape and responsive to a count control signal having an UP signal generated when said tape is being transported in a forward direction mode and having a DOWN signal generated when said tape is being transported in a reverse direction mode, said up-down counter means providing an output count signal in correspondence with said clock input signal and said count control signal; and

(b) display circuit means responsive to said output count signal for selectively lighting a plurality of light means in correspondence to said output count signal; said output count signal from said up-down counter means is provided in binary output bit format on a plurality of lines; and

wherein said display circuit means includes a first decoder means and a second decoder means, said first decoder means is responsive to a first preselected group of said plurality of lines having the lower significant binary output bits for binary-to-decimal converting said output bits and for providing corresponding decimal signals on a first plurality of output lines, and said second decoder means is responsive to a second preselected group of said plurality of lines having the higher significant binary output bits for binary-to-decimal converting said output bits and for providing corresponding decimal signals on a second plurality of output lines.



4,237,374

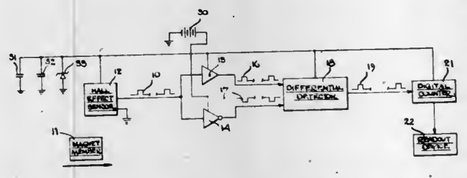
COUNTING SYSTEM FOR COUNTING NEWSPAPERS OR THE LIKE

Douglas J. Malone, 1917 Pullman La., Redondo Beach, Calif. 90278

Filed Apr. 16, 1979, Ser. No. 30,296

Int. Cl.³ H03K *21/06*; G06M *3/12*

U.S. Cl. 235—92 SB **5 Claims**



1. A system for providing a count of the number of paper units passing through a moving member of a printing press or the like comprising

a magnet member mounted on said moving member

sensor means fixedly mounted adjacent to said moving member such that said magnet member passes by said sensor in close proximity thereto with the movement of said member, said sensor generating an output pulse each time said magnet member passes by said sensor,

an inverting amplifier,

a non-inverting amplifier,

the pulse output of said sensor being simultaneously fed to said inverting and non-inverting amplifiers, said amplifiers thereby having pulse outputs in phase opposition with each other,

a differential detector having a pair of inputs,

the output of said inverting amplifier being fed to one of said differential detector inputs and the output of said non-inverting amplifier being fed to the other of said differential detector inputs, the output of said differential detector being a pulse signal which is in accordance with the difference between the inputs fed thereto,

digital counter means for counting the pulse output of said differential detector and providing an output signal in accordance with such pulse count, and

readout means responsive to the pulse count output of said digital counter means for providing a readout indicating the number of pulses counter by said counter means.

4,237,375

OPTO-ELECTRONIC APPARATUS FOR READING INFORMATION CONTAINED IN AN INFORMATION CARRIER

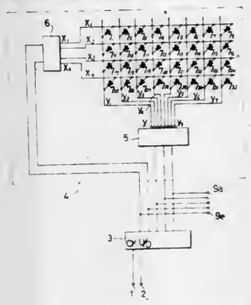
Carl Granholm, Hastings on Hudson, N.Y., assignor to Firma Interlock Sicherheitssysteme GmbH, Stuttgart and Firma Interflex Datensysteme GmbH & Co. K.G., Weigheim, both of, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,516

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1977, 2747076

Int. Cl.³ G06K *19/00, 5/00, 7/10*

U.S. Cl. 235—487 **28 Claims**



1. In an opto-electronic apparatus for reading coded data from a data carrier that may be moved with respect to said apparatus for presentation thereto of the data which is represented by patterns of areas, each area being either transparent (bright) or opaque (dark) to the passage of radiation, and said apparatus including at least one reading assembly consisting of a source of radiation and an associated receiver of radiation and further including means for guiding said data carrier along a predetermined longitudinal path relative to said at least one reading assembly so that radiation from said source may pass through the transparent ones of said pattern areas to be received by said at least one radiation receiver and said apparatus still further including electronic data processing means for evaluating the data on said data carrier, the improvement wherein:

said data carrier is provided with a plurality of longitudinally extending tracks of pattern areas, each of said tracks having associated with it at least one reading assembly, said plurality of tracks including at least one data track containing stored data bits and at least one clock track containing a plurality of adjacent alternately arranged transparent and opaque pattern areas, each pattern area of said at least one clock track constituting a clock bit, each clock bit having the same longitudinal dimension as every other clock bit, said at least one clock track having associated therewith at least two longitudinally spaced clock reading assemblies, each generating a clock bit signal corresponding to an adjacent one of said clock bits, said clock bit signals together constituting a clock sequence of different clock bit patterns, the longitudinal distance between adjacent clock track reading assemblies exceeding said clock bit longitudinal dimension and being preselected so that, as said data carrier is moved along said predetermined longitudinal path with respect to said apparatus for a distance equal to at least twice said clock bit longitudinal dimension, said clock track reading assemblies generate a clock sequence having at least four different clock bit patterns corresponding to equal portions of the distance said data carrier is moved relative to said apparatus, each data bit of each data track being associ-

ated with a particular clock bit pattern of said clock sequence; and

said data processing means includes a memory holding a first predetermined clock sequence program corresponding to a first clock sequence generated by said clock track reading assemblies as said data carrier is moved along said predetermined longitudinal path with respect to said apparatus in a first direction; and

said data processing means further includes data track evaluating means and comparison means for comparing the clock sequence generated by said clock track reading assemblies with said first predetermined clock sequence program, said comparison means delivering a disabling signal to said data track evaluating means whenever the clock sequence generated by said clock track reading assemblies differs from said first predetermined clock sequence.

4,237,376

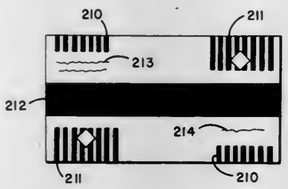
EVENT MONITOR FOR COURT GAMES

Richard A. Giacomotti; Sally A. Giacomotti, both of 542 Calle Mastil, Santa Barbara, Calif. 93111; Julian L. Petrini; Madeline A. Petrini, both of 3748 Meru La., Santa Barbara, Calif. 93105, and Ted L. Slater, 1822 Bath St., Santa Barbara, Calif. 93101

Continuation-in-part of Ser. No. 779,610, Mar. 21, 1977, Pat. No. 4,139,764. This application Feb. 12, 1979, Ser. No. 11,526

Int. Cl.[3] G06K *19/06, 19/08*

U.S. Cl. 235—487 **10 Claims**





1. A reusable, programmable card for use in actuating a control system having means for reading multiple tracks of data along the card, the card including:

a first data track having data readable in a first manner and providing, when read by the control system, a first data input for the control system; and

a second data track having data readable in a second manner substantially different than said first manner and providing, when read by the control system, a second data input for the control system, at least one of the data tracks being reprogrammable without substantial alteration of the visual appearance of the card, the second data track being parallel to the first data track and oriented on the card such that the data on the card can be read in at least two different orientations of the card and used to actuate the control system when read in either orientation.

4,237,377

PHOTOELECTRIC LAMP CONTROL WITH SUN-SYNCHRONIZED TIMER

Victor H. Sansum, 2518 Webster St., Palo Alto, Calif. 94301

Filed May 23, 1979, Ser. No. 41,792

Int. Cl.[3] H01V *40/14*

U.S. Cl. 250—214 R **8 Claims**

1. A light-responsive control circuit comprising

a light-responsive switch which distinguishes daytime from nighttime by representing the light intensity of the daytime sky and the relatively low light intensity of the nighttime sky as binary voltage levels,

a pulse-generating circuit whose output is a train of pulses having a first fixed frequency when said light-responsive switch signals the occurrence of daytime and whose output is a train of pulses having a second fixed frequency, said second fixed frequency being twice the frequency of said first fixed frequency, when said light-responsive switch signals the occurrence of nighttime,

a turn-off time controlling means which is settable by a user to a solar time of night, at which turn-off time every night a load is to be disconnected from an electrical power source, whose output is an electrical representation of said turn-off time,

an encoder which has an input the output of said turn-off time controlling means and produces an output, the turn-off time setting, which is a set of electrical states presenting the settings of said turn-off time controlling means as a digital number,

a counter that counts the number of pulses emanating from said pulse-generating circuit between the time said light-responsive switch signals the occurrence of dawn and said turn-off time set on said turn-off time controlling means, such that, when said turn-off time set on said turn-off time controlling means occurs, the states of the latter stages of said counter, said latter stages constituting the outputs of said counter, constitute a digital number equal to said turn-off time setting,

a counter reset means which enables said counter to count from zero beginning when said light-responsive switch signals the arrival of dawn,

a comparator which signals the occurrence of said turn-off time when said outputs of said counter become equal to said turn-off time setting,

a latch for controlling said counter by allowing counting by said counter between the occurrence of a dawn signal from said light-responsive switch and the occurrence of a signal from said digital comparator indicating the occurrence of said turn-off time, and for maintaining said counter in a reset state between the occurrence of said turn-off time signalled by said digital comparator and the occurrence of a dawn signal from said light-responsive switch,

a first gate circuit which monitors the state of said latch and the state of said light-responsive switch, so that, when said light-responsive switch indicates the occurrence of darkness, and at the same time said latch indicates the counter is counting, then the output of said first gate circuit constitutes a signal commanding that said load be connected to said electrical power source, and

a power switching means which, in response to said signal from said first gate circuit, connects said electrical power source to said load.

4,237,378

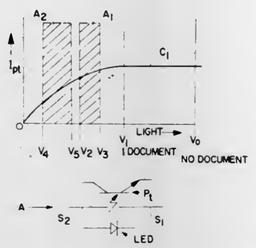
PHOTOELECTRIC APPARATUS FOR DOCUMENT COUNTING AND OVERLAP DETECTION

Alan P. Jones, Levittown, Pa., assignor to Brandt-Pra, Inc., Cornwells Heights, Pa.

Filed Dec. 28, 1977, Ser. No. 865,316

Int. Cl.[3] G01V *9/04*

U.S. Cl. 250—223R **8 Claims**



1. Sensing means for distinguishing between single and double fed documents moving along a feed path at spaced intervals so that the trailing edge of each document is normally spaced from the leading edge of the next succeeding document, said means comprising:

sensing means including a light sensing element positioned to one side of said path;

a light source positioned on the opposite side of said path and aligned so that its light rays are directed toward said light sensing element;

comparator means for comparing the output of said light sensing means, which varies as a function of the light transmission characteristic of the passing documents, against a predetermined threshold for generating a constant level output when the level of the sensing means output reaches the threshold valve;

means coupled to the output of said comparator means for averaging the signal at said comparator means output; and

means for generating a doubles sense signal when the level of the averaged signal reaches a predetermined threshold.

4,237,379

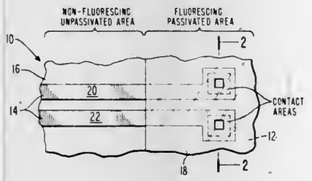
METHOD FOR INSPECTING ELECTRICAL DEVICES

Cheryl A. Deckert, Lawrenceville; Robert B. Comizzoli, Belle Mead, both of N.J., and George L. Schnable, Lansdale, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,168

Int. Cl.[3] G09K *3/00*

U.S. Cl. 250—302 **10 Claims**



1. A method for inspecting an electrical device, which has conductors covered by a protective layer of passivating material, to determine the quality of said protective layer comprising the steps of

coating said device with fluorescent dye,

applying electrical energy to two conductors of said device, and

exposing said fluorescent dye to actinic radiation.

4,237,380

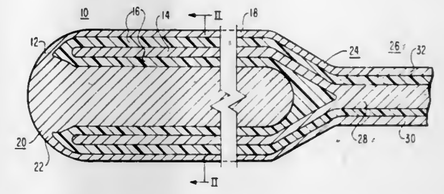
SELF-POWERED RADIATION DETECTOR WITH INSULATED INNER AND OUTER COLLECTOR ELECTRODES

Kerwin C. Playfoot, Horseheads, N.Y., and Norman P. Goldstein, Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 27, 1978, Ser. No. 919,573

Int. Cl.[2] G01T *1/24, 3/00*

U.S. Cl. 250—370 **4 Claims**



1. A self-powered radiation detector of a small overall diameter adapted for in-core radiation monitoring in which a radiation flux indicative electrical signal is developed between a spaced apart first emitter electrode and second collector electrode as a result of the differing radiation interactions of the incident radiation flux upon the first emitter electrode and second collector electrode, the first emitter electrode being formed of tubular conductive material, and the second collector electrode consisting of a supporting solid center conductor portion coaxially disposed within the tubular first emitter electrode with insulating means therebetween, and an outer tubular portion disposed coaxially about the tubular first emitter electrode with insulating means therebetween, and wherein the center conductor portion and the outer tubular portion are electrically connected as the second collector electrode.

4,237,381

MULTILAYERED ELECTROLUMINESCENT LIGHT ASSEMBLY ADAPTABLE FOR READING AND WRITING IN THE DARK

Becky J. Schroeder, 2317 Valleybrook Dr., Toledo, Ohio 43615

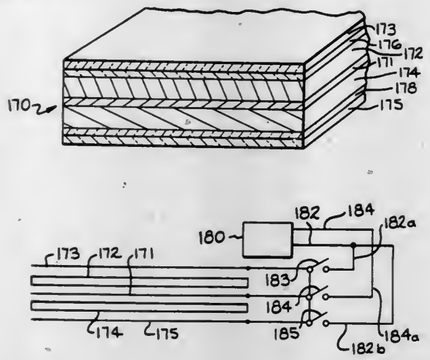
Continuation-in-part of Ser. No. 796,694, May 13, 1977, Pat. No. 4,103,171, which is a continuation-in-part of Ser. No. 639,200, Dec. 9, 1975, Pat. No. 4,024,404, which is a continuation-in-part of Ser. No. 567,397, Apr. 11, 1975, Pat. No. 3,978,340, which is a continuation-in-part of Ser. No. 498,705, Aug. 19, 1974, Pat. No. 3,879,611, which is a continuation-in-part of Ser. No. 428,339, Dec. 23, 1973, Pat. No. 3,832,556, which is a continuation of Ser. No. 288,148, Sep. 11, 1972, abandoned. This application Jul. 24, 1978, Ser. No. 927,400

Int. Cl.[2] F21K *2/00;* **H05B** *33/00, 37/00*

U.S. Cl. 250—462 **12 Claims**

1. An electroluminescent panel assembly having oppositely facing electroluminescent light emitting surfaces comprising a laminar assembly including a pair of light passing electrodes, an intermediate electrode layer of conductive material and a pair of layers containing electroluminescent light emitting matter each interposed between one of said light passing elec-

trodes and said intermediate layer of conductive material permitting selective energization of either or both of said light



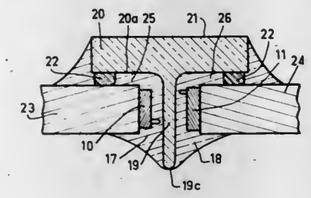
emitting layers and corresponding modification of the light output from said opposite surfaces.

4,237,382

PHOTOCOUPLER DEVICE

Jacques C. Thillays, Herouville-St-Clair, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,497
Claims priority, application France, Apr. 18, 1977, 77 11606
Int. Cl.³ H01J *39/12*
U.S. Cl. 250—551 **11 Claims**



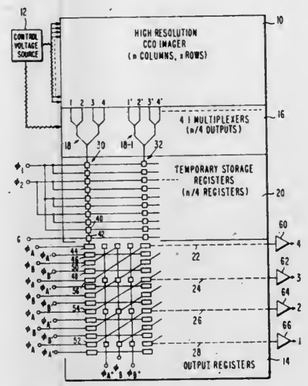
1. A photocoupler device comprising:
a light emitter having electrical connections;
a photosensitive receiver having electrical connections and being situated opposite the light emitter, said emitter and said receiver being coupled optically along an optical axis;
an insulating clement comprising a substantially planar shield, said shield providing electrical insulation between the light emitter and the photosensitive receiver, and a base, said base being situated in a plane substantially perpendicular to said shield, said base having two faces with said shield being situated on one face, and said base having two branches which are substantially symmetrical with respect to the shield, a profile of the insulating element having substantially the form of a "T", wherein said insulating element comprises an amorphous transparent thermoplastic polyamide;
a layer of a dielectric transparent material adhering to and situated between the emitter and the shield;
a layer of a dielectric transparent material adhering to and situated between the receiver and shield, the index of refraction and the coefficient of expansion of each of the dielectric materials being near those of the polyamide; and
wherein the emitter and the receiver are mounted on separate supports and the base bears on said supports.

4,237,383

HIGH SPEED LOADING OF OUTPUT REGISTER OF CCD ARRAY SYSTEM

Walter F. Kosonocky, Skillman, and Rodney L. Angle, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,013
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—578 **4 Claims**



1. A method for transferring charges from a charge-coupled device (CCD) array comprising a semiconductor substrate, n columns of channels in the substrate, each channel comprising a substrate region defined by potential barriers in the substrate at the channel edges, and electrodes over the channels responsive to applied voltages for the storage of rows of charges in the channels and the propagation of said rows of charges along the channels, in the column direction, comprising the steps of:
translating the n charges in a row of the array, into n/m groups of m serial charges, where each group of m serial charges originates in m adjacent columns, and where m and n are integers and m is greater than 1 and is much smaller than n;
providing m CCD output registers each with n/m stages; and
concurrently serially shifting the n/m groups of serial charges into the respective n/m stages of the output registers, the corresponding charges in the respective groups being shifted in parallel into the output register into which they are stored, each charge in each group of serial charges being concurrently shifted into the same stage of a different output register, whereby upon the completion of the serial shifting, each output register stores 1/m'th of a row of charges from each m'th column of the array.

4,237,384

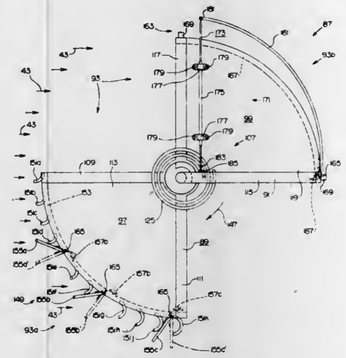
WIND TURBINE MEANS

Woodrow A. Kennon, Rte. 1, Dyersburg, Tenn. 38024

Continuation-in-part of Ser. No. 825,435, Aug. 17, 1977, abandoned. This application Jun. 27, 1979, Ser. No. 52,690
Int. Cl.³ F03D *7/00*
U.S. Cl. 290—55 **20 Claims**

1. In wind turbine means intended to be powered by the wind and being of the type having a wind rotatable turbine wheel with the periphery thereof being defined by numerous vanes, the improvement which comprises shroud means disposed in proximity with selectable ones of the vanes for varying the effectiveness of the wind as it is acting upon said turbine wheel with the effectiveness being in infinite variable stages commensurate with the changing velocity of the wind, said turbine wheel and said shroud means being free to rotate 360° independently about their coextending vertical axes, said shroud means including deflector means for advantageously

directing moving air selectively to effectively increase and decrease the speed of rotation of said turbine wheel commensurate with changing velocities of the wind, means responsive to the changing direction of the wind for properly orienting said shroud means about its vertical axis, and control means for controlling said deflector means with respect to the wind condition at said turbine means; said deflector means including at least a primary quadrant member, and the numerous vanes individually having concave and convex surfaces and being disposed in a uniform array to rotatably drive the turbine wheel in a forward direction as the wind impinges the concave



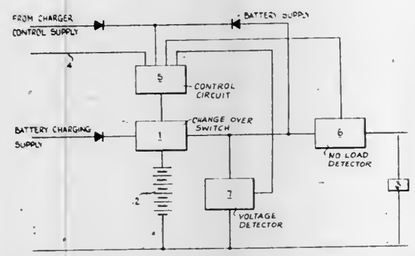
surfaces and to tend to drive the turbine wheel in a reverse direction as the wind impinges the convex surfaces; said deflector means having a normal position which corresponds to minimal wind velocity conditions, a retard position which corresponds to strong wind velocity conditions, and infinite variable positions therebetween; said primary quadrant member includes primary baffler means for precluding direct impingement of the wind with the convex surfaces of those individual vanes which occupy the forward facing semi-circle of the turbine wheel when said deflector means is in said normal position; said control means being adapted to cause said deflector means to move toward the retard position thereof.

4,237,385

CONTROL OF POWER SUPPLY

Gunter R. Jurgens, Collaroy Beach, and Mohammed A. Helal, Harbord, both of Australia, assignors to Minitronics Pty, Ltd., Australia

Filed Nov. 3, 1978, Ser. No. 957,065
Claims priority, application Australia, Nov. 4, 1977, PD2307
Int. Cl.³ H02J *7/00, 9/00*
U.S. Cl. 307—66 **4 Claims**



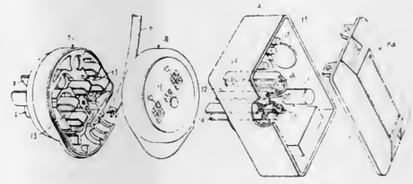
1. A control system for a power supply comprising a controlled battery change over switch, a battery connected to said controlled battery change over switch which connects said battery to battery charging means, when a mains supply is operative in association with said change over switch, or to a load to be supplied with battery power when said mains supply fails after having been operatively connected, and wherein when the battery voltage, during discharge through the load, has fallen to a predetermined value, a battery voltage detector generates a signal operative to effect switching of said change over switch to disconnect said battery from said load and connect said battery to the charging means.

4,237,386

PLUG-IN MODULE FOR TOUCH CONTROL SWITCHING

Michael M. Instance, Peakhurst, Australia, assignor to E-Comm Australia Pty. Ltd., New South Wales, Australia

Continuation-in-part of Ser. No. 806,355, Jun. 14, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 10,622
Claims priority, application Australia, Jun. 29, 1976, 6456/76
Int. Cl.³ H01H *35/00;* **H01R** *33/30*
U.S. Cl. 307—116 **5 Claims**



1. An operator-touch switch assembly for power applied to electrical apparatus, such as an electrical lamp, appliance, and machinery, which apparatus includes a connection for power to said apparatus and a series connected power socket in said connection having a plurality of make-before-break jacks each comprising a pair of normally closed electrical contacts so that the power connection to said apparatus is uninterrupted when the socket is vacant; said switch assembly comprising a housing module; switching electronic circuitry of solid-state components disposed within said housing module; terminal means on said housing module having a first section comprising a pair of spaced pins for plugging-in to a first one of said jacks to engage respective ones of said contacts of said first jack to force them open while maintaining electrical connection therewith and being connected internally of said module across a switching element of said electronic circuitry, and having a second section comprising an electrical conductor for plugging-in to a second one of said jacks to bridge and maintain electrical connection between the normally closed contacts of said second jack; control means for said switching element; and a touch-sensor terminal to which said control means responds; whereby when said module is plugged into said socket said electronic circuitry controls the connection of power to said apparatus.

4,237,387

HIGH SPEED LATCHING COMPARATOR

Don C. Devendorf, and Eugene Baskevitch, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 755,377, Dec. 29, 1976, abandoned, which is a division of Ser. No. 650,820, Jan. 20, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 880,817
Int. Cl.² H03K *19/00, 19/20, 3/286, 5/20*
U.S. Cl. 307—203 **10 Claims**
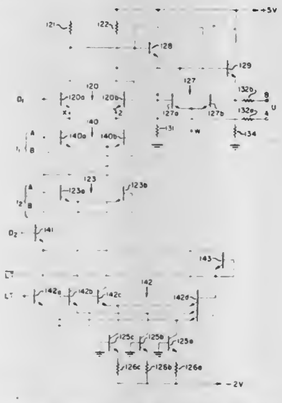
1. A latch network comprising:
input means for providing input signals;
first differential current switch means coupled to said input means for providing differential signals in response to said input signals;
differential regenerative current switch means coupled to said first differential current switch means for providing

preselected logic output states in response to said differential signals;

cascode switch means coupled between said first differential current switch means and said differential regenerative current switch means for providing isolation between said input means and said differential regenerative current switch means;

logic input means for providing logic input control states;

second differential current switch means coupled to said logic input means, to said first differential current switch means and to said differential regenerative current switch means for selectively controlling current flow in said first differential current switch means and said differential



regenerative current switch means in response to said logic input control states, a first logic input control state causing current flow in said first differential current switch means, a second logic input control state causing current flow in said differential regenerative current switch means thereby providing latched logic output states in response to predetermined differentiai signals from said first differential current switch means; and

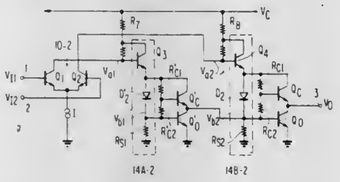
current source means coupled to said second differential current switch means for selectively providing current to said first differential current switch means and said differential regenerative current switch means as controlled by said second differential current switch means.

4,237,388

INVERTER CIRCUIT

Jyoji Nokubo, and Hiroshi Mayumi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,686
Claims priority, application Japan, Jun. 14, 1977, 52-69493
Int. Cl.[3] H03K *19/013, 19/20*
U.S. Cl. 307—214 **2 Claims**



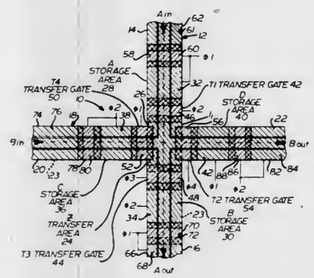
1. An inverter circuit comprising an output terminal, a first bipolar transistor having a collector coupled to said output terminal, a second bipolar transistor having a collector coupled to the base of said first transistor, a current mode logic circuit including third and fourth bipolar transistors having emitters jointly connected to a common junction point and a power supply, first means for controlling said first transistor, said first means including a fifth bipolar transistor having a base coupled to the collector of said third transistor and an emitter coupled to the base of said first transistor, a second means for controlling said second transistor, said second means including a sixth bipolar transistor having a base coupled to the collector of said fourth transistor and an emitter coupled to the base of said second transistor, first clamp means including a seventh bipolar transistor having a collector coupled to the emitter of said fifth transistor and an emitter coupled to the collector of said first transistor, a first resistor coupled between the collector and the base of said seventh transistor and a second resistor coupled between the base of said seventh transistor and the base of said first transistor, and second clamp means including an eighth bipolar transistor having a collector coupled to the emitter of said sixth transistor and an emitter coupled to the collector of said second transistor, a third resistor coupled between the collector and the base of said eighth transistor and a fourth resistor coupled between the base of said eighth transistor and the base of said second transistor.

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CHARGE COUPLED DEVICE CHANNEL CROSSOVER CIRCUIT

Reginald A. Allen, Topanga, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 1, 1978, Ser. No. 938,911
Int. Cl.[3] G11C *19/28;* **H01L** *29/78*
U.S. Cl. 307—221 D **2 Claims**



1. A channel crossover circuit comprising:

a semiconductor element,

a common transfer electrode disposed over the element and forming a common transfer area, therein

first and second storage electrodes disposed over the element on opposite sides of and spaced apart from the common transfer electrode and forming first and second storage areas in the element,

third and fourth storage electrodes disposed over the element on opposite sides of and spaced apart from the common transfer electrode and from the first and second storage electrodes respectively and forming third and fourth storage areas in the element,

a first transfer electrode disposed over the element between the first storage electrode and the common transfer electrode, the first transfer electrode overlapping the common transfer electrode and the first storage electrode and forming a first transfer area with the element adjacent to the first storage area,

a second transfer electrode disposed over the element between the second storage electrode and the common transfer electrode, the second transfer electrode overlapping the common transfer electrode and the second storage electrode and forming a second transfer area with the element adjacent to the second storage area,

a third transfer electrode disposed over the element between the third storage electrode and the common transfer electrode, the third transfer electrode overlapping the common transfer electrode and the third storage electrode, and forming a third transfer area with the element adjacent to the third storage area,

a fourth transfer electrode disposed over the element between the fourth storage electrode and the common transfer electrode, the fourth transfer electrode overlapping the common transfer electrode and the fourth storage electrode, and forming a fourth transfer area with the element adjacent to the fourth storage area,

a fifth transfer electrode disposed over the element on a side of the first storage electrode away from the first transfer electrode, the fifth electrode overlapping the first storage electrode, and forming a fifth transfer area in the element adjacent to the first storage area,

a sixth transfer electrode disposed over the element on a side of the second storage electrode away from the second transfer electrode, the sixth transfer electrode overlapping the second storage electrode, and forming a sixth transfer area in the element adjacent to the second storage area,

a seventh transfer electrode disposed over the element on a side of the third storage electrode away from the third transfer electrode, the seventh transfer electrode overlapping the third storage electrode, and forming a seventh transfer area in the element adjacent to the third storage area,

an eighth transfer electrode disposed over the element on a side of the fourth storage electrode away from the fourth transfer electrode, the eighth transfer electrode overlapping the fourth storage electrode, and forming an eighth transfer area in the element adjacent to the fourth storage area,

a first channel including the first and second storage areas, the first, second, fifth and sixth transfer areas and the common transfer area,

a second channel including the third and fourth storage areas, the third fourth, seventh and eighth transfer areas and the common transfer area, and,

means for providing a first time-varying phased signal repetitiously alternating between opposite levels,

means for applying the first signal to the first and fourth storage electrodes and the third, fifth and sixth transfer electrodes,

means for providing a second time-varying signal of opposite phase from the first signal,

means for applying the second signal to the second and third storage electrodes and to the first, seventh, and eighth transfer electrodes,

means for providing a third signal consisting of a pulse of predetermined duration coinciding with alternate ones of the changes in level of the first and second signals,

means for applying the third signal to the second transfer electrode,

means for providing a fourth signal consisting of a pulse of selected duration coinciding with alternate ones of the changes in level of the first and second signals which are in between the alternate ones of the changes in level of the first and second signals with which the pulses of the third signal coincide, and

means for applying the fourth signal to the fourth transfer electrode,

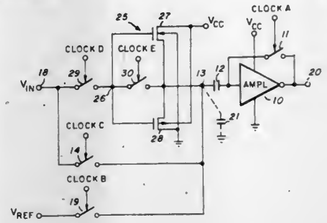
whereby, the time-varying signals applied to the electrodes during each of a succession of transfer intervals transfers charge packets applied to the first and second channels along the first and second channels during the transfer interval.

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SWITCHING COMPARATOR

Gerald B. Buurma, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 28, 1978, Ser. No. 946,477
Int. Cl.[3] H03K *5/24, 17/296*
U.S. Cl. 307—362 **8 Claims**



1. A switching comparator circuit having first and second inputs and an output responsive to the difference in input potentials, said circuit comprising:

amplifier means having an output terminal constituting said comparator output, an input terminal, and a trip point;

means for periodically forcing said amplifier means to said trip point;

capacitor means coupled between said amplifier means input terminal and a circuit node, said circuit node having appreciable stray capacitance;

means for alternately coupling said circuit node to said first and second inputs in synchronism with said means for periodically forcing said amplifier to said trip point whereby said output is a function of the difference in potential between said first and second inputs; and

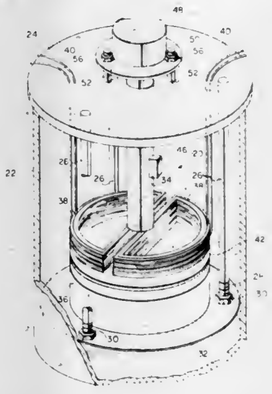
means for isolating said node from one of said first and second inputs whereby the loading produced by said stray capacitance is reduced.

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APPARATUS FOR PRODUCING ELECTRICAL ENERGY

Paul E. Schur, 74 Vaneck Dr., New Rochelle, N.Y. 10801, and Andrew I. Abolafia, Forest Hills, N.Y., assignors to Paul E. Schur, New Rochelle, N.Y.

Continuation of Ser. No. 566,090, Apr. 8, 1975, abandoned. This application Sep. 2, 1976, Ser. No. 719,978
Int. Cl.[3] H02K *11/00*
U.S. Cl. 310—10 **16 Claims**



1. An apparatus for producing electrical energy, comprising:

support means;

a permanent magnet supported by a first portion of said support means and establishing a magnetic field;

sensing means supported by a second portion of said support

means and mounted within and responsive to the magnetic field established by said permanent magnet and operable to produce electrical energy in response to changes in the magnetic field, said sensing means comprising a coil located within said magnetic field; and

blocking means supported by a third portion of said support means between said permanent magnet and said sensing means and operable to periodically interrupt the magnetic field between said permanent magnet and said sensing means to thereby produce electrical energy in said sensing means, said blocking means comprising a rotatable blocking element of superconductive material rendered impermeable to the magnetic field at temperatures near absolute zero and adapted to alternately block and pass the magnetic field from said magnetic establishing means upon rotation of said blocking element to produce electrical energy in said coil.

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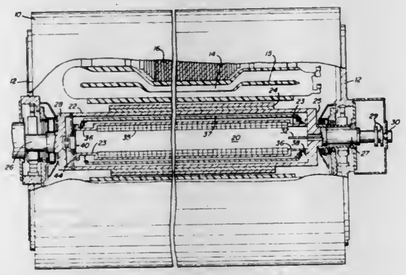
ROTOR MEMBER FOR A SUPERCONDUCTING GENERATOR

Sui-chun Ying, Monroeville, Pa.; Joseph L. Smith, Jr., Concord, Mass., and Kai J. Baumann, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 24, 1978, Ser. No. 936,421

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **6 Claims**



1. A rotor structure for a dynamoelectric machine comprising: a hollow cylindrical outer rotor member; shaft portions at opposite ends of said rotor member, one of said shaft portions being a drive shaft; a cylindrical inner rotor member disposed coaxially within the outer rotor member, said rotor member carrying a winding of superconducting material and including means for maintaining the winding at superconducting temperatures; means for rigidly attaching the inner rotor member to the outer rotor member at the end opposite said drive shaft; and connecting means for connecting the inner rotor member to the outer rotor member at the drive end, said connecting means comprising a radially-extending flexure member secured to the outer member and engaging the inner rotor member with a drive connection, said flexure member being a laminated circular structure having its outer periphery secured to the outer rotor member and having a central opening for receiving a portion of the inner rotor member, said connecting means being flexible in the axial direction to permit relative axial movement between the inner and outer rotor members and being torsionally stiff to transmit torque.

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DRIVE MOTOR FOR A DENTAL HANDPIECE

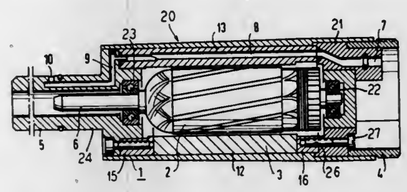
Hermann Landgraf, Heppenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 779,100, Mar. 18, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 962,717

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2613061

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—59 **10 Claims**



1. In a drive section for a dental handpiece having a housing with means for connection to a supply hose and means for connection to a grip section of a dental handpiece, said housing receiving a drive motor having a stator surrounding a rotor and at least one coolant line extending through the drive section in a direction parallel to the axis of the drive section, the improvements comprising said stator consisting of a hard metallic material with at least one stator section of a soft metallic material, each stator section comprising a portion of the circumference of the stator and extending the length thereof, and at least one stator section having means for receiving a portion of a coolant line, said means for receiving being a passageway extending through the one stator section for the entire length thereof.

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FREQUENCY GENERATOR AND MINIATURE MOTOR PROVIDED WITH THE SAME

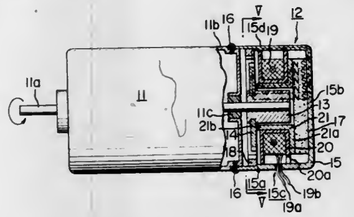
Kanemasa Aoki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,609

Claims priority, application Japan, May 23, 1977, 52-66219[U]; Mar. 8, 1978, 53-26186

Int. Cl.³ H02K *47/04*

U.S. Cl. 310—113 **39 Claims**



1. A frequency generator comprising:

(a) a magnetically conductive casing in a shape of cup having a cylinder part and a bottom part;

(b) a permanent magnet having a first flat surface and a second flat surface magnetized in such manner that the first magnetic pole of the permanent magnet is at the side of the first flat surface and the second magnetic pole is at the side of the second flat surface and disposed within the inner space of said casing with its first flat surface being connected with the bottom part of said casing;

(c) a magnetically conductive frame having a flange part and a cylinder part with its flange part being connected with the second flat surface of said permanent magnet;

(d) a power generation coil disposed in the space existing between the cylinder part of said casing and the cylinder part of said frame;

(e) a magnetically conductive rotor at least a portion of which is received rotatably within the cylinder part of said frame;

(f) a first group of magnetically conductive projections supported on a portion of said rotor outside of the cylinder part of said frame so as to be rotatable with said rotor; and

(g) a second group of magnetically conductive projections supported on a portion of the cylinder part of said casing so as to face the rotation path of said first group of projections.

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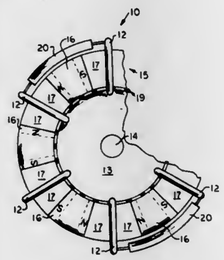
ELECTRIC DYNAMOTOR

Billy E. Loudermilk, 310 Madison Ave., P.O. Box 1168, Cape Canaveral, Fla. 32920

Filed Oct. 30, 1978, Ser. No. 956,063

Int. Cl.³ H02K *47/04*

U.S. Cl. 310—113 **12 Claims**



1. An electric dynamotor machine comprising in combination:

a motive hub having an axial shaft of rotation attached thereto;

a plurality of annular motive coils each defining a void therein, with each of said coils coupled in sequential registration about the circumference of said motive hub;

a ring-shaped rotor encircling said hub and communicating through said voids within each of said motive coils, said rotor including a plurality of permanent magnets arranged sequentially about the circumference of said rotor with like poles adjacent each other;

counter-rotation means operatively coupled between the plurality of said motive coils and said rotor for rendering said rotor movable only in a direction opposite to the rotation of said motive coils and said hub;

commutator means operatively coupled between a source of electrical energy and said motive coils for periodically energizing selected ones of said motive coils in proper polarity; and

a plurality of generator coils operatively juxtaposed with the circumference of said rotor for cutting the magnetic lines of flux emanating from said permanent magnets therein so as to generate an induced voltage at an output thereof responsive to the relative motion between said generator coils and said permanent magnets.

4,237,396

ELECTROMAGNETIC MACHINES WITH PERMANENT MAGNET EXCITATION

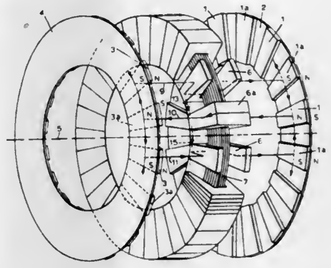
Philip T. Blenkinsop, Melbourn; Graham W. McLean, Lyme, and David Turner, Haslingfield, all of England, assignors to P A Management Consultants Limited, London, England

Filed Sep. 29, 1978, Ser. No. 947,046

Claims priority, application United Kingdom, Oct. 6, 1977, 41539/77; Oct. 6, 1977, 41541/77; Oct. 6, 1977, 41542/77

Int. Cl.³ H02K *21/26, 1/22*

U.S. Cl. 310—154 **5 Claims**



1. An electromagnetic machine having a first array of magnets, a magnetic path between pairs of magnets in the first array, a second array of permanent magnets arranged parallel to the first array, a magnetic path between pairs of the magnets in the second array, an array of pole pieces arranged between the first and second arrays of permanent magnets, the first and second arrays of magnets and the array of pole pieces being movable relative to one another and coil means arranged to magnetise the pole pieces, the arrangement being such that a magnetic path can be provided between a pair of magnets in the first array and a pair of magnets in the second array via a pair of the pole pieces in which the magnetic path between magnets in each of the said first and second arrays of magnets comprises a backing member of magnetisable material which is laminated at least in the direction of the magnetic path between the pairs of the magnets in the said arrays and in which adjoining pole pieces are radially inwardly and outwardly relatively displaced.

4,237,397

ELECTRIC MACHINE, ESPECIALLY SMALL MOTOR

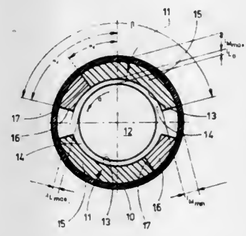
Adolf Mohr, Bühlertal, and Rainer Corbach, Olfen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,513

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845264

Int. Cl.³ H02K *21/26*

U.S. Cl. 310—154 **2 Claims**



1. An improved electric machine, of the type comprising an armature,

a permanent-magnet field magnet system including at least

two diametrically located permanent-magnet segments each of generally arcuate configuration,

each permanent-magnet segment having two ends and a middle located midway between the two ends and having a radial thickness which decreases proceeding from the middle towards each of the two ends,

each permanent-magnet segment defining together with the armature a radial air gap whose radial length increases proceeding from the middle of the respective segment towards each of the two ends in correspondence to the radial-thickness decrease in the segment,

the improvement wherein:

each permanent-magnet segment comprises a first and a second subsegment respectively made of first and second magnetic materials, the first magnetic material having a higher remanence than the second magnetic material, the second magnetic material having a higher coercive force than the first magnetic material, the second subsegment being located more downstream than the first subsegment as considered in the direction of relative rotation of the armature and permanent-magnet segments,

the sum of the radial length l_L of the air gap and the radial thickness l_M of each permanent-magnet segment being constant,

the radial thickness l_{Mmin} of each permanent-magnet segment at each of the two ends thereof being

$$l_{Mmin} = \frac{w \cdot I_e}{H_{G2}} \cdot \frac{\beta/2}{90} + l_{Lmax}\left(\frac{B_{r2}}{\mu_o \cdot H_{G2}} - 1\right)$$

the two subsegments of each permanent-magnet segment adjoining each other at a junction location which is spaced from the middle of the respective permanent-magnet segment by an angular distance α_1 such that

$$\alpha_1 = \frac{(l_L + l_M)\left(H_{G1} - \frac{B_{r1}}{\mu_o} l_{Lo}\right)}{\frac{w \cdot I_e}{90} + \frac{B_{r1}}{\mu_o} \cdot \frac{\Delta l_L}{\beta/2}}$$

wherein:

$w \cdot I_e$ = the armature quadrature mmf of the motor,

H_{G2} = the field intensity up to which the second magnetic material can be demagnetized without undergoing irreversible demagnetization,

B_{r2} = the remanent induction of the second magnetic material,

β = the angular span of each permanent-magnet segment,

μ_o = the magnetic permeability of free space,

l_{Lmax} = the radial thickness of the air gap measured at an end of a permanent-magnet segment,

l_{Lo} = the radial thickness of the air gap measured at the middle of a permanent-magnet segment,

Δl_L = the amount by which the radial thickness of the air gap measured at a segment end exceeds that measured at the middle of a segment,

H_{G1} = the field intensity up to which the first magnetic material can be demagnetized without undergoing irreversible demagnetization, and

B_{r1} = the remanent induction of the second magnetic material.

4,237,398

STATOR CONSTRUCTION

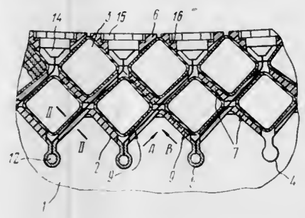
Alexandr A. Chigirinsky, ulitsa Kuibysheva, 11, kv. 8; Vladimir G. Danko, bulvar Ivana Karkacha, 2, kv. 89; Nikolai G. Grinchenko, ulitsa Vatutina, 16/25; Ivan Y. Cheremisov, bulvar Ivana Karkacha, 2, kv. 81; Roman I. Tretevich, prospekt Kosiora, 126, kv. 61, and Galina V. Penkina, prospekt Kosiora, 107, kv. 10, all of Kharkov, U.S.S.R.

Filed Nov. 16, 1978, Ser. No. 961,393

Claims priority, application U.S.S.R., Dec. 22, 1977, 2558752

Int. Cl.³ H02K *3/48*

U.S. Cl. 310—214 **7 Claims**



1. A stator of an electrical machine, separated by an air gap from a rotor, comprising:

a core of said stator having slots of a triangular cross-section and half-closed axial slots;

a multilayer bar winding, bars of adjacent layers being staggered and adjoining one another on two sides, bars of a first layer being partially received in said slots of said stator and partially received in said air gap, and bars of remaining layers being accomodated in said air gap;

insulating wedge members having holes and being accomodated in slots of bars of a last layer of said multilayer bar winding to hold all of said layers in place;

spacers having slots interposed between said bars of said multilayer bar winding;

first rollers accomodated in respective half-closed slots of said stator;

second rollers accomodated in said holes of respective insulating wedge members; and

brace members accomodated in said slots of respective spacers and enveloping respective bars of said multilayer bar winding, a first end of each brace member enveloping a respective first roller, and a second end of each brace member enveloping a respective second roller.

4,237,399

DRIVING CIRCUIT FOR PIEZO-ELECTRIC MULTIMORPH TRANSDUCER

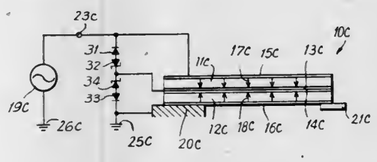
Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,447

Claims priority, application Japan, Dec. 29, 1977, 52/158187

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—317 **13 Claims**



1. An apparatus for reproducing information signals recorded in a track on a magnetic tape having said track extending obliquely thereon and being preceded and followed by similar tracks which are parallel thereto and also have information signals recorded therein; comprising a grounded guide drum, said tape extending helically about at least a portion of the periphery of said guide drum and being adapted to be longitudinally advanced, at least a portion of said guide drum being rotatable; transducer means movable along said track for reproducing the information signals recorded therein; transducer mounting means including a bi-morph leaf which is cantilevered at one end and carries said transducer means at the other end which is free to deflect in the direction transverse to the length of said track, said bi-morph leaf having a pair of electrically poled piezo-electric elements interposed between inner and outer electrodes with each of said elements being bonded to the other at the respective inner electrode, and with said elements being oppositely poled, said bi-morph leaf being mounted at said outer electrode of one of said piezo-electric elements on said rotatable portion of the guide drum so as to rotate with the latter and thereby scan along the one of the tracks positioned in proximity thereto by advancement of the tape; and a drive circuit for said bi-morph leaf including a source of AC drive voltage connected across said outer electrodes of said piezo-electric elements, respectively, for deflecting said transducer means in said transverse direction, said outer electrode of said one piezo-electric element being connected to ground and said source of the drive voltage being connected between the outer electrode of the other of said piezo-electric elements and said ground, first means for clamping, at a predetermined maximum value, the voltage at the bonded together inner electrodes at least in response to a polarity of said drive voltage opposed to the direction in which one of said piezo-electric elements is poled, and second means for clamping, at said relatively small maximum value, the voltage at said bonded together inner electrodes in response to the polarity of said drive voltage opposed to the direction in which the other of said piezo-electric elements is poled, in which each said first and second means for clamping the voltage includes unidirectional means connected across the respective piezo-electric element and permitting current flow in a direction opposed to the direction in which said respective element is poled, and voltage limiting means in series with said unidirectional means.

4,237,400

LOW-PRESSURE DISCHARGE LAMP WITH TORTUOUS DISCHARGE PATH

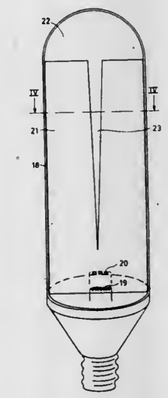
Gustaaf A. Wesselink; Hendrik Roelofs, and Cornelis H. M. Van Bommel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,587

Claims priority, application Netherlands, Mar. 8, 1978, 7802511

Int. Cl.³ H01J *61/10, 61/30*

U.S. Cl. 313—204 **4 Claims**



1. A low-pressure discharge lamp having a discharge space limited by an elongate lamp vessel, first and second electrodes disposed at one end of said vessel, an ionizable medium in said vessel, means for directing a discharge between said first and second electrodes and repetitively between the ends of said vessel, said means for directing including said lamp vessel having at least one partition therein which divides the discharge space into chambers each extending substantially the length of the lamp vessel, said chambers communicating with one another through an opening at least partly formed in each of the partitions, each successive opening between two chambers being disposed at a different end, at least one opening being located at the end of the vessel remote from the electrodes and has a wedge-shaped portion extending towards the electrodes with the point of minimum thickness of the wedge located near an electrode as a result of which the discharge path extends itself after ignition of the lamp.

4,237,401

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Winston D. Couwenberg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,368

Claims priority, application Netherlands, Nov. 2, 1977, 7712058

Int. Cl.³ H01J *61/20*

U.S. Cl. 313—225 **1 Claim**



1. A low-pressure mercury vapor discharge lamp which comprises:

a discharge vessel;

at least two thermally emitting electrodes, mercury, at least one rare gas, and between 0.005 and 0.05 mg/cm³ of mercury iodide being disposed in said discharge vessel; and

said discharge vessel having a glass wall which is permeable to ultra-violet radiation generated in the mercury discharge.

4,237,402

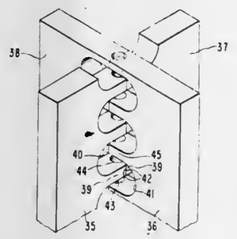
SLOW-WAVE CIRCUIT FOR TRAVELING-WAVE TUBES

Arthur Karp, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 26, 1979, Ser. No. 23,923

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **13 Claims**



1. A slow-wave circuit for a traveling-wave tube comprising:

a linear passageway extending in the direction of wave propagation;

a number of integral metallic comb-shaped conducting elements with similar pitches arranged in two sets;

means for supporting said combs such that in each set the longitudinal axis of each comb extends in said direction, the teeth of each comb project toward said passageway, and tips of said teeth adjacent said passageway are registered along said direction;

the teeth of one of said sets extending in directions at substantial angles to the teeth in the other of said sets and being spaced along said passageway to align with the spaces between teeth of said other set.

4,237,403

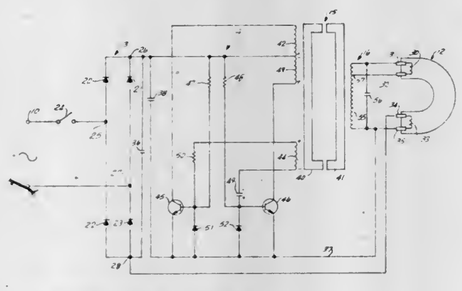
POWER SUPPLY FOR FLUORESCENT LAMP

Forrest W. Davis, San Luis Obispo, Calif., assignor to Berkleonics, Inc., San Luis Obispo, Calif.

Continuation-in-part of Ser. No. 860,597, Dec. 14, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,322

Int. Cl.³ H05B *41/30, 41/392*

U.S. Cl. 315—98 **31 Claims**



1. A lighting system comprising:

a source of electrical power;

means for converting the electrical power from the source into rectangular waves;

a parallel tank circuit resonant near the fundamental or a harmonic of the frequency of the rectangular waves;

a fluorescent lamp having first and second electrodes, the lamp having high impedance while starting and low impedance after starting;

means for connecting the tank circuit between the first and second electrodes of the lamp; and

means for magnetically coupling the converting means to the tank circuit to apply the electrical power across the first and second electrodes of the lamp, the coupling means having sufficiently loose coupling to prevent the low impedance of the lamp after starting from loading the converting means.

4,237,404

SPARK GAP CONTROL

Rudolf Limpaecher, Topsfield, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

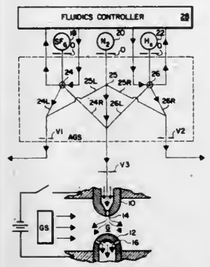
Filed May 18, 1979, Ser. No. 40,197

Int. Cl.³ H01J *7/24;* **H05B** *31/26*

U.S. Cl. 315—111 **9 Claims**

1. In a high frequency, cyclic (over 1000 Hz) arc/recovery spark gap process, the improvement comprising:

injecting multiple control gases of different compositions into the spark gap region under fluidic switching control at different times during the arc/recovery cycles, a first one of said control gases being selected to elevate spark gap breakdown voltage to enhance recovery and a second



one of said gases being selected to depress spark gap breakdown voltage and enhance triggering.

4,237,405

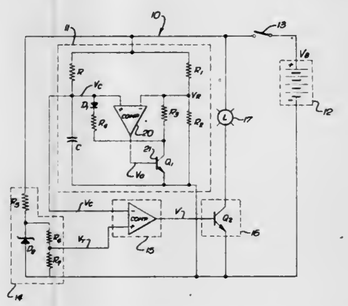
METHOD AND APPARATUS FOR CONSERVING ENERGY

James T. Kellis, Tustin, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Mar. 10, 1978, Ser. No. 885,392

Int. Cl.³ G05F *1/00;* **H05B** *37/02, 39/04, 41/36*

U.S. Cl. 315—307 **11 Claims**



1. Apparatus for regulating the light output of an electrical lamp comprising

a power source having a nominal output voltage V_B exhibiting a decreasing output voltage with time,

a lamp adapted to be coupled to the source to be energized and de-energized therefrom, the lamp having a voltage rating substantially equivalent to a preselected voltage level lower than said V_B voltage level,

a source of reference potential adapted to be coupled to the power source for providing a first reference potential V_T of substantially constant amplitude when energized therefrom,

means for generating an oscillating signal having a preselected wave shape and a fixed frequency, said means comprising voltage storage means coupled in parallel circuit relationship with said power source to be charged from said source and second reference voltage means coupled in parallel circuit relationship with said source for providing a pair of reference voltage signals βV_B and αV_B wherein α and β are fixed percentages of the power source output voltages and V_B is representative of the power source output voltages and β is a value a preselected amount higher than α, said oscillating signal generating means comprising

first means for sensing the relative amplitudes of the voltage stored on said voltage storage means and said reference voltages βV_B and αV_B for switching the second reference voltage means to said αV_B potential when the voltage storage means exceeds the amplitude of said βV_B reference potential and for discharging the voltage stored in said voltage storage means and for sensing when the amplitude of the voltage stored in said voltage storage means has discharged to a value that is lower than said αV_B reference potential for switching the reference voltage means to said βV_B reference potential and for charging the voltage storage means to thereby sequentially charge and discharge the voltage storage means between βV_B and αV_B in a fixed time interval, regardless of the actual value of V_B to thereby obtain an oscillating signal of a fixed frequency, and

second means for sensing the relative amplitudes of said first reference potential V_T and said oscillating signal for providing pulses having pulse widths that vary in an inverse square relationship with the source voltages V_B, and switching means coupled between the lamp and the power source and coupled to responsive to the output pulses from said second means for switching the power source to the lamp on and off at a preselected rate, the pulses having heights varying with the output voltages from said source.

4,237,406

EQUIPMENT FOR USE IN MEASURING THE DISTANCE BETWEEN DIFFERENT POINTS DISPLAYED ON A FLUORESCENT SCREEN

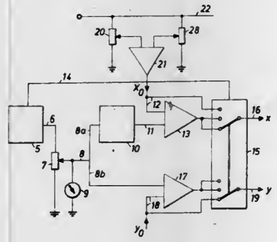
Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Jul. 16, 1979, Ser. No. 57,678

Claims priority, application Austria, Oct. 6, 1978, 7195/78

Int. Cl.³ G01R *13/30*

U.S. Cl. 315—377 **27 Claims**



1. Equipment for controlling the tracing of a center mark and of an arc of a circle centered on said mark on a fluorescent screen, comprising

a control knob,

a first controller adapted to deliver a first deflecting voltage, which determines the x coordinate of said mark, and operable by said knob to effect coarse and fine adjustments of said first deflecting voltage,

a second controller adapted to deliver a second deflecting voltage, which determines the y coordinate of said mark, and operable by said knob to effect coarse and fine adjustments of said second deflecting voltage,

change-over means for conditioning said first and second controllers for said coarse and fine adjustments, and

a third controller controlling the radius of said circle.

4,237,407

VERTICAL DEFLECTION CIRCUIT FOR A CAMERA TUBE IN A TELEVISION CAMERA

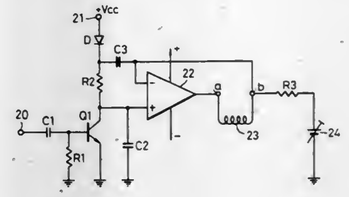
Sumio Yokokawa, Yokohama, and Yasuaki Watanabe, Kasukabe, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jan. 18, 1979, Ser. No. 4,599

Claims priority, application Japan, Jan. 20, 1978, 53-4849

Int. Cl.³ H01J *29/70, 29/72*

U.S. Cl. 315—389 **2 Claims**



1. A vertical deflection circuit of a camera tube in a color television camera in which said camera tube is provided with an optical filter having an optically black part extending in parallel with a beam scanning direction of the camera tube, said vertical deflection circuit comprising: a circuit for generating a saw-tooth voltage for vertical deflection; a vertical deflection coil for said camera tube; a circuit for supplying said saw-tooth voltage thus generated to one end of said vertical deflection coil in DC coupling; a reference voltage source for applying a reference voltage to the other end of said vertical deflection coil

so that one end of a vertical deflection width corresponds to the black part of said optical filter; and a bootstrap circuit adapted to improve linearity of the waveform of said saw-tooth voltage.

4,237,408

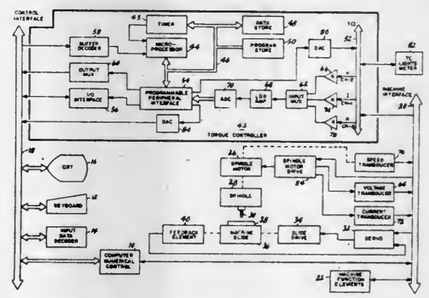
METHOD AND APPARATUS FOR MODIFYING THE OPERATION OF A MACHINE TOOL AS A FUNCTION OF TORQUE

Thomas R. Frecka, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 10, 1979, Ser. No. 65,583

Int. Cl.³ G05B *19/24*

U.S. Cl. 318—571 **12 Claims**



1. An apparatus for modifying the operation of a machine tool as a function of the torque load on a rotating cutting tool caused by the cutting tool being in contact with a workpiece, the said machine tool having a spindle motor for rotating the cutting tool and a feed motor for providing relative motion between the tool and the workpiece in response to command signals from a numerical control, the apparatus comprising:

(a) means responsive to the spindle motor for producing a

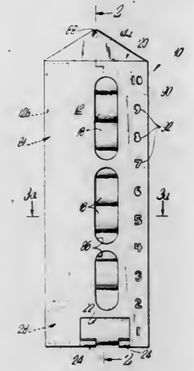
voltage signal representing a spindle motor voltage magnitude occurring within a range of two decades;
(b) means responsive to the spindle motor for producing a current signal representing a spindle current magnitude occurring within a range of four decades;
(c) means responsive to the spindle motor for producing a speed signal representing a spindle motor velocity occurring within a range of three decades;
(d) means responsive to the voltage, current and velocity signals for generating corresponding log voltage, log current and log speed signals representing logarithmic values of the voltage, current and speed signals respectively:
(e) data storage means for storing the log voltage, log current and log speed signals; and
(f) computer means including a processor, program store and interface means for
(1) controlling the detection, conversion and storage of the signals representing the voltage, current and speed of the spindle motor, and
(2) determining a torque signal in response to the stored log voltage, log current and log speed signals, said torque signal representing a spindle motor torque being generated within a range of five decades, and
(3) providing a control signal to the numerical control in response to the torque signal exceeding a predetermined reference torque signal.

4,237,409

MULTIPLE-BATTERY BATTERY CHARGER

Raymond K. Sugalski, Gainsville, Fla., assignor to General Electric Company, Gainsville, Fla.

Filed May 4, 1978, Ser. No. 902,671
Int. Cl.³ H01M *10/46*
U.S. Cl. 320—2 **14 Claims**



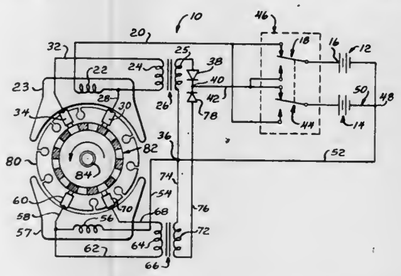
1. A battery charger for simultaneously charging a plurality of cells, comprising:
a charger housing having a generally elongate chamber adapted to contain a plurality of battery cells in generally side-by-side abutting relation, said housing having an essentially completely open inlet end for introducing battery cells into said chamber and an outlet end for removing battery cells from said chamber;
at least one resiliently deflectable support finger at said outlet end for holding all said battery cells in said chamber, yet permitting removal of one battery cell adjacent said outlet end when desired by resiliently yielding when said one battery cell is pulled from said outlet end; and
electrically conductive means in said housing for connection to a source of charging current, said conductive means including portions that are positioned along opposite sides of said chamber to supply current, in parallel, to battery cells in said housing, such that any desired number of battery cells may be charged by insertion into said housing through said inlet end and charged when said conductive means are connected to a power source, and, charged cells may be removed from said housing through said outlet.

4,237,410

REGENERATIVE ELECTRIC MOTOR

Alfred C. Erickson, 329 Black Oak Dr., Michigan City, Ind. 46363, and Clyde W. Erickson, Box 184, Sperry, Iowa 52650

Filed Oct. 23, 1978, Ser. No. 953,795
Int. Cl.³ H02P *7/06*; H02J *7/00*
U.S. Cl. 320—14 **15 Claims**



1. An electric motor for converting electrical energy from a primary energy source into mechanical energy while simultaneously utilizing counter-electromotive force developed during motor operation to provide a secondary source of energy, said electric motor comprising:
(a) a stator structure including a stator field generating means for receiving current from the primary energy source and for generating a first electromagnetic field in response to the flow of current so received;
(b) a brush means connected to said stator field generating means for receiving current therefrom;
(c) an armature structure mounted for rotation relative to said stator structure, said armature structure including an armature field generating means energizible by a current flow to generate a second electromagnetic field which interacts with said first electromagnetic field to create a torque for rotating said armature structure relative to said stator structure, said armature structure further including a commutator means connected to said armature field generating means for electrically contacting said brush means to conduct a flow of current periodically from the primary energy source through said stator field generating means and said brush means to said armature field generating means such that said first and second electromagnetic fields are respectively generated by said stator field generating means and said armature field generating means to create said torque for rotating said armature structure relative to said stator structure, and;
(d) transformer means connected to said brush means for generating a counter-electromotive force in response to the periodic flow of current through said brush means and for converting the counter-electromotive force so generated to an output voltage.

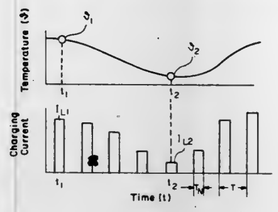
4,237,411

CHARGE MAINTENANCE AND CONTINUOUS CHARGING FOR STORAGE BATTERIES

Hans K. Köthe, Kelkheim, and Günter Strasen, Neu-Isenburg, both of Fed. Rep. of Germany, assignors to Varta Batterie, A.G., Hanover, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,231
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748644
Int. Cl.³ H02J *7/04*
U.S. Cl. 320—21 **7 Claims**

1. A method of charge maintenance and continuous charging of storage batteries, and particularly of nickel cadmium batteries with sinter plates, through periodic supplying of charge quantities with predetermined programmed relationships, the method comprising
supplying to the storage battery at predetermined substantially uniform intervals T a current I_L lasting for an also predetermined substantially uniform after-charge period T_N, the intensity of said current being determined by the prevailing storage battery temperature ν so as to increase with increasing temperature and decrease with decreasing temperature.



4,237,412

VOLTAGE REGULATOR FOR A GENERATOR

Lars N. Rundlöf, Västra Frölunda, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Mar. 2, 1978, Ser. No. 882,897
Claims priority, application Sweden, Mar. 9, 1977, 7702656
Int. Cl.³ H02J *7/14*
U.S. Cl. 322—28 **4 Claims**



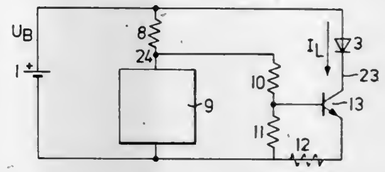
1. A voltage regulator for a generator of the type used in motor vehicles, the regulator being adapted to set, in use, the generator at a charging voltage when charging a storage battery, the regulator comprising a voltage divider (R_4, R_5) having a pair of branches for sensing the voltage of a generator (G) and comparing such voltage with a reference voltage (Z); switch means (T_1); an additional voltage divider element (R_1) connected in one branch (R_5) of the first-mentioned voltage divider (R_4, R_5) through said switch means (T_1) and only when said switch means (T_1) is rendered operative; terminal means (T) for connecting a regulator element (R_7) in the other branch (R_4) of said first-mentioned voltage divider (R_4, R_5); and means (R_2, R_3) for rendering operative said switch means (T_1) to connect said additional voltage divider element (R_1) in said one branch (R_5) of the voltage divider, only when a said regulator element (R_7) is connected to said terminal means (T).

4,237,413

CIRCUIT ARRANGEMENT FOR STABILIZING A DIRECT CURRENT

Bernhard Rall, Ulm, and Dietrich Höppner, Wippingen, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 20, 1977, Ser. No. 834,865
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1976, 2642512
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—4 **14 Claims**



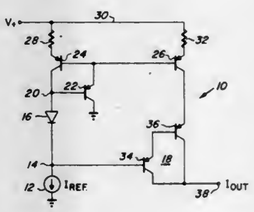
1. A direct current stabilization circuit for maintaining the current through a load constant with varations in a D.C. supply voltage source, comprising
a first transistor having its emitter-collector electrodes connected in series with said load, said first transistor and said load being coupled across said voltage source,
current control means comprising first and second series-connected resistors and a second transistor having base, emitter and collector electrodes, said second transistor having its base electrode connected to the junction of said first and second resistors and its other electrodes coupled to the other ends of said first and second resistors,
a third resistor having one end coupled to the other end of said first resistor and the other end thereof to one terminal of said voltage source, and,
non-rectifying resistive means coupling the other end of said first resistor to the base electrode of said first transistor, the other end of said second resistor being coupled to the other terminal of said voltage source.

4,237,414

HIGH IMPEDANCE OUTPUT CURRENT SOURCE

Marc T. Stein, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1978, Ser. No. 967,823
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—4 **2 Claims**



1. A current source for supplying current at a high impedance output to a load, comprising:
a current turn around circuit including first and second transistors each having an emitter, collector and base electrode, each of said emitter electrodes being coupled to a terminal at which is supplied a first potential level, said base electrodes being interconnected to each other;
a diode having an anode and cathode, said anode being coupled to said collector electrode of said first transistor;
means for supplying a reference current, said reference current means having an electrode connected to said cathode of said diode;

output means including first and second PNP transistors connected in a Darlington amplifier configuration with the base electrode of said first PNP transistor being connected to said cathode of said diode, the emitter of said second PNP transistor being connected to said collector electrode of said second transistor of said current turn around circuit, and the collectors of said first and second PNP transistors being interconnected with the output of the current source; and

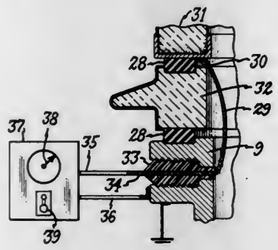
a third transistor having base, emitter and collector electrodes, said emitter electrode being connected to said base electrodes of said first and second transistors of said current turn around circuit, said collector electrode being connected to a terminal at which is supplied a second potential, and said base electrode being conected to said anode of said diode.

4,237,415

METHOD AND APPARATUS FOR MEASURING CONDUCTIVITY IN ELECTRICAL FEEDTHROUGH

John K. Easley, Pittsfield, Mass., assignor to General Electric Company, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,687
Int. Cl.³ G01R *31/12*
U.S. Cl. 324—54 **2 Claims**



1. A method for measuring the current through a conductive coating on a porcelain bushing jacket comprising the steps of:

providing an insulated electrical feedthrough intermediate the ends of the jacket and connected at one end to the conductive coating;

connecting the feedthrough at the other end to one side of a current reading ammeter; and

connecting the other side of the ammeter to ground.

4,237,416

APPARATUS FOR COUNTING AND SIZING PARTICLES SUSPENDED IN A LIQUID ELECTROLYTE

Tibor Zöld, Munster, Fed. Rep. of Germany, assignor to Becton Dickinson and Company, Paramus, N.J.

Filed Mar. 22, 1978, Ser. No. 888,899
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712360; Sep. 23, 1977, 2742838
Int. Cl.² G01N *27/00*
U.S. Cl. 324—71 CP **34 Claims**

1. An apparatus for counting and sizing particles suspended in a liquid electrolyte, comprising, in combination:

(1) a first vessel for first liquid electrolyte having particles to be counted and sized suspended therein;

(2) a second vessel for particle-free second liquid electrolyte;

(3) a first electrode immersed in the first liquid electrolyte;

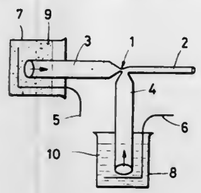
(4) a second electrode immersed in the second liquid electrolyte;

(5) an orifice having upstream and downstream sides and constituting a first particle-observing location in fluid flow connection on its upstream side with the first vessel and sized to allow one particle at a time to pass therethrough; the passage of a particle through the orifice being sensed as a change in electrical resistance at the orifice and measured at the electrodes;

(6) a first fluid flow passage connecting the first vessel with the upstream side of the orifice for flow of first liquid electrolyte from the vessel to the orifice;

(7) a second fluid flow passage in fluid flow connection with the second vessel and with the downstream side of the orifice or flow of second liquid electrolyte from the vessel to the downstream side of the orifice;

(8) a third fluid flow passage directly interconnecting the downstream side of the orifice and the second fluid flow



passage with a second-particle-observing location for carrying first and second liquid electrolyte and particles away from the orifice to the second particle-observing location; and sized throughout its length to carry the particles in the same sequence of flow as that in which they pass through the orifice to facilitate observation in that order at the second particle-observing location; and

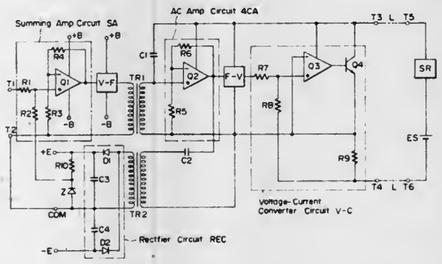
(9) means for drawing first and second liquid electrolyte and particles in the third fluid flow passage from each of the first vessel through the orifice and the second vessel to the second particle-observing location.

4,237,417

SIGNAL TRANSMISSION APPARATUS OF TWO-WIRE TYPE

Akikazu Nishikawa, Kiyose, Japan, assignor to Kenki Kagaku Keiki Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,760
Claims priority, application Japan, Apr. 18, 1978, 53/45602
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—118 **2 Claims**



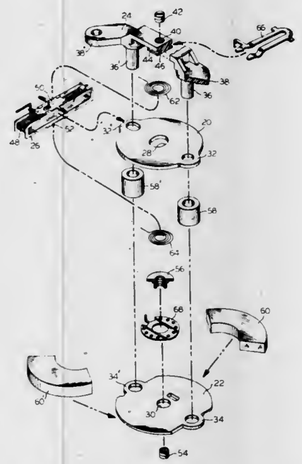
1. A signal transmission apparatus of two-wire type, comprising a transmitting circuit which receives a DC voltage to be detected or to be measured as an input signal and generates an output signal which represents the magnitude of the input signal, a receiving circuit including a device for indicating or recording the magnitude of the output signal sent from the transmitting circuit and a DC power source connected in series with said device, and a two-wire transmission line connecting the transmitting circuit and the receiving circuit to transmit the output signal from the transmitting circuit to the receiving circuit and also to transmit energizing DC power from the receiving circuit to the transmitting circuit, characterized in that said transmitting circuit comprises a voltage-frequency converter which is supplied with a DC input signal voltage and generates an alternating current having a frequency proportional to the magnitude of the input signal voltage; an AC amplifier circuit coupled to the output of said voltage-frequency converter through a first insulating transformer to amplify the AC output of the voltage-frequency converter; a frequency-voltage converter coupled to the output of said AC amplifier circuit to generate a DC voltage having a magnitude proportional to the frequency of the amplified AC output of the AC amplifier circuit; a voltage-current converter circuit coupled to the output of said frequency-voltage converter, and changes the magnitude of a direct current transmitted from the receiving circuit to the transmitting circuit through said two-wire transmission line, in response to the changes in the DC output voltage of said frequency-voltage converter; and a rectifier circuit having at least a pair of rectifying elements and being coupled to the output of said AC amplifier circuit through a second insulating transformer to rectify a portion of the amplified AC output of the AC amplifier circuit and to supply operating DC power to said voltage-frequency converter.

4,237,418

ELECTRICAL CURRENT INDICATING METER

Carl F. Van Bennekom, Green Valley, Ariz.; Donald E. Rogers, Lynn, and Edward F. Scannell, Saugus, both of Mass., assignors to General Electric Company, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,173
Int. Cl.³ G01R *1/20*
U.S. Cl. 324—150 **5 Claims**



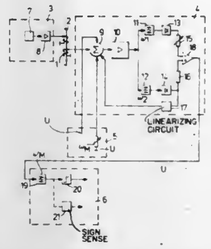
1. In an electrical current indicating meter mechanism having an inner and outer parallel flux plate, a pair of pivots, a rotor assembly having a coil surrounding said inner flux plate, said rotor assembly being mounted for rotational movement in the same plane as the inner flux plate, a pair of bearings, at least one permanent magnet positioned on said outer flux plate and means for supplying current to the coil of the rotor assembly, wherein the improvement comprises two spacer posts, a unitary frame member molded from an organic polymeric material having a pair of parallel projecting studs for securing thereto the inner and outer parallel flux plates separated by the two spacer posts mounted on said studs, said rotor assembly being mounted for rotation on said pair of pivots with one of said pivots extending to the bearing affixed to the frame member and the other pivot extending to the bearing affixed to the outer flux plate.

4,237,419

METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING USING A PLURALITY OF FREQUENCIES

Bengt H. Törnblom, and Torborg M. Törnblom, both of Västeras, Sweden, assignors to Tornbloms Kvalitetskontroll AB, Västeras, Sweden

Filed Jun. 7, 1978, Ser. No. 913,313
Int. Cl.³ G01N *27/82;* **G01R** *33/12*
U.S. Cl. 324—225 **24 Claims**



1. A method of testing a conductive article using a test probe having a variable physical relationship to said article comprising:

applying an alternating magnetic field having at least first and second different frequencies to said article from said test probe;

sensing at least one electrical quantity responsive to said variable physical relationship having first and second components responsive to said first and second different frequencies respectively;

cyclically electrically adding a third component to said first component to produce a fifth component and cyclically electrically adding a fourth component to said second component to produce a sixth component, said fifth and sixth components being effective to cyclically electrically simulate a change in a physical relationship related to said variable physical relationship whereby testing results are obtained regardless of said variable physical relationship;

detecting said fifth and sixth components to produce first and second detected components;

subtracting one of said first and second detected components from the other thereof to produce an output signal; and said output signal containing information about a change in said article

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4,237,420

TEMPERATURE SENSING CIRCUIT

Heihachiro Ebihara; Fukuo Sekiya, and Misao Uchino, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Oct. 18, 1978, Ser. No. 952,513
Claims priority, application Japan, Oct. 25, 1977, 52-129930
Int. Cl.³ H03K *3/284;* **G05D** *23/20*
U.S. Cl. 328—3 **3 Claims**

1. A temperature sensing circuit comprising:

a temperature sensor multivibrator for producing output pulses having a pulse width that varies with temperature;

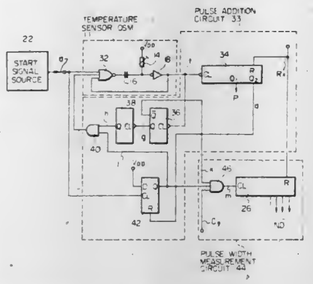
a source of start pulses for triggering said temperature sensor multivibrator to produce a first output pulse after each of said start pulses;

circuit means for producing a retrigger pulse to retrigger said temperature sensor multivibrator after each of said first output pulses has ended, to produce at least a single second output pulse consecutive with said first output pulse;

pulse addition means for producing an output signal having a duration equal to the sum of the durations of said first and second output pulses from said temperature sensor multivibrator;

a source of clock pulses; and

a pulse width measurement circuit responsive to said output signal from said pulse addition means for counting said clock pulses, to thereby produce a digital output signal



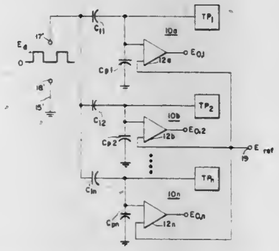
whose value is proportional to the total duration of said first output pulse and said second output pulse consecutive with said first output pulse from said temperature sensor monostable multivibrator.

4,237,421

SINGLE-ELECTRODE CAPACITANCE TOUCHPAD SENSOR SYSTEMS

Wesley K. Waldron, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 19, 1978, Ser. No. 952,705
Int. Cl.[3] H03K *3/26;* **G08B** *13/26*
U.S. Cl. 328—5 **20 Claims**



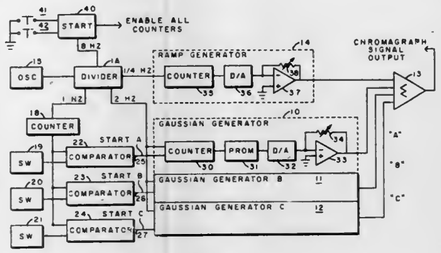
1. A sensor for indicating the presence or absence of direct contact by a human member, comprising:
- a sensor common bus;
- first means for receiving a driving signal of at least one sequential pulse of a substantially predetermined peak amplitude with respect to said common bus;
- a touchpad electrode formed of a conductive or semiconductive material and adapted to be directly contacted by said member;
- a linear first impedance element connected between said first means and said touchpad electrode;
- a second impedance element connected between said common bus and the junction between said first impedance element and said touchpad electrode;
- a sense amplifier having an output and first and second inputs, said first input connected to the common junction of said first and second impedance elements and said touchpad electrode; and
- second means coupled to said sense amplifier second input for providing a reference potential independent of said driving signal and of an essentially constant and predetermined non-zero value less than the peak amplitude of the driving signal;
- the output of said sense amplifier being in one of first and second conditions responsive respectively to the first input receiving portions of the driving signal respectively having greater than and less than the value provided by said second means in the respective presence and absence of contact of said touchpad electrode by said member.

4,237,422

CHROMATOGRAPH SIGNAL GENERATOR

Wilfried K. Lenhardt, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,275
Int. Cl.[3] H03K *3/01, 3/04*
U.S. Cl. 328—61 **9 Claims**



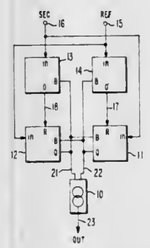
1. A chromatograph signal generator comprising:
- (a) a plurality of Gaussian-waveform generators,
- (b) a ramp generator, and
- (c) means for summing the outputs of said plurality of Gaussian-waveform generators and said ramp generator to produce a chromatograph signal output.

4,237,423

DIGITAL PHASE DETECTOR

Randy D. Rhodes, Frenchtown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,792
Int. Cl.[3] H03K *5/26*
U.S. Cl. 328—133 **4 Claims**



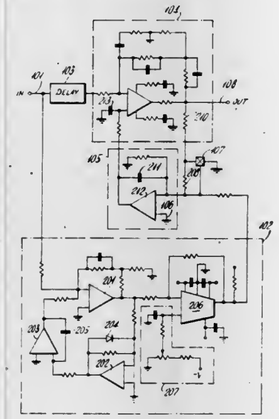
1. A digital phase detector comprising:
- means for applying first and second input signals the phase of which is to be compared;
- a current source having first and second control terminals, for providing current of a first polarity in response to a first control signal being present at said first control terminal and to a second control signal being absent at said second control terminal, for providing current of a second polarity in response to said second control signal being present said second control terminal and to said first control signal being absent at said first control terminal, and providing substantially zero current in response to said first and second control signals being simultaneously present at said first and said second control terminals, respectively;
- first and second bistable circuits for providing control signals to said first and second control terminals respectively, and for providing blocking signals; each bistable circuit susceptible of SET and RESET states with the potential corresponding to one of these states supplying said control signals, and the blocking signal being provided in the RESET state; said first and second bistable circuits being induced to the SET state in response to determinable transitions of said first and second input signals respectively conditioned on both bistable circuits being in the reset state, and each bistable circuit being unconditionally RESET upon application of a reset pulse to RESET terminal thereof;
- a first pulse forming circuit for providing reset pulses to the first bistable circuit in response to determinable transitions of the second input signal in the absence of the blocking signal from the first bistable circuit;
- a second pulse forming circuit for providing reset pulses to the second bistable circuit in response to determinable transitions of the first input signal in the absence of the blocking signal from the second bistable circuit.

4,237,424

GATED BASELINE CORRECTOR

Irving L. Weiner, Sharon, Mass., assignor to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 18, 1978, Ser. No. 934,939
Int. Cl.[3] H03L *5/00*
U.S. Cl. 328—175 **2 Claims**



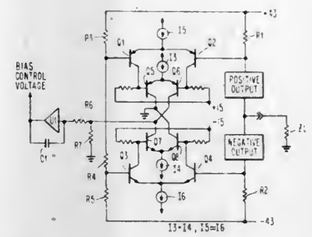
1. In a system for processing signals with respect to a predetermined baseline level, automatic baseline correcting means comprising:
- (a) an amplifier having an output and at least one input, signals to be processed being coupled to said input;
- (b) first feedback means, connected between the output and input of said amplifier for correcting the output level of said amplifier to said baseline level;
- (c) means for detecting the presence of signals to be processed;
- (d) means, responsive to the presence of signals at the input of said amplifier, for forcing said feedback means to supply an unchanging correction function to said amplifier for the duration of presence of said signals;
- (e) wherein said means for detecting includes
  - (i) first amplifier means receiving said signals to be processed,
  - (ii) second feedback means between the output and input of said first amplifier means, for correcting the output level of said first amplifier means to a predetermined baseline level,
  - (iii) a reference voltage source, and
  - (iv) comparator means, for comparing corrected signal form said first amplifier means with said reference level, and responsively thereto, for conditioning said means for forcing.

4,237,425

AUTOMATIC BIAS ADJUSTING CIRCUIT

David A. Spiegel, 3625 W. Moreland Rd., Apt. C-23, Willow Grove, Pa. 19090

Filed May 3, 1979, Ser. No. 35,489
Int. Cl.[3] H03F *3/18*
U.S. Cl. 330—263 **23 Claims**



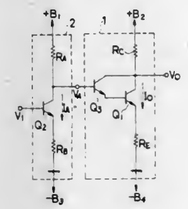
1. A circuit for automatic bias adjustment of a push-pull amplifier comprising:
- a. current measuring means for comparing the current consumed by each half of said push-pull amplifier with a predetermined current level;
- b. logic means for generating a control signal depending upon the input to said current measuring means;
- c. means for integrating the control signals of said logic means, and
- d. bias control means connected to the output of said integrating means.

4,237,426

TRANSISTOR AMPLIFIER

Susumu Sueyoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,717
Claims priority, application Japan, Jan. 27, 1978, 53-8146
Int. Cl.[3] H03F *3/04, 1/32*
U.S. Cl. 330—296 **4 Claims**



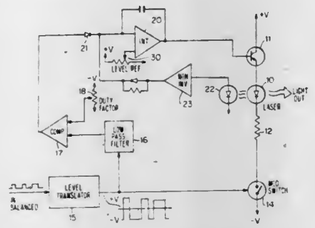
1. A transistor amplifier comprising; a first amplifier circuit having a first transistor, said first transistor having a base supplied with an input voltage, said first transistor having an output voltage wherein the ratio of an output voltage provided at the collector of said first transistor to said input voltage being n, where n is an integer of at least two; and a second amplifier circuit having a second transistor, said second transistor having a base to which said output voltage provided at the collector of said first transistor is applied through (n−1) PN junctions which are connected in series between said collector of said first transistor and said base of said second transistor.

4,237,427

APPARATUS FOR STABILIZING A LASER

John M. Holland, Shawsville, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,399
Int. Cl.³ H01S 3/13
U.S. Cl. 331—94.5 S **10 Claims**



1. Stabilizing apparatus for controlling the output radiation from a laser modulated according to an input signal optimumly possessing a balanced duty factor, in combination therewith of apparatus for deenergizing said laser when said input signal deviates from said balanced duty factor, comprising:

means responsive to said input signal to develop an output control signal indicative of the duty factor of said input signal, and

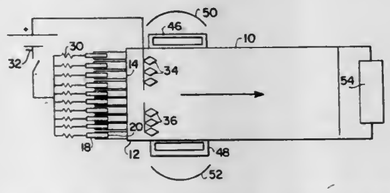
means coupled to said laser and responsive to said control signal for substantially reducing current conduction of said laser when said control signal is of a predetermined value indicative of said duty factor falling below an acceptable margin.

4,237,428

15.9 MICRON ACETYLENE LASER

Bernard L. Wexler, Arlington, Va.; Joseph A. Stregack, Silver Spring, and Thomas J. Manuccia, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1978, Ser. No. 939,040
Int. Cl.³ H01S 3/00, 3/09
U.S. Cl. 331—94.5 G **11 Claims**



1. An acetylene laser operable at a wavelength near 15.9 microns which comprises:

means for admitting a gaseous mixture including carbon monoxide into a plenum chamber;

means for vibrationally exciting the carbon monoxide in said plenum chamber;

means for pumping said vibrationally excited carbon monoxide gas mixture through a supersonic gas expansion section;

means for adding acetylene gas to said vibrationally excited carbon monoxide gas mixture in said supersonic gas expansion section;

oppositely disposed windows in said housing situtated downstream from said supersonic gas expansion section and positioned at Brewster's angle along said supersonic gas flow-laser cavity section;

a fully reflective spherical mirror opposite one window and a partially reflective mirror opposite the other window both mirrors being transparent at 8 microns and highly reflective at 16 microns thereby forming an optical cavity axis transverse to the gas flow;

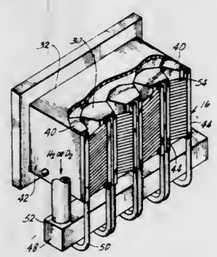
said laser operating such that said vibrationally excited carbon monoxide will transfer its energy to said acetylene gas thereby operating on the (01000) Σ_g^+ to (0001^{1}1^1) Σ_u^+ transition of the acetylene molecule with an output near 15.9 microns.

4,237,429

TRANSVERSE MIXING HYPERSONIC WEDGE NOZZLE CHEMICAL LASER

Dale L. Hook, and John Waypa, Jr., both of Rancho Palos Verdes, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 8, 1978, Ser. No. 958,919
Int. Cl.³ H01S 3/00
U.S. Cl. 331—94.5 G **23 Claims**



1. Apparatus for mixing first and second reactants in a chemical laser, comprising:

primary nozzle means for expanding said first reactant to produce an expanding reactant flow field whose free expansion is essentially two dimensional in character and occurs predominantly in directions parallel to a given expansion plane parallel to the flow path of the flow field; and

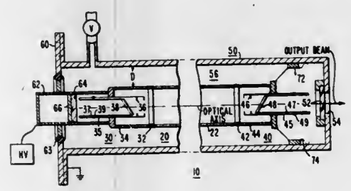
secondary injection means for mixing said second reactant with said first reactant predominantly by molecular diffusion of the second reactant into said first reactant flow field in transverse directions of said flow field expansion plane.

4,237,430

COAXIAL DISCHARGE SEALED-OFF QUARTZ LASER TUBE

Chi-Sheng Liu, Monroeville; Roy K. Williams, Murrysville, and Lelland A. Weaver, Wilkins Township, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1979, Ser. No. 15,844
Int. Cl.³ H01S 3/02
U.S. Cl. 331—94.5 D **6 Claims**



1. A laser assembly comprising:

a tubular metal housing;

an open-ended tubular quartz laser discharge tube including a laser medium contained therein positioned within said tubular metal housing;

a first and second tubular molybdenum electrode means sealed to either end of said tubular quartz laser discharge tube, the longitudinal axis of said tubular molybdenum electrode means coinciding with the longitudinal axis of said tubular quartz laser discharge tube, said axis being the optical axis of said laser assembly;

laser windows sealed within said first and second tubular molybdenum electrode means to totally enclose the internal volume of said tubular quartz laser discharge tube;

electrical contact means extending between said first molybdenum electrode means and said tubular metal housing to provide electrical continuity therebetween;

mounting means connected to said second molybdenum electrode means for securing the combination of said quartz laser discharge tube and said first and second molybdenum electrode means within said tubular metal housing while electrically isolating said second molybdenum electrode means from said tubular metal housing;

electrical excitation means operatively connected to said second molybdenum electrode means to initiate laser discharge excitation within said tubular quartz laser discharge tube, said tubular metal housing being connected to an electrical ground with the longitudinal electrical discharge produced in said laser medium in response to said electrical excitation means extending between said first and second molybdenum electrode means, said longitudinal discharge serving as a central electrical conductor for said laser assembly and said tubular metal housing functioning as a ground return path which surrounds the laser discharge thereby minimizing the circuit inductance associated with the longitudinal discharge, said tubular metal housing functioning both as a heat shield and a ground shield for reducing electrical noise radiation.

4,237,431

FIVE PORT WAVEGUIDE SWITCH

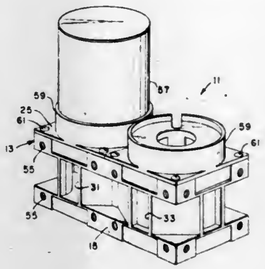
Isuneo Shishido, Rancho Palos Verdes; Herman W. Cramm, Rolling Hills Estates, and William L. Vick, Yorba Linda, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

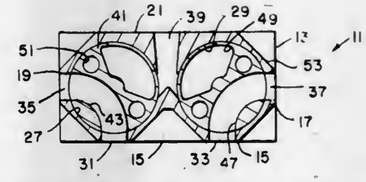
Filed Jul. 10, 1978, Ser. No. 922,896
Int. Cl.² H01P 1/10
U.S. Cl. 333—106 **5 Claims**

1. A five port waveguide switch comprising:

a housing having first and second rotor accepting cylindrical cavities and first and second ports, said housing having also include a third port associated with said first port, a fourth port associated with said second port, and a fifth port selectably associated with either said first port or said second port;

first and second rotors respectively disposed in said first and second cavities, said first rotor having a curved waveguide channel disposed therein providing a radiofrequency propagation path between said first and third ports when said first rotor is in a first position and providing said path between said first and fifth ports when said first rotor is in a second position, said second rotor having a curved waveguide channel disposed therein providing a radio frequency propagation path between said second and fourth ports when said second rotor is in its first position and providing said path between said second and fifth ports when said second rotor is in its second position; and





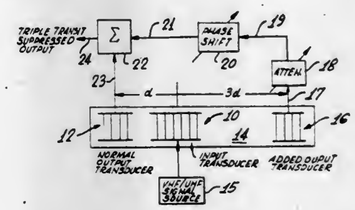
rotating means operatively coupled to said first and second rotors for selectably moving said rotors between their respective two positions.

4,237,432

SURFACE ACOUSTIC WAVE FILTER WITH FEEDFORWARD TO REDUCE TRIPLE TRANSIT EFFECTS

Marshall Y. Huang, Rancho Palos Verdes; Albert J. Grote, Venice, and Kuo-Hsiung Yen, Manhattan Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 5, 1979, Ser. No. 17,215
Int. Cl.³ H03H 9/64, 9/25
U.S. Cl. 333—194 **4 Claims**



1. An acoustic wave filter device in which the effects of triple transit echo are substantially reduced, said device comprising:

a piezoelectric substrate;

an input transducer disposed on said substrate, to which an alternating electric signal is applied;

a first output transducer disposed on said substrate at a distance d from said input transducer, to receive acoustic waves propagated from said input transducer and to convert them to a corresponding electrical output signal;

a second output transducer disposed on said substrate at a distance of approximately 3d from said input transducer, in a direction opposite to the direction of the first output transducer;

electrical attenuation means coupled to said second output transducer, to adjust the amplitude of the signal generated at said second output transducer;

electrical phase-shifting means coupled to said second out-

put transducer, to adjust the phase of the signal generated at said second output transducer to be opposite to the phase of a triple transit signal component contained in the output signal from said first output transducer; and

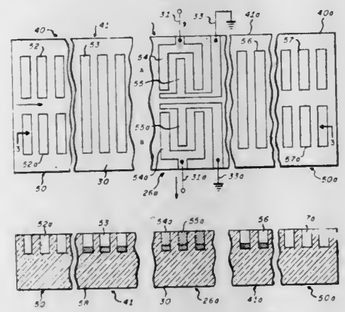
signal summing means, to add the output signal from said first output transducer and the phase-shifted and attenuated output from said second output transducer, to produce a suppressed-triple-transit output signal.

4,237,433

SURFACE ACOUSTIC WAVE RESONATORS WITH INTEGRATED INTERNAL COUPLER REFLECTORS

William J. Tanski, Maynard, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 13, 1979, Ser. No. 20,115
Int. Cl.³ H03H *9/64, 9/25, 9/145;* H01L *41/08*
U.S. Cl. 333—195 **7 Claims**



1. Signal processing apparatus comprising:

substrate means for propagating acoustic waves at a surface thereof,

first transducer means for launching an acoustic wave along a first propagation track at said surface,

second transducer means for receiving an acoustic wave propagating along a second propagating track at said surface and spaced from said first propagation track, and

first and second reflector-coupler means on opposite sides of said first and second transducers means at least in part extending across said first and second propagation tracks for forming coupled first and second respective resonator means,

said reflector-coupler means including a regular array of parallel grooves in said surface disposed at right angles to said first and second propagation tracks, each said parallel groove including a thin metal layer disposed at the bottom thereof, said parallel grooves being of equal length,

said lengths of said thin metal layers varying from a maximum adjacent said first and second transducer means to a minimum at the opposed end of said reflector-coupler means.

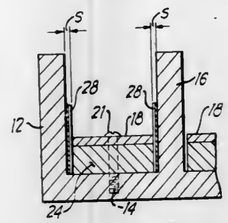
4,237,434

RIDGE WAVEGUIDE MODE SUPPRESSOR

Joseph D. Cappucci, Wayne, N.J., assignor to Merrimac Industries Incorporated, West Caldwell, N.J.

Filed Apr. 2, 1979, Ser. No. 26,083
Int. Cl.³ H01P *1/162, 1/203, 3/123*
U.S. Cl. 333—202 **7 Claims**

1. A transmission device comprising a conducting channel member having a cavity of a selected width, a conducting ground plane element disposed in said cavity and having a width less than said selected width, whereby a space is formed between said channel member and said ground plane element, whereby said space allows ridge waveguide modes to propagate a printed circuit board disposed on top of said ground plane element and having a width slightly less than said selected width said circuit board comprising a low pass filter having a selected cut off frequency and means disposed in said



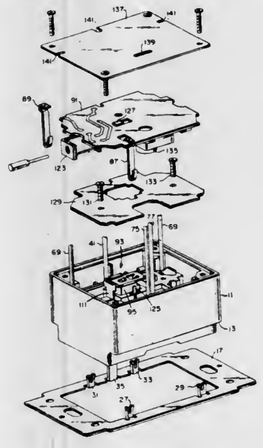
space for suppressing said ridge waveguide modes thereby preventing bypassing of said filter.

4,237,435

GROUND FAULT RECEPTACLE RE-SET GUIDE ASSEMBLY

David A. Cooper, Loganton; William T. Monoski, and Edward J. Vibert, both of Muncy, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 27, 1979, Ser. No. 33,919
Int. Cl.³ H01H *83/02*
U.S. Cl. 335—18 **15 Claims**



1. In a duplex electrical receptacle for mounting in a wall outlet box and connecting an electrical load to the conductors of a power source wherein a container of electrical insulating material is formed to include a recessed centrally apertured re-set button receiving portion, a pair of bus-bar conductors each having an affixed electrical contact with the bus-bar conductors formed to receive the prongs of a male plug, a ground fault circuit interrupting apparatus with a pair of flexible connectors each having an electrical contact aligned with an electrical contac. . the bus-bar conductors and connected to the conductors of the power source, and an electrical circuit responsive to a ground fault condition for activating the ground fault circuit interrupting apparatus, the improvement comprising a re-set guide assembly including:

a re-set button formed for ingress and egress of said recessed button-receiving portion of said container;

a guide pin affixed to said re-set button and extending through said central aperture of said re-set button receiving portion of said container, said guide pin having retaining ring and indented latching grooves;

a retaining ring disposed within said retaining ring groove of said guide pin within said container;

a spring member telescoped over said guide pin and positioned intermediate said re-set button and said recessed button-receiving portion of said container;

a substantially oblong-shaped re-set guide member having a central aperture extending along a longitudinal axis and telescoped over said guide pin, said re-set guide member having a slotted end normal to said longitudinal axis, a spring-receiving hole spaced from said slotted end and normal to said longitudinal axis, and a pair of outstanding ear members oppositely disposed on said re-set guide member, and spaced from said spring-receiving hole and normal to said longitudinal axis;

a latch member having a pre-formed locking tab, a central aperture, and an "L"-shaped end portion with said locking tab capturing said latch member in slidable engagement within said slotted end of said re-set guide member, said latch member having a central aperture and formed for engagement with and disengagement from said indented latching groove of said guide pin, and said "L"-shaped end portion covering said spring-receiving hole of said re-set guide member; and

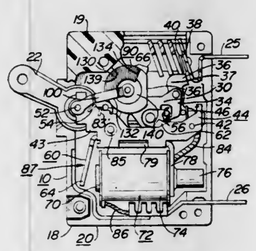
a biasing spring disposed within and extending outwardly from said spring-receiving hole of said re-set guide member and contacting said "L"-shaped portion of said latch member.

4,237,436

CIRCUIT BREAKER HAVING A MODIFIED ARMATURE FOR TIME DELAYS AT HIGH TRANSIENT CURRENTS

Edward J. Setescak, West Windsor, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Jan. 15, 1979, Ser. No. 3,522
Int. Cl.³ H01H *7/08*
U.S. Cl. 335—63 **7 Claims**



1. A circuit breaker comprising

a solenoid coil,

a pivotal armature actuatable by said coil,

a frame about said coil,

a tube surrounded by said coil,

a movable and magnetizable core within said tube,

means for retarding movement of said core and biasing said core toward one end of said tube,

said armature having an attractable leg, an unlatching leg, and a balancing leg,

a magnetizable pole piece secured to the end of said tube opposite to the end toward which said core is biased and toward which said attractable leg is movable,

a toggle linkage and latch mechanism,

said pole piece defining with said core a magnetic gap,

said pole piece defining with said attractable leg another magnetic gap,

said core being movable toward said pole piece,

further means biasing said attractable leg away from said pole piece and biasing said unlatching leg away from said latch mechanism,

an auxiliary inertial mass pivotally carried by said balancing leg, and

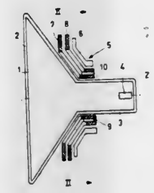
a link pivotally connected to said auxiliary inertial mass and also pivotally connected to a fixed support within said circuit breaker and proportioned and located so that a certain angular movement of said balancing leg results in a greater angular movement of said auxiliary inertial mass, so that the current in the coil required to overcome the bias on said unlatching leg with substantially no time delay is substantially higher than the current required for a similar device but which omits said auxiliary inertial mass.

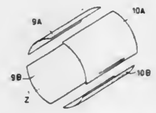
4,237,437

DEFLECTION UNIT FOR COLOR TELEVISION DISPLAY TUBES

Nicolaas G. Vink; Joris A. M. Nieuwendijk, and Werner A. L. Heijnemans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1979, Ser. No. 6,614
Claims priority, application Netherlands, Feb. 6, 1978, 7801317
Int. Cl.³ H01F *3/12*
U.S. Cl. 335—211 **5 Claims**





1. A deflection unit for a color television display tube, said deflection unit comprising a core, a vertical deflection coil and a horizontal deflection coil, said vertical deflection coil having a winding distribution for producing, when said deflection unit is mounted on a display tube having a neck portion, a display screen and a funnel-shaped central portion therebetween, a weakly barrel-shaped vertical deflection field at the central portion and the screen-side portion of the deflection unit, and a pin cushion-shaped vertical deflection field at the neck-side portion of said deflection unit, wherein said deflection unit further comprises flux altering means associated with said vertical deflection coil and disposed at the neck-side portion of the vertical deflection coil for achieving a sharp pin cushion-shaped vertical deflection field at the neck-side portion of the deflection unit for correcting coma distortion.

4,237,438

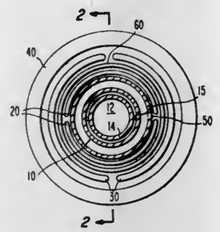
HIGH RESISTANCE CONTINUOUS SHIELD FOR REDUCED CAPACITIVE COUPLING IN A DEFLECTION YOKE

John F. McCoy, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1978, Ser. No. 971,035
Int. Cl.³ H01F *3/00*
U.S. Cl. 335—214 **4 Claims**

1. A deflection yoke adapted for deflection of an electron beam produced by electron gun apparatus disposed within the interior of a vacuum tube, comprising first and second deflection windings, said first winding disposed between said second winding and said vacuum tube, said yoke including first and second electrostatic shields, said first electrostatic shield disposed between said first deflection winding and said vacuum

tube for reducing capacitive coupling between said first deflection winding and said electron gun apparatus, said second electrostatic shield disposed between said first and second



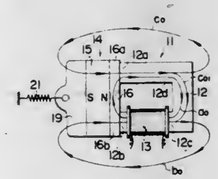
deflection windings for reducing capacitive coupling therebetween, wherein the improvement resides in that each of said shields is continuous and exhibits high resistivity and low permeability and is composed of nickel chromium alloy.

4,237,439

RELEASE ELECTROMAGNET ASSEMBLY

Kazuyuki Nemoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 924,932
Claims priority, application Japan, Aug. 23, 1977, 52/101375
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—230 **10 Claims**



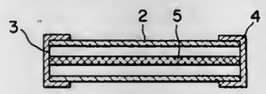
1. A release electromagnet assembly comprising an electromagnet including a U-shaped yoke having ends which are subject to a magnetic attraction by a permanent magnet and also including a release coil disposed on one limb of the yoke for producing a flux which passes through a magnetic path formed integrally of the yoke and which produces a magnetic pole at one of the ends which opposes the magnetic attraction, and a permanent magnetic body including said permanent magnet, the magnet having a magnetic pole of single polarity which is located adjacent to both ends of the yoke so that the magnetic flux from the magnet partly passes through a magnetic path located externally of the yoke when the ends of the yoke are held attracted to the permanent magnet.

4,237,440

GLASS-TUBE FUSE

Susumu Miyasaka, and Isamu Miyasaka, both of Yokosuka, Japan, assignors to Kowa Denki Kogyo Kabushiki Kaisha, Lamagawa, Japan

Filed Aug. 8, 1978, Ser. No. 931,917
Claims priority, application Japan, Aug. 9, 1977, 52-95315
Int. Cl.³ H01H *85/14*
U.S. Cl. 337—227 **7 Claims**



1. A glass-tube fuse comprising a glass tube, electrically conductive caps on both ends of the glass tube and a fuse element which is enclosed in said glass tube and connected between said caps, said fuse element being braided wire comprising a plurality of cores extending between said caps and at least one braiding strand of metallic material coiled alternately around said cores and connected at its ends to said caps.

4,237,441

LOW RESISTIVITY PTC COMPOSITIONS

Peter V. van Konynenburg, Palo Alto; Andrew Au, Fremont; Chris Rauwendaal, Menlo Park, and Alan J. Gotcher, Saratoga, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 1, 1978, Ser. No. 965,343
Int. Cl.³ H01C *7/02*
U.S. Cl. 338—22 R **43 Claims**

1. A conductive polymer composition which exhibits PTC behavior with a switching temperature T_s above 0° C., which has a resistivity of less than 7 ohm. cm at at least one temperature between T_s and −40° C.; and which comprises

(1) a polymer component having at least 10% crystallinity and

(2) a particulate filler component which has been dispersed in said polymer component and which comprises carbon black having a particle size, D, which is from 20 to 150 millimicrons and a surface area, S, in m^2/gram such that S/D is not more than 10; the amount of said filler component being such that the quantity

$$\frac{S}{D} \times \frac{\text{volume of filler component}}{\text{volume of polymer component}}$$

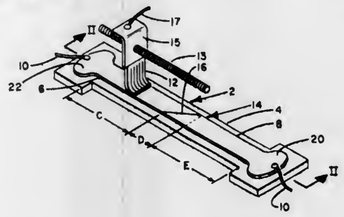
is less than 1.

4,237,442

ELECTRICAL RESISTANCE ELEMENT FOR VARIABLE RESISTANCE DEVICES

Jerry L. Carter, Cerritos, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,025
Int. Cl.³ H01C *10/40*
U.S. Cl, 338—180 **8 Claims**



1. An electrical resistance element of the type used in variable resistance devices wherein the resistance element forms a track for a multi-fingered electrical contact which is movable along the track to change the electrical resistance of the device comprising,

an electrically non-conductive substrate,

a track on the surface of the substrate for movement of a multi-fingered electrical contact,

said track comprising a series of materials of different electrical resistances deposited on the substrate in sequential, abutting relationship, forming an interface between each adjacent material,

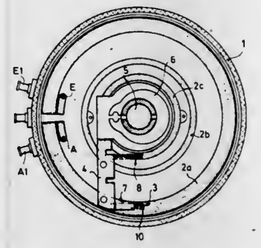
the interface between the materials being shaped to form a transition section of the track wherein the multi-fingered contact moving along the track contacts both adjacent materials simultaneously with the ratio of each material being contacted changing as the multi-finger contact moves through the transition section whereby the electrical resistance of the device is changed according to the shape of the interface.

4,237,443

MOVABLE WIPER FOR POTENTIOMETERS

Ernst Gass, Stuttgart, Fed. Rep. of Germany, assignor to Novotechnik KG Offterdinger & Co., Ostfildern, Fed. Rep. of Germany

Continuation of Ser. No. 873,702, Jan. 30, 1978, abandoned. This application Jun. 20, 1979, Ser. No. 50,190
Int. Cl.³ H01C *1/12*
U.S. Cl. 338—202 **10 Claims**



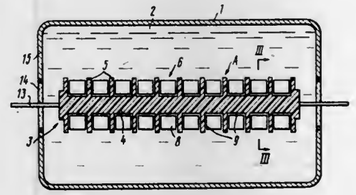
1. In a wiper for high speed adjustable resistance, potentiometers and the like having a plurality of electrically conductive and flexible fingers which slidably engage a conductive surface along a given path and in which the fingers are arranged in parallel to each other with lateral separations therebetween and are carried by a relatively rigid support and having each a flexible length which extends outwardly from said support and in engagement with said conductive surface, the improvement comprising a common covering of yieldable elastomeric material extending over portions of said flexible lengths of said parallel fingers extending outwardly from said support and over portions of said lateral separations between said length portions to form a continuous covering over said length and separation portions, said elastomeric material having a high degree of internal friction and practically no elasticity thereby exerting a high dampening force on a possible oscillating movement of each of said fingers, the contact area of the wiper with said conductive surface being free of said elastomeric material.

4,237,444

HEAVY-DUTY PRECISION WIRE-WOUND ALTERNATING-CURRENT RESISTOR AND METHOD OF MAKING

Endel T. Lippmaa, ulitsa Sybra, 14, kv. 2, and Vambola I. Roose, ulitsa Ryannaku, 3, kv. 4, both of Tallin, U.S.S.R.

Filed Mar. 13, 1979, Ser. No. 20,083
Int. Cl.³ H01C *1/02, 3/14*
U.S. Cl. 338—270 **15 Claims**



1. A heavy-duty precision wire-wound alternating-current resistor comprising:

a capsule;

a liquid dielectric formed of a low-viscosity liquid perfluorinated organic compound and provided for filling said capsule;

a sectionalized bobbin arranged within said capsule and made from an insulating material being chemically resistant to said liquid perfluorinated organic compound; and

a resistance element arranged on said sectionalized bobbin with a clearance therebetween, said clearance being dimensioned so as to exceed by at least an order of magnitude the change in the bobbin diameter due to the thermal expansion of the material of said sectionalized bobbin,

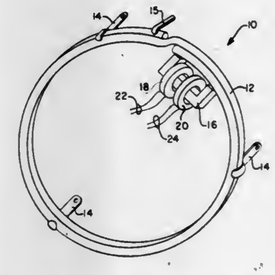
said resistance element being made in the form of a high-resistance insulated wire winding.

4,237,445

TIRE PRESSURE COMMUNICATION DEVICES

Richard L. Crossman, Tallmadge, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jul. 30, 1979, Ser. No. 61,580
Int. Cl.³ B60C *23/02*
U.S. Cl. 340—58 **9 Claims**



1. Apparatus for sensing the pressure of an aircraft tire and for communicating such pressure sensing from a rotating tire to a stationary portion of the aircraft, comprising:

tire pressure sensing means connected to and rotatable with the tire;

signal receiving means comprising a coil fixedly secured to a stationary portion of the aircraft; and

communication means comprising a core positioned and movable within said coil and operatively connected to said sensing means for communicating a signal indicative of tire pressure from said sensing means to said coil.

4,237,446

VEHICLE CLEARANCE DETECTOR

William L. Roberts, 2319 E. McArthur, Tempe, Ariz. 85281

Filed Jul. 27, 1979, Ser. No. 61,529
Int. Cl.³ G08B *21/00*; H01H *3/16*
U.S. Cl. 340—61 **1 Claim**

1. In a clearance detecting device for warning the driver of a vehicle of an impending obstruction, including

(a) a base adapted for attachment to an existing structure;

(b) an antenna for contacting said obstruction;

(c) primary spring means, laterally deflectable from a normally generally linear position, for attaching said antenna to said base, and

(d) an electrical circuit having an alarm device and normally open switch means, said switch means responsive to close and activate said circuit when said antenna is contacted and deflected by said obstruction,

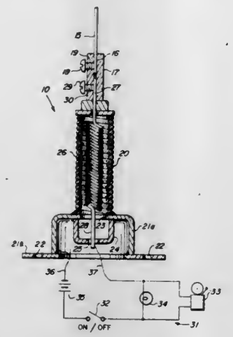
the improvements in said clearance detecting device which permit deflection of said antenna in any direction through an arc of at least 90° and in which said switch means comprises,

(a) a contact surface mounted in said base and included in said circuit, and

(b) elongate spring means normally generally parallel along the length thereof to said primary spring means and having a pair of ends,

(i) a first end attached to said clearance detector device, and

(ii) means mounting said first end to said primary spring means, and



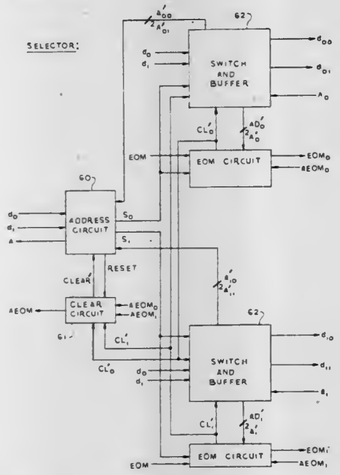
(iii) a substantially free end of said elongate spring means responsive when said antenna is deflected to engage said contact surface so that said circuit is closed and said alarm device is activated.

4,237,447

SPEED INDEPENDENT SELECTOR SWITCH FOR DIGITAL COMMUNICATION NETWORKS

Becky J. Clark, Tualatin, Oreg., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1979, Ser. No. 35,411
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—147 T **4 Claims**



1. A selection switch for receiving signals from a node of a digital communication network and transmitting those signals to one of two other nodes, said switch comprising:

a pair of switch circuits, each adapted to receive a set of said data signals;

an address circuit to receive said data signals preceded by an address signal specifying which of two nodes is to be selected for subsequent transmission and to signal the corresponding one of said switch circuits; and

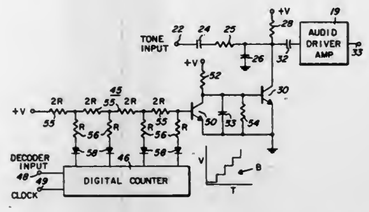
said address circuit includes means to remove the first address bit of the address upon selection of one of the pair of switch circuits.

4,237,448

PAGER WITH ESCALATING AUDIO ALERT SIGNAL LEVEL

Morton Weinberg, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1979, Ser. No. 34,302
Int. Cl.³ G08B *27/00*; H04M *11/02*; H04Q *9/08*
U.S. Cl. 340—311 **7 Claims**



1. A control system for the audible alerting signal of paging apparatus which includes a decoder responsive to a received code for producing an output, a generator responsive to the decoder output for producing an electrical tone signal, and an audio transducer for producing the audible alerting signal from the electrical tone signal, said control system including in combination:

signal translating means connecting the generator to the audio transducer for applying the electrical tone signal to the transducer; and

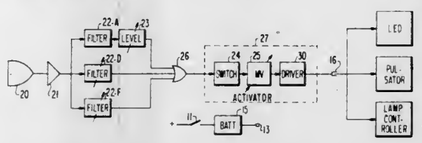
level control means connected to said signal translating means and coupled to the decoder, said level control means causing said signal translating means to apply the electrical signal to the audio transducer at a higher level as the signal continues.

4,237,449

SIGNALLING DEVICE FOR HARD OF HEARING PERSONS

J. Scott Zibell, 60 Brittany Ct., Charlotte, N.C. 28211

Filed Jun. 16, 1978, Ser. No. 916,420
Int. Cl.³ H04R *25/00*; H04Q *9/00*
U.S. Cl. 340—407 **10 Claims**



1. A signalling device for making a hard of hearing person aware of an impending happening in his proximity which is foretold by a distinguishable sound, comprising in combination:

a sound transducer for converting said distinguishable sound made in advance of the impending happening and associated therewith to an electrical signal,

means for receiving and amplifying the electrical signal from said sound transducer,

selective filter means connected to said means for receiving and amplifying for selecting amplified signals above a selected amplitude and within a selected frequency range, and

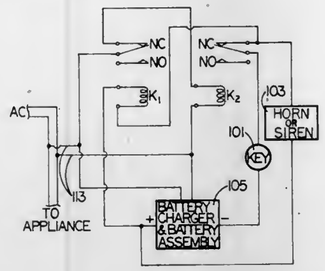
an indicator means connected to said selective filter means for providing a non-aural stimulus to said hard of hearing person.

4,237,450

APPLIANCE THEFT ALARM

Antonio R. Canez, 1210 W. Siglo Pl., Tucson, Ariz. 85705

Filed Nov. 13, 1978, Ser. No. 959,697
Int. Cl.³ G08B *13/14*
U.S. Cl. 340—571 **7 Claims**



1. An electrical appliance theft alarm for installation on an appliance for detection of the removal of the electrical power through the appliance associated electrical power cord from an electrical power source comprising a warning sound device an electrical battery for powering said warning sound device, and a first relay and a latch-up relay, both said first relay and latch-up relay having an electromagnetic energizing coil and responding normally open and normally closed contacts, said first relay coil operably connected to said associated appliance power cord through said latch-up relay normally closed contact, and said first relay normally closed contact operably connected between said electrical battery and said warning sound device, said latch-up relay coil operably connected to said battery through said first relay normally closed contact whereby said first relay coil is continually energized by the outside electrical power source and the warning device inhibited, but when the outside electrical power source is removed from the appliance, said warning device is activated by said electrical battery through said first relay normally closed contacts and said latch-up relay coil is also energized and thereby removes said first relay coil from the outside power source in order that the re-application of power to the appliance's electrical power cord does not shut off the warning device.

4,237,451

METHOD AND MEANS FOR CONTINUOUSLY SAMPLING A FLUID

Keith E. Hollenbeck, Mountain View, Calif., assignor to Spectrex Corporation, Redwood City, Calif.

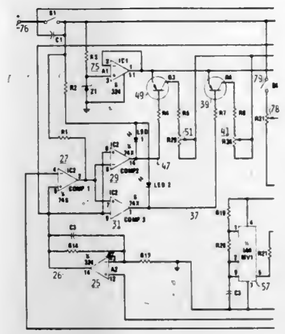
Filed Feb. 9, 1979, Ser. No. 10,903
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—606 **7 Claims**

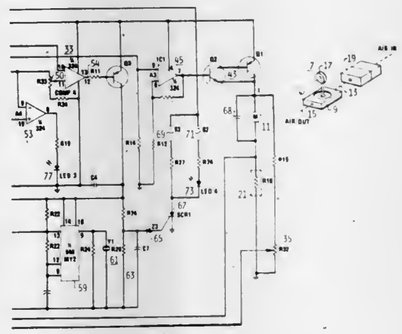
1. Fluid-sampling apparatus including fluid-pumping means arranged to pump fluid through a test chamber, the apparatus comprising:

motor means coupled to the fluid-pumping means for pumping fluid through the test chamber at a flow rate which is determined by the characteristics of applied motor current and fluid pressure differential across the test chamber;

monitoring means coupled to the motor means for producing a signal proportional to the motor current therethrough; and

circuit means responsive to the signal from said monitoring means for supplying current to said motor means through





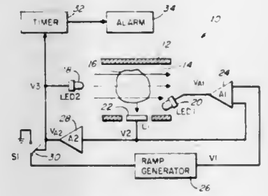
the monitoring means to maintain the flow rate of fluid through the test chamber substantially constant.

4,237,452

SMOKE DETECTION SYSTEM AND METHOD

William J. Malinowski, Johnson St., P.O. Box 274, Bryantville, Mass. 02327

Filed Jan. 4, 1979, Ser. No. 824
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—630 **13 Claims**



1. The method of detecting the presence of an aerosol within a volume, comprising the steps of

(a) first, illuminating a photo responsive device exposed to said volume to pre bias said device and generate an electrical output therefrom having a waveform of one configuration,

(b) secondly, periodically terminating the first step and illuminating said volume whereby any aerosol present in said volume will reflect light onto said device to change the waveform to a second configuration and to extend the duration of said electrical output.

(c) thirdly, measuring the duration of said electrical output after termination of said first step, and,
(d) generating an alarm in the event that the duration of any output exceeds a predetermined value.

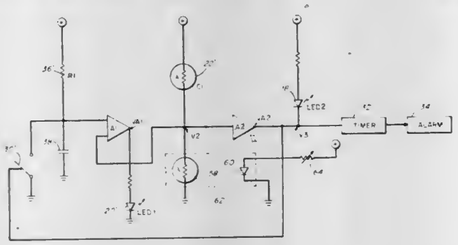
12. A system for detecting an aerosol such as smoke or the like, comprising
(a) means defining an examination zone in which an aerosol is adapted to pass,
(b) a photo responsive device mounted in position to monitor said zone and having an electrical output of a known duration when an aerosol is absent from said zone and exposed to a pulse of light and having an electrical output of a different duration when an aerosol is present in said zone and exposed to a pulse of light,
(c) light means for illuminating said zone,
(d) timing means connected to said device for measuring the duration of said output and,
(e) alarm means connected to said timing means and adapted to be actuated by said timing means in the event that the duration of said output is beyond said known duration.

4,237,453

SMOKE DETECTION SYSTEM AND METHOD

William J. Malinowski, P.O. Box 274, Bryantville, Mass. 02327

Continuation-in-part of Ser. No. 824, Jan. 4, 1979. This application Mar. 23, 1979, Ser. No. 23,033
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—630 **7 Claims**



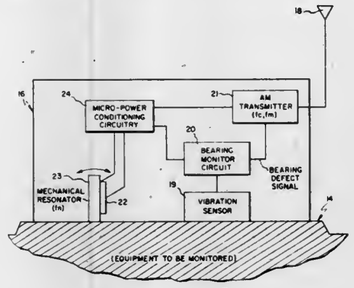
1. A system for detecting an aerosol such as smoke or the like, comprising
(a) means defining an examination zone in which an aerosol is adapted to pass,
(b) a photo responsive device mounted in position to monitor said zone and having an electrical output of a known duration when an aerosol is absent from said zone and having an electrical output of a different duration when an aerosol is present in said zone,
(c) a first light source mounted in position to illuminate said device and second light source mounted in position to illuminate said zone and any aerosol therein,
(d) control means operatively connected to said light sources and said photo responsive device for cyclically operating said light sources in closely timed sequence whereby a pulse of light from said first source will illuminate said photo responsive device to generate an electrical pulse of predetermined duration therefrom and a pulse of light from said second source will illuminate said zone and reflect against any aerosol present therein and onto said photo responsive device to extend the duration of said electrical pulse,
(e) timing means connected to said device for measuring the duration of said output,
(f) alarm means connected to said timing means and adapted to be actuated by said timing means in the event that the duration of said output is beyond said known duration,
(g) a second photo responsive device connected to said first device,
(h) second light means illuminating said second device, and,
(i) adjustment means connected to said second light means for adjusting the output thereof until the resistance of said second device corresponds to that of said first device when an aerosol is present.

4,237,454

SYSTEM FOR MONITORING BEARINGS AND OTHER ROTATING EQUIPMENT

Leslie D. Meyer, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,573
Int. Cl.³ G01H *13/00*; G08B *21/00*
U.S. Cl. 340—682 **5 Claims**



1. A system for monitoring rotating machinery at many locations and communicating a fault condition to a central station, said machinery inherently having a fundamental unbalance component of machine vibration, comprising:
a self-powered monitor unit removably mounted on every piece of machinery on a stationary structure thereof at a position to sense structure-borne vibrations;
each monitor unit including a tuned mechanical resonator for generating electrical power which operates at the rotational frequency of the machinery and is driven by the fundamental unbalance component of machine vibration; a power conditioner for converting the generated electrical power; a vibration sensor for sensing said structure-borne vibrations and continuously producing an electrical vibration signal; signal processing circuitry for continuously processing said vibration signal and producing a defect signal upon the occurrence of a fault condition; and radio transmitter circuitry triggered by said defect signal for transmitting to the central station a radio signal that uniquely identifies the piece of machinery with a fault condition;
said tuned mechanical resonator comprising a cantilever beam and an attached piezoelectric element; said power conditioner being connected to said piezoelectric element and supplying electrical power to said signal processing circuitry continuously so long as said machinery is rotating and to said radio transmitter circuitry only upon triggering by said defect signal.

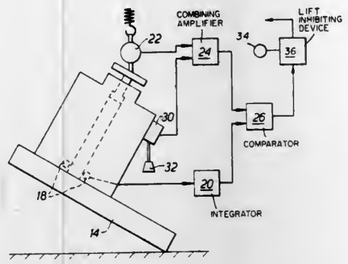
4,237,455

IMPROVEMENTS IN SAFETY DEVICE FOR LIFTING MAGNETS

Philip Beckley, Newport, and John Mildoon, Dudley, both of England, assignors to British Steel Corporation, London, England

Filed Jul. 10, 1978, Ser. No. 923,352
Int. Cl.³ G08B *21/00*; B66C *15/00*
U.S. Cl. 340—685 **24 Claims**

1. A safety system for a magnetic lifting device comprising sensor means for producing a signal representative of flux produced by a device in the magnetic circuit including a body to be lifted, a transducer capable of producing a signal representative of the lifting tension applied to the device together with signal translation means arranged to receive signals derived from the sensor means and from the transducer and effective to provide an output indicating existence of a safety margin between lifting tension and the field available for lifting.

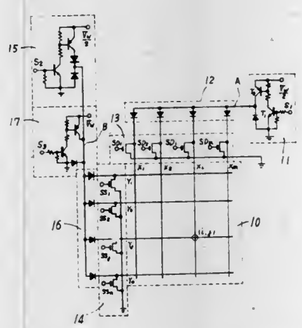


4,237,456

DRIVE SYSTEM FOR A THIN-FILM EL DISPLAY PANEL

Yoshiharu Kanatani, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1977, Ser. No. 819,147
Claims priority, application Japan, Jul. 30, 1976, 51-92571; Feb. 10, 1977, 52-13630; Feb. 10, 1977, 52-13631; Feb. 10, 1977, 52-13632; Feb. 14, 1977, 52-15429
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—719 **12 Claims**



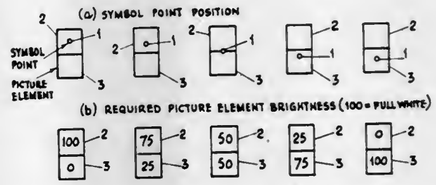
1. A drive system for a thin-film EL matrix display panel, said panel including a thin-film EL element sandwiched between a pair of dielectric layers, scanning line electrodes formed on one of said dielectric layers and data line electrodes, transversely disposed of said scanning line electrodes, formed on the other of said dielectric layers, said scanning and data line electrodes defining individual picture points at respective crossings thereof to provide a matrix of picture points and said thin-film EL element having a predetermined threshold voltage level of electroluminescence, said drive system comprising:
first charging means for applying a first selection voltage to said data line electrodes of a magnitude less than said threshold voltage level of electroluminescence;
a plurality of data side switching means connected to each of said data line electrodes on one end and to a ground potential on the other end for switching to a first switched condition and to a second switched condition, said data side switching means selectively maintaining said first selection voltage on desired ones of said data line electrodes when switched to said first switched condition, said data side switching means selectively maintaining said ground potential on the remaining ones of said data line electrodes when switched to said second switched condition;
second charging means for applying a second selection voltage to said scanning line electrodes of a magnitude less than said threshold voltage level of electroluminescence; and
a plurality of scanning side switching means connected to each of said scanning line electrodes on one end and to a ground potential on the other end for switching to a first switched condition and to a second switched condition, said scanning side switching means selectively maintaining said second selection voltage on desired ones of said scanning line electrodes when switched to said first switched condition, said scanning side switching means selectively maintaining said ground potential on the remaining ones of said scanning lines electrodes when switched to said second switched condition.

4,237,457

DISPLAY APPARATUS

John Houldsworth, Yeovil, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

Filed Nov. 10, 1977, Ser. No. 850,231
Claims priority, application United Kingdom, Nov. 15, 1976, 47417/76
Int. Cl.² G06F *3/14*
U.S. Cl. 340—728 **8 Claims**



1. A method of displaying a symbol on a display apparatus of the kind having a display area which is effectively a regular array of display elements on which a symbol is produced by brightening selected ones of the display elements, the method comprising: selecting the positions of a multiplicity of equally-spaced points on the display area required to define said symbol; for each said symbol point, determining the relative brightness contributions of a group of said display elements adjacent the position required for that symbol point so that said group of display elements create a subjective impression of that symbol point at its required position; for each said element, summing the brightness contributions required for each symbol point for which that element is one of a said group adjacent that symbol point; and setting the brightness of each element in accordance with the summation.

4,237,458

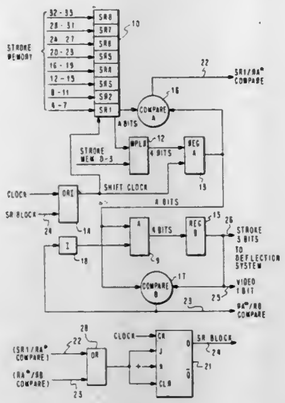
STROKE EXPANSION APPARATUS

Robert H. Lantz, Round Rock, and Alfred A. Schwartz, Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1979, Ser. No. 52,054
Int. Cl.³ G06F *3/153*
U.S. Cl. 340—739 **10 Claims**

1. In a display system in which a sequence of strokes define individual symbols, the improvement comprising:
detecting means for generating a first signal upon the detection of a first stroke immediately succeeded by a second

stroke of opposite direction to said first stroke and of the same video state as said first stroke; and



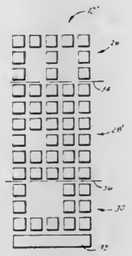
means responsive to said first signal for automatically initiating another display system operation.

4,237,459

VISUAL DISPLAY WITH ILLUMINABLE ELEMENTS ARRANGED IN VERTICALLY ALIGNED SECTIONS

James Cordova, Burlingame, Calif., assignor to Eric F. Burtis, Menlo Park, Calif.

Filed Dec. 21, 1978, Ser. No. 972,017
Int. Cl.³ G09F *9/32*
U.S. Cl. 340—756 **12 Claims**



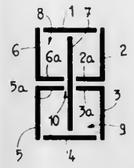
1. In a luminescent display in which individual illuminable elements are located in fixed positions in said display and are electrically connected and arranged in a multipurpose matrix and are coupled to respond directly and concurrently to binary electronic alphabet character codes and are actuable in selected combinations to produce an illuminated display of alphabet characters as specified by said binary electronic alphabet character codes, the improvement wherein said elements are positioned in upper, central and lower vertically aligned sections, each section including a plurality of said elements, and wherein a plurality of elements in each of said upper and lower sections are coupled together for tandem enablement, and said elements in said lower section are responsive only to character codes of alphabet characters having portions descending below a baseline.

4,237,460

ELECTRO-OPTIC DISPLAY DEVICE

Freddy Huguenin, Lausanne, Switzerland, assignor to Ebauches S.A., Canton of Neuchatel, Switzerland

Filed Nov. 27, 1978, Ser. No. 963,791
Claims priority, application Switzerland, Dec. 12, 1977, 15193/77
Int. Cl.³ G09F *9/32*
U.S. Cl. 340—756 **6 Claims**



1. A display device for displaying the ten digits, the device being substantially disposed on the sides of a quadrangular surface, the quadrangular surface having a center, a top side, a bottom side, and two longitudinal sides, the device comprising:

an upper segment lying on said top side of said quadrangular surface;

an upper-left segment including a first longitudinal portion and a first transverse portion arranged in a shape of a letter L with said first longitudinal portion lying on one of the longitudinal sides of said quadrangular surface adjacent said upper segment and said first transverse portion pointing toward said center of said quadrangular surface;

an upper-right segment including a second longitudinal portion and a second transverse portion arranged in a shape of a reversed letter L with said second longitudinal portion lying on the other of said longitudinal sides of said quadrangular surface adjacent said upper segment and said second transverse portion pointing toward said center of said quadrangular surface, said first and second transverse portions extending towards each other, but being spaced from each other;

a lower-right segment including a third longitudinal portion and a third transverse portion arranged in a shape of a number 7 with said third longitudinal portion lying on said other of said longitudinal sides of said quadrangular surface and said third transverse portion pointing toward said center of said quadrangular surface adjacent said second transverse portion;

a lower-left segment including a fourth longitudinal portion and a fourth transverse portion arranged in a shape of a reversed number 7 with said fourth longitudinal portion lying on said one longitudinal side of said quadrangular surface and said fourth transverse portion pointing toward said center of said quadrangular surface adjacent said first transverse portion, said third and fourth transverse portions extending toward each other, but being spaced from each other;

a lower segment lying on said bottom side of said quadrangular surface; and

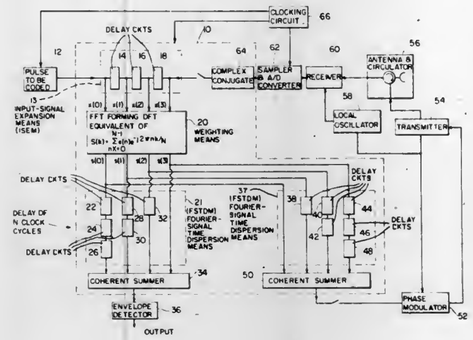
a longitudinal substantially rectilinear segment, passing through said center of said quadrangular surface in the space between said first and second transverse portions and the space between said third and foruth transverse portions and dividing said quadrangular surface into a right portion and a left portion.

4,237,461

HIGH-SPEED DIGITAL PULSE COMPRESSOR

Ben H. Cantrell, Springfield, Va., and Bernard L. Lewis, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1979, Ser. No. 12,409
Int. Cl.³ G01S *13/28*
U.S. Cl. 343—5 FT **6 Claims**



1. Signal-processing means comprising:

pulse coder means for providing a series of weighted pulses from a single input pulse, the time interval of the series being greater than that of said input pulse,

said coder means including input-signal expansion means (ISEM) into which the input signal is fed, said ISEM comprising at least one delay stage, weighting means comprising a discrete Fourier transform circuit to which the output of the ISEM is fed, and a first time-dispersion means to which the outputs of said weighting means are fed for spreading the series of weighted pulses over a still greater time interval; and

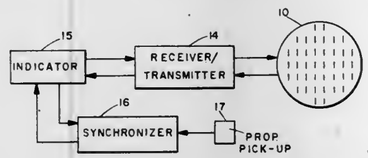
pulse-compression means, of the matched filter type including weighting means which is the same as that employed in said coder means, for receiving and processing echo signals corresponding to the output signals of said time-dispersion means.

4,237,462

RADAR SYNCHRONIZING APPARATUS AND METHOD

James U. Lemke, 1728 Ocean Front, Del Mar, Calif. 92014, and James A. Bixby, 5640 Sandburg Ave., San Diego, Calif. 92122

Filed Feb. 28, 1979, Ser. No. 16,103
Int. Cl.³ G01S *7/28*
U.S. Cl. 343—5 R **12 Claims**



7. Apparatus for synchronizing the firing of radar pulses from behind the propeller of an airplane, said apparatus being comprised of:

means for determining a dead zone comprising an angular increment of blade position within which if the radar is fired a blade of said propeller will intersect the path of said radar pulse or its return and outside of which no blade of propeller will intersect the path of said pulse or its return;

means for detecting when any blade of said propeller is within said dead zone; and

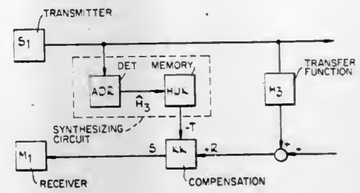
means for generating commands to fire said radar only when no blade of said propeller is within said dead zone.

4,237,463

DIRECTIONAL COUPLER

Hakon E. Bjor, Hvalstad, and Bjorn H. Raad, Oslo, both of Norway, assignors to A/S Elektrisk Bureau, Nesbru, Norway

Filed Oct. 20, 1978, Ser. No. 952,984
Claims priority, application Norway, Oct. 24, 1977, 773627
Int. Cl.³ H04B *1/12*
U.S. Cl. 370—27 **11 Claims**



1. A directional coupler for duplex transmission systems including a transmitter and a receiver comprising compensation circuit means for connection to the receiver,

correction signal means coupled to said compensation circuit means for providing a correction signal thereto for suppressing part of the signal received by said receiver, which part is caused by the transmitted signal from said transmitter, said correction signal means including memory means for storing values of the correction signal, said values corresponding to different possible time function variants of the signal from the transmitter within a fixed time period, the output of said memory means being connected to said compensation circuit means, and

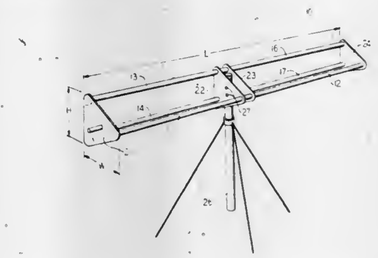
decoder means connected to the transmitter for detection of the actual variants of the signal from said transmitter, and coupled to said memory means to select the corresponding values of the correction signal to be applied to said compensation circuit means.

4,237,464

RADAR ANTENNA EMPLOYING PHASE SHIFTED COLLINEAR DIPOLES

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 26, 1978, Ser. No. 973,642
Int. Cl.³ H01Q *3/26*
U.S. Cl. 343—814 **4 Claims**



1. An antenna array radiation pattern shifting system comprising first and second half-wave antennas colinearly disposed in a common plane;

a fixed phase shifting means connected to said first antenna;

a second variable phase shifting means connected to said second antenna;

the phase shift introduced by said variable phase shifting means being substantially double the phase shift introduced by said fixed phase shifting means; and

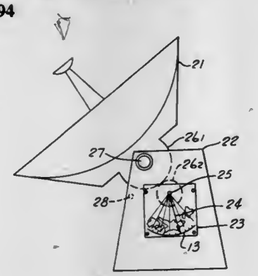
switching means for selectively bypassing the second phase shifting means for changing the direction of said antenna array radiation pattern.

4,237,465

MAP PLATE FOR THE ADJUSTMENT OF ANGLE ELEVATION OF AN ANTENNA

Yoshizo Shibano, Osaka; Tetsuo Hatano, Takatsuki, and Toshihiko Ohkura, Amagasaki, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 697,974, Jun. 21, 1976, abandoned.
This application Mar. 19, 1979, Ser. No. 21,763
Claims priority, application Japan, Jun. 26, 1975, 50-090335
Int. Cl.³ H01Q *3/00*
U.S. Cl. 343—894 **2 Claims**



1. An antenna and map plate combination for adjusting the angle of elevation of the antenna which comprises a contour map of polar coordinates of an area of signal receiving points; a group of equi-angle elevation lines on said map; a scale of the angle of elevation which covers the whole area of signal receiving points and which is given on a circumferential portion of said map; a pointer which is provided on the origin of the polar coordinates and rotates around said origin to indicate the values of said scale; means connected to said pointer for interconnecting the revolution of the pointer to the revolution of an antenna for adjusting the angle of elevation of the antenna, which is found among the group of equi-angle elevation lines on the map, such that the angle of elevation of the antenna will attain the value of the angle of elevation for the point where the antenna is geographically placed in the area of receiving points by driving the antenna until the pointer attains a value on said scale corresponding to that value at which the antenna is placed; and wherein said map plate is fixed to a stand of the antenna and means connected to said pointer is composed of a set of gears a_1 and a_2 whose revolution ratio is made A which is given by the formula below, one of said gear a_1 being connected to the pointer and the other a_2 connected to the antenna,

$$\theta - \theta o' = A\,(\theta u - \theta uo')$$

where

θ is an arbitrary angle,

θu is the angle of elevation of an antenna,

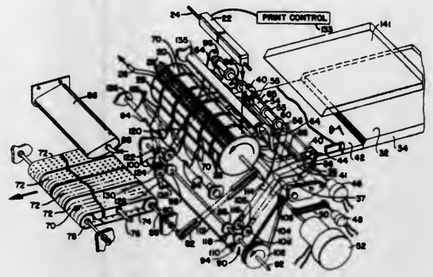
$\theta o'$ and $\theta uo'$ are arbitrary constants.

4,237,466

PAPER TRANSPORT SYSTEM FOR AN INK JET PRINTER

Robert J. Scranton, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed May 7, 1979, Ser. No. 36,886
Int. Cl.³ B65H *7/06*; H04N *1/22*; G01D *15/16*
U.S. Cl. 346—75 **14 Claims**



1. An ink jet printer, comprising:

rotatable support means for supporting a sheet of paper, said support means defining an interior vacuum chamber and a plurality of vacuum openings in the surface of said support means communicating with said chamber,

rotary drive means for rotating said support means,

vacuum source means for partially evacuating said interior vacuum chamber in said rotatable support means,

paper supply means, adjacent said rotatable support means, for loading a sheet of paper onto said rotatable support means,

an ink jet print head, mounted adjacent said rotatable support means, for printing on a sheet of paper supported on said rotatable support means,

sheet diverter means, positioned adjacent said rotatable support means beween said ink jet print head and said paper supply means, for stripping a sheet of paper from said rotatable support means if the sheet is not firmly supported thereon, and

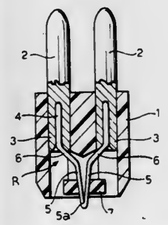
paper sensor means mounted adjacent said rotatable support means, intermediate said sheet diverter means and said ink jet print head, for inhibiting operation of said ink jet print head when a sheet of paper is diverted by said paper diverter means.

4,237,467

THERMAL WRITING DEVICE FOR RECORDING APPARATUS

Renzo Fedrigo, San Fruttuoso - Monza, Italy, assignor to C.G.S. Istrumenti Di Misura S.p.A., Monza, Italy

Filed Sep. 1, 1978, Ser. No. 938,795
Claims priority, application Italy, Sep. 19, 1977, 27668 A/77
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 R **15 Claims**



1. A thermal writing device for recording apparatus using heat-sensitive paper and comprising:

a nib including writing means in the form of a resistor having an electric resistance substantially dependent on temperature and shaped as a stylus, and

an electric supply control circuit which supplies the resistor directly and controls its temperature so as to heat the writing means, comprising

a measuring bridge, one arm of which supplies the resistor;

a power amplifier for supplying the measuring bridge;

a source of a.c. electric signals;

a gate circuit disposed between the source and the input of the power amplifier, and

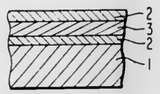
an error amplifier adapted to amplify the voltage present at the sampling diagonal of the measuring bridge and generate a control signal for the gate circuit, the contrl signal enabling the gate circuit to supply the electric signal generated by the source of the power amplifier for periods of time, the duration and sequence of which depend on the amount of unbalance of the measuring bridge, the dependence being such that the length and nearness to one another of the supply periods vary in proportion to the extent to which the temperature of the resistor is lower than a given reference value, and the shortness and distance between the periods value, and the shortness and distance between the periods vary with the temperature of the resistor with respect to the reference value.

4,237,468

RECORDING MEMBER

Akira Nahara; Minoru Wada; Yuzo Mizobuchi, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 21, 1977, Ser. No. 862,883
Claims priority, application Japan, Dec. 29, 1976, 51-158464
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **13 Claims**



1. A recording member comprising a support having a recording layer thereon wherein the recording layer contains (a) a metal selected from the group consisting of Sn, Bi and In and (b) a halide capable of being thermally or photo-chemically activated by high energy density light irradiation and which thereby promotes a thermally initiated phase or structure change of the metal (a), wherein said halide (b) is selected from the group consisting of ZnI_2, SbI_3, SbI_5, CdI_2, KI, AgI, ZrI, SnI_2, SnI_4, SrI_2, CsI, TiI, WI_2, TiI_4, CuI, ThI_4, PbI_2, BiI_3, $SbBr_3$, AgBr, $SnBr_2$, CsBr, TiBr, CuBr, NaBr, $PbBr_2$, NbBr, $BaBr_2$, $CdCl_2$, KCl, AgCl, $SnCl_2$, TlCl, $FeCl_3$, $TaCl_5$, CuCl, NaCl, $PbCl_2$, $NdCl_3$, $BaCl_2$, and a mixture thereof.

4,237,469

ELECTROSTATIC WRITE HEAD

Pol A. G. J. Gustin, and Raymond G. G. Shayes, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,264
Claims priority, application Belgium, Dec. 6, 1977, 183186
Int. Cl.³ G01D *15/00*
U.S. Cl. 346—155 **2 Claims**

1. An electrostatic write head which comprises:

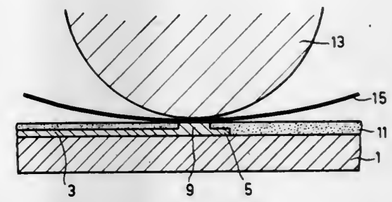
an insulating plate having at least one major surface,

a plurality of conductor tracks disposed on said one major surface,

each track of said plurality of conductor tracks comprising a first end portion having at least first and second axial portions, said first axial portion having a cross-section which has a greater area than the area of any other cross-section at any other axial portion thereof, said first axial portion comprising a write electrode,

each first end portion of each track of said plurality of conductor tracks being coplanar with a part of the conductor track to which it is connected in said plurality of conductor tracks,

each conductor track in said plurality of conductor tracks being disposed in physically spaced relation from every other conductor track in said plurality of conductor tracks on said one major surface and having no magnetically or electrically conductive paths between any two conductor tracks in said plurality of conductor tracks on said one major surface, each of said end portions being mutually parallel,



said first end portions being disposed in an elongated strip-shaped region which extends along the central portion of said one major surface,

each of said first end portions extending perpendicularly to the longitudinal direction of said region,

each conductor track in said plurality of conductor tracks extending from said strip-shaped region in only a single direction,

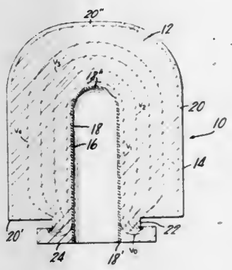
each successive conductor track in said plurality of conductor tracks extending from said strip-shaped region in opposite directions, at least said first end portion of each conductor track in said plurality of conductor tracks being covered by an insulating layer with the exception of said first axial portion.

4,237,470

HYPERPURE GERMANIUM COAXIAL RADIATION DETECTOR

Thomas W. Raudorf, Oak Ridge, Tenn., assignor to ORTEC Incorporated, Oak Ridge, Tenn.

Filed Mar. 20, 1978, Ser. No. 888,236
Int. Cl.² H01L *27/14*
U.S. Cl. 357—30 **7 Claims**



1. A radiation detector comprising a semiconductor having generally the shape of a hollow cylinder with an outer generally cylindrical surface and an inner generally cylindrical surface and being formed with a p^+ contact and an n^+ contact, the p^+ contact being on the outer cylindrical surface and the n^+ contact being on the inner cylindrical surface, said contacts being generally cylindrical and coaxial, the respective cylin-

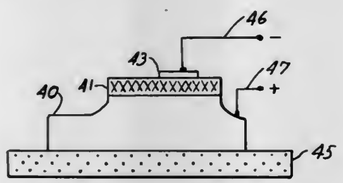
ders formed by each of said contacts being open at at least one end thereof, said open ends being adjacent to each other, and one of said contacts being a thin contact, characterized in that the radially-outer portion of the semiconductor is formed with a rim-like axial extension beyond the open end of the n^+ contact, and that the semiconductor is formed with an annular groove coaxial with the contacts and extending to a position which is closely spaced apart from the thin contact and inward of the open end of the thin contact, whereby, when a reverse bias is applied across the semiconductor between the contacts, the resulting equipotential lines are relatively crowded at the groove, the electric field is of reduced strength adjacent the open end of the thin contact, and reverse leakage current is inhibited.

4,237,471

METHOD OF PRODUCING A SEMICONDUCTOR PHOTODIODE OF INDIUM ANTIMONIDE AND DEVICE THEREOF

Dieter H. Pommerrenig, Burke, Va., assignor to Hamamatsu Corporation, Middlesex, N.J. and Hamamatsu TV Co, Ltd., Hamamatsu, Japan

Continuation of Ser. No. 879,640, Feb. 21, 1978, abandoned, which is a division of Ser. No. 739,659, Nov. 8, 1976, abandoned.
This application Jun. 22, 1979, Ser. No. 51,245
Int. Cl.[2] H01L *27/14*
U.S. Cl. 357—30 **6 Claims**



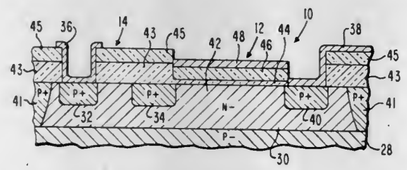
1. An infrared photodiode, comprising
a substrate of indium antimonide of one type of conductivity;
an epitaxial layer on said substrate of another type conductivity and of indium antimonide having the antimony partially replaced with arsenic or phosphorus and having the general formula InM_xSb_{i-x} wherein M is arsenic or phosphorus, and "x" is between 0.01 to 0.05; and wherein said epitaxial layer forms the detecting surface for the detection of infrared radiation;
an ohmic contact on said epitaxial layer; and
an electrode connected directly or indirectly to said substrate.

4,237,472

HIGH PERFORMANCE ELECTRICALLY ALTERABLE READ ONLY MEMORY (EAROM)

Richard J. Hollingsworth, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,586
Int. Cl.[3] H01L *27/02, 29/72, 29/34;* H03K *5/00*
U.S. Cl. 357—43 **9 Claims**



1. An integrated circuit memory comprising:
(A) a plurality of integrated circuit memory cells formed in a body of semiconductor material in an x-y array, each of which comprises:
(i) a metal-nitride-oxide-semiconductor (MNOS) transistor comprising:
(a) a semiconductor layer of a first conductivity type having a pair of spaced regions of opposite conductivity type formed therein, said spaced regions extending to a surface of said semiconductor layer;
(b) a first insulating layer on the surface of said semiconductor layer, said first insulating layer extending at least between said pair of spaced regions;
(c) a second insulating layer on the surface of said first insulating layer; and
(d) a conductive gate on the surface of said second insulating layer; and
(ii) a bipolar transistor comprising:
(a) an emitter region of said opposite conductivity type, said emitter region comprising one of said spaced regions;
(b) means for contacting said semiconductor layer, which semiconductor layer comprises the base of said bipolar transistor;
(c) a collector region of said opposite conductivity type, said collector region extending into said semiconductor layer from a surface thereof, said collector region not lying between said pair of spaced regions and said collector region being separated from the one of said pair of spaced regions nearest to said collector region by a distance equal to the base width of said bipolar transistor; and
(d) means for contacting said collector region; and
(B) means for addressing an individual one of said plurality of cells, said means for addressing comprising a first series of conductive metal lines extending over the surface of the substrate in one direction and a second series of conductive metal lines extending over the surface of said substrate in a direction orthogonal to said one direction, said second series of conductive metal lines not extending over or under said first series of conductive metal lines, said second series of conductive metal lines being connected to conductive diffused regions which extend under said first series of conductive metal lines.

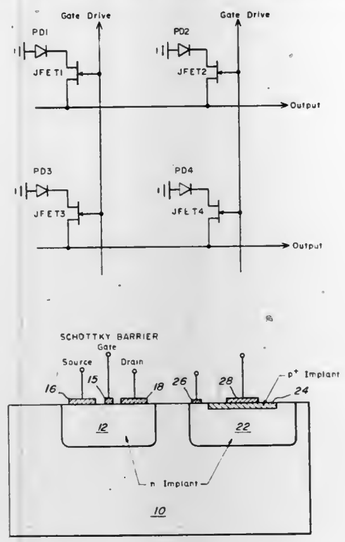
4,237,473

GALLIUM PHOSPHIDE JFET

Alice M. Chiang, Framingham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 762,533, Jan. 26, 1977, abandoned. This application Dec. 22, 1978, Ser. No. 972,298
Int. Cl.[3] H01L *29/161*
U.S. Cl. 357—61 **33 Claims**

1. A field-effect transistor comprising:
a body of GaP having a first conductivity type except in selected regions thereof;
a channel region in one of the selected regions in the body being of a second conductivity type with this second conductivity type of the channel region being opposite the first conductivity type of the body, the channel region doped to provide therein a carrier concentration of $<1\times10^{17}$ carriers/cm3;
a pair of second conductivity type regions, separated by and joined to the channel region, which are capable of serving at least as source and drain regions into which and out of which primary currents through the field-effect can pass upon the source and drain regions being electrically energized; and
a gate region sufficiently adjacent the channel region to be capable of affecting, upon being electrically energized, any current flow occurring through the channel region as



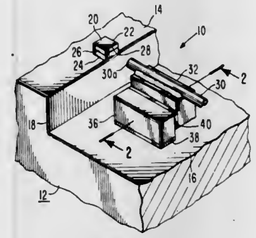
a result of any electrical energization of the source and drain regions.

4,237,474

ELECTROLUMINESCENT DIODE AND OPTICAL FIBER ASSEMBLY

Ivan Ladany, Stockton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,350
Int. Cl.[3] H01L *33/00, 23/02, 23/12*
U.S. Cl. 357—81 **9 Claims**



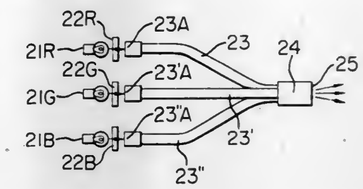
1. In an electroluminescent semiconductor diode assembly which includes an electroluminescent semiconductor diode mounted on a mounting block, an optical fiber mounted on a separate mounting block with an end of the optical fiber being adjacent to and aligned with a light emitting end surface of said diode and at least one layer of a cement securing the optical fiber mounting block to the diode mounting block, the improvement comprising:
said cement layer being thin enough to minimize movement of the mounting blocks relative to each other upon curing of the cement but thick enough to allow ease of moving the blocks relative to each other prior to curing of the cement.

4,237,475

TELEVISION CAMERA WITH TEST PATTERN

Takeshi Sekiguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 888,780, Mar. 21, 1978, abandoned.
This application Mar. 26, 1979, Ser. No. 24,035
Claims priority, application Japan, Mar. 10, 1977, 52-34945; Mar. 29, 1977, 52-47097; Apr. 22, 1978, 53-27386
Int. Cl.[3] H04N *9/04*
U.S. Cl. 358—10 **9 Claims**



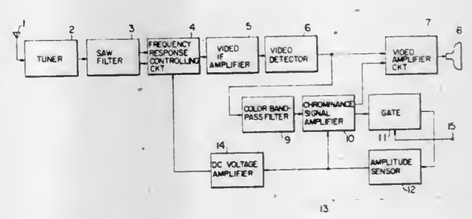
1. A television camera provided with a test pattern projecting device, comprising:
an objective lens;
a color-separating optical system provided on the optical axis of said objective lens;
image-taking devices for sensing the monochromatic images formed by said objective lens and said color-separating optical system;
a test pattern chart projecting means including a light source for illuminating said test pattern chart, a lens means for forming images of said test pattern on said image-taking devices, a means for forming plural color component light beams within said projecting means, a means for regulating intensity of at least one of said plural color component light beams, and a means for again uniting said plural light beams; and
a deflecting means for deflecting the optical axis of said test pattern chart projecting apparatus so as that said optical axis coincides with the optical axis of said objective lens.

4,237,476

AUTOMATIC TILT CONTROL CIRCUIT FOR TELEVISION RECEIVERS

Kentaro Hanma, Yokohama, Japan, and Takeshi Murakami, Ridgewood, N.J., assignors to Hitachi, Ltd., Japan

Filed Apr. 18, 1979, Ser. No. 31,304
Claims priority, application Japan, Apr. 20, 1978, 53/47549
Int. Cl.[3] H04N *9/537*
U.S. Cl. 358—38 **5 Claims**



1. A control circuit of a television receiver for correcting the frequency response characteristic of the television signal comprising:
(a) An SAW filter including an input electrode set connected to receive an intermediate frequency signal from a tuner, and first and second output electrode sets for delivering out the intermediate frequency signal received by the input electrode set, delivery of the intermediate frequency signal from said second output electrode set being delayed a predetermined time with respect to delivery of the inter-

mediate frequency signal from said first output electrode set;

(b) a variable gain circuit connected to receive the intermediate frequency signal from said second output electrode set of said SAW filter and varying the amplitude of the intermediate frequency signal to deliver out an amplitude varied intermediate frequency signal;

(c) an adder circuit connected to receive the intermediate frequency signal from said first output electrode set of said SAW filter and the amplitude varied intermediate frequency signal from said variable gain circuit and adding together these intermediate frequency signals to deliver out a summed intermediate frequency signal;

(d) detector means for amplifying and detecting the summed intermediate frequency signal from said adder circuit to deliver out a detected television signal;

(e) amplitude sensor means connected to receive the output signal of said detector means and deriving out a color burst signal from the output signal of said detector means to generate a DC voltage whose level depends on the amplitude of the color burst signal; and

(f) means for applying the DC voltage generated by said amplitude sensor means to said variable gain circuit to vary the amplitude of the intermediate frequency signal.

4,237,477

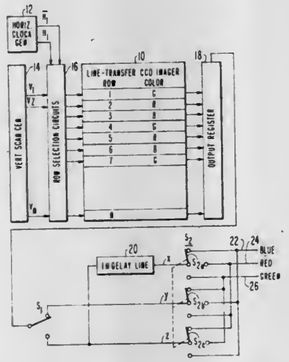
CHARGE TRANSFER IMAGER

Paul K. Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,454

Int. Cl.³ H04N 9/07

U.S. Cl. 358—44 **3 Claims**



1. A charge-transfer (CT) color imager comprising, in combination:

a CT imager array arranged in a plurality of rows;

color filter stripes over the rows, each stripe over a row being of the same color over the entire length of a row, and the stripes over each group of three adjacent rows being in three different colors;

means for reading out the rows of the imager, a pair of rows at a time;

means for delaying for one line time, the signals read from the last row of each pair of rows read out; and

means for selecting color signals to be combined comprising, means for producing, during each of successive intervals in each line time, signals read from successive locations along the pair of rows then being read out, and the signals delayed one line time read from corresponding locations of the preceding row of the pair of rows read out during the previous line time.

4,237,478

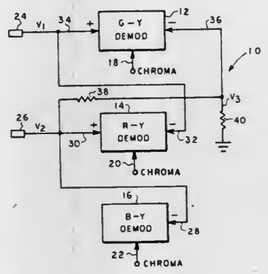
I.C. CHROMA INJECTION AND DEMODULATION SYSTEM

Christopher M. Engel, Arlington Hts.; Gopal K. Srivastava, Mt. Prospect, and George J. Tzakis, Chicago, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 23, 1979, Ser. No. 32,318

Int. Cl.³ H04N 9/50, 9/52

U.S. Cl. 358—23 **13 Claims**



1. In an integrated circuit receiving chroma and oscillator injection signals for developing three color-difference signals, an injection and demodulation system, comprising:

means external to the integrated circuit for applying thereto, via a first input pin, a first oscillator injection signal whose phase vector is oriented along the demodulation axis of a selected color-difference signal;

means external to the integrated circuit for applying thereto, via a second input pin, a second oscillator injection signal whose magnitude and phase is selected such that a signal vector comprising the vector difference of said first injection signal minus said second injection signal is oriented along the demodulation axis of a second color-difference signal, and such that a signal vector comprising the vector difference of said second injection signal minus a selected fraction of said first injection signal is oriented along the demodulation axis of a third color-difference signal;

means located on the integrated circuit and receiving the first injection signal for developing a third injection signal comprising said selected fraction of said first injection signal;

first demodulator means disposed on the integrated circuit, receiving a chroma signal, said second injection signal, and said third injection signal, and adapted to demodulate its received chroma signal along the axis of the vector difference of the second injection signal minus the third injection signal;

second demodulator means disposed on the integrated circuit, receiving a chroma signal, said first injection signal and said second injection signal, and adapted to demodulate its received chroma signal along the axis of the vector difference to the first injection signal minus said second injection signal;

third demodulator means disposed on the integrated circuit, receiving a chroma signal and the first injection signal, and adapted to demodulate its received chroma signal along the axis of said first injection signal;

whereby the chroma signal is demodulated to develop three color-difference signals by utilizing only two input pins for applying the injection signals to the integrated circuit.

4,237,479

BLANKING VOLTAGE GENERATOR FOR A CATHODE RAY TUBE

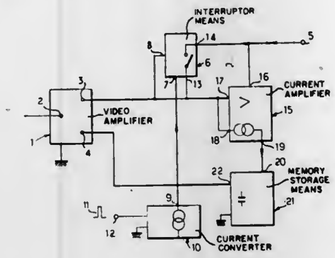
Andre Lavigne, Montrouge, France, assignor to Videocolor S.A., Montrouge, France

Filed Mar. 16, 1979, Ser. No. 21,251

Claims priority, application France, Mar. 16, 1978, 78 07703; Jun. 5, 1978, 78 16770

Int. Cl.³ H04N 9/16

U.S. Cl. 358—33 **13 Claims**



1. Apparatus for generation of a blanking voltage for a cathode ray tube usable for display of television signals and having an electron gun, including a cathode, comprising means sensitive to intensity of cathode current and sampling meand connected for enabling said means sensitive to intensity of cathode current at periods during which a video signal applied to said cathode is equal to zero, and control means for modifying said blanking voltage according to said intensity in such a manner as to blank the beam current when the video signal is equal to zero, characterized by:

(a) a video voltage amplifier means for applying said video voltage and said blanking voltage signals to the cathode of said electron gun, said video voltage amplifier having an output and a control input, the control means comprising:

(i) means for servo-control of said blanking voltage including a feedback loop between: (a) a connection joining the output of said video voltage amplifier to said cathode, and (b) said control input of said video voltage amplifier means,

(ii) said feedback loop comprising a current amplifier means for increasing the cathode current,

(iii) said current amplifier means having an input and an output and further having an output impedance that is high in relation to the output impedance of said video voltage amplifier means, the input circuit of said current amplifier means being connected to the connection joining said cathode to the output of said video voltage amplifier means; and (b) memory storage means having an input connected to the output of said current amplifier means, and an output connected to said control input of said video voltage amplifier means, to maintain a control signal at said control input between successive sampling periods.

4,237,480

TELEVISION CAMERA WITH PICK-UP TUBE MOUNTING MEANS

Adrianus J. J. Franken, and Wolter W. J. Degger, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

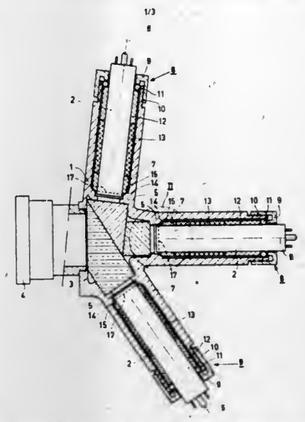
Filed Jun. 1, 1979, Ser. No. 44,610

Claims priority, application Netherlands, Jun. 19, 1978, 7806570

Int. Cl.³ H04N 9/04

U.S. Cl. 358—55 **6 Claims**

1. A television camera in which a color splitting prism and a plurality of pick-up tubes are positioned with respect to each other in a holder which comprises a plurality of annular seats for optical alignment of each respective pick-up tube, each of said pick-up tubes having an adapter ring, which is connected to the tube transversely of the tube axis, for engaging said respective seat, and a resilient pressure member, acting in the



direction of the tube axis, for pressing said adapter ring against said seat, wherein the diameter of the parts of the seat and the adapter ring which are to be pressed together decreases in the pressing direction.

4,237,481

IMAGE REPRODUCTION USING SHARP AND UNSHARP SIGNALS

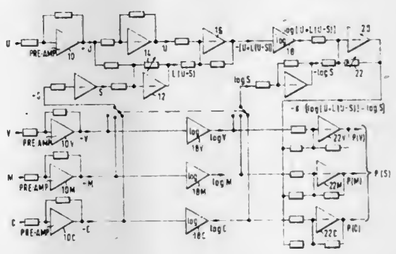
John E. Aughton, London, England, assignor to Crosfield Electronics, Ltd., London, England

Filed Sep. 20, 1979, Ser. No. 77,225

Claims priority, application United Kingdom, Sep. 26, 1978, 38154/78

Int. Cl.³ H04N 1/40

U.S. Cl. 358—80 **8 Claims**



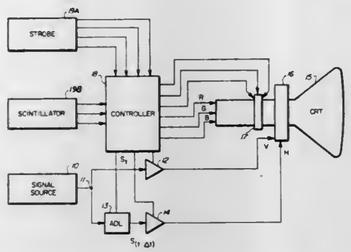
1. A method of image reproduction, in which a picture signal used to form the reproduction is derived from sharp and unsharp signals by subtracting the sharp signal from the unsharp signal to obtain a first difference, adding a multiple between 0.4 and 2.0 of this first difference to the unsharp signal to obtain a first sum, subtracting a multiple (1+K) of a predetermined function of the sharp signal from a multiple K of the same function of the said first sum, the resulting picture signal being thereafter used with or without tone and/or colour correction to control the reproduction of the image.

4,237,482

DISPLAY SYSTEM FOR ACHIEVING AESTHETICALLY PLEASING LISSAJOUS PATTERNS FROM A SINGLE SOURCE OF SIGNALS

Brent R. Brentlinger, 1645 E. Thomas Rd., Apt. 409, Phoenix, Ariz. 85016

Filed Dec. 1, 1978, Ser. No. 965,570
Int. Cl.³ H04N *9/02*
U.S. Cl. 358—81 **19 Claims**



1. A display system using a single source of signals to achieve aesthetically pleasing Lissajous patterns on a multi-color phosphor screen of a color cathode ray tube (CRT), said CRT having the necessary associated power supply and first and second deflection means to provide an intensity controlled, visually discernible image on said screen in response to signals applied to said first and second deflection means comprising:

(a) means for inputting a signal from a single source into said display system;

(b) means for communicating said signal directly to first deflection means of a multi-color phosphor CRT, and through

(c) time delay means to second deflection means of said CRT;

whereby Lissajous figures are formed on the screen of said CRT, and:

(d) hue control deflection means for establishing the color tone of the Lissajous figures displayed.

4,237,483

SURVEILLANCE SYSTEM

Eric C. Clever, Haddonfield, N.J., assignor to Electronic Management Support, Inc., Haddonfield, N.J.

Continuation of Ser. No. 753,588, Dec. 26, 1976, Pat. No. 4,145,715. This application Mar. 19, 1979, Ser. No. 21,887
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.³ H04N *7/18, 5/30;* **G06F** *15/20*
U.S. Cl. 358—108 **7 Claims**

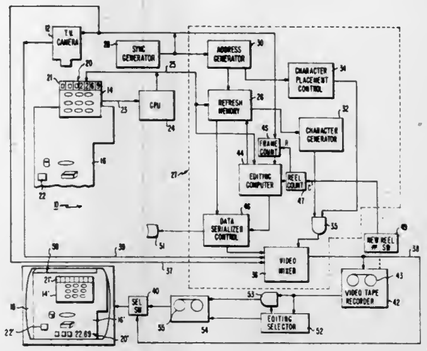
1. A surveillance system for point of sale stations comprising:

a television camera for developing frames of video signals representative of sales transactions performed by a human operator at a point of sale station where goods are moved by the operator across a sales counter and the prices are registered;

means including at least one operator-controlled register for developing digital electronic signals representing data including price information entered by said operator at said point of sale station about said sales transactions concurrently with the development of said video frames;

a video display device for visually displaying image frames of said transactions corresponding to and from associated frames of composite signals;

and control means for generating a set of video character signals from said digital data signals of each of said sales transactions and for forming each of said frames of composite signals from one of said frames of video signals and a set of said character signals of the same transactions in a certain relation so that the associated character images are



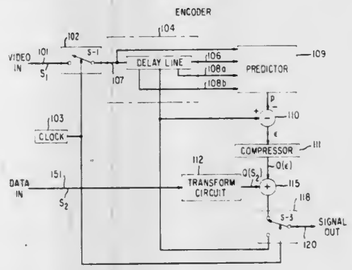
positioned on said display device in a certain location with relation to the associated image frames of said transaction.

4,237,484

TECHNIQUE FOR TRANSMITTING DIGITAL DATA TOGETHER WITH A VIDEO SIGNAL

Earl F. Brown, Piscataway, and Arun N. Netravali, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 8, 1979, Ser. No. 64,918
Int. Cl.³ H04N *7/08*
U.S. Cl. 358—142 **15 Claims**



1. Apparatus for transmitting digital data together with a sampled video signal comprising:

means **(109)** for predicting the value of each of a first set of samples of said video signal based upon the value of other ones of said video signal samples;

means **(110)** for computing the prediction error between the value of each sample in said first set and the corresponding predicted value thereof;

means **(111)** for compressing said error to a range narrower than the range of said video signal;

means **(112, 115)** for superimposing a value indicative of said digital data on each of said compressed errors, whereby the composite value uniquely indicates the digital data; and

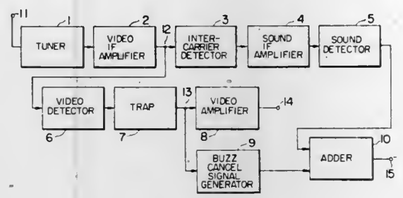
means **(118)** for time multiplexing said composite values with the values of said other ones of said video samples.

4,237,485

BUZZ CANCELLING SYSTEM FOR TELEVISION RECEIVER

Hiroshi Saito, Katano, and Chihiro Adachi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 15, 1979, Ser. No. 3,539
Claims priority, application Japan, Jan. 19, 1978, 53-5075; Oct. 16, 1978, 53-127542
Int. Cl.³ H04N *5/60*
U.S. Cl. 358—197 **5 Claims**



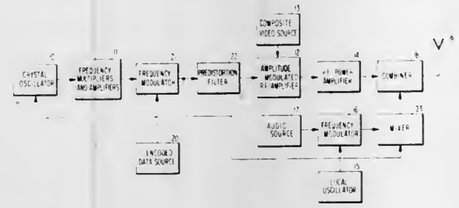
1. A system for cancelling out buzz component from a sound signal in a television receiver, comprising: means for producing a sound IF signal through detection of a video IF signal, means for producing a sound signal by detecting said sound IF signal, means for producing a video signal by detecting said video IF signal, a buzz component cancelling a signal generator circuit for producing a buzz cancelling signal by detecting phase-modulated components of said video IF signal, and adder means for adding said buzz cancelling signal to said sound signal, whereby the buzz component contained in said sound signal is cancelled.

4,237,486

COMPATIBLE TRANSMISSION OF AN ENCODED SIGNAL WITH A TELEVISION

Richard L. Shimp, Waynesboro, Va., assignor to ComSonics, Inc., Harrisonburg, Va.

Filed Nov. 9, 1978, Ser. No. 959,277
Int. Cl.³ H04N *7/08*
U.S. Cl. 358—142 **49 Claims**



1. A method of compatibly and simultaneously transmitting an encoded signal with the normal visual carrier of a television signal comprising the steps of

generating a visual carrier frequency signal,

frequency modulating the visual carrier frequency signal over a narrow bandwidth with a source of encoded signal,

amplitude modulating the frequency modulated visual carrier frequency signal with a source of composite video signals, and

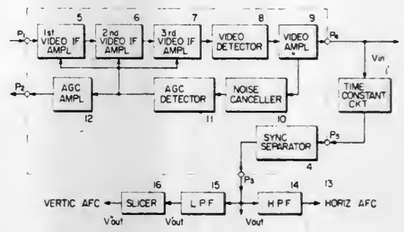
transmitting the frequency and amplitude modulated visual carrier frequency signal.

4,237,487

MONOLITHIC SEMICONDUCTOR INTEGRATED CIRCUIT FOR TELEVISION RECEIVERS

Tsuneo Ikeda, Kodaira, and Yasuhiro Nunogawa, Fuchu, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 26, 1979, Ser. No. 60,752
Claims priority, application Japan, Aug. 21, 1978, 53/100942
Int. Cl.³ H04N *5/08, 5/10*
U.S. Cl. 358—154 **7 Claims**



1. A monolithic semiconductor integrated circuit for television receivers comprising:

a high-frequency amplifier circuit for amplifying video intermediate-frequency signals, wherein an input terminal of said high-frequency amplifier circuit is connected to an externally located input terminal of said monolithic semiconductor integrated circuit;

a video detector circuit which receives the output signals of said high-frequency amplifier circuit and produces composite video signals as detected outputs;

a syn separator circuit which receives the detected outputs of said video detector circuit and produces syn separation output signals to an externally located output terminal of said monolithic semiconductor integrated circuit; and

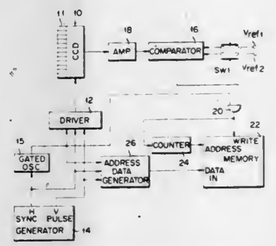
a low-pass filter connected between said externally located output terminal and the output of said syn separator circuit, wherein the time constant of said low-pass filter has been so selected that the resulting syn separation output signals will have a pulse width nearly equal to the pulse width of horizontal syn pulses in said composite video signals and have reduced harmonic components of said horizontal syn pulses.

4,237,488

BLEMISH COMPENSATING SYSTEM FOR A SOLID STATE IMAGE PICK-UP DEVICE

Yasuo Takemura, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 8, 1979, Ser. No. 1,836
Claims priority, application Japan, Jan. 20, 1978, 53-4284
Int. Cl.³ H04N *5/34*
U.S. Cl. 358—163 **7 Claims**



1. A blemish compensating system used for a solid state image pick-up device having a plurality of image pick-up elements which are arranged to store electric charges corre-

sponding to an optical image formed on the light sensitive portions thereof and are sequentially energized by a driving circuit in response to an output signal from a control signal generating means to derive out the electric charges stored on the respective image pick-up elements, comprising:

memory means for storing address data representing the position of a defective solid state image pick-up element or elements;

delay means for delaying the output signal from said image pick-up device by a time required for electrical signals to be taken out of those image pick-up elements of the image pick-up device which are horizontally arranged in a series;

comparing means for comparing the address data corresponding to the position of that image pick-up element which is energized by said driving circuit to produce an output signal with the address data read out from said memory means, in which, when both the data are coincident with each other as a result of the comparison, said comparing means produces an output signal; and

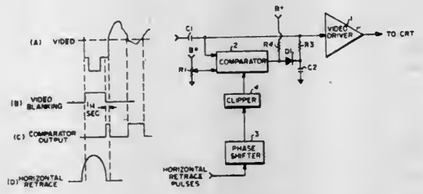
switching means permitting the output signal of the solid state image pick-up device to pass therethrough in a first switching position, and responding to the output signal from said comparing means to be set to a second switching position, thereby permitting the output signal from the solid state image pick-up device to pass therethrough by way of said delay means.

4,237,489

VIDEO BLACK LEVEL REFERENCE SYSTEM

John M. Kresock, Elba, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 26, 1979, Ser. No. 15,024
Int. Cl.³ H04N *5/19*
U.S. Cl. 358—168 **8 Claims**



1. A method of effecting automatic brightness control for a television receiver comprising the steps of:

(a) applying a reference level to a reference input of a comparator means;

(b) coupling a video signal to a signal input of the comparator means;

(c) rendering the comparator means sensitive both to at least a prescribed portion of the luminance component and to at least a prescribed portion of the horizontal sync component of the video signal and insensitive to other portions of the video signal;

(d) developing a signal at the output of the comparator means in response to the prescribed portions of the video signal; and

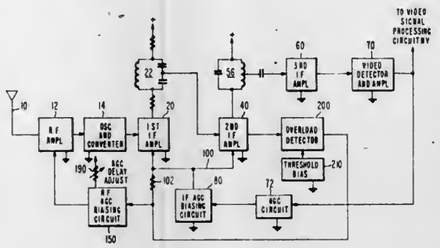
(e) coupling the developed signal to the receiver's CRT so that effective automatic brightness control is achieved regardless of luminance components corresponding to substantially white scenic representations.

4,237,490

SIGNAL OVERLOAD PREVENTION CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,326
Int. Cl.³ H04N *5/52*
U.S. Cl. 358—174 **9 Claims**



1. In a television receiver including a radio frequency amplifying stage; means coupled to said radio frequency amplifying stage for converting a radio frequency signal to an intermediate frequency signal; an intermediate frequency amplifying stage coupled to said converting means, to which an intermediate frequency signal of amplitude sufficient to overload said stage may be applied; and an automatic gain control system including means responsive to the level of a detected video signal for developing an AGC control signal, means responsive to said AGC control signal for controlling the gain of said intermediate frequency amplifying stage, and means responsive to said AGC control signal for controlling the gain of said radio frequency amplifying stage; apparatus comprising:

an overload detector, coupled to said intermediate frequency amplifying stage and independent of said AGC control signal developing means, for generating an overload signal whenever said intermediate frequency signal exceeds a threshold level;

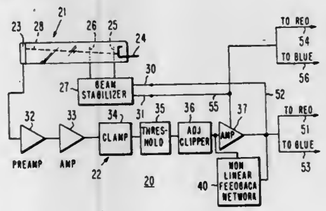
and means for utilizing said overload signal to reduce the gain of said radio frequency amplifying stage without affecting the gain of said gain controlled intermediate frequency amplifying stage, said overload signal utilizing means comprising means for rendering said radio frequency amplifying stage gain controlling means additionally responsive to said overload signal when generated.

4,237,491

TELEVISION CAMERA HIGHLIGHT DISCHARGE APPARATUS

Charles L. Olson, Oaklyn, and Joseph F. Hacke, Lindenwold, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 21, 1979, Ser. No. 22,616
Int. Cl.³ H04N *5/34*
U.S. Cl. 358—223 **4 Claims**



1. An apparatus for discharging an image highlight in a television camera pickup tube, comprising:

(A) means coupled to said pickup tube for forming an electrical signal representative of said highlight;

(B) signal shaping means responsive to said electrical signal, for providing a control signal; and

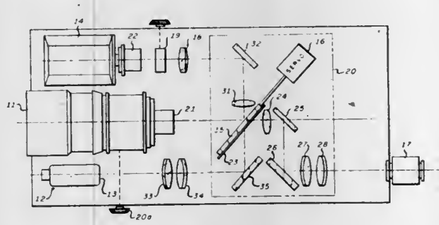
(C) a beam current stabilizer means normally providing a substantially constant scanning beam current, said stabilizer means including circuit means responsive to said control signal for providing increased scanning beam current during the trace period in the presence of said image highlight.

4,237,492

IMAGE OBSERVATION APPARATUS

Irving Roth, Williston Park, and Ralph Davidson, Old Bethpage, both of N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,991
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—225 **7 Claims**



1. An apparatus for viewing a multiplicity of images comprising:

first and second image generating means:

first and second means for receiving optical images; and

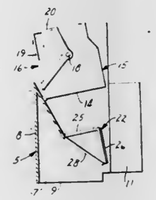
beam splitting means positioned in the optical paths of images generated by said first and second image generators for directing said images to said first and second optical image receiving means, said beam splitting means for controllably reflecting and transmitting portions of a light beam incident thereto to vary the percentages of said incident light beam reflected and transmitted, the range of said variations including substantially 0% reflection and substantially 100% transmission.

4,237,493

TELEVISION SUPPORT AND PICTURE PROJECTOR

Roger H. Appeldorn, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 23, 1978, Ser. No. 953,617
Int. Cl.³ H04N *5/74, 5/64;* G03B *21/00;* H05K *5/00*
U.S. Cl. 358—237 **5 Claims**



1. A television support and picture projection structure comprising

a frame having a pair of transversely spaced vertical members, each with a lower support area,

means on said members for pivotally supporting a television set for movement from a first position with the screen disposed generally vertically to a second position with the screen disposed below the set and generally horizontally, and

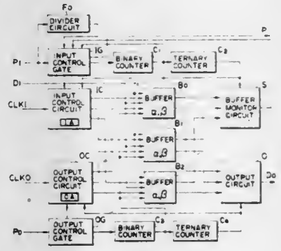
projection lens means, supported by said members and disposed below said means for supporting a television set and between said means for supporting a television set and said lower support areas, for projecting an image from said screen when a said television set is in said second position to a remote screen.

4,237,494

FACSIMILE SYSTEM

Shingo Yamaguchi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,478
Claims priority, application Japan, Jul. 20, 1978, 53-87653
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **7 Claims**



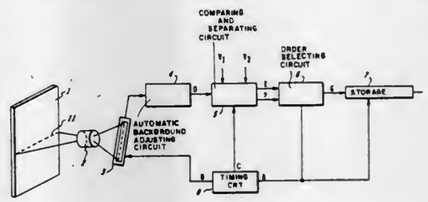
1. In a facsimile system provided with at least a scanner, a printer, a buffer apparatus, a data compression apparatus and a data expansion apparatus, which performs read scanning, record scanning and transmission processing of image element data, line by line, using a subscanning pulse motor for subscanning, the improvement wherein the suspension time of said subscanning pulse motor for use in at least either the read scanning or the record scanning is set so as to be equivalent to a minimum scanning for two lines of said image element data.

4,237,495

CIRCUIT FOR DOUBLING THE NUMBER OF OUTPUT BITS OF A PHOTODIODE ARRAY

Akimitsu Yamamoto, Ebina, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 15, 1979, Ser. No. 20,887
Claims priority, application Japan, Mar. 22, 1978, 53-32540
Int. Cl.³ H04N *1/40;* G06K *9/00*
U.S. Cl. 358—282 **5 Claims**



1. The method of producing two serial binary output bits from the output voltage of each of an array of photoelectric converting elements comprising the steps of:

comparing each element voltage output to two reference voltage levels, and

using the results of said comparing step and the previous output bit to produce two serial output bits, (a) the two bits being both 1's or both 0's if the element output voltage is above the higher reference, or below the lower reference, respectively, or (b) the two bits being a 1 and a 0, or a 0 and a 1, if the element output voltage is between the

reference levels, and the last previously produced output bit was a 1 or a 0, respectively.

4,237,496

DEVICE FOR CODING/DECODING DATA FOR A MEDIUM

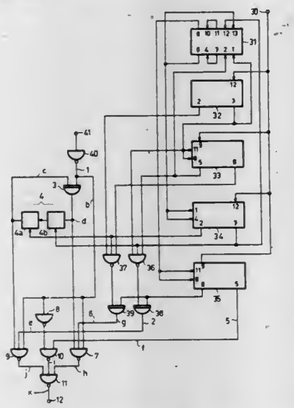
Edmond De Niet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1979, Ser. No. 5,883

Claims priority, application Netherlands, Jan. 30, 1978, 7801042

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—40 **4 Claims**



1. A device for introducing digital data into a medium by means of a bivalent status quantity thereof, said device comprising:

(a) an input for receiving an interleaved data stream of even data bits and odd data bits;

(b) clock pulse generating means for producing for each bit cell, in synchronism with the data bits received, at least one clock signal;

(c) coding means for, within the stream of said even data bits, imparting to a first value of a data bit a first value of a code bit signal and to a second value of a data bit an element of a first alternating succession of second and third values of a code bit signal, and, within the stream of said odd data bits, imparting to the first value of a data bit the first value of a code bit signal and to the second value of a data bit an element of a second succession of the second and third values of a code bit signal; and

(d) output means, connected to an output of said clock pulse generating means, for each time generating, under control of a code bit signal, a transition in said status quantity, whereby under control of said first value of a code bit signal said transition occurs at a standard instant with a code bit cell, under control of said second value of a code bit signal said transition occurs at an advanced instant with respect to said standard instant, and under control of said third value of a code bit signal said transition occurs at a delayed instant with respect to said standard instant.

4,237,497

PROGRAMMABLE MULTI-CHANNEL AUDIO PLAYBACK SYSTEM

Richard W. Trevithick, 1730 E. Woodside Dr., Salt Lake City, Utah 84117

Filed Aug. 11, 1978, Ser. No. 932,781

Int. Cl.³ G11B *15/16, 15/52, 27/22*

U.S. Cl. 360—72.1 **12 Claims**

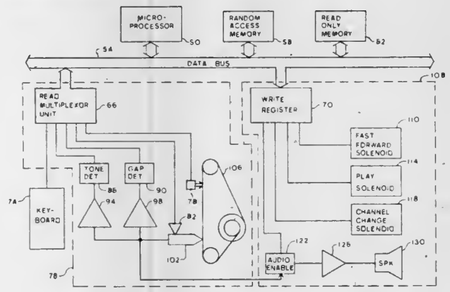
1. A programmable multi-channel audio playback system for tape decks and the like comprising

record means having a multiplicity of channels on which segments or portions of segments of information are serially recorded, each serially adjacent pair of segments being separated by a numbered gap, wherein said record means has recorded thereon a table of contents which includes information identifying each segment of information recorded on the record means, information identifying the number of the gaps preceding each segment of information, information identifying which channel each segment of information begins on, and information indicating what sequence position, from a common position on the record means, each segment of information occupies on the channel on which said each segment begins,

control means for causing the record means to move and for controlling such movement in response to control signals,

reading means for reading said information segments and said table of contents from the record means as the record means is moved,

channel select means responsive to control signals for causing said reading means to read from selected channels on said record means,



means coupled to said reading means for producing a gap indication signal when said reading means encounters a gap on said record means,

audio speaker means for aurally reproducing information segments applied thereto when activated by an activation signal,

keyboard means having a plurality of manually operable keys which, when operated, cause production of key signals, said key signals identifying information segments on the record means which are to be reproduced,

storage means for temporarily storing said key signals, and

a microprocessor responsive to said key signals and said gap indication signals for producing control signals for application to said control means and to said channel select means to control movement of the record means and the reading of information segments by the reading means, and for producing activation signals for activating said audio speaker means.

4,237,498

METHOD OF ADDRESSING AND/OR LOCATING INFORMATION ON A RECORD CARRIER

Gustavus L. P. van Eijck, and Henri J. L. Simons, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,393

Claims priority, application Netherlands, Jan. 30, 1978, 7801041

Int. Cl.³ G11B *15/52, 23/36, 27/22*

U.S. Cl. 360—72.2 **9 Claims**

1. An improved method of addressing and locating information on a record carrier used in an information recording and playback system, the addresses being recorded in the form of digital pulse trains in the same track of said record carrier, wherein the improvement comprises:

recording an address with a sub-audo frequency at recording and playback speed on said record carrier by recording

consecutively at least two preamble pulses and a number of pulses and intervals, corresponding to the ones and zeros of the digitized address, and a number of post-amble pulses equal to the number of preamble pulses;

entering said address into a first address memory;

erasing simultaneously a previous address contained in said first address memory when entering said digitized address into said address memory;

starting the record carrier transport;

starting a pulse counter upon the first preamble pulse when an address passes a read head;

advancing said counter one step upon each subsequent pulse;

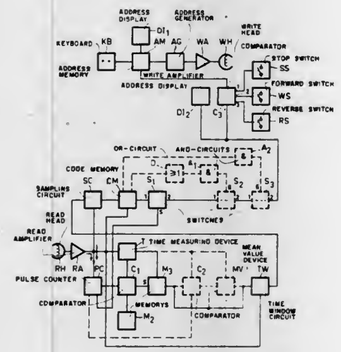
measuring the interval between the first two preamble pulses;

storing predetermined values in a second memory;

comparing said interval with values stored in said second memory, which values correspond to the minimum and maximum speed of said record carrier; and,

storing the measured value if it lies between said minimum and maximum speed values in a third memory;

measuring the interval between the two consecutive preamble pulses if the number of preamble pulses is greater than two,



determining whether a code pulse appears in a time window near the end of the subsequent intervals which are equal to the mean of the preamble intervals if, within certain limits, the measured values are equal to the interval between the first and second preamble pulse;

storing a binary value in a code memory, the value being a function of the appearance or non-appearance of a pulse in a time window;

advancing the pulse counter one step after each interval until said pulse counter reaches a count which is equal to the sum of the total member of preamble, code and post-amble pulses;

comparing the content of said code memory with the content of said address memory;

stopping the record carrier transport if said contents correspond in anticipation of re-starting at playback speed;

switching directly to playback speed; and

moving said record carrier forward if the content of said code memory is smaller than that of said address memory;

moving the record carrier in the reverse direction if the content of said code memory is greater than that of the address memory.

4,237,499

VIDEO TAPE CONTROL TIME CODE READING

Katsuichi Tachi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

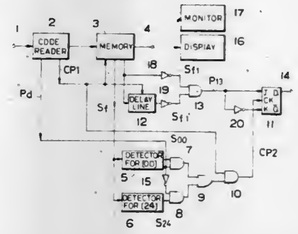
Filed Nov. 15, 1978, Ser. No. 960,855

Claims priority, application Japan, Nov. 18, 1977, 52-138757

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.² G11B *15/52*

U.S. Cl. 360—73 **10 Claims**



1. A method for distinguishing between at least first and second control time codes reproduced from a video tape which contains frames of video recorded thereon, said first control time code including at least first repeating sequences of contiguous frame codes identifying an odd number of individual frames of said video, said second control time code including at least second repeating sequences of contiguous frame codes identifying an even number of individual frames of said video, comprising the steps of:

producing a first signal responsive to a reproduced frame code identifying an even frame number;

comparing said first signal with a second signal produced responsive to an immediately preceding frame code identifying an even frame number; and

producing a first output signal when the comparing step indicates that said first signal and said second signal both identify the same condition of oddness or evenness.

4,237,500

METHOD OF CONTROLLING THE POSITION OF A WRITE-READ HEAD AND DEVICE FOR CARRYING OUT THE METHOD

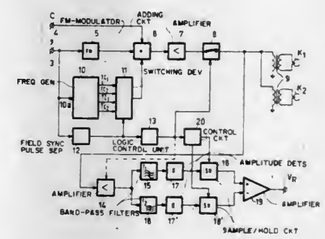
Hendrik J. Sanderson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1979, Ser. No. 6,061

Claims priority, application Netherlands, Feb. 6, 1978, 7801318

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **8 Claims**



1. A device for controlling the position of a write-read head in a recording apparatus relative to a record carrier while recording on said record carrier, said device comprising a write-read head for recording information on the record carrier, positioning means for controlling the relative position of

the write-read head with respect to information tracks being recorded on said record carrier in a direction transverse to said information tracks, and a control circuit for generating and applying a control signal to said positioning means, wherein the device further comprises a signal generator for applying, at least during a first time interval, a tracking signal to the write-read head, switching means for interrupting the supply of signals to the write-read head during a second time interval, and detection means for detecting the cross-talk signal during the second time interval, resulting from the tracking signal from the preceding information track, and for applying the detected signal to the control circuit.

4,237,501

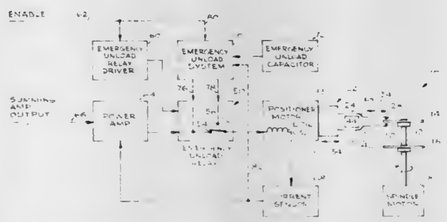
EMERGENCY HEAD UNLOAD SYSTEM FOR MAGNETIC DISK DRIVE

Evan L. Barmache, Northridge, and Abraham Brand, Encino, both of Calif., assignors to Pertec Computer Corporation, Los Angeles, Calif.

Continuation of Ser. No. 927,763, Jul. 25, 1978, abandoned. This application Jun. 6, 1979, Ser. No. 45,924

Int. Cl.[2] G11B *5/54, 17/00, 21/08*

U.S. Cl. 360—75 **11 Claims**



1. In a disk drive including a disk having a magnetic surface and a motor having a positioner coil for radially moving a head support structure along said disk surface, apparatus responsive to an emergency condition for causing said coil to rapidly move said support structure radially outwardly at a controlled velocity, said apparatus comprising:

switch means having first and second input terminals and including means capable of selectively defining a first state to connect said first input terminal to said positioner coil or a second state to connect said second input terminal to said positioner coil;

brake circuit means electrically connected to said first input terminal and responsive to a signal indicative of said emergency condition for reducing the velocity of said positioner coil toward zero;

means responsive to said emergency condition signal for switching said switch means from said first to said second state after a predetermined time delay;

velocity control circuit means connected to said second input terminal for supplying a substantially constant current through said switch means to said positioner coil;

emergency power supply means; and

means for connecting said emergency power supply means to said brake and velocity control circuit means to supply power thereto during said emergency condition.

4,237,502

DISK DRIVE SYSTEM

Robert W. Erickson, Jr., Pacific Palisades, and G. Randall Stevens, Inglewood, both of Calif., assignors to Per Sci, Inc., Los Angeles, Calif.

Filed Jul. 10, 1979, Ser. No. 56,243

Int. Cl.[3] G11B *21/08;* **G05B** *13/00*

U.S. Cl. 360—78 **8 Claims**

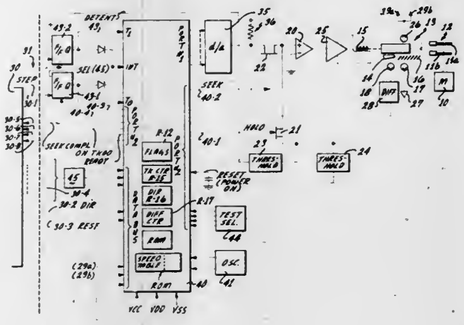
1. A disk drive having at least one spinning disk, a carriage for at least one transducer to be positioned adjacent to the disk for interaction therewith for data recording and/or retrieval, the carriage with the transducer being movable in radial direction for positioning above one of a plurality of concentric tracks on the disk; an electric motor for driving the carriage; and a control circuit for the motor comprising:

transducer means operatively coupled to the carriage for sensing the disposition of the carriage and producing a periodically variable output signal representative of the relative disposition of the carriage and the transducer thereon;

amplifier means connected to the motor for providing thereto a control signal for controlling the motor, further having an input means connected for receiving error type signals;

a first feedback loop including analog circuit means and connected to be responsive to said output signal and feeding it to the said input means, further including first gate means connected for enabling and disabling the first feedback loop;

a second feedback loop also connected to the output circuit of the transducer means and deriving from the output signal a train of pulses corresponding to the periodicity thereof, the pulses being representative of the passage of the carriage transducer across the tracks of the disk, the second feedback loop further including a microcomputer means having an interrupt input, there being circuit means



to connect the interrupt input to receive said train of pulses, the microcomputer having an output port, the second feedback loop further including a digital to analog converter to provide output signals to the input means in response to a digital signal on the port, there being second gate means connected for enabling and disabling the second feedback loop;

external circuit means connected to provide pulses to the interrupt means commanding and representing number of tracks over which the carriage transducer is to be moved;

first program means in the microcomputer for causing the content of a register in the computer to be incremented in response to the pulses as provided by the external circuit means and to be decremented in response to the pulses of the second feedback loop, the first program means including interrupt routines for the separate acceptance of the pulses from the external circuit means and from the second feedback loop;

second program means in the microcomputer for providing digital speed command signals to the said port in response to the content of the register; and

third program means for providing signals to the first and second gate means for enabling the first feedback loop in response to a particular content of the said register and for enabling the second feedback loop in response to a content of the register different from the particular content.

4,237,503

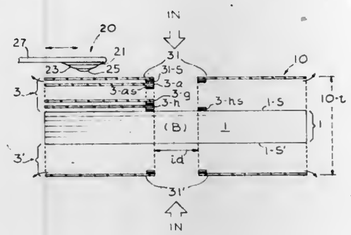
SEMI-RIGID MAGNETIC RECORDING DISK MODULE

Herbert U. Ragle, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 3, 1979, Ser. No. 680

Int. Cl.[3] G11B *5/016*

U.S. Cl. 360—99 **17 Claims**



1. An improved floppy disk recording unit including at least one flexible magnetic recording disk characterized by a recording face adapted to "fly" over the aerodynamic face of a prescribed fixedly-held transducer for transduction thereby, the unit also including:

pneumatic flexible cushion means disposed adjacent each said disk on the side opposite said recording face, this cushion means consisting of a number of spaced flexible dummy-disks similar to said recording disk;

all disks being separated from one another by a respective annular spacer, each spacer being identical and radially-pervious to a respective air-flow, outward betwen respective disks, cushioningly; and

a support means disposed operatively adjacent each said cushion means opposite the respective recording disk and adapted to present thereto a "reference surface" of prescribed rigidity, uniform flatness and levelness when corotated with the unit at a prescribed, relatively high rotational speed.

4,237,504

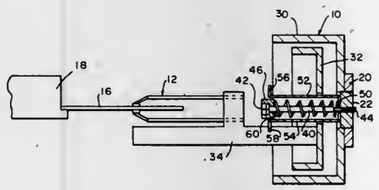
LINEAR ACTUATOR INCLUDING LIMIT STOP ASSEMBLY FOR MAGNETIC DISC DRIVE

Bin L. Ho, Los Gatos, and Albert Guerini, Gilroy, both of Calif., assignors to Priam, Cupertino, Calif.

Filed Jan. 26, 1979, Ser. No. 6,777

Int. Cl.[2] G11B *21/08;* **G05G** *5/06*

U.S. Cl. 360—106 **19 Claims**



1. A limit stop assembly for use with linear actuator means to limit linear travel of a carriage assembly of said linear actuator means comprising

an elongated first stop member axially aligned with the linear travel of said carriage assembly and having an enlarged head portion on one end and a threaded portion on the other end,

an adjustable seat having an externally threaded surface for mating with a support plate of the linear actuator means and an internally threaded surface for receiving said threaded portion of said first stop member,

a cup shaped member having an open end and a partially closed end with the cup portion being of sufficient size to receive said enlarged head portion of said first stop member and said partially closed portion having an opening therethrough for receiving the body portion of said first stop member whereby said cup shaped member is slideably mounted on said first stop member with said enlarged head portion limiting travel thereof,

a second stop member including a generally planar central portion having an opening for receiving said first stop member and a plurality of fingers extending from said central portion in generally parallel alignment with said first stop member, each of said fingers including a stop surface extending generally perpendicular to said finger, and

spring means positioned about said first stop member yieldably biasing said cup shaped member into engagement with said enlarged head portion and yieldably biasing said second stop member away from said cup shaped member whereby travel of said carriage assembly is limited in one direction when said carriage assembly engages said cup shaped member and said enlarged head and travel of said carriage assembly is limited in an opposite direction when said carriage assembly engages said stop surfaces of said fingers.

4,237,505

COMBINED RECORDING AND PLAYBACK MAGNETIC TAPE HEAD WITH SHIELD CASES AND A FLAT CHIP FOR CONTROLLING TAPE WRAP ANGLE

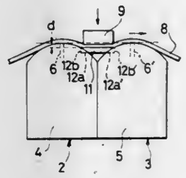
Yozo Yamada, and Michinori Narui, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 3, 1978, Ser. No. 957,503

Claims priority, application Japan, Nov. 5, 1977, 52-147953[U]

Int. Cl.[3] G11B *5/22, 5/28, 15/60*

U.S. Cl. 360—122 **7 Claims**



1. In a magnetic tape head having a recording head and a playback head combined into a unitary element with associated shield cases for each head, said heads having generally arcuate front surfaces having a groove therebetween and chip means positioned in said groove for controling the wrap angle of a tape traveling over said tape head, the improvement comprising: slot means in at least one shield case for receiving one end of said chip means and for maintaining said chip means in position in said groove, wherein said chip means has a substantially flat top portion with said one end forming a rectangular corner with said top portion.

4,237,506

POLYMODAL MAGNETIC RECORDING MEMBER

William A. Manly, Arlington, Tex., assignor to Graham Magnetics Inc., North Richmond Hills, Tex.

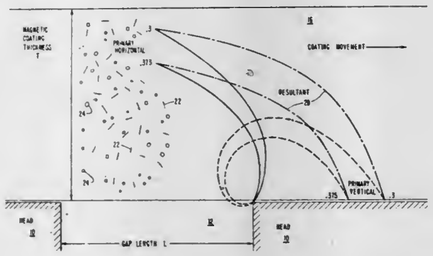
Filed Apr. 3, 1978, Ser. No. 892,984

Int. Cl.[3] G11B *5/82;* **H01F** *10/02*

U.S. Cl. 360—135 **7 Claims**

1. In a polymodal magnetic recording member of the circular floppy disc type characterized by a polymodal combination of at least two population of magnetic particles the combination of which exhibits an unintegrated dM/dt curve having

peaks separated by valleys of a depth equal to at least one-half of the average height of the adjacent peaks over the base line, the improvement comprising a magnetic-recording coating having ferromagnetic particles in an organic resin binder, and said coating being up to about 100 microinches thick and comprising one population of magnetic particles, vertically-oriented within an upper zone and preferentially responsive to vertical magnetic flux lines in said zone, and wherein said vertically-oriented particles exhibits a squareness in the direc-



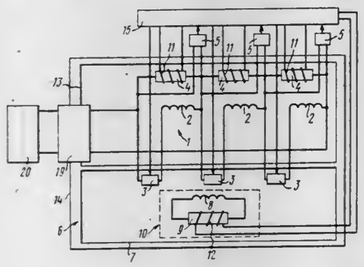
tion normal to the surface of the medium of at least about 0.65; and said coating also comprising, in addition to said vertically-oriented particles of at least one other magnetic material, which are preferentially responsive to a horizontal flux of a magnetic field in a lower zone, and which have a coercivity differing by at least 200 oersteds from said coercivity of said vertically oriented particles thereby enhancing the independent switching characteristics of each particle population in the polymodal combination.

4,237,507

SUPERCONDUCTING MAGNETIC SYSTEM

Eduard A. Meierovich; Pavel B. Shenderovich; Jury I. Chalisov; Valery A. Golenchenko; Igor V. Rybin, and Vitaly B. Sukhushin, all of Moscow, U.S.S.R., assignors to Gosudarstvenny Nauchnoissledovatelsky Energeticheskiy Institut Imeni G. M. Krzhizhanovskogo, Moscow, U.S.S.R.

Filed Jul. 11, 1978, Ser. No. 923,683
Int. Cl.[2] H02H *3/08*
U.S. Cl. 361—19 **8 Claims**



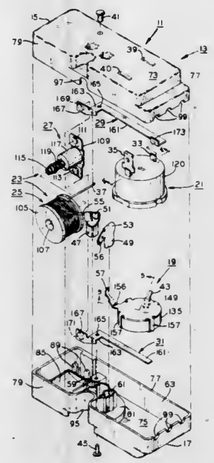
1. A superconducting magnetic system comprising:
a cryostat;
a cooled compartment placed in said cryostat;
a superconducting sectionalized coil arranged in said cooled compartment, each coil section having a series-connected disconnector, said coil section and series-connected disconnector being connected in parallel to a controlled shunt of superconducting material and a normal zone detection unit with an output, each said controlled shunt having an individual control winding linked electrically with the respective normal zone detection unit;
an energy removal device linked inductively with each said section of said superconducting sectionalized coil, said energy removal device comprising a compartment cooled to cryogenic temperature, heat-insulated from above-said cooled compartment and arranged likewise inside, said cryostat containing said disconnector of each said section, and at least one coil of normal metal arranged within said cryogenically cooled compartment and having a jumper of superconducting material connected with said coil of normal metal so as to make up a closed electric circuit, said jumper having an individual control winding linked electrically with each said normal zone detection unit;
current-carrying leads of said superconducting sectionalized coil;
a source of supply connected to said current-carrying leads of said superconducting sectionalized coil.

4,237,508

ELECTRICAL CONTROL

Lee O. Woods, Morrison, and Donald L. Haag, Sterling, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Sep. 8, 1978, Ser. No. 940,589
Int. Cl.[3] H02H *7/085*
U.S. Cl. 361—24 **16 Claims**



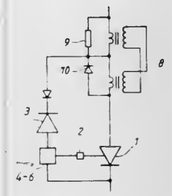
7. An electrical control adapted for assembly onto at least some predeterminately spaced apart male terminals of a clustered plurality thereof which may be subjected to vibration, the electrical control comprising a housing, a clustered plurality of predeterminately spaced apart female terminals disposed in said housing and adapted for releasably receiving respective ones of the at least some male terminals of the clustered plurality thereof when the electrical control is assembled onto the at least some male terminals; a relay device, a solid state starter device and an overload protector device connected in circuit relation in said housing and predeterminately supported in spaced relation in said housing with respect to said female terminals of said clustered plurality thereof so that the centers of gravity of said relay device, said solid state starter device and said overload protector device are generally balanced about said female terminals thereby to at least limit vibrational torque stressing of said female terminals in the event of the occurrence of the vibration of the at least some male terminals when the electrical control is assembled thereon.

4,237,509

THYRISTOR CONNECTION WITH OVERVOLTAGE PROTECTION

Gunnar Asplund, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed May 16, 1978, Ser. No. 906,509
Claims priority, application Sweden, May 17, 1977, 7705762
Int. Cl.[3] H02H *3/20*
U.S. Cl. 361—56 **5 Claims**



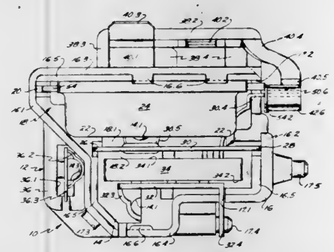
1. In an overvoltage protection circuit for a thyristor having an impedance means connected in parallel with the thyristor, the impedance of the impedance means decreasing from a first high value to a lower value in accordance with an impedance characteristic and in response to an increase in the voltage across the impedance means exceeding a predetermined value, the improvement of a circuit means for compensating for the non-ideal impedance characteristic of the impedance means comprising:
inductive means having a first winding connected in series with the thyristor only, and a second winding connected in series with the parallel connection of the thyristor and said impedance means,
resistive means connected in parallel with said second winding for generating a voltage across the second winding when the impedance means is conducting with a low impedance,
said second winding being coupled to said first winding for generating a voltage in said first winding compensating for the resistive voltage drop in the impedance means.

4,237,510

ELECTRICAL SWITCHING APPARATUS

Herbert A. Thompson, Jr., Cumberland, R.I.; Ronald E. Senor, North Attleboro, and Louis C. Beggs, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Attleboro, Mass.

Filed Dec. 29, 1978, Ser. No. 974,455
Int. Cl.[3] H02H *7/085*
U.S. Cl. 361—24 **18 Claims**



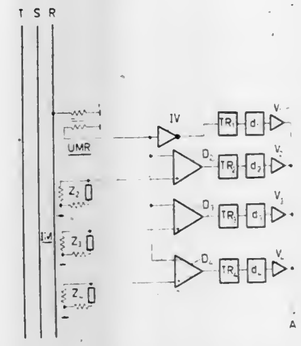
1. Combination motor protector and starter apparatus comprising a housing of electrically insulative material having a bottom wall and upstanding front, back and side walls attached thereto and terminating at an opened end, the walls forming a chamber therein, a groove formed in each side wall extending generally from the bottom wall to the open end, the grooves opposed to each and forming a pair,
a first terminal plate having two opposite edges slidably received in the pair of grooves and separating the chamber into a first and second portion, the plate having electrical contacting surfaces thereon,
a second terminal plate received in the first chamber portion in spaced relation to the first terminal plate, the second plate having electrical contacting surfaces thereon,
an electrical resistor in the form of an element having spaced contact surfaces received in the first chamber portion between the first and second terminal plates with the contact surfaces of the plates in electrical engagement with the respective contact surfaces of the resistor element,
a motor protector having a housing, the motor protector mounted in the second chamber portion with the housing spaced a selected distance from the first terminal plate,
electrical energizing means mounted in the housing, and
lid means lockingly received at the open end of the housing to close the chamber.

4,237,511

SELECTIVE PROTECTION PROCESS FOR ELECTRICAL LINES AND DEVICE FOR CARRYING OUT THE PROCESS

Ivan De Mesmaeker, Fislisbach, Switzerland, and Ivan De Mesmaeker, Fislisbach, Switzerland, assignors to BBC Brown, Boveri & Co Ltd, Baden, Switzerland and BBC Brown, Boveri & Co Ltd, Baden, Switzerland

Filed Oct. 23, 1978, Ser. No. 953,788
Claims priority, application Switzerland, Oct. 31, 1977, 13196/77
Int. Cl.[3] H02H *7/26, 7/26*
U.S. Cl. 361—80 **8 Claims**



1. A method for monitoring an electric line for short-circuits occurring within a predetermined distance from a measuring location at the line, in which line phase detection signals dependent on the distance between the measuring location and the short-circuit location are formed from the line current and the line voltage at the measuring location, and in which timewise immediately successive ones of said detection signals are subjected to a detection and comparison of their relative phase angles with a threshold value of at least approximately 180° to produce a triggering signal in the event of a short-circuit occurring within said predetermined distance, comprising the steps of:
(a) forming at least three reference signals proportional to the voltage drop across a reference impedance each caused by a line current signal applied to the respective reference impedance, said at least three reference signals defining a polygonal trigger region;
(b) forming from each of said reference signals a detection signal by forming the difference between a corresponding reference signal and a line voltage signal;
(c) deriving first and second monitoring signals from the zero cross-overs of said detection signals, said first and

second monitoring signals having positive and negative rates of change; and

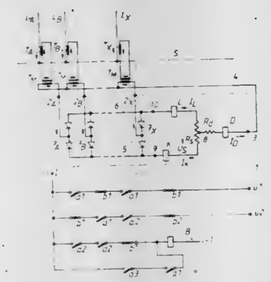
(d) sequence detecting said monitoring signals to produce said triggering signal, said triggering signal being derived from at least twice alternatingly successive first and second monitoring signals within a predetermined monitoring interval of at least approximately the duration of a half-period of the frequency of said detection signal.

4,237,512

DIFFERENTIAL PROTECTION CIRCUITRY FOR ELECTRICAL DEVICES

Thorleif Forford, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Nov. 7, 1978, Ser. No. 958,481
Claims priority, application Sweden, Nov. 11, 1977, 7712755
Int. Cl.³ H02H *3/32*
U.S. Cl. 361—87 **11 Claims**



1. Differential protection circuitry responsive to measured current pulses occurring upon external and internal faults of a protected device for emitting blocking and tripping signals, respectively, upon occurrence of an external and an internal fault of the protected device, the protection circuitry comprising:

a stabilizing circuit including means for rectifying said measured current pulses, first and second level-sensing means each being responsive to a respective different polarity output of said rectifying means, and a stabilizing potentiometer connected in series with said first and second level sensing means;

a differential circuit connected to the sliding terminal of said potentiometer for emitting tripping signals in conjunction with the operation of said stabilizing circuit; and

blocking circuitry for blocking the emission of said tripping signals, and being responsive to the outputs of said first and second level-sensing means, said blocking circuitry being activated during a half cycle of said measured current pulses when overcurrent occurs in said stabilizing circuit before overcurrent occurs in said differential circuit and being reset when the currents through said two level-sensing means are below a predetermined level.

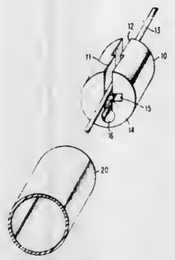
4,237,513

THERMOCONSTRICTIVE DISCONNECT OF CONDUCTORS IN ELECTRICAL APPARATUS

Stephen Foldes, 5 Riverside Dr., Binghamton, N.Y. 13905

Filed Oct. 25, 1978, Ser. No. 954,369
Int. Cl.³ H02H *5/04*
U.S. Cl. 361—103 **2 Claims**

1. Overheating protection for electrical apparatus having internal wirings, including a conductor carrying current vital to the operation of said apparatus, disconnect means comprising a shearing member, having cutting jaws engaging said conductor and a covering of thermoconstrictive material surrounding said shearing member, said material having a coefficient of constriction at a selected temperature sufficient to produce a force for closing said jaws and thereby severing said conductor.

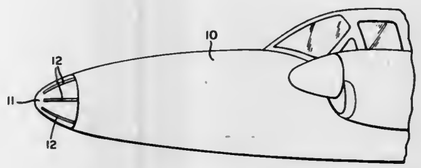


4,237,514

LIGHTNING DIVERTER STRIP

Jay D. Cline, Fort Lauderdale, Fla., assignor to Dayton-Granger, Inc., Fort Lauderdale, Fla.

Continuation of Ser. No. 823,025, Aug. 9, 1977, abandoned. This application Dec. 1, 1978, Ser. No. 965,605
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—117 **5 Claims**



1. A lightning diverter strip for conducting lightning-induced electrical currents and thereby protecting vulnerable aircraft components such as radomes and the like, comprising a substrate of flexible dielectric tape having a lower surface adapted to be applied to the aircraft component to be protected thereby, and having an upper surface, a flexible epoxy binder on said upper surface, a conductive metal powder of finely divided aluminum uniformly deposited along said tape and bound thereto by said binder, said powder having a density such as to provide a very high DC resistance which reads essentially as an open circuit to DC voltages while forming a discrete, non-destructive conductive path for electrical currents induced by lightning.

4,237,515

PROTECTIVE ELECTRICAL DISCHARGE DEVICE

Thomas V. Pierce, Jr., Monroeville, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Mar. 19, 1979, Ser. No. 21,521
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—127 **7 Claims**

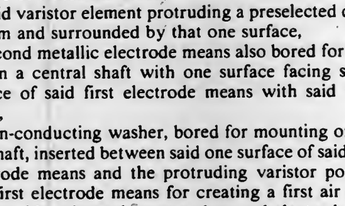
1. A protective electrical discharge device comprising:

(a) a pair of conductive electrodes, each with a recess formed in one surface and drilled for mounting on a central shaft with recessed surfaces facing each other,

(b) a block of varistor material having a predetermined voltage characteristic for high conductivity and a length longer by a selected distance than the sum of the depth of both recesses in said electrodes,

(1) said varistor block drilled for assembling in line with said electrodes on a central shaft and further sized for press-fitting into each recess to space said electrodes by an air gap equal to said selected distance,

(c) an insulated shaft and spring structure inserted through said electrodes and varistor as a mounting shaft for retaining the assembly in position with said selected distance air gap, and



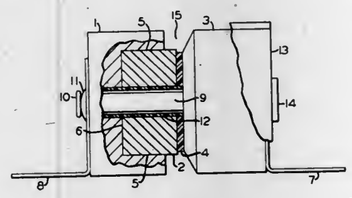
(d) a pair of electric terminals positioned one against each electrode outer surface for forming an electrical discharge path through said electrode and varistor assembly with said air gap in parallel with said varistor block whereby a voltage potential greater than said predetermined characteristic applied across said terminals initially discharges through said varistor block and subsequently discharges through said parallel air gap.

4,237,516

PROTECTIVE ELECTRICAL DISCHARGE DEVICE

Thomas V. Pierce, Jr., Monroeville, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Mar. 19, 1979, Ser. No. 21,522
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—127 **10 Claims**



1. A protective electrical discharge device comprising,

(a) a first electrode means bored for mounting on a central shaft and comprising a varistor element fitted into one surface of a metallic block,

(1) said varistor element protruding a preselected distance from and surrounded by that one surface,

(b) a second metallic electrode means also bored for mounting on a central shaft with one surface facing said one surface of said first electrode means with said varistor insert,

(c) a non-conducting washer, bored for mounting on a central shaft, inserted between said one surface of said second electrode means and the protruding varistor portion of said first electrode means for creating a first air gap between said varistor element and second electrode,

(1) said washer and protruding varistor portion creating a second and copositioned air gap between the second electrode one surface and the surface of said metallic block surrounding said varistor protrusion,

(d) a retainer shaft means inserted through the bored elements for holding the assembly of said first and second electrode means and said washer firmly in position, and

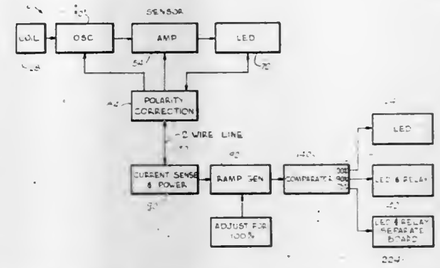
(e) a pair of terminals, one connected to the outer surface of said first and second electrode means by said retainer shaft means for completing a discharge path, over which a high voltage applied to said terminals is dissipated by an initial discharge across said first air gap which actuates a subsequent discharge across said second air gap to dissipate the major portion of the high energy surge and protect the varistor from damage.

4,237,517

MOTION MONITORING APPARATUS

Donald M. Myers, Berrien Springs, Mich., assignor to Ludlow Industries, Inc., Batavia, Ill.

Filed Apr. 28, 1978, Ser. No. 900,889
Int. Cl.³ G01D *3/48*
U.S. Cl. 361—239 **4 Claims**



1. A device for monitoring the motion of a movable element, comprising

sensor means for producing a series of repetitive pulses in response to the motion of the movable element and at a repetition rate corresponding of the speed thereof,

ramp generator means for producing an increasing ramp signal,

said ramp generator means including means for resetting said ramp signal to a starting level in response to each of said pulses,

said ramp generator means including an operational current amplifier having an output and inverting and noninverting inputs,

a timing capacitor connected between said output and said inverting input,

adjustable means for supplying current at a controlled adjustable rate to and noninverting input and thereby causing said capacitor to be charged at a corresponding controlled rate,

and means for supplying said repetitive pulses to said inverting input for causing the discharge of said capacitor in response to each of said pulses whereby the ramp signal at said output is reset to zero,

said ramp signal rising to a voltage level which increases with any decrease in the repetition rate of said repetitive pulses,

reference voltage source means including first means for producing a first reference voltage,

first comparator means for comparing said ramp signal with said first reference voltage,

said first comparator means having first output means operable when said ramp signal rises above said first reference voltage,

said reference voltage source means including second means for producing a second reference voltage which is greater than said first reference voltage by a particular percentage,

second comparator means for comparing said ramp signal with said second reference voltage,

and second output means for performing an output function when said ramp signal rises above said second reference voltage,

said adjustable means being operable with the aid of said first output means to calibrate the relationship between said ramp signal and said first reference voltage at a particular operating speed of said movable member whereby said second output means will be operative at a particular

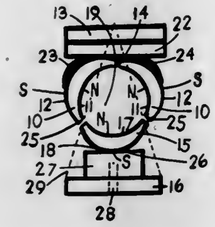
percentage reduction in the speed of said movable element below said operating speed.

4,237,518

NONELECTRIC MAGNETIZER AND DEMAGNETIZER

Lester S. Krulwich, 241 Central Park West, New York, N.Y. 10024

Filed May 11, 1979, Ser. No. 38,250
Int. Cl.³ H01F *13/00*
U.S. Cl. 361—267 **7 Claims**



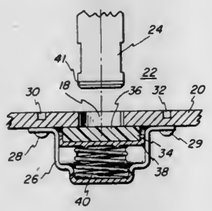
1. A magnetizer and demagnetizer apparatus that operates without electricity comprising a plurality of permanent magnets adjustably mounted on two backings detachable from each other and capable of being manually brought to each other with said magnets aligned so that when the two backings are brought partly together, thereby engaging the magnets, each of said magnets angularly and repellingly face each other with the same magnetic polarity, with said magnets substantially surrounding and adjustably forming an air gap containing a combined magnetic field into and through which workpieces of various sizes and shapes may be inserted and withdrawn to be magnetized.

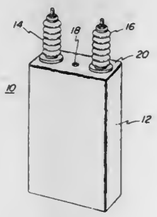
4,237,519

CAPACITOR WITH A CASE SEAL

Samuel R. Wilson, Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,696
Int. Cl.³ H01G *4/04*
U.S. Cl. 361—327 **4 Claims**





1. In a power capacitor having a casing, a capacitor roll section in said casing, and a cover for said case, said cover having a notched opening therein for filling said capacitor with dielectric fluid, the improvement comprising a sealing means for said opening, said sealing means being comprised of

(a) a seat for said means formed on the inside of said cover and surrounding said opening,

(b) a resilient gasket shaped to seal said opening,

(c) a biasing spring for urging said gasket into sealing relationship with said seat, and

(d) a housing mounted to the inside of said cover to form an enclosure for said gasket and spring and a guide for aligning said gasket and spring with said seat,

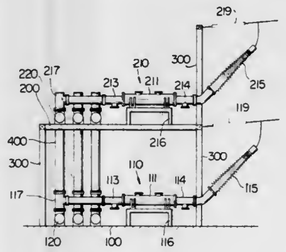
(e) and key means adapted to fit in and be retained in said notched opening to overcome said biasing spring and to hold said sealing means in unpoled relationship.

4,237,520

GAS INSULATED SWITCH-GEAR APPARATUS

Kazuaki Oishi, Hitachi; Seizo Nakano, Mito, and Yutaka Kitano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 4, 1979, Ser. No. 966
Claims priority, application Japan, Jan. 6, 1978, 53-14278
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—335 **8 Claims**



1. A gas insulated switch-gear apparatus comprising a plurality of base planes arranged in parallel to each other at different vertical spatial levels, at least one gas insulated main busbar device arranged on each one of said base planes and having a substantial length extending in a predetermined first direction, at least one electrical equipment assembly having a gas insulated circuit breaker and at least one gas insulated disconnecting switch arranged on each one of said base planes in a second direction substantially perpendicular to said first direction and disposed separately from said main busbar device via a predetermined distance on one side of said main busbar device, at least one feeding busbar device arranged on each one of said base planes and having a substantial length extending in said second direction and connecting said electrical equipment assembly to said main busbar device, and at least one gas insulated connecting busbar device interconnecting said main busbar devices arranged on adjacent ones of said base planes.

4,237,521

HOUSING FOR ELECTRONIC ASSEMBLY INCLUDING INTERNALLY MOUNTED HEAT SINK

Jerry B. Denker, Cincinnati, Ohio, assignor to R. L. Drake Company, Miamisburg, Ohio

Filed Feb. 5, 1979, Ser. No. 9,665
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—384 **5 Claims**

1. An electronic device including a heat generating element comprising

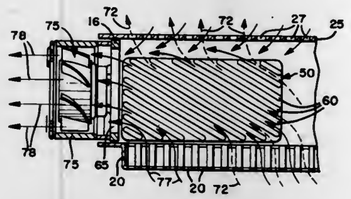
a low profile enclosure including a top cover, a bottom plate and front, rear and side walls,

a heat sink contained entirely within said enclosure and including a body member having attached in thermal relation thereto the heat generating element and a plurality of fins extending laterally outwardly therefrom, said

fins forming spaces therebetween through which cooling air may pass, said fins being set at an acute angle with respect to the vertical,

means forming openings in said bottom plate so positioned with respect to the fins of said heat sink that ambient air may be drawn in through the openings in the bottom plate and pass over said fins,

means forming openings in said top cover and positioned directly above said heat sink,



means forming an opening in the rear or side wall of said enclosure, and means for mounting a fan to draw air through said opening

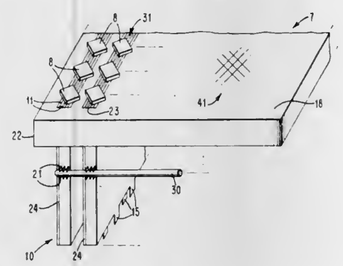
whereby said heat sink may be cooled either by convection with the air passing over the fins and exiting through the openings in the top cover, or by causing the air to be drawn outwardly through the opening in the rear or side wall by means of the fan.

4,237,522

CHIP PACKAGE WITH HIGH CAPACITANCE, STACKED VLSI/POWER SHEETS EXTENDING THROUGH SLOTS IN SUBSTRATE

David A. Thompson, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,660
Int. Cl.³ H05K *7/08*
U.S. Cl. 361—392 **7 Claims**



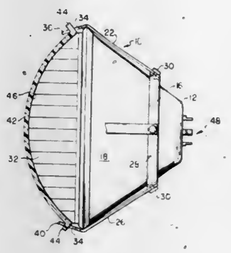
1. In a packaging module for circuit chips including a planar substrate having opposed surfaces, a plurality of stacked power distribution conductive layers, a plurality of land areas on a level adjacent to that of one surface of said substrate for mounting the interconnection to said chips, said stacked power distribution layers being composed of a plurality of parallel, flat conductive metallic sheets having large parallel surfaces with dielectric material between said sheets and with high electrical capacitance between said metal sheets and minimal inductive coupling therebetween, the improvement comprising at least one slot through said substrate between said opposed surfaces, with said slot containing a stack of said metal sheets extending therethrough with their flat surfaces extending through said slot and with at least some of said sheets insulated electrically from said substrate.

4,237,523

REMOVABLE FOG LIGHT FILTERS

Bruce Moote, 11 Madison Ave., Hamilton, Ontario, Canada (L8L 5Y2)

Continuation of Ser. No. 818,740, Jul. 25, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,606
Int. Cl.³ F21V *9/02;* **B60Q** *1/00*
U.S. Cl. 362—2 **5 Claims**



1. A removable fog light filter for automobile headlights or the like, having a front lens portion and a rear neck portion and terminals, wherein said neck portion has a truncated conical shape and wherein said terminals are disposed at the apex of said conical shape, comprising in combination: a retaining member including a C-shaped yoke portion, said yoke portion having an open mouth portion between the ends of said C-shaped yoke portion, said yoke portion configured for only partially circumscribing a portion of said truncated conical shape of said rear neck portion of said automobile headlight, said yoke portion being a V-shaped rigid member disposed having the apex of said V-shaped member extending substantially parallel to a conically shaped surface of said truncated conical shape of said rear neck portion of said automobile headlight when said C-shaped yoke portion is positioned intermediate said front lens portion and said apex of said conical shape, a resilient member, said resilient member being disposed intermediate and clampingly engaging said conically shaped surface and said V-shaped member when said C-shaped yoke portion is positioned intermediate said front lens and said apex of said conical shape, at least three substantially equally spaced radially extending arms emanating from said yoke portion and extending in a forwardly direction towards and beyond the front lens portion of said headlight when said yoke portion is disposed touching said portion of said rear neck portion, each said redially extending arm being provided with an aperture and curved in an inwardly direction towards the center of said lens portion at its distal ends; and a transluscent light filter being of a size and shaped to substantially cover the lens portion of said automobile headlight and having at least three protrusions equally disposed proximate the circumference thereof adapted to be received by said radial arm aperture and being removably retained thereon for retaining said filter against said headlight front lens portion, wherein said filter and said resilient member engage said headlight in clamping engagement when said at least three protrusions are engaged within said radial arm aperture and wherein said yoke portion may be disposed disengaged from said headlight when said at least three protrusions are disengaged from said radial arm aperture by displacing the remaining portion of said headlight through said open mouth portion, said light filter filtering said light provided by said headlight and converting it to a fog penetrating beam.

4,237,524

PRESSURE-MEDIUM-ACTUATED INSTALLATION FOR ADJUSTING THE INCLINATION OF A VEHICLE HEADLIGHT

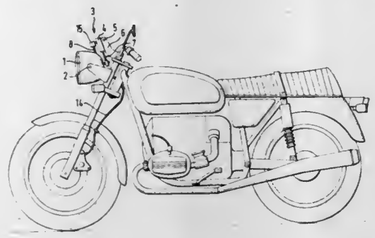
Peter Hundemer, Hackensack, N.J., assignor to Bayerische Motoren Werke Atiengesellschaft, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,474

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806306

Int. Cl.³ B60Q *1/10*

U.S. Cl. 362—71 **10 Claims**



1. An installation actuated by a fluid pressure medium for adjusting the inclination of a vehicle headlight in relation to the road plane, comprising adjusting cylinder means, on the one hand, arranged at a relatively fixed part of the vehicle and, on the other, operatively connected with the headlight, said adjusting cylinder means being operable to pivot the headlight about a cross axis during actuation of said adjusting cylinder means by the fluid pressure medium, characterized in that the adjusting cylinder means is operatively connected with a hydraulic brake system of the vehicle such that hydraulic fluid of said hydraulic brake system actuates said adjusting cylinder means to pivot the headlight about said cross axis.

4,237,526

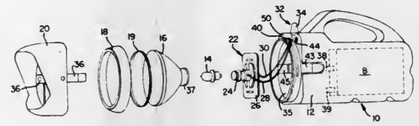
BATTERY OPERATED DEVICE HAVING A WATERPROOF HOUSING AND GAS DISCHARGE VENT

David H. Wood, Avon Lake, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed May 19, 1978, Ser. No. 907,852

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—158 **16 Claims**



1. In an electrically operated device comprising a waterproof housing enclosing at least one dry galvanic battery cell as the source of electrical energy for said device, said battery cell normally evolving hydrogen gas, the improvement comprising gas discharge means for continuously discharging said evolved hydrogen gas from the interior of said device including at least one aperture of predetermined size disposed in said housing in fluid communication with said interior and the atmosphere exterior to said device and a hydrophobic membrane, said membrane covering each aperture and secured watertightly thereabout and being of a predetermined composition and microporosity such that the concentration of hydrogen gas within the air space in said housing interior is maintained below about 10% by volume.

4,237,527

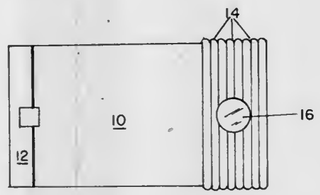
FLASHLIGHT APPARATUS

Leon J. Breedlove, 453 Nassau Dr., Baton Rouge, La. 70815

Filed Oct. 16, 1978, Ser. No. 951,584

Int. Cl.² F21L *7/00*

U.S. Cl. 362—189 **7 Claims**



1. A flashlight apparatus comprising a housing, a cap, said cap removably affixed to one end of said housing, a mouth portion of said housing, said cap being disposed covering said mouth portion, a transparent sheet, said transparent sheet being fixedly secured to the other end of said housing, a light reflecting element, an incandescent lamp, one pole of said incandescent lamp engaging said light reflecting element, said incandescent lamp and said light reflecting element being disposed within said housing adjacent said transparent sheet, a contacting strap, a battery, said contacting strap and said battery being disposed passing through said mouth portion and residing entirely within said housing, a plurality of annular corrugations disposed in the exterior surface of said housing adjacent said other end thereof, said plurality of corrugations for urging said transparent sheet towards said one end of said housing, one end of said contacting strap being disposed electrically contacting one pole of said battery, the other pole of said incandescent lamp being disposed contacting the other pole of said battery, means to electrically connect the other end of said contacting strap to said one pole of said incandescent lamp said electrically connecting means including a circular depression located within said plurality of corrugations, said depression disposed

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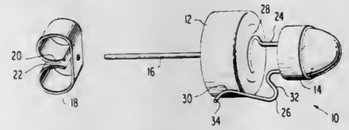
ILLUMINATED JEWELRY

Arthur R. Deter, P.O. Box 1864, Anderson, S.C. 29621

Continuation of Ser. No. 815,438, Jul. 13, 1977, abandoned. This application Aug. 11, 1978, Ser. No. 932,932

Int. Cl.³ F21L *15/08*

U.S. Cl. 362—104 **7 Claims**



1. Illuminated jewelry comprising:

(a) a battery having a positive terminal and a negative terminal;

(b) a light emissive diode mounted on said battery and having a first lead mounted on and electrically connected to one said terminal of said battery so as to provide support for said light emissive diode and a second lead resiliently biased against the other said terminal of said battery, said second lead making interruptible contact with said other terminal; and

(c) attachment means mounted on said battery for attaching said illuminated jewelry including said light emissive diode and said battery to a wearer.

adjacent to said other end of said contacting strap, said other end of said contacting strap being disposed radially inwardly of said housing upon the applicaion of manually radially inwardly directed forces upon said depression, said other end of said contacting strap forming a part of a series circuit including the poles of said battery and the poles of said incandescent lamp and said one end of said contacting strap, wherein said cap and said housing and said transparent sheet comprise a waterproof enclosure, said series circuit entirely residing within said enclosure.

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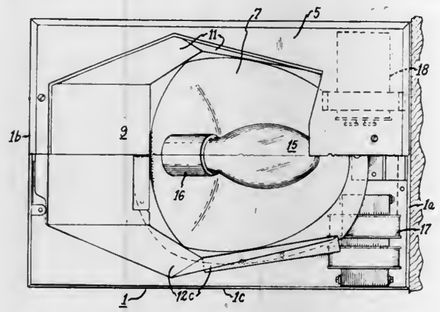
LUMINAIRE

Samuel L. Baldwin, East Flat Rock, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,174

Int. Cl.² F23Q *3/00*

U.S. Cl. 362—263 **8 Claims**



1. A luminaire adapted to be mounted eccentric to a work area below a ceiling or the like for indirectly lighting the work area comprising, in combination, a housing having side, front and rear walls defining an open top, said housing having a horizontal fore-and-aft axis intersecting said front and rear walls, a bowl-shaped reflector having a light center therein and a rim defining an opening, said reflector mounted within said housing with its opening facing the open top of said housing and being tilted toward the front of said housing so that the plane of said opening is at an angle to said fore-and-aft axis, and an elongated high intensity gaseous discharge lamp mounted within said reflector at said light center and extending generally parallel to the plane of said reflector opening, the light emanating upwardly from the luminaire principally forwardly and laterally therefrom with substantially no light emanating therefrom below said fore-and-aft axis.

4,237,529

HEADLAMP ADJUSTING DEVICE

Erich Mutschler; Hans Prohaska, and Adam Weber, all of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,559

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803089

Int. Cl.³ F21V *21/26*

U.S. Cl. 362—272 **9 Claims**

1. Apparatus for adjusting the inclination of a motor vehicle headlamp comprising:

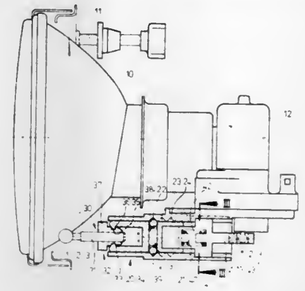
a motor;

An actuating member coupled to said motor, said motor being operable to selectively place said actuating member in selected ones of a first plurality of predetermined positions;

a movable push rod coupled to said headlamp;

means for exerting a locking force on said push rod in selected ones of a plurality of second predetermined positions, each of said plurality of second predetermined positions having a correspondence with one of said first plurality of predetermined positions of said actuating member;

an articulated connection between said push rod and said actuating member, said articulated connection comprising



first connection means carried by said push rod and second connection means carried by said actuating member and adapted to engage said first connection means, said first and second connection means having a predetermined clearance therebetween.

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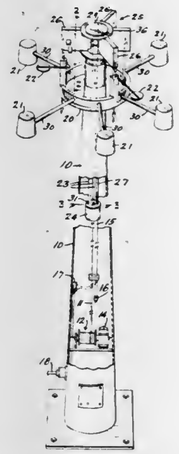
HIGH MAST LIGHT SUPPORT SYSTEM

Joseph E. Murray, Walbridge, and Aloysius M. Mocek, Jr., Toledo, both of Ohio, assignors to Rowe Industries Inc., Division of Groman Corporation, Toledo, Ohio

Filed Dec. 12, 1977, Ser. No. 859,696

Int. Cl.³ H05K *7/10*

U.S. Cl. 362—418 **19 Claims**



1. A lighting assembly comprising in combination a high mast and an annular light carrying unit in which the light carrying unit can be raised and lowered by lift means operable from the lower region of the mast, locking means for locking said light unit in an upper lighting position on said mast comprising a plurality of like single pivotal locking members on said light unit and matching support members having no moving parts aligned on said mast for engagement with said locking members,

said locking members each being pivotable to a support position in which it will engage its matching support member when said light unit is raised to its lighting position,

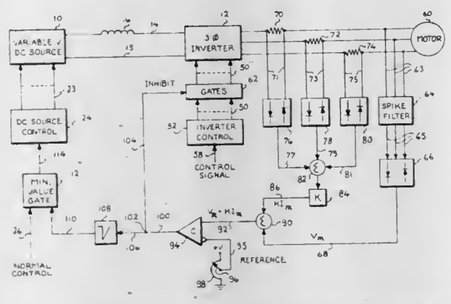
each said locking member having associated biasing means imparting a normal support position orientation to said locking member, each said locking member being located for movement against the force of its associated biasing means upon engagement with its matching support member when said light unit is lifted to its lighting position, each said locking member then being biased to its normal support position again under the influence of its respective biasing means when said light unit is lifted higher than its lighting position to provide support for said light unit upon unit and said support member being lowered from said higher position into supported engagement with its matching support member.

4,237,531

CONTROLLED CURRENT INVERTER SYSTEM HAVING SEMICONDUCTOR OVERVOLTAGE PROTECTION

John H. Cutler, Roanoke, and Loren H. Walker, Salem, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,770
Int. Cl.[3] H02H 7/122; H02P 5/40
U.S. Cl. 363—58 **11 Claims**



1. In a controlled current inverter system including an inverter circuit having controlled semiconductor devices for controlling the output voltage, current and frequency of the inverter circuit, means for protecting the semiconductor devices against impressed voltages in excess of a prescribed magnitude comprising:

(a) means to determine the magnitude of the output voltage of said inverter circuit and to provide a first signal having a value proportional thereto;

(b) means to determine the magnitude of the output current of said inverter circuit and to provide a second signal having a value proportional thereto;

(c) means to adjust the value of said second signal by a constant to provide third signal of adjusted magnitude, said constant having a value determined as a function of the impedance values of a load supplied by said inverter circuit;

(d) means to combine said first and third signals to provide a limit signal;

(e) means to provide a reference signal proportional to a permissible voltage which may be impressed across each of said semiconductor devices;

(f) means to compare said limit signal and said reference signal and to output a correction signal in response to a prescribed relationship therebetween; and,

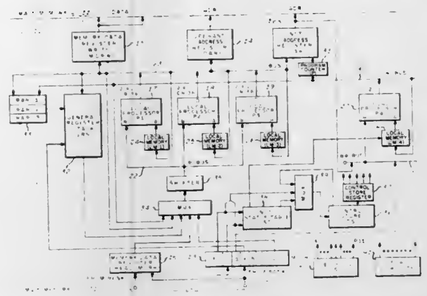
(g) means responsive to said correction signal to effect a reduction in the output voltage and current of said inverter circuit.

4,237,532

TABLE DRIVEN DECISION AND CONTROL LOGIC FOR DIGITAL COMPUTERS

Barry R. Borgerson, Gwynedd Valley; Garold S. Tjaden, Doylestown, both of Pa., and Merlin L. Hanson, Arden Hills, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 2, 1977, Ser. No. 830,302
Int. Cl.[3] G06F 9/22, 13/00, 9/42
U.S. Cl. 364—200 **10 Claims**



1. In a microprogrammable CPU for a computer utilizing a plurality of binary valued control variables and having control storage means for storing a plurality of micro instruction words, each micro instruction word having control variable selection fields and function selection fields, decision control logic apparatus for providing a binary valued decision signal to an appropriate point in said computer for effecting a binary valued control decision within said computer, said binary valued decision signal being provided in accordance with a binary valued control function utilized in said computer for making said binary valued control decision, said control function being a function of binary valued control variables selected from said plurality thereof by said control variable selection fields, said control function selected from a plurality of control functions by said function selection fields, said decision control logic apparatus comprising

control variable means for providing a plurality of binary valued control variable signals corresponding to said plurality of binary valued control variables, respectively,

control variable selection means coupled to receive said plurality of binary valued control variable signals and said control variable selection fields for selecting control variable signals from said plurality thereof in accordance with said control variable selection fields, and

memory means coupled to receive said selected control variable signals and said function selection fields, said memory means storing a plurality of truth tables corresponding to said plurality of control functions respectively, each said truth table comprising binary valued entries, each said entry equal to the binary value of the associated control function for a particular combination of binary values of said selected control variable signals, said memory means being addressed by said selected control variable signals and said function selection fields for providing, in response thereto, the truth table entry corresponding to said selected control variable signals from the truth table selected in accordance with said function selection fields, the addressed truth table entry providing said binary valued decision signal to said appropriate point in said computer for effecting said binary valued control decision within said computer,

and in which said computer operates in cycles, said plurality of binary valued control variables comprise a plurality of first binary valued control variables and a plurality of second binary valued control variables, said second binary valued control variables being available in a cycle subsequent to the availability of said first binary valued control variables, said control variable means comprises means for

providing a plurality of first binary valued control variable signals and a plurality of second binary valued control variable signals corresponding to said plurality of first binary valued control variables and said plurality of second binary valued control variables respectively, and said control variable selection fields comprise first control variable selection fields and second control variable selection fields, said control variable selection means comprising

first control variable selection means responsive to said plurality of first binary valued control variable signals and said first control variable selection fields for selecting first binary valued control variable signals from said plurality thereof in accordance with said first control variable selection fields, and

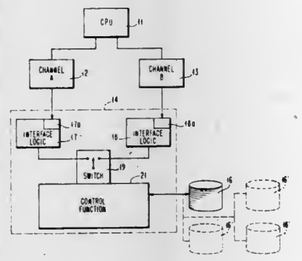
second control variable selection means responsive to said plurality of second binary valued control variable signals and said second control variable selection fields for selecting second binary valued control variable signals from said plurality thereof in accordance with said second control variable selection fields.

4,237,533

PREVENTING INITIAL PROGRAM LOAD FAILURES

Phillip R. Mills, Gilroy; Fernando A. Luiz, Monte Sereno, and John H. Sorg, Jr., Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1978, Ser. No. 973,992
Int. Cl.[3] G06F 3/00
U.S. Cl. 364—200 **6 Claims**



1. In a computer system in which a central processing unit communicates over channel devices through commands to a control device controlling direct access storage devices, said control device terminating two or more channel devices from the same or different central processing units, said central processing unit initiating an "initial program load" procedure under which a "system reset" signal is sent to said control device by each channel device connected to the central processing unit and connectable to said control device, followed by the issuance of a "read initial program load" command by one of said channel devices to said control device, said control device being capable of responding to only one of said channel devices at any one time and, when said control device is responding to one channel device, presenting a "control device busy" signal to all other channel devices,

apparatus including;

means responsive to the initiation of a "system reset" procedure for generating a first signal,

means responsive to a "not busy" condition of said control device for generating a second signal,

means responsive to the joint existence of said first and said second signals for generating a "system reset pending" signal, and

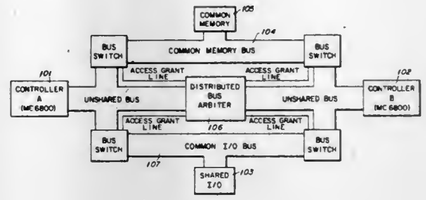
means responsive to said "system reset pending" signal for inhibiting the transmission of said "control device busy" signal to said channels.

4,237,534

BUS ARBITER

Kenneth A. Felix, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1978, Ser. No. 960,321
Int. Cl.[3] G06F 9/46, 13/00
U.S. Cl. 364—200 **5 Claims**



1. A bus arbiter for providing, in response to bus access request signals from two or more controllers, dynamically prioritized access to a common bus of a digital system have at least one peripheral device coupled to the common bus, and said two or more controllers coupled to the common bus through respective bus access switching means, said switching means activated by applied present bus access grant signals, the arbiter comprising:

(a) a plurality of logic circuits each having input means coupled to a plurality of decoding AND gates inputs and the outputs of the AND gates are coupled to an OR gate, for generating at the output of the OR gate a future bus access grant signal based on the bus access request signals and one or more present bus access grant signals applied to said input means;

(b) a plurality of memory devices for storing the present bus access grant signal, each of said memory devices coupled to the output of each said OR gate for updating the present bus access grant signal of the memory devices in response to the future bus access grant signal, and each memory device having an output terminal for applying the present bus access grant signal to the bus access switching means; and

(c) direct feedback means for coupling the output terminal of at least one of the memory means to the input memory devices of each logic circuit supply the present bus access grant signal information thereto .

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APPARATUS AND METHOD FOR RECEIVING AND SERVICING REQUEST SIGNALS FROM PERIPHERAL DEVICES IN A DATA PROCESSING SYSTEM

Gregory B. Wiedenman, Sandy, Utah, assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,157
Int. Cl.[3] G06F 3/04
U.S. Cl. 364—200 **4 Claims**

1. Apparatus including processing means for servicing requests from a plurality of peripheral devices in which each peripheral device includes a request line over which request signals are sent by the device when service is requested, each device being responsive to a device address signal which identifies the device and an enable vector signal for producing a vector request signal which identifies the service requested by the device, said apparatus including

priority logic means coupled to said request lines and responsive to said vector request signals received over one or more of the request lines for producing a device address

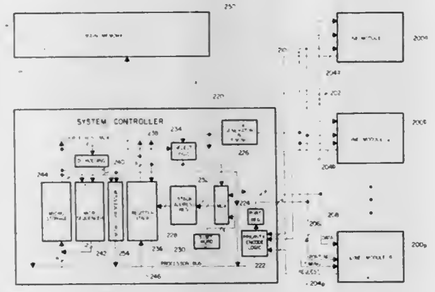
signal which identifies the peripheral device of those requesting service which has the highest priority,

means for periodically producing enable vector signals,

means for supplying said produced device address signal and enable vector signal to said highest priority peripheral device,

storage means for storing instructions which define the operations suitable for servicing requests from the peripheral devices,

register stack means included in the processing means for storing address information which identifies the locations in said storage means where said instructions are stored,



means responsive to each vector request signal for producing index signals which identify the locations in said register stack means containing the address information which identifies the locations in said storage means where the instructions for servicing the request of the request vector are stored, and

means for supplying the index signals to the register stack means included within the processing means for reading out a said instruction for performing the operation so as to service the request from the identified peripheral device.

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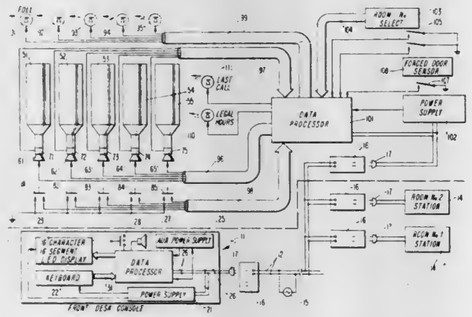
SYSTEM FOR INDICATING AND CONTROLLING DISPENSING OF BEVERAGES

Michael R. Enelow, Miami Lakes; Michael Levy, Plantation, and William P. Porter, Coral Springs, all of Fla., assignors to M.R.E. Enterprises, Inc., Miami Lakes, Fla.

Filed Oct. 12, 1978, Ser. No. 950,810

Int. Cl.[3] G06F *15/20*; B67D *5/06*

U.S. Cl. 364—465 **21 Claims**



1. A system for indicating and controlling at a central console the dispensing of beverages from a plurality of units remote from the console, each of the units including a plurality of beverage reservoirs, comprising:

a plurality of beverage flow controllers at each unit, one of said flow controllers being provided for each reservoir;

the console including: a keyboard for deriving data and command signals, data processing means responsive to the keyboard data and command signals for deriving addressing signals for the units;

each of said units including: customer input signalling means, data processing means for: selectively deriving control signals for the flow of a beverage from the reservoirs and for deriving signals indicative of the quantity of beverage dispensed from the selected reservoirs, and for coupling the quantity of beverage signals to the console data processing means in response to the address of the unit being transmitted to the unit data processor from the console data processor, and means for activating the flow control means in response to the beverage flow control signals;

the console further comprising: display means responsive to the console data processing means for displaying characters derived in response to the keyboard data signals and the quantity of beverage signals derived from the address units.

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PRICE DISPLAY SETTING ARRANGEMENTS

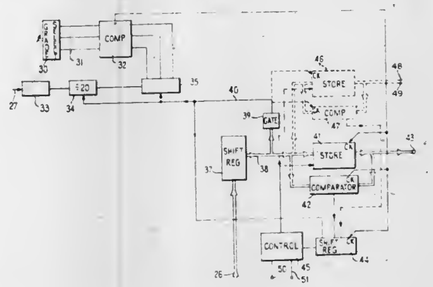
Brian E. Pitches; Robert M. S. Murray, and Ian A. Greig, all of Edinburgh, Scotland, assignors to Ferranti Limited, Hollinwood, England

Filed May 23, 1979, Ser. No. 41,616

Claims priority, application United Kingdom, May 23, 1978, 21527/78

Int. Cl.[3] G06F *15/56*

U.S. Cl. 364—465 **14 Claims**



2. A price setting arrangement for remotely controlled dispensing apparatus from which any one of a number of products may be selected, comprising a transmitting unit located separately from the remotely controlled apparatus including manually settable switching means operable to produce for each unit price a unique binary word of fixed length, and scanning means operable to address the switching means and to select each binary word in turn and to transmit the binary words in a sequence which includes all of the unit prices, and a receiving unit carried by the remotely controlled apparatus including recognition means responsive to the selection of a particular product to recognise the unit price signal transmitted in respect of that product, comparison means operable to compare the recognised received price signal in each transmission with a signal stored from a previous transmission, and means responsive to a predetermined successive number of comparisons made without identity between the received price signal and the stored signal to replace the stored signal by the received price signal.

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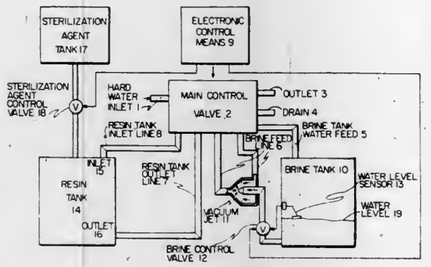
ELECTRONIC MEANS FOR CONTROLLING THE REGENERATION OF RESINS IN A RESIN TYPE ION EXCHANGE DEVICE

Guy Le Dall, Rueil-Malmaison, France, assignor to Permo S.A., Rueil-Malmaison, France

Filed Nov. 24, 1978, Ser. No. 963,261

Int. Cl.[3] G06F *15/46*; B01D *15/04*; C02F *1/42*

U.S. Cl. 364—500 **20 Claims**



1. In a resin-type ion exchange apparatus of the type requiring periodic resin regeneration and having an electrically actuated main control valve including an inlet, an outlet and a drain, a resin tank having a resin tank inlet and a resin tank outlet connected to said main control valve, a regeneration brine tank, a vacuum jet connected to said main control valve and a brine control valve connected to said regeneration brine tank and said vacuum jet, the improvement of an improved electronic control means comprising:

a memory means for storing therein a predetermined value loading program, a regeneration initiation program, a regeneration sequence control program and a plurality of predetermined values;

a microprocessor calculating means connected to said memory means (1) for loading a plurality of predetermined values into said memory means according to said predetermined value loading program, (2) for initiating a regeneration sequence according to said regeneration initiation program and at least one of said predetermined values, (3) for controlling said regeneration sequence according to said regeneration sequence program and at least some of said predetermined values by production of valve control signals (a) for causing said main control valve to couple said inlet and to said resin tank outlet and said resin tank outlet to said drain for backwashing said resin, (b) for causing said main control valve to couple said inlet to said vacuum jet, said vacuum jet to said resin tank outlet and said resin tank inlet to said drain and for causing said brine control valve to open for brining said resin, (c) for causing said main control valve to couple said inlet to said resin tank outlet and said resin tank outlet to said drain for rinsing said resin, and (d) for causing said main control valve to couple said inlet to said resin tank inlet and said resin tank outlet to said outlet for ordinary operation;

a programming means connected to said microprocessor calculating means for application of at least some of said predetermined values to said microprocessor calculating means for storing in said memory means; and

an output buffer means connected to said microprocessor calculating means, said main control valve and said brine control valve for converting said valve control signals into electrical valve operating signals for controlling said main control valve and said brine control valve.

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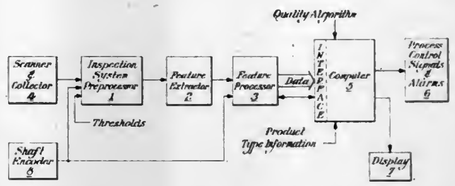
ON-LINE WEB INSPECTION SYSTEM

Michael J. Piovoso, Newark; Edmund H. Smith, Jr., Wilmington, and William E. Wolf, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1977, Ser. No. 853,421

Int. Cl.[3] G01N *21/84*; G06F *15/20*

U.S. Cl. 364—552 **7 Claims**



1. A method of automatically inspecting, by a sequence of areas of preselected size, a running web for defects using a flying spot scanning system, by repetitively measuring a plurality of web features which may contribute to a web defect, each feature represented by an electrical signal extracted in the course of scanning said web, and analyzing said extracted feature signals with regard to each said area of preselected size comprising of steps of:

converting said plurality of extracted feature signals, obtained from scanning each area, into a set of area characterizing feature values representative of the magnitudes and distribution of said extracted features over each said scanned area;

calibrating each said set of area characterizing feature values to obtain correspondence with a range of stored values specifying one or more sets of reference feature values;

classifying each said set of calibrated area characterizing feature values according to its relationship with said one or more sets of reference feature values; and

grading as to acceptability each defective web area in said inspected sequence of areas based on the outcome of said classification.

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TAPE RECORDER WITH TABLE COMPUTER

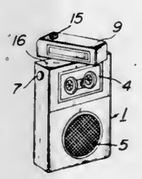
Masaaki Sato, Hatchioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,642

Claims priority, application Japan, Mar. 1, 1978, 53-23295

Int. Cl.[3] G11B *1/04*; G06F *15/02*

U.S. Cl. 364—705 **4 Claims**



1. A combination tape recorder/calculator in a polyhedron shape having a cassette charging portion of the tape recorder on one side surface of the polyhedron and digit keys for performing standard calculator functions on another side surface of the polyhedron, said combination comprising a rotatable display portion wherein said display portion indicates a count representative of tape movement when said display portion is switched into a first mode by rotating said display portion until it is aligned with said one side surface and said display portion indicates keyboard entries and calculated results when said

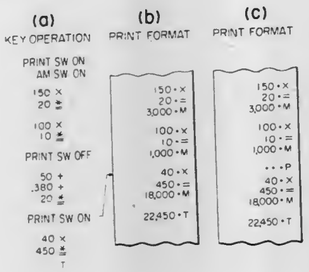
display portion is switched into a second mode by rotating said display portion until it is aligned with said another side surface.

4,237,541

ELECTRONIC APPARATUS FOR INDICATING THAT A PRINTER HAS BEEN DISABLED

Hiroyuki Mikada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1978, Ser. No. 945,116
Claims priority, application Japan, Sep. 30, 1977, 52-118226
Int. Cl.³ G06F *3/12*
U.S. Cl. 364—710 **3 Claims**



1. In an electronic apparatus having a display, a combination comprising:

printing means;

control means connected to said print means for enabling and disabling the operation of said printing means; and

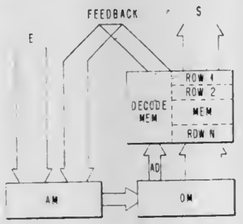
means connected to said control means for providing an indication that said printing means was disabled when said printing means is enabled after having been disabled by said control means.

4,237,542

PROGRAMMABLE LOGIC ARRAYS

Maurice Cukier, Vence, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1978, Ser. No. 901,166
Claims priority, application France, Jun. 30, 1977, 77 20729
Int. Cl.³ G06F *9/00, 7/48*
U.S. Cl. 364—900 **5 Claims**



1. In a programmable logic array of the type which includes an AND matrix of logic performing elements generating inputs to an OR matrix of logic performing elements which in turn feeds output signals generated from said inputs into a storage means on a set of output lines for storing said output signals and for supplying said output signals as inputs to the AND array, the improvement comprising:

said storage means having n separately accessed registers each of which is connected to said set of output lines for receipt of output signals on said set of output lines by each of the registers; and

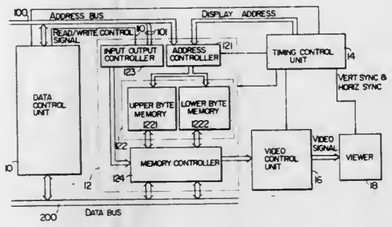
decoding circuit coupled to said storage means for supplying different combinations of said output Signals as inputs to said AND array in different time segments by selecting a different one of said locations in said storage means during each such time segment.

4,237,543

MICROPROCESSOR CONTROLLED DISPLAY SYSTEM

Yoji Nishio; Toshitaka Hara, and Nagaharu Hamada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 1, 1978, Ser. No. 938,954
Claims priority, application Japan, Sep. 2, 1977, 52-104882
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **8 Claims**



1. In a microprocessor controlled display system comprising a data control unit which incorporates therein a microprocessor and a microprogram memory for storing a program for operating said microprocessor and carries out data access with an external information source and data access with a refresh memory unit connected thereto via an address bus and a data bus, said refresh memory unit storing a field of data to be displayed through the data access with said data control unit and reading said data for display in synchronism with display timing, a video control unit for converting the data read for display from said refresh memory unit to a video signal, and a viewer for receiving said video signal to display an image thereof; the improvement that said refresh memory unit comprises;

(a) a plurality of byte memories each storing the data by byte,

(b) an address controller for switching display addresses and addresses from said data control unit in a time division manner to enable the access to addresses of said plurality of byte memories,

(c) an I/O controller for receiving a read/write control signal indicating a particular type of access and an access memory specifying signal indicating a particular memory to be accessed, from said data control unit and producing I/O control signals in accordance with the received signals, and

(d) a memory controller responsive to said I/O control signals to cause the data access between said data control unit and said plurality of byte memories to be carried out for each byte memory or for said plurality of byte memories.

4,237,544

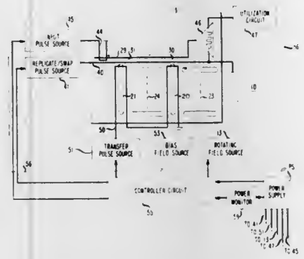
MAGNETIC MEMORY ORGANIZATION

Peter I. Bonyhard, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 15, 1978, Ser. No. 960,948
Int. Cl.³ G11C *11/02, 29/00*
U.S. Cl. 364—900 **8 Claims**

1. A magnetic bubble memory arrangement comprising a layer of magnetic material in which magnetic bubbles can be moved, and means for moving said bubbles in said layer along a plurality of multistage paths including a plurality of storage loops and an accessing path, said accessing path having therein a detector for bubbles stored in said loops and moved to said accessing path during normal operation of said memory, said means for moving including a driver for moving said bubbles when powered by a power supply and means for providing a

power outage signal upon the occurrence of a power outage in said power supply, said arrangement including both a master clock counter and an address register, means responsive to control signals from said counter and said register for generating respectively in said accessing path a bubbles pattern representative of the number of stages MC for which bubble movement has occurred from a reference stage and the address AR of selected data for movement to said detector, said generating means including a bubble generator coupled to said accessing path and responsive to said control signals for generating said



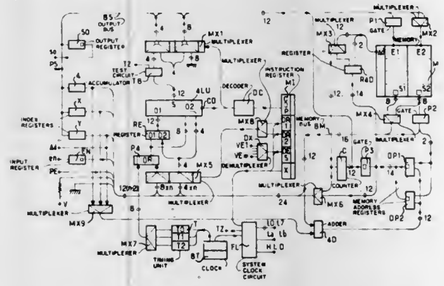
bubble pattern at a point g+f stages from said detector defining thereby a tag of f bits representative of the present status of said master counter and the present address in said address register in response to said power outage signal, means responsive to a power outage signal indicative of the reinstatement of power to said power supply for setting said counter and register to zero and for moving said tag g stages to said detector for setting said counter and register to Mc+g+2f and to AR respectively where g is a constant integer equal to the number of stages between said generator and the detector less the number of stages encompassed by the tag.

4,237,545

PROGRAMMABLE SEQUENTIAL LOGIC

Rene' Deglin, Velizy-Villacoublay, and Gilbert Reymond, Malakoff, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel S.A., Paris, France

Continuation of Ser. No. 780,393, Mar. 23, 1977, abandoned.
This application Dec. 27, 1978, Ser. No. 973,774
Claims priority, application France, Mar. 31, 1976, 76 09391
Int. Cl.³ G06F *9/06*
U.S. Cl. 364—900 **6 Claims**



1. A programmable sequential logic circuit for the processing of data according to a program containing instructions of different lengths each instruction composed of one or several instruction words, said sequential logic circuit comprising:

a memory containing instructions and data words,

an arithmetic and logical processing unit (ALU),

an instruction register for temporarily storing an instruction word from said memory,

a plurality of data registers and address registers,

an adder connected to index the contents of either of said address registers by adding the contents of one of said data registers to either of said address registers,

a clock driving a system clock circuit which is additionly responsive to an operation code in driving said instruction register to control the operation of said sequential logic circuit,

an input multiplexer through which access to said ALU is provided wherein inputs of said input multiplexer are connected to the outputs of said memory, the outputs of said data registers and the outputs of said address registers,

an output bus, the output of said ALU being connected to said output bus via a circuit having outputs which adopt a high impedance state when they are not enabled, said output bus connecting elsewhere to the inputs of said memory and of said data registers, and

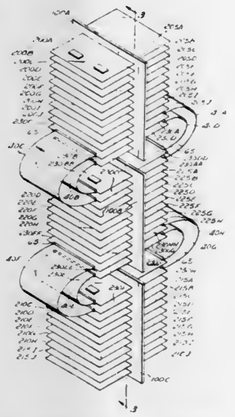
wherein complete processing according to said instruction word temporarily stored in said instruction register is performed in a plurality of phases under the control of said system clock circuit, a first portion of said plurality of phases being devoted to the acquisition of one or several data or instruction words, and a second portion being devoted to the execution of an operation by said ALU according to an operation code contained in said instruction word stored in said instruction register.

4,237,546

MULTI-LAYERED BACK PLANE FOR A COMPUTER SYSTEM

George H. Wells, Santa Ana, Calif., assignor to Technology Marketing, Inc., Costa Mesa, Calif.

Filed Jan. 31, 1979, Ser. No. 7,933
Int. Cl.³ H01R *23/68*
U.S. Cl. 364—900 **5 Claims**



1. A computer system having a plurality of circuit board components such as processors or memories mounted on a plurality of pairs of back planes, each of said back plane pairs comprising a front back plane having front and back faces, and a rear back plane having front and back faces, the back face of said front back plane facing the front face of said rear back plane, in which:

one of said back plane pairs comprises a processor back plane pair having a first front face and a first back face; and

another of said back plane pairs comprises a memory back plane pair having a second front face and a second back face, said system further comprising:

front and back processor circuit board components mounted on said first front and back faces, respectively, said front processor components insulated from said back processor components;

front and back memory circuit board components

mounted on said second front and back faces, respectively, said front memory components insulated from said back memory components;

first means in one of said processor and memory back plane pairs for providing electrical access on the front face of said one back plane pair to front and back components mounted on the front and back faces, respectively, of said one back plane pair while maintaining the front components of said one back plane pair insulated from its back components;

second means in said one back plane pair for providing electrical access on the back face of said one back plane pair to said front and back components of said one back plane pair and maintaining said front components of said one back plane pair insulated from its back components; and

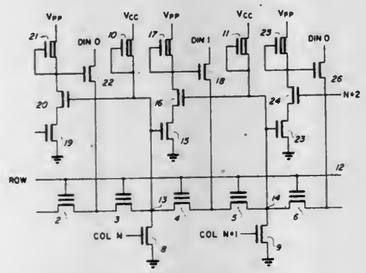
plural connecting means, some of which are connected between said first means and the front face of the other of said back plane pairs, others of which are connected between said second means and the back face of said other back plane pair, said connecting means for connecting each of said front and back processor components to each of said front and back memory components.

4,237,547

PROGRAM DECODER FOR SHARED CONTACT EPROM

Stephen L. Smith, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 17, 1979, Ser. No. 75,928
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **9 Claims**



1. A decoding circuit for a shared contact electrically programmable read only memory including a plurality of pairs of memory devices arranged in a row, first and second data lines and a plurality of column select lines wherein each pair of memory devices is coupled to a different column select line and wherein first and second devices in each pair are each coupled to a different one of said first and second data lines, comprising:

first means coupled between adjacent column select lines for sensing when one of said adjacent column select lines has been energized; and

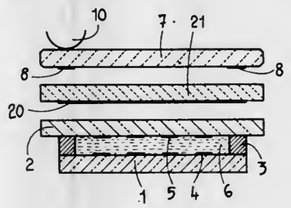
switching means coupled to said first means and responsive thereto for enabling the data line associated with said second device in each pair, the data line associated with the first device in each pair being controlled by another one of said decoding circuits.

4,237,548

ELECTRONIC TIMEPIECE

Jean Fellrath, Neuchatel; Jean-Felix Perotto, Hauterive; Ali Schneiter, and Maurice Grimm, both of Neuchatel, all of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed Feb. 1, 1979, Ser. No. 8,238
Claims priority, application Switzerland, Feb. 6, 1978, 1271/78
Int. Cl.³ G04C *17/00, 19/00, 9/00*
U.S. Cl. 368—69 **8 Claims**



1. An electronic timepiece having a crystal with an inner face adjacent an electro-optic passive display cell and having several functions, comprising:

oscillator means producing a timebase signal;

electronic circuit means for controlling the several functions of the timepiece operable by means of at least one stationary key, the stationary key having a capacitive action and being carried on the inner face of the crystal, the stationary key being coupled to the timebase signal by a fixed condenser, and

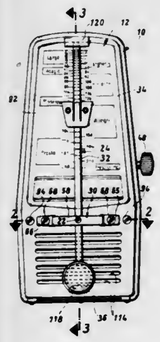
a conductive element interposed between the stationary key and the display cell and constituting one of the two electrodes of the fixed condenser to reduce the influence of a parasitic condenser formed by the plates of the electro-optic passive display cell on the stationary key.

4,237,549

METRONOME

Friedrich Härle, Isny-Neutrauchburg, Fed. Rep. of Germany, assignor to Rudolf Wittner GmbH u. Co., Isny, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 920,124
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1977, 2731210
Int. Cl.³ G04B *15/00*; G10B *15/00*
U.S. Cl. 368—134 **18 Claims**



1. A metronome, comprising

(a) an elongate trough-like casing (**10**) including three side walls, a bottom wall and a top wall, said walls being arranged to define a chamber;

(b) a front cover plate (**12**) connected with said casing for closing said chamber;

(c) pendulum driving means (**16,26**) arranged within said chamber;

(d) a horizontal U-shaped pendulum bridge (**30**) extending transversely across said cover plate adjacent the front surface thereof;

(e) a pair of spaced threaded devices (**68**) for simultaneously connecting both said bridge and said pendulum driving means in contiguous engagement with the front and rear surfaces of said cover plate, respectively;

(f) a horizontal pendulum shaft (**22**) rotatably supported at one end by said bridge, said pendulum shaft extending rearwardly through an opening (**28**) contained in said cover plate and being rotatably supported at its outer end, said pendulum shaft being connected for driven movement by said driving means;

(g) a vertical pendulum (**24**) non-rotatably mounted intermediate its ends on said shaft between said bridge and said cover plate;

(h) a vertical imprinted scale plate (**92**) mounted on the outer surface of said cover plate adjacent said pendulum; and

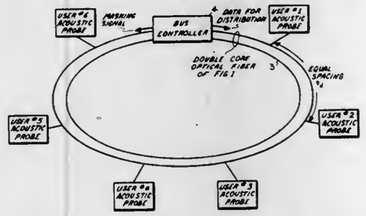
(i) holder means (**74, 76**) on the inside surface of said cover plate for engaging an edge portion of said pendulum driving means, said holder means cooperating with said pair of threaded devices to securely retain said driving means against the rear surface of said cover plate.

4,237,550

MULTIUSER PROTECTED OPTICAL DATA BUS DISTRIBUTION SYSTEMS

Peter D. Steensma, Midland Park, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,979
Int. Cl.³ G02B *5/14, 5/16*; G08B *13/18*
U.S. Cl. 370—4 **16 Claims**



1. A multiuser protected optical data bus distribution system comprising:

an optical fiber capable of propagating thereon two different signals independent of each other, said fiber being coupled in a loop to a control station and N equally spaced users, where N is equal to an integer greater than one, and propagating data between said N users in time sequence in one direction around said loop; and

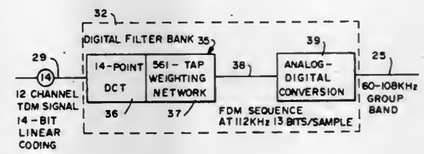
first means disposed in said control station to transmit a first masking signal on said fiber in a direction around said loop opposite to said given direction to prevent interception of said data, said first masking signal being turned off at a given time for a predetermined period of time to provide a window in said first masking signal which arrives at each of said N users in time sequence coincident with said data intended for each of said N users to enable each of said N users to recover said data intended therefore.

4,237,551

TRANSMULTIPLEXER

Madihally J. Narasimha, Mountain View, Calif., assignor to Granger Associates, Santa Clara, Calif.

Filed Dec. 22, 1978, Ser. No. 972,458
Int. Cl.³ H04J *4/00*
U.S. Cl. 370—50 **7 Claims**



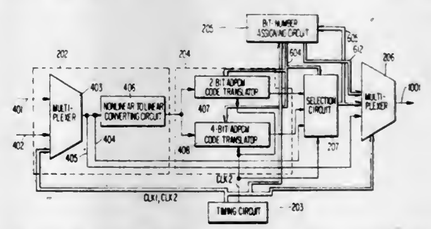
1. A transmultiplexer for converting a first multi-channel time division multiplexed signal into a second corresponding multi-channel frequency division multiplexed signal, said transmultiplexer comprising: discrete cosine transform processor means connected to receive a linearly coded time division multiplexed signal representing said first signal for transforming said signal into a transformed signal, and weighting network means for weighting said transformed signal with predetermined real coefficients thereby forming a frequency division multiplexed signal corresponding to said time signal.

4,237,552

TIME DIVISION MULTIPLEXED TRANSMISSION SYSTEMS FOR TELEPHONE OR LIKE SIGNALS WITH FREQUENCY BAND COMPRESSION

Shinichi Aikoh; Kunihiko Niwa, and Atsushi Tomozawa, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 51,291
Claims priority, application Japan, Jun. 22, 1978, 53-76022
Int. Cl.³ H04J *3/16*
U.S. Cl. 370—83 **6 Claims**



1. A digital transmission system for efficient transmission of time division multiplexed digital telephone signals, wherein a plurality of telephone signals are cyclically sampled and quantized so that each sampled value may be encoded into a binary codeword of a preset number of bits and that a series of said codewords equal in number to said telephone signals may constitute a frame defined by a frame synchronization signal and a series of a predetermined number of said frames may in turn constitute a superframe defined by a superframe synchronization signal, thereby to provide said time division multiplexed digital telephone signals, wherein said system comprises at the transmission end:

input means for receiving said time division multiplexed telephone signals;

means coupled to said input means in parallel and responsive to a state-representing signal for successively converting each said binary codewords into a plurality of modified codewords, said modified codewords being variably assigned comparatively smaller and greater numbers of binary digits depending on said state-representing signal, said comparatively greater number being equal to or smaller than said preset numbers; selection means supplied

in parallel with said modified codewords for selectively allowing in response to said state-representing signal one of said modified codewords to pass therethrough for each said binary codewords;

means coupled to said converting means and responsive to the output of said selection means for producing said state-representing signal in response to the corresponding one of at least one preceding frame, and for producing, for each said modified codewords, a bit-number-representing signal indicating the number of binary digits assigned to the binary codeword being transmitted;

means coupled to said state-representing signal producing means for arranging a time domain the output of said selection means, bit-number-representing signal and said superframe synchronization signal, so that said time division multiplexed digital signals with said modified codewords are provided; and means for generating timing pulses for controlling the operation of all the foregoing means; and

wherein said system comprises at the reception end:

input means for receiving said time division multiplexed digital signals with said modified codewords;

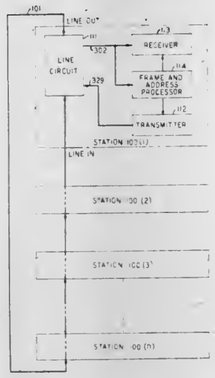
means responsive to said bit-number-representing signal for reproducing said binary codewords respectively from said modified codewords, thereby reproducing said time division multiplexed digital signals of unmodified codewords suited for ordinary decoding.

4,237,553

DATA PACKET MULTIPLEXING IN A STAGGERED FASHION

Arthur B. Larsen, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 973,181
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—89 **7 Claims**



1. In a transmission system conveying frames of data carrying interleaved data packets (**200(N)-208(N)**), each frame having a plurality of time slots (**220-228**), each data packet occupying corresponding time slots of a plurality of frames,

characterized by

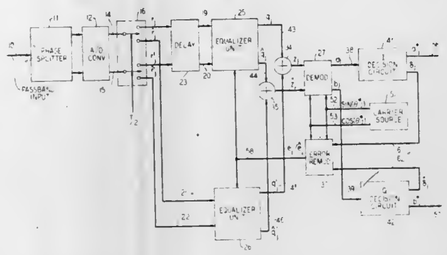
means (**321', 322', 323', 324', 325', 326', 333'**) for positioning an initial portion of each of the packets in respectively exclusive ones of the frames, and means (**402, 404, 405, 406, 414, 416, 417**) for operatively connecting control equipment with the transmission system during the corresponding time slots of the exclusive frames occupied by the initial portion of each of the packets.

4,237,554

COEFFICIENT TAP LEAKAGE FOR FRACTIONALLY-SPACED EQUALIZERS

Richard D. Gitlin, Monmouth Beach; Howard C. Meadors, Jr., Ocean, and Stephen B. Weinstein, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 1, 1979, Ser. No. 16,495
Int. Cl.³ H04B *3/04*
U.S. Cl. 375—15 **34 Claims**



1. An arrangement for processing a received data signal which was transmitted over a transmission channel at a rate of 1/T symbols per second comprising

sampling means (**11, 12, 16**) for forming a succession of samples of said signal at a predetermined rate

means for forming a decision as to the value of each one of said symbols and for forming an error signal associated with each symbol, the last-mentioned means comprising means (**25, 26**) for multiplying each successive one of an ordered plurality of coefficients with a successive respective one of a plurality of said samples associated with said decision, means (**27, 34, 35, 51**) responsive to the resulting products for generating an equalized signal, and means (**41, 42**) for quantizing said equalized signal to form said decision, the value of said error signal being a function of the value of said equalized signal and the value of said one of said symbols, and

updating means (**121, 122**) for determining at least a first value for each one of said coefficients by additively combining first and second terms with a previous value of that coefficient, said first term being a function of the error signal associated with a predetermined one of said symbols, said updating means including means (**180**) for subtracting the magnitude of said second term from said previous value if that value has a positive sign and for adding the magnitude of said second term to said previous value if that value has a negative sign,

said updating means characterized in that the magnitude of said second term is independent of the magnitudes of any of said coefficients.

4,237,555

AUTOMATIC MODULATION SYSTEM

Milton Dishal, Clifton, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,626
Int. Cl.³ H04B *1/02;* **H03C** *1/06*
U.S. Cl. 455—108 **64 Claims**

1. A multistate feedback controlled modulation system for linearizing and stabilizing an amplifier having an input-output characteristic including a linear portion and at least a lower non-linear portion comprising:

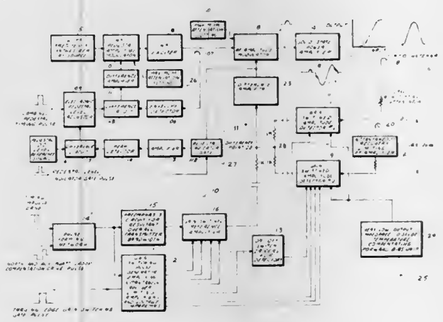
an extended range, gain controlled detector system disposed in a first feedback loop coupled to the output and input of said amplifier;

a gain controlled reference signal source coupled to an output of said detector system to provide a difference signal in said first feedback loop;

a gain controlling pulse generator coupled to said source and said detector system to simultaneously control the gain of said source and the gain of said detector system to control the shape of said difference signal so as to linearize said lower non-linear portion of said characteristic without loss of loop stability and without causing amplitude distortion in said first feedback loop;

an exciter to provide controllable amplitude, rectangular pulses;

a first amplitude modulator disposed in said first feedback loop coupled to the input of said amplifier and the output of said exciter responsive to an amplified version of said difference signal and said rectangular pulses;



a second feedback loop coupled between an output and an input of said exciter to provide an extremely flat top for each of said rectangular pulses; and

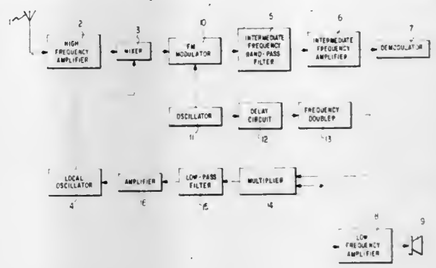
a third feedback loop coupled to said first and second feedback loops responsive to a predetermined gated portion of said amplified version of said difference signal to produce a control signal for said second feedback loop to accurately control the amplitude of said flat top rectangular pulses so as to hold the amplitude of a baseline portion of the output signal of said modular exactly at the threshold of said linearized characteristic.

4,237,556

SUPERHETERODYNE RECEIVER HAVING DISTORTION REDUCING CIRCUITRY

Michinori Naito, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,815
Claims priority, application Japan, Mar. 6, 1978, 53-25232; Sep. 20, 1978, 53-116116; Sep. 20, 1978, 53-116117; Sep. 20, 1978, 53-116118; Oct. 2, 1978, 53-121340
Int. Cl.³ H04B *1/10, 1/16*
U.S. Cl. 455—154 **24 Claims**



1. A superheterodyne receiver comprising

a local oscillator;

a mixer responsive to an output of said local oscillator and a signal received by the receiver to provide an intermediate frequency signal;

a further oscillator for generating a fixed modulating frequency;

means for frequency modulating said intermediate frequency signal with said fixed modulation frequency;

means for demodulating the intermediate frequency signal whose frequency has been modulated with said fixed modulation frequency;

means for providing a signal having a frequency n times that of said fixed modulation frequency where n is an integer whose value is at least two;

means for synchronously detecting the output of said demodulating means with said signal having a frequency n times that of said modulation frequency, and

control means for controlling the frequency of said local oscillator with the output of said synchronous detecting means.

DESIGNS

DECEMBER 2, 1980

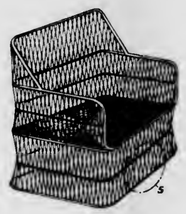
257,571
JACKET
Ryoichi Inoue, Ashiya, Japan, assignor to Descente Limited, Osaka, Japan
Filed Apr. 21, 1978, Ser. No. 899,016
Claims priority, application Japan, Feb. 1, 1978, 53-3141
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—192



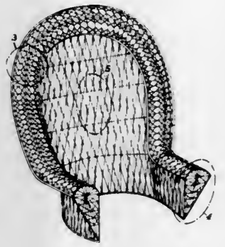
257,572
COMBINED KEY RING AND BOB
Michael W. Wefler, 416 McKinley Ave., Hobart, Ind. 46342
Filed Feb. 14, 1979, Ser. No. 12,233
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



257,573
SEAT
Donald E. Hanaford, 4601 S. 35th St., Phoenix, Ariz. 85040
Filed Oct. 16, 1978, Ser. No. 951,468
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



257,574
DIAMOND DESIGN CHAIR BACK
Donald E. Hanaford, 4601 S. 35th St., Phoenix, Ariz. 85040
Filed Oct. 16, 1978, Ser. No. 951,470
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



257,575
WOOD SPLITTER
Jackson M. Ideen, P.O. Box 9, Broken Bow, Nebr. 68822
Filed Nov. 13, 1978, Ser. No. 960,430
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—47



257,576
REEL FOR ELECTRIC CORD
Bert Bobrovniczky, Don Mills, Canada, assignor to Noma Lites Canada Limited, Scarborough, Canada
Filed Mar. 30, 1979, Ser. No. 25,670
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—359



257,577
BOTTLE, OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,084
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—381



257,578
BOTTLE, OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,085
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378



257,579
BOTTLE, OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,086
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—381



257,580
BOTTLE, OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,087
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383



257,581
BOTTLE OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1979, Ser. No. 27,088
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—381



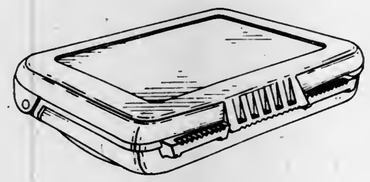
257,582
BOTTLE OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 30, 1979, Ser. No. 34,623
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—381



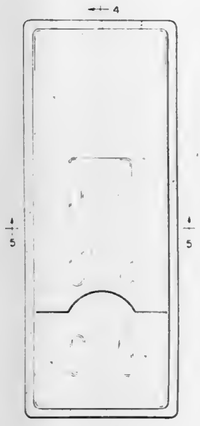
257,583
BOTTLE OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 30, 1979, Ser. No. 34,625
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383



257,584
PILL BOX
Henry Finkel, Westmount, Canada, assignor to Promo Ad Canada Ltd./Ltée., Montreal, Canada
Filed Jul. 5, 1978, Ser. No. 922,261
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—423



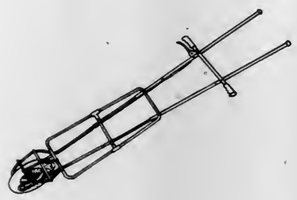
257,585
PACKAGING CONTAINER FOR A DENTAL INSTRUMENT
Sigmund A. Neuwirth, 30 St. George's Rd., Golders Green, London NW11 OLR, England
Filed Dec. 15, 1978, Ser. No. 969,731
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—425



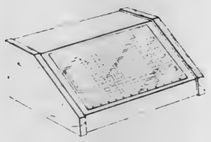
257,586
HIGHWAY DELINEATOR
Sidney A. Heenan, Park Ridge, and Robert M. Flanagan, Lincolnshire, both of Ill., assignors to Amerace Corporation, New York, N.Y.
Filed Aug. 4, 1978, Ser. No. 931,107
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—113



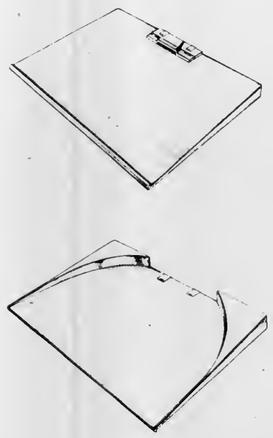
257,587
GAME CART
Ratko Doyich, 15 E. San Bernardino Ave., Redlands, Calif. 92373
Filed Jun. 22, 1978, Ser. No. 918,315
Term of patent 7 years
Int. Cl. D12—*02*
U.S. Cl. D12—21



257,588
CUSTOMER SATISFACTION TERMINAL, OR THE LIKE
Ernest R. Cadotte, Knoxville, Tenn.; Gerald P. Hester, and Martin D. Husted, both of Santa Ana, Calif., assignors to MSI Data Corporation
Filed Oct. 13, 1978, Ser. No. 951,319
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45



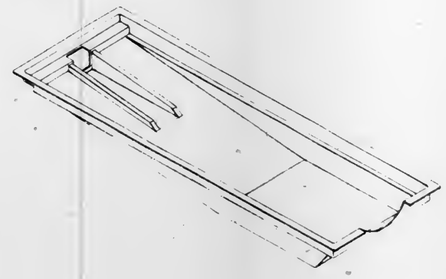
257,589
STEERING WHEEL DESK
Robert W. Shaffert, Philadelphia, Pa., assignor to Falcon Industries, Inc., Chalfont, Pa.
Filed Oct. 19, 1978, Ser. No. 952,702
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—88



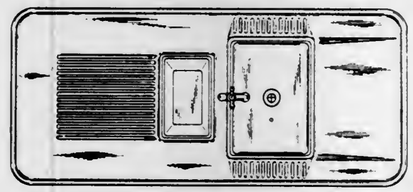
257,590
ASTRONAUT DOLL
Timothy Jackson, Morristown, N.J., assignor to Be A Doll, Inc., New York, N.Y.
Filed Jan. 29, 1979, Ser. No. 7,413
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—177

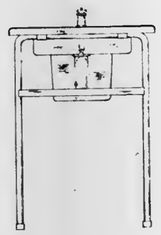


257,591
EXIT POOL FOR AN AMUSEMENT WATER SLIDE
Robert H. Brown, 874 E. Woodward Rd., Manteca, Calif. 95336
Filed Jan. 19, 1979, Ser. No. 4,665
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—252

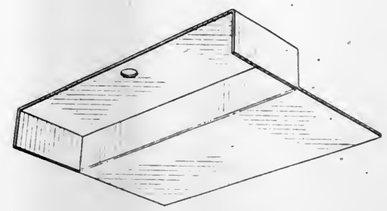


257,592
COMBINED SINK AND TABLE
Albert L. Kinsey, 2395 Delaware Ave., #84, Santa Cruz, Calif. 95060
Filed Nov. 9, 1978, Ser. No. 959,389
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—61





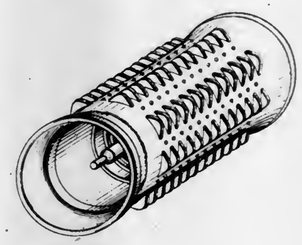
257,593
COMBINED FIREPLACE AIR VENT AND ASH DROP COVER
Harold E. Vogel, 1009 Sylvia, Sedalia, Mo. 65301
Filed Dec. 26, 1978, Ser. No. 973,381
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



257,594
ANKLE AND FOOT IMMOBILIZER
Alan Finnieston, 1901 NW. 17th Ave., Miami, Fla. 33125
Filed Jun. 12, 1978, Ser. No. 914,809
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



257,595
HAIR ROLLER
James H. Bullock, Trumbull, Conn., assignor to Clairol Incorporated
Filed May 25, 1979, Ser. No. 42,647
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—37



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See—*
Dick, George H.; and Smith, John A., 4,236,842, Cl. 400-144.200.
Tonkin, Kenneth J., 4,236,814, Cl. 355-26.000.

A-Betong AB: *See—*
Limmergard, Sten; and Thim, Stig, 4,236,670, Cl. 238-8.000.

A. C. Engines, Inc.: *See—*
Correll, Jerome B., 4,236,490, Cl. 123-32.00B.

A/S Elektrisk Bureau: *See—*
Bjor, Hakon E.; and Raad, Bjorn H., 4,237,463, Cl. 343-180.000.

AB Ostgota-Byggen: *See—*
Larsson, Arnold; and Elwing, Assar, 4,236,364, Cl. 52-383.000.

AB Volvo: *See—*
Rundlof, Lars N., 4,237,412, Cl. 322-28.000.

Ab Volvo Penta: *See—*
Mansson, Staffan T., 4,236,478, Cl. 115-34.00R.

Abbott Laboratories: *See—*
Genese, Joseph N., 4,236,515, Cl. 128-214.00G.
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,269, Cl. 536-17.00R.
Williams, John W.; and Becker, Frank C., 4,237,166, Cl. 424-310.000.

Abe, Noboru: *See—*
Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, 4,237,256, Cl. 526-229.000.

Abe, Nobuo, to Hitachi, Ltd. Hermetic motor-compressor. 4,236,879, Cl. 417-368.000.

Abels, Theodor, to Linde Aktiengesellschaft. Hydrostatic-transmission control system, especially for lift and other industrial vehicles. 4,236,596, Cl. 180-307.000.

Abex Corporation: *See—*
Heyer, Bruce A.; and Huth, Donald L., 4,236,921, Cl. 75-134.00F.
Smilges, Robert; and Wigmore, Richard, 4,236,690, Cl. 251-30.000.

Abler, Norman C.; Zimmerman, Earlyn E.; and Swihart, Wayne A., to Borg Textile Corporation. Manufacture of knitted synthetic fur fabric. 4,236,286, Cl. 28-160.000.

Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., to International Business Machines Corporation. Amorphous magnetic thin films with highly stable easy axis. 4,236,946, Cl. 148-108.000.

Abolafia, Andrew I.: *See—*
Schur, Paul E.; and Abolafia, Andrew I., 4,237,391, Cl. 310-10.000.

ACCO International Inc.: *See—*
Moore, David C.; Cooper, Edward W.; and Porteous, Archibald, 4,236,770, Cl. 312-184.000.

ACF Industries, Incorporated: *See—*
Niggemeier, Joseph F.; Stoller, David A.; and Xander, William J., 4,236,853, Cl. 410-77.000.
Williamson, Alton M., 4,236,692, Cl. 251-328.000.

Ackert, Duane B. Escalator safety device. 4,236,623, Cl. 198-333.000.

Acosta, William A. Quick change cartridge filter. 4,237,011, Cl. 210-237.000.

Adachi, Chihiro: *See—*
Saito, Hiroshi; and Adachi, Chihiro, 4,237,485, Cl. 358-197.000.

Adee, Ellis E.: *See—*
Adee, Raymond A.; and Adee, Ellis E., 4,236,585, Cl. 172-587.000.

Adee, Raymond A.; and Adee, Ellis E., to Hesston Corporation. Fold-back implement frame having angle adjustment. 4,236,585, Cl. 172-587.000.

Adjemian, Alain: *See—*
Cohen, Joseph; and Adjemian, Alain, 4,237,102, Cl. 423-126.000.

Aerojet-General Corporation: *See—*
Anderson, Roger E.; and Vander Wall, Eugene M., 4,236,464, Cl. 110-238.000.

Aeroquip Corporation: *See—*
Herbert, John T.; and Nixon, Larry R., 4,236,737, Cl. 285-234.000.

Aerpat A.G.: *See—*
McGauran, Hugh K.; and Summerlin, Frederick A., 4,236,438, Cl. 85-1.0JP.

Aeschlimann, Hans-Peter; Schmidhuber, Volker; and Kappes, Werner, to Dr. Molter GmbH. Laboratory centrifuge. 4,236,666, Cl. 233-26.000.

Agaeva, Magira A. K.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.

Agence Nationale de Valorisation de la Recherche: *See—*
Rouxel, Jean; and Trichet, Luc, 4,237,201, Cl. 429-104.000.

AGFA-Gevaert AG: *See—*
Hofstetter, Franz, 4,236,817, Cl. 355-68.000.

Aginsky, Jacob. Connector for fractured bones. 4,236,512, Cl. 128-92.0BA.

Agnese, Gino: *See—*
Ghelli, Giovanni; Bruschi, Enrico; and Agnese, Gino, 4,237,301, Cl. 546-327.000.

Ahangarzadeh, Mansour, to Otis Engineering Corporation. Well tubing coupling system. 4,236,734, Cl. 285-26.000.

Aichert, Hans; Hoffman, Otto-Horst; and Stephan, Herbert, to Leybold-Heraeus GmbH. Method of vaporizing alloys of metals having different vapor pressures. 4,237,148, Cl. 427-42.000.

Aikoh, Shinichi; Niwa, Kunihiko; and Tomozawa, Atsushi, to Nippon Electric Co., Ltd. Time division multiplexed transmission systems for telephone or like signals with frequency band compression. 4,237,552, Cl. 370-83.000.

Ainsworth, Oliver C.: *See—*
Raines, Dale A.; and Ainsworth, Oliver C., 4,237,324, Cl. 568-858.000.

Airco, Inc.: *See—*
Linhardt, Hans D., 4,236,868, Cl. 415-121.00A.

Aisin Seiki Kabushiki Kaisha: *See—*
Okamato, Toshiaki; and Nawa, Hideo, 4,236,471, Cl. 112-240.000.

Ajinomoto Company, Incorporated: *See—*
Sakakibara, Shumpei, 4,237,047, Cl. 260-112.50R.

Akimura, Yoshitaka: *See—*
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Tsujino, Nobuyuki, 4,237,214, Cl. 430-441.000.

Aktiebolaget Electrolux: *See—*
Blomberg, Peter E.; and Lindmark, Magnus C. W., 4,236,380, Cl. 62-148.000.

Akzona Incorporated: *See—*
Carlyle, Ian C.; Sleigh, Thomas; and Savage, David S., 4,237,126, Cl. 424-241.000.
Reck, Richard A., 4,237,064, Cl. 260-459.00A.

Albe S.A.: *See—*
Buzzi, Ugo, 4,236,624, Cl. 198-399.000.

Alcan Aluminum Corporation: *See—*
Bell, Harry E., 4,236,934, Cl. 106-290.000.

Alexander, John D.: *See—*
Reed, Philip W.; and Alexander, John D., 4,236,406, Cl. 73-61.10R.

Alfenaar, Marinus, to Electrochemische Energieconversie N.V. Porous electrode. 4,237,195, Cl. 429-44.000.

Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K. Process for preparing film-forming composition. 4,237,041, Cl. 260-33.6UA.

Aliev, Sakhib M. O.; Aliev, Vagab S.; Guseinov, Novruz I. O.; Nagiev, Vagif A. O.; and Sultanov, Nuri T. O. Method for preparing α-naphthol. 4,237,323, Cl. 568-738.000.

Aliev, Vagab S.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.
Aliev, Sakhib M. O.; Aliev, Vagab S.; Guseinov, Novruz I. O.; Nagiev, Vagif A. O.; and Sultanov, Nuri T. O., 4,237,323, Cl. 568-738.000.

Alifandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Crystallized silica-alumina cogel and catalyst employing the same. 4,237,031, Cl. 252-438.000.

Allcock, Harry R.; and Ritchie, Robert J., to Firestone Tire & Rubber Company, The. Poly(monoalkyl group containing organophosphazenes) and method for their preparation. 4,237,263, Cl. 528-399.000.

Allee, Lannie. Sleeping bag for children. 4,236,263, Cl. 5-413.000.

Allegheny Ludlum Steel Corporation: *See—*
Reen, Orville W., 4,236,945, Cl. 148-105.000.

Allen, Jerome D.: *See—*
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Allen, John D. Fitment for a vessel. 4,236,735, Cl. 285-114.000.

Allen, Joseph C.; and Porter, John W., to Texaco Inc. Steam flooding hydrocarbon recovery composition. 4,237,017, Cl. 252-8.55D.

Allen, Reginald A., to TRW Inc. Charge coupled device channel crossover circuit. 4,237,389, Cl. 307-221.00D.

Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., to General Motors Corporation. Catalytic converter with dual catalyst pellet beds and plenum therebetween. 4,237,099, Cl. 422-171.000.

Allied Chemical Corporation: *See—*
Raybon, James C., Jr.; Darby, Malcolm O.; and Derrick, Thomas V., Jr., 4,237,187, Cl. 428-399.000.
Ulmer, Harry E.; and Mathew, Chempolil T., 4,237,069, Cl. 260-566.00A.

Allis-Chalmers Corporation: *See—*
Heian, Glenn A., 4,236,887, Cl. 432-14.000.
Shaver, J. Lyle, 4,236,370, Cl. 56-297.000.

Alpini, Alessandro; and Ruspa, Giacomo, to Centro Ricerche Fiat S.p.A. Process and apparatus for the quality control inspection of vehicle driving axles. 4,236,407, Cl. 73-118.000.

Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. 1,9-Dihydroxyoctahydrophenanthrenes. 4,237,133, Cl. 424-248.520.

Aluminum Company of America: *See—*
Pohlenz, Elmer E., 4,237,360, Cl. 219-10.410.

Aluminum Pechiney: *See—*
Cohen, Joseph; and Adjemian, Alain, 4,237,102, Cl. 423-126.000.

Alza Corporation: *See—*
Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., 4,236,517, Cl. 128-275.000.

American Can Company: *See—*
Beguhn, Gordon H., 4,236,652, Cl. 222-92.000.
Kuchenbecker, Morris W., 4,236,636, Cl. 206-461.000.
McGee, Theodore L., 4,237,190, Cl. 428-513.000.

American Cyanamid Company: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.
Ingle, Donald L., 4,237,120, Cl. 424-181.000.
Stretanski, Joseph A., 4,237,042, Cl. 260-45.80R.
Torre, Salvatore F., 4,236,933, Cl. 106-288.00Q.
Wissner, Allan, 4,237,307, Cl. 560-121.000.

American Flange & Manufacturing Co. Inc.: *See—*
Dwinell, Davis B., 4,236,629, Cl. 222-529.000.

American Home Products Corporation: *See—*
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., 4,237,045, Cl. 260-112.50R.
Lien, Eric L., 4,237,169, Cl. 424-330.000.

American Hospital Supply Corporation: *See—*
Huempfner, David F., 4,236,261, Cl. 5-68.000.

American Optical Corporation: *See—*
Walker, Terence, 4,236,820, Cl. 356-41.000.
Whitney, Donald B.; Grolman, Bernard; and Richards, William, 4,236,793, Cl. 351-21.000.

American Standard Inc.: *See—*
Kanjo, Wajih; Housman, Richard J.; and Natschke, Scott L., 4,236,424, Cl. 74-505.000.
Pierce, Thomas V., Jr., 4,237,515, Cl. 361-127.000.
Pierce, Thomas V., Jr., 4,237,516, Cl. 361-127.000.

Amfac Foods, Inc.: *See—*
Rudy, Norman A.; and Fredrickson, Lloyd C., 4,236,277, Cl. 17-73.000.

AMP Incorporated: *See—*
Crowley, Daniel J.; and Stine, Jon D., 4,236,667, Cl. 235-443.000.
Hughes, Richard L.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Weisenburger, Lawrence P., 4,236,778, Cl. 339-97.00P.
Merlina, Joseph F.; Redmond, John P.; Ulbrich, George; and Wagner, Richard M., 4,236,777, Cl. 339-17.0CF.

Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., to International Business Machines Corporation. High performance bipolar device and method for making same. 4,236,294, Cl. 29-578.000.

Anderson, Katherine H.: *See—*
Powell, Richard M.; and Anderson, Katherine H., 4,236,524, Cl. 128-419.0PT.

Anderson, Mark L. Fluid drain or injection tube for an animal's udder. 4,236,520, Cl. 128-348.000.

Anderson Power Products, Inc.: *See—*
Eby, Richard L.; and Wilson, Lester E., 4,237,198, Cl. 429-93.000.

Anderson, Richard D.; and Wedel, John A., to Pako Corporation. Adjustable width punch marking apparatus with interchangeable spacer inserts. 4,236,815, Cl. 355-29.000.

Anderson, Robert L.: *See—*
Lobdell, Donn D.; Herman, Stephen J.; and Anderson, Robert L., 4,237,091, Cl. 422-46.000.

Anderson, Robert V., to Turnbuckle Products Corporation. Hose coupling. 4,236,736, Cl. 285-150.000.

Anderson, Roger E.; and Vander Wall, Eugene M., to Aerojet-General Corporation. Incineration of noxious materials. 4,236,464, Cl. 110-238.000.

Anderson, Rogers H., to Honeywell Inc. Method for correction of forged optical elements. 4,236,824, Cl. 356-359.000.

Anderson, Stephen I.: *See—*
Woolhouse, Geoffrey R.; Huggins, Harold A.; Anderson, Stephen I.; and Scholl, Frederick R., 4,236,296, Cl. 29-583.000.

Andlid, Sune; and Linden, Lennart, to Karlshamns Oljefabriker. Metal working emulsion. 4,237,021, Cl. 252-49.500.

Andreas Stihl: *See—*
Muller, Erich, 4,236,310, Cl. 30-276.000.

Andrysek, Oskar: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Angelini, Gianfranco: *See—*
Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, 4,237,274, Cl. 536-56.000.

Angelus Sanitary Can Machine Company: *See—*
Koeberle, George G., 4,236,672, Cl. 239-139.000.

Angle, Rodney L.: *See—*
Kosonocky, Walter F.; and Angle, Rodney L., 4,237,383, Cl. 250-578.000.

Anodex: *See—*
Passovoy, Alexander E., 4,236,354, Cl. 49-504.000.

Ansen, Jakob; Hoppen, Heinz; and Duill, Helmut, to Klockner-Humboldt-Wedag AG. Method and apparatus for the production of coal-dust. 4,236,886, Cl. 432-14.000.

Aoki, Kanemasa, to Canon Kabushiki Kaisha; and Canon Seiki Kabushiki Kaisha. Frequency generator and miniature motor provided with the same. 4,237,394, Cl. 310-113.000.

Aoyagi, Chiyoko: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.

Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, to Fischer & Porter Co. Temperature-compensated electromagnetic flowmeter. 4,236,410, Cl. 73-194.0EM.

Appeldorn, Roger H., to Minnesota Mining and Manufacturing Company. Television support and picture projector. 4,237,493, Cl. 358-237.000.

Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, to Fuji Photo Film Co., Ltd. Silver halide emulsion containing two-equivalent magenta coupler. 4,237,217, Cl. 430-387.000.

Archbold, Ellard. Window school bag. 4,236,559, Cl. 150-1.600.

Archibald Development Labs, Inc.: *See—*
Archibald, G. Kent, 4,236,880, Cl. 417-478.000.

Archibald, G. Kent, to Archibald Development Labs, Inc. Nonpulsating IV pump and disposable pump chamber. 4,236,880, Cl. 417-478.000.

Arens Controls, Inc.: *See—*
Gregory, Ted W., 4,236,757, Cl. 298-22.00C.

Arimura, Yoshiaki, to Tokyo Shibaura Electric Co., Ltd. Illumination system for specimen. 4,236,781, Cl. 350-81.000.

Armerad Betong Vagforbattringar AB: *See—*
Norin, Ake; and Nordlund, Tore, 4,236,910, Cl. 71-9.000.

Armstrong Cork Company: *See—*
Jones, Donald B., 4,237,087, Cl. 264-134.000.
Lilley, George L., 4,237,239, Cl. 521-134.000.

Armstrong, Kenneth J.: *See—*
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.

Arnoldy, Roman F., to Tapco International, Inc. Method of producing hardfaced plate. 4,237,362, Cl. 219-76.140.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Yamataka, Kazunori; Matsuoka, Yuuji; and Isoya, Toshiro, 4,237,317, Cl. 562-590.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Takumi, 4,236,799, Cl. 354-209.000.
Satoh, Mitsuo, 4,236,800, Cl. 354-213.000.
Takami, Satoshi, 4,236,801, Cl. 354-234.000.

Asai, Tatsuo: *See—*
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.

Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, to Sumitomo Chemical Company, Limited. Imidazolidinedione compounds, and their production and use. 4,237,122, Cl. 424-200.000.

ASEA Aktiebolag: *See—*
Asplund, Gunnar, 4,237,509, Cl. 361-56.000.
Classon, Ake, 4,237,333, Cl. 174-21.00R.
Forford, Thorleif, 4,237,512, Cl. 361-87.000.

Asics Corporation: *See—*
Inohara, Masanobu, 4,236,326, Cl. 36-29.000.

Asplund, Gunnar, to ASEA Aktiebolag. Thyristor connection with overvoltage protection. 4,237,509, Cl. 361-56.000.

Astra Lakemedel Aktiebolag: *See—*
Ernegot, Lennart S., 4,236,633, Cl. 206-213.100.
Lindberg, Ulf M. A.; Ross, Svante B.; Thorberg, Seth-Olov; and O gren, Sven O., 4,237,311, Cl. 560-173.000.

Astra Pharmaceutical Products, Inc.: *See—*
Boyes, Robert N.; Duce, Benjamin R.; Smith, Emil R.; and Byrnes, Eugene W., 4,237,068, Cl. 260-562.00N.

Atlantic Richfield Company: *See—*
Sheng, Ming N.; and Kao, Jar-Lin, 4,237,314, Cl. 562-496.000.

Attler, Anthony R.: *See—*
La Russa, Joseph A.; Troutman, Richard C.; and Attler, Anthony R., 4,236,519, Cl. 128-305.000.

Au, Andrew: *See—*
van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., 4,237,441, Cl. 338-22.00R.

Auel, Theodor: *See—*
Medic, Nikolaj; Auel, Theodor; Bergner, Dieter; and Russow, Jurgen, 4,236,980, Cl. 204-98.000.

Augat Inc.: *See—*
Wellington, Roger D., 4,236,776, Cl. 339-17.00R.

Aughton, John E., to Crosfield Electronics, Ltd. Image reproduction using sharp and unsharp signals. 4,237,481, Cl. 358-80.000.

August Thyssen Aktiengesellschaft: *See—*
Zwintscher, Wolfgang; Kittel, Horst; and Ruge, Hinrich, 4,237,361, Cl. 219-76.100.

Austin, Ivy C. Gaseous atmosphere for electric arc furnaces. 4,236,913, Cl. 75-10.00R.

Autographic Business Forms, Inc.: *See—*
Lovrich, Vincent; and Sundell, George J., 4,236,446, Cl. 101-79.000.

Autoline Supply Company: *See—*
Salzmann, Donald F., 4,236,549, Cl. 137-343.000.

Automotive Products Limited: *See—*
Fearnhead, Robert, 4,237,015, Cl. 210-444.000.

Autotron Products, Inc.: *See—*
Ziegler, John H., 4,236,592, Cl. 180-68.00P.

Avaiusini, Mauricio V. Bolt type lock. 4,236,395, Cl. 70-34.000.

Avco Everett Research Laboratory, Inc.: *See—*
Limpaecher, Rudolf, 4,237,404, Cl. 315-111.000.

Aviron-Violet, Paul; and Dang, Tuan-Phat, to Rhone-Poulenc Industries. Preparation of optically active citronellal. 4,237,072, Cl. 260-601.00R.

Azuma, Takashi: *See—*
Inukai, Sumitaka; and Azuma, Takashi, 4,236,485, Cl. 118-690.000.

Azzerri, Nazzareno; and Milanese, Giovanni, to Italsider, S.p.A. Method for preplating steel surfaces. 4,236,977, Cl. 204-29.000.

B. C. Barton & Son Limited: *See—*
Barton, Peter, 4,236,846, Cl. 403-298.000.

Baba, Masanao, to Nippon Cable System, Inc. Meshing mechanism for intermittent transmission. 4,236,421, Cl. 74-467.000.

Bachman, Gerald L.: *See—*
Merten, Helmut L.; and Bachman, Gerald L., 4,237,147, Cl. 426-590.000.

Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., to National Research Development Corporation. Electrochemical cells. 4,236,991, Cl. 204-272.000.

Bactex, Inc.: *See—*
Brinton, Charles C., Jr., 4,237,115, Cl. 424-92.000.

Bader, Rolf; and Reinehr, Dieter, to Ciba-Geigy Corporation. Process for producing hydrazone derivatives of pyridinaldehydes. 4,237,275, Cl. 542-417.000.

Bailey, Donald L.: *See—*
Packo, Joseph J.; and Bailey, Donald L., 4,237,172, Cl. 428-63.000.

Baker Industries, Inc.: *See—*
Jaretsky, Michael G.; and Lax, Michael, 4,236,822, Cl. 356-256.000.

Bakewell, Henry P., Jr.; and Johnson, Marguerite A., to United States of America, Navy. Frequency response tester. 4,236,401, Cl. 73-1.0DV.

Baldini, Alberto: *See—*
Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, 4,237,274, Cl. 536-56.000.

Baldwin, Samuel L., to General Electric Company. Luminaire. 4,237,528, Cl. 362-263.000.

Baliga, Bantval J., to General Electric Company. Fabrication of grown-in p-n junctions using liquid phase epitaxial growth of silicon. 4,236,947, Cl. 148-171.000.

Balke-Durr Aktiengesellschaft: *See—*
Joekel, Alfred; Langen, Hans; and Denner, Peter, 4,236,299, Cl. 29-727.000.

Ball Corporation: *See—*
Byers, Stanley A.; McKee, James R., Sr.; and Gridley, Marvin C., 4,236,929, Cl. 106-52.000.

Balland, Michel: *See—*
Moers, Daniel; and Balland, Michel, 4,236,563, Cl. 152-354.00R.

Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, to Cassella Aktiengesellschaft. Process for the preparation of crosslinked copolymers, the process products obtained, and their use in textile printing. 4,237,249, Cl. 525-369.000.

Balzer, Juliane: *See—*
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.

Bamberger, Carlos E.; and Robinson, Paul R., to United States of America, Energy. Thermochemical cyclic system for splitting water and/or carbon dioxide by means of cerium compounds and reactions useful therein. 4,237,105, Cl. 423-306.000.

Banfield, Ernest R.: *See—*
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.

Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, to Teijin Limited. 1α-Hydroxy-24-dehydrovitamin 3pharmaceutical compositions and uses thereof. 4,237,125, Cl. 424-236.000.

Bara, Anton J.: *See—*
Meyer, Walter; and Bara, Anton J., 4,236,651, Cl. 222-82.000.

Barcita, Jose M. Power transmission. 4,236,416, Cl. 74-52.000.

Barksdale, Lester T. Removable and foldable vehicle table. 4,236,461, Cl. 108-44.000.

Barmache, Evan L.; and Brand, Abraham, to Pertec Computer Corporation. Emergency head unload system for magnetic disk drive. 4,237,501, Cl. 360-75.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Dammann, Peter; and Frank, Benno, 4,236,323, Cl. 34-152.000.

Baron, George B., to Dresser Industries, Inc. Center pin assembly for power shovels. 4,236,863, Cl. 414-687.000.

Barrer, Daniel E., to Lubrizol Corporation, The. Tartarimides and lubricants and fuels containing the same. 4,237,022, Cl. 252-51.50A.

Barrow, Randall G. Bearing carrier puller for outboard motors. 4,236,291, Cl. 29-256.000.

Barth, Tomislav: *See—*
Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,237,119, Cl. 424-177.000.

Barthell, Eduard: *See—*
Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, 4,237,067, Cl. 260-561.00N.

Barthelme, Richard W.; Leonard, John B.; and Biercuk, John N., to Grumman Aerospace Corporation. Ship compatible launch, retrieval and handling system for (VTOL) aircraft. 4,236,686, Cl. 244-116.000.

Barton, Danny B., to Mobay Chemical Corporation. Preparation of lower alkyl thiosemicarbazides. 4,237,066, Cl. 260-552.0SC.

Barton, Peter, to B. C. Barton & Son Limited. Tube joint. 4,236,846, Cl. 403-298.000.

Barton, William M., Jr., to Cipher Data Products Incorporated. Slot loaded, low profile magnetic tape drive. 4,236,682, Cl. 242-198.000.

Bartoszek, John A.; and Hirdler, Louis C., to Olin Corporation. Process for the production of concentrated cyanuric acid slurries. 4,237,285, Cl. 544-192.000.

BASF Aktiengesellschaft: *See—*
Jarre, Wolfgang; and Wurmb, Rolf, 4,237,237, Cl. 521-128.000.
Jarre, Wolfgang; Weyland, Peter; and Mueller, Gerhard, 4,237,240, Cl. 521-159.000.
Krapf, Heinz; Oppenlaender, Knut; and Uhl, Guenter, 4,237,320, Cl. 568-609.000.
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,237,330, Cl. 585-807.000.
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

Baskevitch, Eugene: *See—*
Devendorf, Don C.; and Baskevitch, Eugene, 4,237,387, Cl. 307-203.000.

Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., to Brigham Young University. Confinement of high temperature plasmas. 4,236,964, Cl. 176-3.000.

Bassman, Seymour: *See—*
Turner, John; Koster, Richard A.; and Bassman, Seymour, 4,236,441, Cl. 89-40.00F.

Bataille, Jean-Roger. Dynamic device for holding the foot and the leg in position in a rigid structure. 4,236,725, Cl. 280-611.000.

Batjukov, Vladimir I.; Vjugov, Oleg N.; Fadeev, Alexandr I.; and Shkhian, Tsolak G. Gripping means for fuel assemblies of nuclear reactor. 4,236,967, Cl. 176-30.000.

Batjukov, Vladimir I.: *See—*
Ljubivy, Alexandr G.; Batjukov, Vladimir I.; Shkhian, Tsolak G.; and Fadeev, Alexandr I., 4,236,969, Cl. 176-61.000.

Batstone, Roger J., to French Masterpieces, Incorporated. Automatic swimming pool cover. 4,236,258, Cl. 4-172.120.

Battelle Memorial Institute: *See—*
Gillot, Jacques; Exell, Stuart F.; and Lux, Benno, 4,237,107, Cl. 423-445.000.

Bauchk, Friedrich G. K.: *See—*
Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, 4,237,196, Cl. 429-50.000.

Baumann, Kai J.: *See—*
Ying, Sui-chun; Smith, Joseph L., Jr.; and Baumann, Kai J., 4,237,392, Cl. 310-52.000.

Baxter Travenol Laboratories, Inc.: *See—*
Ganz, Rudolf V., Jr.; and Winchell, David A., 4,236,646, Cl. 215-232.000.

Bayer Aktiengesellschaft: *See—*
Buchel, Karl H.; Kramer, Wolfgang; and Brandes, Wilhelm, 4,237,142, Cl. 424-269.000.
Dieterich, Dieter, 4,237,250, Cl. 525-440.000.
Gottschlich, Alois; and Leverenz, Klaus, 4,237,048, Cl. 260-207.100.
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,237,143, Cl. 424-270.000.
Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, 4,237,124, Cl. 424-211.000.
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,237,162, Cl. 424-283.000.
Minz, Franz-Rudolf; and Wiechers, Herbert, 4,236,983, Cl. 204-129.000.
Noll, Klaus; Nachtkamp, Klaus; and Pedain, Josef, 4,237,264, Cl. 528-67.000.
Tacke, Reinhold; Bentlage, Anke; Towart, Robertson; and Vater, Wulf, 4,237,137, Cl. 424-251.000.
von Harpe, Hannes; Bottenbruch, Ludwig; Peltzer, Bernd; and Schulz-Walz, Hansjochen, 4,237,244, Cl. 525-171.000.
Walz, Klaus; and Tamer, Ergun, 4,237,268, Cl. 536-4.000.

Bayerische Motoren Werke Atiengesellschaft: *See—*
Hundemer, Peter, 4,237,524, Cl. 362-71.000.

Bayliss, John P., to Girling Limited. Friction pad assemblies for rail vehicle brakes. 4,236,612, Cl. 188-242.000.

BBC Brown, Boveri & Co Ltd: *See—*
De Mesmaeker, Ivan; and De Mesmaeker, Ivan, 4,237,511, Cl. 361-80.000.
De Mesmaeker, Ivan; and De Mesmaeker, Ivan, 4,237,511, Cl. 361-80.000.

BBC Brown, Boveri & Co. Ltd.: *See—*
Bellati, Hans; and Brunner, Heinz, 4,236,425, Cl. 74-573.00R.
Hecht, Siegfried, 4,237,338, Cl. 178-23.00A.
Muller, Rene; and Stucki, Samuel, 4,236,993, Cl. 204-294.000.
Ragaller, Klaus, 4,237,356, Cl. 200-148.00A.

Beccaris, Carlo, to Societe Anonyme Francaise du Ferodo. Double clutch assembly. 4,236,620, Cl. 192-48.800.

Beck, Richard A.; and Presley, Glen T., to Parno Corp. Auxiliary drive system. 4,236,595, Cl. 180-243.000.

Becker, Frank C.: *See—*
Williams, John W.; and Becker, Frank C., 4,237,166, Cl. 424-310.000.

Becker, Larry W., to Betz Laboratories, Inc. Method of breaking oil-in-water emulsions. 4,237,005, Cl. 210-43.000.

Beckett, Joseph E. Harvesting machine. 4,236,581, Cl. 171-56.000.

Beckley, Philip; and Mildoon, John, to British Steel Corporation. Improvements in safety device for lifting magnets. 4,237,455, Cl. 340-685.000.

Beckman Instruments, Inc.: *See—*
Loeb, Phillip J., 4,236,511, Cl. 128-731.000.

Becnel, Larry H., to General Dynamics Corporation Pomona Division. Toggle latch opening and closing tool. 4,236,427, Cl. 81-3.00R.

Becton Dickinson and Company: *See—*
Zold, Tibor, 4,237,416, Cl. 324-71.0CP.

Beecham Group Limited: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,237,161, Cl. 424-283.000.
Wootton, Gordon; and Moore, Richard W., 4,237,131, Cl. 424-248.510.

Beggs, Louis C.: *See—*
Thompson, Herbert A., Jr.; Senor, Ronald E.; and Beggs, Louis C., 4,237,510, Cl. 361-24.000.

Beguhn, Gordon H., to American Can Company. Dispenser package. 4,236,652, Cl. 222-92.000.

Bell, Cyril F. Paper folding apparatus. 4,236,704, Cl. 270-94.000.

Bell-Fruit Manufacturing Co. Limited: *See—*
Wichinsky, Michael, 4,236,717, Cl. 273-143.00R.

Bell, Harry E., to Alcan Aluminum Corporation. Nonleafing aluminum flake pigments. 4,236,934, Cl. 106-290.000.

Bell Telephone Laboratories, Incorporated: *See—*
Bonyhard, Peter I., 4,237,544, Cl. 364-900.000.
Brown, Earl F.; and Netravali, Arun N., 4,237,484, Cl. 358-142.000.
Gitlin, Richard D.; Meadors, Howard C., Jr.; and Weinstein, Stephen B., 4,237,554, Cl. 375-15.000.
Kohl, Paul A., 4,236,976, Cl. 204-15.000.
Larsen, Arthur B., 4,237,553, Cl. 370-89.000.
Lazay, Paul D., 4,236,904, Cl. 65-2.000.
Robbins, Murray; and Staudinger, Annemarie, 4,236,924, Cl. 75-211.000.

Bell, Weldon K.; and Chang, Clarence D., to Mobil Oil Corporation. Synthesis gas conversion. 4,237,063, Cl. 260-449.00R.

Bellati, Hans; and Brunner, Heinz, to BBC Brown, Boveri & Co. Ltd. Balancing arrangement for rotating machinery. 4,236,425, Cl. 74-573.00R.

Beller, Melchior P.: *See—*
Domo, John M., 4,236,332, Cl. 40-2.200.

Bellocci, Rio: *See—*
Pierrel, Michel; and Bellocci, Rio, 4,236,571, Cl. 164-85.000.

Beloit Corporation: *See—*
Busker, Leroy H., 4,236,963, Cl. 162-271.000.

Belony, Jean-Claude M. J. Tile or card game. 4,236,720, Cl. 273-292.000.

Belt, Wesley D. Method of making metal beam for geodesic dome structure. 4,236,473, Cl. 113-116.0HA.

Bendix Corporation, The: *See—*
Johannesen, Donald D., 4,236,614, Cl. 188-326.000.

Benedict, Gertrude B. Garment storage bag. 4,236,634, Cl. 206-287.000.

Bengtsson, Nils E.: *See—*
Risman, Per O. G.; and Bengtsson, Nils E., 4,237,145, Cl. 426-241.000.

Benjamin, Benjamin C.; and LaVene, Leon F., to Schmelzer Corporation. Two stage vacuum break. 4,237,076, Cl. 261-23.00A.

Benjamin, Benjamin C., to Schmelzer Corporation. Carburetor choke control. 4,237,078, Cl. 261-39.00B.

Bentlage, Anke: *See—*
Tacke, Reinhold; Bentlage, Anke; Towart, Robertson; and Vater, Wulf, 4,237,137, Cl. 424-251.000.

Beretta, Pier C., to Fabrica d'Armi Pietro Beretta S.p.A. Reversible sliding magazine latch for pistols. 4,236,337, Cl. 42-7.000.

Berg, Peter G., to Texas Instruments Incorporated. Automatic choke system. 4,237,077, Cl. 261-39.00E.

Berg, Peter G., to Texas Instruments Incorporated. Heated automobile mirror. 4,237,366, Cl. 219-219.000.

Berger Traffic Markings Ltd.: *See—*
Horne, John M., 4,237,191, Cl. 428-542.000.

Bergh, John C., to Wheelabrator-Frye Inc. Mechanical actuation of furnace grate beams. 4,236,466, Cl. 110-281.000.

Berglund, Erik A.: *See—*
Hultman, Bengt G.; and Berglund, Erik A., 4,236,960, Cl. 162-30.00K.

Bergner, Dieter: *See—*
Medic, Nikolaj; Auel, Theodor; Bergner, Dieter; and Russow, Jurgen, 4,236,980, Cl. 204-98.000.

Beringer Co., Inc.: *See—*
Trott, Delano B., 4,237,014, Cl. 210-330.000.

Berkleonics, Inc.: *See—*
Davis, Forrest W., 4,237,403, Cl. 315-98.000.

Berlin, Herbert: *See—*
Schmidt, Rolf; and Berlin, Herbert, 4,236,535, Cl. 131-21.00R.

Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., to American Cyanamid Company. Novel 2-substituted-3,4-epoxycyclopentan-1-ones, 2-substituted-3,4-epoxycyclopentan-1-ols, and various 2-substituted-cyclopentenones. 4,237,316, Cl. 562-503.000.

Bernardi, Herbert: *See—*
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.
Hoese, Frank; von Aschwege, Gerd; and Bernardi, Herbert, 4,236,858, Cl. 414-331.000.

Berrier, Bobby L., to United States of America, National Aeronautics and Space Administration. Thrust augmented spin recovery device. 4,236,684, Cl. 244-52.000.

Berry, Howard S.: *See—*
Walker, Leon; and Berry, Howard S., 4,237,001, Cl. 209-442.000.

Berthier, Marc A.; and Chauvel, Alain Y. Folding tea trolley. 4,236,462, Cl. 108-111.000.

Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the recovery of pyridine and 3-methylpyridine. 4,237,299, Cl. 546-250.000.

Best Metal Products: *See—*
Taliaferro, James R., 4,236,498, Cl. 126-120.000.

Betz Laboratories, Inc.: *See—*
Becker, Larry W., 4,237,005, Cl. 210-43.000.

Bhatia, Harsaran S.: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., 4,236,294, Cl. 29-578.000.

Bhattacharya, Debanshu; Quinto, Dennis T.; and Holowaty, Michael O., to Inland Steel Company. Semi-finished steel article and method for producing same. 4,236,939, Cl. 148-2.000.

Bialski, Alexander; Gentile, Camillo; and Sepall, Ola, to Reed Ltd. Paper sorting apparatus. 4,236,676, Cl. 241-74.000.

Biercuk, John N.: *See—*
Barthelme, Richard W.; Leonard, John B.; and Biercuk, John N., 4,236,686, Cl. 244-116.000.

Billet, Rene, to Societe Anonyme Francaise du Ferodo. Caliper brake with axially elongate cylindrical braking member. 4,236,610, Cl. 188-76.000.

Binks Bullows Limited: *See—*
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Bio-Rad Laboratories, Inc.: *See—*
Mor[illegible]ny, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Biastri, Gian D., 4,237,218, Cl. 435-2.000.

Biological Chemical Activities Patents SA B.C.A.P.: *See—*
Ehrat, Rodolphe, 4,237,065, Cl. 260-502.500.

Bissar, Saadi J., to Timex Corporation. Electrochromic display and method for making same. 4,236,792, Cl. 350-357.000.

Bitler, Harold C., to Fisher Stove Works. Dual action safety latch for stove door. 4,236,501, Cl. 126-197.000.

Bixby, James A.: *See—*
Lemke, James U.; and Bixby, James A., 4,237,462, Cl. 343-5.00R.

Bjor, Hakon E.; and Raad, Bjorn H., to A/S Elektrisk Bureau. Directional coupler. 4,237,463, Cl. 343-180.000.

Blach, Josef A. Screw machine for processing materials of solid, pasty and liquid consistency. 4,236,833, Cl. 366-85.000.

Black, Sivalls & Bryson: *See—*
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Blackwell, Jennings P., to Phillips Petroleum Company. Salts of arylalkanoic acids as corrosion inhibitors for poly(arylene sulfide)s. 4,237,039, Cl. 260-29.20R.

Bladykas, Theodore S. Process and apparatus for producing stockpileable asphaltic concrete. 4,236,675, Cl. 241-65.000.

Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., to United States of America, Agriculture. Process for producing transfer printed cotton and cotton blends. 4,236,890, Cl. 8-2.50A.

Blank, Jochen; and Bobe, Dieter, to Terrot Strickmaschinen GmbH. Knitting machine. 4,236,390, Cl. 66-149.00R.

Blenkinsop, Philip T.; McLean, Graham W.; and Turner, David, to P A Management Consultants Limited. Electromagnetic machines with permanent magnet excitation. 4,237,396, Cl. 310-154.000.

Block, Alvin, to Intimate Jewels Inc. Earring. 4,236,385, Cl. 63-12.000.

Block, Thomas S., to Clarke-Gravely Corporation. Vertical axis brush. 4,236,269, Cl. 15-180.000.

Blomberg, Peter E.; and Lindmark, Magnus C. W., to Aktiebolaget Electrolux. Control system for automatic delayed operation of a gas operated absorption refrigerator. 4,236,380, Cl. 62-148.000.

Bobe, Dieter: *See—*
Blank, Jochen; and Bobe, Dieter, 4,236,390, Cl. 66-149.00R.

Bochis, Richard J.; and Kulsa, Peter, to Merck & Co., Inc. Certain 6-substituted-2-pyridinamines. 4,237,300, Cl. 546-297.000.

Bodanszky, Miklos. Polypeptides and methods of preparation. 4,237,046, Cl. 260-112.50R.

Boden, Joseph. Prefabricated building components. 4,236,361, Cl. 52-204.000.

Bodine, Albert G. Method and apparatus for sonically extracting oil well liners. 4,236,580, Cl. 166-301.000.

Boehme, Helen J., legal representative: *See—*
Murphy, Clarence R.; Boehme, Robert E., deceased; Boehme, Helen J., legal representative; and Phelp, Joseph P., executor, 4,237,081, Cl. 264-9.000.

Boehme, Robert E., deceased: *See—*
Murphy, Clarence R.; Boehme, Robert E., deceased; Boehme, Helen J., legal representative; and Phelp, Joseph P., executor, 4,237,081, Cl. 264-9.000.

Boehringer Ingelheim GmbH: *See—*
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Boehringer Mannheim GmbH: *See—*
Gauhl, Helmgard; and Seidel, Hans, 4,237,221, Cl. 435-15.000.

Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Method of automatically sorting thin sheet articles. 4,236,639, Cl. 209-534.000.

Bonomi, Antonio, to De La Rue Giori S.A. Installation for the continuous cleaning of a wiping roller of a machine for copper-plate printing. 4,236,450, Cl. 101-425.000.

Bonyhard, Peter I., to Bell Telephone Laboratories, Incorporated. Magnetic memory organization. 4,237,544, Cl. 364-900.000.

Boot, David: *See—*
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Borg Textile Corporation: *See—*
Abler, Norman C.; Zimmerman, Earlyn E.; and Swihart, Wayne A., 4,236,286, Cl. 28-160.000.

Borg-Warner Corporation: *See—*
Kountz, Kenneth J., 4,236,669, Cl. 236-92.00B.

Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., to Sperry Corporation. Table driven decision and control logic for digital computers. 4,237,532, Cl. 364-200.000.

Borner, Wilhelm: *See—*
Curchod, Donald B.; and Borner, Wilhelm, 4,236,315, Cl. 33-203.180.

Borsig GmbH: *See—*
Deuse, Karl-Heinz; and Drobka, Witold, 4,236,576, Cl. 165-134.00R.

Bosne, Jacques G. P. E., to Hamon-Sobelco, S.A. Heat exchanger, in particular for an atmospheric cooling tower. 4,236,574, Cl. 165-67.000.

Bottenbruch, Ludwig: *See—*
von Harpe, Hannes; Bottenbruch, Ludwig; Peltzer, Bernd; and Schulz-Walz, Hansjochen, 4,237,244, Cl. 525-171.000.

Bottum, Charles F. Rope attaching device. 4,236,281, Cl. 24-115.000.

Botzler, Ludwig, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Digitally compatible servomotor. 4,236,442, Cl. 91-375.00R.

Boulanger, Henry J.; and Puccini, Richard E., to Texas Instruments Incorporated. Keyboard apparatus. 4,237,351, Cl. 200-5.00A.

Boultinghouse, Harold D., to Phillips Petroleum Company. Fluorinated poly(arylene sulfides). 4,237,156, Cl. 427-248.00A.

Bowen, David; and Boot, David, to Lucas Electrical Company, Ltd., The. Conveyor unit. 4,236,631, Cl. 198-583.000.

Bowman, Harold M., to National Utility Products Company. Adjustable manhole cover support structure. 4,236,358, Cl. 52-19.000.

Boyer, Herbert W.: *See—*
Cohen, Stanley N.; and Boyer, Herbert W., 4,237,224, Cl. 435-68.000.

Boyes, Robert N.; Duce, Benjamin R.; Smith, Emil R.; and Byrnes, Eugene W., to Astra Pharmaceutical Products, Inc. Primary aminoacylanilides. 4,237,068, Cl. 260-562.00N.

Bracewell, Bertha, administratrix: *See—*
Rudd, Frederick V.; and Bracewell, Tom, deceased, 4,236,942, Cl. 148-16.600.

Bracewell, Tom, deceased: *See—*
Rudd, Frederick V.; and Bracewell, Tom, deceased, 4,236,942, Cl. 148-16.600.

Brachet, Roland. Device for indicating optimum sail position. 4,236,409, Cl. 73-178.00R.

Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., to Bush Universal, Inc. Technique and articles for forming shoe shanks. 4,236,268, Cl. 12-146.00S.

Brand, Abraham: *See—*
Barmache, Evan L.; and Brand, Abraham, 4,237,501, Cl. 360-75.000.

Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, to Deutsche Texaco Aktiengesellschaft. Method of conducting reactions in a trickle-type reactor. 4,237,325, Cl. 568-896.000.

Brandes, Wilhelm: *See—*
Buchel, Karl H.; Kramer, Wolfgang; and Brandes, Wilhelm, 4,237,142, Cl. 424-269.000.
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,237,143, Cl. 424-270.000.

Brandt-Pra, Inc.: *See—*
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Braner Enterprises, Inc.: *See—*
Gawlik, Charles B.; Hall, James D.; and Matsunaga, Douglas S., 4,236,431, Cl. 83-479.000.

Brault, Georges: *See—*
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Braun, Franz; and Schafer, Ewald, to Karl Otto Braun KG. Elastic muslin bandage. 4,236,550, Cl. 139-421.000.

Bravin, Ben, to Dynamex Corporation. Traverse control system. 4,236,373, Cl. 57-71.000.

Bray, Donald L.: *See—*
Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., 4,236,268, Cl. 12-146.00S.

Bredenholler, Norbert: *See—*
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, 4,236,997, Cl. 209-144.000.

Breedlove, Leon J. Flashlight apparatus. 4,237,527, Cl. 362-189.000.

Brennan, H. George: *See—*
Kephart, Richard E., 4,236,795, Cl. 354-80.000.

Brentlinger, Brent R. Display system for achieving aesthetically pleasing lissajous patterns from a single source of signals. 4,237,482, Cl. 358-81.000.

Brigham Young University: *See—*
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.

Brinton, Charles C., Jr., to Bactex, Inc. Method of immunization against enterotoxogenic infection by *Escherichia coli*. 4,237,115, Cl. 424-92.000.

British-American Tobacco Company Limited: *See—*
Foster, Norman; and Stephenson, Alan G., 4,236,538, Cl. 131-149.000.

British Hovercraft Corporation: *See—*
Wheeler, Raymond L., 4,236,593, Cl. 180-128.000.

British Leyland UK Limited: *See—*
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British Steel Corporation: *See—*
Beckley, Philip; and Mildoon, John, 4,237,455, Cl. 340-685.000.

Britton, Thomas C.; and Trepanier, Donald L., to Dow Chemical Company, The. Method for preparing 6-phenyl-triazolo or imidazolo-(2,3,4)-benzotriazepines and the novel intermediates used therewith. 4,237,049, Cl. 260-239.0BD.

Britzman, Agnita. Retained compressible pillow support. 4,236,264, Cl. 5-435.000.

Brochon, Marie-Jose: *See—*
Popoff, Michel; Brochon, Marie-Jose; and Brault, Georges, 4,237,096, Cl. 422-102.000.

Brody, Philip S., to United States of America, Army. Efficient high voltage photovoltaic cells. 4,236,938, Cl. 136-89.0SP.

Broitman, Kalman: *See—*
Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, 4,236,845, Cl. 403-144.000.

Brown, Boveri & Cie AG: *See—*
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Brown, Earl F.; and Netravali, Arun N., to Bell Telephone Laboratories, Incorporated. Technique for transmitting digital data together with a video signal. 4,237,484, Cl. 358-142.000.

Brown, Michael A.: *See—*
Mol, Hans C.; and Brown, Michael A., 4,236,856, Cl. 414-54.000.

Brownfield, Louie A. Rotary engine. 4,236,496, Cl. 123-212.000.

Brueggemann, Walter H.; and Meteer, Charles L., to Ferro Corporation. Moldable sound control composite. 4,237,176, Cl. 428-212.000.

Brunner, Heinz: *See—*
Bellati, Hans; and Brunner, Heinz, 4,236,425, Cl. 74-573.00R.

Brunninger, Manfred: *See—*
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Brunton, Ronald G. Backpack. 4,236,657, Cl. 224-153.000.

Bruschi, Enrico: *See—*
Ghelli, Giovanni; Bruschi, Enrico; and Agnese, Gino, 4,237,301, Cl. 546-327.000.

Bruzzese, Tiberio; and Ferrari, Lorenzo, to Spa-Societa Prodotti Antibiotici S.p.A. Method for the treatment of benign prostatic hypertrophy. 4,237,117, Cl. 424-122.000.

Buchel, Karl H.; Kramer, Wolfgang; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with 2-carbamoyloxy-3,3-dimethyl-1-phenoxy-1-(1,2,4-tri azol-1-yl)-1-butanes. 4,237,142, Cl. 424-269.000.

Buffalo Forge Company: *See—*
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Bugg, John: *See—*
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Bugrov, Valery V.: *See—*
Savin, Nikolai I.; Khramov, Dmitry A.; Filippov, Vladimir J.; and Bugrov, Valery V., 4,236,966, Cl. 176-30.000.

Buhl, Horst; and Gutjahr, Manfred, to Daimler-Benz Aktiengesellschaft. Method for the manufacture of iron-containing sintered electrodes. 4,236,927, Cl. 75-246.000.

Buirski, David P.; and Hedley, Peter H., to Cat-A-Van Associates. Boats. 4,236,474, Cl. 114-56.000.

Bukhteev, Pavel I.: *See—*
Kartavtsev, Viktor M.; Posleider, Grigory Y.; Bytsak, Vladimir S.; and Bukhteev, Pavel I., 4,236,300, Cl. 29-736.000.

Bunda, Tsuchio: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, 4,237,030, Cl. 252-432.000.

Bunker Ramo Corporation: *See—*
Kuehling, Guenter, 4,236,302, Cl. 29-753.000.
Tang, Paul R., 4,236,779, Cl. 339-143.00R.

Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., to Post Office, The. Audio teleconferencing. 4,237,339, Cl. 179-1.0CN.

Burgess, George; and Pitches, Ernest W., to Contra-Shear Holdings Limited. Separation of solids from liquids by screening. 4,236,999, Cl. 209-250.000.

Burroughs Corporation: *See—*
Clark, Becky J., 4,237,447, Cl. 340-147.00T.
Ragle, Herbert U., 4,237,503, Cl. 360-99.000.
Sprenkle, George J., 4,236,303, Cl. 29-762.000.

Burroughs Wellcome Co.: *See—*
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,237,289, Cl. 544-279.000.

Burtis, Eric F.: *See—*
Cordova, James, 4,237,459, Cl. 340-756.000.

Burundukov, Sergei V.: *See—*
Burundukov, Valentin M.; and Burundukov, Sergei V., 4,237,347, Cl. 179-100.41M.
Burundukov, Valentin M.; and Burundukov, Sergei V. Electrodynamic transducer with longitudinally moving magnet. 4,237,347, Cl. 179-100.41M.
Bush Universal, Inc.: *See—*
Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., 4,236,268, Cl. 12-146.00S.
Busker, Leroy H., to Beloit Corporation. Apparatus for texturing untextured dry tissue web. 4,236,963, Cl. 162-271.000.
Buurma, Gerald B., to National Semiconductor Corporation. Switching comparator. 4,237,390, Cl. 307-362.000.
Buzzi, Ugo, to Albe S.A. Apparatus for orientating elongated articles, such as bodies of writing pens. 4,236,624, Cl. 198-399.000.
B.V. Neratoom: *See—*
Pennock, Theodorus A. F., 4,236,721, Cl. 277-14.00V.
BWG Bergwerk- und Walzwerk-Maschinenbau GmbH: *See—*
Noe, Oskar, 4,236,626, Cl. 198-488.000.
Byers, Stanley A.; McKee, James R., Sr.; and Gridley, Marvin C., to Ball Corporation. Rapid strength development in compacting glass batch materials. 4,236,929, Cl. 106-52.000.
Byrnes, Eugene W.: *See—*
Boyes, Robert N.; Duce, Benjamin R.; Smith, Emil R.; and Byrnes, Eugene W., 4,237,068, Cl. 260-562.00N.
Bytsak, Vladimir S.: *See—*
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C. A. Weidmuller KG: *See—*
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C.G.S. Istrumenti Di Misura S.p.A.: *See—*
Fedrigo, Renzo, 4,237,467, Cl. 346-76.00R.
Cabot Corporation: *See—*
Johnson, Timothy E.; and Giuffrida, John, 4,237,023, Cl. 252-70.000.
Calfee, Richard V.: *See—*
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Calvert, Ronald J., to Hills Industries Limited. Clothes hoist elevating means. 4,236,419, Cl. 74-89.150.
Campana, Patsie C. Fabricated opening cover and cover assembly. 4,236,972, Cl. 202-242.000.
Campbell, Simon F.; Danilewicz, John C.; and Greengrass, Colin W., to Pfizer Inc. Antihypertensive 4-amino-2-[4-(substituted-alkoxy)-piperidino)]quinazolines. 4,237,138, Cl. 424-251.000.
Campenon-Bernard Cetra: *See—*
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Canadian Patents & Development Ltd.: *See—*
Torkko, Reino, 4,236,341, Cl. 43-88.000.
Candor, James T. Method and apparatus for electrostatically forming a layer of material from a slurry thereof. 4,236,317, Cl. 34-1.000.
Canez, Antonio R. Appliance theft alarm. 4,237,450, Cl. 340-571.000.
Canon Kabushiki Kaisha: *See—*
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Endo, Ichiro; Kobayashi, Hajime; Yano, Yasuhiro; and Muramatsu, Takao, 4,237,213, Cl. 430-353.000.
Mikada, Hiroyuki, 4,237,541, Cl. 364-710.000.
Sekiguchi, Takeshi, 4,237,475, Cl. 358-10.000.
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.
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Canon Seiki Kabushiki Kaisha: *See—*
Aoki, Kanemasa, 4,237,394, Cl. 310-113.000.
Cantalupo, Giuseppe; De Servi, Sergio; and Lepori, Agostino, to Montedison S.p.A. Process for preparing vulcanizable acrylic elastomers. 4,237,258, Cl. 526-273.000.
Cantrell, Ben H.; and Lewis, Bernard L., to United States of America, Navy. High-speed digital pulse compressor. 4,237,461, Cl. 343-5.0FT.
Canty, John: *See—*
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.
Capelle, Anton; and Scholten, Heinz, to Chemische Werke Huls AG. Suspension agent for synthetic resin powders. 4,237,040, Cl. 260-29.20N.
Cappucci, Joseph D., to Merrimac Industries Incorporated. Ridge waveguide mode suppressor. 4,237,434, Cl. 333-202.000.
Carborundum Company, The: *See—*
Smoak, Richard H., 4,237,085, Cl. 264-65.000.
Cardarelli, Nathan F. Biologically active insecticide containing polymeric formulation. 4,237,113, Cl. 424-78.000.
Cardarelli, Nathan F., to Environmental Chemicals, Inc. Method and composition for the long term controlled release of a non-persistent organotin pesticide from an inert monolithic thermoplastic dispenser. 4,237,114, Cl. 424-78.000.
Carey, Glen A.: *See—*
Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., 4,236,825, Cl. 356-414.000.
Carlson, David W.: *See—*
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,237,245, Cl. 525-272.000.
Carlsson, John, to Stiftelsen Kalmarsundsgruppen. Releasable locking device for pipes, shafts and the like. 4,236,609, Cl. 188-67.000.
Carlyle, Ian C.; Sleigh, Thomas; and Savage, David S., to Akzona Incorporated. 2β, 16β-bis-piperidino-androstanes. 4,237,126, Cl. 424-241.000.
Carra, James A. Animal pool with lift platform. 4,236,489, Cl. 119-158.000.
Carradine, James. Portable traction apparatus. 4,236,265, Cl. 5-508.000.
Carrier Corporation: *See—*
Carter, Jerry L., 4,237,442, Cl. 338-180.000.
Fraser, Bruce A.; and Yannascoli, Donald, 4,236,876, Cl. 417-250.000.
Carter, Jerry L., to Carrier Corporation. Electrical resistance element for variable resistance devices. 4,237,442, Cl. 338-180.000.
Cassella Aktiengesellschaft: *See—*
Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, 4,237,249, Cl. 525-369.000.
Castera, Jean-Paul; and Hepner, Georges, to Thomson-CSF. Device for modulating optical radiation by a variable magnetic field. 4,236,782, Cl. 350-96.130.
Castera, Jean-Paul: *See—*
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Castner, J. Fred, Sr.; and Castner, John F., Jr., to Castner, J. Fred, Sr. Cotton swab vender. 4,236,637, Cl. 206-467.000.
Castner, John F., Jr.: *See—*
Castner, J. Fred, Sr.; and Castner, John F., Jr., 4,236,637, Cl. 206-467.000.
Cat-A-Van Associates: *See—*
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Cavazza, Claudio. Acyl-carnitines in a therapeutical method for treating chronic uraemic patients undergoing regular dialysis and liquid composition for use therein. 4,237,167, Cl. 424-311.000.
CAW Industries, Inc.: *See—*
Willard, John W., Sr., 4,237,101, Cl. 423-20.000.
Cayou, James S., to K & S Industries, Inc. Flexible line trimmer with line feeding apparatus. 4,236,309, Cl. 30-276.000.
Ceintrey, Claude G., to La Cellophane. Photochromic composition containing indoline spirobenzopyran and copolymer of PVC and imaged product thereof. 4,237,207, Cl. 430-17.000.
Celanese Corporation: *See—*
Yates, Derek N.; and Presta, John C., 4,236,386, Cl. 64-1.00S.
CENSOR patent- und Versuchs-Anstalt: *See—*
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Centro Ricerche Fiat S.p.A.: *See—*
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Centro Sperimentale Metallurgico S.p.A.: *See—*
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Certified Chemicals, Inc.: *See—*
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Ceskoslovenska akademie ved: *See—*
Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,237,119, Cl. 424-177.000.
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Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.
Champion International Corporation: *See—*
Gingerich, David L.; and Cohn, Robert, 4,236,482, Cl. 118-642.000.
Kanemura, Tom T., 4,236,660, Cl. 226-95.000.
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Sorenson, John F.; and Locke, Frank W., 4,236,740, Cl. 229-36.000.
Champseix, Alain A.; Gueremy, Claude G. A.; and Le Fur, Gerard R., to Pharmindustrie. 4-(3-(4-Quinolyl)propyl)piperidines, their preparation and their use as medicines. 4,237,139, Cl. 424-258.000.
Chang, Clarence D.: *See—*
Bell, Weldon K.; and Chang, Clarence D., 4,237,063, Cl. 260-449.00R.
Chattha, Mohinder S., to Ford Motor Company. Coating compositions including hydroxy phosphate catalyst. 4,237,241, Cl. 525-110.000.
Chauvel, Alain Y.: *See—*
Berthier, Marc A.; and Chauvel, Alain Y., 4,236,462, Cl. 108-111.000.
Chemische Fabrik Stockhausen & Cie.: *See—*
Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, 4,237,067, Cl. 260-561.00N.
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Capelle, Anton; and Scholten, Heinz, 4,237,040, Cl. 260-29.20N.
Chen, Robert H. K., to Ortho Pharmaceutical Corporation. Total synthesis of (1RS,4SR,5RS)-4-(4,8-dimethyl-5-hydroxy-7-nonenyl)-4-methyl-3,8-dioxabicyclo[3.2.1] octane-1-acetic acid. 4,237,054, Cl. 260-340.600.
Cheng, Chen-Yen; Cheng, Sing-Wang; and Cheng, Wu-Cheng. Separation of an aqueous solution by the improved vacuum freezing high pressure ice melting process. 4,236,382, Cl. 62-537.000.
Cheng, Sing-Wang: *See—*
Cheng, Chen-Yen; Cheng, Sing-Wang; and Cheng, Wu-Cheng, 4,236,382, Cl. 62-537.000.
Cheng, Wu-Cheng: *See—*
Cheng, Chen-Yen; Cheng, Sing-Wang; and Cheng, Wu-Cheng, 4,236,382, Cl. 62-537.000.
Cheremisov, Ivan Y.: *See—*
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Cherepok, Gennady V.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.
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Dabby, Franklin W.; and Chesler, Ronald B., 4,236,905, Cl. 65-3.00A.
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Goodrich, Judson E., 4,237,036, Cl. 260-28.00R.
King, William F.; and Wheeler, Ronald E., 4,237,121, Cl. 424-200.000.
Chiang, Alice M., to Honeywell Inc. Gallium phosphide JFET. 4,237,473, Cl. 357-61.000.
Chiang, Chih-Shu: *See—*
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, 4,237,306, Cl. 560-105.000.
Chiba, Masakazu: *See—*
Ooshiro, Hideyuki; and Chiba, Masakazu, 4,236,753, Cl. 297-364.000.
Chietti, Giovanni, to Macchine Tessili Circolari MATEC S.p.A. Circular knitting machine for stockings or the like, having raising cams which can be moved both radially and angularly. 4,236,389, Cl. 66-42.000.
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V. Stator construction. 4,237,398, Cl. 310-214.000.
Chikamura, Takao; Fujiwara, Shinji; Terui, Yasuaki; and Fukai, Masakazu, to Matsushita Electric Industrial Co., Ltd. Solid-state image sensor. 4,236,829, Cl. 357-16.000.
Childs, William V., to Phillips Petroleum Company. Recovery of methyl heptafluorobutyrate from water by distillation. 4,236,975, Cl. 203-14.000.
Chisholm, Douglas B. Sign post couplings. 4,236,843, Cl. 403-2.000.
Choate, James R. Log-burning stove. 4,236,500, Cl. 126-145.000.
Chokai, Shoichi: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.
Christoph, Heinz: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.
Church & Dwight Co., Inc.: *See—*
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,236,935, Cl. 134-2.000.
Ciba-Geigy Aktiengesellschaft: *See—*
Long, William E., 4,237,281, Cl. 544-99.000.
Ciba-Geigy Corporation: *See—*
Bader, Rolf; and Reinehr, Dieter, 4,237,275, Cl. 542-417.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,286, Cl. 544-225.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,292, Cl. 546-7.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,293, Cl. 546-7.000.
Mentzel, Detlef; and Frei, Hans-Rudolf, 4,237,179, Cl. 428-276.000.
Rody, Jean; and Karrer, Friedrich, 4,237,297, Cl. 546-189.000.
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,237,294, Cl. 546-20.000.
Cimarusti, Christopher M.; Koster, William H.; and Sykes, Richard B., to E. R. Squibb & Sons, Inc. 7-[2-(2-Amino-4-thiazolyl)-2-[(1-carboxy-1,1-dialkyl)alkoxyimino]acetamido]cephem sulfoxides. 4,237,128, Cl. 424-246.000.
Cincinnati Milacron Inc.: *See—*
Frecka, Thomas R., 4,237,408, Cl. 318-571.000.
Cipher Data Products Incorporated: *See—*
Barton, William M., Jr., 4,236,682, Cl. 242-198.000.
Cipriani, Tullio, to Hoonet s.a.s. di Indro Paolo Dall' & C. Apparatus for washing and drying food products. 4,236,541, Cl. 134-104.000.
Citizen Watch Company Limited: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Uchino, Misao, 4,237,420, Cl. 328-3.000.
Claassen, George R.: *See—*
Thomas, Dean L.; Frank, Robert G.; and Claassen, George R., 4,236,909, Cl. 65-115.000.
Clark, Becky J., to Burroughs Corporation. Speed independent selector switch for digital communication networks. 4,237,447, Cl. 340-147.00T.
Clarke-Gravely Corporation: *See—*
Block, Thomas S., 4,236,269, Cl. 15-180.000.
Classon, Ake, to ASEA Aktiebolag. High voltage insulated cable terminations. 4,237,333, Cl. 174-21.00R.
Claudius Peters Ag.: *See—*
Krauss, Werner, 4,236,852, Cl. 406-90.000.
Claus, Jon S.: *See—*
Johnston, Howard; Troxell, Lillian H.; and Claus, Jon S., 4,236,912, Cl. 71-94.000.
Claverie, Jean-Claude, to Societe Anonyme DBA. Brake shoe adjusting structure for a drum brake. 4,236,611, Cl. 188-79.50P.
Claxton, Gerald L., to Up-Right, Inc. Picking device for harvesting machines. 4,236,371, Cl. 56-330.000.
Clayton Dewandre Company Limited: *See—*
Hawker, Michael J., 4,236,762, Cl. 303-7.000.
Page, Wilbur M., 4,236,761, Cl. 303-6.00C.
Clayton, John P.: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,237,161, Cl. 424-283.000.

Clever, Eric C., to Electronic Management Support, Inc. Surveillance system. 4,237,483, Cl. 358-108.000.
Clift, Miner E.: *See—*
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.
Cline, Jay D., to Dayton-Granger, Inc. Lightning diverter strip. 4,237,514, Cl. 361-117.000.
Clint, John H.: *See—*
Rudkin, Arthur L.; Clint, John H.; and Young, Kenneth, 4,237,016, Cl. 252-8.800.
Cloutier, Denis L.; and Cloutier, Fernand. Stake for truck bed, trailer or truck structure. 4,236,748, Cl. 296-43.000.
Cloutier, Fernand: *See—*
Cloutier, Denis L.; and Cloutier, Fernand, 4,236,748, Cl. 296-43.000.
Cloutier, Oscar H.: *See—*
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Cluett, Peabody & Co., Inc.: *See—*
Rockerath, John L.; and Schreck, Harold J., 4,236,472, Cl. 112-304.000.
Cobe Laboratories, Inc.: *See—*
Lobdell, Donn D.; Herman, Stephen J.; and Anderson, Robert L., 4,237,091, Cl. 422-46.000.
Cochran, Gary L.; Wilson, Charles D.; and Klee, Maurice, to J. I. Case Company. Fluid pump control system for a tractor. 4,236,422, Cl. 74-470.000.
Cohen, Joseph; and Adjemian, Alain, to Aluminum Pechiney. Process for obtaining pure alumina by the hydrochloric attack of aluminous ores and extraction of the impurities by means of a sulphuric treatment. 4,237,102, Cl. 423-126.000.
Cohen, Stanley N.; and Boyer, Herbert W., to Leland Stanford Jr. University, Board of Trustees of the. Process for producing biologically functional molecular chimeras. 4,237,224, Cl. 435-68.000.
Cohn, Robert: *See—*
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Cole, Elsa D.: *See—*
Kerr, Barbara P., 4,236,508, Cl. 126-451.000.
Cole, Raymond C.: *See—*
Williams, Harvey F.; Cole, Raymond C.; and Donaghy, James G., 4,236,257, Cl. 2-406.000.
Colla, Jeannine O.; and Thoma, Paul E., to Johnson Controls Inc. Method of making a nitrogen dioxide sensing element. 4,236,307, Cl. 29-857.000.
Collen, Heinrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile rail welding machine. 4,236,453, Cl. 104-15.000.
Colman, Derek A.; and Thew, Martin T., to National Research Development Corporation. Cyclone separator. 4,237,006, Cl. 210-84.000.
Colonneau, Jean. Display device. 4,236,335, Cl. 40-442.000.
Colorguard Corporation: *See—*
Ingraham, Glen E., 4,237,186, Cl. 428-379.000.
Columbus McKinnon Corporation: *See—*
Schreyer, Kenneth D.; Leverentz, Earl T.; and Nusz, Thomas R., 4,236,456, Cl. 105-154.000.
Combustion Engineering, Inc.: *See—*
Prible, Glen V., 4,237,103, Cl. 423-207.000.
Comizzoli, Robert B.: *See—*
Deckert, Cheryl A.; Comizzoli, Robert B.; and Schnable, George L., 4,237,379, Cl. 250-302.000.
Commissariat a l'Energie Atomique: *See—*
Delvalle, Pierre, 4,237,100, Cl. 423-6.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel S.A.: *See—*
Deglin, Rene'; and Reymond, Gilbert, 4,237,545, Cl. 364-900.000.
Compagnie Internationale pour l'Informatique: *See—*
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.
Compte, Jean, to Campenon-Bernard Cetra. Railing for building works and the like. 4,236,698, Cl. 256-23.000.
ComSonics, Inc.: *See—*
Shimp, Richard L., 4,237,486, Cl. 358-142.000.
Condar, Co.: *See—*
Kreith, Frank; and Cornelison, Richard C., 4,236,578, Cl. 165-181.000.
Conduit-Amherst Limited: *See—*
Marquardt, Mark O., 4,236,557, Cl. 144-315.00R.
Conoco, Inc.: *See—*
Reed, Philip W.; and Alexander, John D., 4,236,406, Cl. 73-61.10R.
Contra-Shear Holdings Limited: *See—*
Burgess, George; and Pitches, Ernest W., 4,236,999, Cl. 209-250.000.
Control Data Corporation: *See—*
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,236,355, Cl. 51-168.000.
Cooper, David A.; Monoski, William T.; and Vibert, Edward J., to GTE Products Corporation. Ground fault receptacle re-set guide assembly. 4,237,435, Cl. 335-18.000.
Cooper, Edward W.: *See—*
Moore, David C.; Cooper, Edward W.; and Porteous, Archibald, 4,236,770, Cl. 312-184.000.
Cope, Geoffrey W., to Dresser Industries, Inc. Steerable railway truck adapter pad centering means. 4,236,457, Cl. 105-218.00R.

Corbach, Rainer: *See—*
Mohr, Adolf; and Corbach, Rainer, 4,237,397, Cl. 310-154.000.
Cordova, James, to Burtis, Eric F. Visual display with illuminable elements arranged in vertically aligned sections. 4,237,459, Cl. 340-756.000.
Cormier, Raymond G.: *See—*
Davis, Austin E.; Cormier, Raymond G.; Lutz, Leo O.; Pauk, Henry T.; and Lones, Harry E., 4,236,483, Cl. 118-647.000.
Cornelison, Floyd S., Jr. Impellers and apparatus for use therewith. 4,236,504, Cl. 126-247.000.
Cornelison, Richard C.: *See—*
Kreith, Frank; and Cornelison, Richard C., 4,236,578, Cl. 165-181.000.
Corning Glass Works: *See—*
Keck, Donald B., 4,236,786, Cl. 350-96.150.
Correll, Jerome B., to A. C. Engines, Inc. Internal combustion engine. 4,236,490, Cl. 123-32.00B.
Corry, Stuart E., to Geolograph Company, The. Drilling rig load indicator. 4,236,408, Cl. 73-151.000.
Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, to Ceskoslovenska akademie ved. Long-acting oxytocin analogs for use in inducing and accelerating labor in mammals, particularly farm animals. 4,237,119, Cl. 424-177.000.
Costa, Eugenio. Electronic automatic timing device for photographic enlargements or reproductions by projection or contact. 4,236,816, Cl. 355-68.000.
Coulter Systems Corporation: *See—*
Kuehnle, Manfred R., 4,236,807, Cl. 355-3.00R.
Kuehnle, Manfred R., 4,236,812, Cl. 355-14.00E.
Courtesy Mold and Tool Corporation: *See—*
Kreiseder, Walter J., 4,236,280, Cl. 24-16.0PB.
Couture, Raymond; and Couture, Raynald. Safety control system for the boom of a crane. 4,236,864, Cl. 414-699.000.
Couture, Raynald: *See—*
Couture, Raymond; and Couture, Raynald, 4,236,864, Cl. 414-699.000.
Couwenberg, Winston D., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,237,401, Cl. 313-225.000.
Coyne, Roy J.: *See—*
Lombardi, Louis J.; and Coyne, Roy J., 4,237,185, Cl. 428-337.000.
Cragoe, Edward J., Jr.; and Hoffman, William F., to Merck & Co., Inc. 2,3-Dihydro-6,7-disubstituted-5-(substituted sulfonyl)benzofuran-2-carboxylic acids. 4,237,130, Cl. 424-248.500.
Cragoe, Edward J., Jr.; and Hoffman, William F., to Merck & Co., Inc. 2,3-Dihydro-2,6,7-trisubstituted-5-acylbenzofurans. 4,237,144, Cl. 424-270.000.
Cramm, Herman W.: *See—*
Shishido, Isuneo; Cramm, Herman W.; and Vick, William L., 4,237,431, Cl. 333-106.000.
Crandall, Alan L.: *See—*
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.
Crane, Wendy S.: *See—*
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Crawford, Wheeler C.: *See—*
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,237,070, Cl. 260-580.000.
Crosfield Electronics, Ltd.: *See—*
Aughton, John E., 4,237,481, Cl. 358-80.000.
Cross, Robin C.: *See—*
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.
Crossman, Richard L., to Goodyear Aerospace Corporation. Tire pressure communication devices. 4,237,445, Cl. 340-58.000.
Crowley, Daniel J.; and Stine, Jon D., to AMP Incorporated. Low insertion force card reader. 4,236,667, Cl. 235-443.000.
Csanyi, Endre: *See—*
Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, 4,237,273, Cl. 536-53.000.
Cukier, Maurice, to International Business Machines Corporation. Programmable logic arrays. 4,237,542, Cl. 364-900.000.
Cunningham, James C. Fishing rod indicator assembly. 4,236,340, Cl. 43-17.000.
Cuomo, Jerome J.: *See—*
Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., 4,236,946, Cl. 148-108.000.
Curchod, Donald B.; and Borner, Wilhelm, to Nortron Corporation. Sensor assembly for wheel alignment system. 4,236,315, Cl. 33-203.180.
Curtis-Dyna Products Corporation: *See—*
Curtis, Russell R., 4,236,877, Cl. 417-265.000.
Curtis, Russell R., to Curtis-Dyna Products Corporation. Highly accurate low volume metering pump. 4,236,877, Cl. 417-265.000.
Cuthbertson, Eric, to Sterling Drug Inc. 2,4,5-Trichlorophenol process. 4,237,321, Cl. 568-776.000.
Cutler, John H.; and Walker, Loren H., to General Electric Company. Controlled current inverter system having semiconductor overvoltage protection. 4,237,531, Cl. 363-58.000.
Cyprus Metallurgical Processes Corporation: *See—*
Narain, Kartik A., 4,236,918, Cl. 75-101.00R.
Dabby, Franklin W.; and Chesler, Ronald B., to Times Fiber Communications, Inc. Method for continuously monitoring the composition of glass particulate during the production of optical fiber. 4,236,905, Cl. 65-3.00A.
Dahlberg, Lois A., to PPG Industries, Inc. Electrolytic cell. 4,236,989, Cl. 204-252.000.
Dahm, Franz-Ludwig: *See—*
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, 4,237,299, Cl. 546-250.000.
Dahmen, Kurt: *See—*
Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, 4,237,067, Cl. 260-561.00N.
Dai-Ich Seiko Co., Ltd.: *See—*
Iwabuchi, Kiyoshi, 4,236,565, Cl. 152-427.000.
Dai Nippon Insatu Kabushiki Kaisha: *See—*
Inoue, Eiichi; Takeda, Misturu; and Shimada, Fumio, 4,237,212, Cl. 430-346.000.
Daig Corporation: *See—*
Little, Richard L., 4,236,529, Cl. 128-785.000.
Daimler-Benz Aktiengesellschaft: *See—*
Buhl, Horst; and Gutjahr, Manfred, 4,236,927, Cl. 75-246.000.
Resch, Reinhard, 4,236,763, Cl. 303-54.000.
Dainippon Pharmaceutical Co., Ltd.: *See—*
Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, 4,237,135, Cl. 424-250.000.
Daiwa Kasei Kabushiki Kaisha: *See—*
Iida, Takao; Ozaki, Sho; and Kotaka, Toshihiko, 4,237,230, Cl. 435-207.000.
Dammann, Peter; and Frank, Benno, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Heating apparatus for false twist yarn crimping machine. 4,236,323, Cl. 34-152.000.
Dang, Tuan-Phat: *See—*
Aviron-Violet, Paul; and Dang, Tuan-Phat, 4,237,072, Cl. 260-601.00R.
Danielle, Louis: *See—*
Iacono, Frederick D.; and Danielle, Louis, 4,236,787, Cl. 350-96.210.
Danilewicz, John C.: *See—*
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Danko, Vladimir G.: *See—*
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Darby, Malcolm O.: *See—*
Raybon, James C., Jr.; Darby, Malcolm O.; and Derrick, Thomas V., Jr., 4,237,187, Cl. 428-399.000.
Dart Industries Inc.: *See—*
Valayil, Silvester P.; and Elias, Moenes L., 4,236,957, Cl. 156-666.000.
Dartmouth College, Trustees of: *See—*
Grethlein, Hans E., 4,237,226, Cl. 435-99.000.
Daub, Arthur R. Locking assembly for article of jewelry. 4,236,384, Cl. 63-7.000.
Dauth, Christoph: *See—*
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.
David Brown Gear Industries Limited: *See—*
Whateley, Eric A., 4,236,617, Cl. 192-3.300.
Davidson, Ralph: *See—*
Roth, Irving; and Davidson, Ralph, 4,237,492, Cl. 358-225.000.
Davis, Austin E.; Cormier, Raymond G.; Lutz, Leo O.; Pauk, Henry T.; and Lones, Harry E., to Nashua Corporation. Metering roll with fixed sliders. 4,236,483, Cl. 118-647.000.
Davis, Bryan T.; and Retzloff, James B., to Ethyl Corporation. Friction modifier for gasoline. 4,236,898, Cl. 44-66.000.
Davis, Forrest W., to Berkleonics, Inc. Power supply for fluorescent lamp. 4,237,403, Cl. 315-98.000.
Davis, Grover M. Retractable streamlining device for vehicles. 4,236,745, Cl. 296-1.00S.
Davis, William L., Jr., to Hicap Engineering & Development Corporation. Apparatus for wet-post treatment of metallized iron ore. 4,236,699, Cl. 266-114.000.
Dayton-Granger, Inc.: *See—*
Cline, Jay D., 4,237,514, Cl. 361-117.000.
De La Rue Giori S.A.: *See—*
Bonomi, Antonio, 4,236,450, Cl. 101-425.000.
Deaton, Donald J.: *See—*
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.
de Bucs, Eugen S.: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.
Deckert, Cheryl A.; Comizzoli, Robert B.; and Schnable, George L., to RCA Corporation. Method for inspecting electrical devices. 4,237,379, Cl. 250-302.000.
de Clara, Maximilian, to TKR Tabak Forschnugs-GmbH & Co. Novel cigarette process and product produced therefrom. 4,236,533, Cl. 131-17.00R.
Decoene, Frans J. G. C., to Sperry Corporation. Row crop attachment. 4,236,369, Cl. 56-60.000.
Deere & Company: *See—*
Isachsen, Henning, 4,236,584, Cl. 172-385.000.
Lysenko, George P., 4,236,759, Cl. 303-6.00A.
Deffeyes, Robert J., to Deffeyes, Robert J. Polymodal magnetic recording media process for making and verifying the same and compositions useful therein. 4,237,189, Cl. 428-457.000.

Degger, Wolter W. J.: *See—*
Franken, Adrianus J. J.; and Degger, Wolter W. J., 4,237,480, Cl. 358-55.000.
Deglin, Rene'; and Reymond, Gilbert, to Compagnie Industrielle des Telecommunications Cit-Alcatel S.A. Programmable sequential logic. 4,237,545, Cl. 364-900.000.
DeGuiseppi, David T.; and Kolakowski, Richard A., to Upjohn Company, The. Polyisocyanurate foams based on esterified DMI oxidation residue additive. 4,237,238, Cl. 521-131.000.
de Jong, Aaldert J.: *See—*
Mulder, Albertus J.; and de Jong, Aaldert J., 4,237,322, Cl. 568-820.000.
Delorme, Raymond: *See—*
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.
De Luca, Paul V.; and Fasano, Michael C., to Porta Systems Corp. Bridge lifter module. 4,237,346, Cl. 179-35.000.
Delvalle, Pierre, to Commissariat a l'Energie Atomique. Isotopic enrichment of uranium with respect to an isotope. 4,237,100, Cl. 423-6.000.
Demarthe, Jean-Michel; Gandon, Louis; and Goujet, Monique, to Societe Metallurgique le Nichel-S.L.N. Hydrometallurgical process for treating nickel mattes. 4,236,981, Cl. 204-113.000.
De Mesmaeker, Ivan; and De Mesmaeker, Ivan, to BBC Brown, Boveri & Co Ltd; and BBC Brown, Boveri & Co Ltd. Selective protection process for electrical lines and device for carrying out the process. 4,237,511, Cl. 361-80.000.
De Mesmaeker, Ivan: *See—*
De Mesmaeker, Ivan; and De Mesmaeker, Ivan, 4,237,511, Cl. 361-80.000.
Demetron Gesellschaft fur Elektronik Werkstoffe mbH: *See—*
Seibold, Klaus; and Schlamp, Gunther, 4,236,948, Cl. 148-188.000.
DeMonbrun, James R.; Schmitt, Charles R.; and Schreyer, James M., to United States of America, Energy. Method for inhibiting corrosion in aqueous systems. 4,237,090, Cl. 422-13.000.
De Niet, Edmond, to U.S. Philips Corporation. Device for coding/decoding data for a medium. 4,237,496, Cl. 360-40.000.
Denk, Hans; and Habrich, Reiner, to Siemens Aktiengesellschaft. Method of manufacturing molded and impregnated parts. 4,237,149, Cl. 427-58.000.
Denker, Jerry B., to R. L. Drake Company. Housing for electronic assembly including internally mounted heat sink. 4,237,521, Cl. 361-384.000.
Denkyi Kagaku Kogyo Kabushiki Kaisha: *See—*
Ito, Higashi; and Watanabe, Seiichi, 4,237,074, Cl. 260-654.00R.
Denner, Peter: *See—*
Joekel, Alfred; Langen, Hans; and Denner, Peter, 4,236,299, Cl. 29-727.000.
de Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, to Oronzio de Nora Impianti Elettrochimici S.p.A. Composite diaphragms and process for electrolyzing alkali metal chloride. 4,236,979, Cl. 204-98.000.
DePenti, Kenneth L., to Midland-Ross Corporation. Wearplate for the butt end of a coupler shank. 4,236,644, Cl. 213-62.00R.
DePenti, Kenneth L., to Midland-Ross Corporation. Wearplate for a coupler shank pinhole. 4,236,645, Cl. 213-69.000.
Derrick, Thomas V., Jr.: *See—*
Raybon, James C., Jr.; Darby, Malcolm O.; and Derrick, Thomas V., Jr., 4,237,187, Cl. 428-399.000.
Desai, Nitin V.; and Poliniak, Eugene S., to RCA Corporation. Silane electron beam resists. 4,237,208, Cl. 430-270.000.
De Servi, Sergio: *See—*
Cantalupo, Giuseppe; De Servi, Sergio; and Lepori, Agostino, 4,237,258, Cl. 526-273.000.
Dessen, Erik: *See—*
Wallevik, Oddmund; and Dessen, Erik, 4,237,111, Cl. 423-632.000.
Deter, Arthur R. Illuminated jewelry. 4,237,525, Cl. 362-104.000.
Deuse, Karl-Heinz; and Drobka, Witold, to Borsig GmbH. Heat exchangers with tube bundles. 4,236,576, Cl. 165-134.00R.
Deutsch Fastener Corp.: *See—*
Molina, Jorge W., 4,236,562, Cl. 151-69.000.
Deutsche Automobilgesellschaft mbH: *See—*
Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, 4,237,196, Cl. 429-50.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, 4,237,299, Cl. 546-250.000.
Deutsche Texaco Aktiengesellschaft: *See—*
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,237,325, Cl. 568-896.000.
Devendorf, Don C.; and Baskevitch, Eugene, to Hughes Aircraft Company. High speed latching comparator. 4,237,387, Cl. 307-203.000.
DeVoille, Maurice: *See—*
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.
Dewey, George G., to Illinois Tool Works Inc. Stand-up screwgun. 4,236,555, Cl. 144-32.000.
Diaz, Raul, to Norlin Industries, Inc. Electronic apparatus cabinet assembly. 4,236,774, Cl. 312-351.000.
Diaz, Stephen H.: *See—*
Horsma, David A.; and Diaz, Stephen H., 4,236,949, Cl. 156-49.000.
Dick, George H.; and Smith, John A., to A. B. Dick Company. Hammer support for rotary printing apparatus. 4,236,842, Cl. 400-144.200.
Dieterich, Dieter, to Bayer Aktiengesellschaft. Polyurethanes containing aryl sulfonic acid alkyl ester groups. 4,237,250, Cl. 525-440.000.
Dietrich, Ralph N.; Robinson, John W.; and Howell, Stephen L., to Kimball International, Inc. Electronic music synthesizer. 4,236,436, Cl. 84-1.260.
Disco Engineering, Inc.: *See—*
Henson, Artel R., 4,236,772, Cl. 312-242.000.
Dishal, Milton, to International Telephone and Telegraph Corporation. Automatic modulation system. 4,237,555, Cl. 455-108.000.
Diversified Plastics Products Inc.: *See—*
McCaffrey, James A., 4,236,273, Cl. 16-150.000.
Dixon, George, to Binks Bullows Limited. Spray nozzle. 4,236,674, Cl. 239-296.000.
Djurner, Jan K.: *See—*
Kubat, Josef; and Djurner, Jan K., 4,237,089, Cl. 264-328.000.
Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG: *See—*
Schindler, Johannes G.; and Schael, Wilfried, 4,236,987, Cl. 204-195.00M.
Dr. Molter GmbH: *See—*
Aeschlimann, Hans-Peter; Schmidhuber, Volker; and Kappes, Werner, 4,236,666, Cl. 233-26.000.
Dolch, Gernot. Blind rivet. 4,236,429, Cl. 85-72.000.
Dolling, Ulf H., to Merck & Co., Inc. Preparation of 5(halophenyl)salicylic acid compounds. 4,237,315, Cl. 562-469.000.
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V. Method of gas-dynamic stirring of liquid molten metals and apparatus for performing same. 4,236,917, Cl. 75-93.00R.
Domo, John M., to Beller, Melchior P. Medical history card. 4,236,332, Cl. 40-2.200.
Donaghy, James G.: *See—*
Williams, Harvey F.; Cole, Raymond C.; and Donaghy, James G., 4,236,257, Cl. 2-406.000.
Dorling, Rolf; and Hemshemeier, Hans, to L. & C. Steinmuller GmbH. High-temperature gas exit from a pre-stressed pressure container. 4,236,573, Cl. 165-54.000.
Dorsch, Peter: *See—*
Michl, Rudy; and Dorsch, Peter, 4,236,922, Cl. 75-134.00D.
dos Santos, Jose P. Method and apparatus for generating linear electromagnetic travelling fields for driving and increasing the adhesive load of railway motored vehicles. 4,236,455, Cl. 104-148.0LM.
Dotter, Berton E., to TRW Inc. Transformer with integral reed contact. 4,237,345, Cl. 179-16.00E.
Dougherty, Robert S., to RCA Corporation. Aqueous photoresist method. 4,237,210, Cl. 430-318.000.
Dougier, Patrick; Fouassier, Claude; and Latourrette, Bertrand, to Rhone-Poulenc Industries. Novel black light emitting luminophors. 4,237,027, Cl. 252-301.40H.
Douglas, Melvin O., Jr. Two-player pivoted rod ball drop game. 4,236,716, Cl. 273-110.000.
Dow Chemical Company, The: *See—*
Britton, Thomas C.; and Trepanier, Donald L., 4,237,049, Cl. 260-239.0BD.
Dowd, William; Krauss, Richard C.; and Freiter, Edward R., 4,237,304, Cl. 548-239.000.
Forster, Allen V.; Martz, Lyle E.; and Leng, Douglas E., 4,237,110, Cl. 423-488.000.
Gatling, Sterling C., 4,237,303, Cl. 548-235.000.
Johnston, Howard; Troxell, Lillian H.; and Claus, Jon S., 4,236,912, Cl. 71-94.000.
Raines, Dale A.; and Ainsworth, Oliver C., 4,237,324, Cl. 568-858.000.
Reifschneider, Walter, 4,237,168, Cl. 424-326.000.
Robbins, Lanny A., 4,236,973, Cl. 203-10.000.
Dowd, William; Krauss, Richard C.; and Freiter, Edward R., to Dow Chemical Company, The. Oxazolinium salts and method of preparation. 4,237,304, Cl. 548-239.000.
Dresser Industries, Inc.: *See—*
Baron, George B., 4,236,863, Cl. 414-687.000.
Cope, Geoffrey W., 4,236,457, Cl. 105-218.00R.
McGuire, Robert C., 4,236,402, Cl. 73-12.000.
Drobka, Witold: *See—*
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Drummond, James E.: *See—*
Fitch, Richard A.; Drummond, James E.; and Mondelli, Alfred A., 4,236,900, Cl. 55-138.000.
Dubs, Paul; and Kuntzel, Heiner, to Givaudan Corporation. Process for making asymmetrical disulfides. 4,237,290, Cl. 544-335.000.
Duce, Benjamin R.: *See—*
Boyes, Robert N.; Duce, Benjamin R.; Smith, Emil R.; and Byrnes, Eugene W., 4,237,068, Cl. 260-562.00N.
Dudek, Edward R.: *See—*
Eller, Harry J.; Eller, Donald G.; Dudek, Edward R.; and Goodwin, Edward C., 4,237,342, Cl. 179-1.0PC.
Dudzinski, John R., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and acetaminophen. 4,237,140, Cl. 424-260.000.
Dugdale, Ronald A., to United Kingdom Atomic Energy Authority. Apparatus for depositing materials on substrates. 4,236,994, Cl. 204-298.000.

Duhault, Jacques, to Science Union et Cie. Treatment of carbohydrate metabolism disorders. 4,237,165, Cl. 424-308.000.

Duill, Helmut: *See—*
Ansen, Jakob; Hoppen, Heinz; and Duill, Helmut, 4,236,886, Cl. 432-14.000.

DuLac, Steven M. Toy space gun. 4,236,348, Cl. 46-228.000.

Dunn, Bruce S.; and Evenden, Theodore M., to General Electric Company. Thermocompression methods of forming sodium-sulfur cell casings. 4,236,661, Cl. 228-184.000.

Du Pont de Nemours, E. I., and Company: *See—*
Dudzinski, John R., 4,237,140, Cl. 424-260.000.
Piovoso, Michael J.; Smith, Edmund H., Jr.; and Wolf, William E., 4,237,539, Cl. 364-552.000.

Duron, Ola; Griffin, Richard J., deceased; and by United Bank of Denver, N. A., personal representative, to Whale Scientific, Inc. Separation and quantitation of coproporphyrins and uroporphyrins. 4,236,892, Cl. 23-230.00B.

Duthie, Anthony J.: *See—*
Hirst, Peter B.; and Duthie, Anthony J., 4,236,871, Cl. 416-186.00R.

Dwinell, Davis B., to American Flange & Manufacturing Co. Inc. Nestable pouring spout assembly. 4,236,629, Cl. 222-529.000.

Dymov, Gershon D.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.

Dynamex Corporation: *See—*
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E-Comm Australia Pty. Ltd.: *See—*
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E. D. Bullard Company: *See—*
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E. R. Squibb & Sons, Inc.: *See—*
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Ondetti, Miguel A., 4,237,129, Cl. 424-246.000.
Ondetti, Miguel A., 4,237,134, Cl. 424-248.520.

Eapen, Kuttikandathil E.: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,237,146, Cl. 426-330.000.

Easley, John K., to General Electric Company. Method and apparatus for measuring conductivity in electrical feedthrough. 4,237,415, Cl. 324-54.000.

Eastman Kodak Company: *See—*
Sylvester, Robert A., 4,236,798, Cl. 354-181.000.
Upson, Donald A.; and Steklenski, David J., 4,237,194, Cl. 428-922.000.

Ebauches S.A.: *See—*
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, 4,237,548, Cl. 368-69.000.
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Eberlein, Dietmar: *See—*
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, 4,236,808, Cl. 355-8.000.

Ebihara, Heihachiro; Sekiya, Fukuo; and Uchino, Misao, to Citizen Watch Company Limited. Temperature sensing circuit. 4,237,420, Cl. 328-3.000.

Eby, Richard L.; and Wilson, Lester E., to Anderson Power Products, Inc. Electrical device with bi-level battery state-of-charge indicator. 4,237,198, Cl. 429-93.000.

Eckhardt, Sandor: *See—*
Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, 4,237,273, Cl. 536-53.000.

Ecodyne Corporation: *See—*
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Ecolaire Incorporated: *See—*
Raseley, LeRoy J.; Forster, Leslie L.; and Hay, Edward F., 4,236,575, Cl. 165-113.000.

Edinger, Gerald: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Edwards, Frederick H., to Vinyl Clad Proprietary Limited. Label applicator. 4,236,954, Cl. 156-352.000.

Edwards, Richard A., to Esselte Pendaflex Corporation. Transport mechanism for stationary encoders. 4,236,659, Cl. 226-58.000.

Edwin Cooper, Inc.: *See—*
Papay, Andrew G.; and O'Brien, Joseph P., 4,237,020, Cl. 252-47.500.

Eggert, Winfried: *See—*
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Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Electronic sewing machine with back stitching system. 4,236,468, Cl. 112-158.00E.

Eguchi, Yasukata: *See—*
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Ehlers, Eugene J. Pillow for recliner chair. 4,236,754, Cl. 297-423.000.

Ehrat, Rodolphe, to Biological Chemical Activities Patents SA B.C.A.P. Process for the preparation of N-phosphonomethyl glycine. 4,237,065, Cl. 260-502.500.

Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid crystalline carboxylic acid esters. 4,237,026, Cl. 252-299.000.

Eigenmann, Ludwig. Road marking machine and method. 4,236,950, Cl. 156-71.000.

Ekholm, Pertti: *See—*
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, 4,237,094, Cl. 422-100.000.

Electric Power Research Institute, Inc.: *See—*
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Electrochemische Energieconversie N.V.: *See—*
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Electronic Management Support, Inc.: *See—*
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Elf Union: *See—*
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Elgin Sweeper Company: *See—*
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Eli Lilly and Company: *See—*
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Elias, Moenes L.: *See—*
Valayil, Silvester P.; and Elias, Moenes L., 4,236,957, Cl. 156-666.000.

Eliassen, John D.; Lee, Gim F., Jr.; and Watson, James, Jr., to General Electric Company. Process for catalyst removal from polyphenylene ether reaction solutions. 4,237,265, Cl. 528-496.000.

Eller, Donald G.: *See—*
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Eller, Harry J.; Eller, Donald G.; Dudek, Edward R.; and Goodwin, Edward C. Telephone hook-up box. 4,237,342, Cl. 179-1.0PC.

Elliott Brothers (London) Limited: *See—*
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Elliott, Richard D., to Skuttle Mfg. Co. Humidifier assemblies. 4,237,080, Cl. 261-80.000.

Elmapa N.V.: *See—*
Ullmann, Werner, 4,237,370, Cl. 219-69.00P.

El-Sayed, Refaat M. Process for biological purification of liquid wastes. 4,237,003, Cl. 210-11.000.

Elwing, Assar: *See—*
Larsson, Arnold; and Elwing, Assar, 4,236,364, Cl. 52-383.000.

Emary, Robert J.: *See—*
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Emerson Electric Co.: *See—*
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Lambros, William S.; and Metzger, James I., Jr., 4,237,365, Cl. 219-139.000.
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Emery Industries, Inc.: *See—*
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Emhart Industries, Inc.: *See—*
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Emkay Manufacturing Company: *See—*
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Emme, Harry W., to Hunt, Clifton T., Jr., a part interest. Method and means for disposing of animal waste. 4,236,741, Cl. 294-1.0BB.

Emsperger, Werner: *See—*
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Endo, Ichiro; Kobayashi, Hajime; Yano, Yasuhiro; and Muramatsu, Takao, to Canon Kabushiki Kaisha. Image forming method. 4,237,213, Cl. 430-353.000.

Endo, Masami: *See—*
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Endress u. Hauser GmbH u. Co.: *See—*
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Enelow, Michael R.; Levy, Michael; and Porter, William P., to M.R.E. Enterprises, Inc. System for indicating and controlling dispensing of beverages. 4,237,536, Cl. 364-465.000.

Energy Development Associates, Inc.: *See—*
Hart, Thomas G., 4,237,197, Cl. 429-81.000.

Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., to Zenith Radio Corporation. I.C. chroma injection and demodulation system. 4,237,478, Cl. 358-23.000.

Engelhardt, Friedrich: *See—*
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Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.

Engl, Robert; and Richter, Hans, to Meggle Milchindustrie GmbH & Co. Compositions containing thiocyanic acid and hexamethylene-tetramine production process. 4,237,283, Cl. 544-186.000.

Enomoto, Hiroshi: *See—*
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Environmental Chemicals, Inc.: *See—*
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Epstein, David; and Bugg, John, to White Sea & Baltic Company Limited, The. Foundry processes and compositions. 4,236,569, Cl. 164-43.000.

Erich Rühl Chemische Fabrik und Chemikalien-Grosshandel, Firma: *See—*
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Erickson, Alfred C.; and Erickson, Clyde W. Regenerative electric motor. 4,237,094, Cl. 320-14.000.

Erickson, Alve J.; and Thulman, Robert D. Mountain monorail slide. 4,236,454, Cl. 104-69.000.

Erickson, Clyde W.: *See—*
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Erickson, Robert W., Jr.; and Stevens, G. Randall, to Per Sci, Inc. Disk drive system. 4,237,502, Cl. 360-78.000.

Ernerot, Lennart S., to Astra Lakemedel Aktiebolag. Process for storage. 4,236,633, Cl. 206-213.100.

Erskine, William G.: *See—*
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Esselte Pendaflex Corporation: *See—*
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Etablissement Dentaire Ivoclar: *See—*
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Ethyl Corporation: *See—*
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Evans Products Company: *See—*
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Evans, William D. J.; Larbey, Robert J.; and Stewart, Thomas I., to Johnson, Matthey & Co., Limited. Catalysts. 4,237,032, Cl. 252-462.000.

Evenden, Theodore M.: *See—*
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Eversman Mfg. Company, The: *See—*
Shader, Benjamin A.; and Mayeda, Bruce H., 4,236,586, Cl. 172-779.000.
Shader, Benjamin A.; and Mayeda, Bruce H., 4,236,587, Cl. 172-779.000.

EVT Energie- und Verfahrenstecknik GmbH: *See—*
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Exell, Stuart F.: *See—*
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Exxon Research & Engineering Co.: *See—*
Johnson, Jack W., 4,237,061, Cl. 260-429.300.
Thompson, Arthur H.; Symon, Charles R.; and Jacobson, Allan J., 4,237,204, Cl. 429-194.000.
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F. T. Read & Sons, Inc.: *See—*
Read, James L.; and Morgan, William K., 4,237,000, Cl. 209-319.000.

Fabrica d'Armi Pietro Beretta S.p.A.: *See—*
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Fadeev, Alexandr I.: *See—*
Batjukov, Vladimir I.; Vjugov, Oleg N.; Fadeev, Alexandr I.; and Shkhian, Tsolak G., 4,236,967, Cl. 176-30.000.
Ljubivy, Alexandr G.; Batjukov, Vladimir I.; Shkhian, Tsolak G.; and Fadeev, Alexandr I., 4,236,969, Cl. 176-61.000.

Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., to American Home Products Corporation. N-substituted cyclopeptide derivatives and preparation thereof. 4,237,045, Cl. 260-112.50R.

Fairchild, Harold W., to Outboard Marine Corporation. Electronically controlled C.D. ignition and interlocking shut-off system. 4,236,494, Cl. 123-148.0CC.

Fanselow, Dan L., to Minnesota Mining and Manufacturing Company. Photochromic aziridine recording media. 4,237,211, Cl. 430-338.000.

Fasano, Michael C.: *See—*
De Luca, Paul V.; and Fasano, Michael C., 4,237,346, Cl. 179-35.000.

Fauchier, Jess F., II, to Pako Corporation. Exposure time control for photographic printer. 4,236,818, Cl. 355-77.000.

Fauls, Thomas J., to Mego Corp. Flexible doll closure and head mounting. 4,236,347, Cl. 46-156.000.

Favre, Ernest. Boom for containing and collecting oil spills on the surface of a body of water. 4,237,012, Cl. 210-242.00S.

Feamster, William C., III. Canopy cutting device. 4,236,428, Cl. 82-4.00R.

Fearnhead, Robert, to Automotive Products Limited. Filter units. 4,237,015, Cl. 210-444.000.

Fechant, Louis; Guery, Jean-Pierre; and Martin, Gabriel, to La Telemecanique Electrique. Blowing element. 4,237,355, Cl. 200-147.00R.

Fedechko, Walter J., to Certified Chemicals, Inc. Dishwashing composition and method of making the same. 4,237,024, Cl. 252-99.000.

Fedrigo, Renzo, to C.G.S. Istrumenti Di Misura S.p.A. Thermal writing device for recording apparatus. 4,237,467, Cl. 346-76.00R.

Feher, Peter: *See—*
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, 4,236,808, Cl. 355-8.000.

Feldle, Kurt, to SKF Kugellagerfabriken GmbH. Device for sealing and mounting a rolling-element bearing. 4,236,767, Cl. 308-187.100.

Feldmuhle Aktiengesellschaft: *See—*
Heys, Karel A. G., 4,236,998, Cl. 209-246.000.

Felix, Kenneth A., to Motorola, Inc. Bus arbiter. 4,237,534, Cl. 364-200.000.

Felker, Merle, to Sheffer Collet Company. Double acting cam operated chuck collet. 4,236,722, Cl. 279-118.000.

Fellner, Van N.; and Ruskin, Frank. Compact vending machine. 4,236,649, Cl. 221-90.000.

Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, to Ebauches S.A. Electronic timepiece. 4,237,548, Cl. 368-69.000.

Ferguson, Helaman R. P.: *See—*
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.

Fernotex Fernost-Testihandel: *See—*
LeBouder, Maurice, 4,237,371, Cl. 235-92.0PD.

Ferranti Limited: *See—*
Pitches, Brian E.; Murray, Robert M. S.; and Greig, Ian A., 4,237,537, Cl. 364-465.000.

Ferrari, Lorenzo: *See—*
Bruzzese, Tiberio; and Ferrari, Lorenzo, 4,237,117, Cl. 424-122.000.

Ferro Corporation: *See—*
Brueggemann, Walter H.; and Meteer, Charles L., 4,237,176, Cl. 428-212.000.

Filippov, Vladimir J.: *See—*
Savin, Nikolai I.; Khramov, Dmitry A.; Filippov, Vladimir J.; and Bugrov, Valery V., 4,236,966, Cl. 176-30.000.

Filtrol Corporation: *See—*
Alifandi, Hamid; and Stamires, Dennis, 4,237,031, Cl. 252-438.000.

Firestone Tire & Rubber Company, The: *See—*
Allcock, Harry R.; and Ritchie, Robert J., 4,237,263, Cl. 528-399.000.
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,237,245, Cl. 525-272.000.

Fischer & Porter Co.: *See—*
Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, 4,236,410, Cl. 73-194.0EM.
Ketelsen, Broder, 4,236,411, Cl. 73-194.0EM.
Ratigan, Brian; Longley, Karl E.; and Roop, Robert N., 4,237,008, Cl. 210-205.000.

Fishburn, Charles E., to National Printing Plate Company, Inc. Rotating fastener mechanism for holding a workpiece in a washing apparatus. 4,236,542, Cl. 134-153.000.

Fisher, Gary H., to Industrial Sheet Metal & Mechanical Corp. Ordering system for tobacco bulk curing barn. 4,236,537, Cl. 131-134.000.

Fisher, Jack W., to Eli Lilly and Company. Crystalline 3-hydroxycephalosporin solvates. 4,237,279, Cl. 544-16.000.

Fisher Stove Works: *See—*
Bitler, Harold C., 4,236,501, Cl. 126-197.000.

Fisons Limited: *See—*
Parsons, John H., 4,237,127, Cl. 424-244.000.

Fitch, Richard A.; Drummond, James E.; and Mondelli, Alfred A., to Maxwell Laboratories, Inc. Electrostatic precipitator apparatus having an improved ion generating means. 4,236,900, Cl. 55-138.000.

Fitoussi, Fredj; and Maldonado, Paul, to Elf Union. Method for the preparation of bitumens modified by polymers. 4,237,052, Cl. 260-28.5AS.

Fleischmann, Martin: *See—*
Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., 4,236,991, Cl. 204-272.000.

Fletcher, Harvey J.: *See—*
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.

Florence, Otis. Retractable rake. 4,236,742, Cl. 294-24.000.

Floyd, James K., to Gyne-Tech Instrument Corporation. Cryogenic device selectively operable in a continuous freezing mode, a continuous thawing mode or a combination thereof. 4,236,518, Cl. 128-303.100.

Floyd, Middleton B., Jr.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.

FMC Corporation: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,237,058, Cl. 260-343.30R.

Focke & Co.: *See—*
Krautter, Hermann; and Focke, Heinz, 4,236,663, Cl. 229-44.0CB.

Focke, Heinz: *See—*
Krautter, Hermann; and Focke, Heinz, 4,236,663, Cl. 229-44.0CB.

Fodor, Lawrence M., to Phillips Petroleum Company. Catalyst comprising intensely mixed triaryl phosphite, aluminum trihalide, titanium trihalide component. 4,237,029, Cl. 252-429.00B.

Foldes, Stephen. Thermoconstrictive disconnect of conductors in electrical apparatus. 4,237,513, Cl. 361-103.000.

Ford Motor Company: *See—*
Chattha, Mohinder S., 4,237,241, Cl. 525-110.000.

Forford, Thorleif, to ASEA Aktiebolag. Differential protection circuitry for electrical devices. 4,237,512, Cl. 361-87.000.

Forster, Allen V.; Martz, Lyle E.; and Leng, Douglas E., to Dow Chemical Company, The. Process for separating and recovering concentrated hydrochloric acid from the crude product obtained from the acid hydrolysis of cellulose. 4,237,110, Cl. 423-488.000.

Forster, Helmut: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Forster, Leslie L.: *See—*
Raseley, LeRoy J.; Forster, Leslie L.; and Hay, Edward F., 4,236,575, Cl. 165-113.000.

Forsythe, Calvin C.: *See—*
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Foster, C. Thomas: *See—*
Kohm, Richard C.; and Foster, C. Thomas, 4,236,333, Cl. 40-212.000.

Foster, Gary H.; and Lombard, Marco H., to Emerson Electric Co. Apparatus for cutting vegetation. 4,236,312, Cl. 30-276.000.

Foster, Michael R.: *See—*
Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., 4,237,099, Cl. 422-171.000.

Foster, Norman; and Stephenson, Alan G., to British-American Tobacco Company Limited. Smoking articles. 4,236,538, Cl. 131-149.000.

Fouassier, Claude: *See—*
Dougier, Patrick; Fouassier, Claude; and Latourrette, Bertrand, 4,237,027, Cl. 252-301.40H.

Fox, Earl W. Bottle carrier. 4,236,743, Cl. 294-27.00H.

Frank, Benno: *See—*
Dammann, Peter; and Frank, Benno, 4,236,323, Cl. 34-152.000.

Frank, Robert G.: *See—*
Thomas, Dean L.; Frank, Robert G.; and Claassen, George R., 4,236,909, Cl. 65-115.000.

Franke, Albrecht: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

Frankel, Lawrence S., to Rohm and Haas Company. Uses of chelated metal catalysts for acid/epoxy polymer systems. 4,237,242, Cl. 525-119.000.

Franken, Adrianus J. J.; and Degger, Wolter W. J., to U.S. Philips Corporation. Television camera with pick-up tube mounting means. 4,237,480, Cl. 358-55.000.

Frantzen, John J., to Minnesota Micro Metal, Inc. Etched metal abrasives. 4,236,357, Cl. 51-309.000.

Franz, Manfred: *See—*
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, 4,236,551, Cl. 140-1.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Collen, Heinrich, 4,236,453, Cl. 104-15.000.
Theurer, Josef; and Brunninger, Manfred, 4,236,452, Cl. 104-2.000.

Fraser, Bruce A.; and Yannascoli, Donald, to Carrier Corporation. Multiple compressor system. 4,236,876, Cl. 417-250.000.

Frecka, Thomas R., to Cincinnati Milacron Inc. Method and apparatus for modifying the operation of a machine tool as a function of torque. 4,237,408, Cl. 318-571.000.

Fredrickson, Lloyd C.: *See—*
Rudy, Norman A.; and Fredrickson, Lloyd C., 4,236,277, Cl. 17-73.000.

Frei, Hans-Rudolf: *See—*
Mentzel, Detlef; and Frei, Hans-Rudolf, 4,237,179, Cl. 428-276.000.

Freiter, Edward R.: *See—*
Dowd, William; Krauss, Richard C.; and Freiter, Edward R., 4,237,304, Cl. 548-239.000.

French Masterpieces, Incorporated: *See—*
Batstone, Roger J., 4,236,258, Cl. 4-172.120.

Frentzel, Kurt H., to Hunter Douglas International N.V. Fastening member for securing the slats of a venetian blind to a support element and method for assembly. 4,236,567, Cl. 160-178.00R.

Fricke, Roy A. Modular air purifying device. 4,236,902, Cl. 55-279.000.

Frickel, Fritz-Frieder: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

Friedlander, Bruce W. Shoe with adjustable orthopedic appliance. 4,236,328, Cl. 36-58.500.

Friedrich, Heinz: *See—*
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, 4,237,299, Cl. 546-250.000.

Fries, Walter. Developing apparatus for the dry development of photosensitive sheet material. 4,236,805, Cl. 354-300.000.

Frohberger, Paul-Ernst: *See—*
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,237,143, Cl. 424-270.000.

Fuga, Nobuhiko; Uchimura, Kunio; and Takahashi, Hideyuki, to Mitsubishi Petrochemical Company Limited. Method of inhibiting polymerization of styrene. 4,237,326, Cl. 585-4.000.

Fuji Electrochemical Co., Ltd.: *See—*
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, 4,237,203, Cl. 429-122.000.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 4,237,217, Cl. 430-387.000.
Fujita, Yoshihiro, 4,237,206, Cl. 430-11.000.
Ikenoue, Shinpei; and Masuda, Takao, 4,237,215, Cl. 430-619.000.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Tsujino, Nobuyuki, 4,237,214, Cl. 430-441.000.
Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,237,468, Cl. 346-135.100.
Nakamura, Takeshi; and Kushima, Hiroshi, 4,236,710, Cl. 271-108.000.

Fujii, Tadashiro: *See—*
Okuyama, Tsuneo; Fujii, Tadashiro; Nakagawa, Nobuaki; and Kotani, Kikuo, 4,237,267, Cl. 536-1.000.

Fujii, Tomoo: *See—*
Mukai, Takamitu; Fujii, Tomoo; and Kouno, Hiroya, 4,236,621, Cl. 192-82.00T.

Fujimori, Ryo: *See—*
Kaneko, Nobutaka; and Fujimori, Ryo, 4,236,828, Cl. 356-444.000.

Fujimoto, Sakae, to Ricoh Company, Ltd. Pneumatic sheet feeder. 4,236,707, Cl. 271-11.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

Fujita, Yoshihiro, to Fuji Photo Film Co., Ltd. Photographic paper base with seperate reflective layer. 4,237,206, Cl. 430-11.000.

Fujiwara, Junichi; and Nakamura, Kazuo, to Nihon Shinku Gijutsu Kabushiki Kaisha. Process for the surface treatment of a synthetic resin lens and the product thereof. 4,237,183, Cl. 428-336.000.

Fujiwara, Shinji: *See—*
Chikamura, Takao; Fujiwara, Shinji; Terui, Yasuaki; and Fukai, Masakazu, 4,236,829, Cl. 357-16.000.

Fukai, Masakazu: *See—*
Chikamura, Takao; Fujiwara, Shinji; Terui, Yasuaki; and Fukai, Masakazu, 4,236,829, Cl. 357-16.000.

Fukami, Ichiro: *See—*
Kawamura, Hideo; Fukami, Ichiro; Wada, Shuhei; and Yoshikawa, Fusayuki, 4,237,261, Cl. 528-272.000.

Fukuhara, Mototada; and Morita, Ken-ichi, to Toray Industries, Inc. Process for producing carbon fabric. 4,237,108, Cl. 423-447.400.

Fulmer, Glenn E.; and Murch, Robert M., to W. R. Grace & Co. Method of sealing interior mine surface with a fire retardant hydrophilic polyurethane foam and resulting product. 4,237,182, Cl. 428-310.000.

Fun Sculpture, Inc.: *See—*
McCarty, Mary D., 4,236,705, Cl. 269-100.000.

Furukawa, Hiroshi: *See—*
Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,237,329, Cl. 585-474.000.

Furukawa, Kiyoshi: *See—*
Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, 4,237,135, Cl. 424-250.000.

Furuta, Yasuhiko: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.

Furutachi, Nobuo: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 4,237,217, Cl. 430-387.000.

Futober Epuletgepeszeti Termekeket Gyarto Vallalat: *See—*
Kiss, Sandor; and Nagy, Zsolt, 4,236,597, Cl. 181-224.000.

Fuzii, Norihito: *See—*
Nakamine, Chosin; and Fuzii, Norihito, 4,236,486, Cl. 118-691.000.

G.A.O. Gesellschaft fur Automation und Organisation mbH: *See—*
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.
Hoese, Frank; von Aschwege, Gerd; and Bernardi, Herbert, 4,236,858, Cl. 414-331.000.

G K T Gesellschaft fur Kernverfahrenstechnik mbH: *See—*
Meinke, Peter; and Zippe, Gernot, 4,236,426, Cl. 74-574.000.

Gach, Peter P., to Sunbeam Plastics Corporation. Child-resistant dispensing closure. 4,236,653, Cl. 222-153.000.

Gadient, Fulvio, to Sandoz Ltd. Quaternary tropane ethers. 4,237,296, Cl. 546-126.000.

Gadzhiev, Tofik A.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.

Gala, Hiren S.: *See—*
Orr, David A.; Gala, Hiren S.; and Scagnelli, George J., 4,236,292, Cl. 29-408.000.

Gallaher Limited: *See—*
Schweizer, Alfred D.; Erskine, William G.; and Turpin, Daniel, 4,236,532, Cl. 131-9.000.

Gallant, James O., to SW (Delaware), Inc. Curved roll having sealed torsional coupling between roll sections. 4,236,285, Cl. 26-103.000.

Galle, Edward M., to Hughes Tool Company. Earth boring drill bit with snap ring cutter retention. 4,236,764, Cl. 308-8.200.

Galluzzi, Giovanni, to Giulio Fiocchi, S.p.A. Self-propelling projectile for firearms. 4,236,451, Cl. 102-38.0RA.

Gandon, Louis: *See—*
Demarthe, Jean-Michel; Gandon, Louis; and Goujet, Monique, 4,236,981, Cl. 204-113.000.

Gangulee, Amitava: *See—*
Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., 4,236,946, Cl. 148-108.000.

Ganz, Rudolf V., Jr.; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Closure for pharmaceutical containers. 4,236,646, Cl. 215-232.000.

Gardner, John H.: *See—*
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.

Garrison, William H. Improved galvanizing method [and apparatus]. 4,237,154, Cl. 427-241.000.

Gas Spring Corporation: *See—*
Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, 4,236,845, Cl. 403-144.000.

Gass, Ernst, to Novotechnik KG Offterdinger & Co. Movable wiper for potentiometers. 4,237,443, Cl. 338-202.000.

Gatling, Sterling C., to Dow Chemical Company, The. Removal of oxazole from acrylonitrile. 4,237,303, Cl. 548-235.000.

Gauhl, Helmgard; and Seidel, Hans, to Boehringer Mannheim GmbH. Process for obtaining maltose phosphorylase and β-phosphoglucomutase and method of determining α-amylase using same. 4,237,221, Cl. 435-15.000.

Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., to Olin Corporation. Ingot shape control by dynamic head in electromagnetic casting. 4,236,570, Cl. 164-49.000.

Gautreaux, Gloria A.: *See—*
Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 4,236,890, Cl. 8-2.50A.

Gavioli, Gabriele: *See—*
Palmonari, Carlo; and Gavioli, Gabriele, 4,236,321, Cl. 34-57.00E.

Gawlik, Charles B.; Hall, James D.; and Matsunaga, Douglas S., to Braner Enterprises, Inc. Multiple head slitter. 4,236,431, Cl. 83-479.000.

Gear/tronics Corporation: *See—*
Musial, George J., 4,236,415, Cl. 74-25.000.

Gebr. Berchtold: *See—*
Mantele, Erwin, 4,236,844, Cl. 403-55.000.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Groger, Hans, 4,236,758, Cl. 299-42.000.

Gehle, Richard W., to Rockwell International Corporation. Method for releasably mounting a substrate on a base providing heat transfer and electrical conduction. 4,237,086, Cl. 264-130.000.

Geier, Josef: *See—*
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.

Geisler, Gottfried: *See—*
Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, 4,236,410, Cl. 73-194.0EM.

Geissel, Charles H.: *See—*
Young, James; Geissel, Charles H.; and Zenczak, Piotr, 4,237,083, Cl. 264-41.000.

Geisthoff, Hubert, to Jean Walterscheid GmbH. Separable three-section telescopic drive shaft. 4,236,388, Cl. 64-23.000.

Geisthoff, Hubert, to Jean Walterscheid GmbH. Wide-angle joint. 4,236,420, Cl. 74-380.000.

Gelin, Guy, to Saft Leclanche. Cylindrical electric cell. 4,237,199, Cl. 429-94.000.

Gelperin, Nison I.; Polotsky, Leonid M.; and Konovalenko, Nikolai A. Apparatus for eliminating residual solvent from crumbled polymer. 4,236,958, Cl. 159-16.00S.

General Dynamics Corporation Pomona Division: *See—*
Becnel, Larry H., 4,236,427, Cl. 81-3.00R.
Palmer, John P., 4,236,784, Cl. 350-96.200.

General Electric Company: *See—*
Baldwin, Samuel L., 4,237,528, Cl. 362-263.000.
Baliga, Bantval J., 4,236,947, Cl. 148-171.000.
Cutler, John H.; and Walker, Loren H., 4,237,531, Cl. 363-58.000.
Dunn, Bruce S.; and Evenden, Theodore M., 4,236,661, Cl. 228-184.000.
Easley, John K., 4,237,415, Cl. 324-54.000.
Eliassen, John D.; Lee, Gim F., Jr.; and Watson, James, Jr., 4,237,265, Cl. 528-496.000.
Jackson, Melvin R.; and Rairden, John R., III, 4,237,193, Cl. 428-678.000.
Keeley, Donald E., 4,237,259, Cl. 528-204.000.
Ketchum, Marshall D.; and Yerman, Alexander J., 4,236,404, Cl. 73-19.000.
Meyer, Leslie D., 4,237,454, Cl. 340-682.000.
Sugalski, Raymond K., 4,237,409, Cl. 320-2.000.
Van Bennekom, Carl F.; Rogers, Donald E.; and Scannell, Edward F., 4,237,418, Cl. 324-150.000.
Vogt, Robert L., 4,236,378, Cl. 60-757.000.
Waldron, Wesley K., 4,237,421, Cl. 328-5.000.
Welch, Stanley B., 4,237,368, Cl. 219-449.000.
Wilson, Samuel R., 4,237,519, Cl. 361-327.000.
Woods, Lee O.; and Haag, Donald L., 4,237,508, Cl. 361-24.000.

General Motors Corporation: *See—*
Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., 4,237,099, Cl. 422-171.000.
Main, Ray F., Jr., 4,236,941, Cl. 148-16.500.
Matter, Robert C., 4,237,205, Cl. 429-234.000.
Roberts, David E., 4,237,098, Cl. 422-171.000.
Widdowson, Richard E., 4,236,875, Cl. 417-222.000.

General Signal Corporation: *See—*
Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., 4,237,177, Cl. 428-215.000.

General Tire & Rubber Company, The: *See—*
Hendricks, Ronald S., 4,237,153, Cl. 427-140.000.
Kalafus, Edward F.; and Sharma, Satish C., 4,236,564, Cl. 152-359.000.
Kuan, Tiong H., 4,237,173, Cl. 428-65.000.

Genese, Joseph N., to Abbott Laboratories. Equipment sets and system for the sequential administration of medical liquids at dual flow rates employing parallel secondary liquid tubing. 4,236,515, Cl. 128-214.00G.

Gentile, Camillo: *See—*
Bialski, Alexander; Gentile, Camillo; and Sepall, Ola, 4,236,676, Cl. 241-74.000.

Geolograph Company, The: *See—*
Corry, Stuart E., 4,236,408, Cl. 73-151.000.

Georgia-Pacific Corporation: *See—*
Jespersen, Paul W., 4,236,679, Cl. 242-55.530.

Geurts, Cletus J., to Geurts Inc. Toggle link trip and reset mechanism for earthworking tool. 4,236,583, Cl. 172-266.000.

Geurts Inc.: *See—*
Geurts, Cletus J., 4,236,583, Cl. 172-266.000.

Ghelli, Giovanni; Bruschi, Enrico; and Agnese, Gino, to Luigi Stoppani S.p.A. Two stage process for preparing 2,6-pyridin-dicarboxylic acid. 4,237,301, Cl. 546-327.000.

Ghosh, Arup K.: *See—*
Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, 4,237,151, Cl. 427-74.000.

Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L. Event monitor for court games. 4,237,376, Cl. 235-487.000.

Giacomotti, Sally A.: *See—*
Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L., 4,237,376, Cl. 235-487.000.

Gibson, Robert C.: *See—*
Korenko, Michael K.; Merrick, Howard F.; and Gibson, Robert C., 4,236,943, Cl. 148-32.500.

Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, to Siemens Aktiengesellschaft. Multiple joint box utilizing a thermoplastic clamping sleeve principle. 4,237,335, Cl. 174-92.000.

Giles, Richard F.: *See—*
LaSpisa, Ronald J.; and Giles, Richard F., 4,237,082, Cl. 264-40.600.

Gilford Instrument Laboratories, Inc.: *See—*
Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., 4,236,825, Cl. 356-414.000.

Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., to Gilford Instrument Laboratories, Inc. Automatic monochromatic light absorbance measurement analyzer. 4,236,825, Cl. 356-414.000.

Gillespy, Keith R., to Platt Saco Lowell Limited. Warp sheet splitting device for a drying chamber in a yarn sizing process. 4,236,319, Cl. 34-12.000.

Gillin, James; and Jacobus, David P., to Merck & Co., Inc. Combination of thiopeptin and rumensin to improve ruminant feed efficiency. 4,237,116, Cl. 424-117.000.

Gillot, Jacques; Exell, Stuart F.; and Lux, Benno, to Battelle Memorial Institute. Cellular carbon beads and process for fabrication. 4,237,107, Cl. 423-445.000.

Ginat, Esther. Packing case having expansible compartments. 4,236,615, Cl. 190-52.000.

Gingerich, David L.; and Cohn, Robert, to Champion International Corporation. Apparatus for applying sealing material to envelopes. 4,236,482, Cl. 118-642.000.

Ginn, Jack M.: *See—*
Tomka, Jiri; and Ginn, Jack M., 4,237,034, Cl. 260-18.00N.

Girling Limited: *See—*
Bayliss, John P., 4,236,612, Cl. 188-242.000.

Gitlin, Richard D.; Meadors, Howard C., Jr.; and Weinstein, Stephen B., to Bell Telephone Laboratories, Incorporated. Coefficient tap leakage for fractionally-spaced equalizers. 4,237,554, Cl. 375-15.000.

Giuffre, Luigi: *See—*
de Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, 4,236,979, Cl. 204-98.000.

Giuffrida, John: *See—*
Johnson, Timothy E.; and Giuffrida, John, 4,237,023, Cl. 252-70.000.

Giuliano, Peter A.: *See—*
Policy, Jene A.; and Giuliano, Peter A., 4,236,728, Cl. 280-661.000.

Giulio Fiocchi, S.p.A.: *See—*
Galluzzi, Giovanni, 4,236,451, Cl. 102-38.0RA.

Givaudan Corporation: *See—*
Dubs, Paul; and Kuntzel, Heiner, 4,237,290, Cl. 544-335.000.

Gladden, Robert E.: *See—*
Hucul, Elias, Jr.; and Gladden, Robert E., 4,236,870, Cl. 416-97.00R.

Glass, Carl R. Mail box post bracket. 4,236,665, Cl. 232-39.000.

Glaubitz, Werner: *See—*
Krueger, Hans; and Glaubitz, Werner, 4,236,791, Cl. 350-345.000.

Gloucester Engineering Co., Inc.: *See—*
Schott, Charles M., Jr., 4,236,884, Cl. 425-72.00R.

Gnann, Alfons: *See—*
Gronbach, Wilhelm; and Gnann, Alfons, 4,236,272, Cl. 16-142.000.

Gogarty, William B.: *See—*
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 4,236,545, Cl. 137-13.000.

Gold- und Silber- Scheideanstalt Oberstein Franz Reischauer: *See—*
Reischauer, Axel, 4,236,560, Cl. 150-46.000.

Goldstein, Norman P.: *See—*
Playfoot, Kerwin C.; and Goldstein, Norman P., 4,237,380, Cl. 250-370.000.

Golenchenko, Valery A.: *See—*
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.

Gonseth, Denis R.; and Hauser, Charles, to Stellram S.A. Stratified protecting coating for wearing pieces and hard metal cutting tools. 4,237,184, Cl. 428-336.000.

Goodrich, Judson E., to Chevron Research Company. Polymerizable premix composition for preparation of polyurethane surfaces. 4,237,036, Cl. 260-28.00R.

Goodridge, Francis: *See—*
Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., 4,236,991, Cl. 204-272.000.

Goodwin, Edward C.: *See—*
Eller, Harry J.; Eller, Donald G.; Dudek, Edward R.; and Goodwin, Edward C., 4,237,342, Cl. 179-1.0PC.

Goodyear Aerospace Corporation: *See—*
Crossman, Richard L., 4,237,445, Cl. 340-58.000.

Goossens, Bernhard: *See—*
Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, 4,237,067, Cl. 260-561.00N.

Gordon, Gary B. Self-focusing camera apparatus and method. 4,236,794, Cl. 354-25.000.

Gorsche, Robert D.; and Cloutier, Oscar H., to Jones & Vining, Incorporated. Welt. 4,236,327, Cl. 36-14.000.

Gosudarstvenny Nauchnoissledovatelsky Energeticheskiy Institut Imeni G. M. Krzhizhanovskogo: *See—*
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.

Gotcher, Alan J.: *See—*
van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., 4,237,441, Cl. 338-22.00R.

Goto, Kenji: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.

Gottlieb, David; and Zer, Eliezer. Apparatus for lifting a wheelchair onto the roof of an automoble. 4,236,860, Cl. 414-462.000.

Gottschlich, Alois; and Leverenz, Klaus, to Bayer Aktiengesellschaft. Monoazo dyestuff containing di-cyano substituents ortho to the azo group. 4,237,048, Cl. 260-207.100.

Gotz, Manfred K.: *See—*
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., 4,237,045, Cl. 260-112.50R.

Gough, Stanley T. D., to Mobil Oil Corporation. Formamide catalysts for reacting phosphorus halides with thiols. 4,237,075, Cl. 260-976.000.

Goujet, Monique: *See—*
Demarthe, Jean-Michel; Gandon, Louis; and Goujet, Monique, 4,236,981, Cl. 204-113.000.

Graham Magnetics Inc.: *See—*
Manly, William A., 4,237,506, Cl. 360-135.000.

Granger Associates: *See—*
Narasimha, Madihally J., 4,237,551, Cl. 370-50.000.

Granholm, Carl, to Interlock Sicherheitssysteme GmbH, Firma; and Interflex Datensysteme GmbH & Co. K.G., Firma. Opto-electronic apparatus for reading information contained in an information carrier. 4,237,375, Cl. 235-487.000.

Grantham, Daniel H., to United Technologies Corporation. Hydrogen gas generation utilizing a bromide electrolyte, an amorphous silicon semiconductor and radiant energy. 4,236,984, Cl. 204-129.000.

Grass, Klaus: *See—*
Schmidt, Klaus; and Grass, Klaus, 4,236,314, Cl. 33-126.600.

Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, to VEB Arzneimittelwerk Dresden. Process for the isolation of ergot alkaloids from culture suspensions. 4,237,291, Cl. 544-346.000.

Green, Frank B. Pulping lignocellulose in continuous pressurized batch digesters. 4,236,961, Cl. 162-52.000.

Green, Leland D., to United States of America, Air Force. Imagery with constant range lines. 4,236,819, Cl. 356-5.000.

Greengrass, Colin W.: *See—*
Campbell, Simon F.; Danilewicz, John C.; and Greengrass, Colin W., 4,237,138, Cl. 424-251.000.

Gregory, Ted W., to Arens Controls, Inc. Hydraulic system control means. 4,236,757, Cl. 298-22.00C.

Greig, Ian A.: *See—*
Pitches, Brian E.; Murray, Robert M. S.; and Greig, Ian A., 4,237,537, Cl. 364-465.000.

Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, to Robert Bosch GmbH. Fuel supply device. 4,237,079, Cl. 261-44.00A.

Grethlein, Hans E., to Dartmouth College, Trustees of. Process for pretreating cellulosic substrates and for producing sugar therefrom. 4,237,226, Cl. 435-99.000.

Gridley, Marvin C.: *See—*
Byers, Stanley A.; McKee, James R., Sr.; and Gridley, Marvin C., 4,236,929, Cl. 106-52.000.

Gries, Josef: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

Griffin, Richard J., deceased: *See—*
Duron, Ola; Griffin, Richard J., deceased; and United Bank of Denver, N. A., personal representative, 4,236,892, Cl. 23-230.00B.

Griffin, Roy N., Jr. Apparatus for and method of evaluating solar exposure. 4,236,313, Cl. 33-1.0DD.

Griffith, Dwight N. Empty beverage can carrier. 4,236,638, Cl. 206-493.000.

Griffith, Vern. Vacuum motor. 4,236,589, Cl. 173-169.000.

Grimm, Maurice: *See—*
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, 4,237,548, Cl. 368-69.000.

Grinberg, Aron K.: *See—*
Grodzinsky, Eduard Y.; Isakova, Roalda B.; Zubatova, Lidia S.; Makonovitskaya, Anna T.; and Grinberg, Aron K., 4,236,985, Cl. 204-129.430.

Grinchenko, Nikolai G.: *See—*
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V., 4,237,398, Cl. 310-214.000.

Grodzinsky, Eduard Y.; Isakova, Roalda B.; Zubatova, Lidia S.; Makonovitskaya, Anna T.; and Grinberg, Aron K. Method for machining works of current-conducting material with current-conducting abrasive tools. 4,236,985, Cl. 204-129.430.

Groger, Hans, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H. Rack drive for a drum cutter mining machine. 4,236,758, Cl. 299-42.000.

Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with 2-methylene-3-substituted-4,5-bis-trifluoro-methyl iminothiazolidines. 4,237,143, Cl. 424-270.000.

Grohl, Friedrich, to VDO Adolf Schindling A.G. Indicator dial and method of making same. 4,236,480, Cl. 116-286.000.

Grolman, Bernard: *See—*
Whitney, Donald B.; Grolman, Bernard; and Richards, William, 4,236,793, Cl. 351-21.000.

Gronbach, Wilhelm; and Gnann, Alfons. Hinge comprising a compression spring, which is adapted to balance the weight of a hinged leaf. 4,236,272, Cl. 16-142.000.

Grosjean, Henri: *See—*
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.

Grote, Albert J.: *See—*
Huang, Marshall Y.; Grote, Albert J.; and Yen, Kuo-Hsiung, 4,237,432, Cl. 333-194.000.

Grove, John L., to JLG Industries, Inc. Scissors lift with pipe handler. 4,236,861, Cl. 414-540.000.

Groves, Ian S.: *See—*
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.

Gruenenwald, Stanley L., to Medtronic, Inc. Frequency to voltage converter for cardiac communication system. 4,236,523, Cl. 128-419.0PT.

Grumman Aerospace Corporation: *See—*
Barthelme, Richard W.; Leonard, John B.; and Biercuk, John N., 4,236,686, Cl. 244-116.000.

GTE Products Corporation: *See—*
Cooper, David A.; Monoski, William T.; and Vibert, Edward J., 4,237,435, Cl. 335-18.000.
Kresock, John M., 4,237,489, Cl. 358-168.000.

Guard, David R.: *See—*
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.

Gudmandsen, Robert: *See—*
Hansen, Bjarne S.; and Gudmandsen, Robert, 4,237,348, Cl. 179-100.41R.
Hansen, Bjarne S.; and Gudmandsen, Robert, 4,237,349, Cl. 179-100.41D.

Gueremy, Claude G. A.: *See—*
Champseix, Alain A.; Gueremy, Claude G. A.; and Le Fur, Gerard R., 4,237,139, Cl. 424-258.000.

Guerini, Albert: *See—*
Ho, Bin L.; and Guerini, Albert, 4,237,504, Cl. 360-106.000.

Guerrini, Giampaolo, to Ing. C. Olivetti & C., S.p.A. Type-carrier disk with flexible tongues. 4,236,838, Cl. 400-144.300.

Guery, Jean-Pierre: *See—*
Fechant, Louis; Guery, Jean-Pierre; and Martin, Gabriel, 4,237,355, Cl. 200-147.00R.

Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, to Siemens Aktiengesellschaft. Gas generator for catalytically reacting liquid, hydrocarbon containing fuel to be evaporated with an oxygen containing gas at elevated temperature to form a fuel gas, particularly for supplying internal-combustion engines. 4,236,899, Cl. 48-89.000.

Gulf Oil Corporation: *See—*
Hoffman, Otto L.; and Kirkpatrick, Joel L., 4,237,302, Cl. 548-139.000.
Murphy, Clarence R.; Boehme, Robert E., deceased; Boehme, Helen J., legal representative; and Phelp, Joseph P., executor, 4,237,081, Cl. 264-9.000.

Gunnarsson, Staffan H.: *See—*
Lampe, Vaino; Gunnarsson, Staffan H.; and Johansson, Karl-Erik, 4,236,920, Cl. 75-128.00A.

Gunther, Roland: *See—*
Sander, Gunter; and Gunther, Roland, 4,236,630, Cl. 198-577.000.

Guseinov, Novruz I. O.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Guseinov, Novruz I. O.; Nagiev, Vagif A. O.; and Sultanov, Nuri T. O., 4,237,323, Cl. 568-738.000.

Guseinov, Vagif B. G. O.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.

Gustavsson, Kjell: *See—*
Yaman, Melih; Gustavsson, Kjell; and Hammer, Orjan, 4,236,944, Cl. 148-35.000.

Gustin, Pol A. G. J.; and Shayes, Raymond G. G., to U.S. Philips Corporation. Electrostatic write head. 4,237,469, Cl. 346-155.000.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Sander, Gunter; and Gunther, Roland, 4,236,630, Cl. 198-577.000.

Gutjahr, Manfred: *See—*
Buhl, Horst; and Gutjahr, Manfred, 4,236,927, Cl. 75-246.000.

Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, to Deutsche Automobilgesellschaft mbH; and Jenaer Glaswerk Schott & Gen. Sodium ion-conducting glass electrolyte for sodium-sulfur batteries. 4,237,196, Cl. 429-50.000.

Gyne-Tech Instrument Corporation: *See—*
Floyd, James K., 4,236,518, Cl. 128-303.100.

Haag, Donald L.: *See—*
Woods, Lee O.; and Haag, Donald L., 4,237,508, Cl. 361-24.000.

Haar, Lucas H.; and Schafer, Ernst-Dieter, to ITT Industries, Inc. Brake-force regulator for dual-circuit brake systems. 4,236,760, Cl. 303-6.00C.

Haber, Terry M. Truss staple. 4,236,440, Cl. 85-49.000.

Habrich, Reiner: *See—*
Denk, Hans; and Habrich, Reiner, 4,237,149, Cl. 427-58.000.

Hachmeister, Bernd, to Kali-Chemie Pharma GmbH. Process for the production of 17-hydroxysparteine by oxidation of sparteine with a permanganate. 4,237,295, Cl. 546-63.000.

Hacke, Joseph F.: *See—*
Olson, Charles L.; and Hacke, Joseph F., 4,237,491, Cl. 358-223.000.

Hafer, Cameron H.; and Wilbur, Clayton V., to International Business Machines Corporation. Electrothermal printing apparatus. 4,236,834, Cl. 400-120.000.

Hagen, Helmut: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,237,278, Cl. 542-429.000.

Hajos, Zoltan G.; and Wachter, Michael P., to Ortho Pharmaceutical Corporation. Synthesis of 1RS,4SR,5RS-4-(4,8-dimethyl-5-hydroxy-7-nonen-1-yl)-4-methyl-3,8-dioxabicyclo[3.2.1]octane-1-acetic acid. 4,237,055, Cl. 260-340.600.

Halasa, Adel F.; Carlson, David W.; and Hall, James E., to Firestone Tire & Rubber Company, The. Hydrogenated block copolymers of butadiene containing a block of 1,4 and a block of 1,2-microstructure. 4,237,245, Cl. 525-272.000.

Hall, James D.: *See—*
Gawlik, Charles B.; Hall, James D.; and Matsunaga, Douglas S., 4,236,431, Cl. 83-479.000.

Hall, James E.: *See—*
Halasa, Adel F.; Carlson, David W.; and Hall, James E., 4,237,245, Cl. 525-272.000.

Hall, John D.; and Williams, Alfred S., Jr., to Singer Company, The. Simulator control loading inertia compensator. 4,236,325, Cl. 35-12.00S.

Halwes, Dennis R.; and Simmons, William A., to Textron, Inc. Vibration suppression system. 4,236,607, Cl. 188-1.00B.

Hama, Kazuaki: *See—*
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,237,266, Cl. 536-1.000.

Hamada, Nagaharu: *See—*
Nishio, Yoji; Hara, Toshitaka; and Hamada, Nagaharu, 4,237,543, Cl. 364-900.000.

Hamamatsu Corporation: *See—*
Pommerrenig, Dieter H., 4,237,471, Cl. 357-30.000.

Hamamatsu TV Co, Ltd.: *See—*
Pommerrenig, Dieter H., 4,237,471, Cl. 357-30.000.

Hamano, Hiroaki: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.

Hamel, Pierre A.; and Rokach, Joshua, to Merck Sharp & Dohme (I.A.) Corp. 3-Hydroxymethyldibenzo[b,f]thiepins as prostaglandin antagonists. 4,237,160, Cl. 424-275.000.

Hamill, Robert L., to Eli Lilly and Company. Process for preparing tunicamycin. 4,237,225, Cl. 435-75.000.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, 4,237,124, Cl. 424-211.000.

Hammer, Orjan: *See—*
Yaman, Melih; Gustavsson, Kjell; and Hammer, Orjan, 4,236,944, Cl. 148-35.000.

Hamon-Sobelco, S.A.: *See—*
Bosne, Jacques G. P. E., 4,236,574, Cl. 165-67.000.

Hancock, Henry. Process for making fire retardant polypropylene. 4,237,157, Cl. 427-352.000.

Hanma, Kentaro; and Murakami, Takeshi, to Hitachi, Ltd. Automatic tilt contrcl circuit for television receivers. 4,237,476, Cl. 358-38.000.

Hannah, Frank E.; and Hannah, Ronnie L. Collapsible automotive tool. 4,236,266, Cl. 7-100.000.

Hannah, Ronnie L.: *See—*
Hannah, Frank E.; and Hannah, Ronnie L., 4,236,266, Cl. 7-100.000.

Hansen, Bjarne S.; and Gudmandsen, Robert, to Ortofon Manufacturing A/S. Pickup having damping. 4,237,348, Cl. 179-100.41R.

Hansen, Bjarne S.; and Gudmandsen, Robert, to Ortofon Manufacturing A/S. Compact moving-coil pickup of low weight and high quality. 4,237,349, Cl. 179-100.41D.

Hanson, Merlin L.: *See—*
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,237,532, Cl. 364-200.000.

Hara, Toshitaka: *See—*
Nishio, Yoji; Hara, Toshitaka; and Hamada, Nagaharu, 4,237,543, Cl. 364-900.000.

Harada, Saburo: *See—*
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,237,222, Cl. 435-25.000.

Harand, Elmar; and Michel, Eberhard, to Kraftwerk Union Aktiengesellschaft. Structural unit formed of a coolant pump and a steam generator, especially for nuclear reactor plants secured against rupture. 4,236,970, Cl. 176-87.000.

Harasewych, Bohdan A., to Ogontz Controls Company. Self-cleaning valve plug and seat assembly. 4,236,547, Cl. 137-243.000.

Harbert, Charles A.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,237,133, Cl. 424-248.520.

Harford, Jack R., to RCA Corporation. Signal overload prevention circuit. 4,237,490, Cl. 358-174.000.

Harle, Friedrich, to Rudolf Wittner GmbH u. Co. Metronome. 4,237,549, Cl. 368-134.000.

Harper, Robert J., Jr.: *See—*
Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 4,236,890, Cl. 8-2.50A.

Harries, John R.: *See—*
Smith, Stanley; and Harries, John R., 4,236,625, Cl. 198-454.000.

Harrington, Richard P.; and Harrington, Russell J. Padlocks and locks in general. 4,236,394, Cl. 70-25.000.

Harrington, Russell J.: *See—*
Harrington, Richard P.; and Harrington, Russell J., 4,236,394, Cl. 70-25.000.

Harris Corporation: *See—*
Schlough, James R., 4,236,706, Cl. 270-53.000.

Harrison, B. Kent: *See—*
Bass, Robert W.; Ferguson, Helaman R. P.; Fletcher, Harvey J.; Gardner, John H.; Harrison, B. Kent; and Larsen, Kenneth M., 4,236,964, Cl. 176-3.000.

Harrison, Donald A.; and Lanier, Howard A. Floor laying tool. 4,236,956, Cl. 156-527.000.

Harsco Corporation: *See—*
Turner, John; Koster, Richard A.; and Bassman, Seymour, 4,236,441, Cl. 89-40.00F.

Hart, LeRoy: *See—*
Surko, Walter E., Jr.; and Hart, LeRoy, 4,236,396, Cl. 70-107.000.

Hart, Thomas G., to Energy Development Associates, Inc. Electrochemical system. 4,237,197, Cl. 429-81.000.

Hartdegen, Frank J.; and Swann, Wayne E., to W. R. Grace & Co. Immobilization of biological material with polyurethane polymers. 4,237,229, Cl. 435-182.000.

Hartelmuller, Ludwig. Stackable transport container. 4,236,664, Cl. 229-49.000.

Harvey, Howard F., Jr. Helical coil rope fastening device. 4,236,282, Cl. 24-132.00C.

Hashimoto, Akira: *See—*
Matoba, Yasuo; Hashimoto, Akira; and Sugahara, Mikio, 4,237,247, Cl. 525-335.000.
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.

Hashimoto, Isao: *See—*
Nambu, Hirohiko; Hashimoto, Isao; and Imai, Ichiro, 4,237,319, Cl. 568-571.000.

Hashimoto, Masashi: *See—*
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

Hass, Alan R., to Lyall Electric, Inc. Connector mold with flexible wire guide. 4,236,689, Cl. 249-204.000.

Hasselbach, Arthur, Sr. Seedling tray assembly and greenhouse. 4,236,350, Cl. 47-17.000.

Hastings, Allen M. Apparatus for and method of drying items by open air and solar energy. 4,236,322, Cl. 34-130.000.

Hastings, Paul F. Powered ground aerator. 4,236,582, Cl. 172-22.000.

Hatano, Tetsuo: *See—*
Shibano, Yoshizo; Hatano, Tetsuo; and Ohkura, Toshihiko, 4,237,465, Cl. 343-894.000.

Hatter, Edward E.; Taylor, Richard H.; and McGunigle, Richard D. Ultrasonic tooth cleaning apparatus. 4,236,510, Cl. 128-24.00A.

Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, to Nippondenso Co., Ltd.; Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing control apparatus for internal combustion engines. 4,236,491, Cl. 123-117.00D.

Hauni-Werke Korber & Co. KG: *See—*
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.
Schmidt, Rolf; and Berlin, Herbert, 4,236,535, Cl. 131-21.00R.

Hauser, Charles: *See—*
Gonseth, Denis R.; and Hauser, Charles, 4,237,184, Cl. 428-336.000.

Hawker, Michael J., to Clayton Dewandre Company Limited. Full power hydraulic braking systems for tractor-trailer combinations. 4,236,762, Cl. 303-7.000.

Hay, Edward F.: *See—*
Raseley, LeRoy J.; Forster, Leslie L.; and Hay, Edward F., 4,236,575, Cl. 165-113.000.

Hayashi, Hiroo: *See—*
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, 4,236,732, Cl. 282-27.500.

Hayashi, Kenshin: *See—*
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Hayashi, Toshio; and Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Photographic camera provided with flash means. 4,236,796, Cl. 354-145.000.

Hayashi, Tsutomu: *See—*
Kitamura, Minoru; Hayashi, Tsutomu; Moritsugi, Takeharu; and Saruwatari, Mitsuyoshi, 4,236,914, Cl. 75-58.000.

Haynes, Elwood W. Storage holder for firewood and the like. 4,236,775, Cl. 312-351.000.

Hch. Bertrams Aktiengesellschaft: *See—*
Kuhnlein, Hans, 4,236,974, Cl. 203-11.000.

Head, Brian E., to International Standard Electric Corporation. Sealing glass envelopes. 4,236,908, Cl. 65-108.000.

Heaney, William B.; and Spector, George. Plant watering device. 4,236,352, Cl. 47-80.000.

Heard, Harold; and Wilt, Charles R., Jr., to Salem Corporation. Methods and apparatus for heating particulate material. 4,236,318, Cl. 34-10.000.

Hecht, Siegfried, to BBC Brown, Boveri & Company Limited. Coordinated communication system for transmitting data and method of operating the same. 4,237,338, Cl. 178-23.00A.

Hedley, Peter H.: *See—*
Buirski, David P.; and Hedley, Peter H., 4,236,474, Cl. 114-56.000.

Heian, Glenn A., to Allis-Chalmers Corporation. Method and apparatus for handling and utilizing system off-gas in a pyro-processing system. 4,236,887, Cl. 432-14.000.

Heidenbluth, Karlheinz: *See—*
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.

Heijnemans, Werner A. L.: *See—*
Vink, Nicolaas G.; Nieuwendijk, Joris A. M.; and Heijnemans, Werner A. L., 4,237,437, Cl. 335-211.000.

Heim, Clarence W., Jr.: *See—*
Wagner, Roland W.; and Heim, Clarence W., Jr., 4,236,855, Cl. 414-42.000.

Heinemann Electric Company: *See—*
Setescak, Edward J., 4,237,436, Cl. 335-63.000.

Heinemann, Otto: *See—*
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, 4,236,997, Cl. 209-144.000.

Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, to Hauni-Werke Korber & Co. KG. Method and apparatus for monitoring the height of a stream of tobacco or the like. 4,236,534, Cl. 131-21.00B.

Hektoen, Per, to Moore Business Forms, Limited. Continuous stationery assembly and methods of making binders, folder covers and the like from the assembly. 4,236,731, Cl. 282-11.50A.

Helal, Mohammed A.: *See—*
Jurgens, Gunter R.; and Helal, Mohammed A., 4,237,385, Cl. 307-66.000.

Helke, Robert C., to Le Mere Industries, Inc. Method for treating waste water. 4,237,004, Cl. 210-40.000.

Hemshemeier, Hans: *See—*
Dorling, Rolf; and Hemshemeier, Hans, 4,236,573, Cl. 165-54.000.

Hendricks, Ronald S., to General Tire & Rubber Company, The. Method of stripping and repainting ethylene-propylene-non-conjugated-diene rubber parts. 4,237,153, Cl. 427-140.000.

Hendrickson, Thomas E., to Honeywell Inc. Semiconductor apparatus. 4,236,831, Cl. 357-30.000.

Henke, Ulrich; and Meyer, Reinhard, to Pierburg GmbH & Co. KG. Arrangement for regulating supercharger air pressure. 4,236,376, Cl. 60-602.000.

Henkel Corporation: *See—*
Spitzner, Ernest B., 4,237,062, Cl. 260-438.100.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See—*
Schwadike, Karl; Meyer, Dieter; and Puchta, Rolf, 4,236,320, Cl. 34-19.000.

Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., to Control Data Corporation. Precision grinding wheel mount. 4,236,355, Cl. 51-168.000.

Hennrich, Norbert: *See—*
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,237,044, Cl. 260-112.00B.

Hensel, Erich E., to Hunter Douglas International N.V. External venetian blind. 4,236,566, Cl. 160-130.000.

Henson, Artel R., to Disco Engineering, Inc. Storage system. 4,236,772, Cl. 312-242.000.

Henter, Theodore C., Jr. Hydraulic suspension system for an individual vehicle wheel. 4,236,726, Cl. 280-709.000.

Hepner, Georges; and Castera, Jean-Paul, to Thomson-CSF. Electrically-controlled optical branch connection. 4,236,783, Cl. 350-96.130.

Hepner, Georges: *See—*
Castera, Jean-Paul; and Hepner, Georges, 4,236,782, Cl. 350-96.130.

Herbert, John T.; and Nixon, Larry R., to Aeroquip Corporation. Conduit swivel joint. 4,236,737, Cl. 285-234.000.

Herchenbach, Horst; and Lechner, Bartl, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for producing a hydraulic binder. 4,236,932, Cl. 106-100.000.

Hercules Incorporated: *See—*
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 4,236,545, Cl. 137-13.000.

Herman, Stephen J.: *See—*
Lobdell, Donn D.; Herman, Stephen J.; and Anderson, Robert L., 4,237,091, Cl. 422-46.000.

Herrling, Siegfried. Pharmaceutical compositions and methods of using thiadiazolo pyrimidinone compounds. 4,237,136, Cl. 424-251.000.

Hersey, James P.: *See—*
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.

Hesston Corporation: *See—*
Adee, Raymond A.; and Adee, Ellis E., 4,236,585, Cl. 172-587.000.

Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., to Abbott Laboratories. Apparatus for fitting a resilient ring on a bottle. 4,236,305, Cl. 29-774.000.

Hetrick, Vernon L., to Meyer Products, Inc. Detachable blade mounting device. 4,236,329, Cl. 37-42.00R.

Hetzel, Eckhard: *See—*
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.

Heyer, Bruce A.; and Huth, Donald L., to Abex Corporation. Heat resistant alloy castings. 4,236,921, Cl. 75-134.00F.

Heys, Karel A. G., to Feldmuhle Aktiengesellschaft. Process and apparatus for purifying a fibrous suspension. 4,236,998, Cl. 209-246.000.

Hicap Engineering & Development Corporation: *See—*
Davis, William L., Jr., 4,236,699, Cl. 266-114.000.

Hickman, Ronald P.: *See—*
Luff, Brian A.; and Hickman, Ronald P., 4,236,599, Cl. 182-33.000.

Hicks, Gordon C.; and Megar, George H., to Tennessee Valley Authority. Production of solid ammonium polyphosphate by controlled cooling. 4,237,106, Cl. 423-315.000.

Hicks, Raymond J.; and Webb, John T. H., to Wharton Engineers (Elstree) Limited. Multicapstan traction unit. 4,236,696, Cl. 254-175.700.

Higo, Akio; and Suzuki, Yukio, to Sumitomo Chemical Company, Limited. Racemization of optically active α-substituted-α-phenylacetic acid derivatives. 4,237,313, Cl. 562-401.000.

Hildebrand, Donald L.; and Prescott, Ernest F., to Elgin Sweeper Company. Street sweeper having an elevating hopper with supporting outriggers. 4,236,756, Cl. 298-11.000.

Hillmann, Willi, to Paul Vahle KG. Current collector shoe. 4,236,616, Cl. 191-59.100.

Hills Industries Limited: *See—*
Calvert, Ronald J., 4,236,419, Cl. 74-89.150.

Hiltgen, Aloysius X.: *See—*
Strudgeon, George E.; and Hiltgen, Aloysius X., 4,237,002, Cl. 210-18.000.

Hilti Aktiengesellschaft: *See—*
Moldan, Karl; and Krueger, Wilm, 4,236,588, Cl. 173-48.000.

Hiramatsu, Toru; and Morita, Ken-ichi, to Toray Industries, Inc. Process for producing carbon fabric. 4,237,109, Cl. 423-447.500.

Hirdler, Louis C.: *See—*
Bartoszek, John A.; and Hirdler, Louis C., 4,237,285, Cl. 544-192.000.

Hirose, Akira; Sugita, Keiji; and Takagi, Yasuzi, to Ricoh Company, Ltd. Electrophotographic copying apparatus. 4,236,811, Cl. 355-14.00R.

Hirose, Yusuke: *See—*
Ito, Takehiko; Hirose, Yusuke; and Ishida, Hideaki, 4,237,192, Cl. 428-659.000.

Hirst, Peter B.; and Duthie, Anthony J., to Johnston Brothers (Engineering) Limited. Centrifugal fan impellers with blades secured between plates. 4,236,871, Cl. 416-186.00R.

Hisada, Yoshio: *See—*
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.

Hitachi Chemical Company, Ltd.: *See—*
Ishimaru, Toshiaki; Nishizawa, Hiroshi; and Osada, Yuichi, 4,237,251, Cl. 525-440.000.

Hitachi Koki Co., Ltd.: *See—*
Matsuzaki, Kazuo; Katagiri, Shigenobu; and Nakano, Hiroshige, 4,236,447, Cl. 101-93.140.

Hitachi, Ltd.: *See—*
Abe, Nobuo, 4,236,879, Cl. 417-368.000.
Hanma, Kentaro; and Murakami, Takeshi, 4,237,476, Cl. 358-38.000.
Ikeda, Tsuneo; and Nunogawa, Yasuhiro, 4,237,487, Cl. 358-154.000.
Nishio, Yoji; Hara, Toshitaka; and Hamada, Nagaharu, 4,237,543, Cl. 364-900.000.
Oishi, Kazuaki; Nakano, Seizo; and Kitano, Yutaka, 4,237,520, Cl. 361-335.000.
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Hitt, James A., to Buffalo Forge Company. Swing-away hold-down construction for bar or billet shear. 4,236,430, Cl. 83-461.000.

Ho, Bin L.; and Guerini, Albert, to Priam. Linear actuator including limit stop assembly for magnetic disc drive. 4,237,504, Cl. 360-106.000.

Hoadley, Howard W. Dental film packet and processor therefor. 4,236,806, Cl. 354-303.000.

Hodne, Ingard B., to Teletype Corporation. Dot impact printer and actuator therefor. 4,236,836, Cl. 400-124.000.

Hoechst Aktiengesellschaft: *See—*
Korbanka, Helmut; and Scheidl, Franz, 4,237,043, Cl. 260-45.75S.
Medic, Nikolaj; Auel, Theodor; Bergner, Dieter; and Russow, Jurgen, 4,236,980, Cl. 204-98.000.
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.
Springer, Hartmut, 4,237,050, Cl. 260-242.200.
Steppich, Walter; and Sartorius, Rudolf, 4,237,073, Cl. 260-604.0AC.

Hoese, Frank; von Aschwege, Gerd; and Bernardi, Herbert, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Sheet collating and stacking device. 4,236,858, Cl. 414-331.000.

Hoffman, Otto-Horst: *See—*
Aichert, Hans; Hoffman, Otto-Horst; and Stephan, Herbert, 4,237,148, Cl. 427-42.000.

Hoffman, Otto L.; and Kirkpatrick, Joel L., to Gulf Oil Corporation. Dichloroacetylimino herbicide antagonists as plant protection agents. 4,237,302, Cl. 548-139.000.

Hoffman, William F.: *See—*
Cragoe, Edward J., Jr.; and Hoffman, William F., 4,237,130, Cl. 424-248.500.
Cragoe, Edward J., Jr.; and Hoffman, William F., 4,237,144, Cl. 424-270.000.

Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Combating pests with O-ethyl-S-n-propyl-N-alkylamino-methylidene thiolphosphoric acid diester-imides. 4,237,124, Cl. 424-211.000.

Hoffmann-La Roche Inc.: *See—*
Holland, George W.; and Rosen, Perry, 4,237,060, Cl. 260-346.220.
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,237,276, Cl. 542-426.000.

Hofstetter, Franz, to AGFA-Gevaert AG. Photographic copying machine with exchangeable format masks. 4,236,817, Cl. 355-68.000.

Hoke, Donald I., to Lubrizol Corporation, The. Epoxide or episulfide polymer-based hot melt metal working lubricants. 4,237,188, Cl. 428-418.000.

Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. Prostacyclin analogs. 4,237,060, Cl. 260-346.220.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry, to Hoffmann-La Roche Inc. Bicyclic lactone intermediates for 16-substituted prostaglandins. 4,237,276, Cl. 542-426.000.

Holland, John M., to International Telephone and Telegraph Corporation. Apparatus for stabilizing a laser. 4,237,427, Cl. 331-94.50S.

Holland, Stephen. Electric string instrument. 4,236,433, Cl. 84-1.160.

Hollenbeck, Keith E., to Spectrex Corporation. Method and means for continuously sampling a fluid. 4,237,451, Cl. 340-606.000.

Hollingsworth, Richard J., to RCA Corporation. High performance electrically alterable read only memory (EAROM). 4,237,472, Cl. 357-43.000.

Hollis, Donald F.: *See—*
Monthony, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Polastri, Gian D., 4,237,218, Cl. 435-2.000.

Holmstrand, Allan L.: *See—*
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,236,355, Cl. 51-168.000.

Holowaty, Michael O.: *See—*
Bhattacharya, Debanshu; Quinto, Dennis T.; and Holowaty, Michael O., 4,236,939, Cl. 148-2.000.

Holznagel, Uwe: *See—*
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.

Homeyer, Bernhard: *See—*
Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, 4,237,124, Cl. 424-211.000.

Honeywell Inc.: *See—*
Anderson, Rogers H., 4,236,824, Cl. 356-359.000.
Chiang, Alice M., 4,237,473, Cl. 357-61.000.
Hendrickson, Thomas E., 4,236,831, Cl. 357-30.000.
Mueller, Dale A., 4,236,379, Cl. 62-126.000.

Honig, Helmut: *See—*
Pampouchidis, Georgios; and Honig, Helmut, 4,237,038, Cl. 260-29.2TN.

Hook, Dale L.; and Waypa, John, Jr., to TRW Inc. Transverse mixing hypersonic wedge nozzle chemical laser. 4,237,429, Cl. 331-94.50G.

Hoonet s.a.s. di Indro Paolo Dall' & C: *See—*
Cipriani, Tullio, 4,236,541, Cl. 134-104.000.

Hoover, Donald L. Planetary coiler especially useful for coiling textile strand material. 4,236,278, Cl. 19-159.00R.

Hoover Universal, Inc.: *See—*
Mizelle, Ned W., 4,236,260, Cl. 5-13.000.
Mizelle, Ned W., 4,236,752, Cl. 297-303.000.

Hoppen, Heinz: *See—*
Ansen, Jakob; Hoppen, Heinz; and Duill, Helmut, 4,236,886, Cl. 432-14.000.

Hoppner, Dietrich: *See—*
Rall, Bernhard; and Hoppner, Dietrich, 4,237,413, Cl. 323-4.000.

Horiba, Atushi; Saitoh, Osamu; and Ishida, Kozo, to Horiba, Ltd. Opto-acoustic gas analyzer. 4,236,827, Cl. 356-437.000.

Horiba, Ltd.: *See—*
Horiba, Atushi; Saitoh, Osamu; and Ishida, Kozo, 4,236,827, Cl. 356-437.000.

Horii, Kazuo: *See—*
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.

Horiuchi, Yoshifumi: *See—*
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,237,222, Cl. 435-25.000.

Horne, John M., to Berger Traffic Markings Ltd. Bonded road studs. 4,237,191, Cl. 428-542.000.

Horsma, David A.; and Diaz, Stephen H., to Raychem Corporation. Process for preparing a hermetically sealed assembly. 4,236,949, Cl. 156-49.000.

Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, to Richter Gedeon Vegyeszeti Gyar RT. Bis(nitrosoureido)-polyol derivatives. 4,237,273, Cl. 536-53.000.

Hospital Communication Systems, Inc.: *See—*
Moore, John R., 4,237,344, Cl. 179-2.00A.

Houldsworth, John, to Elliott Brothers (London) Limited. Display apparatus. 4,237,457, Cl. 340-728.000.

Housman, Richard J.: *See—*
Kanjo, Wajih; Housman, Richard J.; and Natschke, Scott L., 4,236,424, Cl. 74-505.000.

Howard, Alan N. Dietary supplement and dietary methods employing said supplement for the treatment of obesity. 4,237,118, Cl. 424-140.000.

Howard, E. W. Apparatus for providing instant hot water. 4,236,548, Cl. 137-335.000.

Howard, Timothy L.: *See—*
Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, 4,236,845, Cl. 403-144.000.

Howell, Stephen L.; Robinson, John W.; and Kube, Donald, to Kimball International, Inc. Organ brass pulse keyer. 4,236,437, Cl. 84-1.260.

Howell, Stephen L.: *See—*
Dietrich, Ralph N.; Robinson, John W.; and Howell, Stephen L., 4,236,436, Cl. 84-1.260.

Hsieh, Henry L., to Phillips Petroleum Company. Copolymers of 1,3-cyclodienes, monovinylaromatic compounds and polyvinylaromatic hydrocarbons. 4,237,246, Cl. 525-332.000.

Huang, Marshall Y.; Grote, Albert J.; and Yen, Kuo-Hsiung, to TRW Inc. Surface acoustic wave filter with feedforward to reduce triple transit effects. 4,237,432, Cl. 333-194.000.

Hucul, Elias, Jr.; and Gladden, Robert E., to United Technologies Corporation. Turbine blade. 4,236,870, Cl. 416-97.00R.

Huempfner, David F., to American Hospital Supply Corporation. Pivot top for stretcher or the like. 4,236,261, Cl. 5-68.000.

Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, to Compagnie Internationale pour l'Informatique. Apparatus for mounting devices on a substrate. 4,236,301, Cl. 29-740.000.

Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, to Compagnie Internationale pour l'Informatique. Method for mounting devices on a substrate. 4,236,306, Cl. 29-827.000.

Huggins, Harold A.: *See—*
Woolhouse, Geoffrey R.; Huggins, Harold A.; Anderson, Stephen I.; and Scholl, Frederick R., 4,236,296, Cl. 29-583.000.

Hughes Aircraft Company: *See—*
Devendorf, Don C.; and Baskevitch, Eugene, 4,237,387, Cl. 307-203.000.
Shishido, Isuneo; Cramm, Herman W.; and Vick, William L., 4,237,431, Cl. 333-106.000.

Hughes, John F.; and Roberts, John M. C., to National Research Development Corporation. Apparatus for producing emulsions. 4,237,028, Cl. 252-359.00B.

Hughes, Richard L.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Weisenburger, Lawrence P., to AMP Incorporated. Terminal block. 4,236,778, Cl. 339-97.00P.

Hughes Tool Company: *See—*
Galle, Edward M., 4,236,764, Cl. 308-8.200.

Huguenin, Freddy, to Ebauches S.A. Electro-optic display device. 4,237,460, Cl. 340-756.000.

Hultman, Bengt G.; and Berglund, Erik A., to Mo och Domsjo Aktiebolag. Process for controlling the degree of causticization in the preparation of white liquid from the chemicals recovered from black liquor. 4,236,960, Cl. 162-30.00K.

Hummel, Merritt J., to PPG Industries, Inc. Reducing tin drip with sulfur containing gas. 4,236,906, Cl. 65-27.000.

Humphries, Romilly H., to S.A.Y. Industries, Inc. Container with flexible nozzle. 4,236,655, Cl. 222-465.000.

Hundemer, Peter, to Bayerische Motoren Werke Atiengesellschaft. Pressure-medium-actuated installation for adjusting the inclination of a vehicle headlight. 4,237,524, Cl. 362-71.000.

Hunt, Clifton T., Jr.: *See—*
Emme, Harry W., 4,236,741, Cl. 294-1.0BB.

Hunt, Ronald E., to International Business Machines Corporation. Cartridge sheet feed attachment. 4,236,709, Cl. 271-21.000.

Hunter Douglas International N.V.: *See—*
Frentzel, Kurt H., 4,236,567, Cl. 160-178.00R.
Hensel, Erich E., 4,236,566, Cl. 160-130.000.
Rijnders, Willem, 4,236,366, Cl. 52-580.000.

Huron Tool & Manufacturing Division of U.S. Industries, Inc.: *See—*
Oldford, William G., 4,236,289, Cl. 29-159.00R.

Husqvarna Aktiebolag: *See—*
Risman, Per O. G.; and Bengtsson, Nils E., 4,237,145, Cl. 426-241.000.
Huth, Donald L.: *See—*
Heyer, Bruce A.; and Huth, Donald L., 4,236,921, Cl. 75-134.00F.
Hycel, Inc.: *See—*
Sommervold, David E., 4,236,894, Cl. 23-230.00R.
Iacono, Frederick D.; and Danielle, Louis, to Kings Electronics Co., Inc. Optical fiber connector. 4,236,787, Cl. 350-96.210.
Iida, Takao; Ozaki, Sho; and Kotaka, Toshihiko, to Daiwa Kasei Kabushiki Kaisha. Novel lactase. 4,237,230, Cl. 435-207.000.
Ikeda, Masako: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.
Ikeda, Tomoaki: *See—*
Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,237,468, Cl. 346-135.100.
Ikeda, Tsuneo; and Nunogawa, Yasuhiro, to Hitachi, Ltd. Monolithic semiconductor integrated circuit for television receivers. 4,237,487, Cl. 358-154.000.
Ikenoue, Shinpei; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Heat-developable light-sensitive material. 4,237,215, Cl. 430-619.000.
Illinois Tool Works Inc.: *See—*
Dewey, George G., 4,236,555, Cl. 144-32.000.
Imai, Ichiro: *See—*
Nambu, Hirohiko; Hashimoto, Isao; and Imai, Ichiro, 4,237,319, Cl. 568-571.000.
Imai, Kishio, to Sanyo Kiki Kabushiki Kaisha. Lockable pin. 4,236,439, Cl. 85-5.0CP.
Imanari, Makoto: *See—*
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.
Immer, Hans U.: *See—*
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., 4,237,045, Cl. 260-112.50R.
Imperial Chemical Industries Limited: *See—*
Kennedy-Skipton, Henry K., 4,236,849, Cl. 405-261.000
Krause, Janusz J. H.; and Stanier, Colin, 4,236,952, Cl. 156-93.000.
Singer, Michael; and Tury, Bernard, 4,237,019, Cl. 252-47.500.
Tomka, Jiri; and Ginn, Jack M., 4,237,034, Cl. 260-18.00N.
Imral, Sadik S.; and Khan, Asadulla R., to Intertherm Inc. Suction-liquid heat exchanger having accumulator and receiver. 4,236,381, Cl. 62-324.000.
Imura, Toshinori: *See—*
Hayashi, Toshio; and Imura, Toshinori, 4,236,796, Cl. 354-145.000.
Industrial Sheet Metal & Mechanical Corp.: *See—*
Fisher, Gary H., 4,236,537, Cl. 131-134.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Guerrini, Giampaolo, 4,236,838, Cl. 400-144.300.
Ingle, Donald L., to American Cyanamid Company. Antibacterial agent BM123-gamma, pharmaceutically acceptable salts, complexes and alkylated derivatives as animal food additives. 4,237,120, Cl. 424-181.000.
Ingraham, Glen E., to Colorguard Corporation. Thermoplastic resin-coated metallic substrate and the method of producing the same. 4,237,186, Cl. 428-379.000.
Inland Steel Company: *See—*
Bhattacharya, Debanshu; Quinto, Dennis T.; and Holowaty, Michael O., 4,236,939, Cl. 148-2.000.
Inohara, Masanobu, to Asics Corporation. Sport shoe sole. 4,236,326, Cl. 36-29.000.
Inoue, Eiichi; Takeda, Misturu; and Shimada, Fumio, to Dai Nippon Insatu Kabushiki Kaisha. Process for forming images. 4,237,212, Cl. 430-346.000.
Inoue, Tsutomu, to Takara Co., Ltd. Toy assembly with selective propulsion of subcomponent parts. 4,236,345, Cl. 46-44.000.
Instance, Michael M., to E-Comm Australia Pty. Ltd. Plug-in module for touch control switching. 4,237,386, Cl. 307-116.000.
Institut Pasteur: *See—*
Popoff, Michel; Brochon, Marie-Jose; and Brault, Georges, 4,237,096, Cl. 422-102.000.
Interflex Datensysteme GmbH & Co. K.G., Firma: *See—*
Granholm, Carl, 4,237,375, Cl. 235-487.000.
Interlock Sicherheitssysteme GmbH, Firma: *See—*
Granholm, Carl, 4,237,375, Cl. 235-487.000.
Intermedics, Inc.: *See—*
Sluetz, James E.; and Calfee, Richard V., 4,236,525, Cl. 128-419.00P.
International Business Machines Corporation: *See—*
Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., 4,236,946, Cl. 148-108.000.
Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., 4,236,294, Cl. 29-578.000.
Cukier, Maurice, 4,237,542, Cl. 364-900.000.
Hafer, Cameron H.; and Wilbur, Clayton V., 4,236,834, Cl. 400-120.000.
Hunt, Ronald E., 4,236,709, Cl. 271-21.000.
Lantz, Robert H.; and Schwartz, Alfred A., 4,237,458, Cl. 340-739.000.
Mills, Phillip R.; Luiz, Fernando A.; and Sorg, John H., Jr., 4,237,533, Cl. 364-200.000.
Schlig, Eugene S., 4,236,830, Cl. 357-24.000.
Sienkiewicz, Gerald C.; McQuade, Donal J.; and Leonard, Herbert G., 4,236,678, Cl. 242-55.19A.
Skarvinko, Eugene R., 4,237,216, Cl. 430-280.000.
Thompson, David A., 4,237,522, Cl. 361-392.000.
International Harvester Company: *See—*
Schillings, Dieter, 4,236,724, Cl. 280-460.00A.
International Platex, Inc.: *See—*
Williams, Harvey F.; Cole, Raymond C.; and Donaghy, James G., 4,236,257, Cl. 2-406.000.
International Standard Electric Corporation: *See—*
Head, Brian E., 4,236,908, Cl. 65-108.000.
Ruzic, Hugo, 4,237,350, Cl. 179-103.000.
International Telephone and Telegraph Corporation: *See—*
Dishal, Milton, 4,237,555, Cl. 455-108.000.
Holland, John M., 4,237,427, Cl. 331-94.50S.
Steensma, Peter D., 4,237,550, Cl. 370-4.000.
Interstate Folding Box Company, The: *See—*
Nerenberg, Robert W.; and Shiverdecker, James H., 4,236,368, Cl. 53-491.000.
Intertherm Inc.: *See—*
Imral, Sadik S.; and Khan, Asadulla R., 4,236.381, Cl. 62-324.000.
Intimate Jewels Inc.: *See—*
Block, Alvin, 4,236,385, Cl. 63-12.000.
Inukai, Sumitaka; and Azuma, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Toner concentration control device. 4,236,485, Cl. 118-690.000.
Inventec Licensing BV: *See—*
Luff, Brian A.; and Hickman, Ronald P., 4,236,599, Cl. 182-33.000.
Iowa State University Research Foundation, Inc.: *See—*
Kraus, George A., 4,237,057, Cl. 260-343.30R.
Ireland, Leonard: *See—*
Hetherington, Ross W.; Armstrong, Kenneth J.; Ireland, Leonard; Canty, John; and Banfield, Ernest R., 4,236,305, Cl. 29-774.000.
Isachsen, Henning, to Deere & Company. Rear furrow wheel locking structure for disk tillers and the like. 4,236,584, Cl. 172-385.000.
Isaka, Tutomu: *See—*
Yoshimura, Shohei; and Isaka, Tutomu, 4,237,088, Cl. 264-235.800.
Isakova, Roalda B.: *See—*
Grodzinsky, Eduard Y.; Isakova, Roalda B.; Zubatova, Lidia S.; Makonovitskaya, Anna T.; and Grinberg, Aron K., 4,236,985, Cl. 204-129.430.
Ishibashi, Yoshiaki: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Ishida, Hideaki: *See—*
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Ishimaru, Toshiaki; Nishizawa, Hiroshi; and Osada, Yuichi, to Hitachi Chemical Company, Ltd. Polyesteramides and process for producing the same. 4,237,251, Cl. 525-440.000.
Ishizuka, Seiichi: *See—*
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.
Ismailova, Zemfira A. B. K.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Agaeva, Magira A. K.; Gadzhiev, Tofik A.; Guseinov, Vagif B. G. O.; and Ismailova, Zemfira A. B. K., 4,237,041, Cl. 260-33.6UA.
Isoya, Toshiro: *See—*
Yamataka, Kazunori; Matsuoka, Yuuji; and Isoya, Toshiro, 4,237,317, Cl. 562-590.000.
Italsider, S.p.A.: *See—*
Azzerri, Nazzareno; and Milanese, Giovanni, 4,236,977, Cl. 204-29.000.
Ito, Higashi; and Watanabe, Seiichi, to Denkyi Kagaku Kogyo Kabushiki Kaisha. Isomerization of dichlorobutenes. 4,237,074, Cl. 260-654.00R.
Ito, Kazuhiko: *See—*
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Ito, Nobuo: *See—*
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Ito, Takehiko; Hirose, Yusuke; and Ishida, Hideaki, to Nisshin Steel Co., Ltd. Zinc plated steel plate and can produced from the same. 4,237,192, Cl. 428-659.000.
Ito, Teruyoshi: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Ito, Yoshikazu: *See—*
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Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,237,266, Cl. 536-1.000.
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ITT Industries, Inc.: *See—*
Haar, Lucas H.; and Schafer, Ernst-Dieter, 4,236,760, Cl. 303-6.00C.
Mutschler, Erich; Prohaska, Hans; and Weber, Adam, 4,237,529, Cl. 362-272.000.
Iwabuchi, Kiyoshi, to Dai-Ich Seiko Co., Ltd. Valve for pneumatic tires. 4,236,565, Cl. 152-427.000.
Iwao, Noriaki, to Tomy Kogyo Co., Inc. Toy having a seemingly random movement. 4,236,346, Cl. 46-104.000.
J. I. Case Company: *See—*
Cochran, Gary L.; Wilson, Charles D.; and Klee, Maurice, 4,236,422, Cl. 74-470.000.
Schmitz, Floyd A., 4,236,643, Cl. 212-145.000.
Jackson, Denise M.; and Tsuda, Yoshihisa, to UOP Inc. Method of purifying glucose isomerase and a composition for storing same. 4,237,231, Cl. 435-234.000.
Jackson, Melvin R.; and Rairden, John R., III, to General Electric Company. Oxidation corrosion resistant superalloys and coatings. 4,237,193, Cl. 428-678.000.
Jacobson, Allan J.: *See—*
Thompson, Arthur H.; Symon, Charles R.; and Jacobson, Allan J., 4,237,204, Cl. 429-194.000.
Jacobus, David P.: *See—*
Gillin, James; and Jacobus, David P., 4,237,116, Cl. 424-117.000.
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, to L'Oreal. Copolymers, their process of preparation, and cosmetic compounds containing them. 4,237,253, Cl. 526-75.000.
Jager, Heinz. Heat exchanger with preliminary calcining. 4,236,888, Cl. 432-106.000.
Jahnke, Otto C.: *See—*
Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,237,084, Cl. 264-61.000.
Jamesbury Corporation: *See—*
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Jannes Reinders & Noord-Nederlandache Machinefabriek B. V.: *See—*
Reinders, Jannes, 4,236,744, Cl. 294-88.000.
Janome Sewing Machine Co. Ltd.: *See—*
Eguchi, Yasukata, 4,236,468, Cl. 112-158.00E.
Takenoya, Hideaki; and Makabe, Hachiro, 4,236,469, Cl. 112-158.00E.
Tanaka, Yoshikazu; and Eguchi, Yasukata, 4,236,467, Cl. 112-158.00F.
Japan Exlan Company Limited: *See—*
Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, 4,237,256, Cl. 526-229.000.
Jaretsky, Michael G.; and Lax, Michael, to Baker Industries, Inc. Fire detector housing. 4,236,822, Cl. 356-256.000.
Jarre, Wolfgang; and Wurmb, Rolf, to BASF Aktiengesellschaft. Hydrophobic polyurethane foams, their manufacture and use. 4,237,237, Cl. 521-128.000.
Jarre, Wolfgang; Weyland, Peter; and Mueller, Gerhard, to BASF Aktiengesellschaft. Process for the manufacture of flexible polyurethane foams with high load-bearing and high energy-absorption capacity. 4,237,240, Cl. 521-159.000.
Jaskowski, Michael C. Insulation material and process for making the same. 4,237,180, Cl. 428-280.000.
Jean Walterscheid GmbH: *See—*
Geisthoff, Hubert, 4,236,388, Cl. 64-23.000.
Geisthoff, Hubert, 4,236,420, Cl. 74-380.000.
Jenaer Glaswerk Schott & Gen.: *See—*
Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, 4,237,196, Cl. 429-50.000.
Jenkins, Allan L.: *See—*
Lewis, Michael; and Jenkins, Allan L., 4,236,267, Cl. 9-1.700.
Jernow, Jane L.: *See—*
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,237,276, Cl. 542-426.000.
Jespersen, Paul W., to Georgia-Pacific Corporation. Flexible sheet material roll dispensing. 4,236,679, Cl. 242-55.530.
Jesson, Joseph E.: *See—*
Larson, Willis A.; Vannice, Steven D.; and Jesson, Joseph E., 4,237,358, Cl. 200-159.00B.
JLG Industries, Inc.: *See—*
Grove, John L., 4,236,861, Cl. 414-540.000.
Joekel, Alfred; Langen, Hans; and Denner, Peter, to Balke-Durr Aktiengesellschaft. Method and device for winding spiral fins onto oval tubing. 4,236,299, Cl. 29-727.000.
Joh, Yasushi: *See—*
Yamazaki, Masahiro; Makuta, Yoshihiro; Joh, Yasushi; and Kaneko, Noriaki, 4,237,013, Cl. 210-321.00B.
Johannesen, Donald D., to Bendix Corporation, The. Drum brake having parking mechaism. 4,236,614, Cl. 188-326.000.
Johansson, Karl-Erik: *See—*
Lampe, Vaino; Gunnarsson, Staffan H.; and Johansson, Karl-Erik, 4,236,920, Cl. 75-128.00A.
Johnson Controls Inc.: *See—*
Colla, Jeannine O.; and Thoma, Paul E., 4,236,307, Cl. 29-857.000.
Johnson, Edward G. T.: *See—*
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.
Johnson, Jack W., to Exxon Research & Engineering Co. Organometallic intercalates. 4,237,061, Cl. 260-429.300.
Johnson, James M.: *See—*
Van Twuyver, Robert; and Johnson, James M., 4,236,276, Cl. 17-48.000.
Johnson, John L. B. Grain thrasher. 4,236,530, Cl. 130-27.00R.
Johnson, Marguerite A.: *See—*
Bakewell, Henry P., Jr.; and Johnson, Marguerite A., 4,236,401, Cl. 73-1.0DV.
Johnson, Matthey & Co., Limited: *See—*
Evans, William D. J.; Larbey, Robert J.; and Stewart, Thomas I., 4,237,032, Cl. 252-462.000.
Johnson, Michael R.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,237,133, Cl. 424-248.520.
Johnson Products Co., Inc.: *See—*
Selega, Zbigniew J.; Khalil, Ezzat N.; and McKavanagh, Gloria M., 4,237,112, Cl. 424-70.000.
Johnson, Robert A.: *See—*
Hennenfent, Douglas J.; Johnson, Robert A.; and Holmstrand, Allan L., 4,236,355, Cl. 51-168.000.
Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-trans-2,3,4,5-tetradehydro-9-deoxy-5,9α-epoxy-PGF_1 compounds. 4,237,059, Cl. 260-345.200.
Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-9-deoxy-5,9α-epoxy-4,5-didehydro-PGF_1. 4,237,277, Cl. 542-426.000.
Johnson, Timothy E.; and Giuffrida, John, to Massachusetts Institute of Technology; and Cabot Corporation. Aqueous heat-storage compositions containing fumed silicon dioxide and having prolonged heat-storage efficiencies. 4,237,023, Cl. 252-70.000.
Johnston Brothers (Engineering) Limited: *See—*
Hirst, Peter B.; and Duthie, Anthony J., 4,236,871, Cl. 416-186.00R.
Johnston, Howard; Troxell, Lillian H.; and Claus, Jon S., to Dow Chemical Company, The. Quinolinyloxyphenoxy and quinolyinylthiophenoxy alkanoic acids and derivatives thereof and methods of herbicidal use. 4,236,912, Cl. 71-94.000.
Johnston, Ian F. Fuel pellets. 4,236,897, Cl. 44-10.00A.
Jones, Alan P., to Brandt-Pra, Inc. Photoelectric apparatus for document counting and overlap detection. 4,237,378, Cl. 250-223.000.
Jones, Donald B., to Armstrong Cork Company. Method of embossing wood composition board. 4,237,087, Cl. 264-134.000.
Jones, Robert H. Wild stress relief power supply apparatus. 4,237,369, Cl. 219-503.000.
Jones, Robert J., to TRW Inc. Curable aliphatic epoxy-polimide compositions. 4,237,262, Cl. 528-322.000.
Jones, Roy. Aircraft glide path teaching aid. 4,236,324, Cl. 35-12.00B.
Jones & Vining, Incorporated: *See—*
Gorsche, Robert D.; and Cloutier, Oscar H., 4,236,327, Cl. 36-14.000.
Jongeward, John H. Suspension system for writing implements. 4,236,841, Cl. 401-131.000.
Jost, Karel: *See—*
Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,237,119, Cl. 424-177.000.
Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Mages, Bernhard, 4,236,848, Cl. 403-406.000.
Jurgens, Gunter R.; and Helal, Mohammed A., to Minitronics Pty, Ltd. Control of power supply. 4,237,385, Cl. 307-66.000.
K & S Industries, Inc.: *See—*
Cayou, James S., 4,236,309, Cl. 30-276.000.
Kabakov, Genrikh I.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating arthropods with 2-and 4-substituted-chromanes. 4,237,162, Cl. 424-283.000.
Kabel-und Metallwerke Gutehoffnungshuette AG: *See—*
Rohner, Peter, 4,236,288, Cl. 29-157.30H.
Kabushiki Kaisha Daini Seikosha: *See—*
Komaki, Shojiro, 4,236,375, Cl. 58-23.00R.
Kabushiki Kaisha Fuji Seisakusho: *See—*
Kimura, Yoshimi, 4,236,334, Cl. 40-378.000.
Kabushiki Kaisha Kawai Sakki Susakusho: *See—*
Nishibe, Koji, 4,236,434, Cl. 84-1.190.
Kabushiki Kaisha Mitutoyo Seisakusho: *See—*
Nakaya, Tadao; and Kobashi, Takashi, 4,236,481, Cl. 116-292.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kawaura, Kouichi, 4,236,279, Cl. 19-159.00R.
Mukai, Takamitu; Fujii, Tomoo; and Kouno, Hiroya, 4,236,621, Cl. 192-82.00T.
Kaebernick, Hartmut: *See—*
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.
Kaga, Takashi, to Tomy Kogyo Co., Inc. Amusement device. 4,236,718, Cl. 273-153.00R.
Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Freezer soft intermediate-moisture food dressing. 4,237,146, Cl. 426-330.000.
Kakita, Minoru; and Kosugi, Tsuneo, to Victor Company of Japan, Limited. Keying system in an electronic musical instrument. 4,236,435, Cl. 84-1.220.
Kalafus, Edward F.; and Sharma, Satish C., to General Tire & Rubber Company, The. Rubber-free phenol-formaldehyde adhesive for bonding bright steel to rubber. 4,236,564, Cl. 152-359.000.
Kalfoglou, George, to Texaco Inc. Modified lignosulfonates as additives in oil recovery processes involving chemical recovery agents. 4,236,579, Cl. 166-274.000.

Kali-Chemie Pharma GmbH: *See—*
Hachmeister, Bernd, 4,237,295, Cl. 546-63.000.

Kallman Research Corporation: *See—*
Kallman, Robert A., 4,236,658, Cl. 224-250.000.

Kallman, Robert A., to Kallman Research Corporation. System for holding articles to objects. 4,236,658, Cl. 224-250.000.

Kama, Haruo: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.

Kamino, Kimiyuki, to Mitsubishi Seiko Kabushiki Kaisha. Magnetic alloy. 4,236,919, Cl. 75-126.00H.

Kamiya, Minoru. Solid slide fastener capable of effecting strong union. 4,236,284, Cl. 24-205.13R.

Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, to Fujisawa Pharmaceutical Co., Ltd. Substituted phenylacetic acid compounds and process for preparation thereof. 4,237,305, Cl. 560-29.000.

Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of alkylbenzenes. 4,237,329, Cl. 585-474.000.

Kamo, Hideo: *See—*
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.

Kanagawa, Shuichi; Kawakami, Kazunori; and Shintani, Akira, to Sumitomo Chemical Company, Limited. Epoxy resin from by-product tar from resorcinol process and use thereof. 4,237,035, Cl. 260-28.00R.

Kanatani, Yoshiharu, to Sharp Kabushiki Kaisha. Drive system for a thin-film EL display panel. 4,237,456, Cl. 340-719.000.

Kane, Vinayak V., to Ortho Pharmaceutical Corporation. Total synthesis of the utero-evacuant substance d,l-zoapatanol. 4,237,053, Cl. 260-333.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, 4,237,227, Cl. 435-108.000.

Kaneko, Katsumi: *See—*
Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,237,329, Cl. 585-474.000.

Kaneko, Nobutaka; and Fujimori, Ryo, to Olympus Optical Co., Ltd. Method for calibrating densitometer of cataphoretic apparatus and calibration film for use in such calibrating method. 4,236,828, Cl. 356-444.000.

Kaneko, Noriaki: *See—*
Yamazaki, Masahiro; Makuta, Yoshihiro; Joh, Yasushi; and Kaneko, Noriaki, 4,237,013, Cl. 210-321.00B.

Kanemura, Tom T., to Champion International Corporation. Solenoid clutch mechanism. 4,236,660, Cl. 226-95.000.

Kangol Magnet Limited: *See—*
Pollitt, John M.; and Nicod, Frederick, 4,236,755, Cl. 297-483.000.

Kanjo, Wajih; Housman, Richard J.; and Natschke, Scott L., to American Standard Inc. Hand brake for railway vehicles. 4,236,424, Cl. 74-505.000.

Kankaanpa , Matti, to Valmet Oy. Method and apparatus for separating a web from a former wire and transferring the web to a press felt. 4,236,962, Cl. 162-204.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See—*
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, 4,236,732, Cl. 282-27.500.

Kao, Jar-Lin: *See—*
Sheng, Ming N.; and Kao, Jar-Lin, 4,237,314, Cl. 562-496.000.

Kaplan, Alan, to Emkay Manufacturing Company. Crystal plating apparatus. 4,236,487, Cl. 118-723.000.

Kappes, Werner: *See—*
Aeschlimann, Hans-Peter; Schmidhuber, Volker; and Kappes, Werner, 4,236,666, Cl. 233-26.000.

Karasawa, Tadahiko: *See—*
Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, 4,237,135, Cl. 424-250.000.

Kardouche, Nabil G., to Procter & Gamble Company, The. Articles and methods for treating fabrics. 4,237,155, Cl. 427-242.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Mista, Kresimir, 4,236,739, Cl. 289-2.000.

Karl Otto Braun KG: *See—*
Braun, Franz; and Schafer, Ewald, 4,236,550, Cl. 139-421.000.

Karlshamns Oljefabriker: *See—*
Andlid, Sune; and Linden, Lennart, 4,237,021, Cl. 252-49.500.

Karp, Arthur, to Varian Associates, Inc. Slow-wave circuit for traveling-wave tubes. 4,237,402, Cl. 315-3.500.

Karpal, David L., to Teledyne Industries, Inc. Aircraft battery. 4,237,202, Cl. 429-120.000.

Karrer, Friedrich: *See—*
Rody, Jean; and Karrer, Friedrich, 4,237,297, Cl. 546-189.000.

Kartavtsev, Viktor M.; Posleider, Grigory Y.; Bytsak, Vladimir S.; and Bukhteev, Pavel I. Armature winding machine. 4,236,300, Cl. 29-736.000.

Kasabell Industries: *See—*
Saia, Carman R., 4,236,342, Cl. 43-17.600.

Kasper Instruments, Inc.: *See—*
Szasz, Peter R., 4,236,851, Cl. 406-72.000.

Katagiri, Shigenobu: *See—*
Matsuzaki, Kazuo; Katagiri, Shigenobu; and Nakano, Hiroshige, 4,236,447, Cl. 101-93.140.

Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Air cleaner with secondary air filter element. 4,236,901, Cl. 55-276.000.

Katz, Laurence B. Novel anti-inflammatory composition. 4,237,159, Cl. 424-274.000.

Katzfey, James M., to Pellerin Milnor Corporation. Continuous tunnel batch washer. 4,236,393, Cl. 68-27.000.

Kaukanen, Esko: *See—*
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, 4,237,094, Cl. 422-100.000.

Kawakami, Hideo; Endo, Masami; and Yamazaki, Fumio, to Toshiba Kikai Kabushiki Kaisha. Fret saw blade having saw-teeth provided with sets and an automatic fret sawing machine having the fret saw blade. 4,236,432, Cl. 83-848.000.

Kawakami, Kazunori: *See—*
Kanagawa, Shuichi; Kawakami, Kazunori; and Shintani, Akira, 4,237,035, Cl. 260-28.00R.

Kawamura, Hideo; Fukami, Ichiro; Wada, Shuhei; and Yoshikawa, Fusayuki, to Nippon Ester Co., Ltd. Process for continuously producing polyester and spun fiber. 4,237,261, Cl. 528-272.000.

Kawamura, Masaharu: *See—*
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.

Kawaura, Kouichi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Planetary coiler. 4,236,279, Cl. 19-159.00R.

Kayhko, Jussi J.: *See—*
Makipirtti, Simo A. I.; and Kayhko, Jussi J., 4,236,700, Cl. 266-161.000.

Keck, Donald B., to Corning Glass Works. Method of effecting coupling of selected modes in an optical waveguide. 4,236,786, Cl. 350-96.150.

Keddie, Burton G. Picture frame making tool. 4,236,702, Cl. 269-41.000.

Keeley, Donald E., to General Electric Company. Organic materials having meta, para-isopropylidene diphenoxy units and method. 4,237,259, Cl. 528-204.000.

Kellis, James T., to Lear Siegler, Inc. Method and apparatus for conserving energy. 4,237,405, Cl. 315-307.000.

Kelly, William J., to Mattel, Inc. Toy with spring-operated speed regulated motor mechanism. 4,236,344, Cl. 46-40.000.

Kelm, Edward C.: *See—*
Kurtin, Stephen L.; and Kelm, Edward C., 4,237,343, Cl. 179-1.00J.

Kemp, Wayne T., to Raytheon Company. Grate with adjustable vents. 4,236,503, Cl. 126-215.000.

Kenki Kagaku Keiki Co., Ltd.: *See—*
Nishikawa, Akikazu, 4,237,417, Cl. 324-118.000.

Kennedy, Michael D. Internal reservoired soap dispensing animal washer. 4,236,840, Cl. 401-42.000.

Kennedy-Skipton, Henry K., to Imperial Chemical Industries Limited. Method of grouting a drill hole. 4,236,849, Cl. 405-261.000.

Kennon, Woodrow A. Wind turbine means. 4,237,384, Cl. 290-55.000.

Kent, William F.: *See—*
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,236,885, Cl. 425-514.000.

Kephart, Richard E., to Brennan, H. George. Precision photographic documentation apparatus. 4,236,795, Cl. 354-80.000.

Kermisch, Dorian, to Xerox Corporation. Low resolution correction apparatus and method for electrophotographic copiers. 4,236,809, Cl. 355-4.000.

Kerr, Barbara P., to Cole, Elsa D., a part interest. Solar cooker and method of assembly. 4,236,508, Cl. 126-451.000.

Kerr-McGee Corporation: *See—*
Morris, Alan J.; and Rado, Theodore A., 4,236,896, Cl. 23-293.00R.

Kerr, Thomas R. Competitive word game. 4,236,719, Cl. 273-265.000.

Ketchum, Marshall D.; and Yerman, Alexander J., to General Electric Company. Device for monitoring dissolved gases in electrical insulating liquids such as transformer oils. 4,236,404, Cl. 73-19.000.

Ketelsen, Broder, to Fischer & Porter Co. Electromagnetic flowmeter. 4,236,411, Cl. 73-194.0EM.

Khalil, Ezzat N.: *See—*
Selega, Zbigniew J.; Khalil, Ezzat N.; and McKavanagh, Gloria M., 4,237,112, Cl. 424-70.000.

Khan, Asadulla R.: *See—*
Imral, Sadik S.; and Khan, Asadulla R., 4,236,381, Cl. 62-324.000.

Khramov, Dmitry A.: *See—*
Savin, Nikolai I.; Khramov, Dmitry A.; Filippov, Vladimir J.; and Bugrov, Valery V., 4,236,966, Cl. 176-30.000.

Kibun Company Limited: *See—*
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.

Kiehl, Jean-Pierre; Remi, Jean-Pierre; and Schoennahl, Jacques R. P., to Societe Europeenne des Produits Refractaires. Gas-permeable refractory parts. 4,236,931, Cl. 106-64.000.

Kiene, Wilfried: *See—*
Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, 4,236,410, Cl. 73-194.0EM.

Kiener, Volker: *See—*
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.

Kieslich, Klaus, to Schering, Aktiengesellschaft. Process for preparing 9α-hydroxy-4-androstene-3,17-dione. 4,237,220, Cl. 435-58.000.

Kimball International, Inc.: *See—*
Dietrich, Ralph N.; Robinson, John W.; and Howell, Stephen L., 4,236,436, Cl. 84-1.260.
Howell, Stephen L.; Robinson, John W.; and Kube, Donald, 4,236,437, Cl. 84-1.260.

Kimura, Yoshimi, to Kabushiki Kaisha Fuji Seisakusho. Rotary type information retrieving machine. 4,236,334, Cl. 40-378.000.

King, Arthur S. Treater with self-cleaning electrodes. 4,236,990, Cl. 204-275.000.

King, William F.; and Wheeler, Ronald E., to Chevron Research Company. Substituted oxadiazoles and their use as corn root worm insecticides. 4,237,121, Cl. 424-200.000.

Kings Electronics Co., Inc.: *See—*
Iacono, Frederick D.; and Danielle, Louis, 4,236,787, Cl. 350-96.210.

Kinoshita, Sakae: *See—*
Kojima, Takeshi; Kinoshita, Sakae; and Takeuchi, Kenzo, 4,237,334, Cl. 174-25.00R.

Kiraly nee Vida, Emilia: *See—*
Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, 4,237,273, Cl. 536-53.000.

Kirkpatrick, Joel L.: *See—*
Hoffman, Otto L.; and Kirkpatrick, Joel L., 4,237,302, Cl. 548-139.000.

Kise, Yoshio: *See—*
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.

Kiss, Sandor; and Nagy, Zsolt, to Futober Epuletgepeszeti Termekeket Gyarto Vallalat. Sound-absorbing device, especially for damping of noises expanding in air ducts. 4,236,597, Cl. 181-224.000.

Kissel, Gerhard K., to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Steering mechanism with an active force feedback, especially for aircraft. 4,236,685, Cl. 244-83.00D.

Kistrup, Holger: *See—*
Gutmann, Gunter; Kistrup, Holger; Bauchk, Friedrich G. K.; and M/ler, Gerd, 4,237,196, Cl. 429-50.000.

Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, to Mitsubishi Petrochemical Company Limited. Process for producing olefin polymers. 4,237,254, Cl. 526-122.000.

Kitamura, Minoru; Hayashi, Tsutomu; Moritsugi, Takeharu; and Saruwatari, Mitsuyoshi. Desulfurization composition for molten pig iron. 4,236,914, Cl. 75-58.000.

Kitano, Yutaka: *See—*
Oishi, Kazuaki; Nakano, Seizo; and Kitano, Yutaka, 4,237,520, Cl. 361-335.000.

Kitchen, Harry E.: *See—*
Zevgolis, Victoria H.; and Kitchen, Harry E., 4,237,372, Cl. 235-92.0GA.

Kittel, Hilmar: *See—*
Meining, Hans; Pfaller, Egon; Winkler, Otmar; and Kittel, Hilmar, 4,236,766, Cl. 308-15.000.

Kittel, Horst: *See—*
Zwintscher, Wolfgang; Kittel, Horst; and Ruge, Hinrich, 4,237,361, Cl. 219-76.100.

Kiuchi, Hiroshi: *See—*
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.

Klee, Maurice: *See—*
Cochran, Gary L.; Wilson, Charles D.; and Klee, Maurice, 4,236,422, Cl. 74-470.000.

Klein, Herbert H., to Unarco Industries, Inc. Connector assembly for a storage rack. 4,236,642, Cl. 211-207.000.

Klingbeil, Karl. Magician's walking cane snake. 4,236,711, Cl. 272-8.00R.

Klipsch and Associates, Inc.: *See—*
Klipsch, Paul W., 4,237,340, Cl. 179-1.00D.

Klipsch, Paul W., to Klipsch and Associates, Inc. Crossover network for optimizing efficiency and improving response of loudspeaker system. 4,237,340, Cl. 179-1.00D.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Herchenbach, Horst; and Lechner, Bartl, 4,236,932, Cl. 106-100.000.
Tholen, Paul, 4,236,492, Cl. 123-119.0CD.

Klockner-Humboldt-Wedag AG: *See—*
Ansen, Jakob; Hoppen, Heinz; and Duill, Helmut, 4,236,886, Cl. 432-14.000.
Melcher, Gerhard; and Weigel, Horst, 4,236,916, Cl. 75-85.000.

Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., to Hercules Incorporated. Use of radiation-induced polymers as friction reducing agents. 4,236,545, Cl. 137-13.000.

Knight, John H., to Superior Oil Company, The. Separation of nahcolite from oil shale by infrared sorting. 4,236,640, Cl. 209-587.000.

Knothe, Erich; and Melcher, Franz-Josef, to Sartorius GmbH. Balance with compensated loading and reference systems. 4,236,590, Cl. 177-200.000.

Knyazev, Vladimir A.: *See—*
Kostjukov, Nikolai S.; Minakov, Nikolai V.; and Knyazev, Vladimir A., 4,237,336, Cl. 174-151.000.

Kobashi, Takashi: *See—*
Nakaya, Tadao; and Kobashi, Takashi, 4,236,481, Cl. 116-292.000.

Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, to Japan Exlan Company Limited. Process for producing an acrylonitrile polymer melt. 4,237,256, Cl. 526-229.000.

Kobayashi, Hajime: *See—*
Endo, Ichiro; Kobayashi, Hajime; Yano, Yasuhiro; and Muramatsu, Takao, 4,237,213, Cl. 430-353.000.

Kobayashi, Takumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Unwinding-mechanism releasing device for use in a camera. 4,236,799, Cl. 354-209.000.

Kobayashi, Tuguo. Carbon-filament reinforced gear. 4,237,175, Cl. 428-192.000.

Kobayashi, Yuichi: *See—*
Torii, Sigeru; Tanaka, Hideo; and Kobayashi, Yuichi, 4,237,308, Cl. 560-122.000.

Kobelt, Jacob. Compact caliper brake. 4,236,608, Cl. 188-43.000.

Kobliska, Robert J.: *See—*
Aboaf, Joseph A.; Cuomo, Jerome J.; Gangulee, Amitava; and Kobliska, Robert J., 4,236,946, Cl. 148-108.000.

Koeberle, George G., to Angelus Sanitary Can Machine Company. Nozzle for steaming retortable pouches. 4,236,672, Cl. 239-139.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Wieland, Erich G., 4,236,448, Cl. 101-216.000.

Kogler, Peter: *See—*
Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, 4,236,627, Cl. 198-514.000.

Kohl, Paul A., to Bell Telephone Laboratories, Incorporated. Preventing stains on multiple-electroplated articles. 4,236,976, Cl. 204-15.000.

Kohm, Richard C.; and Foster, C. Thomas. Sign structure. 4,236,333, Cl. 40-212.000.

Kojima, Takeshi; Kinoshita, Sakae; and Takeuchi, Kenzo, to Showa Electric Wire & Cable Co., Ltd. Laminated insulating paper and oil-filled cable insulated thereby. 4,237,334, Cl. 174-25.00R.

Kolakowski, Richard A.: *See—*
DeGuiseppi, David T.; and Kolakowski, Richard A., 4,237,238, Cl. 521-131.000.

Komai, Takeshi: *See—*
Moriya, Yasuo; and Komai, Takeshi, 4,237,257, Cl. 526-230.500.

Komaki, Shojiro, to Kabushiki Kaisha Daini Seikosha. Electronic watch. 4,236,375, Cl. 58-23.00R.

Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, to Tokyo Shibaura Denki Kabushiki Kaisha. Strain insensitive integrated circuit resistor pair. 4,236,832, Cl. 357-51.000.

Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi: *See—*
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, 4,237,094, Cl. 422-100.000.
Suovaniemi, Osmo A.; Tervamaki, Jukka; and Kukka, Aarre, 4,237,095, Cl. 422-100.000.

Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, to FMC Corporation. Bicyclic lactone derivatives. 4,237,058, Cl. 260-343.30R.

Konovalenko, Nikolai A.: *See—*
Gelperin, Nison I.; Polotsky, Leonid M.; and Konovalenko, Nikolai A., 4,236,958, Cl. 159-16.00S.

Koppers, Manfred; and Pawelski, Ludwig, to Thyssen Industrie AG. Shield timbering frame for timbering mines. 4,236,850, Cl. 405-291.000.

Korbanka, Helmut; and Scheidl, Franz, to Hoechst Aktiengesellschaft. Organotin compounds, the preparation and use thereof. 4,237,043, Cl. 260-45.75S.

Kordt, Hans-Herbert: *See—*
Stenz, Paul; and Kordt, Hans-Herbert, 4,236,780, Cl. 339-198.00G.

Korenko, Michael K.; Merrick, Howard F.; and Gibson, Robert C., to United States of America, Energy. Precipitation hardenable iron-nickel-chromium alloy having good swelling resistance and low neutron absorbence. 4,236,943, Cl. 148-32.500.

Kosonocky, Walter F.; and Angle, Rodney L., to RCA Corporation. High speed loading of output register of CCD array system. 4,237,383, Cl. 250-578.000.

Koster, Richard A.: *See—*
Turner, John; Koster, Richard A.; and Bassman, Seymour, 4,236,441, Cl. 89-40.00F.

Koster, William H.: *See—*
Cimarusti, Christopher M.; Koster, William H.; and Sykes, Richard B., 4,237,128, Cl. 424-246.000.

Kostjukov, Nikolai S.; Minakov, Nikolai V.; and Knyazev, Vladimir A. Device for passing electrical and power installation conductors through protective shell separating clean zone from contaminated one and method of assembling same. 4,237,336, Cl. 174-151.000.

Kosuga, Tadashi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.

Kosugi, Tsuneo: *See—*
Kakita, Minoru; and Kosugi, Tsuneo, 4,236,435, Cl. 84-1.220.

Kotaka, Toshihiko: *See—*
Iida, Takao; Ozaki, Sho; and Kotaka, Toshihiko, 4,237,230, Cl. 435-207.000.

Kotani, Kikuo: *See—*
Okuyama, Tsuneo; Fujii, Tadashiro; Nakagawa, Nobuaki; and Kotani, Kikuo, 4,237,267, Cl. 536-1.000.

Kothe, Hans K.; and Strasen, Gunter, to Varta Batterie, A.G. Charge maintenance and continuous charging for storage batteries. 4,237,411, Cl. 320-21.000.

Kotturan, Paulson A. Container for sterile liquids. 4,236,647, Cl. 215-247.000.

Kotva, Rudolf: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Kouno, Hiroya: *See—*
Mukai, Takamitu; Fujii, Tomoo; and Kouno, Hiroya, 4,236,621, Cl. 192-82.00T.

Kountz, Kenneth J., to Borg-Warner Corporation. Thermostatic expansion valve with lead-lag compensation. 4,236,669, Cl. 236-92.00B.

Kowa Denki Kogyo Kabushiki Kaisha: *See—*
Miyasaka, Susumu; and Miyasaka, Isamu, 4,237,440, Cl. 337-227.000.

Kozdon, Friedrich: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Kozyreva, Ljudmila F.: *See—*
Zhdanova, Nelli I.; Leonova, Tatyana V.; and Kozyreva, Ljudmila F., 4,237,228, Cl. 435-116.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Harand, Elmar; and Michel, Eberhard, 4,236,970, Cl. 176-87.000.
Werker, Ekke; and Emsperger, Werner, 4,236,968, Cl. 176-38.000.

Kramer, Wolfgang: *See—*
Buchel, Karl H.; Kramer, Wolfgang; and Brandes, Wilhelm, 4,237,142, Cl. 424-269.000.

Krapf, Heinz; Oppenlaender, Knut; and Uhl, Guenter, to BASF Aktiengesellschaft. 1,3-Bis-aryl-2-oxyalkylated-glycerol ethers. 4,237,320, Cl. 568-609.000.

Kraus, George A., to Iowa State University Research Foundation, Inc. Synthesis of quinone pyrano-gamma-lactone antibiotics and antifungal agents. 4,237,057, Cl. 260-343.30R.

Krause, Herbert: *See—*
Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, 4,237,335, Cl. 174-92.000.

Krause, Janusz J. H.; and Stanier, Colin, to Imperial Chemical Industries Limited. Production of sheet materials. 4,236,952, Cl. 156-93.000.

Krause, Joachim: *See—*
Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, 4,237,026, Cl. 252-299.000.

Krauss, Richard C.: *See—*
Dowd, William; Krauss, Richard C.; and Freiter, Edward R., 4,237,304, Cl. 548-239.000.

Krauss, Werner, to Claudius Peters Ag. Apparatus for the loosening and lifting of aerated pulverized material at an increased pressure from a silo. 4,236,852, Cl. 406-90.000.

Krautter, Hermann; and Focke, Heinz, to Focke & Co. Hinge-lid pack, more particularly for cigarettes. 4,236,663, Cl. 229-44.0CB.

Krchma, Ludwig C.; and Morris, Paul L. Method of treating blisters in asphaltic membrane covered roofs. 4,236,951, Cl. 156-71.000.

Kreiseder, Walter J., to Courtesy Mold and Tool Corporation. Releasable tie. 4,236,280, Cl. 24-16.0PB.

Kreith, Frank; and Cornelison, Richard C., to Condar, Co. Heat exchange enhancement structure. 4,236,578, Cl. 165-181.000.

Krepelka, Jiri: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Kresock, John M., to GTE Products Corporation. Video black level reference system. 4,237,489, Cl. 358-168.000.

Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Equipment for use in measuring the distance between different points displayed on a fluorescent screen. 4,237,406, Cl. 315-377.000.

Kretztechnik Gesellschaft m.b.H.: *See—*
Kretz, Carl, 4,237,406, Cl. 315-377.000.

Kristensson, Nils L. O., to Landstingens Inkopscentral Lic, Ekonomisk Forening. Manual winch with safety clutch, especially as a power source in nursing for lifting patients. 4,236,694, Cl. 254-167.000.

Kromer, Karl: *See—*
Noack, Rolf; Kromer, Karl; and Zimmet, Hans, 4,236,797, Cl. 354-152.000.

Krueger, Hans; and Glaubitz, Werner, to Siemens Aktiengesellschaft. Liquid crystal illuminator having ellipoidal light guide. 4,236,791, Cl. 350-345.000.

Krueger, Wilm: *See—*
Moldan, Karl; and Krueger, Wilm, 4,236,588, Cl. 173-48.000.

Krulwich, Lester S. Nonelectric magnetizer and demagnetizer. 4,237,518, Cl. 361-267.000.

Kruyer, Jan, to Kruyer Tar Sand Development, Inc. Process for recovering bitumen from tar sand. 4,236,995, Cl. 208-11.0LE.

Kruyer Tar Sand Development, Inc.: *See—*
Kruyer, Jan, 4,236,995, Cl. 208-11.0LE.

Kuan, Tiong H., to General Tire & Rubber Company, The. White sidewall tire. 4,237,173, Cl. 428-65.000.

Kubat, Josef; and Djurner, Jan K., to Sunds AB. Method of reducing internal stresses and improving the mechanical properties of injection molded thermoplastic resins. 4,237,089, Cl. 264-328.000.

Kube, Donald: *See—*
Howell, Stephen L.; Robinson, John W.; and Kube, Donald, 4,236,437, Cl. 84-1.260.

Kubo, Junji: *See—*
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.

Kuchenbecker, Morris W., to American Can Company. Blister package. 4,236,636, Cl. 206-461.000.

Kuehling, Guenter, to Bunker Ramo Corporation. Electrical contact feeding and attachment apparatus. 4,236,302, Cl. 29-753.000.

Kuehnle, Manfred R., to Coulter Systems Corporation. Modular electrophotographic copying machine. 4,236,807, Cl. 355-3.00R.

Kuehnle, Manfred R., to Coulter Systems Corporation. Image recording method for electrophotographic film. 4,236,812, Cl. 355-14.00E.

Kuhl, Hans. Portable heating system. 4,236,502, Cl. 126-208.000.

Kuhnlein, Hans, to Hch. Bertrams Aktiengesellschaft. Process and apparatus for purifying waste waters. 4,236,974, Cl. 203-11.000.

Kukka, Aarre: *See—*
Suovaniemi, Osmo A.; Tervamaki, Jukka; and Kukka, Aarre, 4,237,095, Cl. 422-100.000.

Kulsa, Peter: *See—*
Bochis, Richard J.; and Kulsa, Peter, 4,237,300, Cl. 546-297.000.

Kuntzel, Heiner: *See—*
Dubs, Paul; and Kuntzel, Heiner, 4,237,290, Cl. 544-335.000.

Kurashige, Shuji: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.

Kurashiki Boseki Kabushiki Kaisha: *See—*
Tanabe, Nato; Okada, Kenzoh; and Maeda, Norio, 4,237,181, Cl. 428-307.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Kurita Machinery Manufacturing Company, Limited: *See—*
Kurita, Tetsuya, 4,237,009, Cl. 210-227.000.

Kurita, Tetsuya, to Kurita Machinery Manufacturing Company Limited. Filtration-compression type filter press. 4,237,009, Cl. 210-227.000.

Kuroda, Masao, to NTN Toyo Bearing Company, Limited. One-way clutch. 4,236,619, Cl. 192-45.000.

Kurtin, Stephen L.; and Kelm, Edward C. Digital delay/ambience processor. 4,237,343, Cl. 179-1.00J.

Kurumada, Tomoyuki: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,237,294, Cl. 546-20.000.

Kusebauch, Walter: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Kushima, Hiroshi: *See—*
Nakamura, Takeshi; and Kushima, Hiroshi, 4,236,710, Cl. 271-108.000.

Kuster, Erich; Goossens, Bernhard; Barthell, Eduard; and Dahmen, Kurt, to Chemische Fabrik Stockhausen & Cie. Process for the manufacture of α,β-unsaturated N-substituted carboxylic acid amides. 4,237,067, Cl. 260-561.00N.

Kutani, Chiaki: *See—*
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,272, Cl. 536-17.00R.

L. & C. Steinmuller GmbH: *See—*
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La Cellophane: *See—*
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La Telemecanique Electrique: *See—*
Fechant, Louis; Guery, Jean-Pierre; and Martin, Gabriel, 4,237,355, Cl. 200-147.00R.
Marcenne, Jacques, 4,236,641, Cl. 211-87.000.

Laage, Fred C.; and Loftus, Patrick A., to Laage, Fred C. Insulated and moisture absorbent food container and method of manufacture. 4,237,171, Cl. 426-127.000.

Lada, Henry: *See—*
Manty, Brian A.; Liss, Herbert R.; and Lada, Henry, 4,236,940, Cl. 148-6.200.

Ladany, Ivan, to RCA Corporation. Electroluminescent diode and optical fiber assembly. 4,237,474, Cl. 357-81.000.

Ladish Co.: *See—*
Zimmerly, Robert D., 4,237,010, Cl. 210-232.000.

Lagardere, Bruno J. F.; and Sovish, Richard C. Wrap-around devices. 4,237,174, Cl. 428-99.000.

Lake, Steven R. Portable power operated chemical spray apparatus. 4,236,673, Cl. 239-172.000.

Lambert, Lloyd J., Jr. Standing calf exercise machine. 4,236,712, Cl. 272-118.000.

Lambros, William S.; and Metzger, James I., Jr., to Emerson Electric Co. Combination arc brazing and welding electrode holder. 4,237,365, Cl. 219-139.000.

Lamer, Gerald P.: *See—*
Stearn, Richard A.; Lamer, Gerald P.; and Lenius, Norbert W., 4,236,859, Cl. 414-460.000.

Lampe, Vaino; Gunnarsson, Staffan H.; and Johansson, Karl-Erik, to Uddeholms Aktiebolag. Steel alloy. 4,236,920, Cl. 75-128.00A.

Landgraf, Hermann, to Siemens Aktiengesellschaft. Drive motor for a dental handpiece. 4,237,393, Cl. 310-59.000.

Landstingens Inkopscentral Lic, Ekonomisk Forening: *See—*
Kristensson, Nils L. O., 4,236,694, Cl. 254-167.000.

Lang, Hermann: *See—*
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,237,044, Cl. 260-112.00B.

Lange, Gerhard, to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG). Method of and apparatus for producing coil springs with eyelets. 4,236,397, Cl. 72-137.000.

Lange, Robert G.; and Schlotthauer, Harley L., to United States Gypsum Company. Plaster consistency reducer. 4,237,260, Cl. 528-230.000.

Langen, Hans: *See—*
Joekel, Alfred; Langen, Hans; and Denner, Peter, 4,236,299, Cl. 29-727.000.

Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., to Alza Corporation. Patient-care apparatus with chemoprophylactic system. 4,236,517, Cl. 128-275.000.

Lanier, Howard A.: *See—*
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Lanig, Peter, to Siemens Aktiengesellschaft. Method of manufacturing a superconductor. 4,236,297, Cl. 29-599.000.

Lanin, Jury N.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.

Lantz, Robert H.; and Schwartz, Alfred A., to International Business Machines Corporation. Stroke expansion apparatus. 4,237,458, Cl. 340-739.000.

Lapp, John; and Willy, John R., to McGraw-Edison Company. Apparatus for processing an electrical apparatus. 4,236,484, Cl. 118-663.000.

Larbey, Robert J.: *See—*
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Larsen, Arthur B., to Bell Telephone Laboratories, Incorporated. Data packet multiplexing in a staggered fashion. 4,237,553, Cl. 370-89.000.

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Larson, David L., to Sherwood Refractories, Inc. Method of casting steel and iron alloys with precision cristobalite cores. 4,236,568, Cl. 164-41.000.

Larson, Willis A.; Vannice, Steven D.; and Jesson, Joseph E., to Oak Industries Inc. Isolation membrane switch. 4,237,358, Cl. 200-159.00B.

Larsson, Arnold; and Elwing, Assar, to AB Ostgota-Byggen. Reinforced building component. 4,236,364, Cl. 52-383.000.

La Russa, Joseph A.; Troutman, Richard C.; and Attler, Anthony R. Corneal punch. 4,236,519, Cl. 128-305.000.

LaSpisa, Ronald J.; and Giles, Richard F., to Phillips Petroleum Company. Automatic control of extrusion rate. 4,237,082, Cl. 264-40.600.

Latourrette, Bertrand: *See—*
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Laurello, Vincent P., to United Technologies Corporation. Gas turbine engine having bleed apparatus with dynamic pressure recovery. 4,236,869, Cl. 416-95.000.

Lauterjung, Friedrich G. Probe. 4,236,521, Cl. 128-348.000.

LaVene, Leon F.: *See—*
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Lavigne, Andre, to Videocolor S.A. Blanking voltage generator for a cathode ray tube. 4,237,479, Cl. 358-33.000.

LaVoie, Richard. Stop for vehicle license plate mounting bracket. 4,236,746, Cl. 296-1.00C.

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Lazay, Paul D., to Bell Telephone Laboratories, Incorporated. Method for monitoring optical fiber drawing. 4,236,904, Cl. 65-2.000.

Le Mere Industries, Inc.: *See—*
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Lear Siegler, Inc.: *See—*
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LeBouder, Maurice, to Fernotex Fernost-Testihandel. Rotary machine electronics supervisory and control apparatus. 4,237,371, Cl. 235-92.0PD.

Lechner, Bartl: *See—*
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Le Dall, Guy, to Permo S.A. Electronic means for controlling the regeneration of resins in a resin type ion exchange device. 4,237,538, Cl. 364-500.000.

Lee, Gim F., Jr.: *See—*
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Leesona Corporation: *See—*
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Le Fur, Gerard R.: *See—*
Champseix, Alain A.; Gueremy, Claude G. A.; and Le Fur, Gerard R., 4,237,139, Cl. 424-258.000.

Leggett, Paul. Tree stand and seat. 4,236,602, Cl. 182-187.000.

Leland Stanford Jr. University, Board of Trustees of the: *See—*
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Lemelson, Jerome H. Beam welding apparatus and method. 4,237,363, Cl. 219-121.0LM.

Lemelson, Jerome H. Welding tool and method. 4,237,364, Cl. 219-121.0LC.

Lemke, James U.; and Bixby, James A. Radar synchronizing apparatus and method. 4,237,462, Cl. 343-5.00R.

Lemmon, John A. Hip cart. 4,236,723, Cl. 280-1.500.

Leng, Douglas E.: *See—*
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Lenhardt, Wilfried K., to Mobil Oil Corporation. Chromatograph signal generator. 4,237,422, Cl. 328-61.000.

Lenius, Norbert W.: *See—*
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Lenke, Dieter: *See—*
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Leonard, Herbert G.: *See—*
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Leonard, John B.: *See—*
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Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, to SNIA VISCOSA Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Process for the preparation of solutions of cellulose derivatives which can be coagulated and spun to form regenerated cellulose bodies. 4,237,274, Cl. 536-56.000.

Leonova, Tatyana V.: *See—*
Zhdanova, Nelli I.; Leonova, Tatyana V.; and Kozyreva, Ljudmila F., 4,237,228, Cl. 435-116.000.

L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, to Ciba-Geigy Corporation. Metal complexes of azomethines. 4,237,286, Cl. 544-225.000.

L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, to Ciba-Geigy Corporation. Metal complexes of azomethines. 4,237,292, Cl. 546-7.000.

L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, to Ciba-Geigy Corporation. Metal complexes of azomethines. 4,237,293, Cl. 546-7.000.

Lepori, Agostino: *See—*
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Leutner, Bernd: *See—*
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Leverentz, Earl T.: *See—*
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Leverenz, Klaus: *See—*
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Levine, Alfred B. Multiplex photocopier system having plural scanners without memory. 4,236,813, Cl. 355-14.00R.

Levy, Michael: *See—*
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Lewis, Bernard L.: *See—*
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Lewis, Michael; and Jenkins, Allan L. Canoe and paddle support. 4,236,267, Cl. 9-1.700.

Lewis, Richard A., to United States of America, Energy. Target assembly. 4,236,965, Cl. 176-11.000.

Lewis, Robert J., to Phillips Petroleum Company. Method and apparatus for producing carbon black. 4,237,092, Cl. 422-62.000.

Leybold-Heraeus GmbH: *See—*
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Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
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Lien, Eric L., to American Home Products Corporation. Inhibition of prolactin release by an aminobenzylcycloalkanol. 4,237,169, Cl. 424-330.000.

Lilley, George L., to Armstrong Cork Company. Reticulated polyvinyl chloride plastisol foams. 4,237,239, Cl. 521-134.000.

Limmergard, Sten; and Thim, Stig, to A-Betong AB. Arrangement at a railroad crossing. 4,236,670, Cl. 238-8.000.

Limpaecher, Rudolf, to Avco Everett Research Laboratory, Inc. Spark gap control. 4,237,404, Cl. 315-111.000.

Lindberg, Ulf M. A.; Ross, Svante B.; Thorberg, Seth-Olov; and Ogren, Sven O., to Astra Lakemedel Aktiebolag. 2-Methyl-1-(substituted)phenyl-2-propyl esters of 2-aminopropanoic acid. 4,237,311, Cl. 560-173.000.

Lindbergh, Charles. Variable counterweight system. 4,236,605, Cl. 187-94.000.

Linde Aktiengesellschaft: *See—*
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Linden, Lennart: *See—*
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Lindmark, Magnus C. W.: *See—*
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Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, to BASF Aktiengesellschaft. Isolation of butadiene from a C_4-hydrocarbon mixture. 4,237,330, Cl. 585-807.000.

Lindstrom, Jan N.: *See—*
Lindholm, Leif S.; and Lindstrom, Jan N., 4,236,926, Cl. 75-238.000.

Linhardt, Hans D., to Airco, Inc. Tangential RIF turbine with particle removing means. 4,236,868, Cl. 415-121.00A.
Lippmaa, Endel T.; and Roose, Vambola I. Heavy-duty precision wire-wound alternating-current resistor and method of making. 4,237,444, Cl. 338-270.000.
Liss, Herbert R.: *See*—
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Liu, Chi-Sheng; Williams, Roy K.; and Weaver, Lelland A., to Westinghouse Electric Corp. Coaxial discharge sealed-off quartz laser tube. 4,237,430, Cl. 331-94.50D.
Ljubivy, Alexandr G.; Batjukov, Vladimir I.; Shkhian, Tsolak G.; and Fadeev, Alexandr I. System for cooling set of fuel assemblies arranged in reactor vessel. 4,236,969, Cl. 176-61.000.
Llewellyn, Thomas E.: *See*—
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Lobdell, Donn D.; Herman, Stephen J.; and Anderson, Robert L., to Cobe Laboratories, Inc. Temperature probe. 4,237,091, Cl. 422-46.000.
Locke, Carl L. Game apparatus. 4,236,714, Cl. 273-94.00R.
Locke, Frank W.: *See*—
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Lodige, Fritz: *See*—
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Lodige, Wilhelm; Lodige, Fritz; Lucke, Joseph; and Lucke, Roland. Apparatus for treating bulk material in batches. 4,236,677, Cl. 241-172.000.
Loeb, Phillip J., to Beckman Instruments, Inc. Electroencephalograph. 4,236,511, Cl. 128-731.000.
Loftus, Patrick A.: *See*—
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Loginov, Leonid A.: *See*—
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Lombardi, Louis J.; and Coyne, Roy J., to Richardson Company, The. Radiation curable transparentizing resin systems, methods and products. 4,237,185, Cl. 428-337.000.
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Lomonaco, Orlando M.: *See*—
Loricchio, Domingos; Lomonaco, Orlando M.; and Lomonaco, Luiz M., 4,237,152, Cl. 427-136.000.
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L'Oreal: *See*—
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Loricchio, Domingos; Lomonaco, Orlando M.; and Lomonaco, Luiz M. Process for improving the resistance of asphalt pavement surfaces to corrosion, deterioration and disintegration. 4,237,152, Cl. 427-136.000.
Loudermilk, Billy E. Electric dynamotor. 4,237,395, Cl. 310-113.000.
Lovrich, Vincent; and Sundell, George J., to Autographic Business Forms, Inc. Check-digit printing means. 4,236,446, Cl. 101-79.000.
Lubrizol Corporation, The: *See*—
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Lodige, Wilhelm; Lodige, Fritz; Lucke, Joseph; and Lucke, Roland, 4,236,677, Cl. 241-172.000.
Lucke, Roland: *See*—
Lodige, Wilhelm; Lodige, Fritz; Lucke, Joseph; and Lucke, Roland, 4,236,677, Cl. 241-172.000.
Ludlow Industries, Inc.: *See*—
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Macchine Tessili Circolari MATEC S.p.A.: *See*—
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Macedo, Pedro B.; and Litovitz, Theodore A. Optical waveguide and method and compositions for producing same. 4,236,930, Cl. 106-54.000.
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Makita, Hiromitsu: *See*—
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Malinowski, William J. Smoke detection system and method. 4,237,452, Cl. 340-630.000.
Malinowski, William J. Smoke detection system and method. 4,237,453, Cl. 340-630.000.
Mallory, William R.: *See*—
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Malmsten, Sven O. Air cleaner. 4,236,903, Cl. 55-325.000.
Malone, Douglas J. Counting system for counting newspapers or the like. 4,237,374, Cl. 235-92.0SB.
Mandelbaum, William: *See*—
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Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., to United States of America, Navy. Electronic breathing mixture control. 4,236,546, Cl. 137-88.000.

Manly, William A., to Graham Magnetics Inc. Polymodal magnetic recording member. 4,237,506, Cl. 360-135.000.
Mansson, Staffan T., to Ab Volvo Penta. Drive installation in boats. 4,236,478, Cl. 115-34.00R.
Mantele, Erwin, to Gebr. Berchtold. Joint support structure. 4,236,844, Cl. 403-55.000.
Manty, Brian A.; Liss, Herbert R.; and Lada, Henry, to United Technologies Corporation. Wear resistant titanium alloy coating. 4,236,940, Cl. 148-6.200.
Manuccia, Thomas J., Jr.: *See*—
Wexler, Bernard L.; Stregack, Joseph A.; and Manuccia, Thomas J., Jr., 4,237,428, Cl. 331-94.50G.
Marbacher, Lothar, to Palitex Project Company GmbH. Yarn take-up and supply mechanism for use with textile machines. 4,236,374, Cl. 57-279.000.
Marcenne, Jacques, to La Telemecanique Electrique. Frame for securing electrical, mechanical or pneumatic devices having a base member fitted with hooking means. 4,236,641, Cl. 211-87.000.
Marine Travelift, Inc.: *See*—
Stearn, Richard A.; Lamer, Gerald P.; and Lenius, Norbert W., 4,236,859, Cl. 414-460.000.
Marini, Paolo: *See*—
Vantini, Nereo; and Marini, Paolo, 4,236,986, Cl. 204-181.00N.
Marosy, Andre. Coupling. 4,236,283, Cl. 24-201.00A.
Marquardt, Kurt, to EVT Energie- und Verfahrenstecknik GmbH. Apparatus and method for the thermal regeneration of matter in water treatment plants. 4,237,007, Cl. 210-181.000.
Marquardt, Mark O., to Conduit-Amherst Limited. Method for manufacturing wood mouldings. 4,236,557, Cl. 144-315.00R.
Martin Engineering: *See*—
Stahura, Richard, 4,236,628, Cl. 198-525.000.
Martin, Gabriel: *See*—
Fechant, Louis; Guery, Jean-Pierre; and Martin, Gabriel, 4,237,355, Cl. 200-147.00R.
Martin Marietta Corporation: *See*—
Tadros, Maher E., 4,237,025, Cl. 252-192.000.
Martino, Ronald T. Brush attachment for tennis racket. 4,236,271, Cl. 15-246.000.
Martz, Lyle E.: *See*—
Forster, Allen V.; Martz, Lyle E.; and Leng, Douglas E., 4,237,110, Cl. 423-488.000.
Marvin Glass & Associates: *See*—
Wildman, John R., 4,236,343, Cl. 46-39.000.
Maschinenfabrik Benninger AG: *See*—
Stobi, Johann, 4,236,391, Cl. 68-5.00D.
Massachusetts General Hospital: *See*—
Newbower, Ronald S.; and Philip, James H., 4,236,527, Cl. 128-692.000.
Massachusetts Institute of Technology: *See*—
Johnson, Timothy E.; and Giuffrida, John, 4,237,023, Cl. 252-70.000.
Masuda, Takao: *See*—
Ikenoue, Shinpei; and Masuda, Takao, 4,237,215, Cl. 430-619.000.
Masukawa, Shoichi: *See*—
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.
Mathew, Chempolil T.: *See*—
Ulmer, Harry E.; and Mathew, Chempolil T., 4,237,069, Cl. 260-566.00A.
Matoba, Yasuo; Hashimoto, Akira; and Sugahara, Mikio, to Osaka Soda Co. Ltd. Chlorinated polyethylene composition and process for curing chlorinated polyethylene. 4,237,247, Cl. 525-335.000.
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, to Osaka Soda Co. Ltd. Chlorinated polyethylene composition and process for curing chlorinated polyethylene. 4,237,248, Cl. 525-335.000.
Matsunaga, Douglas S.: *See*—
Gawlik, Charles B.; Hall, James D.; and Matsunaga, Douglas S., 4,236,431, Cl. 83-479.000.
Matsuo, Masaharu. Pneumatic sheet feeding apparatus. 4,236,708, Cl. 271-12.000.
Matsuoka, Yuuji: *See*—
Yamataka, Kazunori; Matsuoka, Yuuji; and Isoya, Toshiro, 4,237,317, Cl. 562-590.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Chikamura, Takao; Fujiwara, Shinji; Terui, Yasuaki; and Fukai, Masakazu, 4,236,829, Cl. 357-16.000.
Saito, Hiroshi; and Adachi, Chihiro, 4,237,485, Cl. 358-197.000.
Matsushita Electric Works, Ltd.: *See*—
Nakamura, Yoshimitsu, 4,236,295, Cl. 29-598.000.
Matsuura, Kazuo: *See*—
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,237,222, Cl. 435-25.000.
Matsuzaki, Kazuo; Katagiri, Shigenobu; and Nakano, Hiroshige, to Hitachi Koki Co., Ltd. Printing column number limiting device. 4,236,447, Cl. 101-93.140.
Matteini, Silvano. Material level checking apparatus for use in a rotary incinerating furnace. 4,236,465, Cl. 110-246.000.
Mattel, Inc.: *See*—
Kelly, William J., 4,236,344, Cl. 46-40.000.
Matter, Robert C., to General Motors Corporation. Pocket grid for alkaline battery plates. 4,237,205, Cl. 429-234.000.
Mattson, Ralph W. Magnetic badge assembly. 4,236,331, Cl. 40-1.500.
Mavis, Michael J. Window cleaning device. 4,236,270, Cl. 15-245.000.
Maxwell Laboratories, Inc.: *See*—
Fitch, Richard A.; Drummond, James E.; and Mondelli, Alfred A., 4,236,900, Cl. 55-138.000.
Mayeda, Bruce H.: *See*—
Shader, Benjamin A.; and Mayeda, Bruce H., 4,236,586, Cl. 172-779.000.
Shader, Benjamin A.; and Mayeda, Bruce H., 4,236,587, Cl. 172-779.000.
Mayer, Herbert E., to CENSOR patent- und Versuchs-Anstalt. Device for fixing a planar work piece. 4,236,701, Cl. 269-21.000.
Mayne, David W.; and Melissa, Raymond F., to Printronix, Inc. Printer system with compressed print capability. 4,236,835, Cl. 400-121.000.
Mayumi, Hiroshi: *See*—
Nokubo, Jyoji; and Mayumi, Hiroshi, 4,237,388, Cl. 307-214.000.
Mazaki, Tadashige, to Sakai, Hideo. Sound proof materials for buildings. 4,237,178, Cl. 428-242.000.
Mazzucco, Rosalba. Urethanic polymerization by chelating agents acting as catalysts or cocatalysts. 4,237,235, Cl. 521-118.000.
McCaffrey, James A., to Diversified Plastics Products Inc. Spring-like hinge. 4,236,273, Cl. 16-150.000.
McCarty, Mary D., to Fun Sculpture, Inc. Sculpture holding apparatus. 4,236,705, Cl. 269-100.000.
McCombie, Stuart W., to Schering Corporation. Stereospecific production of 6- or 7-carbon-substituted-β-lactams. 4,237,051, Cl. 260-245.20R.
McCormick, Edward J., to Raymond Corporation, The. Material handling apparatus. 4,236,862, Cl. 414-633.000.
McCoy, John F., to RCA Corporation. High resistance continuous shield for reduced capacitive coupling in a deflection yoke. 4,237,438, Cl. 335-214.000.
McCoy, Raymond D., to Phillips Petroleum Company. Hydrocarbon cracking. 4,237,093, Cl. 422-62.000.
McCrea, Elmer R. Portable winch apparatus. 4,236,693, Cl. 254-166.000.
McCullough, John F., to Tennessee Valley Authority. Purification and conversion of phosphoric acid to ammonium phosphates. 4,236,911, Cl. 71-34.000.
McCullough, Timothy J. Rotary blade holder. 4,236,531, Cl. 30-276.000.
McDonald, Herschel B.: *See*—
Prengaman, Raymond D.; and McDonald, Herschel B., 4,236,978, Cl. 204-57.000.
McDonald, Ray S.; and Rossing, Martin A., to Medtronic, Inc. Asynchronous/demand made programmable digital cardiac pacemaker. 4,236,522, Cl. 128-419.0PG.
McDuffie, Raleigh. Incense burner. 4,237,097, Cl. 422-126.000.
McFarlin, Skip D.: *See*—
Ramsperger, David C., 4,236,594, Cl. 180-167.000.
McGauran, Hugh K.; and Summerlin, Frederick A., to Aerpat A.G. Seal for headed pin fastener member. 4,236,438, Cl. 85-1.0JP.
McGee, Theodore L., to American Can Company. Propylene/polystyrene composition and substrates coated with such compositions. 4,237,190, Cl. 428-513.000.
McGraw-Edison Company: *See*—
Lapp, John; and Willy, John R., 4,236,484, Cl. 118-663.000.
McGuire, Robert C., to Dresser Industries, Inc. Method and apparatus for testing rock tenacity. 4,236,402, Cl. 73-12.000.
McGunigle, Richard D.: *See*—
Hatter, Edward E.; Taylor, Richard H.; and McGunigle, Richard D., 4,236,510, Cl. 128-24.00A.
McHenry Systems, Inc.: *See*—
Meyer-Arendt, Jurgen R., 4,236,821, Cl. 356-124.000.
McKavanagh, Gloria M.: *See*—
Selega, Zbigniew J.; Khalil, Ezzat N.; and McKavanagh, Gloria M., 4,237,112, Cl. 424-70.000.
McKee, James R., Sr.: *See*—
Byers, Stanley A.; McKee, James R., Sr.; and Gridley, Marvin C., 4,236,929, Cl. 106-52.000.
McLean, Graham W.: *See*—
Blenkinsop, Philip T.; McLean, Graham W.; and Turner, David, 4,237,396, Cl. 310-154.000.
McPherson, Billie J. Fan puller. 4,236,290, Cl. 29-239.000.
McQuade, Donal J.: *See*—
Sienkiewicz, Gerald C.; McQuade, Donal J.; and Leonard, Herbert G., 4,236,678, Cl. 242-55.19A.
McQuay-Perfex, Inc.: *See*—
Neudeck, Gene T., 4,236,577, Cl. 165-175.000.
Mead Corporation, The: *See*—
Scranton, Robert J., 4,237,466, Cl. 346-75.000.
Meadors, Howard C., Jr.: *See*—
Gitlin, Richard D.; Meadors, Howard C., Jr.; and Weinstein, Stephen B., 4,237,554, Cl. 375-15.000.
Medic, Nikolaj; Auel, Theodor; Bergner, Dieter; and Russow, Jurgen, to Hoechst Aktiengesellschaft. Process for alkali metal chloride electrolysis. 4,236,980, Cl. 204-98.000.
Medley, Frank W., III. Single copy periodical dispenser. 4,236,650, Cl. 221-226.000.
Medtronic, Inc.: *See*—
Gruenenwald, Stanley L., 4,236,523, Cl. 128-419.0PT.
McDonald, Ray S.; and Rossing, Martin A., 4,236,522, Cl. 128-419.0PG.
Powell, Richard M.; and Anderson, Katherine H., 4,236,524, Cl. 128-419.0PT.
Megar, George H.: *See*—
Hicks, Gordon C.; and Megar, George H., 4,237,106, Cl. 423-315.000.

Meggle Milchindustrie GmbH & Co.: *See—*
Engl, Robert; and Richter, Hans, 4,237,283, Cl. 544-186.000.
Mego Corp.: *See—*
Fauls, Thomas J., 4,236,347, Cl. 46-156.000.
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., to Gosudarstvenny Nauchnoissledovatelsky Energeticheskiy Institut Imeni G. M. Krzhizhanovskogo. Superconducting magnetic system. 4,237,507, Cl. 361-19.000.
Meining, Hans; Pfaller, Egon; Winkler, Otmar; and Kittel, Hilmar, to SKF Kugellagerfabriken GmbH. Roller having supporting body between outer tread body and inner bearing. 4,236,766, Cl. 308-15.000.
Meinke, Peter; and Zippe, Gernot, to G K T Gesellschaft fur Kernverfahrenstechnik mbH; and M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method and arrangement for the traversing of the critical rotational speeds of elongate rotors. 4,236,426, Cl. 74-574.000.
Melcher, Franz-Josef: *See—*
Knothe, Erich; and Melcher, Franz-Josef, 4,236,590, Cl. 177-200.000.
Melcher, Gerhard; and Weigel, Horst, to Klockner-Humboldt-Wedag AG. Method for the continuous recovery of tin from iron rich concentrates. 4,236,916, Cl. 75-85.000.
Melissa, Raymond F.: *See—*
Mayne, David W.; and Melissa, Raymond F., 4,236,835, Cl. 400-121.000.
Mello, Frank A., to Mello Manufacturing, Inc. Apparatus for blowing insulating material into an attic, wall cavity or wet spraying against a surface. 4,236,654, Cl. 222-238.000.
Mello Manufacturing, Inc.: *See—*
Mello, Frank A., 4,236,654, Cl. 222-238.000.
Mêloy Laboratories, Inc.: *See—*
Stahl, Quade R., 4,236,895, Cl. 23-232.00R.
Meltsch, Hans-Juergen: *See—*
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Melvin, Lawrence S., Jr.: *See—*
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Mentzel, Detlef; and Frei, Hans-Rudolf, to Ciba-Geigy Corporation. Process for fireproofing cellulose-containing fiber material dyed with copper-complex azo dyes. 4,237,179, Cl. 428-276.000.
Merck & Co., Inc.: *See—*
Bochis, Richard J.; and Kulsa, Peter, 4,237,300, Cl. 546-297.000.
Cragoe, Edward J., Jr.; and Hoffman, William F., 4,237,130, Cl. 424-248.500.
Cragoe, Edward J., Jr.; and Hoffman, William F., 4,237,144, Cl. 424-270.000.
Dolling, Ulf H., 4,237,315, Cl. 562-469.000.
Gillin, James; and Jacobus, David P., 4,237,116, Cl. 424-117.000.
Scattergood, Edgar M., 4,237,033, Cl. 260-6.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, 4,237,026, Cl. 252-299.000.
Metz, Harald, 4,237,223, Cl. 435-30.000.
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,237,044, Cl. 260-112.00B.
Merck Sharp & Dohme (I.A.) Corp.: *See—*
Hamel, Pierre A.; and Rokach, Joshua, 4,237,160, Cl. 424-275.000.
Merlina, Joseph F.; Redmond, John P.; Ulbrich, George; and Wagner, Richard M., to AMP Incorporated. Integrated circuit package and manufacturing method. 4,236,777, Cl. 339-17.0CF.
Merrick, Howard F.: *See—*
Korenko, Michael K.; Merrick, Howard F.; and Gibson, Robert C., 4,236,943, Cl. 148-32.500.
Merrimac Industries Incorporated: *See—*
Cappucci, Joseph D., 4,237,434, Cl. 333-202.000.
Merry, Carl A., to Schaefer Marine, Inc. Sail feeder. 4,236,475, Cl. 114-90.000.
Merten, Helmut L.; and Bachman, Gerald L., to Monsanto Company. Stabilized amorphous calcium carbonate. 4,237,147, Cl. 426-590.000.
Mertes, Paul M. Low friction drawer support. 4,236,773, Cl. 312-341.00R.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Botzler, Ludwig, 4,236,442, Cl. 91-375.00R.
Kissel, Gerhard K., 4,236,685, Cl. 244-83.00D.
Metal Box Limited: *See—*
Smith, Stanley; and Harries, John R., 4,236,625, Cl. 198-454.000.
Metcalf, Silas L., to Outboard Marine Corporation. Marine propeller fish line and weed cutter. 4,236,872, Cl. 416-146.00R.
Meteer, Charles L.: *See—*
Brueggemann, Walter H.; and Meteer, Charles L., 4,237,176, Cl. 428-212.000.
Metz, Harald, to Merck Patent Gesellschaft mit beschrankter Haftung. Sheet for picking off microorganisms. 4,237,223, Cl. 435-30.000.
Metzger, James I., Jr.: *See—*
Lambros, William S.; and Metzger, James I., Jr., 4,237,365, Cl. 219-139.000.
Meunier, Henry E. Device for use in the study of biochemical or enzymatic reactions produced by living organisms. 4,237,234, Cl. 435-301.000.
Meyer-Arendt, Jurgen R., to McHenry Systems, Inc. Method and apparatus for testing optical retrodirective prisms. 4,236,821, Cl. 356-124.000.
Meyer, Dieter: *See—*
Schwadike, Karl; Meyer, Dieter; and Puchta, Rolf, 4,236,320, Cl. 34-19.000.
Meyer, Leslie D., to General Electric Company. System for monitoring bearings and other rotating equipment. 4,237,454, Cl. 340-682.000.
Meyer Products, Inc.: *See—*
Hetrick, Vernon L., 4,236,329, Cl. 37-42.00R.
Meyer, Reinhard: *See—*
Henke, Ulrich; and Meyer, Reinhard, 4,236,376, Cl. 60-602.000.
Meyer, Walter; and Bara, Anton J., to Trisa Burstenfabrik A.G. Dispenser device with valve piston pump. 4,236,651, Cl. 222-82.000.
Michel, Eberhard: *See—*
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Michl, Rudy; and Dorsch, Peter, to Etablissement Dentaire Ivoclar. Dental alloy of bismuth-tin with additions of Ag, Sb and Cu. 4,236,922, Cl. 75-134.00D.
Middlebrook, Terence C., to Phillips Petroleum Company. Amusement device of coated paper and adherable object of oil-extended radial teleblock copolymer. 4,236,715, Cl. 273-95.00R.
Midland-Ross Corporation: *See—*
DePenti, Kenneth L., 4,236,644, Cl. 213-62.00R.
DePenti, Kenneth L., 4,236,645, Cl. 213-69.000.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Tsujino, Nobuyuki, to Fuji Photo Film Co., Ltd. Process for forming contrasty image. 4,237,214, Cl. 430-441.000.
Mikada, Hiroyuki, to Canon Kabushiki Kaisha. Electronic apparatus for indicating that a printer has been disabled. 4,237,541, Cl. 364-710.000.
Milanese, Giovanni: *See—*
Azzerri, Nazzareno; and Milanese, Giovanni, 4,236,977, Cl. 204-29.000.
Mildoon, John: *See—*
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Miller, George A.; and Owen, Ronald P., to Rohm and Haas Company. 1-Substituted aralkyl imidazoles and their use as fungicides. 4,237,158, Cl. 424-273.000.
Mills, Phillip R.; Luiz, Fernando A.; and Sorg, John H., Jr., to International Business Machines Corporation. Preventing initial program load failures. 4,237,533, Cl. 364-200.000.
Minakov, Nikolai V.: *See—*
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Minitronics Pty, Ltd.: *See—*
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Minnesota Micro Metal, Inc.: *See—*
Frantzen, John J., 4,236,357, Cl. 51-309.000.
Minnesota Mining and Manufacturing Company: *See—*
Appeldorn, Roger H., 4,237,493, Cl. 358-237.000.
Fanselow, Dan L., 4,237,211, Cl. 430-338.000.
Newell, Richard G.; and Rude, Harold E., 4,237,252, Cl. 525-454.000.
Rice, Thomas K., 4,236,893, Cl. 23-230.00B.
Minolta Camera Kabushiki Kaisha: *See—*
Hayashi, Toshio; and Imura, Toshinori, 4,236,796, Cl. 354-145.000.
Yamanishi, Akio, 4,236,826, Cl. 356-432.000.
Minz, Franz-Rudolf; and Wiechers, Herbert, to Bayer Aktiengesellschaft. Process and apparatus for electrolysis of hydrochloric acid. 4,236,983, Cl. 204-129.000.
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, to Toyo Jozo Kabushiki Kaisha. Lactate oxidase process for the manufacture thereof and analytical method and kit for the use of the same. 4,237,222, Cl. 435-25.000.
Mislin, Roland, to Sandoz Ltd. Anthraquinone reactive dyes. 4,237,284, Cl. 544-189.000.
Mista, Kresimir, to Karl Mayer Textilmaschinenfabrik GmbH. Thread inserter and braking mechanism for a knotting apparatus used on spooling machines. 4,236,739, Cl. 289-2.000.
Mitchell, Albert W., to Emerson Electric Company. Vegetation cutting apparatus. 4,236,311, Cl. 30-276.000.
Mitsubishi Petrochemical Company Limited: *See—*
Fuga, Nobuhiko; Uchimura, Kunio; and Takahashi, Hideyuki, 4,237,326, Cl. 585-4.000.
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.
Mitsubishi Seiko Kabushiki Kaisha: *See—*
Kamino, Kimiyuki, 4,236,919, Cl. 75-126.00H.
Mitsui Petrochemical Industries Ltd.: *See—*
Nambu, Hirohiko; Hashimoto, Isao; and Imai, Ichiro, 4,237,319, Cl. 568-571.000.
Takahashi, Takao, 4,237,037, Cl. 260-28.5AV.
Mitzel, Wilhelm: *See—*
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Miura, Katsunori: *See—*
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Miyasaka, Isamu: *See—*
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Miyasaka, Susumu; and Miyasaka, Isamu, to Kowa Denki Kogyo Kabushiki Kaisha. Glass-tube fuse. 4,237,440, Cl. 337-227.000.

Miyazaki, Hiroshi: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.
Mizelle, Ned W., to Hoover Universal, Inc. Sofa sleeper with polypropylene deck assembly. 4,236,260, Cl. 5-13.000.
Mizelle, Ned W., to Hoover Universal, Inc. Rocker swivel assembly for chairs. 4,236,752, Cl. 297-303.000.
Mizobuchi, Yuzo: *See—*
Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,237,468, Cl. 346-135.100.
M/ler, Gerd: *See—*
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Mo och Domsjo Aktiebolag: *See—*
Hultman, Bengt G.; and Berglund, Erik A., 4,236,960, Cl. 162-30.00K.
Mobay Chemical Corporation: *See—*
Barton, Danny B., 4,237,066, Cl. 260-552.0SC.
Mobil Oil Corporation: *See—*
Bell, Weldon K.; and Chang, Clarence D., 4,237,063, Cl. 260-449.00R.
Gough, Stanley T. D., 4,237,075, Cl. 260-976.000.
Lenhardt, Wilfried K., 4,237,422, Cl. 328-61.000.
Murray, James G., 4,237,255, Cl. 526-201.000.
Ramus, Joseph S., 4,236,349, Cl. 47-1.400.
Tabak, Samuel A.; and Morrison, Roger A., 4,236,996, Cl. 208-134.000.
Mocek, Aloysius M., Jr.: *See—*
Murray, Joseph E.; and Mocek, Aloysius M., Jr., 4,237,530, Cl. 362-418.000.
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, to Abbott Laboratories. Derivatives of fortimicin A. 4,237,269, Cl. 536-17.00R.
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, to Kyowa Hakko Kogyo Co., Ltd. Derivatives of fortimicin A. 4,237,272, Cl. 536-17.00R.
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Moers, Daniel; and Balland, Michel, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Pneumatic tire with anisotropic filler strip. 4,236,563, Cl. 152-354.00R.
Moertel, George B., to Textron Inc. Coupling element for slide fastener and method of manufacture. 4,236,683, Cl. 24-205.13R.
Mohr, Adolf; and Corbach, Rainer, to Robert Bosch GmbH. Electric machine, especially small motor. 4,237,397, Cl. 310-154.000.
Mol, Hans C.; and Brown, Michael A., to Pitney Bowes, Inc. Sheet stacking apparatus. 4,236,856, Cl. 414-54.000.
Molby, Lloyd A. Off-road vehicle that both oscillates and articulates. 4,236,591, Cl. 180-41.000.
Moldan, Karl; and Krueger, Wilm, to Hilti Aktiengesellschaft. Hammer drill with a lockable tool holder. 4,236,588, Cl. 173-48.000.
Molina, Jorge W., to Deutsch Fastener Corp. Ratchet bolt assembly. 4,236,562, Cl. 151-69.000.
Momonoi, Kaishu: *See—*
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.
Mondelli, Alfred A.: *See—*
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Monoski, William T.: *See—*
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Monsanto Company: *See—*
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Montedison S.p.A.: *See—*
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Monthony, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Polastri, Gian D., to Bio-Rad Laboratories, Inc. Micro-carrier cell culture. 4,237,218, Cl. 435-2.000.
Monticelli, Giulio. Self-locking nut. 4,236,561, Cl. 151-19.00R.
Moore Business Forms, Limited: *See—*
Hektoen, Per, 4,236,731, Cl. 282-11.50A.
Moore, David C.; Cooper, Edward W.; and Porteous, Archibald, to ACCO International Inc. Glide insert for hanging file folder system. 4,236,770, Cl. 312-184.000.
Moore, John R., to Hospital Communication Systems, Inc. Rapid response health care communications system. 4,237,344, Cl. 179-2.00A.
Moore, Richard W.: *See—*
Wootton, Gordon; and Moore, Richard W., 4,237,131, Cl. 424-248.510.
Moote, Bruce. Removable fog light filters. 4,237,523, Cl. 362-2.000.
Moreno, Joseph A. Frog game. 4,236,713, Cl. 273-1.00M.
Moretti, Anthony L., to E. D. Bullard Company. Respiration system. 4,236,514, Cl. 128-201.230.
Morgan, William K.: *See—*
Read, James L.; and Morgan, William K., 4,237,000, Cl. 209-319.000.
Mori, Yasuki: *See—*
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,269, Cl. 536-17.00R.
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,272, Cl. 536-17.00R.
Morimura, Syoji: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,237,294, Cl. 546-20.000.
Morita, Ken-ichi: *See—*
Fukuhara, Mototada; and Morita, Ken-ichi, 4,237,108, Cl. 423-447.400.
Hiramatsu, Toru; and Morita, Ken-ichi, 4,237,109, Cl. 423-447.500.
Morita, Toyoo; and Oura, Hiroshi, to Yoshida Kogyo K.K. Method and apparatus for forming space sections in a slide fastener. 4,236,293, Cl. 29-408.000.
Morita, Toyoo, to Yoshida Kogyo K.K. Device for spreading apart a pair of tapes. 4,236,304, Cl. 29-768.000.
Moritsugi, Takeharu: *See—*
Kitamura, Minoru; Hayashi, Tsutomu; Moritsugi, Takeharu; and Saruwatari, Mitsuyoshi, 4,236,914, Cl. 75-58.000.
Moritz, Victor, to Societe Orleanaise de Literie et de Mecanique. Seat for a public transport vehicle. 4,236,750, Cl. 297-183.000.
Moriya, Yasuo; and Komai, Takeshi, to Nippon Oil and Fats Co. Process for producing low molecular weight styrene series polymers. 4,237,257, Cl. 526-230.500.
Morris, Alan J.; and Rado, Theodore A., to Kerr-McGee Corporation. Slurry removal process. 4,236,896, Cl. 23-293.00R.
Morris, Joseph H., to United States of America, Navy. Friction reducing arrangement for hydraulic machines. 4,236,867, Cl. 415-26.000.
Morris, Paul L.: *See—*
Krchma, Ludwig C.; and Morris, Paul L., 4,236,951, Cl. 156-71.000.
Morrison, Archibald J. S. Sea swell compensation. 4,236,695, Cl. 254-172.000.
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., to Burroughs Wellcome Co. 2,7-Diamino-8-methyl-5-substituted pyrido{2,3-d}pyrimidin-6-ones. 4,237,289, Cl. 544-279.000.
Morrison, Roger A.: *See—*
Tabak, Samuel A.; and Morrison, Roger A., 4,236,996, Cl. 208-134.000.
Morrone, James V. Record album filing cabinet. 4,236,768, Cl. 312-10.000.
Mosby, John S., Jr., to Mosby, John S., Jr.; and Sealy, L. Gregg. Smoking apparatus. 4,236,539, Cl. 131-175.000.
Moss, Charles W. Portable tent. 4,236,543, Cl. 135-3.00R.
Motonami, Masanao: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,729, Cl. 280-804.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,730, Cl. 280-804.000.
Motorola, Inc.: *See—*
Felix, Kenneth A., 4,237,534, Cl. 364-200.000.
Smith, Stephen L., 4,237,547, Cl. 365-189.000.
Stein, Marc T., 4,237,414, Cl. 323-4.000.
Weinberg, Morton, 4,237,448, Cl. 340-311.000.
Motta, Raimondo, to Oxon Italia S.p.A. Process for obtaining 4,5-dichloro-2-phenyl-3(2H)-pyridazinone from 5-chloro-4-amino-2-phenyl-3(2H)-pyridazinone. 4,237,287, Cl. 544-241.000.
Mrozek, Christian: *See—*
Solf, Alexander; and Mrozek, Christian, 4,236,476, Cl. 114-91.000.
Mueller, Dale A., to Honeywell Inc. Heat pump compressor crankcase low differential temperature detection and control system. 4,236,379, Cl. 62-126.000.
Mueller, Gerhard: *See—*
Jarre, Wolfgang; Weyland, Peter; and Mueller, Gerhard, 4,237,240, Cl. 521-159.000.
Mueller, Martin L. Rotating display stand. 4,236,769, Cl. 312-135.000.
Mueller, Wolfgang, to Siemens Aktiengesellschaft. Device for adjusting the height of a ribbon guide. 4,236,839, Cl. 400-216.100.
Mukai, Takamitu; Fujii, Tomoo; and Kouno, Hiroya, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for protecting a compressor from breakdown. 4,236,621, Cl. 192-82.00T.
Mulder, Albertus J.; and de Jong, Aaldert J., to Shell Oil Company. Process for preparation of 1,5-dimethylbicyclo[3,2,1]octan-8-ol. 4,237,322, Cl. 568-820.000.
Muller, Erich, to Andreas Stihl. Portable working implement. 4,236,310, Cl. 30-276.000.
Muller, Manfred: *See—*
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, 4,236,997, Cl. 209-144.000.
Muller, Monika: *See—*
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.
Muller, Rene; and Stucki, Samuel, to BBC Brown, Boveri & Company, Limited. Electrode for water electrolysis. 4,236,993, Cl. 204-294.000.
Multimarques Inc.: *See—*
Satin, Morton, 4,237,170, Cl. 426-21.000.
Munro, James A.; and Lummis, Alan P., to Sperry Corporation. Agricultural harvesting machines with crop pick-up mechanisms. 4,236,372, Cl. 56-364.000.
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, to Nippon Shinyaku Co., Ltd. Morpholinone derivatives and method of use. 4,237,132, Cl. 424-248.520.
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, to Kanzaki Paper Manufacturing Co., Ltd. Heat-sensitive record material. 4,236,732, Cl. 282-27.500.

Murakami, Takeshi: *See—*
Hanma, Kentaro; and Murakami, Takeshi, 4,237,476, Cl. 358-38.000.

Muramatsu, Takao: *See—*
Endo, Ichiro; Kobayashi, Hajime; Yano, Yasuhiro; and Muramatsu, Takao, 4,237,213, Cl. 430-353.000.

Murata, Eiji: *See—*
Nakamura, Ken; Nakajima, Yasuo; Ofuji, Hiromichi; and Murata, Eiji, 4,236,493, Cl. 123-119.00A.

Murch, Robert M.: *See—*
Fulmer, Glenn E.; and Murch, Robert M., 4,237,182, Cl. 428-310.000.

Murphy, Clarence R.; Boehme, Robert E., deceased; by Boehme, Helen J., legal representative; and by Phelp, Joseph P., executor, to Gulf Oil Corporation. Method for preparation of fibrils. 4,237,081, Cl. 264-9.000.

Murray, James G., to Mobil Oil Corporation. Suspension stabilizer for p-methylstyrene suspension polymerization. 4,237,255, Cl. 526-201.000.

Murray, Joseph E.; and Mocek, Aloysius M., Jr., to Rowe Industries Inc., Division of Groman Corporation. High mast light support system. 4,237,530, Cl. 362-418.000.

Murray, Robert M. S.: *See—*
Pitches, Brian E.; Murray, Robert M. S.; and Greig, Ian A., 4,237,537, Cl. 364-465.000.

Musgrave, Daniel D. Magazine spring adjustment apparatus. 4,236,338, Cl. 42-90.000.

Musial, George J., to Gear/tronics Corporation. Traverse mechanism and method. 4,236,415, Cl. 74-25.000.

Mutschler, Erich; Prohaska, Hans; and Weber, Adam, to ITT Industries, Inc. Headlamp adjusting device. 4,237,529, Cl. 362-272.000.

Myers, Donald M., to Ludlow Industries, Inc. Motion monitoring apparatus. 4,237,517, Cl. 361-239.000.

Myrick, Alma L. Pressure transmitting apparatus. 4,236,412, Cl. 73-706.000.

Nachtkamp, Klaus: *See—*
Noll, Klaus; Nachtkamp, Klaus; and Pedain, Josef, 4,237,264, Cl. 528-67.000.

Nagai, Yasutaka: *See—*
Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, 4,237,135, Cl. 424-250.000.

Nagashima, Yukio: *See—*
Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,237,329, Cl. 585-474.000.

Nagiev, Vagif A. O.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Guseinov, Novruz I. O.; Nagiev, Vagif A. O.; and Sultanov, Nuri T. O., 4,237,323, Cl. 568-738.000.

Nagy, Zsolt: *See—*
Kiss, Sandor; and Nagy, Zsolt, 4,236,597, Cl. 181-224.000.

Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Recording member. 4,237,468, Cl. 346-135.100.

Naito, Michinori, to Trio Kabushiki Kaisha. Superheterodyne receiver having distortion reducing circuitry. 4,237,556, Cl. 455-154.000.

Naka, Hiromitsu. Turning type emergency escape. 4,236,601, Cl. 182-76.000.

Nakagawa, Nobuaki: *See—*
Okuyama, Tsuneo; Fujii, Tadashiro; Nakagawa, Nobuaki; and Kotani, Kikuo, 4,237,267, Cl. 536-1.000.

Nakaguti, Osamu: *See—*
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

Nakajima, Yasuo: *See—*
Nakamura, Ken; Nakajima, Yasuo; Ofuji, Hiromichi; and Murata, Eiji, 4,236,493, Cl. 123-119.00A.

Nakamine, Chosin; and Fuzii, Norihito, to Tokyo Shibaura Denki Kabushiki Kaisha. Toner concentration control device. 4,236,486, Cl. 118-691.000.

Nakamura, Hitoshi: *See—*
Takahashi, Akio; Tsumuki, Chiaki; and Nakamura, Hitoshi, 4,236,923, Cl. 75-208.00R.

Nakamura, Kazuo: *See—*
Fujiwara, Junichi; and Nakamura, Kazuo, 4,237,183, Cl. 428-336.000.

Nakamura, Ken; Nakajima, Yasuo; Ofuji, Hiromichi; and Murata, Eiji, to Nissan Motor Company, Limited. EGR Control system. 4,236,493, Cl. 123-119.00A.

Nakamura, Kotaro: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 4,237,217, Cl. 430-387.000.

Nakamura, Takeshi; and Kushima, Hiroshi, to Fuji Photo Film Co., Ltd. Sheet supplying apparatus. 4,236,710, Cl. 271-108.000.

Nakamura, Teruo: *See—*
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, 4,236,732, Cl. 282-27.500.

Nakamura, Yoshimitsu, to Matsushita Electric Works, Ltd. Method of making rotor coil of coreless motor. 4,236,295, Cl. 29-598.000.

Nakano, Hiroshige: *See—*
Matsuzaki, Kazuo; Katagiri, Shigenobu; and Nakano, Hiroshige, 4,236,447, Cl. 101-93.140.

Nakano, Seizo: *See—*
Oishi, Kazuaki; Nakano, Seizo; and Kitano, Yutaka, 4,237,520, Cl. 361-335.000.

Nakanoya, Takishi: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Nakao, Toshihiro, to Olympus Optical Co., Ltd. Operation mechanism for tape recorder. 4,236,423, Cl. 74-483.0PB.

Nakata, Tetsuya: *See—*
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.

Nakaya, Tadao; and Kobashi, Takashi, to Kabushiki Kaisha Mitutoyo Seisakusho. Measuring instrument. 4,236,481, Cl. 116-292.000.

Nakayama, Yoshinori: *See—*
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.

Nambu, Hirohiko; Hashimoto, Isao; and Imai, Ichiro, to Mitsui Petrochemical Industries Ltd. Process for liquid-phase oxidation of m-diisopropylbenzene. 4,237,319, Cl. 568-571.000.

Namiki, Naokuni, to Slidex Corporation. Filing sheet for microscope slides. 4,236,635, Cl. 206-456.000.

Narain, Kartik A., to Cyprus Metallurgical Processes Corporation. Recovery of elemental sulfur and metal values from tailings from copper recovery processes. 4,236,918, Cl. 75-101.00R.

Narasimha, Madihally J., to Granger Associates. Transmultiplexer. 4,237,551, Cl. 370-50.000.

Naruchi, Tatuyuki: *See—*
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.

Narui, Michinori: *See—*
Yamada, Yozo; and Narui, Michinori, 4,237,505, Cl. 360-122.000.

Nashua Corporation: *See—*
Davis, Austin E.; Cormier, Raymond G.; Lutz, Leo O.; Pauk, Henry T.; and Lones, Harry E., 4,236,483, Cl. 118-647.000.

National Printing Plate Company, Inc.: *See—*
Fishburn, Charles E., 4,236,542, Cl. 134-153.000.

National Research Development Corporation: *See—*
Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., 4,236,991, Cl. 204-272.000.
Colman, Derek A.; and Thew, Martin T., 4,237,006, Cl. 210-84.000.
Hughes, John F.; and Roberts, John M. C., 4,237,028, Cl. 252-359.00B.

National Semiconductor Corporation: *See—*
Buurma, Gerald B., 4,237,390, Cl. 307-362.000.

National Tax Administration Agency: *See—*
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.

National Utility Products Company: *See—*
Bowman, Harold M., 4,236,358, Cl. 52-19.000.

Natschke, Scott L.: *See—*
Kanjo, Wajih; Housman, Richard J.; and Natschke, Scott L., 4,236,424, Cl. 74-505.000.

Nawa, Hideo: *See—*
Okamato, Toshiaki; and Nawa, Hideo, 4,236,471, Cl. 112-240.000.

Neier, Wilhelm: *See—*
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,237,325, Cl. 568-896.000.

Nemenz, Andreas U., to Stabilus GmbH. Telescopic spring operable as an electric switch. 4,237,353, Cl. 200-52.00R.

Nemoto, Kazuyuki, to Olympus Optical Co., Ltd. Release electromagnet assembly. 4,237,439, Cl. 335-230.000.

Nerenberg, Robert W.; and Shiverdecker, James H., to Interstate Folding Box Company, The. Carton closing and sealing apparatus for lined cartons and method of closing same. 4,236,368, Cl. 53-491.000.

Netravali, Arun N.: *See—*
Brown, Earl F.; and Netravali, Arun N., 4,237,484, Cl. 358-142.000.

Neudeck, Gene T., to McQuay-Perfex, Inc. Separately removable tubes in heavy duty heat exchanger assemblies. 4,236,577, Cl. 165-175.000.

Neumann, Brigitte: *See—*
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.

Newbower, Ronald S.; and Philip, James H., to Massachusetts General Hospital. Cardiac output detection by multiple frequency thermodilution. 4,236,527, Cl. 128-692.000.

Newell, Richard G.; and Rude, Harold E., to Minnesota Mining and Manufacturing Company. Heat activatable one-part liquid resin systems. 4,237,252, Cl. 525-454.000.

Newitzki, Berthold, to Erich Ruhl Chemische Fabrik und Chemikalien-Grosshandel, Firma. Plastics material and method of producing said material. 4,237,236, Cl. 521-123.000.

Nicholson Manufacturing Company: *See—*
Nicholson, Thomas W., 4,236,554, Cl. 144-34.00R.

Nicholson, Thomas W., to Nicholson Manufacturing Company. Land clearing machine. 4,236,554, Cl. 144-34.00R.

Nicod, Frederick: *See—*
Pollitt, John M.; and Nicod, Frederick, 4,236,755, Cl. 297-483.000.

Nieuwendijk, Joris A. M.: *See—*
Vink, Nicolaas G.; Nieuwendijk, Joris A. M.; and Heijnemans, Werner A. L., 4,237,437, Cl. 335-211.000.

Nifco Inc.: *See—*
Omote, Kazuaki; and Watanabe, Koji, 4,236,274, Cl. 16-150.000.

Niggemeier, Joseph F.; Stoller, David A.; and Xander, William J., to ACF Industries, Incorporated. Plated container pedestal locking member. 4,236,853, Cl. 410-77.000.

Nihon Shinku Gijutsu Kabushiki Kaisha: *See—*
Fujiwara, Junichi; and Nakamura, Kazuo, 4,237,183, Cl. 428-336.000.

Nilson, Nils B. Syringe and disposable container therefor. 4,236,516, Cl. 128-216.000.

Nippon Cable System, Inc.: *See—*
Baba, Masanao, 4,236,421, Cl. 74-467.000.

Nippon Electric Co., Ltd.: *See—*
Aikoh, Shinichi; Niwa, Kunihiko; and Tomozawa, Atsushi, 4,237,552, Cl. 370-83.000.
Nokubo, Jyoji; and Mayumi, Hiroshi, 4,237,388, Cl. 307-214.000.
Yonezawa, Masatomo; Utsumi, Kazuaki; and Ohno, Tomeji, 4,236,928, Cl. 106-39.500.

Nippon Ester Co., Ltd.: *See—*
Kawamura, Hideo; Fukami, Ichiro; Wada, Shuhei; and Yoshikawa, Fusayuki, 4,237,261, Cl. 528-272.000.

Nippon Gaishi Kabushiki Kaisha: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, 4,237,030, Cl. 252-432.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, 4,237,141, Cl. 424-267.000.

Nippon Kogaku K.K.: *See—*
Shimomura, Jun, 4,236,803, Cl. 354-286.000.
Toyoda, Kenji; and Shimomura, Jun, 4,236,804, Cl. 354-286.000.

Nippon Oil and Fats Co.: *See—*
Moriya, Yasuo; and Komai, Takeshi, 4,237,257, Cl. 526-230.500.

Nippon Shinyaku Co., Ltd.: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.

Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.

Nippon Zeon Co., Ltd.: *See—*
Yamazaki, Masahiro; Makuta, Yoshihiro; Joh, Yasushi; and Kaneko, Noriaki, 4,237,013, Cl. 210-321.00B.

Nippondenso Co., Ltd.: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.

Nishibe, Koji, to Kabushiki Kaisha Kawai Sakki Susakusho. Apparatus for producing a vocal sound signal in an electronic musical instrument. 4,236,434, Cl. 84-1.190.

Nishida, Minoru: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.

Nishikawa, Akikazu, to Kenki Kagaku Keiki Co., Ltd. Signal transmission apparatus of two-wire type. 4,237,417, Cl. 324-118.000.

Nishio, Yoji; Hara, Toshitaka; and Hamada, Nagaharu, to Hitachi, Ltd. Microprocessor controlled display system. 4,237,543, Cl. 364-900.000.

Nishizawa, Hiroshi: *See—*
Ishimaru, Toshiaki; Nishizawa, Hiroshi; and Osada, Yuichi, 4,237,251, Cl. 525-440.000.

Nissan Motor Company, Limited: *See—*
Nakamura, Ken; Nakajima, Yasuo; Ofuji, Hiromichi; and Murata, Eiji, 4,236,493, Cl. 123-119.00A.
Omote, Kazuaki; and Watanabe, Koji, 4,236,274, Cl. 16-150.000.

Nissen, Peter: *See—*
Appel, Eggert; Geisler, Gottfried; Kiene, Wilfried; and Nissen, Peter, 4,236,410, Cl. 73-194.0EM.

Nisshin Steel Co., Ltd.: *See—*
Ito, Takehiko; Hirose, Yusuke; and Ishida, Hideaki, 4,237,192, Cl. 428-659.000.

Niwa, Kunihiko: *See—*
Aikoh, Shinichi; Niwa, Kunihiko; and Tomozawa, Atsushi, 4,237,552, Cl. 370-83.000.

Nixon, Larry R.: *See—*
Herbert, John T.; and Nixon, Larry R., 4,236,737, Cl. 285-234.000.

Noack, Rolf; Kromer, Karl; and Zimmet, Hans, to VEB Pentacon Dresden Kamera- und Kinowerke. Mirror mechanism for a monocular reflex camera. 4,236,797, Cl. 354-152.000.

Noda, Nobuhiro: *See—*
Takahashi, Nagashige; and Noda, Nobuhiro, 4,236,509, Cl. 128-4.000.

Noe, Oskar, to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH. Walking beam conveyor. 4,236,626, Cl. 198-488.000.

Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippon Gaishi Kabushiki Kaisha. Catalyst for purifying exhaust gas from an internal combustion engine. 4,237,030, Cl. 252-432.000.

Nojiro, Kikuo: *See—*
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,237,232, Cl. 435-243.000.

Nokubo, Jyoji; and Mayumi, Hiroshi, to Nippon Electric Co., Ltd. Inverter circuit. 4,237,388, Cl. 307-214.000.

Noll, Klaus; Nachtkamp, Klaus; and Pedain, Josef, to Bayer Aktiengesellschaft. Process for the preparation of polyurethanes which are dispersible in water. 4,237,264, Cl. 528-67.000.

Nordischer Maschinenbau Rud. Baader GmbH & Co. KG: *See—*
Westerdahl, Henri, 4,236,275, Cl. 17-46.000.

Nordlund, Tore: *See—*
Norin, Ake; and Nordlund, Tore, 4,236,910, Cl. 71-9.000.

Norin, Ake; and Nordlund, Tore, to Armerad Betong Vagforbattringar AB. Method of biologically decomposing organic material, and apparatus for carrying out the method. 4,236,910, Cl. 71-9.000.

Norlin Industries, Inc.: *See—*
Diaz, Raul, 4,236,774, Cl. 312-351.000.

Norris, Thomas E.; and Spence, Bertle, to Water Front Products, Inc. Boat hull cleaning device. 4,236,477, Cl. 114-222.000.

Norsk Hydro a.s.: *See—*
Wallevik, Oddmund; and Dessen, Erik, 4,237,111, Cl. 423-632.000.

Northeast Shipley Company, Ltd.: *See—*
Van Twuyver, Robert; and Johnson, James M., 4,236,276, Cl. 17-48.000.

Northup, Marcus A., Jr.: *See—*
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,236,935, Cl. 134-2.000.

Nortron Corporation: *See—*
Curchod, Donald B.; and Borner, Wilhelm, 4,236,315, Cl. 33-203.180.

Novotechnik KG Offterdinger & Co.: *See—*
Gass, Ernst, 4,237,443, Cl. 338-202.000.

NRM Corporation: *See—*
Turk, Leonard G.; and Enders, George E., 4,236,883, Cl. 425-32.000.

NTN Toyo Bearing Company, Limited: *See—*
Kuroda, Masao, 4,236,619, Cl. 192-45.000.

Nunogawa, Yasuhiro: *See—*
Ikeda, Tsuneo; and Nunogawa, Yasuhiro, 4,237,487, Cl. 358-154.000.

Nusser, Hermann: *See—*
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.

Nusz, Thomas R.: *See—*
Schreyer, Kenneth D.; Leverentz, Earl T.; and Nusz, Thomas R., 4,236,456, Cl. 105-154.000.

Oak Industries Inc.: *See—*
Larson, Willis A.; Vannice, Steven D.; and Jesson, Joseph E., 4,237,358, Cl. 200-159.00B.

O'Brien, Joseph P.: *See—*
Papay, Andrew G.; and O'Brien, Joseph P., 4,237,020, Cl. 252-47.500.

Oce'-Industries, Inc.: *See—*
Thompson, John U., 4,236,680, Cl. 242-74.100.

Oeda, Yoshitaka: *See—*
Murakami, Takeshi; Oeda, Yoshitaka; Hayashi, Hiroo; and Nakamura, Teruo, 4,236,732, Cl. 282-27.500.

Ofuji, Hiromichi: *See—*
Nakamura, Ken; Nakajima, Yasuo; Ofuji, Hiromichi; and Murata, Eiji, 4,236,493, Cl. 123-119.00A.

Ogawa, Hisashi: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,729, Cl. 280-804.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,730, Cl. 280-804.000.

Ogawa, Tadashi: *See—*
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.

Ogontz Controls Company: *See—*
Harasewych, Bohdan A., 4,236,547, Cl. 137-243.000.

O gren, Sven O.: *See—*
Lindberg, Ulf M. A.; Ross, Svante B.; Thorberg, Seth-Olov; and O gren, Sven O., 4,237,311, Cl. 560-173.000.

Ogura, Katsuyuki: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 4,237,298, Cl. 546-238.000.

Ohata, Katsuya: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.

Ohkura, Toshihiko: *See—*
Shibano, Yoshizo; Hatano, Tetsuo; and Ohkura, Toshihiko, 4,237,465, Cl. 343-894.000.

Ohno, Hiroyuki: *See—*
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,237,266, Cl. 536-1.000.

Ohno, Tomeji: *See—*
Yonezawa, Masatomo; Utsumi, Kazuaki; and Ohno, Tomeji, 4,236,928, Cl. 106-39.500.

Ohnuma, Norio: *See—*
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.

Oishi, Kazuaki; Nakano, Seizo; and Kitano, Yutaka, to Hitachi, Ltd. Gas insulated switch-gear apparatus. 4,237,520, Cl. 361-335.000.

Okada, Isao: *See—*
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.

Okada, Kenzoh: *See—*
Tanabe, Nato; Okada, Kenzoh; and Maeda, Norio, 4,237,181, Cl. 428-307.000.

Okamato, Toshiaki; and Nawa, Hideo, to Aisin Seiki Kabushiki Kaisha. Color cooled presser feet. 4,236,471, Cl. 112-240.000.

Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, to Pioneer Electronic Corporation. Magnetic tape running state and tape run amount display device. 4,237,373, Cl. 235-92.0EV.

Okayama, Akio: *See—*
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Oku, Teruo: *See—*
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

Okubo, Azuma: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Okuyama, Tsuneo; Fujii, Tadashiro; Nakagawa, Nobuaki; and Kotani, Kikuo, to Toyo Jozo Kabushiki Kaisha. Disulfide compounds of a carrier, having S—S exchange reactivity. 4,237,267, Cl. 536-1.000.

Oldford, William G., to Huron Tool & Manufacturing Division of U.S. Industries, Inc. Apparatus and method for fabricating pulleys. 4,236,289, Cl. 29-159.00R.

Olds, Linda W.; and Olds, Merton R., to Olds, Linda W.; Olds, Merton R.; and Williamson, John L. Separable multi-component aquarium filtering and cleaning device. 4,236,488, Cl. 119-5.000.

Olds, Merton R.: *See—*
Olds, Linda W.; and Olds, Merton R., 4,236,488, Cl. 119-5.000.

Olin Corporation: *See—*
Bartoszek, John A.; and Hirdler, Louis C., 4,237,285, Cl. 544-192.000.
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,236,570, Cl. 164-49.000.
Scardera, Michael; and Schifilliti, Garrett B., 4,236,891, Cl. 8-108.00A.

Oliver, David W., to United States of America, Army. Erosion lithography with high-aspect nozzle. 4,237,209, Cl. 430-317.000.

Olson, Charles L.; and Hacke, Joseph F., to RCA Corporation. Television camera highlight discharge apparatus. 4,237,491, Cl. 358-223.000.

Olympus Optical Co., Ltd.: *See—*
Kaneko, Nobutaka; and Fujimori, Ryo, 4,236,828, Cl. 356-444.000.
Nakao, Toshihiro, 4,236,423, Cl. 74-483.0PB.
Nemoto, Kazuyuki, 4,237,439, Cl. 335-230.000.
Osanai, Akira, 4,236,681, Cl. 242-198.000.
Sato, Masaaki, 4,237,540, Cl. 364-705.000.
Suzuki, Nobuyoshi; and Yoshinari, Shigeru, 4,236,988, Cl. 204-195.00R.

Omholt, Ray E. Wall system. 4,236,362, Cl. 52-228.000.

Omote, Kazuaki; and Watanabe, Koji, to Nissan Motor Company, Limited; and Nifco Inc. Pantographic open-close device. 4,236,274, Cl. 16-150.000.

Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Derivatives of thiazolidinecarboxylic acids and related acids. 4,237,129, Cl. 424-246.000.

Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Derivatives of thiazolidinecarboxylic acids and related acids. 4,237,134, Cl. 424-248.520.

Onishi, Hiroshi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.

Onodera, Hisakiti: *See—*
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, to Hitachi, Ltd. Method of producing sintered material having high damping capacity and wearing resistance and resultant products. 4,236,925, Cl. 75-229.000.

Ooshiro, Hideyuki; and Chiba, Masakazu, to Shiroki Kinzoku; and Toyota Jidosha Kogyo Kabushiki Kaisha. Seat reclining apparatus. 4,236,753, Cl. 297-364.000.

Opfer, John C., to S & C Electric Company. Operating mechanism for a high-voltage switch. 4,237,357, Cl. 200-153.0SC.

Oppenlaender, Knut: *See—*
Krapf, Heinz; Oppenlaender, Knut; and Uhl, Guenter, 4,237,320, Cl. 568-609.000.

Oronzio de Nora Impianti Elettrochimici S.p.A.: *See—*
de Nora, Oronzio; Giuffre, Luigi; and Modica, Giovanni, 4,236,979, Cl. 204-98.000.

Orr, David A.; Gala, Hiren S.; and Scagnelli, George J., to Textron Inc. Method of positioning, gapping and applying stop to slide fastener. 4,236,292, Cl. 29-408.000.

ORTEC Incorporated: *See—*
Raudorf, Thomas W., 4,237,470, Cl. 357-30.000.

Orth, Hans-Dieter: *See—*
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, 4,237,044, Cl. 260-112.00B.

Ortho Diagnostics, Inc.: *See—*
Weiner, Irving L., 4,237,424, Cl. 328-175.000.

Ortho Pharmaceutical Corporation: *See—*
Chen, Robert H. K., 4,237,054, Cl. 260-340.600.
Hajos, Zoltan G.; and Wachter, Michael P., 4,237,055, Cl. 260-340.600.
Kane, Vinayak V., 4,237,053, Cl. 260-333.000.

Ortofon Manufacturing A/S: *See—*
Hansen, Bjarne S.; and Gudmandsen, Robert, 4,237,348, Cl. 179-100.41R.
Hansen, Bjarne S.; and Gudmandsen, Robert, 4,237,349, Cl. 179-100.41D.

Osada, Yuichi: *See—*
Ishimaru, Toshiaki; Nishizawa, Hiroshi; and Osada, Yuichi, 4,237,251, Cl. 525-440.000.

Osaka Soda Co. Ltd.: *See—*
Matoba, Yasuo; Hashimoto, Akira; and Sugahara, Mikio, 4,237,247, Cl. 525-335.000.
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.

Osaka, Takeshi. Safety-enhancing walking stick. 4,236,544, Cl. 135-66.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Tape recorder. 4,236,681, Cl. 242-198.000.

Osswald, Norbert: *See—*
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.

Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, to BASF Aktiengesellschaft. Manufacture of aqueous methanolic solution of sodium formate. 4,237,318, Cl. 562-609.000.

Otis Engineering Corporation: *See—*
Ahangarzadeh, Mansour, 4,236,734, Cl. 285-26.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*
Torii, Sigeru; Tanaka, Hideo; and Kobayashi, Yuichi, 4,237,308, Cl. 560-122.000.

Oura, Hiroshi: *See—*
Morita, Toyoo; and Oura, Hiroshi, 4,236,293, Cl. 29-408.000.

Outboard Marine Corporation: *See—*
Fairchild, Harold W., 4,236,494, Cl. 123-148.0CC.
Metcalf, Silas L., 4,236,872, Cl. 416-146.00R.

Outokumpu Oy: *See—*
Makipirtti, Simo A. I.; and Kayhko, Jussi J., 4,236,700, Cl. 266-161.000.

Owen, Ronald P.: *See—*
Miller, George A.; and Owen, Ronald P., 4,237,158, Cl. 424-273.000.

Oxon Italia S.p.A.: *See—*
Motta, Raimondo, 4,237,287, Cl. 544-241.000.

Ozaki, Masahiko: *See—*
Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, 4,237,256, Cl. 526-229.000.

Ozaki, Sho: *See—*
Iida, Takao; Ozaki, Sho; and Kotaka, Toshihiko, 4,237,230, Cl. 435-207.000.

Ozaki, Takayuki: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.

P A Management Consultants Limited: *See—*
Blenkinsop, Philip T.; McLean, Graham W.; and Turner, David, 4,237,396, Cl. 310-154.000.

Packo, Joseph J.; and Bailey, Donald L., to Packo, Joseph J. Sealing leaks by polymerization of volatilized aminosilane monomers. 4,237,172, Cl. 428-63.000.

Page, Wilbur M., to Clayton Dewandre Company Limited. Dual circuit braking system employing single load sensing valve in one circuit and relay valve in other circuit. 4,236,761, Cl. 303-6.00C.

Pako Corporation: *See—*
Anderson, Richard D.; and Wedel, John A., 4,236,815, Cl. 355-29.000.
Fauchier, Jess F., II, 4,236,818, Cl. 355-77.000.

Palitex Project Company GmbH: *See—*
Marbacher, Lothar, 4,236,374, Cl. 57-279.000.

Palmer, John P., to General Dynamics Corporation Pomona Division. Discretely positioned magnetic fiber optic scanner. 4,236,784, Cl. 350-96.200.

Palmonari, Carlo; and Gavioli, Gabriele. Drying chamber. 4,236,321, Cl. 34-57.00E.

Pampouchidis, Georgios; and Honig, Helmut, to Vianova Kunstharz, A.G. Cathodically depositable resins and process of preparing same. 4,237,038, Cl. 260-29.2TN.

Papantoniou, Christos: *See—*
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,237,253, Cl. 526-75.000.

Papay, Andrew G.; and O'Brien, Joseph P., to Edwin Cooper, Inc. Lubricating and fuel compositions containing succinimide friction reducers. 4,237,020, Cl. 252-47.500.

Papuchon, Michel; Puech, Brigitte; and Werner, Michel, to Thomson-CSF. Non linear thin layer optical device. 4,236,785, Cl. 350-96.140.

Park, Sang M.: *See—*
Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,237,084, Cl. 264-61.000.

Parno Corp.: *See—*
Beck, Richard A.; and Presley, Glen T., 4,236,595, Cl. 180-243.000.

Parrier, Andre'; Parrier, Jean; and Parrier, Henri. Multiple-pane window comprising a fluid filter curtain. 4,236,360, Cl. 52-171.000.

Parrier, Henri: *See—*
Parrier, Andre'; Parrier, Jean; and Parrier, Henri, 4,236,360, Cl. 52-171.000.

Parrier, Jean: *See—*
Parrier, Andre'; Parrier, Jean; and Parrier, Henri, 4,236,360, Cl. 52-171.000.

Parsons, John H., to Fisons Limited. 1,2,4,5-Tetrazines. 4,237,127, Cl. 424-244.000.

Partin, Igor A.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.

Passovoy, Alexander E., to Anodex. Door frame assembly. 4,236,354, Cl. 49-504.000.

Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., to Texaco Inc. Novel process for preparing aniline by catalytic reaction of vinyl cyclohexene and nitrobenzene. 4,237,070, Cl. 260-580.000.

Pauk, Henry T.: *See—*
Davis, Austin E.; Cormier, Raymond G.; Lutz, Leo O.; Pauk, Henry T.; and Lones, Harry E., 4,236,483, Cl. 118-647.000.

Paul, Samuel J., to Sperry Corporation. Means for inhibiting the separation of toner particles from dispersant in a copy machine. 4,236,810, Cl. 355-10.000.

Paul Vahle KG: *See—*
Hillmann, Willi, 4,236,616, Cl. 191-59.100.

Paul, Volker: *See—*
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,237,143, Cl. 424-270.000.

Pawelski, Ludwig: *See—*
Koppers, Manfred; and Pawelski, Ludwig, 4,236,850, Cl. 405-291.000.

Payne, David A.; Park, Sang M.; and Jahnke, Otto C., to University of Illinois Foundation. Method of producing internal boundary layer ceramic compositions. 4,237,084, Cl. 264-61.000.

Pechau, Gerhard: *See—*
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, 4,236,551, Cl. 140-1.000.

Pecota, Walter, to Wagner Electric Corporation. No-relight cigar lighter socket. 4,237,367, Cl. 219-265.000.

Pedain, Josef: *See—*
Noll, Klaus; Nachtkamp, Klaus; and Pedain, Josef, 4,237,264, Cl. 528-67.000.

Pedro-Palomer, Enrique. Rotatable and supporting mechanisms. 4,236,765, Cl. 308-9.000.

Pellerin Milnor Corporation: *See—*
Katzfey, James M., 4,236,393, Cl. 68-27.000.

Peltzer, Bernd: *See—*
von Harpe, Hannes; Bottenbruch, Ludwig; Peltzer, Bernd; and Schulz-Walz, Hansjochen, 4,237,244, Cl. 525-171.000.

Penkina, Galina V.: *See—*
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V., 4,237,398, Cl. 310-214.000.

Pennella, John J.: *See—*
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.

Pennock, Theodorus A. F., to B.V. Neratoom. Sealing bushing. 4,236,721, Cl. 277-14.00V.

Per Sci, Inc.: *See—*
Erickson, Robert W., Jr.; and Stevens, G. Randall, 4,237,502, Cl. 360-78.000.

Permo S.A.: *See—*
Le Dall, Guy, 4,237,538, Cl. 364-500.000.

Perotto, Jean-Felix: *See—*
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, 4,237,548, Cl. 368-69.000.

Perrella, Emilio. Dispensing lid for a container of loose solid products. 4,236,656, Cl. 222-517.000.

Pertec Computer Corporation: *See—*
Barmache, Evan L.; and Brand, Abraham, 4,237,501, Cl. 360-75.000.

Peters, Klaus J.: *See—*
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.

Petersen, Arthur W.: *See—*
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,236,935, Cl. 134-2.000.

Peterson, Raymond L.: *See—*
Bradley, Robert W.; Bray, Donald L.; and Peterson, Raymond L., 4,236,268, Cl. 12-146.00S.

Petrini, Julian L.: *See—*
Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L., 4,237,376, Cl. 235-487.000.

Petrini, Madeline A.: *See—*
Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L., 4,237,376, Cl. 235-487.000.

Pfadenhauer, Berthold: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.

Pfaller, Egon: *See—*
Meining, Hans; Pfaller, Egon; Winkler, Otmar; and Kittel, Hilmar, 4,236,766, Cl. 308-15.000.

Pfannmuller, Joachim: *See—*
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.

Pfizer Inc.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,237,133, Cl. 424-248.520.
Campbell, Simon F.; Danilewicz, John C.; and Greengrass, Colin W., 4,237,138, Cl. 424-251.000.

Pfleger, Robert K., to Ecodyne Corporation. Liquid metering pump. 4,236,881, Cl. 417-502.000.

Pharmindustrie: *See—*
Champseix, Alain A.; Gueremy, Claude G. A.; and Le Fur, Gerard R., 4,237,139, Cl. 424-258.000.

Phelp, Joseph P., executor: *See—*
Murphy, Clarence R.; Boehme, Robert E., deceased; Boehme, Helen J., legal representative; and Phelp, Joseph P., executor, 4,237,081, Cl. 264-9.000.

Philip, James H.: *See—*
Newbower, Ronald S.; and Philip, James H., 4,236,527, Cl. 128-692.000.

Phillips Petroleum Company: *See—*
Blackwell, Jennings P., 4,237,039, Cl. 260-29.20R.
Boultinghouse, Harold D., 4,237,156, Cl. 427-248.00A.
Childs, William V., 4,236,975, Cl. 203-14.000.
Fodor, Lawrence M., 4,237,029, Cl. 252-429.00B.
Hsieh, Henry L., 4,237,246, Cl. 525-332.000.
LaSpisa, Ronald J.; and Giles, Richard F., 4,237,082, Cl. 264-40.600.
Lewis, Robert J., 4,237,092, Cl. 422-62.000.
McCoy, Raymond D., 4,237,093, Cl. 422-62.000.
Middlebrook, Terence C., 4,236,715, Cl. 273-95.00R.
Stapp, Paul R., 4,237,071, Cl. 260-597.00B.
Stapp, Paul R., 4,237,312, Cl. 560-246.000.
Stapp, Paul R., 4,237,331, Cl. 585-845.000.

Pickard, George L.: *See—*
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,236,885, Cl. 425-514.000.

Pierburg GmbH & Co. KG: *See—*
Henke, Ulrich; and Meyer, Reinhard, 4,236,376, Cl. 60-602.000.

Pierce, Thomas V., Jr., to American Standard Inc. Protective electrical discharge device. 4,237,515, Cl. 361-127.000.

Pierce, Thomas V., Jr., to American Standard Inc. Protective electrical discharge device. 4,237,516, Cl. 361-127.000.

Pierrel, Michel; and Bellocci, Rio, to Pont-a-Mousson S.A. Process and installation for the continuous casting of tubular products. 4,236,571, Cl. 164-85.000.

Pioneer Electronic Corporation: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Sueyoshi, Susumu, 4,237,426, Cl. 330-296.000.
Yamada, Yozo; and Narui, Michinori, 4,237,505, Cl. 360-122.000.

Piovoso, Michael J.; Smith, Edmund H., Jr.; and Wolf, William E., to Du Pont de Nemours, E. I., and Company. On-line web inspection system. 4,237,539, Cl. 364-552.000.

Pitches, Brian E.; Murray, Robert M. S.; and Greig, Ian A., to Ferranti Limited. Price display setting arrangements. 4,237,537, Cl. 364-465.000.

Pitches, Ernest W.: *See—*
Burgess, George; and Pitches, Ernest W., 4,236,999, Cl. 209-250.000.

Pitney Bowes, Inc.: *See—*
Mol, Hans C.; and Brown, Michael A., 4,236,856, Cl. 414-54.000.

Platt Saco Lowell Limited: *See—*
Gillespy, Keith R., 4,236,319, Cl. 34-12.000.

Playfoot, Kerwin C.; and Goldstein, Norman P., to Westinghouse Electric Corp. Self-powered radiation detector with insulated inner and outer collector electrodes. 4,237,380, Cl. 250-370.000.

Plessey Handel und Investments AG: *See—*
Turner, Horace G.; and Taylor, Peter J., 4,236,572, Cl. 165-38.000.

Plimley, Raymond E.: *See—*
Backhurst, John R.; Fleischmann, Martin; Goodridge, Francis; and Plimley, Raymond E., 4,236,991, Cl. 204-272.000.

Plokhov, Viktor I.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.

Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
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Pohlenz, Elmer E., to Aluminum Company of America. Induction heat sealing. 4,237,360, Cl. 219-10.410.

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Monthony, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Polastri, Gian D., 4,237,218, Cl. 435-2.000.

Poletto, John F.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.

Policy, Jene A.; and Giuliano, Peter A. Apparatus for caster adjustment. 4,236,728, Cl. 280-661.000.
Poliniak, Eugene S.: *See—*
Desai, Nitin V.; and Poliniak, Eugene S., 4,237,208, Cl. 430-270.000.
Pollitt, John M.; and Nicod, Frederick, to Kangol Magnet Limited. Shoulder height adjuster for seat belt systems. 4,236,755, Cl. 297-483.000.
Polotsky, Leonid M.: *See—*
Gelperin, Nison I.; Polotsky, Leonid M.; and Konovalenko, Nikolai A., 4,236,958, Cl. 159-16.00S.
Polson, Jack R., to United States of America, Army. Electrolysis of lead azide. 4,236,982, Cl. 204-116.000.
Polysius AG: *See—*
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, 4,236,997, Cl. 209-144.000.
Pommerrenig, Dieter H., to Hamamatsu Corporation; and Hamamatsu TV Co, Ltd. Method of producing a semiconductor photodiode of indium antimonide and device thereof. 4,237,471, Cl. 357-30.000.
Pont-a-Mousson S.A.: *See—*
Pierrel, Michel; and Bellocci, Rio, 4,236,571, Cl. 164-85.000.
Poot, Martinus, to Machinefabriek Kreber B.V. Ball joint for two pipe ends. 4,236,738, Cl. 285-263.000.
Popoff, Michel; Brochon, Marie-Jose; and Brault, Georges, to Institut Pasteur. Device for multiple analyses. 4,237,096, Cl. 422-102.000.
Poppendiek, Heinz F., to Thermonetics Corporation. Means and techniques useful in establishing R values in insulation. 4,236,403, Cl. 73-15.00A.
Porta Systems Corp.: *See—*
De Luca, Paul V.; and Fasano, Michael C., 4,237,346, Cl. 179-35.000.
Porteous, Archibald: *See—*
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Porter, John W.: *See—*
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Porter, William P.: *See—*
Enelow, Michael R.; Levy, Michael; and Porter, William P., 4,237,536, Cl. 364-465.000.
Posleider, Grigory Y.: *See—*
Kartavtsev, Viktor M.; Posleider, Grigory Y.; Bytsak, Vladimir S.; and Bukhteev, Pavel I., 4,236,300, Cl. 29-736.000.
Post Office, The: *See—*
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.
Poupko, Felice. Foldable furniture system. 4,236,460, Cl. 108-41.000.
Powell, James E., to Shell Oil Company. Cyclopropanecarboxylate pesticides. 4,237,164, Cl. 424-304.000.
Powell, Richard M.; and Anderson, Katherine H., to Medtronic, Inc. Program testing apparatus. 4,236,524, Cl. 128-419.0PT.
PPG Industries, Inc.: *See—*
Dahlberg, Lois A., 4,236,989, Cl. 204-252.000.
Hummel, Merritt J., 4,236,906, Cl. 65-27.000.
Thomas, Dean L.; Frank, Robert G.; and Claassen, George R., 4,236,909, Cl. 65-115.000.
Prengaman, Raymond D.; and McDonald, Herschel B., to RSR Corporation. Stable lead dioxide anode and method for production. 4,236,978, Cl. 204-57.000.
Prescott, Ernest F.: *See—*
Hildebrand, Donald L.; and Prescott, Ernest F., 4,236,756, Cl. 298-11.000.
Presley, Glen T.: *See—*
Beck, Richard A.; and Presley, Glen T., 4,236,595, Cl. 180-243.000.
Presta, John C.: *See—*
Yates, Derek N.; and Presta, John C., 4,236,386, Cl. 64-1.00S.
Priam: *See—*
Ho, Bin L.; and Guerini, Albert, 4,237,504, Cl. 360-106.000.
Prible, Glen V., to Combustion Engineering, Inc. Method for disposal of sodium waste material. 4,237,103, Cl. 423-207.000.
Price, Earl T., to Price, Earl T. Paster pilot sensor for press. 4,236,449, Cl. 101-228.000.
Prikkel, John, III. Thermal damper assembly having position controls. 4,236,668, Cl. 236-1.00G.
Printronix, Inc.: *See—*
Mayne, David W.; and Melissa, Raymond F., 4,236,835, Cl. 400-121.000.
Prittie, Allan R. Printing and die-cutting apparatus. 4,236,955, Cl. 156-353.000.
Procter & Gamble Company, The: *See—*
Kardouche, Nabil G., 4,237,155, Cl. 427-242.000.
Rudkin, Arthur L.; Clint, John H.; and Young, Kenneth, 4,237,016, Cl. 252-8.800.
Prohaska, Hans: *See—*
Mutschler, Erich; Prohaska, Hans; and Weber, Adam, 4,237,529, Cl. 362-272.000.
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Puchta, Rolf: *See—*
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Puech, Brigitte: *See—*
Papuchon, Michel; Puech, Brigitte; and Werner, Michel, 4,236,785, Cl. 350-96.140.
Pugin, Andre: *See—*
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L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,292, Cl. 546-7.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,293, Cl. 546-7.000.
Pujman, Vojtech: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.
Pullman Incorporated: *See—*
Varda, Eugene I., 4,236,458, Cl. 105-308.00R.
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, to Hoechst Aktiengesellschaft. Use of crosslinked polymers to increase the viscosity in cosmetic, pharmaceutical and technical compositions. 4,237,243, Cl. 525-154.000.
Queneau, Paul E.; and Schuhmann, Reinhardt, Jr. Process for oxygen sprinkle smelting of sulfide concentrates. 4,236,915, Cl. 75-74.000.
Quinto, Dennis T.: *See—*
Bhattacharya, Debanshu; Quinto, Dennis T.; and Holowaty, Michael O., 4,236,939, Cl. 148-2.000.
R. L. Drake Company: *See—*
Denker, Jerry B., 4,237,521, Cl. 361-384.000.
Raad, Bjorn H.: *See—*
Bjor, Hakon E.; and Raad, Bjorn H., 4,237,463, Cl. 343-180.000.
Rado, Theodore A.: *See—*
Morris, Alan J.; and Rado, Theodore A., 4,236,896, Cl. 23-293.00R.
Ragaller, Klaus, to BBC Brown, Boveri & Company Limited. Electrical compression switch with contact movement assistor. 4,237,356, Cl. 200-148.00A.
Ragle, Herbert U., to Burroughs Corporation. Semi-rigid magnetic recording disk module. 4,237,503, Cl. 360-99.000.
Raines, Dale A.; and Ainsworth, Oliver C., to Dow Chemical Company, The. Production of monoglycols from alkylene carbonates. 4,237,324, Cl. 568-858.000.
Rairden, John R., III: *See—*
Jackson, Melvin R.; and Rairden, John R., III, 4,237,193, Cl. 428-678.000.
Rall, Bernhard; and Hoppner, Dietrich, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit arrangement for stabilizing a direct current. 4,237,413, Cl. 323-4.000.
Ramsperger, David C., to McFarlin, Skip D., a part interest. System for automatically controlling automotive starting and accessory functions. 4,236,594, Cl. 180-167.000.
Ramus, Joseph S., to Mobil Oil Corporation. Algae biopolymer production. 4,236,349, Cl. 47-1.400.
Raseley, LeRoy J.; Forster, Leslie L.; and Hay, Edward F., to Ecolaire Incorporated. Tube bundle support plate. 4,236,575, Cl. 165-113.000.
Ratigan, Brian; Longley, Karl E.; and Roop, Robert N., to Fischer & Porter Co. Gravity flow disinfection contactor. 4,237,008, Cl. 210-205.000.
Ratliff, Roger D. Transport vehicle. 4,236,747, Cl. 296-24.00R.
Raudorf, Thomas W., to ORTEC Incorporated. Hyperpure germanium coaxial radiation detector. 4,237,470, Cl. 357-30.000.
Rauwendaal, Chris: *See—*
van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., 4,237,441, Cl. 338-22.00R.
Raybon, James C., Jr.; Darby, Malcolm O.; and Derrick, Thomas V., Jr., to Allied Chemical Corporation. Highly oriented, partially drawn, untwisted, compact poly(ε-caproamide) yarn. 4,237,187, Cl. 428-399.000.
Rayboy, Eric R. Gasoline pump clip cap. 4,236,552, Cl. 141-98.000.
Raychem Corporation: *See—*
Horsma, David A.; and Diaz, Stephen H., 4,236,949, Cl. 156-49.000.
van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., 4,237,441, Cl. 338-22.00R.
Rayford, Warren E.; and Wing, Robert E., to United States of America, Agriculture. Crosslinked starch halohydrins and their nitrogen-containing substitution products. 4,237,271, Cl. 536-47.000.
Raymond Corporation, The: *See—*
McCormick, Edward J., 4,236,862, Cl. 414-633.000.
Raytheon Company: *See—*
Kemp, Wayne T., 4,236,503, Cl. 126-215.000.
RCA Corporation: *See—*
Deckert, Cheryl A.; Comizzoli, Robert B.; and Schnable, George L., 4,237,379, Cl. 250-302.000.
Desai, Nitin V.; and Poliniak, Eugene S., 4,237,208, Cl. 430-270.000.
Dougherty, Robert S., 4,237,210, Cl. 430-318.000.
Harford, Jack R., 4,237,490, Cl. 358-174.000.
Hollingsworth, Richard J., 4,237,472, Cl. 357-43.000.
Kosonocky, Walter F.; and Angle, Rodney L., 4,237,383, Cl. 250-578.000.
Ladany, Ivan, 4,237,474, Cl. 357-81.000.
McCoy, John F., 4,237,438, Cl. 335-214.000.
Olson, Charles L.; and Hacke, Joseph F., 4,237,491, Cl. 358-223.000.
Rhodes, Randy D., 4,237,423, Cl. 328-133.000.
Roach, William R.; and Sheng, Ping, 4,236,823, Cl. 356-351.000.
Weimer, Paul K., 4,237,477, Cl. 358-44.000.
Read, James L.; and Morgan, William K., to F. T. Read & Sons, Inc. Shaker assembly for screening and scalping. 4,237,000, Cl. 209-319.000.
Recaro GmbH & Co.: *See—*
Strien, Werner, 4,236,751, Cl. 297-216.000.

Reck, Richard A., to Akzona Incorporated. Process for preparing quaternary ammonium compositions. 4,237,064, Cl. 260-459.00A.
Redmond, John P.: *See—*
Merlina, Joseph F.; Redmond, John P.; Ulbrich, George; and Wagner, Richard M., 4,236,777, Cl. 339-17.0CF.
Reed Ltd.: *See—*
Bialski, Alexander; Gentile, Camillo; and Sepall, Ola, 4,236,676, Cl. 241-74.000.
Reed, Philip W.; and Alexander, John D., to Conoco, Inc. Method and apparatus for sonic velocity type water cut measurement. 4,236,406, Cl. 73-61.10R.
Reen, Orville W., to Allegheny Ludlum Steel Corporation. Phosphorus-iron powder and method of producing soft magnetic material therefrom. 4,236,945, Cl. 148-105.000.
Reichenberger, Arthur M. Beverage portion controller. 4,236,553, Cl. 141-198.000.
Reifschneider, Walter, to Dow Chemical Company, The. N-(4-Chloro-2-methylphenyl)-N-hydroxy methanimidamide and its pesticidal use. 4,237,168, Cl. 424-326.000.
Reinders, Jannes, to Jannes Reinders & Noord-Nederlandache Machinefabriek B. V. Gripping-lifting apparatus. 4,236,744, Cl. 294-88.000.
Reinehr, Dieter: *See—*
Bader, Rolf; and Reinehr, Dieter, 4,237,275, Cl. 542-417.000.
Reinhall, Rolf B. Method of producing fiber pulp by grinding fibrous material in a steam environment. 4,236,959, Cl. 162-23.000.
Reischauer, Axel, to Gold- und Silber- Scheideanstalt Oberstein Franz Reischauer. Frame for a case, wallet or similar device. 4,236,560, Cl. 150-46.000.
Remi, Jean-Pierre: *See—*
Kiehl, Jean-Pierre; Remi, Jean-Pierre; and Schoennahl, Jacques R. P., 4,236,931, Cl. 106-64.000.
Reng, Alwin: *See—*
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.
Resch, Reinhard, to Daimler-Benz Aktiengesellschaft. Brake valve especially for motor vehicles. 4,236,763, Cl. 303-54.000.
Retzloff, James B.: *See—*
Davis, Bryan T.; and Retzloff, James B., 4,236,898, Cl. 44-66.000.
Reuland, Joachim: *See—*
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.
Reymond, Gilbert: *See—*
Deglin, Rene'; and Reymond, Gilbert, 4,237,545, Cl. 364-900.000.
Rhodes, Randy D., to RCA Corporation. Digital phase detector. 4,237,423, Cl. 328-133.000.
Rhone-Poulenc Industries: *See—*
Aviron-Violet, Paul; and Dang, Tuan-Phat, 4,237,072, Cl. 260-601.00R.
Dougier, Patrick; Fouassier, Claude; and Latourrette, Bertrand, 4,237,027, Cl. 252-301.40H.
Rhudy, John S.: *See—*
Knight, Bruce L.; Rhudy, John S.; and Gogarty, William B., 4,236,545, Cl. 137-13.000.
Ribka, Joachim: *See—*
Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, 4,237,249, Cl. 525-369.000.
Quack, Jochen M.; Reng, Alwin; Balzer, Juliane; Engelhardt, Friedrich; and Ribka, Joachim, 4,237,243, Cl. 525-154.000.
Rice, Thomas K., to Minnesota Mining and Manufacturing Company. Method for the assay of classes of antigen-specific antibodies. 4,236,893, Cl. 23-230.00B.
Rich Products Corporation: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,237,146, Cl. 426-330.000.
Richard, Patricia A. Method of screening for sickle cell disease by detection of porphyrins and porphyrin metabolites in human dentition. 4,236,526, Cl. 128-633.000.
Richards, Paul E. Portable self-contained amplifier and loudspeaker apparatus. 4,237,341, Cl. 179-1.0MG.
Richards, William: *See—*
Whitney, Donald B.; Grolman, Bernard; and Richards, William, 4,236,793, Cl. 351-21.000.
Richardson Company, The: *See—*
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Richter Gedeon Vegyeszeti Gyar RT: *See—*
Horvath, Tibor; Csanyi, Endre; Eckhardt, Sandor; and Kiraly nee Vida, Emilia, 4,237,273, Cl. 536-53.000.
Richter, Hans: *See—*
Engl, Robert; and Richter, Hans, 4,237,283, Cl. 544-186.000.
Ricoh Company, Ltd.: *See—*
Fujimoto, Sakae, 4,236,707, Cl. 271-11.000.
Hirose, Akira; Sugita, Keiji; and Takagi, Yasuzi, 4,236,811, Cl. 355-14.00R.
Yamaguchi, Shingo, 4,237,494, Cl. 358-280.000.
Riedl, Franz, to Wacker Werke GmbH & Co. KG. Unbalance oscillation generator. 4,236,417, Cl. 74-87.000.
Rijnders, Willem, to Hunter Douglas International N.V. Prefabricated wall panel. 4,236,366, Cl. 52-580.000.
Risman, Per O. G.; and Bengtsson, Nils E., to Husqvarna Aktiebolag. Method of preparing foodstuffs containing coagulating proteins and a device for performing the method. 4,237,145, Cl. 426-241.000.
Ritchie, Robert J.: *See—*
Allcock, Harry R.; and Ritchie, Robert J., 4,237,263, Cl. 528-399.000.
Rittenbach, Otto E., to United States of America, Army. Radar antenna employing phase shifted collinear dipoles. 4,237,464, Cl. 343-814.000.
Roach, William R.; and Sheng, Ping, to RCA Corporation. Diffractometer for measuring signal depth and width. 4,236,823, Cl. 356-351.000.
Roark, Charles F. Solar energy collector. 4,236,506, Cl. 126-439.000.
Robbins, Lanny A., to Dow Chemical Company, The. Method of removing contaminants from water. 4,236,973, Cl. 203-10.000.
Robbins, Murray; and Staudinger, Annemarie, to Bell Telephone Laboratories, Incorporated. Production of single phase alloy parts by reduction of oxides. 4,236,924, Cl. 75-211.000.
Robert Bosch GmbH: *See—*
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.
Mohr, Adolf; and Corbach, Rainer, 4,237,397, Cl. 310-154.000.
Roberts, David E., to General Motors Corporation. Catalytic converter with housing-bed-plenum reinforcing and spacing means. 4,237,098, Cl. 422-171.000.
Roberts, David E.: *See—*
Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., 4,237,099, Cl. 422-171.000.
Roberts, John M. C.: *See—*
Hughes, John F.; and Roberts, John M. C., 4,237,028, Cl. 252-359.00B.
Roberts, Robert, to Washington University. Radioimmunoassay assay and reagents for MB isoenzyme of CK. 4,237,219, Cl. 435-7.000.
Roberts, William L. Vehicle clearance detector. 4,237,446, Cl. 340-61.000.
Robinson, John W.: *See—*
Dietrich, Ralph N.; Robinson, John W.; and Howell, Stephen L., 4,236,436, Cl. 84-1.260.
Howell, Stephen L.; Robinson, John W.; and Kube, Donald, 4,236,437, Cl. 84-1.260.
Robinson, Paul R.: *See—*
Bamberger, Carlos E.; and Robinson, Paul R., 4,237,105, Cl. 423-306.000.
Roccaforte, Harry I., to Champion International Corporation. Container having an internal support platform and blank therefor. 4,236,662, Cl. 229-39.00B.
Rock, Edward B.: *See—*
Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, 4,237,151, Cl. 427-74.000.
Rock, Erich; and Mages, Bernhard, to Julius Blum Gesellschaft m.b.H. Furniture connector. 4,236,848, Cl. 403-406.000.
Rockenfeller, John D.; and Llewellyn, Thomas E., to Textron Inc. Pressure change responsive device. 4,237,354, Cl. 200-83.00C.
Rockerath, John L.; and Schreck, Harold J., to Cluett, Peabody & Co., Inc. Sewing machine material preassembly system. 4,236,472, Cl. 112-304.000.
Rockwell International Corporation: *See—*
Gehle, Richard W., 4,237,086, Cl. 264-130.000.
Rodgers, Aubrey, to United States of America, Army. High-g gimbal platform. 4,236,414, Cl. 74-5.100.
Rody, Jean; and Karrer, Friedrich, to Ciba-Geigy Corporation. Piperidine containing malonic acid derivatives. 4,237,297, Cl. 546-189.000.
Roelofs, Hendrik: *See—*
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,237,400, Cl. 313-204.000.
Roessler, Peter: *See—*
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,237,162, Cl. 424-283.000.
Rogers, Donald E.: *See—*
Van Bennekom, Carl F.; Rogers, Donald E.; and Scannell, Edward F., 4,237,418, Cl. 324-150.000.
Rogers, Norman H.: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,237,161, Cl. 424-283.000.
Rogers, Robert. Portable cargo brace. 4,236,854, Cl. 410-121.000.
Rohm and Haas Company: *See—*
Frankel, Lawrence S., 4,237,242, Cl. 525-119.000.
Miller, George A.; and Owen, Ronald P., 4,237,158, Cl. 424-273.000.
Rohner, Peter, to Kabel-und Metallwerke Gutehoffnungshuette AG. Method of fabricating heat transfer conduits. 4,236,288, Cl. 29-157.30H.
Rokach, Joshua: *See—*
Hamel, Pierre A.; and Rokach, Joshua, 4,237,160, Cl. 424-275.000.
Roman, Steven A., to Shell Oil Company. Oxyimino-substituted cyclopropanecarboxylate pesticides. 4,237,123, Cl. 424-200.000.
Roman, Steven A., to Shell Oil Company. Hydrazono-substituted cyclopropanecarboxylate pesticides. 4,237,163, Cl. 424-304.000.
Roop, Robert N.: *See—*
Ratigan, Brian; Longley, Karl E.; and Roop, Robert N., 4,237,008, Cl. 210-205.000.
Roose, Vambola I.: *See—*
Lippmaa, Endel T.; and Roose, Vambola I., 4,237,444, Cl. 338-270.000.
Root, Charles J.: *See—*
Alley, William L.; Roberts, David E.; Root, Charles J.; and Foster, Michael R., 4,237,099, Cl. 422-171.000.
Rosan, Inc.: *See—*
Rosan, Jose, Jr., 4,236,495, Cl. 123-188.00S.
Rosan, Jose, Jr., to Rosan, Inc. Self locking valve seat insert. 4,236,495, Cl. 123-188.00S.
Rosen, Perry: *See—*
Holland, George W.; and Rosen, Perry, 4,237,060, Cl. 260-346.220.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,237,276, Cl. 542-426.000.
Ross, Svante B.: *See—*
Lindberg, Ulf M. A.; Ross, Svante B.; Thorberg, Seth-Olov; and O gren, Sven O., 4,237,311, Cl. 560-173.000.
Rossing, Martin A.: *See—*
McDonald, Ray S.; and Rossing, Martin A., 4,236,522, Cl. 128-419.0PG.
Roth, Gunther, to Thyssen Industrie AG. Method and apparatus for the electroinduction heating of metal workpieces. 4,237,359, Cl. 219-10.410.
Roth, Irving; and Davidson, Ralph, to Sperry Corporation. Image observation apparatus. 4,237,492, Cl. 358-225.000.
Rothman, Edward A.: *See—*
Sherman, Robert; Rothman, Edward A.; and Mandelbaum, William, 4,236,873, Cl. 416-204.00R.
Rouxel, Jean; and Trichet, Luc, to Agence Nationale de Valorisation de la Recherche. Ionic conductivity materials, suitable for constituting solid electrolytes for dry cells and batteries. 4,237,201, Cl. 429-104.000.
Rowe Industries Inc., Division of Groman Corporation: *See—*
Murray, Joseph E.; and Mocek, Aloysius M., Jr., 4,237,530, Cl. 362-418.000.
RSR Corporation: *See—*
Prengaman, Raymond D.; and McDonald, Herschel B., 4,236,978, Cl. 204-57.000.
Rudd, Frederick V.; and Bracewell, Tom, deceased (by Bracewell, Bertha, administratrix), to British Leyland UK Limited. Method for the gaseous nitriding of ferrous-based components. 4,236,942, Cl. 148-16.600.
Rude, Harold E.: *See—*
Newell, Richard G.; and Rude, Harold E., 4,237.252, Cl. 525-454.000.
Rudkin, Arthur L.; Clint, John H.; and Young, Kenneth, to Procter & Gamble Company, The. Textile conditioning compositions with low content of cationic materials. 4,237,016, Cl. 252-8.800.
Rudolf Wittner GmbH u. Co.: *See—*
Harle, Friedrich, 4,237,549, Cl. 368-134.000.
Rudy, Norman A.; and Fredrickson, Lloyd C., to Amfac Foods, Inc. Crustacean shelling apparatus. 4,236,277, Cl. 17-73.000.
Ruge, Hinrich: *See—*
Zwintscher, Wolfgang; Kittel, Horst; and Ruge, Hinrich, 4,237,361, Cl. 219-76.100.
Rundlof, Lars N., to AB Volvo. Voltage regulator for a generator. 4,237,412, Cl. 322-28.000.
Rushmore, Dean F., to Societe d'Assistance Technique pour Produits Nestle S.A. Decaffeination of fatty materials. 4,237,288, Cl. 544-275.000.
Ruskin, Frank: *See—*
Fellner, Van N.; and Ruskin, Frank, 4,236,649, Cl. 221-90.000.
Ruspa, Giacomo: *See—*
Alpini, Alessandro; and Ruspa, Giacomo, 4,236,407, Cl. 73-118.000.
Russow, Jurgen: *See—*
Medic, Nikolaj; Auel, Theodor; Bergner, Dieter; and Russow, Jurgen, 4,236,980, Cl. 204-98.000.
Ruzic, Hugo, to International Standard Electric Corporation. Telephone handset. 4,237,350, Cl. 179-103.000.
Rybin, Igor V.: *See—*
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.
S.A.Y. Industries, Inc.: *See—*
Humphries, Romilly H., 4,236,655, Cl. 222-465.000.
S & C Electric Company: *See—*
Opfer, John C., 4,237,357, Cl. 200-153.0SC.
Sabo, Irving. Woodworking technique for forming corners. 4,236,558, Cl. 144-318.000.
Saft Leclanche: *See—*
Gelin, Guy, 4,237,199, Cl. 429-94.000.
Sagami Chemical Research Center: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 4,237,298, Cl. 546-238.000.
Sagi, Tadao: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.
Saia, Carman R., to Kasabell Industries. Combined fish lure, bait holder and artificial bait. 4,236,342, Cl. 43-17.600.
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, to Toyama Chemical Company, Limited. Intermediate for cephalosporin type compound. 4,237,280, Cl. 544-27.000.
Saint-Gobain Industries: *See—*
Mairlot, Henri, 4,236,907, Cl. 65-104.000.
Saito, Hiroshi; and Adachi, Chihiro, to Matsushita Electric Industrial Co., Ltd. Buzz cancelling system for television receiver. 4,237,485, Cl. 358-197.000.
Saito, Katsuhide: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Maehara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,237,132, Cl. 424-248.520.
Saito, Teruo: *See—*
Kitagawa, Sadao; Okada, Isao; Saito, Teruo; Masukawa, Shoichi; Watanabe, Yoshihisa; and Imanari, Makoto, 4,237,254, Cl. 526-122.000.
Saitoh, Osamu: *See—*
Horiba, Atushi; Saitoh, Osamu; and Ishida, Kozo, 4,236,827, Cl. 356-437.000.
Sakai, Hideo: *See—*
Mazaki, Tadashige, 4,237,178, Cl. 428-242.000.
Sakakibara, Shumpei, to Ajinomoto Company, Incorporated. Peptide derivative. 4,237,047, Cl. 260-112.50R.
Sakamoto, Hitoshi, to Sony Corporation. Driving circuit for piezo-electric multimorph transducer. 4,237,399, Cl. 310-317.000.
Salem Corporation: *See—*
Heard, Harold; and Wilt, Charles R., Jr., 4,236,318, Cl. 34-10.000.
Salzmann, Donald F., to Autoline Supply Company. Bleeder kit for bleeding a master cylinder. 4,236,549, Cl. 137-343.000.
Sandco Ltd.: *See—*
Weinhold, Otto, 4,236,882, Cl. 425-6.000.
Sander, Gunter; and Gunther, Roland, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Extensible telescopic coal bunker for subsurface mining. 4,236,630, Cl. 198-577.000.
Sanderson, Hendrik J., to U.S. Philips Corporation. Method of controlling the position of a write-read head and device for carrying out the method. 4,237,500, Cl. 360-77.000.
Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,236,392, Cl. 68-5.00E.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Continuous processing apparatus for treatment of knit fabric material. 4,236,392, Cl. 68-5.00E.
Sandoz Ltd.: *See—*
Gadient, Fulvio, 4,237,296, Cl. 546-126.000.
Mislin, Roland, 4,237,284, Cl. 544-189.000.
Sandvik Aktiebolag: *See—*
Lindholm, Leif S.; and Lindstrom, Jan N., 4,236,926, Cl. 75-238.000.
Yaman, Melih; Gustavsson, Kjell; and Hammer, Orjan, 4,236,944, Cl. 148-35.000.
Sankyo Company, Limited: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,237,294, Cl. 546-20.000.
Sankyo Electric Company Limited: *See—*
Terauchi, Kiyoshi, 4,236,878, Cl. 417-269.000.
Sansum, Victor H. Photoelectric lamp control with sun-synchronized timer. 4,237,377, Cl. 250-214.00R.
Sanyo Kiki Kabushiki Kaisha: *See—*
Imai, Kishio, 4,236,439, Cl. 85-5.0CP.
Sartorius GmbH: *See—*
Knothe, Erich; and Melcher, Franz-Josef, 4,236,590, Cl. 177-200.000.
Sartorius, Rudolf: *See—*
Steppich, Walter; and Sartorius, Rudolf, 4,237,073, Cl. 260-604.0AC.
Saruwatari, Mitsuyoshi: *See—*
Kitamura, Minoru; Hayashi, Tsutomu; Moritsugi, Takeharu; and Saruwatari, Mitsuyoshi, 4,236,914, Cl. 75-58.000.
Sasaki, Yutaro: *See—*
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,237,266, Cl. 536-1.000.
Satin, Morton, to Multimarques Inc. High fiber white bread. 4,237,170, Cl. 426-21.000.
Sato, Katsuziro: *See—*
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Sato, Masaaki, to Olympus Optical Company Limited. Tape recorder with table computer. 4,237,540, Cl. 364-705.000.
Sato, Moriyuki: *See—*
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,269, Cl. 536-17.00R.
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,272, Cl. 536-17.00R.
Sato, Reisuke: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Satoh, Mitsuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera film stop position adjusting mechanism. 4,236,800, Cl. 354-213.000.
Savage, David S.: *See—*
Carlyle, Ian C.; Sleigh, Thomas; and Savage, David S., 4,237,126, Cl. 424-241.000.
Savin Corporation: *See—*
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, 4,236,808, Cl. 355-8.000.
Savin, Nikolai I.; Khramov, Dmitry A.; Filippov, Vladimir J.; and Bugrov, Valery V. Nuclear reactor. 4,236,966, Cl. 176-30.000.
Savino, Alfred T. Cart storage device. 4,236,697, Cl. 256-1.000.
Sawada, Daisaku: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Scagnelli, George J.: *See—*
Orr, David A.; Gala, Hiren S.; and Scagnelli, George J., 4,236,292, Cl. 29-408.000.
Scannell, Edward F.: *See—*
Van Bennekom, Carl F.; Rogers, Donald E.; and Scannell, Edward F., 4,237,418, Cl. 324-150.000.

Scardera, Michael; and Schifilliti, Garrett B., to Olin Corporation. Process for textile bleaching with dibasic magnesium hypochlorite. 4,236,891, Cl. 8-108.00A.
Scattergood, Edgar M., to Merck & Co., Inc. Pretreatment of microcarriers for cell culture. 4,237,033, Cl. 260-6.000.
Schaefer Marine, Inc.: *See—*
Merry, Carl A., 4,236,475, Cl. 114-90.000.
Schael, Wilfried: *See—*
Schindler, Johannes G.; and Schael, Wilfried, 4,236,987, Cl. 204-195.00M.
Schaetz, Robert: *See—*
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.
Schafer, Ernst-Dieter: *See—*
Haar, Lucas H.; and Schafer, Ernst-Dieter, 4,236,760, Cl. 303-6.00C.
Schafer, Ewald: *See—*
Braun, Franz; and Schafer, Ewald, 4,236,550, Cl. 139-421.000.
Schaub, Robert E.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.
Scheidl, Franz: *See—*
Korbanka, Helmut; and Scheidl, Franz, 4,237,043, Cl. 260-45.75S.
Schelthas, Peter: *See—*
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.
Schering, Aktiengesellschaft: *See—*
Kieslich, Klaus, 4,237,220, Cl. 435-58.000.
Schering Corporation: *See—*
McCombie, Stuart W., 4,237,051, Cl. 260-245.20R.
Schetina, Otto: *See—*
Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, 4,236,627, Cl. 198-514.000.
Schidlo, Wolfram: *See—*
Balzer, Juliane; Engelhardt, Friedrich; Ribka, Joachim; and Schidlo, Wolfram, 4,237,249, Cl. 525-369.000.
Schiedt, Ludwig: *See—*
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.
Schievelbein, Vernon H., to Texaco Inc. Surfactant flooding oil recovery process. 4,237,018, Cl. 252-8.55D.
Schifilliti, Garrett B.: *See—*
Scardera, Michael; and Schifilliti, Garrett B., 4,236,891, Cl. 8-108.00A.
Schillings, Dieter, to International Harvester Company. Stabilizer for tractor hitch. 4,236,724, Cl. 280-460.00A.
Schindler, Johannes G.; and Schael, Wilfried, to Dr. E. Fresenius Chemisch Pharmazeutische Industrie KG Apparatebau KG. Electrode having membrane with ion selective properties. 4,236,987, Cl. 204-195.00M.
Schirutschke, Rudolf: *See—*
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.
Schlamp, Gunther: *See—*
Seibold, Klaus; and Schlamp, Gunther, 4,236,948, Cl. 148-188.000.
Schlig, Eugene S., to International Business Machines Corporation. CCD Parallel-serial and serial-parallel charge transfer method and apparatus. 4,236,830, Cl. 357-24.000.
Schlimper, Hans-Ulrich: *See—*
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.
Schlotthauer, Harley L.: *See—*
Lange, Robert G.; and Schlotthauer, Harley L., 4,237,260, Cl. 528-230.000.
Schlough, James R., to Harris Corporation. Signature conveyor for use with inserter and stitcher. 4,236,706, Cl. 270-53.000.
Schluns, Steven M. Icebox for a recreational vehicle. 4,236,749, Cl. 296-156.000.
Schmelzer Corporation: *See—*
Benjamin, Benjamin C.; and LaVene, Leon F., 4,237,076, Cl. 261-23.00A.
Benjamin, Benjamin C., 4,237,078, Cl. 261-39.00B.
Schmid, Jurgen; and Eggert, Winfried, to Boehringer Ingelheim GmbH. Testing apparatus for tablet-shaped specimens. 4,236,413, Cl. 73-821.000.
Schmidhuber, Volker: *See—*
Aeschlimann, Hans-Peter; Schmidhuber, Volker; and Kappes, Werner, 4,236,666, Cl. 233-26.000.
Schmidt, Klaus; and Grass, Klaus, to Endress u. Hauser GmbH u. Co. Electromechanical filling-level measurement. 4,236,314, Cl. 33-126.600.
Schmidt, Rolf; and Berlin, Herbert, to Hauni-Werke Korber & Co. KG. Apparatus for convoluting adhesive-coated uniting bands around rod-shaped articles. 4,236,535, Cl. 131-21.00R.
Schmitt, Charles R.: *See—*
DeMonbrun, James R.; Schmitt, Charles R.; and Schreyer, James M., 4,237,090, Cl. 422-13.000.
Schmitz, Floyd A., to J. I. Case Company. Vehicle stabilizer assembly. 4,236,643, Cl. 212-145.000.
Schnable, George L.: *See—*
Deckert, Cheryl A.; Comizzoli, Robert B.; and Schnable, George L., 4,237,379, Cl. 250-302.000.
Schneiter, Ali: *See—*
Fellrath, Jean; Perotto, Jean-Felix; Schneiter, Ali; and Grimm, Maurice, 4,237,548, Cl. 368-69.000.
Schnicke, Mathias: *See—*
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., to Church & Dwight Co., Inc. Method for removing organic acid soil from surfaces. 4,236,935, Cl. 134-2.000.
Schoennahl, Jacques R. P.: *See—*
Kiehl, Jean-Pierre; Remi, Jean-Pierre; and Schoennahl, Jacques R. P., 4,236,931, Cl. 106-64.000.
Scholl, Frederick R.: *See—*
Woolhouse, Geoffrey R.; Huggins, Harold A.; Anderson, Stephen I.; and Scholl, Frederick R., 4,236,296, Cl. 29-583.000.
Scholl, Hans-Joachim: *See—*
Grohe, Klaus; Scholl, Hans-Joachim; Paul, Volker; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,237,143, Cl. 424-270.000.
Scholten, Heinz: *See—*
Capelle, Anton; and Scholten, Heinz, 4,237,040, Cl. 260-29.20N.
Schonberger, Milton. Method of trimming thermistor or other electrical components and the contacts thereof. 4,236,298, Cl. 29-610.000.
Schossow, George W. Chimney stack exhaust unit. 4,236,443, Cl. 98-58.000.
Schott, Charles M., Jr., to Gloucester Engineering Co., Inc. Internal air cooling of tubular plastic film. 4,236,884, Cl. 425-72.00R.
Schreck, Harold J.: *See—*
Rockerath, John L.; and Schreck, Harold J., 4,236,472, Cl. 112-304.000.
Schreiner, Siegfried: *See—*
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.
Schreyer, Gerd: *See—*
Beschke, Helmut; Dahm, Franz-Ludwig; Friedrich, Heinz; and Schreyer, Gerd, 4,237,299, Cl. 546-250.000.
Schreyer, James M.: *See—*
DeMonbrun, James R.; Schmitt, Charles R.; and Schreyer, James M., 4,237,090, Cl. 422-13.000.
Schreyer, Kenneth D.; Leverentz, Earl T.; and Nusz, Thomas R., to Columbus McKinnon Corporation. Trolley suspension. 4,236,456, Cl. 105-154.000.
Schroeder, Becky J. Multilayered electroluminescent light assembly adaptable for reading and writing in the dark. 4,237,381, Cl. 250-462.000.
Schuh, Ernst. Method for cleaning articles by spraying. 4,236,936, Cl. 134-7.000.
Schuhmann, Reinhardt, Jr.: *See—*
Queneau, Paul E.; and Schuhmann, Reinhardt, Jr., 4,236.915, Cl. 75-74.000.
Schultes, Max: *See—*
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, 4,236,808, Cl. 355-8.000.
Schulz-Walz, Hansjochen: *See—*
von Harpe, Hannes; Bottenbruch, Ludwig; Peltzer, Bernd; and Schulz-Walz, Hansjochen, 4,237,244, Cl. 525-171.000.
Schur, Paul E.; and Abolafia, Andrew I., to Schur, Paul E. Apparatus for producing electrical energy. 4,237,391, Cl. 310-10.000.
Schwadike, Karl; Meyer, Dieter; and Puchta, Rolf, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Method and apparatus for conditioning and drying laundry. 4,236,320, Cl. 34-19.000.
Schwartz, Alfred A.: *See—*
Lantz, Robert H.; and Schwartz, Alfred A., 4,237,458, Cl. 340-739.000.
Schwartz, Norman D.: *See—*
Monthony, James F.; Schwartz, Norman D.; Hollis, Donald F.; and Polastri, Gian D., 4,237,218, Cl. 435-2.000.
Schwarze, Rigobert. Tube bending machine. 4,236,398, Cl. 72-157.000.
Schweizer, Alfred D.; Erskine, William G.; and Turpin, Daniel, to Gallaher Limited. Smoking rod wrapper. 4,236,532, Cl. 131-9.000.
Science Union et Cie: *See—*
Duhault, Jacques, 4,237,165, Cl. 424-308.000.
Scranton, Robert J., to Mead Corporation, The. Paper transport system for an ink jet printer. 4,237,466, Cl. 346-75.000.
Sealy, L. Gregg: *See—*
Mosby, John S., Jr., 4,236,539, Cl. 131-175.000.
Seffrood, Leroy J. Forage press. 4,236,444, Cl. 100-65.000.
Seibold, Klaus; and Schlamp, Gunther, to Demetron Gesellschaft fur Elektronik Werkstoffe mbH. Process for doping semiconductor crystals. 4,236,948, Cl. 148-188.000.
Seidel, Hans: *See—*
Gauhl, Helmgard; and Seidel, Hans, 4,237,221, Cl. 435-15.000.
Seiden, Lewis J., to T-Bar Incorporated. Patch module for connecting to off-line transmission lines of a switchably selected pair of transmission lines. 4,237,352, Cl. 200-51.030.
Seilly, Alec H., to Lucas Industries Limited. Operating mechanism for a dot matrix printer. 4,236,837, Cl. 400-124.000.
Sekiguchi, Takeshi, to Canon Kabushiki Kaisha. Television camera with test pattern. 4,237,475, Cl. 358-10.000.

Sekiya, Fukuo: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Uchino, Misao, 4,237,420, Cl. 328-3.000.

Selcuk, M. Kudret: *See—*
United States of America, National Aeronautics and Space Administration; and Selcuk, M. Kudret, 4,236,383, Cl. 60-641.000.

Selega, Zbigniew J.; Khalil, Ezzat N.; and McKavanagh, Gloria M., to Johnson Products Co., Inc. Medicated hair and scalp conditioner. 4,237,112, Cl. 424-70.000.

Semanisin, Dale J.: *See—*
Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., 4,237,177, Cl. 428-215.000.

Semin, Sergei S.: *See—*
Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Senin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.

Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased (by Vesely, Jiri, heir), to SPOFA, United Pharmaceutical Works. Derivatives of carboxyalkyl imino- and thioxo-barbituric acids. 4,237,270, Cl. 536-18.000.

Senor, Ronald E.: *See—*
Thompson, Herbert A., Jr.; Senor, Ronald E.; and Beggs, Louis C., 4,237,510, Cl. 361-24.000.

Sepall, Ola: *See—*
Bialski, Alexander; Gentile, Camillo; and Sepall, Ola, 4,236,676, Cl. 241-74.000.

Sernagiotto, Emilio: *See—*
Sernagiotto, Raffaello; and Sernagiotto, Emilio, 4,236,445, Cl. 100-118.000.

Sernagiotto, Raffaello; and Sernagiotto, Emilio. Continuous belt filter press. 4,236,445, Cl. 100-118.000.

Serrander, Hans R., to Telefonaktiebolaget L M Ericsson. Cable with wire for slitting a protective sheath and process of manufacturing same. 4,237,337, Cl. 174-70.00R.

Service d'Exploitation Industrielle des Tabacs et des Allumette: *See—*
Wzegaert, Pierre, 4,236,536, Cl. 131-33.000.

Setescak, Edward J., to Heinemann Electric Company. Circuit breaker having a modified armature for time delays at high transient currents. 4,237,436, Cl. 335-63.000.

Shader, Benjamin A.; and Mayeda, Bruce H., to Eversman Mfg. Company, The. Land leveling apparatus with section blade assembly. 4,236,586, Cl. 172-779.000.

Shader, Benjamin A.; and Mayeda, Bruce H., to Eversman Mfg. Company, The. Ground-working apparatus and hitch assembly therefor. 4,236,587, Cl. 172-779.000.

Sharma, Satish C.: *See—*
Kalafus, Edward F.; and Sharma, Satish C., 4,236,564, Cl. 152-359.000.

Sharp Kabushiki Kaisha: *See—*
Kanatani, Yoshiharu, 4,237,456, Cl. 340-719.000.

Shaver, J. Lyle, to Allis-Chalmers Corporation. Mower with two sickle bars. 4,236,370, Cl. 56-297.000.

Shayes, Raymond G. G.: *See—*
Gustin, Pol A. G. J.; and Shayes, Raymond G. G., 4,237,469, Cl. 346-155.000.

Sheffer Collet Company: *See—*
Felker, Merle, 4,236,722, Cl. 279-118.000.

Shell Oil Company: *See—*
Mulder, Albertus J.; and de Jong, Aaldert J., 4,237,322, Cl. 568-820.000.
Powell, James E., 4,237,164, Cl. 424-304.000.
Roman, Steven A., 4,237,123, Cl. 424-200.000.
Roman, Steven A., 4,237,163, Cl. 424-304.000.

Shenderovich, Pavel B.: *See—*
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.

Sheng, Ming N.; and Kao, Jar-Lin, to Atlantic Richfield Company. Phenyl acetic acid preparation. 4,237,314, Cl. 562-496.000.

Sheng, Ping: *See—*
Roach, William R.; and Sheng, Ping, 4,236,823, Cl. 356-351.000.

Sherman, Robert; Rothman, Edward A.; and Mandelbaum, William, to United Technologies Corporation. Wind turbine blade retention device. 4,236,873, Cl. 416-204.00R.

Sherwood Refractories, Inc.: *See—*
Larson, David L., 4,236,568, Cl. 164-41.000.

Shiba, Keisuke: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 4,237,217, Cl. 430-387.000.

Shibano, Yoshizo; Hatano, Tetsuo; and Ohkura, Toshihiko, to Sumitomo Electric Industries, Ltd. Map plate for the adjustment of angle elevation of an antenna. 4,237,465, Cl. 343-894.000.

Shigematu, Takashi: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.

Shigeta, Yoshihiro: *See—*
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.

Shimada, Fumio: *See—*
Inoue, Eiichi; Takeda, Misturu; and Shimada, Fumio, 4,237,212, Cl. 430-346.000.

Shimomura, Jun, to Nippon Kogaku K.K. Lens for a camera provided with code patterns. 4,236,803, Cl. 354-286.000.

Shimomura, Jun: *See—*
Toyoda, Kenji; and Shimomura, Jun, 4,236,804, Cl. 354-286.000.

Shimp, Richard L., to ComSonics, Inc. Compatible transmission of an encoded signal with a television. 4,237,486, Cl. 358-142.000.

Shinn, Robert W.: *See—*
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,237,309, Cl. 560-131.000.
Suld, George; Lyons, James E.; and Shinn, Robert W., 4,237,310, Cl. 560-131.000.

Shinoda, Kenichi: *See—*
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, 4,237,203, Cl. 429-122.000.

Shintani, Akira: *See—*
Kanagawa, Shuichi; Kawakami, Kazunori; and Shintani, Akira, 4,237,035, Cl. 260-28.00R.

Shiozawa, Akira; Kurashige, Shuji; Hamano, Hiroaki; Furuta, Yasuhiko; Ikeda, Masako; Miyazaki, Hiroshi; Aoyagi, Chiyoko; and Ishii, Yasuo, to Nippon Kayaku Kabushiki Kaisha. Derivatives of α-methyl-β-aminopropiophenone and use thereof. 4,237,141, Cl. 424-267.000.

Shiroki Kinzoku: *See—*
Ooshiro, Hideyuki; and Chiba, Masakazu, 4,236,753, Cl. 297-364.000.

Shishido, Isuneo; Cramm, Herman W.; and Vick, William L., to Hughes Aircraft Company. Five port waveguide switch. 4,237,431, Cl. 333-106.000.

Shiverdecker, James H.: *See—*
Nerenberg, Robert W.; and Shiverdecker, James H., 4,236,368, Cl. 53-491.000.

Shkhian, Tsolak G.: *See—*
Batjukov, Vladimir I.; Vjugov, Oleg N.; Fadeev, Alexandr I.; and Shkhian, Tsolak G., 4,236,967, Cl. 176-30.000.
Ljubivy, Alexandr G.; Batjukov, Vladimir I.; Shkhian, Tsolak G.; and Fadeev, Alexandr I., 4,236,969, Cl. 176-61.000.

Short, Edward H., III: *See—*
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Showa Electric Wire & Cable Co., Ltd.: *See—*
Kojima, Takeshi; Kinoshita, Sakae; and Takeuchi, Kenzo, 4,237,334, Cl. 174-25.00R.

Siemens Aktiengesellschaft: *See—*
Denk, Hans; and Habrich, Reiner, 4,237,149, Cl. 427-58.000.
Giebel, Wolfgang; Krause, Herbert; and Meltsch, Hans-Juergen, 4,237,335, Cl. 174-92.000.
Gulden, Peter; Kozdon, Friedrich; de Bucs, Eugen S.; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,236,899, Cl. 48-89.000.
Krueger, Hans; and Glaubitz, Werner, 4,236,791, Cl. 350-345.000.
Landgraf, Hermann, 4,237,393, Cl. 310-59.000.
Lanig, Peter, 4,236,297, Cl. 29-599.000.
Mueller, Wolfgang, 4,236,839, Cl. 400-216.100.

Sienkiewicz, Gerald C.; McQuade, Donal J.; and Leonard, Herbert G., to International Business Machines Corporation. Endless ribbon cartridge. 4,236,678, Cl. 242-55.19A.

Sigel, Pierre: *See—*
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,301, Cl. 29-740.000.
Hug, Joseph; Sigel, Pierre; Delorme, Raymond; DeVoille, Maurice; and Grosjean, Henri, 4,236,306, Cl. 29-827.000.

Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft. Cutting machine. 4,236,627, Cl. 198-514.000.

Simeone, Arthur. Fire board. 4,236,499, Cl. 126-140.000.

Simmons, William A.: *See—*
Halwes, Dennis R.; and Simmons, William A., 4,236,607, Cl. 188-1.00B.

Simons, Henri J. L.: *See—*
van Eijck, Gustavus L. P.; and Simons, Henri J. L., 4,237,498, Cl. 360-72.200.

Singer Company, The: *See—*
Hall, John D.; and Williams, Alfred S., Jr., 4,236,325, Cl. 35-12.00S.

Singer, Michael; and Tury, Bernard, to Imperial Chemical Industries Limited. 1-Thiocyanato-8-substituted naphthalene compounds and their use as biocides. 4,237,019, Cl. 252-47.500.

Sisk, Francis J., to Westinghouse Electric Corp. Dual capacity compressor with reversible motor and controls arrangement therefor. 4,236,874, Cl. 417-315.000.

Skaggs, Robert L.: *See—*
Williams, Orlan G.; and Skaggs, Robert L., 4,236,399, Cl. 72-295.000.

Skarvinko, Eugene R., to International Business Machines Corporation. Photosensitive patternable coating composition containing novolak type materials. 4,237,216, Cl. 430-280.000.

SKF Kugellagerfabriken GmbH: *See—*
Feldle, Kurt, 4,236,767, Cl. 308-187.100.
Meining, Hans; Pfaller, Egon; Winkler, Otmar; and Kittel, Hilmar, 4,236,766, Cl. 308-15.000.

Skuttle Mfg. Co.: *See—*
Elliott, Richard D., 4,237,080, Cl. 261-80.000.

Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., to General Signal Corporation. Corrosion-resistant coated articles. 4,237,177, Cl. 428-215.000.

Slater, Ted L.: *See—*
Giacomotti, Richard A.; Giacomotti, Sally A.; Petrini, Julian L.; Petrini, Madeline A.; and Slater, Ted L., 4,237,376, Cl. 235-487.000.

Sleigh, Thomas: *See—*
Carlyle, Ian C.; Sleigh, Thomas; and Savage, David S., 4,237,126, Cl. 424-241.000.

Slidex Corporation: *See—*
Namiki, Naokuni, 4,236,635, Cl. 206-456.000.

Sluetz, James E.; and Calfee, Richard V., to Intermedics, Inc. Multiple function lead assembly. 4,236,525, Cl. 128-419.00P.

Smilges, Robert; and Wigmore, Richard, to Abex Corporation. Electrohydraulic flow control apparatus. 4,236,690, Cl. 251-30.000.

Smith, Bernard, to United States of America, Army. Method of making a ruggedized high current density cathode. 4,236,287, Cl. 29-25.180.

Smith, Edmund H., Jr.: *See—*
Piovoso, Michael J.; Smith, Edmund H., Jr.; and Wolf, William E., 4,237,539, Cl. 364-552.000.

Smith, Elmer L. Planter with tubular air hole member. 4,236,351, Cl. 47-79.000.

Smith, Emil R.: *See—*
Boyes, Robert N.; Duce, Benjamin R.; Smith, Emil R.; and Byrnes, Eugene W., 4,237,068, Cl. 260-562.00N.

Smith, John A.: *See—*
Dick, George H.; and Smith, John A., 4,236,842, Cl. 400-144.200.

Smith, Joseph L., Jr.: *See—*
Ying, Sui-chun; Smith, Joseph L., Jr.; and Baumann, Kai J., 4,237,392, Cl. 310-52.000.

Smith, Lawther O.; Howard, Timothy L.; and Broitman, Kalman, to Gas Spring Corporation. Socket assembly for a ball and socket coupling. 4,236,845, Cl. 403-144.000.

Smith, Robin C. Wood splitter attachment. 4,236,556, Cl. 144-193.00A.

Smith, Ronald D. Temperature compensated positioning device. 4,236,790, Cl. 350-253.000.

Smith, Stanley; and Harries, John R., to Metal Box Limited. Article handling apparatus. 4,236,625, Cl. 198-454.000.

Smith, Stephen L., to Motorola, Inc. Program decoder for shared contact eprom. 4,237,547, Cl. 365-189.000.

Smoak, Richard H., to Carborundum Company, The. Method of producing a high density silicon carbide product. 4,237,085, Cl. 264-65.000.

SNIA VISCOSA Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Leoni, Roberto; Baldini, Alberto; and Angelini, Gianfranco, 4,237,274, Cl. 536-56.000.

Societe Anonyme DBA: *See—*
Claverie, Jean-Claude, 4,236,611, Cl. 188-79.50P.

Societe Anonyme Francaise du Ferodo: *See—*
Beccaris, Carlo, 4,236,620, Cl. 192-48.800.
Billet, Rene, 4,236,610, Cl. 188-76.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Rushmore, Dean F., 4,237,288, Cl. 544-275.000.

Societe Europeenne des Produits Refractaires: *See—*
Kiehl, Jean-Pierre; Remi, Jean-Pierre; and Schoennahl, Jacques R. P., 4,236,931, Cl. 106-64.000.

Societe Metallurgique le Nichel-S.L.N.: *See—*
Demarthe, Jean-Michel; Gandon, Louis; and Goujet, Monique, 4,236,981, Cl. 204-113.000.

Societe Orleanaise de Literie et de Mecanique: *See—*
Moritz, Victor, 4,236,750, Cl. 297-183.000.

Soderstrom, Melvin A.: *See—*
Hughes, Richard L.; Soderstrom, Melvin A.; Vachhani, Vasantrai A.; and Weisenburger, Lawrence P., 4,236,778, Cl. 339-97.00P.

Soejima, Shigeo: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, 4,237,030, Cl. 252-432.000.

Soeno, Ko: *See—*
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Solarex Corporation: *See—*
Wihl, Manfred G., 4,236,937, Cl. 136-89.0PC.

Solf, Alexander; and Mrozek, Christian, to Solf, Alexander. Articulate mast footing arrangement, in particular for wind surfboards. 4,236,476, Cl. 114-91.000.

Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, to Sankyo Company, Limited; and Ciba-Geigy Corporation. 2,2,6,6-Tetramethylpiperidine derivatives. 4,237,294, Cl. 546-20.000.

Sommervold, David E., to Hycel, Inc. Readout circuit in an automatic chemical testing apparatus. 4,236,894, Cl. 23-230.00R.

Sony Corporation: *See—*
Sakamoto, Hitoshi, 4,237,399, Cl. 310-317.000.
Tachi, Katsuichi, 4,237,499, Cl. 360-73.000.

Sorenson, Gordon U. Plant growing and display assembly. 4,236,353, Cl. 47-81.000.

Sorenson, John F.; and Locke, Frank W., to Champion International Corporation. File box. 4,236,740, Cl. 229-36.000.

Sorg, John H., Jr.: *See—*
Mills, Phillip R.; Luiz, Fernando A.; and Sorg, John H., Jr., 4,237,533, Cl. 364-200.000.

Sovish, Richard C.: *See—*
Lagardere, Bruno J. F.; and Sovish, Richard C., 4,237,174, Cl. 428-99.000.

Spa-Societa Prodotti Antibiotici S.p.A.: *See—*
Bruzzese, Tiberio; and Ferrari, Lorenzo, 4,237,117, Cl. 424-122.000.

Specktor, Gerald A. Vehicle anchoring apparatus. 4,236,400, Cl. 72-461.000.

Spector, George: *See—*
Heaney, William B.; and Spector, George, 4,236,352, Cl. 47-80.000.

Spectrex Corporation: *See—*
Hollenbeck, Keith E., 4,237,451, Cl. 340-606.000.

Spence, Bertle: *See—*
Norris, Thomas E.; and Spence, Bertle, 4,236,477, Cl. 114-222.000.

Speranza, George P.; and Zimmerman, Robert L., to Texaco Development Corporation. Urea derivative and use as polyurethane catalyst. 4,237,282, Cl. 544-168.000.

Sperry Corporation: *See—*
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,237,532, Cl. 364-200.000.
Decoene, Frans J. G. C., 4,236,369, Cl. 56-60.000.
Munro, James A.; and Lummis, Alan P., 4,236,372, Cl. 56-364.000.
Paul, Samuel J., 4,236,810, Cl. 355-10.000.
Roth, Irving; and Davidson, Ralph, 4,237,492, Cl. 358-225.000.
Tanski, William J., 4,237,433, Cl. 333-195.000.

Sperry Rand Corporation: *See—*
Wiedenman, Gregory B., 4,237,535, Cl. 364-200.000.

Spiegel, David A. Automatic bias adjusting circuit. 4,237,425, Cl. 330-263.000.

Spiller, Rex S., to Spiller Spring Company. Support grid and spring unit for a box spring foundation unit. 4,236,262, Cl. 5-267.000.

Spiller Spring Company: *See—*
Spiller, Rex S., 4,236,262, Cl. 5-267.000.

Spitzner, Ernest B., to Henkel Corporation. Sulfonylthiosemicarbazides, metal complexes thereof, and solutions containing such compounds for use in extraction of metal values. 4,237,062, Cl. 260-438.100.

Spodig, Heinrich. Magnetic conveyor belt. 4,236,632, Cl. 198-690.000.

SPOFA, United Pharmaceutical Works: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Sportsonic, Inc.: *See—*
Zevgolis, Victoria H.; and Kitchen, Harry E., 4,237,372, Cl. 235-92.0GA.

Sprenkle, George J., to Burroughs Corporation. Wire unwrap assembly for use on automatic wiring machines. 4,236,303, Cl. 29-762.000.

Springer, Hartmut, to Hoechst Aktiengesellschaft. Process for the preparation of water-soluble phthalocyanine dyestuffs. 4,237,050, Cl. 260-242.200.

Srivastava, Gopal K.: *See—*
Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., 4,237,478, Cl. 358-23.000.

Stabilus GmbH: *See—*
Nemenz, Andreas U., 4,237,353, Cl. 200-52.00R.

Stach, Leonard J., to Velsicol Chemical Corporation. Cyclic acetal-methyl-carbamoyl-methyl esters of phosphonic and phosphoric acid. 4,237,056, Cl. 260-340.700.

Stahl, Quade R., to Meloy Laboratories, Inc. Analytical apparatus and method employing purified ozone. 4,236,895, Cl. 23-232.00R.

Stahura, Richard, to Martin Engineering. Conveyor skirt board and holder. 4,236,628, Cl. 198-525.000.

Stamires, Dennis: *See—*
Alifandi, Hamid; and Stamires, Dennis, 4,237,031, Cl. 252-438.000.

Stanec, Anna; and Stanec, George. Apparatus and method for the quantitative measurement of the isometric contraction of the adductor pollicis muscle. 4,236,528, Cl. 128-741.000.

Stanec, George: *See—*
Stanec, Anna; and Stanec, George, 4,236,528, Cl. 128-741.000.

Stanier, Colin: *See—*
Krause, Janusz J. H.; and Stanier, Colin, 4,236,952, Cl. 156-93.000.

Stapp, Paul R., to Phillips Petroleum Company. Olefin oxidation process. 4,237,071, Cl. 260-597.00B.

Stapp, Paul R., to Phillips Petroleum Company. Oxidation process including recovery and recycle of catalyst. 4,237,312, Cl. 560-246.000.

Stapp, Paul R., to Phillips Petroleum Company. Olefin oxidation process. 4,237,331, Cl. 585-845.000.

Staudinger, Annemarie: *See—*
Robbins, Murray; and Staudinger, Annemarie, 4,236,924, Cl. 75-211.000.

Stauter, John C.: *See—*
Urban, Peter; Stauter, John C.; and Tolley, William K., 4,237,104, Cl. 423-242.000.

Stearn, Richard A.; Lamer, Gerald P.; and Lenius, Norbert W., to Marine Travelift, Inc. Mobile hoist. 4,236,859, Cl. 414-460.000.

Steensma, Peter D., to International Telephone and Telegraph Corporation. Multiuser protected optical data bus distribution systems. 4,237,550, Cl. 370-4.000.

Stein, Marc T., to Motorola, Inc. High impedance output current source. 4,237,414, Cl. 323-4.000.

Steiniger, Wolfgang: *See—*
Heitmann, Uwe; Steiniger, Wolfgang; Holznagel, Uwe; Kaebernick, Hartmut; Pfannmuller, Joachim; and Reuland, Joachim, 4,236,534, Cl. 131-21.00B.

Steklenski, David J.: *See—*
Upson, Donald A.; and Steklenski, David J., 4,237,194, Cl. 428-922.000.

Stellram S.A.: *See—*
Gonseth, Denis R.; and Hauser, Charles, 4,237,184, Cl. 428-336.000.

Stendel, Wilhelm: *See—*
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,237,162, Cl. 424-283.000.

Stenson, Thomas K. Portable stitching device. 4,236,470, Cl. 112-169.000.

Stenz, Paul; and Kordt, Hans-Herbert, to C. A. Weidmuller KG. Multiway terminal block. 4,236,780, Cl. 339-198.00G.

Stephan, Herbert: *See—*
Aichert, Hans; Hoffman, Otto-Horst; and Stephan, Herbert, 4,237,148, Cl. 427-42.000.

Stephenson, Alan G.: *See—*
Foster, Norman; and Stephenson, Alan G., 4,236,538, Cl. 131-149.000.

Steppich, Walter; and Sartorius, Rudolf, to Hoechst Aktiengesellschaft. Process for the manufacture of acetaldehyde. 4,237,073, Cl. 260-604.0AC.

Sterling Drug Inc.: *See—*
Cuthbertson, Eric, 4,237,321, Cl. 568-776.000.

Stevens, Alan E.: *See—*
Bunting, John G.; Cross, Robin C.; Guard, David R.; Groves, Ian S.; Johnson, Edward G. T.; and Stevens, Alan E., 4,237,339, Cl. 179-1.0CN.

Stevens, G. Randall: *See—*
Erickson, Robert W., Jr.; and Stevens, G. Randall, 4,237,502, Cl. 360-78.000.

Stevenson, Cleatus G. Controlled pressure draw clamp. 4,236,703, Cl. 269-41.000.

Stevenson, James G. Coin operated tire inflating apparatus. 4,236,622, Cl. 194-87.000.

Stewart, Thomas I.: *See—*
Evans, William D. J.; Larbey, Robert J.; and Stewart, Thomas I., 4,237,032, Cl. 252-462.000.

Stiefel, Peter: *See—*
Greiner, Max; Peters, Klaus J.; Schelthas, Peter; Stiefel, Peter; and Nusser, Hermann, 4,237,079, Cl. 261-44.00A.

Stiftelsen Kalmarsundsgruppen: *See—*
Carlsson, John, 4,236,609, Cl. 188-67.000.

Stine, Jon D.: *See—*
Crowley, Daniel J.; and Stine, Jon D., 4,236,667, Cl. 235-443.000.

Stobi, Johann, to Maschinenfabrik Benninger AG. Steamer for a continuously throughpassing textile web. 4,236,391, Cl. 68-5.00D.

Stoller, David A.: *See—*
Niggemeier, Joseph F.; Stoller, David A.; and Xander, William J., 4,236,853, Cl. 410-77.000.

Stone, W. James; and Thomas, Lovic P., to United States of America, Navy. Ejection seat with pitch, roll and yaw control. 4,236,687, Cl. 244-122.0AD.

Storandt, Ralf, to Vereinigte Baubeschelagfrabriken Gretsch & Co. GmbH. Safety toe units for ski bindings. 4,236,727, Cl. 280-629.000.

Strasen, Gunter: *See—*
Kothe, Hans K.; and Strasen, Gunter, 4,237,411, Cl. 320-21.000.

Stregack, Joseph A.: *See—*
Wexler, Bernard L.; Stregack, Joseph A.; and Manuccia, Thomas J., Jr., 4,237,428, Cl. 331-94.50G.

Strelow, John L.: *See—*
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., 4,236,648, Cl. 220-89.00A.

Stretanski, Joseph A., to American Cyanamid Company. Polyolefins stabilized against light-induced degradation. 4,237,042, Cl. 260-45.80R.

Strien, Werner, to Recaro GmbH & Co. Vehicle safety seat bottom. 4,236,751, Cl. 297-216.000.

Strom, Robert, to Textron Inc. Notions display heading for perforated board. 4,236,336, Cl. 40-622.000.

Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, to United States of America, Energy. Thermal decomposition of silane to form hydrogenated amorphous Si film. 4,237,151, Cl. 427-74.000.

Strudgeon, George E.; and Hiltgen, Aloysius X., to Zurn Industries, Inc. Multi sorption process and system. 4,237,002, Cl. 210-18.000.

Stucki, Samuel: *See—*
Muller, Rene; and Stucki, Samuel, 4,236,993, Cl. 204-294.000.

Styles, Virgil L.: *See—*
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,237,289, Cl. 544-279.000.

Suda, Minoru: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,237,058, Cl. 260-343.30R.

Sueyoshi, Susumu, to Pioneer Electronic Corporation. Transistor amplifier. 4,237,426, Cl. 330-296.000.

Sugahara, Mikio: *See—*
Matoba, Yasuo; Hashimoto, Akira; and Sugahara, Mikio, 4,237,247, Cl. 525-335.000.

Sugalski, Raymond K., to General Electric Company. Multiple-battery battery charger. 4,237,409, Cl. 320-2.000.

Suganuma, Hisashi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.

Sugita, Keiji: *See—*
Hirose, Akira; Sugita, Keiji; and Takagi, Yasuzi, 4,236,811, Cl. 355-14.00R.

Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, to Sugiura, Mamoru; and Itoh, Hitoshi. Glucan having antitumor activity. 4,237,266, Cl. 536-1.000.

Sugiura, Yoji: *See—*
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.

Sukhushin, Vitaly B.: *See—*
Meierovich, Eduard A.; Shenderovich, Pavel B.; Chalisov, Jury I.; Golenchenko, Valery A.; Rybin, Igor V.; and Sukhushin, Vitaly B., 4,237,507, Cl. 361-19.000.

Suld, George; Lyons, James E.; and Shinn, Robert W., to Suntech, Inc. Co-oxidation of methyl benzenes and benzaldehyde to phenolics and formaldehyde. 4,237,310, Cl. 560-131.000.

Suld, George: *See—*
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,237,309, Cl. 560-131.000.

Sultanov, Nuri T. O.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Guseinov, Novruz I. O.; Nagiev, Vagif A. O.; and Sultanov, Nuri T. O., 4,237,323, Cl. 568-738.000.

Sumitomo Chemical Company, Limited: *See—*
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.
Higo, Akio; and Suzuki, Yukio, 4,237,313, Cl. 562-401.000.
Kanagawa, Shuichi; Kawakami, Kazunori; and Shintani, Akira, 4,237,035, Cl. 260-28.00R.

Sumitomo Electric Industries, Ltd.: *See—*
Shibano, Yoshizo; Hatano, Tetsuo; and Ohkura, Toshihiko, 4,237,465, Cl. 343-894.000.

Summerlin, Frederick A.: *See—*
McGauran, Hugh K.; and Summerlin, Frederick A., 4,236,438, Cl. 85-1.0JP.

Summers, Geraldine Y. Portable disposable basin apparatus. 4,236,771, Cl. 312-228.000.

Sunakoda, Katsuaki; and Ito, Yoshikazu. Friction braking type vibration damper. 4,236,606, Cl. 188-1.00B.

Sunbeam Plastics Corporation: *See—*
Gach, Peter P., 4,236,653, Cl. 222-153.000.

Sundell, George J.: *See—*
Lovrich, Vincent; and Sundell, George J., 4,236,446, Cl. 101-79.000.

Sunds AB: *See—*
Kubat, Josef; and Djurner, Jan K., 4,237,089, Cl. 264-328.000.

Suntech, Inc.: *See—*
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,237,309, Cl. 560-131.000.
Suld, George; Lyons, James E.; and Shinn, Robert W., 4,237,310, Cl. 560-131.000.

Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi. Apparatus for precise mutual dilution and dosage of liquids. 4,237,094, Cl. 422-100.000.

Suovaniemi, Osmo A.; Tervamaki, Jukka; and Kukka, Aarre, to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi. Tip vessel for use in connection with a dosage pipette. 4,237,095, Cl. 422-100.000.

Superior Oil Company, The: *See—*
Knight, John H., 4,236,640, Cl. 209-587.000.

Surko, Walter E., Jr.; and Hart, LeRoy, to Emhart Industries, Inc. Retrofit lock. 4,236,396, Cl. 70-107.000.

Suwa, Masateru: *See—*
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.

Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,236,729, Cl. 280-804.000.

Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,236,730, Cl. 280-804.000.

Suzuki, Kazuo. Vessel adaptable to the expansion and/or contraction of fluid therein. 4,236,316, Cl. 33-364.000.

Suzuki, Kinzaburo: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Suzuki, Kouji: *See—*
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, 4,236,832, Cl. 357-51.000.

Suzuki, Nobuyoshi; and Yoshinari, Shigeru, to Olympus Optical Co., Ltd. Apparatus for measuring ion activities. 4,236,988, Cl. 204-195.00R.

Suzuki, Toshio: *See—*
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, 4,237,203, Cl. 429-122.000.

Suzuki, Yukio: *See—*
Higo, Akio; and Suzuki, Yukio, 4,237,313, Cl. 562-401.000.

SW (Delaware), Inc.: *See—*
Gallant, James O., 4,236,285, Cl. 26-103.000.

Swann, Wayne E.: *See—*
Hartdegen, Frank J.; and Swann, Wayne E., 4,237,229, Cl. 435-182.000.

Swihart, Wayne A.: *See—*
Abler, Norman C.; Zimmerman, Earlyn E.; and Swihart, Wayne A., 4,236,286, Cl. 28-160.000.

Sykes, Richard B.: *See—*
Cimarusti, Christopher M.; Koster, William H.; and Sykes, Richard B., 4,237,128, Cl. 424-246.000.

Sylvester, Robert A., to Eastman Kodak Company. Film pack. 4,236,798, Cl. 354-181.000.

Symon, Charles R.: *See—*
Thompson, Arthur H.; Symon, Charles R.; and Jacobson, Allan J., 4,237,204, Cl. 429-194.000.

Szasz, Peter R., to Kasper Instruments, Inc. Disc handling system and method. 4,236,851, Cl. 406-72.000.

T-Bar Incorporated: *See—*
Seiden, Lewis J., 4,237,352, Cl. 200-51.030.

Tabak, Samuel A.; and Morrison, Roger A., to Mobil Oil Corporation. Xylene isomerization. 4,236,996, Cl. 208-134.000.

Tachi, Katsuichi, to Sony Corporation. Video tape control time code reading. 4,237,499, Cl. 360-73.000.

Tacke, Reinhold; Bentlage, Anke; Towart, Robertson; and Vater, Wulf, to Bayer Aktiengesellschaft. Sila-substituted 1,4-dihydropyridine derivatives and their medicinal use. 4,237,137, Cl. 424-251.000.

Tadros, Maher E., to Martin Marietta Corporation. Product comprising lime or limestone and Graham's salt or $M_xP_nO_{(3N+1)}$. 4,237,025, Cl. 252-192.000.

Takada, Shunji: *See—*
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Tsujino, Nobuyuki, 4,237,214, Cl. 430-441.000.

Takagi, Shoji; and Ito, Nobuo, to Tokyo Shibaura Electric Co., Ltd. Pliable and restorable hairsetter. 4,236,540, Cl. 132-40.000.

Takagi, Yasuzi: *See—*
Hirose, Akira; Sugita, Keiji; and Takagi, Yasuzi, 4,236,811, Cl. 355-14.00R.

Takahashi, Akio; Tsumuki, Chiaki; and Nakamura, Hitoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of metallurgically joining a fitting to a shaft. 4,236,923, Cl. 75-208.00R.

Takahashi, Hideyuki: *See—*
Fuga, Nobuhiko; Uchimura, Kunio; and Takahashi, Hideyuki, 4,237,326, Cl. 585-4.000.

Takahashi, Keiichi, to Tokan Kogyo Co., Ltd. Process for producing thermoplastic multi-walled pipes. 4,236,953, Cl. 156-244.130.

Takahashi, Nagashige; and Noda, Nobuhiro. Curving device in an endoscope. 4,236,509, Cl. 128-4.000.

Takahashi, Satomi: *See—*
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, 4,237,227, Cl. 435-108.000.

Takahashi, Satoshi: *See—*
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, 4,236,832, Cl. 357-51.000.

Takahashi, Takao, to Mitsui Petrochemical Industries Ltd. Powder coating composition composed of ethylene resin mixture and hydrocarbon wax. 4,237,037, Cl. 260-28.5AV.

Takakura, Isamu: *See—*
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Takami, Satoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure factor switching circuit. 4,236,801, Cl. 354-234.000.

Takano, Shuntaro: *See—*
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Takara Co., Ltd.: *See—*
Inoue, Tsutomu, 4,236,345, Cl. 46-44.000.

Takashima, Toshiyuki: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,237,058, Cl. 260-343.30R.

Takatsu, Suehiro. Energy storing device. 4,236,387, Cl. 64-11.00R.

Takayama, Chiyozo: *See—*
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.

Takeda, Misturu: *See—*
Inoue, Eiichi; Takeda, Misturu; and Shimada, Fumio, 4,237,212, Cl. 430-346.000.

Takemura, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Blemish compensating system for a solid state image pick-up device. 4,237,488, Cl. 358-163.000.

Takeno, Hidekazu: *See—*
Kamiya, Takashi; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; and Takeno, Hidekazu, 4,237,305, Cl. 560-29.000.

Takenoya, Hideaki; and Makabe, Hachiro, to Janome Sewing Machine Co. Ltd. Sewing machine with feed dog dropping control system. 4,236,469, Cl. 112-158.00E.

Takeuchi, Kenzo: *See—*
Kojima, Takeshi; Kinoshita, Sakae; and Takeuchi, Kenzo, 4,237,334, Cl. 174-25.00R.

Taliaferro, James R., to Best Metal Products. See through fireplace. 4,236,498, Cl. 126-120.000.

Talley, Charles D. Ladder leveling device. 4,236,603, Cl. 182-204.000.

Tamer, Ergun: *See—*
Walz, Klaus; and Tamer, Ergun, 4,237,268, Cl. 536-4.000.

Tanabe, Nato; Okada, Kenzoh; and Maeda, Norio, to Kurashiki Boseki Kabushiki Kaisha. Method of manufacturing a flexible polyurethane foam product. 4,237,181, Cl. 428-307.000.

Tanaka, Hideo: *See—*
Torii, Sigeru; Tanaka, Hideo; and Kobayashi, Yuichi, 4,237,308, Cl. 560-122.000.

Tanaka, Kiyoshi: *See—*
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.

Tanaka, Yoshikazu; and Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Sewing machine with display units which display guidance data guiding the user in manual adjustment of operating variables in automatic response to user selection of stitch type. 4,236,467, Cl. 112-158.00F.

Tang, Paul R., to Bunker Ramo Corporation. EMI Shielded cable and connector assembly. 4,236,779, Cl. 339-143.00R.

Tanski, William J., to Sperry Corporation. Surface acoustic wave resonators with integrated internal coupler reflectors. 4,237,433, Cl. 333-195.000.

Tapco International, Inc.: *See—*
Arnoldy, Roman F., 4,237,362, Cl. 219-76.140.

Tarullo, Daniel J., to Tarullo, Daniel J. Forced droplet humidifier. 4,236,505, Cl. 126-350.00B.

Taylor, Edward C.: *See—*
White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, 4,237,306, Cl. 560-105.000.

Taylor, Peter J.: *See—*
Turner, Horace G.; and Taylor, Peter J., 4,236,572, Cl. 165-38.000.

Taylor, Richard H.: *See—*
Hatter, Edward E.; Taylor, Richard H.; and McGunigle, Richard D., 4,236,510, Cl. 128-24.00A.

Technology Marketing, Inc.: *See—*
Wells, George H., 4,237,546, Cl. 364-900.000.

Teijin Limited: *See—*
Bannai, Kiyoshi; Ohnuma, Norio; Ishizuka, Seiichi; Kubo, Junji; and Naruchi, Tatuyuki, 4,237,125, Cl. 424-236.000.

Teledyne Industries, Inc.: *See—*
Karpal, David L., 4,237,202, Cl. 429-120.000.

Telefonaktiebolaget L M Ericsson: *See—*
Serrander, Hans R., 4,237,337, Cl. 174-70.00R.

Teletype Corporation: *See—*
Hodne, Ingard B., 4,236,836, Cl. 400-124.000.

Tennessee Valley Authority: *See—*
Hicks, Gordon C.; and Megar, George H., 4,237,106, Cl. 423-315.000.
McCullough, John F., 4,236,911, Cl. 71-34.000.

Teoli, Anthony, to Youngstown Steel Door Company, The. Depressed center car. 4,236,459, Cl. 105-406.00R.

Terauchi, Kiyoshi, to Sankyo Electric Company Limited. Lubrication system for compressor unit. 4,236,878, Cl. 417-269.000.

Terrot Strickmaschinen GmbH: *See—*
Blank, Jochen; and Bobe, Dieter, 4,236,390, Cl. 66-149.00R.

Terui, Yasuaki: *See—*
Chikamura, Takao; Fujiwara, Shinji; Terui, Yasuaki; and Fukai, Masakazu, 4,236,829, Cl. 357-16.000.

Tervamaki, Jukka: *See—*
Suovaniemi, Osmo A.; Tervamaki, Jukka; and Kukka, Aarre, 4,237,095, Cl. 422-100.000.

Texaco Development Corporation: *See—*
Speranza, George P.; and Zimmerman, Robert L., 4,237,282, Cl. 544-168.000.

Texaco Inc.: *See—*
Allen, Joseph C.; and Porter, John W., 4,237,017, Cl. 252-8.55D.
Kalfoglou, George, 4,236,579, Cl. 166-274.000.
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,237,070, Cl. 260-580.000.
Schievelbein, Vernon H., 4,237,018, Cl. 252-8.55D.

Texas Instruments Incorporated: *See—*
Berg, Peter G., 4,237,077, Cl. 261-39.00E.
Berg, Peter G., 4,237,366, Cl. 219-219.000.
Boulanger, Henry J.; and Puccini, Richard E., 4,237,351, Cl. 200-5.00A.
Thompson, Herbert A., Jr.; Senor, Ronald E.; and Beggs, Louis C., 4,237,510, Cl. 361-24.000.

Textron, Inc.: *See—*
Halwes, Dennis R.; and Simmons, William A., 4,236,607, Cl. 188-1.00B.
Moertel, George B., 4,236,683, Cl. 24-205.13R.
Orr, David A.; Gala, Hiren S.; and Scagnelli, George J., 4,236,292, Cl. 29-408.000.
Rockenfeller, John D.; and Llewellyn, Thomas E., 4,237,354, Cl. 200-83.00C.
Strom, Robert, 4,236,336, Cl. 40-622.000.

Tezuka, Nobuo: *See—*
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.

Theiler, Robert. Ironing installation and method of operating the same. 4,236,330, Cl. 38-8.000.

Themy, Constantinos D. High voltage electrolytic cell. 4,236,992, Cl. 204-278.000.

Thermonetics Corporation: *See—*
Poppendiek, Heinz F., 4,236,403, Cl. 73-15.00A.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile apparatus for continuously renewing track. 4,236,452, Cl. 104-2.000.

Thew, Martin T.: *See—*
Colman, Derek A.; and Thew, Martin T., 4,237,006, Cl. 210-84.000.

Thieme, Peter C.; Frickel, Fritz-Frieder; Hagen, Helmut; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, to BASF Aktiengesell-

schaft. Amino derivatives of 2-methyl-5-(2-hydroxystyryl)-1,3,4-thiadiazole. 4,237,278, Cl. 542-429.000.
Thillays, Jacques C., to U.S. Philips Corporation. Photocoupler device. 4,237,382, Cl. 250-551.000.
Thim, Stig: *See—*
Limmergard, Sten; and Thim, Stig, 4,236,670, Cl. 238-8.000.
Tholen, Paul, to Klockner-Humboldt-Deutz Aktiengesellschaft. Internal combustion engine having a supercharger and means for cooling charged air. 4,236,492, Cl. 123-119.0CD.
Thoma, Paul E.: *See—*
Colla, Jeannine O.; and Thoma, Paul E., 4,236,307, Cl. 29-857.000.
Thomas, Dean L.; Frank, Robert G.; and Claassen, George R., to PPG Industries, Inc. Producing glass sheets having improved break patterns. 4,236,909, Cl. 65-115.000.
Thomas, Lovic P.: *See—*
Stone, W. James; and Thomas, Lovic P., 4,236,687, Cl. 244-122.0AD.
Thompson, Arthur H.; Symon, Charles R.; and Jacobson, Allan J., to Exxon Research & Engineering Co. Molybdenum sulfide cathode structure. 4,237,204, Cl. 429-194.000.
Thompson, David A., to International Business Machines Corporation. Chip package with high capacitance, stacked vlsi/power sheets extending through slots in substrate. 4,237,522, Cl. 361-392.000.
Thompson, Herbert A., Jr.; Senor, Ronald E.; and Beggs, Louis C., to Texas Instruments Incorporated. Electrical switching apparatus. 4,237,510, Cl. 361-24.000.
Thompson, John U., to Oce'-Industries, Inc. Take-up reel. 4,236,680, Cl. 242-74.100.
Thomson-CSF: *See—*
Castera, Jean-Paul; and Hepner, Georges, 4,236,782, Cl. 350-96.130.
Hepner, Georges; and Castera, Jean-Paul, 4,236,783, Cl. 350-96.130.
Papuchon, Michel; Puech, Brigitte; and Werner, Michel, 4,236,785, Cl. 350-96.140.
Thorberg, Seth-Olov: *See—*
Lindberg, Ulf M. A.; Ross, Svante B.; Thorberg, Seth-Olov; and O gren, Sven O., 4,237,311, Cl. 560-173.000.
Thulman, Robert D.: *See—*
Erickson, Alve J.; and Thulman, Robert D., 4,236,454, Cl. 104-69.000.
Thyssen Industrie AG: *See—*
Koppers, Manfred; and Pawelski, Ludwig, 4,236,850, Cl. 405-291.000.
Roth, Gunther, 4,237,359, Cl. 219-10.410.
Times Fiber Communications, Inc.: *See—*
Dabby, Franklin W.; and Chesler, Ronald B., 4,236,905, Cl. 65-3.00A.
Timex Corporation: *See—*
Bissar, Saadi J., 4,236,792, Cl. 350-357.000.
Tjaden, Garold S.: *See—*
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,237,532, Cl. 364-200.000.
TKR Tabak Forschnugs-GmbH & Co.: *See—*
de Clara, Maximilian, 4,236,533, Cl. 131-17.00R.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Kamiyama, Setsuo; Nagashima, Yukio; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,237,329, Cl. 585-474.000.
Tokan Kogyo Co., Ltd: *See—*
Takahashi, Keiichi, 4,236,953, Cl. 156-244.130.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Inukai, Sumitaka; and Azuma, Takashi, 4,236,485, Cl. 118-690.000.
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, 4,236,832, Cl. 357-51.000.
Nakamine, Chosin; and Fuzii, Norihito, 4,236,486, Cl. 118-691.000.
Takemura, Yasuo, 4,237,488, Cl. 358-163.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Arimura, Yoshiaki, 4,236,781, Cl. 350-81.000.
Takagi, Shoji; and Ito, Nobuo, 4,236,540, Cl. 132-40.000.
Tolley, William K.: *See—*
Urban, Peter; Stauter, John C.; and Tolley, William K., 4,237,104, Cl. 423-242.000.
Tomka, Jiri; and Ginn, Jack M., to Imperial Chemical Industries Limited. Polyamide compositions containing carboxylic acid metal salt and organophosphonic acid. 4,237,034, Cl. 260-18.00N.
Tomozawa, Atsushi: *See—*
Aikoh, Shinichi; Niwa, Kunihiko; and Tomozawa, Atsushi, 4,237,552, Cl. 370-83.000.
Tomy Kogyo Co., Inc.: *See—*
Iwao, Noriaki, 4,236,346, Cl. 46-104.000.
Kaga, Takashi, 4,236,718, Cl. 273-153.00R.
Tonkin, Kenneth J., to A. B. Dick Company. Transport system for advancing copy sheets through tandem duplicating system. 4,236,814, Cl. 355-26.000.
Toray Industries, Inc.: *See—*
Fukuhara, Mototada; and Morita, Ken-ichi, 4,237,108, Cl. 423-447.400.
Hiramatsu, Toru; and Morita, Ken-ichi, 4,237,109, Cl. 423-447.500.
Torii, Sigeru; Tanaka, Hideo; and Kobayashi, Yuichi, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing 2-cyclopentenone derivative and perfume composition containing the derivative. 4,237,308, Cl. 560-122.000.
Torkko, Reino, to Canadian Patents & Development Ltd. Animal trap. 4,236,341, Cl. 43-88.000.
Tornblom, Bengt H.; and Tornblom, Torborg M., to Tornbloms Kvalitetskontroll AB. Method and apparatus for non-destructive testing using a plurality of frequencies. 4,237,419, Cl. 324-225.000.
Tornblom, Torborg M.: *See—*
Tornblom, Bengt H.; and Tornblom, Torborg M., 4,237,419, Cl. 324-225.000.
Tornbloms Kvalitetskontroll AB: *See—*
Tornblom, Bengt H.; and Tornblom, Torborg M., 4,237,419, Cl. 324-225.000.
Torre, Salvatore F., to American Cyanamid Company. Process for phthalocyanine green pigment. 4,236,933, Cl. 106-288.00Q.
Toshiba Kikai Kabushiki Kaisha: *See—*
Kawakami, Hideo; Endo, Masami; and Yamazaki, Fumio, 4,236,432, Cl. 83-848.000.
Towart, Robertson: *See—*
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Toyama Chemical Company, Limited: *See—*
Saikawa, Isamu; Takano, Shuntaro; Momonoi, Kaishu; Takakura, Isamu; Kutani, Chiaki; Tanaka, Kiyoshi; and Hayashi, Kenshin, 4,237,280, Cl. 544-27.000.
Toyo Jozo Kabushiki Kaisha: *See—*
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,237,222, Cl. 435-25.000.
Okuyama, Tsuneo; Fujii, Tadashiro; Nakagawa, Nobuaki; and Kotani, Kikuo, 4,237,267, Cl. 536-1.000.
Toyobo Co., Ltd.: *See—*
Yoshimura, Shohei; and Isaka, Tutomu, 4,237,088, Cl. 264-235.800.
Toyoda, Kenji; and Shimomura, Jun, to Nippon Kogaku K.K. Lens information introducing device having corrected extraneous light. 4,236,804, Cl. 354-286.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Kato, Yasutosi; Kamo, Hideo; Ogawa, Tadashi; Ito, Kazuhiko; Sato, Katsuziro; and Asai, Tatsuo, 4,236,901, Cl. 55-276.000.
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, 4,237,030, Cl. 252-432.000.
Ooshiro, Hideyuki; and Chiba, Masakazu, 4,236,753, Cl. 297-364.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,729, Cl. 280-804.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,236,730, Cl. 280-804.000.
Takahashi, Akio; Tsumuki, Chiaki; and Nakamura, Hitoshi, 4,236,923, Cl. 75-208.00R.
Trepanier, Donald L.: *See—*
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Tretevich, Roman I.: *See—*
Chigirinsky, Alexandr A.; Danko, Vladimir G.; Grinchenko, Nikolai G.; Cheremisov, Ivan Y.; Tretevich, Roman I.; and Penkina, Galina V., 4,237,398, Cl. 310-214.000.
Trevithick, Richard W. Programmable multi-channel audio playback system. 4,237,497, Cl. 360-72.100.
Tri-Tronics Company, Inc.: *See—*
Warner, Robert A., 4,236,604, Cl. 186-61.000.
Trichet, Luc: *See—*
Rouxel, Jean; and Trichet, Luc, 4,237,201, Cl. 429-104.000.
Trio Kabushiki Kaisha: *See—*
Naito, Michinori, 4,237,556, Cl. 455-154.000.
Trisa Burstenfabrik A.G.: *See—*
Meyer, Walter; and Bara, Anton J., 4,236,651, Cl. 222-82.000.
Troncoso, Fernando V., Jr. Archery bow with arrow rest. 4,236,497, Cl. 124-24.00R.
Trott, Delano B., to Beringer Co., Inc. Flowable material passage with interposable slide member. 4,237,014, Cl. 210-330.000.
Troutman, Richard C.: *See—*
La Russa, Joseph A.; Troutman, Richard C.; and Attler, Anthony R., 4,236,519, Cl. 128-305.000.
Troxell, Lillian H.: *See—*
Johnston, Howard; Troxell, Lillian H.; and Claus, Jon S., 4,236,912, Cl. 71-94.000.
TRW Inc.: *See—*
Allen, Reginald A., 4,237,389, Cl. 307-221.00D.
Dotter, Berton E., 4,237,345, Cl. 179-16.00E.
Hook, Dale L.; and Waypa, John, Jr., 4,237,429, Cl. 331-94.50G.
Huang, Marshall Y.; Grote, Albert J.; and Yen, Kuo-Hsiung, 4,237,432, Cl. 333-194.000.
Jones, Robert J., 4,237,262, Cl. 528-322.000.
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, to Fuji Electrochemical Co., Ltd. Rupturable safety sealing gasket of cell. 4,237,203, Cl. 429-122.000.
Tsuchihashi, Genichi; and Ogura, Katsuyuki, to Sagami Chemical Research Center. Aromatic acetic acid derivatives having sulfur atom at alpha-position and process for their preparation. 4,237,298, Cl. 546-238.000.
Tsuchiya, Masatoshi: *See—*
Onuke, Jin; Suwa, Masateru; Soeno, Ko; Okayama, Akio; Tsuchiya, Masatoshi; and Onodera, Hisakiti, 4,236,925, Cl. 75-229.000.
Tsuda, Yoshihisa: *See—*
Jackson, Denise M.; and Tsuda, Yoshihisa, 4,237,231, Cl. 435-234.000.
Tsujino, Nobuyuki: *See—*
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Tsujino, Nobuyuki, 4,237,214, Cl. 430-441.000.

Tsumuki, Chiaki: *See—*
Takahashi, Akio; Tsumuki, Chiaki; and Nakamura, Hitoshi, 4,236,923, Cl. 75-208.00R.
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Dolzhenkov, Boris S.; Partin, Igor A.; Loginov, Leonid A.; Kabakov, Genrikh I.; Lanin, Jury N.; Turanin, Sergei G.; Plokhov, Viktor I.; Semin, Sergei S.; Dymov, Gershon D.; and Cherepok, Gennady V., 4,236,917, Cl. 75-93.00R.
Turk, Leonard G.; and Enders, George E., to NRM Corporation. Tire press. 4,236,883, Cl. 425-32.000.
Turnbuckle Products Corporation: *See—*
Anderson, Robert V., 4,236,736, Cl. 285-150.000.
Turner, David: *See—*
Blenkinsop, Philip T.; McLean, Graham W.; and Turner, David, 4,237,396, Cl. 310-154.000.
Turner, Horace G.; and Taylor, Peter J., to Plessey Handel und Investments AG. Fluid cooled heat exchanger system. 4,236,572, Cl. 165-38.000.
Turner, John; Koster, Richard A.; and Bassman, Seymour, to Harsco Corporation. Field artillery ammunition support vehicle. 4,236,441, Cl. 89-40.00F.
Turpin, Daniel: *See—*
Schweizer, Alfred D.; Erskine, William G.; and Turpin, Daniel, 4,236,532, Cl. 131-9.000.
Tury, Bernard: *See—*
Singer, Michael; and Tury, Bernard, 4,237,019, Cl. 252-47.500.
Tusso, Robert J.; Feher, Peter; Schultes, Max; and Eberlein, Dietmar, to Savin Corporation. Copier scan and collator back bar control. 4,236,808, Cl. 355-8.000.
Tyler, Derek E.: *See—*
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,236,570, Cl. 164-49.000.
Tzakis, George J.: *See—*
Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., 4,237,478, Cl. 358-23.000.
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, to Canon Kabushiki Kaisha. Safety device for camera. 4,236,802, Cl. 354-268.000.
Uchimura, Kunio: *See—*
Fuga, Nobuhiko; Uchimura, Kunio; and Takahashi, Hideyuki, 4,237,326, Cl. 585-4.000.
Uchino, Misao: *See—*
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Uddeholms Aktiebolag: *See—*
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Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Uhl, Guenter: *See—*
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Merlina, Joseph F.; Redmond, John P.; Ulbrich, George; and Wagner, Richard M., 4,236,777, Cl. 339-17.0CF.
Ullman, Frederick E. Method for controlling the flow of articles and pallets in a conveyor system. 4,236,865, Cl. 414-786.000.
Ullmann, Werner, to Elmapa N.V. Pulse generator for metal machining by electric discharges. 4,237,370, Cl. 219-69.00P.
Ulmer, Harry E.; and Mathew, Chempolil T., to Allied Chemical Corporation. Production of alpha-hydroxy oximes. 4,237,069, Cl. 260-566.00A.
Unarco Industries, Inc.: *See—*
Klein, Herbert H., 4,236,642, Cl. 211-207.000.
Union Carbide Corporation: *See—*
Wood, David H., 4,237,526, Cl. 362-158.000.
United Bank of Denver, N. A., personal representative: *See—*
Duron, Ola; Griffin, Richard J., deceased; and United Bank of Denver, N. A., personal representative, 4,236,892, Cl. 23-230.00B.
United Kingdom Atomic Energy Authority: *See—*
Dugdale, Ronald A., 4,236,994, Cl. 204-298.000.
United States Gypsum Company: *See—*
Lange, Robert G.; and Schlotthauer, Harley L., 4,237,260, Cl. 528-230.000.
United States of America
Agriculture: *See—*
Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 4,236,890, Cl. 8-2.50A.
Rayford, Warren E.; and Wing, Robert E., 4,237,271, Cl. 536-47.000.
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Army: *See—*
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Oliver, David W., 4,237,209, Cl. 430-317.000.
Polson, Jack R., 4,236,982, Cl. 204-116.000.
Rittenbach, Otto E., 4,237,464, Cl. 343-814.000.
Rodgers, Aubrey, 4,236,414, Cl. 74-5.100.
Smith, Bernard, 4,236,287, Cl. 29-25.180.
Energy: *See—*
Bamberger, Carlos E.; and Robinson, Paul R., 4,237,105, Cl. 423-306.000.
DeMonbrun, James R.; Schmitt, Charles R.; and Schreyer, James M., 4,237,090, Cl. 422-13.000.
Korenko, Michael K.; Merrick, Howard F.; and Gibson, Robert C., 4,236,943, Cl. 148-32.500.
Lewis, Richard A., 4,236,965, Cl. 176-11.000.
Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, 4,237,151, Cl. 427-74.000.
Wiesmann, Harold J., 4,237,150, Cl. 427-74.000.
Winston, Roland, 4,237,332, Cl. 136-89.0CA.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Selcuk, M. Kudret. Solar energy receiver for a Stirling engine. 4,236,383, Cl. 60-641.000.
National Aeronautics and Space Administration: *See—*
Berrier, Bobby L., 4,236,684, Cl. 244-52.000.
Navy: *See—*
Bakewell, Henry P., Jr.; and Johnson, Marguerite A., 4,236,401, Cl. 73-1.0DV.
Cantrell, Ben H.; and Lewis, Bernard L., 4,237,461, Cl. 343-5.0FT.
Manley, Claude E.; Pennella, John J.; Deaton, Donald J.; Crandall, Alan L.; and Hersey, James P., 4,236,546, Cl. 137-88.000.
Morris, Joseph H., 4,236,867, Cl. 415-26.000.
Stone, W. James; and Thomas, Lovic P., 4,236,687, Cl. 244-122.0AD.
Wexler, Bernard L.; Stregack, Joseph A.; and Manuccia, Thomas J., Jr., 4,237,428, Cl. 331-94.50G.
U.S. Philips Corporation: *See—*
Couwenberg, Winston D., 4,237,401, Cl. 313-225.000.
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Sanderson, Hendrik J., 4,237,500, Cl. 360-77.000.
Thillays, Jacques C., 4,237,382, Cl. 250-551.000.
van Eijck, Gustavus L. P.; and Simons, Henri J. L., 4,237,498, Cl. 360-72.200.
Vink, Nicolaas G.; Nieuwendijk, Joris A. M.; and Heijnemans, Werner A. L., 4,237,437, Cl. 335-211.000.
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,237,400, Cl. 313-204.000.
United Technologies Corporation: *See—*
Grantham, Daniel H., 4,236,984, Cl. 204-129.000.
Hucul, Elias, Jr.; and Gladden, Robert E., 4,236,870, Cl. 416-97.00R.
Laurello, Vincent P., 4,236,869, Cl. 416-95.000.
Manty, Brian A.; Liss, Herbert R.; and Lada, Henry, 4,236,940, Cl. 148-6.200.
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University of Illinois Foundation: *See—*
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Uno, Hitoshi; Nagai, Yasutaka; Karasawa, Tadahiko; and Furukawa, Kiyoshi, to Dainippon Pharmaceutical Co., Ltd. 2-(4-Ethyl-1-piperazinyl)-4-phenylquinoline, process for preparation thereof, and composition thereof. 4,237,135, Cl. 424-250.000.
UOP Inc.: *See—*
Jackson, Denise M.; and Tsuda, Yoshihisa, 4,237,231, Cl. 435-234.000.
Urban, Peter; Stauter, John C.; and Tolley, William K., 4,237,104, Cl. 423-242.000.
Winter, George R., III, 4,237,327, Cl. 585-450.000.
Winter, George R., III, 4,237,328, Cl. 585-456.000.
Up-Right, Inc.: *See—*
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Upjohn Company, The: *See—*
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Johnson, Roy A., 4,237,059, Cl. 260-345.200.
Johnson, Roy A., 4,237,277, Cl. 542-426.000.
Upson, Donald A.; and Steklenski, David J., to Eastman Kodak Company. Conductive polyanaline salt-latex compositions, elements and processes. 4,237,194, Cl. 428-922.000.
Urban, Peter; Stauter, John C.; and Tolley, William K., to UOP Inc. Flue gas treatment for sulfur dioxide removal. 4,237,104, Cl. 423-242.000.
Utsumi, Kazuaki: *See—*
Yonezawa, Masatomo; Utsumi, Kazuaki; and Ohno, Tomeji, 4,236,928, Cl. 106-39.500.
Vachhani, Vasantrai A.: *See—*
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Valayil, Silvester P.; and Elias, Moenes L., to Dart Industries Inc. Dissolution of metals utilizing an aqueous H_2SO_4—H_2O_2-mercapto containing heterocyclic nitrogen etchant. 4,236,957, Cl. 156-666.000.
Valmet Oy: *See—*
Kankaanpa , Matti, 4,236,962, Cl. 162-204.000.
Van Bennekom, Carl F.; Rogers, Donald E.; and Scannell, Edward F., to General Electric Company. Electrical current indicating meter. 4,237,418, Cl. 324-150.000.
Van Bommel, Cornelis H. M.: *See—*
Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., 4,237,400, Cl. 313-204.000.
van der Lely, Cornelis. Coupling member. 4,236,613, Cl. 188-300.000.

Vander Wall, Eugene M.: *See—*
Anderson, Roger E.; and Vander Wall, Eugene M., 4,236,464, Cl. 110-238.000.

van Eijck, Gustavus L. P.; and Simons, Henri J. L., to U.S. Philips Corporation. Method of addressing and/or locating information on a record carrier. 4,237,498, Cl. 360-72.200.

van Konynenburg, Peter V.; Au, Andrew; Rauwendaal, Chris; and Gotcher, Alan J., to Raychem Corporation. Low resistivity PTC compositions. 4,237,441, Cl. 338-22.00R.

Vannice, Steven D.: *See—*
Larson, Willis A.; Vannice, Steven D.; and Jesson, Joseph E., 4,237,358, Cl. 200-159.00B.

Vantini, Nereo; and Marini, Paolo, to Centro Sperimentale Metallurgico S.p.A. Applying annealing separators to oriented grain electrical steel sheet. 4,236,986, Cl. 204-181.00N.

Van Twuyver, Robert; and Johnson, James M., to Northeast Shipley Company, Ltd. Bivalve mollusk shucking apparatus and method. 4,236,276, Cl. 17-48.000.

Varda, Eugene I., to Pullman Incorporated. Door locking and actuating mechanism for hopper car. 4,236,458, Cl. 105-308.00R.

Varian Associates, Inc.: *See—*
Karp, Arthur, 4,237,402, Cl. 315-3.500.

Varta Batterie, A.G.: *See—*
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Vater, Wulf: *See—*
Tacke, Reinhold; Bentlage, Anke; Towart, Robertson; and Vater, Wulf, 4,237,137, Cl. 424-251.000.

VDO Adolf Schindling A.G.: *See—*
Grohl, Friedrich, 4,236,480, Cl. 116-286.000.

VEB Arzneimittelwerk Dresden: *See—*
Grawert, Werner; Schiedt, Ludwig; Neumann, Brigitte; Heidenbluth, Karlheinz; Dauth, Christoph; Schirutschke, Rudolf; and Muller, Monika, 4,237,291, Cl. 544-346.000.

VEB Pentacon Dresden Kamera- und Kinowerke: *See—*
Noack, Rolf; Kromer, Karl; and Zimmet, Hans, 4,236,797, Cl. 354-152.000.

VEB Schwermaschinenbau-Kombinat Ernst Thalmann Magdeburg: *See—*
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, 4,236,551, Cl. 140-1.000.

Velsicol Chemical Corporation: *See—*
Stach, Leonard J., 4,237,056, Cl. 260-340.700.

Vereinigte Baubeschelagfrabriken Gretsch & Co. GmbH: *See—*
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Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft: *See—*
Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, 4,236,627, Cl. 198-514.000.

Vesela, Hana, deceased: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Vesely, Jiri, heir: *See—*
Semonsky, Miroslav; Kotva, Rudolf; Cerny, Antonin; Krepelka, Jiri; Pujman, Vojtech; Andrysek, Oskar; and Vesela, Hana, deceased, 4,237,270, Cl. 536-18.000.

Veznik, Zdenek: *See—*
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Vianova Kunstharz, A.G.: *See—*
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Vick, William L.: *See—*
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Victor Company of Japan, Limited: *See—*
Kakita, Minoru; and Kosugi, Tsuneo, 4,236,435, Cl. 84-1.220.
Yokokawa, Sumio; and Watanabe, Yasuaki, 4,237,407, Cl. 315-389.000.

Videocolor S.A.: *See—*
Lavigne, Andre, 4,237,479, Cl. 358-33.000.

Vincent, Ogden W. Dome solar air heater. 4,236,507, Cl. 126-450.000.

Vink, Nicolaas G.; Nieuwendijk, Joris A. M.; and Heijnemans, Werner A. L., to U.S. Philips Corporation. Deflection unit for color television display tubes. 4,237,437, Cl. 335-211.000.

Vinther, Jette V.: *See—*
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Vinther, Knud; and Vinther, Jette V. Assembly element sets. 4,236,363, Cl. 52-285.000.

Vinyl Clad Proprietary Limited: *See—*
Edwards, Frederick H., 4,236,954, Cl. 156-352.000.

Vjugov, Oleg N.: *See—*
Batjukov, Vladimir I.; Vjugov, Oleg N.; Fadeev, Alexandr I.; and Shkhian, Tsolak G., 4,236,967, Cl. 176-30.000.

Voelkl, Erfried: *See—*
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Vogt, Robert L., to General Electric Company. Sectoral combustor for burning low-BTU fuel gas. 4,236,378, Cl. 60-757.000.

Volkamer, Klaus: *See—*
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,237,330, Cl. 585-807.000.

von Aschwege, Gerd: *See—*
Boettge, Horst; Mitzel, Wilhelm; Bernardi, Herbert; Geier, Josef; Osswald, Norbert; von Aschwege, Gerd; and Schaetz, Robert, 4,236,639, Cl. 209-534.000.
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von der Crone, Jost: *See—*
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,286, Cl. 544-225.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,292, Cl. 546-7.000.
L'Eplattenier, Francois; Pugin, Andre; and von der Crone, Jost, 4,237,293, Cl. 546-7.000.

von Harpe, Hannes; Bottenbruch, Ludwig; Peltzer, Bernd; and Schulz-Walz, Hansjochen, to Bayer Aktiengesellschaft. Molding composition based on unsaturated polyesters. 4,237,244, Cl. 525-171.000.

Vredenburg, Edric W., Sr. Self-cleaning tree girdling device. 4,236,308, Cl. 30-121.000.

W. R. Grace & Co.: *See—*
Fulmer, Glenn E.; and Murch, Robert M., 4,237,182, Cl. 428-310.000.
Hartdegen, Frank J.; and Swann, Wayne E., 4,237,229, Cl. 435-182.000.

Wachter, Michael P.: *See—*
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Wacker Werke GmbH & Co. KG: *See—*
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Wada, Minoru: *See—*
Nahara, Akira; Wada, Minoru; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,237,468, Cl. 346-135.100.

Wada, Shuhei: *See—*
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Wada, Toshihiko: *See—*
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, 4,237,233, Cl. 435-254.000.

Waegaert, Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumette. Method for wrapping cigars or like articles in an outer envelope of natural tobacco. 4,236,536, Cl. 131-33.000.

Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG): *See—*
Lange, Gerhard, 4,236,397, Cl. 72-137.000.

Wagner Electric Corporation: *See—*
Pecota, Walter, 4,237,367, Cl. 219-265.000.

Wagner, Richard M.: *See—*
Merlina, Joseph F.; Redmond, John P.; Ulbrich, George; and Wagner, Richard M., 4,236,777, Cl. 339-17.0CF.

Wagner, Roland W.; and Heim, Clarence W., Jr., to Warrick Equipment Corp. Apparatus for and method of sequentially transporting, accumulating and stacking a predetermined number of groups of individual similar flat articles and thereafter depositing the entire stack on a conveyor. 4,236,855, Cl. 414-42.000.

Wagner, Ulrich: *See—*
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,237,330, Cl. 585-807.000.

Wakatsuki, Masao: *See—*
Komatsu, Shigeru; Takahashi, Satoshi; Suzuki, Kouji; and Wakatsuki, Masao, 4,236,832, Cl. 357-51.000.

Waldron, Wesley K., to General Electric Company. Single-electrode capacitance touchpad sensor systems. 4,237,421, Cl. 328-5.000.

Walker, Craig A.: *See—*
Walker, Lila A.; Walker, Richard A.; and Walker, Craig A., 4,236,479, Cl. 116-28.00R.

Walker, Leon; and Berry, Howard S., to Berry, Howard S. Ore classifier. 4,237,001, Cl. 209-442.000.

Walker, Lila A.; Walker, Richard A.; and Walker, Craig A. Headlights reminder. 4,236,479, Cl. 116-28.00R.

Walker, Loren H.: *See—*
Cutler, John H.; and Walker, Loren H., 4,237,531, Cl. 363-58.000.

Walker, Richard A.: *See—*
Walker, Lila A.; Walker, Richard A.; and Walker, Craig A., 4,236,479, Cl. 116-28.00R.

Walker, Terence, to American Optical Corporation. Cuvette and standard holder for oximeters. 4,236,820, Cl. 356-41.000.

Wallevik, Oddmund; and Dessen, Erik, to Norsk Hydro a.s. Method of manufacturing melted iron oxide. 4,237,111, Cl. 423-632.000.

Walsh, James L.: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., 4,236,294, Cl. 29-578.000.

Walz, Klaus; and Tamer, Ergun, to Bayer Aktiengesellschaft. Esters of acylated aminocarboxylic acid containing compounds. 4,237,268, Cl. 536-4.000.

Ward, John D. Cutting saw and concrete groover. 4,236,356, Cl. 51-176.000.

Warner, Robert A., to Tri-Tronics Company, Inc. Start/stop control of conveying means. 4,236,604, Cl. 186-61.000.

Warrick Equipment Corp.: *See—*
Wagner, Roland W.; and Heim, Clarence W., Jr., 4,236,855, Cl. 414-42.000.

Washburn, Robert B.: *See—*
Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., 4,237,177, Cl. 428-215.000.

Washington University: *See—*
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Watanabe, Koji: *See—*
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Watanabe, Seiichi: *See—*
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Watanabe, Yasuaki: *See—*
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Watanabe, Yoshihisa: *See—*
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Water Front Products, Inc.: *See—*
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Watson, James, Jr.: *See—*
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Waypa, John, Jr.: *See—*
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Weaver, Lelland A.: *See—*
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Webb, John T. H.: *See—*
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Weber, Adam: *See—*
Mutschler, Erich; Prohaska, Hans; and Weber, Adam, 4,237,529, Cl. 362-272.000.

Webers, Werner: *See—*
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Weddigen, Gert, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,237,200, Cl. 429-102.000.

Wedel, John A.: *See—*
Anderson, Richard D.; and Wedel, John A., 4,236,815, Cl. 355-29.000.

Weigel, Horst: *See—*
Melcher, Gerhard; and Weigel, Horst, 4,236,916, Cl. 75-85.000.

Weimer, Paul K., to RCA Corporation. Charge transfer imager. 4,237,477, Cl. 358-44.000.

Weinberg, Morton, to Motorola, Inc. Pager with escalating audio alert signal level. 4,237,448, Cl. 340-311.000.

Weiner, Irving L., to Ortho Diagnostics, Inc. Gated baseline corrector. 4,237,424, Cl. 328-175.000.

Weinert, Friedrich. Heat expansion machine. 4,236,377, Cl. 60-641.000.

Weinhold, Otto, to Sandco Ltd. Apparatus for producing drops or portions of liquid and viscous materials and for producing pellets therefrom. 4,236,882, Cl. 425-6.000.

Weinstein, Stephen B.: *See—*
Gitlin, Richard D.; Meadors, Howard C., Jr.; and Weinstein, Stephen B., 4,237,554, Cl. 375-15.000.

Weisenburger, Lawrence P.: *See—*
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Weiss, Martin J.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,237,316, Cl. 562-503.000.

Welch, Stanley B., to General Electric Company. Temperature sensor for glass-ceramic cooktop. 4,237,368, Cl. 219-449.000.

Wellington, Roger D., to Augat Inc. Electrical contact with improved means for solder wicking and degassing. 4,236,776, Cl. 339-17.00R.

Wells, George H., to Technology Marketing, Inc. Multi-layered back plane for a computer system. 4,237,546, Cl. 364-900.000.

Wendt, Gary R., to Crane, Wendy S., a part interest. Spa cover. 4,236,259, Cl. 4-172.120.

Werker, Ekke; and Emsperger, Werner, to Kraftwerk Union Aktiengesellschaft. Device for removing heat of decomposition in a steam power plant heated by nuclear energy. 4,236,968, Cl. 176-38.000.

Werner, Michel: *See—*
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Wessel, Josef: *See—*
Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, 4,236,997, Cl. 209-144.000.

Wessel, Josef A; Muller, Manfred; Heinemann, Otto; and Bredenholler, Norbert, to Wessel, Josef; and Polysius AG. Air separator apparatus. 4,236,997, Cl. 209-144.000.

Wesselink, Gustaaf A.; Roelofs, Hendrik; and Van Bommel, Cornelis H. M., to U.S. Philips Corporation. Low-pressure discharge lamp with tortuous discharge path. 4,237,400, Cl. 313-204.000.

West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., to Leesona Corporation. Container lining. 4,236,885, Cl. 425-514.000.

West, Joe E. Torque transmitting and blocking device. 4,236,618, Cl. 192-8.00R.

Westcott, Randy L. Tamper proof case for the protection of sensitive papers. 4,236,463, Cl. 109-33.000.

Westerdahl, Henri, to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG. Process for the filleting of fish. 4,236,275, Cl. 17-46.000.

Westinghouse Electric Corp.: *See—*
Liu, Chi-Sheng; Williams, Roy K.; and Weaver, Lelland A., 4,237,430, Cl. 331-94.50D.
Playfoot, Kerwin C.; and Goldstein, Norman P., 4,237,380, Cl. 250-370.000.
Sisk, Francis J., 4,236,874, Cl. 417-315.000.
Ying, Sui-chun; Smith, Joseph L., Jr.; and Baumann, Kai J., 4,237,392, Cl. 310-52.000.

Wexler, Bernard L.; Stregack, Joseph A.; and Manuccia, Thomas J., Jr., to United States of America, Navy. 15.9 Micron acetylene laser. 4,237,428, Cl. 331-94.50G.

Weyland, Peter: *See—*
Jarre, Wolfgang; Weyland, Peter; and Mueller, Gerhard, 4,237,240, Cl. 521-159.000.

Whale Scientific, Inc.: *See—*
Duron, Ola; Griffin, Richard J., deceased; and United Bank of Denver, N. A., personal representative, 4,236,892, Cl. 23-230.00B.

Wharton Engineers (Elstree) Limited: *See—*
Hicks, Raymond J.; and Webb, John T. H., 4,236,696, Cl. 254-175.700.

Whateley, Eric A., to David Brown Gear Industries Limited. Vehicles. 4,236,617, Cl. 192-3.300.

Wheelabrator-Frye Inc.: *See—*
Bergh, John C., 4,236,466, Cl. 110-281.000.

Wheeler, Raymond L., to British Hovercraft Corporation. Air cushion vehicle flexible skirts. 4,236,593, Cl. 180-128.000.

Wheeler, Robert G., to Wood Processes, Oregon Ltd. Rigid building component and method of manufacture. 4,236,365, Cl. 52-455.000.

Wheeler, Ronald E.: *See—*
King, William F.; and Wheeler, Ronald E., 4,237,121, Cl. 424-200.000.

White, John F.; Taylor, Edward C.; and Chiang, Chih-Shu, to Emery Industries, Inc. Thallium(III) reagents supported on montmorillonite clay minerals and oxythallation processes for utilizing same. 4,237,306, Cl. 560-105.000.

White, Lorell. Signaling fishing stand. 4,236,339, Cl. 43-17.000.

White Sea & Baltic Company Limited, The: *See—*
Epstein, David; and Bugg, John, 4,236,569, Cl. 164-43.000.

Whitney, Donald B.; Grolman, Bernard; and Richards, William, to American Optical Corporation. Ophthalmic refracting device. 4,236,793, Cl. 351-21.000.

Wichinsky, Michael, to Bell-Fruit Manufacturing Co. Limited. Game machines. 4,236,717, Cl. 273-143.00R.

Widdig, Arno: *See—*
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,237,162, Cl. 424-283.000.

Widdowson, Richard E., to General Motors Corporation. Pressure operated hydraulic control valve. 4,236,875, Cl. 417-222.000.

Wiechers, Herbert: *See—*
Minz, Franz-Rudolf; and Wiechers, Herbert, 4,236,983, Cl. 204-129.000.

Wiedenman, Gregory B., to Sperry Rand Corporation. Apparatus and method for receiving and servicing request signals from peripheral devices in a data processing system. 4,237,535, Cl. 364-200.000.

Wieland, Erich G., to Koenig & Bauer Aktiengesellschaft. Vibration damping mechanism in a rotary printing press. 4,236,448, Cl. 101-216.000.

Wiener Bruckenbau und l Eisenkonstruktions Atkiengesellschaft: *See—*
Willi, Josef, 4,236,857, Cl. 414-139.000.

Wiesmann, Harold J., to United States of America, Energy. Method of producing hydrogenated amorphous silicon film. 4,237,150, Cl. 427-74.000.

Wiesmann, Harold J.: *See—*
Strongin, Myron; Ghosh, Arup K.; Wiesmann, Harold J.; Rock, Edward B.; and Lutz, Harry A., III, 4,237,151, Cl. 427-74.000.

Wigmore, Richard: *See—*
Smilges, Robert; and Wigmore, Richard, 4,236,690, Cl. 251-30.000.

Wihl, Manfred G., to Solarex Corporation. Solar collector device. 4,236,937, Cl. 136-89.0PC.

Wilbur, Clayton V.: *See—*
Hafer, Cameron H.; and Wilbur, Clayton V., 4,236,834, Cl. 400-120.000.

Wilczynski, Mieczylaw. Bricklaying apparatus. 4,236,367, Cl. 52-749.000.

Wildman, John R., to Marvin Glass & Associates. Toy power tool. 4,236,343, Cl. 46-39.000.

Wilk, John J. Anchoring devices. 4,236,688, Cl. 248-71.000.

Willard, John W., Sr., to CAW Industries, Inc. Process for treating solid carbonaceous fossil fuels and the products thus prepared. 4,237,101, Cl. 423-20.000.

Willi, Josef, to Wiener Bruckenbau und l Eisenkonstruktions Atkiengesellschaft. Apparatus for the continuous unloading of ships. 4,236,857, Cl. 414-139.000.

Williams, Alfred S., Jr.: *See—*
Hall, John D.; and Williams, Alfred S., Jr., 4,236,325, Cl. 35-12.00S.

Williams, Harvey F.; Cole, Raymond C.; and Donaghy, James G., to International Platex, Inc. Women's undergarments including ventilated crotch assembly. 4,236,257, Cl. 2-406.000.

Williams, John W.; and Becker, Frank C., to Abbott Laboratories. 1-Acryloyl-3-(substituted) phenyl ureas. 4,237,166, Cl. 424-310.000.

Williams, Orlan G.; and Skaggs, Robert L. Method of forming a parabolic trough. 4,236,399, Cl. 72-295.000.

Williams, Roy K.: *See—*
Liu, Chi-Sheng; Williams, Roy K.; and Weaver, Lelland A., 4,237,430, Cl. 331-94.50D.

Williamson, Alton M., to ACF Industries, Incorporated. Controlled floating seat for gate valves. 4,236,692, Cl. 251-328.000.

Williamson, John L.: *See—*
Olds, Linda W.; and Olds, Merton R., 4,236,488, Cl. 119-5.000.

Willy, John R.: *See—*
Lapp, John; and Willy, John R., 4,236,484, Cl. 118-663.000.

Wilson, Charles D.: *See—*
Cochran, Gary L.; Wilson, Charles D.; and Klee, Maurice, 4,236,422, Cl. 74-470.000.
Wilson, James R.: *See—*
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,237,070, Cl. 260-580.000.
Wilson, Lester E.: *See—*
Eby, Richard L.; and Wilson, Lester E., 4,237,198, Cl. 429-93.000.
Wilson, Samuel R., to General Electric Company. Capacitor with a case seal. 4,237,519, Cl. 361-327.000.
Wilt, Charles R., Jr.: *See—*
Heard, Harold; and Wilt, Charles R., Jr., 4,236,318, Cl. 34-10.000.
Winans, Ralph P. Railroad rail holder. 4,236,671, Cl. 238-39.000.
Winchell, David A.: *See—*
Ganz, Rudolf V., Jr.; and Winchell, David A., 4,236,646, Cl. 215-232.000.
Wing, Robert E.: *See—*
Rayford, Warren E.; and Wing, Robert E., 4,237,271, Cl. 536-47.000.
Winkleblack, Robert K., to Electric Power Research Institute, Inc. Apparatus for sealing a rotatable shield plug in a liquid metal nuclear reactor. 4,236,971, Cl. 176-87.000.
Winkler, Otmar: *See—*
Meining, Hans; Pfaller, Egon; Winkler, Otmar; and Kittel, Hilmar, 4,236,766, Cl. 308-15.000.
Winston, Roland, to United States of America, Energy. Nonimaging radiant energy direction device. 4,237,332, Cl. 136-89.0CA.
Winter, George R., III, to UOP Inc. Process for HF-catalyzed alkylation of aromatic hydrocarbons. 4,237,327, Cl. 585-450.000.
Winter, George R., III, to UOP Inc. Process for HF-catalyzed alkylation of aromatic hydrocarbons. 4,237,328, Cl. 585-456.000.
Winton, Wilbur P.: *See—*
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,236,885, Cl. 425-514.000.
Wirt, Leslie S., to Lockheed Corporation. Rotating self-cleaning sound absorber for ducts. 4,236,598, Cl. 181-231.000.
Wissner, Allan, to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-methyl-Δ19-prostaglandins of the E and F series. 4,237,307, Cl. 560-121.000.
Wolf, William E.: *See—*
Piovoso, Michael J.; Smith, Edmund H., Jr.; and Wolf, William E., 4,237,539, Cl. 364-552.000.
Wollner, Johannes: *See—*
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,237,325, Cl. 568-896.000.
Wong, Patrick S.: *See—*
Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., 4,236,517, Cl. 128-275.000.
Wood, David H., to Union Carbide Corporation. Battery operated device having a waterproof housing and gas discharge vent. 4,237,526, Cl. 362-158.000.
Wood, Loren E.; Forsythe, Calvin C.; Strelow, John L.; Short, Edward H., III; Allen, Jerome D.; and Clift, Miner E., to Black, Sivalls & Bryson. Safety pressure relief apparatus. 4,236,648, Cl. 220-89.00A.
Wood Processes, Oregon Ltd.: *See—*
Wheeler, Robert G., 4,236,365, Cl. 52-455.000.
Woods, Lee O.; and Haag, Donald L., to General Electric Company. Electrical control. 4,237,508, Cl. 361-24.000.
Woolford, Anthony Y. Self securing merchandising kiosk. 4,236,359, Cl. 52-66.000.
Woolhouse, Geoffrey R.; Huggins, Harold A.; Anderson, Stephen I.; and Scholl, Frederick R., to Exxon Research & Engineering Co. Etch method of cleaving semiconductor diode laser wafers. 4,236,296, Cl. 29-583.000.
Wooten, William. Vertical horizontal rescue system. 4,236,600, Cl. 182-43.000.
Wootton, Gordon; and Moore, Richard W., to Beecham Group Limited. Prostaglandin analogues. 4,237,131, Cl. 424-248.510.
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, to VEB Schwermaschinenbau-Kombinat Ernst Thalmann Magdeburg. Method of and apparatus for cooling rolled wire. 4,236,551, Cl. 140-1.000.
Wright, Joseph B., to Jamesbury Corporation. Ball valve to relieve cavity pressure. 4,236,691, Cl. 251-315.000.
Wright, Winston F. Dental cleaning device. 4,236,889, Cl. 433-86.000.
Wunsch, Gerd: *See—*
Ostertag, Werner; Wunsch, Gerd; Kiener, Volker; Hetzel, Eckhard; Schreiner, Siegfried; Leutner, Bernd; Schlimper, Hans-Ulrich; and Voelkl, Erfried, 4,237,318, Cl. 562-609.000.
Wurmb, Rolf: *See—*
Jarre, Wolfgang; and Wurmb, Rolf, 4,237,237, Cl. 521-128.000.
Wurzburg, Uwe; Hennrich, Norbert; Orth, Hans-Dieter; and Lang, Hermann, to Merck Patent Gesellschaft mit beschrankter Haftung. Antibodies against creatinekinase-M8 and process for the production thereof. 4,237,044, Cl. 260-112.00B.
Wyckoff, Charles W. Direction-indicating surface marker strip for roadways and the like. 4,236,788, Cl. 350-97.000.
Wyzgol, Ewald: *See—*
Worgt, Walter; Pechau, Gerhard; Wyzgol, Ewald; and Franz, Manfred, 4,236,551, Cl. 140-1.000.
Xander, William J.: *See—*
Niggemeier, Joseph F.; Stoller, David A.; and Xander, William J., 4,236,853, Cl. 410-77.000.
Xerox Corporation: *See—*
Kermisch, Dorian, 4,236,809, Cl. 355-4.000.
Yamamoto, Akimitsu, 4,237,495, Cl. 358-282.000.
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for preparing D-N-carbamoyl-α-amino acids. 4,237,227, Cl. 435-108.000.
Yamada, Minoru: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; Furutachi, Nobuo; and Nakamura, Kotaro, 4,237,217, Cl. 430-387.000.
Yamada, Nobuo: *See—*
Matoba, Yasuo; Kise, Yoshio; Yamada, Nobuo; Hashimoto, Akira; and Nakata, Tetsuya, 4,237,248, Cl. 525-335.000.
Yamada, Yozo; and Narui, Michinori, to Pioneer Electronic Corporation. Combined recording and playback magnetic tape head with shield cases and a flat chip for controlling tape wrap angle. 4,237,505, Cl. 360-122.000.
Yamada, Yu, to Canon Kabushiki Kaisha. Projection optical system. 4,236,789, Cl. 350-183.000.
Yamaguchi, Hiroaki: *See—*
Hattori, Tadashi; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ito, Teruyoshi, 4,236,491, Cl. 123-117.00D.
Yamaguchi, Shingo, to Ricoh Company, Ltd. Facsimile system. 4,237,494, Cl. 358-280.000.
Yamamoto, Akimitsu, to Xerox Corporation. Circuit for doubling the number of output bits of a photodiode array. 4,237,495, Cl. 358-282.000.
Yamamoto, Hiroshi: *See—*
Uchidoi, Masanori; Kawamura, Masaharu; Shigeta, Yoshihiro; Sugiura, Yoji; Yamamoto, Hiroshi; and Tezuka, Nobuo, 4,236,802, Cl. 354-268.000.
Yamamoto, Kohei: *See—*
Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; and Suzuki, Toshio, 4,237,203, Cl. 429-122.000.
Yamamoto, Noboru: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; Yamamoto, Noboru; and Soejima, Shigeo, 4,237,030, Cl. 252-432.000.
Yamamoto, Shigeo: *See—*
Asao, Shuichiro; Yamamoto, Shigeo; Hisada, Yoshio; Nakayama, Yoshinori; and Takayama, Chiyozo, 4,237,122, Cl. 424-200.000.
Yaman, Melih; Gustavsson, Kjell; and Hammer, Orjan, to Sandvik Aktiebolag. Cast iron especially suited for ingot molds. 4,236,944, Cl. 148-35.000.
Yamanishi, Akio, to Minolta Camera Kabushiki Kaisha. Apparatus for optically measuring a property of an object. 4,236,826, Cl. 356-432.000.
Yamataka, Kazunori; Matsuoka, Yuuji; and Isoya, Toshiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing sebacic acid. 4,237,317, Cl. 562-590.000.
Yamazaki, Fumio: *See—*
Kawakami, Hideo; Endo, Masami; and Yamazaki, Fumio, 4,236,432, Cl. 83-848.000.
Yamazaki, Masahiro; Makuta, Yoshihiro; Joh, Yasushi; and Kaneko, Noriaki, to Nippon Zeon Co., Ltd. Hollow fiber permeability apparatus. 4,237,013, Cl. 210-321.00B.
Yannascoli, Donald: *See—*
Fraser, Bruce A.; and Yannascoli, Donald, 4,236,876, Cl. 417-250.000.
Yano, Yasuhiro: *See—*
Endo, Ichiro; Kobayashi, Hajime; Yano, Yasuhiro; and Muramatsu, Takao, 4,237,213, Cl. 430-353.000.
Yarwood, John C.: *See—*
Gaule, Gerhart K.; Yarwood, John C.; and Tyler, Derek E., 4,236,570, Cl. 164-49.000.
Yasuda, Hiroaki. Metal corner fittings for picture frames. 4,236,847, Cl. 403-402.000.
Yates, Derek N.; and Presta, John C., to Celanese Corporation. Fiber reinforced composite shaft with metallic connector sleeves mounted by a polygonal surface interlock. 4,236,386, Cl. 64-1.00S.
Yen, Kuo-Hsiung: *See—*
Huang, Marshall Y.; Grote, Albert J.; and Yen, Kuo-Hsiung, 4,237,432, Cl. 333-194.000.
Yerman, Alexander J.: *See—*
Ketchum, Marshall D.; and Yerman, Alexander J., 4,236,404, Cl. 73-19.000.
Ying, Sui-chun; Smith, Joseph L., Jr.; and Baumann, Kai J., to Westinghouse Electric Corp. Rotor member for a superconducting generator. 4,237,392, Cl. 310-52.000.
Yokogawa, Tomohisa: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,237,373, Cl. 235-92.0EV.
Yokokawa, Sumio; and Watanabe, Yasuaki, to Victor Company of Japan, Limited. Vertical deflection circuit for a camera tube in a television camera. 4,237,407, Cl. 315-389.000.
Yoneda, Koji: *See—*
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, 4,237,227, Cl. 435-108.000.
Yonezawa, Masatomo; Utsumi, Kazuaki; and Ohno, Tomeji, to Nippon Electric Co., Ltd. Ceramic compositions. 4,236,928, Cl. 106-39.500.
Yoshida Kogyo K.K.: *See—*
Morita, Toyoo; and Oura, Hiroshi, 4,236,293, Cl. 29-408.000.
Morita, Toyoo, 4,236,304, Cl. 29-768.000.
Yoshiie, Shigeo: *See—*
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,269, Cl. 536-17.00R.
Mochida, Kenichi; Sato, Moriyuki; Yoshiie, Shigeo; and Mori, Yasuki, 4,237,272, Cl. 536-17.00R.

Yoshikawa, Fusayuki: *See—*
Kawamura, Hideo; Fukami, Ichiro; Wada, Shuhei; and Yoshikawa, Fusayuki, 4,237,261, Cl. 528-272.000.
Yoshikumi, Chikao; Wada, Toshihiko; Makita, Hiromitsu; Suzuki, Kinzaburo; Okubo, Azuma; Nakanoya, Takishi; Miura, Katsunori; and Sagi, Tadao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for cultivating Basidiomycetes. 4,237,233, Cl. 435-254.000.
Yoshimura, Shohei; and Isaka, Tutomu, to Toyobo Co., Ltd. Stretching of polyethylene terephthalate films. 4,237,088, Cl. 264-235.800.
Yoshinari, Shigeru: *See—*
Suzuki, Nobuyoshi; and Yoshinari, Shigeru, 4,236,988, Cl. 204-195.00R.
Yoshioka, Takao: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,237,294, Cl. 546-20.000.
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, to National Tax Administration Agency; and Kibun Company Limited. Method of purifying distillers solubles and use of the purified matter. 4,237,232, Cl. 435-243.000.
Young, James; Geissel, Charles H.; and Zenczak, Piotr, to Evans Products Company. Process of manufacturing a microporous sheet material. 4,237,083, Cl. 264-41.000.
Young, Kenneth: *See—*
Rudkin, Arthur L.; Clint, John H.; and Young, Kenneth, 4,237,016, Cl. 252-8.800.
Youngstown Steel Door Company, The: *See—*
Teoli, Anthony, 4,236,459, Cl. 105-406.00R.
Zambrano, Thomas P. Fire hose coupling device. 4,236,733, Cl. 285-23.000.
Zapata Martinez, Valentin. System for the obtainment and the regulation of energy starting from air, sea and river currents. 4,236,866, Cl. 415-2.000.
Zenczak, Piotr: *See—*
Young, James; Geissel, Charles H.; and Zenczak, Piotr, 4,237,083, Cl. 264-41.000.
Zenith Radio Corporation: *See—*
Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., 4,237,478, Cl. 358-23.000.
Zer, Eliezer: *See—*
Gottlieb, David; and Zer, Eliezer, 4,236,860, Cl. 414-462.000.
Zevgolis, Victoria H.; and Kitchen, Harry E., to Sportsonic, Inc. Scorekeeping device for tennis and similar games. 4,237,372, Cl. 235-92.0GA.
Zhdanova, Nelli I.; Leonova, Tatyana V.; and Kozyreva, Ljudmila F. Method of producing L-isoleucine using *Brevibacterium flavum*. 4,237,228, Cl. 435-116.000.
Zibell, J. Scott. Signalling device for hard of hearing persons. 4,237,449, Cl. 340-407.000.
Ziegler, John H., to Autotron Products, Inc. Protective structure for vehicles. 4,236,592, Cl. 180-68.00P.
Zimmerly, Robert D., to Ladish Co. Interconnector for filtration modules. 4,237,010, Cl. 210-232.000.
Zimmerman, Earlyn E.: *See—*
Abler, Norman C.; Zimmerman, Earlyn E.; and Swihart, Wayne A., 4,236,286, Cl. 28-160.000.
Zimmerman, Robert L.: *See—*
Speranza, George P.; and Zimmerman, Robert L., 4,237,282, Cl. 544-168.000.
Zimmet, Hans: *See—*
Noack, Rolf; Kromer, Karl; and Zimmet, Hans, 4,236,797, Cl. 354-152.000.
Zippe, Gernot: *See—*
Meinke, Peter; and Zippe, Gernot, 4,236,426, Cl. 74-574.000.
Zitz, Alfred: *See—*
Sigott, Siegfried; Kogler, Peter; Schetina, Otto; and Zitz, Alfred, 4,236,627, Cl. 198-514.000.
Zold, Tibor, to Becton Dickinson and Company. Apparatus for counting and sizing particles suspended in a liquid electrolyte. 4,237,416, Cl. 324-71.0CP.
Zubatova, Lidia S.: *See—*
Grodzinsky, Eduard Y.; Isakova, Roalda B.; Zubatova, Lidia S.; Makonovitskaya, Anna T.; and Grinberg, Aron K., 4,236,985, Cl. 204-129.430.
Zurn Industries, Inc.: *See—*
Strudgeon, George E.; and Hiltgen, Aloysius X., 4,237,002, Cl. 210-18.000.
Zwintscher, Wolfgang; Kittel, Horst; and Ruge, Hinrich, to August Thyssen Aktiengesellschaft. Buildup welding of inclined surfaces. 4,237,361, Cl. 219-76.100.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ashland Oil, Inc.: *See—*
Moore, William P., Jr., Re. 30,442, Cl. 260-17.300.

Borg-Warner Corporation: *See—*
Jeffrey, Joseph O., Re. 30,440, Cl. 74-229.000.

Brunswick Corporation: *See—*
Reynolds, Eugene E., Re. 30,441, Cl. 273-54.00C.

Jeffrey, Joseph O., to Borg-Warner Corporation. Synchronous belt and pulley drive. Re. 30,440, Cl. 74-229.000.

Moore, William P., Jr., to Ashland Oil, Inc. Process for producing stabilized high strength urea-aldehyde insulating foams. Re. 30,442, Cl. 260-17.300.

Reynolds, Eugene E., to Brunswick Corporation. Bowling scoring apparatus and programming system therefor. Re. 30,441, Cl. 273-54.00C.

LIST OF DESIGN PATENTEES

Amerace Corporation: *See—*
Heenan, Sidney A.; and Flanagan, Robert M., 257,586, Cl. D10-113.000.

Be A Doll, Inc.: *See—*
Jackson, Timothy, 257,590, Cl. D21-177.000.

Bobrovniczky, Bert, to Noma Lites Canada Limited. Reel for electric cord. 257,576, 12-2-80, Cl. D8-359.000.

Brown, Robert H. Exit pool for an amusement water slide. 257,591, 12-2-80, Cl. D21-252.000.

Bullock, James H., to Clairol Incorporated. Hair roller. 257,595, 12-2-80, Cl. D28-37.000.

Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., to MSI Data Corporation. Customer satisfaction terminal, or the like. 257,588, 12-2-80, Cl. D14-45.000.

Clairol Incorporated: *See—*
Bullock, James H., 257,595, Cl. D28-37.000.

Descente Limited: *See—*
Inoue, Ryoichi, 257,571, Cl. D2-192.000.

Doyich, Ratko. Game cart. 257,587, 12-2-80, Cl. D12-21.000.

Ethyl Corporation: *See—*
Hayes, Thomas H., 257,577, Cl. D9-48.000.
Hayes, Thomas H., 257,578, Cl. D9-48.000.
Hayes, Thomas H., 257,579, Cl. D9-48.000.
Hayes, Thomas H., 257,580, Cl. D9-48.000.
Hayes, Thomas H., 257,581, Cl. D9-48.000.
Hayes, Thomas H., 257,582, Cl. D9-48.000.
Hayes, Thomas H., 257,583, Cl. D9-48.000.

Falcon Industries, Inc.: *See—*
Shaffert, Robert W., 257,589, Cl. D19-88.000.

Finkel, Henry, to Promo Ad Canada Ltd./Ltee. Pill box. 257,584, 12-2-80, Cl. D9-235.000.

Finnieston, Alan. Ankle and foot immobilizer. 257,594, 12-2-80, Cl. D24-64.000.

Flanagan, Robert M.: *See—*
Heenan, Sidney A.; and Flanagan, Robert M., 257,586, Cl. D10-113.000.

Hanaford, Donald E. Seat. 257,573, 12-2-80, Cl. D6-67.000.

Hanaford, Donald E. Diamond design chair back. 257,574, 12-2-80, Cl. D6-197.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle, or similar article. 257,577, 12-2-80, Cl. D9-48.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle, or similar article. 257,578, 12-2-80, Cl. D9-48.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle, or similar article. 257,579, 12-2-80, Cl. D9-48.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle or similar article. 257,580, 12-2-80, Cl. D9-48.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle or similar article. 257,581, 12-2-80, Cl. D9-48.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle or similar article. 257,582, 12-2-80, Cl. D9-48.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle or similar article. 257,583, 12-2-80, Cl. D9-48.000.

Heenan, Sidney A.; and Flanagan, Robert M., to Amerace Corporation. Highway delineator. 257,586, 12-2-80, Cl. D10-113.000.

Hester, Gerald P.: *See—*
Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., 257,588, Cl. D14-45.000.

Husted, Martin D.: *See—*
Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., 257,588, Cl. D14-45.000.

Ideen, Jackson M. Wood splitter. 257,575, 12-2-80, Cl. D8-47.000.

Inoue, Ryoichi, to Descente Limited. Jacket. 257,571, 12-2-80, Cl. D2-192.000.

Jackson, Timothy, to Be A Doll, Inc. Astronaut doll. 257,590, 12-2-80, Cl. D21-177.000.

Kinsey, Albert L. Combined sink and table. 257,592, 12-2-80, Cl. D23-61.000.

MSI Data Corporation: *See—*
Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., 257,588, Cl. D14-45.000.

Neuwirth, Sigmund A. Packaging container for a dental instrument. 257,585, 12-2-80, Cl. D9-185.000.

Noma Lites Canada Limited: *See—*
Bobrovniczky, Bert, 257,576, Cl. D8-359.000.

Promo Ad Canada Ltd./Ltee.: *See—*
Finkel, Henry, 257,584, Cl. D9-235.000.

Shaffert, Robert W., to Falcon Industries, Inc. Steering wheel desk. 257,589, 12-2-80, Cl. D19-88.000.

Vogel, Harold E. Combined fireplace air vent and ash drop cover. 257,593, 12-2-80, Cl. D23-127.000.

Wefler, Michael W. Combined key ring and bob. 257,572, 12-2-80, Cl. D3-61.000.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 2, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

December 9, 1980 Volume 1001 Number 2

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 17, 1980.

National Inventor's Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 7, 1981, from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 8, 1981 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend the ceremony at 2:00 p.m. on Sunday, Feb. 8, 1981 during which time a number of inventors will be inducted into the National Inventors Hall of Fame.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 6, 1981 at 5:00 p.m. We would appreciate the cooperation of all users of the Search facilities by removing all personal property for the early closing.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Oct. 29, 1980.

Department of the Treasury
United States Customs Service

(TMK-2-RRUEE)

NOTICE OF APPLICATION FOR RECORDATION OF TRADE NAME

AMERICAN MACHINE & TOOL CO., INC.

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "AMERICAN MACHINE & TOOL CO., INC.," a corporation organized under the laws of the State of Pennsylvania, located at Fourth Avenue and Spring Street, Royersford, Pennsylvania 19468.

The application states that the trade name is used in connection with power tools, manufactured in the United States. The application states further that no foreign firm is authorized to use the trade name sought to be recorded. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person, in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the FEDERAL REGISTER.

Notice of the action taken on the application for recordation of the trade name will be published in the FEDERAL REGISTER.

DONALD W. LEWIS,
Director, Office of Regulations and Rulings.

Dated: Nov. 6, 1980.

Department of the Treasury
United States Customs Service

(T.D. 80-250)

NOTICE OF RECORDATION OF TRADE NAME

WASHINGTON STOVE WORKS

On July 1, 1980, there was published in the FEDERAL REGISTER (45 FR 44438-44439) a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name WASHINGTON STOVE WORKS. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulation (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "WASHINGTON STOVE WORKS" is hereby recorded as the trade name of Washington Stove Works, a corporation organized under the laws of the State of Washington, located at 3402 Smith, Everett, Washington 98201, when applied to freestanding fireplaces, wood heaters, marine ranges, cook stoves, both oil and wood/coal, manufactured in Yugoslavia. No foreign firm is authorized to use the trade name.

HARVEY B. FOX,
Director, Office of Regulations and Rulings.

Dated: Oct. 8, 1980.

Department of the Treasury
United States Customs Service

(T.D. 80-269)

NOTICE OF RECORDATION OF TRADE NAME

R.B.K. IMPORTERS, INC.

On August 14, 1980, there was published in the FEDERAL REGISTER (45 F.R. 54173) a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name R.B.K. IMPORTERS, INC. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice. No responses were received in opposition to the application. The name "R.B.K. IMPORTERS, INC." is hereby recorded as the trade name of R.B.K. Importers, Inc., a corporation organized under the laws of the State of Delaware, located at 940 So. Alameda Street, Los Angeles, California 90021, when applied to women's wearing apparel and sportswear including but not limited to sweaters, skirts, tops, jackets, shirts, jeans, and slacks, manufactured in Macau, Korea, Taiwan, Hong Kong, China, Japan, Italy and Greece. No foreign firms are authorized to use the trade name.

DONALD W. LEWIS,
Director, Office of Regulations and Rulings.

Dated: Nov. 5, 1980.

Department of the Treasury
United States Customs Service

(T.D. 80-270)

NOTICE OF RECORDATION OF TRADE NAME

DONNKENNY, INC.

On August 14, 1980, there was published in the FEDERAL REGISTER (45 F.R. 54173) a notice of application for the recordation under section 42 of the Act of July 15, 1946, as amended (15 U.S.C. 1124), of the trade name DONNKENNY, INC. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "DONNKENNY, INC." is hereby recorded as the trade name of Donnkenny, Inc., a corporation organized under the laws of the State of Delaware, located at 1411 Broadway, New York, New York 10018, when applied to women's wearing apparel and sportswear including but not limited to sweaters, skirts, tops, jackets, shirts, jeans and slacks, manufactured in Macau, Korea, Taiwan, Hong Kong, China, and Japan. No foreign firm is authorized to use the trade name.

DONALD W. LEWIS,
Director, Office of Regulations and Rulings.

Dated: Nov. 5, 1980.

Patent and Trademark Office

PERFORMANCE REVIEW BOARD

The Patent and Trademark Office announces the addition of a new member to its Performance Review Board. The original membership was announced in the FEDERAL REGISTER of February 6, 1980 [45 FR 8083] and a change in the membership was announced in the FEDERAL REGISTER of August 5, 1980 [45 FR 51867]. The new member is: S. William Yost, Assistant Commissioner for Finance and Planning, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Mr. Yost is appointed as a permanent member of the Board.

LUTRELLE G. PARKER,
Acting Commissioner of Patents and Trademarks.

Dated: Oct. 20, 1980.

[FR Doc. 80-33214 Filed 10-23-80; 8:45 am]
BILLING CODE 3510-16-M

Department of Commerce

PATENT AND TRADEMARK OFFICE

37 CFR Part 1

FILE WRAPPER; CONTINUING APPLICATION PROCEDURE

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rulemaking.

SUMMARY: Patent and Trademark Office proposes amendment of the rules of practice in patent cases to provide an additional procedure for filing continuation and divisional applications. This procedure is being proposed to simplify filing and processing continuation and divisional patent applications by using the application and amendment papers filed in the abandoned parent application. The proposed procedure would eliminate many of the problems currently involved in preparing and processing new patent application papers in such applications.

DATES: Written comments by Feb. 4, 1981. Hearing, Feb. 4, 1981 beginning at 10:00 a.m.

ADDRESSEES: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office is considering amendments to the rules of practice in patent cases to permit an applicant for patent to file a continuation or divisional application by simply filing a special request, a new set of claims, and paying the statutory filing fee. The proposed procedure would simplify filing a continuation or divisional application in those cases where the parent application is to be abandoned. If the parent application will issue as a patent, a division or continuation thereof may continue to be filed under the provisions of 37 CFR 1.60. Under the proposal, a new serial number would be assigned to the continuing application, the parent application would be abandoned and, the specification, drawings, oath or declaration, and other papers in the file wrapper of the parent application would be used as the papers in the continuing application, along with the new set of claims. Only the payment of the filing fee, the filing of a special request containing an indication of a desire to continue prosecution and a new set of claims would be required to effect the filing of a continuation or divisional application. The procedure would be available for utility, design, plant, and reissue applications. Use of the proposed procedure will automatically result in abandonment of the parent application.

The proposed procedure could be used for either a continuation or divisional application provided that applicant wishes the parent case to become abandoned.

A continuation or divisional application is an application in which the disclosure is identical to an earlier application. However, the claims may be somewhat changed. Continuation applications are often filed in situations where the applicant feels that the issue of patentability has not been sufficiently developed before the examiner for an appeal from the final rejection to be filed with the Board of Appeals. Divisional applications are filed voluntarily or as a result of a requirement for restriction by the examiner in a prior application.

The filing of continuing applications is provided for in the patent statute at 35 U.S.C. 120. Divisional applications are provided for in 35 U.S.C. 121. Under these provisions of the patent law, a continuation or divisional application may be filed during the pendency of an earlier application and retain the benefit of the filing date of the earlier parent application. Such benefit is valuable to the applicant if prior art becomes available or another inventor made the same invention during the pendency of the first application.

A simplified method of filing of such continuation or divisional applications is presently available under 37 CFR 1.60. Under § 1.60, the applicant may pay the filing fee and either supply or ask the Office to prepare the continuation or divisional application papers by making a copy of the original papers. Section 1.60 replaced earlier, more restrictive procedures under 37 CFR 1.147 and a procedure established by Commissioner's notice known as the "Streamline Continuation" program. The procedure under § 1.60 would remain in effect in its present form, if the proposed procedure were adopted since it allows a continuation or divisional application to be filed without abandonment of the parent application. The continuation or divisional application practice under § 1.60 has resulted in a number of problems. Often the original application does not permit the reproduction of good quality copy. Sometimes applicants prematurely abandon or fail to abandon the original application or otherwise do not understand the § 1.60 procedures. Correspondence relating to such problems has become burdensome to both the applicants and the Office. Under current § 1.60, the continuation or divisional application, in addition to being copied, must be completely processed as a new application through the Application Division, Microfilming Branch and Licensing and Review Division, as well as the Examining Group's new case docketing and amendment entry procedures. The prior application is sometimes difficult to locate because of the movement and placement of the application file wrapper after it leaves the Examining Group. The proposed procedure would not require such copies to be processed and filed and should therefore result in fewer problems and less work.

The proposed procedure is set forth in proposed § 1.62 and is in compliance with the requirements of 35 U.S.C. 111. The specification and drawings from the parent application are made available for use in the continuation or divisional application. A new filing fee is required in accordance with 35 U.S.C. 41(a). The only other statutory filing requirements are claims and a signed oath or declaration. A new copy of claims, beginning with "claim 1," would be required under the proposed procedure. Since a continuation or divisional application filed under proposed § 1.62 can not contain new matter, the oath or declaration filed in the parent case should supply all the information required under the statute and rules to obtain a filing date. Accordingly, the previously filed

oath or declaration would be considered to be the oath or declaration of the § 1.62 continuation or division. If the claims submitted are broadened, a supplemental oath or declaration should be filed by the applicant in accordance with 37 CFR 1.67.

The original disclosure of an application filed under § 1.62 would be the original parent application as executed by the inventor(s). However, the filing fee would be based on the new copy of claims which must accompany the request and filing fee. The Certificate of Mailing Procedure under 37 CFR 1.8 would not apply to filing such a request since the filing of such a request is considered to be the filing of an application which is excluded under 37 CFR 1.8(a)(1).

Some of the anticipated benefits of the proposed procedures are the following: 1. Formality problems should be very small.

2. All current rules relating to after final rejection practice and filing of continuing applications would remain unchanged. The proposed filing procedure is an additional alternative which would be available to applicants to use at their option.

3. A more prompt first action in the continuation or divisional application should be received in view of the reduced processing time. The Application Division will process promptly all such applications. In the examining groups, such applications will be given high priority for processing purposes.

4. Amendments made to the specification and drawings of the parent application would carry over into the continuing application and would not need to be submitted again in the continuing application.

For the public: 1. The pendency of applications should be reduced since the time delay before examination and issuance of a continuing application filed under the proposed program would be reduced.

2. The entire record of prosecution would be in one file wrapper, even if several continuation applications were filed. This would result in easier access to a series of applications by the public if a patent is later issued.

For the Patent and Trademark Office: 1. The workload of reviewing and processing new application papers in the Application Division would be reduced.

2. The examining group clerks would not be required to again enter amendments made in the parent application.

3. Less storage space would be required since there would be fewer papers.

4. The parent file history and references cited therein would be readily available to the examiner and need not be ordered from abandoned files.

5. The Office would not be required to prepare a copy of the parent application file as under the current procedures under 37 CFR 1.60.

Proposed new § 1.62 outlines the requirements of the proposed procedure.

Section 1.138 is proposed to be amended so that a registered attorney or agent could, without being of record, file a § 1.60 or 1.62 application and expressly abandon the prior application. Such an action would not affect an applicant's rights since the prior application would only be expressly abandoned if a filing date is granted to a continuing application.

Notice is hereby given that, pursuant to the authority contained in section 6 of Title 35 of the United States Code, as amended, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending § 1.138 and by adding a new § 1.62. The Patent and Trademark Office has determined that these rule changes would have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044. In the text of rule 1.138 below, additions are shown by arrows and deletions are shown by brackets. It is proposed to amend Title 37 of the Code of Federal Regulations, Chapter I, Part 1, as follows: 1. By adding new § 1.62 to read as follows:

§ 1.62. *File wrapper continuation or division procedure.*

(a) A continuation or divisional application which discloses and claims only subject matter disclosed in a prior application may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application by filing a request to use the specification, drawings, and oath of declaration from the prior application if the following four conditions are met: (1) The prior application is to be abandoned and not issued as a patent.

(2) A new set of claims to be prosecuted in the continuing application is submitted which begins with a new claim numbered "1."

(3) The filing fee under 35 U.S.C. 41(a) for the continuation or divisional application is paid during the pendency of the prior application. Such filing fee should be based on the number of claims submitted under the previous paragraph.

(4) Information is supplied as to the title, applicant, correspondence address, prior U.S. application, foreign priority application, number of pages of specification and sheets of drawings in the prior application.

(b) The filing of an application under § 1.62 will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning, either the prior application, or any one of its continuation or divisional applications filed under the provisions of this section may be given similar access to, or information concerning, the other applications in the file wrapper.

(c) The filing of an application under § 1.62 will be considered to be a request to expressly abandon the parent application as of the filing date granted the continuation or divisional application filed under § 1.62.

2. By revising § 1.138 to read as follows:

§ 1.138 *Express abandonment.*

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant himself and the assignee of record, if any, and identifying the application. Except as provided in § 1.262 an application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. ►A registered attorney or agent or agent acting under the provisions of § 1.34(a), or of record, may also expressly abandon a parent application as of the filing date granted to a continuing application by filing such a continuing application under the provision by filing such a continuing application under the provisions of § 1.60 or § 1.62.◄ Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dated: Oct. 17, 1980

Approved:

JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

Dated: Oct. 31, 1980.

[FR Doc. 80-34919 Filed 11-6-80; 8:45 am]

BILLING CODE 3510-16-M

Reorganization of the Patent and Trademark Office

In July 1980 the Patent and Trademark Office was reorganized to establish a fourth Assistant Commissioner position. The new Assistant Commissioner is known as the Assistant Commissioner for Finance and Planning. Set forth below is the text of Department of Commerce Organization Order 30-3B and an accompanying organization chart defining the functions and lines of authority for the principal units in the Patent and Trademark Office.

SECTION 1. PURPOSE

.01 This Order prescribes the organization and assignment of functions within the Patent and Trademark Office. (Department Organization Order 30-3A prescribes the scope of authority and functions.)

.02 This revision reflects the realignment of existing elements of the Patent and Trademark Office to form the offices reporting to the newly established Assistant Commissioner for Finance and Planning (Section 9.), and incorporates the provisions of outstanding amendments.

SECTION 2. ORGANIZATION STRUCTURE

The principal organization structure and line of authority shall be as depicted in the attached organization chart (Exhibit 1).

SECTION 3. COMMISSIONER OF PATENTS AND TRADEMARKS

The Commissioner of Patents and Trademarks determines the policies and directs the programs of the Patent and Trademark Office and is responsible for the conduct of all activities of the Patent and Trademark Office. The Commissioner is principally assisted by a Deputy Commissioner, four Assistant Commissioners and a Solicitor whose main duties shall be as specified below.

a. The *Deputy Commissioner* shall assist the Commissioner in the direction of the Patent and Trademark Office; shall perform the duties of the Commissioner in the latter's absence; and shall direct the Office of Equal Employment Programs.

b. The *Assistant Commissioner for Patents* (an Assistant Commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the patent examining and documentation operations which consist of the organizational elements enumerated in Section 5. of this Order. The Assistant Commissioner is assisted by a Deputy Assistant Commissioner. The Deputy Assitant Commissioner shall, among other duties as assigned, have immediate responsibility for patent examination and for the organizational elements enumerated in paragraph 5.01, and shall perform the duties of the Assistant Commissioner during the latter's absence. There shall also be an Administrator for Documentation who shall have immediate responsibility for domestic and foreign patent documentation and the organization elements enumerated in paragraph 5.02.

c. The *Assistant Commissioner for Trademarks* (an Assistant Commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organizational elements enumerated in Section 6. of this Order.

d. The *Solicitor* shall be the chief law officer of the Patent and Trademark Office and shall provide administrative and policy direction to organizational elements enumerated in Section 7. of this Order. Pursuant to Department Organization Order 10-6, the Solicitor shall be subject to the overall authority of the Department's General Counsel with respect to legal matters involving the Patent and Trademark Office, other than in connection with the issuance of patents or the registration of trademarks. The Solicitor shall be assisted by a Deputy Solicitor who shall perform the duties of the Solicitor during the latter's absence.

e. The *Assistant Commissioner for Administration* shall be the principal advisor to the Commissioner on the formulation and application of administrative policies. The Assistant Commissioner for Administration shall provide administrative and policy direction to the organizational elements enumerated in Section 8. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

f. The *Assistant Commissioner for Finance and Planning* shall be the principal advisor to the Commissioner on financial and planning matters. The Assistant Commissioner shall provide administrative and policy direction to the organizations enumerated in Section 9. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner. Among other duties as assigned, the Deputy Assistant Commissioner also shall be the Director of Resource Management, with immediate responsibility for the organizational elements enumerated in paragraph 9.01.

SECTION 4. ORGANIZATIONS REPORTING TO THE COMMISSSONER

.01 The *Board of Appeals* shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patent.

.02 The *Board of Patent Interferences* shall conduct interference proceedings and make final determinations in the Patent and Trademark Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of Sections 2182 and 2456 (d) and (e) of Title 42, U.S.C.

.03 The *Office of Information Services* shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and of the functions, services and administrative publications of the Patent and Trademark Office; and develop publication policies.

.04 The *Office of Legislation and International Affairs* shall, subject to Department Organization Order 10-6, make studies and advise the Commissioner on policy and actions concerning matters which may require legislation or which involves international patent and trademark (intellectual property) matters; draft proposed legislation relating to patents and trademarks and advise on pending legislation affecting the Patent and Trademark Office; represent the Commissioner in the negotiation or renegotiation of treaties and the negotiation of other new major international initiatives; assist in the development and implementation of related programs; coordinate or conduct in cooperation with other appropriate Patent and Trademark Office organizations, negotiations in matters relating to existing international programs; and maintain liaison with the Office of the Secretary, the General Counsel, other agencies, international and foreign bodies, members of the public, and appropriate congressional committees in such matters.

.05 The *Office of Equal Employment Programs*, under the immediate direction of the Deputy Commissioner, shall be responsible for the design, development, implementation, review, and maintenance of all Patent and Trademark Office Equal Employment Opportunity (EEO) programs; including EEO complaint processes, the Affirmative Action Plan, upward mobility programs and other special emphasis programs such as those for women, Hispanic-Americans, the handicapped, and all protected groups and classes of employees.

SECTION 5. ORGANIZATIONS REPORTING TO THE ASSISTANT COMMISSIONER FOR PATENTS

.01 Patent Examination Organizations.

a. The *Office of Patent Program Control* shall establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and provide planning evaluation and budget support to the examination organizations, and perform such other duties as assigned.

b. The *Patent Examining Groups* shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

.02 Patent Documentation Organizations.

a. The *Office of Documentation Planning, Support and Control* shall analyze the examiner and public patent search files and all proposed programs concerning them; coordinate efforts in regard to numerical files; develop and maintain overall documentation plans relating to these files; define the form, content and accessibility of these files and insure such definition through periodic checks; initiate the acquisition and provision of patent documentation for these files; coordinate the development of an overall system, and the efforts of related implementing activities, to insure the accuracy and effective utilization of patent data; provide budgetary and other services for the documentation organizations; and establish performance standards and evaluation criteria for, and monitor and evaluate, the activities of the documentation organizations.

b. The *Office of International Patent Classification* shall direct Patent and Trademark Office initiatives designed to foster harmonization of the United States Patent Classification System with the International Patent Classification System. The Office shall also consult and participate with foreign counterparts representing national offices and appropriate international groups in further development and refinement of the International Patent Classification System. In carrying out such consultations and participations, it shall coordinate all related policy matters with the Office of Legislation and International Affairs.

c. The *Office of Micrographic Systems* shall develop and recommend plans for micrographic information systems including analyses of existing and proposed micrographic hardware and techniques suitable for meeting the particular demands of the U.S. Patent and Trademark Office. It shall also evaluate ongoing micrographic information systems in respect to the responsiveness of such systems to evolving informational needs. The foregoing shall be coordinated with other appropriate offices such as the Office of Automatic Data Processing Administration and the Office of Search Systems.

d. The *Office of Search Systems* shall maintain a state-of-the-art awareness of machine-assisted information storage, access, retrieval, and display systems useful or potentially useful in searching patent documentation; participate with

parties in the private and government sectors in cooperative programs designed to develop systems for Patent and Trademark Office utilization; evaluate the potential of existing and cooperatively developed systems; initiate the acquisition and adaption of selected systems and direct the maintenance of all non-operational search and display systems (equipment and materials); conduct and evaluate pilot tests in Patent and Trademark Office operating environments; recommend operational establishment or discontinuance of evaluated systems; and monitor and evaluate the performance of operational systems.

e. The *Scientific Library* maintains collections of technical and scientific information such as foreign patents, periodicals, books and other publications, in printed or microfilm form, and provides related services and facilities, for use by the public and by examiners and other personnel in the internal operations of the Patent and Trademark Office.

f. The *Classification Groups* shall develop, implement and maintain subject matter classification systems for the organization of patent search files of prior art including the preparation of definitions, indexes, schedules, and related documentations. Each classification group shall perform this function for subject matter falling within the generic category (chemical, electrical, mechanical) assigned to it.

SECTION 6. ORGANIZATIONS REPORTING TO THE ASSISTANT COMMISSIONER FOR TRADEMARKS

.01 The *Office of Trademark Program Control* shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practice and procedures and coordinate trademark administrative support activities.

.02 The *Trademark Trial and Appeal Board* shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The *Trademark Examining Operation* shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks, and maintain the principal and supplemental registers of trademarks. The Trademark Examining Operation shall be composed of examining divisions, the number and coverage of such divisions to be determined by the Commissioner.

SECTION 7. OFFICES REPORTING TO THE SOLICITOR

.01 The *Office of the Solicitor* shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The *Office of Government Employee Inventions* shall review questions of ownership of patents and rights to inventions made by Government employees in issues brought before it under Executive Order 10096 and shall make appropriate recommendations to the Commissioner for action on such questions.

SECTION 8. OFFICES REPORTING TO THE ASSISTANT COMMISSIONER FOR ADMINISTRATION

.01 The *Office of Automatic Data Processing Administration* shall coordinate automatic data processing resources for the Patent and Trademark Office; recommend to management the acceptance, updating or termination of all Patent and Trademark Office automatic data processing resources and contracts; provide management with regular reviews on the status of automatic data processing expenditures and utilization of resources; advise management on alternatives for meeting defined short and long range ADP requirements; coordinate ADP procurement and installation; operate a central computer facility for the Patent and Trademark Office responsive to user needs; conduct and review specified ADP feasibility studies; design, implement, operate and coordinate specialized ADP management information systems, including data collection, manipulation and dissemination; coordinate ADP liaison for the Patent and Trademark Office with the Department of Commerce and other Federal agencies; provide programming and systems design resources for approved projects based on requirements; provide technical assistance to the Patent and Trademark Office to fulfill needs as specified by the user.

.02 The *Office of General Services* shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, files, mail and correspondence, and forms management; administrative printing; and clearance of all requirements involving contractual procurements, including liaison with the Department of Commerce, in connection therewith.

.03 The *Office of Patent and Trademark Services* shall provide materials and services to the public, many on a fee basis, as well as to examiners and other personnel for internal operations of the Patent and Trademark Office. It shall maintain a Public Search Room with a collection of U.S. patents; record assignments and other instruments for the transfer of property rights to patents and trademarks; furnish copies of patents, trademark registrations and office records; and provide drafting services. It shall also conduct an initial examination of patent applications for compliance with law and regulations as to form and certain matters of factual content; grant or deny a filing date based on such examination, and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; and maintain records on the status and location of all applications.

.04 The *Office of Personnel* shall administer activities relating to recruitment, placement, employee relations, training and career development, incentive awards, performance rating, position classification and wage administration, group management relations, and various employee benefit programs.

.05 The *Office of Publications* shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly issues and related announcements in the Official Gazette; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

SECTION 9. OFFICES REPORTING TO THE ASSISTANT COMMISSIONER FOR FINANCE AND PLANNING

.01 Resource Management Organizations.

a. The *Office of Finance* shall develop and maintain the financial accounting system of the Patent and Trademark Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent and Trademark Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent and Trademark Office, and administration of the payroll system and related employee accounts; and provide financial advice.

b. The *Office of Budget* shall develop and maintain Patent and Trademark Office budget and fiscal plans; provide advice and staff to assist line managers in preparing, reviewing, justifying, presenting and executing the Patent and Trademark Office's budget; develop budgetary policies and procedures for the entire Patent and Trademark Office budget process; maintain budgetary accountability for available funds; maintain external liaison on budgetary matters; and provide assistance in integrating program plans with the budgetary process.

c. The *Office of Planning and Evaluation* shall coordinate and help develop medium and long range plans for all Patent and Trademark Office programs; develop and administer a system for integrating the Patent and Trademark Office planning process with the budgetary process; coordinate and help develop goals, objectives, and strategies for the operating program offices of the Patent and Trademark Office, and evaluate the effectiveness of the administration of the programs against those goals, objectives and strategies.

.02 The *Office of Management and Organization* shall develop and/or receive requests for management improvement systems, programs or projects, including studies for work measurement, resource utilization, workflow analyses, computer systems, operations research and other operational problems and programs and determine the best resource(s) for analyses, resolution, and implementation; conduct organizational reviews; conduct, coordinate or assign studies on resource utilization, procedures or workflow analyses; coordinate work measurement studies; manage Patent and Trademark Office policy orders and administrative instructions and issuances; develop and maintain statistical data; and develop and manage a historical file on all management studies and statistical data developed.

.03 The *Office of Technology Assessment and Forecast* shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast development on a worldwide basis.

.04 The *Office of Quality Review* shall establish criteria for reviewing, and perform a review of the quality of examination of patent and trademark applications which have been examined. The Office shall review: the application of substantive statutory criteria for patentability or registrability; the adequacy of the examiner's search of prior patent, trademark or other literature; and the adherence to approved examining procedures. The Office shall provide information to managers and examiners on the results of its review, and make recommendations for maintaining or improving the quality of examination.

SECTION 10. EFFECT ON OTHER ORDERS

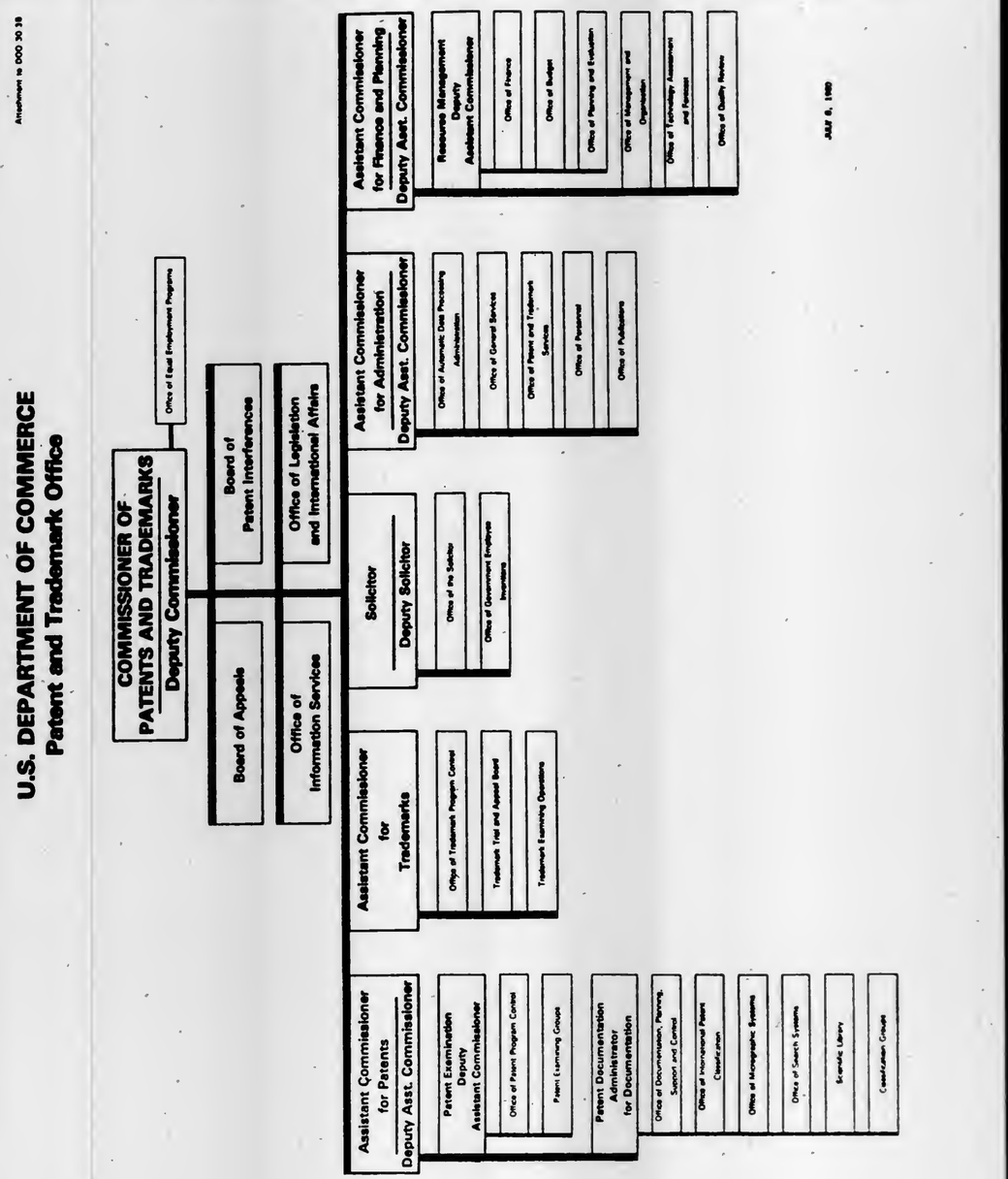
This Order supersedes Department Organization Order 30-3B of August 19, 1976, as amended.

SIDNEY A. DIAMOND,
Commissioner of Patent and Trademarks.

Approved:

Assistant Secretary for Science and Technology.

Acting Assistant Secretary for Administration.



Increase in PCT Fees and Changes in PCT Rules Effective in International Applications Filed After January 1, 1981

The sixth session of the Assembly of the International Patent Cooperation Treaty (PCT) Union was held in Geneva, Switzerland from September 22 to 26, 1980. This meeting adopted several changes in the PCT Rules and increased the amounts of the International Basic and Designation fees due in international applications filed after January 1, 1981.

The amounts of the fees charged in international applications filed after January 1, 1981 will be as follows:

Transmittal Fee—$35.00 (no change).

Search Fee—$300.00 (no change).

International Basic Fee: For first 30 sheets of international applications—$265.00 (revised).

Basic Supplemental Fee: For each sheet over 30–$5.00 (revised).

International Designation Fee: For State for which a national patent is sought or group of States for which the same regional patent is sought—$64.00 (revised).

The above revised amounts are the U.S. dollar equivalent amounts of the fees fixed in Swiss francs in "Schedule of Fees" using the exchange rate of September 22, 1980.

LIST OF PCT MEMBER STATES AS OF NOVEMBER 1, 1980

State	*Ratification of Accession*	*Date of Ratification or Accession*	*Date From Which State May Be Designated*
(1) Central African Empire*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar	Ratification	27 March 1972	01 June 1978
(4) Malawi	Accession	16 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	29 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978
(21) Austria**	Ratification	23 January 1979	23 April 1979
(22) Monaco	Ratification	22 March 1979	22 June 1979
(23) Netherlands**	Ratification	10 April 1979	10 July 1979
(24) Romania	Accession	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein**	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member states. A designation of any state is an indication that all OAPI states have been designated. Note: only one designation fee is due regardless of the number of OAPI member states designated.

**Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for members States are available through PCT, *except for France*, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due if the regional patent protection is sought for several States.

Amended PCT Rule 22 provides 15 months, rather than the earlier 14 months, from the priority date for transmitting a copy of the Record Copy to the International Bureau. This change is effective January 1, 1981.

The amendment to PCT Rule 80.6(b) merely clarifies a change made by the fifth PCT Assembly. This change entered into effect on October 1, 1980.

PCT Rule 82 concerning irregularities in the mail service has been amended to apply to the transmittal of the Record Copy by the Receiving Office or applicant to the International Bureau. This change becomes effective on January 1, 1981.

RULE 22

Transmittal of the Record Copy

22.1 [No change]

22.2 *Alternative Procedure*

(a) [No change]
(b) [No change]
(c) [No change]
(d) [No change]

(e) Where the receiving Office does not hold the record copy at the disposal of the applicant by the date fixed in paragraph (d), or where, after having asked for the record copy to be mailed to him, the applicant has not received that copy at least 10 days before the expiration of 13 months from the priority date, the applicant may transmit a copy of his international application to the International Bureau. This copy ("provisional record copy") shall be replaced by the record copy or, if the record copy has been lost, by a substitute record copy certified by the receiving Office on the basis of the home copy, as soon as practicable and, in any case, before the expiration of 15 months from the priority date.

22.3 *Time Limit under Article 12(3)*

(a) The time limit referred to in Article 12(3) shall be:
(i) where the procedure under Rule 22.1 or Rule 22.2(c) applies, 15 months from the priority date;
(ii) where the procedure under Rule 22.2(d) applies, 14 months from the priority date, except that, where a provisional record copy is filed under Rule 22.2(e), it shall be 14 months from the priority date for the filing of the provisional record copy, and 15 months from the priority date for the filing of the record copy.

(b) [Deleted]

22.4 [No change]

22.5 [No change]

RULE 80

Computation of Time Limits

80.1 [No change]

80.2 [No change]
80.3 [No change]
80.4 [No change]
80.5 [No change]

80.6 *Date of Documents*

(a) [No change]

(b) Any receiving Office may exclude the application of the second sentence of paragraph (a) by a written notification to that effect given to the International Bureau by September 1, 1980. Such notification may be withdrawn at any time. The International Bureau shall publish all such notifications and withdrawals in the Gazette.

80.7 [No change]

RULE 82

Irregularities in the Mail Service

82.1 *Delay or Loss in Mail*

(a) Any interested party may offer evidence that he has mailed the document or better 5 days prior to the expiration of the time limit. Except in cases where surface mail normally arrives at its destination within 2 days of mailing, or where no airmail service is available, such evidence may be offered only if the mailing was by airmail. In any case, evidence may be offered only if the mailing was by mail registered by the postal authorities.

(b) [No change]

(c) [No change]

82.2 *Interruption in the Mail Service*

(a) Any interested party may offer evidence that on any of the 10 days preceding the day of expiration of the time limit the postal service was interrupted on account of war, revolution, civil disorder, strike, natural calamity, or other like reason, in the locality where the interested party resides or has his place of business or is staying.

(b) [No change]

SCHEDULE OF FEES; PRICES OF PUBLICATIONS

Basic Fee:

(Rule 15.2(a)):

If the international application, contains not more than 30 sheets—432 Swiss francs.
If the international application contains more than 30 sheets—432 Swiss francs (plus 8 Swiss francs for each sheet in excess of 30 sheets).

Designation Fee:

(Rule 15.2(a))—104 Swiss francs.

Handling Fee:

(Rule 57.2(a))—133 Swiss francs.

Supplement to the Handling Fee:

(Rule 57.2(b))—133 Swiss francs.

Surcharges:

(Rule 16*bis*.2(a)) surcharges for late payment—minimum: 200 Swiss francs; maximum: 500 Swiss francs.

Price of the Subscription to the PCT Gazette—400 Swiss francs.

Sales Price of Each Copy of the Pamphlet—8 Swiss francs.

Date: Nov. 17, 1980.

LUTRELLE PARKER,
Acting Commissioner of Patents and Trademarks.

Department of Commerce

PATENT AND TRADEMARK OFFICE

37 CFR Part 5

SECRECY OF CERTAIN INVENTIONS AND LICENSES TO FILE APPLICATIONS IN FOREIGN COUNTRIES; EXPORTS OF TECHNICAL DATA

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: This amendment of the rules of practice brings them into agreement with changes which the Office of Export Administration of the International Trade Administration, Department of Commerce, has made in its Export Administration Regulations. The Office of Export Administration has amended these regulations by adding the filing of patent applications in foreign countries to the list of exports which are not controlled by the Office of Export Administration. As amended, these regulations point out that exports of unclassified technical data in the form of patent applications, amendments and the like are governed by regulations issued by the Patent and Trademark Office. These changes in the Export Administration Regulations are intended to be reflected in this amendment of the Patent and Trademark Office's rules of practice.

EFFECTIVE DATE: November 3, 1980.

FOR FURTHER INFORMATION CONTACT: Mr. Samuel Engle by telephone at (703) 557-2897 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: On July 30, 1980, the International Trade Administration of the Department of Commerce published in the Federal Register (45 FR 50556) its amendment of 15 CFR Parts 370 and 379. These amendments added the filing of patent applications in foreign countries to the list of exports which are not controlled by the Office of Export Administration. They point out that no validated export license from the Office of Export Administration is required for data contained in a patent application, or an amendment, modification, supplement or division thereof for filing in a foreign country in accordance with the regulations of the Patent and Trademark Office in 37 CFR Part 5. Section 5.19 of 37 CFR Part 5 is therefore being revised to delete the now-obsolete requirement for a validated export license and make clear that such a license is not required if the filing of a patent application in a foreign country is in accordance with Patent and Trademark Office regulations. 37 CFR 5.11–5.23.

This amendment of 37 CFR Part 5 has been reviewed pursuant to Executive Order 12044 and found to have no major economic consequences and therefore does not require a regulatory analysis.

Since the amendment imposes no burden on any person and is a clarification of an existing rule, notice and public procedures thereon are considered to be unnecessary.

Accordingly, pursuant to the authority contained in 35 U.S.C. 6, as amended and 35 U.S.C. 181–188, the rules of practice in 37 CFR Part 5, relating to licenses to file applications in foreign countries are amended as follows:

By revising § 5.19 to read:

§ 5.19 *Export of technical data.*

(a) Under regulations (15 CFR 370.10(j)) established by the U.S. Department of Commerce, International Trade Administration, Office of Export Administration, a validated export license is not required in any case to file a patent application or part thereof in a foreign country if the foreign filing is in accordance with the regulations (37 CFR 5.11-5.23) of the Patent and Trademark Office.

(b) A validated export license is not required for data contained in a patent application prepared wholly from foreign-origin technical data where such application is being sent to the foreign inventor to be executed and returned to the United States for subsequent filing in the U.S. Patent and Trademark Office (15 CFR 379.3(c)).

(3) Inquiries concerning the export control regulations for the foreign filing of technical data other than patent applications should be made to the Office of Export Administration, International Trade Administration, Department of Commerce, Washington, D.C. 20230.

Dated: Oct. 15, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Approval:

Dated: Oct. 28, 1980.

JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

[FR Doc. 80-34082 Filed 10-31-80; 8:45 am]
Billing Code 3510-16-M

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,116,410, Re. S.N. 188,526, Filed Sep. 18, 1980, Cl. 248/581, ADAPTABLE RESILIENT MOTOR MOUNTING, John H. Boyd, et al., Owner of Record: *General Electric Company, New York, N.Y.,* Attorney or Agent: John M. Stoudt, et al., Ex. Gp.: 355

4,198,699, Re. S.N. 183,352, Filed Sep. 2, 1980, Cl. 365/230, MASS MEMORY ACCESS METHOD AND APPARATUS, Richard W. Caddell, Owner of Record: *Kearney & Trecker Corporation, West Allis, Wis.,* Attorney or Agent: Cyril M. Hajewski, et al., Ex. Gp.: 235

4,205,539, Re. S.N. 179,881, Filed Aug. 20, 1980, Cl. 64/21, AXIALLY-RETAINED TRIPOD HOMOKINETIC JOINT, Michel Orain, Owner of Record: *Glaenzer Spicer, Poissy, France,* Attorney or Agent: V. M. Creedon, et al, Ex. Gp.: 345

PATENT NOTICES

Certificates of Correction for the Week of Dec. 9, 1980

3,950,604	4,193,187	4,209,721	4,218,587
3,954,595	4,197,686	4,210,594	4,218,917
4,000,312	4,198,014	4,210,925	4,219,216
4,050,508	4,198,324	4,210,978	4,219,344
4,075,136	4,198,767	4,211,275	4,219,594
4,093,763	4,201,353	4,211,342	4,219,704
4,121,584	4,201,413	4,211,475	4,219,738
4,130,959	4,201,582	4,211,709	4,220,081
4,131,270	4,201,583	4,211,743	4,220,207
4,131,476	4,201,591	4,211,766	4,220,572
4,131,638	4,201,766	4,211,781	4,220,652
4,131,697	4,202,009	4,211,803	4,221,116
4,144,087	4,202,622	4,211,822	4,221,134
4,146,489	4,202,947	4,212,812	4,221,219
4,147,277	4,203,874	4,212,916	4,221,423
4,148,482	4,203,879	4,213,124	4,221,507
4,154,812	4,203,887	4,213,386	4,221,604
4,158,386	4,204,170	4,213,527	4,221,656
4,161,739	4,204,225	4,213,573	4,222,006
4,168,169	4,204,232	4,213,770	4,222,110
4,168,170	4,204,289	4,213,838	4,222,470
4,170,453	4,204,751	4,214,036	4,222,685
4,171,139	4,205,324	4,214,411	4,222,739
4,171,757	4,205,658	4,214,598	4,222,760
4,172,590	4,205,665	4,215,386	4,222,886
4,172,806	4,206,078	4,215,417	4,222,991
4,179,311	4,206,126	4,215,451	4,223,548
4,180,319	4,207,063	4,216,075	4,223,661
4,181,601	4,207,270	4,216,334	4,224,111
4,181,684	4,207,348	4,216,463	4,224,422
4,184,033	4,207,705	4,216,618	4,224,666
4,185,047	4,207,913	4,216,738	4,225,050
4,185,303	4,208,425	4,216,798	4,225,098
4,186,529	4,208,473	4,217,664	4,225,136
4,188,542	4,208,510	4,217,830	4,225,207
4,188,699	4,208,877	4,218,163	4,225,300
4,189,417	4,209,430	4,218,193	4,225,555
4,189,718	4,209,512	4,218,557	4,226,245

Disclaimers

3,148,578.—*Roland H. Gapp,* Santa Ana, Calif. RIVET AND METHOD OF RIVETING. Patent dated Sept. 15, 1964. Disclaimer filed Oct. 6, 1980, by the assignee, *Textron Inc.*

Hereby enters this disclaimer to claims 1–4 of said patent.

3,958,756.—*John Trenary,* Fort Collins; *David Smith,* Wellington; *Donald W. Ruehmann, Christopher W. Elkins, Elmer Erwin* and *Roy Treadwell,* Fort Collins, Colo. SPRAY NOZZLES. Patent dated May 25, 1976. Disclaimer filed Oct. 9, 1980, by the assignee, *Teledyne Industries, Inc.*

Hereby enters this disclaimer to claims 1–8, 19 and 20 of said patent.

4,008,371.—*Donald Robert Barron,* Sunbury-on-Thames, England. IMAGING SYSTEMS. Patent dated Feb. 15, 1977. Disclaimer filed Oct 9, 1980, by the assignee, *EMI Limited.*

Hereby enters this disclaimer to claims 1 through 11 of said patent.

4,125,156.—*Gilbert R. Glinsmann,* Bartlesville, Okla. AQUEOUS SURFACTANT SYSTEMS FOR IN SITU MULTIPHASE MICROEMULSION FORMATION. Patent dated Nov. 14, 1978. Disclaimer filed Aug. 12, 1980, by the assignee, *Phillips Petroleum Company.*

Hereby enters this disclaimer to claims 12 and 13 of said patent.

4,126,838.—*Joseph Henry McCusker* and *Stuart Stanley Perlman,* Princeton, N.J. UNIFORM SURFACE ACOUSTIC WAVE TRANSDUCER CONFIGURATION HAVING IMPROVED FREQUENCY SELECTIVITY. Patent dated Nov. 21, 1978. Disclaimer filed Sept. 19, 1980, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1, 2, 5, 6, 7, 10, 11, 12, 13, 14 and 18 of said patent.

Disclaimer and Dedication

3,972,740.—*Carrol Dean Starr,* Whippany and *Teh Po Wang,* North Caldwell, N.J. THERMOCOUPLE WITH IMPROVED EMF STABILITY. Patent dated Aug. 3, 1976. Disclaimer and Dedication filed Sept 18, 1980, by the assignee, *Amax Inc.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

National Technical Information Service

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6–149,792. Mixed Flow Augmentor Incorporating a Fuel/Air Tube. Filed May 14, 1980.

Patent application 6–152,232. Interferometric Distance Measurement Method. Filed May 22, 1980.

Patent application 6–152,234. Intruder Detection System Having Multiple Discrete RF Sensor Elements Illuminated by a Remote RF Transmitter. Filed May 22, 1980.

Patent application 6–160,259. Aerial Refueling Boom Control Apparatus. Filed June 17, 1980.

Patent 4,207,520. Multiple Frequency Digital Eddy Current Inspection System. Filed Apr. 6, 1978. Patented June 10, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-150,550. Encapsulation by Entrapment. Filed May 16, 1980.

Patent 4,207,068. Process for Producing Chambray and Other Dyed Fabrics Through Phosphorylation. Filed Oct. 16, 1978. Patented June 10, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-005,264. Thermochemical Cycles for the Production of Hydrogen. Filed Jan. 22, 1979.

Patent application 6-005,942. Process for Purifying Geothermal Steam. Filed Jan. 24, 1979.

Patent application 6-033,088. Process for Treating Weldments. Filed Apr. 25, 1979.

Patent application 6-050,379. Thermochemical Cyclic System for Spitting Water and/or Carbon Dioxide by Means of Cerium Compounds and Reactions Useful Therein. Filed June 20, 1979.

Patent application 6-068,359. Method for Storing Spent Nuclear Fuel in Repositories. Filed Aug. 21, 1979.

Patent application 6-070,548. Method for Storing Nuclear Fuel in Respositories. Filed Aug. 28, 1979.

Patent 4,164,373. Spectrometer Employing Optical Fiber Time Delays for Frequency Resolution. Filed Jan. 12, 1978. Patented Aug. 14, 1979. Not available NTIS.

Patent 4,179,608. Right/Left Assignment in Drift Chambers and Proportional Multiwire Chambers (PWC's) Using Induced Signals. Filed May 10, 1978. Patented Dec. 18, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent application 6-092,102. Polymer Alloy Blood Compatible Surface and Method of Making Same. Filed Nov. 7, 1979.

Patent application 6-094,814. Homocysteine Thiolactone Perchlorate and a Method of Making Same. Filed Nov. 16, 1979.

Patent application 6-100,496. N-Acetyl-Cysteine Protects Against Cardiac Damage From Subsequently-Administered Cardio-Toxic Anthracycline in Cancer Therapy. Filed Dec. 5, 1979.

Patent application 6-104,806. L-Acetyl Carnitine Infusion to Prevent Glucose and Fatty Acid Oxidation During Myocardial Ischemia, Anoxia, and Other Diseases. Filed Dec. 18, 1979.

Patent application 6-126,108. Absorbed Dose Water Calorimeter. Filed Feb. 29, 1980.

Patent application 6-139,236. Hepatitis B Immune Globulin Used To Inactivate Hepattis B Virus in Injectable Biological Products. Filed Apr. 11, 1980.

Patent application 6-141,764. Illuminated Surgical Instrument. Filed Apr. 21, 1980.

Patent application 6-144,043. Optical Sensor of Plasma Constituents. Filed Apr. 28, 1980.

Patent application 6-145,350. Irreversible Anti-Glucocorticoids. Filed Apr. 30, 1980.

Patent application 6-148,491. Apparatus and Method for Continuous Countercurrent Extraction and Particle Separation. Filed May 9, 1980.

Patent application 6-165,690. A Short Total Synthesis of Dihydrothebainone, Dihydrocodeinone, and Nordihydrocodeinone. Filed July 3, 1980.

Patent 4,200,110. Fiber Optic pH Probe. Filed Nov. 28, 1977. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,200,689. Method of Cell Culture Using a Dual Circuit. Woven Artificial Capillary Bundle. Filed Aug. 29, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,203,971. Neisseria Gonorrhoeae Vaccine. Filed Mar. 23, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,205,057. Cerebrospinal Fluid Protein Fragments. Filed Jan. 17, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,206,015. Method of Simulation of Lymphatic Drainage Utilizing a Dual Circuit, Woven Artificial Capillary Bundle. Filed Aug. 29, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,207,308. Process for Purifying Iodinated Bile Acid Conjugates. Filed June 13, 1977. Patented June 10, 1980. Not available NTIS.

Patent 4,209,300. Hemoglobin-Oxygen Equilibrium Curve Analyzer. Filed Sept. 25, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,210,639. 5'-Deoxy-5'-(Isobutylthio)-3-Deazaadenosine, Method of Making Same and Its Antiviral Effect on Rous Sarcoma Virus and Gross Murine Leukemia Virus. Filed Aug. 29, 1978. Patented July 1, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-142,796. Bow Dock. Filed Apr. 22, 1980.

Patent application 6-147,440. Self-Contained Backflush/Start System for Suction LFC Undersea Vehicle. Filed May 7, 1980.

Patent 4,187,676. Bi-Metallic Thermal Compensator for Mounting and a Solid Propellant Grain. Filed Mar. 13, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,187,760. Inflight, Stores, Forces and Moments Measuring Device. Filed Sept. 19, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,187,761. Variable Force Control System for Weapon Ejection Mechanisms. Filed Sept. 19, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,192,908. Mass-Transport Separator for Alkaline Nickel-Zinc Cells and Cell. Filed June 15, 1979. Patented Mar. 11, 1980. Not avaiable NTIS.

Patent 4,193,952. Extrusion of Solid Propellant Including Ammonium Perchlorate Whiskers. Filed May 4, 1972. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,196,895. Ring-Loaded Flexural Disc Spring. Filed July 21, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,198,474. Seawater Battery. Filed Feb 26, 1979. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,199,003. Flow Control System With Density Compensation. Filed Dec. 15, 1978. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,204,475. Arming-Safing System for Airborne Weapons. Filed Apr. 29, 1969. Patented May 27, 1980. Not available NTIS.

Patent 4,204,552. Dual Speed Fluid Control Apparatus. Filed Oct. 24, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,205,396. Automatic Difar Cardioid Former. Filed Mar. 25, 1975. Patented May 27, 1980. Not available NTIS.

Patent 4,206,510. Automatic Detection and Classification Device. Filed June 27, 1955. Patented June 3, 1980. Not available NTIS.

Patent 4,212,084. Beam-Former for FFT-Based Signal Processor. Filed Nov. 20, 1978. Patented July 8, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent application 6-145,208. Heating and Cooling System. Filed Apr. 30, 1980.

Patent application 6-154,725. Hermetic Seal for a Shaft. Filed May 30, 1980.

Patent application 6-154,726. Stark Effect Spectrophone for Continuous Absorption Spectra Monitoring. Filed May 30, 1980.

Patent application 6-157,150. Diesel Engine Catalytic Combustor System. Filed June 6, 1980.

Patent application 6-158,183. Frequency Tracked Pulse Technique for Ultrasonic Analysis. Filed June 10, 1980.

Patent application 6-163,837. Cloud Cover Sensor. Filed June 27, 1980.

Patent application 6-163,840. An Improved Head for High Speed Spinner Having a Vacuum Chuck. Filed June 27, 1980.

Patent 4,199,650. Modification of the Electrical and Optical Properties of Polymers. Filed Nov. 7, 1978. Patented Apr. 22, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 6, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus: Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-25-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-27-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	4-16-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-78
DESIGNS, GROUP 290—Vacant. Industrial Arts; Household, Personal and Fine Arts.	10-10-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-4-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-24-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during September 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,102,270 to 3,105,236, inclusive
Plant Patents ..... Numbers 2,277 to 2,286, inclusive

REISSUES

DECEMBER 9, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,443

REAL-TIME ULTRASONIC IMAGING APPARATUS

Ludwig Niklas, Lövenich, Fed. Rep. of Germany, assignor to Krautkramer-Branson, Incorporated, Stratford, Conn.

Original No. 4,099,416, dated Jul. 11, 1978, Ser. No. 790,407, Apr. 25, 1977. Application for reissue Sep. 25, 1978, Ser. No. 945,597

Int. Cl.[2] **G01N** *29/04*

U.S. Cl. 73—602 **15 Claims**

1. An apparatus for improving the resolution of a real-time ultrasonic imaging system comprising:

electroacoustic probe means adapted to be acoustically coupled to a workpiece;

energizing means coupled to said probe means for causing said probe means to periodically transmit an ultrasonic energy search signal in the workpiece and to receive echo signals therefrom and to convert said echo signals into electrical signals *for each search signal transmitted to thereby form a sequence of electrical signals;*

receiver means coupled to said probe means for receiving said *sequence of* electrical signals and providing *a* respective *sequence of* discrete echo amplitude signals (f_k) responsive to said *sequence of* electrical signals, wherein k is an integer and each *sequence of discrete* [signal] *signals* f_k is commensurate with a [depth] *scan* increment in the workpiece;

scanning means coupled to said probe means for causing said probe means to transmit said search signal along predetermined scan increments in the workpiece;

processor means including storage means for storing a sequence of acoustic beam profile values (d_v) commensurate with the characteristics of said probe means coupled to said receiver means for sequentially receiving said amplitude signals (f_k), associating respective stored beam profile values (d_v) with amplitude signals (f_k) and providing a sequence of output signals b_i commensurate with the equation:

$$b_i = \sum_k d_v \cdot f_k,$$

wherein $v = k - i$.

Re. 30,444

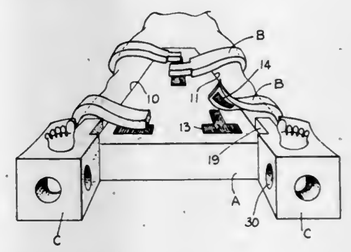
ORTHOPEDIC SUPPORT

Donald C. Spann, 5 Ferncreek Ct., Greenville, S.C. 29607

Original No. 4,135,504, dated Jan. 23, 1979, Ser. No. 780,761, Mar. 24, 1977. Application for reissue Jun. 1, 1979, Ser. No. 44,691

Int. Cl.[3] **A61F** *3/00*

U.S. Cl. 128—80 A **7 Claims**



1. An abduction pillow for immobilizing the lower limbs of orthopedic patients comprising:

a flat wedge shaped body constructed of uncovered synthetic foam material tapering outwardly at opposite sides;

spaced strapping constructed of flat strips of synthetic foam material extending about spaced portions of each limb fixing same against respective sides of said body maintaining said limbs in divergent fixed positions corresponding to the divergent disposition of said sides; and

a block constructed of synthetic foam material having an internal cavity therein carried adjacent a lower corner of said wedge shaped body for receiving and supporting the foot and ankle portions of said limbs.

PATENTS

GRANTED DEC. 9, 1980

ERRATA

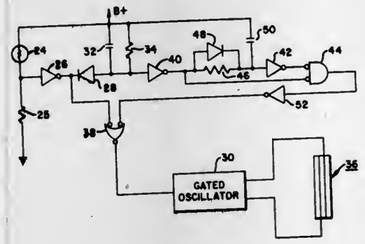
For CLASS	See PATENT NO.
241–296	4,237,589
434–169	4,237,624
474–116	4,237,744
493–038 L	4,237,776
493–100	4,237,777
493–039	4,237,778
493–376	4,237,779
410–007	4,237,794
440–038	4,237,812
081–429	4,237,946
180–328	4,238,008
224–042.23	4,238,091
051–033 W	4,238,205
137–013	4,238,336
310–260	4,238,339
585–024	4,238,343
556–436	4,238,401
556–434	4,238,402
564–453	4,238,414
568–342	4,238,415
568–384	4,238,416
568–385	4,238,417
568–458	4,238,418
568–454	4,238,419
568–931	4,238,420
562–442	4,238,589
340–629	4,238,677
280–421	4,238,683
357–025	4,238,757
357–025	4,238,758
357–028	4,238,759
357–030	4,238,760
357–038	4,238,761
357–049	4,238,762
357–068	4,238,763
357–071	4,238,764
358–043	4,238,765
358–086	4,238,766
358–107	4,238,767
358–154	4,238,769
358–154	4,238,770
358–165	4,238,771
358–166	4,238,772
358–183	4,238,773
358–242	4,238,774
358–257	4,238,775
360–010	4,238,776
360–038	4,238,777
371–005	4,238,779

PATENTS

GRANTED DECEMBER 9, 1980

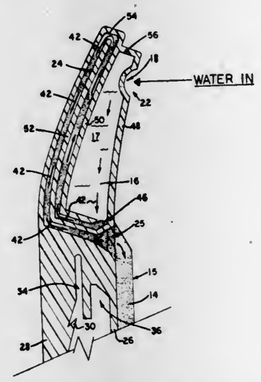
GENERAL AND MECHANICAL

4,237,557
CONTROL SYSTEM FOR WELDING HELMET LIQUID CRYSTAL LIGHT SHUTTER
Mack Gordon, 1724 Wilbur Rd., Medina, Ohio 44256
Filed Jul. 30, 1979, Ser. No. 62,195
Int. Cl.[3] A61F *9/06*
U.S. Cl. 2—8 **3 Claims**



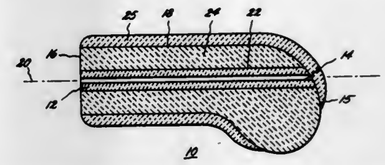
2. A method for controlling a liquid crystal light shutter welding helmet lens assembly which comprises causing said shutter to approach an opaque condition whenever a welding arc is struck, causing said light shutter to increase its light transmission characteristics for a fixed period of time immediately after the welding arc is extinguished, and thereafter automatically increasing the opacity of said light shutter for a predetermined period of time whether or not a welding arc exists.

4,237,558
REMOVABLE COOLING HATBAND APPARATUS
Joseph R. Mackenroth, III, 8117 McArthur Dr., Harahan, La. 70123, and Hugo B. Bode, 9555 King Crest Pkwy., Baton Rouge, La. 70810
Continuation-in-part of Ser. No. 820,755, Aug. 1, 1977, Pat. No. 4,130,902, which is a continuation-in-part of Ser. No. 701,848, , abandoned. This application Dec. 20, 1978, Ser. No. 971,229
Int. Cl.[3] A42C *5/02*
U.S. Cl. 2—181 **10 Claims**



1. A removable cooling hatband apparatus, comprising:
a. a cooling band structure, said band structure providing a liquid retaining pad for abutting at least a portion of the forehead of a wearer;
b. a fluid supply vessel cooperatively connected to said cooling band structure and transmitting fluid to said band structure; and
c. an attachment clip associated with said cooling band structure for temporarily attaching said band structure to a desired hat to be cooled, with said pad abutting the head of the wearer when so attached by said attachment clip.

4,237,559
BONE IMPLANT EMBODYING A COMPOSITE HIGH AND LOW DENSITY FIRED CERAMIC CONSTRUCTION
Marcus P. Borom, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed May 11, 1979, Ser. No. 38,097
Int. Cl.[3] A61F *1/03*
U.S. Cl. 3—1.9 **5 Claims**

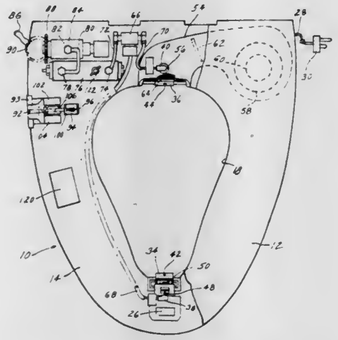


1. A composite ceramic bone implant structure comprising
a first ceramic member having an outer surface, opposed end surfaces, a central axis and walls defining an aperture which extends entirely through said member and terminates in the opposed end surface;
the first member consists essentially of a fired ceramic material which is one selected from the group consisting of alumina, calcium aluminate, lanthanum aluminate and yttrium aluminate;
the microstructure of the ceramic material of the first member has a porosity content which is no greater than 20 percent by volume;
a second ceramic member disposed within the aperture, encompassing, and integral with selected surface areas of the outer surface, and the walls of the first ceramic member;
the second ceramic member consists essentially of a fired ceramic material which is one selected from the group consisting of alumina, calcium aluminate, lanthanum aluminate and yttrium aluminate, and
the microstructure of the fired ceramic material of the second member has a porosity content of from about 20 percent by volume to 65 percent by volume, at least a portion of the porosity being interconnected and the grain morphology is indicative of having undergone vapor transport action.

4,237,560
BIDET SYSTEM AND WATER TANK THEREIN
Harry M. Riegelman, Fullerton; Anthony C. Paganelli; John A. Walker, both of Northridge; Norris Borden, Mission Hills; Stephen A. Lawhead, Arleta, and Harry M. Umann, Los Angeles, all of Calif., assignors to Rusco Industries, Inc., Los Angeles, Calif.
Filed Dec. 28, 1978, Ser. No. 973,907
Int. Cl.[3] E03D *9/08;* A47K *3/22;* F24H *1/00*
U.S. Cl. 4—447 **6 Claims**

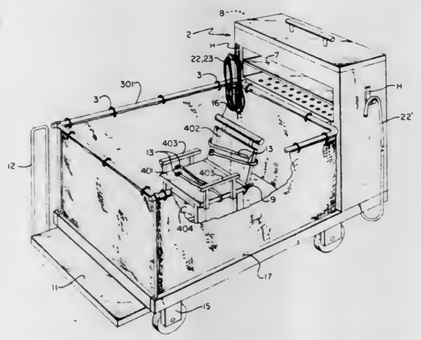
1. A bidet water handling system comprising:
a toilet seat housing having a central opening;
water outlet means in said housing through which to direct water into said opening from the rear thereof;
a horizontal water tank in said housing having an elongated inner cylindrical wall;

an inlet fitting extending vertically into the top lateral surface of said tank adjacent one end thereof;
said inlet fitting being closed at its inner end,
said inlet fitting having a transverse opening directed parallel to the axis of said tank toward its other end and located adjacent the top of said wall;
means including a water pressure control means connected to said inlet fitting and a supply line in said housing for supplying water under pressure to said tank;
an outlet fitting extending vertically into the top lateral surface of said tank adjacent its other end;
means connecting said outlet fitting to said water outlet means;



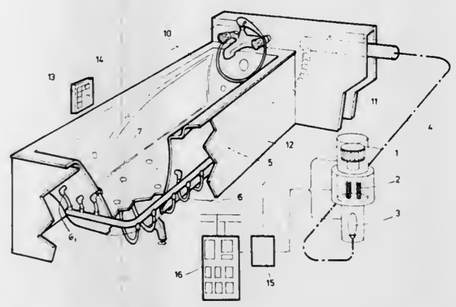
and a heater in said tank adapted to heat the water flowing through said tank so as to supply heated water through said water outlet means,
said outlet fitting having a transverse opening adjacent the top of said wall directed parallel to the axis of said tank in a direction away from the direction of flow from the opening in the inlet fitting,
said opening in the outlet fitting functioning upon initiation of water flow to permit air in the top of the tank to be discharged through
said water outlet means, and said opening in the inlet fitting functioning to cause water entering the tank to exert such stirring action as to make the water temperature the same in all portions of the tank.

4,237,561
SEDENTARY BATHING SYSTEM
Milton Britton, 39 Forest St., Boston, Mass. 02119
Filed Jun. 22, 1979, Ser. No. 51,249
Int. Cl.[3] A47K *3/22*; A61H *33/00*; A47K *3/12*
U.S. Cl. 4—546 **1 Claim**



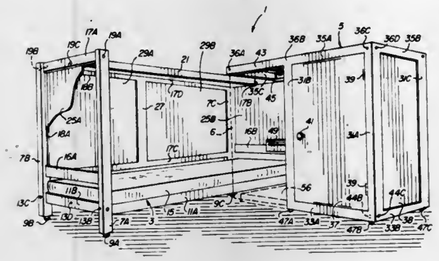
1. A movable sedentary bathing system, comprising
(a) a seat;
(b) a pair of arm rests mounted on the seat;
(c) a back reclinably mounted to the seat so as to form, in cooperation therewith, a chair;
(d) a head rest mounted on the back;
(e) a supporting belt attached to the chair for removably retaining a subject sitting in the chair;
(f) perforated pipe, means secured to the back of said chair, for spraying water on a subject sitting in the chair, such perforated pipe means having a head spray section and a body spray section;
(g) a valve, in series with the head spray section of the perforated pipe, to control whether water is provided to the head spray section of the perforated pipe;
(h) a base, shaped so as to form a shallow trough and in which the chair is placed, and having a head and a foot;
(i) a rod, mounted above the base, said rod receiving hooks and a shower curtain with the bottom of said shower curtain extending into said trough;
(j) a drain mounted in the base;
(k) a step, mounted at the foot of the base, for assisting a subject's entrance into the system;
(l) a hand rail, also mounted at the foot of the base, as an aid in supporting a subject utilizing the step;
(m) at least four wheels mounted underneath the base to facilitate movement of the system from one location to another;
(n) a cabinet, affixed at the head of the base, and having a shelf with drainage holes located over the trough so as to permit drip drying of articles placed on the shelf; and
(o) said rod being secured to both said cabinet and said base with said rod being located at substantially the same height as said shelf.

4,237,562
MASSAGE INSTALLATION
Robert J. DuPont, 77, bis, rue Michel Ange, 75016 Paris, France
Filed Jul. 25, 1979, Ser. No. 60,651
Claims priority, application France, Jul. 26, 1978, 78 22189; Jul. 13, 1979, 79 18272
Int. Cl.[3] A47K *3/00*; A61H *33/02*
U.S. Cl. 4—543 **19 Claims**



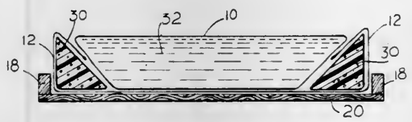
1. Massage installation comprising a bath, air jet nozzles, said nozzles opening through the bottom and sidewalls of the bath, means producing air to said nozzles, air heating means and an ozone producing means, a casing for said air producing means, heating means and ozone producing means, and means for conducting air from said producing means to said jet nozzles whereby said heated, ozone laden air may be pumped under pressure into said bath.

4,237,563
LIVING MODULE FOR INSTITUTIONAL RESIDENTS
Thomas E. Ollerman, 4511 E. Belleview St. #2, Phoenix, Ariz. 85008
Filed Feb. 7, 1979, Ser. No. 9,937
Int. Cl.[3] A47B *83/00*; A61G *7/00*
U.S. Cl. 5—2 R **11 Claims**



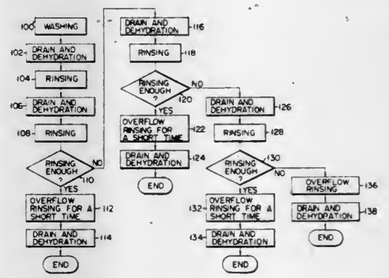
1. A personal living module comprising in combination:
a. a bed, said bed having a mattress, the top of said mattress being a first height from a floor supporting said bed; and
b. a storage unit for use in conjunction with said bed, said storage unit including a top, a bottom, a wall, and a door enclosing a storage region, said storage unit further including a desk unit extendible from said wall through an opening in siad wall for use by a person sitting on said mattress, said desk unit being returnable into said hole to an unextended position when not in use, said desk unit having a top surface, said storage unit being positioned so that when said desk unit is fully extended from said wall, said desk unit is located a sufficient distance above and away from said mattress that an average sized person can sit at the edge of the mattress, place his or her knees comfortably beneath said desk unit and comfortably work on or study material on the top surface, a storage compartment being included in said desk unit, said top surface being hingeably connected to said storage compartment to form a cover for said storage compartment, whereby said top surface can be raised to expose said storage compartment when said desk unit is extended from said wall, wherein said door includes first locking means for locking said door, and wherein said desk unit includes second locking means for locking said desk unit in said unextended position.

4,237,564
WATERBED CONSTRUCTION
Lee B. Zeltzer, 3145 Camino Juan Paisano, Tucson, Ariz. 85718
Division of Ser. No. 857,470, Dec. 5, 1977, Pat. No. 4,187,565. This application Feb. 26, 1979, Ser. No. 14,836
Int. Cl.[3] A47C *27/08*
U.S. Cl. 5—400 **3 Claims**



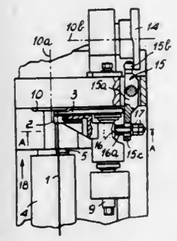
1. A method of preventing spillage by leakage from a filled waterbed mattress in a waterbed frame comprising the steps of:
placing an open cell water absorbent material adjacent the sides of the mattress within the waterbed frame,
encasing the water mattress bottom and the open cell water absorbent material adjacent the sides of the water mattress with a water proof liner,
absorbing water leaking from the waterbed mattress with the open cell water absorbent material, and
containing the leaked water in the liner and absorbent material whereby the water is prevented from spilling.

4,237,565
AUTOMATIC WASHING MACHINE
Fumio Torita, Nagoya, and Toshihiro Nomura, Okazaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jun. 7, 1979, Ser. No. 46,324
Claims priority, application Japan, Jun. 12, 1978, 53-70654
Int. Cl.[3] D06F *33/02*
U.S. Cl. 8—158 **12 Claims**



6. In an automatic washing machine having a rotatable tub, an agitating vane, and means for selectively driving said vane and said tub for respectively executing a washing and a rinsing operation, the improvement comprising:
means for sensing a transparency of rinse water;
means for comparing said sensed transparency with a predetermined reference value; and
means for selecting a first type of rinsing step when said sensed transparency is at least equal to said reference value, and a second type of rinsing step when said sensed transparency is less than said reference value.

4,237,566
HIGH SPEED MACHINE FOR COLD FORGING SCREWS, RIVETS, AND THE LIKE HARDWARE
Albino Castiglioni, Paradiso-Lugano, Switzerland, assignor to Somavis S.A., Switzerland
Filed Mar. 20, 1979, Ser. No. 22,307
Claims priority, application Switzerland, Mar. 24, 1978, 3190/78
Int. Cl.[3] B21K *1/44*
U.S. Cl. 10—11 R **6 Claims**



1. A high speed machine for cold forging screws, rivets, and the like hardware, comprising a frame, a die-carrying head supported for step rotational movement by said frame, a punch-carrying slide caused to reciprocate to and fro said die-carrying head, means for feeding a bar stock to said die-

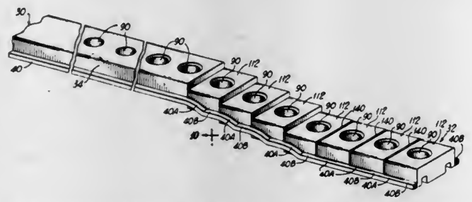
carrying head, shears having a fixed blade and a movable blade carried by said frame in the proximity of said die-carrying head, and a bar stock shearing device including linkage means secured at one end to said punch-carrying slide and secured at the other end to said movable blade for transmitting at least part of the movement and energy of said punch-carrying slide to said movable blade and converting the reciprocating motion of said slide into a reciprocating motion of said movable blade.

4,237,567

METHOD OF MAKING A FASTENER STRIP

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Nov. 28, 1977, Ser. No. 855,138
Int. Cl.³ B21D *53/20*; F16B *39/28*
U.S. Cl. 10—86 CL **31 Claims**



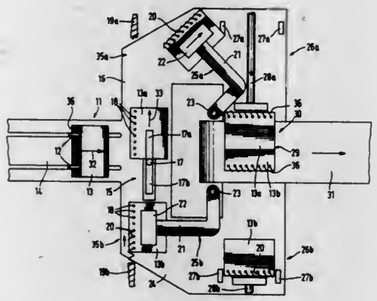
1. A method of forming a strip of interconnected nut bodies from an elongated blank having a body portion and a pair of opposed flanges thinner than the body portion, said method comprising:
longitudinally severing the blank at regular intervals to separate spaced segments of the flanges from the body portion, with the severed segments being integral at both ends with unsevered flange portions; and
transversely severing the main body portion of the blank at regular intervals to form discrete nut bodies interconnected with adjacent nut bodies by the severed flange segments.

4,237,568

APPARATUS AND METHOD FOR THE BINDING OF STACKS OF SHEETS

Otto Kunzmann, Neuffen, Fed. Rep. of Germany, assignor to Bielomatik Leuze GmbH & Co., Neuffen, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,399
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1978, 2803775
Int. Cl.³ B42C *19/00*
U.S. Cl. 11—1 R **14 Claims**



1. Apparatus for binding stacks of sheets to form pads or books, comprising:
two binding stations;
binding means at each of said binding stations for applying binders to said stacks of sheets;
a distributor station;
means for feeding stacks of unbound sheets to said distributor station;
means at said distributor station, movable back and forth between the binding stations transversely of the feed direction of the stacks of unbound sheets, for distributing said stacks of unbound sheets alterately, to one side or the other into one of said two binding stations; and,
respective removal means at each binding station for moving the bound stacks of sheets therefrom to a common central discharge station.

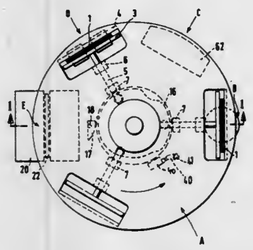
14. A method for binding stacks of sheets, comprising the steps of:
forwardly conveying stacks of unbound sheets to a distributing station;
alternately displacing the forwardly conveyed stacks of sheets transversely of the feed direction, on opposite paths respectively, into two binding stations;
applying binders to the stacks of sheets at the binding stations;
subsequently turning the bound stacks of sheets substantially through 90°, the turning directions in each of the binding stations being opposite the other; and,
bringing the so-turned stacks of sheets together at a common discharge station.

4,237,569

BOOKBINDING MACHINE

Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

PCT No. PCT/CH78/00009, § 371 Date Mar. 19, 1979, § 102(e) Date Feb. 21, 1979, PCT Pub. No. WO 79/00049, PCT Pub. Date Feb. 8, 1979
This PCT application Filed Feb. 21, 1979, Ser. No. 24,654
Claims priority, application Switzerland, Jul. 19, 1977, 8909/77
Int. Cl.³ B42C *13/00*
U.S. Cl. 11—3 **9 Claims**



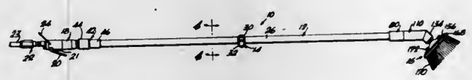
1. In a machine for attaching covers to stacks of overlapping sheets, the combination of a shaft; means for rotating said shaft; a turntable rotatably mounted on said shaft; entraining means interposed between said turntable and said shaft for normally rotating said turntable in response to rotation of said shaft, including first and second elements respectively affixed to said shaft and to said turntable and engaging one another only by friction; a plurality of normally closed openable gripping devices mounted on said turntable and spaced apart from each other, as considered in the circumferential direction of said shaft; a book inserting station adjacent to the path of movement of said devices; means for opening successive gripping devices at said inserting station, including first cam means and discrete first follower means each associated with one of said gripping devices and tracking said cam means; and means for arresting said turntable whenever one of said gripping devices is located at said inserting station, including second cam means rotatable with said shaft and second follower means tracking said second cam means and arranged to intercept said turntable with attendant overcoming of the friction between said first and second elements of said entraining means whenever one of said gripping devices reaches said station whereby said turntable is temporarily held against rotation with said shaft to allow for insertion of a stack into the open gripping device at said station.

4,237,570

POWER BRUSH APPARATUS

W. B. Brock, Jr., 875 W. 20 St., Hialeah, Fla. 33010

Filed Aug. 10, 1979, Ser. No. 65,455
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—28 **10 Claims**



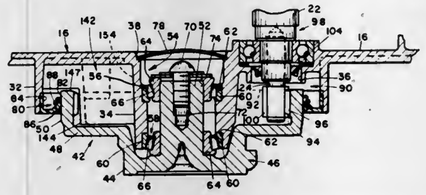
1. A power brush apparatus comprising, in combination,
an elongate hollow handle having an inner end and an outer end,
an elongate drive member having a first end and a second end and including spaced bearing members within said handle,
an air operated drive motor including a drive shaft in coaxial relation with said drive member at the inner end of the handle,
an adapter interconnecting the inner end and the motor,
drive pin connector means interconnecting the drive member and drive shaft at the first end,
an angled housing at the outer end of the handle including a proximal zone, a distal zone, and an intermediate angled zone,
a fitting interconnecting the handle to the housing,
a rotatable member in the proximal zone of said housing,
a stub shaft rotatably mounted in the distal zone of said housing,
bevel gears interconnecting the stub shaft and the rotatable member at said intermediate angled zone, and
means interconnecting the rotatable member with said drive member, and
thrust bearing means with the housing for the stub shaft and the rotatable member, and
a rotatable brush removably secured to the terminal end of said stub shaft.

4,237,571

FLOOR POLISHER WITH GEAR DRIVE

Bertel S. Nelson, Naperville, Ill., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

Filed May 16, 1979, Ser. No. 39,314
Int. Cl.³ A47L *11/162, 11/40*
U.S. Cl. 15—49 R **25 Claims**



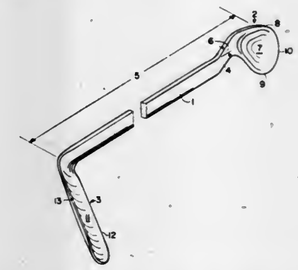
1. A drive for a compact rotary floor maintenance device, comprising:
a motor support base having a depending, annular skirt and a depending hub concentric with said skirt, said base having a motor shaft aperture therein;
a carrier having a generally vertical annular flange and a centrally disposed spindle, said spindle extending into said hub;
means within said hub for supporting said spindle for rotary motion, said carrier and said skirt defining a drive housing within which a liquid lubricant may be disposed;
a ring gear on said annular flange and engageable by a pinion gear secured to a motor shaft extending through the motor shaft aperture;
seal means carried by one of said annular skirt and said flange for sealing lubricant within said carrier to prevent leakage of lubricant between said skirt and said annular flange; and
baffle means within said housing for collecting and directing lubricant within the housing into said hub during rotary motion of said carrier for lubricating said means for supporting said spindle for rotary motion.

4,237,572

CLEANING TOOL FOR ELECTRICAL OR GAS WATER HEATERS

Frederick A. Larson, Rte. 152, Cambridge, Me. 04923

Filed Jun. 14, 1979, Ser. No. 48,485
Int. Cl.³ A47L *25/00*
U.S. Cl. 15—105 **8 Claims**



1. A cleaning tool for a water heater having a given diameter and an interior zone to be cleaned, comprising handle means having a longitudinal axis, scraper means securable to said handle means, and pulling out means also securable to said handle means, said scraper means and said pulling out means having a shape insertable into said electrical water heater for the intended purpose without causing damage to the internal structure of said electrical water heater, said scraper means having a substantially triangular shape including two substantially rounded scraping corners and a third corner, said tool further comprising an intermediate handle section operatively interposed between said handle means and said third corner of said scraper means, said intermediate handle section extending at an angle relative to said longitudinal axis of said handle means, said angle being within the range of about 10° to about 30° said pulling out means comprise an elongated, substantially rectangular member extending substantially at a right angle relative to the longitudinal axis of said handle means, said substantially rectangular member having tapering substantially parallel, longitudinal scraping edges.

4,237,573

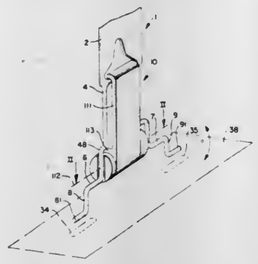
DEVICE FOR RELEASABLY SECURING A CLEANING IMPLEMENT TO A HANDLE

Georg Weihrauch, Wald-Michelbach, Fed. Rep. of Germany, assignor to Coronet-Werke Heinrich Schlerf GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 769,969, Feb. 18, 1977, Pat. No. 4,169,297. This application Jul. 10, 1979, Ser. No. 56,240
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606400; Mar. 19, 1976, 2611683; Nov. 11, 1976, 2651259
Int. Cl.³ A47L *13/11*; B25G *3/28*
U.S. Cl. 15—145 **17 Claims**

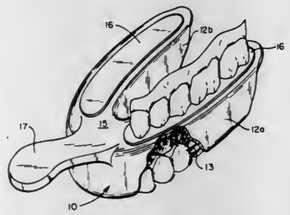
1. A clamping device for releasably securing a cleaning implement body to a handle having an end portion comprising two sprung branch arms in the form of a fork, the arms having

bent end portions and being securable in apertures of said body by means of the clamping device which is adapted to be movable between said branch arms for releasably securing the end portions thereof in the apertures of said body, said clamping device including a pivoting lever for pivotable movement between the branch arms in a plane substantially perpendicular



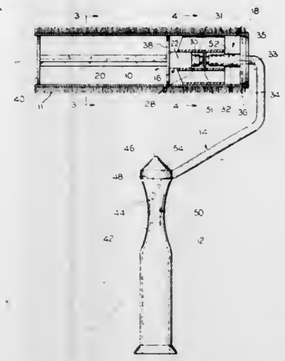
to the plane including the branch arms, said pivoting lever having a bearing member for extending between the two branch arms and forming an axis, said bearing member being adapted to act upon the branch arms to move the end portions thereof for releasably securing said cleaning implement body to said handle when the bearing member is turned about its axis by pivoting the lever.

4,237,574
TOOTH CLEANING APPARATUS
J. Robert Kelly, 1220 Chambers Rd., Apt. 403A, Columbus, Ohio 43212, and Mark J. Squicquero, 6094 Busch Blvd., Apt. 93, Columbus, Ohio 43229
Filed Aug. 7, 1978, Ser. No. 931,751
Int. Cl.[3] A46B *13/02;* **A61H** *7/00*
U.S. Cl. 15—167A **7 Claims**



1. A tooth cleaning apparatus comprising
a structurally rigid tray of U-shaped configuration adapted to conform to a jaw member, said tray having an outwardly opening channel of U-shape extending around the periphery thereof for receiving therein teeth carried by that jaw member,
cleaning means associated with said tray in operative relationship thereto for effecting a cleansing function with respect to teeth received within said tray, and
retainer pads formed with said tray on the outer surface thereof, said pads being of predetermined size, said size being less than the surface area of the base of the outer surface of said tray, and positioned to enable mechanical engagement with an opposite jaw member during tooth cleaning operations to secure the structure in relatively fixed relationship to the jaw member opposite that having the teeth to be cleaned.

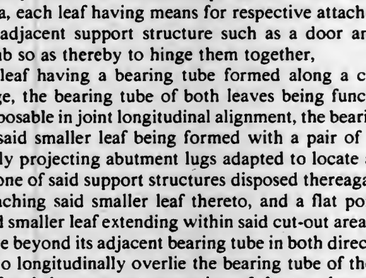
4,237,575
PAINT ROLLER
Albert A. Mlachnik, 6235 Fisher La., Greendale, Wis. 53129
Filed Jan. 26, 1979, Ser. No. 6,594
Int. Cl.[3] B05C *1/10*
U.S. Cl. 15—230.11 **8 Claims**



1. A paint roller including an elongate roller support formed of a plastic material and for engaging and supporting a roller cover and handle means,
said roller support being substantially equal in length to said cover and having a body portion adjacent one end,
said body portion including first cover engaging means and means defining an internal bearing extending from one end of the body portion a distance along the longitudinal axis of said roller support said distance being substantially shorter in length than that of said body portion,
said bearing being open at one end, fixed surface means formed intermediate the ends of the body portion and disposed adjacent to the other end of said bearing and lying along the axis thereof,
a metallic shaft extending into said bearing and extending from said open end to said surface means to define a shaft portion which is substantially shorter than said body portion,
a recess formed in said body portion,
and a coupling washer disposed in said recess for engaging said shaft portion intermediate its ends and said body portion for retaining said roller support on said shaft portion,
said roller support including an elongate axial extension projecting from the body portion and being integral therewith and having second cover engaging means adjacent its remote end, said axial extension being longer than said body portion.

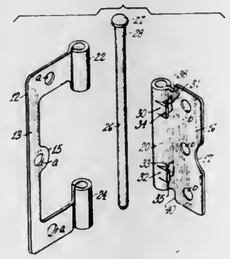
4,237,576
BLOWER DEVICE FOR SWEEPING
Charles W. Stakes, Nederland, Tex., assignor to Electronic Services, Ltd., Nederland, Tex.
Filed Apr. 16, 1979, Ser. No. 30,068
Int. Cl.[3] A47L *5/24, 5/14*
U.S. Cl. 15—344 **8 Claims**

1. A sweeping device, comprising:
(a) a portable housing including a receptacle forming an internal chamber to accommodate the establishment therein of a standing head of pressure, the receptacle having an air intake and a discharge port;
(b) power means mounted in the housing for (i) supplying and pressurizing air in the receptacle (ii) establishing a standing head of pressure in the receptacle and (iii) forcing air into the receptacle and out through the discharge port for sweeping;
(c) air directional means connected to the discharge port, for directing pressurized air in a jet, in order to sweep small debris; and



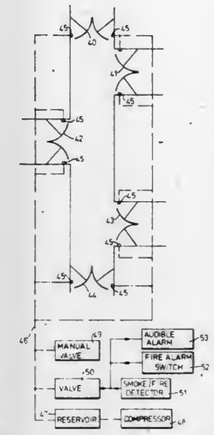
(d) support means interconnected with the housing for accommodating the manual displacement of the sweeping device during use.

4,237,577
SAFETY HINGE
Lesley Chapel, 9211 Haas Ave., Los Angeles, Calif. 90049
Filed Nov. 3, 1978, Ser. No. 957,359
Int. Cl.[3] E05D *11/00*
U.S. Cl. 16—137 **2 Claims**



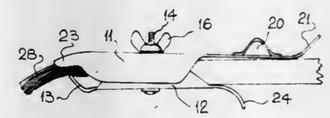
1. A three piece, separable, safety hinge comprising in combination:
a pair of hinge leaves each consisting of a parallel-faced flat area of approximately equal thickness but different lengths, said pair consisting of a larger length leaf formed with a central cut-out area and a smaller length leaf loosely receivable nested coplanar within said cut-out area, each leaf having means for respective attachment to an adjacent support structure such as a door and door jamb so as thereby to hinge them together,
each leaf having a bearing tube formed along a common edge, the bearing tube of both leaves being functionally disposable in joint longitudinal alignment, the bearing tube of said smaller leaf being formed with a pair of tangentially projecting abutment lugs adapted to locate an edge of one of said support structures disposed thereagainst for attaching said smaller leaf thereto, and a flat portion of said smaller leaf extending within said cut-out area lengthwise beyond its adjacent bearing tube in both directions so as to longitudinally overlie the bearing tube of the larger leaf and thus prevent separation of the two leaves when the letter are disposed nested coplanar with each other, and
a hinge pin characterized by a generally cylindrical shaft with a peripherally enlarged head and a distally converging, frustro-conic neck immediately beneath, which neck is frictionally engagable by insertion within said bearing tubes, whereby said pin may be removably inserted through the aligned bearing tubes and transiently engage its frustro-conic neck therewith from either end when so inserted.

4,237,578
RELEASABLE RETAINING MEANS AND FIRE DOOR CONTROL SYSTEM
Anthony H. E. Welch, Corsham, England, assignor to Dorgard Limited, Corsham, England
Continuation-in-part of Ser. No. 793,433, May 3, 1977, Pat. No. 4,121,319. This application Aug. 25, 1978, Ser. No. 936,901
Claims priority, application United Kingdom, May 11, 1976, 19352/76; Jan. 31, 1978, 3787/78
Int. Cl.[3] E05F *15/20*
U.S. Cl. 16—48.5 **15 Claims**



1. A fire door control system comprising a latch having a first part adapted to be mounted on a door and a second part adapted to be mounted in a fixed position relative to the door for cooperation with the first part when the door is in an open position, the second part including holding means operative, when actuated, to engage with the first part to inhibit closing movement of the door and pneumatically operated actuating means for actuating the holding means when a gas pressure differing from atmospheric pressure is applied thereto, the system further comprising a gas pressure source connected to the actuating means and valve means for establishing communication between the actuating means and atmosphere.

4,237,579
GRAINING BRUSH
Jonathan H. Salmon, 72 Trafalgar St., Belmore, New South Wales, 2192, Australia
Filed Apr. 24, 1979, Ser. No. 32,958
Claims priority, application Australia, Sep. 15, 1978, 39911/78
Int. Cl.[3] A47L *17/02*
U.S. Cl. 15—166 **7 Claims**



1. A graining tool comprising, in combination, a paint brush, a bristle-retaining slidable plate having an elongated slot therein and a finger rest and pull-back lever thereon, a slidable comb plate terminating in a comb and having a second elongated slot therein together with a finger grip, said comb plate being adapted to slide within said bristle-retaining plate via fittingly co-acting respective margins of said plates, the latter being adapted to encompass the bristles of said brush in regis-

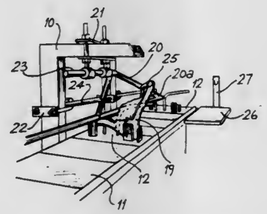
tering juxtaposition therewith, and lockably removable fastening means being adapted to engage said slots via a preformed hole in the bristle-supporting base of said brush, whereby said comb adjustably separates said brush bristles into discrete bunches to an extent determined by the relative endwise adjustment of said plates responsive to relative displacement of said finger grip with respect to said finger rest and pull-back lever, thereby permitting the application of said brush to a pre-stained surface to cause said bunches to impart a wood grain simulating pattern to said surface as said brush is manipulated across said surface with a pattern-describing motion.

4,237,580

HALF PIG'S HEAD BONING METHOD AND APPARATUS

Desmond F. Croasdell, 115 Retreat Park, Athlone, Ireland

Filed Jun. 28, 1979, Ser. No. 52,894
Int. Cl.³ A22C *17/00*
U.S. Cl. 17—45 **6 Claims**



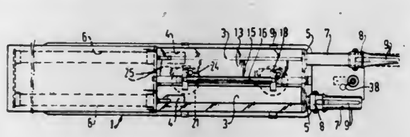
1. A method of severing the jowl muscles of a half pig's head, comprising the steps of: placing the half head on a conveyor such that the half head is held securely on the conveyor in a lateral position relative to the direction of conveyance for sideways presentation to a fixed wedge member pointing in the opposite direction to that of the conveyor movement, and advancing the conveyor to drive the wedge member between the upper and lower jaws of the half head from the side and force the jaws progressively further apart to sever the jowl muscles without severing the upper and lower jaws from each other.

4,237,581

METHOD AND DEVICE FOR COMPRESSING MEAT

Johannes C. Langen, 56 Jan van Cuykstraat and Christianus P. Langen, 11 Zandkampen, both of Cuyk, Netherlands

Filed Nov. 3, 1978, Ser. No. 957,350
Int. Cl.³ A22C *11/06*
U.S. Cl. 17—45 **25 Claims**



1. Apparatus for compressing a product having a liquid component comprising first means for compressing a product and forcing therefrom at least a portion of a liquid component thereof, second means for compressing a product and forcing therefrom at least a portion of a liquid component thereof, means for sequentially operating said first and second compressing means, and means for placing said first and second compressing means in fluid communication such that the liquid component portion being forced from the product during the operation of said first compressing means flows through said fluid communication means into said second compressing means while the latter is inoperative and vice versa.

21. The method of compressing a product having a liquid component comprising the steps of

(a) inserting a liquid component containing product into a first chamber of a predetermined volume,

(b) reducing the predetermined volume to a lesser volume thereby compressing the product and forcing the liquid component therefrom,

(c) while performing step (b) conducting the liquid component from the first chamber into a second chamber, and

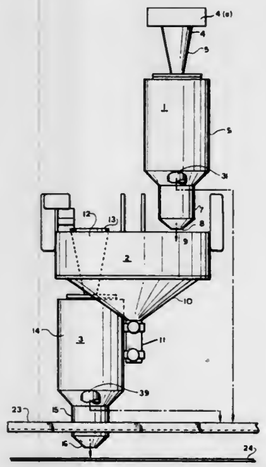
(d) ejecting an earlier compressed product and the liquid component from the second chamber.

4,237,582

BAGASSE PREPARATION

Eduardo J. Villavicencio, San Angel, Mexico, assignor to Process Evaluation & Development Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 811,090, Jun. 29, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,062
Int. Cl.³ D01B *1/30*
U.S. Cl. 19—7 **5 Claims**



1. An improvement in the method of processing fibrous vegetable materials containing pith, said method consisting of the three separate operations of (i) metering fragments of said fibrous vegetable materials into a first depithing zone and at least partially depithing said fibrous material therein; (ii) collecting and metering the partially depithed fibers into a fiber washer and washing said partially depithed fiber therein; and (iii) collecting and metering the washed fiber into a second depithing zone and further depithing said washed fiber therein; the improvement comprising:

(a) arranging said first depithing zone vertically above said fiber washer and in turn arranging said fiber washer vertically above said second depithing zone;

(b) taking partially depithed fibers from the outlet of said first depithing zone and directing the gravitational fall of said partially depithed fibers from said first depithing zone downwardly directly into the inlet end of a fiber washer without metering said partially depithed fibers;

(c) removing the washed fibers from the outlet end of said washer at essentially the same rate that partially depithed fibers are entering said washer and directing said washed fibers downwardly by gravitational fall directly into the inlet of said second depithing zone without metering said washed fibers; and

(d) collecting a substantially depithed fiber as it flows from said second depithing zone.

4,237,583

LOCKING CLIPS FOR SECURITY WALLETS AND THE LIKE

William H. Sullivan, 5527 Shasta La., La Mesa, Calif. 92041

Filed Feb. 1, 1979, Ser. No. 8,247
Int. Cl.³ A45C *13/18*; A45F *5/02*
U.S. Cl. 24—3 R **8 Claims**



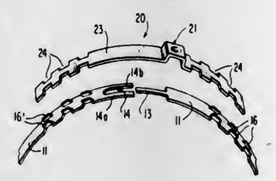
1. A locking clip for a security wallet to be attached to the waistband of a person's garment for disposition between the person's body and the garment, comprising an inverted U-shaped clip secured to the wallet for suspending the same from a garment waistband, at least one latch member on said clip interiorly thereof having an upwardly facing serrated edge thereon, and means for moving said latch member from a first open position adjacent one wall of said clip to a second closed position wherein said serrated edge thereof is adjacent the other wall of said clip, said latch member moving means being mounted interiorly of said clip upon said one wall between said one wall and said latch member, said member in its open position facilitating attachment of the clip to and detachment of the clip from a waistband, said latch member in its closed position confining waistband material between the latch member and said other wall of said clip so that attempted removal of said clip from the waistband results in the serration on said latch member digging into the waistband material and preventing the removal of said clip and wallet from the waistband.

4,237,584

CLAMP STRUCTURE, ESPECIALLY AXLE SLEEVE CLAMP

Hans Oetiker, Oberdorfstrasse 21, Horgen, Switzerland

Filed Jun. 14, 1978, Ser. No. 915,466
Int. Cl.³ B65D *63/06*
U.S. Cl. 24—23 EE **42 Claims**



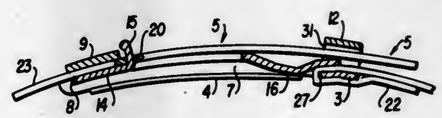
1. A clamp structure for clamping a hose-like object onto a circular support member, which comprises clamping band means having open ends and deformable ear means adapted to contract the band means upon deformation thereof and leaving an at least narrow gap in the circumferential direction of the band means upon deformation of the ear means, characterized in that for purposes of reducing the diametric dimension of the band means by deformation of the ear means without internal projection in the clamp structure and without the external projection of the hose-like object, further means are provided in the clamp structure enabling relative movement of the open band ends of reduce the diametric dimension of the band means without internal projection or step-like offset in the inner diametric dimension of the band structure while retaining a circular configuration of the band means and at the same time effectively bridging the gap to prevent squeezing out of any material of the hose-like object into the gap.

4,237,585

SECURITY BUCKLE FOR WRIST WATCH METAL BRACELETS

Marcel Solomon, 2553 Younge St., Toronto, Ontario, Canada (MaP 2H9)

Continuation-in-part of Ser. No. 781,461, Mar. 25, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,971
Int. Cl.³ A44B *11/20*
U.S. Cl. 24—190 **9 Claims**



1. A security buckle for attaching together two portions of a band comprising:

a first frame work having a pair of longitudinally disposed lateral side walls interconnected by a first traverse element at a forward end of the sidewalls and a second traverse element at the rearward end of the sidewalls,

a second frame work fitted within said first frame work for limited sliding movement with respect to said first frame work between a first and second relative rest position, said second frame work including a downwardly projecting traverse portion, and a raised spur adapted to abut said traverse element,

an inflexible removable third traverse element mounted to and extending between said sidewalls and disposed under said second traverse element, a portion of said third traverse element having a longitudinally disposed surface which slopes relative to the remainder of said third traverse element, said third traverse element being positioned to cooperate with said traverse portion to lock said second frame work against rearward sliding movement with respect to the first frame work, said third traverse element being attachable to one of said two band portions, said second traverse element and inflexible removable traverse element forming a space therebetween, said space being partially occupied by a rearward portion of said second frame work, and

a locking band attachable to the other of said two band portions to form the end part thereof, said locking band including a plurality of spaced longitudinally disposed holes being engageable with said spur when said first and second frame works are in said second mutual rest position where said spur is not in abutment with said first traverse element, said locking band thereafter being insertable into said space only when said first and second frame works are relatively slid to said first relative rest position where said spur abuts said first traverse element, said locking band, when inserted in said space, cooperating with said rearward portion of said second frame work and third traverse element to lock said first and second frame works in said first relative rest position.

4,237,586

BUCKLE DEVICE FOR SAFETY BELT

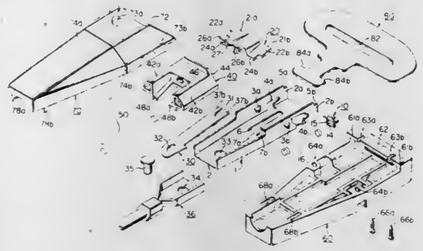
Masaru Morinaga, Yamoto, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Oct. 20, 1978, Ser. No. 952,989

Claims priority, application Japan, Dec. 16, 1977, 52-168257[U]; Dec. 10, 1977, 52-166043[U]; Oct. 21, 1977, 52-141494[U]

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—230 A **7 Claims**



1. A buckle device for a safety belt, comprising a casing having an entrance slot for receiving a tongue member, a latch member supported for pivotal movement in the casing at a position past which said tongue member moves as it enters the casing through said entrance slot, said latch member being engageable with said tongue member to hold the tongue member in the casing, first biasing means for biasing said latch member into engagement with said tongue member, a manually operable member supported for movement inwardly of said casing, second biasing means for biasing said manually operable member outwardly of said casing, said manually operable member and said latch member having cooperable elements integral therewith, respectively, one of said elements having a cam surface and the other of said elements having a surface that moves along said cam surface when said manually operable member is moved inwardly of said casing to transform that movement to pivotal movement of said latch member that disengages said latch member from said tongue member.

4,237,587

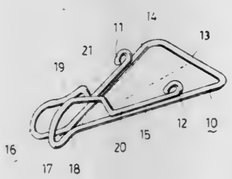
PAPER CLIP

Oliver T. W. Hsiao, and Thomas Tan, both of 2nd Fl., 168-1 Chien-Kue S. Rd., Nan-Mei Bldg., Taipei, Taiwan

Filed Jul. 26, 1979, Ser. No. 60,759

Int. Cl.³ B42F *1/02*; A44B *21/00*

U.S. Cl. 24—261 R **5 Claims**



1. A paper clip made of a single piece of metal wire comprising:

an isosceles triangle base portion having a base arm and two isosceles arms extending from two ends of said base arm respectively and contacting each other at a first connecting point;

a first clipping portion having two clamping jaws extending apart outwardly from said first connecting point of said isosceles arms and bending upwardly and reversly approaching to contact each other at a second connecting point whereby to permit a relative number of documents to be clipped therebetween; and

a second clipping portion including two horizontal arms contact closely and parallel to said two isosceles arms respectively so as to clip less sheets of documents.

4,237,588

CLAMP FOR PIPES OR THE LIKE

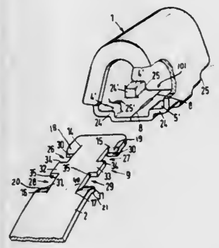
Jörgen Rasmussen, Hammersbach, and Reiner Schreiter, Maintal, both of Fed. Rep. of Germany, assignors to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Jan. 5, 1979, Ser. No. 1,263

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1978, 2800824

Int. Cl.³ B65D *63/00*; F16L *33/10*

U.S. Cl. 24—274 R **18 Claims**



1. A clamp for pipes or the like, comprising a circumferentially complete housing; an externally threaded tightening element rotatably mounted in said housing; and an elongated band including an end portion in said housing and a threaded second portion remote from said end portion and movable into mesh with said element so that the band forms a loop between said portions thereof, said band having a constant width and said end portion having an outer side, an inner side facing said loop when said second portion meshes with said element, marginal recesses disposed opposite each other as considered transversely of said band, and a lug located at one end of each of said recesses as considered in the longitudinal direction of said band and having an end face extending beyond said inner side, said housing including a wall which is adjacent to said inner side and said wall haivng projections extending into said recesses and an end face adjacent to the end faces of said lugs, said end face of said wall being immediately adjacent to said projections.

4,237,589

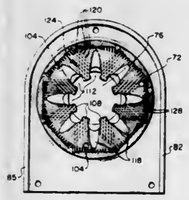
GRINDING DISC

Leland H. Boothe, 251 S. 600 East, Alpine, Utah 84003

Continuation of Ser. No. 873,126, Jan. 30, 1978, abandoned, which is a division of Ser. No. 743,862, Nov. 22, 1976, Pat. No. 4,085,899. This application Apr. 4, 1979, Ser. No. 27,001

Int. Cl.³ B02C *7/13*

U.S. Cl. 241—296 **2 Claims**



1. A grinding disc for use in combination with grinding apparatus for grinding grains and the like, said disc including an opening centrally located therein, the perimeter of the opening forming a plurality of teeth projecting toward the center of the disc, said teeth being separated by generally horseshoe-shaped notches, and

a plurality of groups of channels on one face thereof, defining grinding ridges therebetween and extending from near the periphery of the disc inwardly to the opening in the disc, certain of said channels in each group intersecting with certain other of said channels in at least one other group to form a cross-hatching of channels, the channels and ridges in each group being formed generally parallel to one another and generally colinear with the channels and ridges of a corresponding group disposed on the opposite side of the opening.

4,237,590

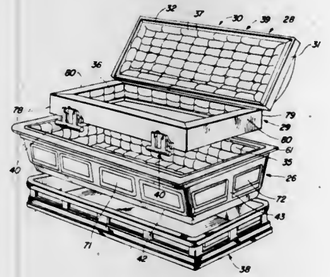
COMBINATION BURIAL VAULT AND CASKET AND FUNERAL AND BURIAL METHOD OR SYSTEM

Gerald L. Work, Spokane, Wash., assignor to Wilbert, Inc., Forest Park, Ill.

Filed Oct. 5, 1979, Ser. No. 82,059

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—35 **29 Claims**



1. A combination burial vault and casket comprising

(a) a burial vault including

(1) a base adapted to be arranged over and mounted on a supporting member at a funeral home during visitation and the funeral service at the funeral home including

a. upright side walls and end walls having

1. marginal upper edge portions;

(b) a surround or false casket arranged over and assembled with the said base of the said burial vault at the funeral home during visitation and the funeral service at the funeral home and cooperating with the said base of the burial vault at the funeral home to provide a casket in which the remains of the deceased are rested during visitation and the funeral service at the funeral home;

(c) the said surround or false casket including

(1) a generally rectangular-shaped open frame which is substantially dimensionally coextensive with the said marginal upper edge portions of the said upright side and end walls of the said base of the said vault and including

a. a front side wall;

b. a rear side wall; and

c. end walls; and

(2) a top or closure member hingedly connected to the said rear side wall of the said generally rectangular-shaped open frame of the said surround or false casket;

(d) the said vault including a cover adapted to be arranged over the said base of the vault and to be hermetically sealed thereto with the remains of the deceased enclosed within the said burial vault after removal of the said surround or false casket from the said base of the said vault, and including

(1) side walls and end walls having

a. lower marginal edge portions;

(e) the said vault including cooperating sealing means on the said upper marginal edge portions of the said side walls and end walls of the said base of the said vault and on the said lower marginal edge portions of the said side walls and end walls of the said cover of the said vault for hermetically sealing the said base and the said cover together in assembled position with the remains of the deceased enclosed therein prior to interment.

4,237,591

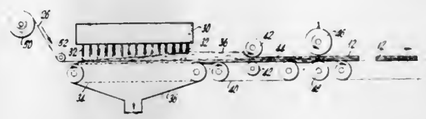
DEODORANT MINI-PAD SANITARY NAPKIN

James A. Ginocchio, Summit, N.J., assignor to Personal Products Company, Milltown, N.J.

Division of Ser. No. 799,850, May 23, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,217

Int. Cl.³ D06B *3/02*; D04H *5/08*

U.S. Cl. 28—121 **8 Claims**



1. A process for manufacturing elongated absorbent bodies having a perfume composition disposed therein comprising:

providing a supply of elongated narrow strip elements carrying said perfume composition;

continuously feeding said narrow elements into a pad-forming device comprising an endless air-pervious belt and means for air-laying loose particles of absorbent material thereon;

suspending said strip elements above and longitudinal with said belt; and

air-laying loose particles of absorbent material onto said belt and around at least one of said strip elements to form an absorbent body having at least one of said perfume composition carrying strip elements disposed therein said narrow strip element providing the only perfume in said body.

4,237,592

ELASTIC ROLLER FOR IMAGE FORMING APPARATUS

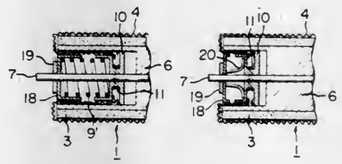
Tsukasa Kuge, Tokyo; Tsuyoshi Watanabe, Kawasaki, and Toru Matsumoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,068

Claims priority, application Japan, Jun. 10, 1977, 52-68639

Int. Cl.³ B60B *7/00*

U.S. Cl. 29—119 **3 Claims**



1. An elastic roller for use in an image forming apparatus comprising: a rotary shaft, a rigid shaft member surrounding a portion of the length of said rotary shaft and fixed thereto, said shaft member being formed with an axially extending recess in at least one of its ends, an internal layer provided around said shaft member and consisting of a porous elastic member having pores for holding liquid, and external layer covering said internal layer and consisting of a flexible, liquid permeable member having a number of through holes, inner and outer rigid members mounted for axial movement on at least one end of said rotary shaft in at least one of said recesses, resilient means

urging said inner and outer members in at least one of said recesses axially apart, stop means limiting axial movement of the outer rigid member in a direction outwardly along said rotary shaft, said liquid permeable member extending into said at least one of said recesses, and means securing an end of said liquid permeable member to the inner one of said rigid members in said at least one of said recesses.

4,237,593

METHOD OF MAKING A TWO-PART PRESSURE RELIEF VALVE

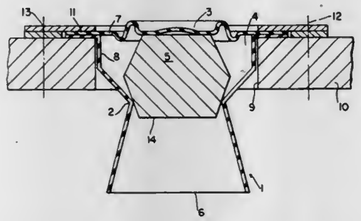
Franz J. Wolf, Bad Soden-Salmunster, Fed. Rep. of Germany

Division of Ser. No. 715,463, Aug. 18, 1976, abandoned. This application Aug. 17, 1978, Ser. No. 934,506

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1975, 2537510

Int. Cl.³ B23P *15/00*; B29D *31/00*

U.S. Cl. 29—157.1 R **6 Claims**



1. The method of making a two-part valve and assembling same to a container or part thereof comprising:

(a) making a container part of predetermined thickness having opposing end faces having an opening extending transversely therethrough, the opening having a predetermined length and opposite ends,

(b) providing shaping tools at the end faces of the container part at the opposite ends of the opening to form substantially flat ends of a valve housing,

(c) injection molding a valve housing into said opening, the wall of the opening providing substantially the entire female mold for the valve housing and engaging the entire periphery of the injected valve housing and substantially the entire length of said valve housing and providing in said valve housing a chamber and an inlet to said chamber, and

(d) pressing a valve body into said chamber through said outlet.

4,237,594

COIL SPRING COMPRESSING TOOL

John O. Young, 8448 W. 83rd St., Justice, Ill. 60458

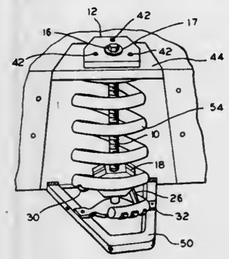
Filed Jan. 29, 1979, Ser. No. 7,505

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—227 **3 Claims**

1. A device for compressing a coil spring located in the spring tower on the suspension system of an automobile comprising;

an elongated threaded rod; rotating means disposed on one end of said rod adapted to be engaged by a tool whereby said rod may be rotated; shock mount assembly means removably attached to said spring tower by a plurality of bolts which remain on said spring tower when said assembly means is removed therefrom; adapter plate means adapted to be removably mounted on said spring tower of the suspension system of an automobile, said plate means having a centrally located aperture means shaped to receive said rod in a rotatable fit and to limit axial and lateral movement of said rod, and having a plurality of apertures spaced around the periphery of said plate means to fit over said bolts when said shock mount assembly is removed from said spring tower, whereby said adapter plate means is prevented from shifting laterally during compression of said coil spring; and hook assembly means adapted to engage the convolutions of a coil spring, said hook assembly means having a threaded aperture means adapted to



receive said threaded rod, whereby when said hook assembly means is mounted on said rod opposite said rotating means and said rod is rotated, said hook assembly means moves upward on said rod engaging the convolutions of said coil spring to compress said coil spring and said rotating means bears against said adapter plate means.

4,237,595

AUTOMATIC TOOL CHANGING DEVICE FOR A MACHINING CENTER

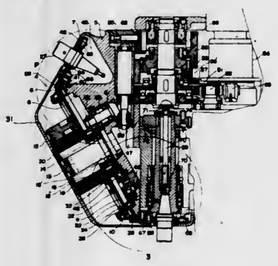
Koichiro Kitamura, 11-5 Ekinan-3-chome, Takaoka-shi, Japan

Filed Mar. 7, 1979, Ser. No. 18,224

Claims priority, application Japan, Jun. 30, 1978, 53-78644

Int. Cl.³ B23B *39/00, 39/20*

U.S. Cl. 29—26 A **4 Claims**



1. In an automatic tool changing device for machining centers including a movable head and a drum vertically movably mounted on said head, the improvement wherein said drum comprises: a base member disposed so as to be guided by guide means mounted on an outer end of said vertically movable head; a center shaft projected from an outer end central portion of said base member to slant downwardly; a large number of inverted angle shaped arms each thereof being mounted radially and rotatably in a predetermined position around said center shaft and including an arbor holding portion provided in the outer end portion thereof, an elongated groove provided in the base side central back surface thereof for engagement with a geneva drive pin and a cylinder projected from a predetermined position on the intermediate portion thereof for engagement with an unused arm connecting rotary plate; said unused arm connecting rotary plate having a plurality of semicircular grooves formed in the outer peripheral portion thereof and each being adapted to receive one of the cylinders of said arms arranged close to one another whereby when one of said arms is engaged with a main shaft provided in said head, the cylinders of the other ones of said arms are received and held by said semicircular grooves and said the other arms are continuously arranged above the position on each side of said one arm engaged with said main shaft which is spaced from said one arm by a predetermined angle; and a pair of genevas disposed symmetrically each so as to be positioned between said one arm engaged with said main shaft and adjacent one of said the other arms on each side of said one arm in the back thereof, each of said genevas including said arm moving drive pin adapted for selective engagement with the elongated grooves of said one arm and said adjacent one arm, whereby when said genevas are each caused to make one or plurality of rotations in a clockwise or counterclockwise direction said arms are each moved in said clockwise or counterclockwise direction by an amount corresponding to one or plurality of said arms while maintaining said arrangement.

4,237,596

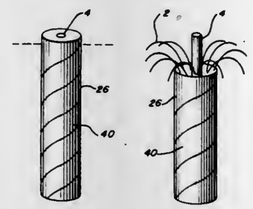
METHOD OF CONVERTING MEMBRANE SEPARATION UNITS

Robert D. Hughes; Edward F. Steigelmann, both of Naperville, and Kemp R. Bunting, Wheaton, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 4, 1978, Ser. No. 948,339

Int. Cl.³ B22D *19/10*; B23P *6/00*

U.S. Cl. 29—401.1 **10 Claims**



1. A method for converting a membrane separation unit having a single ended housing and a U-shaped wet elongated anisotropic hollow fiber membranes into a bundle separation unit having relatively straight fibers comprising:

removing the U-shaped fiber bundle from the single ended separation unit housing;

eliminating the bent U-shaped portion of the fibers by cutting leaving cut fiber ends;

exposing substantially all of the cut fiber ends to be potted to drying conditions so that a substantial portion of the moisture is removed from the fiber ends to be potted;

contacting the substantially dried portion of the fibers with a potting agent which will securely hold the fibers and form a relatively impermeable fluid barrier around the fibers; and inserting the straight fiber bundle into a double ended separation unit housing.

4,237,597

PROCESS FOR THE ASSEMBLY OF SHAPED LEAVES

Henri R. Auger, Le Vesinet, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 809,017, Jun. 22, 1977, Pat. No. 4,134,238. This application Oct. 24, 1978, Ser. No. 954,285

Claims Priority, Application France, Jun. 24, 1976, 76 19189

Int. Cl.³ B29D *12/00*; B29C *27/00, 27/30*

U.S. Cl. 29—526 R **14 Claims**

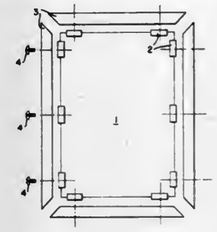
1. A process of making a panel comprising

(a) a positioning plural spaced members along an edge of a glass sheet,

(b) introducing an elastic adhesive between said members and said sheet and allowing said adhesive to set to bond said members to said sheet,

(c) disposing a frame of channel outline around said members;

(d) inserting a strip of a preformed joint material between at least one side of said members and said frame, and



(e) attaching said frame to said members with mechanical fasteners.

4,237,598

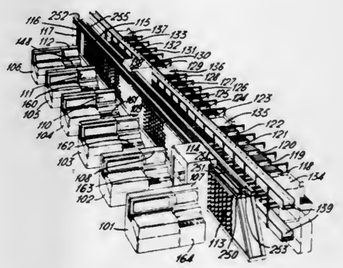
MANUFACTURING PROCESSES USING MACHINE TOOLS

David T. N. Williamson, London, England, assignor to Molins Limited, London, England and John C. Smith, Jr., Arlington, Va.

Division of Ser. No. 85,289, Oct. 29, 1970, which is a continuation of Ser. No. 695,817, Dec. 4, 1967, abandoned, which is a continuation of Ser. No. 578,318, Sep. 9, 1966, abandoned, and Ser. No. 636,993, May 8, 1967, abandoned. This application Apr. 27, 1972, Ser. No. 248,198

Int. Cl.³ B23Q *7/00*

U.S. Cl. 29—568 **1 Claim**



1. In a manufacturing system, a machine tool, comprising:

(a) a housing,

(b) a spindle rotatably mounted in the housing,

(c) a plurality of tool modules adapted to be connected one at a time to the spindle,

(d) ready-access storage means located at a position in close proximity to the spindle for retaining a relatively small number of said modules and for presenting said modules seriatim to the spindle,

(e) bulk storage means located at a position remote from the spindle and ready access storage means for retaining a relatively large number of said modules,

(f) means for transferring predetermined modules from said bulk storage means to said ready-access storage means to form a queue of said modules in said ready-access storage means for presentation seriatim to the spindle, and

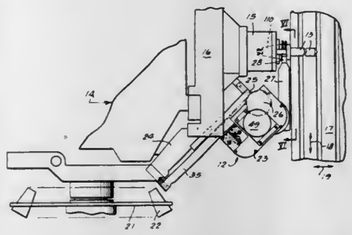
(g) control means connected to said transferring means and having a programmed memory of the modules that will be needed at the spindle within a short time and the order in which they will be needed, said control means being adapted to control said transferring means to introduce the said needed modules from the bulk storage means to the ready-access storage means in the necessary order.

4,237,599

TOOL CHANGER ASSEMBLY

John A. Buonauro, Mission Viejo, and James L. Frazier, Los Alamitos, both of Calif., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Feb. 21, 1978, Ser. No. 879,211
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **16 Claims**



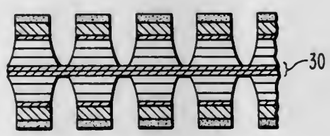
1. In a tool changing mechanism for a machine tool having an operating axis on which a tool is operable and a tool storage structure having a tool receiving means for supporting a tool on a storage axis, said tool changing mechanism having a transfer arm with gripper means for holding a tool at one end, means for mounting the other end of the transfer arm for rotation on a first axis of rotation, said transfer arm including means for rotating the gripper means about a second axis, and means for rotating the transfer arm on the first axis of rotation between a position with the gripper means engageable with a tool disposed on the operating axis and a second position with the gripper means disposed for engaging a tool on said storage axis, the improvement comprising translating means for moving the means for mounting and the first axis of rotation along a given linear path extending from a point adjacent the storage axis and a point adjacent the operating axis as the transfer arm is rotated to move the gripper means between said positions, said translating means including means for beginning said movement after the initial rotation of the transfer arm between the positions and completing said movement prior to the end of said rotation.

4,237,600

METHOD FOR FABRICATING STACKED SEMICONDUCTOR DIODES FOR HIGH POWER/LOW LOSS APPLICATIONS

Arye Rosen, Cherry Hill; Anna M. Gombar, Princeton, and Edward Mykietyn, West Windsor, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,471
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—577 **8 Claims**



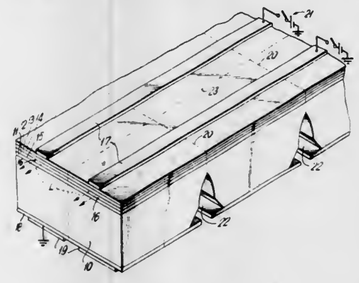
1. A method for batch fabricating stacked semiconductor devices, wherein the stack consists of two diodes, comprising the steps of:
(a) depositing a metallization layer on both planar surfaces of two appropriately doped semiconductor wafers;
(b) bonding one wafer to the second wafer such that they form a stacked, concentric configuration with complete surface contact;
(c) generating a plurality of electrode areas on both planar surfaces of the stacked wafer, such that the electrode areas on each surface are registered with each other;
(d) etching through the semiconductor material on both sides of the stacked wafer, using the electrode areas as an etch mask, such that the metallization layer at the center of the stack is exposed; and,
(e) separating the stacked wafer along the exposed center metallization boundaries, so as to create a plurality of stacked semiconductor devices.

4,237,601

METHOD OF CLEAVING SEMICONDUCTOR DIODE LASER WAFERS

Geoffrey R. Woolhouse, White Plains; Harold A. Huggins, Hartsdale, both of N.Y., and David W. Collins, Watchung, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 13, 1978, Ser. No. 951,064
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—583 **17 Claims**



8. A method of cleaving a wafer into bars of diodes, said wafer comprising a substrate, at least a portion of which is metallized, and a plurality of semiconductor layers deposited on at least a portion of the opposite surface, at least one of which layers, when appropriately biased, generates coherent electromagnetic radiation, which method comprises:
(a) forming channels of substantially parallel side walls about 1 to 4 mils deep in the substrate;
(b) etching into the substrate with an anisotropic etchant to a depth sufficient to form V-grooves in the bottom of the channels said V-grooves terminating at a point before reacing the said one layer; and
(c) mechanically cleaving the wafer including the said one layer along the etched grooves to form bars of diodes, thereby generating substantially damage-free lsing facets along the plane of cleaving the bars of diodes being of substantially equal width.

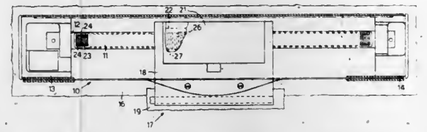
4,237,602

METHOD OF MANUFACTURE OF PRECISION TRANSDUCER FOR POSITION MEASUREMENTS

Piero Pomella, and Nino Azzani, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Division of Ser. No. 787,536, Apr. 14, 1977, Pat. No. 4,150,532.
This application Oct. 31, 1978, Ser. No. 956,240
Claims priority, application Italy, May 18, 1976, 68210 A/73
Int. Cl.³ H01F *41/06*
U.S. Cl. 29—602 R **3 Claims**

1. A method of making a precision transducer for position measurements, comprising a pair of supports movable relative to each other and each provided with an electric winding constituted by equidistant serially connected printed circuit conductors extending transverse to the direction of relative movement, the winding of one of the supports comprising a plurality of groups of conductors, the condutors of each group being connected in series with each other by auxiliary conductors and intercalated with the conductors of the other group(s), said method comprising the steps of printing the auxiliary conductors on one face of a substrate, bonding the substrate to



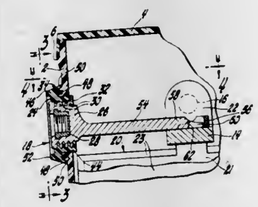
said support and printing the groups of conductors on the other face after the substrate has been bonded to the support.

4,237,603

METHOD FOR ASSEMBLING A TERMINAL TO A BATTERY SIDE WALL

Jerry V. Crow, Muncie, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 851,211, Nov. 14, 1977, Pat. No. 4,154,907.
This application Nov. 13, 1978, Ser. No. 959,420
Int. Cl.³ H01M *2/06*
U.S. Cl. 29—623.4 **1 Claim**



1. A process for assembling a terminal in the side wall of a thermoplastic electric storage battery container comprising the steps of:
forming said container such that at least one of its walls has an aperture therein and a boss on the outside of said wall circumscribing said aperture, said boss being adapted for softening and welding to a terminal insert;
molding a thermoplastic body around a conductive spool to form a terminal insert said body having a plug portion adapted to extend in close fitting relation to and through said aperture and a flange portion adapted to overlie and be welded to said boss; softening said boss and said flange; and thereafter
inserting said plug portion into said aperture in tight fitting relation thereto and pressing said softened flange and boss into engagement one with the other to sealingly weld them together around said aperture upon hardening.

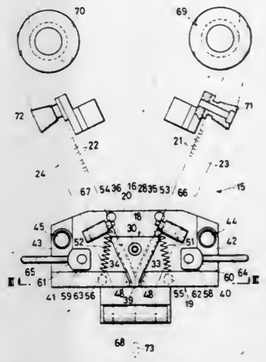
4,237,604

APPARATUS FOR PAIRING TWO ROWS OF SLIDE FASTENER COUPLING ELEMENTS

Mitsuo Sawada, and Toyoo Morita, both of Kurobe, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Apr. 27, 1979, Ser. No. 34,170
Claims priority, application Japan, Apr. 28, 1978, 53-51132
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—766 **15 Claims**

1. An apparatus for interengaging a pair of rows of slide fastener coupling elements on a pair of stringer tapes, respectively, with a pair of top end stops mounted on the stringer tapes respectively at confronting ends of the rows of coupling elements, comprising:
(a) a base; and
(b) a pairing guide mounted on said base and normally defining a substantially Y-shaped guide channel including a pair of branched passages for receiving disengaged rows of coupling elements, respectively, said branched passages being joined together into a joint passage for discharging interengaged rows of coupling elements, said pairing guide comprising:
(1) first guide means fixed to said base and including first flange means defining said branched passages; and
(2) second guide means movably supported on said base and including second flange means normally defining a



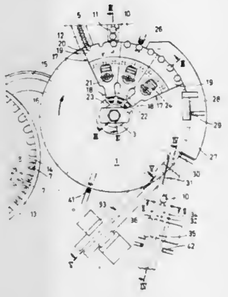
portion of said joint passage, said second flange means being movable away from said first flange means in response to the engagement of at least one of the top end stops with said second flange means, whereby the top end stops can be discharged out of said pairing guide.

4,237,605

MACHINE FOR ASSEMBLING SCREW BLANKS AND WASHERS

Clemens Jung, Hilchenbach, and Ernst Wiesel, Hilchenbach-Lutzel, both of Fed. Rep. of Germany, assignors to E. W. Menn KG Maschinenfabrik, Hilchenbach, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 16,741
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810620
Int. Cl.³ B23P *19/08*
U.S. Cl. 29—783 **4 Claims**



1. In a machine for assembling screw or bolt blanks and associated parts, comprising a rotary platform inclined obliquely to the horizontal for receiving the blanks and associated parts in peripheral recesses, supplying means for inserting the associated parts and the screw or bolt blanks into the peripheral recesses of the rotary plate, means for coaxially inserting the screw or bolt blanks into their associated parts, removal means for the completed combinations of screw or bolt blanks and associated parts, and means for removing defective combi-

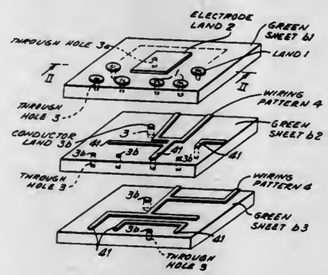
nations; the improvement in which the means for the coaxial insertion of the screw or bolt blanks into the associated parts has a plurality of lifting segments which rotate with the rotary platform, means pivotally mounting said segments to pivot about axes extending in chordal directions of the rotary platform, recesses at the peripheries of said segments for receiving the shafts of the screw or bolt blanks, a slide rail that extends substantially radially relative to the rotary platform, a cam that engages the inner ends of said segments to swing them about said pivotal mounting means whereby said peripheries are raised adjacent said slide rail and are lowered when the rotary platform is further rotated, said removal means for the completed screw or bolt blank and associated part combinations comprising two parallel slide rails which have grooves in the lateral faces which face one another, said grooves forming a tangential continuation of the peripheral recesses of the rotary platform which guide the associated parts and end successively in the upper faces of the slide rails bearing the heads of the screw or bolt blanks, said means removing defective combinations comprising two parallel side rails with grooves, which also form tangential continuations of the peripheral recesses of the rotary platform which receive the associated parts and which open out successively into vacant discharge channels of the slide rails, scanning means to detect the presence or absence of said blanks and associated parts in said recesses, and a deflector actuated by said scanning means at the transition point between the rotary platform and the slide rails to deflect the contents of said recesses to predetermined said slide rails according to said presence or absence.

4,237,606

METHOD OF MANUFACTURING MULTILAYER CERAMIC BOARD

Koichi Niwa, Tama; Teruo Murase, Tokorozawa; Masatoshi Fujimori, Musashino, and Kyohei Murakawa, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 823,650, Aug. 11, 1977, abandoned.
This application Aug. 11, 1978, Ser. No. 933,073
Claims priority, application Japan, Aug. 13, 1976, 51-96742
Int. Cl.³ H05K *3/36*
U.S. Cl. 29—830 **15 Claims**



1. A method of manufacture of a multilayer ceramic board having a fine wiring pattern on its surface and internal multilayered wiring, said method comprising the steps of

forming a hole in a first ceramic plate which has been fired,

forming a land layer devoid of wiring patterns, except the land, which is large enough to compensate for shrinkage due to firing on the surface of a second unfired ceramic plate having internal multilayered wiring, the land being formed at a position corresponding to the position of the through hole in the first ceramic plate,

firing the second ceramic plate,

laminating the first and second ceramic plates, and

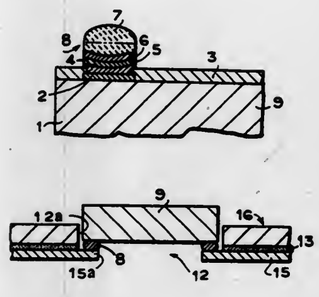
electrically connecting the through hole of the first ceramic plate and the land of the second ceramic plate.

4,237,607

METHOD OF ASSEMBLING SEMICONDUCTOR INTEGRATED CIRCUIT

Hideshi Ohno, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,709
Claims priority, application Japan, Jun. 1, 1977, 52-64123
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—840 **6 Claims**



1. A method of assembling a semiconductor integrated circuit comprising:

(a) forming a bump on an external connecting electrode on a semiconductor integrated circuit chip;

(b) first, bonding a copper foil to a base film made of heatproof high molecular weight resin;

(c) etching said copper foil to form a conductive pattern on a flexible film circuit substrate;

(d) forming an opening in said base film;

(e) forming a portion of said conductive pattern projecting into said opening;

(f) forming a solder layer as a cap metal of said bump on said semiconductor integrated circuit chip;

(g) treating the surface of said conductive pattern on said flexible film circuit substrate with gold;

(h) mounting said semiconductor integrated circuit chip in said opening, the chip being mounted facedown on said conductive pattern projecting into said opening; and

(i) second, bonding said flexible film circuit substrate and the bump of said semiconductor integrated circuit chip, wherein the first bonding step includes forming the copper foil and the base film into a integral, unitary structure, the first bonding step further includes laminating the base film and the copper foil by coating the heatproof high molecular resin with the copper foil, and the first bonding step further includes pressing the base film and the copper foil between heated rollers thereby curing the copper foil and base film into a solidified, unitary structure.

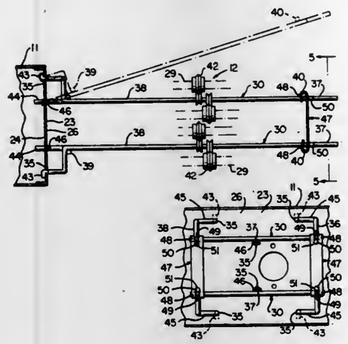
4,237,608

METHOD OF MAKING AN ELECTRICAL HEATER CONSTRUCTION

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 806,846, Jun. 15, 1977, Pat. No. 4,131,787.
This application Oct. 12, 1978, Ser. No. 950,848
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **10 Claims**

1. In a method of making an electrical heater construction having a substantially closed housing means containing control means therein and having bracket means carrying electrical heater means externally thereof, said housing means having connection means detachably interconnected to said heater means externally to said housing means and electrically interconnecting said electrical heater means to said control means to be operated thereby, the improvement comprising the steps of forming said housing means with externally accessible detachable means, forming said bracket means with detachable means, and detachably interconnecting said detachable means of said bracket means to said detachable means of said housing means in a manner that is accessible externally to said housing means whereby said detachable means of said bracket means can be detached from said detachable means of said housing means without access to the interior of said housing means so that said heater means can be detached from said housing means without requiring the opening of said housing means.

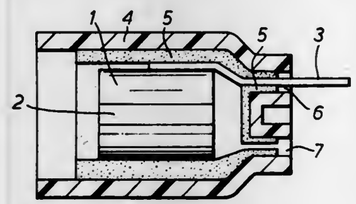


4,237,609

HEAT-RECOVERABLE CONNECTOR

Robin J. T. Clabburn, Atherton, Calif., and Richard J. Penneck, Lechlade, England, assignors to Raychem Limited, London, England

Filed Jan. 17, 1978, Ser. No. 870,183
Claims priority, application United Kingdom, Jan. 24, 1977, 2833/77
Int. Cl.³ H01R *43/00*; H02G *15/08*
U.S. Cl. 29—859 **15 Claims**



1. A method of making a tubular heat-recoverable article comprising the steps of

applying thermally recoverable strain and resiliently recoverable elastic strain to a tubular memory metal member, wherein the elastic strain is imparted after the thermally recoverable strain has been imparted; and

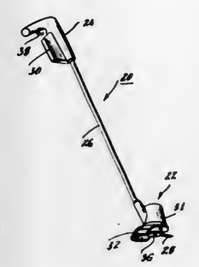
maintaining such resiliently recoverable elastic strain by a disburdenable keeper made from a material different from the memory metal and which can be disburdened by selected treatment.

4,237,610

PORTABLE, ELECTRICALLY ENERGIZED, CORDLESS GRASS TRIMMER

Robert Bradus, Randallstown; Thomas J. Howard, Jr., White Marsh, and John W. Miller, Parkton, all of Md., assignors to Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 21, 1978, Ser. No. 934,744
Int. Cl.³ A01D *35/26, 55/18*
U.S. Cl. 30—276 **19 Claims**



1. A portable, hand held grass trimmer device comprising:

(a) an electrical drive means having an output shaft which is rotatable upon energization of said drive means;

(b) means for energizing said drive means;

(c) a generally circular shaped one piece hub having a periphery and means for mounting said hub to said output shaft for rotation therewith, said hub mechanically balanced for rotation about a longitudinal axis thereof;

(d) said hub including integrally formed segments for mounting for rotation therewith a flexible strip cutter blade and alternatively an elongated cutter line having a counterbalance body mounted to said line;

(e) said integrally formed segments providing slots through which a cutter blade extends and is restrained on said hub and apertures through which a cutter line extends and is restrained on said hub; and,

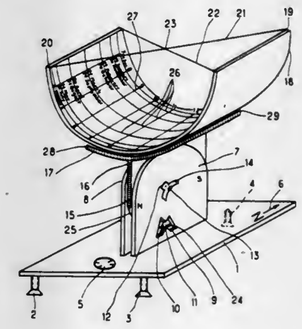
(f) said counterbalancing body is mounted to said cutter line for positioning of said counterbalancing body on said hub within said hub periphery.

4,237,611

SOLAR SHADOWSCOPE

Manuela Wurch, 3, rue Saint Pierre le Jeune, 67000 Strasbourg, and Gilbert Cerf, 24, rue Sancey, 25000 Besancon, both of France

Filed May 9, 1979, Ser. No. 37,528
Claims priority, application France, May 10, 1978, 78 14513
Int. Cl.³ G01C *1/00*
U.S. Cl. 33—1 DD **9 Claims**



1. An apparatus for positioning a sun-simulating light source

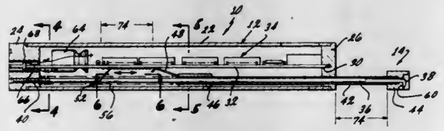
relative to a model to simulate the sunlight conditions on the model at a given place, date and hour comprising a base positionable adjacent the model in a horizontal plane, a pivotable cradle supported on the base and adapted for being tilted relative to said base to a preselected position corresponding to a given latitude, a semi-cylindrical bracket mounted on said cradle and having a concave inner surface and lateral free ends facing away from said base, reticle wires joining said free ends and intersecting intermediate said ends in spaced relationship to said concave surface, and graph means on said concave surface comprising a date scale extending along a first axis and an hour scale extending along an axis transverse to said first axis whereby the sun-simulating light source can be positioned so that the shadow of the reticle wire intersection is in registry with a point on said graph representing a given date and hour.

4,237,612

FASTENER GRIP LENGTH MEASURING SYSTEM

Earl L. Christian, and Ronald D. Blunck, both of San Diego, Calif., assignors to General Dynamics, San Diego, Calif.

Filed Mar. 29, 1979, Ser. No. 24,990
Int. Cl.³ G01B 5/06, 7/06
U.S. Cl. 33—143 L **4 Claims**



1. A totally portable hand holdable measuring system for measuring various thicknesses of structural parts comprising,
hollow tubular and elongated casing means usuable as a handle for holding the system,
probe means extending from one end of said casing means, said probe means including means for measuring thicknesses of parts, said probe means includes a tube means slidable relative to said casing means and a rod positioned within said tube means and provided with a hook means adaptable to engage one side of a part to be measured, said rod being telescoped in said tube means, said tube means having on one end a part engaging face means which engages a side of said part opposite the side engaged by said hook means so that the thickness of a part may be measured between said hook means and said face means, said tube means being spring activated toward said hook means to provide a spring loaded measuring probe means,
circuit means within said casing means and operated by said probe means, said circuit including digited electronic display means visible through an opening in said casing means for displaying the position of said measuring means of said probe as determined by the thickness of said parts, a plurality of individual terminal contact means aligned in a row direction parallel to the movement of said tube means, and,
wiper contact means moveable with said tube means which contact individual terminals according to the position of said tube means for displaying a different number in said display means.

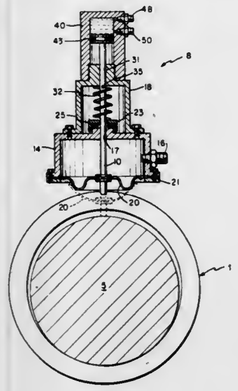
4,237,613

SHAFT BEARING WEAR MEASURING APPARATUS

Carlton M. Slough, Spring, Tex., and Wendell W. Dedman, Darien, Conn., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 883,607, Mar. 6, 1978, abandoned, which is a continuation of Ser. No. 745,262, Nov. 26, 1976, abandoned. This application Jan. 5, 1979, Ser. No. 1,247
Int. Cl.³ G01B 7/02, 7/31
U.S. Cl. 33—172 E **13 Claims**

1. In combination, a ship's propeller shaft bearing having a rotatable propeller shaft resting on its inner surface, and an on line apparatus for measuring the wear of a ship's propeller shaft bearing, said apparatus comprising determining means for determining the displacement of the ship's propeller shaft in



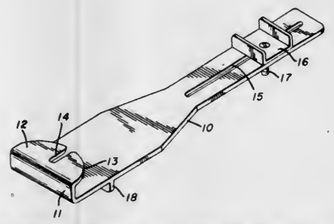
the direction of a contact surface of the shaft bearing, and means for providing a measurement of the shaft bearing wear in accordance with the determined shaft displacement.

4,237,614

ADJUSTABLE LOCATOR FOR FURRING STRIPS

James R. Williams, 7195 Akron-Canfield Rd., Canfield, Ohio 44406

Filed Nov. 2, 1979, Ser. No. 90,672
Int. Cl.³ B43I 13/00
U.S. Cl. 33—180 R **7 Claims**



1. An adjustable locator for positioning furring strips comprises an elongated straight body member, a right angular upturned portion on one end thereof, a right angular inturned portion on said upturned portion, said inturned portion being spaced with respect to and parallel with a part of said elongated straight body member, a channel-shaped body member slidably positioned on said elongated straight body member and means for detachably securing said channel shaped body member to said elongated straight body in a desired location thereon spaced with respect to said upturned and inturned end portions.

4,237,615

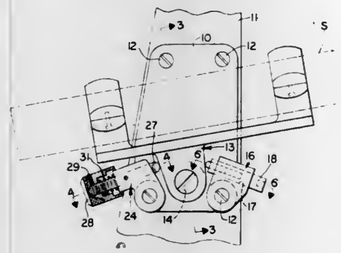
SIGHT MOUNT FOR AN ARCHERY BOW

Paul A. Bracknell, Tuscaloosa, Ala., assignor to Thomas H. Hudson, Hueytown, Ala., a part interest

Filed Dec. 11, 1978, Ser. No. 968,103
Int. Cl.³ F41G 1/46
U.S. Cl. 33—265 **2 Claims**

1. A sight mount for mounting a telescopic sight unit on an archery bow comprising:
(a) an attachment bracket adapted to be mounted upon a side of an archery bow which extends in a vertical plane parallel to a plane extending longitudinally and forwardly through the bow,

(b) a sight support member for carrying said telescopic sight unit and mounted on said attachment bracket for pivotal movement in a vertical plane parallel to a plane extending longitudinally and forwardly through the bow on which said attachment bracket is mounted,
(c) a first adjustment member mounted on said attachment bracket at one side of said sight support member and having an internally threaded opening therethrough,
(d) an elongated externally threaded member in threaded engagement with said internally threaded opening through said first adjustment member and being movable selectively toward and away from said sight support member in response to rotation of said elongated externally threaded member in opposite directions,
(e) there being an elongated recess extending axially within said elongated externally threaded member,



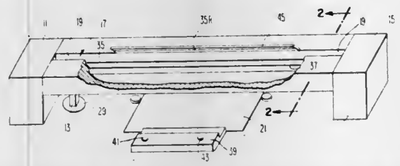
(f) an elongated member mounted for axial movement in said elongated recess with one end thereof engaging said sight support member,
(g) spring means interposed between said elongated member and the inner end of said elongated recess urging said elongated member into yieldable engagement with said sight support member to restrain pivotal movement of said sight support,
(h) a second adjustment member mounted on said attachment bracket at the opposite side of said sight support member from said one side, and
(i) a movable member carried by said second adjustment member and movable to selected positions toward and away from said sight support member to hold said sight support member and the telescopic sight unit carried thereby at selected angular positions relative to said attachment bracket and in a vertical plane parallel to a plane extending longitudinally and forwardly through the bow.

4,237,616

SCANNING PATH ALIGNMENT ARRANGEMENT

Philip E. Tobias, 1872 Watson Rd., Abington, Pa. 19001

Filed Oct. 13, 1978, Ser. No. 951,148
Int. Cl.³ G01B 11/00; G01C 15/00
U.S. Cl. 33—286 **2 Claims**



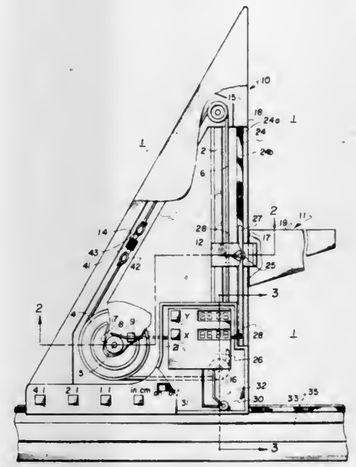
1. An alignment arrangement for aligning material along a path which the projection of a moving mechanism will follow in order for the moving mechanism to have an interaction with said material comprising in combination: first wire means disposed in a plane which lies parallel to said path and orthogonal to the center line of said path; second wire means disposed in said last mentioned plane and additionally disposed to lie further away from said center line of said path than said first wire; and means to hold said wires taut so that when by human eye said second wire is aligned directly over said first wire the center line of the path on said material can be located to be in alignment with said plane as defined by the alignment of said first and second wires.

4,237,617

POLYTRACK OPTO-DIGITAL DRAFTING MACHINE

Constantine C. Goussios, 37 Chafee Ave., Albertson, N.Y. 11507

Continuation-in-part of Ser. No. 883,631, Mar. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 766,877, Feb. 9, 1977, Pat. No. 4,121,344. This application Feb. 5, 1979, Ser. No. 9,421
Int. Cl.³ B43L 7/00
U.S. Cl. 33—427 **13 Claims**



8. A digital drafting machine for measuring and displaying a distance on a drafting surface comprising:
a first triangle with a vertical straight edge;
a second triangle with a horizontal straight edge having an adjacent edge slideably engaged with said first triangle along said vertical straight edge;
a drive wheel rotatably mounted in said first triangle;
a cable guide means in said first triangle spaced from said drive wheel;
a cable engaged around said drive wheel and cable guide means having at least a portion coextensive with a portion of said vertical straight edge and adjacent thereto;
said drive wheel rotatable to vertically move said cable portion;
a slide member connected to said cable portion adapted for movement in a path in said first triangle and along said vertical straight edge;
said second triangle connected to said slide member;
a first plurality of spaced ruled markings distributed along said first triangle adjacent said vertical straight edge and in the path of said slide member;
first photosensor means in said slide member facing said first plurality of spaced ruled markings for sensing the passing of said ruled markings with respect to said slide member;
a roller rotatably mounted in said first triangle on an axis parallel to the plane of the drafting surface hacing a portion engaged with the drafting surface;
a shaft encoder connected to said roller for providing digital information corresponding to the rolling of said roller, said roller being rotated when said first triangle is moved horizontally across the drafting surface; and
digital circuit means connected to said first photosensor means and said shaft encoder for displaying a digital num-

ber corresponding to the passing of said ruled markings and the rotation of said shaft encoder.

4,237,618

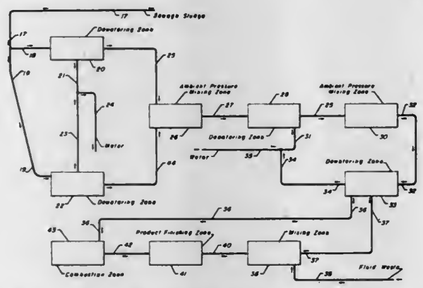
PROCESS FOR MECHANICALLY DEWATERING SEWAGE SLUDGE

Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 891,437, Mar. 29, 1978, Pat. No. 4,160,732, and Ser. No. 909,587, May 25, 1978, Pat. No. 4,193,206, which is a continuation-in-part of Ser. No. 775,673, Mar. 8, 1977, Pat. No. 4,128,946, Ser. No. 813,577, Jul. 7, 1977, Pat. No. 4,140,452, Ser. No. 813,578, Jul. 7, 1977, Pat. No. 4,098,006, Ser. No. 844,097, Oct. 20, 1977, Pat. No. 4,121,349, Ser. No. 858,879, Dec. 8, 1977, Pat. No. 4,161,825, and Ser. No. 891,437, Mar. 29, 1978, Pat. No. 4,160,732, which is a continuation-in-part of said Ser. No. 813,577, said Ser. No. 858,879, is a continuation-in-part of Ser. No. 813,577, and Ser. No. 813,578, said Ser. No. 844,097, is a continuation-in-part of said Ser. No. 813,578, said Ser. No. 813,577, and said Ser. No. 813,578, is a continuation-in-part of said Ser. No. 775,673. This application Mar. 22, 1979, Ser. No. 22,910

Int. Cl.³ F26B *7/00*

U.S. Cl. 34—12 **4 Claims**



1. A process for dewatering fibrous sewage sludge which comprises the steps of:

(a) passing a feed stream comprising sewage sludge which comprises 50 wt.% water and at least 5 wt.% fibers on a dry basis into a first end of a first dewatering zone comprising a cylindrical chamber having a cylindrical porous wall formed by parallel windings which are spaced apart by a distance of about 0.0075 to about 0.013 cm.;

(b) pressurizing the feed stream within the first dewatering zone to a superatmospheric pressure by rotating a screw conveyor having a helical blade which begins at the first end of the first dewatering zone and which is centrally mounted within the cylindrical chamber while constricting the opening available at a second end of the first dewatering zone to less than the available cross-sectional area of the cylindrical chamber, the blade of the screw conveyor having a helical outer edge which is separated from the inner surface of the porous wall by a distance of from about 0.08 to 5.0 cm. along the length of the porous wall, and with the screw conveyor having a length to diameter ratio above 2:1;

(c) maintaining a substantially continuous and unagitated cylindrical layer of filter media comprising fibers derived from the feed stream in an annular space located between the inner surface of the porous wall of the cylindrical chamber and the helical outer edge of the screw conveyor, and simultaneously transferring the organic waste located between the grooves of the helical blade of the screw conveyor and surrounded by said cylindrical layer of filter media from the first end of the first dewatering zone to the second end of the first dewatering zone;

(d) withdrawing water radially from the first dewatering zone through the porous wall and through said cylindrical layer of filter media;

(e) withdrawing a first dewatering zone solids stream having a higher organic waste solids content than the feed stream from the second end of the first dewatering zone;

(f) depressurizing the first dewatering zone solids stream to substantially ambient atmospheric pressure;

(g) passing the first dewatering zones solids stream into the first end of a second dewatering zone operated at conditions substantially the same as the first dewatering zone and constructed in substantially the same manner as the first dewatering zone, and extracting additional water from the first dewatering zone solids stream to produce a second dewatering zone solids stream comprising over 50 wt.% solids;

(h) depressurizing the second dewatering zone solids stream to substantially ambient atmospheric pressure; and,

(i) passing the second dewatering zone solids stream into the first end of a third dewatering zone operated at conditions substantially the same as the first dewatering zone and constructed in substantially the same manner as the first dewatering zone, and extracting additional water from the second dewatering zone solids stream to thereby form a third dewatering zone solids stream comprising over 60 wt.% solids.

4,237,619

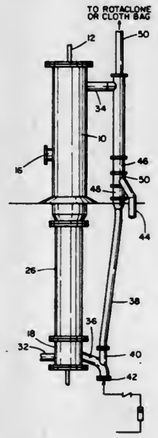
FLUIDIZED BED APPARATUS

Willard E. Ledding, Clarendon Hills, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 15, 1978, Ser. No. 970,069

Int. Cl.³ F26B *17/00*

U.S. Cl. 34—57 R **6 Claims**



1. Apparatus for carrying out fluidized operations comprising:

(a) an elongate upstanding housing defining

(1) an upper fluidized chamber and a lower fluidized chamber, with both the upper and lower fluidized chambers including mechanical agitating means therein, and

(2) a plurality of open-ended tubes positioned intermediate of the upper and lower chamber and communicating therewith;

(b) inlet means to supply a fluidizable material to the upper fluidized chamber;

(c) means to supply a fluidizing fluid to the lower fluidized chamber whereby the fluid passes upwardly through the lower fluidized chamber, the tubes and the upper chamber to maintain the fluidizable material therein in a fluidized state;

(d) discharge means including (1) a generally upstanding leg, (2) means to supply fluidizing fluid to said leg, (3) means to supply fluidizable material from one of said fluidized chambers to said leg whereby the fluidizing fluid supplied to said leg serves to fluidize the fluidizable material therein, and (4) means mounted in said leg to remove fluidizable material therefrom;

(e) means in the upper chamber to remove fluidizing fluid therefrom, wherein the means to remove fluidizing fluid communicates with said leg, and said leg includes means to remove fluidizing fluid therefrom.

4,237,620

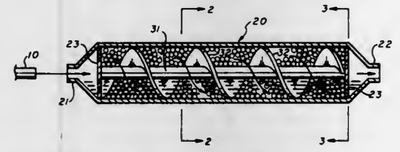
CONTACTOR

Frank M. Black, 5112 Clay Rd., Houston, Tex. 77056

Continuation-in-part of Ser. No. 937,063, Aug. 28, 1978, Pat. No. 4,193,205. This application Apr. 24, 1979, Ser. No. 32,738

Int. Cl.³ F26B *21/06*

U.S. Cl. 34—72 **2 Claims**



1. In a device for drying a gaseous media having a cylinder with inlet and outlet portions for a gaseous media, means for receiving and accommodating an absorbent liquid bath, and an auger member within said cylinder for causing said gaseous media to follow a generally spiralar path between said inlet and outlet portions, the improvement comprising:

(a) a pair of screen members, oppositely positioned within said cylinder, adjacent, respectively, said inlet and outlet means, and

(b) gas dispersing means, comprised of a large number of individual, unconnected, randomly arranged elements, for causing said gaseous media to follow a tortuous path around the shaft of said auger, substantially filling said cylinder intermediate said screen members.

4,237,621

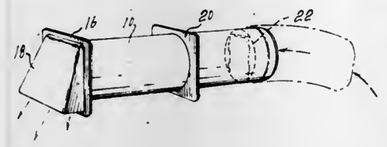
DAMPER STRUCTURE FOR A CLOTHES DRYER VENT

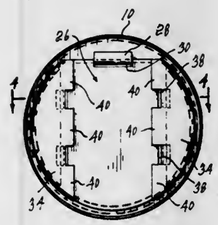
Lucien Boismenu, 5635 Wolseley, Cote St. Luc, Montreal, Quebec, Canada (H4W 2L4)

Filed May 18, 1979, Ser. No. 40,189

Int. Cl.³ F26B *19/00*

U.S. Cl. 34—108 **3 Claims**





1. A damper structure for a clothes dryer and the like tubular vent of circular cross-section and equipped with an outside closure damper, comprising:

(a) a support member adapted to be inserted inside the vent adjacent the inside wall of a house; and

(b) a damper structure mounted on said support member so as to form a closed air space between said damper structure and the closure damper of the vent for minimizing heat losses through the vent, wherein said damper structure comprises a central damper element hinged on the top of the support member, and two lateral damper elements hinged one on each side of said central damper element for allowing full opening of said damper plate into the tubular vent.

4,237,622

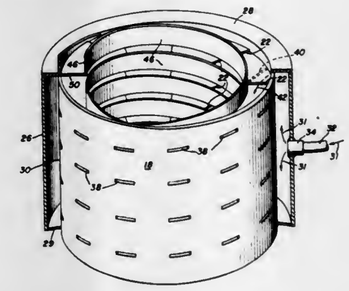
DRYER USING VIBRATORY FEEDING

Theodore R. Francis, 511 S. Shore Dr., Fontana, Wis. 53125

Filed Dec. 29, 1978, Ser. No. 974,526

Int. Cl.³ F26B *15/26*

U.S. Cl. 34—147 **5 Claims**



5. A dryer comprising walls defining a gas plenum, a spiral ramp mounted upon a surface of a wall of said plenum, said plenum defining openings in communication with said ramp, said spiral ramp comprising a plurality of ramp segments with consecutive ramp segments being spaced from each other at successive levels, each pair of consecutive ramp segments overlapping at their adjacent ends above and below one of said openings, angled partition means positioned between pairs of consecutive ramp segments at an acute angle with respect to said openings to deflect the drying gas that exits from the plenum through said openings so that the drying gas is deflected at an acute angle by the angled partition means to emerge toward the upper surface of the lower ramp segment of each pair, and means for vibrating said ramp whereby parts to be dried will move along the ramp and be contacted by gas from said plenum passing through said openings and deflected at an acute angle by the angled partition means.

4,237,623

HUMIDIFIED HOLDING CABINET FOR FOODS

Malvern K. Timm, Troy; James D. King, Dayton, and David O. Moore, Eaton, all of Ohio, assignors to Henny Penny Corporation, Eaton, Ohio

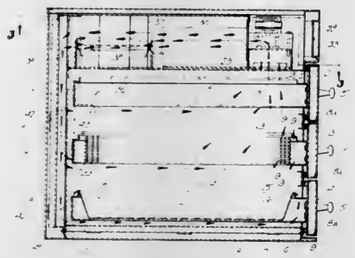
Filed Oct. 5, 1979, Ser. No. 82,415

Int. Cl.³ F26B *9/06*

U.S. Cl. 34—196 **14 Claims**

1. A heating and humidifying system for a holding cabinet having a product receiving compartment containing a plurality of product receptacles spaced one above the other, said system comprising a blower overlying said compartment and having an inlet side and an outlet side, an orifice in the top-front-center of said compartment in communication with the inlet side of said blower, an elongated heating tube connected at one end to the outlet side of said blower, heating means in said heating tube, temperature control means operatively connected to said

heating means, a water reservoir lying beyond the opposite end of said heating tube, a plurality of heat transfer plates projecting upwardly from said reservoir and lying in the path of air discharged from said heating tube, means removably mounted



said transfer plates in said reservoir, means for metering water into said reservoir, and duct means positioned to convey air flowing over said reservoir and around said transfer plates into said compartment from the rear thereof.

4,237,624

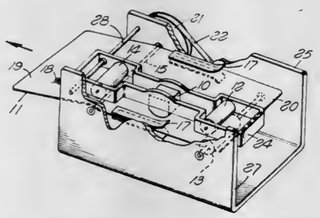
CARDS FOR LEARNING PRONUNCIATIONS

Richard S. Yeh, 1470 Bellwood Rd., San Marino, Calif. 91108

Continuation-in-part of Ser. No. 771,031, Feb. 22, 1977, abandoned. This application Sep. 21, 1978, Ser. No. 944,378

Int. Cl.[3] **G09B** *19/04;* **G11B** *25/04*

U.S. Cl. 434/169 **9 Claims**



1. A sound reproducing device for use in combination with a flexible card comprising a wide magnetic tape of card size and a flexible sheet of card materials, having laminated over the back surface of said wide magnetic tape not coated with magnetically susceptible materials, thereby secured together at least at the edges of said card by means of adhesive tapes, and having printed thereon the spelling or characters of the word recorded on said magnetic tape, the flexible card being locally bent during the processes of sound reproduction, said device comprising:

a. a planar board;

b. a shiftable lever movable in an imaginary plane parallel to said board, so as to clamp or release said card, and laterally movable in order to place said lever on the recording portions located at a lateral coordinate on said flexible card;

c. an electromagnetic transducer head mounted on said lever such that the tangential plane imagined at the center of the curved front surface of said head is perpendicular with respect to said board;

d. a rubber roller rotatably mounted on said lever in the direction perpendicular to said board and disposed on the exit side in relation to said head;

e. a drive roller rotatably mounted on said board perpendicularly and disposed in such a manner that said flexible card is locally bent over the surface of said drive roller to increase an arc of frictional engagement and to propel said flexible card when said drive roller is connected to a power transmitting means, and said flexible card is clamped instantaneously between said drive roller and said rubber roller, composing the pair of drive rollers located at the exit for a card;

f. a pair of planar boards comprising said board and another planar board mounted parallel to said board with a separation distance sufficient to accommodate said card widthwise so as to let each of the longitudinal boundaries of said card slide along each surface of said boards while said flexible card is perpendicularly situated with respect to said boards and transported;

g. guide means for having said flexible card put at proper place and locally bent over the curved front surface of said head which is disposed slightly crossing the imaginary plane drawn asymptotically on the entrance side of said guide means in such a manner to include the contact line of said pair of drive rollers, when said lever is in clamping position and said card is transported;

h. a card feeder comprising said pair of drive rollers, said power transmitting means and said guide means, said card feeder operative to bring the sound recorded portion of said flexible card tangentially to and in sliding contact with the central area of said head, said power transmitting means comprising a d.c. motor, a pulley fixed coaxially on the shaft of said motor, a flywheel, a rubber belt, and a metal shaft fixed at one end to the center of said flywheel and utilized as the body of said drive roller, said flywheel being engraved on the rim whereby coupled with said pulley by said rubber belt to transmit rotational motion to said drive roller;

i. a power supply, a speaker, a microphone and electronic circuitries necessary in position and connected to said transducer head in order to have pronunciations recorded on and to reproduce from the recorded portion of said flexible card.

4,237,625

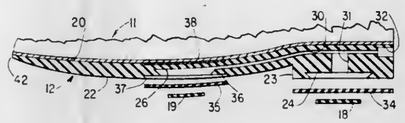
THRUST PRODUCING SHOE SOLE AND HEEL

Jerorge S. Cole, P.O. Box 233, 17 Mile Dr. at Midway Pt., Pebble Beach, Calif. 93953, and Karl M. Schmidt, 105 South Dr., Mountain View, Calif. 94040

Filed Sep. 18, 1978, Ser. No. 943,053

Int. Cl.[3] **A43B** *13/18, 13/20, 21/28*

U.S. Cl. 36—28 **16 Claims**



1. A thrust producing shoe sole and heel, comprising:

a sole and heel member including a heel portion having a first cavity therein, said member having a generally transverse second cavity therein underlying only the metatarsal ball area of a foot for which said member is sized;

said sole and heel member having a restricted passageway connecting said first and second cavities;

cavity closing material overlying said first and second cavities and secured to said sole and heel member in fluidproof manner, the walls of said cavities at the bottoms of said sole and heel member being resilient and wear-resistant; and

fluid in said cavities and said passageway under such pressure as to create bulges below the bottoms of said sole and heel member;

whereby at rest a foot on said sole and heel member is cushioned comfortably on the pressurized fluid in the bulges at the heel portion and the metatarsal ball area, and in walking fluid under bulge producing pressure alternates through said passageway between the heel portion and metatarsal ball area bulges, producing shock absorption and an alternate lifting effect by the bulges which provides forward thrust both in the heel portion and the metatarsal ball area that facilitates walking.

4,237,626

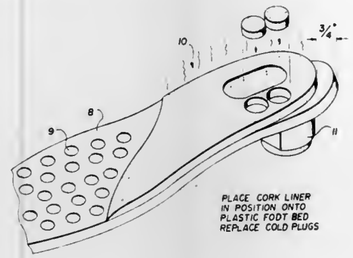
DEFORMABLE FOOT WEDGE

Dennis N. Brown, c/o Northwest Podiatric Laboratory Inc., 1091 Fir Ave., Blaine, Wash. 98230

Filed Feb. 26, 1979, Ser. No. 14,840

Int. Cl.[3] **A43B** *13/38;* **A43D** *00/00*

U.S. Cl. 36—43 **7 Claims**



1. An orthotic device for use between a foot and a shoe or a boot preferrably made from cork and resin comprising an insert which when heated expands twice the original volume, and plug means removable from said insert and not to be heated whereby when said plug means are reinserted into the heated orthotic device, the orthotic device deforms by foot pressure, but the plug means retain their original dimension.

4,237,627

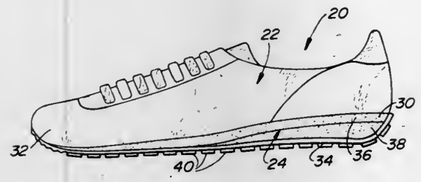
RUNNING SHOE WITH PERFORATED MIDSOLE

Jerome A. Turner, Baltimore, Md., assignor to Turner Shoe Company, Inc., Aquadilla, P.R.

Filed Feb. 7, 1979, Ser. No. 9,993

Int. Cl.[3] **A43B** *5/00, 7/06, 13/20*

U.S. Cl. 36—129 **18 Claims**



1. A sole component for an athletic shoe including a heel portion, an arch portion, a forefoot portion and a toe portion, said sole component being formed of a resilient material, the forefoot portion of said sole component including a first group of apertures extending into the sole component, all of said apertures in said first group being located at said forefoot portion in an array of plural transverse rows of plural apertures, each of said rows extending for substantially the full width of said sole component, said sole component including a second group of apertures extending therein, all of said apertures in said second group being located to the rear of said forefoot portion and contiguous with said arch portion, the apertures of said second group being disposed in an array of plural transverse rows of plural apertures, each of said rows extending for substantially the full width of said sole component and with said apertures being disposed closer to one another than the apertures in said first group to increase the flexibility of said sole component at the portion containing said second group of apertures.

4,237,628

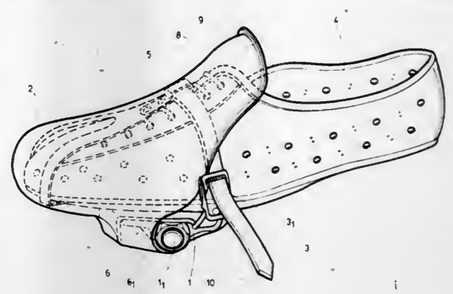
DEVICE FOR PROTECTING CYCLIST FEET

Christian Etancelin, Vernon, France, assignor to Les Manufactures de Saint Marcel, St. Marcel, France

Filed Oct. 11, 1979, Ser. No. 84,027

Int. Cl.[3] **A43B** *5/00, 3/18, 13/22*

U.S. Cl. 36—131 **7 Claims**



1. A device for protecting cyclist feet, consisting of a sleeve or shoe fixed to the pedal of the cycle and wrapping the extremity of the foot up to the opening of the shoe, as well as, at least partly, the lower face of the pedal, a device wherein said sleeve carries an external edge on its upper edge and the sides of the opening of the shoe.

4,237,629

APPARATUS FOR ACTUATING THE OPERATION OF A SNOWPLOW

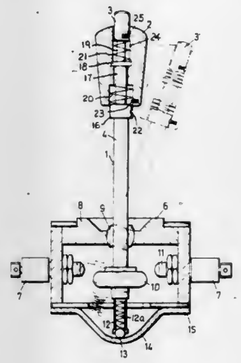
Alfred Schmidt, St. Blasien, Fed. Rep. of Germany, assignor to Ing. Alfred Schmidt GmbH, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 930,932

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736312

Int. Cl.[3] **H01H** *21/24;* **E01H** *5/04*

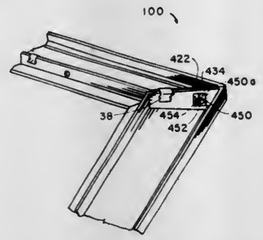
U.S. Cl. 37—41 **13 Claims**



1. Apparatus for controlling the operation of a snow plow having a blade movable by drive means actuated by switch members, comprising a stick shift having a hand grip at one end and means at the other end for engagement with said switch members, said stick shift being pivotal from a neutral position in a selected one of a plurality of paths into engagement with the switch members, said switch members being connected to said drive means for respectively "raising", "lowering", "adjusting to the right", and "adjusting to the left" said blade and including two additional switch means in combination with said hand grip for controlling at least one additional operation for "plowing under dead weight" and "unlock in

adjusting direction" of said blade independently of the position of the stick shift.

4,237,630
PICTURE FRAME ASSEMBLY
John Franzone, 2220 Eastridge Rd., Timonium, Md. 21093
Filed Mar. 30, 1979, Ser. No. 25,341
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152 **2 Claims**

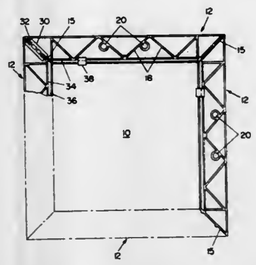


1. In a picture frame made of plural pieces joined by "U"-clips at mitre joint structures, the improvement comprising: each piece having a web, integral long and short sides and ends on each web forming a trapezoidal trough therewith in rear plan view; each mitre joint structure formed of abutting ends of a pair of adjacent pieces, means joining each pair of abutting ends; an integral picture-mount flange structure projecting in a direction inwardly and parallel with respect to the frame from each of the short sides; means for retaining a picture against the picture-mount flange structure; the means for retaining including at least one nail-hole through each short side rearwardly of the picture mount flange structure, each long side being forwardly offset relative to the respective short side a distance providing axial access therepast to said at least one nail hole; said forward offset including an inclining of all said webs producing a concave front aspect of the webs in the frame; the means for retating including each short side having reducing sectional thickness rearwardly of the picture-mount flange, a "U"-leg clip of the type having a lateral projection, proportioned for engagement over said reducing section with the lateral projection in spaced parallel relation with the picturemount flange the means joining; including at least one "U"-clip and additionally each pair of abutting ends having a screwhole therethrough, a screw in each screwhole for attaching each said pair of abutting ends together, and said forward offset of each long side relative to the respective short side providing screwdriver access to each said screw.

4,237,631
PICTURE FRAME
Walter Moe, and Lawrence A. Bernstein, both of Los Angeles, Calif., assignors to Diker Moe Associates, West Los Angeles, Calif.
Filed Feb. 5, 1979, Ser. No. 9,587
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—155 **3 Claims**

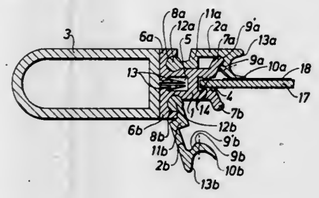
1. A picture frame comprising four side members each having its ends cut at a 45° angle to its length, each of said ends having an end wall adapted to mate with the end wall of the adjoining side member in a manner which locks adjoining members into a coplanar attitude, and means for clipping said end walls together,

said side members are each formed of a plastic material with an outer and an inner side wall and a plurality of contiguous buttressing walls secured to said outer and inner side walls and angularly disposed to form a juxtaposed series of triangles which provide strength in torsion, compression, and bending, each of the side members has a pair of cylindrical recesses affixed to a pair of adjacent buttressing walls and positioned perpendicularly to the side member axis and opening to the back thereof, and which further



comprises a hanger having projecting cylindrical members adapted to fit into the cylindrical recesses.

4,237,632
FRAME ELEMENTS FOR RELEASABLY MOUNTING A POSTER
Peder A. G. B. H. A. Segerstad, Sollentunavägen 25, S-191 40 Sollentuna, Sweden
Filed Dec. 14, 1978, Ser. No. 969,320
Claims priority, application Sweden, Dec. 20, 1977, 7714492
Int. Cl.³ A47G *1/06*
U.S. Cl. 40—156 **15 Claims**



1. A frame element for use in assembling a frame for mounting of a poster (**18**), or the like, comprising:

an elongated main frame member (**1**) and at least one elongated clamp member (e.g. **2***a*), said clamp member being of substantially the same length as said main frame member;

said main frame member and said at least one clamp member respectively having mutually engageable hinge elements (**8***a*, **12***a*) forming a hinge device by means of which said clamp member is rotatably connected to said main frame member with the rotational axis being parallel with the longitudinal axis of said members;

said hinge element of one of said main frame member and clamp member being shaped as a longitudinally extending notch (**8***a*) having a longitudinally extending opening communicating with the interior of said notch along the length of said notch, said notch and longitudinal opening extending parallel to the longitudinal axis of said one member and said opening being of a width which is smaller than the diameter of the interior of said notch;

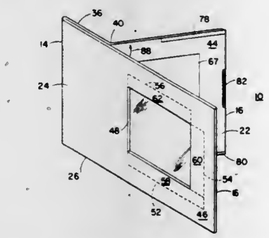
said hinge element of the other of said main frame member and clamp member being formed by an edge of said other member, the outermost part of said edge of said other member being in the form of a longitudinal part (**12***a*) extending longitudinally of said other member, said longitudinal part (**12***a*) having a width in a direction transverse to the longitudinal direction thereof which is greater than that of said notch and being received into said notch in its lengthwise direction and further being rotatable within said notch, a part of said edge connected to said other member protruding through said longitudinal opening of said notch, said clamp member being thereby rotatable relative to the main frame member around an axis which is parallel to the longitudinal axis thereof and being fixedly connected to the main frame member in a direction transverse to said axis of rotation;

a locking device (**7***a*,**9'***a*) comprising a longitudinal flange shaped projection (**7***a*) integrally formed on one of said main frame member and clamp member, and a longitudinally extending recess (**9'***a*) having a locking edge (**9***a*) integrally formed on the other of said main frame and clamp members, said projection (**7***a*) being engageable with said recess to form a releasable locking device for relative locking of said clamp member to said main frame member, at least one of said projection and said recess having an elastically flexible and yieldable portion whereby the locking device will have a definite snapping latch position which is passed by when said flange shaped projection (**7***a*) engages and recess (**9'***a*) and said locking edge (**9***a*) is resiliently forced over said flange shaped projection (**7***a*) during pivoting of said clamp member (**2***a*) via the hinge device toward the poster or the like;

said at least one clamp member having an integral longitudinal clamping edge (**10***a*) for contacting the poster or the like and pressing against same when said projection and recess of said locking device are mutually engaged; and

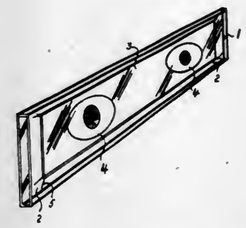
said main frame member having an integral longitudinal receiving notch or edge (**4**) for receiving at least one of a supporting member or the like and a poster or the like therein to fixedly mount said poster or the like to said frame element.

4,237,633
PHOTOGRAPHIC MAILING POSTCARD AND BLANK THEREFOR
Robert T. Murrell, 1023 Euclid Ave., Marion, Ind. 46952
Filed Jan. 2, 1979, Ser. No. 163
Int. Cl.³ B42D *15/04*
U.S. Cl. 40—158 R **13 Claims**



1. A photograph mailing postcard comprising a unitary rectangular card of paper material having top and bottom longitudinal edges and opposite side edges, and front and back sides, said card having top and bottom sections respectively defined between said side edges and parallel with said longitudinal edges, said card having means for partially separating said sections extending along said first line with one side edge to a point spaced from the other side edge thereby forming top and bottom integrally connected portions of said sections defined by said other side edge, said longitudinal edges and a second line extending between said longitudinal edges through said point and parallel with said other side edge, and top and bottom flap portions respectively joined thereto along said second line, said bottom flap portion having a window formed therein, said sections being folded along said first line with said front sides of said connected portions abutting and adhered together, means for attaching a photograph to said front side of said top flap portion for viewing through said window, means for folding at least one of said flap portions along said second line thereby to facilitate attaching said photograph to said front side of said top flap portion, and means on said front side of at least one of said flap portions for adhering the same to said front side of the other flap portion.

4,237,634
ARTICLE OF ADVERTISEMENT
Naum Pokhis, 30-36 Magaw Pl., Apt. 5D, New York, N.Y. 10033
Filed Jun. 25, 1979, Ser. No. 51,342
Int. Cl.³ G09F *19/08*
U.S. Cl. 40—422 **7 Claims**



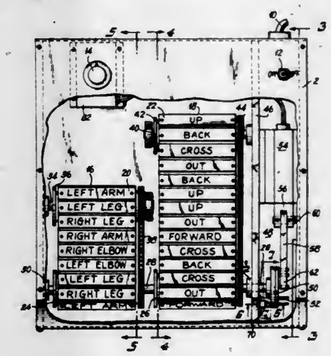
1. An article of advertisement imitating eyes and mountable on a movable object having a front surface, a rear surface, and eye holes, the article comprising

a container having an inner chamber which has two transverse dimensions and having a transparent wall positionable behind the rear surface of the object in the region of eye holes;

a substantially flat member located in said inner chamber of said container and provided with an image of at least an iris and a pupil, said member having two dimensions which are also transverse and at least one of which is smaller than a respective one of the transverse dimensions of said inner chamber of said container so that when the object moves, said member displaces relative to said container so as to provide for impression of moving eyes; and

means in said inner chamber for controlling the displacement of said member inside said container, said controlling means being a transparent liquid which fills said inner chamber of said container so that said member floats in said liquid.

4,237,635
REACTION TRAINING APPARATUS
Aram C. Paraghamian, 6133 Russell, Mission, Kans. 66202, and Robert C. Kelly, 8115 Glencliffe, Houston, Tex. 77070
Filed Mar. 28, 1977, Ser. No. 782,024
Int. Cl.³ G09F *11/16*
U.S. Cl. 40—463 **5 Claims**



1. Reaction training apparatus comprising:

housing means defining a viewing station;

a pair of indicia bearing display means movably mounted in said housing adjacent said viewing station, each of said display means having a plurality of indicia arranged in an endless series and each being movable to sequentially present successive indicia at said viewing station, the series on one of said display means having a number of indicia different from the number of indicia in the series on the other;

each of the indicia on one of said display means identifying a movable part of a person's body, there being a plurality of indicia identifying each movable part with the indicia randomly arranged in said series; each of said indicia on said other display means identifying an exercise to be performed, there being a plurality of indicia indentifying each exercise with the indicia randomly arranged in the series, each body part and each exercise appearing more than once in their respective series; and

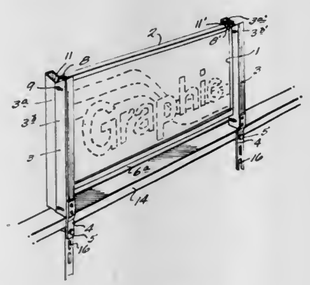
drive means for intermittently moving both said display means simultaneously to intermittently and simultaneously present successive indicia of each series at said viewing station, said drive means being arranged to move said display means in discrete successive steps; and control means for selectively changing the time interval between successive steps.

4,237,636

VERTICAL GRAPHIC PANEL FRAME SYSTEM

James P. Matthews, Atlanta, Ga., assignor to Miller - Zell, Inc., Atlanta, Ga.

Continuation of Ser. No. 920,194, Jun. 29, 1978, abandoned.
This application Jun. 6, 1979, Ser. No. 45,920
Int. Cl.³ G09F *7/18*
U.S. Cl. 40—606 **8 Claims**



1. A panel frame system comprising:

(a) an upright post comprising at least one pair of upright members each said member having a downwardly and inwardly beveled upper end, said members being movable one within the other to provide a composite "V"-shaped edge of adjustable width; and

(b) a panel frame having a hook which rests in said "V"-shaped edge.

4,237,637

INFORMATION DISPLAY PANEL

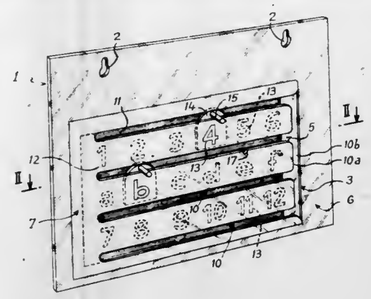
Jean Bourbon, B.P. 1, Saint-Lupicin, France (39170)

Filed Feb. 8, 1979, Ser. No. 10,533
Claims priority, application France, Feb. 8, 1978, 78 04178
Int. Cl.³ G09F *7/02*
U.S. Cl. 40—618 **5 Claims**

1. An information display panel comprising:

a support plate including a front surface having a visual characteristic associated therewith;

a matrix member mounted on said support plate and including an attachment support adapted to be secured to said support plate and at least one elongated transparent flexible member, each said flexible member being secured at one end thereof to said attachement support in facing relation to said front surface and each flexible member having a transverse free edge and further having information markings thereon with a visual characteristic substantially identical to the visual characteristic of said front surface whereby said markings are not visually discernible relative to said front surface, said at least one flexible member having at least one slot associated therewith; and



at least one identification element adapted for slidable movement relative to said at least one flexible member in a direction parallel to said at least one slot, said at least one identification element having a visual characteristic different from said visual characteristic of said information markings, whereby said information markings are visually discernible when said at least one identification element is disposed in facing relation thereto,

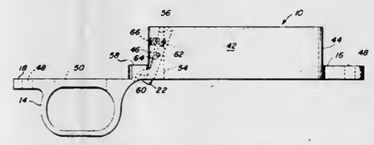
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4,237,638

BOX MAGAZINE REPLACEMENT KIT FOR BOLT ACTION RIFLES

Gene D. Trexler, 3115 Washington St., Allentown, Pa. 18104

Filed Aug. 4, 1978, Ser. No. 931,164
Int. Cl.³ F41C *25/00*
U.S. Cl. 42—6 **6 Claims**



1. A replacement magazine kit for bolt action rifles comprising:

(a) a generally parallelpipedal magazine including floor and side walls, front and back walls, and opened sufficiently at the top to permit insertion of rifle cartridges therein in stacked relationship, said magazine outer back wall including a recess portion above its horizontal mid point to receive a latch detent;

(b) a magazine housing including:

(i) a housing floor plate portion with an opening of sufficient size to allow insertion therein of said magazine, said housing plate extending forwardly from said opening and ending in tab means whereby said housing may be secured to said rifle at its forward end;

(ii) a trigger guard bow, integral with said floor plate and extending rearwardly therefrom, said trigger guard ending in tab means whereby said housing may be secured to said rifle at its rearward end;

(iii) a generally parallelpipedal wall portion including side walls and a front and a back wall with an external shoulder, said shoulder underside including a recess portion to accommodate a magazine latching detent finger piece, said wall inner dimensions being of a size and shape to accommodate said magazine and said

housing rear wall being recessed to provide an opening to permit a spring-urged detent to be inserted therein;

(iv) as a magazine latching means a detent, pivotally mounted, positioned generally vertically within said housing rear wall recess, the upper end of said detent being adapted to catch and rest within said magazine recess and said other end of which terminates in a finger piece projecting below said floor plate; and,

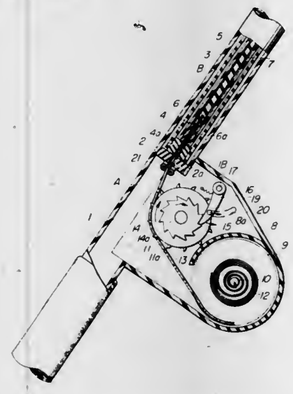
(v) spring means positioned horizontally between said housing rear wall and said detent above said detent pivot point to urge said detent upper end toward said magazine recess, said spring being mounted within recesses in both said wall and said detent.

4,237,639

TELESCOPIC FISHING ROD HAVING MEANS FOR EXTENDING AND CONTRACTING SAME

Yukio Uemori; Shigeko Uemori; Terue Uemori; Michie Uemori, all of 43-22, Ichiban-2-chome, Atsuta-ku; Tuguo Kamoshita, and Masako Kamoshita, both of 45, Enbacho-1-chome, Nishi-ku, Nagoya, all of Japan

Filed Aug. 16, 1979, Ser. No. 67,128
Claims priority, application Japan, Nov. 30, 1978, 53-165269
Int. Cl.³ A01K *87/00*
U.S. Cl. 43—18 R **8 Claims**



1. A telescopic fishing rod having means for extending and contracting same, comprising:

a main rod body having a rear portion serving as a grip and formed with an opening at its forward end portion, said main rod body being hollow and having a space therein;

a plurality of rod elements telescopically slidable in and out of one another and said main rod body through said opening at the forward end portion thereof to be contained in said space in said hollow main rod body;

an elongated power-transmitting member connected at one end thereof to the rear end of the rod element remotest from said main rod body;

means for paying out and winding said elongated power-transmitting member having the other end of said elongated power-transmitting member connected thereto; and

means operative to store energy therein as said elongated power-transmitting member paying out and winding means is operated to pay out said elongated power-transmitting member, so that said elongated power-transmitting member can be automatically wound when the energy is released;

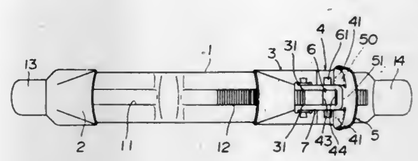
the telescopic movement of said rod elements to slide into and out of one another and said main rod body being performed such that the rod element remotest from said main rod body is first moved by said elongated power-transmitting member as the latter is actuated and the movement of the rod element remotest from the main rod body is successively transmitted to the rest of the rod elements, thereby enabling the fishing rod to be telescopically brought from a contracted state to an extended state and vice versa.

4,237,640

REEL SEAT

Jun Sato, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Aug. 1, 1979, Ser. No. 62,626
Int. Cl.³ A01K *87/06*
U.S. Cl. 43—22 **6 Claims**



1. A reel seat for mounting the leg of a fishing reel to a fishing rod comprising:

(a) a seat body mounted to said fishing rod lengthwise thereof, said seat body having at its upper surface at one lengthwise end a number of grooves which extend widthwise of said seat body and are arranged lengthwise thereof,

(b) a stationary socket fixed to one lengthwise end of said seat body for receiving one end of said reel leg,

(c) a movable socket positioned at the other lengthwise end of said seat body opposite to said stationary socket for receiving the other end of said reel leg, said movable socket being supported to said seat body so as to be slidable lengthwise thereof,

(d) a retainer for fixing said movable socket in the predetermined position lengthwise of said seat body, said retainer being supported slidably to said seat body and having a leaf spring having a bent portion engageable with one of said grooves at said seat body and a control segment swingable to control the engaging movement of the bent portion of said leaf spring with said grooves, and

(e) an interconnecting member inserted between said movable socket and said control segment at said retainer, said interconnecting member being connected at at least one end thereof with one of said movable socket and control segment of said retainer, so that when said control segment swings to allow said leaf spring to engage with said grooves, said interconnecting member is moved rectilinearly by swinging motion of said control segment to move said movable socket toward said stationary socket.

4,237,641

CLEANING AND COATING FISHING LINE

Jimmie R. Gupton, Rte. 3, Box 45-A, Louisburg, N.C. 27549

Filed Oct. 10, 1979, Ser. No. 83,301
Int. Cl.³ B05C *1/06*
U.S. Cl. 43—25 **7 Claims**

1. A cleaning and coating device for line type means comprising:

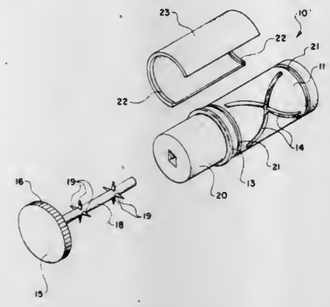
a generally sleeve shaped housing;

a generally cylindrical shaped fixed applicator disposed within said housing;

said applicator being a resiliant, porous mass impregnated with the coating material;

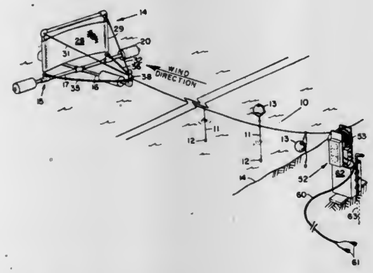
at least one slot means communicating through the peripheral wall of said housing whereby when said line is pulled longitudinally along said slot and in contact with the

impregnated resilient mass, said cleaning and coating will be effected; and



means for rotatably adjusting said applicator within the housing in order to present a fresh applicator surface at the slot opening.

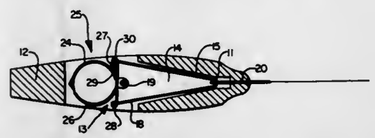
4,237,642
SAILING TROTLINE
John A. Petorella, 702 Marquette Dr., San Antonio, Tex. 78228
Filed May 8, 1979, Ser. No. 25,638
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—26.1 **9 Claims**



1. A sail trotline comprising:
a. a buoyant frame means;
b. a sail adjustably mounted on said buoyant frame means,
c. guy lines attached to the top portion of said sail,
d. an adjustable harness attached to the bottom portion of said sail,
e. adjusting means for attaching said harness to said buoyant frame means, and
f. a trotline attached to said buoyant frame means, said trotline extending from said buoyant frame means to,
g. a remote windlass capable of reeling in said trotline.

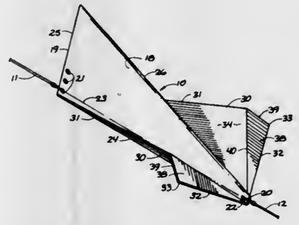
4,237,643
FISHING LURE
James A. Simons, 2819 Hills Rd., Pineville, La. 71360
Filed May 29, 1979, Ser. No. 43,116
Int. Cl.³ A01K *83/02*
U.S. Cl. 43—35 **4 Claims**

1. A weedless, artificial fishing lure comprising:
a. a lure body, said body having a hollow portion;
b. a pair of hooks mounted at their shanks to a pivot rigidly mounted in said hollow portion whereby each of said hooks is pivotable along an arc at which the points of said hooks are within said hollow portion at one extent of the arc and are oppositely opposed and facing forward outside of said hollow portion at the other extent of said arc;
c. an elongated V-shaped spring slidably carried within said hollow portion along a line through said pivot, said spring having its legs biased inwardly with one of said legs pivotably connected to the shank end of one of said hooks and the other of said legs pivotably connected to the shank end of the other of said hooks, said spring being slidable rearwardly to an extent to position said pivotal connection of said shank ends and said spring legs slightly rearward of said pivot and slidable forwardly to bring said connections



forward of said pivot and on to a point whereby said hooks are facing forward and outside of said hollow portion, said bias provided by said V-spring being substantially the sole resistance to said forward sliding of said V-spring from its said rearward extent to its said point forward of said pivot; and
d. stop means to restrict the extent of said rearward travel of said spring.

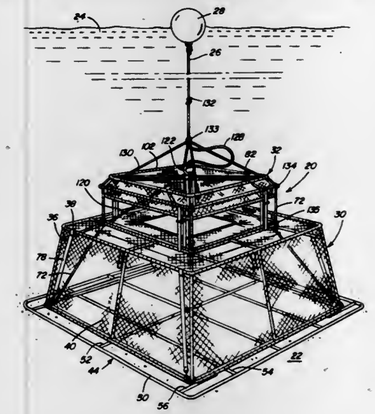
4,237,644
FISH TROLLING DEVICE
Walt Hansen, 9814 E. Upriver Dr., Spokane, Wash. 99206
Filed Sep. 7, 1979, Ser. No. 73,239
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—43.13 **10 Claims**



1. A trolling device adapted for connection between a trolling line and a fish hook line for guiding the hookline in a zig-zag path when being pulled through the water in a forward direction, comprising:
an upright rudder having a forward end and a rearward end;
a trolling line aperture at the forward rudder end;
a hook line aperture at the rearward rudder end defining a longitudinal axis with the trolling line aperture;
said rudder having a height dimension at the forward end greater than the height dimension at the rearward end;
wings extending outward of the rudder from below the longitudinal axis to opposite sides thereof;
said wings having leading edges diverging from the forward end at equal acute angles with the upright rudder;
said wings having upwardly facing planar surfaces; and
wing flaps formed along the wings adjacent the trailing edges and bent downwardly relative to the upwardly facing surfaces.

4,237,645
COMBINATION MARINE LIFE TRAP
Warren H. Kinser, P.O. Box 1726, Kodiak, Ak. 99615
Filed Feb. 17, 1978, Ser. No. 878,992
Int. Cl.³ A01K *69/10*
U.S. Cl. 43—102 **12 Claims**

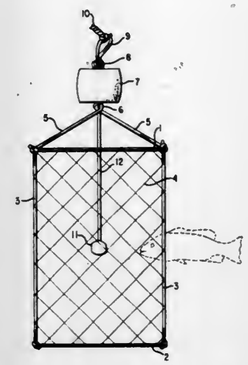
1. A combination marine life trap comprising a bottom trap having a top wall with a single opening therein, a top trap structure mounted on said top wall of the bottom trap in enclosing relation to the opening therein, said trap structure including a side net movable between open and closed positions to enable access to the interior of the bottom trap through the top trap structure when open and prevent escape of marine life when closed, and means connected with said side net to move it to closed position when the combination trap is lifted for preventing escape of marine life, said trap structure including an enclosure projecting upwardly from the top wall of the bottom trap, said side net extending completely about the periphery of the enclosure to enable access to the opening in



the top wall from any direction when open, said enclosure including a plurality of vertical, circumferentially spaced guide means in the periphery thereof, a peripheral frame vertically movable along said guide means, said side net having a top edge secured to said movable frame and a bottom edge being connected with the top wall of the bottom trap peripherally of the opening therein, and an elastic band peripherally encircling said side net at the central portion thereof to fold the side net inwardly when the movable frame is in a lowered position, said side net having a vertical dimension such that the elastic band defines the periphery of an opening in alignment with the opening in the top wall of the bottom trap.

4,237,646
PORTABLE FISH CATCHER
Priestly G. Mims, III, 404 Georgia Rd., Chesapeake, Va. 23321
Continuation-in-part of Ser. No. 800,176, May 26, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,245
Int. Cl.³ A01K *71/00*
U.S. Cl. 43—103 **1 Claim**

1. A collapsible and portable fish catcher comprising a support ring and an opposed anchor ring interconnected by a plurality of flexible, elongated means, gill netting means attached to said rings and encompassing said rings and said flexible members to provide an enclosure, floatation means attached to said support ring and external of the enclosure to suspend said catcher in a body of water whereby the anchor ring will extend the elongated means to position the catcher in an extending and floating position, and means depending from said float means to position bait within the enclosure; said rings being made of material selected from the group consisting of metal, plastic, and wood, at least one of said rings being made of a material selected from the group consisting of hollow metal and hollow plastic, said at least one of said rings having a filling nipple and enclosure therefor; said gill netting means comprising gill netting of predetermined sized openings to engage and hold a fish by its gills, and removable means to attach said netting to said ring-like members to permit interchange of gill netting according to the size of fish to be caught, said removable means being selected from the group consisting



of clamps, ties, and a continuous line spirally wound around each ring through the openings in said netting.

4,237,647
SOFT TOY CONTAINING SOUNDING DEVICE
Maurice Shaw, 27, Greenway Close, Totteridge, London, England
Filed Jan. 11, 1979, Ser. No. 2,579
Claims priority, application United Kingdom, Jan. 13, 1978, 1445/78
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—117 **6 Claims**

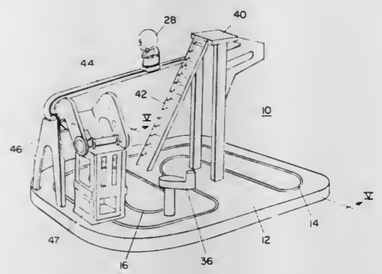


1. A soft toy havig two electric contacts disposed at spaced-apart regions on the exterior of the toy, an electrically operable noise producing device disposed within the toy, input terminals on said device, and conductors connecting said input terminals to said electric contacts, said noise producing device comprising electronic switching means having an "on" condition and an "off" condition, said switching means being in its "on" condition whenever said electric contacts are resistively bridged by being touched simultaneously by a user of the toy, said device further comprising a noise producing apparatus which is operated whenever said switching means is in the "on" condition.

4,237,648
MOVING TOY FIGURE
Walter Moe, Los Angeles, Calif., and Charles M. Diker, New York, N.Y., assignors to Diker Moe Associates, West Los Angeles, Calif.
Filed Jan. 24, 1979, Ser. No. 5,989
Int. Cl.³ A63H *11/00*; A63F *9/14*
U.S. Cl. 46—122 **2 Claims**

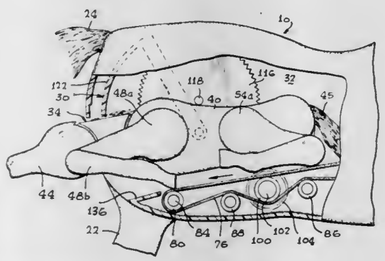
1. A toy comprising a baseboard having an upper surface with a groove therein, an endless belt with upwardly-extend-

ing projections which belt fits into the groove, means for moving the belt longitudinally in the groove and supporting the belt above the bottom surface of the groove and restraining the belt from shifting up and out of the groove, and a figure adapted to mesh with the projections of the belt, the figure including a bottom portion adapted to support the figure in



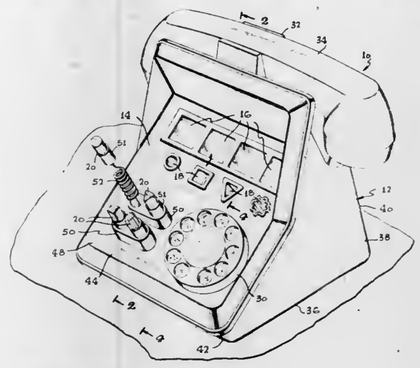
upright position on a planar surface, downwardly-depending projections, and means mounting the projections whereby they will extend beyond the bottom portion when the figure is placed upright on the board over the groove, and will be caused to retract into the figure when it is placed upright on a planar surface.

4,237,649
TOY ANIMAL FIGURES REPRESENTING PARENT ANIMAL AND OFFSPRING
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Elonne Dantzer, Redondo Beach, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.
Filed Feb. 2, 1979, Ser. No. 8,957
Int. Cl.³ G09B *23/28;* **A63H** *3/20, 13/16, 11/00*
U.S. Cl. 46—161 **34 Claims**



1. A toy animal apparatus comprising;
(a) a first toy animal figure representative of a mother animal, said mother animal figure being comprised of:
(1) a body having an interior chamber and an access leading to said chamber,
(2) conveyor means in said chamber, and
(3) manually actuable means on said body and being operatively connected to said conveyor means for causing movement of said conveyor means when actuated,
(b) a second toy animal figure representing a baby offspring of said mother animal, said baby animal figure having a size smaller than that of said chamber in the body of the mother animal, said baby animal figure being positionable within said chamber and on said conveyor means so that said baby animal figure will be moved out through the access opening representing birth of the baby animal upon actuation of said manually actuable means said conveyor means comprising a continuous conveyor belt.

4,237,650
PRESCHOOL PLAY APPARATUS
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 21356
Filed Feb. 9, 1979, Ser. No. 10,925
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—175 R **9 Claims**



7. A play apparatus comprising:
(a) a wall;
(b) means defining a window in said wall, the window extending in a plane;
(c) a picture associated with said window; means for moving at least a major portion of said picture in a direction generally transverse to said plane so that said picture is moved between a first position spaced away from said plane of said window and a second position adjacent to said plane of said window, said means for moving said picture comprising a picture-supporting element which is mounted by pivot means located on the rear of said wall adjacent to an edge of said window; and
(d) a layer of translucent material disposed across said window, said layer having such thickness and such translucent characteristics that the said picture can be readily seen through the layer without backlighting when the picture is in said second position adjacent to said layer, but said picture cannot be readily seen through said layer when said picture is in said first position spaced from said layer.

4,237,651
APPARATUS AND METHOD FOR GROWING LEGUME SPROUTS
Edward A. Caballero, 1216 Spruce Ave., Chico, Calif. 95926
Division of Ser. No. 787,991, Apr. 15, 1977, Pat. No. 4,130,964, which is a continuation-in-part of Ser. No. 636,818, Dec. 1, 1975, abandoned. This application Dec. 26, 1978, Ser. No. 973,156
Int. Cl.³ A01C *1/00*
U.S. Cl. 47—58 **3 Claims**

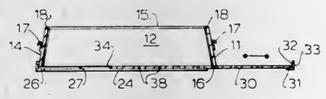
1. The method of reducing the swelling time of soaking legume seeds selected from the group consisting of lentils, soy beans and garbanzo beans which comprises adding from about one to about 2 teaspoonsful of potassium nitrate to each pint of soaking solution.

4,237,652
METHOD OF BREEDING AND PRODUCING SEED CORN
Alan F. Rothermel, P.O. Box 79, West Liberty, Iowa 52776
Continuation-in-part of Ser. No. 917,966, Jun. 22, 1978, abandoned. This application Feb. 4, 1980, Ser. No. 118,588
Int. Cl.³ A01H *1/02*
U.S. Cl. 47—58 **7 Claims**

1. A method of producing yellow dent hybrid seed corn comprising:
planting a selected ear parent strain of a corn plant,

allowing said corn plant to grow until the top ear shoot emerges from a leaf sheath of the corn plant,
preventing fertilization of the top ear shoot,
allowing the silks to emerge from an ear shoot below the top ear shoot,
causing pollination of the lower ear shoot from an unrelated pollen parent plant, and
harvesting the seed corn produced from fertilization of the lower ear shoot, whereby the seed from the lower ear shoot will produce a higher yield the next generation than seed from the top ear shoot.

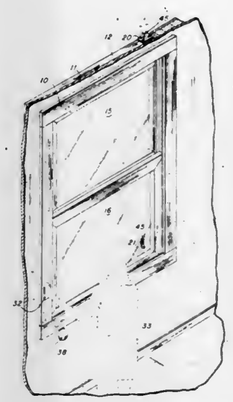
4,237,653
PLANT GROWING BOX
Reynaldo Cortez, 6015 Monterey Ave., Richmond, Calif. 94805
Continuation-in-part of Ser. No. 854,690, Nov. 25, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,403
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—73 **5 Claims**



1. A plant-growing box, including in combination:
four inwardly and upwardly sloping side walls, the length of each of which is several times as large as its height, defining a quadrilateral enclosure with four corners, each said side wall being beveled at each corner edge at 45°, the slope inwardly being about 15° to vertical,
two facing said walls having their lower edges providing a bottom-receiving slide,
bracket means on the outwardly facing surface of said box at each corner having two leaves, each joined to a different one of the two walls meeting at that corner, said bracket means being freely separable into two portions, each comprising one leaf,
readily removable securing means for holding the two portions of said bracket means together, said bracket means and securing means holding the two beveled edges at each corner of the walls spaced apart from each other a uniform distance from bottom to top, in order to provide for ventilation there, and
a removable bottom wall slidable in said slide, the bottom wall having a large number of ventilating and draining perforations and otherwise imperforate, said bottom wall being of hardboard with a metal angle member at one end to serve as a handle and with two nearly parallel side edges that taper convergingly from said handle toward the opposite end.

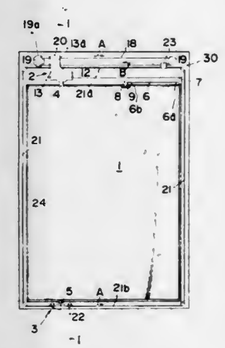
4,237,654
FIRE ESCAPE WINDOW SYSTEM
Roy Landem, and Michael Connolly, both of 204 Melody La., Vernon Hills, Ill. 60061
Filed Jul. 24, 1978, Ser. No. 927,503
Int. Cl.³ E05B *65/10*
U.S. Cl. 49—141 **4 Claims**

1. In a window system having a peripheral outer frame fixed in a wall and having any of one or more panes of glass, screens, and the like occupying substantially the entirety of a center opening of the peripheral frame, an emergency escape apparatus for allowing unrestricted egress by quickly and easily clearing said opening through the window system, the apparatus comprising:
an inner frame received within the peripheral frame and carrying all of said glass, screens, and the like;
mounting means engaging the outer, peripheral frame and the inner frame and allowing controlled movement of the inner frame between a first position sealably engaging across the outer frame and its opening and a second position clear of the outer frame and away from said center opening;
latch means selectively engaging at least the inner frame and barring the inner frame from moving to said second position; and



release means for disengaging the latch means to allow the inner frame to be moved from the outer frame to clear the opening.

4,237,655
SLIDING DOOR
Chishiro Yamao, 29-13, Shiroyama-machi, Nagasaki-shi, Nagasaki-ken, Japan
Filed Jul. 10, 1978, Ser. No. 923,434
Claims priority, application Japan, Feb. 20, 1978, 53-22055[U]
Int. Cl.³ E05D *15/30*
U.S. Cl. 49—252 **9 Claims**



1. A sliding door comprising:
(1) a vertical door body having a rectangular shape,
(2) a door casing surrounding said vertical door body, said door casing comprising first and second vertical side members and upper and lower horizontal members,
(3) upper and lower guide structures for guiding the movement of said door body, said guide structures being mounted on said upper and lower horizontal members of said door casing,
(4) upper and lower connecting means for rotatably and slidably connecting the upper and lower brims of said door body to said upper and lower guide structures respectively, said upper connecting means comprising an upper pivot pin which is secured to the upper brim of said

door body and carried by a suspension plate which is slidably received in said upper guide structure, said lower connecting means comprising a lower pivot pin which is secured to the lower brim in said door body and carried by a sliding plate which is slidably received in said lower guide structure, and

(5) a rotary elongated lever disposed above and parallel to the surface of the upper brim of said door body, said rotary lever having a proximal end thereof pivotally mounted on a lateral pivot shaft secured to said first vertical side member of said door casing and a distal end pivotally connected to an upright lug secured to an intermediate position of said upper brim of said door body, said lateral pivot shaft also being disposed above said upper brim of said door casing, whereby upon the exertion of an initial pulling force on said closed door body exclusively in a direction parallel to said upper guide structure, said sliding door slides along said guide structures and simultaneously rotates on said upper and lower pivot pins to move to a full open position which is perpendicular to the original closed position, said upper pivot pin, said intermediate upright lug, and said lateral pivot shaft defining an imaginary triangular configuration, said upper pivot pin, said intermediate upright lug, and said lateral pin being disposed above the upper brim of said door body such that said door body can cross underneath said rotary elongated lever without being obstructed by said rotary elongated lever when said door body is moved between closed and open positions.

4,237,656

MOTOR VEHICLE WINDOW DRIVE MECHANISM

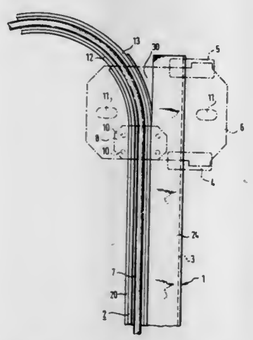
Hans-Peter Hess; Günther Mühling, both of Coburg; Manfred Sünkel, Sonnefeld, and Hans Dauernheim, Dreieich, all of Fed. Rep. of Germany, assignors to Metallwerk Max Brose, GmbH, Coburg, Fed. Rep. of Germany

Filed Apr. 19, 1979, Ser. No. 31,519

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1978, 2818109; Jul. 4, 1978, 2829378

Int. Cl.³ E05F *11/48*

U.S. Cl. 49—352 **20 Claims**



1. A window drive mechanism, particularly for lifting and lowering a motor vehicle window pane comprising a carriage adapted to have said window pane affixed thereto, a drive cable for operatively driving said carriage, a guide tube consisting essentially of plastic material extending in a direction parallel to the driven direction of said carriage, said tube being arranged to surround said drive cable and having said cable operatively arranged in guided engagement therein, means on said guide tube defining a longitudinal slot therethrough, said carriage having a portion thereof extending through said longitudinal slot and connected with said drive cable for effecting driven engagement between said drive cable and said carriage, and a support tube surrounding said guide tube and provided with another longitudinal slot which extends in alignment with said longitudinal slot in said guide tube, said support tube being arranged to deter said drive cable being displaced from within said guide tube through said longitudinal slot, said longitudinal slot in said guide tube being formed between a pair of radial projections with said another slot in said support tube being formed between a pair of longitudinal edges of said support tube, said radial projections of said guide tube extending to between said edges of said support tube.

4,237,657

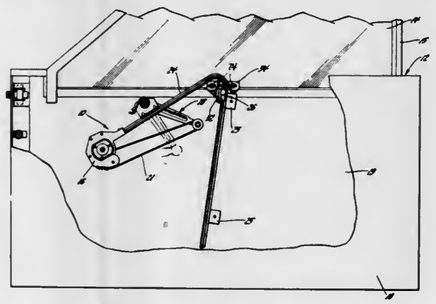
AUTOMOTIVE TAPE DRIVE WINDOW REGULATOR

Bohdan Kazewych, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 12, 1979, Ser. No. 56,904

Int. Cl.³ E05F *11/48*

U.S. Cl. 49—352 **3 Claims**



1. In a tape drive window regulator having a tape slidably mounted in a fixed channel track, a drive block having teeth engaged with perforations in the tape, and a guide block slidably mounted on the track and also slidably engageable with the drive block for assembly therewith and wherein the guide block is drivingly connected to both the drive block and a window so as to effect opening and closing of the window as the tape is slid in opposite directions in the track, an improved drive connection arrangement between the drive and guide blocks comprising in combination: resilient drive means on one of the blocks for snapping into a position of drive engagement with the other block as the blocks are slidably engaged with each other during the assembly thereof to thereby effect a drive connection therebetween that is operable when the tape is slid in one direction in the track, rigid drive means on said one block for engaging with the other block to effect a drive connection therebetween that is operable when the tape is slid in the opposite direction in the track, and rigid interlock means on the blocks for engaging with each other to prevent disengagement of the drive connections provided by said resilient drive means and said rigid drive means and thereby maintain the blocks in their assembled condition.

4,237,658

DEVICE FOR USE IN POLISHING TABLE FACETS OF GEMS

Hanoch Stark, Ramat Hasharon, Israel, assignor to Hargem Ltd., Ramat Gan, Israel

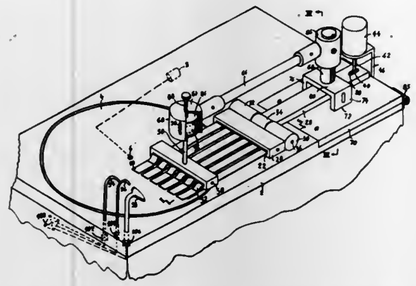
Filed Jan. 26, 1979, Ser. No. 7,000

Int. Cl.³ B24B *9/16*

U.S. Cl. 51—122 **10 Claims**

1. A polishing device particularly useful for polishing table facets of gems, comprising a rotary polishing disc, a plurality of said spring fingers each mounted in cantilever fashion to overlie the polishing disc and each including a pad formed with a socket adapted to receive a gem to be polished by the polishing disc and to be pressed against the polishing disc by

the spring finger: a pressure bar overlying the upper faces of all the spring fingers; and pressure-applying means applying a



pre-selected substantially uniform pressure to the bar in the direction of the polishing disc.

4,237,659

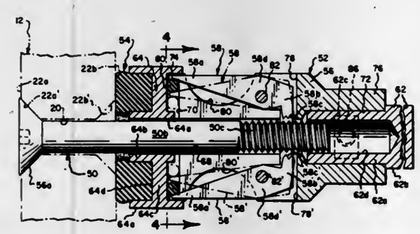
QUICK CHANGE ADAPTER FOR MOUNTING ROTATABLE GRINDING ELEMENTS

Walter N. Welsch, Tonawanda, and Elwin H. Fleckenstein, Alden, both of N.Y., assignors to Dynabrade, Inc., Tonawanda, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,736

Int. Cl.³ B24B *45/00*

U.S. Cl. 51—168 **8 Claims**



1. In the combination of a grinding element, a drive shaft for mounting said grinding element and being formed integrally therewith, a power source and means for mounting said grinding element and said drive shaft for driven rotation in a given direction by said power source; the improvement comprising in combination:

said drive shaft being formed with locking recess means; and

said means for mounting said grinding element and said drive shaft includes a fixture having, a housing formed with a mounting opening sized to slidably receive said drive shaft, an arbor for connecting said housing to said source of power for driven rotation in said given direction, said arbor having a fixture mounting end portion formed with a recess, an opposite power source mounting end portion and means for removably coupling said fixture mounting end portion to said housing for conjunctive rotation and to position said recess in communication with said mounting opening, jaw means mounted on said housing for movement between release and locking positions, said jaw means being formed with tooth means arranged for receipt within said mounting opening for locking engagement with said locking recess means when said jaw means is in said locking position, and a resiliently deformable means disposed within said recess for engagement with an inserted end of said drive shaft and being subject to clamping deformation between said inserted end and said fixture mounting end portion incident to insertion of said drive shaft within said mounting opening to position said locking recess means in engagement with said tooth means, characterized in that deformation of said deformable means establishes a bias acting lengthwise of said drive shaft for releasably maintaining said tooth means and said locking recess means in surface engagement and constraining said drive shaft and said grinding element for rotation with said fixture.

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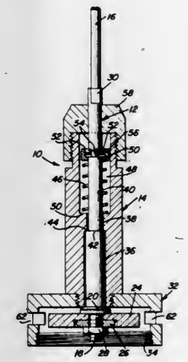
GASKET SEAT RESURFACER

John L. Fontenot, Sr., Rte. 2, Box 1605A, Westlake, La. 70669

Filed Feb. 22, 1979, Ser. No. 14,146

Int. Cl.³ B24B *19/00*

U.S. Cl. 51—241 VS **6 Claims**



1. A grinding device for resurfacing gasket seats of valve bodies comprising an arbor having a longitudinally extending free end for engagement with a power drive tool and having an opposite end containing a threaded connector; an arbor housing for partially enclosing said arbor, and including a bearing surface disposed adjacent said threaded connector and slidably and rotatably receiving said arbor for aligning said arbor with said arbor housing; an arbor housing adaptor threadedly engaged with said arbor housing, said adaptor enclosing said threaded connector and terminating in a threaded aperture for connection to the valve body; a generally circular cutting means connected to said threaded connector of the arbor; and means connected between said arbor and said arbor housing for biasing said threaded connector toward said arbor housing, said means for biasing including a shoulder disposed within said arbor housing, a compression spring having one end thereof in engagement with said shoulder, and an arbor engagement device connected to the opposite end of said spring, said arbor engagement device including a circumferential extending groove on said arbor, a pair of half rings disposed in said groove and a retainer ring disposed over said half rings for holding said half rings in said groove and connected to said spring, said spring biasing said retainer over said half rings.

4,237,661

SUPPORT STAND FOR USE WITH AN ABOVE GROUND POOL

George F. Adams, Sr., and Mary L. Adams, both of 2740 NW. 172 Ter., Miami, Fla. 33055

Filed Jun. 21, 1978, Ser. No. 917,546

Int. Cl.³ E04H *3/12*

U.S. Cl. 52—8 **5 Claims**

1. A collapsible stand support comprising:

a standard having an upper end and a lower end and being of a first predetermined height and having a main longitudinally extending surface;

main upper pivot pin means at a predetermined location between said upper end and said lower end and adjacent said upper end,

a main normally horizontally oriented support arm having an inside surface and an outside surface and having an

inner end and an outer end and being of a length less than the distance between said predetermined location and said lower end;

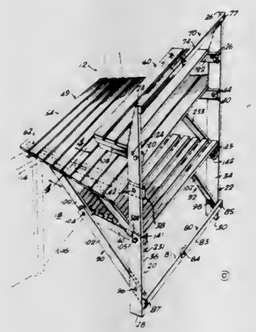
said main pivot pin means connecting said inner end of said support arm at said predetermined location to said leg with the inside surface of said main support arm confronting the outside surface of said support standard;

a first and second equilength brace leg each with an inside surface and an outside surface and with an upper end and a lower end;

first pivot pin means connecting the upper end of said first brace leg to said main support arm adjacent the other end of said support arm with the inside surface of said leg confronting the outside surface of said support arm;

second pivot pin means connecting the upper end of said second brace leg to said support arm intermediate said first pivot means and said main pivot means with the inside surface of said second brace leg confronting the outside surface of said arms;

a normally horizontally oriented support arm having an inner end and an outer end and an inside surface and an outside surface and of a length less than the distance along the outside surface of said main support arm between said first pivot means and said second pivot means connecting the upper ends of said legs to said arm;



third pivot pin means connecting the outer end of said support arm to the lower end of said first brace leg with the inside surface of said support arm confronting the outside surface of said first leg;

fourth pivot pin means connecting the inner end of said support arm to the lower end of said second brace leg with the inside surface of said support arm confronting the outside surface of said second leg,

said main support arm, said support arm, and said brace legs defining a collapsible rectangular frame swingable with said arm about said main pivot means;

a support and guide leg having an upper end and a lower end and an inside surface and an outside surface,

main lower pivot pin means connecting the lower end of said support end guide leg adjacent the lower end of said support standard with the inside surface of said support end guide leg confronting the outside surface of said support standard, and

the upper end of said support and guide leg being connected to the third pivot means defining a swingable elbow connection, the outside surface of the support and guide leg confronting the inside surface of the first brace leg; and

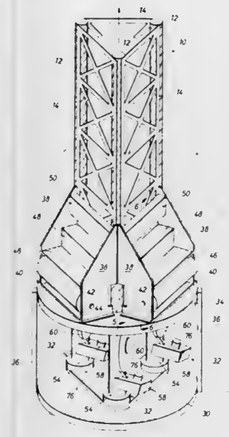
removable lock pin means to removably connect the lower end of the second leg and the second brace leg adjacent said fourth pivot means in a hole provided in said support standard intermediate said main upper pivot pin means and said main lower pivot pin means.

4,237,662

STRUCTURAL MEMBERS, METHOD AND APPARATUS

Jack A. Kinzler, Seabrook, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Apr. 4, 1978, Ser. No. 893,383
Int. Cl.³ E04N *12/18*
U.S. Cl. 52—108 **60 Claims**



1. A method of manufacturing in situ a structural member from compactly stored flexible single sheet material comprising:

(a) progressively forming a plurality of generally tubular column members, each by advancing sheet material from an independent source into a column forming assembly, and deploying the column members generally parallel to one another;

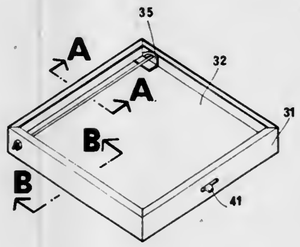
(b) interconnecting adjacent column members simultaneously with the forming thereof by progressively securing a respective side member between each such pair of adjacent column members each side member being comprised of a strip of the sheet material advanced from an independent source.

4,237,663

FALSE CEILING ACCESS PANELS

Barrie W. Storer, Nuneaton, England, assignor to Profilex Limited, Hinckley, England

Filed Nov. 3, 1978, Ser. No. 957,349
Claims priority, application United Kingdom, Nov. 5, 1977, 46119/77
Int. Cl.³ E05D *15/10;* **E06B** *1/12;* **E04B** *5/52*
U.S. Cl. 52—204 **11 Claims**



1. An access panel assembly for a ceiling, comprising a metal outer frame around at least one access panel which has a depending metal skirt around the edge thereof and which fits

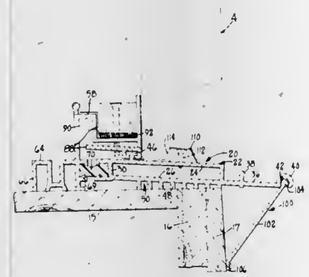
flush in the opening defined by the frame, a pivot rod mounted securely on the frame above the panel or panels above and parallel to, but laterally spaced from, an adjacent edge of the panel or panels, and at least two upstanding brackets on each panel, each having a guide slot therein for receiving the pivot rod, wherein each guide slot extends from a generally horizontal first end portion for receiving the rod when the access panel is raised, to a second end portion nearer the adjacent edge of the associated access panel.

4,237,664

SLIDING DOOR UNIT

Richard J. Wilmes, Stillwater, Minn., assignor to Andersen Corporation, Bayport, Minn.

Filed Jul. 24, 1978, Ser. No. 927,454
Int. Cl.³ E06B *7/14*
U.S. Cl. 52—209 **9 Claims**



1. An improved sliding door unit (2) of the type having a first stationary door panel (4) and a second movable door panel (6) supported in a door frame which includes a sill (20) beneath the door panels, the movable door panel (6) being slidable relative to the stationary door panel (4) to a closed position to block a door opening (7) through the door frame, the stationary door panel (4) being located closer to an exterior side of the sill (20) than the movable door panel (6), wherein the improvement relates to an improved sill (20) which comprises:

(a) a first sill surface (24) located generally adjacent and in front of the movable door panel (6) when the movable door panel (6) is in its closed position;

(b) a second sill surface (78) located generally adjacent and in back of the stationary door panel (4), wherein the first and second sill surfaces (24 and 78) are located side-by-side along a line extending between the first and second door panels (4 and 6), and the second sill surface (78) being located above the first sill surface (24) and having a substantially solid vertical face (90) which extends down to the first sill surface (24) to block an opening between the door panels (4 and 6) to minimize water infiltration between the stationary and movable door panels (4 and 6); and

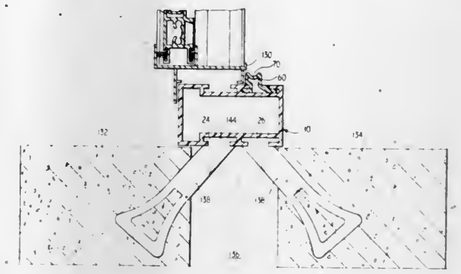
(c) wherein the sill (20) further includes an enclosed drain tank which underlies and operatively communicates with the second sill surface (78), and wherein the drain tank is configured to drain any water reaching the second sill surface (78) to an exterior side of the sill.

4,237,665

STRUCTURAL ELEMENTS FOR BUILDING CONSTRUCTION AND ASSEMBLIES INCORPORATING THESE ELEMENTS

George Molyneux, Plymouth, England, assignor to Radway Plastics Limited, Solihull, England

Filed Feb. 21, 1978, Ser. No. 879,566
Int. Cl.³ E06B *1/60*
U.S. Cl. 52—213 **10 Claims**



1. A structural assembly comprising a sub-frame structural element and a metal window frame element, said sub-frame structural element being adapted to be fitted and secured into an opening in a wall of a building around said window frame element and said window frame element being adapted to support at least one sash frame or glazing; said sub-frame element itself comprising a strip of corrosion-resistant liquid impermeable material of substantially constant cross-section throughout its length, said cross-section providing a substantially rectangular overall shape free from protrusions, providing the strip with two side faces and two edge faces, at least two parallel longitudinally extending grooves in one side face of said strip; an intermediate land on said one side face between each adjacent pair of said at least two grooves; two outer lands located respectively between each laterally outer groove of said at least two grooves and the adjacent edge face of said strip, said two outer lands being of unequal width; said window frame element having a longitudinally extending web and a flange depending from said web, said sub-frame element and said window frame element being secured to each other with the web supported by at least said intermediate land and said flange engaging with one of said edge faces, so that there is at least one of said grooves located under said web, and at least one of said grooves uncovered on the inside of said window frame element to provide a moisture channel, the unequal widths of said two outer lands permitting either of said outer lands to be on the outside of the assembly to accommodate window frame elements of different widths.

4,237,666

TRIMLESS FLUSH FLOOR FITTING

John E. Kohaut, West Orange, N.J., assignor to Raceway Components, Inc., Nutley, N.J.

Filed Sep. 14, 1978, Ser. No. 942,166
Int. Cl.³ E04F *19/08*
U.S. Cl. 52—221 **12 Claims**

1. A flush-floor fitting, to be positioned at a level line opening in a structural member, for passage of cables therethrough from a cable raceway said structural member having a flexible floor covering positioned on and concealing the flush-floor fitting, comprising:

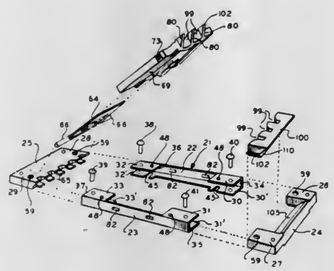
(a) a frame member to be positioned at said opening,

(b) a tongue member,

(c) means hingedly connecting the tongue member to the frame member,

(d) a cover member provided with means connecting the cover member for axial slidable movement relative to the tongue member, for opening and closing the leveling frame,

whereby said cover member and overlying flexible floor covering member may be moved to open position relative



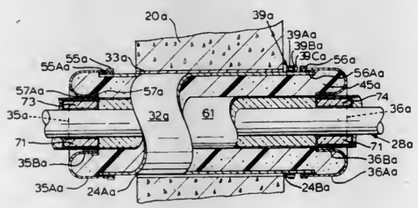
to said level line, thereby opening the frame for passage of cables therethrough and may be moved to closing position relative to said level line, to thereby close the frame.

4,237,667

METHOD AND APPARATUS FOR INSTALLING GEL MATERIAL IN ARCHITECTURAL BARRIER BREACHES

Joseph N. Pallucci, Stone Park; Gregory J. Jarosz, Des Plaines, and Glenn R. Kruse, Elk Grove Village, all of Ill., assignors to Tech-Sil, Inc., Elk Grove Village, Ill.

Filed May 2, 1979, Ser. No. 35,283
Int. Cl.³ E04F *17/08;* E04B *5/48*
U.S. Cl. 52—221 **14 Claims**



1. Apparatus for sealing a breach having inner and outer openings formed in an architectural barrier which comprises:

a collar having two open ends adapted to be affixed to portions of an architectural barrier adjacent to the breach in said barrier, said collar projecting outwardly therefrom in at least one of the openings;

a resilient, flexible, sheet-form member circumferentially wrapped around the collar portion adjacent each outer opening of said collar;

means locking said sheet-form member in a sealed-together relationship with adjoining portions of said collar;

means maintaining said sheet-form member in a radially inward-extending position to form a bellows-type boot and together with said collar forming an enclosed cavity; and

a quantity of gel material disposed within and filling said cavity to form a pocket of the gel,

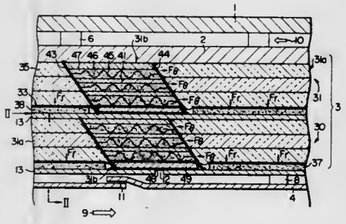
whereby the entire breach is sealed with a flexible barrier providing a deformable seal.

4,237,668

HEAT INSULATING STRUCTURE FOR USE IN TRANSPORTING AND HANDLING GAS OF HIGH TEMPERATURE AND PRESSURE

Tokunori Mathusima, Ibaraki; Takeshi Sato, Hitachi, and Akira Uenishi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1978, Ser. No. 932,328
Int. Cl.³ F16L *9/14, 9/18, 59/12, 59/14*
U.S. Cl. 52—249 **11 Claims**



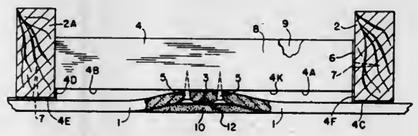
10. A heat insulating structure for preventing the heat possessed by a high temperature and pressure gas in a tubular cylindrical body from leaking outside, characterized by comprising a tube made of a heat-resistant material and disposed in said tubular cylindrical body so as to define a passage for said gas, a heat insulating material disposed between said tube and said tubular cylindrical body, and elastic means adapted to bias said heat insulating material in both of axial and radial directions, said elastic means being formed to be continuous in the circumferential direction, thereby to prevent the gas from passing therethrough.

4,237,669

SEAM ELIMINATOR FOR BUTT JOINTS

George S. Hunter, 125 Bennett Rd., Granby, Mass. 01033

Filed Aug. 20, 1979, Ser. No. 67,920
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—417 **10 Claims**



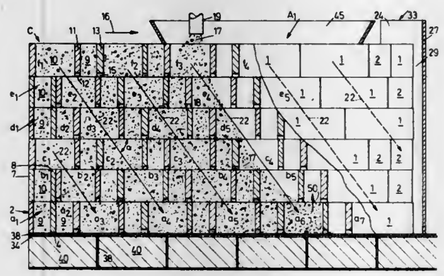
1. A device for eliminating seams between the butt joints of two contiguous sheets of installed wall board mounted on studs comprising, a front flat surface, a top surface extending at right angles to the rear of said front surface, a bottom surface at right angles to said front surface, below said top surface, said top and bottom surfaces converging towards each other, a first vertical section located at the closest point between said upper and lower surfaces and extending at right angles forward of said front surface, a first flange extending at right angles to said first vertical section and in the same plane as the front surface, a second vertical section extending forward of said front surface and parallel to said first vertical section, a second flange extending outwardly therefrom, and being in the same plane as the first flange, a third section extending upwardly from said top surface and in the same plane as said second section, a fourth section extending downwardly from said bottom surface and in the same plane as said second and third sections.

4,237,670

BUILDING BLOCK SET AND METHOD FOR BUILDING WITH SUCH A BLOCK SET

Gerard De Waele, Heldergem, Belgium, assignor to Hanota Holdings S.A., Luxembourg, Luxembourg

Filed Sep. 2, 1977, Ser. No. 830,095
Claims priority, application Belgium, Mar. 1, 1977, 175359
Int. Cl.² E04B *2/54*
U.S. Cl. 52—436 **38 Claims**



1. Building method by means of a block set comprising at least two block types formed by base blocks and/or joined base blocks comprised by a united combination of identical or different base blocks, a first base block having a portion in the shape of a straight rectangular parallelepiped which is extended at the one end thereof by two flanges each extending in the extension of a side surface of said portion over a distance substantially equal to a fraction of the length of the parallelepiped-shaped portion, the latter having a hollow volume extending through the block over the whole height thereof, a second base block the horizontal cross-section of which is fork-shaped, particularly U-shaped, the flange length of said second block being substantially equal to the flange length of the first base block, the tolerance allowed for the above defined length and distances being substantially equal to the thickness of the walls of the parallelpiped-shaped portion, no anchoring means being provided at the lower and upper edges of the blocks, while the lower or upper edges of the latter are situated in the same plane, said method comprising first laying blocks loosely on top of one another and next to one another to form walls through which extend downwards shafts and then pouring binder in the hollow block spaces of the top row to fill said shafts, the blocks being arranged relative to one another so as to form vertical shafts with at least every third block row open sidewise towards an adjacent shaft, along a continuous channel letting the binder fed to the shaft concerned flow out partly by overflowing substantially under the weight thereof, towards the adjacent shaft or shafts which are not yet filled with binder, with such a speed and flow rate which are at most equal to the allowable speed and flow rate as determined by the block pressure strength.

4,237,671

INSULATION BARRIER FOR RECESSED LIGHT FIXTURES

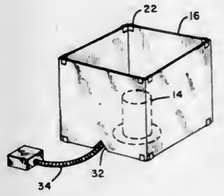
Richard W. Munson, Minnetonka, Minn., assignor to Insulation Sales Company, Minneapolis, Minn.

Filed Jul. 24, 1978, Ser. No. 927,341
Int. Cl.³ E04F *19/00*
U.S. Cl. 52—584 **6 Claims**

1. Apparatus for maintaining a safe spacing between thermal insulation and a recessed light fixture having a portion extending into an insulated attic space comprising:

(a) first, second, third and fourth panel members each having exposed top and bottom edges and a pair of side edges and a predetermined length, width and thickness dimension and formed of a fire-proof material, said panel members being positioned proximate one another along the side edge of at least one of each pair of adjacent panels to form an enclosure surrounding the portion of a light fixture extending into an insulated attic space; and

(b) a plurality of clips each comprising first and second U-shaped segments and each having opposed pairs of legs spaced apart a distance corresponding generally to the



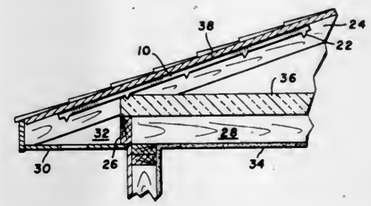
thickness of said panel members, each leg having a pair of side edges and a joined edge at which said leg is joined to its opposed leg, said first and second U-shaped members being joined together along a side edge of one of the legs of each U-shaped member such that the planes of said one legs are at a predetermined angle with respect to one another, said angle being substantially 90 degrees.

4,237,672

ROOFING VENT AND INSTALLATION TOOL

Lloyd A. Peterson, Center City, Minn., assignor to Lloyd Plastics Company, Forest Lake, Minn.

Continuation of Ser. No. 873,792, Jan. 31, 1978, abandoned. This application Apr. 9, 1979, Ser. No. 28,520
Int. Cl.³ F04B *1/74;* F24F *7/02*
U.S. Cl. 52—743 **1 Claim**



1. In the construction of a pitched roof building of the type in which spaced apart roof rafters having roof sheathing attached to the outer side edge thereof intersect at an acute angle with horizontal ceiling joists along a plateline separating a soffit zone from the attic space, a method for maintaining adequate ventilation between said soffit zone and said attic zone, comprising the steps of:

(a) installing ceiling insulation material between said ceiling joists, said insulating material extending proximate the intersection of said roof rafters with the building's plateline; and

(b) thereafter, from a position remote from the location of said plateline, inserting a plurality of elongated, open ended, molded plastic channel members between selected pairs of adjacent roof rafters of said pitched roof building with the bottom portion of said channel members being spaced from said roof sheathing by the side walls of said channel members, the bottom portion being provided with a plurality of transversely extending wedge-shaped notches, one open end of each of said channel members being disposed in said soffit zone and the other open end of said channel members being disposed in said uninsulated attic zone, said elongated open ended channel members being put in place with a long handled tool having a wedge-shaped head thereon for engaging a selected one of

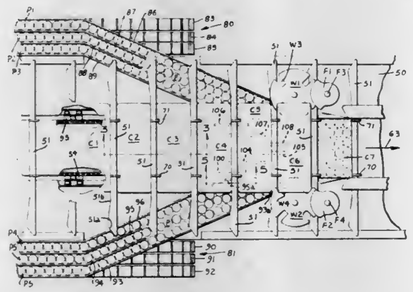
said wedge-shaped notches in said bottom portion of said channel members.

4,237,673

MACHINE FOR LOADING CONTAINER SLEEVES THROUGH THEIR OPEN ENDS

Rodney K. Calvert, Dunwoody, and Charles R. Landrum, Doraville, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 30, 1979, Ser. No. 25,367
Int. Cl.³ B65B *21/02*
U.S. Cl. 53—48 **9 Claims**



1. A machine for loading at least one row of primary packages (P) through each end of an open ended container sleeve (C), said machine comprising a horizontal fixed base plate (**50**) having infeed and outfeed ends, a plurality of transverse parallel metering bars (**51**) having wedge shaped ends and disposed above said base plate and spaced apart to receive transverse open ended sleeves therebetween and connected with endless means (**64–65**) having a working reach movable relative to said fixed base plate from a point adjacent the infeed end toward the outfeed end thereof and effective to move said sleeves, infeed conveyor means (**80,81**) disposed on each side of said base plate at the infeed end thereof, and fixed guide means (**86–89**) (**93–96**)disposed above said base plate on each side of the infeed end thereof and at an acute angle to the path of movement of said working reach of said endless means for receiving primary packages (P) from said infeed conveyor means respectively and for guiding said primary packages into the space between the wedge shaped ends of adjacent metering bars respectively and in turn into the open ends of said sleeves (C) respectively, said wedge shaped ends of said metering bars being effective to facilitate entry into said rows of primary packages moving in angular relation to the direction of movement of said metering bars to deter ine the number of primary packages which are loaded into e :h open end of the container.

4,237,674

APPARATUS FOR INTRODUCING STACKS OF PAPER SHEETS INTO BOXES

Kurt Aykut, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,502
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756473
Int. Cl.³ B65B *57/20, 39/50, 39/12*
U.S. Cl. 53—249 **25 Claims**

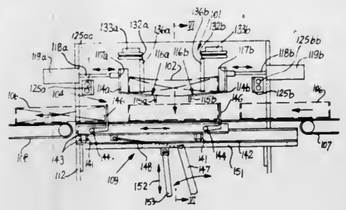
1. Apparatus for introducing stacks of sheets into containers, comprising

(a) a receptacle for stacks, said receptacle having a bottom including a plurality of sections movable toward and away from each other between first positions in which said sections provide a base for the lowermost sheet of a stack in said receptacle and retracted positions in which such stack is free to descend by gravity, said sections being substantially coplanar in each of said positions thereof;

(b) means for feeding stacks seriatim into said receptacle;

(c) a support for containers disposed below said receptacle;

(d) means for delivering empty containers onto said support, one after the other, to a position of register with said receptacle;



(e) means for receiving filler containers from said support; and

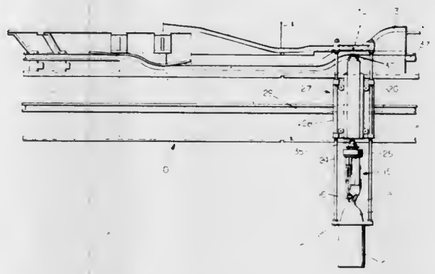
(f) means for simultaneously moving said sections from said first to said retracted positions while said receptacle contains a stack and an empty container on said support registers with said receptacle.

4,237,675

METHOD AND APPARATUS FOR ASSEMBLYING TUBULAR SLEEVE PREFORMS ONTO CONTAINERS IN PRECISE ALIGNMENT

Jack H. Myers, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 21, 1979, Ser. No. 50,577
Int. Cl.³ B65B *21/24, 53/02*
U.S. Cl. 53—397 **17 Claims**



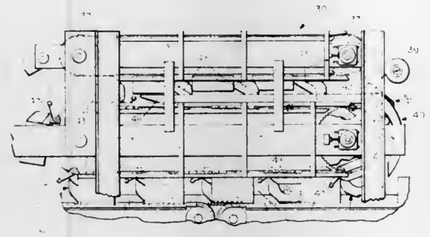
1. The method of precisely positioning a close-fitting tubular sleeve on a generally cylindrical container comprising the steps of placing a close-fitting tubular sleeve in telescoping relation over an upper portion of said container, retaining an upper portion of said container, contacting the upper edge of said tubular sleeve by a coaxially-movable apertured plate and lowering said sleeve to an intermediate position on the container body by downward movement of said apertured plate, separating the said apertured plate from contact with said sleeve, and elevating the said container while restraining the upper edge of said tubular sleeve by said apertured plate to further move the sleeve into precise relative position on said container.

4,237,676

METHOD AND APPARATUS FOR PACKAGING CONTAINERS

James W. Buckingham, Pemberville, and Stephen W. Amberg, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 9, 1979, Ser. No. 18,962
Int. Cl.³ B65B *21/24, 53/06*
U.S. Cl. 53—398 **25 Claims**



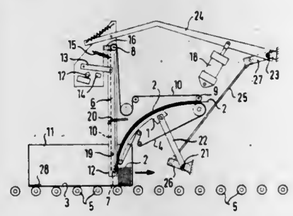
1. The method of applying a preformed heat-shrinkable flexible tubular wrap to a plurality of similar articles arranged in a group comprising the steps of supplying said tubular wrap in double-folded flat condition, opening the tubular wrap in two stages during its conveyance above and parallel to the supply source for said articles, moving said opened tubular wrap in an axial direction at one lineal speed, gathering a predetermined group of said articles and moving same at a greater lineal speed to telescopically enter said opened tubular wrap traveling in coaxial alignment therewith, depositing and maintaining said group articles firmly together centrally within said wrap, and conveying said articles and surrounding wrap into a heating zone to heat-shrink the wrap into conforming relation around said articles.

4,237,677

SWITCHING APPARATUS FOR THE LOWERING AND PIVOTING RAILS OF A CARTON FILLING MACHINE

Hartmut Klapp, Kaarst, Fed. Rep. of Germany, assignor to Jagenberg-Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,136
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825647
Int. Cl.³ B65B *5/10;* **B65H** *29/14*
U.S. Cl. 53—505 **5 Claims**



1. Switch apparatus for the positioning drive of a lowering and pivoting rail means of a carton filling machine for guiding blanks into a transport container, the pivoting rail being pivotally movable into the container and supporting lower belt means, the lowering rail being generally vertically movable into the container and supporting upper belt means, the blanks being guided and delivered into said container between the lower and upper belt means, comprising:

a switch rail mounted adjacent said lowering rail, and movable with respect to said lowering rail in a generally vertical up and down movement, said switch rail projecting downwardly into said container beyond said lowering rail into a lowermost, extended position as said lowering rail is moved into said container;

an end switch fixed to said lowering rail;

a permanent magnet fixed to said lowering rail;

a bridge fixed to said switch rail and abutting said end switch and said permanent magnet in the lowermost position of said switch rail with respect to said lowering rail;

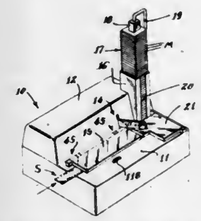
a spring mounted between said lowering rail and said switch rail, said bridge and permanent magnet holding said switch rail against the force of said spring wherein said end switch is activated by removing said bridge out of abutment with said end switch, said end switch remaining closed until being abruptly opened when said switch rail contacts one of the floor of said container and a layer of blanks, whereby said bridge is removed from contact with said permanent magnet.

4,237,678

APPARATUS FOR LOADING FILM TRANSPARENCIES INTO PRE-CLOSED SLIDE MOUNTS

Edwin R. Thompson, Stamford, Conn., assignor to Forox Corporation, Stamford, Conn.

Division of Ser. No. 737,201, Nov. 1, 1976, Pat. No. 4,102,029.
This application Mar. 6, 1978, Ser. No. 883,380
Int. Cl.³ B65B *5/04, 35/02, 35/20*
U.S. Cl. 53—520 **17 Claims**



1. Apparatus for automatically loading a film transparency into a pre-closed slide mount having at least one window therein for viewing the transparency comprising:

means for supplying the slide mounts to a predetermined initial position,

first feed means for moving the slide mount from said initial position along a first path into a loading station,

second feed means for feeding a film transparency along a second path into the slide mount in the loading station, said second path being perpendicular to said first path,

a lever assembly pivotally mounted to swing back and forth about a pivot axis, said pivot axis being offset from both of said perpendicular paths,

one portion of said lever assembly being connected to said first feed means for moving said first feed means back and forth along said first path, and another portion of said lever assembly being connected to said second feed means for moving said second feed means back and forth along said second path perpendicular to said first path,

drive means for swinging said lever assembly in a first direction about said pivot axis during a first portion of a cycle of operation for causing said first feed means to move a slide mount from said initial position along said first path into said loading station while simultaneously retracting said second feed means along said second path and subsequently for swinging said lever assembly in the opposite direction about said pivot axis during a second portion of the cycle of operation for causing said second feed means to feed a firm transparency along said perpendicular path into the slide mount in said loading station while simultaneously retracting said first feed means, and

said drive means provide smooth acceleration and deceleration of said lever assembly during swinging in said first direction about said pivot axis and also provide smooth acceleration and deceleration of said lever assembly dur-

ing swinging in the opposite direction about said pivot axis,

whereby the slide mount and the film transparency are each in turn moved into the loading station along respective paths which are perpendicular to each other and with smooth acceleration and deceleration applied through said lever assembly.

4,237,679

MOWING MACHINE

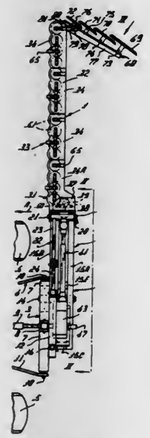
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Mar. 24, 1978, Ser. No. 889,951

Claims priority, application Netherlands, Mar. 30, 1977, 7703424

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—13.6 **21 Claims**



1. A mowing machine comprising a plurality of mowing elements arranged side-by-side and adapted to rotate about upwardly extending axes, each said element including a rotor, a cutting member being mounted on each said rotor, the top surface of each said rotor being at an acute angle to the rotational axis of its corresponding said mowing element, each said rotor having the shape of a wedge as seen in a radical cross-section view, said cutting member extending parallel to the adjacent part of said top surface.

4,237,680

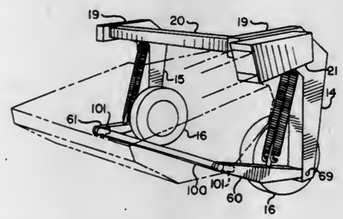
LATERAL FLOAT LOOKOUT DEVICE

Manfried L. Hoch, Romeoville, and George B. Cicci, Burr Ridge, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 914,318, Jun. 12, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,463

Int. Cl.³ A01D *47/00*

U.S. Cl. 56—15.9 **5 Claims**



1. In a mobile crop harvester,

a mobile frame supported by a pair of laterally spaced wheels;

a laterally elongated crop harvesting header including crop cutting apparatus disposed adjacent the forward edge thereof and ground-engaging means for limiting the downward travel of said cutting apparatus;

linkage for attaching said header to said frame, said linkage including an upper link and a pair of laterally spaced lower swing links having forward ends substantially coaxially pivotally connected respectively with said header at laterally spaced locations thereon and rearward ends having pivotal connections respectively with said frame means; and

a laterally extending torque transmitting bar rigidly attached at each end to said lower links respectively and extending rotationally unrestrained therebetween coaxially with said coaxial pivotal connection.

4,237,681

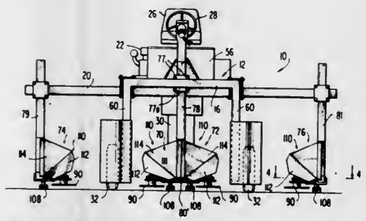
MULTIPLE-ROW TOBACCO HARVESTING MACHINE

Richard C. Zantzinger, Jr., West Hatton Farm, Mt. Victoria, Md. 20661

Filed Mar. 30, 1979, Ser. No. 25,526

Int. Cl.³ A01D *57/00*

U.S. Cl. 56—27.5 **9 Claims**



1. An improved multiple row tobacco harvesting machine comprising:

a laterally stationary frame movable in rolling contact with the ground along several of a plurality of laterally spaced rows of tobacco plants,

a plurality of vertical support bars,

means for supporting said plurality of laterally spaced, vertical support bars from said frame at laterally spaced intervals corresponding to the spacing of the tobacco plant rows,

cutting saw assemblies carried by said vertical support bars at their lower ends, above the surface of the ground, said cutting saw assemblies comprising cutting discs mounted for rotation about vertical axes at positions corresponding to said rows for severance of said plants just above said ground surface,

guide members affixed to said support bars and having portions for adjacent rows which extend from a point in advance of said cutting discs to positions laterally aligned with the axis of rotation of said discs for deflection of said plants of said adjacent rows towards each other and for lifting the leaves vertically upwardly, and

means for driving said discs for said cutting assemblies for adjacent rows in given opposite directions to cause, along with the deflection of said plants by said guide members, plants of adjacent rows, upon severance, to fall with their butt ends extending rearwardly, on top of each other to form rows of severed tobacco plants numbering one-half of the rows being harvested to facilitate subsequent pick-up of the severed plants.

4,237,682

OPEN-END ROTOR FOR A SPINNING MACHINE

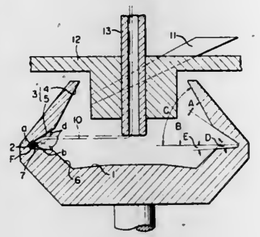
Noriaki Miyamoto, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 13, 1979, Ser. No. 20,233

Claims priority, application Japan, Mar. 20, 1978, 53-32208

Int. Cl.³ D01H *1/135*

U.S. Cl. 57—58.89 **5 Claims**



1. An open end rotor for a spinning machine, said rotor comprising:

a rotary chamber concentrically disposed about a rotational axis and having an open end and a closed end axially spaced from said open end;

a first annular wall extending from said open end radially outwardly from said rotational axis and toward said closed end, said first wall having an inner portion onto which discrete fibres are supplied through said open end and forming a first angle of 55° to 75° with a plane perpendicular to said rotational axis, and an outer portion receiving the fibres from said inner portion, said inner portion forming a second angle of 10° to 35° with a straight line extending from said outer portion;

a second annular wall extending from said closed end radially outwardly from said rotational axis and toward said outer portion of said first annular wall, said second annular wall having an inner portion and an outer portion, said outer portion of said second annular wall forming a third angle of 20° to 50° with a straight line extending from said inner portion of said second annular wall;

said outer portion of said second annular wall defining a fibre collecting space in cooperation with said outer portion of said first annular wall, the fibres being collected into said fibre collecting space while sliding down along said inner and outer portions of said first annular wall;

the thus collected fibres being removed in contact relationship with said outer portion of said first annular wall by twisting them into a tail end of a yarn which is continuously withdrawn from a yarn discharge pipe projecting through said open end into said rotary chamber;

said second angle and the juncture between said inner and outer portions of said first annular wall comprising means for causing heavier impurities, supplied with said fibres onto said inner portion of said first annular wall, to, under the influence of centrifugal force, separate from said fibres and said first annular wall and to be fed to the inner side of said collected fibres in said fibre collecting space; and

said third angle and the juncture between said inner and outer portions of said second annular wall comprising means for causing lighter impurities, deposited on said closed end of said rotary chamber, to, under the influence of centrifugal force, separate from said second annular wall and to be fed to said inner side of said collected fibres in said fibre collecting space.

4,237,683

DEVICE FOR DELIVERING YARNS

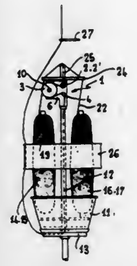
Henri Mathlolon, Lyons, and Jean Hourmagne, Caluire, both of France, assignors to Verdol S.A., Caluire, France

Filed Jan. 9, 1979, Ser. No. 2,147

Claims priority, application France, Oct. 25, 1978, 78 30996

Int. Cl.³ D01H *7/86, 1/10, 13/10*

U.S. Cl. 57—58.86 **7 Claims**



1. A yarn regulating device for feeding multiple yarns pulled by a machine from different bobbins and delivering the yarns at equal speeds, comprising

multiple brake means comprising paired discs resiliently urged together and operative respectively to receive said yarns from the cops and independently tension the yarns;

separator means for said yarns operative to maintain the separation of the yarns provided by said multiple brake means and operative to guide the yarns toward said machine; and

a rotatable drum having an annular peripheral surface with a high coefficient of friction coating thereon, the drum being located between the brake means and the separator means and offset therefrom such that said peripheral surface aligns with both the brake means and the separator means, the yarns while traveling from the brake means to the separator means passing around said peripheral surface in side-by-side relationship whereby all of the yarns advance from the drum to the separator means at equal speeds despite independent brake tensioning.

4,237,684

ROPE

William J. Hilton, Ashby-de-la-Zouch, England, assignor to Bonas Brothers Limited, Burton-On-Trent, England

Filed Feb. 5, 1979, Ser. No. 9,214

Int. Cl.³ D02G *3/00, 3/02*

U.S. Cl. 57—260 **4 Claims**



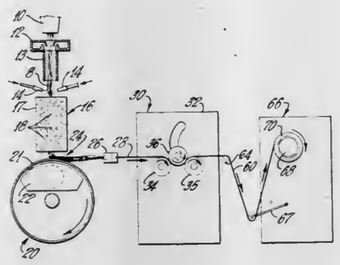
1. A rope comprising a plurality of strips of woven fabric, each said strip having warp and weft yarns and each strip having weft yarns projecting from one woven edge thereof, and said strips being twisted together so that the woven parts thereof form a core with the projecting weft yarns extending substantially radially outwardly from the core.

4,237,685

APPARATUS FOR PRODUCING A YARN

Gregory A. Pelagio, Swansea, and Wiley B. Holland, North Attleboro, both of Mass., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 29, 1979, Ser. No. 25,156
Int. Cl.³ D01H *5/28, 5/30*
U.S. Cl. 57—328 **3 Claims**



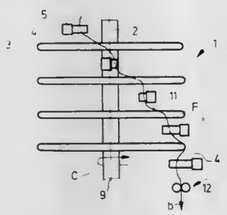
1. Apparatus for producing a yarn comprising:
feeder means for supplying a plurality of streams of molten glass;
attenuation means for transforming said streams into staple filaments;
means for collecting said staple filaments as a web at a first region;
first means for forming said web into a strand-like bundle of fibers at a second region;
second means for drafting said web and bundle of fibers into said yarn, said second means having (a) a first pull roll having a movable axis of rotation, (b) a second pull roll, and (c) a third pull roll spaced from said second pull roll, said first pull roll being adapted to substantially simultaneously engage said second and third pull rolls when said first pull roll is moved towards said second and third pull rolls to advance the yarn therebetween to draft said web and bundle; and
third means for collecting said yarn as a wound package, said first, second and third means being spaced from each other.

4,237,686

FALSE TWISTING APPARATUS

Jakob Fluck, and Hans Schellenberg, both of Winterthur, Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Mar. 1, 1979, Ser. No. 16,511
Claims priority, application Switzerland, Mar. 3, 1978, 2324/78
Int. Cl.³ D02G *1/04;* **D01H** *7/92*
U.S. Cl. 57—337 **7 Claims**



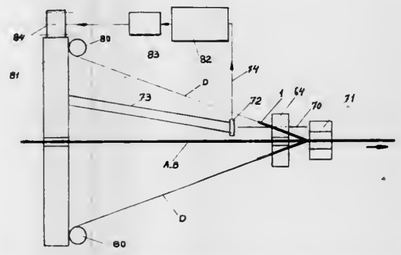
1. False twisting apparatus comprising at least one twist element movable in a predetermined twisting direction and having a surface adapted to impart twist to a thread by frictional contact therewith and at least one elongate thread guide having a thread surface extending along said thread guide, support means supporting the thread guide relative to the twist element so that a thread contacting said surface on the twist element and twisted thereby, also contacts said thread guide and is urged along the thread guide surface, the latter being provided with a curvature which is concave with respect to said direction.

4,237,687

OPTICAL FIBRE LAYING HEAD FOR CABLE PRODUCTION

Michel de Vecchis, and Jean-Pierre Hulin, both of Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Mar. 1, 1979, Ser. No. 16,385
Int. Cl.³ D07B *5/00, 3/00*
U.S. Cl. 57—361 **5 Claims**



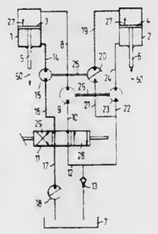
1. Apparatus for simultaneously laying a number of optical fibres in a number of helical grooves in a cylindrical core continuously travelling consisting of a mount which is freely movable in a frame and is machined with a central through opening for said core a set of fibre guides consisting of resilient hollow metallic tubes terminated at one of their ends by a bevel resting under pressure on the bottom of the said grooves carried by said mount so that their inclination in relation to the direction of travel is at most equal to 45 degrees.

4,237,688

HYDRAULIC SYNCHRONOUS DRIVING MECHANISM

Arie A. Demmers, Alblasserdam, Netherlands, assignor to Koninklijke Bos Kalis Westminster Group N.V., Sliedrecht, Netherlands

Filed May 23, 1979, Ser. No. 42,603
Claims priority, application Netherlands, May 30, 1978, 7805880
Int. Cl.³ F15B *13/02*
U.S. Cl. 60—484 **5 Claims**

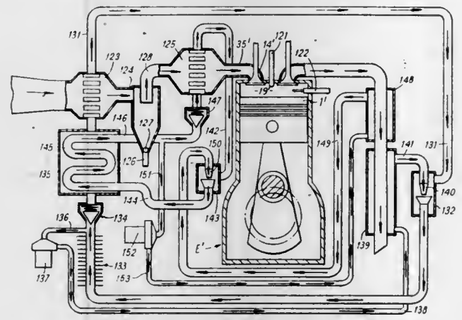


1. A hydraulic synchronous driving mechanism provided with at least two piston-cylinder assemblies, each having a bottom chamber and a ring chamber and piston rods of which projecting from the ring chambers engage a counter-device adapted to synchronously load the piston rods mutually in opposite directions, a hydraulic fluid circuit provided with at least a pump and a storage reservoir, there being arranged pair-wise volumetric hydraulic pump-motors in fluid lines throughconnected to the bottom chamber of the one cylinder and the ring chamber of the other cylinder, and inversely, means mutually coupling said pump-motors in each pair for a constant supply ratio, characterised in that fluid line sections extending from the pump-motors to the cylinders are throughconnected with only one cylinder chamber.

4,237,689

INTERNAL COMBUSTION ENGINES

Achilles C. Sampietro, P.O. Box 2484, Delray Beach, Fla. 33444
Continuation-in-part of Ser. No. 746,966, Dec. 2, 1976, abandoned. This application May 26, 1978, Ser. No. 909,780
Int. Cl.³ F02B *37/00, 29/04*
U.S. Cl. 60—599 **6 Claims**



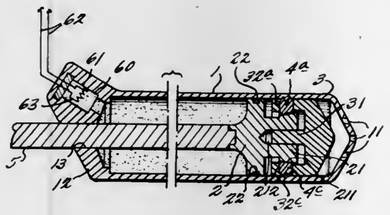
1. In an internal combustion engine having an air inlet, at least one compression stage for said air, a fuel supply, a combustion chamber for burning said fuel with compressed air to supply power to an output member, first refrigeration means arranged to extract heat from air supplied to said inlet prior to the or each compression stage, and second refrigeration means disposed to remove heat from the first refrigeration means, said first refrigeration means being heat-powered and having a heat-input portion disposed in heat-receiving relation to a portion of an exhaust-gas path of said engine, said second refrigeration means being heat-powered and having a heat-input portion disposed in said exhaust-gas path downstream of said heat-input portion of said first refrigeration means.

4,237,690

PISTON RETURN STOP DEVICE FOR SEAT BELT TENSIONING DEVICE

Noboru Tsuge, Kariya; Satosi Kuwakado, Aichi; Toshihiro Takei, and Toshiaki Shimogawa, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 18, 1979, Ser. No. 58,438
Claims priority, application Japan, Aug. 25, 1978, 53/116837[U]
Int. Cl.³ F01B *29/08;* **B60R** *21/10;* **F02N** *13/00*
U.S. Cl. 60—635 **4 Claims**



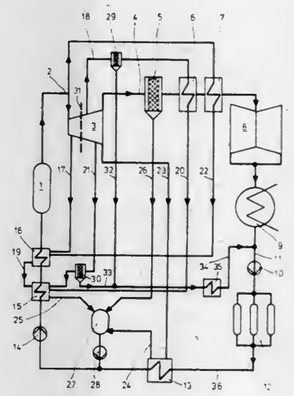
1. A seat belt tensioning device comprising:
cylinder means having an inner wall,
a piston slidably disposed within said cylinder means and having a longitudinally extended tapered portion with a diameter enlarging in the direction of its extended end and extending radially to a length short of said inner wall, said piston further having at its other end means for connecting the piston to a seat belt,
a cylindrical sliding member slidably disposed between said cylinder means and said tapered portion of said piston so as to be slid together with said piston in said direction, said member having a plurality of circumferentially spaced guide grooves radially perforated through itself,
a plurality of stopper members slidably disposed respectively within said guide grooves and having an inclined inner surface supported by said tapered portion of said piston and further having at least one sharp end portion for contacting the said inner wall of said cylinder means, and
a piston operating means for making said piston slide within said cylinder.

4,237,691

PROCESS OF REMOVING WATER-SOLUBLE IMPURITIES FROM THE WORKING MEDIUM OF A STEAM POWER PLANT

Maurice Bodmer, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 22, 1978, Ser. No. 944,784
Claims priority, application Switzerland, Sep. 26, 1977, 11746/77
Int. Cl.³ F01K *21/06*
U.S. Cl. 60—646 **6 Claims**



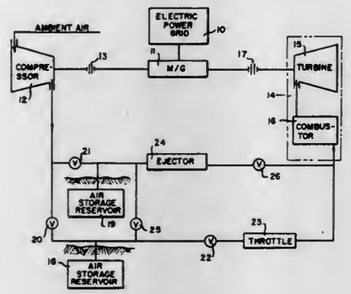
1. A process for removing water-soluble inpurities from the working medium of a steam turbine power plant of the type having a condensate purifying unit for receiving cooled liquid condensate after expansion and then returning the liquid condensate to a steam generator, and conducting super heated steam to a steam turbine where the steam produces work upon expansion in the turbine, said process comprising:
conducting the working medium from the last stage of said turbine to a main moisture separator;
conducting liquid from said main mositure separator to the inlet of said steam generator independently of said purifying unit;
bleeding working medium from said turbine at a location where the steam has a humidity greater than 3 percent and before said last stage;
conducting said bleed medium to an auxiliary moisture separator;
conducting liquid from said auxiliary separator through said purifying unit to the inlet of said steam generator.

4,237,692

AIR EJECTOR AUGMENTED COMPRESSED AIR ENERGY STORAGE SYSTEM

Frederick W. Ahrens, and George T. Kartsounes, both of Naperville, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 28, 1979, Ser. No. 16,036
Int. Cl.³ F02C *9/14, 7/00*
U.S. Cl. 60—659 **2 Claims**



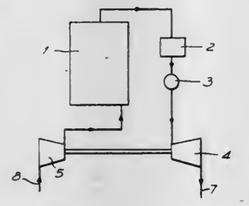
1. A method of storing energy during slack demand periods and utilizing said energy in peak demand periods comprising utilizing excess power available during slack demand periods to charge a plurality of underground reservoirs with air to the same peak storage pressure, during peak demand periods throttling the air from one storage reservoir into a gas turbine system at a constant inlet pressure until the air pressure in the reservoir falls to said constant inlet pressure, thereupon permitting air in a second reservoir to flow into said gas turbine system while drawing air from the first reservoir through a variable geometry air ejector and adjusting said variable geometry air ejector, said air flow being essentially at the constant inlet pressure of the gas turbine system.

4,237,693

ENERGY RECOVERY SYSTEM

Frank P. Maslen, and Geoffrey B. Cordell, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 4, 1978, Ser. No. 931,156
Claims priority, application United Kingdom, Aug. 9, 1977, 33338/77
Int. Cl.³ F02C *1/04, 7/02*
U.S. Cl. 60—648 **10 Claims**



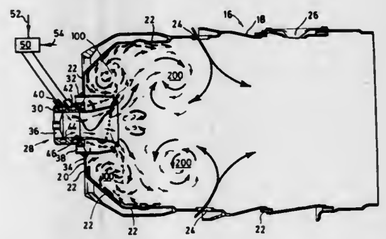
1. An aerobic fermentation process utilizing a compressor, a fermenter, and a gas expander, comprising the steps of
feeding an oxygen containing gas to the compressor;
compressing the oxygen containing gas in the compressor to provide a feed gas having a pressure of at least about 2 bars gauge;
feeding the feed gas into the fermenter to provide an overpressure in the fermenter of at least about 2 bars gauge;
withdrawing off-gas from the fermenter, the withdrawn gas having a pressure of at least about 2 bar gauge;
heating the withdrawn off-gas to a temperature high enough to prevent condensation in the gas expander;
feeding the heated off-gas to the gas expander to produce power; and
transmitting the resulting power from the gas expander to the compressor to supply all or part of the power requirements thereof in compressing the feed gas.

4,237,694

COMBUSTION EQUIPMENT FOR GAS TURBINE ENGINES

Robert D. Wood, Welton, and John Stockdale, Castle Donington, both of England, assignors to Rolls-Royce Limited, London, England

Filed Mar. 6, 1979, Ser. No. 17,957
Claims priority, application United Kingdom, Mar. 28, 1978, 11893/78
Int. Cl.³ B05B *7/10*
U.S. Cl. 60—738 **7 Claims**



1. Combustion equipment for a gas turbine engine comprising a fuel burner including a hollow duct intended to receive a flow of air, first swirl means located adjacent to the upstream end of the hollow duct, an annular outer duct at least partially surrounding the hollow duct, second swirl means located adjacent to the upstream end of the annular outer duct and means for injecting fuel into each duct downstream of the first and second swirl means, said fuel injection means including a fuel supply means to each duct and fuel scheduling means arranged to receive a supply of fuel and to apportion said fuel supply to each said duct fuel supply means in dependence of a parameter of the gas turbine engine of which the combustion equipment forms a part.

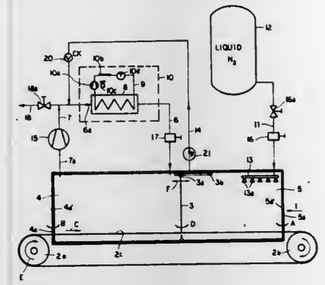
4,237,695

METHOD OF AND APPARATUS FOR THE COOLING OF ARTICLES OR MATERIALS

Jakob Oberpriller, Baierbrunn; Alfred Schuster, Bornheim-Waldorf, and Dolf D. Hofmann, Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 850,802, Nov. 11, 1977, abandoned. This application Jun. 28, 1979, Ser. No. 52,973
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651871
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 **8 Claims**

1. A method of cooling objects which comprises:
(a) passing said objects through a cooling chamber in one direction;
(b) introducing a first cooling-gas stream into said chamber at a relatively upstream location and passing said first cooling-gas stream in direct heat-exchange relation with said objects;
(c) generating a second cooling-gas stream by evaporation and expansion of a liquefied gas and passing said second gas stream in direct heat-exchanging relation with the precooled objects at a location downstream from said upstream location;
(d) withdrawing said second gas stream from said downstream location after at least partial heat exchange between said second gas stream and said objects;
(e) passing said first cooling-gas stream in indirect heat exchange with a coolant other than said gas streams prior to the introduction of said first cooling-gas stream into said chamber at said upstream location;



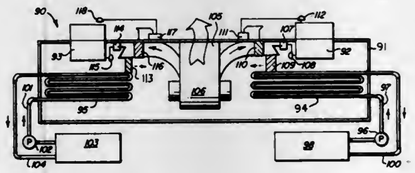
(f) mixing the withdrawn second gas stream with said first gas stream prior to its indirect heat exchange with said coolant; and
(g) venting a portion of said first cooling-gas stream from a warm end of said upstream location corresponding to the quantity of said second cooling-gas stream introduced into said downstream location.

4,237,696

COMPRESSED AIR SYSTEM

Robert C. Coblentz, 761 Avenue D, SW., Winter Haven, Fla. 33880

Filed Oct. 24, 1978, Ser. No. 954,318
Int. Cl.³ F25D *17/06*; B01D *51/00*
U.S. Cl. 62—93 **16 Claims**



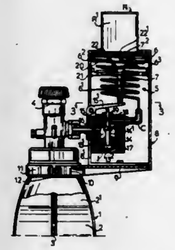
1. A compressed air system comprising in combination:
water chiller means for chilling water passing therethrough and a water chiller line when water passing therethrough is above a predetermined temperature;
pump means connected to said water chiller line for pumping water passing through said water chiller line;
inlet air conditioning means coupled to the atmosphere to receive air and to said water chiller line for receiving water passing therethrough, said inlet air conditioning means having at least two heat exchangers mounted therein and connected to said water chiller line for removing moisture from inlet air passing therethrough, and each heat exchanger being coupled to a separate opening and having an individually actuated bypass valve for bypassing air around each heat exchanger;
compressor means operatively coupled to said inlet air conditioning means for receiving air from said inlet air conditioning means and compressing said air; and
reheat air dryer means connected to said compressor means for receiving compressed air therefrom, and said reheat air dryer being coupled to said inlet air conditioning means water chiller line for receiving water therefrom, said water chiller line also being connected between said reheat air dryer means and said water chiller means, whereby said water chiller line forms a recirculating line for drying air before and after compression.

4,237,697

APPARATUS FOR ICING OR FREEZING OR FROSTING CONTAINERS OR HOLLOW BODIES, MORE PARTICULARLY DRINKING-GLASSES

Georges Cherbland, 5 place Maréchal Foch, 42100 Saint Etienne-Loire, France

Filed Mar. 15, 1979, Ser. No. 20,952
Claims priority, application France, Mar. 22, 1978, 78 09176; Dec. 20, 1978, 78 36590
Int. Cl.³ F25D *3/00*
U.S. Cl. 62—293 **14 Claims**



1. Apparatus for icing, freezing or frosting containers or hollow bodies, more particularly drinking glasses, said apparatus comprising a tank with closing means containing a gas in a liquid state under pressure, means including a receiver plate for abutment of at least one drinking glass thereagainst, a spraying nozzle positioned within said receiver plate for facing into the interior of said drinking glass when the latter is abutted on the receiver plate, valve means for controlling flow of said gas from said tank to said nozzle, means for controlling said valve means in response to the abutment of said glass with the receiver plate thereby for controlling the distribution of the gas to said nozzle and to the glass to be frosted, and means connecting said nozzle and to the glass to be frosted, and means connecting said nozzle to said valve means for conveying the liquefied gas from said tank to the nozzle and thus to the glass in the receiver plate, said means comprising a capillary conduit to convey said liquefied gas along an elogated path to provide heat exchange with the ambient atmosphere, pressure reduction of the liquefied gas and a time lag so that at discharge from the nozzle the liquefied gas is in a liquid-gaseous state and flows into the glass to lower the temperature therein and produce the homogeneous formation of frost on the outside wall of the glass from water vapor in the ambient air.

4,237,698

MOTOR COOLING SYSTEM FOR REFRIGERATION MACHINE

Gordon L. Mount, West Monroe, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

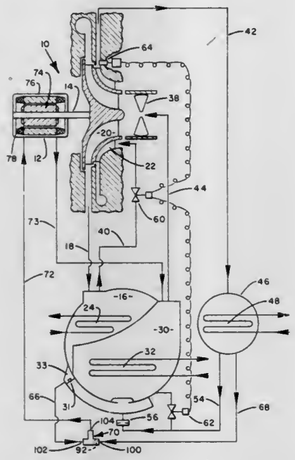
Filed Aug. 16, 1979, Ser. No. 66,966
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—197 **5 Claims**

1. A compressor motor cooling circuit in a refrigeration system of the type comprising a multistage compressor driven by a motor, an evaporator, a first condenser connected to the first compressor stage to provide liquid refrigerant to the evaporator for cooling requirements of the system, a second condenser connected to a subsequent higher pressure stage of the compressor to reject heat to a coolant for heating requirements of the system,
the motor cooling circuit including
a liquid refrigerant supply line connecting the high pressure

side of the system and the compessor motor to provide liquid refrigerant thereto,

a conduit line to return the refrigerant to the refrigeration system after motor cooling, and

regulating means arranged in said liquid refrigerant supply line to connect selectively said compressor motor with the first condenser or the second condenser,



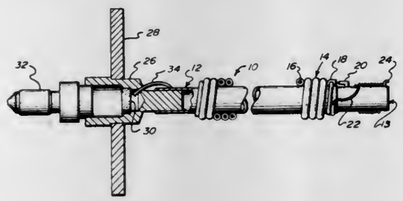
said regulating means being responsive to a relationship between the pressure in the first condenser and the pressure in the second condenser and adapted to connect said motor with a higher pressure liquid refrigerant source thereby providing sufficient liquid refrigerant flow irrespective of refrigeration machine operating conditions.

4,237,699

VARIABLE FLOW CRYOSTAT WITH DUAL ORIFICE

Ralph C. Longsworth, Allentown, and Matthew G. Chalmers, Mertztown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 23, 1979, Ser. No. 41,963
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 JT **9 Claims**



1. A cryostat of the type wherein a working fluid is expanded through an orifice associated with the cold end of a heat exchanger used to cool the working fluid before expansion through the orifice to produce an inventory of liquefied working fluid adjacent the orifice, the improvement comprising:

first means contained within said cryostat to initiate fluid flow through said orifice at a high rate to provide initial rapid cool-down of said cryostat; said first means interrupting fluid flow after cool-down and remaining inoperative until working fluid source pressure decays to a value approximately one-half the initial value at room temperature and above;

second means associated with said heat exchanger to permit continuous flow of working fluid through said heat exchanger and continuous production of liquefied working fluid;

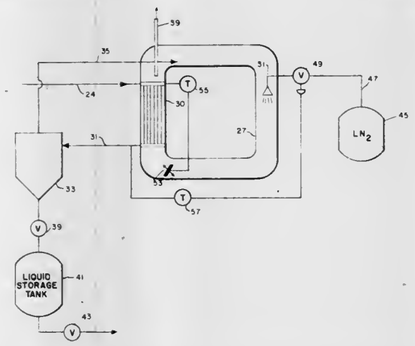
whereby said cryostat operates with continuous minimum fluid flow to maintain maximum heat transfer between said liquefied working fluid and an object being cooled by said cryostat.

4,237,700

METHODS AND APPARATUS FOR PROVIDING REFRIGERATION

Ronald D. Rothchild, South Orange, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Apr. 20, 1979, Ser. No. 31,718
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—514 R **20 Claims**



1. A method of utilizing the refrigeration available in a liquefied gas to refrigerate a fluid having a boiling point above the boiling point of the liquefied gas comprising the steps of: introducing said liquefied gas into an endless conduit to vaporize said liquefied gas and including a thermal downdraft to provide motive power for circulating a flow of said gas through said conduit; passing said fluid in indirect heat exchange relation with said gas flow in said conduit to refrigerate said fluid and heat said gas flow while inducing a thermal updraft of said gas flow; and returning a portion of said heated gas into direct contact with said spray of liquefied gas to augment the vaporization thereof with said thermal drafts providing motive power for circulating said gas flow through said conduit without the use of shaft power.

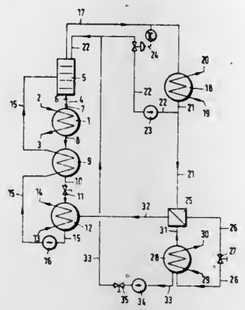
4,237,701

METHOD OF AND APPARATUS FOR IMPROVING THE ENERGY CONSUMPTION OF ABSORPTION COOLING PLANTS

Günther Holldorff, Berlin, Fed. Rep. of Germany, assignor to Borsig GmbH, Berlin, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,377
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2758547
Int. Cl.³ F25B *15/00, 33/00*
U.S. Cl. 62—476 **8 Claims**

1. An absorption cooling plant which includes: an expeller adapted to receive heating steam and provided with a condensate discharge, a separating column having a first end and a second end, said first end being connected to said expeller for receiving cooling medium vapor from said expeller and to convey rich cooling medium solution from said separating column to said expeller, an absorber having an inlet and outlet for cooling water, a conduit leading from said absorber to said separating column, a solution heat exchanger interposed in said conduit, an evaporator, first conduit means connecting said separating column to said evaporator, second conduit means connecting said evaporator to said separating column, and



third conduit means connecting said evaporator to said absorber.

4,237,702

NECKLACE

Richard Caverly, 32716 Franklin Rd., Franklin, Mich. 48025

Filed May 24, 1979, Ser. No. 42,059
Int. Cl.³ A44C *5/00, 25/00*
U.S. Cl. 63—2 **13 Claims**



1. A necklace comprising an elongated flexible strand;

the depending free ends of the strand being substantially parallel and spaced apart;

a series of spaced slide housings mounted upon the strand for selective longitudinal adjustment thereon;

opposed walls of each slide housing having an aperture therethrough of a size and shape to cooperatively engage and receive the strand, the slide housings being non-rotatably mounted on the strand, each slide housing having an end wall and an outwardly facing ornamental end;

a resilient friction means within each said slide housing interposed in compression between the end wall and the strand for adjustably retaining said slide housing against longitudinal movement relative to the strand;

stop means on the ends of said strand;

a pair of housings, one of said pair on each of said strand ends, said pair being laterally spaced apart;

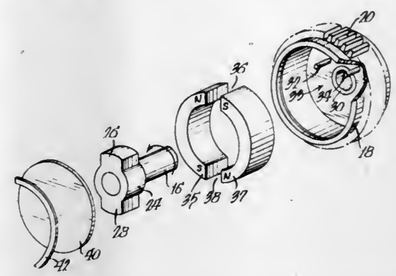
and means fixedly interconnecting said pair of housings.

4,237,703

MAGNETIC GOVERNOR DRIVE COUPLING

Thomas V. Wahl, Jr., North Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 12, 1978, Ser. No. 950,637
Int. Cl.³ F16D *7/00;* **H02K** *49/00*
U.S. Cl. 64—28 M **4 Claims**



1. A drive assembly for driving a mechanical element from a drive shaft comprising:

a drive shaft (**16**);

a rotor (**24**) mounted on an end of the shaft and having two portions of magnetically permeable material thereon;

a housing (**18**) mounted for rotation about said shaft, said housing encircling said rotor;

pin means (**32,34**) carried by said housing (**18**) and positioned on opposite sides of said rotor (**24**) for permitting only a selected degree of relative rotational motion between said rotor and said housing;

magnet means (**35,37**) for aligning said rotor (**24**) between said pin means (**32,34**), said magnet means includes two arcuately-shaped magnets (**35,37**) carried by said housing, each magnet having two concentrically-shaped faces, a front and a rear face, and two end faces, the end faces of one of said magnets being spaced from the end faces of the other of said magnets to define spaces (**36,38**) therebetween, said portions of magnetically permeable material on said rotor aligning with said spaces (**36,38**) between said magnet means (**35,37**); and

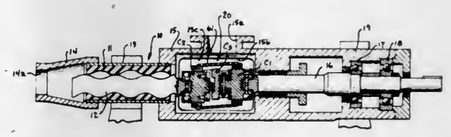
means (**20**) on said housing for driving said mechanical element.

4,237,704

OLDHAM TYPE COUPLING AND PUMP EMBODYING THE SAME

Rajan Varadan, Winterville, Ga., assignor to Roper Industries, Inc., Commerce, Ga.

Filed Mar. 8, 1979, Ser. No. 18,510
Int. Cl.³ F16D *3/04*
U.S. Cl. 64—31 **19 Claims**



1. In an Oldham type coupling including first and second end coupling members having relatively parallel axes and an intermediate coupling member between the first and second end coupling members, a first connecting means connecting the intermediate coupling member to the first end coupling member for translatory movement along a first path radially of the first end coupling member, a second connecting means connecting the intermediate coupling member to the second end coupling member for translatory movement along a second path radially of the second end coupling member and

crosswise of the first path, the improvement comprising, said first connecting means including first roller means rotatable about an axis parallel to the axes of the coupling members for transmitting torque between the intermediate and first end coupling members and a second roller means rotatable about an axis perpendicular to said first path and in a plane perpendicular to the axes of the coupling members for transmitting end thrust between the intermediate and first end coupling members, said second connecting means including a third roller means rotatable about an axis parallel to the axes of the coupling members for transmitting torque between the intermediate and second end coupling members and a fourth roller means rotatable about an axis perpendicular to said second path and in a plane perpendicular to the axes of the coupling members for transmitting end thrust between the intermediate and second end coupling members.

4,237,705

LOOP-FORMING INSTRUMENT OF KNITTING MACHINE

Evgeny I. Petrov, Belovezhskaya ulitsa, 91, kv. 77, Moscow, U.S.S.R.

Filed Nov. 28, 1977, Ser. No. 855,298
Claims priority, application U.S.S.R., Dec. 16, 1976, 2426701
Int. Cl.[2] D04B *35/04*
U.S. Cl. 66—123 **5 Claims**



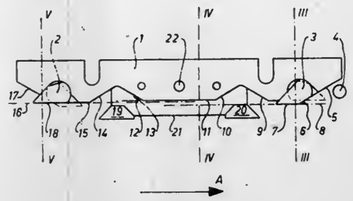
1. A loop-forming instrument for use in a knitting machine comprising an elongate stem member having a rectilinear longitudinal central axis, said stem member having an upper working end portion, a lower tail end portion, a butt portion intersecting said tail end portion extending substantially transversely to said longitudinal central axis, a first portion having a constant transverse cross-sectional width extending upwardly for a predetermined distance from said butt portion along said rectilinear longitudinal central axis and being symmetrically formed with respect thereto, a primary widening portion having a transverse cross-sectional width which gradually increases from a lower narrow width section to an upper wide width section in the direction of said working end portion, said primary widening portion being symmetrically formed with respect to said longitudinal central axis, said primary widening portion being located immediately vertically adjacent to said first constant cross-sectional width portion such that the narrow width section abruptly intersects the upper end of said constant width portion, the width of said intersecting narrow width section being considerably less than the width of said first constant width portion, and additional portions having variable transverse cross-sectional widths extending between the upper end of said primary widening portion and the upper working end portion of said stem member, said additional portions including an additional constant cross-sectional width portion located immediately above said primary widening portion and intersecting said upper wide width section thereof, said additional constant cross-sectional width portion being of a narrower width than said first portion and having a longitudinally extending center-line, said center-line being transversely displaced relative to said longitudinal central axis along which said first constant cross-sectional width portion extends.

4,237,706

INTARSIA KNITTING MACHINE

Michel Patthey, Couvet, Switzerland, assignor to Edouard Dubied & Cie, Couvet, Switzerland

Filed Mar. 20, 1979, Ser. No. 22,315
Claims priority, application Switzerland, Apr. 12, 1978, 3902/78
Int. Cl.[3] D04B *15/52, 15/56, 15/64*
U.S. Cl. 66—126 R **6 Claims**



1. A flat knitting machine for the manufacture of an Intarsia knit, comprising

a plurality of needles,

a knitting carriage,

a plurality of thread guides each including a movably mounted plunging yarn hook/feeder having a yarn guide tube, and

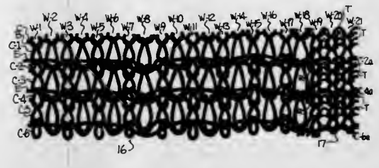
plunging yarn hook/feeder control means mounted on said knitting carriage for movement integrally with the latter and acting on the plunging yarn hook/feeders of all of said thread guides for selectively displacing each said yarn guide tube between a plurality of relative levels with respect to the needles of the machine regardless of whether one of said thread guides is temporarily inactive in the knitting operation.

4,237,707

DRESS WEIGHT TUBE SOCK WITH MOCK RIB LEG AND METHOD OF KNITTING

Sam C. Safrit, Pfrafftown; Harper Shields; William H. Coble, both of Burlington, and Roscoe M. Farrell, Pittsboro, all of N.C., assignors to Kayser-Roth Hoisery, Inc., Burlington, N.C.

Continuation-in-part of Ser. No. 939,262, Sep. 7, 1978, abandoned. This application Jun. 19, 1979, Ser. No. 49,610
Int. Cl.[3] D04B *9/46;* A41B *11/02*
U.S. Cl. 66—172 E **25 Claims**



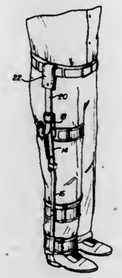
1. A tube sock including leg and foot portions, said foot portion comprising a closed toe, an upper instep portion, and lower heel and sole areas, said leg and foot portions including complete courses knit of a stretchable synthetic body yarn, a nonstretchable auxiliary yarn knit in plated relationship with said body yarn and forming terry loops in said heel area and said sole area, and an elastic yarn incorporated in spaced-apart wales of noncontiguous courses of said leg portion and forming mock ribs extending to said heel area, said elastic yarn being incorporated in spaced-apart wales of non-contiguos partial courses of at least the portion of said instep adjacent said heel area and forming mock ribs therein, said elastic yarn extending from said instep portion and into said heel area and being knit in predetermined wales and forming noncontiguous stretchable partial courses in said heel area, said noncontiguous stretchable partial courses knit of said elastic yarn in said heel area being positioned between the body yarn courses including terry loops and permitting enhanced stretch in said heel area so that said heel area will readily conform to the configuration of the heel of the wearer.

4,237,708

PRISONER LEG RESTRAINER

Karl W. Bremer, Jr., 1724 S. Orange Ave., Orlando, Fla. 32806

Filed Jul. 2, 1979, Ser. No. 54,170
Int. Cl.[3] E05B *75/00*
U.S. Cl. 70—16 **15 Claims**



1. A prisoner leg restrainer attachable to one leg of a prisoner wearing a belt, said leg restrainer comprising:

a. first and second brace elements positionable vertically along the inner and outer sides of the leg, each brace section including

i. an upper section having a flat, downward sloping edge

ii. a lower section having a flat, upward sloping upper edge

iii. a hinge pivotally coupling the upper and lower sections together to permit rearward pivotal movement of the lower sections of said leg restrainer with respect to the upper sections of said leg restrainer;

b. first support means coupled to the upper sections of said first and second brace elements for maintaining a predetermined fixed spacing between said first and second brace elements;

c. second support means coupled to the lower sections of said first and second brace elements for maintaining a predetermined fixed spacing between said first and second brace elements;

d. means coupled to said first and second brace elements for securing the upper and lower sections of said leg restrainer to the upper and lower portions of the leg of the prisoner;

e. an automatic locking mechanism for preventing rearward pivotal movement of the lower sections of said leg restrainer when engaged and for automatically engaging when the upper and lower sections of said leg restrainer are in vertical alignment, said locking mechanism including

i. a collar coupled and surrounding one of said brace elements and displaceable downward along said brace element from a first retracted position above the upper edge of the upper section of said brace element into a second locked position in which said collar surrounds portions of both the upper and lower sections of said brace element

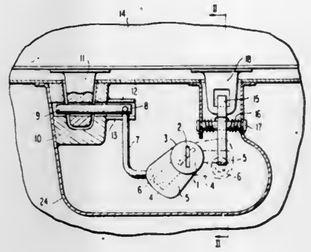
ii. biasing means coupled to said collar and to said brace element for biasing said collar into the second position, whereby said collar is automatically displaced into the second position when the upper and lower sections of said brace elements are vertically aligned to prevent rearward pivotal movement of the lower sections of said leg restrainer with respect to the upper sections of said brace.

4,237,709

LOCKING MECHANISM

Rolf Krügener; Ernst Haug, and Hermann W. Kurth, all of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,696
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742467
Int. Cl.[3] E05B *59/00, 63/14*
U.S. Cl. 70—107 **14 Claims**



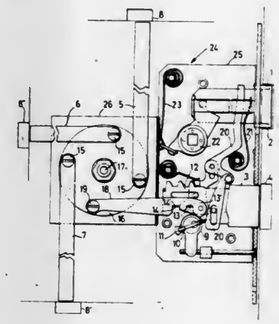
1. A locking mechanism for a part to be locked such as a lid, hood, flap and/or door, the locking mechanism being cooperable with a cylinder lock having a displaceably mounted lock cylinder means and spring means operatively effective on the lock cylinder means, the lock cylinder means is adapted to be pressed-in against the force of the spring means, said lock cylinder means including a cylindrical outer surface having a pressure pin, said lock cylinder means being rotatably mounted so as to enable the pressure pin to be swung from an operating position to a non-operating position, characterized in that additional locking means are provided, a lug means is arranged at the outer surface of said lock cylinder means and is operatively connected with said additional locking means, said lug means being arranged at the outer surface with respect to the pressure pin such that said additional locking means becomes operable only over a limited rotary range of the lock-cylinder means, as viewed in a locking direction, adjoins the non-operating position of the pressure pin.

4,237,710

LOCKING DEVICE

David L. Cardozo, 93, Boulevard Mettewie, Molenbeek-Saint-Jean, Belgium

Filed Sep. 11, 1978, Ser. No. 941,363
Claims priority, application Belgium, Sep. 13, 1977, 858654
Int. Cl.[3] E05B *59/00*
U.S. Cl. 70—108 **5 Claims**



1. An improved locking device for closing panels, particularly doors or windows, of the type comprising a dead lock and

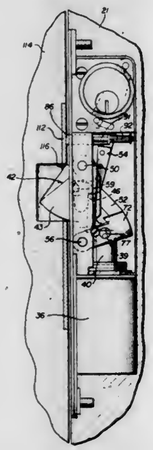
a spring lock biased by spring means to a projecting position relative to the panel as well as a cylindrical safety block, extending through the panel thickness and operatable by a key on either side of said panel, a projection being provided on the cylinder so as to enter, under the pushing action of the key, at least one groove provided on the dead lock tail and to impart thereto a translation movement in and out of a corresponding keeper, said projection driving by means of hinged levers connected to the dead lock the spring lock to the retracted position inside the panel against the action of said spring, wherein the improvement comprises, a driving arm mounted on the one end thereof on the dead lock tail and having a least one groove which coincides accurately with one groove provided on the dead lock tail and into which the cylindrical safety block projection is simultaneously engaged during the rotation thereof by means of the key, in such a way as to impart to said arm a translation movement, said driving arm being connected with the other end thereof to a plurality of locking members which are guided inside the panel, so as to cause the entering into or the release from corresponding keepers under the action of the translation movement thereof.

4,237,711

LOCK MECHANISM

Raymond V. Kambic, Joliet, Ill., assignor to Brink's Locking Systems, Inc., Plainfield, Ill.

Filed Feb. 10, 1978, Ser. No. 876,685
Int. Cl.³ E05B *57/00*; E05C *3/16*
U.S. Cl. 70—150 **17 Claims**



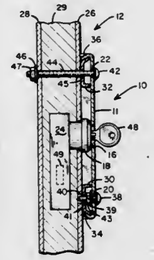
1. A lock mechanism including a casing structure adapted to be mounted to a door or door frame and having a front plate with an aperture therein, a latch bolt pivotally mounted with respect to said casing structure adjacent the front plate for movement between a first position wherein a portion thereof extends from the front plate of the casing structure, and a second retracted position, a deadlock member pivotally mounted to said casing adjacent the front plate for movement between a blocking position wherein said deadlock member will prevent retraction of the latch bolt, and a non-blocking position, wherein said latch bolt is free to move to a retracted position, an operating lever having a pivot portion and being pivotally mounted to the casing adjacent the front plate, said operating lever including a first elongate arm portion extending from said pivot portion in a direction away from said front plate, and a second, integral elongate arm portion extending from the free end of said first arm portion toward the face plate, said second elongate arm portion being coupled to said latch bolt by a lost motion type of connection, and selectively operable actuator means interconnected with said operating lever and said deadlock member, with the connection to said operating lever being located intermediate the pivot portion and the free end of said operating lever, said actuator means being capable of effecting pivotal movement of said operating lever and said deadlock member with the initial operation of said actuator means resulting only in the retraction of the deadlock member from the blocking position, with said lost motion connection between said operating lever and said latch bolt delaying movement of said latch bolt until said deadlock member is retracted from the blocking position, said latch bolt, said deadlock member and said operating lever being disposed on pivot axes which extend parallel to and which are in close proximity to said casing front plate, such that the necessary movement of said operating lever, said latch bolt and said deadlock member can be accommodated within a relatively shallow casing structure.

4,237,712

LATCH AND CYLINDER GUARD

David J. Cramer, 10472 Dupont Rd., Bloomington, Minn. 55431

Filed Oct. 20, 1978, Ser. No. 953,095
Int. Cl.³ E05B *63/00*
U.S. Cl. 70—417 **4 Claims**



1. In combination with a building entry door of the type having a lock cylinder with a keyhole therein and a key operated latch mounted in one edge of said door, apparatus for rendering said door less susceptible to forced entry, comprising:

(a) a generally rectangular metal plate having its edges bent out of the plane of said plate and having an aperture formed therethrough at a predetermined location; and

(b) means for attaching said plate to said entry door with said edges directed inwardly toward said door and with said aperture generally aligned with said keyhole and a first portion of said plate at least partially overlaying said lock cylinder and a second portion of said plate extending beyond said one edge of said door proximate said latch with opposing corners on said second portion of said plate bent inwardly along a diagonal and truncated to the plane formed by the inward extremes of said bent edges with said bent corners and said bent edges forming a continuous surface.

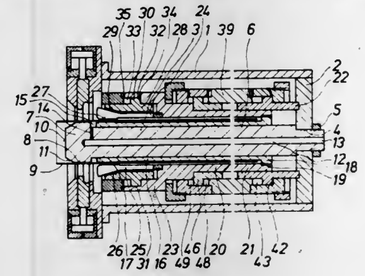
4,237,713

APPARATUS FOR PRODUCING A TUBE WITH SUCCESSIVE CORRUGATIONS

Hubertus Benteler, Bielefeld; Egon Olszewski; Rainer Hansen, both of Paderborn-Elsen, and Ferdinand Wecker, Paderborn-Sennelager, all of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,275
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2851944
Int. Cl.³ B21D *15/06*
U.S. Cl. 72—59 **12 Claims**

1. Apparatus for producing a tube with successive corrugations of uniform configuration and wall thickness from a tubular blank of constant diameter, comprising support means; a central pin having an elongated shaft portion fixedly attached only at one end to said support means and having a radially enlarged head portion at the other end; a tubular member mounted on said shaft portion of said central pin for movement in axial direction and adapted to support together with said head portion a tubular blank at the inner surface thereof, said tubular member having one end axially spaced from said head portion to form between said one end and said head portion and a blank supported thereon an annular expansion chamber; first clamping means comprising a plurality of hydraulically operated radially movable holding and forming jaws opposite said head portion; second clamping means comprising a plurality of circumferentially displaced radially tiltable clamping fingers of a collet arranged in the region of said one end of the tubular member about the outer circumference of a blank supported by the latter; a hydraulically operated axial movable annular clamping piston surrounding said clamping fingers for



moving the latter between a clamping and a releasing position; an upsetting cylinder connected at one end to the other end of said tubular member and having opposite said one end a radially enlarged end portion surrounding and guiding said clamping piston for movement in axial direction; an axially movable corrugation cylinder surrounding part of said upsetting cylinder and being formed with an annular groove; an annular collar fixed to said upsetting cylinder and located in said annular groove of said corrugation cylinder and forming in said groove two chambers adapted to be alternatingly filled with pressure fluid so as to axially move said upsetting cylinder relative to said corrugation cylinder; and means for feeding pressure fluid into said expansion chamber after axially spaced portions of the blank have been clamped against the head portion and said one end of said tubular member by said first and said second clamping means to expand a portion of said blank clamped between said first and said second clamping means.

4,237,714

STAND OF COLD TUBE-ROLLING MILL

Petr I. Polukhin, ulitsa Dmitria Ulyanova, 4, kv. 37; Ivan N. Potapov, Leninsky prospekt, 57/1, kv. 33; Ivan P. Gremyakov, ulitsa Profsojuznaya, 95, korpus 1, kv. 411, all of Moscow; German D. Styrkin, ulitsa Klimova, 22/11, kv. 29, Noginsk Moskovskoi oblasti; Mikhail A. Bitny, Kommunistichesky prospekt, 89, kv. 17, Alma-Ata; Igor M. Raushenbakh, 5 mikroraion, 33, kv. 33, Alma-Ata, and Petr A. Rodionov, ulitsa Zhubanova, 5, kv. 60, Alma-Ata, all of U.S.S.R.

Filed Oct. 11, 1978, Ser. No. 950,448
Claims priority, application U.S.S.R., Oct. 19, 1977, 2529718
Int. Cl.³ B21B *13/12, 29/00, 31/18*
U.S. Cl. 72—242 **3 Claims**

1. A stand of a cold tube-rolling mill comprising:

a housing;

uprights arranged in pairs on said housing on opposite sides of an axis of rolling;

upper and lower bearing chocks installed between said uprights;

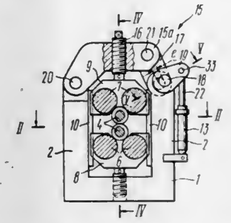
means for independently vertically adjusting said upper and said lower bearing chocks;

pairs of upper and lower backup rolls mounted in corresponding chocks;

bearing supports positioned in said uprights;

work rolls installed one above the other in said bearing supports between said pairs of upper and lower backup rolls;

a device for the positive contact of said backup rolls with said work rolls;



independent power drive means for controlling vertical setup motions of said bearing chocks of said upper backup rolls and for controlling forces between the work rolls during a rolling operation;

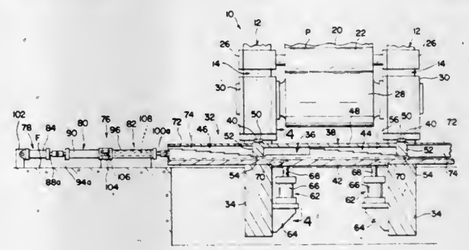
said device for the positive contact of said backup rolls with the work rolls including a linking mechanism kinematically linking each of said upper bearing chocks with said independent power drive means.

4,237,715

ROLLING MILL PASS-LINE ADJUSTING MECHANISM

LaVerne H. Lutz, Salem, Ohio, assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Apr. 5, 1979, Ser. No. 27,491
Int. Cl.³ B21B *31/30*
U.S. Cl. 72—244 **29 Claims**



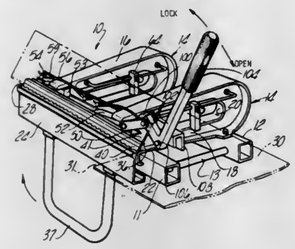
1. An adjusting mechanism for a multiple roll strip mill including housing means, a lower roll, and a pair of axially spaced apart chocks supporting said lower roll for vertical movement relative to said housing means, said adjusting mechanism including axially reciprocable adjusting member means supported on said housing means beneath said pair of chocks, vertically displaceable support member means between said pair of chocks and said adjusting member means, said adjusting member means having surface means varying in vertical height axially thereof and interengageable with said support member means to adjust the vertical positions of said chocks in accordance with the axial position of said adjusting member means, means to elevate and lower said support member means and said pair of chocks relative to said adjusting member means, and means to axially displace said adjusting member means when said support member means is elevated.

4,237,716

SHEET METAL BRAKE WITH IMPROVED LOCKING MECHANISM

William Onisko, Southfield, Mich., assignor to Van Mark Products Corporation, Farmington Hills, Mich.

Filed Feb. 23, 1979, Ser. No. 14,445
Int. Cl.³ B21D *11/04*
U.S. Cl. 72—319 **16 Claims**



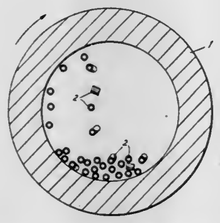
1. In a brake for bending sheet metal having upper and lower clamping members, with a pressure member slidably mounted on the upper clamping member, the improvement comprising a locking mechanism which permits the sheet metal to extend longitudinally from the clamping members to perform bends on selected portions of said sheet metal, said locking mechanism including a bell crank having a heel portion thereof pivotally engaged with said upper clamping member, said bell crank having first and second arm portions, said first arm portion serving as at least a portion of a handle, and link means connected at one end to said pressure member and connected at the other end to said second arm portion, wherein rotation of said handle toward the clamping members creates a force in said pressure member which urges the upper clamping member toward the lower clamping member to secure the sheet metal therebetween, with said locking mechanism being wholly disposed upwardly of said lower clamping member so that the sheet metal can extend beyond the handle.

4,237,717

METHOD OF MANUFACTURING ROLLERS

Franz Kohmaier, Trazerberggasse 78, 1130 Wien, Austria

Filed May 24, 1979, Ser. No. 42,061
Claims priority, application Austria, May 23, 1978, 3723/78
Int. Cl.³ B21B *31/06*
U.S. Cl. 72—364 **10 Claims**



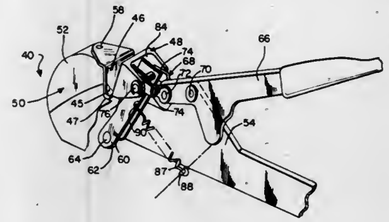
1. A method of manufacturing rollers, particularly for roller chains, comprising the steps of providing a metallic band having two spared ends; winding the metallic band so that the ends of the metallic band abut against and are flush with one another; heating and hardening the wound metallic band after said winding step; and applying a striking load to the wound metallic band during said heating step so as to close a gap which forms between the ends of the metallic band.

4,237,718

BENDING TOOL

William S. Greenwood, Nutley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,536
Int. Cl.³ B21D *7/06*
U.S. Cl. 72—410 **21 Claims**



1. A bending tool for bending a bendable member, said bending tool comprising:

first and second engaging members each having an engaging surface for engaging a portion of a bendable member;

a first support member supporting said first engaging member;

a second support member for supporting said second engaging member;

mounting means for mounting said second support member for relative movement with respect to said first support member between an open position in which said first and second engaging members are spaced from one another a first distance and a closed position in which said first and second engaging members are spaced from one another a second distance less than said first distance; and

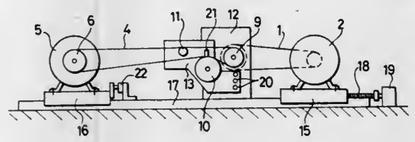
pivotal mounting means for pivotally mounting said second engaging member on said second support member to be pivotable with respect to said second support member independent of relative movement of said first and second support members.

4,237,719

APPARATUS FOR TESTING POWER TRANSMISSION BELTS

Hiroshi Takano, Miki, Japan, assignor to Mitsuboshi Belting Limited, Kobe, Japan

Filed Oct. 26, 1978, Ser. No. 955,056
Claims priority, application Japan, Oct. 26, 1977, 52/144392[U]
Int. Cl.³ G01N *3/56*; G01M *13/02*
U.S. Cl. 73—7 **25 Claims**



1. An apparatus for testing power transmission belts comprising:

(a) at least one drive motor having a pulley secured to its motor shaft,

(b) at least one driven motor having a pulley secured to its motor shaft,

(c) at least one single-piece intermediate shaft having pulleys secured thereto, said intermediate shaft being disposed between said drive and driven motors,

(d) a drive belt mounted between said pulley secured to said drive motor and one of said pulleys secured to said intermediate shaft, and

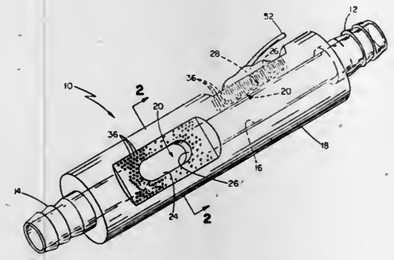
(e) a test belt mounted between said pulley secured to said driven motor and the other of said pulleys secured to said intermediate shaft, whereby fatigue of the belt is observed by visual inspection thereof.

4,237,720

ULTRASONIC PARTICULATE SENSING

Leigh R. Abts, Providence, R.I., assignor to Rhode Island Hospital, Providence, R.I.

Continuation of Ser. No. 792,669, May 2, 1977, Pat. No. 4,112,773. This application Aug. 7, 1978, Ser. No. 931,478
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.
Int. Cl.³ G01N *29/02*
U.S. Cl. 73—19 **6 Claims**



1. A pulse echo device for detecting the presence of small particles in a flowing stream of fluid, comprising

a conduit for receiving said stream of fluid,

acoustical transducer means for transmitting ultrasonic energy transversely into said stream along a first direction and for receiving ultrasonic energy reflected by said particles and returning from said stream along a second direction generally opposite said first direction, said transducer means including

at least one acoustical transducer mounted on said conduit, and

acoustic damping means spaced from and surrounding said transducer in directions other than said first transmission direction for retarding transmission of ultrasonic energy from said transducer to said conduit along said other directions, and

acoustical lens means for focusing said transmitted energy to a focal zone and for shaping said reflected energy,

said lens means including at least one inwardly-concave surface on the interior of said conduit in the path of said transmitted energy and

said focal zone being spaced transversely from said concave surface a distance of not more than twice the transverse width of said conduit.

4,237,721

APPARATUS AND METHOD FOR DETECTING SUBSTANCES AND FOR REGULATING CURRENT

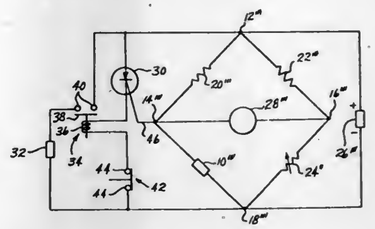
James P. Dolan, Seattle, Wash., assignor to ADS Systems, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 841,802, Oct. 13, 1977, Pat. No. 4,129,030. This application Dec. 11, 1978, Ser. No. 968,026
The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.
Int. Cl.³ G01N *27/04*
U.S. Cl. 73—23 **12 Claims**

1. A sensing apparatus for liquid, vaporous and gaseous substances, comprising:

a detection device of the type having a plurality of independently anchored, electrically conductive particles which are adsorbently sensitive to liquids, vapors or gases, said particles being arranged in sequential contact to form one or more conductive paths between separated points;

current source means electrically connected to the detection device and supplying a substantially constant current through the detection device having a magnitude sufficient to cause said detection device to operate in a non-linear region; and



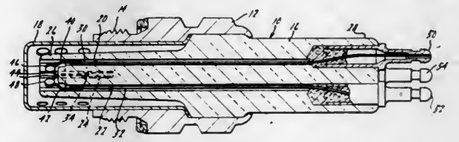
indicating means electrically connecting to the detection device to indicate when an electrical property of said detection device changes responsive to said detection device being exposed to the substance being sensed.

4,237,722

EXHAUST GAS SENSOR ELECTRODE IMPROVEMENT

Achyuta Achari, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 22, 1979, Ser. No. 5,419
Int. Cl.³ G01N *27/12*
U.S. Cl. 73—23 **12 Claims**



1. An improved exhaust gas sensor, the exhaust gas sensor having an element made from a ceramic material that undergoes a change in an electrical characteristic in response to a change in its temperature or in the composition of exhaust gases to which the ceramic element is exposed when at a temperature within the range from about 350° C. to about 850° C., the ceramic element having connected to it metallic electrodes employing Pt as the major or only constituent thereof except for impurities therein, the electrodes being used to detect changes in the electrical characteristic, wherein the improvement comprises:

the electrode material of the sensor comprising Pt having reduced susceptibility to attack by carbon deposited thereon from exhaust gases that are the products of combustion of an air/fuel mixture rich with respect to stoichiometry and to attack by oxygen in exhaust gases that are the products of combustion of an air/fuel mixture lean with respect to stoichiometry, such reduction being accomplished by employing in the fabrication of the electrodes a means for increasing in magnitude the energy required to produce a chemical reaction between the Pt therein and such carbon or oxygen in such exhaust gases.

4,237,723

CONTROL MEANS FOR A PIPE TESTER

Francis J. Kent, Wallingford, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Nov. 1, 1976, Ser. No. 737,644
Int. Cl.³ G01M *19/00*; G01N *3/10*
U.S. Cl. 73—49.6 **4 Claims**

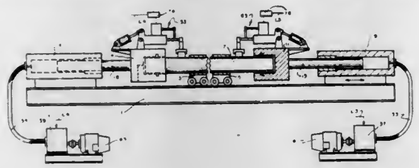
1. An hydrostatic pipe testing apparatus comprising a pair of opposed testheads each having an aperture for receiving a different end of a pipe when the pipe is arranged between said testheads,

a sealing element arranged in each of said apertures which have an end wall,

separate means for moving said testheads axially of the arranged pipe to position said sealing element around or inside an associated end of the pipe in a manner to establish a datum position for each said sealing element and for positioning the pipe slightly away from said end wall of said each aperture receiving said different end of the pipe,

means associated with one of said testheads for introducing testing fluid under pressure into the interior of the arranged pipe,

an electrical linear variable differential transducer means mounted on each said opposed testheads, each arranged to be associated with an opposite end portion of the pipe external of said respective testhead for sensing a displacement of an associated sealing element relative to its datum position and for producing separate electrical signals representative of said displacements,



separate means for mounting each said transducer means on an associated testhead for movement therewith including means for selectively bringing said transducer means into a sensing position with an end portion of the pipe, and into a non-sensing position away from an end portion of the pipe, whereby the pipe may be brought to and from the testing apparatus, and

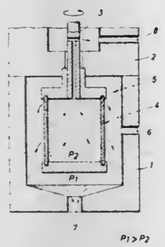
compensating means associated with each said testhead for receiving and responding to said electrical signals of said respective transducer means for effecting separate operation of said means for moving said testhead in the direction to counteract said displacement of said end of the pipe to maintain said sealing elements in said datum positions.

4,237,724

DETECTION OF BATCH INTERFACES IN PIPELINES

Thomas L. Stewart, Houston, and Joe O. Esparza, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 3, 1979, Ser. No. 35,673
Int. Cl.³ G01N *11/00*; G01R *27/26*
U.S. Cl. 73—53 **13 Claims**



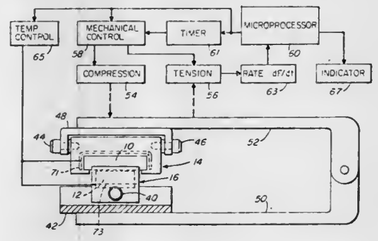
1. A method for detecting the interface between batches of different fluids in a pipeline, the fluids all containing BS&W, and for identifying each batch fluid comprising, continuously withdrawing a sample of the batch fluid from the pipeline, rotating a fluid pervious inner chamber within an outer chamber, admitting the sample of batch fluid to the outer chamber, pressuring the sample fluid from the outer chamber into the inner chamber, allowing centrifugal force in the inner chamber to force more-dense sample fluid including BS&W back into the outer chamber, separately withdrawing less-dense sample fluid essentially free of BS&W from the inner chamber, identifying the dielectric constant of the less-dense sample fluid and identifying the batch fluid by correlating the identified dielectric constant to a dielectric constant of a known fluid, and correlating change of dielectric constant to the passing of an interface between batches of different fluids.

4,237,725

DEVICES AND PROCESSES FOR DETERMINING PROPERTIES OF VISCOUS FLUIDS

Louis Kopito, Brookline; Samuel R. Schuster, Wellesley, and Harold Kosasky, Chestnut Hill, all of Mass., assignors to Ovutime, Inc., Newton, Mass.

Continuation of Ser. No. 874,215, Feb. 1, 1978, Pat. No. 4,167,110. This application Jul. 23, 1979, Ser. No. 59,674
The portion of the term of this patent subsequent to Sep. 11, 1996, has been disclaimed.
Int. Cl.³ G01N *33/48, 3/08*
U.S. Cl. 73—58 **25 Claims**



1. A device for testing the properties of a fluid, said device comprising:

(a) a pair of disposable test elements for presenting a pair of faces that are adapted for relative movement between remote locations at which said faces are apart and proximate locations at which said faces are in flush contact with each other;

(b) said faces having a pair of distributions of lands and cavities;

(c) said pair of distributions of lands of said faces being planar and being disposed geometrically in a pair of common planes;

(d) said pair of distributions of cavities of said faces being subordinate to said pair of common planes to form a pair of cavity networks;

(e) means for reciprocating said solid faces into and out of said flush contact with each other;

(f) portions of said pair of distributions of lands being in substantial contact with each other when said faces are in said flush contact with each other;

(g) said pair of cavity networks forming a composite network when said faces are in said flush contact with each other;

(h) means for controlling the temperature of said test elements; and

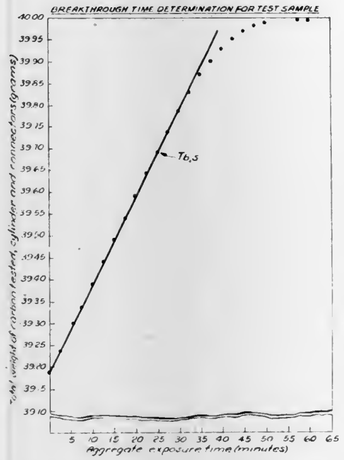
(i) whereby a small sample of said fluid between said faces is spread in said composite network during said movement into said proximate locations and the force associated with said movement into said remote locations is indicative of properties of said fluid.

4,237,726

PROCESS FOR PREDICTING THE USEFUL LIFE OF A RESPIRATOR CARTRIDGE

Robert L. Peterson, Midland, Mich.; Gerald P. Beaumont, Buffalo, W. Va., and Bruce P. Johnson, Tustin, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 1, 1979, Ser. No. 62,656
Int. Cl.³ G01N *5/02*
U.S. Cl. 73—73 **5 Claims**



1. A process for predicting the useful life of a respirator cartridge charged with a preselected sorptive agent with respect to a given concentration of a preselected organic vapor in air to be passed through the respirator cartridge at a predetermined linear flow rate and the respirator cartridge being adapted to hold the sorptive agent in a bed of predetermined thickness, which comprises; (a) positioning a portion of the preselected sorptive agent within an enclosed zone in a bed substantially of the same depth as said predetermined thickness within the said cartridge; (b) passing an air/organic vapor mixture through the portion of sorptive agent in said enclosed zone at a constant flow rate, said flow rate being substantially less than that at which either channeling or entrainment occur, said air/organic vapor mixture consisting of dry air admixed with said preselected organic vapor in a preselected concentration; (c) measuring and recording throughout the period of passing the dry air/organic vapor mixture through the enclosed zone, the resulting weight increase of the sorptive agent with respect to the time of exposure to the flow of the preselected dry air/organic vapor mixture at least until the sorptive agent no longer removes the organic vapor from the dry air at a constant rate and breakthrough has occurred; and (d) calculating the useful life of the respirator charged with the preselected sorptive agent according to the formula

$$T_{b,r} = T_{b,s} \times \frac{F_s}{F_r} \times \frac{W_r}{W_s}$$

wherein

$T_{b,r}$ is the useful life of the respirator cartridge;

$T_{b,s}$ is the breakthrough time of the portion of the preselected sorptive agent in the said enclosed zone;

F_s is the flow rate through the portion of the preselected sorptive agent in said enclosed zone;

F_r is the predetermined flow rate through the respirator cartridge;

W_r is the weight of the preselected sorptive agent in the respirator cartridge; and

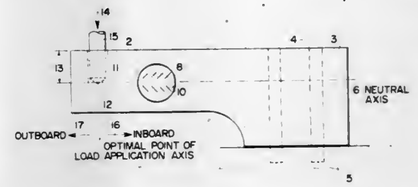
W_s is the weight of the portion of the preselected sorptive agent in said enclosed zone.

4,237,727

MECHANICAL MOMENT SENSITIVITY COMPENSATION IN SHEAR BEAM TRANSDUCERS

Harry E. Lockery, Sudbury, and Eric Laimins, Bellmont, both of Mass., assignors to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Filed Apr. 30, 1979, Ser. No. 34,371
Int. Cl.³ G01L *1/22*
U.S. Cl. 73—141 A **8 Claims**



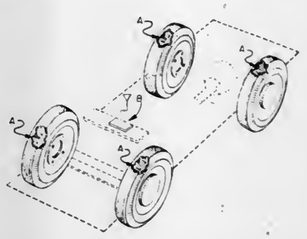
1. A method for mechanically compensating the moment sensitivity of a shear beam transducer, comprising the following steps: establishing a load application axis extending through an optimal loading point of said shear beam transducer, drilling, in the direction of said load application axis, a hole into said shear beam transducer to a first depth which is less than a final compensating depth, applying a defined load to the shear beam transducer along said load application axis in said hole, measuring the respective transducer output, applying said defined load to the shear beam transducer off-center relative to said load application axis and again measuring the respective off-center transducer output, comparing the two transducer outputs to ascertain any difference therebetween, and continuing the foregoing steps until said difference is substantially zero, whereby the shear beam transducer is made substantially insensitive to loads applied off-center relative to said load application axis.

4,237,728

LOW TIRE WARNING SYSTEM

David A. Betts, Mentor-on-the-Lake, Ohio, and Gregory W. Ledenbach, San Jose, Calif., assignors to Gould Inc., Rolling Meadows, Ill. and National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 30, 1979, Ser. No. 34,836
Int. Cl.³ B60C *23/02*
U.S. Cl. 73—146.5 **10 Claims**



1. An abnormal tire condition sensing apparatus comprising:

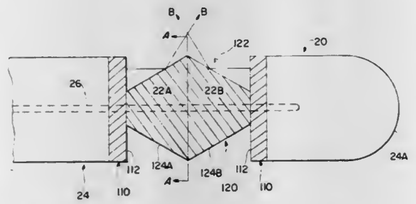
transducer means for detecting an abnormal tire condition and for producing electrical pulses in response to said abnormal tire condition, said transducer adapted for mounting adjacent a vehicle tire; counter means for directly counting the number of transducer pulses, said counter means operatively connected with said transducer means, said counter means producing an enable signal upon reaching a predetermined count;

encoder means for producing an encoded signal; and

transmitter means for transmitting a modulated radio signal, said transmitting means operatively connected with said

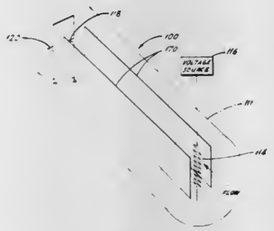
encoder means to receive the encoded signal for modulating a carrier frequency to produce the modulated radio signal and said encoder means and said transmitter means operatively connected with said counter means to be enabled by the enable signal whereby the enable signal enables the transmission of the modulated radio signal.

4,237,729
DOPPLER FLOW METER
Francis McLeod, Fort Collins, Colo.; Spencer Silverstein, Ithaca, and Robert Kurtz, New York, both of N.Y., assignors to Howmedica, Inc., New York, N.Y.
Division of Ser. No. 685,902, May 12, 1976, Pat. No. 4,142,412. This application Jun. 2, 1978, Ser. No. 911,881
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.25 **5 Claims**



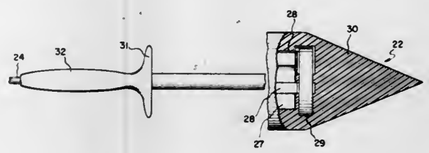
5. An acoustical transducer probe comprising:
an elongate housing;
first and second acoustical transducers which generate and receive respective beams of sound, said transducers being mounted in a mutual coaxial relationship to said housing;
a bore in said housing;
electrical conductors extending through said bore and electrically connected to said transducers;
first and second sound directing means comprising shaped acoustical reflectors mounted to said housing and acoustically coupled to said first and second transducers, respectively, so as to direct said first and second beams from said housing at a predetermined angle with respect to each other such that the Doppler vectors of the reflected back portions of said sound beams are nonparallel.

4,237,730
FLUID VELOCITY MEASUREMENT SYSTEM
Chung L. Feng, Wayne, Pa., assignor to Selas Corporation of America, Dresher, Pa.
Filed Sep. 15, 1978, Ser. No. 942,865
Int. Cl.³ G01F *1/68, 1/70*
U.S. Cl. 73—204 **27 Claims**



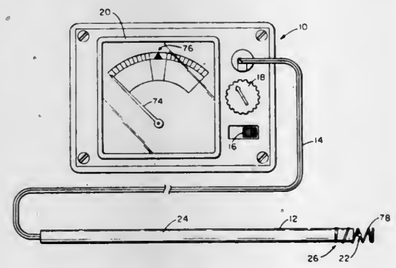
1. A fluid velocity measurement system comprising:
(a) a housing means through which said fluid is caused to flow;
(b) a fluid flow guide means disposed in said housing so that at least a portion of said fluid whose velocity is to be determined flows therethrough and is guided thereby;
(c) a thermal generation means disposed upstream in said fluid flow guide means, and capable of operating in a short period of time to heat a slug of fluid;
(d) a first and second thermal sensing means, being differentially coupled with each other, at least one of said sensing means being located in said guide means, said thermal sensing means adapted for emitting a differential electrical signal upon either or both sensing means detecting a heated slug of fluid, the period of time from when the thermal generation means is triggered into heating a slug of fluid to when the first and second sensing means emits a differential electrical signal defining the flight time of said heating slug of fluid;
(e) means for measuring the flight time of a heated slug of fluid and dividing said measurement into a predetermined number thereby providing a quotient which is directly proportional to the velocity of said fluid;
(f) means for receiving said quotient and converting said quotient into electrical signals for numerically displaying said fluid velocity;
(g) a flight timer means which, upon being triggered by an input signal, provides a high voltage level output signal to operate a switching means for turning on said thermal generation means for a short period of time;
wherein said means for measuring and dividing comprise pluse measuring means for measuring the number of electrical pulses at a predetermined frequency that are counted during the duration of said flight time;
wherein said pulse measuring means comprises:
(h) a flight time counter means for counting the number of electrical pulses that occur during the flight time of a heated slug of fluid;
(i) a main cycle counter means into which is set said predetermined number, said main cycle counter means further adapted to trigger said flight time measuring means at a predetermined count of said predetermined number;
(j) a transfer counter means for dividing the count of said flight time counter means into the predetermined fixed number of said main cycle counter means; and
(k) a rate counter means for determining the quotient of the count of said flight time counter means divided into said predetermined fixed number.

4,237,731
TEMPERATURE SENSING PROBE FOR MICROWAVE OVENS
Rudolph A. Dehn, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Apr. 9, 1979, Ser. No. 28,180
Int. Cl.³ G01K *07/16;* H05B *06/80*
U.S. Cl. 73—352 **3 Claims**



1. A temperature sensing probe to be inserted into food in a microwave oven in which an electromagnetic field is generated for heating the food comprising; a rigid insulating bar having a high impedance temperature sensor mounted at one end and having four high resistance leads deposited along the length of the bar; a flexible cable with four high resistance leads coupled to the deposited leads on said bar; two of said leads being connected to impress a constant current across said sensor whereby a voltage is developed indicative of temperature and two of said leads being connected across said sensor to transmit the voltage to utilization means; and a dielectric, nonmetallic coating encapsulating said sensor and bar and flexible cable made of a material that is nonabsorbing to microwave energy; the impedance of said sensor and leads being sufficiently high that upon insertion into the electromagnetic field negligible microwave energy is coupled to the probe and cable and the electromagnetic field is minimally perturbed to thereby realize a more accurate temperature measurement without leakage of microwave energy to the ambient.

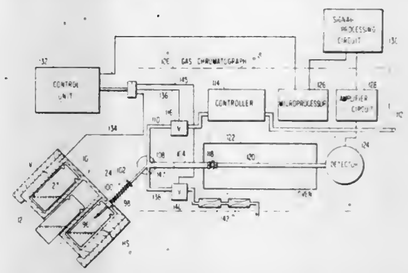
4,237,732
TEMPERATURE RESPONSIVE APPARATUS FOR DETECTING HEAT LEAKS
Louis F. Grein, Stow, and John L. DuBois, Boxborough, both of Mass., assignors to Enertron Corporation, Waltham, Mass.
Filed Nov. 29, 1978, Ser. No. 964,478
Int. Cl.³ G01K *7/22*
U.S. Cl. 73—366 AR **6 Claims**



1. A hand-held, battery-operated, temperature-difference, ambient air measuring apparatus comprising
a temperature sensitive probe having a housing for mounting a low thermal-mass thermistor in an ambient air exposed position, said housing having
means for mounting said low thermal-mass thermistor in said ambient air exposed position out of contact with any heat sinking means and
means for protecting said low thermal-mass thermistor from accidential contact with potentially damaging mechanical elements,
an electrical temperature-difference measuring circuit,
means for connecting said thermistor to said electrical temperature-difference measuring circuit,
said electric circuit comprising
a comparison circuit for comparing a temperature signal representative of the impedance of the thermistor with a presettable reference standard signal for providing an output signal which varies as a function of a difference between said temperature signal and said reference standard, and
an indicator responsive to said electrical circuit for providing an indication of the value of the output signal.

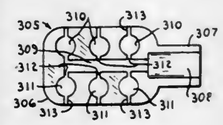
4,237,733
SAMPLING DEVICE FOR MEASURING INSTRUMENTS
Bruno Kolb, Owingen; Michael Jaklin, Bodman-Ludwigshafen; Peter Pospisil, Uberlingen; Dietrich Boege, Daisendorf, and Hubertus Riegger, Uberlingen, all of Fed. Rep. of Germany, assignors to Bodenseewerke Perkin-Elmer & Co. GmbH, Uberlingen, Fed. Rep. of Germany
Continuation of Ser. No. 32,620, Apr. 23, 1979, abandoned. This application Aug. 15, 1979, Ser. No. 67,069
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818251
Int. Cl.³ G01N *1/10*
U.S. Cl. 73—423 A **27 Claims**

1. A sampling device having a conduit for transporting samples from sample vessels to the column of a gas chromatograph comprising:
a magazine for use with the gas chromatograph,
a turntable carried by said magazine for rotation about an axis and having a plurality of chambers spaced one from the other about said axis for receiving sample vessels, said chambers opening axially through axially opposite end faces of said turntable,
means for heating the sample vessels received in said chambers;
means in opposition to one end face of said turntable for closing the chamber openings through said one end face and including an aperture for registration with selected chamber openings upon relative rotation of said turntable



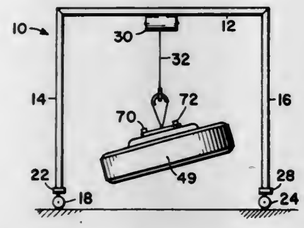
and said closing means whereby a sample vessel is disposable through said aperture for reception in a selected chamber in registry with said aperture, and,
means mounting said magazine for movement in an axial direction between a first rest position and a second position enabling insertion of the conduit through a selected chamber opening in the opposite end face of said turntable and into the corresponding chamber for withdrawing sample from a sample vessel in the corresponding chamber.

4,237,734
DEVICE FOR OBTAINING A SAMPLE OF LIQUID
Robert F. McDevitt, Box 551 Ogden Dunes, Portage, Ind. 46368
Continuation-in-part of Ser. No. 907,109, May 18, 1978, abandoned, which is a division of Ser. No. 720,697, Sep. 7, 1976, Pat. No. 4,112,772, which is a continuation of Ser. No. 565,396, Apr. 7, 1975, abandoned. This application Apr. 16, 1979, Ser. No. 29,985
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—425.4 R **43 Claims**



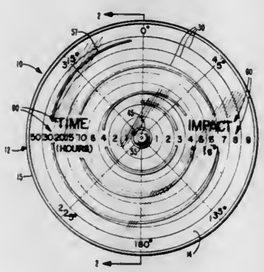
1. A subassembly of a device for obtaining a sample of liquid from a supply thereof, said assembly being elongated and comprising wall structure forming a head and a reduced tubular extension, said head being provided with a row of separate chambers disposed alongside the longitudinal axis of said subassembly, said extension being provided with an opening, a longitudinal axial passage common to and establishing communication between said chambers and opening, and vents respectively provided for said chambers.

4,237,735
BALANCING APPARATUS
Kenneth W. Rodgers, 809 Moall Dr., Prescott, Ariz. 86301, and Frank J. Knize, 2736 Loos Ct., Prescott Valley, Ariz. 86312
Filed Nov. 1, 1978, Ser. No. 956,630
Int. Cl.³ G01M *1/12*
U.S. Cl. 73—486 **11 Claims**



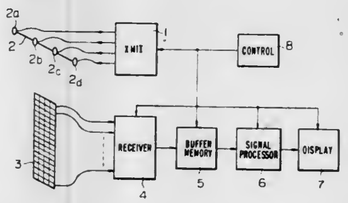
1. An improved balancing apparatus especially useful for balancing an object having at least first and second orthogonal horizontal axes comprising, in combination, lifting means for lifting the object into a suspended position; and X-Y adjustment means connected to said lifting means for permitting the object to assume a free floating position about both of said axes to indicate the degree of unbalance of the object with respect to the center thereof, said X-Y adjusting means comprises a first arcuate shaped member, a second arcuate shaped member spaced from said first arcuate shaped member, said first arcuate shaped member and said second arcuate shaped member each having a bearing surface, and bearing means located between said first arcuate shaped member and said second arcuate shaped member for rotatably moving along said bearing surface of at least one of said first and second arcuate shaped members.

4,237,736
IMPACT GAUGE
John H. Wright, 2719 Tangy Ct., Apt. 3, Dayton, Ohio 45414
Filed Jul. 19, 1979, Ser. No. 58,880
Int. Cl.³ G01P *15/04*
U.S. Cl. 73—492 **13 Claims**



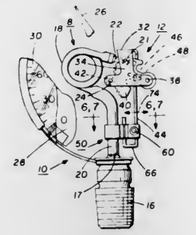
1. An impact gauge, comprising:
(a) a housing,
(b) an inertial member within said housing,
(c) release means in said housing for holding said inertial member in a predetermined position within said housing until subjected to an acceleration above a predetermined level, and then releasing said inertial member for displacement to a new position,
(d) displacement control means for limiting said displacement of said inertial member as a graduated function of the magnitude and direction of the acceleration which displaced it,
(e) retention means for retaining said inertial member in said new position to indicate the magnitude and direction of said acceleration,
(f) a source of liquid in said housing connected to said release means,
(g) an absorbent material in said housing separated from said source of liquid, and
(h) said release means including means for simultaneously releasing liquid from said source of liquid to said absorbent material upon release of said inertial member, to commence migration of said liquid through said absorbent material for indicating elapsed time since said acceleration.

4,237,737
ULTRASONIC IMAGING SYSTEM
Kazuhiko Nitadori, Tokyo, Japan, assignor to Oki Electric Industry Co. Ltd., Tokyo, Japan
Filed Sep. 12, 1978, Ser. No. 941,472
Claims priority, application Japan, Sep. 14, 1977, 52-109977
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—625 **1 Claim**



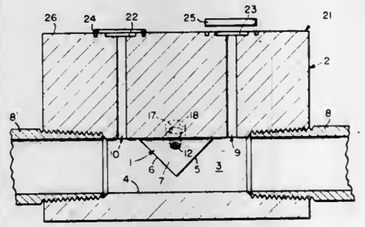
1. An ultrasonic imaging system for forming an orthographic image and a tomographic image of an object comprising:
(a) a receiving transducer array having a plurality of elements positioned at the lattice points of a parallelogram,
(b) a transmitting transducer array having a plurality of elements arranged on a straight line parallel to one side of said parallelogram at a period equivalent of the length of said side,
(c) means for applying an electrical signal, having a delay time defined for each element, to said transmitting transducer array to project an acoustic pulse to an object,
(d) said receiving transducer array receiving the reflected sound waves from said object,
(e) a receiving beam former for compensating for the delay time of the received signals of each element in the receiving transducer array and adding the compensated signals of all the elements, said receiving beam former comprising of a quadrature demodulator which decomposes the output of a receiving transducer element into the inphase component and the quadrature component of a transmitting carrier signal, means for delaying said components, means for performing the complex multiplication for the delayed components, means for adding the real parts of the output of the complex multiplication means of all the channels, means for adding the imaginary parts of the output of the complex multiplication means of all the channels, a pair of square circuits for providing the square of the real sum and the imaginary sum respectively, and an adder for adding the output of said square circuits,
(f) means for extracting the received beams in accordance with the timing of the transmitted beam, and
(g) means for displaying the extracted received beams thereby forming an image.

4,237,738
PRESSURE MEASURING SUB-ASSEMBLY AND AMPLIFIER SUPPORT THEREFORE
Richard H. Wetterhorn, Fairfield, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 948,368, Oct. 4, 1978, abandoned. This application May 3, 1979, Ser. No. 35,379
Int. Cl.³ G01L *7/04*
U.S. Cl. 73—740 **25 Claims**



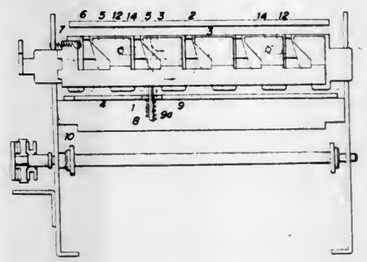
6. A pressure measuring sub-assembly for a pressure gauge comprising in combination:
(a) a pressure responsive element extending between a displacement portion operatively displaceable in correlation to pressure changes to which it is exposed and a relatively non-displacement portion defining a pressure inlet and adapted for a self-supporting connection to a source of pressure to be measured;
(b) an amplifier for communicating displacement motion of said pressure responsive element to an output shaft for support of a gauge pointer;
(c) support means supporting said amplifier secured to said displacement portion of said pressure responsive element for floating conjoint movement therewith;
(d) an elongated actuator secured to the relatively non-displacement portion of said pressure responsive element and extending therefrom into the motion path of said amplifier to operably cooperate with said amplifier in effecting said displacement motion communication; and
(e) clamp means operatively securing said actuator to said pressure responsive element, said clamp means comprising first gripping means for attached mounting onto a relatively non-displacement portion of said pressure responsive element and second gripping means for securing said actuator.

4,237,739
INTEGRAL FLOW METERING ASSEMBLY USING A SEGMENTAL WEDGE
Raymond E. Owen, Greece, and William B. Brosius, Jr., Perinton, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed Mar. 1, 1979, Ser. No. 16,471
Int. Cl.³ G01F *1/40*
U.S. Cl. 73—861.63 **5 Claims**



1. A flow metering assembly comprising a body having a bore therethrough, said bore having connecting means at at least one end constructed and arranged for connecting said bore to a pipe line in order to provide for flow of fluid through said bore and pipe line in series;
said bore having wedge means therein and said wedge means partially-occluding said bore for creating a flow-representative pressure drop while said flow of fluid exists, there being fluid pressure transmitting means in said body for transmitting fluid pressures representative of said presure drop to fluid pressure receiving means connected to said fluid pressure transmitting means;
said wedge means being separate from said body but fitting said bore, there being fixing means fixing said wedge means fixedly in place in said body;
said flow metering assembly including the improvement wherein said wedge means has the shape of a wedge having an outer peripheral surface extending for at least 180° of the circumference of said bore.

4,237,740
PUSHBUTTON TUNER
Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan
Filed May 18, 1978, Ser. No. 907,402
Claims priority, application Japan, May 19, 1977, 52-63237[U]; Nov. 30, 1977, 52-159574[U]
Int. Cl.³ F16H *35/18*; H03J *1/06*; G05G *1/02*
U.S. Cl. 74—10.33 **8 Claims**



1. In a pushbutton tuner comprising a tuner housing, a tuning mechanism disposed within said housing, a pushbutton selector connectable to said tuning mechanism and including a plurality of button slides disposed sidewise across the front fact of the housing and movable rectilinearly between inoperative initial and operative retracted positions, there being first resilient means for urging said button slides fully into their initial positions, and a plurality of actuating means respectively associated with the button slides and adapted to be connected to the tuning mechanism when pressed inwardly, a clutch adapted to connect a manual tuning selector to the tuning mechanism, and clutch releasing means adapted to release the clutch and having portions engaged by said actuating means to release the clutch when any of the button slides is pressed inwardly; the improvement which comprises button slide urging means including second resilient means operative near the end of the path of travel of any button slide to its retracted position to urge the button slide toward its initial position.

4,237,741

MECHANICAL TRANSMISSION ARRANGEMENT

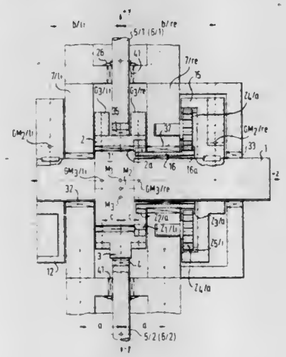
Franz-Joseph Huf; Roland Huf, both of Ailemannenstrasse 17, 7750 Konstanz, Fed. Rep. of Germany, and Helga Huf, deceased, late of Konstanz, Fed. Rep. of Germany (by Franz-Joseph Huf and Roland Huf, legal representatives)

Filed May 3, 1978, Ser. No. 902,536

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720284

Int. Cl.[2] G05G *1/00*; F16H *21/22, 21/36*

U.S. Cl. 74—52 **19 Claims**



1. A mechanical transmission arrangement which comprises, in combination:

(a) a main shaft having its axis of rotation defining the Z axis of a system of x, y and z axes disposed mutually at right angles;

(b) at least one primary eccentric fixedly mounted upon said main shaft, the rotational axis and the load axis of the primary eccentric being spaced apart by a distance ($E_{Hy/2}$) and parallel to the z axis of the main shaft;

(c) a supporting tube mounted on a bearing which in turn is mounted upon the primary eccentric;

(d) at least one secondary eccentric fixedly mounted upon said supporting tube, the secondary eccentric having its rotation and load axes located parallel to the z axis of the main shaft at a maximum spacing ($2\times E_{Hy/2}$) through the resultant mass centre (M_3); and

(e) a ring bearing rotatably mounted on the secondary eccentric and with its rotation axis through the centre of mass (M_3); wherein said ring bearing is drivingly coupled to one of: (a) a connecting rod and an actuating member associated therewith and (b) a counterweight whereby the resultant overall centre of mass lies in the resultant mass centre (M_3) and the mass centre (M_3) is drivingly associated with counter-weights carried by the supporting tube respectively to the left of and to the right of the main (x-y) balancing plane of the transmission arrangement, and further, a secondary resultant mass centre (M_2) is formed which, in operation, rotates with the main shaft on a circle or radius ($E_{Hy/2}$) around a mass centre (M_1) which is opposed by primary balance masses ($GM_{2/left}$ and $GM_{2/right}$) drivingly connected with the main shaft, so that the resultant mass centre (M_1) is produced on the z axis of the main shaft and so that the transmission arrangement kinetically simulates a hypocycloid gear by means of an effectively-loadable adjustment gear to cause the mass centre (M_3) to move exactly on the y axis whilst the mass centres ($GM_{2/left}$ and $GM_{2/right}$) rotate about the z axis, wherein the adjustment gear comprises the combination of a first internally-toothed gear wheel mounted on the supporting tube, a first externally-toothed gear wheel fixedly mounted on a bearing tube and meshing with the first internally-toothed gear wheel, a first bearing carried by the main shaft and a second bearing located in an intermediate wall of the housing of the transmission arrangement supporting said bearing tube, a second externally-toothed gear wheel arranged on the bearing tube, a plurality of second externally-toothed gear wheels mounted in the transmission housing, each meshing both with the second externally-toothed gear wheel and with a second internally-toothed gear wheel arranged on the main shaft, said second externally-toothed gear wheels being located with their respective points of rotation radially arranged at mutual spacing about the main shaft and second internally-toothed gear wheel having its point of rotation located on the axis of the main shaft.

4,237,742

ELECTRICALLY CONTROLLABLE SETTING DEVICE

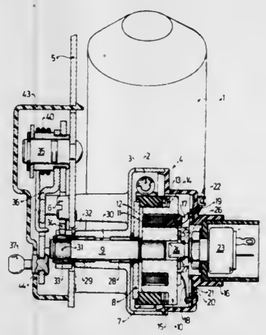
Otto Barthruff, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 29, 1977, Ser. No. 865,624

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724828

Int. Cl.[3] F16H *27/02*; F02D *11/10*; B60K *27/00*

U.S. Cl. 74—89.19 **10 Claims**



1. An electrically controllable setting device for use in connection with a servo-mechanism generating a control signal, comprising, in combination: an electromotor energized by said signal; a supporting member; a shaft arranged on said supporting member for rotary movement; an electromagnetic coupling having a disc-shaped armature supported on said shaft for rotary and axial movements and an electromagnetic member fixedly connected to said shaft and engageable with said armature upon actuation by said control signal; a first reduction gear for transmitting the rotary movement of said electromotor to said armature; a rocking arm pivotably supported on said support; means for urging said rocking arm to a rest position; a second reduction gear coupled between said rocking arm and said shaft to angularly displace said rocking arm from its rest position to a controlling position; and angle-to-signal converting means coupled to said shaft to transmit an actual angular value information to said servo-mechanism.

4,237,743

FRONT DERAILLEUR FOR A BICYCLE

Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Oct. 2, 1978, Ser. No. 947,818

Claims priority, application Japan, Oct. 11, 1977, 52/122148; Oct. 11, 1977, 52/136671[U]

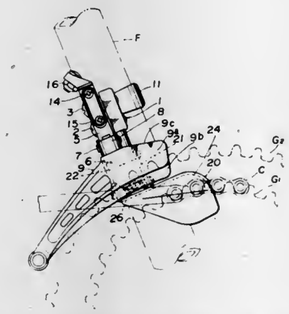
Int. Cl.[3] F16H *7/18*

U.S. Cl. 74—474/82 **8 Claims**

1. A front derailleur for a bicycle, through which a driving chain is switched to one of multi-stage front gears, said front derailleur including:

four members comprising a fixing member, two linkage members pivoted to said fixing member, and a movable member pivoted to said two linkage members and movable through said two linkage members in parallel with respect to said fixing member; and

a chain guide fixed to said movable member and movable therewith for guiding said driving chain to one of said front gears; one of said four members having a chain guard for preventing said chain from coming off one of said front gears, said chain guard comprising a mounting plate for mounting with said one of the four members and at least



one guard plate for preventing said chain from coming off one of said front gears, said guard plate extending ahead of said chain guide in the forward travelling direction of said chain and being positioned at the lateral side of a low speed gear of a minimum diameter reverse to a high speed gear of a maximum diameter among said front gears, so as to be opposite said low speed front gear at an interval smaller than the width of said chain.

4,237,744

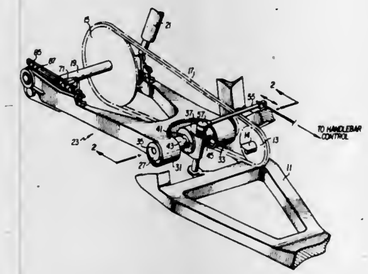
CHAIN TENSIONING SYSTEM FOR VEHICLES

James D. Jolly, Rte. 2, Glen Dean, Ky. 40141

Filed Nov. 20, 1978, Ser. No. 962,105

Int. Cl.[3] F16H *7/10*

U.S. Cl. 474/116 **7 Claims**



1. In a wheeled vehicle having a drive sprocket mounted on an axle fixed to said vehicle, a driven wheel with a sprocket on its axle, and a drive chain connecting said sprockets for transmitting power from said drive sprocket to said driven sprocket, a chain tension adjusting device comprising

means for mounting said driven wheel on an axle mounted to said driven sprocket;

a forked frame having its legs rotatably mounted on a shaft parallel to and secured to said driven wheel axle on either side of said driven sprocket and terminating at its closed end in at least one sleeve;

means for rotatably mounting said sleeve to said frame;

camming means mounted within said sleeve; and

means for manually rotating said camming means within said sleeve so as to move said driven wheel axle by means of said forked frame toward and away from said drive sprocket axle.

4,237,745

REVERSE SHIFT MECHANISM FOR POWER TRANSMISSION UNIT

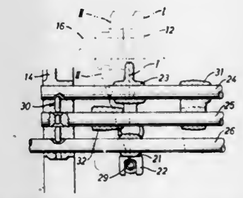
Nobuaki Katayama, and Hideaki Koga, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 19, 1979, Ser. No. 31,397

Claims priority, application Japan, Aug. 2, 1978, 53/94410

Int. Cl.[3] F16H *3/38*

U.S. Cl. 74—339 **4 Claims**



1. A reverse shift mechanism for a power transmission unit having a reverse drive gear train assembled within a transmission casing, said reverse drive gear train including a reverse drive gear drivingly connected to an output shaft of a vehicle engine, a reverse output gear arranged on an output mainshaft to be positioned in a common vertical plane with said drive gear and a reverse idler gear arranged on a reverse idler shaft to be brought into engagement with said drive gear and said output gear, said output mainshaft and said idler shaft being supported from said transmission casing in parallel with each other, said reverse shift mechanism comprising:

a plurality of fork shafts slidably supported from said transmission casing in parallel with said idler shaft to be shifted by an operator's shift lever in an axial direcion;

a shift arm member rotatably mounted on a first shaft selected from said fork shafts and being pivoted on a portion of said transmission casing to be swung in response to axial movement of said first shaft; and

a shift fork member slidably mounted on a second shaft selected from said fork shafts and spaced from said first shaft and being supported by a swingable portion of said shift arm member to be moved along said second shaft, said shift fork member receiving thereon said reverse idler gear to shift it toward and away from said drive and output gears.

4,237,746

DRIVE ARRANGEMENT FOR SETTING MECHANICAL APPARATUS, ESPECIALLY THERMOSTATS

Guglielmo Rossi, Linkenheim, Fed. Rep. of Germany, and Vincenzo Ferloni, Castello Lurate Caccivio, Italy, assignors to Ranco Incorporated, Columbus, Ohio

Filed Jul. 6, 1978, Ser. No. 922,295

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730475

Int. Cl.[3] G05G *1/10*

U.S. Cl. 74—504 **9 Claims**

1. A drive arrangement for setting mechanical apparatus such as a thermostat comprising:

(a) an apparatus body member defining a mounting opening;

(b) a bearing fixed with respect to the body member;

(c) a shaft journaled in the bearing for rotation relative to the body member, said shaft comprising:

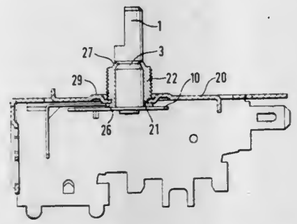
(i) one end disposed outwardly of the body member for carrying at least a setting means;

(ii) an opposite end disposed within the body member; and,

(iii) power transmitting means at said opposite end formed by a shoulder on the shaft and a collar projecting from the shoulder; and,

(d) cam means disposed within the body member and fixed

to said opposite shaft end by said power transmitting means, said cam means comprising a cam member defining a cam profile and having a bore with at least one slot opening to the bore at a predetermined angular position with respect to the cam profile, the cam member being



constructed from material which is harder than the shaft material so that said bore and slot form a die;

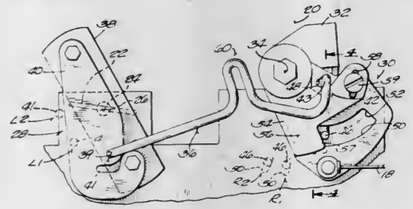
(e) said shaft collar projecting axially through the cam member bore and protruding beyond said cam member, the projecting end of the collar being expanded into engagement with the cam member bore and slot.

4,237,747

ENGINE THROTTLE CONTROL FOR MARINE PROPULSION DEVICES AND THE LIKE

Alan R. Dudleston, Waukegan, Ill., and Harry Stemper, Milwaukee, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 5, 1978, Ser. No. 939,778
Int. Cl.³ G05G *7/04*
U.S. Cl. 74—516 **14 Claims**



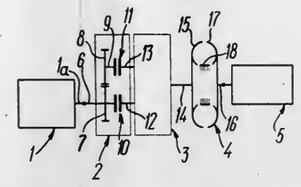
1. An engine control comprising a throttle lever adapted to actuate an engine throttle in response to rotational movement of said throttle lever, a pivot arm mounted for pivotal movement between an idle position and a full throttle position, and means connecting said throttle lever and said pivot arm for rotating said throttle lever in response to movement of said pivot arm and for effecting rotational movement of said throttle lever relative to movement of said pivot arm during pivot arm movement from the idle position toward the full throttle position, said connecting means including a link having a first end pivotally connected to said throttle lever and a second end portion having a first part which is pivotally carried by said pivot arm at a first radius from the pivot arm axis so as to effect movement of said throttle arm in response to movement of said pivot arm from the idle position to a position intermediate the idle and full throttle positions, and a second part which is engaged by said pivot arm, after said pivot arm has reached the intermediate position, at a second radius from the pivot arm axis greater than said first radius so as to effect movement of said throttle lever in response to movement of said pivot arm from the intermediate position toward the full throttle position.

4,237,748

REVERSING HYDROMECHANICAL TRANSMISSION

Alexandr A. Brimmer, Sadovo-Chernogryazskaya ulitsa, 13/3, kv. 93; Semen I. Berezov, Perovskaya ulitsa, 13, korpus 2, kv. 104; Jury B. Deinego, ulitsa Druzhby, 2/19, kv. 199, all of Moscow; Vladimir Y. Demidov, Studenchesky proezd, 6, kv. 94, Ivanteevka Moskovskoi oblasti; Leonid K. Voinich, ulitsa Ivovaya, 5, kv. 14, Moscow, all of U.S.S.R., and Lorell White, 5747 S. Honore, Chicago, Ill. 60636

Filed Mar. 3, 1978, Ser. No. 883,257
Int. Cl.³ F16H *47/00*
U.S. Cl. 74—732 **6 Claims**



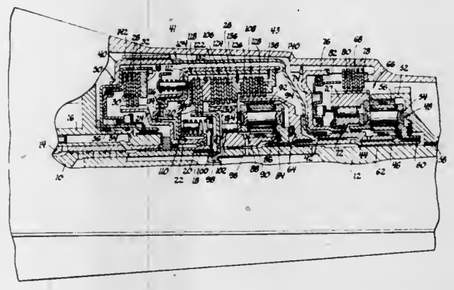
1. A reversing hydromechanical transmission intended for use in a road building machine and comprising: a reversing gear with at least two clutches; a device for control of the clutches of said reversing gear; an input shaft incorporated in said reversing gear and designed for connection to the shaft of the engine of said road-building machine; at least one output shaft of said reversing gear; a gearbox; at least one input shaft incorporated in said gearbox and connected to said at least one output shaft of said reversing gear; at least one output shaft of said gearbox; a hydrodynamic drive; a turbine incorporated in said hydrodynamic drive; a shaft of said turbine incorporated in said hydrodynamic drive, which shaft is designed for connection to the power consumer; an impeller incorporated in said hydrodynamic drive; a shaft of said impeller incorporated in the hydrodynamic drive; at least one of said shafts of said hydrodynamic drive being connected to at least one output shaft of said gearbox; said reversing gear, said gearbox and said hydrodynamic drive being designed for transmitting power from the engine to the power consumer.

4,237,749

MULTI-SPEED POWER TRANSMISSION

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1979, Ser. No. 38,339
Int. Cl.³ F16H *57/10*; F16D *21/02, 25/10, 25/061*
U.S. Cl. 74—763 **3 Claims**



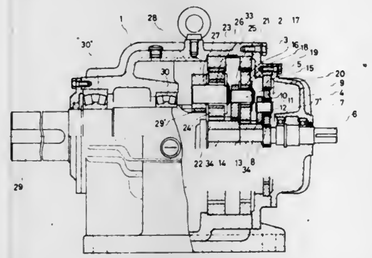
1. A power transmission comprising: input means; output means; a pair of interconnected planetary gear means operatively connected between said input means and said output means and being selectively controllable for providing four forward speed ratios between said input means and said output means; first friction clutch means for selectively connecting one gear member of one planetary gear means with said input means; second friction clutch means; one-way drive means in series drive relation with said second friction clutch means and being drivingly connected with the one gear member of the one planetary gear means and coacting with said second friction clutch for selectively connecting said input means with the one gear member for a one-way input drive; third friction clutch means for selectively connecting said input means with both another gear member of the one planetary gear means and one gear member of the other planetary gear means; first clutch apply means for simultaneously engaging said first friction clutch means and said second friction clutch means; and second clutch apply means for simultaneously engaging said second friction clutch means and said third friction clutch means.

4,237,750

PLANETARY GEAR REDUCTION SYSTEM

Takashi Takahashi, 26-18, Kamisoshigaya 1, Setagaya-ku, Tokyo, Japan

Filed May 10, 1978, Ser. No. 904,483
Int. Cl.³ F16H *1/28, 57/00, 57/04*
U.S. Cl. 74—801 **2 Claims**



1. A planetary gear reduction system including at least two planet gear mechanisms assembled in series within a casing, individually comprising a sun gear, a plurality of planet gears engageable with said sun gear, floating intermediate rings supporting said planet gears, roller bearings, planet shafts individually disposed about a central portion of each roller bearing and supported by a carrier, each of said plurality of planet gears having a corresponding internal spur gear which engages its outer periphery; each of the separate internal spur gears being laterally spaced from each other by a spacer member to determine their relative position with respect to the lateral direction; each of said spur gears having a key groove formed on its peripheral face and a corresponding similar groove formed in the confronting portion of the casing with a key positioned in said grooves to fix the internal spur gears to the casing to permit rotation; an input shaft and an output shaft respectively supported through two bearings at one side and the other of said casing, wherein the carriers supporting intermediately disposed planet gears and sun gear are supported in a floating condition without being supported through bearings, said sun gears and carriers are fixed by pressing in of a spline.

4,237,751

MOTION TRANSMITTING DEVICE

Roland O. Davis, 4451 White Pine La., Santa Ynez, Calif. 93460

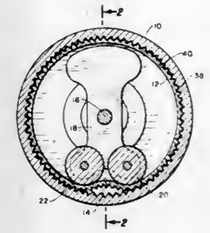
Filed Aug. 11, 1978, Ser. No. 932,896
Int. Cl.³ F16H *1/28*
U.S. Cl. 74—801 **18 Claims**

1. A motion transmitting device comprising:

an outer member having a curved internal surface;

a flexible member having a curved external surface mating with the curved internal surface of said outer member;

said flexible member having a longer curved outside perimeter than the inside perimeter of the curved surface of the outer member causing at least one area of separation of the inner member; and



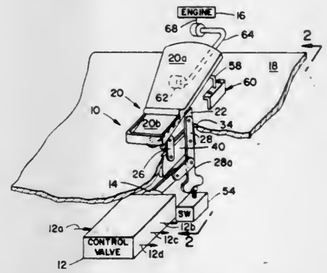
drive means for driving said separation around the curved interior surface of said outer member whereby rotational motion may be transmitted.

4,237,752

APPARATUS FOR CONTROLLING A PLURALITY OF MECHANISMS

Harold V. Hildebrecht, Cleveland, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Oct. 6, 1978, Ser. No. 949,322
Int. Cl.³ G05G *1/14, 9/02*; F16H *57/06*
U.S. Cl. 74—878 **14 Claims**



1. Apparatus (**10**) for controlling a plurality (**12, 16**) of mechanisms, comprising:

(a) a pedal (**20**);

(b) first means (**44, 46**) for controlling said pedal (**20**) to move in a substantially straight line to regulate a first mechanism (**12**); and

(c) second means (**24, 58, 60**) for controlling said pedal (**20**) to pivot to regulate a second mechanism (**16**), said second means including means (**58, 60**) for preventing said pedal (**20**) from moving in a substantially straight line when said pedal (**20**) is pivoted a preselected amount to regulate the second mechanism (**16**).

4,237,753

COFFEE FILTER PICKER

Peter Princevalle, 5 E. Quail St., Sparks, Nev. 89431

Filed Mar. 9, 1979, Ser. No. 19,072
Int. Cl.³ B25B *27/00*
U.S. Cl. 81—3 R **10 Claims**

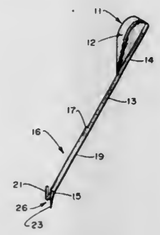
1. A device for manually separating fluted coffee filters comprising:

a main elongated shaft having a compoundedly curved lower section terminating in a pointed tip at one end,

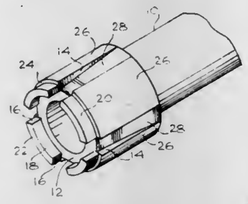
an auxilliary arm shaft extending from said main shaft at a point between said pointed tip and the top of said main shaft,

said auxilliary arm shaft having a main portion secured along

the length thereof parallel to said main shaft, said main portion curving into a secondary portion extending generally normal to said main shaft at a location on said main shaft spaced slightly upward from the tip of said main shaft.



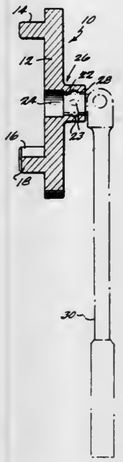
4,237,754
UNIVERSAL SPUD WRENCH
Calvin H. Battrick, Cambria, Calif., assignor to Raymond W. Troutt, Atascadero, Calif., a part interest
Filed Jul. 12, 1979, Ser. No. 56,892
Int. Cl.³ B25B *13/48*
U.S. Cl. 81—439 **5 Claims**



1. A multi-purpose spud wrench comprising:
(a) a shaft with means for rotating said shaft about its axis;
(b) plural perpendicularly oriented slots accommodating spud surfaces on at least one end of said shaft;
(c) a first set of plural extensions defined by
(1) an inside surface of said wrench;
(2) radial extensions forming said slots; and
(3) a first outside arced surface coaxial with said shaft; and
(d) second plural extension adjacent said first extensions, defined by:
(1) said inside surface of said wrench;
(2) said plural radial extensions; and
(3) a second larger outside arced surface coaxial with said shaft; and said slots being adjacent said first and second extensions, and sloping relatively outwardly from said first extension to said second outside diameter.

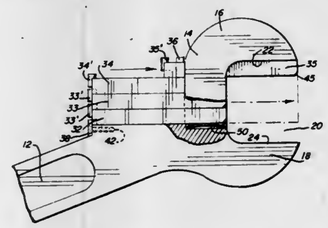
4,237,755
PIPE FLANGE TOOL
Carl F. Gunnell, III, 2965 Wilson Ave., Oakton, Va. 22124
Filed Dec. 6, 1978, Ser. No. 967,151
Int. Cl.³ B25B *13/02*
U.S. Cl. 81—90 C **9 Claims**

1. A pipe flange tool for tightening or removing threaded pipe flanges comprising:
(a) a base;
(b) at least three spaced engaging pins affixed to said base wherein the distance from the centers of a first set of two pins is in the range of about 2¾ to 3-7/16 inches and the distance from the centers of a second set of two pins is in the range of about 3 to 3-14/16 inches; and



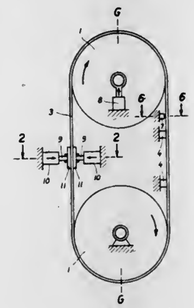
(c) means provided in said base for rotational engagement of said base with a wrench.

4,237,756
ADJUSTABLE WRENCH
G. Jordan Maclay, 939 W. Armitage, Chicago, Ill. 60614
Continuation of Ser. No. 853,985, Nov. 23, 1977, abandoned, which is a continuation of Ser. No. 731,297, Oct. 12, 1976, abandoned. This application Nov. 1, 1978, Ser. No. 956,871
Int. Cl.³ B25B *13/58*
U.S. Cl. 81—185 **6 Claims**



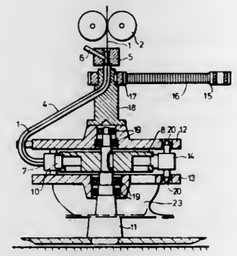
1. In an open-ended wrench of the type including a manually-graspable handle and a nut-seizing jaw connected to the handle, the improvement comprising, in combination:
said jaw comprising an upper jaw and a lower jaw spaced a fixed distance from each other to define an opening for receiving a nut, and a slot communicating with said opening and extending through said jaw;
a plurality of equal size shims longitudinally slidable through said slot from a location outside of said opening to a location inside of said opening to provide a variable dimension for said nut-receiving opening;
said handle including a shelf portion adjacent said jaws for supporting said plurality of equal size shims;
said plurality of equal size shims comprising interlock means for preventing any shim from being located inside of said opening unless there is supportive contact with said jaw;
said interlock means comprising equal size lugs carried by said shims, and each of said shims defining a groove for receiving the lug of an underlying shim;
said plurality of equal size shims being positioned for sequentially varying said nut-receiving opening dimension by longitudinally moving said shims into said opening with said shims that are moved into said opening being in supportive contact with said jaw;
an abutment means carried by the top shim adjacent to and spaced from said lug on said top shim to prevent the shims from sliding further than a predetermined distance and to provide a space between said lug on said top shim and said jaw when the shims are slid inside said opening.

4,237,757
BANDSAW MECHANISM
Tomo Bonac, 3636 W. 30th Ave., Vancouver, B.C., Canada (V6S 1W8)
Filed Dec. 1, 1978, Ser. No. 965,519
Claims priority, application Canada, Dec. 7, 1977, 292599
Int. Cl.³ B23D *55/08, 55/10*
U.S. Cl. 83—74 **10 Claims**



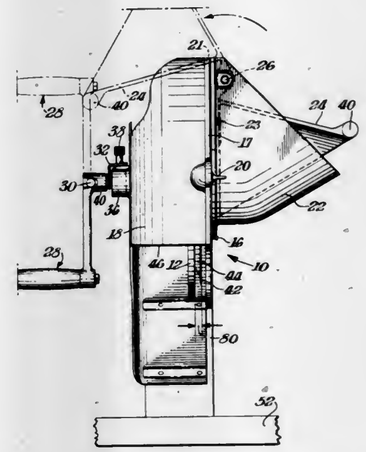
1. In a bandsaw mechanism having a frame and a saw blade trained over two wheels, a system of actuators for introducing "tensioning" stress distribution into said blade and for automatical compensation for temperature expansions and manufacturing inaccuracies of said blade, said system of actuators mounted on said frame and acting as a couple, said couple applying a torsion to a noncutting section of said saw blade not supported by said wheels, forces representing said couple being of such magnitude to assure stable position of said saw blade on said wheels.

4,237,758
PROCESS AND APPARATUS FOR SHREDDING FIBRE TOWS INTO STAPLE FIBRES
Wolfgang Lindner, and Herbert Lütkecosmann, both of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Nov. 15, 1978, Ser. No. 960,815
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752068
Int. Cl.³ D01G *1/04*
U.S. Cl. 83—403 **6 Claims**



1. Apparatus for the shredding of fibre tows into staple fibres comprising a cutting ring of substantially radially disposed blades disposed about a central axis and a plurality of pressure rollers disposed therearound and radially outwardly thereof, a feed device for the fibre tow to be cut and a container for receiving the staple fibres after cutting, means mounting the pressure rollers comprising supporting discs, one supporting disc mounted above and one below the cutting ring mounting each pressure roller around the ring for rotation about the central axis relative to the cutting ring, the feed device comprising a depositing nozzle mounted for rotation around the central axis relative to the cutting ring, means for synchronizing the relative rotation of the supporting discs and depositing nozzle and wherein the outlet of the depositing nozzle and pressure rollers are so arranged in relation to each other on the supporting discs that the nozzle outlet is always situated in a gap between two pressure rollers.

4,237,759
ROTARY SLICER
Frank W. Jones, Wilmington, Del., assignor to Redco, Inc., Wilmington, Del.
Filed Jun. 7, 1979, Ser. No. 46,465
Int. Cl.³ B26D *4/38*
U.S. Cl. 83—419 **14 Claims**

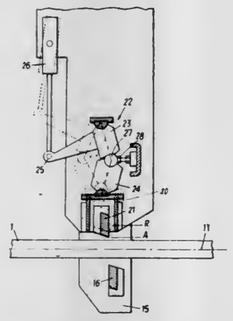


1. A rotary slicer comprising a hollow casing, bearing means on the casing, a shaft rotatably mounted in the bearing means, drive means connected to the shaft for rotating it, an inlet in the casing for supplying objects to be sliced, a rotary plate disposed within the casing on the shaft adjacent the inlet, a slicing assembly mounted on the shaft for rotation therewith, rotational bearing means connected to the shaft, apertures in the place substantially corresponding to the slicing assembly, adjustable means securing the plate to the shaft whereby the distance between the cutting discs and the plate may be varied for adjusting slice thickness, the slicer assembly including circular cutter discs mounted on the bracket, and cutter discs being connected to the bracket by an angularly variable means whereby different portions of the cutter discs may be successively utilized.

4,237,760
SHEARING MACHINE TO BE USED IN BOW-TYPE CONTINUOUS CASTING PLANTS
Franz Kagerhuber, Traun, and Wolfgang Lederer, Haid, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria
Filed Nov. 3, 1978, Ser. No. 957,549
Claims priority, application Austria, Nov. 22, 1977, 8337/77
Int. Cl.³ B26D *5/02;* B22D *11/126*
U.S. Cl. 83—529 **3 Claims**

1. In a shearing machine to be used in bow-type continuous

casting plants for separating continuously cast strands, such as slabs and billets, said continuously cast strands constituting pieces to be cut, of the type including a carrying construction, two cutters being arranged in said carrying construction, one of said two cutters being an upper cutter and the other of said two cutters being a lower cutter, said lower cutter being movable towards and away from said upper cutter and said upper cutter being fixed to said carrying construction during the cutting procedure, the improvement comprising position adjustment means for shifting said upper cutter out of a working position immediately above the surface of said pieces to be cut, into a pulled-back position farther removed from the surface of said pieces to be cut, and vice versa, said adjustment means comprising



a toggle linkage for linking said upper cutter to said carrying construction, said toggle linkage being bowed in one direction when said upper cutter is in the pulled-back position, and bowed slightly beyond its fully stretched position in the other direction when the upper cutter is in the working position, and

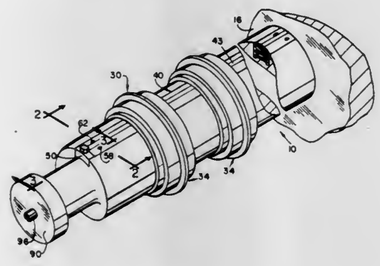
a stopper for limiting the movement of the upper cutter, said stopper being arranged on the carrying construction, a knee of said toggle linkage abutting said stopper when the upper cutter is in the working position so as to hold said upper cutter in place during a cutting operation without the application of an external holding force.

4,237,761

HEAD LOCKING MEANS FOR SLITTER SCORER

Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Continuation-in-part of Ser. No. 814,749, Jul. 11, 1977, Pat. No. 4,162,643. This application May 23, 1978, Ser. No. 908,608
The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.
Int. Cl.[3] B23D *19/06, 35/00*
U.S. Cl. 83—665 **11 Claims**



1. In a slitter scorer comprising:

(a) a shaft, a plurality of heads slideable along said shaft,

(b) a covering having an arcuate friction drag surface on its outer periphery, said surface having a centrally disposed flat thereon, said drag surface projecting in a radial direction with respect to the periphery of said shaft for a predetermined distance into contact with said heads, spring means biasing said drag surface radially inwardly, means for adjusting the radial distance of the outer periphery of said drag surface relative to the longitudinal axis of said shaft within fixed limits and against the bias of said spring means,

(c) a rigid body extending longitudinally of said shaft and guided by said shaft for radial movement, the inner periphery of said covering being fixedly secured to the outer periphery of said body,

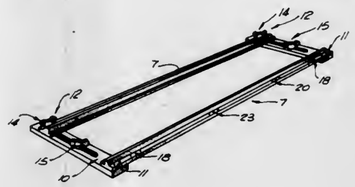
(d) locking means including an expandable chamber disposed radially inwardly of said body for simultaneously locking all heads to said shaft by moving said body and drag surface radially outwardly.

4,237,762

HAND HELD TOOL APPLIANCE

Kevin J. Winter, 15 Watson St., Oak Flats, New South Wales 2527, Australia

Filed Sep. 5, 1978, Ser. No. 939,739
Claims priority, application Australia, Sep. 6, 1977, 1532/77; Oct. 10, 1977, 1994/77
Int. Cl.[3] B27B *9/04, 5/20, 5/22*
U.S. Cl. 83—745 **3 Claims**



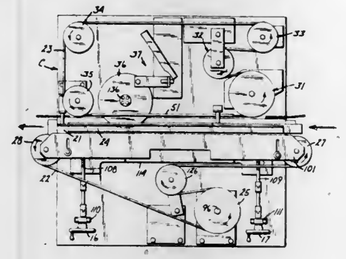
1. A light weight milti-purpose portable appliance adapted to guide a hand held tool when slidably positioned therein along a straight line path, consisting essentially of a pair of rigid metallic straight elongate spaced apart guide members, each with a mirror image, substantially right angled inner channel, adapted to function as a pair of guide rails for the frame structure of a hand held tool and each guide member having an outer longitudinal flange; an elongate plastic, running strip affixed along the channel of each guide member along the length thereof forming a contacting surface along which the frame structure of the hand held tool slides when positioned in the appliance; a pair of cross members extending transversely of and positioned below and proximate the respective ends of the guide rails, each cross member having a longitudinal slot extending beneath one guide member and extending a substantial distance therealong toward the opposite guide member, an upwardly projecting stop member in the form of an adjustable fastener mounted in each slot between the guide members and selectively fixable in each said slot to limit the movement of the frame structure of the hand held tool in the appliance beyond the end of the cross members and selectively prevent the hand held tool from contacting the cross member, the said opposite guide member being mounted in a non-adjustable manner to the cross members and a pair of wing nuts mounted on bolts each projecting through said slot in each cross member and the said outer longitudinal flange in the said one guide member, to thereby permit rapid manual adjustment of the position where the adjustably mounted guide rail is mounted on the cross members toward or away from the other guide member; each guide member being provided with mounting holes along the length of each outer flange of the guide members to permit temporary mounting of the appliance to an appurtenent structure.

4,237,763

APPARATUS FOR SLICING OR SCORING MUFFINS

Frank D. Chipchase, West Milford, N.J., assignor to International Multifoods Corporation, Minneapolis, Minn.

Continuation of Ser. No. 893,925, Apr. 6, 1978, abandoned. This application Mar. 19, 1979, Ser. No. 21,640
Int. Cl.[3] A21C *15/04;* **B26D** *3/30*
U.S. Cl. 83—872 **16 Claims**



1. Apparatus for slicing bakery products such as muffins to a predetermined depth, comprising:

(a) a stationary bed surface for supporting the bakery products and over which the bakery products may be moved;

(b) first and second longitudinal conveyor belt means disposed in generally parallel relation adjacent the stationary surface and spaced apart a distance permitting the bakery products to be carried therebetween sequentially over said stationary bed surface;

(c) first drive means for moving the first belt means in a first direction at a first linear velocity;

(d) second drive means for moving the second belt means in a direction opposite that of the first belt means and at a second linear velocity;

(e) the first and second linear velocities being chosen to move the bakery products over said stationary surface in said first direction, and to cause each bakery product to rotate as it moves in said first direction;

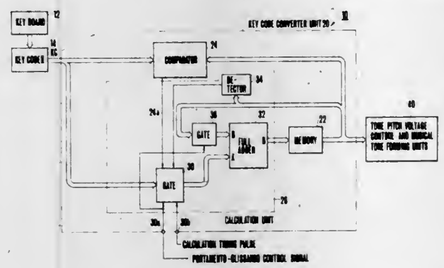
(f) and disc cutting means rotatable in a plane which is generally parallel to and spaced from the stationary bed surface, the disc cutting means projecting into the bakery product travel space between the first and second belt means, whereby each bakery product is sliced as it rotates and moves over said stationary bed surface in said first direction and into engagement with the disc cutting means.

4,237,764

ELECTRONIC MUSICAL INSTRUMENTS

Hideo Suzuki, Kosai, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 20, 1977, Ser. No. 807,894
Int. Cl.[3] G10H *1/02*
U.S. Cl. 84—1.24 **12 Claims**



1. An electronic musical instrument comprising key coder means for delivering key code signals identifying depressed keys, said key code signals having values which only identify depressed keys and which are not proportional to tone frequencies represented by said depressed keys, key code memory means for storing said key code signals, comparator means connected to said key coder means and to said key code memory means for comparing a first key code received from said key code memory means with a second key code received from said key coder means, calculation means responsive to the result of comparison in said comparator means for adding to or subtracting from the content of said key code memory means a predetermined value defining a semitone step repetitively at a predetermined clock rate to change said first key code in said key code memory means by successive semitone steps one after another to the next key code until said first key code in said key code memory means becomes equal to said second key code, and tone forming means connected to said key code memory means for forming a musical tone having a pitch determined by said key code in said key code memory means.

4,237,765

GUITAR BODY WITH IMPROVED NECK STRUCTURE

Arthur F. Valdez, 8807 Santa Monica Blvd., West Hollywood, Calif. 90069

Continuation-in-part of Ser. No. 796,839, May 13, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,341
Int. Cl.[3] G01D *3/18*
U.S. Cl. 84—293 **15 Claims**



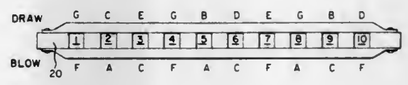
15. In a guitar body, the improvement of neck structure having a substantially flat front surface along and over which the strings of the guitar extend and a back surface, said back surface having a plurality of distinct longitudinally spaced apart transversely extending thumb receiving guide notches defined therein as a longitudinal row which function as thumb stops and sight and feel guides for aiding a guitarist to play and in learning to play the guitar, each of said substantially transversely extending thumb receiving guide notches having a longitudinal axis, forming a concave surface about its longitudinal axis and having its longitudinal axis disposed at an incline to said flat front surface whereby to define an inclinded thumb pivot surface which aids in the playing of the guitar by aiding the pivoting of a player's hand to facilitate the fingering of different guitar strings.

4,237,766

HARMONICA

Michael A. Marshall, 3041 91st NE., Seattle, Wash. 98115

Filed Apr. 16, 1979, Ser. No. 30,063
Int. Cl.[3] G10D *7/12*
U.S. Cl. 84—377 **24 Claims**



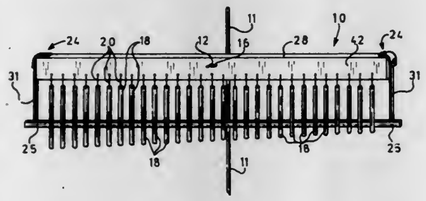
1. A harmonica comprising a body shaped so as to form a

series of adjacent cavities and further comprising a plurality of reeds each of which is responsive to the passage of air to produce an audible musical note of a certain pitch, two reeds being associated with each cavity such that one reed is responsive to blowing into such cavity to produce a blownote and the other is responsive to drawing on such cavity to produce a drawnote, the reeds being constructed and arranged such that the blownotes include the first, fourth and sixth notes of the major scale of a keynote, and all drawnotes are notes of the major scale of the keynote.

4,237,767
CHIME ASSEMBLY

David H. Levine, Tarzana, Calif., assignor to Carroll Sound, Inc., New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,040
Int. Cl.³ G10D *13/08*
U.S. Cl. 84—406 **9 Claims**

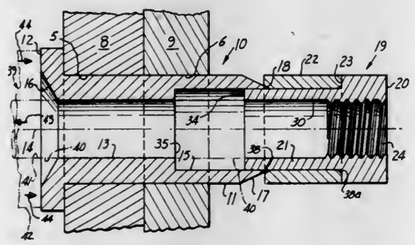


1. A chime assembly comprising:
an elongated chime support bar;
a multiplicity of chimes;
means for suspending said chimes from said support bar; and
a manually movable damper bar including mounting means for pivotably and frictionally securing said damper bar to said support bar for movement between an engaged and non-engaged position relative to said chimes suspended from said support bar so as to produce dampened and non-dampened sounds, respectively, upon the striking of said chimes, said damper bar being held in the desired position solely by the frictional support provided by said mounting means.

4,237,768
BLIND FASTENER

Josef F. Volkmann, Torrance, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Continuation-in-part of Ser. No. 659,414, Feb. 19, 1976, abandoned. This application Nov. 5, 1976, Ser. No. 739,040
Int. Cl.³ F16B *13/04*
U.S. Cl. 85—73 **19 Claims**

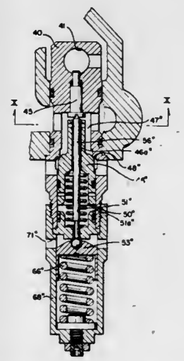


1. A blind fastener pre-assembly comprising: a hollow tubular sleeve having a head and having a first section and a second section; the first section having a smaller internal diameter than that of the second section and being disposed between the head and the second section;
a nut having a head and a tubular shank protruding forwardly from the nut head, a forward part of the nut shank being fitted within a rear part of said second section of the sleeve;
a metallic tubular collar more deformable and ductile than the nut and sleeve, positioned around the nut shank between the nut head and the rear end of the second sleeve section, said collar being expandable and slidable forwardly over the rear end of the second sleeve section;
whereby when the pre-assembly is passed through bodies to be fastened, with the sleeve head at the front side of said bodies, and the rear end of the sleeve at the rear side of said bodies, the nut can be pulled toward the sleeve head so that a portion of the collar expands and slides forwardly over the second sleeve section and abuts the rear of the bodies, and a core bolt may be passed through the sleeve and torque into the nut to secure the fastener.

4,237,769
RELIEF VALVES AND MINE PROPS INCORPORATING THE SAME

Arthur J. Williams, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Apr. 3, 1978, Ser. No. 892,914
Int. Cl.³ F01B *31/12*; F15B *13/04*; F16K *37/00*
U.S. Cl. 91—1 **2 Claims**

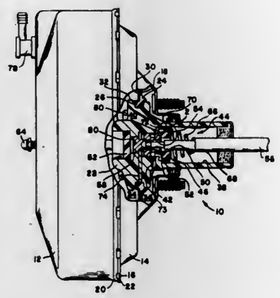


1. A relief valve assembly comprising an elongate housing, a first load chamber at one end of said housing, an inlet aperture into said housing, a non-return valve in said inlet aperture for admitting fluid non-returnably into said load chamber, a first valve seat in said housing communicating with said load chamber, a spring loaded relief valve movable lengthwise of the housing and normally engaging said seat to close the load chamber, a second valve seat in said housing spaced lengthwise from said first valve seat and relief valve and forming therebetween a balancing load chamber, a spring loaded pilot relief valve movable lengthwise of the housing and normally engaging said second seat to close the same, a regulated orifice means in said relief valve connecting the first load chamber and the balancing load chamber whereby said balancing load chamber is normally pressurized to the pressures of the load chamber, wherein the regulated orifice means in the relief valve is formed between an axially extending passage through the relief valve and a slidable solid plunger of smaller diameter than the passage resting on the head of the pilot relief valve and movable in said axial passage, said plunger extending from said axial passage beyond the end of said relief valve, manual release means mounted adjacent the extending end of the plunger for engaging same to move said pilot valve to its open position to vent the valve assembly, and indicator means visible from the exterior of the housing mounted in a bore generally transverse to the axis of the valve assembly and communicating with the load chamber whereby fluid pressure in the load chamber urges the indicator means outwardly of the bore and resilient means in the bore normally urging the indicator into the bore against fluid pressure therein.

4,237,770
POPPET MEMBER FOR A CONTROL VALVE

Gregory K. Harrison, Niles, Mich.; George D. Pope; Richard F. Riel, both of Granger, Ind.; Donald A. Kobb; Charley T. Kelley, both of Mishawaka, Ind.; David J. Lawrence, South Bend, Ind.; Donald R. Conn, South Bend, Ind., and Richard C. Odom, South Bend, Ind., assignors to Tne Bendix Corporation, Southfield, Mich.

Filed Aug. 2, 1979, Ser. No. 63,281
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—369 A **8 Claims**



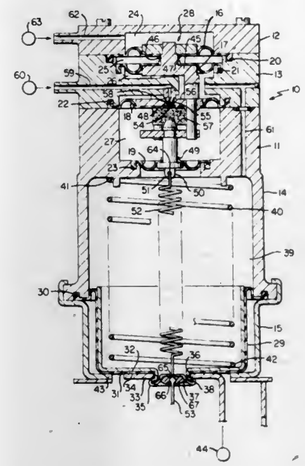
1. In a servomotor having a movable wall with a hub having a bore therethrough for connecting a first passage with a second passage, a valve located in the bore having a first mode of operation wherein fluid from a first source freely flows between the first passage and the second passage and a second mode of operation wherein fluid communication from the first source through the first passage is interrupted and fluid communication from a second source flows through the bore and second passage to create an operational pressure differential across the movable wall, an input member responsive to an operator input for allowing the valve to operate in one of the first and second modes of operation, and an output member connected to the movable wall for transmitting an output force corresponding to an input force corresponding to an input force during the first and second modes of operation, the improvement wherein the valve comprises:
a disc having a peripheral surface and a central opening;
first and second annular ribs symmetrically extending from opposite sides of said disc adjacent the central opening; and
a spring connected to said input member which holds said peripheral surface in a sealing engagement with the hub and the input member into sealing engagement with said first annular rib in the first mode of operation, said disc having sufficient internal resiliency to urge said first annular rib into sealing engagement with a seat in the hub to prevent communication of said first fluid through said first passage during the second mode of operation.

4,237,771
PNEUMATICALLY OPERATED ACTUATOR AND METHOD OF MAKING THE SAME

Alfred A. Frankenberg, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 864,374, Dec. 27, 1977, Pat. No. 4,178,837. This application Jun. 28, 1979, Ser. No. 53,023
The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.
Int. Cl.³ F15B *13/16*; F01B *19/00*; F16J *3/02*
U.S. Cl. 91—387 **7 Claims**

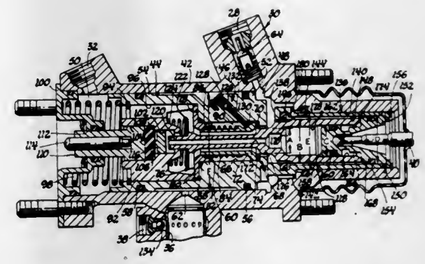
1. In a pneumatically operated actuator having a housing means provided with a pneumatically operated movable wall interconnected by a feedback tension spring to a pilot valve positioner that is adapted to pneumatically move said movable wall of said actuator in relation to a pneumatic signal directed to said positioner and in opposition to a biasing means of said wall, said wall having an opening therethrough through which one integral end of said spring projects, the improvement wherein said one integral end of said spring outboard of said opening has an integral abutment of a size that prevents said abutment from passing through said opening under the force of said spring, said movable wall comprising a flexible diaphragm and a cup-shaped backing member having a closed end provided with said opening therethrough and against which said abutment engages.



4,237,772
HYDRAULIC RATIO-CHANGING BOOSTER WITH HYDRAULIC LOCK

Denny L. Peeples, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1979, Ser. No. 13,880
Int. Cl.³ F15B *13/10, 17/02*
U.S. Cl. 91—391 R **3 Claims**



1. In a hydraulic power booster having a power piston with a power pressure chamber on one side and an exhaust pressure chamber on the other side, booster control valve means for controlling power pressure in said power pressure chamber, a ratio changing trapped volume chamber defined by a cylinder and an input piston and an output piston reciprocably movable in said cylinder, said output piston having a valve element of said booster control valve means formed thereon, said output piston being provided with an effective area exposed to said trapped volume chamber which is smaller than the effective area of said input piston exposed to said trapped volume cham-

ber, and normally open trapped volume chamber valve means closing upon initiation of booster actuation to trap hydraulic fluid in said trapped volume chamber so that further movement of said input piston moves said output piston at a greater rate of movement, said output piston having a bore therein with one bore end in selective fluid communication with said exhaust chamber and the other bore end forming another cylinder, said input piston having an extension forming a piston head sealingly and reciprocally received in said another cylinder of the output piston other bore end, the improvement comprising:

means responsive to a predetermined relative movement of said output piston in the booster actuating direction relative to movement in the booster actuating direction of said power piston and acting to close and seal the selective fluid communication of said output piston bore with said exhaust chamber and to trap hydraulic fluid in said bore and provide a fixed length hydraulic link from said input piston through said output piston independent of the relative positions of said input and output pistons in said first-named cylinder at the occurrence of said predetermined relative movement, a manual force apply path being provided from said input piston through said hydraulic link and said output piston to said power piston by engagement of said output piston and said power piston in force-transmitting relation for further actuating movement of said power piston at a 1:1 ratio relative to further actuating movement of said input piston.

4,237,773

PRESSURE MEDIUM CONTROLLER FOR MOTOR VEHICLE STEERING SYSTEMS

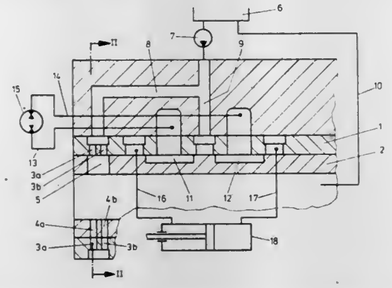
Karl-Heinz Liebert, Schwabsich; Werner Tischer, Unterbobingen; Josef Deppenbrock, Schwabisch, and Kurt Leberfinger, Mogglingen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,922

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749352

Int. Cl.³ F15B *11/08, 13/04*

U.S. Cl. 91—467 **9 Claims**



1. A pressure medium controller for a hydrostatic steering system having a pressure inlet (**8-9**), a servomotor (**18**), two valve elements (**1,2**) displaceable relative to each other from a neutral position in opposite directions to two operating positions, metering means (**15**) operatively coupled to one of the valve elements for supplying pressure medium from said inlet to the servomotor in the operating positions of the valve elements, a pressure outlet (**10**) and conduit means establishing a short circuit between the inlet and the outlet for the pressure medium in the neutral position of said valve elements; said conduit means including a plurality of passages (**3***a*, **3***b*, **4***c*, **4***b*, **5**) in the valve elements having at least two different flow areas, the passages (**5**) having the larger flow areas being mounted in two (**2**) of the valve elements, the passages (**3***a*, **3***b*) in the other (**1**) of the valve elements being of equal flow areas, at least two of said equal flow area passages being always in direct communication with each of the said larger flow area passages to establish said short circuit, the number of smaller flow area passages (**3***a*, **3***b*, **4***a*, **4***b*) in each of the valve elements being greater than the number of said larger flow area passages.

4,237,774

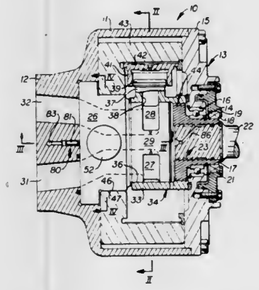
DISPLACEMENT CONTROL VALVING FOR A RADIAL PISTON DEVICE

William K. Engel, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 16, 1979, Ser. No. 94,257

Int. Cl.³ F01B *13/06;* **F04B** *1/04*

U.S. Cl. 91—490 **18 Claims**



1. In a radial piston device (**10**) having a housing (**11**), a cylindrical race (**43**) eccentrically positioned within the housing (**11**) and movable between a first position at which a first displacement setting of the device is established and a second position at which a second displacement setting of the device is established, first and second means (**50,51**) for moving the cylindrical race (**43**) to said first and second positions respectively, a rotor assembly (**34**) having a rotor (**33**), a pintle (**26**) positioned within a bore (**36**) of the rotor (**33**) for relative rotation therebetween and having first and second fluid control ports (**27,28**) for delivering fluid to and from said rotor (**33**), and valve means (**58**) for selectively controlling fluid flow from a source of pressurized fluid to and from said first means (**50**), the improvement comprising:

wherein said valve means (**58**) is positioned within said pintle (**26**) and said source of pressurized fluid is one of said first and second fluid control ports (**27,28**).

4,237,775

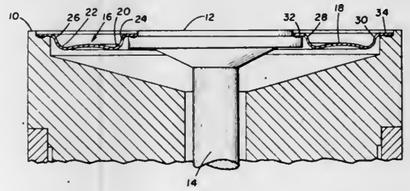
DIAPHRAGM FOR PRESSURE SENSORS

Walter H. Eisele, Malibu, Calif., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 21, 1978, Ser. No. 935,180

Int. Cl.³ F01B *19/00;* **F16J** *3/02, 3/04*

U.S. Cl. 92—99 **8 Claims**



1. An annular diaphragm element for a pressure sensor, comprising

a first sheetlike diaphragm member having a pressure receiving side, said pressure receiving side having a first annular concave section which extends inwardly to form a first substantially cylindrical portion, a first annular convex section radially outwardly of said first annular concave section and extending directly therefrom and a second annular concave section radially outwardly of said first annular convex section and extending directly therefrom which extends outwardly to form a second substantially cylindrical portion, said first annular convex section having a sufficiently shallower curvature and a sufficiently wider span than each of said first and second annular concave sections such that radial compression loading from flattening of said first annular convex section is substantially equal to radial tension loading from pressure responsive deflection of the pressure sensor when said diaphragm member is subjected to pressure loading of said pressure receiving side.

4,237,776

CUSHIONING DUNNAGE MECHANISM

Gary W. Ottaviano, Bedford Heights, Ohio, assignor to Ranpak Corporation, Willoughby, Ohio

Division of Ser. No. 743,704, Nov. 22, 1976, Pat. No. 4,109,040, which is a division of Ser. No. 573,615, May 1, 1975, Pat. No. 4,026,198. This application Jun. 2, 1978, Ser. No. 911,933

The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.

Int. Cl.³ B31D *5/00;* **B31F** *1/08*

U.S. Cl. 493/382 **11 Claims**



1. In combination a dunnage producing mechanism for producing generally low density pad-like cushioning dunnage from flexible sheet-like material, and a mobile transfer vehicle spaced from said mechanism and having means thereon for receiving said dunnage on said vehicle from said mechanism for subsequent transfer to an area remote from said mechanism, said dunnage being produceable in strip form by said mechanism and comprising a central compressed section and lateral pillow-like sections, and means on said dunnage maintaining the dunnage in said pad-like form, said vehicle including a frame and rotatable means mounted intermediate the ends of said frame for antifriction movement of said vehicle over a floor surface to a remote location, and means on said vehicle for causing movement of said vehicle, the last mentioned means including hand gripping portions for tipping of said frame about the axis of rotation of said rotatable means to facilitate movement of the vehicle to a remote location.

4,237,777

METHOD AND APPARATUS FOR ERECTING AND FORMING DOUBLE WALL CONTAINERS

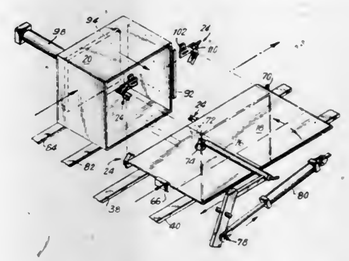
Ulrich G. Nowacki, Leisure City, and Edwin C. Weibrecht, Pompano Beach, both of Fla., assignors to International Paper Company, New York, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,837

Int. Cl.³ B31B *1/06*

U.S. Cl. 493/100 **3 Claims**

1. In a process for forming a double wall container from a container blank comprising four side panels pivotally joined at opposite edges and having two top side flaps and two top end flaps, each of which is joined respectively to one of said side panels, and an erected and sealed container comprising four side panels joined at opposite sides and having two bottom side flaps and two bottom end flaps said end flaps being sealed to said side flaps, the steps comprising: positioning a plurality of said container blanks in a blank feeding station of a container erecting and telescoping machine to form a vertical column with each of said container blanks lying in a horizontal plane; driving the lowermost container blank from said vertical column of container blanks into an erecting and telescoping station; erecting said container blank by applying a turning moment to the trailing side panel of said container blank while maintaining the lower side panel of said container blank stationary in a horizontal plane; positioning an erected and sealed container in a container feeding station with its open top facing said erecting and telescoping station and in alignment with said erected container blank; driving said erected and sealed container into engagement with a plurality of guide arms, each of



said guide arms engaging an outer surface of said erected and sealed container at an outside corner thereof; further driving said erected and sealed container and each of said guide arms into engagement with an inside corner of said erected container blank; further driving said erected and sealed container into telescoping relation with said erected container blank until said guide arms are released from engagement with the outer corners of said erected container blank to form a double wall container; and simultaneously ejecting said double wall container from said erecting and telescoping machine while driving a subsequent container blank into said erecting and telescoping station.

4,237,778

MACHINE FOR MAKING RECESSED COMPOSITE FILTER MOUTHPIECES

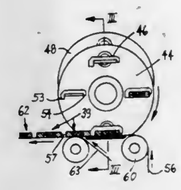
Nikolaus Häusler, Oststeinbek; Erich Berger, Hamburg, and Wolfgang Wiese, Hamwarde, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,528

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811176

Int. Cl.³ A24C *5/50*

U.S. Cl. 493/39 **10 Claims**



1. In a machine for producing a filter rod which is subdivisible into recessed composite filter mouthpieces, the combination of means for assembling dissimilar filter plugs into a series of groups of assorted coaxial filter plugs, including means for moving the plugs and the groups sideways; means for conveying an adhesive-coated web of wrapping material lengthwise; means for transferring successive groups of said series onto the moving web, one behind the other so that the transferred groups form a rod-like filler consisting of coaxial groups, said transferring means including at least one phantom plug and holder means for placing said phantom plug between a previ-

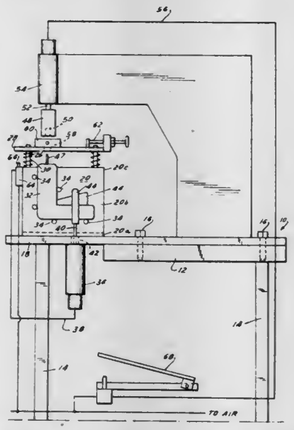
ously transferred group and the next-following group and for withdrawing the phantom plug as soon as the next-following group adheres to the moving web whereby the withdrawal of said phantom plug results in the formation of a gap between neighboring groups of the filler, said holder means comprising a plurality of discrete holders each having a flute for a group of assorted filter plugs and a phantom plug adjacent to one end of the group in the respective flute; and means for draping the moving web about said filler to form a continuous filter rod wherein said groups alternate with gaps.

4,237,779

AUTOMATIC ATTACHING APPARATUS

Steven Kunreuther, New York, N.Y., assignor to Kunreuther & Beringhause, Carle Place, N.Y.

Filed Feb. 22, 1979, Ser. No. 14,264
Int. Cl.³ B31F *7/00*
U.S. Cl. 493/372 **38 Claims**



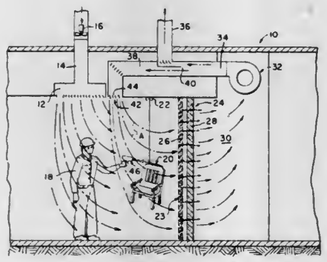
1. An automatic apparatus for attaching first and second articles together with a fastener of the type adapted to be dispensed through the stationary hollow needle of a fastener attacher, said apparatus comprising a support, means for mounting an attacher to said support, means for clamping the articles together, at locations on opposite sides of the point thereon through which the needle will penetrate, and for moving same relative to the attacher to position same, as a unit, on the needle, and means for actuating said attacher.

4,237,780

HYDROCARBON FUME DISPOSAL SYSTEM PARTICULARLY FOR USE IN PAINT SPRAY BOOTHS

Andrew Truhan, P.O. Box 467, Granite Falls, N.C. 28630

Filed Jan. 30, 1979, Ser. No. 7,715
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—115 SB **6 Claims**



1. A method of utilizing waste wood for controlling the environment in an area adjacent a spray finishing operation producing air born hydrocarbons comprising the steps:

(a) forming a first coarse filter of wood particles;

(b) forming a second hydrocarbon adsorption filter by carbonizing wood particles, and steam activating;

(c) drawing the air surrounding a spray booth serially through the first and second filters; and

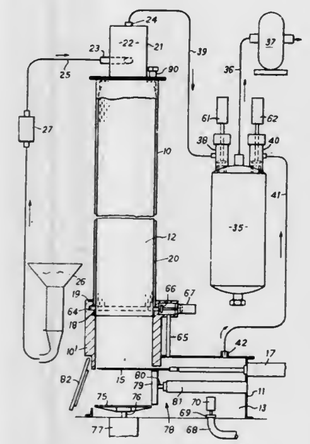
(d) returning at least a major portion of the filter air to the area adjacent the spray booth.

4,237,781

METHOD AND APPARATUS FOR FORMING BLOCKS OF NATURAL CHEESE FROM CHEESE CURD

George K. Charles, Wincanton, England, assignor to Alfa Laval AB, Tumba, Sweden

Filed Apr. 10, 1979, Ser. No. 28,803
Claims priority, application United Kingdom, Apr. 20, 1978, 15749/78
Int. Cl.³ A23C *19/02*; A01J *25/11*
U.S. Cl. 99—454 **2 Claims**



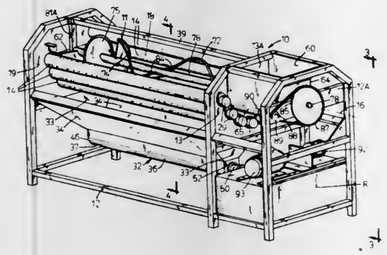
1. Apparatus for forming blocks of cheese from prepared cheese curd, comprising a casing defining an upper chamber, a lower chamber directly below the upper chamber, and an opening between the two chambers, a hollow column mounted in the upper chamber above said opening, the wall of said column being formed with apertures at least in the lower portion thereof, a guillotine blade movable between an open position and a closed position closing off said opening, vacuum means for creating a sub-atmospheric pressure in the two chambers, means for introducing prepared cheese curd into the upper end of the column to form a pillar of curd therein supported on the guillotine blade in the closed position while the upper chamber is maintained at a sub-atmospheric pressure, means for removing from the upper chamber whey expressed from the lower end portion of the pillar of curd through the apertures in the column due to the weight of curd superimposed thereon, means for lowering the pillar of curd in the column upon retraction of the guillotine blade into the open position so that the lower end portion of the pillar of curd extends into the lower chamber, the guillotine blade being adapted to cut a block of cheese from the lower end of the pillar of curd upon movement of the guillotine blade into the closed position, and means for removing the block from the lower chamber, wherein the said opening between the two chambers comprises a smooth walled passageway the surfaces of which are flush with the internal surfaces of the column in the upper chamber, the means for removing whey from the upper chamber comprises a drainage duct connected to vacuum means and fitted with a drain valve operable selectively to open and close the duct, and means are provided for admitting air to the upper chamber while said drain valve is closed to increase the pressure and effect lateral compression of the pillar of curd.

4,237,782

VEGETABLE PROCESSING MACHINE WITH PRODUCT MOBILIZER APPARATUS

Ronald A. Bichel, Neosho, Wis., assignor to Starr, Incorporated, Hustisford, Wis.

Filed Nov. 27, 1978, Ser. No. 963,794
Int. Cl.³ A23N *7/02*
U.S. Cl. 99—625 **3 Claims**



1. In a machine for processing products such as fruits and vegetables or the like:

a plurality of elongated rotatable processing rollers arranged about a common axis to define a generally U-shaped trough open at its top and having an infeed end and a discharge end, each roller having a fixed position relative to said trough but being rotatable about its own axis;

first drive means for rotating said rollers about their own axes;

a rotatable product mobilizer for association with said rollers and comprising at least one rod forming a helix rotatable in said trough about said common axis to lift upwardly the products thereby creating a tumbling action, rotatable auger means in said trough between said product mobilizer and said outlet end thereof;

second drive means for rotating said product mobilizer and said auger;

and control means for controlling said second drive means to regulate the rotational speed of said auger means and thereby control the product load within said machine, further including rotatable anger means between said infeed end of said trough and said product mobilizer, wherein said product mobilizer includes a rotatable shaft, wherein said rod is arranged around and spaced from said shaft, and further including rod support means connected between said rod and said shaft, and wherein said auger means are connected to said shaft.

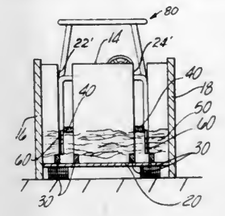
4,237,783

STORAGE AND BANDING CONTAINER

Roman J. Tafelski, Jr., 1163 Colonial, Inkster, Mich. 48141

Filed Feb. 12, 1979, Ser. No. 11,313
Int. Cl.³ B30B *7/00*; B65B *13/18*
U.S. Cl. 100—34 **6 Claims**

1. In combination, a forklift vehicle including means for forcibly displacing the tines of the forklift vehicle downwardly and a container having four side walls, a bottom wall and an open top wherein each wall of at least one pair of opposed side walls includes a pair of vertically elongated slots adapted to receive the tines of said forklift vehicle and permit vertical displacement of the tines relative to said housing, wherein said



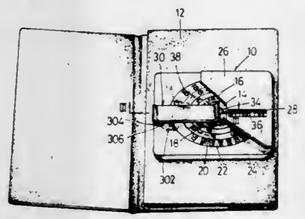
bottom wall of said container resists the force exerted by said tines displacing means upon the contents of the container.

4,237,784

DATING MACHINE IMPRESSING A DATE ON CALLING CARDS, BUSINESS CARDS OR THE LIKE

Kisaburo Suzuki, 23-5, Shibamata 4-chome Katsushika-ku, Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,309
Int. Cl.³ B41F *1/02*; B41J *3/24, 1/28*; B41K *3/26*
U.S. Cl. 101—20 **4 Claims**



1. A machine for impressing a date on calling cards, comprising:

a base plate having a circular recess;

a dial member mounted for rotation within the circular recess and having a series of concentric annular link plates relatively rotatable within a common plane, said link plates each having on one planar face thereof; a series of normal and reverse numerals arranged symmetrically relative to an axis for reading and impressing purposes, respectively, said link plates being adjustable rotatively to indicate a preselected date in combination at first and second diametrically opposed locations on said planar faces of said plates;

a cover plate superimposed on the base plate, said cover plate having a sight opening at said first location and a cutout portion which includes said second location;

depressing means pivotable relative to the base plate and against said impressing numerals at said second location;

whereby a card can be forced against said impressing numerals to impress said preselected date thereon, said date being visually indicated by said normal numerals at said first location.

4,237,785

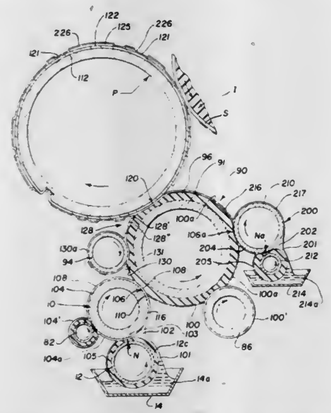
INKER FOR APPLYING NEWSPRINT TYPE INK

Harold F. Dahlgren, 3305 Manor Way, Dallas, Tex. 75235

Filed Apr. 18, 1978, Ser. No. 897,262
Int. Cl.³ B41F *7/26, 7/36, 31/06, 31/36*
U.S. Cl. 101—141 **11 Claims**

1. Inker apparatus for selectively and uniformly applying a film of fluid newsprint type ink to a printing plate comprising: an ink metering means; an ink transfer roller having an oleophilic ink receptive surface; a form roller engaging the printing plate, said form roller having an ink receptive surface urged into pressure relation with said ink transfer roller to form an

ink transfer nip; means supporting said ink metering means and said ink transfer roller in pressure relationship to form an ink metering nip between adjacent surfaces of the ink metering means and the ink transfer roller; speed control means secured to control the surface speed of said ink transfer roller relative to the surface speed of said form roller to maintain the surface speed of the transfer roller less than the surface speed of said form roller; means to supply an excess of ink to said ink metering nip to replenish ink on the surface of the ink transfer roller which is moving from the ink transfer nip to said ink metering nip; and an ink storage vibrator roller supported in rotative contact with the surface of a film of ink on the form roller surface which has just moved from the printing plate to remove excess ink from portions of the surface of the form roller and to add the ink to depleted areas on the surface of the form roller which is moving toward said ink transfer nip.



4,237,786

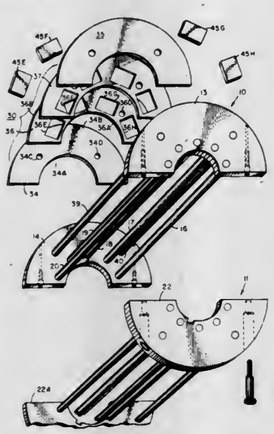
SPLIT-SHELL MAGNETIC CYLINDER

Homer H. Sanford, Streamwood, Ill., assignor to Bunting Magnetics Company, Newton, Kans.

Filed Oct. 16, 1978, Ser. No. 951,471

Int. Cl.³ B41F *27/02, 27/06;* **B41L** *29/02, 29/06*

U.S. Cl. 101—378 **10 Claims**



1. In a split-shell magnetic printing cylinder including first and second half cylinders each comprising first and second end plates; a plurality of laminations between said end plates and alternately forming pole pieces and spacers, each lamination having curved outer and inner edges; and permanent magnets in said spacers engaging adjacent pole pieces, the improvement comprising: a plurality of core bars extending between and secured to said end plates and arranged so that said bars engage the inner curved edges of said laminations when said laminations are assembled between said end plates; means for securing said core bars under tension to said end plates to compress said laminations together; weld joints between said core bars and the inner edges of said laminations; and means for securing said half cylinders together.

4,237,787

INCENDIARY PROJECTILE

Klaus P. Wacula, Nuremberg, and Karl Emmerling, Neumarkt, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 23, 1978, Ser. No. 953,434

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752946

Int. Cl.³ F42B *11/14, 13/04*

U.S. Cl. 102—52 **6 Claims**



1. In an incendiary projectile, particularly an armor-piercing projectile, including an incendiary composition constituted of a metal powder admixture as a reducing agent and an inorganic oxidizing agent; and a binding agent for converting these components into a solid form, the improvement comprising: the incendiary composition providing for increased sensitivity to impact to spontaneously ignite upon impact against a target without requiring a separate ignition charge, said oxidizing agent being nitrate or peroxide of the elements selected from the group consisting of potassium, strontium or barium, said oxidizing and reduction agents being present in about equal parts in said incendiary composition; and binding agents being included in said admixture in an amount of 1 to 5% by weight so as to formulate said admixture into a hard-grained agglomerate and with a resultant increased impact sensitivity of said incendiary composition.

4,237,788

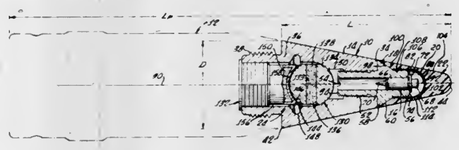
EXPLOSIVE FUSE FOR BALLISTIC PROJECTILE

Richard L. Hagen, Santa Ana, Calif., assignor to ARES, Inc., Port Clinton, Ohio

Filed Dec. 18, 1978, Ser. No. 970,489

Int. Cl.³ F42C *15/22, 1/00*

U.S. Cl. 102—245 **14 Claims**



1. A projectile fuse for a ballistic projectile body having a explosive charge contained herein, comprising:

a fuse body having forward and rearward portions, said rearward portion being adapted for attachment to the projectile body;

a firing pin having a forward head portion and a rearward ignitor striking portion;

means for supporting the firing pin with the head portion forwardly directed and for guiding rearward movement of the firing pin toward the fuse body rearward portion;

cap means for enclosing the firing pin forward head portion and responsive to fuse impact with a target for collapsing and impacting the firing pin forward head portion and for thereby driving the firing pin toward the fuse body rearward portion;

windscreen means for enclosing the cap means and for providing an aerodynamically streamlined forward continuation of the fuse body;

means joining the windscreen means to the firing pin supporting means for enabling separation therebetween, thereby enabling the windscreen means to collapse said cap means upon impact of the fuse with a target; and

detonation means, disposed within the fuse body rearward portion and responsive to impace by the firing pin striking portion for causing detonation of the explosive charge contained within the projectile body.

4,237,789

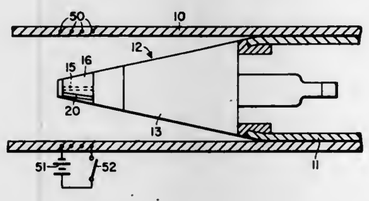
PROGRAMMABLE FUZE FOR PROJECTILES

Juris Stauers, Tempe, and Vincent R. Alfaro, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1978, Ser. No. 946,484

Int. Cl.³ F42C *11/00, 19/00*

U.S. Cl. 102—270 **12 Claims**



1. A programmable fuze for a projectile, including an antenna projecting outwardly from said fuze, comprising a heat fusible electrically conducting link fixedly connected in shorting engagement to said antenna and fusible by aeroheating subsequent to firing of the projectile.

4,237,790

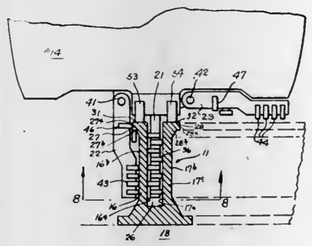
MONORAIL RAPID TRANSIT SYSTEM

Thomas A. DeLucia, 280 Brady Ct., Sacramento, Calif. 95820

Filed Nov. 1, 1978, Ser. No. 956,674

Int. Cl.³ E01B *25/12*

U.S. Cl. 104—130 **9 Claims**



1. A monorail transit system comprising, in combination, a single main track, a single auxiliary track diverging obliquely from one side of said main track and having one side in common with one side of said main track, a car supported for travel on said main track and said auxiliary track a pair of guide means on said car for guiding engagement with said track, said pair of guide means including independently retractable means disposed on opposite sides of said track each selectively and independently moveable between a retracted position out of engagement with the associated side of said track and an operative position in guiding engagement with said associated side of said track to permit said car to travel onto said auxiliary track or to continue on said main track whereby said pair of guide means may be simultaneously actuated to provide stability on the main track, or singly actuated for turning onto the auxiliary track.

4,237,791

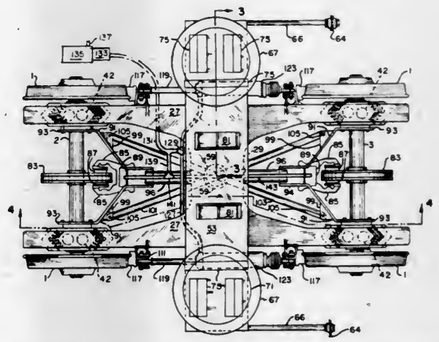
RADIAL AXLE RAILWAY TRUCK DISC BRAKES

Keith L. Jackson, Granite City, and James J. Reece, Belleville, both of Ill., assignors to General Steel Industries, Inc., St. Louis, Mo.

Filed Aug. 24, 1978, Ser. No. 936,212

Int. Cl.³ B61F *5/30, 5/38;* **B61H** *5/00, 13/26*

U.S. Cl. 105—168 **17 Claims**



1. In a railway truck having a pair of longitudinally spaced wheel and axle assemblies each comprising an axle and a pair of wheels mounted thereon, journal bearings supported on the end portions of said wheel and axle assemblies at each side of the truck, adaptors mounted on the respective journal bearings, truck framing, means supporting said truck framing on said adaptors and permitting said wheel and axle assemblies to turn in the horizontal plane with respect to said truck framing, means including separate structures rigidly connecting both journal bearing adaptors on the respective axles forming operative interconnections between the diagonally opposite journal bearing adaptors causing the respective wheel and axle assemblies to turn in opposite senses in the horizontal plane while positively holding the journal bearing adaptors at each side in alignment with each other longitudinally of the truck, said adaptors being mounted on said journal bearings to permit movement transversely of the truck of said journal bearings with respect to said adaptors whereby to accommodate corresponding lateral movements of each said axle with respect to the other axle as may be required to allow the wheels to move laterally to follow lateral offsets in the track rails irrespective of the resistance of said interconnection means to relative transverse movements of the journal bearing adaptors associated with the respective axles.

12. In a railway truck, a pair of longitudinally spaced wheel and axle assemblies each comprising an axle and a pair of wheels mounted thereon, truck framing, means resiliently supporting said truck framing on the end portions of said wheel and axle assemblies and permitting said wheel and axle assemblies to turn in a horizontal plane with respect to said truck framing, a brake disc mounted on the central portion of an axle, a yoke having side members supported on the end portions of

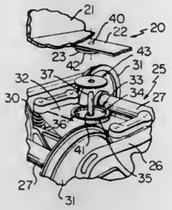
said axle, disc brake mechanism mounted on said yoke and having shoes movable transversely of the truck for selective frictional engagement with opposite sides of said disc, and means for transmitting braking torque reactions from said yoke to said truck framing while facilitating turning movements in the horizontal plane of said yoke with respect to said truck framing in accordance with turning movements of the associated wheel and axle assembly.

4,237,792

REINFORCED LINER FOR CENTER PLATE STRUCTURE OF A RAILWAY VEHICLE

M. John Somers, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Sep. 28, 1978, Ser. No. 946,672
Int. Cl.³ B61F *5/16;* **F16C** *17/04, 17/10*
U.S. Cl. 105—199 C **7 Claims**



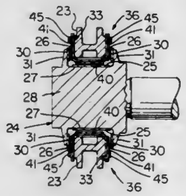
1. In a railway vehicle having; a body provided with a body bolster and a body center plate; a truck provided with a truck bolster and a bolster bowl defined by a truck center plate having an unstanding peripheral flange; said body center plate being received within said flange and being supported by said truck center plate; a wear-resistant liner disposed between said center plates; said liner being defined by polymeric material and having a top surface which engages said truck center plate; and a liner reinforcement embedded in said polymeric material which serves as a matrix therefor, the improvement wherein said reinforcement is constructed to serve the additional purpose of electrically conductive means and define dual-purpose means having a top surface portion which comprises said top surface and a bottom surface portion which comprises said top surface and a bottom surface portion which comprises said bottom surface, said dual-purpose means providing reinforcement for said liner and a comparatively low electrical resistance path through said liner with each surface portion in contact with an associated center plate, said top and bottom surface portions each comprising a small fractional part of its associated planar surface.

4,237,793

RAILWAY TRUCK PEDESTAL LINER

Homer N. Holden, Sylva, and Reese Sumrall, Maggie Valley, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 13, 1979, Ser. No. 30,035
Int. Cl.³ B61F *5/32, 5/50;* **F16C** *27/02, 33/20*
U.S. Cl. 105—225 **10 Claims**



1. In a pedestal liner for a railway vehicle wherein said vehicle comprises; pedestal trucks comprising pairs of pedestal legs and a journal box disposed between each pair of pedestal legs, each journal box having a vertically disposed planar central guide surface and a pair of spaced vertically disposed parallel side surfaces disposed on opposite sides of said guide surface; said pedestal liner being roughly U-shaped having a bight and a pair of parallel legs and being for disposal between an associated pedestal leg and journal box, the improvement comprising, a continuous uninterrupted metal backing material defining said bight and parallel legs, antifriction material for said bight adapted to engage said guide surface, antifriction material for said parallel legs adapted to engage said side surfaces, and means fixing said antifriction material against said bight and parallel legs of said backing material, said backing material providing optimum structural support for said antifriction material, said antifriction material being an ultra high molecular weight polymeric material.

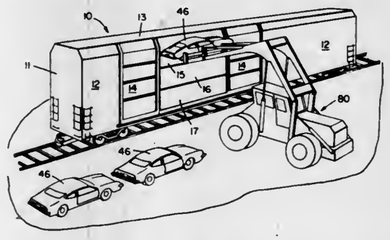
7. In a pedestal liner for a railway vehicle wherein said vehicle comprises; pedestal trucks comprising pairs of pedestal legs and a journal box disposed between each pair of pedestal legs, each journal box having a vertically disposed planar central guide surface and a pair of spaced vertically disposed parallel side surfaces disposed on opposite sides of said guide surface; said pedestal liner being roughly U-shaped having a bight and a pair of parallel legs and being for disposal between an associated pedestal leg and journal box; the improvement comprising; a continuous uninterrupted metal backing material defining said bight and parallel legs; antifriction material for said bight adapted to engage said guide surface; antifriction material for said parallel legs adapted to engage said side surfaces; means fixing said antifriction material against said bight and parallel legs of said backing material; said backing material providing optimum structural support for said antifriction material; said antifriction material being an ultra high molecular weight polymeric material; and means for fastening said pedestal liner to its pedestal leg; said fastening means comprising, at least one pair of aligned bores in said legs for receiving a fastener therethrough, and a rigid tubular insert around each of said bores, each of said inserts having an inner end engaging the backing material of its associated leg and being held in position by antifriction material of its associated leg, each insert being adapted to prevent cold flow of antifriction material from around its associated bore upon clamping a fastener therethrough.

4,237,794

AUTOMOBILE SECUREMENT MECHANISM TO FREIGHT CAR

Benjamin F. Biaggini, San Francisco; William M. Jaekle, Moraga; Paul V. Garin, San Francisco; Robert Byrne, San Carlos, and Armand Giovanelli, San Francisco, all of Calif., assignors to Southern Pacific Transportation Company, San Francisco, Calif.

Division of Ser. No. 646,940, Jan. 6, 1976, Pat. No. 4,067,469.
This application Nov. 14, 1977, Ser. No. 851,140
Int. Cl.² B60P *7/08;* **B61D** *45/00, 49/00;* **B65J** *1/22*
U.S. Cl. 410/7 **10 Claims**



1. Securement mechanism for releasably securing an automobile to a horizontal rail car deck in response to longitudinal movement of said automobile along said deck, said automobiles each having a frame spring-suspended on wheels, said securement mechanism comprising:

a locking hook having a vertical shank and an elongated prong extending outwardly from the lower end of said shank,

means for removably attaching said locking hook to and beneath the frame of said automobile whereby longitudinal movement of said automobile along said rail car deck will translate said prong along and above said deck,

a socket member having spaced-apart top and bottom walls and spaced-apart side walls and open at at least one end for insertion of said prong into said socket,

means for removably attaching said socket member to said rail car deck with said open end of said socket in the path of movement of said prong,

means forming a downwardly facing surface on said prong and means forming an upwardly facing surface on said socket member, said surfaces being interengageable upon insertion of said prong into said socket to limit upward movement of said prong relative to said socket when inserted thereinto,

means forming a vertical surface on said shank and means forming a vertical surface on said socket, said vertical surfaces being interengageable for limited movement of said prong into said socket,

a lock member mounted on said socket member for movement between a first position blocking removal of said prong from said socket member when said prong is inserted into said socket member and a second position allowing said prong to be inserted and removed from said socket member,

means biasing said lock member to its first position,

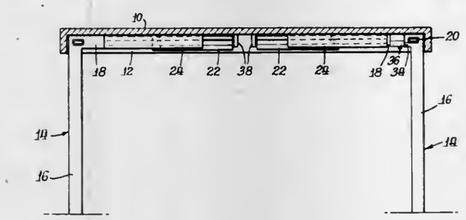
means forming interengageable surfaces on said lock member and said prong for moving said lock member to its second position by said prong as said prong is inserted into said socket member.

4,237,795

DUAL HEIGHT TABLE

Wayland B. Parker, South Boston, Va., assignor to Daystrom Furniture, Inc., South Boston, Va.

Filed Oct. 20, 1978, Ser. No. 953,207
Int. Cl.³ A47B *3/08*
U.S. Cl. 108—12 **4 Claims**



1. In a table having a table top supported on L-shaped leg members which are movably connected to the table top to support the table top selectively at one of two heights above a floor by standing the table top either on the long or the short legs of said leg members,

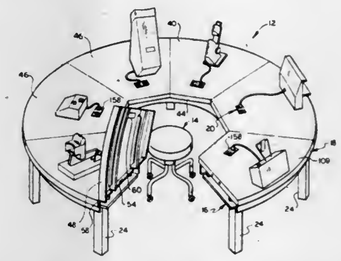
the improvement comprising the pivotal connection of the leg members to the table top at the distal ends of the short legs with said leg members oriented so that the short legs extend inwardly of the table when the table is supported by the long legs, and the long legs extend inwardly of the table when the table is supported by the short legs, slide members secured to the underside of the table top and having said pivotal connections secured thereto for sliding movement therewith, said pivotal connections of the leg members to the table top being movable along the underside of the table top to alter the distance between the pivot axes of opposed leg members at least to the extent necessary to provide the same spacing of the supporting legs at both heights of the table top, said legs being four in number arranged in two opposing pairs, said pivotal connections being located at inward positions with said short legs abutting the underside of said table top when the table is supported by said long legs to provide stability to said table, said pivotal connections being moved from said inward positions to adjacent the table end when the table is supported by the short legs, said short legs and said long legs each being located at corners of the table top when supporting the table, said long legs being aligned and abutting the floor when the table is positioned at the lower height.

4,237,796

REVOLVING EXAMINATION TABLE APPARATUS

Michael D. Gordon, and Hollis D. Baker, both of Derby, Kans., assignors to Ro-Ta Development Company, Derby, Kans.

Filed Sep. 25, 1978, Ser. No. 945,587
Int. Cl.³ A47B *11/00, 81/00*
U.S. Cl. 108—22 **6 Claims**



1. A revolving examination table apparatus operable to selectively place examination instruments between an optometrist and his patient, comprising:

(a) a main support base assembly includes a ring shaped basic table top member mounted on support leg members;

(b) a revolving table top assembly having a main table top assembly rotatably mounted on said basic table top member;

(c) each of said basic table top member and said main table top assembly having a central opening to receive the optometrist therein;

(d) said main table top assembly rotates through an entire 360 degrees and includes a plurality of instrument table sections each adapted to support an examination instrument thereon;

(e) an electrical control and drive assembly includes (1) a table drive assembly secured to said basic table top member and engagable with said main table top assembly to rotate same; (2) a power assembly having a stationary power contact assembly secured to said basic table top member at a home base working station and a receptacle power contact assembly having a receptacle member mounted at each instrument table section; (3) a control panel assembly secured to said basic table top member; and (4) an electrical control assembly having a control switch assembly mounted at said home base working station on said basic table top member and a circuit assembly to provide electrical power to said table drive assembly, said power assembly to energize separately a respective one of the said receptacle members, said control panel assembly, and said control switch assembly; and

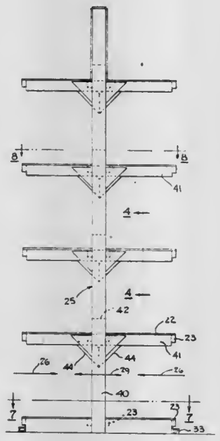
(f) said control panel assembly includes an override switch operable when actuated to rotate said revolving table top assembly and, when said override switch is released, the next one of said instrument table sections is automatically stopped at said home base working station.

4,237,797

LAMINATED WOOD WAREHOUSE SUPPORT STRUCTURE

Gerald A. Zapara, 9881 Brier La., Santa Ana, Calif. 92705, and Lyle G. Zapara, 3421 Via Oporto St., Newport Beach, Calif. 92260

Division of Ser. No. 773,513, Mar. 2, 1977, Pat. No. 4,127,929. This application Dec. 1, 1978, Ser. No. 965,613
Int. Cl.³ A47B *57/00*; E04G *1/18*
U.S. Cl. 108—59 **5 Claims**



1. A support structure for a plurality of vertically spaced storage racks comprising in combination:

an upright support tower including base means at the lower end for resting on the floor, said upright tower including a pair of columns;

a lateral arm connected through a laminated junction with said upright tower at a location displaced above said base means, said laminated junction including a portion of said lateral arm sandwiched between said columns, said laminated junction also including block means (i) affixed to and sandwiched between said columns in order to direct force exerted upon said block means to said columns through the connection therebetween, (ii) extending beyond opposite side edges of said columns, and (iii) abutting said lateral arm substantially along the full length of said block means in order to exert vertical force upon said lateral arm along the contact area between said lateral arm and said block means for deterring relative rotation between said tower and said lateral arm when a load is carried by the portion of said arm extending beyond said laminated junction and for directing the torsional force exerted upon said lateral arm by said load through said lateral arm to said columns; and

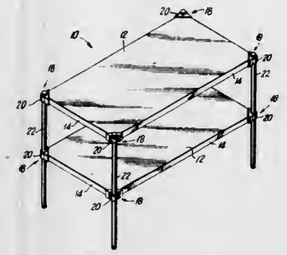
shelving means on said lateral arm for carrying and storing inventories of items such as furniture and the like, whereby said lateral arm is supported by only one upright support tower in order to provide easy access for loading and unloading said shelf and still withstand heavy loads placed upon said lateral arm on one side of said upright tower which said loads exert rotational forces upon said lateral arm without bending or rotating said lateral arm.

4,237,798

ADJUSTABLE SHELVING

John H. Welsch, Moscow, and Charles W. Nicely, Dallas, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Apr. 4, 1979, Ser. No. 26,831
Int. Cl.³ A47B *9/08*
U.S. Cl. 108—111 **25 Claims**



1. Shelving comprising:

a flat shelf member having downwardly depending corner portions;

a corner connector at each corner portion, each connector comprising a brace member having a base wall disposed with a rear surface against an outside surface of the corner portion and a receiving pocket provided in a front surface of said brace member, said receiving pocket being defined by at least upper and lower walls of said brace member, aligned arcuate seats provided in said upper and lower walls, and a U-shaped clamp having a bight portion and spaced apart legs to be received in said pocket, said bight portion together with said aligned arcuate seats defining a sleeve for fitting around a corner support post;

fastening means for tightening said legs of said U-shaped clamp into said pocket of said brace member to clamp the sleeve about the post and for tightening said brace member in abutment against the corner portion of the shelf member to retain the shelf member in position on the post;

said base wall defining a rear wall of said receiving pocket, and said legs of said clamp having terminal faces which face the rear wall of the receiving pocket; and

said corner portion and said base wall having aligned clearance holes, said terminal faces having threaded holes aligned with said clearance holes, said fastening means including bolts insertable from an inside surface of said corner portion through said clearance holes and into said threaded holes of said legs.

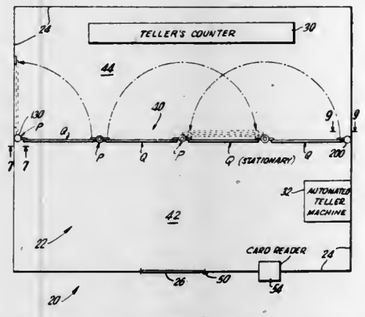
4,237,799

BANKING PROTECTION SYSTEM FOR 24 HOUR BANKING

James S. Berman, New York, N.Y., assignor to Citibank, N.A., New York, N.Y.

Filed Feb. 7, 1978, Ser. No. 875,915
Int. Cl.³ E05G *5/00*
U.S. Cl. 109—2 **4 Claims**

1. A banking protection system for providing 24 hour service to customers in a bank, said bank having an entrance, comprising: partition means located in said bank to divide said bank in a vestibule area adjacent said entrance and a second banking area remote from said entrance, said second banking area being the area for personal customer services, said partition means being movable between a closed position, wherein said partition means block access to said second banking area, and an open position; said partition means including a series of poles extending from the floor to ceiling of said bank; panel members sized to be positioned between said poles, means mounting said panels to said poles such that at least some of said panels may be rotated about said poles between said open and closed positions, and means for locking said panels in said closed position; automated teller machine means located in said vestibule customer area, whereby customers may enter both the vestibule and second banking areas during normal business



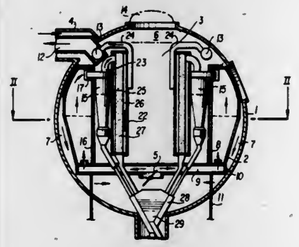
hours of the bank, when the partition means is in the open position, and may enter only the vestibule customer area during off business hours, when said partition means are in said closed position to use the automated teller machine means.

4,237,800

MULTI-STAGE CLEANING PLANT

Anders Kullendorff, Aby, and Jan Wikner, Finspong, both of Sweden, assignors to Stal-Laval Turbin AB, Finspong, Sweden

Filed Feb. 12, 1979, Ser. No. 11,591
Claims priority, application Sweden, Feb. 13, 1978, 7801618
Int. Cl.³ F23J *3/00*; F23G *5/00*
U.S. Cl. 110—216 **11 Claims**



1. A combination of a hollow fluizided combustion chamber and cleaning plant assembly, comprising:

said hollow fluidized bed combustion chamber mounted within a hollow outer casing, said hollow fluidized bed combustion chamber having a substantially cylindrically-shaped inner wall defining a substantially cylindrically-shaped area extending through said hollow fluidized bed combustion chamber;

said cleaning plant positioned within said substantially cylindrically-shaped area and surrounded by said hollow fluidized bed combustion chamber, said cleaning plant including a plurality of first stage cleaning means having inlets in direct fluid communication an outlet of with said hollow fluidized bed combustion chamber for receiving hot combustion gases from said fluidized bed and cleaning debris from said hot gases during passage through said cleaning plant prior to said hot gases exiting said surrounding outer casing.

4,237,801

FURNACE LINING OR BURNER CUP ELEMENT

Ernst A. Siemssen, Gwynedd, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Continuation of Ser. No. 606,859, Aug. 22, 1975. This application Nov. 15, 1979, Ser. No. 94,638
Int. Cl.³ F23M *5/00*
U.S. Cl. 110—336 **8 Claims**

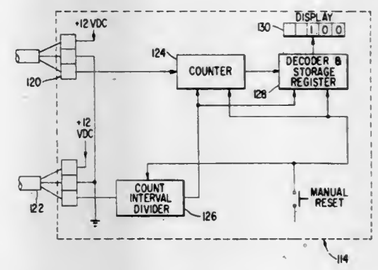
1. A light-weight, erosion resistant element having low heat inertia to be used as furnace lining, comprising a rigid block of ceramic fiber material of a predetermined shape and thickness, said ceramic fiber material comprising alumina and silicon oxide, the surface of the block that is to face the furnace interior comprising melted and solidified ceramic fibers forming a thin layer of said surface, the melted thin layer of said surface being solidified into a smooth non-fibrous thin hard crust, said surface being resistant to a temperature higher than any temperature to which said surface is intended to be subjected when in use within said furnace.

4,237,802

TUFTING MACHINE MONITOR

Jimmie D. Scott, Harrison, Tenn., assignor to Tooling and Machine Development, Inc., Chattanooga, Tenn.

Filed Apr. 25, 1979, Ser. No. 33,107
Int. Cl.³ D05C *15/00*
U.S. Cl. 112—79 A **20 Claims**



1. In combination with a tufting machine having a main shaft, means for rotating said main shaft, means for feeding a backing fabric through the machine, a plurality of needles disposed on one side of said backing fabric transverse to the direction of feed of said backing fabric, means for reciprocating said needles into and out of said backing fabric in timed relationship with said main shaft, means including a roller for feeding yarn to said needles, means for rotating said roller, and a plurality of hooks disposed on the opposite side of said backing fabric from said needles for cooperating with said needles to form stitches of pile extending from said backing fabric, apparatus for monitoring the pile height of the stitches extending from the pile fabric produced comprising means for determining the rotational speed of said main shaft, means for determining the rotational speed of said roller, and means for obtaining and displaying the ratio of one of said speed to the other of said speed.

4,237,803

AUTOMATIC ELECTRONIC SEWING MACHINE

Tousaku Nakanishi, Nara; Kazuo Suzuki, Higashiosaka; Masayasu Makino, Gose; Nobuyoshi Miyao, Sakurai, and Hirokazu Koda, Gose, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

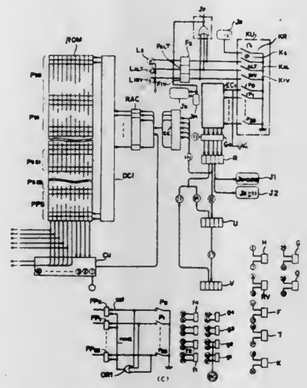
Filed Oct. 19, 1977, Ser. No. 843,639
Claims priority, application Japan, Oct. 20, 1976, 51-126396
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **31 Claims**

14. An electronic sewing machine which forms stitch pat-

terns in response to output signals from a control system, said control system comprising:

memory means for storing digital information related to various stitch patterns;

means for selecting desired stitch patterns stored in memory means and developing digital data related to said selected stitch patterns;



means for applying said digital data to a control means for driving a stitch forming section included in the electronic sewing machine;

main power switch means for selectively applying electric power to said electronic sewing machine; and

autoclear means for placing the electronic sewing machine in the normal straight stitch formation mode in response to an initial application of electric power to said electronic sewing machine through said main power switch means.

4,237,804

LOOPER CHANGEOVER DEVICE FOR AN EDGE STITCHING SEWING MACHINE

Tetsuro Hirayama, Chofu, Japan, assignor to Juki Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,492

Claims priority, application Japan, Aug. 2, 1977, 52/92821; Feb. 28, 1978, 53/22423

Int. Cl.³ D05B *1/08, 1/20, 57/06*

U.S. Cl. 112—168 **9 Claims**



1. A looper changeover device for a sewing machine for one-needle three-thread edge stitching by a cooperative action of an upper looper and a lower looper which comprises:

an upper looper arm;

a pawled looper arm for forming a hook looper by engagement with said upper looper arm, said pawled looper arm being swingably mounted adjacent to, and acting integrally with, said upper looper arm for selective changeover between a disengaged position for one-needle three-thread edge stitching and an engaged position for one-needle two-thread edge stitching.

4,237,805

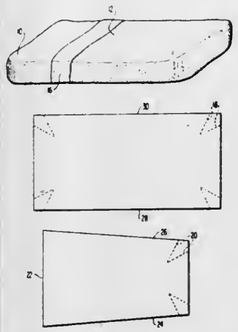
METHOD FOR MAKING A DOUBLE FITTED SHEET

Michele Ferrante, and Franca G. De Ferrante, both of Calle Caicara 35-05, Caracas, Venezuela

Division of Ser. No. 821,973, Aug. 4, 1977, Pat. No. 4,145,778. This application Dec. 28, 1978, Ser. No. 974,033

Int. Cl.³ A47G *9/02*

U.S. Cl. 112—262.1 **4 Claims**



1. A method of making a double fitted sheet comprising:

(a) forming a lower fitted sheet such that the head and foot end portions fit over the head and foot ends of a mattress,

(b) forming an upper fitted sheet from a trapezoidal shaped blank such that a head end portion is of greater width than a foot end portion, said foot end portion being configured to fit over said foot end portion of said mattress and said foot end portion of said lower fitted sheet, and

(c) sewing said upper fitted sheet to said lower fitted sheet across said foot end portion and along substantially the entire length of both sides of said upper fitted sheet.

4,237,806

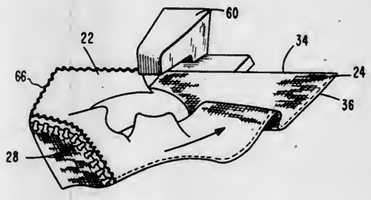
INSTALLATION OF SEPARABLE SLIDE FASTENER ON ARTICLE

Walter J. Michaelis, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Jun. 7, 1979, Ser. No. 46,294

Int. Cl.³ D05B *3/12, 3/14, 3/16, 3/18*

U.S. Cl. 112—265.2 **8 Claims**



1. A method of forming an installation of a separating type slide fastener to a pair of opposite portions of an article, comprising the steps of

sewing one of the pair of article portions to one half of a single slide fastener stringer tape section which has a retainer at one end and a pin member at the other end for mating with a retainer,

sewing the other article portion to the other half of the single slide fastener stringer tape section with the other article portion oriented opposite to the one article portion,

severing the single slide fastener stringer tape section between the sewn article portions, and

finishing the article portions at the severed ends of the halves of the single slide fastener stringer tape section to secure the severed ends.

4,237,807

THREAD MONITORING DEVICE FOR THE THREAD SUPPLY OF A ROTARY HOOK OF A SEWING MACHINE

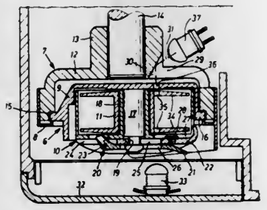
Günter Meier, Karlsruhe-Durlach, and Patrice Kemmel, Stutensee-Friedrichstal, both of Fed. Rep. of Germany, assignors to Dorina Nähmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,380

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 7827499[U]

Int. Cl.³ G01B *7/12;* **D05B** *69/36*

U.S. Cl. 112—278 **9 Claims**



1. A device for monitoring a thread supply in a sewing machine having a rotary hook, comprising, a light source which emits a light beam directed approximately parallel to the axis of the hook and passes through a path taking it through the supply of thread on the hook bobbin, a light receiver disposed in a position to receive light after it passes through the thread and wherein said hook includes a portion thereof defining a deflection surface deflecting the light beam from the axis of the hook into the light receiver after it passes through the thread supply.

4,237,808

STERN BRAKING DEVICE

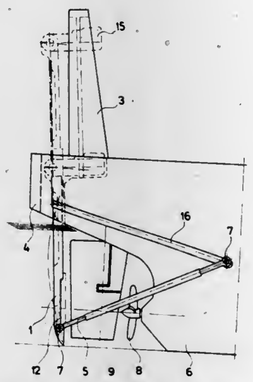
Jerzy Doerffer, Polska, Poland, assignor to Politechnika Gdanska, Gdansk, Poland

Filed May 9, 1979, Ser. No. 37,565

Claims Priority, Application Poland, May 10, 1978 206680

Int. Cl.³ B63H *25/34*

U.S. Cl. 114—170 **2 Claims**



1. A stern braking device for a vessel, comprising shield means having a generally concave profile and pivotably mounted behind the propeller and the rudder of the vessel, said shield means including aperture means extending through the center of said shield means for stabilizing hydraulic fluid flow therethrough directly behind said rudder and being coaxially positioned with respect to said propeller, said aperture means having in cross-section a fluid-accelerating profile, said shield means being vertically movable from a first position within the vessel directly above said rudder, and a second position directly behind said rudder, adjustable linkage means supporting said shield means in said second position including means having a common pivot axis defined by corresponding hinge means at opposite sides of the hull of said vessel, said linkage means being coupled to support said shield means at points above and below said aperture means, and said shield means being concave both in vertical cross-section and in horizontal cross-section for deflection and redistribution of hydraulic fluid flow thereagainst.

4,237,809

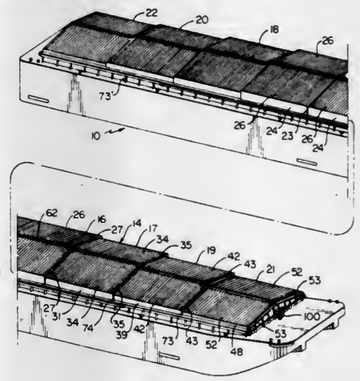
COVER FOR A BARGE

Horst Hickmann, Cincinnati, Ohio, assignor to The Ohio River Company, Cincinnati, Ohio

Filed Mar. 2, 1979, Ser. No. 16,921

Int. Cl.³ B63B *19/18*

U.S. Cl. 114—202 **23 Claims**



1. A cover for a hopper area of a barge including a central housing having a transverse plate extending across the center of said central housing, at least one housing disposed on each end of said central housing and being telescopically received within said central housing at any position of said central housing, said housings covering the hopper area when said housings are in their extended positions, said transverse plate limiting the movement of said telescoping housings within said central housing while enabling each of said telescoping housings to be telescopically received within said central housing, each of said housings having support means to support said housings on the barge for movement therealong; and said transverse plate transmitting movement of said housing on one side of said transverse plate to said central housing when said housing on the one side of said transverse plate moves toward said transverse plate to be telescopically received within said central housing and into engagement with said transverse plate and transmitting movement of said housing on the other side of said transverse plate to said central housing when said housing on the other side of said transverse plate moves toward said transverse plate to be telescopically received within said central housing and into engagement with said transverse plate.

4,237,810

HYDRODYNAMICALLY AND AERODYNAMICALLY DESIGNED BOAT

Kirk M. Westfall, 1139 White Dr., Santa Clara, Calif. 95051

Filed Dec. 5, 1978, Ser. No. 966,663

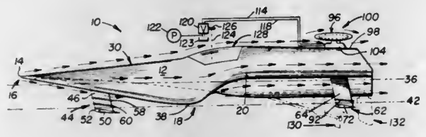
Int. Cl.³ B63B *1/16*

U.S. Cl. 114—272 **14 Claims**

1. A motor driven hydroplaning boat, comprising:

a hull of symmetrical generally smooth surfaced configuration converging towards an apex at a bow thereof and widening amidships to form a pair of laterally and down-

wardly extending wings, a forward bottom portion of the hull from the bow to beneath the wings forming single generally smooth surfaced fore tunnel which extends generally entirely from larboard to starboard of said forward bottom portion, the wings smoothly narrowing aft of amidships and becoming generally horizontal from



amidships aft, a top of said hull being of a generally smooth minimal air resistance shape;

a fore foil structure mounted to extend downwardly from said fore tunnel; and

an aft foil structure mounted to extend downwardly from an aft bottom portion of said hull.

4,237,811

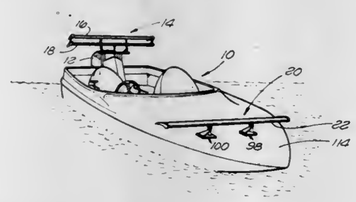
WINGED SKI BOAT

Delfino C. Montez, 24888 E. Rialto Ave., San Bernardino, Calif. 92408

Filed Mar. 27, 1978, Ser. No. 890,746

Int. Cl.³ B63B *1/32*

U.S. Cl. 114—273 **16 Claims**



1. A water ski boat comprising:

a hull having a passenger compartment between front and rear portions;

power means having a water reactive means located aft of said passenger compartment for driving said boat forward;

first aerodynamic lift means;

means for removably securing said first aerodynamic lift means to the top of, and directly over, said hull at a region forward of said passenger compartment so that said lift means is spaced above and limited to said forward region; and

second aerodynamic lift means spaced from and distinct from said first lift means and spaced above and removably attached to the rear of said hull;

said first and second aerodynamic lift means each having at least one aerodynamic lift member;

said aerodynamic lift member of said first lift means being substantially closer to the hull than any aerodynamic lift member of said second lift means, said first and second lift means being arranged to exert an upward force on said hull as said power means drives said boat forward, said second lift means being arranged to provide substantially more lift than said first lift means; and wherein a substantial portion of said passenger compartment is clear of any aerodynamic lift means.

4,237,812

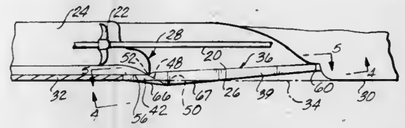
JET SKI GRATING

Jerald S. Richardson, 11461 Biscayne Blvd., Garden Grove, Calif. 92641

Filed Sep. 28, 1978, Ser. No. 946,493

Int. Cl.³ B63H *11/02, 11/10*

U.S. Cl. 440/38 **18 Claims**



10. In a jet ski having a hull with a generally planar bottom surface, a well in the hull bottom surface, the well having a front end and an aft end, a pump inside the hull aft of the well and exposed to the opening in the aft end of the well, the improvement comprising:

a grating secured over the well, the grating having a pair of laterally spaced apart, elongated side bars extending generally lengthwise over the well for deflecting debris away from the well, an elongated opening extending between forward and aft ends of the grating between the side bars, the grating having an inclined scoop surface adjacent the aft opening in the well, the inclined scoop surface intersecting a bottom surface of the grating to form a bottom edge extending across the width of the grating between the side bars, the bottom edge of the scoop being spaced below the plane of the hull bottom surface and being generally at the point of maximum spacing between the bottom surface of the hull and the bottom surface of the grating, said bottom edge of the scoop being essentially continuous and uninterrupted across the width of the opening in the grating.

4,237,813

WARNING AND PROTECTIVE DEVICE

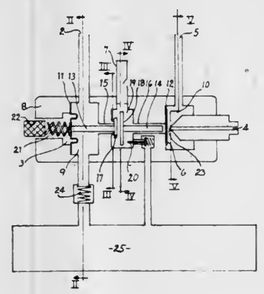
Ronald G. Howison, 84 Gladstone Rd., Mosgiel, New Zealand

Filed Jul. 13, 1978, Ser. No. 924,397

Claims priority, application New Zealand, Jul. 22, 1977, 184718

Int. Cl.³ G01I *19/12*

U.S. Cl. 116—70 **16 Claims**



1. A warning and protection apparatus comprising:

(a) a first gas supply line;

(b) pressure responsive means communicable with said first gas supply line;

(c) a second gas supply line;

(d) first valve means disposed in said second gas supply line;

(e) connection means connecting said pressure responsive means to said first valve means in a manner such that said first valve means closes upon said pressure responsive means experiencing a pressure below a predetermined level in said first gas supply line;

(f) first gas reserve storage means;

(g) second valve means actuable in the event of said pressure responsive means experiencing a pressure below said predetermined level to place said first gas reserve storage means in communication with said first gas supply line; and

(h) audible gas operable alarm means communicable with said first gas supply line and said first gas reserve storage means upon said pressure responsive means experiencing pressure below said predetermined level.

4,237,814

APPARATUS FOR THE CONTINUOUS PRODUCTION AND COATING OF GRANULATES IN FLUIDIZED LAYER

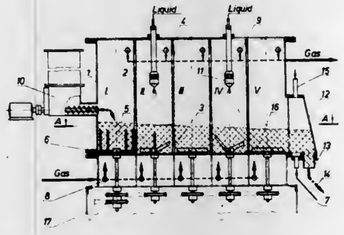
Zoltan Ormos, 5/d, Cserbat u.; Bela Csukas, 5, Gagarin u.; Karoly Pataki, 8, Stromfeld Aurel u.; Laszlo Balla, 24/a, Stadion u., all of Veszprem, and Tibor Blickle, 4/6, Madach Imre ut., Budapest, all of Hungary

Continuation of Ser. No. 835,642, Sep. 22, 1977, abandoned, which is a continuation of Ser. No. 717,287, Aug. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 581,427, Mar. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 424,282, Dec. 13, 1973, abandoned. This application Mar. 28, 1979, Ser. No. 24,856

Claims priority, application Hungary, Dec. 13, 1972, MA 2430

Int. Cl.³ B05C *5/00*

U.S. Cl. 118—24 **1 Claim**



1. A multi-cell fluidization and atomization apparatus for the continuous production of granules in a fluidized bed, comprising at least five cells communicating with each other in series, each of said cells being cylindrical and having a vertical axis, said cells comprising successively a preheating cell having a horseshoe agitator therein having upstanding terms, a first agglomerating cell having an asymmetric three-bladed agitator therein, a first drying cell having a bent blade agitator therein, a second agglomerating cell having an asymmetric three-bladed agitator therein, a second drying cell having a bent blade agitator therein, means in each of the cells for fluidizing particulate material independent from the fluidization in the other cells, means for spraying a liquid onto the fluidized material in said first and second agglomerating cells, and means common to all said agitators for rotating all said agitators in unison about spaced parallel vertical axes in their respective cells, the adjacent cells communicating with each other within the height range of said fluidized fed through openings in common side walls of said adjacent cells, the vertical position of each of said openings depending on the operations in said adjacent cells as well as on the vertical distribution of the particle size within said adjacent cells, said cells having a communicating air space with uniform pressure above said fluidized bed.

4,237,815

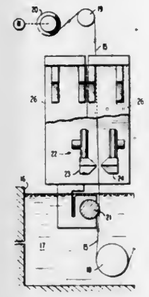
APPARATUS FOR LIQUID COATING THICKNESS CONTROL AND REMOVING EXCESS LIQUID COATING FROM WEB EDGES

Robert T. Ernest, Valparaiso, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 685,801, May 12, 1976, which is a continuation-in-part of Ser. No. 540,599, Jan. 13, 1975, abandoned. This application Jul. 12, 1978, Ser. No. 924,077

Int. Cl.³ B05C *11/06*

U.S. Cl. 118—63 **1 Claim**



1. In combination with a pair of opposed nozzles, a bath of liquid coating which will harden to form a solid coating on a substrate, means for moving a continuous imperforate web lengthwise through the bath of liquid coating, the web issuing from the bath having excess liquid coating thereon and means for moving the coated strip upwardly between the nozzles in such closely spaced relation to each nozzle as to make the nozzle operative for impinging a stream of fluid under pressure against the web across the entire width of the web for removing excess liquid coating from the web and wherein the two opposed streams of fluid under pressure normally cause a heavier liquid coating to remain on the longitudinal marginal portions of the imperforate web after the web has passed the nozzles, the improvement for preventing the accumulation of such heavier coating on the web in which each nozzle comprises

a body member,

a chamber enclosed by the body member,

fluid discharge orifice forming means extending along one dimension of the body member for placing the chamber in communication with the exterior of the body member, the fluid discharge orifice forming means facing toward the web and disposed transversely of the length of the web and across the entire width of the web,

fluid inlet port forming means associated with the body member in fluid communication with the chamber,

baffle means interposed in the path of fluid moving from the fluid inlet port forming means through the chamber and the fluid discharge orifice forming means to determine the direction of movement of fluid passing through the fluid discharge orifice forming means,

the baffle means being shaped to impart to fluid impinging on the baffle means and moving through each end portion of the fluid discharge orifice forming means movement having a component parallel to the associated surface of the web and in a direction toward the associated marginal portion of the web to thereby move liquid coating on the associated marginal portion of the web outwardly relative to the surface of the web,

the baffle means comprising at least in part vanes shaped to impart to fluid impinging on the baffle means said movement having a component parallel to the associated surface of the web and in a direction toward the associated marginal portion of the web to thereby move liquid coat-

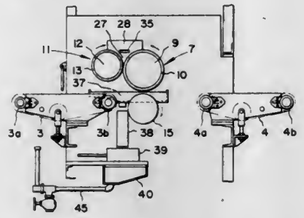
ing on the associated marginal portion of the web outwardly relative to the surface of the web.

4,237,816

OIL COATER FOR MAT

Kikuo Shimono, Takatsuki; Ichiro Miyoshi, Kobe, and Osamu Yamasaki, Kaizuka, all of Japan, assignors to Duskin Franchise Co., Ltd., Osaka, Japan

Filed Oct. 31, 1978, Ser. No. 956,405
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—249 **5 Claims**



1. An oil coater for mats which comprises a mat-supporting moving surface, a coating roller disposed above said mat-supporting moving surface and having on the periphery thereof a foam layer capable of being impregnated with an oiling composition, a press roller having a diameter smaller than the diameter of said coating roller and having on the periphery thereof a foam layer capable of being impregnated with an oiling composition, a first bearing mechanism which supports said press roller at a position upstream of said coating roller so that the top face of said press roller is substantially on the same horizontal plane with the top face of said coating roller and the degree of pressed contact between said coating roller and said press roller can be adjusted, a mat-feeding roller disposed below said mat-supporting moving surface, a second bearing mechanism which supports said feeding roller so that the axis of said feeding roller is substantially on the same vertical plane with the axis of said coating roller and the gap between said feeding roller and said coating roller can be adjusted, a pair of confronting dam plates arranged to form an oil reservoir on the surfaces of said coating roller and said press roller through seal portions above the contact position of said two rollers, an oil feed mechanism for supplying an oiling composition to said oil reservoir, a mechanism for controlling the level of the oiling composition in said oil reservoir and a driving mechanism for driving said coating roller and said feeding roller, wherein the amount of the oiling composition coated on the mat can be controlled by adjusting the degree of pressed contact between said coating roller and said press roller and the gap between said coating roller and said feeding roller wherein both of said foam layers and said sealed portions are composed of open-cell structure foams of an oil-resistant elastomer whereby liquid tightness is attained between said foam layers and said seal portions without abrasion of these materials.

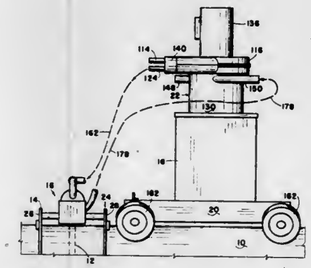
4,237,817

APPARATUS FOR SPRAYING POWDER CIRCUMFERENTIALLY AROUND A PIPE JOINT

Robert J. Hart, and Russell M. Langley, both of Tulsa, Okla., assignors to Commercial Resins Company, Tulsa, Okla.

Filed Mar. 23, 1979, Ser. No. 23,095
Int. Cl.³ B05B *1/06, 15/04*
U.S. Cl. 118—307 **7 Claims**

1. Apparatus for spraying a powder circumferentially around a pipe joint on a pipe comprising a yoke engagable with the pipe, means for driving the yoke circumferentially about the pipe, a pair of circumferentially spaced powder dispensers mounted on said yoke and disposed over the pipe joint, each powder dispenser having an inner housing, said inner housing having an opening positioned adjacent the surface of the pipe, each said powder dispenser having an outer housing surrounding said inner housing and having an opening positioned adjacent said pipe and surrounding the opening of said inner housing, said inner and outer housings being spaced from each other to form a space therebetween, a powder suspension device comprising a hollow container adapted to contain a quantity of powder therein, means for introducing air under pressure into said container to place the powder in suspension therein, a blower having an internal central inlet and a rotating impeller disposed therein, a tangential outlet connecting with the interior of said blower from which a stream of air is allowed to pass, a pair of outlet pipes extending outwardly from said tangential outlet, a cylindrical powder return housing mounted on said container beneath said blower and in communication with said central inlet to said blower, said return housing communicating with the upper end of said powder suspension device, a pair of tangential inlet pipes circumferentially spaced and connecting with the interior of said return housing, a pair of eductors having their suction ports con-



nected to opposite sides of said container and in communication with said powder suspension therein, means for passing a stream of air through each eductor providing suction for withdrawing a quantity of powder suspension from said container, means for introducing said withdrawn powder suspension from said eductors into the sides of each outlet pipe, respectively, a supply conduit connecting each said outlet pipe with a respective inner housing of each powder dispenser for supplying a stream of air-powder suspension to each powder dispensing device, a return conduit connecting each tangential inlet of said return housing to the space between said inner and outer housing of each said powder dispenser for returning excess powder to said return housing, and means for rotating said impeller within said blower, thereby drawing air from said return housing to said blower through said central inlet, thus creating a suction within said return housing which subsequently causes withdrawal of excess powder from said pipe joint.

4,237,818

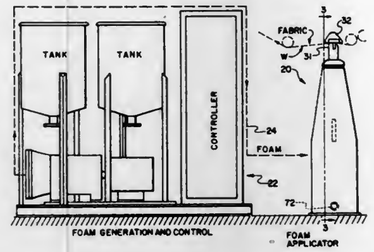
MEANS FOR APPLYING TREATING LIQUOR TO TEXTILE SUBSTRATE

Graham F. Clifford, Stanley, and Dieter F. Zeiffer, Iron Station, both of N.C., assignors to Gaston County Dyeing Machine Company, Stanley, N.C.

Filed Dec. 15, 1978, Ser. No. 969,786
Int. Cl.³ B05C *3/02*; D06B *1/00, 3/00*
U.S. Cl. 118—410 **21 Claims**

1. Means for applying foamed treating liquor under pressure to open-width moving textile substrate comprising:

a foam distribution chamber having an inlet conduit for foam, an application opening slot portion disposed to extend across the width of said substrate in close proximity thereto for traverse thereby, and means for distribution of foam from said inlet conduit to said application opening slot portion of said distribution chamber in essentially uniform foamed condition comprising a portion of said chamber continuing from said inlet conduit, said continuing portion being of limited widthwise extent with respect to the open width of said substrate adjacent said inlet conduit, extending from said conduit to generally match



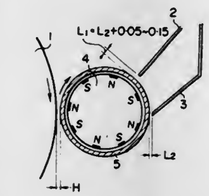
with said slot portion, and having cross-sectional shape only gently changing therebetween.

4,237,819

IMAGE DEVELOPING MACHINE USING MAGNETIC TONER

Masahiro Ikegami; Sennosuke Morikawa, both of Komae; Keitaro Yamashita, and Koji Noguchi, both of Kumagaya, all of Japan, assignors to Tokyo Aircraft Instrument Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1978, Ser. No. 917,800
Claims priority, application Japan, Jun. 29, 1977, 52-77432
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—658 **4 Claims**



1. An image developing machine employing a magnetic toner, comprising:

a magnetic roller having a fixed axis;

a sleeve surrounding said magnetic roller;

a light sensitive drum rotatable in one direction, the surface of said drum being spaced from the surface of said sleeve by a distance H, one of said magnetic roller and sleeve being rotated about said fixed axis to transfer magnetic toner on the surface of said sleeve to said drum, said magnetic toner rotating in the opposite direction from said drum;

a first doctor blade positioned adjacent the surface of said sleeve at a distance L_1 therefrom, said first doctor blade regulating the volume and thickness of the magnetic toner on the surface of said sleeve; and

a second doctor blade positioned adjacent the surface of said sleeve at a distance L_2 therefrom, said second doctor blade further regulating the thickness of the magnetic toner already regulated by said first doctor blade on the surface of said sleeve, the distances H, L_1 and L_2 having the following values when the magnetic flux density on the surface of said sleeve is between 700 and 1000 gauss:

$0.55\ mm \leqq H \leqq 0.65\ mm$

$L_2+0.05\ mm \leqq L_1 \leqq L_2+0.15\ mm$

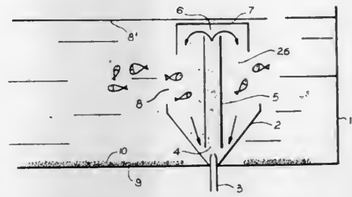
$0.25\ mm \leqq L_2 \leqq 0.40\ mm.$

4,237,820

METHOD AND AN ARRANGEMENT FOR FEEDING FISH WITH A FODDER

Hans Müller, Im Allmendli, 8703 Erlenbach, Switzerland

Division of Ser. No. 780,250, Mar. 22, 1977. This application Jun. 21, 1978, Ser. No. 920,374
Claims priority, application Switzerland, Mar. 24, 1976, 3706/76
Int. Cl.³ A01K *61/02*
U.S. Cl. 119—51 R **4 Claims**



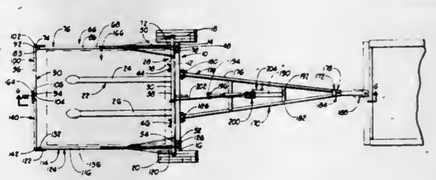
1. An arrangement for feeding fish, comprising a fish tank adapted to be filled with water and having a bottom wall; means forming a feeding station in said tank for feeding fish with a fodder, said feeding station being adapted to be filled with said water and to receive said fodder therein, said means for forming said feeding station including a funnel-shaped element adjacent said bottom wall of said tank, a cup-shaped element vertically spaced from said funnel-shaped element, and a conduit tube extending substantially vertically between said funnel-shaped element and said cup-shaped element.

4,237,821

LOADER FEEDER APPARATUS FOR LOADING AND FEEDING BALES OF HAY AND THE LIKE

H. M. Haines, 1905 E. Broadway, Altus, Okla. 73521

Filed Oct. 22, 1979, Ser. No. 87,010
Int. Cl.³ A01K *5/00*; B60P *1/04*
U.S. Cl. 119—60 **12 Claims**



1. A loader feeder apparatus adapted to be pulled by a vehicle for loading bales of hay and the like from a ground surface, transporting the loaded bales of hay and the like and allowing animals to feed on the bales of hay and the like, comprising:

an axle having a first end and an opposite second end;

means for rotatingly supporting the axle;

a tongue assembly having a first end and an opposite second end; the second end of the tongue assembly being pivotally connected to the axle;

means for removably connecting the first end of the tongue assembly to a vehicle;

a tongue bar having a first end and an opposite second end with the first end connected to the tongue assembly, the tongue bar extending angularly from the tongue assembly with the second end of the tongue bar being spaced a distance from the second end of the tongue assembly;

a tine assembly connected to and extending a distance from the axle;

a rear wall assembly having an upper side, a lower side, a first end and a second end, the lower side being connected to the axle and the rear wall assembly extending a distance from the axle generally perpendicular to the tine assembly and terminating with the upper side thereof;

a winch assembly, having a portion removably connectable to the rear wall assembly generally near the upper side of the rear wall assembly, for moving the rear wall assembly in a direction generally toward the tongue assembly thereby rotating the axle and pivoting the tine assembly in a generally upwardly direction to a hauling position wherein the tine assembly is positioned for supporting a bale of hay and the like a distance above the ground for transporting the bale of hay and the like and for moving the rear wall assembly from the hauling position in a direction generally away from the tongue assembly thereby rotating the axle and pivoting the tine assembly in a generally downwardly direction to a loading position wherein the tine assembly is positioned for engaging a bale of hay and the like, the loader feeder apparatus being positioned for allowing animals to feed on the bale of hay and the like in the loading position;

means for removably connecting the rear wall assembly to the second end of the tongue bar when the tine assembly is in the hauling position for securing the tine assembly in the hauling position;

a first side wall assembly having a first end, a second end, an upper side and a lower side, a portion of the first side wall assembly being constructed to permit animals to feed on the hay and the like through the first side wall assembly, the first end of the first side wall being removably connected to the axle and to the first end of the rear wall assembly;

a first gate assembly having a first end, a second end, an upper side and a lower side, a portion of the first gate assembly being constructed to permit animals to feed on the hay and the like through the first gate assembly, the first end of the first gate assembly being hingedly connected to the second end of the first side wall assembly to permit the first gate assembly to be moved to an opened position and to be moved to a closed position wherein the first gate assembly extends generally perpendicularly from the first side wall assembly;

a second side wall assembly having a first end, a second end, an upper side and a lower side, a portion of the second side wall assembly being constructed to permit animals to feed on the hay and the like through the second side wall assembly, the first end of the second side wall being removably connected to the axle and to the second end of the rear wall assembly; and

a second gate assembly having a first end, a second end, an upper side and a lower side, a portion of the second gate assembly being constructed to permit animals to feed on the hay and the like through the second gate assembly, the first end of the second gate assembly being hingedly connected to the second end of the second side wall assembly to permit the second gate assembly to be moved to an opened position and to be moved to a closed position wherein the second gate assembly extends generally perpendicularly from the second side wall assembly.

4,237,822

ANIMAL MEDICATION BRUSH

LeRoy E. Kaiser, Jr., 7833 Springer St., Downey, Calif. 90241

Filed Jan. 8, 1979, Ser. No. 1,884
Int. Cl.³ A01K *13/00*; A46B *11/00*
U.S. Cl. 119—85 **8 Claims**

8. An animal medication brush comprising:

a hollow body having a handle and a bottom with an opening;

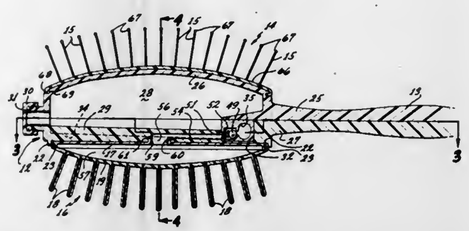
a hollow brush head having an upper wall member mounted on the bottom of said body, said brush head having an inlet coupler on the upper wall member thereof fitted in the opening on the bottom of said body;

a plurality of elongated hollow teeth depending from the hollow brush head in communication with the interior thereof;

a reciprocating pump within said hollow body including a pump cylinder having a piston slideable therein and an inlet valve and an outlet valve;

a passageway leading from the outlet valve of the pump to the opening in the bottom of said hollow body;

a closeable inlet to said hollow body for storing a liquid medication in the interior thereof; and



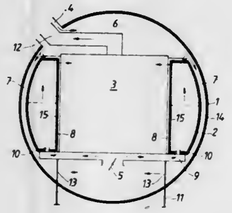
a manually operated lever on the side of the handle of said hollow body for reciprocally moving said piston within said cylinder to force the liquid contained in the hollow body in a controlled manner through said inlet coupler into said hollow brush and out said elongated hollow teeth.

4,237,823

FLUIDIZED BED COMBUSTION CHAMBER

Pehr Börjesgård, Finspong; Anders Kullendorff, Aby, and Jan Wikner, Finspong, all of Sweden, assignors to Stal-Laval Turbine AB, Finspong, Sweden

Filed Feb. 5, 1979, Ser. No. 9,571
Claims priority, application Sweden, Feb. 13, 1978, 7801616
Int. Cl.³ F22B *1/00*
U.S. Cl. 122—4 D **11 Claims**



1. A pressurized combustion chamber assembly adaptable for providing hot combustion gases to gas turbines and the like, and comprising:

a hollow outer casing having a shell-like configuration and including inlet and outlet apertures extending therethrough;

a hollow, box-like gas distribution assembly positioned within said hollow casing and supporting a substantially annularly-shaped fluidized bed combustion chamber mounted thereon;

valve assembly means mounted in an opening formed through a wall of said box-like gas distribution assembly facing away from said fluidized bed combustion chamber, said valve means being selectively actuable for adjusting the size of said opening to control the flow of a compressed gas into said distribution assembly via said opening;

inlet aperture means extending through abutting wall surfaces of said box-like gas distribution assembly and said fluidized bed combustion chamber for providing the only entrance allowing said compressed gas to flow from said distribution assembly into said fluidized bed combustion chamber, and outlet aperture means extending through a further wall portion of said fluidized bed combustion chamber for allowing heated combustion gas to leave said combustion chamber;

gas flow means for conveying a quantity of relatively cool compressed gas from said inlet aperture to said box-like distribution assembly, said gas flow mans comprising at least one coolling gap defined by an outer wall surface of said fluidized bed combustion chamber and a confronting inner wall surface of said outer casing, wherein said relatively cool compressed gas flowing through said at least one gap cools the adjacently disposed outer wall surface of said fluidized bed combustion chamber prior to entering said opening of said box-like distribution chamber; and

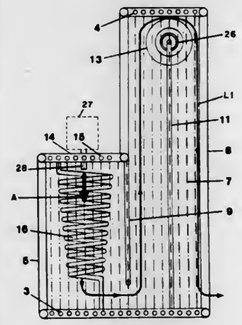
support means extending from said box-like distribution assembly through openings formed in said outer casing and into contact with a support surface for providing the entire support for said combustion chamber assembly relative to said support surface.

4,237,824

CENTRAL HEATING FURNACE

Ernst S. Svensson, Hedebo, Heda, S-599 00 Ödeshög, Sweden

Filed Dec. 5, 1978, Ser. No. 966,609
Claims priority, application Sweden, Dec. 8, 1977, 7713914
Int. Cl.³ F22B *21/00*
U.S. Cl. 122—235 R **4 Claims**



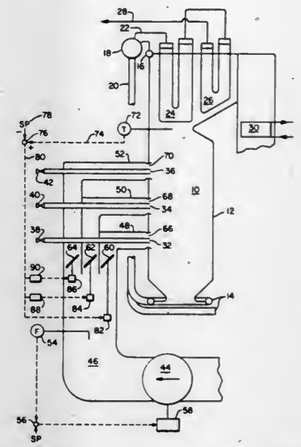
1. A central heating furnace comprising an outer casing enclosing a closed system of tubes communicating with each other and containing a heat-carrying medium, said tube system having parts placed along at least the major areas of the inner walls of said casing, and burner means included in said furnace for heating said heat-carrying medium, said burner means having a nozzle means for generating a flame directed substantially vertically downwardly, said tube system further including a tube spiral having its length axis directed substantially in the same direction as said nozzle means and being shaped to surround said flame, said tube system includes a plurality of said tube positioned side by side to form planes having horizontally directed tubes along a bottom of said casing and along a top of the rear part of said casing and having vertically directed tubes along all sides, excluding a top of said front part and openings for discharging flue gas and enabling soot removal, the tube plane directly inside the vertical front side of said rear part extends downwardly far enough to leave only a lower opening for the flue gases to pass above the bottom tube plane, and between said vertical tube plane behind the front side of said rear part and the vertical back tube plane is inserted a vertical intermediary tube plane which is parallel to the two firstmentioned vertical planes and extending from the bottom tube plane and up to a level high enough to form a second flue gas opening below the top tube plane, said vertical intermediary tube plane having side facing said vertical covered with a tight plate, extending upwardly to the top of said vertical intermediary tube plane.

4,237,825

FURNACE HEAT ABSORPTION CONTROL

Edward L. Kochey, Colebrook, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 6, 1978, Ser. No. 958,225
Int. Cl.³ F22D *7/00*
U.S. Cl. 122—406 ST **2 Claims**



1. A fossil fuel-fired steam generator adapted for start-up and very low load temperature control comprising: a furnace; steam generator tubes lining the walls of said furnace; a gas exit duct for conveying gases from said furnace; superheat surface located in said exit duct; means for conveying steam generated in said steam generating tubes to said superheat surface; firing means for injecting suspended fuel into said furnace; a first air means for introducing air into said furnace adjacent said firing means; a second air means for introducing air into said furnace remote from said firing means; means for establishing a total air flow to said furnace of a constant quantity; means for adjusting the ratio of air through said first and second air means; means for measuring a parameter of the heat absorption of the tubes lining the walls of said furnace; and said means for adjusting the ratio of air responsive to said means for measuring a parameter, means for establishing a desired heat absorption of the tubes lining the walls of said furnace; means for comparing said means for measuring a parameter to said means for establishing a desired heat absorption and establishing a signal indicative of insufficient or excess furnace heat absorption; means for increasing the ratio of air through said first means with respect to said second means in response to a signal indicating excess furnace heat absorption; and decreasing said ratio in response to a signal indicating an insufficiency of said heat absorption.

4,237,826

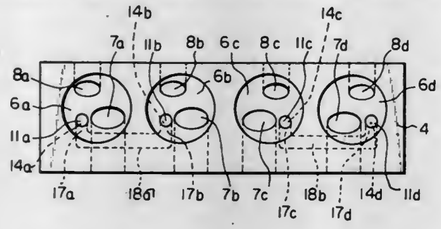
MULTI-CYLINDER INTERNAL COMBUSTION ENGINE EQUIPPED WITH AN ACCUMULATION CHAMBER

Katsuhiko Motosugi; Setsuro Sekiya, both of Toyota; Hidetaka Nohira, Mishima; Sumio Ito, Susono; Hisashi Obki, Numazu, and Teruo Kumai, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 4, 1979, Ser. No. 897
Claims priority, application Japan, Mar. 2, 1978, 53-22819
Int. Cl.³ F02B *19/00, 21/00*
U.S. Cl. 123—25 R **13 Claims**

1. A multi-cylinder internal combustion engine having a cylinder block, a cylinder head, a plurality of cylinders each comprising a cylinder bore formed in said cylinder block, a piston movable in each cylinder bore, a combustion chamber formed between each piston and said cylinder head, an accumulation chamber for each cylinder formed in said cylinder head and having a port connected to the corresponding com-

bustion chamber, an intake passage with an intake valve for leading a suction gas into each combustion chamber, an exhaust passage with an exhaust valve for discharging exhaust gas from each cylinder into the atmosphere, and valve means for opening said port of each accumulation chamber during the compression stroke of the corresponding piston to permit the inflow of the suction gas into said accumulation chamber from said combustion chamber during the latter half of each compression stroke for temporarily accumulating the suction gas under pressure after said valve means closes said port of said accumulation chamber and to spout a jet of accumulated suction gas, under a pressure close to the pressure in the combustion chamber just before said port was previously closed, from



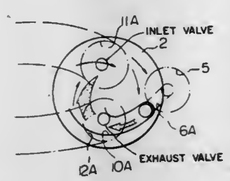
said accumulation chamber into said combustion chamber during the first half of each compression stroke, wherein the improvement comprises at least one connecting passage interconnecting at least two of said accumulation chambers to each other, such that the suction gas accumulated during the latter half of the compression stroke in the cylinder corresponding to one of said at least two accumulation chambers is spouted out during the first half of the next compression stroke occurring in a cylinder corresponding to another of said at least two accumulation chambers, thereby shortening the average storage time of said accumulated suction gas and correspondingly reducing its loss of pressure due to cooling in the accumulation chamber.

4,237,827

SWIRL-CHAMBER DIESEL ENGINE WITH PISTON FORMED WITH CURVED GROOVE AT ITS CROWN

Kyugo Hamai, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 11, 1978, Ser. No. 941,203
Claims priority, application Japan, Dec. 19, 1977, 52-152715
Int. Cl.³ F02B *19/08*
U.S. Cl. 123—262 **7 Claims**



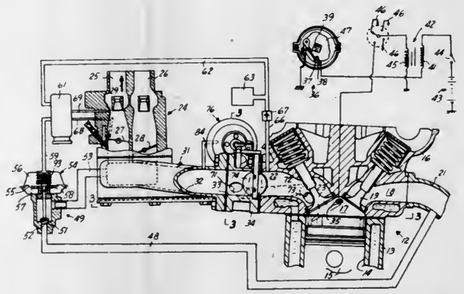
1. A swirl-chamber Diesel engine comprising:
a cylinder block having a cylinder;
a piston reciprocally movable in said cylinder;
a cylinder head secured to said cylinder block to close said cylinder to form in said cylinder a main combustion chamber between said cylinder head and said piston;
an intake arrangement comprising means for swirling an air charge within the main combustion chamber;
said cylinder head having a swirl chamber therein and a communicating passage interconnecting said swirl chamber and said main combustion chamber;
a fuel injector to inject fuel into said swirl chamber;
said communicating passage being so shaped and inclined with respect to said swirl chamber as to permit, during the compression stroke of said piston, part of said air charge within the main combustion chamber to enter into said swirl chamber to generate swirl in said swirl chamber;
said communicating passage connecting tangentially into said main combustion chamber so as to direct combustion gases resulting from the combustion within said swirl chamber along with said swirl of air charge within said main combustion chamber; and
said piston having at a crown thereof a curved groove having one end which, when said piston is at top dead center, communicates with said swirl chamber through said communicating passage, said curved groove being curved generally along with said swirl of air charge within said main combustion chamber and having an opposite end widened, said curved groove comprising means for directing said combustion gases to circle around the axis of said cylinder in a direction substantially concurrent with the swirl of said air charge in said combustion chamber.

4,237,828

METHOD OF CONTROLLING AN INTERNAL COMBUSTION ENGINE

Keiichi Sugiyama, Shizuoka, and Hiromitsu Matsumoto, Hamamatsu, both of Japan, assignors to Yamaha Hatsukoko Kabushiki Kaisha, Iwata, Japan

Filed Dec. 21, 1978, Ser. No. 971,740
Claims priority, application Japan, Dec. 26, 1977, 52-159409
Int. Cl.³ F02B *3/02*; F02P *5/06*
U.S. Cl. 123—262 **13 Claims**



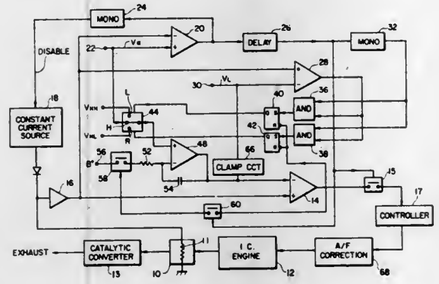
1. In a spark ignited internal combustion engine having a variable volume chamber in which combustion occurs, a spark plug for firing a charge in said chamber, a distributor for delivering an electrical charge at a timed interval to said spark plug for firing said spark plug, said distributor including only governor advance means for varying the time of delivery of a charge to said spark plug in response to the speed of the engine, said governor advance means providing a fixed time of spark firing at least at certain engine speeds below a predetermined speed, the improvement comprising means for increasing the turbulence in said variable volume chamber at speeds less than the predetermined sufficiently to cause the rate of combustion in said chamber to produce efficient running at the fixed time of spark firing.

4,237,829

VARIABLE REFERENCE MIXTURE CONTROL WITH CURRENT SUPPLIED EXHAUST GAS SENSOR

Masaharu Asano, Yokosuka; Shigeo Aono, Seki, and Haruto Tanaka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 29, 1979, Ser. No. 25,189
Claims priority, application Japan, Apr. 3, 1978, 53-38065
Int. Cl.³ F02D *3/04*
U.S. Cl. 123—489 **8 Claims**



1. A method for controlling the air-fuel ratio of mixture supplied to an internal combustion engine having air-fuel correcting means and an exhaust gas sensor for generating a signal representative of the concentration of an exhaust composition of the emission from said engine, said gas sensor having an internal impedance which varies inversely as a function of temperature, and means for generating a signal representative of the deviation of said concentration representative signal from a reference value, comprising the steps of:
(a) supplying a substantially constant current into said exhaust gas sensor to develop a corresponding voltage across said internal impedance;
(b) detecting when said voltage across said internal impedance reduces to a level below a first threshold level;
(c) applying said deviation representative signal to said air-fuel correcting means substantially in response to the step (b) to cause said mixture to be controlled in a closed loop mode;
(d) interrupting said current for a predetermined period of time in response to the step (b);
(e) generating a first or a second signal depending respectively on whether said concentration representative signal generated during said period of time is above or below a second threshold level lower than said first threshold level;
(f) varying said reference value in different directions in response to the presence of one of said first and second signals; and
(g) decreasing said reference value in response to the step (f) as a function of temperature until said second threshold level is reached.

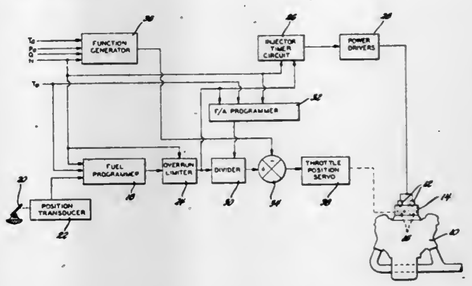
4,237,830

VEHICLE ENGINE AIR AND FUEL MIXTURE CONTROLLER WITH ENGINE OVERRUN CONTROL

Donald L. Stivender, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 18, 1978, Ser. No. 952,490
Int. Cl.³ F02D *35/00*; F02P *5/04*
U.S. Cl. 123—493 **2 Claims**

1. An air and fuel mixture control apparatus for a motor vehicle internal combustion engine having an intake space into which air and fuel are supplied, comprising in combination:
an engine fuel supply means effective to supply fuel to the engine intake space at a vehicle operator controlled fuel flow rate;
an engine air supply means including a throttle operable between wide open and closed positions to regulate the air flow rate into the engine intake space, the throttle closed position defining a minimum available air flow rate into the engine and a maximum vacuum in the intake space;
means responsive to the fuel flow rate effective to provide an engine air flow rate signal representing the air flow rate required to produce a predetermined air/fuel ratio;
means effective to monitor the actual air flow rate into the engine;
air control means responsive to the air flow rate signal and the monitored air flow rate effective to position the throttle to a position at which the actual air flow rate is substantially equal to the air flow rate represented by the air flow rate signal;



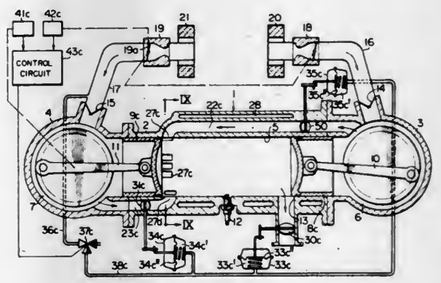
means effective to sense engine speed; and
means responsive to the sensed engine speed effective to limit the minimum value of the fuel flow rate independent of the vehicle operator controlled fuel flow rate in accord with the value of engine speed to a fuel flow rate whereat the engine air flow rate represented by the air flow rate signal is greater than the minimum available air flow rate, the throttle position being limited in the closed direction by the air control means in accord with the limited minimum value of the fuel flow rate to maintain the vacuum in the intake space at a value less than the maximum value to provide improved engine operation during engine deceleration and coast conditions.

4,237,831

TWO-CYCLE ENGINE

Masaaki Noguchi, Nagoya; Taro Tanaka; Norikatsu Uejima, both of Chiryu, all of Japan; Yukiyasu Tanaka, deceased, late of Okazaki, Japan; by Koichiro Tanaka, successor, Himeji, and by Mihoko Miyazaki, successor, Kobe, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 16, 1978, Ser. No. 961,369
Claims priority, application Japan, Nov. 18, 1977, 52-139093; Nov. 24, 1977, 52-141181; Dec. 22, 1977, 52-155338
Int. Cl.³ F02B *25/08, 25/20*
U.S. Cl. 123—51 BA **9 Claims**



1. A two-cycle engine having a cylinder provided with an

exhaust port and scavenging port means, a first crank case and a second crank case each connected to one of two ends of said cylinder, a first piston and a second piston housed in said cylinder in opposed relationship, said first piston being operative to open and close said exhaust port, said second piston being operative to open and close said scavenging means and second air-fuel mixture supplying means connected to said first crank case an said second crank case respectively, comprising:

first passage means formed outside of said cylinder to connect said first crank case with said scavenging port means for feeding an air-fuel mixture from said first crank case to said cylinder;

second passage means formed outside of said cylinder to connect said second crank case with said scavenging port means for feeding an air-fuel mixture from said second crank case to said cylinder; and

means, cooperative with said first and second passage means, located upstream of said scavenging port means for restricting the flow of said air-fuel mixtures in said first and second passage means to moderate the flow of said air-fuel mixtures in the vicinity of said scavenging port means in said cylinder, said first air-fuel mixture supply means is adapted to supply rich mixtures and said second air-fuel mixture supply means is adapted to supply lean mixture, and said scavenging port means comprises first set of scavenging ports communicating with said first passage means for supplying said rich mixtures to said cylinder and second set of scavenging ports communicating with said second passage means and located in positions in which they are open earlier than said first set of scavenging ports for supplying said lean mixture to said cylinder, and said cylinder further comprises deflector means mounted in said first passage means for moderating streams of said rich mixtures supplied from said first crank case to said cylinder through said first set of scavenging ports in the range between low and no load operation of the engine, scavenging gas throttle valve means mounted in said second passage means for interrupting the supply of said lean mixture from said second crank case to said cylinder through said second set of scavenging ports in the range below low and no load operation of the engine, and an exhaust throttle valve mounted in said exhaust port for throttling exhaust gases in the range between low and no load operation of the engine, whereby said rich mixtures can be ignited by compression-ignition in the range below low and no load operation of the engine and can be ignited by spark ignition by means of a spark plug in the range between medium and high load operation of the engine.

4,237,832

PARTIAL-LOAD CONTROL APPARATUS AND METHOD AND FOR INTERNAL COMBUSTION ENGINES

Fritz Hartig, Olching, and Reinhard Hofmann, Fürstenfeldbruck, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

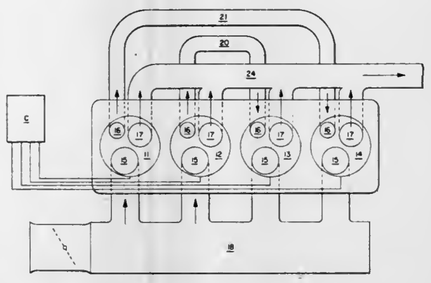
Filed Sep. 1, 1978, Ser. No. 938,956

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 2740045

Int. Cl.³ F02B *75/12, 75/02;* **F02M** *25/06*

U.S. Cl. 123—59 EC **5 Claims**

1. In a method for the partial load control of an operating internal combustion engine with internal combustion in several working spaces, in which with a decreasing load the number of working strokes with internal combustion is reduced per time unit, the improvement comprising the steps of changing over with a decreasing load an increasing number of the working spaces to an after-expansion operation which includes a number of displacement and after-expansion strokes divisible by two, and feeding working gas which has only incompletely expanded in the non-changed-over working spaces during a respective working stroke with internal combustion, to the changed-over working spaces in lieu of fresh mixture and further expanding the same, wherein the exhaust from the internal combustion in at least one of said several working spaces is divided into a high pressure pre-exhaust and a low



pressure exhaust, and in that only said high pressure pre-exhaust is fed to said changed-over working spaces as said working gas.

4,237,833

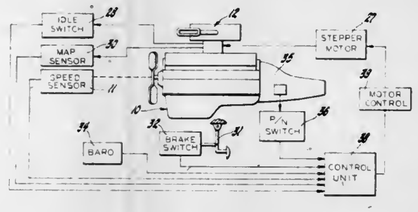
VEHICLE THROTTLE STOP CONTROL APPARATUS

Edwin D. Des Lauriers, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 16, 1979, Ser. No. 30,017

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—320 **2 Claims**



1. In a motor vehicle engine having an induction passage, a throttle effective to control the flow of air through the induction passage and further affect the pressure therein and a throttle stop effective to limit closure of the throttle and thus define an idle position therefor, throttle stop control apparatus comprising:

means effective to enerate a desired speed signal;

means effective to generate a signal indicative of engine speed;

means effective to generate a signal indicative of induction passage pressure;

means effective to store a plurality of induction passage pressure reference numbers corresponding to specified values of the engine speed signal through a predetermined engine coastdown speed range;

means effective, when the throttle is in the idle position and the induction passage pressure signal falls below the stored indication passage pressure reference number corresponding to the engine speed signal, to control the throttle stop position to minimize the difference between the induction passage pressure signal and a control reference number which is derived from the aforementioned induction passage pressure number and is at least equal thereto, said means being further effective, when the throttle is in the idle position and the induction passage pressure signal rises above the aforementioned control reference number, to control the throttle stop position to minimize the difference between the engine speed signal and desired speed signal, whereby engine idle speed control may be shifted to engine induction pressure control in a specified engine coastdown speed range to open the throttle according to a predetermined, stored schedule during vehicle coastdown.

4,237,834

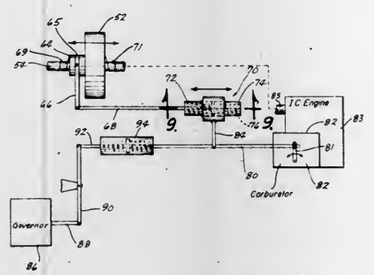
GOVERNOR CONTROL DEVICE

Douglas F. McFarland, Davis City, Iowa 50065

Division of Ser. No. 798,371, May 19, 1977, Pat. No. 4,174,995. This application Apr. 20, 1978, Ser. No. 898,032

Int. Cl.³ F02B *13/00*

U.S. Cl. 123—363 **7 Claims**



1. A governor device for controlling the speed control means of a motor, comprising,

a drive shaft,

a flywheel having a center aperture slidably receiving said drive shaft,

means for connecting said flywheel to said drive shaft so that the rotation of said drive shaft rotates said flywheel and an increase in the rotational speed of said drive shaft relative to said flywheel causes said flywheel to move in one direction along said drive shaft and a decrease in the rotational speed of said drive shaft relative to said flywheel causes said flywheel to move in the other direction along said shaft, and

means for connecting said flywheel to the speed control means of a motor such that the movement of said flywheel in one direction along said drive shaft increases the speed of said motor and the movement of said flywheel in the other direction along said shaft decreases the speed of said motor, said means for connecting said flywheel to said drive shaft comprising at least one pin protruding radially into the center aperture of said flywheel and adapted to be slidably received within a coacting slot in the cylindrical wall of said drive shaft, said slot extending both circumferentially and axially relative to said drive shaft.

4,237,835

SPEED-DEPENDENT IGNITION TIMING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Friedrich Rabus, Schwieberdingen; Gunter Grather, Pinache, and Richard Schleupen, Ingersheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,374

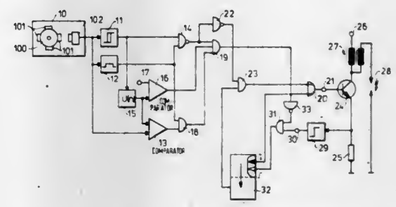
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753255

Int. Cl.³ F02P *3/04, 5/04*

U.S. Cl. 123—418 **11 Claims**

1. In an internal combustion engine having a shaft, control signal furnishing means (**10**) coupled to said shaft for furnishing a speed varying cyclical control signal, and an ignition system, said ignition system having spark creating means (**27, 28**) and ignition switch means (**24**) having a first and second stable state connected to said spark creating means for furnishing energy to said spark creating means when in said first stable state and for triggering said spark creating means to create said spark when switching from said first to said second stable state, an ignition timing system comprising

limiting speed detector means (**16, 23**) connected to said control signal furnishing means for furnishing an upper speed range signal only when the speed of said shaft exceeds a preselected speed; timing signal furnishing means (**11**) connected to said control signal furnishing means for furnishing a timing signal at a predetermined point in each cycle of said cyclical control signal; and switch control means (**21, 23**) connected to said timing signal furnishing means, said limiting speed detector means and said ignition switch means for switching said ignition switch means to said first stable state at a time coincident with or following said timing signal in the absence of said upper speed range signal and at a time preceding said timing signal in the presence of said upper speed range signal; and



wherein said switch control means comprising first switch control means (**19**) connected to said limiting speed detector means for switching said ignition switch means to said first stable state in response to a comparator output signal in the presence of said upper speed range signal;

reference signal furnishing means (**15**) for furnishing a reference signal;

and comparator means (**13**) connected to said reference signal furnishing means, said control signal furnishing means and said first switch control means for furnishing said comparator output signal to said switch control means when said cyclical control signal has a predetermined relationship to said reference signal.

4,237,836

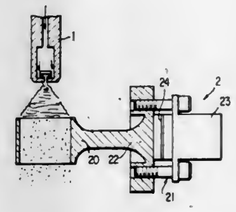
FUEL SUPPLY SYSTEM EMPLOYING ULTRASONIC VIBRATORY MEMBER OF HOLLOW CYLINDRICALLY SHAPED BODY

Yasusi Tanasawa, Nagoya; Norio Muto, Aichi, and Akinori Saito, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenyusho, Aichi, Japan

Filed May 11, 1978, Ser. No. 904,897

Int. Cl.³ F02M *27/08*

U.S. Cl. 123—537 **34 Claims**



1. A fuel supply system employing an ultrasonic vibratory member of a hollow cylindrically shaped body comprising:

an intake passage having an intake air control means for controlling the flow rate of the intake air, through which air is fed;

a fuel tank for storing fuel therein;

a pressurizing and regulating means for pressurizing the fuel supplied from said fuel tank to a predetermined pressure level, and regulating the flow rate of said fuel;

an ultrasonic wave generating means comprising an ultra-

sonic wave transducer connected to an ultrasonic wave oscillator for transforming an electric oscillation into mechanical vibrations, a mechanical vibration amplifying portion which is integrally secured to said ultrasonic wave transducer, and an ultrasonic vibratory member of a hollow cylindrically shaped body having a predetermined length and diameter, which is integrally secured to an output end of said mechanical vibration amplifying portion, with the axis of said member being directed perpendicularly to the axis of said mechanical vibration amplifying portion, and which is provided within said air supply passage; and

liquid film forming and supplying means, connected to said pressurizing and regulating means, having an exit provided at the position adjacent to said ultrasonic vibratory member of said hollow cylindrically shaped body, said liquid film forming and supply means being specifically designed for forming a thin film of said supplied fuel and supplying said fuel film from said exit to said ultrasonic vibratory member of said hollow cylindrically shaped body,

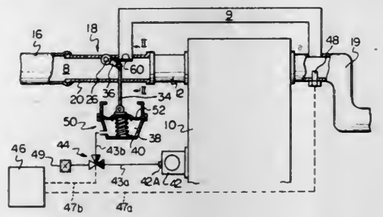
whereby film like fuel is atomized by said ultrasonic vibratory member of said hollow cylindrically shaped body, and the mixture of fine droplets of said fuel and the air is supplied through said intake passage.

4,237,837

EXHAUST GAS RECIRCULATION FOR A DIESEL ENGINE

Tadahide Toda, Mishima, and Tatehito Ueda, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 4, 1979, Ser. No. 898
Claims priority, application Japan, Sep. 13, 1978, 53-111736
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **6 Claims**



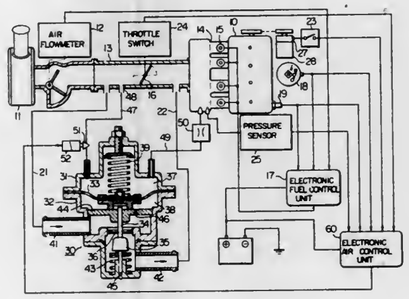
1. An exhaust gas recirculating system for a diesel engine having a gas exhaust passageway connected with an exhaust gas recirculating passageway, and an air intake passageway having an exhaust gas recirculating control valve to which said recirculating passageway connects; said valve forming a straight passageway having a rectangular cross section and flat sides of which one side has an exhaust gas inlet opening to which said recirculating passageway connects, the valve's said straight passageway being connected in series with said air intake passageway and having a rectangular valve plate provided with means for pivoting one edge portion of the plate parallel to and adjacent to said one side and on the upstream side of said inlet opening so that the valve plate swings downstream so as to cover the inlet opening while opening said straight passageway and vice versa, the edges of said valve plate each being parallel to the adjacent one of said flat sides of the valve's said straight passageway and said valve having means for swinging said valve plate; wherein the improvement comprises said valve plate on its side which covers said inlet opening having a projecting member which inserts in said inlet opening to a degree depending on the degree said valve plate swings downstream so to more or less cover the inlet opening, said guide member being contoured so as to maintain substantially constant the ratio of flow through said inlet opening and through said straight passageway on the downstream side of said valve plate as the latter swings through positions more or less covering said inlet opening.

4,237,838

ENGINE AIR INTAKE CONTROL SYSTEM

Masumi Kinugawa; Hideya Fujisawa; Norio Omori, and Motoharu Sueishi, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 4, 1979, Ser. No. 1,353
Claims priority, application Japan, Jan. 19, 1978, 53/4872
Int. Cl.³ F02D *1/04*; F02B *75/10*
U.S. Cl. 123—327 **14 Claims**



1. In an engine system having throttle means for controlling the amount of air flowing into an engine, an air passage bypassing the throttle means, air control valve means within said bypassing air passage for controlling the flow of air bypassing the throttle means, and fuel supply means for supplying said engine with fuel in accordance with the whole amount of air flowing into said engine through both the throttle means and the bypassing air passage, an apparatus for controlling air flowing into said engine comprising:

temperature detecting means for detecting the temperature of said engine;

speed detecting means for detecting the rotation speed of said engine and generating a rotation speed signal proportional thereto;

reference generating means for generating a reference speed signal representative of a desired idling rotation speed of said engine in response to said temperature detected by said temperature detecting means;

comparing means for comparing said rotation speed signal generated by said speed detecting means with said reference speed signal generated by said reference generating means and providing a comparator signal for controlling said control valve means thereby controlling the amount of air bypassing the throttle means so as to cause the idling rotation speed to be kept at the desired idling rotation speed;

throttle detecting means for detecting the closing and opening of said throttle means;

first control means responsive to said throttle detecting means for allowing and preventing the operation of said air control valve means by said comparing means;

pressure detecting means for detecting the intake pressure present downstream of said throttle means; and

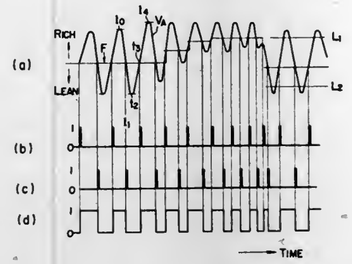
second control means for causing said air control valve means to increase and decrease the amount of bypass air in response to the output of said pressure detecting means indicative of said intake pressure being below and above a predetermined value, respectively, said second control means providing a control of said air control valve overriding the control provided by said first control means.

4,237,839

AIR-FUEL RATIO DETECTING SYSTEM

Yoshiki Ueno, Aichi, and Tadashi Hattori, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 8, 1979, Ser. No. 18,775
Claims priority, application Japan, Jun. 22, 1978, 53-75725
Int. Cl.³ F02D *5/00*; F02B *3/08*
U.S. Cl. 123—440 **4 Claims**



1. An air-fuel ratio detecting system for internal combustion engines comprising:

oxygen detecting means disposed in an exhaust passage of an internal combustion engine for detecting an absence and presence of oxygen, said oxygen detecting means exhibiting a low resistance and a high resistance in response to said absence and said presence of oxygen in said exhaust passage, respectively;

variable resistance means connected in series with said oxygen detecting means;

power supply means for supplying a series circuit of said oxygen detecting means and said variable resistance means with an electric power so that said series circuit develops a first and a second voltages in response to said low resistance and said high resistance of said oxygen detecting means, respectively, at a junction between said oxygen detecting means and said variable resistance means;

sampling means for sampling a maximum value of larger one of said first and second voltages and a minimum value of smaller one of said first and second voltages during a sampling period;

calculation means for calculating a reference value in proportion to both of said maximum and minimum values;

resistance control means for controlling resistance of said variable resistance means in response to said reference value, said reference value in turn being varied in accordance with changes of said maximum and minimum values due to the resistance control by said resistance control means; and

comparison means for comparing said first and second voltages with said reference value so that an air-fuel ratio of mixture supplied to said internal combustion engine is detected.

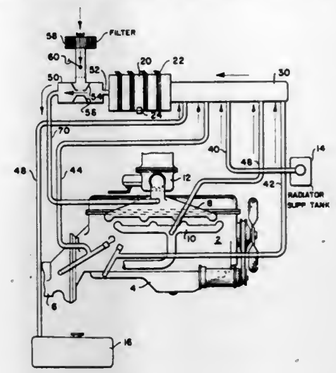
4,237,840

UNIVERSAL SYSTEM FOR SUPPLYING GASES TO INTERNAL COMBUSTION ENGINE

Andres Figueiras, Calle L#1085 Urb. Monoz Rivera, Guaynabo, P.R. 00657

Filed Apr. 12, 1979, Ser. No. 29,526
Int. Cl.³ F02B *25/06*
U.S. Cl. 123—568 **1 Claim**

1. An internal combustion engine fuel supply system, comprising a fuel inlet manifold, a carburetor supplying a fuel-air mixture to the inlet mainfold, an exhaust manifold, a radiator within which a coolant is circulated, a crankcase having a lubricant therein, a transmission casing having a lubricant therein, a fuel tank, a filter chamber having inlet and outlet ports and filter means therein, a header chamber, means connecting the header chamber to the inlet port of the filter chamber, means connecting the header chamber to the exhaust manifold, to the radiator supply tank above the level of coolant therein, to the crankcase above the level of lubricant therein, to the transmission casing above the level of lubricant therein, and to the fuel tank above the level of fuel therein, means for connecting the outlet port of the filter chamber to the inlet



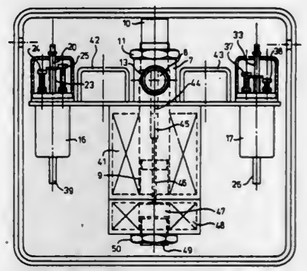
manifold, means connected between the outlet port of the filter chamber and the inlet manifold for increasing the velocity of the gas passing to the inlet manifold comprising a chamber having therein a restricted passage through which gas flowing from the filter chamber to the inlet manifold must pass, and means for supplying atmospheric air to the restricted passage for mixture with the gas passing therethrough.

4,237,841

APPARATUS FOR CONTROLLING THE AIR SUPPLY TO THE INTAKE MANIFOLD OF AN INTERNAL COMBUSTION ENGINE

William O. Lieuwen, Draviklaan 16, Nuenen, Netherlands

Continuation-in-part of Ser. No. 640,120, Dec. 12, 1975, abandoned. This application Dec. 30, 1977, Ser. No. 865,823
Claims priority, application Netherlands, Dec. 18, 1974, 7416472
Int. Cl.³ F02M *23/04*
U.S. Cl. 123—585 **14 Claims**



1. Apparatus for controlling the air supply to the intake manifold of an internal combustion engine having an intake system comprising a carburetor, the carburetor having a throttle, means for admitting air from the atmosphere and conduit means for conducting a mixture of air and fuel from the carburetor to the intake manifold, said apparatus comprising auxiliary conduit means for conducting fuel-free air into the engine, said auxiliary conduit means communicating with the intake system at a point downstream of the throttle, a displaceable closure member associated with said auxiliary conduit means, said displacement closure member being displaceable between a position in which said member blocks the access of air from

the auxiliary conduit to the intake manifold and positions in which the member at least partly opens access of air from the auxiliary conduit to the intake manifold, an electromagnet associated with said displaceable member for controlling the diplacement of said member, said electromagnet being actuated through a bi-stable switch controlled by means of two pressure responsive switches, a first one of said switches being connected with said intake system just upstream of the throttle and a second one of said switches being connected with the intake system just downstream of the throttle said switches being responsive to pressure variations in the regions to which they are connected, the arrangement being such that when the throttle closes and the pressure in the intake manifold drops below a predetermined value then the pressure upstream of the throttle increases the first switch is moved to a position for supplying current to said bi-stable switch and the second switch moves to a position for supplying a pulse to said bi-stable switch to energize the electromagnet to open the closure member and when the throttle is opened again due to a lowering of the pressure upstream of the throttle said first switch is moved to another position to de-energize the electromagnet and cause the closure member to move to a position to close said auxiliary conduit means.

4,237,842

INTAKE VACUUM CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

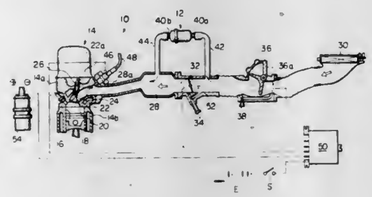
Takao Fukuhara, Yamato, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 4, 1978, Ser. No. 948,560

Claims priority, application Japan, Oct. 7, 1977, 52/135555[U]; Nov. 24, 1977, 52/157560[U]

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—585 **18 Claims**



1. In an internal combustion engine having a combustion chamber, means defining an intake passageway providing communication between the combustion chamber and ambient air, and a throttle valve rotatably disposed in the intake passageway,

an intake vacuum control device comprising:

an outer cylindrical member formed at its first end with an air inlet opening through which the inside of said outer cylindrical member is communicable with the intake passageway upstream of the throttle valve;

a valve seat secured to the inner surface of the first end of said outer cylindrical member and adjacent the air inlet opening;

a movable valve member seatable on said valve seat;

a coil spring disposed in said outer cylindrical member to bias said valve member to be seated on said valve seat, the space between the adjacent coils of said coil spring being smaller than the wire diameter of the same when said coil spring is set in position; and

a cylindrical spring guide member disposed inside the coils of said coil spring, defining a chamber between it and said outer cylindrical member, said chamber being communicated with the intake passageway downstream of the throttle valve and communicable through the air inlet opening with the intake passageway upstream of the throttle valve, said spring guide member having a first end which faces and is spaced from said valve member to restrict the movement of said valve member; and

a valve stopper made of an elastomeric material, secured to said first end of said cylindrical spring guide member, said movable valve member being contactable with said valve stopper.

4,237,843

STARTING AID FOR A COMBUSTION ENGINE

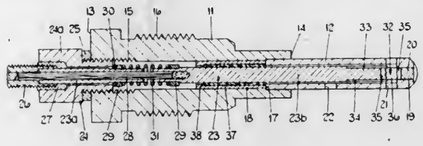
Kenneth Page, Birmingham; David C. Bowie, Stratford on Avon; Alfred J. Taylor, Solihull, and Richard P. Knowles, Farnborough, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Sep. 20, 1979, Ser. No. 77,376

Claims priority, application United Kingdom, Oct. 3, 1978, 39024/78; May 2, 1979, 15340/79

Int. Cl.³ F02P *19/02*; H05B *3/00*

U.S. Cl. 123—145 A **18 Claims**



1. A starting aid for a combustion engine comprising a hollow, elongated body, a refractory electrical heating element mounted in the body at one end thereof, said one end of the body being formed with one or more holes through which, in use, the heating element can be exposed to the combustion mixture of an engine, an electrode rod extending through the body and electrically connected to the heating element so that, in use, heating current can be supplied to the heating element to raise its temperature, said electrode rod including two relatively movable, electrically connected parts and maintaining the heating element in compression against said one end of the body, and a heat resistant, gas restricting packing layer mounted between the body and the electrode rod intermediate the ends of the body to allow free axial movement between the electrode rod and the body and substantially prevent gas flow past the packing layer.

4,237,844

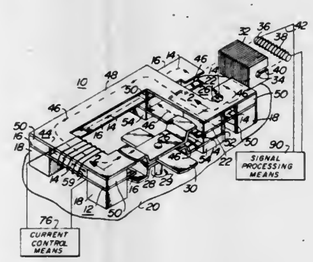
SIGNAL GENERATING APPARATUS

Richard A. Lathlaen, Hatfield, Pa., assignor to TRW, Inc., Cleveland, Ohio

Filed Jul. 17, 1978, Ser. No. 925,376

Int. Cl.³ F02P *3/02, 1/00*; H01V *5/00*; G01P *3/48*

U.S. Cl. 123—617 **27 Claims**



1. A signal generating apparatus comprising a bistable magnetic device which alters its magnetic state when the density of magnetic flux to which it is subject passes through a predetermined value, detecting means providing an output signal responsive to a change in magnetic state of said bistable device, conducting means for magnetic flux for subjecting said bistable magnetic device to conducted magnetic flux, said conducting means comprising a first portion providing a path of high permeability and a second portion providing a path of alterable permeance for varying the reluctance of said conducting means and the density of magnetic flux to which said bistable device is subject, the conducting means providing a first circuit for magnetic flux with a non cross-over "0" configuration and second circuit with a cross-over "8" configuration for subjecting said bistable device to magnetic flux of opposite senses, and an energizing means providing a controllable magnetic field for inducing magnetic flux in the first and second circuits of said conducting means and providing a flux density sufficient to alter the state of said bistable device with the variation of reluctance of said conducting means.

4,237,845

INTERNAL COMBUSTION ENGINE WITH AN AUXILIARY COMBUSTION CHAMBER

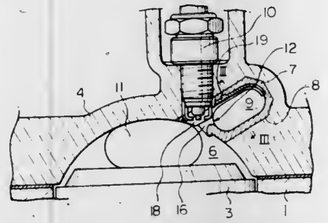
Takashi Kato, Susono, and Toshio Tanahashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 27, 1977, Ser. No. 864,637

Claims priority, application Japan, Oct. 11, 1977, 52-120897

Int. Cl.³ F02B *19/16*

U.S. Cl. 123—271 **15 Claims**



1. An internal combustion engine including a main combustion chamber; a cylinder head positioned over one end of said chamber and having therein a recess opening into said chamber; an insert composed of a heat resistant material disposed in said recess and having therein an auxiliary combustion chamber and a connecting passage for communicating said auxiliary combustion chamber with said main combustion chamber; and a spark plug having a spark gap located in said connecting passage for forming a flame, wherein the improvement comprises:

a heat insulating liner for said connecting passage and for a portion of said auxiliary combustion chamber, said liner being formed as a separate member different from said insert and arranged to extend in abutting contact with and longitudinally of said connecting passage and said auxiliary combustion chamber, said liner covering at least one half of the wall surface of said connecting passage, which covered wall surface is located at a position near an inner wall of said recess and said liner covering only the portion of the wall of the auxiliary combustion chamber along which the flame grows extending away from the spark plug, said heat insulating liner serving to maintain the surface temperature of said connecting passage high enough to ensure flame growth in a combustible mixture ignited by the spark plug during operation of the engine.

4,237,846

PISTON

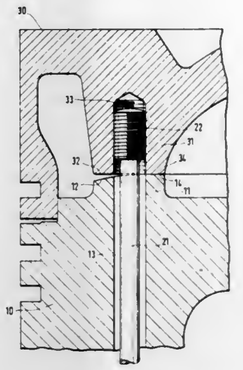
Reinhold Fuchs, Fellbach, Fed. Rep. of Germany, assignor to Mahler GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 23,769

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821176

Int. Cl.³ F02F *3/02*

U.S. Cl. 123—193 P **5 Claims**



1. A piston for internal-combustion engines, comprising

(a) a piston barrel consisting of light metal, said piston barrel being formed with an annular rib,

(b) a head plate which consists of a metal having a lesser thermal conductivity but a greater high-temperature strength, said head being formed with an annular rib which engages the annular rib on said piston barrel, and

(c) retaining means extending parallel to the piston axis through apertures in said rib, for supporting the head plate against the piston barrel only by said ribs, in which piston a radially outwardly widening gap is left free between the opposite faces of the annular ribs at room temperature and when the retaining screws have not yet been tightened, the surface of the annular rib of the piston barrel which faces the opposed annular rib of the head plate being progessively convexly curved in the radial direction going from the longitudinal axis of the piston.

4,237,847

COMPOSITE ENGINE BLOCK HAVING HIGH STRENGTH TO WEIGHT RATIO

James D. Baugh, Greensburgh; Stephen Smith, and Terrence M. Shaw, both of Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Mar. 21, 1979, Ser. No. 22,647

Int. Cl.³ F02F *7/00*; F16M *1/02*

U.S. Cl. 123—195 R **64 Claims**

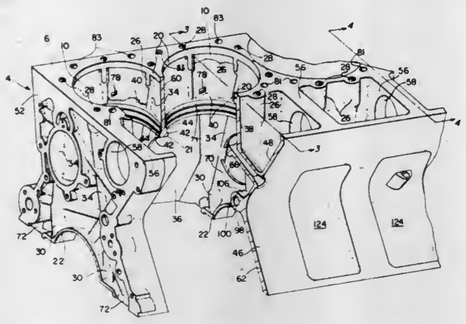
1. An engine block having plural cylinders for receiving a plurality of piston guiding cylinder liners, comprising

(a) a main frame having a head engaging surface on one side and a crankshaft receiving cavity on an opposed side and containing a plurality of closely spaced cylinder cavities for receiving the cylinder liners, said cylinder cavities extending from the head engaging surface toward the crankshaft receiving cavity;

(b) liner engaging means formed in said main frame for engaging each cylinder liner intermediate the liner ends to retain the liner in a position in which each liner is free of all direct contact with said main frame along a substantial portion of the axial length of the liner commencing at the end of the liner adjacent the crankshaft receiving cavity of said main frame thereby defining a plurality of inter liner spaces including those portions of said main frame which separate the liners when positioned within said cylinder

cavities, said liner engaging means including a projection in each said cavity directed radially inwardly of each cylinder cavity; and

(c) lubrication flow passage forming means for directing lubrication fluid through said main frame along a lubrication flow path which bypasses entirely the portion of said inter liner spaces extending between said head engaging surface and said projections and which specifically includes the portion of said inter liner spaces extending between said projection and said crankshaft receving cavity.



4,237,848

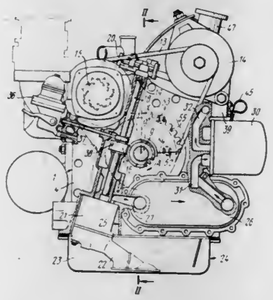
ROTARY-PISTON INTERNAL COMBUSTION ENGINE

Mikhail A. Korzhov, ulitsa Banykina, 6, kv. 18; Leonid N. Novikov, Leninsky prospekt, 40, kv. 342; Vyacheslav N. Makarov, prospekt Stepana Razina, 21, kv. 164; Olga L. Onkova, bulvar Baumana, 8, kv. 42; Vladimir V. Mishunin, ulitsa Jubileinaya, 1/57, kv. 77; Vladimir I. Usenko, ulitsa Voroshilova, 30, kv. 14, and Alexandr F. Bendersky, Moskovsky prospekt, 33, kv. 265, all of Tolyatti Kuibyshevskoi oblasti, U.S.S.R.

Filed Apr. 17, 1979, Ser. No. 31,014

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—242 **2 Claims**



1. A rotary-piston internal combustion engine comprising: a housing; a trochoidal working chamber hollowed in said housing so that its major axis is vertical; a rotor accommodated within said working chamber; a rotor shaft installed in said housing; a generator and a water pump mounted on said housing and coupled mechanically to said rotor shaft; auxiliary units installed on said housing: an oil pump, a lubricator used for metering oil supplied into said working chamber to lubricate its internal surfaces and a fuel pump; an auxiliary drive shaft designed for driving said auxiliary units, mechanically geared with said rotor shaft and disposed in an inclined position in the direction of rotation of said rotor shaft at an angle of 7 to 15 deg of arc relative to the major axis of said working chamber so that its geometrical axis intersects the major axis of said working chamber somewhat above the chamber uppermost point; the ends of said auxiliary drive shaft used one for driving said oil pump, the other for driving said lubricator; a fuel pump actuated from said auxiliary drive shaft; a water-cooled oil radiator positioned on said housing; an oil filter installed on said housing, said oil pump, water-cooled oil radiator and oil filter being connected in series; a means for igniting fuel-air mixture in said working chamber.

4,237,849

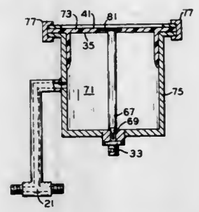
FUEL PRESSURE REGULATOR

Albert S. Roberts, Star Route, Rector, Pa. 15677

Filed Mar. 27, 1978, Ser. No. 890,148

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—513 **4 Claims**



1. A pressure regulator for a vehicle fuel system having a fuel tank, a carburetor, a fuel pump, first means coupling the fuel tank to a fuel pump inlet, and second means coupling a fuel pump outlet to the carburetor, said pressure regulator maintaining the fuel pressure at the fuel pump outlet at a preferred level relative to atmospheric pressure and comprising:

a regulator housing having a fuel inlet for coupling to the fuel pump outlet, and a fuel outlet for coupling to the fuel system upstream of the fuel pump;

a diaphragm peripherally supported by the housing with one diaphragm surface comprising a pressure responsive surface exposed to and actuable by fuel pressure at the fuel inlet and another diaphragm surface exposed to and actuable by atmospheric pressure, the diaphragm being flexible between a first position to preclude fuel flow between the fuel inlet and the fuel outlet so long as the ratio of fuel pressure to atmospheric pressure is less than a preselected value and another position to allow fuel flow from the fuel inlet to the fuel outlet when the ratio of fuel pressure to atmospheric pressure exceeds the preselected value.

4,237,850

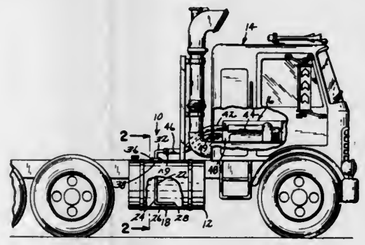
SYSTEM FOR HEATING FUEL OIL

Frank G. Connor, Delano, and Billy B. R. Veach, Maple Plain, both of Minn., assignors to Nationwide Carriers Incorporated, Maple Plain, Minn.

Filed Mar. 13, 1979, Ser. No. 20,025

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **2 Claims**



1. A system for heating diesel fuel in a diesel engine vehicle to prevent the jelling of the diesel fuel comprising:

a fuel tank for holding diesel fuel, said fuel tank having top, bottom and side portions, an access opening formed through the top portion of said fuel tank;

a heat exchange conduit comprised of a length of rigid tubing passing into and out of said fuel tank through said access opening, said rigid tubing including an inlet section and an outlet section interconnected to one another and extending generally parallel to one another, said inlet and outlet sections each including a first portion extending generally downward into the fuel tank and a second portion transverse thereto and extending adjacent the bottom portion of said fuel tank;

a mounting plate extending over said access opening and being attached to the top portion of said fuel tank, an upper end of the inlet section and the outlet section of said rigid tubing each passing through and being attached to a hole through mounting plate; and

conduit means for connecting said heat exchange conduit to the diesel engine, said conduit means including an inlet conduit having a first end connected in fluid communication to the inlet section of said heat exchange conduit and a second end connected in fluid communication with a water manifold of said engine, and an outlet conduit having a first end connected to the outlet section of said heat exchange conduit and a second end connected to an engine block of said engine whereby heated coolant liquid in said diesel engine is passed through said heat exchange conduit to heat diesel fuel contained in said fuel tank.

4,237,851

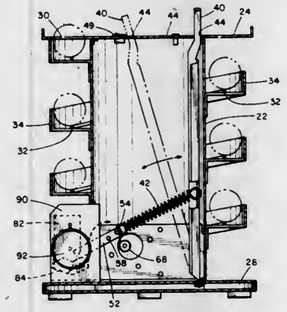
PORTABLE BALL THROWING MACHINE WITH ONE-WAY CLUTCH

Jacob S. Haller, Northbrook, Ill., assignor to Rallymaster, Inc., Elk Grove Village, Ill.

Filed Jul. 23, 1979, Ser. No. 59,984

Int. Cl.³ F41B *7/00*

U.S. Cl. 124—16 **12 Claims**



1. A portable ball throwing machine comprising:

(a) means on which balls are positioned for launching,

(b) means for supplying balls to said launching means,

(c) means for striking balls positioned on said launching means, said striking means including:

(i) a ball striker rotatably mounted on a shaft,

(ii) means for normally biasing said ball striker to a release position,

(iii) electrical drive means for rotating said striker in a first direction against the force of said biasing means to a fully cocked position, said striker, upon reaching said fully cocked position, rapidly rotating in said first direction toward said release position striking said balls, said drive means including clutch means for permitting said striker to rotate on said shaft in said first direction only, whereby kinetic energy remaining in said striker after striking a ball is utilized to partially cock said striker for the next cycle of operation thereby reducing the energy required from said electrical drive means to rotate said striker to said fully cocked position.

4,237,852

DRESSING TOOL FOR THE GRINDING WHEEL OF A GEAR GRINDING MACHINE

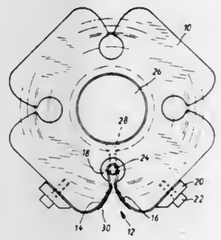
Dieter Wiener, Ettlingen; Klaus Koch, Sulzberg, and Jürgen Pomp, Kempten, all of Fed. Rep. of Germany, assignors to Liebherr-Verzahntechnik GmbH, Kempten, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 942,966

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811769

Int. Cl.³ B24B *53/06*

U.S. Cl. 125—11 R **10 Claims**



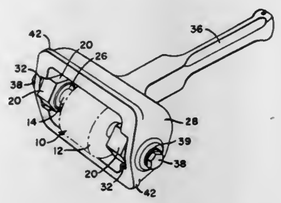
1. A truing tool for the grinding wheel of a gear grinding machine for profile grinding helical spur gears, said truing tool when truing the grinding wheel being guided past the grinding wheel in the same manner as a workpiece gear when being ground, said truing tool comprising:

a disc-shaped member (**10'**) presenting opposed planar side surfaces, at least one tooth space (**12'**) being provided on the circumference of said member with truing flanks (**14'**, **16'**) having surfaces (**40**) in the form of a section of the workpiece gear, said member having defined therein the root and crown cylinders associated with the workpiece gear, said flanks lying at an angle to the planar surfaces of said member in accordance with the angle of skew of the helical spur gear, each of said flanks utilizing that portion of the surface (**40**) lying between the intersections (**52**, **50**) with a pair of planes, one of said planes (**54**) being tangent to the root cylinder (**42**) at a point where said surface (**40**) intersects said root cylinder, the other of said planes (**56**) being tangent to the root cylinder (**42**) at a point angularly displaced from said first point of tangency through a rolling angle ρ so that said plane and said surface intersect the crown cylinder (**44**) at a common point, said flank surface portion being connected along its outer edge (**50**) to a uniaxially curved transition surface, the flanks of said tooth space opening into a bore located beneath the root cylinder, the diameter of which is larger than the closest distance between said flanks;

a strip of abrasive applied to said flank surfaces, said strip having the ends thereof affixed to said disc on either side of said tooth space and a central portion extending into said bore; and

tightening means mounted in said bore and engaging said central portion of said strip, said means being radially movable to establish said strip taut on said flank surfaces.

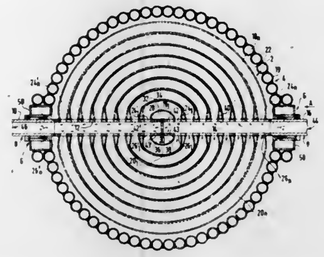
4,237,853
DRESSER DESIGN
Robert B. McConnell, Urbana, Ohio, assignor to The Desmond-Stephan Mfg. Company, Urbana, Ohio
Filed Jan. 31, 1979, Ser. No. 8,120
Int. Cl.³ B28D *5/02*
U.S. Cl. 125—37 **7 Claims**



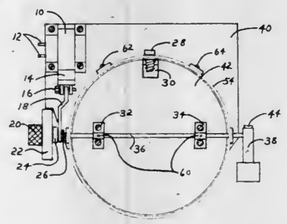
1. A dresser for roughening the surface of an abrasive wheel, comprising:
- cutter means for rotation about an axis in contact with said abrasive wheel such that said wheel is dressed, said cutter means including a plurality of cutter teeth mounted on a cutter shaft,
- ball bearing means mounted at each end of said cutter shaft, permitting said cutter means to rotate freely about said axis when held against said abrasive wheel as said wheel is rotated,
- a pair of polygonal bearing support means, each support means defining a bearing receiving recess and a threaded, bolt receiving opening, and each of said pair of bearing support means mounting one of said ball bearing means in said bearing receiving recess thereof such that said bolt receiving opening is axially aligned with said axis of said cutter means,
- a dresser body, defining a cavity receiving said cutter means, slot means on opposite sides of said cavity receiving said bearing support means, bolt holes extending from the exterior of said body into said cavity through each of said slot means and axially aligned with said bolt receiving openings and with said axis of said cutter means, said dresser body further including a dresser handle, and
- cutter supporting bolts extending from said exterior of said dresser body through said bolt holes into said cavity and engaging said threaded, bolt receiving openings in said bearing support means.

4,237,854
DAMPER CONSTRUCTION AND A METHOD OF COOLING A DAMPER
Herbert Kuhlmann, Bochum, Fed. Rep. of Germany, assignor to Sidepal S.A. Societe Industrielle de Participations Luxembourgeoise, Luxembourg, Luxembourg
Filed Dec. 1, 1978, Ser. No. 965,508
Claims priority, application Luxembourg, Dec. 19, 1977, 78708
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—285 R **7 Claims**

1. A damper construction for hot gas conduits comprising a central hollow tubular pipe pivot portion having an interior pipe coolant flow passage therethrough, and a substantially cylindrical flat plate portion connected to said pipe pivot portion, said flat plate portion including a plurality of substantially concentrically arranged first arcuate bent tubes of different bend diameters arranged side by side and abutting each other, having respective ends connected to one side of said tubular pipe pivot portion and having interiors defining tube coolant flow passages connected into said pipe coolant flow passage, a plurality of second substantially concentrically arranged arcuate bent tubes of different bend diameters arranged side by side and abutting each other, having respective ends connected to the opposite side of said tubular pipe pivot portion and having interiors defining tube coolant flow passages connected into said pipe coolant flow passage, baffle means associated with said first arcuate bent tubes, said second arcuate bent tubes and said pipe pivot portion providing a selected quantity of fluid flow through all of said tube coolant flow passages and said pipe coolant flow passage, said baffle means comprising orifices of selected sizes defining the connections between said first arcuate bent tubes and said second arcuate bent tubes in respect to said tubular pipe pivot portion, and bearing means pivotally supporting each end of said pipe pivot portions for rotation, said bearing means including a conduit surrounding said pipe pivot portion for the passage of a cooling medium therethrough.

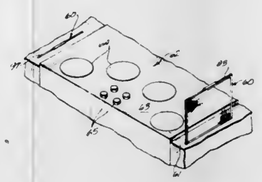


4,237,855
FLUE THROTTLE
Melvin E. Shea, 85 Terrace Rd., Milford, Conn. 06460
Filed Jul. 2, 1979, Ser. No. 54,561
Int. Cl.³ F23L *13/00*
U.S. Cl. 126—285 B **1 Claim**



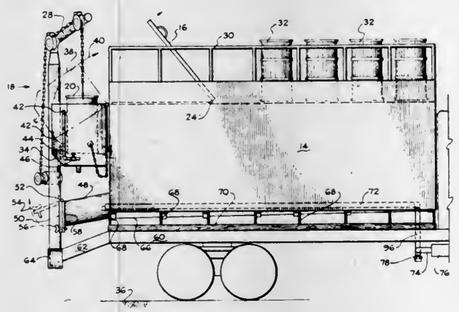
1. A device for controlling gases through a flue pipe comprising: a flue pipe, a disc inside the flue pipe and corresponding to the inside cross-section of the flue pipe, a shaft extending through the flue pipe and attached to said disc for pivotally mounting the disc, a solenoid, means attaching said solendoid to said flue pipe, lever means connecting said solenoid to said shaft for rotational movement of said shaft, adjustment means for said lever means, said flue pipe including an elongated slot, a bumper means having a portion extending through the slot in said flue pipe to engage said disc, means for adjusting the position of said bumper means along said flue slot to control the amount of closing of said flue pipe by said disc in said flue pipe, the amount of opening of said flue pipe by said disc being controlled by said lever adjustment means.

4,237,856
SPATTER SCREEN FOR COUNTERTOP MOUNTING ADJACENT STOVE
Edward T. Trombatore, 4139 Whistler Ave., El Monte, Calif. 91732
Continuation-in-part of Ser. No. 898,678, Apr. 21, 1978, Pat. No. 4,150,664, which is a continuation of Ser. No. 720,123, Sep. 3, 1976, abandoned. This application Apr. 23, 1979, Ser. No. 32,380
Int. Cl.³ F24C *15/12*
U.S. Cl. 126—299 C **4 Claims**



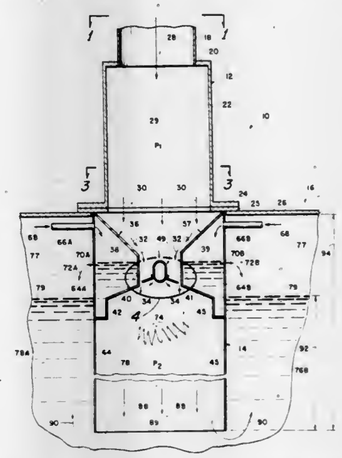
1. A spatter screen assembly for a stove having a generally horizontal upper surface with a heater for cooking food, the stove being mounted on a generally horizontal countertop panel extending from at least one side of the stove, comprising:
- a frame;
- mounting means secured to the frame and the countertop panel for mounting the frame in an upright position alongside the stove and beneath a slot extending through the panel;
- a mesh screen slidably mounted on the frame to be movable between retracted and extended positions, the screen when in the retracted position being disposed generally within the frame and having an upper end which is generally flush with the upper surface of the countertop panel, and when in the extended position having the upper end higher than the stove upper surface while remaining horizontally spaced apart from the heater so the screen intercepts material spattered from food being cooked on the heater without preventing access to the food; and
- a latch means operative between the screen and frame for holding the screen in the extended position at a predetermined height, the latch means being of a type which can be bypassed without adjustment by exerting an additional lifting force on the screen to enable the screen to be fully withdrawn from the frame for cleaning.

4,237,857
WASTE GREASE TRUCK AND METHOD
Eugene F. Sharp, Sr., Box 2129, Pontchatoula, La. 70454
Filed Dec. 22, 1978, Ser. No. 972,351
Int. Cl.³ B60H *1/02, 1/22*
U.S. Cl. 126—343.5 A **14 Claims**



1. A waste grease truck, comprising:
- (a) a truck having positioned thereon a special body, the body comprising,
  - (1) a fully enclosed tank and having positioned thereon insulation surrounding the tank,
  - (2) means, associated with the tank, for access to the interior of the tank;
- (b) means, associated with the tank, for positioning and dumping full containers of waste grease into the interior of the tank through the access means, the positioning and dumping means further comprising means, associated therewith, for heating the containers before dumping to release solidified fat from the containers prior to dumping;
- (c) means, associated with the tank, for controlling the inside temperature of the tank during transmission of the waste grease to a ultimate dumping station; and
- (d) means, associated with the tank, for removing the previously dumped waste grease from the interior of the tank.

4,237,858
THIN AND FLAT FLAME BURNER
Hershel E. Goodnight; Kurt S. Jaeger, and Richard R. Martin, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.
Filed Jan. 16, 1978, Ser. No. 869,712
Int. Cl.³ F24H *1/20;* **F23D** *15/02;* **F24H** *1/00*
U.S. Cl. 126—360 R **3 Claims**



1. In a gas burner system for providing a thin flat flame for use in a long narrow combustion space, comprising,
- (a) a first air supply plenum for downward supply of combustion air, having a long rectangular cross-section, its length much greater than its width;
- (b) a second combustion plenum contiguous and below said first plenum, having length and width of the same order of magnitude as said first plenum;
- (c) a burner assembly comprising an elongated pipe being flattened to provide an oval cross-section with its long axis vertical and having air interrupting baffles extending outwardly on each side, the improvement characterized by,
- (d) the upstream end of said second plenum having longitudinal projections directed downwardly and inwardly from both walls, forming a narrow rectangular inlet to said second plenum;
- (e) means to support said burner assembly axially in said narrow rectangular inlet, the baffles extending outwardly and downwardly, the width of said burner assembly being such as to provide longitudinal gaps on each side, between said baffles and said narrow rectangular inlet walls for

passage of combustion air from said first to said second plena;

(f) a first set of gas ports drilled in said pipe, equally spaced along its length, on the downstream sdie of said pipe below said baffles and directed downstreamwardly and outwardly for the major flow of fuel gas;

(g) a second set of gas ports drilled in said pipe, equally spaced along its length, on the downstream side of said pipe below said baffles and above said first ports directed substantially horizontally outwardly into the spaces behind said baffles, for a minor flow of fuel gas; the longitudinal spacings between said first ports being equal to the spacings between said second ports, said first ports longitudinally positioned between said second ports;

whereby the flow of gas through said second set of ports will provide a stable flame sheltered by said baffles from the turbulent flow of air and fuel gas; which will continuously ignite the turbulent mixture of fuel gas, flowing through said first set of ports and air flowing through said gaps in the second plenum, downstream from said burner assembly.

4,237,859

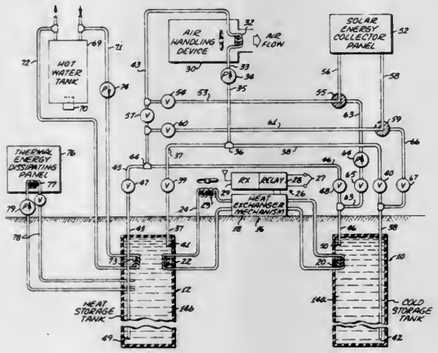
THERMAL ENERGY STORAGE AND UTILIZATION SYSTEM

Adam D. Goettl, 4960 E. Palomino Rd., Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 605,649, Aug. 18, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,339

Int. Cl.³ F24H *7/04*

U.S. Cl. 126—400 **9 Claims**



1. A thermal energy storage system comprising:

(a) at least a pair of storage tanks each containing a heat absorbing liquid;

(b) a heat exchanger system connected between said pair of storage tanks so as to be in contact with the liquids thereof, said heat exchanger system operable to transfer thermal energy from the liquid of one of said pair of storage tanks to the liquid of the other of said pair of storage tanks; and

(c) each of said pair of storage tanks comprising:

(I) an elongated vertically disposed columnar shaft formed in the earth below the surface thereof, said shaft being closed,

(II) a pliable, thermally insulative, leakproof liner within said shaft for containing the heat absorbing liquid, said liner in bearing supportive engagement with the side and end walls which define said shaft so that structural support of said liner is provided by the disposition thereof between the walls of said shaft and the liquid contained therein.

4,237,860

IMMERSIBLE SOLAR WATER HEATER

Robert S. Caroon, 3025 Benefit Rd., Chesapeake, Va. 23322

Filed Sep. 12, 1978, Ser. No. 941,794

Claims priority, application New Zealand, Sep. 19, 1977, 185202

Int. Cl.³ F24J *3/02;* **E04H** *3/20*

U.S. Cl. 126—415 **8 Claims**

1. A water immersible solar heat collecting means comprising an array of substantially laminar members with one side having a higher light absorbence than the other, each of which laminar member is of a configuration and sufficient density to lie flat on the bottom of a water filled swimming pool, hinge means connecting at least one edge of each member to an edge of another member to provide a unitary structure capable of being laid out in a flat position with the higher light absorbence surface of all of said members facing upwardly and of being rearranged by folding said members about said hinge means to selectively vary the number of members having their higher light absorbence surface facing upwardly, at least one of said laminar members has two edges each connected by a said hinge means to an edge of different laminar members, wherein two of said edges are normal with respect to each other, wherein there are four laminar members two of which have one said hinge means and two of which have two said hinge means one of the hinge means being located between the two laminar members having two hinge means.

4,237,861

SOLAR ENERGY COLLECTOR USED AS ROOF MEMBER

Carlos O. Fayard, and Carlos A. Fayard, both of 313 Pettis Ave., Mountain View, Calif. 94041

Filed May 5, 1978, Ser. No. 903,313

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **6 Claims**



1. A solar energy collector for use as a roof member comprising: a rigid, solid body cast from a moldable, heat-absorbing material and having a top surface, a bottom surface, a pair of opposed side margins, and a pair of opposed end margins, said body having a lower surface provided with a projection integral therewith and extending between one of said pair of margins; and a pipe section embedded in the projection of said body to form a one-piece construction with the body, said pipe section being in heat exchange relationship to the material of said body and adapted to be coupled to a manifold, said body having a number of spaced ridges on the upper surface for increasing the heat-capacity thereof, there being joining means on the side and end margins of the body to permit said body to be used with other, identical bodies to form the roof of a building with one side margin of each body overlapping the corresponding side margins of the next adjacent body and with one end margin of each body overlapping the corresponding end margin of the next adjacent body.

4,237,862

CLOSED PRESSURIZED SOLAR HEATING SYSTEM WITH AUTOMATIC SOLAR COLLECTOR DRAIN-DOWN

John M. Embree, Charlottesville, Va., assignor to Helios Corporation, Charlottesville, Va.

Filed Mar. 27, 1978, Ser. No. 890,306

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—420 **7 Claims**

1. A closed solar heating system wherein a heat transport fluid is forced to circulate between a heat exchange tank and a solar collector having an input port, an output port and back-

sloped piping, said transport fluid absorbing heat produced by solar energy impinging on said solar collector, releasing absorbed heat in said heat exchange tank, and recirculating through said solar collector, comprising:

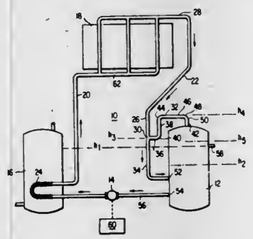
a sump tank serving as a reservoir for said transport fluid and located in a non-freezing area, said sump tank having a top opening, a bottom opening, and an intermediate opening between said top and bottom openings, said sump tank initially filled with said transport fluid to an initial fill level between said top and said intermediate openings, said heat transport fluid rising to an expanded fluid fill level, higher than said initial fill level, after drain-down of said solar collector;

a system pump having an input port in fluid connection with said bottom opening of said sump tank, said system pump forcing the circulation of said transport fluid;

system controller means coupled to said system pump for controlling the operation of said pump in accordance with predetermined temperature differentials existing within said solar heating system;

collector supply line means connected to said output port of said system pump and coupled through said heat exchange tank to said input port of said solar collector, for providing a supply flow path from said pump to said heat exchange tank and said solar collector, said supply line means formed of piping having a first internal diameter;

collector return line means for coupling said output port of said collector to said sump tank, said collector return line



means comprising an initial return section coupled to said output port of said collector, and formed of piping with at least one portion of said piping having a second internal diameter smaller than said first internal diameter, a vertical initial draining section formed of piping having said second internal diameter, said initial draining section extending generally downwardly and coupling said initial return section to said intermediate opening of said sump tank, and a vacuum-break section coupling said initial return section and said initial draining section at a first height above said expanded fluid fill level to said top opening of said sump tank, said vacuum-break section including a first portion extending upwardly to a second height above said first height to prevent fluid flow through said vacuum-break section during operation of said pump, and a second portion connected to said first portion and extending generally downwardly and coupling said top opening of said sump tank, said initial draining section and said vacuum break section being located in the vicinity of said sump tank in said non-freezing area;

whereby deenergization of said pump by said controller means produces a cessation of circulation of said transport fluid, causing fluid contained in said initial draining section to drain under the force of gravity into said sump tank, thereby drawing air from said top of said sump tank through said vacuum-break section into said initial return line, breaking the vacuum in said return line means, and commencing drain-down of said solar collector.

4,237,863

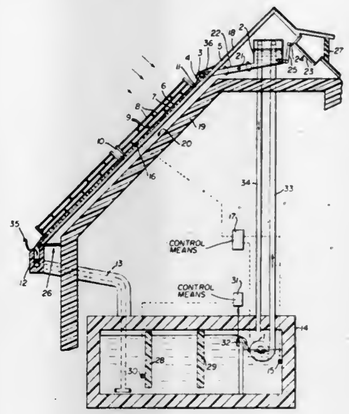
SOLAR HEATING SYSTEM

Henry Harrison, Locust Valley, N.Y., assignor to Halm Industries Co., Inc., Glen Head, N.Y.

Continuation of Ser. No. 677,265, Apr. 15, 1976, abandoned. This application Jul. 20, 1977, Ser. No. 817,335

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—422 **10 Claims**



1. A solar heating system having at least one roof mounted panel for collecting heat from the sun, said panel having an upper sunlight-absorbing surface, at least one translucent cover mounted above the panel to protect it from the weather, said panel having a lower surface for heat transfer to a stream of water, means for mounting said panel in cooperative relation with a roof to form a passage for said stream of water, means connected to said panel for maintaining said stream of water in substantially uniform contact with said lower surface of said panel, insulated tank means connected for receiving and storing said stream of water, and means for controlling said stream of water under said panel in response to the temperature of said panel and said water in said tank, whereby said water collects heat from said panel at useful temperatures, and air stream means for preventing said roof from overheating.

4,237,864

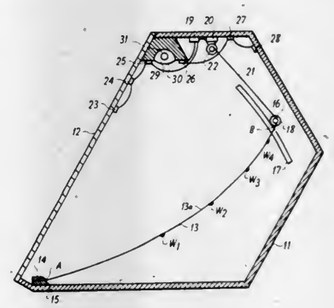
FOCUSING SOLAR COLLECTOR

Barry Kravitz, 334 A Thomas Rd., Middleboro, Mass. 02324

Filed May 15, 1978, Ser. No. 906,103

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—425 **9 Claims**



1. A tracking solar collector comprising:

first and second elongate support means positioned apart

from one another with their longitudinal axes generally parallel;

a sheet of flexible material suspended between said support means having a reflective surface receiving solar rays and focusing said rays along a focal axis parallel to said support means;

an elongate absorber positioned at the focal axis of said reflective surface;

means for moving one of said support means in response to the diurnal movement of the sun thereby altering the shape of said material; and

said material being non-uniformly loaded along its cross section such that when the shape is altered the focus will be maintained at said focal axis.

4,237,865

SOLAR HEATING SIDING PANEL

Peter J. Lorenz, Rte. 1, Box 314X, Jefferson, Wis. 53549

Filed Mar. 2, 1979, Ser. No. 17,068
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **7 Claims**



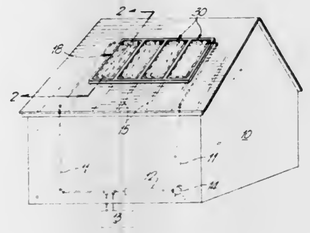
1. A solar heating siding panel assembled in a vertical position on the side of a building for heating an air space within the building, which comprises a housing adapted to be secured to the building, said housing having a frame member horizontally spaced from a wall of the building, double panes of glass secured within the frame in a vertical position. A thin non-supporting foil-like heat exchanger secured within the frame in a vertical position, said heat exchanger being located in a space relationship between said panes of glass and said wall of the building for forming a dead air spaced and a longitudinal passage for heating air by solar energy respectively, the surface of the foil heat exchanger facing the panes of glass being of a dull color and the surface of the foil heat exchanger facing said wall provided as a bright reflective surface, a bright foil-like reflective material provided against the wall of the building a first passage through the wall of the building connecting the lower portion of the longitudinal passageway to the air space within the building, a second passage through the wall of the building connecting the upper portion of the longitudinal passageway to the air space within the building, temperature controlled valve means opening and closing the first passage under predetermined temperature settings to control the flow of room air from inside the building to the longitudinal passage to be heated therein by solar energy, and additional temperature controlled means opening and closing the second passage to control the flow of heated air into the building through the second passageway.

4,237,866

SOLAR HEATER

Charles K. Rush, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed Jul. 31, 1978, Ser. No. 929,747
Claims priority, application Canada, Aug. 19, 1977, 285021
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **9 Claims**



1. A solar heater for use in a solar heating system comprising:

(a) a collector having a plurality of laterally spaced apart fluid passage means for a fluid to be heated therein by solar energy;

(b) a heat exchanger having an elongate chamber therein extending in a direction across said passage means closely adjacent one end thereof, said fluid passage means each being individually directly connected to said heat exchanger chamber for direct fluid communication therewith;

(c) conduit means disposed in said chamber and having an inlet thereto and an outlet therefrom disposed exteriorly of the chamber for connection to a fluid flow circuit of a heating system;

(d) a fluid return passage means interconnecting said heat exchanger chamber and plurality of fluid passage means and all together defining a hermetically sealed closed loop path for circulation of fluid heated by solar energy; said solar heater, when installed in an operative position, having said fluid passage means inclined upwardly toward the heat exchanger and communicating with the chamber thereof at an elevation higher than the position at which the fluid return passage communicates with the heat exchanger, and the at rest liquid level in the fluid passage means; and

(e) means directing fluid flowing from respective ones of said plurality of passage means into said chamber directly onto the outer surface of said conduit means, the arrangement being such that boiling of liquid in the passages, resulting from solar heating, causes pumping of the fluid around the closed loop path and wherein the fluid pumped into said heat exchanger is a two phase mixture of liquid and vapour.

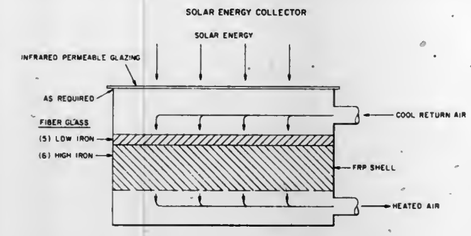
4,237,867

SOLAR ENERGY COLLECTOR

William C. Bauer, 175 Cordova Ct., Boulder, Colo. 80303

Filed Jun. 29, 1978, Ser. No. 920,490
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—441 **8 Claims**

1. In a solar collector comprising in combination a collector housing, first means for absorbing solar energy from incident solar radiation, second means located adjacent to the outer surface of said first means to serve as a heat insulator, and fluid means for flowing through said first means to transfer heat from said first means to said fluid means, wherein said first means is a batt of fibrous material whose chemical composition yields optical properties that permit solar rays that enter the fibrous material to be absorbed and converted to thermal energy and said second means serving as a heat insulator being a batt of fibrous material whose chemical composition yields optical properties such that greater transmission and less attenuation of the solar energy occurs in this fibrous material of the solar rays passing therethrough than in the first means.



4,237,868

SOLAR HEATING BALLOON

Charlie N. Overton, P.O. Box 31407, Dallas, Tex. 75231

Filed Sep. 14, 1978, Ser. No. 942,433
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **8 Claims**

1. A solar heat collector comprising:

a first inflatable envelope transparent to solar heat radiation,

a second inflatable envelope,

a gas, lighter than air, substantially filling said first envelope, and the space between said first and second envelopes,

first and second flexible fluid conduits connected to a lower side of said first envelope and extending to and attached to the surface of the earth to thereby tether said first envelope, said first conduit extending through said lower side of said first envelope to a point near the top of the inner surface of said first envelope, and said second conduit extending to the inner surface of the lower side of said first envelope,

a nozzle connected to the end of said first conduit for directing fluid from said first conduit over at least a portion of the inner surface of said first envelope, and

pump means for pumping heat absorbing fluid up said first conduit, and through said nozzle to the inner surface of said first envelope, first whereby said fluid is heated by solar radiation and is returned to the surface of the earth through said second conduit by gravity flow,

wherein the buoyancy of said gas filled envelopes is sufficient to lift said envelopes, said fluid conduits, and said nozzle.

4,237,869

SOLAR COLLECTOR

Floyd H. Rooney, 14800 Evergreen St., NW., Andover, Minn. 55303

Filed May 19, 1978, Ser. No. 907,788
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **20 Claims**

1. A solar heat collector comprising:

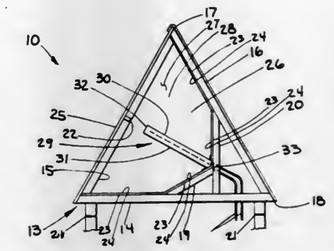
(a) a plurality of trusses spaced from and aligned with one another, said trusses having

(1) a base first beam, a lower inclined central second beam, an upright central third beam, and a rear fourth beam adjoined together substantially in the form of one-half of an octagon with the second and third beams being connected to each other at a central angular point of the half-octagon form, and with the first and fourth beams being connected to outer ends of the second and third beams respectively,

(2) a sunward structural beam connected to and spanning the distance between sunward ends of the first and fourth beams;

(b) a solar window mounted on said sunward structural beams;

(c) planar reflective material mounted on the four structural beams, said material being in a concave hemi-octahedral form reflective toward the solar window; and



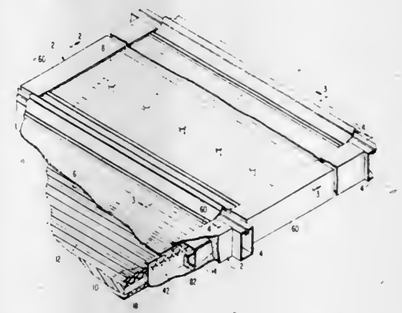
(d) a heat absorber mounted between the second and third beams, and the solar window, said absorber being spaced from and being in between the first and fourth beams and extending from the connection point of the second and third beams toward the solar window a majority of a distance between such connection point and the solar window.

4,237,870

SOLAR COLLECTOR FOR GASEOUS HEAT EXCHANGE MEDIA

Lloyd L. Wartes, Denver, Colo., assignor to Ecothermia, Inc., Denver, Colo.

Filed Nov. 13, 1978, Ser. No. 960,265
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **13 Claims**



1. A solar collector for heating air or other gaseous heat exchange media, comprising,

an enclosure having a chamber formed by walls and a cover which is transparent to radiant solar energy,

primary conduit means located within the enclosure for providing a primary flow passage for a heat exchange medium, said primary conduit means having an upper surface which is absorptive of solar radiation, said primary conduit being spaced from the cover to provide a first space between the primary conduit means and the cover, said primary conduit means being spaced from the bottom of the chamber to provide a second space between the primary conduit means and the bottom of the chamber,

said primary conduit means having inlet and outlet means enabling a heat exchange medium to flow therethrough to remove heat from the chamber,

said first space having inlet and outlet means enabling heat exchange medium to flow therethrough to remove heat

from the chamber and reduce heat losses through said cover,

said second space means having inlet and outlet means enabling a heat exchange medium to flow therethrough to remove heat from the chamber and reduce heat transmission to the bottom of the enclosure,

a common inlet chamber which contains a gaseous heat exchange medium and is in communication with all of said inlet means, said inlet means of said primary conduit means being substantially larger than the inlet means of said first and second spaces to provide a substantially greater quantitative flow of the gaseous heat exchange medium through said primary conduit means than through said spaces.

4,237,871

DEVICES FOR INJECTING PASTES OR FLUIDS INTO THE HUMAN BODY

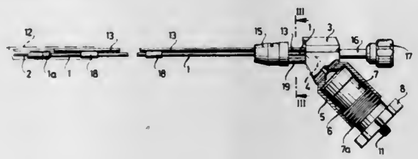
Ludwig Bonnet, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 69,936

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 7827905[U]

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **4 Claims**



1. In a device for injecting pastes or fluid substances into human obturation organs or sphincters by means of an injection tube which is axially displaceable through an endoscope shaft combined with an optical system and is provided with a distal cannular, and which, proximally with respect to the connector member, joining the same to the endoscope stem is connected to a head, which is displaceable on a proximal reinforcing sleeve traversed by said optical system, and is chargeable with paste, the invention which consists in that a cylinder which is fillable with the material to be injected, is connected to said injection tube and into whose open proximal extremity a piston is screwable, said piston being provided with external handle means and said cylinder being joined to said displaceable head.

4,237,872

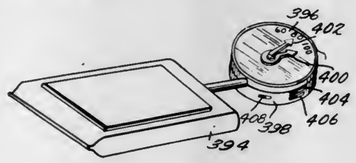
EXTERNAL CARDIAC RESUSCITATION AID

Roy M. Harrigan, Bromley Mountain Rd., Manchester, Vt. 05254

Division of Ser. No. 908,467, May 22, 1978, which is a division of Ser. No. 688,348, May 20, 1976, Pat. No. 4,095,590. This application Apr. 30, 1979, Ser. No. 34,646

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—24 R **8 Claims**



1. Apparatus for use by a rescuer in administering cardiopulmonary resuscitation to a patient or for use as a training aid in the application of cardiopulmonary resuscitation, comprising:

means for receiving manually applied force;

sensing means in operative relationship with said force receiving means for sensing pressure applied to said force receiving means;

means in operative relationship with said sensing means for indicating the force applied to said pressure receiving means;

timing means in operative relationship with said force indicating means for enabling said force indicating means to relax from a first predetermined force reading to a second predetermined force reading during a predetermined time interval when force is removed by the rescuer from said pressure receiving means; and

said force indicating means including a pressure gauge having a pressure gauge pointer mounted on a first axis and wherein said timing means includes a timer having a timing pointer mounted coaxially with said pressure gauge pointer.

4,237,873

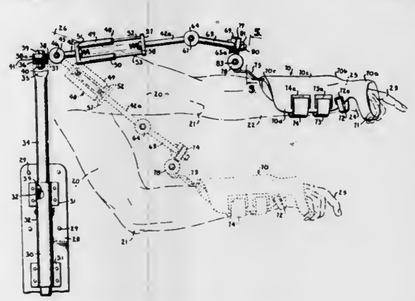
CEREBRAL PALSY ARM AND HAND BRACE

Thomas E. Terry, 204 E. Athey R.R. #1, Farber, Mo. 63345, and Laurance J. Hoyt, Sr., R.R. #2, Laddonia, Mo. 63352

Filed Dec. 11, 1978, Ser. No. 967,900

Int. Cl.³ A61F *5/01*

U.S. Cl. 128—77 **7 Claims**



1. A neuro-muscular stabilizing device for a human arm comprising, in combination:

a normally vertical post having normally upper and lower ends,

an elongate, substantially rigid sleeve adapted to embrace a human forearm having an inboard end (towards the elbow) and an outboard end (toward the hand),

a coupling linkage train connecting the upper end of the post and the inboard end of said sleeve, comprising:

(a) a first arm having inboard and outboard ends connected to the upper end of the post at its inboard end,

(b) the means connecting said post and the inboard end of said first arm comprising a double element friction joint,

(c) another arm having inboard and outboard ends coupled at its outboard end to the inboard end of the sleeve,

(b) the means coupling the outboard end of said other arm and the inboard end of the sleeve comprising a double element friction joint,

(e) means coupling the inboard end of the other arm and the outboard end of the first arm to one another comprising a single element friction joint, and

(f) a cylinder-piston rod extension-retraction assembly received within the first arm and forming an extendable and retractable part thereof, said assembly having a spring loading for extension of the piston rod with respect to said cylinder,

(g) the piston part of the said assembly fixed to one part of said arm and the rod part of the assembly fixed to another part thereof, so that insertion of the rod part of the assembly into the cylinder part shortens the said first arm and extension thereof lengthens the said first arm,

(h) the sleeve and arm lengths so sized, with the extension-

retraction assembly fully extended, so that the means coupling the inboard end of the other arm and the outboard end of the first arm to one another normally is located substantially at the elbow of a user of the device when the user's arm, engaged, with the device, is fully extended.

4,237,874

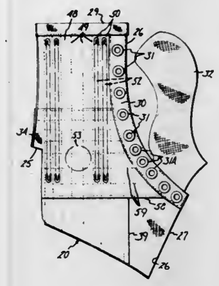
ANKLE BRACE

Ronald E. Nelson, 100 S. Main St., Cambridge, Minn. 55008

Filed Sep. 28, 1979, Ser. No. 79,785

Int. Cl.³ A61F *3/00*

U.S. Cl. 128—80 H **16 Claims**



1. An ankle brace to be worn on a foot and ankle encompassing the lateral and medial sides of a foot and an ankle having respectively a lateral malleolus and a medial malleolus, in supportive relationship to the ankle joint, comprising:

a base of flexible sheet material shaped to encompass an ankle and at least the middle portion of a foot;

a medial flexible upright support member fixed to the medial side of the base by parallel upright seams extending from the lower portion of the base to an upper edge of the base surrounding the ankle;

a flexible medial transverse support member fixed to the medial upright support member in the vicinity covering the medial malleolus of the ankle, by a plurality of parallel transverse seams generally perpendicular to the upright seams on the medial upright support member;

a lateral flexible upright support member fixed to the lateral side of the base by upright parallel seams extending from the lower portion of the base to the upper edge of the base surrounding the ankle; and

a flexible lateral transverse support member fixed to the lateral upright support member in the vicinity covering the lateral malleolus of the ankle, by a plurality of parallel transverse seams generally perpendicular to the upright seams on the lateral upright support member.

4,237,875

DYNAMIC INTRAMEDULLARY COMPRESSION NAILING

Zafer Termanini, 506 New Rochelle Rd., Bronxville, N.Y. 10708, assignor to Towmotor Corporation, Mentor, Ohio

Filed Feb. 23, 1979, Ser. No. 14,558

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—92 BA **12 Claims**

1. A dynamic compression nail for intramedullary compression nailing in treating the fractures of long bones comprising:

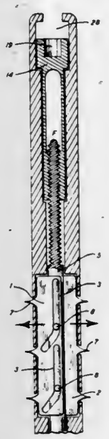
(a) a proximal part having at its distal end a central cylindrical recess open on the distal end and a central bore through the remaining portion of the part;

(b) a distal part having a tip portion and a portion attached thereto for insertion into said cylindrical cavity said distal part also containing a central bore;

(c) a central axial shaft extending through the bores in said proximal and distal parts;

(d) a spring surrounding said shaft and acting between the proximal end of said cylindrical recess and said distal part biasing said distal part distally;

(e) at least one pair of sliding blades having laterally directed pointed projections said blades being constrained to slide substantially radially in each of said proximal and distal parts, means operatively coupling said sliding blades to said shaft by slot means in the blades and pins attached to said shaft, said pins extending into said slot means in such fashion that movement of said shaft proximally will slide said blades, from a first position, relative to said shaft, substantially radially outward to a second position; said sliding blades having substantially no axial movement when sliding radially from said first position to said second position; said pointed projections when in said second



position being adapted to and positioned for tractically engaging the osseous tissue and adfixing said proximal and distal parts within the medullary canal.

(f) means for moving said shaft; and

(g) the slots in the blades installed in said distal part containing only an oblique portion, and the slots in said proximal protion containing an oblique portion at their distal end followed by an axial portion at their proximal end whereby as said shaft is retracted, the sliding blades in said distal end will be extended, the sliding blades in said proximal end extended and then, with further retraction of said shaft, said distal end will be drawn toward said proximal end permitting compression of distal and proximal bone fragments.

4,237,876

ANTI-RAPE DEVICE

Joel D. Rumph, 8875 Armaria Ct., Elk Grove, Calif. 95624, and Lynda K. Warren, Elk Grove, Calif., assignors to Joel Darren Rumph, Elk Grove, Calif.

Filed Oct. 17, 1979, Ser. No. 85,497

Int. Cl.³ A61B *19/00*

U.S. Cl. 128—138 R **10 Claims**

1. An improved anti-rape device, said device comprising, in combination:

a. a hollow housing dimensioned to be releasably received within a human vagina, said housing having a front opening;

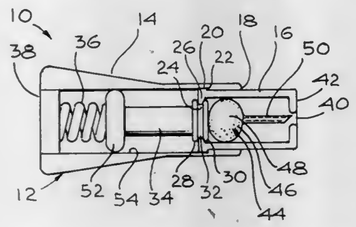
b. a hypodermic syringe containing a volume of rape-deterring fluid and a needle for injection of said fluid, said syringe being disposed in said housing with the front end of said needle facing and aligned with said opening; and,

c. syringe-actuator means in said housing, said actuator means including

i. biasing means rearward of said syringe in said housing

for biasing said syringe into a needle-protruding, fluid-injecting position,

ii. cocking means for releasably holding said syringe in a needle-retracted position in said housing, and,



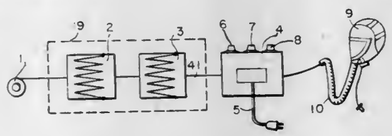
iii. trigger means for releasing said syringe from said cocking means, to allow said biasing means to effect rapid protrusion of said needle through said opening and injection of said fluid through said needle into the penis of a rapist during penetration of a vagina containing said device.

4,237,877

PROTECTIVE ENVIRONMENTAL MASK WITH THERMOELECTRIC AIR CONDITIONING SYSTEM

Gabriel D. Boehler, 3010 Ordway St., NW., Washington, D.C. 20008

Filed Jan. 22, 1979, Ser. No. 5,622
Int. Cl.³ A62B *7/00, 7/10, 7/14*
U.S. Cl. 128—204.15 **8 Claims**



1. A protective environment mask system comprising:

(a) a mask which fits onto the head of a wearer and adapted to cover a substantial portion of the face of a wearer and including means for providing a substantial airtight fit with the head of said wearer,

(b) temperature control means which operates in accordance with the Peletier principle for cooling fluid, wherein said control means includes means for retaining water condensed therein and means for pumping and spraying said condensed water into said mask,

(c) means for pumping breathable fluid through said control means, and

(d) means for coupling said control means to said mask to deliver said breathable fluid from said control means into said mask.

4,237,878

DRIPPING FLUID LEVEL DETECTOR

Toshiyuki Kobayashi, Kyoto; Hideharu Nakai, Nagaokakyo; Isao Kai, Kameoka, and Yoshinori Yonemori, Tokyo, all of Japan, assignors to Omron Tateisi Electronics Co., Ltd., Kyoto, Japan and Bohsei Enterprise, Tokyo, Japan

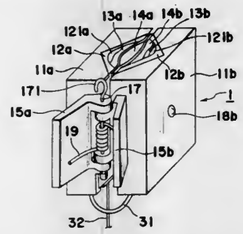
Filed Jan. 3, 1979, Ser. No. 799
Claims priority, application Japan, Jan. 10, 1978, 53/1302; Jan. 10, 1978, 53/1305
Int. Cl.³ A61M *5/14*
U.S. Cl. 128—214 E **7 Claims**

1. A dripping fluid level detector for use with a fluid passage of a medical fluid dropper comprising:

a drip chamber connected in said fluid passage;

a pair of electrodes oppositely disposed about and in contact with the outer surfaces of said drip chamber for detecting changes in the electrostatic capacity between said electrodes caused by changes in the amount of dripping fluid remaining in said chamber, said electrodes being formed of an elastic substance and being deformable into conformity with the shape of said drip chamber; and,

an electric circuit for detecting a change in electrostatic capacity existing between said electrodes, which represents a change in the amount of fluid remaining in said chamber, said circuit including an oscillation circuit having an oscillation state which varies in accordance with a change in said electrostatic capacity and means responsive to said oscillator circuit for providing a predetermined output signal when said oscillator state reaches a predetermined condition indicating the dropping of fluid in said chamber below a predetermined amount.

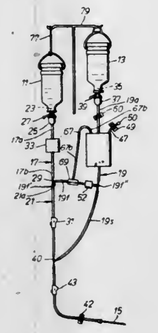


4,237,879

EQUIPMENT SETS FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES EMPLOYING PARALLEL SECONDARY LIQUID TUBING AND A 3-WAY VALVE

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 28, 1979, Ser. No. 16,226
Int. Cl.³ A61M *5/14*
U.S. Cl. 128—214 G **16 Claims**



1. A set for the sequential administration of medical liquids to a patient, said set comprising:

a primary tube for the flow of a primary liquid therethrough and including a primary valve for controlling the flow of liquid through said primary tube,

a secondary tube having first and second parallel branches for the parallel flow of a secondary liquid therethrough,

a common tube having its distal end connected in fluid communication with the proximal ends of said primary tube and said first branch of said secondary tube, the proximal end of said second branch of said second tube connected in fluid communication to said common tube at a location on said common tube proximal to said connection of said first branch to said common tube, said proximal end of said second branch being open for the flow of liquid therefrom to form a primary liquid flow path comprising said primary tube and said common tube and a secondary liquid flow path comprising the combined flow of secondary liquid through a first flow path defined by the portions of said secondary tube common to both branches, said first branch and said common tube and a second flow path defined by the portions of said secondary tube common to both branches, said second branch and said common tube,

a one-way valve in said first branch of said secondary tube that only allows liquid to flow therethrough towards the proximal end of said first branch,

a 3-way valve in said first branch of said secondary tube and located on the proximal side of said one-way valve, said 3-way valve comprising a housing with three ports for the flow of liquid into and out of said housing, said first port located on the proximal side of said 3-way valve, said second port on the distal side of said 3-way valve, said third port joined to the proximal end of a priming tube joined at its distal end to said secondary tube in fluid communication with the distal side of said one-way valve, and means for alternately connecting only said first and second ports, said second and third ports, or said first and third ports in fluid communication,

a first flow control means on said common tube between the distal end thereof and said connection to said second branch of said secondary tube for adjusting the flow rate of said primary and secondary liquid therethrough,

a second flow control means in said second flow path for adjusting the flow rate of said secondary liquid therethrough, and

an air barrier in said second flow path substantially impervious to air while said set is in use and preventing the flow of air therethrough,

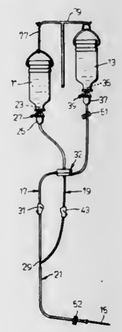
whereby said secondary liquid flows through said secondary liquid flow path at a rate controlled by said first and second flow control means and said primary liquid flows through said primary liquid flow path at a rate independent of the flow rate of said secondary liquid.

4,237,880

EQUIPMENT SETS FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES EMPLOYING A COMBINED AIR BARRIER AND LIQUID SEQUENCING VALVE CONTROLLED BY A COMMON FLEXIBLE MEMBRANE

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 28, 1979, Ser. No. 16,231
Int. Cl.³ A61M *5/14*
U.S. Cl. 128—214 G **11 Claims**



1. A set for the sequential administration of medical liquids to a patient, comprising:

a primary tube for the flow of a primary medical liquid therethrough,

a secondary tube for the flow of a secondary medical liquid therethrough;

a common tube having its distal end in fluid communication with the proximal ends of said primary and secondary tubes and its proximal end open for the flow of liquid therefrom to form a primary liquid flow path comprising said primary tube and said common tube and a secondary liquid flow path comprising said secondary tube and said common tube,

a secondary flow control means in said secondary liquid flow path for adjusting the flow rate of said secondary liquid therethrough,

a primary flow control means on said primary tube for adjusting the flow rate of said primary liquid through said primary flow path to a rate independent of the flow rate of said secondary liquid through said secondary liquid flow path, and

a combined air barrier and liquid sequencing valve having a housing comprising a first chamber which constitutes a portion of said primary tube and has inlet and outlet ports thereto and a second chamber which constitutes a portion of said secondary tube and has inlet and outlet ports thereto,

said housing divided into said first and second chambers by an air and liquid impermeable flexible diaphragm, a portion of said diaphragm normally covering one of said ports to said second chamber and hydrostatically moveable away therefrom to cover one of said ports to said first chamber,

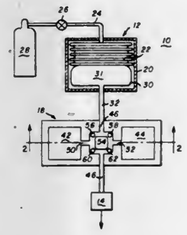
whereby said flexible diaphragm prevents the flow of primary liquid through said primary tube whenever the pressure of said secondary liquid in said second chamber exceeds the pressure of said primary liquid in said first chamber and provides a barrier substantially impervious to air in said secondary liquid flow path whenever the pressure of said primary liquid in said first chamber exceeds the pressure of said secondary liquid in said second chamber.

4,237,881

DEVICE FOR THE INTRAVENOUS OR ENTERIC INFUSION OF LIQUIDS INTO THE HUMAN BODY AT A PREDETERMINED CONSTANT RATE

Myron A. Beigler, Los Altos Hills, and Hal C. Danby, Palo Alto, both of Calif., assignors to Anatros Corporation, Palo Alto, Calif.

Filed Dec. 26, 1978, Ser. No. 972,730
Int. Cl.³ A61M *5/00;* **A61B** *5/02*
U.S. Cl. 128—214 F **14 Claims**



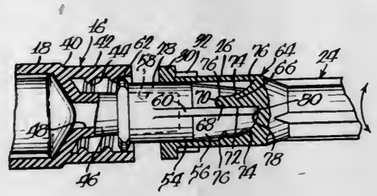
1. A device for the intravenous and enteric infusion of a liquid into a human body at a predetermined average rate comprising:

storage means for holding the entire amount of said liquid to be infused, said storage means including an exit port through which said liquid is expelled;

gaseous pressurizing means for pressurizing said liquid in

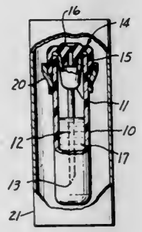
said storage means and for maintaining and expelling said liquid at a substantially constant predetermined pressure;
discharge means adapted for expelling said liquid into the body, said discharge means being passive; and
active metering means connected between said exit port and said discharge means, said metering means being actuated solely by said pressurized liquid and being operative to deliver a predetermined average amount of said liquid per unit time to said discharge means.

4,237,882
NEEDLE SHEATH
Ray M. Wickham, Deland, Fla., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.
Filed Sep. 27, 1979, Ser. No. 79,337
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 N **11 Claims**



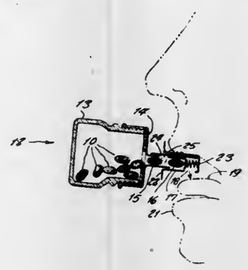
1. A needle sheath (24) for a syringe (10) having a barrel (18), a connector (16) on the distal end of said barrel (18), and a needle assembly (22) removably connectable to said barrel (18), said needle sheath (24) encircling a portion of said needle assembly (22), and comprising: cam means (64) operative between said needle sheath (24) and said needle assembly (22) for forcing said needle sheath (24) axially relative to said needle assembly (22) upon rotating said sheath (24) relative to said needle assembly (22) whereby said needle sheath (24) is separated from said needle assembly (22).

4,237,883
NEEDLE PACKAGE AND METHOD OF TREATING SYRINGE
David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 2, 1979, Ser. No. 26,118
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 N **14 Claims**



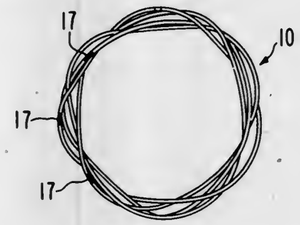
1. A needle package comprising: a protector; a needle fitting inside this protector, which needle includes a hub with a passage therethrough communicating with a passage of a cannula; a syringe treating liquid within the protector; and an openable closure sealing off both the passage of the hub and the protector, whereby the closure can be opened and the hub attached to a syringe immediately prior to treating a syringe with the liquid.

4,237,884
MEDICATION DISPENSER
Victor Erickson, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Mar. 17, 1978, Ser. No. 887,873
Int. Cl.³ A61J 7/00
U.S. Cl. 128—222 **1 Claim**



1. The combination of medication pellets and a dispenser for dispensing individual pellets directly into a users mouth comprising a container for said pellets having an opening at one end in combination with means for dispensing said pellets, said means being insertable into a users mouth and responsive to contact with the users lips to dispense pellets one at a time wherein said container comprises a small bottle for containing a plurality said pellets, and a screw cap on said bottle having a hollow projection in which said pellets enter one behind another, a dispensing opening in a side of said projection, being normally closed by a knob around said projection, able relative to a side opening in said knob for aligning with said projection side opening, a flange around said knob, a compression coil spring between end walls of said projection and knob, and a thin leaf spring connected at opposite ends to said projection and knob being bendable through a second opening in a side of said projection when said flange is depressed against an action of said coil spring so to extend transversely across a central passage of said projection and arrest following pellets behind a first pellet to each said dispensing opening.

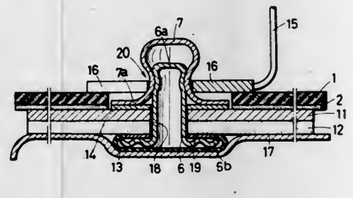
4,237,885
DELIVERY SYSTEM WITH MATED MEMBERS FOR STORING AND RELEASING A PLURALITY OF BENEFICIAL AGENTS
Patrick S. L. Wong, and Bruce B. Pharriss, both of Palo Alto, Calif., assignors to Alza Corporation, Palo Alto, Calif.
Filed Oct. 23, 1978, Ser. No. 953,480
Int. Cl.³ A61M 7/00
U.S. Cl. 128—260 **23 Claims**



1. A system for delivering a drug to a vagina, said system comprising:
(a) a body sized, shaped and adapted for easy placement and comfortable retention in the vagina, said body comprising;
(b) a wall surrounding and encompassing an internal reservoir;

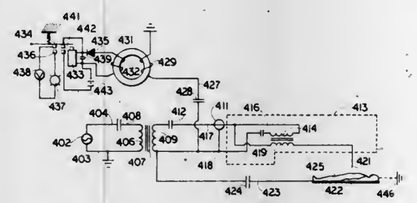
(c) a pair of ends formed integral with the wall and joined to make a closed curved wall, said latter wall circumscribing;
(d) a multiplicity of entwined revolutions;
(e) a drug in the reservoir; and,
(f) wherein, when the system is in the vagina, the system delivers an effective amount of drug at a controlled rate over a prolonged period of time to produce the desired drug effect.

4,237,886
ELECTRODE TO BE USED IN CONTACT WITH A LIVING BODY
Isoji Sakurada, Kanuma, and Tadasu Kawashima, Utsunomiya, both of Japan, assignors to Sony Corporation and Natsuo Uchiyama, both of Tokyo, Japan
Filed Mar. 31, 1978, Ser. No. 892,200
Claims priority, application Japan, Apr. 2, 1977, 52-37821; Jan. 31, 1978, 53-10506[U]
Int. Cl.³ A61B 17/36
U.S. Cl. 128—303.13 **15 Claims**



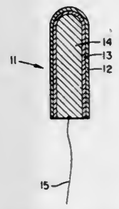
1. An electrode for electrically contacting a surface of a living body comprising:
a conductive substrate of a textile having conductive fibers constituting more than 15% by weight of said textile;
a conductive adhesive layer for contacting the surface, said adhesive layer being affixed to said conductive substrate and including a mixture of carbon fibers and a resin in which said carbon fibers have a length of 0.2 to 6 mm and a diameter of 1 to 20 μm, and are contained in said adhesive layer in an amount ranging from about 2 to 30% by weight relative to the remainder of said adhesive layer;
each of said substrate and said adhesive layer having a specific resistance of less that 100Ω cm; and
means forming an electrical connection to said conductive substrate.

4,237,887
ELECTROSURGICAL DEVICE
Donald I. Gonser, Forest Park, Ohio, assignor to Valleylab, Inc., Boulder, Colo.
Filed Jan. 23, 1975, Ser. No. 543,489
Int. Cl.³ A61B 17/36
U.S. Cl. 128—303.14 **4 Claims**



1. A radio-frequency electrosurgical device which comprises a radio-frequency generator, a power lead and a return lead, means for coupling the power lead and the return lead to the radio-frequency generator, an active electrosurgical electrode, means for coupling the power lead to the active electrosurgical electrode to power the active electrode, a passive electrode, means for coupling the passive electrode to the return lead, alternate path return means for coupling the return lead to ground at a point between the passive electrode and the radio-frequency generator, and means in the alternate path return means for indicating a predetermined radio-frequency return in the alternate path return means wherein the means in the alternate path return means includes a primary return path winding, and the device includes a secondary winding transformer coupled to the primary winding and a relay connected to and powered by the secondary winding.

4,237,888
TWO-MEMBRANE MEDICATED DEVICE FOR RATE-CONTROLLED ADMINISTRATION OF PROSTAGLANDINS
Theodore J. Roseman, Portage; Osmer C. Carpenter, Schoolcraft Township, Kalamazoo County, both of Mich.; Richard W. Baker, Bend, and James W. Ayres, Corvalis, both of Oreg., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Mar. 23, 1979, Ser. No. 23,126
Int. Cl.³ A61F 13/20
U.S. Cl. 128—270 **2 Claims**



1. A medicated device adapted for single, acute, and rate-controlled vaginal or rectal administration to a female mammal of a therapeutic amount of LAP (lipophilic anti-luteal/oxytocic prostaglandin) effective to accomplish a discrete event in the mammalian reproductive cycle selected from the group consisting of
(a) estrous induction,
(b) menses induction,
(c) cervical dilatation,
(d) abortion,
(e) labor induction, and
(f) uterine evacuation subsequent to fetal death in utero or hydatidiform mole;
said administration being of a predetermined TD (therapeutic duration) of less than about 72 hours;
said administration resulting in the release of LAP from said device during the course of said administration at a predetermined, essentially time-independent RR (release rate) between about 1 μg and 1 mg per hour; and
said administration resulting in the exhaustion of said LAP from said device during the course of said treatment to the extent that the medicinal reuse of said device is essentially impossible; which comprises:
(1) a flexible polymeric DBM (drug-bearing membrane), containing dissolved and suspended therethrough said LAP and being further characterized by:
(a) a D_{DBM} (diffusion coefficient of said DBM with respect to said LAP) and an S_{DBM} (solubility in said DBM of said LAP);
(b) an SA (surface area) of said DBM on the order of 10–50 cm^2, being sufficiently great such that the RF (release flux of said LAP released from said device), which RF is the quotient which is said RR divided by said SA, is substantially less than the absorption rate per unit area of said LAP by the rectal or vaginal epithelial tissues of said mammal in contact with said device during said administration; and

(c) an essentially uniform T_{DBM} (thickness of said DBM) and a D_{DBM} (initial concentration of said LAP in said device), which C_{DBM} is the quotient which is the amount of said LAP divided by the volume of said DBM;

(2) a flexible, polymeric RCM (rate controlling membrane), being laminated onto a first surface of said DBM and being substantially coextensive therewith, being further characterized by:

(a) an S_{RCM} (solubility in said RCM of said LAP) and an essentially uniform T_{RCM} (thickness of said RCM); and

(b) D_{RCM} (diffusion coefficient of sad RCM with respect to said LAP), such that the R_{RCM} (resistance of said RCM), which R_{RCM} is the quotient which is said T_{RCM} divided by the products of (i) K (partition coefficient between said DBM and RCM), which is the quotient which is said S_{DBM} divided by said S_{RCM} and (ii) said D_{RCM}, is at least very much greater than the R_{DBM} (resistance of said DBM), which R_{DBM} is the quotient which is said T_{DBM} divided by said D_{DBM}; and

(3) a physiologically inert, resilient, and water-insoluble support means, having the second surface of said DBM laminally affixed to at least a portion of the surface thereof; being adapted, contoured, and dimensioned for accomodation of the entirety of said DBM on the surface thereof and for easy and comfortable rectal or vaginal insertion and withdrawal of said device; being essentially non-absorptive of said LAP; and being of substantially non-concave construction, whereby the surface of said device upon insertion is in essentially complete and intimate contact with rectal or vaginal epithelial tissues and associated secretions;

said device being further characterized by

(a) said T_{RCM} being approximately

$$D_{RCM}S_{RCM}/RF \qquad \text{Eq. 1}$$

wherein RF, D_{RCM} and S_{RCM} are as defined above;

(b) said T_{50}, which is the time after TD for the RF to be reduced by 50 percent, being approximately

$$(1n\ 2)[P/(1-P](TD) \qquad \text{Eq. 2}$$

wherein P is the ratio of the amount of LAP remaining in said device at TD to the initial amount of LAP in said device, said P being characterized by a preselected value less than about 0.42; and

wherein TD is as defined above;

(c) said $[C_{DBM}]T_{DBM}$ being approximately

$$[P/(1-P)][(RF)(TD)/S_{DBM}]-T_{RCM}2K \qquad \text{Eq. 3}$$

wherein K, TD, T_{RCM}, RF, and P are defined as above; and

(d) said C_{DBM} being approximately

$$((RF)(TD)/(1-P)T_{DBM}) \qquad \text{Eq. 4}$$

wherein P, RF, TD, and T_{DBM} are as defined above.

4,237,889

DIAPER CLOSURE UTILIZING PRESSURE-SENSITIVE ADHESIVE TAPE HAVING TEXTURED FOIL BACKING

Ramsis Gobran, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 842,058, Oct. 14, 1977, abandoned. This application Sep. 13, 1978, Ser. No. 942,026

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **5 Claims**

1. In the combination of a diaper and, adhered to one exterior surface thereof, at least one closure tab comprising a strip of sheet material having a coating of normally tacky and pressure-sensitive adhesive firmly bonded to one face thereof,

the improvement comprising said sheet material's being a substantially untensilized, tough, ductile foil of crystalline polypropylene or linear polyethylene having a fine grain crystal structure and a calipered thickness of about 100–500 micrometers, said foil having one smooth face and one textured face, the textured face having a pattern of ridges separated by valleys,

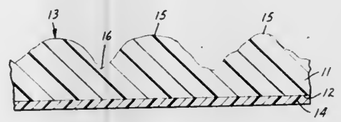
(a) the average distance between the crests of adjacent ridges being about 250–1,500 micrometers,

(b) none of said crests being more than either

(1) 100 micrometers or

(2) ⅔ the calipered thickness of the foil below the highest crest,

(c) the thickness of the foil between the bottom of the valleys and said smooth face being at least about 25 micrometers but not more than about ⅔ the calipered thickness,



(d) the void volume included on the textured face of said foil constituting about 10–60% of the apparent volume of said foil,

at least some of the ridges extending at an angle of 60° or less to the lateral edge of the closure tab and having a length significantly greater than any valleys they block,

said tab being further characterized by having a tensile strength at yield of 2.5 kg/cm width, a stiffness value of no more than about 3 gm-cm perpendicular to its long dimension and no more than about 5 gm-cm parallel to its long dimension so that it is readily conformable, and a tear propagation value perpendicular to its long dimension of at least 100 grams so that it resists inadvertent edge tear resulting from tensile forces even when nicked.

4,237,890

FASTENER MEANS FOR DISPOSABLE DIAPERS AND PROCESS OF MANUFACTURE

Pierre Laplanche, Turckheim, France, assignor to S.A. Beghin-Say, France

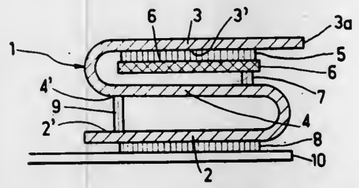
Filed Jan. 8, 1979, Ser. No. 1,849

Claims priority, application France, Jan. 6, 1978, 78 00341

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **18 Claims**

1. A fastener in the shape of an "S" to be affixed to a disposable diaper during the manufacturing process of the diaper comprising a first end zone, a central elastic zone, and a second end zone; the side of said second zone facing the central zone being coated with a pressure-sensitive adhesive which in turn is covered with a protective element and connected to said central zone by a continuous or discontinuous row of glue parallel to the folds of said fastener.



4,237,891

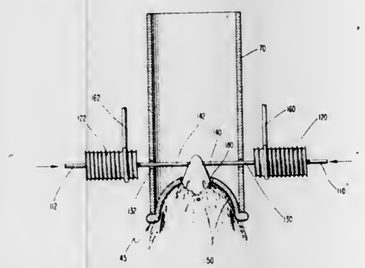
APPARATUS FOR REMOVING APPENDAGES FROM AVIAN SPECIES BY USING ELECTRODES TO INDUCE A CURRENT THROUGH THE APPENDAGE

Ronald A. DuBose, Marietta, Ga., and William D. Woolsey, Greenville, Tenn., assignors to Agri-Bio Corporation, Ithaca, N.Y.

Filed May 17, 1978, Ser. No. 906,808

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.14 **12 Claims**



6. An apparatus for removing an appendage from avian species such as a beak from fowl comprising:

a pair of electrodes;

mask means for receiving and positioning said appendage between and in contact with said electrodes,

said electrodes being disposed behind said mask means on opposite sides thereof and said electrodes directly contacting opposite sides of said appendage; and

power means to supply current to said electrodes, whereby upon extension of said appendage through said mask means and into contact with said electrodes a circuit is formed across said electrodes through said appendage and resistance heating damages said appendage.

4,237,892

MULTI-BEVELED, V-SHAPED NEEDLE POINT

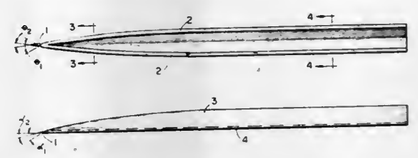
Thomas A. Ritter, New Fairfield; Leonard J. Laskowski, Middletown, and Donald S. Kaplan, Ridgefield, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 16, 1979, Ser. No. 12,686

Int. Cl.³ A61B *17/06*

U.S. Cl. 128—339 **7 Claims**

1. A surgical needle comprising a penetration portion initiating at a point defined by a symmetrical primary angle of width of about 20° to 35° and a secondary angle of width of about 5° to less than 20° and a primary angle of slope of about 20° to 35° and a secondary angle of slope of about 5° to 30°, with the proviso that the secondary angle of slope is always less than the primary angle of slope, and terminating in dual cutting blades providing four cutting edges and having a V-shaped cross-section and joined at the apex of said V-shape; a middle portion; and a butt portion having strand attachment means.



4,237,893

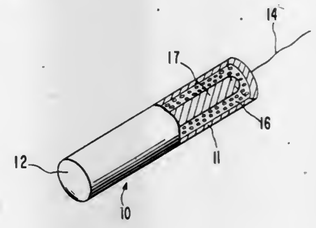
CERVICAL DILATOR

Alan S. Michaels, San Francisco, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 844,967, Oct. 25, 1977, abandoned. This application Nov. 28, 1979, Ser. No. 97,928

Int. Cl.³ A61M *29/00*

U.S. Cl. 128—341 **7 Claims**



1. A cervical dilator sized, shaped and adapted to occlude the length of the cervical canal, comprising:

(a) a base that permits pressure to be exerted against it without any major changes in its shape and dimensions and is made of a shape and dimension retaining material for imparting structural support to the dilator;

(b) a laminate surrounding the base, said laminate adapted to absorb fluid and swell, and formed of a first lamina consisting of an absorbent material selected from the group consisting of porous and fibrous materials in contact with the base, which material is capable of imbibing an external fluid into the dilator and is in laminar arrangement with a second lamina formed of a different material consisting of a swellable hydrophilic material positioned distant from the base;

(c) a wall surrounding the laminate, said wall formed of a low modulus elastomeric material that expands in response to pressure applied by the laminate; and wherein,

(d) when, the dilator is positioned in a cervical canal, the laminate imbibes fluid and swells with inward expansion restricted by the base, and concurrently applies outwardly an expanding pressure on the elastomeric wall, which wall then expands and exerts pressure against the cervical membrane, thereby dilating the canal over a period of time.

4,237,894

MALE CATHETER

Milton J. Cohen, Potomac, Md.

Filed Jun. 8, 1979, Ser. No. 46,679

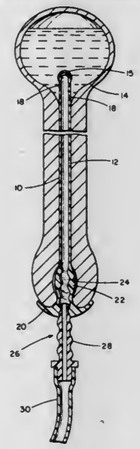
Int. Cl.³ A61M *25/00*

U.S. Cl. 128—349 R **8 Claims**

1. A catheter for male species comprising

a hollow urethra tube adapted to be inserted into the male urethra through the glans penis to communicate the the male urethra through the glans penis to communicate the

bladder with an external urine receptacle, one end of said tube being inserted and provided with a plurality of openings to permit urine to flow into the tube, the other end of said tube having a guard member secured thereto adapted to engage and seat against the head of the penis, said guard being secured to said tube by a flexible portion of said tube



which can be manually expanded and reduced in diameter, and means for controlling expansion of said flexible portion, said tube being inserted with said flexible section in a reduced condition and subsequently expanded after the tube is in position, the expanding of said flexible section being effective to cause said section to engage the fossa navicularus to secure the catheter in position.

4,237,895

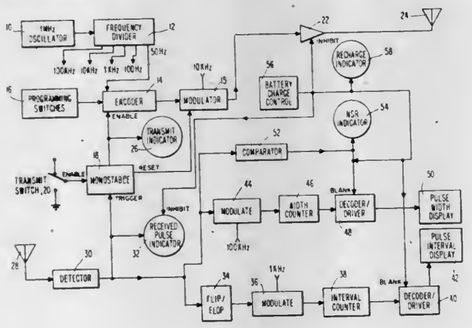
CONTROL SIGNAL TRANSMITTER AND MONITOR FOR IMPLANTED PACER

Robert W. Johnson, Levittown, Pa., assignor to Medcor, Inc., Hollywood, Fla.

Continuation of Ser. No. 807,516, Jun. 17, 1977, abandoned. This application Apr. 20, 1979, Ser. No. 31,975

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **10 Claims**



1. Control means for modifying the operation of an implanted pacer by a programming signal, comprising:

oscillator means for producing a carrier signal;

encoder means for modulating said carrier signal to provide the programming signal having an invariant number of data bits;

programming means coupled to said encoder means for selectively varying a characteristic of predetermined ones of said data bits; and

an output transmitter coupled to said encoder means for directing a programming signal to the implanted pacer.

4,237,896

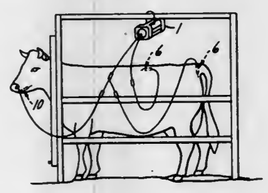
IMMOBILIZING ANIMALS

Lancelot H. Lines, Adelaide, Australia, assignor to Senil Nominees Pty. Ltd, Adelaide and Australian Merino Wool Harvesting Limited, Perth, both of, Australia

Continuation of Ser. No. 920,239, Jun. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 900,139, Apr. 26, 1978, abandoned, which is a continuation of Ser. No. 708,934, Jul. 27, 1976, abandoned. This application Aug. 1, 1979, Ser. No. 62,640

Int. Cl.³ A61N *1/32*

U.S. Cl. 128—419 R **9 Claims**



1. A method of producing temporary immobilization of an animal undergoing animal husbandry without rendering the animal unconscious, including the step of implanting electrodes subcutaneously and clipping them to the hindquarters and forwardly thereof along the spine of the animal, the electrodes piercing the skin and the fatty tissue beneath thereby to contact the ionized fluids beneath the skin allowing a low voltage to be used, subjecting the electrodes to a current flow driven by a potential of up to about 55 volts maximum to produce immobilizing simultaneous muscular tetanic contraction in the animal and, while the animal is thus immobilized, performing animal husbandry on the animal.

4,237,897

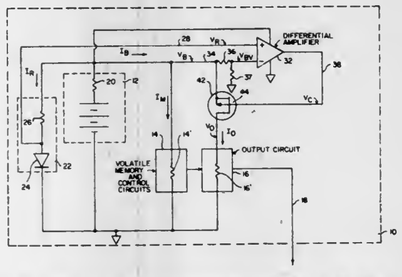
BATTERY LIFE EXTENDER

Russell R. Beane, Sepulveda, and Brian M. Mann, Northridge, both of Calif., assignors to Pacesetter Systems, Inc., Sylmar, Calif.

Filed Nov. 3, 1978, Ser. No. 957,411

Int. Cl.³ D61N *1/36*

U.S. Cl. 128—419 PG **15 Claims**



1. In an implantable human tissue stimulator having a volatile memory and control circuit means and an output circuit both of which are connected in parallel across a battery, said memory and control circuit means comprising a first resistance and said output circuit comprising a second resistance, the improvement comprising means for altering the ratio of current flowing through said second resistance with respect to current flowing through said first resistance as a function of said battery output voltage.

4,237,898

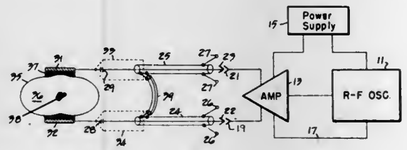
APPARATUS FOR HEATING TISSUE AND EMPLOYING PROTECTION AGAINST TRANSIENTS

Wilfrid B. Whalley, Palo Alto, Calif., assignor to Critical Systems, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 705,524, Jul. 20, 1976, Pat. No. 4,121,592, which is a continuation-in-part of Ser. No. 643,515, Dec. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 601,257, Aug. 4, 1975, abandoned. This application Mar. 27, 1978, Ser. No. 890,693

Int. Cl.³ A61N *1/32*

U.S. Cl. 128—422 **3 Claims**



1. Apparatus for treating tumors in humans and animals, comprising, radio frequency oscillator means, amplifier means coupled to the output of said radio frequency oscillator means for producing an amplified radio frequency output signal, electrode means coupled to said amplifier means, said electrode means including a pair of uninsulated conductive electrodes having a configuration adapted to pass an electric current directly into the tissue to which they are attached for passing current through both the tumor and the surrounding tissue, said electrode means and said amplifier means forming with the tissue between said electrode means an electrical circuit, said electrical circuit exclusive of the tissue including inductance means and capacitance means selected such that the capacitive reactance of said circuit is substantially equal and opposite in phase to the inductive reactance thereof, the value of said capacitance means also being selected to prevent transient very low frequency pulses and direct current pulses occurring in said circuit when said amplifier means are turned on and off from reaching the tissue, and means for controlling the power of said amplifier means to avoid heating the surrounding tissue beyond a preselected temperature level while allowing the tumor to heat beyond the preselected temperature level.

4,237,899

ELECTRONIC TISSUE STIMULATOR WITH OUTPUT SIGNAL CONTROLS

Norman R. Hagfors, Fridley, Minn., and John W. Keller, Jr., Miami, Fla., assignors to Stimtech, Inc., Minneapolis, Minn.

Filed Sep. 26, 1978, Ser. No. 945,975

Int. Cl.³ A61N *1/36*

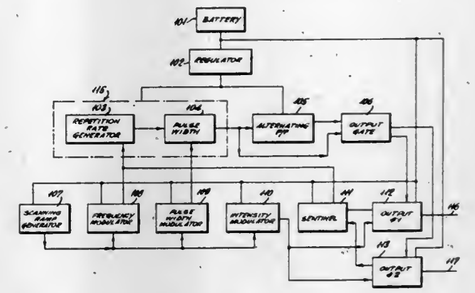
U.S. Cl. 128—422 **5 Claims**

1. A transcutaneous electrical nerve stimulator for pain control comprising:

oscillator means for generating a stimulation control pulse signal having predetermined rate, pulse width, and pulse amplitude factors;

output means for producing nerve stimulating pulse signals having parameters as respective functions of said factors;

said output means comprising means for independently establishing and independently controlling the pulse rise time and pulse decay time of select pulses of said stimulating signal selectively to establish a stimulating signal waveshape to which given nerves are selectively responsive, thereby producing effective pain control with respect to said given nerves.



4,237,900

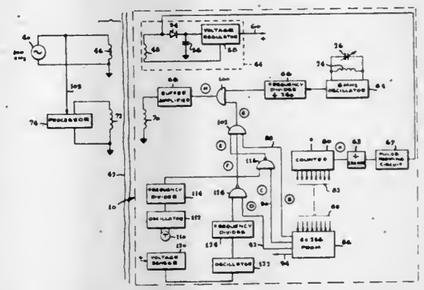
IMPLANTABLE CALIBRATION MEANS AND CALIBRATION METHOD FOR AN IMPLANTABLE BODY TRANSDUCER

Joseph H. Schulman, Los Angeles, and Douglas G. Ritchie, Pasadena, both of Calif., assignors to Pacesetter Systems, Inc., Sylmar, Calif.

Filed Feb. 14, 1979, Ser. No. 12,142

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—630 **21 Claims**



1. In combination with an implantable body transducer for sensing a body-related parameter, and a means for generating a parameter output signal related to said body-related parameter, an implantable calibration means for said transducer comprising:

means for storing predetermined calibration data for said implantable body transducer;

means for accessing said stored predetermined calibration data; and

means for generating a calibration output signal related to said stored predetermined calibration data.

4,237,901

LOW AND CONSTANT PRESSURE TRANSDUCER PROBE FOR ULTRASONIC DIAGNOSTIC SYSTEM

Jon C. Taenzer, Palo Alto, Calif., assignor to Picker Corporation, Northford, Conn.

Filed Aug. 30, 1978, Ser. No. 938,072

Int. Cl.³ A61B *10/00*

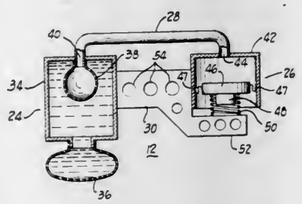
U.S. Cl. 128—660 **19 Claims**

1. A mobile fluid coupled ultrasonic probe assembly comprising:

(a) an ultrasonic transducer;

(b) apparatus including a reservoir containing a fluid me-

dium in communication with the transducer and including a subject contact portion for fluid coupling the transducer to a subject, the contact portion being coupled to the fluid medium and adapted for exerting a pressure on the subject which is a function of both the pressure on the fluid me-



dium and the rotational orientation of the mobile probe assembly, and

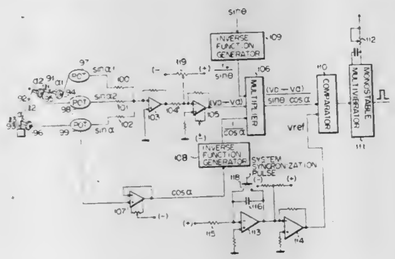
(c) passive pressure compensating apparatus coupled to the fluid medium and having means for varying the pressure on the fluid medium as a function of rotational orientation of the mobile probe assembly.

4,237,902

ULTRASONIC DIAGNOSING APPARATUS

Takahisa Okazaki, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 3, 1978, Ser. No. 948,336
Claims priority, application Japan, Oct. 8, 1977, 52-121081
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **4 Claims**



1. An ultrasonic diagnosing apparatus comprising:

ultrasonic probe means for radiating an ultrasonic wave in a sector-scanning manner toward a target to be diagnosed in an object and receiving a reflected ultrasonic wave therefrom; said ultrasonic probe means including a plurality of electromechanical transducer elements;

scanner means for mechanically moving said ultrasonic probe means in contact with the surface of the object;

means for generating a pulse to drive said transducer elements;

scanning controller means for controlling pulse generation of said pulse generating means and the pulse phase thereof to change the direction of said ultrasonic wave radiated from said transducer elements;

means for detecting a position of said ultrasonic probe means;

depth setting means for generating a pulse (including a component indicative of a diagnostic depth of the target plane of the body and further including components of compensation for a variation of the distance between said ultrasonic probe means and the target plane due to a direction change of the ultrasonic wave, a variation of the distance due to the unevenness of the surface of the object and a variation of the distance due to the inclination of said ultrasonic probe means with respect to the axis perpendicular to the target plane;

means for deriving a C-Mode image signal from the reflected ultrasonic wave coupled to said transducer elements in accordance with the output pulse of said depth setting means; and

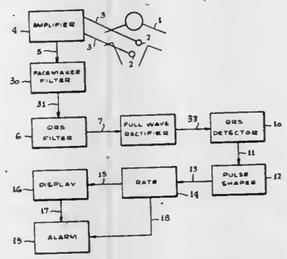
means coupled to said deriving means for displaying the C-mode image of the target.

4,237,903

QRS DETECTOR FOR EKG SIGNALS

Gerhard H. Hofmann, Freiburg im Breisgau, Fed. Rep. of Germany, assignor to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Jan. 31, 1979, Ser. No. 8,029
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—708 **11 Claims**



1. A detector for detecting biologically generated periodic wave form complexes in the presence of sinusoidal noise, comprising:

automatic threshold means for generating a threshold value signal related to the arithmetic mean value of an input signal;

comparison means for generating an output signal indicating the presence of the biologically generated wave form complexes whenever the amplitude of a first signal exceeds the threshold value signal; and

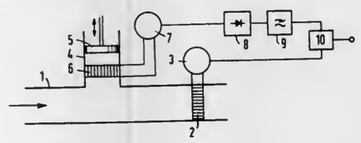
noise reduction means for reducing the first signal relative to the input signal by a proportionality factor such that the amplitude of sinusoidal noise in said first signal is less than the threshold value signal.

4,237,904

MEDICAL APPARATUS FOR THE MEASUREMENT OF RESPIRATORY FLOW INDEPENDENT OF GASEOUS COMPOSITION

Manfred Franetzki, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 700,504, Jun. 28, 1976, Pat. No. 4,127,115. This application Jun. 30, 1978, Ser. No. 921,056
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1975, 2530474
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—725 **4 Claims**



1. In medical apparatus for respiratory flow measurement, including a breathing tube for containing a fluid medium sub-

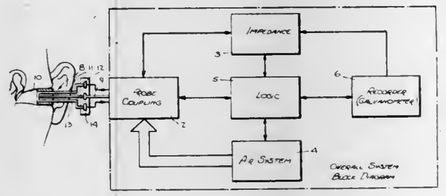
ject to respiratory flow varying at a breathing rate, and a flow measurement sensor accommodated in said breathing tube for coupling with the respiratory flow of the fluid medium in said breathing tube to control the supply of a respiratory flow signal as a function of such respiratory flow, said breathing tube having an auxiliary fluid path and having auxiliary means coupled with the fluid medium in said breathing tube for producing a supplementary flow component in said auxiliary fluid path, supplementary measurement means in said auxiliary fluid path and responsive to the supplementary flow component therein to supply a supplementary signal which is dependent on a parameter of said fluid medium which also affects the accuracy of said respiratory flow signal, and evaluation means operatively connected with said flow measurement sensor and responsive to said respiratory flow signal and to said supplementary signal for forming a quotient signal as a function of the quotient of said respiratory flow signal and said supplementary signal, said supplementary measurement means comprising a supplementary flow measurement sensor in said auxiliary fluid path which functions such that the accuracy of its supplementary signal has the same dependence on the parameter of the fluid medium as said flow measurement sensor in said breathing tube and such that said evaluation means provides a respiratory flow indication compensated for said parameter of the fluid medium substantially independently of the type of respiratory gas or gases making up said fluid medium.

4,237,905

AUTOMATIC TYMPANOMETRIC TESTING MEANS

James E. Keller, Milford, and Irwin Klar, Hudson, both of N.H., assignors to Electro Audio Dynamics, Inc., Great Neck, N.Y.

Filed Jul. 31, 1979, Ser. No. 62,534
Int. Cl.³ A61B *5/12*
U.S. Cl. 128—746 **28 Claims**



1. An improved automatic means for tympanometric ear testing under predetermined conditions using an ear probe having means for transmitting and for receiving an audio test signal and having an ear canal seal and an air transmission means and also having a recorder and means for varying the air pressure in the sealed ear canal through said probe air transmission means and means for generating an audio frequency probe tone signal for said transmitting means and means for coupling said probe signal receiving means to said recorder, the improvement comprising means for automatically detecting and evaluating the test conditions and means for automatically controlling the test in accordance with the evaluation.

4,237,906

ANTIGEN INJECTION ASSEMBLY

Harold R. Havstad, 3344 Rogue River Dr., Eagle Point, Oreg. 97524, and Isadore Pitesky, 4001 Linden Ave., Long Beach, Calif. 90806

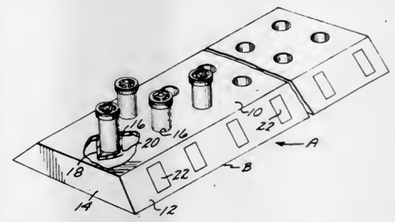
Filed Dec. 6, 1978, Ser. No. 966,854
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—743 **1 Claim**

1. A portable assembly for removably storing a plurality of different biological active antigen liquids in sealed test tube shaped containers that are removably maintained in spaced relationship with one another both in storage and when in used, with the contents of each of said containers being visually identified both when said containers are in storage and when in use, and said containers in cooperation with applicators permitting said antigen liquids to be intermittently dispensed from said containers and injected under the skin of a plurality of patients to a desired depth, said assembly including:

a. a tray that includes a flat generally rectangular top that has a plurality of longitudinally spaced and transversely aligned openings therein, a plurality of walls that extend downwardly and outwardly from the sides and ends of said top and that may rest on a horizontal surface, a plurality of cups that extend downwardly from said openings in said top a distance less than the height of a plurality of antigen containers removably supported by said cups said walls, said cups of a length substantially less than that of said containers, with substantial portions of said containers extending upwardly above said top to permit said containers to be grasped and removed from said tray when the occasion so requires, and visual means on said tray that indicate the identity of said antigen liquids in said containers disposed in said transverse openings and cups;

b. a plurality of stoppers formed from an inert plastic material that sealingly engage the interior surfaces of said containers adjacent the open tops thereof to sealingly maintain said antigen liquids thereof out of contact with the ambient atmosphere except when said antigen liquids are being dispensed, each of said stoppers including:

1. a cylindrical side wall that has an upper open end and a lower end, a plurality of longitudinally spaced, circumferentially extending sealing rings that extend outwardly from said side wall and pressure seal with the interior surface of said cup, and a circumferentially



extending lip that extends outwardly from said upper end of said side wall;

2. a ring-shaped web that extends inwardly from said lower end of said side wall;

3. a tube that extends upwardly longitudinally from the inner periphery of said web within said side wall, said tube including a bubble on the upper end thereof that projects above said lip, said bubble when severed from said tube in a plane common with the upper extremity of said lip providing said entrance into a bore in said tube;

c. a plurality of applicators that are each formed as an integral unit from a polymerized resin that will be wet by one of said antigen liquids, each of said applicators including a handle that has a stem projecting therefrom that has a tapered external surface, said external surface adjacent said handle having a diameter greater than that of said entrance, said stem terminating in a flat free end of smaller diameter than that of said entrance, and a plurality of spaced sharp projections that extend outwardly from said free end, said applicator capable of being moved downwardly longitudinally in said bore in one of said stoppers until a portion of said tapered surface intermediate said free end and said handle pressure seals with a portion of said stopper defining said bore, said applicator each time it is sequentially removed from said stopper having a film of said biological active liquid in uniform volume adhering to said projections which when said projections are forced through the skin of a patient by pressure contact therewith is transferred to the flesh underlying said skin, and the

depth of penetration of said projections being limited by said free end contacting the skin of the patient and acting as a stop to further penetration, with the applicator after such injection being discarded, and a sterile one of said applicators now inserted in said stopper for use in making a future injection and cooperating with said stopper to seal said container until said future injection is made; and

d. means for maintaining said applicators in a sterile condition until just prior to each said applicators being inserted in one said stoppers for subsequent use in dispensing an injection of said antigen liquid under the skin of a patient.

4,237,907

APPARATUS FOR CONVOLUTING ADHESIVE-COATED UNITING BANDS AROUND GROUPS OF ROD-SHAPED ARTICLES IN FILTER TIPPING AND LIKE MACHINES

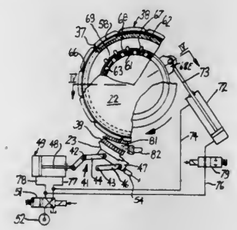
Karl-Heinz Pawelko, Marschacht, and Erwin Oesterling, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 27, 1979, Ser. No. 79,482

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842834

Int. Cl.³ A24C *5/32*

U.S. Cl. 131—23 A **19 Claims**



1. Apparatus for convoluting adhesive-coated uniting bands around groups of coaxial rod-shaped articles in filter tipping and analogous machines, comprising first and second rolling devices defining a gap having a width which normally at most equals the diameters of the articles, said first device including a conveyor and means for driving said conveyor, and one of said devices being shiftable with reference to the other of said devices between an operative position in which said devices define said gap and an inoperative position in which the width of said gap is increased; means for feeding groups of rod-shaped articles and attached uniting bands into said gap in the operative position of said one device so that the groups are transported by said conveyor through said gap and are caused to rotate about their respective axes to thereby convert the corresponding uniting bands into tubes; means for shifting said one device between said positions; and a cleaning implement movable between a plurality of positions intermediate said devices to clean at least one of said devices when said one device is shifted to said inoperative position.

4,237,908

METHOD FOR MANUFACTURING FILTER-TIPPED CIGARETTES

Pierre Debrois, Fleury-les-Aubrais, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Feb. 22, 1979, Ser. No. 14,285

Claims priority, application France, Feb. 24, 1978, 78 05307

Int. Cl.³ A24C *5/47*

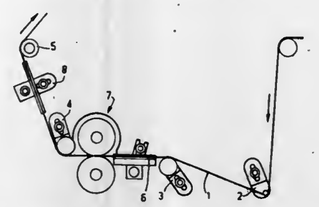
U.S. Cl. 131—61 R **3 Claims**

1. A method of manufacturing filter-tipped cigarettes comprising the following steps:

(1) slitting a paper band longitudinally into at least a first and second strip;

(2) separating strips of paper a specific distance; and

(3) wrapping a first portion of the filter with the first strip to create a first band and wrapping a second portion of the



filter and a portion of a cylinder of tobacco with said second strip creating a second band spaced apart to create an exposed portion of the filter to allow air to enter the filter to dilute the smoke.

4,237,909

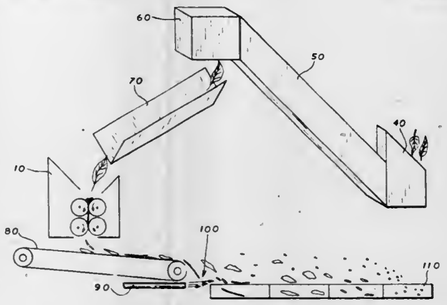
METHOD AND APPARATUS FOR TOBACCO LEAF DESTEMMING

Carl B. Jenkins, Jr.; Harry S. Porenski, Jr., both of Louisville, Ky., and Paul N. Turner, Kettering, Ohio, assignors to Brown & Williamson Tobacco Corp., Louisville, Ky.

Filed Apr. 24, 1978, Ser. No. 899,768

Int. Cl.³ A24B *5/06*

U.S. Cl. 131—128 **11 Claims**



1. Apparatus for destemming tobacco leaves, which comprises:

a first pair of rotatable rollers, each of said rollers of said first pair being disposed in a face-to-face relationship with the other of said rollers so that a nip is formed between said rollers, said first pair of rollers including a first means to grip tobacco leaves passing therebetween;

a second pair of rotatable rollers, each of said rollers of said second pair being disposed in a face-to-face relationship with the other of said rollers so that a nip is formed between said second pair of rollers, said second pair of rollers including a second means to grip tobacco leaves passing therebetween, said second means to grip being greater than said first means to grip;

said rollers being faced with an elastomeric, gripping material;

means of adjusting the nip between the rollers of each pair of rotatable rollers;

means for mounting the first pair of rollers in tandem relationship with said second pair of rollers whereby the nip of said first pair of rollers is in alignment with the nip of said second pair rollers;

means for rotating one roller of each pair in a clockwise direction and the other roller of each pair in a counterclockwise direction, said directions being such that a leaf introduced into the nip of said first pair of rollers would be carried to the nip of said second pair of rollers and upon

entry into the nip as said second pair of rollers from said first pair of rollers will be carried away from said first pair of rollers; and

means for controlling the speed of rotation of said rollers so that the speed of said second pair is faster than the speed of said first pair whereby the first pair of rollers hold the lamina while the second pair of rollers pull the stem away from the lamina.

4,237,910

STABLE HAIR RELAXER

Ezzat N. Khahil, Oak Park, and Ali N. Syed, Hazel Crest, both of Ill., assignors to Johnson Products Co., Inc., Chicago, Ill.

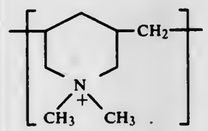
Continuation-in-part of Ser. No. 34,933, Apr. 30, 1979, abandoned. This application Sep. 24, 1979, Ser. No. 78,593

Int. Cl.³ A45D *7/04;* **A61K** *7/09*

U.S. Cl. 132—7 **23 Claims**

1. In a no base hair relaxer composition comprising a continuous water phase having dissolved therein a sufficient quantity of a water-soluble alkali to provide a pH from about 12 to about 14 and having dispersed therein about 3 to about 50 weight percent oleaginous material, about 7 to about 25 percent by weight emulsifier, the improvement wherein said composition is stabilized by about 2 to about 30 weight percent lipophilic, organically modified hectorite clay gellant which consists of hectorite modified with a quaternized nitrogen-containing compound containing at least one C_8–C_{20} long chain substituent on the quaternary nitrogen atom, propylene carbonate and a non-polar organic liquid, said weight percents being based upon the total weight of the composition, and said oleaginous material, emulsifier and gellant together comprising no more than about 65 percent by weight of the composition.

6. the hair relaxer of claim 1 additionally comprising about 0.25 to about 10 weight percent 2-heptadecyl-1-carboxymethyl-1-(2-hydroxyethyl)-2-imidazolinium chloride and about 0.05 to about 8 weight percent of a quaternary polymer having recurring units of the formula:



21. In the method of treating human hair with a no-base relaxer composition in which the relaxer is applied to the hair, the hair physically smoothed, rinsed, shampooed, set and dried, the improvement which comprises using as the relaxer the hair relaxer composition of claim 6.

4,237,911

DENTAL PRODUCT

Maurice J. E. White, 87 Lewis Rd., Wantirna South, Victoria 3152, Australia

Continuation-in-part of Ser. No. 769,655, Feb. 17, 1977, abandoned. This application May 1, 1979, Ser. No. 35,071

Claims priority, application Australia, Feb. 18, 1976, 4899/76

Int. Cl.³ A61C *15/00*

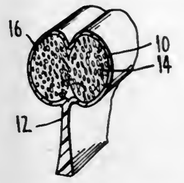
U.S. Cl. 132—89 **14 Claims**

1. A dental product for maintaining oral hygiene comprising:

an elongated, chewable stem formed of a resilient thermoplastic cellular material for cleaning tooth surfaces; said cellular material having a density of from about 0.005 to about 0.5 g/cm³;

an elongated fin of the thermoplastic material formed integrally with said stem and extending laterally from the periphery of said stem along the entire length of the stem, said fin being arranged to be inserted through the contact points between adjacent pairs of teeth and drawn lengthwise between said adjacent teeth in close engagement with the proximal surfaces of said teeth to thereby clean said proximal surfaces and the interproximal space between said teeth;

A dental fluoride disposed within cells of the thermoplastic cellular material in an amount of 1 mg of fluoride ion per volume of cellular material in the range of about 2 cm³ to about 12 cm³, said fluoride being substantially evenly



distributed throughout the cellular material and being in the form of a plurality of discrete units; and

an outer skin extending around said stem and said fin which is broken after the fin has been used to clean between said teeth to expose the thermoplastic cellular material of said stem and to release said fluoride for topical application to said teeth and fluoride dietary intake.

4,237,912

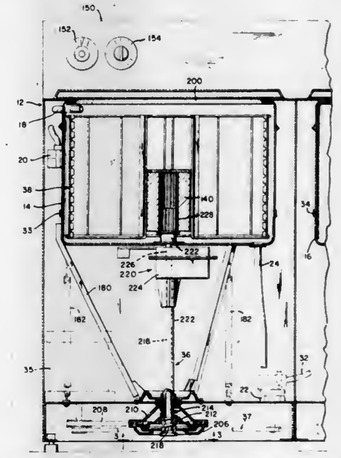
WASHING, PASTEURIZING AND DISINFECTING APPARATUS

Eleanor S. Hill; William J. Hill, and Ralph C. Hill, all of Mercer Island, Wash., assignors to H & R Incorporated, Seattle, Wash.

Filed Nov. 8, 1978, Ser. No. 958,604

Int. Cl.³ B08B *3/06, 9/00, 11/02*

U.S. Cl. 134—57 R **40 Claims**



10. A cleaning apparatus adapted to clean articles by means of a cleaning liquid, said apparatus comprising:

a. a housing structure,

b. a tub to contain said cleaning liquid,

c. a container adapted to carry the articles to be cleaned, said container being mounted in said tub for rotation about a generally vertical axis of rotation,

d. filling means to direct said cleaning liquid into said tub,

e. motor means operatively connected to said container to oscillate said container angularly about said axis of rotation,

f. pump means to direct said cleaning liquid from said tub,

g. control means to activate said motor means to cause said container to oscillate, and simultaneously to activate one

of said filling means and pump means so as to cause said container to oscillate during a period where said tub is partially filled with cleaning fluid.

4,237,913

HIGH-PRESSURE CONDUIT-CLEANING NOZZLE

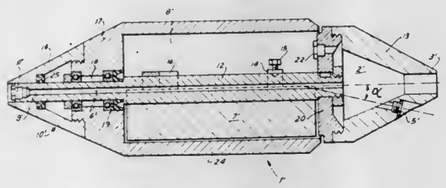
Wolfgang Maasberg, Duisburg, Fed. Rep. of Germany, assignor to Woma Apparatbau Wolfgang Maasberg & Co. GmbH, Duisburg, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 59,120

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 7822037[U]

Int. Cl.[2] B08B *9/04*

U.S. Cl. 134—167 C **14 Claims**



1. A conduit-cleaning nozzle comprising:

a nozzle body elongated along and generally centered on a longitudinal axis and having axially spaced front and rear ends, said body formed at said rear end with a liquid-distribution compartment and with at least one backwardly opening liquid-ejection aperture;

means at said rear end for connecting said body to a high-pressure hose for supplying high-pressure liquid from said hose to said compartment for ejection of said liquid backwardly from said aperture;

a generally offcenter mass in said body imparting to said nozzle a center of gravity offset from said axis and wherein said nozzle body is integrally formed with said mass to one side of said axis and is hollow to the other side thereof, said compartment being centered on said axis and generally axis-symetical.

4,237,914

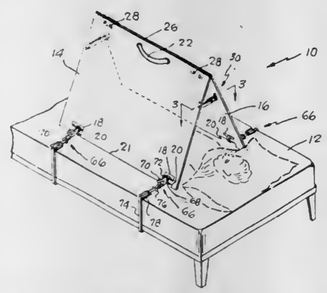
BED TENT

Emmett J. Gantz, 1007 S. 14th St., Burlington, Iowa 52601

Continuation-in-part of Ser. No. 850,496, Nov. 11, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,061

Int. Cl.[3] A45F *1/02, 1/06*

U.S. Cl. 135—4 R **15 Claims**



1. A tent structure, which comprises:

first and second substantially identical tent sides;

means for joining adjacent longitudinal edges of said tent sides so as to form a V-shaped structure;

means connecting said tent sides for adjusting the angle therebetween; and

means for fastening said tent sides to a support structure thereunder;

wherein said tent sides each comprise a substantially rectangular planar rigid board hingedly connected at their upper longitudinal edges;

wherein said means connecting said tent sides comprises first and second elongated rigid members, each of which may be pivotally mounted to the inside surface of said tent sides, said rigid members including pin and aperture means for adjustably securing same to one another, wherein said first rigid member comprises a substantially flat, elongated bar pivotally mounted to the inside wall of one of said boards and including a plurality of apertures formed therein for selectively receiving a retaining bolt, and a locating pin formed therein;

wherein said second rigid member comprises a substantially flat, elongated bar having a plurality of apertures formed near one end thereof for selectively receiving said retaining bolt and said locating pin of said first rigid member, and a slot formed at the other end thereof for securing same to a retaining bolt mounted on the inside wall of the other of said boards.

4,237,915

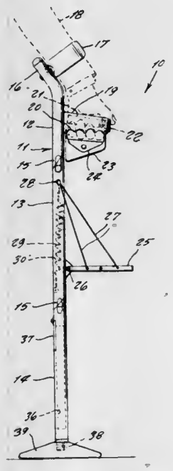
HANDI CRUTCH

Frank Zabielski, c/o George Spector, 3615 Woolworth Building, 233 Broadway, and George Spector, 3615 Woolworth Building, 233 Broadway, both of New York, N.Y. 10007

Filed Jun. 15, 1979, Ser. No. 48,747

Int. Cl.[3] A61H *3/02*

U.S. Cl. 135—68 **4 Claims**



1. A hand crutch, comprising in combination, a foldable shaft comprised of three sections snap locked together by locks, a top section having an arm clip and handle grip, an intermediate section having an extendable shelf, a lower section having a storage compartment therewithin accessible by a pivotable door, and a lower end thereof being interchangably screwed to one of a plurality of flat discs, one of which is comprised of two spirals rotatable respective to each other so to selectively lock or unlock together.

4,237,916

CRUTCHES

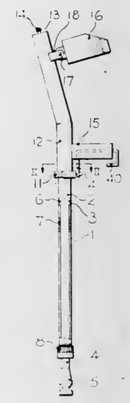
John L. Harrison-Smith, and Henry B. C. Milsom, both of Tauranga, New Zealand, assignors to Fisher & Paykel, Limited, New Zealand

Filed Dec. 28, 1978, Ser. No. 974,115

Claims priority, application New Zealand, Jan. 13, 1978, 186215; Mar. 10, 1978, 186621

Int. Cl.[3] A61H *3/02*

U.S. Cl. 135—69 **6 Claims**



1. A crutch comprising a piston and cylinder arrangement one of the piston and the cylinder thereof having a crutch tip which in use is placed on the ground, a reservoir for working fluid, a working fluid under pressure in said piston and cylinder arrangement and said reservoir, said working fluid being partly a liquid and partly a gas and a valve means manually operable to control the interchange of working fluid between said piston and cylinder arrangement and said reservoir and limb support means whereby a user may in use support himself by use of the crutch, the construction and arrangement being such that by manual manipulation of said valve means and by the application of force the user can cause contraction of the piston and cylinder arrangement with consequent flow of working fluid into said reservoir and by removing such force can allow the piston and cylinder arrangement to extend in length, such contraction and extension being resisted by further manipulation of said valve means.

4,237,917

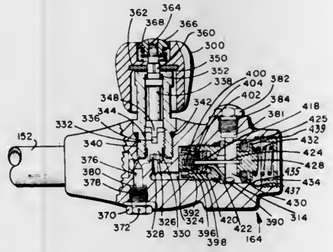
UNDERWATER DIVING SYSTEM

Daniel B. Merrifield, Orange County, Calif., assignor to U.S. Divers Co., Santa Ana, Calif.

Continuation-in-part of Ser. No. 529,410, Dec. 4, 1974, Pat. No. 4,062,356. This application Nov. 2, 1977, Ser. No. 847,725

Int. Cl.[3] G05D *16/10*

U.S. Cl. 137—116.3 **6 Claims**



1. A breathing gas regulator for regulating and valving a high pressure source of gas into a lower outlet pressure zone which can then be further regulated or conducted in any suitable manner from the outlet pressure zone comprising:

a valve body:

means connecting said valve body to said high pressure source;

a valve implaced within said valve body controlling flow communication between said high pressure source and outlet pressure zone;

a torroidal member mounted around a pistion member having one side exposed to ambient pressures and the other side exposed to the outlet pressure;

a linkage connected to said valve at one end and to said piston member at the other end;

passage means between said valve and said torroidal member connected to the outlet pressure zone to which said piston member is exposed for receiving regulated gas through said valve;

spring biasing means for biasing said piston member so that as differential outlet pressures are sensed, said spring with said torroid flexing through its cross section and not substantially sliding in relationship to said regulator wall during its regulation function will act to provide for passage of gas through said valve to which they are connected by said linkage through pressure imbalances across said piston member; and,

wherein said torroid has a configuration such that it can flex away from the adjacent regulator wall to serve the function of a relief valve by allowing the flow of gas to ambient pressure when said outlet pressure zone within said passage exceeds a predetermined value beyond the pressures to be regulated.

4,237,918

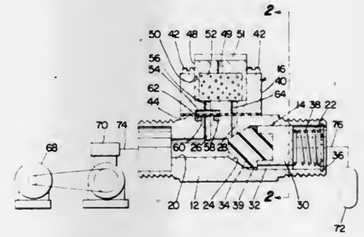
UNLOADER AND CHECK VALVE

Dale F. German, Roxboro, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 21, 1979, Ser. No. 40,803

Int. Cl.[3] G05D *11/00*

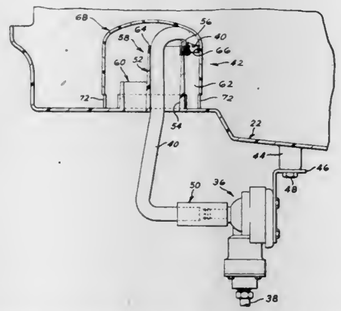
U.S. Cl. 137—116 **7 Claims**



1. A valve comprising a body having an inlet passage and an outlet passage formed therein; check valve means in said body between said inlet and outlet passage and movable between an open position when flow is from said inlet passage to said outlet passage, and a closed position when flow is from said outlet passage to said inlet passage; a control chamber formed in said body; a diaphragm dividing said control chamber into first and second chambers; a first conduit connecting said inlet passage with said first chamber; a second conduit connecting said first chamber to atmosphere; and means defining a valve seat at the intersection of said first conduit and said first chamber, said diaphragm being engageable with said valve seat and movable between a first position closing communication between said first and second conduits in response to opening of said check valve means and a second position opening communication between said first and second conduits in response to closing of said check valve means said valve further including means defining a flow path between said second chamber and said outlet passage including control passage means opened

when said check valve means is open and closed when said check valve means is closed.

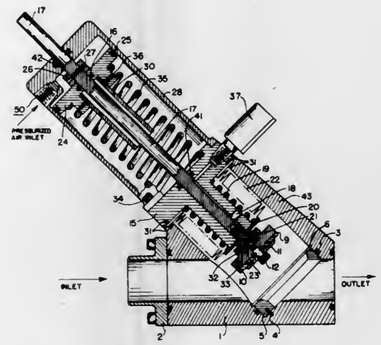
4,237,919
DISHWASHER INLET AIR GAP
John G. Crawford, Louisville, and John B. Taylor, Prospect, both of Ky., assignors to General Electric Company, Louisville, Ky.
Filed Jun. 8, 1979, Ser. No. 46,982
Int. Cl.³ F16K *24/00*
U.S. Cl. 137—216 **15 Claims**



1. An air gap arrangement for providing an antisiphon vacuum breaker interposed in a plumbing supply water line adapted to direct an inflow of water to a tub receiving said inflow of water, said air gap arrangement comprising:
an inlet standpipe extending up from the bottom of said tub;
a fill tube and valve means controllably creating flow from said plumbing water supply line, the terminal end of said fill tube extending into the interior of said tub in close proximity to the top of said inlet standpipe and directing inflow of water into said tub;
a flood level establishing standpipe extending up from the bottom of said tub and having an opening passing through the bottom of said tub, the top of said flood level establishing standpipe at a level below the top of said fill standpipe and the terminal end of said fill tube, whereby the flood level in said tub defined by the top of said flood level standpipe is below the level of said terminal end of said tube, whereby an air gap is maintained between said terminal end of said tube and the level of water in said tub at said flood level.

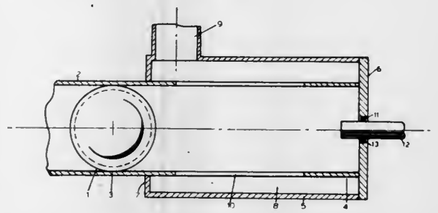
4,237,920
SPRING LOADED PLUG VALVE
Arthur E. Norman, Northridge, Calif., assignor to Torr Vacuum Products, Inc., Van Nuys, Calif.
Filed Jan. 29, 1979, Ser. No. 7,332
Int. Cl.³ F16K *31/122, 31/44*
U.S. Cl. 137—243.3 **7 Claims**

1. A valve assembly including: a housing defining an inlet and an outlet, and further defining a seat positioned within the housing between the inlet and the outlet; a poppet valve mounted in the housing and movable between an open position displaced from said seat and a closed position; a plastic plug member secured to said poppet valve for engaging said seat in sealed relationship therewith when the poppet valve is closed; a piston rod reciprocally movable in said housing; means coupling one end of said piston rod to said poppet valve; a piston slidable on said piston rod; a stop mounted on said piston rod; first resilient means biasing said piston against said stop for moving said piston rod to a first position in said housing and for moving said poppet valve to its open position; means for introducing a pressurized fluid into said housing to move said piston along said piston rod against the bias of said first resilient means and away from said stop to release said piston rod; and second resilient means for moving said piston rod from said first position independently of said piston for forcing said poppet valve to its closed position when said piston rod is released and for maintaining a positive force on said poppet valve in its closed position in the presence of any deformation thereof.



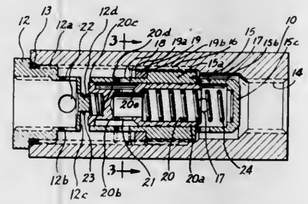
3. The valve assembly defined in claim 1, in which said seat has a tapered surface, and said plastic plug member is configured to have an edge positioned to scrape the tapered surface of the seat as the poppet valve is opened and closed.

4,237,921
LAUNCHING AND ARRESTING A DISCRETE OBJECT IN A PIPELINE
Alan T. J. Hayward, Leamington Spa, England, assignor to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Jul. 19, 1978, Ser. No. 926,114
Claims priority, application United Kingdom, Jul. 20, 1977, 30525/77
Int. Cl.³ G01F *25/00*
U.S. Cl. 137—268 **5 Claims**



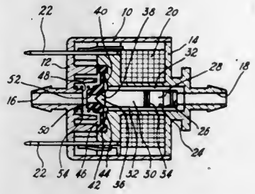
1. A device for arresting and/or launching a discrete body at the end of a pipeline in which the body forms a sliding seal, comprising:
a length of pipe continuous with and opening into said pipeline, and having a closed end remote from said pipeline, the internal cross-section of said length of pipe being substantially the same as that of said pipeline;
a casing forming an annular chamber on the exterior of said length of pipe said annular chamber being of substantially constant cross-sectional area along its length;
an external connection for fluid flow to or from said chamber; and
a plurality of apertures through which said chamber and said length of pipe communicate, said apertures being in the form of a plurality of elongate slots extending in the longitudinal direction of said length of pipe,
said plurality of apertures including at least one aperture for controlling the arrest of said discrete body which aperture is so dimensioned and arranged that, when said discrete body is within said length of pipe, the total area of arrester apertures between said sliding seal and the closed end of said length of pipe is approximately proportional to the square root of the distance from the discrete body to the closed end.

4,237,922
IN-LINE FLOW CONTROL VALVE
Albin Maier, Edinboro, Pa., assignor to Snap-Tite, Inc., Union City, Pa.
Filed Sep. 25, 1978, Ser. No. 945,126
Int. Cl.³ G05D *7/01*
U.S. Cl. 137—493 **4 Claims**



1. A fixed flow in-line regulator adapted to be mounted directly in a hydraulic flow line, comprising a hollow housing, an inlet and exhaust adapter mounted in one end of said housing and said housing being open at its other end, said adapter having an inner end radially spaced from said housing and closed at its axial inner end, there being flow openings in said adapter inner end, a fixed hollow subhousing concentric in a midportion of said housing, said subhousing having a midportion and an end portion, said subhousing joined substantially at its said midportion to said housing with said end portion extending away from said adapter end of said housing, said end portion of said subhousing being closed, said end portion of said subhousing radially spaced from said housing and having a first flow opening means therein, said subhousing having a cylindrical portion extending toward said adapter, there being a control flow opening of fixed size in said cylindrical portion, an annular flow control ring axially movable between surrounding parts of said cylindrical portion and said housing, said ring having a threaded connection with one of said surrounding parts and having a sliding fit upon the other of said parts for movement toward and away from adjustable positions over said control flow opening, a hollow spool piston concentric in said subhousing and extending along its midportion and cylindrical portion, the end of said spool piston being normally closed across said cylindrical portion at one end and being open at its opposite end, there being second flow opening means extending radially through said spool piston near its closed end, compression spring means held between said closed subhousing end and said spool piston, said spool piston being slidable longitudinally of said subhousing to cause an annular opening between said spool piston closed end and said cylindrical portion of said subhousing, and a compression spring held between said adapter and said spool piston, whereby for regulated flow the hydraulic liquid will flow into one end of said housing through said adapter and through said control flow opening and through said second flow opening means and through said hollow spool piston and through said first flow opening means and through said housing open end, and reverse flow would be in the opposite directions through said first and second flow opening means sliding said spool piston toward said adapter end causing said annular opening for free flow on through the adapter and out of the housing.

4,237,923
SOLENOID NON RETURN VALVE
Pierre Pressaco, Clichy, France, assignor to Societe Anonyme D.B.A., Paris, France
Filed Aug. 23, 1978, Ser. No. 936,154
Claims priority, application France, Sep. 9, 1977, 77 27267
Int. Cl.³ F16K *31/02*
U.S. Cl. 137—495 **18 Claims**

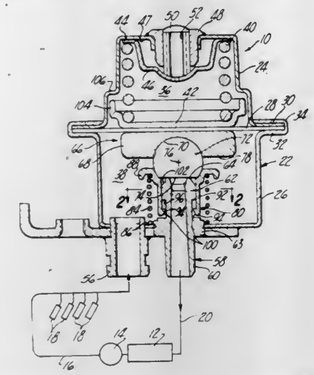


1. A solenoid valve comprising a housing having at least one inlet port and at least one outlet port which communicate by way of a first passage containing a poppet member movable in response to operation of an electromagnetic device to open or close said passage, pressure differential responsive piston means defining in said passage an inlet chamber communicating with the inlet port and an outlet chamber communicating with the outlet port, said inlet and outlet chambers communicating via a second passage defined in said piston means, a valve seat defined in the second passage of said piston means being normally urged into fluid-tight engagement with the poppet member by resilient means, the poppet member being adapted to move between a first position by fluid pressure in the inlet which urges the piston means on to abutment means provided in the housing against the action of the resilient means, so as to prevent any communication between the inlet and outlet ports, said electromagnetic device retains the poppet member in a fixed second position, said piston means being adjacent said abutment means and is responsive to the pressure differential prevailing between said inlet and outlet ports so as to permit communication from the inlet port towards the outlet port when the pressure level at the inlet port is greater than the pressure level at the outlet port by an amount sufficient to overcome the force exerted by said resilient means and to prevent communication in the opposite direction.

4,237,924
FUEL PRESSURE REGULATOR
Benjamin C. Benjamin, Flint, and Charles A. Detweiler, Durand, both of Mich., assignors to Schmelzer Corporation, Durand, Mich.
Filed Dec. 5, 1978, Ser. No. 966,615
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—510 **4 Claims**

1. A pressure regulator including a housing, a diaphragm in said housing forming a chamber at one side thereof, an inlet port and a relief port communicating with said chamber, a valve seat associated with said relief port, a valve assembly engageable with said seat to prevent communication between said ports, said valve assembly including a socket member movable with said diaphragm, a closure element in the form of a segmented sphere having a flat valve seat engaging surface disposed to one side of the center of said sphere a distance less than the sphere radius, said sphere being disposed in said socket for movement about the center of said sphere upon engagement of said flat surface with said seat, and a spring biasing said diaphragm and valve assembly toward said seat in opposition to pressure at said inlet port, a retainer member engaging said sphere, biasing means acting between said housing and said retainer to hold said sphere in said socket member and to urge said seat engaging surface out of engagement with

said valve seat, said retainer member having fingers engageable with an interior portion of said housing to limit movement of



and to maintain said biasing means confined relative to said housing during assembly of said pressure regulator.

4,237,925

ANESTHESIA APPARATUS

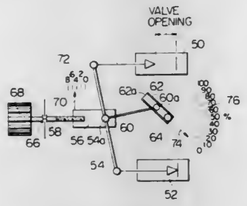
Yoshihisa Urushida, Kodaira, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1978, Ser. No. 869,183

Claims priority, application Japan, Jan. 18, 1977, 52/4247; Oct. 7, 1977, 52/120607

Int. Cl.³ A61M *17/00*; F16K *19/00*

U.S. Cl. 137—552 **23 Claims**



1. An anesthesia apparatus for providing a mixture of first and second fluids, comprising:

a mixing chamber for mixing said first and second fluids;

first and second flow meters communicating with said mixing chamber;

first means for supplying said first fluid to said mixing chamber through said first flow meter;

second means for supplying said second fluid to said mixing chamber through said second flow meter;

first and second flow rate adjustment valve means disposed between said first flow meter and said first means and between said second flow meter and said second means, respectively, each of said first and second flow rate adjustment valve means including orifice means and a valve element movable relative to said orifice means and having a predetermined shape to vary the effective cross sectional area between said orifice means and said valve element substantially linearly in proportion to the amount of movement of said valve element;

actuating means connected to the valve elements of said flow rate adjustment valve means for actuating said valve elements relative to respective ones of said orifice means;

compensating means operatively connected to said actuating means and operative to set a selected angular position of said actuating means with respect to said valve elements of said flow rate adjustment valve means for thereby determining the relative proportions of said first and second fluids passing through said first and second flow rate adjustment valves, respectively; and

feed means for feeding said actuating means towards directions to vary the total rate of flow of said first and second fluids while maintaining said selected angular position to provide the relative proportions of said first and second fluids;

said actuating means comprising a feed lever, a connecting lever driven by said compensating means to be rotatable about an axis of said feed lever by which said connecting lever assumes said selected angular position, and first and second actuating shafts extending from said connecting lever and having ball members engaging with said flow rate adjustment valve means, respectively;

said compensating means comprising first cam means, and second cam means actuated by said first cam means to assume a predetermined angular position for guiding said actuating means so as to permit said valve means to move while maintaining said selected angular position.

4,237,926

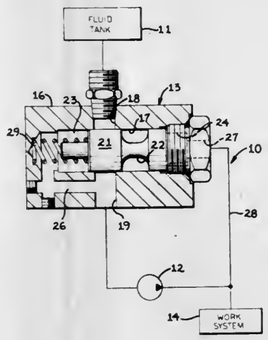
FLUID FLOW SHUTOFF VALVE

George W. Walker, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 29, 1979, Ser. No. 18,951

Int. Cl.³ B60K *15/08*

U.S. Cl. 137—565 **2 Claims**



1. A fluid flow shutoff valve (**13**) for positioning within a fluid system (**10**) having a fluid tank (**11**) and a pump (**12**), comprising:

a body (**16**) having a bore (**17**) and an inlet port (**18**) and an outlet port (**19**) in communication with said bore (**17**);

a valve spool (**21**) slidably positioned within the bore (**17**) and movable between a first position at which the inlet port (**18**) is blocked from communication with the outlet port (**19**) and a second position at which the inlet port (**18**) is in communication with outlet port (**19**);

said valve spool (**21**) and said body (**16**) defining first and second chambers (**23,24**) at opposite ends of said valve spool;

a passage (**26**) connecting the outlet port (**19**) to the first chamber (**23**);

a pressure port (**27**) connected to the second chamber (**24**);

a spring (**29**) positioned within the first chamber (**23**) and resiliently urging the valve spool (**21**) to the first position, said spring (**29**) having sufficient resiliency to be overcome by the force exerted on the valve spool (**21**) in response to a partial vacuum being created in said first chamber (**23**); and

wherein said inlet port (**18**) is connected to said fluid tank (**11**) and said outlet port (**19**) is connected to the pump (**12**) and including means (**28**) for directing pressurized fluid from the pump (**12**) to the pressure port (**27**) and hence into second chamber (**24**).

4,237,927

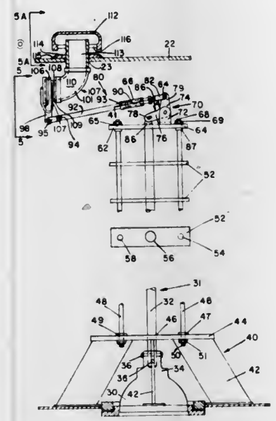
AUTOMATIC AIR INLET AND OUTLET VALVE ASSEMBLY

Patricia S. Stoller, Plymouth, Mich.; John A. Krug, Jr., St. Charles, and Gerald D. Garner, Florissant, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation of Ser. No. 808,916, Jun. 22, 1977, abandoned. This application May 3, 1979, Ser. No. 35,862

Int. Cl.³ F16K *24/00*

U.S. Cl. 137—587 **3 Claims**



1. An automatic air inlet and outlet valve assembly for use in a railway tank car which automatically opens and closes when a bottom operable tank lading valve is opened and closed comprising: an air chamber located adjacent the top of the tank; an air valve movable between open and closed position relative to a chamber opening in said chamber, opening and closing fluid communication between said chamber and the interior of the tank; said chamber being in fluid communication by conduit means with an opening in the top of the tank; said air valve being automatically opened when said lading valve opens, and closed when said lading valve closes, by air valve linkage means including an operating shaft which extends from the lading valve up through the tank to the air valve; said shaft moving upwardly when said lading valve is opened and downwardly when lading valve is closed; air valve linkage support means attached to the bottom of the tank; said air valve being laterally spaced from said shaft, and said air valve linkage means including a laterally extending linkage which opens and closes said air valve; said laterally extending linkage including telescoping means whereby one portion of said laterally extending linkage will telescope relative to another portion of said laterally extending linkage means, whereby when the top of the tank moves downwardly relative to the tank bottom when said tank car is impacted, said laterally extending linkage means will telescope, said air valve will not open, and the top of the tank will not strike said air valve or said air valve linkage means.

4,237,928

LOW PROFILE TAPERED SUMP FOR RAILWAY TANK CARS

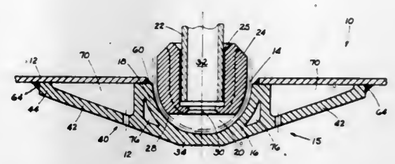
Robert C. Messersmith, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed May 29, 1979, Ser. No. 42,832

Int. Cl.³ B65D *87/24*

U.S. Cl. 137—590 **6 Claims**

1. A low profile tank car siphon pipe sump comprising: a sump portion located below an opening in the tank bottom having a lining located on said tank bottom and extending through said sump; said sump extending below said tank bottom; said sump portion including a sump opening sufficiently deep to readily unload through a siphon pipe the remaining portion of the lading in the tank; sufficiently deep to enable said siphon pipe to telescope therein when the tank top moves downwardly relative to said tank bottom during coupling impacts, and also sufficiently wide to enable a rubber spider siphon pipe guide normally used in rubber lined tank cars to position and anchor itself in said sump; and a tapered portion extending from the bottom of said sump portion exteriorly of



said tank bottom and longitudinally of said tank in both directions; said tapered portion being tapered upwardly from said sump portion to an end portion engaging said bottom of said tank; said tapered portion also extending a short distance transversely of said tank; said low profile sump being rigidly attached to said tank bottom adjacent said sump opening and at said end portion by welding; and void spaces in said tapered portion above said tapered wall.

4,237,929

PIPE MANIFOLD, ESPECIALLY FOR SUPPLY AND RETURN OF HOT WATER HEATERS

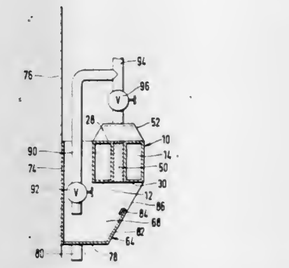
Ernst Sauter, Ebingerstr. 17, D-7475 Messstetten, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 941,764

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741727

Int. Cl.³ F24H *9/12*

U.S. Cl. 137—596 **18 Claims**



1. A pipe manifold, especially for use with hot water heating systems, comprising:

a single manifold housing defining a substantially closed elongated box having sides defining walls;

a dividing wall, disposed within said housing so as to divide the interior volume of said housing into an inlet chamber and a return flow chamber;

said dividing wall having edges that meet opposed walls of said housing;

a plurality of pipe headers mounted flush on said housing over both chambers, each serving to communicate with one of said chambers, and there being defined on at least one said wall of said housing adjacent to said edges of said dividing wall a plurality of longitudinally spaced openings located on both sides of said edge, for permitting communication between the interior of said housing and said pipe headers whereby said pipe headers being flush on said housing do not constrict flow cross section nor raise manufacturing costs.

4,237,930

SAFETY VALVE

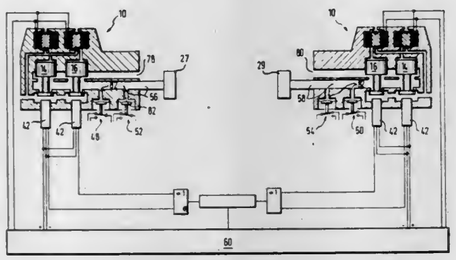
Erich Herion, Stuttgart, and Erich Ruchser, Kernen, both of Fed. Rep. of Germany, assignors to Technomatic AG, Aesch, Switzerland

Filed Oct. 11, 1978, Ser. No. 950,632

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750895

Int. Cl.³ F15B *13/043, 13/08, 20/00*

U.S. Cl. 137—596.16 **4 Claims**



1. A safety valve arrangement for controlling a consumer driven by pressurized fluid, in particular a control device of a press, the safety valve arrangement including a safety valve comprising a valve housing; two switching valves in the valve housing connected to act in parallel; a connecting conduit provided between the safety valve and the consumer for permitting pressurized fluid to be transmitted to the consumer and for permitting pressurized fluid to discharge from the consumer; means controlling the settings of the two switching valves; and shut-off means operative for generating in response to malfunction a shut-off signal commanding that the consumer by shut-off, the shut-off means comprising pressure-responsive switch means coupled to said connecting conduit for sensing at least one predetermined pressure value in the fluid transmitted through said connecting conduit, said pressure-responsive switch means comprising a first pressure-responsive switch operative for generating a signal when despite the fact that the switching valves are in the closed setting pressure is building up intermediate the safety valve and the consumer, and a second pressure-responsive switch operative for generating a signal when despite the fact that the switching valves are in the open setting the pressure intermediate the safety valve and the consumer is lower than a predetermined value.

4,237,931

THREE-WAY VALVE

Gilad Rafaely, Givat Chaim - Ihud, Israel, assignor to Givat Chaim-Ihud, Hakvutzot Vehakibbutzim Kvutzat Poalim Lehityashvut Shitufit B.M., Kibbutz Givat Chaim-Ihud, Israel

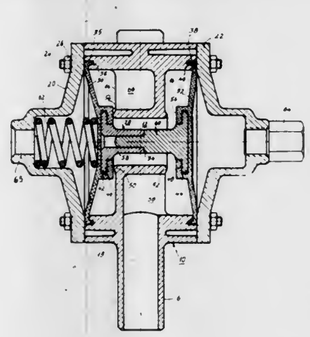
Filed Jan. 24, 1979, Ser. No. 6,247

Claims priority, application Israel, Jan. 30, 1978, 53914

Int. Cl.³ F16K *31/128, 11/02*

U.S. Cl. 137—625.5 **5 Claims**

1. A three-way control valve characterized in that it includes a body member formed with an axial bore extending through its opposite faces, and with a peripheral wall circumscribing and extending axially beyond said opposite faces; a pair of end walls secured to the opposite ends of the peripheral wall and spaced thereby from said opposite faces to define therewith a first and second space; a valve assembly displaceable between two positions and including a first valve member disposed in said first space, a second valve member disposed in said second space, and a connecting stem passing through said axial bore and carrying at its opposite ends the two valve members such that in one position of the valve assembly the first valve member opens the end of the axial bore in one face of the body member and the second valve member closes the end of the axial bore in the opposed face thereof, and in the other position of the valve assembly the first valve member closes the end of the axial bore in said one face of the body member and the second valve member opens the end of the axial bore in said opposed face thereof; said first and second valve members including first and second flexible diaphragms fixed at their outer peripheries between said peripheral and end walls and secured at their centers to said connecting stem; said body member being further formed with a first port, a second port, a third port, a first passageway connecting the first port directly to said axial bore, a second passageway connecting the second port to said axial bore via said first space and the end of the axial bore in said one face of the body member, and a third passageway connecting the third port to said axial bore via said second space and the end of the axial bore in said opposed face of the body member; said first, second and third ports being formed along radially-extending, angularly spaced axes through the peripheral wall of the body member, said first passageway comprising a radial bore extending continuously from said first port to said axial bore, said second passageway comprising a recess formed in said one face of the body member at a first angular location thereof, and extending axially from said second port into said first space; said third passageway comprising another recess formed in said opposed face of the body member at a second angular location thereof angularly spaced from said first recess and extending axially from said third port into said second space; and displacing means for selectively displacing said valve assembly either to said one position wherein said valve assembly establishes communication between said first and second ports, or to said other position wherein said valve assembly establishes communication between said first and third ports; said displacing means comprising a spring in said first space interposed between said one end wall and said first valve member and biassing the latter to close its end of the axial bore and the second valve member to open its end of the axial bore, and a control port for introducing pressurized fluid into said second space between said second end wall and said second valve member for displacing the latter to close its end of the axial bore and the first valve member to open its end of the axial bore.



4,237,932

CONTROL ARRANGEMENT FOR A DAMPER

Gilbert H. Johnson, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 733,991, Nov. 20, 1976, abandoned. This application Jul. 13, 1979, Ser. No. 57,287

Int. Cl.³ F16K *31/02*

U.S. Cl. 137—624.18 **1 Claim**

1. A damper control arrangement for controlling the movement of a damper relative to a flow-through orifice, the damper control arrangement comprising:

damper moving means operatively associated with said damper for moving said damper relative to said orifice;

actuating means operable to activate said damper moving means for movement of said damper blade from one position to another, said actuating means including a first and a second solenoid for controlling said damper blade moving means actuated in response to a first control circuit and a second control circuit wherein:

(1) said first control circuit comprises two branch circuits,

(a) the first branch circuit comprising, in series, a three-way control switch closed across a first contact, a normally closed contact switch, a normally open contact relay switch and a first solenoid, and a timing device in parallel with the normally closed contact switch; and

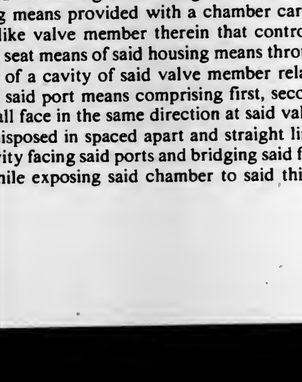
(b) the second branch circuit comprising, in series, the three-way control switch closed across said first contact, a normally open limit switch and a contact relay;

with the control switch closed across the first contact and the normally open limit switch closed, the contact relay is energized closing the normally open contact relay switch and the normally closed contact switch remains in its normally closed position resulting in the electrical energization of the first solenoid and the timing element;

(2) said control circuit comprises a first solenoid actuating circuit for energizing the first solenoid and a second solenoid actuating circuit for energizing the second solenoid wherein:

(a) the first solenoid actuating circuit comprises, in series, the first solenoid and the three-way control switch closed across a second contact; and,

(b) the second solenoid actuating circuit comprises, in series, the second solenoid and the three-way control switch closed across a third contact; the three-way control switch concurrently with the closure of the three-way control switch across the second contact.



4,237,933

REVERSING VALVE CONSTRUCTION AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

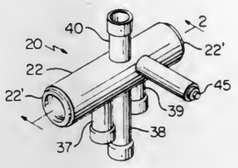
Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 825,956, Aug. 19, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,741

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—625.63 **16 Claims**

1. In a method of making a reversing valve construction having a housing means provided with a chamber carrying a movable piston-like valve member therein that controls port means of a valve seat means of said housing means through the relative position of a cavity of said valve member relative to said port means, said port means comprising first, second and third ports that all face in the same direction at said valve seat means and are disposed in spaced apart and straight line relation and said cavity facing said ports and bridging said first and second ports while exposing said chamber to said third port when said valve member is in one position thereof and bridging said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, the improvement comprising the steps of disposing a flexible annular sealing member to be movable between said valve member and said valve seat means and surrounding said cavity to seal said cavity to said valve seat means while permitting sliding movement therebetween, and operatively associating biasing means with said valve member and said flexible sealing member to urge and flex said sealing member relative to said valve member and into sealing engagement with said valve seat means so as to tend to sealingly conform said flexible sealing member to the contour of said valve seat means.



4,237,934

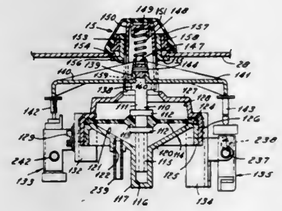
VACUUM FLUSH WATER CLOSET

Charles E. Gregory, Anchorville; Michael Brian, Orchard Lake; Jerald F. Thomas, Utica, and James F. Cameron, Milford, all of Mich., assignors to Jered Brown Brothers, Inc., Troy, Mich.

Division of Ser. No. 804,234, Jun. 6, 1977, Pat. No. 4,144,903, which is a division of Ser. No. 435,511, Jan. 22, 1974, Pat. No. 4,041,554. This application Jul. 28, 1978, Ser. No. 928,879

Int. Cl.³ F16K *11/00*

U.S. Cl. 137—637 **1 Claim**



1. A fluid flow activation switch, comprising:

(a) a housing having a cylindrical chamber open at one end to the atmosphere and closed at the other end;

(b) a circular flexible diaphragm member disposed in said cylindrical chamber and having a circular periphery sealingly fixed to the housing to divide said cylindrical chamber into one portion open to the atmosphere and one portion sealed from the atmosphere;

(c) a vacuum line is connected to said cylindrical chamber sealed portion to admit vacuum to provide a selective holding action on the operating shaft;

(d) a valve operating member having an operating shaft movably mounted in said cylindrical chamber in said housing, and attached to said diaphragm;

(e) a push button member;

(f) spring means interconnecting said push button member and said valve operating member;

(g) a pair of normally closed, two-way vacuum flow control valves mounted on said housing;

(h) a bridge member fixedly mounted on said operating shaft and having a pair of bridge arms attached thereto;

(i) each of said bridge arms having a valve operator mounted thereon for operative engagement with one of said flow control valves for operating the same, whereby when the

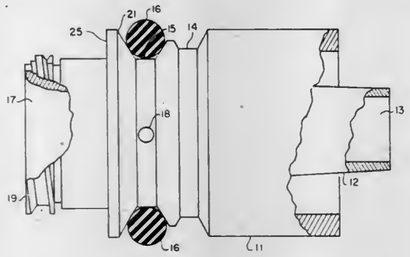
push button member is depressed the operating shaft is moved, from an initial position, inwardly of said housing into an advanced position so as to flex said diaphragm member into said cylindrical chamber sealed portion, and the bridge member and valve operators are moved to operate said flow control valves from normally closed positions to open positions, and vacuum admitted through said vacuum line into said cylindrical chamber sealed portion holds the diaphragm and operating shaft in said advanced position to hold the flow control valves in said open positions, and when the vacuum is releasing from said cylindrical chamber sealed portion, the diaphragm member will return the operating shaft to its initial position and the bridge and valve operators will return the flow control valves to their normally closed positions.

4,237,935

HYDRAULIC PRESSURE RELIEF VALVE AND FLUID ISOLATOR

Julian Delmonte, La Canada; M. Janet Kirkwood, Montebello, and Douglas G. Ritchie, Pasadena, all of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 14, 1978, Ser. No. 969,609
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—860 **1 Claim**



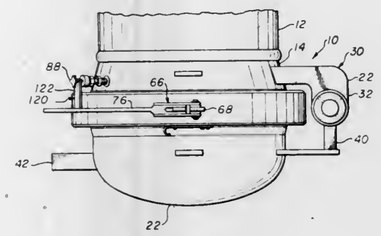
1. A hydraulic pressure release valve and isolator, comprising:
(a) a body, having a passageway extending completely through said body,
(b) a flexible diaphram secured to said body within said passageway and extending completely across said passageway in a generally transversal direction to prevent flow through said passageway,
(c) a port extending from the outside of said body to said passageway, located to one side of said diaphram,
(d) means for closing said port below a specified pressure within said port and removing said closure above said specified pressure,
said body being fabricated of electrically insulating material and further comprises a threaded end about one end of said passageway to accept a sensing device and a hollow conical projection at the other end of said passageway to accept a flexible tube, said conical projection being located on the same side of said diaphram as said port to transmit pressure from within a tube connected to said conical portion through said diaphram to said sensing device,
said means for closing said port is an "O" ring of resilient material surrounding said body and covering said port, and
said body contains a first groove encircling the body and passing through the opening of said port to hold said "O" ring in place over said port opening and said body contains a second groove encircling the body adjacent said first groove to hold said "O" ring away from said port and thereby uncover said port.

4,237,936

PIG TRAP CLOSURE

Jack D. Lollis, and David J. Hicks, both of Tulsa, Okla., assignors to T. D. Williamson Inc., Tulsa, Okla.

Filed May 30, 1978, Ser. No. 910,432
Int. Cl.³ F16L *55/10*; G01M *3/00*
U.S. Cl. 138—90 **6 Claims**



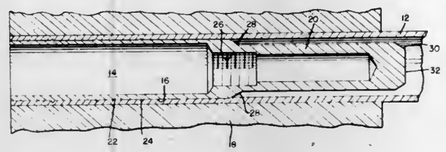
1. A pig trap closure, comprising:
a collar adapted to be attached to the end of a pipe which is to receive a pig;
a door pivotally connected to the collar for opening and closing the end of the pipe;
means for clamping the door to the collar including semicircular sections forming a clamping ring around the pipe, lips being provided on the inner surface of the ring for engaging with portions on the door and collar, one end of the sections being hinged together and the other ends being movable together for clamping the door to the collar when the lips engage the portions on the door and collar and apart for unclamping the door from the collar;
a latching mechanism for moving the other ends together and apart including a mechanical linkage pivotally connected to each of these ends and a handle attached to the linkage for controlling movement of these ends between opened and closed positions;
fluid energized sealing means provided on the collar for preventing communication between the interior of the pipe and the atmosphere when the door is clamped to the collar;
a testing valve for indicating the presence of pressurized fluid in the pipe including
a housing connected to the collar having an inlet passage in communication with the interior of the pipe,
an outlet passage in communication with the inlet passage and the atmosphere,
a seat within the housing intermediate of the inlet and outlet passages,
a ball disposed within the housing for engaging with the seat to prevent communication between the inlet and outlet passages, and
a stem assembly for urging the ball toward the seat having
a push rod extending into the housing for contacting the ball and threads for engaging mating threads on the housing to move the push rod toward and away from the seat, the presence of pressurized fluid being indicated by fluid flowing through the housing into the atmosphere when the push rod is moved away from the seat; and
means connecting the testing valve to the handle for preventing movement of the handle to open the door until after the push rod is moved away from the seat and the stem assembly removed from the housing to test for the presence of pressurized fluid within the pipe.

4,237,937

DEVICE FOR SEALING DAMAGED TUBULAR MEMBERS

Robert D. Healy, Sr., Chesterfield, Mass., assignor to Quabbin Industries, Inc., Westover, Mass.

Filed Mar. 12, 1979, Ser. No. 19,801
Int. Cl.³ F16L *55/10*
U.S. Cl. 138—97 **5 Claims**



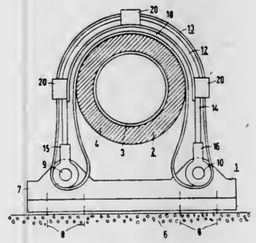
1. In a tubular member having a sealing device disposed securely within an open section thereof, the improvement wherein the sealing device comprising in combination:
(A) a hollow sleeve dimensioned and configurated to approximate the inner diameter of the tubular member to be sealed;
(B) a projecting cylindrically configurated member having an outer diameter smaller than the outer diameter of the hollow sleeve and integrally disposed to the outer diameter hollow sleeve by an inwardly tapered flange; and
(C) at least one circumferentially disposed rib positioned about the hollow sleeve for contact with the inner diameter of the tubular member;
(D) said hollow sleeve containing a retraction means disposed within the tapered flange portion of the device.

4,237,938

ENERGY ABSORBING DEVICE FOR PIPELINES

Josef Jedlicka, Dietzenbach, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,453
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757076
Int. Cl.³ F16L *3/12*
U.S. Cl. 138—107 **6 Claims**



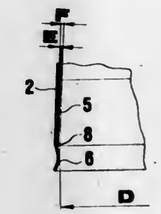
1. Pipeline restraining device including a loop-shaped holder surrounding a pipe of the pipeline and being of such dimension and material as to be plastically deformed under the action of the force with which the pipe is held, comprising a further holder disposed substantially parallel to the direction of application of the holding force and being longer than the plastically deformable holder and being independently moveable with respect thereto, said further holder being of such dimension and material as to be elastically deformed under the action of the holding force.

4,237,939

STACKABLE TUBE BODY HAVING A LAYER OF SEALANT MATERIAL

Werner Schwarz, Reinach, Switzerland, assignor to H. Obrist & Co. AG, Reinach, Switzerland

Filed Mar. 12, 1979, Ser. No. 19,626
Claims priority, application Switzerland, Mar. 10, 1978, 2621/78
Int. Cl.³ B65D *35/00*
U.S. Cl. 138—109 **6 Claims**



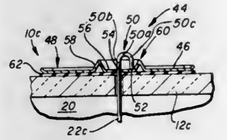
1. A stackable tapered tube body having an open end, and a sealant material for sealingly closing said open end, at an annular sealant section on the inside of the tube body wall, the material of said tube body wall in at least one relatively minor portion of the body wall being deformed inwardly towards the axis of the tube to protect the sealant material when stacking the tubes, the inside diameter of this deformed portion being smaller than the inside diameter of the end region of said sealant layer adjacent said deformed portion, and smaller than the inside diameter of that part of the relatively major portion of the tube body which immediately adjoins said deformed portion on the side thereof away from said open end.

4,237,940

APPARATUS FOR REINFORCING A DUCT

Ray G. Brooks, Irving, Tex., assignor to Malco Products, Inc., Annandale, Minn.

Filed Jan. 5, 1979, Ser. No. 1,177
Int. Cl.³ F16L *9/14*
U.S. Cl. 138—172 **5 Claims**

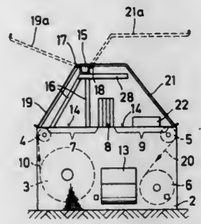


1. A duct reinforcement comprising, in combination:
two support washers placed on the outside of the duct, one of the support washers on each of two opposing sides of the duct so that the two support washers are substantially aligned with each other with the outer face of each support washer facing away from the duct; and
a stiff wire extending through the sides of the duct and through both support washers; and
wherein the improvement comprises two hooks, one hook protruding beyond each support washer on the outside of the duct and each hook having a bight and substantially parallel legs with one leg integrally joined to the wire and with the tip of the other leg substantially opposed to the outer face of the respective support washer.

4,237,941
LOOM WITH COVER ARRANGEMENT

Hartmann Bader, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 27, 1978, Ser. No. 890,795
Claims priority, application Switzerland, Apr. 21, 1977, 004946/77
Int. Cl.[2] D03J *1/00*
U.S. Cl. 139—1 C 7 Claims

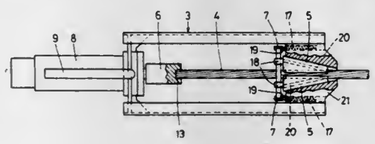


1. A loom comprising a first deflection beam located at the side of the warp ends, a second deflection beam located at the side of the woven cloth, said first and second deflection beams essentially bounding a weaving plane, a cover arrangement provided for the loom, said cover arrangement extending only above the weaving plane essentially from the first deflection beam at the side of the warp ends to the second deflection beam at the side of the woven cloth, shed forming mechanism for forming a front shed and a rear shed, a longitudinal beam arranged above the rear shed, said rear shed extending from the first deflection beam to said shed forming mechanism, said front shed extending from the shed forming mechanism to the second deflection beam, said cover arrangement comprising at least one flap member for covering the rear shed, at least one flap member for covering the front shed, means for hingedly connecting said two flap members at said longitudinal beam, said flap members can be moved between a closed position covering the related rear shed and front shed and an opened position, and means for arranging said longitudinal beam together with the thereat hingedly connected flap members when in their open position for back-and-forth movement in the direction of the warp and substantially parallel to the weaving plane.

4,237,942
APPARATUS TO PRODUCE AN ANCHOR ON A TENDON TWISTED OF SEVERAL STEEL WIRES

Hans Dietrich, Gerenstrasse 12, Bolligen, Switzerland (3065)

Division of Ser. No. 645,993, Jan. 2, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,457
Claims priority, application Switzerland, Nov. 21, 1975, 15141/75
Int. Cl.[3] B21F *5/00*
U.S. Cl. 140—105 3 Claims

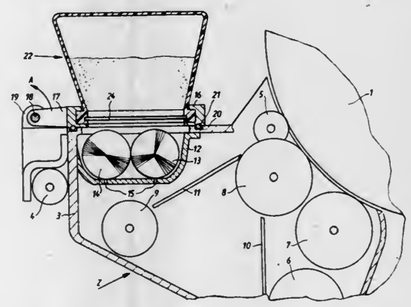


1. A device for producing an anchor on a tendon twisted of a number of steel wires intended to be anchored in a hardening agent capable of being poured, comprising a frame having a press including a press piston operatively attached to the frame, means for seizing the tendon on two arbitrary places spaced from each other, wherein a first of said means is attached to the press piston and shiftable therewith to exert an axial load on the tendon, a second of said means is attached to said frame, and whereby said first of said means is a head piece having a bore for receiving the end part of the tendon, said bore having the same diameter as that of the end part of the tendon, said bore being substantially as deep as the length of its diameter.

4,237,943
TUNER SUPPLY FOR ELECTROSTATIC COPIERS

Heinrich Ermel, Munich; Franz Fruth, Unterpfaffenhofen, and Fritz Rau, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 20, 1979, Ser. No. 31,867
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 7812275[U]
Int. Cl.[3] B65B *1/06*
U.S. Cl. 141—284 2 Claims



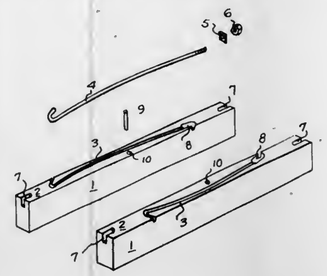
1. In an electrostatic copier, a combination comprising a developer device having a housing provided with an opening; a toner supply container having an open side with which said opening is juxtaposed when said container is installed on said housing; cooperating means on said housing and container for installing the container on said housing with said open side facing downwardly, for gravity movement of the toner through said open side of the container into said housing; a closure on said container for selectively blocking and unblocking said open side at the will of a user, said closure including a closure member slidably mounted on said container so as to respectively extend across, and be withdrawn from, said open side; and a container mounting element on which said container is installed, said mounting element being connected to said housing for movement between an operating position in which it holds said container with said open side directly proximal to said opening, and a container installing and removing position in which it holds said container with said open side thereof at least slightly spaced from said opening, said mounting element including mounting means mounting it on said housing for tilting movement between said positions about a pivot axis.

4,237,944
METHOD FOR FORMING THE NECK OF A GUITAR

Charles H. Todd, III, and Hartley D. Peavey, both of Meridian, Miss., assignors to Peavey Electronics Corporation, Meridan, Miss.

Filed Jan. 17, 1978, Ser. No. 870,077
Int. Cl.[3] B27M *1/08*
U.S. Cl. 144—316 7 Claims

1. A method for assembling a guitar neck comprising: providing a pair of symmetrical uncarved blanks from which a guitar neck is to be curved, said blanks having inner and outer faces thereon respectively, routing a groove on each of said inner faces of each blank in a complementally associated relationship, disposing a torsion rod having extremities within one of said grooves, fastening together the inner faces of each blank one to the other with fastening means to form a stock article

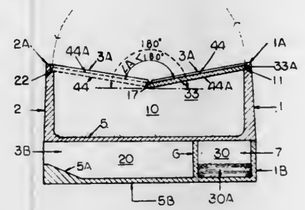


having said torsion rod disposed internally within said grooves, and carving said stock article to the configuration of a guitar neck.

4,237,945
APPARATUS AND METHOD FOR ABRADING PENCIL LEAD

Ting-Fu Peng, 6315 Fair Oaks Ave., Baltimore, Md. 21214

Filed Jun. 16, 1978, Ser. No. 916,230
Int. Cl.[3] B43L *23/00*
U.S. Cl. 145—3.32 3 Claims



1. A pencil lead abrading device, comprising two major parts—a receptacle and an abrader, and is further defined as follows:

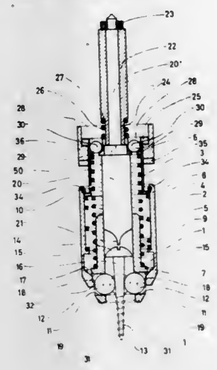
the said receptacle with an open top is defined by sidewalls and a bottom, whereupon, two pivotal receiving means are formed at middle points of two opposite side rims of the said receptacle in order to receive two pivotal means of the said abrader, and each of the said side rims decline from two ends toward middle point of the said side rim to form a valley and to define an angle less than 180°;

the said abrader being in the form of plate with abrasive surfaces on both sides of the said plate, and possessing two pivotal means at one end of said plate, and each said pivotal means fits into each said pivotal receiving means of said side rims; the other end of the said abrader rests on the end rim of said receptcale, therefore, by turning one of the said pivotal means or pressing against the said end of the said abrader with pencil point to flip the said abrader, the said abrader will rotate from said end rim to the other end rim of the said receptacle.

4,237,946
CHUCK FOR HOLDING AND DRIVING FASTENERS, SUCH AS SCREWS OR NAILS

Kajetan J. Leitner, Am Winacker 18, 8170 Bad Tölz, Fed. Rep. of Germany

Continuation of Ser. No. 797,394, May 16, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,321
Claims priority, application Fed. Rep. of Germany, May 17, 1976, 2621932
Int. Cl.[3] B25B *23/10*
U.S. Cl. 81/429 2 Claims



1. A chuck for holding and driving fasteners comprising

a bearing sleeve (1) having a forward end portion (31),

a plurality of apertures (11) in said bearing sleeve (1) adjacent said forward end portion (31),

a plurality of clamping balls (12), one for each of said apertures (11),

a clamping sleeve (2) having a front end (32) and a rear end (34), said clamping sleeve (2) surrounding said bearing sleeve (1) and being longitudinally displaceable with respect thereto,

abutting means (10) on said clamping sleeve (2) adjacent said rear end (34),

an abutment sleeve (3) slidably disposed within said clamping sleeve (2) and having a collar end (8) adapted to engage said abutting means (10) to limit forward movement of said clamping sleeve (2),

a first compression spring (5) mounted in compression between said abutment sleeve (3) and said clamping sleeve (2) for normally biasing said clamping sleeve (2) forward with respect to said abutment sleeve (3),

a second compression spring (4) mounted inside said first compression spring (5) in compression between said bearing sleeve (1) and said abutment sleeve (3) for normally biasing said bearing sleeve (1) forward with respect to said abutment sleeve (3),

a clamping taper (18) in said clamping sleeve (2) adjacent said front end (32) adapted to force the clamping balls (12) inwardly toward each other into a clamping position to clamp a shank (16) of a fastener (13) therebetween as said bearing sleeve (1) is urged forward by said second spring (4) while said clamping sleeve (2) is prevented from moving forward by said abutting means (10),

a free space (15) in said clamping sleeve (2) adjacent said clamping taper (18) adapted to allow said balls (12) to move outwardly away from each other into a non-clamping position, thereby releasing the shank (16) of the fastener (13), when said bearing sleeve (1) is moved rearwardly against the bias of said second spring (4) into alignment against a workpiece with said bearing sleeve (1),

a screw driving shaft (20) having a blade end (21) slidably and rotatably disposed in said bearing sleeve (1) and a driven end (50) affixed to said abutment sleeve (3) for unitary rotation therewith,

a drive sleeve (22) for rotating said screw driving shaft (20), and

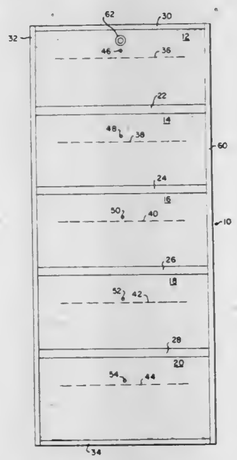
a force-engaging connection between said drive sleeve (22) and said screw driving shaft (20), said force-engaging connection including uncoupling means adapted to terminate automatically rotation of said screw driving shaft (20) when said forward end (32) of said clamping sleeve (2) abuts against a workpiece and said rear end (34) of said clamping sleeve (2) abuts against said force-engaging connection in an uncoupling position to prevent further driving of the fastener (13).

4,237,947

COMPARTMENTALIZED COUPON CARRYING CASE

Carolyn V. Mater, 58 School Rd. West, Marlboro, N.J. 07746

Filed Aug. 16, 1979, Ser. No. 67,051
Int. Cl.[3] A45C *11/18*
U.S. Cl. 150—39 7 Claims



1. A coupon carrying case comprising:

front and back portions of a see-through material composition;

first means securing together respective top, bottom and side edges of said front and back portions;

second means predeterminedly positioned from top to bottom of said front and back portions and secured thereto, to compartmentalize said front and back portions into individualized sections; and

third means forming an opening along each individualized section so formed, and extending towards opposite side edges of said sections, to permit thereby insertion of coupons or other writings into said sections; and

wherein said first means comprises binding tape means overlying the top, bottom and side edges of said front and back see-through material portions.

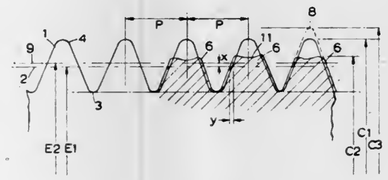
4,237,948

SCREW THREADED MEMBERS AND THEIR MANUFACTURE

Ernest Jones, Walsall, and John L. Hall, Wednesbury, both of England, assignors to Rubery Owen Fasteners Limited, Wednesbury, England

Continuation of Ser. No. 781,988, Mar. 28, 1977, abandoned. This application Nov. 14, 1978, Ser. No. 960,553
Claims priority, application United Kingdom, Mar. 31, 1976, 12870/76
Int. Cl.[3] F16B *39/30*
U.S. Cl. 151—22 8 Claims

1. An externally screw threaded member comprising a shank produced from a cylindrical blank of constant diameter and formed with a continuous thread having first and second series convolutions of the same thread pitch and the same root diameter, said first series convolutions being of a standard thread form and having a first effective diameter, and said second series convolutions having a theoretical effective diameter (the second effective diameter) which exceeds said first effective diameter by 13% to 35.5% of said thread pitch, said second series convolutions being of less height than said first series convolutions, having incomplete crests of a free, radially uncompressed form, and said second series convolutions being of



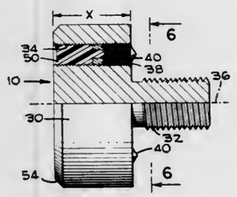
wider section axially of said shank at said first effective diameter than said first series convolutions, the construction and arrangement being such that said second series convolutions provide an interference fit at their flanks when engaged with a thread of a co-operating internally threaded member having convolutions of a complementary form to said first series convolutions, and a portion of each said crest of said second series convolutions is caused to be extruded outwardly when said second series convolutions are engaged by the thread of such an internally threaded member.

4,237,949

ANTI-THEFT FASTENER

Laurence Wagner, 6552 Northridge Dr., San Jose, Calif. 95120

Filed Oct. 5, 1978, Ser. No. 948,794
Int. Cl.[3] F16B *39/02*
U.S. Cl. 151—67 2 Claims



1. An anti-theft fastener comprising:

(a) a bolt head having a head, said head having a cylindrical external periphery and being provided with at least two circumferentially spaced threaded apertures extending therethrough parallel to and radially displaced from the turning axis of said bolt to define spanner engaging drive means, said head being a hardened head;

(b) a pair of set screws threaded into each of said threaded apertures, one of said set screws projecting from one side of said head at installation of said fastener, and the other of said set screws having its driving end recessed in said head and spaced from the other side of said head; and

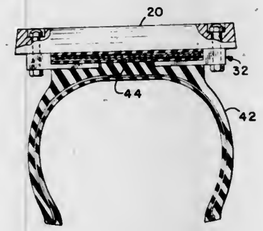
(c) a hardening compound in each of said apertures over the driving end of said other set screws.

4,237,950

TRACKED ARMORED TIRE ASSEMBLY USING A TWO PIECE GROUSER RETAINER

E. A. Domes, Carpentersville, and David B. Meisner, Palatine, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 16, 1978, Ser. No. 934,159
Int. Cl.[3] B60C *27/00*
U.S. Cl. 152—175 8 Claims



1. A tracked tire assembly comprising:

a pneumatic tire having a tread surface;

a circumferential belt encircling the tread surface portion of said tire in contact with said tread surface thereof;

a plurality of left grouser retainers extending part way across the width of said belt, said left grouser retainers accommodated between said tread portion of said tire and said circumferential belt;

a plurality of right grouser retainers extending part way across the width of said belt toward said plurality of left grouser retainers, said right grouser retainers accommodated between said tread portion of said tire and said circumferential belt;

a plurality of grousers which extend continuously across the width of said circumferential belt and carried on an outer surface of said circumferential belt, each grouser attached to one of said left grouser retainers and one of said right grouser retainers.

4,237,951

INDUSTRIAL TIRE CHAIN TIGHTENER

Jay Dirks, Box 1039, Bonners Ferry, Id. 83805

Filed Apr. 19, 1979, Ser. No. 31,499
Int. Cl.[3] B60C *27/00*
U.S. Cl. 152—242 5 Claims



1. An industrial tire chain tightener mountable to the side rail chain of an industrial tire chain for tightening the chain about an industrial tire, comprising:

a first block member having a threaded bore formed through it from one side to the other;

a second block member having a threaded bore formed through it from one side to the other;

a draw bolt having a threaded shank formed about a center axis and having a tool gripping surface thereon, the shank being threadably received within the bores formed through the first and second block member;

non-extensible side rail chain connector means in the form of separate connectors anchored to each of the block members for selectively engaging the side rail chain of an industrial tire chain at points about its periphery with the draw bolt and block members located adjacent the center of an industrial tire on which they are mounted and with the axis of the tire intersecting the axis of the drawbolt;

the threads along the shank of said draw bolt being divided axially into a left hand threaded portion and a right hand threaded portion with the blocks being similarly threaded within their respective bores to threadably receive the right and the left hand threaded portions so that rotational motion of the draw bolt relative to the blocks will cause movement of the blocks axially toward or away from one another along the length of the shank.

4,237,952

PNEUMATIC TIRE WITH SEALING LINING COMPRISING A THERMOSETTING RESIN AND ISOLATED RESIN CROSSLINKING AGENT

Jean Chautard, Mozac, and Andre Chemizard, Clermont-Ferran, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jul. 13, 1979, Ser. No. 57,439
Claims priority, application France, Jul. 13, 1978, 78 21344
Int. Cl.[3] B60C *21/08, 17/00*
U.S. Cl. 152—330 RF 19 Claims

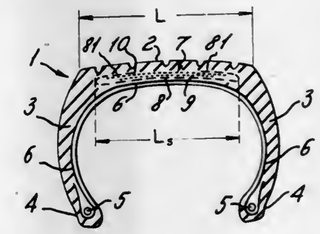
1. A pneumatic tire whose inner wall is provided, at least in part, with a lining comprising a layer of a sealing mixture capable of flowing into a puncture hole, the layer being covered radially inward by a vulcanized elastomeric partition, characterized by the fact that the layer of sealing mixture has a base of at least one elastomer of low molecular weight less than 30,000, mixed with at least one thermosetting resin, and by the fact that at least one cross-linking agent or hardener for the thermosetting resin is isolated from the layer of sealing mixture by means of the vulcanized elastomeric partition arranged radially inward of the layer of sealing mixture.

4,237,953

RADIAL TIRE WITH TREAD REINFORCEMENT COMPRISING NONFOLDED PLIES WITH RADIALLY INCREASING AXIAL WIDTHS

Albert Mathevet, Chamalieres, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation of Ser. No. 812,120, Jul. 1, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,341
Claims priority, application France, Jul. 12, 1976, 76 21373
Int. Cl.[3] B60C *9/20*
U.S. Cl. 152—361 FP 17 Claims



1. A tire having a radial carcass reinforcement and a tread reinforcement formed of at least two nonfolded diagonal superposed plies of different widths and of at least one diagonal folded ply with two folded edges, each of said folded edges resting on at least a portion of a nonfolded ply, characterized by the fact that (a) the nonfolded plies have axial widths which increase with the radial distances of said plies from the axis of the tire, (b) the folded ply is so arranged that its folded edges cover at least the edges of the widest nonfolded ply, (c) the fold lines of the edges of the folded ply practically coincide with the edges of the widest nonfolded ply and (d) the non-

folded plies are reinforced with relatively rigid cables and the folded ply is reinforced with relatively flexible cables.

4,237,954

TIRE WITH TUBULAR BEAD RINGS

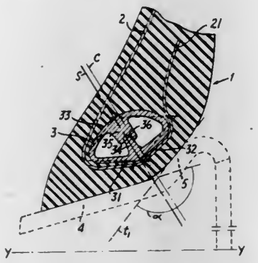
Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 904,295, May 9, 1978, abandoned. This application Jan. 3, 1979, Ser. No. 964

Claims priority, application France, May 9, 1977, 77 14329; Nov. 2, 1978, 78 31291

Int. Cl.³ B60C *15/04*

U.S. Cl. 152—362 R **20 Claims**



1. A tire having a carcass reinforcement anchored to at least one hollow metallic bead ring having an interior reinforcement, characterized by the fact that

(a) the hollow metallic bead ring, as seen in radial cross-section, is essentially formed of four sides which converge in pairs and the interior reinforcement connects the two regions where two consecutive converging sides meet;

(b) the interior reinforcement is formed of a first rib coming from the region surrounding the point of convergence of two consecutive sides and of a second rib opposite the first rib and provided at its free end with a groove against which the free end of the first rib bears;

(c) the hollow metallic bead ring is arranged in the bead in such a manner that the interior reinforcement is parallel to the bisector of the angle formed by the bead seat on the rim with the tangent to the rim flange adjacent to said bead seat, the bisector being directed towards the inside of the tire; and

(d) the tire being mounted and inflated.

4,237,955

APPARATUS AND METHOD FOR GROOVING TIRES

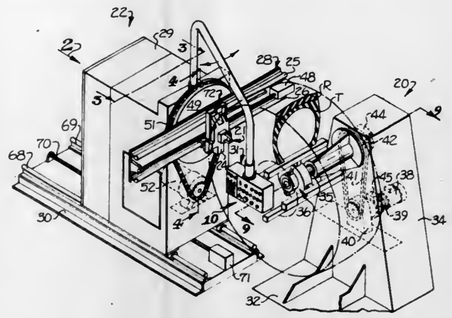
Andrew R. Clayton, Salisbury, N.C., assignor to Brad Ragan, Inc., Spruce Pine, N.C.

Filed Jan. 25, 1979, Ser. No. 6,517

Int. Cl.³ B29H *21/08*

U.S. Cl. 157—13 **44 Claims**

1. In an apparatus for forming a predetermined grooved tread design in tread rubber applied to a tire, said apparatus including tire mounting means for supporting a tire for rotation about a predetermined axis, heated knife means for forming grooves in tread rubber previously applied to the tire, and means mounting said knife means for movement transversely of the tread surface of the tire, the improvement comprising control means including programmable memory means for controlling the movement of said knife means to form grooves transversely of the tread surface of the tire and of any selected one of a plurality of different shapes including straight, curved and combinations thereof and for controlling rotation of said tire mounting means in timed relation to movement of said knife means to produce the desired number of grooves in the



tread rubber on the tire to form said predetermined tread design.

4,237,956

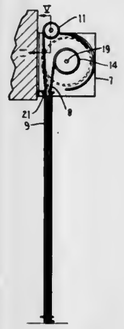
SOLAR HEATED DOOR

Bernard J. Sivin, and John J. Luby, both of Dallas, Tex., assignors to Overhead Door Corporation, Dallas, Tex.

Filed Sep. 12, 1978, Ser. No. 941,457

Int. Cl.² E06B *9/08*

U.S. Cl. 160—120 **7 Claims**



1. A heat-protective door assembly for a door opening formed in a vertical wall of a building, comprising:

a roll-type door formed from a plurality of horizontally arranged pivotally connected parallel metal slats which are opaque to at least longwave (heat generating) electromagnetic radiation;

first drum means arranged above said door opening for receiving said roll-type door in coiled relationship thereabout, said door being unrolled from said first drum means and movable downwardly for closing said opening;

first channel-shaped side guide means positionable on the respective sides of said door opening for guiding the edges of said door therealong as said door is moved between open and closed positions;

a flexible panel of material opaque to at least longwave (heat generating) electromagnetic radiation, said panel being co-extensive with, spaced from and substantially parallel to the exterior surface of that portion of said door as is in said door opening;

second drum means mounted adjacent said first drum means for receiving said panel and rolling same therearound as said panel is moved out of said door opening;

connecting means secured to the lower free edges of said door and said panel for fixedly connecting said lower edges together so that said door and panel move in unison when being opened or closed, said connecting means including spacer structure for maintaining said panel adjacent the lower edge thereof spaced outwardly a substantial distance from the exterior surface of said door;

second channel-shaped side guide means positionable on the respective sides of said door opening for guiding the side edges of said panel when the panel is positioned within said door opening, said second guide means being positioned adjacent but exterior of said first guide means and substantially parallel thereto;

said second guide means including means for slidably and sealingly engaging said panel adjacent the side edges thereof to maintain said edges spaced a substantial distance from the exterior surface of said door; and

said second guide means and said connecting means creating a substantially closed air space between said panel and said door when the latter are in said closed position, whereby said air space defines a heat zone for inhibiting radiant heat loss through said door from within the building.

4,237,957

VENETIAN BLIND AND TAPE ROLL SUPPORT FOR A VENETIAN BLIND

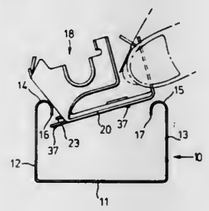
Erich E. Hensel, Wassenaar, Netherlands, assignor to Hunter Douglas International N.V., Netherlands

Filed Mar. 7, 1979, Ser. No. 18,258

Claims priority, application United Kingdom, Dec. 14, 1978, 48605/78

Int. Cl.³ E06B *9/38*

U.S. Cl. 160—178 R **5 Claims**



1. A tape roll support for fitting in a venetian blind headrail, which is of channel-shaped cross-section, formed of a lower web and front and rear flanges, and having an inturned rim at the upper free edges of the front and rear flanges, said tape roll support comprising, in combination:

(a) a base engageable with the upper surfaces of the lower web of the headrail;

(b) an inclined front wall extending upwardly and forwardly from said base;

(c) a rear wall extending upwardly from said base;

(d) an upper portion at the top of said front wall inclined upwardly and rearwardly and engageable by the inturned rim at the upper free edge of the front flange, when the tape roll support is fully engaged in said headrail;

(e) an upper portion at the top of said rear wall inclined upwardly and forwardly and engageable by the inturned rim at the upper free edge of the rear flange, when the tape roll support is fully engaged in said headrail; and

(f) side walls connected to said base between which the tape roll is rotatably mountable on a tilt rod.

4,237,958

DRAPERY CONNECTOR ASSEMBLY

Gerald E. Guebert, Farmers Branch, and Raymond R. Belknap, Austin, both of Tex.

Filed Oct. 12, 1976, Ser. No. 731,347

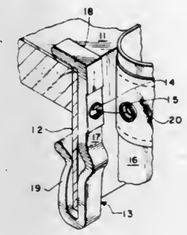
Int. Cl.³ A47H *1/00*

U.S. Cl. 160—330 **9 Claims**

1. A system for draping a table, stage, or the like, of the type having a peripheral edge with a downwardly extending flange member around said peripheral edge which comprises:

(a) a plurality of clips resiliently and slideably clamped onto and along said peripheral edge, each of said clips comprising a face section, having an inner surface and an outer surface with a first fastener means disposed at the outer surface of said face section, an upper leg section transversely intersecting said face section along the upper portion thereof and a lower leg section springingly affixed to the lower portion of said face section and extending upwardly along the inner surface of said face section whereby at least a portion of said lower leg is adjacent the inner surface of said face portion at a point intermediate the upper and lower portions of said face section;

(b) each of said clips clamping said peripheral edge in a



manner whereby the inner surface of said upper leg portion and the inner surface of said face portion are against the top and front surfaces of said peripheral edge, respectively, and said portion of said lower leg adjacent to the inner surface of said face section simultaneously abuts the back portion of said downwardly extending flange to thereby urge said inner surface of said face portion into contact with the front portion of said downwardly extending flange section, and to thereby maintain said inner surface of said upper leg portion in contact with said top surface of said peripheral edge when a load is exerted downwardly along said outer surface of said face section; and

(c) drapery means having a plurality of second fastener means for detachable coupling with respective ones of said first fastener means of said clips.

4,237,959

METHOD OF EXAMINING THE SURFACE OF A CONTINUOUSLY CAST METAL STRIP FOR DETECTION OF SCARFS APPEARING THEREON AND APPARATUS FOR THE SAME

Tomio Yamamoto; Hideyuki Hanafusa; Kouji Seno, all of Takamatsu; Toshiro Mihara, Tokyo, and Isoshiro Ishida, Machida, all of Japan, assignors to Futec Inc., Takamatsu, Japan

Filed Mar. 20, 1979, Ser. No. 22,372

Claims priority, application Japan, Mar. 23, 1978, 53-33312; Mar. 23, 1978, 53-33313

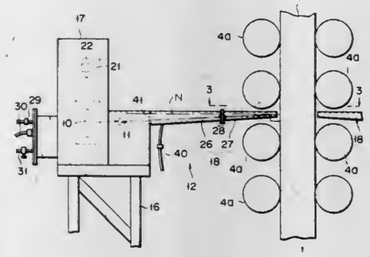
Int. Cl.³ B22D *2/00*

U.S. Cl. 164—4 **12 Claims**

1. In a continuous casting process for making metal strips, a method for examining the surface of a traveling metal strip during the continuous casting process for detection of scarfs produced on said surface, comprising positioning a light emitter having a light source and a light detector to face the traveling metal strip; projecting light beams from the light emitter on the traveling metal strip; receiving in the light detector light beams which are reflections of said projected light beams from the traveling metal strip and generating signals from the light detector which are a function of the received reflected light beams, thereby producing a shade image of the traveling metal strip; and detecting scarfs, if any, appearing on the surface of the metal strip in accordance with the contents of said signals generated by the light detector;

the improvement wherein:
the light source of the light emitter emits light beams of short wavelengths and also other waves;
projecting the light beams across the metal strip in the form of narrow bands;
filtering the reflections of said projected light beams so that only those light beams which consist of said short wavelengths are received by the light detector;
air purging a light path extending between the light emitter and light detector to prevent contamination from getting into the light paths between the light emitter and the light detector; and
processing said signals generated by the light detector by an image memory system continuously to produce the shade image of the metal strip on a monitor television set.

6. In an apparatus for examining the surface of a traveling metal strip in a continuous casting apparatus for detection of scarfs produced on said metal strip surface, comprising a light emitter provided with a light source and disposed to face said traveling metal strip; a light detector facing said traveling metal strip for receiving reflections of light beams projected by the light emitter onto the metal strip, the light detector generating electrical signals which are a function of the received reflected light beams; and processing means coupled to said light detector for electrically processing said signals generated by the light detector;



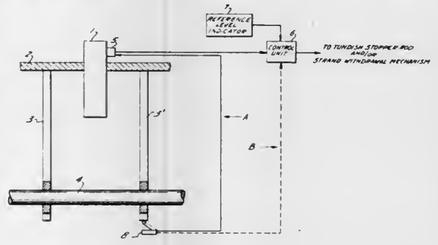
the improvement wherein:
the light emitter includes a light source which produces light beams of short wavelength and also other waves;
means is provided for projecting said light beams onto the metal strip and across the metal strip in the form of narrow bands;
said light detector includes a filter which passes only light beams of said short wavelengths selected from the reflections of said projected light beams;
air purge means is provided for air-purge cleaning the environment of the light paths of said light emitter and said light detector, said air purge means including an air purge hood surrounding the light path extending between the light emitter and light detector to air-purge the environment of said light paths; and
said processing means includes an image memory for storing image data which corresponds to image signals supplied from the light detector, an image-producing circuit coupled to said image memory for causing image data to be written therein and read out therefrom, and a monitor television set coupled to said image-producing circuit and on which the surface condition of the metal strip is displayed in accordance with the contents of signals issued from said image-producing circuit.

4,237,960

METHOD AND APPARATUS FOR REGULATING THE BATH LEVEL IN A CONTINUOUS CASTING MOLD

Albert J. Perratore, Queens Village, and Mikhail Bass, Brooklyn, both of N.Y., assignors to Concast Incorporated, Montvale, N.J.

Filed Jul. 12, 1979, Ser. No. 56,952
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—4 **10 Claims**



1. A continuous casting apparatus for metals comprising:
(a) an oscillatory assembly including a continuous casting mold for accommodating a bath of molten metal, means for monitoring the level of the bath and for generating signals indicative of the bath level, and means for oscillating said mold and said monitoring means along the casting direction;
(b) means for regulating the bath level in response to the signals from said monitoring means; and
(c) means for intermittently supplying signals from said monitoring means to said regulating means, said suppling means comprising a limit switch, and said limit switch having a first position in which said regulating means receives signals from said monitoring means, and a plurality of second positions in which said regulating means receives no signals from said monitoring means, said limit switch being urged into said first position by said assembly when the latter is at a predetermined position along the oscillation path thereof.

6. A method of continuously casting metals comprising the steps of:
(a) oscillating a level monitoring source relative to a molten metal bath being continuously cast;
(b) monitoring the level of said bath with said source;
(c) generating signals indicative of said bath level with said source; and
(d) regulating said bath level with said signals only when said source is at a first position along the oscillation path thereof but not when said source is at a plurality of second positions along said oscillation path, the regulating step being performed when said source is at said first position regardless of the oscillation frequency of said source.

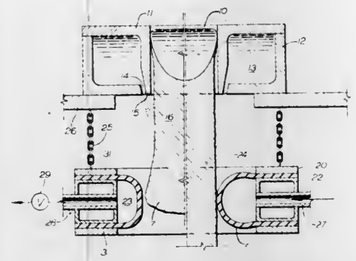
4,237,961

DIRECT CHILL CASTING METHOD WITH COOLANT REMOVAL

Theodore C. Zinniger, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 13, 1978, Ser. No. 959,956
Int. Cl.³ B22D *11/124*
U.S. Cl. 164—89 **3 Claims**

1. In the method of D.C. casting ingot or billet wherein coolant is applied to the ingot or billet and wherein coolant is subsequently removed from the ingot or billet, the improvement comprising:
A. passing the ingot or billet through an inflatable elastomeric collar;
B. maintaining the collar in a deflated condition at the start-up of casting to allow the large butt of the ingot or billet formed during start-up to pass through the collar with essentially no contact therewith, and



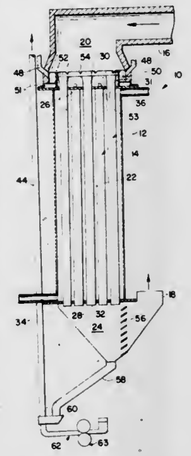
C. inflating the collar after the passage of the large butt of the ingot or billet through the collar to urge the collar into substantial contact with periphery of the ingot or billet to thereby remove coolant from the surfaces thereof.

4,237,962

SELF-CLEANING HEAT EXCHANGER

J. Paul Vandenhoeck, c/o The Econo-Therm Corporation P.O. Box 309, Englewood, N.J. 07631

Filed Aug. 11, 1978, Ser. No. 932,800
Int. Cl.³ F28G *13/00;* **B08B** *9/02*
U.S. Cl. 165—1 **14 Claims**



1. A method of cleaning a heat exchanger during operation thereof, the heat exchanger having a plurality of tubes each of which has an inlet end and an outlet end, and through which a first fluid is conducted from said inlet end to said outlet end in indirect heat transfer relationship with a second medium disposed on the outside of said tubes intermediate the inlet and outlet ends of said tubes, the heat exchanger further including an inlet chamber for said first fluid, a tube sheet for supporting the inlet ends of said tubes and isolating the inlet chamber for said first fluid from said second medium, the inlet ends of said tubes extending into the inlet chamber beyond said tube sheet, the method comprising:
introducing a particulate cleaning media into said inlet chamber between the inlet ends of said tubes and said tube sheet; and
forcing said particulate cleaning media along the exterior surfaces of said tubes to the inlet ends of said tubes in a direction counter to the direction of flow of said first fluid through said tubes so that said particulate cleaning matter is introduced into said tubes and is directed against the inner walls of said tubes as the direction of flow of said particulate cleaning matter is changed so that it flows through said tubes in the direction of the flow of said first fluid.

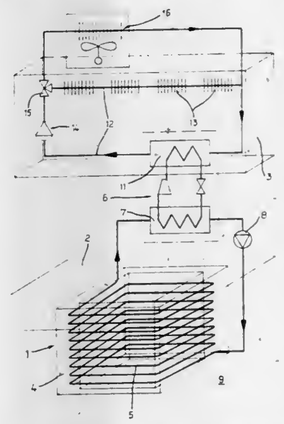
6. A self cleaning shell-tube type heat exchanger comprising:
a plurality of tubes for conducting a first fluid therethrough in indirect heat transfer relationship with a second exchange media, said tubes each having an inlet end, a heat exchange section along which heat is transferred between said first fluid and said second exchange media, and an outlet end;
an inlet chamber communicating with said inlet ends of said tubes for introducing said first fluid into said tubes;
an outlet chamber communicating with said outlet ends of said tubes for receiving said first fluid after conduction through said tubes;
a tube sheet for said tubes intermediate said inlet ends of said tubes and said heat exchange section of said tubes for supporting said inlet ends of said tubes in said inlet chamber, said inlet ends of said tubes extending into said inlet chamber beyond said tube sheet; and
means for distributing particulate cleaning media between the inlet ends of said tubes and said tube sheet in said inlet chamber and for forcing said particulate cleaning media along the exterior surfaces of said tubes to the inlet ends of said tubes in a direction counter to the direction of flow of said fluid through said tubes so that said particulate cleaning media is introduced into said tubes and directed against the inner walls of said tubes as the direction of flow of said particulate cleaning matter is changed so that it flows through said tubes in the direction of the flow of said first fluid.

4,237,963

PROCESS AND APPARATUS FOR CONTROL OF THE CLIMATIC ENVIRONMENT OF AN UNDERGROUND ENCLOSURE INCLUDING A SOURCE OF EXTRANEOUS HEAT

Edmond Girard, Boulogne-Billancourt, France, assignor to Messier, Paris, France

Filed Mar. 13, 1978, Ser. No. 885,865
Claims priority, application France, Apr. 6, 1977, 77 10468
Int. Cl.³ F28D *15/00;* **F28F** *13/00*
U.S. Cl. 165—1 **14 Claims**



1. A process for the control of the climatic environment of a subterranean enclosure including at least one source capable of emitting a quantity of extraneous heat, which comprises
promoting the transfer of heat through selected parts of the walls of the enclosure from the ground to the enclosure due to the natural phenomenon of thermal counterbalancing in order to draw upon the thermal energy stored in the

ground to maintain the enclosure at the temperature of the ground, and

in the event of the emission of extraneous heat from the source or sources, either controlling and promoting the transfer of heat through the walls of the enclosure from the latter to the ground due to the counterbalancing phenomenon in order to draw upon the capacity of the ground for storage of thermal energy and to maintain the enclosure at a temperature equal to or slightly above that of the ground,

inhibiting said thermal transfer from the enclosure to the ground to satisfy an occasional need for heating or controlling said thermal transfer in such a manner that part of the thermal energy emitted from said source or sources is stored in the ground and part is retained to satisfy a lesser need for heating, and

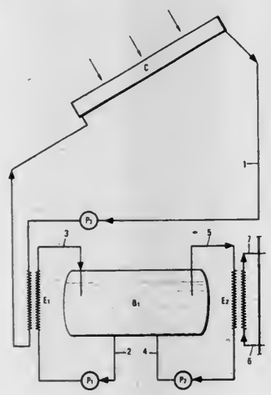
transferring the residual extraneous heat from the enclosure through the selected parts to the atmosphere where the extraneous heat emitted by the sources is greater than the total of both that which is capable of being absorbed by the ground and that which is required to satisfy the need for heating.

4,237,964

HEAT EXCHANGE PROCESS WITH HEAT ACCUMULATION

Joseph Larue, Vaucresson, and Alexandre Rojey, Garches, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 5, 1979, Ser. No. 45,794
Claims priority, application France, Jun. 5, 1978, 78 16791
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—1 **15 Claims**



1. A heat exchange process comprising a thermal storage step, which comprises repeatedly conducting the following successive steps:

(a) the temperature of a dispersed substance (A) in solid state in a liquid (B) is raised by thermal exchange with a heat source to above the melting temperature of said substance (A) so as to obtain an emulsion of melted substance (A) in liquid (B), and then

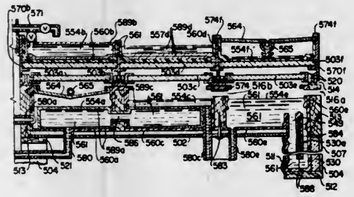
(b) the temperature of the emulsion of the melted substance (A) in liquid (B) is allowed to decrease, by thermal exchange with a cold source, to below the temperature of solidification of the melted substance (A) so as to obtain a dispersion of the solid substance (A) in liquid (B), said process being remarkable in that, after at least one step (a) or one step (b), the obtained emulsion or dispersion is stored under adiabatic conditions before proceeding to the following step, the process beginning with a step (a) or a step (b).

4,237,965

PROCESS AND APPARATUS FOR MODULATING TEMPERATURES WITHIN ENCLOSURES

Harold R. Hay, 2424 Wilshire Blvd., Los Angeles, Calif. 90057

Division of Ser. No. 611,408, Sep. 8, 1975, Pat. No. 4,089,916, which is a continuation-in-part of Ser. No. 668,202, Jun. 26, 1957, abandoned, which is a continuation-in-part of Ser. No. 163,381, Dec. 19, 1961, abandoned, which is a continuation-in-part of Ser. No. 482,027, Aug. 16, 1963, Pat. No. 3,299,589, which is a continuation-in-part of Ser. No. 610,597, Jan. 20, 1967, Pat. No. 3,450,192, which is a continuation-in-part of Ser. No. 815,785, Apr. 14, 1969, Pat. No. 3,563,305, which is a continuation-in-part of Ser. No. 114,977, Feb. 17, 1971, Pat. No. 3,903,958. This application Apr. 12, 1978, Ser. No. 895,797
Int. Cl.³ F25B *13/00*
U.S. Cl. 165—2 **8 Claims**



1. The method for influencing the temperature of at least partially enclosed space by means of an evaporable liquid which has substantial thermal exchange with said space wherein the steps are:

(a) moving at least one thermal barrier from a first position, where it covers said liquid during a first period, to a second position during a second period thereby exposing at least a portion of said liquid to unconfined overlying air,

(b) increasing the evaporation of said liquid by causing the velocity of movement of air overlying said liquid to increase thereby increasing the cooling of said liquid and of said space with which it is in thermal exchange, and

(c) moving said thermal barrier to said first position to retard the heating of said liquid by a heat source external to said space.

4,237,966

ENERGY CONSERVING HEATING AND AIR CONDITIONING SYSTEM

Joe W. Tomlinson, 12406 Foxburo, Houston, Tex. 77065

Filed Jan. 24, 1979, Ser. No. 6,019
Int. Cl.³ F23N *5/20*; G05D *23/32*
U.S. Cl. 165—12 **19 Claims**

1. A control system for office building air conditioning equipment comprising heating, ventilating and refrigerating apparatus having separate electric circuit means controlling the heating, ventilating and refrigerating components comprising

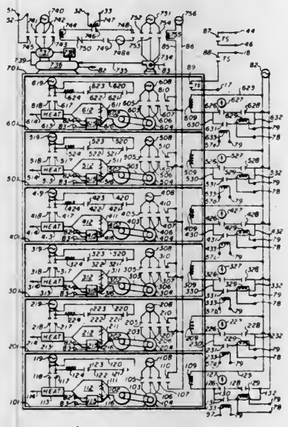
first circuit means adapted to be operatively connected to and controlling energization of said refrigerating and said ventilating circuit means,

second circuit means adapted to be operatively connected to and controlling energization of said ventilating circuit means,

first time controlled switch means positioned in said first circuit means operable to be closed at a selected hour in the A.M. to place said refrigerating and said ventilating circuits in condition for operation and operable to be opened at a selected hour in the P.M. to inactivate said refrigerating and said ventilating circuits,

second time controlled switch means positioned in said second circuit means operable to control the same to control operation of said ventilating circuit means independently of said first circuit means and

said second time controlled switch means being operable to be closed at a selected later hour in the A.M. and opened at a selected later hour in the P.M. than said first time



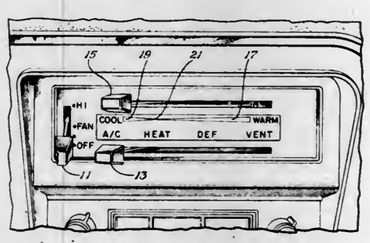
controlled switch means whereby said ventilating circuit means is operable to remain energized for a selected time after deenergization of said refrigerating circuit means.

4,237,967

MOTOR VEHICLE AIR CONDITIONER CONTROL CIRCUIT

Robert C. Harding, Dallas, and Jack E. Herweg, Fort Worth, both of Tex., assignors to Lone Star Manufacturing Company, Inc., Fort Worth and Genelco, Inc., Dallas, both of, Tex.

Filed Jan. 15, 1979, Ser. No. 3,352
Int. Cl.³ B60H *3/00*
U.S. Cl. 165—43 **10 Claims**



1. A circuit means for enabling one to install an air conditioner in a motor vehicle having a heater blower using the vehicle's existing heater and vent controls, the heater and vent controls including an electrical heater blower switch and a member that is movable from a coolest position to a warmest position for mechanically controlling the temperature of the air being discharged into the vehicle, the air conditioner having a separate blower and a compressor clutch that is electrically controlled by a temperature sensing device and a temperature regulating circuit, the circuit means comprising:

a potentiometer having a resistance element and a wiper, the wiper being mounted in engagement with the member for movement therewith;

a conductor mounted adjacent the resistance element and electrically insulated from the resistance element, the wiper being positioned to disengage from the resistance element and engage the conductor as the member is moved from the coolest position towards the warmest position;

first enabling means for selectively enabling the air conditioner blower and the heater blower to be energized when the heater blower switch is turned on, and for preventing the air conditioner and heater blowers from operating simultaneously, the air conditioner blower being connected to the heater blower switch in parallel with the heater blower;

the first enabling means being operably connected to the potentiometer for enabling the heater blower by placing the wiper in contact with the conductor and enabling the air conditioner blower by disengaging the wiper from the conductor; and

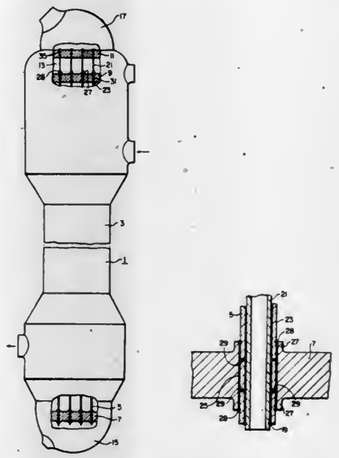
second enabling means operably connected to the potentiometer for enabling the temperature regulating circuit to function only when the wiper is in contact with the resistance element, the variable positions of the wiper contacting the resistance element affecting the temperature regulating circuit to allow the operator to control the air conditioner temperature.

4,237,968

HEAT EXCHANGER WITH DOUBLE WALL TUBES AND THREE TUBE SHEETS

James M. Duke, St. Petersburg, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 810,816, Jun. 28, 1977, abandoned. This application May 2, 1979, Ser. No. 35,166
Int. Cl.³ F28F *11/00*
U.S. Cl. 165—70 **4 Claims**



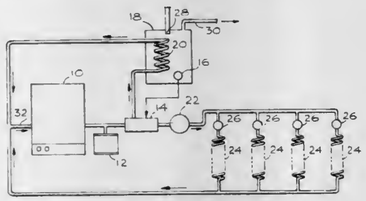
1. A heat exchanger comprising a shell, a plurality of generally straight double wall tubes each tube having an inner wall portion and an outer wall portion which are contiguous, and at least one groove at the interface of the wall portions, said groove generally extending the length of the tube, a single tube sheet adjacent one end of the tubes and a pair of tube sheets adjacent the other end of the tubes, said pair of tube sheets being disposed in a spaced relationship to form an enclosed space, the inner wall portion of one end of the tubes terminating adjacent one of said pair of tube sheets and the outer wall portion of said tubes terminating adjacent the other of said pair of tube sheets and the groove being in fluid communication with the enclosed space, the outer wall portions of the tubes being sealed at the junctions between the outer wall portions and both side of the single tube sheet, and a segment of the outer wall portion within the single tube sheet having at least one opening extending therethrough and disposed in communication with the groove, whereby leak detection can be made in the enclosed space regardless of whether a leak occurs in either wall of the tube or at any weld between the tube and the tube sheet.

4,237,969

HEAT TRANSFER ELEMENT TO REPLACE ELECTRICAL HEATING ELEMENT

Willard E. Andre, Cypress; Andrew Clausen, Jr., Whittier, and Ben B. Hultsman, Covina, all of Calif., assignors to Southern California Gas Company, Los Angeles, Calif.

Filed May 21, 1979, Ser. No. 40,780
Int. Cl.[3] F24H *9/16;* F28F *13/06;* F28D *1/04*
U.S. Cl. 165—71 4 Claims



1. For use in an electrical water heater tank from which the electrical heating element is absent, leaving a pair of openings spaced by a first distance:

a liquid-to-liquid, immersible, heat transfer element having an inlet manifold and an outlet manifold;

a plurality of parallel, finned, thin-walled tubes joining said inlet and outlet manifolds;

an inlet pipe connected to said inlet manifold;

an outlet pipe connected to said outlet manifold in parallel relationship to said inlet pipe;

said inlet and outlet pipes being horizontal and being spaced by a distance equal to said first distance; and,

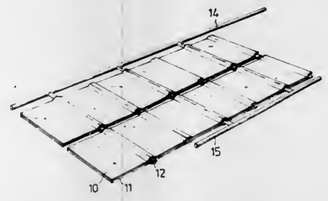
a dump valve connected to said inlet pipe for selectively releasing any liquid from said heat transfer element.

4,237,971

COLD-WELDED HEAT EXCHANGER MEMBER

Göran B. K. Olsson, Lotorp, and Gunnar T. Wilson, Finspang, both of Sweden, assignors to Gränges Aluminium Aktiebolag, Stockholm, Sweden

Filed Jan. 23, 1979, Ser. No. 5,833
Claims priority, application Sweden, Jan. 24, 1978, 7800864
Int. Cl.[3] F28F *1/22;* F24J *3/02*
U.S. Cl. 165—171 8 Claims



1. A heat exchange member, particularly for solar collector apparatuses, comprising first and second metal sheets of substantially equal surface dimensions disposed in a face-to-face relationship and at least one metal tube for a heat-carrying medium disposed therebetween and extending rectilinearly and uninterruptedly from one edge of said first and second metal sheets to an edge of said first and second metal sheets opposite therefrom, said first and second metal sheets being cold-welded to each other so as to be molecularly bonded substantially over their entire mutual contact surface on either side of said tube to form heat-conveying fins, said metal tube being cold-welded so as to be molecularly bonded substantially over its entire circumferential surface to at least one of said first and second metal sheets, and the member having a greater total material thickness at the location of said tube than at said fins.

4,237,970

PLATE TYPE CONDENSERS

Haruo Uehara, Saga, and Michizo Miyoshi, Yokohama, both of Japan, assignors to Haruo Uehara and Tokyo Shibaura Denki Kabushiki Kaisha, both of, Japan

Division of Ser. No. 809,766, Jun. 24, 1977, abandoned. This application May 7, 1979, Ser. No. 36,642
Int. Cl.[3] F28B *9/08*
U.S. Cl. 165—110 1 Claim



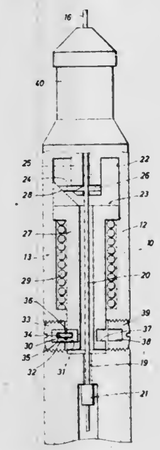
1. In a plate type condenser of the type wherein a plurality of spaced metal plates are arranged to define a plurality of passages therebetween and heated medium to be condensed and medium to be heated thereby are passed through said passages in the opposite directions, the improvement which comprises a primary condensation section including a plurality of condensattion elements and a plurality of condensate discharge grooves extending along respective condensation elements and inclined with respect to said passages, and a secondary condensation section positioned on the downstream side of said primary condensation section for condensing the heated medium not condensed by said primary condensation section, said secondary condensation section comprising a flat metal plate and a plurality of spaced metal rods secured to one surface of said metal plate.

4,237,972

WELL BORE APPARATUS ADAPTED FOR BEING RELEASABLY COUPLED TO SUSPENSION CABLES

C. P. Lanmon, II, Friendswood, Tex., assignor to Schlumberger Technology Corp., New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,325
Int. Cl.[3] E21B *29/02*
U.S. Cl. 166—54.5 12 Claims



1. Well bore apparatus comprising:

body means adapted for suspension in a well bore by a suspension cable having a load-supporting end-portion;

means on said body means adapted for carrying well tools;

means on said body means defining a space adapted for receiving a load-supporting end-portion of a suspension cable that is to be secured to said body means; and

means cooperatively arranged on said body means for severing a load-supporting end-portion of a suspension cable disposed in said space only after the elapse of a given time interval and including a cutting blade adapted for transverse movement from a normally retained position on one side of said space to another position on the opposite side of said space,

an actuating member adapted for movement axially along said body,

force transferring means for transferring axial force of said actuating member to force said cutting blade across said cable in said space,

a spring for forcing said actuating member via said force transferring means against said cutting blade, and

time-delayed retaining means for preventing axial movement of said actuating member for said given time interval, said retaining means having a chemically-corrodible element within a chamber cooperatively arranged therein and adapted for bringing a corrosive chemical into operative contact within the chemically-corrodible element at the beginning of the given time interval to progressively attack said element until its failure, thereby ending said given time interval, whereby upon failure of said chemically-corrodible element, said spring causes said actuating member via said force transferring means to drive said cutting blade toward its other position.

4,237,974

METHOD OF CONTROLLING FLUID LOSS IN ACIDIZING TREATMENT OF A SUBTERRANEAN FORMATION

Gary A. Scherubel, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 9, 1978, Ser. No. 904,155
Int. Cl.[3] E21B *33/13*
U.S. Cl. 166—281 23 Claims

1. In a method of treating a heterogenous permeable subterranean formation penetrated by a wellbore, wherein an acidizing fluid in which at least a portion of the formation is soluble is injected into the formation so that at least a portion of the formation is dissolved, the improvement which comprises: prior to injecting said acid, injecting an aqueous gelled fluid into the formation, said fluid containing dissolved therein, an inorganic water soluble metal halide or sulfate salt which does not precipitate in acid, in an amount effective to reduce the loss of the acidizing fluid to the more permeable portions of said formation, but not in excess of the amount necessary to saturate said gelled fluid.

4,237,975

WELL STIMULATION METHOD USING FOAMED ACID

Gary A. Scherubel, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 11, 1978, Ser. No. 895,333
Int. Cl.[3] E21B *33/13*
U.S. Cl. 166—281 16 Claims

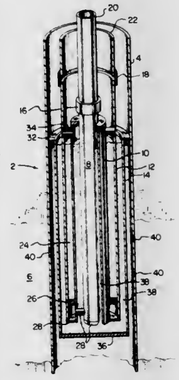
1. In a method of treating a subterranean formation penetrated by a wellbore, wherein a foamed acid in which at least a portion of the formation is soluble is injected into the formation so that at least a portion of the formation is dissolved, the improvement which comprises: prior to injecting said foamed acid, injecting a gelled, substantially unfoamed fluid as a pad fluid for said subsequent stage of foamed acid.

4,237,973

METHOD AND APPARATUS FOR STEAM GENERATION AT THE BOTTOM OF A WELL BORE

John C. Todd, 10646 Marquis, Dallas, Tex. 75229

Filed Oct. 4, 1978, Ser. No. 948,436
Int. Cl.[3] E21B *36/00*
U.S. Cl. 166—59 8 Claims



1. A steam generator for use in a borehole comprising:

first and second porous beds in thermal communication with each other, said first bed containing oxidizing catalyst in at least a portion thereof,

means for conducting fuel and oxidizing gas to and into contact with said first bed,

means for conducting water to said second bed, and

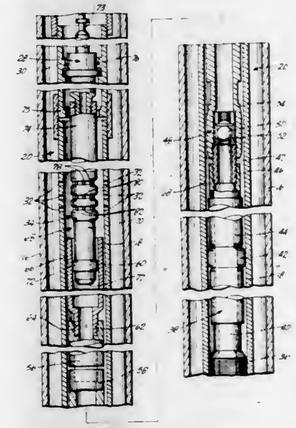
means for exhausting steam from said second bed.

4,237,976

HYDRAULIC WELL PUMPING METHOD

Phillip M. Wilson, Downey, Calif., assignor to Kobe, Inc., Huntington Park, Calif.

Filed Aug. 13, 1979, Ser. No. 66,010
Int. Cl.[3] E21B *43/00*
U.S. Cl. 166—297 27 Claims



1. A method for pumping well fluid from a well at the bottom of a well bore after the well fluid has stopped flowing naturally from the well up through a tubing installed in the well bore, comprising the steps of:

perforating the tubing;

sealing a landing means inside the interior of the tubing below the perforations;
securing a pump to a portion of the landing means; and
operating the pump to pump well fluid from the well up through the interior of the tubing and out through the peforations and then up through the annulus between the tubing and the well bore.

4,237,977

REMOVAL OF WATER FROM GAS WELL BOREHOLE WITH SOLID FOAMING AGENT

Stuart B. Lutener, Edmonton, Canada, assignor to Skyline Products Ltd., Fort Saskatchewan, Canada

Filed Feb. 2, 1979, Ser. No. 8,550
Int. Cl.³ E21B *21/14*
U.S. Cl. 166—309 **18 Claims**

17. The process for producing a solid foaming agent body for the removal of water from a gas well comprising:
combining a water-soluble surfactant with urea to form a solid urea adduct; and
compressing the urea adduct into a shape of size and density sufficient to enable it to drop to the bottom of the column of water expected to be existing in the well.

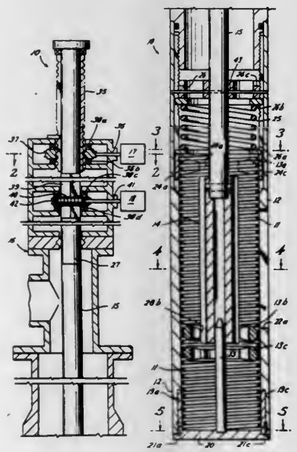
18. A process for removing water from a gas well which comprises:
combining a water-soluble surfactant with urea to form a solid urea adduct;
compressing the urea adduct into a shape of size and density sufficient to enable it to drop to the bottom of the column of water expected to be existing in the well; and
dropping the urea adduct into the water in the gas well and producing gas through the water to generate foam, thereby gradually removing said foam from the well.

4,237,978

METHOD FOR CLEANING A HELICAL SPRING SAND SCREEN IN A WELL

Reynaldo Calderon, and Billy H. Towell, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 957,253, Nov. 2, 1978. This application Jul. 30, 1979, Ser. No. 61,972
Int. Cl.³ E21B *37/08*
U.S. Cl. 166—311 **6 Claims**



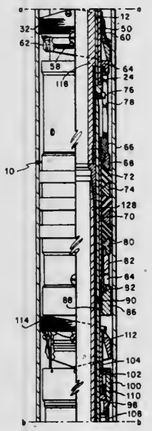
1. A method for cleaning the foreign material from between the coils of a helical spring screen in a well while simultaneously producing filtered liquid from the well comprising,
(a) positioning a cleaning washer means with a large opening therein between two coils at a first end of the helical spring screen, and
(b) connecting a rotatable rod means of smaller circumference in the cleaning washer means large opening for rotating the cleaning washer means between all the coils to a second end of the helical spring screen for cleaning the foreign material from between the coils of the helical spring screen and for simultaneously producing filtered liquid through the cleaning washer means large opening while sliding over the rod means from the first end of the helical spring screen to its second end.

4,237,979

VALVE FOR HYDRAULIC SETTING PACKER SETTING TOOL AND METHOD OF SETTING A HYDRAULICALLY SETTABLE PACKER THEREWITH

Stanley A. Weise, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 19, 1979, Ser. No. 4,647
Int. Cl.³ E21B *33/128, 33/129*
U.S. Cl. 166—315 **22 Claims**



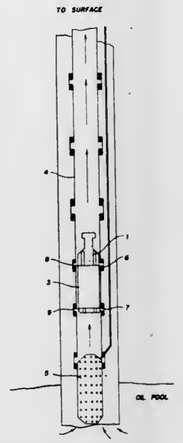
14. A method of installing a hydraulically settable well packer comprising the steps of:
(a) inserting a hydraulic setting tool into a hydraulically settable well packer wherein the setting tool has an operable and closeable valve for controlling fluid flow from an opening therein through a port in an outer wall thereof with said valve arranged in the open position;
(b) connecting the hydraulic setting tool to well tubing and positioning the well packer at a desired location in a well bore;
(c) temporarily blocking fluid flow through the hydraulic setting tool at a location below said port;
(d) applying fluid pressure to the well packer through the well tubing, the hydraulic setting tool, the port and the valve for operable actuating a hydraulic setting mechanism of the well packer to set the packer;
(e) partially withdrawing the hydraulic setting tool from the well packer; and
(f) closing the valve in order to prevent fluid communication between the interior of the well tubing and an annular cavity above the well packer around the well tubing.

4,237,980

CHECK VALVE FOR FLUID-PRODUCING WELLS

Robert G. Robinson, Edmonton, Canada, assignor to R & C Machine Devon Ltd., Edmonton, Canada

Filed Mar. 15, 1979, Ser. No. 20,819
Int. Cl.³ E21B *34/08*
U.S. Cl. 166—317 **2 Claims**



1. A check valve for controlling back flow in the tubing string of a fluid-producing well, said string having a submersible pump positioned at its lower end, said tubing string further incorporating a seating nipple above the submersible pump, said check valve comprising:
a retrievable generally tubular body adapted to seat in the seating nipple and having a first longitudinal bore extending therethrough, said body forming an annular valve seat and a stop shoulder spaced above the valve seat, said valve seat and stop shoulder defining the ends of a chamber which is part of the bore;
a generally tubular valve element having a second longitudinal bore and being disposed in the chamber, said valve member having a transversely extending wall which is pierceable by a wireline tool and which closes off the second bore against fluid flow therethrough, said valve element being operative to prevent fluid flow through the first bore when it seats on the valve seat, said valve element being operative to permit fluid flow through the first bore when the valve element is unseated, the cross-sectional area of the peirceable wall available to be pierced being substantially less than the cross-sectional area of the first bore, whereby, when the wall is pierced, only restricted flow is permitted therethrough so as to avoid damaging the submersible pump.

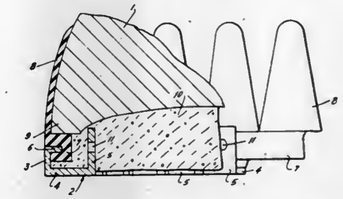
4,237,981

HORSESHOE

Peter Stübbe, Schenkenberger Weg 17, 2061 Bliestorf, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,491
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815374
Int. Cl.³ A01L *3/00, 7/02*
U.S. Cl. 168—4 **13 Claims**

1. A horseshoe comprising
(a) a horseshoe base formed of sheet metal and corresponding to the shape of the horse's hoof, having a U-shaped configuration;
(b) fastening means constructed of a resilient material fixedly attached to said metal base and adapted for being secured to the outer wall of the hoof by glueing; and
(c) a molded sole formed of a plastic material which fills the space provided in the U-shaped metal base and when the shoe is mounted on the hoof will substantially fill the space between the lower surface of the hoof and the metal base.

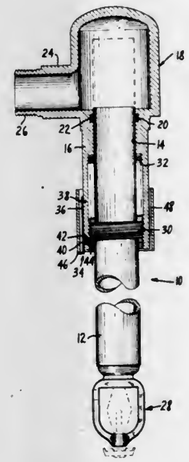


4,237,982

ADJUSTABLE DRY SPRINKLER HAVING A LATCHING MECHANISM CONTROLLED BY A SLEEVE

Joseph R. Sclafani, Greenwich, Conn., assignor to The Reliable Automatic Sprinkler Co., Inc., Mount Vernon, N.Y.

Filed May 1, 1978, Ser. No. 902,289
Int. Cl.³ A62C *37/10*
U.S. Cl. 169—37 **10 Claims**



1. An adjustable srpinkler comprising a component having a bore with an open end and adapted to be connected to a fluid supply system, a sprinkler assembly including a tube adapted to be received in the open end of the component bore for longitudinal movement therein, adjustment means on the sprinkler assembly tube for adjusting the longitudinal position of the tube in the bore, and latching means for preventing accidental removal of the sprinkler assembly tube from the component bore while permitting said longitudinal movement, the latching means including an element which is releasably urged in a radial direction into the bore of the component toward the sprinkler assembly tube, the adjustment means providing an abutment projecting from the sprinkler assembly tube toward the component at a location longitudinally spaced from the open end of the component bore providing an unobstructed portion of the sprinkler assembly tube extending away from the abutment toward the open end of the component bore, the latching means element being positioned to intercept the abutment and prevent longitudinal movement of the sprinkler assembly tube from a selected position out of the component bore unless the latching means is released, but to permit longitudinal movement of the sprinkler assembly tube inwardly in the bore from the selected position, and sleeve means surrounding the component adjacent to the latching means and

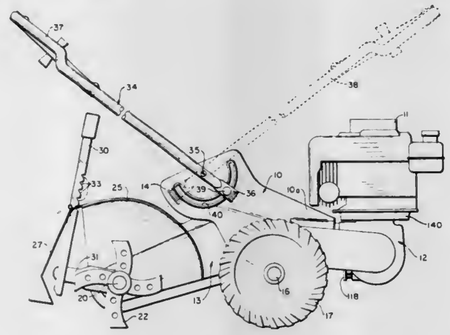
longitudinally movable with respect to the component, the sleeve means normally preventing release of the latching means, but being movable to permit release of the latching means.

4,237,983

COMBINATION TILLER AND CULTIVATOR AND REVERSIBLE DRIVE ASSEMBLY THEREFOR

Douglas E. Allen, Garden Way Manufacturing Company, Inc., 102nd St. and Ninth Ave., Troy, N.Y. 12180

Filed Dec. 7, 1978, Ser. No. 967,412
Int. Cl.³ B62D *51/04*; A01B *33/02*
U.S. Cl. 172—42 **9 Claims**



1. In a combination tilling and cultivating machine having tines rotatably mounted on a frame supported on a pair of wheels and a rotary output drive supported on the frame for operating the tines responsive to operation of a power operated unidirectional rotary input drive, a reversible drive assembly mounted on the frame for drivingly connecting the input and output drives and comprising an invertible handle bar mounted on the frame and movable into opposite tilling and cultivating positions, a single transmission input gear drivingly connected to the input drive, a transmission output shaft mounted on the frame for rotation in opposite directions and drivingly connected to the output drive, first and second power take-off assemblies between the input and output drives, the power take-off assemblies each having a face gear supported for free rotation on the transmission output shaft in continuous meshing engagement with the transmission input gear for driving the face gears in opposite angular directions, the first and second power take-off assemblies each having a clutch selectively operable independently of the other clutch, each power take-off clutch being movable between a normally disengaged position and an engaged position drivingly connecting the face gear of its respective power take-off assembly and the transmission output shaft for driving the output drive in a predetermined angular direction opposite that of the other clutch in each handle bar position, and a manually operable drive select mechanism selectively movable between first and second operating positions in either handle bar position for alternatively actuating the clutches of the first and second power take-off assemblies to establish a predetermined drive connection between the input and output drives.

4,237,984

ROTATING FIELD PLOT ROW MARKER

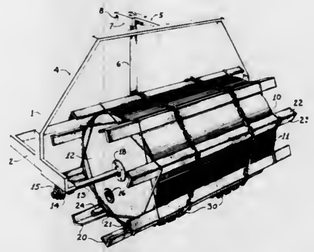
David L. Cobb; Brian L. Doyle, both of Lansing; James A. Webster, Okemos, and David H. Smith, Jr., East Lansing, all of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,976
Int. Cl.³ A01B *29/06*
U.S. Cl. 172—554 **7 Claims**

1. A row marking apparatus adapted for simultaneously imprinting the earth with first lines transverse to the direction of travel of said apparatus and at least one second line substantially perpendicular to and transecting said first lines whereby said first lines and said at least one second line form a grid pattern in the earth, said apparatus comprising:

(a) a frame;

(b) support means rotatably mounted on said frame for rotation about the longitudinal axis of said support means;



(c) first imprinting means mounted on said support means for imprinting said first lines;

(d) second imprinting means mounted on said support means for imprinting said at least one second line, and

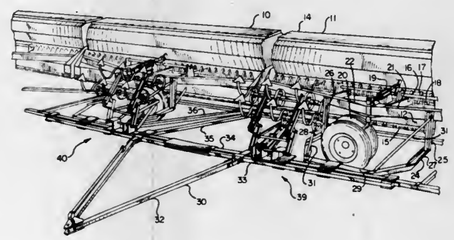
(e) an eccentric weight for gravitationally returning said rotatably mounted support means to a predetermined position when said row marker is raised above the earth.

4,237,985

TRACK REMOVING DEVICE

Heiner J. Hoefkes, Oakville, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed Jun. 14, 1979, Ser. No. 48,417
Int. Cl.³ A01B *37/00, 63/32*
U.S. Cl. 172—676 **10 Claims**



1. A track removing device comprising:

a. a bracket adapted to be mounted on an implement hitch rearward of a tractor;

b. a hydraulic cylinder having an end pivotally mounted on an axis on said bracket;

c. a first link pivotally mounted on said bracket on one side of said cylinder and also pivotally connected to the extension end of said cylinder;

d. a support structure mounted for rotation on said axis;

e. a plurality of spaced soil working tools mounted on said structure;

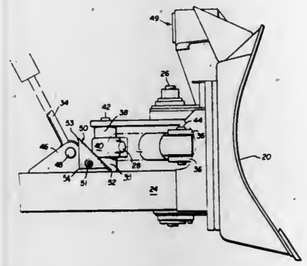
f. a second link pivotally mounted on said support structure on another side of said cylinder and also pivotally connected to the extension end of said cylinder, said cylinder, upon extension, rotating said structure about said axis to withdraw said tools from the soil and returning said tools to the soil upon retraction.

4,237,986

FLEXIBLE ROCK GUARD FOR BULLDOZER

Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 19, 1978, Ser. No. 952,768
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—805 **1 Claim**



1. In a vehicle having a C-shaped frame surrounding the forward end of said vehicle and a transverse scraper blade pivotally mounted on a vertical axis adjacent its midportion to the forward end of said frame, each side of said blade operably connected to said frame by angling means permitting angling movement of said blade about said vertical axis, at least one upstanding and spaced apart lug means mounted on said C-shaped frame, at least one piston-cylinder for lifting and lowering the C-shaped frame and blade, one end of said piston-cylinder mounted between said upstanding lug means and the other end mounted to said vehicle, the improvement comprising:

a flexible rock and debris guard mounted to the forward end of said upstanding lug means and covering the hollow area between said lug means to prevent rocks and other debris from becoming trapped between said upstanding and spaced apart lug means, said guard having an arcuate shaped body portion for deflecting said debris, said body portion including upper and lower triangularly shaped flap portions that are yieldable and laterally opposed corner portions which are secured to the sides of said upstanding lug means whereby during angling movement one of said angling means swinging about a vertical pivot on said frame and pushing debris against said guard, said guard deflecting away from said lug means the debris pushed against it by said angling means, said one end of said piston-cylinder including a piston rod eye having a lubrication fitting, said piston rod eye mounted to a piston rod and said lubrication fitting being angularly spaced from the longitudinal axis of said piston rod on said piston rod eye whereby said upper triangularly shaped flap portion normally covers and protects said lubrication fitting, said upper flap portion being pulled forwardly away from said lug means and pushed downwardly to permit lubrication of said piston rod eye without removing said rock guard.

4,237,987

PERCUSSIVE TOOL

Victor L. Sherman, 115 Logan St., Apt. 2D, Brooklyn, N.Y. 11208

Filed Oct. 27, 1978, Ser. No. 955,468
Int. Cl.³ B25D *17/24, 11/04*
U.S. Cl. 173—117 **6 Claims**

1. A percussive tool, comprising

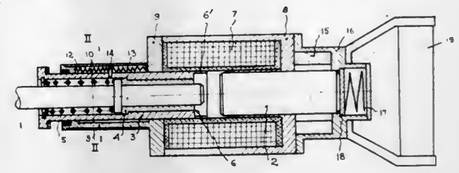
housing means;

a tool member having an axis and reciprocable in said housing means in an axial direction;

a tool casing movable in said housing means in said axial direction in two axially opposite directions and surrounding said tool member so that the latter is movable relative to said tool casing, said tool member being movable relative to said housing means;

a reciprocable member imparting impacts to said tool member under the direct action of magnetic flux generated by a source; and

spring means between said tool casing and said housing



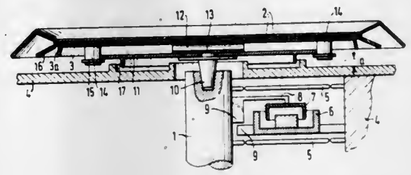
means and operative for preventing transmission of impacts from said tool casing to said housing means, said spring means including a first spring member operative for absorbing impacts of said tool casing during its movement in one of said axial directions, and a second spring operative for absorbing impacts of said tool casing during its movement in other of said axial directions.

4,237,988

OVERLOAD PROTECTION DEVICE FOR A TOP PAN PRECISION SCALE

Dieter Blawert, Göttingen; Karl-Heinz Rademacher; Erich Knothe, both of Bovenden, and Franz J. Melcher, Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH

Filed Jun. 18, 1979, Ser. No. 49,552
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 7818416[U]
Int. Cl.³ G01G *21/22*
U.S. Cl. 177—189 **13 Claims**

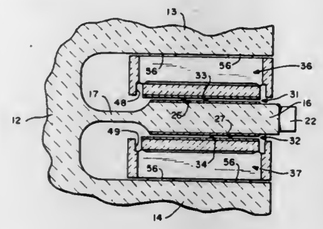


1. In an overload protection device for a top pan precision scale, wherein the weighing pan is arranged on a load support mounted for limited movement on a housing, limit stops are provided for limiting movement of the weighing pan, and an elastic component is arranged between the weighing pan and the load support, the resilient travel of which is larger in the direction of movement of the load support than the free travel of the weighing pan as defined by the limit stops, the improvement comprising:

a weighing pan support for supporting the weighing pan,

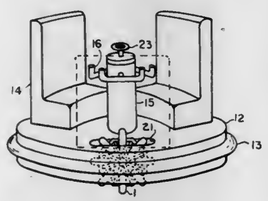
a support plate supported on the load support and extending basically parallel to and spaced from the weighing pan support defining a free space therebetween, asid elastic component being arranged in the free space between the underside of the weighing pan support and the upper side of the support plate, so that the weighing pan support is supported in a limited resilient manner opposite the support plate, and overlapping elements connected to the weighing pan support and extending downwardly in close proximity beyond the outer edge of the support plate, said overlapping elements holding the weighing pan support and support plate together against the bias of the elastic component.

4,237,989
CAPACITIVE LOAD CELL AND METHOD OF MANUFACTURE
Howard B. Lewis, Evergreen, Colo., assignor to National Controls, Inc., Santa Rosa, Calif.
Continuation-in-part of Ser. No. 910,833, May 30, 1978, abandoned. This application May 11, 1979, Ser. No. 38,328
Int. Cl.³ G01G *3/14*; G01L *5/12*
U.S. Cl. 177—210 C **8 Claims**



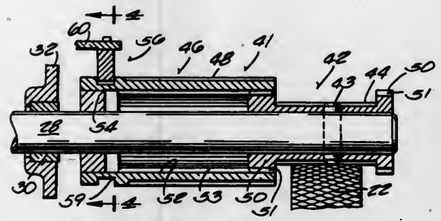
1. In a load cell: a first plate of electrically conductive material mounted in a fixed position, an arm of ceramic material rigidly mounted at one end thereof, a second plate of electrically conductive material carried by the ceramic arm in facing relationship to the first plate, and means for applying a load to the ceramic arm to flex the arm and change the spacing between the plates to provide a capacitance corresponding to the load.

4,237,990
OMNIDIRECTIONAL VEHICLE
Hau T. La, P.O. Box 12398, Gainesville, Fla. 32601
Filed Jan. 2, 1979, Ser. No. 570
Int. Cl.³ B60B *19/00*; B62D *57/00*
U.S. Cl. 180—7 R **41 Claims**



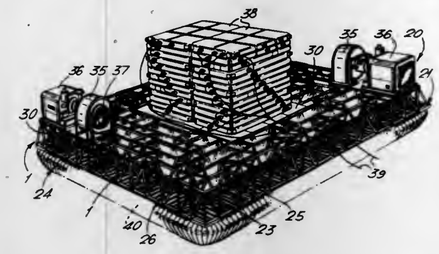
1. A wheeled vehicle comprising a body, three wheels for supporting said body on a surface, each said wheel being attached to said body and rotatable about an axis fixed with respect to said body, each said wheel having a center point at which its said axis intersects the plane of the wheel, the centers of said wheels being disposed at the corners of a first finite triangle defining a first plane, each said wheel comprising a plurality of rollers disposed around its periphery for supportingly engaging said surface, said rollers having rotational axes oriented at a respective angle as measured counterclockwise from said respective wheel axis to said roller axis to the respective wheel axis for each said wheel as projected onto said first plane, said roller axes and said wheels being so oriented that, as taken for the roller of each wheel which is in lower dead center position in engagement with said surface, said roller axes define the sides of a second finite triangle defining a second plane, and means on said body connected to said wheels for driving each said wheel about its said axis.

4,237,991
SELF-PROPELLED LAWN MOWER
Eugene H. Schlapper, Libertyville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Continuation-in-part of Ser. No. 872,638, Jan. 26, 1978, abandoned. This application Dec. 8, 1978, Ser. No. 967,610
Int. Cl.³ B60K *23/00*
U.S. Cl. 180—74 **6 Claims**



1. A self-propelled rotary lawn mower comprising a frame supported on a plurality of wheels for movement over the ground, at least one of said wheels being adapted to serve as a drive wheel, a prime mover supported on said frame, a cutter blade drivingly connected to said prime mover and mounted within a housing for rotation relative to said frame, a drive shaft mounted on said frame for rotation relative to said frame and disposed in parallel relationship to the axis of said drive wheel, means drivingly connecting said prime mover to said drive shaft, drive means on said drive shaft for selectively driving said drive wheel at two different speeds including a first drive member mounted on said drive shaft for common rotation therewith and including a first generally circular drive surface for frictionally engaging the outer periphery of said drive wheel, and a pair of radially outwardly extending, axially-spaced annular shoulders disposed adjacent the opposite ends of said first drive surface and having a diameter greater than the diameter of said first drive surface, each of said shoulders having a plurality of circumferentially-spaced, axially-extending splines, a second drive member including a secnd generally circular drive surface having a diameter greater than the diameter of said first drive surface, said second drive member also including a central bore receiving said annular shoulders and having a plurality of circumferentially-spaced, axially extending internal splines receiving said shoulder splines, whereby said second drive member is mounted on said drive shaft for common rotation therewith and for axial movement relative to said first drive member between a first position wherein said second drive member is axially spaced from said drive wheel and said first drive surface is exposed for engagement with the outer periphery of said drive wheel and a second position axially spaced from said first position wherein said second drive surface is located for engagement with the outer periphery of said drive wheel, a shift member movable axially of said drive shaft and operably connected to said second drive member for relative rotation therebetween and for moving said second drive member axially of said drive shaft relative to said first drive member between the first and second positions in response to shift member movement axially of said drive shaft, and means for moving said drive shaft and said drive wheel relative to each other between a drive position wherein one of said first and second drive members is in driving engagement with said drive wheel and a non-driving position wherein said first and second drive members are disengaged from said drive wheel.

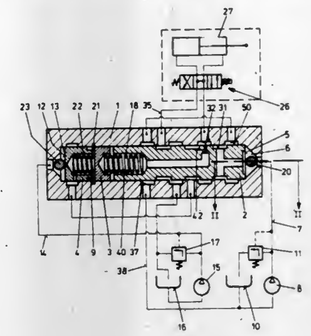
4,237,992
MODULAR LOAD-SUPPORT VEHICLE
Ian R. Bristow, Romsey, England, assignor to U.B.M. Hover Systems, Southampton, England
Filed May 16, 1978, Ser. No. 906,533
Claims priority, application United Kingdom, May 17, 1977, 20580/77
Int. Cl.³ B60V *1/18*
U.S. Cl. 180—116 **5 Claims**



1. A modular, demountable fluid-cushion-supported vehicle, comprising:
an openwork base frame structure;
a plurality of load-support modules disposed in close-packed rows on the base frame structure so as to form a load-support surface, each module comprising first and second openwork frame structures of rectangular plan form disposed one above the other on a common central axis, with load support members attached to and extending between the first and second frame structures, said first and second frame structures having substantially the same plan form but differing dimensions so that the sides of one of the first and second frame structures are spaced further from the central axis than the sides of the other of the first and second frame structures, whereby the modules can be stacked together one on another in nested relationship when disassembled, adjacent rows of the nested modules being staggered relative to each other;
floor members fitted into the lowermost of the first and second frame structures of the modules;
means for demountably securing contiguous modules together; and,
a flexible skirt demountably attached to the periphery of the base frame structure.

4,237,993
AUXILIARY POWER STEERING FOR MOTOR VEHICLES
Erich Jablonsky, Babingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany
Filed Jul. 17, 1978, Ser. No. 925,234
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2731975
Int. Cl.³ B62D *5/06*; F15B *20/00*
U.S. Cl. 180—133 **7 Claims**

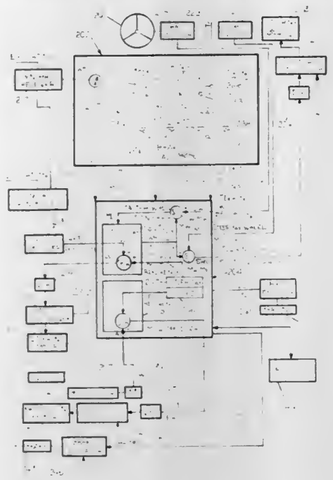
1. In combination with a power steering system having a servomotor (27), a primary pump (8) and an auxiliary pump (15), a transfer valve assembly displaceable between an inactive condition and two operating conditions for respectively establishing separate flow paths between the servomotor and the pumps, said transfer valve assembly comprising a valve body (1), a control valve (2 or 100-102) displaceably mounted within the valve body, a piston (3) engageable by the control valve within the valve body, stop means (21) engageable with the piston for limiting movement thereof by the control valve, a connecting valve (4) engageable with the piston within the valve body, spring means (22) engageable with the connecting valve and the piston for biasing thereof to positions corresponding to the inactive condition of the transfer valve assembly, first fluid pressure actuating means (5–6) connected to said primary pump for displacement of the control valve tending to establish one of the two operating conditions of the transfer valve assembly, second fluid pressure actuating means (12–13) connected to the auxiliary pump for displacement of the connecting valve tending to establish the other of the two operating conditions, and flow rate responsive control means (40-41-42) operatively connected to the primary pump through the control valve for influencing selection of one of the two operating conditions established by the control and connecting valves as a function of the flow rate of fluid from the primary pump to the servomotor.

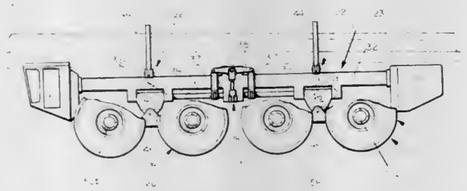


4,237,994
INDEPENDENT STEERING AND PROPULSION SYSTEM FOR OFF ROAD VEHICLE
Bruce J. McColl, Whitby, Canada, assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 842,801, Oct. 17, 1977, Pat. No. 4,153,265. This application Aug. 17, 1978, Ser. No. 934,457
Int. Cl.³ B62D *61/10*, *5/04*
U.S. Cl. 180—179 **8 Claims**

1. In a vehicle for traversing roadless terrain having an elongated main frame and front and rear wheel assemblies respectively mounted to said main frame to permit free vertical movements of each wheel to conform to the terrain, the improvement comprising:
a. means mounting each wheel in the assembly for rotational and steering movements;
b. a first actuator means for individually rotating each wheel in response to at least a first control signal representing a desired speed of rotation for the associated wheel and sensor means for generating a signal representing the actual speed of rotation of said associated wheel;
c. a second actuator means for individually controlling the turn angle of each wheel in response to at least a second control signal representing a desired turn angle for the associated wheel and a sensor means for generating a signal representing the actual turn angle of said associated wheel;
d. a memory means for storing information representing a plurality of modes of operation for the vehicle, each of said modes including information representing a desired direction of rotation, a desired relative speed of rotation and a desired turn angle for each of said wheels; and
e. control means for selecting one of said modes of operation and for generating said first and second control signals, said control means comparing said actual speed and said

actual turn angle signals with said desired speed rotation and desired turn angle information respectively for effecting any corrections to said first and second control signals respectively.



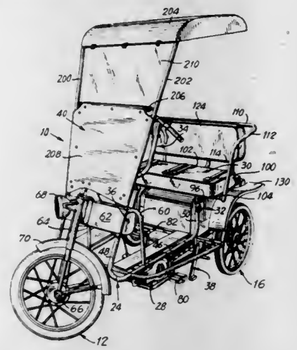


4,237,995

THREE-WHEELED, MOTOR-POWERED, PEDAL-STARTED VEHICLE

Stuart Pivar, New York, N.Y., assignor to American Microcar Incorporated, Farmingdale, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,282
Int. Cl.³ B62D *61/08;* **B62M** *7/04;* **B60J** *1/06*
U.S. Cl. 180—210 **19 Claims**



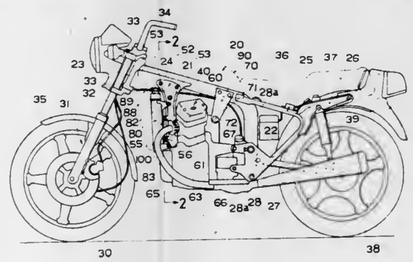
1. A vehicle comprising a frame, three wheels disposed in triangular relationship on and supporting said frame, seating means on said frame, steering means on said frame and coupled to and adapted for steering at least one of said wheels, motor and pedal means on said frame for driving at least one of said wheels, and fuel means on said frame to supply fuel to said motor means, said pedal means being adapted to crank said motor means for starting the latter, said motor means being adapted for self sustaining operation once started, said seating means being of a breadth to support at least two passengers in side-by-side relation, a rotatable yoke mounted on said frame and straddling and coupled to the wheel which is adapted for being steered, said steering means being coupled to said yoke, said steering means including a steering tube which is adapted for yielding under pressure and is connected to said yoke, and handlebars on said steering tube, said steering tube including first, second and third serially interconnected sections, said first section being connected to said yoke to turn the same, said second section being generally horizontal, and third section extending upward at an angle from the second section and forming a junction therewith constituting a yieldable bend.

4,237,996

MOTORCYCLE ENGINE MOUNTING STRUCTURE

Minoru Matsuda, Chofu; Mitsuo Nakagawa, Kawagoe, and Tsuneaki Arakawa, Tokyo, all of Japan, assignors to Honde Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,394
Claims priority, application Japan, Oct. 5, 1977, 52-119756; Feb. 20, 1978, 53-20560[U]
Int. Cl.³ B62D *61/02;* **B60K** *11/04*
U.S. Cl. 180—229 **14 Claims**



1. A motorcycle, comprising:
a head tube;
a main frame member extending rearwardly from said head tube;
supporting means suspended from said main frame member adjacent said head tube;
said supporting means including a square-shaped fan case enclosing a cooling fan;
an engine connected to the rear side of said square-shaped fan case;
a radiator connected to the front side of said fan case;
said fan case being provided with connecting portions for connecting to said supporting means, said engine, and said radiator; and
said connecting portions of said fan case being integrally shaped by die-casting or the like.

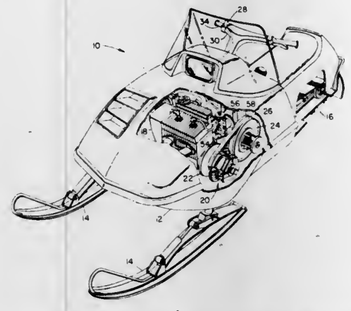
4,237,997

SWITCH AND THROTTLE LEVER COMBINATION FOR USE IN CONJUNCTION WITH SNOWMOBILE ENGINE SPEED LIMITING SYSTEM

Larry D. Swanson, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 878,547, Feb. 16, 1978, Pat. No. 4,186,291. This application Jul. 31, 1979, Ser. No. 62,396
Int. Cl.³ B60K *28/00*
U.S. Cl. 180—272 **1 Claim**

1. In a snowmobile including the combination of an engine r.p.m. control and an operator-presence sensing switch and throttle control, the improvement comprising: a support member provided with an elongate opening; a throttle control lever having a pin fixed thereto and received in said opening; a switch mounted on the support member and having a pair of contacts adjacent one end of the opening in a position for being contacted by said pin to effect a closed condition when the latter approaches said one end; a spring acting between the support member and the pin in a direction urging the latter away from said one end of the opening to a position wherein the pin is free of the switch contacts to effect an open condition; a throttle valve control means including a cable attached to the lever at a location spaced from the pin and biasing means exerting a force on the cable which is greater than the force exerted by the spring on the pin; an engine r.p.m. control



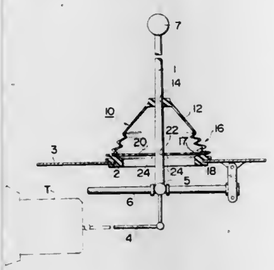
circuit; an engine r.p.m. sensor connected to the engine r.p.m. control circuit for respectively conveying electrical pulse signals thereto representative of the engine r.p.m.; said switch being connected to the r.p.m. control circuit; an ignition circuit coupled for receiving current from said r.p.m. control circuit; said r.p.m. control circuit including component means operable in response to said switch being in its open condition to control current flow to the ignition circuit such as to effect a limiting of the engine speed below a predetermined drive engagement speed and operable in response to said switch being in its closed condition to control current flow to the ignition circuit such as to effect a limiting of the engine speed below a predetermined maximum.

4,237,998

SOUND INSULATING ARRANGEMENT AROUND A VEHICLE GEAR SHIFT LEVER

Hiroshi Matayoshi, Tokyo, Japan, assignor to Nissen Motor Company, Limited, Kanagawa, Japan

Filed Jul. 23, 1979, Ser. No. 59,627
Claims priority, application Japan, Aug. 2, 1978, 53/106448[U]
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—175 **4 Claims**



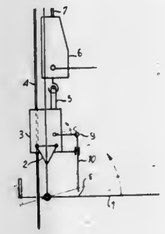
1. A sound insulating arrangement for a vehicle including a gear shift lever extending upward into the compartment of the vehicle through an aperture formed in the floor panel thereof, the arrangement comprising a shift lever boot **12** having a bottom opening slightly larger in size than the aperture **2** and a top opening in fitting engagement with the gear shift lever **1**, the shift lever boot fixed to the floor panel **3** so as to cover the aperture, the shift lever boot provided at least partially with a bellows portion **16**, a sound insulating plate **20** fitted in one fold **17** of the bellows portion of the shift lever boot, the sound insulating plate having a center hole **22** for penetration of the gear shift lever and a number of slits **24** radially extending from the center hole for freedom of movement of the gear shift lever, thereby preventing direct travel of sounds created below the floor panel into the compartment through the aperture.

4,237,999

AUTOMATIC ANTI-TILT DEVICE FOR SCAFFOLDINGS

Bernard Batreau, Pontault Combault, France, assignor to Tractel, S.A., France

Filed Jun. 6, 1979, Ser. No. 46,087
Claims priority, application France, Jun. 9, 1978, 78 17338
Int. Cl.³ B66D *1/54;* **B66F** *11/04;* **E04G** *3/10, 21/32*
U.S. Cl. 182—19 **11 Claims**



1. In a scaffolding or like structure suspended by means of bearer cables from two or more winches, an automatic intervention device for stopping a tilting movement of said scaffolding which comprises:
a safety device suspended from at least one of said bearer cables,
a safety cable parallel to said bearer cables and passing through said safety device,
a stirrup fixed to said safety device and to which is pivoted said scaffolding in such a manner than said stirrup keeps a vertical position irrespective of the scaffolding inclination,
a control lever pivoted to the safety device and adapted, when actuated, to grip said safety device on said safety cable, and
a connecting member having one end fixed to said control lever and having its opposite end adapted to be actuated by the scaffolding, in case of a tilting of this scaffolding exceeding a predetermined angle, for actuating in turn said control lever and causing the safety device to grip the safety cable.

4,238,000

SCAFFOLD STRUCTURE

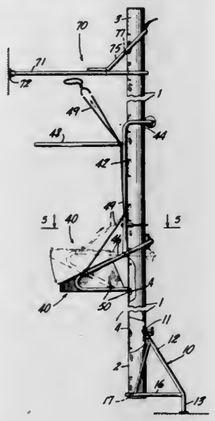
Curt L. Nyman, Skolvägen 22, Aplared, Sweden

Filed Jun. 16, 1978, Ser. No. 916,055
Int. Cl.³ E04G *1/18, 3/02*
U.S. Cl. 182—136 **16 Claims**

1. A scaffold structure comprising:
a tubular column positioned in use in a generally vertical orientation and when so positioned having a lower base end portion and an upper top end portion, said tubular column having a vertical flat side surface portion extending along a substantial portion of its length and openings through the flat side surface portion regularly spaced along its length and dimensioned to define handholds and footholds to permit a person to climb said tubular column;
base supporting means for supporting the base end portion of

said tubular column and for imparting torsional rigidity to said tubular column and maintaining said tubular column in a generally vertical orientation;

top supporting means for supporting the top end portion of said tubular column and for imparting torsional rigidity to said column and maintaining said tubular column in a generally vertical orientation; and



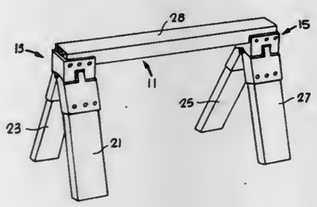
a positionable platform assembly including a platform dimensioned to permit a worker to stand thereon, and mounting means for positionably mounting said platform assembly on said tubular column at selected positions along the length thereof to permit selection and adjustment of the height of said platform above said base end portion of said tubular column.

4,238,001

KNOCKDOWN SAWHORSE BRACKET CONSTRUCTION

Donald W. Alexander, 1104 Dillon, Napa, Calif. 94558

Filed Aug. 9, 1979, Ser. No. 65,367
Int. Cl.³ F16M *11/00*
U.S. Cl. 182—153 **11 Claims**



1. A sawhorse bracket comprising,

a central bracket member attachable to a beam and having downwardly extending, aligned hinge posts,

a pair of opposed leg members, each attachable to an end of a beam, said leg members having upwardly extending, aligned hinge posts interleaving with aligned hinge posts of the other leg member and the downwardly extending hinge posts of said central bracket member, and

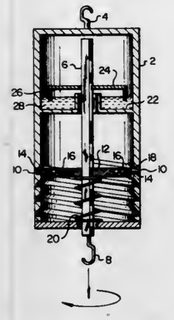
a removable hinge pin for passage through said hinge posts of said leg members and said central bracket member, whereby said leg members may be removably joined to said central bracket member.

4,238,002

SUSPENSION DEVICE

Don L. Hexamer, 6142 Royalton, Dallas, Tex. 75230

Filed Jul. 31, 1978, Ser. No. 929,542
Int. Cl.² F03G *3/00*; F16H *25/20*
U.S. Cl. 185—27 **10 Claims**



1. Apparatus for suspending and rotating a body having mass comprising;

(a) a housing,

(b) a shaft within said housing and extending from one end thereof, said shaft coupled to said housing by spiral cam means for rotating said shaft in response to axial movement of said shaft,

(c) means for supplying a load to said shaft to thereby cause said shaft to rotate by action of gravity on said load;

(d) damping means contained within said housing; and

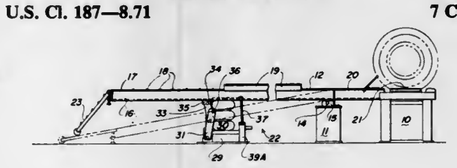
(e) arm means operably connected to said shaft and extending into said damping means whereby rotation of said shaft causes movement of said arm means within said damping means to thereby control rotational speed of said shaft.

4,238,003

VEHICLE LIFT RACK

Lee Hunter, 13501 Ladue Rd., Creve Coeur, Mo. 63141

Filed Jul. 30, 1979, Ser. No. 61,834
Int. Cl.³ B60S *13/00*
U.S. Cl. 187—8.71 **7 Claims**



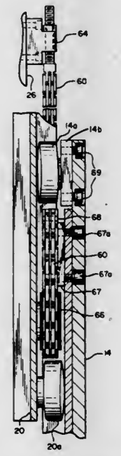
1. In a vehicle lifting rack: a pair of runways in spaced parallel positions and having front ends and rear ends; elevated stands pivotally supporting said runways front ends such that said runways are in slanted positions with the rear ends lower for vehicle run-on and run-off maneuvering; a base located beneath each runway spaced from said rear ends; lifting means carried by each base and engaged under the associated runway for operating said runways between slanting and raised positions; a shaft extending between and operably carried by said bases; first links having lower ends secured to said shaft beneath said runways; second links having upper ends secured to said runways; means pivotally connecting said first and second links for movement between folded positions with said runways in slanted positions and extended positions with said runway raised for limiting the extent of the runway lift by said lifting means, said shaft coordinating the movement of said first links for substantially simultaneous movement relative to the movement of said runways; safety strut means supported by and movable relative to said shaft beneath said runways and movable into safety positions preventing lowering of said runways; means interconnecting said safety strut means for each runway; resilient means connected to said interconnecting means to cause substantially simultaneous movement of said safety strut means into safety positions upon lifting of said runways; and latch means carried by one of said bases in position to engage said interconnecting means upon movement of said safety strut means out of safety position in opposition to said resilient means such that said safety strut means is held out of runway safety position to permit runway lowering to the slanted positions.

4,238,004

HIDDEN CHAIN ASSEMBLY FOR LIFT TRUCK MAST

Harlan D. Olson, Sandy, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Jul. 18, 1979, Ser. No. 58,561
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 E **9 Claims**



1. A load-lifting structure for an industrial lift truck or the like comprising:

(a) a telescopic mast comprising multiple relatively reciprocable mast sections having respective elongate upright members longitudinally extensible and contractable with respect to each other and, when said upright members are contracted, juxtaposed with each other in spaced, transverse relation, said juxtaposed upright members having elongate, transversely-extending flange means for strengthening said upright members, said flange means defining an elongate enclosure between said juxtaposed upright members bounded longitudinally by said flange means;

(b) a flexible tension member having one end connected to a first one of said juxtaposed upright members by an anchor located within said enclosure adjacent one end of said first upright member, and extending from said anchor through said enclosure longitudinally toward the opposite end of said first upright member;

(c) a sheave rotatably mounted on the other one of said juxtaposed upright members and positioned transversely between said upright members, said flexible tension member being trained around said sheave;

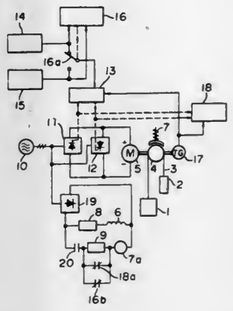
(d) said anchor including detachment means operatively accessible while said anchor is within said enclosure for permitting detachment and reattachment of said flexible tension member with respect to said first upright member while said upright members are juxtaposed with respect to each other.

4,238,005

DECELERATION CONTROLLING APPARATUS FOR ELEVATOR

Eiki Watanabe, and Nobuo Anzai, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1978, Ser. No. 940,770
Claims priority, application Japan, Sep. 21, 1977, 52-113572
Int. Cl.³ B66B *1/32*
U.S. Cl. 187—29 R **5 Claims**



1. A deceleration controlling apparatus for an elevator which comprises:

a friction type brake for applying a braking torque to a motor for driving a cage;

a deceleration detector for detecting a deceleration at a speed of the cage over a normal decelerating speed; said deceleration detector generating a signal whenever a normal stopping means is switched to a terminal stopping device;

a regeneration discriminating circuit for discriminating the regenerative operation of the motor; and

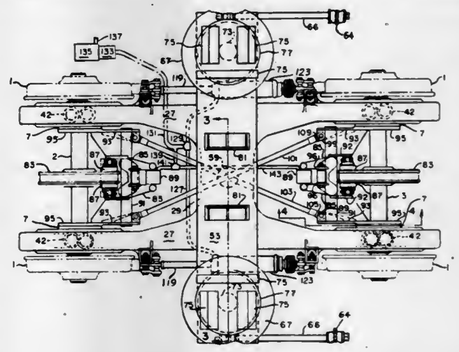
a braking torque controlling circuit which applies a braking torque to the motor by the friction type brake when both the deceleration detector and the regeneration discriminating circuit are operated.

4,238,006

RADIAL AXLE TRUCK DISC BRAKES

Keith L. Jackson; William C. Jones, and Kenneth E. Spencer, all of Granite City, Ill., assignors to General Steel Industries, Inc., St. Louis, Mo.

Filed Aug. 24, 1978, Ser. No. 936,211
Int. Cl.³ B61F *5/30, 5/38*; B61H *5/00, 13/26*
U.S. Cl. 188—59 **15 Claims**



1. In a railway truck having a pair of longitudinally spaced wheel and axle assemblies each comprising an axle and a pair of wheels mounted thereon, bearing structures including journal

bearings supported on the end portions of said wheel and axle assemblies at each side of the truck, a rigid truck frame, vertically and longitudinally yieldable means supporting said truck frame on said bearing structures to permit said bearing structures to move vertically with respect to said truck frame for cushioning vertical impacts received by the wheels from the track structure and to accommodate turning movements of said wheel and axle assemblies in the horizontal plane with respect to said truck frame, a brake disc mounted on the central portion of at least one of said axles, a yoke having side members fixedly mounted on the bearing structures on said one axle, and disc brake mechanism including opposing shoes mounted on said yoke and positioned on opposite sides of said disc, said bearing structures forming the sole support of said yoke, and through said yoke, of said disc brake mechanism whereby to facilitate turning movements of the respective wheel and axle assemblies in the horizontal plane while maintaining the normal orientation of said disc brake mechanism with respect to said axle-mounted brake disc, said frame supporting means being arranged to oppose tipping longitudinally of the truck by said bearing structures and the yoke supported thereby about the axis of said one axle in response to disc brake torque reactions received by said structures from said yoke.

4,238,007

BRAKE HAVING A RING-LIKE BRAKING MEMBER

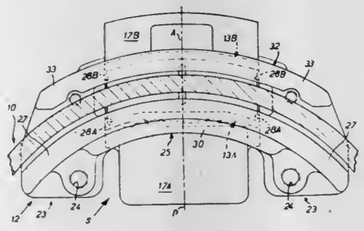
Michel C. M. Ygnard, Ermont, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Continuation of Ser. No. 926,731, Jul. 21, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,833

Claims priority, application France, Jul. 29, 1977, 77 23394

Int. Cl.³ F16D *53/00*

U.S. Cl. 188—76 **4 Claims**



1. A brake of the type comprising a fixed support, a rotatable brake member in the overall form of a cylindrical ring, inner and outer brake pads respectively disposed on radially inner and outer sides of said brake member, a clamping member straddling said brake member and said brake pads, control means mounted in said clamping member for applying said brake pads in conjunction with said clamping member simultaneously against said brake member along a pressure axis in a radial direction relative to said ring brake member passing through central regions of said brake pads, said fixed support comprising two side members each disposed on both sides of an axial plane of said brake containing said pressure axis, means on said side members for circumferentially retaining said brake pads, and wherein the improvement comprises a part-cylindrical connecting bar integrally formed with and joining said side members inside said brake member, and said connecting bar having circumferential ends joining said connecting bar to said side members and being disposed substantially in alignment with said means on said side members for circumferentially retaining the corresponding inner brake pad, fastening lugs for fixing said fixed support, said fastening lugs extending generally parallel to the axis of said cylindrical ring brake member along the radially inner side of said part-cylindrical connecting bar, said fastening lugs being disposed, when viewed in parallel to the axis of said cylindrical ring brake member, generally within the confines of the space of a circular segment defined between the circumferential ends of the radially inner side of said part-cylindrical connecting bar and said bar.

4,238,008

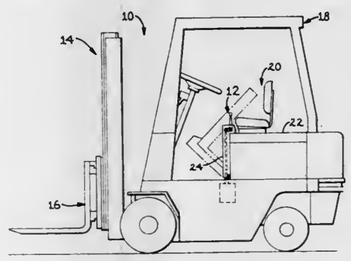
CONTROL VALVE LINKAGE

Robert D. Higgins, Highland Heights, and John E. Wible, Painesville, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Oct. 6, 1978, Ser. No. 949,323

Int. Cl.³ B60K *26/00;* **G05G** *7/16*

U.S. Cl. 180—328 **8 Claims**



1. In a control valve linkage (**12**) having a control valve (**32**) mounted beneath a floor (**34**) of a vehicle (**10**), and a control member (**30**) having a top end portion extending upwardly from the control valve (**32**) through the floor (**34**), axial positioning of said control member (**30**) determining a control signal from said control valve (**32**) and controlling operation of a work circuit carried by the vehicle (**10**), the improvement comprising:

a link member (**36**) having first and second member end portions;

means (**40**) for attaching said first member end portion to said top end portion of said control member (**30**), said link member (**36**) being pivotable about an axis and only in a plane;

an enclosure structure (**46**) having first and second structure end portions, said structure (**46**) being positioned a spaced distance from and substantially parallel to said link member (**36**);

means (**50**) for attaching said structure first end portion to said vehicle (**10**) at a location above said floor (**34**) adjacent said member first end portion for pivoting in said plane;

a bellcrank (**53**) having a first arm (**54**), a second arm (**60**) and a central portion, said first arm (**54**) and said central portion being in said plane;

means (**56**) for attaching said first arm (**54**) to said member second end portion for pivoting in said plane; and

means (**58**) for attaching said central portion to said structure second end portion, said bellcrank (**53**) being pivotable in said plane;

said structure (**46**), said link member (**36**), said first arm (**54**) and said spaced distance between said means (**40**) and said means (**50**) defining a substantially parallelogram linkage (**45**) in said plane providing pivoting of said link member (**36**) about said means (**40**) without axial movement of said control member (**30**) and providing pivoting of said second arm (**60**) to provide axial movement of said link member (**36**) to axially move said control member **30** without significant pivoting of said link member (**36**) about said means (**40**).

4,238,009

VIBRATION DAMPER FOR VEHICLES

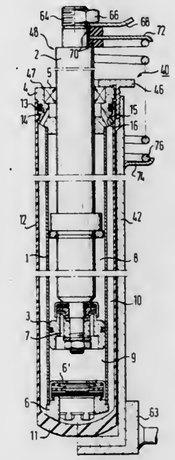
Felix Wössner, Schweinfurt, and Günther Handke, Euerbach, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 935,877

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741998

Int. Cl.³ F16F *9/06, 9/54*

U.S. Cl. 188—315 **11 Claims**



1. Vibration damper, such as used in a vehicle, includes an axially extending cylinder having a first end and a second end, a piston rod extending into the first end of said cylinder, a piston connected to said piston rod and located within said slidably displaceable through said cylinder, said piston transversely dividing the interior of said cylinder into a first working space between said piston and the first end of said cylinder and a second working space between said piston and the second end of said cylinder, said first and second working spaces are arranged to contain a fluid, a damping device located in said piston and interconnecting said first and second working spaces for affording the flow of fluid between said working spaces, an axially extending sleeve-like container laterally enclosing said cylinder and forming an axially extending annular reservoir therebetween with said reservoir arranged to be filled partly with a liquid and partly with gas, said reservoir being in fluid connection with the second working space in said cylinder, said container having a first end adjacent the first end of said cylinder and a second end adjacent the second end of said cylinder, a piston rod guide fitted into and closing the first end of said cylinder and into fitted into and sealing the first end of said container, said piston rod extending through said piston rod guide into said cylinder, said container including a transverse member closing off the second end of said container and extending transversely of the axis of said cylinder, the second end of said cylinder supported against said transverse member so that in the axial direction said cylinder is supported between said piston rod guide and said transverse member, wherein the improvement comprises that said container being formed at least at the first end thereof of a radially elastically expandable material, said piston rod guide and container are interengaged by a snap-like connection so that said piston rod guide and said container are movably displaceable in the axial direction of said cylinder relative to one another during assembly for a portion of the axial length of said container from the first end thereof before the snap-like connection is established, the snap-like connection comprises a projection formed on and extending radially from one of said container adjacent to the first end thereof and said piston rod guide and an indentation formed in the outer one of said container adjacent to the first end thereof and said piston rod guide, with said projection extending into said indentation and forming the snap-like connection between said container and said piston rod guide, said projection and indentation being dimensioned in the axial direction so that a certain amount of axial play is provided between said container and piston rod guide when the snap-like connection is effected, and means for applying an axially directed force between said piston rod guide and said container comprising first means for applying an axially directed force to said piston rod guide with the force directed toward the second end of said container and second means for applying an axially directed force to the second end of said container directed toward the first end thereof so that due to the axial play a significant axial force is not applied to the axially extending portion of said container and the axially directed force is directed through said cylinder.

4,238,010

CURRENT TRANSMITTING SYSTEM FOR TRACKWAY TYPE MOTOR VEHICLE

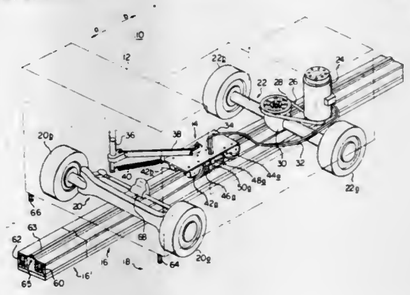
Yoshiaki Hidaka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Feb. 16, 1979, Ser. No. 12,807

Claims priority, application Japan, Feb. 20, 1978, 53-19586[U]

Int. Cl.³ B60M *1/04*

U.S. Cl. 191—31 **3 Claims**



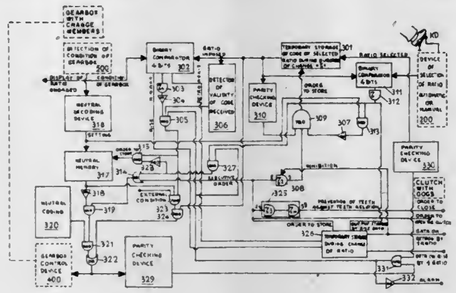
1. A current transmitting system having a bus bar unit and a current collecting unit which rides on said bus bar unit to run along the same for transmitting current carried by said bus bar unit to an electric device mounted in a self-propelled vehicle, said bus bar unit comprising a body having therein a groove and thereon a hinged lid portion which sealingly closes said groove when pressed against the body proper, and a current carrying naked cable fixedly received in said groove; said current collecting unit comprising a current collecting shoe, a horizontal roller engaging at the cylindrical surface thereof with a back surface of said lid portion for continuously opening said lid portion to allow said shoe to be in sliding contact with said naked cable when moved in a direction, and a vertical roller for pressing at the cylindrical surface thereof the opened lid portion against the body proper to close said groove with said lid portion when moved in the direction, which is characterized in that said shoe has a tapered end at a section thereof which becomes a front of said shoe when said shoe moves in the direction, said tapered end pointing in said the direction and having an inclined side upon which said back surface of said lid portion bears to cause raising of the lid portion from the body proper when said shoe moves in the direction under a state in which said lid portion is disengaged from said horizontal roller.

4,238,011

DEVICE FOR CHANGING THE GEARS AUTOMATICALLY ON A SYNCHRONIZED GEARBOX

Jean-Paul Sibeud, Chaponnay, and Jean-Mari Noyer, Ste Foy les Lyon, both of France, assignors to Automobiles M. Berliet, Lyons, France

Division of Ser. No. 563,377, Mar. 31, 1975, Pat. No. 4,140,031.
This application Oct. 19, 1977, Ser. No. 843,389
Claims priority, application France, Mar. 29, 1974, 74 11917
Int. Cl.[3] B60K *41/22*
U.S. Cl. 192—3.56 **7 Claims**



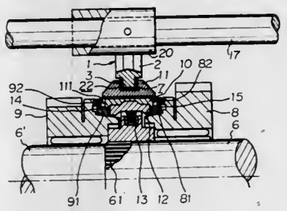
1. A processing device for automatically controlling changes of speed in a synchronized gearbox associated with a clutch of a vehicle, comprising, in combination:
- a gearbox having change members;
- a gearbox control device (**400**) operatively connected with and controlling said change members of said gearbox;
- a device (**200**) for selection of speed ratios;
- a device (**500**) for detecting the condition of said gearbox;
- a first comparator (**302**);
- an electronic assembly including logic elements;
- said electronic assembly having an input section which includes said first comparator (**302**) operably and electrically connected between said speed ratio selection device (**200**) and said gearbox condition detecting device (**500**);
- said electronic assembly having its output operably and electrically connected to said gearbox control device (**400**) for controlling said change members of said gearbox;
- said input section of said electronic assembly also including a memory device (**301**) for the temporary storage of the code of a selected ratio;
- said memory device (**301**) being operably and electrically connected between said speed ratio selection device (**200**) and said first comparator (**302**);
- said speed ratio selection device (**200**) selecting a ratio code and transmitting said selected ratio code to the input of said temporary storage memory (**301**);
- said gearbox condition detection device (**500**) producing a gearbox condition code and transmitting said bearbox condition code to said first comparator (**302**);
- and, when said first comparator (**302**) detects a difference between said ratio code and said gearbox condition code, said first comparator (**302**) emitting:
  - a "progression" pulse for increasing by one speed if the selected ratio code is greater than said gearbox condition code; and
  - a "regression" pulse for decreasing by one speed if the selected ratio code is less than said gearbox condition code;
- said electronic assembly also including a validity detector (**306**) operably and electrically connected to said temporary storage memory (**301**);
- said temporary storage memory (**301**) transmitting an input code to said validity detector (**306**);
- said detector (**306**) detecting the validity of the input code received from the temporary storage memory (**301**);
- said electronic assembly also including a first AND gate (**305**), a "Neutral" memory (**317**), and a temporary storage means (**326**);
- the output of said validity detector (**306**) and the output of said first comparator (**302**) being both connected as inputs to said first AND gate (**305**);
- the output of said first AND gate (**305**) being electrically connected to and shared between said "Neutral" memory (**317**), said temporary storage means (**326**), and said gearbox control device (**400**);
- said first AND gate (**305**) emitting an executive order to execute the change of ratio when the imbalance of the first comparator (**302**) and the validity of the codes are confirmed;
- said executive order producing:
  - an order for said temporary storage means (**326**) to memorize the nature of said change of ratio;
  - an order to open the clutch;
  - an order to bring the gearbox into "Neutral"; and
  - an order to store said selected ratio code in said temporary storage memory (**301**) when the following three requirements are met: (a) the parity of the selected ratio code has been checked and found correct; (b) said executive order is present; and (c) said temporary storage memory (**301**) is not already in a storage condition.

4,238,012

SHIFT FORK IN MANUAL TRANSMISSION

Hiroshi Takiguchi, No. 1591-16, Hirato-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, and Tsuneyoshi Ohhazama, No. 1-1, 1-chome, Iwai-cho, Hodagaya-ku, Yokohama-shi, Kanagawa-ken, both of Japan

Filed Oct. 16, 1978, Ser. No. 951,775
Claims priority, application Japan, May 13, 1978, 53-64488
Int. Cl.[3] F16D *11/10, 21/04, 23/06*
U.S. Cl. 192—48.91 **9 Claims**



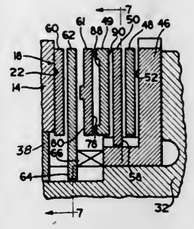
1. In a manual transmission of the synchromesh type, having transmission gears (**8, 9**) mounted on a main shaft (**6**) and a drive shaft (**6'**), a clutch means (**11**) with a circumferential groove shiftable along an axial line of the main shaft between the transmission gears, and a shift fork (**1**) shifting the clutch means to engage the transmission gears, an improved shift fork for manual transmission comprising:
- (a) a main body (**2**) with an end part (**22**) smaller in cross-section than the circumferential groove (**7**) of the clutch means (**11**);
- (b) a piece (**3**) made of a material having high wear resistibility, said piece (**3**) having a channel shape section and integrally formed with a plurality of elastic tongue-like projections (**33**) on the bottom of the channel shape section; and,
- (c) grooves (**4**) in said main body (**2**) formed at said end parts (**22**), said grooves (**4**) corresponding to the tongue-like projections (**33**), said tongue-like projections (**33**) being urged into said grooves (**4**) so as to tightly attach the piece (**3**) to the end part (**22**) of the main body of the shift fork.

4,238,013

CONTACT IMPROVER FOR CLUTCH OF A SLIP LIMITING DIFFERENTIAL

Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 8, 1978, Ser. No. 904,076
Int. Cl.[3] F16D *13/60;* F16H *1/38*
U.S. Cl. 192—54 **17 Claims**



1. A clutch for retarding relative rotation between two rotatably members, said clutch comprising: a first annular thrust surface rotatable with one of said members; a second annular thrust surface rotatable with the other of said members and in substantially opposed relation to said first thrust surface; at least one disc interposed between said thrust surfaces, said disc having opposed annular contact surfaces having a given radial dimension and configured to be aligned relative to said thrust surfaces; means to reduce the distance between said thrust surfaces to move adjacent surfaces toward one another; first means associated with one of said surfaces for exerting a force on an adjacent surface along a desired circle of contact within said boundries of said annular thrust surfaces, said first means being the only force exerting means associated with said one surface; second means associated with another surface different from said one surface and said respective adjacent surface upon which said first means exerts a force to exert a force on an adjacent surface along a desired circle of contact radially outwardly from said first means within said boundries of said annular thrust surfaces; and third means associated with said another surface different from said one surface and said respective adjacent surface upon which said first means exerts a force to exert a force on said an adjacent surface along a desired circle of contact radially inwardly from said first means within said boundries of said annular thrust surfaces, said second and third means being the only force exerting means that may be associated with said another surface, whereby movement of said thrust surfaces toward one another will result in said contact.

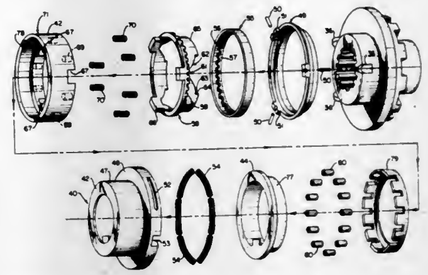
4,238,014

AUTOMATIC LOCKING GEAR FOR FOUR WHEELED DRIVE VEHICLES

Harry A. Petrak, 2565 Table Mesa Dr., Boulder, Colo. 80303

Filed Jun. 16, 1978, Ser. No. 916,288
Int. Cl.[3] B60B *27/00;* F16D *43/20*
U.S. Cl. 192—54 **18 Claims**

1. A clutch assembly adapted to drivingly connect a driving member to an outer concentric driven member automatically in response to the application of torque to said driving member, said clutch assembly comprising:
- a locking member;
- an axially movable cam member having circumferentially spaced cam surfaces axially directed away from said locking member, and resilient means yieldingly urging said cam member into locking engagement with said locking member; and
- cam follower means associated with said driving member and interposed between said cam member and said driven member, said cam follower means including circumferentially spaced lugs interengaging with said cam surfaces, said lugs being movable along said cam surfaces in response to the application of torque to said driving member whereby to urge said driving member axially into engagement with said driven member while imparting an axial thrust to said cam member sufficient to overcome the urging of said resilient means and to release said cam member from locking engagement with said locking member.



4,238,015

TEMPERATURE RESPONSIVE VISCOUS FAN DRIVE

Lawrence F. Schmida, Williamston, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 8, 1978, Ser. No. 904,180
Int. Cl.[3] F16D *33/08, 35/00*
U.S. Cl. 192—58 B **7 Claims**

1. A viscous drive comprising: a housing member having an annular peripheral surface; a clutch member rotatable relative to the housing member and disposed within the housing member to define an operating chamber, the clutch member having a pair of axially spaced generally radially extending annular surfaces and an outer peripheral surface spaced from the peripheral surface of the housing member; a fluid storage chamber separate from and adjacent to the operating chamber; an opening between the operating chamber and the storage chamber for providing fluid flow communications between the chambers, the opening being carried by the housing member; valve means effecting selective fluid communication via the opening between the storage chamber and the operating chamber temperature responsive means controlling the valve means; fluid disposed within the storage chamber and being selectively displaced into the operating chamber when the valve means is in a fluid communication position whereby the fluid is positioned in the operating chamber to transmit energy via the fluid from one of the members to the other of the members; pump means comprising an impeller element carried by one of the members in the operating chamber and being effective to pump fluid from the operating chamber to the storage chamber, the impeller element being located radially outwardly from the rotational axis substantially along the outer periphery of the clutch member; and a notch for improving pump-out time in the peripheral surface of one of the members extending

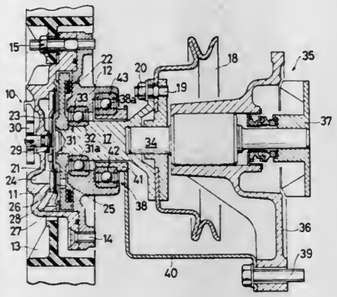
parallel to the axis between the axially spaced surfaces of the clutch member and opening radially toward the peripheral surface of the other member.

4,238,016

VISCOUS FLUID COUPLING DEVICE

Motoharu Yoshida, Ichinomiya, and Hiroto Masai, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 20, 1978, Ser. No. 917,280
Claims priority, application Japan, Jun. 20, 1977, 52/73034
Int. Cl.³ F16D *35/00*
U.S. Cl. 192—58 B **5 Claims**



1. A viscous fluid coupling device for driving a cooling fan of a vehicle, comprising an input shaft including a rotor and driven by an engine, output means connected to said cooling fan and made of a metal material whose coefficient of thermal expansion is relatively large, a valve plate dividing an interior of said output means into a reservoir chamber and an operating chamber in which said rotor is positioned, said reservoir chamber being in communication with said operating chamber, said rotor and said output means having opposed spaced surfaces providing a fluid shear space therebetween and cooperable with a viscous fluid in said shear space in order to transmit rotational torque from said rotor to said output means, a first bearing set interposed between said input shaft and said output means, a stationary member secured to a fixed part of the vehicle and made of a metal material whose coefficient of thermal expansion is relatively small, and a second bearing set interposed between said output means and said stationary member;

whereby, at a temperature of a predetermined value, the output means is compressed thereby locking the second bearing set such that said second bearing set acts as a braking mechanism preventing rotation of the cooling fan.

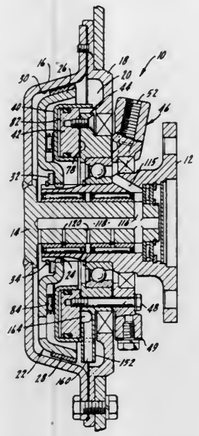
4,238,017

CLUTCH MECHANISM

Romas B. Spokas, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 5, 1977, Ser. No. 857,550
Int. Cl.³ F16D *43/25*
U.S. Cl. 192—82 T **8 Claims**

1. A temperature responsive drive mechanism for an engine comprising a driving member and a driven member, a friction clutch connected between said members adapted to provide a releasable coupling therebetween, a stationary actuator mechanism associated with said members and adapted to engage said clutch in response to fluid pressure, a source of fluid pressure, a pair of fluid passages connecting said drive mechanism to said source, a rotatable clutch drum having a friction surface thereon connected to said driving member, a rotatable housing defining said driven member and having said actuator mechanism and said drum mounted therein, whereby one of saidpassages will supply pressure to the actuator to engage the clutch when supplied with fluid pressure when the temperature of the engine exceeds a predetermined maximum, and the other of said passages when supplied with pressure providing lubricant supply to said drive mechanism when the engine is below a predetermined temperature, and a temperature responsive



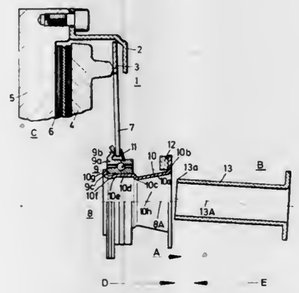
valve connected to operate such that one of said passages acts as a return fluid passage when the other of said passages is connected to said source, and said other passage acts as a return fluid passage when said one passage is connected to said source.

4,238,018

DISENGAGING UNIT FOR DRAWING DISENGAGEABLE FRICTION CLUTCHES, ESPECIALLY FOR MOTOR VEHICLES

Paul Maucher, Sasbach, Fed. Rep. of Germany, assignor to LuK Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Oct. 31, 1977, Ser. No. 846,847
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650140
Int. Cl.³ F16D *23/14*
U.S. Cl. 192—98 **5 Claims**



1. In a disengaging unit for a drawingly disengageable friction clutch having a disengaging member linkable to respective disengaging means of the friction clutch, and further having an anti-friction bearing with a revolving race revolvable together with the disengaging means of the friction clutch, and a non-revolving race rigid with a hollow guide member of the disengaging unit, the disengaging member being axially slidably shiftable by means of the inner bore of the guide member along a guide tube disposed at a transmission side of the disengaging

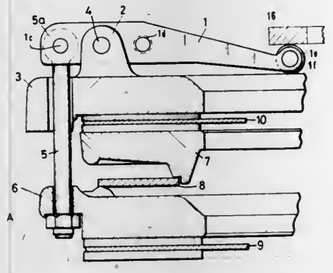
member, the improvement comprising at least two ring-shaped sliding regions formed on said guide member and being axially spaced from one another and mutually separated by a hollow chamber, one of said sliding region facing toward the clutch side of the disengaging member, and the other of said sliding regions toward the transmission side of the disengaging member, at least one of said guide member and said guide tube being formed with a capture inclination for securing the other of said guide member and said guide tube therewith, the capture inclination of said guide tube being formed by a tapering contour narrowing in direction toward the clutch side of the disengaging member at an end region of said guide tube facing toward the clutch side of the disengaging member, the capture inclination of said guide member being formed by a funnel-shaped contour flaring outwardly in direction toward the transmission side of the disengaging member at an end region of said guide member facing toward the transmission side of the disengaging member, the sliding region of said guide member which faces toward the transmission side of the disengaging member having a diameter and a contour which, together with the mutual axial spacing of both sliding regions of said guide member and the construction of said hollow chamber between said sliding regions as well as the respective capture inclination are coordinated so that the disengaging member linkable to the disengaging means of the clutch and said guide tube connectible to the transmission are swingable relative to one another about the sliding region of said guide member facing toward the transmission side of the disengaging member, when the free end of said guide tube is received in vicinity of said hollow chamber of said guide member.

4,238,019

FRICTION CLUTCH

Paul Maucher, Sasbach, and Oswald Dubiel, Bühl, both of Fed. Rep. of Germany, assignors to LuK Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Continuation of Ser. No. 718,518, Aug. 30, 1976, abandoned.
This application Aug. 4, 1978, Ser. No. 930,978
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1975, 2538662
Int. Cl.³ F16D *21/06, 13/71*
U.S. Cl. 192—99 A **13 Claims**



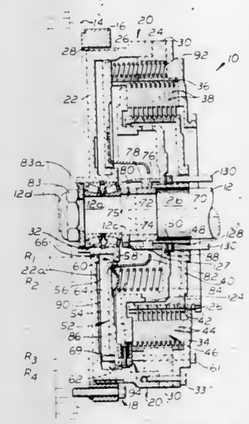
1. In combination, a friction clutch comprising at least one pressure plate, a plurality of levers for actuating the pressure plate, each of said levers being disposed in substantially radial direction of said pressure plate and having a radially inner and a radially outer region, said levers, respectively, comprising a rigid, self-contained prefabricated unitary assembly of at least two stamped-out sheet-metal parts and at least two spacer members holding said sheet-metal parts mutually spaced at a fixed distance from one another, one of said spacer members being located at said radially inner region of said lever and having a portion extending beyond said sheet-metal parts in axial direction of the clutch; linkage means extending in said axial direction of the clutch and connecting a region intermediate said radially inner and said radially outer regions of said levers to said pressure plate, and disengagement means for disengaging the clutch being disposed at said one spacer member at said radially inner region of said lever for operatively actuating said portion of said one spacer member extending beyond said sheet-metal parts so as to disengage the clutch.

4,238,020

CENTRIFUGAL CLUTCH WITH AN OVERSPEED RELIEF VALVE AND CLUTCH MODULATION

Karl A. Nerstad, Peoria; Curtis E. Chadwick, III, Edelstein, and Gordon W. Johnson, Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 8, 1977, Ser. No. 858,864
Int. Cl.³ F16D *43/284, 25/063;* F16K *17/04*
U.S. Cl. 192—103 FA **10 Claims**



1. Apparatus for quickly disengaging a clutch pack of a clutch to prevent damage to an engine due to engine overspeed, comprising:

(a) means for exerting forces on the clutch pack to engage and disengage the clutch, including piston means for moving towards a clutch engaging position in response to fluid pressure produced by centrifugal force, and means for defining with said piston means a fluid chamber;

(b) means for varying the rate at which said chamber is filled with fluid, including means for providing a controlled clearance between said piston means and said defining means which is reduced as said piston means moves towards said clutch engaging position, said clearance being a fluid pathway into said chamber; and

(c) centrifugal relief valve means for discharging fluid in said chamber in response to engine overspeed to disengage the clutch.

4,238,021

END SWITCH FOR A SHAFT DRIVEN THROUGH A LARGE ANGLE OF ROTATION

Adolf Lindner, Rottendorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

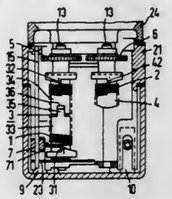
Filed Mar. 16, 1978, Ser. No. 887,136
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714493
Int. Cl.³ F16D *43/26, 71/00*
U.S. Cl. 192—141 **17 Claims**

1. An end switch for use with a shaft being driven in rotation through a substantial angle to an end position, comprising:

a switching member having a stop surface adapted to engage a contact of a stationary switch;

spindle-like means adapted to be driven in rotation with said shaft for moving said switching member so as to bring said stop surface into engagement with said contact at the end of said rotation of said shaft, said spindle-like means moving said member axially relative thereto during a first

portion of said rotation and tangentially thereto during the remaining portion of said rotation, said first portion being larger than said remaining portion; and



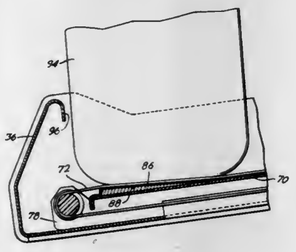
means for maintaining said switching member in operative engagement with said spindle-like means during said tangential relative motion.

4,238,022

AUTOMATIC FORWARD-FEED SHELF

John L. Williams, Atlanta, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Apr. 4, 1979, Ser. No. 26,956
Int. Cl.³ A47F 5/00; B65G 11/00
U.S. Cl. 193—32 **6 Claims**



1. In a shelf having a flexible conveyor belt for supporting a plurality of articles arranged in a column and automatically feeding the articles in said column forward in a columnwise direction when the foremost article in the column is removed, brake means located at a position underneath said conveyor belt and responsive to the presence of an article on said belt and above said position, for stopping the movement of said belt, and substantially rigid support means underlying said conveyor belt, the upper surface of said support means and the underside of said conveyor belt having a mutual coefficient of friction permitting sliding of the conveyor belt on said support means, wherein said brake means comprises a ramp sloping upwardly with respect to said upper surface in the direction of conveyor movement.

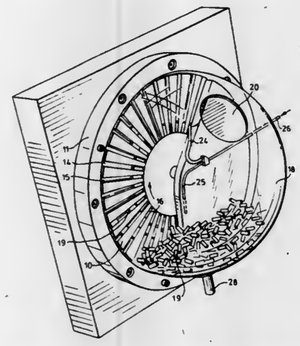
4,238,023

APPARATUS FOR ORIENTING HOLLOW, CAP-LIKE ARTICLES

Barry C. Millar, Islington, and Keith W. Little, Georgetown, both of Canada, assignors to Promatic International Limited, Mississauga, Canada

Filed May 29, 1979, Ser. No. 43,113
Int. Cl.³ B65G 47/24
U.S. Cl. 198—388 **9 Claims**

1. Apparatus for orienting in the same direction hollow, cap-like articles, each having an open end comprising a member rotatably mounted about an axis of rotation, said member having a surface inclined at an acute angle to the horizontal, said surface having a plurality of radially extending grooves therein each having an open end remote from said axis of rotation of said member, pin means located in said grooves opposite the open ends thereof and closer to said axis of rotation than to the open ends of said grooves, said pin means being constructed and arranged to receive thereover and retain caps thereon when said caps are delivered under the influence of gravity to said pin means via said grooves with the open ends of said caps facing said pin means, means for rotating said member about said axis of rotation, a reservoir for caps arranged adjacent to and in communication with a portion of said surface, whereby caps in said reservoir are picked up in said grooves as said surface rotates past said reservoir, first means
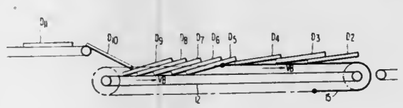


for directing a fluid under pressure into or over said grooves at a point after the location where caps are picked up in said grooves from said reservoir to remove from said grooves all but caps retained on said pins, an exit port located further around in the direction of rotation of said member than said fluid directing means, said exit port communicating with the open ends of said grooves as said grooves move past said exit port and receiving from said grooves caps all oriented in the same direction.

4,238,024

CONVEYOR DEVICE

Tadashi Hirakawa, Mihara, Japan; Kiyomitsu Yoshikawa, Cockeysville, Md., and Toshiaki Kusubayashi, Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 57,809
Int. Cl.³ B65G 47/26; B65H 5/24
U.S. Cl. 198—425 **10 Claims**



1. A conveyor device for separating into separate batches articles continuously fed from one source, said conveyor device comprising:

(a) a first conveyor including a continuous endless belt for receiving articles from the source and collecting the articles in a first batch:

(b) two spaced rollers for mounting said first conveyor for movement about the axes of said rollers;

(c) a second conveyor mounted for movement about said axes;

(d) said second conveyor being arranged to travel along a path outside that of said first conveyor;

(e) said second conveyor including an article-receiving portion extending along only part of the length of said second conveyor; and

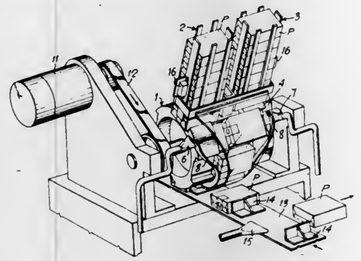
(f) said article-receiving portion being movable above said belt of said first conveyor for receiving articles from the source to collect the articles in a second batch.

4,238,025

DEVICE FOR REPLACING DEFECTIVE ARTICLES

Renato Manservisi, Bologna, Italy, assignor to Cir S.p.A. Divisione Sasib, Bologna, Italy

Filed Apr. 10, 1979, Ser. No. 28,672
Claims priority, application Italy, Apr. 18, 1978, 12569 A/78
Int. Cl.³ B65G 47/68
U.S. Cl. 198—450 **6 Claims**



1. A device for automatically replacing defective articles discarded from a feeding line on which the articles advance in a single row, comprising:

(a) a pair of gravity-fed reserve hoppers each containing a stack of reserve articles, said reserve hoppers being arranged transversely aligned above said feeding line;

(b) a transferring drum, operatively interposed between said reserve hoppers and said feeding line, said drum being driven in step-by-step rotation in relation to the absence on said feeding line of a discarded defective article, the rotational axis of said transferring drum being arranged transversely with respect to the direction of advancement of said feeding line; said transferring drum presenting a plurality of longitudinal grooves, each of which grooves is intended to receive and house a single article, each groove presenting, alternately intercalated with respect to the adjacent groove, a sector member arranged in correspondence with the discharge end of a reserve hopper, each sector member being adapted to close the discharge end of the respective hopper, whereby upon each step rotation of the transferring drum, an article at the bottom of the stack in one reserve hopper, alternately, is sustained by a sector member and maintained in said one hopper, while the article at the bottom of the other reserve hopper, alternately is permitted to fall into a groove and is progressively transferred to said feeding line and;

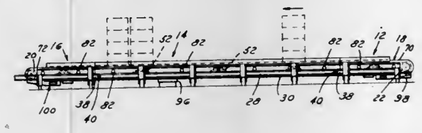
(c) guide means for guiding the articles along the groove during the stepwise rotation, in such a manner as to bring the articles into alignment with said feeding line.

4,238,026

ACCUMULATING CONVEYOR SYSTEM

Ronald J. Mrugala, Brooklyn Park; Keith W. Nord, and Ronald B. Benson, both of Stillwater, all of Minn., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 1, 1979, Ser. No. 80,897
Int. Cl.³ B65G 47/26
U.S. Cl. 198—460 **6 Claims**



1. An accumulating conveyor system comprising:

(a) stationary parallel rails extending from an infeed station to a discharge station for supporting stacks or cases or the like,

(b) channel means movably mounted intermediate said parallel rails,

(c) parallel endless chains, each formed in part by tall links and in part by short links, mounted around said channel means for movement therewith, with said tall links being initially positioned along the length of the upper surface of said channel means,

(d) pneumatic means for at times raising said channel means a distance sufficient to position the plane of the top surface of said tall links above the plane of said parallel rails to thereby lift said stacks or cases off of said parallel rails,

(e) indexing means operatively connected to said channel means for moving said channel means and associated endless chains forward as a unit a distance equal to the length of one stack or case while said pneumatic means is raised, and retracting said channel means and chains once said pneumatic means is lowered, said pneumatic means being adapted to lower said channel means at the end of each forward stroke to thereby reset said stacks or cases onto said parallel rails, said stacks or cases thus being moved forward in stepwise fashion from said infeed station to said discharge station,

(f) electrical switching means operatively connected to said tall and short links and adapted to sense the arrival of a stack or case adjacent the juncture of the tall and short links,

(g) motor means adapted to respond to the actuation of said electrical switching means to slide said endless chains rearwardly relative to said channel means the length of one stack or case, such that said short links become positioned beneath said newly arrived stack or case to permit accumulation of said stacks or cases, and

(h) plate means operatively connected to said channel means and adapted to position said channel means at a different elevation such that the plane of the top surface of said short links is above the plane of said parallel rails when said pneumatic means is raised to thereby lift said stacks or cases off of said rails to be discharged by the action of said indexing means.

4,238,027

WEIGHING APPARATUS FOR WEIGHING CONVEYED PRODUCTS

Burkhard Oelte, Schwaebisch Hall, Fed. Rep. of Germany, assignor to Optima-Maschinenfabrik, Dr. Beuhler GmbH & Co., Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,675
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752193
Int. Cl.³ G01G 11/00
U.S. Cl. 198—504 **15 Claims**

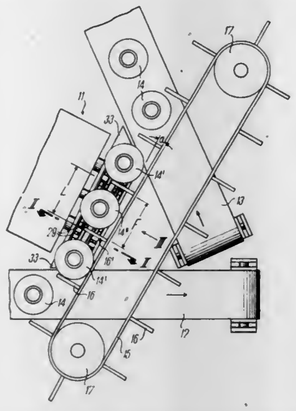
1. A weighing apparatus, for successively conveyed articles, comprising:

a weighing conveyor;

weighing means operatively associated with the weighing conveyor; and,

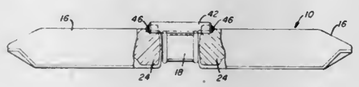
a support conveyor for carrying selected articles of the successively conveyed articles parallel to and out of contact with the weighing conveyor, the support conveyor having means for supporting the selected articles selectively arranged on the support conveyor, such that

unselected articles, which arrive at positions between the supporting means, are carried by the weighing conveyor,



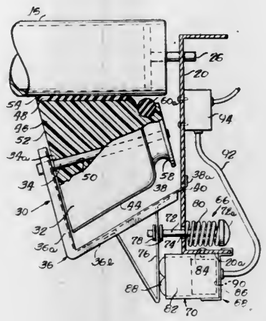
whereby only a predetermined proportion of articles is weighed.

4,238,028
FLIGHT CONVEYOR
Robert C. Lake, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Continuation of Ser. No. 672,568, Mar. 31, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,736
Int. Cl.[3] B65G *19/24*
U.S. Cl. 198—731 **5 Claims**



1. In a flight conveyor having a plurality of spaced pairs of axially aligned elongated flights which extend outwardly from opposite sides of chain connecting portions of a center driven conveyor chain, the improvement comprising: said flights having flight connecting portions adjacent the inner axial ends thereof; a pair of elongated transversely spaced connecting pins each of which extends in the longitudinal direction of said flights and communicate between a respective chain connecting portion and said flight connecting portions of a pair of said flights to secure said pair of flights to said chain connecting portions; the respective longitudinal axes of each of said connecting pins extending at a common elevation and in a common horizontal plane; at least a third elongated connecting pin rigidly communicating between said flight connecting portions of said pair of said flights; and the longitudinal axis of said third connecting portion being parallel to and at an elevation higher than said axes of said first mentioned connecting pins and the lowermost surface of said third connecting portion being at an elevation higher than the uppermost surface of said chain connecting portions whereby a pocket is formed.

4,238,029
ACCUMULATING CONVEYOR
Michael S. Pirro, Jr., 9804 Butternut Dr., Crystal Lake, Ill. 60014
Filed Jun. 23, 1978, Ser. No. 918,512
Int. Cl.[3] B65G *13/06*
U.S. Cl. 198—781 **20 Claims**



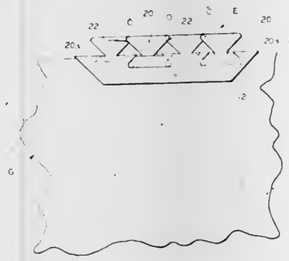
1. An accumulator conveyor comprising, in combination,
frame means including a pair of longitudinal laterally spaced frame members,
a plurality of article carrier rollers, defining a path of travel and supported by said frame means for rotation about axes substantially transverse to said path, said carrier rollers defining at least two discrete zones of rollers,
drive means operatively associated with each discrete zone and adapted to effect driving rotation of at least one of the carrier rollers in the corresponding zone so as to effect movement of an article having engagement with said rotationally driven roller in said corresponding zone,
each drive means including a clutch wheel having a frusto-conical peripheral drive surface, support bracket means supported by one of said frame members for pivotal movement about a pivot axis substantially parallel to said path of travel and supporting said clutch wheel for rotation about an axis lying in a plane substantially normal to a plane containing the axes of said carrier rollers and for pivotal movement with said support bracket means between a position wherein said peripheral drive surface of said clutch wheel engages at least one carrier roller in the corresponding zone with said peripheral drive surface substantially parallel to the rotational axis of said carrier roller, and a position wherein said clutch wheel is spaced from said at least one carrier roller, and means operatively associated with said clutch wheel for effecting continuous rotation thereof,
and control means including sensor means associated with each of said discrete zones and adapted to be actuated by an article disposed within the corresponding zone, and actuator means operatively associated with each of said support bracket means and being responsive to actuation of sensor means within a selected one of the other zones to disengage an associated clutch wheel within a zone upstream from the zone in which an article is detected so as to stop driven movement of an article disposed within said upstream zone when an article is halted within said selected one of said other zones.

4,238,030
ELECTRICALLY CONDUCTIVE COVER SHEATH FOR DIELECTRIC RECORD DISCS AND THE LIKE
Helmut Maylandt, Sachsenweg 6, 7310 Plochingen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 833,454, Sep. 15, 1977, abandoned. This application May 30, 1978, Ser. No. 910,289
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1976, 2642908
Int. Cl.[2] H05F *3/00;* **B65D** *85/30*
U.S. Cl. 206—313 **6 Claims**



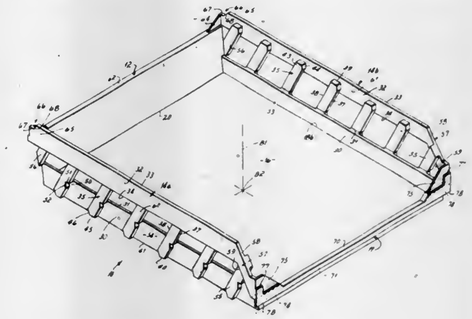
1. A protective cover sheath on a synthetic resin plate such as a sound record disc, capable of reducing electrostatic charges on the plate and the consequent attraction thereof for dust, constituted by a flat pocket made of flexible insulating sheet material which is metallized on both sides with a continuous vapor-deposited metal coating and which fits over and covers the synthetic resin plate and is in area contact with both face surfaces therof, the metallizing layers on opposite sides of said material being electrically connected with each other.

4,238,031
EDGE PROTECTOR
Boyd T. Skaggs, Louisville, Ky., assignor to Container Corporation of America, Chicago, Ill.
Filed Oct. 1, 1979, Ser. No. 80,518
Int. Cl.[3] B65D *81/02, 85/48, 59/00*
U.S. Cl. 206—453 **3 Claims**



1. An edge protector, formed of a unitary blank of foldable paperboard, for holding and positioning within an outer package an edge portion of a sheet of fragile material such as glass, and comprising:
(a) a pair of relatively narrow, elongated first and second panels;
(b) a narrow connecting hinge strip foldably joined at its opposed side edges to corresponding outer edges of respective first and second panels along parallel, interrupted fold lines;
(c) each of said panels having projecting from the outer edges thereof beyond said hinge strip a plurality of lock tabs formed from material cut from portions of said hinge strip and the other panel of said pair and spaced alternately between corresponding tabs projecting from said other panel;
(d) each of said tabs being generally triangular in shape, with one truncated corner thereof extending from its related panel at a location where the fold line joining said related panel to said hinge strip is interrupted and with its widest portion being spaced from said related panel and presenting corner portions which overlap corner portions of adjacent tabs of the other panel to resist the panels from being folded into face to face relation when said panels are folded toward each other about said fold lines to form with said hinge strip a channel for receiving an edge portion of said sheet of glass.

4,238,032
THREE-POSITION STACKING TRAY
Paul G. Thurman, West Liberty, Ohio, assignor to G. B. Lewis Co., Urbana, Ohio
Filed Jul. 30, 1979, Ser. No. 62,022
Int. Cl.[3] B65D *21/04*
U.S. Cl. 206—507 **7 Claims**



1. A three position stacking tray comprising
a floor,
a plurality of angled ribs oriented in a generally vertical plane on each side of said tray floor for forming opposed side walls on said tray, each of said angled ribs on each side being parallel to the other, each of said angled ribs presenting a leading edge and a trailing edge, and said angled ribs on one side of said tray being located in mirror relation with said angled ribs on the other side of said tray,
a top end seat, a middle seat and a bottom end seat, formed on at least some of said angled ribs on each side of said tray floor, said rib seats cooperating to permit stacking of identical upper and lower trays in a nest position one with another by use of a diagonally downward linear stroke of the upper tray relative to the lower tray from an offset separated position into an in-line nest position with said upper and lower tray being like oriented in both the separated and nest positions, to permit stacking of identical upper and lower trays in an intermediate stack position one with another by use of a vertically downward linear stroke of the upper tray relative to the lower tray from an in-line separated position to an in-line intermediate stack position with said upper and lower trays being reverse oriented in both the separated and intermediate stack positions, and to permit stacking of identical upper and lower trays in a high stack position one with another by use of a vertically downward linear stroke of the upper tray relative to the lower tray from an in-line separated position to an in-line high stack position with said upper and lower trays being like oriented in both the separated and high stack position, and
notch structure cut out of a rib between said rib's leading and trailing edges for defining each middle seat, the notch structure of an upper tray's ribs being received in seated

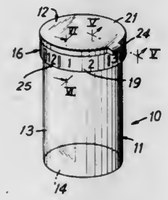
relation on the top end seat of a lower tray's ribs to establish said upper and lower trays in said intermediate stack position, and the upper tray's bottom end seats being adapted to slide over the lower tray ribs' trailing edges, and alternatively the upper tray ribs' leading edges being adapted to slide over the lower tray's top end seats, in assembly of upper and lower trays in the intermediate stack position.

4,238,033

RECEPTACLE FOR MEDICATION

William W. Artzt, 333 Sunset Ave., Palm Beach, Fla. 33480

Filed May 26, 1977, Ser. No. 800,912
Int. Cl.³ B65D *85/56*
U.S. Cl. 206—534 **6 Claims**



1. A receptacle for medication to be taken at prescribed intervals of time, comprising a container member having an opening at the top thereof with a generally circular rim extending around said opening and defining an annular shoulder facing axially away from said opening, a lid member engageable with said rim for closing said opening and being rotatable in respect to said rim when engaged with the latter, said container member having a scale of hour designations angularly spaced apart thereabout adjacent said lid member, said lid member having index means thereon cooperating with said scale for selectively indicating various times in response to turning of said lid member relative to said rim of the container member, said lid member having an annular flange which nests axially with respect to said rim when the lid member closes said opening, a keeper extending radially from said flange for engaging under said shoulder and thereby retaining said lid member in engagement with said rim, said keeper being angularly aligned with said index means on the lid member, and said rim having a plurality of uniformly angularly spaced recesses therein interrupting said shoulder to permit the passage of said keeper and being angularly aligned with selected ones of said hour designations of the scale which represent said prescribed intervals of time so that said lid member is removable from said container member only when said lid member is turned to any selected one of a plurality of positions where said index means and said selected hour designations indicate respective times.

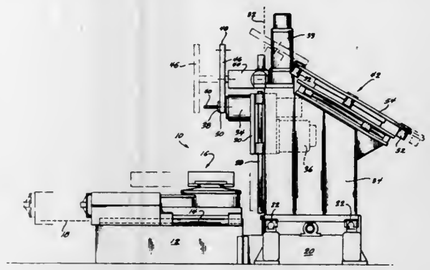
4,238,034

AUTOMATIC TOOL CHANGER FOR MACHINE TOOL

Charles B. Sipek, Hales Corners; Richard Johnstone, Brookfield, and Russell B. Clegg, Milwaukee, all of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Division of Ser. No. 860,705, Dec. 15, 1977, Pat. No. 4,164,810.
This application Apr. 16, 1979, Ser. No. 30,162
Int. Cl.³ B23Q *3/157*
U.S. Cl. 211—1.5 **5 Claims**

1. In a tool storage magazine for storing a plurality of tools for use selectively in the operating station of a machine tool;
a frame;
a tool change station in said magazine for individually receiving the tools for transfer from said magazine to the operating station of the machine tool;
a tool storage ring having a plurality of toolholders for individually holding the tools;
an annular groove formed in said tool storage ring;
a plurality of rollers rotatably supported by said frame in position so that the peripheries of each of said rollers is in



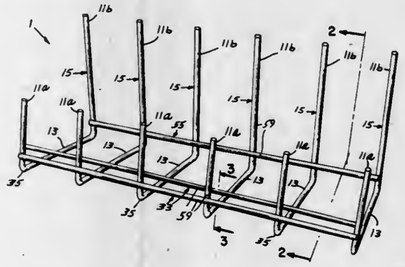
engagement with said annular groove for rotatably supporting said tool storage ring on said frame; and
power means connected to rotate said storage ring for selectively moving said tools into said tool change station.

4,238,035

BABY BOTTLE RACK

Jerry N. Kassanchuk, 1312 S. Tyrol Trail, Golden Valley, Minn. 55416

Filed Sep. 15, 1978, Ser. No. 942,626
Int. Cl.³ A47F *5/01*
U.S. Cl. 211—74 **5 Claims**



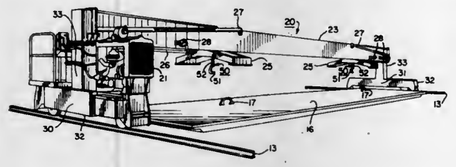
1. A rack upon which are dried various components of a baby bottle assembly including a bottle, a nipple, a plug disc having a grasping tab with a dimension transverse to a main body portion of the disc, and a threaded cap, comprising:
a plurality of generally U-shaped rods, each of which rods includes a first generally vertical arm having a top and bottom end and a second generally vertical arm having a top and bottom end, over which arms can be looped threaded caps and upon which can be placed nipples and inverted bottles, and a horizontal base interconnecting said arms near the bottom ends thereof; and
means for holding plug discs, said means including a pair of parallel and generally horizontal rods, the first of said generally horizontal rods affixed on the interior side of the first arm of each of said U-shaped rods near the base thereof, and the second of said generally horizontal rods affixed on the exterior side of the first arm of each of said U-shaped rods and spaced from said first of said generally horizontal rods a distance less than the transverse dimension of a plug disc grasping tab so as to define a slot in which plug discs can be received.

4,238,036

HATCH COVER CRANE

Gerald P. Lamer; Arnold Petersen, and Norbert W. Lenius, all of Sturgeon Bay, Wis., assignors to Marine Travelift, Inc., Sturgeon Bay, Wis.

Filed Oct. 23, 1978, Ser. No. 953,626
Int. Cl.³ B66C *23/52*
U.S. Cl. 212—147 **11 Claims**



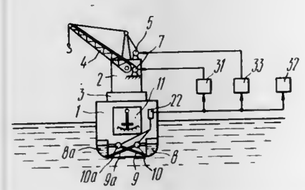
1. A hatch cover crane for removing a hatch cover from a cargo hold opening of a ship including,
support means for operative engagement with a hatch cover positioned upon a cargo hold opening to form a removable cover therefore, said support means extending a width greater than the width of the hatch cover,
lifting means carried by said support means for engaging the hatch cover to remove and replace the hatch cover on the cargo hold opening,
drive means operatively connected to said support means for moving said support means relative to the cargo hold opening and hatch cover positioned thereover, and
aligning means for elevating one end of said support means and thereby fixedly securing said one end of said support means and allowing an opposite end of said support means to be moved relative to said elevated fixed end by operation of said drive means for facilitating aligning said lifting means over the cargo hold opening for removal and replacement of the hatch cover on the cargo hold opening.

4,238,037

ANGLE-OF-HEEL CONTROL MEANS FOR A FLOATING CRANE

Alexandr A. Azovtsev, ulitsa Marshala Govorova, 14, kv. 130, Leningrad; Nikolai D. Velikoselsky, prospekt Gagarina, 15, kv. 29, Sevastopol; Sergei S. Vinogradov, prospekt Kutuzovsky, 26, kv. 246; Alexei E. Vorontsov, naberezhnaya T. Shevchenko, 1/2, kv. 88, both of Moscow; Lev E. Kuznetsov, ulitsa Demyana Bednogo, 30, kv. 29, Leningrad; Viktor I. Podbeltsev, ulitsa B. Morskaya, 38, kv. 4, Sevastopol; Mikhail E. Polevikov, prospekt Zanavsky, 28, kv. 153; Georgy M. Sviridov, prospekt Kosmonavtov, 30, korpus 2, kv. 91, both of Leningrad; Valery G. Fadeev, ulitsa Primorskaya, 27, kv. 45, and Anatoly A. Cherevaty, ulitsa Nadezhdintsev, 20, kv. 32, both of Sevastopol, all of U.S.S.R.

Filed Dec. 11, 1978, Ser. No. 967,984
Claims priority, application U.S.S.R., Dec. 15, 1977, 2550651[I]
Int. Cl.³ B66C *23/52, 13/48*
U.S. Cl. 212—149 **1 Claim**



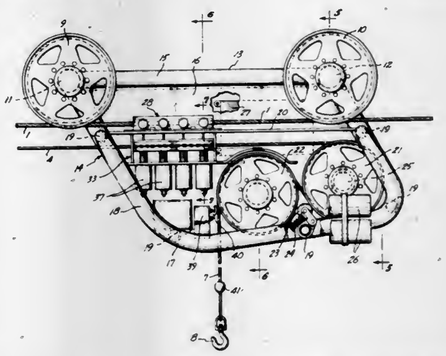
1. A floating crane, comprising: a pontoon, a crane slewing portion installed on said pontoon; a boom mounted on said crane slewing portion so that it may be slewed and luffed; a slewing drive of said boom, mounted on said crane slewing portion; a luffing drive of said boom, mounted on said crane slewing portion; a load hoisting drive mounted on said crane slewing portion; a heel compensation means; an angle-of-heel transmitter; said heel compensation means controlled by a signal from said angle-of-heel transmitter; a control system which controls operation of said drives of said boom slewing, said boom luffing and load hoisting by a signal from said angle-of-heel transmitter, including: a device connected by its input to said angleof-heel transmitter and converting the value of a heeling angle to an electrical signal, an angle-of-heel comparator unit, an output of said device being connected to one input of said comparator unit, a signal setting device generating a signal proportional to an allowable angle of heel and connected to another input of said comparator unit, OR logic units, an output of said comparator unit connected in parallel to one group of inputs of said OR logic units, master controllers of respective said drives of said boom slewing, said boom luffing and load hoisting, other inputs of said OR logic units being connected to outputs of said master controllers, voltage converters, outputs of said OR logic units connected to inputs of said voltage converters, outputs of said voltage converters connected to inputs of said drives of said boom slewing, said boom luffing and load hoisting, as a result of which the control of said drives is fully automated and synchronized with the control of the heel compensation means according to a heeling angle of the floating crane.

4,238,038

LOG YARDING SKYLINE CARRIAGE

Tyman H. Fikse, and James A. Fikse, 1760 Alki Ave. SW., both of Seattle, Wash., assignors to Dana W. Meeks, Sumner, Wash., by said Tyman H. Fikse

Filed Oct. 10, 1978, Ser. No. 949,644
Int. Cl.³ B66C *21/00*
U.S. Cl. 212—89 **21 Claims**



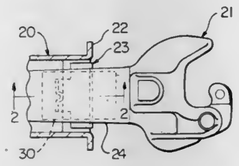
5. In apparatus including a skyline; a carriage carrying skyline sheave means mounting the carriage for movement along the skyline and load line sheave means for receiving a load line; and slack-pulling means carried by the carriage for driving the load line sheave means to lower load line from the carriage, the improvement comprising the slack-pulling means including an accumulator and a hydraulic device adapted to be powered by said accumulator to operate as a motor for selectively driving the load line sheave means and adapted to be driven by the load line to operate as a pump for replenishing said accumulator with liquid, said hydraulic device and said accumulator being mounted for movement with the carriage along the skyline.

4,238,039

RAILWAY CAR COUPLER WEAR LINER

Jerry W. Cooper, Waynesville; Homer N. Holden, Sylvia; Richard D. Medford, Waynesville, all of N.C., and John S. Haley, Centerville, Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 5, 1979, Ser. No. 27,340
Int. Cl.³ B61G 7/10, 9/20; F16C 27/02, 33/20
U.S. Cl. 213—61 15 Claims



1. In a wear member for a railway vehicle wherein said vehicle comprises a pair of relatively movable components and said wear member is supported by one of said components and protects said components from wear during relative movement thereof; the improvement wherein said wear member comprises; a support having a continuous supporting surface; a polymeric material having an anti-friction wear surface engageable by said other component; means attaching said polymeric material to said support; said attaching means comprising a metal structure having openings therein and mechanical means fixing said metal structure to said support; said polymeric material surrounding said metal structure and serving as a matrix therefor while extending through said openings with said antifriction wear surface defining the outermost surface of said polymeric material; said attaching means serving the multiple purpose of attaching said polymeric material to said support, supporting said polymeric material against said continuous supporting surface, and providing integral reinforcement for said polymeric material; and said support, metal structure, and polymeric material being defined as a unitary structure.

10. In a coupler carrier wear member for a railway vehicle wherein said vehicle comprises a coupler assembly and a coupler carrier which are relatively movable and said coupler carrier wear member is supported by said coupler carrier and protects said coupler assembly and coupler carrier from wear during relative movement thereof; the improvement wherein said wear member comprises; a support having a continuous supporting surface; a polymeric material defining an antifriction wear surface engageable by said coupler assembly; means attaching said polymeric material to said support; said support comprising a metal support; said attaching means comprising a metal structure having openings therein and mechanical means fixing said metal structure to said support; said polymeric material surrounding said metal structure and serving as a matrix therefor while extending through said openings with said antifriction wear surface defining the outermost surface of said polymeric material; said attaching means serving the multiple purpose of attaching said polymeric material to said support, supporting said polymeric material against said continuous supporting surface, and providing integral reinforcement for said polymeric material; and said support, metal structure, and polymeric material being defined as a unitary structure.

4,238,040

NURSING UNIT

William E. Fitzpatrick, Wyckoff, N.J., assignor to International Playtex, Inc., Stamford, Conn.

Filed Aug. 9, 1979, Ser. No. 65,260
Int. Cl.³ A61J 9/00
U.S. Cl. 215—11 E 13 Claims

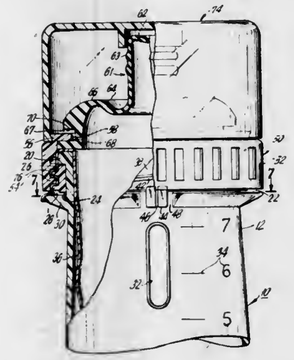
1. A nursing unit system comprising:

a generally elongated, hollow nursing holder, said nursing holder having an open nipple receiving end, with an end rim at its upper terminus, annular groove proximate said end rim, and a radially extending abutment shoulder at the lower extent of said annular groove,

a first nipple including a teat-like protuberance, an aerola portion, and a breast-like portion, said first nipple adapted to snap over holder end, and having a depending annular skirt with an internal annular groove, said depending annular skirt being of an appropriate width and depth for complementary engagement within the annual groove of said holder with the internal annular groove of said nipple skirt engaging the end rim of said holder,

the improvement comprising holder conversion means to selectively permit the nipple receiving end of the holder to accommodate a second nipple, said second nipple type including a teat-like protuberance, an areola portion and a breast-like portion,

said second nipple adapted to be fastened to said holder end by a threaded nipple retainer, said second nipple having a bottom flange for placement on the holder end rim and an intermediate external annular groove for secure engagement with said threaded nipple retainer,



said threaded nipple retainer including a depending annular skirt for overlying said annular groove of the holder, and having internal threads extending across said annular groove,

said holder conversion means including a removable threaded adaptor ring for insertion into said annular groove, to switch said holder from a first to a second condition,

said threaded adaptor ring having an external thread complementary to the internal thread of said nipple retainer,

said first condition characterized by said threaded adaptor ring being removed from the nurser unit and said first nipple being frictionally secured to said holder,

said second condition characterized by said threaded adaptor ring being located within the holder annular groove, said second nipple being secured to said threaded nipple retainer, and the internal threads of said nipple retainer being in engagement with the external threads of said threaded adaptor ring.

4,238,041

GLASS CONTAINER WITH A FIXED PLASTIC PROTECTIVE LAYER

Bo R. Jönsson, Skyrsta 42, 690 43 Hammar; Gunnar G. Toll, Asbacken 7, and Bo T. K. Bodelind, Skräddargränd 20, both of 445 00 Bohus, all of Sweden

Continuation-in-part of Ser. No. 261,970, Jun. 12, 1972, abandoned, which is a continuation of Ser. No. 41,623, May 28, 1970, abandoned. This application Dec. 7, 1973, Ser. No. 422,838
The portion of the term of this patent subsequent to Apr. 22, 1992, has been disclaimed.
Int. Cl.³ B05D 1/36, 3/02; B32B 17/06; C03C 17/00
U.S. Cl. 215—12 R 5 Claims

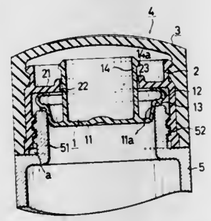
1. A plastic-coated glass container comprising a glass container with bottom, sidewall and neck portions having at least its sidewall surface surface-hardened, an outer layer of plastic hardened on to said glass container and having a thickness of between 0.04 and 0.06 mm, and an intermediate molecular layer of friction reducing organic material between said surface-hardened sidewall surface and said outer layer of plastic and wherein said outer layer of plastic is from the group consisting of polyethylene, polypropylene, polyvinyl chloride and polyester or copolymers thereof.

4,238,042

AIR-TIGHT CAP FOR BOTTLE

Yoshiharu Hatakeyama, and Ichiro Kizawa, both of Tokyo, Japan, assignors to Yoshida Kogyo Co., Ltd., Japan

Filed Jul. 16, 1979, Ser. No. 57,939
Int. Cl.³ B65D 53/00
U.S. Cl. 215—334 4 Claims



1. A cap, for air-tight engagement onto a container neck having an external thread and an end face about an opening therein, comprising:

(i) a cap member having an internal thread for engagement onto the external thread of the container neck, and an apertured transverse wall,

(ii) a packing made of a resiliently deformable material, said packing being disposed in said cap member and having:

(a) a closure portion including a transverse wall with a peripheral frusto-conical side wall for engagement into the opening of the container neck;

(b) a hollow annular portion extending from a broader end of said frusto-conical side wall and positioned so as, when the cap is engaged on the container neck, to be disposed between the end face of the container neck and the transverse wall of the cap;

(c) an annular projection on said hollow annular portion positioned to abut said end face, and

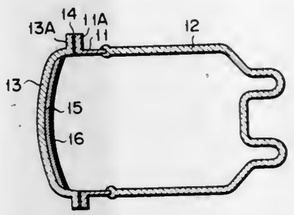
(d) a support extending from the transverse wall of the closure portion through the aperture of the transverse wall of the cap member.

4,238,043

X-RAY IMAGE INTENSIFIER

Hiroshi Minami; Takashi Kuze, both of Yokohama, and Norio Harao, Ayase, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 17, 1977, Ser. No. 797,734
Claims priority, application Japan, May 17, 1976, 51-55297
Int. Cl.³ H01J 35/16, 35/18, 61/36
U.S. Cl. 220—2.1 R 8 Claims



1. (Thrice Amended) An evacuated X-ray image intensifier, comprising:

an X-ray inlet window section made of aluminum or an alloy thereof;

a glass envelope mainly constituting an output section;

a joint ring prepared from a glass-wettable alloy and connected to said glass envelope; and

sealing means as an intermediate member between said X-ray inlet window and said joint ring for hermetically fusing said X-ray inlet window and joint ring, said intermediate member including a first layer attached to said joint ring made of copper, a second layer attached to said inlet window and chosen from the group consisting of the following materials:

(a) tin

(b) silicon, and

(c) germanium,

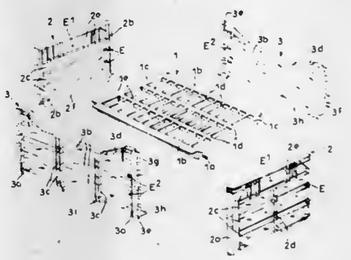
and a third layer attached to said second layer and said first layer made of tin, said intermediate member not forming an intermetallic compound with any of the materials constituting said X-ray inlet window and said joint ring.

4,238,044

COLLAPSIBLE PLASTIC CRATE FOR DISPLAY AND TRANSPORT OF PERISHABLE COMMODITIES

Roger Roddier, Impasse du Breuil, Thiers, France

Filed Feb. 4, 1972, Ser. No. 223,447
Claims priority, application France, Dec. 10, 1970, 70.45693; Jul. 13, 1971, 71.26421
Int. Cl.³ B65D 6/24
U.S. Cl. 220—4 F 10 Claims



1. A collapsible crate for display and transport of perishable commodities comprising, in combination, a plurality of lattice components of molded plastic including a bottom member and

held against vertical movement thereof, and long and short side members each composed of strips forming a relatively unwarpable lattice component; and interfitting means connected to said components for assembling the side members of said crate, said bottom member being substantially movable in the plane of said bottom member relative to said side members, said bottom member having projecting tongues; at least two of said side members having ledges supporting respective tongues of said bottom member; the other side members having slots retaining respective tongues of said bottom member and holding said bottom member against vertical movement thereof; said interfitting means comprising a plurality of perforated tongues on one of two adjacent side members to be joined, the other adjacent side member having slots for holding said perforated tongues, said slots having projecting locking elements, said locking elements extending into the perforations of said perforated tongues for locking together said adjacent members.

4,238,045

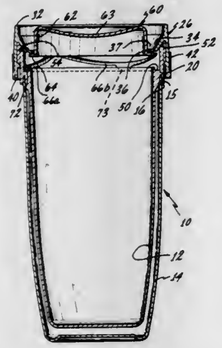
LIP OPENABLE CLOSURE FOR CONTAINERS

Ernest F. D'Andria, P.O. Box 4487, Palm Springs, Calif. 92263

Filed Aug. 27, 1979, Ser. No. 70,254

Int. Cl.³ A47G *19/22*

U.S. Cl. 220—90.4 **7 Claims**



1. In combination with a container for liquids, a lip-openable closure cap body for the container adapted to fit an annular open end of the liquid container, the said cap body having an open end provided with an annular drinking edge, a lip-openable cap, positioned internally of the cap body, said cap body having a valve seat, the lip-openable cap having part forming a valve member cooperable with said seat and including integrally formed resilient means, means providing an annular ledge, the said resilient means resting against said ledge and normally urging the lip-openable cap to seat against the valve seat, said lip-openable cap being positioned whereby a user's lips may engage the openable cap for purpose of unseating it from its seat to allow liquid to pass through the valve seat into the upper interior part of the cap body for drinking from the drinking edge, the cap body being constructed to hold liquid to be drunk.

4,238,046

EASY OPENING TOP CLOSURE MEMBER FOR A CONTAINER

Kuno J. Vogt, 4250 1/2 Fairmont Ave., San Diego, Calif. 92105

Filed Jul. 30, 1979, Ser. No. 61,925

Int. Cl.³ B65D *41/32*

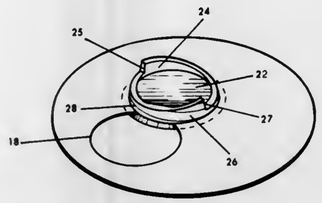
U.S. Cl. 220—269 **12 Claims**

1. An easy opening top closure member for a container comprising:

a container top member having an aperture of a first predetermined configuration,

a closure member for said aperture having exterior portion finger gripping means, an intermediate portion, and an interior portion,

said exterior portion finger gripping means extending upwardly from said intermediate portion and functioning to provide structure that can be gripped by the fingers of the



person opening the top closure member by a rotational twisting motion,

said intermediate portion being in the form of a disc member that closes said aperture, and

said interior portion being in the form of a flange that is connected to the bottom of said disc member.

4,238,047

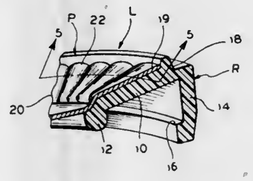
COMPOSITE CLOSURE MEMBER

Charles R. Helms, Malvern, and Donald A. Addison, Chester Spring, both of Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed Oct. 4, 1979, Ser. No. 81,872

Int. Cl.³ B65D *5/64, 43/00*

U.S. Cl. 220—306 **1 Claim**



1. In a reusable, composite container closure member, the combination of:

(a) a continuous rim formed from an injection molded, thermoplastic material and comprising:

(i) a laterally disposed shelf;

(ii) a skirt depending from said shelf for engagement with a wall of a container body;

(iii) a recess;

(b) a central panel, formed from a blank of generally flexible sheet material such as paperboard, and having a fluted marginal portion presenting a plurality of circumferential spaced, radially extending, alternately disposed ridges and grooves;

(c) said panel marginal portion being disposed within the recess of said rim and bonded thereto by the material of said rim with part of said material received in the grooves of said marginal portion.

4,238,048

PLUG SEAL

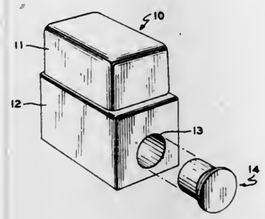
Jay C. Elander, Wayzata, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 27, 1979, Ser. No. 70,281

Int. Cl.³ B65D *39/00*

U.S. Cl. 220—307 **14 Claims**

1. A plug seal for sealing a housing having a hardness at least slightly less than the hardness of the plug seal comprising a plug with a predetermined geometric shape, said plug having first and second portions having corresponding first and second perimeters, said second perimeter greater than said first



perimeter, and said plug having a groove and being of a material having a hardness wherein as the plug is inserted into the housing, the first portion entering first, the second portion of the plug will force a portion of the housing into the groove.

4,238,049

BOX-TYPE TRANSPORT CONTAINER OF AN ELECTRICALLY DRIVEN TRANSPORT CAR WITH A LOCKABLE COVER

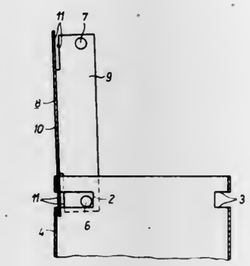
Herbert Lehmann, and Kurt Tutas, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 12, 1979, Ser. No. 29,394

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816894

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—331 **12 Claims**



1. A box-type transport container of an electrically driven transport car with a lockable cover which exhibits lateral side pieces depending from a covering plate and overlapping exterior surfaces of the walls of the transport container in the seating area, characterized in that the cover (8) is seated against the wall (1) by means of two pegs (6) arranged in alignment with one another and guided in a respective slot (2) in such manner that, after releasing the locking, the cover (8) is rotated by approximately 90° in conjunction with a relative motion between pegs (6) and slots (2) in the longitudinal direction of the slots (2) and is positively locked in this position by means of the abutment of the cover (8) against an end area of the transport container and abutment of the pegs (6) against the contour of the slots (2).

4,238,050

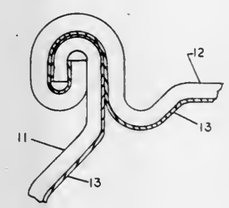
METAL CONTAINERS WITH INTERIOR SURFACES COATED WITH AN ORGANOSILOXANE COMPOSITION

Gary E. LeGrow, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 30, 1979, Ser. No. 61,568

Int. Cl.³ B65D *81/34;* B32B *15/08*

U.S. Cl. 220—458 **15 Claims**



1. A process for producing interiorly-coated metal containers comprising the steps of:

(A) applying to a sheet metal surface a coating composition consisting essentially of

(1) a solvent soluble organosiloxane resin containing 10 to 50 mole percent monomethylsiloxane units, 90 to 30 mole percent monophenylsiloxane units, 0 to 20 mole percent of diorganosiloxane units selected from the group consisting of dimethylsiloxane units, phenylmethylsiloxane units, and diphenylsiloxane units, the resin having a silicon-bonded hydroxyl content of 4 to 10 percent by weight,

(2) an organosilicon crosslinker selected from the group consisting of silanes of the formula $CH_3Si(OR)_3$ and $C_6H_5Si(OR)_3$ wherein R is an alkyl radical of 1 to 3 inclusive carbon atoms, partial hydrolyzates of the silanes, and siloxanes of the general formula $(C_6H_5SiO_{3/2})_x\{(CH_3)_2Si-O\}_{2x}(OR)_{x+2}$ wherein R is an alkyl radical as defined above and x has an average value within the range of 2 to 4 and

(3) a volatile solvent selected from the group consisting of aldehydes and ketones, said coating composition containing 0.25 to 2 chemical equivalents of crosslinker (2) per chemical equivalent of resin (1),

(B) heating the coated metal for a time period sufficient to cure the coating, and thereafter

(C) forming the coated metal into an interiorly-coated container.

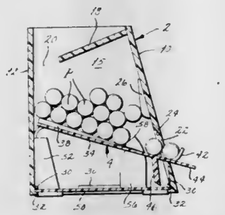
9. A metal container for edibles and potable beverages comprising a metal container having the interior surface covered by a cured coating obtained from a coating composition consisting essentially of (1) a solvent soluble organosiloxane resin containing 10 to 50 mole percent monomethylsiloxane units, 90 to 30 mole percent monophenylsiloxane units, 0 to 20 mole percent of diorganosiloxane units selected from the group consisting of dimethylsiloxane units, phenylmethylsiloxane units and diphenylsiloxane units, the resin having a silicon-bonded hydroxyl content of 4 to 10 percent, (2) an organosilicon crosslinker selected from the group consisting of silanes of the formula $CH_3Si(OR)_3$ and $C_6H_5Si(OR)_3$ wherein R is an alkyl radical of 1 to 3 inclusive carbon atoms, partial hydrolyzates of the silanes, and siloxanes of the general formula $(C_6H_5SiO_{3/2})_x\{(CH_3)_2SiO\}_{2x}(OR)_{x+2}$ wherein R is an alkyl radical as defined above and x has an average value within the range of 2 to 4 and (3) a volatile solvent selected from the group consisting of aldehydes and ketones, said coating composition containing 0.25 to 2 chemical equivalents of crosslinker (2) per chemical equivalent of resin (1).

4,238,051

DISPENSER FOR PENS, PENCILS AND OTHER ELONGATED OBJECTS

Alan E. Sherman, University City, Mo., assignor to Quick Point, Inc., Fenton, Mo.

Filed Jun. 4, 1979, Ser. No. 44,980
Int. Cl.³ B65H *3/50*
U.S. Cl. 221—205 **14 Claims**



1. A dispenser for elongated objects such as pens, pencils, and the like, said dispenser comprising: a housing having front, rear, side and top walls that are joined together to enclose a storage space capable of holding a plurality of the elongated objects, the housing also having an entry opening through which elongated objects may be introduced into the storage space, the front wall having a discharge slot, with the slot being large enough to accommodate the elongated objects generally one at a time, the top wall forming a fixed tray that is large enough to accommodate an elongated object and is inclined downwardly toward an entry opening so that an elongated object which is placed on the tray will roll to the opening and drop into the storage space; a ramp located within the housing and forming the lower surface of the storage space, the ramp being inclined downwardly toward the front wall and having its upper surface generally unobstructed from the rear of the storage area to the front of the storage area so that the elongated objects will migrate to the front of the ramp without being impeded, the ramp along its rear margin further being pivoted with respect to the housing such that it will move from a hold position, wherein the forward end of the ramp blocks the slot in the front wall of the housing and prevents the discharge of elongated objects from that slot, to a release position, wherein the ramp permits elongated objects to pass out of the slot; means for urging the ramp to its hold position with sufficient force to enable the ramp to normally assume that position; means at the forward end of the ramp for supporting an elongated object such that it can be easily retrieved from the ramp, said means being projected beyond the discharge slot in the front wall of the housing so as to be accessible from outside the housing, whereby an elongated object will roll onto the supporting means when the ramp is moved to its release position; and control posts mounted in a fixed position within the housing such that they are located entirely below the ramp when the ramp is in its hold position, but when the ramp is moved to its release position the posts project through the ramp to agitate the elongated objects in the storage area and thereby prevent jams and to further control the movement of objects to the discharge slot.

4,238,052

ADJUSTABLE METERING LIQUID DISPENSER

John J. Trujillo, Castro Valley, Calif.

Continuation-in-part of Ser. No. 629,694, Nov. 7, 1975, Pat. No. 4,057,174. This application Sep. 19, 1977, Ser. No. 834,571
Int. Cl.³ B67D *5/22*
U.S. Cl. 222—43 **1 Claim**

1. In a liquid dispensing device having a cap structure adapted to engage the open top of liquid container and including a pump having a vertically reciprocal plunger extending upwardly through the cap, the improvement comprising:

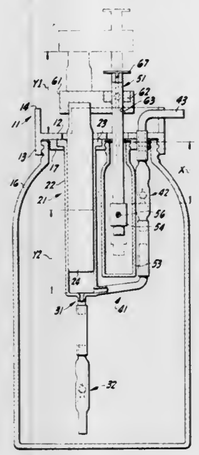
said cap structure including a lateral floor with an angular depending flange thereabout adapted to engage the open top of a container and a lower plate disposed contiguous to said floor beneath same,

said pump including a pump cylinder depending from said cap structure and connected thereto with said pump plunger slidably engaging said cylinder and extending above said floor through aligned openings in said floor and lower plate,

a longitudingly movable gauge rod with markings along the length thereof disposed in spaced parallel relation to the said pump plunger,

means connecting the portion of said plunger extending through said cap to said gauge rod in adjustable sliding relation longitudingly of said plunger,

a tube having a closed lower end and an open upper end



threaded into said lower plate from the bottom thereof at an opening through said lower plate aligned with an opening through said floor,

an annular member disposed beneath said plate above said tube and having a central opening there through slidably accepting said gauge rod in extension through said floor and lower plate, and

a collar about said gauge rod adjacent the lower end thereof and adapted to engage said angular member upon upward movement of said gauge rod to thus limit the longitudal movement of said gauge rod,

whereby adjustable longitudinal positioning of said gauge rod relative to said plunger predetermines the maximum stroke of said pump plunger to set the volume of fluid dispensed by each full reciprocation thereof.

4,238,053

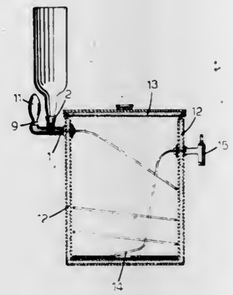
DEVICE FOR DISPENSING CHILLED LIQUID

Nelson Bonini, Aprigio de Araujo St. No. 973, Sertaozinho, Sao Paulo, Brazil

Filed May 24, 1978, Ser. No. 909,293
Int. Cl.³ B67D *5/56*
U.S. Cl. 222—129.1 **3 Claims**

1. In a portable device for dispensing a liquid in chilled condition, container means for containing a refrigerating medium such as ice, said container means carrying a manually operable discharge valve means which is accessible at the exterior of said container means to be manipulated for discharging chilled liquid and for terminating the discharge of chilled liquid, said container means having distant from said valve means a wall portion formed with an opening passing therethrough, tubular coil means situated in said container means and having a pair of opposed ends one of which is connected to and communicates with said valve means and the other of which is connected to said container means at said

opening of said wall portion thereof in communication with said opening, so that a liquid delivered to said container means at said opening of said wall portion thereof will flow through said tubular coil means to said discharge valve means while being chilled by the refrigerating medium in said container means which engages the exterior surface of said tubular coil means to act therethrough for chilling a liquid in said tubular coil means, tubular carrier means connected with said container means at said opening of said wall portion thereof and extending outwardly beyond said container means from said opening of said wall portion thereof, said tubular carrier means having a first passage portion communicating with said tubular coil means through said opening of said wall portion of said container means, and said tubular carrier means carrying a fitting means for releasably connecting to said carrier means a liquid-containing receptacle, said fitting means having a second passage portion for fluidly intercommunicating the liquid



contained in the receptacle and said first passage portion in a manner providing a continuous passage for flow of liquid from the receptacle through the first and second passage portions into said coil means so that liquid from the receptacle will be chilled before reaching said valve means and means communicating with said first passage portion for introducing pressure thereinto to facilitate the flow of the liquid through the first passage portion into the tubular coil means, said tubular carrying means carrying a plurality of said fitting means so that a plurality of liquid-containing receptacles can be respectively connected with said plurality of fitting means for supplying liquid from the plurality of receptacles through said coil means to said discharge valve means, said connecting means connecting each fitting means to said carrier means for movement with respect thereto between a position where said second passage portion communicates with the first passage portion and a position where said second passage portion is out of communication with the first passage portion.

4,238,054

AIR PRESSURIZED INSULATED CONTAINER

Rong-Sheng Chen, 26-2, Lane 233, Fu-Chiang Rd., Tainan, Taiwan

Filed Jan. 15, 1979, Ser. No. 3,649
Int. Cl.³ B67D *5/42, 5/54*
U.S. Cl. 222—131 **4 Claims**

1. An air pressurized insulated container comprising:

a container casing;

at least two insulated flasks within said casing;

a cover seat assembly secured to the top of said casing and retaining said insulated flasks, said cover seat having spout means and providing openings into said flasks;

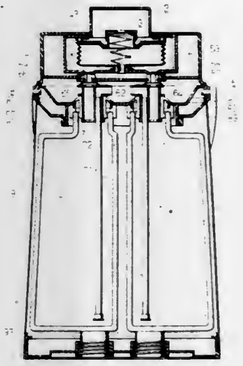
a discharge pipe assembly insertable through said openings in said cover seat assembly and having one discharge pipe and one air passage into each of said flasks, said assembly including seal means for pressurizing said flasks; and

a cover assembly having latch means for securing said cover assembly to said cover seat assembly, said cover assembly further comprising:

a cover having a central hole therethrough, said cover having lugs projecting into said cover assembly parallel to the axis of said hole and having internal stopping plates parallel to the axis of said hole;

a twisting plunger, operating within said central hole of the cover, said plunger having radially-extending lugs engaging said stopping plates whereby the rotation of said plunger is limited, said plunger having engagement means for engaging said internal lugs of said cover, whereby the axial movement of said plunger is guided and controlled;

a bottom fixing plate, said plate having holes which align with said air passages in said discharge pipe assembly when said cover assembly is latched to said cover seat assembly, said plate containing resilient annular seals extending through each of said aligned holes in the plate;



a control member having a rotating annular seal against said bottom plate and a hole within the annulus of said seal, said control member having sliding engagement means engaging with said twisting plunger whereby said control member and said twisting plunger may be rotated together, said control means having closure means within said annular seal for selectively obstructing said resilient annular seals extending through said bottom fixing plate; and

an air pump, said pump being operable by axial motion of said twisting plunger, the air discharged from said pump being conducted through said hole in said control member, through said resilient annular seals in the bottom plate, and through said air passages in the discharge pipe assembly into said flasks for discharge of liquid from said flasks, whereby rotation of said control member provides selection of the discharge by selective obstruction of said annular seals.

4,238,055

POWERED ATOMIZER

Marcel J. H. Staar, Brussels, Belgium, assignor to Staar S.A., Brussels, Belgium

Filed Apr. 24, 1979, Ser. No. 32,898
Claims priority, application Belgium, Apr. 26, 1978, 886392
Int. Cl.³ B67D *5/64*
U.S. Cl. 222—162 **9 Claims**

1. In a power unit for operating a manual atomizer comprised of a container with spray head and pump mounted on the container, by reciprocating said container relative to the spray head and pump, the improvement comprising:

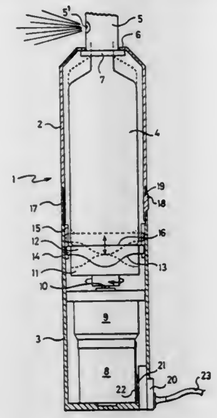
a housing for said container having an opening for said spray head to project outward and be operable manually from the outside of said housing to actuate said spray pump,

means on said housing adjacent said opening cooperating

with means on said spray head to hold said spray head against outward movement while allowing it to be moved axially inward to actuate the spray pump when said container is resting in a lowered position in said housing,

an electrically operated motor within said housing,

drive means including a cam for converting rotary motion of



said motor to reciprocating motion and to impart said reciprocating motion to move said container between lowered and raised positions in said housing to actuate said spray pump and spray liquid from the container, and

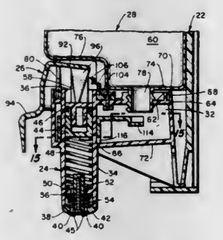
an on-off switch for controlling the supply of electrical power to said motor in said housing and the duration of actuation of said spray pump under power.

4,238,056

SOAP DISPENSER HAVING A PIVOTABLE DISPENSING LEVER AND A ROTATABLE FLOW VALVE

Council A. Tucker, Los Angeles, and Oliver B. Gains, Arcadia, both of Calif., assignors to Towlsaver, Inc., City of Industry, Calif.

Filed Mar. 6, 1978, Ser. No. 883,489
Int. Cl.³ B67D *5/06*
U.S. Cl. 222—181 **9 Claims**



1. In a dispenser for dispensing flowable soap, and dispenser being of the type having a frame mounting a selectively operable dispensing mechanism for dispensing soap therefrom and a reservoir operably connected to said dispensing mechanism for supplying soap thereto to be dispensed; the combination of: a generally horizontally projecting dispensing lever extending in cantilever fashion and having rearward end means pivotally attached to said frame for selective vertical pivotal movement of said lever in actuating strokes, said lever having at least a part overlying said dispensing mechanism and having actuating means spaced forwardly of said rearward end means and operably connected to said dispensing mechanism for operating said dispensing mechanism during pivotal actuating strokes of said lever; said reservoir including a sump operably connected to said dispensing mechanism for supplying said soap to said mechanism, a selectively removable container positioned on and projecting generally vertically from said sump supplying soap to said sump, said container at least partially overlying said dispensing lever; said dispensing lever extending forwardly between and being selectively vertically pivotal between parts of said container and said dispensing mechanism during said lever pivotal actuating strokes, a forward end of said actuating lever being forwardly exposed of said container and dispensing mechanism accessible for hand engagement to carry out said lever pivotal actuating strokes.

4,238,057

SIZING COMPOSITION OF SPRAYING TYPE

Kinjiro Matsunaga, Saitama; Masaki Tsumadori, Funabashi, and Yunosuke Nakagawa, Soka, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,061
Claims priority, application Japan, Apr. 19, 1978, 53/46266
Int. Cl.³ B65B *31/00;* **D06M** *13/16, 13/18, 15/20*
U.S. Cl. 222—192 **9 Claims**

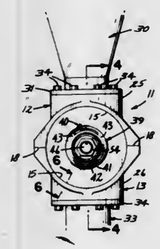
1. A sizing composition of the spraying type consisting essentially of: from 2 to 10% by weight of a modified starch, said modified starch having the property that a 5% by weight aqueous solution of said modified starch has a viscosity of 5 to 30 centipoises measured at 20° C.; from 0.3 to 7% by weight of dipropylene glycol; and the balance is water.

4,238,058

BODY CONSTRUCTION FOR ROTARY VALVE

Donald J. Heth, Coon Rapids, Minn., assignor to M & S Industries, Inc., Coon Rapids, Minn.

Filed Jun. 26, 1978, Ser. No. 919,175
Int. Cl.³ G01F *11/10*
U.S. Cl. 222—368 **8 Claims**



1. A rotary valve for guiding particulate material comprising:

(a) a housing defining a valve chamber through which particulate material is passed, said housing including an inner cylindrical surface having a longitudinal axis and flat opposite inner wall surfaces for contacting the material passing through said chamber, and inlet and outlet passageways through said cylindrical wall surface to said chamber;

(b) a rotary valve element in said chamber for guiding the particulate material from said inlet passageway to said outlet passageway by the rotation of said valve element;

(c) a shaft for said valve element;

(d) bearing means journaling said shaft in said housing;

(e) said housing comprising a pair of housing side sections defining said inlet and outlet passageways, each of said side sections having a semi-cylindrical surface portion cooperating with the other thereof to define said inner cylindrical wall surface, and a pair of circular end sections defining said inner end wall surfaces and having circular edge surfaces equal in diameter to that of the cyindrical wall surface of said chamber, said inner cylindrical wall surface and said inner end wall surfaces defining interior boundaries of said valve chamber;

(f) said end sections each including a circumferential flange projecting radially outwardly from its respective edge surface;

(g) each of said housing side sections defining a pair of circumferentially extending recesses aligned with and cooperating with the recesses of the other housing side sections to receive the flanges of said end sections;

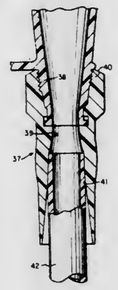
(h) and means for securing said housing side sections together, with said flanges disposed in said recesses, to lock said end sections between said side sections to form an interior seal of said valve chamber along the juncture of said end wall surfaces and said cylindrical wall surface where said flanges are disposed in said recesses for preventing the escape of the particulate material through said juncture while the particulate material contacts said juncture during the rotation of said valve element without the use of supplemental gasket material.

4,238,059

STOMA DRAINAGE APPLIANCE

William R. Caraway, Walnut, Calif., and Clarence M. Falkingham, Largo, Fla., assignors to Howmedica, Inc., New York, N.Y.

Division of Ser. No. 605,553, Aug. 18, 1975, Pat. No. 4,084,590.
This application Nov. 29, 1977, Ser. No. 855,569
Int. Cl.³ B65D *25/48*
U.S. Cl. 222—529 **4 Claims**



1. A valve type spout assembly for use as an outlet on a fluid container, said spout assembly including a flexible spout and having:

(a) an inlet neck section;

(b) an outlet end section having a spout opening and external surface tapering inwardly in a direction extending toward the spout opening;

(c) a separate tubular coupling member adapted to be removably secured at one end to the end section of the spout and at its other end to an external conduit; the opening through said coupling member adjacent the one end being tapered inwardly in cross-section in a direction measured away from the one end and having an internally ribbed section integrally formed at said one end with the ribs extending circumferentially around the opening through the coupling member;

(d) a complementary shaped externally circumferentially ribbed section integrally formed on the end section of the spout for mating with the ribbed section of the coupling member to provide a fluid tight connection therebetween;

(e) the one end of the coupling member being rigid in construction relative to said spout;

(f) the opening through the coupling member being smooth and tapering inwardly in cross-section adjacent its other end as measured in a direction extending from the other end toward the one end thereof; and

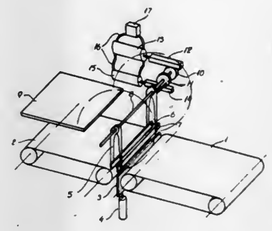
(g) said coupling member being flexible in construction along said last mentioned tapered cross-section to tightly frictionally engage the inserted end of the external conduit in sealing relationship.

4,238,060

APPARATUS FOR FOLDING AND STACKING OF PIECES OF LAUNDRY

Henry J. Weir, Dublin, Ireland, assignor to Beta S.A., Luxembourg

Filed Dec. 18, 1978, Ser. No. 970,278
Claims priority, application Denmark, Dec. 29, 1977, 5832/77
Int. Cl.³ B65H *15/107*
U.S. Cl. 223—37 **10 Claims**



1. Apparatus for simultaneously folding and stacking pieces of laundry, comprising:

a swing axis; a pair of clamping jaws each carried on said spring axis and swingable together about said swing axis; said clamping jaws being normally opposed;

means for folding a piece of laundry and delivering a folded portion thereof between said jaws when the latter are open;

first driving means connected with one said jaw for swinging said one jaw in one direction about said swing axis;

second driving means connected with the other said jaw for driving said other jaw to swing counter to said one direction about said swing axis;

said first and second driving means including respective first and second power devices on relatively stationary mountings;

said first driving means being stronger than said second driving means, whereby as both said driving means operate simultaneously, said first driving means overcomes force exerted by said second driving means and swings both said jaws in said one direction around said swing axis and said second driving means causes said jaws to clamp together thereby gripping a folded portion of a laundry piece positioned between said jaws.

4,238,061

SOCKS OR STOCKINGS WEAR-HELPING UTENSIL

Luigi Marchetti, and Sergio Zaglio, both of Castiglione delle Stiviere, Italy, assignors to I.B. Internazionale Brevetti s.r.l., Castiglione delle Stiviere, Italy

Filed May 9, 1979, Ser. No. 37,913
Claims priority, application Italy, May 15, 1978, 23410 A/78
Int. Cl.³ A47J *51/06*
U.S. Cl. 223—111 **3 Claims**



1. A manually operable utensil for putting on socks or stockings, characterized in that it comprises

an elongate rod carrying at one end thereof a substantially

semi-cylindrical shell disposed to be held by said rod in a starting position in which the axis of said shell is positioned transversely of the axis of said rod, and wherein the open end of a sock or stocking is supported on the shell for engagement by the foot of the person by whom it is to be worn, and

means pivotally mounting said shell on said one end of the rod automatically to be swung about an axis perpendicular to its own axis and to the axis of said rod from said starting position to a final position in which its axis is disposed substantially parallel to said rod, when the wearer's foot is inserted into the sock or stocking, and said rod is drawn manually upwardly.

4,238,062

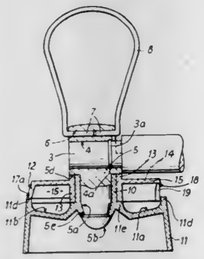
CARRIER FOR GARMENT HANGERS

Raymond R. Wheeler, 95, Garden St., Kelso, Wash. 98626

Continuation-in-part of Ser. No. 912,685, Jun. 5, 1978. This application Jun. 5, 1979, Ser. No. 45,807

Int. Cl.[3] B65D *71/00*

U.S. Cl. 224—45 T **7 Claims**



1. A carrier for garment hangers comprising:

(i) a saddle member which includes a journal portion having an axis of rotation, and an axially recessed support surface extending to and bounded by a radially outer end portion and adapted to receive a plurality of garment hanger hooks in side by side relationship,

(ii) a locking means journalled on said journal portion of the saddle member for rotation about said axis, said locking means including a first portion which in a first position of rotation lies adjacent said radially-outer end portion of the saddle to prevent passage of a garment hanger hook off said support surface over said saddle end portion, said locking means including a second portion which is angularly spaced from said first portion and which is recessed so as, in a second position of rotation, to be spaced sufficiently from said radially-outer end portion of said saddle to permit passage of a garment hanger hook off said support surface over said radially-outer end portion of said saddle, and said locking means being journalled about said saddle member such that said first and second portions of said locking means maintain a fixed axial distance from said radially-outer end portion of the saddle, and

(iii) a handle coupled to the saddle member.

4,238,063

SKI TRANSPORT CONTAINER

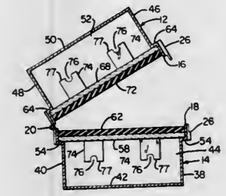
Timothy J. O'Dair, 6109 Gale Dr., Boulder, Colo. 80303

Filed Jan. 15, 1979, Ser. No. 3,266

Int. Cl.[3] A45C *5/12*

U.S. Cl. 224—45 S **8 Claims**

1. In an elongated container for transporting skis and ski poles wherein said container comprises a bottom chamber member having a bottom wall, a pair of sidewalls and a pair of end walls, and an upper lid member having a top wall, a pair of sidewalls and a pair of endwalls, said bottom chamber member and said upper lid member hinged together and being pivotal between a closed position defining an enclosed chamber and an open position, and means to releasably secure said lid member to said chamber member when they are in said closed position the improvement comprising: a pair of clamp members mounted in the chamber defined by said chamber member and said lid member, each said clamp member including first and second jaw members having facing surfaces, said facing surfaces each having a resilient member mounted thereon, said clamp member adapted for frictionally retaining a ski in suspended relation within said chamber, each said first jaw member being mounted in said upper lid member in spaced-apart parallel relation to said top wall and each said second jaw member being mounted in said bottom chamber member in spaced-apart parallel relation to said bottom wall, whereby said jaw members are moved into and out of clamping engagement as said lid member and said chamber member are moved into and out of said closed position, respectively; and support means on one of said first and second jaw members for postively supporting an article from the surface of said jaw member opposite its said facing surface.



4,238,064

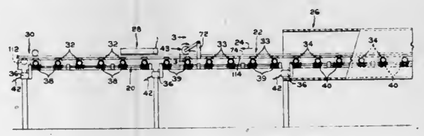
SYSTEM FOR ACTUATING GLASS RIBBON, CROSS SCORING AND SNAPPING EQUIPMENT

Daniel C. Plocik, Burkburnett, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 24, 1978, Ser. No. 927,083

Int. Cl.[3] C03B *33/02*

U.S. Cl. 225—2 **19 Claims**



10. A method of monitoring movement of a glass ribbon advancing on conveying means along a movement path through a severing station having severing means to actuate the severing means comprising the steps of:

generating a first signal as a function of advancement by the conveying means;

generating a second signal as a function of ribbon advance;

determining the differences between the first signal and second signal;

actuating the severing means in response to the first signal when differences of said determining step have a first relationship to a predetermined standard; and

actuating the severing means in response to the second signal when differences of said determining step have a relationship other than the first relationship.

4,238,065

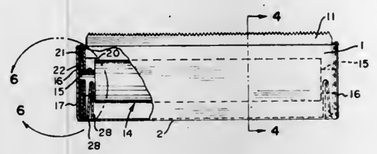
FILM MATERIAL DISPENSER

Donald W. Ragsdale, Creve Coeur, Mo., assignor to Cavalier Products, Inc., St. Louis, Mo.

Filed Oct. 19, 1978, Ser. No. 952,694

Int. Cl.[3] B26F *3/02*

U.S. Cl. 225—47 **6 Claims**



1. A film material dispensing carton for supporting a roll of film, wrapping paper, or the like material and comprising front, back, and bottom panels foldably connected together, an openable top panel foldably connected to the back panel and providing closure at this location for the carton, said top panel having a slot therein for dispensing through unrolling of a quantity of the film material, side walls foldably connecting with one of said panels for providing side closure at each end of the said carton, a front flap foldably connecting with the forward edge of the top panel, a cutting means secured to the leading edge of the said front flap, said front flap having a fold line approximately at its mid-point and extending its full length, with the folding of the front flap along its fold line and its insertion contiguously against the inside of the front panel arranges the said cutting means into position for severing a segment of the unrolled film, each side wall including a first flap, said first flap being foldably connected to the back panel, a second flap foldably connected with the front panel and being arranged into adjacency with the said first flap, said second flap having an aperture therethrough for supporting the roll of film material at an end thereof, a pair of positioning flaps foldably connected together and also being foldably connected to an edge of the said first flap, each said pair of positioning flaps having an aligned aperture therethrough for assisting in support of the roll, a support flap foldably connecting with the opposite edge of the said first flap, said support flap having an aperture therethrough and being foldable in half and into adjacency with each other and against the said pair of positioning flaps for providing additional support to the proximate end of the material roll.

4,238,066

APPARATUS FOR STACKING SHEETS IN CORNER REGISTRATION

Edric R. Brooke, Bishops Stortford, England, assignor to Xerox Corporation, Stamford, Conn.

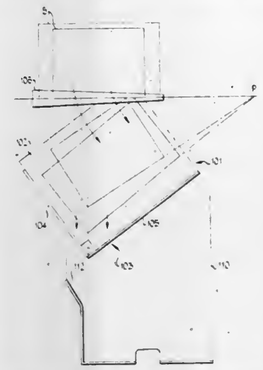
Filed Apr. 23, 1979, Ser. No. 32,439

Claims priority, application United Kingdom, Apr. 27, 1978, 16753/78

Int. Cl.[3] B27F *7/17;* **B42C** *1/12;* **B65H** *29/22, 31/30*

U.S. Cl. 227—39 **3 Claims**

1. Apparatus for stacking sheets in corner registration, comprising: coacting opposed sheet feed means of tapered cross-section and spanning the total width of a paper path adapted to receive sheets fed from a feed source and forward the sheets through said paper path for further processing, said tapered feed means, due to said tapered cross-section, rotating the sheets in the planes thereof individually by approximately 45° as they are forwarded with the sheets being positively gripped throughout their rotational movement such that they pass through a nip formed between said coacting feed means in a straightforward rolling manner; and stacking means located downstream from said coacting sheet feed means and adapted to receive the sheets forwarded by said coacting feed means, said stacking means being downwardly inclined in relation to said coacting feed means and including a registration corner means diagonally opposite said feed means, said registration corner means being rotated 45° in relation to said coacting feed means such that a V-shaped intersection is presented thereby to incoming sheets to said stacking means whereby sheets forwarded toward said registration corner means by said coacting feed means are forwarded with a corner thereof in line with said registration corner means V-shaped intersection.



4,238,067

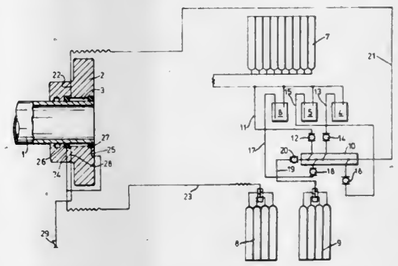
DRYING OF CAVITIES

Owen B. Osmotherley, and John M. Lowes, both of Dalton-in-Furness, England, assignors to Vickers Limited, London, England

Filed Jun. 26, 1979, Ser. No. 52,094

Int. Cl.[3] B23K *20/08;* **F27B** *3/00*

U.S. Cl. 228—107 **8 Claims**



1. A method of drying a water filled cavity which method comprises:

(i) removing the water from the cavity and introducing into the cavity a first liquid which is miscible with water,

(ii) removing said first liquid from the cavity and introducing into the cavity a second liquid which is miscible with said first liquid and which has a high vapour pressure, and

(iii) introducing a gas into said cavity to remove said second liquid.

4,238,068

VARIABLE DEPTH SELF-LOCKING CONTAINER

Roger A. Ellerbe, Clemmons; Jay V. Welch, and Roy L. Miller, both of Winston Salem, all of N.C., assignors to Container Corporation of America, Chicago, Ill.

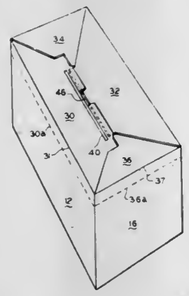
Filed Oct. 4, 1979, Ser. No. 81,873

Int. Cl.[3] B65D *5/10, 5/02*

U.S. Cl. 229—39 R **1 Claim**

1. A variable depth container, formed from a unitary blank of foldable paperboard, with a self-locking closure arrangement, said container comprising:

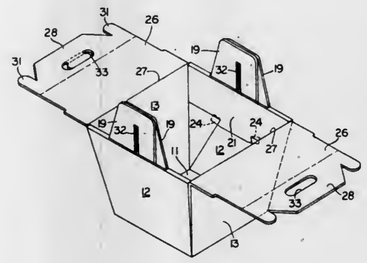
(a) opposed pairs of major and minor side walls foldably interconnected to form a tubular body open at the ends;
(b) integral closure means for at least one end of said tubular body including opposed pairs of major and minor closure flaps foldably joined to corresponding edges of respective major and minor side walls of said body along aligned first fold lines;
(c) said major walls having aligned second fold lines disposed parallel to and spaced inwardly from said first fold lines to define therewith a plurality of aligned strips which are adapted to become portions of related closure flaps to permit the depth of said container to be reduced by alternatively folding said flaps on said second fold lines instead of on said first fold lines;
(d) said closure flaps being arranged for interlocking engagement when folded normal to said body side walls, with said first major flap being an inner flap, said second major



flap being an outer flap, and said minor flaps being intermediate flaps between said inner and outer flaps;
(e) certain of said flaps having contour features for receiving portions of other flaps to accommodate interlocking engagement therebetween when said flaps are folded on said first fold lines and having additional contour features for receiving other portions of said other flaps to accommodate interlocking engagement therebetween when the dimensions of said flaps are increased by being folded on said second fold lines to reduce the depth of said container;
(f) said first major closure flap having an opening for receiving a projection of said second major closure flap when the depth of the container is reduced;
(g) said minor closure flaps having recesses for receiving portions of at least one of said major closure flaps when the depth of the container is reduced.

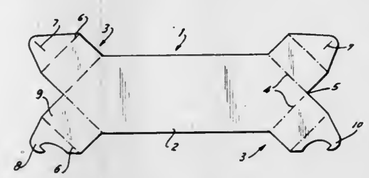
4,238,069
ONE-PIECE CORRUGATED CONTAINER
George A. Morris, Jr., P.O. Box 76136, Atlanta, Ga. 30326
Filed Aug. 9, 1979, Ser. No. 65,377
Int. Cl.[3] B65D *5/46, 5/10, 5/02*
U.S. Cl. 229—52 B **5 Claims**

1. A container formed of a unitary blank of foldable paperboard comprising:
(a) a central bottom panel substantially rectangular in outline and integrally connected to opposed end walls and opposed side walls to provide an upwardly facing opening,
(b) corner gussets between each end wall and the side walls adjacent thereto with each said corner gusset being folded inwardly of the container along the inner surface of the end wall adjacent thereto,
(c) upstanding projections carried by the free extremities of each of said corner gussets with said upstanding projections carried by the corner gussets adjacent each end wall overlapping each other,
(d) an end flap member on each end wall folded inwardly of the container and along the inner surface of the corner gussets adjacent thereto,
(e) there being an elongated slot along the fold line of each said end flap member disposed to receive said upstanding projections carried by the corner gussets adjacent thereto,
(f) opposed tabs on the free extremity of each said end flap member extending laterally away from each other with each tab being folded under the corner gusset adjacent thereto to lock the tab between said corner gusset adjacent thereto and the inner surface of the end wall adjacent thereto,



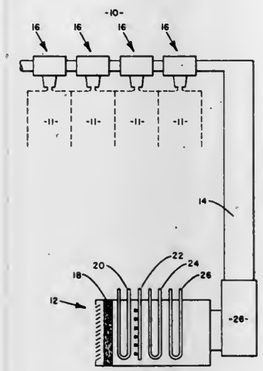
(g) side flap members on said side walls folded inwardly toward each other to define a top for the container and having upwardly folded flaps on the free extremities thereof extending alongside each other,
(h) handle means carried by said upwardly folded flaps,
(i) upwardly projecting tabs carried by the ends of each said upwardly folded flap, and
(j) there being aligned slots in said upstanding overlapping projections carried by said corner gussets receiving said upwardly projecting tabs carried by said upwardly folded flaps.

4,238,070
GIFT BOX RIBBON SLEEVE
Russell J. Lyons, Franklin Park, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Oct. 15, 1979, Ser. No. 84,885
Int. Cl.[3] B65D *65/06, 65/12*
U.S. Cl. 229—87 R **7 Claims**



1. A ribbon sleeve for boxes, especially gift boxes, comprising a sheet-material blank having an elongated strip portion provided at each end with a pair of lobes, first fold lines at the junction of said lobes with the respective end, said fold lines intersecting one another in a point which is adapted to be placed onto a respective corner of a box to be provided with said sleeve, and a second fold line in each lobe spaced from and parallel to the respective first fold lines, so that the lobes can be bent along the first fold lines to overlie the sides of a box onto which the sleeve is placed and portions of the lobes can be bent underneath the box along the second fold lines; and means for connecting said portions of the lobes of each pair to one another.

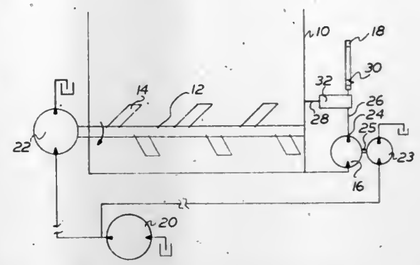
4,238,071
AIR CONDITIONING SYSTEM AND CONTROL THEREFOR
John E. Post, Cincinnati, Ohio, assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jun. 29, 1979, Ser. No. 53,599
Int. Cl.[3] F24F *7/04*
U.S. Cl. 236—49 **5 Claims**



1. An air conditioning system for supplying conditioned air to a plurality of zones, the system comprising:
a central air conditioning station for conditioning air;
supply air duct means for conducting conditioned air from the central station to the zones; and
a plurality of discharge terminal means for discharging conditioned air from the supply air duct means into the zones, wherein each terminal includes
air control means for controlling the amount of conditioned air discharged into a zone by the discharge terminal, and
thermostatic adjusting means for adjusting the air control means to directly vary the amount of air discharged into the zone in response to changes in the air temperature thereof; and wherein:
a first selected discharge terminal means further includes primary override means for overriding the thermostatic adjusting means of the first selected discharge terminal means to increase the amount of air discharged into a first selected zone during a warm-up period when the temperature of the air passing through the supply air duct means exceeds a predetermined value; and
a second selected discharge terminal means further includes auxiliary override means for overriding the thermostatic adjusting means of the second selected discharge terminal means to substantially restrict the discharge of air into a second selected zone during the warm-up period to prevent overheating thereof.

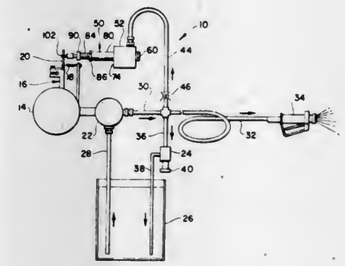
4,238,072
METHOD OF DISPENSING A GRANULAR FERTILIZER
Nicola Licursi, 7588 White Pine Dr., Chesterland, Ohio 44026
Continuation of Ser. No. 888,739, Mar. 21, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,621
Int. Cl.[3] A01C *21/00*
U.S. Cl. 239—1 **6 Claims**

1. A method for dispensing a granular normally dry fertilizer onto a lawn, said granular normally dry fertilizer in a dry state having a particle size such that at least about 80% of the granular fertilizer composition will pass through an 8 mesh screen and will be retained on a 50 mesh screen and having water soluble readily available lawn nutrients and slow released water insoluble lawn nutrients which remain in granular particles when said fertilizer is mixed with water, which comprises the steps of suspending from about 5% to about 15% by weight of the total suspension of said granular fertilizer in water to form a suspension of granular particles having slow released lawn nutrients in a solution of readily available lawn nutrients,



agitating said suspension to prevent settling of the granules thereof, and spraying said granular suspension on the lawn.

4,238,073
PAINT SPRAY APPARATUS HAVING PRESSURE ACTUATED CONTROL
Miroslav Liska, 1242 Holt St., Los Angeles, Calif. 90035
Filed Mar. 26, 1979, Ser. No. 24,170
Int. Cl.[3] B05B *9/00*
U.S. Cl. 239—127 **11 Claims**



1. In an abrasive liquid spraying apparatus,
an airless pump having an inlet and an outlet,
an internal combustion engine for driving said pump, said engine having a speed regulating means,
said inlet being connected to a liquid source and said outlet being connected to a liquid spray nozzle by a hose,
the improvement comprising:
a liquid pressure actuated throttle valve connected to said pump outlet and positioned to operate said speed regulating means,
said throttle valve having means to operate said regulating means to reduce the engine speed from operating speed to idling when the spray nozzle is closed.

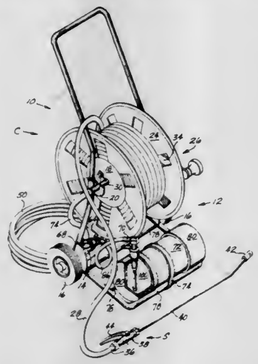
4,238,074
ATTENDANT PROPELLED PORTABLE SPRAYING APPARATUS
Scott Coons, 5511 Erlands Pt., Bremerton, Wash. 98310
Filed Dec. 23, 1976, Ser. No. 753,737
Int. Cl.[3] B05B *7/30*
U.S. Cl. 239—199 **2 Claims**

1. A wheeled, walking attendant propelled spraying apparatus, comprising:
a cart comprising a frame and wheels connected to a lower portion of the frame, a spray hose storage reel adapted to receive a length of hose thereon, means journaling said reel onto said frame for rotation during wrapping and unwrapping of the spray hose, a swivel coupling including an outlet rotatable with the spray hose storage reel which

is connectible to the spray hose and a non-rotating inlet located at one end of said spray hose storage reel, said frame including a forward projecting shelf generally below the reel, and a handle above the spray hose storage reel;

a storage tank for a liquid to be sprayed, mounted onto said shelf generally below the hose storage reel;

apparatus for removing a liquid from said tank and delivering it in diluted form into the inlet of said swivel coupling, comprising an inlet fitting connectible to a water hose and a jet pump connected in series and mounted onto said cart frame, said jet pump having a pumping fluid passageway in water receiving communication with said inlet fitting, a pumped fluid inlet and a combined fluid outlet, a first conduit interconnected between the combined fluid outlet of said jet pump and the inlet of said swivel coupling, and



a second conduit interconnected between the storage tank and the pumped fluid inlet of said jet pump, said second conduit including flexible hose means and adjustable metering means to regulate the rate of removal of liquid from the storage tank; and wherein a first check valve is provided in series with and between the inlet fitting and the jet pump, for preventing back flow through the jet pump into the water supply, and wherein a second check valve is provided in the second conduit, to prevent back flow from the jet pump into the second conduit;

whereby the cart can be wheeled into a yard, a hose can be connected between a water faucet and the inlet fitting, and the spray hose can be unwrapped from the reel and used by an operator to spray a water diluted liquid without the encumbrance of a mixing apparatus at the outlet end of the spray hose.

4,238,075

FUEL INJECTION JET FOR INJECTION COMBUSTION ENGINES

Richard Bauder, Neckarsulm, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

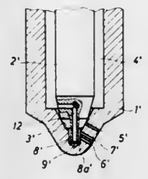
Filed Jan. 24, 1979, Ser. No. 6,217

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1978, 2803774

Int. Cl.³ F02M *45/00*

U.S. Cl. 239—533.4 **9 Claims**

1. A fuel injection jet for combustion engines having an injection head and a spring biased jet needle which lifts from a conical needle valve seat provided by the injection head due to fuel pressure acting against the spring bias, and wherein jet bores are provided in the injection head in at least two planes and are released in sequence upon reciprocation of the jet needle with increased fuel pressure, the improvement of at least one jet bore emanating from the conical needle seat, the jet needle being provided with a cylindrical pin which is guided in a pocket bore of the injection head from which at least one further jet bore emanates and which is covered by the pin when the jet needle is closed on the valve seat, and fuel



supply channel means for communicating with the further jet bore when the jet needle is lifted a predetermined amount.

4,238,076

APPARATUS FOR BUILDING UP AND REPAIRING THE REFRACTORY LINING OF INDUSTRIAL FURNACES AND HOT-RUNNING VESSELS

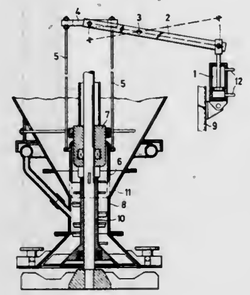
Franz Weiss; Franz Waisnix, both of Vienna; Friedrich Baumgartner, and Werner Zach, both of Veitsch, all of Austria, assignors to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

Filed Feb. 21, 1979, Ser. No. 13,173

Claims priority, application Austria, Feb. 22, 1978, 1294/78

Int. Cl.³ F27D *1/16*

U.S. Cl. 239—676 **1 Claim**



1. An apparatus for building up and repairing a vertically extending refractory lining of an industrial furnace or like hot-running vessel, which comprises a centrifugal wheel extending in a horizontal plane and rotatable in the plane for centrifugally depositing a granular refractory material on a portion of the lining to be built up or repaired, a conduit for feeding the granular refractory material to the centrifugal wheel, the conduit having an outlet opening above the wheel, a casing defining a mixing chamber connected to, and opening into, the conduit, a conical container for the granular refractory material connected to the casing and opening into the mixing chamber, the centrifugal wheel, the conduit, the casing and the container having a common axis, a vertical drive shaft for rotating the wheel extending along the axis and passing through the container and mixing chamber, a mounting housing for the drive shaft arranged in the container, a shut-off bell member having a bevelled lower edge, the bell member being slidably mounted on the mounting housing for vertical movement into selected positions wherein the bevelled lower edge defines an annular gap between the container and the mixing chamber or permitting the granular refractory material to flow from the container into the mixing chamber and the bevelled lower edge engages the conical inside wall surface of the conical container for completely closing the annular gap for interrupting the flow, vertical rods secured to the shut-off bell member for vertically moving the bell member, a linkage

system having one end attached to the rods and pivotal about a horizontal axis, and a stationary pneumatic motor attached to the other end of the linkage system for pivoting the linkage system and thereby to move the rods and bell member vertically.

4,238,077

SPRAY NOZZLE FOR ELECTROSTATIC AIRLESS COATING

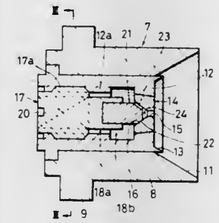
Nakaichi Hori, Owariasahi, Japan, assignor to Asahiokuma Sangyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 8, 1978, Ser. No. 968,005

Claims priority, application Japan, Oct. 17, 1978, 53/127677

Int. Cl.³ B05B *5/00*

U.S. Cl. 239—707 **6 Claims**



1. A nozzle for a spray gun for electrostatic airless coating comprising:

a member defining a circular orifice forming a single cylindrical ejection opening;

means including a swirl chamber for feeding an airless liquified coating material under pressure to said orifice for ejection from said opening; and

a hollow cylindrical holder having one end which concentrically encircles said orifice and defining an annular electrode disposed in radially spaced relationship with the axis of said orifice.

4,238,078

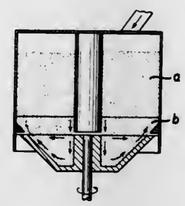
APPARATUS FOR DISINTEGRATING A LUMPED MATERIAL

Alexandr V. Yagupov, Ordzhonikidze, U.S.S.R., assignor to Severo-Kavkazsky Gorno-Metallurgichesky Institute, U.S.S.R.

Division of Ser. No. 848,723, Nov. 4, 1977, Pat. No. 4,176,795. This application Mar. 22, 1979, Ser. No. 22,995

Int. Cl.³ B02C *23/36*

U.S. Cl. 241—46.02 **4 Claims**



1. Apparatus for disintegrating lumped solid materials into smaller particles comprising, means for continuously feeding into a vertical column a lumped solid material which can be reduced by disintegration into solid smaller particles, means for directly rotating about the axis of said column of material a lowermost portion of said column of material and with a velocity gradient increasing away from the axis and at a maximum rotational speed remote from said axis effective to develop an active horizontal disintegration zone immediately above said lowermost portion of the vertical column of said material in which lumps of said material impact each other directly and the lumped solid material is disintegrated, means for simultaneously flowing disintegrated solid material from said lower portion outwardly and upwardly along the periphery of said column to continuously allow entry of lumped solid material into said disintegration zone, and disintegrated solid material into said lower portion, while simultaneously flowing the disintegrated solid material away from said column, means for holding all of said lumped solid material in said column above the level of said disintegration zone and holding it from rotation, and means for continuously maintaining a pressure head of said lumped solid material on said solid material in said zone by continuously replenishing said column above the level of said zone.

4,238,079

CUTTING DEVICE OF A COMMINUTING APPARATUS

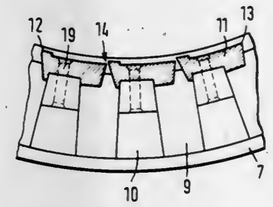
Friedrich Otto, Hameln, Fed. Rep. of Germany, assignor to A. Stephan & Soehne GmbH & Co., Hameln, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,060

Claims priority, application Fed. Rep. of Germany, May 27, 1978, 2823245

Int. Cl.³ B02C *18/18*

U.S. Cl. 241—248 **13 Claims**



1. A cutting device of an apparatus for comminuting food products, comprising

two rings located concentrically with and rotatable relative to one another about a common axis, said rings bounding an annular slot therebetween;

a first plurality of axially extending teeth provided on one of said rings and spaced from one another in a circumferential direction, and a second plurality of axially extending teeth provided on the other of said rings and also spaced from one another in the circumferential direction, the teeth of said one ring and the teeth of said other ring having surfaces which face toward said annular slot; and

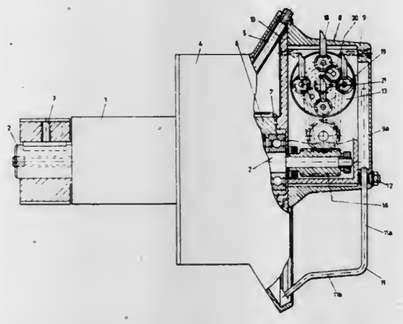
a plurality of shaped cutting members provided on the teeth of at least one of said rings, each of said cutting members being plate-like and completely overlapping the surface of a respective one of said teeth of said one ring, each of said cutting members having two axially extending edges facing toward said annular slot and spaced from one another in the circumferential direction, one of said edges of each of said cutting members being formed as a cutting edge, whereas the other of said edges of the cutting member is extended from said cutting edge and spaced from the cutting edge of the cutting member provided on a circumferentially adjacent one of said teeth such a predetermined distance as to define a relatively small cutting gap therebetween.

4,238,080

APPARATUS FOR FORMING A SUPPLY COIL FROM A THREAD SUPPLIED FROM A YARN STOCK

Hubert P. Van Mullekom, Deurne, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Mar. 21, 1979, Ser. No. 22,522
Claims priority, application Netherlands, Jun. 15, 1978, 7806469
Int. Cl.³ B65H *51/20*
U.S. Cl. 242—47.12 **2 Claims**



1. Apparatus for forming a supply coil from a thread supplied from a yarn stock, said apparatus comprising a stationary yarn winding drum having a radially fixed part with a winding surface and a radially adjustable part with a winding surface, winding arm means rotatable with respect to the drum for forming a yarn coil on the drum, and pin means within the drum engaging the windings of the formed yarn coil on the drum to move the yarn coil axially along the drum, the radially adjustable part of the drum including means for adjusting the effective diameter of the drum corresponding to the desired yarn length of the yarn coil formed by the winding arm means on the drum, wherein the radially adjustable part comprises at least one axially directed rib, which is mounted radially adjustable from the winding surface of the fixed part, and wherein the fixed part of the drum is constituted by a substantially cylindrical housing which is arranged excentrically with respect to the axis of the winding arm means, whereas the radially adjustable drum part is constituted by a number of ribs shaped as parts bent substantially to L-shape which each are radially directed with one leg and are connected to the cylindrical housing adjustable in radial direction and with the other leg are directed axially according to the generatrices of the winding drum.

4,238,081

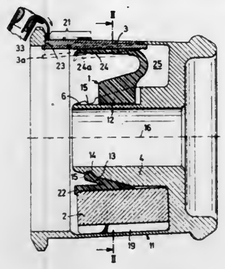
APPARATUS FOR STORING FILAMENTARY MATERIAL

Ferdinand Kovic, Radolfzell, and Peter Jung, Constance, both of Fed. Rep. of Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 25, 1979, Ser. No. 6,798
Claims priority, application Switzerland, Jan. 30, 1978, 976/78
Int. Cl.³ B65H *51/20*
U.S. Cl. 242—47.01 **15 Claims**

1. An apparatus for storing filamentary material, said apparatus comprising

a bobbin having a substantially cylindrical peripheral surface to receive windings of a filamentary material thereon, an internal cavity for receiving storage components and on integral centrally disposed hub within said cavity; and



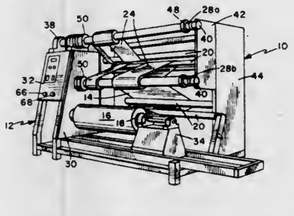
a tension member fitted into said cavity of said bobbin over said hub for securing the storage components therein.

4,238,082

METHOD AND APPARATUS FOR SLITTING AND REWINDING WEB MATERIALS

Morten A. Lund, 148 Calle Maribel, San Marcos, Calif. 92069

Filed Aug. 14, 1979, Ser. No. 66,500
Int. Cl.³ B65H *35/02*
U.S. Cl. 242—56.2 **1 Claim**



1. A slitter-rewinder apparatus for forming a web of material into a plurality of individual rolls, the web being unwound from around an elongate supply core and slit into strips which are rewound about a plurality of individual product cores, the apparatus comprising:

a pair of takeup rollers each adapted slidably to receive a portion of the product cores thereabout;

chuck means for rotatably supporting the supply core;

frame means for supporting the pair of takeup rollers and the chuck means in spaced apart relationship including bearings for rotatably mounting the takeup rollers on the frame;

knife means for cutting the web into a plurality of strips after the web is unwound from about the supply core, adjacent strips being rewound about individual product cores on different ones of the pair of takeup rollers in alternating fashion;

a first electric motor for rotating the takeup rollers;

first coupler means for providing a driving connection between the first electric motor and the takeup rollers to enable simultaneous powered rotation of the rollers at the same speed for rewinding the strips around the produce cores;

clutch means for varying the amount of frictional engagement between the product cores and the respective takeup rollers they are on;

a second electric motor for rotating the supply core;

second coupler means for providing a driving connection between the second electric motor and the chuck means to enable powered rotation of the supply core for unwinding the web from therearound, including intermeshing spur and worm gears adapted to prevent pulling forces exerted by the takeup rollers through the web from increasing the speed of rotation of the supply core; and

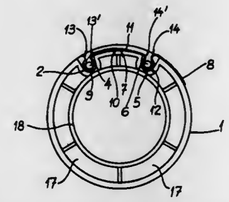
control means for independently varying the amount of electric current supplied to the first and second electric motors to vary the speeds of rotation of the cores, the control means including means for sensing the amount of the web that has been wound around the product cores, and means responsive to the sensing means for automatically increasing the amount of electric current supplied to the second electric motor.

4,238,083

WINDING DRUM FOR A FLEXIBLE TAPE

Louis Scandella, Marnay, and Bernard Faivre, Besancon, both of France, assignors to Stanley-Mabo S.A., Besancon, France

Filed Apr. 5, 1979, Ser. No. 27,525
Claims priority, application France, Apr. 12, 1978, 78 11435
Int. Cl.³ B65H *75/28*
U.S. Cl. 242—74 **4 Claims**



1. In a tape measure having a rotary winding drum and an elongated flexible tape wound upon the drum, the improvement wherein the winding drum has two side faces and a generally cylindrical peripheral wall therebetween, first and second closely angularly spaced axially extending peripheral grooves opening through one of the side faces and having axes parallel to the axis of the drum and radially extending peripheral slot openings, first and second axially extending fixed cylindrical pins generally centrally located in the first and second grooves respectively, the peripheral wall having a recess portion extending the full circumferential distance between the peripheral grooves, the first and second grooves respectively being generally cylindrical and each of the slots having a width less than the diameter of the associated pin and the drum wall having rounded generally circumferentially projecting portions at both circumferential edges of each slot and the flexible tape having a free end positioned in the recess and looped around the first pin in the first groove, and then passed over the portion of the tape in the recess and underneath the second pin in the second groove before being wound to form a convolution around the drum.

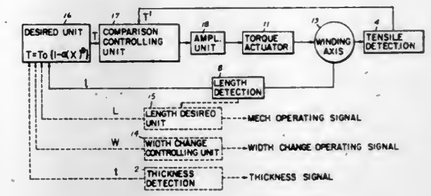
4,238,084

METHOD OF CONTROLLING WINDING TENSION

Hiroshi Kataoka, Iyo-mishima, Japan, assignor to Kataoka Machine Product Co., Ltd., Ehime, Japan

Continuation of Ser. No. 660,632, Feb. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 485,618, Jul. 3, 1974, abandoned. This application May 22, 1979, Ser. No. 41,410
Claims priority, application Japan, Jul. 6, 1973, 48-76396
Int. Cl.³ B65H *23/20*
U.S. Cl. 242—75.51 **9 Claims**

1. A method of controlling a winding tension, on a roll comprising instantaneously measuring a tension (T') of a sheet being wound on a winding shaft and its instantaneous length growing with the progress of the winding, determining a desired tension (T) from the thus measured length on the basis of a theoretical equation, comparing said sheet tension (T') with said desired tension (T) to obtain a difference signal and controlling the winding tension by the use of the difference signal, said desired tension (T) being obtained by generating a signal proportional to the initial winding tension (To), generating a signal proportional to the actual winding length, dividing said last mentioned signal by a signal proportional to the total winding length to obtain a signal representing a variable (x), multiplying the signal representing the variable (x) by the



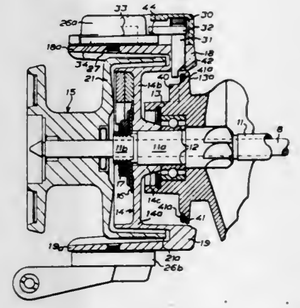
signal representing the initial winding tension (To) and by a constant predetermined signal representing the rate of change of the tension, and subtracting the resulting signal from the signal representing the initial tension (To).

4,238,085

FIXED-SPOOL REEL

Bertil E. Jansson, Karlshamn, and Karl L. O. Carlsson, Asarum, both of Sweden, assignors to ABU Aktiebolag, Svangsta, Sweden

Filed Jun. 6, 1978, Ser. No. 913,144
Claims priority, application Sweden, Jun. 9, 1977, 7706721
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2G **2 Claims**



2. A fishing reel comprising a body, a line spool (**15**) which during casting is non-rotating and from which fishing line is unwound in a substantially axial direction, a hand crank (**61**), a rotatably mounted bail support member (**14**) connected via transmission means to said hand crank to be rotated thereby, a bail means (**20**, **26***a*, **26***b*) pivotally mounted on said support member to be rotated therewith, spring means (**48**) acting on said bail means, said bail means being movable against the action of said spring means from an active position for winding up the line on said line spool when said support member (**14**) is rotated by said hand crank to an inactive position in relation to the line for permitting undisturbed unwinding of the line during casting, a releasable latching mechanism for automatically and releasably locking said bail means (**20**, **26***a*, **26***b*) in its inactive position and for automatically and releasably locking said rotatable bail support member when said bail means is pivoted to its inactive position, wherein said latching mechanism (**31**, **32**, **26***a*, **35**, **41***a*) includes first engagement means (**41**, **41***a*) on said body, second engagement means (**26***a*, **35**) supported by and movable with said bail means, and an engaging member (**31**, **32**) for cooperation with said first and second engagement means, said engaging member being movably supported by said rotatable bail support member, means (**30**, **33**) for moving said engaging member from an unengaged position to an engaging position with said first and second

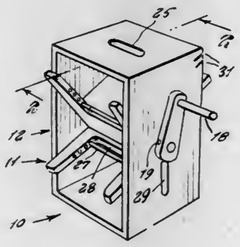
engagement means when said ail means is pivoted to its inactive position, and releasing means supported by said body for returning said engaging member to said unengaged position when said rotatable bail supporting member is rotated by said hand crank, said body (13) having a plurality of cam means (55) equiangularly spaced from each other, said cam means preferably having serrated teeth (55), said serrated teeth so designed that one tooth flank (56) serves as a cam surface, whereas the opposite tooth flanks (57) serve as stop means with respect to said engaging member (31, 32).

4,238,086

KITE STRING WRAPPER

Albert L. Brimmeier, 102 Maplewood Dr., Pittsburgh, Pa. 15214

Filed Sep. 20, 1979, Ser. No. 77,395
Int. Cl.³ B65H *75/38, 75/44*
U.S. Cl. 242—96 **1 Claim**



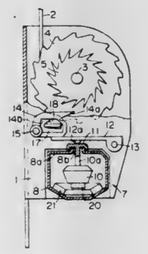
1. A kite string wrapper, comprising, in combination, a box-like frame, a reel rotatably supported in said frame, a crank handle attached to said reel, and a length of string wound on said reel, said string being paid out of a slot on one wall of said frame; said reel comprising a plurality of radially extending, flat blades affixed to a central spool, each said blade having an end-edge notch forming a pair of opposite side legs, a row of aligned holes in each said pair of legs, a cross pin selectively inserted through said aligned holes, a radially extending second slot on another wall of said frame, aligning with all said row of holes for insertion of said cross pins, a pair of saw cuts on said frame for locking said string therein, and a spring brake on said frame for braking a rotation of said reel.

4,238,087

SAFETY SEAT BELT RETRACTOR

Yoshihiro Makishima, Yokohama, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Jun. 18, 1979, Ser. No. 49,111
Claims priority, application Japan, Jul. 4, 1978, 53-91403; Nov. 21, 1978, 53-159385
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **5 Claims**



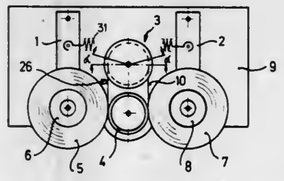
1. A safety seat belt retractor comprising an inertia sensing member capable of sensing a predetermined speed variation or tilting of a vehicle body and of assuming a first position of stable state and a second position corresponding to said predetermined speed variation or tilting and being continuously displaceable from said first position to said second position; means for locking the retractor when said inertia sensing member is displaced to said second position, and a magnet having such an attraction that said inertia sensing member is brought to said second position when said inertia sensing member has been displaced by a predetermined amount from said first position.

4,238,088

GUIDE FOR A THIN TAPE-LIKE RECORDING MEDIUM, PARTICULARLY A MAGNETIC TAPE

Klaus Schoettle, Heidelberg; Werner Hoffmann, Ludwigshafen, and Eduard Kaemmer, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 26, 1979, Ser. No. 52,105
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830615
Int. Cl.³ G11B *15/32, 15/66*
U.S. Cl. 242—192 **17 Claims**



1. A guide arrangement for a thin tape-like recording medium, especially a magnetic tape which, when transported past a magnetic head, is subjected to strong acceleration forces in the longitudinal direction, said arrangement comprising:

at least one guide roller mounted for rotation about a relatively stationary axis, and

two relatively stationary, arc-shaped guide surfaces, each facing said guide roller on one side thereof, extending around part of the periphery of the guide roller and having an ingress and an egress chamfer for the tape,

whereby entrapment of air between the tape and the guide roller is substantially reduced and gradual entry of the tape into the zone of effective lateral guidance of the tape is insured.

4,238,089

AIMING AND GUIDING DEVICE FOR REMOTE CONTROLLED, JET PROPELLED PROJECTILES

Heinrich Grosser, Vellmar, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellschaft, Kassel, Fed. Rep. of Germany

Filed Jan. 15, 1979, Ser. No. 3,608
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1978, 2801694
Int. Cl.³ F41G *7/26*
U.S. Cl. 244—3.13 **3 Claims**

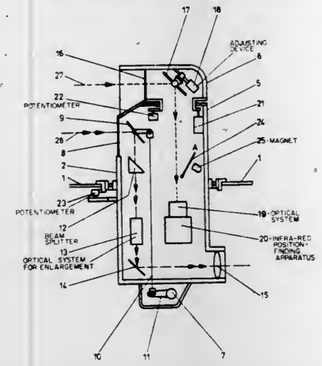
1. An aiming and guiding device for remote controlled, jet propelled projectiles, said device being arranged in an armor plating and comprising:

an aiming portion, including a launching stand; and

a guiding portion which is azimuthally pivotally mounted in said armor plating and which includes:

an optical sight, having an optical sight axis for picking up and tracking a target;

a position-finding apparatus, having an infrared sight axis for the remote control of said projectile in the direction of said target, said optical sight and said position-finding apparatus being fixedly assembled together and being accommodated in a single support housing having a first entry window for the optical axes of said sight and said position-finding apparatus, which axes are oriented parallel to one another, and having a common head mirror, said support housing being azimuthally pivotal independent of said launching stand after launch of a projectile;



a head housing azimuthally pivotally mounted on said support housing and including a second entry window and a mirror, which is tiltable about a horizontal axis, for said infrared sight axis; and

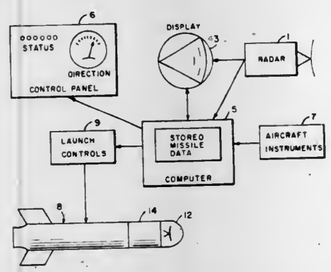
means for adjusting said optical sight and said position-finding apparatus independent of one another and, in conformity with the angle between said optical sight axis and said infrared sight axis, for adjusting said angle to zero.

4,238,090

ALL-WEATHER INTERCEPT OF TANKS FROM A HELICOPTER

John A. French, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 22, 1978, Ser. No. 944,833
Int. Cl.³ F41G *7/22*
U.S. Cl. 244—3.19 **1 Claim**



1. A method of detecting a tank from a remote location in a helicopter which carries a missile and sends the missile against said tank comprising the steps of locating a tank relative to the helicopter by the use of a pulse doppler radar system; aligning the helicopter in the direction of the tank by the use of a computer system; aligning the missile on a ballistic path towards the tank, and activating the missile's homing system after a predetermined time so the missile will home onto the tank; using fire-and-forget tactics for the helicopter; utilizing pulse doppler radar to detect the tank in any optical visibility conditions; providing tank bearing and range information to the pilot on a display, so that he may direct the aircraft to a proper course for firing of the missile; utilizing the range and bearing information of the helicopter's instruments as inputs to the computer system so as to detect a proper ballistic missile firing path to the tank; and using a microwave radiometric receiver in said missile's homing system for sensing the tank's direction based on variations in microwave emissivities between metallic targets and non-metallic background.

4,238,091

SAFETY DEVICE FOR RETENTION OF A SPARE-TIRE CRADLE

Philippe Clain, Pontchartrain, and Christian Faye, Rueil Malmaison, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 23, 1978, Ser. No. 953,845
Claims priority, application France, Oct. 21, 1977, 77 31707
Int. Cl.³ B62D *43/04*
U.S. Cl. 224—42.23 **3 Claims**



1. A safety device for retaining a spare tire cradle pivotally mounted under the floor of a motor vehicle, comprising:

a lock adapted to draw up said cradle against said vehicle; and,

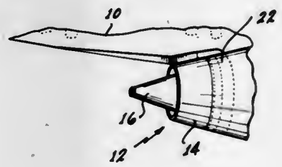
a safety catch having a hook portion pivotally mounted on a fixed part of said vehicle body by the intermediary of a support and biased by a spring means into a pivotally extended position wherein it may cooperate with a rod of said cradle to retain said rod when said lock is released, said safety catch having an inner profile in the form of a cam surface engageable with said rod during the pivoting of said safety catch to pivotally retract said safety catch under said floor when said cradle is drawn up by said lock, whereby said spring means also maintains said cam surface in engagement with said rod during the pivotal extension of said safety catch thereby ensuring engagement of the hook with the rod.

4,238,092

ACCESSORY FOR A TURBINE ENGINE

John M. Brennan, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation of Ser. No. 815,690, Jul. 17, 1977, abandoned. This application Aug. 17, 1978, Ser. No. 934,660
Int. Cl.² B64D *29/06*
U.S. Cl. 244—54 **2 Claims**



2. A thrust tuning accessory for use with a turbine engine pylon mounted to an aircraft having a turbine exhaust duct utilizing said accessory in the absence of a thrust reverser thereon comprising:

an outer cowl member having streamlined inner and outer surfaces attached to the outer periphery of the turbine exhaust duct forming a rearward streamlined continuation thereof;

a hollow center plug open at opposite ends to provide a through passageway and having an outer surface form

defining a thrust gas path, said plug having a longitudinal cross-sectional profile resembling two axially aligned abutting frustro-conic sections, the end of said engine plug remote from said engine being substantially pointed and extending further rearward than said outer cowl member;

a transition means for attaching said engine center plug to said engine; and

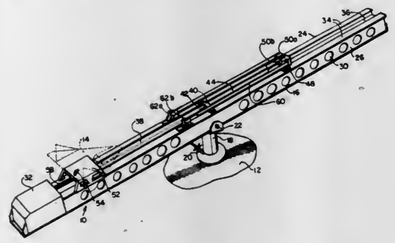
a fairing element for attachment to said pylon to further tune the tuned gases leaving said engine, said fairing element is substantially "V" shaped in vertical cross-section with the downward extending closed end of the "V" substantially flattened with the side surfaces of the "V" conforming substantially with the outer surface of said pylon and the substantially flattened portion slightly curved inward in a convex manner with respect to said pylon adjacent surface away from said thrust gas path to substantially match the outer periphery of the exhaust gases exiting from the nozzle.

4,238,093

AIRCRAFT LAUNCHER

Moses Siegel, Cheltenham, Pa.; Everett Cahall, Medford; David Dunning, Bayville, both of N.J., and Joseph Hammond, Cornwells Heights, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1978, Ser. No. 972,133
Int. Cl.³ B64F *1/06*
U.S. Cl. 244—63 **4 Claims**



1. A system for launching an aircraft, comprising:

a track extended longitudinally between a forward and a rearward end;

a shuttle adapted to advance along said track from the rearward to the forward end thereof;

a crosshead positioned intermediate the ends of said track forward of said shuttle and adapted to be driven longitudinally along said track to a position intermediate the ends thereof rearward of said shuttle; and

a strip of energy-absorbing tape fixed at its ends to said track rearward of said crosshead and reeved through said crosshead and said shuttle for advancing and shuttle along said track with forward movement of said crosshead and for braking said shuttle forward of said crosshead at the forward end of said track.

4,238,094

AIRCRAFT WING FENCE

Rodney McGann, 4187 Old San Jose Rd., Santa Cruz, Calif. 95065

Filed Nov. 2, 1978, Ser. No. 957,049
Int. Cl.² B64C *5/06*
U.S. Cl. 244—91 **7 Claims**

1. In combination of a fluid foil designed to create by its motion through a fluid a force component perpendicular to the direction of its motion and a fluid fence attached thereto in a plane substantially perpendicular to said foil, the improvement wherein said fence comprises an elongated U-shaped or scimitar-shaped open fence having a concave edge and a convex edge, the fence attached at its extremities to the surface of said foil with its concave edge adjacent the foil thereby providing



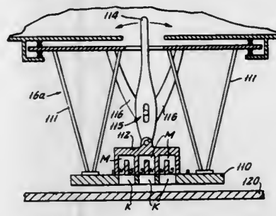
an unobstructed opening between the surface of the foil and the concave edge of said fence.

4,238,095

METHOD OF AND APPARATUS FOR ANCHORING AIRSHIPS AND PROPULSION MEANS FOR AIRSHIPS

Saul I. Slater, Miami Beach, Fla., assignor to Hov-Air-Ship, Inc., Miami Beach, Fla.

Continuation-in-part of Ser. No. 809,130, Jun. 22, 1977, which is a continuation-in-part of Ser. No. 674,278, Apr. 14, 1976, Pat. No. 4,085,912, which is a continuation-in-part of Ser. No. 552,793, Feb. 25, 1975, Pat. No. 3,971,533. This application Feb. 14, 1978, Ser. No. 877,704
Int. Cl.³ B64B *1/66, 1/24*
U.S. Cl. 244—115 **24 Claims**



7. A magnetic anchoring assembly for anchoring an airship containing lighter-than-air gas, the airship having a longitudinal axis, comprising:

a generally hollow support member coupled at one of its ends to the airship, the other end of said support member providing a cavity portion which opens into the hollow support member, said support member including a generally cylinder-like member mounted at one end to the airship with its longitudinal axis extending generally parallel to the longitudinal axis of the airship and having a generally free end edge at its other end;

permanent magnet means adapted to be slidably retained within said cavity portion; and

positioning means attached to said magnet means for positioning said magnet means at desired locations within said cavity portion, said positioning means being operably coupled to said support member for bearing against said support member when positioning said magnet means within said cavity portion, such that a magnetic surface of said magnet means can be moved from a first position generally co-planar with the free end edge of said other end of said support member for permitting physical contact between the magnetic surface and a magnetically attractive anchoring structure supported above the ground at a level corresponding to that of the support member when the airship is in its anchoring configuration relative to the ground to a second position inwardly from said end edges for substantially weakening the magnetic attraction between said magnet means and the anchoring structure to permit flight of the airship.

20. Propulsion means for an airship containing lighter-than-air gas, which comprise:

a generally hollow shaft mounted to the airship, the free ends of the hollow shaft extending generally outwardly from the airship;

a drive shaft rotatably mounted within said hollow shaft;

drive means coupled to said drive shaft for rotating said drive shaft;

a propeller assembly operably coupled to each outward end of said drive shaft at the free ends of said hollow shaft, said propeller assemblies being adapted to rotate through at least about 180° and having propeller blades adapted for reversing the pitch thereof, each said propeller assembly including:

a first frame rotatably mounted to each outward end of said hollow shaft, said frame having first gear means operably coupled to motor means which is mounted to said hollow shaft for rotating said frame relative to said hollow shaft,

a second shaft rotatably mounted in said frame, one end of said second shaft operably coupled by second gear means to an end of said drive shaft and the other end adapted to be fixedly attached to said propeller blades,

a second frame fixedly secured to the other end of each said second shaft, said propeller blades being pivotally mounted to said second frame for pivoting about an axis longitudinal of said blades to permit variations in the pitch of said blades, and

variable pitch means mounted to said first frame and operably coupled to said propeller blades for varying the pitch of said blades,

said propulsion means being mounted to the airship for translating generally longitudinally of the airship for permitting a change in the position at which propelling thrust is applied to the airship, and said drive means operating both of said propeller assemblies for providing thrust in desired directions.

4,238,096

MOVABLE SUPPORT POST DEVICES

Harold A. Dvorachek, Iola, Kans., assignor to The Echlin Manufacturing Company, Branford, Conn.

Filed Mar. 9, 1979, Ser. No. 18,996
Int. Cl.³ A62C *23/04*
U.S. Cl. 248—75 **15 Claims**



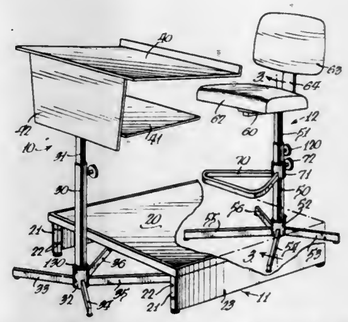
1. A movable post device for supporting portions of flexible hose or cable members or the like, comprising: an elongated hollow sleeve having an outside diameter which is substantially uniform and a small fraction of the length thereof, fulcrum means on one end of said sleeve defining an annular fulcrum edge having a diameter substantially larger than said outside diameter of said sleeve, means adjacent the other end of said sleeve for support of a flexible member to be supported, base means having an annular portion engageable by said annular fulcrum edge, an elongated coiled spring for acting between said base means and said sleeve to urge said annular edge into engagement with an annular portion of said base means and to hold said sleeve in a normal position while allowing pivotal movement of said sleeve about a fulcrum point on said annular fulcrum edge in response to application of a transverse force of a certain magnitude at said other end of said sleeve, first connection means between said spring means and said base means, and second connection means between said spring means and said sleeve, said spring being located substantially entirely within said sleeve and having a large number of convolutions and a diameter only slightly less than the inside diameter of said sleeve and being formed of a wire having a diameter which is relatively large in comparison to the inside diameter of said sleeve, said first connection means comprising a link, a first connection between one end of said link and said base means, and a second connection between the opposite end of said link and said spring, said link being effective to minimize transverse displacement of said second connection and to minimize pressure engagement between convolutions of said spring and the internal surface of said sleeve.

4,238,097

CONDUCTOR'S CHAIR

Herman A. Clausen; David R. Boeddeker, both of Owatonna; Logan W. Johnson, Edina, and Jerry A. Wenger, Owatonna, all of Minn., assignors to Wenger Corporation, Owatonna, Minn.

Filed Feb. 17, 1978, Ser. No. 878,732
Int. Cl.³ A47B *91/00;* A47C *1/02, 7/50*
U.S. Cl. 248—188.7 **1 Claim**



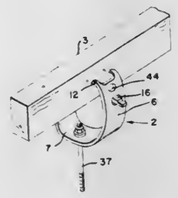
1. A chair frame structure comprising, a tubular base with a plurality of generally horizontal front and rear legs radiating from an axis centrally of said base and with said front legs being of a greater length than the rear legs, a column positionable in said base to extend upwardly along said axis having a hollow post of generally square cross section and an extendable tubular member positioned therein, means at the upper end of said tubular member for mounting a chair seat positioned forwardly of said axis to overlie said front legs, means carried on both said base and the lower end of the column to permit insertion of the column into the base in only one rotative position of the column including a fixed protruding pin on one of said base and column and an open-ended slot in a wall of the other of said base and column whereby the slot receives said pin upon insertion of a lower end of said hollow post into said base, and means permitting only one rotational orientation of the tubular member to the hollow post including a co-acting protrusion and a longitudinally-extending recess formed one in the tubular member and the other in the hollow post.

4,238,098

SPRING-ACTION SUSPENSORY DEVICE FOR ATTACHMENT TO OVERHEAD BEAMS

Gerald E. Siegfried, 3678 Charles St., Santa Clara, Calif. 95050; Donald C. Parson, deceased, late of Palo Alto, Calif., and by Carolyn K. Parson, adminstratrix, 3226 Waverly St., Palo Alto, Calif. 94306

Filed Nov. 30, 1978, Ser. No. 964,914
Int. Cl.³ E04G *5/06*
U.S. Cl. 248—217.2 **10 Claims**



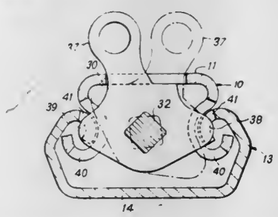
1. A spring actuated suspensory device for attachment to an overhead beam, comprising:
(a) a generally U-shaped member including a pair of spaced legs interconnected at one end and extending freely at their opposite ends;
(b) trigger means interposed between said legs retaining said legs resiliently spaced apart in a first position, said trigger means being laterally displaceable by abutment with said overhead beam to release said legs to allow movement of said legs toward each other under the impetus of the inherent resilience thereof to thereby cause the freely extending ends of the spaced legs to engage the beam.

4,238,099

VEHICLE SEAT SLIDES

Alec A. Hunwicks, 32 High St., Milton Malsor, Northampton, England

Filed Mar. 22, 1978, Ser. No. 889,132
Claims priority, application United Kingdom, Mar. 24, 1977, 12521/77
Int. Cl.² F16M *13/00*
U.S. Cl. 248—430 **11 Claims**



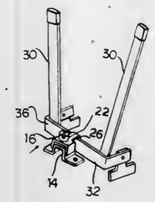
1. A slide mechanism for a vehicle seat comprising upper and lower opposed channels in sliding relationship with one another and having limbs which interlock to resist separation of the channels and which include outwardly extending parts and together define an axially extending tunnel of non-circular section, and further comprising latching means for locking the upper channel against axial movement in relation to the lower channel, said latching means comprising a latching plate mounted within said tunnel on the upper channel and shaped to occupy a first situation in the tunnel, and said latching plate having peripheral parts and being rotatable in a vertical plane to a second situation where said peripheral parts extend through slots in both limbs of the upper channel to enter aligned slots in both limbs of the lower channel to lock the upper channel in selected positions.

4,238,100

FIXED DEVICE OF FOLDING LEG

Min C. Shy, 20, Alley 18, Lane 109, Hoping St., Yang Ho City, Taipei, Taiwan

Filed Jun. 11, 1979, Ser. No. 47,608
Int. Cl.³ F16M *11/32, 11/38*
U.S. Cl. 248—439 **3 Claims**



1. A latch mechanism for stabilizing a foldable leg assembly on a roaster oven body comprising:
(a) a bracket including a U-shaped intermediate member having a bight portion, first and second leg portions extending from said bight portion at two opposite edges thereof, first and second bases extending laterally from said first and second leg portions, respectively, at ends of said first and second leg portions away from said bight portion, and an aperture in said bight portion, said first and second bases being secured to said oven body in assembled condition of said latch mechanism;
(b) a latch member including a U-shaped portion with a central section having a pair of leg segments extending from two opposite edges thereof, said central section also having a tongue-like extension extending toward the center of said oven from one end thereof, said latch member being disposed in nesting relationship around said bracket wherein the leg segments and central section of said latch member are located in proximity over the leg portions and bight portion, respectively, of said bracket, said central section of said latch member having an elongated narrow slot passing over said aperture in said bight portion;
(c) means at the free end of said tongue-like extension for hooking against a connecting frame element for a foldable leg assembly of said oven to provide said oven with stability when its legs are extended to supporting position; and
(d) a threaded adjustment screw bolt passing through said slot in said central section of said latch member and in threaded relationship with said aperture in said bight portion of said bracket to facilitate sliding adjustment of said latch member with respect to said bracket whereby said hooking means at the free end of said tongue-like extension may be placed around said connecting frame element, drawn tightly thereagainst, and securely held to provide stability.

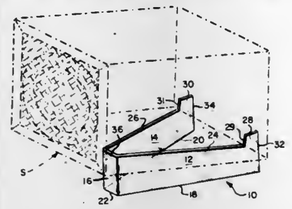
4,238,101

SUPPORT STAND FOR HIGH FIDELITY SPEAKER

Steven W. Kaye, 275 Prospect St., East Orange, N.J. 07017

Filed Apr. 4, 1979, Ser. No. 26,924
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—441 R **6 Claims**

1. A support stand for a high fidelity speaker comprising,
(a) a pair of vertical side panels converging toward each other at their front ends,
(b) means connecting said front ends of said side panels to each other,
(c) the bottom edges of said side panels lying in a horizontal plane which defines the resting surface for said stand,
(d) the upper edges of said side panels being inclined downwardly from front to rear whereby to lie in a downwardly and rearwardly slanted plane which defines a rearwardly inclined supporting surface for said speaker which is raised above the resting surface for said stand,



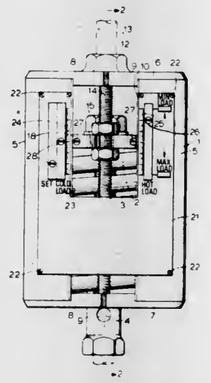
(e) said upper edges terminating at their rear ends in upstanding edges to define stops for a speaker supported on said supporting surface.

4,238,102

SPRING SUPPORTS

Colin J. Salter, Warley, England, assignor to Anthony John Salter and Yvonne Diane Salter, both of Droitwich, England

Filed Jan. 6, 1978, Ser. No. 867,590
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—543 **14 Claims**



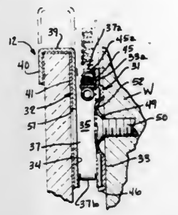
1. A spring support comprising a body, compression spring means located in said body, carrier means connected to said spring means and constructed and arranged to be engaged with a load, such as a pipe, to connect the load to said spring means to be supported thereby, and locking means which acts between said spring means and said body for locking said spring means in an infinite number of longitudinal positions within an operating range of longitudinal movement of said spring means, said spring means having an associated component which is longitudinally movable with said spring means, and said locking means comprising an elongated externally threaded member and nuts engaged with said threaded member, said threaded member being fixed to said body and extending longitudinally of said spring means, said component having a part which freely co-operates with said threaded member, and said nuts being movable on said threaded member at opposite sides of said part between released positions in which they are spaced from said part and leave said component, and thereby said spring means, free to move longitudinally relative to said threaded member, and locking positions in which said nuts are tightened against said part to prevent said component from moving relative to said threaded member and thereby lock said spring means against longitudinal movement.

4,238,103

MIRROR MOUNTING BRACKET

Thomas D. Kurtz, 1101 First Ave., Rock Falls, Ill. 61071

Filed Oct. 27, 1978, Ser. No. 955,355
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—544 **13 Claims**



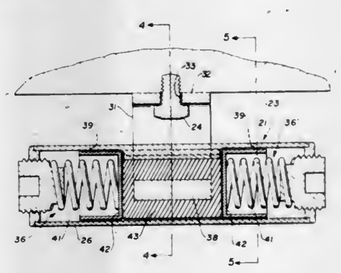
1. A bracket for mounting an article such as a mirror on a supporting surface comprising: a stationary bracket member adapted for attachment to a wall and a movable bracket member having an integral mirror engaging hook, said bracket members each having a generally rectangular body portion and interfitting guides along opposite side edges of the body portions supporting the bracket members for relative sliding movement along a path paralleling the body portions with the body portions laterally spaced apart to provide a cavity therebetween, a spring member positioned in the cavity crosswise of said path and having end portions attached to one of the bracket members, a tab on the body portion of the other bracket member engaging the spring member intermediate its ends and arranged to progressively distend the spring member when the movable bracket member is moved in one direction relative to the stationary bracket member from a first to a second position, the body portion of the stationary bracket member having a screw receiving aperture substantially medially between the side edges thereof and spaced from said spring member, the movable bracket member having an opening dimensioned to allow the head of the screw to pass therethrough and adapted to register with the aperture in the stationary bracket member when the movable bracket member is in said first portion.

4,238,104

ENERGY ABSORBING MOTOR MOUNT ASSEMBLY

Rex Hamilton, 944 South Ct., Visalia, Calif. 93277

Filed Aug. 14, 1978, Ser. No. 933,643
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—566 **5 Claims**



1. An energy absorbing motor mount assembly including a first mounting element formed for mounting to a frame of a vehicle, a second mounting element formed for mounting to a motor for said vehicle, one of said mounting elements being formed to include a containment portion and a remainder of said mounting elements being formed to include an arm portion, said arm portion being mounted to extend into said containment portion, and said arm portion and said containment

portion being further cooperatively formed to positively prevent withdrawal of said arm portion from said containment portion, and resiliently displaceable energy absorbing means mounted intermediate the mounting elements, said mounting elements and said energy absorbing means being formed for cooperative engagement and displacement of said energy absorbing means upon relative movement of said mounting elements in directions having vertical components to provide vibrational damping of motor operation, wherein the improvement in said motor mount assembly is comprised of:

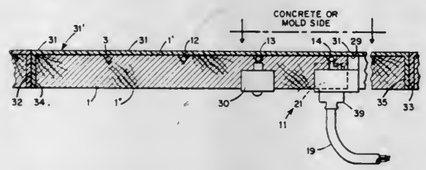
said energy absorbing means including spring means positioned on both fore and aft facing sides of said arm portion, said spring means being horizontally oriented and formed with an energy absorbing capacity in a horizontal direction which is substantially greater than the energy absorbing capacity of said energy absorbing means in a vertical direction to resiliently bias said arm portion to a neutral position from which horizontal displacement of said arm portion in fore and aft directions as a result of relative movement between said motor and said frame during a high energy vehicle impact is resisted initially by said spring means and is eventually positively limited by said containment portion.

4,238,105

MOLD PANEL FOR CASTING CONCRETE

Gardner D. West, Woody Creek, Colo., assignor to Therma Form, Inc., Hubbard, Tex.

Filed Jan. 22, 1979, Ser. No. 5,660
Int. Cl.³ B22D *27/02*
U.S. Cl. 249—78 **14 Claims**



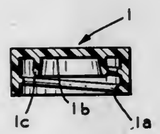
1. A heated mold panel for casting concrete comprising,
(a) a panel base providing a rigid supportive base surface defining the panel size and contours,
(b) a plurality of connecting grooves in the base surface,
(c) a heating element in the grooves,
(d) at least one layer of material covering the surface and the grooves in intimate contact with the surface and bonded thereto providing a smooth outer surface substantially parallel to the base surface, and
(e) heating element controlling means connecting the element to a source of energy,
(f) whereby the temperature of the element is controlled and heat flows from the element to the concrete poured against the outer surface.

4,238,106

CORE PIN COOLING FOR HIGH SPEED INJECTION MOLDING APPARATUS

Wendell D. Willingham, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 3, 1979, Ser. No. 99,279
Int. Cl.² B29C *1/00;* **B29F** *1/14;* **B29D** *15/00*
U.S. Cl. 249—79 **6 Claims**



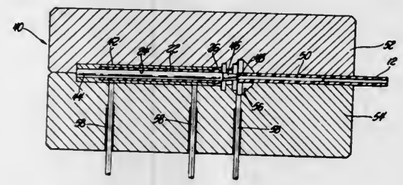
1. A core pin for an injection mold comprising an outer sleeve defining external molding surfaces on one axial end thereof, an inner sleeve insertable within said outer sleeve and terminating adjacent said one axial end of said outer sleeve, fluid sealing means between both axial and portions of said inner and outer sleeves, at least one pair of helically extending parallel grooves formed in one of the adjacent surfaces of said sleeves intermediate said sealing means, means connecting said grooves of each pair respectively to a cooling fluid inlet port and a fluid discharge port, and means defining an annular channel between the adjacent surfaces of the ends of said sleeves adjacent the molding surfaces for inter-conecting the ends of all said grooves.

4,238,107

MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY

Thomas J. Frankhouse, Southfield, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

Division of Ser. No. 6,587, Jan. 26, 1979. This application Feb. 14, 1980, Ser. No. 121,777
Int. Cl.³ B29C *6/00*
U.S. Cl. 249—83 **3 Claims**



1. An assembly for making a motion transmitting remote control of the type including a conduit with an end fitting of organic polymeric material disposed on one end of the conduit and a motion transmitting core element extending through the conduit and end fitting with the core element connected to a rod movably supported in a bore in a sleeve having a male swivel portion with a partial convex spherical surface extending from by its intersection with the bore of the sleeve and pivotally supported in a female swivel portion having a partial concave spherical surface, said assembly comprising; a first member for enclosing and covering a portion of the convex spherical surface extending from the intersection thereof with the exterior of the sleeve while leaving the remainder of the convex surface extending to the lip exposed, a mandrel for insertion into the bore of the sleeve to plug the bore at the lip to prevent entry of material into the bore past the lip, and a mold having a portion surrounding and engaging the exterior of said first member and defining a cavity spaced about the exposed remainder portion of the convex surface for molding a fitting about the male swivel portion.

4,238,108

FLOW CONTROL DEVICE

Andrew J. Muetterties, Gages Lake, Ill., assignor to Abbott Laboratories, Chicago, Ill.

Filed May 12, 1978, Ser. No. 905,305
Int. Cl.³ F16K *7/06*
U.S. Cl. 251—6 **7 Claims**

1. A disposable roller-type tubing clamp for regulating flow of fluid through a length of flexible tubing comprising a portion of an intravenous administration set and for preventing the accidental removal of the roller comprising:

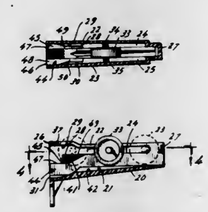
a clamp body defining a rigid support surface for said length of flexible tubing, said clamp body having a longitudinal axis;

opposing semiflexible walls extending from said support surface defining opposing track members with guide surfaces integrally disposed in said walls, said guide surfaces spaced from said support surface a predetermined distance and extending substantially in a direction of said longitudinal axis, said opposing walls spaced from each other and presenting an open slot therebetween;

an open infeed section for said tubing defined by said clamp body extending between said walls, said infeed section including a floor portion spaced from an end of said support surface, said floor portion spaced from said guide surfaces a distance greater than said support surface, said guide surfaces extending in at least a portion of said infeed section;

a rotatable member having trunnions positioned to be captively guided and rotated along said guide surfaces with said track members providing confining wall surfaces for the ends of said trunnions; and

ridge portions extending inwardly from each end of said opposing walls and defining a substantially transverse



supporting ledge surface for said trunnions, said ridge portions spaced a distance away from said guide surfaces at a position where said ridge portions are adjacent said end of said opposing walls in said open infeed section and joining said guide surfaces by inclined surfaces in a continuing manner and intermediate their ends, said trunnions dimensioned to extend transversely over said ridge portions, said inclined and guide surfaces and providing an outward flexing of said walls upon engagement with said inclined surfaces;

so that said rotatable member can be inserted within said clamp body by placement of said trunnions on said ridge portions and upon further movement of said rotatable member into said clamp body said trunnions will move over said ridge portions and said inclined surfaces and onto said guide surfaces upon flexing of said walls and said rotatable member will be retained on said guide surfaces even when positioned adjacent said inclined surfaces.

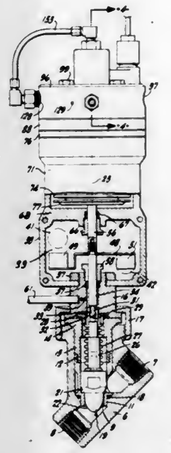
4,238,109

CONTROL VALVE

William H. Powers, Tulsa, Okla., assignor to Badger Meter, Inc., Richmond, Calif.

Filed Feb. 9, 1979, Ser. No. 10,518
Int. Cl.³ F16K *31/126*
U.S. Cl. 251—28 **6 Claims**

1. A control valve comprising a valve body having a valve orifice and inlet and outlet ports open to said orifice, a valve stem movable along an axis in said body toward and away from said orifice, a first bellows engaging said valve body and said valve stem for precluding leakage therebetween, an actuator housing joined to said valve body and defining a first compartment and a second compartment spaced along said axis, an actuator stem secured to said valve stem and extending through said first compartment into said second compartment, circuit control mechanism on said actuator stem in said first compartment, a first divider wall closing an end of said first compartment, a mounting disc at the end of said second compartment, a second bellows engaging said actuator stem and said mounting disc for precluding leakage therebetween, a diaphragm unit spanning an end of said second compartment and at least partially defining a chamber, flexible disc means in said diaphragm unit and at least partially spanning said chamber, means including a spring for transmitting movement along said axis between said diaphragm unit and said actuator stem, a cap overlying said diaphragm unit and at least partially overlying said chamber, a piston valve in said cap, means including



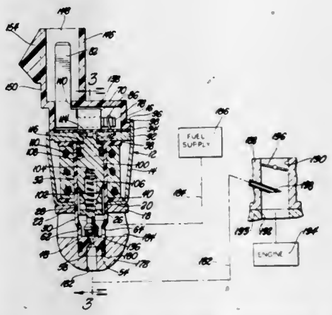
said piston valve for conducting pressure fluid to and from said second compartment, and means for interconnecting said diaphragm unit and said piston valve for conjoint action.

4,238,110

ELECTROMAGNETIC FUEL METERING VALVE ASSEMBLY

Ralph P. McCabe, Troy, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Jul. 23, 1979, Ser. No. 59,779
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—129 **17 Claims**



1. A valving assembly for variably restricting fluid flow, comprising housing means, said housing means comprising a first housing section and a second housing section, said first housing section being of a cup-like configuration and having an end wall and a circumscribing side wall joined to and extending from said end wall as to be terminating in an open end opposite from said end wall, clearance passage means formed through said end wall, a bobbin structure, said bobbin structure comprising a generally tubular axially extending bobbin body and first and second radially outwardly extending annular walls carried by said bobbin body, said first and second annular walls being axially spaced from each other along said bobbin body, electrical coil means carried by said bobbin structure in a manner as to be situated generally about said tubular bobbin body and axially between said first and second annular walls, said tubular bobbin body comprising a tubular extending por-

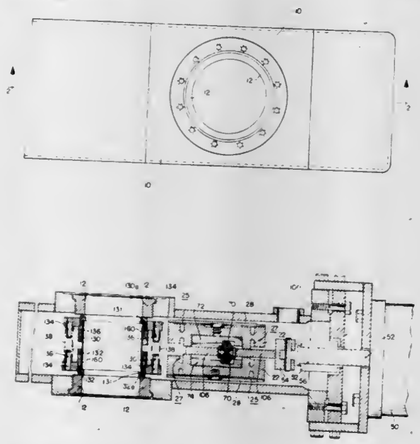
tion extending axially beyond said second annular wall, first fluid orifice means formed through said tubular extending portion as to provide for communication as between the interior and exterior of said tubular extending portion, a tubular end-wall portion carried by said tubular extending portion, second fluid orifice means formed in said tubular end-wall portion for providing for communication as between the interior and exterior of said tubular extending portion, said bobbin structure being situated within said first housing section as to have said second annular wall operatively axially abutting said end wall and said tubular extending portion extending through said clearance passage means as to be situated generally externally of said first housing section, a pole piece situated generally internally of said tubular bobbin body and fixedly secured against movement relative to said tubular bobbin body, armature means slidably received within said tubular bobbin body and situated axially generally between said pole piece and said tubular end-wall portion, said armature means being movable with respect to said pole piece and said tubular bobbin body, said armature means comprising valving means carried thereby and movable therewith, said valving means being effective to coact with said second fluid orifice means in controlling the flow of fluid therethrough, resilient means operatively engaging said armature means and normally yieldingly urging said armature means and said valving means in a first direction generally toward said end-wall portion thereby moving said valving means toward a position of closing said communication through said second fluid orifice means, said second housing section being operatively fixedly connected to said first housing section generally at said open end thereof as to form an end closure, and first and second electrical terminal means operatively carried by said second housing section, said first and second electrical terminal means being electrically connected to said electrical coil means and effective for electrical connection to an associated source of electrical potential, said electrical coil means being effective upon electrical energization to produce a magnetic field of a strength sufficient to move said armature means and valving means in a second direction opposite to said first direction against the force of said resilient means as to thereby cause said valving means to move away from said second fluid orifice means and complete said communication through said second fluid orifice means.

4,238,111

GATE VALVE FOR USE WITH VACUUM EQUIPMENT

Arthur E. Norman, Northridge, Calif., assignor to Torr Vacuum Products, Inc., Van Nuys, Calif.

Filed Aug. 4, 1978, Ser. No. 930,886
Int. Cl.³ F16K 25/00, 31/22
U.S. Cl. 251—193 **7 Claims**



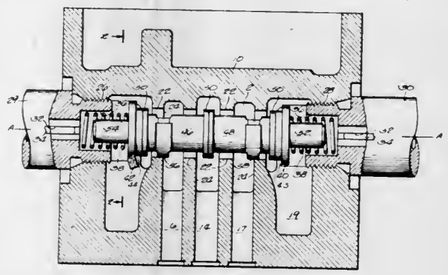
1. A gate valve for use in conjunction with vacuum equipment, and the like, comprising: a housing having a pair of opposite walls with aligned orifices therein; a pair of annular valve seats mounted to surround respective ones of said orifices; a gate assembly mounted in said housing, said gate assembly including a carrier, and at least one gate mounted on the carrier; an actuator coupled to the carrier for reciprocally moving the gate assembly in a direction parallel to the opposite walls of the housing between a first position coaxial with said orifices and a second position displaced from said orifices; a sub-assembly including two open-ended electrically conductive cylindrical sections coaxially adjacent to one another and coupled to the carrier and movable to a position coaxial with said seats when the gate assembly is moved to the second position, resilient means mechanically coupled to the two cylindrical sections for biasing the two sections into respective engagement with corresponding ones of the valve seats when the gate assembly is moved to the second position, said sub-assembly including means interconnecting said section to provide a smooth electrically conductive bore surface between the orifices and said cylindrical sections for the free passage of radio frequency currents when the valve is open; and roller means coupled to the sub-assembly and engaging the inner surface of the housing as the gate assembly is moved by the carrier toward said second position to allow said sections to move toward one another away from said seats, the roller means being received in detents in the inner surface of the housing to permit the resilient means to bias the cylindrical sections into respective engagement with the valve seats when the sub-assembly is axially aligned with the orifices when said gate assembly is moved toward said first position.

4,238,112

SPOOL SPIN PREVENTION FOR HYDRAULIC CONTROL VALVES

Danny M. Derozier, Burlington, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Dec. 22, 1978, Ser. No. 972,198
Int. Cl.³ F15B 13/044
U.S. Cl. 251—324 **3 Claims**



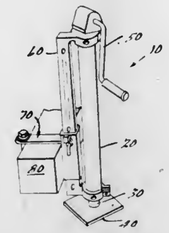
1. A hydraulic control valve comprising:
a valve body having a central chamber and at least one inlet or outlet port through which hydraulic fluid may enter and exit said chamber,
a valve spool located within said chamber for opening and closing access between said ports and said chamber; and
a washer keyed to said valve spool by the mating contact of a first planar surface on said valve spool and a second planar surface on said washer to prevent the relative rotation of said washer and valve spool, said washer having a surface extending therefrom and contacting said valve body eccentric to the axis of said valve spool to prevent relative rotation of said washer to said valve body,
whereby the prevention of said relative rotations of said washer and valve spool and said washer and valve body prevents the rotation of said valve spool about its longitudinal axis relative to said valve body, but allows relative axial displacement between said valve spool and said valve body.

4,238,113

JACKING DEVICE

Vernon E. Adams, 665 W. Baker, Clawson, Mich. 48017

Filed Nov. 16, 1979, Ser. No. 95,507
Int. Cl.³ B60S 9/02
U.S. Cl. 254—86 R **6 Claims**



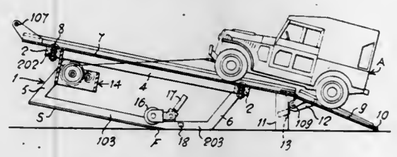
1. In a jacking device having an upright vertical housing and including means for moving a support base and inner telescoping member in said vertical housing from a retracted position to an extended position so that the overall length of said jacking device is increased, the improvement comprising:
a rough adjusting column spaced apart from and secured to the exterior of said upright vertical housing, said column including an engaging member movably mounted thereon for contacting the object to be lifted, and also including means for locating and securing said engaging member at various positions along said column,
said engaging member comprising a tubular barrel slidably mounted on said column and a pair of generally horizontal separated arm-like projections extending in spaced apart horizontal planes in a direction generally normal to said barrel having means to overlap the upper and lower surfaces of the object being lifted, said arm-like projections being connected at their outermost ends by a securing means.

4,238,114

ROCKING PLATFORM FOR THE POSITIONING OF VEHICLES ABOVE GROUND LEVEL

Pier I. Migliorati, 5, Corso Italia, Alba, province of Cuneo, Italy

Filed May 30, 1979, Ser. No. 43,798
Claims priority, application Italy, Jun. 6, 1978, 68297 A/78
Int. Cl.³ B66F 7/22
U.S. Cl. 254—88 **12 Claims**



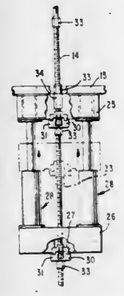
1. A rocking platform for the positioning of loads, and more particularly of vehicles, above ground level, comprising loading surface means, supporting structure means for said loading surface means, said supporting structure means including a cradle-shaped base with the convexity directed towards the ground, said cradle-shaped base presenting two bearing plane means, one of said bearing plane means being parallel to said loading surface means, said one bearing plane means extending over a substantial distance across the ground, the other bearing plane means being inclined with respect thereto; said loading surface means extending adjacent the access end for a substantial length above and beyond said parallel bearing plane means in the direction of the said inclined bearing plane means, said platform being rockable from a horizontal position, in which said supporting structure means rests on the ground on the bearing plane means which is parallel to the loading surface means, to an inclined position in which said supporting structure means rests on the ground on the inclined bearing plane means, the bearing plane means parallel to the loading surface means presenting a length which is greater than the length of the inclined bearing plane means, whereby the stability of said platform is enhanced when a vehicle is positioned on said loading surface means and the load is extended over a substantial area of the ground.

4,238,115

JACKING DEVICE

Franz Kallinger, Greenwich, Conn., assignor to Research-Cottrell, Inc., Chicago, Ill.

Filed Aug. 17, 1979, Ser. No. 67,534
Int. Cl.³ B66F 1/00
U.S. Cl. 254—106 **14 Claims**



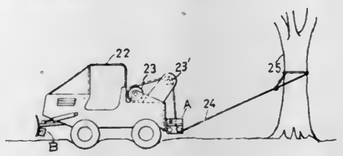
1. In an apparatus for selectively raising a load relative to a vertical thread bar having a plurality of vertically spaced threaded elements thereon, the apparatus including an upper support defining a vertical through opening for relative movement therethrough of said bar and threaded elements thereon, a lower support defining a vertical opening for relative movement therethrough of said bar and threaded elements thereon, and extensible means for moving said support longitudinally of said bar selectively toward and from each other, the improvement comprising:
first stop means;
means for pivotally carrying the first stop means on the upper support to be selectively positioned in a first, inner position wherein the stop extends to closely adjacent the bar, and in a second, outer position spaced from the bar to permit movement of the upper support upwardly past a next superior threaded element to dispose the stop means superjacent the passed stop;
first spring means for biasing said stop means pivotally toward said first position;
second stop means;
means for pivotally carrying the second stop means on the lower support to be selectively positioned in a first, inner position wherein the second stop means extends to closely adjacent the bar, and in a second, outer position spaced from the bar to permit movement of the lower support upwardly past a next superior threaded element to dispose the second stop means superjacent the passed threaded element; and
second spring means for biasing the second stop means pivotally toward said first position thereof, said stop means defining bottom surfaces arranged in said first position thereof to be supported by the passed threaded elements as a result of threaded movement of the passed threaded elements upwardly into engagement therewith.

4,238,116

SKIDDER JACK

Jacques F. Plante, and Robert A. Plante, both of 11846 Tecumseh, Ontario, Canada (N8N 1L7)

Filed Jun. 25, 1979, Ser. No. 51,894
Int. Cl.³ B66D *3/00*
U.S. Cl. 254—400 **4 Claims**



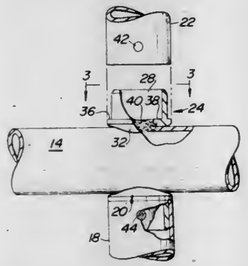
1. A pair of lift mechanisms for lifting the wheels of a bogged down vehicle equipped with a winch having a cable wound thereon, said pair comprising a rear lift mechanism having a frame provided with fastening means to attach the frame to the back of the vehicle, two spaced, generally parallel and horizontal rear rollers having ends supported by said frame, one of said rear rollers raising the rear of the vehicle when the winch cable is passed thereunder and is taut, and two spaced, generally parallel guide means for guiding the winch cable carried by said frame and spaced from and at right angles to said rear rollers; said pair further comprising a front lift mechanism having a second frame with fastening means to attach the second frame to the front of the vehicle, a generally horizontal front roller having ends carried by said second frame and positioned generally parallel to said rear rollers, said front roller and the other of said rear horizontal rollers raising the front of said vehicle when the hoist cable is passed under the other of said rear horizontal rollers and under said front horizontal roller and is taut, and two front guide means carried by said second frame and spaced from said horizontal roller for guiding the winch cable.

4,238,117

RAILING AND METHOD OF MAKING THE SAME

Don Newman, 501 W. Hortter St., Philadelphia, Pa. 19119

Filed Aug. 31, 1978, Ser. No. 938,567
Int. Cl.² F16B *7/08*
U.S. Cl. 256—65 **24 Claims**



1. A railing comprising:
(a) an upright post member,
(b) a rail member disposed at an angle with respect to the longitudinal axis of said post member,
(c) a fitting having a head at one end and a reduced diameter hollow extension portion at its other end, said head having a concave end face shaped to mate with and being in contact with the outer periphery of one of said members, the radius of curvature of said end face being approximately the same as the radius of curvature of the outer periphery of said one member, said head having a tapered outer peripheral surface which converges to said end face, at least a portion of the end face having a radial dimension greater than the wall thickness of said extension portion,
(d) a weld within the periphery of said head and joining said end face to said one member with a joint, said weld being exposed only on the inner periphery of said fitting, and
(e) said other member being telescoped with respect to said extension portion and joined thereto.

4,238,118

METHOD OF PERMANENT PROTECTION OF THE LOWER PART OF THE BLAST FURNACE, IN PARTICULAR OF THE BOTTOM OF THE BLAST FURNACE HEARTH

Stanislaw Czosnyka; Walter Krzywon; Andrzej Kozien; Stanislaw Cichocki, and Ryszard Benesch, all of Cracow, Poland, assignors to Osrodek Badawgzo-Rozwojowy Przemyslu Budowy Urzadzen Chemicznych "CEBEA", Cracow, Poland

Filed Mar. 5, 1979, Ser. No. 17,211
Claims priority, application Poland, Mar. 8, 1978, 205234
Int. Cl.³ C21B *7/10*
U.S. Cl. 266—46 **2 Claims**

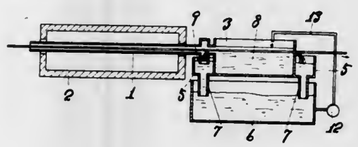
1. A method of permanent protection of the lower part of the blast furnace, in particular of the hearth bottom, against corrosive and chemical action of liquid pig-iron, comprising the steps of: forming directly upon the surface of the bottom lining a permanent protective layer of coagulated metal and slag, as a shield for the lining, the said layer having a predetermined required thickness; and maintaining said protective layer by controlled withdrawal of heat from the layer of the lining encircling the lower part of the hearth, below the part containing the molten iron.

4,238,119

STEEL WIRE HEAT TREATMENT EQUIPMENT

Sinzi Mitsuyoshi, Amagasaki, Japan, assignor to Hiroyuki Kanai, Ashiya, Japan

Filed Mar. 8, 1979, Ser. No. 18,676
Int. Cl.³ C21D *9/56*
U.S. Cl. 266—100 **3 Claims**



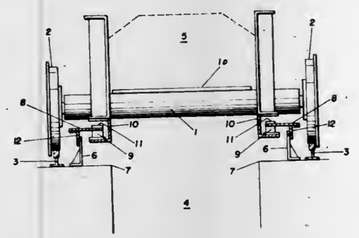
1. A steel wire heat treatment apparatus comprising:
a heating furnace;
a plurality of heating pipes extending through said heating furnace, whereby wire rods passed through said heating pipes are heated by heat from said furnace;
a tempering oil tank positioned at a wire rod outlet end of said furnace, said tempering oil tank having therein tempering oil within which said wire rods are immersed and thereby tempered;
a plurality of cross-shaped pipes, each said cross-shaped pipe having a wire inlet branch pipe portion detachably connected to a wire rod outlet end of a respective said heating pipe, and a wire outlet branch pipe portion extending into said tempering oil tank at a position below the surface of said tempering oil therein, such that said tempering oil flows from said tempering oil tank through said wire outlet branch pipe portion into said cross-shaped pipe, and whereby each said wire rod being treated passes through a respective said heating pipe, directly through a respective said cross-shaped pipe, and directly into said tempering oil within said tempering oil tank;
each said cross-shaped pipe including an upper branch pipe portion having therein a detachable lid and an inspection window, whereby the condition and quality of said wire rod passing through said cross-shaped pipe can be inspected;
an oil drain tank positioned below all of said cross-shaped pipes;
an oil storage tank positioned below said oil drain tank;
at least one oil feed pipe extending from said oil drain tank to said oil storage tank, said oil feed pipe having an upper end extending into said oil drain tank and a lower end extending into said oil storage tank;
each said cross-shaped pipe including a lower branch pipe portion which forms an oil drain pipe which extends downwardly into said oil drain tank and which has a lower end positioned at a level below said upper end of said oil feed pipe;
whereby said tempering oil which flows into said cross-shaped pipes from said tempering oil tank then flows downwardly through said oil drain pipes into said oil drain tank and maintains therein an oil level above said lower ends of said drain pipes, and then flows downwardly through said oil feed pipe into said oil storage tank; and
means for recirculating said tempering oil from said oil storage tank back to said tempering oil tank.

4,238,120

SEALING DEVICE FOR SINTER COOLER

Gunter Schneider, Eschborn, Fed. Rep. of Germany, assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 26, 1979, Ser. No. 61,031
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844227
Int. Cl.³ F27B *21/02*
U.S. Cl. 266—179 **3 Claims**



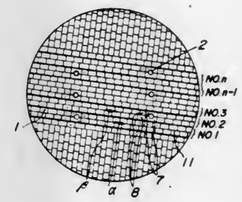
1. In a circular cooler for hot material in lump form comprising a ring-shaped frame supported for circular movement on a pair of circular rails, bottom plates permeable to gas mounted to the frame for supporting the hot material in the cooler, wind boxes located under the frame and bottom plates for supplying cooling air up through the bottom plates and the hot material for cooling the latter and sliding seals for preventing the escape of said cooling air between the upper edges of the wind boxes and the bottoms sides of the ring-shaped frame, said sealing means comprising:
arcuate sections of flat, horizontally disposed rings cantilevered along one arcuate edge thereof inward toward each other from adjacent the upper edges of both arcuate sides of the wind boxes;
horizontally disposed outwardly directed ring-shaped flanges depending from both arcuate bottom edges of said frame and extending outward underneath said arcuate sections; and
arcuate sealing strips mounted on the underside of said arcuate sections and bearing against the upper surface of said ring-shaped flanges to form a sliding seal between the wind boxes and cooler frame, said cantilevered arcuate sections being bendable in the vertical direction and the weight of the arcuate sections and of the sealing strips being sufficient to overcome the overpressure of cooling air bearing against the underside of the arcuate section to maintain the sealing strips in sealing contact with the flanges.

4,238,121

HEARTH STRUCTURE OF AN OXYGEN-BOTTOM-BLOWING CONVERTER

Akira Harita; Tadashi Morimoto; Toshio Kanatani, all of Chiba, and Ryoji Uchimura, Funabashi, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Oct. 4, 1978, Ser. No. 948,329
Claims priority, application Japan, Oct. 7, 1977, 52-120698; Sep. 1, 1978, 53-106290
Int. Cl.³ C21C *5/44, 5/48*
U.S. Cl. 266—218 **9 Claims**



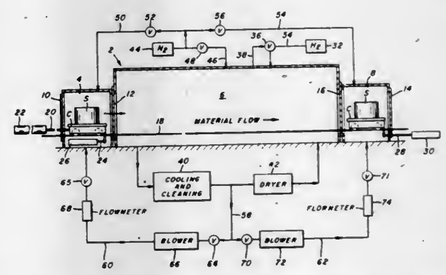
1. In a hearth structure of an oxygen-bottom-blowing converter, including a plurality of tuyeres extending through said structure and opening into an inside of said converter for oxygen-blowing, and monolithic refractories filled between converter lining and hearth lining including said tuyeres, the improvement comprising said hearth lining including a plurality of brick row units, a plurality of which is provided with a single tuyere per row unit, wherein the row units have a chord direction substantially parallel to each other, and the brick ends in adjacent brick row units are shifted in the chord direction relative to the brick ends in an adjacent row unit, so that a brick row unit including a tuyere would also be shifted in the chord direction from other tuyeres and thereby eliminate thermal stresses acting upon the bricks and causing the wearing thereof.

4,238,122

APPARATUS FOR ANNEALING STEEL

Ralph E. Snyder, Export, and Philip R. Robinson, New Kensington, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

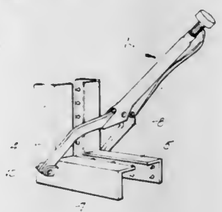
Division of Ser. No. 898,010, Apr. 20, 1978, Pat. No. 4,167,426.
This application Mar. 12, 1979, Ser. No. 19,796
Int. Cl.³ C21D *1/06*
U.S. Cl. 266—251 **2 Claims**



1. A tunnel furnace for annealing a plurality of individual silicon steel charges comprising:
a main annealing chamber,
a charge vestibule at one end of the annealing chamber,

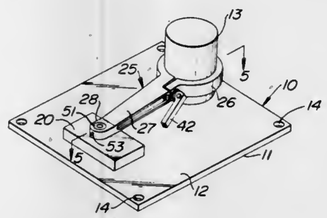
a discharge vestibule at the other end of the annealing chamber,
each of said vestibules having an inner door and an outer door with respect to the main annealing chamber,
means for purging the vestibule with nitrogen,
means for providing a plurality of silicon steel charges in the charge vestibule,
means for transferring said charges into and through the main annealing chamber of the tunnel furnace after the charge vestibule has been successively purged with nitrogen then hydrogen,
means for transferring said charges into the discharge vestibule, and means for removing said charges from the discharge vestibule after the discharge vestibule has been purged with nitrogen,
means for operating the doors of the vestibules,
means for providing a hydrogen atmosphere in the main annealing chamber of the tunnel furnace,
a recirculating system including a reconditioning device located outside the main annealing chamber of the tunnel furnace and means for continuously circulating the hydrogen atmosphere from the main annealing chamber of the tunnel furnace to the reconditioning device and back to the main annealing chamber,
means for maintaining a substantially constant pressure in the main annealing chamber of the furnace,
wherein the improvement comprises:
means for intermittently removing a substantial amount of hydrogen from the recirculating system at a location upstream of the discharge end of the reconditioning device, and
means for feeding the removed hydrogen to the respective charge and discharge vestibules when a hydrogen purge is required therein, and
means for feeding hydrogen from a separate hydrogen source to the recirculating system in an amount sufficient to maintain the substantially constant pressure in the main annealing chamber of the tunnel furnace.

4,238,123
TOE-NAILING CLAMPING TOOL
Dale L. Bardes, 7050 N. Ridge Blvd., Chicago, Ill. 60645
Continuation-in-part of Ser. No. 885,955, Mar. 13, 1978, abandoned. This application May 7, 1979, Ser. No. 36,438
Int. Cl.[3] B25B *1/20*
U.S. Cl. 269—41 **2 Claims**



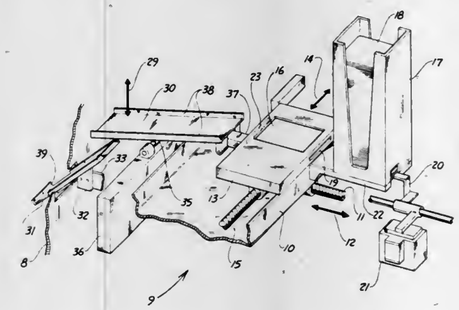
1. A clamping tool for positioning and securely holding wood structural framing members in a fixed relationship to perfect the joining of said members, said clamping tool comprising a pair of opposed, substantially L-shaped, perpendicularly arranged, concave angle-like jaws, each said jaw being substantially L-shaped in cross section and provided with a pair of perpendicularly arranged substantially planar legs having interior surfaces adapted to contact the surfaces of said wood structural framing members, said interior surfaces being provided with frictional gripping barbs, each of said frictional gripping barbs comprising a pyramidal shaped barb sized to deeply engage the cellular construction of the wood fibers of said wood structural framing members, a supporting arm terminating in a fixed handle dimensioned to be grasped by a single hand, one of said jaws being pivotally attached to said supporting arm, a movable arm pivotally attached to said fixed handle, said movable arm being similarly pivotally attached to the other of said jaws, whereby said jaws accommodate variously sized wood structural framing members, an operating handle pivotally attached to said movable arm between said fixed handle and said other jaw for moving said other jaw between a closed clamping position, wherein said jaws are in abutting contact with the structural members to hold said members in said fixed relationship, and an open position, wherein said jaws are spaced from said structural members to facilitate positioning said clamping tool on or removing said clamping tool from said wood structural framing members, locking means actuated by squeezing together said fixed and movable handles for retaining said jaws in said closed clamping position with said wood structural framing members, said locking means comprising a bar-like stud lever pivotally attached to said movable handle and including a contact end extending toward said fixed handle, said fixed handle including a shank having a head portion adapted to abut said contact end, said contact end being brought into firm engagement with said shank head to place said stud lever in compression when said handles are squeezed together, said compression forces being transmitted through said handles and said arms to said jaws to restrain said jaws in closed clamping position, means for adjusting the spacing between said jaws when said jaws are in the closed clamping position, said adjusting means comprising means for adjusting the length of said shank to vary the travel distance of said stud lever, and unlocking means in association with said locking means for separating said handles to permit moving said jaws to said open position.

4,238,124
WORK HOLDER
Timothy J. Eichfeld, and Horace C. Disston, both of 6730 Dewey Ave., Pennsauken, N.J. 08110
Continuation-in-part of Ser. No. 907,093, May 18, 1978, Pat. No. 4,140,308. This application Jan. 24, 1979, Ser. No. 6,095
The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.
Int. Cl.[3] B25B *1/00*
U.S. Cl. 269—97 **7 Claims**



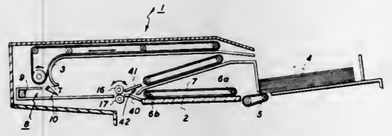
1. A work holder comprising a work engaging member, a work engaging face on said work engaging member, a cylindrical shaft extending generally normal to said work engaging face, a sleeve on said shaft having a generally cylindrical internal configuration and an internal dimension greater than the external dimension of said shaft, said sleeve being loosely circumposed about said shaft for sliding therealong and tiltable about a transverse axis between a longitudinal position relative to and slidable on said shaft and a canted position jammed against movement along said shaft, said sleeve having articulated sections releasably contractible about said shaft to urge the sleeve from is canted position toward its longitudinal position, an arm extending rigidly from said sleeve for movement therewith between an initial outstanding position projecting transversely of said shaft and a final outstanding position swung at an angle to said initial outstanding position upon sleeve movement between respective longitudinal and canted positions, and a jaw on said arm spaced from said sleeve and facing toward said work engaging face, said jaw being engageable with a work piece engaging said work engaging face in the final outstanding arm position to releasably clamp the work piece against said work engaging face upon contraction of said flange.

4,238,125
PLATE FEEDING DEVICE FOR EMBOSSING MACHINES
Lothar R. Klietz, Gorxheimertal, Fed. Rep. of Germany, assignor to Pitney Bowes Deutschland GmbH, Berlin, Fed. Rep. of Germany
Filed May 16, 1979, Ser. No. 39,627
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 7816371[U]
Int. Cl.[3] B65H *3/24, 1/22*
U.S. Cl. 271—3 **5 Claims**



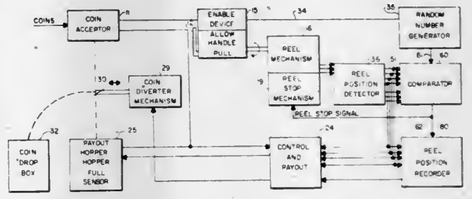
1. Plate feeding apparatus for embossing machines that produce embossed printing plates for address printing machines, identification means, and the like, comprising: a housing, a plate carriage movably mounted within said housing, a plate holder movably mounted on said plate carriage, said plate holder having a plate receiving trough therein, means for moving said plate holder along a first path, means for moving said plate carriage along a second path which is perpendicular to said first path between a first location and a second location, a plate hopper fixed to said plate carriage and an elongated plate slide having first and second ends, said first end of said plate slide being pivotably mounted to said plate carriage and adjacent to said first path.

4,238,126
RECIRCULATING SIMPLEX/DUPLEX DOCUMENT HANDLER
Michael J. Langdon, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 31, 1979, Ser. No. 71,643
Int. Cl.[3] B65H *1/06, 3/04*
U.S. Cl. 271—3.1 **5 Claims**



1. In a copier having a fixed platen and a recirculating document handler for simplex or duplex copying, the improvement comprising:
a first oval shaped document path folded over the platen for copying duplex documents;
a second document path for simplex copying that disects said first document path diagonally;
chute means extending from adjacent one end of the platen and adapted to receive a document during simplex copying and return the document along said diagonal path to an original feed position; and
dual mode actuator means for selecting either said first or second paths depending upon whether simplex or duplex copying is required.

4,238,127
ELECTRONIC GAMING APPARATUS
Andres R. Lucero; Neil J. Netley; Richard C. Raven, all of Reno, and Chester C. Egan, Jr., Sparks, all of Nev., assignors to Bally Manufacturing Corporation, Chicago, Ill.
Filed Jan. 17, 1977, Ser. No. 759,809
Int. Cl.[3] A63F *9/00*
U.S. Cl. 273—143 R **10 Claims**



1. A game apparatus of the type having a set of cyclically rotational movable symbol-bearing members which are activated and set into motion by a player to be subsequently stopped with the alignment of the symbols on the members serving as a determination of the score-award for the game played, comprising in combination:
means activated by the player for setting the symbol-bearing members into motion;
each of the symbol-bearing members having adapted for rotation therewith coding means for defining a predetermined number of possible symbol stopping positions and comprising alternate address and decode information elements for each of said symbols, the address and decode information for each symbol being unique to that symbol;
means for reading the address information elements for said symbols as the symbol-bearing members pass a predetermined point in their respective rotational cycles and for detecting the instantaneous position of the symbol-bearing members;
a generator for generating on a random basis numbers corresponding to the address information elements for the various stopping positions of the symbol-bearing members;
means for selecting a number from the generator and for stopping each symbol-bearing member at the position corresponding to the address information elements for the random number selected;
means for reading the decode information elements for each symbol-bearing member after each member is stopped to detect the stopped position of each member and for determining the relative positions of said members;
means for determining the score-award for the game played based on the relative stopped positions of said symbol-bearing members.

4,238,128
COMBINATION LOAD-LEVELING AND KNEELING AIR SUSPENSION SYSTEM
Laird W. McKee, Poway, Calif., assignor to Grumman Flexible Corporation, Delaware, Ohio
Filed Sep. 7, 1978, Ser. No. 940,281
Int. Cl.[3] B60G *21/00*
U.S. Cl. 280—703 **7 Claims**

1. A combination load-leveling and kneeling air suspension

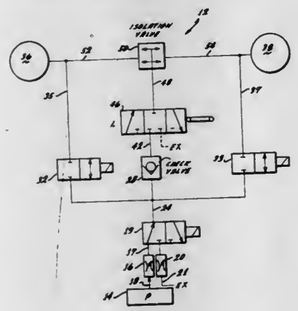
system for a vehicle having a sprung member and an unsprung member comprising:

a pair of laterally spaced air springs for resiliently connecting the unsprung member to the sprung member at the front end of the vehicle,

a pressurized air reservoir,

a first air passage means connecting said pressurized air reservoir to said first laterally spaced air spring and a second air passage means connecting said pressurized air reservoir to said second laterally spaced air spring, said first air passage means and said second air passage means having a common air passage portion,

a first valve member located in said first air passage means but not in said common air passage portion, said first valve member having structure which in one position will shut off the flow of air through said valve member and structure which in another position will allow air to pass therethrough in either direction,



a second valve member located in said second air passage means but not in said common air passage portion, said second valve member having structure which in one position will shut off the flow of air through said valve member and structure which is another position will allow air to pass therethrough in either direction,

a third air passage means connecting said pair of laterally spaced air springs, isolation valve means are located in said third air passage means intermediate its ends,

a fourth air passage means connecting said isolation valve means and said common air passage portion, and

said isolation valve means having structure which in one position functions to prevent the flow of air back and forth between said air springs and structure which in another position allows for the passage of air toward said air springs from said fourth air passage means or away from said air springs into said fourth air passage means.

4,238,129

PASSIVE SEATBELT SYSTEM

Jun Yasumatsu, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

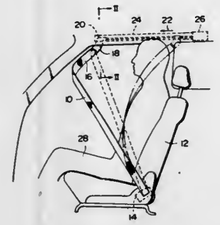
Filed May 8, 1979, Ser. No. 37,159

Claims priority, application Japan, Aug. 16, 1978, 53-112187[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **11 Claims**

1. In a passive seatbelt system which automatically fastens or unfastens a belt about a passenger as a result of the outer end of the passenger restraining belt separating from the passenger to permit entering or exiting of the passenger, said passive seatbelt system being characterized by at least one elastic piece coupled to said belt, said elastic piece's rigidity gradually decreasing from the outer end of the belt towards the central



portion of the belt, thereby causing the outer end of said belt to sufficiently separate from said passenger.

4,238,130

PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 1, 1978, Ser. No. 911,564

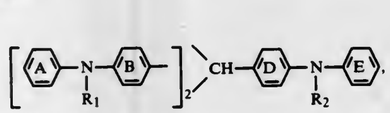
Claims priority, application Switzerland, Jun. 10, 1977, 7180/77

Int. Cl.² B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **10 Claims**

1. A pressure-sensitive or heat-sensitive recording material which contains as colour former in its colour-forming system at least one tris-aminophenylmethane compound of the formula

(1)



wherein

R_1 and R_2, each independently of the other, represent hydrogen, lower alkyl, benzyl or phenyl, and the rings

A, B, D and E, each independently of the other, are unsubstituted or substituted by one or two substituents selected from the group consisting of halogen, nitro, trifluoromethyl, lower alkyl, lower alkoxy and lower alkoxycarbonyl.

4,238,131

FLUSHING T FOR HEATER HOSE

Marvin G. Cleveland, 1446 W. Skillman Ave., St. Paul, Minn. 55113

Filed Jun. 12, 1978, Ser. No. 914,502

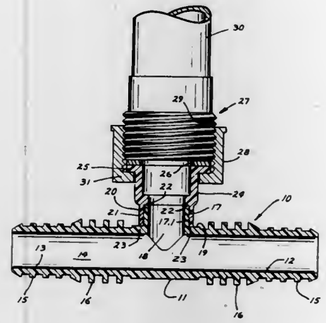
Int. Cl.³ F16L *41/02*

U.S. Cl. 285—38 **4 Claims**

1. A flushing fitting for attachment into the heater hose of an automotive engine to facilitate flushing the cooling system with water from a garden hose,

comprising a rigid base conduit of rigid plastic and having opposite ends for telescopic attachment to the ends of the heater hose and providing flow communication to and between such ends, the conduit also having an intermediate portion and a rigid connecting duct extending transversely of the base conduit and connecting thereto at said intermediate portion in flow communicating relation, the rigid plastic base conduit having a transversely extending nipple formed integrally thereof and projecting transversely of the base conduit at the intermediate portion thereof to provide flow communication into the interior of the base conduit, the connecting duct having a sleeve-shaped neck portion telescopically embracing the nipple

in tight fitting relation, the sleeve-shaped neck portion having an end adjoining the base conduit and welded thereto, and the nipple having an outer end and outer periphery welded entirely around the inner periphery of the sleeve-shaped neck portion, the connecting duct having an outer end spaced from the base conduit and defining an out-turned annular flange with a front face to bear against the end of the garden hose, and also a rear face confronting and spaced from the base conduit, and



a rigid and rotatable connecting sleeve embracing the connecting duct and having a threaded interior extending past the flanged end of the connecting duct for connection to the threaded insert end of such a garden hose, the sleeve having an in-turned peripheral lip confronting and bearing against the rear face of the out-turned annular flange of the connecting duct from the connecting sleeve revolving relative to the connecting duct to draw the insert end of the garden hose tightly against the flange of the connecting duct and in sealing relation therewith.

4,238,132

CONNECTOR

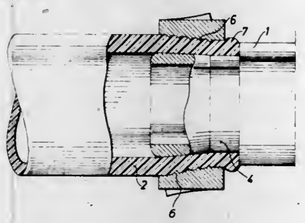
Tore G. Palmaer, Kvarnliden 2, S-330 30 Gnosjö, Sweden

Filed Sep. 29, 1978, Ser. No. 947,027

Claims priority, application Sweden, Oct. 18, 1977, 1117166

Int. Cl.³ F16L *33/22*

U.S. Cl. 285—39 **6 Claims**



1. A connector for connecting the ends of a pipe and a hose, comprising a tubular nipple having a smooth outer surface defining a cylindrical section and a contiguous frustro-conical section flaring outwardly therefrom, said cylindrical section being adapted to be inserted within and connected to the end of the pipe to which the hose is to be connected, said frustro-conical section being adapted to be inserted within the hose to which the pipe to be connected with the ends of said pipe and hose in abutment, a clamping member adapted to fit over the exterior surface of the pipe and hose in alignment with said nipple, said clamping member comprising a sleeve having a bore formed with cylindrical terminal sections, one terminal section being adapted to fit over said hose in juxtaposition with the cylindrical section of said nipple, said other terminal section section having a diameter greater than said first terminal section and being adapted to fit over the surface of said hose, and an intermediate frustro-conical section formed with a helical screw thread having a direction of closure moving from the pipe toward said hose, the conical angle of the frustro-conical section of the nipple being smaller than the conical angle of the bore, said thread increasing from the smaller diameter end of the bore to the larger diameter end of the bore to thereby act to push the material of the hose toward the small end deforming the same into an annular bead between the sleeve and the end of the pipe.

4,238,133

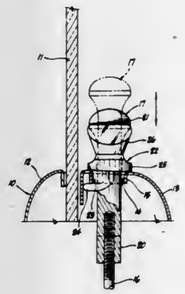
DOOR-LOCK BUTTON ASSEMBLY

Earl M. Trammell, Jr., EMT Enterprises, Inc., P.O. Box 435, St. Louis, Mo. 63166

Filed Jan. 30, 1978, Ser. No. 873,248

Int. Cl.³ E05C *21/02*

U.S. Cl. 292—347 **3 Claims**



1. A door-lock button assembly for use on a door, the assembly comprising:

(a) an inside door frame element,

(b) a lock button selectively movable between door-locking and door-unlocking positions,

(c) a housing mounted on the door frame element and embracing the lock button, the housing being provided with an aperture, the lock button being located out of the housing for digital access when in the door-unlocking position, and being digitally movable into the housing to the door-locking position,

(d) the lock button including relatively smooth surfaces exposed through the aperture when in the door-locking position, and

(e) the aperture being of a size proportioned for permitting digital access to and actuation of the lock button to the door un-locking position when in the door-locking position and for precluding effective gripping actuation of the lock button to the door-unlocking position when in the door-locking position by an instrument such as a wire or hook, the lock button being without any upwardly facing edge that can be gripped by an instrument when the lock button is in either the door-locking or door-unlocking position.

4,238,134

DEVICE FOR REMOVING AND REPLACING SOFT CONTACT LENSES WORN ON THE HUMAN EYE

Delma M. Cointment, 914 Pontalba St., New Orleans, La. 70124

Continuation of Ser. No. 773,473, Mar. 2, 1977. This application Oct. 12, 1978, Ser. No. 950,555

Int. Cl.³ H61F *9/00*

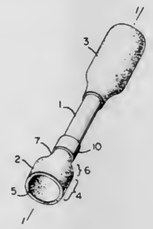
U.S. Cl. 294—1 CA **2 Claims**

1. A method of removing a soft contact lens from a human eye on which the soft contact lens is worn comprising the steps:

a. placing on the soft contact lens a cup of soft flexible

plastic, rubber or like material having a diameter approximating that of the soft contact lens and which when squeezed will flatten and present two lips curving convexly outwardly;

b. squeezing the cup to flatten it so that two lips curving convexly outwardly to effectively grip the soft contact lens;



c. continuing to squeeze the cup to the extent that the soft contact lens is deformed thereby breaking fluid suction-bond between the soft contact lens and the eye; and

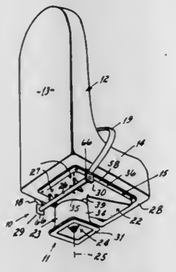
d. withdrawing the cup while the soft contact lens is held thereby to remove the soft contact lens from the eye.

4,238,135

SEAT BELT KIT FOR A PEDESTAL SEAT BASE

Edwin C. Sandham, Thiensville, Wis., assignor to Leggett & Platt, Inc., Carthage, Mo.

Filed Jul. 2, 1979, Ser. No. 53,752
Int. Cl.³ A62B *35/00*; A47C *31/00*
U.S. Cl. 297—468 **10 Claims**



1. A pedestal seat base for a seat, said base comprising

a pedestal and a seat support, said seat support being pivotable relative to said pedestal, and said seat support having a rear wall,

at least one bar seat formed integral on said seat support's rear wall, said bar seat facing downwardly and rearwardly relative to the front edge of said seat,

a connector bar received in seated relation on said seat, said connector bar being prevented from upward and forward motion due to its seated relation on said rearwardly and downwardly facing seat,

strap means for connecting two seat belt straps to said connector bar at spaced locations one from the other, and

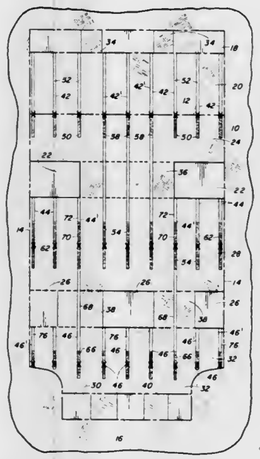
bolt means connecting said connector bar to said seat support, said connector bar being easily connected to said seat support only by said bolt means after being positioned against said bar seat, and said bar seat cooperating with said connector bar to prevent upward and forward motion of said connector bar relative to said seat support.

4,238,136

FORMATION OF IN SITU OIL SHALE RETORT WITH VOID AT THE TOP

Thomas E. Ricketts, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 27, 1979, Ser. No. 52,520
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **11 Claims**



2. A method for forming an in situ oil shale retort in a subterranean formation containing oil shale, the retort having a top boundary of unfragmented formation and containing a fragmented permeable mass of formation particles containing oil shale wherein substantially all of the upper surface of the fragmented permeable mass is separated from the top boundary of unfragmented formation by an inlet plenum void, the method comprising the steps of:

(a) excavating formation from within the retort site for forming at least one void extending horizontally across the retort site, the void having a substantially horizontal roof and floor, leaving an upper zone of unfragmented formation intermediate the top boundary of the retort and the roof of the void and a lower zone of unfragmented formation below the floor of the void;

(b) forming spaced apart vertically extending blastholes in the upper and lower zones of unfragmented formation;

(c) placing explosive in the blastholes;

(d) initiating detonation of explosive in the blastholes in the upper zone of unfragmented formation to explosively expand the upper zone downwardly into the void; and,

(e) thereafter initiating detonation of explosive in the blastholes in the lower zone of unfragmented formation to explosively expand the lower zone upwardly into the void, the time delay between detonations of the explosive in the upper zone and the detonation of the explosive in the lower zone being sufficient so that the unfragmented formation in the upper zone is expanded a greater amount and for a longer time than the unfragmented formation in the lower zone.

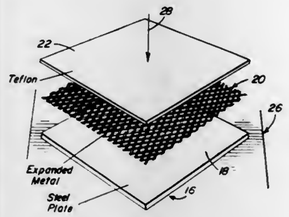
4,238,137

SLIDE BEARING

Robert A. Furchak, Pine Brook, and Ronald L. Roman, Denville, both of N.J., assignors to American Bearing Company, Inc., Fairfield, N.J.

Continuation of Ser. No. 725,321, Sep. 21, 1976, abandoned. This application Apr. 26, 1978, Ser. No. 900,097
Int. Cl.³ F16C *29/02*
U.S. Cl. 308—3 R **10 Claims**

1. A slide bearing comprising a rigid backing pad having a face, a metal mesh covering the face of the pad, means fixedly securing the mesh to the pad, and a sheet of low friction bearing material overlying the mesh and having a portion of its thickness pressed into the mesh to interlock the bearing material with the mesh.

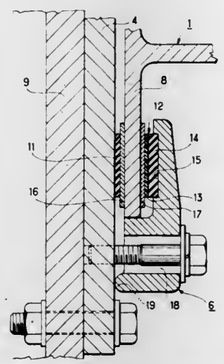


4,238,138

CONNECTION SYSTEM BETWEEN A SLIDE AND A VERY LONG MEMBER

Jean-Marie Demorieux, Montgeron, France, assignor to Setec Travaux Publics, Paris, France

Continuation of Ser. No. 920,419, Jun. 29, 1978, abandoned. This application Oct. 25, 1979, Ser. No. 88,302
Claims priority, application France, Jul. 20, 1977, 77 22233
Int. Cl.³ F16C *29/02*
U.S. Cl. 308—3 R **4 Claims**



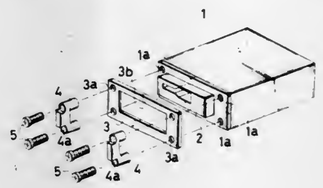
1. A connection system for force clamping a very long transport rail to a relatively fixed slide while allowing some longitudinal movement of said rail relative to said slide corresponding to differential deformation, said rail including oppositely directed half flanges, said slide comprising a support provided with clamping parts overlying said half flanges and clamping said half flanges to said support the improvement wherein said support and said clamping parts comprise plates made of a material having a low coefficient of friction respectively mounted to the surface of the support facing said half flanges and secondly on the internal surface of each of said clamping parts facing the opposite side of said half flanges, and wherein said half flanges include polished metal strips mounted on opposite sides for contact with said plates, such that for all relative longitudinal movement of said slide and said rail, the contact surfaces are limited to facing surfaces of said strips and said plates.

4,238,139

PANEL ASSEMBLY

Kazuo Suzuki; Shoji Ariga, and Yoshiaki Murakami, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 9,267
Claims priority, application Japan, Feb. 16, 1978, 53-18918[U]
Int. Cl.³ A47B *81/06, 95/02*; H05K *5/00*
U.S. Cl. 312—7 R **3 Claims**



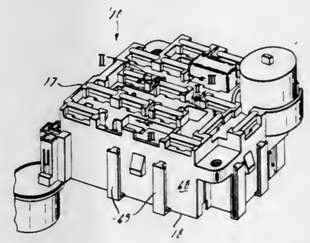
1. A panel assembly comprising: a radio device or the like having threaded holes on its front face: a panel portion formed on said front face of the device: an ornamental panel formed with an opening having a size corresponding to that of the panel portion and holes corresponding to said threaded holes of the device: at least one handle member, each handle member having holes corresponding to at least some of said threaded holes of the device and the holes of the ornamental panel, each of said handle members having a hand gripping portion extending generally parallel to said ornamental panel and spaced therefrom to provide a clearance space for the hand gripping the same; and screws adapted to be threaded into the respective threaded holes of the device through the holes of the ornamental panel and each handle member to secure each handle member to the panel portion of said device together with said ornamental panel.

4,238,140

TERMINAL BLOCK WITH ELECTRICAL CONNECTION MEANS WITH CONNECTOR LOCATION WALL AND LOCKING FINGER

Thomas M. Cairns, Birmingham; John H. Dewar, Grosse Ile, and Emmons F. Sumner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,469
Int. Cl.³ H01R *13/64*
U.S. Cl. 339—186 M **13 Claims**



1. A fuse terminal block assembly including a terminal block having a generally rectangular solid shape with a front side, a rear or back side, side faces extending generally between said front and back sides, a plurality of passages extending from said front side to said back side of said terminal block, and a fuse holder with spring clips secured within a passage adapted for receiving the blade contact of a fuse in said spring clips, said front side adapted for receiving fuses, said back side adapted for receiving accessory connectors for connection to a fuse holder, said fuse holder including a bus bar portion laterally extending from said spring clips in said terminal block for selectively connecting said fuses and accessory connectors;

an elongated resilient finger extending into said passage for engaging said fuse holder, said resilient finger being an integral part of said terminal block and being movable within said passage;

a stop means positioned adjacent said resilient finger and integral with said terminal block to limit movement of said resilient finger out of the path of said fuse holder into said passage thereby avoiding overstress of said resilient finger; and

said fuse holder having an opening for engagement of said resilient finger thereby securing said fuse holder in said passage;

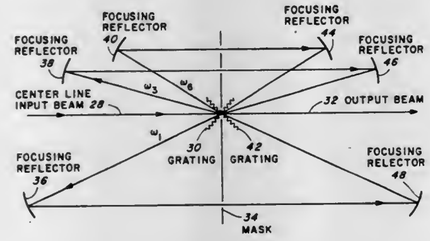
a plurality of raised boundary walls defining connector openings in the rear of said terminal block for receiving one of said accessory connectors for electrical connection to a fuse holder, said raised boundary walls distinguishing said connector openings from any other openings in said back side, said resilient fingers and raised boundary walls combining to provide a secure and ready access to a fuse blade contact from said back side of said terminal block, electrical connection to a fuse blade contact being formed by said fuse holder, secured by said resilient finger and said accessory connector.

4,238,141

TIME DELAY SPECTRUM CONDITIONER

Norman R. Greiner, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 4, 1978, Ser. No. 948,454
Int. Cl.³ G02B *5/18*
U.S. Cl. 350—162 R **5 Claims**



1. A device for producing a substantially parallel beam of laser radiation of preselected frequencies having specified time delays from a multiple frequency laser beam comprising:

a first grating disposed at a first predetermined location on a focal plane, said first grating aligned to diffract said multiple frequency laser beam into a plurality of spatially separated single frequency beams;

first focusing reflector means aligned to focus said single frequency beams on said focal plane;

means for altering propagation distance of preselected single frequency beams to provide said specified time delays of said preselected frequencies;

an apertured mask disposed at said focal plane, said apertured mask having apertures at preselected points to transmit said preselected single frequency beams;

second focusing reflector means aligned to direct said preselected single frequency beams to a second predetermined location on said focal plane;

a second grating disposed at said second predetermined location on said focal plane, said second grating aligned to diffract said preselected set of single frequency beams to a substantially parallel beam of preselected frequencies having specified time delays;

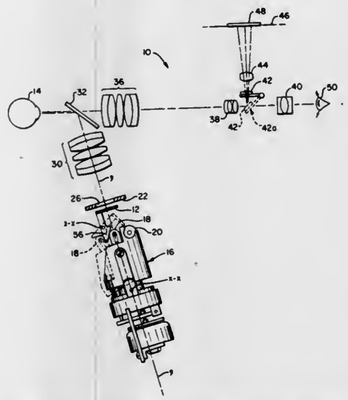
whereby disposition of said first and second gratings on said focal plane allows said single frequency beams to be focused on said predetermined area of said focal plane with central rays of said single frequency beams parallel so as to enhance reconstitution of said substantially parallel output beam.

4,238,142

METHOD AND APPARATUS FOR EXAMINING AND PHOTOGRAPHING THE OCULAR FUNDUS

William Richards, Medway; Bernard Grolman, Worcester, and Joseph W. Kantorski, Southbridge, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Dec. 18, 1978, Ser. No. 970,304
Int. Cl.³ A61B *6/10, 3/14;* **G03B** *29/00*
U.S. Cl. 351—7 **7 Claims**



1. In the system of an ophthalmic photographic recording instrument including means for directing light along a given path into an eye for illumination of its fundus and means for viewing the illuminated fundus to align and focus said instrument thereupon, the improvement comprising the combination in said means for directing light into said eye of:

incandescent and photoflash lamp means alternately individually positionable in said given path to direct light emitted therefrom into said eye for respectively viewing said fundus and photographing same;

an optical stop having an aperture with a diameter smaller than the approximate diametral size of the optic disc of said eye to be illuminated and selectively positionable in said given path between said incandescent lamp means and eye when said incandescent lamp means is positioned in said path, said stop being movable away from said given path when said photoflash lamp is positioned in said path thereby permitting direct exposure of said eye to light emitted from said photoflash lamp when activated;

means for moving said optical stop into said given path when said incandescent lamp is positioned in said path; and

means for moving said optical stop away from said path when said photoflash lamp is positioned in said path.

4,238,143

AUTOFOCUS MOVIE CAMERA HAVING PULSED TERMINAL DRIVE MEANS

Edwin K. Shenk, Westford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1979, Ser. No. 276
Int. Cl.³ G03B *3/10;* **G05B** *5/01, 19/29*
U.S. Cl. 352—140 **10 Claims**

1. In an autofocusing camera having a displaceable lens,

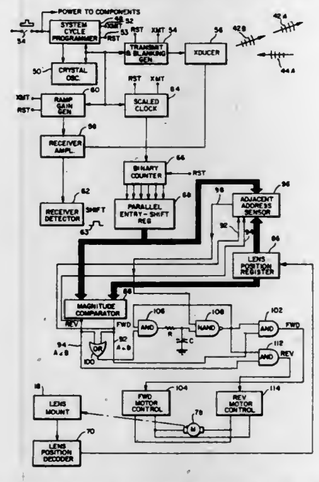
means for determining subject distance,

control means energizeable for displacing said lens to a location selected in accordance with said distance determining means to thereby focus an image of the subject on the camera focal plane,

said control means including encoder means responsive to lens displacement for producing a plurality of discrete signals, each representative of displacement of said lens to within a respective positional zone of said lens;

and said control means including means for terminating displacement of said lens within a positional zone selected in accordance with said distance determining means, the improvement comprising:

that said displacement terminating means includes,



means for generating a signal representative of said lens at the adjacent positional zone immediately before said selected positional zone; and

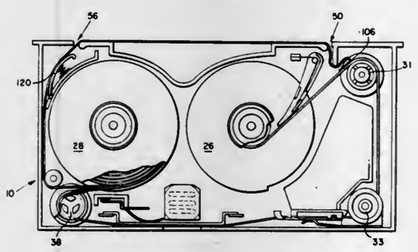
means for regulating said control means such that it provides a constant force to said displaceable lens before it is positioned to a positional zone immediately adjacent said selected positional zone and provides a pulsating force to said displaceable lens while said lens is positioned within said adjacent positional zone.

4,238,144

AUDIO TAPE FREE LOOP CONTROL ARRANGEMENT FOR MULTIPURPOSE AUDIO-VISUAL FILM CASSETTE

William L. Keefe, Cambridge, and Paul B. Mason, Magnolia, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,945
Int. Cl.³ G03B *23/02*
U.S. Cl. 352—72 **10 Claims**



1. An audio-visual system having a film strip and an audio tape coupled at their respective ends to supply and takeup spools for advancement thereof from one of said spools to the other, means for defining a film path of a predetermined minimum length extending between said spools and through a photographic station and for defining a tape path of predetermined minimum length extending between said spools and through an audio station, and said film path being different at least in part from said tape path, and

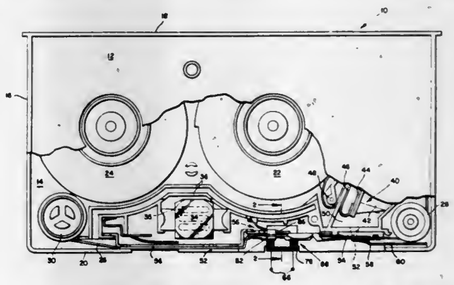
said film strip and tape being of selected lengths and intercoupled with each other or said spools such that during advancement between said spools along their respective paths, the length of tape advancing along said tape path exceeds said predetermined minimum length of said tape path to thereby permit formation of a tape loop along said tape path, the improvement wherein said tape and film strip are joined together at a given point adjacent one end thereof with a common portion extending from said given point to one of said spools such that upon completion of advancement of said film and tape from said one spool, the tape at said given point is carried along said film path and away from said tape path so as to reduce the length of tape extending along said tape path and thereby reduce said tape loop.

4,238,145

MULTIPURPOSE FILM CASSETTE HAVING ONE-PIECE PROCESS MODE SWITCH

Frank M. Czumak, Derry, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 6, 1979, Ser. No. 64,132
Int. Cl.³ G03C *11/00*
U.S. Cl. 352—130 **8 Claims**



1. A photographic film cassette for use with other apparatus, said cassette configured for depositing a coating of processing fluid on a moving run of a cassette-retained photographic film strip to develop images thereon, said cassette comprising:

a cassette housing;

means responsive to a drive arrangement of the other apparatus for advancing the film along a given path within said housing;

means actuatable in accordance with a predetermined processing operation of said cassette for depositing processing fluid on the advancing film strip;

means for indicating to the other apparatus the processed or unprocessed condition of the film strip, said indicating means comprising an indicating element mounted for displacement from a first position wherein said indicating element does not engage a signal generating arrangement carried by the other apparatus, thereby indicating a given process condition of the film, to a second position wherein said indicating means operatively engages said signal generating arrangement, thereby indicating another process condition of the film in the cassette, and means for biasing said element towards its said first position; and

selectively operable means for engaging said indicating means and displacing said indicating element against said biasing force into said indicating element's second position, said engaging and displacing means comprising a member slidably mounted within said cassette for movement, responsive to said predetermined processing operation, from a first position wherein it maintains said indicating element in said indicating element's said second position to a second position wherein it does not engage said

indicating means thereby allowing said biasing means to displace said indicating element to its said first position.

4,238,146

SOUND ALARM DEVICE IN A CAMERA

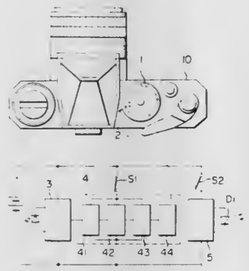
Yasunori Kitamura, Tokyo; Shigeo Akasaka, Kodaira; Sakuji Watanabe, Warabi; Mikio Takemae, Yokohama; Yoshiaki Ohtsubo, and Ryuzo Motoori, both of Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 23, 1979, Ser. No. 69,166

Claims priority, application Japan, Aug. 25, 1978, 53-115718[U]

Int. Cl.³ G03B *17/20*

U.S. Cl. 354—53 **5 Claims**



1. An alarm device in a camera having means for generating an alarm sound for the operative condition of an exposure control circuit for determining the shutter speed in accordance with exposure information and/or the determined shutter speed, the improvement comprising:

a shutter speed change-over dial changeable over to a first auto position and a second auto position, said dial, when in any of said first and second auto positions, being effective to energize said exposure control circuit into its operative condition;

switch means responsive to the change-over operation of said change-over dial so as to energize said alarm sound generating means when said change-over dial is in said first auto position and to deenergize said alarm sound generating means when said change-over dial is in said second auto position; and

display means capable of effecting a visual display at a recognizable position through the eyepiece portion of the finder of said camera, said display means being energized in response to the change-over operation and adapted, when energized, to effect said display.

4,238,147

RECORDING IMAGES OF A THREE-DIMENSIONAL SURFACE BY FOCUSING ON A PLANE OF LIGHT IRRADIATING THE SURFACE

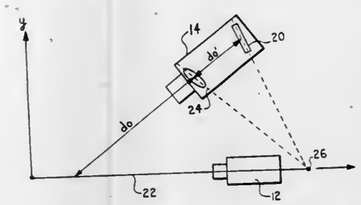
Howard Stern, Greenlawn, N.Y., assignor to Solid Photography Inc., Melville, N.Y.

Filed May 23, 1979, Ser. No. 41,717

Int. Cl.³ G03B *29/00, 35/08, 17/02, 5/06*

U.S. Cl. 354—77 **15 Claims**

8. An arrangement for recording surface characteristics of an object, comprising: means for generating a plane of electromagnetic energy and directing said plane of electromagnetic energy against a surface to be recorded for irradiating said surface in a substantially planar section defined by the intersection of said plane of energy and said surface; camera means having a lens plane and a film plane arranged so that said plane of energy, said lens plane and said film plane all intersect in a common line; said camera means being focused on said plane of



electromagnetic energy in a region about said surface to be recorded.

4,238,148

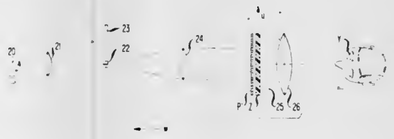
THREE-DIMENSIONAL PHOTOGRAPHIC TECHNIQUE

Jeofry S. Courtney-Pratt, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 14, 1980, Ser. No. 111,874

Int. Cl.³ G03B *35/02, 35/16, 39/06*

U.S. Cl. 354—112 **13 Claims**



1. A method for viewing a streaked, dissected image on a developed photographic film including the steps of:

(a) directing light through a lenticular plate onto the film;

(b) moving the film relative to the plate at a velocity u in a direction parallel to the plane of the film, the plane of the plate being substantially parallel to the plane of said film;

(c) simultaneously moving the lenticular plate and the film at a velocity w perpendicular to said plane of the film.

4,238,149

FLASH CAMERA SYSTEM WITH DAYLIGHT CUTOUT CONTROL

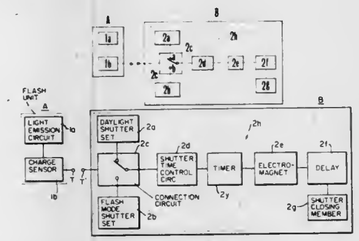
Takashi Uchiyama; Shohei Ohtaki, both of Yokohama; Zenzo Nakamura, Urawa; Tokuichi Tsunekawa; Tadashi Ito, both of Yokohama, and Hiroshi Aizawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 764,739, Feb. 1, 1977, abandoned. This application Jul. 28, 1978, Ser. No. 928,791

Claims priority, application Japan, Feb. 5, 1976, 51-11689

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—128 **7 Claims**



1. For use with a flash unit forming a charge completion signal and with a camera forming an aperture, a shutter time control system comprising:

A. input means for receiving a charge completion signal from the flash unit;

B. shutter means for controlling the time during which the aperture is open, said shutter means having an opening member and a closing member as well as an operation controller for starting movement of the opening member from the aperture and the closing member in front of the aperture;

C. control means for controlling the operation of the shutter means, said control means including:

(i) daylight setting means for producing a first electrical signal suited for daylight operation;

(ii) flash setting means for producing a second electrical signal corresponding to the interval between the time at which the operation controller starts to move the opening member and the time immediately before the aperture is fully exposed;

(iii) control circuit means for starting a timing operation when the operation controller starts the opening means and forming a control signal after a lapse of time corresponding to one of the first or second electrical signals;

(iv) selector means connected to both of the setting means and the control circuit means for normally connecting said daylight setting means to said control circuit means so that the first electrical signal is applied to the control circuit means, said selector means being connected to the input means and applying the second electrical signal of the flash setting means to the control circuit means and disconnecting the daylight setting means from the control circuit means in response to the charge completion signal;

D. shutter operation means, said means including electromagnetic means and connected to said shutter means for causing the operation controller to start the closing member, the electromagnetic means being electrically connected to the control circuit means so as to cause the operation controller to start the operation of the closing member in response to the control signal from the control circuit means;

the closing member of the shutter means being connected to the operation controller so as to be moved across the aperture after the operation of the electromagnetic means by operation of the operation controller, the operation controller having a moment of inertia for delaying the movement of the closing member into the aperture until the opening member completely exposes the aperture.

4,238,150

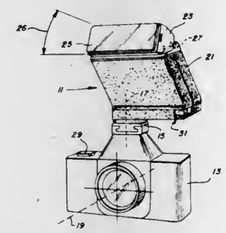
ROTATABLE ELECTRONIC FLASH DEVICE WITH AUTOMATIC LIGHT SENSOR TRACKING

Peter T. Quinn, Littleton, Colo., assignor to Rollei of America, Inc., Littleton, Colo.

Filed Jan. 4, 1979, Ser. No. 998

Int. Cl.³ G03B *15/05, 7/00*

U.S. Cl. 354—145 **8 Claims**



2. An electronic flash device for permitting bounce flash photography, comprising:

flash tube means for producing a light flash output;

light transducer means for monitoring light along a general line of sensing and generating an electrical signal for affecting termination of said flash output;

housing means for locating said flash tube at a position for projecting said flash output along at least one general flash direction relative to said housing means, said housing means mounting said light transducer means for permitting directional positioning of its said line of sensing relative to said housing means;

mounting means connected to said housing means for permitting attachment of the same to a camera, said mounting means for permitting rotation of said housing means about an axis vertical with respect to the camera when the camera is held in its normal operating position, for changing said general flash direction relative to the camera; and

automatic positioning means responsive to rotation of said housing means with respect to the camera, for rotating said line of sensing of said light transducer means about an axis fixed with respect to said housing for maintaining said line of sensing substantially parallel with respect to the lens axis of the camera.

4,238,151

PENTAPRISM MOUNT ASSEMBLY

Ryoichi Yoshikawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 849,799, Nov. 9, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 16,335

Claims priority, application Japan, Nov. 24, 1976, 51-140925

Int. Cl.³ G03B *7/00, 19/12, 17/20, 13/08*

U.S. Cl. 354—152 **5 Claims**

1. A device for holding a pentaprism of a camera, comprising:

(a) a pentaprism support framework including a mounting part for securing the framework directly or indirectly to a camera body, a carrying part for setting the pentaprism at a predetermined optical position within the camera and an engaging part for holding the pentaprism in place; and

(b) a pentaprism pressing plate for holding said pentaprism at said pentaprism support framework, the pressing plate being formed similar to the shape of the roof surface to fit with the roof surface of the pentaprism, and having a pushing part which presses the pentaprism against the pentaprism support framework, an engaging part which engages with the engagement part of the pentaprism support framework, and a spring part being formed in continuous fashion from said pushing part and having a spring characteristic to push the pentaprism at least in the neighboring two directions by a component of force of the spring part at a predetermined optical position of the camera when the engagement parts are engaged with each other and continuous.

4,238,152

FIXING DEVICE FOR A SWING AND SHIFTING MECHANISM

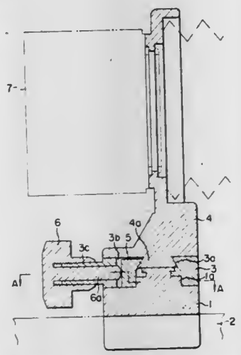
Kunihiro Fukino, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 22, 1978, Ser. No. 972,262

Claims priority, application Japan, Dec. 27, 1977, 52/175151[U]

Int. Cl.³ G03B *5/06, 5/02*

U.S. Cl. 354—189 **14 Claims**



1. A swing and shifting mechanism in a camera comprising a mount body, a swing portion and a shift portion, a first one of said portions being disposed on the second portion and the second portion being disposed on the mount body, the second portion having a cut-out adjacent to the first portion and to the mount body, fixing means disposed within the cut-out, and a manual operating member on one of the portions, the manual operating member engaging the fixing means and operable to cause the fixing means to engage the mount body and the other portion for fixing the portion having the operating member to the mount body and to the other portion.

4,238,153

AUTOMATIC FOCUS ADJUSTING DEVICE FOR CAMERAS

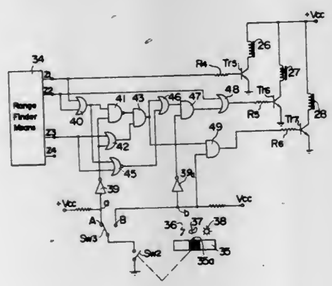
Toshinori Imura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1979, Ser. No. 6,176

Claims priority, application Japan, Feb. 4, 1978, 53-11779; Jun. 21, 1978, 53-75892

Int. Cl.³ G03B *3/10, 13/20*

U.S. Cl. 354—195 **15 Claims**



1. In a camera which is selectively settable to a daylight photography mode and to a flash photography mode and which includes an objective and a manually operable selector for selection of the photographic modes, an automatic focus adjusting device comprising:

range finder means for generating a distance signal representative of a distance from said camera to an object;

objective setting means responsive to said distance signal for setting said objective at a position where said objective focuses on said object; and

control means responsive to the selection of a photographic mode for, upon selection of the flash photography mode, causing said objective setting means to set said objective at a position where said objective focuses on an object at a predetermined distance within the maximum permissible distance for flash photography, and, upon selection of the daylight photography mode, enabling said objective setting means to set said objective in response to said distance signal.

4,238,154

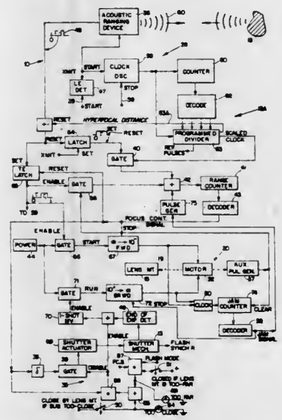
CAMERA HAVING TOO CLOSE/TOO FAR INDICATION

Conrad H. Biber, Needham, and Edwin K. Shenk, Westford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 899,962, Apr. 25, 1978, abandoned. This application Aug. 9, 1979, Ser. No. 65,263

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—198 **20 Claims**



1. In a camera operable to record an image of a subject located within a given range of subject distance, the camera having a range finder for, in response to camera actuation, determining the distance to the subject, and a shutter arrangement for exposing an image of the subject on a recording medium, said range finder producing a train of pulses, whose total is related to subject distance, the improvement wherein said range finder produces a train of pulses such that one plurality of pulses is representative of subject distance located within said range and at least another plurality is representative of subject distance outside of said range, and additionally comprising means for indicating when the total number of pulses is within said other plurality to thereby indicate that said subject is outside of said range.

4,238,155

METHOD AND APPARATUS TO ENLARGE PHOTOGRAPH

Shinkichi Fujitani, No. 10, 315-gaiku, Takamoridai 52-1044, Shona-cho, Kasugai, Aichi Prefecture, Japan

Filed Jul. 5, 1979, Ser. No. 54,909

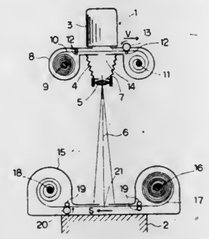
Claims priority, application Japan, Jul. 8, 1978, 53-83427

Int. Cl.³ G03B *27/48*

U.S. Cl. 355—50 **1 Claim**

1. An apparatus to enlarge photograph comprising a light source, a film carrier, focus adjusting parts, a lens to enlarge,

means for adjusting magnification enlarged and a photosensitive material carrier, characterized by a roller equipped in said film carrier to make run a film to definite direction, a roller equipped in said photosensitive material carrier to make run a photosensitive material to the direction opposite to said definite direction, a driving means for making run said rollers



including unite driving motor and means to change the revoluting speed ratio of said rollers and for absorbing variation of the center distance of said rollers, and a slit which is set near by the surface of the photosensitive material and on the optical axis of said lens to enlarge and of which longitudinal axis falls at right angles to the running direction of said photosensitive material.

4,238,156

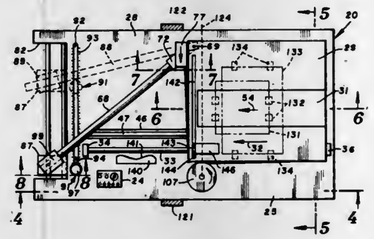
PHOTOGRAPHIC REPROPORTIONING SYSTEM

James C. Parsons, 1414 Laurel Ave., Minneapolis, Minn. 55403

Filed Mar. 26, 1979, Ser. No. 23,906

Int. Cl.³ G03B *27/10, 27/68*

U.S. Cl. 355—52 **60 Claims**



1. An apparatus for changing one dimension of a two-dimension image projected on a photosensitive member comprising: a support, first means having a surface for carrying a sheet having an image thereon or a photosensitive member, means supporting the first means on the support for movement in a linear direction, second means having a surface for carrying a sheet having an image thereon or a photosensitive member, means movably mounting the second means on the first means for movement in the linear direction of movement of the first means, said surface of the first means being generally flat, and the surface of the second means being generally flat and located in the same general plane as the surface of the first means, drive means connected to the first means to move the first means in said linear direction, opaque means for covering the surfaces of the first and second means, means having an elongated exposure window extended transversely of the first and second means allowing light to project onto said surfaces of the first and second means and sheet and member carried by said first and second means, and control means for moving the second means in the linear direction at a speed equal to or less than the speed of the first means, said control means including first rod means, means movably mounting the first rod means on the support, means for adjusting and holding the first rod means in a selected position, slide means mounted on the first rod means and movable along the length of the first rod means, second rod means mounted on the first means extended transversely of the linear direction, said slide means movably mounted on the second rod means for movement along the length thereof, and motion transmitting means connected to the slide means and second means operable to move the second means in said linear direction in response to movement of the first means in said linear direction.

4,238,157

PROCESS AND ARRANGEMENT FOR THE ALIGNMENT OF IMAGING SYSTEMS

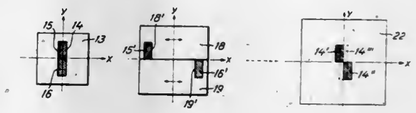
Ernst Strauch, Naunheim, and Rudi Faatz, Heuchelheim, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Feb. 2, 1979, Ser. No. 8,735

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804527

Int. Cl.³ G01C *3/00;* **G01B** *11/06;* **G03B** *13/18*

U.S. Cl. 356—3 **25 Claims**



1. A process for the alignment of the image plane of an imaging system with a plane for the interception of the image, wherein at least one measuring mark is reproduced by at least two partial pupils of the imaging system comprising the steps of moving at least one of the partial pupils (**18', 19'; 58, 59, 60, 61**) over the full pupil of the imaging system (**20**) and selecting a minimum movement of the image depending on the alternating use of the partial pupils as the criterion of said alignment.

4,238,158

VISUAL INVESTIGATION METHOD

Edward P. C. Sington, New Amberden Hall, Deben Green, Saffron Walden, Essex, England

Filed Mar. 8, 1979, Ser. No. 18,615

Claims priority, application United Kingdom, Mar. 15, 1978, 10289/78

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—241 **10 Claims**

1. A method of carrying out a visual inspection at a desired level in an opaque liquid in a bore hole, an exploration well, a production well or the like used in the recovery of oil or other valuable materials from a subterranean formation, said method comprising the steps of

(a) forming a region of relative optical clarity at said level by introducing an optically clear liquid which is substantially immiscible with, and which has a density similar to, that of the opaque liquid present at said level, and

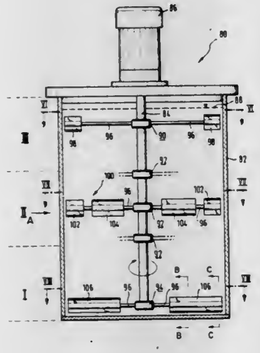
(b) introducing suitable visual inspection means into the region of relative optical clarity so produced and effecting an in situ inspection.

4,238,159

APPARATUS FOR EXTRACTING ALUMINA FROM BAUXITE

Arther J. Tielens, Bad Homburg; Wolfgang Müller, and Erich K. Todtenhaupt, both of Schopfheim, all of Fed. Rep. of Germany, assignors to Ekato-Werk Erich Karl Todtenhaupt, Schopfheim, Fed. Rep. of Germany

Continuation of Ser. No. 866,932, Jan. 4, 1978, abandoned, which is a division of Ser. No. 703,649, Jul. 8, 1976, abandoned.
This application Apr. 2, 1979, Ser. No. 26,061
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1975, 2531646
Int. Cl.³ B01F *7/18*
U.S. Cl. 366—327 **16 Claims**



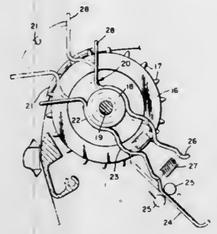
1. A separator-agitator tank for separating alumina from bauxite, comprising a closed vessel having a wall bounding an inner chamber which forms different upper, middle and lower treatment zones arranged to accommodate a solution with relatively low, medium and large solid contents, respectively; a rotatable shaft in said chamber which is radially inwardly spaced from said wall, and centered on and rotatable about an upright axis; a plurality of radially extending arms on said shaft for joint rotation with the latter and including at least one upper, middle and lower arm vertically spaced from each other and each located in a respective one of said different treatment zones; and a plurality of paddles arranged so that each of said arms is provided with at least one of said paddles for joint rotation therewith and the paddles of different arms are located in said different treatment zones, each of said paddles located in one of said zones being constructed differently than any of said paddles located in the other of said zones so that said paddles differently act on the solution, in dependence upon the solids content in each of said different treatment zones during rotation of said shaft, with relatively low, medium and high intensity in said upper, middle and lower treatment zones, respectively, said plurality of paddles including at least one lower paddle on said lower arm and extending in radial direction substantially from said shaft up to said wall of said vessel by a predetermined distance, said plurality of paddles further including at least one middle paddle on said middle arm, said middle paddle having inner and outer segments spaced from one another in said radial direction, said segments being inclined at different angles to an axial plane, said plurality of paddles further including at least one upper paddle on said upper arm and located adjacent to said wall and extending in said radial direction by a distance which is smaller than the distance by which said lower paddle extends.

4,238,160

MEDIA GUIDE

Nicholas Kondur, Jr., Riverton, Wyo., assignor to C. Itoh Electronics, Inc., Los Angeles, Calif.

Filed Jun. 2, 1978, Ser. No. 912,088
Int. Cl.³ B41J *15/00*
U.S. Cl. 400—616.3 **6 Claims**



1. A media guide for use in combination with a printer for printing on a print medium which includes:
a. a frame;
b. a pair of sprockets, each of which has a cylindrical sidewall on which the print medium travels, wherein each of said sprockets has a disc-shaped hub and is axially coupled to said frame;
c. a print head which is mechanically coupled to said frame and which travels laterally along the front of said frame;
d. a platen which is mechanically coupled to said frame and which is disposed so that the print medium may travel between said platen and said print head; and
e. rotating means for rotating each of said sprockets at its axis, said media guide comprising:
a. a pair of integral members each of which is disposed adjacent one of said sprockets so that the print medium is disposed between the cylindrical sidewall of each of said sprockets and a first portion of each of said integral members and which is mechanically coupled to said disc-shaped hub of each of said sprockets through a second portion of each of said integral members so that each of said sprockets may rotate independently of each of said integral members, each of said integral members having a pair of fingers which are mechanically coupled to said disc-shaped hub of each of said sprockets being biased by a spring which resiliently couples said pair of fingers.

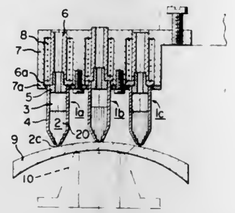
4,238,161

SPOTTING DEVICE

Kazuo Morohashi, Yokohama, Japan, assignor to Nippon Kogaku K.K. and Shachihata Industrial Co., Ltd., both of, Japan

Continuation of Ser. No. 805,565, Jun. 10, 1977, abandoned.
This application Feb. 26, 1979, Ser. No. 14,850
Claims priority, application Japan, Jun. 12, 1976, 51/75696
Int. Cl.³ B43K *27/08*
U.S. Cl. 401—35 **7 Claims**

1. A spotting device for use with a lens meter, comprising:
means for supporting a lens in a predetermined position;
spotting means for spotting said lens with ink, said means including a plurality of hollow cylinders each having a small aperture at an end thereof;
means for holding said hollow cylinders in parallelism to one another and for sliding movement axially thereof towards and away from said supporting means and independently of one another;
means defining an ink reservoir disposed within each of said hollow cylinders for containing ink therein;
a porous member for spotting said lens, said porous member being disposed within each of said hollow cylinders with one end thereof communicating with said ink reservoir and the other end projected from said small aperture, said porous members each being formed of a resilient material permitting axial compression thereof into the aperture of its respective hollow cylinder and having a number of communication pores for directing said ink therethrough from said one end to said other end; and
bias means provided to impart a biasing force to each of said hollow cylinders in the direction toward said end thereof,



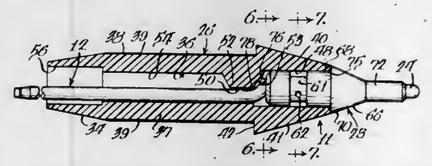
said biasing force being greater than the resilient force of said porous members exerted when said other end of a porous member is compressed into its respective cylinder, said biasing means thus permitting retraction of its respective cylinder relative to said holding means when a respective porous member having spotted said lens, is compressed and said lens is then contacted by the apertured end of said cylinder under a force greater than said biasing force.

4,238,162

NIB RETAINING ASSEMBLY FOR A WRITING INSTRUMENT

Edward E. Sherwood, Wheaton, Ill., assignor to Sanford Research Company, Bellwood, Ill.

Filed Apr. 17, 1978, Ser. No. 897,635
Int. Cl.³ B43K *3/00, 8/02*
U.S. Cl. 401—198 **11 Claims**



1. A writing instrument, comprising: an elongated hollow barrel having an internal chamber and a front end portion shaped to afford a forwardly opening annular seat, the barrel being provided with a longitudinal passageway extending between the chamber and the annular seat and having a transversely extending portion extending into the passageway to form an abutment having a forwardly facing, rearwardly inclined surface, the abutment being positioned rearwardly of the seat and partially obstructing said longitudinal passageway to afford a smaller constricted passageway; an elongate reservoir of absorbent material positioned in the chamber of the barrel to receive a quantity of writing fluid; a separable nib holder having a longitudinal nib-supporting bore therethrough and an inner body portion shaped to frictionally fit within the annular seat, the inner body portion and the bore being positioned in longitudinal alignment with said abutment and the inner ends of the body portion and bore being closely spaced from the abutment when the nib holder is fully seated in the annular seat; and an elongate flexible plastic nib extending through the bore of the nib holder and being deflected by the abutment surface through the constricted passageway into the reservoir in the barrel without any cutting or splitting of said nib by the abutment, the nib having an outer end portion provided with a writing end exposed forwardly of the nib holder, an inner end portion extending through the constricted passageway to the reservoir for receiving writing fluid, and an intermediate portion positioned against said abutment and between said abutment and said inner end of said inner body portion to prevent movement of the nib inwardly of the passageway when the nib holder is fully seated in the annular seat of the barrel, the axes of said outer and inner end portions being in laterally offset relation and the axis of the intermediate portion extending transversely of the axes of said outer and inner end portions, the constricted passageway having a cross-section of a size to accommodate a plurality of nib sizes with a single barrel structure.

4,238,163

MAGNETIC WRITING IMPLEMENT

Kuo-Hua Hung, 52, Sec. 1, Hsin Sheng N.Rd., Taipei, Taiwan

Filed Sep. 14, 1978, Ser. No. 942,153
Int. Cl.³ B43K *21/02*
U.S. Cl. 401—89 **5 Claims**



1. A writing implement, of the type having a casing member including a writing unit socket in the front end thereof, and having an interchangeable writing unit with a front portion for holding the writing point and a rear portion to be received into the writing unit socket, comprising
a first magnet mounted on the rear portion of said writing unit;
front magnet means including a second magnet mounted in said casing member near the front end thereof;
said first magnet and said second magnet each having their poles normally aligned in the same direction, to draw said writing unit into said socket and to hold said writing unit in engagement with said casing member by the mutual attraction between said first and said second magnets;
a storage tube mounted in said casing member, operable to store a plurality of said writing implements and having an open rear end and a front end;
rear magnet means including a removable stopper operable to close said storage tube open rear end; and
a third magnet secured to said stopper, said third magnet having its poles normally aligned in the same direction the poles of said first and second magnets to attract and hold writing implements stored in said tube, for removal of said writing implements from said tube.

4,238,164

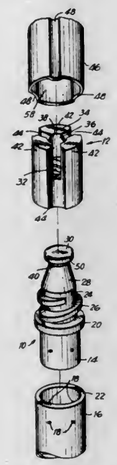
POSITIVE LOCKING DEVICE FOR TELESCOPING TUBING

Richard Mazzolla, Bloomfield, N.J., assignor to H & G Industries, Inc., Belleville, N.J.

Filed Mar. 13, 1979, Ser. No. 20,131
Int. Cl.³ F16B *7/14*
U.S. Cl. 403—109 **8 Claims**

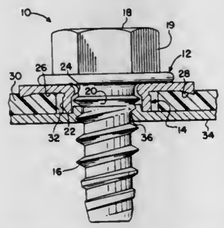
8. A positive locking device for releasably joining a first tube to a second tube, comprising:

a collet, said collet having a central opening therein;
a mandrel including means for fixedly attaching said mandrel to said first tube and for releasably engaging said collet, said mandrel being positioned inside said central opening of said collet;
movable means cooperating with said collet and adapted to fit inside said second tube, the progressive engagement of said mandrel with said collet causing said movable means to move outwardly;



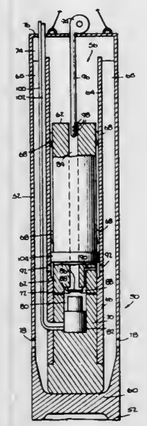
means for preventing rotational motion between said collet and said movable means and said second tube including longitudinal grooves on said collet engaging longitudinal ridges on said second tube,
whereby when said mandrel is connected to said first tube and said movable means is within said second tube, said tubes are locked together by pressurized contact of said movable means with said second tube when said mandrel is engaged with said collet.

4,238,165
FASTENER UNIT FOR CLAMPING PLASTIC WORKPIECES
David P. Wagner, Geneva, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 25, 1979, Ser. No. 6,956
Int. Cl.[3] F16B *5/02, 43/00*
U.S. Cl. 403—408 **7 Claims**



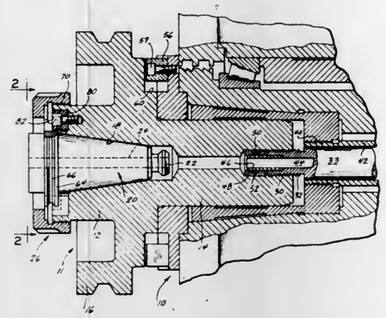
1. A fastener unit in combination with plastic material of a first predetermined thickness and a support of relatively thin sheet metal having a second predetermined thickness, said unit comprising a self-tapping fastener having a shank portion which has threads whose crests define an outside diameter, a laterally extending head portion having a drivable means on an upper region thereof, a laterally extending material-engaging means engaging an outward surface of said plastic material, an axially extending, generally cylindrical spacer means having an axial length substantially equal to said first predetermined thickness, said spacer means having an axial extent greater than the distance from the underside of said head to the thread convolution nearest thereto and, in operative engagement, surrounding a portion of the threaded shank, said spacer means having an inside diameter substantially equal to the outside diameter of said thread crests plus twice said second predetermined thickness, said spacer means being received in an aperture in said plastic material thereby engaging said sheet metal and permitting the material-engaging means to lightly clamp said plastic material, whereby as the fastener is threadingly advanced into the sheet metal, at least a portion of said sheet metal surrounding the threads is extruded upwardly into the gap between said spacer and said thread crests greatly increasing said stripping torque.

4,238,166
UNDERWATER DRIVING OF PILES
George J. Gendron, Houston, Tex., assignor to Raymond International Builders, Inc., Houston, Tex.
Filed Apr. 7, 1978, Ser. No. 894,601
Int. Cl.[3] E02D *7/10;* B25D *9/00*
U.S. Cl. 405—228 **10 Claims**



1. In a method of anchoring to a sea bed an elongated structure which extends upwardly from the sea bed to a location above the surface of the sea, the steps of guiding an elongated anchor pile down through spaced apart tubular guides, arranged along the length of said structure below the surface of the sea, until the pile reaches the sea bed, lowering an elongated follower assembly down through said tubular guides and into contact with the upper end of the pile, the upper end of said follower assembly being submerged but being located at a depth such that the surrounding water pressure at said upper end is substantially less than the water pressure at the upper end of the pile, operating an underwater hammer provided at the upper end of said follower assembly and in open fluid communication with said surrounding water to apply downwardly driving hammer blows to the upper end of said follower assembly and to exhaust against the pressure of said surrounding water, and transmitting said hammer blows through said follower assembly down to said pile.

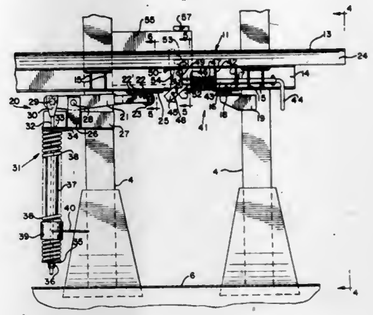
4,238,167
TOOLHOLDER ADAPTER
Dennis M. Brugger, Pewaukee, and John J. Hughes, Greendale, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.
Filed Mar. 28, 1979, Ser. No. 24,562
Int. Cl.[3] B23Q *3/12;* B23B *31/00*
U.S. Cl. 409—232 **1 Claim**



1. A toolholder adapter for use in combination with a machine tool which includes a spindle adapted to receive a cylindrical shank toolholder and to clamp said toolholder thereto, said toolholder adapter comprising:
a cylindrical body;
a cylindrical shank extending axially outwardly from one end of said body, said shank being dimensioned to fit in said spindle;
means on said adapter for engagement by the draw bar of a machine tool,
means on said adapter for engagement by the grips of a tool change, arm of a machine tool;
a tapered socket in said body opening on the end thereof opposite said shank, said socket being dimensioned to receive a tapered shank toolholder;
a cylindrical flange on said tapered shank toolholder, said flange having a peripheral groove;
a clamping nut;
threads on the end of said body adjacent to said tapered socket for receiving said clamping nut;
a pair of radially inwardly projecting tabs on said clamping nut for bearing against the outer face of said second flange;
a pair of drive slots in said second flange; and
a pair of radially inwardly projecting tabs on said clamping nut positioned to engage in said peripheral groove to pull said tapered shank toolholder out of said tapered socket when said clamping nut is unscrewed.

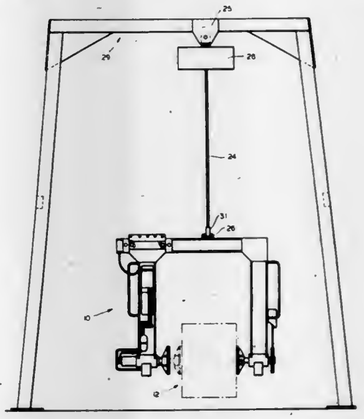
4,238,168
RAILWAY CAR FOR TRANSPORTING VEHICLES
David G. Naves, Ypsilanti, Mich., assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 28, 1978, Ser. No. 973,830
Int. Cl.[3] B61D *3/16;* F16F *1/06*
U.S. Cl. 410—27 **19 Claims**

1. In a transportation device for carrying vehicles including a body having a floor,
side support means extending upward from said floor,
a generally horizontal deck supported on said side support means,
said deck including a movable section thereof selectively positionable in vehicle-carrying and vehicle-loading positon,
counter-balancing means operatively associated with said movable section to accommodate selective vertical positioning thereof by a vehicle operator, and
a locking mechanism for locking said movable section in said vehicle-carrying and vehicle-loading positions comprising:
a rotatable latch, including a hook-shaped member, carried by said movable section,
a linearly reciprocable member carried by said movable section,



a keeper tab rigidly affixed to said side support means releasably engageable by said hook-shaped member for maintaining said movable section in selected positon,
linking means operatively interconnecting said reciprocable member to said rotatable latch, whereby movement of said reciprocable member disengages said hook-shaped member from said associated keeper tab, and
biasing means supported by said movable section urging said rotatable latch into a keeper tab engagement disposition relative to said movable section.

4,238,169
HANDLING DEVICE FOR VEHICLE FRAMES
Donald J. DePriester, Niles, and Richard C. Miller, Cassopolis, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.
Filed May 8, 1978, Ser. No. 904,130
Int. Cl.[3] B65G *7/00*
U.S. Cl. 414—783 **1 Claim**



1. Vehicle frame handling apparatus adapted to be supported from an overhead crane or the like comprising an inverted U-shaped frame device having a fixed leg and a leg spaced from the fixed leg and adjustable in a direction lengthwise of

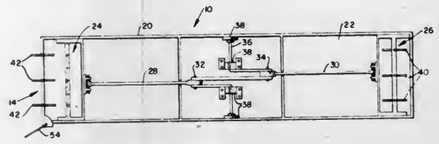
the bridge of the U-frame, a pair of opposed clamp pads for clamping therebetween under the bridge of the frame device a vehicle frame, said clamp pads being supported from the lower end portions of respective ones of said legs, a piston motor for actuating one of said clamp pads outwardly of the supporting leg into the space between said legs, said piston motor having mounted thereon said one clamp pad, a second motor for rotating the other clamp pad, the cylinder of said piston motor being bearing mounted from one said leg for rotation with said one pad and with a vehicle frame during rotation of said other clamp pad, conduit means for conducting pressure fluid of said cylinder, swivel means mounting said conduit means to said cylinder so that the cylinder can rotate relative to said conduit means, said other clamp being mounted from the end of a drive shaft which is adapted to be rotated by said second motor, means pivotably securing said one clamp pad to the piston rod at a position angularly displaced from a location pivotably securing said other clamp pad to the drive shaft, and control means for first actuating said one pad into abutment with the vehicle frame to clamp the frame between the clamp pads for elevation with the U-frame and then actuate said other clamp pad in rotation which causes the vehicle frame and said one pad to rotate to a selected position.

4,238,170
BLADE TIP SEAL FOR AN AXIAL FLOW ROTARY MACHINE
Brian A. Robideau, and Juri Niiler, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Jun. 26, 1978, Ser. No. 919,185
Int. Cl.[2] F10D *11/08*
U.S. Cl. 415—172 A **6 Claims**

1. In an axial flow rotary machine of the type having a rotor adapted for rotation about the axis of the machine at a design condition and a stator encasing said rotor to form a compression section through which a working medium gas is flowable, wherein an annular flow path for the working medium gas is formed between an outer wall on the stator and an inner wall on the rotor, the improvement comprising: a compressor stator vane disposed radially across the flow path wherein said vane has an unshrouded tip; and an inner flow path wall on the rotor having a surface facing the flow path wherein the wall has a circumferentially extending groove recessed from said surface under said tip such that at the design condition the tip and the surface are spaced equal distances from the axis of the machine.

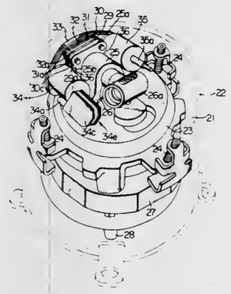
4,238,171
RECIPROCATING WIND ENGINE
Bernard Van Mechelen, 704 Bertsch Ave., Crescent City, Calif. 95531
Filed Mar. 13, 1979, Ser. No. 20,118
Int. Cl.[3] F03D *5/04*
U.S. Cl. 416—67 **15 Claims**

2. A reciprocating wind engine for receiving wind energy and for converting the wind energy into rotation of a shaft, said reciprocating wind engine comprising:
- at least first and second pistons, each of said pistons having a face formed by plural spaced rotatable panels, said first and second pistons being opposed to each other;
- means for directing and controlling wind flow to said pistons;
- means for rotating said panels in response to the location of each said piston in said engine;



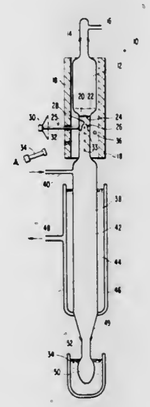
- means for supporting each said piston for reciprocating motion; and
- a central crankshaft connecting said pistons wherein the wind energy supplied to said pistons will cause said pistons to reciprocate and turn said crankshaft.

4,238,172
HERMETIC MOTOR-COMPRESSOR
Nobuo Abe; Susumu Yamazaki, and Isao Kanamori, all of Tochigi, Japan, assignors to Hitachi, Ltd., Japan
Filed Apr. 18, 1978, Ser. No. 897,399
Claims priority, application Japan, Apr. 20, 1977, 52-44478
Int. Cl.[3] F04B *39/12*
U.S. Cl. 417—312 **2 Claims**



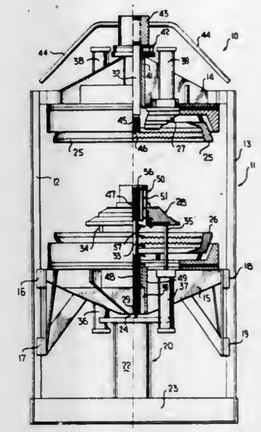
1. A hermetic motor-compressor comprising a closed container with motor means and compressor means disposed within said container and drivingly connected to one another, said compressor means including:
- a piston and cylinder assembly, the cylinder of said piston and cylinder assembly having a cylinder head;
- a valve assembly attached to said cylinder head and including a valve member and a valve seat member, having therein a suction port and a delivery port;
- a valve seat cover assembly attached to said valve assembly with the latter interposed between said valve seat cover assembly and said cylinder head, said valve seat cover assembly including a base plate having one end face thereof in contact with said valve assembly and a cover member attached to the other end of said base plate, delivery passage means and suction valve chamber means being defined between said base plate and said cover member, said base plate having side extensions which respectively project outwardly from opposed sides of said base plate beyond the sides of said cylinder head; and
- suction-side and delivery-side silencer chambers respectively attached directly to said side extensions of said base plate with said valve assembly and said cylinder interposed between said suction-side and delivery-side silencer chambers, said delivery-side silencer chamber being in communication with said delivery passage means and said suction-side silencer chamber being in communication with said suction valve chamber means, and
- wherein said compressor means further includes a member disposed between said base plate and said cover member for defining said delivery passage means, said delivery passage defining member as well as said base plate and said cover member being formed of a plastically worked relatively thin steel sheet material, wherein said base plate has therein a pair of apertures respectively communicating with the ends of said delivery passage means and a further aperture communicating with said suction valve chamber means, said suction-side silencer chamber being in communication with said suction port in said valve seat member through said further aperture and said suction valve chamber means, said delivery-side silencer chamber being in communication with said delivery port in said valve seat member through said pair of apertures and said delivery passage means, and wherein said suction valve chamber means has a volume at least equal to the displaced volume within said cylinder.

4,238,173
APPARATUS FOR MANUFACTURING HIGH-PURITY SODIUM AMALGAM PARTICLES
Scott Anderson, P.O. Box 2680, Champaign, Ill. 61820
Division of Ser. No. 654,416, Feb. 2, 1976. This application Aug. 29, 1979, Ser. No. 70,839
Int. Cl.[3] B01J *2/04*
U.S. Cl. 425—6 **14 Claims**



1. An apparatus for providing free-flowing sodium amalgam particles of controlled particle size comprising:
- a vessel for containing molten sodium amalgam;
- means for forming said amalgam into droplets comprising a vibrating discharge conduit through which said molten amalgam may exit said vessel at a point other than at an upper surface of said molten amalgam; and,
- a column of inert cooling fluid for receiving said droplets of molten amalgam, said column of cooling fluid being substantially surrounded by and in indirect heat exchange relationship with a liquid batch to maintain said inert cooling fluid at a temperature sufficient to solidify said droplets.

4,238,174
RIMLESS, PRODUCTION MOLD
Kenneth T. MacMillan, 347 Hazel St., P.O. Box 557, Macon, Ga. 31202
Division of Ser. No. 2,064, Jan. 9, 1979. This application Sep. 13, 1979, Ser. No. 75,027
Int. Cl.[2] B29H *5/04*
U.S. Cl. 425—19 **17 Claims**

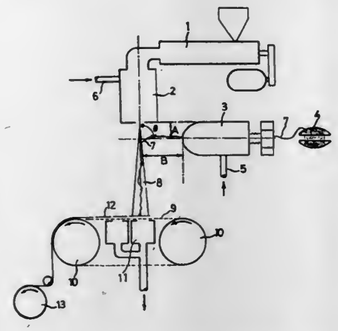


1. A retreading mold comprising first and second relatively movable platens, means for relatively moving said platens between first adjacent closed and a second remote open positions, first and second matrices carried by said first and second platens defining in said first position a chamber within which is adapted to be housed a tire to be retreaded, first and second bead aligner wheels carried by said first and second platens, means for moving said first bead aligner wheel between a first position adjacent said first platen in said first closed position and a second position spaced from said first platen in said second open position, said bead aligner wheels having axially aligned openings, a tubular sealing sleeve spanning said chamber in said first closed position, said tubular sealing sleeve having axially opposite end portions received in associated ones of said bead aligner wheel openings in said first closed position, said tubular sealing sleeve being in internal telescopic sliding relationship to said first bead aligner wheel in said second open position, and means for normally biasing said sealing sleeve in an axial direction toward said second bead aligner wheel and in spaced relationship to said first platen in said second open position.

4,238,175
MELT BLOWING APPARATUS
Shigeo Fujii; Tokuzo Ikeda; Takashi Mikami, and Shuji Okano, all of Ooi, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 2, 1978, Ser. No. 882,596
Claims priority, application Japan, Mar. 15, 1977, 52-27659
Int. Cl.[3] B28B *5/00*
U.S. Cl. 425—83.1 **3 Claims**

1. An apparatus for the production of a non-woven structure, which comprises means for blowing a thermoplastic resin to form a fiber stream consisting of fine thermoplastic resin fibers with a hot gas, means for collecting the fiber stream arranged apart from the thermoplastic resin blowing means, and spaced apart from the fiber stream a distance from about 10 to about 1000 mm means having a yarn path, two gas paths at varying angles to the yarn path and movable spacer means for changing the angles of the gas passing through the gas path for charging a continuous yarn at a rate of 30 to 40 m/sec. and at an angle of about 30 degrees to about 140 degrees uniformly

into the fiber stream by a high speed gas arranged between the thermoplastic resin blowing means and fiber stream collecting



means, the distance between the thermoplastic resin blowing means and the means for charging the yarn being about 5 to about 300 mm.

4,238,176

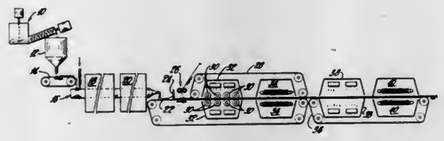
APPARATUS FOR PRODUCING SHEET RESINOUS MATERIALS

Walter D. Cottrell, Jr., Newark, and Ernest E. Lawson, Columbus, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 888,261, Mar. 20, 1978, Pat. No. 4,182,701, which is a continuation of Ser. No. 751,635, Dec. 17, 1976, abandoned. This application Apr. 9, 1979, Ser. No. 28,411

Int. Cl.³ B29D *7/14*

U.S. Cl. 425—85 **7 Claims**



1. Apparatus for preparing sheet molding compound comprising: conveyor means with an impervious upper surface thereon for advancing tacky material past curing stations, and endless belt having an impervious surface and a bottom run spaced above said conveyor means, means for depositing a tacky prepolymer containing material and a fibrous reinforcement therefor on said conveyor means ahead of said endless belt, means biasing said endless belt toward said conveyor means to embed the reinforcement into the prepolymer containing material, first heating means for heating the material between the conveyor means and endless belt to initiate a reaction of the prepolymer, first cooling means for cooling the material between the conveyor means and the endless belt to control advance of the initiated reaction of the prepolymer prior to the end of the bottom run of the endless belt, second heating means for heating the materials on said conveyor means following exiting from said endless belt to again initiate further reaction of the prepolymer containing material to a still crosslinkable, sheet handleable condition, and second cooling means for cooling the material discharged from said heating means to arrest polymerization of said prepolymer containing material in its crosslinkable condition.

4,238,177

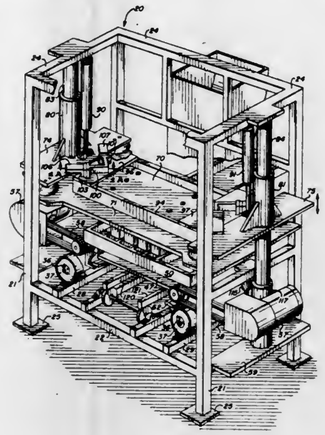
MOLDING MACHINE WITH VIBRATION ISOLATION

Eugene E. Crile, 3801 E. Stella La., Paradise Valley, Ariz. 85253, and Donald D. Schwellenbach, 4520 W. Bryce La., Glendale, Ariz. 85301

Filed Apr. 24, 1978, Ser. No. 899,582

Int. Cl.³ B29C *1/16*

U.S. Cl. 425—150 **16 Claims**



1. A molding machine including in combination:
a machine frame member;
a support table;
a mold member located above said support table and adapted to be freely supported thereby;
vibration isolation means for resiliently mounting said support table in a fixed position on said machine frame member;
means for lowering said mold member onto said support table for free support thereby and for lifting said mold member away from said support table;
clamp means on one of said table and said mold member;
clamp receiving means on the other of said table and said mold member;
drive means for relatively moving said clamp means and said clamp receiving means into engagement with one another to clamp said support table and said mold member together when said mold member is supported by said support table; and
said vibration isolation means isolating vibrations of said support table and said mold member from said frame member when said table and said mold member are clamped together.

4,238,178

SLAB ROLLER MACHINE

James G. Bailey, R.D. 3, Box 249-B, Kingston, N.Y. 12401

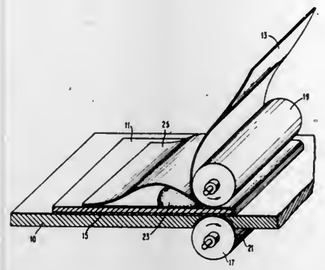
Filed May 18, 1979, Ser. No. 40,170

Int. Cl.³ B28B *3/12*

U.S. Cl. 425—367 **9 Claims**

1. Apparatus for forming clay slabs from a mass of clay for subsequent processing comprising, in combination,
a discontinuous transport medium having a flat surface for supporting said clay slabs,
said transport medium also functioning as a carrier for said slabs,
a roller assembly comprising a pair of rollers, at least one of said rollers being power driven,
said transport medium being adapted to be driven through said roller assembly,
means for driving said transport medium with said mass of clay positioned thereon through said roller assembly, and

means for insulating said clay mass from said roller assembly and from said flat surface of said transport medium



during passage therethrough to thereby provide a slab of clay of substantially uniform thickness on said transport medium surface for subsequent processing.

4,238,179

ARRANGEMENT FOR PRESSING FLEXIBLE DISCS AND A PRESSING PROCESS USING THIS ARRANGEMENT

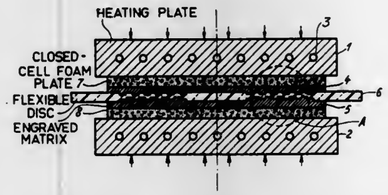
Raymond Llabres; Liliane Fournier, and Claire Lemonon, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 25, 1979, Ser. No. 51,410

Claims priority, application France, Jun. 29, 1978, 78 19502

Int. Cl.³ B29D *17/00*; B29C *3/00*

U.S. Cl. 425—394 **6 Claims**



1. An arrangement for copying by heat pressing onto a flexible thermoformable sheet an engraved relief comprising:
first and second matrices for receiving said sheet therebetween, of which at least one matrix carries said engraved relief facing one side of said sheet;
two parallel plates of which at least one is a heating plate; and
pneumatic compensator means between said plates including first and second pads for receiving between them said matrices and sheet, at least one of said pads being made of foam having gas filled, closed cells for pneumatically transmitting the pressure supplied by said parallel plates to said matrices.

4,238,180

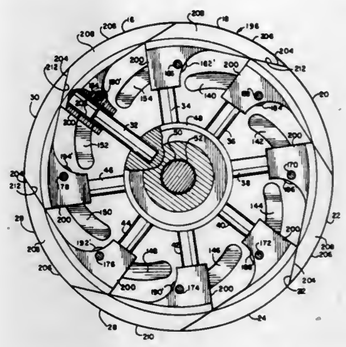
MANDREL WITH IDENTICAL EXPANDING SEGMENTS

John H. Gordon, 855 Brandywine Rd., Downingtown, Pa. 19335; Ronald L. Roberts, Downingtown, Pa., and Winfield S. Frybarger, Jr., West Chester, Pa., assignors to John H. Gordon, Downingtown, Pa.

Filed Jan. 8, 1979, Ser. No. 1,956

Int. Cl.² B29C *17/00*; B29D *23/00*

U.S. Cl. 425—403 **35 Claims**



1. In a machine for providing a bell with an annular groove in an end of a plastic pipe, the combination of
nose means and body means shaped to form the configuration of the bell,
said nose means and said body means being non-rotative,
said nose means and said body means defining an operating opening therebetween;
a plurality of identical segment means circularly arranged in the said opening to impress the annular groove in the bell,
said segment means each being equally radially reciprocal between a respective retracted position and a respective expanded position;
a shaft axially and centrally aligned through the nose means, the body means and the circle defined by the segment means and being rotatively reciprocal relative to the nose means and the body means;
a plurality of radially oriented guide pins spaced about the shaft, the pins being positioned in the operating opening;
each of said plurality of segment means being radially movable along one of said guide pins as the plurality of segment means are reciprocated between their said retracted and expanded positions; and actuating means connected to and being rotatively reciprocated by the shaft, said actuating means being engaged by each of the plurality of segment means and having means to radially reciprocate simultaneously the plurality of segment means upon rotative reciprocation of the shaft.

4,238,181

METHOD AND APPARATUS FOR RUNNERLESS INJECTION-COMPRESSION MOLDING THERMOSETTING MATERIALS

W. Andrew Dannels, Grand Island, N.Y., and Robert W. Bainbridge, Gainesville, Ga., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,189

Int. Cl.³ B29F *1/03, 1/05, 1/08*

U.S. Cl. 425—543 **17 Claims**

1. An apparatus for injection-compression molding of thermosetting material comprising:
a stationary assembly comprised of:
a stationary support plate,
a heat plate mounted thereon, means to heat said plate,
a temperature-controlled manifold mounted on said heat plate, said manifold having an entry orifice connected

internally with a plurality of outlet orifices, operably connected means to control the temperature in said manifold at a temperature between about 77° and about 121° C.

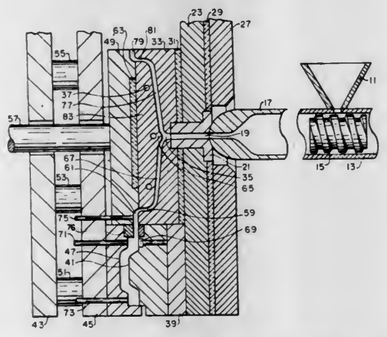
said heat plate having a plurality of mold faces mounted thereon heated by said heat plate, said mold faces positioned adjacent the periphery of said temperature-controlled manifold, and operably connected means to heat said mold faces to a temperature between about 135° and about 216° C.,

a movable assembly comprised of:

a movable support plate,

a heat plate mounted thereon, and operably connected means for heating said plate to a temperature between about 135° and about 216° C.,

said heat plate having a plurality of mold faces mounted



thereon heated by said heat plate, said mold faces corresponding to and aligned with the mold faces on said stationary assembly,

means to move said movable assembly to bring said aligned mold faces into close proximity with corresponding mold faces in said stationary assembly to form partially open mold cavities,

means for feeding a supply of plasticized thermosetting molding material into the entry orifice of said temperature-controlled manifold, through said outlet orifices, and into said partially open mold cavities,

means for closing said partially open mold cavities to cure any thermosetting molding material enclosed therein by pressure and heat, and

means for retracting said movable assembly to open said mold faces and remove said movable heat plate and cooled manifold from contact.

4,238,182

DEVICE FOR INJECTING PLASTICS MATERIAL INTO A MOULD HAVING A PLURALITY OF IMPRESSIONS

Gilbert Mollier, La Balmette, 74210 Faverges, France

Filed Jul. 24, 1978, Ser. No. 927,300

Claims priority, application France, Aug. 3, 1977, 77 23883

Int. Cl.³ B29F *1/03, 1/05*

U.S. Cl. 425—566 **7 Claims**

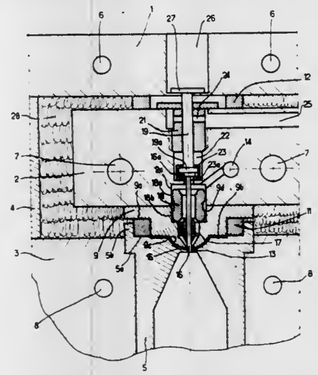
1. A device for injecting plastics material in a mould having a plurality of impressions, comprising:

a distribution plate pierced with channels for the inlet of the plastics material to be injected and provided with heating means;

an impression plate comprising a plurality of impression inserts into which the plastics material is to be injected;

injection nozzles disposed between said distribution plate and the various impression inserts and being free of any connection with said distribution plate, each presenting an injection orifice opening into the impression insert associated therewith and being obturated by an obturator needle mounted to slide axially in the nozzle;

a material transfer tube ensuring the connection between the distribution plate and each nozzle and engaged in two cavities made respectively in the distribution plate and in the nozzle, opposite each other, the first communicating with a channel for the inlet of the plastics material from said distribution plate and the second with the injection orifice of the nozzle, this transfer tube being in tight contact with the lateral walls of the two cavities via two respective spherical sectors provided on its side surface to perform a sealing function even when said distribution plate and said nozzles are relatively displaced; and



said obturator needle projects into a coaxial housing provided in the distribution plate, it terminates in a head of larger diameter and is upwardly extended by a coaxial rod terminating, at its lower end, in a head of larger diameter disposed in the housing, said obturator needle and said rod being in contact with each other via their respective heads of different diameters and being assembled together by a ring crimped on the head of large diameter, leaving a minimum axial clearance for the head of smaller diameter but allowing it the radial, rotary or planetary displacements necessary for its alignment.

4,238,183

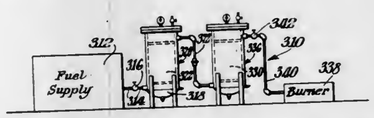
METHOD AND DEVICE FOR INCREASING EFFICIENCY OF NATURAL GAS FUEL

T. Garrett Robinson, 101 N. Clifton Ave., Wilmington, Del. 19805

Continuation-in-part of Ser. No. 34,411, Apr. 30, 1979, Pat. No. 4,201,140. This application Feb. 7, 1980, Ser. No. 119,379

Int. Cl.³ F23K *5/00*

U.S. Cl. 431—2 **16 Claims**



1. A device for increasing the efficiency of natural gas fuel comprising a source of natural gas, a first housing, a first inlet chamber in the lower portion of said first housing, said source of natural gas communicating with said first inlet chamber for supplying natural gas thereto, a first magnet chamber in said first housing downstream from said first inlet chamber, said first magnet chamber having a plurality of sets of vertically arranged magnets for applying a magnetic flux to the natural gas flowing therethrough, said first inlet chamber and said first magnet chamber being separated from each other by a first distributor plate having a plurality of spaced holes extending therethrough for feeding the natural gas into said first magnet chamber in an array of spaced locations corresponding to the array of said plurality of sets of vertically arranged magnets, a second housing downstream from said first housing, a second inlet chamber in said second housing communicating with said first magnet chamber of said first housing whereby the treated natural gas may be supplied into said second housing, a second magnet chamber in said second housing downstream from said second inlet chamber, said second magnet chamber having a plurality of sets of vertically arranged magnets for applying a further magnetic flux to the treated natural gas flowing therethrough, said second inlet chamber and said second magnet chamber being separated from each other by a second distributor plate having a plurality of spaced holes extending completely therethrough for feeding the treated natural gas into said second magnet chamber in an array of spaced locations corresponding to the array of said plurality of sets of magnets in said second magnet chamber, and a burner downstream from and communicating with said second magnet chamber for burning the treated natural gas.

4,238,184

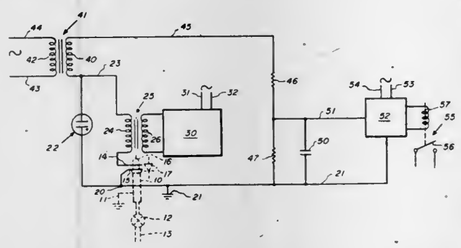
FLAME DETECTION SYSTEM USING A VOLTAGE CLIPPER MEANS

Roger A. Schilling, West Saint Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 856,695, Dec. 2, 1977, abandoned. This application Jul. 20, 1979, Ser. No. 59,423

Int. Cl.³ F23Q *9/08*

U.S. Cl. 431—59 **4 Claims**



1. A spark generation and flame detection arrangement, including; spark generator means including a transformer secondary output winding having an output voltage which is high enough to produce an ignition spark across a spark gap and adapted to ignite a fuel; flame detector means including a transformer secondary winding impressing a flame detection voltage across said spark gap with said spark generator transformer secondary winding in series circuit with said detector transformer secondary winding; said flame detection voltage providing a current in said flame detection means when flame is present across said spark gap; and voltage clipping means connected across said spark gap and said spark generator transformer secondary winding; said voltage clipping means having a clipping voltage that is low compared to said spark generator output voltage, and that is high compared to said flame detection voltage; said voltage clipping means acting to conduct said spark generator means output voltage to prevent said spark generator output voltage from adversely affecting said flame detection means.

4,238,185

CONTROL SYSTEM FOR A BURNER

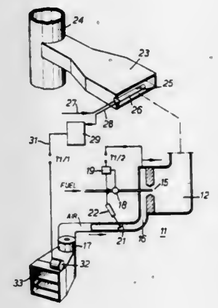
Kenneth Watson, Croydon, England, assignor to Telegan Limited, Surrey, England

Filed May 19, 1978, Ser. No. 907,722

Claims priority, application United Kingdom, May 25, 1977, 22156/77; Mar. 9, 1978, 9414/78

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—76 **10 Claims**



1. A burner control system for optimizing the fuel and air supplied to a burner, comprising:

a fuel control;

an air control responsive to the fuel control;

demand responsive means for controlling the fuel control and air control;

oxygen sensing means for sensing the amount of oxygen in the products of combustion from the burner and producing an oxygen signal;

additional burner control means responsive to the oxygen signal for further adjusting air to the burner to optimize the ratio of fuel to air supplied for combustion;

a substantially continuously running timer; and

switch means connected with the timer for cyclical operation to first render the demand responsive means operative, then render both the demand responsive means and additional control means inoperative to provide time for stabilization of combustion following operation of the demand responsive means, and then render the additional control means operative for additional adjustment as necessary, and for thereafter repeating the cycle.

4,238,186

METHODS AND APPARATUS FOR HEATING ARTICLES SELECTIVELY EXPOSED TO A GENERATED VAPOR THROUGH A VOLUME CONTROLLABLE VAPOR BARRIER

Robert C. Pfahl, Jr., Bethlehem, Pa., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,412

Int. Cl.³ F27D *7/00*

U.S. Cl. 432—10 **22 Claims**

15. A method of performing a heating operation at an elevated temperature on only a selected underside surface of an article, comprising the steps of:

boiling a heat transfer liquid substantially at atmospheric pressure to form an initially co-extensive body of hot condensible vapor of the heat transfer liquid at the elevated temperature, while being selectively confined with respect to base and side boundaries, and substantially completely confined with respect to an upper boundary;

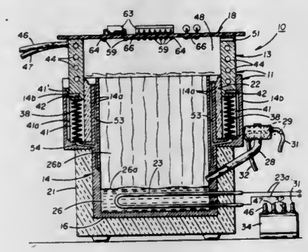
establishing an initial vapor barrier confined, but of control-

lable volume and depth, above said vapor body, the lower boundary of said vapor barrier being defined by a relatively stationary vapor body-vapor barrier interface;

positioning an article at a first elevated boundary that at least substantially coincides with an initial upper boundary of said vapor barrier, while the latter is of predetermined maximum depth and volume, so that the selected underside surface of the article is initially exposed to the vapor barrier;

displacing the article to be heated downwardly from said first elevated boundary to a second elevated boundary while causing the depth and volume of said vapor barrier to progressively decrease until the latter is eliminated when the selected underside of the article coincides with the initially established vapor body-vapor barrier interface, said selected article surface at that time being exposed to, and heated by, the hot vapor body, and said article while at said second elevation, at least in part, also facilitating the confinement of the vapor body therebelow, within said base and side boundaries therefor, so as to minimize any loss of vapor to the atmosphere;

raising the article from the second elevated boundary after the completion of a vapor condensation-induced heating operation thereon back to the first elevated boundary, said raising step re-establishing a vapor barrier of progressively increasing depth and volume overlying said body of vapor, until the maximum depth and volume thereof is re-established, thereby minimizing any loss of said hot vapor to the atmosphere upon the removal of the heated article from the first elevated boundary, with any resulting vapor barrier-entrapped condensate being directed back to the heat transfer liquid for re-boiling and re-use as part of the confined generated body of hot vapor.



4,238,187

WASTE HEAT RECOVERY SYSTEM

Jürgen Euskirchen, Feldolling, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

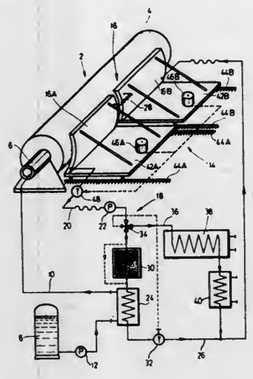
Filed Mar. 15, 1979, Ser. No. 20,708

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813133

Int. Cl.[3] **F27D** *10/02;* **F27B** *7/38*

U.S. Cl. 432—116 **13 Claims**

1. A waste heat recovery system for an industrial furnace or a similar reactor, comprising a radiation collector entirely disposed outside of the outer wall of the furnace between the furnace ends and having a radiation absorbing surface for absorbing the heat radiation issuing from the furnace wall, said surface facing the outer furnace wall and surrounding it at least partly and being spaced therefrom by an air gap, a coolant circuit extending through the radiation collector to cool the radiation absorbing surface, a heat exchanger associated with said coolant circuit to dissipate the heat removed from the radiation absorbing sufface, carriage means for movably supporting said radiation collector, and drive means operatively connected to said carriage means for moving said carriage means and said collector to adjust the air gap between the outer wall and the radiation absorbing surface.



4,238,188

EXTRAORAL FORCE-APPLYING ORTHODONTIC APPLIANCE

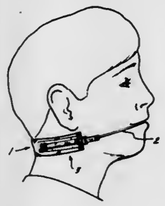
Maclay M. Armstrong, Seattle, Wash., assignor to Northwest Orthodontics, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 655,401, Feb. 5, 1976, Pat. No. 4,155,161, which is a continuation-in-part of Ser. No. 613,243, Sep. 15, 1975, abandoned. This application Mar. 19, 1979, Ser. No. 21,571

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.[2] **A61C** *7/00*

U.S. Cl. 433—5 **10 Claims**



1. In an orthodontic appliance including force-reaction means, orthodontic force-applying means and a resilient connection connecting the force-reaction means and the force-applying means and having a resilient force-producing unit, the improvement comprising a disengageable connection connected to the resilient force-producing unit and having interengageable elements disconnectible without structural injury by movement of the force-reaction means and the orthodontic force-applying means away from each other exceeding a predetermined distance, said interengageable elements when disconnected being again interengageable to restore the same connection, and the resilient force-producing unit including helical compression spring means.

4,238,189

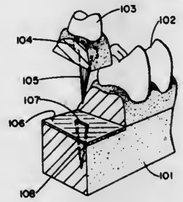
METHOD AND APPARATUS FOR MAKING IN A SINGLE OPERATION A BASE AND DENTAL MODEL INCLUDING A TOOTH DIE WITH AN INTEGRAL BAYONET TYPE MOUNTING PIN

Angelo C. Tirino, c/o Tirino Dental Studios, 299 Smithtown Blvd., Nesconset, N.Y. 11767

Filed Jul. 30, 1979, Ser. No. 61,679

Int. Cl.[3] **A61C** *13/00;* **B29C** *5/00*

U.S. Cl. 433—74 **6 Claims**



1. A method for forming a unitary tooth die and mounting pin integral with and removable from a dental model and base, comprising the steps of:

(a) providing a negative dental model including the selected tooth to be reproduced,

(b) providing a planar divider with a width and breadth sufficient to cover the area in the model over a cavity of a selected tooth to be reproduced, said divider having a central opening generally in the shape of a rectangle,

(c) providing a generally flat bayonet-shaped pin comprising:

1. a lower tip having a width less than that of the mouth of said opening to facilitate insertion of said pin in said opening,

2. an upper portion with a width greater than that of the tip and having generally parallel sides, said upper portion having a cross section generally corresponding to the opening in said divider,

3. a central portion tapering from the tip to the wider upper portion, and

4. a top portion having a cross member to anchor said pin in said die,

(d) inserting said pin up to the center of its upper portion into the divider through said opening in the divider,

(e) positioning the divider with the pin inserted in the divider opening over and in alignment with the cavity in the model of the selected tooth to be reproduced, said divider being oriented to place the pin cross member in the cavity of the selected tooth,

(f) pouring a dental molding material into the negative impression, about the pin, about the cross member of said pin and the divider to form the die of the tooth to be reproduced and the base in a single pour,

(g) allowing the molding material to harden, and

(h) relieving the model through the base portion on either side of the pin about the width of the tooth to be reproduced down to the divider to permit removal of the die.

4,238,190

SIMULTANEOUS TRANSFER PRINTING AND EMBOSSING OR SURFACE TEXTURING METHOD

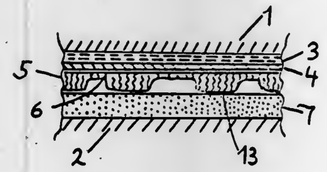
Thomas Rejto, 19 Homestead Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 797,542, May 16, 1977, which is a continuation of Ser. No. 759,887, Jan. 17, 1977, Pat. No. 4,049,374, which is a continuation-in-part of Ser. No. 597,562, Jul. 21, 1975, abandoned. This application Sep. 18, 1978, Ser. No. 942,970

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.[3] **D06P** *5/00*

U.S. Cl. 8—471 **28 Claims**



1. A method of printing in colour onto a thermoplastic fabric a replica of a first pattern and of simultaneously embossing in relief into that fabric a second pattern without substantially affecting the first pattern as so printed, said method comprising the steps of

(a) superposing

i. a heat transfer printing means bearing a vapourizable or sublimable dye according to said first pattern, the dye having a high affinity for said thermoplastic fabric;

ii. an embossing sheet or web, the material of which is permeable to said dye but has practically no affinity or retention properties for said dye, said embossing means having in both faces or at least in the face thereof remote from the transfer printing means, a design in relief according to said second pattern, said relief being created by alternation of raised and hollow portions and/or by apertures in the embossing surface, and

iii. a thermoplastic fabric;

(b) applying heat and pressure to the superposed members to cause the transfer by migration of the dye through the material of the embossing means and into the thermoplastic fabric and also to cause reproduction in the latter, in relief, of said second pattern, and

(c) separating said members one from another.

4,238,191

BULKING OF POLYCARBONAMIDES: QIANA

Samir Hussamy, Lynchburg, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

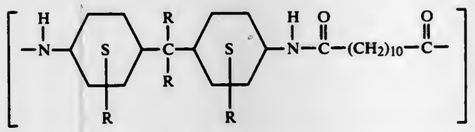
Continuation of Ser. No. 659,637, Feb. 20, 1976, abandoned. This application Nov. 26, 1979, Ser. No. 97,373

Int. Cl.[3] **D06M** *3/24*

U.S. Cl. 8—130.1 **7 Claims**

1. A process for permanently bulking and stabilizing as well as developing the silk-like handle of linear polycarbonamide fibers consisting essentially of sequential steps of:

(1) treating linear polycarbonamide fibers, wherein 90% of the repeating unit in said fibers have the formula:



wherein R is hydrogen or methyl, with a solution or emulsion of an alcohol;

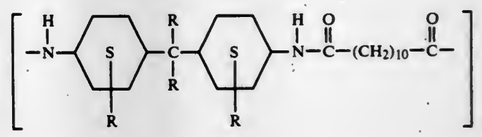
(2) washing the fibers in hot water;

(3) washing the fibers in cold water;

(4) drying the washed fibers; and thereafter

(5) dyeing the thus-bulked and stabilized fibers.

7. A process for permanently bulking and stabilizing as well as developing the silk-like handle of linear polycarbonamide fibers which comprises treating linear polycrabonamide fibers wherein 90% of the repeating unit in said fibers have the formula:



wherein R is hydrogen or methyl with a solution or emulsion of an alcohol, said solution or emulsion being substantially devoid of dyestuff, thereafter washing in hot and cold water and drying.

4,238,192

HYDROGEN PEROXIDE BLEACH COMPOSITION

Thomas V. Kandathil, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jan. 22, 1979, Ser. No. 5,127

Int. Cl.[3] **D06L** *3/02;* **C11D** *3/395, 3/40, 3/42*

U.S. Cl. 8—111 **17 Claims**

1. A stable aqueous bleach composition comprising:

(a) from 2–12% by weight hydrogen peroxide;

(b) from 0–20% by weight of an acid selected from the group consisting of an organic acid, phosphoric acid, boric acid or mixtures thereof;

(c) from 0.05–10.0% by weight of at least one alpha-amino acid;

(d) from 0.0001–1% by weight of a compound selected from the group consisting of a dye, an optical brightener or mixtures thereof; and

(e) water;

the weight ratio of hydrogen peroxide to alpha-amino acid is within the range of from 1:0.003–1:1.5 and with the proviso that the composition contains sufficient organic acid to bring the pH of the composition to within the range of from about 1.8–5.5.

4,238,193

METHOD OF TREATING SYNTHETIC FIBERS OR SYNTHETIC FIBER FABRICS

Akio Kisaichi, Nagahama; Masao Oguchi, Suita; Toshihide Takeda, Nagahama; Akira Aikawa, Nagahama, and Toshio Saito, Nagahama, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Sep. 19, 1978, Ser. No. 943,707

Claims priority, application Japan, Sep. 20, 1977, 52-113637

Int. Cl.[3] **C08L** *51/06, 51/08*

U.S. Cl. 8—115.5 **13 Claims**

1. A method of treating fiber made of synthetic polymer or a fabric comprised of said fiber, which comprises the steps of: applying to said fiber a first aqueous solution or an aqueous dispersion containing a heat-stable polymerization initiator and heat treating said fiber in a first heat treating step until from 0.01 to 5 percent by weight of said polymerization initiator, based on the weight of said fiber, penetrates into and is retained in the interior of said fiber; then washing said fiber with water to remove polymerization initiator remaining on the surface of said fiber; then applying to said fiber a second aqueous solution of at least one water-soluble polymerizable monomer capable of being polymerized by contact with said polymerization initiator to form a hydrophilic polymer for imparting a water absorption property and an antistatic property to said fiber,

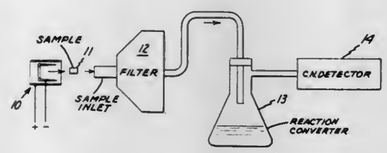
said second aqueous solution having a pH of not higher than 6, and heat treating said fiber in a second heat treating step at a temperature effective to polymerize said monomer to form said hydrophilic polymer wherein said polymerization initiator migrates to the surface of said fiber and said monomer penetrates into the interior of the fiber so that said hydrophilic polymer is formed both in the interior and on the surface of the fiber.

4,238,194

NUCLEI ANALYSIS OF SOLID SUBSTANCES

Stuart B. Dunham, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1966, Ser. No. 585,220
Int. Cl.³ G01N *31/00*
U.S. Cl. 23—230 R **3 Claims**



1. A method for detecting a non-volatile solid substance which comprises the steps of introducing into the atmosphere surrounding the said solid substance a reagent selected from the group consisting of nitric acid, hydrochloric acid, ammonia and ozone and chemically reacting the said solid substance in the atmosphere and thereby producing a gas reaction mixture containing a gaseous reaction product of the non-volatile solid substance, selecting a sample of the resulting gas mixture, filtering the gas mixture sample and removing substantially all non-gaseous material therefrom, converting the said gaseous reaction product to condensation nuclei, and detecting the resulting condensation nuclei with a condensation nuclei detector.

4,238,195

FLUORESCER-LABELED SPECIFIC BINDING ASSAYS

Robert C. Boguslaski, and Robert J. Carrico, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 18, 1979, Ser. No. 4,580
Int. Cl.³ G01N *33/50, 21/76, 21/64*
U.S. Cl. 23—230 B **26 Claims**

1. In a specific binding assay method for determining a ligand in or the ligand binding capacity of a liquid medium,
wherein said liquid medium is combined with reagent means including a labeled conjugate comprising a binding component incorporated with a fluorescent label, said combination forming a binding reaction system having a bound-species and a free-species of the labeled conjugate, the amount of said fluorescent label resulting in either of said bound-species or said free-species being a function of the presence or amount of said ligand or ligand binding capacity in said liquid medium, and
wherein said fluorescent label is measured,
the improvement which comprises measuring said fluorescent label by chemically exciting said label to cause the same to emit light, and then measuring the light emitted by the excited fluorescent label.

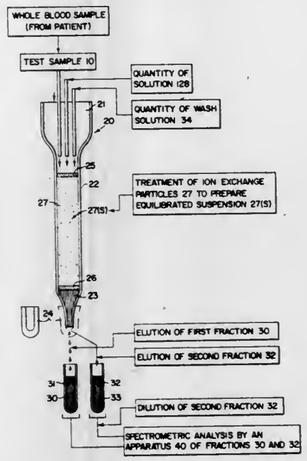
12. A test kit for use in determining a ligand in a liquid medium by a specific binding assay method, comprising, in a packaged combination, one or more containers holding
(1) said ligand, or a binding analog thereof, incorporated with a fluorescent label,
(2) a binding partner for said ligand, and
(3) chemical reagents capable of reacting to produce a high energy intermediate which excites said fluorescent label to cause same to emit light.

4,238,196

METHODS TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITIONS, AND, LIQUID CHROMATOGRAPHIC COLUMNS THEREFOR (CYANIDE FREE)

Kenneth J. Acuff, Clinton; Murray A. Rosenthal, and Murray E. Volk, both of Akron, all of Ohio, assignors to Isolab, Inc., Barberton, Ohio

Filed Nov. 1, 1979, Ser. No. 90,319
Int. Cl.³ B01D *15/08; G01N 33/16*
U.S. Cl. 23—230 B **15 Claims**



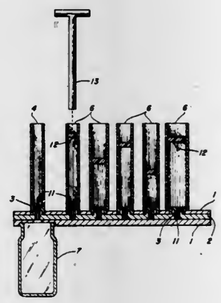
1. A method to determine a numerical percentage value as a diagnostic indicator of the blood sugar condition of a specific person, wherein a whole blood sample is taken from said person and thereafter prepared as a test sample containing a red blood cell hemolysate solution, and thereafter,
a quantity of said test sample is introduced into an end of a column bed having no cyanide therein which will adsorb hemoglobin species present in said test sample, said column bed comprising an equilibrated suspension of ion exchange material particles having a size less than 100 mesh, said particles in a column bed being one member selected from the class consisting of CarXH and CarYOH, where "Car" represents an inert substrate for carrying ionizable groups X^{31} providing dissociated cations H^+ and ionizable groups Y^+ providing dissociated anions OH^-, said CarXH particles being a weakly acidic cation exchanger having a reported pK_a: 3–7 and being used in an equilibrated suspension at a pH: 6.0–7.5 at 22.5° C., said CarYOH particles being a weakly basic anion exchanger having a reported pK_a: 7–10 and being used in an equilibrated suspension at a pH: 7.3–9.0 at 22.5° C., and thereafter,
a quantity of a buffer solution having no cyanide therein is introduced into an end of said column bed to preferentially elute therefrom a first fraction which contains certain of the hemoglobin species present in said test sample, a column bed which is an equilibrated suspension of CarXH particles providing a said first fraction containing substantially all of the hemoglobin species Hb-$A_{1a\text{-}c}$ present in said test sample, a column bed which is an equilibrated suspension of CarYOH particles providing a said first fraction containing essentially all of the hemoglobin species present in said test sample other than Hb-$A_{1a\text{-}c}$, and thereafter,
an aliquot quantity of said first eluate fraction is collected from the other end of said column bed, and then,
a quantity of a wash solution is introduced into an end of said column bed to desorb and elute therefrom a second fraction containing substantially all of the reminaing hemoglobin species present in said test sample, a column bed which is an equilibrated suspension of CarXH particles providing a said second fraction containing essentially all of the hemoglobin species present in said test sample other than Hb-$A_{1a\text{-}c}$, a column bed which is an equilibrated suspension of CarYOH particles providing a said second fraction containing substantially all of the hemoglobin species Hb-$A_{1a\text{-}c}$ present in said test sample, and then,
an aliquot quantity of said second eluate fraction is collected from the other end of said column bed, and then,
the hemoglobin species present in the said first and second eluate fractions are separately detected and measured by spectrometric analysis and the respective amounts thereof are expressed as numerical values which are then compared in accordance with a mathematical formula to provide a numerical percentage value for the hemoglobin species Hb-$A_{1a\text{-}c}$ in said test sample for use as a diagnostic indicator of the blood sugar characteristics of said specific person.

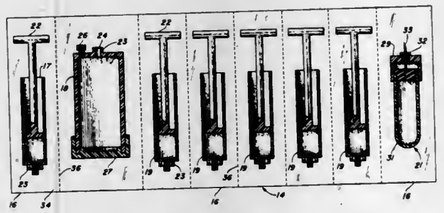
4,238,197

ANALYSIS OF LUBRICATING OILS FOR IRON CONTENT

Kent J. Eisentraut, Xenia; William D. Ross, Eaton; William J. Hillan, Kettering; Joseph J. Brooks, Centerville, all of Ohio, and Thomas G. Duffy, Jacksonville, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 12, 1979, Ser. No. 29,586
Int. Cl.³ G01N *31/22, 33/28*
U.S. Cl. 23—230 HC **4 Claims**





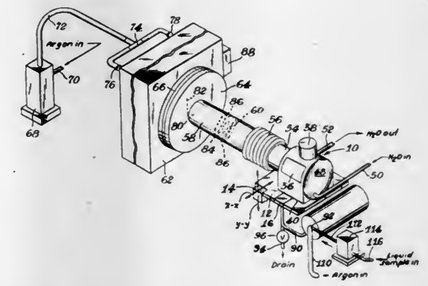
1. A method for determining the amount of iron present in a used lubricating oil which comprises the following steps:
a. adding a solution of concentrated sulfuric acid in distilled water and ethanol to a sample of the lubricating oil in an amount sufficient to extract iron from the oil;
b. adding isoamyl alcohol to the solution formed in step a in an amount sufficient to prevent formation of emulsions;
c. adding a solution of a buffering amount of sodium acetate in distilled water and a solution of a reducing amount of hydroxylamine hydrochloride in distilled water to the solution formed in step b;
d. adding a solution of a complexing amount of bathophenanthroline disulfonic acid or an alkali metal salt thereof in distilled water to the solution formed in step c;
e. adding distilled water to the solution formed in step d in an amount sufficient to dilute the color;
f. allowing the solution of step e to separate into an oil phase and a colored aqueous phase; and
g. determining from the color intensity of the aqueous phase the iron content of the lubricating oil.

4,238,198

METHOD FOR DETERMINING TOTAL INORGANIC SULFUR

Paul D. Swaim, and Steven R. Ellebracht, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 10, 1979, Ser. No. 37,810
Int. Cl.³ G01N *21/33, 21/64, 21/73*
U.S. Cl. 23—230 R **10 Claims**



1. An improved method for analyzing liquid samples for total inorganic sulfur, and which comprises: introducing the sample into a reducing solution which is effective to reduce inorganic sulfur of said sample to H_2S sweeping the volatile H_2S evolving from the reducing solution using an inert carrier gas and ultimately in-line to a plasma, and wherein the evolved H_2S is atomized and excited by the plasma, and analyzing the emitted light resultingly attained to determine the total inorganic sulfur concentration of said sample.

4,238,199

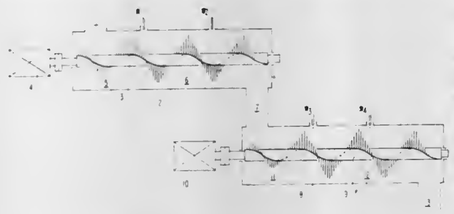
PROCESS FOR THE CONTROL OF THE RATIO DBP NUMBER/DBP NUMBER AFTER PRESSING IN THE MANUFACTURE OF CARBON BLACK PELLETS

Lothar Rothbühr, Hürth-Hermühlheim; Werner Sroka, Brühl, and Karl Vogel, Bad Vilbel, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 862,789, Dec. 21, 1977, abandoned.
This application Jul. 30, 1979, Ser. No. 62,206
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703016
Int. Cl.³ C01B *3/14; 425 222*
U.S. Cl. 23—314 **3 Claims**

1. A process for controlling the properties of carbon blacks by bringing about a change in the ratio of DBP number/DBP number after pressing comprising:
continuously mixing dry powdered carbon black with water and forming the carbon black and water into pellets by means of a wet pelletizing machine; said machine having at least two sections each section having therein a rotating shaft with spines spirally wound around said shaft and equipped with at least one water entry port in each section, the dry carbon black being added in the first section only and a portion of the water being injected into each of at least two sections of said machine and wherein to obtain a low value for the ratio DBP number/DBP number after

pressing, the speed of the rotating shaft of the pellet machine is set at a high rate relative to the speed of the shaft in the second portion and/or the major portion of water is added at a position for the injection of water located in the first section of the machine and wherein to obtain a high value for the ratio DBP number/DBP number after press-



ing, the speed of the rotating shaft of the pellet machine is set at a low rate relative to the second section and/or the major portion of water is added at a place for the injection of water lying in the second section of the machine; and wherein the wet carbon black pellets are subsequently dried.

4,238,200

PROCESS FOR THE PRODUCTION OF FUEL FROM FINE COAL FOR COAL PRESSURE GASIFICATION IN A FIXED BED REACTOR

Artur Richter, Mülheim, Fed. Rep. of Germany, assignor to STEAG Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,530

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2810125

Int. Cl.³ C10L *5/20*

U.S. Cl. 44—16 F **5 Claims**

1. A process for the production of fuel for coal pressure gasification in a fixed bed reactor from fine coal, comprising the steps of:

grading the coal into an oversize particle fraction and an undersize particle fraction;

mixing the undersize particle fraction with sulfite liquor;

forming the mixture into pellets;

exposing the pellets to a temperature below the coking temperature of the coal to initially thicken and thereafter harden the sulfite liquor at least on the surface of the pellets for forming solid, generally non-adhesive bridges among the particles of the undersize fraction; and

subsequently adding the hardened pellets to the oversize fraction.

4,238,201

GRILL CHARCOAL LIGHTER

Theodor Spilles, Essen, Fed. Rep. of Germany, assignor to Twente Convenience Products b.v., Enschede, Netherlands

Filed Aug. 6, 1979, Ser. No. 64,272

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835427

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—51 **7 Claims**

1. A grill charcoal lighter comprising a pasty emulsion of an alcohol in an amount from about 65 to 94% by weight, of about 0.5 to 2% aqueous solution of triethanolamine salt of alkylbenzene sulphonic acid (alkyl benzene sulphonate) as an emulsifier in an amount of about 4 to 13% by weight, and of fine pulverulent silicon tetrachloride as a filler in an amount of about 2 to 22% by weight.

4,238,202

HYDROCARBON FUELS WITH CARBURETOR DETERGENT PROPERTIES

William J. Trepka, and Richard J. Sonnenfeld, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1979, Ser. No. 71,596

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—62 **46 Claims**

1. Hydrocarbon fuel compositions exhibiting carburetor detergency properties comprising a major amount of a liquid hydrocarbon fuel and a minor effective amount of gasoline-soluble nitrogen-containing organic compound-grafted, hydrogenated conjugated diene/monovinylarene copolymer dissolved therein, said copolymer having a polymerized monovinylarene content of about 20 to 70 weight percent, with the proviso that when said copolymer contains a random block the block polymonovinylarene content is less than about 35 weight percent, a number average molecular weight suitable for gasoline solubility and in the range of about 1,000 to 10,000, the extent of hydrogenation of said copolymer such that about at least about 95 weight percent of olefinic double bonds having been saturated and less than about 5 weight percent of aromatic double bonds having been saturated, said copolymer characterized as having been prepared by the process which comprises reacting a metalated, conjugated diene hydrocarbon/monovinylarene hydrocarbon copolymer, optionally hydrogenated, with effective amounts of at least one nitrogen-containing organic compound represented by the general formulae $X—Q—(NR_2^3)_n$ or $Y[Q—(NR_2^3)_n]_m$ wherein each R^3 is the same or different alkyl, cycloalkyl, aryl, or combination radical, Q is a hydrocarbon radical having a valence of n+1 and is a saturated aliphatic, saturated cycloaliphatic, aromatic or combination radical, X is a functional group capable of reaction on a one-to-one basis with one equivalent of polymer metal, Y is or contains a functional group capable of reacting on a one-to-one basis with one equivalent of polymer metal, n is at least one, and m is 2 or 3, and wherein if said metalated copolymer has not previously been hydrogenated, subsequently hydrogenating said grafted copolymer.

4,238,203

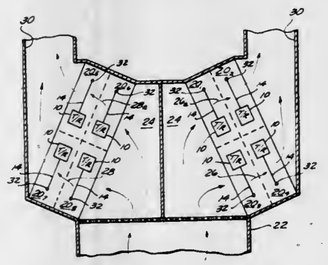
METHOD OF ENHANCING THE EFFECTIVENESS OF ELECTROSTATIC PRECIPITATORS USED WITH GAS STREAMS FORMED FROM BURNING FUEL

Raymond Jaworowski, Convent Station, N.J.; Eric Darmstaedter, Dallas, Tex.; Cliff D. Barton, Mountain Lakes, N.J., and William Taylor, Tyler, Tex., assignors to Apollo Technologies, Inc., Whippany, N.J.

Filed Jun. 14, 1979, Ser. No. 48,521

Int. Cl.³ B03C *3/00*

U.S. Cl. 55—5 **14 Claims**



1. Method of improving the action of electrostatic precipitators in separating particulate matter from a gas stream formed from burning fuel in pre-existing installations having x precipitating cells and y electric power sources of given voltage capacity electrically connected to said cells for energizing them, where x is greater than y, said power sources being

operated at voltage levels such as to cause the voltage level applied thereby to each cell associated therewith to be at a first value below that which would cause excessive sparking upon operation of said cell in pre-existing manner, which method comprises:

(a) forming a first mixture of the particle-laden gas at a temperature of 590°-900° C. with a conditioning agent from the group consisting of sodium bisulphate, ammonium sulphate, ammonium bisulphate and mixtures thereof, said mixture containing 75-1250 grams of conditioning agent per metric ton of fuel burned;

(b) at a temperature of about 100°-300° C., and in advance of said cells, forming a second mixture of said first mixture of conditioned gas with a spark-inhibiting ammonium salt; and

(c) increasing the number of electric power sources of said given voltage capacity to y+z, where z is greater than 0 and less than x−y+1, so connecting said sources to said cells as to substantially maximize the number of said cells that have individual power sources, and operating said power sources at voltage levels such as to cause the voltage level applied thereby to each cell associated therewith to be at a second value above said first value, said second value being one which, in the absence of said spark-inhibiting additive, would cause excessive sparking but which is insufficient to cause excessive sparking in the presence of said spark inhibiting chemical,

whereby additional voltage is applied to each said cell without causing excessive sparking.

4,238,204

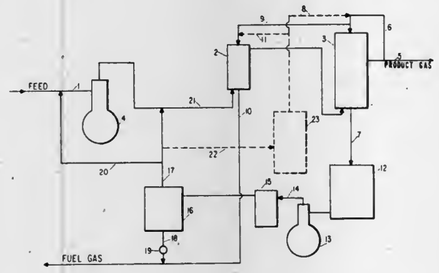
SELECTIVE ADSORPTION PROCESS

Eli Perry, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 18, 1979, Ser. No. 49,516

Int. Cl.³ B01D *53/04, 53/22*

U.S. Cl. 55—16 **29 Claims**



1. In a selective adsorption process wherein a feed gas mixture having a light gas component is directed to a selective adsorption unit, a product light gas is obtained from said selective adsorption unit and a purge gas comprising light gas is obtained from said selective adsorption unit, the improvement comprising directing said purge gas to a membrane permeator selectively permeable to said light gas, recovering from said permeator permeated gas comprising said light gas of a higher concentration than in said purge gas and directing said permeated gas to said selective adsorption unit.

20. A system for improving recovery of a light gas by a selective adsorption unit having a plurality of selective adsorbers, at least one gas inlet, a first outlet for a product comprising a light gas, a second outlet for purge gas, means for feeding a gas mixture to a feed gas inlet and means for recovering a product light gas from the first outlet of said selective adsorption unit, said system comprising: a membrane permeator unit comprising a plurality of membranes selectively permeable to said light gas, having a gas inlet, a first outlet for permeated gas and a second outlet for a non-permeated gas mixture, means for directing the purge gas from the second outlet of said selective adsorption unit to the gas inlet of the membrane permeator unit, and means for directing the permeated gas from the first outlet of the membrane permeator unit to at least one of said feed gas inlet or a purging gas inlet of said selective adsorption unit.

4,238,205

MAKING OF PILGER ROLL

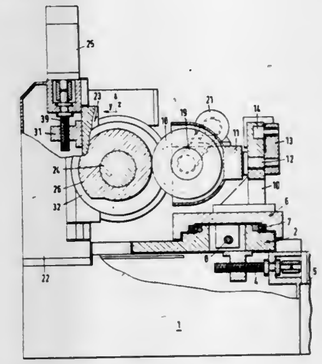
Otto Geiger, Ratingen, and Karl-Ernst Genter, Düsseldorf-Benrath, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,139

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1977, 2718603

Int. Cl.³ B24B *19/08*

U.S. Cl. 51—33 W **6 Claims**



1. Apparatus for grinding the groove in a roll for pilger rolling, including a machine stand;

first means for supporting the roll on the stand and including means for rotating such a roll about a first axis; a grinding wheel;

second means for supporting the grinding wheel on the the stand, the grinding wheel rotating about a second axis;

means for moving the second and first means in relation to each other and in relation to three perpendicular coordinate axes, a first one of which is parallel to the first axis, and the two others are at right angles to the first axis, whereby a second one of the coordinate axis runs in a direction commensurate to movement of the second axis towards or away from the first axis as defined by the first means, and a third one of the three coordinate axes is perpendicular to the first and second coordinate axes, to position the wheel relative to the groove, to thereby establish a particular work point, in which the wheel engages the groove of the roll as supported by the first means;

first control means for causing the means for moving to move the first and second means in relation to each other in directions of the first and second coordinate axes;

second control means for the means for moving, operatively connected to the means for moving and to the means for rotating, to respectively shift the first and second means in a direction of the third coordinate axis and to correctively rotate the roll as supported, for positioning the roll as supported by the first means and the wheel in relation to each other so that the roll as supported by the first means has a position in which its axis is pivoted out of a plane through the axis of the wheel and the work point; and

means for tilting the grinding wheel about an axis parallel to the second coordinate axis out of a position of parallelism of its axis with the axis of the roll as supported by the first means.

4,238,206

USING SOLVENTS FOR ACIDIC GAS REMOVAL

Charles C. Hong, Columbus, Ohio, assignor to Columbia Gas System Service Corporation, Wilmington, Del.

Filed Mar. 5, 1979, Ser. No. 17,468
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—48 **10 Claims**

1. In a cyclic process for removing carbon dioxide containing acidic gas from a normally gaseous mixture containing same, wherein said gaseous mixture is contacted with a solvent under acidic gas/solvent contact conditions, said acidic gas bearing solvent is stripped of said acidic gas, and said stripped solvent is recycled for contact with additional gaseous mixture, the improvement which comprises:

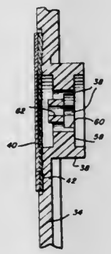
contacting said gaseous mixture containing on a dry molar basis between about 5% and 95% carbon dioxide with a solvent which is liquid under said contact conditions, said solvent restricted to an anhydrous solvent which physically absorbs said acidic gas but which is chemically unreactive with said acidic gas under said contact conditions, said solvent selected from the group consisting of N,N-dialkylaminoalkanol, N,N-dialkoxyalkylaminoalkanol, N-alkyl-N-alkoxyalkylaminoalkanol, N,N-dialkylaminoalkylether, N,N-dialkoxyalkylaminoalkylether, N-alkyl-N-alkoxyalkylaminoalkylether, dialkyl carbonate, di(alkoxyalkyl) carbonate, mono-alkyl-monoalkoxyalkyl carbonate, and mixtures thereof, said solvent optionally in admixture with an anhydrous cosolvent which also is chemically unreactive with said acidic gas.

4,238,207

METHOD OF MOUNTING A FILTER MEMBRANE

Ricky R. Ruschke, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 856,147, Nov. 30, 1977, Pat. No. 4,190,426. This application Jan. 11, 1979, Ser. No. 2,689
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—159 **6 Claims**



1. A method for mounting a plastic liquid-repellent filter membrane over vent opening means in a heat-deformable plastic medical fluid filter housing having a melt temperature lower than said membrane, said method comprising:

providing a liquid-repellent filter assembly comprising said plastic liquid-repellent filter membrane and a plastic fibrous backing attached to said membrane, said membrane and backing assembly having a higher melt temperature than said housing;

positioning said assembly over said vent opening means with said backing being disposed against said housing and with the peripheral edge of said assembly extending beyond the edge of said opening means and overlying a portion of said housing;

momentarily applying pressure against the peripheral edge portion of said membrane continuously around said opening; and

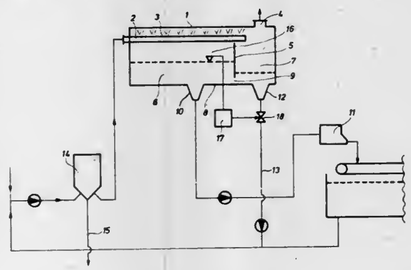
heating said heat-deformable plastic housing in the area of said pressure and during the application of said pressure to a temperature higher than its melting point but less than the melting point of said membrane and backing so as to melt said housing sufficiently to flow into interstices in the fibrous backing to provide a mechanical bond therewith continuously around said opening, sealing said membrane and backing assembly to said housing free of supporting structure adjacent the membrane side of said assembly.

4,238,208

APPARATUS FOR DEGASSING PAPER STOCK

Rune H. Frykhult, Huddinge, and Hans O. G. Forsblom, Skarholmen, both of Sweden, assignors to AB Celleco, Stockholm, Sweden

Filed Nov. 22, 1978, Ser. No. 962,873
Claims priority, application Sweden, Nov. 24, 1977, 7713286
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—169 **3 Claims**



1. Apparatus for degassing a suspension of cellulosic fibers forming a stock for paper making, the apparatus comprising a closed tank having a partition extending upward from the lower part of the tank and dividing the tank into a first chamber and a smaller second chamber, each chamber having a stock discharge outlet, means for feeding the stock to the tank, said partition means having a free gas passageway at the top of the tank between the two chambers, gas evacuation means for maintaining substantially equally low gas pressures in the two chambers, a stock consumer connected to said stock outlet of the first chamber, said partition further having a restricted opening extending from the bottom of the tank for passage of stock from the first chamber to the second chamber, a recycle line for recycling stock from said stock outlet of the second chamber back to the tank, means for sensing the stock level in the first chamber, and valve means located in said recycle line and operable under control of said sensing means to maintain said stock level constant.

4,238,209

GAS DRYING APPARATUS

Gabriel M. LaPointe, Worcester, Mass., assignor to Ramco Industries, Inc., Providence, R.I.

Filed Jul. 24, 1978, Ser. No. 927,603
Int. Cl.³ B01D *53/06*
U.S. Cl. 55—181 **5 Claims**

1. Gas drying apparatus, comprising:

(a) a supporting frame,

(b) two tubular towers mounted on the frame in spaced, parallel vertical relationship, each tower carried on the frame for rotation about its axis and adapted to carry a body of desiccant, each having a transverse plate dividing it into an upper desiccant chamber and a lower vestibule, a perforated tube lying concentrically of the tower in the desiccant chamber and having a closed top and an open bottom leading through an aperture in the plate into the vestibule,

(c) a cap closing the upper end of each tower and having an aperture, each of the cap apertures being provided with an annular seal that is spring-loaded in the upward direction for gas-tight engagement with an outlet manifold and a vent manifold,

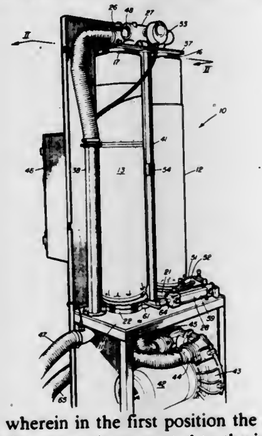
(d) a base closing the lower end of each tower and having an aperture,

(e) an intake gas manifold mounted on the frame under the two bases,

(f) the outlet manifold overlying the two caps,

(g) the vent manifold overlying the two caps and located laterally of the outlet manifold,

(h) a purge gas manifold mounted on the frame under the two bases and located laterally of the intake gas manifold, and (i) an actuator for rotating the towers simultaneously 90° for alternately occupying a first position and a second



position, wherein in the first position the aperture in the base of a first tower is connected to the intake gas manifold, the aperture in the cap of the first tower is connected to the outlet manifold, the aperture in the base of the second tower is connected to the purge gas manifold, and the aperture in the cap of the second tower is connected to the vent manifold, and wherein in the second position the aperture in the base of the first tower is connected to the purge gas manifold, the aperture in the cap of the first tower is connected to the vent manifold, the aperture in the base of the second tower is connected to the intake gas manifold, and the aperture in the cap of the second tower is connected to the outlet manifold.

4,238,210

PARTICLE-REMOVAL APPARATUS

Ulrich Regehr, Susterfeldstr. 65, 51 Aachen; Horst Hannemann, Haus-Heyden Str. 256, 5120 Herzogenrath; Siegfried Bulang, Drievogel 177, Kerkrade (NL); Helmut Derichs, Halfenstr. 41, 51 Aachen; Vladimir Knuplez, Schindlerstr. 11, 51 Aachen, and Martin Wedrich, Zeppelinstr. 65, 51 Aachen, all of Fed. Rep. of Germany

Filed Apr. 26, 1979, Ser. No. 33,501
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818510
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—396 **6 Claims**

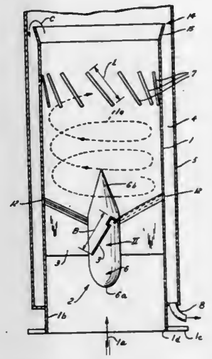
1. A uniflow cyclone for the removal of particles from a gas stream entraining same, said uniflow cyclone comprising:

a duct having an upstream end receiving said gas stream and a downstream end;

swirl-inducing means in said duct between said ends for imparting rotary movement to the gas stream as it traverses said duct, said swirl-inducing means comprising a body disposed centranlly in said duct and a plurality of angularly spaced vanes disposed around said body and pitched to deflect said stream angularly, at least some of said vanes having trailing edges formed with longitudinally extending collecting channels which have slits open to the gas stream;

a plurality of elongated outlet slots formed in the duct downstream of said swirl-inducing means; and

a housing surrounding said duct and defining a collecting chamber communicating with the interior of said duct through said slots, said channels communicating through the wall of said duct with said chamber through respective openings, said slots being inclined and being oriented



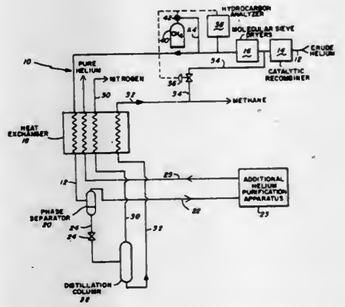
so as to be substantially transverse to the rotary movement of said gas stream, said duct at said downstream end being formed with an outwardly divergent collar over which a portion of the gas stream is deflected into said chamber, the openings of said channels through the wall of said duct into said chamber and said slots being so dimensioned that a portion of the gas stream which has passed said slots is drawn over the collar into said chamber.

4,238,211

METHOD OF EMPLOYING A FIRST CONTAMINANT TO PREVENT FREEZE-OUT OF A SECOND CONTAMINANT DURING CRYOGENIC PROCESSING OF A GASEOUS STREAM

Robert W. Stuart, Kinderhook, N.Y., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Nov. 20, 1978, Ser. No. 962,255
Int. Cl.² F25J *3/00*
U.S. Cl. 62—20 **5 Claims**



1. In the cryogenic processing of a gaseous stream containing a first contaminant and a second contaminant, said first contaminant being a solvent for said second contaminant and said second contaminant being one which will freeze out of the gaseous stream at cryogenic temperatures, said processing including the steps of reducing the concentration of the first contaminant to a level which is insufficient to dissolve substantially all of the second contaminant at said cryogenic temperatures and subsequently cooling said gaseous stream to cryo-

genic temperatures whereby freeze-out of said second component would normally occur:

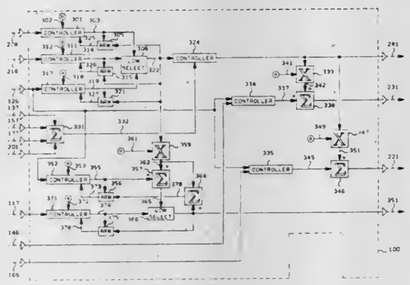
The improvement of analyzing the proportions of the first contaminant to the second contaminant and adding to the gaseous stream prior to cooling it to said cryogenic temperatures a supplemental amount of said first contaminant to raise the level of said first contaminant in the gaseous stream if the concentration of the first contaminant is insufficient to dissolve substantially all of said second component at said cryogenic temperatures thereby reducing the likelihood of freeze-out of said second component during processing of the gaseous stream.

4,238,212

CONTROL OF A FRACTIONAL DISTILLATION COLUMN

John E. Anderson, Corpus Christi, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1979, Ser. No. 70,543
Int. Cl.³ B01D *3/42*; F25J *3/08*
U.S. Cl. 62—37 **19 Claims**



13. Apparatus comprising:

a first separator means;

a second separator means;

means for supplying a first feed stream to said first separator means;

means for supplying the vapor portion of said first feed stream from said first separator means to said second separator means;

a fractional distillation column means;

means for supplying the liquid portion of said first feed stream as a second feed stream from said first separator means to said fractional distillation column means;

means for supplying the liquid in said second separator means as a third feed stream to said fractional distillation column means;

means for calculating a first signal representative of the predicted desired total feed flow to said fractional distillational column means required to prevent flooding of said fractional distillation column means;

means for establishing a second signal representative of the flow rate of said second feed stream;

means for establishing a third signal representative of the flow rate of said third feed stream;

means for summing said second signal and said third signal to establish a fourth signal representative of the actual total feed flow rate to said fractional distillation column means;

means for comparing said first signal and said fourth signal and for establishing a fifth signal responsive to the difference between said first signal and said fourth signal;

means for manipulating the flow rate of said second feed stream in response to said fifth signal;

means for establishing a sixth signal representative of the actual liquid level in said first separator means;

means for establishing a seventh signal representative of the actual liquid level in said second separator means;

means for comparing said sixth signal and said seventh signal and for establishing an eighth signal responsive to the difference between said sixth signal and said seventh signal;

means for combining said fifth signal and said eighth signal to establish a ninth signal;

means for manipulating the flow rate of said third feed stream in response to said ninth signal;

means for calculating a tenth signal representative of the predicted desired flow rate of said first feed stream required to prevent flooding of said fractional distillational column means;

means for calculating an eleventh signal representative of a correction factor utilized to maintain the liquid level in said first and second separators within desired limits;

means for combining said tenth signal and said eleventh signal to establish a twelfth signal representative of a modified predicted desired flow rate of said first feed stream required to both prevent flooding of said fractional distillation column means and maintain the liquid level in said first separator means and said second separator means within desired limits;

means for establishing a thirteenth signal representative of the actual flow rate of said first feed stream;

means for comparing said twelfth signal and said thirteenth signal and for establishing a fourteenth signal responsive to the difference between said twelfth signal and said thirteenth signal; and

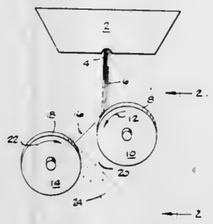
means for manipulating the flow rate of said first feed stream in response to said fourteenth signal.

4,238,213

METHOD OF OPERATION OF A REFRACTORY FIBER PRODUCTION PROCESS

John M. Pallo, Englewood, and Donald E. Shisler, Littleton, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Apr. 5, 1979, Ser. No. 27,331
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—8 **5 Claims**



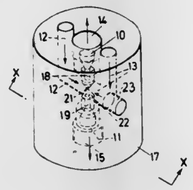
1. In a process for the centrifugal spinning of refractory fibers from a molten stream of predominantely aluminosilicate refractory mixed oxide materials wherein the stream impinges on the circumferential surface of at least one rotating rotor of a plurality of rotating rotors of conventional diameter; the molten mixed oxide material initially adheres to the surface; thereafter portions of the adhered material are flung from the surface by the centrifugal force created by the rotation of said rotor; and each of said portions is thereby attenuated into a fiber or impinges on the circumferential surface of at least one other rotating rotor of said plurality of rotors from which it is subsequently flung by centrifugal force and ultimately thereby attenuated into a fiber, the improvement which comprises rotating all of the rotors at a circumferential speed of at least about 21,000 linear feet per minute.

4,238,214

PARTICLE ORIENTATION METHOD

Kenneth H. G. Ashbee, 2 Druid Stoke Ave., Stoke Bishop, Bristol, United Kingdom (BS9 1DD)

Continuation-in-part of Ser. No. 635,173, Nov. 25, 1975, abandoned. This application May 22, 1979, Ser. No. 41,326
Claims priority, application United Kingdom, Mar. 25, 1975, 12496/75; Mar. 25, 1975, 12511/75; May 16, 1975, 20941/75; Fed. Rep. of Germany, Jun. 2, 1975, 2524337; Japan, Jun. 5, 1975, 50-67113
Int. Cl.³ B29D *3/02*; C03B *19/00, 32/00*
U.S. Cl. 65—33 **10 Claims**



1. A method of orienting asymmetrically shaped particles suspended in a fluid, comprising the steps of: forcing a first stream of said fluid, under pressure, into a first conduit and forcing a second stream of said fluid, under pressure, into a second conduit in a direction opposite to said first stream, said conduits having parallel centerlines on a common axis; forcing the streams of said fluids into narrow, axial channels in each of said conduits, at the intersection of the said centerlines, such that said opposite-flowing axial streams meet at the intersection of centerlines under high biaxial pressure and such that the velocity of said streams falls to zero at said intersection; and removing said fluid from said intersection to a zone of lower pressure through a narrow bore, thereby subjecting said fluid to extensional flow under high strain rate and orienting the asymmetrically shaped particles in said fluid.

4,238,215

MAGNETIC HEAD AND METHOD FOR PREPARING THE SAME

Kazuo Yokoyama; Ryuji Nichiyama, both of Osaka, and Taketoshi Yonezawa, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 943,397, Sep. 18, 1978, Pat. No. 4,170,032. This application Mar. 30, 1979, Ser. No. 25,467
Claims priority, application Japan, Sep. 19, 1977, 52-112815
Int. Cl.³ C03B *23/20*
U.S. Cl. 65—43 **3 Claims**



1. A method of producing a magnetic head in which a glass film is formed by sputter deposition on the gap opposing faces of at least one of two unilateral magnetic core pieces, said glass film being made of borosilicate glass having the composition of 65 to 85 mol % SiO_2 and 8 to 30 mol % B_2O_3 and containing 2 to 15 mol % of alkali metal oxides Na_2O and K_2O and 0.1 to 5 mol % of Al_2O_3, with the molar ratio of boron oxide to alkali metal oxides being defined by:

$$0.05 < \frac{Na_2O + K_2O}{B_2O_3 + Na_2O + K_2O} < 0.4$$

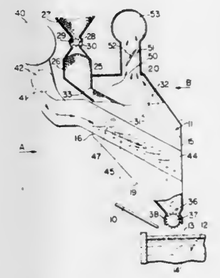
and then said two unilateral magnetic core pieces are butted against each other with said sputter-deposited glass film interposed therebetween and bonded together by heating at a temperature which is higher than transition point of said sputter glass film and lower than yielding point thereof.

4,238,216

HEATING GLASS BATCH MATERIAL

Leslie A. Nevard, Liverpool, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Apr. 30, 1979, Ser. No. 34,647
Claims priority, application United Kingdom, May 9, 1978, 18494/78
Int. Cl.³ C03B *3/00*
U.S. Cl. 65—134 **14 Claims**



1. A heating chamber for heating pellets of glass batch material before feeding to a glass melting tank, which chamber has a pellet inlet in the upper part of the chamber, a pellet supply system connected to said inlet, means limiting the upper extent of the inlet so that when pellets are fed into the chamber a bed of pellets is formed with an upper surface lying in a plane passing through the upper edge of the inlet and inclined at the angle of repose of the pellets, an outlet spaced below said inlet in a lower part of the chamber through which outlet heated pellets may leave the heating chamber, and hot gas supply means for feeding a stream of hot gas to the interior of the chamber to heat the pellets, which hot gas supply means comprises an inlet passage, a plurality of gas outlet passages distributed within the chamber below the surface of the bed of pellets and arranged in a plane parallel to the surface of the bed of pellets so that gas emerging from all the gas outlet passages has a substantially constant path length from the outlet passages to the upper surface of the bed of pellets, and a gas outlet duct in an upper part of the chamber to exhaust the gas which passes upwardly from the surface of the bed of pellets, said outlet duct defining an outlet opening disposed above said plane passing through the upper edge of the inlet and inclined at the angle of repose of the pellets.

14. A method of preheating pellets of glass batch material before feeding to a glass melting tank, which method comprises feeding a succession of pellets into a heating chamber and forming a bed of pellets within the chamber, the bed having an inclined upper surface at the angle of repose of the pellets, introducing hot gas into the bed of pellets at a plurality of positions distributed below the surface of the bed in a plane parallel to the surface of the bed so that the gases passing through the bed of pellets has a substantially constant path length over the full area of the bed, exhausting the gases from a space which is disposed above the bed and which communicates with the bed along the entire surface thereof, and removing the heated pellets from the heating chamber and feeding them to a glass melting tank.

4,238,217

SYSTEM FOR THE FORMATION INTO PELLETS OF MIXTURES OF RAW MATERIALS FOR GLASS

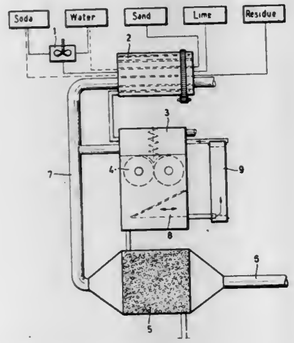
Premek Stepanek, Garmisch-Partenkirchen, and Hugo Bleckmann, Bonn, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 447

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759021

Int. Cl.³ C03B *3/00*

U.S. Cl. 65—335 **2 Claims**



1. A system for the formation into lumps or pellets of mixtures of raw materials for glass to be melted in a furnace, comprising:

a furnace having a hot exhaust;

a mixing container;

means for supplying soda, water, and raw materials for the glass to the mixing container;

a supply means for feeding a mixture from the mixing container to a solidification means,

said solidification means forming said mixture into lumps or pellets; and

a heat exchanger means connected to the hot exhaust for heating the lumps or pellets received from the solidification means; the hot exhaust being connected to supply heat to the mixing container after the heat exchanger.

4,238,218

ETHANIMIDOTHIOIC (α-DIARYLOXYPHOSPHINYLMETHYLAMINO) ACID ESTER HYDROCHLORIDES, HERBICIDAL COMPOSITION AND HERBICIDAL USE THEREOF

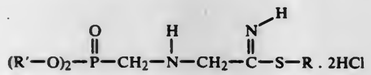
Gerard A. Dutra, Ladue, and James A. Sikorski, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 6, 1978, Ser. No. 913,167

Int. Cl.³ A01N *57/12, 57/14*; C07F *9/40*

U.S. Cl. 71—87 **24 Claims**

9. A herbicidal composition comprising a herbicidally acceptable surfactant, an inert diluent and a herbicidally effective amount of a compound of the formula



$$(R'-O)_2-\overset{O}{\overset{\|}{P}}-CH_2-\overset{H}{\overset{|}{N}}-CH_2-\overset{H}{\overset{|}{\overset{\|}{C}}}-S-R \cdot 2HCl$$

wherein R is selected from the group consisting of primary or secondary alkyl containing up to 10 carbons; phenyl; phenyl substituted with one or two groups individually selected from the class consisting of lower alkyl, lower alkoxy, halogen, nitro and trifluoromethyl; and lower alkyl substituted with naphthyl, phenyl or phenyl substituted with one or two groups individually selected from the class consisting of lower alkyl, lower alkoxy, halogen, nitro and trifluoromethyl; and R′ is phenyl or a lower alkyl substituted phenyl group.

4,238,219

INCREASING CHLOROETHYLPHOSPHONIC ACID-INDUCED ETHYLENE RESPONSE

Robert E. Holm, and Han San Ku, both of Painesville, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation of Ser. No. 722,805, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 610,916, Sep. 8, 1975, abandoned. This application Feb. 21, 1978, Ser. No. 879,963

Int. Cl.³ A01N *57/12*

U.S. Cl. 71—86 **5 Claims**

1. A composition for synergistically enhancing the ethylene release promoting effect of 2-chloroethylphosphonic acid in plant tissue consisting essentially of an ethylene release promoting amount of 2-chloroethylphosphonic acid and tetrachloroisophthalonitrile wherein the ratio of tetrachloroisophthalonitrile to 2-chloroethylphosphonic acid is within the range of from about 0.2 to 4:1 parts by weight.

4,238,220

1-ARYL-5-CARBOXY-2-PYRIDONES AND DERIVATIVES THEREOF

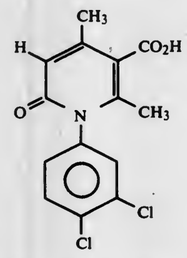
Glenn R. Carlson, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 816,051, Jul. 15, 1977, abandoned. This application Jul. 16, 1979, Ser. No. 57,854

Int. Cl.³ A01N *9/22*; C07D *213/55*

U.S. Cl. 71—94 **10 Claims**

1. The compound having the formula



and the agronomically acceptable salts or carb(C_1-C_4)alkoxy esters thereof.

8. A method of inhibiting plant growth which comprises applying to the plant, the plant seeds, or the plant habitat an effective amount of a compound of claims **1**, **2**, **3**, **4**, **5** or **6**.

4,238,221

PROCESS FOR PREPARING IRON BASED POWDER FOR POWDER METALLURGICAL MANUFACTURING OF PRECISION COMPONENTS

Lars-Erik Sevensson, Hoganas, Sweden, assignor to Hoganas AB, Hoganas, Sweden

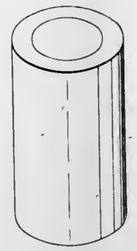
Filed May 7, 1979, Ser. No. 36,838

Int. Cl.² B22F *1/02*

U.S. Cl. 75—0.5 BA **9 Claims**

1. A process for manufacturing iron based powder to be used for powder metallurgical manufacturing of precision components having good accuracy to size and high strength, wherein a mixture of substantially only iron powder and an alloying powder selected from the group consisting of copper, reducible copper compounds and mixtures thereof is prepared, the mixture is subjected to an annealing treatment in reducing atmosphere at a temperature between 700° C. and 950° C. for a period of 15 minutes to 10 hours, preferably 0.5–5 hours, so that said alloying powder is adhered to said iron powder by diffusion, the cake thus obtained is ground to an iron powder

diffusion alloyed with copper, and the copper alloyed iron powder thus obtained is mixed with pure iron powder in such



an amount that the mixture obtains the intended copper content.

4,238,222

WAELZ PROCESS OF VOLATILIZING ZINC AND LEAD FROM IRON OXIDE-CONTAINING MATERIALS

Harry Serbent, Hanau; Gerhard Reuter, Frankfurt am Main; Wolfram Schnabel, Hattersheim, and Günter Kossek, Duisburg, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,413

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831911

Int. Cl.³ C22B *1/02, 13/02, 19/16*

U.S. Cl. 75—7 **5 Claims**

1. In a Waelz process of volatilizing zinc and lead from iron containing and oxide containing material in an inclined rotary kiln, which is charged at its upper end with the material together with solid carbonaceous reducing agent having a high content of volatile combustible constituents, wherein the reduction and volatization are effected below the softening point of the charge, metallic iron-containing material is discharged from the lower end of the rotary kiln, combustion air is sucked into the lower end of the rotary kiln and the exhaust gases are sucked from the upper end, the improvement which comprises blowing oxygen-containing gases through tubular air nozzles which extend through the kiln wall and the refractory lining of the rotary kiln and have outlet openings lying in the inside surface of the refractory lining or dispose lightly inside or outside of said surface and into the charge disposed over said tubular air nozzles in that region of the heating up zone which begins where ignitable particles of the solid reducing agent begin to occur and which terminates at up to 50% of the length of said kiln said oxygen containing gas being blown through the tubular air nozzles into the heating-up zone in a region which begins with a reducing agent and has a temperature of about 300° C. and terminates where a charge has a temperature of 800° to 950° C.

4,238,223

METHOD OF EXTRACTING MAGNESIUM FROM MAGNESIUM OXIDES

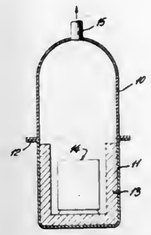
Carlo Bettanini; Stelio Zanier, and Margherita Enrici, all of Bolzano, Italy, assignors to Societa Italiana per Il Magnesio E Leghe Di Magnesio S.p.A., Balzano, Italy

Filed Jun. 25, 1979, Ser. No. 51,835

Int. Cl.³ C22B *45/00*

U.S. Cl. 75—10 R **12 Claims**

1. A process of extracting magnesium from compounds containing magnesium oxides comprising the steps of mixing magnesium oxide and calcium oxide with aluminum, compressing the mixture, heating the compressed mixture uniformly to a temperature in the range of 800°–1,100° C. under controlled pressure below atmospheric pressure to vaporize the magnesium, and condensing the vaporized magnesium on a cooled surface.



4,238,224

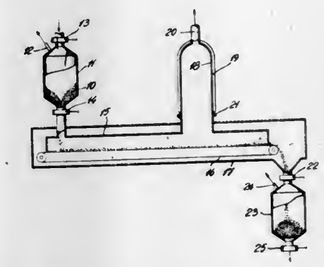
CONTINUOUS EXTRACTION OF MAGNESIUM FROM MAGNESIUM OXIDES

Carlo Bettanini; Stelio Zanier, and Margherita Enrici, all of Bolzano, Italy, assignors to Societa Italiana per Il Magnesesio E Leghe Di Magnesio S.p.A., Balzano, Italy

Filed Jun. 25, 1979, Ser. No. 51,970

Int. Cl.³ C22B *45/00*

U.S. Cl. 75—10 A **6 Claims**



1. A continuous process of extracting magnesium from compounds containing magnesium oxides, comprising the steps of:

mixing magnesium oxide and alkaline earth metal oxide with aluminum,

compressing the mixture into briquettes,

feeding the briquettes onto a conveying means,

heating the briquettes uniformly to a temperature in the range of 800°–1100° C. on the conveying means under controlled pressure below atmospheric pressure to vaporize the magnesium, and

condensing the vaporized magnesium on a cooled surface.

4,238,225

METHOD OF MONITORING CONVERSION OF IRON ORE INTO HIGH CONTENT PELLETS

Larry A. Coccia, Elizabeth, Pa., assignor to Pullman Incorporated, Chicago, Ill.

Filed May 3, 1979, Ser. No. 35,867

Int. Cl.³ C21B *13/02*

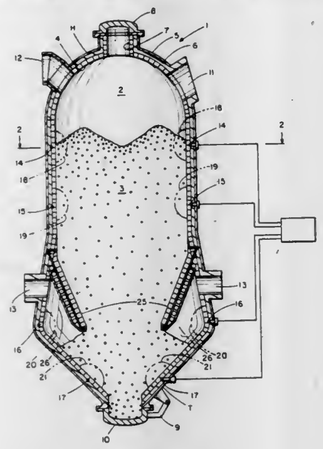
U.S. Cl. 75—33 **20 Claims**

1. A method of reducing ore having a certain percentage of iron into a product having a higher usable percentage of iron comprising:

loading a batch of ore into a converter,

subjecting the ore in the converter to a reducing medium, and

concurrently monitoring increases in iron content in the ore by measuring change in the inductance of a measuring coil



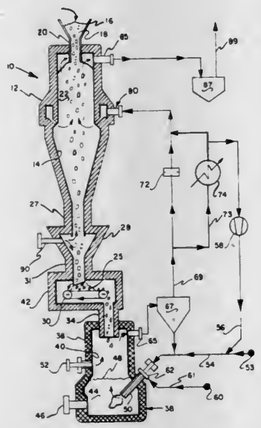
which is located in the vicinity of a preselected portion of the ore.

4,238,226

METHOD FOR PRODUCING MOLTEN IRON BY SUBMERGED COMBUSTION

Charles W. Sanzenbacher, Charlotte, N.C., and John C. Scarlett, Toledo, Ohio, assignors to Midrex Corporation, Charlotte, N.C.

Filed Jul. 16, 1979, Ser. No. 58,037
Int. Cl.³ C21B *13/06*
U.S. Cl. 75—38 **9 Claims**



1. A method for reducing particulate iron oxide and producing molten iron comprising:
(a) chemically reducing particulate iron oxide to particulate metallized iron product by reaction with a hot reducing gas consisting principally of carbon monoxide and hydrogen, and forming a spent reducing gas;
(b) discharging said particulate metallized iron product into a submerged combustion melter-gasifier chamber and melting said product therein to form a molten metal bath in said chamber;
(c) injecting fossil fuel and oxygen into the molten metal bath beneath the surface of the bath to gasify the fossil fuel, melt the iron, and form a hot gas within said chamber;
(d) continuously humidifying the hot gas in the chamber by injecting water into said chamber above said bath;
(e) removing the humidified hot gas from the chamber, partially cooling said hot gas and removing entrained solids therefrom to form a hot reducing gas;
(f) reacting said hot reducing gas with said particulate iron oxide to directly reduce said particulate iron oxide to said particulate metallized iron product; and
(g) drawing off the molten iron from said melter-gasifier.

4,238,227

CLEANSING OF STEEL BY GAS RINSING

Eugene A. Golas, Middletown Township, Bucks County, and Robert A. Rege, Hempfield Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 27, 1979, Ser. No. 52,882
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—58 **4 Claims**

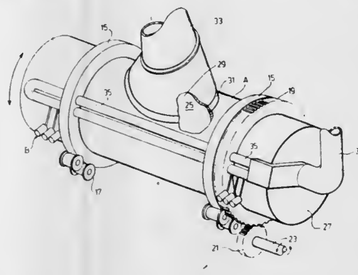
1. A process for deoxidizing a steel to produce exceptional microcleanliness comprising, tapping a heat of molten steel into a vessel, adding a predetermined amount of aluminum to the steel in the vessel before the first one-third volume of steel is tapped, said predetermined amount being from about 110 to about 780 pounds per 200 tons of steel in inverse proportion of the steel's carbon content within the range 0.03 to 0.60 percent carbon, adding ferromanganese and ferrosilicon while the final two-thirds volume of steel is being tapped as necessary to meet the required steel composition, providing a non-oxidizing slag on the tapped steel, injecting an inert gas through the steel at a rate no greater than 10 scfm for a period of about 9 to 20 minutes to provide at least about 0.3 but not more than about 1 cubic foot of inert gas per ton of steel.

4,238,228

NON-FERROUS METAL TREATMENT

J. Keith Brimacombe, Vancouver, and Enrique O. Hoefele, Regina, both of Canada, assignors to Canadian Liquid Air Ltd./Air Liquide Canada Ltee, Montreal, Canada

Filed Mar. 27, 1979, Ser. No. 24,243
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—76 **26 Claims**



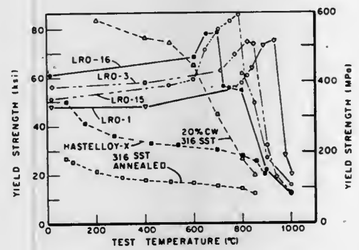
1. A method of converting a bath of a nonferrous molten metal matte in a converter vessel having an elongated sealed chamber formed by a cylindrical metallic sidewall and circular endwalls having refractory lining, the sidewall being provided with a charging port and an off-gas stack, a plurality of metallic tuyeres extending into the chamber through the sidewalls to refractory-surrounded exposed tips, means outside the vessel to supply oxidizing gas under pressure to the tuyeres, and means supporting the vessel on its horizontal axis for rotation between a charging position and a blowing position in which the tuyere tips are submerged in the bath, the process including a treatment cycle in which the vessel is initially charged with molten matte and a plurality of sequential blows carried out with the vessel being rotated back and forth between said charging and blowing positions and the gas introduced through the tuyeres or turned off accordingly for coordinated blowing, charging flux, removal of slag, replenishing the charge, and recovering converted metal from the vessel, comprising,
carrying out the blows by injecting into the bath a total flow of oxidizing gas effective to maintain autogenous converting temperatures within the range from about 1100° C. to about 1300° C. through a plurality of spacedapart tuyeres limited in cross-sectional area and in number effective to cause the gas to enter the bath at a pressure effective to provide discrete underexpanded steady jets which continue to a position remote from the tuyere tips whereby wear of the refractory lining is reduced substantially to a minimum.

4,238,229

FE-BASED LONG RANGE ORDERED ALLOYS

Chain T Liu; Henry Inouye, and Anthony C. Schaffhauser, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 11, 1979, Ser. No. 47,444
Int. Cl.³ C22C *38/08*
U.S. Cl. 75—122 **11 Claims**



1. A long range ordered alloy composition having a critical ordering temperature greater than 600° C., a room temperature ultimate tensile strength greater than about 1000 MPa, and a room temperature tensile elongation in the ordered state greater than about 30%, said alloy having the nominal $V(Fe,Ni)_3$ or $V(Fe,Ni.Co)_3$ composition and comprising by weight 22–23% V, 35–50% Fe, 0–22% Co and 19–40% Ni with an electron density no greater than 8.00.

4,238,230

PROCESS FOR PRODUCING FREE-MACHINING STEEL

John H. Bucher; Eugene J. Paliwoda, both of Bethel Park, Pa., and Frank E. Rote, Bay Village, Ohio, assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Sep. 28, 1978, Ser. No. 946,698
Int. Cl.³ B22D *11/00*
U.S. Cl. 75—123 G **6 Claims**



1. A process for producing a free-machining, high sulfur steel alloy consisting of up to 0.09% carbon, 1.05–1.35% manganese, 0.40–0.65% sulfur, 0.04–0.09% phosphorus, 0.001–0.012% nitrogen, up to 0.05% silicon, 0.001–0.010% aluminum, and the balance substantially all iron with incidental impurities by continuous casting wherein the alloy is characterized by having a microstructure containing a uniform distribution of small manganese sulfide particles, the particles being smaller in size than those appearing in the microstructure of a sulfur-containing alloy produced by casting free-machining steel into ingots followed by subsequent rolling which comprises the steps of:
(a) pouring the molten alloy having the desired chemical composition from a ladle into the tundish of a continuous casting machine;
(b) introducing the molten alloy continuously from the tundish into the continuous casting machine mold having a desired cross section to form an elongated metal body;
(c) continuously protecting the casting stream from the atmosphere to prevent reoxidation leading to pinholes and oxide inclusions;
(d) cooling the elongated metal body so as to solidify the metal body; and
(e) continuously withdrawing the cooled metal body from the continuous casting machine.

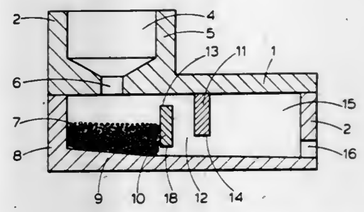
4. A free-machining, high sulfur, low carbon, rephosphorized steel alloy characterized in having a microstructure containing a uniform distribution of small manganese sulfide particles and consisting of no more than 0.09% carbon, 1.05–1.35% manganese, 0.40–0.65% sulfur, 0.04–0.09% phosphorus, 0.001–0.012% nitrogen, no more than 0.05% silicon, 0.001–0.010% aluminum, and the balance substantially all iron with incidental impurities as is produced by the process of:
(a) pouring the molten alloy having the desired chemical composition from a ladle into the tundish of a continuous casting machine;
(b) introducing the molten alloy continuously from the tundish into the continuous casting machine mold having a desired cross section;
(c) feeding aluminum into the mold to dissolve in the molten alloy to minimize pinholes and oxide inclusions;
(d) continuously protecting the casting stream from the atmosphere to prevent reoxidation leading to pinholes and oxide inclusions;
(e) cooling the elongated metal body so as to solidify the metal body; and
(f) continuously withdrawing the cooled metal body from the continuous casting machine.

4,238,231

APPARATUS FOR TREATMENT OF MOLTEN METAL

Clifford M. Dunks, East Grinstead, and Timothy Castledine, Ripley, both of England, assignors to Materials and Methods Limited, Surrey, England

Filed May 24, 1979, Ser. No. 42,087
Claims priority, application United Kingdom, May 30, 1978, 23798/78
Int. Cl.³ C22C *33/08*
U.S. Cl. 75—130 R **6 Claims**



1. An apparatus for the treatment of molten metal with a reactive additive comprising a reaction chamber and a pouring

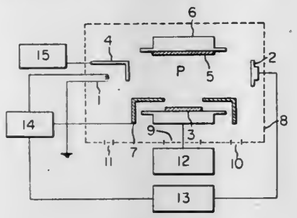
cup means, the pouring cup means having an outlet means communicating with the reaction chamber for introducing reactive additive and molten metal into the reaction chamber, an expansion chamber communicating via a channel with the reaction chamber and provided with an outlet for molten metal wherein the cross-sectional area of the outlet from the expansion chamber is less than the cross-sectional area of the outlet of the pouring cup means such that molten metal flows through the reaction chamber at a rate which ensures that the reaction chamber is filled to an extent sufficient to cover any reactive additive contained therein.

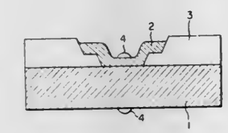
4,238,232

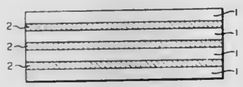
METALLIC MODIFIED MATERIAL OF INTERMETALLIC COMPOUND

Shigeru Minomura, 2-10-6, Sukura, Setagaya-ku, Tokyo 156, Japan

Continuation of Ser. No. 886,581, Mar. 14, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,464
Claims priority, application Japan, Mar. 14, 1977, 52-27095
Int. Cl.³ C01C *15/00*
U.S. Cl. 75—134 T **1 Claim**







1. A metallic modified material of InSb or alloys thereof with a rocksalt-type structure, which has the same chemical composition as an intermetallic compound semiconductor with a zincblende-type structure, which is stable at a temperature of up to 215° C. under a pressure of up to 80 Kbar, and which shows no change of structure at room temperature under the various pressures as shown in FIG. 7.

4,238,233

ALUMINUM ALLOY FOR CLADDING EXCELLENT IN SACRIFICIAL ANODE PROPERTY AND EROSION-CORROSION RESISTANCE

Kazuo Yamada, Mishima; Koji Mikami, and Shigetake Imaizumi, both of Susono, all of Japan, assignors to Mitsubishi Aluminum Kabushiki Kaisha, Ohtemachi, Japan

Filed Apr. 19, 1979, Ser. No. 31,958
Int. Cl.³ C22C *21/10*
U.S. Cl. 75—146 **1 Claim**

1. An aluminum alloy for cladding excellent in sacrificial anode property and erosion-corrosion resistance, which consists essentially of, in weight percentage:
zinc: from 0.3 to 3.0%,
magnesium: from 0.2 to 2.5%,
manganese: from 0.3 to 2.0%,
at least one element from the group consisting of tin and bismuth each in an amount from 0.01 to 0.3% provided that the total content of tin and bismuth does not exceed 0.3% and,
the balance aluminum and incidental impurities.

4,238,234

PRINTING INKS CONTAINING A POLYETHER AMINE FIXING AGENT

Theodor Lang, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 27, 1979, Ser. No. 79,452
Claims priority, application Switzerland, Oct. 3, 1978, 10252/78
Int. Cl.³ C09D *11/10*
U.S. Cl. 106—22 **19 Claims**

1. An aqueous printing ink comprising a colouring material selected from an anionic dyestuff, a pigment or mixtures thereof and a cationic fixing agent based on a water soluble, high molecular weight, cross-linked polyether amine.

4,238,235

PROCESS FOR STABILIZING HYDRAULIC BINDING AGENT AND BRIQUETTES PREPARED THEREFROM

Gerrit Van der Wiele, Beukstraat 135, The Hague, Netherlands

Filed Sep. 19, 1978, Ser. No. 943,911
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—89 **2 Claims**

1. A compressed article of cement comprising particles of a powdered cement binding agent which are coated and pressed together with a 1 to 5% of a saturated solution of hydrated calcium sulphate which delays deterioration by moisture carbon dioxide or the like.

4,238,236

RAPIDLY COLD WEATHER SETTING/HARDENING MORTARS AND CONCRETES COMPRISED OF HYDRAULIC BINDERS

Pierre Falcoz, Champagne au Mont D'or; Raymond Filhol, Lyons, and Jean-Nöel Communal, Villeurbanne, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 20, 1979, Ser. No. 31,999
Claims priority, application France, Dec. 5, 1978, 78 35137
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—90 **25 Claims**

1. In a process for the formulation of mortars and concretes from hydraulic binders, adapted for more rapid setting and hardening and including the admixture of hydraulic binder, aggregates and water, the improvement which comprises including in said mix:
(a) a water-soluble dispersant/water-reducing agent;
(b) an inorganic basic agent selected from the group comprising the hydroxides of alkali metals other than lithium, alkaline earth metal hydroxides and the mixtures of one of such hydroxides with lithium hydroxide; and
(c) a water-soluble salt of an inorganic oxyacid or an aliphatic or aromatic carboxylic acid, said acid having an ionization constant pKa of less than 2.5 in water at 25° C.

4,238,237

MANUFACTURE OF CEMENT BY INTERGRINDING CARBONACEOUS FUEL

Robert P. Jarrett, St. John, and Stewart W. Tresouthick, Munster, both of Ind., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1980, Ser. No. 113,418
Int. Cl.³ C04B *7/36*
U.S. Cl. 106—100 **14 Claims**

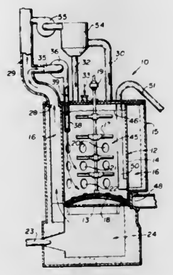
1. A continuous method of manufacturing Portland cement clinker comprising:
(1) forming an intimate mixture by intergrinding (a) unsintered Portland cement raw materials and (b) a low volatile carbonaceous fuel having a high ignition temperature,
(2) passing said intimate mixture through a set of preheating cyclones wherein said intimate mixture is preheated prior to passing into a calcining zone, and
(3) passing said preheated intimate mixture into said calcining zone wherein said intimate mixture (a) is maintained in a substantial fluidized condition, and (b) is heated rapidly up to a calcination temperature of from about 1000° to about 2000° F. to accomplish calcination of said Portland cement raw material in said calcining zone and to accomplish the ignition of said carbonaceous fuel such that the heating in said calcining zone is effected at least in part by combustion of said carbonaceous fuel within said calcining zone, said calcination temperature being below the temperature of insipient fusion of said Portland cement raw materials to effect thermal decomposition of calcium carbonate with evolution of carbon dioxide.

4,238,238

CALCINING KETTLE HAVING MEANS FOR RETURNING STACK EXHAUST GAS TO CALCINING MIXTURE

William A. Kinkade, Lisle, and Robert E. McCleary, Geneva, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Aug. 15, 1979, Ser. No. 66,729
Int. Cl.³ C04B *11/00*
U.S. Cl. 106—110 **11 Claims**



11. A method for calcining calcium sulfate dihydrate to produce calcium sulfate hemi-hydrate, which comprises heating said calcium sulfate dihydrate in a calcining mixture contained in a calcining kettle by passing heated combustion gas around said kettle and not in direct contact with the calcining mixture, removing the hot combustion gas from the combustion chamber surrounding said kettle, and recirculating a substantial proportion of the combustion gas removed thereby and discharging said combustion gas directly into the calcining mixture at a distance below the surface of said calcining mixture sufficient to enable adequate heat transfer to the calcining mixture, but at a level whereby the pressure exerted by the weight of said calcining mixture is less than that of the pressure at which the gas is discharged into the calcining mixture.

4,238,239

DRY WALL JOINT AND FINISHING COMPOUNDS

William F. Brown, Wausau, Wis., assignor to Weston Research, Corporation, Rothschild, Wis.

Filed Oct. 25, 1978, Ser. No. 954,445
Int. Cl.³ C04B *11/14*
U.S. Cl. 106—116 **6 Claims**

1. A method for preparing a joint cement which can be applied to completely fill the joint between adjoining panels of dry wall board without a tape material comprising the steps of admixing a sufficient quantity of (a) a liquid additive composition comprising an aqueous mixture containing about 0.35 to about 8 weight % zinc oxide, about 0.35 to about 1.5 weight % sodium acetate, about 0.35 to about 3 weight % ammonium alum, and about 0.35 to about 8 weight % of an acrylic resin, all based on the total weight of the aqueous mixture, with (b) a wall board joint compound comprising a powdered mixture of about 27 to about 41 weight % gypsum, about 24 to about 38 weight % hydrated gypsum, about 16 to about 26 weight % calcium carbonate, about 5 to about 9 weight % plaster of paris, about 4 to about 6 weight % hydrated amorphous silica, and about 1 to about 3 weight % talc to provide a spreadable product.

4,238,240

METHOD OF AND STRUCTURE FOR FORMING A REACTION PRODUCT SUCH AS CALCIUM SILICATE AND THE RESULTING STRUCTURE

Pieter Krijgsman, P.O. Box 68, 8050AB Hattem, Netherlands

Filed Feb. 16, 1979, Ser. No. 12,886
Claims priority, application Netherlands, Sep. 21, 1978, 7809621
Int. Cl.³ C04B *13/10*
U.S. Cl. 106—120 **31 Claims**

1. The method of forming a reaction product comprising the steps of:
mixing the reaction constituents in an autoclave;
reacting the reaction constituents for a selected time to form reaction products; and
transferring, at the end of said selected time, the reaction products from said autoclave to another vessel connected by a flow passage to said autoclave, while maintaining the pressure in said vessel in a controlled manner beneath the pressure in said autoclave during the transfer of the reaction products from said autoclave to said vessel.

4,238,241

ACIDIC ASPHALTIC COMPOSITION AND METHOD

Gordon L. Schneider, 4236 Cottage Cir. #3, Las Vegas, Nev. 89109

Continuation-in-part of Ser. No. 878,232, Feb. 16, 1978, abandoned, which is a continuation of Ser. No. 656,957, Feb. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 489,472, Jul. 18, 1974, abandoned. This application Jul. 12, 1978, Ser. No. 923,799
Int. Cl.³ C08L *95/00*; C09C *3/00*; E01C *7/24, 7/26*
U.S. Cl. 106—281 R **30 Claims**

1. A treated aggregate composition comprising an aggregate of stone and finely divided particles; water in an amount of at least 1000 gallons per 100 tons of aggregate and a sulfonic acid source selected from the group consisting of sulfuric acid sludge, spent sulfuric sludge, and spent sulfuric acid in an amount such that the pH of the composition is less than 3.5.

11. A method of coating aggregate with asphalt to form an asphaltic concrete composition comprising
contacting an aggregate of stone and finely divided particles with water in an amount of at least 1,000 gallons of water per 100 tons of aggregate,
combining a sulfonic acid source selected from the group consisting of sulfuric acid sludge, spent sulfuric sludge, and spent sulfuric acid with said water to form a mixture of aggregate in an acid-water solution, said mixture having a pH less than 3.5, and

combining asphalt with said aggregate in an amount sufficient to substantially completely coat said aggregate.

4,238,242

LIGHTWEIGHT AGGREGATES, INTERMEDIATE AGGREGATES, AND PROCESS OF MANUFACTURING SAME

Jae H. Park, 5-171, Hyochang-Dong, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 709,823, Jul. 29, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,557

Int. Cl.[3] **C04B** *31/02, 31/44*

U.S. Cl. 106—288 B **12 Claims**

1. Lightweight aggregate for producing lightweight construction material, the aggregate consisting essentially of lightweight aggregate intermediates and an outer layer of cured cement mortar, the intermediates comprising expanded plastic cores having adhered thereto an adhesive mixture layer consisting essentially of 60 to 99% viscous soil by weight, 0 to 20% Portland cement by weight, 0 to 6% sand by weight, 0 to 10% calcium hydroxide by weight and 0 to 4% sodium silicate by weight together with an appropriate quantity of water, and the outer layer of cured cement mortar having a cement/sand ratio of 1:1 to 1:6 by volume, said aggregate having air entrained in the interior thereof, whereby the aggregate has flexible elasticity and heat-insulating properties.

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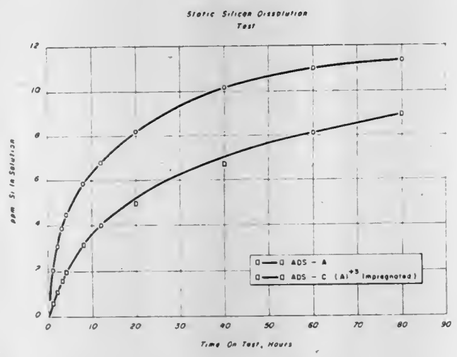
TECHNIQUE TO REDUCE THE ZEOLITE MOLECULAR SIEVE SOLUBILITY IN AN AQUEOUS SYSTEM

Hosheng Tu, Shorewood, and Juana E. Rojo, La Grange, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 29, 1979, Ser. No. 43,526

Int. Cl.[3] **C13K** *3/00;* **C13D** *3/12;* **C13K** *11/00, 3/00*

U.S. Cl. 127—46 B **11 Claims**



1. In a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components by contacting said solution with an adsorbent comprising a crystalline aluminosilicate exhibiting an adsorptive selectivity towards said component, thereby selectively adsorbing said component from said mixture, and thereafter recovering said adsorbed component, the silicon constituent of said crystalline aluminosilicate tending to dissolve in said solution resulting in the undesirable disintegration of said crystalline aluminosilicate, the improvement which comprises the impregnation of said crystalline aluminosilicate, prior to said contacting with said aqueous solution, with aluminum cations, thereby effecting a chemical reaction between said crystalline aluminosilicate and said aluminum cations which substantially reduces the extent of dissolution of said silicon constituent and the extent of said disintegration of said crystalline aluminosilicate.

4,238,244

METHOD OF REMOVING DEPOSITS FROM SURFACES WITH A GAS AGITATED CLEANING LIQUID

William P. Banks, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 10, 1978, Ser. No. 950,192

Int. Cl.[3] **B08B** *3/10, 9/00*

U.S. Cl. 134—22 R **2 Claims**

1. In the method of removing deposits of corrosion products and scale from the interior surfaces of heat transfer equipment comprising contacting said deposits with a liquid composition capable of removing said deposits under appropriate contact conditions of pH, temperature, concentration and pressure for a period of time sufficient to remove said deposits, the improvement which consists essentially of:

(a) forming a liquid mixture by combining with said liquid composition by dissolution therein at a super-atmospheric pressure a chemical which is a gas at atmospheric conditions and which produces a gas in said liquid composition at a reduced pressure level at said appropriate contact conditions;

(b) contacting said deposits with said liquid mixture for a period of time at said super-atmospheric pressure whereby at least a portion of said chemical dissolved in said liquid composition remains in solution followed by a period of time at said reduced pressure level at said appropriate contact conditions whereby at least a portion of said chemical produces said gas which is liberated from solution and forms bubbles which agitate said liquid composition to thereby improve said contacting of said deposits by said liquid composition;

(c) raising the pressure exerted on said liquid mixture to said super-atmospheric pressure whereby said chemical is placed back into solution; and

(d) repeating said steps (b) and (c) whereby said chemical is repeatedly liberated from solution and placed back into solution.

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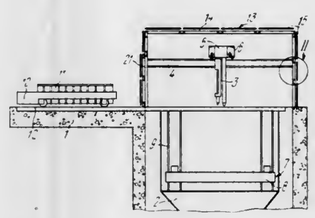
INSTALLATION FOR ELECTROHYDROBLASTING OF CASTINGS

Alexandr G. Kachkarov, prospekt Mira, 21b, kv. 45, and Valery V. Prikhodko, ulitsa Chaikovskogo, 6a, kv. 54, both of Nikolaev, U.S.S.R.

Filed May 11, 1979, Ser. No. 38,108

Int. Cl.[3] **B08B** *3/10*

U.S. Cl. 134—133 **8 Claims**



1. In an improved installation for electrohydroblasting of castings having a base; a bath mounted on said base; a mechanism for feeding castings into the bath including a lift platform located near the bath; an electrode located over said bath; a mechanism mounted on a trestle for transporting and introducing said electrode into said bath; and a pulse current generator coupled electrically with said electrode; said improvement comprising: a noise-insulated casing having a substantially closed profile, including a space lattice framework having rows of openings, mounted on said base over said bath and enclosing the bath, the trestle and electrode, and the mechanisms for feeding castings and for transporting and introducing the electrode into the bath; a plurality of grounded slabs each formed with two metallic boxes, each having a bottom and sides, inserted one into another in a manner that the ends of the sides of one box face a bottom of the other box, with the space between the bottoms filled with a vibration-absorbing material, and being capable of guarding service personnel against a pulse magnetic field and of withstanding considerable dynamic alternating loads, and the openings in said space lattice framework receiving and retaining in place said slabs; whereby both the harmful effects of vibration noise and the pulse magnetic field are substantially avoided with the use of said framework and said grounded slabs.

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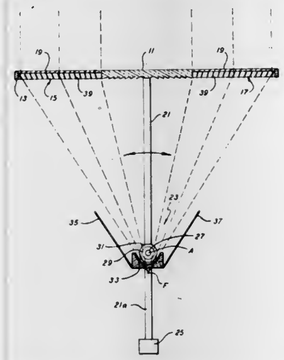
SOLAR ENERGY SYSTEM WITH COMPOSITE CONCENTRATING LENSES

Pierre Genequand, Geneva, Switzerland, and Virgil Stark, New York, N.Y., assignors to North American Utility Construction Corp., New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 44,902

Int. Cl.[3] **H01L** *3/04;* **F24J** *3/02*

U.S. Cl. 136—248 **10 Claims**



1. A concentrating lens arrangement for collecting and focusing solar energy comprising:

a linear Fresnel lens having a width limited so that the transmission efficiency thereof does not drop below approximately 85% at its edges;

first and second slide assemblies disposed adjacent the two longitudinal edges of said Fresnel lens, each of said slide assemblies comprising a plurality of slats having thereon a reflective surface, tilted at an angle such as to reflect incident solar energy to the same focal point as the focus of said Fresnel lens; and

a frame for holding said Fresnel lens and slide assemblies together.

6. The arrangement according to claim 1, in combination with a conduit system for collecting solar energy in the form of thermal energy and further including:

(a) support means for supporting said arrangement over said conduit system so as to be rotatable about the axis of said conduit; and

(b) a counterweight for balancing the weight of said arrangement, whereby said arrangement may be rotated about the axis of said conduit system to track the movement of the sun from East to West.

9. An arrangement according to claim 6, wherein said conduit system includes transparent concentric tubes and further including an array of photovoltaic cells disposed within the innermost tube of said conduit and at least one fluid flowing between the innermost conduit and an outer conduit, whereby said fluid will absorb infrared radiation while passing radiation of a wavelength which will activate said photovoltaic cells to produce electricity.

4,238,247

STRUCTURE FOR CONVERSION OF SOLAR RADIATION TO ELECTRICITY AND HEAT

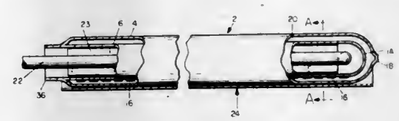
Eugene A. Oster, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 917,123, Jun. 19, 1978, Pat. No. 4,184,895. This application Nov. 5, 1979, Ser. No. 91,628

The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.

Int. Cl.[3] **H01L** *31/04*

U.S. Cl. 136—246 **6 Claims**



1. A method which comprises passing solar radiation into the walls of a tubular luminescent solar collector and concentrator means having at least one photovoltaic conversion means optically coupled to the outer surface thereof and converting a portion of the luminescent radiation produced by said luminescent solar collector and concentrator means directly to electricity, and recovering thermal energy by transferring heat by conduction to a heat recovery fluid passed in heat exchange relationship with the interior surface of said tube, which fluid has a low refractive index relative to said tube.

3. A luminescent photovoltaic device comprising a curvilinear tubular luminescent member having a plurality of sides and having one open end and one closed end, at least one photovoltaic means on the outer side of said tubular member, and conduit means in heat exchange relationship with the inner side of said tubular member, said conduit means being adapted to have a cooling fluid passed therethrough to cool said luminescent member.

4,238,248

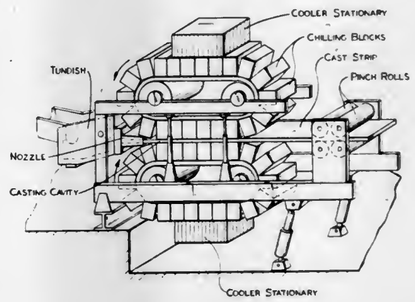
PROCESS FOR PREPARING LOW EARING ALUMINUM ALLOY STRIP ON STRIP CASTING MACHINE

Ivan Gyöngyös, Männedorf; Kurt Buxmann; Martin Bolliger, both of Sierre; Willi Kerth, Flurlingen, and Kurt Neufeld, Zürich, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 4, 1978, Ser. No. 931,037

Int. Cl.[3] **C22F** *1/04*

U.S. Cl. 148—2 **30 Claims**



1. A multi-stepped process for fabricating high strength, improved formability, low earing aluminum strip stock from an aluminum melt comprising:

(A) continuously casting said aluminum melt in strip form;

(B) holding said casting strip at casting speed after the start of solidification at a temperature between 400° C. and the liquidus temperature of the alloy for about 2 to 15 minutes

prior to hot rolling so as to obtain a preferred dendritic arm spacing;

(C) continuously hot rolling the cast strip at casting speed at a temperature range between 300° C. and the non-equilibrium solidus temperature of the alloy to a total reduction of at least 70%; and

(D) hot coiling said hot rolled strip wherein said coiled strip is allowed to cool in air to room temperature prior to further working.

4,238,249

PROCESS FOR THE PREPARATION OF A COPPER-ZINC MATERIAL

Peter Ruchel, Lauf, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,379

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758822

Int. Cl.³ C22F *1/08*

U.S. Cl. 148—2 **13 Claims**

1. A process for the preparation of a copper-zinc material having a small grain size, comprising the steps of:

(a) initially casting an alloy having a theoretical copper content of 61 to 65% by weight, with the remainder being zinc and common impurities;

(b) subjecting said alloy to an α stabilizing annealing at a temperature of between 450° and 700° C. and for an annealing period of between 15 minutes and 100 hours to totally dissolve all of the β phase;

(c) cold working said alloy through a process facilitating the application of high degrees of cold working in one or a few operative steps with a degree of deformation of at least 70%; and

(d) subjecting said alloy to a heat treatment at temperatures of between 200° and 350° C. and for an annealing period of between 1 minute and 500 hours so as to lead to β_1 precipitation and recrystallization whereby the copper-zinc material evidences a structure in which the recrystallized phases $\alpha$and β_1 are primarily present as a fine mixture in which the component of the β_1 phase consists of 10 to 50% and all of this phase is arranged in the form of a superfine distribution of discrete particles in the grain boundaries of the α phase.

4,238,250

PROCESS FOR DYEING ZINC AND ZINC ALLOYS

Nobuyoshi Kasahara, Sayama, and Koutarou Nonomura, Kunitachi, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,324

Claims priority, application Japan, May 4, 1978, 53/52807

Int. Cl.³ C23F *7/26, 5/04*

U.S. Cl. 148—6.1 **6 Claims**

1. A process for chemically coloring zinc or zinc alloy in multi-color, which comprises the steps of (1) dyeing with a dyestuff zinc or zinc alloy having a dyeable chromate film bonded thereonto, (2) polishing locally the dyed surface to expose the surface of zinc or zinc alloy, (3) making the chromate film on the exposed surface, (4) dyeing with another dyestuff having a different color the chromate film on the exposed surface, and then the steps (2), (3) and (4) may successively be repeated.

4,238,251

ZIRCONIUM ALLOY HEAT TREATMENT PROCESS AND PRODUCT

Cedric D. Williams, Wilmington, N.C.; Andrew W. Urquhart, Scotia; James L. Walker, Schenectady, both of N.Y.; Richard A. Proebstle, and Timothy J. Black, both of San Jose, Calif., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 552,794, Feb. 25, 1975, abandoned.

This application Nov. 18, 1977, Ser. No. 852,906

Int. Cl.² C21D *1/00*

U.S. Cl. 148—133 **6 Claims**

1. As an article of manufacture, a zirconium-base alloy structural component produced by the method including, in addition to hot and cold working and annealing steps, the steps of heating said structural component to 825° C. to 1100° C., maintaining said structural component at said temperature for at least about 3 seconds to initiate alpha to beta transformation, cooling said structural component to about 700° C. at a rate of at least about 20° C. per second to precipitate intermetallic phase material dissolved during the heating step in two dimensional arrays in an amount effective to at least double the corrosion-limited lifetime of said structural component and retaining substantially all said two dimensional arrays during any subsequent processing steps executed through and including installing said structural component in a boiling water reactor.

4. In the method of producing a boiling water reactor structural component of a zirconium-base alloy including hot and cold working and annealing steps comprising a fabrication schedule, the combination of the steps of heating the structural component to 825° C. to 1100° C., maintaining the structural component at said temperature for at least about 3 seconds to initiate alpha to beta transformation, cooling the structural component to about 700° C. at a rate of at least about 20° C. per second to precipitate intermetallic phase material dissolved during the heating step in two dimensional arrays in an amount effective to at least double the corrosion-limited lifetime of said structural component and retaining substantially all said two dimensional arrays during any subsequent processing steps executed through and including installing said structural component in a boiling water reactor.

4,238,252

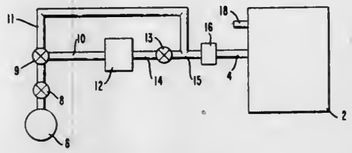
PROCESS FOR GROWING INDIUM PHOSPHIDE OF CONTROLLED PURITY

G. Sanjiv Kamath, Malibu, and Douglas E. Holmes, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 11, 1979, Ser. No. 56,495

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 **11 Claims**



1. A process for controlling the conductivity of a selected Group III-V semiconductor material as said material is grown in monocrystalline form, which includes the steps of:

(a) exposing said material to a source of silicon atoms;

(b) passing a gaseous mixture including hydrogen and water vapor over said material; and

(c) controlling the percentage of water vapor in said mixture, whereby the concentration of silicon impurities in said material is suppressed in proportion to the water vapor content in said mixture and thereby permits a corresponding control over the silicon-impurity-dependent-conductivity of said material.

4,238,253

STARCH AS FUEL IN GAS GENERATING COMPOSITIONS

Eugene F. Garner, Canyon Country, Calif., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 15, 1978, Ser. No. 905,829

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.6 **7 Claims**

1. A pyrotechnic composition for use in providing a generating gas to inflate an inflatable device, said composition comprising:

(a) about 45 to 50 weight percent of an inorganic oxidizer;

(b) about 8 to 13 weight percent of starch having a particle size of about 4 to 30 microns;

(c) about 35 to 45 weight percent of a coolant selected from the group consisting of calcium hydroxide, magnesium chloride, calcium carbonate and magnesium carbonate;

(d) about 1 to 2 weight percent of an oxygen-containing polymeric compound selected from the group consisting of polyacetal resins and polyvinyl acetate resins; and

(e) about 0 to 1 weight percent of carbon black.

4,238,254

PYROTECHNIC SMOKE CHARGE CONTAINING GUANIDINE NITRATE

Georg Prähauser, Oberalm, Austria, and Alois Schiessl, Marzoll, Fed. Rep. of Germany, assignors to Buck Chemisch-Technische Werke GmbH & Co., Reichenhall, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,423

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819850

Int. Cl.³ C06B *39/00*

U.S. Cl. 149—29 **12 Claims**

1. A pyrotechnic smoke charge which comprises guanidine nitrate and

(a) chlorohydrocarbons and a metal powder or

(b) red phosphorus, which can be partially replaced by a chlorohydrocarbon, and wherein said charge may optionally contain a small amount of a reaction regulating agent.

4,238,255

USE OF EITHER REGULAR OR LOW-CALCIUM HETEROPOLYSACCHARIDE S-7 IN EXPLOSIVES AND COMPOSITIONS THEREBY PRODUCED

Ralph Moorhouse, Carlsbad, and Jaewon L. Shim, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 29, 1979, Ser. No. 24,923

Int. Cl.³ C06B *31/30*

U.S. Cl. 149—60 **6 Claims**

1. An aqueous explosive composition containing as thickening agent, from 0.1 to 10% (w/w) heteropolysaccharide S-7 in either regular or low-calcium form.

4,238,256

DEVICE AND METHOD FOR APPLYING FLEXIBLE BAILS TO CONTAINERS

Michael C. Faust, North St. Paul, and Richard A. Patterson, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 4, 1979, Ser. No. 926

Int. Cl.² E06B *9/26*

U.S. Cl. 156—65 **6 Claims**

1. A device for applying flexible bails to containers being moved in a predetermined spaced relationship by a conveyor, said device comprising:

Means for defining generally parallel paths for two lengths of pressure-sensitive adhesive-coated tape first along first path portions spaced from said conveyor, and then along second path portions with the adhesive coatings on said tapes closely adjacent the opposite sides of the containers and adhered to the containers along a part of the second path portions so that movement of the containers via the conveyor will pull the tapes along their paths;

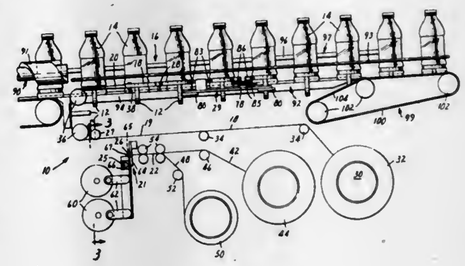
Means along said first path portions for forming elongate bails of a flexible strip material, said bails having opposite end portions coated with a pressure-sensitive adhesive on one surface;

Means for pressing the surfaces of the end portions opposite said adhesive coatings into engagement with the adhesive coatings on the tapes as the tapes move along said path, and for positioning said bails in predetermined spaced relationships along said tapes to position the end portions of said bails on opposite sides of containers being moved by said conveyor;

Means along said second path portions for pressing the end portions of said bails into engagement with said containers; and

Means for severing said tapes between said containers along said conveyor, and for pressing the severed portions of said tapes into engagement with said containers.

4. A method for applying flexible bails to containers being moved in a predetermined spaced relationship by a conveyor, said method comprising the steps of



defining generally parallel paths for two lengths of pressure-sensitive adhesive-coated tape along first path portions spaced from the conveyor, and then along second path portions with the adhesive coatings on the tapes closely adjacent the opposite sides of the containers and adhered to the containers along a part of the second path portions so that movement of the containers via the conveyor will pull the tapes along their paths;

forming elongate bails of a flexible strip material, the bails having opposite end portions coated with a pressure-sensitive adhesive on one surface;

pressing the surfaces of the end portions opposite their adhesive coatings into engagement with the adhesive coatings on the tapes as the tapes move along the first portion of said path, while positioning said bails in predetermined spaced relationships along the tapes so that the end portions of the bails will be positioned on opposite sides of containers being moved by said conveyor;

pressing the end portions of the bails into engagement with the containers;

severing the tapes between the containers along the conveyor; and

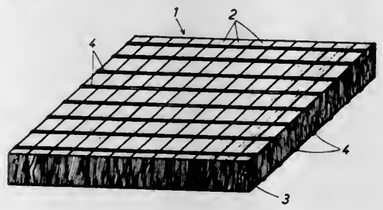
pressing the severed portions of the tapes into engagement with the containers.

4,238,257

INSULATING SLAB OF REFRACTORY FIBRES

Jean-Pierre Remi, and Guy Gehin, both of Bron, France, assignors to Societe Europenne des Produits Refractaires, Neuilly-Sur-Seine, France

Filed Sep. 18, 1978, Ser. No. 943,462
Claims priority, application France, Sep. 19, 1977, 77 28160
Int. Cl.³ B32B *5/12, 3/12;* **E04B** *2/00;* **C04B** *33/34*
U.S. Cl. 156—71 **7 Claims**



1. A heat-insulating refractory slab comprising a plurality of continuous strips disposed in contacting side-by-side relationship, each said strip comprising entangled refractory fibres, a major portion of said fibres being perpendicular to opposing surfaces of the slab, a plurality of ribbons of an organic synthetic adhesive material being provided for exclusively maintaining said strips in said side-by-side relationship, said ribbons being adhered to said strips and being applied to said opposing surfaces perpendicularly to said strips.

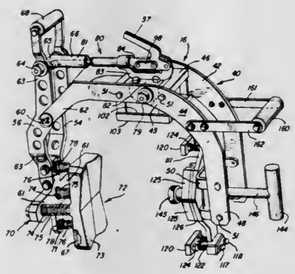
5. A method of securing a slab to a solid surface to be heat-insulated, said slab comprising a plurality of continuous strips disposed in contacting side-by-side relationship, each said strip comprising entangled refractory fibres, a major portion of said fibres being perpendicular to opposing surfaces of the slab, a plurality of ribbons of an organic synthetic adhesive material being provided for exclusively maintaining said strips in said side-by-side relationship, said ribbons being adhered to said strips and being applied to said opposing surfaces perpendicularly to said strips, the method including the steps of coating one of said opposing surfaces of said slab with a refractory cement, coating said solid surface with said refractory cement, and applying said one surface against said solid surface to be insulated.

4,238,258

ELONGATE MATERIAL SPREADING AND TACKING APPARATUS AND METHOD

Michael H. Kraps, Edwards, and Samuel B. Stevens, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00449, § 371 Date Jun. 26, 1979, § 102(e) Date Jun. 26, 1979
This PCT application Filed Jun. 26, 1979, Ser. No. 89,121
Int. Cl.³ B29H *15/00*
U.S. Cl. 156—120 **19 Claims**



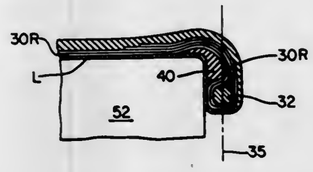
15. A method of tacking a plurality of strands of elongate material (32) to a tire carcass (15) around a core opening (20) in said carcass (15), applying heat to said elongate material (32) and carcass (15) on either peripheral side of said core opening (20) to initially tack said elongate material (32) to said carcass (15), spreading the elongate material (32) lying over said core opening (20), and applying heat to said elongate material (32) and carcass (15) circumferentially adjacent said core opening (20) to tack said spread elongate material (32) to said carcass (15).

4,238,259

FOLDABLE SPARE TIRE

Michael L. Gill, Akron, and William M. Hopkins, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 869,883, Jan. 16, 1978, Pat. No. 4,177,851, which is a continuation of Ser. No. 666,852, Mar. 15, 1976, abandoned. This application May 21, 1979, Ser. No. 40,797
Int. Cl.³ B29H *17/22;* **B60C** *15/00*
U.S. Cl. 156—131 **5 Claims**



1. The method of building a foldable tire having a diameter at the tread centerline materially smaller when deflated for stowage than when inflated for use, the method comprising disposing at least one reinforcing cord ply in cylindrical form about a building drum, positioning a pair of tire bead cores coaxially of the drum and with their respective mid-planes normal to the axis of the building drum, displacing bead-receiving portions of the cord ply radially outwardly relative to the ply endings axially outward of the bead-receiving portions, moving the bead cores respectively axially to engage the associated bead-receiving portions such that each said bead-receiving portion is conformed about the associated bead core and such that said portion departs axially and radially outwardly of the bead core from its conformity therewith only at or beyond its mid-plane, and then turning the ply endings about the respectively associated bead cores and maintaining said conformity while molding and curing the tire.

4,238,260

METHOD OF MAKING AN ELASTOMERIC HOSE

Donald E. Washkewicz, Bedford Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 13, 1978, Ser. No. 960,376
Int. Cl.³ B29D *23/05*
U.S. Cl. 156—149 **8 Claims**



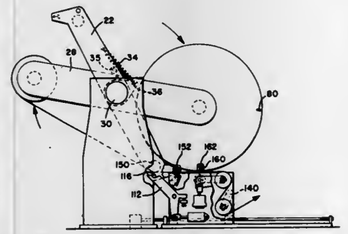
1. A method for producing a hose comprising the sequential steps of forming a hollow elongated inner core of thermosetting elastomeric material which is vulcanizable at a given temperature, said forming being accomplished so that the entire core is substantially uncured, applying strands of reinforcing material to the outer peripheral surface of said entirely uncured core, encapsulating said reinforcing material and uncured core with a thermoplastic elastomeric cover having a melting temperature higher than said given vulcanizing temperature, and thereafter maintaining said core and reinforcing material and cover at a temperature below said melting temperature and no less than said given vulcanization temperature for a time period sufficient to vulcanize said entire core while maintaining the outer peripheral surface of said cover free of any adjacent solid confinement structure, said thermoplastic elastomer having sufficient tensile strength at said maintained temperature and having a coefficient of thermal expansion less than that of the thermosetting elastomeric material whereby said cover restrains free radial expansion of said core and reinforcement during said vulcanization of said core.

4,238,261

METHOD FOR FORMING A ZERO TAIL LENGTH SPLICE IN A MOVING WEB

Richard S. Tetro, Fulton, N.Y., assignor to The Black Clawson Company, Fulton, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,879
Int. Cl.³ B31F *5/06;* **B65H** *19/16, 19/18, 19/20*
U.S. Cl. 156—157 **6 Claims**



1. A method of joining a leading edge of a new roll of web material onto a moving web from an expiring roll of web material, the steps comprising:
placing a mark on said new roll of web at a location along the outer circumference a predetermined circumferential distance from said leading edge;
securing a splicing strip to said leading edge with an adhesive portion extending beyond said leading edge so as to be engagable with said moving web;
releasably securing said splicing strip and said leading edge to the surface of said new roll;
positioning said new roll immediately adjacent said moving web so that said leading edge and splicing strip when unwound will move in the direction of movement of said moving web;
rotating said new roll of web so that the surface speed thereof is substantially the same as said moving web;
sensing the passing of said mark at a fixed location around the circumference of said new roll of web so as to locate the position of said leading edge relative to the point of closest proximity of said new roll of web and said moving web;
forcing said moving web at said point of closest proximity into engagement with said new roll of web a sufficient time after said sensing of said mark to allow said leading edge to pass said point of closest proximity;
securing a web cutting blade to a rotatable shaft driven by a motor;
initiating movement of said web cutting blade towards said moving web by rotating said shaft upon sensing the passing of said mark at said fixed location;
continuously monitoring the angular position of said shaft;
continuously monitoring web speed;
correlating said web speed with said angular position of said shaft;
continuously adjusting the speed of rotation of said shaft in response to change of said web speed so that said blade contacts said web at substantially web speed and severs said web at a predetermined distance from said point of closest proximity when said leading edge is substantially the same or greater circumferential distance from said point of closest proximity; and
pressing said adhesive portion of said splicing strip into engagement with the cut trailing edge of said moving web by a pressing means at said point of closest proximity.

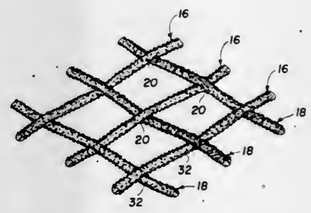
4. A method of joining a leading edge of a new roll of web material onto a moving web from an expiring roll of web material, the steps comprising:
placing a mark on said new roll of web at a location along the outer circumference a predetermined circumferential distance from said leading edge;
securing a splicing strip to said leading edge with an adhesive portion extending beyond said leading edge so as to be engagable with said moving web;
releasably securing said splicing strip and said leading edge to the surface of said new roll;
carrying said new roll and said expiring roll on an indexing head rotatable about an axis transverse to the plane of said web, said indexing head further carrying an anvil associated with each said roll;
rotating said indexing head until said new roll is disposed adjacent said web so that said leading edge and splicing strip when unwound will move in the direction of movement of said moving web, and said anvil associated therewith is disposed on the opposite side of said web and in registry with a web cutting blade for severing said web;
rotating said new roll of web so that the surface speed thereof is substantially the same as said moving web;
sensing the passing of said mark at a fixed location around the circumference of said new roll of web so as to locate the position of said leading edge relative to the point of closest proximity of said new roll of web and said moving web;
forcing said moving web at said point of closest proximity into engagement with said new roll of web a sufficient time after said sensing of said mark to allow said leading edge to pass said point of closest proximity;
initiating movement of said web cutting blade towards said moving web upon sensing the passing of said mark at said fixed location;
continuously adjusting the speed of said blade in response to change of said web speed so as to contact said web with said blade at substantially web speed and force said web into said anvil and sever said web at a predetermined distance from said point of closest proximity when said leading edge is substantially the same or greater circumferential distance from said point of closest proximity; and
pressing said adhesive portion of said splicing strip into engagement with the cut trailing edge of said moving web by a pressing means at said point of closest proximity.

4,238,262

APPLYING PARTICLES AND ADHESIVE TO RACQUET STRINGS

Clark W. Fishel, 201 S. Greenville, Allen, Tex. 75002

Filed Jul. 26, 1978, Ser. No. 928,239
Int. Cl.³ A63B *51/02*
U.S. Cl. 156—166 **3 Claims**



1. A method of forming an abrasive surface on the central portion of a racquet, comprising the steps of: masking the head of the racquet with only the central portion of the strings being exposed; applying a primer coat of adhesive material onto the

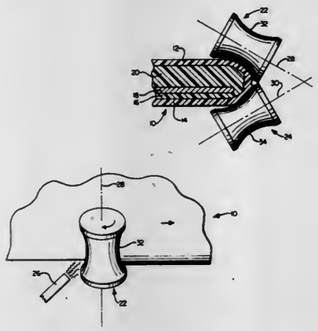
exposed portion of the strings; partially curing the primer layer to bond the strings together at the intersections; applying a second layer of adhesive material over the partially cured primer layer to form a bonding layer; depositing a granular substance over the bonding layer of adhesive material; curing the bonding layer to bond the granular substance to the strings; applying a sealing layer of adhesive over the bonding layer and granular material; and curing the sealing layer to encapsulate the granular material between the primer and sealing layers.

4,238,263

EDGE SEALING OF LAMINATE

Lewis C. LoMaglio, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 2, 1978, Ser. No. 947,519
Int. Cl.[2] B31F *1/00*; B29C *17/04*; B32B *3/04*; B29C *17/00*
U.S. Cl. 156—202 **3 Claims**



1. A method for encapsulating the edge of an interior lamina of a laminated sheet having two outer thermoplastic laminae enclosing at least one interior lamina, the outer lamina having the same length and width as the inner lamina, comprising:

a. heating an edge of said laminated sheet sufficiently to cause said outer lamina to reach a molten state by moving said edge past a heat source; and,

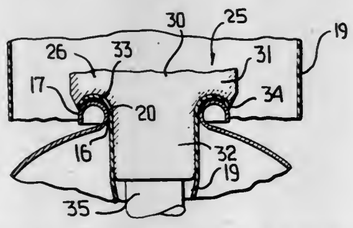
b. contacting said heated edge with rollers as said heated edge is moved past said heat source to force said outer lamina over said interior lamina or laminae and to encapsulate the edge of said interior lamina or laminae.

4,238,264

AEROSOL BARRIER PACKAGE WITH A BAG ADHESIVELY ATTACHED TO THE CURL

Peter G. Pelton, St. Louis, Mo., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,329
Int. Cl.[2] B29C *17/00, 27/24*
U.S. Cl. 156—212 **8 Claims**



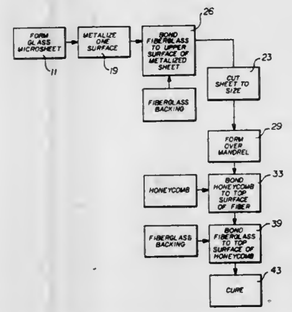
1. A method of positioning a product bag in an aerosol can, said method comprising the steps of providing an aerosol can having a valve cup opening defined by a curl with the valve cup opening being of a diameter less than that of the can, providing a product bag of a size generally corresponding to that of the can, engaging the product bag with a tool, drawing a vacuum in the product bag to collapse the product bag and reduce the cross sectional size thereof, inserting the product bag into the can through the valve cup opening, seating an upper portion of the product bag on the curl, and inflating the product bag within the can.

4,238,265

METHOD OF MANUFACTURING A GLASS PARABOLIC-CYLINDRICAL SOLAR COLLECTOR

Czeslaw Deminet, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 27, 1978, Ser. No. 955,258
Int. Cl.[3] G02B *5/10*
U.S. Cl. 156—221 **8 Claims**



1. A method of manufacturing a curved glass solar collector, comprising the steps of:

(1) forming a microsheet of glass on order of 0.004 inches–0.040 inches;

(2) depositing a layer of reflective material on one surface of said microsheet of glass, thereby forming a reflective microsheet;

(3) placing a first backing layer means of flexible, but otherwise relatively stiff, material on top of the reflective microsheet so that the reflective microsheet can be moved without breaking, with an uncured adhesive between said first backing layer means and the reflective microsheet, so that the combination of the reflective microsheet and said first backing layer means can be moved together without the reflective microsheet separating from said first backing layer means, but so that the reflective microsheet and said first backing layer means can move sideways relative to each other;

(4) moving the combination of the reflective microsheet and said first backing layer means to a mandrel of desired configuration;

(5) forming the combination about the mandrel during the time that the adhesive between the reflective microsheet and said first backing layer means remains uncured;

(6) forming a support element layer means on top of said first backing layer means, with an uncured adhesive between said support element layer means and said first backing layer means; and

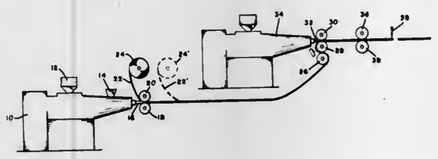
(7) maintaining the resulting product of steps 1–6 above in place of the mandrel until the adhesive between the reflective microsheet and said first backing layer means and between said first backing layer means and said support element layer means cures sufficiently that the resulting product remains in the desired configuration after it is removed from the mandrel.

4,238,266

PROCESS OF FORMING A GLASS FIBER REINFORCED, STAMPABLE THERMOPLASTIC LAMINATE

Albert H. Steinberg, Morris Plains, and Lowell G. Ward, Mendham, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 817,070, Jul. 19, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,664
Int. Cl.[3] B29D *7/02*
U.S. Cl. 156—243 **8 Claims**



1. A continuous process of forming a glass-fiber reinforced, stampable thermoplastic laminate consisting essentially of the steps of:

(a) extruding a first sheet of thermoplastic resin containing about 5 to 35% by weight of glass fibers on an extruded basis;

(b) embedding a layer of glass fibers into one side of said first sheet;

(c) extruding a second sheet of thermoplastic resin containing about 5 to 35% by weight of glass fibers on an extruded basis; and

(d) laminating, in a lamination zone, said second sheet to said first sheet and said layer of glass fibers without substantially impairing the integrity of or rearranging said glass fibers of said first and second sheets, wherein said lamination zone comprises a set of three heated rolls, said first sheet and said layer of glass fibers being in the form of a prelaminate and being passed serially around the first and second of said heated rolls and thence between the second and third rolls, advancing said second sheet to the nip formed by the second and third rolls and onto said prelaminate and laminating said prelaminate and said second sheet between the second and third rolls and wherein the lamination occurs at a temperature ranging from the melting point of the resin to about 650° F.

4,238,267

APPARATUS FOR PRODUCING SHRINKABLE PLASTIC CAPS

Anatole E. Konstantin, 10 Live Oak Rd., Norwalk, Conn. 06851

Filed Jul. 18, 1978, Ser. No. 925,754
Int. Cl.[3] B29C *17/04, 27/04*
U.S. Cl. 156—380 **6 Claims**

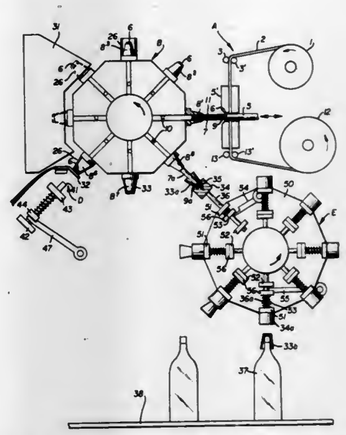
1. Apparatus for producing heat-shrinkable plastic caps having a metal containing top comprising in combination:

(a) at least one mandrel the top of which forms an end-face for positioning a disc thereon, said mandrel being provided with a movable core, the end-face of which forms the top of the mandrel and wherein said core is provided with: (1) a passageway terminating in said end-face as a pneumatic orifice and (2) means for connecting said passageway to a source of vacuum or pressure,

(b) means for placing a metal containing disc coated with heat sensitive adhesive on the end-face of said mandrel,

(c) means for placing a band of preselected length of heat-shrinkable plastic over said mandrel, the length of said band being sufficient to protrude over the end-face of said mandrel and to overlay the edge of said disc so as to be heat-sealable to said disc,

(d) heating means for pre-shrinking said plastic band to conform to the shape of said mandrel and to overlay the edge of said disc, said heat-shrinking means imparting insufficient energy to activate the adhesive on said disc, and



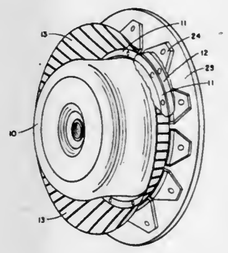
(e) electric induction heating means for rapidly heat-sealing said disc to the portion of said band overlaying the disc by activating the heat-sensitive adhesive on said disc by the heat generated by induction in the metal.

4,238,268

TIRE BUILDING MACHINE PLY TURN-DOWN FINGER ASSEMBLY

Robert S. McGaughey, Indiana, Pa., assignor to McCreary Tire and Rubber Company, Indiana, Pa.

Filed Feb. 7, 1979, Ser. No. 10,038
Int. Cl.[3] B29H *17/22*
U.S. Cl. 156—398 **5 Claims**



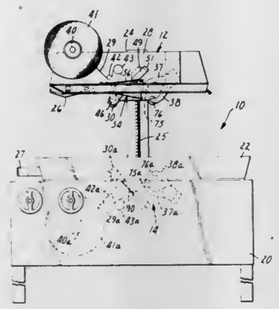
1. In a ply turn-down finger assembly for a tire building machine comprising an outer ring, an inner ring secured to the outer ring by a plurality of fasteners and a plurality of spring fingers, each having a shank end of toe thereon, positioned around the rings and clamped therebetween at their shank ends with toes turned under the inner ring, the improvement comprising at least one said ring being formed of an elastomer, whereby an individual spring finger is removed and replaced by loosening only the said fasteners adjacent said finger and deforming said elastomer ring in that region only sufficiently to release the shank and toe of that finger and to accept the shank and toe of a replacement finger.

4,238,269

TAPE APPLYING DEVICE

Hartland W. Deering, Jr., Inver Grove Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1978, Ser. No. 960,165
Int. Cl.[2] B31F *1/00*; B32B *31/00*
U.S. Cl. 156—465 **7 Claims**



1. In a device adapted for applying lengths of pressure sensitive adhesive coated tape from a supply length of tape seriatim on the peripheries of spaced rectangular objects driven along a predetermined path in a first direction past the device, said device comprising:

a frame;

an application member having an arcuate periphery;

means adapted for defining a tape route for a said supply length of tape to the arcuate periphery of said application member with the adhesive coating disposed away from said application member;

means for mounting said application member on said frame to afford movement thereof from a contact position with said arcuate tape route portion in said path to afford contact between a said length of tape disposed along said arcuate tape route portion and the leading surface of a said object driven along said path in said first direction to adhere the tape to the leading surface object, to a second position while pressing tape against the leading surface of the object, at which second position said application member will press the tape being applied against the side surface of the object, and back to said contact position;

means mounted on said frame and adapted to be activated by movement of a said object past a predetermined position along said path for severing an applied length of tape from said supply length; and

means for positively positioning an end portion of said supply length of tape adjacent said application member when said application member is in said contact position and during movement of said application member from said second position back to said contact position, the improvement wherein:

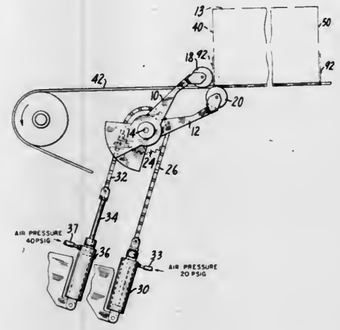
said means for mounting said application member on said frame mounts said application member for generally linear motion relative to said frame between said contact position and said second position with a component of movement for the application member being in said first direction.

4,238,270

TAPE PRESSING ROLLER SET APPLYING DIFFERENT WIPE DOWN PRESSURES

Saul Warshaw, Hawley, Pa., and Winton S. Loveland, Fort Salonga, N.Y., assignors to The Loveshaw Corporation, Deer Park, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,406
Int. Cl.[3] B31F *1/00*
U.S. Cl. 156—468 **9 Claims**



1. In apparatus for wiping down adhesive tape which has been applied along at least portions of horizontal and vertical surfaces of a carton travelling on a horizontal conveyor, said apparatus including

a cooperative pair of first and second arms swingably mounted for rotation about co-directionally disposed axes, each arm carrying at its free end tape wipe down means, the swinging arms in an initial carton engaging position thereof being in closed together configuration and presenting one of said wipe down means for engagement with a carton leading vertical surface and the other wipe down means for engagement with said horizontal carton surface, horizontal movement of said carton while in engagement with both wipe down means spreading said arms apart for maintaining said one wipe down means initially in contact with said leading vertical surface of said carton and then a horizontal surface thereof, and said second wipe down means initially in contact with said carton horizontal surface and then a trailing vertical surface thereof, there being first force applying means operatively connected with the arm carrying said one wipe down means tending to rotate said arm counter-directional to rotation imparted thereto by movement of said carton whereby a wipe down pressure of a predetermined magnitude is applied to the tape on said leading vertical surface by said one wipe down means, the improvement of

second force applying means operatively connected with the arm carrying said second wipe down means tending to rotate said arm in the direction of travel of said carton with a force sufficient to cause said second wipe down means to apply a wipe down pressure to the tape on said trailing vertical surface which is of substantially greater magnitude than that applied to the tape on said leading vertical surface by said one wipe down means,

said arms being in driving relation with one another when they are in said closed together configuration,

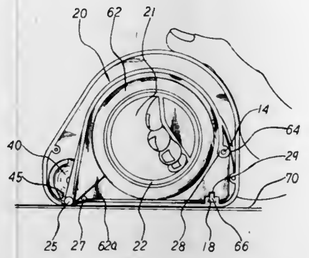
said first force applying means being continuously operative, said second force applying means being temporarily disabled upon disengagement of said arms from a carton to permit restoration of both of said arms to said initial carton engaging position by said first force applying means.

4,238,271

ADHESIVE TAPE APPLICATOR

Sakae Urushizaki, No. 4-1, Nishidotonbori-dori 5-chome, Nishi-ku, Osaka-shi, Osaka-fu, Japan

Filed Mar. 5, 1979, Ser. No. 17,256
Int. Cl.[2] B32B *31/00*; B44C *7/00, 7/06*; B65B *67/06*
U.S. Cl. 156—523 **4 Claims**



1. An adhesive tape applicator comprising:

a main body having a finger inserting aperture formed in its center,

a swing member housed in the main body and pivotably supported at one end of the main body, the member including a guide roller and a tape press roller at one end and an annular portion in its center for rotatably mounting a roll of adhesive tape, the member further having substantially the same aperture as the above and a finger engaging portion provided in the aperture,

a rotatable member provided in the main body and rotatably supported at the other end of the main body, the member including a disc rotatable by the swing member in a direction opposite to the direction of turn of the swing member when the swing member is turned toward the rotatable member and a peripheral wall projecting from the disc toward the front,

a spring mounted on the main body to bias the swing member away from the rotatable member,

a revolving split ring in the form of a partially cut ring interposed between the annular portion and the tape roll,

a cutter attached to a slanting end of the peripheral wall of the rotatable member slanting toward the other end of the main body from the front toward the rear, and

a cover detachably fittable to the main body and having substantially the same aperture as the above, whereby the pressure of fingers inserted in said aperture against said fingers engaging portion is substantially sufficient to cut said adhesive tape.

4,238,272

TAPE DISPENSER

Ernest E. Schleicher, 2929-82nd Ave., Oakland, Calif. 94605

Continuation-in-part of Ser. No. 942,427, Sep. 14, 1978. This application Aug. 31, 1979, Ser. No. 71,533
Int. Cl.[2] B32B *31/00*; B44C *7/00*
U.S. Cl. 156—527 **9 Claims**

1. A device for dispensing a tape web from a supply roll onto a surface, comprising;

a housing including a pair of rigid, tear drop shaped panels disposed in parallel, spaced apart relationship;

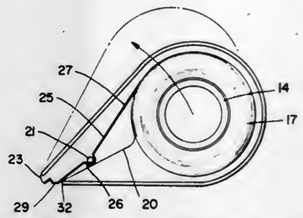
spool means extending between said panels for supporting said supply roll in rotatable fashion;

said housing including a side wall joining the peripheral edges of said panels,

a slot opening in said side wall adjacent to the apices of said panels, said tape web extending from said supply roll through said slot opening;

a post extending between said panels and disposed intermediate of said supply roll and said slot opening; and

a leaf spring member secured to said post, one end of said leaf spring member resiliently impinging on said supply



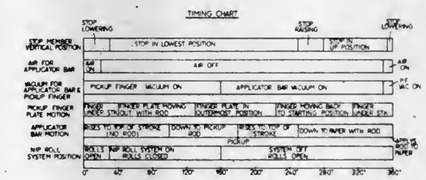
roll, the other end extending into said slot opening and resiliently impinging on said tape web.

4,238,273

ROD APPLICATOR MECHANISM FOR MACHINE FOR MAKING HANGING FILE FOLDERS

Robert A. Memmel, Jr., Brown Deer, Wis., assignor to Condes Corporation, Milwaukee, Wis.

Filed Mar. 19, 1979, Ser. No. 21,686
Int. Cl.[3] B23Q *7/04*; B32B *31/12*; B65C *9/00*
U.S. Cl. 156—552 **7 Claims**



1. In a machine for making hanging file folders, each of which folders comprises a blank and at least one support rod, in combination:

conveyor means for moving said blank along a path, said blank having a glue pattern thereon;

means including a stop member movable into the path of said blank for temporarily engaging and momentarily interrupting movement of said blank along said path;

a rod-dispensing means adjacent said path;

means for transferring a rod from said rod-dispensing means and for applying said rod to said glue pattern while movement of said blank along said path is interrupted,

said transferring means including a reciprocably and horizontally movable rod-holding plate and a reciprocably and vertically movable applicator member for removing a rod from said plate and for applying said rod to said glue pattern, said applicator member having at least one fluid aperture therein for association with a rod on said rod-holding plate;

and means for creating suction at and then subsequently pressurizing said fluid port to enable said applicator member to remove a rod from said rod-holding plate and deposit said rod on said glue pattern.

4,238,274

METHOD FOR AVOIDING UNDESIRABLE DEPOSITS IN CRYSTAL GROWING OPERATIONS

Tze Y. Chu, Trenton, N.J.; Yogesh Jaluria, Kanpur, India; Robert J. Lavigna, Bath, Pa.; Raymond E. Reusser, Bethlehem, Pa., and George Williams, Mercerville, N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 750,985, Dec. 15, 1976, Pat. No. 4,116,642.
This application Jul. 17, 1978, Ser. No. 925,146
Int. Cl.[3] C30B *5/00*
U.S. Cl. 156—617 SP 5 Claims

1. A method of growing a single crystalline form from a melt comprising:
- providing a quantity of a material in a crucible;
- supporting the crucible with a housing surrounding said crucible;
- heating the material in the crucible to at least a temperature at which the material melts;
- supporting and pulling a crystalline form of the material with respect to the melt; and
- providing supplemental, locally intensified heat at an inner annular wall portion of the crucible located just above the surface of the melt by providing less resistance to the transmission of heat to said portion than to other areas of the crucible wall, said heat provided at said portion being sufficiently intense to prevent undesirable formation of material thereupon.

4,238,275

PYROCATECHOL-AMINE-WATER SOLUTION FOR THE DETERMINATION OF DEFECTS

Kwang K. Shih, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,586
Int. Cl.[3] H01L *21/306*
U.S. Cl. 156—626 15 Claims



1. A non-microscopic method for visually detecting surface damage on polished silicon wafer surfaces including the steps of:
- (a) growing a SiO_2 film on the surface of said polished silicon wafer surfaces;
- (b) immersing said SiO_2 covered silicon wafer in buffered HF for a time sufficient to remove said SiO_2 film;
- (c) rinsing said SiO_2 free wafer in water,
- (d) immersing said SiO_2 free wafer in a etch solution comprising pyrocatechol, ethylene diamine and water for a time sufficient to cause defects in the surface of said wafer to appear, thereafter
- (e) rinsing said wafer and inspecting the surface of said wafer for etch pits and scratches.

4,238,276

PROCESS FOR PRODUCING LIQUID CRYSTAL DISPLAY ELEMENT

Kiyoshige Kinugawa, Mobara; Satoru Ogihara, Hitachi; Yosio Hanada, Mobara; Shizuo Ishitani, Mobara, and Tadashi Ishibashi, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 16, 1979, Ser. No. 21,185
Claims priority, application Japan, May 19, 1978, 53-58930
Int. Cl.[3] C23F *1/02*
U.S. Cl. 156—634 13 Claims

1. A process for producing a liquid crystal display element which comprises
- forming an electrical insulating metal oxide film on a transparent glass substrate,
- forming a transparent conductive film thereon by coating a coating solution prepared by diluting a solute comprising indium, tin, a β-diketone and nitric acid with an organic solvent, followed by calcination,
- etching the transparent conductive film to give a first composite having electrodes having desired patterns,
- performing said forming an electrical insulating metal oxide film step, said forming a transparent conductive film step, and said etching step on a second transparent glass substrate to give a second composite having electrodes having desired patterns,
- placing the two resulting composites spaced from each other and in parallel so that the electrodes of each composite are positioned at the inner side of the display element and stand opposite to each other, and
- enclosing a liquid crystal material in the space formed between the two composites.

4,238,277

METHOD OF MANUFACTURING A MAGNETIC DEVICE

Thijs W. Bril, and Lambertus Postma, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 815,109, Jul. 13, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,558
Claims priority, application Netherlands, Jul. 20, 1976, 7608002
Int. Cl.[3] B44C *1/22*
U.S. Cl. 156—643 5 Claims

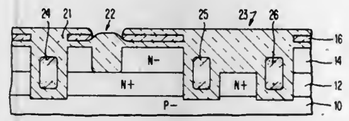
1. A method of manufacturing a magnetic device comprising a thin domain layer of a magnetizable material which has an easy axis of magnetization which is substantially normal to the surface of said layer, a detection pattern of magnetoresistive material and a propagation pattern of magnetizable material, wherein the method comprises the steps of:
- providing a nonmagnetic substrate with a thin domain layer of magnetizable material;
- depositing, on top of the domain layer, three successive layers comprising a layer of at least partly electrically insulating, substantially nonmagnetic material sandwiched between a detection layer of a magnetoresistive material and a propagation layer of a magnetizable material;
- shaping the uppermost layer into the form of a mark from which the remaining two layers are shaped; and
- successively removing the uncovered portions of the next two layers by the use of an etching method which does not substantially attack the materials present above the layer being etched.

4,238,278

POLYCRYSTALLINE SILICON OXIDATION METHOD FOR MAKING SHALLOW AND DEEP ISOLATION TRENCHES

Igor Antipov, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1979, Ser. No. 48,561
Int. Cl.[3] H01L *21/308*
U.S. Cl. 156—657 4 Claims



1. The method for forming narrow, deep, recessed oxide isolation filled trenches and wide, deep recessed oxide isolation filled trenches in a monocrystalline silicon substrate comprising:
- etching said substrate through mask apertures in a masking layer defining said narrow trenches and the perimeters of said wide trenches,
- thermally oxidizing the surfaces of said trenches,
- partially filling said trenches with a dielectric material,
- completing the filling of said trenches with polycrystalline silicon,
- etching said substrate through mask apertures in the masking layer defining shallow trenches, some of said shallow trenches coinciding with the upper regions of said filled deep trenches and others of said shallow trenches bridging between said filled deep trenches, and thermally oxidizing the remaining polycrystalline silicon in said deep trenches and the monocrystalline silicone in said shallow trenches.

4,238,279

COMPOSITIONS AND METHODS FOR TREATING SURFACE OF LITHOGRAPHIC PRINTING PLATES

Yasuo Tsubai, and Toshiro Kondo, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 20, 1978, Ser. No. 944,070
Claims priority, application Japan, Nov. 16, 1977, 52-136727
Int. Cl.[3] B41M *1/00, 5/00;* C09D *5/20;* C23F *1/00*
U.S. Cl. 156—664 18 Claims

1. A treating liquid composition for treating the surface of lithographic printing plates which essentially consists of (a) a phosphoric acid, (b) nitric acid or a salt thereof, (c) nitrous acid or a salt thereof and (d) aminopolycarboxylate.

9. A method of treating the surface of a lithographic printing plate comprising applying to said surface:
- a treating liquid composition for treating the surface of lithographic printing plates which essentially consists of (a) a phosphoric acid, (b) nitric acid or a salt thereof, (c) nitrous acid or a salt thereof and (d) aminopolycarboxylate.

4,238,280

PHOTOGRAPHIC SUPPORT

Roger E. Wallis, Hyde Heath, near Amersham, and Michael R. Chamberlain, High Wycombe, both of England, assignors to The Wiggins Teape Group Limited, Basingstoke, England

Filed Nov. 2, 1978, Ser. No. 957,192
Claims priority, application United Kingdom, Nov. 10, 1977, 46910/77
Int. Cl.[3] 021H *5/20*
U.S. Cl. 162—157 R 24 Claims

1. A photographic support produced by heat treatment of paper made wholly of thermoplastic synthetic papermaking fibres, said support comprising:
- a substantially homogeneous surface film with a surface finish for receiving a photographic coating;
- a first fibrous layer adjacent said surface film, the fibres in said first fibrous layer being substantially fully-bonded by virtue of being fused at their regions of contact; and,
- a second fibrous layer adjacent said first fibrous layer, said second fibrous layer having an impermeable surface skin and the fibres in said second fibrous layer being only lightly-bonded at their points of contact;
- said surface film having a true % pitting (P_t) of not more than about 10%, where P_t is given by the expression $P_t=(P_m-P_a)$, P_m being the measured % pitting and P_a being the apparent % pitting, P_m being given by the expression $(R_1-R_2)/R_1\times 100$ where R_2 is the reflectance of the surface film after the surface film has been smeared with microcontour ink which has then been wiped off and R_1 is the reflectance of the surface film before such smearing is carried out and P_a being given by the expression $(R_3-R_4)/R_3\times 100$ where R_4 is the reflectance of a heat consolidated synthetic paper surface known to be pit-free after the surface has been smeared with microcontour ink which has then been wiped off and R_3 is the reflectance of the surface before such smearing is carried out.

4,238,281

SIMPLIFIED BLEACHING PROCESS

John A. Histed, L'Orignal, Canada, assignor to Canadian International Paper Company, Montreal, Canada

Filed Apr. 30, 1979, Ser. No. 34,922
Int. Cl.[3] D21C *9/14*
U.S. Cl. 162—60 21 Claims

1. A multi-stage, sequential bleaching process for alkaline cooked pulps, in which the bleaching stages are conducted with conventional static flow of the pulp during retention periods so that there is no substantial movement of the bleaching liquid employed with respect to the fibers making up said pulp, and in which there is a sequence of at least four bleaching stages and no more than three washing steps, and in which the initial bleaching stage of said sequence comprises a chlorination with a member selected from the class consisting of chlorine, chlorine dioxide, mixtures and sequential use thereof, and the final bleaching stage of which sequence comprises a chlorine dioxide bleaching stage, which process comprises subjecting said alkaline cooked pulp to said sequence of at least four bleaching stages and washing said pulp only subsequent to said first and final stages and subsequent to an initial alkali extraction stage, and where all bleaching stages subsequent to said initial alkali extraction stage up to said final chlorine dioxide stage are shortened to less than about 15 minutes.

4,238,282

CHEMICAL TREATMENTS IN BLEACHING STAGES WHICH INCREASE PULP BRIGHTNESS

James A. Hyde, Downers Grove, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 23, 1979, Ser. No. 59,821
Int. Cl.[3] D21C *9/12*
U.S. Cl. 162—76 4 Claims

1. In a method of bleaching iron or manganese salt contaminated paper pulp in a chlorine bleaching process comprising one or more alkaline stages, the improvement which consists of addding to the iron or manganese salt contaminated paper pulp after the last alkaline stage when said pulp has an acid pH at least 0.1 lbs/ton of a water soluble chelating agent chosen from the group consisting of phosphonates, hydroxy alkylidene diphosphonates, and alkaline metal salt of a low molecular weight acrylic acid polymers, and mixtures thereof, such improvement increasing the final brightness of the paper pulp.

4,238,283

POST-TREATMENT OF HUMIC ACID-DYED PAPER

Randall K. Greene, and Willard A. Geiszler, Jr., both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 899,128, Apr. 24, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,367
Int. Cl.³ D21H 5/16, 1/46
U.S. Cl. 162—139 5 Claims

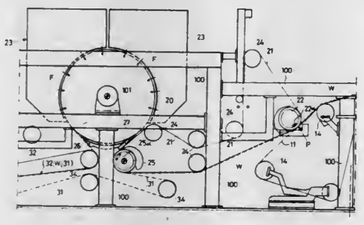
1. A method of preparing an improved humic acid-dyed paper for use as a wrapper for smoking articles, which method comprises the steps of (1) contacting humic acid solids with water at a pH of about 5–7 to dissolve acid-soluble material, and recovering the remaining insoluble humic acid solids; (2) resuspending the recovered insoluble humic acid in water and adjusting the pH of the aqueous medium to about 7–8 with alkali hydroxide to effect dissolution of the humic acid and provide an alkali humate solution; (3) dyeing paper with the alkali humate solution; and (4) fixing the humic acid-dyed paper with a solution of magnesium sulfate.

4,238,284

METHOD FOR DEWATERING A TISSUE WEB

Markku Huostila, Nokia; Timo Haapsaari, Keski-Palokka; Matti Suokas, and Risto Turunen, both of Jyväskylä, all of Finland, assignors to Oy Nokia Ab & Valmet Oy, Finland

Filed Jul. 6, 1978, Ser. No. 922,275
Claims priority, application Finland, Jul. 8, 1977, 772150
Int. Cl.³ D21F 5/14
U.S. Cl. 162—207 4 Claims



3. In a tissue paper making machine which includes a flow through wire extending around a flow through drying cylinder, a method for dewatering and transferring a tissue web to the flow through drying cylinder comprising the steps of:

conducting a tissue web onto a pick-up fabric which is formed of felt material having a capillary structure sufficient to give rise to capillary forces when contacted by the tissue web, the felt pick-up fabric lapping at least two suction rolls, at least one of which has an extremely pervious surface;

removing water from the web into the felt pick-up fabric, without web pressing, solely through the application to the web of suction by said suction rolls and capillary forces arising from the contact between the web and the felt pick-up fabric until the web has a dry matter content of about 22 to 27% so that it can be passed to the flow through drying cylinder;

passing said web to the flow through drying cylinder;

passing a section of the flow through wire onto the web carried by the pick-up felt;

transferring the web from the pick-up felt to the flow through wire by applying a first suction on the web through the flow through wire at said wire section; and

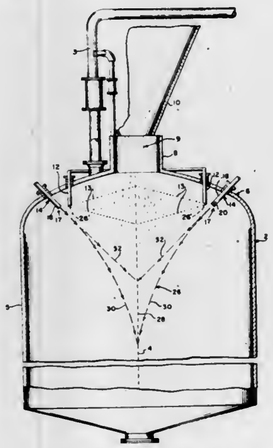
deviating the direction of travel of the pick-up felt from the direction of travel of the flow through drying wire.

4,238,285

DIGESTER SYSTEM FOR DELIVERING WOOD CHIPS IN AN EVEN LAYER INTO A DIGESTER

Jerry Zucker, Lake Como, Fla., assignor to Hudson Pulp & Paper Corp., New York, N.Y.

Continuation of Ser. No. 740,315, Nov. 9, 1976, Pat. No. 4,120,748, which is a continuation of Ser. No. 565,567, Apr. 7, 1975. This application Oct. 11, 1978, Ser. No. 950,373
The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.
Int. Cl.³ D21C 7/06, 7/14
U.S. Cl. 162—242 2 Claims



1. In a digester for producing pulp, the combination of, a digester tank which has a central vertical axis and a top wall with an opening the horizontal cross-section of which is substantially less than the horizontal cross-section of said tank and through which a stream of wood particles can be delivered into said tank so that the particles fall centrally into the tank in a zone along said vertical axis; spray means for spraying liquor transversely with respect to said tank and into said stream of wood particles so as to intersect and wet said stream of wood particles, said spray means being located within said tank below said top wall and within a zone spaced radially outwardly relative to said vertical axis and relative to the zone occupied by said stream of wood particles falling from said opening; and steam jet means which discharges steam and thereby produces a steam vortex with its axis substantially concentric with said vertical axis and adjacent said spray means, said steam jet means comprising a plurality of nozzle units each of which projects a jet of steam downwardly and substantially tangential to said stream of wood particles, said nozzle units being spaced circumferentially and cooperating with each other to produce said steam vortex and said steam jet means is positioned so the vortex forms below the intersection of liquor and wood particles whereby the liquor is distributed and directed by said vortex so as to wet said wood particles, and whereby the liquor-wetted wood particles are distributed radially of said vertical axis with the aid of the movement produced by said vortex.

4,238,286

DEWATERING TABLE BAR FOR THE WIRE CLOTH OR FELT IN A PULP-DEWATERING MACHINE

Rudolf Poeschl, A 1150 Vienna, Mariahilferstrasse 135, Austria

Filed May 22, 1979, Ser. No. 41,366
Int. Cl.³ D21F 1/00
U.S. Cl. 162—352 10 Claims

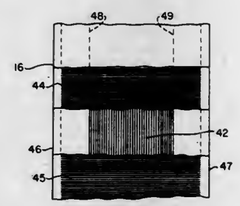
1. In a dewatering table bar for the moving wire cloth or felt of a paper making or like pulp dewatering machine, the table bar comprising means for stationary mounting thereof on such machine transversely to the direction of motion of the wire cloth or felt, and having a surface in sliding contact with the underside thereof, including a leading edge and a trailing edge, the leading edge being formed of a harder wear resistant element embedded in a softer less wear resistant body member, the improvement wherein the softer member is formed of a steatite material having substantially the same coefficient of expansion as the harder element.

4,238,287

EXTENDED NIP PRESS WITH TRANSVERSE STIFFENING MEANS IN THE BELT

Michael L. Gill, Beloit, Wis., assignor to Beliot Corporation, Beloit, Wis.

Filed Apr. 26, 1979, Ser. No. 33,708
Int. Cl.³ D21F 3/02
U.S. Cl. 162—358 16 Claims



1. An extended nip press for removing water from a moving web of material, said press comprising:

a rotatable roll having a cylindrical outer pressing surface;

a flexible endless belt trained about a plurality of pulleys such that said belt turns about the pressing surface of said roll over an arc of contact;

at least one movable felt means trained about said roll between said belt and said roll for carrying said web of material between said belt and said roll;

a pressure shoe disposed on the side of said belt opposite said roll and adjacent said arc of contact, said shoe terminating in lateral directions substantially short of the lateral edges of said belt; and

a reinforcing structure in said belt extending circumferentially thereof, said reinforcing structure comprising longitudinal tension resisting means and a pair of plies of parallel cords which are substantially incompressible and inextensible, said cords extending transversely of said belt and substantially across said pressure shoe so that said belt is substantially free of any bulging adjacent said shoe.

4,238,288

DRIVE OF NUCLEAR REACTOR S CONTROL ELEMENT

Alexandr A. Anikin, ulitsa Very Slutskoi, 32, kv. 192, Leningradskaya oblast, Kolpino; Vladimir G. But, ulitsa Sofiiskaya, 55, kv. 263, Leningrad; Vladimir P. Nikolaev, ulitsa Proletarskaya, 58, kv. 91, and Anatoly A. Silvanovich, ulitsa Vokzalnaya, 12, kv. 7, both of Leningradskaya oblast, Kolpino, all of U.S.S.R.

Filed May 24, 1978, Ser. No. 908,923
Int. Cl.² G21C 7/08
U.S. Cl. 176—36 R 1 Claim

1. A drive for driving a control element of a nuclear reactor having a coolant contained therein, said drive comprising:

an electromotor having a housing and having a supply voltage applied thereto;

said electromotor including a stator accommodated in said housing, insulated from the coolant of said nuclear reactor, and producing an electromagnetic field as said supply voltage is applied to said electromotor, said stator including an active part of given length;

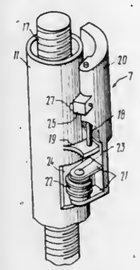
said electromotor further including a rotor also accommodated in said housing so that said stator encompasses said rotor with a certain clearance between them, said rotor comprising two lengthwise parts, a first part and a second part, the total length of said two parts being equal to the given length of the active part of said stator;

securing means for securing said rotor in said housing;

the first part of said rotor comprising a solid cylinder-shaped member secured in said housing by said securing means;

a drive screw having a shaft extending inside said solid cylinder-shaped member, said drive screw being coupled to said control element;

the second part of said rotor comprising at least three double-arm rocking levers, each having a first arm, a second arm and a pivot axle coupled to and intermediate said first arm and said second arm;



said first arm, said second arm and said pivot axle being parallel to said shaft of said drive screw and secured in said housing by said securing means, the first arm of each said lever acting as a pole of said rotor; and

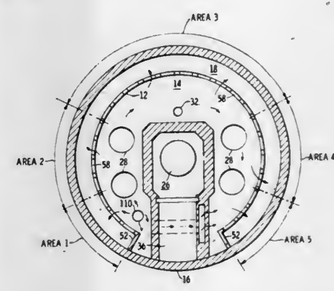
rollers, one for each double-arm rocking lever, each said roller having an axle of rotation and mounted on corresponding said second arm of said each double-arm rocking lever so that said axle of rotation is parallel to said shaft of said drive screw, each said roller comprising detachable roller nut means rotatably mounted with axis parallel to said shaft of said drive screw for interacting with said drive screw under the action of said electromagnetic field of said stator.

4,238,289

NUCLEAR REACTOR CONDENSER DOOR ARRANGEMENT

Sterling J. Weems, Chevy Chase, Md., and Harold W. McCurdy, Vienna, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 230,641, Mar. 1, 1972, abandoned, which is a continuation of Ser. No. 837,443, Jun. 30, 1969, abandoned. This application Jan. 23, 1974, Ser. No. 435,903
Int. Cl.² G21C 13/00
U.S. Cl. 176—38 4 Claims



1. A pressure suppressing arrangement for pressurized fluid-handling apparatus including a nuclear reactor and associated

coolant system from which a pressurized expansible fluid may escape comprising:

a reactor compartment housing said fluid-handling apparatus;

an annular condenser compartment substantially encircling the reactor compartment;

means for supporting a quantity of fusible material in a solid state in the condenser compartment, said material having the property of melting at a temperature lower than the condensation temperature of the condensable portions of said escaping expansible fluid;

a plurality of door ports in the condenser compartment wall which establish communication between the condenser compartment and the reactor compartment, said ports containing normally closed hinged doors openable in response to a differential pressure between said compartments;

said doors and ports being of a size to provide a resistance to flow of the escaping fluid from the reactor compartment into said condenser compartment, said resistance being of one value in that area closest to the fluid handling apparatus, and a lesser value in those areas farther away from said apparatus, so as to more uniformly distribute the energy in said fluid to all sections of the condenser compartment.

4,238,290

NUCLEAR REACTOR INSTALLATION

Hans-Peter Schabert, and Jörgen Hoffmann, both of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

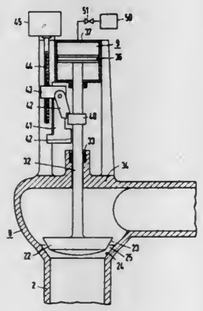
Continuation of Ser. No. 590,672, Jun. 26, 1975, abandoned.

This application Jan. 16, 1978, Ser. No. 869,628

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1974, 2430724

Int. Cl.[2] G21C *9/00*

U.S. Cl. 176—38 **10 Claims**



1. A controllable valve for the live steam line extending from the inside to the outside of the containment of a nuclear reactor plant comprising:

(a) a valve body having an inlet, an outlet and a valve seat, each with a cross section corresponding to that of the live steam line;

(b) probe means in the live steam line for detecting the pressure therein in order to detect a leak in said steam line;

(c) a movable valve disk disposed within said valve body;

(d) operating means coupled to said probe means and responsive thereto for moving the valve disk to a closed position in the event of a leak in the live steam line, said operating means being further responsive to the application of the pressure on the valve disk in excess of the normal operating pressure of the live steam line to move the valve toward an open position; and

(e) limiting means for limiting the reopening of the valve in response to said excessive pressure to a maximum of one half the outlet cross section, whereby after closing, in response to a leak in the live steam line, said valve will reopen to prevent a build-up of pressure on its inlet side to prevent damage to the nuclear reactor plant.

4,238,291

DEVICE FOR COUPLING PIPELINES IN NUCLEAR REACTOR PRESSURE VESSELS, ESPECIALLY IN BOILING WATER REACTORS

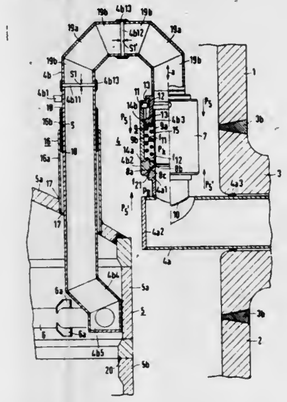
Walter Neuenfeldt, Schmitten; Milan Sulic, Seulberg, and Gerd Pollak, Kelsterbach, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Jan. 13, 1978, Ser. No. 869,362

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1977, 2701472

Int. Cl.[2] G21C *9/00*

U.S. Cl. 176—38 **8 Claims**



1. For coupling pipelines in a nuclear reactor pressure vessel with a core flood line formed of a first line section extending sealingly through a housing wall of the reactor pressure vessel and secured thereto, and a second line section disposed in the interior of the pressure vessel and couplable sealingly to the first line section, the second line section extending through a cover of a core container and terminating in the core container, a device comprising means for forming the second line section and the core container cover into a structural unit so that the second line section together with the core container cover is liftable out of and insertable into the pressure vessel upon opening the latter for selectively inspecting, servicing and both inspecting and servicing the same, the first and second line sections having a mutual coupling location, means defining coaxial sealing surfaces disposed at said mutual coupling location for holding the first and second line sections in mutual engagement, said coaxial sealing surfaces having a contact pressure therebetween deriving from weight per se and bracing forces of the core container cover oriented in axial direction of the pressure vessel, the first and the second line sections being in mutual spring-biased engagement at said mutual coupling location thereof, the second line section having a guidance collar integral therewith at said mutual coupling location, and including a one-piece counter-support member formed as a pipe bushing carried by said guidance collar, said counter-support member being mounted with spring bias and displaceable longitudinally on said guidance collar, said spring bias being afforded by compression spring means carried by said pipe bushing and disposed intermediate said pipe bushing and said guidance collar.

4,238,292

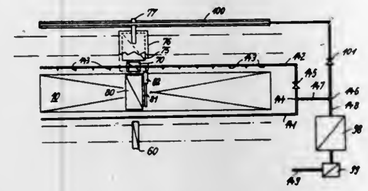
APPARATUS FOR WITHDRAWING AND CLEANING EMISSIONS OF A BATTERY OF COKE OVENS

Wilhelm Stog, Waltrop, Fed. Rep. of Germany, assignor to WSW Stahl- und Wasserbau GmbH, Waltrop, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,647

Int. Cl.[3] C10B *27/00, 27/04, 27/06*

U.S. Cl. 202—257 **11 Claims**



1. In combination with apparatus for making coke including a battery of coke ovens, means for withdrawing and cleaning emissions of said battery of coke ovens, which emissions occur during the filling, coking, especially within the regions of the doors of said ovens, and during the pushing, in which said means for withdrawing and cleaning emissions of said battery of coke ovens comprises: a machine carriage, a charging larry displaceable in the longitudinal direction on said battery of coke ovens with withdrawal means for the filling gases, two suction conduits one located on each side of said battery of coke ovens and above said doors while extending in the longitudinal direction of said battery of coke ovens and both suction conduits coming together at a first joining point, collecting chambers connected to both of said suction conduits for collecting dust laden gases rising within the region of said doors, said means for withdrawing and cleaning emissions of said battery of coke ovens also including a coke cake carriage and a coke quenching car which are both displaceable substantially parallel to and on the coke side of said battery of coke ovens and having associated therewith a collecting hood which extends over the coke quenching car and which carries emissions withdrawing means, a withdrawing conduit extending parallel and arranged in spaced relationship to said battery of coke ovens and having connected thereto said withdrawing means of said collecting hood, one of said suction conduits being provided with a plurality of pipe connections respectively associated with one and with one only of said oven chambers, said withdrawal means of said charging larry being respectively connectable to one of said pipe connections for introducing said filling gases into said respective suction conduit for mixing said filling gases and said dust laden gases rising within the region of said doors within said respective suction conduit while both suction conduits and said withdrawing conduit are connected at a second joining point upstream of a common purifying device and suction blower.

4,238,293

MAINTENANCE AND REPAIR STATION FOR CHARGING CARS OF COKE OVEN BATTERIES

Werner Abendroth, Haltern, Fed. Rep. of Germany, assignor to Firma Carl Still, Fed. Rep. of Germany

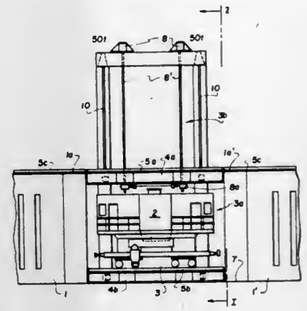
Filed May 30, 1979, Ser. No. 43,702

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824516

Int. Cl.[3] C10B *45/00;* **B60S** *13/00;* **B61J** *3/10;* **E01B** *25/06*

U.S. Cl. 202—270 **5 Claims**

1. In a coke oven battery including a charge car trackway defined on the roof thereof for the passage of a charging car, the improvement comprising a charging car receiving lift having at least two trackway portions thereon located at separate vertically spaced levels each forming a portion of the charge car trackway when they are respectively disposed at the level of the charging car trackway on a line therewith, means defining a repair station at a level distinct from the level of said charging car trackway, and lift means for selectively shifting said lift to dispose a respective receiving trackway portion in alignment with the charging car trackway and a respective receiving track portion at a vertically spaced level from said charging car trackway in said repair station defining



means, a charging car being receivable on a trackway portion and being transferable by said lift means to a different level from said charging car trackway for the maintenance or repair of the car at such level while the other of said trackway portion is located in alignment with and forms a part of the charging car trackway with the passage of other charging cars thereon.

4,238,294

PROCESS FOR RECOVERING HEAVY METAL IONS OR HEAVY METAL IONS AND HALOGEN VALUES FROM SOLUTIONS COMPRISING A LOWER ALIPHATIC MONOCARBOXYLIC ACID

Hiroshi Takeuchi, Nobeoka; Tetsuya Miyake, Tokyo; Masatoshi Tanouchi, Nobeoka; Tatsushi Saeki, Nobeoka, and Kazuki Ban, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1978, Ser. No. 928,980

Claims priority, application Japan, Apr. 10, 1978, 53/41233

Int. Cl.[3] B01D *3/00;* **C01G** *1/00*

U.S. Cl. 203—72 **7 Claims**

1. A process for recovering heavy metal ions and organic bromine compounds from a mother liquor of a reaction mixture derived from liquid phase oxidation to a carboxylic acid of a substituted benzene oxidizable thereto by means of a molecular oxygen-containing gas in a lower aliphatic monocarboxylic acid in the presence of a heavy metal catalyst system and a bromine compound as a reaction promotor, which comprises the step of contacting said mother liquor comprising a lower aliphatic monocarboxylic acid, water in an amount less than 20% by weight and heavy metal ions, dissolved therein, of at least one member selected from the group consisting of vanadium, cobalt, chromium, manganese, nickel, copper, zinc, molybdenum and iron and halogen values in the form of bromine ions, non-dissociative bromine compounds and organic bromine compounds, with an anion exchange resin, at least 60% of the ion-exchange groups of said anion exchange resin being in the bromide state, thereby adsorbing said heavy metal ions and bromine ions on the anion exchange resin to remove the same from the mother liquor; and the steps of subjecting the resulting mother liquor to a distillation comprising a first step distillation to recover the lower aliphatic monocarboxylic acid and a second step distillation which is carried out so that the relationship between the vapor temperature and the distillation pressure satisfies the requirement represented by the following equation:

$$\log p \leqq 9.57 - \frac{3330}{t + 348}$$

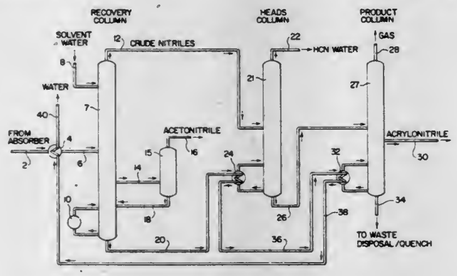
wherein p stands for the distillation pressure (mmHg absolute) and t stands for the vapor temperature (°C.), to recover the remaining non-dissociative and organic bromine compounds which had not been adsorbed in the preceding step.

4,238,295

ENERGY EFFICIENT RECOVERY OF ACRYLONITRILE

Paul S. Odom, Houston, Tex., assignor to Standard Oil Company (Ohio); Cleveland, Ohio

Filed Dec. 4, 1978, Ser. No. 965,758
Int. Cl.[2] B01D *3/40*
U.S. Cl. 203—83 **2 Claims**



1. In the process for the recovery and purification of acrylonitrile from an aqueous solution of acrylonitrile, acetonitrile, HCN and impurities consisting of the steps of:

(a) distilling said aqueous solution in an extractive distillation column with solvent water to produce an overhead stream of acrylonitrile, HCN and water, and a bottoms stream of water and impurities;

(b) distilling in a second distillation column the overhead stream of (a) to produce a second overhead stream of HCN and water, and a second bottoms stream of acrylonitrile and impurities;

(c) distilling in a product column the second bottoms stream of (b) to recover product quality acrylonitrile, the improvement comprising; passing said bottoms stream of (a) in indirect heat exchange relationship with liquid from the second distillation column of (b) followed by the liquid from the product column of (c) to provide heat to the respective columns.

4,238,296

PROCESS OF DESALINATION BY DIRECT CONTACT HEAT TRANSFER

Pasupati Sadhukhan, La Verne, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed May 17, 1978, Ser. No. 907,143
Int. Cl.[3] C02B *1/06*
U.S. Cl. 203—100 **16 Claims**

1. A process for separating water from an aqueous solution containing a non-volatile solute, by direct contact heat transfer in a plurality of stages, each of said stages comprising a lower evaporator zone and an upper condenser zone, said process comprising in each stage thereof

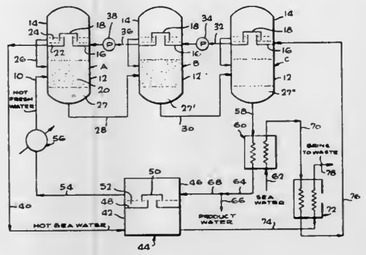
(a) directly contacting, in said evaporator zone a first hot liquid with a water immiscible second liquid having a boiling point lower than said first hot liquid, causing said immiscible second liquid to boil and generate vapor,

(b) contacting the vapor of said immiscible second liquid generated during said boiling with a cooler aqueous solution of a non-volatile solute in said condenser zone,

(c) causing condensation of said vapor of said second liquid and heating said aqueous solution by transfer of latent heat from the condensing vapor,

(d) withdrawing condensed second liquid, and

(e) recycling said condensed immiscible second liquid from said condenser zone to said evaporator zone; then



(f) withdrawing said heated aqueous solution of a non-volatile solute from the condenser zone of the first stage of said plurality of stages,

(g) flashing said heated aqueous solution to generate water vapor, and

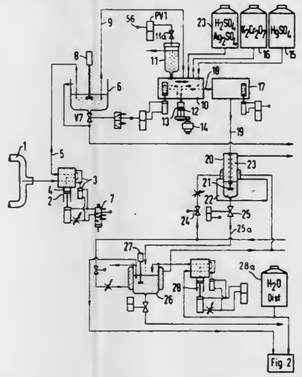
(h) condensing said water vapor.

4,238,297

PROCESS FOR THE DETERMINATION OF THE CONTENT OF SOLID, DISSOLVED AND WITH WATER IMMISCIBLE ORGANIC SUBSTANCES IN WATER

Christian Vandenbossche, Zwijnaarde; Laurent Danneels, Varsenare, and Jacky Vanhumbeeck, Brugge, all of Belgium, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,536
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804267
Int. Cl.[3] G01N *27/42*
U.S. Cl. 204—1 T **4 Claims**



1. In a process for determining the amount of the dispersed water-immiscible solid organic materials in sewage water whereby a calculated amount of sulfuric acid and silver sulfate are added to a defined amount of sewage water and admixed therewith to obtain an analysis sample; an amount of $K_2Cr_2O_7$-solution is admixed with such analysis sample to obtain a reaction sample; said reaction sample is heated substantially up to the boiling point thereof and maintained at the resultant temperature for a period of time until substantially all of the oxygen, released from the $K_2Cr_2O_7$-solution during the reduction of Cr^{+6}-ions into Cr^{+3}-ions, reacts with and oxidizes the organic materials in such reaction sample; and a residual amount of Cr^{+6}-ions within the resultant reaction sample is determined by titrating such sample with a Fe^{+2}-ion containing solution so that a reaction in accordance with the following formula occurs:

$$(Cr_2O_7)^{-2} + 6Fe^{+2} + 14H^{+} \rightarrow 2Cr^{+3} + 6Fe^{+3} + 7\text{-}H_2O$$

wherein the consumed amount of the Fe^{+2}-ion containing solution as measured by titration, comprises an indirect indication of the amount of organic materials in the defined amount of sewage water, the improvement comprising:

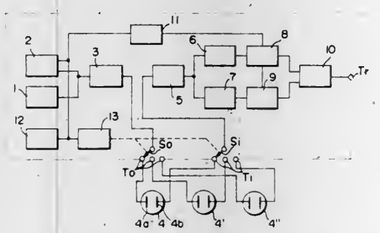
generating a required amount of Fe^{+2}-ions for said titration via a coulometric reduction in an Fe^{+3}-ion containing solution during the preparation and reaction of said reaction sample.

4,238,298

CORROSION RATE MEASURING METHOD AND APPARATUS

Tohru Tsuru, Yokohama, and Shiro Haruyama, Tokyo, both of Japan, assignors to Shiro Haruyama, Tokyo, Japan

Filed May 16, 1979, Ser. No. 39,662
Claims priority, application Japan, Oct. 2, 1978, 53/120401
Int. Cl.[3] G01N *27/02, 27/06*
U.S. Cl. 204—1 T **11 Claims**



1. A method of measuring the corrosion rate of a given environment upon a given corrodible material which comprises arranging a given pair of test plates of said material in a given spaced relation while immersed in an environment substantially the same as said given environment, impressing two small alternating currents of differing frequency between said given pair of plates, and from the different impedances encountered by said two currents of differing voltages flowing between said given pair of plates, determining the A.C. impedance of the corrosion reaction which is a measure of the corrosion rate.

4,238,299

TUBING WITH COPPER-BORON CARBIDE COMPOSITE FACING AND METHODS FOR ITS PRODUCTION

Chih-Chung Wang, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

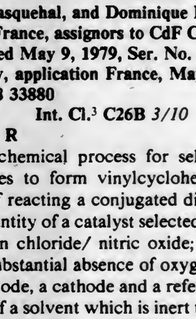
Filed Aug. 24, 1979, Ser. No. 69,525
Int. Cl.[3] C25D *15/00, 7/04*
U.S. Cl. 204—16 **24 Claims**

1. A method of coating tubing with a layer of boron carbide embedded in copper, comprising the steps of:

providing an electrolyte containing copper ions in contact with the surface of the tubing to be coated;

depositing a layer of electrically nonconductive boron carbide particles through the electrolyte onto a portion of the outer surface of metal tubing in contact with the electrolyte containing copper ions;

electrolytically depositing copper onto said outer surface of said tubing through said layer of nonconductive particles to build up an electrodeposited copper matrix substantially filling spaces between the nonconductive boron carbide particles deposited on said surface; and



rotating said tubing and repeating the preceding depositing steps at another portion of the outer surface of said tubing.

4,238,300

GOLD ELECTROPLATING PROCESS

Kei Yoshida, Reading, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 25, 1979, Ser. No. 42,456
Int. Cl.[3] C25D *3/48*
U.S. Cl. 204—46 G **5 Claims**

1. A method of manufacturing an article by steps comprising electrolytically depositing gold from a gold plating bath onto said article,

characterized by adding hypophosphorous acid to said bath, with the pH of said bath being in the range of 6 to 10.

4,238,301

PROCESS FOR SELECTIVE ELECTROCHEMICAL DIMERIZATION OF CONJUGATED DIENES TO FORM VINYLCYCLOHEXENES

Francis Petit, Wasquehal, and Dominique Huchette, Vendin-le-Vieil, both of France, assignors to CdF Chimie, Paris, France

Filed May 9, 1979, Ser. No. 37,549
Claims priority, application France, May 9, 1978, 78 13697; Nov. 30, 1978, 78 33880
Int. Cl.[3] C26B *3/10*
U.S. Cl. 204—59 R **30 Claims**

1. An electrochemical process for selectively dimerizing conjugated dienes to form vinylcyclohexenes, which comprises the step of reacting a conjugated diene, in the presence of a catalytic quantity of a catalyst selected from dinitrosyliron chloride and iron chloride/ nitric oxide; said reaction being effected in the substantial absence of oxygen in an electrolysis cell having an anode, a cathode and a reference electrode, and in the presence of a solvent which is inert to both the reactants and the reaction conditions; wherein a substantially constant cathode potential with respect to said reference electrode, substantially corresponding to the plateau of the last reduction wave of said catalyst, is maintained during the course of the electrolysis.

4,238,302

ELECTROLYTIC PROCESS OF RECOVERING OXYACIDS OF CHLORINE OR SALTS THEREOF

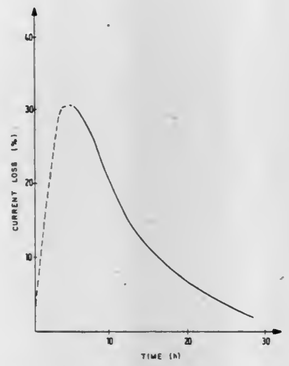
Karl Lohrberg, Heusenstamm, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,312

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850575

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—95 3 Claims



1. In a process for recovering oxyacids of chlorine or salts of such acids by the electrolysis of sea water or salt solutions contaminated by metal ions wherein extensive build-up of calcium hydroxide or magnesium hydroxide on the cathode is prevented by precipitating calcium ions and/or magnesium ions by adding precipitating chemicals to the sea water or the salt solutions contaminated by metal ions, the improvement wherein the electrolytic cell is operated such that there is formed on the cathode a layer of calcium hydroxide and/or magnesium hydroxide such that the current efficiency of the electrolytic cell increases to a value in excess of 90 percent and thereafter there is added to the sea water or salt solution contaminated by metal ions said precipitating chemicals and the purified solution is fed to the electrolytic cell.

4,238,303

DIAPHRAGM MODIFIER FOR CHLOR-ALKALI CELL

James C. Fang, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 14, 1978, Ser. No. 933,561

Int. Cl.³ C25B *1/46, 13/08;* H01M *2/16;* C08K *3/22*

U.S. Cl. 204—98 45 Claims

1. A composition of matter comprising at least one magnesium compound and a fluoropolymer,

said magnesium compound being at least partially reacted with said fluoropolymer, said magnesium compound being selected from magnesium oxide, hydroxide, carbonate, oxyhalide and hydroxyhalide, wherein the halide is at least one of fluorine and chlorine, and

said fluoropolymer containing functional groups of carboxyl ions, carboxylic acid or carbonyl fluoride or combinations thereof and optionally olefinic double bonds, and having an equivalent weight for each such functional group of not more than about 25,000.

25. An aqueous dispersion of the composition of claim 1 which also contains surfactant in an amount effective to disperse the composition.

26. The aqueous dispersion of claim 25 having a solids content of up to about 30% by weight.

31. A composition suitable for producing an improved diaphragm for a chlor-alkali cell comprising a composition of claim 25 mixed with an aqueous dispersion of at least one type of fiber selected from asbestos and borosilicate fiberglass, said fiber being present in an amount of about 50–95% by weight based on the fluoropolymer plus the magnesium compound.

36. A modified asbestos diaphragm for a chlor-alkali cell comprising the composition of claim 31 in which the selected fiber is asbestos, which composition has been deposited on a substrate and sintered.

4,238,304

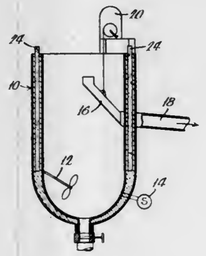
METHOD FOR IMPROVED RECOVERY OF TALL OIL FROM BLACK LIQUORS

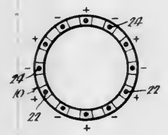
Jerry Zucker, Charleston, S.C., assignor to Raybestos-Manhattan, Inc., Trumbull, Conn.

Filed Aug. 30, 1979, Ser. No. 71,007

Int. Cl.³ B01D *17/06;* C02F *1/46, 1/48*

U.S. Cl. 204—131 8 Claims





1. A method for improving recovery of tall oil from black liquor obtained from a paper making process, comprising the steps of first separating the alkaline black liquor soap from the black liquor, acidifying the black liquor soap to a stable pH of from about 2.0 to about 2.5 until the soap is substantially converted into the acid form, whereby the acidified soap will separate into layers including an upper tall oil layer and a lower sludge layer containing tall oil, applying an electrical potential to said acidified soap with a voltage gradient in the range of about one to about 100 volts for a time sufficient to cause liberation of tall oil from the sludge layer without substantial hydrolysis, and removing the tall oil from the liquor.

4,238,305

ELECTRODIALYTIC PROCESS FOR THE CONVERSION OF IMPURE SODA VALUES TO SODIUM HYDROXIDE AND CARBON DIOXIDE

Alan B. Gancy, Syracuse, and Theodore J. Jenczewski, Sherrill, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 29, 1979, Ser. No. 88,781

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—180 P 8 Claims

1. A process for the production of high strength, high purity NaOH and CO_2 from soda values in an electrodialysis cell having an anode and a cathode compartment separated by base and acid zones, which comprises the steps of:

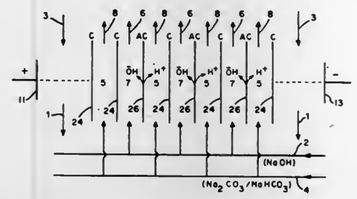
(a) introducing an aqueous soda solution having $NaHCO_3$, Na_2CO_3, trona or mixtures thereof to an acid zone of the electrodialysis cell located between a cation permselective face of a bipolar membrane and one face of a cation permselective membrane;

(b) introducing an aqueous NaOH solution to a base zone of the cell located between an anion permselective face of a bipolar membrane and the other face of said cation permselective membrane;

(c) passing direct electric current through the electrodialysis cell thereby producing H_2CO_3 and CO_2 gas from the soda solution in the acid zone and producing a NaOH-enriched stream in the base zone;

(d) withdrawing the NaOH-enriched product stream from the base zone; and

(e) withdrawing H_2CO_3 and CO_2 gas and partially depleted soda solution from the acid zone.



4,238,306

ELECTRODIALYSIS PROCESS FOR THE SEPARATION OF NON-ESSENTIAL AMINO ACIDS FROM DERIVATIVES THEREOF

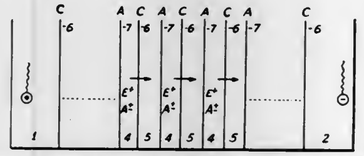
Mordechai Perry, Petach Tikvah, and Ora Kedem, Rehovot, both of Israel, assignors to Research Products Rehovot Ltd., Rehovot, Israel

Filed Feb. 14, 1979, Ser. No. 12,214

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—180 P 13 Claims



1. A process for the separation, by electrodialysis, of a mixed aqueous solution containing a non-essential amino acid and a derivative of that acid in ionic form, into at least two separate product solutions of acid and derivative respectively, of which at least one solution contains highly pure product obtained at high quantitative yield, comprising:

(a) providing an electrodialysis stack;

(b) continuously introducing a feed solution containing a non-essential amino acid and derivative thereof to be separated into feed cells of said stack;

(c) adjusting the flow rate and concentration of said solution and the electric current density applied to values adapted to create concentration polarization conditions adjacent to the membranes in the feed cells thereby accumulating a high local concentration of protons upon the surface of the anion exchange membranes, and a high local concentration of hydroxyl ions upon the cation exchange membranes; and

(d) maintaining the pH of the bulk solution in the feed cells in a range of between 4–8, irrespective of the isoelectric point of said amino acid, in order to adjust for pH changes of the bulk solution occurring due to unequal rates of water dissociation at the cation and anion exchange membreanes.

4,238,307

ELECTRODIALYSIS PROCESS FOR THE SEPARATION OF ESSENTIAL AMINO ACIDS FROM DERIVATIVES THEREOF

Mordechai Perry, Petach Tikvah, and Ora Kedem, Rehovot, both of Israel, assignors to Research Products Rehovot Ltd., Rehovot, Israel

Filed Feb. 14, 1979, Ser. No. 12,213

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—180 P 12 Claims



1. A process for the separation, by electrodialysis of a mixed aqueous solution, containing an essential amino acid and a derivative of that acid as components thereof, wherein one of said components is in charged form and the other of said components is in amphoteric form, into at least two separate product solutions, of acid and derivative respectively, of which at least one product solution contains highly pure product obtained at high quantitative yield, comprising:

(a) providing an electrodialysis stack;

(b) continuously introducing a feed solution containing an essential amino acid and derivative thereof to be separated into feed cells of said stack; and

(c) adjusting the flow rate and concentration of said solution and the electric current density applied to values adapted to create concentration polarization conditions adjacent to the membranes in the feed cell thereby accumulating a high local concentration of protons upon the surface of the anion exchange membranes, and a high local concentration of hydroxyl ions upon the cation exchange membranes; and

(d) maintaining the pH of the bulk solution in the feed cells in a range of between 4–8, irrespective of the isoelectric point of said amphoteric component, in order to adjust the pH changes of the bulk solution occurring due to unequal rates of water dissociation at the cation and anion exchange membranes.

4,238,308

DEVICE FOR MONITORING A COMPONENT IN A FLUID MIXTURE

Riad M. A. Kocache; Danny F. Holman, and Ronald H. Sunderland, all of Crowborough, England, assignors to Sybron Corporation, Rochester, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,416

Claims priority, application United Kingdom, Sep. 30, 1977, 40817/77

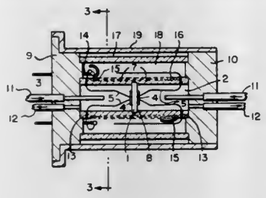
Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S 6 Claims

1. A device for monitoring a component in a fluid mixture comprising a solid electrolyte tube, the bore of which is divided into two chambers at a distance substantially mid-way along its length by a disc of said solid electrolyte, said tube being provided with heating means on each side of said disc;

said heating means being a heat-producing element which is substantially coextensive with the length of said tube, and substantially everywhere in contact with a corresponding surface of said tube, and the periphery of said disc being

continuously integral with said tube, whereby to provide said disc with even heat resulting in substantially the same



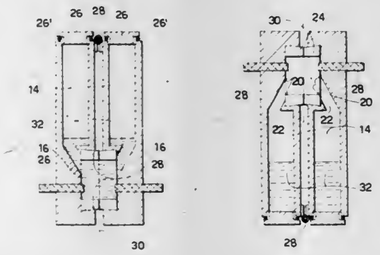
temperature on each side of said disc, said disc being provided with electrodes on its opposed faces.

4,238,309

APPARATUS FOR ELECTROCHEMICAL DEVELOPMENT OF NUCLEAR RADIATION TRACKS

Giorgio Zapparoli, Anguillara Sabazia, and Luigi Tommasino, Rome, both of Italy, assignors to Comitato Nazionale per l'Energia Nucleare—CNEN, Rome, Italy

Filed May 8, 1979, Ser. No. 37,227
Claims priority, application Italy, May 18, 1978, 49440 A/78
Int. Cl.[2] G01N *27/28;* C25B *9/00*
U.S. Cl. 204—195 R **4 Claims**



1. An apparatus for the electrochemical attack of insulating material thin sheets which apparatus comprises a first elongated hollow body with top and bottom flat bases and a flat face on which a window is provided which gives access to a cavity into which an electrode projects extending watertight through the cavity wall to reach the outside thereof; said window being provided with a gasket surrounding the cavity opening and projecting from said face, said first hollow body being hinged on a second hollow body which too is provided with at least one flat face on which a window is provided in such a position that, by rotating said two bodies about their common hinge, their two windows are brought to mate; said hollow body being provided with an elongated chamber extending over about the whole length of the body not occupied by said cavity the latter communicating with said chamber through a conveying means; the capacity of said chamber being at least twice the capacity of said cavity plus the conveying means capacity.

4,238,310

APPARATUS FOR ELECTROLYTIC ETCHING

Thomas A. Eckler, and Brian A. Manty, both of Lake Park, Fla., assignors to United Technologies Corporation, Hartford, Conn.

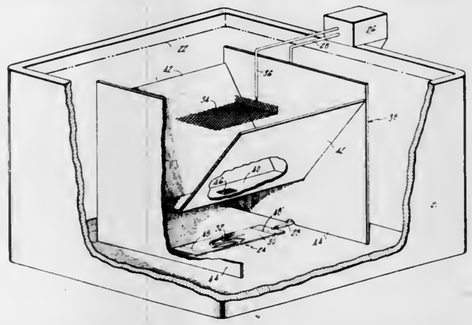
Division of Ser. No. 13,762, Feb. 21, 1979. This application Oct. 3, 1979, Ser. No. 81,514
Int. Cl.[3] C25F *7/00*
U.S. Cl. 204—252 **2 Claims**

1. In apparatus for electrolytically etching a precision groove pattern in a metal workpiece using a vessel, an electrode and means for applying alternating electric potential between the electrode and the workpiece, the improvement comprising:

a shield of non-conductive material, capable of being interposed between the workpiece and the electrode, having:

a horizontally disposed base plate containing an aperture, the aperture having small dimensions compared to the base plate and the workpiece,

a concave shape of sufficient dimension to contain the electrode, the shape being adapted to divert passage



toward the electrode of gases generated at the workpiece,

a shape which allows circulation of electrolyte through the aperture, to avoid stagnation and heating of electrolyte contained within the concavity of the shield,

means for fixedly holding the shield between the electrode and the workpiece, and means for holding the electrode within the shield concavity, so that a current distribution is achieved at the workpiece which promotes uniformity of depth of etching.

4,238,311

CATHODE FOR USE IN ELECTROLYSIS AND METHOD FOR THE PRODUCTION THEREOF

Kazuki Kasuya, Ichihara, Japan, assignor to Chlorine Engineers Corporation, Ltd., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 8,813
Claims priority, application Japan, Feb. 20, 1978, 53-17690
Int. Cl.[3] C25B *11/06, 11/02;* B01J *25/02*
U.S. Cl. 204—290 R **3 Claims**

1. A cathode for use in electrolysis comprising:

(1) a substrate of iron or an alloy of iron;

(2) a compact interlayer of Fe_3O_4 on the surface of the substrate (1); and

(3) a coating of activating nickel comprising principally nickel or an alloy of nickel on the Fe_3O_4 interlayer (2).

4,238,312

SPUTTERING SYSTEM FOR OPTIMIZING QUARTZ DEPOSITION UNIFORMITY

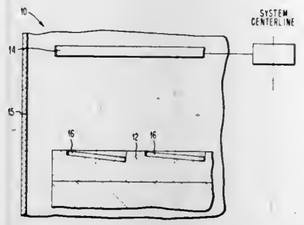
Arkadi Galicki, San Jose, Calif.; Carl P. Hayunga, Poughkeepsie, and Homi G. Sarkary, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 23, 1979, Ser. No. 59,718
Int. Cl.[3] C23C *15/00*
U.S. Cl. 204—298 **4 Claims**

1. In a multiple wafer processing system for applying a layer on said wafers by sputter deposition,

means for attaining improved thickness uniformity of said layer across each individual wafer comprising means for

tilting each wafer to a predetermined deposition angle with respect to a reference electrode in the system as



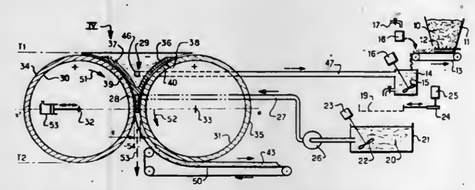
determined by the diameter of the wafer and the distance of the wafer from the center of the electrode.

4,238,313

METHOD AND MACHINE FOR MANUFACTURING A PLATE-LIKE MATERIAL MADE FROM AGGLOMERATED PARTICLES AND IN PARTICULAR CERAMIC PRODUCTS OBTAINED THEREBY

Sten Chronberg, Arnieres-sur-Iton, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Division of Ser. No. 811,078, Jun. 29, 1977, which is a division of Ser. No. 679,012, Apr. 21, 1976, Pat. No. 4,048,037. This application Dec. 22, 1978, Ser. No. 972,075
Int. Cl.[3] B01D *13/02*
U.S. Cl. 204—300 R **3 Claims**



1. A plate-like product comprising a pair of sheet-like layers, each of which is formed of agglomerated particles from a slip solution comprising a suspension of said particles deposited on two different electrodes through electrophoresis, each layer having a side in contact with the respective electrode and the free outer side, each of said layers being fused to each other in an air-tight relation in the presence of said slip solution by connection of the free outer sides, whereby the bending stresses in the composite plate-like product are balanced.

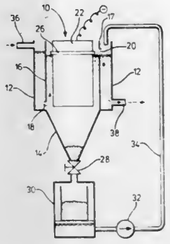
4,238,314

CONTINUOUS ELECTROLYTIC TREATMENT OF CIRCULATING WASHINGS IN THE PLATING PROCESS AND AN APPARATUS THEREFOR

Atsuyuki Ueno, Tokyo, Japan, assignor to Katsuhiro Okuho, Higashi, Japan

Filed Aug. 16, 1978, Ser. No. 933,995
Int. Cl.[3] C25C *1/12, 1/20*
U.S. Cl. 204—52 Y **4 Claims**

1. In a silver or copper plating process, the washings of which have traces of said copper or silver combined with cyanide, the method of continuously monitoring and maintaining the cyanide level in said washings and simultaneously removing the silver or copper traces therefrom comprising the steps of providing a plurality of washing baths in decreasing concentrations of impurity, continuously circulating a portion of said washings from the washing bath having the greatest concentration of impurity through an electrolytic cell having an anode and a cathode through which current is passed, said circulating portion constituting the electrolyte therefor, applying an electrolytic current across said cathode and anode at a selected level sufficient to oxidatively reduce substantially all of said cyanide to ammonia prior to precipitation of said metal and to cause relatively pure metal to be deposited on the cathode of said cell in a soft spongy mass, said electrolytic cell being provided with a hopper arranged at its bottom and periodically scraping said metals from said cathode while said cathode is immersed in the electrolyte, and collecting the same in said hopper for removal and thereafter recycling said electrolyte free of cyanide and metal to the washing bath from which it was taken.



4,238,315

RECOVERY OF OIL FROM OIL SHALE

John F. Patzer, II, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 31, 1978, Ser. No. 956,394
Int. Cl.[2] C10G *1/04*
U.S. Cl. 208—11 LE **14 Claims**

1. A process for recovering oil from oil shale containing kerogen which comprises bringing a mixture of oil shale and solvent to a temperature in the range of about 385° to about 440° C. in a time period of less than about 10 minutes, maintaining said mixture at a temperature in the range of about 385° to about 440° C. and a pressure in the range of about 250 to about 2000 pounds per square inch gauge for a period of about 20 minutes to about two hours and thereafter recovering the resulting oil.

4,238,316

TWO-STAGE CATALYTIC PROCESS TO PRODUCE LUBRICATING OILS

John Mooi, Homewood, and James P. Gallagher, Park Forest, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 801,948, May 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 687,438, May 17, 1976, abandoned. This application Jul. 6, 1978, Ser. No. 922,253
Int. Cl.[3] C10G *47/12*
U.S. Cl. 208—58 **11 Claims**

1. A process for preparing a mineral hydrocarbon lubricating oil having an increased viscosity index, on a dewaxed basis, which comprises 1) contacting a mineral hydrocarbon oil feedstock of lubricating viscosity, at least about 90% by weight of which boils above about 600° F. and having a viscosity index of about 50 to about 85, with molecular hydrogen at hydrocarbon hydrocracking conditions in the presence of a catalyst which is boria-free and comprises a major amount of a catalytically active support derived by the calcination of a material comprising about 30% to about 70% by weight of silica and about 30% to about 70% by weight of alumina, based on the total silica and alumina in said support, said silica and alumina being supplied by a mixture comprising about 40% to about 90% by weight of amorphous silica-alumina and about 10% to about 60% by weight of alumina derived from hydrous alumina selected from the group consisting of boehmite, and mixtures thereof with amorphous hydrous alumina, and a

minor, catalytically effective amount of each of at least one metal selected from the group consisting of Group VIb metals and at least one metal selected from the group consisting of Group VIII metals; and (2) contacting hydrocarbon oil of lubricating viscosity from step (1) with molecular hydrogen under hydrocarbon hydrogenation conditions in the presence of a solid hydrogenation catalyst at a hydrotreating severity such that not more than about 5 volume percent of the hydrocarbon feed to step (2) boiling above about 600° F. is cracked to material boiling below about 600° F. to produce oil of lubricating viscosity having a viscosity index of at least about 90 and at least about 20 viscosity index numbers greater than the hydrocarbon oil feedstock contacted in step (1), on a dewaxed basis.

4,238,317

CATALYTIC CRACKING WITH REDUCED EMISSION OF NOXIOUS GASES

Iacovos A. Vasalos; William D. Ford, both of Downers Grove, Ill., and Chuan-Kang R. Hsieh, San Rafael, Calif., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 21,883, Mar. 19, 1979, which is a division of Ser. No. 748,555, Dec. 8, 1976, Pat. No. 4,153,535, which is a continuation-in-part of Ser. No. 642,545, Dec. 19, 1975, abandoned. This application Aug. 20, 1979, Ser. No. 67,447

Int. Cl.³ C10G *11/05, 11/18*

U.S. Cl. 208—120 **18 Claims**

1. In a process for the cyclic, fluidized catalytic cracking of a hydrocarbon feedstock containing organic sulfur compounds wherein: (i) said feedstock is subjected to cracking in a reaction zone through contact with a particulate cracking catalyst at a temperature in the range from about 850° to 1,200° F.; (ii) cracking catalyst, which is deactivated by sulfur-containing coke deposits, is separated from reaction zone effluent and passes to a stripping zone wherein volatile deposits are removed from said catalyst by contact with a stripping gas comprising steam at a temperature in the range from about 850° to about 1,200° F.; (iii) stripped catalyst is separated from stripping zone effluent and passes to a catalyst regeneration zone and non-stripped, sulfur-containing coke deposits are removed from the stripped catalyst by burning with an oxygen containing regeneration gas at a temperature in the range from about 1,050° to about 1,450° F., thereby forming sulfur oxides; and (iv) resulting catalyst is separated from regeneration zone effluent gas and recycled to the reaction zone; a method for reducing emissions of sulfur oxides in the regeneration zone effluent gas which comprises:

(a) absorbing sulfur oxides in said regeneration zone with a fluidizable particulate solid other than said cracking catalyst, wherein said particulate solid is physically admixed with said cracking catalyst and comprises at least one free or combined first metal selected from the group consisting of the rare earth metals, at least one free or combined second metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, platinum and rhenium, and at least one inorganic oxide selected from the group consisting of silica and alumina, and

(b) removing said absorbed sulfur oxides from the particulate solid as a sulfur-containing gas by contacting said particulate solid with the hydrocarbon feedstock in said reaction zone and with steam in said stripping zone while physically admixed with the cracking catalyst.

4,238,318

CRYSTALLINE SILICATES AND HYDROCARBON-CONVERSION PROCESSES EMPLOYING SAME

Herman W. Kouwenhoven, and Willem H. J. Stork, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 858,136, Dec. 7, 1977, Pat. No. 4,208,305. This application Oct. 10, 1979, Ser. No. 83,497

Claims priority, application Netherlands, Dec. 16, 1976, 7613957

Int. Cl.³ C10G *11/05, 35/095, 47/18*

U.S. Cl. 208—120 **8 Claims**

6. A hydrocarbon conversion process which comprises contacting a petroleum hydrocarbon fraction at an elevated temperature and pressure with shaped catalyst particles comprising from about 0–90% w of binder material and 10–100% w of crystalline silicates, which silicates are characterized in that;

(a) they are thermally stable up to temperatures above 600° C.;

(b) after dehydration in vacuum at 400° C. they are capable of absorbing more than 3% w water at 25° C. and saturated water vapor pressure; and

(c) in the dehydrated form they have the following overall composition, in terms of moles of the oxides:

$(1.0\pm0.3)(R)_{2/n}O.[a\ Fe_2O_3.b\ Al_2O_3.c\ Ga_2O_3].y(d\ SiO_2.e\ GeO_2)$,

where R=one or more monovalent or bivalent cations introduced during preparation of said silicates and selected from the group consisting of alkaline metals, alkaline earth metals and organic cations obtained from primary, secondary and tertiary alkylamines and quaternary ammonium compounds;

$a>0.5$

$b\geqq0$;

$c\geqq0$;

$a+b+c=1$;

$y=10$ to 300

$d\geqq0.1$;

$e\geqq0$;

$d+e=1$,

n is the valency of R; and their X-ray diffraction patterns include, inter alia, the reflections given in Table A of this specification.

4,238,319

PROCESS FOR ISOMERIZATION OF PETROLEUM HYDROCARBONS

F. William Hauschildt, Dune Acres, and Ralph J. Bertolacini, Chesterton, both of Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 23, 1979, Ser. No. 32,268

Int. Cl.³ C10G *35/08*

U.S. Cl. 208—138 **5 Claims**

1. A process for the isomerization of light hydrocarbons boiling in the range from about 100° F. (38° C.) to about 210° F. (99° C.) which process comprises contacting said hydrocarbons with a catalyst consisting essentially of an ultrastable, large pore crystalline zeolitic aluminosilicate material containing less than 1 weight percent alkali metal calculated as the element and based upon the total catalyst weight and characterized by well-defined hydroxyl infra-red bands near 3700 cm^{-1} and near 3625 cm^{-1} and a maximum unit cubic cell dimension of 24.55 Å and a metal component selected from the metals, oxides and sulfides of the Group VIII elements of the Periodic Table.

4,238,320

DENITROGENATION OF SHALE OIL

Donald C. Cronauer, Gibsonia; Roger F. Vogel, Butler, both of Pa., and Richard A. Flinn, Littleton, Colo., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 819,710, Jul. 28, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 31,630

Int. Cl.³ C10G *45/08, 67/06*

U.S. Cl. 208—254 H **11 Claims**

1. A process for upgrading crude shale oil containing basic and nonbasic nitrogen compounds which comprises contacting said crude shale oil containing from about 0.1 to about 4 weight percent nitrogen in a hydrogenation zone at a space velocity of about 0.5 to about 4.0 v/v/hr., a pressure of about 500 to about 2500 psig and a temperature of about 330° to about 415° C. with hydrogen in the presence of a nickel-tungsten hydrogenation catalyst supported on activated alumina to obtain a treated oil containing from about 35 to about 95 weight percent of the nitrogen present in the feed and thereby increasing the ratio of basic nitrogen compounds to total nitrogen compounds by about 15 to about 40 percent and then contacting the resulting hydrogenation product with an ion-exchange resin to obtain shale oil containing from about 0.01 to about one weight percent nitrogen.

4,238,321

PROCESS FOR THE SEPARATION OF STRAIGHT PARAFFINS FROM MIXED PARAFFINS

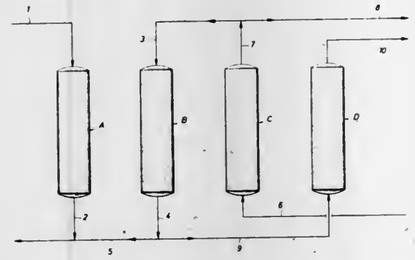
Petrus M. Florack, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 22, 1979, Ser. No. 51,299

Claims priority, application Netherlands, Jun. 27, 1978, 7806874

Int. Cl.³ C10G *25/03*

U.S. Cl. 208—310 Z **10 Claims**



1. A process for the separation of straight paraffins from a feed mixture mainly consisting of straight and branched paraffins by selective adsorption of the straight paraffins on a molecular sieve, followed by desorption of the straight paraffins from the molecular sieve with the aid of hydrogen, which comprises consecutively

(a) passing the feed downwardly through a molecular sieve bed which contains substantially no straight paraffins and the voids of which bed contain branched paraffins, until a desired quantity of straight paraffins has been adsorbed on the molecular sieve,

(b) passing a mixture of straight paraffins and hydrogen downwardly through the molecular sieve bed until substantially all the branched paraffins have been expelled therefrom,

(c) passing hydrogen upwardly through the molecular sieve bed until most of the straight paraffins have been desorbed and removed with the gas stream, and

(d) passing branched paraffins upwardly through the molecular sieve bed until substantially all the hydrogen has been expelled therefrom.

4,238,322

APPARATUS FOR PREPARATION OF A SPRAYABLE PRECIPITATED SILICIC ACID SUSPENSION

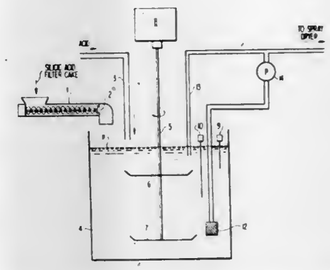
Bernd Brandt, Wesseling-Berzdorf; Peter Nauroth, Wesseling; Albert Peters, Erftstadt-Liblar, and Helmut Reinhardt, Rodenkirchen, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 648,848, Jan. 13, 1976, Pat. No. 4,094,771. This application Jan. 18, 1978, Ser. No. 870,544

The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.

Int. Cl.³ B03B *1/00*

U.S. Cl. 209—3 **3 Claims**



1. An apparatus for the production of a sprayable, highly concentrated suspension of a precipitated silicic acid having little grit and at least about 12 percent by weight solids, said apparatus comprising:

(a) a container having a diameter, said container provided with rotatable stirring means having a diameter and a peripheral speed of about 20–30 m/sec;

(b) means for feeding a silicic acid filter cake to said container;

(c) means for feeding a suspension agent to said container;

(d) means for removing a portion of said silicic acid suspension from a zone of highest turbulence of the suspension in said container; said means including a filter basket, and

(e) means for maintaining level of filling of said container so that the ratio of container diameter to level of filling is a maximum of about 1:2;

wherein the ratio of container diameter to the diameter of said stirring means is about 3:1.

4,238,323

METHOD OF AND APPARATUS FOR ELECTRODYNAMIC SEPARATION OF NONMAGNETIC FREE-FLOWING MATERIALS

Maia S. Zakharova, zh/m Kommunar 3p, kv. 69; Nikolai G. Polyakov, prospekt Geroev, 33, korpus 1, kv. 65; Viktor N. Lapitsky, zh/m Topol, 14, kv. 6, all of Dnepropetrovsk; Benyamin A. Ioffe, ulitsa Stirnu, 37a, kv. 44; Robert K. Kalnyn, ulitsa Gorkogo, 52, kv. 19, both of Riga; Anatoly V. Krymtsov, ulitsa Progressivnaya, 8, kv. 132, Dnepropetrovsk, all of U.S.S.R.; Vladimir Podolsky, deceased, late of Dnepropetrovsk, U.S.S.R.; by Sergei V. Podolsky, executor, and by Natalia V. Podolskaya, executor, both of ulitsa Barrikadnaya, 4, kv. 3, Dnepropetrovsk, U.S.S.R.

Filed Feb. 2, 1979, Ser. No. 8,873

Int. Cl.³ B03C *1/26*

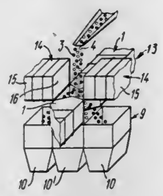
U.S. Cl. 209—212 **11 Claims**

1. A method of electrodynamic separation of nonmagnetic free-flowing materials comprising the steps of:

orienting the materials so their maximum cross-sectional areas are substantially perpendicular to magnetic lines of force of a variable nonuniform magnetic field; and

feeding said oriented materials into a maximum intensity region of said variable nonuniform magnetic field, whereby eddy currents are induced in electrically con-

ducting particles of said materials, and interaction between said eddy currents and said magnetic field causes



deflection of said electrically conducting particles from said flow of material.

4,238,324

APPARATUS FOR SEPARATING IMPURITIES FROM FIBER SUSPENSIONS

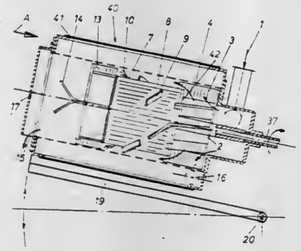
Walter Musselmann; Reimund Rienecker; Herbert Kinzler, and Josef Trä, all of Heindenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,635

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1978, 2850385

Int. Cl.³ B07B *1/20*

U.S. Cl. 209—255 **30 Claims**



1. Apparatus for separating impurities from fibrous suspensions, comprising:

a housing having a housing wall; an annular basket in said housing; said basket being spaced in from said housing internal wall;

an inlet for suspension to be cleaned and leading into said basket; a first outlet from said housing, spaced from said inlet, for separated impurities;

a second outlet communicating with the space between said basket and said housing wall for discharge of cleaned suspension;

weir means connected with said housing for maintaining a minimum level of fibrous suspension in said housing;

a rotatable rotor disposed within said screen basket and rotatable around its axis in said screen basket;

said screen basket having an interior containing a first upstream zone; in said first zone, said rotor having generally axially extending sorting vanes, located at a radially spaced distance from the axis of said rotor, and each said sorting vane also being spaced inwardly from said screen basket so that a screen gap is formed between said sorting vanes and said screen basket;

said screen basket having a second zone therein, downstream of said first zone with respect to the movement of impurities; said rotor having baffle means thereon at said second zone for inhibiting downstream flow of impurities.

4,238,325

FLUID TREATING APPARATUS AND METHOD

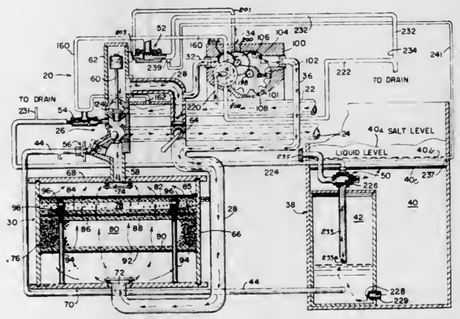
Don E. Heskett, Villa Park, Ill., assignor to Fluid Power Research, Inc., Windsor, Wis.

Continuation of Ser. No. 845,129, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 659,381, Feb. 19, 1976, abandoned, which is a division of Ser. No. 370,235, Jun. 15, 1973, Pat. No. 3,960,721. This application Sep. 20, 1978, Ser. No. 943,771

The portion of the term of this patent subsequent to Jun. 1, 1993, has been disclaimed.

Int. Cl.³ B01D *15/04*

U.S. Cl. 210—678 **2 Claims**



2. A method of treating fluid by ion exchange to prevent reverse exchange following regeneration and rinsing, said method comprising, passing a fluid to be treated through a first treating chamber and a second treating chamber respectively interconnected to each other in an upstream-downstream series flow relationship to each other when said apparatus is operated in a treating mode during which fluid to be treated passes through at least said second treating chamber in an upward flow direction after having previously passed through said first treating chamber and in a downstream-upstream series flow relationship to each other when said apparatus is operated in a regeneration mode during which a regenerant fluid and a rinse fluid pass through at least said second treating chamber in a downward flow direction prior to passing through said first chamber, said first treating chamber containing a bed of fine mesh ion exchange resin particles in a quantity sufficient to occupy substantially the entire volume of said first treating chamber, said second treating chamber containing a quantity of fine mesh ion exchange resin particles which is substantially less than the total volume of said second treating chamber, loosely distributing said fine mesh ion exchange particles in said second treating chamber during said treating mode operation throughout said second treating chamber as a result of the upward flow of fluid therethrough, and during said regeneration mode compacting said fine mesh ion exchange particles in said second treating chamber into a packed bed in which said particles are in surface-to-surface engagement with each other upon a lower surface of said second treating chamber as a result of gravitational forces and the downward flow of regenerant fluid and rinse fluid through said second treating chamber, whereby said fine mesh ion exchange particles in said second treating chamber provide efficient ion exchange when said apparatus is operated in said regeneration mode in comparison to the ion exchange which they provide when said apparatus is operated in said treating mode.

4,238,326

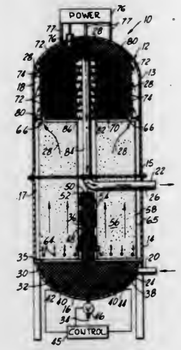
FLUID PROCESSOR APPARATUS AND METHOD

Bernard A. Wolf, #130, 2738 Roosevelt Blvd., Clearwater, Fla. 33520

Filed Sep. 21, 1979, Ser. No. 77,567

Int. Cl.³ B01D *35/06*

U.S. Cl. 210—695 **18 Claims**



1. In an apparatus for removing undesirable elements from a stream of fluid wherein said apparatus includes at least one pair of parallel electrode plates spaced apart to permit the fluid to flow therebetween, means for establishing an electric potential between said pair of electrodes plates to maintain an electric field therebetween, the improvement comprising:

means for providing a magnetic field which is substantially perpendicular to the electric field in a region between the pair of electrode plates,

the means for establishing the electric potential comprising a source of frequency controlled, square wave pulses superimposed over a constant base voltage,

whereby the undesirable elements are accelerated in a helical path toward one of the pair of electrodes.

4,238,327

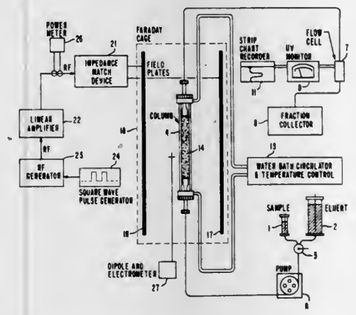
ELECTRIC RESONANCE CHROMATOGRAPHY

Robert P. Liburdy, 54 Pomeroy Ave., Pittsfield, Mass. 01201

Filed Jun. 25, 1979, Ser. No. 52,177

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **8 Claims**



1. A method for enhancing the partitioning of molecules having net dipole moments or distributed dipoles within their molecular chains using liquid gel chromatography, which comprises the application of a time-varying electric field through the gel media to alter the apparent molecular size.

4,238,328

PROCESS FOR REMOVING HEAVY-METAL IONS FROM AQUEOUS SOLUTIONS

Quentin Bowes, Allschwil, and Rudolf F. Wurster, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 14, 1979, Ser. No. 11,970

Claims priority, application Switzerland, Feb. 24, 1978, 2036/78

Int. Cl.² C02B *1/60*; C02C *5/08*

U.S. Cl. 210—688 **18 Claims**

1. A process for removing heavy-metal ions from an aqueous solution, which process comprises bringing the aqueous solution in contact with a water-insoluble adsorbent which has been produced from

(1) a basic polynitrogen compound capable of being acylated;

(2) an aliphatic or araliphatic carboxylic acid containing mobile substituents or a multiple bond capable of undergoing addition; and

(3) a crosslinking compound which contains at least two reactive substituents and which is different from component (2).

4,238,329

PROCESS FOR RECOVERING HEAVY METAL USING INSOLUBLE STARCH-XANTHATES

James F. Zievers, LaGrange, Ill., assignor to Industrial Filter Corporation, Cicero, Ill.

Continuation-in-part of Ser. No. 925,056, Jul. 17, 1978, abandoned, which is a continuation of Ser. No. 607,549, Aug. 25, 1975, abandoned. This application Sep. 14, 1979, Ser. No. 75,587

Int. Cl.³ B01D *15/04*

U.S. Cl. 210—36 **5 Claims**

1. A process for recovering heavy metal from a continuous stream of water containing said metal in concentrations which vary from time to time between minimum and maximum levels, comprising

causing said stream of water to flow through a filter element,

coating said filter element with a mixture of diatomaceous earth and insoluble starch-xanthate, the relative amounts of diatomaceous earth and insoluble starch-xanthate combined in said mixture being in the range of 1.75 to 3.0 parts diatomaceous earth to one part insoluble starch-xanthate,

continuously adding to said stream upstream of said filter element diatomaceous earth and insoluble starch-xanthate, the relative amounts of diatomaceous earth and insoluble starch-xanthate added to said stream being in the range of 1.75 to 3.0 parts diatomaceous earth to one part insoluble starch-xanthate,

the amount of said insoluble starch-xanthate added to said stream upstream of said filter element being sufficient to react with all of said metal contained in said stream at said minimum concentration level to form upstream of said filter element a complex including all of the metal contained in said stream at said minimum concentration level, but said amount being insufficient to react with all of said metal in said stream at said maximum concentration level.

4,238,330

FLOTATION AIDS FOR OIL-IN-WATER EMULSIONS

Dodd W. Fong, and Ronald J. Allain, both of Richmond, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 18, 1979, Ser. No. 57,663

Int. Cl.³ B01D *17/04*

U.S. Cl. 210—708 **3 Claims**

1. The method of treating oil-in-water emulsion to separate the emulsion and float the oil in the water incidental to recovering one of the emulsion phases, comprising the step of adding to the emulsion an effective amount of a cationic polyacrylamide selected from the group consisting of:

(A) diethylaminoethlmethacrylamide, acrylamide copolymer; and
(B) dimethyl, diethyl and dibutyl aminopropylmethacylamide, acrylamide copolymer; diethylaminoethylmethacrylamide, acrylamide copolymer; and dimethylaminoethyl and dimethylaminopropyl acrylamide, acrylamide copolymer;
wherein the unsubstituted acrylamide fraction of (A) is about 75% weight and wherein the unsubstituted fraction of (B) is about 40%.

4,238,331

PROCESS FOR TREATING SEA WATER CONTAINING WAXY LIPIDS

Robert W. Mitchell, Inverurie, Scotland, and Ernst L. Neustadter, Ruislip, England, assignors to The British Petroleum Company Limited, Sunbury-on-Thames, England

Continuation of Ser. No. 847,422, Nov. 1, 1977, abandoned. This application Jul. 27, 1979, Ser. No. 61,198
Claims priority, application United Kingdom, Nov. 1, 1976, 45275/76
Int. Cl.³ C02F *1/00*
U.S. Cl. 210—698 **5 Claims**

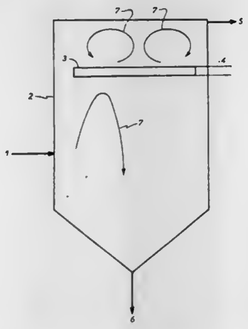
1. A method for treating sea water containing waxy lipids to prevent clogging of a filter upon filtration thereof, which method comprises adding a non-ionic dispersing agent to said sea water before the sea water is filtered to maintain said waxy lipids in a dispersed state, passing the sea water through a filter medium comprising fibers not negatively charged at the pH of sea water to remove solid impurities.

4,238,332

DECANTATION METHODS

Yves Samuel, and Philippe Gillet, both of St. Avold, France, assignors to Societe Chimique des Charbonnages, France

Continuation-in-part of Ser. No. 835,082, Sep. 20, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 961,908
Claims priority, application France, Sep. 23, 1976, 76 28680
Int. Cl.³ B01D *17/00*
U.S. Cl. 210—774 **7 Claims**



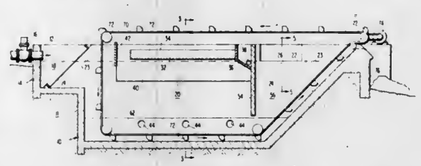
1. A method of continuous decantation and neutralizing convection currents between material feed and material about to be or being decanted, comprising the steps of
continuously introducing the mixture to be decanted at a feed temperature in association with an introductory zone of the mixture in the vicinity of the inlet of the decanter,
removing decanted liquid from the decanter at an outflow zone at an outflow temperature,
and creating a single thermal barrier by means located solely within the liquid phase least charged with the product to be separated from the mixture and between the introd tory zone and the outflow zone,
thereby avoiding convection streams by compensating the difference of temperature between the liquid mixture entering the decanter and the liquid already in the decanter.

4,238,333

WASTE WATER-OIL SEPARATOR

Franklin D. Tidwell, Douglasville, Ga., assignor to Tidwell Construction Company, Douglasville, Ga.

Filed Oct. 6, 1978, Ser. No. 949,364
Int. Cl.³ B03D *3/00*
U.S. Cl. 210—800 **3 Claims**



1. A method of separating oil, sand and other solid material from waste water comprising the steps of:
A. In a first, oil-collecting, phase of operation:
feeding the waste water into the inlet chamber of a tank also having a clear water chamber and a larger settling chamber between the inlet and clear water chambers;
mechanically removing relatively large solid material from the waste water as it flows through the inlet chamber;
permitting water to settle to the bottom of the settling chamber and oil to float to the top thereof;
permitting only clear water to float under an oil barrier between the settling and clear water chambers; and
removing via a discharge outlet in the clear water chamber the clear water flowing over a first weir means mounted in said clear water chamber at an elevation which determines the liquid level in the tank during said first phase of operation; and
B. In a second, oil-removing, phase of operation, when a predetermined height of oil is floating on the top of the liquid in the settling chamber:
terminating the feed of waste water, blocking the discharge outlet in the clear water chamber to prevent removal of the clear water flowing over the first weir means;
pumping liquid into the bottom of the settling chamber slowly to raise the liquid level therein to the top of a second weir means mounted in said settling chamber at an elevation substantially higher than that of the first weir means;
removing the oil which flows over the second weir means; and
then mechanically removing from the bottom of the settling chamber sand which has accumulated there.

4,238,334

PURIFICATION OF LIQUIDS WITH TREATED FILTER AID MATERIAL AND ACTIVE PARTICULATE MATERIAL

Christopher J. Halbfoster, Union, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 836,967, Sep. 27, 1977, Pat. No. 4,177,142, which is a continuation-in-part of Ser. No. 457,821, Apr. 4, 1974, abandoned. This application Sep. 17, 1979, Ser. No. 76,065
The portion of the term of this patent subsequent to Dec. 4, 1996, has been disclaimed.
Int. Cl.³ B01D *37/02*
U.S. Cl. 210—679 **20 Claims**

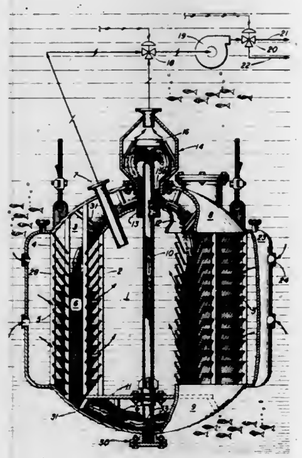
1. A method for removing impurities from a liquid comprising: passing said liquid through a filter bed comprising a mixture of treated fibrous filter aid material and an active particulate material, said treated filter aid material and said particulate material having opposite surface charges in aqueous suspension, and said mixture producing a clumping phenomenon, wherein said filter aid material comprises about 5 to 95% by weight, of said bed, and wherein said filter aid material has been treated with an electrolyte-type compound that produces a surface charge opposite to the normal surface charge by bonding to the surface of said filter aid material.

4,238,335

UNDERSEA SAND FILTER FOR CLEANING INJECTION WATER

R. Leroy Grimsley, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Mar. 12, 1979, Ser. No. 19,385
Int. Cl.³ B01D *23/24*
U.S. Cl. 210—802 **5 Claims**



1. A method for filtering injection water prior to use in an offshore oil platform comprising filtering said water through an apparatus submerged in an ocean environment, said apparatus comprising
(a) an inner chamber having an outer wall;
(b) an outer chamber surrounding said inner chamber and having an outer wall, the inner wall of said outer chamber being common with said outer wall of said inner chamber, both inner and outer walls being vertically aligned frusto-conical members set at opposing angles;
(c) means for retaining particulate filter media means in said outer chamber, said retaining means allowing fluid communication from said fluid through said retaining particulare filter media means into said inner chamber, said means being the inner and outer chamber walls comprised of vertically aligned frusto-conical members set at opposing angles, and wherein both inner and outer chambers have fluid impermeable partitions at the upper and lower ends, and wherein output means are in fluid communication with the inner chamber; and
(d) means for recovering particulate free fluid from said inner chamber.

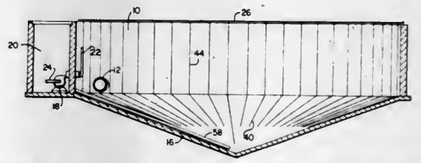
4. An apparatus for removing particulate solids from fluids when said apparatus is submerged in said fluid, comprising,
(a) an inner chamber having an outer wall;
(b) an outer chamber surrounding said inner chamber and having an outer wall, the inner wall of said outer chamber being common with said outer wall of said inner chamber, both inner and outer walls being vertically aligned frusto-conical members set as opposing angles;
(c) means for retaining particulate filter media means in said outer chamber, said retaining means allowing fluid communication from said fluid through said retained particulate filter media means into said inner chamber, said means being the inner and outer chamber walls comprised of vertically aligned frusto-conical members set at opposing angles, and wherein both inner and outer chambers have fluid impermeable partitions at the upper and lower ends, and wherein output means are in fluid communication with the inner chamber;
(d) a cylindrical portion in axial alignment with said fluid impermeable end portions of the inner and outer chambers, said cylindrical portion penetrating the lower end of said inner chamber fluid impermeable housing, and the upper fluid impermeable ends of both the inner and outer chambers, said cylindrical portion surrounded by a housing affixed to the upper fluid impermeable end of said outer chamber, said housing containing a baffle situated over the upper end of the cylindrical portion, the interior of the housing in fluid communication with the outer chamber at the lower end and open to a three-way switching valve at the upper end, said valve containing a first means capable of directing filtered fluid to a desired source and a second means capable of directing fluid containing particulates cleaned from filter media to a desired source, and
(e) means for recovering particulate free fluid from said inner chamber.

4,238,336

SLUDGE DIFFUSION METHOD AND APPARATUS

Lynn E. Bultman, 3877 Highway 70, St. Charles, Mo. 63301

Filed May 24, 1979, Ser. No. 42,042
Int. Cl.³ B01D *21/00*
U.S. Cl. 137—13 **20 Claims**



1. The method of treating a bed of a relatively dense sludge in the nature of a substantially thick, heavy mass consisting essentially of solid wastes settled from water into a sedimentation basin, said method including the steps of:
injecting air under pressure into said mass at a plurality of locations between the top of the mass and the bottom of the basin at a sufficient velocity and volume to diffuse the mass until it can be handled like a fluid;
thereupon pumping the diffused mass from said basin into a means of conveyance; and
then utilizing said conveyance means for transporting the wastes to an area of disposal.

4,238,337

METHANE GAS PRODUCER USING BIOLOGICAL DECOMPOSITION OF WASTE MATTER

Melville F. Peters, Livingston, N.J., and Walter T. Peters, East Dennis, Mass., assignors to Walter Todd Peters; Margot Elizabeth Peters, both of East Dennis, Mass. and Albert F. Kronman, Locust Valley, N.Y.

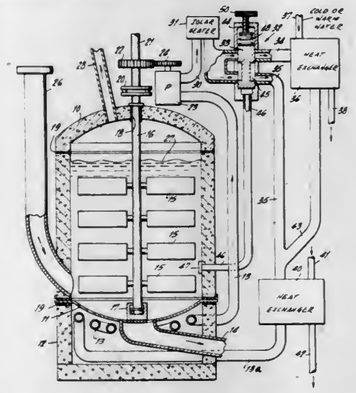
Filed Feb. 9, 1979, Ser. No. 10,689
Int. Cl.³ C02F *1/00*
U.S. Cl. 210—179 **4 Claims**

1. Apparatus for the production of methane gas by biological decomposition of waste matter comprising;
a. a container for holding waste material,
b. an elongated shaft rotatably mounted within the container said shaft enclosed in an elongated electrically conductive cylinder and provided with magnets which are rotated with the shaft within the cylinder to generate electric

eddy currents in the cylinder thereby providing a first heat source within the container to warm the waste material,

c. paddle means coupled to the shaft within the container and in contact with the waste matter,

d. at least one external heat source to raise the temperature of the waste matter within the container,



e. a power source coupled to the shaft to rotate the said shaft and paddle wheels said paddle wheels providing a second heat source within the container,

f. means to control the temperature of the waste matter within the container,

g. means to introduce waste matter into the container, and,

h. outlet means to remove the methane gas and excess heat from the container.

4,238,338

APPARATUS FOR THE TREATMENT OF SEWAGE

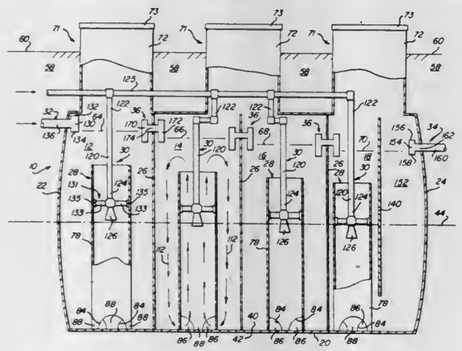
Jay Kinzer, Denver, Colo., assignor to Sanilogical Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 836,375, Sep. 26, 1977, Pat. No. 4,142,975, and Ser. No. 947,780, Oct. 2, 1978. This application Mar. 5, 1979, Ser. No. 17,736

The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.

Int. Cl.³ C02F *3/20*

U.S. Cl. 210—195.4 **5 Claims**



1. Apparatus for treating sewage to produce a clarified effluent and having a plurality of treatment chambers arranged in serial fluid communication, comprising:

a series of treatment chambers including a first chamber of the series, a last chamber of the series and at least one intermediate unit of the series, each such chamber comprising a sidewall of generally circular cross-sectional peripheral configuration having first and second end portions; first and second chamber endwalls mounted in fluid-tight engagement with the first and second end portions of the sidewall to define a generally cylindrically shaped sewage treatment chamber therewithin; a first conduit means vertically mounted in the treatment chamber in spaced relationship relative to the chamber endwalls for directing the flow of mixed liquor within the treatment chamber, the first conduit means comprising a tubular member extending from a lower end portion located in supporting engagement with the chamber sidewall vertically upward to an upper end portion terminating beneath the liquid level in the chamber, the lower end portion defining at least one passageway providing fluid communication between the inside of the tubular member and a lower portion of the treatment chamber; a second conduit means vertically mounted within the first conduit means in substantially coaxial relationship relative thereto and extending from an upper end portion above the upper liquid level in the chamber to a lower end portion within the first conduit means for supplying oxygen containing gas to the treatment chamber at a location within the first conduit means to cause sewage in the chamber to rapidly rise vertically upward within the first conduit means and then circumferentially outward and downward in a continuous path to the bottom of the treatment chamber and then vertically upward again within the first conduit means to cause an intimate and thorough mixing of the gas with the sewage in the treatment chamber and to thereby maintain relatively heavy particulate solid matter in generally uniform suspension throughout the sewage in the treatment chamber; and means for supplying an oxygen containing gas under pressure to the second conduit means;

inlet means for supplying raw sewage to the first chamber of the series;

means for providing a quiescent zone in the last chamber of the series;

outlet means for withdrawing clarified effluent from the quiescent zone at about the upper liquid level thereof; and

fluid communication means for providing fluid communication between an intermediate top portion of each successive chamber of the series and determining an upper liquid level in each treatment chamber of the series.

4,238,339

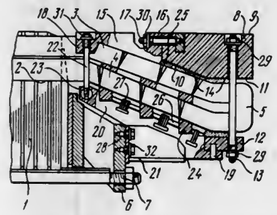
ARRANGEMENT FOR SUPPORTING STATOR END WINDINGS OF AN ELECTRIC MACHINE

Garri M. Khutoretsky, Altaiskaya ulitsa, 20, kv. 5; Vladimir M. Fridman, Grazhdansky prospekt, 13, korpus 1, kv. 170, both of Leningrad; Alexandr I. Vorontsov, ulitsa Khazova, 43, kv. 94, Pushkin Leningradskoi oblasti; Igor A. Prigorovsky, ulitsa Basseinaya, 53, kv. 4, and Anatoly D. Ignatiev, ulitsa Basseinaya, 85, kv. 162, both of Leningrad, all of U.S.S.R.

Filed Nov. 27, 1978, Ser. No. 963,671

Int. Cl.³ H02K *3/46*

U.S. Cl. 310—260 **6 Claims**



1. In a stator of an electric machine including a core having slots arranged around the periphery thereof and provided with an inner bore, clamping plates secured to the end surfaces of said core, and a bar winding laid into said slots of said core and having end portions with heads, an arrangement for supporting said end portions of said winding, comprising:

an inner ring made of an electrically insulating material, mounted coaxially with said inner bore of said core, and supporting said end portions;

an outer ring made of an electrically insulating material and externally embracing said end portions,

said inner ring being secured to said outer ring substantially along said heads of said end portions;

a plurality of Z-shaped members secured to said inner ring and adjoining said end portions,

a projection of each of said Z-shaped members, facing an end surface of said core, being positioned between said bars of said winding at the outlet of said bars from said core slots and preventing said inner ring from axial displacements relative to said end portions; and

a plurality of brackets, each bracket being movably connected to said clamping plates and having one end attached to said outer ring and a second end attached to said projection of one of said Z-shaped members;

whereby said inner ring and said outer ring with said end portions supported therebetween make up a single rigid vibration-resistant unit permitting displacement of said end portions in an axial direction relative to said stator core during operation of an electric machine.

4,238,340

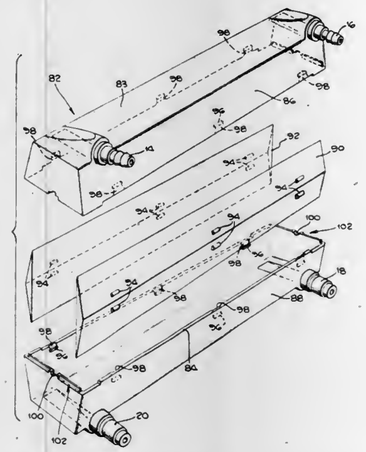
HEMODIALYZER

Finley W. Markley, Burnsville; Thomas H. Benham, Apple Valley, and Raymond M. Lukes, Eagan, all of Minn., assignors to Medical, Incorporated, Inver Grove Heights, Minn.

Continuation of Ser. No. 854,783, Nov. 25, 1977, abandoned, which is a continuation of Ser. No. 672,853, Apr. 2, 1976, abandoned. This application May 4, 1979, Ser. No. 35,852

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **21 Claims**



1. A hemodialyzer comprising:

a substantially rigid case having blood ports and dialysate ports therein, said case being divided along a parting line into two parts, each of said parts having a generally trapezoidal shaped cross section with said parting line extending at about the larger base of each of said parts;

a pair of wedge elements received within said case, each of the cross sections of said wedge elements being generally in the form of an obtuse triangle, said wedge elements being positioned on opposite sides of said case with the apex of said triangles at about said parting line, the legs of said triangles extending generally coangular with the adjacent inner walls of said case, and the bases of said triangles extending generally perpendicular to said parting line; and

a cellulosic semipermeable membrane folded in a plurality of pleats to define a stack of membrane having a generally rectangular cross section and including a plurality of generally parallel planar blood and dialysate flow channels defined by said pleats and opening respectively on opposite channel opening sides of said stack, the opposite sides of said stack which extend generally parallel to said channels being confined between said wedge elements, the last pleat on each side of said stack extending between and sealed to said wedge element and said adjacent inner wall.

4,238,341

COMPOSITION OF MAGNETIC RECORDING MEDIA

Yoshiki Kato, Tokyo; Heigo Ishihara, Hachioji; Hajime Fukke, Inagi; Katsuyoshi Chiba; Waichi Nagashiro, both of Hachioji; Teruo Tsunoda, Tokyo, and Munehisa Mitsuya, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 12, 1979, Ser. No. 84,453

Claims priority, application Japan, Oct. 18, 1978, 53-127339

Int. Cl.³ H01F *1/113*

U.S. Cl. 252—62.54 **9 Claims**

1. A composition of magnetic recording medium consisting of a ferromagnetic powder, a binder, and single crystal alumina as a reinforcing agent in an amount of from 1 to 20 percent by weight on the basis of said ferromagnetic powder, said composition when coated on a disc exhibiting a greater sliding distance than a corresponding composition of said ferromagnetic powder, binder and same amount of polycrystalline alumina employed for grinding when coated on a disc.

4,238,342

PROCESS OF MAKING SHAPED ARTICLE OF LITHIUM FERRITE CONTAINING PHOSPHORUS PENTOXIDE WITH VANADIUM PENTOXIDE OR BISMUTH TRIOXIDE SINTERING AGENTS

Ho B. Im, Seoul, Rep. of Korea, and Donald G. Wickham, Malibu, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 907,039, May 18, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 57,140

Int. Cl.³ C04B *35/26*

U.S. Cl. 252—62.61 **1 Claim**

1. In the process of making a shaped article of a lithium ferrite having the formula:

$$Li_{0.38}Zn_{0.12}Ni_{0.08}Mn_{0.32}Fe_{2.10}O_4$$

wherein the ferrite raw materials are reacted by heating them to an elevated temperature wherein the temperature and time of heating are selected to cause said materials to react to form a reacted ferrite, followed by cooling, mixing the reacted ferrite with a binder and sintering agent, forming a shaped article and then sintering said shaped article at an elevated temperature of from about 980° C. to 1040° C. and for a time of from about 3 to 20 minutes, the improvement wherein the sintering agent comprises a mixture of a phosphorus compound with a member selected from vanadium and bismuth compounds said phosphorus, vanadium and bismuth compounds being selected from the oxides of said metals and compounds which decompose to oxides under the above defined sintering conditions, wherein the mol ratio of the vanadium or bismuth to the phosphorus is from about 0.6 to about 1.5 and the total quantity of the sintering agent to the ferrite is from about 0.5 to 3.0 mol percent.

4,238,343

HIGH FIRE POINT ALKYLAROMATIC INSULATING FLUID

John P. Pellegrini, Jr., O'Hara Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 26, 1978, Ser. No. 954,923
Int. Cl.³ H01B *3/22*
U.S. Cl. 585/24 **9 Claims**

1. A high fire point synthetic hydrocarbon suitable for use in oil filled electrical apparatus, said synthetic hydrocarbon consisting essentially of the monoalkylate or dialkylate reaction product or a mixture thereof of a preformed oligomer fraction consisting essentially of at least 30 and up to about 60 carbon atoms per molecule or a mixture thereof and prepared solely from a normal alpha-olefin selected from 1-butene, 1-hexene, 1-octene, 1-decene and 1-dodecene and mixtures thereof with an aromatic composition selected from aromatic hydrocarbons having from six to eight carbon atoms, chlorobenzene, bromobenzene, diphenyl, diphenyl ether, naphthalene and mixtures thereof and characterized by a maximum 98.9° C. (210° F.) viscosity of about 20 cs., a viscosity index of at least about 110, a maximum pour point of about −25° F. (−31.7° C.), a fire point of at least about 300° C. (572° F.) and a negative gassing tendency.

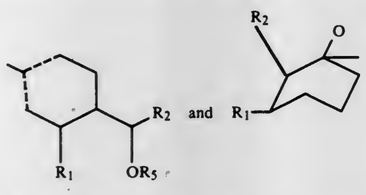
4,238,344

USE OF CYCLIC CHEMICAL COMPOUNDS AUGMENTING OR ENHANCING THE AROMA DETERGENTS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 953,128, Oct. 20, 1978. This application Jun. 7, 1979, Ser. No. 46,364
Int. Cl.² C11D *3/50, 9/44*
U.S. Cl. 252—174.11 **18 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid detergent comprising the step of intimatley admixing with a solid or liquid detergent base from 0.01% up to 0.5% by weight of at least one cyclic chemical compound having a structure selected from the group consisting of:



wherein R_1 is selected from the group consisting of hydrogen and methyl; R_2 is C_3–C_5 alkyl or alkenyl; and R_5 is hydrogen or C_1–C_4 acyl and wherein one of the dashed lines is a carbon-carbon single bond and the other of the dashed lines is a carbon-carbon double bond.

4,238,345

STABILIZED LIQUID ENZYME-CONTAINING DETERGENT COMPOSITIONS

C. Carol Guilbert, St. Paul, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed May 22, 1978, Ser. No. 908,505
Int. Cl.³ C11D *3/386*
U.S. Cl. 252—174.12 **18 Claims**

1. A stabilized, liquid, enzyme-containing detergent composition consisting essentially of:

(a) 20–90% by weight of water;

(b) a proteolytically effective amount of a proteolytic enzyme uniformly distributed throughout said water said proteolytically effective amount having an original activity in the range from about 100 to about 1,000 casein units per gram;

(c) 1–70% by weight of a detergent selected from the group consisting of a anionic surfactants, nonionic surfactants, and mixtures thereof; said detergent being uniformly distributed throughout said water;

(d) 0.5–30% by weight of a water-dispersible stabilizing system for said enzyme, dissolved in said water, said system comprising the combination of:

(1) 0.1–5% by weight, based on the weight of the entire detergent composition, of a water-dispersible antioxidant having a single electrode potential, at 25° C., for the oxidation of said antioxidant to an oxidized species, which is at least equal to that of ascorbic acid but less than that of sodium hydrosulfite wherein said antioxidant is a water-soluble metal salt of an oxidizable, oxygenated-sulfur anion;

(2) 1–25% by weight of an organic, hydrophilic, water-soluble free water-reducing polyol having a molecular weight less than about 500 and containing 2 to 6 hydroxyl groups; and,

(3) a buffering amount of a weak base for maintaining the pH of said composition within the range of 5.2 to 9.0 and for preventing spontaneous downward pH shifts of said composition, which shifts would result from the spontaneous oxidation of said anion.

4,238,346

DETERGENT BUILDERS AND PROCESS FOR PREPARATION THEREOF

Yujiro Sugahara, Tokyo; Koichi Usui, Shibata; Masahide Ogawa, Nakajo; Hideaki Kurosaki, Shibata, and Shigehisa Imafuku, Nakajo, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 741,365, Nov. 12, 1976, Pat. No. 4,102,977. This application Apr. 17, 1978, Ser. No. 896,767
Claims priority, application Japan, Nov. 18, 1975, 50/137814; Nov. 27, 1975, 50/141141; Oct. 13, 1976, 51/121795
Int. Cl.² B01J *1/04;* C01B *33/28;* C02B *1/44;* C11D *3/12*
U.S. Cl. 252—174.25 **10 Claims**



1. A detergent composition comprising (A) 1 to 99% by weight of at least one surface active agent selected from the group consisting of anionic surface active agents, non-ionic surface active agents and amphoteric surface active agents and (B) 1 to 99% by weight of a water-insoluble alkali metal aluminosilicate builder, said alkali metal aluminosilicate builder consisting essentially of an inorganic fine powder composed mainly of an alkali metal aluminosilicate having an X-ray diffraction pattern substantially same as that of zeolite of the type A and having a degree of crystallization in the range of from 55 to 75%, wherein said inorganic fine powder has (I) a maximum primary particle size smaller than 1μ and such a secondary particle size distribution that all particles of said fine

powder are smaller than 4μ, said maximum primary particle size being expressed by the maximum length among lengths of edges of cubic particles measured by an electron microscope and said secondary particle size distribution being measured according to Stokes' law by using an apparatus of the light scanning type for prompt measurement of the particle size distribution; (II) a buffer capacity (S) of at least 132 ml/100 g of solids, an initial buffer capacity (R) of at least 35 ml/100 g of solids and an effective alkali content of 2 to 8% by weight based on the inorganic fine powder, said buffer capacity (S), said initial buffer capacity (R) and said effective alkali content (Qc) being respectively expressed by an amount of hydrochloric acid necessary for lowering the pH of a 1% aqueous dispersion of said inorganic fine powder from 9.0 to 6.75, an amount of hydrochloric acid necessary for lowering the pH of said dispersion from 9.0 to 8.0, and a quantity of the alkali, as NaOH, equivalent to an amount of hydrochloric acid necessary for lowering the pH of said dispersion to 6.75 when said dispersion is titrated with 0.4 N hydrochloric acid at a rate of 20 to 50 ml/hr, (III) a calcium ion binding property (C.I.) of 90 to 160 mg/g as expressed as CaO, (IV) a suspension pH of 9.5 to 12 as measured after a 1% aqueous dispersion of said inorganic powder is boiled for 5 minutes, (V) such a suspension stability that when a 0.05% aqueous suspension of said inorganic fine powder is allowed to stand still, the sedimentation speed as expressed as the rate of formation of a supernatant is lower than 4 cm/hr, (VI) a Methylene Blue-adsorbing capacity, (VII) an oil absorption of at least 45 ml/100 g of the powder and (VIII) such an interfacial electric characteristic that when it is dispersed in water after exchange of calcium ion, the surface potential is retained uniformly negative.

4,238,347

AMORPHOUS POLYALUMINUM SULFATE COMPOSITIONS

Alan B. Gancy, Syracuse, and Christian A. Wamser, Camillus, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 9, 1979, Ser. No. 65,313
Int. Cl.³ C02F *5/02*
U.S. Cl. 252—175 **11 Claims**

1. An amorphous polyaluminum sulfate a composition of the formula

$$Al(OH)_x(SO_4)_y(H_2PO_4)_z(H_2O)_w$$

wherein
x is about 0.75 to 1.5;
y is about 0.7 to 1.07;
z is about 0 to 0.2; and
w is about 2.0 to 4.2
with the proviso that $x+2y+z$ is 3.

4,238,348

METHOD AND A COMPOSITION FOR INHIBITING CORROSION

Arthur L. Larsen, Saltsjöbaden; Sören J. Marklund, Saltsjö-Boo, and Jan Rosenblom, Saltsjöbaden, all of Sweden, assignors to Malaco AG, Zug, Switzerland

Filed Nov. 9, 1978, Ser. No. 959,081
Int. Cl.³ C23F *11/16, 11/14, 11/12;* E21B *43/22*
U.S. Cl. 252—391 **10 Claims**

1. A method for preventing corrosion of metals in contact with liquid systems, characterized in that, to the systems is added an effective amount of a carboxylic acid containing an organic hydrophobic group having at least 5 carbon atoms in combination with a sulfite or a bisulfite of an amine.

6. A composition for preventing corrosion of metals in contact with liquid systems, said composition comprising a carboxylic acid containing an organic hydrophobic group having at least 5 carbon atoms and an amine sulfite, whereby the weight ratio of carboxylic acid to the amine sulfite is within the range of from 1:20 to 20:1.

4,238,349

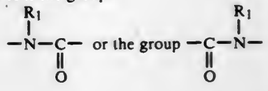
METHOD AND A COMPOSITION FOR INHIBITING CORROSION

Arthur L. Larsen, Saltsjöbaden; Sören J. Marklund, Saltsjö-Boo, and Jan Rosenblom, Saltsjöbaden, all of Sweden, assignors to Malaco AG, Zug, Switzerland

Filed Nov. 9, 1978, Ser. No. 959,084
Int. Cl.³ C23F *11/14, 11/12;* E21B *43/22*
U.S. Cl. 252—392 **10 Claims**

1. A method of preventing corrosion of metals in contact with liquid corrosive systems, characterized in that to the systems is added an effective amount of a hydrazine salt of an amido carboxylic acid having the general formula

$R-X-(CH_2)_nCOOH$ whereby X is the group



wherein R is an organic hydrophobic group having 5 to 22 carbon atoms, R_1 is hydrogen, an alkyl group having 1 to 4 carbon atoms, or has the same meaning as R, and n is an integer from 1 to 10.

5. A composition for the prevention of corrosion of metals in contact with liquid systems, said composition containing a corrosion preventing amount of a hydrazine salt of an amido carboxylic acid having the general formula

$R-X=(CH_2)_nCOOH$ whereby X is the group

wherein R is an organic hydrophobic group having 5 to 22 carbon atoms, R_1 is hydrogen, an alkyl group having 1 to 4 carbon atoms, or has the same meaning as R, and n is an integer from 1 to 10.

4,238,350

METHOD AND A COMPOSITION FOR INHIBITING CORROSION

Arthur L. Larsen, Saltsjöbaden; Sören J. Marklund, Saltsjö-Boo, and Jan Rosenblom, Saltsjöbaden, all of Sweden, assignors to Malaco AG, Zug, Switzerland

Filed Nov. 9, 1978, Ser. No. 959,083
Claims priority, application Sweden, Nov. 16, 1977, 7712953; Nov. 16, 1977, 7712957
Int. Cl.³ C23F *11/14, 11/12;* E21B *43/22*
U.S. Cl. 252—392 **10 Claims**

1. A method of preventing corrosion of metals in contact with liquid systems, characterized in that, to the systems is added an effective amount of an amino carboxylic acid having the general formula

$$R-N(R_1)-(CH_2)_nCOOH$$

wherein R is an organic hydrophobic group having 6 to 22 carbon atoms, R_1 is hydrogen, an alkyl group having 1 to 4 carbon atoms or has the same meaning as R and n is an integer from 1 to 10, in combination with a nitrogen containing compound selected from the groups

(a) mono-, di- or polyamines

(b) ether mono-, di- or triamines,

(c) quaternary ammonium compounds,

whereby the compounds of the groups (a), (b) and (c) contain at least one organic hydrophobic group having 6 carbon atoms or more, or

(d) a cyclic nitrogen containing compound being morpholine, cyclphexylamine or imidazolines.

4,238,351

POLYARYLAMIDE, THEIR PRODUCTION AND THEIR USE AS ABSORBERS FOR ULTRAVIOLET RAYS

Franz Alfes, Krefeld; Wolfgang Jacob, Moers; Karl-Heinrich Meyer, and Ludwig Bottenbruch, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 12, 1976, Ser. No. 675,738

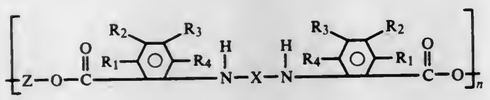
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1975, 2516684

Int. Cl.³ C09K *15/22*

U.S. Cl. 252—403 **8 Claims**

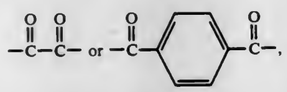
1. UV-absorbers corresponding to the formula

(I)



in which

X represents the group



Z represents a straight-chain or branched chain alkylene radical having 2 to 30 carbon atoms, optionally substituted by chlorine, or a straight-chain or branched chain alkylene radical having 2 to 35 carbon atoms interrupted by one or more oxygen atoms,

R_1 to R_4 are the same or different and represent hydrogen or alkyl groups having 1 to 4 carbon atoms, and

n is a number from 2 to 100.

4,238,352

CO-POLYMERIZED ACETYLENIC COMPOSITIONS

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 817,069, Jul. 19, 1977. This application Nov. 13, 1978, Ser. No. 960,506

Int. Cl.² C09K *9/02*

U.S. Cl. 252—408 **4 Claims**

1. A copolymeric composition comprising an actinically irradiated or thermally annealed product of a composition comprised of at least two co-crystallized acetylenic compounds, of different chemical structures, each containing at least one —C≡C—C≡C— group and substituents selected from the group consisting of sulfonate, urethane, and alcohol radicals, at least one of the compounds capable of undergoing a contrasting color change upon exposure to actinic radiation or thermal annealing, wherein the composition exhibits a substantially different thermogram than the sum of thermograms of the individual compounds as obtained by differential scanning calorimetry, and wherein the composition exhibits a higher or lower rate of color change upon exposure to actinic radiation or thermal annealing than the individual compounds.

4,238,353

OLEFIN POLYMERIZATION CATALYST

Anthony N. Speca, Cincinnati, Ohio, assignor to National Petro Chemicals Corp., New York, N.Y.

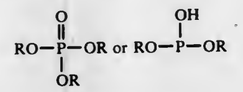
Continuation-in-part of Ser. No. 924,470, Jul. 14, 1978, abandoned. This application Jun. 8, 1979, Ser. No. 46,985

Int. Cl.³ C08F *4/78*

U.S. Cl. 252—428 **15 Claims**

1. A process for preparing an olefin polymerization catalyst system which comprises:

(a) depositing an organophosphoryl chromium reaction product of chromium trioxide and a phosphorus compound having the formula



wherein R is alkyl, aralkyl, aryl, cycloalkyl, or hydrogen but at least one R is other than hydrogen, upon a solid inorganic support material;

(b) depositing the non-volatile aluminum-containing product obtained from the reaction of an aluminum alkoxide and an aluminum carboxylic acid salt upon said support material; and,

(c) heat-activating said supported organophosphoryl chromium reaction product and non-volatile aluminum-containing reaction product in a non-reducing atmosphere at a temperature above about 300° C. up to the decomposition temperature of the support material.

4,238,354

POLYMERIZATION OF OLEFINS

Richard E. Dietz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 15, 1979, Ser. No. 3,566

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **10 Claims**

1. A method for preparing a catalyst composition comprising mixing a milled mixture of magnesium and particulate inorganic solid selected from the group consisting of magnesium halides with an alcohol to form an unagglomerated product, the alcohol being employed in a quantity as stoichiometrically required to convert the magnesium to magnesium hydrocarbyloxide having 0–3 moles of alcohol per mole associated therewith,

contacting said product with a tetravalent, halogenated titanium compound, and

washing said titanium contacted product with an inert solvent to remove any unreacted titanium compound.

4,238,355

HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Randall S. Shipley, Alvin; Donald F. Birkelbach, Angleton, and Kirby Lowery, Jr., Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 939,636, Sep. 5, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 74,037

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **14 Claims**

1. A catalytic reaction product of

(A) a tetravalent titanium compound represented by the formula $TiX_n(OR)_{4-n}$ wherein X is a halogen, R is an alkyl or an aryl group having from 1 to 12 carbon atoms and n has a value of 0 to 4;

(B) an anhydrous divalent zinc compound represented by the formulas $Zn(Q)_m$, RZnX and R_2Zn wherein each R is independently an alkyl or an aryl group having from 1 to about 12 carbon atoms, X is a halogen, Q is an anion selected from halide, hydroxide, carboxylate, carbonate, nitrate, sulfate, or mixtures thereof and m is two divided by the valence of Q;

(C) an organomagnesium component selected from (1) an organomagnesium compound or (2) a complex of an organomagnesium compound and an organometallic compound in an amount sufficient to solubilize the organomagnesium compound in a hydrocarbon solvent, said organomagnesium compound and said complex being represented respectively by the following formulas MgR''_2 and $MgR''_2 \cdot xMR''_y$ wherein each R'' is independently a hydrocarbyl group having from 1 to 20 carbon atoms; M is a metal selected from Al, Zn, Si, Sn, B and P; y is the number of hydrocarbyl groups and corresponds to the valency of M and x is about 0.001 to 10 and

(D) a halide source selected from (1) an active non-metallic halide, said non-metallic halide corresponding to the formula R'X wherein R' is hydrogen or a hydrocarbyl group such that the hydrocarbyl halide is at least as active as sec-butyl chloride and does not poison the catalyst and X is halogen or (2) a metallic halide corresponding to the formula $MR_{y-a}X_a$ wherein M is a metal of Group IIB, IIIA or IVA of Mendeleev's Periodic Table of Elements, R is a monovalent hydrocarbyl radical, X is halogen, y is a number corresponding to the valence of M and a is a number of 1 to y; provided that the proportions of the foregoing components of said catalytic reaction product being such that the atomic ratio of Mg:Ti is from about 1:1 to about 2000:1, the atomic ratio of Al:Ti is from about 0.1:1 to about 2000:1, the atomic ratio of Zn:Ti is from about 0.01 to about 500:1, the atomic ratio of excess X:Al is from about 0.0005:1 to about 10:1; and further provided that when the organomagnesium component and/or the halide source provides insufficient quantities of aluminum, there is also present an aluminum compound represented by the formula $AlR_{y'}X_{y''}$ wherein R and X are as defined above and y' and y'' each have a value of from zero to three with the sum of y' and y'' being three.

4,238,356

DIACYLOXYBUTENE ISOMERIZATION CATALYSTS COMPRISING SELENIUM DIOXIDE AND CARBOXYLIC ACID

George B. Fozzard, and John R. Norell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

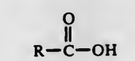
Division of Ser. No. 841,780, Oct. 13, 1977, Pat. No. 4,182,901. This application Jul. 31, 1979, Ser. No. 62,389

Int. Cl.³ B01J *27/00, 31/04*; C07C *67/28, 163/00*

U.S. Cl. 252—430 **9 Claims**

1. A catalyst composition comprising the reaction product of

(a) a carboxylic acid represented by the general formula:

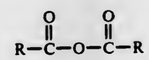


wherein R is selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms, and aryl from 6 to 10 carbon atoms:

(b) selenium dioxide;

(c) an ionic reagent selected from the group consisting of alkali metal hydroxide, alkaline earth metal hydroxide, ammonium hydroxide and a salt of said carboxylic acid; and

(d) an acid anhydride represented by the formula



wherein each R is as defined above and is individually selected.

2. A composition as in claim 1 further comprising a polar compound having a dielectric constant of at least 10 when measured within a temperature range of 20°–30° C. in combination with said carboxylic acid, said selenium dioxide, said ionic reagent and said acid anhydride.

3. A composition as in claim 2 wherein said polar compound is selected from the group consisting of pyridine, 1-methyl-2-pyrrolidinone, N,N-dimethylformamide, benzonitrile, acetonitrile, dimethyl sulfoxide and sulfolane.

4,238,357

CARBONYLATION OF OLEFINICALLY UNSATURATED COMPOUNDS

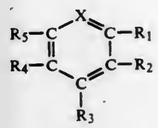
Frederick A. Pesa, Aurora, and Thomas A. Haase, Twinsburg, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 973,069, Dec. 26, 1978. This application Oct. 31, 1979, Ser. No. 90,164

Int. Cl.³ B01J *31/12, 31/02*; C07C *121/14*

U.S. Cl. 252—431 N **5 Claims**

1. A catalyst composition comprising a heterocyclic nitrogen promoter ligand and at least one of cobalt carbonyl and ruthenium carbonyl wherein said heterocyclic nitrogen promoter ligand has the following structure:



wherein

X is NO; and

wherein

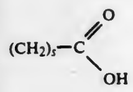
R_1, R_2, R_3, R_4 and R_5 are each independently selected from the group consisting of:

(1) H;

(2) $C_{1\text{-}10}$ alkyls;

(3) $(CH_2)_qOH$ wherein q is 0–10;

(4)



wherein

s is 0–10; and

(5) $O(CH_2)_tCH_3$

wherein

t is 0–10; and

wherein R_1 and R_2 may comprise a five to eight membered carbocyclic fused ring optionally substituted with $C_{1\text{-}10}$ alkyls.

4,238,358

HETEROGENEOUS CATALYTIC HYDROGENATION

Norman L. Holy, Bowling Green, Ky.; William A. Logan, Nashville, Tenn., and Karl D. Stein, Vincennes, Ind., assignors to Western Kentucky University, Bowling Green, Ky.

Division of Ser. No. 894,244, Apr. 7, 1978, which is a continuation-in-part of Ser. No. 787,584, Apr. 14, 1977, abandoned. This application Mar. 29, 1979, Ser. No. 24,951

Int. Cl.³ B01J *31/22*

U.S. Cl. 252—431 C **9 Claims**

1. A heterogeneous catalyst consisting essentially of anthranilic acid complexed with a metal selected from the group consisting of rhodium, ruthenium, palladium and platinum, said anthranilic acid complex being chemically linked through the amino group thereof to a polymeric support having reactive

sites thereon for effecting a chemical linkage between the anthranilic acid complex and said polymer.

4,238,359

PROCESS FOR PREPARING SPHERICAL SHAPED PELLETIZED OXIDE CATALYSTS COMPRISING MOLYBDENUM AND PHOSPHORUS

Shinichi Akiyama; Haruhisa Yamamoto; Nobuaki Yoneyama, and Shinji Matsumoto, all of Takaoka, Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Division of Ser. No. 940,484, Sep. 7, 1978, abandoned, which is a continuation of Ser. No. 623,616, Oct. 20, 1975, abandoned. This application May 11, 1979, Ser. No. 38,057

Claims priority, application Japan, Oct. 23, 1974, 49/121418

Int. Cl.[3] B01J *21/18, 21/14;* C07C *51/25, 57/04*

U.S. Cl. 252—437 10 Claims

1. A process for preparing a spherical shape pelletized oxide catalytic composition having a high degree of reproducibility of catalytic activity for oxidizing an unsaturated aldehyde into an unsaturated carboxylic acid, said composition consisting essentially of (1) phosphorus, (2) molybdenum, (3) X in which X is at least one element selected from the group consisting of thallium and metals of Groups 1A and II of the periodic table and, optionally (4) Z in which Z is at least one element selected from the group consisting of silicon, chromium, aluminum, germanium, titanium, vanadium, tungsten, bismuth, niobium, boron, gallium, lead, tin, cobalt, palladium, arsenic, zirconium, antimony, iron, nickel, indium, copper, silver, manganese, lanthanum, neodymium, samarium and tellurium at an atomic ratio of P:Mo:X:Z of 0.1-8:12:0.01-10:0-12 and a surface area of 4 to 20m^2/g and a pore volume of 0.08 to 0.5 ml/g, said catalyst composition being produced by tumbling granulation comprising the steps of:

feeding the unpelletized, uncalcined catalytic composition into a tumbling granulator;

granulating the composition at an elevated temperature while spraying a binder selected from the group consisting of water and ammonia water until granules of a predetermined size have formed;

withdrawing the granules of said predetermined size; and

calcining said granules.

4,238,360

AMMONIATED SILICA-ALUMINA GEL AND CATALYST CONTAINING THE SAME AND PROCESSES FOR PRODUCING SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 935,628, Aug. 21, 1978, and Ser. No. 769,118, Feb. 16, 1977, Pat. No. 4,142,995, and Ser. No. 874,755, Feb. 3, 1974, Pat. No. 4,198,310. This application Jan. 16, 1979, Ser. No. 3,879

Int. Cl.[3] B01J *27/24, 27/02, 29/06*

U.S. Cl. 252—438 15 Claims

1. A process for producing an active cracking catalyst which comprises exchanging an ammoniated silica-alumina gel containing NH_4 ions associated with the gel in an amount, substantially in excess of about 0.3 equivalents per mole of alumina (Al_2O_3), and having a SiO_2/Al_2O_3 molar ratio in the range of less than 3 with a solution of a salt of a monovalent cation other than alkali metal cation, or a polyvalent cation or both said cations, and reducing the NH_4 associated with the gel to substantially less than 0.3, equivalents per mole of Al_2O_3 in the gel, and separating said exchanged gel.

4,238,361

AMMONIATED SILICA-ALUMINA GEL AND CATALYST CONTAINING THE SAME AND PROCESSES FOR PRODUCING SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 9,487, Feb. 5, 1979, and Ser. No. 3,879, Jan. 16, 1979, and Ser. No. 935,628, Aug. 21, 1978, and Ser. No. 874,754, Feb. 3, 1978, and Ser. No. 869,856, Jan. 16, 1978, Pat. No. 4,192,778, and Ser. No. 769,118, Feb. 16, 1977, Pat. No. 4,142,995, and Ser. No. 718,167, Sep. 9, 1976, Pat. No. 4,058,484, and Ser. No. 718,166, Aug. 27, 1976, Pat. No. 4,085,069, and Ser. No. 874,755, Feb. 3, 1974, Pat. No. 4,198,319. This application Jun. 1, 1979, Ser. No. 44,676

Int. Cl.[3] B01J *27/24, 27/02, 29/06;* C01B *33/26*

U.S. Cl. 252—438 6 Claims

1. A crystalline composition of matter consisting essentially of gamma crystalline complex characterized by a d spacing corresponding substantially to Table 1.

4,238,362

PASSIVATION OF METALS CONTAMINATING A USED CRACKING CATALYST WITH CERTAIN ANTIMONY CARBONATES AND THEIR THIO ANALOGUES

Brent J. Bertus; Dwight L. McKay, and H. Wayne Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1978, Ser. No. 926,696

Int. Cl.[3] C10G *11/02, 11/18*

U.S. Cl. 252—439 4 Claims

1. A cracking catalyst composition comprising a used cracking catalyst having thereon a modifying amount of a treating agent which comprises an antimony carbonate.

4,238,363

SULFIDED AND ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 965,225, Nov. 30, 1978, which is a continuation-in-part of Ser. No. 883,115, Mar. 3, 1978, Pat. No. 4,137,153, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Jun. 15, 1979, Ser. No. 48,958

The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.

Int. Cl.[3] B01J *27/04*

U.S. Cl. 252—439 17 Claims

1. A catalytic composite comprising a sulfided combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state during the incorporation and pyrolysis of the rhenium carbonyl component, and of a zinc component.

4,238,364

CLASS OF CRACKING CATALYSTS ACIDIC FORMS OF CROSS-LINKED SMECTITIES

Joseph Shabtai, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Apr. 3, 1979, Ser. No. 26,636

Int. Cl.[3] B01J *29/02*

U.S. Cl. 252—455 R 14 Claims

1. A novel cracking catalyst comprising a cross-linked smectite framework material functionalized with acidic ions selected from the group consisting of the ions of hydrogen and rare-earth elements.

10. A method for preparing a novel molecular sieve cracking catalyst comprising:

preparing an acidic form of smectite including ions selected from the group consisting of hydrogen, cerium, gadolinium, lanthanum, neodymium, praseodymium, and samarium;

cross-linking the acidic form of smectite with oligomeric species of aluminum hydroxide and

stabilizing the cross-linked acidic form of smectite.

4,238,365

ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 884,310, Mar. 7, 1978. This application Jun. 8, 1979, Ser. No. 46,884

Int. Cl.[3] B01J *27/08, 27/10*

U.S. Cl. 252—441 12 Claims

1. An acidic catalytic composite comprising a porous carrier material containing catalytic components consisting essentially of on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % nickel, about 0.01 to about 5 wt. % zinc, and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group, catalytically available nickel, and zinc components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; and wherein substantially all of the catalytically available nickel component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state or in a mixture of these states.

4,238,366

ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 943,492, Sep. 18, 1978, Pat. No. 4,183,805, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Jun. 8, 1979, Ser. No. 46,885

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.[3] B01J *23/64, 27/08, 27/10*

U.S. Cl. 252—441 17 Claims

1. A catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state, and of a manganese component.

6. A catalytic composite as defined in claim 1 wherein the porous carrier material contains a catalytically effective amount of a halogen component.

4,238,367

PASSIVATION OF METALS ON CRACKING CATALYST WITH THALLIUM

Brent J. Bertus, and Dwight L. McKay, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1978, Ser. No. 949,299

Int. Cl.[3] B01J *29/04, 23/08*

U.S. Cl. 252—455 Z 6 Claims

1. A method for passivating a contaminating metal upon a hydrocarbon cracking catalyst containing zeolite which comprises contacting said catalyst with a thallium supplying material to add the same thereto.

3. A cracking catalyst containing zeolite suitable for cracking hydrocarbon having a contaminating metal thereon and having been treated to passivate said contaminating metal by incorporating with said catalyst a thallium supplying material.

4,238,368

WATER DEALKYLATION CATALYST OF AROMATIC HYDROCARBONS

Daniel Duprez, Poitiers, and Michel Grand, Serezin du Rhone, both of France, assignors to Elf Union, Paris, France

Filed Dec. 18, 1978, Ser. No. 970,332

Claims priority, application France, Dec. 19, 1977, 77 38277; Mar. 3, 1978, 78 06159

Int. Cl.[3] B01J *29/04, 29/28*

U.S. Cl. 252—455 Z 14 Claims

1. A water dealkylation catalyst for oil fractions containing alkylated aromatic hydrocarbons which comprises a zeolite L carrier exchanged with cations selected from the group consisting of alkali metal cations, cations from group V_b, VI_b, and VII_b of the periodic table and mixtures thereof, and containing from about 0.1 to 5% by weight of at least one metal from group VIII of the periodic table.

4,238,369

CHROMIUM-SILICA CATALYSTS BY HYDROTHERMAL TREATING

Max P. McDaniel; Melvin B. Welch, and Alonzo G. Kitchen, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 16, 1979, Ser. No. 30,599

Int. Cl.[3] B01J *23/26, 21/08*

U.S. Cl. 252—458 9 Claims

1. A method for preparing a catalyst composition comprising a chromium compound supported on a silica-containing substrate said process comprising contacting (1) said silica-containing substrate previously impregnated with a chromium compound with (2) a gaseous carrier containing a finite amount, up to about 5 volume percent of water vapor at a temperature in the range above about 1100° F. for a time sufficient to effect a broadening of molecular weight distribution of polymers produced under particle form polymerization conditions using the catalyst.

2. A method for preparing a catalyst composition comprising a chromium compound supported on a silica-containing substrate said process comprising contacting (1) said silica-containing substrate with (2) a gaseous carrier containing a finite amount, up to about 5 volume percent of water vapor at a temperature in the range of about 1300° F. to about 1800° F. for a time sufficient to effect a broadening of molecular weight distribution of the polymers produced under particle form polymerization conditions using the catalyst wherein the substrate is impregnated with said chromium compound subsequent to the contact of the substrate with water vapor.

4,238,370

OXIDATION CATALYST AND METHOD FOR ITS MANUFACTURE

Peter König, Budapest, Hungary, assignor to Tioxide Group Limited, Billingham, England

Filed Sep. 14, 1979, Ser. No. 75,409

Claims priority, application United Kingdom, Jul. 24, 1979, 25802/79

Int. Cl.[3] B01J *21/06, 23/22*

U.S. Cl. 252—461 14 Claims

1. A method for the manufacture of a total oxidation catalyst which comprises selecting a catalyst substrate comprising titanium dioxide, treating the substrate with a source of vanadium pentoxide, if necessary heating the treated substrate, washing the treated substrate with a wash liquid until the wash liquid is substantially free of vanadium pentoxide drying the washed substrate and recovering the dried washed total oxidation catalyst thereby obtained.

4,238,371

METHANATION CATALYST

Jack N. Finch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 893,365, Apr. 4, 1978, Pat. No. 4,168,276.
This application Apr. 18, 1979, Ser. No. 31,090
Int. Cl.³ B01J *21/04, 21/08, 23/28, 23/72*
U.S. Cl. 252—465 10 Claims

1. A methanation catalyst produced by impregnating a catalyst support with a solution of at least one oxidizable molybdenum compound, oxidizing the thus impregnated catalyst support to oxidize said at least one molybdenum compound, then impregnating the molybdenum oxide-containing support with a solution of at least one oxidizable copper compound and oxidizing the thus impregnated support to oxidize the said at least one copper compound, and then subjecting the resulting oxide composition to sufficient reduction to result in a catalyst having methanation activity, wherein said molybdenum and copper compounds are employed in such amounts that the atomic ratio of copper to molybdenum is in the range of 0.1/1 to 10/1.

4,238,372

CATALYTIC REFORMING CATALYST

Waldeen C. Buss, Richmond, and Harris E. Kluksdahl, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 583,236, Jun. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 355,606, Apr. 30, 1973, abandoned, which is a continuation-in-part of Ser. No. 301,696, Oct. 27, 1972, Pat. No. 3,852,190. This application May 4, 1979, Ser. No. 36,207
Int. Cl.³ B01J *23/62, 23/08;* C10G *35/06*
U.S. Cl. 252—466 PT 3 Claims

1. A catalyst composition comprising 0.01 to 5 weight percent platinum and 0.01 to 5 weight percent rhenium disposed on an alumina support wherein the alumina is obtained by removing water from aluminum hydroxide produced as a by-product from a Ziegler higher alcohol synthesis reaction and wherein the alumina is calcined at a temperature of 1100°–1400° F. so as to have a surface area of 165–225 square meters per gram.

4,238,373

PROCESS FOR MAKING DETERGENT COMPOSITIONS CONTAINING NITROGENOUS CATIONIC SURFACTANTS

Frederick E. Hardy, Newcastle upon Tyne, and Brian E. Talkes, Morpeth, both of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 5, 1979, Ser. No. 17,209
Claims priority, application United Kingdom, Mar. 6, 1978, 8778/78; Mar. 7, 1978, 8989/78
Int. Cl.³ C11D *1/62, 1/835*
U.S. Cl. 252—542 13 Claims

1. A process for producing an intimate solid mixture of a nitrogenous cationic surfactant and a water soluble or water dispersible organic component, comprising the steps of

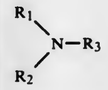
(a) reacting tertiary amine with quaternizing agent in liquid reaction medium consisting essentially of said organic component, one of said tertiary amine and said quaternizing agent reactants having a boiling point at atmospheric pressure equal to or less than 200° C. and being present in stoichiometric excess, said reaction being carried out at a temperature less than about 50° C. so as to form cationic surfactant in said liquid reaction medium while avoiding color body formation;

(b) treating the mixture resulting from step (a) at a temperature not greater than about 200° C. to remove unreacted portion of reactant used in excess to leave intimate mixture of organic component and cationic surfactant wherein the ratio of organic component to cationic surfactant lies in the range from about 50:1 to about 1:2 by weight;

(c) cooling to provide initimate solid mixture to cationic surfactant and organic component;

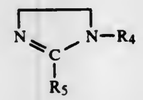
said tertiary amine having a structure selected from the group consisting of

(i)

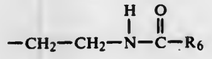


wherein R_1 is alkyl group containing from 1 to 22 carbon atoms and wherein R_1 may additionally contain up to 20 ethoxy groups and wherein each of R_2 and R_3 can be the same as R_1 or is independently selected from C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl, and benzyl groups, no more than one group in a molecule being benzyl, and

(ii)



wherein R_5 is a C_1–C_{20} alkyl group and R_4 has the formula



wherein R_6 is C_1–C_{18} alkyl; said quaternizing agent being selected from the group consisting of C_1–C_4 alkyl halides, C_2–C_4 alkylene oxides, C_{12}–C_{14} alkyl bromides, and C_{10}–C_{18} alkyl benzyl chlorides; said organic component having a molecular weight greater than about 240 and being selected from the group consisting of (i) fatty alcohols containing an average of more than 16 carbon atoms, and (ii) polyethylene oxide condensates of C_{10}–C_{20} alcohols, C_{10}–C_{18} fatty acids, C_6–C_{12} alkyl phenols, and C_{10}–C_{18} fatty acid esters of sorbitan.

4,238,374

BOUND AGGREGATE METHOD AND COMPOSITION

Robert L. Durham, Houston, Tex., and John H. McKenzie, Naples, Fla., assignors to Agritec, Inc., Houston, Tex.

Filed Apr. 16, 1979, Ser. No. 30,199
Int. Cl.³ C08L *3/02*
U.S. Cl. 260—17.4 GC 30 Claims

1. A composition comprised of,

a particulate, water-insoluble, water-retaining binder having water retention properties of at least 100 gm/gm and,

inert aggregate particles dispersed throughout the binder,

the particles being present in an amount and having a bulk density and surface area effective to disperse the composition in water as the composition is added to it without mixing and to provide a firmly bound aggregate support with the water comprised of about 60% to 80% by weight of water.

4,238,375

PROCESS FOR THE PRODUCTION OF ORGANIC HALOSILICON ACID RESINOUS PRODUCTS AND THEIR REACTION PRODUCTS UTILIZING PHENOL COMPOUNDS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 908,106, May 22, 1978, Pat. No. 4,198,491, which is a continuation-in-part of Ser. No. 845,464, Oct. 25, 1977, Pat. No. 4,120,937. This application Apr. 23, 1979, Ser. No. 32,411
Int. Cl.³ C08L *91/00*
U.S. Cl. 260—18 S 35 Claims

1. The process for the production of phenol halosilicon acid resinous products and their reaction products by the following steps:

(a) adding slowly and simultaneously 0.25 to 2 mols of a silicon acid, 0.25 to 2 mols of a phenol compound and 1 mol of a silicon halide having the structural formula:

$$R_ySiX_z$$

wherein X is halogen selected from the group consisting of chlorine and fluorine; R is independently selected from the group consisting a monovalent hydrogen radical and monovalent hydrocarbon radical; y is an integer 0 to 2; and z is an integer 1 to 4, inclusive; and the sum of y plus z is equal to 4, while

(b) agitating at a temperature below the boiling temperature of the mixture for 1 to 2 hours; the reaction is complete in 2 to 8 hours, thereby

(c) producing a phenol halosilicon acid resinous product.

27. The process of claim 1 wherein an additional step is taken following step (c) of claim 1 wherein a vegetable oil, selected from the group consisting of soya bean, linseed, tung, dehydrated castor, castor, cottonseed, tall, fish, perilla, oiticica, sunflower, safflower, corn and walnut oils and mixtures thereof, is added in the amount of 0.25 to 1 mol of hydroxyl and/or carboxyl group present in the vegetable oil to 1 mol of the halogen present in the phenol halosilicon acid resinous product while agitating at ambient temperature for 1 to 2 hours; the reaction is complete in 2 to 8 hours, thereby producing an organic silicon acid resinous product.

4,238,376

COMPOSITIONS OF ETHYLENE-PROPYLENE-DIENE IONIC POLYMERS AND POLY(ALPHA-METHYLSTYRENE)

Alfred P. Wilson, St. Charles, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,262
Int. Cl.³ C08F *236/02, 236/10, 236/14*
U.S. Cl. 260—23.7 M 7 Claims

1. A composition comprising an ethylene-propylene-diene ionic terpolymer comprising from 5 to 200 parts per hundred by weight of resin of poly(alpha-methylstyrene) per 100 parts by weight of terpolymer wherein the ionic group in said terpolymer comprises one member selected from the group consisting of sulfonic groups, carboxylate groups and phosphonate groups and at least some of said ionic groups are neturalized with a neturalizing agent and wherein the molecular weight of said poly(alpha-methylstyrene) is within the range of from about 600 to about 1000.

4,238,377

POLYMERIZABLE PREMIX COMPOSITION FOR PREPARATION OF POLYURETHANE SURFACES

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 4, 1979, Ser. No. 45,577
Int. Cl.³ C08L *91/00*
U.S. Cl. 260—28 R 7 Claims

1. A method for improving the storage stability of a polymerizable mixture comprising a high molecular weight diol component, a low molecular weight chain stiffener component and an asphalt component which comprises at least substantially increasing said stability by admixing into said mixture an effective amount to improve storage stability of at least one stabilizing agent selected from the group consisting of substantially aromatic hydrocarbon resins and said resins containing a minor amount of chemically bonded oxygen, said resins having an average molecular weight in the range of from about 500 to 2000 and a softening temperature in the range of from about 90° to 150° C.

4,238,378

CATIONIC ELECTROLYTE-STABLE DISPERSIONS AND PROCESS FOR PRODUCING POLYURETHANES USEFUL THEREIN

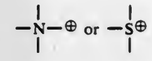
Peter Markusch, New Martinsville, W. Va.; Klaus Noll, Cologne, and Dieter Dieterich, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 8, 1977, Ser. No. 849,689
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651505
Int. Cl.³ C08G *18/12, 18/32;* C08L *75/08, 75/12*
U.S. Cl. 260—29.2 TN 7 Claims

1. Electrolyte-stable aqueous dispersions of polyurethane cationomers, characterized by:

(a) lateral or terminal polyalkylene oxide polyether chains containing from 2 to 10%, by weight, of ethylene oxide units, based on the total weight of the polyurethane;

(b) a content of



groups of from 16 to 100 milliequivalents per 100 g of polyurethane;

(c) an average particle size of from 50 to 300 mμ; and

(d) a solids content of from 10 to 45%.

4,238,379

WATER BASED OLIGOMERIC PRIMERS FOR ALUMINUM AND ALUMINUM ALLOYS

Theodore J. Reinhart, Jr., 345 Forrer Blvd., Dayton, Ohio 45419

Filed May 29, 1979, Ser. No. 43,575
Int. Cl.³ C08G *8/10, 8/22*
U.S. Cl. 260—29.3 10 Claims

I. A primer for aluminum or aluminum alloys consisting essentially of an aqueous solution of a water soluble condensation product of (1) phenol, resorcinol or a mixture of phenol and resorcinol and (2) formaldehyde, said solution being free of alkaline materials which corrode aluminum.

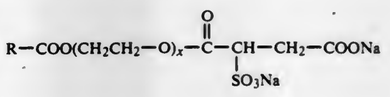
4,238,380

DISODIUM ETHOXYLATED ROSIN HALF ESTERS OF SULFOSUCCINIC ACID AS FOAM STABILIZERS FOR LATICES AND COMPOSITIONS CONTAINING SAME

John A. Alford, Hanahan, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,396
Int. Cl.³ C09F *1/04*
U.S. Cl. 260—29.7 SQ 17 Claims

1. A compound of the formula:



wherein x is an integer from 1 to 5 and R is a resin acid.

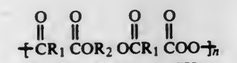
4,238,381

PROCESS FOR PRODUCING A NON-AQUEOUS SYSTEM DISPERSED SOLUTION OF POLYMERS FROM POLYMERIC PEROXIDES

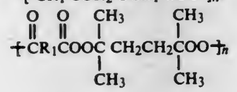
Takeshi Komai, and Masaru Matsushima, both of Aichi, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 54,239
Claims priority, application Japan, Jul. 4, 1978, 53-80584
Int. Cl.³ C08L *33/08*
U.S. Cl. 260—31.2 R **4 Claims**

1. A method for producing a non-aqueous liquid dispersion of polymers, which comprises: in a first copolymerization step, copolymerizing one or more polymeric peroxides selected from the group consisting of compounds having the formulas (I) and (II),

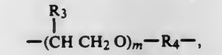


(I)



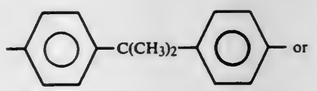
(II)

wherein R_1 is alkylene having 1 to 18 carbon atoms or phenylene, R_2 is (1) alkylene having 2 to 10 carbon atoms,

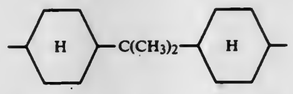


(2)

wherein R_3 is hydrogen or methyl, R_4 is alkylene having 2 to 10 carbon atoms, m is an integer of 1 to 13,



(3)



(4)

and n is from 2 to 20, with one or more vinyl-type monomers, thereby obtaining copolymers having peroxy bonds therein; then, in a second copolymerization step, subjecting said copolymers having peroxy bonds therein to block copolymerization with one or more vinyl-type monomers which are different in composition from the vinyl-type monomer used in the first copolymerization step, in the presence of an organic liquid which dissolves said copolymers of the vinyl-type monomers obtained in the first copolymerization step but does not dissolve polymers of the vinyl-type monomer used in the second copolymerization step.

4,238,382

COMPOSITION AND PROCESS FOR DELUSTERING PLASTISOL FILMS

John W. Uphoff, Kankakee, Ill., assignor to Brunswick Corporation, Skokie, Ill.

Filed Mar. 29, 1979, Ser. No. 25,071
Int. Cl.³ C08K *5/05, 5/01, 5/02*
U.S. Cl. 260—33.4 SB **19 Claims**

1. A composition for application to a carrier cloth to enable ready release of a plastisol film formed on said cloth and for delustering the release surface of said film, said composition comprising a mixture of:

a silicone polyester resin;

an effective amount of a fluorotelemer for delustering said release surface and permitting ready release of said film from said cloth;

a curing agent for curing said resin upon application of an effective amount of heat to said composition;

an effective amount of a catalyst solution to initiate reaction between said resin and said curing agent upon application of said heat;

an effective amount of an inert flatting agent for reducing the gloss of said plastisol release surface;

an effective amount of an anti-settling agent comprising a thixotrop in solution to prevent settling of said flatting agent prior to curing of said resin and to prevent foaming of said composition when applied to said carrier cloth; and

an effective amount of an aromatic solvent to maintain said mixture in solution prior to application of said heat and to permit ready application of said composition to said cloth.

4,238,383

VULCANIZABLE SHOE SOLING COMPOSITION

Thomas J. Anderson, Windsor, Vt., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 5, 1978, Ser. No. 948,839
Int. Cl.³ C08K *5/01*
U.S. Cl. 260—33.6 AQ **1 Claim**

1. A vulcanizable elastomer composition comprising a blend on a weight basis of 40 to 70 parts of polybutadiene of at least 93 percent cis content, 23 to 53 parts of a copolymer of styrene/butadiene containing 22.5 to 24.5 mol percent of styrene and a thermoplastic block copolymer of styrene/butadiene compounded with from 15 to 35 parts of a silica filler, 5 to 30 parts of a hydrocarbon processing oil and 10 to 30 parts of a hydrocarbon resin obtained as a polymer or copolymer of olefins of less than 10 carbon atoms and an effective amount of a sulfur curative exhibiting in a vulcanized state good abrasion, slip resistance and flexibility and having a Rex A hardness of 30 to 45.

4,238,384

METHOD OF INCORPORATING ADDITIVES IN POLYMERIC MATERIALS

Morris Blumberg, Irvington, N.Y., and Chester C. Swasey, Demarest, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Jun. 19, 1978, Ser. No. 916,733
Int. Cl.³ C08J *3/20, 5/14*; G01N *21/52*
U.S. Cl. 260—37 R **17 Claims**

1. A method of monitoring the distribution in a thermoplastic organic polymeric material of one or more additives normally solid at room temperature and selected from the group consisting of anti-oxidants, stabilizers, lubricants, flameproofing agents, slip agents, anti-blocking agents and anti-static agents, which comprises mixing said polymeric material with a uniform blend consisting essentially of said additive(s) and a compound which gives a detectable response to irradiation in the presence of said additive(s) and said polymeric material, said additive(s) and said compound being in cohesive relationship to one another, and subjecting at least a portion of the thus-treated material to the irradiation to which said compound is responsive and observing the presence or absence of a response to irradiation in said portion.

4,238,385

COATING COMPOSITION FOR FORMING INSULATING FILM ON ELECTROCONDUCTIVE SUBSTRATE FOR PRINTED CIRCUITS AND METHOD THEREFOR

Yasuomi Okado; Ken Nishizaki, both of Narashino, and Akinobu Tanaka, Mito, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Shinto Paint Co., Ltd., both of, Japan

Filed Aug. 14, 1979, Ser. No. 66,822
Claims priority, application Japan, Aug. 17, 1978, 53-100781
Int. Cl.³ C08L *63/00*
U.S. Cl. 260—37 EP **1 Claim**

1. A coating composition for forming an insulating film on an electroconductive substrate for printed circuits, composed of a pigment-containing finely divided synthetic resin powder and a water-dilutable cationic resin, characterized in that

(i) the weight ratio of said finely divided powder to said cationic resin is 0.5–20 to 1,

(ii) said finely divided powder is composed of 50–80 weight parts of a vehicle comprising an epoxy resin (A) having an epoxy equivalent of 400–2400 and a hardener, and 50–20 weight parts of a pigment (B), 2–10 weight parts in said pigment weight parts being finely divided silica particles having a particle diameter not larger than 100 mμ, and

(iii) said water-dilutable cationic resin is produced from an addition product of an epoxy resin having an epoxy equivalent of 200–2400 and a primary or secondary amine by water-solubilizing said addition product with an acid compound.

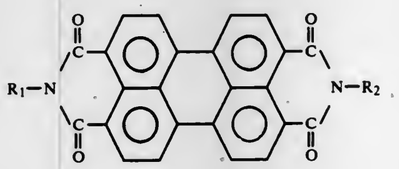
4,238,386

PROCESS FOR THE MASS PIGMENTING OF RIGID POLYVINYL CHLORIDE AND POLYOLEFINS

Fridolin Bäbler, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 10, 1979, Ser. No. 37,799
Claims priority, application Switzerland, May 18, 1978, 5388/78
Int. Cl.³ C08K *5/34*
U.S. Cl. 260—42.21 **7 Claims**

1. A process for pigmenting a polyolefin or a rigid polyvinyl chloride which comprises initimately mixing with the polyolefin or the rigid polyvinyl chloride a perylenetetracarboxylic acid diimide pigment, or a mixture of said pigments of the formula



wherein R_1 represents an alkyl, alkoxyalkyl or cycloalkyl radical of 12 to 24 carbon atoms and R_2 represents hydrogen, an alkyl radical of 1 to 24 carbon atoms, an alkoxyalkyl radical of 3 to 24 carbon atoms or a cycloalkyl radical of 5 to 24 carbon atoms.

4,238,387

RHEOLOGY CONTROL ADDITIVE FOR PAINTS

Joseph A. Antonelli, Riverton, N.J., and Souheng Wu, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 20, 1978, Ser. No. 962,178
Int. Cl.³ C08K *3/20*
U.S. Cl. 260—42.29 **14 Claims**

1. An additive comprising about:

(a) 40–98% by weight based on the weight of the additive, of finely divided silica;

(b) 1–40% by weight, based on the weight of the additive, of a polyfunctional acid constituent selected from the group consisting of a polyfunctional carboxylic acid, an anhydride or a polyfunctional carboxylic acid, phosphoric acid or polysulfonic acid, and

(c) 1–15% by weight, based on the weight of the additive, of an amine;

wherein the total of (a), (b) and (c) equals 100%.

14. A coating composition containing about 1–15% by weight, based on the weight of the coating composition, of the additive of claim 1.

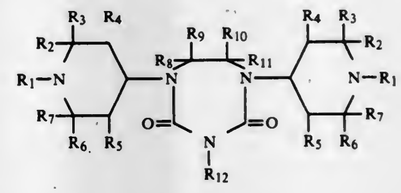
4,238,388

DERIVATIVES OF 1,3,5-TRIAZACYCLOHEPTANE-2,4-DIONE AND THEIR USE AS POLYMER STABILIZERS

Giuseppe Cantatore, Casalecchio di Reno, and Paolo Cassandrini, Bologna, both of Italy, assignors to Chimosa Chimica Organica S.p.A., Pontecchio Marconi, Italy

Filed Jun. 20, 1979, Ser. No. 50,207
Claims priority, application Italy, Jun. 20, 1979, 24744 A/78
Int. Cl.³ C07D *401/14*; C08K *5/34*
U.S. Cl. 260—45.8 N **14 Claims**

1. A compound of formula

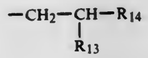


(I)

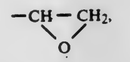
in which:

R_1, R_{12}, which can be the same or different, represent —O, —CN, a hydrogen liner or branched alkyl containing 1 to 20 carbon atoms, an alkynl or alkinyl containing 2 to 20 carbon atoms, benzyl, benzyl substituted by 1 to 3 alkyls containing 1 to 4 carbon atoms, hydroxybenzyl, hydroxybenzyl substituted by 1 to 3 alkyls containing 1 to 4 carbon atoms; a $—COR_{15}$, $—COOR_{15}$ or $—CONR_{15}R_{16}$ radical in which R_{15}, R_{16}, which can be equal or different, represent a linear or branched alkyl containing 1 to 20 carbon atoms, an alkynl containing 2 to 20 carbon atoms, a cycloalkyl containing 5 to 12 carbon atoms anaralkyl contain-

ing, 7 to 12 carbon atoms an aryl containing 7 to 12 carbon atoms, or when bonded to N they can be hydrogen, or together with the N to which they are bonded can form a nitrogenous heterocyclic ring of 5 to 8 terms; or a



radical in which R_{13} is hydrogen, methyl or phenyl, and R_{14} is —OH, —CN,



—OR_{15}, —$COOR_{15}$, —COR_{15}, —$OCOR_{15}$, —$CONR_{15}R_{16}$, —$OCONR_{15}R_{16}$, —$NR_{15}R_{16}$ in which R_{15} and R_{16} are as heretofore defined;

R_2, R_3, R_6, R_7, which can be equal or different, represent an alkyl containing 1 to 6 carbon atoms;

R_4, R_5, which can be equal or different, represent hydrogen or an alkyl containing 1 to 6 carbon atoms;

R_8, R_9, R_{10}, R_{11}, which can be equal or different, represent hydrogen or an alkyl containing 1 to 6 carbon atoms.

11. Polymer compositions stabilised against light, heat and oxidation, comprising a synthetic polymer and a stabilising compound of formula I as claimed in claim **1**, in a quantity of 0.01 to 5%, and preferably 0.1 to 1%, by weight with respect to the weight of the synthetic polymer.

4,238,389

VALPROATE CONJUGATION USING DICARBONYLS

Danton K. Leung, San Jose, and Prithipal Singh, Santa Clara, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Feb. 12, 1979, Ser. No. 11,254

Int. Cl.[3] **C07C** *103/52;* **A23J** *1/00;* **C07G** *7/00*

U.S. Cl. 260—112.5 R **15 Claims**

1. A conjugate of a compound selected from the group consisting of: 2-propyl-2-carboxymethylpentanoic acid, 2-propyl-2-(2'-carboxyethyl)pentanoic acid, 2,2-dipropylglutaric anhydride, 2,2-dipropylsuccinic anhydride, 6-carboxy-6-propylnonanal, and 2-carboxy-2-propylnonanoic acid, with a poly(amino acid) antigen or an enzyme.

4,238,390

SYNTHESIS AND BIOLOGICAL ACTIVITY OF [D-Thr^2, Δ^3Pro^5]-ENKEPHALINAMIDE

Johannes A. Meienhofer, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 9, 1979, Ser. No. 37,559

Int. Cl.[3] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **2 Claims**

1. A compound of the formula:

[D-Thr^2, Δ^3Pro^5]-enkephalinamide

4,238,391

3-[(S)-1'-PHENYLETHYLAMINO]PROPYLAMINOBLEOMYCIN, NON-TOXIC SALT THEREOF, AND METHOD FOR PRODUCING SAME

Tomohisa Takita, Asaka; Akio Fujii, Kamakura; Takeyo Fukuoka, Tokyo; Yasuhiko Muraoka, Kitamoto; Osamu Yoshioka, Yono, and Hamao Umezawa, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 915,805, Jun. 15, 1978. This application Jul. 18, 1979, Ser. No. 58,526

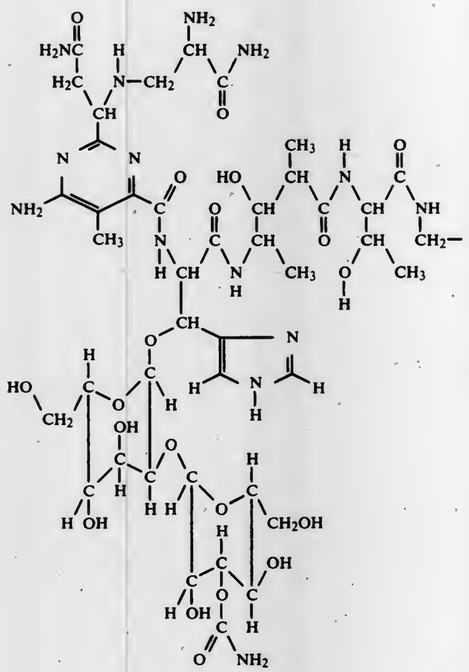
Claims priority, application Japan, Jul. 1, 1977, 52-77770; Oct. 14, 1977, 52-122485

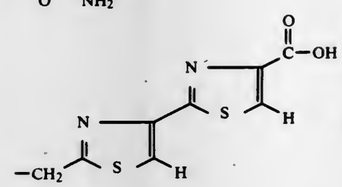
Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **5 Claims**

1. A method for producing 3-[(S)-1'-phenylethyl-amino] propylaminobleomycin represented by the formula

and a non-toxic salt thereof, which comprises reacting a reactive derivative of the carboxylic group of the bleomycinic acid represented by the formula





4,238,392

PURIFICATION OF L-ASPARTYL-L-PHENYLALANINE ALKYL ESTERS

Fredric J. Vinick, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,640

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **9 Claims**

1. A process for deodorizing an L-aspartyl-L-phenylalanine alkyl ester having odorous impurities formed in the preparation of said ester by the reaction of L-aspartic acid N-thiocarboxyanhydride and a L-phenylalanine alkyl ester, said alkyl groups having from 1 to 3 carbon atoms, comprising contacting said L-aspartyl-L-phenylalanine alkyl ester in aqueous solution at a pH between about 2 and 6 with an effective amount of an alkali metal periodate at a temperature between about 0° and 50° C.

4,238,393

ADDITIVES FOR COATING COMPOSITIONS

Minoru Takamizawa; Yoshio Inoue; Hiroshi Yoshioka, and Masaki Moteki, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Sep. 27, 1976, Ser. No. 726,440

Claims priority, application Japan, Oct. 1, 1975, 50-119050

Int. Cl.[3] **C09D** *3/00, 3/82*

U.S. Cl. 260—22 S **9 Claims**

1. In a paint, lacquer, or varnish composition which contains an organopolysiloxane, the improvement which comprises said organopolysiloxane being present in an anti-blocking effective amount within the range from about 0.05% to 15% by weight based on the solids in the composition and having the formula



where

R^1 is a divalent hydrocarbon group having from 1 to 12 carbon atoms;

R^2 is a substituted or unsubstituted monovalent hydrocarbon group other than the mercapto-substituted hydrocarbon groups;

R^3 has the same definition as R^2;

Y is a hydroxy group or a hydrolyzable group;

a is 1, 2 or 3;

b is 0, 1 or 2;

c is 0, 1 or 2, with the proviso that (a+b+c) is 1, 2, or 3;

d is 0, 1, 2 or 3;

m is a positive number; and

n is 0 or a positive number.

4,238,394

METHOD FOR MAKING DIARYLIODONIUM SALTS

James V. Crivello, Clifton Park, and Julia H. W. Lam, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 749,116, Dec. 9, 1976, Pat. No. 4,151,175. This application Oct. 30, 1978, Ser. No. 956,024

Int. Cl.[3] **C07F** *9/68, 9/02, 9/22*

U.S. Cl. 260—326.26 **5 Claims**

1. In the method of making diaryliodonium salts of the formula

$$[(R)_a(R^1)_bI]+[Q]^-,$$

where R is a monovalent aromatic organic radical, R^1 is a divalent aromatic organic radical, a is a whole number equal to 0 or 2, b is a whole number equal to 0 or 1, and the sum of a+b is equal to 2 or the valence of I, Q is an anion selected from the class consisting of halogen ions, YF_6^-, NO_3^{-3}, ClO_4^-, $CF_3SO_3^-$, PO_4^{-3}, $SO_4^=$, HSO_4^-, $CH_3C_6H_5SO_3^-$, Y is selected from the group consisting of P, As, and Sb, by effecting a metathesis between a metal salt of the formula,

$$MQ,$$

where M is a metal ion, and a diaryliodonium bisulfate of the formula,

$$[(R)_a(R^1)_bI]+[HSO_4]^-,$$

which is made by effecting a coupling reaction between a C(6–30) aromatic compound and potassium iodate in the presence of a mixture consisting essentially of acetic acid, acetic anhydride, and sulfuric acid, whereby long reaction times of 16 hours or more are required and product yields are difficult to predict, the improvement which comprises substituting methylene chloride for the acetic acid in the coupling reaction mixture to produce an acetic acid-free mixture during the coupling reaction which is conducted at a temperature of from −25° C. to +25° C., whereby improved yields and reduced reaction time is achieved in the formation of the diaryliodonium bisulfate salt and in the resulting diaryliodonium salt resulting from the metathesis between said metal salt and said diaryliodonium bisulfate salt.

4,238,395

DIMETHYL 7-[ω-N-(PHTHALIMIDO)ALKYL]AMINONAPHTHALENE-1,2-DICARBOXYLATES

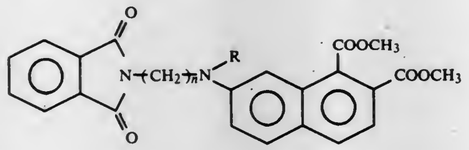
Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 927,286, Jul. 24, 1978. This application Oct. 5, 1979, Ser. No. 82,040

Int. Cl.³ C07D *209/48*; C07G *7/00*

U.S. Cl. 260—326 N **3 Claims**

1. A compound of the formula:



wherein R is hydrogen or straight chain alkyl containing 1–4 carbon atoms and n=2–6.

4,238,396

1-HYDROCARBYL-PYRROLE-2-ACETIC ACID DERIVATIVES AND THEIR PRODUCTION

Kiyosi Kondo, Yamato; Minoru Suda, and Daiei Tunemoto, both of Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Japan

Filed Nov. 27, 1978, Ser. No. 963,673

Claims priority, application Japan, Dec. 8, 1977, 52/146581; Dec. 8, 1977, 52/146582

Int. Cl.³ C07D *207/34*

U.S. Cl. 260—326.2 **21 Claims**

1. A process for preparing 5-acyl-1-hydrocarbyl-pyrrole-2-acetic acids characterized by reacting a 5-cyano-1-hydrocarbylpyrrole-2-acetic acid with a Grignard compound and then hydrolyzing the resultant reaction product.

20. A 5-cyano-1-hydrocarbylpyrrole-2-acetic acid in which the hydrocarbyl group on the nitrogen atom is lower alkyl, phenyl, benzyl, or cyclohexyl.

4,238,397

HYDROXYL-TERMINATED LIQUID POLYMERS AND PROCESS FOR PREPARATION THEREOF USING A MIXTURE OF AT LEAST ONE HYDROXYL-CONTAINING DISULFIDE AND AT LEAST ONE HYDROXYL-CONTAINING TRISULFIDE

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 829,831, Sep. 1, 1977. This application May 18, 1979, Ser. No. 40,341

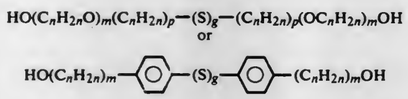
Int. Cl.³ C07D *403/14*

U.S. Cl. 260—326.25 **17 Claims**

1. A product of a process for preparing a hydroxyl-terminated liquid polymer having an aliphatic polymeric backbone, said process comprising thermal polymerization in a single step of

(1) at least one vinylidene monomer having at least one terminal $CH_2{=}C<$ group, together with

(2) at least one hydroxyl-containing disulfide having the formula

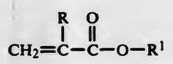


or

wherein m is an integer from 0 to 10, n and p are integers from 1 to 10 and g is 2, and

(3) at least one hydroxyl-containing trisulfide having the formula above, except that g is 3, the amount of said trisulfide constituting from about 1 wt. % to about 25 wt.% of the total amount of said trisulfide and disulfide, wherein

(4) said vinylidene monomer is selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, and (e) acrylic acids and acrylates having the formula



said R being hydrogen or an alkyl radical containing 1 to 3 carbon atoms, and R^1 being hydrogen or an alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms.

4,238,398

ANTIBIOTICS 7(R)-0-ALKYLNOGALAROLS

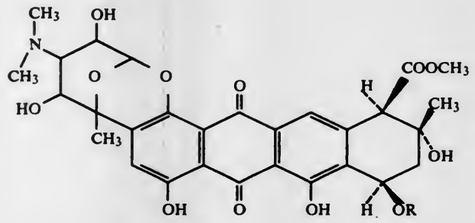
Paul F. Wiley, Kalamazoo, and David J. Houser, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 970,341, Dec. 18, 1978, abandoned. This application Oct. 31, 1979, Ser. No. 89,967

Int. Cl.³ C07D *319/08*

U.S. Cl. 260—340.3 **7 Claims**

1. Essentially pure 7(R)-O-alkylnogalarols, compounds having the following structure:



wherein R is alkyl of from 1 to 4 carbon atoms, inclusive.

4,238,399

3,4-ANHYDRO-2,6-DIDEOXY-L-RIBOHEXOSE

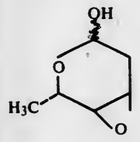
Guenter Grethe, North Caldwell; Milan R. Uskokovic, Upper Montclair, and John Sereno, Pine Brook, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 850,982, Nov. 14, 1977, Pat. No. 4,174,344. This application Jun. 13, 1979, Ser. No. 48,109

Int. Cl.³ C07D *311/00*

U.S. Cl. 260—345.9 R **1 Claim**

1. A compound of the formula



its enantiomer and racemate thereof.

4,238,400

ANTHRAQUINONE DYES

Michael Yelland, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

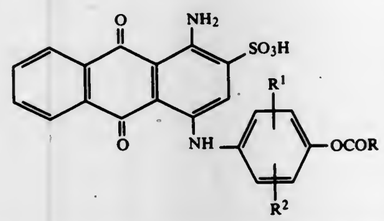
Filed May 21, 1979, Ser. No. 41,259

Claims priority, application United Kingdom, Jul. 7, 1978, 29229/78

Int. Cl.³ C07C *143/665*

U.S. Cl. 260—372 **2 Claims**

1. An anthraquinone dye which, in the form of the free acid, has the formula:



wherein R represents lower alkyl, hydroxy lower alkyl, carboxy lower alkyl, lower alkoxy lower alkyl, phenyl lower alkyl, phenoxy lower alkyl, phenyl, lower alkoxy, phenoxy, cyclohexyloxy or methylcyclohexyloxy and each of R^1 and R^2, independently, represents hydrogen or a lower alkyl radical.

4,238,401

ALKOXYSILICON MATERIALS AND METHOD FOR MAKING

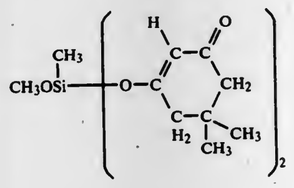
James A. Cella, Clifton Park, and Tyrone D. Mitchell, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,287

Int. Cl.³ C07F *7/18*

U.S. Cl. 260—448.8 R **6 Claims**

1. The compound



4,238,402

REACTIONS OF CHLOROSILANES AND METHOXYSILANES WITH CHLOROSILOXANES, METHOXYSILOXANES AND SILOXANES

Harold J. Clayton, Watervliet; Theodore A. Kulpa, Castleton, and George F. Roedel, Schenectady, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jun. 5, 1979, Ser. No. 45,704

Int. Cl.³ C07F *7/18*

U.S. Cl. 556/434 **6 Claims**

1. A process for preparing a methoxy chainstopped polydimethylsiloxane polymer having a viscosity of approximately 1 to 5000 centipoise at 25° C., and a methoxy content of approximately 2 to 30 weight percent, comprising:

(a) charging 100 parts by weight $(CH_3)_2SiCl_2$ to a reaction vessel;

(b) adding approximately 4 to 20 parts by weight of water to form an α,ω-dichloropolydimethylsiloxane intermediate fluid and reducing the concentration of dissolved HCl in a reaction mixture by heating the reaction mixture;

(c) adding an additional amount of $(CH_3)_2SiCl_2$ effective for adjusting the viscosity and chlorine content of said α,ω-dichloropolydimethylsiloxane intermediate fluid to preselected levels and heating the reaction vessel to, approximately, 50° to 100° C. for, approximately, 4 to 8 hours and;

(d) washing the reaction mixture with methanol and stirring for, approximately, 0.5 to 2 hours at approximately 35° to 40° C., and removing an immiscible MeOH—HCl phase.

4,238,403

METHANOL SYNTHESIS PROCESS

Alwyn Pinto, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London

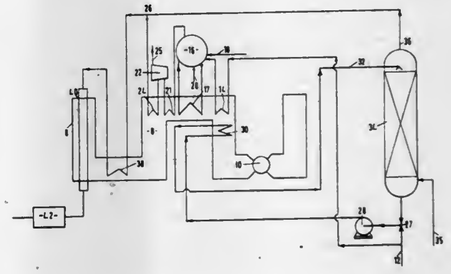
Continuation of Ser. No. 659,630, Feb. 20, 1976, Pat. No. 4,072,625. This application Feb. 6, 1978, Ser. No. 875,543

Claims priority, application United Kingdom, Mar. 3, 1975, 8732/75; Apr. 9, 1975, 14553/75

The portion of the term of this patent subsequent to Feb. 7, 1995, has been disclaimed.

Int. Cl.³ C07C *29/16*

U.S. Cl. 260—449.5 **6 Claims**



1. A process of treating hydrocarbons which comprises:

(a) reacting a normally gaseous hydrocarbon with steam endothermically over a catalyst at an outlet temperature in the range 700° to 900° C. in a reaction zone heated by a combustion furnace, to give a process gas stream containing hydrogen, carbon monoxide and carbon dioxide;

(b) cooling the process gas stream of step (a), separating the condensed water and passing the resulting process gas stream over a copper-containing methanol synthesis catalyst to give a reacted synthesis gas containing methanol at a temperature in the range 160° to 300° C.;

(c) transferring heat contained in said reacted synthesis gas at 160° to 300° C. by indirect heat exchange to liquid water under pressure; and

(d) bringing the resulting hot liquid water under pressure into direct heat exchange with the normally gaseous hydrocarbon to be reacted in step (a), to provide 10% to 30% of the steam to be reacted in step (a).

4,238,404

PROCESS FOR THE PREPARATION OF ISOCYANATE DERIVATIVES OF ALIPHATIC, CYCLOALIPHATIC, AND ARALIPHATIC COMPOUNDS

Hans Zengel, Kleinwallstadt; Manfred Bergfeld, Erlenbach; Rainer Zielke, Erlenbach, and Erich Klimesch, Erlenbach, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed May 18, 1979, Ser. No. 40,375

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1978, 2824648

Int. Cl.³ C07C *118/04*

U.S. Cl. 260—453 P **5 Claims**

1. A process comprising reacting an aliphatic, cycloali-

phatic, or araliphatic compound containing from 1 to 3 N-chloramide groups bound to from 1 to 3 secondary or tertiary carbon atoms which are part of (1) an aliphatic radical which contains from 3 to 30 carbon atoms, (2) a cycloaliphatic radical which contains from 4 to 18 carbon atoms, or (3) an araliphatic radical having from 6 to 18 carbon atoms in its aromatic portion and from 3 to 30 carbon atoms in its aliphatic portion, or a combination of said compounds, with at least one mole of a tertiary amine having a pk_a greater than 7 per equivalent of N-chloro amide, at a temperature from about 20° to about 180° C., in an inert solvent, to convert the N-chloro amide groups into isocyanate groups.

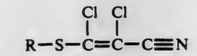
4,238,405

FUNGICIDAL 1,2-DICHLOROCYANOVINYL COMPOUNDS

Raymond A. Felix, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

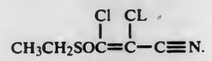
Filed Sep. 19, 1977, Ser. No. 834,215
Int. Cl.³ A01N *37/34, 41/10;* C07C *121/30, 121/48*
U.S. Cl. 260—464 **17 Claims**

1. A compound having the general structural formula



wherein R is alkyl or cyclohexyl.

11. The compound having the structural formula



4,238,406

METHOD FOR PREPARING A MIXTURE OF STEREOISOMERS OF α-CYANO-3-PHENOXYBENZYL 2-(4-CHLOROPHENYL)ISOVALERATE

Yukio Suzuki; Kohichi Aketa, both of Toyonaka, and Masachika Hirano, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 29, 1979, Ser. No. 7,536
Claims priority, application Japan, Jan. 27, 1978, 53-8621
Int. Cl.³ C07C *121/75;* A01N *9/20*
U.S. Cl. 260—465 D **21 Claims**

1. A method for preparing a mixture of (S)-α-cyano-3-phenoxybenzyl (S)-2-(4-chlorophenyl)isovalerate and (R)-α-cyano-3-phenoxybenzyl (R)-2-(4-chlorophenyl)isovalerate which comprises precipitating a mixture of (S)-α-cyano-3-phenoxybenzyl (S)-2-(4-chlorophenyl)isovalerate and (R)-α-cyano-3-phenoxybenzyl (R)-2-(4-chlorophenyl)isovalerate as crystals from a solution of α-cyano-3-phenoxybenzyl 2-(4-chlorophenyl)isovalerate, and separating the crystals from the mother liquor.

6. A method for preparing a mixture of (S)-α-cyano-3-phenoxybenzyl (S)-2-(4-chlorophenyl)isovalerate and (R)-α-cyano-3-phenoxybenzyl (R)-2-(4-chlorophenyl)isovalerate which comprises precipitating a mixture of (S)-α-cyano-3-phenoxybenzyl (S)-2-(4-chlorophenyl)isovalerate and (R)-α-cyano-3-phenoxylbenzyl (R)-2-(4-chlorophenyl)isovalerate as crystals from a solution of α-cyano-3-phenoxybenzyl 2-(4-chlorophenyl)isovalerate in the presence of a basic catalyst.

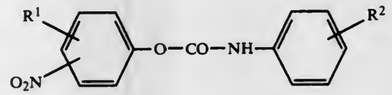
4,238,407

PROCESS FOR THE PREPARATION OF NITRO DIPHENYL AMINE DERIVATIVES

Rudolf Fauss, Cologne; Kuno Wagner, Leverkusen, and Jan Mazanek, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,711
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851514
Int. Cl.³ C07C *87/60, 121/78*
U.S. Cl. 260—465 E **12 Claims**

1. A process for the production of a nitro-diphenyl amine which comprises decarboxylating a urethane of the formula



wherein

R^1 denotes hydrogen, alkyl, cycloalkyl, aryl, alkoxy, aryloxy, acyl, halogen, nitro or cyano and

R^2 denotes hydrogen, alkyl, cycloalkyl, aryl alkoxy, aryloxy, acyl, halogen, nitro or cyano by heating the same in the presence of a base at a temperature of 100° to 250°, characterized in that the process is conducted in tetramethylene sulphone as the reaction medium.

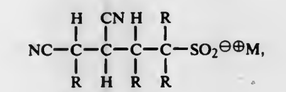
4,238,408

COMPOUNDS AND PROCESS

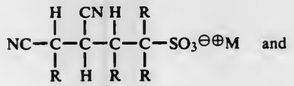
Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 13, 1979, Ser. No. 11,747
Int. Cl.³ C07C *120/00, 121/20*
U.S. Cl. 260—465.8 R **14 Claims**

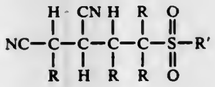
1. Salts of 3,4-dicyanoalkanesulfinic acid and 3,4-dicyanoalkanesulfonic acid and hydrocarbyl 3,4-dicyanoalkanesulfones which correspond, respectively, to the following formulas



I



II and



III

wherein R is independently selected from hydrogen, alkyl, cycloalkyl and phenyl groups or alkoxy-substituted alkyl and cycloalkyl groups containing from 1 to about 6 carbon atoms per group, R' is an alkyl, cycloalkyl, phenyl, benzyl, or p-tolyl radical containing 1 to 7 carbon atoms, with the further proviso that the total number of carbon atoms in molecules of formulas I, II, and III will not exceed 13, and M is an alkali metal or a quaternary ammonium group having up to and including 6 carbon atoms.

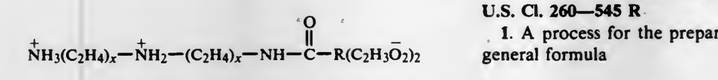
4,238,409

FROTH FLOTATION WITH PETROLEUM OXIDATE-AMINE COMPOSITIONS

Orville W. Rigdon, Groves; Gordon R. Schierberg, Port Arthur, both of Tex., and Lawrence H. Keon, Croton-on-Hudson, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 19, 1979, Ser. No. 59,090
Int. Cl.³ C07C *97/03;* B03D *1/00*
U.S. Cl. 260—501.17 **2 Claims**

1. A flotation reageant having the formula:



wherein x ranges from 1 to 5 and R is an alkyl group having from 1 to 15 carbon atoms.

4,238,410

PROCESS FOR PRODUCING MAGNESIUM SALT OF OLEFIN SULFONIC ACID

Akira Kawakami, Sakura; Haruo Ohkouchi, Chiba; Yoshio Aoki, Tokyo, and Kyozo Kitano, Chiba, all of Japan, assignors to The Lion Fat and Oil Co., Ltd., Tokyo, Japan

Filed May 11, 1978, Ser. No. 905,001
Claims priority, application Japan, May 31, 1977, 52-63515
Int. Cl.³ C07C *143/16*
U.S. Cl. 260—513 R **5 Claims**

1. In a process for producing the magnesium salt of an olefin sulfonic acid in an aqueous medium comprising the steps of:

sulfonating and neutralizing an olefin having 10 to 20 carbon atoms, and; then

heating the resulting neutralization product in the presence of magnesium hydroxide, magnesium oxide or a mixture thereof to thereby hydrolyze sultone present in the neutralization product;

the improvement wherein the hydrolysis of the sultone is carried out in the presence of at least one additive selected from the group consisting of benzoic acid, citric acid, malic acid, and water-soluble salts thereof, at a temperature within the range of from 110° C. to 180° C.

4,238,411

METHOD OF RECOVERING THIOUREA DIOXIDE

Osami Ohura, and Osamu Fujimoto, both of Fuji, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Ohtemachi, Japan

Filed Jul. 9, 1979, Ser. No. 55,787
Claims priority, application Japan, Jul. 25, 1978, 53/89985
Int. Cl.³ C07C *145/00*
U.S. Cl. 260—513.7 **13 Claims**

1. A method of recovering thiourea dioxide characterized in that in the production of thiourea dioxide by the reaction of thiourea and hydrogen peroxide in an aqueous solvent, the waste liquor after separation of the crystals of thiourea dioxide after reaction is treated with both an anion exchange resin and a cation-exchange resin to remove side reaction products and impurities contained therein, and is then concentrated with a reverse-osmotic membrance to crystallize the thiourea dioxide dissolved therein.

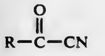
4,238,412

PROCESS FOR THE PREPARATION OF ACYL CYANIDES

Kurt Findeisen, Odenthal, and Herbert Schwarz, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 777,287, Mar. 11, 1977, abandoned.
This application Dec. 8, 1978, Ser. No. 967,934
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614241
Int. Cl.³ C07C *120/00*
U.S. Cl. 260—545 R **23 Claims**

1. A process for the preparation of an acyl cyanide of the general formula

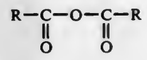


(I),

in which

R represents alkyl or substituted alkyl of from 1 to 8 carbon atoms, wherein the substituents are selected from alkoxy or carbalkoxy of up to 4 carbon atoms in the alkoxy moiety, nitro, nitrile and halo; cycloalkyl or substituted cycloalkyl with 3 to 12 carbon atoms wherein the substituent is selected from alkyl, alkoxy and carbalkoxy of up to 4 carbon atoms in each alkyl moiety, nitro, nitrile and halo; aryl or substituted aryl wherein the substituents are selected from alkyl, alkoxy and carbalkoxy of up to 4 carbon atoms in the alkyl moiety, nitro and halo; or an optionally substituted 5-membered or 6-membered heterocyclic radical which can additionally also be fused with a benzene ring, wherein said substituents are selected from alkyl, alkoxy and carbalkoxy of up to 4 carbon atoms in each alkyl moiety, nitro, nitrile and halo;

which process comprises reacting a carboxylic acid anhydride of the general formula



(II),

in which

R has the above meaning with an alkali metal cyanide, at a temperature of between 50° C. and 250° C. under vacuum and the resulting acyl cyanide is removed from the reaction medium by distillation under vacuum, immediately after it has been formed.

4,238,413

(3-TRIFLUOROMETHYL)-BENZOYL CYANIDE AND PROCESS FOR ITS PRODUCTION

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Nov. 7, 1979, Ser. No. 92,166
Int. Cl.³ C07C *121/76*
U.S. Cl. 260—545 R **5 Claims**

1. (3-trifluoromethyl)-benzoyl cyanide.

2. A process producing (3-trifluoromethyl)-benzoyl cyanide comprising the step of:

a. converting (3-trifluoromethyl)-benzotrochloride to the corresponding benzoyl chloride, and

b. cyanation of the benzoyl chloride to produce the corresponding benzoyl cyanide, (3-trifluoromethyl)-benzoyl cyanide.

4,238,414

2-DECARBOXY-2-AMINOMETHYL-6A-CARBA-PGI$_2$ COMPOUNDS

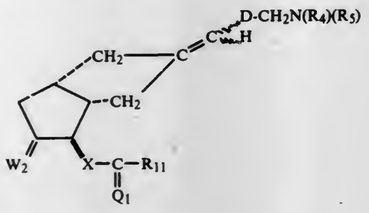
Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 877,253, Feb. 13, 1978. This application Sep. 27, 1979, Ser. No. 79,658

Int. Cl.^{3} C07C *91/02, 91/40*

U.S. Cl. 564/453 **68 Claims**

1. A compound of the formula



wherein W_2 is α-OH:β-H, α-H:β-OH, oxo, or α-H:β-H; wherein D is

(1) $-(CH_2)_d-$, wherein d is one to 5, inclusive,

(2) $-(CH_2)_d-CF_2-$, wherein d is one to 5, inclusive,

(3) $-(CH_2)_k-CH=CH-$, wherein k is one or 2;

wherein one of R_4 and R_5 is hydrogen, and the other is hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl;

wherein R_{11} is

$$-C(R_{12})(R_{13})-C_gH_{2g}-CH_3, \quad (1)$$

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_{12}R_{13}-$ and terminal methyl, wherein R_{12} and R_{13} are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_{12} and R_{13} is fluoro only when the other is hydrogen or fluoro;

$$-C(R_{12})(R_{13})-Z-(Ph), \quad (2)$$

wherein R_{12} and R_{13} are as defined above; wherein Z represents an oxa atom (—O—) or C_jH_{2j}, wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 6 carbon atoms, inclusive between $-CR_{12}R_{13}-$ and (Ph), wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_{14}$, wherein R_{14} is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T s are other than alkyl and when s is 2 or 3 the T s are either the same or different; or

$$\text{cis}-CH_2-CH=CH\,CH_2CH_3; \quad (3)$$

ps wherein Q_1 is α-OH:β-R_8 or α-R_8:β-OH, wherein R_8 is hydrogen or methyl;

wherein X is trans—CH=CH—, cis-CH=CH—, —C≡C—, or $-CH_2CH_2-$.

4,238,415

PROCESS FOR PREPARING CYCLOALKANOLS AND CYCLOALKANONES

William O. Bryan, Augusta, Ga., assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Feb. 26, 1979, Ser. No. 15,433

Claims priority, application Netherlands, Feb. 25, 1978, 7802125

Int. Cl.^{3} C07C *45/28*

U.S. Cl. 568/342 **12 Claims**

1. In a process for the preparation of cycloalkanols and cycloalkanones by the liquid phase oxidation of a cycloalkane having from 5 to 12 carbon atoms in the ring, by means of a gas containing molecular oxygen to obtain an oxidation mixture containing cycloalkyl hydroperoxide and acids, and thereafter treating said cycloalkyl hydroperoxide, in the presence of an aqueous solution of an alkali metal hydroxide, with a metal salt that causes decomposition of the cycloalkyl hydroperoxide to said cycloalkanols and cycloalkanones, the improvement comprising the combination of a neutralization step (a) wherein said oxidation mixture is treated with an aqueous solution of a neutralizing agent selected from the group consisting of an alkali metal hydroxide and an alkali metal carbonate to neutralize at least a portion of the acids contained therein thereby forming a neutralized organic phase containing said cycloalkyl hydroperoxide and a neutralization step aqueous phase, which aqueous phase is separated off, and a subsequent decomposition step (b) wherein said neutralized organic phase is treated with said metal salt in the presence of an aqueous solution of an alkali metal hydroxide thereby decomposing at least a portion of said cycloalkyl hydroperoxide and forming an organic phase containing said cycloalkanols and cycloalkanones and a decomposition step aqueous phase.

4,238,416

METHOD FOR ISOMERIZATION OF FLUORINATED EPOXY COMPOUNDS

Takashi Tohzuka, and Yohnosuke Ohsaka, both of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 826,247, Aug. 19, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,239

Claims priority, application Japan, Aug. 21, 1976, 51-99849

Int. Cl.^{3} C07C *45/58*

U.S. Cl. 568/384 **4 Claims**

1. In a method for the catalytic isomerization of a fluorinated epoxy compound to form the corresponding fluorinated carbonyl compound, the improvement which comprises conducting the isomerization in the presence of a catalyst selected from the group consisting of fluorinated alumina and fluorinated silica alumina and a gas containing oxygen.

4,238,417

DECOMPOSITION OF CUMENE HYDROPEROXIDE AND RECOVERY OF BORON TRIFLUORIDE CATALYST

Richard G. Austin, Churchill Borough; Wayne R. Pretzer, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 15, 1979, Ser. No. 66,520

Int. Cl.^{3} C07C *45/53*

U.S. Cl. 568/385 **13 Claims**

1. The method for cleaving cumene hydroperoxide at high selectivity to phenol and acetone which comprises the steps

(a) contacting a solution comprising about 0.1 to about 20 weight percent cumene hydroperoxide with a catalytic amount of boron trifluoride, a boron trifluoride complex with water or a boron trifluoride complex with an oxygen-containing polar organic compound at a temperature between about 25° and about 110° C. until the cleavage of said cumene hydroperoxide is substantially completed,

(b) deactivating said catalyst by adding at least a stoichiometric amount of an alkali metal phosphate or alkali metal pyrophosphate whereby a coordination compound of said boron trifluoride and said alkali metal phosphate or alkali metal pyrophosphate is formed,

(c) distilling the product solution at a temperature and a pressure whereby all components of the product solution are substantially distilled over except the said coordination compound of boron trifluoride with the said alkali metal phosphate or pyrophosphate and the polymeric tar solids formed during the cleavage reaction or during said distillation,

(d) heating the residue to at least the decomposition temperature of the said coordination compound of boron trifluoride with the said alkali metal phosphate or pyrophosphate to dissociate said coordination compound and volatilize the boron trifluoride and

(e) recovering said dissociated boron trifluoride.

4,238,418

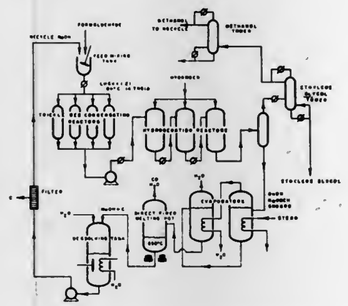
GLYCOLALDEHYDE OR ETHYLENE GLYCOL FROM FORMALDEHYDE

Alvin H. Weiss, 26 Oakland Ave., Shrewsbury, Mass. 01545

Filed May 14, 1979, Ser. No. 38,794

Int. Cl.^{3} C07C *47/19*

U.S. Cl. 260—602 **8 Claims**



1. A process for converting formaldehyde to glycolaldehyde, comprising the steps of:

(a) exposing formaldehyde to a zeolite catalyst in an aqueous basic solution including sodium hydroxide in a mole ratio to the formaldehyde of 0.21 to 0.85, wherein the formaldehyde is exposed to zeolite at a liquid hourly space velocity equivalent to from 1.21 to 2.36 at 16 wt. % aqueous solution of formaldehyde over 16 gms of catalyst,

(b) allowing the formaldehyde to react to glycolaldehyde, and

(c) maintaining the above reaction at approxiately 94° C. and at atmospheric pressure.

4,238,419

HYDROFORMYLATION OF OLEFINIC COMPOUNDS

Mitsuo Matsumoto, and Masuhiko Tamura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jun. 4, 1979, Ser. No. 45,301

Claims priority, application Japan, Jun. 5, 1978, 53-68085; Sep. 26, 1978, 53-118908; Sep. 26, 1978, 53-118909

Int. Cl.^{3} C07C *45/50*

U.S. Cl. 568/454 **15 Claims**

1. A process for hydroformylating an olefinic compound to obtain an aldehyde having an additional carbon atom, which process comprises contacting said olefinic compound with carbon monoxide and hydrogen in the presence of a rhodium catalyst and in the presence of an added secondary phosphine oxide having the formula (I) in an



(I)

amount of at least one mole per gram atom of rhodium, wherein R^1 and R^2 are the same or different and each is a substituted or unsubstituted hydrocarbon residue containing not more than about 20 carbon atoms.

4,238,420

PRODUCTION OF HEXANITROSTILBENE USING INORGANIC BUFFERS

Roger Bird, Swindon, and Allen E. Webb, Waltham Abbey, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 6, 1979, Ser. No. 17,972

Claims priority, application United Kingdom, Mar. 7, 1978, 9077/78

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.^{3} C07C *79/10*

U.S. Cl. 568/931 **15 Claims**

1. A process for the production of 2,2',4,4',6,6'-hexanitrostilbene which comprises contacting in an aqueous organic solvent, 2,4,6-trinitrotoluene with an alkali or alkaline earth metal hypochlorite and, at least after an initial reaction period, adjusting the pH of the reaction mixture to within the range 9.5 to 11.0 and then maintaining the pH of the reaction mixture within that range by the addition of an inorganic buffer.

4,238,421

PRODUCTION OF HEXANITROSTILBENE WITH PH CONTROL

Roger Bird, Swindon, and Allen E. Webb, Waltham Abbey, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 6, 1979, Ser. No. 17,974

Claims priority, application United Kingdom, Mar. 7, 1978, 9077/78

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.^{3} C07C *79/10*

U.S. Cl. 568/931 **12 Claims**

1. A process for the production of 2,2', 4,4', 6,6'-hexanitrostilbene which comprises contacting, in an aqueous organic solvent, 2,4,6-trinitrotoluene with an alkali or alkaline earth metal hypochlorite and, at least after an initial reaction period, adjusting the pH of the reaction mixture to within the range 9.5 to 11.0 and then maintaining the pH of the reaction mixture within that range by progressive addition of an alkali metal hydroxide.

4,238,422

SUBSTITUTED PHENYL PHOSPHINITES AND PHOSPHONITES

Ross J. Cozens, Mossley Hill; James R. Jennings, Hutton Rudby; Philip J. Hogan, Runcorn, all of England, and Lawrence F. M. Kelly, Canberra, Australia, assignors to Imperial Chemical Industries Limited, London, England

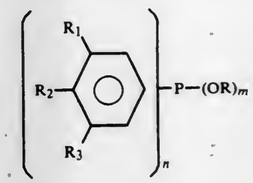
Filed Jul. 17, 1979, Ser. No. 58,543

Claims priority, application United Kingdom, Jul. 26, 1978, 31148/78

Int. Cl.^{3} C07F *9/46, 9/48*

U.S. Cl. 260—945 **9 Claims**

9. Phosphinites and phosphonites on the general formula:



wherein:

R_1, R_2 and R_3 are electron donating substituents selected

from the group consisting of alkoxy, alkyl and alkylamino groups, or either R_1 or R_3 forms part of a fused alicyclic ring with R_2 to give a tetralinyl group;

R is an alkyl or cycloalkyl group containing from 1 to 10 carbon atoms; and

n and m are integers each being either 1 or 2, provided that (M+n) equals 3, and when n is 2, the substituents on each aromatic ring may be the same or different.

4,238,423

PROCESS FOR PREPARING CYCLO-1,3,2-OXAZAPHOSPHORYL DERIVATIVES

Tadao Sato; Hiraki Ueda, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

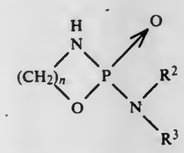
Filed Nov. 6, 1979, Ser. No. 91,786

Claims priority, application Japan, Nov. 7, 1978, 53/137685

Int. Cl.³ C07F 9/24

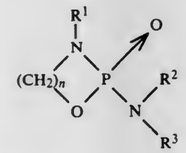
U.S. Cl. 260—968 **5 Claims**

1. Process for preparing cyclo-1,3,2-oxazaphosphoryl derivatives represented by the formula (II)



(II)

wherein R^2 and R^3 are respectively lower alkyl group which may have hologen atom(s) or lower alkansulfonyloxy group(s) as substituent(s), and n is an integer of 2 to 6, which comprises acid-cleaving the N—R^1 bond of 3(α-arylalkyl)-cyclo-1,3,2-oxazaphosphoryl derivatives represented by the formula (I)



(I)

wherein R^1 signifies an α-arylalkly group and R^2, R^3, and n are the same as defined above, in the use of an acid selected from the group consisting of sulfuric acid, fluorosulfuric acid, trifluoroacetic acid, perchloric acid, hydrogen bromide, methanesulfonic acid, and trifluoromethanesulfonic acid.

4,238,424

PROCESS FOR S-CHLOROMETHYLATION OF ORGANIC DITHIOPHOSPHO COMPOUNDS WITH METHYLENE CHLORIDE

William W. Brand, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 28, 1979, Ser. No. 53,066

Int. Cl.³ C07F 9/165

U.S. Cl. 260—979 **20 Claims**

1. A process for preparing S-chloromethyl derivatives of O-alkyl dithiophospho acids which comprises reacting a salt thereof, which is either preformed or generated in situ by including a suitable base, with methylene chloride in the presence of:

(1) a large excess of methylene chloride amounting to at least about 25 times stoichiometric, and

(2) a miscible, highly polar cosolvent in amounts which effectively promote reaction by methylene chloride to form said S-chloromethyl derivatives.

4,238,425

ULTRASONIC HUMIDIFIER

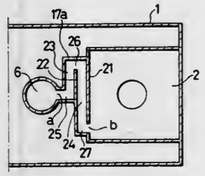
Isao Matsuoka, and Hiroshi Matsui, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jul. 13, 1979, Ser. No. 57,475

Claims priority, application Japan, Sep. 28, 1978, 53/133391[U]

Int. Cl.³ B05B 3/14

U.S. Cl. 261—81 **8 Claims**



1. In an ultrasonic humidifier having an atomizing chamber containing water which is atomized by an ultrasonic vibration board, a water supply tank provided with a valve adapted to close a water outlet thereof, said valve having a valve rod, a water supply tank chamber holding said water supply tank mounted therein with the valve rod directed downwrd, and a valve rod receiving chamber communicating with said tank chamber, the water level of said atomizing chamber being maintained equal to the level of said water outlet of said water supply tank confronting with said valve rod receiving chamber, the improvement comprising; a water delivering path establishing communication between said valve rod receiving chamber and said atomizing chamber, said delivery path being bent and elongated in a horizontal plane thereof and being formed with two legs operable to direct the flow of water in substantially opposite directions.

4,238,426

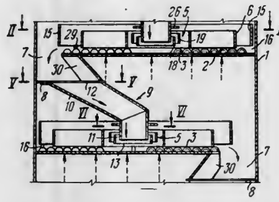
CENTRIFUGAL-WHIRLING CONTACT TRAY

Ivan P. Slobodyanik, ulitsa Gagarina, 87, kv. 15, Krasnodar, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,124

Int. Cl.³ B01D 3/22

U.S. Cl. 261—114 JP **12 Claims**



1. A centrifugal-whirling contact tray for use in heat-and mass transfer processes between gas or vapor and liquid, to be installed in the body of a mass-transfer column, said tray comprising:

a round plate arranged horizontally in said body of a mass-transfer column;

a circular hydroseal made up of two concentric cylindrical rings, an outer one and an inner one, placed at some distance from the plate of said round plate, said distance increasing towards said outer ring;

arched slots for the passage of gas or vapor provided said round plate outside of the projection of said circular hydroseal and extending towards the periphery, said slots having tangentially directed axes and arranged in concentric circles relative to the center of said circular hydroseal;

Archimedean spiral-shaped curvilinear plates vertically mounted on said round plate, diverging from the center of said circular hydroseal and bent towards the gas or vapor outlet from said arched slots;

an overflow device for the transfer of liquid from the top tray of the column to the bottom one, said device located in the peripheral zone of said round plate and including an overflow pocket and at least one discharge pipe serving to communicate said overflow pocket with said circular hydroseal;

said overflow pocket being defined by a foundation secured horizontally in the column wall, a cylindrical wall and two inclined planes symmetrical with respect to a vertical plane extending through the axis of symmetry of said round plate of the tray, the line of intersection of said planes being directed towards the column axis, said overflow pocket further having a cross-section diverging in the direction of flow of liquid being discharged, the center of said circular hydroseal being shifted with respect to the center of said round plate of the tray through 0.05–0.1 diameter of the tray whose radius lies in the zone of quadrant of its circle located in the direction of two-phase flow rotation after a quadrant accomodating a half of the overflow pocket.

4,238,427

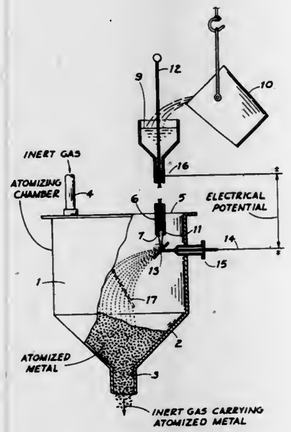
ATOMIZATION OF MOLTEN METALS

Douglas S. Chisholm, R.F.D. 1-141-E, Kent, Conn. 06757

Filed Apr. 5, 1979, Ser. No. 27,601

Int. Cl.³ B01J 2/04

U.S. Cl. 264—7 **8 Claims**



1. A process for producing a powdered metallic solid from a supply of electrically conductive molten liquid metallic material, comprising:

directing a stream of said electrically conductive molten liquid metallic material from the supply to impinge upon an electrode;

establishing and maintaining an electrical potential between said electrode and said supply sufficient to strike and maintain an electric arc in said stream in the vicinity of said electrode and sufficient to produce a metallic gas in the vicinity of said electrode, whereby, due to said electric arc and a disruptive effect of said metallic gas, said stream in the vicinity of said electrode is atomized into discrete droplets of molten metallic liquid; and

contacting said discrete droplets with sufficient cooling fluid medium to at least superficially solidify said discrete droplets into metallic powder particles.

4,238,428

PROCESS FOR MAKING A PRILLED PRODUCT

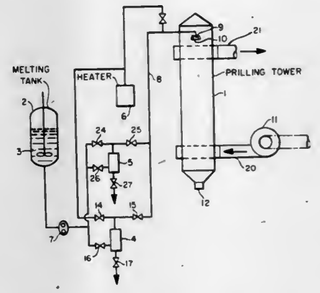
Susumu Sasaki; Tamikazu Takemota, and Shoji Tomita, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Nov. 14, 1978, Ser. No. 960,549

Claims priority, application Japan, Nov. 25, 1977, 52-140662

Int. Cl.³ B01J 2/04

U.S. Cl. 264—13 **3 Claims**



1. In a process for making a prilled product comprising:

(a) passing a molten substance through one or more orifices in a nozzle disposed in the upper portion of the prilling zone, and

(b) solidifying the resulting droplets of molten substance as said droplets fall through said prilling zone,

the improvement comprising:

(c) passing said molten substance through a filter zone prior to introduction of the molten substance to said orifice,

(d) interrupting the flow of a molten substance through said orifice and filter zone, and

(e) introducing steam or heated gas through the orifice, filter zone and prilling zone to clean the nozzle, filter zone and prilling zone.

4,238,429

PRILLING PROCESS

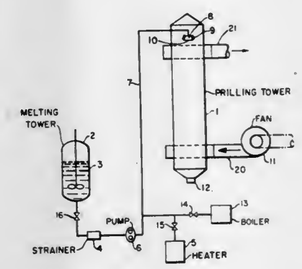
Susumu Sasaki; Tamikazu Takemota, and Shoji Tomita, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Nov. 14, 1978, Ser. No. 960,694

Claims priority, application Japan, Nov. 25, 1977, 52-140663

Int. Cl.³ B01J 2/04

U.S. Cl. 264—13 **7 Claims**



1. In a process for making a prilled product comprising:

(a) passing an organic molten substance through a conduit to a spray chamber disposed in the upper portion of a prilling zone, and then through an orifice in a nozzle in said spray chamber, and

(b) solidifying the resulting droplets of molten substance as said droplets fall through said prilling zone,

the improvement which comprises:

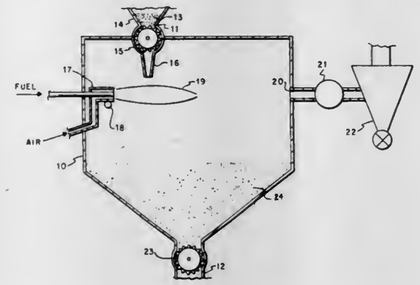
(c) internally pre-heating the nozzle with steam or heated gas or a combination thereof prior to introduction of the molten substance to the nozzle at the beginning of the process.

4,238,430

METHOD FOR FORMING EXPANDED CELLULAR VOLCANIC ASH

Harold L. Phillips, Oochita Lake, N. Mex., assignor to United States Vacuumite Corporation, Irving, Tex.

Filed Jul. 30, 1979, Ser. No. 61,943
Int. Cl.³ B29C *23/00*
U.S. Cl. 264—15 **3 Claims**



1. The method of forming expanded hollow substantially spherical bodies of volcanic ash comprising the steps of

(a) dropping particulate bodies of volcanic ash through a substantially horizontally extending flame to thereby momentarily heat said particulate bodies to a temperature between about 930° C. and about 1100° C.;

(b) thereafter immediately cooling said particulate bodies to a temperature below about 900° C.; and

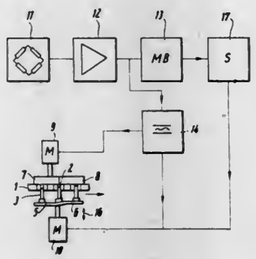
(c) maintaining the environment surrounding said particulate bodies during said heating and cooling at a pressure less than atmospheric.

4,238,431

METHOD FOR THE PRODUCTION OF TABLETS AND A TABLET PRESS

Werner Stüben, Büchen; Jürgen Hinzpeter, Schwarzenbek; Rudolf Deusch, Schwarzenbek, and Konrad Friedrichs, Schwarzenbek, all of Fed. Rep. of Germany, assignors to Wilhelm Fette GmbH, Schwarzenbek, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 943,921
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742572
Int. Cl.³ B29C *3/06*
U.S. Cl. 264—40.5 **5 Claims**



1. A method for the production of uniform tablets by means of a tablet press which includes a rotary disc provided with a plurality of dies and pistons engaging from below respective dies, a filling wheel and a metering wheel arranged for simultaneous rotation on the upper surface of the disc in the range of the dies, a vertically adjustable cam track, on which the pistons ride, having a section of less vertical displacement and a section of greater vertical displacement which raises the pistons so that the pressure is exerted by the pistons pressing the tablet forming material against a position of the metering wheel, an electronic device for measuring individual pressing forces in said dies, variations in said pressing forces being caused by, among other factors, fluctuating bulk densities in the tablet-forming material in the die due to the varying of the rotary speeds of the filling and metering wheels, an electronic device which amplifies the electronic measuring device output, a first electronic control device which receives a portion of the amplifier output, compares said output with a predetermined required pressing force value and emits control impulses based upon said amplifier output and said predetermined required pressing force value, an electronic signal averager which receives the remaining portion of said amplifier output and averages said output, a second electronic control device, also emitting control impulses which compares the signal averager output with a predetermined average pressing force valve representing the required average pressing force which is related to the vertical displacement of the pistons as controlled by the vertical position of the cam track, comprising the steps of:

(a) adjusting the rotary speed of said wheels in accordance with said control impulses, originating from the first electronic control device, in order to minimize the variations of the pressing forces exerted against the forming tablet in the die due to the action of the cam track; and

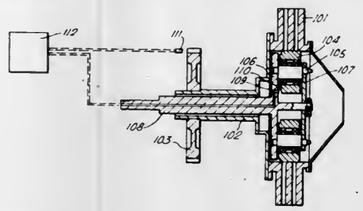
(b) adjusting the vertical position of said cam track so in response to control impulses generated by either both control devices or solely by the second control device so that the pressure exerted by the piston upon the tablet forming material in the die is altered by raising or lowering the position of the pistons relative to the die according to the difference between an average value of said pressing forces and a predetermined desired value so as to minimize differences in weight of respective tablets.

4,238,432

EXTRUSION PRESSES

John A. Henderson; Raymond H. Lindley, both of Bristol, and Keith B. Whiteley, Basingstoke, all of England, assignors to Internationale Octrooi Maatschappij, Rotterdam, Netherlands

Filed May 3, 1979, Ser. No. 35,782
Int. Cl.³ B29F *3/012, 3/06*
U.S. Cl. 264—40.7 **8 Claims**



1. A method of extruding material through an extrusion press comprising feeding the material into the nip between a press roll and a die having extrusion orifices through which the material is forced, positively driving either one of said roll or die, thereby causing the other of said roll or die to rotate, detecting slip between the roll and die and varying the feed of material to the nip when the slip or the rate of change of slip corresponds to a predetermined value which, if exceeded, leads to blockage of said press.

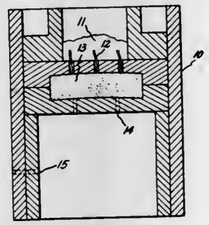
6. A roll extrusion press comprising a rotary die carrying a plurality of extrusion orifices; at least one press roll which is arranged to rotate in frictional engagement with the rotary die to force material through the extrusion orifices; drive means for rotating the die and press roll, one directly and the other via the frictional engagement; and measuring means associated with the press roll and the die for detecting slip between the roll and die by obtaining signals proportional to the peripheral speed of said roll and die and a comparator adapted to receive said signals from said measuring means and to provide a output signal related to the slip or rate of change of slip in response to said signals from the measuring means thereby enabling regulation of the operating conditions when a predetermined value is reached to eliminate blockage of the press.

4,238,433

METHOD OF MAKING MOLTEN SILICON INFILTRATION REACTION PRODUCTS

William B. Hillig, Ballston Lake, and Charles R. Morelock, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 849,186, Nov. 7, 1977, Pat. No. 4,148,894.
This application Dec. 15, 1978, Ser. No. 969,946
Int. Cl.³ C04B *35/70, 37/00*
U.S. Cl. 264—60 **3 Claims**



1. A method for making a silicon carbide composite comprising a refractory base structure and a contiguous machinable or compliant layer structure, which comprises,

(1) introducing molten silicon into a mold substantially filled with a composite having a base structure, and a contiguous exterior layer, where the base structure is a member selected from

(i) a shaped mass of silicon carbide,

(ii) a composite of silicon and silicon carbide, and

(iii) a carbon fiber preform

and the contiguous exterior layer comprises a uniform mixture of particulated carbon and a particulated inorganic material substantially non-reactive to molten silicon and having a Mohs hardness in the range of from about 1 to about 7,

(2) allowing the molten silicon to fully infiltrate into said mold, while allowing gases of reaction to vent therefrom and

(3) removing the resulting silicon carbide composite from the mold.

4,238,434

METHOD OF PRODUCING A SILICON CARBIDE SINTERED BODY

Ryo Enomoto; Hiroyuki Tanaka, both of Ohgaki, and Kazuhisa Hara, Ichinomiya, all of Japan, assignors to Ibigawa Electric Industry Co., Ltd., Ohgaki, Japan

Filed Feb. 2, 1979, Ser. No. 8,851
Claims priority, application Japan, Feb. 16, 1978, 53/15883; Apr. 10, 1978, 53/41330; Nov. 1, 1978, 53/133758
Int. Cl.³ C01B *31/36;* C04B *35/56*
U.S. Cl. 264—63 **20 Claims**

1. A method of producing a silicon carbide sintered body comprising the steps of:

(a) preparing a mixture consisting mainly of silicon carbide having an average particle size of not more than 3 microns and 0.5–10.0 parts by weight as a solid content of a temporary binder based on 100 parts by weight of silicon carbide,

(b) shaping the mixture into a green body, and

(c) sintering the green body at a temperature of 1,750° C.–2,100° C. to produce a sintered body having a density of at least 2.4 g/cm³;

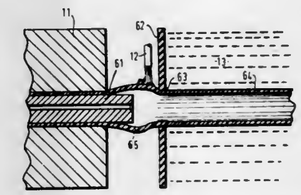
said silicon carbide being contacted with either hydrofluoric acid or anhydrous hydrofluoric acid at latest before the step (c) to remove silicon dioxide film contained thereon and maintained in a non-oxidizing atmosphere after the contact treatment up to the completion of the sintering to prevent formation of silicon dioxide film thereon.

4,238,435

PLASTIC EXTRUSION

Wolfgang F. Liebisch, Reading, England, assignor to Victroplas Limited, Solihull, England

Filed Aug. 1, 1978, Ser. No. 929,906
Claims priority, application United Kingdom, Aug. 9, 1977, 33310/77
Int. Cl.³ B29F *3/00*
U.S. Cl. 264—75 **7 Claims**



1. A method of producing an elongated member of thermoplastic material simulating over at least part of its periphery a length of natural bamboo having a plurality of anti-node portions of substantially constant cross-section throughout their length and a plurality of axially spaced node portions intermediate said anti-node portions, the node portions being projections having at least one cross-sectional dimension which is greater than the corresponding cross-sectional dimension of the anti-node portions and having a plurality of irregularities in the surface thereof, said method comprising continuously extruding said material through a die while in a hot and fluid state into a region which permits increase in external transverse dimension of the extrudate, cooling the material downstream of the die by means of a water jet directed onto the surface of the extrudate a short distance downstream of the die exit to establish an unstable wave front on the extrudate to cause irregularities to form on the node portions, followed by further rapid cooling of the extrudate, transporting the material away from the die and intermittently slowing the speed of transport relative to the speed of extrusion at predetermined lengths of extrusion thus to produce regions of greater external cross-section dimension than the corresponding cross-sectional dimension of the extrudate in regions not produced by slowing said speed of extrusion thereby providing said axially spaced node portions of irregular shape on the member.

4,238,436

METHOD OF OBTAINING POLYCRYSTALLINE SILICON

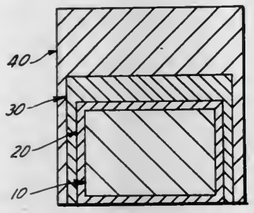
Lawrence R. Hill, Short Hills, N.J.; Dennis Garbis, Dix Hills, and Robert Heller, Levittown, both of N.Y., assignors to General Instrument Corporation, Clifton, N.J.

Filed May 10, 1979, Ser. No. 37,864
Int. Cl.³ H01L *21/205*
U.S. Cl. 264—81 **17 Claims**

1. A method of obtaining polycrystalline silicon comprising the steps of:

A. providing a substrate body having a substantially planar

face and a sidewall, said substrate body having disposed over at least said face thereof a base coating of a composition selected from the group consisting of oxide, nitride and oxynitride compositions;



B. forming a substantially pinhole-free and scratch-free layer of carbon on said base coating over at least the face thereof;

C. forming a layer of polycrystalline silicon on the face of said carbon layer; and

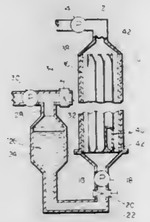
D. removing said silicon layer from said base coating.

4,238,437

METHOD FOR PRODUCING FIBER REINFORCED PRODUCT

John A. Rolston, P.O. Box 62, Granville, Ohio 43023

Filed Aug. 2, 1978, Ser. No. 930,357
Int. Cl.³ B29C *6/02, 27/00;* B29D *23/00*
U.S. Cl. 264—102 **8 Claims**



1. A method of making a fiber-reinforced plastic article which comprises forming at least one layer of reinforcing fibers in a shape defining a space, placing channel-forming means within the space with channels generally parallel and extending substantially over the length of the fibrous layer and in communication therewith, placing the combination channel-forming means and layer in a mold to completely fill the cross-sectional area of the mold, with the channel-forming means spaced inwardly from the inner surface of the mold but communicating with at least one end thereof, evacuating the mold, subsequently supplying plastic material to the mold whereby the plastic material will flow through the channels and into the fibrous layer in communication therewith, removing the impregnated combination of fibers and channel-forming means from the mold, and retaining the channel-forming means with the impregnated fiber layer as part of the finished article.

4,238,438

HARDBOARD WITH SMOOTH, DENSE SURFACE AND METHOD

Gerald F. Laughinghouse, and Donald B. Gibson, both of Rock Hill, S.C., assignors to Champion International Corporation, Stamford, Conn.

Filed Feb. 1, 1979, Ser. No. 8,290
Int. Cl.³ D21J *1/08*
U.S. Cl. 264—119 **8 Claims**

1. A dry formed method for making hardboard with a smooth, dense surface which comprises:

(a) mixing fibers with a thermosetting glue system;

(b) forming a mat of said fibers having a moisture content less than 30%;

(c) applying to the surface fibers of said mat from 8 to 30 grams per square foot of a coating of a surface consolidating agent comprising from 62 to 95% water, from 4 to 25% of a hydroxy-radical-containing compound having a boiling point of from 212° F. to 600° F. selected from the group consisting of alcohols and their esters, and from 1 to 25% polyvinyl acetate, wherein the percentages of ingredients are based on the weight of the surface consolidating agent; and

(d) pressing said mat for a time and at a temperature and pressure effective to consolidate the fibers and permanently bind them by virtue of the glue system.

4,238,439

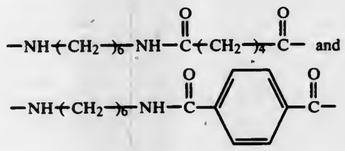
PROCESS FOR PRODUCING SELF-CRIMPING POLYAMIDE YARNS

Jae C. Hyun, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 6, 1977, Ser. No. 839,868
Int. Cl.³ D01D *5/22*
U.S. Cl. 264—168 **9 Claims**

1. A melt spinning process for producing a multifilament polyamide yarn having at latent bulk of at least 18%, comprising

(a) extruding at a given extrusion rate through spinneret orifices of trilobal or triskellion cross-section a fiber-forming polyamide consisting essentially of randomly recurring units of the formula



wherein the mole ratio of (i) units to (ii) units is in the range of from about 90:10 to about 99:1, to form a molten stream;

(b) differentially quenching said molten streams by exposing one side thereof to transversely flowing air in a cooling zone to provide filaments

(c) withdrawing said filaments from said cooling zone by passing said filaments around at least one rotatable roll with a least a partial wrap; and

(d) collecting said filaments under tension on a take-up bobbin;

wherein the peripheral speed of said rotatable roll(s) is at least 2000 yards (1828.8 meters) per minute and is correlated with said extrusion rate to provide a drawn yarn having a denier per filament of at least 18 and wherein said filaments have a modification ratio greater than 1.2 and less than 4.0.

4,238,440

PROCESS FOR SPINNING ACRYLIC FIBERS

Francis M. Logullo, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1978, Ser. No. 380
Int. Cl.³ D01D *5/08*
U.S. Cl. 264—176 F **7 Claims**

1. Process for spinning acrylonitrile polymer fibers of an acrylonitrile polymer containing at least 91% by weight acrylonitrile units and up to 9% by weight copolymeric units having an intrinsic viscosity of 0.6 to 2.0, 7 to 23 μeq./g. enolizable groups after mild acid treatment, 15 to 70 μeq./g. thioether ends derived from a water insoluble mercaptan and less than 3 μeq./g. oxidizable hydrolysis fragments wherein the polymer is dissolved in a solvent for the polymer to provide a solution

having a polymer concentration of 38–75% by weight which is then spun by conventional dry, wet or plasticized melt spinning methods.

4,238,441

PROCESS FOR PREPARING ACRYLIC POLYMER PLEXIFILAMENTS

Francis B. Cramer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1978, Ser. No. 378
Int. Cl.³ D01D *5/04*
U.S. Cl. 264—206 **3 Claims**

1. Process for producing plexifilament strands of an acrylonitrile polymer which comprises dispersing in water 25 to 45% by weight of an acrylonitrile polymer containing at least 91% by weight acrylonitrile units and up to 9% by weight copolymeric units having an intrinsic viscosity of 0.6 to 2.0, 7 to 23 μeq./g. enolizable groups after mild acid treatment, 15 to 70 μeq./g. thioether ends derived from a water insoluble mercaptan and less than 3 μeq./g. oxidizable hydrolysis fragments, heating the dispersion to a temperature of 200° to 300° C. while maintaining the dispersion under sufficient pressure to maintain the water in the liquid state, the time of such heating not exceeding about 30 minutes, and promptly flash-extruding the dispersion through an orifice into a region of substantially lower temperature and pressure to form a continuous strand of fibrillated plexifilaments.

4,238,442

PROCESS FOR MELT SPINNING ACRYLONITRILE POLYMER HYDRATES

Edward T. Cline, Wilmington, and Francis B. Cramer, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1978, Ser. No. 379
Int. Cl.³ D01D *5/04*
U.S. Cl. 264—206 **4 Claims**

1. In a process for spinning acrylonitrile polymer filaments comprising addition to the polymer of water in an amount equivalent as a minimum to either 45% of that required to hydrate all the nitrile groups in the polymer or 80% of that required to hydrate the coupled nitrile groups (on a 1/1 water molecule/nitrile group basis), whichever is larger, and as a maximum the amount of water actually combined as hydrate plus 7 weight percent based on polymer, the total water not exceeding the amount necessary to hydrate all the nitrile groups in the polymer, heating the composition under at least autogenous pressure at a temperature ranging between about 25° C. less to about 10° C. more than the temperature of hydration as determined by Laser Raman Spectroscopy and extrusion of the resulting composition under pressure through an orifice to form a shaped product, the improvement comprising use of an acrylonitrile polymer containing at least 91% by weight acrylonitrile units and up to 9% by weight of one or more copolymeric units, having an intrinsic of 0.6 to 2, 7 to 23 μeq./g. enolizable groups after mild acid treatment, 15 to 70μ eq./g. thioether ends derived from a water insoluble mercaptan and less than 3 μeq./g. oxidizable hydrolysis fragments.

4,238,443

PROCESS FOR TRANSVERSELY STRETCHING POLYETHYLENE TEREPHTHALATE FILM

Stanley B. Levy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1979, Ser. No. 65,067
Int. Cl.³ B29D *7/24;* B29C *17/02*
U.S. Cl. 264—210.7 **9 Claims**

9. A process for manufacturing an oriented film comprising the steps of:

(a) extruding a molten web of thermoplastic material;

(b) quenching the molten web to solidify it in a substantially amorphous form;

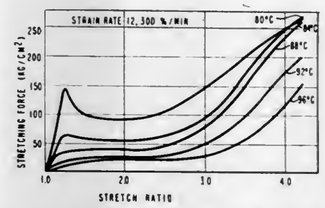
(c) heating the quenched web to a substantially uniform temperature across the web;—said temperature being from 10 to 35 Celsius degrees above the second order transition temperature of the thermoplastic material;

(d) introducing the web to a transverse stretching means;

(e) stretching the web in the transverse stretching means to an initial degree more than about 5 percent and less than about 25 percent of the total stretching degree;

(f) maintaining the temperature of the moving web during the initial stretching at a temperature about equal to the temperature of the web in step (c);

(g) stretching the moving web in the transverse stretching



means to the total stretching degree, that is, more than 2.5 and less than 5.5 times the width of the web before stretching was begun;

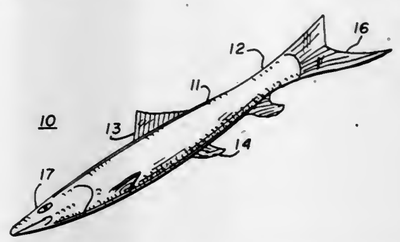
(h) maintaining the atmosphere surrounding the moving web during the stretching of step (g) at a temperature of about 1 to 15 Celsius degrees below the temperature of the web in step (c) but above the second order transition temperature, whereby the web in the stretching means, while being stretched, is cooling toward the temperture of step (h) and, after being stretched, exhibits a substantially uniform temperature across the web and substantially equal to the temperature of the atmosphere in step (h).

4,238,444

REENFORCED FISHING LURE

Joseph R. Thom, 1217 Johnson Ave., Point Pleasant, N.J. 08742

Filed Aug. 31, 1979, Ser. No. 71,739
Int. Cl.² B29C *1/02*
U.S. Cl. 264—226 **2 Claims**



1. A method for making a fishing lure from an exact copy of a given bait fish comprising the steps:

cutting off the tail portion of said exact copy of said given bait fish at a relatively thick portion of the body of the fish;

forming a substitute tail portion of the same profile as that of the original portion of said given fish, but tapering to a much thicker section having the same profile as that of the original tail portion of said given bait fish;

attaching said substitute tail portion to the body of said exact copy of said given bait fish, to provide a modified copy of said bait fish;

making a final mold of said modified copy of said original bait fish;

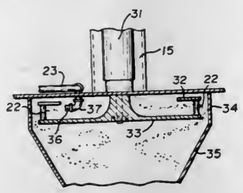
embedding a reenforcing network including connecting eyes, hooks, and other necessary appurtenances into said mold; and molding a fishing lure in said final mold.

4,238,445

PROCESS FOR MANUFACTURING GYPSUM BOARD

Richard F. Stone, Buffalo Grove, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jul. 2, 1979, Ser. No. 54,069
Int. Cl.³ B32B *13/00*; B28B *3/00*
U.S. Cl. 264—234 **6 Claims**



1. An improved process for manufacturing gypsum board characterized by using a reduced amount of water to fluidize calcined gypsum in forming a gypsum slurry which is fed to a boardmaking machine while maintaining the compressive strength of the dried gypsum board which comprises:
(1) Supplying calcined gypsum feed to be conveyed to a gypsum slurry mixer;
(2) conveying the calcined gypsum feed to an impacting blender;
(3) blending a small amount of water with said calcined gypsum and simultaneously or substantially simultaneously grinding the calcined gypsum to increase the surface area of the gypsum particles, said water ranging from about 1% to 10% by weight of the calcined gypsum feed, said grinding increasing the surface area of the gypsum particles up to about 4 times;
(4) allowing the freshly exposed facets of the treated calcined gypsum particles to heal;
(5) conveying the healed calcined gypsum to a gypsum slurry mixer;
(6) adding additional water to the healed calcined gypsum in the slurry mixer, said additional water being added in an amount sufficient to provide from about 50 to 85 parts of water, including water added in the blender, per 100 parts of the calcined gypsum, which results in a substantially reduced amount of water to be evaporated from the wet boards;
(7) mixing the healed calcined gypsum and water in the slurry mixer to form a homogeneous slurry;
(8) feeding the slurry to a gypsum board making machine to form a wet gypsum board;
(9) passing the wet gypsum board through a kiln to dry the board;
(10) recovering dry gypsum board consisting essentially of calcium sulphate dihydrate.

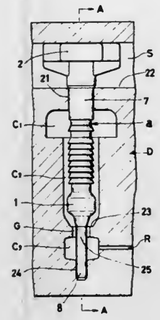
4,238,446

METHOD FOR MOLDING BLIND RIVET

Toshie Tanaka, Machida, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Feb. 27, 1979, Ser. No. 15,837
Claims priority, application Japan, Feb. 28, 1978, 53-21557
Int. Cl.³ B29D *3/00*; F16B *19/10*
U.S. Cl. 264—250 **4 Claims**

1. A method for the two-stage molding of a blind rivet adapted to have a rivet body radially expanded by the upward movement of a shank comprising a first stage for molding a shank in a first die and a second stage for setting the essential part of the shank in position within the cavity of a second die for molding a rivet body and subsequently injecting a synthetic resin into the second die and thereby forming a rivet body around the shank, which method comprises allowing the injection of the synthetic resin into the cavity of the die for molding the rivet body to be effected through the medium of a ring gate disposed at the lower end of the cavity and thereby producing a uniform flow of the synthetic resin from said lower end through said rivet body cavity to the cavity for the molding of the head portion of the rivet body, said shank molded within the first die being provided on the lower end thereof with a rod of a smaller diameter extending from said lower end to a length past the lower end of the cavity for molding the rivet body,



forming in the second die a gate cavity at the center of the lower end of said rivet body cavity, setting the essential part of the shank in position within said cavity and consequently allowing said smaller diameter rod of the shank to extend through said gate cavity, and resting in a complimentary cavity in said die thereby causing said gate cavity to be converted into said ring gate.

4,238,447

STEAM STERILIZING PROCESS

Robert Wolff, Mantoloking, N.J., assignor to Better Built Machinery Corporation, Saddle Brook, N.J.

Division of Ser. No. 755,440, Dec. 29, 1976, Pat. No. 4,108,601.
This application May 31, 1978, Ser. No. 911,281
Int. Cl.³ A61L *2/06, 2/24*
U.S. Cl. 422—26 **5 Claims**

1. A process for sterilizing hospital and laboratory glassware, equipment, soft goods, and the like material comprising the steps of:
(a) admitting steam at a first low pressure to only a steam jacket surrounding an enclosed sealed chamber to preheat said chamber;
(b) placing said material to be sterilized in said enclosed sealed chamber;
(c) interconnecting said jacket and said chamber at the commencement of the sterilization in said chamber and at all times during the steam sterilization operation;
(d) continuously monitoring the temperature in said chamber; and
(e) introducing steam at a second higher pressure into said jacket and said chamber when the temperature in said chamber drops below a predetermined level.

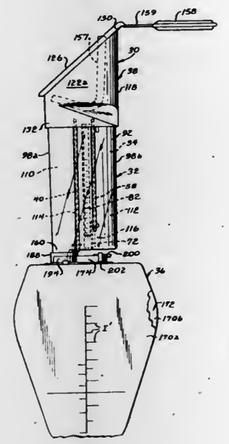
4,238,448

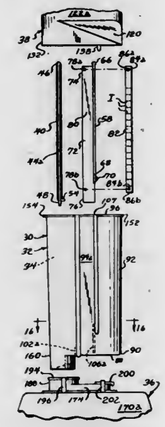
DISCHARGE MEASURING DEVICE

Lawrence A. Salvadori, Milwaukee; Frank N. Miller, Racine, both of Wis.; Terry N. Layton, Arlington Heights, Ill.; W. Martin Schultze, New Berlin, Wis., and Frank K. Villari, Oak Park, Ill., assignors to The Kendall Company, Boston, Mass.

Filed Apr. 24, 1979, Ser. No. 32,819
Int. Cl.³ G01F *1/20*; G01N *31/22*
U.S. Cl. 422—58 **3 Claims**

1. A device for measuring a discharge of urine, comprising:
a hollow receptacle having a pair of opposed generally flat sidewalls and a pair of opposed arcuate end walls connecting the sidewalls, with the end walls and sidewalls defining a chamber, said receptacle having means for measuring a dynamic characteristic of the discharge comprising means for indicating the maximum height of liquid in said receptacle, and an outwardly directed rim extending along at least a portion of said sidewalls at the upper end of the sidewalls; and
a fluid receiving member detachably connected to said hollow receptacle and having a lower wall and sidewalls defining a cavity, an inlet port communicating with the cavity for passage of the discharge into the cavity, and a lower outlet opening communicating with the cavity for





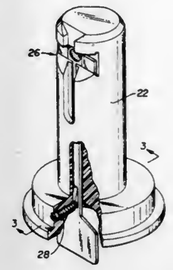
passage of the discharge out of the cavity, said receiving member having a depending skirt defining a pair of opposed generally planar lower edges of the receiving member, and a pair of opposed arcuate edges connecting the planar edges, such that said skirt receives the upper end of the receptacle within said edges, said planar edges having inwardly directed flange means for releasably interengaging and grasping said rim on opposed sides of the receptacle and thereby releasably attaching the receiving member to the receptacle.

4,238,449

REAGENT HOLDER

Fred H. Deindoerfer, Northridge, Calif., assignor to International Diagnostic Technology, Inc., Santa Clara, Calif.

Filed May 21, 1979, Ser. No. 40,592
Int. Cl.³ G01N *21/33, 33/48*
U.S. Cl. 422—58 **1 Claim**



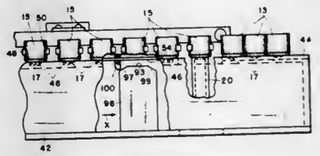
1. In an elongated diagnostic reagent holder having front and rear sides, an elongated shaft, a diagnostic surface area on the front side of the holder near one end of the shaft for supporting an immunofluorescent sample, and a cam surface on one side of the shaft adapted to engage a retainer in a receiver for the reagent holder to retain the reagent holder at an examination position in the receiver, the improved reagent holder having,
a. a second diagnostic surface area on the back side of the holder opposite to the first diagnostic surface area for supporting a second immunofluorescent sample, and
b. a second cam surface on the second side of the shaft opposite to the first cam surface for retaining the reagent holder at the examination position during examination of the second diagnostic surface area with the shaft having a flexibly mounted wedge shaped portion thereof with the first and second cam surfaces on opposite sides thereof whereby each of the cam surfaces may be inclined to the length of the shaft while the other cam surface is generally parallel to the shaft.

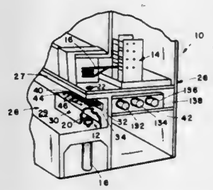
4,238,450

CRUCIBLE LOADING-UNLOADING SYSTEM

Roger L. Bredeweg, Stevensville; Edward P. Povilaitis, Coloma, and Ramsey G. Reed, St. Joseph, all of Mich., assignors to Leco Corporation

Filed Feb. 21, 1979, Ser. No. 13,031
Int. Cl.³ G01N *31/12, 33/00*
U.S. Cl. 422—63 **23 Claims**





1. A system for mechanically advancing a series of crucibles

into a loading station of an analyzer in a predetermined sequence for the analysis of specimens contained by the crucibles comprising:

a crucible support surface positioned adjacent to the loading station for holding a series of crucibles in predetermined spaced relationship to one another;

a plurality of lineally spaced crucible gripping fingers for alternately gripping and releasing said series of crucibles; and

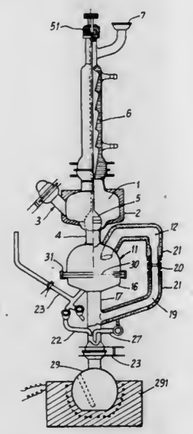
means for actuating said crucible gripping finger to stepwise and sequentially lineally advance said series of crucibles into the loading station in a predetermined sequence.

4,238,451

PROCESS AND DEVICE TO MEASURE THE ASPHALTENE CONTENT OF PETROLEUM PRODUCTS

Andre Cials, Mornant, and Andre Lambelin, St Pierre de Chandieu, both of France, assignors to Elf Union, France

Filed Apr. 3, 1979, Ser. No. 26,575
Claims priority, application France, Apr. 6, 1978, 78 10210
Int. Cl.³ B01D *1/00, 5/00;* **B01L** *11/02*
U.S. Cl. 422—101 **4 Claims**



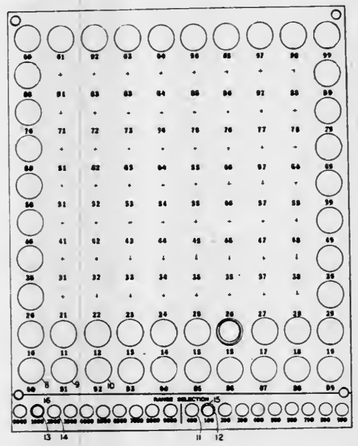
1. An apparatus for quantitative analysis of a sample requiring precipitation and evaporation which comprises in a columnar arrangement from top to bottom; condensing means connected to an upper portion of a first evaporator means, said first evaporator means having heating means, sample inlet means, and basal outlet means, said basal outlet means comprising an opening connected to a first downpipe for refluxed sample carrying liquid, said opening fitted with adjustable closing means; said downpipe connected to filter means for receiving and filtering said refluxed liquid comprising two parts roughly hemispherical in shape forming an upper and lower portion with an interposed filter; said upper portion having a washing-vapor inlet tube, said lower portion having a downpipe for washing liquids; said filtering means supported by a column which surmounts an interchangeable lower evaporator and heating means, at least a portion of said supporting column being hollow and communicating with said lower evaporator, said hollow column portion having connecting means which connect said hollow column portion with said downpipe and washing-vapor intlet tube of said filter means to provide a circuitous route for a washing fluid between said lower evaporator and said filter means through said filter.

4,238,452

BLOOD SPECIMEN INDEXING MEANS

John J. McMorrow, 55 Florence Ave., Oyster Bay, N.Y. 11771

Filed Oct. 16, 1978, Ser. No. 951,729
Int. Cl.³ G01N *1/10;* **B01L** *9/06*
U.S. Cl. 422—104 **4 Claims**



1. Chemical specimen rack indexing means comprising:

a rack for test tubes having a lower solid flat plate, a center flat plate and an upper flat plate, the center and upper plates having a plurality of holes for receiving test tubes,

the upper plate having a plurality of peg holes to receive pegs, at least one peg in one of said peg holes,

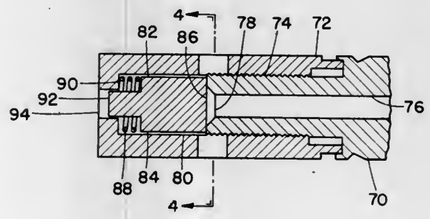
the test tube holes in the upper plate being identified with indicia and the peg holes being identified with indicia, whereby rack having specimens in test tubes may be numerically indexed.

4,238,453

CATALYST SPRAY NOZZLE

Henri A. Van den Bossche, Antwerp, Belgium, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 853,601, Nov. 21, 1977, Pat. No. 4,163,040.
This application Dec. 4, 1978, Ser. No. 966,452
Int. Cl.³ B01J *3/04;* **B05B** *1/32;* **C08F** *2/00, 110/02*
U.S. Cl. 422—131 **4 Claims**



1. In a high pressure reactor for polymerizing ethylene into polyethylene, the improvement comprising a liquid catalyst injection nozzle for injecting a finely atomized spray of liquid catalyst into the reactor, said nozzle comprising:

(a) an injector housing having therein an injection passageway with a discharge end through which liquid catalyst is injected into the reactor, said housing having a flat, radially oriented annular surface at said discharge end, said housing further including a substantially cylindrically shaped compartment adjacent to said discharge end and extending coaxially with said injection passageway;

(b) a valve element having a large diameter section and a smaller diameter section positioned coaxially with respect to said large diameter section and an annular shoulder being formed between said large and smaller diameter sections, with the valve element being axially movably positioned in said compartment, and the end of said large diameter cylindrical section including a surface complementary to said flat, radially oriented annular surface on said housing and abutting the discharge end of said injection passageway to close thereagainst;

(c) means mounted entirely within said housing compartment for normally biasing said complementary surface of said valve element intc closing engagement with said annular surface at the discharge end of said passageway with a predetermined force, said biasing means including a spring compressively arranged within said compartment and coaxial therewith around said smaller diameter cylindrical section and abutting against said annular shoulder on the valve element to bias the complementary end of said large diameter cylindrical section into closing engagement with said discharge end of the injection passageway at said predetermined force;

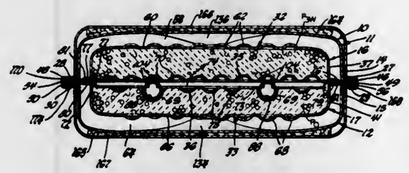
(d) means for enabling the liquid catalyst to be supplied to said injection passageway at a pressure in excess of and opposite to the predetermined force of said biasing means to bias said valve element away from engagement with the discharge end of said injection passageway and facilitate liquid catalyst to be expelled through the space therebetween, atomizing said liquid catalyst and causing said catalyst to be radially injected between said radially oriented surfaces into the reactor as an atomized spray.

4,238,454

CATALYTIC CONVERTER HAVING A PAIR OF CATALYST PELLET BEDS WITH A PLENUM AND AIR TUBE THEREBETWEEN

David E. Roberts, Flint, and Michael R. Foster, Columbiaville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1979, Ser. No. 33,043
Int. Cl.³ B01J *8/04;* **F01N** *3/28, 3/34, 7/18*
U.S. Cl. 422—171 **4 Claims**



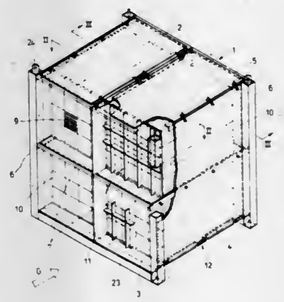
1. In a catalytic converter for internal combustion engine exhaust gases and of the type having a sheet metal housing comprised of a pair of housing shell members cooperatively enclosing and also cooperatively providing an inlet and an outlet for a pair of sheet metal catalyst pellet beds wherein each of the beds has a perforated outer bed member cooperating with one of the housing shell members so that the inlet and outlet are directly open within the housing to the perforated area of the respective outer bed members and wherein the outer bed members have corresponding flanges extending on opposite sides thereof between the inlet and outlet sandwiched between and welded to corresponding flanges of the housing shell members and wherein each of the beds also has a perforated inner bed member for cooperating with its outer bed member to retain the pellets therebetween while permitting gas flow therethrough and for also cooperating with the inner bed member of the other bed to form a plenum between the beds and wherein an air passage extends through the housing to the plenum to deliver air thereto and wherein the inner bed members have corresponding flanges which, as extending on opposite sides thereof between the inlet and outlet, are sandwiched between corresponding flanges of the outer bed members: the improvement comprising in combination, at least one of the inner bed members having the area containing its perforations displaced away from that of the other inner bed member whereby the plenum is formed with a predetermined spacing between the inner bed members, at least said one inner bed member further having an imperforate channel on its plenum side extending across its displaced area cooperating with the plenum side of the other inner bed member to provide a tube receiving cavity between the inner bed members that is open on opposite sides to the plenum, an opening formed between the flanges of the inner bed members open to said tube receiving cavity, an opening formed between the flanges of the outer bed members open to said opening between said inner bed members, an air tube extending through both said openings and along the length of said tube receiving cavity and engaging on opposite sides with said channel and the plenum side of said other inner bed member whereby the air tube maintains said predetermined spacing in the plenum between the inner bed members, said air tube having a closed end in the plenum and having holes spaced along the length thereof which open to the plenum to deliver air thereto along the open sides of said tube receiving cavity, and a weld external of the housing between said air tube and the flanges of the outer bed members whereby the air tube is sealingly fixed to the outer bed members but is free to expand internally thereof along its length both with and relative to the inner bed members while also maintaining the predetermined spacing therebetween.

4,238,455

DENITRIFICATION REACTOR

Toshiaki Ogiwara, Funabashi, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1979, Ser. No. 38,261
Claims priority, application Japan, Jun. 27, 1978, 53-88306[U]
Int. Cl.³ B01J *35/04;* **F01N** *3/10*
U.S. Cl. 422—171 **5 Claims**



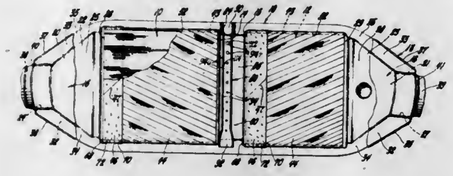
1. A denitrification reactor incorporating catalyst cells wherein each of the catalyst cells is produced by packing a plurality of honeycomb catalyst blocks into a box-shaped frame having four corner posts and two opposed open ends, a plurality of vertical guide posts erected within a reactor main body and spaced apart from each other in such a way that four adjacent vertical guide posts may vertically guide the corner posts of said catalyst cell, each of said vertical guide posts being provided with a plurality of clamping means adapted to tightly press said corner posts of said catalyst cell against said vertical guide posts, hoisting means mounted on the top of said reactor main body for loading and unloading said catalyst cells into and out of said vertical guide posts, the frame of said catalyst cell being divided by vertical and horizontal partition walls into a plurality of catalyst block stowing chambers, and elastic packing sheets made of ceramic fiber or the like placed between the catalyst blocks and said vertical and horizontal partition walls and the top, side and bottom walls of said box-shaped frame.

4,238,456

CATALYTIC CONVERTER WITH UNIFORM AIR DISTRIBUTION AND MIXING WITH THE EXHAUST GASES

John I. Jalbing, Millington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 16, 1979, Ser. No. 30,124
Int. Cl.³ B01J *8/02;* **F01N** *3/28, 3/30*
U.S. Cl. 422—172 **3 Claims**



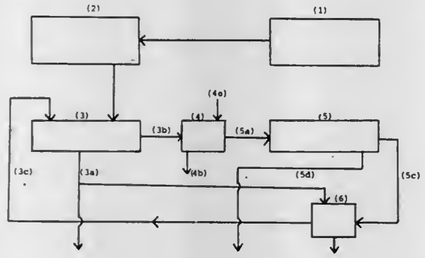
1. In a catalytic converter for internal combustion engine exhaust gases and of the type having oxidizing catalyst means mounted in a housing wherein a straight or substantially straight air tube with a closed end extends into the housing for injecting air into the exhaust gases for oxidation thereof: the improvement comprising in combination, a plurality of circumferentially spaced sets of holes in the air tube, one set of said holes facing upstream into the exhaust gases, two other sets of said holes facing in opposite directions transverse to the exhaust gas flow, the holes in each of said three sets being spaced along the length of tube and decreasing in size toward the closed end so as to deliver substantially equal amounts of air, and the holes in all said three sets being sized in relation to each other so that the two sets of transversely facing holes deliver substantially equal and separately greater amounts of air than the upstream facing holes.

4,238,457

PROCESS FOR THE RECOVERY OF URANIUM FROM WET-PROCESS PHOSPHORIC ACID

Angelo Sialino, Ris Organis, and Alain Francois, Toulouse, both of France, assignors to Compagnie Generale des Matieres Nucleaires (COGEMA) S.A., Paris and APC - Azote et Produits Chimiques S.A., Toulouse, both of, France

Filed Jul. 5, 1978, Ser. No. 922,019
Claims priority, application France, Jul. 5, 1977, 77 20552
Int. Cl.³ B01D *11/00*
U.S. Cl. 423—10 **17 Claims**



1. In a process for the recovery of uranium from a wet-process phosphoric acid, comprising treating in an extraction step, the preliminary oxidized acid first with an organic solvent consisting essentially of a dialklyphosphoric acid and a trialkylphosphine oxide, dissolved in an inert and unreactive organic solvent whereby there are obtained a uranium-free phosphoric acid and an organic extract consisting essentially of the solvent containing the major portion of uranium; then, in a reextraction step, separating the uranium from the organic extract as ammonium uranyl tricarbonate by reacting the organic extract with ammonium hydroxide and ammonium carbonate; and recycling the uranium-free solvent to the extraction step; the improvement which comprises treating the organic extract in a reextraction apparatus having at least two stages, by (a) introducing the extract at the head of the first stage; (b) countercurrently introducing ammonia or ammonium hydroxide solution at the bottom of the first stage; the pH of the first stage being controlled and maintained at a value of 8.0 to 8.5; (c) introducing an ammonium carbonate aqueous solution at the bottom of the last stage; the amount of ammonium carbonate employed being 50–80 percent by weight of the theoretical molar quantity which is necessary to neutralize the dialkylphosphoric acid contained in the solvent and to convert the uranium to ammonium uranyl tricarbonate; and (d) separately regenerating the ammoniated solvent obtained after the reextraction step by treating it with an acid and recycling regenerated solvent to the extraction step.

4,238,458

PROCESS FOR THE PRODUCTION OF A BASIC CARBONATE OF ALUMINUM AND AN ALKALI OR ALKALI EARTH METAL

Chanakya Misra, Orissa, India, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Feb. 1, 1978, Ser. No. 874,193
Claims priority, application Switzerland, Feb. 1, 1977, 1164/77; Fed. Rep. of Germany, Mar. 1, 1977, 2708861
Int. Cl.³ C01F *7/00;* **C01D** *7/00, 7/38*
U.S. Cl. 423—115 **7 Claims**

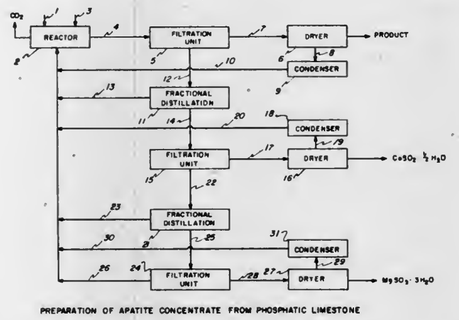
1. A process for the production of a basic pure aluminum-sodium carbonate of the dawsonite type by reacting aluminum tri-hydroxide obtained from the Bayer process with an aqueous sodium bi-carbonate solution wherein the conversion to dawsonite is in the order of 98.5 to 99.5% comprising carrying out the reaction at a temperature between 160° and 240° C. and under a pressure of between 5 and 50 atm. in an aqueous suspension which is agitated by stirring whereby the length of the crystalline fibers increase with a corresponding increase in the reaction temperature.

4,238,459

CHEMICAL BENEFICIATION OF PHOSPHATIC LIMESTONE AND PHOSPHATE ROCK WITH α-HYDROXYSULFONIC ACIDS

John F. Phillips, Jr., Florence; Guerry H. McClellan, Killen, and John F. McCullough, Florence, all of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 940,940, Sep. 11, 1978, now Defensive Publication No. T988,006. This application Jun. 18, 1979, Ser. No. 49,513
Int. Cl.³ C01F *11/48*
U.S. Cl. 423—167 **2 Claims**



PREPARATION OF APATITE CONCENTRATE FROM PHOSPHATIC LIMESTONE

1. A process for removing calcite and dolomite from calcined, uncalcined phosphate rock, phosphatic limestone, or mixtures thereof, which contains up to about 60 percent calcite and up to about 60 percent dolomite by the use of sulfur dioxide, water, and cyclohexanone which comprises the following steps:

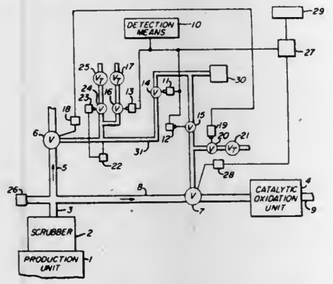
(1) mixing said phosphate rock, said phosphatic limestone, or both, with water, sulfur dioxide and cyclohexanone while maintaining the temperature of said reaction mixture between 60° C. and 90° C. for a period of time sufficient to add up to about 50 percent excess sulfur dioxide over the stoichiometric amount required to form magnesium and calcium bisulfite salts wherein for each 100 g of solvent used, phosphate rock or phosphatic limestone containing about 1 to 15 grams of dolomite is used and wherein the cyclohexanone concentration of the water-cyclohexanone solvent ranges from 4.8 percent to 23 percent;
(2) separating the solids from the liquid from step 1, supra;
(3) drying said solids from step 2, supra;
(4) condensing gaseous products from step 3, supra, and returning said condensate to step 1, supra;
(5) distilling filtrate from step 2 supra until the distillate temperature reaches about 55° C.;
(6) condensing the distillate from step 5 supra and returning said condensate to step 1, supra;
(7) separating calcium sulfite hemihydrate from the undistilled filtrate of step 5, supra;
(8) heating the separated calcium sulfite hemihydrate of step 7, supra, to remove sulfur dioxide, water, and cyclohexanone from the calcium sulfite;
(9) condensing the offgas from step 8, supra, and returning it to step 1, supra;
(10) distilling sulfur dioxide, water, and cyclohexanone from the filtrate of step 7, supra, until the distillate temperature reaches between about 90° C. and about 100° C.;
(11) separating magnesium sulfite trihydrate from the undistilled liquid of step 10, supra; and
(12) returning the liquid back to step 1, supra;
(13) condensing the distillate step 10, supra, and returning the condensate back to step 1, supra;
(14) heating the separated magnesium sulfite crystals recovered from step 11, supra;
(15) condensing the offgas from step 14, supra; and
(16) returning the condensate to step 1, supra.

4,238,460

WASTE GAS PURIFICATION SYSTEMS AND METHODS

John E. Aiken, Monroeville, and William J. Didycz, Whitehall, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1979, Ser. No. 8,678
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—210 **14 Claims**



1. Process for removing oxidizable pollutants from a waste gas stream, comprising:

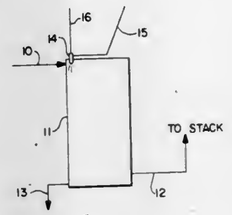
(1) maintaining an oxidation catalyst for oxidizable pollutants at a temperature sufficient to sustain catalytic oxidation;
(2) contacting said waste gas stream with said oxidation catalyst for a period of time sufficient to effect substantially complete oxidation;
(3) automatically sensing one or more variables which indicate an impending harmful rise in the temperature of said catalyst; and
(4) automatically diverting said waste gas stream from said catalyst in response to a signal indicating that one or more of said variables have been sensed which indicate an impeding harmful rise in the temperature of said catalyst, said diverting of said waste gas stream being conducted in a manner which maintains a substantially uniform pressure in said waste gas stream and which prevents harmful overheating of said catalyst, and wherein said waste gas stream originates from a scrubber, and wherein the pressure of said gas stream in said scrubber is maintained substantially uniform during said diverting of said waste gas stream.

4,238,461

REMOVAL OF ODORS FROM GAS STREAMS

Egbert Devries, Kettering, Ohio, assignor to Quad Corporation, Highland Park, Ill.

Filed Sep. 28, 1979, Ser. No. 80,792
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—210 **8 Claims**



1. A method for removing odoriferous constituents from a relatively dry waste gas stream which comprises:

passing the waste gas into an upper level of a treatment zone;
introducing into the gas stream at a point at or near its entry into the treatment zone a finely divided spray comprising an aqueous solution of a chemical reagent reactive toward said odoriferous constituents;
adjusting the droplet size and volume of said spray according to the temperature and relative humidity of said gas stream to produce upon equilibrium of the gas and spray residual liquid droplets having a maximum diameter of about 10 microns and having a residual liquid volume ranging from about 0.01 to about 1.0 gallons per thousand cubic feet of gas;
allowing the droplets to fall unimpeded through the treatment zone for at least about 3 seconds;
removing a treated gas stream from a lower level of the treatment zone, and
separately removing settled out spray liquid, now containing the reaction products of said chemical reagent and odoriferous gas constituents, from the bottom of the treatment zone.

4,238,462

AUTOCIRCULATION PROCESS AND APPARATUS

Leslie C. Hardison, Barrington, Ill., assignor to Air Resources, Inc., Palatine, Ill.

Filed Jan. 31, 1978, Ser. No. 873,941
Int. Cl.³ B01D *53/36;* **B01J** *10/00*
U.S. Cl. 423—224 **7 Claims**

3. In a continuous oxidation-reduction process for removing hydrogen sulfide gas from a gas stream by continuously effecting contact between hydrogen sulfide and a catalytic oxidation-reduction reaction solution which is reduced when

contacted by hydrogen sulfide and wherein said gas stream is passed through a first vertically disposed reaction zone in which the reaction solution reacts with hydrogen sulfide gas to form elemental sulfur and the reaction solution is reduced and thereafter circulating the reduced reaction solution to a second vertically disposed laterally spaced reaction zone having the upper and lower ends in open flow communication with the first reaction zone and wherein said reaction solution is oxidized by an oxygen containing gas, the improvement comprising;

(a) introducing a hydrogen sulfide containing gas in a finely divided form into said first reaction zone filled with the reducible catalytic oxidation-reduction reaction solution at a point adjacent the lower end thereof to provide upwardly flow of said hydrogen sulfide containing gas therein while effecting reduction of said catalytic solution and oxidation of said hydrogen sulfide to elemental sulfur,

(b) introducing said oxygen containing gas in a finely divided form into said second reaction zone filled with the reduced catalytic oxidation-reduction reaction solution from said first reaction zone at a point adjacent the lower end thereof to provide upwardly flow of oxygen containing gas therein and effecting oxidation of the oxidation-reduction reaction solution,

(c) controlling the rate at which each said gas is introduced into the respective reaction zones to effect lowering the density of said reaction solution in one of said reaction zones below the density of the reaction solution in the other reaction zone to draw liquid catalytic solution into the reaction zone having the lower density from the reaction zone having the higher density and thereby effecting continuous circulation of said reaction solution, and said catalytic oxidation-reduction solution being reduced by upwardly flowing hydrogen sulfide containing gas stream while said reaction solution flows in one vertical direction within said first reaction zones and said reduced reaction solution being oxidized in said second reaction zone to its original reactive state by said upwardly flowing oxygen containing gas while said reduced reaction solution is flowing in a vertical direction opposite to the flow of the reaction solution within the said first reaction zone before said solution returns to said first reaction zone.

4,238,463

METHOD FOR DESULFURIZING GASES WITH IRON OXIDE

Stephen W. Nicksic, Brea, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 53,123

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—226 **9 Claims**

1. In a method for removing hydrogen sulfide from a gas, wherein said gas is contacted with a bed of subdivided solids containing iron oxide, hydrogen sulfide is reacted with iron oxide to form iron sulfide; iron sulfide is reacted with molecular oxygen in said gas to form iron oxide and elemental sulfur; elemental sulfur is deposited in said bed; and said gas is recovered from said bed, the improvement comprising: introducing into said bed a liquid comprising an amine having the formula



where R^1 and R^2 are selected from hydrocarbon radicals having from 1 to 10 carbon atoms, and where R^1 may be hydrogen ion.

4,238,464

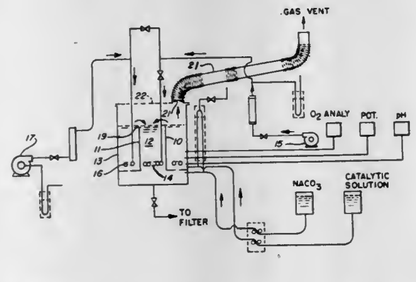
AIR REVITALIZATION MATERIALS

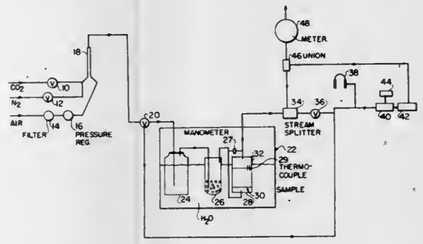
Paul R. Gustafson, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 790,624, Apr. 25, 1977, abandoned. This application Aug. 9, 1978, Ser. No. 932,233

Int. Cl.³ C01B *35/10*

U.S. Cl. 423—230 **14 Claims**





1. An oxygen-generating compound of the formula: $A_m.Z_n(D_xO_yH_z)_p$ wherein A is a base having a lithium, magnesium, or calcium cation and an oxide, hydroxide, peroxide, or superoxide anion; Z is selected from the group consisting of calcium, lithium, sodium, and potassium; $(D_xO_yH_z)$ is selected from the group consisting BO_5, B_2O_8, BO_5H, B_3O_{13}, TiO_8, and ZrO_8; m is 0 or 1; n is an integer from 1 to 4; and p is 1 or 2.

2. The compound of claim 1 wherein $(D_oO_y.H_2)$ is selected from the group consisting of BO_5, B_2O_8, and B_3O_{13}.

9. An oxygenated-atmosphere-revitalization compositions comprising a compound of claim 2.

13. A method of revitalizing an oxygenated atmosphere which comprises passing said atmosphere through the composition of claim 9.

4,238,465

REMOVAL OF PHOSGENE FROM BORON TRICHLORIDE

Duk S. Chun, Uniontown, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 62,646

Int. Cl.³ C01B *35/06*

U.S. Cl. 423—240 **13 Claims**

1. A method for removing phosgene from a vaporous stream of boron trichloride containing minor amounts of phosgene as an impurity and simultaneously forming hydrogen chloride, which comprises the step of contacting said vaporous boron trichloride stream in the presence of at least a stoichiometric amount of hydrogen, based on the phosgene impurity, with a substantially metal-free carbon catalyst under substantially anhydrous conditions, said carbon catalyst having a temperature of between about 300° C. and about 700° C., thereby removing phosgene from said boron trichloride stream and producing a hydrogen chloride-containing boron trichloride gas stream.

4,238,466

ABSORPTION OF SULFUR DIOXIDE FROM GASES BY FERROUS SULFATE

Adolfo R. Zambrano, and Barry J. Hansen, both of Hibbing, Minn., assignors to The Hanna Mining Company, Cleveland, Ohio

Continuation of Ser. No. 403,954, Oct. 5, 1973, abandoned. This application Oct. 8, 1976, Ser. No. 731,029

Int. Cl.³ C01B *17/60;* **C01G** *41/14*

U.S. Cl. 423—244 **6 Claims**

1. In a process for removing sulfur dioxide from a gas containing oxygen and from about 0.001% to about 5% by weight of sulfur dioxide by contacting said gas with a solid sorbent in an absorption zone at a temperature of from about 300° to about 500° C. to form sulfate-bearing solids and a gas reduced in sulfur dioxide content, the improvement comprising the use of solid ferrous sulfate as the sorbent and maintaining a ratio of oxygen to sulfur oxides in the absorption zone of at least 1.

4,238,467

METHOD OF PRODUCING YTTRIUM OXIDE WITH PARTICULARLY BIG PARTICLES

Martin Dugan, Bakke Soendre 81, 2040 Kloefta, and Norvald Gjelsvik, Fossumkroken 13, Oslo 9, both of Norway

Filed Apr. 9, 1979, Ser. No. 28,237

Claims priority, application Norway, Apr. 14, 1978, 781301

Int. Cl.³ C01F *17/00*

U.S. Cl. 423—263 **3 Claims**

1. A method of producing yttrium oxide particles with substantially all of the particles having a size greater than five microns comprising:

(a) precipitating yttrium oxalate;

(b) maintaining the yttrium oxalate in a liquid medium at a temperature of 90°–100° C. for at least three hours whereby yttrium oxalate crystals are formed;

(c) drying the yttrium oxalate crystals;

(d) calcining the yttrium oxalate crystals whereby the yttrium oxalate is converted to yttrium oxide.

4,238,468

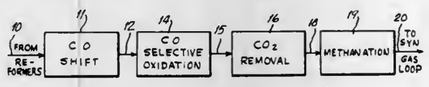
AMMONIA MANUFACTURING PROCESS

John C. Bonacci, Murray Hill; Thomas G. Otchy, Fanwood, and Thomas Ackerman, Teaneck, all of N.J., assignors to Engelhard Minerals and Chemicals Corporation, Iselin, N.J.

Filed Aug. 30, 1978, Ser. No. 938,187

Int. Cl.³ C01C *1/04*

U.S. Cl. 423—359 **21 Claims**



1. In a process for the catalytic synthesis of ammonia from a synthesis gas comprising nitrogen and hydrogen wherein said synthesis gas is produced by steam reforming a normally gaseous hydrocarbon or vaporized naphtha in a steam reforming reaction zone into which air is introduced at a preselected rate and the resulting reforming reaction zone effluent is shift converted to produce a gaseous mixture containing, in addition to hydrogen and nitrogen in approximately stoichiometric proportion for the production of ammonia, residual carbon monoxide, said gaseous mixture being at an elevated temperature substantially above 200° C. and wherein said gaseous mixture is cooled to a temperature in the range from about 20° C. to about 200° C. to condense water vapor therefrom and the resulting condensed water vapor removed from the resulting cooled gaseous mixture followed by introducing the cooled gaseous mixture into a selective oxidation reaction zone containing a catalyst effective for the selective oxidation of carbon monoxide to carbon dioxide in the presence of hydrogen and wherein there is withdrawn from the selective oxidation reaction zone the resulting treated gaseous mixture now having a reduced carbon monoxide content and comprising nitrogen, hydrogen and carbon dioxide and the resulting gaseous mixture withdrawn from said selective oxidation reaction zone treated for the selective removal of carbon dioxide therefrom and the resulting treated gaseous mixture, now having a reduced carbon monoxide and carbon dioxide content and consisting essentially of nitrogen and hydrogen, introduced into an ammonia conversion zone to contact therein a catalyst effective for the conversion of said nitrogen and hydrogen to ammonia, the improvement which comprises diverting a minor proportion of said air into said selective oxidation reaction zone, thereby reducing the rate of air introduced into said steam reforming zone to less than said preselected rate and introducing supplemental oxygen into said selective oxidation reaction zone, said diverted air and said supplemental oxygen thus-introduced into said selective oxidation zone serving to oxidize the carbon monoxide introduced thereinto as part of said cooled gaseous mixture to carbon dioxide, upon contact with said selective oxidation catalyst.

4,238,469

PROCESS FOR THE MANUFACTURE OF ALUMINUM FLUORIDE

Alfred Schmidt, Vienna, and Wilhelm Tschebull, Linz, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Apr. 3, 1979, Ser. No. 27,012

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1978, 2815881

Int. Cl.³ C01F *7/50*

U.S. Cl. 423—489 **7 Claims**

1. A process for preparing substantially pure solid aluminum fluoride containing water of crystallization and with an AlF_3 content of at least 96 percent per weight, relative to the anhydrous product, from an aqueous solution obtained by reacting aluminum hydroxide with aqueous fluosilicic acid and separating the solution so formed from silica, precipitated during reaction, which comprises adding to said aqueous solution, having an AlF_3 content from 20 up to 50 percent per weight, gaseous HF or an aqueous solution of HF in an amount of 0.1–1 percent per weight of HF, relative to the aqueous solution and thereafter and before occurrence of AlF_3 crystallisation atomizing said solution at temperatures from 110° to 350° C. and under drying conditions.

4,238,470

METHOD FOR OIL-TREATING INSOLUBLE SULFUR

Randall A. Young, Milford, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 30, 1979, Ser. No. 62,447

Int. Cl.³ C01B *17/12*

U.S. Cl. 423—567 R **7 Claims**

1. A method for inhibiting the accelerating effect of a rubber processing oil on the rate of reversion of insoluble sulfur with which it is mixed to soluble sulfur which comprises adding iodine to said oil in an amount sufficient to inhibit said accelerating effect of said oil on the reversion rate of said insoluble sulfur.

4,238,471

ASSAY FOR THYROID HORMONE BINDING CAPACITY

Max G. Reese, and LaVell R. Johnson, both of Salt Lake City, Utah, assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Jul. 12, 1978, Ser. No. 923,712

Int. Cl.³ G01N *33/16;* **B01J** *1/22;* **G21H** *5/02*

U.S. Cl. 424—1 **5 Claims**

1. An automated assay for qualitative determination of the thyroid hormone binding capacity of a serum sample, comprising:

(a) mixing a known amount of T_3 tracer with an unknown serum sample;
(b) flowing the mixture from step (a) through a chamber containing a T_3 binder supported on a solid support;
(c) determining the amount of T_3 tracer which passes through the chamber;
(d) flowing an eluting solution through the chamber to release any T_3 tracer which is bound to the binder in said chamber;
(e) determining the amount of T_3 tracer released from the binder;
(f) determining the percent of T_3 tracer present in the serum sample which was bound to the binder; and
(g) comparing the percent of bound T_3 tracer in the sample with the percent of bound T_3 tracer in a reference sample to determine the difference in T_3 binding capacity between said sample and said reference sample to thereby qualitatively determine the T_3 binding capacity of said serum sample.

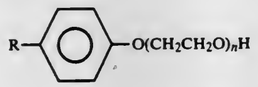
4,238,472

RADIOIMMUNOASSAY FOR CHLORINATED DIBENZO-P-DIOXINS

Phillip W. Albro, Cary; Kun Chae, Durham; Michael I. Luster, Chapel Hill, and James D. McKinney, Raleigh, all of N.C., assignors to United States of America, Washington, D.C.

Filed Nov. 27, 1978, Ser. No. 963,784
Int. Cl.[2] G01N *33/16;* A61K *43/00*
U.S. Cl. 424—1 **13 Claims**

1. A radioimmunoassay method for determining the amount of a chlorinated dibenzodioxin contaminant present in an environmental sample comprising:
(a) removing all naturally-occurring lipids and water-soluble components that might interfere with the subsequent assay from the environmental sample to obtain a final sample containing the chlorinated dibenzodioxin;
(b) emulsifying the final sample obtained in step (a) with a detergent having the general formula



wherein R is a normal or branched alkyl group and $n \geqq 8$;
(c) incubating the detergent emulsion obtained in step (b) with (1) an antiserum containing antibodies to said chlorinated dibenzodioxin and (2) a hapten consisting of an ^{125}I-labeled derivative of said chlorinated dibenzodioxin capable of being bound by said antibodies, until equilibrium binding occurs, thereby to obtain a mixture containing a formed antibody-^{125}I-labeled dioxin association complex;
(d) adding a second antibody to the mixture obtained in step (c) to precipitate said antibody-^{125}I-labeled dioxin complex; and
(e) determining the amount of radioactivity in said precipitate obtained in step (d) and comparing it to a standard curve to determine the amount of the chlorinated dibenzodioxin present in the sample.

4,238,473

ARTIFICIAL OLIGOSACCHARIDE ANTIGENIC DETERMINANTS

Raymond U. Lemieux, Edmonton; David R. Bundle, Ottawa, and Donald A. Baker, Edmonton, all of Canada, assignors to Chembiomed Limited, Edmonton, Canada

Continuation-in-part of Ser. No. 698,548, Jun. 21, 1976, Pat. No. 4,137,401. This application Jan. 22, 1979, Ser. No. 5,579
Claims priority, application United Kingdom, Jul. 8, 1975, 28729/75
Int. Cl.[3] A61K *35/14;* C07H *13/06*
U.S. Cl. 424—11 **26 Claims**

1. Lower oligosaccharide compounds active as blood group determinants having aldoses O-α or O-β-glycosidically linked to form di-, tri-, or tetra-saccharides, and having a bridging arm O-β-glycosidically linked to one of the aldose moieties, the bridging arm having the structure:

O—R—COR″

where R is a saturated aliphatic hydrocarbon moiety having from 3 to 17 carbon atoms and R″ is —H, —OH, —NH_2, —$NHNH_2$, —N_3 or lower alkoxy; the aldoses being selected from the group consisting of glucose, galactose, mannose, fucose, glucosamine, and acetamidodeoxyglucose, said aldoses and their sequence and linkage configurations being chosen to give active blood group determinants.

18. The lower oligosaccharide of claim 1 attached to a solid immunoadsorbent-type support or soluble, antigen-forming carrier macromolecule.

4,238,474

AGGLUTINATION OF LYMPHOCYTES FOR DIAGNOSING MALIGNANT TUMOR

Wolfgang Ax; Hartwig W. Bauer, and Sabine Schottler, all of Marburg, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 890,913
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713742; Sep. 30, 1977, 2744019
Int. Cl.[3] G01N *33/48, 33/50*
U.S. Cl. 424—12 **3 Claims**

1. A method for diagnosing a malignant tumor in a patient possibly suffering therefrom, which method comprises subjecting the patient's lymphocytes to a specific agglutination by adding at least 0.01 mg/ml of polylysine having a molecular weight between 1000 and 4000, or at least 0.1 g/ml of polyornithine having a molecular weight between 40000 and 60000, to a dispersion of at least 10^5/ml of intact lymphocytes in a physiologically compatible aqueous medium and keeping the mixture at a temperature from 20° C. to 40° C. for at least 20 minutes.

4,238,475

CHEWING CUM CAPABLE OF RELEASING FINELY DIVIDED WATER-INSOLUBLE MATERIALS THEREFROM

Frank Witzel, Spring Valley; Wayne J. Puglia, Bellerose Village; K. Warren Clark, Brewster, and Donald A. M. Mackay, Pleasantville, all of N.Y., assignors to Life Savers Inc., New York, N.Y.

Filed Aug. 1, 1979, Ser. No. 62,861
Int. Cl.[3] A23G *3/30;* A61K *9/68*
U.S. Cl. 424—48 **22 Claims**

1. A chewing gum capable of releasing finely divided water-insoluble therapeutic materials therefrom comprising a water-soluble phase comprised of softener, a finely divided water-insoluble therapeutic material coated with a water-soluble coating agent to facilitate release of said therapeutic material and prevent resorption back into the gum base, wherein said coating agent is gum arabic, a dextrin, gum tragacanth, gelatin, pectin, carboxymethyl cellulose, alginate, or other hydrocolloid or mixtures thereof, and a relatively water-insoluble phase consisting essentially of a plurality of separate and distinct masses suspended in and dispersed throughout the water-soluble phase, each of said masses comprising gum base, the water-soluble phase releasing said therapeutic material upon chewing.

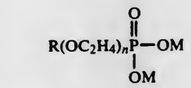
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DENTIFRICES

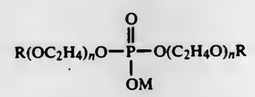
Kenneth Harvey, Wilmslow, England, assignor to Colgate Palmolive Company, New York, N.Y.

Filed May 10, 1979, Ser. No. 37,597
Claims priority, application United Kingdom, May 19, 1978, 20758/78
Int. Cl.[3] A61K *7/18*
U.S. Cl. 424—52 **12 Claims**

1. A clear dentifrice comprising a dentifrice vehicle containing from 5% to 50% of a polishing agent having an empirical SiO_2 content of at least 70%, a particle size in the range from 1 to 35 microns, an essentially amorphous X-ray structure and an index of refraction between 1.44 and 1.47, a liquid phase having an index of refraction matching that of the polishing agent to permit clarity of the dentifrice, the liquid phase including humectant, a solid phase including a gelling agent or a thickening agent or a mixture thereof, a compound which provides from 0.01% to 1% of fluorine, selected from alkali metal fluorides and alkali metal monofluorophosphates, and from 0.1% to 5% of a surface active system comprising narrow cut alkali metal lauryl sulphate in which the C_{12} content is at least 90% and a further anionic surface active agent selected from (a) alkali metal salts of a substantially saturated higher aliphatic acid amide of a lower aliphatic amino carboxlic acid compound, (b) alkali metal salts of a substantially saturated higher fatty aliphatic alcohol alkylene oxide sulphate, (c) an anionic phosphate esters comprising a mixture of a monoester of the formula



and a diester of the formula



wherein R is an alkyl group of from 10 to 20 carbon atoms, n is an integer from 1 to 6 and M is hydrogen, an alkali metal or ammonium and (d) mixtures thereof, the amount of the alkali metal lauryl sulphate being greater than the amount of the further anionic surface active agent, the ratio being at least 3:1.

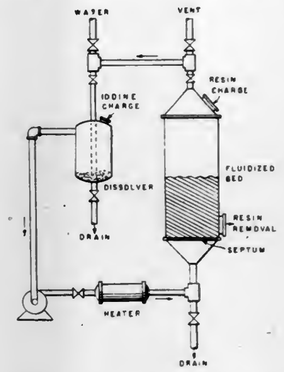
4,238,477

PROCESS OF PREPARING HOMOGENEOUS RESIN-POLYIODIDE DISINFECTANTS

Jack L. Lambert, and Louis R. Fina, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Apr. 20, 1979, Ser. No. 31,920
Int. Cl.[3] A61L *2/16;* C02F *1/42, 1/50*
U.S. Cl. 424—79 **14 Claims**

1. The process of preparing a homogeneous resin-polyiodide disinfectant containing a pre-determined quantity of a selected polyiodide or mixture of polyiodides, comprising:
(a) converting strong base anion exchange resin beads to the iodide(I^-) form, the equivalent exchange capacity of the combining sites of the resin being known, said iodide resin beads being contained in a reactor;
(b) selecting the equivalent amount of crystalline iodine for reaction with the I^- of the resin to produce the desired polyiodide disinfectant, said iodine being contained in a dissolver separate from said reactor;
(c) circulating water in a recycling stream arranged to contact sequentially said iodine in said dissolver and said resin beads in said reactor, said circulating water gradually dissolving said iodine and carrying it as I_2 in a substantially saturated solution to said resin beads for absorption thereby, said water being free of halide ions; and
(d) continuing said circulation until substantially all of said amount of crystalline iodine has been dissolved by said water and until substantially all of said I_2 has been absorbed by said resin beads.



4,238,478

HETEROVACCINE AGAINST THE TRICHOMONAS SYNDROME, AND PROCESS FOR ITS PREPARATION

Ljubinko Stojkovic, Oberwilerstrasse 64, CH-4054 Basel, Switzerland

Continuation-in-part of Ser. No. 967,033, Dec. 6, 1978, abandoned. This application Apr. 3, 1979, Ser. No. 26,496
Claims priority, application Switzerland, Dec. 23, 1977, 16012/77
Int. Cl.[3] A61K *39/02*
U.S. Cl. 424—92 **10 Claims**

1. A heterovaccine for the therapeutic treatment of the Trichomonas syndrome, consisting essentially of inactivated micro-organisms of strains of *Lactobacterium acidophilum,* which have been deposited with the "Centraalbureau voor Schimmelcultures" in Baarn (Netherlands) under references CBS 465.77, CBS 466.77, CBS 467.77, CBS 468.77, CBS 469.77, CBS 470.77, CBS 471.77 and CBS 472.77, in a physiologically tolerated solution, the micro-organisms present being from at least three of the above strains and being present in approximately equal numbers per strain.

4,238,479

NUTRIENT TREATING NUTRITIONAL DEFICIENCY

Masaka Matsubara, Tokyo; Tatsuo Ishihara, Tokyo, both of Japan, and Tokitaka Mori, 1-24, Sakuradai, Nerima-ku, Tokyo, Japan, assignors to Tokitaka Mori, Tokyo, Japan

Filed Feb. 7, 1979, Ser. No. 10,050
Claims priority, application Japan, Feb. 24, 1978, 53-20720
Int. Cl.[3] A61K *35/12, 35/56, 35/78*
U.S. Cl. 424—95 **12 Claims**

1. A method of treating nutritional deficiency in a human comprising orally administering to a human in need of treatment therefor a nutritionally effective amount of an orally ingestible nutrient composition, said nutrient composition comprising a small amount of substance obtained by extraction of Paramecium with water or aqueous solution and a large amount of a carrier, said nutritionally effective amount of said nutrient composition being an amount such that the total of

said substance extracted from Paramecium ingested per day does not exceed 50 mg.

4,238,480

METHOD FOR PREPARING AN IMPROVED HEMOSTATIC AGENT AND METHOD OF EMPLOYING THE SAME

Philip N. Sawyer, 7600 Ridge Blvd., Brooklyn, N.Y. 11209

Filed May 19, 1978, Ser. No. 907,899
Int. Cl.[2] A23J *1/10;* **A61L** *17/00*
U.S. Cl. 424—177 **26 Claims**

1. A method comprising modifying one of the group consisting of collagen substance or a collagen-like substance by dissolving the substance in water and modifying the thusly dissolved substance to render the surface charge thereof effectively more positive than prior to modification, and freezing and drying the thusly modified substance and applying the thusly modified substance to control bleeding.

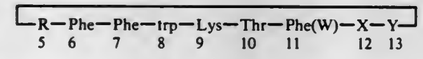
4,238,481

NOVEL CYCLOPEPTIDES

Hans Rink, Riehen; Bruno Kamber, Arlesheim, and Peter Sieber, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

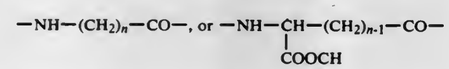
Filed Sep. 15, 1978, Ser. No. 942,565
Claims priority, application Luxembourg, Sep. 28, 1977, 78191
Int. Cl.[3] A61K *37/00;* **C07C** *103/52*
U.S. Cl. 424—177 **10 Claims**

1. A cyclopeptide of the formula



(I)

in which R is Asn, trp is D-Trp or L-Trp, which can be substituted in the benzene ring by halogen atoms or nitro groups, W is a free or etherified hydroxyl group or halogen atom present as a substituent on the benzene ring of the L-phenylalanine radical, or is hydrogen, X is the radical of an ω-amino-lower alkane-(mono or di)-carboxylic acid of the formula



respectively in which n is an integer from 1 to 7 or de-X and Y is the radical of an ω-amino-lower alkane-(mono or di)-carboxylic acid as defined above or de-Y, or an acid addition salt or complex thereof.

4,238,482

INTRAOCULAR INFUSION IRRIGATION SOLUTION AND METHOD

Gholam A. Peyman, 535 N. Michigan Ave., Chicago, Ill. 60611, and Donald R. Sanders, 8110 N. Harding, Skokie, Ill. 60076

Filed Sep. 29, 1978, Ser. No. 947,225
Int. Cl.[3] A61K *31/735;* **C08B** *37/02*
U.S. Cl. 424—180 **19 Claims**

1. An intraocular infusion and irrigation fluid comprising an aqueous physiologically acceptable saline solution containing from 2–15% by weight of an artificial, substantially non-antigenic, non-toxic oncotic pressure agent selected from a colloid-type dextran.

4,238,483

ANTIMICROBIAL COMPOSITIONS OF MATTER AND A PROCESS FOR PREPARING ANTIMICROBIAL COMPOSITIONS OF MATTER FROM NATURALLY OCCURRING FLAVANOID GLYCOSIDES

Stephen E. Frazier, 3521 Pinetree Rd., Orlando, Fla. 32804

Filed Jul. 19, 1979, Ser. No. 58,810
Int. Cl.[3] A61K *31/70;* **C07H** *15/00, 17/00*
U.S. Cl. 424—180 **17 Claims**

1. A process for the production of antimicrobial compositions from naturally occurring flavanoid glycosides comprising the steps of:

forming a hydrolysis mixture by contacting an acid with a flavanoid glycoside of the formula:

X—O—Y—O—Z,

wherein:

X is a flavanoid aglycone moiety,

Y is a glucose or rhamnose group, and

Z is H when Y is a rhamnose group, and H or a rhamnose group when Y is a glucose group;

wherein said acid is a stronger acid than said flavanoid glycoside and further wherein said mixture is maintained under substantially quiescent conditions at a temperature within the range of about 60° C. to about 100° C. for a sufficient time to hydrolyze said flavanoid glycoside to partially hydrolyzed flavanoid compositions having antimicrobial activity, said compositions being different from either flavanoid glycosides or flavanoid aglycones.

16. A disinfectant composition for controlling and destroying fungi and bacteria which comprises an inert carrier and an amount effective to control fungi and bacteria of the composition of matter produced by the process of any one of claims **1, 4, 5,** and **7.**

17. A process of controlling and destroying fungi and bacteria which comprises bringing an amount effective to control fungi and bacteria of the composition of matter produced by the process of any one of claims **1, 4, 5** and **7** into contact with said fungi or bacteria.

4,238,484

MOLLUSCICIDE COMPOSITIONS AND METHODS OF USE

Robert G. Stein, Kenosha, Wis.; Terry L. Couch, Waukegan, and Aldo J. Crovetti, Lake Forest, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 960,819, Nov. 15, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 33,598
Int. Cl.[3] A01N *43/00, 57/00, 57/16*
U.S. Cl. 424—202 **10 Claims**

1. A method for controlling mollusks, comprising applying to the mollusks or their habitat a molluscicidally effective composition containing a 0,0-diloweralkyl-0-(3-benzothienglyoxylonitrile oximino)-phosphate, wherein said loweralkyl contains 1–4 carbons, in combination with a known molluscicide in a ratio of between 2:1 and 1:2 on a weight basis.

4,238,485

NOVEL PHARMACEUTICAL COMPOSITIONS

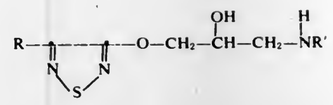
Charles S. Sweet, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 966,521, Dec. 4, 1978, abandoned, which is a continuation of Ser. No. 734,702, Oct. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 554,373, Mar. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 497,961, Aug. 16, 1974, abandoned. This application Oct. 29, 1979, Ser. No. 88,900
Int. Cl.[3] A61K *27/00, 31/54, 31/445*
U.S. Cl. 424—246 **13 Claims**

1. Composition useful for treating hypertension comprising:

A. β-blocking agent selected from:

(i) compounds having the formula



wherein R is morpholino or piperidino and R' is C_3-C_6 alkyl,

(ii) non-toxic pharmaceutically acceptable salts of (i); and

(iii) mixtures containing (i) and (ii); and

B. Diuretic selected from a 1,2,4 benzothiadiazine and a pharmaceutically acceptable salt thereof wherein the weight ratio of A:B is about 1:1 to about 1:10.

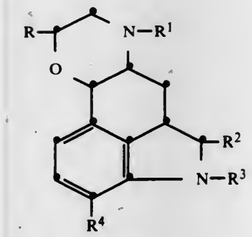
4,238,486

INDOLOBENZOXAZINES

James H. Jones, Blue Bell, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 23, 1979, Ser. No. 96,966
Int. Cl.[3] A61K *31/395;* **C07D** *498/04*
U.S. Cl. 424—248.4 **37 Claims**

1. Compounds having the formula



and pharmaceutically acceptable salts thereof wherein

R is H, alkyl or aryl,

R^1 is H, alkyl, aralkyl, cycloalkyl or alkenyl,

R^2 is H, halogen or alkyl,

R^3 is H, alkyl or aralkyl, and

R^4 is H, halogen, alkyl, hydroxy or alkoxy.

16. A pharmaceutical composition for treating hypertension containing a compound of claim **1.**

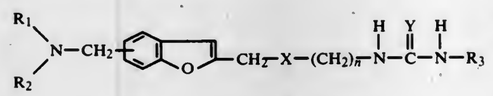
4,238,487

AMINOALKYL BENZOFURAN DERIVATIVES

John B. Bicking, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 31, 1979, Ser. No. 89,808
Int. Cl.[3] A61K *31/535, 31/34;* **C07D** *307/81*
U.S. Cl. 424—248.52 **9 Claims**

1. A compound having the formula:



wherein R_1 and R_2 are independently loweralkyl of from 1 to 3 carbon atoms, and R_1 and R_2 may be joined to form, together with the nitrogen atom to which they are attached, heterocycle selected from piperidine, pyrrolidine, morpholine, piperazine, and N-methylpiperazine;

X is sulfur or a methylene group;

n is 2, 3, or 4;

R_3 is hydrogen, lower alkyl, cycloloweralkyl, cycloloweralkyl lower alkyl, loweralkenyl, loweralkynyl, phenylloweralkyl, hydroxyloweralkyl, loweralkoxyloweralkyl, and di(loweralkyl)aminoloweralkyl; and

Y is sulfur, $=CHNO_2$ or $=NR_4$ wherein

R_4 is nitro, cyano, or loweralkylsulfonyl.

8. A method for the treatment of excess gastric acid secretions which comprises administering to a mammal with excess gastric acid secretions, an effective amount of a compound of claim **1.**

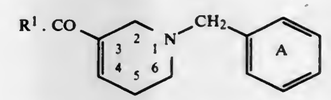
4,238,488

CARBOXYLIC ACID DERIVATIVES OF N-SUBSTITUTED BENZYL-1,2,5,6-TETRAHYDROPYRIDINES

Ralph Howe, and Stuart D. Mills, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 7, 1979, Ser. No. 92,027
Claims priority, application United Kingdom, Nov. 17, 1978, 44987/78; Sep. 21, 1979, 32817/79
Int. Cl.[3] A61K *31/535, 31/455;* **C07D** *211/78, 265/30*
U.S. Cl. 424—248.55 **12 Claims**

1. A 1-benzyl-1,2,5,6-tetrahydropyridine-3-carboxylic acid derivative of the formula:



I

wherein R^1 is a hydroxy, amino, (1–4C)alkylamino, or di-[(1–4C)alkyl]amino radical, a benzyloxy radical optionally bearing a halogeno substituent, or a (1–6C)alkoxy radical optionally bearing a (1–4C)alkoxy, morpholino or di-[(1–4C)alkyl]amino substituent; and benzene ring A bears one or two substituents selected from halogeno, (1–4C)alkyl, cyano, carboxamido, trifluoromethyl and hydroxy radicals, or a pharmaceutically acceptable salt thereof.

11. A method for inhibiting the aggregation of blood platelets in warm-blooded animals including man requiring such treatment which comprises administering to said animal an effective amount of a 1-benzyl-1,2,5,6-tetrahydropyridine-3-carboxylic acid derivative, or a pharmaceutically acceptable salt thereof, as claimed in claim **1.**

4,238,489

TREATMENT OF SECONDARY FRIGIDITY

Jean-Pierre Lombard, Massy, France, assignor to C.M. Industries, Paris, France

Filed May 1, 1979, Ser. No. 34,971
Int. Cl.[2] A61K *31/535, 9/20*
U.S. Cl. 424—248.56 **1 Claim**

1. A method for the treatment of secondary frigidity in women, comprising orally administering daily to the secondarily frigid women from 100 mg to 300 mg of 3-morpholinoethylamino-4-methyl-6-phenylpyridazine or a pharmaceutically acceptable salt thereof.

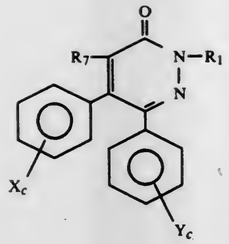
4,238,490

ANTIHYPERTENSIVE PYRIDAZIN(2H)-3-ONES

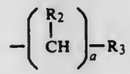
Larry J. Powers, Madison; Zaven S. Ariyan, Mentor; Russell Buchman, Madison; James A. Scozzie, Painesville; Robert E. Moser, Mentor, and William J. Pyne, Painesville, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Feb. 12, 1979, Ser. No. 11,416
Int. Cl.[3] A01N *31/50;* **C07D** *237/14, 237/24, 237/22*
U.S. Cl. 424—250 **18 Claims**

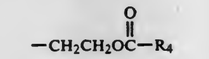
1. A compound of the formula



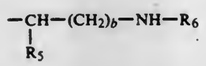
or a pharmaceutically acceptable nontoxic salt thereof wherein R_1 is hydrogen, C_1-C_4 hydroxyalkyl, carbonyl(C_1-C_4)alkyl, C_1-C_6 carboxyalkyl, C_1-C_6 alkoxycarbonyl(C_1-C_6)alkyl, C_1-C_6 alkoxy(C_1-C_6)alkyl; or the group



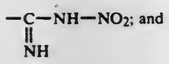
where a is 1 to 4, inclusive, R_2 is hydrogen or C_1-C_4 alkyl and R_3 is amino, methylthio, C_1-C_6 alkylamino, C_1-C_6 alkylimino, C_1-C_6 alkanoylamino, C_1-C_6 alkoxycarbonyl amino, morpholinyl, piperizinyl, (C_1-C_6 alkoxycarbonyl)-piperizinyl, piperidinyl, pyrrolidinyl, glucuronyl or glucopyranosyl; or the group



where R_4 is hydrogen, C_1-C_{20} alkyl, C_1-C_6 carboxyalkyl, phenyl, phenyl(C_1-C_6)alkyl or R_4 represents the group



where b is 0 to 4, inclusive, R_5 is hydrogen, C_1-C_4 alkyl, methylthioethyl, benzyl, NH_2, or benzyloxycarbamyl, and R_6 is hydrogen, benzyloxycarbonyl, t-butyloxycarbonyl or



R_7 is acetyl, cyano, phenylsulfonyl, (C_1-C_4)alkylhydrazono, naphthyl, phenyl or phenyl substituted with at least one substituent selected from the group consisting of halogen, C_1-C_6 alkylamino and C_1-C_4 alkoxy; and

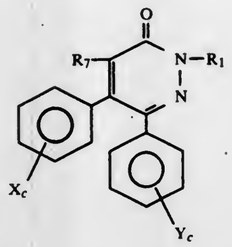
X_c and Y_c are the same or different and independently selected from the group consisting of halogen, C_1-C_4 alkyl and C_1-C_4 alkoxy where c is 0, 1 or 2;

subject to the provisos that when R_7 is acetyl, phenyl or cyano, R_1 is other than hydrogen; and when R_7 is cyano, R_1 is C_1-C_4 hydroxyalkyl, C_1-C_6 carboxyalkyl or the group

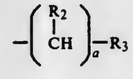
where R_4 is C_1-C_6 carboxyalkyl and X_c and Y_c are halo, with c being at least 1;

and the enol tautomeric derivatives thereof.

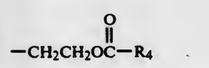
17. An antihypertensive composition comprised of a pharmaceutical carrier in combination with a compound of the formula



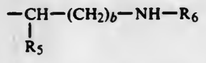
or a pharmaceutically acceptable nontoxic salt thereof wherein R_1 is hydrogen, C_1-C_4 hydroxyalkyl, carbonyl(C_1-C_4)alkyl, C_1-C_6 carboxyalkyl, C_1-C_6 alkoxycarbonyl(C_1-C_6)alkyl, C_1-C_6 alkoxy(C_1-C_6)alkyl; or the group



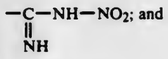
where a is 1 to 4, inclusive, R_2 is hydrogen or C_1-C_4 alkyl and R_3 is amino, methylthio, C_1-C_6 alkylamino, C_1-C_6 alkylimino, C_1-C_6 alkanoylamino, C_1-C_6 alkoxycarbonyl amino, morpholinyl, piperizinyl, (C_1-C_6 alkoxycarbonyl)-piperizinyl, piperidinyl, pyrrolidinyl, glucuronyl or glucopyranosyl; or the group



where R_4 is hydrogen, C_1-C_{20} alkyl, C_1-C_6 carboxyalkyl, phenyl, phenyl(C_1-C_6)alkyl or R_4 represents the group



where b is 0 to 4, inclusive, R_5 is hydrogen, C_1-C_4 alkyl, methylthioethyl, benzyl, NH_2, or benzyloxycarbamyl, and R_6 is hydrogen, benzyloxycarbonyl, t-butyloxycarbonyl or



R_7 is acetyl, cyano, phenylsulfonyl, (C_1-C_4)alkylhydrazono, naphthyl, phenyl or phenyl substituted with at least one substituent selected from the group consisting of halogen, C_1-C_6 alkylamino and C_1-C_4 alkoxy; and

X_c and Y_c are the same or different and independently selected from the group consisting of halogen, C_1-C_4 alkyl and C_1-C_4 alkoxy where c is 0, 1 or 2;

subject to the provisos that when R_7 is acetyl, phenyl or cyano, R_1 is other than hydrogen; and when R_7 is cyano, R_1 is C_1-C_4 hydroxyalkyl, C_1-C_6 carboxyalkyl or the group

where R_4 is C_1-C_6 carboxyalkyl and X_c and Y_c are halo, with c being at least 1;

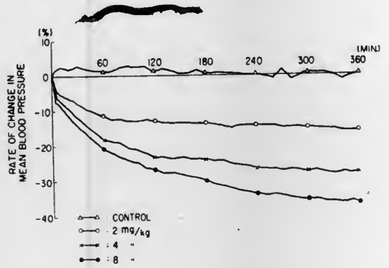
and the enol tautomeric derivatives thereof.

4,238,491

METHOD FOR TREATING HYPERTENSION WITH METHYLRESERPATE

Yasuo Fujimoto, Tokyo, and Hiroshi Katagihara, Misato, both of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed May 9, 1978, Ser. No. 904,290
Claims priority, application Japan, May 10, 1977, 52-53599
Int. Cl.³ A61K *31/475*
U.S. Cl. 424—262 **1 Claim**



1. A treating method of hypertension in humans comprising orally administering an effective amount of methylreserpate.

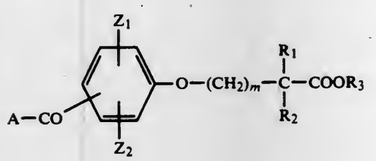
4,238,492

PHENOXYALKYLCARBOXYLIC ACIDS

Bernard Majoie, Dijon, France, assignor to Societe de Recherches Industrielles S.O.R.I., Paris, France

Filed May 24, 1979, Ser. No. 42,156
Claims priority, application United Kingdom, May 31, 1978, 25621/78
Int. Cl.³ A61K *31/44*; C07D *213/79*
U.S. Cl. 424—263 **6 Claims**

1. A compound selected from the group consisting of those of formula I



I

wherein

A is 3-pyridyl; R_1 and R_2 are the same or different and are each selected from the group consisting of hydrogen and methyl;

R_3 is selected from the group consisting of hydrogen or C_{1-4} alkyl;

m is 3 or 4;

Z_1 and Z_2 are the same or different and are each selected from the group consisting of hydrogen, chlorine and methyl; and

The A—CO— and —O—$(CH_2)_m$—CR_1R_2—$COOR_3$ groups are in the relative meta or para positions;

and non-toxic salts thereof.

5. A compound as defined in claim 1 wherein A is 3-pyridyl, m is 3, Z_1 and Z_2 each are hydrogen and R_1 and R_2 each are methyl.

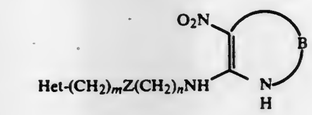
4,238,493

2-(SUBSTITUTED AMINO)-3-NITRO-2,3-UNSATURATED NITROGEN HETEROCYCLES

Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed May 30, 1979, Ser. No. 43,785
Claims priority, application United Kingdom, May 30, 1978, 24116/78
Int. Cl.³ A61K *31/415, 31/44*; C07D *401/12, 403/12*
U.S. Cl. 424—263 **9 Claims**

1. A compound represented by Structure 1:



Structure 1

in which

Het is imidazole or pyridine which is attached at a ring carbon and which is optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy, lower alkoxy, or amino, provided that when Het is imidazole, the optional substituents do not include hydroxy or amino;

Z is sulphur, methylene or oxygen;

m is 0, 1 or 2 and n is 2 or 3 provided that m+n is 3 or 4; and

B is a 1,2-ethanediyl (—CH_2—CH_2—) or 1,3-propanediyl (—$CH_2CH_2CH_2$—) group, which group is optionally substituted with one lower alkyl, aryl, aryl lower alkyl or heteroaryl lower alkyl group, aryl being phenyl optionally substituted by lower alkyl, lower alkoxy or halogen and heteroaryl being 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl optionally substituted by lower alkyl or lower alkoxy, or a pharmaceutically acceptable acid solution salt thereof.

9. A method of blocking histamine H_2-receptors which comprises administering an effective amount of a compound according to claim 1 to an animal in need of such treatment.

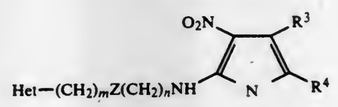
4,238,494

2-HETEROCYCLIC ALKYLAMINO-3-NITROPYRROLES

Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed May 30, 1979, Ser. No. 43,786
Claims priority, application United Kingdom, May 30, 1978, 24117/78; Aug. 4, 1978, 32313/78
Int. Cl.³ A61K *31/415, 31/44*; C07D *401/12, 403/12*
U.S. Cl. 424—263 **15 Claims**

1. A compound represented by Structure 1:



Structure 1

in which

Het is imidazole or pyridine which is attached at a ring carbon and which is optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy, lower alkoxy or amino, provided that when Het is imidazole, the optional substituents do not include hydroxy or amino;

Z is sulphur, methylene or oxygen;

m is 0, 1 or 2 and n is 2 or 3 provided that m+n is 3 or 4;

R^3 is hydrogen, lower alkyl, aryl, aryl lower alkyl or heteroaryl lower alkyl, aryl being phenyl optionally substituted by lower alkyl, lower alkoxy or halogen and heteroaryl being 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl or

4-pyridyl optionally substituted by lower alkyl or lower alkoxy; and

R^4 is hydrogen or lower alkyl, or a pharmaceutically acceptable acid addition salt thereof.

14. A method of blocking histamine H_2-receptors which comprises administering an effective amount of a compound of claim **1** to an animal in need of such treatment.

4,238,495

1-(4-CYANO-PHENOXY)-2-HYDROXY-3-[2-(5-1H-TETRAZOLYL)-CHROMON-5-YLOXY]-PROPANE AND SALTS THEREOF

Brian T. Warren, Ickenham, and John W. Spicer, Booker, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 419,809, Nov. 28, 1973, abandoned. This application Jan. 30, 1976, Ser. No. 653,744

Int. Cl.[3] **A61K** *31/41;* **C07D** *257/04*

U.S. Cl. 424—269 **6 Claims**

1. A compound selected from the group consisting of 1-(4-cyano-phenoxy)-2-hydroxy-3-[2-(5-1H-tetrazolyl)-chromon-5-yloxy]-propane or a pharmacologically acceptable, non-toxic salt thereof.

4. A method of producing an anti-allergic effect in an individual having an allergic condition, which method comprises: administering to the individual an effective anti-allergic amount of a compound selected from the group consisting of 1-(4-cyano-phenoxy)-2-hydroxy-3-[2-(5-1H-tetrazolyl)-chromon-5-yloxy]-propane or a pharmacologically acceptable, non-toxic salt thereof.

4,238,496

4-SUBSTITUTED THIAZOLYL-2-OXAMIC ACIDS AND SALTS AND ESTERS THEREOF

Friedrich K. Hess, Ridgefield; Patrick B. Stewart, Washington Depot, and James T. Oliver, Middlebury, all of Conn., assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

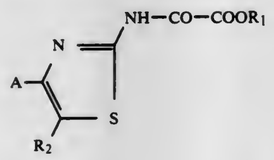
Filed Jun. 18, 1979, Ser. No. 49,173

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828091

Int. Cl.[3] **C07D** *277/20*

U.S. Cl. 424—270 **7 Claims**

1. A compound of the formula

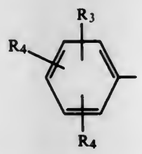


wherein

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_2 is hydrogen, methyl or carboxyl; and

A is pyridyl, benzodioxanyl or



where R_3, R_4 and R_5, which may be identical to or different from each other, are each hydrogen, hydroxyl, lower alkoxy, lower alkyl, halogen, carboxy-lower alkyl or nitro, or one of R_3, R_4 or R_5 is di(lower alkyl)amino, carboxamido, morpholino, piperidino, hydroxypiperidino, cyano or phenyl;

a non-toxic salt thereof formed with an inorganic base when R_1 is hydrogen and/or R_2 is carboxyl; or a non-toxic addition salt thereof formed with an organic base when R_1 is hydrogen.

6. An antiallergic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antiallergic amount of a compound of claim **1**.

4,238,497

IMIDAZOLINE DERIVATIVES, SALTS THEREOF AND THEIR USE AS PESTICIDES

Malcolm H. Black, Tring; Alexander D. Frenkel, Aston Clinton, and Peter T. Roberts, Berkhamsted, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

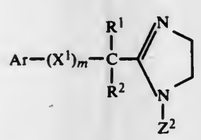
Filed Oct. 26, 1978, Ser. No. 954,745

Claims priority, application United Kingdom, Oct. 26, 1977, 44486/77

Int. Cl.[3] **C07D** *233/20;* **A61K** *31/45*

U.S. Cl. 424—273 R **23 Claims**

1. An imidazoline compound of formula (I):



(I)

wherein

Ar is selected from a phenyl or a mono-, di- or tri-substituted phenyl radical in which the substituents may be the same or different and are selected from alkyl, alkoxy, halogen, hydroxy, cyano, amino, trihalomethyl and nitro and in which any two adjacent, otherwise unsubstituted, carbon atoms of the phenyl ring may together be joined by a carbon chain containing 3 or 4 carbon atoms;

X^1 is S;

R^1 and R^2 may be the same or different and are selected from hydrogen or alkyl;

m is 0 or 1; and

Z^2 is a group SO_nR^9 or a group



in which X^2 is O, S or NR^5;

R^4 is alkyl, aryl, alkoxy, aryloxy or NR^6R^7;

R^5 is alkyl, aryl, alkoxy, aryloxy, alkylthio, arylthio or NR^6R^7;

R^6 and R^7 may be the same or different and are selected from hydrogen, alkyl, aryl, COR^8 or SO_2R^8;

R^8 is alkyl, aryl, alkoxy or aryloxy;

n is 1 or 2;

R^9 is alkyl, aryl or $NR^{10}R^{11}$; and

R^{10} and R^{11} may be the same or different and are selected from hydrogen, alkyl or aryl, the above mentioned alkyl or alkoxy radicals or moieties containing from 1 to 4 carbon atoms each; the imidazoline compound being the free base or present as an acid addition salt thereof, and in the above aryl is phenyl or naphthyl either unsubstituted or substituted with one or more substituents, the substituents being the same or different and selected from the group consisting of alkyl, alkoxy, halogen, nitro, hydroxy, cyano, carbalkoxy and amino.

21. A method of controlling arthropod pests which comprises applying to the pest or the pest's environment an effective pesticidal amount of a compound of formula (I) as defined in claim **1** or **2**.

4,238,498

ANTIMYCOTIC SUBSTITUTED DIPHENYL-IMIDAZOLYL-METHANES

Erik Regel; Karl H. Büchel; Wilfried Draber; Manfred Plempel, and Ingo Haller, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

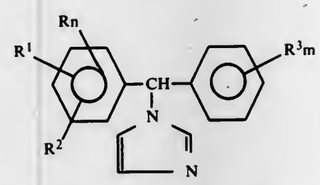
Filed Feb. 1, 1979, Ser. No. 8,632

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808086

Int. Cl.[3] **A61K** *31/415;* **C07D** *233/58, 233/56*

U.S. Cl. 424—273 R **17 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof in which

R denotes a halogen atom or an alkyl or alkoxy group with, in each case, 1 to 4 carbon atoms or a halogenalkyl group with 1 to 4 carbon atoms and up to 5 fluorine or chlorine atoms,

R^1 denotes a cycloalkyl group with 3 to 7 carbon atoms which is unsubstituted or substituted by fluorine, chlorine, bromine or alkyl with 1 to 4 carbon atoms,

R^2 denotes a hydrogen atom or

R^1 and R^2, in the ortho-position relative to one another, together denote a multi-membered methylene bridge with 3 to 5 methylene groups which is unsubstituted or substituted by fluorine, chlorine, bromine or alkyl with 1 to 4 carbon atoms,

R^3 denotes a halogen atom a straight-chain or branched alkyl with 1 to 4 carbon atoms, a halogenoalkyl group with 1 to 4 carbon atoms and up to 5 fluorine or chlorine atoms, an alkoxy, alkylthio or alkylsulphonyl group with 1 to 4 carbon atoms, n and m are independently 0,1,2 or 3, and R^3 may also denote cyano when m is 1.

14. A method of combating mycotic diseases in warm-blooded animals which comprises administering to the animals an antimycotically effective amount of an active compound according to claim **1** either alone or in admixture with a diluent or in the form of a medicament.

4,238,499

METHOD OF KILLING ECTOPARASITES WITH IMIDAZOLINE AND IMIDAZOLIUM TOXICANTS

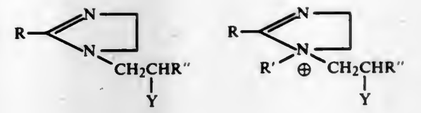
Myron J. Lover, Moutainside; Arnold J. Singer, Verona, and Donald M. Lynch, Waldwick, all of N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Filed Feb. 15, 1979, Ser. No. 12,509

Int. Cl.[2] **A01N** *9/22*

U.S. Cl. 424—273 R **13 Claims**

1. A method of controlling ectoparasites, their ova or aphids which comprises applying to an animal or human in need of such control, an effective toxic amount of at least one imidazoline or imidazolium derivative of the formulas I or II



I II

where R is alkyl of 6 to 20 carbon atoms, R' is carboxy lower alkyl or hydroxy lower alkyl, R'' is hydroxy, carboxy lower alkyl, sulfo lower alkoxy or amino and Y is hydrogen or hydroxy and the pharmaceutically acceptable non-toxic salts of the carboxy compounds.

4,238,500

CYCLIC DOUBLE HEMIACETALS OF ENEDIOL COMPOUNDS AND COMPOSITIONS AND METHODS FOR PREPARING AND USING SAME

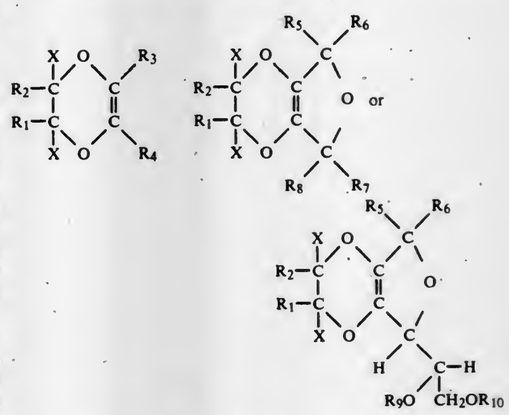
Albert Szent-Gyorgyi, Woods Hole, Mass., and Gabor B. Fodor, Morgantown, W. Va., assignors to National Foundation for Cancer Research, Bethesda, Md.

Filed Apr. 6, 1979, Ser. No. 27,692

Int. Cl.[3] **C07D** *493/04, 319/12;* **A61K** *31/335, 31/365*

U.S. Cl. 424—278 **10 Claims**

1. A compound of the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen, lower alkyl, phenyl or phenyl loweralkyl, wherein R_3 through R_{10} are selected from the group consisting of hydrogen, lower alkyl and phenyl, wherein R_5 and R_6 together may form =O, and wherein X is hydroxy.

4,238,501

COMBATING ARTHROPODS WITH 2- AND 4-SUBSTITUTED-CHROMANES

Hans-Joachim Kabbe, Leverkusen; Arno Widdig, Odenthal; Wilhelm Stendel, Wuppertal, and Peter Roessler, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

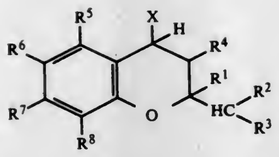
Division of Ser. No. 947,286, Sep. 29, 1978. This application Aug. 15, 1979, Ser. No. 66,738

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745305

Int. Cl.[3] **A01N** *43/16;* **C07D** *311/72*

U.S. Cl. 424—283 **4 Claims**

1. A compound of the formula



in which

R^3 and R^4, which need not be identical, each represents hydrogen, an optionally substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl or alkoxycarbonyl radical, carboxyl or aminoalkyl,

R^1 and R^2 conjointly with the adjoining carbon atoms can form an optionally substituted carbocyclic,

R^5 to R^8, which need not be identical, each represents hydrogen, halogen, hydroxyl, nitro, cyano, carboxyl, an optionally substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aralkoxy, aryloxy, alkoxycarbonyl, alkylamino or dialkylamino radical, amino or acylamino,

X represents the $—NR^9R^{10}$ radical, wherein

R^9 and R^{10}, which may be identical or different, each represents hydrogen or optionally substituted alkyl, alkenyl, cycloalkyl, aryl or aralkyl.

4,238,502

METHOD OF TREATING PSYCHIATRIC CONDITIONS

Derek C. Quantock, Rutland, England, assignor to Fisons Limited, London, England

Filed Jul. 18, 1979, Ser. No. 58,608

Claims priority, application United Kingdom, Aug. 3, 1978, 32081/78

Int. Cl.³ A61K *31/35*

U.S. Cl. 424—283 **8 Claims**

1. A method of treatment of a psychiatric condition which method comprises administering by inhalation an effective amount of 1,3-bis(2-carboxychromon-5-yloxy)-2-hydroxy propane or a pharmaceutically acceptable salt thereof, as active ingredient, to a patient suffering from such a condition.

4,238,503

ANILIDE UREA BIOCIDES

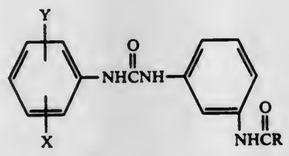
Eugene G. Teach, El Cerrito, and Don R. Baker, Orinda, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 792,291, Apr. 29, 1977, Pat. No. 4,159,344, which is a continuation of Ser. No. 605,088, Aug. 15, 1975, abandoned, which is a continuation of Ser. No. 443,539, Feb. 19, 1974, abandoned. This application Mar. 1, 1979, Ser. No. 16,464

Int. Cl.³ A01N *47/10, 47/28*

U.S. Cl. 424—300 **8 Claims**

1. The method of controlling bacteria and fungi comprising applying to the habitat thereof, an effective amount of a compound having the formula



R is selected from the group of alkyl having from 1 to 6 carbon atoms and haloalkyl having from 1 to 6 carbon atoms, NHR_1, OR_1 in which R_1 is lower alkyl having from 1 to 6 carbon atoms, X and Y are independently selected from the group consisting of H, $NHCOR_3$ and R_3 is selected from the group of lower alkyl having from 1 to 6 carbon atoms provided that when X is hydrogen Y is $NHCOR_3$.

4,238,504

CYCLOPROPANECARBOXYLIC ACID-PHENOXY-α-VINYL-BENZYL ESTERS, PROCESSES FOR PRODUCING THEM, AND THEIR USE IN COMBATING PESTS

Jozef Drabek, Oberwil; Peter Ackermann, Reinach; Saleem Farooq, Ettingen; Laurenz Gsell, Basel, and Odd Kristiansen, Möhlin, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

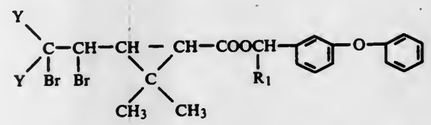
Continuation-in-part of Ser. No. 955,667, Oct. 27, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,081

Claims priority, application Switzerland, Nov. 1, 1977, 13287/77; Sep. 25, 1978, 9991/78

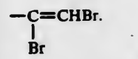
Int. Cl.³ C07C *69/74;* A01N *53/00*

U.S. Cl. 424—305 **5 Claims**

1. A compound of the formula



in which Y is chlorine or bromine, and R_1 is $—CH=CH_2$ or



4. An insecticidal and acaricidal composition comprising an insecticidally and acaricidally effective amount of a compound according to claim 1, together with a suitable carrier therefor.

4,238,505

INSECTICIDAL BIPHENYLMETHYL PERHALOALKYLVINYLCYCLOPROPANECARBOXYLATES

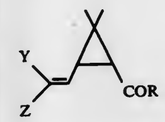
John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 927,198, Jul. 24, 1978, abandoned, which is a continuation of Ser. No. 870,973, Jan. 20, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 52,043

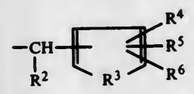
Int. Cl.³ A01N *9/24;* C07D *69/73*

U.S. Cl. 424—305 **11 Claims**

1. A compound of the formula



wherein one of Y and Z is a perhaloalkyl group having 1 to 4 carbon atoms and the other is hydrogen, halogen, or lower alkyl; and R is $—OR^1$ where R^1 is a group of the formula



in which R^2 is hydrogen, R^3 is vinylene; R^4 and R^5 are independently hydrogen, lower alkyl, halogen, or haloalkyl; and R^6 is phenyl which may be substituted with one to three substituents selected from halogen and lower alkyl.

11. A method for insect control which comprises applying to the situs where control is desired an insecticidally effective amount of the compound of claim 1, 2, 3, 4, 5, 6, 7 or 8.

4,238,506

HYPOGLYCAEMICALLY AND HYPOLIPIDAEMICALLY ACTIVE DERIVATIVES OF PHENYL-ALKANE-CARBOXYLIC ACIDS

Kurt Stach, deceased, late of Mannheim-Waldhof, Fed. Rep. of Germany (by Werner Plattner, executor); Elmar Bosies, Heppenheim, Fed. Rep. of Germany; Ruth Heerdt, Mannheim-Feudenheim, Fed. Rep. of Germany; Hans-Frieder Kühnle, Mannheim-Neuostheim, Fed. Rep. of Germany, and Felix H. Schmidt, Mannheim-Seckenheim, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

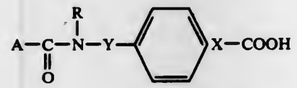
Division of Ser. No. 674,993, Apr. 8, 1976, Pat. No. 4,113,871. This application Jun. 29, 1978, Ser. No. 920,508

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1975, 2527229

Int. Cl.³ C07C *101/42*

U.S. Cl. 424—319 **9 Claims**

1. A phenyl-alkane-carboxylic acid of the formula



wherein

A is an aryl, aralkyl or arylvinyl radical optionally substituted by hydroxy, halogen, trifluoromethyl, alkyl, alkylthio, alkoxy, alkenyloxy, alkoxyalkoxy, alkyl-substituted amino, aryloxy or alkoxy-substituted aryloxy, or is an aryloxyalkyl or arylthioalkyl radical, or a thienyl or quinolyl radical optionally substituted by halogen, or alkyl or alkoxy containing up to 5 carbon atoms, any aryl moiety of A containing from 6 to 10 carbon atoms and any alkyl, alkoxy or alkenyloxy moiety of A containing 2 5 carbon atoms,

Y is an unbranched or branched lower alkylene radical containing up to 3 carbon atoms,

X is a straight or branched, saturated or unsaturated divalent aliphatic hydrocarbon radical containing 2 to 8 carbon atoms, there being at least 2 carbon atoms between the benzene ring and the carboxyl group, and

R is a hydrogen atom or a lower alkyl radical containing up to 5 carbon atoms,

or a physiologically compatible salt, ester or amide thereof.

4,238,507

PHARMACOLOGICAL COMPOUND WITH IMMUNOPOTENTIATING ACTIVITY AND PRODUCTION AND USES THEREOF

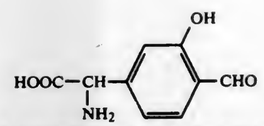
Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Takaaki Aoyagi, Fujisawa; Masaaki Ishizuka, Tokyo; Hajime Morishima, Tokyo; Ikuo Matsumoto, Tokyo, and Takuzo Yamamoto, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Mar. 16, 1979, Ser. No. 21,222

Int. Cl.³ A01N *37/12;* C07C *101/72*

U.S. Cl. 424—319 **4 Claims**

1. A compound of the formula:



and its pharmaceutically acceptable salts and hydrates and pharmaceutically acceptable salts of the hydrates.

2. A pharmaceutical composition, useful as immunopotentiator, comprising as active ingredient the compound of formula (I) as described in claim 1 or a pharmaceutically acceptable salt or hydrate thereof, in combination with a pharmaceutically acceptable carrier or adjuvant.

4,238,508

METHOD FOR ANALGESIA USING 3-HYDROXYACETANILIDE

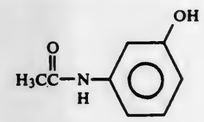
Edward B. Nelson, Williamsville, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Aug. 17, 1979, Ser. No. 67,348

Int. Cl.³ A61K *31/165*

U.S. Cl. 424—324 **9 Claims**

1. A method for providing analgesia which comprises administering to a warm blooded animal in need of analgesia, sufficient 3-hydroxyacetanilide in a quantity of from about 3 to about 400 milligrams per kilogram of body weight of the animal said 3-hydroxyacetanilide being of the formula:



4,238,509

OAT FLOUR-OIL GEL COSMETIC CREME

Gregory S. Evans, Aurora, and Corinne R. Jembrzycki, Chicago, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Continuation-in-part of Ser. No. 861,832, Dec. 19, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,341

Int. Cl.² A61K *7/00, 7/48*

U.S. Cl. 424—358 **9 Claims**

1. A cosmetic creme which is easily spreadable to form a thin non-greasy coating on the skin, consisting essentially of a homogenous mixture of finely-divided oat flour and a non-aqueous cosmetic oil gel, said oat flour having a particle size such that at least about 98% thereof passes through a 200 mesh screen (U.S. Sieve Series), said cosmetic oil gel containing at least one cosmetic oil and a quaternary ammonium smectite gellant, said creme being characterized by containing from 40 to 60% by weight of said oat flour.

5. A cosmetic creme which is easily spreadable to form a thin non-greasy coating on the skin, consisting essentially of finely-divided oat flour and a non-aqueous cosmetic oil gel, said oat flour having a particle size such that about 98% thereof passes through a 200 mesh screen (U.S. Sieve Series), said cosmetic oil gel being composed of:

	ingredients	parts by weight of creme
(a)	a cosmetic oil selected from the class consisting of a hydrocarbon cosmetic oil, isopropyl myristate, and mixtures thereof	20 to 50
(b)	a silicone cosmetic oil	0 to 20
(c)	quaternary ammonium	

-continued

ingredients	parts by weight of creme
smectite gellant	3 to 5

said creme being characterized by containing from 45 to 55% by weight of said oat flour.

4,238,510

SUGARLESS COATING FOR CHEWING GUM AND CONFECTIONS AND METHOD

Subraman R. Cherukuri, and Dominick R. Friello, both of Danbury, Conn., assignors to Life Savers, Inc., New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 12,999
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—5 **22 Claims**

1. A sugarless coated comestible comprising a center portion selected from the group consisting of chewing gum, boiled candy or pressed candy, having a sugarless coating comprising a sweet material in crystalline form and consisting essentially of sorbitol alone or in admixture with mannitol, and/or hydrogenated starch hydrolysate, the sorbitol being present in an amount within the range of from about 45 to about 90% by weight of the coating.

4,238,511

METHOD AND APPARATUS FOR MACERATION AND FERMENTATION OF GRAPES IN THE PRESENCE OF CARBON DIOXIDE

Michel Egretier, 12 Quai Victor Hugo, 11100 Narbonne, France

Filed May 22, 1978, Ser. No. 908,425
Claims priority, application France, May 26, 1977, 77 17294
Int. Cl.² C12G *1/00*
U.S. Cl. 426—15 **2 Claims**

1. The method of macerating and fermenting grapes in the presence of carbon dioxide wherein the berries are detached from the stems in such a fashion that during de-stemming the berries liberate a fraction of the must which they contain and the berries become surrounded by a substantially incompressible mass of the liberated must, the method being characterized by forcing the berries with stems attached toward a fermentation vat by intermittently pumping them against a carbon dioxide back-pressure existing in the fermentation vat in such a manner that they are subjected to pulsating pressures of compression taking the form of shock waves, thereby to de-stem the berries and as a result thereof liberate a small but sufficient portion of their must to prevent crushing of the berries.

4,238,512

PRODUCTION OF A NATURAL LEAVENED DOUGH FOR THE PREPARATION OF BREAD AND PASTRIES

Wilhelm Menge, Hauptstrasse 54, 3004 Isernhagen 2, Fed. Rep. of Germany

Continuation of Ser. No. 778,662, Mar. 17, 1977, abandoned. This application Apr. 27, 1979, Ser. No. 34,076
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2611916; Mar. 20, 1976, 2611972; Oct. 8, 1976, 2645457
Int. Cl.³ A21D *2/08, 15/00*
U.S. Cl. 426—20 **24 Claims**

1. A method of producing a naturally leavened initial dough capable of storage for extended periods for the preparation of bread and pastries, comprising the steps of adding to a cereal mash a culture of isolated heterofermentative leavening dough bacteria, which bacteria form lactic acid and acetic acid, and thereafter fermenting the mixture of bacteria and cereal mash to form lactic and acetic acid in said cereal mash, wherein

(a) the relative amounts of bacteria and cereal mash are sufficient, and

(b) the fermentation is carried out for a period of time sufficient to essentially complete bacteriological metabolic activity, so that such activity is inhibited to an extent sufficient to produce a self-preservation effect in the dough.

4,238,513

METHOD AND COMPOSTION FOR THE PRODUCTION OF FERMENTED SAUSAGE

Mark V. Satz, Elizabeth, N.J., assignor to Trumark, Inc., Roselle, N.J.

Filed Mar. 9, 1979, Ser. No. 19,241
Int. Cl.³ A23B *4/12;* A23C *11/00*
U.S. Cl. 426—59 **10 Claims**

2. In the method of producing dry or semi-dry sausage wherein a meat emulsion is inoculated and fermented with lactic acid producing microorganisms, the improvement which comprises using *Pediococcus pentosaceus* ATCC 10791 as the lactic acid producing microorganism in the form of a starter culture concentrate containing from 10^8 to 10^{13} viable cells per milliliter, the concentrate being selected from the family consisting of freeze dried concentrates, frozen concentrates and liquid stabilized concentrates and being added in an amount of from 0.1% to 10% based upon the weight of the meat emulsion, and fermenting said meat emulsion until its pH is below about 5.0 by maintaining the emulsion at a temperature in the range of from 50° F. to 80° F. for not longer than 72 hours.

4,238,514

RICE CEREAL AND PROCESS

Thom O. Martin, Delton, Mich., and Adolph S. Clausi, Cos Cob, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 15, 1979, Ser. No. 48,968
Int. Cl.³ A23L *1/18*
U.S. Cl. 426—62 **9 Claims**

1. An improvement in a process for preparing a puffed product from cooked and tempered Nato rice, heated under conditions effective to puff the rice, wherein the improvement comprises:

prior to cooking the rice, admixing with it, an amount of dried torula yeast effective to reduce the tendency of the cooked rice to stick and clump.

4,238,515

NOVEL PHYSICAL FORM OF GLUTEN, METHOD FOR ITS MANUFACTURING AND ITS USES

Michael Shemer, Haifa, Israel, assignor to Pedco Proteins and Enzymes Development Co. Ltd., Petah-Tiqwa, Israel

Filed Feb. 15, 1979, Ser. No. 12,403
Claims priority, application Israel, Feb. 22, 1978, 54096
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—104 **7 Claims**

1. A novel physical form of gluten containing an inert food material bound within its matrix, having a net-like fibrous structure which fibers have a diameter smaller than 2 mm diameter, with a viscosity of at least 50,000 cps., possessing self-binding properties, obtained by the steps comprising:

(a) agitating a mixture consisting essentially of hydrated vital wheat gluten and a reducing agent at a temperature below 70° C. to form a softened, net-like fibrous structure, and

(b) incorporating during said agitation the solid inert food material having particles size below 5 cm diameter in an amount sufficient to obtain a ratio of gluten to inert food material of from about 1:0.1 to 1:10.

4,238,516

METHOD AND DEVICE FOR TREATING COCOA BUTTER-CONTAINING MASSES

Walter Kreuter, Norderstedt, Fed. Rep. of Germany, assignor to Kreucoha AG, Zug, Switzerland

Filed Oct. 24, 1975, Ser. No. 625,748
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1974, 2450515
Int. Cl.³ A23G *1/00*
U.S. Cl. 426—231 **22 Claims**

1. A method for pre-crystallizing a mass of chocolate containing meltable cocoa butter fats releasing a latent heat upon crystallization, said method comprising the steps of:

establishing the temperature of the mass at a first temperature which melts the cocoa butter fats in the mass;

cooling the mass at a mild cooling rate to a second temperature, lower than said first temperature, sufficient to initiate the pre-crystallization of the mass;

sensing during cooling of the mass a reduction in the cooling rate resulting from a release of latent heat of crystallization in the mass;

terminating the cooling of the mass responsive to said reduction in the cooling rate; and

mildly heating the mass to a third temperature at which pre-crystallization is complete and further processing of the mass may occur.

4,238,517

FROZEN FRENCH FRIED POTATO PRODUCT AND METHOD OF PREPARATION

Roy E. Bosley, Jr.; Michael L. Hamann; Richard K. Pinegar, all of Caldwell, Id., and Harold G. Gobble, Pughtown, Pa., assignors to J. R. Simplot Co., Boise, Id.

Filed Dec. 11, 1978, Ser. No. 967,960
Int. Cl.³ A23L *1/216*
U.S. Cl. 426—250 **5 Claims**

1. A method for preparing a frozen French fried potato product for heating in a toaster or oven, comprising:

preparing about 56 parts of cooked potato having about 19 to 26 weight percent of solids, said potato being cooked in about 160° F. to about 175° F. water for about 4 to 15 minutes, drained from said water, cooled to about 60° F. to about 90° F. for about 2 to about 15 minutes and steam cooked for about 15 to 30 minutes under atmospheric pressure;

forming a dough by admixing the following additives into said cooked potato:

about 23 parts of water,

about 16 parts of dehydrated potato flakes or potato granules,

about 1.7 parts of starch,

about 1.8 parts of mixture of dairy whey and calcium caseinate,

about 0.42 parts of guar gum,

about 0.40 parts of cellulose having a substantial amount of microcrystalline cellulose,

about 0.1 parts of disodium pyrophosphate,

about 0.1 parts of sodium aluminum phosphate,

about 0.08 parts of sodium bicarbonate;

extruding said dough into said product;

frying said product in cooking oil at a temperature of about 320° F. to about 390° F. for about 30 to about 120 seconds to reduce the water content of said product to about 40% to about 60% by weight and to absorb about 5% to about 15% by weight of cooking oil; and

freezing said fried product.

4,238,518

PROCESS FOR THE PREPARATION OF A STABLE *BETA VULGARIS* EXTRACT

Jacques Poisson, Chatenay Malabry, France, assignor to Laboratoire L. Lafon, Maisons-Alfort, France

Filed Apr. 28, 1978, Ser. No. 900,995
Int. Cl.³ A23L *1/272*
U.S. Cl. 426—540 **13 Claims**

1. A process for preparing a stabilized pigment composition from a betanidine-containing pigmentary material selected from the group consisting of betanidine and betanidine-containing Beta vulgaris extracts comprising the steps of preparing an aqueous solution of the pigmentary material and adding to said solution a stabilizing amount of from about 1 to about 2 parts by weight of an acid polysaccharide per one part by weight of pigmentary material, to obtain a solution of stabilized pigmentary material.

4,238,519

EGG ALBUMEN EXTENDER PREPARED FROM DERIVED PROTEIN-CONTAINING COMPOSITIONS AND ADDITIVES

Pei K. Chang, Montrose, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 18, 1978, Ser. No. 970,688
Int. Cl.³ A23J *3/02*
U.S. Cl. 426—549 **32 Claims**

1. An egg albumen extender comprising at least 65% of a derived protein-containing composition from plant or animal sources wherein the molecular weight of said derived protein-containing composition is less than 20,000, said composition having a total Kjeldahl nitrogen content of from about 0.45% to about 2.1% of which at least 60% of the nitrogen is non-protein nitrogen and a fat content of less than 0.25% with a member selected from the group consisting of from about 1% to about 15% gelatin; from about 1% to about 15% gelatin and from about 5% to about 25% of a water soluble polyphosphate, the additive total of gelatin and phosphate not to exceed about 35%; from about 0.5% to about 5% of a gum, and mixtures thereof; and from 0% to about 30% of a whipping aid, all percentages are by weight based on the total dry solids weight of the egg albumen extender.

4,238,520

LOW-FAT COMESTIBLE SPREAD SUBSTITUTES

Donald E. Miller, Strongsville, and Charles E. Werstak, Medina, both of Ohio, assignors to SCM Corporation, N.Y.

Continuation-in-part of Ser. No. 930,037, Aug. 1, 1978, abandoned. This application Jun. 28, 1979, Ser. No. 53,044
Int. Cl.³ A23D *3/00, 5/00*
U.S. Cl. 426—573 **26 Claims**

17. A process for making a low-fat comestible spread consisting essentially of fat, water, an oil-in-water lipoidal emulsifer, and water soluble or water dispersible, edible thickening agent, said process comprising:

mixing together the above ingredients in the proportions on a weight basis of about

20 to 40% low melting point fat; 0.5 to 3.25% thickening agent, about 2-5% emulsifier and water;

said emulsifier being a plastic partial fatty acid ester of polyalcohols having an HLB value less than about 5 and a Capillary Melting Point less than about 135° F.;

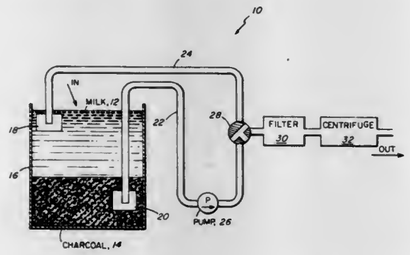
said fat having a Wiley Melting Point between about 75° F. and about 106° F. and a solid-fat index at 100° F. not substantially greater than zero;

said thickening agent comprising a blend of a cellulose either and a gum capable of imparting thixotropic properties to said spread;

emulsifying, at an elevated temperature sufficient to make the fat molten, said fat and lipoidal emulsifier in water containing said thickening agent dispersed therein to form an oil-in-water emulsion; and

cooling the resulting emulsion to a temperature sufficiently low to provide a plastic consistency in the finished product similar to that of a non-flowable spread, said emulsion having a Brookfield viscosity in the range of about 100,000 to about four million centipoises through a temperature range of about 90° F. to 38° F.

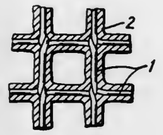
4,238,521
PROCESS FOR THE REMOVAL OF ANTIBIOTICS FROM MILK
Stanley E. Charm, Newton, Mass., assignor to Penicillin Assays, Inc., Boston, Mass.
Filed Sep. 18, 1979, Ser. No. 76,600
Int. Cl.[3] A23C *9/15*
U.S. Cl. 426—580 **22 Claims**

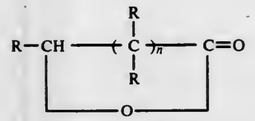


21. A process for the removal of penicillin and antibiotic residues from a contaminated, reconstituted-milk composition, which process comprises:
(a) contacting the penicillin-contaminated milk composition with a bed of particulated, food-grade, activated charcoal;
(b) recycling the milk composition through the bed of charcoal for a period of time of from 2 minutes to 2 hours, to remove the penicillin from the contaminated-milk composition and to provide a penicillin-free milk composition;
(c) periodically regenerating the activated charcoal in the bed by contacting the bed of activated charcoal with boiling or hot water to regenerate the charcoal;
(d) removing any particulate activated charcoal derived from the contacting step from the penicillin-free milk composition; and
(e) recovering a penicillin-free milk composition suitable for use as a food-additive material.

4,238,522
ORTHOPEDIC DEVICES, MATERIALS AND METHODS
James E. Potts, 18 Crest Dr., R.D.#1, Millington, N.J. 07946
Division of Ser. No. 881,138, Feb. 24, 1978, abandoned. This application Mar. 27, 1979, Ser. No. 24,321
Int. Cl.[3] A61F *5/04*
U.S. Cl. 427—2 **5 Claims**

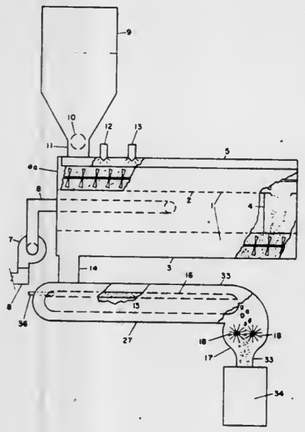
1. Method of producing a bandage material, convertible to an orthopedic cast, which comprises:
(A) applying an electrically conductive coating to the surfaces of the strands of a net substrate;
(B) electrostatically spray coating the strands of the netting having the electrically conductive coating on their surfaces with a powder comprising a thermoplastic, crosslinkable copolymer said copolymer being one which is produced by the process which comprises reacting, at a temperature of from 25° to 300° C., an active-hydrogen containing initiator with a molar excess of a monomer mixture comprising:
(1) from 90 to 99.5 weight percent of at least one lactone of the formula





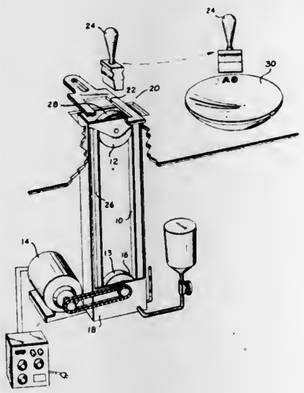
wherein n is an integer having a value from about 3 to 6, at least n+2 of the R's are hydrogen and the remaining R's are each alkyl of 1 to 10 carbons; and
(2) from 0.5 to 10 weight percent of a polyfunctional acrylate monomer; containing a plurality of acrylate or methacrylate groups
(C) fusing the applied coating to the substrate by heating; and
(D) crosslinking the thermoplastic, crosslinkable copolymer on the strands of the net substrate to a gel content of from 20 to 70 weight percent.

4,238,523
SEED COATING PROCESS
Frederic E. Porter, St. Louis Park, and James M. Scott, Minneapolis, both of Minn., assignors to Sandoz Ltd., Basel, Switzerland
Filed Sep. 10, 1979, Ser. No. 73,882
Int. Cl.[3] A01C *1/06*
U.S. Cl. 427—4 **23 Claims**



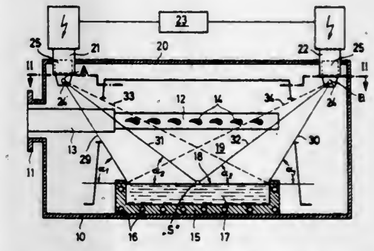
1. The process of seal coating plant seeds comprising applying a curable liquid coating composition onto a mass of seeds, said coating composition containing a polymeric coating forming material mixing said mass together to distribute said coating composition over the entire exposed surface of seeds in said mass, effecting an accumulation of coated seeds from said mass in a tacky agglomerated static seed mass prior to the time when further mixing of the mass would cause substantial permanent rupture of the coating on the seeds, maintaining the static condition of said static agglomerated mass while curing of the coating composition progresses, and breaking up the agglomerated seeds into individual seeds during the time span prior to complete curing of the coating composition in which: (1) the thus-separated seeds can be promptly again accumulated in a mass without again substantially agglomerating; and (2) the said breaking up can be effected without causing the coatings to suffer a substantial premature rupture which would occur if said breaking up was delayed closer to the point of final cure; whereby there is obtained a plurality of seal coated seeds substantially free of rupture damage.

4,238,524
PROCESS FOR IDENTIFICATION MARKING CLEAR PLASTIC ARTICLES
Norman U. LaLiberte, Woodstock, Conn., and Don H. Rotenberg, Westboro, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Mar. 6, 1978, Ser. No. 883,768
Int. Cl.[3] G02B *1/10;* **C09K** *11/00*
U.S. Cl. 427—7 **14 Claims**



1. A process for imparting a permanent identification mark to an optically clear plastic article without adversely affecting its visible light optical properties, said process comprising the steps of:
(a) mixing a solid ultraviolet light activatable fluorescent dye with a liquid carrier material to produce a marking composition;
(b) mixing a solid sublimeable inert diluent with said dye and said liquid carrier;
(c) causing at least a portion of said carrier to evaporate so that said dye and said solid diluent form a paste in said liquid carrier;
(d) applying a pattern of said paste marking composition to a surface of the optically clear plastic article;
(e) evaporating a remaining portion of said carrier material from the surface of the article to leave a residue of solid dye and solid diluent in the pattern on said surface, the amount of dye on said surface being sufficient to induce a readily detectable fluorescent response when irradiated with light from a U.V. lamp, yet insufficient to produce a visually detectable response in the presence of sunlight; and
(f) heating the surface of the article to a selected temperature below the degradation point of the plastic for a sufficient amount of time to transfer the dye into a surface layer of said article to result in a fade resistant mark and to sublime said solid diluent.

4,238,525
METHOD AND APPARATUS FOR VACUUM DEPOSITING THIN COATINGS USING ELECTRON BEAMS
Hans Aichert; Walter Dietrich, both of Hanau am Main; Friedrich Stark, Langenselbold, and Herbert Stephan, Bruchköbel, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany
Filed Nov. 15, 1978, Ser. No. 960,895
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812311
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—42 **8 Claims**



1. Method for vacuum depositing thin films on substrates which are heated at more than 500° C. by bombardment by reflected electrons during the depositing which comprises holding the substrates above an elongated evaporating crucible having long sides and short sides and filled with a bath of the material to be evaporated and heating the substrates with reflected electrons by providing at least two electron beams generated at the short sides and deflecting the electron beams at an angle lower than 80° onto approximately half of the bath surface situated between the shorter axis of symmetry and the associated short side of the evaporating crucible.

7. Vacuum depositing apparatus for depositing thin films on substrates heated at more than 500° C. by electron beam heating during the deposition comprising vacuum chamber means having an elongated evaporating crucible means with long sides and short sides for holding a bath of material to be evaporated, substrate holder means for the flat disposition of a plurality of substrates above the evaporating crucible means in a substantially uniform distribution above the surface thereof and means for heating the substrates by reflected electrons comprising at least two electron gun means disposed at the short sides of the evaporating crucible means and means for deflecting the beams at an angle smaller than 80° C. onto approximately half of the bath surface situated between the shorter axis of symmetry and the associated short side of the crucible means.

4,238,526
METHOD OF COATING OBJECTS
Costa G. Chitouras, 10 Packard Ave., Somerville, Mass. 02144
Filed Sep. 4, 1979, Ser. No. 72,107
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—44 **8 Claims**

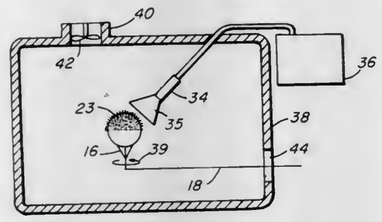
1. A method of coating objects comprising the steps of:
(a) applying an electron beam curable coating to the surface of said object
(b) supportably contacting said object at a first location,
(c) applying an electron beam to said object to cure a portion of said coating exclusive of an area including said first location,
(d) supportably contacting said object at a second location in said cured portion of said coating, and

(e) applying an electron beam to said object to cure the remaining portion of said coating.

4. A method of flocking the entire surface of an object having a first and a second side comprising the steps of:

(a) applying an electron beam curable adhesive to the surface of said object,

(b) supportably contacting said object at a location on said first side of said object,



(c) applying fibers to said second side,

(d) directing an electron beam at said second side to cure said adhesive on said second side,

(e) supporting said object on said second side,

(f) applying fibers to said first side, and

(g) applying an electron beam to said object to cure the remainder of said adhesive.

4,238,527

METHOD OF PROVIDING METAL BUMPS ON AN APERTURED SUBSTRATE

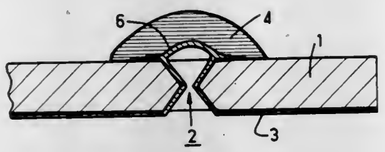
Michel J. C. Monnier, Montgeron; Marc A. Monneraye, Saint Maur, and Claude Foucher, Palaiseau, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,179

Claims priority, application France, Sep. 12, 1977, 77 27445

Int. Cl.³ H05K *3/10*

U.S. Cl. 427—55 **2 Claims**



1. A method of providing meltable metal bumps on the surface of an insulating substrate which is provided with metal conductors, said substrate comprising metallized holes, the metallization of the holes being connected to the conductors and at least said metallization being covered with a meltable soldering material, characterized in that a resin is provided on a surface of the substrate at least at the area of the holes, the viscosity of said resin being such that it cannot flow into the holes and that the resin is heated at the area of the holes, due to which on the side of the resin facing the holes a spherical surface is formed adjoining the holes and remote therefrom, while soldering material melted as a result of the heating flows past said spherical surfaces and, after cooling, forms metal bumps.

4,238,528

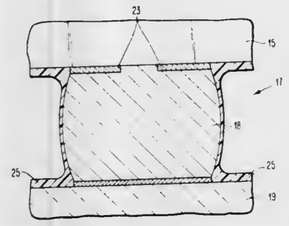
POLYIMIDE COATING PROCESS AND MATERIAL

Raymond W. Angelo; Richard M. Poliak, both of Endwell, and John R. Susko, Binghampton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 919,356, Jun. 26, 1978, abandoned. This application Oct. 2, 1979, Ser. No. 81,298

Int. Cl.³ H05K *3/28;* **H01L** *21/56*

U.S. Cl. 427—96 **7 Claims**



1. A process for forming a seal coating on electronic circuitry comprising:

applying to said circuitry a filler free coating material which includes:

an aromatic polymer which, when cured, forms a polyimide,

an organic solvent for said polymer, and

a non-ionic fluorocarbon surfactant, and curing the material to form a polyimide seal coating on said circuitry.

4,238,529

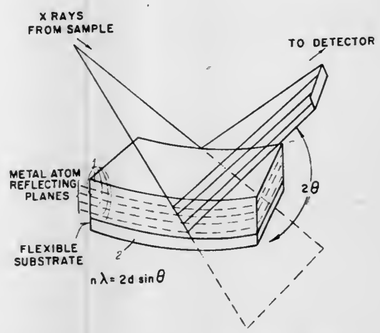
LONG WAVE-LENGTH X-RAY DIFFRACTION CRYSTAL

Albert Sicignano, Mount Kisco, N.Y.; William P. Zingaro, deceased, late of Hartsdale, N.Y., and Josephine Zingaro, executrix, Scarsdale, N.Y., assignors to North American Philips Corp., New York, N.Y.

Continuation-in-part of Ser. No. 873,418, Jan. 30, 1978, abandoned, which is a division of Ser. No. 755,683, Dec. 20, 1976, Pat. No. 4,084,089. This application Aug. 2, 1979, Ser. No. 63,015

Int. Cl.³ G01N *23/20;* **B05D** *1/20, 1/36*

U.S. Cl. 427—160 **4 Claims**



1. A method of manufacturing an x-ray diffraction crystal comprising the steps of:

forming a monomolecular layer of a first divalent metal soap on the surface of a first aqueous solution;

forming a monomolecular layer of either a fatty acid or a second divalent metal soap on the surface of a second aqueous solution, said second metal having a lower atomic number than said first metal; and

alternately dipping a substrate in said first and second solutions, each dip transferring a monomolecular layer from the solution to the substrate, so as to form a diffraction crystal having the first metal soap layers separated by one or more fatty acid or second metal soap layers.

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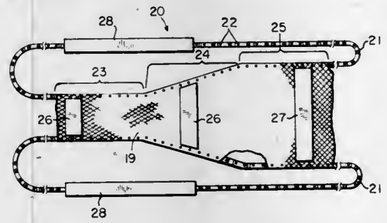
METHOD FOR PRODUCING STRESS-RELIEVED FABRIC

Gerald C. Hollaway, Springfield; Paul L. Spivy, Rogersville; Jack Nelson, and Wayne C. Fieler, both of Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Jul. 24, 1979, Ser. No. 60,098

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—173 **8 Claims**



1. A process for making a continuous, spliceless bias fabric in which the angular displacement between the warp and filling yarns is at least about 90 degrees and having at least one layer of an elastomeric compound calendered to at least one side thereof, which comprises the steps of cutting a tubular, square-woven fabric at an angle of about 40 to 50 degrees to provide a continuous strip of said fabric of width W, wherein said warp to filling angle is about 90 degrees; calendering at least one layer of an elastomeric compound onto at least one side of said continuous strip, whereby said fabric decreases in width and said warp to filling angle decreases to less than 90 degrees; heating the resulting calendered strip to a temperature sufficient to cause said elastomeric compound to undergo a phase change from the elastic state to the plastic state tensioning said calendered strip in its width direction to at least said original width W of said continuous strip, thereby increasing said warp to filling angle of said calendered strip to at least 90 and up to about 150 degrees; and cooling the resulting stretched, calendered strip to a temperature sufficient to cause said elastomeric compound to return from the plastic state to the elastic state.

4,238,531

ADDITIVES FOR CLOTHES DRYERS

Jerome Rudy, Livingston, N.J., and Anthony A. Rapisarda, Elmhurst, N.Y., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 589,993, Jun. 24, 1975, abandoned, which is a continuation of Ser. No. 376,586, Jul. 5, 1973, abandoned, which is a division of Ser. No. 158,090, Jun. 29, 1971, abandoned. This application Nov. 21, 1977, Ser. No. 853,663

Int. Cl.² B05D *3/12*

U.S. Cl. 427—242 **10 Claims**

1. An article of manufacture consisting essentially of (1) a composition for application of an adjuvant to a fabric in a tumbler-type dryer, consisting essentially of an adjuvant for said fabric and a distributing agent therefor, said adjuvant being present in an effective concentration not exceeding about 95% by weight and being selected from the group consisting of fabric softeners, optical brighteners, antistatic agents, stain repellents, soil release agents, wrinkle preventatives, deodorizers, fresheners, cleaning agents, surfactants, moth proofing agents, and bleaching agents and said distributing agent being selected from the group consisting of ammonium carbonate, short chain quaternary compounds of the formula $[N(R_2R_7R_8R_8)]yX$ wherein R_2 is a C_1-C_4 alkyl, R_7 is a C_{10}-C_{14} alkyl, each R_8 is selected from the group consisting of R_2 and R_7, X is an anion imparting water dispersibility and y is the valency of X, condensates of alkyl alcohols and ethylene oxide which melt at dryer temperatures, and lower molecular weight, innocuous carboxylic acids which promote the spreading of the adjuvant, and which are soluble in the water accompanying spun-dried clothes, and (2) a means for applying said composition to the fabric in said dryer.

4. In a method for applying an adjuvant to a fabric in a tumbler-type dryer, the improvement which comprises adding said adjuvant for the fabric to the dryer in combination with a distributing agent for the adjuvant, said adjuvant being present in an effective concentration not exceeding about 95% by weight, based on the combined weight of the adjuvant and distributing agent, and being selected from the group consisting of fabric softeners, optical brighteners, antistatic agents, strain repellents, soil release agents, wrinkle preventatives, deodorizers, fresheners, cleaning agents, surfactants, moth proofing agents, and bleaching agents, and said distributing agent being selected from the group consisting of ammonium carbonate, short chain quaternary compounds of the formula $[N(R_2R_7R_8R_8]yX$ wherein R_2 is a C_1-C_4 alkyl, R_7 is a C_{10}-C_{14} alkyl, each R_8 is selected from the group consisting of R_2 and R_7, X is an anion imparting water dispersibility and y is the valency of X, condensates of alkyl alcohols and ethylene oxide which melt at dryer temperatures, and lower molecular weight, innocuous carboxylic acids which promote the spreading of the adjuvant, and which are soluble in the water accompanying spun-dried clothes.

10. A composition for application to a fabric in a tumbler-type dryer, consisting essentially of an adjuvant for said fabric and a distributing agent therefor, said adjuvant being present in an effective concentration not exceeding about 95% by weight and being selected from the group consisting of fabric softeners, optical brighteners, antistatic agents, stain repellents, soil release agents, wrinkle preventatives, deodorizers, fresheners, cleaning agents, surfactants, moth proofing agents, and bleaching agents, and said distributing agent being selected from the group consisting of short chain quaternary compounds of the formula $[N(R_2R_7R_8R_8)]yX$ wherein R_2 is a C_1-C_4 alkyl, R_7 is a C_{10}-C_{14} alkyl, each R_8 is selected from the group consisting of R_2 and R_7, X is an anion imparting water dispersibility and y is the valency of; X and condensates of alkyl alcohols and ethylene oxide, wherein said distributing agent melts at dryer temperatures and promotes the spreading of the adjuvant.

4,238,532

ZINC ALLOY AND GALVANIZATION PROCESS

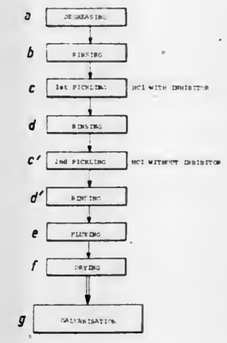
Noël Dreulle, 5 Rue Fourques, Douai, France

Division of Ser. No. 834,975, Sep. 20, 1977, Pat. No. 4,168,972. This application Apr. 10, 1979, Ser. No. 28,919

Claims priority, application France, Oct. 1, 1976, 76 29545

Int. Cl.³ C23C *1/02*

U.S. Cl. 427—309 **3 Claims**



1. An immersion galvanisation process for galvanising sili-

con steel containing more than 0.01% by weight silicon, comprising the steps of:

(a) degreasing the steel to be galvanised and then rinsing the steel;

(b) pickling the steel with concentrated hydrochloric acid containing a corrosion inhibitor and then rinsing the steel;

(c) pickling the steel in concentrated hydrochloric acid containing no inhibitor, followed by rinsing the steel;

(d) fluxing the steel and then drying it; and

(e) immersing the steel in a molten bath of an alloy consisting essentially of zinc of commercial purity and having a lead content of the order of 1000 to 20000 p.p.m. by weight, an aluminum content of from 100 to 5000 p.p.m. by weight, a magnesium content of from 10 to 1000 p.p.m. by weight and a tin content of from 300 to 20000 p.p.m. by weight.

4,238,533

COATING PROCESS AND APPARATUS

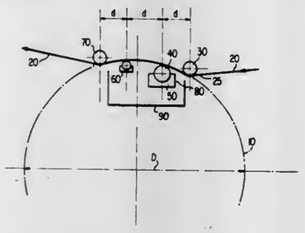
Jean-Pierre Pujol, Caluire; Jean Jugnet, Beynost, and Claude Motta, Pizay, all of France, assignors to La Cellophane, Paris, France

Continuation of Ser. No. 787,587, Apr. 14, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 14,219

Claims priority, application France, Apr. 16, 1976, 76 11302

Int. Cl.³ B05D *1/40*

U.S. Cl. 427—359 **6 Claims**



1. In a process for coating a flexible polyester film with a coating composition having a predetermined thickness, by the steps of:

feeding the uncoated polyester film over a coating roller which deposits a layer of the coating compositions on a surface of the polyester film, the layer being thicker than the predetermined thickness, and

feeding the coated polyester film over a rotating smoothing rod having a diameter less than the diameter of the coating roller to smooth out and reduce the thickness of the coating to the predetermined thickness,

the improvement comprising

feeding the polyester film, in at least its path of travel between the coating roller and rotating smoothing rod, over a substantially circular path of travel having a diameter between 0.5 and 1.5 meters, while maintaining the polyester film under tension during at least its travel in the substantially circular path, the tension being maintained independently of the speed of travel of the polyester film in the substantially circular path and passing the polyester film over the coating roller and over the rotating smoothing rod such that the angle that the polyester film makes with itself before and after passage over the coating roller and before and after passage over the rotating smoothing rod is between about 160° and about 163° with the proviso that the axes of the coating roller and rotating smoothing rod are in vertical planes which are at most 20 centimeters apart.

4,238,534

METHOD FOR FORMING A HEAT-RESISTANT COATING ON AN ORIENTED SILICON STEEL SHEET

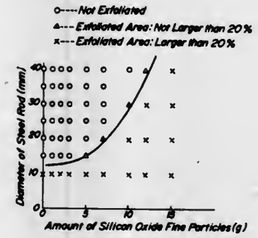
Toshio Ichida, and Toshihiko Funahashi, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe City, Japan

Continuation-in-part of Ser. No. 714,312, Aug. 16, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,987

Claims priority, application Japan, Aug. 22, 1975, 50/101130

Int. Cl.² B05D *3/02*

U.S. Cl. 427—376.15 **8 Claims**



1. In a method for forming a heat-resistant insulating coating on an oriented silicon steel sheet having a forsterite-ceramic film thereon, in which an aqueous coating dispersion having a specific gravity of 1.05–1.30, which is obtained by mixing (a) 22.4 parts by weight, calculated as SiO_2, of colloidal silica dispersed in water with (b) at least one of monobasic phosphates of Mg, Al, Sr, Ba and Fe in a molar ratio of SiO_2 in the colloidal silica/monobasic phosphate of 0.8/1–15/1, (c) 0.1–20 parts by weight of the total amount of at least one compound selected from chromic acid anhydride, chromates and dichromates, (d) 0.1–10 parts by weight of the total amount of at least one fine particle oxide selected from SiO_2, Al_2O_3, and TiO_2 and (e) water so as to adjust the specific gravity of the aqueous coating dispersion to the above described range, is applied to an oriented silicon steel sheet, and the coated steel sheet is baked at a temperature of not lower than 350°, the improvement comprising said fine particle oxide having a primary particle size of 70–500 A and an apparent density of not higher than 100 g/l.

4,238,535

CAN COATINGS FROM NITRILE COPOLYMER LATEXES

Herbert Talsma, East Cleveland, and William M. Giffen, Jr., Aurora, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 772,005, Feb. 25, 1977, abandoned, which is a division of Ser. No. 658,842, Feb. 17, 1976, abandoned. This application Feb. 17, 1978, Ser. No. 878,975

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—388.4 **4 Claims**

1. The process consisting of coating at least one side of a metal sheet, said metal being selected from the group consisting of steel, tin-plated steel and aluminum, with a layer of a polymer latex maintained at a pH of from 4.5 to 6.7, drying said layer and heating the thus-coated sheet for a short time at a temperature in the range of from 200° to 300° C. wherein the polymer is prepared by polymerization in aqueous emulsion of 100 parts by weight of

(A) from 60 to 90% by weight of at least one nitrile having the structure

$$CH_2=C(R)-CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) from 10 to 40% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

(1) an ester having the structure

$$CH_2=C(R_1)-COOR_2$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(2) an alpha-olefin having the structure

$$CH_2=C(R')-R''$$

wherein R' and R'' are alkyl groups having from 1 to 7 carbon atoms,

(3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

(4) vinyl acetate, and

(5) styrene,

in the presence of from 0 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and a comonomer selected from the group consisting of styrene, a monomer having the structure

$$CH_2=C(R)-CN$$

wherein R has the foregoing designation, and an ester having the structure

$$CH_2=C(R_1)-COOR_2$$

wherein R_1 and R_2 have the foregoing respective designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer.

4,238,536

PREVENTING WATER INCURSION INTO COMMODITY PILES

Ronney R. Koch, and Roger F. Rensvold, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 374,192, Jun. 27, 1973, abandoned. This application Sep. 14, 1978, Ser. No. 935,225

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—421 **32 Claims**

1. A method of forming a protective coating on a commodity pile whereby water incursion into the pile is prevented comprising:

combining a liquid hydrocarbon having a viscosity greater than about 50 cps at 75° F. and a minimum boiling point greater than about 500° F. with rosin, an alkaline earth metal compound and water to form a flowable alkaline earth metal ion-rosin-liquid hydrocarbon mixture which rapidly converts into a highly viscous gel; and

immediately thereafter introducing said mixture onto the surface of said commodity pile so that said mixture forms a highly viscous protective coating on said pile.

4,238,537

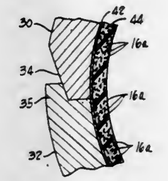
PROCESS FOR ROTATIONAL MOLDING UTILIZING EVA AND PRODUCTS PRODUCED THEREFROM

Douglas S. Kerr, Ashland, Ohio, assignor to The National Latex Products Company, Ashland, Ohio

Filed Dec. 18, 1978, Ser. No. 970,391

Int. Cl.² A63B *39/02*; B28B *1/46*

U.S. Cl. 428—35 **22 Claims**



1. A rotationally molded, hollow article formed from a mixture of thermoplastic pellets and powder, both of which are copolymers of ethylene and vinyl acetate, having a melt index within the range of approximately 10 to 50 and a pellet to powder mixture ratio within the range by weight of approximately 50% to 80% pellets to approximately 50% to 20% powder, said article being characterized by having substantial bounce characteristics generally equivalent to those possessed by (a) hollow articles with non-cellular walls made from other thermoplastics, (b) hollow articles with non-cellular walls made from rubber-like compositions of natural and/or synthetic polymers, and/or (c) solid cellular articles made from other thermoplastics or rubber-like compositions of natural and/or synthetic polymers.

10. In a rotational molding process wherein a plastic material is introduced into a mold and said mold is rotated simultaneously about two axes in the presence of heat followed by cooling whereby the plastic is melted and distributed against the walls of the mold to form a hollow, enclosed, molded article, the improvement comprising providing a mixture of plastic pellets and powder both of which are coplymers of ethylene and vinyl acetate, having a melt index within the range of approximately 10 to 50 and a pellet to powder mixture ratio within the range by weight of approximately 50% to 80% pellets and approximately 50% to 20% powder, and introducing a predetermined amount of the mixture into said mold, said process resulting in the production of a hollow article having predetermined bounce characteristics which are not dependent on internal pressure within the article, and which are maintained for unlimited time and irrespective of puncturing of the article wall.

4,238,538

METHOD OF AND APPARATUS FOR RAM-EXTRUSION OF AROMATIC POLYIMIDE AND POLYAMIDE RESINS, AND SHAPED ARTICLES FORMED USING SUCH METHOD AND APPARATUS

Carl H. Manwiller, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1978, Ser. No. 971,675

Int. Cl.³ B29D *23/01*; B29F *3/04*

U.S. Cl. 428—36 **10 Claims**

1. A method of forming a shaped article from non-melt fabricatable particulate aromatic polyimide or aromatic polyamide resin in a die having means defining (a) a compaction zone, followed by (b) a back pressure zone, followed by (c) a relief zone

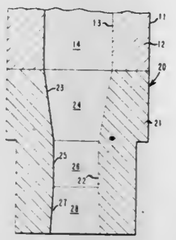
such method including the steps of:

(1) compacting such resin in the compaction zone, at a temperature of from about room temperature to 400° C., while simultaneously

(2) providing back pressure on such resin at the exit of the

compaction zone by moving the compacted resin through the back pressure zone, and, thereafter,

(3) relieving the pressure on such resin in the relief zone to control the rate of elastic recovery thereof, resulting in a radial recovery of the compacted resin of about 3 to 5 percent as such compacted resin is moved through the relief zone to form the shaped article.



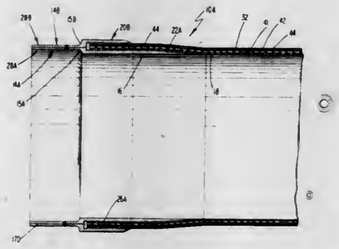
7. An extruded, coalesced, shaped article formed of a non-melt fabricatable particulate aromatic polyimide or aromatic polyamide resin, such shaped article being oriented primarily in the direction of extrusion and having a thermal expansion in the axial direction of less than about 50 μm/m/°C. at at temperature of from about room temperature to 300° C.

4,238,539

FIBER REINFORCED COMPOSITE SHAFT WITH METALLIC CONNECTOR SLEEVES MOUNTED BY A KNURL INTERLOCK

Derek N. Yates, Los Gatos, and John C. Presta, San Jose, both of Calif., assignors to Celanese Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,553
Int. Cl.³ B32B *5/12;* F16C *1/02*
U.S. Cl. 428—36 **8 Claims**



7. A hollow tubular fiber reinforced composite drive shaft comprising:

a shaft body comprising a plurality of integrally bonded plies of solidified fiber reinforced resinous material;

an inner metal sleeve section mounted in at least one end of said shaft body, said inner sleeve section including an outer periphery having knurling thereon, with inner fibers of said fibrous material being seated between circumferentially spaced and longitudinally staggered knurl projections, creating a torsion-transmitting connection between said shaft body and said inner sleeve section;

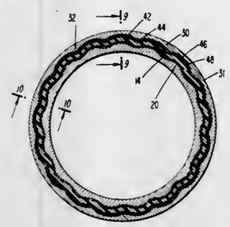
an outer metal sleeve section mounted over said shaft body said outer sleeve section including an inner periphery having knurling thereon, said inner periphery being deformed against said shaft body such that outer fibers of said fibrous material are seated between circumferentially spaced and longitudinally staggered knurl projections, creating a torsion-transmitting connection between said shaft body and said outer sleeve section.

4,238,540

FIBER REINFORCED COMPOSITE SHAFT WITH METALLIC CONNECTOR SLEEVES MOUNTED BY CONNECTOR RING INTERLOCK

Derek N. Yates, Los Gatos, and John C. Presta, San Jose, both of Calif., assignors to Celanese Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,556
Int. Cl.³ B32B *5/12;* F16C *1/02*
U.S. Cl. 428—36 **21 Claims**



12. A hollow tubular reinforced composite shaft comprising:

a shaft body comprising a plurality of integrally bonded circumferential plies of solidified fiber reinforced resinous material;

a metal sleeve mounted in at least one end of said shaft body, said sleeve including a plurality of circumferentially spaced, longitudinally extending grooves on an outer periphery of said sleeve;

said grooves each being inclined in a direction extending longitudinally inwardly and radially outwardly;

an annular lock ring positioned upon said sleeve and upon said plies of fibrous material disposed therearound, said lock ring including a plurality of circumferentially spaced, longitudinally extending ridges on an inside periphery thereof;

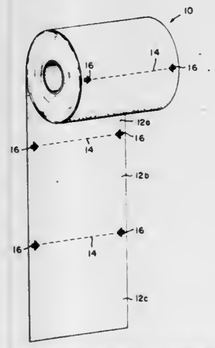
said ridges each being inclined in a direction extending longitudinally inwardly and radially outwardly, and being disposed in overlying relation to said grooves in said sleeves to press portions of said fibrous material into said grooves thereby forming a torsion-transmitting connection therebetween.

4,238,541

IDENTIFYING MARKER FOR TEAR PERFORATION LINES OF ROLLED PAPER WEBS

William E. Burton, 1632 S. Weller St., Apt. #B206, Seattle, Wash. 98144

Filed Aug. 30, 1979, Ser. No. 71,305
Int. Cl.³ B65D *65/28;* G09F *3/00;* B32B *3/00, 7/00*
U.S. Cl. 428—43 **6 Claims**



1. In a rolled web of paper having a plurality of lines of tear perforations extending transversely across said web at spaced apart locations thereof, the improvement comprising a visually perceiveable identifying marker placed adjacent each line of said tear perforations to facilitate identification of said line thereby allowing said web to be torn along said line of tear perforations in low light conditions and by visually handicapped individuals.

4,238,542

METHOD OF USING ADHESIVE JOINT DRESSING COMPOSITIONS AND PRODUCT

David R. Burley, Cranbury, N.J., assignor to Tile Council of America, Inc., Princeton, N.J.

Division of Ser. No. 817,553, Jul. 21, 1977, Pat. No. 4,143,019, which is a continuation of Ser. No. 572,660, Apr. 29, 1975, Pat. No. 4,055,529. This application Feb. 13, 1979, Ser. No. 11,770
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—58 **22 Claims**

12. A method for restoring, preserving and improving the grout surfaces of a ceramic tile-grout assembly, said method comprising the steps of applying a dressing composition onto the grout and tile surfaces and removing excess dressing composition from the tile surfaces leaving a layer of the dressing composition over the grout surface, wherein said tile grout dressing composition is capable of selectively adhering to grout surfaces and forming on adherable grout surfaces a non-porous, stain resistant, washable layer when cured, said composition comprising

i. a high molecular weight polymer in the form of an emulsion which is not alkali-thickenable, which emulsion is destabilized in the presence of polyvalent cations, said polymer selected from the group consisting of polymers of carboxylic acids, polymers of esters of carboxylic acids, and copolymers of a carboxylic acid or ester of a carboxylic acid with one or more monomers from the group consisting of the carboxylic acids, esters of carboxylic acids, acrylonitriles, acrylamides, aromatic compounds and alkenes, said polymer characterized as being room-temperature curable and forming a water-resistant film when cured;

ii. an alkali-thickenable high molecular weight polymer capable of substantially increasing the viscosity of the composition as its pH is increased above neutral pH, said polymer in the form of a colloidal dispersion or emulsion of polymer particles which dispersion or emulsion is destabilized in the presence of polyvalent cations, said polymer selected from the group consisting of polymers of carboxylic acids, polymers of esters of carboxylic acids, and copolymers of a carboxylic acid or ester of a carboxylic acid with one or more monomers from the group consisting of the carboxylic acids, esters of carboxylic acids, acrylonitriles, acrylamides, aromatic compounds and alkenes, said polymer characterized as being room-temperature curable and forming a water-resistant film when cured;

iii. an alkaline agent wherein the cation or cations of said agent are mono-valent and said alkaline agent is present in sufficient amounts to cause the alkali-thickenable polymer to increase the viscosity of the composition;

iv. water; and

v. a solvent having a vapor pressure at room temperature lower than that of water and capable of inhibiting the time rate of film formation of the composition and present in an amount sufficient to allow adequate time for the composition to be suitably applied to a substrate;

wherein the total weight of polymer solids is in the range of 5–60% by weight of the total composition, at least 5% by weight of the total polymer solids is the polymer in the form of an emulsion, and the volatile components comprise at least 20% by weight of the composition, and wherein the composition has a thixotropic rheology and a viscosity which is greater than about 50,000 cps at 70° F.

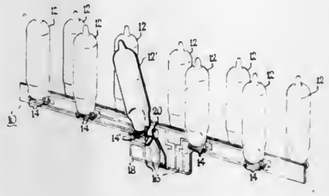
21. A tile assembly comprising a plurality of tiles arranged in an edge-to-edge, spaced-apart relationship, said spaces forming joints comprising a cured grouting composition, said tile assembly treated in accordance with the method of claim 12 whereby there is formed a cured layer of the dressing composition covering the surface of the grouting composition.

4,238,543

ELECTRICAL CONNECTION MEANS FOR A LINEAR PHOTOFLASH LAMP ARRAY

Vaughn C. Sterling, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 22, 1978, Ser. No. 963,027
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—63 **2 Claims**



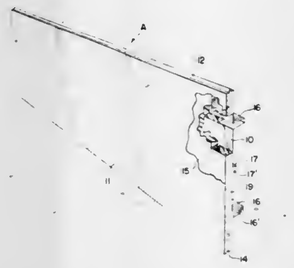
1. Repair means for electrically reconnecting a photoflash lamp in-lead to sequential firing circuitry located on the circuit board member of a planar flash array which comprises a deposit of an adhesive non-conductive organic polymer enveloping the end of said in-lead and secured to the circuitry, said adhesive deposit further including a surface conductive coating interconnecting the in-lead and the adjacent circuitry.

4,238,544

DOOR PANEL AND MANNER OF MAKING

Willis J. Mullet, Wooster, Ohio, assignor to Virginia Door Co., Mt. Hope, Ohio

Filed May 16, 1979, Ser. No. 39,574
Int. Cl.³ B32B *1/04, 5/20*
U.S. Cl. 428—71 **7 Claims**



1. The method for continuously manufacturing overhead door panels having inner and outer skins and a core of expanded polyurethane foam, at least one of said skins being metal and having contoured edges and longitudinal reinforcing ribs and the other skin being of plastic materials, the method comprising continuously supplying horizontal strips of sheet material for both skins, continuously roll-forming vertically disposed male and female contoured edges and longitudinal ribs in said metal strip, preheating both strips, applying expandable polyurethane foam to the underside of the other strip and then bringing it into proximity with said one strip to form a composite strip having a cavity therein, and in which the marginal edges of the other strip extend beyond the contoured edges of said metal strip continuously pulling the composite strip through a pressure conveyor under controlled temperature to expand the foam and completely fill said cavity, progressively forming marginal edge portions of said other strip by bending said edge portions into sealing relation with the

contoured edges of said one strip, and shearing the moving composite strip into predetermined lengths.

4,238,545

MODIFIED UREA-FORMALDEHYDE RESIN

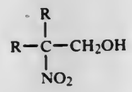
Jerry H. Hunsucker, and Milton E. Woods, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corporation, Terre Haute, Ind.

Division of Ser. No. 41,119, May 21, 1979, and a continuation-in-part of Ser. No. 25,502, Mar. 30, 1979, abandoned. This application Oct. 22, 1979, Ser. No. 86,844

Int. Cl.³ B32B *7/00;* **D03D** *3/00;* **D04B** *1/00;* **D04H** *1/00*

U.S. Cl. 428—270 **14 Claims**

1. A method of preparing a wrinkle-resistant fabric comprising the steps of (a) impregnating the fabric with a solution of a curable urea-formaldehyde resin modified with from 0.25 to 3.0 moles of a nitroalkanol per mole of urea, said nitroalkanol being represented by the formula



where R is hydrogen, methyl, ethyl or hydroxymethyl, and a catalyst therefor and (b) heating to 225° F. to 350° F. to effect a cure of the resin.

2. A wrinkle-resistant fabric obtained by the method of claim 1.

3. The method of claim 1 wherein the fabric is a woven textile of wool or cotton.

4,238,546

LIGHTWEIGHT GYPSUM PRODUCTS AND METHODS OF MAKING SAME

Harold L. Phillips, Cochita Lake, N. Mex., assignor to Ferjon, Dallas, Tex.

Filed Jul. 30, 1979, Ser. No. 61,942

Int. Cl.³ B32B *13/08, 5/18;* **C04B** *31/02*

U.S. Cl. 428—306 **9 Claims**

4. A wallboard comprising parallel sheets of paper bonded to opposite major faces of a monolithic core, wherein said core consists essentially of hydrated calcium sulfate and expanded substantially monocellular volcanic ash and has a bulk density of from about 24 pounds per cubic foot to about 45 pounds per cubic foot.

4,238,547

HIGH STRENGTH YARN CONSISTING OF BORON CARBIDE FIBERS

James Economy, Eggertsville; Ruey Y. Lin, Williamsville, and William D. Smith, Tonawanda, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

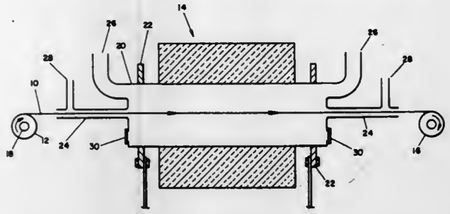
Continuation of Ser. No. 810,222, Jun. 27, 1977, abandoned, which is a continuation of Ser. No. 677,582, Apr. 16, 1976, abandoned, which is a division of Ser. No. 345,376, Mar. 27, 1973, Pat. No. 3,971,840. This application Dec. 1, 1978, Ser. No. 965,671

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—366 **12 Claims**

1. A yarn of sufficient length to be wound on a spool, consisting of high strength fibers of essentially straight configuration and having minimal internal stresses, consisting essentially of boron carbide; the fibers having a diameter ranging from about 9 to about 14 microns and a tensile strength in the range of 194,000 psi to about 284,000 psi.

7. A yarn of sufficient length to be wound on a spool, consisting of high strength fibers of essentially straight configuration and having minimal internal stresses, consisting essentially of boron carbide; the fibers having a diameter ranging from



about 8 to about 9 microns and a tensile strength in the range of 208,000 psi to about 309,000 psi.

4,238,548

MAGNETIC RECORDING MEDIUM

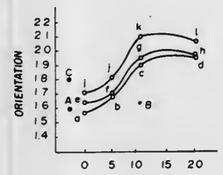
Kiyotaka Okuyama, and Akihiko Hosaka, both of Tokyo, Japan, assignors to TDK Electronics Company Limited, Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,971

Claims priority, application Japan, Mar. 10, 1978, 53/26611

Int. Cl.² H01F *10/02*

U.S. Cl. 428—480 **4 Claims**



1. A magnetic recording medium which comprises a substrate coated with a magnetic layer wherein a magnetic powder is oriented in a cured binder comprising 3 to 10 wt. parts of a vinyl chloride-vinyl acetate copolymer having 10 to 20 wt.% of vinyl alcohol component, 5 to 20 wt. parts of a polyester and 3 to 10 wt. parts of a nitrocellulose; and wherein said magnetic powder is present in an amount of 100 wt. parts.

4,238,549

TRANSFER ELEMENTS

George P. Dapp, and Michael A. Scott, both of Huntington, N.Y., assignors to Columbia Ribbon and Carbon Mfg. Co., Inc., Plainview, N.Y.

Filed Nov. 27, 1978, Ser. No. 963,856

Int. Cl.³ B41M *5/10*

U.S. Cl. 428—484 **6 Claims**

1. A pressure-sensitive transfer element adapted to transfer solid, fluorescing images to a copy sheet under the effect of imaging pressure, comprising a smooth, thin plastic film foundation supporting a volatile solvent-applied solid, complete-transfer imaging layer comprising from about 20% to 30% by weight of a synthetic thermoplastic resin binder material which is soluble in the application solvent, from about 20% to 30% by weight of a hard wax which is at least partially insoluble in the application solvent, the insoluble portion being present in the form of finely dispersed hard wax particles, from about 30% to 45% by weight of a non-volatile oily liquid plasticizer which is compatible with and softens said hard wax, and from about 3% to 30% by weight of a fluorescing dye in the form of a solid solution within said imaging layer, said dye being soluble in said application solvent, in said resin binder material and in said oily liquid plasticizer, said dye being capable of emitting intense radiation within the range of from about 300 mμ to about 700 mμ when exposed to a light source rich in infrared radiation.

4,238,550

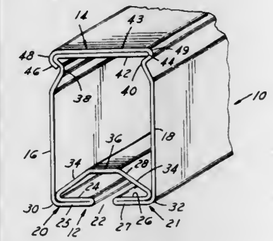
DUNNAGE BAR AND METHOD OF MAKING IT

Leonard G. Burgess, New Baltimore, and Richard E. Wroblewski, Roseville, both of Mich., assignors to Equipment Manufacturing, Inc., Warren, Mich.

Filed Feb. 5, 1979, Ser. No. 9,410

Int. Cl.³ A47F *5/00*

U.S. Cl. 428—586 **6 Claims**



1. A sheet metal dunnage bar of tubular, rectangular configuration having a working face, an oppositely disposed base portion and a pair of generally parallel sides connecting the working face and base portion; said working face, sides and base portion being formed from a single strip of sheet metal deformed so as to provide on said working face a pair of walls extending toward each other from the sides and separated by a longitudinal slot; each of said walls being composed of a double thickness of said strip and said walls being connected by a transverse web disposed inwardly of said slot; each of said sides being formed by a single thickness of said strip; and said base portion being formed by double thicknesses of said strip having ends interlocked with the sides at the edges of said base portion.

4,238,551

COMPOSITION FOR INHIBITING CORROSION OF TITANIUM

Sudarshan Lal, Glen Rock, N.J., and Richard V. Porcelli, Yonkers, N.Y., assignors to Halcon Research & Development Corporation, New York, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,756

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—660 **4 Claims**

1. Substantially non-corrosive titanium materials of construction for chemical process apparatus intended for use in contact with strong acid media in the substantial absence of externally applied, anodically polarizing voltage to the said materials of construction, said material of construction comprising titanium or a titanium alloy containing titanium in an amount of at least 50 weight percent of the alloy, said titanium or titanium alloy having a discontinuous coating of metallic rhodium of a thickness of from about 0.0001 to 1 mil over at least 1% of the surface of said materials which is intended for use in contact with said strong acid media, said materials of construction, following the application of said metallic rhodium coating, being exposed to a temperature of less than about 400° C.

4,238,552

ELECTROLYTE SALT FOR NON-AQUEOUS ELECTROCHEMICAL CELLS

Arabinda N. Dey, Needham; John S. Miller, Charleston, both of Mass., and William L. Bowden, Nashua, N.H., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 956,833, Nov. 2, 1978, Pat. No. 4,177,329. This application Jul. 3, 1979, Ser. No. 54,494

The portion of the term of this patent subsequent to Dec. 4, 1996, has been disclaimed.

Int. Cl.³ H01M *10/39*

U.S. Cl. 429—101 **17 Claims**

1. A non-aqueous electrochemical cell comprising an anode, above hydrogen in the EMF series, a cathode depolarizer and a dissolved electrolyte salt wherein said salt contains an alkali or alkaline earth metal cation and an anion selected from the group consisting of halo-gallates, halo-thallates and mixtures thereof.

4,238,553

ELECTROCHEMICAL STORAGE CELL

Gert Weddigen, Heidelberg-Neuenheim; Bernd Houpert, Plankstadt, and Monika Gerlach, Mannheim, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,206

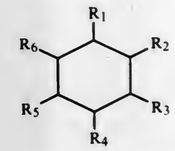
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831191

Int. Cl.³ H01M *10/00*

U.S. Cl. 429—104 **14 Claims**



1. An electrochemical storage cell or battery operable in the range from about 100° C. to 200° C., of the alkali metal and sulfur type, with at least one anode chamber and at least one cathode chamber separated from each other by an alkali ion-conducting solid electrolyte, and at least one organic aprotic solvent having a boiling point above the operating temperature of the cell, contained in the cathode chamber for dissolving, at least partially, alkali compounds contained in the cathode chamber, the improvement comprising adding to the cathode chamber, another organic solvent component containing a compound having the general formula



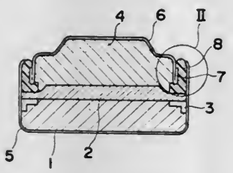
wherein R_1, R_2, R_3, R_4, R_5 and R_6 each represent a radical selected from the group A, B and C in which

A=H
B=CH_3
C=F, Cl, CN and SCN
and where a radical from A and C are each represented at least once and a radical of B not more than three times.

4,238,554
ABUSE RESISTANT ACTIVE METAL ANODE/FLUID CATHODE DEPOLARIZED CELLS
Joseph N. Barrella, Irvington, N.Y., assignor to Duracell International Inc., Indianapolis, Ind.
Filed Sep. 4, 1979, Ser. No. 72,525
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—105 **28 Claims**

1. An abuse resistant electrochemical cell comprising an active metal anode, a fluid cathode depolarizer in a non-aqueous electrolyte solution and an inert cathode, wherein the realizable capacity of said inert cathode, relative to the realizable capacities of said anode and said cathode depolarizer, is dependent upon at least one variable parameter characterized in that under predetermined parameters, which result in said inert cathode being the limiting factor in the life of the cell and said predetermined parameters being selected as approximating abuse conditions, the relationship between the utilizable capacity of the active metal anode and the realizable capacity of the inert cathode is such that at the end of the discharge life of said cell, the quantity of dischargeable active metal remaining in the anode is no greater than about 15% of the amount of active metal already discharged; and that there is initially a stoichiometric excess of said cathode depolarizer above the initial amount of said utilizable anode metal.

4,238,555
LEAK-PROOF ALKALINE CELL AND ITS PRODUCTION
Yoshio Uetani, Ibaraki; Yasuyoshi Taniguchi, Hirakata; Kenichi Yokoyama, Takatsuki; Seiichi Matsushima, Shinsenrinishi, and Sonae Kirihara, Sawaraginishi, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan
Filed Jul. 10, 1979, Ser. No. 56,325
Claims priority, application Japan, Jul. 10, 1978, 53-84436
Int. Cl.³ H01M *2/00*
U.S. Cl. 429—163 **9 Claims**



1. A leak-proof aklaline cell comprising a positive can, a negative cap having a turned-up portion, said cap being fitted at the open end of the positive can and a gasket provided between the positive can and the negative cap, the rim of the positive can being crimped inwardly so as to press the gasket to the negative cap, the negative cap being made of a metal plate laminated with the copper layer which is adapted to be contacted with a negative electrode active material mix and said copper layer also extending to the outer surface of the negative cap facing the gasket, characterized in that the copper layer is eliminated at the ultimate terminal edge of said turned-up portion.

4,238,556
LEAD-ACID CELL
Rudolf J. Hradcovsky, and Otto R. Kozak, both of 27 W. Beech St., Long Beach, N.Y. 11561
Filed Aug. 13, 1979, Ser. No. 66,164
Int. Cl.³ H01M *10/08*
U.S. Cl. 429—190 **5 Claims**

1. A lead-acid storage cell comprising a lead negative electrode, a lead dioxide positive electrode, and an electrolyte constituted by a sulfuric acid solution having a catalyst dissolved therein formed by an organic substance constituted by a cellulosic compound which prevents sulfation of the electrodes and results, during the discharge of the cell, in reduction of the positive electrode and oxidation of the negative electrode.

4,238,557
LEAD ACID BATTERY PLATE WITH STARCH COATED GLASS FIBERS
Heinrich Schulte, and Werner Kirchhoff, both of Hagen, Fed. Rep. of Germany, assignors to Varta Batterie, A.G., Hanover
Filed Apr. 20, 1978, Ser. No. 898,488
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724839
Int. Cl.³ H01M *4/20, 4/62*
U.S. Cl. 429—212 **13 Claims**

1. An electrode plate for lead storage batteries having a pasted-on active mass containing an additive of glass fibers, wherein the glass fibers have been provided with a starch coating before being added to the active mass.

4,238,558
LOW DENSITY MAGNETIC POLYMER CARRIER MATERIALS PRODUCED BY METAL CARBONYL THERMAL DECOMPOSITION
Ronald F. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 26, 1979, Ser. No. 107,308
Int. Cl.³ G03G *9/14*; B05D *7/00*
U.S. Cl. 430—108 **10 Claims**

1. A magnetically responsive, composite electrostatographic carrier particle comprising an imbibitive a polymer material impregnated with the magnetic elemental metal or metal oxide of a transition metal carbonyl, said carrier particle having been prepared by placing in a suitable vessel particles of said polymer material having an average bulk density of between about 0.95 and about 1.05 gram/cm^3, a suspending medium, and a transition metal carbonyl selected from iron, cobalt, and nickel carbonyl, excluding air and moisture from said vessel by displacement with a dry inert gas, heating the mixture with agitation to reflux temperature of said suspending medium to thermally decompose said transition metal carbonyl whereupon said polymer material is impregnated with the magnetic elemental metal or metal oxide of said transition metal carbonyl, cooling the mixture, washing the composite particle with fresh suspending medium, and diethyl ether, and air drying the composite particle with heat and vibration.

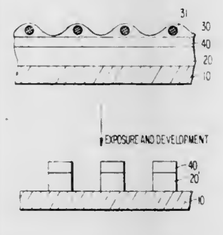
4,238,559
TWO LAYER RESIST SYSTEM
Bai-Cwo Feng, Wappingers Falls, and George C. Feng, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 865,814, Dec. 30, 1977, Pat. No. 4,180,604. This application Aug. 24, 1978, Ser. No. 936,435
Int. Cl.² G02C *5/18*
U.S. Cl. 430—156 **12 Claims**

1. In a resist structure comprising:
a first layer of resist material disposed on a substrate; which layer has been prebaked at temperatures not above about 100° C.; a second layer of resist material disposed atop said first layer, each resist material being a diazo oxide sensitized organic polymer capable of forming a patterned resist mask to protect the underlying portions of said substrate;
the improvement wherein;



said second layer is formed from a resist material solution which is saturated with a dilutant which does not dissolve the first resist material such that the layers are not substantially mixed.

4,238,560
PHOTOSENSITIVE PRINTING PLATE FORMING MATERIAL HAVING A NOVEL MATTING LAYER COMPOSITION
Yasuo Nakamura, and Yoshio Okishi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Aug. 30, 1979, Ser. No. 71,414
Claims priority, application Japan, Aug. 30, 1978, 53-105883
Int. Cl.³ G03C *1/76*; G03F *7/02*
U.S. Cl. 430—162 **9 Claims**

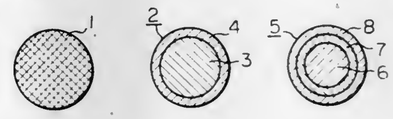


1. A photosensitive printing plate forming material comprising a support, a photosensitive layer, and, on the surface of said photosensitive layer a matting layer composed of a resin and a fine particulate material dispersed therein, said resin being at least one member selected from rosin and rosin esters.

4,238,561
IMAGE REPRODUCTION PROCESS USING A NEGATIVE TONABLE PHOTOHARDENABLE ELEMENT
Mario Grossa, Dreieich, and Helmut G. Sandner, Nieder-Roden, both of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 926,577, Jul. 20, 1978. This application Aug. 30, 1979, Ser. No. 71,197
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733581
Int. Cl.³ G03C *11/12*
U.S. Cl. 430—253 **10 Claims**

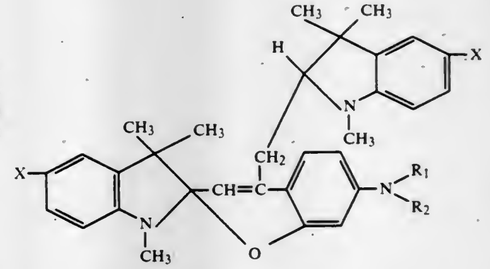
1. A process for the preparation of toned negative images with respect to an original image formed in a photohardenable element by imagewise exposure through the original, the photohardenable element comprising
(1) a support;
(2) an intermediate layer consisting essentially of one or more thermoplastic binders;
(3) a photohardenable layer comprising an addition polymerizable ethylenically unsaturated compound or a compound having photocrosslinkable groups, and a polymeric binder; and optionally,
(5) a removable cover sheet, the improvement wherein over layer (3) is a layer
(4) which is tonable and which comprises a polymeric binder and a nonvolatile diffusible component which can diffuse imagewise from the tonable layer,
the process comprising the diffusion of the nonvolatile component from the tonable layer (4) modulated by the imagewise exposed photohardenable layer (3), and producing the negative image in the tonable layer by the application of finely dispersed solid particles.

4,238,562
LIGHT TRANSMISSION PARTICLE FOR FORMING COLOR IMAGE
Eisuke Ishida, Nara; Yuji Takashima, Osaka; Hisanori Nishiguchi, Neyagawa; Yoshihide Miyazawa, Tokyo, and Shigeru Endo, Machida, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of, Japan
Filed Jul. 27, 1978, Ser. No. 928,420
Claims priority, application Japan, Aug. 4, 1977, 52/93822
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—106 **13 Claims**



1. A light transmission particle for forming a color image comprising
(a) 100 parts by weight of a transparent resin binder,
(b) about 0.3 to about 30 parts by weight of at least one spirobenzopyrane indole compound having a general formula I:

I



wherein R_1 and R_2 independently represent a methyl, ethyl, or phenyl group and X represents hydrogen, a methyl group or a halogen atom, and
(c) about 0.1 to about 50 parts by weight of at least one coloring agent.

4,238,563
RADIOGRAPHIC IMAGE ENHANCEMENT
Norman L. Weinberg, Amherst, N.Y., assignor to Minrad Corporation, East Amherst, N.Y.
Continuation-in-part of Ser. No. 848,993, Nov. 11, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,922
Int. Cl.³ G03C *7/00, 1/92*
U.S. Cl. 430—367 **22 Claims**

1. A method for enhancing the image density of a radiograph, which comprises contacting an underexposed, developed and fixed radiographic film with a composition to intensify the image density profile of the radiograph, said composition comprising an aqueous mixture of at least one water soluble organic or inorganic salt of copper, a water soluble ferricyanide salt and a sequestering agent having a stability constant of sufficient value to prevent substantial precipitation of cupric

ferricyanide in said composition and to enable formation of a cupric ferrocyanide-containing composition in said radiographic film.

4,238,564

RECORDING MATERIAL FOR COLOR PHOTOGRAPHY

Mario Fryberg, Praroman-le-Mouret, Switzerland, assignor to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

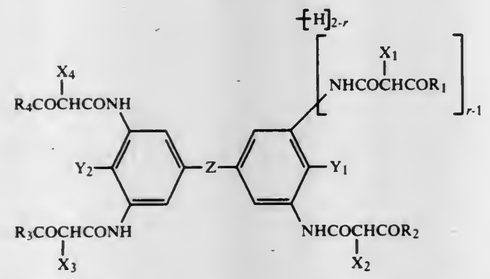
Filed Jun. 11, 1979, Ser. No. 47,465

Claims priority, application Switzerland, Jun. 20, 1978, 6730/78

Int. Cl.³ G03C 7/00, 1/40

U.S. Cl. 430—381 **15 Claims**

1. A recording material for colour photography, which contains, in at least one silver halide emulsion layer, at least one yellow coupler of the formula



in which R_1, R_2, R_3 and R_4 are alkyl, cycloalkyl or aryl, X_1, X_2, X_3 and X_4 are radicals detachable during the coupling reaction and Y_1 and Y_2 are halogen, alkyl, alkoxy, alkylmercapto, —CN, —COOH, carbalkoxy, $—NH_2$, $—NHR_5$, $—NR_5R_6$ or —NHCOR$_5$, in which R_5 and R_6 are alkyl or phenyl, Z is a divalent bridge member and r is 1 or 2.

15. A process, for colour photography, for the production of a yellow image by colour development of a recording material according to claim 1 which has been exposed image-wise.

4,238,565

SPECIFIC BINDING ASSAY WITH A PROSTHETIC GROUP AS A LABEL COMPONENT

William E. Hornby, Bray, and David L. Morris, Stoke Poges, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 917,961, Jun. 22, 1978. This application Jun. 4, 1979, Ser. No. 45,423

Int. Cl.³ C12Q 1/66; C12N 9/96, 11/02

U.S. Cl. 435—7 **66 Claims**

1. A homogeneous specific binding assay method for determining a ligand in a liquid medium, comprising the steps of:

forming a reaction mixture by contacting said liquid medium with

(a) reagent means including a labeled conjugate comprising, as label component, flavin adenine dinucleotide coupled to a binding component, such contact producing a binding reaction system in which a bound-species and a free-species of said labeled conjugate are formed, the proportion of the flavin adenine dinucleotide label component in said two formed species being a function of the presence of said ligand in said liquid medium, and

(b) apoglucose oxidase, the ability of the flavin adenine dinucleotide label component to combine with the apoglucose oxidase to produce the holoenzyme glucose oxidase being different in activity in said two formed species, and

determining the proportion of the flavin adenine dinucleotide label component in said two formed species by measuring glucose oxidase activity in said reaction mixture.

26. In a reagent means for determining a ligand in a liquid medium,

which means includes a conjugate having a label component and a binding component,

the improvement wherein said label component comprises flavin adenine dinucleotide and said means includes apoglucose oxidase, which combines with the flavin adenine dinucleotide label component to produce the holoenzyme glucose oxidase.

31. A test kit for determining a ligand in a liquid medium, comprising,

(1) a labeled conjugate comprising, as label component, flavin adenine dinucleotide coupled to said ligand or a binding analog thereof,

(2) a specific binding partner of said ligand, and

(3) apoglucose oxidase, which combines with the flavin adenine dinucleotide label component to produce the holoenzyme glucose oxidase.

4,238,566

XANTHINE OXIDASE

John P. Zikakis, Townsend, Del., assignor to University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 14,338, Feb. 23, 1979, abandoned, which is a division of Ser. No. 806,736, Jun. 15, 1977, Pat. No. 4,172,763. This application Jan. 21, 1980, Ser. No. 114,047

Int. Cl.³ C12N 9/02, 9/06

U.S. Cl. 435—189 **2 Claims**

1. A milk xanthine oxidase active enzyme concentrate having an average protein to flavin ratio as measured by E_{280nm} for protein and E_{450nm} for flavin ranging from 2.0 to 4.1, one symmetric peak by ion-exchange gel chromatography, shows a single protein band by polyacrylamide disc gel electrophoresis, and has a pH profile curve at approximate optimum temperature of the change in initial velocity of uric acid productivity against change in pH that shows two peaks, one at pH of about 8.3 and the other at pH of about 8.7.

4,238,567

PROCESS FOR PRODUCING FOOD PROTEINS FROM TRICHODERMA ALBUM

Thadee J. Staron, Noisy le Roi, France, assignor to Institut National de la Recherche Agronomique, Paris, France

Filed Jun. 2, 1978, Ser. No. 912,017

Claims priority, application France, Jun. 7, 1977, 77 17449

Int. Cl.³ C12N 1/22

U.S. Cl. 435—252 **7 Claims**

1. Process for producing food proteins, comprising the steps of: cultivating the fungus Trichoderma Album (I-032) in liquid nutrient media at a temperature below 28° C.; the pH of said media being kept at a value between about 3.7 and 4.8; the nitrogen content (atomic N) of said media being adjusted to a value of about 4 to 5%, with respect to the dry material; the dissolved oxygen content being from about 6 to 10 mg/l; said cultivation being carried out with stirring which does not cause lysis of the fungus; and under conditions such that foaming is avoided.

4,238,568

ROLLER BOTTLE

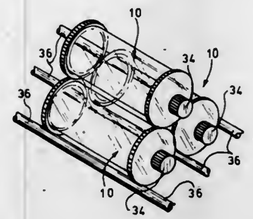
Robert W. Lynn, Oxnard, Calif., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Filed Oct. 10, 1978, Ser. No. 949,450

Int. Cl.³ C12M 1/24

U.S. Cl. 435—285 **14 Claims**

1. A roller bottle comprising a substantially cylindrical center portion having first and second ends, the first end of the center portion being inserted and sealed within a groove within a first cap portion, the second end of the center portion being inserted and sealed within a groove within a second cap portion, and at least part of the interior surfaces of the bottle being capable of allowing cell adhesion thereto.



4,238,569

PREPARATION OF HYDROPHILIC MATERIAL FOR GEL CHROMATOGRAPHY

Drahoslav Lim; Jiri Coupek; Miroslava Krivakova, and Svatopluk Pokorny, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Division of Ser. No. 825,922, Aug. 19, 1977, Pat. No. 4,184,020, which is a continuation of Ser. No. 281,288, Aug. 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 201,311, Nov. 23, 1971, abandoned. This application Nov. 24, 1978, Ser. No. 963,460

Claims priority, application Czechoslovakia, Nov. 24, 1970, 7919/70

Int. Cl.³ C08F 220/20

U.S. Cl. 521—52 **8 Claims**

1. A method for preparing insoluble globular hydrophilic copolymers of microreticulated internal structure comprising suspension polymerizing a mixture of a hydroxyalkyl methacrylate and a hydrophobic monomer selected from the group consisting of ethylene dimethacrylate and ethylene diacrylate, the hydroxyalkyl methacrylate being present in amount of at least 70% by weight of said mixture, in an aqueous medium in the presence of a polymerization initiator and an inert organic compound selected from the group consisting of cyclohexanol and cyclohexylamine, said inert compound being soluble in the monomer mixture and insoluble in water, the value of the partition coefficient of the hydrophilic monomer between water and the inert compound being limited to substantially zero, thus preventing extraction of the hydrophilic monomer into the aqueous phase, said inert organic compound being present in weight amount of from about 19.16% to about 19.26% of the weight of water present in said aqueous medium.

4,238,570

NOVEL EXPANDABLE PARTICLES OF A STYRENE POLYMER AND PROCESS FOR PREPARING THE SAME

Hideaki Shibata, and Michihisa Osawa, both of Ichihara, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 873,898, Jan. 31, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 14,716

Claims priority, application Japan, Feb. 4, 1977, 52-11341

Int. Cl.³ C08J 9/22

U.S. Cl. 521—57 **7 Claims**

1. Expandable particles of a styrene polymer containing a blowing agent, said particles having a surface coating consisting essentially of (i) an ester of a saturated fatty acid with a monohydric saturated aliphatic alcohol, or (ii) a triglyceride of a saturated fatty acid, said ester or triglyceride having no hydroxyl group in the molecule and being a solid at room temperature.

4,238,571

PROCESS FOR PRODUCING POROUS MATERIALS

Hiroshi Mano, and Koichi Okita, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 706,366, Jul. 19, 1976, abandoned. This application Jun. 22, 1978, Ser. No. 918,186

Claims priority, application Japan, Jul. 17, 1975, 52-88038; Jul. 17, 1976, 52-72063

Int. Cl.³ C08J 9/28

U.S. Cl. 521—62 **16 Claims**

1. A process for preparing a porous material having a fine pore size which comprises: (1) preparing a solution containing at least one resin, wherein the resin or resins are selected from the group consisting of a vinylidene fluoride/tetrafluoroethylene copolymer, a vinylidene fluoride homopolymer or a mixture thereof, and at least one solvent for said resin or resins and a non-solvent for said resin or resins, wherein said non-solvent has a partial vapor pressure lower than that of said at least one solvent, and is miscible with said solvent, provided that more than one resin and/or more than one solvent is present; (2) evaporating the solvent and the non-solvent from said solution, and thereby first forming a network of precipitated resin and thereafter bridging that network with subsequently precipitated resin.

4,238,572

FOAMABLE ABS POLYBLEND COMPOSITION

Richard L. Hoffman, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 16, 1979, Ser. No. 95,015

Int. Cl.³ C08J 9/02

U.S. Cl. 521—77 **11 Claims**

1. A foamable polymeric polyblend composition comprising:

A. a matrix copolymer of monoalkenyl aromatic and alkenyl nitrile monomers,

B. a grafted conjugated diene rubber grafted with said monomers, and

C. an alkyl half ester of a styrene/maleic anhydride copolymer as the blowing agent.

4,238,573

METHACRYLATE COATING COMPOSITIONS

Louis W. Hamilton, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 12, 1979, Ser. No. 11,716

Int. Cl.³ C08L 63/00

U.S. Cl. 525—110 **15 Claims**

1. A coating composition comprising 35–95% by weight of a methacrylate interpolymer, said interpolymer consisting essentially of 5–40% by weight of methyl methacrylate, 5–26% of at least one functionally substituted (meth)acrylic monomer carrying carboxy, amido, N-hydroxymethylamido, N-alkoxymethylamido hydroxy or oxirane functional groups, and at least one other monomer having a $CH_2=C<$ group, and about 4–20% by weight of a fully phosphated and amine- or ammonia-neutralized epoxyhydroxy polyether resin.

4,238,574

BLENDS OF THERMOPLASTIC POLYURETHANE ELASTOMERS AND ETHYLENE/CARBOXYLIC ACID COPOLYMERS FOR BLOW MOLDING

Ignazio S. Megna, Lebanon, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 26, 1979, Ser. No. 23,913

Int. Cl.³ C08L 75/00

U.S. Cl. 525—130 **9 Claims**

1. A polymer blend consisting essentially of (A) about 90–97 percent by weight of a thermoplastic polyurethane elastomer, said elastomer comprising the product of reaction of about one molar proportion of a polymeric glycol selected from polyester glycols, polyether glycols and polythioether glycols, optionally from about 1 to 10 molar proportions of one or more

low-molecular-weight aliphatic diols, and sufficient aromatic diisocyanate to react with essentially all of the hydroxyl groups of said polymeric glycol and said aliphatic diol, and (B) about 3–10 percent by weight of an ethylene/carboxylic acid copolymer prepared from ethylene and about 1.5 to about 30 weight percent of acrylic or methacrylic acid, the carboxyl groups of which are about 10% to 100% neutralized with an alkali metal, alkaline earth metal, or zinc ion.

4,238,575

STABILIZED COMPOSITIONS CONTAINING POLYMERIC THIOSYNERGISTS

Eduard K. Kleiner, New York, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 902,454, May 3, 1978, abandoned, which is a continuation of Ser. No. 697,094, Jun. 17, 1976, abandoned. This application Feb. 12, 1979, Ser. No. 11,275

Int. Cl.³ C08L *33/14, 23/00*

U.S. Cl. 525—212 **6 Claims**

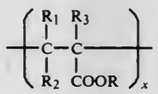
1. A stabilized composition which comprises

(a) a polyolefin,

(b) 0.005 to 5% by weight of the polyolefin (a) of a phenolic antioxidant, and

(c) 0.005 to 5% by weight of the polyolefin (a) of a polymeric thiosynergist with the unit structural formula I

(I)



wherein

R_1 is hydrogen,

R_2 is hydrogen,

R_3 is methyl,

R is $—CH_2CH_2—S—R_4$

R_4 is alkyl of 2 to 12 carbon atoms, and

X is an integer from 25 to 90.

4,238,576

ORTHOESTERS AS COUPLING AGENTS FOR PRODUCING NOVEL POLYMERS

William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 22, 1979, Ser. No. 5,625

Int. Cl.³ C08F *8/00, 8/06, 8/14*

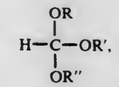
U.S. Cl. 525—271 **16 Claims**

1. A method of producing a coupled polymer comprising:

(a) forming living polymer molecules in which an alkali metal atom is attached to a terminal monovinylarenyl group in said living polymer molecules, and

(b) then adding an orthoester and coupling said living polymer molecules with said orthoester so as to form said coupled polymer,

said orthoester having the formula



wherein R, R′, and R″ are the same or different and are individually selected from alkyl groups, and

said coupled polymers being prepared from monomers selected from the group consisting of monovinylarenes and a combination of monovinylarenes and conjugated dienes.

4,238,577

NOVEL ELASTOMER COMPOSITION AND PROCESSES THEREFOR

Volker D. Arendt, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 8, 1978, Ser. No. 967,814

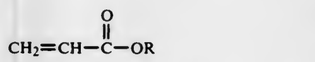
Int. Cl.³ C08L *27/00, 31/02, 63/00*

U.S. Cl. 525—286 **14 Claims**

1. A vulcanizable elastomeric composition comprising a copolymer of:

(a) 89 to 40%, by weight, based on the total weight of the composition, of an acrylic acid ester, or mixture of acrylic acid esters, represented by the formula

(I)



wherein R represents C_1–C_4 alkyl, $—CH_2—CH_2OR'$, wherein R′ represents C_1–C_4 alkyl, or $—CH_2CH_2CN$;

(b) 10 to 45%, by weight, same basis, of an α,β-unsaturated diester selected from bis(2-methoxyethyl)-fumarate, bis(2-methoxyethyl)maleate, or mixtures thereof;

(c) 1 to 10%, by weight, same basis, of an unsaturated monomer containing either a halogen atom or an epoxy group; and

(d) less than about 5%, by weight, same basis, of polybutadiene, polychloroprene, or polyisoprene having a molecular weight of from about 500 to 4000.

4,238,578

ELASTOMER WITH IMPROVED HEAT AND OIL RESISTANCE BASED ON MODIFIED CHLORINATED POLYETHYLENE

Yong S. Rim, Woodbridge; Walter Nudenberg, Newtown; Robert Miller, Woodbridge, and Phillip J. Cangelosi, Waterbury, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 17,297, Mar. 5, 1979. This application May 21, 1979, Ser. No. 40,783

Int. Cl.³ C08L *23/28, 51/04*

U.S. Cl. 525—309 **15 Claims**

1. A mixed copolymerizate vulcanizable to an elastomeric state characterized by heat and oil resistance comprising:

(A) a chlorinated polyethylene polymer spine; and

(B) at least one acrylic ester monomer graft copolymerized in the presence of (A) in an amount sufficient to provide an ester group content (—COO—) in the mixed copolymerizate of from 25 to 40% by weight, said acrylic ester monomer being one whose homopolymer has a glass transition temperature of not greater than 6° C.

4,238,579

VINYLAMINE AROMATIC COPOLYMERS AND SALTS THEREOF

William J. Leonard, Jr., San Francisco, and Robert E. Wingard, Jr., Palo Alto, both of Calif., assignors to Dynapol, Palo Alto, Calif.

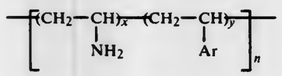
Filed May 18, 1979, Ser. No. 40,359

Int. Cl.³ C08F *212/08, 8/12, 220/54*

U.S. Cl. 525—330 **30 Claims**

1. A copolymer consisting essentially of randomly distributed repeating units represented by the formula

I

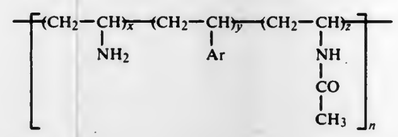


wherein Ar is an aromatic selected from the group consisting of phenyl and phenyl substituted with a member of the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy and halo; x and y are numbers greater than zero which total 1.0, the ratio of x to y from about

0.05:0.95 to about 0.95:0.05; and n is an integer from about 14 to about 10,000.

9. A copolymer consisting essentially of randomly distributed repeating units represented by the formula

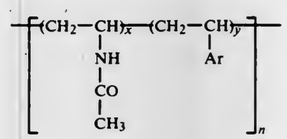
II



wherein Ar is an aromatic selected from the group consisting of phenyl and phenyl substituted with a member of the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy and halo; x, y and z are numbers greater than zero which total 1.0, the ratio of x to z being from about 0.1:0.9 to about 0.9:0.1; the ratio of (x+z) to y from about 0.05:0.95 to 0.95:0.05, and n is an integer from about 14 to about 10,000.

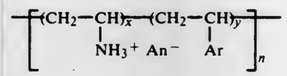
17. A copolymer consisting essentially of randomly distributed repeating units represented by the formula

III



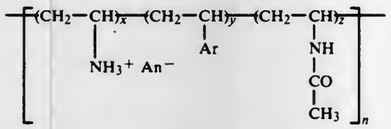
wherein Ar is an aromatic selected from the group consisting of phenyl and phenyl substituted with a member of the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy and halo; x and y are numbers greater than zero which total 1.0, the ratio of x to y from about 0.05:0.95 to about 0.95:0.05; and n is an integer from about 14 to about 10,000.

25. A copolymer consisting essentially of randomly distributed repeating units represented by the formula



wherein Ar is an aromatic selected from the group consisting of phenyl and phenyl substituted with a member of the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy and halo; x and y are numbers greater than zero which total 1.0, the ratio of x to y from about 0.05:0.95 to about 0.95:0.05; and n is an integer from about 14 to about 10,000 and An^- is the anion of a strong acid selected from the group consisting of hydrochloric, sulfuric, p-toluene sulfonic, hydrobromic and trifluoroacetic acid.

28. A copolymer consisting essentially of randomly distributed repeating units represented by the formula



wherein Ar is an aromatic selected from the group consisting of phenyl and phenyl substituted with a member of the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy and halo; x, y and z are numbers greater than zero which total 1.0, the ratio of x to 2 being from 0.9:0.1 to 0.1:0.9, the ratio of (x+z) to y from about 0.05:0.95 to 0.95:0.05; and n is an integer from about 14 to about 10,000 and An^- is the anion of a strong acid selected from the group consisting of hydrochloric, sulfuric, p-toluene sulfonic, hydrobromic and trifluoroacetic acid.

4,238,580

PROCESS OF FORMING URETHANE-COUPLED POLYMERS OF QUINONE-COUPLED POLYPHENYLENE OXIDES

George R. Loucks, Scotia, and Dwain M. White, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 19, 1978, Ser. No. 907,589

Int. Cl.³ C08G *65/48*

U.S. Cl. 525—395 **9 Claims**

1. A process of forming urethane-coupled polymers of a quinone-coupled polyphenylene oxide which comprises contacting in a high fluid stress reaction medium (A) a polyfunctional isocyanate with (B) a quinone-coupled polyphenylene oxide having an average hydroxyl group per molecule value greater than zero including 2.0 or less, and, optionally, a (C) polyphenylene oxide having an average hydroxyl group per molecule value greater than zero including 1.0 or less.

4,238,581

URETHANE-COUPLED BLOCK POLYMERS OF QUINONE-COUPLED POLYPHENYLENE OXIDES

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 19, 1978, Ser. No. 907,590

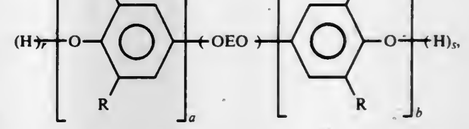
Int. Cl.³ C08G *65/48*

U.S. Cl. 525—395 **19 Claims**

1. A urethane-coupled block polymer of an isocyanate of the formula:

$$R''—(NCO)_c$$

where c is a number at least equal to 2, R″ is a C_{2-8} ethylene, a phenylene, a biphenylene, a bis(phenylene) C_{1-8} alkane, or a biphenylene oxide, and a quinone-coupled polyphenylene oxide of the formula:



wherein independently each R is hydrogen, a hydrocarbon radical, a halohydrocarbon radical, a hydrocarbonoxy radical or a halohydrocarbonoxy radical, the sum of r and s being from about 0.001 to about 2.0, either a or b is at least equal to 1, the sum of a plus b is at least equal to 10, —(OEO)— is a divalent quinone residue, and E is a divalent arene radical.

4,238,582

HYDROLYSIS-RESISTANT COPOLYETHER-ESTERAMIDES

Gerard Deleens, Orsay; Bernard Guerin, Bures-sur-Yvette, and Claude Poulain, Orsay, all of France, assignors to Ato Chimie, Courebevoie, France

Continuation of Ser. No. 870,578, Jan. 18, 1978, abandoned. This application Jul. 5, 1979, Ser. No. 54,976

Claims priority, application France, Jan. 24, 1977, 77 01886

Int. Cl.³ C08L *71/02, 77/00*

U.S. Cl. 525—430 **11 Claims**

1. Hydrolysis-resistant sequential moldable and extrudable linear aliphatic copolyether-esteramides, wherein one chain end is constituted by a hydrocarbon radical while the other chain end is constituted by a hydroxyl group, said copolyether-esteramides being obtained by polycondensation of linear aliphatic polyamide sequences having a molecular weight comprised between 100 and 15,000, the chain ends of which are

constituted by dicarboxyl groups and of ω-ω'dihydroxyl polyoxyalkylene sequences having a molecular weight comprised between 100 and 6000, in the presence of 0.2 to 15% of a linear aliphatic monocarboxylic polyamide having a molecular weight comprised between 300 and 15,000 and the chain end of which is constituted by a hydrocarbon radical.

4,238,583

THERMOSETTABLE POLYESTER RESIN COMPOSITIONS

Michael A. Tobias, Bridgewater, and Conrad L. Lynch, Edison, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 928,341, Jul. 27, 1978. This application Jul. 20, 1979, Ser. No. 58,966

Int. Cl.³ C08G *63/76, 63/18*

U.S. Cl. 525—443 **25 Claims**

1. A thermosettable polyester resin derived from a reaction mixture comprising:
(a) between about 40 percent and about 60 percent by weight of a benzenedicarboxylic acid component;
(b) between about 2 percent and about 18 percent by weight of a trihydroxy alkyl component;
(c) between about 9 percent and about 23 percent by weight of a short chain alkylene diol component having four or fewer carbon atoms in the primary carbon chain between the hydroxyl moieties;
(d) between about 9 percent and about 30 percent by weight of a dihydroxy alkyl compound having four to ten carbon atoms in the primary carbon chain between the hydroxyl moieties; and
(e) from 0 percent to about 10 percent by weight of an alkyl dicarboxylic acid component;
(f) said polyester resin having a number average molecular weight of from about 400 to about 5000, a combined acid and hydroxyl value of about 40 to about 250 milligrams of KCH per gram of polyester, and a glass transition temperature of about −15° to +25° C.

14. A coating composition comprising the polyester resin of claim 1 or 3, between about 5 weight percent and about 25 weight percent of an aminoplast cross-linking agent on resin solids, between about 0 and about 1.0 weight percent of an acid catalyst on resin solids, and an inert organic solvent in an amount sufficient to provide a solids content of between about 35 weight percent and about 55 weight percent, based on the weight of the composition.

4,238,584

BLOCK POLYMERS OF POLYPHENYLENE OXIDE AND POLYSTYRENE

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,761

Int. Cl.³ C08F *93/00*

U.S. Cl. 525—534 **14 Claims**

1. A bis-formate-coupled block polymer comprising a polyvalent bis-formate radical, a divalent quinone-coupled polyphenoxy radical, and a divalent bis(oxyarylenethio)polystyrene radical.

4,238,585

ARYL AMINE TERMINATED POLYSULFIDE POLYMERS, RELATED COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Filed Aug. 10, 1979, Ser. No. 66,214

Int. Cl.³ C08G *75/14*

U.S. Cl. 525—535 **9 Claims**

1. A compound of the formula:

$$(H_2N)_a—Ar—S_x+R—S_x+_nR\text{-}Y$$

wherein Y is —SH or $—S_x—Ar—(NH_2)_a$; Ar is an a +1 valent radical derived by removal of a +1 nuclear hydrogens from a substituted or unsubstituted aryl moiety either carbocyclic or heterocyclic and having 1 or 2 aromatic rings; R is a hydrocarbon, oxahydrocarbon, or thiahydrocarbon radical; a is 1 or 2; n is about 4 to about $k \times 10^3$ wherein k is 1 to about 10 and x is from 1.8 to about 4.

4,238,586

GROUP VA AND VII OXYGEN MINERAL ACIDS AS CATALYST MODIFIERS

Nikolaous K. Balint, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 947,086, Sep. 29, 1978. This application May 3, 1979, Ser. No. 35,602

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—137 **14 Claims**

1. A polymerization process comprising contacting, under polymerization conditions, propylene or a mixture of propylene and one or more copolymerizable alpha-olefins with a catalyst comprising a titanium trihalide; an organoaluminum compound; and an effective amount of a Group Va or VII oxygen mineral acid in a molar ratio from about 0.01 to 1 to about 0.7 to 1 whereby the amount of n-hexane soluble polymeric product produced is decreased.

4,238,587

HEAT CURABLE COMPOSITIONS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 58,318, Jul. 17, 1979, which is a continuation-in-part of Ser. No. 962,997, Nov. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 861,127, Dec. 16, 1977, abandoned. This application Nov. 28, 1979, Ser. No. 98,096

The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.

Int. Cl.³ C08J *4/44*

U.S. Cl. 526—192 **21 Claims**

1. Heat curable compositions comprising
(A) a cationically polymerizable organic material,
(B) a diaryliodonium salt and
(C) a member selected from a copper chelate and a mixture of a copper chelate and a reducing agent.

4,238,588

METHOD FOR THE PREPARATION OF POLYMERS AND COPOLYMERS OF VINYL MONOMERS BY ANIONIC POLYMERIZATION

Lubomir Lochman, and Jiri Trekoval, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Dec. 19, 1978, Ser. No. 970,987

Claims priority, application Czechoslovakia, Dec. 29, 1977, 8999-77

Int. Cl.³ C08F *4/46, 4/48, 4/56, 4/58*

U.S. Cl. 526—217 **7 Claims**

1. A method for preparation of polymers and copolymers based on olefins substituted by polar groups, which are selected from the group comprising ester, nitrile, and aryl groups, or based on dienes, wherein the polymerization, the grafting polymerization, or the copolymerization is initiated by the system formed by mixing of an organic amide of lithium, sodium, or potassium, derived from a primary or secondary amine or polyamine, or from a tertiary polyamine which, however, contains at least one primary or secondary amino group in the molecule, which has its nitrogen atoms bonded with carbon atoms and/or silicon atoms and contains 1 to 2090 carbon atoms and 1 to 1045 nitrogen atoms in the molecule or which has the molecular weight up to 45,000, with an alkoxide of the same or other alkaline metal derived from an alcohol

with the straight, branched, or cyclic chain of 3 to 16 carbon atoms, while the polymerization, the grafting polymerization, or the copolymerization is carried out at the molar ratio of the monomer and the organic amide of alkaline metal 5 to 1500 and the molar ratio of the alkaline metal alkoxide and the organic amide of alkaline metal 0.5 to 10 hydrocarbons or ether solvents.

4,238,589

FLUOROGENIC MATERIALS AND LABELING TECHNIQUES

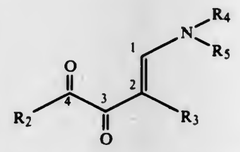
Roy Cleeland, Jr., Short Hills; Emanuel Grunberg, North Caldwell; Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 801,952, May 31, 1977, abandoned, which is a division of Ser. No. 668,179, Mar. 18, 1976, Pat. No. 4,045,487, which is a division of Ser. No. 590,655, Jun. 26, 1975, Pat. No. 3,969,373, which is a continuation-in-part of Ser. No. 338,019, Mar. 5, 1973, abandoned. This application Dec. 4, 1978, Ser. No. 966,527

Int. Cl.³ C07C *101/42, 101/00*

U.S. Cl. 562—442 **3 Claims**

1. A compound of the formula



wherein R_2 is phenyl, R_3 is phenyl substituted with 1 or more carboxy or carboxy lower alkyl groups and R_4 and R_5 taken independently are each lower alkyl and taken together with the nitrogen atom form a 5- or 6-membered heterocyclic ring having at the most one additional heteroatom selected from the group consisting of piperidino, morpholino, pyrrolidino, piperazino, imidazolidino and pyrazolidino.

4,238,590

PROCESS FOR THE PRODUCTION OF SILICIC ACID HETEROPOLYCONDENSATES USEFUL AS MEMBRANES AND ADSORBENTS

Horst Scholze, Würzburg, and Helmut Schmidt, Höchberg, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,560

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758415

Int. Cl.³ C08G *77/56*

U.S. Cl. 528—5 **22 Claims**

1. A process for the production of a silicic acid heteropolycondensate porous adsorbent, comprising: condensing
(a) at least one hydrolysable silicic acid derivative corresponding to the general formula:

$$SiR_4 \quad (I)$$

wherein R represents a group selected from the group consisting of hydrogen, halogen, alkoxy and $—NR'_2$, wherein R' is hydrogen lower alkyl and combinations thereof, with the proviso that not all the radicals R are hydrogen;
(b) at least one substituted silane corresponding to the general formula:

$$SiR_nR''_{(4-n)} \quad (II)$$

wherein R is as defined above, R'' represents a group selected from the group consisting of alkyl, alkenyl, aryl and aralkyl and n is an integer of from 1 to 3;
(c) optionally at least one functional silane corresponding to the general formula:

$$SiR_n(R'''Y)_{(4-n)} \quad (III)$$

wherein R is as defined above, R''' represents a group selected from the group consisting of alkylene, phenylene, alkylphenylene and alkylenephenylene, Y represents a group selected from the group consisting of halogen, amino, anilino, aldehyde, keto, carboxy, hydroxy, mercapto, cyano, hydroxyphenyl, diazo, carboxylic acid alkyl ester, sulphonic acid ($—SO_3H$) and phosphoric acid ($—PO_3H_2$) groups and n is an integer of from 1 to 3; and/or
(d) optionally at least one compound selected from the group consisting of substantially involatile oxides soluble in the reaction medium and compounds of elements of Groups Ia to Va, IVb and Vb of the Periodic System forming a substantially involatile oxide in the presence of at least the quantity of water stoichiometrically required for hydrolysis and in an organic solvent in the presence of a condensation catalyst in a single stage until condensation is complete, the quantities in which components (a) to (d) are used being selected in such a way that the silicic acid heteropolycondensate formed contains, based on oxides, from 50 to 90% by weight of component (a), from 10 to 50% by weight of component (b), from 0 to 15% by weight of component (c) and from 0 to 40% by weight of component; and thereafter removing said organic solvent and drying said polycondensate, thereby producing a porous adsorbent having a porosity of from 15 to 35% and a BET surface area of from 40 to 1200 m^2/g.

4,238,591

NOVEL COPOLYMERS OF IMIDO MONOMER/HYDROXYLATED ORGANOSILICON COMONOMER

Robert Cassat, Ternay, and Bruno Vignando, Saint-Fons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

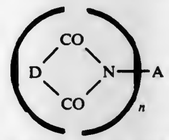
Filed Apr. 10, 1979, Ser. No. 28,893

Claims priority, application France, Apr. 13, 1978, 78 11450

Int. Cl.³ C08G *77/04*

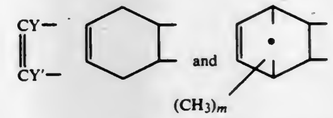
U.S. Cl. 528—27 **29 Claims**

1. An imido polymer, comprising a copolymer of:
(1) an imido monomer selected from the group consisting of
(a) an oligo-imide having the structural formula (I):

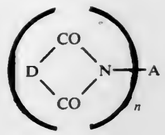


(I)

wherein D is a divalent radical selected from the group comprising those of the structural formulae:



wherein Y and Y', which are identical or different, are each H, CH_3 or Cl and m is equal to 0 or 1, the symbol A represents an organic radical of valency n, containing up to 50 carbon atoms, and n represents a number equal to at least 1.5 and at most 5; (b) a mixture of an oligo-imide having the structural formula:



(I)

wherein D, A and n are as defined above, together with a polyamine of the structural formula (II):

$$G(NH_2)_z \quad \text{(II)}$$

wherein G is an organic radical of valency z and z is an integer equal to at least 2; and (c) the reaction product of the said oligo-imide (I) with the said polyamine (II); with

(2) an hydroxylated organosilicon comonomer comprising at least one hydroxyl function covalently bonded to a silicon atom.

4,238,592

METHOD FOR PRODUCTION OF DUROPLASTIC, SINGLE-COMPONENT POLYURETHANES

Felix Schmitt, Herten, and Günter Kriebel, Herne, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Recklinghausen, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,423

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732775

Int. Cl.[3] **C08G** *18/80;* **C08K** *5/02, 5/07, 5/10*

U.S. Cl. 528—45 **25 Claims**

1. A method for the production of single-component polyurethane lacquers which comprises:

reacting (1) a polyester having an OH-functionality of at least 2, an OH-count of 70–150 mg KOH/g and a molecular weight of about 800–2500, derived from (A) an acid selected from the group consisting of ortho-, meta-, and para-dicarboxylic acids, 1,2,5-benzenetricarboxylic acid, 1,3,5-benzenetricarboxylic acid, C_1–C_4 alkyl esters thereof and mixtures thereof and (B) a glycol with a heteroatom-free chain which chain consists of 5–8 C atoms with

(2) a dimethylketoxime-blocked cycloaliphatic polyisocyanate; wherein the equivalence ratio of said OH groups to said blocked isocyanate group is 1.0:0.7 to 1.0:1.1.

4,238,593

METHOD FOR PRODUCTION OF A HIGH MOLECULAR WEIGHT POLYESTER PREPARED FROM A PREPOLYMER POLYESTER HAVING AN OPTIMAL CARBOXYL CONTENT

Ben Duh, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 12, 1979, Ser. No. 47,849

Int. Cl.[3] **C08G** *63/26;* **C07D** *211/30*

U.S. Cl. 528—272 **45 Claims**

1. A method for the production of a high molecular weight, high purity polyester comprising the steps of

(a) reacting a glycol and a dicarboxylic compound selected from the group consisting of dicarboxylic acids and dicarboxylic esters to form a polyester prepolymer having an intrinsic viscosity from about 0.40 dl/g to about 0.62 dl/g and having a carboxyl end group content from about 18% to about 40% of total end groups,

said dicarboxylic acids selected from the group consisting of alkyl dicarboxylic acids having a total of from 2 to 16 carbon atoms, and aryl dicarboxylic acids containing a total of from 8 to 16 carbon atoms,

said dicarboxylic esters selected from the group consisting of alkyl esters having from 2 to 20 carbon atoms and an alkyl substituted aryl ester having from 10 to 20 carbon atoms, said glycol selected from the group consisting of glycols having 2 to 10 carbon atoms, and

(b) polymerizing in a solid state in a static bed, said polyester prepolymer so that a high molecular weight, high purity polycondensed polyester is formed, said polycondensed polyester having an intrinsic viscosity of at least 0.70 dl/g and having an acetaldehyde impurity concentration less than about 3.0 parts per million.

4,238,594

CATHODICALLY DEPOSITABLE URETHANE COMPOSITIONS AND PROCESS FOR SAME

Georgios Pampouchidis, Graz, Austria, assignor to Vianova Kunstharz, A.G., Vienna, Austria

Filed Jul. 19, 1977, Ser. No. 816,936

Claims priority, application Austria, Jul. 19, 1976, 5284/76; Oct. 29, 1976, 8068/76; Oct. 29, 1976, 8069/76; Dec. 20, 1976, 9455/76

Int. Cl.[3] **C08G** *18/12, 18/71, 18/62*

U.S. Cl. 528—69 **28 Claims**

1. Process for producing self-crosslinking coating compositions for cathodically depositable electrodeposition paints including the steps of reacting (A) an unsaturated copolymer or a polycondensation reaction product or a polyaddition reaction product or mixture thereof carrying at least 0.5 ethylenically unsaturated bonds on a side chain or at the end of a chain for each 1000 molecular weight units; with (B) a sufficient amount to render the coating composition water dilutable when reacted with an inorganic or organic acid, of a reaction product carrying one free isocyanate group and which is obtained from aromatic or aliphatic or cycloaliphatic polyisocyanates or mixtures thereof and an amine of the general formula



wherein R is an alkanol or hydroxyphenyl radical and R_1 and R_2 are alkyl, aryl or cycloalkyl radicals; and reacting the reaction product of (A) and (B) with an inorganic acid or an organic acid or mixtures thereof to provide a water-soluble coating composition.

4,238,595

MODIFIED PHENOLIC ALDEHYDE RESIN TO PRODUCE AN IMPROVED ADHESIVE COATING AND METHOD OF MAKING SAME

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 956,455, Oct. 31, 1978. This application Jun. 8, 1979, Ser. No. 47,524

Int. Cl.[2] **C08G** *14/06*

U.S. Cl. 528—158 **7 Claims**

1. A phenolic aldehyde resin comprising: a phenolic compound, a thionamide having 1 to 6 carbon atoms or said thionamide in combination with urea or thiourea in an amount to about 1 to about 10 weight percent of the resin, and an aldehyde selected from the group consisting of formaldehyde, paraformaldehyde, acetaldehyde, which is prepared by:

a. reacting the phenolic compound with a thionamide having 1 to 6 carbon atoms or thionamide mixture of said thionamide and urea or thiourea and aldehyde in an amount to give a mole ratio of phenolic compound to aldehyde in the range of about 0.2 to about 2.0 and a mole ratio of phenolic compound to thionamide or thionamide mixture in the range of about 0.2 to about 2.0 and a mole ratio of the thionamide or thionamide mixture to aldehyde in the range of about 0.5 to about 5.0 at an acid or a basic pH at a temperature in the range of about 0° C. to about 100° C.

and for a period of time in the range of about 1 hr. to about 20 hrs.

4,238,596

PROCESS FOR OBTAINING COPOLYESTER-CARBONATES

Clayton B. Quinn, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 26, 1979, Ser. No. 33,390

Int. Cl.[3] **C08G** *63/64*

U.S. Cl. 528—179 **16 Claims**

1. A process for producing copolyester-carbonates comprising

directly polymerizing in a solvent system at a pH level of about 10–12 a dihydric phenol, an acid dichloride and a chain stopper to form a reaction medium, the molar ratio of said dihydric phenol to said acid dichloride being in the range of about 90:10–55:45;

adding a carbonate precursor to said reaction medium while maintaining the pH of said reaction medium at about 10–12;

continuing the addition of said carbonate precursor until said reaction is complete; and

directly recovering from said solvent system a copolyester-carbonate.

4,238,597

PROCESS FOR PRODUCING COPOLYESTER-CARBONATES

Ronald L. Markezich, and Clayton B. Quinn, both of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 26, 1979, Ser. No. 33,393

Int. Cl.[3] **C08G** *63/64*

U.S. Cl. 528—179 **18 Claims**

1. A process for producing copolyester-carbonates comprising:

reacting in a solvent system at a first pH level of about 9–12 a dihydric phenol, an acid dichloride and phenol to form a reaction medium, the molar ratio of said dihydric phenol to said acid dichloride being in the range of about 90:10–55:45;

adding a chain stopper to said reaction medium;

adjusting the pH of said reaction medium to a second pH level of about 4–7;

adding a carbonate precursor to said reaction medium;

adjusting the pH of said reaction medium to a third pH level of about 9–12;

continuing the addition of said carbonate precursor until said reaction is complete; and

recovering from said solvent system a copolyestercarbonate.

4,238,598

POLYESTER OF PARA-HYDROXY BENZOIC ACID, 1,2-BIS(PARA-CARBOXY PHENOXY)ETHANE, TEREPHTHALIC ACID AND HYDROQUINONE CAPABLE OF FORMING AN ANISOTROPIC MELT WHICH READILY UNDERGOES MELT PROCESSING

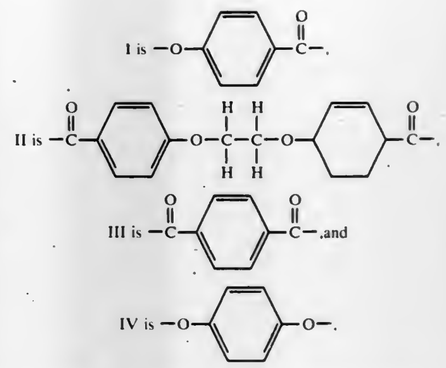
Nicolai A. Favstritsky, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed Feb. 8, 1979, Ser. No. 10,393

Int. Cl.[3] **C08G** *63/60, 63/66*

U.S. Cl. 528—193 **7 Claims**

1. A melt processable polyester capable of forming an anisotropic melt phase at a temperature no higher than approximately 300° C. consisting essentially of the recurring moieties I, II, III, and IV wherein:



and wherein said polyester comprises approximately 30 to 50 mole percent of moiety I, approximately 17 to 25 mole percent of moiety II, approximately 7.5 to 12.5 mole percent of moiety III, and approximately 25 to 35 mole percent of moiety IV, with the proviso that the total molar concentration of moieties II and III is substantially identical to that of moiety IV.

4,238,599

POLYESTER OF PARA-HYDROXY BENZOIC ACID, 1,2-BIS(PARA-CARBOXY PHENOXY)ETHANE, TEREPHTHALIC ACID AND SUBSTITUTED HYDROQUINONE CAPABLE OF FORMING AN ANISOTROPIC MELT WHICH READILY UNDERGOES MELT PROCESSING

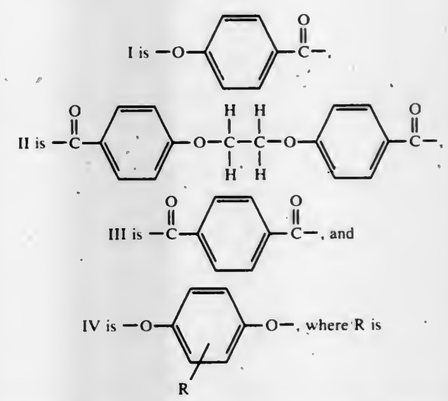
Jeffrey T. Langley, Pineville, and Robert M. Mininni, Charlotte, both of N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Filed Feb. 8, 1979, Ser. No. 10,392

Int. Cl.[3] **C08G** *63/60, 63/66*

U.S. Cl. 528—193 **22 Claims**

1. A melt processable polyester capable of forming an anisotropic melt phase at a temperature no higher than approximately 320° C. consisting essentially of the recurring moieties I, II, III, and IV wherein:



methyl, chloro, bromo, or mixtures thereof, and is substituted for a hydrogen atom present upon the aromatic ring, and wherein said polyester comprises approximately 20 to 60 mole percent of moiety I, approximately 5 to 18 mole percent of moiety II, approximately 5 to 35 mole percent of moiety III, and approximately 20 to 40 mole percent of moiety IV.

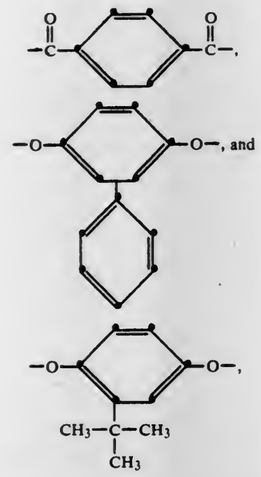
4,238,600

COPOLYESTERS DERIVED FROM TEREPHTHALIC ACID, PHENYLHYDROQUINONE AND T-BUTYLHYDROQUINONE

Winston J. Jackson, Jr., and Herbert F. Kuhfuss, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,852
Int. Cl.³ C08G *63/18*
U.S. Cl. 528—193 **4 Claims**

1. Copolyester having a film- and fiber-forming molecular weight and consisting essentially of the following divalent radicals



wherein (C) is present in the amount of about 25 to 65 mole percent based on (B) and (C).

4,238,601

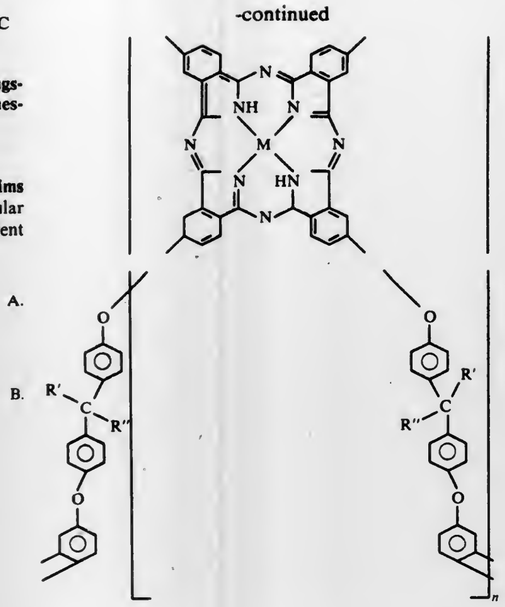
PERFLUORINATED ALIPHATIC PHENOXY BISORTHODINITRILES AND POLYPHTHALOCYANINES THEREFROM

Teddy M. Keller, Alexandria, Va., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1979, Ser. No. 51,569
Int. Cl.³ C08G *73/06*
U.S. Cl. 528—206 **7 Claims**

1. A polyphthalocyanine resin having recurring units of the general formula

-continued



wherein R′ and R″ are perfluorinated alkyls having from 1 to 4 carbon atoms, the phenyl groups are attached at the paraposition, and M is a metal or salt or a mixture thereof.

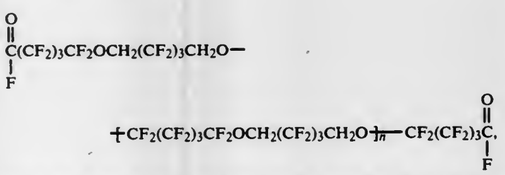
4,238,602

FLUORINE CONTAINING POLYETHERS

Warren R. Griffin, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 748,582, Dec. 8, 1976. This application Apr. 26, 1979, Ser. No. 33,609
Int. Cl.³ C08G *63/68*; C07C *69/74, 41/00*
U.S. Cl. 528—299 **2 Claims**

1. A fluorine-containing polyether having the following structural formula:



where n is an integer representing the number of recurring units.

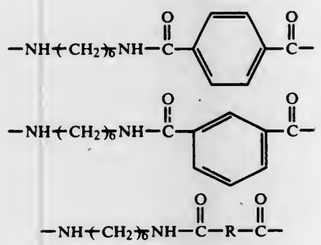
4,238,603

POLYAMIDES DERIVED FROM HEXAMETHYLENE DIAMINE, TEREPHTHALIC ACID, ISOPHTHALIC ACID AND A C_5 TO C_{10} ALIPHATIC DIBASIC ACID

Richard D. Chapman; Donald A. Holmer; Oscar A. Pickett, Jr., and James H. Saunders, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 749,184, Dec. 9, 1976, abandoned, which is a continuation of Ser. No. 631,244, Nov. 12, 1975, abandoned. This application May 19, 1977, Ser. No. 798,502
Int. Cl.³ C08G *69/26*
U.S. Cl. 528—339 **4 Claims**

1. A fiber-forming random copolyamide consisting essentially of the following recurring units



wherein R is a C_3 to C_{10} alkylene and is the same or different in successive (C) units and wherein from 30 to 40 percent of the recurring units are (B) units, from 2–15 percent of the recurring units are (C) units, and the remainder of the recurring units are (A) units, said copolyamide in fiber form being characterized in having a modulus ranging from about 80 to 110 grams per denier measured using a constant extension rate of 120% per minute with a gauge length of 25 centimeters.

4,238,604

PROCESS FOR PREPARING AN ODOR-FREE ACETYLATED STARCH

Jay H. Katcher, Dover, Del., and Joseph A. Ackilli, South Salem, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 6, 1978, Ser. No. 949,177
Int. Cl.³ C08B *31/02*
U.S. Cl. 536~~4~~—109 **16 Claims**

1. A process for making a dry acetylated cross-linked starch in which the formation of the acetyl odor and flavor are reduced or eliminated, which comprises: cross-linking and acetylating a starch to an acetyl substitution of not more than 2.5%, thereafter washing the starch sufficiently to reduce the ash content to below 0.20%, and thereafter drying the starch.

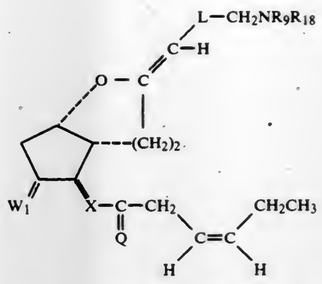
4,238,605

2-DECARBOXY-2-AMINOMETHYL-9-DEOXY-5,9α-EPOXY-4,5-CIS-17,18-TETRADEHYDRO-PGF$_1$ COMPOUNDS

Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,982, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,458
Int. Cl.³ C07D *311/74*
U.S. Cl. 542—422 **12 Claims**

1. A compound of the formula



wherein W_1 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, α—CH_2OH:β—H;
wherein L is
(1) —$(CH_2)_d$—$C(R_2)_2$, or
(2) —CH=CH—,
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,
wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl or 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive;
wherein Q is oxo, α—H:β—H, α—OH:β—R_8 or α—R_8:β—OH
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—;
including the lower alkanoates thereof.

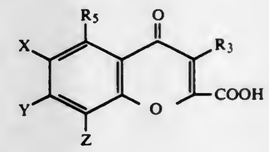
4,238,606

TRICYCLIC MONO-CHROMONE-2-CARBOXYLIC ACIDS

Roger C. Brown, Loughborough; Richard Hazard, Cropston, and John Mann, Long Whatton, all of England, assignors to Fisons Limited, London, England

Division of Ser. No. 869,654, Jan. 16, 1978, Pat. No. 4,159,273, which is a continuation of Ser. No. 632,217, Nov. 17, 1975, abandoned. This application May 3, 1979, Ser. No. 35,739
Claims priority, application United Kingdom, Nov. 30, 1974, 51994/74; Dec. 12, 1974, 53704/74; May 16, 1975, 21043/75; May 16, 1975, 21044/75
Int. Cl.³ C07D *311/22*
U.S. Cl. 542—441 **9 Claims**

1. A compound of the formula



in which
R_3 represents hydrogen, or alkyl C 1 to 6,
R_5 represents hydrogen, hydroxy, alkoxy C 1 to 6, alkanoyloxy C 2 to 6, alkenyloxy C 2 to 6, nitro, —NR_1R_2, halogen, alkyl C 1 to 6, hydroxy-alkyl C 1 to 6, or hydroxyalkoxy C 1 to 6;
an adjacent pair of X, Y and Z form an —$O(CH_2)_3$— chain which is unsubstituted or substituted by one or two C 1 to

6 alkyl groups, and the remaining substituent X or Z represents alkenyl C 2 to 6 unsubstituted or substituted by phenyl; halogen; cyclohexylmethyl, cyclopentylmethyl, or cyclopentylethyl; or alkyl C 1 to 9 unsubstituted or substituted by one or more of the groups hydroxy, halogen, carbonyl oxygen, phenyl, or alkoxy C 1 to 6;

or, when an adjacent pair of X, Y and Z form said chain substituted by one or two C 1 to 6 alkyl groups the remaining substituent X or Z is hydrogen, and

R_1 and R_2, which may be the same or different, are each hydrogen or alkyl C 1 to 6,

or a pharmaceutically acceptable salt, ester or amide thereof.

4,238,607

PYRIDOPYRROLO BENZHETEROCYCLES

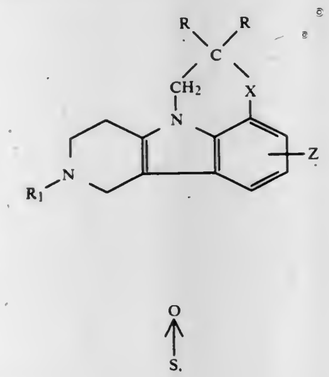
Parathasarathi Rajagopalan, Wilmington, Del., assignor to Endo Laboratories Inc., Garden City, N.Y.

Division of Ser. No. 916,846, Jun. 16, 1978, Pat. No. 4,183,936, which is a division of Ser. No. 755,121, Dec. 28, 1976, Pat. No. 4,115,577, which is a division of Ser. No. 586,746, Jun. 13, 1975, Pat. No. 4,013,652, which is a division of Ser. No. 357,528, May 7, 1973, Pat. No. 3,914,421, which is a continuation-in-part of Ser. No. 263,766, Jun. 19, 1972, abandoned. This application Jul. 9, 1979, Ser. No. 55,701

Int. Cl.³ C07D *471/14*

U.S. Cl. 544—14 **2 Claims**

1. A compound of the formula:



where X is

S, or SO_2;

the R's are the same or different and are H, CH_3; or OCH_3; and one of them can be C_2-C_9 alkyl, phenyl, C_7-C_{10} phenylalkyl, furyl, thienyl, pyridyl, phenyl or C_7-C_{10} phenylalkyl substituted on adjacent ring carbon atoms with methylenedioxy, or phenyl or C_7-C_{10} phenylalkyl substituted on the ring with 1, 2 or 3 substituents individually selected from methoxy, ethoxy, bromine, chlorine, fluorine, trifluoromethyl and C_1-C_4 alkyl;

R_1 is hydrogen, C_1-C_4 alkyl, C_3-C_5 alkenyl, C_3-C_5 alkynyl, C_3-C_6 cycloalkyl, C_2-C_4 alkoxycarbonyl, trifluoroacetyl or substituted C_1-C_4 alkyl where the substituent is C_3-C_6 cycloalkyl, phenyl, phenyl substituted on adjacent carbon atoms with methylenedioxy, or phenyl substituted with 1, 2 or 3 substituents individually selected from methoxy, ethoxy, bromine, chlorine, fluorine, and trifluoromethyl; and

Z is H, Cl, or CH_3;

and their pharmaceutically suitable salts.

4,238,608

7-[2-(2-AMINOTHIAZOL-4-YL)-2-SUBSTITUTED THIO-ACETAMIDO] CEPHALOSPORINS

Mitsuo Numata, and Masayoshi Yamaoka, both of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Japan

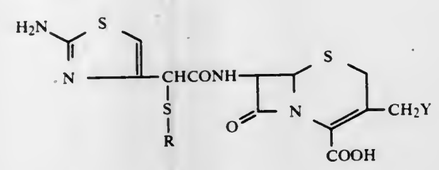
Filed May 29, 1979, Ser. No. 43,323

Claims priority, application Japan, Jun. 2, 1978, 53/67006

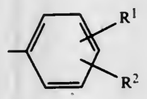
Int. Cl.³ C07D *501/34, 501/46, 501/56;* A61K *31/545*

U.S. Cl. 544—027 **19 Claims**

1. A compound of the formula:



wherein R is lower alkyl or a group of the formula



where R^1 and R^2 are the same or different and each is hydrogen, carboxyl or halogen; Y is C_{2-4} alkylcarbonyloxy, acetoacetoxy or carbamoyloxy or a group of the formula —S—Het where Het is an unsubstituted or substituted pyridyl, N-oxopyridyl, pyrimidyl, pyridazinyl, N-oxopridazinyl, pyrazolyl, diazolyl, thiazolyl, thiadiazolyl, oxazolyl, oxadiazolyl, triazolyl or tetrazolyl wherein the substituent is C_{1-4} alkyl, trifluoromethyl, C_{1-4} alkoxy, halogen, hydroxyl, mercapto, amino, carboxyl, carbamoyl, or a group of the formula $-(CH_2)_n-Q^1$, —S—Q^2 or



where n is 1–3, Q^1 is hydroxyl, mercapto, amino, guanyl, morpholino, carboxyl, sulfo, carbamoyl, C_{1-4} alkoxyl, C_{1-4} alkylcarbamoyl, C_{1-4} alkoxycarbonyl, C_{1-4} alkylthio, C_{1-4} alkylsulfonyl, C_{2-4} acryloxy or morpholino-carbonyl, Q^2 is C_{1-4} alkyl or $-(CH_2)_n-Q^1$, and Q^3 and Q^4 are C_{1-4} alkyl, carboxyl, C_{1-4} alkoxycarbonyl, C_{1-4} acyl, carbamoyl, C_{1-4} alkylcarbamoyl or $-(CH_2)_n-Q^1$ or a pharmaceutically acceptable salt thereof.

4,238,609

PRODUCTION OF AMPHO-IONIC COMPOUNDS

Ryuzo Mizuguchi; Atsushi Takahashi; Shinichi Ishikura, and Akimitsu Uenaka, all of Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

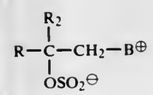
Filed Dec. 4, 1978, Ser. No. 966,045

Claims priority, application Japan, Dec. 3, 1977, 52-146416; Dec. 28, 1977, 52-159788; Dec. 28, 1977, 52-159789; Mar. 24, 1978, 53-34649; Mar. 24, 1978, 53-34650

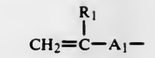
Int. Cl.³ C07D *245/08;* C07C *137/00*

U.S. Cl. 544—158 **6 Claims**

1. A process for preparing an ampho-ionic compound of the formula:



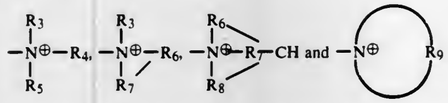
wherein R is a group of the formula:



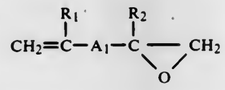
wherein R_1 is hydrogen or methyl and A_1 is $—COOCH_2—$, $—CH_2OCH_2—$ or $—CONHCH_2—$;

R_2 is hydrogen or methyl; and

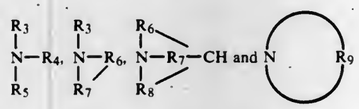
$B^{\oplus}$ is a group of any one of the formulas:



wherein R_3, R_4 and R_5 are each alkyl, alkenyl, hydroxyalkyl, mercaptoalkyl, alkoxy, alkylthio, cyclic alkyl, phenyl or substituted phenyl, each of these groups having not more than 7 carbon atoms, R_6, R_7 and R_8 are each alkylene, alkenylene, alkyleneoxy or alkylenethio, each of these groups having not more than 7 carbon atoms, and R_9 is optionally substituted alkylidene of 4 to 10 carbon atoms, which comprises reacting a compound of the formula:



wherein R_1, R_2 and A_1 are each as defined above, with sulfur dioxide and a tertiary amine of any one of the formulas:



wherein R_3, R_4, R_5, R_6, R_7, R_8 and R_9 are each as defined above.

4,238,610

INTERMEDIATES FOR THE PRODUCTION OF IMIDAZOBENZODIAZEPINES

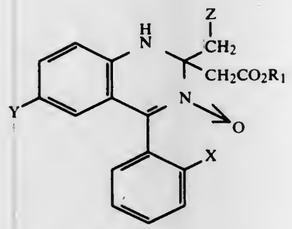
George F. Field, West Caldwell, and William J. Zally, Cresskill, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 20, 1979, Ser. No. 105,823

Int. Cl.³ C07D *239/04, 245/06*

U.S. Cl. 544—283 **1 Claim**

1. A compound of the formula



wherein X and Y are selected from the group consisting of hydrogen and halogen, R_1 is selected from the group consisting of hydrogen and lower alkyl and Z is halogen, arylsulfonyl or alkylsulfonyl.

4,238,611

POLYSUBSTITUTED DERIVATIVES OF 10-PIPERAZINODIBENZO (B,F) THIEPINE

Miroslav Protiva; Karel Sindelar; Irena Cervena, and Jirina Metysova, all of Prague, Czechoslovakia, assignors to SPOFA, United Pharmaceutical Works, Prague, Czechoslovakia

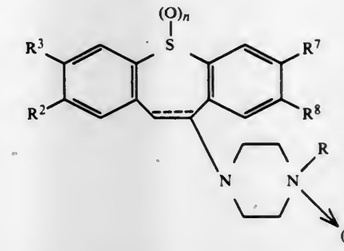
Filed Jan. 6, 1976, Ser. No. 646,755

Claims priority, application Czechoslovakia, Jan. 6, 1975, 95/75

Int. Cl.³ C07D *409/04*

U.S. Cl. 544—375 **12 Claims**

1. A compound of the formula



wherein R^2, R^3, R^7 and R^8 are selected from the group consisting of hydrogen, fluorine and chlorine atoms, a trifluoromethyl group, a methoxy group and a hydroxyl group, the relationship between R^2, R^3, R^7 and R^8 being such that (a) R^2 and R^3 are other than hydrogen, (b) R^7 and R^8 are other than hydrogen, or (c) at least three of the substituents R^2, R^3, R^7 and R^8 are other than hydrogen, R being selected from the group consisting of hydrogen, an alkyl group having from 1–3 carbon atoms, a hydroxyalkyl, a hydroxyalkyl group having from 1–3 carbon atoms, an acyloxyalkyl group having from 8–10 carbon atoms in the acyl moiety and from 2–3 carbon atoms in the alkyl moiety and an ethoxycarbonyl group, m and n being selected from the group consisting of 0 and 1, and the bond between carbon atoms 10 and 11 being selected from the group consisting of single bonds and double bonds, and salts thereof determined by neutralization with an acid selected from the group consisting of maleic acid and methanesulfonic acid.

4,238,612

PROCESS FOR THE ISOMERIZATION OF DERIVATIVES OF 3-VINYL-PIPERIDINE

Jean-Jacques Barieux, Villeurbanne; Marie-Christine Dubroeucq, Deuil-la Barre, and Francois Rocquet, Viarmes, all of France, assignors to Pharmindustrie, Gennevilliers, France

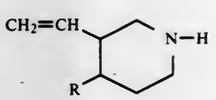
Filed Mar. 21, 1979, Ser. No. 22,544

Claims priority, application France, Mar. 23, 1978, 78 08449; Feb. 9, 1979, 79 03291

Int. Cl.³ C07D *401/06, 211/32*

U.S. Cl. 546—153 **6 Claims**

1. Process for the conversion of compounds of the formula:



(I)

in which R is hydrogen, phenyl, phenyl substituted by chlorine, fluorine, bromine, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or trifluoromethyl, alkyl having 1 to 4 carbon atoms or a $—(CH_2)_n—X—Z$ group wherein n is 1 or 2, X is methylene or carbonyl, and Z is alkoxy having 1 to 4 carbon atoms, phenyl, phenyl substituted by chlorine, fluorine, bromine, alkyl having 1 to 4 carbon atoms,

alkoxy having 1 to 4 carbon atoms or trifluoromethyl, or a 4-quinolyl or 2-indolyl residue, unsubstituted or substituted chlorine, fluorine, bromine, alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms, and for which the carbon carrying the vinyl group has the rectus configuration, into the corresponding compounds of formula (I) for which the carbon carrying the vinyl group has the sinister configuration, and vice versa, which comprises subjecting a compound of formula (I) for which the carbon carrying the vinyl group has the rectus or sinister configuration, partially or entirely salified, to a heating at a temperature above 50° C. in a protic solvent or a mixture of protic solvents, in the presence or absence of formaldehyde, and isolating the compound of formula (I) for which the carbon carrying the vinyl group has the sinister or rectus configuration thus formed.

4,238,613

POLYALKYLPIPERIDINE DERIVATIVES

Michael Rasberger, Riehen, and Friedrich Karrer, Zofingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

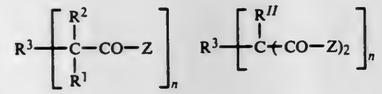
Continuation of Ser. No. 861,052, Dec. 15, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,218

Claims priority, application Switzerland, Dec. 23, 1976, 016262/76

Int. Cl.[3] **C07D** *211/08, 211/60, 211/32, 211/20*

U.S. Cl. 546—190 **7 Claims**

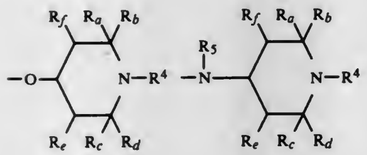
1. A compound of the formula I or II



I

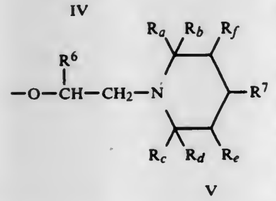
II

and its salts, in which n is 1 or 2, Z is a group of the formula III, IV or V



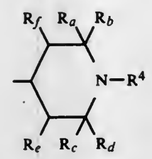
III

IV



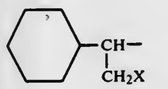
V

in which R^4 represents hydrogen, O·, —OH, alkyl with 1-12 C atoms, alkenyl with 3 or 4 C atoms, propargyl, benzyl or a group of the formula $—CH_2—CH(OR^9)—R^8$, in which R^8 denotes hydrogen, methyl or phenyl and R^9 denotes hydrogen or a group A—CO—; or R^4 denotes a group A—CO— and in both cases A denotes alkyl with 1-17 C atoms, alkenyl with 2 or 3 C atoms, cyclohexyl, phenyl, benzyl or a phenyl, phenylmethyl or phenylethyl group which is substituted by 2 alkyl groups, each with 1-4 C atoms, and a hydroxyl group, or denotes alkylamino with 1-12 C atoms, dialkylamino with 2-16 C atoms, anilino, alkoxy with 1-12 C atoms, benzyloxy or phenoxy, R^5 denotes hydrogen, alkyl with 1-18 C atoms, alkenyl with 3-6 C atoms, propargyl, cycloalkyl with 5-12 C atoms, aralkyl with 7-14 C atoms, which can be substituted by OH, or a group of the formula VI

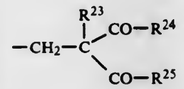


VI

R^6 is hydrogen, methyl or phenyl, R^7 denotes hydrogen, $—OR^{10}$ or $—N(R^{11})(R^{12})$ and R^{10} denotes alkyl with 1-18 C atoms, alkenyl with 3-6 C atoms, benzyl, 2-cyanoethyl or an aliphatic, cycloaliphatic, aromatic or araliphatic acyl group which has up to 18 C atoms and can be substituted in the aromatic part by halogen, alkoxy with 1-4 C atoms, alkyl with 1-4 C atoms and/or hydroxyl, R^{11} is alkyl with 1-18 C atoms, alkenyl with 3-6 C atoms or phenylalkyl with 7-9 C atoms and R^{12} has the same meaning as R^{11} or represents an aliphatic, cycloaliphatic, aromatic or araliphatic acyl group which has up to 18 C atoms and can be substituted in the aromatic part by halogen, alkoxy with 1-4 C atoms, alkyl with 1-4 C atoms and/or hydroxyl, R_a denotes alkyl with 1-6 C atoms, R_b denotes alkyl with 1-6 C atoms, R_c denotes alkyl with 1-9 C atoms, phenyl, benzyl or phenylethyl and R_d denotes alkyl with 1-6 C atoms, or R_c and R_d conjointly denote tetramethylene or pentamethylene, R_e denotes hydrogen, alkyl with 1-5 C atoms, alkenyl or alkinyl with 3-4 C atoms or benzyl and R_f denotes hydrogen, alkyl with 1-5 C atoms or benzyl and the positions of R_e and R_f can be exchanged, and R^1 denotes one of the groups —CN, —CHO, $—COR^{13}$, $—SO_2R^{13}$, $—P(O)(OR^{14})_2$, $—P(O)(C_6H_5)_2$, $—COOR^{15}$ or $—CON(R^{16})(R^{17})$, in which R^{13} denotes alkyl with 1-18 C atoms, cyclohexyl, aryl which has 6-10 C atoms and can be substituted by chlorine or C_1-C_8-alkyl, phenylalkyl with 7-9 C atoms or a phenyl or phenylalkyl radical which is substituted by one or two C_1-C_4-alkyl groups and/or hydroxyl, R^{14} denotes alkyl with 1-18 C atoms, aryl with 6-10 C atoms or aralkyl with 7-9 C atoms, R^{15} denotes alkyl with 1-18 C atoms, alkenyl with 3-6 C atoms, phenyl, phenylalkyl with 7-9 C atoms or alkylphenyl with 7-14 C atoms and R^{16} and R^{17} independently of one another denote hydrogen, alkyl with 1-12 C atoms, cyclohexyl, benzyl or phenyl, R^2 denotes hydrogen, alkyl with 1-20 C atoms, alkenyl or alkinyl with 3-4 C atoms, aralkyl with 7-11 C atoms, phenyl, —COZ, $—COOR^{15}$ or an alkyl group which has 1-10 C atoms and is substituted by one or two of the groups —CN, —COZ, $—P(O)(OR^{14})_2$, $—COOR^{15}$ or $—CON(R^{16})(R^{17})$ on different C atoms, or denotes a group of the formula VI, and, when n is 1, R^{II} denotes —COZ, $—COOR^{15}$ or an alkyl group which has 1-10 C atoms and is substituted by one or two of the groups —CN, —COZ, $—P(O)(OR^{14})_2$, $—COOR^{15}$ or $—CON(R^{16})(R^{17})$ on different C atoms, or denotes a group of the formula VI, and, if R^3 is a —COZ group, can also be hydrogen, and when n is 2, R^{II} can also denote alkyl with 1-20 C atoms, alkenyl or alkinyl with 3-4 C atoms, aralkyl with 7-11 C atoms or phenyl, and, when n is 1, R^3 denotes alkyl with 1-20 C atoms or an alkyl group which has 1-10 C atoms and is substituted by one or more of the groups —CN, —COZ, $—COOR^{15}$, $—SO_2R^{13}$, $—CON(R^{16})(R^{17})$, $—COR^{18}$ or $—P(O)(OR^{14})_2$, in which R^{18} denotes alkyl with 1-12 C atoms, or R^3 denotes a group of the formula

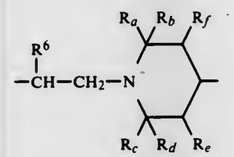


in which X represents —CN, $—COR^{19}$, —COOH, $—COOR^{20}$ or —COZ, R^{19} represents alkyl with 1-5 C atoms or phenyl and R^{20} represents alkyl with 1-18 C atoms, allyl, cyclohexyl or benzyl, and R^3 furthermore represents one of the groups —COZ or $—COOR^{15}$, an alkyl group which has 3-18 C atoms and is interrupted by $—SO_2—$, or alkenyl with 3-18 C atoms, alkinyl with 3-8 C atoms, cycloalkyl with 5-12 C atoms, alkylcycloalkyl with 6-18 C atoms, cycloalkyl-alkyl with 6-14 C atoms, aralkyl or alkyl-aralkyl with 7-19 C atoms, phenyl or a group $—OR^{21}$, in which R^{21} can be alkyl with 1-18 C atoms, alkenyl with 3-4 C atoms, alkinyl with 3-4 C atoms or phenylalkyl with 7-9 C atoms, or R^3 represents a group —O—C(O)R^{22} or —NH—C(O)R^{22}, in which R^{22} can be alkyl with 1-12 C atoms, alkenyl with 2 or 3 C atoms, cyclohexyl, phenyl, benzyl or a phenyl, phenylmethyl or phenylethyl group which is substituted by 2 alkyl groups, each with 1-4 C atoms, and a hydroxyl group, or R^3 represents a group of the formula VII



VII

in which R^{23} represents alkyl with 1-20 C atoms, allyl, benzyl, phenyl or a group —O—C(O)R^{22} or —NH—C(O)R^{22}, which is as defined above, and R^{24} and R^{25} independently of one another represent alkoxy with 1-6 C atoms or have one of the meanings indicated for Z and, when n is 2, R^3 represents a direct bond, alkylene with 1-20 C atoms, alkylene which has 2-10 C atoms and is interrupted by —O—, arylene-bis-alkylene with 8-14 C atoms, alkenylene with 4-8 C atoms, alkinylene with 4-8 C atoms or a group of the formula $—C_mH_{2m}—COO—Y—OCO—C_mH_{2m}—$, in which Y denotes alkylene with 2-12 C atoms, butenylene, butinylene, cyclohexylene or a group of the formula VIII



VIII

and m denotes a number from 1 to 4, but R^1 cannot be the group —CN when one of the substituents R^2, R^{II} or R^3 has the meaning —COZ.

4,238,614

PYRIDYL ESTERS OF ETHER AND THIOETHER SUBSTITUTED CYCLOPROPANECARBOXYLIC ACIDS

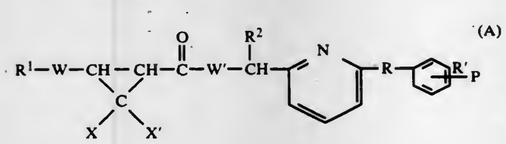
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Aug. 30, 1979, Ser. No. 71,336

Int. Cl.[3] **C07D** *213/64, 213/50*

U.S. Cl. 546—301 **20 Claims**

1. A compound of the formula (A):



(A)

wherein,

W is oxygen or sulfur;

W′ is oxygen or sulfur;

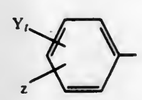
X is lower alkyl or halogen;

X′ is hydrogen, lower alkyl or halogen;

R is oxygen, sulfur, methylene or carbonyl;

R′ is fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy, or methylthio; p is zero, one or two;

R^1 is lower alkyl, lower haloalkyl, lower alkenyl, lower haloalkenyl, or the group



in which

t is zero, one, two, three or four;

Y is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyl, lower alkoxycarbonyl, lower alkanogoxy, halogen, cyano, nitro and lower haloalkylthio;

Z is independently selected from the values of Y, cycloalkyl of three to six carbon atoms and lower haloalkoxy; and R^2 is hydrogen, cyano, ethynyl, methyl or ethyl.

4,238,615

CYCLOPENTANONE INTERMEDIATES 2-(BENZOTHIAZOLYL-2)

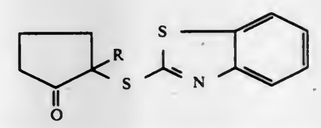
Sigeru Torii; Hideo Tanaka, and Toshihiro Kudai, all of Okayama, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1978, Ser. No. 884,222

Int. Cl.[3] **C07D** *277/64*

U.S. Cl. 548—170 **4 Claims**

1. A 2-substituted-cyclopentanone compound represented by the formula



(I)

wherein R is hydrogen, alkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms or alkynyl having from 3 to 6 carbon atoms.

4,238,616

3-(SUBSTITUTED)PHENYL-5-(β-HYDROXYPHENETHYL)-N-(ALKYL)-ISOXAZOLE-4-CARBOXAMIDES

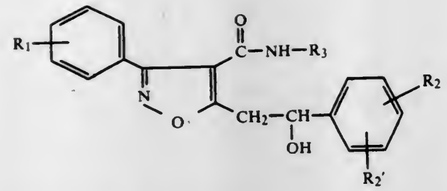
Jeffrey Nadelson, Denville, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 18,621, Mar. 8, 1979, which is a division of Ser. No. 901,477, May 1, 1978, Pat. No. 4,158,735, which is a division of Ser. No. 760,818, Jan. 19, 1977, Pat. No. 4,103,013, which is a continuation-in-part of Ser. No. 719,231, Aug. 31, 1976, abandoned, which is a continuation-in-part of Ser. No. 625,817, Oct. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 584,764, Jun. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 558,419, Mar. 14, 1975, abandoned. This application Nov. 19, 1979, Ser. No. 95,356

Int. Cl.[3] **C07D** *261/02*

U.S. Cl. 548—248 **1 Claim**

1. A compound of the formula



where R_1,R_2 and R_2'each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, lower alkoxy or trifluromethyl, and R_3 represents lower alkyl, or a pharmaceutically acceptable salt thereof.

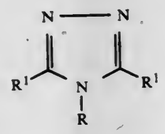
4,238,617

CYANIDE PROCESS FOR THE PREPARATION OF 4H-1,2,4-TRIAZOLES

Newman Bortnick, Oreland, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 29, 1979, Ser. No. 43,295
Int. Cl.³ C07D *249/08*
U.S. Cl. 548—262 **9 Claims**

1. A process for the preparation of a 4H-1,2,4-triazole of the formula



wherein

R is selected from the group consisting of (C_1–C_{20}) alkyl, (C_2–C_{10}) alkenyl, and phenyl, benzyl or phenethyl or phenyl, benzyl or phenethyl the aryl portion of which is substituted with up to three substituents selected from the group consisting of halogen, nitro, trifluoromethyl, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, carbamoyl and carboxy and when R is benzyl or phenethyl the carbon atom of the alkyl chain adjacent to the aryl ring can be substituted with up to two substituents independently selected from the group consisting of cyano, (C_1–C_{10}) alkyl, (C_1–C_{10}) alkoxy, (C_2–C_{10}) alkenoxy, phenyl or benzyl or phenyl or benzyl the aryl portion of which is substituted with up to three substituents selected from the group consisting of halogen, nitro, trifluoromethyl, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, carbamoyl, and carboxy and R^1 is selected from the group consisting of hydrogen, (C_1–C_{10}) alkyl, unsubstituted phenyl or benzyl or phenyl or benzyl substituted with up to three substituents selected from the group consisting of halogen, nitro, trifluoromethyl, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, carbamoyl and carboxy,

which comprises

reacting

(a) one mole of hydrazine with

(b) about one mole or an excess amount of an amine of the formula

RNH_2

wherein

R is as defined above and

(c) about 2 moles or an excess amount of a nitrile of the formula

R^1CN

wherein

R^1 is as defined above,

at temperatures from about room temperature to about 250° C., either neat or in the presence of an inert solvent, and optionally in the presence of an acid catalyst.

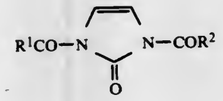
4,238,618

PROCESS FOR THE PREPARATION OF DIACYLATED 4-IMIDAZOLIN-2-ONES

Karl-Heinz Scholz; Willy Hartmann, and Hans-Georg Heine, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 884,520
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1977, 2713431
Int. Cl.³ C07D *233/70*
U.S. Cl. 548—320 **6 Claims**

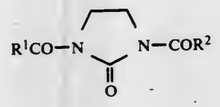
1. A process for the preparation of a diacylated 4-imidazolin-2-one of the formula



(I)

wherein

R^1 and R^2 independently represent hydrogen, alkyl which can be substituted by a C_{1-2} alkoxy radical or a halogen, cycloalkyl which can be C_{1-4} alkyl substituted, aryl which which can be C_1-C_4 alkyl or C_1-C_2 alkoxy or halogen substituted or alkoxy, the alkyl, cycloalkyl, aryl or alkoxy groups representing R^1 or R^2 having up to ten carbon atoms, which comprises contacting a compound of the formula



(II)

where

R^1 and R^2 have the previously assigned significance with about 2 mol equivalents of chlorine or 2 to 10 mol equivalents or sulphuryl chloride at a temperature from 20° to 150° C. in the presence of a peroxide, peracid ester or azoalkane radical forming agent or under ultra-violet light to dihalogenate the same and thereafter dehalogenating the resultant dihalogenated product in the presence of a metal or metal carbonyl compound selected from the group consisting of zinc, iron, nickel tetracarbonyl, molybdenum hexacarbonyl and iron pentacarbonyl.

4,238,619

METHOD FOR MAKING ARYL ONIUM SALTS OF GROUP VIA ELEMENTS

James V. Crivello, Clifton Park, and Julia H. W. Lam, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 954,196, Oct. 24, 1978, which is a continuation of Ser. No. 833,279, Sep. 14, 1977, abandoned. This application Jun. 6, 1979, Ser. No. 46,116
Int. Cl.² C07D *335/12, 497/00*
U.S. Cl. 549—3 **8 Claims**

1. In a method for making aryl organic onium salts of a Group VIa element selected from the class consisting of sulfur and selenium which comprises reaction at temperatures exceeding 185° C., an aryl organic iodonium salt and an organic compound of the Group VIa element selected from aryl organic compounds, aliphatic organic compounds and cycloaliphatic organic compounds whereby extended reaction times

are required and less than 60% yields of the aryl organic onium salt of the Group VIa element result, the improvement which comprises, effecting the reaction of the organic compound of the Group VIa element and the aryl organic iodonium salt in the presence of an effective amount of copper catalyst resulting in improved yields of the aryl organic onium salt of the Group VIa element at a reduced temperature and reaction time.

8. A method for making 4-isopropylphenylphenoxanthylium hexafluoroarsenate, which comprises reaction 4,4'-diisopropyldiphenyliodonium hexafluoroarsenate and phenoxanthene in the presence of copper benzoate.

4,238,620

DIBENZ[b,f]OXEPIN AND DIBENZO[b,f]THIEPIN DERIVATIVES, PROCESS FOR PREPARATION THEREOF, METHOD OF USING THE SAME, AND COMPOSITIONS THEREOF

Hitoshi Uno, Takatsuki; Yasutaka Nagai, Mukou, and Hideo Nakamura, Tenri, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 21, 1979, Ser. No. 13,477
Claims priority, application Japan, Feb. 17, 1978, 53-18004
Int. Cl.³ C07D *313/14, 337/14*
U.S. Cl. 549—13 **10 Claims**

10. 2-(2-Hydroxyethoxy)ethyl dl-2-(8-methyl-10,11-dihydro-11-oxodibenzo[b,f]thiepin-2-yl)propionate.

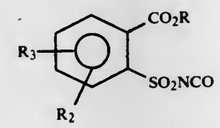
4,238,621

INTERMEDIATES FOR HERBICIDAL SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

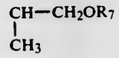
Continuation-in-part of Ser. No. 029,281, Apr. 13, 1979. This application Jun. 18, 1979, Ser. No. 49,149
Int. Cl.³ C07C *143/828*
U.S. Cl. 560—12 **20 Claims**

1. A compound having the formula:

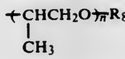


wherein

R is C_1-C_{12} alkyl; C_3-C_{10} alkenyl; C_2-C_6 alkyl substituted with one to four substituents selected from up to 3 atoms of F, Cl, Br, up to 2 methoxy groups; C_3-C_6 alkenyl substituted with 1-3 atoms of F, Cl, Br; C_5-C_8 cycloalkyl; C_5-C_8 cycloalkenyl; C_5-C_6 cycloalkyl substituted with substituents selected from up to four methyl groups, methoxy, alkyl substituents of C_2-C_4, F, Cl or Br; C_4-C_{10} cycloalkylalkyl; or C_4-C_8 cycloalkylalkyl with 1-2 CH_3; $-CH_2CH_2OR_7$; $CH_2CH_2CH_2OR_7$ or



where R_7 is $-CH_2CH_3$, $CH(CH_3)_2$, phenyl, $-CH_2CH_2Cl$, $-CH_2CCl_3$; $-CH_2CH_2O-_{n'}R_8$ or



where R_8 is CH_3, $-CH_2CH_3$ $-CH(CH_3)_2$, phenyl, $-CH_2CH_2Cl$ or $-CH_2CCl_3$, and n' is 2 or 3;

R_2 is H, Cl, Br, F, C_1-C_3 alkyl, $-NO_2$, $-OCH_3$, $-SCH_3$, CF_3, SO_2CH_3, $N(CH_3)_2$ or $-CN$; and

R_3 is H, Cl, Br or CH_3.

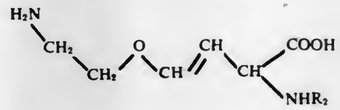
4,238,622

D,L-2-AMINO-4-(2-AMINOETHOXY)-TRANS-BUT-3-ENOIC ACID DERIVATIVES

Dennis D. Keith, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 15, 1977, Ser. No. 824,371
Int. Cl.³ C07C *101/28*
U.S. Cl. 560—39 **4 Claims**

1. A racemic compound of the formula



where R_2 is a protecting group which is alkanoyl, aroyl, alkoxycarbonyl or aralkoxycarbonyl.

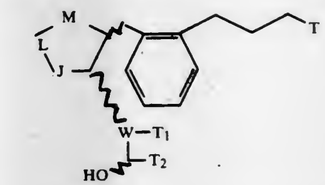
4,238,623

5,6-BENZO ANALOGUES OF PROSTAGLANDIN

Robert T. Buckler, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 29, 1976, Ser. No. 671,423
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



in which:

T is selected from the group consisting of carboxyl or alkoxycarbonyl having an alkyl chain of 1 to 3 carbon atoms;

M is carbonyl;

L is methine;

J is methine;

W is trans—CH=C—;

T_1 and T_2 are attached to adjacent carbon atoms;

T_1 is hydrogen; and

T_2 is alkyl of from 1 to 5 carbon atoms.

4,238,624

PROCESS FOR MAKING GLYCOL ESTERS

Nancy J. Morris, and George D. Shier, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1979, Ser. No. 90,710
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **5 Claims**

1. In a process for reacting a mixture of ethylene, molecular oxygen, and lower alkanoic acid at a moderately elevated temperature in the presence of a halogen-containing promoter and a tellurium catalyst to produce a mixture of the monoalkanoate and the dialkanoate of ethylene glycol, the improvement wherein the mixture is reacted in the gas phase in the presence of a source of iodine and a heterogeneous catalyst consisting essentially of carbon coated with about 1-20 percent of TeO_2 and about 2-30 percent of Bi_2O_3 based on the weight of the coated carbon catalyst.

4,238,625
PROCESS FOR THE PREPARATION OF ARYLOXYACETIC ACID

Helmut Fiege, Leverkusen, and Karlfried Wedemeyer, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

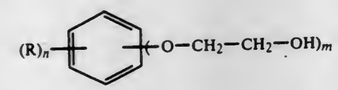
Filed Nov. 8, 1979, Ser. No. 92,783

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851788

Int. Cl.³ C07C *51/16*

U.S. Cl. 562—421 19 Claims

1. In a process for the preparation of an aryloxyacetic acid by oxidation of an aryloxyethanol of the formula



(I)

wherein

m represents 1 or 2,

n represents the numeral which results from the difference (6-m) and

R either individually or independently of one another represent hydrogen, alkyl, cycloalkyl, aryl, aralkyl, alkoxy, cycloalkoxy, aryloxy, hydroxyl, halogen, alkylcarbonyl, arylcarbonyl, carboxyl or nitro, or represent a benzene ring or cycloalkane ring fused to the phenyl ring,

with oxygen or an oxygen-containing gas in an aqueous alkaline medium at a temperature from 0° C. to the boiling point of the reaction mixture in the presence of platinum metals and/or palladium metals containing catalyst, the improvement which comprises carrying out the oxidation in the additional presence of an activator of lead and/or bismuth and/or a compound thereof and optionally in the additional presence of cadmium and/or its compounds.

4,238,626
4-PHENOXY-PHENOXY-ALKANE-CARBOXYLIC ACID DERIVATIVES AND PROCESS FOR THEIR MANUFACTURE

Helmut Nahm, and Ernold Granzer, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

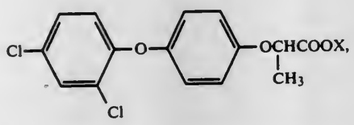
Continuation-in-part of Ser. No. 542,061, Jan. 17, 1965, abandoned, which is a continuation of Ser. No. 273,770, Jul. 21, 1972, abandoned. This application May 11, 1978, Ser. No. 905,049

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1971, 2136828

Int. Cl.³ C07C *59/68, 69/736*

U.S. Cl. 562—472 3 Claims

1. A compound of the formula



wherein X is H, lower alkyl, cyclopentyl, cyclohexyl, or methylcyclohexyl.

4,238,627
OXIDATIVE PROCESS FOR PREPARING SUBSTITUTED BIPHENOLS

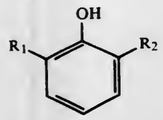
Walter T. Reichle, Warren, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,472

Int. Cl.³ C07C *37/00, 37/11*

U.S. Cl. 568—730 16 Claims

1. A process for making 4,4'-bis(2,6-di-substitutedphenols) which comprises intimately contacting a phenol having the formula



wherein R_1 and R_2 may be the same or different and is a member selected from the group consisting of alkyl radicals containing from 1 to 20 carbon atoms, aryl radicals containing from 6 to 14 carbon atoms, aralkyl radicals containing from 7 to 9 carbon atoms, and cyclic alkyl groups, with up to a stoichiometric amount of oxygen or an oxygen containing gas in the presence of a catalytic quantity of a catalyst consisting essentially of a member selected from alkali metal hydroxides, alkali metal salts of a weak acid, alkaline earth metal hydroxides, alkaline earth metal salts of a weak acid, amine bases, and mixtures of the same at an elevated temperature for the time necessary to react up to a stoichiometric amount of oxygen with said phenol to form a reaction product containing a substantial amount of 4,4'-bis(2,6-disubstituted phenol).

4,238,628
POLYALKYLAROMATICS UNDEGRADED DURING ALKYLATION

Paul J. Cahill, Wheaton, Ill., and Carl E. Johnson, San Diego, Calif., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 28, 1978, Ser. No. 946,501

Int. Cl.³ C07C *39/38, 2/54, 37/12*

U.S. Cl. 568—736 5 Claims

1. A process for the production of undegraded alkylated benzene, phenol, and naphthol compound comprising alkylating, at about 0° to 60° C., a complex comprising boron trifluoride and benzene, phenol, or naphthol with a C_3 or higher olefin polymer having terminal ethylene units, wherein the molar ratio of complex to olefin polymer is about 1:1 to 3:1.

4,238,629
PROCESS FOR THE PREPARATION OF A MIXTURE OF 2-AND 4-HYDROXYBENZYL ALCOHOL

Kurt Bauer; Reiner Mölleken, both of Holzminden; Karlfried Wedemeyer, Cologne, and Helmut Fiege, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,428

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915216

Int. Cl.³ C07C *33/20, 39/11*

U.S. Cl. 568—764 4 Claims

1. In the known process for the preparation of a mixture of 2- and 4-hydroxybenzyl alcohol by reacting phenol and paraformaldehyde in the presence of strongly basic catalyst, the improvement comprising carrying out the reaction in the presence of a polyalkylene polyether having a molecular weight of 140 to 14,000, 0.05 to 10 g of polyalkylene polyether being used per mol of phenol.

4,238,630
PRODUCTION OF AROMATIC HYDROCARBONS

David G. Parker, Wilton, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 9, 1979, Ser. No. 28,362

Claims priority, application United Kingdom, May 8, 1978, 18268/78

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—467 10 Claims

1. A process for the alkylation of an aromatic hydrocarbon which comprises contacting the aromatic hydrocarbon or a mixture comprising an aromatic hydrocarbon with an alkylating agent under reaction conditions which are effective for accomplishing alkylation of the aromatic hydrocarbon and in the presence of a catalyst comprising an aluminosilicate zeolite of the ZSM-5 type in which some or all of the protons of the zeolite have been replaced by monovalent cations, wherein the amount of said monovalent cation in the zeolite is at least 2.0% by weight.

4,238,631
FLUID ZEOLITE CATALYZED CONVERSION OF ALCOHOLS AND OXYGENATED DERIVATIVES TO HYDROCARBONS BY CONTROLLING EXOTHERMIC REACTION HEAT

Nicholas Daviduk, Pennington, and James H. Haddad, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 30, 1979, Ser. No. 89,706

Int. Cl.³ C07C *1/20*

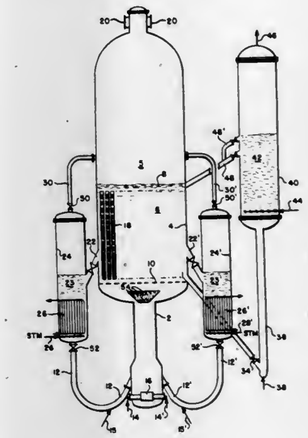
U.S. Cl. 585—469 8 Claims

1. A method for converting reactants comprising lower alcohols and related oxygenates to C_{10} and lower boiling carbon-hydrogen compounds including LPG and gasoline boiling components which comprises:

passing a suspension of vaporized reactant material and fluid catalyst particles comprising a special crystallive zeolite represented by ZSM-5 crystallive zeolite upwardly through a relatively dispersed catalyst phase riser contact zone for a time temperature and pressure suitable to achieve at least 70% conversion of methanol in the reactant feed;

passing the suspension comprising products of reaction upwardly through a relatively dense fluid mass of catalyst particles for a residence time and temperature sufficient to achieve a total conversion of methanol in the feed equivalent to at least 90% and produce simultaneously a product mixture of C_1 to C_{10} hydrocarbons comprising paraffins, olefins and aromatics;

passing catalyst withdrawn from a lower portion of said relatively dense fluid mass of catalyst particles downwardly through a plurality of separate catalyst stripping-cooling zones of desired temperature restriction and thence to the riser reactor for admixture with charged vaporous reactant;



passing stripped products from the stripping-cooling zone into a dispersed phase of catalyst above said more dense fluid mass of catalyst and withdrawing reaction products separated from catalyst in said dispersed phase of catalyst from an upper portion of said reaction zone.

4,238,632

ARC FURNACE FOR MAKING STEEL FROM DIRECTLY REDUCED IRON

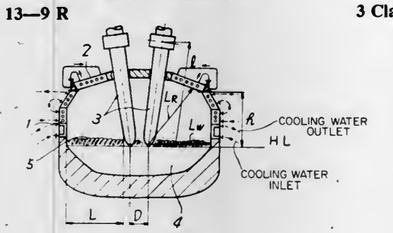
Shozo Yasukawa, Yokosuka; Akinori Nakamura, Kamakura, and Takamitsu Yamada, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 18,660

Claims priority, application Japan, Apr. 20, 1978, 53-52451[U]

Int. Cl.³ F27D *1/00*

U.S. Cl. 13—9 R **3 Claims**



1. An arc furnace for rapidly and continuously melting directly reduced iron to make steel and having a roof, wall and hearth line comprising: at least two spaced electrodes mounted through the furnace roof and inclined toward each other at an angle to an imaginary vertical line therebetween so that the lower ends of said electrodes converge and are adjacent to each other, the inner surfaces of said furnace wall and roof above the hearth line together forming a segment of a circle whose center is located on said hearth line adjacent to the points where the axes of said electrodes intersect the hearth line, and wherein $L_R = L_W$, in which L_R is the distance from said center to the lining surface of the roof, and L_W is the distance from said center to the lining surface of the furnace wall.

4,238,633

ELECTROSLAG REMELTING APPARATUS FOR PRODUCING INGOTS

Boris I. Medovar, ulitsa Anri Barbjusa, 22/26, kv. 109; Rudolf S. Dubinsky, ulitsa Politekhnicheskaya, 5, kv. 209; Georgy A. Boiko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106, all of Kiev; Vladimir I. Butov, ulitsa Turistov, 57, kv. 14, Chelyabinsk, and Valery A. Prikhodko, bulvar Davydova, 7, kv. 158, Kiev, all of U.S.S.R.

Filed Jul. 5, 1979, Ser. No. 54,897

Int. Cl.³ H05B *7/14*

U.S. Cl. 13—9 ES **7 Claims**

1. An electroslag remelting, apparatus for producing ingots comprising:

a mould having a cavity which forms a melting space;

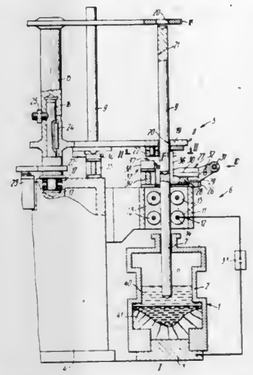
a supporting stand arranged close to the mould;

an electrode feeding device mounted on said supporting stand and including:

a lower holder for a consumable electrode, comprising a roller feeding means having at least two pairs of drive rollers disposed above said mould and intended for friction contact with the surface of the consumable electrode fed by said rollers into the cavity of said mould;

an upper holder for electrode blanks, which is a rotatable drum disposed above said lower holder and comprising a vertical shaft mounted on said supporting stand, through sockets to accommodate the vertically oriented electrode blanks, the sockets being arranged in a circle passing through the vertical axis of symmetry of said roller feeding means of said lower holder, and gates closing the sockets at the bottom end face of said rotatable drum and intended to support the electrode blanks in said sockets;

a means for joining together the consumable electrode and the electrode blank brought into abutting contact with the



aid of said lower and upper holder, arranged between said lower and upper holder.

4,238,634

GAS TIGHT SEAL FOR ELECTRODES IN SMELTING FURNACES

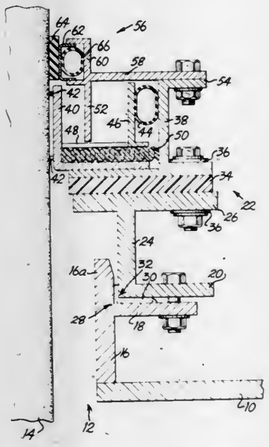
Harald Krogsrud, Gjettum, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Continuation-in-part of Ser. No. 966,269, Dec. 4, 1978, abandoned. This application Jan. 22, 1979, Ser. No. 5,381

Claims priority, application Norway, Dec. 5, 1977, 774138

Int. Cl.³ H05B *7/12*

U.S. Cl. 13—17 **5 Claims**



1. In an electrical smelting furnace having a cover and having at least one electrode carried in an electrode holder which extends through an aperture in said cover, a gas sealing arrangement for sealing the gap between the cover and the holder carrying the electrode, said gas sealing arrangement comprising:

(a) an annular housing affixed to said cover adjacent said aperture;

(b) a plurality of sealing members in said housing adjacent said electrode holder;

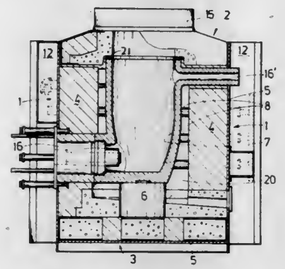
(c) a pneumatic hose positioned between said housing and said plurality of sealing members, said pneumatic hose urging said sealing members against said electrode holder.

4,238,635

MELTING AND CASTING MEANS

Matti Saarivirta, P.O. Box 794, Marquette, Mich. 49855, and Kalervo Lahtinen, Palokunnanpuistokatu 40, 28120 Pori 13, Finland

Continuation-in-part of Ser. No. 803,157, Jun. 3, 1977, abandoned. This application Sep. 24, 1979, Ser. No. 78,569
Claims priority, application Finland, Jun. 10, 1976, 761661
Int. Cl.³ H05B *3/00*
U.S. Cl. 13—22 **8 Claims**



1. A melting and casting apparatus, comprising a heating chamber (20) with side walls (1), a top wall (2), a bottom wall (3) all made of well heat-insulating material (4), a steel shell (5) encircling said heating chamber; a crucible stand (6) disposed within said chamber; a crucible (7) placed on said stand; a minimum of three heating elements (8) installed in said chamber and provided with electric leads (19), said heating elements being disposed within said chamber between said heating elements and said crucible without any physical contact between said heating elements and said crucible; characteristized in that the heating elements (8) are silicon carbide heating elements for heating the crucible to a temperature between 1100 and 1650 degrees Centrigrade for the melting of copper and copper alloys, the well heat-insulating material (4) consists mainly of aluminium oxide and silicon oxide fibres, and the heating elements are so located in the heating chamber that the distance from the centre of the elements to the outer surface (9) of the crucible is 2–4 times 1, where 1 stands for the diameter of the heating element.

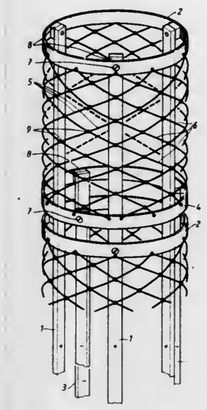
4,238,636

HEATER FOR RESISTANCE FURNACES

Martin Burstrom, Robertsfors, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Mar. 14, 1979, Ser. No. 20,479
Claims priority, application Sweden, Mar. 20, 1978, 7803149
Int. Cl.³ H05B *3/06, 3/34*
U.S. Cl. 13—25 **6 Claims**

1. Heater for furnaces, comprising:
first and second ring-like power-feed elements;
at least one first and at least one second current conductor for respectively supporting said first and second ring-like power-feed elements;
a first group of wire-like resistance elements wound in a righthand spiral between said first and second ring-like power-feed elements;
a second group of wire-like resistance elements wound in a lefthand spiral between said first and second ring-like power-feed elements and forming intersections with said first group of wire-like resistance elements; and



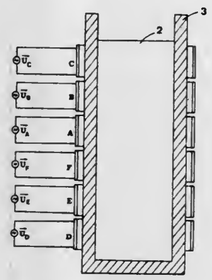
means for retaining the wire-like resistance elements of said first and second groups at said intersections.

4,238,637

CORELESS INDUCTION FURNACE

Roald Bingen, Avenue des Genêts, B-6001 Marcinelle; Jean-Pierre Cordier, Rue Place, 76, B-6110 Montigny-le-Tilleul, and Raymond Georges, Rue d'Affnay, 7, B-4610 Beyne-Heusay, all of Belgium

Filed Jul. 25, 1978, Ser. No. 927,914
Claims priority, application Belgium, Jul. 27, 1977, 18300
Int. Cl.³ H05B *5/00*
U.S. Cl. 13—26 **14 Claims**



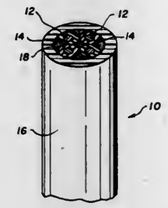
1. Induction furnace comprising a crucible with a vertical axis, containing a bath of molten metal, surrounded by a polyphase winding of a plurality of coils aligned along the crucible and comprising arrangements of certain parts of the windings capable of causing movements in the metal bath, characterized by that the coils of the polyphase winding are arranged in two groups, with n coils at the upper part of the crucible and n′ coils at the lower part of the crucible, by that the upper n coils are supplied by a polyphase system of n voltages $U_1 \ldots U_n$, having an inverse component U_i negligible with respect to a direct component U_d (upward progressing field) and a homopolar component U_o, the ratio of U_o/U_d being chosen so that the tangential components of the vortices generated by the homopolar component on the one hand, and direct component on the other hand, have opposing signs and amplitudes of the same order of magnitude, preferably of equal magnitude, at least in the upper portion of the bath, by that simultaneously, the n′ coils of the lower part are supplied by a polyphase system of n′ voltages $U_1' \ldots U_n''$, having a direct component U_d' negligible with respect to an inverse component U_i' (downward progressing field) and a homopolar component U_o', the ratio of U_o'/U_i' being chosen so that the tangential components of the vortices generated by the homopolar component on the one hand, and the inverse component on the other hand, have opposing signs and amplitudes of the same order of magnitude, preferably of equal magnitude, at least in the lower part of the bath.

4,238,638

ELECTRIC CABLE

Donald F. Cretney, and John Howard, both of Vancouver, British Columbia, Canada, assignors to Phillips Cables Ltd., Ontario, Canada

Filed Dec. 8, 1978, Ser. No. 967,574
Int. Cl.³ H01B *7/28*
U.S. Cl. 174—23 C **5 Claims**



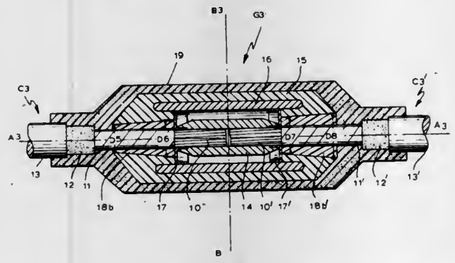
1. In an electrical cable having a core made of insulated conductors disposed within a polymeric sheath wherein the improvement comprises at least partially filling the voids within the core, between the conductors, in the unused cable with a mixture comprising:
untreated calcium carbonate; and
a water-attracting polymer able to form a gel on contact with water without swelling comprising hydroxyethyl cellulose.

4,238,639

JOINT FOR LOW AND MEDIUM VOLTAGE ELECTRIC CABLES

Nicola Palmieri, Milan, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed May 7, 1979, Ser. No. 36,743
Claims priority, application Italy, May 30, 1978, 23989 A/78
Int. Cl.³ H02G *15/184*
U.S. Cl. 174—73 R **9 Claims**



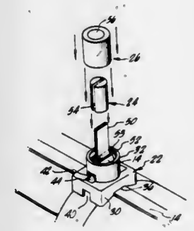
1. An electric power cable joint interconnecting a pair of power cables, each of said cables having a bared conductor end portion and bared insulation surrounding the conductor and extending away from the conductor end and the end of one conductor being axially aligned with the end of the other conductor, said joint comprising:
means conductively interconnecting said end of one conductor to said end of the other conductor;
a pair of insulating, elastomeric adapter sleeves respectively tightly engaging and surrounding the insulation of one conductor and the insulation of the other conductor, each sleeve extending from adjacent a bared conductor in the direction away therefrom and at least one of said sleeves increasing in exterior size in a direction away from the conductor ends to provide a tapered exterior surface there on;
a monolithic, dielectric sleeve surrounding and tightly engaging at least part of each of said adapter sleeves including the tapered exterior surface of said one of said sleeves and surrounding both the conductor end portions and said means interconnecting the end of one conductor to the end of the other conductor, said monolithic sleeve having a conductive electrode which extends at least around the conductor end portions and which has an exposed inner surface and said monolithic sleeve having a size at a portion of its interior which is less than the maximum exterior size of said one of said sleeves whereby movement of said monolithic sleeve in said direction after it engages said one of said sleeves requires movement of said one of said sleeves in said direction; and
conductive means conductively interconnecting the conductor ends and said electrode.

4,238,640

ELECTRICAL CONNECTOR FOR HEATERS

Donald G. Tweed, Mountain View, and Danny G. Morrow, La Honda, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 24, 1979, Ser. No. 6,186
Int. Cl.³ H01R *4/18*
U.S. Cl. 174—87 **27 Claims**



1. A connector for connecting substantially flat conductors comprising:
(a) a deformable insert having a slot through a circumferential edge and extending along the entire length of the insert, the slot being rectangular in cross-section at all cross-sections and sufficiently wide to accept two such flat conductors; and
(b) a deformable crimp barrel shaped to fit around the insert so that when the barrel is crimped, the width of a substantial portion of the slot is decreased to hold the conductors firmly therein.

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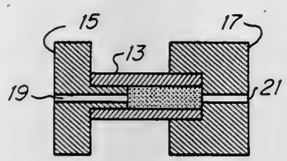
COMPOSITE EPOXY GLASS-MICROSPHERE-DIELECTRICS FOR ELECTRONIC COAXIAL STRUCTURES

Peter J. Planting, and Patricia A. Fritzen, both of Santa Rosa, Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 811,805, Jun. 30, 1977. This application Sep. 26, 1979, Ser. No. 79,148

Int. Cl.³ H01R *5/00;* **H02G** *13/06*

U.S. Cl. 174—88 C **20 Claims**



1. A structure for conveying electrical signals manufactured by performing the steps comprising:
preparing a dielectric material by combining an epoxy resin, an epoxy resin curing agent, a silane coupling agent and a plurality of glass-microspheres;
forming an interim structure including a hollow outer electrical conductor containing disposed therein said dielectric material and at least one inner electrical conductor; and
curing said dielectric material to produce said structure for conveying electrical signals.

12. A method for manufacturing a coaxial structure comprising:
mixing an epoxy resin with a curing agent to produce an epoxy resin base;
mixing a silane coupling agent into said epoxy base to produce an epoxy-silane matrix;
mixing a plurality of glass-microspheres into said epoxy-silane matrix to produce a dielectric material;
inserting said dielectric material into a hollow outer conductor;
positioning an inner conductor in said dielectric material, said inner conductor being centrally disposed with respect to said outer conductor; and
curing said dielectric material to produce said coaxial structure.

4,238,642

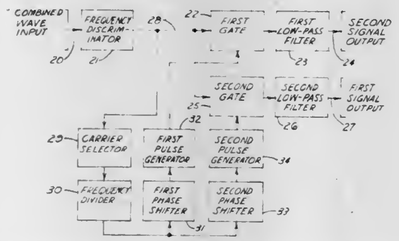
ANGLE-MODULATED STEREO SYSTEM

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, Canada, and Sidney T. Fisher, 53 Morrison, Montreal, Quebec H3P 3C6, Canada

Filed Jul. 17, 1979, Ser. No. 58,152

Int. Cl.³ H04H *5/00*

U.S. Cl. 179—1 GC **3 Claims**



1. A system for transmission of a first and a second signal simultaneously over a channel, without mutual interference between said signals, which comprises:
transmitting apparatus which has substantially linear amplitude response and flat frequency response over the range of amplitude and frequency of the transmitted wave, and generates and transmits a combined carrier angle modulated by said first signal, and amplitude modulated by said second signal, and
receiving apparatus, which receives said combined carrier and has substantially linear amplitude response and flat frequency response over the range of amplitude and frequency of said combined carrier, up to and including a discriminator means, the discriminator means being connected to receive said combined carrier, and also comprises pulse generating, sampling and reconstruction filter means for producing said first and second signals separately, without substantial mutual interference between said signals.

4,238,643

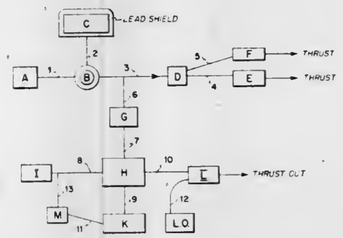
STEAM POWERED PLANE OR VEHICLE

Caroline R. Johnston, 909 W. Central Ave. 205, Missoula, Mont. 59801

Continuation-in-part of Ser. No. 743,788, Nov. 20, 1976, abandoned. This application Mar. 20, 1979, Ser. No. 21,773

Int. Cl.² G21C *1/00*

U.S. Cl. 179—39 **1 Claim**



1. Propulsion system comprising:
(a) a source of liquid water
(b) a boiler means connected to said source for converting said water into steam by means of a nuclear reactor
(c) a reactor pellet storage means having a plurality of reactor cores, said storage means connected to said boiler for delivering one of said cores at a time
(d) a diverter switch connected to said steam, said switch having a plurality of outputs
(e) one of said outputs being connected to the intake of a turbojet wherein it is mixed with air and developes a directional thrust
(f) the other of said outputs being connected to the intake of the ram jet wherein it is mixed with air and developes a directional thrust
(g) said steam also being connected to an electrical generating means so as to supply electricity
(h) a storage battery connected to said electricity generating means so as to supply electricity
(i) a source of liquid oxygen
(j) an ion jet having a plurality of inputs, one of said inputs being connected to said storage battery, another of said inputs being connected to source of liquid oxygen wherein said jet developes a directional thrust by means of a stream of oxygen ions
(k) a rocket control means connected to said storage battery
(l) a rocket connected to said rocket control means Line **11** goes line from rocket to the controls on control panel M.
(l) Ion jet has power line No. **10** to storage battery and connecting line No. **12** to the Liquid Oxygen tank, as electrical power and the Liquid Oxygen converge into the Ion jet equals a thrustout and high speeds will take place
L.O. represents Liquid Oxygen storage tank
(m) All the control switches for all the different components of said propulsion system are to be placed on the control panel of said plane or vehicle and the control throttle for the steam control Line #13 connecting controls to the storage battery.

4,238,644

SUPPLY CIRCUIT FOR A SUBSCRIBER'S LINE CIRCUIT

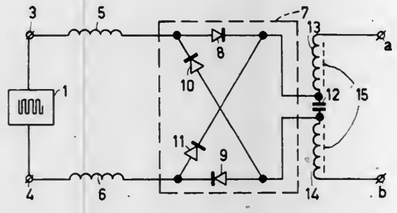
Eise C. Dijkmans, Eindhoven, and Klaus-Dieter K. Brockmann, Hilversum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1978, Ser. No. 912,453

Claims priority, application Netherlands, Mar. 6, 1978, 7802421

Int. Cl.³ H04M *19/00*

U.S. Cl. 179—81 R **10 Claims**



6. A telephone supply circuit for supplying electric energy to a subscriber's line by means of a supply impedance for limiting the line current occurring upon short circuit of the line comprising, an A.C. voltage generator having a frequency above the speech band of the subscriber's line, the supply impedance including a low resistance reactance means, an AC/DC converter, and circuit means coupling the A.C. voltage generator to the subscriber's line via the reactance means and the AC/DC converter whereby the alternating current supplied by the A.C. voltage generator flows through the reactance means to the AC/DC converter with the reactance means operative to produce minimum power dissipation by the supply impedance.

4,238,645

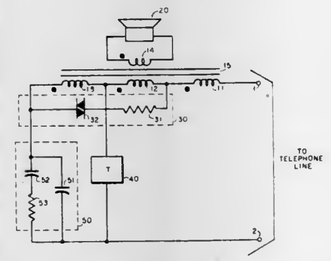
VARIABLE LOOP TELEPHONE TRANSMISSION CIRCUIT

Victor G. Burger, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 29, 1978, Ser. No. 974,393

Int. Cl.² H04M *1/58*

U.S. Cl. 179—81 A **6 Claims**



1. A transmission circuit for use in a telephone substation including first and second line terminals connected to a telephone line, said transmission circuit comprising:
an induction coil having first, second and third windings connected in series, said first winding also connected to said first line terminal and said third winding connected via a circuit connection to said second line terminal; said induction coil further including a fourth winding magnetically coupled to said first, second, and third windings; said first, second and third windings operated in response to incoming signals from said telephone line to generate a magnetic field through and a voltage across each winding;
a receiver connected in parallel with said fourth winding; said fourth winding operated in response to said magnetic field generated by said first, second and third windings to generate a voltage across said fourth winding; and said receiver operated in response to said voltage generated by said fourth winding to audibly reproduce said incoming signals; and
receive signal regulation means connected in parallel with the series combination of said second and third windings operated in response to the sum of said voltages generated by said second and third windings to limit the voltage developed across said second and third windings after a predetermined voltage has been generated across said second and third windings.

4,238,646

PICKUP CARTRIDGE FOR REPRODUCING SIGNALS RECORDED ON A 45—45 STEREOPHONIC RECORD DISK

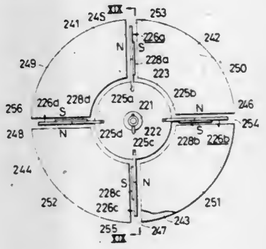
Kenshiro Aizawa, and Hisashi Okada, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 7, 1978, Ser. No. 931,728

Claims priority, application Japan, Aug. 10, 1977, 52-106790[U]; Aug. 12, 1977, 52-107865[U]; Dec. 23, 1977, 52-173676[U]; Jan. 7, 1978, 53-651[U]

Int. Cl.³ H04R *9/16*

U.S. Cl. 179—100.41 D **17 Claims**



1. A pickup cartridge for reproducing signals recorded in the form of undulations of surfaces of walls of a groove formed on a 45—45 stereophonic record disk, comprising:
a vibration system including:
a stylus tip adapted to be moved in accordance with the undulations of the groove walls for tracing the groove of said record disk,
a cantilever carrying, at its foremost end, said stylus tip and making swinging movements centering about a point in accordance with a movement of said stylus tip, and
supporting means for supporting said cantilever to permit said swinging movements of said cantilever while preventing movement of the cantilever in an axial direction thereof;
means for producing a magnetic field; and
a movement-electromagnetism conversion system responsive to the swinging movements of said cantilever within said field, said system including:
first and second coil means, one of said coil means being wound about an axis extending parallel to the record

disk and the other of said coil means being wound about an axis extending perpendicular to the record disk;

said first coil means being mechanically coupled to said cantilever for moving together with said cantilever within the magnetic field and being arranged to induce therein an electromotive force proportional to the component of velocity of the movement of said stylus tip in a direction parallel to a surface of said record disk;

said second coil means being mechanically coupled to said cantilever for moving together with said cantilever within the magnetic field and being arranged to induce therein an electromotive force proportional to the component of velocity of the movement of said stylus tip in a direction perpendicular to the surface of said record disk;

means electrically coupling said first and second coil means with one another to deliver the sum of, and the difference between, electromotive forces induced in the first and second coil means; and

damping means for damping movements of said cantilever.

4,238,647

TELEPHONE HANDSET HAVING SHOULDER REST AND ADJUSTABLE EARPIECE

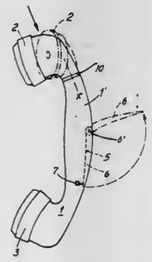
Oscar Maspoli, Via Gerso 17 A, CH-6900 Lugano, Switzerland

Filed Dec. 4, 1978, Ser. No. 966,301

Claims priority, application Switzerland, Dec. 7, 1977, 14970/77

Int. Cl.³ H04M *1/04*

U.S. Cl. 179—103 **2 Claims**



1. A telephone handset comprising a handle element, a shoulder rest mounted on said handle element for outwardly pivotable movement relative to said handle element to permit said handset to be supported on either shoulder of a user, said shoulder rest being so shaped that, when it is pivoted into engagement with said handle element, the outer surface of said shoulder rest matches the shape of and is flush with the outer surface of said handle element, and a rotatably adjustable earpiece on said handset, said earpiece having an angularly displaceable ear-contact surface which is adapted to be positioned to properly engage either the right ear or the left ear of the telephone user by rotatable adjustment of said earpiece relative to said handle element.

4,238,648

TERMINATION FOR TELECOMMUNICATION PATH

Richard E. Epworth, Bishop' s Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 26, 1979, Ser. No. 6,625

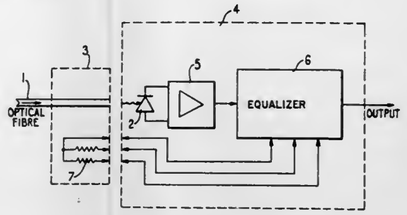
Claims priority, application United Kingdom, Feb. 2, 1978, 04247/78

Int. Cl.³ H04B *9/00*; G02B *27/00*

U.S. Cl. 179—170 D **5 Claims**

1. In an electrical termination for a telecommunication transmission path having a two-part demountable connector device, one part of which is adapted to receive one end of a length of transmission medium forming said path, an electrical circuit to which the other connector part is connected, said electrical circuit comprising:

one or more adjustable programmably components, the one part of the connector being provided with means for adjusting said adjustable components of said electrical



circuit, whereby said two parts of the connector device further comprise means for connecting said adjusting means of the one part of said connector to said adjustable programmably components of the electrical circuit arrangement when the length of transmission medium is connected to the electrical circuit arrangement.

4,238,649

CALL SIMULATOR

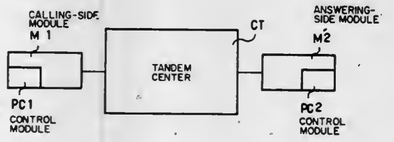
Marc Kemler, Meudon la Foret, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jul. 25, 1978, Ser. No. 928,029

Claims priority, application France, Aug. 8, 1977, 77 24346

Int. Cl.³ H04M *3/24*

U.S. Cl. 179—175.2 D **13 Claims**



1. A traffic simulator for simulating calls switched through a tandem exchange by simulating both the calling and the answering exchange sides of signalling with the tandem exchange, wherein the progress of a call is divided into a succession of phases during which (i) a connection is set up through said tandem exchange, (ii) a speech between subscribers is simulated, and (iii) the connection is cleared, wherein said simulator comprises:

an independent calling side module connected to in-coming circuit terminating equipment of said tandem exchange, said calling side module simulating signalling between a calling exchange and said tandem exchange via an incoming circuit connected to said in-coming circuit terminating equipment;

and an independent answering side module connected to outgoing circuit terminating equipment of said tandem exchange to simulate signalling between said tandem exchange and an answering exchange;

each of said calling and answering side modules being entirely independent from one another, whereby communication between said calling and answering side modules being exclusively through said tandem exchange, each said modules individually comprising central logic function means for controlling the progress of a call and fault analyser logic function means for analysing data received or transmitted at each of said phases to indicate faults.

4,238,650

ELECTRICAL SWITCH

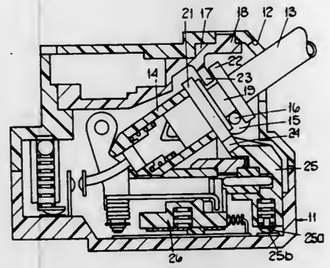
Edward Cryer, Burnley, and Norman Wilkinson, Nelson, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed May 30, 1978, Ser. No. 910,516

Claims priority, application United Kingdom, Jun. 21, 1977, 46136/77; Sep. 13, 1977, 46137/77; Nov. 5, 1977, 46133/77

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—4 **4 Claims**



1. An improvement in a multi-mode electrical switch including a body, an elongate oporating lever extending from the body for manual operation, means mounting at least a portion of said lever for rotational movement with respect to said body about a longitudinal axis of the lever, further means mounting said lever, including said portion thereof, for pivoting movement with respect to said body about an axis generally transverse to said longitudinal axis, said lever being movable to at least first and second positions about said transverse axis, first switching means responsive to rotational movement of said portion of said lever about said longitudinal axis, and second switching means responsive to movement of said lever about said transverse axis, said improvement comprising: lock-out means including a first abutment movable with said portion of said lever, and a co-operating second abutment on part of the switch which is fixed relative to movement of said portion of said lever about both said transverse axis and said longitudinal axis, said first abutment being moved into engagement with said second abutment by movement of said lever to said second position about said transverse axis, whereby interengagement of said first and second abutments prevents rotation of said portion of the lever about said longitudinal axis, whereas in said first position of said portion of said lever about said transverse axis said abutment is spaced from said second abutment, whereby rotation of said portion of said lever about said longitudinal axis is permitted.

4,238,651

SNAP ACTION FLUID PRESSURE SWITCH

David Tann, Detroit, Mich., assignor to Electro-Mechanical Products, Detroit, Mich.

Filed Jan. 11, 1979, Ser. No. 2,577

Int. Cl.³ H01H *35/34*

U.S. Cl. 200—83 P **11 Claims**

1. A fluid pressure actuated electrical switching arrangement comprising:

a switch housing having an internal cavity formed therein;

an electrically conductive movable element mounted within said internal cavity subdividing said cavity into respective subchambers sealingly isolated from each other and having a portion thereof movable in response to the development of a predetermined pressure differential thereacross;

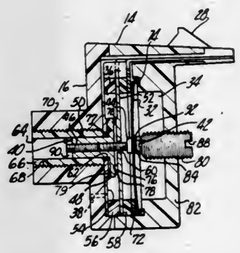
an elongated electrical contact member secured to and extending away from a central region of said electrically conductive movable element, and electrically connected thereto, and further including a flange portion connected to said electrical contact member;

a first electrical contact plate fixedly mounted in said housing spaced from said electrically conductive movable element and having an opening through which said electrical contact member extends;

a second electrical contact plate and means biasing said electrically conductive movable element to a position with said flange portion in contact with said second electrical contact plate;

terminal means including a plurality of terminals respectively connected to said first and second electrical contact plates and said electrically conductive movable element;

means creating an electrical connection between said electrically conductive movable element and said first electrical contact plate by movement of said electrically conductive movable element which moves said elongated electrical contact member and said flange portion away from said second contact plate and its contact with said first electrical contact plate in response to development of a predetermined pressure differential condition existing between said subchambers in said switch housing, said means including a portion of said first electrical contact plate positioned in said switch housing to be engaged by said flange portion by movement of said electrically conductive movable element;



a pilot portion secured to said flange portion;

a threaded sleeve having a guide bore formed therein, said pilot portion slidably extending into said bore, said threaded sleeve received in a threaded bore formed in said switch housing;

said second contact plate formed with an opening therein and wherein said pilot portion passes through said opening into said guide bore at a location remote from said second contact plate;

said threaded sleeve adjustable in said threaded bore to be advanced into said threaded bore and abut said second contact plate on a side thereof remote from said electrically conductive movable element, whereby said position of said second contact plate may be adjusted by said adjustment of said threaded sleeve in said threaded bore.

4,238,652

SWITCH SYSTEM FOR INDICATING CHANGES IN LIQUID LEVEL

Nelson H. Wilson, Brownsburg, Ind., assignor to Indian Head, Inc., New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 956,105

Int. Cl.³ H01H *35/18*

U.S. Cl. 200—84 B **8 Claims**

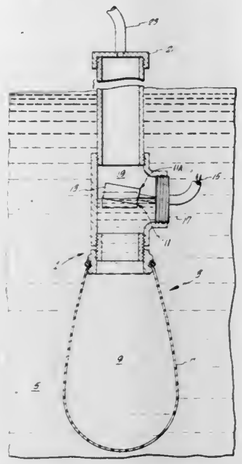
1. An improved method for detecting a change in liquid level of a first liquid comprising:

containing a second liquid within a reservoir;

biasing a switching means to assume a first position when said second liquid is below a predetermined level; and

compressing a flexible membrane lower portion of said

resevoir upon pressure exerting contact with the rising of said first liquid level thereby raising the liquid level of said



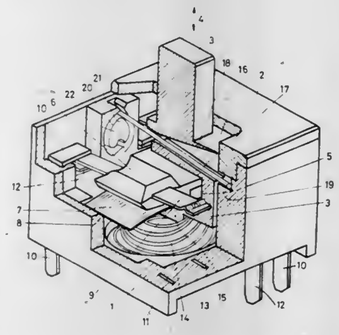
second liquid and urging said switching means to assume a second position.

4,238,653

ELECTRICAL SWITCH HAVING A SETTING ROD ACTING AS A LEVER

Gert M. Brandt, Bronshoj, Denmark, assignor to Aktieselskabet MEC Makanisk Elektrisk Compagni af 1975, Ballerup, Denmark

Filed Feb. 12, 1979, Ser. No. 11,700
Claims priority, application Denmark, Feb. 22, 1978, 784/78
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—153 J **2 Claims**



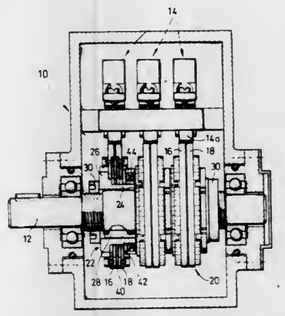
1. An electrical switch including a housing and a button having a through hole therein, which button, by means of a manual depression thereof in a single direction, is movable relative to said housing between two positions defined by a setting mechanism acting between said housing and said button, said setting mechanism including a setting rod with two ends, one extreme end of which is guided in a slot or groove having two fixing points, characterized in that said setting rod comprises an unequal-armed lever with its fulcrum at the second end of said rod, the longest arm of said lever terminating at said extreme end of said rod and being allocated said two spaced-apart fixing points, the shortest arm of said lever being rockably supported in said through-hole of said button, the direction of said through-hole being substantially perpendicular to the direction of movement of said button, and means in said housing maintaining the fulcrum end of said lever as a substantially fixed rocking point of said lever in said housing.

4,238,654

SWITCHGEAR

Eduard Hermle, Kirchstr. 20, 7303 Neuhausen, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,239
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838373
Int. Cl.³ H01H *3/42*
U.S. Cl. 200—153 LB **12 Claims**



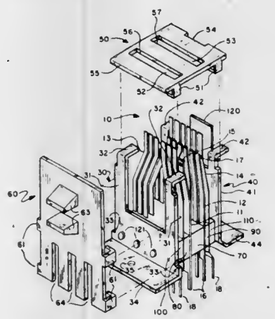
1. Switchgear comprising a rotatable control shaft, a plurality of cam discs carried by said control shaft and being adjustable by rotation about the control shaft, a plurality of switches mounted alongside the control shaft for being actuated by the cam discs as the control shaft rotates, and securing means comprising a securing member disposed on said control shaft adjacent each cam disc and secured against rotation relative to the control shaft, each cam disc and its associated securing member being provided with corresponding engagement parts, one of the engagement parts being a recess, and the other engagement part being an area of plastically deformable material which can be deformed into the recess once a final position of the cam disc has been reached.

4,238,655

CAM ACTUATED SWITCHING DEVICE

David L. Vonder, Addison, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 1, 1979, Ser. No. 80,817
Int. Cl.³ H01H *3/00*
U.S. Cl. 200—153 LA **8 Claims**



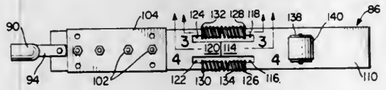
1. A switching device comprising:
at least first and second pairs of contact springs arranged in a linear file, each contact spring of said first and second pairs of contact springs including a fixed end electrically insulated from one another and a free end, said free ends of said first pair of contact springs in spaced relationship with one another and each including a contact surface on a portion of said free ends, and said contact surfaces engaging one another, and similarly said free ends of said second pair of contact springs in spaced relationship with one another and each including a contact surface on a portion of said free ends, and said contact surfaces engaging one another;
a first support bracket having said first and second pairs of contact springs secured thereat, said first support bracket electrically insulated and in spaced relationship with said first pair of contact springs, said first support bracket including a pair of legs in spacial and co-planar relationship with one another in a mutual orientation with said first and second pairs of contact springs, each of said legs including a guide portion oriented perpendicular to said legs;
a follower slideably mounted and displaceable along said guide portions and including electrically insulated first and second edges, said edges transversely oriented between said first and second pairs of contact springs, said first edge in contact with a first contact spring of said first pair of contact springs urging said contact surfaces disengaged and said second edge adjacent a first contact spring of said second pair of contact springs;
an actuator slideably mounted and displaceable along said first support bracket legs perpendicular to said cam follower and including a cam portion for engaging said follower so as to displace said follower to enforce contact of said follower second edge with said first contact spring of said second pair of contact springs urging said contact surfaces disengaged and simultaneously displacing said cam follower first edge out of contact with said first contact spring of said first pair of contact springs allowing engagement of said contact surfaces.

4,238,656

WATERPROOF MULTIPLE ELECTRICAL SWITCH ASSEMBLY

Pablo M. Heyrana, 1839 R St., N.W., Washington, D.C. 20009

Division of Ser. No. 790,418, Apr. 25, 1977, Pat. No. 4,143,254. This application Mar. 1, 1979, Ser. No. 16,372
Int. Cl.³ H01H *1/26*
U.S. Cl. 200—283 **9 Claims**



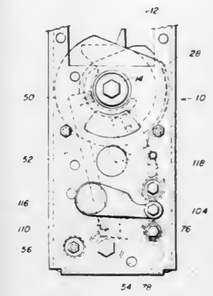
1. An electrical blade switch comprising
(a) a first contact leaf
(b) a second contact leaf
(c) insulating means for maintaining said first and second contact leaves in spaced relation
(d) said second contact leaf consisting of two parts arranged in opposed, end to end relation and comprising a fixed portion and a movable portion
(e) hinge means connecting said fixed and movable portions to permit deflection of the latter
(f) means between, and engaged with, said fixed and movable portions, to normally urge the latter to the undeflected position, and
(g) contacts on first contact leaf and the movable portion of said second contact leaf, said contacts being in opposed, spaced relation whereby, when said movable portion is deflected towards said first contact leaf by an outside force, said contacts are in contiguous engagement to complete an electrical curcuit.

4,238,657

SWITCH OPERATOR CONDITION AND POSITION INDICATOR MECHANISM

John C. Opfer, Deerfield, and Edward J. Rogers, Chicago, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Jul. 6, 1978, Ser. No. 922,326
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—308 **14 Claims**



1. An indicator mechanism for indicating the condition and position of a switch operator, the operator having (a) an output shaft rotatable between a switch-closed and a switch-open position and (b) an input shaft rotatable between a first position, whereat selectively releasable energy for rotating the output shaft to the switch-closed position is stored in the operator, and a second position, whereat selectively releasable energy for rotating the output shaft to the switch-open position is stored in the operator, the switch being opened or closed by rotation of the output shaft if the output shaft is coupled to the switch, the switch being unaffected by rotation of the output shaft if the output shaft is not coupled to the switch, the indicator mechanism comprising:
a first indicator connected to the input shaft of the switch operator for conjoint rotation with the input shaft between a position corresponding to the charged-to-open condition of the switch operator and a position corresponding to the charged-to-closed condition of the switch operator, said first indicator having visible indicia thereon for indicating the condition of the switch operator depending upon the position of the first indicator; and
a second indicator connected to the output shaft of the switch operator for rotation to a first position when the switch operator is in the switch-closed position and to a second position when the switch operator is in the switch-open position, said second indicator having visible indicia thereon for indicating whether the switch operator is in the switch-closed or switch-open position depending upon the position of the second indicator, all indicia being simultaneously visible to indicate the condition and position of the switch operator.

4,238,658

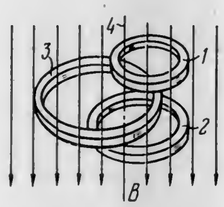
METHOD OF ASSEMBLY OF NONMAGNETIC CURRENT-CONDUCTING COMPONENTS

Robert K. Kalnin, ulitsa Gorkogo, 53, kv. 19; Benyamin A. Ioffe, ulitsa Stirnu, 37a, kv. 44; Jury A. Zommer, ulitsa Artileriyas, 52, kv. 25; Gunar Y. Sermons, ulitsa Bultu, 8, kv. 93; Ivan I. Kern, ulitsa Auglju, 4, kv. 1, and Jury J. Kipers, ulitsa Kokles, 12, kv. 10, all of Riga, U.S.S.R.

Filed Mar. 12, 1976, Ser. No. 666,460
Int. Cl.³ B23K *13/00*
U.S. Cl. 219—9.5 **18 Claims**

1. A method of assembling nonmagnetic current-conducting components into units along an axis of assembly comprising the steps of producing a primary alternating magnetic field whose induction vector is directed along said axis of assembly; plac-

ing the components to be assembled in said primary magnetic field to induce in said components currents exciting a secondary magnetic fields interacting with said primary magnetic field thus producing electrodynamic forces acting on the components placed in said primary magnetic field, said components



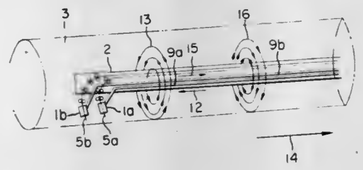
being placed so that the areas of said components covered by the contours of said induced currents are located in planes approximately perpendicular to said axis of assembly and at least partially overlap each other in each adjacent pair of the components to be assembled.

4,238,659

PREVENTING MAGNETIZATION OF PIPE BLANK IN GMA WELDING

Fusao Koshiga, Kawasaki; Jinkichi Tanaka, Yokohama; Itaru Watanabe, Yokohama; Motoaki Suzuki, Yokohama; Toshifumi Kojima, Yokohama; Hiroyoshi Matsubara, Fukuyama; Tatsumi Osuka, Fukuyama; Kenji Takeshige, Fukuyama; Takashi Nagamine, Fukuyama, and Osamu Hirano, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 772,592, Feb. 28, 1977, abandoned.
This application Feb. 12, 1979, Ser. No. 11,412
Claims priority, application Japan, Mar. 24, 1976, 51-31393
Int. Cl.³ B23K *31/06*
U.S. Cl. 219—61 **3 Claims**



1. In a welding method for longitudinally seam-welding a pipe-blank from the inside thereof using the GMA welding process comprising supplying direct electric current as the welding current to an even number of consumable electrodes in tandem through current supply cables, said cables extending substantially parallel in substantially the same direction, half of said consumable electrodes being connected to said direct electric welding current so as to be positive polarity consumable electrodes and the remaining half of said consumable electrodes being connected to said direct electric welding current so as to be negative polarity consumable electrodes; and longitudinally seam-welding the pipe-blank for welded steel pipe from the inside along a cleft or groove by feeding said respective consumable electrodes through a respective even number of welding torches in tandem, while moving a boom carrying said welding torches through said pipe-blank relative to said pipe-blank in the same direction as that of welding, said boom having a free end which carries said welding torches and having a length at least equal to that of said pipe-blank;

the improvement comprising preventing circumferential magnetization of substantially the complete pipe-blank over substantially the entire length thereof and obtaining deeper fusion penetration by:

introducing said current supply cables from the same end of said pipe-blank into said pipe-blank substantially parallel to the axial line of said pipe-blank;

arranging said positive polarity consumable electrodes as leading electrodes in said direction of welding;

arranging said negative polarity consumable electrodes as trailing electrodes in said direction of welding; and,

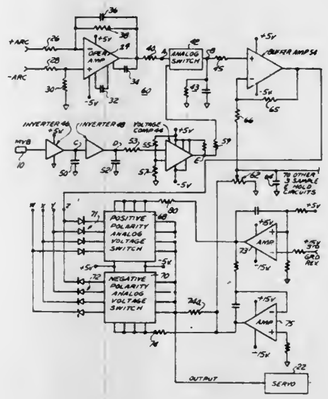
applying said direct electric welding current to said current supply cables for carrying out the GMA welding process to seam-weld said pipe blank from the inside with said electrodes to form a pipe so that the lines of magnetic force produced along the circumference of said pipe-blank by said direct electric welding current flowing through said current supply cables cancel each other, thereby preventing said circumferential magnetization of said pipe-blank, and also obtaining a deeper fusion penetration required on the leading electrode side.

4,238,660

MULTI-LEAD SERVO FEED SYSTEM FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Oliver A. Bell, Jr., Statesville; Randall C. Gilleland, Troutman, and Davey J. Chance, Concord, all of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed May 24, 1978, Ser. No. 909,023
Int. Cl.³ B23P *1/12*
U.S. Cl. 219—69 G **4 Claims**



1. A servo feed system for an electrical discharge machining apparatus of the multiple electrode type with reversible gap polarity and including a pulse generator, comprising:

a plurality of electrodes;

a like plurality of arc leads, each connected to a different one of said electrodes;

a first array of parallel connected diodes, each having its anode connected to one of said leads;

a second array of parallel connected diodes, each having its cathode connected to one of said leads;

a pair of analog electronic switches, one having its input terminals coupled to the cathodes of said first array and the other having its input terminals connected to the anodes of said second array;

means for enabling one of said switches responsive to one gap polarity and for enabling the other of said switches responsive to the opposite gap polarity; and

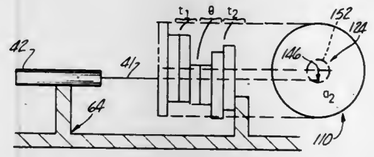
a servo feed means operatively connected to the output of said switches for controlling the upfeed and downfeed of said electrodes.

4,238,661

PRESSURE-SENSING CAPACITOR AND METHOD OF TRIMMING SAME

Peter F. Braunlich, Pullman, Wash., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1978, Ser. No. 947,907
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LN **11 Claims**



1. The method of making a variable capacitor of the type having a first conductive plate being formed of a conductive sheet supported on a non-conductive substrate and which is spaced from and disposed opposite a second conductive plate, the first conductive plate being movable relative to the second conductive plate in accordance with known displacement characteristics in response to changes in the value of a variable physical quantity such that the capacitance therebetween is higher by an unknown amount than the desired value of capacitance at every point in the range of variation of the value of the physical quantity whereby the capacitance value is a function of the physical quantity, the method comprising the steps of:

measuring the capacitance value while subjecting the capacitor to a predetermined value of the physical quantity;

computing the location and dimensions of a first part of said conductive sheet according to a predetermined function of the measured capacitance value, as determined in response to said step of measuring, and said known displacement characteristics between the first and second conductive plates, said first part contributing an increment of capacitance between the plates having a value equal to the amount by which the measured capacitance exceeds the desired capacitance; and

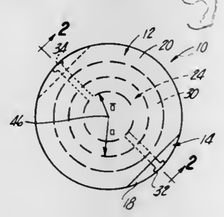
cutting through the conductive sheet along a path defined by said location and dimensions, determined in said step of computing, of the first part of the conductive sheet to sever the first part from a second part of the sheet so that the value of capacitance between the second conductive plate and the second part of the conductive sheet is substantially equal to the desired value of capacitance when the capacitor is subjected to said predetermined value of the physical quantity.

4,238,662

PRESSURE-SENSING CAPACITOR AND METHOD OF TRIMMING SAME

Binneg Y. Lao, West Bloomfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1978, Ser. No. 947,908
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LN **11 Claims**



1. The method of making a variable capacitor of the type having a first conductive plate being formed of a conductive sheet supported on a non-conductive substrate and which is spaced from and disposed opposite a second conductive plate, the first conductive plate being movable relative to the second conductive plate in accordance with known displacement characteristics, at least one portion of the conductive sheet moving to a greater relative extent than a second portion of the conductive sheet along a deflection axis about which the displacement characteristics are symmetric in response to changes in the value of a variable physical quantity such that the capacitance therebetween is higher by an unknown amount than the desired value of capacitance at every point in the range of variation of the value of the physical quantity whereby the capacitance value is a function of the physical quantity, the method comprising the steps of:

measuring the capacitance value while subjecting the capacitor to a first predetermined value of the physical quantity,

measuring the capacitance value while subjecting the capacitor to a second predetermined value of the physical quantity,

computing the location and dimensions of a first part of said conductive sheet relative to the deflection axis according to a predetermined function of the measured capacitance values and said known displacement characteristics between the first and second conductive plates, said first part contributing an increment of capacitance between the plates having a value equal to the amount by which the measured capacitance exceeds the desired capacitance at the first and second predetermined values of the physical quantity, and

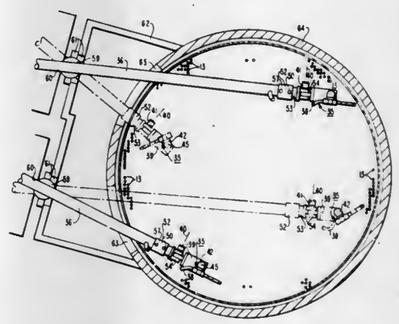
cutting through the conductive sheet along a path defined by said location and dimensions of the first part of the conductive sheet such that the first part is eccentric with respect to the deflection axis to sever the first part from a second part of the conductive sheet so that the values of capacitance between the second conductive plate and the second part of the conductive sheet are substantially equal to the desired values of capacitance when the capacitor is subjected to said first and second predetermined values of the physical quantity.

4,238,663

TUBE BUNDLE CUTTING METHOD AND APPARATUS

Gregory L. Calhoun, Monroeville; Frank Bauer, Harmony, both of Pa., and Arthur W. Kramer, Doctor's Inlet, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1978, Ser. No. 953,658
Int. Cl.² B23K *9/00*
U.S. Cl. 219—121 P **3 Claims**

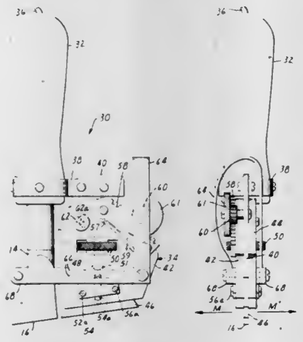


1. A method for cutting through a bundle of vertically-extending tubes of a heat exchanger, comprising the steps of,

simultaneously advancing a pair of vertically-spaced-apart cutting torches horizontally into said bundle, while the upper torch is aimed upwardly and the bottom torch is aimed downwardly, thereby effecting horizontal cuts

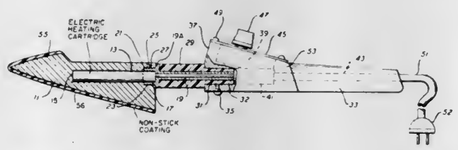
through tubes of such bundle simultaneously at vertically-spaced-apart intervals,
enabling removal of the double-cut tube sections from the bundles, and
moving such torches also laterally to enable cutting-action-traverse of the entire bundle cross section.

4,238,664
BURN-IN KNIFE WITH EDGE GUIDE
Wilfred P. Anderson, 4535 Blaisdale Ave., Minneapolis, Minn. 55409
Filed Aug. 31, 1977, Ser. No. 829,289
Int. Cl.³ H05B *1/00;* **B26B** *3/00, 29/00*
U.S. Cl. 219—230 **8 Claims**



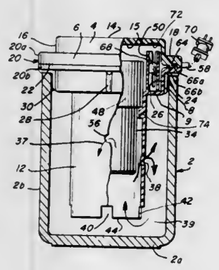
1. A burn-in knife comprising:
(a) insulated handle means,
(b) a heated blade, carried by such handle means, having a straight working edge,
(c) an edge guide mounted on said knife, said edge guide carrying on its lower portion a guide means of heat-insulative material which is in adjacent side-by-side relationship to the working edge of said blade and out of the working path thereof, said guide means having a straight edge adapted to engage the surface of a workpiece and being adapted to support said knife on a workpiece and maintain said working edge of said knife at a predetermined distance from said workpiece, and said edge guide including means for selectively adjusting the edge of said guide means vertically with respect to said working edge of said blade without changing the angle of said working edge of said blade with respect to the edge of said guide means, and wherein said guide means lies in the same plane as said blade.

4,238,665
ELECTRICALLY HEAT TOOL
Paul Tremarco, 108 Long Pond Rd., Hewitt, N.J. 07421
Filed Feb. 23, 1978, Ser. No. 880,338
Int. Cl.³ B23K *3/02;* **H05B** *1/00*
U.S. Cl. 219—238 **9 Claims**



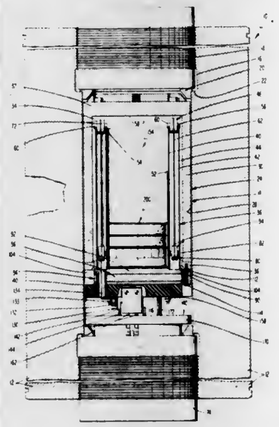
1. A heating tool comprising:
(a) a handle having a bore in one end thereof and an intermediate recess adjacent said bore, said bore opening into said recess;
(b) a heating shoe having a first internal bore of a first diameter and a second bore of a greater diameter extending outwardly therefrom;
(c) a cylindrical heating cartridge of an outer diameter matched to said first internal bore in said heating shoe inserted into said first internal bore;
(d) a sleeve comprising a unitary cylindrical member with a central bore therethrough, said sleeve having a first end section of an outer diameter matched to the inner diameter of said second bore of said shoe, an enlarged collar portion inwardly of said first end section and a second end section extending from the other side of said collar portion, the central bore of said first end section being enlarged, said heating cartridge having an end disposed in said enlarged central bore, said first end section of said sleeve being inserted into said second bore with said collar portion abutting against the end of said shoe, said second end section extending into the bore of said handle;
(e) an insulating collar having a bore of a diameter matched to the outer diameter of said second end section and having a first end of outer diameter substantially equal to the diameter of said collar portion and a second end of diameter matched to said bore in said handle, said collar having a length substantially equal to the length of said second end section, surrounding said second end section with said first end abutting against said collar and said second end inserted in the bore in said handle, said insulating collar thereby extending between said handle and said heating shoe and sleeve and minimizing heat transfer between said heating shoe and sleeve and said handle;
(f) means for detachably connecting the first end section of said said sleeve to said shoe;
(g) means for detachably connecting the second end of said collar and second end section of said sleeve to said handle;
(h) a heat control capable of varying the amount of power supplied to the electric heating cartridge, to thereby control the heat generated by it, disposed it said recess of said handle; and
(i) wiring means extending through the central bore in said sleeve interconnecting said cartridge and heat control; and
(j) wiring interconnected with said heat control, extending from said handle to a plug, for supplying power to said heat sealing tool.

4,238,666
PORTABLE ELECTRIC SINGLE SERVICE BEVERAGE HEATING DEVICE
William R. Pomper, 207 Woodland Rd., Highland Park, Ill. 60035
Filed Mar. 13, 1978, Ser. No. 885,665
Int. Cl.³ H05B *3/80;* **F24H** *1/04*
U.S. Cl. 219—318 **8 Claims**



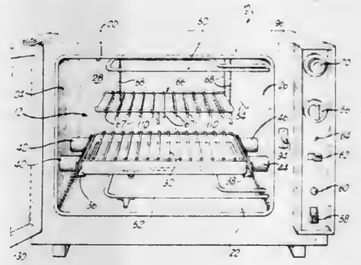
1. A portable liquid heating system comprising a single service beverage container having a bottom and side wall and a removable heating unit, said heating unit comprising: housing means having a central axis and a radially extending imperforate annular flange means sufficiently wide relative to said beverage container for support on the side wall thereof, said flange means including means extending therefrom along the underside thereof maintaining said flange in spaced relationship from said side wall for venting said container; rigid, apertured shroud means having one end secured to said housing means and extending along said central axis from said flange means into said container and spacer means extending from said flange means generally surrounding said shroud means adjacent said flange means and engageable with said side wall to maintain a generally annular space between said shroud means and said side wall; cylindrical resistance heating means suspended by one end from said housing means and extending along said central axis in a spaced relationship to said shroud means; and a thermostat within said shroud means in direct thermal association with said resistance heating means, responsive to the temperature of the resistance heating means, and controlling the temperature of said resistance heating means, said shroud means being apertured at predetermined locations along its length to pass heated liquid located between said heating means and said shroud means to a location between said shroud means and said side wall whereby convective liquid flow occurs upwardly between said heating means and shroud means and downwardly between said side wall and shroud means, thereby enhancing thermal distribution throughout the liquid and the heating means and enhancing the responsiveness of said thermostat, said shroud means being non-metallic and extending along said central axis with the free end thereof being open to freely pass liquid and extending beyond the end of said resistance heating means to shield said resistance heating means from contact with foreign objects whereby said housing means, including said free end of said shroud means, may rest on such foreign objects without deleterious effects.

4,238,667
HEATING UNIT FOR HIP FURNACE
Robert M. Conaway, Columbus, Ohio, assignor to Conaway Pressure Systems, Inc., Dublin, Ohio
Filed Jan. 17, 1979, Ser. No. 4,187
Int. Cl.³ H05B *3/06*
U.S. Cl. 219—390 **19 Claims**



19. A furnace for heating work material, comprising:
an outer wall enclosing a space;
a first upright cylindrical shell disposed within said space and defining a work chamber for receiving work material to be heated;
a second upright cylindrical shell surrounding and spaced outwardly of said first shell to form a heater space therebetween,
said first and second shells each including an upper edge having slots therein; and
heating means comprising:
support means disposed across and supported atop said first and second shells, said support means comprising a plurality of circumferentially spaced radially extending pins formed of electrically insulative material, each pin being seated on upper edges of said first and second shells;
generally vertically extending electrical heating element means supported from said pins and disposed within said heating space and extending around at least a portion of the periphery of said first shell, said heating element means being unconstrained against free thermal expansion and contraction in vertical directions relative to said first and second shells.

4,238,668
ELECTROSTATIC OVEN
H. William Mammen, Hillside, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Mar. 3, 1977, Ser. No. 774,194
Int. Cl.³ F24C *7/00*
U.S. Cl. 219—399 **3 Claims**



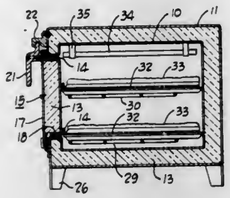
1. Apparatus for cooking food products, comestibles and like articles comprising:
a heating structure defining a closable cavity into which at least one article to be heated is positioned and including a thermostaticallycontrolled electric heating element for heating said articles and a pivotally mounted door for closing an opening to said cavity;
a fixed conductive shelf for fixedly positioning and supporting the article within said closable heating structure cavity and defining an article cooking plane; said fixed shelf being supported by a conducting guide surface extending into the cavity and insulating mounting means positioned between said heating structure and said guide surface for electrically isolating said guide surfaces; and
means adapted to be connected to a power source for generating an electrical field within said closable heating structure cavity, said electrical field being oriented substantially perpendicular to the article cooking plane, means connected to said door to deenergize said field generating means whenever said door is open,
said electrical field generating means comprising means for maintaining said fixed shelf at a first DC potential and a planar field grid element having an area substantially equal to the area of the fixed conductive shelf disposed within said cavity and being connected to an external control means for selectively adjusting the relative distance between the article to be cooked and the planar field grid element upon operation of the selectively adjusting external control means, said planar field grid element being maintained at a second DC potential with respect to said first DC potential for completing said electrical field to the article cooking plane to substantially immerse a comestible within said electric field for improved heat transfer from the electric heating element and the cavity to the comestible being cooked.

4,238,669

OVEN HAVING DUAL HEATING MEANS

James H. Huntley, 5207 Columbus Ave., Sandusky, Ohio 44870

Filed Apr. 3, 1978, Ser. No. 892,738
Int. Cl.[3] H05B *1/02*
U.S. Cl. 219—405 4 Claims



1. An oven for heating the upper portion of a food item under intense heat and for heating the lower portion of the food item with less intense heat, said oven comprising a housing having upper and lower portions;

quartz rod heating means positioned at the upper portion of said housing, and energizable to heat to a relatively high temperature;

heating coil means positioned below said quartz rod heating means;

support means for holding a food item between said quartz rod heating means and said heating coil means; thermostat means for controlling only the operation of said heating coil means, said thermostat means establishing a relatively low temperature in said heating coil means to heat the lower portion of the food item; and

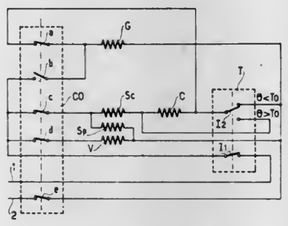
timing means for controlling only the operation of said quartz rod heating means, said timing means being actuable to energize said quartz rod heating means after a preselected time period after the establishment of the relatively low temperature to heat the upper portion of the food item and to de-energize said quartz rod heating means a preselected time period later.

4,238,670

METHOD AND DEVICE FOR REGULATING THE CLEANING TEMPERATURE OF AN OVEN

Paul Maitenaz, Orleans, France, assignor to Compagnie Europeenne pour l'Equipment Menager Cepem, Paris, France

Continuation of Ser. No. 834,259, Sep. 15, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,799
Claims priority, application France, Sep. 28, 1976, 76 29084
Int. Cl.[3] H05B *3/00, 1/02*
U.S. Cl. 219—413 6 Claims



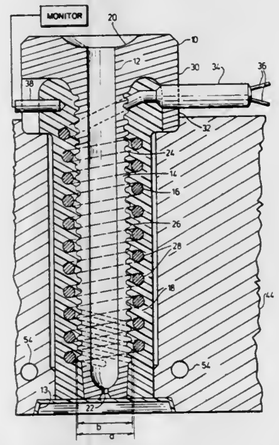
1. A pyrolitically cleaned cooking oven having a cooking chamber, a base plate heating element disposed under said cooking chamber of said oven, said base plate heating element comprising two independent parts, including a central part and a peripheral part, means responsive to the initiation of a cleaning cycle for applying power to a top element and full power to said peripheral part and for applying reduced power to said central part by means of a series connection between said central part and a catalyst resistor, whereby heating of the central part of the oven is prevented in case of accidental breakage of the catalyst resistor; means for applying full power to said top plate element and full power to said peripheral part and for applying power to said central part by means of a series connection between said central part and a grill resistor, in response to the center of the oven reaching a predetermined threshold temperature at a level slightly below the nominal cleaning temperature during a cleaning operation, and means for maintaining a pyrolitic cleaning temperature when said pyrolitic cleaning temperature is reached.

4,238,671

SPRUE BUSHING WITH CAST IN HEATER ELEMENT

Jobst U. Gellert, 233 Armstrong Ave., Georgetown, Ontario, Canada (L7G 4S1)

Continuation-in-part of Ser. No. 970,385, Dec. 18, 1978, abandoned. This application May 8, 1979, Ser. No. 36,880
Int. Cl.[2] F27B *14/06*
U.S. Cl. 219—421 7 Claims



1. An integral electrically heated sprue bushing for injection molding comprising:

(a) an elongated inner core portion defining a central runner passage extending therethrough and an inlet and a restricted orifice portion at opposite ends thereof, the core portion being formed of a high strength thermally conductive metal material and having an undulating outer surface;

(b) an electrically insulated helical heating element having a plurality of spaced coils encircling the inner core portion and terminal means adapted to receive electrical power from an external source, the inner helical diameter of the heating element being greater than the maximum outer diameter of the undulating outer surface of the inner core portion; and

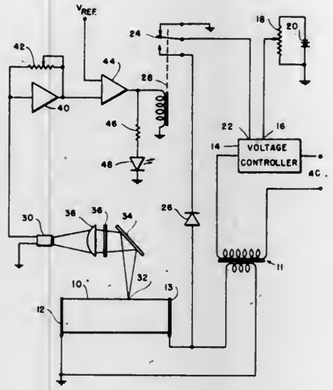
(c) an elongated outer shell portion casted on the inner core portion and casting in the heating element to be bonded to them along their length, the outer shell portion being formed of a metal having a high thermal conductivity.

4,238,672

TEMPERATURE CONTROL CIRCUITRY

Hans Siess, Owingen, Fed. Rep. of Germany, assignor to Boderseewerk Perkin-Elmer & Co. GmbH, Uberlingen, Fed. Rep. of Germany

Filed Jan. 16, 1978, Ser. No. 869,495
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705308
Int. Cl.[3] H05B *1/02*
U.S. Cl. 219—502 6 Claims



1. Control circuitry for controlling the application of electrical power to heating electrodes for rapidly heating and for sustaining a constant preselected elevated temperature of a member having a surface which, when heated, emits radiation, said circuity comprising:

photodetector means positioned to observe the radiation produced at the surface of the member to be heated;

adjustable threshold circuitry coupled to the output of said photodetector means, said threshold circuitry being adjustable to generate an output signal when the radiation from said member reaches a level corresponding to a first predetermined threshold temperature of said member which is in the range of said preselected elevated temperature;

voltage controller means for controlling the voltage supplied to said heating electrodes;

first input means, including switching means, for inputting into said voltage controller means a first signal indicative of the voltage supplied to said heating electrodes when said switching means is in a first position and for discontinuing said first signal when said switching means is in a second position;

said switching means being switchable from its second position to its first position by the output signal from said threshold circuitry;

second input means for inputting an adjustable command signal into said voltage controller means corresponding to the preselected elevated temperature of the member;

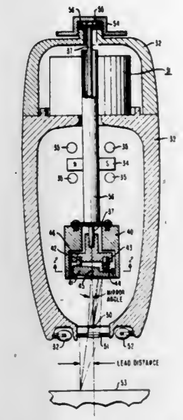
said voltage controller means providing a high heating first output voltage to said heating electrodes in the absence of said first input signal, and in the presence of said first input signal shifts into an automatic control mode of operation in which a second output voltage to said heating electrodes is provided corresponding to a comparison of said first input signal and said command signal.

4,238,673

VARIABLE LEAD DEVICE FOR CIRCULAR SCAN TRACERS

Lawrence M. Layden, Stanton, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Oct. 30, 1978, Ser. No. 955,824
Int. Cl.[3] G05B *1/00*
U.S. Cl. 250—202 7 Claims



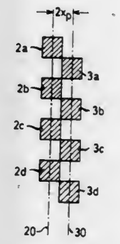
7. In a circular scanning pattern tracing device of the type having a photocell, a shaft rotatable about an axis, a mirror mounted on the shaft at an angle to the axis of rotation, a motor for rotating the shaft, and means for mounting the photocell, shaft, and motor so that, when the motor is energized, light from a pattern to be traced is reflected off the rotating mirror onto the photocell, the improvement which comprises: a pivot for mounting the mirror on the shaft, and means for adjusting the angle of the mirror with respect to the axis of rotation during mirror rotation.

4,238,674

PROCESS AND APPARATUS FOR PRODUCING A HEAT IMAGE WITH COMPENSATION OF THE PHASE ERROR DUE TO SCAN ACTION

Gunther Kuerbitz, Aalen-Ebnat, and Walter Wegener, Koenigsbronn, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,401
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805531
Int. Cl.[3] H01J *31/49*
U.S. Cl. 250—334 9 Claims



1. A process of producing an image of a scene, preferably a heat image, in which the scene to be observed is focused optically, is analyzed linewise by a mechanically moved scanning device (scanner), and is conducted over a multi-element row detector whose elements are arranged in a row perpendicular to the scanning device of the scanner, the signals of the detec-

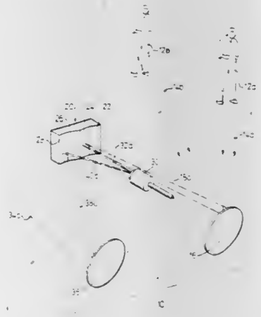
tor being fed via an amplifier to an image presentation device, characterized by the fact that, in order to compensate for the phase error (x_p) which occurs upon the transmission of signal jumps, the signals coming from the row of the individual elements (**1***a*–**1***n*) of the detector device are connected to two adjacent rows of light-emitting diodes (**2***a*–**2***n*, **3***a*–**3***n*) of an image reproduction system in the manner that upon the forward travel of the mirror, the elements of the one row (**2***a*–**2***n*) and upon the rearward movement of the mirror the elements of the other row (**3***a*–**3***n*) are driven and that the distance between the center lines (**20**, **30**), extending in the row-wise direction, of the elements of the two rows (**2***a*–**2***n*, **3***a*–**3***n*) is adjusted in accordance with the phase error to be compensated for.

4,238,675

OPTICS FOR INFRARED INTRUSION DETECTOR

Zbigniew W. Turlej, Mississauga, and Donald F. Hawken, Toronto, both of Canada, assignors to Isotec Industries Limited, Toronto, Canada

Filed Jun. 14, 1979, Ser. No. 48,684
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—353 **21 Claims**



1. In an infrared intrusion detector, an optical device to direct gathered infrared radiation from several discrete, spaced-apart sensitive regions onto an infrared radiation sensor, said device comprising an optical collector for gathering infrared radiation from a space including such sensitive regions and for converging such radiation from a space onto a plurality of reflectors corresponding in number to the number of sensitive regions where each reflector determines a discrete sensitive region and, in turn, is oriented to reflect converging radiation from a corresponding discrete sensitive region onto said infrared radiation sensor

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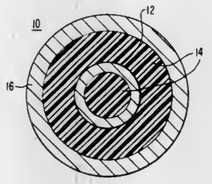
4,238,676

GAMMA FLUX RESPONSIVE SELF-POWERED DETECTOR WITH A TUBULAR EMITTER

Norman P. Goldstein, Murrysville, Pa., and William H. Todt, Elmira Heights, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 1, 1978, Ser. No. 911,578
Int. Cl.² *1/22*
U.S. Cl. 250—370 **5 Claims**

1. A gamma flux sensitive self-powered radiation detector comprising a generally tubular emitter formed of a conductive metal having a high atomic weight, low neutron cross-section, and is high temperature resistant, an insulating core within the tubular emitter, an insulating layer about the tubular emitter,



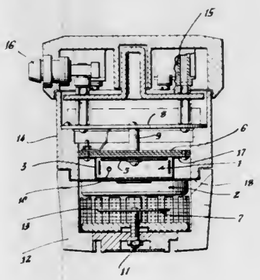
and a generally tubular conductive collector electrode about the insulating layer.

4,238,677

SMOKE DETECTOR BY IONIZATION ASSOCIATED TO A VELOCIMETRIC MEASUREMENT ELECTRONIC CIRCUIT

Emile L. Hugon, Paris, France, assignor to Societe Gamma-Electronic, Paris, France

Filed Mar. 31, 1978, Ser. No. 892,390
Claims priority, application France, Apr. 8, 1977, 77 10719
Int. Cl.² G08B *17/10*
U.S. Cl. 340—629 **11 Claims**



1. An alarm device for detecting smoke, fire or the like, comprising:
- a reference chamber for containing a volume of reference gas therein;
- a measurement chamber communicating with the ambient atmosphere for containing a volume of air in said ambient atmosphere therein;
- means adjacent each of said chambers for ionizing the contents of each of said chambers;
- means communicating with each of said chambers for sensing variations in the degree of ionization of the contents of each of said chambers, said ionization sensing means including means for producing electrical signals corresponding to said degree of ionization and comprising electrode means coupled with each of said chambers for measuring the magnitude of an electric field in each of said chambers; and
- means coupled with said electrode means for eliminating unwanted interference and noise components in said electrical signals,

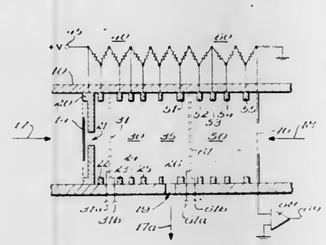
said eliminating circuit means comprising:
- (1) memory circuit means for operating on said electrical signals to temporarily memorize and hold the latter whereby to filter out components in said electrical signals produced by a temporary short circuit condition in said device,
- (2) a comparative discriminator circuit operably coupled with said memory circuit means for compensating for slow occurring, long term variations in the contents of each of said chamber, and
- (3) a time delay circuit coupled with said memory circuit means and said comparative discriminator circuit means for preventing delivery of output signals from said device a prescribed time interval following the occurrence of a short or open circuit condition in said device.

4,238,678

APPARATUS AND A METHOD FOR DETECTING AND MEASURING TRACE GASES IN AIR OR OTHER GASEOUS BACKGROUNDS

B. Wayne Castleman, Kenneth City, and Gene B. Wyatt, Seminole, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 5, 1978, Ser. No. 948,740
Int. Cl.² H01J *39/28*; G01T *1/185*; B01D *59/44*
U.S. Cl. 250—381 **4 Claims**



1. An apparatus for detecting trace amounts of vapors or gases in air or other gaseous backgrounds, said apparatus comprising:
- a housing defining a passage for flow of gas through first and second drift regions;
- a source of ionizing radiation positioned in said passage near said first drift region for creating ions in said gas;
- a collector electrode mounted within said housing near said second drift region;
- means for establishing a substantially linear drift potential in said housing for causing said ions to drift from said source of ionizing radiation toward said collector electrode through said first and second drift regions;
- an electrically conductive grid means located in said first drift region, said grid being comprised of a plurality of conductors biased at predetermined constant electric potentials for selectively collecting ions of higher mobility, while allowing lower mobility ions to pass through to said second drift region;
- gating means located in said second drift region for allowing selected groups of ions from said first drift region to pass through into said second drift region and onto said collector electrode at times proportional to their mobility; and
- means for measuring the number of ions reaching said collector electrode.

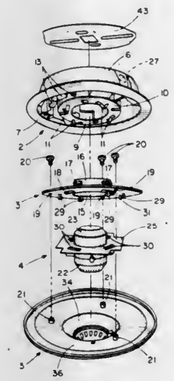
4,238,679

DUAL-CHAMBER IONIZATION SMOKE DETECTOR ASSEMBLY

John M. Macmillan, Deep River, and Hilario S. Costa, Old Saybrook, both of Conn., assignors to Conrac Corporation, Stamford, Conn.

Filed Dec. 7, 1978, Ser. No. 967,128
Int. Cl.³ H01J *47/02*
U.S. Cl. 250—385 **10 Claims**

1. A dual-chamber ionization smoke detector,
having a housing structure formed with at least four readily separable parts protectively housing a generally cylindrical dual ionization chamber and other electrical components comprising:
an adapter base having a generally circular panlike configuration formed with an integral peripheral circular flange, having a centrally disposed cylindrical socket formed with a wall having internal locking slots to define a twist-lock smoke detector head socket, and having a plurality of brush contacts carried by the socket wall;
a circular disc-like adapter base cover formed with a central circular opening and a plurality of contact openings disposed about the circular opening, having a projecting cylinder-like locking ring emanating from the circular opening and carrying a plurality of raised locking keys which mate with the internal locking slots when the adapter base cover is disposed within the panlike opening of the adapter base and twist-locked into the adapter base socket, and having a plurality of ionization chamber module catches;
an ionization chamber module including a relatively flat circuit board having a plurality of circuit board contacts



and formed with a central opening, and a dual-chamber ionization detector with both chamber sections being rigidly fixed one to the other and with the ionization detector being centrally disposed within the circuit board opening with one section of the chamber being housed within the locking ring and the circuit board being held on the adapter base cover by the detector module catches; and
a smoke detector cover having a generally frusto-conical central portion formed with smoke access slots and with a peripheral dish-like portion with the cover enveloping the second or smoke section of the chamber and the covered adapter base, the cover including means for being fixed to the adapter base, whereby a twisting action removes or alternatively fixes from or to the adapter base an assembled smoke detector cover, ionization chamber module and adapter base cover.

4,238,680

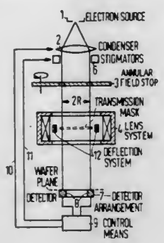
METHOD AND DEVICE FOR SETTING AND CORRECTING ERRORS OF AN ELECTRON OPTICAL CONDENSER OF A MICROPROJECTOR

Klaus Anger; Jüergen Frosien, and Burkhard Lischke, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 17, 1979, Ser. No. 39,878
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2827086
Int. Cl.³ G01K *1/08*
U.S. Cl. 250—397 **7 Claims**

1. A method for setting the focus and correcting errors of an electron optical condenser of a microprojector which microprojector serves for producing an image of a large surface transmission mask and projecting the image onto a wafer by means of electron optical lens system with the electron optical

condenser producing a bundle of axially parallel electron rays for illuminating the large surface transmission mask, said process comprising disconnecting the electron optical lens system; removing the transmission mask; positioning an annular field stop in the path of the rays leaving the electron optical condenser, said annular field stop allowing passage of a bundle of



parallel rays, said bundle having a cross section of an annular ring; adjusting the focal distance of the electron optical condenser; and changing the settings of the stigmators associated therewith until the image of the annular field stop occurring through a shadow projection on a given plane beneath the lens system assumes the size and shape of the annular field stop.

4,238,681

X-RAY DIAGNOSTIC GENERATOR

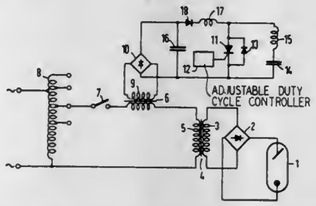
Johann Seissl; Karlheinz Broenner, and Hartmut Krause, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 28, 1979, Ser. No. 80,042

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842947

Int. Cl.[3] **H05G** *1/30*

U.S. Cl. 250—402 **2 Claims**



1. An x-ray diagnostic generator comprising a high voltage transformer with at least one primary winding connected to the mains, and at least one secondary winding which feeds the x-ray tube, comprising a bridge rectifier coupled with the primary circuit of the high voltage transformer, and having a smoothing capacitor and a thyristor connected with the bridge rectifier such that the turn-on frequency and pulse duty factor of the thyristor correspond to the desired x-ray tube voltage, characterized in that an LC-oscillatory circuit (**14, 15**) is connected to the thyristor (**11**), the LC-oscillatory circuit (**14, 15**) including a capacitor (**14**) which when the thyristor (**11**) is conductive, discharges itself via the thyristor, and said LC-oscillatory circuit having means comprising a free-running diode (**13**) connected in parallel with said thyristor (**11**) for effecting the extinction of the thyristor (**11**), the free-running diode (**13**) being conductive in the return oscillatory phase of the LC-oscillatory circuit.

4,238,682

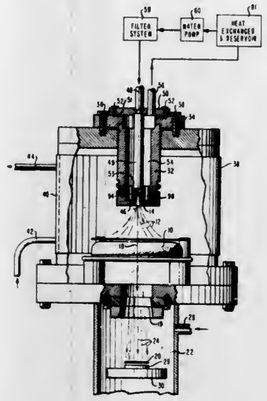
HIGH-POWER X-RAY SOURCE

Frederick Vratny, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 3, 1979, Ser. No. 35,473

Int. Cl.[3] **H01J** *35/00*

U.S. Cl. 250—420 **11 Claims**



1. In combination in a high-power system that includes a member (**14**) susceptible to thermal damage,

means including low-corrosion metallic elements (**32, 34, 46, 48, 49, 50, 56**) for directing a flow of a cooling medium over a surface of said member.

said system being CHARACTERIZED IN THAT said cooling medium includes therein a complexing agent for forming highly soluble compounds with metallic constitutents derived from said elements and dissolved in said medium thereby, even at elevated operating temperatures found at the surface of said member, substantially reducing the deposition on said surface of thin-film thermal barriers otherwise formed thereon by said metallic constituents, and wherein said member to be cooled comprises a stationary conical target anode included in a high-power X-ray lithographic system adapted to fabricate large-scale-integrated circuits.

4,238,683

X-RAY DIAGNOSTIC GENERATOR COMPRISING AN OIL-FILLED TANK WITH A HIGH VOLTAGE TRANSFORMER AND A HIGH VOLTAGE RECTIFIER, AND AN X-RAY TUBE

Heinz Baumann, Buckenhof, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 23,901

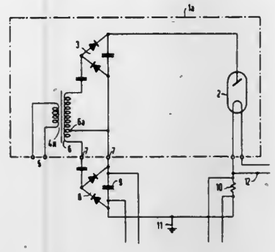
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823917

Int. Cl.[3] **H05G** *1/10*

U.S. Cl. 250—421 **2 Claims**

1. An x-ray diagnostic generator comprising an oil-filled tank, a high voltage transformer, a high voltage rectifier circuit, and an x-ray tube arranged in said oil-filled tank, the high voltage rectifier circuit being connected for supplying an x-ray tube high voltage to said x-ray tube, and a circuit arrangement for the formation of a signal corresponding to the x-ray tube high voltage, characterized in that the high voltage transformer (**4***a*) is provided with a tap (**6***a*) for supplying a low voltage which is conducted out from the tank (**1***a*), and said circuit arrangement comprising a measuring rectifier circuit (**8**) outside said tank and connected for energization by the low

voltage from said tap and having the same circuit configuration as the high voltage rectifier circuit (**3**) such that said



measuring rectifier circuit supplies an electric signal corresponding to the x-ray tube high voltage.

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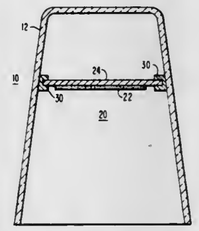
RADIATION DOSIMETER ASSEMBLY

John G. Seidel, McCandless, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 13, 1978, Ser. No. 941,887

Int. Cl.[2] **H05B** *33/00;* **G01V** *5/00*

U.S. Cl. 250—484 **1 Claim**



1. In a radiation measuring apparatus including a radiation dosimeter positioned within a cup-like housing, said dosimeter developing a stored radiation dosage in response to impinging radiation wherein the level of stored radiation dosage is measured as a function of light emitted by the radiation dosimeter in response to heating of the radiation dosimeter, the improvement of eliminating the handling of the radiation dosimeter when removing it from the cup-like housing and positioning it in contact with a heater to measure the stored radiation dosage, the improvement comprising,

the integral combination of a thin film radiation dosimeter and a flat, elongated, substantially rigid heating member, wherein said substantially rigid heating member functions as a mechanical support member for the thin film radiation dosimeter while the integral combination is positioned within said cup-like housing to respond to impinging radiation, and further functions as a heating means during the measuring of the stored radiation dosage of said radiation dosimeter when said integral combination is removed from said cup-like housing.

4,238,685

ARRANGEMENT FOR THE PRODUCTION OF ELECTRONIC SEMICONDUCTOR COMPONENTS

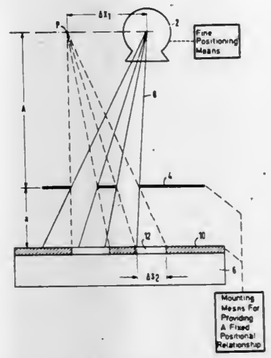
Peter Tischer, Strasslach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,849

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841124

Int. Cl.[3] **H01L** *21/263, 21/308*

U.S. Cl. 250—492 A **2 Claims**



1. An arrangement comprising an x-ray source for the production of electronic semiconductor components with predetermined surface structure, in particular, integrated switching circuits, by means of x-ray lithography, wherein a mask is arranged between a semiconductor body and the x-ray source, characterized by

(a) means providing a fixed association of the mask (**4**) with respect to the semiconductor body (**6**); and

(b) means providing for relative displacement of the x-ray source (**2**) with respect to said mask (**4**) and said semiconductor body (**6**) while said mask and said semiconductor body remain in said fixed association.

4,238,686

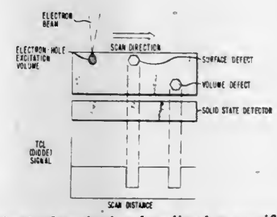
METHOD OF ANALYZING LOCALIZED NONUNIFORMITIES IN LUMINESCING MATERIALS

Aland K. Chin; Gilbert Y. Chin, both of Berkeley Heights, and Henryk Temkin, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 5, 1979, Ser. No. 72,366

Int. Cl.[3] **A61K** *27/02*

U.S. Cl. 250—492 A **7 Claims**



1. A method of analyzing localized nonuniformities in luminescing materials comprising the steps of:

scanning a surface of the luminescing material with an electron beam;

detecting the radiation produced by said electron beam which passes through said semiconductor; and

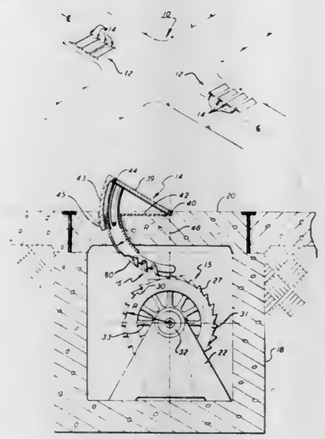
analyzing the intensity of said transmitted radiation.

4,238,687

HIGHWAY TURBINE

Santiago Martinez, 7720 Lemon Tree La., Liverpool, N.Y. 13088

Filed Nov. 30, 1978, Ser. No. 965,177
Int. Cl.[3] H02P 9/04
U.S. Cl. 290—1 R 14 Claims



1. Apparatus for generating power from the passage of a motor vehicle over a roadway including

an actuator plate extending transversely across the roadway and being supported at one of its longitudinal side edges by means of a pivot so that the plate is movable between a first inclined position wherein the plate is raised above the surface of the roadway and a second horizontal position wherein the plate is substantially in coplanar alignment with the surface of the road,

at least one turbine wheel rotatably mounted below the surface of the road directly beneath the plate upon a horizontal shaft, the wheel having ratchet teeth formed along its outer periphery that are equally spaced about a common root circle, and the axis of rotation of said wheel and the pivot point of said plate both lying upon a common centerline,

an arcuate shaped arm associated with said at least one turbine wheel being affixed at one end to the bottom of said plate for pivotable movement therewith and having at least one extended pawl element mounted on the opposite end thereof that is arranged to engage the ratchet teeth on the turbine wheel and turn the wheel when said plate is moved from said first position toward said second position and to pass over said teeth in disengagement therewith when said plate is moved in the opposite direction, the tip of the pawl element describing the cord of a circle that is substantially tangent with the root circle of the ratchet teeth at said common centerline, and

means to restore the plate to said first position upon its being moved toward the second position.

4,238,688

THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY MAINTAINING RESERVE ENERGY SOURCES IN IDLING CONDITION WITH UNBALANCED LOADS

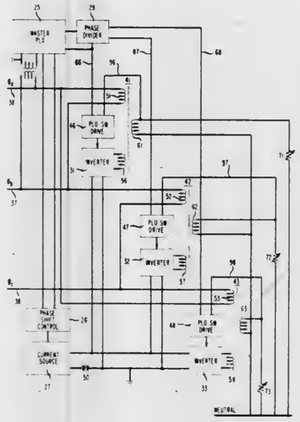
Charles W. Boettcher, Jr., Chester; Billy H. Hamilton, Summit, and Walter L. Zweig, Rockaway, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1978, Ser. No. 953,429
Int. Cl.[3] H02J 9/00
U.S. Cl. 307—20 2 Claims

1. A control system for a three-phase uninterruptible power supply having a ferroresonant power coupling transformer in each phase, an inverter circuit in each phase for generating reserve power signals, means for coupling a centralized DC voltage source to each of said inverter circuits and operative for coupling energy thereto, means for nulling total current flow from the centralized reserve voltage source to all the inverter circuits as a group, said means for nulling comprising:

a master phase-lock loop including phase detection means for synchronizing with a primary three-phase signal and including phase dividing means operative to generate a reference phase signal in each phase, separated from each other by $2\pi/3$ radians

a first phase-lock loop in each phase operative to phase lock an output signal phase of the inverter to the reference



phase signal in each phase, monitoring means for sensing a current output of the centralized DC voltage source, and controllable phase shift means connected in the master phase-lock loop and responsive to current flow sensed by the monitoring means to alter a signal output of the phase detection means and simultaneously shift all three reference phase signals uniformly and thereby simultaneously altering a phase of operation of all the inverters, whereby individual inverters may supply power to and or absorb power from an output of its ferroresonant power coupling transformer and the net total power flow is operative to null current flow in said means for coupling.

4,238,689

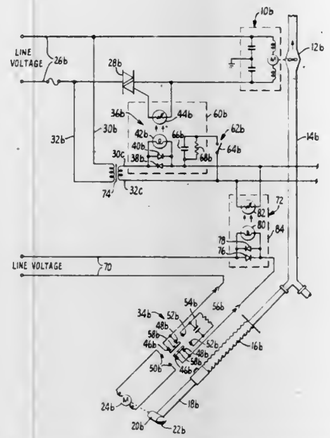
VACUUM CLEANER CONTROL SYSTEM

John J. Breslin, Los Altos Hills, and David K. Lee, San Jose, both of Calif., assignors to Beamco Co., Inc., Mountain View, Calif.

Filed Feb. 28, 1979, Ser. No. 16,018
Int. Cl.[3] H02J 3/00
U.S. Cl. 307—42 3 Claims

1. A power transmission and control system for a central vacuum cleaning system having a centrally located electrical vacuum motor and at least one remote cleaning unit to be coupled to the vacuum system at a location remote from the vacuum motor and carrying an agitator brush driven by a motor, said system comprising: a first conductor coupled to a power transmission line and extending to said location remote from the vacuum motor; a second conductor coupled between a source of electrical power and the remote cleaning unit and extending in close proximity to said first conductor at said location remote from the vacuum motor; a current sensor coupled between said first and second conductors at said remote location without electrically connecting said conductors to one another, said sensor altering current in the first conductor in response to the flow of current through the second conductor; power transmission line extensions connecting the centrally located electrical vacuum motor to the power transmission line an electrically responsive power switch interposed

in said power transmission line extensions; and means coupling said switch to said current sensor through the first conductor



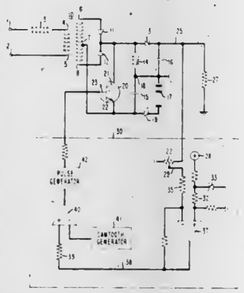
to activate said switch responsive to altered current in the first conductor.

4,238,690

AC-DC SWITCHING REGULATOR TO SUPPLY UNINTERRUPTIBLE POWER

Patrick W. Clarke, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1978, Ser. No. 953,427
Int. Cl.[3] H02J 9/00
U.S. Cl. 307—44 10 Claims



1. In an uninterruptible power supply:

a power coupling medium having a first input to accept a periodic signal source;

a rectifier coupled to rectify signals transmitted by the power coupling medium;

said uninterruptible power supply characterized by

a switching device coupled to the rectifier and to an output of the power coupling medium and operative to disable the power coupling medium;

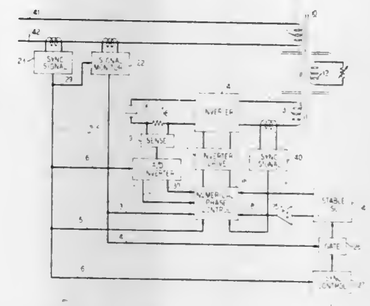
said switching device being further coupled to a second input to accept a nonperiodic signal source and operative to invert the nonperiodic signal source at the second input upon diminution of the periodic signal source.

4,238,691

PHASE CONTROL ARRANGEMENT TO LIMIT OUTPUT SIGNAL TRANSIENTS DURING POWER SOURCE SUBSTITUTION IN AN UNINTERRUPTIBLE POWER SUPPLY

Harry K. Ebert, Jr., Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1978, Ser. No. 973,711
Int. Cl.[3] H02J 9/06
U.S. Cl. 307—66 6 Claims



1. A power supply load transfer system wherein a reserve power source operates in an idling condition by phase lagging a primary power source characterized by:

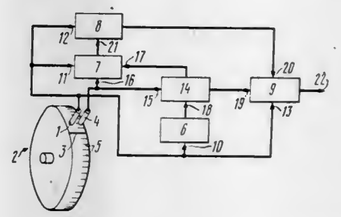
number storage means wherein a controllable number is stored, said number controlling the phase lag magnitude, and number reduction means reducing said number to a predetermined minimum value in two equally successive steps operative for reducing said phase lag, said successive steps thereby reducing equally the time intervals of a first and second half-cycle of a periodic signal output of the reserve power source following a moment of transfer of a load from the primary power source to the reserve power source.

4,238,692

METHOD AND DEVICE FOR PRODUCING START PULSES IN PERIODIC MOTION PROCESS

Viktor B. An, rabochy poselok Krasnoobsk, dom 3, kv. 5; Ivan D. Bukhtiyarov, rabochy poselok Krasnoobsk, dom 3, kv. 157; Alexei S. Demin, rabochy poselok Krasnoobsk, dom 6, kv. 198; Viktor V. Kosyrev, rabochy poselok Krasnoobsk, dom 3, kv. 171, all of Novosibirskaya oblast, and Valery A. Slepchuk, prospekt Dzerzhinskogo, 69, kv. 79, Novosibirsk, all of U.S.S.R.

Filed Dec. 4, 1978, Ser. No. 967,093
Claims priority, application U.S.S.R., Dec. 15, 1977, 2555284; Dec. 15, 1977, 2555286; Jan. 12, 1978, 2571117
Int. Cl.[3] F02P 3/00; H03K 21/36; F02P 5/00
U.S. Cl. 307—106 4 Claims



1. A method of producing start pulses in a periodic motion process, said method comprising the steps of

generating a basic train of periodic motion phase pulses at

the moment a given periodic motion phase is reached in the periodic motion process;

generating a main time interval simultaneously with said basic train of periodic motion phase pulses;

storing, during the main time interval and simultaneously with the generating of said main time interval, an initial train of periodic motion phase pulses forming part of said periodic motion phase pulses in said basic train of periodic motion phase pulses;

generating an additional time interval equal to at least a fraction of the period of said periodic motion phase pulses of said basic train, with due consideration of the parameters of physical processes influencing said periodic motion, the generating of the additional time interval commencing upon the expiration of said main time interval;

storing electric pulses during said additional time interval and simultaneously with the generating of said additional time interval;

generating a start train of periodic motion pulses at the moment the next periodic motion phase is reached, said periodic motion phase pulses of said basic train occurring during said main time interval in a number which is k times less than the number of said periodic motion phase pulses of said initial train, wherein k is a value determined by the ratio of the number of said periodic motion phase pulses in said start train to the number of said periodic motion phase pulses in said basic train;

adding said periodic motion phase pulses of said start train and of said initial train simultaneously with the generating of said start train of periodic motion phase pulses; and

counting down to zero said electric pulses stored during said additional time interval as soon as the resultant sum of said periodic motion phase pulses of said start and initial trains equals a preset value.

4,238,693

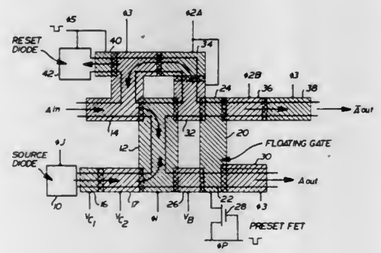
LATCH CIRCUIT FOR DIGITAL CHARGE COUPLED SYSTEMS

Reginald A. Allen, Topanga, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 1, 1978, Ser. No. 938,952

Int. Cl.³ G11C *19/28;* H01L *29/78;* H03K *19/20*

U.S. Cl. 307—221 D **12 Claims**



1. A latch circuit for digital charge coupled devices (CCD) in a system providing input signal and clock signal charge packets comprising:

storage electrode means for storing charge packets provided thereto, the storage electrode means including a pair of input channels and a pair of output channels, a first of said input channels receiving an input signal charge packet and the second of said input channels receiving a clock signal charge packet, said storage electrode means including means providing overflow charge packets to a first output channel upon reception of an input signal packet with a clock signal charge packet;

means intercoupling the output channels for blocking transfer of charge packets along the second output channel in response to the transfer of an overflow charge packet along the first output channel;

and means coupled to the second output channel for recirculating charge packets from the storage electrode to the second input channel.

4,238,694

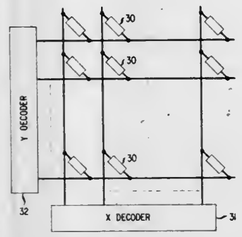
HEALING RADIATION DEFECTS IN SEMICONDUCTORS

Lionel C. Kimerling, Westfield; Harry J. Leamy, New Providence, and George E. Smith, Murray Hill, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 605,233, Aug. 18, 1975, abandoned. This application May 23, 1977, Ser. No. 799,456

Int. Cl.² H01L *21/263*

U.S. Cl. 307—238 **16 Claims**



1. A method for programming an array of MOS devices formed in a semiconductor crystal, the semiconductor selected from the group consisting of silicon or gallium arsenide, where each of the devices includes attached electrodes the method comprising:

exposing the array to radiation with an energy exceeding the threshold for displacement damage to the semiconductor crystal and form a sufficient number of defects with energy states lying within the band gap of the semiconductor to alter the electrical characteristics of the MOS devices in the array, and applying a voltage to the electrodes of selected devices in the MOS array of a value and for a sufficient period to restore substantially the original electrical characteristics of the selected devices by healing the radiation damage to those devices.

4,238,695

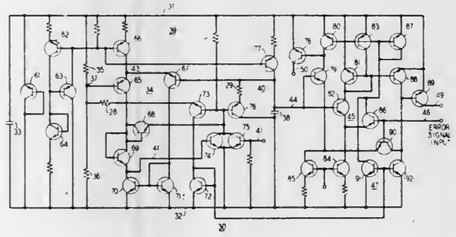
COMPARATOR CIRCUIT HAVING HIGH SPEED, HIGH CURRENT SWITCHING CAPABILITY

Richard H. Hock, Landing, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 20, 1978, Ser. No. 953,196

Int. Cl.³ H03K *5/153*

U.S. Cl. 307—350 **5 Claims**



1. A switching circuit adapted to switch large currents at high speed comprising

a first differentially coupled amplifier stage including a first and second input, and further including first and second output signal switching stages,

a second differentially coupled amplifier stage having first and second inputs connected in common with the first and second inputs to the first differentially coupled amplifier stage,

a first current mirror type current sink connected to be energized by a first amplifying device of said second differentially coupled amplifier stage and coupled to divert drive current from the second output signal switching stage when energized by said first amplifying device,

a second current mirror type current sink connected to be energized by the second amplifying device of said second differentially coupled amplifier stage and coupled to divert drive current from the first output signal switching stage when energized by said second amplifying device,

a clock circuit including a ramp charging device for applying periodic ramp signals to the first input of said first differentially coupled amplifier stage,

pulse generating means responsive to a discharge of said ramp charging device, and

means responsive to the pulse generating means to clamp said first differentially coupled amplifier stage into a predetermined state for extablishing at least a minimum time duration of a predetermined switched state of the switching circuit irrespective of an error signal magnitude applied to the second input of said first differentially coupled amplifier stage.

4,238,696

FAILSAFE ELECTRICAL CIRCUITRY

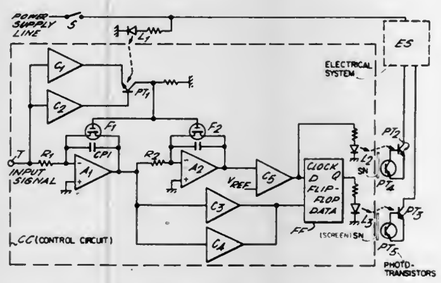
Michael G. Smart, Sunbury on Thames, England, assignor to G. V. Planer Limited, Sunbury on Thames, England

Filed May 18, 1978, Ser. No. 907,326

Claims priority, application United Kingdom, May 20, 1977, 21365/77

Int. Cl.³ H02H *1/06;* H03K *5/153*

U.S. Cl. 307—360 **22 Claims**



1. An electrical control circuit comprising an input terminal; first amplifier means arranged to amplify signals received at said input terminal and to provide an output in accordance therewith; first inhibiting means arranged to inhibit operation of said first amplifier means; second amplifier means arranged to receive as an input said output of said first amplifier means and to provide an output in accordance therewith; second inhibiting means arranged to inhibit operation of said second amplifier means; first comparator means arranged to nullify said first and second inhibiting means in response to the value of said signals received at said input terminal lying between two predetermined limits; second comparator means arranged to receive said output of one of said first and second amplifier means and to be conductive in response to the value of said one amplifier means output lying between two predetermined limits; and third comparator means arranged to receive said output of the other of said first and second amplifier means and to be conductive in response to said other amplifier means output exceeding a predetermined value; said electrical control circuit deriving from said signals received at said input terminal a control output comprising signals derived from conduction of said second and third comparator means.

4,238,697

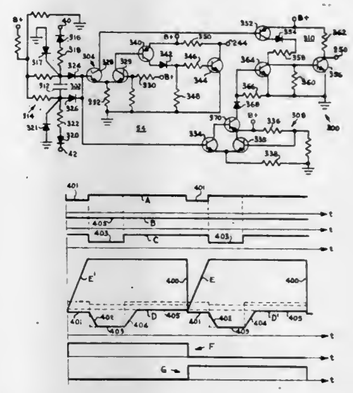
RPM INFORMATION SIGNAL GENERATING CIRCUITRY FOR ELECTRONIC FUEL CONTROL SYSTEM

Junuthula N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 101,896, Dec. 28, 1970, Pat. No. 3,734,068. This application Feb. 15, 1972, Ser. No. 226,486

Int. Cl.³ H03K *5/04, 5/08, 5/153*

U.S. Cl. 307—268 **5 Claims**



1. A circuit for providing a speed indicative signal to indicate the speed of operation of an associated device wherein the device includes means for generating a pulse train of triggering even pulses, each said pulse indicative of the occurrence of a periodically occurring event and comprising a pulse starting portion and a pulse ending portion defining therebetween a pulse duration varying only with the speed of said associated device, said circuit comprising in combination:

event responsive means responsive to one of said triggering event pulses operative to produce an event signal characteristic having a magnitude which starts at predetermined starting level in response to said pulse starting portion, varies from said predetermined starting level at a predetermined rate for a time varying only with the time elapsed from said pulse starting portion, and is reset to said starting level on the occurrence of a said pulse ending portion, said event responsive means comprising first and second sources of constant potential, timing capacitor means comprising first and second terminals, first and second unidirectional current conducting devices each having first and second electrodes, said first electrodes being connected respectively to said first and second terminals, and circuit means operative in response to said first and second pulse portions to permit said first and second constant potential sources to alternately charge and discharge said capacitor respectively at said first and second terminals whereby said event signal characteristics are alternately provided and removed thereat;

reference establishing means operative to generate first and second signals representative of respective first and second of elapsed time from the occurrence of said pulse starting portion;

comparison means connected to said reference establishing means and commonly connected to said second electrodes of said unidirectional current conducting devices operative to generate first and second output signals each switchable from a first to a second value when said event

signal characteristic exceeds said first and second representative signals respectively; and

utilization means connected to said comparison means operative during a said duration to generate a waveform having levels determined in accordance with said first and second values.

4,238,698

ELECTROMAGNETIC DEVICES

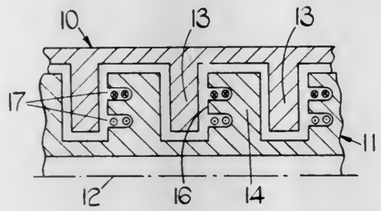
Alec H. Seilly, North Wembley, and Dorian F. Mowbray, Burnham, both of England, assignors to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 682,478, May 3, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,527

Claims priority, application United Kingdom, Mar. 11, 1976, 9668/76

Int. Cl.³ H02K *33/00*

U.S. Cl. 310—27 **10 Claims**



1. An electromagnetic device comprising a pair of relatively movable members one of which is of annular form and surrounds the other member, said members defining opposed substantially cylindrical surface, a single helical magnetizable element on each of said surfaces respectively, each of said elements defining a working surface facing the working surface of the other element a groove formed in one working surface and an electrical conductor accommodated in said groove whereby when said conductor is energised said one working surface will form a pair of magnetic poles and the two members will move relative to each other in one direction so as to reduce the reluctance of the magnetic circuit formed between said poles and including the other working surface.

4,238,699

ELECTRO-MAGNETIC DEVICES

Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

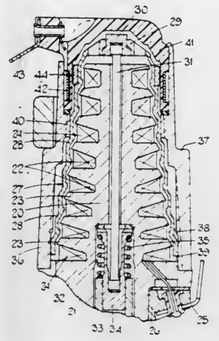
Filed Jul. 20, 1979, Ser. No. 59,247

Claims priority, application United Kingdom, Aug. 5, 1978, 32381/78; Apr. 19, 1979, 13721/79

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—27 **14 Claims**

1. An electromagnetic actuator comprising a pair of members formed from magnetisable material, one of said members being hollow and being located about the other member, a plurality of circumferential ribs defined on the peripheral surface of the other member, the diameter of said ribs reducing from one end of the member to the other, recesses defined between adjacent ribs, windings disposed in some or all of said recesses, electrical connections between said windings, the windings or connections thereto being such that when electric current is passed therethrough the direction of current flow in one winding will be opposite to the direction of current flow in a winding in an adjacent recess, surfaces complementary to said ribs defined on the internal surface of the one member whereby when the other member is placed within the one member, the ribs on the other member will lie in close proximity to the surfaces respectively on the one member and when said windings are energised the adjacent ribs on said other member will be magnetically polarised and the two members



will move to reduce the reluctance of the magnetic paths defined between the two members.

4,238,700

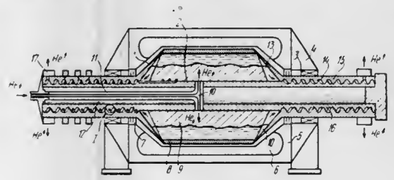
ELECTRICAL MACHINE HAVING AN IMPROVED COOLING SYSTEM FOR A ROTARY SUPERCONDUCTIVE WINDING

Alexandr A. Vinokurov, ulitsa Polzunova, 31, kv. 314; Gennady S. Gorbunov, ulitsa Polzunova, 35, kv. 42; Anatoly G. Korolkov, ulitsa Ivanova, 5, kv. 71; Jury S. Popov, ulitsa Barviernaya, 16, kv. 14; Lev M. Rozenfeld, ulitsa Pravdy, 7a, kv. 30., all of Novosibirsk; Jury V. Skachkov, Nevsky prospekt, 125, kv. 13., Leningrad; Iosif F. Filippov, ulitsa Pulkovskogo, 17, kv. 39, Leningrad, and Gary M. Khutoretsky, Altaiskaya ulitsa, 20, kv. 5, Leningrad, all of U.S.S.R.

Filed Nov. 28, 1977, Ser. No. 855,312

Int. Cl.² H02K *9/00*

U.S. Cl. 310—52 **5 Claims**



1. A cryogenically-cooled machine comprising:

a shell;

a stator winding secured in said shell;

a hollow rotor located in said stator winding and having a shaft;

a superconductive exciting winding located in said hollow rotor;

supply bus conductors coupled to said superconductive exciting winding;

a passage for delivery of a cooling agent to said exciting winding, provided in one end of said shaft and arranged along the axis of said shaft;

said shaft having ends comprising at least two coaxial tubes connected by means of a thread; and

said thread having clearances for removing the cooling agent and cooling the ends of said shaft.

4,238,701

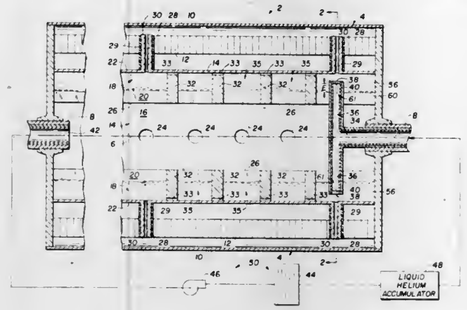
METHOD AND APPARATUS FOR OPERATING GENERATOR IN ITS SUPERCONDUCTING STATE

Phillip W. Eckels, Pittsburgh, Pa., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Apr. 11, 1977, Ser. No. 786,533

Int. Cl.³ H02K *1/32*

U.S. Cl. 310—64 **34 Claims**



1. A method of cooling a winding within a rotor having an axis of rotation, a concentric outer, fluid impervious shell, the winding being disposed intermediate the shell and the axis, a liquid coolant intake establishing fluid communication between the interior of the shell and the exterior thereof, and a coolant vapor outlet for removing coolant vapor from the interior of the shell, the method comprising the steps of: rotating the rotor about its axis; forming a liquid coolant bath in contact with the shell and the winding, the bath forming a generally cylindrical, coaxial liquid interface located radially inward of the winding which defines a generally cylindrical, coaxial vapor core for the collection of coolant vapor therein; evacuating coolant vapor from the core; flowing liquid coolant from the intake along a path separated from the bath and extending radially outward into the liquid bath beyond a portion of the winding; withdrawing from the liquid coolant flowing along the path at least a portion of the sensible heat of compression generated by centrifugal forces acting on the liquid in the path; preventing the portion of the withdrawn heat from communicating with a region surrounding the path; conducting the portion of the withdrawn heat to a region of the bath that is radially inward of the winding; and discharging the flowing liquid coolant into the bath at a point radially outward of a portion of the winding.

4,238,702

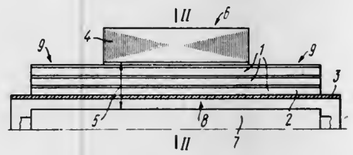
BAR WINDING OF STATOR OF SLOTLESS-CORE ELECTRICAL MACHINE

Tamara N. Belova, ulitsa Budapeshtskaya, 3, korpus 3, kv. 138; Larisa A. Drozdova, prospekt K. Marxa, 25, kv. 26; Anatoly T. Zverev, ulitsa Budapeshtskaya, 31, korpus 1, kv. 58; Jury G. Tjurin, V.O. 8-linia, 55, kv. 1, and Garri M. Khutoretsky, ulitsa Altaiskaya, 20,. kv. 5, all of Leningrad, U.S.S.R.

Filed Nov. 16, 1978, Ser. No. 961,269

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—179 **6 Claims**



1. A bar winding of a stator of an electrical machine having a rotor, a slotless core, and a stator having an active portion and an overhang portion with an air gap between the stator and said rotor; said winding comprising:

a sheath made of an insulating material, secured on said core of said electrical machine in said air gap between said stator and said rotor;

conductors arranged in said sheath in the form of three concentric layers forming inner, middle and outer layers;

said conductors arranged parallel to one another in said active portion of said stator;

said conductors of said inner layer, arranged underneath every second conductor of said middle layer;

said conductors of said outer layer, arranged over every other said conductors of said middle layer;

the number of said conductors of said middle layer is equal to the sum of said conductors in said inner layer and said outer layer;

said conductors of said middle layer being bent in said overhang portions from the axial direction to an angle which is approximately twice as small as the angle to which said conductors of each said outer and inner layers are bent in said overhang portions; and

said conductors of said middle layer, being electrically coupled in series and alternately to every other respective conductors of one of two said other layers.

4,238,703

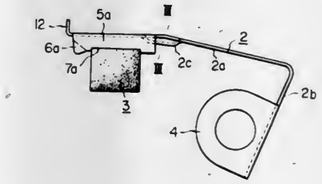
BRUSH DEVICE FOR A MINIATURE ELECTRIC MOTOR

Yuzuru Yoshida, Yamato, Japan, assignor to Aupac Kabushiki Kaisha, Yamato, Japan

Filed Jul. 14, 1978, Ser. No. 924,400

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—242 **4 Claims**



1. In a brush device for a miniature electric motor having:

a brush holder of a leaf spring in the form of a letter "L" in general configuration with a brush mounted on the end of one leg of said L-shaped brush holder in a flat brush fitting part including a pair of mutually opposed and inwardly bent brush holding flaps provided along the lengthwise direction of said leg;

a brush inserting guide at an end of each said flap; and

slip-preventing means for said brush provided in the inserting direction of said brush,

the improvement which comprises:

(a) the brush-mounting leg of said L-shaped brush holder being slightly bent to form an obtuse angle on the brush side of said leg, between the brush and the bend defining the legs of the L, and being provided with deformation preventive reinforcement member which is a longitudinally extending projection along the length of said leg through said slightly bent portion to maintain said slightly bent portion as it is; and

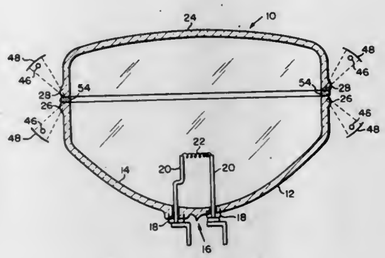
(b) said slip-preventive means is composed of a pair of resilient projecting pawls in the flat surface part of said brush holder.

4,238,704

SEALED BEAM LAMP OF BOROSILICATE GLASS WITH A SEALING GLASS OF ZINC SILICOBORATE AND A MILL ADDITION OF CORDIERITE

John A. Bonk, Big Flats, and Joseph W. Malmendier, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,513
Int. Cl.³ C03C *3/08;* H01J *5/24*
U.S. Cl. 313—113 **2 Claims**



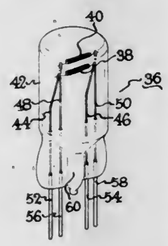
1. A sealed beam lamp comprising a filament mounted in a fixed relationship in a reflector member, the reflector member being hermetically sealed to a glass lens member by a layer of sealing material intermediate opposed sealing surfaces on the lens and reflector members, the lens and reflector members being molded from a borosilicate glass having a coefficient of thermal expansion in the range of 30 to 40×10^{-7}/°C., and the layer of sealing material being a fused mixture having an effective coefficient of thermal expansion not greater than that of the borosilicate glass, the mixture being composed of a sealing glass and a mill addition, the sealing glass having a softening point below 700° C., a coefficient of thermal expansion greater than that of the borosilicate glass parts, and containing, as part of its composition, an infra-red absorbing oxide selected from copper oxide, iron oxide, and mixtures thereof, and the mill addition, as compared to the sealing glass, having a substantially higher softening point and a lower coefficient of thermal expansion, said sealing glass being a zinc silicoborate composed essentially of 60–70% ZnO, 10–16% SiO_2, and 19–25% B_2O_3 plus the infra-red absorbing oxide, and said mill addition being a glass having the approximate composition of the mineral cordierite.

4,238,705

INCANDESCENT LAMP SEAL MEANS

George L. Thomas, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 932,123, Aug. 9, 1978, abandoned. This application Sep. 12, 1979, Ser. No. 75,046
Int. Cl.³ C03C *3/04;* H01J *5/48;* H01K *1/38, 1/42*
U.S. Cl. 313—221 **7 Claims**



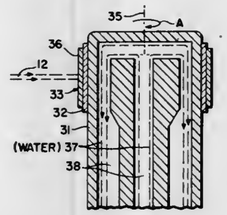
1. An improved incandescent lamp having a transparent glass envelope which contains a resistive incandescent filament connected to a pair of conductive inlead wires having an average thermal coefficient of expansion in the 0°–300° C. temperature range between about 37×10^{-7} cm/cm/°C. to about 50×10^{-7} cm/cm/°C. that are hermetically sealed to the glass envelope, the improvement wherein said inlead wires are joined to larger diameter inlead wires having greater thermal expansion characteristics in the hermetic seal region and the glass envelope comprises a glass composition which consists essentially of oxides in approximate percent by weight 54–71 SiO_2, 12–18 Al_2O_3, 4–8 CaO, 10–23 BaO, and 0–3 R_2O wherein R is an alkali metal ion, along with minor amounts of incidental impurities, residual fluxes, and refining agents, such that the aggregate SiO_2 and Al_2O_3 content lies within the approximate range 73–83 weight percent, the aggregate BaO and CaO content lies within the approximate range 17–30 weight percent and the ratio between BaO weight percent and CaO weight percent lies within the approximate range 2.3 to 3.5 so as to provide improved reboil resistance.

4,238,706

SOFT X-RAY SOURCE AND METHOD FOR MANUFACTURING THE SAME

Hideo Yoshihara, Sekimachi; Mikiho Kiuchi, Asakusabashi; Satoshi Nakayama, Sayama; Toa Hayasaka, Tanashi, and Junji Matsui, Tokyo, all of Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1978, Ser. No. 966,621
Claims priority, application Japan, Dec. 9, 1977, 52/147205
Int. Cl.³ H01J *35/08*
U.S. Cl. 313—330 **7 Claims**



1. A soft x-ray source comprising (a) a substrate formed of a thermally conductive material which tends to generate predominantly hard x-rays upon the collision of an electron beam, (b) an intermediate layer formed on said substrate selected from the group consisting of at least one of rhodium, silver, palladium, and molybdenum, and (c) a silicon film formed on said intermediate layer.

4,238,707

POWER SUPPLY SYSTEM FOR A SEMICONDUCTOR LIGHT SOURCE

Roland Malissin, and Daniel Lecomte, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 10, 1979, Ser. No. 2,307
Claims priority, application France, Jan. 20, 1978, 78 01637
Int. Cl.³ H05B *37/02;* H01S *3/096*
U.S. Cl. 315—175 **11 Claims**

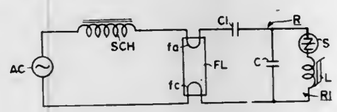
1. A power supply system for a semiconductor light source comprising:
- a power regulating circuit having the output thereof controlled by a signal characteristic of the power emitted by said source;
- a control circuit for said source having an output connected to said source for providing a control current;
- a ramp generator;
- a switching circuit having a first input, a second input, a control input and an output, said ramp generator being connected to said first input of said switching circuit, said output of said regulating circuit being connected to said second input of said switching circuit, the output of said switching circuit being connected to the input of said control circuit, and said control input of said switching circuit being connected to the output of said regulating circuit, said switching circuit being responsive to the signal applied to said control input for connecting the output of said switching circuit to said first input during a transitory phase and to said second input during a steady phase, the end of said transitory phase being determined when a predetermined threshold in the emitted power is reached.

4,238,708

DISCHARGE LAMP OPERATING SYSTEM

Isao Kaneda, Otsu, Japan, assignor to New Nippon Electric Company, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 646,957, Jan. 7, 1976, Pat. No. 4,079,292. This application Jan. 30, 1978, Ser. No. 873,241
Claims priority, application Japan, Feb. 2, 1977, 52-11040; Mar. 17, 1977, 52-30065
The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.
Int. Cl.² H05B *41/16*
U.S. Cl. 315—289 **14 Claims**



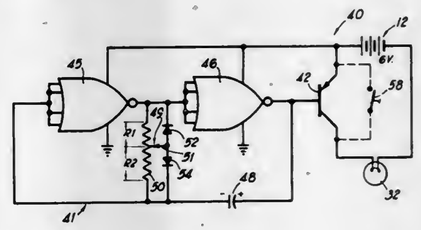
1. A discharge lamp operating system for sustaining the lit condition of discharge lamp means, comprising an electrical a.c. power source having a given low frequency, lamp current limiting means connecting said a.c. power source to said discharge lamp means for establishing lighting conditions for said discharge lamp means, and reignition means connected across said discharge lamp means, said reignition means comprising oscillator circuit means (**R1**) and an intermittently oscillating capacitor (**C1**) supplying an intermittent output, having a frequency higher than said given low frequency, directly to the discharge lamp means immediately after every pause period of every half cycle whereby the reignition means sustain said lit condition by the intermittent output current of said oscillator circuit means which sustains a constant reignition voltage even if the a.c. power source should supply a varying voltage, whereby the oscillator circuit means constitute a self-oscillating independent high frequency output power source, said current limiting means comprising a single winding current limiter, wherein the voltage of said a.c. power source is established below the required reignition voltage of said discharge lamp means during its operation, whereby said discharge lamp means is reignited by supplying an initial discharge lamp current value as an input current to said reignition means in every half cycle of said a.c. power source, so that the lit condition is substantially independent of the effective voltage of said a.c. power source.

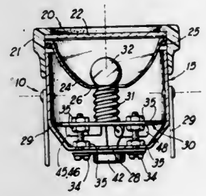
4,238,709

HEAD LAMP CONTROL CIRCUIT

John M. Wallace, 42 S. Prado, NE., Atlanta, Ga. 30309

Filed Jul. 5, 1978, Ser. No. 922,059
Int. Cl.³ H05B *37/02;* F21L *15/14*
U.S. Cl. 315—291 **5 Claims**

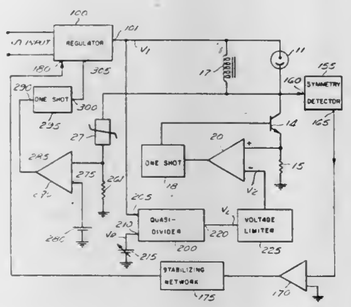




1. A lightweight portable light including:
- a thin hollow metal lamp shell defining a bulb receiving chamber therein and a front opening to said bulb receiving chamber at the front of said lamp shell;
- a lens and reflector assembly selectively closing said front opening to said lamp shell;
- a lamp mounting member mounted in said bulb receiving chamber in said lamp shell behind said lens and reflector assembly;
- a lamp bulb mounted on said lamp mounting member and oriented so that said lamp bulb is operatively associated with said lens and reflector assembly when said lens and reflector assembly selectively closes said front opening in said lamp shell; and
- a switching transistor mounted on said lamp shell in thermally conducting contact therewith so that said lamp shell acts as a heat sink to dissipate heat from said switching transistor to keep said switching transistor cool, said switching transistor selectively controlling the illumination of said lamp bulb.

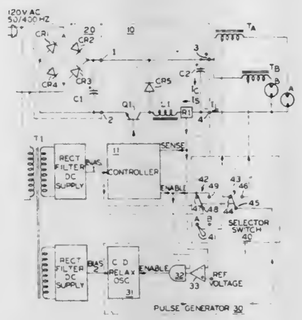
5. The lightweight portable light of claim 1 further including an astable oscillator for selectively controlling the operation of said switching transistor, said oscillator having a duty cycle with an on portion and an off portion and including adjustment means for simultaneously varying the on portion and the off portion of the duty cycle so that the off portion is increased simultaneously as the on portion is decreased and vice versa.

4,238,710
SYMMETRY REGULATED HIGH FREQUENCY BALLAST
Alan H. Nelson, Los Gatos, Calif., assignor to Datapower, Inc., Santa Ana, Calif.
Filed Dec. 27, 1978, Ser. No. 973,617
Int. Cl.³ H05B *41/392*
U.S. Cl. 315—307 **24 Claims**



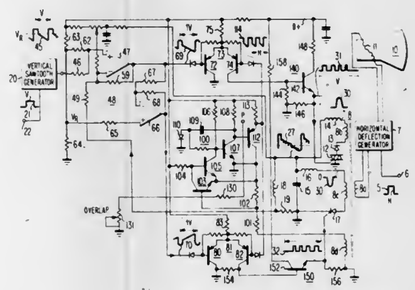
1. A circuit for driving a lamp comprising:
switching circuit means connected to said lamp having first and second switching states;
a power supply connected to drive said switching circuit means, the output of said power supply determining the difference between the time durations of said first and second states; and
symmetry corrective means connected to sense said difference and also connected to vary the output of said power supply in proportion to said difference.

4,238,711
CIRCUIT FOR SELECTIVE INDIVIDUAL OPERATION OF MULTIPLE ARC DISCHARGE LAMPS
George P. Wallot, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.
Filed Aug. 20, 1979, Ser. No. 67,786
Int. Cl.³ H05B *41/22, 41/46*
U.S. Cl. 315—324 **11 Claims**



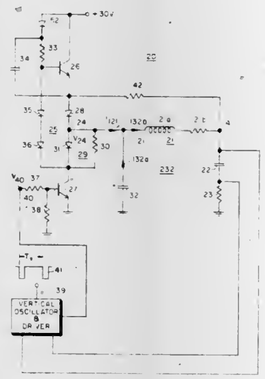
1. A circuit for selectively and individually starting and operating at least two arc discharge lamps connected in parallel, comprising:
a regulator for providing regulated current for operating a selected one of the at least two lamps; the regulator including means for connection to a power source and further including a pair of output terminals for connection to the respective lamps;
means for starting the at least two lamps, respectively, including at least two pulse transformers and a pulse generator for supplying pulses to the respective pulse transformers; one each of said pulse transformers arranged for association with a corresponding one of said lamps; and
means for selecting a one of said lamps to be started and operated; the selecting means arranged for low voltage operation and including means for enabling the regulator and the pulse generator and for steering the pulses from the pulse generator to a one of said pulse transformers associated with the one of said lamps selected for operation; the selecting means further including means for disabling the pulse generator and the regulator for effecting turn-off of a previously lighted lamp and for resetting the circuit in preparation for starting a second of said lamps when the selecting means is operated to select the second of said lamps for operation.

4,238,712
SWITCHED VERTICAL DEFLECTION WITH TRIAC
Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.
Filed May 21, 1979, Ser. No. 41,095
Int. Cl.³ H01J *29/72*
U.S. Cl. 315—393 **8 Claims**



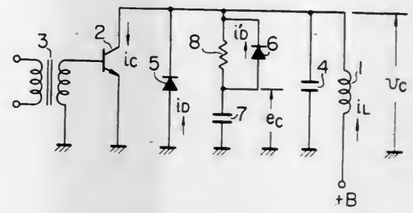
1. A switched vertical deflection circuit, comprising:
a capacitor;
a first charging circuit coupled across said capacitor for charging said capacitor with current of a first polarity, said first charging circuit including a source of horizontal-rate signals and an electronic switch, one electrode of said electronic switch being coupled to a point of reference potential;
a second charging circuit coupled across said capacitor for charging said capacitor with a second current of polarity opposite to said first, said second charging circuit including the serial combination of a source of horizontal-rate signals, a diode and the main current conduction path of a triac, one electrode of said triac being coupled to said point of reference potential;
a deflection winding coupled with said capacitor for drawing deflection current therefrom; and
control means coupled with said electronic switch and with said triac for controlling the conduction of said electronic switch and said triac to control said deflection current.

4,238,713
VERTICAL DEFLECTION CIRCUIT
Warren H. Moles, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Jun. 22, 1979, Ser. No. 51,301
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—397 **4 Claims**



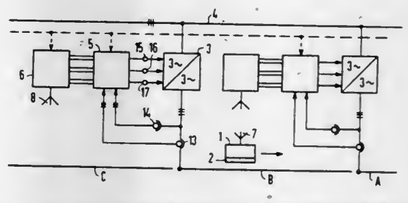
1. A deflection circuit, comprising:
a deflection winding having first and second terminals;
first and second output transistors with output electrodes coupled to said deflection winding for providing trace current to said deflection winding during a trace interval, said first and second output transistors forming a push-pull output stage;
a retrace capacitor coupled to said deflection winding for forming a retrace circuit with said deflection winding for generating a resonant retrace current during at least a portion of a retrace interval;
damping means coupled to said deflection winding for substantially damping current oscillations in said deflection winding during at least the beginning of said trace interval; and
disconnect means including a diode subject to reverse biasing during said retrace interval portion, a first electrode of said diode being coupled to the emitter electrode of one output transistor of said first and second output transistors and to said damping means and a second electrode of said diode being coupled to said retrace capacitor and to one of said deflection winding terminals for preventing resonant retrace current from flowing in said damping means and in said one output transistor during said retrace interval portion, said disconnect means decoupling said retrace capacitor from the reverse conduction path of said one output transistor during said retrace interval portion to prevent a resonant retrace pulse from being applied thereacross,
wherein said damping means comprises a resistor directly connected between the other of said deflection winding terminals and said first electrode of said diode and is subject to coupling in parallel with said deflection winding when said diode is forward biased and subject to being decoupled therefrom when said diode is reverse biased during said retrace interval portion.

4,238,714
HORIZONTAL DEFLECTION OUTPUT CIRCUIT
Takeshi Sumi, Samukawamachi, Japan, assignor to Hitachi, Ltd., Japan
Filed May 23, 1979, Ser. No. 41,555
Claims priority, application Japan, May 24, 1978, 53/61124
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—408 **5 Claims**



1. A horizontal deflection output circuit comprising
a means for causing a horizontal deflection current to flow through the horizontal deflection coil in one direction during the period from an intervening instant within the horizontal scanning period to the end of said horizontal scanning period;
a resonance capacitor for generating a resonance current in cooperation with said horizontal deflection coil during the horizontal flyback period; and
a damper diode for bypassing said resonance current and for causing said resonance current to flow through said horizontal deflection coil in the direction opposite to said one direction from the instant corresponding to the end of the rise time of said horizontal deflection current, after the start of the horizontal scanning period, till said intervening instant, wherein said horizontal deflection output circuit is provided with a damping means which assumes a low impedance and serves as a bypass for said resonance current during at least a portion of said rise time, and has no influence on the current through said horizontal deflection coil during any period other than said rise time.

4,238,715
STARTING CIRCUIT FOR A TRACKBOUND ELECTRIC PROPULSION VEHICLE HAVING A SYNCHRONOUS LINEAR MOTOR
Claus P. Parsch, Forchheim, and John P. Gibson, Fürth-Vach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 14, 1979, Ser. No. 20,407
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 2813253
Int. Cl.³ H02K *41/02*
U.S. Cl. 318—135 **3 Claims**



1. A circuit arrangement for starting a trackbound electric propulsion vehicle driven by a synchronous linear motor without iron having a stator which is a traveling-field winding installed along the track and an exciter which is a translator carried on the vehicle, the traveling-field winding being supplied from a stationary, controlled static frequency converter

whose output frequency and voltage may be varied by a control device having a computing circuit for determining the travel velocity and the relative position of the exciter with respect to the traveling-field winding from the phase currents and voltages at the feed point, comprising

means for opening the control circuit of the control device during start-up and substituting a starting circuit for generating the required thrust, the travel velocity, and the position of the exciter relative to the traveling-field winding from a velocity reference value controlled by a start-up generator, and

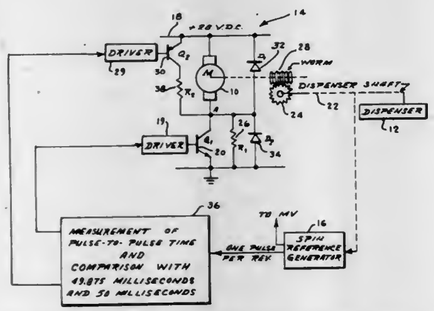
means for deriving a signal for damping the control current component regulating the thrust from a measured value of the thrust connected into the associated starting control circuit.

4,238,716

MINIATURE VEHICLE DISPENSER SPIN-UP SPEED CONTROL SYSTEM

William G. Redmond, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 27, 1978, Ser. No. 946,288
Int. Cl.³ H02P 5/16
U.S. Cl. 318—314 **1 Claim**



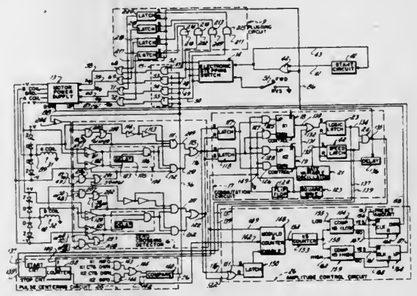
1. A miniature vehicle dispenser spin-up control system, for use in combination with a gas reaction acceleration system, including an electric motor having a shaft, connected through a gear system, to a dispenser and further including means for generating an electronic pulse for each revolution of the motor shaft and means for measuring the time interval between pulses, comparing it with a standard time interval and producing a first output when the time interval is more than the standard and a second output when the time interval is less than the standard, the improvement comprising: a first transistor circuit connecting a line voltage with the motor and controlled by said first output whereby a signal will cause the motor shaft to accelerate; a resistor connected in parallel with the transistor, providing a current to allow the motor to overcome its' inherent friction and a diode connected in parallel with the first transistor and resistor for preventing induced voltages; a second transistor circuit connecting a line voltage, with the motor and controlled by the second output, a limiting resistor connected in series between the transistor and the motor whereby a back emf is created causing the motor shaft to decelerate, and a diode connected in parallel with the transistor reactor for preventing induced voltages.

4,238,717

OPTIMUM EFFICIENCY ROTARY MACHINE HAVING SYNCHRONOUS OPERATION AT A SELECTABLE SPEED

John H. Knight, Kettering, and Milton S. Isaacson, Dayton, both of Ohio, assignors to Nu-Tech Industries, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 561,537, Mar. 24, 1975, Pat. No. 4,027,215, which is a continuation-in-part of Ser. No. 484,563, Jul. 1, 1974, abandoned. This application May 23, 1977, Ser. No. 799,730
Int. Cl.³ H02P 5/16
U.S. Cl. 318—341 **2 Claims**



1. In a three-or-more phase machine with a stator having a plurality of windings thereon, each stator winding producing a magnetic field when voltage is applied thereto, a rotor rotatably mounted with respect to said stator, said rotor having a magnetic field therein fixedly oriented with respect to said rotor, the rotor field being operative to induce a voltage in the stator windings when the rotor is rotating, and a power circuit for applying positive and negative voltage to the stator windings, switching transients beng produced when voltage is applied to and removed from a stator winding, a rotor position sensing circuit, comprising:

a voltage detector connected across a stator winding, said voltage detector being operative only when the voltage across the connected stator winding is more positive than the amplitude of a negative voltage following the turn off of a positive voltage applied to said stator winding, said voltage detector producing a polarity signal when voltage across the connected stator winding is more positive than the amplitude of said negative voltage;

a delay means responsive to said polarity signal to produce a delay polarity signal, said delay being at least as long as the time required for negative going switching transients across said connected stator winding to pass through the voltage range between the amplitude of said positive applied voltage and the amplitude of said negative voltage;

a first gate means responsive to said polarity signal and said delayed polarity signal to produce a transient completed signal;

a polarity detector connected to said stator winding for producing a sense signal when the voltage across said connected stator winding is negative;

a slope sensor responsive to the voltage across said connected stator winding for producing an enable signal when said voltage across said connected stator winding is decreasing; and

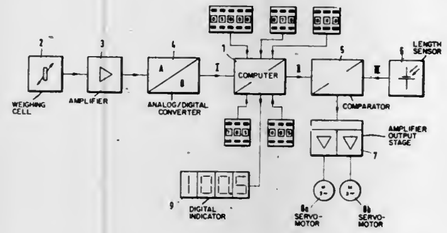
a second gate means responsive to said transient completed signal, said sense signal, and said enable signal to produce a reference position signal indicating that the rotor has a known positional relationship with respect to the stator.

4,238,718

PROCESS AND EQUIPMENT FOR THE PRODUCTION OF SEMI-FINISHED SECTIONS OF ACCURATE WEIGHT OR VOLUME FOR COLD WORKING OR HOT FORMING

Joachim Wepner, and Jochen Zühlke, both of Gevelsberg, Fed. Rep. of Germany, assignors to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

Filed Mar. 1, 1977, Ser. No. 773,210
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1976, 2608551
Int. Cl.³ G05G 5/00
U.S. Cl. 318—626 **10 Claims**



1. Equipment for shearing off semi-finished sections, such as billet sections, to close weight tolerances for subsequent cold working and hot forming, from an elongated workpiece by means of shears for semi-finished sections, said equipment comprising:

a frame;

a length stop movably mounted on said frame for engaging the end of the workpiece to be severed;

servo-motor means for adjusting the location of said length stop with respect to the end of the workpiece;

an hydraulically actuated restraining means for locking said length stop against movement relative to said frame after adjustment and for releasing the length stop prior to the next adjustment, respectively;

hydraulic control circuit means for actuating said restraining means to alternately lock and release the length stop as required during the work cycle;

weighing means for determining the weight of the immediately preceding sheared off section;

computer means for controlling the equipment during the severing process to adjust the location of said length stop with the servo-motor, as a function of the actual weight of the immediately preceding sheared-off semi-finished section, to a first length corresponding to the set weight of the semi-finished section; said computer means including first means for determining said first length by digital computation from parameters including (1) the difference between the fed values for the set weight and the actual weight and (2) the fed values for (a) the cross-sectional dimensions and (b) the density of the material of the workpiece; said computation including a correction factor for the cross-sectional dimensions; and said computer means including second means for operating said hydraulic control circuit means for actuating said restraining means in a given time interval and corresponding to the work cycle.

4,238,719

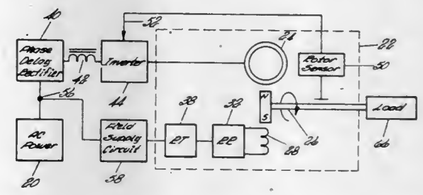
ROTATABLE TRANSFORMER FIELD EXCITATION SYSTEM FOR VARIABLE SPEED BRUSHLESS SYNCHRONOUS MOTOR

Frank J. Bourbeau, 5411 Toltec Dr., Santa Barbara, Calif. 93111

Filed Mar. 24, 1978, Ser. No. 889,902
Int. Cl.³ H02P 7/36
U.S. Cl. 318—716 **20 Claims**

1. A rotatable transformer field excitation system for an armature converter-fed variable speed self-controlled brushless polyphase synchronous motor wherein said armature converter is energized from an alternating current voltage source having at least one phase, said motor including a rotor having a wound field winding and a rectifying means mounted on said rotor and rotatable therewith to energize said field winding with direct current from the rectifying means, said rotatable transformer including a rotor which is adapted to rotate around its axis and having an outer periphery and a stator having an inner periphery, said rotatable transformer comprising

a primary winding having a number of phases equal to that of the alternating current voltage source and formed of a plurality of coils located in slots on the inner periphery defining at least two poles of the rotatable transformer stator, said slots being spaced a predetermined distance from the center of the rotor axis and a separate rotatable secondary winding having a number of phases equal to the number of phases of the rotatable transformer primary winding and formed of a plurality of coils mounted in slots on the outer periphery of the rotor and having the same



number of poles as the stator, said secondary winding being electrically connected to said rectifying means to produce a direct current to energize said field winding, said rotatable transformer having a predetermined magnetizing reactance which is greater than the alternating current load resistance divided by rotatable transformer slip and a predetermined primary leakage reactance; and

impedance matching means including reactance tuning means for producing at the primary winding a capacitative reactance equal to the sum of the rotatable transformer magnetizing reactance plus the primary leakage reactance electrically connected between the alternating current source and the rotatable transformer primary winding to energize the rotatable transformer primary winding with a voltage and current derived from constant voltage of the alternating current source and from the variable current into the armature converter, said current in said rotatable transformer secondary winding having a magnitude which is substantially independent of variations in transformer slip over a variable speed range.

4,238,720

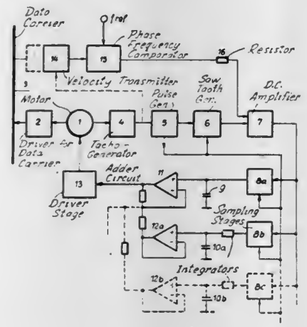
EQUIPMENT FOR THE ELECTRONIC SPEED CONTROL OF AN INDUCTION TYPE MOTOR, ESPECIALLY FOR USE WITH DATA STORE MOTORS

Gyorgy Rothman; Ferenc Biro; Gyorgy Babos; Karoly Antolik, and Otto Roffa, all of Budapest, Hungary, assignors to Mechanikai Laboratorium Hiradastechnikai Kiserleti Vallalat, Hungary

Filed Apr. 27, 1978, Ser. No. 900,619
Claims priority, application Hungary, May 5, 1977, ME 2065
Int. Cl.³ H02P 5/40
U.S. Cl. 318—800 **3 Claims**

1. In equipment for the electronic speed control of an induction type motor, comprising a motor speed transmitter, a reference transmitter coupled to the motor speed transmitter, and a driver stage supplying the terminals of the motor with a voltage corresponding to the required torque; the improvement comprising a pulse generator (5) having a control input that receives signals from said speed transmitter (4) and two outputs, said reference transmitter comprising a saw-tooth genera-

tor (6) having a start input and a control input and an output, a first said output of said pulse generator being connected to said start input of said saw-tooth generator, the second said output of said pulse generator being connected to said control input of said saw-tooth generator, a sampling stage (8) having a control input and a signal input and an output, said second output of said pulse generator being also connected to said control input of said sampling stage, a dc amplifier (7) having



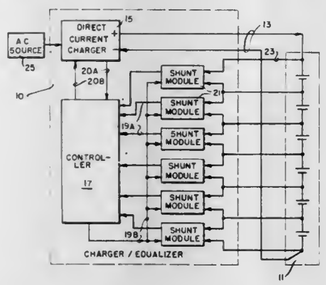
an input and an output, said saw-tooth generator (6) being connected to said input of said dc amplifier (7), said output of said dc amplifier being connected to said signal input of said sampling stage (8), a plate capacitor (9), said output of said sampling stage (8) being connected to one plate of said capacitor (9), the other plate of said capacitor being connected to a terminal of constant potential, said output of said sampling stage (8) being also connected to said driver stage (13).

4,238,721

SYSTEM AND METHOD FOR CHARGING ELECTROCHEMICAL CELLS IN SERIES

William H. DeLuca, Naperville; Fred Hornstra, Jr, St. Charles, both of Ill.; George H. Gelb; Baruch Berman, both of Rancho Palos Verdes, Calif., and Larry W. Moede, Manhattan Beach, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 6, 1979, Ser. No. 9,622
Int. Cl.[3] H02J *7/08*
U.S. Cl. 320—18 **12 Claims**



1. A battery charger for charging a plurality of series-connected cells comprising:

a D.C. source for passing a regulated current between predetermined first and second current levels through said series of cells, said first current level being in excess of said second current level;

voltage-monitoring means for comparing the voltage of each cell with a reference voltage and for generating an output indicating the status of each cell as below or not below said reference voltage;

current-regulating means coupled to receive the output of said voltage-monitoring means and to generate an output to said D.C. source for current regulation in response to cell voltage status, said current-regulating means operating to increase current as long as each cell voltage remains below the reference voltage but only to said first current level and to decrease current when any cell voltage rises to the reference voltage but only to said second current level;

shunt module means electrically coupled to each of said cells, to said current-regulating means and to said voltage-monitoring means for shunting current around any cell having a voltage not below the reference voltage but only when the regulated current has decreased to the second current level; and

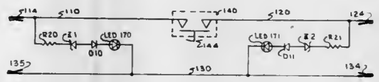
control means for selecting a mode of controlling cell voltage by initially activating said current-regulating means and subsequently activating said shunt module means when said regulated current is decreased to said second current level.

4,238,722

BATTERY SAFETY JUMPER CABLES

Jimmie R. Ford, 208 NW. Hickory St., Melbourne, Fla. 32901

Filed Jul. 20, 1978, Ser. No. 926,372
Int. Cl.[3] H02J *7/00;* **H01R** *11/00*
U.S. Cl. 320—25 **14 Claims**



1. Battery jumper cables for being electrically coupled between a primary battery and a secondary battery for controlling the flow of electrical energy therebetween, said battery jumper cables comprising in combination:

a first electrical conductor having at a first end thereof means electrically coupling with one terminal of the primary battery;

a second electrical conductor having at a first end thereof means for coupling with one terminal of the secondary battery;

a third electrical conductor having at a first end thereof means for electrically coupling with a second terminal of the primary battery, with said third electrical conductor having at a second end thereof means for electrically coupling with a second terminal of the secondary battery;

contactor means operatively coupled in series between second ends of said first and second conductors, said contactor means for selectively enabling the flow of electrical power therebetween responsive to receiving a first signal at an input thereof;

comparator means comprising a first voltage sensor coupled between said first and third conductors and a second voltage sensor coupled between said second and third conductors, and comprising a plurality of differential comparators, each having an input thereof coupled to said

first and second voltage sensors for generating said first signal at an output thereof responsive to the voltage polarity between said first and third conductors being the same as the voltage polarity between said second and third conductors; and first manual switching means operatively coupled to said output of said comparator and said input of said contactor means for momentarily passing said first signal therebetween, whereby the operator may activate said contactor means to allow electrical energy to flow between the primary and secondary batteries only when said first, second and third conductors have been connected in proper polarity.

12. Battery jumper cables for being coupled between a primary battery and a secondary battery for controlling the flow of electrical energy therebetween, said battery jumper cables comprising in combination:

a pair of cable conductors having at each end thereof disengageable connectors for coupling with one of the terminals on the primary or secondary battery;

a mounting frame coupled to said cable conductors and spaced from said ends thereof;

manual contactor means attached to said frame and operatively interposed in series along at least one of said cable conductors for selectively interrupting the flow of electrical energy therethrough;

first visual indicator means and first reverse biased voltage reference means operatively coupled in series between said paid of cable conductors on one side of said manual contractor for indicating the proper voltage and polarity therebetween; and

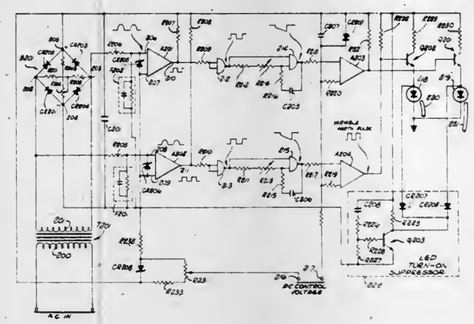
second visual indicator means and second reverse biased voltage reference means operatively coupled in series between said pair of cable conductors on the opposite side of said manual contactor for indicating the proper voltage and polarity therebetween, whereby the operator may verify the proper polarity coupling of said ends of said cable conductors before manually actuating said contactor means for placing the primary and secondary batteries in parallel.

4,238,723

POWER CONTROL SYSTEM

William C. Jenks, 9637 Lemon Ave., Alta Loma, Calif. 91701

Filed Nov. 30, 1977, Ser. No. 856,010
Int. Cl.[3] G05F *1/455*
U.S. Cl. 323—24 **19 Claims**



1. A power control system comprising:

first means including at least one SCR solid state switch device connected with its main current carrying path in series between a source of AC power and a load;

second means for generating an SCR gate signal for firing of said SCR, said gate signal occurring in synchronism only during one half cycle of said AC power source having a duration which is variable in response to a characteristic of an externally generated control signal;

and third means with said second means for generating a series of signal ramp waves, said ramp waves each being synchronous with a corresponding AC power half cycle, said third means generating said signal ramp as a substantially linear voltage ramp and said value of said externally generated control signal is its voltage at said time of crossing, said third means further comprising means for generating a substantially square wave signal corresponding to one of the positive and negative half waves of said AC source, a capacitor charge circuit also including a solid state device exhibiting a substantially initial constant current characteristic, said circuit providing said square wave signals through said solid state device for substantially constant current charging of said capacitor during each of said square waves to provide said linear voltage ramp and means for providing a pedestal amplitude for said linear voltage ramp;

fourth means within said second means comprising a comparator for generating a series of said SCR gate signals when the instantaneous value of said signal ramp crosses over the value of said externally generated control signal at the time of said crossing;

and fifth means for applying said SCR gate signals to said SCR switch device to control the fraction of each AC cycle which causes current to flow in said SCR main current carrying path.

16. A ramp generator for producing an output sawtooth signal in response to a square wave pulse input signal comprising:

a first and second NAND gate each having a first and second input terminal and an output terminal;

means for coupling the input square wave pulse to the input terminals of said first NAND gate;

means for coupling the first NAND gate output terminal to said second NAND gate first input terminal;

a charging capacitor coupled between said second NAND gate output terminal and said second NAND gate second input terminal, and a slope control resistor coupled between said first NAND gate output terminal and said second NAND gate second input terminal for controlling the slope of said output sawtooth signal generated at said second NAND gate output terminal and a resistor connected in series with said charging capacitor for controlling the initial ramp amplitude of said sawtooth signal.

18. Circuit means for providing variable pulse width power frequency signals of the same polarity but of 180 degree relative phase from a full-wave input signal comprising;

a diode bridge formed of two pairs of series connected diodes;

means for coupling said full-wave input signal across the junction of each pair of said series connected diodes;

means for coupling one of said power frequency signals from each of said junctions; and means for adjusting said power frequency signal pulse width while retaining said relative phase comprising a biasing network coupled to said junctions.

4,238,724

PULSE CONTROLLED POTENTIOMETER

Thomas R. Klaus, Mount Prospect, and John S. Strauss, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 780,210, Mar. 22, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,414
Int. Cl.[3] G05B *24/02;* **H01C** *10/08*
U.S. Cl. 323—80 **8 Claims**

1. A signal controlled potentiometer comprising:

a plurality of predetermined value resistor means;

means fkor series connecting said resistors in predetermined sequence, with the free ends of the series connected resistors comprising the end connections of the potentiometer;

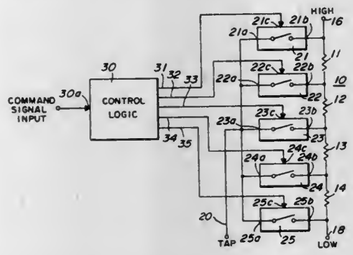
a plurality of controlled switch means, each switch means including first and second terminals, control terminal, and means responsive to a control signal at the control termi-

nal to connect said first terminal to said second terminal thus activating said switch, wherein a first one of the controlled switch means has its second terminal coupled to one free end of the series connected resistors and a last one of the controlled switch means has its second terminal coupled to the other free end of the series connected resistors;

means for common coupling the first terminals of said switches, said common connection comprising the top of said potentiometer;

means for coupling the second terminal of each switch to a predetermined portion of the series connected resistor means; and

control logic means having a commond input terminals adapted to receive command signals and a plurality of controlled outputs, each output being coupled to the control input of a predetermined one of the controlled



switch means, the logic means including means responsive to a received command signal to apply a control signal to the control terminal of a predetermined one of the switch means,

said control logic means further including means responsive to a first received command signal to generate control signals for sequentially activating said switch means in a predetermined order, inhibit means responsive to a second received command signal to inhibit sequential activation of said switch means and to maintain activated that switch which was activated prior to reception of said second received command signal, and further including means for sequentially activating said switch means in the reverse of said predetermined other in response to a predetermined one of said switch means being activated,

thereby activating said switch and providing a desired tap output from the potentiometer.

4,238,725

APPARATUS FOR CHECKING THE DIRECTION OF POLARIZATION OF SHEAR-WAVE ULTRASONIC TRANSDUCERS

Henry H. B. Karplus, Hinsdale, and Forster George A., Westmont, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

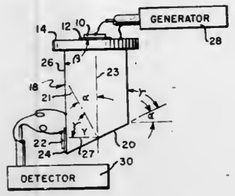
Filed Jan. 15, 1979, Ser. No. 3,559
Int. Cl.³ G01R *29/22*
U.S. Cl. 324—56 **4 Claims**

1. A solid block for determining the direction of polarization of the material of a test shear-wave ultrasonic transducer comprising:

a first planar surface having a first normal, the first planar surface adapted to receive the test transducer in acoustically coupled engagement;

a second planar surface having a second normal that intersects and makes a first predetermined angle with the first normal, the predetermined angle selected to effect mode conversion of a shear wave into a longitudinal wave; and

a third planar surface having a third normal coplanar with the first and second normals, the third normal passing through the intersection of the first and second normals, and forming a second predetermined angle with the second normal, the third planar surface adapted to receive a



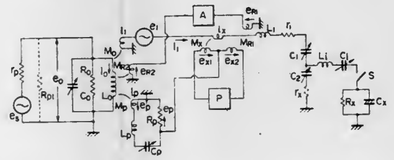
detector transducer to detect a longitudinal wave and generate an electrical signal in response thereto.

4,238,726

METHOD OF MEASURING LOW IMPEDANCE FOR OBTAINING UNKNOWN CAPACITANCE AND/OR RESISTANCE

Bunjiro Ichijo, 23-10, Hirosawa 2-chome, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Feb. 2, 1979, Ser. No. 8,971
Claims priority, application Japan, Feb. 13, 1978, 53-15115
Int. Cl.³ G01R *27/00, 27/02, 27/26*
U.S. Cl. 324—57 R **5 Claims**



1. In a method of measuring a low impedance for obtaining an unknown capacitance and/or resistance of the type wherein: forming a low impedance measuring circuit with (a) a resonant circuit including capacitances C_1 and C_2 connected in series with each other, (b) a high frequency source to supply the resonant circuit with a high frequency voltage, (c) an amplitude detecting circuit respectively coupled electromagnetically with the high frequency source and the resonant circuit for measuring the resonant current of the resonant circuit, (d) a phase detecting circuit respectively coupled electromagnetically with the high frequency source and the resonant circuit for measuring the phase of the resonant current of the resonant circuit, and (e) means for connecting the connecting point between the capacitances C_2 and C_1 of the resonant circuit with electrodes to be connected with the impedance to be measured so as to connect the impedance to be measured with the condenser C_2 in parallel;

adjusting the resonant circuit to the resonant condition before connecting the impedance to be measured;

connecting then the impedance to be measured and adjusting the capacitance C_2 of the resonant circuit to form again the resonant condition; and

obtaining the unknown capacitance of the impedance to be measured from the extent of the adjustment of the capacitance C_2 and the unknown resistance from the indication of the amplitude detector; the improvement comprising:

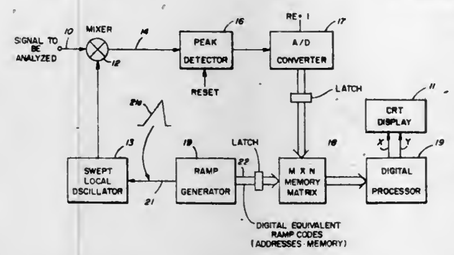
forming the means for connecting with an inductance L_x so as to satisfy the equation $\omega^2 C_2 L_x = 1$ where ω is the angular frequency of the high frequency source.

4,238,727

DIGITALLY PROGRAMMABLE APPARATUS FOR GENERATING A SUBSTANTIALLY LINEAR RAMP SIGNAL

Asad M. Madni, Los Angeles, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Dec. 22, 1978, Ser. No. 972,459
Int. Cl.³ G01R *23/16*
U.S. Cl. 324—77 B **8 Claims**



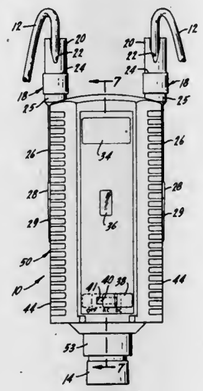
1. Apparatus for generating a substantially linear ramp signal comprising: a binary counter; a first DAC (digital to analog converter) driven by said counter; means for incrementing said counter to cause said DAC to produce a stairstep type output signal; a second DAC of the multiplying type having a digital input and a reference voltage input and producing an output current proportional to the product of said inputs; integrator means for receiving said output current of said second DAC and having as an output said ramp signal; feedback means for summing the ramp signal on said output of said integrator means with said stairstep signal of said first DAC and applying such summed signal as said reference voltage of said second DAC; and comparator means for comparing said output signal of said integrator means and said stairstep signal and for actuating said incrementing means when the absolute values of such signal are substantially equal.

4,238,728

VOLTAGE TESTER HOUSING WITH PROD RETAINING CHANNELS

Peter M. Wells, Jr., and Johannes A. E. Oprins, both of Sycamore, Ill., assignors to Ideal Industries, Inc., Sycamore, Ill.

Filed Feb. 13, 1978, Ser. No. 877,232
Int. Cl.² G01R *1/06, 1/04*
U.S. Cl. 324—149 **14 Claims**



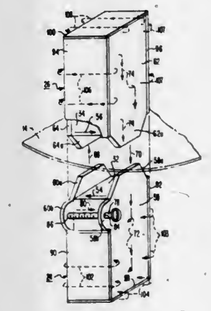
1. In a voltmeter, a housing with a voltmeter circuit therein, leads from the housing extending from one end thereof with handles and test prods on the ends of the leads, two open-sided, open-ended channels extending longitudinally along opposite sides of the housing, each channel being formed by a pair of oppositely facing resilient flanges extending along substantially the entire length of said housing and constructed and arranged to accept one of the handles from either end or from the side of said channel for storage, a reduction in the cross section of the channel intermediate its ends, an enlargement on each of the handles intermediate its ends, the dimensioning of the reduction and enlargement being such that an interference fit is acquired when the handle is fully inserted into the channel and the positioning of the reduction and enlargement along the length of the channel and the handle being such that a portion of the handle end extends beyond the channel when the handle is fully inserted into the channel.

4,238,729

MAGNETIC DAMPING SYSTEM HAVING LOW INDUCTION MAGNET

John A. MacFadden, and Joseph M. Keever, both of Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 16, 1979, Ser. No. 12,915
Int. Cl.³ G01R *1/16*
U.S. Cl. 324—152 **20 Claims**



1. A magnetic damping system for an induction device magnetically driving an electroconductive disk, said magnetic damping system comprising:

an elongated upright permanent magnet means having a direction of magnetization parallel to said disk and along a short length thereof extending between opposite magnet pole faces each having an upright height substantially greater than said length;

flux concentrating pole piece means formed of a soft magnetic material adjoining said opposite pole faces and having edge portions extending along the height thereof and terminating at pole tip portions passing a pair of closely spaced and flux density concentrated braking magnetic fields into said disk; and

temperature compensating magnetic means having a negative temperature coefficient of permeability and magnetically coupling coaligned pairs of said edge portions of said pole piece means to form compensating magnetic shunt paths between said opposite pole faces.

4,238,730

MAGNETIC BRAKE-DAMPER OF ELECTRIC MEASURING INSTRUMENT

Jury A. Konashinsky, ulitsa Budennovskaya, 213, kv. 25, and Alexandr V. Konashinsky, ulitsa Sverdlova, 48, kv. 5, both of Novocherkassk Rostovskoi oblasti, U.S.S.R.

Filed Oct. 17, 1978, Ser. No. 952,069
Int. Cl.³ G01R *1/16*
U.S. Cl. 324—152 **3 Claims**

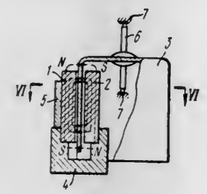
1. A magnetic brake-damper of an electric measuring instrument having a moving element which is secured on a shaft having a rotational axis and adapted to rotate in ball sockets,

said moving element having a portion which is parallel to said rotational axis of said shaft, said magnetic brake-damper comprising:

a first permanent magnet shaped as a segment with opposite poles defining lines of force parallel to said rotational axis of said shaft;

a case of non-magnetic material for housing said first permanent magnet;

a second permanent magnet shaped as a segment with opposite poles defining lines of force parallel to said rotational



axis of said shaft, accommodated in said case with said first permanent magnet and similarly magnetized;

said permanent magnets being spaced apart to form a gap accommodating said portion of said moving element;

said permanent magnets being so magnetized that the vector of their magnetization is parallel to the surface of said portion of said moving element of said electric measuring instrument and parallel to said rotational axis of said shaft, while the surfaces of the poles of the said magnets are not disposed in the plane which is parallel to the said surface of the moving element.

4,238,731

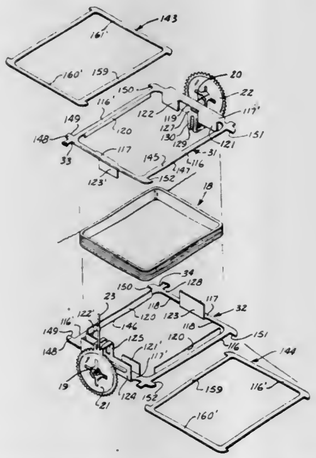
INSTRUMENT MOVING ELEMENT WITH SEVERABLE BRIDGE

David B. Pearson, Raritan, N.J., assignor to Sangamo Weston, Inc., Norcross, Ga.

Division of Ser. No. 738,305, Nov. 3, 1976, Pat. No. 4,080,570, which is a division of Ser. No. 532,245, Dec. 12, 1974, Pat. No. 3,997,840, which is a division of Ser. No. 391,496, Aug. 24, 1973, Pat. No. 3,882,389, which is a division of Ser. No. 173,425, Aug. 20, 1971, Pat. No. 3,764,909. This application Mar. 6, 1978, Ser. No. 883,671

Int. Cl.³ G01R *1/04, 5/06, 3/00*

U.S. Cl. 324—154 R **13 Claims**



8. As an intermediate assembly product in the manufacture of an instrument of the moving coil type, a coil assembly comprising, a frame, a coil mounted on said frame and fixed to the frame, first and second coil support elements at opposite ends of said frame, severable bridge means integrally connecting said frame and said first and second support elements, and means extending between said support elements and said frame for mounting said frame and coil for pivotal movement, whereby, a movable coil is formed by severing said bridge means between said first and second support elements.

4,238,732

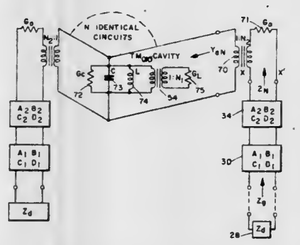
METHOD OF QUALIFYING DIODES FOR A MICROWAVE POWER COMBINER

Richard Aston, Wilkes-Barre, Pa., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Mar. 29, 1979, Ser. No. 24,924

Int. Cl.³ G01R *31/22*

U.S. Cl. 324—158 D **7 Claims**



1. A method of qualifying diodes for simultaneous use in a microwave power combiner to improve the operation thereof; said combiner having a central cavity with N diode oscillator circuits spaced around the cavity for furnishing energy thereto; said method including the steps of;

inserting a probe into said cavity to provide an electric field coupling N_{11} therebetween of the magnitude $N_{12}/\sqrt{N}$ where N_{12} is the corresponding magnitude of magnetic coupling when all N of said oscillator circuits are simultaneously activated;

applying a bias current to a single diode in only one of said oscillator circuits to activate electromagnetic oscillations in said cavity and to transfer energy therefrom to said probe via said coupling N_{11};

measuring the frequency at which said single diode supplies maximum power to said probe during said applying step;

repeating said applying step and measuring step on other individual diodes; and

qualifying for simultaneous use in said combiner, only that portion of said diodes which have measured frequencies of maximum power lying within a predetermined frequency band.

4,238,733

CORONA DISCHARGE MONITOR SYSTEM

David L. Freeman, Bridgenorth, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed May 15, 1979, Ser. No. 39,208

Int. Cl.³ G01R *31/34*

U.S. Cl. 324—158 MG **13 Claims**

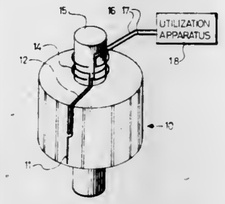
1. A corona discharge monitor system for a dynamoelectric machine having a rotor and a stator, said stator having slots therein with insulated conductors in said slots, said system comprising

antenna means mounted on said rotor for rotation with said rotor for receiving radio frequency signals resulting from corona discharge in said slots as said antenna means moves past said slots in succession,

means for transferring said radio frequency signals received

by said antenna means to a place externally of said dynamoelectric machine,

means for detecting the rotational position of said rotor and thereby the rotational position of said antenna means and for providing a positional signal representing the position, and



utilization means for receiving said radio frequency signal from said means for transferring said radio frequency signal and for receiving said positional signal from said means for detecting the rotational position of said rotor and for synchronizing said signals to provide an indication of the occurrence of said radio frequency signals with reference to the rotational position of said antenna means.

4,238,734

APPARATUS FOR MEASURING THE MAGNETIC MOMENTS OF A BODY USING A MAGNETIC FIELD GENERATED BY A PERMANENT MAGNET

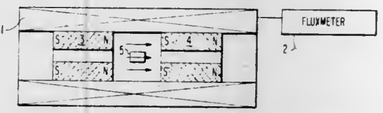
Erich A. Steingroever, Flensberger Strasse, 33 Bonn, and Dietrich A. Steingroever, An der Schanz 2, D 5000 Cologne, both of Fed. Rep. of Germany

Filed Apr. 24, 1978, Ser. No. 898,804

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1977, 2749681

Int. Cl.³ G01R *33/00*

U.S. Cl. 324—228 **17 Claims**



1. In apparatus for measuring the magnetic moment M of a body, said apparatus including means for generating a magnetic field having a controlled value H and subjecting said body to said field by moving it into or out of the field, and a measuring coil positioned in said magnetic field positioned to be responsive to the magnetic moment of the body in that field, the improvement which comprises a permanent magnet having a value of recoil permeability μ_r of less than 2 Gauss/Oersted for generating said controlled magnetic field.

4,238,735

INDIRECT DETECTION OF NUCLEAR SPINS OF LOW GYROMAGENTIC RATIO COUPLED TO SPINS OF HIGH GYROMAGNETIC RATIO

Luciano Muller, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 21, 1979, Ser. No. 13,999

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—310 **31 Claims**

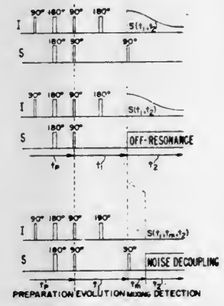
1. In a method of gyromagnetic resonance spectroscopy for indirectly detecting transient gyromagnetic resonances of a first group of gyromagnetic resonators interacting with a second group of gyromagnetic resonators forming heteronuclear spin coupled resonating systems within a sample of matter to be analyzed, said heteronuclear systems exhibiting multiple quantum coherence, the steps of

(a) preparing a non-equilibrium resonant statistical state of an assembly of said heteronuclear resonators, said state characterized by nonvanishing zero and double quantum coherence transitions;

(b) permitting said non-equilibrium state to evolve for a first interval of time;

(c) applying a nonselective 180° pulse of RF energy to said second group whereby heteronuclear zero and double quantum transition amplitures are interchanged;

(d) permitting continued evolution of said non-equilibrium state for a further first interval of time;



(e) applying a 90° pulse of RF energy to said first group of resonators whereby zero and double quantum coherence in said heteronuclear spin coupled system is converted to single quantum coherence in said second group of gyromagnetic resonance;

(f) detecting and recording the free induction decay of said resonators over a second interval of time after application of said conversion pulse;

(g) changing said first period of time by an increment thereof and repeating steps a–e inclusive, whereby a two dimensional function of said first and second time interval is developed;

(h) double Fourier transforming said function to the frequency domain.

4,238,736

PEAK LIMITING BY HALF WAVES

Frederick M. Slay, 12425 Dancrest Dr., Clarksburg, Md. 20734

Filed Jul. 24, 1978, Ser. No. 927,276

Int. Cl.³ H03K *5/08;* **H03L** *5/00*

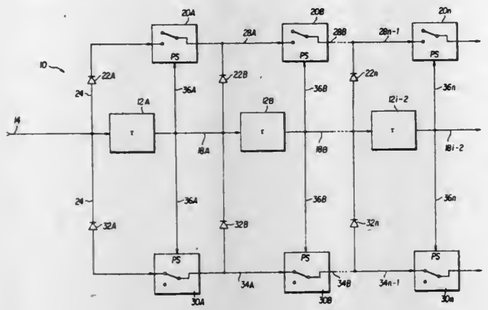
U.S. Cl. 328—169 **10 Claims**

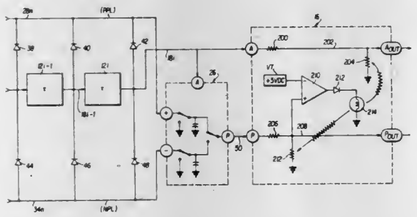
1. A method of maintaining the peak amplitude of a varying bipolar voltage signal below a predetermined level comprising the steps of:

(a) electronically delaying said voltage signal and processing selected portions of said voltage signal as a half wave defined by an interval between opposite-going adjacent zero axis crossings of said voltage signal;

(b) electronically comparing the highest peak amplitude

within each half wave to said predetermined level to derive an amplitude control signal; and





(c) using said control signal for establishing the amplitude of each half wave on an individual basis such that no portion of said voltage signal exceeds said predetermined level.

4,238,737

BIASING ARRANGEMENT FOR A PUSH-PULL AMPLIFIER

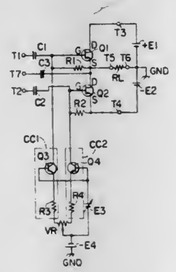
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 564,651, Apr. 2, 1975, abandoned. This application Jul. 31, 1978, Ser. No. 929,534

Claims priority, application Japan, Apr. 3, 1974, 49/37497; Apr. 4, 1974, 49/38162; Apr. 4, 1974, 49/38163; Apr. 6, 1974, 49/39231; May 10, 1974, 49/51875; May 11, 1974, 49/52658

Int. Cl.³ H03F *3/45, 3/30*

U.S. Cl. 330—255 **6 Claims**



1. An amplifier circuit comprising:
a first and a second field effect transistor each having source and drain electrodes,
a connection between the source electrode of said first transistor and the drain electrode of said second transistor,
an output terminal taken out of said connection,
input terminals connected to the gates of said transistors,
a first resistor connected between gate and one of said electrodes of said first transistor,
a second resistor connected between gate and one of said electrodes of said second transistor,
a first voltage supply connected to the drain of said first transistor,
a second voltage supply connected to the source electrode of said second transistor, and
a constant current supplying means including a pair of output adjustable constant current supplying units,
each unit having a respective further transistor with a collector electrode connected directly to a respective one of said gates, a base electrode, and an emitter electrode,
said constant current supplying means further including a differential balancing potentiometer having an adjustable tap and being connected at opposite ends to said emitters respectively and a manually adjustable third voltage supply connected between said tap on one hand and both of said base electrodes on the other hand for selectively setting manually the operating mode of said first and second field effect transistors by varying the gate biases thereof equally by only adjusting said adjustable third voltage source, the adjustment of said tap being itself operative to balance said gate biases.

4,238,738

TEMPERATURE-COMPENSATED AMPLIFIER CIRCUIT

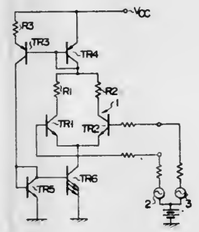
Yuji Komori, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 9, 1978, Ser. No. 914,293

Claims priority, application Japan, Jun. 15, 1977, 52-70616; Jun. 15, 1977, 52-78307

Int. Cl.² H03F *1/30, 3/45*

U.S. Cl. 330—256 **25 Claims**



1. A temperature-compensated amplifier circuit comprising:
a first power source terminal;
a reference power source terminal;
an amplifier section;
resistive load means connected between said amplifier section and the first power source terminal;
temperature compensating resistive means having substantially the same temperature characteristic as said resistive load means; and
current source means having a first current path connected to said temperature compensating resistive means and a second current path connected between said amplifier section and the reference power source terminal, causing a first current to flow through said temperature compensating resistive means and a drive current having a given ratio to the first current to flow through said amplifier section, said first current path including a PN junction device, a first transistor whose emitter-collector path is coupled between one terminal of said temperature compensating resistive means and one terminal of said PN junction device, a second transistor whose emitter is coupled to the other terminal of said temperature compensating resistive means and whose base and collector are coupled to the base of said first transistor, and a third transistor whose collector is coupled to the collector of said second transistor, whose emitter is coupled to the other terminal of said PN junction device and whose base

is coupled to said one terminal of said PN junction device, and said second current path including a fourth transistor whose collector-emitter path is coupled between said amplifier section and the reference power source terminal.

4,238,739

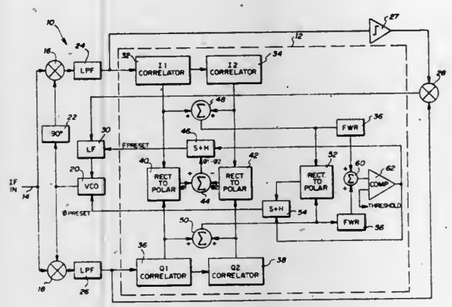
PRESET NETWORK FOR A PHASE LOCK LOOP

William H. Mosley, St. Petersburg; Carl F. Andren, Indiatlantic, and Lex Scott, St. Petersburg, all of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Feb. 26, 1979, Ser. No. 15,233

Int. Cl.³ H03L *7/10*

U.S. Cl. 331—12 **10 Claims**



10. A preset network for use in a phase lock loop circuit that receives an input signal including a carrier signal and at least one data signal, a local oscillator for generating a local oscillator signal having a frequency corresponding to the carrier signal frequency and feedback loop means responsive to the input signal and the local oscillator signal for generating a control signal for the local oscillator to synchronize the local oscillator signal in frequency and phase with the carrier signal, the preset network comprising:
frequency monitoring means for detecting the frequency of the local oscillator signal relative to the carrier signal frequency and for generating a frequency preset signal corresponding to the frequency of the local oscillator signal relative to the carrier signal frequency;
frequency preset control means responsive to the frequency preset signal for presetting the local oscillator to generate the local oscillator signal at a frequency corresponding to the frequency preset signal, whereby the local oscillator signal is synchronized in frequency with the carrier signal;
phase monitoring means for monitoring the phase of the local oscillator signal relative to the carrier signal phase and for generating a phase preset signal corresponding to the phase of the local oscillator relative to the carrier signal phase; and
phase preset control means responsive to the phase preset signal for presetting the local oscillator to generate the local oscillator signal at a phase corresponding to the phase preset signal, whereby the local oscillator signal is synchronized in phase with the carrier signal.

4,238,740

PHASE-LOCKED LOOP FOR PCM TRANSMISSION SYSTEMS

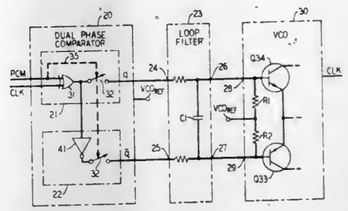
Charles R. Crue, West Newbury, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 2, 1979, Ser. No. 8,556

Int. Cl.³ H03L *7/08*

U.S. Cl. 331—17 **3 Claims**

1. A phase-locked loop circuit for extracting a clock signal from a PCM signal comprising a voltage controlled oscillator (**30**) connected in a phase-locked loop for generating a clock signal having a frequency determined by a control signal (**14**) produced within the phase-locked loop, characterized in that said loop circuit further includes
phase comparison means (**20**) for selectively comparing the phase between a PCM signal and the oscillator clock signal only at times when a PCM pulse is present and generating therefrom a control signal to synchronize the oscillator clock at the PCM frequency, said means providing a high impedance output at times when a PCM pulse is absent, said means comprising a dual section tri-state



gate (**300**) including voltage means (**303**) for providing the voltage required to cause said voltage controlled oscillator to oscillate at a predetermined frequency, and
filter means (**23**) connected between the output of said phase comparison means and the input (**28, 29**) of said voltage controlled oscillator for coupling said control signal to said oscillator, the output (**26, 27**) of said filter means further serving to hold the oscillator frequency fixed during the high impedance state of said phase comparison means.

4,238,741

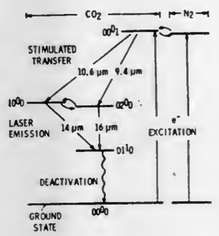
TECHNIQUE FOR GENERATING 14 AND 16 MICRON CO_2 LASER RADIATION

William H. Kasner, Penn Hills; Vincent A. Toth, North Huntingdon, both of Pa., and Lyn D. Pleasance, Livermore, Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1977, Ser. No. 863,193

Int. Cl.² H01S *3/097*

U.S. Cl. 331—94.5 PE **8 Claims**



1. In a method of operating a CO_2 gas laser apparatus to produce a 16 micron laser radiation wherein the gas laser medium consists of a composition of CO_2, N_2 and He with N_2 functioning as an energizing gas constituent to excite the CO_2 molecules via collisional transfer, including the steps of electrically exciting the CO_2 gas laser medium to populate the 00^01 vibrational energy level with excited CO_2 molecules to achieve a population inversion between the 00^01 and 02^00 vibrational energy levels of the CO_2 molecule, transferring the excited CO_2 molecules from the 00^01 vibrational energy level to the 02^00 vibrational energy level to achieve a population inversion between the 02^00 vibrational energy level and the 01^10 vibrational energy level of the CO_2 molecule, and extracting 16 micron laser radiation on the basis of the population inversion between the 02^00 vibrational energy level and the 01^10 vibrational energy level of the CO_2 molecule, wherein the He gas constituent functions to depopulate the 01^10 vibrational energy

level of the CO_2 molecule to enhance said population inversion, the improvements comprising,

mixing said laser gas composition of CO_2:N_2:He in a ratio of approximately 1:2:25 allowing for a ±2 variation in any one of said gas constituents,

maintaining a laser gas pressure sufficient to support electrical discharge in said laser gas composition,

cooling said laser gas composition to a temperature in the range of approximately 125° K. and 230° K., and

delaying the transfer of the excited CO_2 molecules from the 00^01 level to the 02^00 vibrational energy level of the CO_2 molecule for a time following the electrical excitation of the laser gas composition being in a range between approximately 0.1 milliseconds and 5 milliseconds.

4,238,742

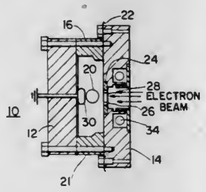
LASER SYSTEM

Louis F. Champagne, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1978, Ser. No. 935,203

Int. Cl.³ H01S *3/22*

U.S. Cl. 331—94.5 G **7 Claims**



1. In an improved electron-beam-excited XeF gas laser including an elongated laser cell constructed with optically aligned end windows positioned at Brewster's angle, mirror means forming a laser cavity relative to said laser cell, and window means for passing electrons into said laser cell, the improvement comprising:

a XeF gaseous mixture within said laser cell in which neon is employed as a diluent.

4,238,743

GAS LASER HAVING A CYLINDRICALLY-SHAPED DISCHARGE TUBE

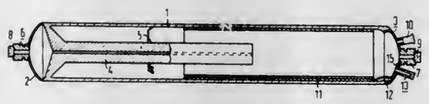
Hans Golser, and Erich Kirschner, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 964,631

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754756

Int. Cl.³ H01S *3/03*

U.S. Cl. 331—94.5 T **12 Claims**



1. In a gas laser having a cylindrically-shaped discharge tube which has at least one end thereof terminated with a metal end cap which supports a mirror body in a central area of such cap and supports a metal pump stem in a position eccentric to a longitudinal axis of the tube, said mirror body being orientated along the longitudinal axis of said tube, the improvement comprising wherein:

said metal end cap is provided with at least one thermal compensation element located at a select position of said end cap so that at gas laser operating temperatures, said compensation element deforms the end cap to a substantially identical extent as the pump stem so that the influence of end cap deformation on mirror orientation relative to the longitudinal axis of the tube is at least approximately compensated.

4,238,744

FREQUENCY BAND DIVIDING FILTER USING DELAY-LINE FILTER

Makoto Iwahara, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

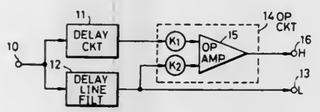
Filed Sep. 6, 1978, Ser. No. 940,644

Claims priority, application Japan, Sep. 8, 1977, 52-107196; Dec. 1, 1977, 52-143286; Dec. 1, 1977, 52-143287

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.³ H03H *7/46*

U.S. Cl. 333—132 **9 Claims**



1. A frequency band dividing filter comprising:

a delay-line filter supplied with an input signal, said delay-line filter producing a divided frequency band signal as an output;

means for deriving a delayed signal in which said input signal has been delayed by a predetermined amount of time; and

means for substantially performing subtraction of the delayed signal and the output signal of said delay-line filter, and producing another divided frequency band output signal,

said delay-line filter comprising a plurality of delay circuits cascade connected, coefficient multipliers respectively supplied with said input signal and the output signal of said delay circuits and for multiplying specific coefficients to said signals thus supplied, and an adder for adding output signals of each of said coefficient multipliers.

4,238,745

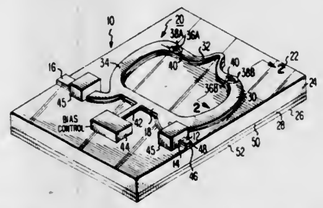
PHASE SHIFTER

Alfred Schwarzmann, Mt. Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,583

Int. Cl.³ H01P *1/185, 3/08, 9/00*

U.S. Cl. 333—164 **14 Claims**



1. A phase shifter adapted to operate at a preselected center frequency f_0 comprising:

an input section of transmission line to which a signal may be applied;

a second section of transmission line;

a newtork coupled between said input and said second sections, said network comprising:

a third section of transmission line matched in impedance to the input and second sections and coupling said input section to said second section;

a reentrant transmission line network having substantially negligible energy storage capacity in shunt with said third section of transmission line and;

means for switching said reentrant transmission line network between a first condition in which it appears like an open circuit to said input section and a second condition for introducing a differential phase shift to a signal propagating in said main transmission line.

4,238,746

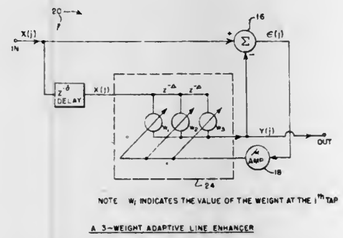
ADAPTIVE LINE ENHANCER

John M. McCool, El Cajon; Bernard Widrow, Stanford; James R. Zeidler; Robert H. Hearn, both of San Diego, and Douglas M. Chabries, Vista, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 20, 1978, Ser. No. 888,266

Int. Cl.³ G11C *27/00;* H03H *15/02, 7/01*

U.S. Cl. 333—166 **3 Claims**



A 3-WEIGHT ADAPTIVE LINE ENHANCER

1. An adaptive line enhancer for spectral line enhancing, generally in an environment where significant noise is present, comprising:

means for delaying an input signal X(j) by a fixed time delay δ;

weighted means, whose input is connected to the output of the delaying means, for adaptively filtering the delayed signal, using a least-means-square (LMS) algorithm, the output of the filtering means comprising a signal Y(j);

means, having as inputs the signals X(j) and Y(j), for subtracting the signal Y(j) from X(j), the output of the subtracting means being the error signals ε(j);

means, having as an input the signal ε(j), for multiplying the signal by a gain μ, the output of the multiplying means being fed back to the filtering means, to cause the weights of the weighted means to be readjusted in a manner to minimize the difference between the signal X(j) and the signal Y(j), thereby minimizing the error signal ε(j), wherein:

the weighted filtering means comprises a transversal filter.

4,238,747

MODE FILTER APPARATUS

Robert S. Harp, Westlake Village, and Kenneth J. Russell, Thousand Oaks, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 10, 1979, Ser. No. 65,678

Int. Cl.³ H01P *1/16, 1/162, 7/04, 7/06*

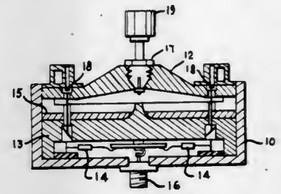
U.S. Cl. 333—228 **8 Claims**

1. In a power combiner apparatus, a mode filter apparatus for multi-moded structures comprising in combination:

a lower member being equally disposed about a center line, said lower member encompassing a bias resistor network, said bias resistor network extending radially from said center line, said bias resistor network having a common point at said center line, said lower member having an input bias connector connected to said common point of said bias resistor network,

an upper plate mated with said lower member to form an enclosed cavity, said upper plate having a plurality of diodes mounted in said upper plate around the periphery thereof, said plurality of diodes respectively having one end connected to said bias resistor network, said upper plate having a coupling probe mounted in the center thereof, said coupling probe interacting with said plurality of diodes to conduct the electromagnetic radiation received therefrom and present in said cavity, and,

a mode filter means located on said lower member in said cavity, said mode filter means comprising a conductive



material covering the top of said lower member to a predetermined height but not filling said cavity, said mode filter means having a plurality of resonant slots therein on said cavity side, said plurality of resonant slots extending radially from the center of said mode filter means toward the outer edge of said mode filter means, said plurality of resonant slots being arranged in a predetermined pattern, said predetermined pattern for said plurality of resonant slots includes resonant slots of varying length, width and depth, each slot of said plurality of resonant slots having an absorbing material positioned therein, said absorbing material filling the bottom of each slot of said plurality of resonant slots and extending therefrom to a predetermined height.

4,238,748

MAGNETICALLY CONTROLLED SWITCH WITH WETTED CONTACT

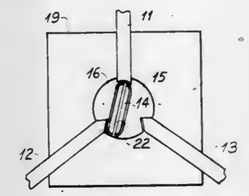
Jean-Francois Goullin, and Michel Nicolas, both of Courbevoie, France, assignors to Orega Circuits et Commutation, Paris, France

Filed May 23, 1978, Ser. No. 908,851

Claims priority, application France, May 27, 1977, 77 16338

Int. Cl.³ H01H *29/00, 1/08, 51/22*

U.S. Cl. 335—56 **17 Claims**



1. A magnetically controlled switch with wetted contacts, comprising:

a housing defining a closeable cavity having a non-wettable inner surface;

at least two fixed electrodes of ferromagnetic material having their contact surface inside said closeable cavity and wettable only at their ends;

a conductive liquid intended to establish electrical contact between at least two of said at least two fixed electrodes disposed in said cavity;

a lightweight moving element of ferromagnetic material wetted by said liquid at least over its contact surfaces, displaceable in a plane inside said cavity between said at least two fixed electrodes in continuous confronting relation to said non-wettable inner surface; and

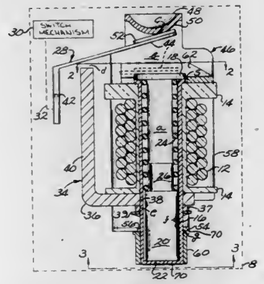
external control means, which creates a magnetic field passing through said cavity, for changing the position of said element making said electrical contact, whereby the electrical contact established in the position acquired by said element is retained, in the absence of said magnetic field, by the action of surface tension forces, the position in space of the switch being immaterial, said cavity surface having such dimensions as to prevent movement of said element perpendicular to said plane.

4,238,749

HIGH INRUSH CURRENT CIRCUIT BREAKER

Martin W. Lawson, North Easton, and David M. Brown, North Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Attleboro, Mass.

Filed Dec. 29, 1978, Ser. No. 974,420
Int. Cl.³ H01H *7/02*; H01F *3/12*
U.S. Cl. 335—63 **6 Claims**



1. An electromagnetic switch comprising a flux producing solenoid assembly having first and second ends and having a bobbin with a groove around its periphery, a pole piece disposed at the first end of the solenoid, an armature having a clapper portion movable toward and away from the pole piece, a tubular housing of non magnetic material received within the solenoid, a core of magnetic material movably mounted within the tubular housing, means forming a flux path including a main frame of magnetic material having a first path thereof contiguous to the second end of the solenoid, the main frame having a second part thereof adjacent a portion of the armature, an auxiliary frame of magnetic material having a first leg proximate the second end of the solenoid and spaced from the main frame, the first leg of the auxiliary frame having a pair of fingers formed in a generally U-shaped configuration, the tubular housing having an end which projects from the solenoid and received between the fingers of the first leg,

the auxiliary frame having a second leg proximate the first end of the solenoid and spaced from the pole piece, the clapper movable between the pole piece and the second leg of the auxiliary frame,

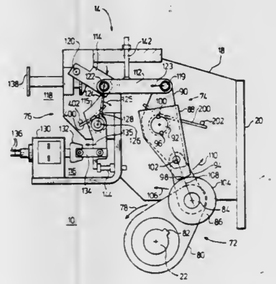
a member of magnetic material extending from the auxiliary frame disposed adjacent the pole piece and spaced therefrom, the member formed with a pair of fingers formed in a generally U-shaped configuration, the fingers disposed within the groove of the bobbin to lockingly engage with the solenoid assembly to fix the solenoid assembly relative to the auxiliary frame, and electrical contact means operatively associated with the armature, the pair of fingers of the member of magnetic material and the pair of fingers of the first leg of the auxiliary frame extending in parallel directions to facilitate assembly by dropping the main frame with the solenoid mounted thereon into position with the fingers of the member of magnetic material extending into the groove of the bobbin and the tubular housing disposed between the fingers of the first leg of the auxiliary frame.

4,238,750

MECHANICAL TRIP DEVICE FOR A CIRCUIT BREAKER

Archibald W. Smith, Peterborough, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Jul. 3, 1979, Ser. No. 54,454
Int. Cl.³ H01H *75/10, 9/20*
U.S. Cl. 335—173 **15 Claims**



1. In a power circuit breaker having large opening forces associated with its separable contacts, a trip mechanism normally holding the contacts closed and collapsing to permit said contacts to open when an overload current condition is present, the trip mechanism comprising:

a collapsible means operable with the contacts and movable between a collapsed position permitting the opening force to open the contacts and a normal position holding the contacts closed, the collapsible means biased towards its collapsed position by a first resultant bias force related to the opening force,

a first latch means having a first end portion for engaging the collapsible means, the first latch means mounted to a shaft which is eccentric to the first end portion, the first latch means movable between a release position therefor permitting the collapsible means to move into its collapsed position and a support position therefor supporting the collapsible means in its normal position whereby the first end portion translates the first resultant bias force into a first rotatable bias force of reduced magnitude which rotatably biases the first latch means towards its release position,

a second latch means having a second end portion serially operable with the first latch means, the second latch means mounted to a first pivot which is eccentric to the second end portion, the second latch means movable between a release position therefor permitting the first latch means to move into its release position and a stop position therefor holding the first latch means in its normal position whereby the second end portion translates a second resultant force acting thereon which is related to the first rotatable bias force into a second rotatable bias force of reduced magnitude which rotatably biases the second latch means towards its release position, and

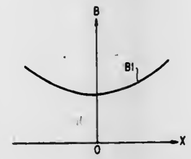
a trip device operable with the second latch means and in response to the overload current condition movable from a normal position opposing the second rotatable bias force into a trip position permitting the second rotatable bias force to move the second latch means into its release position.

4,238,751

DEFLECTION YOKE FOR COLOR PICTURE TUBE

Taketoshi Shimoma, Fukaya, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 772,938, Feb. 28, 1977, abandoned. This application Nov. 14, 1978, Ser. No. 960,625
Int. Cl.³ H01F *5/00*
U.S. Cl. 335—213 **3 Claims**



1. In a color picture tube having an electron gun arranged in a horizontal plane for emitting three electron beams toward a viewing screen through a shadow mask, a deflection yoke comprising:

a toroidally-shaped magnetic core of high permeability;

a pair of vertical windings having toridal-shaped turns wound on said core for providing a non-uniform main field to deflect said electron beams in a vertical direction;

a pair of horizontal windings having turns wound on said core for providing a non-uniform main field to deflect said electron beams in a horizontal direction; and

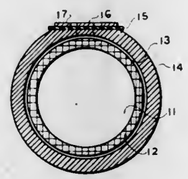
a pair of supplementary coils having predetermined turns and proper shapes disposed adjacent said horizontal windings for providing an induced flux field which couples magnetically with said main field of said horizontal windings so as to decrease the center portion of said main field but to enhance the edge portions thereof, said supplementary coils being symmetrically arranged relative to said horizontal plane and relative to a plane being perpendicular to said horizontal plane which includes the central electron beam of said three electron beams such that the curvature of the meridinal image plane of said electron beams is substantially coincident with the curvature of said shadow mask surface.

4,238,752

MAGNETIZING DEVICE

Hans Lanik, Traiskirchen, Austria, assignor to EVVA Werk Spezialerzeugung von Zylinder- und Sicherheitsschloessern Gesellschaft m.b.H. & Co., Vienna, Austria

Filed Apr. 10, 1978, Ser. No. 894,849
Claims priority, application Austria, Apr. 13, 1977, 2549/77; Jul. 27, 1977, 5494/77; Jul. 27, 1977, 5497/77
Int. Cl.³ H01G *27/28*
U.S. Cl. 336—73 **10 Claims**



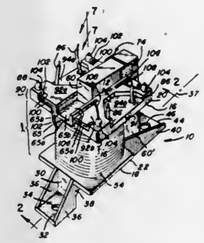
1. A magnetic transformer device comprising: a cylindrical transformer core; a first winding surrounding said core and a second winding surrounding said first winding, said second winding being formed as a ring-like element with a slot on the upper surface thereof and having at least one portion located within said slot and extending beyond said upper surface, said portion being formed with a cross-section of the size substantially lower than that of said slot to produce a magnetic field of high density for magnetizing a magnet material.

4,238,753

TRANSFORMER CORE GAPPING AND LEAD ANCHORING ARRANGEMENT

George S. Bayer, Kildeer, Ill., assignor to TRW Inc., Wheeling, Ill.

Continuation-in-part of Ser. No. 877,728, Feb. 14, 1978, abandoned, which is a continuation of Ser. No. 773,142, Mar. 1, 1977, abandoned. This application Jun. 2, 1978, Ser. No. 911,788
Int. Cl.³ H01F *17/06, 27/30*
U.S. Cl. 336—178 **6 Claims**



1. A transformer comprising a base including terminals, hollow support means extending from said base, flange means extending outwardly from said support means at the distal end thereof, first L-shaped core means including a first portion thereof which extends through said hollow support means and a second portion extending along said flange means, and second L-shaped core means including portions positioned in spaced relation with said portions of said first core means to form gaps therebetween, one of said portions of said second core means extending along said base, a plurality of coils positioned about said support means, each of said coils having a plurality of terminal leads connected to respective ones of said terminals, said flange means including a plurality of notches extending inwardly from the edges of said flange means supporting said terminal leads intermediate said coils and said terminals, and means for limiting movement of at least one of said first and second L-shaped core means.

4,238,754

VARIABLE RESISTOR

Christian Schuberth; Istvan Nemeth, both of Bad Neustadt, and Lothar Guck, Reyersbach, all of Fed. Rep. of Germany, assignors to Elektrofeinmechanische Werke Jacob Preh GmbH & Co., Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,863
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735352; Sep. 9, 1977, 2740578
Int. Cl.³ H01C *10/34*
U.S. Cl. 338—174 **27 Claims**

1. An electrical device of modular design, comprising:

a hub flange;

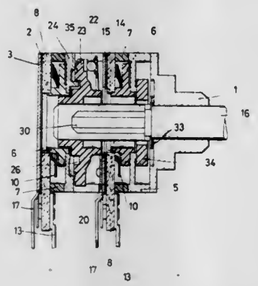
a variable resistor module including a unitary housing frame, a spring carrier mounted for rotation with respect to said unitary housing frame, a contact spring mounted on said spring carrier and fixed for rotation with said spring carrier, a carrier plate mounted adjacent said spring carrier, and a resistance course and a collector course mounted on said carrier plate, said contact spring providing an electrical connection between said resistance course and said collector course;

an actuation shaft extending through said hub flange and said spring carrier and fixed for simultaneous rotation with said spring carrier;

a variable electrical circuit element module mounted in

tandem with said variable resistor module and including a second unitary housing frame, an actuator mounted for rotation with respect to said second housing frame and drivingly connected with said shaft a carrier plate fixed with respect to said second unitary housing and mounted on the opposite side of said second unitary housing frame from said actuator, and spaced electrical circuit elements on said carrier plate to cooperate with rotation of said actuator to change their electrical characteristics;

at least one of said unitary housing frames being formed with



a pot-shaped side facing the other unitary housing frame and having side walls defining a space;

a rotor rotatably mounted within the space defined by said side walls as a separate module between said variable resistor module and said variable electrical circuit element module, said rotor being drivingly connected to said shaft, and said rotor including stop contours arranged angularly;

means provided for arresting the rotation of said rotor to within predetermined angular limits; and

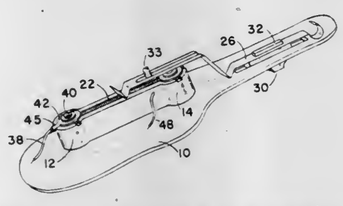
at least one click-stop means resiliently biased against and engaging said rotor stop contours for indexing said shaft.

4,238,755

SIMPLIFIED LINEAR POTENTIOMETER

Robert J. Knauff, 819 N. Gardner St., West Hollywood, Calif. 90046

Filed Dec. 13, 1978, Ser. No. 969,251
Int. Cl.³ H01C *10/38*
U.S. Cl. 338—176 **7 Claims**



1. A potentiometer for incorporation in the planar body wall of models and toys, which comprises:

(a) a pair of spaced insulating standoffs integrally formed with and upstanding from one side of the planar body wall;

(b) an insulated slot integrally formed with the planar body wall and extending between said standoffs;

(c) a resistive element wound around an insulating core in and disposed coextensively of said slot;

(d) a second slot through the planar body wall and extending in alignment with and away from said spaced insulating standoffs;

(e) a resilient contact element slidably mounted on said one side of the planar body wall and over said second slot therethrough and having an extending portion in spaced relation to and in sliding contact engagement with said resistive element; and

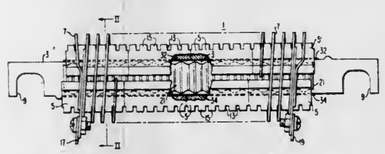
(f) means extending through said second slot in the planar body wall for engaging and sliding said resilient contact element relative to said resistive element.

4,238,756

ELECTRIC RESISTANCE UNIT

Ralph B. Immel, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 28, 1978, Ser. No. 974,176
Int. Cl.³ H01C *7/22*
U.S. Cl. 338—304 **10 Claims**



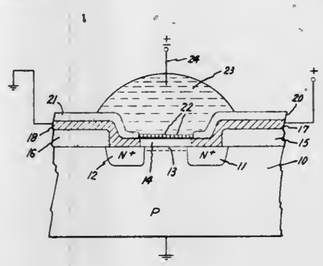
1. An electric resistance unit comprising an elongated support rod, the rod having a rectangular cross section with opposite side walls and opposite edges, a plurality of insulating refractory bodies on opposite edges of the rod in end-to-end abutment and arranged to substantially surround the rod, a continuous resistance winding helically mounted on and surrounding the refractory bodies, each body being a channel member having a slot to fit on the rod and having spaced legs extending over and along the opposite side walls, the corresponding legs of the channel members on opposite edges extending toward each other, flexible metal mounting means in the slot and between the rod and the bodies for retaining the bodies on the rod, and the flexible metal mounting means extending between the rod and said corresponding legs on at least one side wall of the rod.

4,238,757

FIELD EFFECT TRANSISTOR FOR DETECTION OF BIOLOGICAL REACTIONS

John F. Schenck, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 19, 1976, Ser. No. 668,584
Int. Cl.³ H01L *29/78*; G01N *31/00*
U.S. Cl. 357—25 **17 Claims**



1. A field effect transistor comprising:

a substrate of semiconductor material of one conductivity type, said semiconductor material containing first and second separated regions of opposite conductivity type extending a predetermined distance into said substrate from the upper surface thereof, each of said first and second regions, respectively, being situated at, and defining, opposite ends of a channel region of said one conductivity type semiconductor material;

first and second electrical conducting means contacting each of said first and second separated regions of opposite conductivity type, respectively;

an insulating coating overlaying said substrate atop said channel region;

a monomolecular layer of a first protein adsorbed atop said insulating coating, said layer of said first protein being adapted to support a fluid specimen to be investigated; and

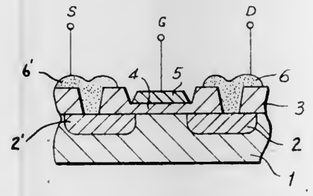
third electrical conducting means adapted to make contact to said fluid specimen.

4,238,758

SEMICONDUCTOR GAS SENSOR

Shunji Suzuki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,816
Claims priority, application Japan, Dec. 8, 1977, 52-147492
Int. Cl.³ H01L *29/66*
U.S. Cl. 357—25 **11 Claims**



1. A metal-oxide-semiconductor transistor gas sensor comprising:

a semi-conductive substrate of given conductivity type;

at least two spaced apart diffusion regions in said substrate, said diffusion regions formed from a dopant material having a conductivity opposite from said substrate;

a field oxide film disposed on the surface of said substrate contacting at least a portion of the surface of each of said diffusion regions;

a gate oxide film comprising an oxide semiconductor having a work-function dependent upon absorption of gas, said gate oxide film disposed on the surface of said substrate at the region free of said dopant material and contacting at least a portion of the remaining surface of each of said diffusion regions, said gate oxide film having a permittivity of more than 10;

a gate disposed on said gate oxide film; and

contact means for connecting said spaced apart diffusion regions and said gate electrode to external circuitry for detecting said charge in work-function of said gate oxide film.

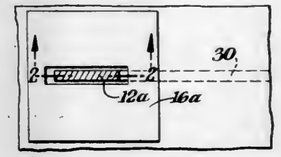
4,238,759

MONOLITHIC PELTIER TEMPERATURE CONTROLLED JUNCTION

Robert G. Hunsperger, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed Oct. 20, 1978, Ser. No. 953,006
Int. Cl.³ H01L *23/56, 29/66*
U.S. Cl. 357—28 **7 Claims**

1. Means for maintaining the temperature of a p-n junction in a monolithic solid-state electronic device embodying a substrate comprising a Peltier thermal surface layer disposed adjacent the active region of said p-n junction and in close proximity therewith, said Peltier thermal surface layer being provided with an electrical conductor in circuit therewith through a first terminal affording an electrical path for the



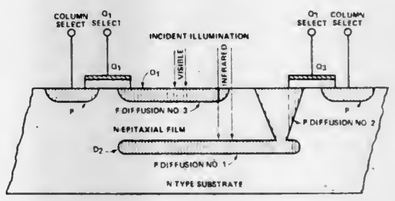
withdrawal or supply of Peltier effect current incident to the maintenance of said junction at a preselected temperature.

4,238,760

MULTI-SPECTRUM PHOTODIODE DEVICES

William N. Carr, Dallas, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Filed Oct. 6, 1978, Ser. No. 949,346
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **6 Claims**



1. A multi-spectrum photodiode device having at least one photodiode pair, each photodiode of the pair operable independent of the other and sensitive to a different wavelength of radiation comprising:

a body of semiconductor material of one conductivity type having an epitaxial layer of the same conductivity type on one face thereon; a diffused region of an opposite conductivity type in said body of semiconductor material at said one face under said epitaxial layer and forming a first photodiode therewith, a second diffused region of said opposite conductivity type in said epitaxial layer and forming a second photodiode therewith, said second photodiode being directly over but spaced apart from said first photodiode, a third diffused region of said opposite conductivity type in said epitaxial layer, extending through said layer to said first diffused region and providing contact thereto; and contact to said second diffused region to facilitate output from said second photodiode independent of the output from said first photodiode.

4,238,761

INTEGRATED GATE ASSISTED TURN-OFF, AMPLIFYING GATE THYRISTOR WITH NARROW LIPPED TURN-OFF DIODE

Earl S. Schlegel, Pittsburgh, and Derrick J. Page, Export, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 27, 1975, Ser. No. 581,255
Int. Cl.³ H01L *29/47*
U.S. Cl. 357—38 **2 Claims**

1. An integrated amplifying gate thyristor with gate assist turn-off capability comprising:

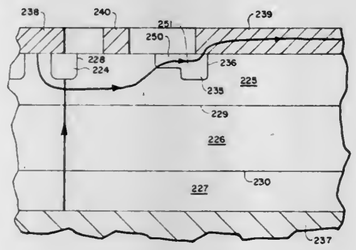
A. main and pilot thyristors disposed in a semiconductor body having first and second major surfaces, each thyristor having four impurity regions extending through the body between the major surfaces, said impurity regions of

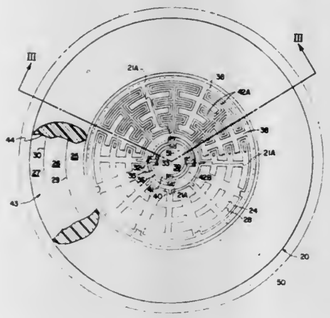
alternate conductivity-type disposed alteratively with PN junctions formed between adjacent regions, the two regions interior being cathode-base and anode-base regions, and the two regions adjoining the first and second major surfaces and adjoining the cathode-base and anode-base regions being cathode-emitter and anode-emitter regions, respectively;

B. the cathode-base, anode-base and anode-emitter regions of the main and pilot thyristors being common to both thyristors;

C. said common cathode-base region adjoining the first major surface between the cathode-emitter regions of the main and pilot thyristors such that the cathode-emitter regions thereof are spaced apart:

D. a diode disposed in the semiconductor body adjacent the main thyristor formed by a cathode impurity region in the body adjoining the first major surface adjacent to and spaced from the separate cathode-emitter regions of the main and pilot thyristors and from the common cathode-base regions of the thyristors, said diode and said cathode-





base region at the diode forming a transistor structure having a current gain less than the ratio of I_{FB}/I_g, where I_{FB} is the forward anode current triggering the main thyristor into low impedance conducting state by applying a threshold negative gate assist current and an operating anode-cathode load potential, and I_g is a specified gate assist turn-off current to turn-off the main thyristor; and said cathode region of said diode having a shallow impurity lip extending toward the cathode-emitter region of the main thyristor, said shallow lip having an area larger than the remainder of the cathode region and a depth less than about one-half of the remainder of the cathode region:

E. cathode and anode electrodes positioned on said first and second major surfaces, respectively, to make ohmic contact with the cathode-emitter region of the main thyristor and the common anode-emitter region of the main and pilot thyristors;

F. a gate electrode positioned on said first major surface to make ohmic contact with the common cathode-base region adjacent to and spaced from the cathode-emitter region of the pilot thyristor, and with the cathode region of the diode; and

G. a floating electrode positioned on said first major surface adjacent to and spaced from the gate electrode to make ohmic contact with the common cathode-base region between the thyristors and the cathode-emitter region of the pilot thyristor.

4,238,762

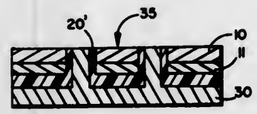
ELECTRICALLY ISOLATED SEMICONDUCTOR DEVICES ON COMMON CRYSTALLINE SUBSTRATE

Donald A. McWilliams, Placentia; Charles H. Fa, Costa Mesa; George A. Larchian, Northridge, and Oral F. Maxwell, Jr., Santa Ana, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 847,807, Jul. 25, 1969, abandoned, which is a continuation of Ser. No. 549,373, May 11, 1969, abandoned, which is a continuation of Ser. No. 327,990, Dec. 4, 1963, abandoned. This application Apr. 22, 1974, Ser. No. 462,698

Int. Cl.³ H01L *27/04, 27/12, 29/04*

U.S. Cl. 357—49 **36 Claims**



1. A semiconductor element comprising, a common electrically insulating, polycrystalline substrate selected from the class of electrically insulating refractory compounds having high thermal conductivity, said substrate being substantially free of semiconductor oxides, and

a plurality of monocrystalline semiconductor segments separated from each other, said substrate forming a base for supporting said segments,

said substrate having a portion thereof interposed between adjacent segments so that said segments are embedded in said substrate in spaced, electrically insulated relationship to each other,

said segments being formed of a material which is crystallographically distinct from said substrate but thermally compatible therewith.

4,238,763

SOLID STATE MICROWAVE DEVICES WITH SMALL ACTIVE CONTACT AND LARGE PASSIVE CONTACT

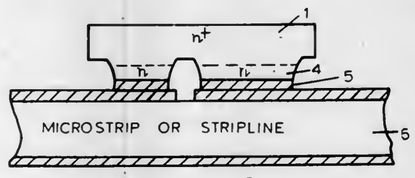
Kenneth W. Gray, and Leonard D. Irving, both of Malvern, England, assignors to National Research Development Corporation, London, England

Filed Jul. 14, 1978, Ser. No. 924,588

Claims priority, application United Kingdom, Aug. 10, 1977, 33609/77

Int. Cl.³ H01L *29/44, 29/48, 47/02*

U.S. Cl. 357—68 **9 Claims**



1. A solid state microwave device comprising a high-conductivity substrate, a thin active layer of semiconductor material overlying at least part of one major surface of the substrate, first metalized contact means overlying the active layer and providing electrical contact to an area of the active layer to define the active region of the device, and second metallized contact means also overlying the active layer and providing electrical contact with an area of the active layer, the electronic structures of the first and second contact means being substantially identical to one another, the area of the contact provided between the second contact means and the active layer being substantially greater than that provided between the first contact means and the active layer whereby, upon application of a suitable bias potential between said first and second contact means to induce microwave operation in the active region of the device underlying the first contact means, the region of the active layer underlying the second contact means remains inactive, and the second contact means behaves as a relatively low impedance contact to the high conductivity substrate underlying the active layer.

4,238,764

SOLID STATE SEMICONDUCTOR ELEMENT AND CONTACT THEREUPON

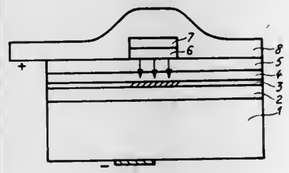
Jean-Claude Carballes, and Alain Bodere, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 13, 1978, Ser. No. 915,117

Claims priority, application France, Jun. 17, 1977, 77 18623

Int. Cl.³ H01L *23/48, 29/46, 29/54*

U.S. Cl. 357—71 **10 Claims**



1. An electroluminescent diode:

a plurality of semiconductive layers having a face and including an active light emitting layer,

a first layer of a first metal forming on said face an ohmic contact of low resistivity and partly covering said face, and

a second layer of a second metal partly covering said first layer and at least part of said face and forming with said face a contact of much higher resistivity than said contact formed by said first layer, the lines of current and the light emitted from said active layer being localized under said first layer.

4,238,765

COLOR TELEVISION CAMERA ADAPTED FOR ELIMINATION OF SPURIOUS LUMINANCE SIGNAL COMPONENTS

Fumio Nagumo, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,821

Claims priority, application Japan, Feb. 13, 1978, 53/15074

Int. Cl.³ H04N *9/09*

U.S. Cl. 358—43 **7 Claims**

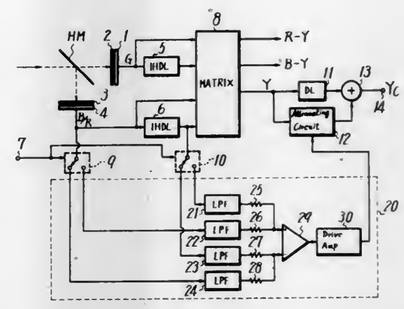
1. A signal processing circuit adapted to a color image pick up system which employs a color coding filter of the type having at least first and second color filter elements in a checker-board pattern, comprising:

(a) means for deriving dot-sequential color signals corresponding to said first and second colors from said color image pickup system;

(b) means for generating luminance signal components which partly includes said dot-sequential color signal components;

(c) first mixing means for mixing first color signals of a first line with second color signals of a succeeding line;

(d) second mixing means for mixing second color signals of said first line with first color signals of said succeeding line;



(e) means for generating a first control signal by comparing respective outputs of said first and second mixing means; and

(f) means for controlling said luminance signal in response to said first control signal.

4,238,766

CHANNEL LEVEL ADJUSTING APPARATUS

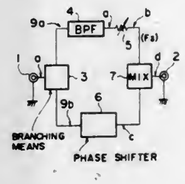
Hajime Masuda, Tokyo, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 17,166

Claims priority, application Japan, Mar. 6, 1978, 53-27479[U]

Int. Cl.³ H04N *7/16*

U.S. Cl. 358—86 **5 Claims**



1. In a channel level adjusting apparatus having an input terminal and an output terminal wherein television signals of a plurality of channels are applied to said input terminal, a group of the television signals on a plurality of the channels being different in input amplitude level from one another by a negligibly small amount and the television signal of a remaining channel differing in input amplitude level from the television signals of the group by an amount not negligible, and wherein the amplitude levels of all the television signals are adjusted to be closer to each other for delivery to said output terminal, the improvement comprising a first circuit path from said input terminal to said output terminal including filter means for passing at least one of the television signals having the higher input level of (i) the television signals of said group of channels and (ii) the television signal of said remaining channel; attenuation means provided in said first circuit path; a second circuit path from said input terminal to said output terminal for passing the television signals of all said channels from said input terminal to said output terminal; phase shifting means in one of said circuit paths for phase shifting signals passing therethrough 180 degrees; and mixer means for combining the signals passed through said first and through said second circuit

paths after said phase shifting and attenuation whereby the amplitude level of the television signals delivered to said output terminal are made more nearly equal to one another than are said signals applied to said input terminal.

4,238,767

ARRANGEMENT FOR MEASURING THE MOBILITY OF IMAGE POINTS OF A VIDEO IMAGE

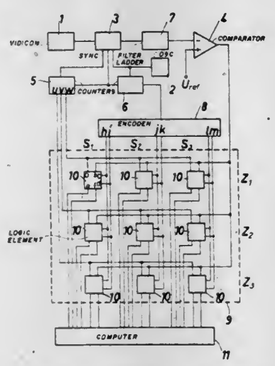
Jürgen Altmann; Heidrun Sanke; Günter Schöppe, all of Jena, and Wolfgang Schütt, Rostock, all of German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed Mar. 6, 1979, Ser. No. 17,959

Claims priority, application German Democratic Rep., Mar. 10, 1978, 0120412

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—107 **3 Claims**



1. Arrangement for measuring the mobility of particles, comprising

a vidicon,

a synchronizing circuit having two inputs and three outputs, the vidicon being connected to the first input of said synchronizing circuit,

a first counter having two inputs and a first output,

a second output, and a third output,

a second counter having two inputs and one output, the first output of the synchronizing circuit being connected to the first input of said first counter, the second output of said synchronizing circuit being connected to the second input of said first counter and to the first input of said second counter,

a pulse generator, being connected to the second input of said synchronizing circuit, and to the second input of said second counter,

an encoder having one input and six outputs, the output of said second counter being connected to the input of said encoder,

a filter ladder connected to the third output of said synchronizing circuit,

a comparator being provided with a reference voltage, said comparator being connected to the output of said filter ladder,

nine logic circuits having each four inputs and two outputs,

a logic matrix constituted of said nine logic circuits,

said nine logic circuits being arranged in three lines and three columns,

the three logic circuits arranged in the first line of said logic matrix being connected via their first inputs to said first output of said first counter, the three logic circuits arranged in the second line of said logic matrix being connected via their first inputs to said second output of said first counter, the three logic circuits arranged in the third line of said logic matrix being connected to said third output of said first counter,

the second outputs of said nine logic circuits being connected to the output of said comparator, the three logic circuits arranged in the first column of said logic matrix being connected via the third inputs to the first output of said encoder, and via the fourth inputs to the second output of said encoder,

the three logic circuits arranged in the second column of said logic matrix being connected via the third inputs to the third output of said encoder, and via the fourth inputs to the fourth output of said encoder, the three logic circuits arranged in the third column of said logic matrix being connected via the third inputs to the fifth output of said encoder, and via the fourth inputs to the sixth output of said encoder,

a computer, the two outputs of said nine logic circuits being connected to said computer.

4,238,768

PICTURE SIGNAL CODING APPARATUS

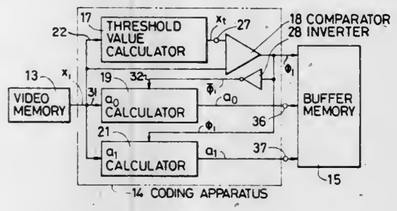
Eiji Mitsuya, Yokohama; Tomio Kishimoto, Yokosuka, and Katsusuke Hoshida, Hoya, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Nov. 14, 1978, Ser. No. 960,542

Claims priority, application Japan, Nov. 28, 1977, 52-142389

Int. Cl.³ H04N *7/12*; **G06K** *9/00*

U.S. Cl. 358—135 **5 Claims**



1. A picture signal coding apparatus comprising:

threshold value setting means for dividing a frame of a gray-scaled picture into a plurality of coding blocks and setting at least one threshold value for each of the coding blocks based on the brightness distribution therein;

means for classifying the brightness level of each picture element of each coding block into any one of level ranges defined by the threshold value to obtain a resolution component;

typical brightness level calculating means for obtaining at least two typical brightness levels from the classification result and the brightness levels of the picture elements of each coding block; and

means for sending out codes respectively representing the resolution components and the typical brightness levels.

4,238,769

VERTICAL SYNCHRONIZATION CIRCUIT FOR TELEVISION RECEIVERS

Theodore S. Rzeszewski, Lombard, and Peter H. Van Anrooy, Itasca, both of Ill., assignors to Matsushita Electric Corp. of America, Franklin Park, Ill.

Filed Jun. 13, 1979, Ser. No. 48,055

Int. Cl.³ H04N *5/10*

U.S. Cl. 358—154 **6 Claims**

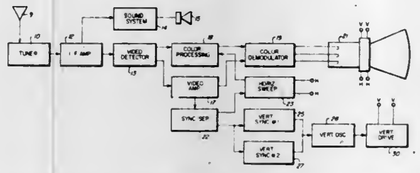
1. An improvement in the vertical synchronization circuitry of a television receiver including in combination;

means for receiving a composite television signal including synchronization signal components and for supplying at least vertical synchronization signal components on an output thereof;

vertical oscillator means having a synchronizing signal input and producing vertical drive signals on an output thereof for use by the television receiver;

first vertical synchronizing circuit means coupled between the output of said receiving means and the synchronizing signal input of said oscillator means for supplying vertical synchronizing pulses to said oscillator means, said first vertical synchronizing circuit means adjusted for a predetermined maximum noise immunity and producing synchronizing pulses a first predetermined time after receipt of the vertical synchronizing signal components by said receiving means; and

second vertical synchronizing circuit means coupled between the output of said receiving means and the synchronizing signal input of said oscillator means for supplying



vertical synchronizing pulses to said oscillator means, said second vertical synchronizing circuit means being adjusted for a predetermined desired vertical interlace and producing vertical synchronizing pulses a second predetermined time aftr receipt of vertical synchronizing signal components by said receiving means, said second predetermined time being prior to said first predetermined time, said oscillator means being nonresponsive to synchronizing pulses supplied to it from said first vertical synchronizing circuit means whenever such pulses are preceded by synchronizing pulses from said second vertical synchronizing circuit means.

4,238,770

VERTICAL SYNCHRONIZING SIGNAL DETECTOR CIRCUIT

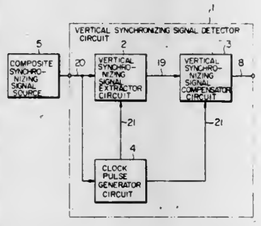
Masaharu Kobayashi; Takao Arai; Takashi Hoshino; Hiroyuki Kimura, and Keizo Nishimura, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 27, 1979, Ser. No. 79,252

Claims priority, application Japan, Sep. 27, 1978, 53-117934

Int. Cl.³ H04N *5/10*

U.S. Cl. 358—154 **6 Claims**



1. A vertical synchronizing signal detector circuit comprising:

(a) an input terminal for receiving a composite synchronizing signal including a horizontal synchronizing signal and vertical synchronizing signal,

(b) an output terminal for providing a vertical synchronizing pulse synchronized with the vertical synchronizing signal,

(c) a clock pulse generator circuit connected to said input terminal and adapted to generate a clock pulse having half the period of the horizontal synchronizing signal and a phase lag therefrom of one-fourth the period thereof,

(d) a vertical synchronizing signal extractor circuit connected to said input terminal and said clock pulse generator circuit and adapted to compare the vertical synchronizing signal with a reference waveform pattern of the vertical synchronizing signal so as to generate a vertical synchronizing signal output synchronized with the vertical synchronizing signal only when the comparison results in a complete coincidence, and

(e) a vertical synchronizing signal compensator circuit connected to said vertical synchronizing signal extractor circuit and said clock pulse generator circuit and responsive to the vertical synchronizing signal output to provide this output at said output terminal and simultaneously store the same temporarily, said vertical synchronizing signal compensator circuit being also adapted to provide the stored vertical synchronizing signal output at said output terminal when the vertical synchronizing signal output is not received.

4,238,771

MUTING CIRCUIT

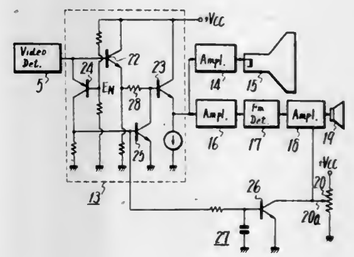
Masayuki Hongu, Komae; Hiromi Kawakami, Yokohama; Shigeru Ohmuro, and Masaharu Tokuhara, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 14, 1978, Ser. No. 886,427

Claims priority, application Japan, Mar. 16, 1977, 52/28979

Int. Cl.² H04N *5/60*

U.S. Cl. 358—165 **11 Claims**



1. A muting circuit for an AM signal receiver, comprising:

an AM signal input terminal;

a synchronous detector having first and second input terminals, said first input terminal being connected to said AM signal input terminal, and said synchronous detector further having an output terminal at which it produces a detected signal of variable amplitude;

a reference signal generating circuit connected to said second input terminal and supplying to said synchronous detector a reference signal having a predetermined frequency and phase;

an amplifier;

means defining a detected signal path connecting said output terminal to said amplifier;

level detecting means for producing excess signals connected to said output terminal, said level detecting means producing one of said excess signals whenever the amplitude of said detected signal exceeds a predetermined amplitude level that exceeds a desired amplitude range for said detected signal;

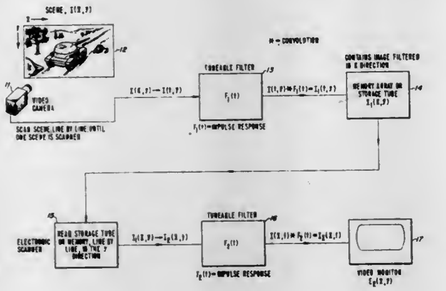
integrating means connected to said level detecting means for producing a muting signal, said integrating means requiring the production over an extended period of time of one or more of said excess signals before producing said muting signal; and

switching means connected to said amplifier for muting the signal produced by said amplifier in response to the production of said muting signal.

4,238,772
IMAGE ENHANCEMENT USING ON-LINE SPATIAL FILTERING

Henning E. von Gierke, Yellow Springs, and Mark W. Cannon, Jr., Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 3, 1979, Ser. No. 64,337
Int. Cl.³ H04N 5/14
U.S. Cl. 358—166 1 Claim



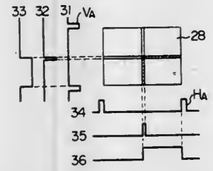
1. Apparatus providing on-line spatial filtering of images of a scene comprising:
a. a video camera for viewing the said scene and providing a horizontal, (x direction), line-by-line scene scan in a time-varying intensity function;
b. a first tuneable frequency filter having an adjustable passband and an adjustable center frequency cooperating with the said time-varrying function and providing filtered image signal;
c. a storage tube;
d. means for writing the said filtered image signal into the said storage tube in the x direction;
e. means for reading the said stored filtered image line-by-line in the y direction and providing a time-varying function of the intensities stored in the said storage tube;
f. a second tuneable frequency filter having an adjustable passband and an adjustable center frequency cooperating with the said time-varying function of the intensities stored on the said storage tube and read in the y direction and providing a doubly filtered image; and
g. means for displaying the said doubly filtered image whereby the said image dispalyed of the said scene represents the initial image spatially filtered in both x and y directions.

4,238,773
TELEVISION RECEIVER FOR DISPLAY OF PLURAL VIDEO IMAGES INCLUDING A DISPLAYED BOUNDARY BETWEEN THE IMAGES

Eiichi Tsuboka, Neyagawa; Takeji Kimura, Toyonaka; Hirokazu Yoshino, Katano; Tatuo Fujita, Moriguchi; and Masao Nakazawa, Nagaokakyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 28, 1978, Ser. No. 973,970
Claims priority, application Japan, Dec. 29, 1977, 52-157702; Dec. 29, 1977, 52-157703
Int. Cl.³ H04N 9/535
U.S. Cl. 358—183 7 Claims

1. A television receiver for receiving two different television signals, writing the first television signal into a storing means, reading said first television signal from said storing means to produce a television signal having a time axis therof compressed and inserting the produced television signal into a portion of the second television signal to display images for the first and second televison signals on the same image screen, said television receiver comprising:
a means for extracting at least a horizontal synchronizing signal at least from said second television signal;
a means for generating a clock pulse signal in synchronism with said horizontal synchronizing signal;
a line counter means for counting said horizontal synchronizing signal;
a clock counter means for counting said clock pulse signal;
a switching control means responsive to outputs from said line counter means and said clock counter means for

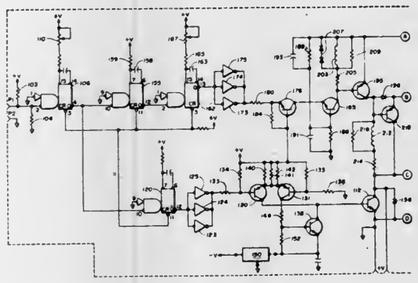


generating a switching control signal for switching between the compressed first television signal and the second television signal;
a boundary signal generating means responsive to the outputs of said line counter means and said clock counter means for generating a boundary signal representing a boundary of the displayed images for said first and second television signals; and
a means for displaying said boundary signal with said first and second television signals.

4,238,774
DRIVE CIRCUITS FOR A HIGH RESOLUTION CATHODE RAY TUBE DISPLAY

Frederick D. Lehman, Rockford, Minn., assignor to CPT Corporation, Eden Prairie, Minn.

Filed Apr. 17, 1978, Ser. No. 896,813
Int. Cl.³ H04N 5/68
U.S. Cl. 358—242 37 Claims

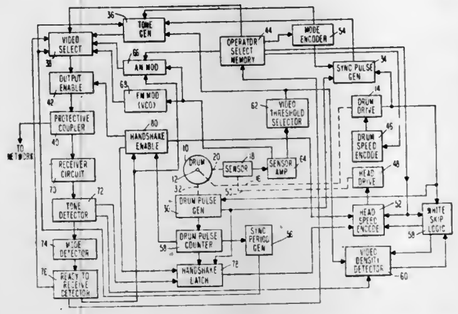


1. An electronic circuit for producing a high resolution cathode ray tube display comprising:
a video drive circuit comprising means for converting a high frequency digital raster scan video input signal into a high voltage high frequency video drive signal at a bit data rate in excess of one hundred fifty megacycles; and
a horizontal drive circuit comprising means for generating a two-way horizontal drive signal which operates at a frequency in excess of forty kilocycles.

4,238,775
FACSIMILE RECEIVER SIGNALING

John M. Vandling, Pleasantville, N.Y., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 617,104, Sep. 26, 1975, Pat. No. 4,079,425. This application Mar. 13, 1978, Ser. No. 886,136
Int. Cl.³ H04N 1/32, 1/36
U.S. Cl. 358—257 23 Claims

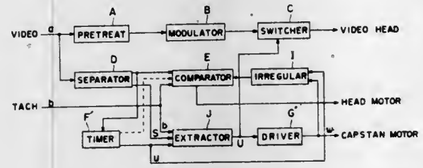


1. A receiving facsimile unit for reproducing dark-light variations on a copy medium representing a facsimile of a remotely located document at a transmitting unit, said receiving unit comprising:
writing means for reproducing dark-light variations on a copy medium;
demodulating means for demodulating received signals representing said dark-light variations, said demodulating means being coupled to said writing means;
modulator means for periodically generating an audio frequency handshake signal of predetermined frequency for transmission to said transmitting unit;
said handshake signal being transmitted in predetermined intervals during transmission of a document in which said received signals are absent.

4,238,776
RECORDING DEVICE OF A TIME LAPSE MAGNETIC VIDEO RECORDER

Ryozo Tanaka, Yokohama, Japan, assignor to Kabushiki Kaisha n a c, Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,744
Claims priority, application Japan, Oct. 19, 1977, 52-124632
Int. Cl.³ H04N 5/78
U.S. Cl. 360—10 3 Claims

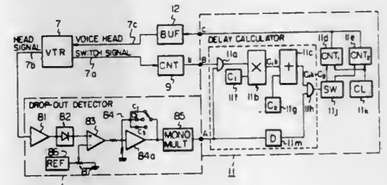


1. A recording device of a helical-scan type lapse video recorder characterized by comprising means for detecting the phase of a vertical sync signal in a video signal to be recorded, means for detecting the phase of rotation of a rotary magnetic head, a comparing circuit for comparing said phases with each other, means for controlling the rotation of said rotary magnetic head according to the output of said comparing circuit so that the phase of the vertical sync signal coincides with the phase of rotation of the rotary magnetic head, means for detecting the phase of a horizontal sync signal in the video signal to be recorded, means for detecting coincidence of said phase of the horizontal sync signal with said phase of rotation of the rotary magnetic head, means for recording at a predetermined time interval on a recording medium through said rotary magnetic head, a frame or field of said video signal immediately after said phase of the horizontal sync signal coincides with said phase of rotation of the rotary magnetic head, and means for feeding said recording medium for one track pitch after the recording of a frame or field has been completed.

4,238,777
DROP-OUT DETECTING SYSTEM FOR VIDEO RECORDING MAGNETIC TAPE

Akira Okada, Komoro; Yoshio Mikame, and Ryoiti Aizawa, both of Saku, all of Japan, assignors to TDK Electronics Company Limited, Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,545
Claims priority, application Japan, Aug. 31, 1978, 53-107055
Int. Cl.³ H04N 5/78
U.S. Cl. 360—38 8 Claims



1. A drop-out detecting system of a magnetic tape for the use of a helical scan type video tape recording system comprising of;
tape running means having at least a pair of tape reels for taking off and winding up the tape, a helical scan head for reading the signal recorded magnetically on an oblique video channel relative to the moving direction of the tape to be tested, and a voice channel head positioned apart from said helical scan head along the path of said tape,
a drop-out detector connected to the output of said helical scan head of the tape running means, said drop-out detector providing an output signal upon detecting the drop-out on the tape, means for generating a predetermined pulse train
a drop-out position detector consisting of a counter, which is initiated by a head element switching signal for said helical scan head from said tape running means, and said counter being decremented or incremented by the predetermined pulse train for providing the position (k) of the drop-out on an oblique video channel,
a delay calculator, responsive to the provided position, k, for providing a marking signal after the time C_1k+C_2, where C_1 and C_2 are velocity related constants, elapsed from the detection of the drop-out by said drop-out detector, and
means for providing a marking signal to said voice channel head of said tape running means upon receipt of said marking signal from the delay calculator.

4,238,778
SYSTEM FOR WARNING THE APPROACH OF AN EMERGENCY VEHICLE

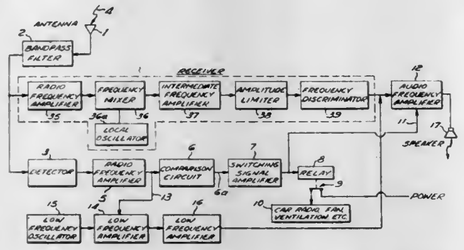
Kinya Ohsumi, Hamamatsu-shi, Shizuoka-ken, Japan

Continuation-in-part of Ser. No. 634,164, Nov. 21, 1975, abandoned. This application Sep. 12, 1977, Ser. No. 832,286
Int. Cl.³ G08G 1/00; H04B 1/034
U.S. Cl. 340—33 1 Claim

1. A system for warning the approach of an emergency motor vehicle comprising:
a warning signal transmitter constructed and arranged for mounting on an emergency motor vehicle, said transmit-

ter including means for generating and transmitting a radio frequency warning signal; and

a warning signal receiver constructed and arranged for mounting on a motor vehicle to be warned of the approach of the emergency motor vehicle, said receiver including means for detecting said radio frequency warning signal, means for comparing the intensity of said detected signal to a threshold signal of predetermined intensity, said means for comparing providing an ON switching signal only when the intensity of said detected signal



exceeds the predetermined intensity of said threshold signal, means for generating an audible frequency tone similar to a siren sound of the emergency motor vehicle, means for emitting the audible frequency tone within the passenger compartment of said vehicle to be warned only when said ON switching signal is provided, means for varying the intensity of said audible frequency tone in proportion to the intensity of said detected signal, and means for disabling selected sound producing sources within said passenger compartment when said ON switching signal is provided.

4,238,779

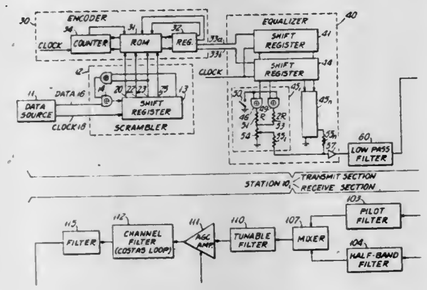
DATA TRANSMISSION AND RECEPTION SYSTEM

Robert V. C. Dickinson, Berkley Heights, N.J.; Alan W. Entenman, Hicksville, and Jans Kliphuis, Huntington, both of N.Y., assignors to Intech Laboratories, Inc., Bohemia, N.Y.

Division of Ser. No. 736,364, Oct. 28, 1976, which is a continuation-in-part of Ser. No. 676,558, Apr. 13, 1976, Pat. No. 4,092,596. This application Jun. 19, 1978, Ser. No. 916,834

Int. Cl.[2] G06F *11/00*

U.S. Cl. 371/5 **4 Claims**



1. In combination in apparatus for determining equipment error rate, a modem including transmitting means having an input and an output and receiving means having an input and an output, means connecting said input of said modem receiving means to said output of said modem transmitting means for supplying to said receiving means data transmitted by said modem transmitting means, means for supplying a fixed, constant binary value to said input of said modem transmitting means, and counting means connected to the output of said modem receiving means for counting the occurrences of the other binary value there occurring.

4,238,780

PROCESS AND AN APPARATUS FOR AUTOMATICALLY RECOGNIZING THE POSITION OF SEMICONDUCTOR ELEMENTS

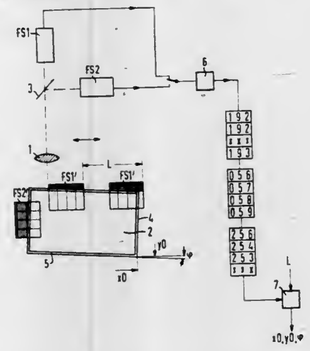
Guenter Doemens, Holzkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 26,038

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816324; Feb. 28, 1979, 2907774

Int. Cl.[3] G06F *15/46;* **H05K** *13/00*

U.S. Cl. 340—146.3 H **33 Claims**



1. A method for automatically recognizing the position of a semiconductor element by investigating the same with respect to at least one rectilinear edge of an element to obtain adjustment information, comprising the steps of: illuminating the semiconductor element;

imaging and optically scanning across a semiconductor element image and its surroundings row-by-row in rows which are substantially parallel to the investigated edge and generating electrical signals representing the light intensity of the optically scanned rows;

integrating the instantaneous values of the electrical signals of each row;

storing the integrated values;

comparing the integrated values of adjacent rows and producing bipolar difference values therefrom;

weighting the difference values of one polarity with a predetermined factor which corresponds to the roughness of the particular position in the image decreasing the difference values in a rough zone and increasing the difference values in a smooth zone;

forming further difference values from the weighted difference values to emphasize sharp-edge lines of the image; and

providing, by row counting, a signal for correcting the position of the semiconductor element.

4,238,781

CAPACITIVE ANGULAR DISPLACEMENT TRANSDUCER FOR REMOTE METER READING

Leonard C. Vercellotti, Oakmont, and Richard A. Johnson, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 9, 1979, Ser. No. 10,565

Int. Cl.[3] G08C *9/02, 19/10*

U.S. Cl. 340—870.37 **6 Claims**

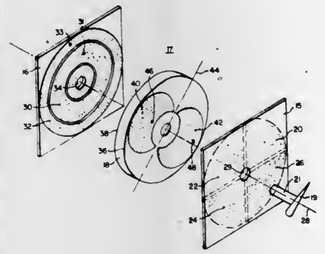
1. A capacitive angular displacement transducer producing a differential electrical output signal having a phase angle that varies linearly with the angular displacement of a shaft, comprising:

a first stator plate divided into a plurality of electrically isolated excitation areas such that each excitation area has at most two adjacent excitation areas;

means impressing sinusoidal excitation voltages on said excitation areas, the phase of each impressed excitation voltage differing by a fixed and predetermined amount from that impressed on adjacent excitation areas;

a second stator plate;

and a rotor plate movable by said shaft coaxially mounted between said first and said second stator plates, said rotor plate having a first face parallel to and variably capacitively coupled with said excitation areas of said first stator plate, and a second face parallel to and capacitively coupled with said second stator plate, half of said first face having a first electrically conductive pattern such that said first pattern produces a first resultant voltage that is the vector sum of the voltages variably capacitively coupled to said first pattern due to said excitation voltages, said first resultant voltage having a constant peak amplitude and a phase angle that varies linearly with displacement of said rotor plate relative to said first stator plate,



the other half of said first face having a second electrically conductive pattern that is the mirror image of said first conductive pattern, said second conductive pattern producing a second resultant voltage that is the vector sum of the voltages variably capacitively coupled to said second pattern due to said excitation voltages, said second resultant voltage equal to said first resultant voltage and of opposite polarity, said second face of said rotor plate having two annular conductive areas, one of said areas electrically connected to said first pattern, the other of said areas electrically connected to said second pattern, said second stator plate comprised of conductive areas forming a constant capacitive pickup with said two annular conductive areas of said second face of said rotor plate, said second stator plate producing a differential output signal responsive to said first and second resultant voltages, said differential output signal having a phase angle that varies linearly with the angular displacement of said shaft.

4,238,782

DEVICE FOR MEASURING THE AMOUNT OF MOVEMENT OF A MOVING OBJECT

Hiroomi Ogasawara, 3821-4, Yamakita, Yamakitamachi, Ashigarakami-gun, Kanagawa-ken, Japan

Filed Apr. 24, 1979, Ser. No. 32,817

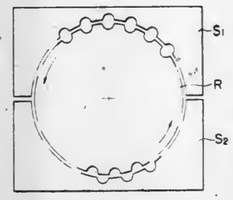
Claims priority, application Japan, Apr. 26, 1978, 53-49605

Int. Cl.[3] G08C *19/16;* **G01R** *27/26*

U.S. Cl. 340—870.37 **5 Claims**

1. A device for sensing movement of a moving object comprising:

(a) sensor means including a first electrode plate and a pair of second electrode plates confronting said first electrode plate to form therewith a pair of capacitors, one of (a) said first electrode plate and (b) said pair of second electrode plates being stationary and the other being adapted for movement with the object to be sensed, the confronting edge surfaces of said electrode plates having a plurality of equal-sized and equal-spaced cuts therein, the relation of the cuts of the edge surface of said first plate and the cuts of the edge surface of one of said second plates being shifted 180° in phase from the relation of the cuts of the edge surface of said first plate and the cuts of the edge surface of the other of said second plates, to cause the capacitance of one of said capacitors to increase and the capacitance of the other of said capacitors to correspondingly decrease differentially as said movable electrode plate moves in response to movement of the object to be sensed;



(b) two oscillator circuits, each having an associated one of said capacitors incorporated therein as a frequency varying component; and

(c) a mixer connected to said two oscillator circuits for providing a frequency difference signal determined by the difference in the frequencies of said two oscillator circuits and indicative of the extent of movement of the movable object.

4,238,783

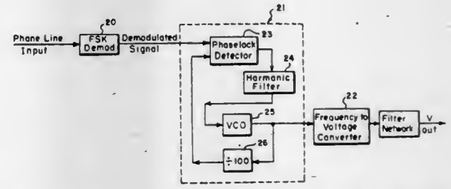
TELEMETRY SYSTEM FOR TRANSMITTING ANALOG DATA OVER A TELEPHONE LINE

Roland G. Miller, New Milford, Conn., assignor to Acco Industries, Inc., Trumbull, Conn.

Filed Jun. 15, 1978, Ser. No. 915,714

Int. Cl.[3] H04B *13/00*

U.S. Cl. 340—207 R **9 Claims**



1. A receiving system for a single channel analog telemetry system comprising:

an FSK demodulator responsive to a transmitted FSK signal for producing therefrom a frequency modulated information-containing signal containing a range of frequencies;

a frequency multiplier responsive to the output of said FSK demodulator for multiplying the frequencies of said demodulator output to produce therefrom an intermediate frequency signal whose frequencies are higher than the frequencies of the demodulator output; and

a frequency-to-amplitude converter responsive to the output of said frequency multiplier for producing an analog output signal.

4,238,784

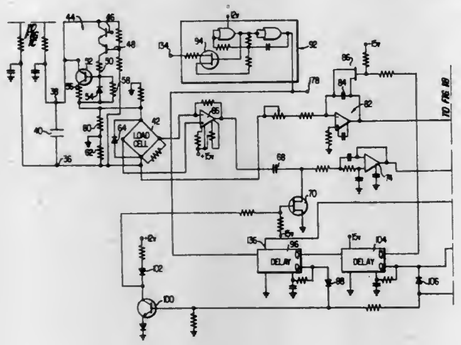
ELECTRONIC MEASURING SYSTEM WITH PULSED POWER SUPPLY AND STABILITY SENSING

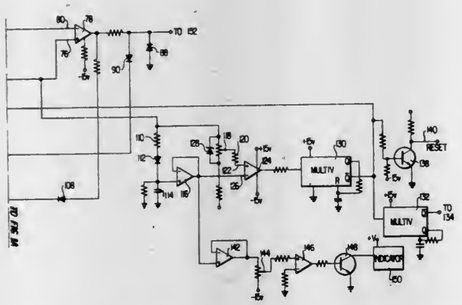
Harry J. Keen, Lyndonville, and Haydon C. Thomas, Waterford, both of Vt., assignors to Colt Industries Operating Corp., New York, N.Y.

Continuation-in-part of Ser. No. 543,465, Jan. 23, 1975, Pat. No. 4,081,801. This application Nov. 23, 1977, Ser. No. 854,323

Int. Cl.[3] H03K *13/02*; G01G *3/14*

U.S. Cl. 340—347 NT **10 Claims**





1. An electronic measuring system comprising measuring transducer means operative when electrically powered to provide an electrical measurement signal indicative of the magnitude of an entity being measured thereby, indicator means operative to receive said electrical measurement signal an provide an indication of the magnitude of the entity being measured, and stability sensing means connected to receive said electrical measurement signal and operating in response to an unstable electrical measurement signal when the rate of change of said electrical measurement signal changes in excess of a predetermined rate to prevent indicator means from providing said indication and operating upon the subsequent stabilization of said electrical measurement signal from an unstable condition to permit operation of said indicator means, said stability sensing means including control signal generating means to receive said electrical measurement signal and operative in response to the rate of change of said electrical measurement signal, said control signal generating means including means to generate a reference signal, magnitude control means to receive said electrical measurement signal and provide an output signal of less magnitude than the magnitude of said reference signal when the rate of change of said electrical measurement signal is less than a predetermined rate, said magnitude control means providing an output signal of greater magnitude than said reference signal when the rate of change of said electrical measurement signal exceeds said predetermined rate, and comparison means connected to recieve said reference signal and the output signal from said magnitude control means, said comparison means operating to provide a first output signal when said reference signal exceeds the magnitude of the output signal from said magnitude control means and a second output signal when the output signal from said magnitude control exceeds the magnitude of said reference signal.

4,238,785

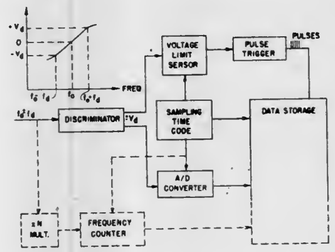
ZERO-DOPPLER SHIFT POSITIONING TECHNIQUE

Joseph F. Hannigan, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 402,491, Oct. 11, 1973, Pat. No. 4,203,115. This application Oct. 25, 1974, Ser. No. 519,470

Int. Cl.[3] G01S *5/02*

U.S. Cl. 343—112 D **4 Claims**



1. An electrical circuit for determining time of zero doppler frequency at a fixed position comprising:

a. a doppler frequency receiving means having a data storage means;

b. determining circuit means including preset voltage response means and analog to digital converter means, said preset voltage response means and said analog to digital converter means in parallel connection for determining time of zero doppler frequency at a fixed position; and

c. first circit means connected between said doppler frequency receiver means and said determining circuit means for determining time of zero doppler frequency, said first circuit means having an output voltage which is a linear function of the received doppler frequencies, the output voltage activating said determining circuit means to provide a predetermined doppler frequency range determined by said preset voltage response means.

4,238,786

VISUAL DISPLAY AND ELECTRO-OPTICAL TRANSDUCER

Melvin G. Fong, 681 Market St., Suite 948, San Francisco, Calif. 94105

Filed Sep. 24, 1979, Ser. No. 78,605

Int. Cl.[3] G08B *5/00*; G02b *27/17*

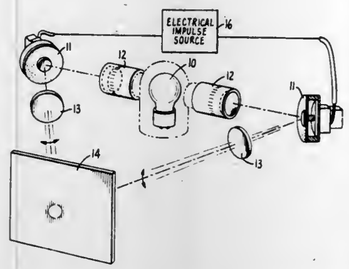
U.S. Cl. 340—378.4 **10 Claims**

1. A visual display comprising:

(a) a light source;

(b) a plurality of electro-optical transducers, each transducer comprising a light-reflective element, means resiliently supporting said light-reflective element, and magnetic means for moving said light-reflective element, said magnetic means comprising a magnetic element connected to said resiliently supporting means and at least one electromagnet mounted in spaced proximity to said magnetic element;

(c) means for directing light rays from said light source upon the light-reflective element of each electro-optical transducer; and



(d) a display screen positioned to receive reflected light from each light-reflective element.

4,238,787

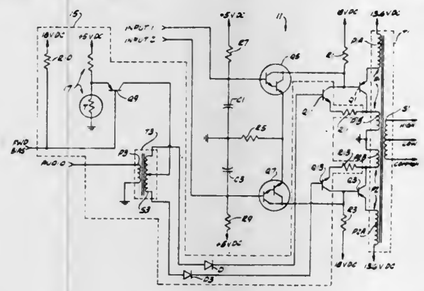
ELECTRONIC SIREN AMPLIFIER

Barry Pearlman, Maryland Heights, and W. Kenneth Menke, Glendale, both of Mo., assignors to Public Safety Equipment, Inc., St. Louis, Mo.

Filed Aug. 31, 1979, Ser. No. 71,708

Int. Cl.[3] G08B *3/00*

U.S. Cl. 340—384 E **19 Claims**



1. In an electronic siren having a siren tone signal generator for generating siren tone signals at relatively low voltage levels, an amplifier for amplifying the siren tone signals, and a loudspeaker operatively connected to the amplifier for acoustically broadcasting a siren tone corresponding to the signals generated by the signal generator, an improved amplifier comprising:

an output transformer having first and second primary windings and having a secondary winding for connection to the loudspeaker, each primary winding being connected during operation between a voltage source and ground and each including first and second winding sections; and

means disposed between the first and second winding sections of each primary winding for opening and closing the circuit between the winding sections in response to the signals from the siren tone signal generator, whereby currents corresponding to the siren tone signals flow through the primary windings causing the loudspeaker to acoustically broadcast the siren tone.

4,238,788

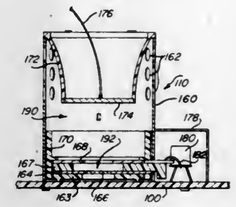
SYSTEM FOR DETECTING A COMBUSTION PROCESS

Robert J. Rosauer, and James F. Gamble, Jr., both of Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.

Filed Jan. 3, 1978, Ser. No. 866,383

Int. Cl.[2] G08B *17/10*; H01H *3/12, 13/52*

U.S. Cl. 340—515 **12 Claims**



1. In a system for detecting the existence of a combustion process and which includes means for sensing the existence of that process and means for indicating the occurrence thereof, the improvement comprising:

a housing having spaced top and bottom walls and defining a cavity in which electronic circuitry of said system is contained, said housing including aperture means through which smoke to be detected is admitted;

means defining an opening in said housing;

a resiliently-biased pushbutton seated in said opening;

means responsive to depression of said pushbutton for simulating the existence of said process and effecting operation of said indicating means;

a visible light-emitting device included within said pushbutton;

and means for periodically energizing said device independently of said pushbutton, to indicate operativeness of said system.

4. In a system for detecting the existence of a combustion process and which includes means for sensing the existence of that process and means for indicating the occurrence thereof, the improvement comprising:

said sensing means having an elongated electrically conductive tube that forms an essential part of an ionization-type of said sensing means and which also includes an internally transverse conductive member for establishing an electric field extending therefrom to said tube with said field being subject to change upon the presence of products of said combustion process;

an electrically-conductive probe positioned within said tube in a location intermediate the extent of said electric field;

and means for addressing said probe in a manner that it creates a simulation of the existence of said process by altering the condition of said electric field.

4,238,789

APPARATUS FOR MONITORING THE YARN PRODUCED BY AN OPEN-END SPINNING TURBINE

Heinz Wehde, Rothenberg, Fed. Rep. of Germany, assignor to TELDIX GmbH, Heidelberg, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 862,047

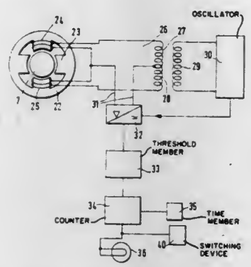
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657525

Int. Cl.[2] D01H *13/22*; G01M *1/22*; G08B *21/00*

U.S. Cl. 340—677 **12 Claims**

1. In a system for monitoring irregularities in the textile yarn being produced by an open-end spinning turbine, the turbine including a rotor rotatably mounted in a bearing and means elastically supporting the bearing, the system including a measuring value sensor to detect such irregularities and an evaluation circuit connected to the sensor to produce a signal upon the occurrence of irregularities, the improvement wherein said sensor constitutes means associated with at least one of said

rotor and bearing and responsive to radial deflections thereof for producing a deflection signal, and said evaluation circuit comprises electrical compensation means connected in said evaluation circuit to modify the signal produced by said sensor



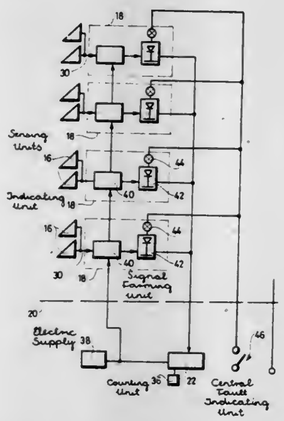
as a function of a inherent imbalance in said rotor in order to compensate for the influence on said sensor output of deflections due to such imbalance for producing a compensated signal indicative of said irregularities.

4,238,790

SOWING MONITORING ARRANGEMENT

Barnabas Balogh; Jozsef Erdelyi; Zsolt Fabian; Vazul Rusz, all of Budapest; Mihaly Samu, and Jozsef Szente, both of Gödöllo, all of Hungary, assignors to Mazögazdasági Gépkisérleti Intézet, Gödöllo, Hungary

Filed Jul. 19, 1978, Ser. No. 925,996
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—684 **5 Claims**



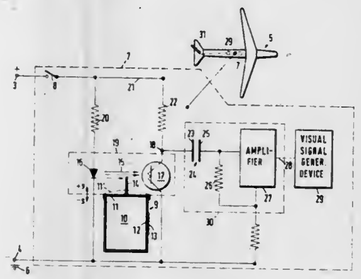
1. A monitoring arrangement for sowing machines that include a row of coulters pivotally supported to introduce seeds into the soil when the machine is entrained by a tractor and the like; the arrangement comprising units for sensing flow of the seeds through each of said coulters; indicating units, installed on a part of the sowing machine where said coulters are supported, responsive to interruption of the seed flow, as evidenced by signals fed from said sensing units to said indicating units, there being one of the latter for a maximum of three of said sensing units; a common, central unit for indicating an interruption occurring in any of said coulters; and a common electric conduit that feeds signals from said indicating units to said central unit.

4,238,791

MODEL AIRCRAFT WITH ALTITUDE CHANGE INDICATING MEANS

Rainar Wiebalck, Lilienstr. 48/V, 8000 München 80, Fed. Rep. of Germany

Filed Sep. 26, 1978, Ser. No. 946,205
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743385; May 30, 1978, 2823608
Int. Cl.³ H04B *7/00*; G01C *21/00*
U.S. Cl. 340—694 **15 Claims**



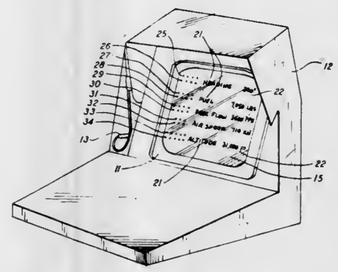
1. A model aircraft with wireless earth-to-craft control and having an altitude change indicating device for signalling the existence of such change to an operator on earth, comprising:
- a pressure-sensitive means for sensing atmospheric pressure change as flight altitude is changing;
- means operatively connected to said pressure-sensitive means for producing output signals representing atmospheric pressure change;
- a device aboard the model aircraft for generating and emitting visual signals visible by the operator on earth; and
- means for supplying said output signals to the device for generating and emitting visual signals to trigger said device to be operative upon occurrence of said output signals.

4,238,792

SYSTEM FOR CHANGING ALPHANUMERIC VALUES THAT ARE DISPLAYED ON CATHODE RAY TUBE SCREENS

Edwin Cohen, and Charles P. L. Mortimer, both of Binghamton, N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,127
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—707 **7 Claims**



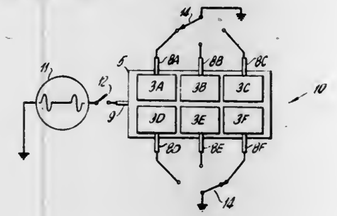
1. A computer controlled display system that is coupled to an instructor's station in a training simulator for changing the alphanumeric value of information that appears on the screen of a display system, said system comprising:
- at least one display device that displays alphanumeric characters, symbols and geometric shapes on its screen, the information displayed on the screen of the display device is arranged such that a plurality of geometric shapes are displayed in a position related to a group of alphanumeric characters and/or symbols that represent a parameter and its value;
- display generating means for causing information to be displayed on the screen of said display device at predetermined locations, said display generating means being coupled to said display device;
- at least one light pen coupled to said generating means and capable of touching the geometric shapes that appear on the screen of said display device; and
- a computer that contains a list of alphanumeric characters and symbols and a series of mathematical relationships that permit the value of the displayed parameter to be in the memory of said computer and on the screen of said display changed at predetermined rates, whereby, when said light pen is placed against one of said geometric shapes, the value of one of said displayed parameters is changed at one rate in the memory of said computer and on the screen of said display device and when said light pen is placed against another one of said geometric shapes, said value is changed at a different rate.

4,238,793

ELECTROLUMINESCENT BACKLIGHT FOR ELECTROOPTIC DISPLAYS

Paul Hochstrate, Bristol, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Mar. 29, 1979, Ser. No. 24,934
Int. Cl.³ H05B *33/08*
U.S. Cl. 340—781 **17 Claims**



1. An illumination-panel/device for use as the backlight in a passive electrooptic display of the light control type comprising:
- an electroluminescent panel having at least one side thereof light transmissive for providing an evenly distributed source of light and having a plurality of segment electrodes, a common electrode and electroluminescent material interposed between said segment and common electrodes; and
- means for applying an electrical field sequentially across each segment electrode and the common electrode at a predetermined repetition rate greater than the decay rate of electroluminescent material such that said panel is continuously illuminated over a desired period of operation and functions as a unitary backlight source for the display.

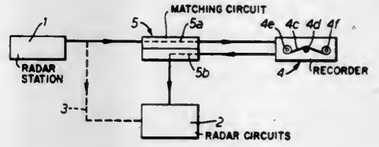
4,238,794

MATCHING CIRCUITRY FOR USE WITH A RADAR STATION AND A TELEVISION MAGNETOSCOPE

Paul J. Marino; Jean Blanchard, and Gerard R. Stefanini, all of Toulon, France, assignors to Etat Francais as represented by the delegue general pour l'armement, Paris, France

Filed Mar. 5, 1979, Ser. No. 17,325
Claims priority, application France, Dec. 12, 1978, 78 34852
Int. Cl.³ G01S *13/00*
U.S. Cl. 343—5 PC **20 Claims**

1. Matching circuitry for use with a radar station and a television magnetoscope, the latter having a video channel and an audio channel, the matching circuitry being operable to supply to and retrieve from said television magnetoscope information provided by said radar station, said matching circuitry comprising:
- first means for supplying to said audio channel of said television magnetoscope information regarding the angular position of an antenna of said radar station;
- second means for supplying to said video channel of said television magnetoscope video signals and synchronising signals from said radar station;
- an oscillator for supplying for said video channel pulses T having a duration and frequency substantially equal to television frame pulses;
- mixing means for mixing said pulses T for said video channel with said video signals and said synchronising signals so



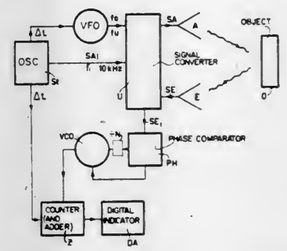
that said pulses T will be recorded on a control track of said magnetoscope, said control track being intended for the recording of said television frame pulses, whereby said pulses T are employed during retrieval of said information from said magnetoscope for synchronising the speed of travel of a tape of said magnetoscope with the speed of revolution of a video signal reading head thereof;
- first retrieval means for retrieving said information from said video channel of said television magnetoscope;
- suppression means in said first retrieval means for suppressing said pulses T in the retrieval of said information; and
- second retrieval means for retrieving said information from said audio channel of said television magnetoscope.

4,238,795

MICROWAVE RANGE MEASURING SYSTEM FOR MEASURING THE DISTANCE OF AN OBJECT

Burkhard Schiek, Halstenbek; Wolfram Schilz, Norderstedt, and Rolf Jacobson, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 24, 1978, Ser. No. 954,275
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748124
Int. Cl.³ G01S *13/26, 13/34*
U.S. Cl. 343—14 **5 Claims**



1. A microwave ranging system for measuring the distance to an object, said system comprising means for transmitting toward the object a microwave signal of a frequency which changes from a first frequency to a second frequency during a predetermined time interval, means for receiving a portion of said transmitted signal which is reflected by the object, means for converting the received signal to a first intermediate frequency signal, the phase shift of said intermediate frequency signal during said predetermined time interval being indicative

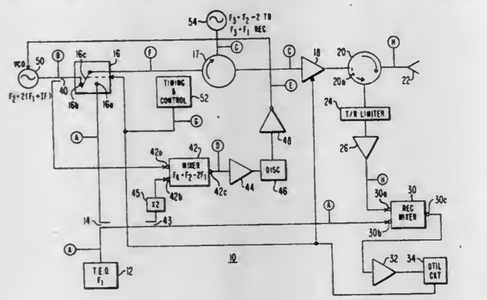
of the distance to the object, and means for measuring said phase shift during said time interval.

4,238,796

RADIO FREQUENCY PULSE GENERATOR

Daniel D. Mawhinney, Livingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,782
Int. Cl.³ G01S *7/28*; H03L *7/00*
U.S. Cl. 343—17.1 R **9 Claims**



1. A radio frequency pulse generator comprising in combination:

a first means producing a first radio frequency signal at frequency F_1;

a second means producing a second radio frequency signal at a second different frequency F_2 which differs from a multiple M of F_1 by a given amount, where M is an integer;

a third means producing radio frequency signal F_3;

means producing a control signal periodically alternating between a first value and a second value;

means responsive to said control signal of said second value for causing said third means to be injection locked by said second means to thereby produce frequency $F_3=F_2\div M$ and responsive to said control signal at said first value for causing said third means to be injection locked by said first means to thereby produce frequency $F_3=F_1$; and

means responsive to said third means when producing said frequency $F_3=F_2\div M$ for providing said frequency F_3.

4,238,797

MULTI-BEAM ANTENNA CONTROLLER

James S. Shreve, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 25, 1979, Ser. No. 42,688
Int. Cl.³ H04B *7/00*
U.S. Cl. 343—100 SA **4 Claims**

1. A multi-beam optical processor antenna controller for controlling an array antenna, comprising,

means for emitting a coherent light beam

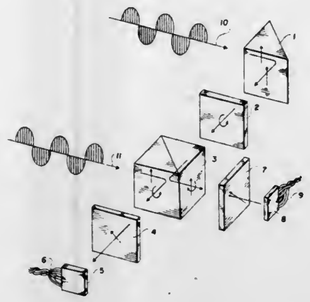
means for splitting said coherent light beam into a plurality of beams,

a different transparency means disposed in each of said plurality of beams, each of said transparency means having a selected transmittance pattern,

a lens means disposed behind each of said transparencies for taking the Fourier transform of the beam which passes through that transparency,

means for combining said plurality of beams after said Fourier transforms have been taken,

means for providing electrical signals corresponding to the amplitude and/or phase of a plurality of spatially displaced samples of said combined beam, said samples corresponding in relative spacing to the spacing of the elements of said array antenna, and,



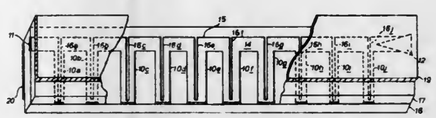
means for exciting the elements of said array antenna with said electrical signals.

4,238,798

STRIPLINE ANTENNAE

James E. Aitken; Peter S. Hall, and James R. James, all of Swindon, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 21, 1979, Ser. No. 40,788
Claims priority, application United Kingdom, May 22, 1978, 21195/78
Int. Cl.³ H01Q *1/28*
U.S. Cl. 343—700 MS **15 Claims**



1. A traveling wave stripline antenna array comprising a pattern of conducting material on an insulating substrate with a conducting backing, the pattern including an elongated feeder strip and a plurality of antenna elements disposed in spaced relation to one another along the feeder strip and each comprising an elongated strip of conducting material connected at one of its ends to and extending away from an edge of the feeder strip, the other end of each of said strips being an open-circuit termination, the feeder strip being interrupted at each of said antenna elements by a slot extending longitudinally of the element from the edge of the feeder strip opposite to that to which it is connected and terminating within the antenna element before the open circuit end thereof.

4,238,799

WINDSHIELD MOUNTED HALF-WAVE COMMUNICATIONS ANTENNA ASSEMBLY

Dale R. Parfitt, Lake Worth, Fla., assignor to Avanti Research & Development, Inc., Addison, Ill.

Filed Mar. 27, 1978, Ser. No. 890,380
Int. Cl.³ H01Q *1/32*
U.S. Cl. 343—715 **28 Claims**

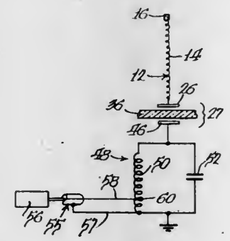
1. A mobile transmitting and receiving communications antenna assembly for use on a vehicle comprising:

an antenna in the form of an elongated, substantially half wave-length radiating member;

a first electrically conductive tuning and loading member electrically connected to and disposed adjacent the base end of said antenna, said first conductive tuning and loading member being mounted on one side of a non-conductive body portion of said vehicle;

a second electrically conductive coupling member mounted on the other side of said non-conductive body portion in substantial juxtaposition with said first electrically conductive tuning and loading member, said first and second electrically conductive members defining with said non-conductive body portion a coupling capacitor at the end of said antenna located adjacent a current node thereof;

impedance matching means comprising a tuned circuit tuned to the nominal resonant frequency of said capacitively loaded antenna and electrically connected to said second



electrically conductive coupling member in the immediate proximity thereof to resonate in conjunction with said one-half wave length radiating member, said impedance matching means displaying an impedance which varies between a first impedance at said connection to said second electrically conductive coupling member which is substantially equal to said impedance at the base end of said antenna and a secnd impedance at least several orders of magnitude less than said first impedance; and

means for connecting transmission line means to said impedance matching means at a point where the impedance of said impedance matching means is substantially equal to the impedance of said transmission line.

4,238,800

WHIP ANTENNA WITH CAPACITIVE LOADING

Geoffrey T. Newington, Portsmouth, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jan. 25, 1979, Ser. No. 6,294
Claims priority, application United Kingdom, Feb. 7, 1978, 4876/78
Int. Cl.³ H01Q *1/32*
U.S. Cl. 343—715 **4 Claims**



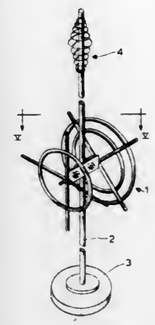
1. A whip antenna comprising an elongated flexible solid core which is of electrically insulating material and which extends along a major part of the length of the antenna, a braided copper wire sleeve on the surface of said core and extending along a major part of the length of the core to provide the required radio frequency path along the antenna and a capacitor arrangement which is connected in said radio frequency path and which comprises at least two electrodes, a first one of said electrodes being embedded in said core and at least a second of said electrodes lying on the surface of and being carried by said core along part of its length and being out of electrical contact with said first electrode.

4,238,801

C-B ANTENNA EXTENDED SURFACE ATTACHMENT

Joseph P. Bell, Rte. 1, Box 2620, Grayslake, Ill. 60030

Filed May 4, 1979, Ser. No. 35,820
Int. Cl.³ H01Q *1/32, 9/40*
U.S. Cl. 343—715 **10 Claims**



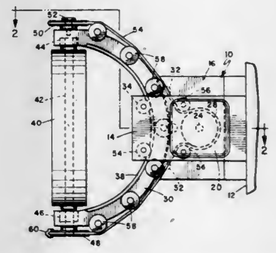
1. A supplemental device for mounted on a rod-type antenna, particularly the antenna of a mobile C-B installation, for reducing the overall noise level in connection with the operation of the squelch control thereof, comprising a pair of assemblies, each having at least one ring member and a plurality of cooperable rod members symmetrically arranged and physically intersecting each other and the axis of the associated ring member, said ring and rod members of each pair being secured in rigid relation with the members thereof lying substantially in a common plane, forming a unitary assembly, said assemblies being disposed on a common axis in spaced parallel planes, a cross member rigidly connecting said assemblies at the intersection of the respective rod members thereof, and means cooperable with said cross member for securing said assemblies to an antenna, with the latter extending therebetween in a plane substantially centered between said first-mentioned planes.

4,238,802

DIFFERENTIAL DRIVE ROLLING ARC GIMBAL

John M. Speicher, Pomona, Calif., assignor to General Dynamics Corporation, Pomona Division, Pomona, Calif.

Filed Dec. 18, 1978, Ser. No. 970,284
Int. Cl.³ H01Q *3/08*
U.S. Cl. 343—765 **3 Claims**



1. A differential drive rolling arc gimbal, comprising:

a mounting having means for attachment to a supporting structure;

an arcuate, substantially semi-circular yoke supported in said mounting for rotation about its center of radius;

a platform having a supporting shaft pivotally mounted in said yoke for rotation about an axis orthogonal to the axis of rotation of the yoke;

a pair of motors on said mounting, with drive means connected to said yoke and said platform for selective independent and combined rotary motions of the yoke and platform;

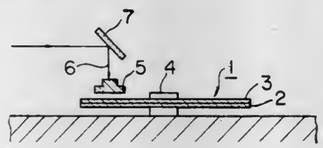
said drive means including a drive pulley on each of said motors, an actuating pulley fixed on each end of said shaft, and an endless cable extending from one drive pulley around said actuating pulleys to the other drive pulley, said endless cable being crossed over adjacent one of said actuating pulleys.

4,238,803

INFORMATION RECORDING METHODS USING LASERS

Motoyasu Terao, Tokyo, and Seiji Yonezawa, Hachioji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 1, 1977, Ser. No. 829,892
Claims priority, application Japan, Sep. 3, 1976, 51-104853
Int. Cl.[2] G01D *15/34, 15/10*
U.S. Cl. 346—1.1 **35 Claims**



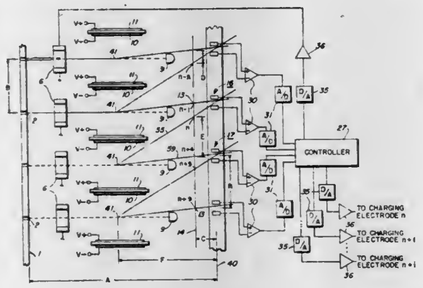
1. A method of recording information in at least one thin film formed on a predetermined substrate by irradiating said at least one thin film with a laser ray beam in accordance with said information to form in said at least one thin film holes or recesses, said irradiating being sufficient to heat said at least one thin film to be softened and displaced or evaporated, said holes or recesses representing said information, wherein said at least one thin film is made of a substantially amorphous chalcogenide having a composition of As_x-Te_y-Se_z-G_g, where G represents at least one element selected from a group consisting of S, In, Tl, Sn, Pb and Ge, and where 10 at $\% \leqq x \leqq 25$ at %, 50 at $\% \leqq y \leqq 88$ at %, 0 at $\% \leqq z \leqq 40$ at % and 0 at $\% \leqq g \leqq 10$ at %, and that $x+y+z+g=100$ and $z+g \neq 0$.

4,238,804

STITCHING METHOD AND APPARATUS FOR MULTIPLE NOZZLE INK JET PRINTERS

W. Thomas Warren, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 28, 1979, Ser. No. 16,256
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—75 **16 Claims**



1. Electrostatic ink jet apparatus for marking a record member with ink drops in a raster pattern having rows of pixel positions comprising

a plurality of nozzles for emitting continuous streams of a conductive fluid and means for promoting the formation of drops from the streams at finite distances from the nozzles,

a charging electrode associated with each nozzle adjacent the region of drop formation for charging drops,

electrostatic deflection means associated with each nozzle for deflecting charged drops toward a segment of a row of pixel positions at a recording plane and

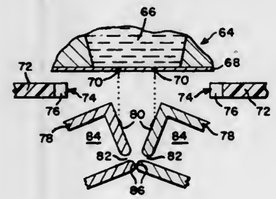
stitching means for aligning the drops of adjacent nozzles to the pixel positions in the raster pattern including at least two drop sensor means associated with each nozzle and wherein the spacing between the sensor means is proportional to the spacing between pixel positions in a raster pattern.

4,238,805

INK JET PRINTER STARTUP AND SHUTDOWN PROCEDURE

Suresh C. Paranjpe, Dallas; James W. Davis, Richardson, both of Tex.; Robert J. Scranton, and Roger D. Wells, both of Dayton, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Sep. 12, 1979, Ser. No. 75,055
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **12 Claims**



1. An ink jet printer for depositing ink drops on a print receiving medium, comprising:

print head means for generating a plurality of jet drop streams, said streams being arranged in at least one row,

charge electrode means mounted for movement between an inactive position and a drop charging position adjacent said jet drop streams, said charge electrode means providing charging of drops in said jet drop streams when in said drop charging position,

a pair of drop catchers, each catcher defining a drop impingement surface, said pair of catchers being pivotable into drop catching positions with said drop impingement surfaces being substantially parallel and positioned on opposite sides of said row of jet drop streams for catching drops deflected thereto by an electrostatic deflection field, and said pair of catchers being pivotable into full catch position in which said drop impingement surfaces are inclined with respect to said row of jet drop streams with the lower edges of said drop impingement surfaces being substantially closer together than when in said drop catching positions, and

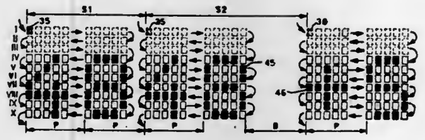
means for moving said charge electrode means between said drop charging position and said inactive position and, simultaneously, pivoting said pair of drop catchers between said drop catching positions and said full catch positions, whereby drops are caught continuously by said catchers before and after printing without charging of said drops, thus increasing the reliability of start up and shut down.

4,238,806

DOT MATRIX PRINTING DEVICE

Michele Bovio, Brosso, and Pierangelo Berruti, Chivasso, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 10, 1979, Ser. No. 28,657
Claims priority, application Italy, Apr. 14, 1978, 67837 A/78
Int. Cl.[3] G01D *15/10;* **B41J** *3/00*
U.S. Cl. 346—76 PH **8 Claims**



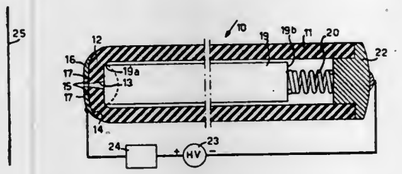
1. A dot printing device comprising a plurality of printing elements, means for selectively activating said printing elements to print an amount having digits and explanatory symbols, and support means for supporting said printing elements wherein said printing elements comprise a symbol element activatable to print said explanatory symbols, and digit elements, activatable to print the digits of said amount, wherein a last digit element of said digit elements is activatable to print the least significant digit of the amount, wherein said digit elements are spaced apart by a pitch associated with the spacing of printing digits and leaving a blank space between said printed digits, and wherein said support means supports said symbol element adjacent to and displaced from said last digit element by a distance greater than said pitch between the last digit element and a digit element of said plurality adjacent to said last digit element, for leaving a separating space between a first of said printed explanatory symbols and the least significant printed digit greater than the blank space between the printed digits.

4,238,807

NON-IMPACT PRINTING DEVICE

Michele Bovio, Brosso; Aquilino Barbero, Pavone; Walter Gillone, Ivrea, and Pierangelo Berruti, Chivasso, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 22, 1978, Ser. No. 972,267
Claims priority, application Italy, Dec. 28, 1977, 69927 A/77
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—140 R **23 Claims**



1. A non-impact printing device for printing symbols on a recording sheet by means of selective emission of ink particles from a nozzle, comprising

a housing of electrically insulative material defining said nozzle at one end facing said sheet,

a rod of electrically conductive solid ink comprising a compressed mixture of pigmented particles and a binder mounted in said housing with an end adjacent said nozzle,

first and second electrodes spaced from each other on opposite sides of said nozzle, the first electrode being electrically connected to said rod, the second electrode being located adjacent said sheet, and

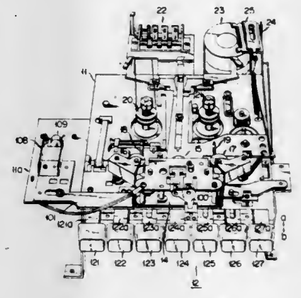
selectively activated means for generating a predetermined high voltage between said electrodes sufficient to overcome the binding action of said binder on the solid ink particles of said rod adjacent said nozzle to cause erosion thereof from said rod, to eject them through said nozzle and to move them rectilinearly toward said sheet.

4,238,808

TAPE STOP DETECTING MECHANISM

Seiji Tomita, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 26, 1979, Ser. No. 6,753
Claims priority, application Japan, Feb. 1, 1978, 53-9238; Feb. 17, 1978, 53-17251
Int. Cl.[3] G11B *15/44, 15/32, 15/50, 21/24*
U.S. Cl. 360—74.2 **18 Claims**



1. In a tape recorder including a support base, a pair of reel holders disposed on said base and rotating in concert with a tape run, rotating members severally mounted so as to rotate together with said reel holders, a tape stop detecting mechanism for detecting a stop of rotation of one of said reel holders in one direction by means of the rotating member engaging with said one reel holder, a capstan to enable said tape run, and a head for scanning a tape; the improvement wherein said tape stop detecting mechanism detects a stop of rotation of the rotating member of the take-up side and wherein said tape stop detecting mechanism comprises:

a detector means disposed correspondingly to both said rotating members and shifted from a non-detecting position to a detecting position when the rotation of said rotating member of the take-up side is a stopped,

a rotation engaging member provided in association with said detector means,

driving means for rotating the rotation engaging member in one direction, and

engaging means for engaging said detector means with said rotation engaging member relatively to shift the same by the rotation force thereof when said detector means is shifted to said detecting position, said engaging means including

an eccentric cam so arranged as to rotate together with said rotation engaging member,

a detector pin on said detector means to follow said eccentric cam when said detector means is in said non-detecting position and to leave said cam to be shifted to an engaging position when said detector means is moved to said detecting position, and

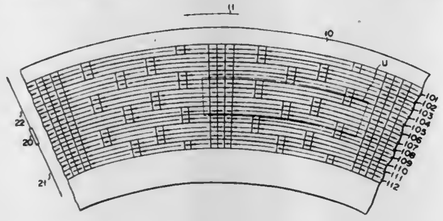
an engaging projection on said rotation engaging member to engage said detector pin when said pin is shifted to said engaging position, thereby achieving said relative shift of said detector means and rotation engaging member.

4,238,809

SERVO TRACK CONFIGURATION FOR MAGNETIC DISK APPARATUS

Masao Fujiki, Hamura; Hiromi Hamaoka, Tokyo, and Toshiaki Hattori, Ome, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 5, 1979, Ser. No. 17,618
Claims priority, application Japan, Mar. 9, 1978, 53-25996
Int. Cl.[2] G11B *5/74, 5/82, 21/10*
U.S. Cl. 360—131 **5 Claims**



1. A servo track configuration comprising at least one unit pattern area including 2n (n=2, 3, 4, . . .) servo tracks T_i(i=0, 1, . . . 2n−1) and $2n^2$ flux transitions R_{jk} (j=0, 1, . . . 2n−1; k=0, 1, . . . n−1) satisfying the following four conditions:

Condition TT: track T_p being adjacent to track T_{p+1};

Condition TR: transition R_{pq} occurring on track T_{p+q} (mod 2n);

Condition RR: transition R_{pq} and transition R_{pr} (r≠q) having the same polarity and occurring at the same position; and

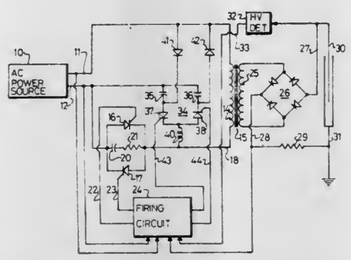
Condition $\overline{RR}$: transition R_{pr} and transition R_{qr} (q≠p) occurring at different positions.

4,238,810

FORCED COMMUTATION PRECIPITATOR CIRCUIT

Andrew C. Stevenson, and Kenneth R. Fox, both of Peterborough, Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada

Filed Dec. 4, 1978, Ser. No. 966,530
Claims priority, application Canada, Dec. 9, 1977, 292812
Int. Cl.[3] B03C *3/68*
U.S. Cl. 361—91 **7 Claims**



1. A control circuit for an electrical precipitator, comprising

main thyristor means for controlling power from an AC source to the electrodes of said precipitator,

capacitor means,

auxiliary thyristor means for controlling the discharge of an electrical charge stored in a said capacitor means,

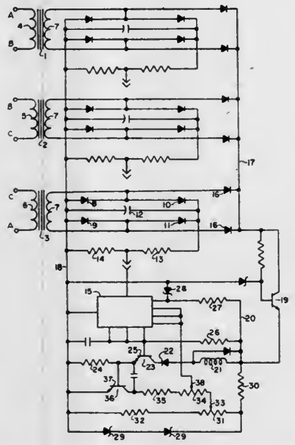
means responsive to a spark discharge at the electrodes of the precipitator to temporarily place said main thyristor means in a state where it would become non-conductive at the end of the half cycle in which spark discharge occurs and to cause said auxiliary thyristor means to discharge said capacitor means to provide a voltage at said main thyristor means rendering it non-conductive before the end of the half cycle in which spark discharge occurs.

4,238,811

THREE PHASE UNDERVOLTAGE MONITOR

Warren C. Fry, Connellsville, Pa., assignor to General Equipment & Mfg. Co., Inc., Louisville, Ky.

Filed Apr. 9, 1979, Ser. No. 28,558
Int. Cl.[3] H02H *3/24*
U.S. Cl. 361—92 **3 Claims**



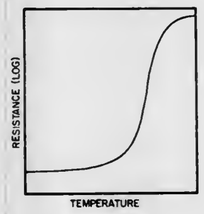
1. A multiphase undervoltage monitoring circuit comprising, in combination, a transformer and rectifier connected across each phase voltage to be monitored to give a direct current voltage proportional to the phase voltage, a regulated reference voltage source, a voltage comparator for each phase voltage to be monitored connected between the corresponding rectifier and the reference voltage, an output relay circuit connected to and responsive to the output of the comparators, and a connection between said output relay circuit and said reference voltage source arranged to vary said reference voltage in response to a change in the output of the comparators.

4,238,812

CIRCUIT PROTECTION DEVICES COMPRISING PTC ELEMENTS

Lee M. Middleman, Portola Valley; Joseph H. Evans, and Donald F. Pettengill, both of Palo Alto, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 1, 1978, Ser. No. 965,344
Int. Cl.[3] H02H *5/04*
U.S. Cl. 361—106 **63 Claims**



1. An electrical circuit which comprises

(1) a source of electrical power;

(2) a circuit protection device comprising at least two electrodes and a PTC element composed of a PTC composition having a switching temperature T_s; and

(3) other circuit elements which are connected in series with said PTC element and which have an impedance R_L ohms;

said electrical circuit having a normal operating condition in which

(A) current flows through said PTC element over an area of equivalent diameter d with an average path length t such that d/t is at least 2;

(B) said device is at a temperature T_{dn} at which the device has a resistance R_{dn} which is

(a) less than 1 ohm; and

(b) less than $0.1 \times R_L$ ohm, and at which said PTC composition has a resistivity of less than 10 ohm. cm.;

(C) said device is in contact with a medium which is at a temperature T_n; and

(D) there is a stable equilibrium between the rate at which the device generates heat by I^2R heating and the rate at which heat is lost from the device;

and said device having an electrical power/temperature relationship and being capable of losing heat to said medium at a rate such that

(a) if said medium is heated slowly from T_n while maintaining R_L and the voltage of the source of electrical power substantially constant, the temperature of the device increases slowly until the equilibrium between the rate at which the device generates heat by I^2R heating and the rate at which heat is lost from the device becomes unstable, at which unstable equilibrium point the medium is at a temperature T_{crit}, the device is at a temperature $T_{d\ trip}$ and has a resistance $R_{d\ trip}$, and the rate at which the resistance of the device changes with temperature, $dR_{d\ trip}/dT_{d\ trip}$ is positive; and

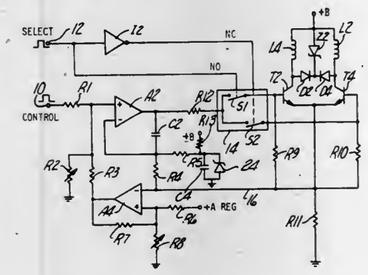
(b) if said medium is then heated just above T_{crit}, the rate at which the device generates heat by I^2R heating exceeds the rate at which heat can be lost from the device and thus causes the temperature and the resistance of the device to rise rapidly and the circuit current to fall until a high temperature stable equilibrium point is reached at which the rate at which the device generates heat by I^2R heating is equal to the rate at which heat is lost from the device; at which high temperature stable equilibrium point, the device is at a temperature $T_{d\ latch}$ and has a resistance $R_{d\ latch}$ which is such that the ratio of the power in the circuit in the normal operating condition to the power in the circuit at said high temperature stable equilibrium point, the Switching Ratio, is at least 10.

4,238,813

COMPENSATED DUAL INJECTOR DRIVER

Ralph W. Carp, and Danny O. Wright, both of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 21, 1979, Ser. No. 41,265
Int. Cl.[3] H01H *47/32*
U.S. Cl. 361—154 **16 Claims**



7. A solenoid driver circuit comprising:

means for controlling the actuating current through a coil of the solenoid in response to the presence of a control pulse by first increasing the current to a peak value and then decreasing the current to a hold value;

means for dissipating, at a controlled rate, the stored energy in the coil as a result of the actuating current after the termination of said control pulse; and

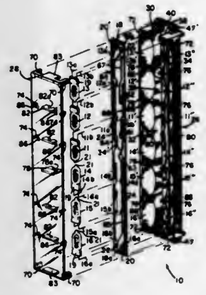
means for varying the hold current value as a function of the variations of the voltage supply.

4,238,814

COVER FOR MULTILAMP PHOTOFLASH UNIT

Daniel W. Bricker, Williamsport, Pa.; Emery G. Audesse, Beverly, Mass.; John W. Shaffer, and Donald W. Hartman, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 4, 1979, Ser. No. 72,534
Int. Cl.[3] F21K *5/02;* G03B *15/02;* H05B *41/34*
U.S. Cl. 362—13 **18 Claims**



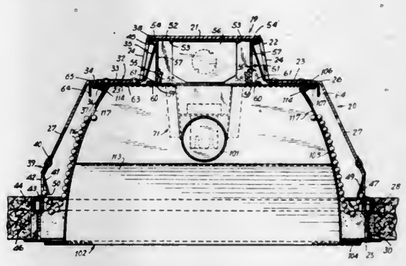
1. In a multilamp photoflash unit commprising a housing member, a plurality of flashlamps mounted in said housing member, and a light-transmitting cover member attached to said housing member and enclosing said flashlamps therein, means for preventing sympathetic ignition of adjacent lamps comprising a light-attenuating partition integrally projecting from said cover member and disposed between a respective pair of said flashlamps.

4,238,815

RECESSED LIGHT FIXTURE

Edison A. Price, New York, N.Y., assignor to Edison Price, Incorporated, New York, N.Y.

Filed Jun. 29, 1978, Ser. No. 920,265
Int. Cl.[3] F21S *2/00*
U.S. Cl. 362—218 **26 Claims**



1. A recessed light fixture comprising a transversely extending upper first reflector member having longitudinally extending side borders, a reflector assembly including a pair of longitudinally and vertically extending transversely spaced second reflector members terminating in transversely extending flanges, said first and second reflector members defining a lamp

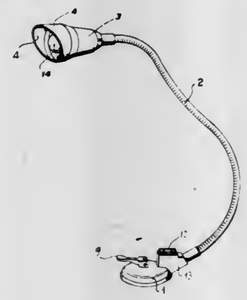
cavity having a light emitting opening, support means in said lamp cavity for supporting at least a lamp below said first reflector and between said second reflector members, means positioning said first and second reflector members with the flanges of said second reflector member located below and extending along the borders of said first reflector member and in spaced relationship to said first reflector member to define air flow passageways between said flanges and borders, said passageways having an entrance communicating with said lamp cavity and an exit communicating with the surrounding area, whereby air flows into said lamp cavity through said light emitting opening, around the lamp and through the passage from entrance to exit to be dissipated in the surrounding area.

4,238,816

LAMP FOR THE MAINTENANCE, SERVICING AND REPAIRING OF MOTORVEHICLES

Mario Merlo, Via Montenero 19, 20029 Turbigo (Milano), Italy

Filed Feb. 12, 1979, Ser. No. 11,426
Claims priority, application Italy, Aug. 18, 1977, 22049/77[U]
Int. Cl.³ F21V *21/26*
U.S. Cl. 362—277 **4 Claims**



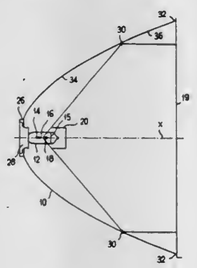
1. A lamp which can be quickley fixed and fully revolving, particularly for use in maintenance and repair operations in motorvehicles, characterized in that it comprises a strong sucker base embodying a standard socket, a flexible stem consisting of a resilient element with helical structure having a decreasing section and a lampholder with directional reflector.

4,238,817

AUTOMOBILE HEADLIGHT

Hector Fratty, Boulogne, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Jun. 21, 1978, Ser. No. 917,756
Claims priority, application France, Jul. 1, 1977, 77 20338
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—309 **3 Claims**



1. An automobile headlight of the type comprising a wide-opening parabolic reflector having an apex, a central optical axis and a focus;

a front glass overlying said reflector and opening and connected thereto, provided with grooves, prisms and outer contours;

and a twin-filament lamp for far-beam and dipped-beam located on said axis on opposite sides of said focus, the far-beam filament being located between said apex and the focus;

intercepting means within the reflector including a screen located on the front of and substantially above said axis and the upper part of the lamp, for defining on the periphery of the reflector zones which are stuck only by the rays emitted by the far-beam filament;

and the corresponding part of the front glass having concentrating grooves and prisms determined as a function of the far-beam only;

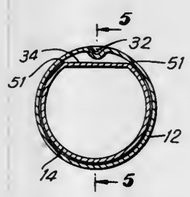
that part of the front glass corresponding to the zone defined by interception having an inner limit substantially parallel to the outer contours of the glass.

4,238,818

NONROTATABLE TELESCOPING SUPPORTING STRUCTURE

Alvin Gindel, 36 Wenwood Dr., Brookville, Long Island, N.Y. 11101

Filed Sep. 18, 1978, Ser. No. 942,917
Int. Cl.³ F21S *3/12*
U.S. Cl. 362—413 **4 Claims**



1. A nonrotatable telescoping supporting structure comprising:

an outer elongated tubular member of substantially cylindrical shape,

an inner elongated member having at least one elongated portion of reduced radial size with respect to the longitudinal central axis of said inner member, said portion extending substantially the entire length of said inner member, and

a stationary protuberance of fixed size and shape located on the inner surface of said outer member extending inwardly therefrom a distance such that said protuberance does not engage said portion of reduced radial size when such is opposite said protuberance, whereby said inner member is slidably disposed within said outer member when said radially reduced portion is opposite said protuberance and relative longitudinal movement of said members is possible but relative rotation is prevented by engagement of said protuberance with portions of said inner member located on either side of said reduced radial portion, said protuberance being a dimple formed in said outer member.

4,238,819

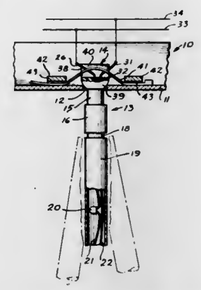
SWIVEL SOCKET FOR LIGHTS

Edward H. Harris, 1065 E. Flamingo Rd., Apt. 524, Las Vegas, Nev. 89109

Filed Oct. 12, 1978, Ser. No. 950,778
Int. Cl.³ F21V *21/30*
U.S. Cl. 362—419 **6 Claims**

1. A socket means for supporting a light from a lighting fixture having a bottom wall with at least one circular opening

of predetermined diameter extending therethrough, said socket means comprising a body having an enlarged head at one end, said head including a semi-spherical portion which is larger than the diameter of the circular opening and slidably engages the edges thereof, said body being of a size to pass through said opening, means within said body for receiving and supporting a light, said head having slot means extending in one direction



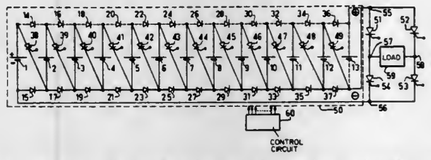
from side to side thereof, and retainer means carried by the fixture and having portions extending through said slot means so that said head is movable in said one direction, said portions of said retainer means being movable so that said head is movable in a direction normal to said one direction, whereby said socket means may circumgyrate relative to the fixture but axial and rotational movement is substantially prevented.

4,238,820

VARIABLE WAVE-FORM CONVERTER

Geert J. Naaijer, Limeil-Brevannes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,676
Claims priority, application France, Mar. 2, 1978, 78 05979
Int. Cl.³ H02M *7/537*
U.S. Cl. 363—43 **12 Claims**



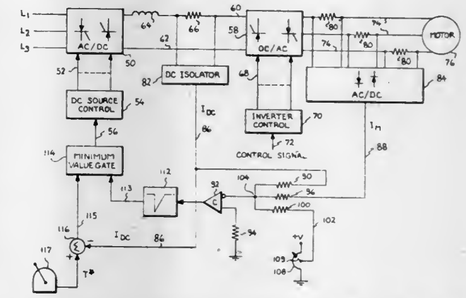
1. A converter for generating an alternating voltage comprising, a power supply unit, the power supply unit comprising n direct voltage sources which when connected in series supply a voltage which is substantially equal to the peak value of said alternating voltage, an interconnection device which comprises a plurality of n switches for selectively combining the direct voltage sources so as to obtain a desired instantaneous alternating voltage amplitude, wherein n is an integer, the converter further comprising a control circuit coupled to the switches for opening and closing the switches in a sequence which depends on the desired waveform of the alternating voltage, the interconnection device further comprising n diodes connected in series in the same forward direction so as to derive a first series connection, means connecting each voltage source in series with one of the switches across the terminals of a respective diode, the power supply unit having output terminals respectively constituted by the anode of the first diode and the cathode of the last diode in the series connection, the converter further comprising a bridge circuit including at least four switches for reversing the polarity, means connecting one diagonal of said bridge circuit to the output terminals of the power supply unit and the other diagonal to terminals for a load to be connected to the converter, and the polarity reversing switches being opened and closed two by two by the control circuit so as to obtain the correct positive and negative polarity of the desired alternating voltage across the load terminals.

4,238,821

METHOD AND APPARATUS FOR A VARIABLE FREQUENCY INVERTER SYSTEM HAVING COMMUTATION FAULT DETECTION AND CORRECTION CAPABILITIES

Loren H. Walker, Salem, Va., assignor to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,854
Int. Cl.³ H02H *7/122*
U.S. Cl. 363—58 **23 Claims**



1. An inverter system for supplying controlled output voltage current and frequency electrical power to a load comprising:

(a) a source of variable direct current power for providing a d.c. output current;

(b) control means for controlling the d.c. output current of said source;

(c) an inverter circuit for receiving said d.c. output current and for providing an a.c. output current of controlled frequency and voltage and current for application to said load;

(d) a d.c. link circuit for carrying said d.c. output current from said source to said inverter circuit; and,

(e) circuit means for detecting a commutation fault condition within said inverter circuit comprising,

(1) means to produce a first feedback signal proportional to the magnitude of the d.c. current in said d.c. link circuit,

(2) means to produce a second feedback signal proportional to the magnitude of the a.c. output current of said inverter circuit,

(3) comparison means for comparing said first and second feedback signals at a fixed ratio other than unity, with respect to their absolute magnitudes, and to provide, in response to a prescribed relationship therebetween, a correction signal, and,

(4) means for applying said correction signal to said control means to effect a reduction in the magnitude of the d.c. output current of said source.

4,238,822

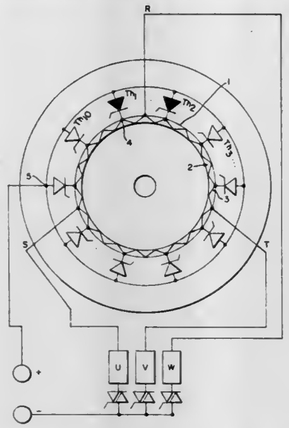
CONTROLLABLE ELECTRICAL SINGLE-ARMATURE OF ROTARY CONVERTER

Walter Schade, Alter Postweg 28, 427 Dorsten, Fed. Rep. of Germany

Filed Mar. 2, 1978, Ser. No. 882,769
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709681
Int. Cl.³ H02M *7/34, 7/60*
U.S. Cl. 363—107 **3 Claims**

1. Controllable electronic rotary converter without a collec-

tor, comprising a ring-shaped drum armature winding having a plurality of individual coil sections with inputs therebetween, a multiplicity of electronic switches consecutively connecting said coil-section inputs and having connection points, at least one of said connection points being connectible to a direct



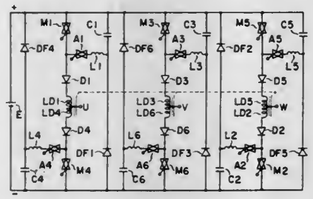
current source for switching said coil-section inputs to said electronic switches through a single pole, and a plurality of induction coils carrying outgoing current between said coil sections and a neutral star point which is further connected to a negative pole of the current source.

4,238,823

INVERTER APPARATUS

Akira Nabae, Nagaoka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 20, 1978, Ser. No. 953,034
Claims priority, application Japan, Nov. 9, 1977, 52-133567
Int. Cl.[3] H02M *1/06*
U.S. Cl. 363—138 **6 Claims**



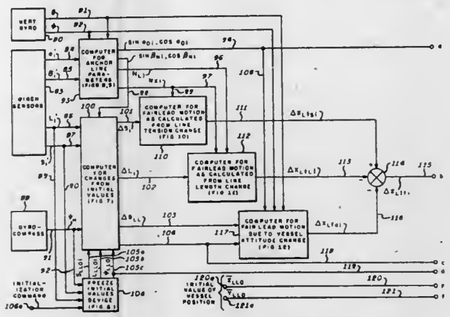
1. Inverter apparatus comprising a plurality of branch circuits connected in parallel across positive and negative bus lines of a source of direct current, each branch circuit including a pair of main controlled semiconductor switching elements comprising reverse conduction type thyristors, diode means and smoothing reactor means connected in series between said pair of main controlled semiconductor switching elements, alternating current output terminals connected to points between respective pairs of said main controlled semiconductor switching elements, a plurality of commutating circuits respectively connected in parallel to said main controlled semiconductor switching elements, each commutating circuit including a commutating capacitor, a commutating reactor and a reverse conduction type controlled semiconductor switching element which are connected in series, and a pair of circulating diodes provided for each branch circuit and connected between respective commutating capacitors thereof and said positive and negative bus lines respectively.

4,238,824

LINE LENGTH NAVIGATION SYSTEM

James F. DeMatte, Coram, and Nazaro A. Simonelli, Woodbury, both of N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,278
Int. Cl.[3] G06F *15/50*; B63B *35/00*; F16L *1/04*
U.S. Cl. 364—449 **42 Claims**



1. Vessel position determination means comprising:
inertial reference means disposed on said vessel for supplying measures of vessel pitch, roll, and heading angles,
fairlead means disposed on said vessel substantially at the corners of a rectangular pattern,
anchor and anchor line means cooperatively associated with said fairlead means,
said fairlead means each including sensor means for supplying:
a first measure of the angle from the associated anchor line to a predetermined plane parallel to the vessel deck,
a second measure of the angle from the associated anchor line to a predetermined fore-aft reference axis,
a third measure of the total length paid out of the associated anchor line, and
a fourth measure of the axial tension in the associated anchor line,
system computer means at least responsive to said pitch, roll, and heading angles and to said first, second, third, and fourth measures for computing the best estimate of the vessel's horizontal position change, and
resolver means responsive to said best estimate and to initial values of vessel heading and vessel position for generating further measures of said vessel actual position.

4,238,825

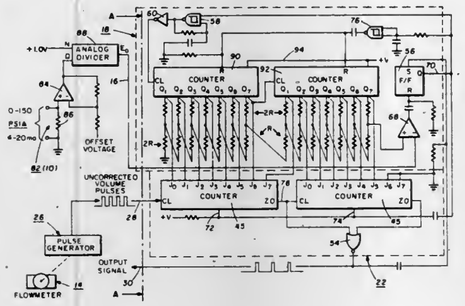
EQUIVALENT STANDARD VOLUME CORRECTION SYSTEMS FOR GAS METERS

Paul W. Geery, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 2, 1978, Ser. No. 947,382
Int. Cl.[3] G01F *1/00*
U.S. Cl. 364—510 **22 Claims**

1. A correction apparatus for correcting actual flow volume of fluid flow at prevailing conditions of pressure and temperature to a corresponding value at a standard base condition for at least one parameter of said prevailing conditions, comprising in combination:
(a) pulse generating means for generating pulses representing uncorrected volume in a ratio proportional to the actual volume of fluid flow at prevailing conditions; said ratio of pulse generation being proportionately greater by at least one order of magnitude relative to a predetermined pulse to volume ratio for a selected engineering unit with which it is to be compared;
(b) sensor transducer means sensitive to the condition parameter for which correction is to be effected and adapted

for exposure to the fluid flow at said prevailing conditions, said sensor transducer means being operative to emit an output signal proportional to the absolute value of its measured parameter;
(c) scaling means operative for emitting an output signal corresponding to the product of said sensor transducer means output signal and a constant correlated to a ratio



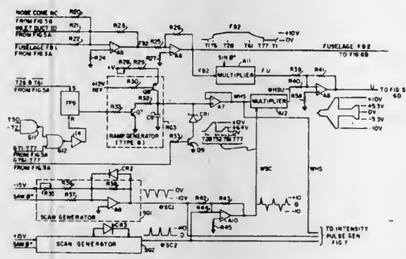
comparison between the pulse to volume ratio generated by said pulse generating means and the pulse to volume ratio of the selected engineering unit; and
(d) divider-counter means operative to divide all of said uncorrected volume pulses by said scaling means output signal and to emit a digital output signal correlated to a volume of fluid flow corrected for the parameter sensitivity of said sensor transducer means.

4,238,826

METHOD AND APPARATUS FOR IMAGE SIGNAL GENERATION AND IMAGE DISPLAY

Robert E. Jones, Jr., Timonium, Md., assignor to AAI Corporation, Cockeysville, Md.

Continuation of Ser. No. 793,908, May 4, 1977, abandoned, which is a continuation of Ser. No. 499,093, Aug. 20, 1974, abandoned, which is a division of Ser. No. 283,673, Aug. 25, 1972, Pat. No. 4,162,492. This application Feb. 12, 1979, Ser. No. 11,731
Int. Cl.[3] G06F *3/153*
U.S. Cl. 364—515 **22 Claims**



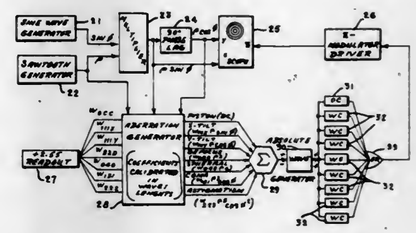
10. For use in an image-forming apparatus having image-forming means, the improvement comprising apparatus for image-signal formation and adapted for input connection to said image-forming means, and which apparatus comprises
means for forming a composite envelope-forming signal from two inphase AC carrier signals which are of different wave-form character,
means for forming a component portion of said composite envelope-forming signal from an AC carrier signal, a portion of which comprises a repetitive triangular wave form,
and means for forming a trace displacement ramp sweep signal having a ramp duration during one occurrence of at least as long as the duration of a multiple number of cycles of said in-phase AC carrier signals.

4,238,827

INTERFEROGRAM SYNTHESIZATION METHOD AND APPARATUS

Joseph M. Geary, Edgewood, and David F. Holmes, Albuquerque, both of N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 20, 1978, Ser. No. 962,411
Int. Cl.[3] G01B *11/00*
U.S. Cl. 364—521 **14 Claims**



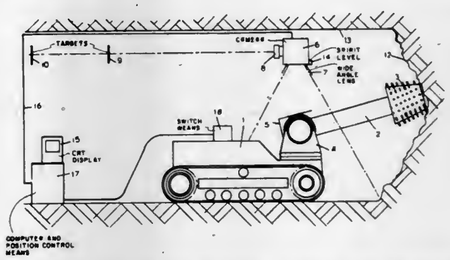
1. An interferogram synthesizer comprising cathode ray tube means,
a beam scan circuit generating a drive signal for driving the cathode ray tube beam,
an electronic aberration generator for generating an aberration pattern signal as a function of said beam scan circuit drive signal,
means for selectively varying coefficients of said aberration pattern signal, and
a cathode ray tube beam intensity drive circuit connected to control the intensity of said cathode ray tube beam in response to aberration pattern signals from said aberration generator.

4,238,828

POSITION DETECTING APPARATUS

Andrew G. Hay, Hamilton, Scotland, and Peter R. Mason, York, England, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 6, 1978, Ser. No. 949,185
Claims priority, application United Kingdom, Oct. 7, 1977, 41808/77
Int. Cl.[3] G01V *5/00*; E21B *25/16*
U.S. Cl. 364—559 **16 Claims**



1. A tunneling machine having a cutting head adjustably supported by a member extending from said machine, and position detecting apparatus having
(a) a target attached to said member in predetermined positional relationship to said cutting head, said target having identifying means for identifying therein at least four target points in non-coplanar relationship with each other;

(b) a camera, having a focal plane at which images are formed, arranged to view the target so as to form on said focal plane images of at least three of said target points, said camera being adjustably positionable on a predetermined datum line and being disposed sufficiently close to said target to provide sensibly different angles to the points on said target which are being viewed by said camera; and

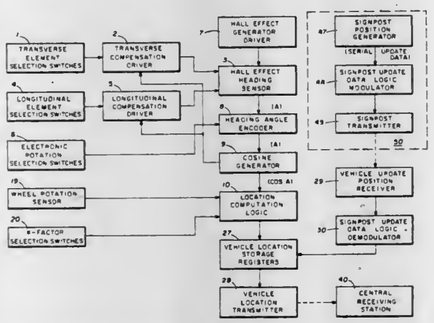
(c) a computer arranged to receive signals indicative of the positions of said images on the focal plane of the camera, and for calculating from said received signals the orientation of the target points corresponding to said images in relation to a given reference plane, and for calculating thereby the position of the said cutting head as projected onto any other plane defined in relation to said given reference plane.

4,238,829

VEHICLE LOCATING APPARATUS

Willie E. Martin, Garland, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Division of Ser. No. 783697, Apr. 1, 1977, Pat. No. 4,124,897.
This application Jul. 24, 1978, Ser. No. 927,512
Int. Cl.[3] G06F *15/50*
U.S. Cl. 364—561 **7 Claims**



1. Apparatus in a vehicle locating system that utilizes wheel rotation to measure distance traveled for incorporating variable map scale units and variable wheel circumferences comprising:

(a) means for inputting a constant number wherein said constant number is the quotient of said wheel circumference divided by said map scale unit,

(b) means for accumulating distance traveled as measured by said wheel rotations,

(c) means for detecting when the absolute value in said accumulating means exceeds the constant number,

(d) means for storing a vehicle location value wherein the location value is increased by one unit when the value in said accumulator means exceeds the positive value of said constant number and is decreased by one unit when the value in said accumulator means is less than the negative value of said constant number, and

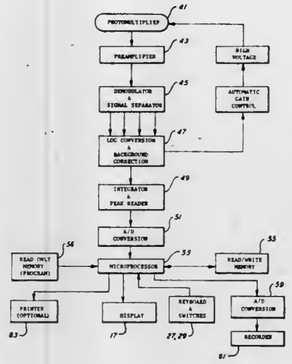
(e) means for adding said constant number to said accumulating means when the location value stored in said means for storing is decreased and subtracting said constant number from said accumulating means when the location value stored in said means for storing is increased.

4,238,830

CURVATURE CORRECTION

Hoshang A. Unvala, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 685,006, May 10, 1976, abandoned.
This application Aug. 1, 1979, Ser. No. 62,825
Int. Cl.[3] G06F *15/20*; G01J *3/42*
U.S. Cl. 364—573 **15 Claims**



8. In a photometric instrument in which radiant energy measurements are taken and used to determine a concentration, and in which the relationship between measured radiant energy values and concentration is non-linear over the full range desired to be measured, apparatus for correcting the curvature which exists in the relationship, comprising:

(a) means for making radiant energy measurements;

(b) computing means for

(1) storing the known concentration values of two measured samples of known concentration and their associated measured radiant energy values;

(2) determining two constants which are such that the excess over one of a second constant times the measured energy value divided into a first constant times the measured energy value, for each sample, is equal to the known concentration;

(3) storing the measured energy values of samples of unknown concentrations; and

(4) using said measured energy values of unknown samples and said stored constants to determine the concentration of said unknown samples; and

(c) means for storing and displaying said unknown concentration.

4,238,831

PULSE INTERPOLATION METHOD AND APPARATUS

Yuly M. Pulyer, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Sep. 1, 1978, Ser. No. 939,023
Int. Cl.[3] G06J *3/00*; H03K *13/02*
U.S. Cl. 364—608 **8 Claims**

1. A method of converting a received series of equally spaced discrete pulses, which have varying amplitudes to jointly represent an original analog signal, into an equivalent interpolated analog signal form, comprising the steps of,

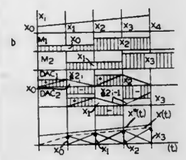
(a) successively registering each of said series of received pulses in an input register means,

(b) alternately storing the registered pulses, each converted into a preselected signal format, in a pair of memory elements alternately actuated by the successively received pulses of said series,

(c) generating two separate series of triangular signals with one series corresponding to the pulse signals successively stored in each memory element, each triangular signal having a base length equal to twice the spacing between

successive received pulses so that alternate triangular signals of the two series overlap in duration,

(d) selecting the amplitude of each triangular signal in accordance with the amplitude of the corresponding signal currently stored in the associated memory element, and



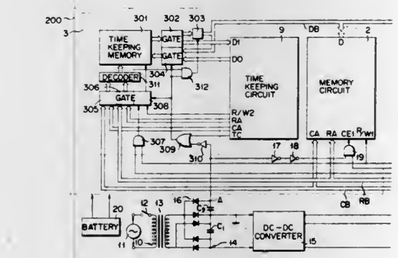
(e) summing and overlapped triangular signals of selected amplitudes from both series into a continuous analog output signal substantially equivalent to the original analog signal from which said received pulses were derived.

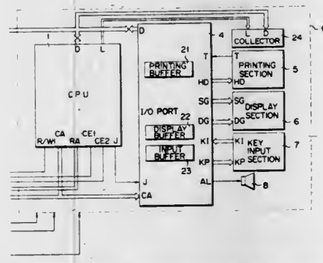
4,238,832

TIME DATA PROCESSING APPARATUS

Hanzou Tsuzuki, Higashiyamato, and Mamoru Mizuno, Yamanashi, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1979, Ser. No. 12,106
Claims priority, application Japan, Feb. 17, 1978, 53-17334; Feb. 20, 1978, 53-18390
Int. Cl.[3] G06F *7/48, 15/02*; G04B *19/30*
U.S. Cl. 364—705 **9 Claims**





1. A time data processing apparatus comprising:

a central processing unit;

a time-keeping memory for storing time data;

a time-keeping circuit coupled to said time-keeping memory for reading all the time data from said time-keeping memory during a period equal to the smallest unit of time represented by the time data, and including a means for renewing the time data read out from said time-keeping memory and writing the time data thus renewed into said time-keeping memory, without being controlled by said central processing unit; and

signal supply means coupled to said central processing unit for supplying said central processing unit with a signal which represents the period of time between the completion of operation of said time-keeping circuit and the next period equal to the smallest unit of time;

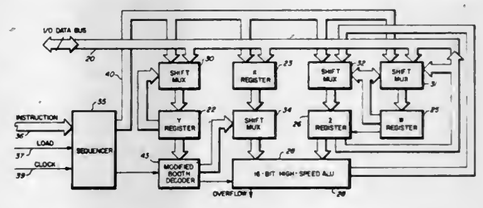
said signal from said signal supply means enabling said central processing unit to have access to the time data in said time-keeping memory when said time-keeping circuit is stopped.

4,238,833

HIGH-SPEED DIGITAL BUS-ORGANIZED MULTIPLIER/DIVIDER SYSTEM

Robert C. Ghest, Saratoga; John M. Birkner; Shlomo Waser, both of Sunnyvale, and Hua T. Chua, Cupertino, all of Calif., assignors to Monolithic Memories, Inc., Sunnyvale, Calif.

Filed Mar. 28, 1979, Ser. No. 24,540
Int. Cl.[3] G06F *7/52*
U.S. Cl. 364—760 **26 Claims**



1. A digital multiplier including in combination:

first means for receiving a plurality of multiplicand signals;

second means for receiving a plurality of multiplier signals;

decoder means coupled with predetermined ones of said multiplier signals less than the total number of said multiplier signals for producing control signals representative of the logic levels of said predetermined signals;

arithmetic logic circuit means connected to said multiplicand signals and said decoder means, and responsive to said control signals for producing a partial product of the multiplier number represeted by the predetermined multiplier signals and the multiplicand number represented by said multiplicand signals;

means coupled to said second means and to said decoder means for supplying different portions of the multiplier to the predetermined number of said multiplier signals in synchronism with the operation of said arithmetic logic circuit means; and

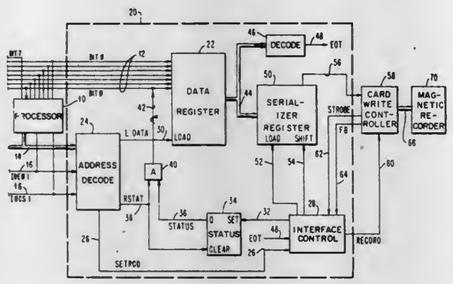
mode control means for receiving mode control input signals and coupled to said arithmetic logic circuit means and said first means for controlling said digital multiplier to operate in one of a plurality of different multiplication options, said first means including a multiplicand register which is a master/slave register with the multiplicand number stored in the master section thereof being transferred to the slave section thereof for use in multiplication operations, the multiplicand number in the slave section thereof remaining for successive operations of said digital multiplier until said multiplicand number is changed at predetermined intervals under control of said mode control means.

4,238,834

APPARATUS FOR COORDINATING REAL TIME TRANSFER OF DATA FROM A PROCESSOR TO A MAGNETIC MEDIA DEVICE

Leonard S. Yates, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1978, Ser. No. 884,087
Int. Cl.[2] G06F *5/06, 5/04, 13/00*
U.S. Cl. 364—900 **5 Claims**



1. In a text processing system, interface apparatus for real time transfer of data between a processor preparing and presenting data at irregular intervals and an output device requiring data at regular intervals wherein the longest processor interval is less than two output intervals, said interface comprising in combination:

first buffer means for receiving data from said processor;

second buffer means for receiving data from said first buffer means and connected to said output device;

means for indicating to said processor when transfer of data from said second buffer has begun; and

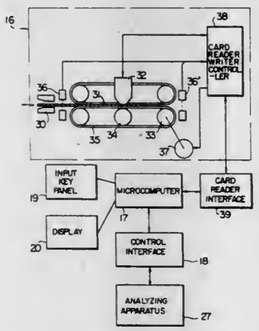
means responsive to said indicating means for allowing said processor to transfer new data to said first buffer means immediately subsequent to said beginning of transfer from said second buffer whereby said processor is free to initiate processing of a succeeding character.

4,238,835

ANALYZING APPARATUS WITH MICROCOMPUTER

Yoshio Fujii; Hiroshi Inomata; Yoshihiko Suenaga; Koji Nishiwaki, and Yohei Takashima, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 2, 1978, Ser. No. 947,833
Claims priority, application Japan, Sep. 30, 1977, 52/118164
Int. Cl.[3] G06F *1/00, 7/00*
U.S. Cl. 364—900 **9 Claims**



1. An analyzing apparatus whose analyzing operation is controlled by a microcomputer, comprising:

a magnetic card carrying information required for the operation of said analyzing apparatus;

a magnetic card reader/writer having means for loading said magnetic card therein and unloading said magnetic card therefrom for reading out said information carried by said magnetic card;

an information reading circuit delivering a data output indicative of the level of each bit in said information; and

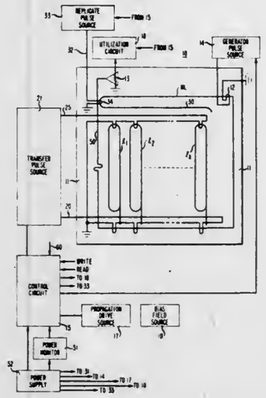
a microcomputer identifying the head of each bit in said information and receiving the bit level indicative data output of said information reading circuit at a predetermined time after the identification of the head of each bit thereby controlling the operation of said analyzing apparatus.

4,238,836

FAIL SAFE MAGNETIC BUBBLE MEMORY

Thomas M. Burford, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 7, 1979, Ser. No. 18,310
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—12 **5 Claims**



1. A magnetic bubble memory comprising a layer of material in which magnetic bubbles can be moved along paths, a plurality of closed minor loops for recirculating bubble patterns synchronously between first and second ends, the memory being characterized by means for selectively adapting ones of the paths into a closed major loop such that a bubble traveling along the major loop passes the minor loops at the first and second ends in a like order.

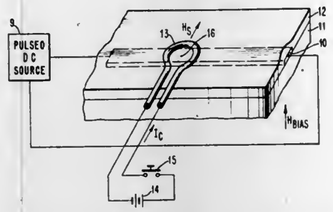
4,238,837

DOMAIN DRAG EFFECT DEVICES

John C. DeLuca, and Richard J. Gambino, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,807
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—28 **12 Claims**

1. In a magnetic bubble device comprising a magnetic bubble domain material which propagates magnetic bubble domains by means of the domain drag effect, the improvement comprising control means for generating an external magnetic bias field H_{bias} directed towards said device for controlling the rate



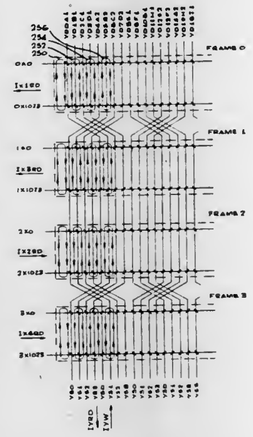
of bubble propagation in said device with said magnetic bias field H_{bias}.

4,238,838

CORE MEMORY WIRING ARRANGEMENT

Kurt Wright, Burbank, and Thomas J. Gilligan, Rolling Hills Estates, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 732,928, Oct. 15, 1976, Pat. No. 4,096,583, and Ser. No. 3,718, Jan. 15, 1979. This application May 16, 1978, Ser. No. 906,642
Int. Cl.[3] G11C *5/06*
U.S. Cl. 365—69 **8 Claims**



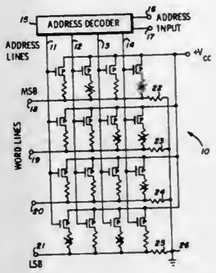
8. A two wire, one core per bit core memory comprising pairs of arrays of magnetic memory cores; a plurality of word conductors for each array, each word conductor inductively coupling a plurality of cores in an array and a plurality of digit-sense conductors coupled to carry partial selection currents in parallel equal magnitude pairs during each read and each write portion of each memory cycle, all of the digit-sense conductors being disposed in subgroup pairs arranged to provide current carrying conductor pairs in respective corresponding relative positions in the subgroups with all of the subgroup pairs having first and opposite juxtapositions in first and opposite arrays respectively of a pair of arrays to achieve noise cancellation with the two conductors of each nonselected digit-sense conductor pair having equal and balanced electrical noise signals coupled thereto from a pair of digit-sense conductors selected during a memory cycle.

4,238,839

LASER PROGRAMMABLE READ ONLY MEMORY

Thomas P. Redfern; Thomas M. Frederiksen, and Joseph J. Connolly, Jr., all of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 19, 1979, Ser. No. 31,562
Int. Cl.[3] G11C *17/00, 17/06*
U.S. Cl. 365—96 **5 Claims**



1. A laser programmable read only memory suitable for incorporation into a monolithic integrated circuit, said circuit including a plurality of transistors, each of which has a pair of controlled conduction electrodes and a control electrode, and a surrounding field oxide, said memory comprising:

a plurality of memory locations arranged in a configuration of columns and rows, each location comprising one of said transistors and severable link means coupled in series therewith;

word line means associated with each row of said configuration and coupled to each transistor in said row,

means connected to each word line means for electrically actuating said word line to a first logic state;

address line means associated with each column of said configuration, said address line means coupled to said control electrode of each of said transistors in said column, whereby when said address line is electrically operated to turn said transistors on, the transistor by way of said severable link means will actuate said word line means to a second logic state.

4,238,840

METHOD, MEDIUM AND APPARATUS FOR PRODUCING THREE DIMENSIONAL FIGURE PRODUCT

Wyn K. Swainson, Berkeley, Calif., assignor to Formigraphic Engine Corporation, Sarasota, Fla.

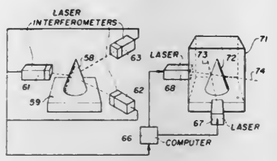
Continuation of Ser. No. 165,042, Jul. 23, 1971, Pat. No. 4,041,476, which is a continuation-in-part of Ser. No. 744,027, Jul. 11, 1968, abandoned. This application Apr. 22, 1977, Ser. No. 789,920
Claims priority, application Denmark, Jul. 12, 1967, 3611/67
Int. Cl.[2] G11C *13/04*
U.S. Cl. 365—119 **39 Claims**

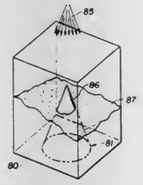
1. A three-dimensional pattern generator comprising:

a. a volume of material capable of existing in discernibly different conditions and capable of undergoing a change in properties in response to energy level changes within said volume allowing said material to effect separation corresponding to said discernibly different conditions,

b. directional means for generating within said volume said changes in energy level, and

c. control means cooperatively associated with said volume of material and said directional means for distributing said





changes in energy level within said volume in selected locations.

4,238,841

DYNAMIC SEMICONDUCTOR MEMORY READ/WRITE ACCESS CIRCUIT

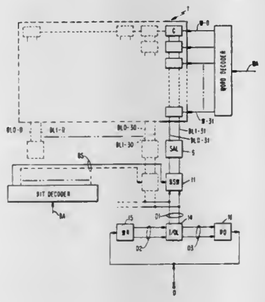
Rainer Clemen, Boeblingen; Joerg Gschwendtner, Esslingen, and Werner Haug, Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,796

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855118

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—203 **5 Claims**



1. A read/write circuit for a memory system including a matrix of dynamic memory cells arranged in columns and rows, each cell having a pair of capacitive storage nodes capable of being simultaneously coupled to a dual-rail column line in response to an addressable row selection signal, a dynamic cross-coupled sense latch circuit connected to each of said dual-rail column lines for detecting and amplifying signals coupled to said column lines and a bit switch, associated with each of said column lines, responsive to an addressable column selection signal, the improvement comprising:

a plurality of dynamic cross-coupled input/output data latches;

a dual-rail data line coupled to each of said input/output latches and to at least some of said bit switches;

a write driver circuit having an input terminal and including a dynamic cross-coupled latch coupled to each of said dual-rail data lines, said write driver being responsive to a data input signal and a first clock signal to provide for the selective discharge of one of the lines of said dual rail data line;

a read driver circuit, having a single output terminal, coupled to each of said dual-rail data lines and comprising a push-pull output driver, said output driver being responsive to a differential data signal established on said dual-rail data line;

means for enabling said sense latch circuits in response to a second clock signal subsequent to said first clock signal, said column selection signal and said row sectional signal;

means for enabling said input/output latch subsequent to said sense latch; and

means for independently enabling only one of said write driver and said read driver during a memory cycle whereby only one of said read and write drivers is enabled in conjunction with the enabling of said sense latches and said input/output latches.

4,238,842

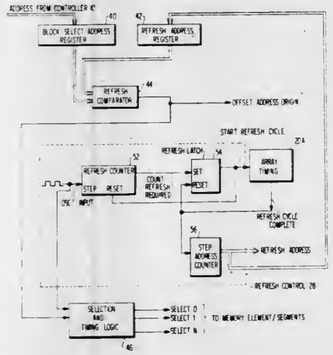
LARAM MEMORY WITH REORDERED SELECTION SEQUENCE FOR REFRESH

Frederick J. Aichelmann, Jr., Hopewell Junction, N.Y., assignor to IBM Corporation, Hopewell Junction, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,294

Int. Cl.³ G11C *8/00*

U.S. Cl. 365—222 **27 Claims**



24. A method for transferring blocks of data of predetermined size to a first memory from a second memory having a plurality of memory elements which are refreshed at predetermined time intervals, comprising the steps of:

(a) reading data out of said memory elements in a predetermined sequence;

(b) while simultaneously determining whether the next memory element in sequence is to be refreshed during the next subsequent readout time interval;

(c) skipping reading out data from a memory element which is to be refreshed during said time interval;

(d) reading out data from another memory element during said time interval; and

(e) reading data out from the skipped memory element during an interval when refresh is not required.

4,238,843

DISC-SHAPED OPTICALLY READABLE RECORD CARRIER USED AS A DATA STORAGE MEDIUM

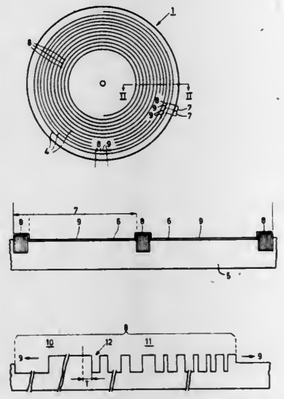
Marino G. Carasso; Johannes J. Verboom, and Maarten R. de Haan, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,221

Claims priority, application Netherlands, Nov. 6, 1978, 7811003

Int. Cl.³ G11C *13/04*; G11B *7/00*

U.S. Cl. 365—234 **7 Claims**



1. An improved disc-shaped record carrier, provided with substantially concentric information tracks, which per track circumference are divided into a number of sectors, each sector being divided into a data section, in which optically detectable information can be recorded with the aid of a radiation beam, and a synchronizing section for defining the sector boundaries, the improvement being characterized in that the synchronizing section comprises an optically detectable relief structure with, in this order, an indicator portion and an address portion, the address of the relevant sector being stored in digitally coded form in the address portion and the indicator portion having such a relief structure that cooperation with a read beam moving relatively with respect to said record carrier results in an indicator signal which is situated in a frequency range which at the most contains only very weak frequency components of the digital signal resulting from cooperation of the read beam with the address portion.

4,238,844

DISPLACED POSITION DETECTING DEVICE

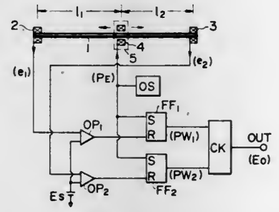
Toshitsugu Ueda; Seiki Ra, and Masanori Noguchi, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,429

Claims priority, application Japan, Feb. 28, 1978, 53-22282; Feb. 28, 1978, 53-22289

Int. Cl.³ G01S *15/08*

U.S. Cl. 367—117 **25 Claims**



1. A displaced position detecting device comprising:

a wire composed of a magnetostrictive material;

first and second receiving means coupled to said magnetostrictive wire;

an exciting means for applying an exciting signal to the wire and disposed between the first and second receiving means;

means for changing the distance between the exciting means and at least one of said receiving means in accordance with a mechanical displacement;

means for developing two signals representing the time periods required for said exciting signal to reach the first and second receiving means respectively; and

circuit means responsive to said two signals for producing a signal representative of said mechanical displacement.

4,238,845

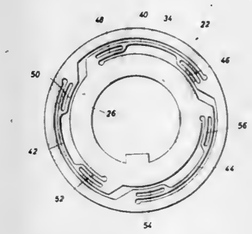
GEOPHONE SPRINGS

Samuel E. Haggard; Travis E. Riley, both of Houston, Tex., and Eugene F. Florian, deceased, late of Leona, Tex. (by Dorothy Sue Florian, executrix), assignors to Mark Products, Incorporated, Houston, Tex.

Filed Apr. 10, 1979, Ser. No. 28,276

Int. Cl.² G01V *1/16*

U.S. Cl. 367—183 **2 Claims**



1. A diaphragm spring for a geophone made from a relatively thin sheet of spring material comprising a flat sided, relatively thin, annular inner portion and a radially spaced flat sided, relatively thin annular outer portion, that is concentric to the inner portion, a plurality of spring arms connected to and extending between the inner and outer annular portions to resisliently resist relative movement of the inner and outer portions along an axis perpendicular to the flat sides of the inner and outer portions, said spring arms being generally rectanular in cross section having relatively narrow flat sides in the plane of the sides of the annular portions, and a plurality of support arms, separate and distinct from said spring arms each being generally rectangular in cross-section having relatively narrow flat sides, in the plane of the sides of the annular portions, each support arm having one end connected to one of the inner and outer portions and its other end connected to the edge of a spring arm intermediate the ends of said spring arms to increase the ratio of the resonant frequency of the spring in a direction transverse the concentric axis of the annular portions to the resonent frequency of the spring along the concentric axis.

4,238,846

TIMING DEVICE

Lyndon O. Barton, 26 Shull Dr., Newark, Del. 19711

Filed Sep. 21, 1979, Ser. No. 77,561

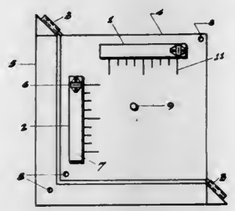
Int. Cl.³ G04F *1/04, 3/00*

U.S. Cl. 368—93 **3 Claims**

1. A timing device comprising a hinged frame on which are mounted two gravity actuated timers, arranged perpendicularly to each other, a right angular base having one leg vertical and the other leg horizontal, and a securing device to measure and control playing time in concentration games such as Scrabble, chess, checkers, and the like, wherein;

a. said frame is arranged with respect to said base such that one timer is parallel to the horizontal leg of said base, and the other timer parallel to the vertical leg of said base,

b. said frame is hinged to both ends of said base along a common diagonal such that it is rotatable within said base about said diagonal,



c. said frame is held to said base, using said securing device, such that both frame and base are movable as an integral unit,

d. said base is rotatable either clockwise or counter-clockwise, in the vertical plane from one leg to to the other.

4,238,847

ELECTRONIC WATCH FOR YACHT RACES

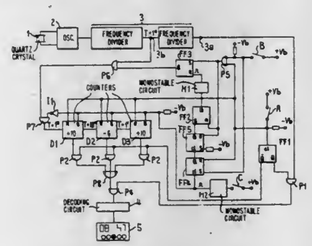
Thomas P. Daly, Hauterive, Switzerland, assignor to Ebauches Electroniques SA., Marin, Switzerland

Filed May 19, 1978, Ser. No. 907,700

Claims priority, application Switzerland, Jun. 3, 1977, 6859/77

Int. Cl.³ G04F *8/00*

U.S. Cl. 368—89 **5 Claims**



1. An electronic watch for yacht races with a display device and an integrated circuit comprising:

an electronic circuit for generating time measurement signals;

a counting circuit coupled to said time measurement circuit and responsive to said time measurement signals for producing signals representative of the countdown of time sequences preceeding the start of a race in response to said time measurement signals;

a logic circuit connected to said counting circuit, said time measurment circuit, and said display device for controlling said time sequences, said logic circuit being receptive of said time measurement signals and said counting circuit signals for delivering one of said signals to said display device;

first control means connected to said logic circuit for selecting between said time measurement signals and said counting circuit signals and for causing said logic circuit to deliver said selected signal to said display device thereby selecting the state of the electronic watch corresponding to a watch function and a yachting counter function respectively, said first control means further having means coupled with said counting circuit for simultaneously starting the countdown of a first of said time sequences in said counting circuit;

second control means connected to said logic circuit for starting the countdown of a second of said time sequences in said counting circuit; and

third control means connected to said logic circuit for selecting a first and second state of said counting circuit, said third control means having means for returning said second time sequence countdown in said counting circuit first state to a predetermined value equal to the time remaining before the start of the race and immediately resuming said second time sequence countdown, said third control means further having means for simultaneously stopping said second time sequence countdown after returning said second time sequence countdown in said counting circuit second state to said predetermined value, thereby postponing the start of the countdown of said second time sequence from said predetermined value until said second time sequence is started by actuation of said second control means; and

said display device including means responsive to said countdown signals for displaying, during said second time sequence, the time remaining before the start of the race in both digital and semi-analog form in combination on said display device.

4,238,848

ELECTRONIC TIMEPIECE

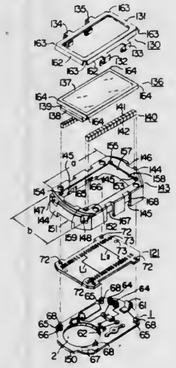
Isao Yamaguchi, Ome; Heiji Hashizume, Higashimurayama, both of Japan; Akira Nakazawa, Balmain East, Australia, and Hirosige Sugihara, Kokubunji, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 17, 1977, Ser. No. 760,123

Claims priority, application Japan, Jan. 20, 1976, 51-4646

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—276 **11 Claims**



1. An electronic timepiece module to be assembled in a watch case comprising:

a first wiring board having first and second principal surfaces at opposite sides thereof, said first principal surface having electronic parts and interconnections for constituting a timepiece circuit, said second principal surface being substantially flat, and said first wiring board having a hole at a portion thereof for mounting a battery therethrough for energizing said timepiece circuit;

a second wiring board having first and second parallel principal surfaces, said second wiring board being substantially sized to said first wiring board and being positioned spaced apart from said first wiring board so as to oppose said first principal surface thereof to said first principal surface of the first wiring board, said first principal surface of the second wiring board having a power source terminal at a portion thereof corresponding to said portion of said first wiring board for connecting said battery and an integrated circuit for said timepiece circuit, said second principal surface of the second wiring board having output wiring terminals for deriving electric output signals of said timepiece circuit, the distance between said first principal surface of the second wiring board and said second principal surface of the first wiring board being substantially equal to the thickness of said battery mounted through said hole of the first wiring board, and said second principal surface of the second wiring board being substantially flat;

a first resilient member having first contact means located at said first principal surface of said first wiring board and second contact means located at said first principal surface of the second wiring board for electrically and elastically connecting said first wiring board to said second wiring board;

display means for displaying the time of the timepiece including a first principal surface having a display panel for giving display and a second principal surface having input wiring terminals for receiving said electric output signals of the timepiece circuit;

a second resilient member having first contact means located at said input wiring terminals of the display means and second contact means located at said output wiring terminals of the second wiring board to said display means; and

assembling means for stacking said first and second wiring boards and said display means for elastically holding them together in cooperation with said first and second resilient members.

4,238,849

METHOD OF AND SYSTEM FOR TRANSMITTING TWO DIFFERENT MESSAGES ON A CARRIER WAVE OVER A SINGLE TRANSMISSION CHANNEL OF PREDETERMINED BANDWIDTH

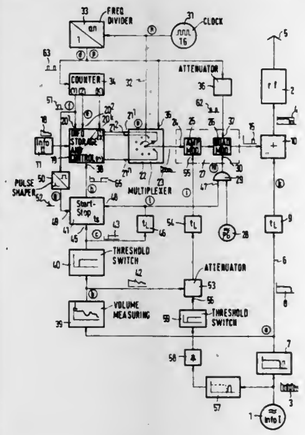
Gerhard-Günter Gassmann, Esslingen-Berkheim, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 19, 1978, Ser. No. 970,835

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757171

Int. Cl.³ H04J *9/00, 11/00*

U.S. Cl. 370—11 **26 Claims**



22. A receiver for use in a transmission system of the type that includes a transmitter having means for providing a first message, a bandpass filter for passing said first message in a baseband, a multiplexer for multiplexing information units of a second message, a clock generator for stepping the multiplexer, a frequency divider connected to the clock generator and generating sync signals, a pilot generator for generating at least one pilot signal, a modulating arrangement for modulating the multiplexed information units and the sync signals upon the pilot signals, and an adding circuit which adds the information contents for transmission wherein said receiver comprises a radio-frequency unit, an audio-frequency unit, a demultiplexer unit for receiving the second message, said demultiplexer unit including a pilot-band filter, a demodulator for recovering the information units of the second message and of the sync signals, a demultiplexer operating at the same stepping rate as that of the multiplexer, a following storage-type output circuit, and a clock generator for controlling the demultiplexer steps which is capable of being synchronized by the sync signals.

4,238,850

TRANSMITTER/RECEIVER FOR SINGLE CHANNEL DUPLEX COMMUNICATION SYSTEM

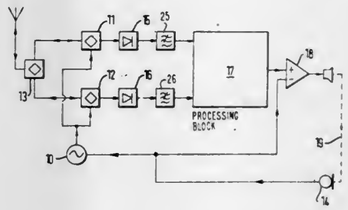
Ian A. W. Vance, Newport, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,764

Claims priority, application United Kingdom, Dec. 1, 1977, 50065/77

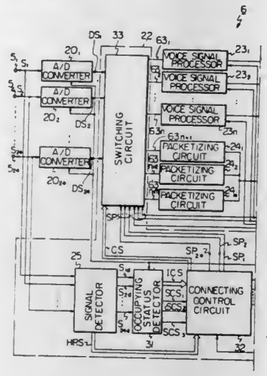
Int. Cl.³ H04B *1/58*

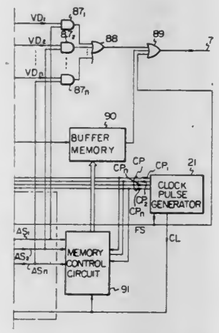
U.S. Cl. 370—27 **4 Claims**



1. A transmitter/receiver for a single channel duplex communication system including a local oscillator for generating a frequency which is the center frequency of the single channel signals, means for frequency modulating the frequency output of said local oscillator with a first audio frequency signal, first and second means for directionally combining the local oscillator output in phase quadrature with audio frequency modulated signals received from the single channel, whereby a major portion of the local oscillator output is transmitted from each combining means to the single channel and a minor portion of the local oscillator output together with the received signals is applied from each combining means to first and second mixing means respectively, means for low pass filtering each of the outputs of the first and second mixing means, means for amplifying each of the outputs of the low pass filtering means to a constant level, separate means for differentiating each of the outputs of the amplifying means, means for multiplying the output of each differentiating means with the input of another differentiating means to provide (a) demodulated second audio frequency signal, signal means for subtracting a proportion of the first audio frequency signal from the demodulated second signal and means for feeding the output of the local oscillator in combination with a phase quadrature output of the local oscillator through said combining means to an aerial via which signals which are frequency-modulated with the second audio frequency are received.

4,238,851
PACKET TRANSMISSION SYSTEM
Osamu Takahashi, Sagamihara, and Isao Fudemoto, Ayase, both of Japan, assignors to Fujitsu Limited, KawasAki, Japan
Filed May 7, 1979, Ser. No. 36,819
Claims priority, application Japan, May 8, 1978, 53-53776
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—94 **11 Claims**

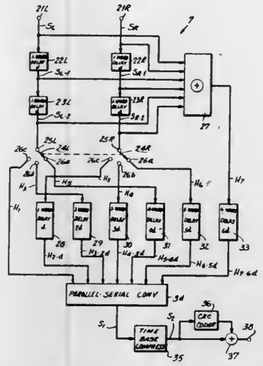




1. A packet transmission system, having a clearing signal input and a call origination signal input, for packetizing and transmitting telephone signals, including voice signals and data signals, said telephone signals being transmitted in transmission frames, comprising:
- a connecting means for allocating each of the voice signals to a predetermined address in each of the transmission frames, and for causing said each of the voice signals to occupy the predetermined address after a particular call-origination signal which indicates the presence of said voice signal is detected; and
- a releasing means, operatively connected to said connecting means, for releasing said predetermined address from occupied status when a clearing signal, which indicates clearing of said voice signal is detected.

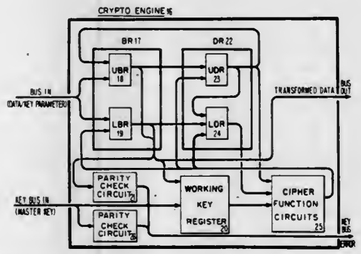
4,238,852
ERROR CORRECTING SYSTEM
Akira Iga, Kawasaki, and Toshitada Doi, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Apr. 16, 1979, Ser. No. 30,652
Claims priority, application Japan, Apr. 17, 1978, 53-44995
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—40 **6 Claims**

1. A method of processing sequentially transferred digital information words, said method comprising the steps of: forming a block of a plurality of said information words; forming and adding an error-correcting word to said block, said error correcting word being capable of reproducing any one of said information words in said block; time-interleaving each of said information words and said error correcting word in said block



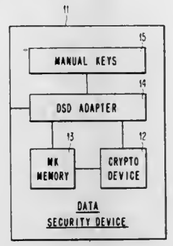
into time-interleaved blocks distributed over a predetermined time; adding an error-detecting code to at least one of said time-interleaving blocks; and transmitting said at least one time-interleaved block and said error-detecting code associated therewith.

4,238,853
CRYPTOGRAPHIC COMMUNICATION SECURITY FOR SINGLE DOMAIN NETWORKS
William F. Ehrsam, Kingston; Robert C. Elander, Saugerties; Stephen M. Matyas, Poughkeepsie; Carl H. W. Meyer, Kingston; Robert L. Powers, West Hurley; Paul N. Prentice, Hyde Park; John L. Smith, and Walter L. Tuchman, both of Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 5, 1977, Ser. No. 857,532
Int. Cl.³ H04L *9/00*
U.S. Cl. 375—2 **49 Claims**



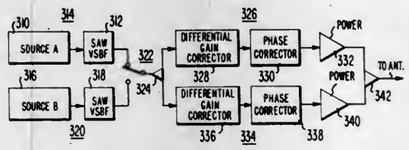
6. A data security device for performing a cryptographic operation comprising:
- key storage means storing a multi-bit key encrypting key,
- working key storage means,
- means causing a variant of said key encrypting key to be transferred from said key storage means to said working key storage means as a working key,
- means providing input data,
- cipher means operable to encipher said input data under control of said working key to obtain ciphertext representing a random number.

4,238,854
CRYPTOGRAPHIC FILE SECURITY FOR SINGLE DOMAIN NETWORKS
William F. Ehrsam, Kingston; Robert C. Elander, Saugerties; Stephen M. Matyas, Poughkeepsie; Carl H. W. Meyer, Kingston; John L. Smith, and Walter L. Tuchman, both of Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 5, 1977, Ser. No. 857,534
Int. Cl.³ H04L *9/04*
U.S. Cl. 375—2 **42 Claims**



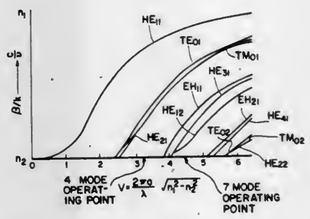
38. In a data processing network having a host system which provides file security for a data file by an arrangement in which a data encrypting key is used to protect file data and a key encrypting key is used to protect said data encrypting key, the method of generating said data encrypting key in protected form comprising the steps of:
- providing a host master key,
- providing a random number, and
- carrying out an encipher operation to encipher said random number under control of said host master key to obtain ciphertext representing said data encrypting key enciphered under said key encrypting key.

4,238,855
PARALLEL OPERATION OF MULTIPLE TV TRANSMITTERS
Ronald W. Zborowski, Houston, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Sep. 19, 1979, Ser. No. 76,850
Int. Cl.³ H04B *1/02;* **H04N** *5/38*
U.S. Cl. 455—103 **9 Claims**



7. A broadcast transmitter, comprising:
- first and second sources of broadband signals;
- first and second high power signal translating stages subjected signals being translated thereby to distortion, the outputs of which are combined to form an output terminal of the transmitter;
- switch and signal splitting means coupled to said first and second sources of signals and to said first and second high power signal translating stages for selecting the signals of one of said first and second sources and splitting the selected signal into first and second equal portions which are applied to said first and second high-power signal translating stages, respectively;
- first and second filter means for band-limiting said signals, said filter means being subject to phase differences therebetween;
- first and second distortion correction means for predistorting the signals applied to said high-power signal translating stages for compensating for the distortion introduced by said high-power signal translating stages;
- wherein the improvement lies in that in order to avoid cancellation of said combined output signal said first and second filter means are coupled between said first and second signal sources, respectively, and said switch and signal splitting means whereby said selected signal is filtered by only one of said first and second filter means for eliminating phase errors between the signals at said outputs of the translating stages, and in that said first and second distortion correction means are coupled between said switch and signal splitting means and said first and second high-power signal translating stages, respectively, whereby said first and second distortion correcting means each compensate only one of said high power signal translating stages.

4,238,856
FIBER-OPTIC ACOUSTIC SENSOR
Joseph A. Bucaro, Herndon, Va., and Edward F. Carome, Palo Alto, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 24, 1979, Ser. No. 6,149
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—614 **6 Claims**



1. An optic fiber acoustic wave sensor which comprises:
- a single radiation-transmitting optic fiber, an optical characteristic of which is sensitivity to acoustical waves,
- said optic fiber being constructed to reflect internally propagating optical radiation at both ends so that beat oscillations are produced,
- said optic fiber including a coil of any geometry along its length;
- means for directing optical radiation into one end of said optic fiber;
- means for detecting optical radiation beat oscillations passing through said optic fiber and for converting said optical radiation to an electrical signal output; and
- means for monitoring the output signals due to acoustical waves incident on said coil.

DESIGNS

DECEMBER 9, 1980

257,596

WORK APRON OR THE LIKE

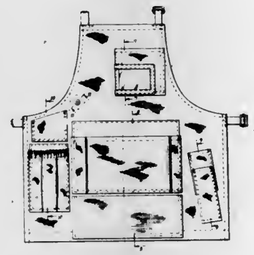
Percy Rosenbloom, III, Jacksonville, Fla., assignor to Technical Materials, Inc., Jacksonville, Fla.

Filed Apr. 9, 1979, Ser. No. 28,280

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—229



257,597

CLEAT PLATE FOR A SPORT SHOE SOLE

Yoshio Ueno, Kobe, Japan, assignor to Asics Corporation, Kobe, Japan

Filed Apr. 10, 1978, Ser. No. 895,286

Claims priority, application Japan, Dec. 13, 1977, 52-49299

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—317



257,598

FLEXIBLE COVERING FOR PARTITIONS OR THE LIKE

Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.

Filed Oct. 4, 1978, Ser. No. 948,510

Term of patent 14 years

Int. Cl. D6—*06*

U.S. Cl. D6—139



257,599

FLEXIBLE COVERING FOR PARTITIONS OR THE LIKE

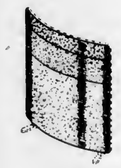
Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.

Filed Oct. 4, 1978, Ser. No. 948,511

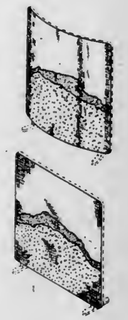
Term of patent 14 years

Int. Cl. D6—*06*

U.S. Cl. D6—139



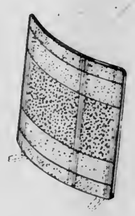
257,600
FLEXIBLE COVERING FOR PARTITIONS OR THE LIKE
Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.
Filed Oct. 4, 1978, Ser. No. 948,514
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139



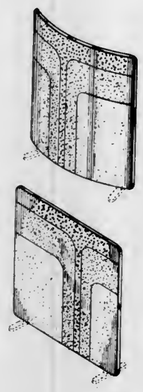
257,601
PANEL FOR PARTITIONS OR THE LIKE
Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.
Filed Oct. 4, 1978, Ser. No. 948,516
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139



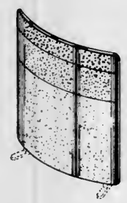
257,602
PANEL FOR PARTITIONS OR THE LIKE
Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.
Filed Oct. 4, 1978, Ser. No. 948,517
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139



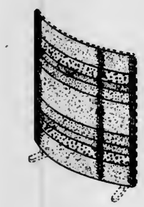
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PANEL FOR PARTITIONS OR THE LIKE
Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.
Filed Oct. 4, 1978, Ser. No. 948,519
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139



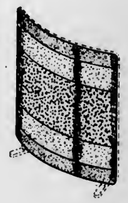
257,604
PANEL FOR PARTITIONS OR THE LIKE
Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.
Filed Oct. 4, 1978, Ser. No. 948,520
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139



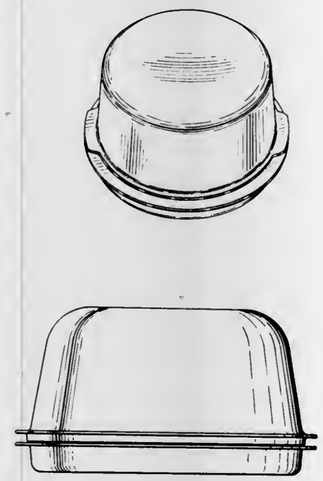
257,605
FLEXIBLE COVERING FOR PARTITIONS OR THE LIKE
Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.
Filed Oct. 4, 1978, Ser. No. 948,639
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139



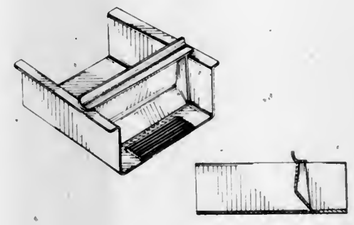
257,606
FLEXIBLE COVERING FOR PARTITIONS OR THE LIKE
Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.
Filed Oct. 4, 1978, Ser. No. 948,642
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139



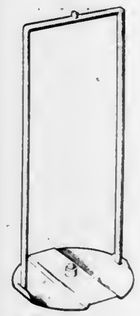
257,607
MICROWAVE COOKING PAN AND COVER
Franklin G. Smith, 2169 NW. Vaughn St., Portland, Oreg. 97210
Filed May 24, 1978, Ser. No. 909,179
Term of patent 14 years
Int. Cl. D07—*01, 02*
U.S. Cl. D7—17



257,608
TAMALE MAKING APPARATUS
Miguel C. Villalpando, 7501 W. Osborn, Phoenix, Ariz. 85033
Filed Jan. 2, 1979, Ser. No. 293
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—43



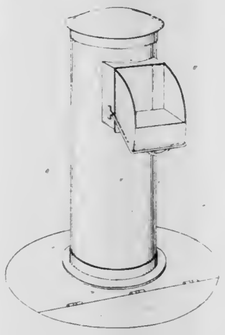
257,609
ROTATABLE CARRIER FOR A CARRIAGE IN A BAKING-, ROASTING- OR SIMILAR OVEN
Nils Eliasson, Fristad, Sweden, assignor to A B Svenska Bakugnsfabriken, Fristad, Sweden
Filed Mar. 28, 1978, Ser. No. 891,157
Claims priority, application Sweden, Sep. 30, 1977, 771966
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—129



257,610
KNIFE
William J. Knope, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed May 23, 1979, Ser. No. 41,723
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



257,611
FREE-STANDING REFUSE CHUTE
Leif S. Bondeson, Malmo, Sweden, assignor to Platmanufaktur AB, Malmo, Sweden
Filed Jun. 5, 1978, Ser. No. 912,590
Claims priority, application Sweden, Dec. 7, 1977, 77-2542
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—194



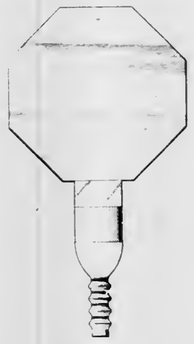
257,612
SIDE FOLDING POCKET KNIFE
Jerry H. Goldin, 2865 El Dorado Pl., Snellville, Ga. 30278, and Walter W. Collins, Rte. 4, P.O. Box 10311, Rock Hill, S.C. 29730
Filed Aug. 11, 1978, Ser. No. 933,119
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—99



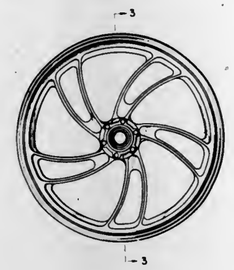
257,613
EXTENSION CORD HOLDER
Manfred Gruenewald, Woodside, N.Y., assignor to Excel Plastics Products, Inc., Jersey City, N.J.
Filed Jun. 23, 1978, Ser. No. 918,657
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—359



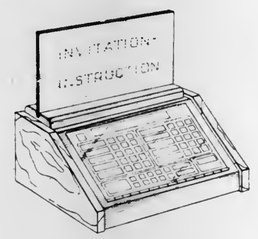
257,614
SIGNAL WAND
Leah R. Branner, 15-10900 No. 3 Rd., Richmond, British Columbia, Canada (V7A 1X1), and Lea Carrothers, 27908 N. Honeycomb, Saugus, Calif. 91350
Filed Feb. 22, 1979, Ser. No. 13,927
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—114



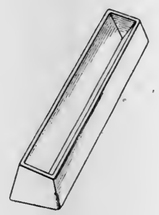
257,615
WHEEL FOR MOTORCYCLE
Tatsuo Horikoshi, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Oct. 11, 1979, Ser. No. 84,057
Claims priority, application Japan, Apr. 14, 1979, 54-15193
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



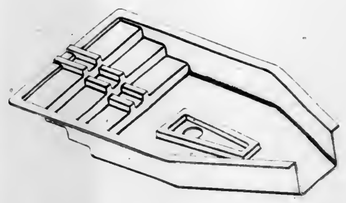
257,616
CUSTOMER SATISFACTION TERMINAL, OR THE LIKE
Ernest R. Cadotte, Knoxville, Tenn.; Gerald P. Hester, and Martin D. Husted, both of Santa Ana, Calif., assignors to MSI Data Corporation
Filed Oct. 13, 1978, Ser. No. 951,239
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45



257,617
GEM HOLDER FOR COLOR EVALUATING
Michael Z. Wolkenfeld, 1235 S. Smithwood, Los Angeles, Calif. 90035
Filed Nov. 20, 1978, Ser. No. 961,959
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—140



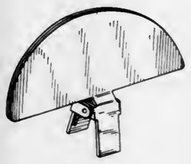
257,618
ENTRY POOL FOR AN AMUSEMENT WATER SLIDE
Robert H. Brown, 874 E. Woodward Rd., Manteca, Calif. 95336
Filed Jan. 23, 1979, Ser. No. 5,782
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—252



257,619
TRACKING LINE STORAGE CONTAINER FOR A BOW
Robert E. Eastman, II, 1232 Briarcliffe, Flint, Mich. 48504, and Dale W. Gray, 3171 W. Reid Rd., Swartz Creek, Mich. 48473
Filed Feb. 26, 1979, Ser. No. 15,329
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—5



257,620
HAIR CURL PROTECTOR
Lenore R. Chartier, 27932 Torroba, Mission Viejo, Calif. 92691
Filed May 16, 1979, Ser. No. 39,591
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—40



LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 9TH DAY OF DECEMBER, 1980

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Abe, Nobuo; Yamazaki, Susumu; and Kanamori, Isao, to Hitachi, Ltd. Hermetic motor-compressor. 4,238,172, Cl. 417-312.000.

Abendroth, Werner, to Carl Still, Firma. Maintenance and repair station for charging cars of coke oven batteries. 4,238,293, Cl. 202-270.000.

Abts, Leigh R., to Rhode Island Hospital. Ultrasonic particulate sensing. 4,237,720, Cl. 73-19.000.

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Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., 4,237,927, Cl. 137-587.000.

Achari, Achyuta, to Ford Motor Company. Exhaust gas sensor electrode improvement. 4,237,722, Cl. 73-23.000.

Ackerman, Thomas: *See—*
Bonacci, John C.; Otchy, Thomas G.; and Ackerman, Thomas, 4,238,468, Cl. 423-359.000.

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Agritec, Inc.: *See—*
Durham, Robert L.; and McKenzie, John H., 4,238,374, Cl. 260-17.4GC.

Ahrens, Frederick W.; and Kartsounes, George T., to United States of America, Energy. Air ejector augmented compressed air energy storage system. 4,237,692, Cl. 60-659.000.

Aichelmann, Frederick J., Jr., to International Business Machines Corporation. LARAM Memory with reordered selection sequence for refresh. 4,238,842, Cl. 365-222.000.

Aichert, Hans; Dietrich, Walter; Stark, Friedrich; and Stephan, Herbert, to Leybold-Heraeus GmbH. Method and apparatus for vacuum depositing thin coatings using electron beams. 4,238,525,, Cl. 427-42.000.

Aikawa, Akira: *See—*
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Aiken, John E.; and Didycz, William J., to United States Steel Corporation. Waste gas purification systems and methods. 4,238,460, Cl. 423-210.000.

Air Products and Chemicals, Inc.: *See—*
Longsworth, Ralph C.; and Chalmers, Matthew G., 4,237,699, Cl. 62-514.0JT.

Air Resources, Inc.: *See—*
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Airco, Inc.: *See—*
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Aisin Seiki Kabushiki Kaisha: *See—*
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Aitken, James E.; Hall, Peter S.; and James, James R., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Gritain and Northern Ireland, The. Stripline antennae. 4,238,798, Cl. 343-700.0MS.

Aizawa, Hiroshi: *See—*
Uchiyama, Takashi; Ohtaki, Shohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; and Aizawa, Hiroshi, 4,238,149, Cl. 354-128.000.

Aizawa, Kenshiro; and Okada, Hisashi, to Nippon Gakki Seizo Kabushiki Kaisha. Pickup cartridge for reproducing signals recorded on a 45—45 stereophonic record disk. 4,238,646, Cl. 179-100.41D.

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Aktieselskabet MEC Makanisk Elektrisk Compagni af 1975: *See—*
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Akzona Incorporated: *See—*
Zengel, Hans; Bergfeld, Manfred; Zielke, Rainer; and Klimesch, Erich, 4,238,404, Cl. 260-453.00P.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Ammoniated silica-alumina gel and catalyst containing the same and processes for producing same. 4,238,360, Cl. 252-438.000.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Ammoniated silica-alumina gel and catalyst containing the same and processes for producing same. 4,238,361, Cl. 252-438.000.

Alberto-Culver Company: *See—*
Evans, Gregory S.; and Jembrzycki, Corinne R., 4,238,509, Cl. 424-358.000.

Albro, Phillip W.; Chae, Kun; Luster, Michael I.; and McKinney, James D., to United States of America, America. Radioimmunoassay for chlorinated dibenzo-p-dioxins. 4,238,472, Cl. 424-1.000.

Alexander, Donald W. Knockdown sawhorse bracket construction. 4,238,001, Cl. 182-153.000.

Alfa Laval AB: *See—*
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Alfes, Franz; Jacob, Wolfgang; Meyer, Karl-Heinrich; and Bottenbruch, Ludwig, to Bayer Aktiengesellschaft. Polyarylamide, their production and their use as absorbers for ultraviolet rays. 4,238,351, Cl. 252-403.000.

Alford, John A., to Westvaco Corporation. Disodium ethoxylated rosin half esters of sulfosuccinic acid as foam stabilizers for latices and compositions containing same. 4,238,380, Cl. 260-29.7SQ.

Allain, Ronald J.: *See—*
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Allegheny Ludlum Steel Corporation: *See—*
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Allen, Douglas E. Combination tiller and cultivator and reversible drive assembly therefor. 4,237,983, Cl. 172-42.000.

Allen, Reginald A., to TRW Inc. Latch circuit for digital charge coupled systems. 4,238,693, Cl. 307-221.00D.

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Altmann, Jurgen; Sanke, Heidrun; Schoppe, Gunter; and Schutt, Wolfgang, to Jenoptik Jena G.m.b.H. Arrangement for measuring the mobility of image points of a video image. 4,238,767, Cl. 358-107.000.

Alza Corporation: *See—*
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Anderson, John E., to Phillips Petroleum Company. Control of a fractional distillation column. 4,238,212, Cl. 62-37.000.

Anderson, Scott. Apparatus for manufacturing high-purity sodium amalgam particles. 4,238,173, Cl. 425-6.000.

Anderson, Thomas J., to Goodyear Tire & Rubber Company, The. Vulcanizable shoe soling composition. 4,238,383, Cl. 260-33.6AQ.

Anderson, Wilfred P. Burn-in knife with edge guide. 4,238,664, Cl. 219-230.000.

Andre, Willard E.; Clausen, Andrew, Jr.; and Hultsman, Ben B., to Southern California Gas Company. Heat transfer element to replace electrical heating element. 4,237,969, Cl. 165-71.000.

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Angelo, Raymond W.; Poliak, Richard M.; and Susko, John R., to International Business Machines Corporation. Polyimide coating process and material. 4,238,528, Cl. 427-96.000.

Anger, Klaus; Frosien, Juergen; and Lischke, Burkhard, to Siemens Aktiengesellschaft. Method and device for setting and correcting errors of an electron optical condenser of a microprojector. 4,238,680, Cl. 250-397.000.

Anikin, Alexandr A.; But, Vladimir G.; Nikolaev, Vladimir P.; and Silvanovich, Anatoly A. Drive of nuclear reactor S control element. 4,238,288, Cl. 176-36.00R.

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Antos, George J., to UOP Inc. Acidic multimetallic catalytic composite. 4,238,365, Cl. 252-441.000.

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Aupac Kabushiki Kaisha: *See—*
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Barieux, Jean-Jacques; Dubroeucq, Marie-Christine; and Rocquet, Francois, to Pharmindustrie. Process for the isomerization of derivatives of 3-vinyl-piperidine. 4,238,612, Cl. 546-153.000.

Barrella, Joseph N., to Duracell International Inc. Abuse resistant active metal anode/fluid cathode depolarized cells. 4,238,554, Cl. 429-105.000.

Barthruff, Otto, to Robert Bosch GmbH. Electrically controllable setting device. 4,237,742, Cl. 74-89.190.

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Battrick, Calvin H., to Troutt, Raymond, a part interest. Universal spud wrench. 4,237,754, Cl. 81-71.000.

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Ax, Wolfgang; Bauer, Hartwig W.; and Schottler, Sabine, 4,238,474, Cl. 424-12.000.

Bauer, Kurt; Molleken, Reiner; Wedemeyer, Karlfried; and Fiege, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of a mixture of 2-and 4-hydroxybenzyl alcohol. 4,238,629, Cl. 568-764.000.

Bauer, Werner R., to Robertshaw Controls Company. Reversing valve construction and parts therefor and methods of making the same. 4,237,933, Cl. 137-625.630.

Bauer, William C. Solar energy collector. 4,237,867, Cl. 126-441.000.

Baugh, James D.; Smith, Stephen; and Shaw, Terrence M., to Cummins Engine Company, Inc. Composite engine block having high strength to weight ratio. 4,237,847, Cl. 123-195.00R.

Baumann, Heinz, to Siemens Aktiengesellschaft. X-ray diagnostic generator comprising an oil-filled tank with a high voltage transformer and a high voltage rectifier, and an x-ray tube. 4,238,683, Cl. 250-421.000.

Baumgartner, Friedrich: *See—*
Weiss, Franz; Waisnix, Franz; Baumgartner, Friedrich; and Zach, Werner, 4,238,076, Cl. 239-676.000.

Baxter Travenol Laboratories, Inc.: *See—*
Ruschke, Ricky R., 4,238,207, Cl. 55-159.000.

Bayer Aktiengesellschaft: *See—*
Alfes, Franz; Jacob, Wolfgang; Meyer, Karl-Heinrich; and Bottenbruch, Ludwig, 4,238,351, Cl. 252-403.000.
Bauer, Kurt; Molleken, Reiner; Wedemeyer, Karlfried; and Fiege, Helmut, 4,238,629, Cl. 568-764.000.
Fauss, Rudolf; Wagner, Kuno; and Mazanek, Jan, 4,238,407, Cl. 260-465.00E.
Fiege, Helmut; and Wedemeyer, Karlfried, 4,238,625, Cl. 562-421.000.
Findeisen, Kurt; and Schwarz, Herbert, 4,238,412, Cl. 260-545.00R.
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,238,501, Cl. 424-283.000.
Lindner, Wolfgang; and Lutkecosmann, Herbert, 4,237,758, Cl. 83-403.000.
Markusch, Peter; Noll, Klaus; and Dieterich, Dieter, 4,238,378, Cl. 260-29.2TN.
Regel, Erik; Buchel, Karl H.; Draber, Wilfried; Plempel, Manfred; and Haller, Ingo, 4,238,498, Cl. 424-273.00R.
Scholz, Karl-Heinz; Hartmann, Willy; and Heine, Hans-Georg, 4,238,618, Cl. 548-320.000.

Bayer, George S., to TRW Inc. Transformer core gapping and lead anchoring arrangement. 4,238,753, Cl. 336-178.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Hartig, Fritz; and Hofmann, Reinhard, 4,237,832, Cl. 123-59.0EC.

BBC Brown, Boveri & Company, Limited: *See—*
Bodmer, Maurice, 4,237,691, Cl. 60-646.000.

Beamco Co., Inc.: *See—*
Breslin, John J.; and Lee, David K., 4,238,689, Cl. 307-42.000.

Beane, Russell R.; and Mann, Brian M., to Pacesetter Systems, Inc. Battery life extender. 4,237,897, Cl. 128-419.0PG.

Beaumont, Gerald P.: *See—*
Peterson, Robert L.; Beaumont, Gerald P.; and Johnson, Bruce P., 4,237,726, Cl. 73-73.000.

Becton, Dickinson and Company: *See—*
Lynn, Robert W., 4,238,568, Cl. 435-285.000.
Reese, Max G.; and Johnson, LaVell R., 4,238,471, Cl. 424-1.000.

Behringwerke Aktiengesellschaft: *See—*
Ax, Wolfgang; Bauer, Hartwig W.; and Schottler, Sabine, 4,238,474, Cl. 424-12.000.

Beigler, Myron A.; and Danby, Hal C., to Anatros Corporation. Device for the intravenous or enteric infusion of liquids into the human body at a predetermined constant rate. 4,237,881, Cl. 128-214.00F.

Beliot Corporation: *See—*
Gill, Michael L., 4,238,287, Cl. 162-358.000.

Belknap, Raymond R.: *See—*
Guebert, Gerald E.; and Belknap, Raymond R., 4,237,958, Cl. 160-330.000.

Bell, Joseph P. C-B Antenna extended surface attachment. 4,238,801, Cl. 343-715.000.

Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., to Colt Industries Operating Corp. Multi-lead servo feed system for electrical discharge machining apparatus. 4,238,660, Cl. 219-69.00G.

Bell Telephone Laboratories, Incorporated: *See—*
Boettcher, Charles W., Jr.; Hamilton, Billy H.; and Zweig, Walter L., 4,238,688, Cl. 307-20.000.
Burford, Thomas M., 4,238,836, Cl. 365-12.000.
Chin, Aland K.; Chin, Gilbert Y.; and Temkin, Henryk, 4,238,686, Cl. 250-492.00A.
Clarke, Patrick W., 4,238,690, Cl. 307-44.000.
Courtney-Pratt, Jeofry S., 4,238,148, Cl. 354-112.000.
Crue, Charles R., 4,238,740, Cl. 331-17.000.
Ebert, Harry K., Jr., 4,238,691, Cl. 307-66.000.
Hock, Richard H., 4,238,695, Cl. 307-350.000.
Kimerling, Lionel C.; Leamy, Harry J.; and Smith, George E., 4,238,694, Cl. 307-238.000.
Vratny, Frederick, 4,238,682, Cl. 250-420.000.
Yoshida, Kei, 4,238,300, Cl. 204-46.00G.

Belova, Tamara N.; Drozdova, Larisa A.; Zverev, Anatoly T.; Tjurin, Jury G.; and Khutoretsky, Garri M. Bar winding of stator of slotless-core electrical machine. 4,238,702, Cl. 310-179.000.

Bendersky, Alexandr F.: *See—*
Korzhov, Mikhail A.; Novikov, Leonid N.; Makarov, Vyacheslav N.; Onkova, Olga L.; Mishunin, Vladimir V.; Usenko, Vladimir I.; and Bendersky, Alexandr F., 4,237,848, Cl. 123-242.000.

Bendix Corporation, The: *See—*
Braunlich, Peter F., 4,238,661, Cl. 219-121.0LN.
Carp, Ralph W.; and Wright, Danny O., 4,238,813, Cl. 361-154.000.
Lao, Binneg Y., 4,238,662, Cl. 219-121.0LN.
Reddy, Junuthula N., 4,238,697, Cl. 307-268.000.

Benesch, Ryszard: *See—*
Czosnyka, Stanislaw; Krzywon, Walter; Kozien, Andrzej; Cichocki, Stanislaw; and Benesch, Ryszard, 4,238,118, Cl. 266-46.000.

Benham, Thomas H.: *See—*
Markley, Finley W.; Benham, Thomas H.; and Lukes, Raymond M., 4,238,340, Cl. 210-321.00B.

Benjamin, Benjamin C.; and Detweiler, Charles A., to Schmelzer Corporation. Fuel pressure regulator. 4,237,924, Cl. 137-510.000.

Benson, Ronald B.: *See—*
Mrugala, Ronald J.; Nord, Keith W.; and Benson, Ronald B., 4,238,026, Cl. 198-460.000.

Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, to Benteler-Werke AG. Apparatus for producing a tube with successive corrugations. 4,237,713, Cl. 72-59.000.

Benteler-Werke AG: *See—*
Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, 4,237,713, Cl. 72-59.000.

Berezov, Semen I.: *See—*
Brimmer, Alexandr A.; Berezov, Semen I.; Deinego, Jury B.; Demidov, Vladimir Y.; Voinich, Leonid K.; and White, Lorell, 4,237,748, Cl. 74-732.000.

Berger, Erich: *See—*
Hausler, Nikolaus; Berger, Erich; and Wiese, Wolfgang, 4,237,778, Cl. 93-77.0FT.

Bergfeld, Manfred: *See—*
Zengel, Hans; Bergfeld, Manfred; Zielke, Rainer; and Klimesch, Erich, 4,238,404, Cl. 260-453.00P.

Berman, Baruch: *See—*
DeLuca, William H.; Hornstra, Fred, Jr; Gelb, George H.; Berman, Baruch; and Moede, Larry W., 4,238,721, Cl. 320-18.000.

Berman, James S., to Citibank, N.A. Banking protection system for 24 hour banking. 4,237,799, Cl. 109-2.000.

Bernstein, Lawrence A.: *See—*
Moe, Walter; and Bernstein, Lawrence A., 4,237,631, Cl. 40-155.000.

Berruti, Pierangelo: *See—*
Bovio, Michele; and Berruti, Pierangelo, 4,238,806, Cl. 346-76.0PH.
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,238,807, Cl. 346-140.00R.

Bertolacini, Ralph J.: *See—*
Hauschildt, F. William; and Bertolacini, Ralph J., 4,238,319, Cl. 208-138.000.

Bertozzi, Eugene R., to Thiokol Corporation. Aryl amine terminated polysulfide polymers, related compounds and processes for their preparation. 4,238,585, Cl. 525-535.000.

Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, to Phillips Petroleum Company. Passivation of metals contaminating a used cracking catalyst with certain antimony carbonates and their thio analogues. 4,238,362, Cl. 252-439.000.

Bertus, Brent J.; and McKay, Dwight L., to Phillips Petroleum Company. Passivation of metals on cracking catalyst with thallium. 4,238,367, Cl. 252-455.00Z.

Beta S.A.: *See—*
Weir, Henry J., 4,238,060, Cl. 223-37.000.

Bettanini, Carlo; Zanier, Stelio; and Enrici, Margherita, to Societa Italiana per Il Magnesio E Leghe Di Magnesio S.p.A. Method of extracting magnesium from magnesium oxides. 4,238,223, Cl. 75-10.00R.

Bettanini, Carlo; Zanier, Stelio; and Enrici, Margherita, to Societa Italiana per Il Magnesesio E Leghe Di Magnesio S.p.A. Continuous extraction of magnesium from magnesium oxides. 4,238,224, Cl. 75-10.00A.

Better Built Machinery Corporation: *See—*
Wolff, Robert, 4,238,447, Cl. 422-26.000.

Betts, David A.; and Ledenbach, Gregory W., to Gould Inc.; and National Semiconductor Corporation. Low tire warning system. 4,237,728, Cl. 73-146.500.

Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, to Southern Pacific Transportation Company. Automobile securement mechanism to freight car. 4,237,794, Cl. 105-368.00R.

Biber, Conrad H.; and Shenk, Edwin K., to Polaroid Corporation. Camera having too close/too far indication. 4,238,154, Cl. 354-198.000.

Bichel, Ronald A., to Starr, Incorporated. Vegetable processing machine with product mobilizer apparatus. 4,237,782, Cl. 99-625.000.

Bicking, John B., to Merck & Co., Inc. Aminoalkyl benzofuran derivatives. 4,238,487, Cl. 424-248.520.

Bielomatik Leuze GmbH & Co.: *See—*
Kunzmann, Otto, 4,237,568, Cl. 11-1.00R.

Bingen, Roald; Cordier, Jean-Pierre; and Georges, Raymond. Coreless induction furnace. 4,238,637, Cl. 13-26.000.

Bird, Roger; and Webb, Allen E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Production of hexanitrostilbene using inorganic buffers. 4,238,420, Cl. 260-645.000.

Bird, Roger; and Webb, Allen E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Production of hexanitrostilbene with pH control. 4,238,421, Cl. 260-645.000.

Birkelbach, Donald F.: *See—*
Shipley, Randall S.; Birkelbach, Donald F.; and Lowery, Kirby, Jr., 4,238,355, Cl. 252-429.00B.

Birkner, John M.: *See—*
Ghest, Robert C.; Birkner, John M.; Waser, Shlomo; and Chua, Hua T., 4,238,833, Cl. 364-760.000.

Biro, Ferenc: *See—*
Rothman, Gyorgy; Biro, Ferenc; Babos, Gyorgy; Antolik, Karoly; and Roffa, Otto, 4,238,720, Cl. 318-800.000.

Bitny, Mikhail A.: *See—*
Polukhin, Petr I.; Potapov, Ivan N.; Gremyakov, Ivan P.; Styrkin, German D.; Bitny, Mikhail A.; Raushenbakh, Igor M.; and Rodionov, Petr A., 4,237,714, Cl. 72-242.000.

Black Clawson Company, The: *See—*
Tetro, Richard S., 4,238,261, Cl. 156-157.000.

Black and Decker Manufacturing Company: *See—*
Bradus, Robert; Howard, Thomas J., Jr.; and Miller, John W., 4,237,610, Cl. 30-276.000.

Black, Frank M. Contactor. 4,237,620, Cl. 34-72.000.

Black, Malcolm H.; Frenkel, Alexander D.; and Roberts, Peter T., to Burroughs Wellcome Co. Imidazoline derivatives, salts thereof and their use as pesticides. 4,238,497, Cl. 424-273.00R.

Black, Timothy J.: *See—*
Williams, Cedric D.; Urquhart, Andrew W.; Walker, James L.; Proebstle, Richard A.; and Black, Timothy J., 4,238,251, Cl. 148-133.000.

Blanchard, Jean: *See—*
Marino, Paul J.; Blanchard, Jean; and Stefanini, Gerard R., 4,238,794, Cl. 343-5.0PC.

Blawert, Dieter; Rademacher, Karl-Heinz; Knothe, Erich; and Melcher, Franz J., to Sartorius GmbH. Overload protection device for a top pan precision scale. 4,237,988, Cl. 177-189.000.

Bleckmann, Hugo: *See—*
Stepanek, Premek; and Bleckmann, Hugo, 4,238,217, Cl. 65-335.000.

Blickle, Tibor: *See—*
Ormos, Zoltan; Csukas, Bela; Pataki, Karoly; Balla, Laszlo; and Blickle, Tibor, 4,237,814, Cl. 118-24.000.

Block Drug Company Inc.: *See—*
Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., 4,238,499, Cl. 424-273.00R.

Blount, David H. Process for the production of organic halosilicon acid resinous products and their reaction products utilizing phenol compounds. 4,238,375, Cl. 260-18.00S.

Blumberg, Morris; and Swasey, Chester C., to Sandoz, Inc. Method of incorporating additives in polymeric materials. 4,238,384, Cl. 260-37.00R.

Blunck, Ronald D.: *See—*
Christian, Earl L.; and Blunck, Ronald D., 4,237,612, Cl. 33-143.00L.

Bode, Hugo B.: *See—*
Mackenroth, Joseph R., III; and Bode, Hugo B., 4,237,558, Cl. 2-181.000.

Bodelind, Bo T. K.: *See—*
Jonsson, Bo R.; Toll, Gunnar G.; and Bodelind, Bo T. K., 4,238,041, Cl. 215-12.00R.

Bodenseewerke Perkin-Elmer & Co. GmbH: *See—*
Kolb, Bruno; Jaklin, Michael; Pospisil, Peter; Boege, Dietrich; and Riegger, Hubertus, 4,237,733, Cl. 73-423.00A.

Bodere, Alain: *See—*
Carballes, Jean-Claude; and Bodere, Alain, 4,238,764, Cl. 357-71.000.

Boderseewerk Perkin-Elmer & Co. GmbH: *See—*
Siess, Hans, 4,238,672, Cl. 219-502.000.

Bodmer, Maurice, to BBC Brown, Boveri & Company, Limited. Process of removing water-soluble impurities from the working medium of a steam power plant. 4,237,691, Cl. 60-646.000.

Boeddeker, David R.: *See—*
Clausen, Herman A.; Boeddeker, David R.; Johnson, Logan W.; and Wenger, Jerry A., 4,238,097, Cl. 248-188.700.

Boege, Dietrich: *See—*
Kolb, Bruno; Jaklin, Michael; Pospisil, Peter; Boege, Dietrich; and Riegger, Hubertus, 4,237,733, Cl. 73-423.00A.

Boehler, Gabriel D. Protective environmental mask with thermoelectric air conditioning system. 4,237,877, Cl. 128-204.150.

Boehringer Ingelheim GmbH: *See—*
Hess, Friedrich K.; Stewart, Patrick B.; and Oliver, James T., 4,238,496, Cl. 424-270.000.

Boehringer Mannheim GmbH: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix H., 4,238,506, Cl. 424-319.000.

Boeing Company, The: *See—*
Deminet, Czeslaw, 4,238,265, Cl. 156-221.000.

Boettcher, Charles W., Jr.; Hamilton, Billy H.; and Zweig, Walter L., to Bell Telephone Laboratories, Incorporated. Three-phase uninterruptible power supply maintaining reserve energy sources in idling condition with unbalanced loads. 4,238,688, Cl. 307-20.000.

Boguslaski, Robert C.; and Carrico, Robert J., to Miles Laboratories, Inc. Fluorescer-labeled specific binding assays. 4,238,195, Cl. 23-230.00B.

Bohsei Enterprise: *See—*
Kobayashi, Toshiyuki; Nakai, Hideharu; Kai, Isao; and Yonemori, Yoshinori, 4,237,878, Cl. 128-214.00E.

Boiko, Georgy A.: *See—*
Medovar, Boris I.; Dubinsky, Rudolf S.; Boiko, Georgy A.; Butov, Vladimir I.; and Prikhodko, Valery A., 4,238,633, Cl. 13-9.0ES.

Boismenu, Lucien. Damper structure for a clothes dryer vent. 4,237,621, Cl. 34-108.000.

Bolliger, Martin: *See—*
Gyongyos, Ivan; Buxmann, Kurt; Bolliger, Martin; Kerth, Willi; and Neufeld, Kurt, 4,238,248, Cl. 148-2.000.

Bonac, Tomo. Bandsaw mechanism. 4,237,757, Cl. 83-74.000.

Bonacci, John C.; Otchy, Thomas G.; and Ackerman, Thomas, to Engelhard Minerals and Chemicals Corporation. Ammonia manufacturing process. 4,238,468, Cl. 423-359.000.

Bonas Brothers Limited: *See—*
Hilton, William J., 4,237,684, Cl. 57-260.000.

Bonini, Nelson. Device for dispensing chilled liquid. 4,238,053, Cl. 222-129.100.

Bonk, John A.; and Malmendier, Joseph W., to Corning Glass Works. Sealed beam lamp of borosilicate glass with a sealing glass of zinc silicoborate and a mill addition of cordierite. 4,238,704, Cl. 313-113.000.

Bonnet, Ludwig, to Richard Wolf GmbH. Devices for injecting pastes or fluids into the human body. 4,237,871, Cl. 128-4.000.

Boothe, Leland H. Grinding disc. 4,237,589, Cl. 241-296.000.

Borden, Norris: *See—*
Riegelman, Harry M.; Paganelli, Anthony C.; Walker, John A.; Borden, Norris; Lawhead, Stephen A.; and Umann, Harry M., 4,237,560, Cl. 4-7.000.

Borg-Warner Corporation: *See—*
Spokas, Romas B., 4,238,017, Cl. 192-82.00T.

Borjesgard, Pehr; Kullendorff, Anders; and Wikner, Jan, to Stal-Laval Turbine AB. Fluidized bed combustion chamber. 4,237,823, Cl. 122-4.00D.

Borom, Marcus P., to General Electric Company. Bone implant embodying a composite high and low density fired ceramic construction. 4,237,559, Cl. 3-1.900.

Borsig GmbH: *See—*
Holldorff, Gunther, 4,237,701, Cl. 62-476.000.

Bortnick, Newman, to Rohm and Haas Company. Cyanide process for the preparation of 4H-1,2,4-triazoles. 4,238,617, Cl. 548-262.000.

Bosies, Elmar: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix H., 4,238,506, Cl. 424-319.000.

Bosley, Roy E., Jr.; Hamann, Michael L.; Pinegar, Richard K.; and Gobble, Harold G., to J. R. Simplot Co. Frozen french fried potato product and method of preparation. 4,238,517, Cl. 426-250.000.

Bottenbruch, Ludwig: *See—*
Alfes, Franz; Jacob, Wolfgang; Meyer, Karl-Heinrich; and Bottenbruch, Ludwig, 4,238,351, Cl. 252-403.000.

Bourbeau, Frank J. Rotatable transformer field excitation system for variable speed brushless synchronous motor. 4,238,719, Cl. 318-716.000.

Bourbon, Jean. Information display panel. 4,237,637, Cl. 40-618.000.

Bovio, Michele; and Berruti, Pierangelo, to Ing. C. Olivetti & C., S.p.A. Dot matrix printing device. 4,238,806, Cl. 346-76.0PH.

Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, to Ing. C. Olivetti & C., S.p.A. Non-impact printing device. 4,238,807, Cl. 346-140.00R.

Bowden, William L.: *See—*
Dey, Arabinda N.; Miller, John S.; and Bowden, William L., 4,238,552, Cl. 429-101.000.

Bowes, Quentin; and Wurster, Rudolf F., to Ciba-Geigy Corporation. Process for removing heavy-metal ions from aqueous solutions. 4,238,328, Cl. 210-36.000.

Bowie, David C.: *See—*
Page, Kenneth; Bowie, David C.; Taylor, Alfred J.; and Knowles, Richard P., 4,237,843, Cl. 123-145.00A.

Bracknell, Paul A., to Hudson, Thomas H., a part interest. Sight mount for an archery bow. 4,237,615, Cl. 33-265.000.

Brad Ragan, Inc.: *See—*
Clayton, Andrew R., 4,237,955, Cl. 157-13.000.

Bradus, Robert; Howard, Thomas J., Jr.; and Miller, John W., to Black and Decker Manufacturing Company. Portable, electrically energized, cordless grass trimmer. 4,237,610, Cl. 30-276.000.

Brand, William W., to Diamond Shamrock Corporation. Process for S-chloromethylation of organic dithiophospho compounds with methylene chloride. 4,238,424, Cl. 260-979.000.

Brandt, Bernd; Nauroth, Peter; Peters, Albert; and Reinhardt, Helmut, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Apparatus for preparation of a sprayable precipitated silicic acid suspension. 4,238,322, Cl. 209-3.000.

Brandt, Gert M., to Aktieselskabet MEC Makanisk Elektrisk Compagni af 1975. Electrical switch having a setting rod acting as a lever. 4,238,653, Cl. 200-153.00J.

Braunlich, Peter F., to Bendix Corporation, The. Pressure-sensing capacitor and method of trimming same. 4,238,661, Cl. 219-121.0LN.

Bredeweg, Roger L.; Povilaitis, Edward P.; and Reed, Ramsey G., to Leco Corporation. Crucible loading-unloading system. 4,238,450, Cl. 422-63.000.

Bremer, Karl W., Jr. Prisoner leg restrainer. 4,237,708, Cl. 70-16.000.

Brennan, John M., to Rohr Industries, Inc. Accessory for a turbine engine. 4,238,092, Cl. 244-54.000.

Breslin, John J.; and Lee, David K., to Beamco Co., Inc. Vacuum cleaner control system. 4,238,689, Cl. 307-42.000.

Brian, Michael: *See—*
Gregory, Charles E.; Brian, Michael; Thomas, Jerald F.; and Cameron, James F., 4,237,934, Cl. 137-637.000.

Bricker, Daniel W.; Audesse, Emery G.; Shaffer, John W.; and Hartman, Donald W., to GTE Products Corporation. Cover for multilamp photoflash unit. 4,238,814, Cl. 362-13.000.

Bril, Thijs W.; and Postma, Lambertus, to U.S. Philips Corporation. Method of manufacturing a magnetic device. 4,238,277, Cl. 156-643.000.

Brimacombe, J. Keith; and Hoefele, Enrique O., to Canadian Liquid Air Ltd./Air Liquide Canada Ltee. Non-ferrous metal treatment. 4,238,228, Cl. 75-76.000.

Brimmeier, Albert L. Kite string wrapper. 4,238,086, Cl. 242-96.000.

Brimmer, Alexandr A.; Berezov, Semen I.; Deinego, Jury B.; Demidov, Vladimir Y.; Voinich, Leonid K.; and White, Lorell. Reversing hydromechanical transmission. 4,237,748, Cl. 74-732.000.

Brink's Locking Systems, Inc.: *See—*
Kambic, Raymond V., 4,237,711, Cl. 70-150.000.

Bristow, Ian R., to U.B.M. Hover Systems. Modular load-support vehicle. 4,237,992, Cl. 180-116.000.

British Petroleum Company Limited, The: *See—*
Mitchell, Robert W.; and Neustadter, Ernst L., 4,238,331, Cl. 210-59.000.

Britton, Milton. Sedentary bathing system. 4,237,561, Cl. 4-146.000.

Brock, W. B., Jr. Power brush apparatus. 4,237,570, Cl. 15-28.000.

Brockmann, Klaus-Dieter K.: *See—*
Dijkmans, Eise C.; and Brockmann, Klaus-Dieter K., 4,238,644, Cl. 179-81.00R.

Broenner, Karlheinz: *See—*
Seissl, Johann; Broenner, Karlheinz; and Krause, Hartmut, 4,238,681, Cl. 250-402.000.

Brooke, Edric R., to Xerox Corporation. Apparatus for stacking sheets in corner registration. 4,238,066, Cl. 227-39.000.

Brooks, Joseph J.: *See—*
Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,238,197, Cl. 23-230.0HC.

Brooks, Ray G., to Malco Products, Inc. Apparatus for reinforcing a duct. 4,237,940, Cl. 138-172.000.

Brosius, William B., Jr.: *See—*
Owen, Raymond E.; and Brosius, William B., Jr., 4,237,739, Cl. 73-861.630.

Brown, Boveri & Cie Aktiengesellschaft: *See—*
Weddigen, Gert; Houpert, Bernd; and Gerlach, Monika, 4,238,553, Cl. 429-104.000.

Brown, David M.: *See—*
Lawson, Martin W.; and Brown, David M., 4,238,749, Cl. 335-63.000.

Brown, Dennis N. Deformable foot wedge. 4,237,626, Cl. 36-43.000.

Brown, Roger C.; Hazard, Richard; and Mann, John, to Fisons Limited. Tricyclic mono-chromone-2-carboxylic acids. 4,238,606, Cl. 542-441.000.

Brown, William F., to Weston Research, Corporation. Dry wall joint and finishing compounds. 4,238,239, Cl. 106-116.000.

Brown & Williamson Tobacco Corp.: *See—*
Jenkins, Carl B., Jr.; Porenski, Harry S., Jr.; and Turner, Paul N., 4,237,909, Cl. 131-128.000.

Brugger, Dennis M.; and Hughes, John J., to Kearney & Trecker Corporation. Toolholder adapter. 4,238,167, Cl. 409-232.000.

Brunswick Corporation: *See—*
Uphoff, John W., 4,238,382, Cl. 260-33.4SB.

Bryan, William O., to Stamicarbon, B.V. Process for preparing cycloalkanols and cycloalkanones. 4,238,415, Cl. 260-586.00P.

Bucaro, Joseph A.; and Carome, Edward F., to United States of America, Navy. Fiber-optic acoustic sensor. 4,238,856, Cl. 455-614.000.

Buchel, Karl H.: *See—*
Regel, Erik; Buchel, Karl H.; Draber, Wilfried; Plempel, Manfred; and Haller, Ingo, 4,238,498, Cl. 424-273.00R.

Bucher, John H.; Paliwoda, Eugene J.; and Rote, Frank E., to Jones & Laughlin Steel Corporation. Process for producing free-machining steel. 4,238,230, Cl. 75-123.00G.

Buchman, Russell: *See—*
Powers, Larry J.; Ariyan, Zaven S.; Buchman, Russell; Scozzie, James A.; Moser, Robert E.; and Pyne, William J., 4,238,490, Cl. 424-250.000.

Buck Chemisch-Technische Werke GmbH & Co.: *See—*
Prahauser, Georg; and Schiessl, Alois, 4,238,254, Cl. 149-29.000.

Buckingham, James W.; and Amberg, Stephen W., to Owens-Illinois, Inc. Method and apparatus for packaging containers. 4,237,676, Cl. 53-398.000.

Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Dimethyl 7-[ω-N-(phthalimido)alkyl]aminonaphthalene-1,2-dicarboxylates. 4,238,395, Cl. 260-326.00N.

Buckler, Robert T., to Miles Laboratories, Inc. 5,6-Benzo analogues of prostaglandin. 4,238,623, Cl. 560-53.000.

Bukhtiyarov, Ivan D.: *See—*
An, Viktor B.; Bukhtiyarov, Ivan D.; Demin, Alexei S.; Kosyrev, Viktor V.; and Slepchuk, Valery A., 4,238,692, Cl. 307-106.000.

Bulang, Siegfried: *See—*
Regehr, Ulrich; Hannemann, Horst; Bulang, Siegfried; Derichs, Helmut; Knuplez, Vladimir; and Wedrich, Martin, 4,238,210, Cl. 55-396.000.

Bultman, Lynn E. Sludge diffusion method and apparatus. 4,238,336, Cl. 210-83.000.

Bundle, David R.: *See—*
Lemieux, Raymond U.; Bundle, David R.; and Baker, Donald A., 4,238,473, Cl. 424-11.000.

Bunker Ramo Corporation: *See—*
Planting, Peter J.; and Fritzen, Patricia A., 4,238,641, Cl. 174-88.00C.

Bunting, Kemp R.: *See—*
Hughes, Robert D.; Steigelmann, Edward F.; and Bunting, Kemp R., 4,237,596, Cl. 29-401.100.

Bunting Magnetics Company: *See—*
Sanford, Homer H., 4,237,786, Cl. 101-378.000.

Buonauro, John A.; and Frazier, James L., to Houdaille Industries, Inc. Tool changer assembly. 4,237,599, Cl. 29-568.000.

Burford, Thomas M., to Bell Telephone Laboratories, Incorporated. Fail safe magnetic bubble memory. 4,238,836, Cl. 365-12.000.

Burger, Victor G., to GTE Automatic Electric Laboratories Incorporated. Variable loop telephone transmission circuit. 4,238,645, Cl. 179-81.00A.

Burgess, Leonard G.; and Wroblewski, Richard E., to Equipment Manufacturing, Inc. Dunnage bar and method of making it. 4,238,550, Cl. 428-586.000.

Burley, David R., to Tile Council of America, Inc. Method of using adhesive joint dressing compositions and product. 4,238,542, Cl. 428-58.000.

Burlington Industries, Inc.: *See—*
Hussamy, Samir; 4,238,191, Cl. 8-130.100.

Burri, Peter, to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material. 4,238,130, Cl. 282-27.500.

Burroughs Wellcome Co.: *See—*
Black, Malcolm H.; Frenkel, Alexander D.; and Roberts, Peter T., 4,238,497, Cl. 424-273.00R.

Burstrom, Martin, to ASEA Aktiebolag. Heater for resistance furnaces. 4,238,636, Cl. 13-25.000.

Burton, William E. Identifying marker for tear perforation lines of rolled paper webs. 4,238,541, Cl. 428-43.000.

Buss, Waldeen C.; and Kluksdahl, Harris E., to Chevron Research Company. Catalytic reforming catalyst. 4,238,372, Cl. 252-466.0PT.

But, Vladimir G.: *See—*
Anikin, Alexandr A.; But, Vladimir G.; Nikolaev, Vladimir P.; and Silvanovich, Anatoly A., 4,238,288, Cl. 176-36.00R.

Butov, Vladimir I.: *See—*
Medovar, Boris I.; Dubinsky, Rudolf S.; Boiko, Georgy A.; Butov, Vladimir I.; and Prikhodko, Valery A., 4,238,633, Cl. 13-9.0ES.

Buxmann, Kurt: *See—*
Gyongyos, Ivan; Buxmann, Kurt; Bolliger, Martin; Kerth, Willi; and Neufeld, Kurt, 4,238,248, Cl. 148-2.000.

Byrne, Robert: *See—*
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,237,794, Cl. 105-368.00R.

C. Itoh Electronics, Inc.: *See—*
Kondur, Nicholas, Jr., 4,238,160, Cl. 400-616.300.

C.M. Industries: *See—*
Lombard, Jean-Pierre, 4,238,489, Cl. 424-248.560.

Caballero, Edward A. Apparatus and method for growing legume sprouts. 4,237,651, Cl. 47-58.000.

Cahall, Everett: *See—*
Siegel, Moses; Cahall, Everett; Dunning, David; and Hammond, Joseph, 4,238,093, Cl. 244-63.000.

Cahill, Paul J.; and Johnson, Carl E., to Standard Oil Company (Indiana). Polyalkylaromatics undegraded during alkylation. 4,238,628, Cl. 568-736.000.

Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., to Ford Motor Company. Terminal block with electrical connection means with connector location wall and locking finger. 4,238,140, Cl. 339-186.00M.

Calderon, Reynaldo; and Towell, Billy H., to Texaco Inc. Method for cleaning a helical spring sand screen in a well. 4,237,978, Cl. 166-311.000.

Calhoun, Gregory L.; Bauer, Frank; and Kramer, Arthur W., to Westinghouse Electric Corp. Tube bundle cutting method and apparatus. 4,238,663, Cl. 219-121.00P.

Calvert, Rodney K.; and Landrum, Charles R., to Mead Corporation, The. Machine for loading container sleeves through their open ends. 4,237,673, Cl. 53-48.000.

Cameron, James F.: *See—*
Gregory, Charles E.; Brian, Michael; Thomas, Jerald F.; and Cameron, James F., 4,237,934, Cl. 137-637.000.

Canadian General Electric Company Limited: *See—*
Freeman, David L., 4,238,733, Cl. 324-158.0MG.
Smith, Archibald W., 4,238,750, Cl. 335-173.000.
Stevenson, Andrew C.; and Fox, Kenneth R., 4,238,810, Cl. 361-91.000.

Canadian International Paper Company: *See—*
Histed, John A., 4,238,281, Cl. 162-60.000.

Canadian Liquid Air Ltd./Air Liquide Canada Ltee: *See—*
Brimacombe, J. Keith; and Hoefele, Enrique O., 4,238,228, Cl. 75-76.000.

Cangelosi, Phillip J.: *See—*
Rim, Yong S.; Nudenberg, Walter; Miller, Robert; and Cangelosi, Phillip J., 4,238,578, Cl. 525-309.000.

Cannon, Mark W., Jr.: *See—*
von Gierke, Henning E.; and Cannon, Mark W., Jr., 4,238,772, Cl. 358-166.000.

Canon Kabushiki Kaisha: *See—*
Kuge, Tsukasa; Watanabe, Tsuyoshi; and Matsumoto, Toru, 4,237,592, Cl. 29-119.000.
Uchiyama, Takashi; Ohtaki, Shohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; and Aizawa, Hiroshi, 4,238,149, Cl. 354-128.000.
Yoshikawa, Ryoichi, 4,238,151, Cl. 354-152.000.

Cantatore, Giuseppe; and Cassandrini, Paolo, to Chimosa Chimica Organica S.p.A. Derivatives of 1,3,5-triazacycloheptane-2,4-dione and their use as polymer stabilizers. 4,238,388, Cl. 260-45.8NB.

Carasso, Marino G.; Verboom, Johannes J.; and de Haan, Maarten R., to U.S. Philips Corporation. Disc-shaped optically readable record carrier used as a data storage medium. 4,238,843, Cl. 365-234.000.

Caraway, William R.; and Falkingham, Clarence M., to Howmedica, Inc. Stoma drainage appliance. 4,238,059, Cl. 222-529.000.

Carballes, Jean-Claude; and Bodere, Alain, to Thomson-CSF. Solid state semiconductor element and contact thereupon. 4,238,764, Cl. 357-71.000.

Carborundum Company, The: *See—*
Economy, James; Lin, Ruey Y.; and Smith, William D., 4,238,547, Cl. 428-366.000.

Cardozo, David L. Locking device. 4,237,710, Cl. 70-108.000.

Carl Still, Firma: *See—*
Abendroth, Werner, 4,238,293, Cl. 202-270.000.

Carl Zeiss-Stiftung: *See—*
Kuerbitz, Gunther; and Wegener, Walter, 4,238,674, Cl. 250-334.000.

Carlson, Glenn R., to Rohm and Haas Company. 1-Aryl-5-carboxy-2-pyridones and derivatives thereof. 4,238,220, Cl. 71-94.000.

Carlsson, Karl L. O.: *See—*
Jansson, Bertil E.; and Carlsson, Karl L. O., 4,238,085, Cl. 242-84.200.

Carome, Edward F.: *See—*
Bucaro, Joseph A.; and Carome, Edward F., 4,238,856, Cl. 455-614.000.

Caroon, Robert S. Immersible solar water heater. 4,237,860, Cl. 126-415.000.

Carp, Ralph W.; and Wright, Danny O., to Bendix Corporation, The. Compensated dual injector driver. 4,238,813, Cl. 361-154.000.

Carpenter, Osmer C.: *See—*
Roseman, Theodore J.; Carpenter, Osmer C.; Baker, Richard W.; and Ayres, James W., 4,237,888, Cl. 128-270.000.

Carr, William N., to Recognition Equipment Incorporated. Multi-spectrum photodiode devices. 4,238,760, Cl. 357-30.000.

Carrico, Robert J.: *See—*
Boguslaski, Robert C.; and Carrico, Robert J., 4,238,195, Cl. 23-230.00B.

Carrier Corporation: *See—*
Mount, Gordon L., 4,237,698, Cl. 62-197.000.
Post, John E., 4,238,071, Cl. 236-49.000.

Carroll Sound, Inc.: *See—*
Levine, David H., 4,237,767, Cl. 84-406.000.

Cascade Corporation: *See—*
Olson, Harlan D., 4,238,004, Cl. 187-9.00E.

Casio Computer Co., Ltd.: *See—*
Tsuzuki, Hanzou; and Mizuno, Mamoru, 4,238,832, Cl. 364-705.000.

Cassandrini, Paolo: *See—*
Cantatore, Giuseppe; and Cassandrini, Paolo, 4,238,388, Cl. 260-45.8NB.

Cassat, Robert; and Vignando, Bruno, to Rhone-Poulenc Industries. Novel copolymers of imido monomer/hydroxylated organosilicon comonomer. 4,238,591, Cl. 528-27.000.

Castiglioni, Albino, to Somavis S.A. High speed machine for cold forging screws, rivets, and the like hardware. 4,237,566, Cl. 10-11.00R.

Castledine, Timothy: *See—*
Dunks, Clifford M.; and Castledine, Timothy, 4,238,231, Cl. 75-130.00R.

Castleman, B. Wayne; and Wyatt, Gene B., to Honeywell Inc. Apparatus and a method for detecting and measuring trace gases in air or other gaseous backgrounds. 4,238,678, Cl. 250-381.000.

Caterpillar Tractor Co.: *See—*
Engel, William K., 4,237,774, Cl. 91-490.000.
Kraps, Michael H.; and Stevens, Samuel B., 4,238,258, Cl. 156-120.000.
Nerstad, Karl A.; Chadwick, Curtis E., III; and Johnson, Gordon W., 4,238,020, Cl. 192-103.0FA.
Wahl, Thomas V., Jr., 4,237,703, Cl. 64-28.00M.
Walker, George W., 4,237,926, Cl. 137-565.000.

Cavalier Products, Inc.: *See—*
Ragsdale, Donald W., 4,238,065, Cl. 225-47.000.

Caverly, Richard. Necklace. 4,237,702, Cl. 63-2.000.

CdF Chimie: *See—*
Petit, Francis; and Huchette, Dominique, 4,238,301, Cl. 204-59.00R.

Celanese Corporation: *See—*
Yates, Derek N.; and Presta, John C., 4,238,539, Cl. 428-36.000.
Yates, Derek N.; and Presta, John C., 4,238,540, Cl. 428-36.000.

Cella, James A.; and Mitchell, Tyrone D., to General Electric Company. Alkoxysilicon materials and method for making. 4,238,401, Cl. 260-448.80R.

Cerf, Gilbert: *See—*
Wurch, Manuela; and Cerf, Gilbert, 4,237,611, Cl. 33-1.0DD.

Cervena, Irena: *See—*
Protiva, Miroslav; Sindelar, Karel; Cervena, Irena; and Metysova, Jirina, 4,238,611, Cl. 544-375.000.

Ceskoslovenska akademie ved: *See—*
Lim, Drahoslav; Coupek, Jiri; Krivakova, Miroslava; and Pokorny, Svatopluk, 4,238,569, Cl. 521-52.000.
Lochman, Lubomir; and Trekoval, Jiri, 4,238,588, Cl. 526-217.000.

Chabries, Douglas M.: *See—*
McCool, John M.; Widrow, Bernard; Zeidler, James R.; Hearn, Robert H.; and Chabries, Douglas M., 4,238,746, Cl. 333-166.000.

Chadwick, Curtis E., III: *See—*
Nerstad, Karl A.; Chadwick, Curtis E., III; and Johnson, Gordon W., 4,238,020, Cl. 192-103.0FA.

Chae, Kun: *See—*
Albro, Phillip W.; Chae, Kun; Luster, Michael I.; and McKinney, James D., 4,238,472, Cl. 424-1.000.

Chaki, Takao, to Clarion Co., Ltd. Pushbutton tuner. 4,237,740, Cl. 74-10.330.

Chalmers, Matthew G.: *See—*
Longsworth, Ralph C.; and Chalmers, Matthew G., 4,237,699, Cl. 62-514.0JT.

Chamberlain, Michael R.: *See—*
Wallis, Roger E.; and Chamberlain, Michael R., 4,238,280, Cl. 162-157.00R.

Champagne, Louis F., to United States of America, Navy. Laser system. 4,238,742, Cl. 331-94.50G.

Champion International Corporation: *See—*
Laughinghouse, Gerald F.; and Gibson, Donald B., 4,238,438, Cl. 264-119.000.
Lyons, Russell J., 4,238,070, Cl. 229-87.00R.

Chance, Davey J.: *See—*
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,238,660, Cl. 219-69.00G.

Chang, Pei K., to Stauffer Chemical Company. Egg albumen extender prepared from derived protein-containing compositions and additives. 4,238,519, Cl. 426-549.000.

Chapel, Lesley. Safety hinge. 4,237,577, Cl. 16-137.000.

Chapman, Richard D.; Holmer, Donald A.; Pickett, Oscar A., Jr.; and Saunders, James H., to Monsanto Company. Polyamides derived from hexamethylene diamine, terephthalic acid, isophthalic acid and a C_5 to C_{10} aliphatic dibasic acid. 4,238,603, Cl. 528-339.000.

Charles, George K., to Alfa Laval AB. Method and apparatus for forming blocks of natural cheese from cheese curd. 4,237,781, Cl. 99-454.000.

Charm, Stanley E., to Penicillin Assays, Inc. Process for the removal of antibiotics from milk. 4,238,521, Cl. 426-580.000.

Chautard, Jean; and Chemizard, Andre, to Compagnie Generale des Etablissements Michelin. Pneumatic tire with sealing lining comprising a thermosetting resin and isolated resin crosslinking agent. 4,237,952, Cl. 152-330.0RF.

Chembiomed Limited: *See—*
Lemieux, Raymond U.; Bundle, David R.; and Baker, Donald A., 4,238,473, Cl. 424-11.000.

Chemie Linz Aktiengesellschaft: *See—*
Schmidt, Alfred; and Tschebull, Wilhelm, 4,238,469, Cl. 423-489.000.

Chemische Werke Huls AG: *See—*
Schmitt, Felix; and Kriebel, Gunter, 4,238,592, Cl. 528-45.000.

Chemizard, Andre: *See—*
Chautard, Jean; and Chemizard, Andre, 4,237,952, Cl. 152-330.0RF.

Chen, Rong-Sheng. Air pressurized insulated container. 4,238,054, Cl. 222-131.000.

Cherbland, Georges. Apparatus for icing or freezing or frosting containers or hollow bodies, more particularly drinking-glasses. 4,237,697, Cl. 62-293.000.

Cherevaty, Anatoly A.: *See—*
Azovtsev, Alexandr A.; Velikoselsky, Nikolai D.; Vinogradov, Sergei S.; Vorontsov, Alexei E.; Kuznetsov, Lev E.; Podbeltsev, Viktor I.; Polevikov, Mikhail E.; Sviridov, Georgy M.; Fadeev, Valery G.; and Cherevaty, Anatoly A., 4,238,037, Cl. 212-3.00R.

Cherukuri, Subraman R.; and Friello, Dominick R., to Life Savers, Inc. Sugarless coating for chewing gum and confections and method. 4,238,510, Cl. 426-5.000.

Chevron Research Company: *See—*
Buss, Waldeen C.; and Kluksdahl, Harris E., 4,238,372, Cl. 252-466.0PT.
Goodrich, Judson E., 4,238,377, Cl. 260-28.00R.
Nicksic, Stephen W., 4,238,463, Cl. 423-226.000.

Chiba, Katsuyoshi: *See—*
Kato, Yoshiki; Ishihara, Heigo; Fukke, Hajime; Chiba, Katsuyoshi; Nagashiro, Waichi; Tsunoda, Teruo; and Mitsuya, Munehisa, 4,238,341, Cl. 252-62.540.

Chimosa Chimica Organica S.p.A.: *See—*
Cantatore, Giuseppe; and Cassandrini, Paolo, 4,238,388, Cl. 260-45.8NB.

Chin, Aland K.; Chin, Gilbert Y.; and Temkin, Henryk, to Bell Telephone Laboratories, Incorporated. Method of analyzing localized nonuniformities in luminescing materials. 4,238,686, Cl. 250-492.00A.

Chin, Gilbert Y.: *See—*
Chin, Aland K.; Chin, Gilbert Y.; and Temkin, Henryk, 4,238,686, Cl. 250-492.00A.

Chipchase, Frank D., to International Multifoods Corporation. Apparatus for slicing or scoring muffins. 4,237,763, Cl. 83-872.000.

Chisholm, Douglas S. Atomization of molten metals. 4,238,427, Cl. 264-7.000.

Chitouras, Costa G. Method of coating objects. 4,238,526, Cl. 427-44.000.

Chlorine Engineers Corporation, Ltd.: *See—*
Kasuya, Kazuki, 4,238,311, Cl. 204-290.00R.

Christian, Earl L.; and Blunck, Ronald D., to General Dynamics. Fastener grip length measuring system. 4,237,612, Cl. 33-143.00L.

Chronberg, Sten, to Agence Nationale de Valorisation de la Recherche (ANVAR). Method and machine for manufacturing a plate-like material made from agglomerated particles and in particular ceramic products obtained thereby. 4,238,313, Cl. 204-300.00R.

Chu, Tze Y.; Jaluria, Yogesh; Lavigna, Robert J.; Reusser, Raymond E.; and Williams, George, to Western Electric Company, Inc. Method for avoiding undesirable deposits in crystal growing operations. 4,238,274, Cl. 156-617.0SP.

Chua, Hua T.: *See—*
Ghest, Robert C.; Birkner, John M.; Waser, Shlomo; and Chua, Hua T., 4,238,833, Cl. 364-760.000.

Chun, Duk S., to PPG Industries, Inc. Removal of phosgene from boron trichloride. 4,238,465, Cl. 423-240.000.

Ciais, Andre; and Lambelin, Andre, to Elf Union. Process and device to measure the asphaltene content of petroleum products. 4,238,451, Cl. 422-101.000.

Ciba-Geigy Aktiengesellschaft: *See—*
Fryberg, Mario, 4,238,564, Cl. 430-381.000.

Ciba-Geigy Corporation: *See—*
Babler, Fridolin, 4,238,386, Cl. 260-42.210.
Bowes, Quentin; and Wurster, Rudolf F., 4,238,328, Cl. 210-36.000.
Burri, Peter, 4,238,130, Cl. 282-27.500.
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,238,504, Cl. 424-305.000.
Kleiner, Eduard K.; and Dexter, Martin, 4,238,575, Cl. 525-212.000.
Rasberger, Michael; and Karrer, Friedrich, 4,238,613, Cl. 546-190.000.
Rink, Hans; Kamber, Bruno; and Sieber, Peter, 4,238,481, Cl. 424-177.000.

Cibie Projecteurs: *See—*
Fratty, Hector, 4,238,817, Cl. 362-309.000.

Cicci, George B.: *See—*
Hoch, Manfried L.; and Cicci, George B., 4,237,680, Cl. 56-15.900.

Cichocki, Stanislaw: *See—*
Czosnyka, Stanislaw; Krzywon, Walter; Kozien, Andrzej; Cichocki, Stanislaw; and Benesch, Ryszard, 4,238,118, Cl. 266-46.000.

Cir S.p.A. Divisione Sasib: *See—*
Manservisi, Renato, 4,238,025, Cl. 198-450.000.

Citibank, N.A.: *See—*
Berman, James S., 4,237,799, Cl. 109-2.000.

Citizen Watch Co., Ltd.: *See—*
Ohno, Hideshi, 4,237,607, Cl. 29-840.000.
Urushida, Yoshihisa, 4,237,925, Cl. 137-552.000.

Clabburn, Robin J. T.; and Penneck, Richard J., to Raychem Limited. Heat-recoverable connector. 4,237,609, Cl. 29-859.000.

Clain, Philippe; and Faye, Christian, to Regie Nationale des Usines Renault. Safety device for retention of a spare-tire cradle. 4,238,091, Cl. 224-42.230.

Clarion Co., Ltd.: *See—*
Chaki, Takao, 4,237,740, Cl. 74-10.330.
Suzuki, Kazuo; Ariga, Shoji; and Murakami, Yoshiaki, 4,238,139, Cl. 312-7.00R.

Clark Equipment Company: *See—*
DePriester, Donald J.; and Miller, Richard C., 4,238,169, Cl. 414-783.000.

Clark, K. Warren: *See—*
Witzel, Frank; Puglia, Wayne J.; Clark, K. Warren; and Mackay, Donald A. M., 4,238,475, Cl. 424-48.000.

Clarke-Gravely Corporation: *See—*
Nelson, Bertel S., 4,237,571, Cl. 15-49.00R.

Clarke, Patrick W., to Bell Telephone Laboratories, Incorporated. AC-DC switching regulator to supply uninterruptible power. 4,238,690, Cl. 307-44.000.

Clausen, Andrew, Jr.: *See—*
Andre, Willard E.; Clausen, Andrew, Jr.; and Hultsman, Ben B., 4,237,969, Cl. 165-71.000.

Clausen, Herman A.; Boeddeker, David R.; Johnson, Logan W.; and Wenger, Jerry A., to Wenger Corporation. Conductor's chair. 4,238,097, Cl. 248-188.700.

Clausi, Adolph S.: *See—*
Martin, Thom O.; and Clausi, Adolph S., 4,238,514, Cl. 426-62.000.

Clayton, Andrew R., to Brad Ragan, Inc. Apparatus and method for grooving tires. 4,237,955, Cl. 157-13.000.

Clayton, Harold J.; Kulpa, Theodore A.; and Roedel, George F., to General Electric Company. Reactions of chlorosilanes and methoxysilanes with chlorosiloxanes, methoxysiloxanes and siloxanes. 4,238,402, Cl. 260-448.80R.

Cleeland, Roy, Jr.; Grunberg, Emanuel; Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Fluorogenic materials and labeling techniques. 4,238,589, Cl. 562-442.000.

Clegg, Russell B.: *See—*
Sipek, Charles B.; Johnstone, Richard; and Clegg, Russell B., 4,238,034, Cl. 211-1.500.

Clemen, Rainer; Gschwendtner, Joerg; and Haug, Werner, to International Business Machines Corporation. Dynamic semiconductor memory read/write access circuit. 4,238,841, Cl. 365-203.000.

Cleveland, Marvin G. Flushing T for heater hose. 4,238,131, Cl. 285-38.000.

Clifford, Graham F.; and Zeiffer, Dieter F., to Gaston County Dyeing Machine Company. Means for applying treating liquor to textile substrate. 4,237,818, Cl. 118-410.000.

Cline, Edward T.; and Cramer, Francis B., to Du Pont de Nemours, E. I., and Company. Process for melt spinning acrylonitrile polymer hydrates. 4,238,442, Cl. 264-206.000.

Cobb, David L.; Doyle, Brian L.; Webster, James A.; and Smith, David H., Jr., to United States of America, Agriculture. Rotating field plot row marker. 4,237,984, Cl. 172-554.000.

Cobb, Raymond L., to Phillips Petroleum Company. Compounds and process. 4,238,408, Cl. 260-465.80R.

Coble, William H.: *See—*
Safrit, Sam C.; Shields, Harper; Coble, William H.; and Farrell, Roscoe M., 4,237,707, Cl. 66-172.00E.

Coblentz, Robert C. Compressed air system. 4,237,696, Cl. 62-93.000.

Coburn, Robert E., to Molins Machine Company, Inc. Head locking means for slitter scorer. 4,237,761, Cl. 83-665.000.

Coccia, Larry A., to Pullman Incorporated. Method of monitoring conversion of iron ore into high content pellets. 4,238,225, Cl. 75-33.000.

Cohen, Edwin; and Mortimer, Charles P. L., to Singer Company, The. System for changing alphanumeric values that are displayed on cathode ray tube screens. 4,238,792, Cl. 340-707.000.

Cohen, Milton J. Male catheter. 4,237,894, Cl. 128-349.00R.

Cointment, Delma M. Device for removing and replacing soft contact lenses worn on the human eye. 4,238,134, Cl. 294-1.0CA.

Cole, George S.; and Schmidt, Karl M. Thrust producing shoe sole and heel. 4,237,625, Cl. 36-28.000.

Colgate Palmolive Company: *See—*
Harvey, Kenneth, 4,238,476, Cl. 424-52.000.

Collins, David W.: *See—*
Woolhouse, Geoffrey R.; Huggins, Harold A.; and Collins, David W., 4,237,601, Cl. 29-583.000.

Colt Industries Operating Corp.: *See—*
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,238,660, Cl. 219-69.00G.
Keen, Harry J.; and Thomas, Haydon C., 4,238,784, Cl. 340-347.0NT.
McCabe, Ralph P., 4,238,110, Cl. 251-129.000.

Columbia Gas System Service Corporation: *See—*
Hong, Charles C., 4,238,206, Cl. 55-48.000.

Columbia Ribbon and Carbon Mfg. Co., Inc.: *See—*
Dapp. George P.; and Scott, Michael A., 4,238,549, Cl. 428-484.000.

Combustion Engineering, Inc.: *See—*
Kochey, Edward L., 4,237,825, Cl. 122-406.0ST.

Comitato Nazionale per l'Energia Nucleare—CNEN: *See—*
Zapparoli, Giorgio; and Tommasino, Luigi, 4,238,309, Cl. 204-195.00R.

Commercial Resins Company: *See—*
Hart, Robert J.; and Langley, Russell M., 4,237,817, Cl. 118-307.000.

Commercial Shearing, Inc.: *See—*
Williams, Arthur J., 4,237,769, Cl. 91-1.000.

Communal, Jean-Noel: *See—*
Falcoz, Pierre; Filhol, Raymond; and Communal, Jean-Noel, 4,238,236, Cl. 106-90.000.

Compagnie Europeenne pour l'Equipment Menager Cepem: *See—*
Maitenaz, Paul, 4,238,670, Cl. 219-413.000.

Compagnie Generale des Etablissements Michelin: *See—*
Chautard, Jean; and Chemizard, Andre, 4,237,952, Cl. 152-330.0RF.
Mathevet, Albert, 4,237,953, Cl. 152-361.0FP.
Pommier, Jean, 4,237,954, Cl. 152-362.00R.

Compagnie Generale des Matieres Nucleaires (COGEMA) S.A.: *See—*
Sialino, Angelo; and Francois, Alain, 4,238,457, Cl. 423-10.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Kemler, Marc, 4,238,649, Cl. 179-175.20D.

Conaway Pressure Systems, Inc.: *See—*
Conaway, Robert M., 4,238,667, Cl. 219-390.000.

Conaway, Robert M., to Conaway Pressure Systems, Inc. Heating unit for HIP furnace. 4,238,667, Cl. 219-390.000.

Concast Incorporated: *See—*
Perratore, Albert J.; and Bass, Mikhail, 4,237,960, Cl. 164-4.000.

Condes Corporation: *See—*
Memmel, Robert A., Jr., 4,238,273, Cl. 156-552.000.

Conn, Donald R.: *See—*
Harrison, Gregory K.; Pope, George D.; Riel, Richard F.; Kobb, Donald A.; Kelley, Charley T.; Lawrence, David J.; Conn, Donald R.; and Odom, Richard C., 4,237,770, Cl. 91-369.00A.

Connolly, Joseph J., Jr.: *See—*
Redfern, Thomas P.; Frederiksen, Thomas M.; and Connolly, Joseph J., Jr., 4,238,839, Cl. 365-96.000.

Connolly, Michael: *See—*
Landem, Roy; and Connolly, Michael, 4,237,654, Cl. 49-141.000.

Connor, Frank G.; and Veach, Billy B. R., to Nationwide Carriers Incorporated. System for heating fuel oil. 4,237,850, Cl. 123-557.000.

Conoco, Inc.: *See—*
Grimsley, R. Leroy, 4,238,335, Cl. 210-80.000.

Conrac Corporation: *See—*
Macmillan, John M.; and Costa, Hilario S., 4,238,679, Cl. 250-385.000.

Container Corporation of America: *See—*
Ellerbe, Roger A.; Welch, Jay V.; and Miller, Roy L., 4,238,068, Cl. 229-39.00R.
Helms, Charles R.; and Addison, Donald A., 4,238,047, Cl. 220-306.000.
Skaggs, Boyd T., 4,238,031, Cl. 206-453.000.

Continental Group, Inc., The: *See—*
Pelton, Peter G., 4,238,264, Cl. 156-212.000.

Coons, Scott. Attendant propelled portable spraying apparatus. 4,238,074, Cl. 239-199.000.

Cooper, Jerry W.; Holden, Homer N.; Medford, Richard D.; and Haley, John S., to Dayco Corporation. Railway car coupler wear liner. 4,238,039, Cl. 213-61.000.

Cordell, Geoffrey B.: *See—*
Maslen, Frank P.; and Cordell, Geoffrey B., 4,237,693, Cl. 60-648.000.

Cordier, Jean-Pierre: *See—*
Bingen, Roald; Cordier, Jean-Pierre; and Georges, Raymond, 4,238,637, Cl. 13-26.000.

Corning Glass Works: *See—*
Bonk, John A.; and Malmendier, Joseph W., 4,238,704, Cl. 313-113.000.

Coronet-Werke Heinrich Schlerf GmbH: *See—*
Weihrauch, Georg, 4,237,573, Cl. 15-145.000.

Cortez, Reynaldo. Plant growing box. 4,237,653, Cl. 47-73.000.

Costa, Hilario S.: *See—*
Macmillan, John M.; and Costa, Hilario S., 4,238,679, Cl. 250-385.000.

Cottrell, Walter D., Jr.; and Lawson, Ernest E., to Owens-Corning Fiberglas Corporation. Apparatus for producing sheet resinous materials. 4,238,176, Cl. 425-85.000.

Couch, Terry L.: *See—*
Stein, Robert G.; Couch, Terry L.; and Crovetti, Aldo J., 4,238,484, Cl. 424-202.000.

Coupek, Jiri: *See—*
Lim, Drahoslav; Coupek, Jiri; Krivakova, Miroslava; and Pokorny, Svatopluk, 4,238,569, Cl. 521-52.000.

Courtney-Pratt, Jeofry S., to Bell Telephone Laboratories, Incorporated. Three-dimensional photographic technique. 4,238,148, Cl. 354-112.000.

Cozens, Ross J.; Jennings, James R.; Hogan, Philip J.; and Kelly, Lawrence F. M., to Imperial Chemical Industries Limited. Substituted phenyl phosphinites and phosphonites. 4,238,422, Cl. 260-945.000.

CPC International Inc.: *See—*
Ledding, Willard E., 4,237,619, Cl. 34-57.00R.

CPT Corporation: *See—*
Lehman, Frederick D., 4,238,774, Cl. 358-242.000.

Cramer, David J. Latch and cylinder guard. 4,237,712, Cl. 70-417.000.

Cramer, Francis B., to Du Pont de Nemours, E. I., and Company. Process for preparing acrylic polymer plexifilaments. 4,238,441, Cl. 264-206.000.

Cramer, Francis B.: *See—*
Cline, Edward T.; and Cramer, Francis B., 4,238,442, Cl. 264-206.000.

Crawford, John G.; and Taylor, John B., to General Electric Company. Dishwasher inlet air gap. 4,237,919, Cl. 137-216.000.

Cretney, Donald F.; and Howard, John, to Phillips Cables Ltd. Electric cable. 4,238,638, Cl. 174-23.00C.

Crile, Eugene E.; and Schwellenbach, Donald D. Molding machine with vibration isolation. 4,238,177, Cl. 425-150.000.

Critical Systems, Inc.: *See—*
Whalley, Wilfrid B., 4,237,898, Cl. 128-422.000.

Crivello, James V.; and Lam, Julia H. W., to General Electric Company. Method for making diaryliodonium salts. 4,238,394, Cl. 260-299.000.

Crivello, James V., to General Electric Company. Heat curable compositions. 4,238,587, Cl. 526-192.000.

Crivello, James V.; and Lam, Julia H. W., to General Electric Company. Method for making aryl onium salts of group via elements. 4,238,619, Cl. 549-3.000.

Croasdell, Desmond F. Half pig's head boning method and apparatus. 4,237,580, Cl. 17-45.000.

Cronauer, Donald C.; Vogel, Roger F.; and Flinn, Richard A., to Gulf Research & Development Company. Denitrogenation of shale oil. 4,238,320, Cl. 208-254.00H.

Crovetti, Aldo J.: *See—*
Stein, Robert G.; Couch, Terry L.; and Crovetti, Aldo J., 4,238,484, Cl. 424-202.000.

Crow, Jerry V., to General Motors Corporation. Method for assembling a terminal to a battery side wall. 4,237,603, Cl. 29-623.400.

Crue, Charles R., to Bell Telephone Laboratories, Incorporated. Phase-locked loop for PCM transmission systems. 4,238,740, Cl. 331-17.000.

Cryer, Edward; and Wilkinson, Norman, to Lucas Industries Limited. Electrical switch. 4,238,650, Cl. 200-4.000.

Csukas, Bela: *See—*
Ormos, Zoltan; Csukas, Bela; Pataki, Karoly; Balla, Laszlo; and Blickle, Tibor, 4,237,814, Cl. 118-24.000.

Cummins Engine Company, Inc.: *See—*
Baugh, James D.; Smith, Stephen; and Shaw, Terrence M., 4,237,847, Cl. 123-195.00R.

Czosnyka, Stanislaw; Krzywon, Walter; Kozien, Andrzej; Cichocki, Stanislaw; and Benesch, Ryszard, to Osrodek Badawgzo-Rozwojowy Przemyslu Budowy Urzadzen Chemicznych "CEBEA". Method of permanent protection of the lower part of the blast furnace, in particular of the bottom of the blast furnace hearth. 4,238,118, Cl. 266-46.000.

Czumak, Frank M., to Polaroid Corporation. Multipurpose film cassette having one-piece process mode switch. 4,238,145, Cl. 352-130.000.

Dahlgren, Harold F. Inker for applying newsprint type ink. 4,237,785, Cl. 101-141.000.

Daikin Kogyo Co., Ltd.: *See—*
Tohzuka, Takashi; and Ohsaka, Yohnosuke, 4,238,416, Cl. 260-593.00H.

Daimler-Benz Aktiengesellschaft: *See—*
Krugener, Rolf; Haug, Ernst; and Kurth, Hermann W., 4,237,709, Cl. 70-107.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Uno, Hitoshi; Nagai, Yasutaka; and Nakamura, Hideo, 4,238,620, Cl. 549-13.000.

Daly, Thomas P., to Ebauches Electroniques SA. Electronic watch for yacht races. 4,238,847, Cl. 368-89.000.

Danby, Hal C.: *See—*
Beigler, Myron A.; and Danby, Hal C., 4,237,881, Cl. 128-214.00F.

D'Andria, Ernest F. Lip openable closure for containers. 4,238,045, Cl. 220-90.400.

Danneels, Laurent: *See—*
Vandenbossche, Christian; Danneels, Laurent; and Vanhumbeeck, Jacky, 4,238,297, Cl. 204-1.00T.

Dannels, W. Andrew; and Bainbridge, Robert W., to Hooker Chemicals & Plastics Corp. Method and apparatus for runnerless injection-compression molding thermosetting materials. 4,238,181, Cl. 425-543.000.

Dantzer, Elonne: *See—*
Goldfarb, Adolph E.; and Dantzer, Elonne, 4,237,649, Cl. 46-161.000.

Dapp, George P.; and Scott, Michael A., to Columbia Ribbon and Carbon Mfg. Co., Inc. Transfer elements. 4,238,549, Cl. 428-484.000.

Darmstaedter, Eric: *See—*
Jaworowski, Raymond; Darmstaedter, Eric; Barton, Cliff D.; and Taylor, William, 4,238,203, Cl. 55-5.000.

Datapower, Inc.: *See—*
Nelson, Alan H., 4,238,710, Cl. 315-307.000.

Dauernheim, Hans: *See—*
Hess, Hans-Peter; Muhling, Gunther; Sunkel, Manfred; and Dauernheim, Hans, 4,237,656, Cl. 49-352.000.

Daviduk, Nicholas; and Haddad, James H., to Mobil Oil Corporation. Fluid zeolite catalyzed conversion of alcohols and oxygenated derivatives to hydrocarbons by controlling exothermic reaction heat. 4,238,631, Cl. 585-469.000.

Davis, James W.: *See—*
Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., 4,238,805, Cl. 346-75.000.

Davis, Roland O. Motion transmitting device. 4,237,751, Cl. 74-801.000.

Dayco Corporation: *See—*
Cooper, Jerry W.; Holden, Homer N.; Medford, Richard D.; and Haley, John S., 4,238,039, Cl. 213-61.000.
Holden, Homer N.; and Sumrall, Reese, 4,237,793, Cl. 105-225.000.
Hollaway, Gerald C.; Spivy, Paul L.; Nelson, Jack; and Fieler, Wayne C., 4,238,530, Cl. 427-173.000.
Somers, M. John, 4,237,792, Cl. 105-199.00C.

Daystrom Furniture, Inc.: *See—*
Parker, Wayland B., 4,237,795, Cl. 108-12.000.

Debrois, Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Method for manufacturing filter-tipped cigarettes. 4,237,908, Cl. 131-61.00R.

Dedman, Wendell W.: *See—*
Slough, Carlton M.; and Dedman, Wendell W., 4,237,613, Cl. 33-172.00E.

Deere & Company: *See—*
Swanson, Larry D., 4,237,997, Cl. 180-272.000.

Deering, Hartland W., Jr., to Minnesota Mining and Manufacturing Company. Tape applying device. 4,238,269, Cl. 156-465.000.

De Ferrante, Franca G.: *See—*
Ferrante, Michele; and De Ferrante, Franca G., 4,237,805, Cl. 112-262.100.

de Haan, Maarten R.: *See—*
Carasso, Marino G.; Verboom, Johannes J.; and de Haan, Maarten R., 4,238,843, Cl. 365-234.000.

Dehn, Rudolph A., to General Electric Company. Temperature sensing probe for microwave ovens. 4,237,731, Cl. 73-352.000.

Deindoerfer, Fred H., to International Diagnostic Technology, Inc. Reagent holder. 4,238,449, Cl. 422-58.000.

Deinego, Jury B.: *See—*
Brimmer, Alexandr A.; Berezov, Semen I.; Deinego, Jury B.; Demidov, Vladimir Y.; Voinich, Leonid K.; and White, Lorell, 4,237,748, Cl. 74-732.000.

Deleens, Gerard; Guerin, Bernard; and Poulain, Claude, to Ato Chimie. Hydrolysis-resistant copolyether-esteramides. 4,238,582, Cl. 525-430.000.

Delmonte, Julian; Kirkwood, M. Janet; and Ritchie, Douglas G., to Eaton Corporation. Hydraulic pressure relief valve and fluid isolator. 4,237,935, Cl. 137-860.000.

DeLuca, John C.; and Gambino, Richard J., to International Business Machines Corporation. Domain drag effect devices. 4,238,837, Cl. 365-28.000.

DeLuca, William H.; Hornstra, Fred, Jr; Gelb, George H.; Berman, Baruch; and Moede, Larry W., to United States of America, Energy. System and method for charging electrochemical cells in series. 4,238,721, Cl. 320-18.000.

DeLucia, Thomas A. Monorail rapid transit system. 4,237,790, Cl. 104-130.000.

DeMatte, James F.; and Simonelli, Nazaro A., to Sperry Corporation. Line length navigation system. 4,238,824, Cl. 364-449.000.

Demidov, Vladimir Y.: *See—*
Brimmer, Alexandr A.; Berezov, Semen I.; Deinego, Jury B.; Demidov, Vladimir Y.; Voinich, Leonid K.; and White, Lorell, 4,237,748, Cl. 74-732.000.

Demin, Alexei S.: *See—*
An, Viktor B.; Bukhtiyarov, Ivan D.; Demin, Alexei S.; Kosyrev, Viktor V.; and Slepchuk, Valery A., 4,238,692, Cl. 307-106.000.

Deminet, Czeslaw, to Boeing Company, The. Method of manufacturing a glass parabolic-cylindrical solar collector. 4,238,265, Cl. 156-221.000.

Demmers, Arie A., to Koninklijke Bos Kalis Westminster Group N.V. Hydraulic synchronous driving mechanism. 4,237,688, Cl. 60-484.000.

Demorieux, Jean-Marie, to Setec Travaux Publics. Connection system between a slide and a very long member. 4,238,138, Cl. 308-3.00R.

Deppenbrock, Josef: *See—*
Liebert, Karl-Heinz; Tischer, Werner; Deppenbrock, Josef; and Leberfinger, Kurt, 4,237,773, Cl. 91-467.000.

DePriester, Donald J.; and Miller, Richard C., to Clark Equipment Company. Handling device for vehicle frames. 4,238,169, Cl. 414-783.000.

Derichs, Helmut: *See—*
Regehr, Ulrich; Hannemann, Horst; Bulang, Siegfried; Derichs, Helmut; Knuplez, Vladimir; and Wedrich, Martin, 4,238,210, Cl. 55-396.000.

Derozier, Danny M., to Rexnord Inc. Spool spin prevention for hydraulic control valves. 4,238,112, Cl. 251-324.000.

Des Lauriers, Edwin D., to General Motors Corporation. Vehicle throttle stop control apparatus. 4,237,833, Cl. 123-97.00B.

Desmond-Stephan Mfg. Company, The: *See—*
McConnell, Robert B., 4,237,853, Cl. 125-37.000.

Detweiler, Charles A.: *See—*
Benjamin, Benjamin C.; and Detweiler, Charles A., 4,237,924, Cl. 137-510.000.

Deusch, Rudolf: *See—*
Stuben, Werner; Hinzpeter, Jurgen; Deusch, Rudolf; and Friedrichs, Konrad, 4,238,431, Cl. 264-40.500.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Brandt, Bernd; Nauroth, Peter; Peters, Albert; and Reinhardt, Helmut, 4,238,322, Cl. 209-3.000.
Rothbuhr, Lothar; Sroka, Werner; and Vogel, Karl, 4,238,199, Cl. 23-314.000.

de Vecchis, Michel; and Hulin, Jean-Pierre, to Societe Lignes Telegraphiques et Telephoniques. Optical fibre laying head for cable production. 4,237,687, Cl. 57-361.000.

Devries, Egbert, to Quad Corporation. Removal of odors from gas streams. 4,238,461, Cl. 423-210.000.

De Waele, Gerard, to Hanota Holdings S.A. Building block set and method for building with such a block set. 4,237,670, Cl. 52-436.000.

Dewar, John H.: *See—*
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,238,140, Cl. 339-186.00M.

Dexter, Martin: *See—*
Kleiner, Eduard K.; and Dexter, Martin, 4,238,575, Cl. 525-212.000.

Dey, Arabinda N.; Miller, John S.; and Bowden, William L., to P. R. Mallory & Co. Inc. Electrolyte salt for non-aqueous electrochemical cells. 4,238,552, Cl. 429-101.000.

Diamond Shamrock Corporation: *See—*
Brand, William W., 4,238,424, Cl. 260-979.000.
Holm, Robert E.; and Ku, Han San, 4,238,219, Cl. 71-86.000.
Powers, Larry J.; Ariyan, Zaven S.; Buchman, Russell; Scozzie, James A.; Moser, Robert E.; and Pyne, William J., 4,238,490, Cl. 424-250.000.

Dickinson, Robert V. C.; Entenman, Alan W.; and Kliphuis, Jans, to Intech Laboratories, Inc. Data transmission and reception system. 4,238,779, Cl. 340-146.10E.

Didycz, William J.: *See—*
Aiken, John E.; and Didycz, William J., 4,238,460, Cl. 423-210.000.

Diehl GmbH & Co.: *See—*
Ruchel, Peter, 4,238,249, Cl. 148-2.000.
Wacula, Klaus P.; and Emmerling, Karl, 4,237,787, Cl. 102-52.000.

Dieterich, Dieter: *See—*
Markusch, Peter; Noll, Klaus; and Dieterich, Dieter, 4,238,378, Cl. 260-29.2TN.

Dietrich, Hans. Apparatus to produce an anchor on a tendon twisted of several steel wires. 4,237,942, Cl. 140-105.000.

Dietrich, Walter: *See—*
Aichert, Hans; Dietrich, Walter; Stark, Friedrich; and Stephan, Herbert, 4,238,525, Cl. 427-42.000.

Dietz, Richard E., to Phillips Petroleum Company. Polymerization of olefins. 4,238,354, Cl. 252-429.00B.

Dietz, Wolfgang F. W., to RCA Corporation. Switched vertical deflection with triac. 4,238,712, Cl. 315-393.000.

Dijkmans, Eise C.; and Brockmann, Klaus-Dieter K., to U.S. Philips Corporation. Supply circuit for a subscriber's line circuit. 4,238,644, Cl. 179-81.00R.

Diker, Charles M.: *See—*
Moe, Walter; and Diker, Charles M., 4,237,648, Cl. 46-122.000.

Diker Moe Associates: *See—*
Moe, Walter; and Bernstein, Lawrence A., 4,237,631, Cl. 40-155.000.
Moe, Walter; and Diker, Charles M., 4,237,648, Cl. 46-122.000.

Dirks, Jay. Industrial tire chain tightener. 4,237,951, Cl. 152-242.000.

Disston, Horace C.: *See—*
Eichfeld, Timothy J.; and Disston, Horace C., 4,238,124, Cl. 269-97.000.

Doemens, Guenter, to Siemens Aktiengesellschaft. Process and an apparatus for automatically recognizing the position of semiconductor elements. 4,238,780, Cl. 340-146.30H.

Doerffer, Jerzy, to Politechnika Gdanska. Stern braking device. 4,237,808, Cl. 114-170.000.

Doi, Toshitada: *See—*
Iga, Akira; and Doi, Toshitada, 4,238,852, Cl. 371-40.000.

Dolan, James P., to ADS Systems, Inc. Apparatus and method for detecting substances and for regulating current. 4,237,721, Cl. 73-23.000.

Domes, E. A.; and Meisner, David B., to International Harvester Company. Tracked armored tire assembly using a two piece grouser retainer. 4,237,950, Cl. 152-175.000.

Dorgard Limited: *See—*
Welch, Anthony H. E., 4,237,578, Cl. 16-48.500.

Dorina Nahmaschinen GmbH: *See—*
Meier, Gunter; and Kemmel, Patrice, 4,237,807, Cl. 112-278.000.

Dow Chemical Company, The: *See—*
Morris, Nancy J.; and Shier, George D., 4,238,624, Cl. 560-246.000.
Peterson, Robert L.; Beaumont, Gerald P.; and Johnson, Bruce P., 4,237,726, Cl. 73-73.000.
Scherubel, Gary A., 4,237,974, Cl. 166-281.000.
Scherubel, Gary A., 4,237,975, Cl. 166-281.000.
Shipley, Randall S.; Birkelbach, Donald F.; and Lowery, Kirby, Jr., 4,238,355, Cl. 252-429.00B.
Swaim, Paul D.; and Ellebracht, Steven R., 4,238,198, Cl. 23-230.00R.

Dow Corning Corporation: *See—*
LeGrow, Gary E., 4,238,050, Cl. 220-458.000.

Doyle, Brian L.: *See—*
Cobb, David L.; Doyle, Brian L.; Webster, James A.; and Smith, David H., Jr., 4,237,984, Cl. 172-554.000.

Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, to Ciba-Geigy Corporation. Cyclopropanecarboxylic acid-phenoxy-α-vinyl-benzyl esters, processes for producing them, and their use in combating pests. 4,238,504, Cl. 424-305.000.

Draber, Wilfried: *See—*
Regel, Erik; Buchel, Karl H.; Draber, Wilfried; Plempel, Manfred; and Haller, Ingo, 4,238,498, Cl. 424-273.00R.

Dravo Corporation: *See—*
Schneider, Gunter, 4,238,120, Cl. 266-179.000.

Dresser Industries, Inc.: *See—*
Geery, Paul W., 4,238,825, Cl. 364-510.000.
Weise, Stanley A., 4,237,979, Cl. 166-315.000.
Wetterhorn, Richard H., 4,237,738, Cl. 73-740.000.

Dreulle, Noel. Zinc alloy and galvanization process. 4,238,532, Cl. 427-309.000.

Drozdova, Larisa A.: *See—*
Belova, Tamara N.; Drozdova, Larisa A.; Zverev, Anatoly T.; Tjurin, Jury G.; and Khutoretsky, Garri M., 4,238,702, Cl. 310-179.000.

Dubiel, Oswald: *See—*
Maucher, Paul; and Dubiel, Oswald, 4,238,019, Cl. 192-99.00A.

Dubinsky, Rudolf S.: *See—*
Medovar, Boris I.; Dubinsky, Rudolf S.; Boiko, Georgy A.; Butov, Vladimir I.; and Prikhodko, Valery A., 4,238,633, Cl. 13-9.0ES.

DuBois, John L.: *See—*
Grein, Louis F.; and DuBois, John L., 4,237,732, Cl. 73-366.0AR.

DuBose, Ronald A.; and Woolsey, William D., to Agri-Bio Corporation. Apparatus for removing appendages from avian species by using electrodes to induce a current through the appendage. 4,237,891, Cl. 128-303.140.

Dubroeucq, Marie-Christine: *See—*
Barieux, Jean-Jacques; Dubroeucq, Marie-Christine; and Rocquet, Francois, 4,238,612, Cl. 546-153.000.

Dudleston, Alan R.; and Stemper, Harry, to Outboard Marine Corporation. Engine throttle control for marine propulsion devices and the like. 4,237,747, Cl. 74-516.000.

Duffy, Thomas G.: *See—*
Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,238,197, Cl. 23-230.0HC.

Dugan, Martin; and Gjelsvik, Norvald. Method of producing yttrium oxide with particularly big particles. 4,238,467, Cl. 423-263.000.

Duh, Ben, to Goodyear Tire & Rubber Company, The. Method for production of a high molecular weight polyester prepared from a prepolymer polyester having an optimal carboxyl content. 4,238,593, Cl. 528-272.000.

Duke, James M., to Westinghouse Electric Corp. Heat exchanger with double wall tubes and three tube sheets. 4,237,968, Cl. 165-70.000.

Dunham, Stuart B., to General Electric Company. Nuclei analysis of solid substances. 4,238,194, Cl. 23-230.00R.

Dunks, Clifford M.; and Castledine, Timothy, to Materials and Methods Limited. Apparatus for treatment of molten metal. 4,238,231, Cl. 75-130.00R.

Dunning, David: *See—*
Siegel, Moses; Cahall, Everett; Dunning, David; and Hammond, Joseph, 4,238,093, Cl. 244-63.000.

Du Pont de Nemours, E. I., and Company: *See—*
Antonelli, Joseph A.; and Wu, Souheng, 4,238,387, Cl. 260-42.290.
Cline, Edward T.; and Cramer, Francis B., 4,238,442, Cl. 264-206.000.
Cramer, Francis B., 4,238,441, Cl. 264-206.000.
Fang, James C., 4,238,303, Cl. 204-98.000.
Grossa, Mario; and Sandner, Helmut G., 4,238,561, Cl. 430-253.000.
Hamilton, Louis W., 4,238,573, Cl. 525-110.000.
Levitt, George, 4,238,621, Cl. 560-12.000.
Levy, Stanley B., 4,238,443, Cl. 264-210.700.
Logullo, Francis M., 4,238,440, Cl. 264-176.00F.
Manwiller, Carl H., 4,238,538, Cl. 428-36.000.

DuPont, Robert J. Massage installation. 4,237,562, Cl. 4-180.000.

Duprez, Daniel; and Grand, Michel, to Elf Union. Water dealkylation catalyst of aromatic hydrocarbons. 4,238,368, Cl. 252-455.00Z.

Duracell International Inc.: *See—*
Barrella, Joseph N., 4,238,554, Cl. 429-105.000.

Durham, Robert L.; and McKenzie, John H., to Agritec, Inc. Bound aggregate method and composition. 4,238,374, Cl. 260-17.4GC.

Duskin Franchise Co., Ltd.: *See—*
Shimono, Kikuo; Miyoshi, Ichiro; and Yamasaki, Osamu, 4,237,816, Cl. 118-249.000.

Dutra, Gerard A.; and Sikorski, James A., to Monsanto Company. Ethanimidothioic (α-diaryloxyphosphinylmethylamino) acid ester hydrochlorides, herbicidal composition and herbicidal use thereof. 4,238,218, Cl. 71-87.000.

Dvorachek, Harold A., to Echlin Manufacturing Company, The. Movable support post devices. 4,238,096, Cl. 248-75.000.

Dynabrade, Inc.: *See—*
Welsch, Walter N.; and Fleckenstein, Elwin H., 4,237,659, Cl. 51-168.000.

Dynapol: *See—*
Leonard, William J., Jr.; and Wingard, Robert E., Jr., 4,238,579, Cl. 525-330.000.

E-Systems, Inc.: *See—*
Martin, Willie E., 4,238,829, Cl. 364-561.000.
Mosley, William H.; Andren, Carl F.; and Scott, Lex, 4,238,739, Cl. 331-12.000.

E. W. Menn KG Maschinenfabrik: *See—*
Jung, Clemens; and Wiesel, Ernst, 4,237,605, Cl. 29-783.000.

Eastman Kodak Company: *See—*
Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,238,600, Cl. 528-193.000.

Eaton Corporation: *See—*
Delmonte, Julian; Kirkwood, M. Janet; and Ritchie, Douglas G., 4,237,935, Cl. 137-860.000.
German, Dale F., 4,237,918, Cl. 137-116.000.
Goscenski, Edward J., Jr., 4,238,013, Cl. 192-54.000.
Schmida, Lawrence F., 4,238,015, Cl. 192-58.00B.

Ebauches Electroniques SA.: *See—*
Daly, Thomas P., 4,238,847, Cl. 368-89.000.

Ebert, Harry K., Jr., to Bell Telephone Laboratories, Incorporated. Phase control arrangement to limit output signal transients during power source substitution in an uninterruptible power supply. 4,238,691, Cl. 307-66.000.

Echlin Manufacturing Company, The: *See—*
Dvorachek, Harold A., 4,238,096, Cl. 248-75.000.

Eckels, Phillip W., to Electric Power Research Institute. Method and apparatus for operating generator in its superconducting state. 4,238,701, Cl. 310-64.000.

Eckler, Thomas A.; and Manty, Brian A., to United Technologies Corporation. Apparatus for electrolytic etching. 4,238,310, Cl. 204-252.000.

Ecodyne Corporation: *See—*
Halbfoster, Christopher J., 4,238,334, Cl. 210-75.000.

Economics Laboratory, Inc.: *See—*
Guilbert, C. Carol, 4,238,345, Cl. 252-174.120.

Economy, James; Lin, Ruey Y.; and Smith, William D., to Carborundum Company, The. High strength yarn consisting of boron carbide fibers. 4,238,547, Cl. 428-366.000.

Ecothermia, Inc.: *See—*
Wartes, Lloyd L., 4,237,870, Cl. 126-450.000.

Edison Price, Incorporated: *See—*
Price, Edison A., 4,238,815, Cl. 362-218.000.

Edouard Dubied & Cie: *See—*
Patthey, Michel, 4,237,706, Cl. 66-126.00R.

Egan, Chester C., Jr.: *See—*
Lucero, Andres R.; Netley, Neil J.; Raven, Richard C.; and Egan, Chester C., Jr., 4,238,127, Cl. 273-143.00R.

Egretier, Michel. Method and apparatus for maceration and fermentation of grapes in the presence of carbon dioxide. 4,238,511, Cl. 426-15.000.

Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., to International Business Machines Corporation. Cryptographic communication security for single domain networks. 4,238,853, Cl. 375-2.000.

Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Smith, John L.; and Tuchman, Walter L., to International Business Machines Corporation. Cryptographic file security for single domain networks. 4,238,854, Cl. 375-2.000.

Eichfeld, Timothy J.; and Disston, Horace C. Work holder. 4,238,124, Cl. 269-97.000.

Eisele, Walter H., to Gould Inc. Diaphragm for pressure sensors. 4,237,775, Cl. 92-99.000.

Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., to United States of America, Air Force. Analysis of lubricating oils for iron content. 4,238,197, Cl. 23-230.0HC.

Ekato-Werk Erich Karl Todtenhaupt: *See—*
Tielens, Arther J.; Muller, Wolfgang; and Todtenhaupt, Erich K., 4,238,159, Cl. 366-327.000.

Elander, Jay C., to Honeywell Inc. Plug seal. 4,238,048, Cl. 220-307.000.

Elander, Robert C.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,238,853, Cl. 375-2.000.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Smith, John L.; and Tuchman, Walter L., 4,238,854, Cl. 375-2.000.

Electric Power Research Institute: *See—*
Eckels, Phillip W., 4,238,701, Cl. 310-64.000.

Electro Audio Dynamics, Inc.: *See—*
Keller, James E.; and Klar, Irwin, 4,237,905, Cl. 128-746.000.

Electro-Mechanical Products: *See—*
Tann, David, 4,238,651, Cl. 200-83.00P.

Electronic Services, Ltd.: *See—*
Stakes, Charles W., 4,237,576, Cl. 15-344.000.

Elektrofeinmechanische Werke Jacob Preh GmbH & Co.: *See—*
Schuberth, Christian; Nemeth, Istvan; and Guck, Lothar, 4,238,754, Cl. 338-174.000.

Elf Union: *See—*
Ciais, Andre; and Lambelin, Andre, 4,238,451, Cl. 422-101.000.
Duprez, Daniel; and Grand, Michel, 4,238,368, Cl. 252-455.00Z.

Elkem-Spigerverket A/S: *See—*
Krogsrud, Harald, 4,238,634, Cl. 13-17.000.

Ellebracht, Steven R.: *See—*
Swaim, Paul D.; and Ellebracht, Steven R., 4,238,198, Cl. 23-230.00R.

Ellerbe, Roger A.; Welch, Jay V.; and Miller, Roy L., to Container Corporation of America. Variable depth self-locking container. 4,238,068, Cl. 229-39.00R.

Embree, John M., to Helios Corporation. Closed pressurized solar heating system with automatic solar collector drain-down. 4,237,862, Cl. 126-420.000.

Emmerling, Karl: *See—*
Wacula, Klaus P.; and Emmerling, Karl, 4,237,787, Cl. 102-52.000.

Endo Laboratories Inc.: *See—*
Rajagopalan, Parathasarathi, 4,238,607, Cl. 544-14.000.

Endo, Shigeru: *See—*
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Endo, Shigeru, 4,238,562, Cl. 430-106.000.

Enertron Corporation: *See—*
Grein, Louis F.; and DuBois, John L., 4,237,732, Cl. 73-366.0AR.

Engel, John F., to FMC Corporation. Insecticidal biphenylmethyl perhaloalkylvinylcyclopropanecarboxylates. 4,238,505, Cl. 424-305.000.

Engel, William K., to Caterpillar Tractor Co. Displacement control valving for a radial piston device. 4,237,774, Cl. 91-490.000.

Engelhard Minerals and Chemicals Corporation: *See—*
Bonacci, John C.; Otchy, Thomas G.; and Ackerman, Thomas, 4,238,468, Cl. 423-359.000.

Enomoto, Ryo; Tanaka, Hiroyuki; and Hara, Kazuhisa, to Ibigawa Electric Industry Co., Ltd. Method of producing a silicon carbide sintered body. 4,238,434, Cl. 264-63.000.

Enrici, Margherita: *See—*
Bettanini, Carlo; Zanier, Stelio; and Enrici, Margherita, 4,238,223, Cl. 75-10.00R.
Bettanini, Carlo; Zanier, Stelio; and Enrici, Margherita, 4,238,224, Cl. 75-10.00A.

Entenman, Alan W.: *See—*
Dickinson, Robert V. C.; Entenman, Alan W.; and Kliphuis, Jans, 4,238,779, Cl. 340-146.10E.

Epworth, Richard E., to International Standard Electric Corporation. Termination for telecommunication path. 4,238,648, Cl. 179-170.00D.

Equipment Manufacturing, Inc.: *See—*
Burgess, Leonard G.; and Wroblewski, Richard E., 4,238,550, Cl. 428-586.000.

Erdelyi, Jozsef: *See—*
Balogh, Barnabas; Erdelyi, Jozsef; Fabian, Zsolt; Rusz, Vazul; Samu, Mihaly; and Szente, Jozsef, 4,238,790, Cl. 340-684.000.

Erickson, Victor; and Spector, George. Medication dispenser. 4,237,884, Cl. 128-222.000.

Ermel, Heinrich; Fruth, Franz; and Rau, Fritz, to AGFA-Gevaert, A.G. Tuner supply for electrostatic copiers. 4,237,943, Cl. 141-284.000.

Ernest, Robert T., to National Steel Corporation. Apparatus for liquid coating thickness control and removing excess liquid coating from web edges. 4,237,815, Cl. 118-63.000.

Ernst Leitz Wetzlar GmbH: *See—*
Strauch, Ernst; and Faatz, Rudi, 4,238,157, Cl. 356-3.000.

Esparza, Joe O.: *See—*
Stewart, Thomas L.; and Esparza, Joe O., 4,237,724, Cl. 73-53.000.

Etancelin, Christian, to Les Manufactures de Saint Marcel. Device for protecting cyclist feet. 4,237,628, Cl. 36-131.000.

Etat Francais as represented by the delegue general pour l'armement: *See—*
Marino, Paul J.; Blanchard, Jean; and Stefanini, Gerard R., 4,238,794, Cl. 343-5.0PC.

Ethyl Corporation: *See—*
LoMaglio, Lewis C., 4,238,263, Cl. 156-202.000.

Euskirchen, Jurgen, to Messerschmitt-Bolkow-Blohm GmbH. Waste heat recovery system. 4,238,187, Cl. 432-116.000.

Evans, Gregory S.; and Jembrzycki, Corinne R., to Alberto-Culver Company. Oat flour-oil gel cosmetic creme. 4,238,509, Cl. 424-358.000.

Evans, Joseph H.: *See—*
Middleman, Lee M.; Evans, Joseph H.; and Pettengill, Donald F., 4,238,812, Cl. 361-106.000.

EVVA Werk Spezialerzeugung von Zylinder- und Sicherheitsschloessern Gesellschaft m.b.H. & Co.: *See—*
Lanik, Hans, 4,238,752, Cl. 336-73.000.

Ex-Cell-O Corporation: *See—*
Mrugala, Ronald J.; Nord, Keith W.; and Benson, Ronald B., 4,238,026, Cl. 198-460.000.

Exxon Research & Engineering Co.: *See—*
Vandling, John M., 4,238,775, Cl. 358-257.000.
Woolhouse, Geoffrey R.; Huggins, Harold A.; and Collins, David W., 4,237,601, Cl. 29-583.000.

Fa, Charles H.: *See—*
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., 4,238,762, Cl. 357-49.000.

Faatz, Rudi: *See—*
Strauch, Ernst; and Faatz, Rudi, 4,238,157, Cl. 356-3.000.

Fabian, Zsolt: *See—*
Balogh, Barnabas; Erdelyi, Jozsef; Fabian, Zsolt; Rusz, Vazul; Samu, Mihaly; and Szente, Jozsef, 4,238,790, Cl. 340-684.000.

Fadeev, Valery G.: *See—*
Azovtsev, Alexandr A.; Velikoselsky, Nikolai D.; Vinogradov, Sergei S.; Vorontsov, Alexei E.; Kuznetsov, Lev E.; Podbeltsev, Viktor I.; Polevikov, Mikhail E.; Sviridov, Georgy M.; Fadeev, Valery G.; and Cherevaty, Anatoly A., 4,238,037, Cl. 212-3.00R.

Faivre, Bernard: *See—*
Scandella, Louis; and Faivre, Bernard, 4,238,083, Cl. 242-74.000.

Falcoz, Pierre; Filhol, Raymond; and Communal, Jean-Noel, to Rhone-Poulenc Industries. Rapidly cold weather setting/hardening mortars and concretes comprised of hydraulic binders. 4,238,236, Cl. 106-90.000.

Falkingham, Clarence M.: *See—*
Caraway, William R.; and Falkingham, Clarence M., 4,238,059, Cl. 222-529.000.

Fang, James C., to Du Pont de Nemours, E. I., and Company. Diaphragm modifier for chlor-alkali cell. 4,238,303, Cl. 204-98.000.

Farooq, Saleem: *See—*
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,238,504, Cl. 424-305.000.

Farrell, Roscoe M.: *See—*
Safrit, Sam C.; Shields, Harper; Coble, William H.; and Farrell, Roscoe M., 4,237,707, Cl. 66-172.00E.

Fauss, Rudolf; Wagner, Kuno; and Mazanek, Jan, to Bayer Aktiengesellschaft. Process for the preparation of nitro diphenyl amine derivatives. 4,238,407, Cl. 260-465.00E.

Faust, Michael C.; and Patterson, Richard A., to Minnesota Mining and Manufacturing Company. Device and method for applying flexible bails to containers. 4,238,256, Cl. 156-65.000.

Favstritsky, Nicolai A., to Fiber Industries, Inc. Polyester of para-hydroxy benzoic acid, 1,2-bis(para-carboxy phenoxy)ethane, terephthalic acid and hydroquinone capable of forming an anisotropic melt which readily undergoes melt processing. 4,238,598, Cl. 528-193.000.

Fayard, Carlos A.: *See—*
Fayard, Carlos O.; and Fayard, Carlos A., 4,237,861, Cl. 126-417.000.

Fayard, Carlos O.; and Fayard, Carlos A. Solar energy collector used as roof member. 4,237,861, Cl. 126-417.000.

Faye, Christian: *See—*
Clain, Philippe; and Faye, Christian, 4,238,091, Cl. 224-42.230.

Felix, Raymond A., to Stauffer Chemical Company. Fungicidal 1,2-dichlorocyanovinyl compounds. 4,238,405, Cl. 260-464.000.

Feng, Bai-Cwo; and Feng, George C., to International Business Machines Corporation. Two layer resist system. 4,238,559, Cl. 430-156.000.

Feng, Chung L., to Selas Corporation of America. Fluid velocity measurement system. 4,237,730, Cl. 73-204.000.

Feng, George C.: *See—*
Feng, Bai-Cwo; and Feng, George C., 4,238,559, Cl. 430-156.000.

Ferjon: *See—*
Phillips, Harold L., 4,238,546, Cl. 428-306.000.

Ferloni, Vincenzo: *See—*
Rossi, Guglielmo; and Ferloni, Vincenzo, 4,237,746, Cl. 74-504.000.

Ferrante, Michele; and De Ferrante, Franca G. Method for making a double fitted sheet. 4,237,805, Cl. 112-262.100.

Fiber Industries, Inc.: *See—*
Favstritsky, Nicolai A., 4,238,598, Cl. 528-193.000.
Langley, Jeffrey T.; and Mininni, Robert M., 4,238,599, Cl. 528-193.000.

Fichtel & Sachs AG: *See—*
Wossner, Felix; and Handke, Gunther, 4,238,009, Cl. 188-315.000.

Fiege, Helmut; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of aryloxyacetic acid. 4,238,625, Cl. 562-421.000.

Fiege, Helmut: *See—*
Bauer, Kurt; Molleken, Reiner; Wedemeyer, Karlfried; and Fiege, Helmut, 4,238,629, Cl. 568-764.000.

Field, George F.; and Zally, William J., to Hoffmann-La Roche Inc. Intermediates for the production of imidazobenzodiazepines. 4,238,610, Cl. 544-283.000.

Fieler, Wayne C.: *See—*
Hollaway, Gerald C.; Spivy, Paul L.; Nelson, Jack; and Fieler, Wayne C., 4,238,530, Cl. 427-173.000.

Figueiras, Andres. Universal system for supplying gases to internal combustion engine. 4,237,840, Cl. 123-119.00A.

Fikse, James A.: *See—*
Fikse, Tyman H.; and Fikse, James A., 4,238,038, Cl. 212-89.000.

Fikse, Tyman H.; and Fikse, James A., to Meeks, said Dana W., by said Tyman H. Fikse. Log yarding skyline carriage. 4,238,038, Cl. 212-89.000.

Filhol, Raymond: *See—*
Falcoz, Pierre; Filhol, Raymond; and Communal, Jean-Noel, 4,238,236, Cl. 106-90.000.

Filippov, Iosif F.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Korolkov, Anatoly G.; Popov, Jury S.; Rozenfeld, Lev M.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,238,700, Cl. 310-52.000.

Filtrol Corporation: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,238,360, Cl. 252-438.000.
Alafandi, Hamid; and Stamires, Dennis, 4,238,361, Cl. 252-438.000.

Fina, Louis R.: *See—*
Lambert, Jack L.; and Fina, Louis R., 4,238,477, Cl. 424-79.000.

Finch, Jack N., to Phillips Petroleum Company. Methanation catalyst. 4,238,371, Cl. 252-465.000.

Findeisen, Kurt; and Schwarz, Herbert, to Bayer Aktiengesellschaft. Process for the preparation of acyl cyanides. 4,238,412, Cl. 260-545.00R.

Fishel, Clark W. Applying particles and adhesive to racquet strings. 4,238,262, Cl. 156-166.000.

Fisher, Charles B.; and Fisher, Sidney T. Angle-modulated stereo system. 4,238,642, Cl. 179-1.0GC.

Fisher & Paykel, Limited: *See—*
Harrison-Smith, John L.; and Milsom, Henry B. C., 4,237,916, Cl. 135-69.000.

Fisher, Sidney T.: *See—*
Fisher, Charles B.; and Fisher, Sidney T., 4,238,642, Cl. 179-1.0GC.

Fisons Limited: *See—*
Brown, Roger C.; Hazard, Richard; and Mann, John, 4,238,606, Cl. 542-441.000.
Quantock, Derek C., 4,238,502, Cl. 424-283.000.

Fitzpatrick, William E., to International Playtex, Inc. Nursing unit. 4,238,040, Cl. 215-11.00E.

Fleckenstein, Elwin H.: *See—*
Welsch, Walter N.; and Fleckenstein, Elwin H., 4,237,659, Cl. 51-168.000.

Flinn, Richard A.: *See—*
Cronauer, Donald C.; Vogel, Roger F.; and Flinn, Richard A., 4,238,320, Cl. 208-254.00H.

Florack, Petrus M., to Shell Oil Company. Process for the separation of straight paraffins from mixed paraffins. 4,238,321, Cl. 208-310.00Z.

Florian deceased, Eugene F.: *See—*
Haggard, Samuel E.; Riley, Travis E.; and Florian deceased, Eugene F., 4,238,845, Cl. 367-183.000.

Fluck, Jakob; and Schellenberg, Hans, to Maschinenfabrik Rieter AG. False twisting apparatus. 4,237,686, Cl. 57-337.000.

Fluid Power Research, Inc.: *See—*
Heskett, Don E., 4,238,325, Cl. 210-20.000.

FMC Corporation: *See—*
Engel, John F., 4,238,505, Cl. 424-305.000.

Fodor, Gabor B.: *See—*
Szent-Gyorgyi, Albert; and Fodor, Gabor B., 4,238,500, Cl. 424-278.000.

Fong, Dodd W.; and Allain, Ronald J., to Nalco Chemical Company. Flotation aids for oil-in-water emulsions. 4,238,330, Cl. 210-43.000.

Fong, Melvin G. Visual display and electro-optical transducer. 4,238,786, Cl. 340-378.400.

Fontenot, John L., Sr. Gasket seat resurfacer. 4,237,660, Cl. 51-241.0VS.

Ford, Jimmie R. Battery safety jumper cables. 4,238,722, Cl. 320-25.000.

Ford Motor Company: *See—*
Achari, Achyuta, 4,237,722, Cl. 73-23.000.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,238,140, Cl. 339-186.00M.

Ford, William D.: *See—*
Vasalos, Iacovos A.; Ford, William D.; and Hsieh, Chuan-Kang R., 4,238,317, Cl. 208-120.000.

Formigraphic Engine Corporation: *See—*
Swainson, Wyn K., 4,238,840, Cl. 365-119.000.

Forox Corporation: *See—*
Thompson, Edwin R., 4,237,678, Cl. 53-520.000.

Forsblom, Hans O. G.: *See—*
Frykhult, Rune H.; and Forsblom, Hans O. G., 4,238,208, Cl. 55-169.000.

Forster George A.: *See—*
Karplus, Henry H. B.; and Forster George A., 4,238,725, Cl. 324-56.000.

Foster, Arthur M.: *See—*
Tang, David Y.; and Foster, Arthur M., 4,238,413, Cl. 260-545.00R.

Foster, Michael R.: *See—*
Roberts, David E.; and Foster, Michael R., 4,238,454, Cl. 422-171.000.

Foucher, Claude: *See—*
Monnier, Michel J. C.; Monneraye, Marc A.; and Foucher, Claude, 4,238,527, Cl. 427-55.000.

Fournier, Liliane: *See—*
Llabres, Raymond; Fournier, Liliane; and Lemonon, Claire, 4,238,179, Cl. 425-394.000.

Fox, Kenneth R.: *See—*
Stevenson, Andrew C.; and Fox, Kenneth R., 4,238,810, Cl. 361-91.000.

Fozzard, George B.; and Norell, John R., to Phillips Petroleum Company. Diacyloxybutene isomerization catalysts comprising selenium dioxide and carboxylic acid. 4,238,356, Cl. 252-430.000.

Francis, Theodore R. Dryer using vibratory feeding. 4,237,622, Cl. 34-147.000.

Francois, Alain: *See—*
Sialino, Angelo; and Francois, Alain, 4,238,457, Cl. 423-10.000.

Franetzki, Manfred, to Siemens Aktiengesellschaft. Medical apparatus for the measurement of respiratory flow independent of gaseous composition. 4,237,904, Cl. 128-725.000.

Frankenberg, Alfred A., to Robertshaw Controls Company. Pneumatically operated actuator and method of making the same. 4,237,771, Cl. 91-387.000.

Frankhouse, Thomas J., to Teleflex Incorporated. Motion transmitting remote control assembly. 4,238,107, Cl. 249-83.000.

Franzone, John. Picture frame assembly. 4,237,630, Cl. 40-152.000.

Fratty, Hector, to Cibie Projecteurs. Automobile headlight. 4,238,817, Cl. 362-309.000.

Fraunhofer-Gesellschaft: *See—*
Scholze, Horst; and Schmidt, Helmut, 4,238,590, Cl. 528-5.000.

Frazier, James L.: *See—*
Buonauro, John A.; and Frazier, James L., 4,237,599, Cl. 29-568.000.

Frazier, Stephen E. Antimicrobial compositions of matter and a process for preparing antimicrobial compositions of matter from naturally occurring flavanoid glycosides. 4,238,483, Cl. 424-180.000.

Frederiksen, Thomas M.: *See—*
Redfern, Thomas P.; Frederiksen, Thomas M.; and Connolly, Joseph J., Jr., 4,238,839, Cl. 365-96.000.

Freeman, David L., to Canadian General Electric Company Limited. Corona discharge monitor system. 4,238,733, Cl. 324-158.0MG.

French, John A., to United States of America, Army. All-weather intercept of tanks from a helicopter. 4,238,090, Cl. 244-3.190.

Frenkel, Alexander D.: *See—*
Black, Malcolm H.; Frenkel, Alexander D.; and Roberts, Peter T., 4,238,497, Cl. 424-273.00R.

Fridman, Vladimir M.: *See—*
Khutoretsky, Garri M.; Fridman, Vladimir M.; Vorontsov, Alexandr I.; Prigorovsky, Igor A.; and Ignatiev, Anatoly D., 4,238,339, Cl. 310-260.000.

Friedrichs, Konrad: *See—*
Stuben, Werner; Hinzpeter, Jurgen; Deusch, Rudolf; and Friedrichs, Konrad, 4,238,431, Cl. 264-40.500.

Friello, Dominick R.: *See—*
Cherukuri, Subraman R.; and Friello, Dominick R., 4,238,510, Cl. 426-5.000.

Frisbee, Claude M., to J. I. Case Company. Flexible rock guard for bulldozer. 4,237,986, Cl. 172-805.000.

Fritzen, Patricia A.: *See—*
Planting, Peter J.; and Fritzen, Patricia A., 4,238,641, Cl. 174-88.00C.

Frosien, Juergen: *See—*
Anger, Klaus; Frosien, Juergen; and Lischke, Burkhard, 4,238,680, Cl. 250-397.000.

Fruth, Franz: *See—*
Ermel, Heinrich; Fruth, Franz; and Rau, Fritz, 4,237,943, Cl. 141-284.000.

Fry, Warren C., to General Equipment & Mfg. Co., Inc. Three phase undervoltage monitor. 4,238,811, Cl. 361-92.000.

Frybarger, Winfield S., Jr.: *See—*
Gordon, John H.; Roberts, Ronald L.; and Frybarger, Winfield S., Jr., 4,238,180, Cl. 425-403.000.

Fryberg, Mario, to Ciba-Geigy Aktiengesellschaft. Recording material for color photography. 4,238,564, Cl. 430-381.000.

Frykhult, Rune H.; and Forsblom, Hans O. G., to AB Celleco. Apparatus for degassing paper stock. 4,238,208, Cl. 55-169.000.

Fuchs, Reinhold, to Mahler GmbH. Piston. 4,237,846, Cl. 123-193.00P.

Fudemoto, Isao: *See—*
Takahashi, Osamu; and Fudemoto, Isao, 4,238,851, Cl. 370-94.000.

Fuji Photo Film Co., Ltd.: *See—*
Nakamura, Yasuo; and Okishi, Yoshio, 4,238,560, Cl. 430-162.000.

Fujii, Akio: *See—*
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,238,391, Cl. 260-112.50R.

Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, to Toa Nenryo Kogyo Kabushiki Kaisha. Melt blowing apparatus. 4,238,175, Cl. 425-83.100.

Fujii, Yoshio; Inomata, Hiroshi; Suenaga, Yoshihiko; Nishiwaki, Koji; and Takashima, Yohei, to Hitachi, Ltd. Analyzing apparatus with microcomputer. 4,238,835, Cl. 364-900.000.

Fujiki, Masao; Hamaoka, Hiromi; and Hattori, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Servo track configuration for magnetic disk apparatus. 4,238,809, Cl. 360-131.000.

Fujimori, Masatoshi: *See—*
Niwa, Koichi; Murase, Teruo; Fujimori, Masatoshi; and Murakawa, Kyohei, 4,237,606, Cl. 29-830.000.

Fujimoto, Osamu: *See—*
Ohura, Osami; and Fujimoto, Osamu, 4,238,411, Cl. 260-513.700.

Fujimoto, Yasuo; and Katagihara, Hiroshi, to Nippon Chemiphar Co., Ltd. Method for treating hypertension with methylreserpate. 4,238,491, Cl. 424-262.000.

Fujisawa, Hideya: *See—*
Kinugawa, Masumi; Fujisawa, Hideya; Omori, Norio; and Sueishi, Motoharu, 4,237,838, Cl. 123-119.0EC.

Fujita, Tatuo: *See—*
Tsuboka, Eiichi; Kimura, Takeji; Yoshino, Hirokazu; Fujita, Tatuo; and Nakazawa, Masao, 4,238,773, Cl. 358-183.000.

Fujitani, Shinkichi. Method and apparatus to enlarge photograph. 4,238,155, Cl. 355-50.000.

Fujitsu Limited: *See—*
Niwa, Koichi; Murase, Teruo; Fujimori, Masatoshi; and Murakawa, Kyohei, 4,237,606, Cl. 29-830.000.
Takahashi, Osamu; and Fudemoto, Isao, 4,238,851, Cl. 370-94.000.

Fukino, Kunihiro, to Nippon Kogaku K.K. Fixing device for a swing and shifting mechanism. 4,238,152, Cl. 354-189.000.

Fukke, Hajime: *See—*
Kato, Yoshiki; Ishihara, Heigo; Fukke, Hajime; Chiba, Katsuyoshi; Nagashiro, Waichi; Tsunoda, Teruo; and Mitsuya, Munehisa, 4,238,341, Cl. 252-62.540.

Fukuhara, Takao; and Iwasa, Yoshio, to Nissan Motor Company, Limited. Intake vacuum control device for internal combustion engine. 4,237,842, Cl. 123-124.00R.

Fukuoka, Takeyo: *See—*
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,238,391, Cl. 260-112.50R.

Funahashi, Toshihiko: *See—*
Ichida, Toshio; and Funahashi, Toshihiko, 4,238,534, Cl. 427-376.00D.

Furchak, Robert A.; and Roman, Ronald L., to American Bearing Company, Inc. Slide bearing. 4,238,137, Cl. 308-3.00R.

Futec Inc.: *See—*
Yamamoto, Tomio; Hanafusa, Hideyuki; Seno, Kouji; Mihara, Toshiro; and Ishida, Isoshiro, 4,237,959, Cl. 164-4.000.

G. B. Lewis Co.: *See—*
Thurman, Paul G., 4,238,032, Cl. 206-507.000.

G. V. Planer Limited: *See—*
Smart, Michael G., 4,238,696, Cl. 307-360.000.

Gains, Oliver B.: *See—*
Tucker, Council A.; and Gains, Oliver B., 4,238,056, Cl. 222-181.000.

Galicki, Arkadi; Hayunga, Carl P.; and Sarkary, Homi G., to International Business Machines Corporation. Sputtering system for optimizing quartz deposition uniformity. 4,238,312, Cl. 204-298.000.

Gallagher, James P.: *See—*
Mooi, John; and Gallagher, James P., 4,238,316, Cl. 208-58.000.

Gambino, Richard J.: *See—*
DeLuca, John C.; and Gambino, Richard J., 4,238,837, Cl. 365-28.000.

Gamble, James F., Jr.: *See—*
Rosauer, Robert J.; and Gamble, James F., Jr., 4,238,788, Cl. 340-515.000.

Gancy, Alan B.; and Jenczewski, Theodore J., to Allied Chemical Corporation. Electrodialytic process for the conversion of impure soda values to sodium hydroxide and carbon dioxide. 4,238,305, Cl. 204-180.00P.

Gancy, Alan B.; and Wamser, Christian A., to Allied Chemical Corporation. Amorphous polyaluminum sulfate compositions. 4,238,347, Cl. 252-175.000.

Gantz, Emmett J. Bed tent. 4,237,914, Cl. 135-4.00R.

Garbis, Dennis: *See—*
Hill, Lawrence R.; Garbis, Dennis; and Heller, Robert, 4,238,436, Cl. 264-81.000.

Garin, Paul V.: *See—*
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,237,794, Cl. 105-368.00R.

Garner, Eugene F., to Allied Chemical Corporation. Starch as fuel in gas generating compositions. 4,238,253, Cl. 149-19.600.

Garner, Gerald D.: *See—*
Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., 4,237,927, Cl. 137-587.000.

Gassmann, Gerhard-Gunter, to International Standard Electric Corporation. Method of and system for transmitting two different messages on a carrier wave over a single transmission channel of predetermined bandwidth. 4,238,849, Cl. 370-11.000.

Gaston County Dyeing Machine Company: *See—*
Clifford, Graham F.; and Zeiffer, Dieter F., 4,237,818, Cl. 118-410.000.

Geary, Joseph M.; and Holmes, David F., to United States of America, Air Force. Interferogram synthesization method and apparatus. 4,238,827, Cl. 364-521.000.

Geery, Paul W., to Dresser Industries, Inc. Equivalent standard volume correction systems for gas meters. 4,238,825, Cl. 364-510.000.

Gehin, Guy: *See—*
Remi, Jean-Pierre; and Gehin, Guy, 4,238,257, Cl. 156-71.000.

Geiger, Otto; and Genter, Karl-Ernst, to Mannesmann Aktiengesellschaft. Making of pilger roll. 4,238,205, Cl. 51-33.00W.

Geiszler, Willard A., Jr.: *See—*
Greene, Randall K.; and Geiszler, Willard A., Jr., 4,238,283, Cl. 162-139.000.

Gelb, George H.: *See—*
DeLuca, William H.; Hornstra, Fred, Jr; Gelb, George H.; Berman, Baruch; and Moede, Larry W., 4,238,721, Cl. 320-18.000.

Gellert, Jobst U. Sprue bushing with cast in heater element. 4,238,671, Cl. 219-421.000.

Gendron, George J., to Raymond International Builders, Inc. Underwater driving of piles. 4,238,166, Cl. 405-228.000.

Genelco, Inc.: *See—*
Harding, Robert C.; and Herweg, Jack E., 4,237,967, Cl. 165-43.000.

Genequand, Pierre; and Stark, Virgil, to North American Utility Construction Corp. Solar energy system with composite concentrating lenses. 4,238,246, Cl. 136-89.0HY.

General Dynamics: *See—*
Christian, Earl L.; and Blunck, Ronald D., 4,237,612, Cl. 33-143.00L.

General Dynamics Corporation: *See—*
Aston, Richard, 4,238,732, Cl. 324-158.00D.

General Dynamics Corporation, Pomona Division: *See—*
Speicher, John M., 4,238,802, Cl. 343-765.000.

General Electric Company: *See—*
Borom, Marcus P., 4,237,559, Cl. 3-1.900.
Cella, James A.; and Mitchell, Tyrone D., 4,238,401, Cl. 260-448.80R.
Clayton, Harold J.; Kulpa, Theodore A.; and Roedel, George F., 4,238,402, Cl. 260-448.80R.
Crawford, John G.; and Taylor, John B., 4,237,919, Cl. 137-216.000.
Crivello, James V.; and Lam, Julia H. W., 4,238,394, Cl. 260-299.000.
Crivello, James V., 4,238,587, Cl. 526-192.000.
Crivello, James V.; and Lam, Julia H. W., 4,238,619, Cl. 549-3.000.
Dehn, Rudolph A., 4,237,731, Cl. 73-352.000.
Dunham, Stuart B., 4,238,194, Cl. 23-230.00R.
Hillig, William B.; and Morelock, Charles R., 4,238,433, Cl. 264-60.000.
Loucks, George R.; and White, Dwain M., 4,238,580, Cl. 525-395.000.
Markezich, Ronald L.; and Quinn, Clayton B., 4,238,597, Cl. 528-179.000.
Quinn, Clayton B., 4,238,596, Cl. 528-179.000.
Schenck, John F., 4,238,757, Cl. 357-25.000.
Sterling, Vaughn C., 4,238,543, Cl. 428-63.000.
Thomas, George L., 4,238,705, Cl. 313-221.000.
Walker, Loren H., 4,238,821, Cl. 363-58.000.
Wallot, George P., 4,238,711, Cl. 315-324.000.
White, Dwain M., 4,238,581, Cl. 525-395.000.
White, Dwain M., 4,238,584, Cl. 525-534.000.
Williams, Cedric D.; Urquhart, Andrew W.; Walker, James L.; Proebstle, Richard A.; and Black, Timothy J., 4,238,251, Cl. 148-133.000.

General Equipment & Mfg. Co., Inc.: *See—*
Fry, Warren C., 4,238,811, Cl. 361-92.000.

General Foods Corporation: *See—*
Katcher, Jay H.; and Ackilli, Joseph A., 4,238,604, Cl. 536-109.000.
Martin, Thom O.; and Clausi, Adolph S., 4,238,514, Cl. 426-62.000.

General Instrument Corporation: *See—*
Hill, Lawrence R.; Garbis, Dennis; and Heller, Robert, 4,238,436, Cl. 264-81.000.

General Motors Corporation: *See—*
Crow, Jerry V., 4,237,603, Cl. 29-623.400.
Des Lauriers, Edwin D., 4,237,833, Cl. 123-97.00B.
Jalbing, John I., 4,238,456, Cl. 422-172.000.
Kazewych, Bohdan, 4,237,657, Cl. 49-352.000.
Koivunen, Erkki A., 4,237,749, Cl. 74-763.000.
Peeples, Denny L., 4,237,772, Cl. 91-391.00R.
Roberts, David E.; and Foster, Michael R., 4,238,454, Cl. 422-171.000.
Stivender, Donald L., 4,237,830, Cl. 123-32.0EL.

General Steel Industries, Inc.: *See—*
Jackson, Keith L.; and Reece, James J., 4,237,791, Cl. 105-168.000.
Jackson, Keith L.; Jones, William C.; and Spencer, Kenneth E., 4,238,006, Cl. 188-59.000.

Genese, Joseph N., to Abbott Laboratories. Equipment sets for the sequential administration of medical liquids at dual flow rates employing parallel secondary liquid tubing and a 3-way valve. 4,237,879, Cl. 128-214.00G.

Genese, Joseph N., to Abbott Laboratories. Equipment sets for the sequential administration of medical liquids at dual flow rates employing a combined air barrier and liquid sequencing valve controlled by a common flexible membrane. 4,237,880, Cl. 128-214.00G.

Genter, Karl-Ernst: *See—*
Geiger, Otto; and Genter, Karl-Ernst, 4,238,205, Cl. 51-33.00W.

Georges, Raymond: *See—*
Bingen, Roald; Cordier, Jean-Pierre; and Georges, Raymond, 4,238,637, Cl. 13-26.000.

Gerlach, Monika: *See—*
Weddigen, Gert; Houpert, Bernd; and Gerlach, Monika, 4,238,553, Cl. 429-104.000.

German, Dale F., to Eaton Corporation. Unloader and check valve. 4,237,918, Cl. 137-116.000.

Ghest, Robert C.; Birkner, John M.; Waser, Shlomo; and Chua, Hua T., to Monolithic Memories, Inc. High-speed digital bus-organized multiplier/divider system. 4,238,833, Cl. 364-760.000.

Gibson, Donald B.: *See—*
Laughinghouse, Gerald F.; and Gibson, Donald B., 4,238,438, Cl. 264-119.000.

Gibson, John P.: *See—*
Parsch, Claus P.; and Gibson, John P., 4,238,715, Cl. 318-135.000.

Giffen, William M., Jr.: *See—*
Talsma, Herbert; and Giffen, William M., Jr., 4,238,535, Cl. 427-388.00C.

Gill, Michael L.; and Hopkins, William M., to Goodyear Tire & Rubber Company, The. Foldable spare tire. 4,238,259, Cl. 156-131.000.

Gill, Michael L., to Beliot Corporation. Extended nip press with transverse stiffening means in the belt. 4,238,287, Cl. 162-358.000.

Gilleland, Randall C.: *See—*
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,238,660, Cl. 219-69.00G.

Gilles, Jack C., to B. F. Goodrich Company, The. Hydroxyl-terminated liquid polymers and process for preparation thereof using a mixture of at least one hydroxyl-containing disulfide and at least one hydroxyl-containing trisulfide. 4,238,397, Cl. 260-326.250.

Gillet, Philippe: *See—*
Samuel, Yves; and Gillet, Philippe, 4,238,332, Cl. 210-71.000.

Gilligan, Thomas J.: *See—*
Wright, Kurt; and Gilligan, Thomas J., 4,238,838, Cl. 365-69.000.

Gillone, Walter: *See—*
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,238,807, Cl. 346-140.00R.

Gindel, Alvin. Nonrotatable telescoping supporting structure. 4,238,818, Cl. 362-413.000.

Ginocchio, James A., to Personal Products Company. Deodorant mini-pad sanitary napkin. 4,237,591, Cl. 28-121.000.

Giovanelli, Armand: *See—*
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,237,794, Cl. 105-368.00R.

Girard, Edmond, to Messier. Process and apparatus for control of the climatic environment of an underground enclosure including a source of extraneous heat. 4,237,963, Cl. 165-1.000.

Girgis, Mikhail M., to PPG Industries, Inc. Modified phenolic aldehyde resin to produce an improved adhesive coating and method of making same. 4,238,595, Cl. 528-158.000.

Givat Chaim-Ihud, Hakvutzot Vehakibbutzim Kvutzat Poalim Lehityashvut Shitufit B.M.: *See—*
Rafaely, Gilad, 4,237,931, Cl. 137-625.500.

Gjelsvik, Norvald: *See—*
Dugan, Martin; and Gjelsvik, Norvald, 4,238,467, Cl. 423-263.000.

Gobble, Harold G.: *See—*
Bosley, Roy E., Jr.; Hamann, Michael L.; Pinegar, Richard K.; and Gobble, Harold G., 4,238,517, Cl. 426-250.000.

Gobran, Ramsis, to Minnesota Mining and Manufacturing Company. Diaper closure utilizing pressure-sensitive adhesive tape having textured foil backing. 4,237,889, Cl. 128-287.000.

Goettl, Adam D. Thermal energy storage and utilization system. 4,237,859, Cl. 126-400.000.

Golas, Eugene A.; and Rege, Robert A., to United States Steel Corporation. Cleansing of steel by gas rinsing. 4,238,227, Cl. 75-58.000.

Goldfarb, Adolph E.; and Dantzer, Elonne, to Goldfarb, Adolph E. Toy animal figures representing parent animal and offspring. 4,237,649, Cl. 46-161.000.

Goldfarb, Adolph E. Preschool play apparatus. 4,237,650, Cl. 46-175.00R.

Goldstein, Norman P.; and Todt, William H., to Westinghouse Electric Corp. Gamma flux responsive self-powered detector with a tubular emitter. 4,238,676, Cl. 250-370.000.

Golser, Hans; and Kirschner, Erich, to Siemens Aktiengesellschaft. Gas laser having a cylindrically-shaped discharge tube. 4,238,743, Cl. 331-94.50T.

Gombar, Anna M.: *See—*
Rosen, Arye; Gombar, Anna M.; and Mykietyn, Edward, 4,237,600, Cl. 29-577.000.

Gonser, Donald I., to Valleylab, Inc. Electrosurgical device. 4,237,887, Cl. 128-303.140.

Goodnight, Hershel E.; Jaeger, Kurt S.; and Martin, Richard R., to John Zink Company. Thin and flat flame burner. 4,237,858, Cl. 126-360.00R.

Goodrich, Judson E., to Chevron Research Company. Polymerizable premix composition for preparation of polyurethane surfaces. 4,238,377, Cl. 260-28.00R.

Goodyear Tire & Rubber Company, The: *See—*
Anderson, Thomas J., 4,238,383, Cl. 260-33.6AQ.
Duh, Ben, 4,238,593, Cl. 528-272.000.
Gill, Michael L.; and Hopkins, William M., 4,238,259, Cl. 156-131.000.

Gorbunov, Gennady S.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Korolkov, Anatoly G.; Popov, Jury S.; Rozenfeld, Lev M.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,238,700, Cl. 310-52.000.

Gordon, John H.; Roberts, Ronald L.; and Frybarger, Winfield S., Jr., to Gordon, John H. Mandrel with identical expanding segments. 4,238,180, Cl. 425-403.000.

Gordon, Mack. Control system for welding helmet liquid crystal light shutter. 4,237,557, Cl. 2-8.000.

Gordon, Michael D.; and Baker, Hollis D., to Ro-Ta Development Company. Revolving examination table apparatus. 4,237,796, Cl. 108-22.000.

Goscenski, Edward J., Jr., to Eaton Corporation. Contact improver for clutch of a slip limiting differential. 4,238,013, Cl. 192-54.000.

Gould Inc.: *See—*
Betts, David A.; and Ledenbach, Gregory W., 4,237,728, Cl. 73-146.500.
Eisele, Walter H., 4,237,775, Cl. 92-99.000.

Goullin, Jean-Francois; and Nicolas, Michel, to Orega Circuits et Commutation. Magnetically controlled switch with wetted contact. 4,238,748, Cl. 335-56.000.

Goussios, Constantine C. Polytrack opto-digital drafting machine. 4,237,617, Cl. 33-427.000.

Grand, Michel: *See—*
Duprez, Daniel; and Grand, Michel, 4,238,368, Cl. 252-455.00Z.

Granges Aluminium Aktiebolag: *See—*
Olsson, Goran B. K.; and Wilson, Gunnar T., 4,237,971, Cl. 165-171.000.

Granzer, Ernold: *See—*
Nahm, Helmut; and Granzer, Ernold, 4,238,626, Cl. 562-472.000.

Grapha-Holding AG: *See—*
Muller, Hans, 4,237,569, Cl. 11-3.000.

Grather, Gunter: *See—*
Rabus, Friedrich; Grather, Gunter; and Schleupen, Richard, 4,237,835, Cl. 123-117.00R.

Gray, Kenneth W.; and Irving, Leonard D., to National Research Development Corporation. Solid state microwave devices with small active contact and large passive contact. 4,238,763, Cl. 357-68.000.

Greene, Randall K.; and Geiszler, Willard A., Jr., to Philip Morris Incorporated. Post-treatment of humic acid-dyed paper. 4,238,283, Cl. 162-139.000.

Greenwood, William S., to Thomas & Betts Corporation. Bending tool. 4,237,718, Cl. 72-410.000.

Gregory, Charles E.; Brian, Michael; Thomas, Jerald F.; and Cameron, James F., to Jered Brown Brothers, Inc. Vacuum flush water closet. 4,237,934, Cl. 137-637.000.

Grein, Louis F.; and DuBois, John L., to Enertron Corporation. Temperature responsive apparatus for detecting heat leaks. 4,237,732, Cl. 73-366.0AR.

Greiner, Norman R., to United States of America, Energy. Time delay spectrum conditioner. 4,238,141, Cl. 350-162.00R.

Gremyakov, Ivan P.: *See—*
Polukhin, Petr I.; Potapov, Ivan N.; Gremyakov, Ivan P.; Styrkin, German D.; Bitny, Mikhail A.; Raushenbakh, Igor M.; and Rodionov, Petr A., 4,237,714, Cl. 72-242.000.

Grethe, Guenter; Uskokovic, Milan R.; and Sereno, John, to Hoffmann-La Roche Inc. 3,4-Anhydro-2,6-dideoxy-L-ribohexose. 4,238,399, Cl. 260-345.90R.

Griffin, Warren R., to United States of America, Air Force. Fluorine containing polyethers. 4,238,602, Cl. 528-299.000.

Griffith, James R.: *See—*
Keller, Teddy M.; and Griffith, James R., 4,238,601, Cl. 528-206.000.

Grimsley, R. Leroy, to Conoco, Inc. Undersea sand filter for cleaning injection water. 4,238,335, Cl. 210-80.000.

Grolman, Bernard: *See—*
Richards, William; Grolman, Bernard; and Kantorski, Joseph W., 4,238,142, Cl. 351-7.000.

Grossa, Mario; and Sandner, Helmut G., to Du Pont de Nemours, E. I., and Company. Image reproduction process using a negative tonable photohardenable element. 4,238,561, Cl. 430-253.000.

Grosser, Heinrich, to Thyssen Industrie Aktiengesellschaft. Aiming and guiding device for remote controlled, jet propelled projectiles. 4,238,089, Cl. 244-3.130.

Grube, William L., to MacLean-Fogg Company. Method of making a fastener strip. 4,237,567, Cl. 10-86.0CL.

Grumman Flexible Corporation: *See—*
McKee, Laird W., 4,238,128, Cl. 280-703.000.

Grunberg, Emanuel: *See—*
Cleeland, Roy, Jr.; Grunberg, Emanuel; Leimgruber, Willy; and Weigele, Manfred, 4,238,589, Cl. 562-442.000.

Gschwendtner, Joerg: *See—*
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Gsell, Laurenz: *See—*
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,238,504, Cl. 424-305.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Burger, Victor G., 4,238,645, Cl. 179-81.00A.
Vonder, David L., 4,238,655, Cl. 200-153.0LA.

GTE Products Corporation: *See—*
Bricker, Daniel W.; Audesse, Emery G.; Shaffer, John W.; and Hartman, Donald W., 4,238,814, Cl. 362-13.000.

Guck, Lothar: *See—*
Schuberth, Christian; Nemeth, Istvan; and Guck, Lothar, 4,238,754, Cl. 338-174.000.

Guebert, Gerald E.; and Belknap, Raymond R. Drapery connector assembly. 4,237,958, Cl. 160-330.000.

Guerin, Bernard: *See—*
Deleens, Gerard; Guerin, Bernard; and Poulain, Claude, 4,238,582, Cl. 525-430.000.

Guilbert, C. Carol, to Economics Laboratory, Inc. Stabilized liquid enzyme-containing detergent compositions. 4,238,345, Cl. 252-174.120.

Gulf Research & Development Company: *See—*
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,238,417, Cl. 260-593.00A.
Cronauer, Donald C.; Vogel, Roger F.; and Flinn, Richard A., 4,238,320, Cl. 208-254.00H.
Patzer, John F., II, 4,238,315, Cl. 208-11.0LE.
Pellegrini, John P., Jr., 4,238,343, Cl. 252-63.000.

Gulf & Western Manufacturing Company: *See—*
Lutz, LaVerne H., 4,237,715, Cl. 72-244.000.

Gunnell, Carl F., III. Pipe flange tool. 4,237,755, Cl. 81-90.00C.

Gupton, Jimmie R. Cleaning and coating fishing line. 4,237,641, Cl. 43-25.000.

Gustafson, Paul R., to United States of America, Navy. Air revitalization materials. 4,238,464, Cl. 423-230.000.

Gyo..gyos, Ivan; Buxmann, Kurt; Bolliger, Martin; Kerth, Willi; and Neufeld, Kurt, to Swiss Aluminium Ltd. Process for preparing low earing aluminum alloy strip on strip casting machine. 4,238,248, Cl. 148-2.000.

H & G Industries, Inc.: *See—*
Mazzolla, Richard, 4,238,164, Cl. 403-109.000.

H. Obrist & Co. AG: *See—*
Schwarz, Werner, 4,237,939, Cl. 138-109.000.

H & R Incorporated: *See—*
Hill, Eleanor S.; Hill, William J.; and Hill, Ralph C., 4,237,912, Cl. 134-57.00R.

Haapsaari, Timo: *See—*
Huostila, Markku; Haapsaari, Timo; Suokas, Matti; and Turunen, Risto, 4,238,284, Cl. 162-207.000.

Haase, Thomas A.: *See—*
Pesa, Frederick A.; and Haase, Thomas A., 4,238,357, Cl. 252-431.00N.

Haddad, James H.: *See—*
Daviduk, Nicholas; and Haddad, James H., 4,238,631, Cl. 585-469.000.

Hagen, Richard L., to ARES, Inc. Explosive fuse for ballistic projectile. 4,237,788, Cl. 102-245.000.

Hagfors, Norman R.; and Keller, John W., Jr., to Stimtech, Inc. Electronic tissue stimulator with output signal controls. 4,237,899, Cl. 128-422.000.

Haggard, Samuel E.; Riley, Travis E.; and Florian deceased, Eugene F., to Mark Products, Incorporated. Geophone springs. 4,238,845, Cl. 367-183.000.

Haines, H. M. Loader feeder apparatus for loading and feeding bales of hay and the like. 4,237,821, Cl. 119-60.000.

Halbfoster, Christopher J., to Ecodyne Corporation. Purification of liquids with treated filter aid material and active particulate material. 4,238,334, Cl. 210-75.000.

Halcon Research & Development Corporation: *See—*
Lal, Sudarshan; and Porcelli, Richard V., 4,238,551, Cl. 428-660.000.

Haley, John S.: *See—*
Cooper, Jerry W.; Holden, Homer N.; Medford, Richard D.; and Haley, John S., 4,238,039, Cl. 213-61.000.

Hall, John L.: *See—*
Jones, Ernest; and Hall, John L., 4,237,948, Cl. 151-22.000.

Hall, Peter S.: *See—*
Aitken, James E.; Hall, Peter S.; and James, James R., 4,238,798, Cl. 343-700.0MS.

Haller, Ingo: *See—*
Regel, Erik; Buchel, Karl H.; Draber, Wilfried; Plempel, Manfred; and Haller, Ingo, 4,238,498, Cl. 424-273.00R.

Haller, Jacob S., to Rallymaster, Inc. Portable ball throwing machine with one-way clutch. 4,237,851, Cl. 124-16.000.

Halliburton Company: *See—*
Banks, William P., 4,238,244, Cl. 134-22.00R.
Banks, William P., 4,238,244, Cl. 134-22.00R.
Koch, Ronney R.; and Rensvold, Roger F., 4,238,536, Cl. 427-421.000.

Halm Industries Co., Inc.: *See—*
Harrison, Henry, 4,237,863, Cl. 126-422.000.

Hamai, Kyugo, to Nissan Motor Company, Limited. Swirl-chamber diesel engine with piston formed with curved groove at its crown. 4,237,827, Cl. 123-30.00D.

Hamann, Michael L.: *See—*
Bosley, Roy E., Jr.; Hamann, Michael L.; Pinegar, Richard K.; and Gobble, Harold G., 4,238,517, Cl. 426-250.000.

Hamaoka, Hiromi: *See—*
Fujiki, Masao; Hamaoka, Hiromi; and Hattori, Toshiaki, 4,238,809, Cl. 360-131.000.

Hamilton, Billy H.: *See—*
Boettcher, Charles W., Jr.; Hamilton, Billy H.; and Zweig, Walter L., 4,238,688, Cl. 307-20.000.

Hamilton, Louis W., to Du Pont de Nemours, E. I., and Company. Methacrylate coating compositions. 4,238,573, Cl. 525-110.000.

Hamilton, Rex. Energy absorbing motor mount assembly. 4,238,104, Cl. 248-566.000.

Hammond, Joseph: *See—*
Siegel, Moses; Cahall, Everett; Dunning, David; and Hammond, Joseph, 4,238,093, Cl. 244-63.000.

Hanada, Yosio: *See—*
Kinugawa, Kiyoshige; Ogihara, Satoru; Hanada, Yosio; Ishitani, Shizuo; and Ishibashi, Tadashi, 4,238,276, Cl. 156-634.000.

Hanafusa, Hideyuki: *See—*
Yamamoto, Tomio; Hanafusa, Hideyuki; Seno, Kouji; Mihara, Toshiro; and Ishida, Isoshiro, 4,237,959, Cl. 164-4.000.

Handke, Gunther: *See—*
Wossner, Felix; and Handke, Gunther, 4,238,009, Cl. 188-315.000.

Hanna Mining Company, The: *See—*
Zambrano, Adolfo R.; and Hansen, Barry J., 4,238,466, Cl. 423-244.000.

Hannemann, Horst: *See—*
Regehr, Ulrich; Hannemann, Horst; Bulang, Siegfried; Derichs, Helmut; Knuplez, Vladimir; and Wedrich, Martin, 4,238,210, Cl. 55-396.000.

Hannigan, Joseph F., to United States of America, Army. Zero-doppler shift positioning technique. 4,238,785, Cl. 343-112.00D.

Hanota Holdings S.A.: *See—*
De Waele, Gerard, 4,237,670, Cl. 52-436.000.

Hansen, Barry J.: *See—*
Zambrano, Adolfo R.; and Hansen, Barry J., 4,238,466, Cl. 423-244.000.

Hansen, Rainer: *See—*
Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, 4,237,713, Cl. 72-59.000.

Hansen, Walt. Fish trolling device. 4,237,644, Cl. 43-43.130.

Hara, Kazuhisa: *See—*
Enomoto, Ryo; Tanaka, Hiroyuki; and Hara, Kazuhisa, 4,238,434, Cl. 264-63.000.

Harao, Norio: *See—*
Minami, Hiroshi; Kuze, Takashi; and Harao, Norio, 4,238,043, Cl. 220-2.10R.

Harding, Robert C.; and Herweg, Jack E., to Lone Star Manufacturing Company, Inc.; and Genelco, Inc. Motor vehicle air conditioner control circuit. 4,237,967, Cl. 165-43.000.

Hardison, Leslie C., to Air Resources, Inc. Autocirculation process and apparatus. 4,238,462, Cl. 423-224.000.

Hardy, Frederick E.; and Talkes, Brian E., to Procter & Gamble Company, The. The process for making detergent compositions containing nitrogenous cationic surfactants. 4,238,373, Cl. 252-542.000.

Hargem Ltd.: *See—*
Stark, Hanoch, 4,237,658, Cl. 51-122.000.

Harita, Akira; Morimoto, Tadashi; Kanatani, Toshio; and Uchimura, Ryoji, to Kawasaki Steel Corporation. Hearth structure of an oxygen-bottom-blowing converter. 4,238,121, Cl. 266-218.000.

Harp, Robert S.; and Russell, Kenneth J., to United States of America, Air Force. Mode filter apparatus. 4,238,747, Cl. 333-228.000.

Harrigan, Roy M. External cardiac resuscitation aid. 4,237,872, Cl. 128-24.00R.

Harris, Edward H. Swivel socket for lights. 4,238,819, Cl. 362-419.000.

Harrison, Gregory K.; Pope, George D.; Riel, Richard F.; Kobb, Donald A.; Kelley, Charley T.; Lawrence, David J.; Conn, Donald R.; and Odom, Richard C., to Tne Bendix Corporation. Poppet member for a control valve. 4,237,770, Cl. 91-369.00A.

Harrison, Henry, to Halm Industries Co., Inc. Solar heating system. 4,237,863, Cl. 126-422.000.

Harrison-Smith, John L.; and Milsom, Henry B. C., to Fisher & Paykel, Limited. Crutches. 4,237,916, Cl. 135-69.000.

Hart, Robert J.; and Langley, Russell M., to Commercial Resins Company. Apparatus for spraying powder circumferentially around a pipe joint. 4,237,817, Cl. 118-307.000.

Hartig, Fritz; and Hofmann, Reinhard, to Bayerische Motoren Werke Aktiengesellschaft. Partial-load control apparatus and method and for internal combustion engines. 4,237,832, Cl. 123-59.0EC.

Hartman, Donald W.: *See—*
Bricker, Daniel W.; Audesse, Emery G.; Shaffer, John W.; and Hartman, Donald W., 4,238,814, Cl. 362-13.000.

Hartmann, Willy: *See—*
Scholz, Karl-Heinz; Hartmann, Willy; and Heine, Hans-Georg, 4,238,618, Cl. 548-320.000.

Haruo Uehara: *See—*
Uehara, Haruo; and Miyoshi, Michizo, 4,237,970, Cl. 165-110.000.

Haruyama, Shiro: *See—*
Tsuru, Tohru; and Haruyama, Shiro, 4,238,298, Cl. 204-1.00T.

Harvey, Kenneth, to Colgate Palmolive Company. Dentifrices. 4,238,476, Cl. 424-52.000.

Hashizume, Heiji: *See—*
Yamaguchi, Isao; Hashizume, Heiji; Nakazawa, Akira; and Sugihara, Hirosige, 4,238,848, Cl. 368-276.000.

Hatakeyama, Yoshiharu; and Kizawa, Ichiro, to Yoshida Kogyo Co., Ltd. Air-tight cap for bottle. 4,238,042, Cl. 215-334.000.

Hattori, Tadashi: *See—*
Ueno, Yoshiki; and Hattori, Tadashi, 4,237,839, Cl. 123-119.0EC.

Hattori, Toshiaki: *See—*
Fujiki, Masao; Hamaoka, Hiromi; and Hattori, Toshiaki, 4,238,809, Cl. 360-131.000.

Haug, Ernst: *See—*
Krugener, Rolf; Haug, Ernst; and Kurth, Hermann W., 4,237,709, Cl. 70-107.000.

Haug, Werner: *See—*
Clemen, Rainer; Gschwendtner, Joerg; and Haug, Werner, 4,238,841, Cl. 365-203.000.

Hauni-Werke Korber & Co. KG: *See—*
Aykut, Kurt, 4,237,674, Cl. 53-249.000.
Hausler, Nikolaus; Berger, Erich; and Wiese, Wolfgang, 4,237,778, Cl. 93-77.0FT.
Pawelko, Karl-Heinz; and Oesterling, Erwin, 4,237,907, Cl. 131-23.00A.

Hauschildt, F. William; and Bertolacini, Ralph J., to Standard Oil Company (Indiana). Process for isomerization of petroleum hydrocarbons. 4,238,319, Cl. 208-138.000.

Hausler, Nikolaus; Berger, Erich; and Wiese, Wolfgang, to Hauni-Werke Korber & Co. KG. Machine for making recessed composite filter mouthpieces. 4,237,778, Cl. 93-77.0FT.

Havstad, Harold R.; and Pitesky, Isadore. Antigen injection assembly. 4,237,906, Cl. 128-743.000.

Hawken, Donald F.: *See—*
Turlej, Zbigniew W.; and Hawken, Donald F., 4,238,675, Cl. 250-353.000.

Hay, Andrew G.; and Mason, Peter R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Position detecting apparatus. 4,238,828, Cl. 364-559.000.

Hay, Harold R. Process and apparatus for modulating temperatures within enclosures. 4,237,965, Cl. 165-2.000.

Hayasaka, Toa: *See—*
Yoshihara, Hideo; Kiuchi, Mikiho; Nakayama, Satoshi; Hayasaka, Toa; and Matsui, Junji, 4,238,706, Cl. 313-330.000.

Hayunga, Carl P.: *See—*
Galicki, Arkadi; Hayunga, Carl P.; and Sarkary, Homi G., 4,238,312, Cl. 204-298.000.

Hayward, Alan T. J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Launching and arresting a discrete object in a pipeline. 4,237,921, Cl. 137-268.000.

Hazard, Richard: *See—*
Brown, Roger C.; Hazard, Richard; and Mann, John, 4,238,606, Cl. 542-441.000.

Healy, Robert D., Sr., to Quabbin Industries, Inc. Device for sealing damaged tubular members. 4,237,937, Cl. 138-97.000.

Hearn, Robert H.: *See—*
McCool, John M.; Widrow, Bernard; Zeidler, James R.; Hearn, Robert H.; and Chabries, Douglas M., 4,238,746, Cl. 333-166.000.

Heerdt, Ruth: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix H., 4,238,506, Cl. 424-319.000.

Heine, Hans-Georg: *See—*
Scholz, Karl-Heinz; Hartmann, Willy; and Heine, Hans-Georg, 4,238,618, Cl. 548-320.000.

Helios Corporation: *See—*
Embree, John M., 4,237,862, Cl. 126-420.000.

Helix Technology Corporation: *See—*
Stuart, Robert W., 4,238,211, Cl. 62-20.000.

Heller, Robert: *See—*
Hill, Lawrence R.; Garbis, Dennis; and Heller, Robert, 4,238,436, Cl. 264-81.000.

Hellige GmbH: *See—*
Hofmann, Gerhard H., 4,237,903, Cl. 128-708.000.

Helms, Charles R.; and Addison, Donald A., to Container Corporation of America. Composite closure member. 4,238,047, Cl. 220-306.000.

Henderson, John A.; Lindley, Raymond H.; and Whiteley, Keith B., to Internationale Octrooi Maatschappij. Extrusion presses. 4,238,432, Cl. 264-40.700.

Henny Penny Corporation: *See—*
Timm, Malvern K.; King, James D.; and Moore, David O., 4,237,623, Cl. 34-196.000.

Henrick, Clive A., to Zoecon Corporation. Pyridyl esters of ether and thioether substituted cyclopropanecarboxylic acids. 4,238,614, Cl. 546-301.000.

Hensel, Erich E., to Hunter Douglas International N.V. Venetian blind and tape roll support for a venetian blind. 4,237,957, Cl. 160-178.00R.

Herion, Erich; and Ruchser, Erich, to Technomatic AG. Safety valve. 4,237,930, Cl. 137-596.160.

Hermle, Eduard. Switchgear. 4,238,654, Cl. 200-153.0LB.

Herweg, Jack E.: *See—*
Harding, Robert C.; and Herweg, Jack E., 4,237,967, Cl. 165-43.000.

Heskett, Don E., to Fluid Power Research, Inc. Fluid treating apparatus and method. 4,238,325, Cl. 210-20.000.

Hess, Friedrich K.; Stewart, Patrick B.; and Oliver, James T., to Boehringer Ingelheim GmbH. 4-Substituted thiazolyl-2-oxamic acids and salts and esters thereof. 4,238,496, Cl. 424-270.000.

Hess, Hans-Peter; Muhling, Gunther; Sunkel, Manfred; and Dauernheim, Hans, to Metallwerk Max Brose, GmbH. Motor vehicle window drive mechanism. 4,237,656, Cl. 49-352.000.

Heth, Donald J., to M & S Industries, Inc. Body construction for rotary valve. 4,238,058, Cl. 222-368.000.

Hexamer, Don L. Suspension device. 4,238,002, Cl. 185-27.000.

Heyrana, Pablo M. Waterproof multiple electrical switch assembly. 4,238,656, Cl. 200-283.000.

Hi-Shear Corporation: *See—*
Volkmann, Josef F., 4,237,768, Cl. 85-73.000.

Hickmann, Horst, to Ohio River Company, The. Cover for a barge. 4,237,809, Cl. 114-202.000.

Hicks, David J.: *See—*
Lollis, Jack D.; and Hicks, David J., 4,237,936, Cl. 138-90.000.

Hidaka, Yoshiaki, to Nissan Motor Company, Limited. Current transmitting system for trackway type motor vehicle. 4,238,010, Cl. 191-31.000.

Higgins, Robert D.; and Wible, John E., to Towmotor Corporation. Control valve linkage. 4,238,008, Cl. 180-77.0TC.

Hildebrecht, Harold V., to Towmotor Corporation. Apparatus for controlling a plurality of mechanisms. 4,237,752, Cl. 74-878.000.

Hill, Eleanor S.; Hill, William J.; and Hill, Ralph C., to H & R Incorporated. Washing, pasteurizing and disinfecting apparatus. 4,237,912, Cl. 134-57.00R.

Hill, Lawrence R.; Garbis, Dennis; and Heller, Robert, to General Instrument Corporation. Method of obtaining polycrystalline silicon. 4,238,436, Cl. 264-81.000.

Hill, Ralph C.: *See—*
Hill, Eleanor S.; Hill, William J.; and Hill, Ralph C., 4,237,912, Cl. 134-57.00R.

Hill, William J.: *See—*
Hill, Eleanor S.; Hill, William J.; and Hill, Ralph C., 4,237,912, Cl. 134-57.00R.

Hillan, William J.: *See—*
Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,238,197, Cl. 23-230.0HC.

Hillig, William B.; and Morelock, Charles R., to General Electric Company. Method of making molten silicon infiltration reaction products. 4,238,433, Cl. 264-60.000.

Hilton, William J., to Bonas Brothers Limited. Rope. 4,237,684, Cl. 57-260.000.

Hinzpeter, Jurgen: *See—*
Stuben, Werner; Hinzpeter, Jurgen; Deusch, Rudolf; and Friedrichs, Konrad, 4,238,431, Cl. 264-40.500.

Hirakawa, Tadashi; Yoshikawa, Kiyomitsu; and Kusubayashi, Toshiaki, to Mitsubishi Jukogyo Kabushiki Kaisha. Conveyor device. 4,238,024, Cl. 198-425.000.

Hirano, Masachika: *See—*
Suzuki, Yukio; Aketa, Kohichi; and Hirano, Masachika, 4,238,406, Cl. 260-465.00D.

Hirano, Osamu: *See—*
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.

Hirayama, Tetsuro, to Juki Co., Ltd. Looper changeover device for an edge stitching sewing machine. 4,237,804, Cl. 112-168.000.

Histed, John A., to Canadian International Paper Company. Simplified bleaching process. 4,238,281, Cl. 162-60.000.

Hitachi Chemical Company, Ltd.: *See—*
Shibata, Hideaki; and Osawa, Michihisa, 4,238,570, Cl. 521-57.000.

Hitachi, Ltd.: *See—*
Abe, Nobuo; Yamazaki, Susumu; and Kanamori, Isao, 4,238,172, Cl. 417-312.000.
Fujii, Yoshio; Inomata, Hiroshi; Suenaga, Yoshihiko; Nishiwaki, Koji; and Takashima, Yohei, 4,238,835, Cl. 364-900.000.
Kato, Yoshiki; Ishihara, Heigo; Fukke, Hajime; Chiba, Katsuyoshi; Nagashiro, Waichi; Tsunoda, Teruo; and Mitsuya, Munehisa, 4,238,341, Cl. 252-62.540.
Kinugawa, Kiyoshige; Ogihara, Satoru; Hanada, Yosio; Ishitani, Shizuo; and Ishibashi, Tadashi, 4,238,276, Cl. 156-634.000.
Kobayashi, Masaharu; Arai, Takao; Hoshino, Takashi; Kimura, Hiroyuki; and Nishimura, Keizo, 4,238,770, Cl. 358-154.000.
Mathusima, Tokunori; Sato, Takeshi; and Uenishi, Akira, 4,237,668, Cl. 52-249.000.
Sumi, Takeshi, 4,238,714, Cl. 315-408.000.
Terao, Motoyasu; and Yonezawa, Seiji, 4,238,803, Cl. 346-1.100.
Yamaguchi, Isao; Hashizume, Heiji; Nakazawa, Akira; and Sugihara, Hirosige, 4,238,848, Cl. 368-276.000.

Hitachi Maxell, Ltd.: *See—*
Uetani, Yoshio; Taniguchi, Yasuyoshi; Yokoyama, Kenichi; Matsushima, Seiichi; and Kirihara, Sonae, 4,238,555, Cl. 429-163.000.

Hoch, Manfried L.; and Cicci, George B., to International Harvester Company. Lateral float lookout device. 4,237,680, Cl. 56-15.900.

Hochiki Corporation: *See—*
Masuda, Hajime, 4,238,766, Cl. 358-86.000.

Hochstrate, Paul, to Timex Corporation. Electroluminescent backlight for electrooptic displays. 4,238,793, Cl. 340-781.000.

Hock, Richard H., to Bell Telephone Laboratories, Incorporated. Comparator circuit having high speed, high current switching capability. 4,238,695, Cl. 307-350.000.

Hodogaya Chemical Co., Ltd.: *See—*
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Endo, Shigeru, 4,238,562, Cl. 430-106.000.

Hoechst Aktiengesellschaft: *See—*
Nahm, Helmut; and Granzer, Ernold, 4,238,626, Cl. 562-472.000.

Hoefele, Enrique O.: *See—*
Brimacombe, J. Keith; and Hoefele, Enrique O., 4,238,228, Cl. 75-76.000.

Hoefkes, Heiner J., to International Harvester Company. Track removing device. 4,237,985, Cl. 172-676.000.

Hoffman, Richard L., to Monsanto Company. Foamable ABS polyblend composition. 4,238,572, Cl. 521-77.000.

Hoffmann, Jorgen: *See—*
Schabert, Hans-Peter; and Hoffmann, Jorgen, 4,238,290, Cl. 176-38.000.

Hoffmann-La Roche Inc.: *See—*
Cleeland, Roy, Jr.; Grunberg, Emanuel; Leimgruber, Willy; and Weigele, Manfred, 4,238,589, Cl. 562-442.000.
Field, George F.; and Zally, William J., 4,238,610, Cl. 544-283.000.
Grethe, Guenter; Uskokovic, Milan R.; and Sereno, John, 4,238,399, Cl. 260-345.90R.
Keith, Dennis D.; and Weigele, Manfred, 4,238,622, Cl. 560-39.000.
Meienhofer, Johannes A., 4,238,390, Cl. 260-112.50R.

Hoffmann, Werner: *See—*
Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, 4,238,088, Cl. 242-192.000.

Hofmann, Dolf D.: *See—*
Oberpriller, Jakob; Schuster, Alfred; and Hofmann, Dolf D., 4,237,695, Cl. 62-63.000.

Hofmann, Gerhard H., to Hellige GmbH. QRS detector for EKG signals. 4,237,903, Cl. 128-708.000.

Hofmann, Reinhard: *See—*
Hartig, Fritz; and Hofmann, Reinhard, 4,237,832, Cl. 123-59.0EC.

Hogan, Philip J.: *See—*
Cozens, Ross J.; Jennings, James R.; Hogan, Philip J.; and Kelly, Lawrence F. M., 4,238,422, Cl. 260-945.000.

Hoganas AB: *See—*
Sevensson, Lars-Erik, 4,238,221, Cl. 75-0.5BA.

Holden, Homer N.; and Sumrall, Reese, to Dayco Corporation. Railway truck pedestal liner. 4,237,793, Cl. 105-225.000.

Holden, Homer N.: *See—*
Cooper, Jerry W.; Holden, Homer N.; Medford, Richard D.; and Haley, John S., 4,238,039, Cl. 213-61.000.

Holland, Wiley B.: *See—*
Pelagio, Gregory A.; and Holland, Wiley B., 4,237,685, Cl. 57-328.000.

Hollaway, Gerald C.; Spivy, Paul L.; Nelson, Jack; and Fieler, Wayne C., to Dayco Corporation. Method for producing stress-relieved fabric. 4,238,530, Cl. 427-173.000.

Holldorff, Gunther, to Borsig GmbH. Method of and apparatus for improving the energy consumption of absorption cooling plants. 4,237,701, Cl. 62-476.000.

Holm, Robert E.; and Ku, Han San, to Diamond Shamrock Corporation. Increasing chloroethylphosphonic acid-induced ethylene response. 4,238,219, Cl. 71-86.000.

Holman, Danny F.: *See—*
Kocache, Riad M. A.; Holman, Danny F.; and Sunderland, Ronald H., 4,238,308, Cl. 204-195.00S.

Holmer, Donald A.: *See—*
Chapman, Richard D.; Holmer, Donald A.; Pickett, Oscar A., Jr.; and Saunders, James H., 4,238,603, Cl. 528-339.000.

Holmes, David F.: *See—*
Geary, Joseph M.; and Holmes, David F., 4,238,827, Cl. 364-521.000.

Holmes, Douglas E.: *See—*
Kamath, G. Sanjiv; and Holmes, Douglas E., 4,238,252, Cl. 148-171.000.

Holy, Norman L.; Logan, William A.; and Stein, Karl D., to Western Kentucky University. Heterogeneous catalytic hydrogenation. 4,238,358, Cl. 252-431.00C.

Honde Giken Kogyo Kabushiki Kaisha: *See—*
Matsuda, Minoru; Nakagawa, Mitsuo; and Arakawa, Tsuneaki, 4,237,996, Cl. 180-229.000.

Honeywell Inc.: *See—*
Castleman, B. Wayne; and Wyatt, Gene B., 4,238,678, Cl. 250-381.000.
Elander, Jay C., 4,238,048, Cl. 220-307.000.
Schilling, Roger A., 4,238,184, Cl. 431-59.000.

Hong, Charles C., to Columbia Gas System Service Corporation. Using solvents for acidic gas removal. 4,238,206, Cl. 55-48.000.

Hongu, Masayuki; Kawakami, Hiromi; Ohmuro, Shigeru; and Tokuhara, Masaharu, to Sony Corporation. Muting circuit. 4,238,771, Cl. 358-165.000.

Hooker Chemicals & Plastics Corp.: *See—*
Dannels, W. Andrew; and Bainbridge, Robert W., 4,238,181, Cl. 425-543.000.
Tang, David Y.; and Foster, Arthur M., 4,238,413, Cl. 260-545.00R.

Hopkins, William M.: *See—*
Gill, Michael L.; and Hopkins, William M., 4,238,259, Cl. 156-131.000.

Hori, Nakaichi, to Asahiokuma Sangyo Kabushiki Kaisha. Spray nozzle for electrostatic airless coating. 4,238,077, Cl. 239-707.000.

Hornby, William E.; and Morris, David L., to Miles Laboratories, Inc. Specific binding assay with a prosthetic group as a label component. 4,238,565, Cl. 435-7.000.

Hornstra, Fred, Jr: *See—*
DeLuca, William H.; Hornstra, Fred, Jr; Gelb, George H.; Berman, Baruch; and Moede, Larry W., 4,238,721, Cl. 320-18.000.

Hosaka, Akihiko: *See—*
Okuyama, Kiyotaka; and Hosaka, Akihiko, 4,238,548, Cl. 428-480.000.

Hoshida, Katsusuke: *See—*
Mitsuya, Eiji; Kishimoto, Tomio; and Hoshida, Katsusuke, 4,238,768, Cl. 358-135.000.

Hoshino, Takashi: *See—*
Kobayashi, Masaharu; Arai, Takao; Hoshino, Takashi; Kimura, Hiroyuki; and Nishimura, Keizo, 4,238,770, Cl. 358-154.000.

Hottinger Baldwin Measurements, Inc.: *See—*
Lockery, Harry E.; and Laimins, Eric, 4,237,727, Cl. 73-141.00A.

Houdaille Industries, Inc.: *See—*
Buonauro, John A.; and Frazier, James L., 4,237,599, Cl. 29-568.000.

Houpert, Bernd: *See—*
Weddigen, Gert; Houpert, Bernd; and Gerlach, Monika, 4,238,553, Cl. 429-104.000.

Hourmagne, Jean: *See—*
Mathiolon, Henri; and Hourmagne, Jean, 4,237,683, Cl. 57-58.860.

Houser, David J.: *See—*
Wiley, Paul F.; and Houser, David J., 4,238,398, Cl. 260-340.300.

Hov-Air-Ship, Inc.: *See—*
Slater, Saul I., 4,238,095, Cl. 244-115.000.

Howard, John: *See—*
Cretney, Donald F.; and Howard, John, 4,238,638, Cl. 174-23.00C.

Howard, Thomas J., Jr.: *See—*
Bradus, Robert; Howard, Thomas J., Jr.; and Miller, John W., 4,237,610, Cl. 30-276.000.

Howe, Ralph; and Mills, Stuart D., to Imperial Chemical Industries Limited. Carboxylic acid derivatives of N-substituted benzyl-1,2,5,6-tetrahydropyridines. 4,238,488, Cl. 424-248.550.

Howison, Ronald G. Warning and protective device. 4,237,813, Cl. 116-70.000.

Howmedica, Inc.: *See—*
Caraway, William R.; and Falkingham, Clarence M., 4,238,059, Cl. 222-529.000.
McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert, 4,237,729, Cl. 73-194.00A.

Hoyt, Laurance J., Sr.: *See—*
Terry, Thomas E.; and Hoyt, Laurance J., Sr., 4,237,873, Cl. 128-77.000.

Hradcovsky, Rudolf J.; and Kozak, Otto R. Lead-acid cell. 4,238,556, Cl. 429-190.000.

Hsiao, Oliver T. W.; and Tan, Thomas. Paper clip. 4,237,587, Cl. 24-261.00R.

Hsieh, Chuan-Kang R.: *See—*
Vasalos, Iacovos A.; Ford, William D.; and Hsieh, Chuan-Kang R., 4,238,317, Cl. 208-120.000.

Huchette, Dominique: *See—*
Petit, Francis; and Huchette, Dominique, 4,238,301, Cl. 204-59.00R.

Hudson Pulp & Paper Corp.: *See—*
Zucker, Jerry, 4,238,285, Cl. 162-242.000.

Hudson, Thomas H.: *See—*
Bracknell, Paul A., 4,237,615, Cl. 33-265.000.

Huf, Franz-Joseph; Huf, Roland; and Huf, Helga, deceased (by Huf, Franz-Joseph Huf and Roland, legal representatives). Mechanical transmission arrangement. 4,237,741, Cl. 74-52.000.

Huf, Franz-Joseph Huf and Roland, legal representatives: *See—*
Huf, Franz-Joseph; Huf, Roland; and Huf, Helga, deceased, 4,237,741, Cl. 74-52.000.

Huf, Helga, deceased: *See—*
Huf, Franz-Joseph; Huf, Roland; and Huf, Helga, deceased, 4,237,741, Cl. 74-52.000.

Huf, Roland: *See—*
Huf, Franz-Joseph; Huf, Roland; and Huf, Helga, deceased, 4,237,741, Cl. 74-52.000.

Huggins, Harold A.: *See—*
Woolhouse, Geoffrey R.; Huggins, Harold A.; and Collins, David W., 4,237,601, Cl. 29-583.000.

Hughes Aircraft Company: *See—*
Kamath, G. Sanjiv; and Holmes, Douglas E., 4,238,252, Cl. 148-171.000.

Hughes, John J.: *See—*
Brugger, Dennis M.; and Hughes, John J., 4,238,167, Cl. 409-232.000.

Hughes, Robert D.; Steigelmann, Edward F.; and Bunting, Kemp R., to Standard Oil Company (Indiana). Method of converting membrane separation units. 4,237,596, Cl. 29-401.100.

Hugon, Emile L., to Societe Gamma-Electronic. Smoke detector by ionization associated to a velocimetric measurement electronic circuit. 4,238,677, Cl. 340-629.000.

Hulin, Jean-Pierre: *See—*
de Vecchis, Michel; and Hulin, Jean-Pierre, 4,237,687, Cl. 57-361.000.

Hultsman, Ben B.: *See—*
Andre, Willard E.; Clausen, Andrew, Jr.; and Hultsman, Ben B., 4,237,969, Cl. 165-71.000.

Hung, Kuo-Hua. Magnetic writing implement. 4,238,163, Cl. 401-89.000.

Hunsperger, Robert G., to University of Delaware. Monolithic Peltier temperature controlled junction. 4,238,759, Cl. 357-28.000.

Hunsucker, Jerry H.; and Woods, Milton E., to International Minerals & Chemical Corporation. Modified urea-formaldehyde resin. 4,238,545, Cl. 428-270.000.

Hunter Douglas International N.V.: *See—*
Hensel, Erich E., 4,237,957, Cl. 160-178.00R.

Hunter, George S. Seam eliminator for butt joints. 4,237,669, Cl. 52-417.000.

Hunter, Lee. Vehicle lift rack. 4,238,003, Cl. 187-8.710.

Huntley, James H. Oven having dual heating means. 4,238,669, Cl. 219-405.000.

Hunwicks, Alec A. Vehicle seat slides. 4,238,099, Cl. 248-430.000.

Huostila, Markku; Haapsaari, Timo; Suokas, Matti; and Turunen, Risto, to Oy Nokia Ab & Valmet Oy. Method for dewatering a tissue web. 4,238,284, Cl. 162-207.000.

Hussamy, Samir, to Burlington Industries, Inc. Bulking of polycarbonamides: qiana. 4,238,191, Cl. 8-130.100.

Hyde, James A., to Nalco Chemical Company. Chemical treatments in bleaching stages which increase pulp brightness. 4,238,282, Cl. 162-76.000.

Hyun, Jae C., to Monsanto Company. Process for producing self-crimping polyamide yarns. 4,238,439, Cl. 264-168.000.

I.B. Internazionale Brevetti s.r.l.: *See—*
Marchetti, Luigi; and Zaglio, Sergio, 4,238,061, Cl. 223-111.000.

Ibigawa Electric Industry Co., Ltd.: *See—*
Enomoto, Ryo; Tanaka, Hiroyuki; and Hara, Kazuhisa, 4,238,434, Cl. 264-63.000.

Ichida, Toshio; and Funahashi, Toshihiko, to Kawasaki Steel Corporation. Method for forming a heat-resistant coating on an oriented silicon steel sheet. 4,238,534, Cl. 427-376.00D.

Ichijo, Bunjiro. Method of measuring low impedance for obtaining unknown capacitance and/or resistance. 4,238,726, Cl. 324-57.00R.

Ideal Industries, Inc.: *See—*
Wells, Peter M., Jr.; and Oprins, Johannes A. E., 4,238,728, Cl. 324-149.000.

Iga, Akira; and Doi, Toshitada, to Sony Corporation. Error correcting system. 4,238,852, Cl. 371-40.000.

Ignatiev, Anatoly D.: *See—*
Khutoretsky, Garri M.; Fridman, Vladimir M.; Vorontsov, Alexandr I.; Prigorovsky, Igor A.; and Ignatiev, Anatoly D., 4,238,339, Cl. 310-260.000.

Ikeda, Tokuzo: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,238,175, Cl. 425-83.100.

Ikegami, Masahiro; Morikawa, Sennosuke; Yamashita, Keitaro; and Noguchi, Koji, to Tokyo Aircraft Instrument Co., Ltd. Image developing machine using magnetic toner. 4,237,819, Cl. 118-658.000.

Illinois Tool Works Inc.: *See—*
Wagner, David P., 4,238,165, Cl. 403-408.000.

Im, Ho B.; and Wickham, Donald G., to Ampex Corporation. Process of making shaped article of lithium ferrite containing phosphorus pentoxide with vanadium pentoxide or bismuth trioxide sintering agents. 4,238,342, Cl. 252-62.610.

Imafuku, Shigehisa: *See—*
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,238,346, Cl. 252-174.250.

Imaizumi, Shigetake: *See—*
Yamada, Kazuo; Mikami, Koji; and Imaizumi, Shigetake, 4,238,233, Cl. 75-146.000.

Immel, Ralph B., to Westinghouse Electric Corp. Electric resistance unit. 4,238,756, Cl. 338-304.000.

Imperial Chemical Industries Limited: *See—*
Cozens, Ross J.; Jennings, James R.; Hogan, Philip J.; and Kelly, Lawrence F. M., 4,238,422, Cl. 260-945.000.
Howe, Ralph; and Mills, Stuart D., 4,238,488, Cl. 424-248.550.
Maslen, Frank P.; and Cordell, Geoffrey B., 4,237,693, Cl. 60-648.000.
Parker, David G., 4,238,630, Cl. 585-467.000.
Pinto, Alwyn, 4,238,403, Cl. 260-449.500.
Yelland, Michael, 4,238,400, Cl. 260-372.000.

Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Automatic focus adjusting device for cameras. 4,238,153, Cl. 354-195.000.

Indian Head, Inc.: *See—*
Wilson, Nelson H., 4,238,652, Cl. 200-84.00B.

Industrial Filter Corporation: *See—*
Zievers, James F., 4,238,329, Cl. 210-36.000.

Industrie Pirelli Societa per Azioni: *See—*
Palmieri, Nicola, 4,238,639, Cl. 174-73.00R.

Ing. Alfred Schmidt GmbH: *See—*
Schmidt, Alfred, 4,237,629, Cl. 37-41.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Bovio, Michele; and Berruti, Pierangelo, 4,238,806, Cl. 346-76.0PH.
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,238,807, Cl. 346-140.00R.
Pomella, Piero; and Azzani, Nino, 4,237,602, Cl. 29-602.00R.

Inomata, Hiroshi: *See—*
Fujii, Yoshio; Inomata, Hiroshi; Suenaga, Yoshihiko; Nishiwaki, Koji; and Takashima, Yohei, 4,238,835, Cl. 364-900.000.

Inoue, Yoshio: *See—*
Takamizawa, Minoru; Inoue, Yoshio; Yoshioka, Hiroshi; and Moteki, Masaki, 4,238,393, Cl. 260-22.00S.

Inouye, Henry: *See—*
Liu, Chain T; Inouye, Henry; and Schaffhauser, Anthony C., 4,238,229, Cl. 75-122.000.

Institut Francais du Petrole: *See—*
Larue, Joseph; and Rojey, Alexandre, 4,237,964, Cl. 165-1.000.

Institut National de la Recherche Agronomique: *See—*
Staron, Thadee J., 4,238,567, Cl. 435-252.000.

Insulation Sales Company: *See—*
Munson, Richard W., 4,237,671, Cl. 52-584.000.

Intech Laboratories, Inc.: *See—*
Dickinson, Robert V. C.; Entenman, Alan W.; and Kliphuis, Jans, 4,238,779, Cl. 340-146.10E.

International Business Machines Corporation: *See—*
Aichelmann, Frederick J., Jr., 4,238,842, Cl. 365-222.000.
Angelo, Raymond W.; Poliak, Richard M.; and Susko, John R., 4,238,528, Cl. 427-96.000.
Antipov, Igor, 4,238,278, Cl. 156-657.000.
Clemen, Rainer; Gschwendtner, Joerg; and Haug, Werner, 4,238,841, Cl. 365-203.000.
DeLuca, John C.; and Gambino, Richard J., 4,238,837, Cl. 365-28.000.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,238,853, Cl. 375-2.000.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Smith, John L.; and Tuchman, Walter L., 4,238,854, Cl. 375-2.000.
Feng, Bai-Cwo; and Feng, George C., 4,238,559, Cl. 430-156.000.
Galicki, Arkadi; Hayunga, Carl P.; and Sarkary, Homi G., 4,238,312, Cl. 204-298.000.
Shih, Kwang K., 4,238,275, Cl. 156-626.000.
Yates, Leonard S., 4,238,834, Cl. 364-900.000.

International Diagnostic Technology, Inc.: *See—*
Deindoerfer, Fred H., 4,238,449, Cl. 422-58.000.

International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,238,344, Cl. 252-174.110.

International Harvester Company: *See—*
Domes, E. A.; and Meisner, David B., 4,237,950, Cl. 152-175.000.
Hoch, Manfried L.; and Cicci, George B., 4,237,680, Cl. 56-15.900.
Hoefkes, Heiner J., 4,237,985, Cl. 172-676.000.

International Minerals & Chemical Corporation: *See—*
Hunsucker, Jerry H.; and Woods, Milton E., 4,238,545, Cl. 428-270.000.

International Multifoods Corporation: *See—*
Chipchase, Frank D., 4,237,763, Cl. 83-872.000.

International Paper Company: *See—*
Nowacki, Ulrich G.; and Weibrecht, Edwin C., 4,237,777, Cl. 93-36.010.

International Playtex, Inc.: *See—*
Fitzpatrick, William E., 4,238,040, Cl. 215-11.00E.

International Standard Electric Corporation: *See—*
Epworth, Richard E., 4,238,648, Cl. 179-170.00D.
Gassmann, Gerhard-Gunter, 4,238,849, Cl. 370-11.000.
Vance, Ian A. W., 4,238,850, Cl. 370-27.000.

Internationale Octrooi Maatschappij: *See—*
Henderson, John A.; Lindley, Raymond H.; and Whiteley, Keith B., 4,238,432, Cl. 264-40.700.

Ioffe, Benyamin A.: *See—*
Kalnin, Robert K.; Ioffe, Benyamin A.; Zommer, Jury A.; Sermons, Gunar Y.; Kern, Ivan I.; and Kipers, Jury J., 4,238,658, Cl. 219-9.500.
Zakharova, Maia S.; Polyakov, Nikolai G.; Lapitsky, Viktor N.; Ioffe, Benyamin A.; Kalnyn, Robert K.; Krymtsov, Anatoly V.; Podolsky, Vladimir, deceased; Podolsky, Sergei V., executor; and Podolskaya, Natalia V., executor, 4,238,323, Cl. 209-212.000.

Irving, Leonard D.: *See—*
Gray, Kenneth W.; and Irving, Leonard D., 4,238,763, Cl. 357-68.000.

Isaacson, Milton S.: *See—*
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Ishibashi, Tadashi: *See—*
Kinugawa, Kiyoshige; Ogihara, Satoru; Hanada, Yosio; Ishitani, Shizuo; and Ishibashi, Tadashi, 4,238,276, Cl. 156-634.000.

Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Endo, Shigeru, to Hodogaya Chemical Co., Ltd.; and Matsushita Electric Industrial Co., Ltd. Light transmission particle for forming color image. 4,238,562, Cl. 430-106.000.

Ishida, Isoshiro: *See—*
Yamamoto, Tomio; Hanafusa, Hideyuki; Seno, Kouji; Mihara, Toshiro; and Ishida, Isoshiro, 4,237,959, Cl. 164-4.000.

Ishihara, Heigo: *See—*
Kato, Yoshiki; Ishihara, Heigo; Fukke, Hajime; Chiba, Katsuyoshi; Nagashiro, Waichi; Tsunoda, Teruo; and Mitsuya, Munehisa, 4,238,341, Cl. 252-62.540.

Ishihara, Tatsuo: *See—*
Matsubara, Masaka; Ishihara, Tatsuo; and Mori, Tokitaka, 4,238,479, Cl. 424-95.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Ogiwara, Toshiaki, 4,238,455, Cl. 422-171.000.
Yasukawa, Shozo; Nakamura, Akinori; and Yamada, Takamitsu, 4,238,632, Cl. 13-9.00R.

Ishikura, Shinichi: *See—*
Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,238,609, Cl. 544-158.000.

Ishitani, Shizuo: *See—*
Kinugawa, Kiyoshige; Ogihara, Satoru; Hanada, Yosio; Ishitani, Shizuo; and Ishibashi, Tadashi, 4,238,276, Cl. 156-634.000.

Ishizuka, Masaaki: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Ishizuka, Masaaki; Morishima, Hajime; Matsumoto, Ikuo; and Yamamoto, Takuzo, 4,238,507, Cl. 424-319.000.

Isolab, Inc.: *See—*
Acuff, Kenneth J.; Rosenthal, Murray A.; and Volk, Murray E., 4,238,196, Cl. 23-230.00B.

Isotec Industries Limited: *See—*
Turlej, Zbigniew W.; and Hawken, Donald F., 4,238,675, Cl. 250-353.000.

Ito, Sumio: *See—*
Motosugi, Katsuhiko; Sekiya, Setsuro; Nohira, Hidetaka; Ito, Sumio; Ohki, Hisashi; and Kumai, Teruo, 4,237,826, Cl. 123-25.00R.

Ito, Tadashi: *See—*
Uchiyama, Takashi; Ohtaki, Shohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; and Aizawa, Hiroshi, 4,238,149, Cl. 354-128.000.

Iwahara, Makoto, to Victor Company of Japan, Ltd. Frequency band dividing filter using delay-line filter. 4,238,744, Cl. 333-132.000.

Iwasa, Yoshio: *See—*
Fukuhara, Takao; and Iwasa, Yoshio, 4,237,842, Cl. 123-124.00R.

J. I. Case Company: *See—*
Frisbee, Claude M., 4,237,986, Cl. 172-805.000.

J. M. Voith GmbH: *See—*
Musselmann, Walter; Rienecker, Reimund; Kinzler, Herbert; and Tra, Josef, 4,238,324, Cl. 209-255.000.

J. R. Simplot Co.: *See—*
Bosley, Roy E., Jr.; Hamann, Michael L.; Pinegar, Richard K.; and Gobble, Harold G., 4,238,517, Cl. 426-250.000.

Jablonsky, Erich, to Zahnradfabrik Friedrichshafen AG. Auxiliary power steering for motor vehicles. 4,237,993, Cl. 180-133.000.

Jackson, Keith L.; and Reece, James J., to General Steel Industries, Inc. Radial axle railway truck disc brakes. 4,237,791, Cl. 105-168.000.

Jackson, Keith L.; Jones, William C.; and Spencer, Kenneth E., to General Steel Industries, Inc. Radial axle truck disc brakes. 4,238,006, Cl. 188-59.000.

Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., to Eastman Kodak Company. Copolyesters derived from terephthalic acid, phenylhydroquinone and t-butylhydroquinone. 4,238,600, Cl. 528-193.000.

Jacob, Wolfgang: *See—*
Alfes, Franz; Jacob, Wolfgang; Meyer, Karl-Heinrich; and Bottenbruch, Ludwig, 4,238,351, Cl. 252-403.000.

Jacobson, Rolf: *See—*
Schiek, Burkhard; Schilz, Wolfram; and Jacobson, Rolf, 4,238,795, Cl. 343-14.000.

Jaeger, Kurt S.: *See—*
Goodnight, Hershel E.; Jaeger, Kurt S.; and Martin, Richard R., 4,237,858, Cl. 126-360.00R.

Jaekle, William M.: *See—*
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,237,794, Cl. 105-368.00R.

Jagenberg-Werke AG: *See—*
Klapp, Hartmut, 4,237,677, Cl. 53-505.000.

Jaklin, Michael: *See—*
Kolb, Bruno; Jaklin, Michael; Pospisil, Peter; Boege, Dietrich; and Riegger, Hubertus, 4,237,733, Cl. 73-423.00A.

Jalbing, John I., to General Motors Corporation. Catalytic converter with uniform air distribution and mixing with the exhaust gases. 4,238,456, Cl. 422-172.000.

Jaluria, Yogesh: *See—*
Chu, Tze Y.; Jaluria, Yogesh; Lavigna, Robert J.; Reusser, Raymond E.; and Williams, George, 4,238,274, Cl. 156-617.0SP.

James, James R.: *See—*
Aitken, James E.; Hall, Peter S.; and James, James R., 4,238,798, Cl. 343-700.0MS.

Jansson, Bertil E.; and Carlsson, Karl L. O., to ABU Aktiebolag. Fixed-spool reel. 4,238,085, Cl. 242-84.200.

Jarosz, Gregory J.: *See—*
Pallucci, Joseph N.; Jarosz, Gregory J.; and Kruse, Glenn R., 4,237,667, Cl. 52-221.000.

Jarrett, Robert P.; and Tresouthick, Stewart W., to United States Steel Corporation. Manufacture of cement by intergrinding carbonaceous fuel. 4,238,237, Cl. 106-100.000.

Jaworowski, Raymond; Darmstaedter, Eric; Barton, Cliff D.; and Taylor, William, to Apollo Technologies, Inc. Method of enhancing the effectiveness of electrostatic precipitators used with gas streams formed from burning fuel. 4,238,203, Cl. 55-5.000.

Jedlicka, Josef, to Kraftwerk Union Aktiengesellschaft. Energy absorbing device for pipelines. 4,237,938, Cl. 138-107.000.

Jembrzycki, Corinne R.: *See—*
Evans, Gregory S.; and Jembrzycki, Corinne R., 4,238,509, Cl. 424-358.000.

Jenczewski, Theodore J.: *See—*
Gancy, Alan B.; and Jenczewski, Theodore J., 4,238,305, Cl. 204-180.00P.

Jenkins, Carl B., Jr.; Porenski, Harry S., Jr.; and Turner, Paul N., to Brown & Williamson Tobacco Corp. Method and apparatus for tobacco leaf destemming. 4,237,909, Cl. 131-128.000.

Jenks, William C. Power control system. 4,238,723, Cl. 323-24.000.

Jennings, James R.: *See—*
Cozens, Ross J.; Jennings, James R.; Hogan, Philip J.; and Kelly, Lawrence F. M., 4,238,422, Cl. 260-945.000.

Jenoptik Jena G.m.b.H.: *See—*
Altmann, Jurgen; Sanke, Heidrun; Schoppe, Gunter; and Schutt, Wolfgang, 4,238,767, Cl. 358-107.000.

Jered Brown Brothers, Inc.: *See—*
Gregory, Charles E.; Brian, Michael; Thomas, Jerald F.; and Cameron, James F., 4,237,934, Cl. 137-637.000.

John Zink Company: *See—*
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Johns-Manville Corporation: *See—*
Pallo, John M.; and Shisler, Donald E., 4,238,213, Cl. 65-8.000.

Johnson, Bruce P.: *See—*
Peterson, Robert L.; Beaumont, Gerald P.; and Johnson, Bruce P., 4,237,726, Cl. 73-73.000.

Johnson, Carl E.: *See—*
Cahill, Paul J.; and Johnson, Carl E., 4,238,628, Cl. 568-736.000.

Johnson, Gilbert H., to American Air Filter Company, Inc. Control arrangement for a damper. 4,237,932, Cl. 137-624.180.

Johnson, Gordon W.: *See—*
Nerstad, Karl A.; Chadwick, Curtis E., III; and Johnson, Gordon W., 4,238,020, Cl. 192-103.0FA.

Johnson, LaVell R.: *See—*
Reese, Max G.; and Johnson, LaVell R., 4,238,471, Cl. 424-1.000.

Johnson, Logan W.: *See—*
Clausen, Herman A.; Boeddeker, David R.; Johnson, Logan W.; and Wenger, Jerry A., 4,238,097, Cl. 248-188.700.

Johnson Products Co., Inc.: *See—*
Khahil, Ezzat N.; and Syed, Ali N., 4,237,910, Cl. 132-7.000.

Johnson, Richard A.: *See—*
Vercellotti, Leonard C.; and Johnson, Richard A., 4,238,781, Cl. 340-200.000.

Johnson, Robert W., to Medcor, Inc. Control signal transmitter and monitor for implanted pacer. 4,237,895, Cl. 128-419.0PG.

Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-9-deoxy-5,9α-epoxy-4,5-cis-17,18-tetradehydro-PGF_1 compounds. 4,238,605, Cl. 542-422.000.

Johnston, Caroline R. Steam powered plane or vehicle. 4,238,643, Cl. 179-39.000.

Johnstone, Richard: *See—*
Sipek, Charles B.; Johnstone, Richard; and Clegg, Russell B., 4,238,034, Cl. 211-1.500.

Jolly, James D. Chain tensioning system for vehicles. 4,237,744, Cl. 74-242.13A.

Jones, Ernest; and Hall, John L., to Rubery Owen Fasteners Limited. Screw threaded members and their manufacture. 4,237,948, Cl. 151-22.000.

Jones, Frank W., to Redco, Inc. Rotary slicer. 4,237,759, Cl. 83-419.000.

Jones, James H., to Merck & Co., Inc. Indolobenzoxazines. 4,238,486, Cl. 424-248.400.

Jones & Laughlin Steel Corporation: *See—*
Bucher, John H.; Paliwoda, Eugene J.; and Rote, Frank E., 4,238,230, Cl. 75-123.00G.

Jones, Robert E., Jr., to AAI Corporation. Method and apparatus for image signal generation and image display. 4,238,826, Cl. 364-515.000.

Jones, William C.: *See—*
Jackson, Keith L.; Jones, William C.; and Spencer, Kenneth E., 4,238,006, Cl. 188-59.000.

Jonsson, Bo R.; Toll, Gunnar G.; and Bodelind, Bo T. K. Glass container with a fixed plastic protective layer. 4,238,041, Cl. 215-12.00R.

Joy Manufacturing Company: *See—*
Lake, Robert C., 4,238,028, Cl. 198-731.000.

Jugnet, Jean: *See—*
Pujol, Jean-Pierre; Jugnet, Jean; and Motta, Claude, 4,238,533, Cl. 427-359.000.

Juki Co., Ltd.: *See—*
Hirayama, Tetsuro, 4,237,804, Cl. 112-168.000.

Jung, Clemens; and Wiesel, Ernst, to E. W. Menn KG Maschinenfabrik. Machine for assembling screw blanks and washers. 4,237,605, Cl. 29-783.000.

Jung, Peter: *See—*
Kovic, Ferdinand; and Jung, Peter, 4,238,081, Cl. 242-47.010.

Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating arthropods with 2- and 4-substituted-chromanes. 4,238,501, Cl. 424-283.000.

Kabushiki Kaisha n a c: *See—*
Tanaka, Ryozo, 4,238,776, Cl. 360-10.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Suzuki, Shunji, 4,238,758, Cl. 357-25.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenyusho: *See—*
Tanasawa, Yasusi; Muto, Norio; and Saito, Akinori, 4,237,836, Cl. 123-119.00E.

Kachkarov, Alexandr G.; and Prikhodko, Valery V. Installation for electrohydroblasting of castings. 4,238,245, Cl. 134-133.000.

Kaemmer, Eduard: *See—*
Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, 4,238,088, Cl. 242-192.000.

Kagerhuber, Franz; and Lederer, Wolfgang, to Voest-Alpine Aktiengesellschaft. Shearing machine to be used in bow-type continuous casting plants. 4,237,760, Cl. 83-529.000.

Kai, Isao: *See—*
Kobayashi, Toshiyuki; Nakai, Hideharu; Kai, Isao; and Yonemori, Yoshinori, 4,237,878, Cl. 128-214.00E.

Kaiser Aluminum & Chemical Corporation: *See—*
Zinniger, Theodore C., 4,237,961, Cl. 164-89.000.

Kaiser, LeRoy E., Jr. Animal medication brush. 4,237,822, Cl. 119-85.000.

Kallinger, Franz, to Research-Cottrell, Inc. Jacking device. 4,238,115, Cl. 254-106.000.

Kalnin, Robert K.; Ioffe, Benyamin A.; Zommer, Jury A.; Sermons, Gunar Y.; Kern, Ivan I.; and Kipers, Jury J. Method of assembly of nonmagnetic current-conducting components. 4,238,658, Cl. 219-9.500.

Kalnyn, Robert K.: *See—*
Zakharova, Maia S.; Polyakov, Nikolai G.; Lapitsky, Viktor N.; Ioffe, Benyamin A.; Kalnyn, Robert K.; Krymtsov, Anatoly V.; Podolsky, Vladimir, deceased; Podolsky, Sergei V., executor; and Podolskaya, Natalia V., executor, 4,238,323, Cl. 209-212.000.

Kamath, G. Sanjiv; and Holmes, Douglas E., to Hughes Aircraft Company. Process for growing indium phosphide of controlled purity. 4,238,252, Cl. 148-171.000.

Kamber, Bruno: *See—*
Rink, Hans; Kamber, Bruno; and Sieber, Peter, 4,238,481, Cl. 424-177.000.

Kambic, Raymond V., to Brink's Locking Systems, Inc. Lock mechanism. 4,237,711, Cl. 70-150.000.

Kamoshita, Masako: *See—*
Uemori, Yukio; Uemori, Shigeko; Uemori, Terue; Uemori, Michie; Kamoshita, Tuguo; and Kamoshita, Masako, 4,237,639, Cl. 43-18.00R.

Kamoshita, Tuguo: *See—*
Uemori, Yukio; Uemori, Shigeko; Uemori, Terue; Uemori, Michie; Kamoshita, Tuguo; and Kamoshita, Masako, 4,237,639, Cl. 43-18.00R.

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Kanamori, Isao: *See—*
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Kanatani, Toshio: *See—*
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Kandathil, Thomas V., to S. C. Johnson & Son, Inc. Hydrogen peroxide bleach composition. 4,238,192, Cl. 8-111.000.

Kanebo, Ltd.: *See—*
Kisaichi, Akio; Oguchi, Masao; Takeda, Toshihide; Aikawa, Akira; and Saito, Toshio, 4,238,193, Cl. 8-115.500.

Kaneda, Isao, to New Nippon Electric Company, Ltd. Discharge lamp operating system. 4,238,708, Cl. 315-289.000.

Kansas State University Research Foundation: *See—*
Lambert, Jack L.; and Fina, Louis R., 4,238,477, Cl. 424-79.000.

Kantorski, Joseph W.: *See—*
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Kao Soap Co., Ltd.: *See—*
Matsunaga, Kinjiro; Tsumadori, Masaki; and Nakagawa, Yunosuke, 4,238,057, Cl. 222-192.000.

Kaplan, Donald S.: *See—*
Ritter, Thomas A.; Laskowski, Leonard J.; and Kaplan, Donald S., 4,237,892, Cl. 128-339.000.

Karplus, Henry H. B.; and Forster George A., to United States of America, Energy. Apparatus for checking the direction of polarization of shear-wave ultrasonic transducers. 4,238,725, Cl. 324-56.000.

Karrer, Friedrich: *See—*
Rasberger, Michael; and Karrer, Friedrich, 4,238,613, Cl. 546-190.000.

Kartsounes, George T.: *See—*
Ahrens, Frederick W.; and Kartsounes, George T., 4,237,692, Cl. 60-659.000.

Kasahara, Nobuyoshi; and Nonomura, Koutarou, to Mitsui Mining & Smelting Co., Ltd. Process for dyeing zinc and zinc alloys. 4,238,250, Cl. 148-6.100.

Kasner, William H.; Toth, Vincent A.; and Pleasance, Lyn D., to Westinghouse Electric Corp. Technique for generating 14 and 16 micron CO_2 laser radiation. 4,238,741, Cl. 331-94.5PE.

Kassanchuk, Jerry N. Baby bottle rack. 4,238,035, Cl. 211-74.000.

Kasuya, Kazuki, to Chlorine Engineers Corporation, Ltd. Cathode for use in electrolysis and method for the production thereof. 4,238,311, Cl. 204-290.00R.

Katagihara, Hiroshi: *See—*
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Kataoka, Hiroshi, to Kataoka Machine Product Co., Ltd. Method of controlling winding tension. 4,238,084, Cl. 242-75.510.

Kataoka Machine Product Co., Ltd.: *See—*
Kataoka, Hiroshi, 4,238,084, Cl. 242-75.510.

Katayama, Nobuaki; and Koga, Hideaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Reverse shift mechanism for power transmission unit. 4,237,745, Cl. 74-339.000.

Katcher, Jay H.; and Ackilli, Joseph A., to General Foods Corporation. Process for preparing an odor-free acetylated starch. 4,238,604, Cl. 536-109.000.

Kato, Takashi; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with an auxiliary combustion chamber. 4,237,845, Cl. 123-191.00A.

Kato, Yoshiki; Ishihara, Heigo; Fukke, Hajime; Chiba, Katsuyoshi; Nagashiro, Waichi; Tsunoda, Teruo; and Mitsuya, Munehisa, to Hitachi, Ltd. Composition of magnetic recording media. 4,238,341, Cl. 252-62.540.

Katsuhiro Okuho: *See—*
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Kawakami, Akira; Ohkouchi, Haruo; Aoki, Yoshio; and Kitano, Kyozo, to Lion Fat and Oil Co., Ltd., The. Process for producing magnesium salt of olefin sulfonic acid. 4,238,410, Cl. 260-513.00R.

Kawakami, Hiromi: *See—*
Hongu, Masayuki; Kawakami, Hiromi; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,238,771, Cl. 358-165.000.

Kawasaki Steel Corporation: *See—*
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Kawashima, Tadasu: *See—*
Sakurada, Isoji; and Kawashima, Tadasu, 4,237,886, Cl. 128-303.130.

Kaye, Steven W. Support stand for high fidelity speaker. 4,238,101, Cl. 248-441.00R.

Kayser-Roth Hoisery, Inc.: *See—*
Safrit, Sam C.; Shields, Harper; Coble, William H.; and Farrell, Roscoe M., 4,237,707, Cl. 66-172.00E.

Kazewych, Bohdan, to General Motors Corporation. Automotive tape drive window regulator. 4,237,657, Cl. 49-352.000.

Kearney & Trecker Corporation: *See—*
Brugger, Dennis M.; and Hughes, John J., 4,238,167, Cl. 409-232.000.
Sipek, Charles B.; Johnstone, Richard; and Clegg, Russell B., 4,238,034, Cl. 211-1.500.

Kedem, Ora: *See—*
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Perry, Mordechai; and Kedem, Ora, 4,238,307, Cl. 204-180.00P.

Keefe, William L.; and Mason, Paul B., to Polaroid Corporation. Audio tape free loop control arrangement for multipurpose audio-visual film cassette. 4,238,144, Cl. 352-72.000.

Keen, Harry J.; and Thomas, Haydon C., to Colt Industries Operating Corp. Electronic measuring system with pulsed power supply and stability sensing. 4,238,784, Cl. 340-347.0NT.

Keever, Joseph M.: *See—*
MacFadden, John A.; and Keever, Joseph M., 4,238,729, Cl. 324-152.000.

Keith, Dennis D.; and Weigele, Manfred, to Hoffmann-La Roche Inc. D,L-2-Amino-4-(2-aminoethoxy)-trans-but-3-enoic acid derivatives. 4,238,622, Cl. 560-39.000.

Keller, James E.; and Klar, Irwin, to Electro Audio Dynamics, Inc. Automatic tympanometric testing means. 4,237,905, Cl. 128-746.000.

Keller, John W., Jr.: *See—*
Hagfors, Norman R.; and Keller, John W., Jr., 4,237,899, Cl. 128-422.000.

Keller, Teddy M.; and Griffith, James R., to United States of America, Navy. Perfluorinated aliphatic phenoxy bisorthodinitriles and polyphthalocyanines therefrom. 4,238,601, Cl. 528-206.000.

Kelley, Charley T.: *See—*
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Kelly, J. Robert; and Squicquero, Mark J. Tooth cleaning apparatus. 4,237,574, Cl. 15-167.000.

Kelly, Lawrence F. M.: *See—*
Cozens, Ross J.; Jennings, James R.; Hogan, Philip J.; and Kelly, Lawrence F. M., 4,238,422, Cl. 260-945.000.

Kelly, Robert C.: *See—*
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Kemler, Marc, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Call simulator. 4,238,649, Cl. 179-175.20D.

Kemmel, Patrice: *See—*
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Kendall Company, The: *See—*
Salvadori, Lawrence A.; Miller, Frank N.; Layton, Terry N.; Schultze, W. Martin; and Villari, Frank K., 4,238,448, Cl. 422-58.000.

Kennecott Copper Corporation: *See—*
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Kent, Francis J., to Wean United, Inc. Control means for a pipe tester. 4,237,723, Cl. 73-49.600.

Keon, Lawrence H.: *See—*
Rigdon, Orville W.; Schierberg, Gordon R.; and Keon, Lawrence H., 4,238,409, Cl. 260-501.170.

Kern, Ivan I.: *See—*
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Kerr, Douglas S., to National Latex Products Company, The. Process for rotational molding utilizing EVA and products produced therefrom. 4,238,537, Cl. 428-35.000.

Kerth, Willi: *See—*
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Khahil, Ezzat N.; and Syed, Ali N., to Johnson Products Co., Inc. Stable hair relaxer. 4,237,910, Cl. 132-7.000.

Khutoretsky, Garri M.; Fridman, Vladimir M.; Vorontsov, Alexandr I.; Prigorovsky, Igor A.; and Ignatiev, Anatoly D. Arrangement for supporting stator end windings of an electric machine. 4,238,339, Cl. 310-260.000.

Khutoretsky, Garri M.: *See—*
Belova, Tamara N.; Drozdova, Larisa A.; Zverev, Anatoly T.; Tjurin, Jury G.; and Khutoretsky, Garri M., 4,238,702, Cl. 310-179.000.

Khutoretsky, Gary M.: *See—*
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Kimerling, Lionel C.; Leamy, Harry J.; and Smith, George E., to Bell Telephone Laboratories, Incorporated. Healing radiation defects in semiconductors. 4,238,694, Cl. 307-238.000.

Kimura, Hiroyuki: *See—*
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King, James D.: *See—*
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Kinkade, William A.; and McCleary, Robert E., to United States Gypsum Company. Calcining kettle having means for returning stack exhaust gas to calcining mixture. 4,238,238, Cl. 106-110.000.

Kinser, Warren H. Combination marine life trap. 4,237,645, Cl. 43-102.000.

Kinugawa, Kiyoshige; Ogihara, Satoru; Hanada, Yosio; Ishitani, Shizuo; and Ishibashi, Tadashi, to Hitachi, Ltd. Process for producing liquid crystal display element. 4,238,276, Cl. 156-634.000.

Kinugawa, Masumi; Fujisawa, Hideya; Omori, Norio; and Sueishi, Motoharu, to Nippondenso Co., Ltd. Engine air intake control system. 4,237,838, Cl. 123-119.0EC.

Kinzer, Jay, to Sanilogical Corporation. Apparatus for the treatment of sewage. 4,238,338, Cl. 210-195.400.

Kinzler, Herbert: *See—*
Musselmann, Walter; Rienecker, Reimund; Kinzler, Herbert; and Tra, Josef, 4,238,324, Cl. 209-255.000.

Kinzler, Jack A., to United States of America, National Aeronautics & Space Administration. Structural members, method and apparatus. 4,237,662, Cl. 52-108.000.

Kipers, Jury J.: *See—*
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Kirchhoff, Werner: *See—*
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Kirihara, Sonae: *See—*
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Kirschner, Erich: *See—*
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Kisaichi, Akio; Oguchi, Masao; Takeda, Toshihide; Aikawa, Akira; and Saito, Toshio, to Kanebo, Ltd. Method of treating synthetic fibers or synthetic fiber fabrics. 4,238,193, Cl. 8-115.500.

Kishimoto, Tomio: *See—*
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Kitamura, Koichiro. Automatic tool changing device for a machining center. 4,237,595, Cl. 29-26.00A.

Kitamura, Yasunori; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Ohtsubo, Yoshiaki; and Motoori, Ryuzo, to Nippon Kogaku K.K. Sound alarm device in a camera. 4,238,146, Cl. 354-53.000.

Kitano, Kyozo: *See—*
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Kitchen, Alonzo G.: *See—*
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Kiuchi, Mikiho: *See—*
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Kizawa, Ichiro: *See—*
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Klapp, Hartmut, to Jagenberg-Werke AG. Switching apparatus for the lowering and pivoting rails of a carton filling machine. 4,237,677, Cl. 53-505.000.

Klar, Irwin: *See—*
Keller, James E.; and Klar, Irwin, 4,237,905, Cl. 128-746.000.

Klaus, Thomas R.; and Strauss, John S., to Motorola, Inc. Pulse controlled potentiometer. 4,238,724, Cl. 323-80.000.

Kleiner, Eduard K.; and Dexter, Martin, to Ciba-Geigy Corporation. Stabilized compositions containing polymeric thiosynergists. 4,238,575, Cl. 525-212.000.

Klietz, Lothar R., to Pitney Bowes Deutschland GmbH. Plate feeding device for embossing machines. 4,238,125, Cl. 271-3.000.

Klimesch, Erich: *See—*
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Kliphuis, Jans: *See—*
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Klockner-Humboldt-Wedag AG: *See—*
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Kluksdahl, Harris E.: *See—*
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Knauff, Robert J. Simplified linear potentiometer. 4,238,755, Cl. 338-176.000.

Knight, John H.; and Isaacson, Milton S., to Nu-Tech Industries, Inc. Optimum efficiency rotary machine having synchronous operation at a selectable speed. 4,238,717, Cl. 318-341.000.

Knize, Frank J.: *See—*
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Knothe, Erich: *See—*
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Knowles, Richard P.: *See—*
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Knuplez, Vladimir: *See—*
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Kobayashi, Masaharu; Arai, Takao; Hoshino, Takashi; Kimura, Hiroyuki; and Nishimura, Keizo, to Hitachi, Ltd. Vertical synchronizing signal detector circuit. 4,238,770, Cl. 358-154.000.

Kobayashi, Toshiyuki; Nakai, Hideharu; Kai, Isao; and Yonemori, Yoshinori, to Omron Tateisi Electronics Co., Ltd.; and Bohsei Enterprise. Dripping fluid level detector. 4,237,878, Cl. 128-214.00E.

Kobb, Donald A.: *See—*
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Kobylinski, Thaddeus P.: *See—*
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Kocache, Riad M. A.; Holman, Danny F.; and Sunderland, Ronald H., to Sybron Corporation. Device for monitoring a component in a fluid mixture. 4,238,308, Cl. 204-195.00S.

Koch, Klaus: *See—*
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Koch, Ronney R.; and Rensvold, Roger F., to Halliburton Company. Preventing water incursion into commodity piles. 4,238,536, Cl. 427-421.000.

Kochey, Edward L., to Combustion Engineering, Inc. Furnace heat absorption control. 4,237,825, Cl. 122-406.0ST.

Koda, Hirokazu: *See—*
Nakanishi, Tousaku; Suzuki, Kazuo; Makino, Masayasu; Miyao, Nobuyoshi; and Koda, Hirokazu, 4,237,803, Cl. 112-158.00E.

Koga, Hideaki: *See—*
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Kohaut, John E., to Raceway Components, Inc. Trimless flush floor fitting. 4,237,666, Cl. 52-221.000.

Kohmaier, Franz. Method of manufacturing rollers. 4,237,717, Cl. 72-364.000.

Koivunen, Erkki A., to General Motors Corporation. Multi-speed power transmission. 4,237,749, Cl. 74-763.000.

Kojima, Toshifumi: *See—*
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.

Kolb, Bruno; Jaklin, Michael; Pospisil, Peter; Boege, Dietrich; and Riegger, Hubertus, to Bodenseewerke Perkin-Elmer & Co. GmbH. Sampling device for measuring instruments. 4,237,733, Cl. 73-423.00A.

Komai, Takeshi; and Matsushima, Masaru, to Nippon Oil and Fats Co., Ltd. Process for producing a non-aqueous system dispersed solution of polymers from polymeric peroxides. 4,238,381, Cl. 260-31.20R.

Komori, Yuji, to Tokyo Shibaura Electric Co., Ltd. Temperature-compensated amplifier circuit. 4,238,738, Cl. 330-256.000.

Konashinsky, Alexandr V.: *See—*
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Konashinsky, Jury A.; and Konashinsky, Alexandr V. Magnetic brake-damper of electric measuring instrument. 4,238,730, Cl. 324-152.000.

Kondo, Kiyosi; Suda, Minoru; and Tunemoto, Daiei, to Sagami Chemical Research Center. 1-Hydrocarbyl-pyrrole-2-acetic acid derivatives and their production. 4,238,396, Cl. 260-326.200.

Kondo, Toshiro: *See—*
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Kondur, Nicholas, Jr., to C. Itoh Electronics, Inc. Media guide. 4,238,160, Cl. 400-616.300.

Konig, Peter, to Tioxide Group Limited. Oxidation catalyst and method for its manufacture. 4,238,370, Cl. 252-461.000.

Koninklijke Bos Kalis Westminster Group N.V.: *See—*
Demmers, Arie A., 4,237,688, Cl. 60-484.000.

Konstantin, Anatole E. Apparatus for producing shrinkable plastic caps. 4,238,267, Cl. 156-380.000.

Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, to Ovutime, Inc. Devices and processes for determining properties of viscous fluids. 4,237,725, Cl. 73-58.000.

Korolkov, Anatoly G.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Korolkov, Anatoly G.; Popov, Jury S.; Rozenfeld, Lev M.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,238,700, Cl. 310-52.000.

Korzhov, Mikhail A.; Novikov, Leonid N.; Makarov, Vyacheslav N.; Onkova, Olga L.; Mishunin, Vladimir V.; Usenko, Vladimir I.; and Bendersky, Alexandr F. Rotary-piston internal combustion engine. 4,237,848, Cl. 123-242.000.

Kosasky, Harold: *See—*
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 4,237,725, Cl. 73-58.000.

Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, to Nippon Kokan Kabushiki Kaisha. Preventing magnetization of pipe blank in GMA welding. 4,238,659, Cl. 219-61.000.

Kossek, Gunter: *See—*
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Kosyrev, Viktor V.: *See—*
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Kouwenhoven, Herman W.; and Stork, Willem H. J., to Shell Oil Company. Crystalline silicates and hydrocarbon-conversion processes employing same. 4,238,318, Cl. 208-120.000.

Kovic, Ferdinand; and Jung, Peter, to Sulzer Brothers Limited. Apparatus for storing filamentary material. 4,238,081, Cl. 242-47.010.

Kozak, Otto R.: *See—*
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Kozien, Andrzej: *See—*
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Kraftwerk Union Aktiengesellschaft: *See—*
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Schabert, Hans-Peter; and Hoffmann, Jorgen, 4,238,290, Cl. 176-38.000.

Kramer, Arthur W.: *See—*
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Kraps, Michael H.; and Stevens, Samuel B., to Caterpillar Tractor Co. Elongate material spreading and tacking apparatus and method. 4,238,258, Cl. 156-120.000.

Krause, Hartmut: *See—*
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Kravitz, Barry. Focusing solar collector. 4,237,864, Cl. 126-425.000.

Kreucoha AG: *See—*
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Kreuter, Walter, to Kreucoha AG. Method and device for treating cocoa butter-containing masses. 4,238,516, Cl. 426-231.000.

Kriebel, Gunter: *See—*
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Krijgsman, Pieter. Method of and structure for forming a reaction product such as calcium silicate and the resulting structure. 4,238,240, Cl. 106-120.000.

Kristiansen, Odd: *See—*
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Krivakova, Miroslava: *See—*
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Krogsrud, Harald, to Elkem-Spigerverket A/S. Gas tight seal for electrodes in smelting furnaces. 4,238,634, Cl. 13-17.000.

Kronman, Albert F.: *See—*
Peters, Melville F.; and Peters, Walter T., 4,238,337, Cl. 210-179.000.

Krug, John A., Jr.: *See—*
Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., 4,237,927, Cl. 137-587.000.

Krugener, Rolf; Haug, Ernst; and Kurth, Hermann W., to Daimler-Benz Aktiengesellschaft. Locking mechanism. 4,237,709, Cl. 70-107.000.

Kruse, Glenn R.: *See—*
Pallucci, Joseph N.; Jarosz, Gregory J.; and Kruse, Glenn R., 4,237,667, Cl. 52-221.000.

Krymtsov, Anatoly V.: *See—*
Zakharova, Maia S.; Polyakov, Nikolai G.; Lapitsky, Viktor N.; Ioffe, Benyamin A.; Kalnyn, Robert K.; Krymtsov, Anatoly V.; Podolsky, Vladimir, deceased; Podolsky, Sergei V., executor; and Podolskaya, Natalia V., executor, 4,238,323, Cl. 209-212.000.

Krzywon, Walter: *See—*
Czosnyka, Stanislaw; Krzywon, Walter; Kozien, Andrzej; Cichocki, Stanislaw; and Benesch, Ryszard, 4,238,118, Cl. 266-46.000.

Ku, Han San: *See—*
Holm, Robert E.; and Ku, Han San, 4,238,219, Cl. 71-86.000.

Kudai, Toshihiro: *See—*
Torii, Sigeru; Tanaka, Hideo; and Kudai, Toshihiro, 4,238,615, Cl. 548-170.000.

Kuerbitz, Gunther; and Wegener, Walter, to Carl Zeiss-Stiftung. Process and apparatus for producing a heat image with compensation of the phase error due to scan action. 4,238,674, Cl. 250-334.000.

Kuge, Tsukasa; Watanabe, Tsuyoshi; and Matsumoto, Toru, to Canon Kabushiki Kaisha. Elastic roller for image forming apparatus. 4,237,592, Cl. 29-119.000.

Kuhfuss, Herbert F.: *See*—
Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,238,600, Cl. 528-193.000.

Kuhlmann, Herbert, to Sidepal S.A. Societe Industrielle de Participations Luxembourgeoise. Damper construction and a method of cooling a damper. 4,237,854, Cl. 126-285.00R.

Kuhnle, Hans-Frieder: *See*—
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix H., 4,238,506, Cl. 424-319.000.

Kullendorff, Anders; and Wikner, Jan, to Stal-Laval Turbin AB. Multistage cleaning plant. 4,237,800, Cl. 110-216.000.

Kullendorff, Anders: *See*—
Borjesgard, Pehr; Kullendorff, Anders; and Wikner, Jan, 4,237,823, Cl. 122-4.00D.

Kulpa, Theodore A.: *See*—
Clayton, Harold J.; Kulpa, Theodore A.; and Roedel, George F., 4,238,402, Cl. 260-448.80R.

Kumai, Teruo: *See*—
Motosugi, Katsuhiko; Sekiya, Setsuro; Nohira, Hidetaka; Ito, Sumio; Ohki, Hisashi; and Kumai, Teruo, 4,237,826, Cl. 123-25.00R.

Kunreuther & Beringhause: *See*—
Kunreuther, Steven, 4,237,779, Cl. 93-87.000.

Kunreuther, Steven, to Kunreuther & Beringhause. Automatic attaching apparatus. 4,237,779, Cl. 93-87.000.

Kunzmann, Otto, to Bielomatik Leuze GmbH & Co. Apparatus and method for the binding of stacks of sheets. 4,237,568, Cl. 11-1.00R.

Kuraray Co., Ltd.: *See*—
Matsumoto, Mitsuo; and Tamura, Masuhiko, 4,238,419, Cl. 260-604.0HF.

Kurosaki, Hideaki: *See*—
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,238,346, Cl. 252-174.250.

Kurth, Hermann W.: *See*—
Krugener, Rolf; Haug, Ernst; and Kurth, Hermann W., 4,237,709, Cl. 70-107.000.

Kurtz, Robert: *See*—
McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert, 4,237,729, Cl. 73-194.00A.

Kurtz, Thomas D. Mirror mounting bracket. 4,238,103, Cl. 248-544.000.

Kusubayashi, Toshiaki: *See*—
Hirakawa, Tadashi; Yoshikawa, Kiyomitsu; and Kusubayashi, Toshiaki, 4,238,024, Cl. 198-425.000.

Kuwakado, Satosi: *See*—
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimogawa, Toshiaki, 4,237,690, Cl. 60-635.000.

Kuze, Takashi: *See*—
Minami, Hiroshi; Kuze, Takashi; and Harao, Norio, 4,238,043, Cl. 220-2.10R.

Kuznetsov, Lev E.: *See*—
Azovtsev, Alexandr A.; Velikoselsky, Nikolai D.; Vinogradov, Sergei S.; Vorontsov, Alexei E.; Kuznetsov, Lev E.; Podbeltsev, Viktor I.; Polevikov, Mikhail E.; Sviridov, Georgy M.; Fadeev, Valery G.; and Cherevaty, Anatoly A., 4,238,037, Cl. 212-3.00R.

La Cellophane: *See*—
Pujol, Jean-Pierre; Jugnet, Jean; and Motta, Claude, 4,238,533, Cl. 427-359.000.

La, Hau T. Omnidirectional vehicle. 4,237,990, Cl. 180-7.00R.

Laboratoire L. Lafon: *See*—
Poisson, Jacques, 4,238,518, Cl. 426-540.000.

Lahtinen, Kalervo: *See*—
Saarivirta, Matti; and Lahtinen, Kalervo, 4,238,635, Cl. 13-22.000.

Laimins, Eric: *See*—
Lockery, Harry E.; and Laimins, Eric, 4,237,727, Cl. 73-141.00A.

Lake, Robert C., to Joy Manufacturing Company. Flight conveyor. 4,238,028, Cl. 198-731.000.

Lal, Sudarshan; and Porcelli, Richard V., to Halcon Research & Development Corporation. Composition for inhibiting corrosion of titanium. 4,238,551, Cl. 428-660.000.

LaLiberte, Norman U.; and Rotenberg, Don H., to American Optical Corporation. Process for identification marking clear plastic articles. 4,238,524, Cl. 427-7.000.

Lam, Julia H. W.: *See*—
Crivello, James V.; and Lam, Julia H. W., 4,238,394, Cl. 260-299.000.
Crivello, James V.; and Lam, Julia H. W., 4,238,619, Cl. 549-3.000.

Lambelin, Andre: *See*—
Ciais, Andre; and Lambelin, Andre, 4,238,451, Cl. 422-101.000.

Lambert, Jack L.; and Fina, Louis R., to Kansas State University Research Foundation. Process of preparing homogeneous resin-polyiodide disinfectants. 4,238,477, Cl. 424-79.000.

Lamer, Gerald P.; Petersen, Arnold; and Lenius, Norbert W., to Marine Travelift, Inc. Hatch cover crane. 4,238,036, Cl. 212-3.00R.

Landem, Roy; and Connolly, Michael. Fire escape window system. 4,237,654, Cl. 49-141.000.

Landrum, Charles R.: *See*—
Calvert, Rodney K.; and Landrum, Charles R., 4,237,673, Cl. 53-48.000.

Lang, Theodor, to Sandoz Ltd. Printing inks containing a polyether amine fixing agent. 4,238,234, Cl. 106-22.000.

Langdon, Michael J., to Xerox Corporation. Recirculating simplex/duplex document handler. 4,238,126, Cl. 271-3.100.

Langen, Christianus P.: *See*—
Langen, Johannes C.; and Langen, Christianus P., 4,237,581, Cl. 17-45.000.

Langen, Johannes C.; and Langen, Christianus P. Method and device for compressing meat. 4,237,581, Cl. 17-45.000.

Langley, Jeffrey T.; and Mininni, Robert M., to Fiber Industries, Inc. Polyester of para-hydroxy benzoic acid, 1,2-bis(para-carboxy phenoxy)ethane, terephthalic acid and substituted hydroquinone capable of forming an anisotropic melt which readily undergoes melt processing. 4,238,599, Cl. 528-193.000.

Langley, Russell M.: *See*—
Hart, Robert J.; and Langley, Russell M., 4,237,817, Cl. 118-307.000.

Lanik, Hans, to EVVA Werk Spezialerzeugung von Zylinder- und Sicherheitsschloessern Gesellschaft m.b.H. & Co. Magnetizing device. 4,238,752, Cl. 336-73.000.

Lanmon, C. P., II, to Schlumberger Technology Corp. Well bore apparatus adapted for being releasably coupled to suspension cables. 4,237,972, Cl. 166-54.500.

Lao, Binneg Y., to Bendix Corporation, The. Pressure-sensing capacitor and method of trimming same. 4,238,662, Cl. 219-121.0LN.

Lapitsky, Viktor N.: *See*—
Zakharova, Maia S.; Polyakov, Nikolai G.; Lapitsky, Viktor N.; Ioffe, Benyamin A.; Kalnyn, Robert K.; Krymtsov, Anatoly V.; Podolsky, Vladimir, deceased; Podolsky, Sergei V., executor; and Podolskaya, Natalia V., executor, 4,238,323, Cl. 209-212.000.

Laplanche, Pierre, to S.A. Beghin-Say. Fastener means for disposable diapers and process of manufacture. 4,237,890, Cl. 128-287.000.

LaPointe, Gabriel M., to Ramco Industries, Inc. Gas drying apparatus. 4,238,209, Cl. 55-181.000.

Larchian, George A.: *See*—
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., 4,238,762, Cl. 357-49.000.

Larsen, Arthur L; Marklund, Sooren J.; and Rosenblom, Jan, to Malaco AG. Method and a composition for inhibiting corrosion. 4,238,348, Cl. 252-391.000.

Larsen, Arthur L.; Marklund, Soren J.; and Rosenblom, Jan, to Malaco AG. Method and a composition for inhibiting corrosion. 4,238,349, Cl. 252-392.000.

Larsen, Arthur L.; Marklund, Soren J.; and Rosenblom, Jan, to Malaco AG. Method and a composition for inhibiting corrosion. 4,238,350, Cl. 252-392.000.

Larson, Frederick A. Cleaning tool for electrical or gas water heaters. 4,237,572, Cl. 15-105.000.

Larue, Joseph; and Rojey, Alexandre, to Institut Francais du Petrole. Heat exchange process with heat accumulation. 4,237,964, Cl. 165-1.000.

Laskowski, Leonard J.: *See*—
Ritter, Thomas A.; Laskowski, Leonard J.; and Kaplan, Donald S., 4,237,892, Cl. 128-339.000.

Lathlaen, Richard A., to TRW, Inc. Signal generating apparatus. 4,237,844, Cl. 123-148.00E.

Laughinghouse, Gerald F.; and Gibson, Donald B., to Champion International Corporation. Hardboard with smooth, dense surface and method. 4,238,438, Cl. 264-119.000.

Lavigna, Robert J.: *See*—
Chu, Tze Y.; Jaluria, Yogesh; Lavigna, Robert J.; Reusser, Raymond E.; and Williams, George, 4,238,274, Cl. 156-617.0SP.

Lawhead, Stephen A.: *See*—
Riegelman, Harry M.; Paganelli, Anthony C.; Walker, John A.; Borden, Norris; Lawhead, Stephen A.; and Umann, Harry M., 4,237,560, Cl. 4-7.000.

Lawrence, David J.: *See*—
Harrison. Gregory K.; Pope, George D.; Riel, Richard F.; Kobb, Donald A.; Kelley, Charley T.; Lawrence, David J.; Conn, Donald R.; and Odom, Richard C., 4,237,770, Cl. 91-369.00A.

Lawson, Ernest E.: *See*—
Cottrell, Walter D., Jr.; and Lawson, Ernest E., 4,238,176, Cl. 425-85.000.

Lawson, Martin W.; and Brown, David M., to Texas Instruments Incorporated. High inrush current circuit breaker. 4,238,749, Cl. 335-63.000.

Layden, Lawrence M., to Airco, Inc. Variable lead device for circular scan tracers. 4,238,673, Cl. 250-202.000.

Layton, Terry N.: *See*—
Salvadori, Lawrence A.; Miller, Frank N.; Layton, Terry N.; Schultze, W. Martin; and Villari, Frank K., 4,238,448, Cl. 422-58.000.

Leamy, Harry J.: *See*—
Kimerling, Lionel C.; Leamy, Harry J.; and Smith, George E., 4,238,694, Cl. 307-238.000.

Leberfinger, Kurt: *See*—
Liebert, Karl-Heinz; Tischer, Werner; Deppenbrock, Josef; and Leberfinger, Kurt, 4,237,773, Cl. 91-467.000.

Leco Corporation: *See*—
Bredeweg, Roger L.; Povilaitis, Edward P.; and Reed, Ramsey G., 4,238,450, Cl. 422-63.000.

Lecomte, Daniel: *See*—
Malissin, Roland; and Lecomte, Daniel, 4,238,707, Cl. 315-175.000.

Ledding, Willard E., to CPC International Inc. Fluidized bed apparatus. 4,237,619, Cl. 34-57.00R.

Ledenbach, Gregory W.: *See*—
Betts, David A.; and Ledenbach, Gregory W., 4,237,728, Cl. 73-146.500.

Lederer, Wolfgang: *See*—
Kagerhuber, Franz; and Lederer, Wolfgang, 4,237,760, Cl. 83-529.000.

Lee, David K.: *See*—
Breslin, John J.; and Lee, David K., 4,238,689, Cl. 307-42.000.

Leggett & Platt, Inc.: *See*—
Sandham, Edwin C., 4,238,135, Cl. 297-468.000.

LeGrow, Gary E., to Dow Corning Corporation. Metal containers with interior surfaces coated with an organosiloxane composition. 4,238,050, Cl. 220-458.000.

Lehman, Frederick D., to CPT Corporation. Drive circuits for a high resolution cathode ray tube display. 4,238,774, Cl. 358-242.000.

Lehmann, Herbert; and Tutas, Kurt, to Siemens Aktiengesellschaft. Box-type transport container of an electrically driven transport car with a lockable cover. 4,238,049, Cl. 220-331.000.

Leimgruber, Willy: *See*—
Cleeland, Roy, Jr.; Grunberg, Emanuel; Leimgruber, Willy; and Weigele, Manfred, 4,238,589, Cl. 562-442.000.

Leitner, Kajetan J. Chuck for holding and driving fasteners, such as screws or nails. 4,237,946, Cl. 145-52.000.

Lemieux, Raymond U.; Bundle, David R.; and Baker, Donald A., to Chembiomed Limited. Artificial oligosaccharide antigenic determinants. 4,238,473, Cl. 424-11.000.

Lemonon, Claire: *See*—
Llabres, Raymond; Fournier, Liliane; and Lemonon, Claire, 4,238,179, Cl. 425-394.000.

Lenius, Norbert W.: *See*—
Lamer, Gerald P.; Petersen, Arnold; and Lenius, Norbert W., 4,238,036, Cl. 212-3.00R.

Leonard, William J., Jr.; and Wingard, Robert E., Jr., to Dynapol. Vinylamine aromatic copolymers and salts thereof. 4,238,579, Cl. 525-330.000.

Les Manufactures de Saint Marcel: *See*—
Etancelin, Christian, 4,237,628, Cl. 36-131.000.

Leung, Danton K.; and Singh, Prithipal, to Syva Company. Valproate conjugation using dicarbonyls. 4,238,389, Cl. 260-112.50R.

Lever Brothers Company: *See*—
Rudy, Jerome; and Rapisarda, Anthony A., 4,238,531, Cl. 427-242.000.

Levine, David H., to Carroll Sound, Inc. Chime assembly. 4,237,767, Cl. 84-406.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Intermediates for herbicidal sulfonamides. 4,238,621, Cl. 560-12.000.

Levy, Stanley B., to Du Pont de Nemours, E. I., and Company. Process for transversely stretching polyethylene terephthalate film. 4,238,443, Cl. 264-210.700.

Lewis, Howard B., to National Controls, Inc. Capacitive load cell and method of manufacture. 4,237,989, Cl. 177-210.00C.

Leybold-Heraeus GmbH: *See*—
Aichert, Hans; Dietrich, Walter; Stark, Friedrich; and Stephan, Herbert, 4,238,525, Cl. 427-42.000.

Liburdy, Robert P. Electric resonance chromatography. 4,238,327, Cl. 210-31.00C.

Licursi, Nicola. Method of dispensing a granular fertilizer. 4,238,072, Cl. 239-1.000.

Liebert, Karl-Heinz; Tischer, Werner; Deppenbrock, Josef; and Leberfinger, Kurt, to Zahnradfabrik Friedrichshafen AG. Pressure medium controller for motor vehicle steering systems. 4,237,773, Cl. 91-467.000.

Liebherr-Verzahntechnik GmbH: *See*—
Wiener, Dieter; Koch, Klaus; and Pomp, Jurgen, 4,237,852, Cl. 125-11.00R.

Liebisch, Wolfgang F., to Victroplas Limited. Plastic extrusion. 4,238,435, Cl. 264-75.000.

Lieuwen, William O. Apparatus for controlling the air supply to the intake manifold of an internal combustion engine. 4,237,841, Cl. 123-124.00B.

Life Savers, Inc.: *See*—
Cherukuri, Subraman R.; and Friello, Dominick R., 4,238,510, Cl. 426-5.000.
Witzel, Frank; Puglia, Wayne J.; Clark, K. Warren; and Mackay, Donald A. M., 4,238,475, Cl. 424-48.000.

Lim, Drahoslav; Coupek, Jiri; Krivakova, Miroslava; and Pokorny, Svatopluk, to Ceskoslovenska akademie ved. Preparation of hydrophilic material for gel chromatography. 4,238,569, Cl. 521-52.000.

Lin, Ruey Y.: *See*—
Economy, James; Lin, Ruey Y.; and Smith, William D., 4,238,547, Cl. 428-366.000.

Linde Aktiengesellschaft: *See*—
Oberpriller, Jakob; Schuster, Alfred; and Hofmann, Dolf D., 4,237,695, Cl. 62-63.000.

Lindley, Raymond H.: *See*—
Henderson, John A.; Lindley, Raymond H.; and Whiteley, Keith B., 4,238,432, Cl. 264-40.700.

Lindner, Adolf, to Siemens Aktiengesellschaft. End switch for a shaft driven through a large angle of rotation. 4,238,021, Cl. 192-141.000.

Lindner, Wolfgang; and Lutkecosmann, Herbert, to Bayer Aktiengesellschaft. Process and apparatus for shredding fibre tows into staple fibres. 4,237,758, Cl. 83-403.000.

Lines, Lancelot H., to Senil Nominees Pty. Ltd; and Australian Merino Wool Harvesting Limited. Immobilizing animals. 4,237,896, Cl. 128-419.00R.

Lion Fat and Oil Co., Ltd., The: *See*—
Kawakami, Akira; Ohkouchi, Haruo; Aoki, Yoshio; and Kitano, Kyozo, 4,238,410, Cl. 260-513.00R.

Lischke, Burkhard: *See*—
Anger, Klaus; Frosien, Juergen; and Lischke, Burkhard, 4,238,680, Cl. 250-397.000.

Liska, Miroslav. Paint spray apparatus having pressure actuated control. 4,238,073, Cl. 239-127.000.

Little, Keith W.: *See*—
Millar, Barry C.; and Little, Keith W., 4,238,023, Cl. 198-388.000.

Liu, Chain T; Inouye, Henry; and Schaffhauser, Anthony C., to United States of America, Energy. Fe-based long range ordered alloys. 4,238,229, Cl. 75-122.000.

Llabres, Raymond; Fournier, Liliane; and Lemonon, Claire, to Thomson-CSF. Arrangement for pressing flexible discs and a pressing process using this arrangement. 4,238,179, Cl. 425-394.000.

Lloyd Plastics Company: *See*—
Peterson, Lloyd A., 4,237,672, Cl. 52-743.000.

Lochman, Lubomir; and Trekoval, Jiri, to Ceskoslovenska akademie ved. Method for the preparation of polymers and copolymers of vinyl monomers by anionic polymerization. 4,238,588, Cl. 526-217.000.

Lockery, Harry E.; and Laimins, Eric, to Hottinger Baldwin Measurements, Inc. Mechanical moment sensitivity compensation in shear beam transducers. 4,237,727, Cl. 73-141.00A.

Logan, William A.: *See*—
Holy, Norman L.; Logan, William A.; and Stein, Karl D., 4,238,358, Cl. 252-431.00C.

Logullo, Francis M., to Du Pont de Nemours, E. I., and Company. Process for spinning acrylic fibers. 4,238,440, Cl. 264-176.00F.

Lohrberg, Karl, to Metallgesellschaft Aktiengesellschaft. Electrolytic process of recovering oxyacids of chlorine or salts thereof. 4,238,302, Cl. 204-95.000.

Lollis, Jack D.; and Hicks, David J., to T. D. Williamson Inc. Pig trap closure. 4,237,936, Cl. 138-90.000.

LoMaglio, Lewis C., to Ethyl Corporation. Edge sealing of laminate. 4,238,263, Cl. 156-202.000.

Lombard, Jean-Pierre, to C.M. Industries. Treatment of secondary frigidity. 4,238,489, Cl. 424-248.560.

Lone Star Manufacturing Company, Inc.: *See*—
Harding, Robert C.; and Herweg, Jack E., 4,237,967, Cl. 165-43.000.

Longsworth, Ralph C.; and Chalmers, Matthew G., to Air Products and Chemicals, Inc. Variable flow cryostat with dual orifice. 4,237,699, Cl. 62-514.0JT.

Lorenz, Peter J. Solar heating siding panel. 4,237,865, Cl. 126-429.000.

Loucks, George R.; and White, Dwain M., to General Electric Company. Process of forming urethane-coupled polymers of quinone-coupled polyphenylene oxides. 4,238,580, Cl. 525-395.000.

Loveland, Winton S.: *See*—
Warshaw, Saul; and Loveland, Winton S., 4,238,270, Cl. 156-468.000.

Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., to Block Drug Company Inc. Method of killing ectoparasites with imidazoline and imidazolium toxicants. 4,238,499, Cl. 424-273.00R.

Loveshaw Corporation, The: *See*—
Warshaw, Saul; and Loveland, Winton S., 4,238,270, Cl. 156-468.000.

Lowery, Kirby, Jr.: *See*—
Shipley, Randall S.; Birkelbach, Donald F.; and Lowery, Kirby, Jr., 4,238,355, Cl. 252-429.00B.

Lowes, John M.: *See*—
Osmotherley, Owen B.; and Lowes, John M., 4,238,067, Cl. 228-107.000.

Luby, John J.: *See*—
Sivin, Bernard J.; and Luby, John J., 4,237,956, Cl. 160-120.000.

Lucas Industries Limited: *See*—
Cryer, Edward; and Wilkinson, Norman, 4,238,650, Cl. 200-4.000.
Page, Kenneth; Bowie, David C.; Taylor, Alfred J.; and Knowles, Richard P., 4,237,843, Cl. 123-145.00A.
Seilly, Alec H.; and Mowbray, Dorian F., 4,238,698, Cl. 310-27.000.
Seilly, Alec H., 4,238,699, Cl. 310-27.000.

Lucero, Andres R.; Netley, Neil J.; Raven, Richard C.; and Egan, Chester C., Jr., to Bally Manufacturing Corporation. Electronic gaming apparatus. 4,238,127, Cl. 273-143.00R.

LuK Lamellen und Kupplungsbau GmbH: *See*—
Maucher, Paul, 4,238,018, Cl. 192-98.000.
Maucher, Paul; and Dubiel, Oswald, 4,238,019, Cl. 192-99.00A.

Lukes, Raymond M.: *See*—
Markley, Finley W.; Benham, Thomas H.; and Lukes, Raymond M., 4,238,340, Cl. 210-321.00B.

Lund, Morten A. Method and apparatus for slitting and rewinding web materials. 4,238,082, Cl. 242-56.200.

Luster, Michael I.: *See*—
Albro, Phillip W.; Chae, Kun; Luster, Michael I.; and McKinney, James D., 4,238,472, Cl. 424-1.000.

Lutener, Stuart B., to Skyline Products Ltd. Removal of water from gas well borehole with solid foaming agent. 4,237,977, Cl. 166-309.000.

Lutkecosmann, Herbert: *See*—
Lindner, Wolfgang; and Lutkecosmann, Herbert, 4,237,758, Cl. 83-403.000.

Lutz, LaVerne H., to Gulf & Western Manufacturing Company. Rolling mill pass-line adjusting mechanism. 4,237,715, Cl. 72-244.000.

Lynch, Conrad L.: *See*—
Tobias, Michael A.; and Lynch, Conrad L., 4,238,583, Cl. 525-443.000.

Lynch, Donald M.: *See*—
Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., 4,238,499, Cl. 424-273.00R.

Lynn, Robert W., to Becton, Dickinson and Company. Roller bottle. 4,238,568, Cl. 435-285.000.

Lyons, Russell J., to Champion International Corporation. Gift box ribbon sleeve. 4,238,070, Cl. 229-87.00R.

M & S Industries, Inc.: *See—*
Heth, Donald J., 4,238,058, Cl. 222-368.000.

Maasberg, Wolfgang, to Woma Apparatbau Wolfgang Maasberg & Co. GmbH. High-pressure conduit-cleaning nozzle. 4,237,913, Cl. 134-167.00C.

MacFadden, John A.; and Keever, Joseph M., to Westinghouse Electric Corp. Magnetic damping system having low induction magnet. 4,238,729, Cl. 324-152.000.

Mackay, Donald A. M.: *See—*
Witzel, Frank; Puglia, Wayne J.; Clark, K. Warren; and Mackay, Donald A. M., 4,238,475, Cl. 424-48.000.

Mackenroth, Joseph R., III; and Bode, Hugo B. Removable cooling hatband apparatus. 4,237,558, Cl. 2-181.000.

Maclay, G. Jordan. Adjustable wrench. 4,237,756, Cl. 81-185.000.

MacLean-Fogg Company: *See—*
Grube, William L., 4,237,567, Cl. 10-86.0CL.

Macmillan, John M.; and Costa, Hilario S., to Conrac Corporation. Dual-chamber ionization smoke detector assembly. 4,238,679, Cl. 250-385.000.

MacMillan, Kenneth T. Rimless, production mold. 4,238,174, Cl. 425-19.000.

Madni, Asad M., to Systron-Donner Corporation. Digitally programmable apparatus for generating a substantially linear ramp signal. 4,238,727, Cl. 324-77.00B.

Maffet, Vere, to UOP Inc. Process for mechanically dewatering sewage sludge. 4,237,618, Cl. 34-12.000.

Mahler GmbH: *See—*
Fuchs, Reinhold, 4,237,846, Cl. 123-193.00P.

Maier, Albin, to Snap-Tite, Inc. In-line flow control valve. 4,237,922, Cl. 137-493.000.

Maitenaz, Paul, to Compagnie Europeenne pour l'Equipment Menager Cepem. Method and device for regulating the cleaning temperature of an oven. 4,238,670, Cl. 219-413.000.

Majoie, Bernard, to Societe de Recherches Industrielles S.O.R.I. Phenoxyalkylcarboxylic acids. 4,238,492, Cl. 424-263.000.

Makarov, Vyacheslav N.: *See—*
Korzhov, Mikhail A.; Novikov, Leonid N.; Makarov, Vyacheslav N.; Onkova, Olga L.; Mishunin, Vladimir V.; Usenko, Vladimir I.; and Bendersky, Alexandr F., 4,237,848, Cl. 123-242.000.

Makino, Masayasu: *See—*
Nakanishi, Tousaku; Suzuki, Kazuo; Makino, Masayasu; Miyao, Nobuyoshi; and Koda, Hirokazu, 4,237,803, Cl. 112-158.00E.

Makishima, Yoshihiro, to NSK-Warner K.K. Safety seat belt retractor. 4,238,087, Cl. 242-107.40A.

Malaco AG: *See—*
Larsen, Arthur L.; Marklund, Sooren J.; and Rosenblom, Jan, 4,238,348, Cl. 252-391.000.
Larsen, Arthur L.; Marklund, Soren J.; and Rosenblom, Jan, 4,238,349, Cl. 252-392.000.
Larsen, Arthur L.; Marklund, Soren J.; and Rosenblom, Jan, 4,238,350, Cl. 252-392.000.

Malco Products, Inc.: *See—*
Brooks, Ray G., 4,237,940, Cl. 138-172.000.

Malissin, Roland; and Lecomte, Daniel, to Thomson-CSF. Power supply system for a semiconductor light source. 4,238,707, Cl. 315-175.000.

Malmendier, Joseph W.: *See—*
Bonk, John A.; and Malmendier, Joseph W., 4,238,704, Cl. 313-113.000.

Mammen, H. William, to Sunbeam Corporation. Electrostatic oven. 4,238,668, Cl. 219-399.000.

Mann, Brian M.: *See—*
Beane, Russell R.; and Mann, Brian M., 4,237,897, Cl. 128-419.0PG.

Mann, John: *See—*
Brown, Roger C.; Hazard, Richard; and Mann, John, 4,238,606, Cl. 542-441.000.

Mannesmann Aktiengesellschaft: *See—*
Geiger, Otto; and Genter, Karl-Ernst, 4,238,205, Cl. 51-33.00W.

Mano, Hiroshi; and Okita, Koichi, to Sumitomo Electric Industries, Ltd. Process for producing porous materials. 4,238,571, Cl. 521-62.000.

Manservisi, Renato, to Cir S.p.A. Divisione Sasib. Device for replacing defective articles. 4,238,025, Cl. 198-450.000.

Manty, Brian A.: *See—*
Eckler, Thomas A.; and Manty, Brian A., 4,238,310, Cl. 204-252.000.

Manwiller, Carl H., to Du Pont de Nemours, E. I., and Company. Method of and apparatus for ram-extrusion of aromatic polyimide and polyamide resins, and shaped articles formed using such method and apparatus. 4,238,538, Cl. 428-36.000.

Marchetti, Luigi; and Zaglio, Sergio, to I.B. Internazionale Brevetti s.r.l. Socks or stockings wear-helping utensil. 4,238,061, Cl. 223-111.000.

Marconi Company Limited, The: *See—*
Newington, Geoffrey T., 4,238,800, Cl. 343-715.000.

Marine Travelift, Inc.: *See—*
Lamer, Gerald P.; Petersen, Arnold; and Lenius, Norbert W., 4,238,036, Cl. 212-3.00R.

Marino, Paul J.; Blanchard, Jean; and Stefanini, Gerard R., to Etat Francais as represented by the delegue general pour l'armement. Matching circuitry for use with a radar station and a television magnetoscope 4,238,794, Cl. 343-5.0PC.

Mark, H. Wayne: *See—*
Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,238,362, Cl. 252-439.000.

Mark Products, Incorporated: *See—*
Haggard, Samuel E.; Riley, Travis E.; and Florian deceased, Eugene F., 4,238,845, Cl. 367-183.000.

Markezich, Ronald L.; and Quinn, Clayton B., to General Electric Company. Process for producing copolyester-carbonates. 4,238,597, Cl. 528-179.000.

Markley, Finley W.; Benham, Thomas H.; and Lukes, Raymond M., to Medical, Incorporated. Hemodialyzer. 4,238,340, Cl. 210-321.00B.

Marklund, Sooren J.: *See—*
Larsen, Arthur L.; Marklund, Sooren J.; and Rosenblom, Jan, 4,238,348, Cl. 252-391.000.

Marklund, Soren J.: *See—*
Larsen, Arthur L.; Marklund, Soren J.; and Rosenblom, Jan, 4,238,349, Cl. 252-392.000.
Larsen, Arthur L.; Marklund, Soren J.; and Rosenblom, Jan, 4,238,350, Cl. 252-392.000.

Markusch, Peter; Noll, Klaus; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Cationic electrolyte-stable dispersions and process for producing polyurethanes useful therein. 4,238,378, Cl. 260-29.2TN.

Marshall, Michael A. Harmonica. 4,237,766, Cl. 84-377.000.

Martin, Richard R.: *See—*
Goodnight, Hershel E.; Jaeger, Kurt S.; and Martin, Richard R., 4,237,858, Cl. 126-360.00R.

Martin, Thom O.; and Clausi, Adolph S., to General Foods Corporation. Rice cereal and process. 4,238,514, Cl. 426-62.000.

Martin, Willie E., to E-Systems, Inc. Vehicle locating apparatus. 4,238,829, Cl. 364-561.000.

Martinez, Santiago. Highway turbine. 4,238,687, Cl. 290-1.00R.

Masai, Hiroto: *See—*
Yoshida, Motoharu; and Masai, Hiroto, 4,238,016, Cl. 192-58.00B.

Maschinenfabrik Rieter AG: *See—*
Fluck, Jakob; and Schellenberg, Hans, 4,237,686, Cl. 57-337.000.

Maslen, Frank P.; and Cordell, Geoffrey B., to Imperial Chemical Industries Limited. Energy recovery system. 4,237,693, Cl. 60-648.000.

Mason, Paul B.: *See—*
Keefe, William L.; and Mason, Paul B., 4,238,144, Cl. 352-72.000.

Mason, Peter R.: *See—*
Hay, Andrew G.; and Mason, Peter R., 4,238,828, Cl. 364-559.000.

Maspoli, Oscar. Telephone handset having shoulder rest and adjustable earpiece. 4,238,647, Cl. 179-103.000.

Masuda, Hajime, to Hochiki Corporation. Channel level adjusting apparatus. 4,238,766, Cl. 358-86.000.

Matayoshi, Hiroshi, to Nissen Motor Company, Limited. Sound insulating arrangement around a vehicle gear shift lever. 4,237,998, Cl. 181-175.000.

Mater, Carolyn V. Compartmentalized coupon carrying case. 4,237,947, Cl. 150-39.000.

Materials and Methods Limited: *See—*
Dunks, Clifford M.; and Castledine, Timothy, 4,238,231, Cl. 75-130.00R.

Mathevet, Albert, to Compagnie Generale des Etablissements Michelin. Radial tire with tread reinforcement comprising nonfolded plies with radially increasing axial widths. 4,237,953, Cl. 152-361.0FP.

Mathiolon, Henri; and Hourmagne, Jean, to Verdol S.A. Device for delivering yarns. 4,237,683, Cl. 57-58.860.

Mathusima, Tokunori; Sato, Takeshi; and Uenishi, Akira, to Hitachi, Ltd. Heat insulating structure for use in transporting and handling gas of high temperature and pressure. 4,237,668, Cl. 52-249.000.

Matsubara, Hiroyoshi: *See—*
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.

Matsubara, Masaka; Ishihara, Tatsuo; and Mori, Tokitaka, to Mori, Tokitaka. Nutrient treating nutritional deficiency. 4,238,479, Cl. 424-95.000.

Matsuda, Minoru; Nakagawa, Mitsuo; and Arakawa, Tsuneaki, to Honde Giken Kogyo Kabushiki Kaisha. Motorcycle engine mounting structure. 4,237,996, Cl. 180-229.000.

Matsui, Hiroshi: *See—*
Matsuoka, Isao; and Matsui, Hiroshi, 4,238,425, Cl. 261-81.000.

Matsui, Junji: *See—*
Yoshihara, Hideo; Kiuchi, Mikiho; Nakayama, Satoshi; Hayasaka, Toa; and Matsui, Junji, 4,238,706, Cl. 313-330.000.

Matsumoto, Hiromitsu: *See—*
Sugiyama, Keiichi; and Matsumoto, Hiromitsu, 4,237,828, Cl. 123-30.00C.

Matsumoto, Ikuo: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Ishizuka, Masaaki; Morishima, Hajime; Matsumoto, Ikuo; and Yamamoto, Takuzo, 4,238,507, Cl. 424-319.000.

Matsumoto, Mitsuo; and Tamura, Masuhiko, to Kuraray Co., Ltd. Hydroformylation of olefinic compounds. 4,238,419, Cl. 260-604.0HF.

Matsumoto, Shinji: *See—*
Akiyama, Shinichi; Yamamoto, Haruhisa; Yoneyama, Nobuaki; and Matsumoto, Shinji, 4,238,359, Cl. 252-437.000.

Matsumoto, Toru: *See—*
Kuge, Tsukasa; Watanabe, Tsuyoshi; and Matsumoto, Toru, 4,237,592, Cl. 29-119.000.

Matsunaga, Kinjiro; Tsumadori, Masaki; and Nakagawa, Yunosuke, to Kao Soap Co., Ltd. Sizing composition of spraying type. 4,238,057, Cl. 222-192.000.

Matsuoka, Isao; and Matsui, Hiroshi, to NGK Spark Plug Co., Ltd. Ultrasonic humidifier. 4,238,425, Cl. 261-81.000.

Matsushima, Masaru: *See—*
Komai, Takeshi; and Matsushima, Masaru, 4,238,381, Cl. 260-31.20R.

Matsushima, Seiichi: *See—*
Uetani, Yoshio; Taniguchi, Yasuyoshi; Yokoyama, Kenichi; Matsushima, Seiichi; and Kirihara, Sonae, 4,238,555, Cl. 429-163.000.

Matsushita Electric Corp. of America: *See—*
Rzeszewski, Theodore S.; and Van Anrooy, Peter H., 4,238,769, Cl. 358-154.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Endo, Shigeru, 4,238,562, Cl. 430-106.000.
Tsuboka, Eiichi; Kimura, Takeji; Yoshino, Hirokazu; Fujita, Tatuo; and Nakazawa, Masao, 4,238,773, Cl. 358-183.000.
Yokoyama, Kazuo; Nichiyama, Ryuji; and Yonezawa, Taketoshi, 4,238,215, Cl. 65-43.000.

Matthews, James P., to Miller - Zell, Inc. Vertical graphic panel frame system. 4,237,636, Cl. 40-606.000.

Matyas, Stephen M.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,238,853, Cl. 375-2.000.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Smith, John L.; and Tuchman, Walter L., 4,238,854, Cl. 375-2.000.

Maucher, Paul, to LuK Lamellen und Kupplungsbau GmbH. Disengaging unit for drawing disengageable friction clutches, especially for motor vehicles. 4,238,018, Cl. 192-98.000.

Maucher, Paul; and Dubiel, Oswald, to LuK Lamellen und Kupplungsbau GmbH. Friction clutch. 4,238,019, Cl. 192-99.00A.

Mawhinney, Daniel D., to RCA Corporation. Radio frequency pulse generator. 4,238,796, Cl. 343-17.10R.

Maxwell, Oral F., Jr.: *See—*
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., 4,238,762, Cl. 357-49.000.

Maylandt, Helmut. Electrically conductive cover sheath for dielectric record discs and the like. 4,238,030, Cl. 206-313.000.

Mazanek, Jan: *See—*
Fauss, Rudolf; Wagner, Kuno; and Mazanek, Jan, 4,238,407, Cl. 260-465.00E.

Mazogazdasagi Gepkiserleti Intezet: *See—*
Balogh, Barnabas; Erdelyi, Jozsef; Fabian, Zsolt; Rusz, Vazul; Samu, Mihaly; and Szente, Jozsef, 4,238,790, Cl. 340-684.000.

Mazzolla, Richard, to H & G Industries, Inc. Positive locking device for telescoping tubing. 4,238,164, Cl. 403-109.000.

McCabe, Ralph P., to Colt Industries Operating Corp. Electromagnetic fuel metering valve assembly. 4,238,110, Cl. 251-129.000.

McCleary, Robert E.: *See—*
Kinkade, William A.; and McCleary, Robert E., 4,238,238, Cl. 106-110.000.

McClellan, Guerry H.: *See—*
Phillips, John F., Jr.; McClellan, Guerry H.; and McCullough, John F., 4,238,459, Cl. 423-167.000.

McColl, Bruce J., to Owens-Illinois, Inc. Independent steering and propulsion system for off road vehicle. 4,237,994, Cl. 180-179.000.

McConnell, Robert B., to Desmond-Stephan Mfg. Company, The. Dresser design. 4,237,853, Cl. 125-37.000.

McCool, John M.; Widrow, Bernard; Zeidler, James R.; Hearn, Robert H.; and Chabries, Douglas M., to United States of America, Navy. Adaptive line enhancer. 4,238,746, Cl. 333-166.000.

McCreary Tire and Rubber Company: *See—*
McGaughey, Robert S., 4,238,268, Cl. 156-398.000.

McCullough, John F.: *See—*
Phillips, John F., Jr.; McClellan, Guerry H.; and McCullough, John F., 4,238,459, Cl. 423-167.000.

McCurdy, Harold W.: *See—*
Weems, Sterling J.; and McCurdy, Harold W., 4,238,289, Cl. 176-38.000.

McDaniel, Max P.; Welch, Melvin B.; and Kitchen, Alonzo G., to Phillips Petroleum Company. Chromium-silica catalysts by hydrothermal treating. 4,238,369, Cl. 252-458.000.

McDevitt, Robert F. Device for obtaining a sample of liquid. 4,237,734, Cl. 73-425.40R.

McFarland, Douglas F. Governor control device. 4,237,834, Cl. 123-115.000.

McGann, Rodney. Aircraft wing fence. 4,238,094, Cl. 244-91.000.

McGaughey, Robert S., to McCreary Tire and Rubber Company. Tire building machine ply turn-down finger assembly. 4,238,268, Cl. 156-398.000.

McKay, Dwight L.: *See—*
Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,238,362, Cl. 252-439.000.
Bertus, Brent J.; and McKay, Dwight L., 4,238,367, Cl. 252-455.00Z.

McKee, Laird W., to Grumman Flexible Corporation. Combination load-leveling and kneeling air suspension system. 4,238,128, Cl. 280-703.000.

McKenzie, John H.: *See—*
Durham, Robert L.; and McKenzie, John H., 4,238,374, Cl. 260-17.4GC.

McKinney, James D.: *See—*
Albro, Phillip W.; Chae, Kun; Luster, Michael I.; and McKinney, James D., 4,238,472, Cl. 424-1.000.

McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert, to Howmedica, Inc. Doppler flow meter. 4,237,729, Cl. 73-194.00A.

McMorrow, John J. Blood specimen indexing means. 4,238,452, Cl. 422-104.000.

McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., to Rockwell International Corporation. Electrically isolated semiconductor devices on common crystalline substrate. 4,238,762, Cl. 357-49.000.

Mead Corporation, The: *See—*
Calvert, Rodney K.; and Landrum, Charles R., 4,237,673, Cl. 53-48.000.
Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., 4,238,805, Cl. 346-75.000.
Williams, John L., 4,238,022, Cl. 193-32.000.

Mechanikai Laboratorium Hiradastechnikai Kiserleti Vallalat: *See—*
Rothman, Gyorgy; Biro, Ferenc; Babos, Gyorgy; Antolik, Karoly; and Roffa, Otto, 4,238,720, Cl. 318-800.000.

Medcor, Inc.: *See—*
Johnson, Robert W., 4,237,895, Cl. 128-419.0PG.

Medford, Richard D.: *See—*
Cooper, Jerry W.; Holden, Homer N.; Medford, Richard D.; and Haley, John S., 4,238,039, Cl. 213-61.000.

Medical, Incorporated: *See—*
Markley, Finley W.; Benham, Thomas H.; and Lukes, Raymond M., 4,238,340, Cl. 210-321.00B.

Medovar, Boris I.; Dubinsky, Rudolf S.; Boiko, Georgy A.; Butov, Vladimir I.; and Prikhodko, Valery A. Electroslag remelting apparatus for producing ingots. 4,238,633, Cl. 13-9.0ES.

Meeks, said Dana W.: *See—*
Fikse, Tyman H.; and Fikse, James A. (said Tyman H. Fikse assors. to), 4,238,038, Cl. 212-89.000.

Megna, Ignazio S., to American Cyanamid Company. Blends of thermoplastic polyurethane elastomers and ethylene/carboxylic acid copolymers for blow molding. 4,238,574, Cl. 525-130.000.

Meienhofer, Johannes A., to Hoffmann-La Roche Inc. Synthesis and biological activity of [D-Thr^2, Δ^3Pro^3]-enkephalinamide. 4,238,390, Cl. 260-112.50R.

Meier, Gunter; and Kemmel, Patrice, to Dorina Nahmaschinen GmbH. Thread monitoring device for the thread supply of a rotary hook of a sewing machine. 4,237,807, Cl. 112-278.000.

Meisner, David B.: *See—*
Domes, E. A.; and Meisner, David B., 4,237,950, Cl. 152-175.000.

Melcher, Franz J.: *See—*
Blawert, Dieter; Rademacher, Karl-Heinz; Knothe, Erich; and Melcher, Franz J., 4,237,988, Cl. 177-189.000.

Memmel, Robert A., Jr., to Condes Corporation. Rod applicator mechanism for machine for making hanging file folders. 4,238,273, Cl. 156-552.000.

Menge, Wilhelm. Production of a natural leavened dough for the preparation of bread and pastries. 4,238,512, Cl. 426-20.000.

Menke, W. Kenneth: *See—*
Pearlman, Barry; and Menke, W. Kenneth, 4,238,787, Cl. 340-384.00E.

Merck & Co., Inc.: *See—*
Bicking, John B., 4,238,487, Cl. 424-248.520.
Jones, James H., 4,238,486, Cl. 424-248.400.
Moorhouse, Ralph; and Shim, Jaewon L., 4,238,255, Cl. 149-60.000.
Moorhouse, Ralph; and Shim, Jaewon L., 4,238,255, Cl. 149-60.000.
Sweet, Charles S., 4,238,485, Cl. 424-246.000.

Merlo, Mario. Lamp for the maintenance, servicing and repairing of motorvehicles. 4,238,816, Cl. 362-277.000.

Merrifield, Daniel B., to U.S. Divers Co. Underwater diving system. 4,237,917, Cl. 137-116.300.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Euskirchen, Jurgen, 4,238,187, Cl. 432-116.000.

Messersmith, Robert C., to ACF Industries, Incorporated. Low profile tapered sump for railway tank cars. 4,237,928, Cl. 137-590.000.

Messier: *See—*
Girard, Edmond, 4,237,963, Cl. 165-1.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Lohrberg, Karl, 4,238,302, Cl. 204-95.000.
Serbent, Harry; Reuter, Gerhard; Schnabel, Wolfram; and Kossek, Gunter, 4,238,222, Cl. 75-7.000.

Metallwerk Max Brose, GmbH: *See—*
Hess, Hans-Peter; Muhling, Gunther; Sunkel, Manfred; and Dauernheim, Hans, 4,237,656, Cl. 49-352.000.

Metropolitan Wire Corporation: *See—*
Welsch, John H.; and Nicely, Charles W., 4,237,798, Cl. 108-111.000.

Metysova, Jirina: *See—*
Protiva, Miroslav; Sindelar, Karel; Cervena, Irena; and Metysova, Jirina, 4,238,611, Cl. 544-375.000.

Meyer, Carl H. W.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,238,853, Cl. 375-2.000.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Smith, John L.; and Tuchman, Walter L., 4,238,854, Cl. 375-2.000.

Meyer, Karl-Heinrich: *See—*
Alfes, Franz; Jacob, Wolfgang; Meyer, Karl-Heinrich; and Bottenbruch, Ludwig, 4,238,351, Cl. 252-403.000.

Michaelis, Walter J., to Textron Inc. Installation of separable slide fastener on article. 4,237,806, Cl. 112-265.200.

Michaels, Alan S., to Alza Corporation. Cervical dilator. 4,237,893, Cl. 128-341.000.

Middleman, Lee M.; Evans, Joseph H.; and Pettengill, Donald F., to Raychem Corporation. Circuit protection devices comprising PTC elements. 4,238,812, Cl. 361-106.000.

Midrex Corporation: *See—*
Sanzenbacher, Charles W.; and Scarlett, John C., 4,238,226, Cl. 75-38.000.

Migliorati, Pier I. Rocking platform for the positioning of vehicles above ground level. 4,238,114, Cl. 254-88.000.

Mihara, Toshiro: *See—*
Yamamoto, Tomio; Hanafusa, Hideyuki; Seno, Kouji; Mihara, Toshiro; and Ishida, Isoshiro, 4,237,959, Cl. 164-4.000.

Mikame, Yoshio: *See—*
Okada, Akira; Mikame, Yoshio; and Aizawa, Ryoiti, 4,238,777, Cl. 360-38.000.

Mikami, Koji: *See—*
Yamada, Kazuo; Mikami, Koji; and Imaizumi, Shigetake, 4,238,233, Cl. 75-146.000.

Mikami, Takashi: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,238,175, Cl. 425-83.100.

Miles Laboratories, Inc.: *See—*
Boguslaski, Robert C.; and Carrico, Robert J., 4,238,195, Cl. 23-230.00B.
Buckler, Robert T.; and Schroeder, Hartmut R., 4,238,395, Cl. 260-326.00N.
Buckler, Robert T., 4,238,623, Cl. 560-53.000.
Hornby, William E.; and Morris, David L., 4,238,565, Cl. 435-7.000.
Warren, Brian T.; and Spicer, John W., 4,238,495, Cl. 424-269.000.

Millar, Barry C.; and Little, Keith W., to Promatic International Limited. Apparatus for orienting hollow, cap-like articles. 4,238,023, Cl. 198-388.000.

Miller, Donald E.; and Werstak, Charles E., to SCM Corporation. Low-fat comestible spread substitutes. 4,238,520, Cl. 426-573.000.

Miller, Frank N.: *See—*
Salvadori, Lawrence A.; Miller, Frank N.; Layton, Terry N.; Schultze, W. Martin; and Villari, Frank K., 4,238,448, Cl. 422-58.000.

Miller, John S.: *See—*
Dey, Arabinda N.; Miller, John S.; and Bowden, William L., 4,238,552, Cl. 429-101.000.

Miller, John W.: *See—*
Bradus, Robert; Howard, Thomas J., Jr.; and Miller, John W., 4,237,610, Cl. 30-276.000.

Miller, Richard C.: *See—*
DePriester, Donald J.; and Miller, Richard C., 4,238,169, Cl. 414-783.000.

Miller, Robert: *See—*
Rim, Yong S.; Nudenberg, Walter; Miller, Robert; and Cangelosi, Phillip J., 4,238,578, Cl. 525-309.000.

Miller, Roland G., to Acco Industries, Inc. Telemetry system for transmitting analog data over a telephone line. 4,238,783, Cl. 340-207.00R.

Miller, Roy L.: *See—*
Ellerbe, Roger A.; Welch, Jay V.; and Miller, Roy L., 4,238,068, Cl. 229-39.00R.

Miller - Zell, Inc.: *See—*
Matthews, James P., 4,237,636, Cl. 40-606.000.

Mills, Stuart D.: *See—*
Howe, Ralph; and Mills, Stuart D., 4,238,488, Cl. 424-248.550.

Milsom, Henry B. C.: *See—*
Harrison-Smith, John L.; and Milsom, Henry B. C., 4,237,916, Cl. 135-69.000.

Mims, Priestly G., III. Portable fish catcher. 4,237,646, Cl. 43-103.000.

Minami, Hiroshi; Kuze, Takashi; and Harao, Norio, to Tokyo Shibaura Electric Co., Ltd. X-ray image intensifier. 4,238,043, Cl. 220-2.10R.

Mininni, Robert M.: *See—*
Langley, Jeffrey T.; and Mininni, Robert M., 4,238,599, Cl. 528-193.000.

Minnesota Mining and Manufacturing Company: *See—*
Deering, Hartland W., Jr., 4,238,269, Cl. 156-465.000.
Faust, Michael C.; and Patterson, Richard A., 4,238,256, Cl. 156-65.000.
Gobran, Ramsis, 4,237,889, Cl. 128-287.000.

Minolta Camera Kabushiki Kaisha: *See—*
Imura, Toshinori, 4,238,153, Cl. 354-195.000.

Minomura, Shigeru. Metallic modified material of intermetallic compound. 4,238,232, Cl. 75-134.00T.

Minrad Corporation: *See—*
Weinberg, Norman L., 4,238,563, Cl. 430-367.000.

Mishunin, Vladimir V.: *See—*
Korzhov, Mikhail A.; Novikov, Leonid N.; Makarov, Vyacheslav N.; Onkova, Olga L.; Mishunin, Vladimir V.; Usenko, Vladimir I.; and Bendersky, Alexandr F., 4,237,848, Cl. 123-242.000.

Misra, Chanakya, to Swiss Aluminium Ltd. Process for the production of a basic carbonate of aluminum and an alkali or alkali earth metal. 4,238,458, Cl. 423-115.000.

Mitchell, Robert W.; and Neustadter, Ernst L., to British Petroleum Company Limited, The. Process for treating sea water containing waxy lipids. 4,238,331, Cl. 210-59.000.

Mitchell, Tyrone D.: *See—*
Cella, James A.; and Mitchell, Tyrone D., 4,238,401, Cl. 260-448.80R.

Mitsubishi Aluminum Kabushiki Kaisha: *See—*
Yamada, Kazuo; Mikami, Koji; and Imaizumi, Shigetake, 4,238,233, Cl. 75-146.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Watanabe, Eiki; and Anzai, Nobuo, 4,238,005, Cl. 187-29.00R.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Hirakawa, Tadashi; Yoshikawa, Kiyomitsu; and Kusubayashi, Toshiaki, 4,238,024, Cl. 198-425.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Tsubai, Yasuo; and Kondo, Toshiro, 4,238,279, Cl. 156-664.000.

Mitsuboshi Belting Limited: *See—*
Takano, Hiroshi, 4,237,719, Cl. 73-7.000.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Kasahara, Nobuyoshi; and Nonomura, Koutarou, 4,238,250, Cl. 148-6.100.

Mitsuya, Eiji; Kishimoto, Tomio; and Hoshida, Katsusuke, to Nippon Telegraph and Telephone Public Corporation. Picture signal coding apparatus. 4,238,768, Cl. 358-135.000.

Mitsuya, Munehisa: *See—*
Kato, Yoshiki; Ishihara, Heigo; Fukke, Hajime; Chiba, Katsuyoshi; Nagashiro, Waichi; Tsunoda, Teruo; and Mitsuya, Munehisa, 4,238,341, Cl. 252-62.540.

Mitsuyoshi, Sinzi, to Kanai, Hiroyuki. Steel wire heat treatment equipment. 4,238,119, Cl. 266-100.000.

Miyake, Tetsuya: *See—*
Takeuchi, Hiroshi; Miyake, Tetsuya; Tanouchi, Masatoshi; Saeki, Tatsushi; and Ban, Kazuki, 4,238,294, Cl. 203-72.000.

Miyamoto, Noriaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Open-end rotor for a spinning machine. 4,237,682, Cl. 57-58.890.

Miyao, Nobuyoshi: *See—*
Nakanishi, Tousaku; Suzuki, Kazuo; Makino, Masayasu; Miyao, Nobuyoshi; and Koda, Hirokazu, 4,237,803, Cl. 112-158.00E.

Miyazaki, Mihoko, successor: *See—*
Noguchi, Masaaki; Tanaka, Taro; Uejima, Norikatsu; Tanaka, Yukiyasu, deceased; Tanaka, Koichiro, successor; and Miyazaki, Mihoko, successor, 4,237,831, Cl. 123-51.0BA.

Miyazawa, Yoshihide: *See—*
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Endo, Shigeru, 4,238,562, Cl. 430-106.000.

Miyoshi, Ichiro: *See—*
Shimono, Kikuo; Miyoshi, Ichiro; and Yamasaki, Osamu, 4,237,816, Cl. 118-249.000.

Miyoshi, Michizo: *See—*
Uehara, Haruo; and Miyoshi, Michizo, 4,237,970, Cl. 165-110.000.

Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shinichi; and Uenaka, Akimitsu, to Nippon Paint Co., Ltd. Production of ampho-ionic compounds. 4,238,609, Cl. 544-158.000.

Mizuno, Mamoru: *See—*
Tsuzuki, Hanzou; and Mizuno, Mamoru, 4,238,832, Cl. 364-705.000.

Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,238,346, Cl. 252-174.250.

Mlachnik, Albert A. Paint roller. 4,237,575, Cl. 15-230.110.

Mobil Oil Corporation: *See—*
Daviduk, Nicholas; and Haddad, James H., 4,238,631, Cl. 585-469.000.
Tobias, Michael A.; and Lynch, Conrad L., 4,238,583, Cl. 525-443.000.

Moe, Walter; and Bernstein, Lawrence A., to Diker Moe Associates. Picture frame. 4,237,631, Cl. 40-155.000.

Moe, Walter; and Diker, Charles M., to Diker Moe Associates. Moving toy figure. 4,237,648, Cl. 46-122.000.

Moede, Larry W.: *See—*
DeLuca, William H.; Hornstra, Fred, Jr; Gelb, George H.; Berman, Baruch; and Moede, Larry W., 4,238,721, Cl. 320-18.000.

Moles, Warren H., to RCA Corporation. Vertical deflection circuit. 4,238,713, Cl. 315-397.000.

Molins Limited: *See—*
Williamson, David T. N., 4,237,598, Cl. 29-568.000.

Molins Machine Company, Inc.: *See—*
Coburn, Robert E., 4,237,761, Cl. 83-665.000.

Molleken, Reiner: *See—*
Bauer, Kurt; Molleken, Reiner; Wedemeyer, Karlfried; and Fiege, Helmut, 4,238,629, Cl. 568-764.000.

Mollier, Gilbert. Device for injecting plastics material into a mould having a plurality of impressions. 4,238,182, Cl. 425-566.000.

Molyneux, George, to Radway Plastics Limited. Structural elements for building construction and assemblies incorporating these elements. 4,237,665, Cl. 52-213.000.

Monneraye, Marc A.: *See—*
Monnier, Michel J. C.; Monneraye, Marc A.; and Foucher, Claude, 4,238,527, Cl. 427-55.000.

Monnier, Michel J. C.; Monneraye, Marc A.; and Foucher, Claude, to U.S. Philips Corporation. Method of providing metal bumps on an apertured substrate. 4,238,527, Cl. 427-55.000.

Monolithic Memories, Inc.: *See—*
Ghest, Robert C.; Birkner, John M.; Waser, Shlomo; and Chua, Hua T., 4,238,833, Cl. 364-760.000.

Monsanto Company: *See—*
Chapman, Richard D.; Holmer, Donald A.; Pickett, Oscar A., Jr.; and Saunders, James H., 4,238,603, Cl. 528-339.000.
Dutra, Gerard A.; and Sikorski, James A., 4,238,218, Cl. 71-87.000.
Hoffman, Richard L., 4,238,572, Cl. 521-77.000.
Hyun, Jae C., 4,238,439, Cl. 264-168.000.
Perry, Eli, 4,238,204, Cl. 55-16.000.

Montez, Delfino C. Winged ski boat. 4,237,811, Cl. 114-273.000.

Mooi, John; and Gallagher, James P., to Atlantic Richfield Company. Two-stage catalytic process to produce lubricating oils. 4,238,316, Cl. 208-58.000.

Moore, David O.: *See—*
Timm, Malvern K.; King, James D.; and Moore, David O., 4,237,623, Cl. 34-196.000.

Moorhouse, Ralph; and Shim, Jaewon L., to Merck & Co., Inc.; and Merck & Co., Inc. Use of either regular or low-calcium heteropolysaccharide S-7 in explosives and compositions thereby produced. 4,238,255, Cl. 149-60.000.

Morelock, Charles R.: *See—*
Hillig, William B.; and Morelock, Charles R., 4,238,433, Cl. 264-60.000.

Mori, Tokitaka: *See—*
Matsubara, Masaka; Ishihara, Tatsuo; and Mori, Tokitaka, 4,238,479, Cl. 424-95.000.

Morikawa, Sennosuke: *See—*
Ikegami, Masahiro; Morikawa, Sennosuke; Yamashita, Keitaro; and Noguchi, Koji, 4,237,819, Cl. 118-658.000.

Morimoto, Tadashi: *See—*
Harita, Akira; Morimoto, Tadashi; Kanatani, Toshio; and Uchimura, Ryoji, 4,238,121, Cl. 266-218.000.

Morinaga, Masaru, to NSK-Warner K.K. Buckle device for safety belt. 4,237,586, Cl. 24-230.00A.

Morishima, Hajime: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Ishizuka, Masaaki; Morishima, Hajime; Matsumoto, Ikuo; and Yamamoto, Takuzo, 4,238,507, Cl. 424-319.000.

Morita, Toyoo: *See—*
Sawada, Mitsuo; and Morita, Toyoo, 4,237,604, Cl. 29-766.000.

Morohashi, Kazuo, to Nippon Kogaku K.K.; and Shachihata Industrial Co., Ltd. Spotting device. 4,238,161, Cl. 401-35.000.

Morris, David L.: *See—*
Hornby, William E.; and Morris, David L., 4,238,565, Cl. 435-7.000.

Morris, George A., Jr. One-piece corrugated container. 4,238,069, Cl. 229-52.00B.

Morris, Nancy J.; and Shier, George D., to Dow Chemical Company, The. Process for making glycol esters. 4,238,624, Cl. 560-246.000.

Morrow, Danny G.: *See—*
Tweed, Donald G.; and Morrow, Danny G., 4,238,640, Cl. 174-87.000.

Mortimer, Charles P. L.: *See—*
Cohen, Edwin; and Mortimer, Charles P. L., 4,238,792, Cl. 340-707.000.

Morton, Douglas R., Jr., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-6a-carba-PGI$_2$ compounds. 4,238,414, Cl. 260-563.00P.

Moser, Robert E.: *See—*
Powers, Larry J.; Ariyan, Zaven S.; Buchman, Russell; Scozzie, James A.; Moser, Robert E.; and Pyne, William J., 4,238,490, Cl. 424-250.000.

Mosley, William H.; Andren, Carl F.; and Scott, Lex, to E-Systems, Inc. Preset network for a phase lock loop. 4,238,739, Cl. 331-12.000.

Moteki, Masaki: *See—*
Takamizawa, Minoru; Inoue, Yoshio; Yoshioka, Hiroshi; and Moteki, Masaki, 4,238,393, Cl. 260-22.00S.

Motoori, Ryuzo: *See—*
Kitamura, Yasunori; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Ohtsubo, Yoshiaki; and Motoori, Ryuzo, 4,238,146, Cl. 354-53.000.

Motorola, Inc.: *See—*
Klaus, Thomas R.; and Strauss, John S., 4,238,724, Cl. 323-80.000.
Stauers, Juris; and Alfaro, Vincent R., 4,237,789, Cl. 102-270.000.

Motosugi, Katsuhiko; Sekiya, Setsuro; Nohira, Hidetaka; Ito, Sumio; Ohki, Hisashi; and Kumai, Teruo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Multi-cylinder internal combustion engine equipped with an accumulation chamber. 4,237,826, Cl. 123-25.00R.

Motta, Claude: *See—*
Pujol, Jean-Pierre; Jugnet, Jean; and Motta, Claude, 4,238,533, Cl. 427-359.000.

Mount, Gordon L., to Carrier Corporation. Motor cooling system for refrigeration machine. 4,237,698, Cl. 62-197.000.

Mowbray, Dorian F.: *See—*
Seilly, Alec H.; and Mowbray, Dorian F., 4,238,698, Cl. 310-27.000.

Mrugala, Ronald J.; Nord, Keith W.; and Benson, Ronald B., to Ex-Cell-O Corporation. Accumulating conveyor system. 4,238,026, Cl. 198-460.000.

Muetterties, Andrew J., to Abbott Laboratories. Flow control device. 4,238,108, Cl. 251-6.000.

Muhling, Gunther: *See—*
Hess, Hans-Peter; Muhling, Gunther; Sunkel, Manfred; and Dauernheim, Hans, 4,237,656, Cl. 49-352.000.

Muller, Hans, to Grapha-Holding AG. Bookbinding machine. 4,237,569, Cl. 11-3.000.

Muller, Hans. Method and an arrangement for feeding fish with a fodder. 4,237,820, Cl. 119-51.00R.

Muller, Luciano, to Varian Associates, Inc. Indirect detection of nuclear spins of low gyromagentic ratio coupled to spins of high gyromagnetic ratio. 4,238,735, Cl. 324-310.000.

Muller, Wolfgang: *See—*
Tielens, Arther J.; Muller, Wolfgang; and Todtenhaupt, Erich K., 4,238,159, Cl. 366-327.000.

Mullet, Willis J., to Virginia Door Co. Door panel and manner of making. 4,238,544, Cl. 428-71.000.

Munson, Richard W., to Insulation Sales Company. Insulation barrier for recessed light fixtures. 4,237,671, Cl. 52-584.000.

Murakami, Yoshiaki: *See—*
Suzuki, Kazuo; Ariga, Shoji; and Murakami, Yoshiaki, 4,238,139, Cl. 312-7.00R.

Murakawa, Kyohei: *See—*
Niwa, Koichi; Murase, Teruo; Fujimori, Masatoshi; and Murakawa, Kyohei, 4,237,606, Cl. 29-830.000.

Muraoka, Yasuhiko: *See—*
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,238,391, Cl. 260-112.50R.

Murase, Teruo: *See—*
Niwa, Koichi; Murase, Teruo; Fujimori, Masatoshi; and Murakawa, Kyohei, 4,237,606, Cl. 29-830.000.

Murrell, Robert T. Photographic mailing postcard and blank therefor. 4,237,633, Cl. 40-158.00R.

Musselmann, Walter; Rienecker, Reimund; Kinzler, Herbert; and Tra, Josef, to J. M. Voith GmbH. Apparatus for separating impurities from fiber suspensions. 4,238,324, Cl. 209-255.000.

Muto, Norio: *See—*
Tanasawa, Yasusi; Muto, Norio; and Saito, Akinori, 4,237,836, Cl. 123-119.00E.

Myers, Jack H., to Owens-Illinois, Inc. Method and apparatus for assemblying tubular sleeve preforms onto containers in precise alignment. 4,237,675, Cl. 53-397.000.

Mykietyn, Edward: *See—*
Rosen, Arye; Gombar, Anna M.; and Mykietyn, Edward, 4,237,600, Cl. 29-577.000.

Naaijer, Geert J., to U.S. Philips Corporation. Variable wave-form converter. 4,238,820, Cl. 363-43.000.

Nabae, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Inverter apparatus. 4,238,823, Cl. 363-138.000.

Nadelson, Jeffrey, to Sandoz, Inc. 3-(Substituted)phenyl-5-(β-hydroxyphenethyl)-N-(alkyl)-isoxazole-4-carboxamides. 4,238,616, Cl. 548-248.000.

Nagai, Yasutaka: *See—*
Uno, Hitoshi; Nagai, Yasutaka; and Nakamura, Hideo, 4,238,620, Cl. 549-13.000.

Nagamine, Takashi: *See—*
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.

Nagano, Masashi, to Shimano Industrial Company, Limited. Front derailleur for a bicycle. 4,237,743, Cl. 74-217.00B.

Nagashiro, Waichi: *See—*
Kato, Yoshiki; Ishihara, Heigo; Fukke, Hajime; Chiba, Katsuyoshi; Nagashiro, Waichi; Tsunoda, Teruo; and Mitsuya, Munehisa, 4,238,341, Cl. 252-62.540.

Nagumo, Fumio, to Sony Corporation. Color television camera adapted for elimination of spurious luminance signal components. 4,238,765, Cl. 358-43.000.

Nahm, Helmut; and Granzer, Ernold, to Hoechst Aktiengesellschaft. 4-Phenoxy-phenoxy-alkane-carboxylic acid derivatives and process for their manufacture. 4,238,626, Cl. 562-472.000.

Nakagawa, Kazuyuki: *See—*
Sato, Tadao; Ueda, Hiraki; and Nakagawa, Kazuyuki, 4,238,423, Cl. 260-968.000.

Nakagawa, Mitsuo: *See—*
Matsuda, Minoru; Nakagawa, Mitsuo; and Arakawa, Tsuneaki, 4,237,996, Cl. 180-229.000.

Nakagawa, Yunosuke: *See—*
Matsunaga, Kinjiro; Tsumadori, Masaki; and Nakagawa, Yunosuke, 4,238,057, Cl. 222-192.000.

Nakai, Hideharu: *See—*
Kobayashi, Toshiyuki; Nakai, Hideharu; Kai, Isao; and Yonemori, Yoshinori, 4,237,878, Cl. 128-214.00E.

Nakamura, Akinori: *See—*
Yasukawa, Shozo; Nakamura, Akinori; and Yamada, Takamitsu, 4,238,632, Cl. 13-9.00R.

Nakamura, Hideo: *See—*
Uno, Hitoshi; Nagai, Yasutaka; and Nakamura, Hideo, 4,238,620, Cl. 549-13.000.

Nakamura, Yasuo; and Okishi, Yoshio, to Fuji Photo Film Co., Ltd. Photosensitive printing plate forming material having a novel matting layer composition. 4,238,560, Cl. 430-162.000.

Nakamura, Zenzo: *See—*
Uchiyama, Takashi; Ohtaki, Shohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; and Aizawa, Hiroshi, 4,238,149, Cl. 354-128.000.

Nakanishi, Tousaku; Suzuki, Kazuo; Makino, Masayasu; Miyao, Nobuyoshi; and Koda, Hirokazu, to Sharp Kabushiki Kaisha. Automatic electronic sewing machine. 4,237,803, Cl. 112-158.00E.

Nakayama, Satoshi: *See—*
Yoshihara, Hideo; Kiuchi, Mikiho; Nakayama, Satoshi; Hayasaka, Toa; and Matsui, Junji, 4,238,706, Cl. 313-330.000.

Nakazawa, Akira: *See—*
Yamaguchi, Isao; Hashizume, Heiji; Nakazawa, Akira; and Sugihara, Hirosige, 4,238,848, Cl. 368-276.000.

Nakazawa, Masao: *See—*
Tsuboka, Eiichi; Kimura, Takeji; Yoshino, Hirokazu; Fujita, Tatuo; and Nakazawa, Masao, 4,238,773, Cl. 358-183.000.

Nalco Chemical Company: *See—*
Fong, Dodd W.; and Allain, Ronald J., 4,238,330, Cl. 210-43.000.
Hyde, James A., 4,238,282, Cl. 162-76.000.

National Controls, Inc.: *See—*
Lewis, Howard B., 4,237,989, Cl. 177-210.00C.

National Distillers and Chemical Corporation: *See—*
Van den Bossche, Henri A., 4,238,453, Cl. 422-131.000.
National Foundation for Cancer Research: *See—*
Szent-Gyorgyi, Albert; and Fodor, Gabor B., 4,238,500, Cl. 424-278.000.
National Latex Products Company, The: *See—*
Kerr, Douglas S., 4,238,537, Cl. 428-35.000.
National Petro Chemicals Corp.: *See—*
Speca, Anthony N., 4,238,353, Cl. 252-428.000.
National Research Development Corporation: *See—*
Gray, Kenneth W.; and Irving, Leonard D., 4,238,763, Cl. 357-68.000.
National Semiconductor Corporation: *See—*
Betts, David A.; and Ledenbach, Gregory W., 4,237,728, Cl. 73-146.500.
Redfern, Thomas P.; Frederiksen, Thomas M.; and Connolly, Joseph J., Jr., 4,238,839, Cl. 365-96.000.
National Steel Corporation: *See—*
Ernest, Robert T., 4,237,815, Cl. 118-63.000.
Nationwide Carriers Incorporated: *See—*
Connor, Frank G.; and Veach, Billy B. R., 4,237,850, Cl. 123-557.000.
Natsuo Uchiyama: *See—*
Sakurada, Isoji; and Kawashima, Tadasu, 4,237,886, Cl. 128-303.130.
Nauroth, Peter: *See—*
Brandt, Bernd; Nauroth, Peter; Peters, Albert; and Reinhardt, Helmut, 4,238,322, Cl. 209-3.000.
Naves, David G., to Pullman Incorporated. Railway car for transporting vehicles. 4,238,168, Cl. 410-27.000.
Nelson, Alan H., to Datapower, Inc. Symmetry regulated high frequency ballast. 4,238,710, Cl. 315-307.000.
Nelson, Bertel S., to Clarke-Gravely Corporation. Floor polisher with gear drive. 4,237,571, Cl. 15-49.00R.
Nelson, Edward B., to Research Foundation of State University of New York, The. Method for analgesia using 3-hydroxyacetanilide. 4,238,508, Cl. 424-324.000.
Nelson, Jack: *See—*
Hollaway, Gerald C.; Spivy, Paul L.; Nelson, Jack; and Fieler, Wayne C., 4,238,530, Cl. 427-173.000.
Nelson, Ronald E. Ankle Brace. 4,237,874, Cl. 128-80.00H.
Nemeth, Istvan: *See—*
Schuberth, Christian; Nemeth, Istvan; and Guck, Lothar, 4,238,754, Cl. 338-174.000.
Nerstad, Karl A.; Chadwick, Curtis E., III; and Johnson, Gordon W., to Caterpillar Tractor Co. Centrifugal clutch with an overspeed relief valve and clutch modulation. 4,238,020, Cl. 192-103.0FA.
Netley, Neil J.: *See—*
Lucero, Andres R.; Netley, Neil J.; Raven, Richard C.; and Egan, Chester C., Jr., 4,238,127, Cl. 273-143.00R.
Neuenfeldt, Walter; Sulic, Milan; and Pollak, Gerd, to Kraftwerk Union Aktiengesellschaft. Device for coupling pipelines in nuclear reactor pressure vessels, especially in boiling water reactors. 4,238,291, Cl. 176-38.000.
Neufeld, Kurt: *See—*
Gyongyos, Ivan; Buxmann, Kurt; Bolliger, Martin; Kerth, Willi; and Neufeld, Kurt, 4,238,248, Cl. 148-2.000.
Neustadter, Ernst L.: *See—*
Mitchell, Robert W.; and Neustadter, Ernst L., 4,238,331, Cl. 210-59.000.
Nevard, Leslie A., to Pilkington Brothers Limited. Heating glass batch material. 4,238,216, Cl. 65-134.000.
New Nippon Electric Company, Ltd.: *See—*
Kaneda, Isao, 4,238,708, Cl. 315-289.000.
Newington, Geoffrey T., to Marconi Company Limited, The. Whip antenna with capacitive loading. 4,238,800, Cl. 343-715.000.
Newman, Don. Railing and method of making the same. 4,238,117, Cl. 256-65.000.
NGK Spark Plug Co., Ltd.: *See—*
Matsuoka, Isao; and Matsui, Hiroshi, 4,238,425, Cl. 261-81.000.
Nicely, Charles W.: *See—*
Welsch, John H.; and Nicely, Charles W., 4,237,798, Cl. 108-111.000.
Nichiyama, Ryuji: *See—*
Yokoyama, Kazuo; Nichiyama, Ryuji; and Yonezawa, Taketoshi, 4,238,215, Cl. 65-43.000.
Nicksic, Stephen W., to Chevron Research Company. Method for desulfurizing gases with iron oxide. 4,238,463, Cl. 423-226.000.
Nicolas, Michel: *See—*
Goullin, Jean-Francois; and Nicolas, Michel, 4,238,748, Cl. 335-56.000.
Nifco Inc.: *See—*
Tanaka, Toshie, 4,238,446, Cl. 264-250.000.
Niiler, Juri: *See—*
Robideau, Brian A.; and Niiler, Juri, 4,238,170, Cl. 415-172.00A.
Nikolaev, Vladimir P.: *See—*
Anikin, Alexandr A.; But, Vladimir G.; Nikolaev, Vladimir P.; and Silvanovich, Anatoly A., 4,238,288, Cl. 176-36.00R.
Nippon Chemiphar Co., Ltd.: *See—*
Fujimoto, Yasuo; and Katagihara, Hiroshi, 4,238,491, Cl. 424-262.000.
Nippon Electric Co., Ltd.: *See—*
Yoshihara, Hideo; Kiuchi, Mikiho; Nakayama, Satoshi; Hayasaka, Toa; and Matsui, Junji, 4,238,706, Cl. 313-330.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Aizawa, Kenshiro; and Okada, Hisashi, 4,238,646, Cl. 179-100.41D.
Suzuki, Hideo, 4,237,764, Cl. 84-1.240.
Yokoyama, Kenji, 4,238,737, Cl. 330-255.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,238,391, Cl. 260-112.50R.
Nippon Kogaku K.K.: *See—*
Fukino, Kunihiro, 4,238,152, Cl. 354-189.000.
Kitamura, Yasunori; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Ohtsubo, Yoshiaki; and Motoori, Ryuzo, 4,238,146, Cl. 354-53.000.
Morohashi, Kazuo, 4,238,161, Cl. 401-35.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.
Nippon Oil and Fats Co., Ltd.: *See—*
Komai, Takeshi; and Matsushima, Masaru, 4,238,381, Cl. 260-31.20R.
Nippon Paint Co., Ltd.: *See—*
Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,238,609, Cl. 544-158.000.
Nippon Soken, Inc.: *See—*
Noguchi, Masaaki; Tanaka, Taro; Uejima, Norikatsu; Tanaka, Yukiyasu, deceased; Tanaka, Koichiro, successor; and Miyazaki, Mihoko, successor, 4,237,831, Cl. 123-51.0BA.
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimogawa, Toshiaki, 4,237,690, Cl. 60-635.000.
Ueno, Yoshiki; and Hattori, Tadashi, 4,237,839, Cl. 123-119.0EC.
Nippon Telegraph and Telephone Public Corporation: *See—*
Mitsuya, Eiji; Kishimoto, Tomio; and Hoshida, Katsusuke, 4,238,768, Cl. 358-135.000.
Okado, Yasuomi; Nishizaki, Ken; and Tanaka, Akinobu, 4,238,385, Cl. 260-37.0EP.
Nippon Zeon Co. Ltd.: *See—*
Akiyama, Shinichi; Yamamoto, Haruhisa; Yoneyama, Nobuaki; and Matsumoto, Shinji, 4,238,359, Cl. 252-437.000.
Nippondenso Co., Ltd.: *See—*
Kinugawa, Masumi; Fujisawa, Hideya; Omori, Norio; and Sueishi, Motoharu, 4,237,838, Cl. 123-119.0EC.
Nishiguchi, Hisanori: *See—*
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Endo, Shigeru, 4,238,562, Cl. 430-106.000.
Nishimura, Keizo: *See—*
Kobayashi, Masaharu; Arai, Takao; Hoshino, Takashi; Kimura, Hiroyuki; and Nishimura, Keizo, 4,238,770, Cl. 358-154.000.
Nishiwaki, Koji: *See—*
Fujii, Yoshio; Inomata, Hiroshi; Suenaga, Yoshihiko; Nishiwaki, Koji; and Takashima, Yohei, 4,238,835, Cl. 364-900.000.
Nishizaki, Ken: *See—*
Okado, Yasuomi; Nishizaki, Ken; and Tanaka, Akinobu, 4,238,385, Cl. 260-37.0EP.
Nissan Motor Company, Limited: *See—*
Asano, Masaharu; Aono, Shigeo; and Tanaka, Haruto, 4,237.829, Cl. 123-32.0EE.
Fukuhara, Takao; and Iwasa, Yoshio, 4,237,842, Cl. 123-124.00R.
Hamai, Kyugo, 4,237,827, Cl. 123-30.00D.
Hidaka, Yoshiaki, 4,238,010, Cl. 191-31.000.
Nissen Motor Company, Limited: *See—*
Matayoshi, Hiroshi, 4,237,998, Cl. 181-175.000.
Nitadori, Kazuhiko, to Oki Electric Industry Co. Ltd. Ultrasonic imaging system. 4,237,737, Cl. 73-625.000.
Niwa, Koichi; Murase, Teruo; Fujimori, Masatoshi; and Murakawa, Kyohei, to Fujitsu Limited. Method of manufacturing multilayer ceramic board. 4,237,606, Cl. 29-830.000.
Noguchi, Koji: *See—*
Ikegami, Masahiro; Morikawa, Sennosuke; Yamashita, Keitaro; and Noguchi, Koji, 4,237,819, Cl. 118-658.000.
Noguchi, Masaaki; Tanaka, Taro; Uejima, Norikatsu; Tanaka, Yukiyasu, deceased; by Tanaka, Koichiro, successor; and by Miyazaki, Mihoko, successor, to Nippon Soken, Inc. Two-cycle engine. 4,237,831, Cl. 123-51.0BA.
Noguchi, Masanori: *See—*
Ueda, Toshitsugu; Ra, Seiki; and Noguchi, Masanori, 4,238,844, Cl. 367-117.000.
Nohira, Hidetaka: *See—*
Motosugi, Katsuhiko; Sekiya, Setsuro; Nohira, Hidetaka; Ito, Sumio; Ohki, Hisashi; and Kumai, Teruo, 4,237,826, Cl. 123-25.00R.
Noll, Klaus: *See—*
Markusch, Peter; Noll, Klaus; and Dieterich, Dieter, 4,238,378, Cl. 260-29.2TN.
Nomura, Toshihiro: *See—*
Torita, Fumio; and Nomura, Toshihiro, 4,237,565, Cl. 8-158.000.
Nonomura, Koutarou: *See—*
Kasahara, Nobuyoshi; and Nonomura, Koutarou, 4,238,250, Cl. 148-6.100.
Nord, Keith W.: *See—*
Mrugala, Ronald J.; Nord, Keith W.; and Benson, Ronald B., 4,238,026, Cl. 198-460.000.
Norell, John R.: *See—*
Fozzard, George B.; and Norell, John R., 4,238,356, Cl. 252-430.000.
Norman, Arthur E., to Torr Vacuum Products, Inc. Spring loaded plug valve. 4,237,920, Cl. 137-243.300.

Norman, Arthur E., to Torr Vacuum Products, Inc. Gate valve for use with vacuum equipment. 4,238,111, Cl. 251-193.000.
North American Philips Corp.: *See—*
Sicignano, Albert; Zingaro, William P., deceased; and Zingaro, Josephine, executrix, 4,238,529, Cl. 427-160.000.
North American Utility Construction Corp.: *See—*
Genequand, Pierre; and Stark, Virgil, 4,238,246, Cl. 136-89.0HY.
Northwest Orthodontics, Inc.: *See—*
Armstrong, Maclay M., 4,238,188, Cl. 433-5.000.
Novikov, Leonid N.: *See—*
Korzhov, Mikhail A.; Novikov, Leonid N.; Makarov, Vyacheslav N.; Onkova, Olga L.; Mishunin, Vladimir V.; Usenko, Vladimir I.; and Bendersky, Alexandr F., 4,237,848, Cl. 123-242.000.
Nowacki, Ulrich G.; and Weibrecht, Edwin C., to International Paper Company. Method and apparatus for erecting and forming double wall containers. 4,237,777, Cl. 93-36.010.
Noyer, Jean-Mari: *See—*
Sibeud, Jean-Paul; and Noyer, Jean-Mari, 4,238,011, Cl. 192-3.560.
NSK-Warner K.K.: *See—*
Makishima, Yoshihiro, 4,238,087, Cl. 242-107.40A.
Morinaga, Masaru, 4,237,586, Cl. 24-230.00A.
Nu-Tech Industries, Inc.: *See—*
Knight, John H.; and Isaacson, Milton S., 4,238,717, Cl. 318-341.000.
Nudenberg, Walter: *See—*
Rim, Yong S.; Nudenberg, Walter; Miller, Robert; and Cangelosi, Phillip J., 4,238,578, Cl. 525-309.000.
Numata, Mitsuo; and Yamaoka, Masayoshi, to Takeda Chemical Industries, Ltd. 7-[2-(2-Aminothiazol-4-yl)-2-substituted thio-acetamido] cephalosporins. 4,238,608, Cl. 544-027.000.
Nyman, Curt L. Scaffold structure. 4,238,000, Cl. 182-136.000.
Oberpriller, Jakob; Schuster, Alfred; and Hofmann, Dolf D., to Linde Aktiengesellschaft. Method of and apparatus for the cooling of articles or materials. 4,237,695, Cl. 62-63.000.
Occidental Oil Shale, Inc.: *See—*
Ricketts, Thomas E., 4,238,136, Cl. 299-2.000.
Occidental Research Corporation: *See—*
Sadhukhan, Pasupati, 4,238,296, Cl. 203-100.000.
O'Dair, Timothy J. Ski transport container. 4,238,063, Cl. 224-45.00S.
Odom, Paul S., to Standard Oil Company; and Standard Oil Company. Energy efficient recovery of acrylonitrile. 4,238,295, Cl. 203-83.000.
Odom, Richard C.: *See—*
Harrison, Gregory K.; Pope, George D.; Riel, Richard F.; Kobb, Donald A.; Kelley, Charley T.; Lawrence, David J.; Conn, Donald R.; and Odom, Richard C., 4,237,770, Cl. 91-369.00A.
Oelte, Burkhard, to Optima-Maschinenfabrik, Dr. Beuhler GmbH & Co. Weighing apparatus for weighing conveyed products. 4,238,027, Cl. 198-504.000.
Oesterling, Erwin: *See—*
Pawelko, Karl-Heinz; and Oesterling, Erwin, 4,237,907, Cl. 131-23.00A.
Oetiker, Hans. Clamp structure, especially axle sleeve clamp. 4,237,584, Cl. 24-23.0EE.
Ogasawara, Hiroomi. Device for measuring the amount of movement of a moving object. 4,238,782, Cl. 340-200.000.
Ogawa, Masahide: *See—*
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,238,346, Cl. 252-174.250.
Ogihara, Satoru: *See—*
Kinugawa, Kiyoshige; Ogihara, Satoru; Hanada, Yosio; Ishitani, Shizuo; and Ishibashi, Tadashi, 4,238,276, Cl. 156-634.000.
Ogiwara, Toshiaki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Denitrification reactor. 4,238,455, Cl. 422-171.000.
Oguchi, Masao: *See—*
Kisaichi, Akio; Oguchi, Masao; Takeda, Toshihide; Aikawa, Akira; and Saito, Toshio, 4,238,193, Cl. 8-115.500.
Ohhazama, Tsuneyoshi: *See—*
Takiguchi, Hiroshi; and Ohhazama, Tsuneyoshi, 4,238,012, Cl. 192-48.910.
Ohio River Company, The: *See—*
Hickmann, Horst, 4,237,809, Cl. 114-202.000.
Ohki, Hisashi: *See—*
Motosugi, Katsuhiko; Sekiya, Setsuro; Nohira, Hidetaka; Ito, Sumio; Ohki, Hisashi; and Kumai, Teruo, 4,237,826, Cl. 123-25.00R.
Ohkouchi, Haruo: *See—*
Kawakami, Akira; Ohkouchi, Haruo; Aoki, Yoshio; and Kitano, Kyozo, 4,238,410, Cl. 260-513.00R.
Ohmuro, Shigeru: *See—*
Hongu, Masayuki; Kawakami, Hiromi; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,238,771, Cl. 358-165.000.
Ohno, Hideshi, to Citizen Watch Co., Ltd. Method of assembling semiconductor integrated circuit. 4,237,607, Cl. 29-840.000.
Ohsaka, Yohnosuke: *See—*
Tohzuka, Takashi; and Ohsaka, Yohnosuke, 4,238,416, Cl. 260-593.00H.
Ohsumi, Kinya. System for warning the approach of an emergency vehicle. 4,238,778, Cl. 340-33.000.
Ohtaki, Shohei: *See—*
Uchiyama, Takashi; Ohtaki, Shohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; and Aizawa, Hiroshi, 4,238,149, Cl. 354-128.000.
Ohtsubo, Yoshiaki: *See—*
Kitamura, Yasunori; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Ohtsubo, Yoshiaki; and Motoori, Ryuzo, 4,238,146, Cl. 354-53.000.
Ohura, Osami; and Fujimoto, Osamu, to Tokai Denka Kogyo Kabushiki Kaisha. Method of recovering thiourea dioxide. 4,238,411, Cl. 260-513.700.
Okada, Akira; Mikame, Yoshio; and Aizawa, Ryoiti, to TDK Electronics Company Limited. Drop-out detecting system for video recording magnetic tape. 4,238,777, Cl. 360-38.000.
Okada, Hisashi: *See—*
Aizawa, Kenshiro; and Okada, Hisashi, 4,238,646, Cl. 179-100.41D.
Okado, Yasuomi; Nishizaki, Ken; and Tanaka, Akinobu, to Nippon Telegraph and Telephone Public Corporation; and Shinto Paint Co., Ltd. Coating composition for forming insulating film on electroconductive substrate for printed circuits and method therefor. 4,238,385, Cl. 260-37.0EP.
Okano, Shuji: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,238,175, Cl. 425-83.100.
Okazaki, Takahisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnosing apparatus. 4,237,902, Cl. 128-660.000.
Oki Electric Industry Co. Ltd.: *See—*
Nitadori, Kazuhiko, 4,237,737, Cl. 73-625.000.
Okishi, Yoshio: *See—*
Nakamura, Yasuo; and Okishi, Yoshio, 4,238,560, Cl. 430-162.000.
Okita, Koichi: *See—*
Mano, Hiroshi; and Okita, Koichi, 4,238,571, Cl. 521-62.000.
Okuyama, Kiyotaka; and Hosaka, Akihiko, to TDK Electronics Company Limited. Magnetic recording medium. 4,238,548, Cl. 428-480.000.
Oliver, James T.: *See—*
Hess, Friedrich K.; Stewart, Patrick B.; and Oliver, James T., 4,238,496, Cl. 424-270.000.
Ollerman, Thomas E. Living module for institutional residents. 4,237,563, Cl. 5-2.00R.
Olson, Harlan D., to Cascade Corporation. Hidden chain assembly for lift truck mast. 4,238,004, Cl. 187-9.00E.
Olsson, Goran B. K.; and Wilson, Gunnar T., to Granges Aluminium Aktiebolag. Cold-welded heat exchanger member. 4,237,971, Cl. 165-171.000.
Olszewski, Egon: *See—*
Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, 4,237,713, Cl. 72-59.000.
Omori, Norio: *See—*
Kinugawa, Masumi; Fujisawa, Hideya; Omori, Norio; and Sueishi, Motoharu, 4,237,838, Cl. 123-119.0EC.
Omron Tateisi Electronics Co., Ltd.: *See—*
Kobayashi, Toshiyuki; Nakai, Hideharu; Kai, Isao; and Yonemori, Yoshinori, 4,237,878, Cl. 128-214.00E.
Onisko, William, to Van Mark Products Corporation. Sheet metal brake with improved locking mechanism. 4,237,716, Cl. 72-319.000.
Onkova, Olga L.: *See—*
Korzhov, Mikhail A.; Novikov, Leonid N.; Makarov, Vyacheslav N.; Onkova, Olga L.; Mishunin, Vladimir V.; Usenko, Vladimir I.; and Bendersky, Alexandr F., 4,237,848, Cl. 123-242.000.
Opfer, John C.; and Rogers, Edward J., to S&C Electric Company. Switch operator condition and position indicator mechanism. 4,238,657, Cl. 200-308.000.
Oprins, Johannes A. E.: *See—*
Wells, Peter M., Jr.; and Oprins, Johannes A. E., 4,238,728, Cl. 324-149.000.
Optima-Maschinenfabrik, Dr. Beuhler GmbH & Co.: *See—*
Oelte, Burkhard, 4,238,027, Cl. 198-504.000.
Orega Circuits et Commutation: *See—*
Goullin, Jean-Francois; and Nicolas, Michel, 4,238,748, Cl. 335-56.000.
Ormos, Zoltan; Csukas, Bela; Pataki, Karoly; Balla, Laszlo; and Blickle, Tibor. Apparatus for the continuous production and coating of granulates in fluidized layer. 4,237,814, Cl. 118-24.000.
Osawa, Michihisa: *See—*
Shibata, Hideaki; and Osawa, Michihisa, 4,238,570, Cl. 521-57.000.
Osmotherley, Owen B.; and Lowes, John M., to Vickers Limited. Drying of cavities. 4,238,067, Cl. 228-107.000.
Osrodek Badawgzo-Rozwojowy Przemyslu Budowy Urzadzen Chemicznych "CEBEA": *See—*
Czosnyka, Stanislaw; Krzywon, Walter; Kozien, Andrzej; Cichocki, Stanislaw; and Benesch, Ryszard, 4,238,118, Cl. 266-46.000.
Oster, Eugene A., Jr., to Owens-Illinois, Inc. Structure for conversion of solar radiation to electricity and heat. 4,238,247, Cl. 136-89.0PC.
Osuka, Tatsumi: *See—*
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.
Otchy, Thomas G.: *See—*
Bonacci, John C.; Otchy, Thomas G.; and Ackerman, Thomas, 4,238,468, Cl. 423-359.000.
Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*
Torii, Sigeru; Tanaka, Hideo; and Kudai, Toshihiro, 4,238,615, Cl. 548-170.000.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Sato, Tadao; Ueda, Hiraki; and Nakagawa, Kazuyuki, 4,238,423, Cl. 260-968.000.
Ottaviano, Gary W., to Ranpak Corporation. Cushioning dunnage mechanism. 4,237,776, Cl. 93-1.0WZ.
Otto, Friedrich, to A. Stephan & Soehne GmbH & Co. Cutting device of a comminuting apparatus. 4,238,079, Cl. 241-248.000.

Outboard Marine Corporation: *See—*
Dudleston, Alan R.; and Stemper, Harry, 4,237,747, Cl. 74-516.000.
Schlapper, Eugene H., 4,237,991, Cl. 180-74.000.
Overhead Door Corporation: *See—*
Sivin, Bernard J.; and Luby, John J., 4,237,956, Cl. 160-120.000.
Overton, Charlie N. Solar heating balloon. 4,237,868, Cl. 126-443.000.
Ovutime, Inc.: *See—*
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 4,237,725, Cl. 73-58.000.
Owen, Raymond E.; and Brosius, William B., Jr., to Sybron Corporation. Integral flow metering assembly using a segmental wedge. 4,237,739, Cl. 73-861.630.
Owens-Corning Fiberglas Corporation: *See—*
Cottrell, Walter D., Jr.; and Lawson, Ernest E., 4,238,176, Cl. 425-85.000.
Pelagio, Gregory A.; and Holland, Wiley B., 4,237,685, Cl. 57-328.000.
Owens-Illinois, Inc.: *See—*
Buckingham, James W.; and Amberg, Stephen W., 4,237,676, Cl. 53-398.000.
McColl, Bruce J., 4,237,994, Cl. 180-179.000.
Myers, Jack H., 4,237,675, Cl. 53-397.000.
Oster, Eugene A., Jr., 4,238,247, Cl. 136-89.0PC.
Willingham, Wendell D., 4,238,106, Cl. 249-79.000.
Oy Nokia Ab & Valmet Oy: *See—*
Huostila, Markku; Haapsaari, Timo; Suokas, Matti; and Turunen, Risto, 4,238,284, Cl. 162-207.000.
P. R. Mallory & Co. Inc.: *See—*
Dey, Arabinda N.; Miller, John S.; and Bowden, William L., 4,238,552, Cl. 429-101.000.
Pacesetter Systems, Inc.: *See—*
Beane, Russell R.; and Mann, Brian M., 4,237,897, Cl. 128-419.0PG.
Schulman, Joseph H.; and Ritchie, Douglas G., 4,237,900, Cl. 128-630.000.
Paganelli, Anthony C.: *See—*
Riegelman, Harry M.; Paganelli, Anthony C.; Walker, John A.; Borden, Norris; Lawhead, Stephen A.; and Umann, Harry M., 4,237,560, Cl. 4-7.000.
Page, Derrick J.: *See—*
Schlegel, Earl S.; and Page, Derrick J., 4,238,761, Cl. 357-38.000.
Page, Kenneth; Bowie, David C.; Taylor, Alfred J.; and Knowles, Richard P., to Lucas Industries Limited. Starting aid for a combustion engine. 4,237,843, Cl. 123-145.00A.
Paliwoda, Eugene J.: *See—*
Bucher, John H.; Paliwoda, Eugene J.; and Rote, Frank E., 4,238,230, Cl. 75-123.00G.
Pallo, John M.; and Shisler, Donald E., to Johns-Manville Corporation. Method of operation of a refractory fiber production process. 4,238,213, Cl. 65-8.000.
Pallucci, Joseph N.; Jarosz, Gregory J.; and Kruse, Glenn R., to Tech-Sil, Inc. Method and apparatus for installing gel material in architectural barrier breaches. 4,237,667, Cl. 52-221.000.
Palmaer, Tore G. Connector. 4,238,132, Cl. 285-39.000.
Palmieri, Nicola, to Industrie Pirelli Societa per Azioni. Joint for low and medium voltage electric cables. 4,238,639, Cl. 174-73.00R.
Pampouchidis, Georgios, to Vianova Kunstharz, A.G. Cathodically depositable urethane compositions and process for same. 4,238,594, Cl. 528-69.000.
Paraghamian, Aram C.; and Kelly, Robert C. Reaction training apparatus. 4,237,635, Cl. 40-463.000.
Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., to Mead Corporation, The. Ink jet printer startup and shutdown procedure. 4,238,805, Cl. 346-75.000.
Parfitt, Dale R., to Avanti Research & Development, Inc. Windshield mounted half-wave communications antenna assembly. 4,238,799, Cl. 343-715.000.
Park, Jae H. Lightweight aggregates, intermediate aggregates, and process of manufacturing same. 4,238,242, Cl. 106-288.00B.
Parker, David G., to Imperial Chemical Industries Limited. Production of aromatic hydrocarbons. 4,238,630, Cl. 585-467.000.
Parker-Hannifin Corporation: *See—*
Washkewicz, Donald E., 4,238,260, Cl. 156-149.000.
Parker, Wayland B., to Daystrom Furniture, Inc. Dual height table. 4,237,795, Cl. 108-12.000.
Parsch, Claus P.; and Gibson, John P., to Siemens Aktiengesellschaft. Starting circuit for a trackbound electric propulsion vehicle having a synchronous linear motor. 4,238,715, Cl. 318-135.000.
Parson, Carolyn K., adminstratrix: *See—*
Siegfried, Gerald E.; Parson, Donald C., deceased; and Parson, Carolyn K., adminstratrix, 4,238,098, Cl. 248-217.200.
Parson, Donald C., deceased: *See—*
Siegfried, Gerald E.; Parson, Donald C., deceased; and Parson, Carolyn K., adminstratrix, 4,238,098, Cl. 248-217.200.
Parsons, James C. Photographic reproportioning system. 4,238,156, Cl. 355-52.000.
Pataki, Karoly: *See—*
Ormos, Zoltan; Csukas, Bela; Pataki, Karoly; Balla, Laszlo; and Blickle, Tibor, 4,237,814, Cl. 118-24.000.
Patel, Gordhanbhai N., to Allied Chemical Corporation. Co-polymerized acetylenic compositions. 4,238,352, Cl. 252-408.000.
Patterson, Richard A.: *See—*
Faust, Michael C.; and Patterson, Richard A., 4,238,256, Cl. 156-65.000.
Patthey, Michel, to Edouard Dubied & Cie. Intarsia knitting machine. 4,237,706, Cl. 66-126.00R.
Patzer, John F., II, to Gulf Research & Development Company. Recovery of oil from oil shale. 4,238,315, Cl. 208-11.0LE.
Pawelko, Karl-Heinz; and Oesterling, Erwin, to Hauni-Werke Korber & Co. KG. Apparatus for convoluting adhesive-coated uniting bands around groups of rod-shaped articles in filter tipping and like machines. 4,237,907, Cl. 131-23.00A.
Pearlman, Barry; and Menke, W. Kenneth, to Public Safety Equipment, Inc. Electronic siren amplifier. 4,238,787, Cl. 340-384.00E.
Pearson, David B., to Sangamo Weston, Inc. Instrument moving element with severable bridge. 4,238,731, Cl. 324-154.00R.
Peavey Electronics Corporation: *See—*
Todd, Charles H., III; and Peavey, Hartley D., 4,237,944, Cl. 144-316.000.
Peavey, Hartley D.: *See—*
Todd, Charles H., III; and Peavey, Hartley D., 4,237,944, Cl. 144-316.000.
Pedco Proteins and Enzymes Development Co. Ltd.: *See—*
Shemer, Michael, 4,238,515, Cl. 426-104.000.
Peddinghaus, Rolf: *See—*
Wepner, Joachim; and Zuhlke, Jochen, 4,238,718, Cl. 318-626.000.
Peeples, Denny L., to General Motors Corporation. Hydraulic ratio-changing booster with hydraulic lock. 4,237,772, Cl. 91-391.00R.
Pelagio, Gregory A.; and Holland, Wiley B., to Owens-Corning Fiberglas Corporation. Apparatus for producing a yarn. 4,237,685, Cl. 57-328.000.
Pellegrini, John P., Jr., to Gulf Research & Development Company. High fire point alkylaromatic insulating fluid. 4,238,343, Cl. 252-63.000.
Pelton, Peter G., to Continental Group, Inc., The. Aerosol barrier package with a bag adhesively attached to the curl. 4,238,264, Cl. 156-212.000.
Peng, Ting-Fu. Apparatus and method for abrading pencil lead. 4,237,945, Cl. 145-3.320.
Penicillin Assays, Inc.: *See—*
Charm, Stanley E., 4,238,521, Cl. 426-580.000.
Penneck, Richard J.: *See—*
Clabburn, Robin J. T.; and Penneck, Richard J., 4,237,609, Cl. 29-859.000.
Perkin-Elmer Corporation, The: *See—*
Unvala, Hoshang A., 4,238,830, Cl. 364-573.000.
Perratore, Albert J.; and Bass, Mikhail, to Concast Incorporated. Method and apparatus for regulating the bath level in a continuous casting mold. 4,237,960, Cl. 164-4.000.
Perry, Eli, to Monsanto Company. Selective adsorption process. 4,238,204, Cl. 55-16.000.
Perry, Mordechai; and Kedem, Ora, to Research Products Rehovot Ltd. Electrodialysis process for the separation of non-essential amino acids from derivatives thereof. 4,238,306, Cl. 204-180.00P.
Perry, Mordechai; and Kedem, Ora, to Research Products Rehovot Ltd. Electrodialysis process for the separation of essential amino acids from derivatives thereof. 4,238,307, Cl. 204-180.00P.
Personal Products Company: *See—*
Ginocchio, James A., 4,237,591, Cl. 28-121.000.
Pesa, Frederick A.; and Haase, Thomas A., to Standard Oil Company. Carbonylation of olefinically unsaturated compounds. 4,238,357, Cl. 252-431.00N.
Peters, Albert: *See—*
Brandt, Bernd; Nauroth, Peter; Peters, Albert; and Reinhardt, Helmut, 4,238,322, Cl. 209-3.000.
Peters, Margot Elizabeth: *See—*
Peters, Melville F.; and Peters, Walter T., 4,238,337, Cl. 210-179.000.
Peters, Melville F.; and Peters, Walter T., to Peters, Walter Todd; Peters, Margot Elizabeth; and Kronman, Albert F. Methane gas producer using biological decomposition of waste matter. 4,238,337, Cl. 210-179.000.
Peters, Walter T.: *See—*
Peters, Melville F.; and Peters, Walter T., 4,238,337, Cl. 210-179.000.
Peters, Walter Todd: *See—*
Peters, Melville F.; and Peters, Walter T., 4,238,337, Cl. 210-179.000.
Petersen, Arnold: *See—*
Lamer, Gerald P.; Petersen, Arnold; and Lenius, Norbert W., 4,238,036, Cl. 212-3.00R.
Peterson, Lloyd A., to Lloyd Plastics Company. Roofing vent and installation tool. 4,237,672, Cl. 52-743.000.
Peterson, Robert L.; Beaumont, Gerald P.; and Johnson, Bruce P., to Dow Chemical Company, The. Process for predicting the useful life of a respirator cartridge. 4,237,726, Cl. 73-73.000.
Petit, Francis; and Huchette, Dominique, to CdF Chimie. Process for selective electrochemical dimerization of conjugated dienes to form vinylcyclohexenes. 4,238,301, Cl. 204-59.00R.
Petorella, John A. Sailing trotline. 4,237,642, Cl. 43-26.100.
Petrak, Harry A. Automatic locking gear for four wheeled drive vehicles. 4,238,014, Cl. 192-54.000.
Petrov, Evgeny I. Loop-forming instrument of knitting machine. 4,237,705, Cl. 66-123.000.
Pettengill, Donald F.: *See—*
Middleman, Lee M.; Evans, Joseph H.; and Pettengill, Donald F., 4,238,812, Cl. 361-106.000.
Peyman, Gholam A.; and Sanders, Donald R. Intraocular infusion irrigation solution and method. 4,238,482, Cl. 424-180.000.
Pfahl, Robert C., Jr., to Western Electric Company, Inc. Methods and apparatus for heating articles selectively exposed to a generated vapor through a volume controllable vapor barrier. 4,238,186, Cl. 432-10.000.
Pfizer Inc.: *See—*
Vinick, Fredric J., 4,238,392, Cl. 260-112.50R.
Pharmindustrie: *See—*
Barieux, Jean-Jacques; Dubroeucq, Marie-Christine; and Rocquet, Francois, 4,238,612, Cl. 546-153.000.
Pharriss, Bruce B.: *See—*
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Phillips, Harold L., to Ferjon. Lightweight gypsum products and methods of making same. 4,238,546, Cl. 428-306.000.
Phillips, John F., Jr.; McClellan, Guerry H.; and McCullough, John F., to Tennessee Valley Authority. Chemical beneficiation of phosphatic limestone and phosphate rock with α-hydroxysulfonic acids. 4,238,459, Cl. 423-167.000.
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Plante, Jacques F.; and Plante, Robert A., 4,238,116, Cl. 254-166.000.
Planting, Peter J.; and Fritzen, Patricia A., to Bunker Ramo Corporation. Composite epoxy glass-microsphere-dielectrics for electronic coaxial structures. 4,238,641, Cl. 174-88.00C.
Plattner, Werner, executor: *See—*
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Yates, Derek N.; and Presta, John C., 4,238,540, Cl. 428-36.000.
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Ragsdale, Donald W., to Cavalier Products, Inc. Film material dispenser. 4,238,065, Cl. 225-47.000.
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Rasmussen, Jorgen; and Schreiter, Reiner, to Rasmussen GmbH. Clamp for pipes or the like. 4,237,588, Cl. 24-274.00R.
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Musselmann, Walter; Rienecker, Reimund; Kinzler, Herbert; and Tra, Josef, 4,238,324, Cl. 209-255.000.
Rigdon, Orville W.; Schierberg, Gordon R.; and Keon, Lawrence H., to Texaco Inc. Froth flotation with petroleum oxidate-amine compositions. 4,238,409, Cl. 260-501.170.
Riley, Travis E.: *See—*
Haggard, Samuel E.; Riley, Travis E.; and Florian deceased, Eugene F., 4,238,845, Cl. 367-183.000.
Rim, Yong S.; Nudenberg, Walter; Miller, Robert; and Cangelosi, Phillip J., to Uniroyal, Inc. Elastomer with improved heat and oil resistance based on modified chlorinated polyethylene. 4,238,578, Cl. 525-309.000.
Rink, Hans; Kamber, Bruno; and Sieber, Peter, to Ciba-Geigy Corporation. Novel cyclopeptides. 4,238,481, Cl. 424-177.000.
Ritchie, Douglas G.: *See—*
Delmonte, Julian; Kirkwood, M. Janet; and Ritchie, Douglas G., 4,237,935, Cl. 137-860.000.
Schulman, Joseph H.; and Ritchie, Douglas G., 4,237,900, Cl. 128-630.000.
Ritter, Thomas A.; Laskowski, Leonard J.; and Kaplan, Donald S., to American Cyanamid Company. Multi-beveled, v-shaped needle point. 4,237,892, Cl. 128-339.000.
Ro-Ta Development Company: *See—*
Gordon, Michael D.; and Baker, Hollis D., 4,237,796, Cl. 108-22.000.
Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 2-(Substituted amino)-3-nitro-2,3-unsaturated nitrogen heterocycles. 4,238,493, Cl. 424-263.000.
Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 2-Heterocyclic alkylamino-3-nitropyrroles. 4,238,494, Cl. 424-263.000.
Robert Bosch GmbH: *See—*
Barthruff, Otto, 4,237,742, Cl. 74-89.190.
Rabus, Friedrich; Grather, Gunter; and Schleupen, Richard, 4,237,835, Cl. 123-117.00R.
Roberts, Albert S. Fuel pressure regulator. 4,237,849, Cl. 123-513.000.
Roberts, David E.; and Foster, Michael R., to General Motors Corporation. Catalytic converter having a pair of catalyst pellet beds with a plenum and air tube therebetween. 4,238,454, Cl. 422-171.000.
Roberts, Peter T.: *See—*
Black, Malcolm H.; Frenkel, Alexander D.; and Roberts, Peter T., 4,238,497, Cl. 424-273.00R.
Roberts, Ronald L.: *See—*
Gordon, John H.; Roberts, Ronald L.; and Frybarger, Winfield S., Jr., 4,238,180, Cl. 425-403.000.
Robertshaw Controls Company: *See—*
Bauer, Werner R., 4,237,933, Cl. 137-625.630.
Frankenberg, Alfred A., 4,237,771, Cl. 91-387.000.
Tyler, Hugh J., 4,237,608, Cl. 29-857.000.
Robideau, Brian A.; and Niiler, Juri, to United Technologies Corporation. Blade tip seal for an axial flow rotary machine. 4,238,170, Cl. 415-172.00A.
Robinson, Philip R.: *See—*
Snyder, Ralph E.; and Robinson, Philip R., 4,238,122, Cl. 266-251.000.
Robinson, Robert G., to R & C Machine Devon Ltd. Check valve for fluid-producing wells. 4,237,980, Cl. 166-317.000.
Robinson, T. Garrett. Method and device for increasing efficiency of natural gas fuel. 4,238,183, Cl. 431-2.000.
Rockwell International Corporation: *See—*
McWilliams, Donald A.; Fa, Charles H.; Larchian, George A.; and Maxwell, Oral F., Jr., 4,238,762, Cl. 357-49.000.
Rocquet, Francois: *See—*
Barieux, Jean-Jacques; Dubroeucq, Marie-Christine; and Rocquet, Francois, 4,238,612, Cl. 546-153.000.
Roddier, Roger. Collapsible plastic crate for display and transport of perishable commodities. 4,238,044, Cl. 220-4.00F.
Rodgers, Kenneth W.; and Knize, Frank J. Balancing apparatus. 4,237,735, Cl. 73-486.000.
Rodionov, Petr A.: *See—*
Polukhin, Petr I.; Potapov, Ivan N.; Gremyakov, Ivan P.; Styrkin, German D.; Bitny, Mikhail A.; Raushenbakh, Igor M.; and Rodionov, Petr A., 4,237,714, Cl. 72-242.000.
Roedel, George F.: *See—*
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Roessler, Peter: *See—*
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,238,501, Cl. 424-283.000.
Roffa, Otto: *See—*
Rothman, Gyorgy; Biro, Ferenc; Babos, Gyorgy; Antolik, Karoly; and Roffa, Otto, 4,238,720, Cl. 318-800.000.
Rogers, Edward J.: *See—*
Opfer, John C.; and Rogers, Edward J., 4,238,657, Cl. 200-308.000.
Rohm and Haas Company: *See—*
Bortnick, Newman, 4,238,617, Cl. 548-262.000.
Carlson, Glenn R., 4,238,220, Cl. 71-94.000.
Rohr Industries, Inc.: *See—*
Brennan, John M., 4,238,092, Cl. 244-54.000.
Rojey, Alexandre: *See—*
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Quinn, Peter T., 4,238,150, Cl. 354-145.000.
Rolls-Royce Limited: *See—*
Wood, Robert D.; and Stockdale, John, 4,237,694, Cl. 60-738.000.
Rolston, John A. Method for producing fiber reinforced product. 4,238,437, Cl. 264-102.000.
Roman, Ronald L.: *See—*
Furchak, Robert A.; and Roman, Ronald L., 4,238,137, Cl. 308-3.00R.
Rooney, Floyd H. Solar collector. 4,237,869, Cl. 126-450.000.
Roper Industries, Inc.: *See—*
Varadan, Rajan, 4,237,704, Cl. 64-31.000.
Rosauer, Robert J.; and Gamble, James F., Jr., to Teledyne Industries, Inc. System for detecting a combustion process. 4,238,788, Cl. 340-515.000.
Roseman, Theodore J.; Carpenter, Osmer C.; Baker, Richard W.; and Ayres, James W., to Upjohn Company, The. Two-membrane medicated device for rate-controlled administration of prostaglandins. 4,237,888, Cl. 128-270.000.
Rosen, Arye; Gombar, Anna M.; and Mykietyn, Edward, to RCA Corporation. Method for fabricating stacked semiconductor diodes for high power/low loss applications. 4,237,600, Cl. 29-577.000.
Rosenblom, Jan: *See—*
Larsen, Arthur L.; Marklund, Sooren J.; and Rosenblom, Jan, 4,238,348, Cl. 252-391.000.
Larsen, Arthur L.; Marklund, Soren J.; and Rosenblom, Jan, 4,238,349, Cl. 252-392.000.
Larsen, Arthur L.; Marklund, Soren J.; and Rosenblom, Jan, 4,238,350, Cl. 252-392.000.
Rosenthal, Murray A.: *See—*
Acuff, Kenneth J.; Rosenthal, Murray A.; and Volk, Murray E., 4,238,196, Cl. 23-230.00B.
Ross, William D.: *See—*
Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,238,197, Cl. 23-230.0HC.
Rossi, Guglielmo; and Ferloni, Vincenzo, to Ranco Incorporated. Drive arrangement for setting mechanical apparatus, especially thermostats. 4,237,746, Cl. 74-504.000.
Rote, Frank E.: *See—*
Bucher, John H.; Paliwoda, Eugene J.; and Rote, Frank E., 4,238,230, Cl. 75-123.00G.

Rotenberg, Don H.: *See—*
LaLiberte, Norman U.; and Rotenberg, Don H., 4,238,524, Cl. 427-7.000.

Rothbuhr, Lothar; Sroka, Werner; and Vogel, Karl, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the control of the ratio DBP number/DBP number after pressing in the manufacture of carbon black pellets. 4,238,199, Cl. 23-314.000.

Rothchild, Ronald D., to Airco, Inc. Methods and apparatus for providing refrigeration. 4,237,700, Cl. 62-514.00R.

Rothermel, Alan F. Method of breeding and producing seed corn. 4,237,652, Cl. 47-58.000.

Rothman, Gyorgy; Biro, Ferenc; Babos, Gyorgy; Antolik, Karoly; and Roffa, Ottc, to Mechanikai Laboratorium Hiradastechnikai Kiserleti Vallalat. Equipment for the electronic speed control of an induction type motor, especially for use with data store motors. 4,238,720, Cl. 318-800.000.

Rozenfeld, Lev M.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Korolkov, Anatoly G.; Popov, Jury S.; Rozenfeld, Lev M.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,238,700, Cl. 310-52.000.

Rubery Owen Fasteners Limited: *See—*
Jones, Ernest; and Hall, John L., 4,237,948, Cl. 151-22.000.

Ruchel, Peter, to Diehl GmbH & Co. Process for the preparation of a copper-zinc material. 4,238,249, Cl. 148-2.000.

Ruchser, Erich: *See—*
Herion, Erich; and Ruchser, Erich, 4,237,930, Cl. 137-596.160.

Rudy, Jerome; and Rapisarda, Anthony A., to Lever Brothers Company. Additives for clothes dryers. 4,238,531, Cl. 427-242.000.

Rumph, Joel D.; and Warren, Lynda K., to Rumph, Joel Darren. Anti-rape device. 4,237,876, Cl. 128-138.00R.

Rumph, Joel Darren: *See—*
Rumph, Joel D.; and Warren, Lynda K., 4,237,876, Cl. 128-138.00R.

Ruschke, Ricky R., to Baxter Travenol Laboratories, Inc. Method of mounting a filter membrane. 4,238,207, Cl. 55-159.000.

Rusco Industries, Inc.: *See—*
Riegelman, Harry M.; Paganelli, Anthony C.; Walker, John A.; Borden, Norris; Lawhead, Stephen A.; and Umann, Harry M., 4,237,560, Cl. 4-7.000.

Rush, Charles K., to Queen's University at Kingston. Solar heater. 4,237,866, Cl. 126-433.000.

Russell, Kenneth J.: *See—*
Harp, Robert S.; and Russell, Kenneth J., 4,238,747, Cl. 333-228.000.

Rusz, Vazul: *See—*
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Ruti-Te Strake B.V.: *See—*
Van Mullekom, Hubert P., 4,238,080, Cl. 242-47.120.

Rzeszewski, Theodore S.; and Van Anrooy, Peter H., to Matsushita Electric Corp. of America. Vertical synchronization circuit for television receivers. 4,238,769, Cl. 358-154.000.

S&C Electric Company: *See—*
Opfer, John C.; and Rogers, Edward J., 4,238,657, Cl. 200-308.000.

S. C. Johnson & Son, Inc.: *See—*
Kandathil, Thomas V., 4,238,192, Cl. 8-111.000.

Saarivirta, Matti; and Lahtinen, Kalervo. Melting and casting means. 4,238,635, Cl. 13-22.000.

Sadhukhan, Pasupati, to Occidental Research Corporation. Process of desalination by direct contact heat transfer. 4,238,296, Cl. 203-100.000.

Saeki, Tatsushi: *See—*
Takeuchi, Hiroshi; Miyake, Tetsuya; Tanouchi, Masatoshi; Saeki, Tatsushi; and Ban, Kazuki, 4,238,294, Cl. 203-72.000.

Safrit, Sam C.; Shields, Harper; Coble, William H.; and Farrell, Roscoe M., to Kayser-Roth Hoisery, Inc. Dress weight tube sock with mock rib leg and method of knitting. 4,237,707, Cl. 66-172.00E.

Sagami Chemical Research Center: *See—*
Kondo, Kiyosi; Suda, Minoru; and Tunemoto, Daiei, 4,238,396, Cl. 260-326.200.

Saint-Gobain Industries: *See—*
Auger, Henri R., 4,237,597, Cl. 29-526.00R.

Saito, Akinori: *See—*
Tanasawa, Yasusi; Muto, Norio; and Saito, Akinori, 4,237,836, Cl. 123-119.00E.

Saito, Toshio: *See—*
Kisaichi, Akio; Oguchi, Masao; Takeda, Toshihide; Aikawa, Akira; and Saito, Toshio, 4,238,193, Cl. 8-115.500.

Sakurada, Isoji; and Kawashima, Tadasu, to Sony Corporation; and Natsuo Uchiyama. Electrode to be used in contact with a living body. 4,237,886, Cl. 128-303.130.

Salmon, Jonathan H. Graining brush. 4,237,579, Cl. 15-166.000.

Salter, Anthony John: *See—*
Salter, Colin J., 4,238,102, Cl. 248-543.000.

Salter, Colin J., to Salter, Anthony John; and Salter, Yvonne Diane. Spring supports. 4,238,102, Cl. 248-543.000.

Salter, Yvonne Diane: *See—*
Salter, Colin J., 4,238,102, Cl. 248-543.000.

Salvadori, Lawrence A.; Miller, Frank N.; Layton, Terry N.; Schultze, W. Martin; and Villari, Frank K., to Kendall Company, The. Discharge measuring device. 4,238,448, Cl. 422-58.000.

Sampietro, Achilles C. Internal combustion engines. 4,237,689, Cl. 60-599.000.

Samu, Mihaly: *See—*
Balogh, Barnabas; Erdelyi, Jozsef; Fabian, Zsolt; Rusz, Vazul; Samu, Mihaly; and Szente, Jozsef, 4,238,790, Cl. 340-684.000.

Samuel, Yves; and Gillet, Philippe, to Societe Chimique des Charbonnages. Decantation methods. 4,238,332, Cl. 210-71.000.

Sanders, Donald R.: *See—*
Peyman, Gholam A.; and Sanders, Donald R., 4,238,482, Cl. 424-180.000.

Sandham, Edwin C., to Leggett & Platt, Inc. Seat belt kit for a pedestal seat base. 4,238,135, Cl. 297-468.000.

Sandner, Helmut G.: *See—*
Grossa, Mario; and Sandner, Helmut G., 4,238,561, Cl. 430-253.000.

Sandoz, Inc.: *See—*
Blumberg, Morris; and Swasey, Chester C., 4,238,384, Cl. 260-37.00R.
Nadelson, Jeffrey, 4,238,616, Cl. 548-248.000.

Sandoz Ltd.: *See—*
Lang, Theodor, 4,238,234, Cl. 106-22.000.
Porter, Frederic E.; and Scott, James M., 4,238,523, Cl. 427-4.000.

Sanford, Homer H., to Bunting Magnetics Company. Split-shell magnetic cylinder. 4,237,786, Cl. 101-378.000.

Sanford Research Company: *See—*
Sherwood, Edward E., 4,238,162, Cl. 401-198.000.

Sangamo Weston, Inc.: *See—*
Pearson, David B., 4,238,731, Cl. 324-154.00R.

Sanilogical Corporation: *See—*
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Sanke, Heidrun: *See—*
Altmann, Jurgen; Sanke, Heidrun; Schoppe, Gunter; and Schutt, Wolfgang, 4,238,767, Cl. 358-107.000.

Sanzenbacher, Charles W.; and Scarlett, John C., to Midrex Corporation. Method for producing molten iron by submerged combustion. 4,238,226, Cl. 75-38.000.

Sarkary, Homi G.: *See—*
Galicki, Arkadi; Hayunga, Carl P.; and Sarkary, Homi G., 4,238,312, Cl. 204-298.000.

Sartorius GmbH: *See—*
Blawert, Dieter; Rademacher, Karl-Heinz; Knothe, Erich; and Melcher, Franz J., 4,237,988, Cl. 177-189.000.

Sasaki, Susumu; Takemota, Tamikazu; and Tomita, Shoji, to Sumitomo Durez Company, Ltd. Process for making a prilled product. 4,238,428, Cl. 264-13.000.

Sasaki, Susumu; Takemota, Tamikazu; and Tomita, Shoji, to Sumitomo Durez Company, Ltd. Prilling process. 4,238,429, Cl. 264-13.000.

Sato, Jun, to Shimano Industrial Company, Limited. Reel seat. 4,237,640, Cl. 43-22.000.

Sato, Tadao; Ueda, Hiraki; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Process for preparing cyclo-1,3,2-oxazaphosphoryl derivatives. 4,238,423, Cl. 260-968.000.

Sato, Takeshi: *See—*
Mathusima, Tokunori; Sato, Takeshi; and Uenishi, Akira, 4,237,668, Cl. 52-249.000.

Satz, Mark V., to Trumark, Inc. Method and compostion for the production of fermented sausage. 4,238,513, Cl. 426-59.000.

Saunders, James H.: *See—*
Chapman, Richard D.; Holmer, Donald A.; Pickett, Oscar A., Jr.; and Saunders, James H., 4,238,603, Cl. 528-339.000.

Sauter, Ernst. Pipe manifold, especially for supply and return of hot water heaters. 4,237,929, Cl. 137-596.000.

Sawada, Mitsuo; and Morita, Toyoo, to Yoshida Kogyo K. K. Apparatus for pairing two rows of slide fastener coupling elements. 4,237,604, Cl. 29-766.000.

Sawyer, Philip N. Method for preparing an improved hemostatic agent and method of employing the same. 4,238,480, Cl. 424-177.000.

Scandella, Louis; and Faivre, Bernard, to Stanley-Mabo S.A. Winding drum for a flexible tape. 4,238,083, Cl. 242-74.000.

Scarlett, John C.: *See—*
Sanzenbacher, Charles W.; and Scarlett, John C., 4,238,226, Cl. 75-38.000.

Schabert, Hans-Peter; and Hoffmann, Jorgen, to Kraftwerk Union Aktiengesellschaft. Nuclear reactor installation. 4,238,290, Cl. 176-38.000.

Schade, Walter. Controllable electrical single-armature of rotary converter. 4,238,822, Cl. 363-107.000.

Schaffhauser, Anthony C.: *See—*
Liu, Chain T; Inouye, Henry; and Schaffhauser, Anthony C., 4,238,229, Cl. 75-122.000.

Schellenberg, Hans: *See—*
Fluck, Jakob; and Schellenberg, Hans, 4,237,686, Cl. 57-337.000.

Schenck, John F., to General Electric Company. Field effect transistor for detection of biological reactions. 4,238,757, Cl. 357-25.000.

Scherubel, Gary A., to Dow Chemical Company, The. Method of controlling fluid loss in acidizing treatment of a subterranean formation. 4,237,974, Cl. 166-281.000.

Scherubel, Gary A., to Dow Chemical Company, The. Well stimulation method using foamed acid. 4,237,975, Cl. 166-281.000.

Schiek, Burkhard; Schilz, Wolfram; and Jacobson, Rolf, to U.S. Philips Corporation. Microwave range measuring system for measuring the distance of an object. 4,238,795, Cl. 343-14.000.

Schierberg, Gordon R.: *See—*
Rigdon, Orville W.; Schierberg, Gordon R.; and Keon, Lawrence H., 4,238,409, Cl. 260-501.170.

Schiessl, Alois: *See—*
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Schilling, Roger A., to Honeywell Inc. Flame detection system using a voltage clipper means. 4,238,184, Cl. 431-59.000.

Schilz, Wolfram: *See—*
Schiek, Burkhard; Schilz, Wolfram; and Jacobson, Rolf, 4,238,795, Cl. 343-14.000.

Schlapper, Eugene H., to Outboard Marine Corporation. Self-propelled lawn mower. 4,237,991, Cl. 180-74.000.

Schlegel, Earl S.; and Page, Derrick J., to Westinghouse Electric Corp. Integrated gate assisted turn-off, amplifying gate thyristor with narrow lipped turn-off diode. 4,238,761, Cl. 357-38.000.

Schleicher, Ernest E. Tape dispenser. 4,238,272, Cl. 156-527.000.

Schleupen, Richard: *See—*
Rabus, Friedrich; Grather, Gunter; and Schleupen, Richard, 4,237,835, Cl. 123-117.00R.

Schlumberger Technology Corp.: *See—*
Lanmon, C. P., II, 4,237,972, Cl. 166-54.500.

Schmelzer Corporation: *See—*
Benjamin, Benjamin C.; and Detweiler, Charles A., 4,237,924, Cl. 137-510.000.

Schmida, Lawrence F., to Eaton Corporation. Temperature responsive viscous fan drive. 4,238,015, Cl. 192-58.00B.

Schmidt, Alfred, to Ing. Alfred Schmidt GmbH. Apparatus for actuating the operation of a snowplow. 4,237,629, Cl. 37-41.000.

Schmidt, Alfred; and Tschebull, Wilhelm, to Chemie Linz Aktiengesellschaft. Process for the manufacture of aluminum fluoride. 4,238,469, Cl. 423-489.000.

Schmidt, Felix H.: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix H., 4,238,506, Cl. 424-319.000.

Schmidt, Helmut: *See—*
Scholze, Horst; and Schmidt, Helmut, 4,238,590, Cl. 528-5.000.

Schmidt, Karl M.: *See—*
Cole, George S.; and Schmidt, Karl M., 4,237,625, Cl. 36-28.000.

Schmitt, Felix; and Kriebel, Gunter, to Chemische Werke Huls AG. Method for production of duroplastic, single-component polyurethanes. 4,238,592, Cl. 528-45.000.

Schmitt, Frederick L.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,238,344, Cl. 252-174.110.

Schnabel, Wolfram: *See—*
Serbent, Harry; Reuter, Gerhard; Schnabel, Wolfram; and Kossek, Gunter, 4,238,222, Cl. 75-7.000.

Schneider, Gordon L. Acidic asphaltic composition and method. 4,238,241, Cl. 106-281.00R.

Schneider, Gunter, to Dravo Corporation. Sealing device for sinter cooler. 4,238,120, Cl. 266-179.000.

Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, to BASF Aktiengesellschaft. Guide for a thin tape-like recording medium, particularly a magnetic tape. 4,238,088, Cl. 242-192.000.

Scholz, Karl-Heinz; Hartmann, Willy; and Heine, Hans-Georg, to Bayer Aktiengesellschaft. Process for the preparation of diacylated 4-imidazolin-2-ones. 4,238,618, Cl. 548-320.000.

Scholze, Horst; and Schmidt, Helmut, to Fraunhofer-Gesellschaft. Process for the production of silicic acid heteropolycondensates useful as membranes and adsorbents. 4,238,590, Cl. 528-5.000.

Schoppe, Gunter: *See—*
Altmann, Jurgen; Sanke, Heidrun; Schoppe, Gunter; and Schutt, Wolfgang, 4,238,767, Cl. 358-107.000.

Schottler, Sabine: *See—*
Ax, Wolfgang; Bauer, Hartwig W.; and Schottler, Sabine, 4,238,474, Cl. 424-12.000.

Schreiter, Reiner: *See—*
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Schroeder, Hartmut R.: *See—*
Buckler, Robert T.; and Schroeder, Hartmut R., 4,238,395, Cl. 260-326.00N.

Schuberth, Christian; Nemeth, Istvan; and Guck, Lothar, to Elektrofeinmechanische Werke Jacob Preh GmbH & Co. Variable resistor. 4,238,754, Cl. 338-174.000.

Schulman, Joseph H.; and Ritchie, Douglas G., to Pacesetter Systems, Inc. Implantable calibration means and calibration method for an implantable body transducer. 4,237,900, Cl. 128-630.000.

Schulte, Heinrich; and Kirchhoff, Werner, to Varta Batterie, A.G. Lead acid battery plate with starch coated glass fibers. 4,238,557, Cl. 429-212.000.

Schultze, W. Martin: *See—*
Salvadori, Lawrence A.; Miller, Frank N.; Layton, Terry N.; Schultze, W. Martin; and Villari, Frank K., 4,238,448, Cl. 422-58.000.

Schuster, Alfred: *See—*
Oberpriller, Jakob; Schuster, Alfred; and Hofmann, Dolf D., 4,237,695, Cl. 62-63.000.

Schuster, Samuel R.: *See—*
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 4,237,725, Cl. 73-58.000.

Schutt, Wolfgang: *See—*
Altmann, Jurgen; Sanke, Heidrun; Schoppe, Gunter; and Schutt, Wolfgang, 4,238,767, Cl. 358-107.000.

Schwarz, Herbert: *See—*
Findeisen, Kurt; and Schwarz, Herbert, 4,238,412, Cl. 260-545.00R.

Schwarz, Werner, to H. Obrist & Co. AG. Stackable tube body having a layer of sealant material. 4,237,939, Cl. 138-109.000.

Schwarzmann, Afred, to RCA Corporation. Phase shifter. 4,238,745, Cl. 333-164.000.

Schwellenbach, Donald D.: *See—*
Crile, Eugene E.; and Schwellenbach, Donald D., 4,238,177, Cl. 425-150.000.

Sclafani, Joseph R., to Reliable Automatic Sprinkler Co., Inc., The. Adjustable dry sprinkler having a latching mechanism controlled by a sleeve. 4,237,982, Cl. 169-37.000.

SCM Corporation: *See—*
Miller, Donald E.; and Werstak, Charles E., 4,238,520, Cl. 426-573.000.

Scott, James M.: *See—*
Porter, Frederic E.; and Scott, James M., 4,238,523, Cl. 427-4.000.

Scott, Jimmie D., to Tooling and Machine Development, Inc. Tufting machine monitor. 4,237,802, Cl. 112-79.00A.

Scott, Lex: *See—*
Mosley, William H.; Andren, Carl F.; and Scott, Lex, 4,238,739, Cl. 331-12.000.

Scott, Michael A.: *See—*
Dapp, George P.; and Scott, Michael A., 4,238,549, Cl. 428-484.000.

Scozzie, James A.: *See—*
Powers, Larry J.; Ariyan, Zaven S.; Buchman, Russell; Scozzie, James A.; Moser, Robert E.; and Pyne, William J., 4,238,490, Cl. 424-250.000.

Scranton, Robert J.: *See—*
Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., 4,238,805, Cl. 346-75.000.

Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See—*
Aitken, James E.; Hall, Peter S.; and James, James R., 4,238,798, Cl. 343-700.0MS.

Segerstad, Peder A. G. B. H. A. Frame elements for releasably mounting a poster. 4,237,632, Cl. 40-156.000.

Seidel, John G., to Westinghouse Electric Corp. Radiation dosimeter assembly. 4,238,684, Cl. 250-484.000.

Seilly, Alec H.; and Mowbray, Dorian F., to Lucas Industries Limited. Electromagnetic devices. 4,238,698, Cl. 310-27.000.

Seilly, Alec H., to Lucas Industries Limited. Electro-magnetic devices. 4,238,699, Cl. 310-27.000.

Seissl, Johann; Broenner, Karlheinz; and Krause, Hartmut, to Siemens Aktiengesellschaft. X-ray diagnostic generator. 4,238,681, Cl. 250-402.000.

Sekiya, Setsuro: *See—*
Motosugi, Katsuhiko; Sekiya, Setsuro; Nohira, Hidetaka; Ito, Sumio; Ohki, Hisashi; and Kumai, Teruo, 4,237,826, Cl. 123-25.00R.

Selas Corporation of America: *See—*
Feng, Chung L., 4,237,730, Cl. 73-204.000.
Siemssen, Ernst A., 4,237,801, Cl. 110-336.000.

Senil Nominees Pty. Ltd: *See—*
Lines, Lancelot H., 4,237,896, Cl. 128-419.00R.

Seno, Kouji: *See—*
Yamamoto, Tomio; Hanafusa, Hideyuki; Seno, Kouji; Mihara, Toshiro; and Ishida, Isoshiro, 4,237,959, Cl. 164-4.000.

Serbent, Harry; Reuter, Gerhard; Schnabel, Wolfram; and Kossek, Gunter, to Metallgesellschaft Aktiengesellschaft. Waelz process of volatilizing zinc and lead from iron oxide-containing materials. 4,238,222, Cl. 75-7.000.

Sereno, John: *See—*
Grethe, Guenter; Uskokovic, Milan R.; and Sereno, John, 4,238,399, Cl. 260-345.90R.

Sermons, Gunar Y.: *See—*
Kalnin, Robert K.; Ioffe, Benyamin A.; Zommer, Jury A.; Sermons, Gunar Y.; Kern, Ivan I.; and Kipers, Jury J., 4,238,658, Cl. 219-9.500.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
Debrois, Pierre, 4,237,908, Cl. 131-61.00R.

Setec Travaux Publics: *See—*
Demorieux, Jean-Marie, 4,238,138, Cl. 308-3.00R.

Sevensson, Lars-Erik, to Hoganas AB. Process for preparing iron based powder for powder metallurgical manufacturing of precision components. 4,238,221, Cl. 75-0.5BA.

Severo-Kavkazsky Gorno-Metallurgichesky Institute: *See—*
Yagupov, Alexandr V., 4,238,078, Cl. 241-46.020.

Shabtai, Joseph, to University of Utah. Class of cracking catalysts acidic forms of cross-linked smectities. 4,238,364, Cl. 252-455.00R.

Shachihata Industrial Co., Ltd.: *See—*
Morohashi, Kazuo, 4,238,161, Cl. 401-35.000.

Shaffer, John W.: *See—*
Bricker, Daniel W.; Audesse, Emery G.; Shaffer, John W.; and Hartman, Donald W., 4,238,814, Cl. 362-13.000.

Sharp, Eugene F., Sr. Waste grease truck and method. 4,237,857, Cl. 126-343.50A.

Sharp Kabushiki Kaisha: *See—*
Nakanishi, Tousaku; Suzuki, Kazuo; Makino, Masayasu; Miyao, Nobuyoshi; and Koda, Hirokazu, 4,237,803, Cl. 112-158.00E.

Shaw, Maurice. Soft toy containing sounding device. 4,237,647, Cl. 46-117.000.

Shaw, Terrence M.: *See—*
Baugh, James D.; Smith, Stephen; and Shaw, Terrence M., 4,237,847, Cl. 123-195.00R.

Shea, Melvin E. Flue throttle. 4,237,855, Cl. 126-285.00B.

Shell Oil Company: *See—*
Florack, Petrus M., 4,238,321, Cl. 208-310.00Z.
Kouwenhoven, Herman W.; and Stork, Willem H. J., 4,238,318, Cl. 208-120.000.

Stewart, Thomas L.; and Esparza, Joe O., 4,237,724, Cl. 73-53.000.
Shemer, Michael, to Pedco Proteins and Enzymes Development Co. Ltd. Novel physical form of gluten, method for its manufacturing and its uses. 4,238,515, Cl. 426-104.000.
Shenk, Edwin K., to Polaroid Corporation. Autofocus movie camera having pulsed terminal drive means. 4,238,143, Cl. 352-140.000.
Shenk, Edwin K.: *See—*
Biber, Conrad H.; and Shenk, Edwin K., 4,238,154, Cl. 354-198.000.
Sherman, Alan E., to Quick Point, Inc. Dispenser for pens, pencils and other elongated objects. 4,238,051, Cl. 221-205.000.
Sherman, Victor L. Percussive tool. 4,237,987, Cl. 173-117.000.
Sherwood, Edward E., to Sanford Research Company. Nib retaining assembly for a writing instrument. 4,238,162, Cl. 401-198.000.
Sherwood Medical Industries Inc.: *See—*
Wickham, Ray M., 4,237,882, Cl. 128-218.00N.
Shibata, Hideaki; and Osawa, Michihisa, to Hitachi Chemical Company, Ltd. Novel expandable particles of a styrene polymer and process for preparing the same. 4,238,570, Cl. 521-57.000.
Shields, Harper: *See—*
Safrit, Sam C.; Shields, Harper; Coble, William H.; and Farrell, Roscoe M., 4,237,707, Cl. 66-172.00E.
Shier, George D.: *See—*
Morris, Nancy J.; and Shier, George D., 4,238,624, Cl. 560-246.000.
Shih, Kwang K., to International Business Machines Corporation. Pyrocatechol-amine-water solution for the determination of defects. 4,238,275, Cl. 156-626.000.
Shim, Jaewon L.: *See—*
Moorhouse, Ralph; and Shim, Jaewon L., 4,238,255, Cl. 149-60.000.
Shimano Industrial Company, Limited: *See—*
Nagano, Masashi, 4,237,743, Cl. 74-217.00B.
Sato, Jun, 4,237,640, Cl. 43-22.000.
Shimogawa, Toshiaki: *See—*
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimogawa, Toshiaki, 4,237,690, Cl. 60-635.000.
Shimoma, Taketoshi, to Tokyo Shibaura Electric Co., Ltd. Deflection yoke for color picture tube. 4,238,751, Cl. 335-213.000.
Shimono, Kikuo; Miyoshi, Ichiro; and Yamasaki, Osamu, to Duskin Franchise Co., Ltd. Oil coater for mat. 4,237,816, Cl. 118-249.000.
Shin-Etsu Chemical Co. Ltd.: *See—*
Takamizawa, Minoru; Inoue, Yoshio; Yoshioka, Hiroshi; and Moteki, Masaki, 4,238,393, Cl. 260-22.00S.
Shinto Paint Co., Ltd.: *See—*
Okado, Yasuomi; Nishizaki, Ken; and Tanaka, Akinobu, 4,238,385, Cl. 260-37.0EP.
Shipley, Randall S.; Birkelbach, Donald F.; and Lowery, Kirby, Jr., to Dow Chemical Company, The. High efficiency catalyst for polymerizing olefins. 4,238,355, Cl. 252-429.00B.
Shiro Haruyama: *See—*
Tsuru, Tohru; and Haruyama, Shiro, 4,238,298, Cl. 204-1.00T.
Shisler, Donald E.: *See—*
Pallo, John M.; and Shisler, Donald E., 4,238,213, Cl. 65-8.000.
Shreve, James S., to United States of America, Army. Multi-beam antenna controller. 4,238,797, Cl. 343-100.0SA.
Shy, Min C. Fixed device of folding leg. 4,238,100, Cl. 248-439.000.
Sialino, Angelo; and Francois, Alain, to Compagnie Generale des Matieres Nucleaires (COGEMA) S.A.; and APC - Azote et Produits Chimiques S.A. Process for the recovery of uranium from wet-process phosphoric acid. 4,238,457, Cl. 423-10.000.
Sibeud, Jean-Paul; and Noyer, Jean-Mari, to Automobiles M. Berliet. Device for changing the gears automatically on a synchronized gearbox. 4,238,011, Cl. 192-3.560.
Sicignano, Albert; Zingaro, William P., deceased; and Zingaro, Josephine, executrix, to North American Philips Corp. Long wavelength x-ray diffraction crystal. 4,238,529, Cl. 427-160.000.
Sidepal S.A. Societe Industrielle de Participations Luxembourgeoise: *See—*
Kuhlmann, Herbert, 4,237,854, Cl. 126-285.00R.
Sieber, Peter: *See—*
Rink, Hans; Kamber, Bruno; and Sieber, Peter, 4,238,481, Cl. 424-177.000.
Siegel, Moses; Cahall, Everett; Dunning, David; and Hammond, Joseph, to United States of America, Navy. Aircraft launcher. 4,238,093, Cl. 244-63.000.
Siegfried, Gerald E.; Parson, Donald C., deceased; and by Parson, Carolyn K., adminstratrix. Spring-action suspensory device for attachment to overhead beams. 4,238,098, Cl. 248-217.200.
Siemens Aktiengesellschaft: *See—*
Anger, Klaus; Frosien, Juergen; and Lischke, Burkhard, 4,238,680, Cl. 250-397.000.
Baumann, Heinz, 4,238,683, Cl. 250-421.000.
Doemens, Guenter, 4,238,780, Cl. 340-146.30H.
Franetzki, Manfred, 4,237,904, Cl. 128-725.000.
Golser, Hans; and Kirschner, Erich, 4,238,743, Cl. 331-94.50T.
Lehmann, Herbert; and Tutas, Kurt, 4,238,049, Cl. 220-331.000.
Lindner, Adolf, 4,238,021, Cl. 192-141.000.
Parsch, Claus P.; and Gibson, John P., 4,238,715, Cl. 318-135.000.
Seissl, Johann; Broenner, Karlheinz; and Krause, Hartmut, 4,238,681, Cl. 250-402.000.
Tischer, Peter, 4,238,685, Cl. 250-492.00A.
Vandenbossche, Christian; Danneels, Laurent; and Vanhumbeeck, Jacky, 4,238,297, Cl. 204-1.00T.
Siemssen, Ernst A., to Selas Corporation of America. Furnace lining or burner cup element. 4,237,801, Cl. 110-336.000.
Siess, Hans, to Boderseewerk Perkin-Elmer & Co. GmbH. Temperature control circuitry. 4,238,672, Cl. 219-502.000.
Sikorski, James A.: *See—*
Dutra, Gerard A.; and Sikorski, James A., 4,238,218, Cl. 71-87.000.
Silvanovich, Anatoly A.: *See—*
Anikin, Alexandr A.; But, Vladimir G.; Nikolaev, Vladimir P.; and Silvanovich, Anatoly A., 4,238,288, Cl. 176-36.00R.
Silverstein, Spencer: *See—*
McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert, 4,237,729, Cl. 73-194.00A.
Simonelli, Nazaro A.: *See—*
DeMatte, James F.; and Simonelli, Nazaro A., 4,238,824, Cl. 364-449.000.
Simons, James A. Fishing lure. 4,237,643, Cl. 43-35.000.
Sindelar, Karel: *See—*
Protiva, Miroslav; Sindelar, Karel; Cervena, Irena; and Metysova, Jirina, 4,238,611, Cl. 544-375.000.
Singer, Arnold J.: *See—*
Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., 4,238,499, Cl. 424-273.00R.
Singer Company, The: *See—*
Cohen, Edwin; and Mortimer, Charles P. L., 4,238,792, Cl. 340-707.000.
Singh, Prithipal: *See—*
Leung, Danton K.; and Singh, Prithipal, 4,238,389, Cl. 260-112.50R.
Sington, Edward P. C. Visual investigation method. 4,238,158, Cl. 356-241.000.
Sipek, Charles B.; Johnstone, Richard; and Clegg, Russell B., to Kearney & Trecker Corporation. Automatic tool changer for machine tool. 4,238,034, Cl. 211-1.500.
Sivin, Bernard J.; and Luby, John J., to Overhead Door Corporation. Solar heated door. 4,237,956, Cl. 160-120.000.
Skachkov, Jury V.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Korolkov, Anatoly G.; Popov, Jury S.; Rozenfeld, Lev M.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,238,700, Cl. 310-52.000.
Skaggs, Boyd T., to Container Corporation of America. Edge protector. 4,238,031, Cl. 206-453.000.
Skyline Products Ltd.: *See—*
Lutener, Stuart B., 4,237,977, Cl. 166-309.000.
Slater, Saul I., to Hov-Air-Ship, Inc. Method of and apparatus for anchoring airships and propulsion means for airships. 4,238,095, Cl. 244-115.000.
Slay, Frederick M. Peak limiting by half waves. 4,238,736, Cl. 328-169.000.
Slepchuk, Valery A.: *See—*
An, Viktor B.; Bukhtiyarov, Ivan D.; Demin, Alexei S.; Kosyrev, Viktor V.; and Slepchuk, Valery A., 4,238,692, Cl. 307-106.000.
Slobodyanik, Ivan P. Centrifugal-whirling contact tray. 4,238,426, Cl. 261-114.0JP.
Slough, Carlton M.; and Dedman, Wendell W., to Texaco Inc. Shaft bearing wear measuring apparatus. 4,237,613, Cl. 33-172.00E.
Smart, Michael G., to G. V. Planer Limited. Failsafe electrical circuitry. 4,238,696, Cl. 307-360.000.
Smith, Archibald W., to Canadian General Electric Company Limited. Mechanical trip device for a circuit breaker. 4,238,750, Cl. 335-173.000.
Smith, David H., Jr.: *See—*
Cobb, David L.; Doyle, Brian L.; Webster, James A.; and Smith, David H., Jr., 4,237,984, Cl. 172-554.000.
Smith, George E.: *See—*
Kimerling, Lionel C.; Leamy, Harry J.; and Smith, George E., 4,238,694, Cl. 307-238.000.
Smith, John C., Jr.: *See—*
Williamson, David T. N., 4,237,598, Cl. 29-568.000.
Smith, John L.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,238,853, Cl. 375-2.000.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Smith, John L.; and Tuchman, Walter L., 4,238,854, Cl. 375-2.000.
Smith Kline & French Laboratories Limited: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,238,493, Cl. 424-263.000.
Roantree, Michael L.; and Young, Rodney C., 4,238,494, Cl. 424-263.000.
Smith, Stephen: *See—*
Baugh, James D.; Smith, Stephen; and Shaw, Terrence M., 4,237,847, Cl. 123-195.00R.
Smith, William D.: *See—*
Economy, James; Lin, Ruey Y.; and Smith, William D., 4,238,547, Cl. 428-366.000.
Snap-Tite, Inc.: *See—*
Maier, Albin, 4,237,922, Cl. 137-493.000.
Snyder, Ralph E.; and Robinson, Philip R., to Allegheny Ludlum Steel Corporation. Apparatus for annealing steel. 4,238,122, Cl. 266-251.000.
Societa Italiana per Il Magnesesio E Leghe Di Magnesio S.p.A.: *See—*
Bettanini, Carlo; Zanier, Stelio; and Enrici, Margherita, 4,238,224, Cl. 75-10.00A.
Societa Italiana per Il Magnesio E Leghe Di Magnesio S.p.A.: *See—*
Bettanini, Carlo; Zanier, Stelio; and Enrici, Margherita, 4,238,223, Cl. 75-10.00R.
S.A. Beghin-Say: *See—*
Laplanche, Pierre, 4,237,890, Cl. 128-287.000.

Societe Anonyme D.B.A.: *See—*
Pressaco, Pierre, 4,237,923, Cl. 137-495.000.
Societe Anonyme Francaise du Ferodo: *See—*
Ygnard, Michel C. M., 4,238,007, Cl. 188-76.000.
Societe Chimique des Charbonnages: *See—*
Samuel, Yves; and Gillet, Philippe, 4,238,332, Cl. 210-71.000.
Societe de Recherches Industrielles S.O.R.I.: *See—*
Majoie, Bernard, 4,238,492, Cl. 424-263.000.
Societe Europenne des Produits Refractaires: *See—*
Remi, Jean-Pierre; and Gehin, Guy, 4,238,257, Cl. 156-71.000.
Societe Gamma-Electronic: *See—*
Hugon, Emile L., 4,238,677, Cl. 340-629.000.
Societe Lignes Telegraphiques et Telephoniques: *See—*
de Vecchis, Michel; and Hulin, Jean-Pierre, 4,237,687, Cl. 57-361.000.
Solid Photography Inc.: *See—*
Stern, Howard, 4,238,147, Cl. 354-77.000.
Solomon, Marcel. Security buckle for wrist watch metal bracelets. 4,237,585, Cl. 24-190.000.
Somavis S.A.: *See—*
Castiglioni, Albino, 4,237,566, Cl. 10-11.00R.
Somers, M. John, to Dayco Corporation. Reinforced liner for center plate structure of a railway vehicle. 4,237,792, Cl. 105-199.00C.
Sonnenfeld, Richard J.: *See—*
Trepka, William J.; and Sonnenfeld, Richard J., 4,238,202, Cl. 44-62.000.
Sony Corporation: *See—*
Hongu, Masayuki; Kawakami, Hiromi; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,238,771, Cl. 358-165.000.
Iga, Akira; and Doi, Toshitada, 4,238,852, Cl. 371-40.000.
Nagumo, Fumio, 4,238,765, Cl. 358-43.000.
Sakurada, Isoji; and Kawashima, Tadasu, 4,237,886, Cl. 128-303.130.
Southern California Gas Company: *See—*
Andre, Willard E.; Clausen, Andrew, Jr.; and Hultsman, Ben B., 4,237,969, Cl. 165-71.000.
Southern Pacific Transportation Company: *See—*
Biaggini, Benjamin F.; Jaekle, William M.; Garin, Paul V.; Byrne, Robert; and Giovanelli, Armand, 4,237,794, Cl. 105-368.00R.
Speca, Anthony N., to National Petro Chemicals Corp. Olefin polymerization catalyst. 4,238,353, Cl. 252-428.000.
Spector, George: *See—*
Erickson, Victor; and Spector, George, 4,237,884, Cl. 128-222.000.
Zabielski, Frank; and Spector, George, 4,237,915, Cl. 135-68.000.
Speicher, John M., to General Dynamics Corporation, Pomona Division. Differential drive rolling arc gimbal. 4,238,802, Cl. 343-765.000.
Spencer, Kenneth E.: *See—*
Jackson, Keith L.; Jones, William C.; and Spencer, Kenneth E., 4,238,006, Cl. 188-59.000.
Sperry Corporation: *See—*
DeMatte, James F.; and Simonelli, Nazaro A., 4,238,824, Cl. 364-449.000.
Spicer, John W.: *See—*
Warren, Brian T.; and Spicer, John W., 4,238,495, Cl. 424-269.000.
Spilles, Theodor, to Twente Convenience Products b.v. Grill charcoal lighter. 4,238,201, Cl. 44-51.000.
Spivy, Paul L.: *See—*
Hollaway, Gerald C.; Spivy, Paul L.; Nelson, Jack; and Fieler, Wayne C., 4,238,530, Cl. 427-173.000.
SPOFA, United Pharmaceutical Works: *See—*
Protiva, Miroslav; Sindelar, Karel; Cervena, Irena; and Metysova, Jirina, 4,238,611, Cl. 544-375.000.
Spokas, Romas B., to Borg-Warner Corporation. Clutch mechanism. 4,238,017, Cl. 192-82.00T.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of cyclic chemical compounds augmenting or enhancing the aroma detergents. 4,238,344, Cl. 252-174.110.
Squicquero, Mark J.: *See—*
Kelly, J. Robert; and Squicquero, Mark J., 4,237,574, Cl. 15-167.000.
Sroka, Werner: *See—*
Rothbuhr, Lothar; Sroka, Werner; and Vogel, Karl, 4,238,199, Cl. 23-314.000.
Staar, Marcel J. H., to Staar S.A. Powered atomizer. 4,238,055, Cl. 222-162.000.
Staar S.A.: *See—*
Staar, Marcel J. H., 4,238,055, Cl. 222-162.000.
Stach, Kurt, deceased (by Plattner, Werner, executor); Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix H., to Boehringer Mannheim GmbH. Hypoglycaemically and hypolipidaemically active derivatives of phenyl-alkane-carboxylic acids. 4,238,506, Cl. 424-319.000.
Stakes, Charles W., to Electronic Services, Ltd. Blower device for sweeping. 4,237,576, Cl. 15-344.000.
Stal-Laval Turbin AB: *See—*
Kullendorff, Anders; and Wikner, Jan, 4,237,800, Cl. 110-216.000.
Stal-Laval Turbine AB: *See—*
Borjesgard, Pehr; Kullendorff, Anders; and Wikner, Jan, 4,237,823, Cl. 122-4.00D.
Stamicarbon, B.V.: *See—*
Bryan, William O., 4,238,415, Cl. 260-586.00P.
Stamires, Dennis: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,238,360, Cl. 252-438.000.
Alafandi, Hamid; and Stamires, Dennis, 4,238,361, Cl. 252-438.000.
Standard Oil Company: *See—*
Odom, Paul S., 4,238,295, Cl. 203-83.000.
Odom, Paul S., 4,238,295, Cl. 203-83.000.
Pesa, Frederick A.; and Haase, Thomas A., 4,238,357, Cl. 252-431.00N.
Talsma, Herbert; and Giffen, William M., Jr., 4,238,535, Cl. 427-388.00C.
Standard Oil Company (Indiana): *See—*
Balint, Nikolaous K., 4,238,586, Cl. 526-137.000.
Cahill, Paul J.; and Johnson, Carl E., 4,238,628, Cl. 568-736.000.
Hauschildt, F. William; and Bertolacini, Ralph J., 4,238,319, Cl. 208-138.000.
Hughes, Robert D.; Steigelmann, Edward F.; and Bunting, Kemp R., 4,237,596, Cl. 29-401.100.
Vasalos, Iacovos A.; Ford, William D.; and Hsieh, Chuan-Kang R., 4,238,317, Cl. 208-120.000.
Wilson, Alfred P., 4,238,376, Cl. 260-23.70M.
Stanley-Mabo S.A.: *See—*
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Stark, Friedrich: *See—*
Aichert, Hans; Dietrich, Walter; Stark, Friedrich; and Stephan, Herbert, 4,238,525, Cl. 427-42.000.
Stark, Hanoch, to Hargem Ltd. Device for use in polishing table facets of gems. 4,237,658, Cl. 51-122.000.
Stark, Virgil: *See—*
Genequand, Pierre; and Stark, Virgil, 4,238,246, Cl. 136-89.0HY.
Staron, Thadee J., to Institut National de la Recherche Agronomique. Process for producing food proteins from Trichoderma Album. 4,238,567, Cl. 435-252.000.
Starr, Incorporated: *See—*
Bichel, Ronald A., 4,237,782, Cl. 99-625.000.
Stauers, Juris; and Alfaro, Vincent R., to Motorola, Inc. Programmable fuze for projectiles. 4,237,789, Cl. 102-270.000.
Stauffer Chemical Company: *See—*
Chang, Pei K., 4,238,519, Cl. 426-549.000.
Felix, Raymond A., 4,238,405, Cl. 260-464.000.
Teach, Eugene G.; and Baker, Don R., 4,238,503, Cl. 424-300.000.
Young, Randall A., 4,238,470, Cl. 423-567.00R.
STEAG Aktiengesellschaft: *See—*
Richter, Artur, 4,238,200, Cl. 44-16.00F.
Stefanini, Gerard R.: *See—*
Marino, Paul J.; Blanchard, Jean; and Stefanini, Gerard R., 4,238,794, Cl. 343-5.0PC.
Steigelmann, Edward F.: *See—*
Hughes, Robert D.; Steigelmann, Edward F.; and Bunting, Kemp R., 4,237,596, Cl. 29-401.100.
Stein, Karl D.: *See—*
Holy, Norman L.; Logan, William A.; and Stein, Karl D., 4,238,358, Cl. 252-431.00C.
Stein, Robert G.; Couch, Terry L.; and Crovetti, Aldo J., to Abbott Laboratories. Molluscicide compositions and methods of use. 4,238,484, Cl. 424-202.000.
Steinberg, Albert H.; and Ward, Lowell G., to Allied Chemical Corporation. Process of forming a glass fiber reinforced, stampable thermoplastic laminate. 4,238,266, Cl. 156-243.000.
Steingroever, Dietrich A.: *See—*
Steingroever, Erich A.; and Steingroever, Dietrich A., 4,238,734, Cl. 324-228.000.
Steingroever, Erich A.; and Steingroever, Dietrich A. Apparatus for measuring the magnetic moments of a body using a magnetic field generated by a permanent magnetic. 4,238,734, Cl. 324-228.000.
Stemper, Harry: *See—*
Dudleston, Alan R.; and Stemper, Harry, 4,237,747, Cl. 74-516.000.
Stendel, Wilhelm: *See—*
Kabbe, Hans-Joachim; Widdig, Arno; Stendel, Wilhelm; and Roessler, Peter, 4,238,501, Cl. 424-283.000.
Stepanek, Premek; and Bleckmann, Hugo, to Klockner-Humboldt-Wedag AG. System for the formation into pellets of mixtures of raw materials for glass. 4,238,217, Cl. 65-335.000.
Stephan, Herbert: *See—*
Aichert, Hans; Dietrich, Walter; Stark, Friedrich; and Stephan, Herbert, 4,238,525, Cl. 427-42.000.
Sterling, Vaughn C., to General Electric Company. Electrical connection means for a linear photoflash lamp array. 4,238,543, Cl. 428-63.000.
Stern, Howard, to Solid Photography Inc. Recording images of a three-dimensional surface by focusing on a plane of light irradiating the surface. 4,238,147, Cl. 354-77.000.
Stevens, Samuel B.: *See—*
Kraps, Michael H.; and Stevens, Samuel B., 4,238,258, Cl. 156-120.000.
Stevenson, Andrew C.; and Fox, Kenneth R., to Canadian General Electric Company Limited. Forced commutation precipitator circuit. 4,238,810, Cl. 361-91.000.
Stewart, Patrick B.: *See—*
Hess, Friedrich K.; Stewart, Patrick B.; and Oliver, James T., 4,238,496, Cl. 424-270.000.
Stewart, Thomas L.; and Esparza, Joe O., to Shell Oil Company. Detection of batch interfaces in pipelines. 4,237,724, Cl. 73-53.000.
Stimtech, Inc.: *See—*
Hagfors, Norman R.; and Keller, John W., Jr., 4,237,899, Cl. 128-422.000.
Stivender, Donald L., to General Motors Corporation. Vehicle engine air and fuel mixture controller with engine overrun control. 4,237,830, Cl. 123-32.0EL.

Stockdale, John: *See*—
Wood, Robert D.; and Stockdale, John, 4,237,694, Cl. 60-738.000.
Stog, Wilhelm, to WSW Stahl- und Wasserbau GmbH. Apparatus for withdrawing and cleaning emissions of a battery of coke ovens. 4,238,292, Cl. 202-257.000.
Stojkovic, Ljubinko. Heterovaccine against the trichomonas syndrome, and process for its preparation. 4,238,478, Cl. 424-92.000.
Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., to ACF Industries, Incorporated. Automatic air inlet and outlet valve assembly. 4,237,927, Cl. 137-587.000.
Stone, Richard F., to United States Gypsum Company. Process for manufacturing gypsum board. 4,238,445, Cl. 264-234.000.
Storer, Barrie W., to Profilex Limited. False ceiling access panels. 4,237,663, Cl. 52-204.000.
Stork, Willem H. J.: *See*—
Kouwenhoven, Herman W.; and Stork, Willem H. J., 4,238,318, Cl. 208-120.000.
Strauch, Ernst; and Faatz, Rudi, to Ernst Leitz Wetzlar GmbH. Process and arrangement for the alignment of imaging systems. 4,238,157, Cl. 356-3.000.
Strauss, John S.: *See*—
Klaus, Thomas R.; and Strauss, John S., 4,238,724, Cl. 323-80.000.
Stuart, Robert W., to Helix Technology Corporation. Method of employing a first contaminant to prevent freeze-out of a second contaminant during cryogenic processing of a gaseous stream. 4,238,211, Cl. 62-20.000.
Stubbe, Peter. Horseshoe. 4,237,981, Cl. 168-4.000.
Stuben, Werner; Hinzpeter, Jurgen; Deusch, Rudolf; and Friedrichs, Konrad, to Wilhelm Fette GmbH. Method for the production of tablets and a tablet press. 4,238,431, Cl. 264-40.500.
Styrkin, German D.: *See*—
Polukhin, Petr I.; Potapov, Ivan N.; Gremyakov, Ivan P.; Styrkin, German D.; Bitny, Mikhail A.; Raushenbakh, Igor M.; and Rodionov, Petr A., 4,237,714, Cl. 72-242.000.
Suda, Minoru: *See*—
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Sueishi, Motoharu: *See*—
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Suenaga, Yoshihiko: *See*—
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Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Detergent builders and process for preparation thereof. 4,238,346, Cl. 252-174.250.
Sugihara, Hirosige: *See*—
Yamaguchi, Isao; Hashizume, Heiji; Nakazawa, Akira; and Sugihara, Hirosige, 4,238,848, Cl. 368-276.000.
Sugiyama, Keiichi; and Matsumoto, Hiromitsu, to Yamaha Hatsukoko Kabushiki Kaisha. Method of controlling an internal combustion engine. 4,237,828, Cl. 123-30.00C.
Sulic, Milan: *See*—
Neuenfeldt, Walter; Sulic, Milan; and Pollak, Gerd, 4,238,291, Cl. 176-38.000.
Sullivan, William H. Locking clips for security wallets and the like. 4,237,583, Cl. 24-3.00R.
Sulzer Brothers Limited: *See*—
Bader, Hartmann, 4,237,941, Cl. 139-1.00C.
Kovic, Ferdinand; and Jung, Peter, 4,238,081, Cl. 242-47.010.
Sumi, Takeshi, to Hitachi, Ltd. Horizontal deflection output circuit. 4,238,714, Cl. 315-408.000.
Sumitomo Chemical Company, Limited: *See*—
Suzuki, Yukio; Aketa, Kohichi; and Hirano, Masachika, 4,238,406, Cl. 260-465.00D.
Sumitomo Durez Company, Ltd.: *See*—
Sasaki, Susumu; Takemota, Tamikazu; and Tomita, Shoji, 4,238,428, Cl. 264-13.000.
Sasaki, Susumu; Takemota, Tamikazu; and Tomita, Shoji, 4,238,429, Cl. 264-13.000.
Sumitomo Electric Industries, Ltd.: *See*—
Mano, Hiroshi; and Okita, Koichi, 4,238,571, Cl. 521-62.000.
Sumner, Emmons F.: *See*—
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,238,140, Cl. 339-186.00M.
Sumrall, Reese: *See*—
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Sunderland, Ronald H.: *See*—
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Sunkel, Manfred: *See*—
Hess, Hans-Peter; Muhling, Gunther; Sunkel, Manfred; and Dauernheim, Hans, 4,237,656, Cl. 49-352.000.
Suokas, Matti: *See*—
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Susko, John R.: *See*—
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Suzuki, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments. 4,237,764, Cl. 84-1.240.
Suzuki, Kazuo; Ariga, Shoji; and Murakami, Yoshiaki, to Clarion Co., Ltd. Panel assembly. 4,238,139, Cl. 312-7.00R.
Suzuki, Kazuo: *See*—
Nakanishi, Tousaku; Suzuki, Kazuo; Makino, Masayasu; Miyao, Nobuyoshi; and Koda, Hirokazu, 4,237,803, Cl. 112-158.00E.
Suzuki, Kisaburo. Dating machine impressing a date on calling cards, business cards or the like. 4,237,784, Cl. 101-20.000.
Suzuki, Motoaki: *See*—
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.
Suzuki, Shunji, to Kabushiki Kaisha Suwa Seikosha. Semiconductor gas sensor. 4,238,758, Cl. 357-25.000.
Suzuki, Yukio; Aketa, Kohichi; and Hirano, Masachika, to Sumitomo Chemical Company, Limited. Method for preparing a mixture of stereoisomers of α-cyano-3-phenoxybenzyl 2-(4-chlorophenyl)isovalerate. 4,238,406, Cl. 260-465.00D.
Svensson, Ernst S. Central heating furnace. 4,237,824, Cl. 122-235.00R.
Sviridov, Georgy M.: *See*—
Azovtsev, Alexandr A.; Velikoselsky, Nikolai D.; Vinogradov, Sergei S.; Vorontsov, Alexei E.; Kuznetsov, Lev E.; Podbeltsev, Viktor I.; Polevikov, Mikhail E.; Sviridov, Georgy M.; Fadeev, Valery G.; and Cherevaty, Anatoly A., 4,238,037, Cl. 212-3.00R.
Swaim, Paul D.; and Ellebracht, Steven R., to Dow Chemical Company, The. Method for determining total inorganic sulfur. 4,238,198, Cl. 23-230.00R.
Swainson, Wyn K., to Formigraphic Engine Corporation. Method, medium and apparatus for producing three dimensional figure product. 4,238,840, Cl. 365-119.000.
Swanson, Larry D., to Deere & Company. Switch and throttle lever combination for use in conjunction with snowmobile engine speed limiting system. 4,237,997, Cl. 180-272.000.
Swasey, Chester C.: *See*—
Blumberg, Morris; and Swasey, Chester C., 4,238,384, Cl. 260-37.00R.
Sweet, Charles S., to Merck & Co., Inc. Novel pharmaceutical compositions. 4,238,485, Cl. 424-246.000.
Swiss Aluminium Ltd.: *See*—
Gyongyos, Ivan; Buxmann, Kurt; Bolliger, Martin; Kerth, Willi; and Neufeld, Kurt, 4,238,248, Cl. 148-2.000.
Misra, Chanakya, 4,238,458, Cl. 423-115.000.
Sybron Corporation: *See*—
Kocache, Riad M. A.; Holman, Danny F.; and Sunderland, Ronald H., 4,238,308, Cl. 204-195.00S.
Owen, Raymond E.; and Brosius, William B., Jr., 4,237,739, Cl. 73-861.630.
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Leung, Danton K.; and Singh, Prithipal, 4,238,389, Cl. 260-112.50R.
Szent-Gyorgyi, Albert; and Fodor, Gabor B., to National Foundation for Cancer Research. Cyclic double hemiacetals of enediol compounds and compositions and methods for preparing and using same. 4,238,500, Cl. 424-278.000.
Szente, Jozsef: *See*—
Balogh, Barnabas; Erdelyi, Jozsef; Fabian, Zsolt; Rusz, Vazul; Samu, Mihaly; and Szente, Jozsef, 4,238,790, Cl. 340-684.000.
T. D. Williamson Inc.: *See*—
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Taenzer, Jon C., to Picker Corporation. Low and constant pressure transducer probe for ultrasonic diagnostic system. 4,237,901, Cl. 128-660.000.
Tafelski, Roman J., Jr. Storage and banding container. 4,237,783, Cl. 100-34.000.
Takahashi, Atsushi: *See*—
Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,238,609, Cl. 544-158.000.
Takahashi, Osamu; and Fudemoto, Isao, to Fujitsu Limited. Packet transmission system. 4,238,851, Cl. 370-94.000.
Takahashi, Takashi. Planetary gear reduction system. 4,237,750, Cl. 74-801.000.
Takamizawa, Minoru; Inoue, Yoshio; Yoshioka, Hiroshi; and Moteki, Masaki, to Shin-Etsu Chemical Co. Ltd. Additives for coating compositions. 4,238,393, Cl. 260-22.00S.
Takano, Hiroshi, to Mitsuboshi Belting Limited. Apparatus for testing power transmission belts. 4,237,719, Cl. 73-7.000.
Takashima, Yohei: *See*—
Fujii, Yoshio; Inomata, Hiroshi; Suenaga, Yoshihiko; Nishiwaki, Koji; and Takashima, Yohei, 4,238,835, Cl. 364-900.000.
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Takeda Chemical Industries, Ltd.: *See*—
Numata, Mitsuo; and Yamaoka, Masayoshi, 4,238,608, Cl. 544-027.000.
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Takei, Toshihiro: *See*—
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Takemae, Mikio: *See*—
Kitamura, Yasunori; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Ohtsubo, Yoshiaki; and Motoori, Ryuzo, 4,238,146, Cl. 354-53.000.
Takemota, Tamikazu: *See*—
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Sasaki, Susumu; Takemota, Tamikazu; and Tomita, Shoji, 4,238,429, Cl. 264-13.000.
Takeshige, Kenji: *See*—
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.
Takeuchi, Hiroshi; Miyake, Tetsuya; Tanouchi, Masatoshi; Saeki, Tatsushi; and Ban, Kazuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for recovering heavy metal ions or heavy metal ions and halogen values from solutions comprising a lower aliphatic monocarboxylic acid. 4,238,294, Cl. 203-72.000.
Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Ishizuka, Masaaki; Morishima, Hajime; Matsumoto, Ikuo; and Yamamoto, Takuzo, 4,238,507, Cl. 424-319.000.
Takiguchi, Hiroshi; and Ohhazama, Tsuneyoshi. Shift fork in manual transmission. 4,238,012, Cl. 192-48.910.
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, to Nippon Kayaku Kabushiki Kaisha. 3-[(S)-1'-phenylethylamino]propylaminobleomycin, non-toxic salt thereof, and method for producing same. 4,238,391, Cl. 260-112.50R.
Talkes, Brian E.: *See*—
Hardy, Frederick E.; and Talkes, Brian E., 4,238,373, Cl. 252-542.000.
Talsma, Herbert; and Giffen, William M., Jr., to Standard Oil Company. Can coatings from nitrile copolymer latexes. 4,238,535, Cl. 427-388.00C.
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Matsumoto, Mitsuo; and Tamura, Masuhiko, 4,238,419, Cl. 260-604.0HF.
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Hsiao, Oliver T. W.; and Tan, Thomas, 4,237,587, Cl. 24-261.00R.
Tanahashi, Toshio: *See*—
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Okado, Yasuomi; Nishizaki, Ken; and Tanaka, Akinobu, 4,238,385, Cl. 260-37.0EP.
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Tanaka, Koichiro, successor: *See*—
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Tanaka, Ryozo, to Kabushiki Kaisha n a c. Recording device of a time lapse magnetic video recorder. 4,238,776, Cl. 360-10.000.
Tanaka, Taro: *See*—
Noguchi, Masaaki; Tanaka, Taro; Uejima, Norikatsu; Tanaka, Yukiyasu, deceased; Tanaka, Koichiro, successor; and Miyazaki, Mihoko, successor, 4,237,831, Cl. 123-51.0BA.
Tanaka, Toshie, to Nifco Inc. Method for molding blind rivet. 4,238,446, Cl. 264-250.000.
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Noguchi, Masaaki; Tanaka, Taro; Uejima, Norikatsu; Tanaka, Yukiyasu, deceased; Tanaka, Koichiro, successor; and Miyazaki, Mihoko, successor, 4,237,831, Cl. 123-51.0BA.
Tanasawa, Yasusi; Muto, Norio; and Saito, Akinori, to Kabushiki Kaisha Toyota Chuo Kenyusho. Fuel supply system employing ultrasonic vibratory member of hollow cylindrically shaped body. 4,237,836, Cl. 123-119.00E.
Tang, David Y.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. (3-Trifluoromethyl)-benzoyl cyanide and process for its production. 4,238,413, Cl. 260-545.00R.
Taniguchi, Yasuyoshi: *See*—
Uetani, Yoshio; Taniguchi, Yasuyoshi; Yokoyama, Kenichi; Matsushima, Seiichi; and Kirihara, Sonae, 4,238,555, Cl. 429-163.000.
Tann, David, to Electro-Mechanical Products. Snap action fluid pressure switch. 4,238,651, Cl. 200-83.00P.
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Takeuchi, Hiroshi; Miyake, Tetsuya; Tanouchi, Masatoshi; Saeki, Tatsushi; and Ban, Kazuki, 4,238,294, Cl. 203-72.000.
Taylor, Alfred J.: *See*—
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Taylor, John B.: *See*—
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Taylor, William: *See*—
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TDK Electronics Company Limited: *See*—
Okada, Akira; Mikame, Yoshio; and Aizawa, Ryoiti, 4,238,777, Cl. 360-38.000.
Okuyama, Kiyotaka; and Hosaka, Akihiko, 4,238,548, Cl. 428-480.000.
Teach, Eugene G.; and Baker, Don R., to Stauffer Chemical Company. Anilide urea biocides. 4,238,503, Cl. 424-300.000.
Tech-Sil, Inc.: *See*—
Pallucci, Joseph N.; Jarosz, Gregory J.; and Kruse, Glenn R., 4,237,667, Cl. 52-221.000.
Technomatic AG: *See*—
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TELDIX GmbH: *See*—
Wehde, Heinz, 4,238,789, Cl. 340-677.000.
Teledyne Industries, Inc.: *See*—
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Frankhouse, Thomas J., 4,238,107, Cl. 249-83.000.
Telegan Limited: *See*—
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Terao, Motoyasu; and Yonezawa, Seiji, to Hitachi, Ltd. Information recording methods using lasers. 4,238,803, Cl. 346-1.100.
Termanini, Zafer, to Towmotor Corporation. Dynamic intramedullary compression nailing. 4,237,875, Cl. 128-92.0BA.
Terry, Thomas E.; and Hoyt, Laurance J., Sr. Cerebral palsy arm and hand brace. 4,237,873, Cl. 128-77.000.
Tetro, Richard S., to Black Clawson Company, The. Method for forming a zero tail length splice in a moving web. 4,238,261, Cl. 156-157.000.
Texaco Inc.: *See*—
Calderon, Reynaldo; and Towell, Billy H., 4,237,978, Cl. 166-311.000.
Rigdon, Orville W.; Schierberg, Gordon R.; and Keon, Lawrence H., 4,238,409, Cl. 260-501.170.
Slough, Carlton M.; and Dedman, Wendell W., 4,237,613, Cl. 33-172.00E.
Texas Instruments Incorporated: *See*—
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Textron Inc.: *See*—
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Therma Form, Inc.: *See*—
West, Gardner D., 4,238,105, Cl. 249-78.000.
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Bertozzi, Eugene R., 4,238,585, Cl. 525-535.000.
Thom, Joseph R. Reenforced fishing lure. 4,238,444, Cl. 264-226.000.
Thomas & Betts Corporation: *See*—
Greenwood, William S., 4,237,718, Cl. 72-410.000.
Thomas, George L., to General Electric Company. Incandescent lamp seal means. 4,238,705, Cl. 313-221.000.
Thomas, Haydon C.: *See*—
Keen, Harry J.; and Thomas, Haydon C., 4,238,784, Cl. 340-347.0NT.
Thomas, Jerald F.: *See*—
Gregory, Charles E.; Brian, Michael; Thomas, Jerald F.; and Cameron, James F., 4,237,934, Cl. 137-637.000.
Thompson, Edwin R., to Forox Corporation. Apparatus for loading film transparencies into pre-closed slide mounts. 4,237,678, Cl. 53-520.000.
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Malissin, Roland; and Lecomte, Daniel, 4,238,707, Cl. 315-175.000.
Thurman, Paul G., to G. B. Lewis Co. Three-position stacking tray. 4,238,032, Cl. 206-507.000.
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Grosser, Heinrich, 4,238,089, Cl. 244-3.130.
Tidwell Construction Company: *See*—
Tidwell, Franklin D., 4,238,333, Cl. 210-73.00W.
Tidwell, Franklin D., to Tidwell Construction Company. Waste water-oil separator. 4,238,333, Cl. 210-73.00W.
Tielens, Arther J.; Muller, Wolfgang; and Todtenhaupt, Erich K., to Ekato-Werk Erich Karl Todtenhaupt. Apparatus for extracting alumina from bauxite. 4,238,159, Cl. 366-327.000.
Tile Council of America, Inc.: *See*—
Burley, David R., 4,238,542, Cl. 428-58.000.
Timex Corporation: *See*—
Hochstrate, Paul, 4,238,793, Cl. 340-781.000.
Timm, Malvern K.; King, James D.; and Moore, David O., to Henny Penny Corporation. Humidified holding cabinet for foods. 4,237,623, Cl. 34-196.000.

Tioxide Group Limited: *See—*
Konig, Peter, 4,238,370, Cl. 252-461.000.

Tirino, Angelo C. Method and apparatus for making in a single operation a base and dental model including a tooth die with an integral bayonet type mounting pin. 4,238,189, Cl. 433-74.000.

Tischer, Peter, to Siemens Aktiengesellschaft. Arrangement for the production of electronic semiconductor components. 4,238,685, Cl. 250-492.00A.

Tischer, Werner: *See—*
Liebert, Karl-Heinz; Tischer, Werner; Deppenbrock, Josef; and Leberfinger, Kurt, 4,237,773, Cl. 91-467.000.

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Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,238,175, Cl. 425-83.100.

Tobias, Michael A.; and Lynch, Conrad L., to Mobil Oil Corporation. Thermosettable polyester resin compositions. 4,238,583, Cl. 525-443.000.

Tobias, Philip E. Scanning path alignment arrangement. 4,237,616, Cl. 33-286.000.

Toda, Tadahide; and Ueda, Tatehito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation for a diesel engine. 4,237,837, Cl. 123-119.00A.

Todd, Charles H., III; and Peavey, Hartley D., to Peavey Electronics Corporation. Method for forming the neck of a guitar. 4,237,944, Cl. 144-316.000.

Todd, John C. Method and apparatus for steam generation at the bottom of a well bore. 4,237,973, Cl. 166-59.000.

Todt, William H.: *See—*
Goldstein, Norman P.; and Todt, William H., 4,238,676, Cl. 250-370.000.

Todtenhaupt, Erich K.: *See—*
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Tohzuka, Takashi; and Ohsaka, Yohnosuke, to Daikin Kogyo Co., Ltd. Method for isomerization of fluorinated epoxy compounds. 4,238,416, Cl. 260-593.00H.

Tokai Denka Kogyo Kabushiki Kaisha: *See—*
Ohura, Osami; and Fujimoto, Osamu, 4,238,411, Cl. 260-513.700.

Tokuhara, Masaharu: *See—*
Hongu, Masayuki; Kawakami, Hiromi; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,238,771, Cl. 358-165.000.

Tokyo Aircraft Instrument Co., Ltd.: *See—*
Ikegami, Masahiro; Morikawa, Sennosuke; Yamashita, Keitaro; and Noguchi, Koji, 4,237,819, Cl. 118-658.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fujiki, Masao; Hamaoka, Hiromi; and Hattori, Toshiaki, 4,238,809, Cl. 360-131.000.
Nabae, Akira, 4,238,823, Cl. 363-138.000.
Okazaki, Takahisa, 4,237,902, Cl. 128-660.000.
Tomita, Seiji, 4,238,808, Cl. 360-74.200.
Torita, Fumio; and Nomura, Toshihiro, 4,237,565, Cl. 8-158.000.
Uehara, Haruo; and Miyoshi, Michizo, 4,237,970, Cl. 165-110.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Komori, Yuji, 4,238,738, Cl. 330-256.000.
Minami, Hiroshi; Kuze, Takashi; and Harao, Norio, 4,238,043, Cl. 220-2.10R.
Shimoma, Taketoshi, 4,238,751, Cl. 335-213.000.

Toll, Gunnar G.: *See—*
Jonsson, Bo R.; Toll, Gunnar G.; and Bodelind, Bo T. K., 4,238,041, Cl. 215-12.00R.

Tomita, Seiji, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape stop detecting mechanism. 4,238,808, Cl. 360-74.200.

Tomita, Shoji: *See—*
Sasaki, Susumu; Takemota, Tamikazu; and Tomita, Shoji, 4,238,428, Cl. 264-13.000.
Sasaki, Susumu; Takemota, Tamikazu; and Tomita, Shoji, 4,238,429, Cl. 264-13.000.

Tomlinson, Joe W. Energy conserving heating and air conditioning system. 4,237,966, Cl. 165-12.000.

Tommasino, Luigi: *See—*
Zapparoli, Giorgio; and Tommasino, Luigi, 4,238,309, Cl. 204-195.00R.

Tooling and Machine Development, Inc.: *See—*
Scott, Jimmie D., 4,237,802, Cl. 112-79.00A.

Torii, Sigeru; Tanaka, Hideo; and Kudai, Toshihiro, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Cyclopentanone intermediates 2-(benzothiazolyl-2). 4,238,615, Cl. 548-170.000.

Torita, Fumio; and Nomura, Toshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic washing machine. 4,237,565, Cl. 8-158.000.

Torr Vacuum Products, Inc.: *See—*
Norman, Arthur E., 4,237,920, Cl. 137-243.300.
Norman, Arthur E., 4,238,111, Cl. 251-193.000.

Toth, Vincent A.: *See—*
Kasner, William H.; Toth, Vincent A.; and Pleasance, Lyn D., 4,238,741, Cl. 331-94.5PE.

Towell, Billy H.: *See—*
Calderon, Reynaldo; and Towell, Billy H., 4,237,978, Cl. 166-311.000.

Towlsaver, Inc.: *See—*
Tucker, Council A.; and Gains, Oliver B., 4,238,056, Cl. 222-181.000.

Towmotor Corporation: *See—*
Higgins, Robert D.; and Wible, John E., 4,238,008, Cl. 180-77.0TC.
Hildebrecht, Harold V., 4,237,752, Cl. 74-878.000.
Termanini, Zafer, 4,237,875, Cl. 128-92.0BA.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Katayama, Nobuaki; and Koga, Hideaki, 4,237,745, Cl. 74-339.000.
Kato, Takashi; and Tanahashi, Toshio, 4,237,845, Cl. 123-191.00A.
Motosugi, Katsuhiko; Sekiya, Setsuro; Nohira, Hidetaka; Ito, Sumio; Ohki, Hisashi; and Kumai, Teruo, 4,237,826, Cl. 123-25.00R.
Toda, Tadahide; and Ueda, Tatehito, 4,237,837, Cl. 123-119.00A.
Yasumatsu, Jun, 4,238,129, Cl. 280-802.000.

Tra, Josef: *See—*
Musselmann, Walter; Rienecker, Reimund; Kinzler, Herbert; and Tra, Josef, 4,238,324, Cl. 209-255.000.

Tractel, S.A.: *See—*
Batreau, Bernard, 4,237,999, Cl. 182-19.000.

Trammell, Earl M., Jr. Door-lock button assembly. 4,238,133, Cl. 292-347.000.

Trekoval, Jiri: *See—*
Lochman, Lubomir; and Trekoval, Jiri, 4,238,588, Cl. 526-217.000.

Tremarco, Paul. Electrically heat tool. 4,238,665, Cl. 219-238.000.

Trepka, William J.; and Sonnenfeld, Richard J., to Phillips Petroleum Company. Hydrocarbon fuels with carburetor detergent properties. 4,238,202, Cl. 44-62.000.

Trepka, William J., to Phillips Petroleum Company. Orthoesters as coupling agents for producing novel polymers. 4,238,576, Cl. 525-271.000.

Tresouthick, Stewart W.: *See—*
Jarrett, Robert P.; and Tresouthick, Stewart W., 4,238,237, Cl. 106-100.000.

Trexler, Gene D. Box magazine replacement kit for bolt action rifles. 4,237,638, Cl. 42-6.000.

Trombatore, Edward T. Spatter screen for countertop mounting adjacent stove. 4,237,856, Cl. 126-299.00C.

Troutt, Raymond: *See—*
Battrick, Calvin H., 4,237,754, Cl. 81-71.000.

Truhan, Andrew. Hydrocarbon fume disposal system particularly for use in paint spray booths. 4,237,780, Cl. 98-115.0SB.

Trujillo, John J. Adjustable metering liquid dispenser. 4,238,052, Cl. 222-43.000.

Trumark, Inc.: *See—*
Satz, Mark V., 4,238,513, Cl. 426-59.000.

TRW Inc.: *See—*
Allen, Reginald A., 4,238,693, Cl. 307-221.00D.
Bayer, George S., 4,238,753, Cl. 336-178.000.
Lathlaen, Richard A., 4,237,844, Cl. 123-148.00E.

Tschebull, Wilhelm: *See—*
Schmidt, Alfred; and Tschebull, Wilhelm, 4,238,469, Cl. 423-489.000.

Tsubai, Yasuo; and Kondo, Toshiro, to Mitsubishi Paper Mills, Ltd. Compositions and methods for treating surface of lithographic printing plates. 4,238,279, Cl. 156-664.000.

Tsuboka, Eiichi; Kimura, Takeji; Yoshino, Hirokazu; Fujita, Tatuo; and Nakazawa, Masao, to Matsushita Electric Industrial Co., Ltd. Television receiver for display of plural video images including a displayed boundary between the images. 4,238,773, Cl. 358-183.000.

Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimogawa, Toshiaki, to Nippon Soken, Inc. Piston return stop device for seat belt tensioning device. 4,237,690, Cl. 60-635.000.

Tsumadori, Masaki: *See—*
Matsunaga, Kinjiro; Tsumadori, Masaki; and Nakagawa, Yunosuke, 4,238,057, Cl. 222-192.000.

Tsunekawa, Tokuichi: *See—*
Uchiyama, Takashi; Ohtaki, Shohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; and Aizawa, Hiroshi, 4,238,149, Cl. 354-128.000.

Tsunoda, Teruo: *See—*
Kato, Yoshiki; Ishihara, Heigo; Fukke, Hajime; Chiba, Katsuyoshi; Nagashiro, Waichi; Tsunoda, Teruo; and Mitsuya, Munehisa, 4,238,341, Cl. 252-62.540.

Tsuru, Tohru; and Haruyama, Shiro, to Shiro Haruyama. Corrosion rate measuring method and apparatus. 4,238,298, Cl. 204-1.00T.

Tsuzuki, Hanzou; and Mizuno, Mamoru, to Casio Computer Co., Ltd. Time data processing apparatus. 4,238,832, Cl. 364-705.000.

Tu, Hosheng; and Rojo, Juana E., to UOP Inc. Technique to reduce the zeolite molecular sieve solubility in an aqueous system. 4,238,243, Cl. 127-46.00B.

Tuchman, Walter L.: *See—*
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Powers, Robert L.; Prentice, Paul N.; Smith, John L.; and Tuchman, Walter L., 4,238,853, Cl. 375-2.000.
Ehrsam, William F.; Elander, Robert C.; Matyas, Stephen M.; Meyer, Carl H. W.; Smith, John L.; and Tuchman, Walter L., 4,238,854, Cl. 375-2.000.

Tucker, Council A.; and Gains, Oliver B., to Towlsaver, Inc. Soap dispenser having a pivotable dispensing lever and a rotatable flow valve. 4,238,056, Cl. 222-181.000.

Tunemoto, Daiei: *See—*
Kondo, Kiyosi; Suda, Minoru; and Tunemoto, Daiei, 4,238,396, Cl. 260-326.200.

Turlej, Zbigniew W.; and Hawken, Donald F., to Isotec Industries Limited. Optics for infrared intrusion detector. 4,238,675, Cl. 250-353.000.

Turner, Jerome A., to Turner Shoe Company, Inc. Running shoe with perforated midsole. 4,237,627, Cl. 36-129.000.

Turner, Paul N.: *See—*
Jenkins, Carl B., Jr.; Porenski, Harry S., Jr.; and Turner, Paul N., 4,237,909, Cl. 131-128.000.

Turner Shoe Company, Inc.: *See—*
Turner, Jerome A., 4,237,627, Cl. 36-129.000.

Turunen, Risto: *See—*
Huostila, Markku; Haapsaari, Timo; Suokas, Matti; and Turunen, Risto, 4,238,284, Cl. 162-207.000.

Tutas, Kurt: *See—*
Lehmann, Herbert; and Tutas, Kurt, 4,238,049, Cl. 220-331.000.

Tweed, Donald G.; and Morrow, Danny G., to Raychem Corporation. Electrical connector for heaters. 4,238,640, Cl. 174-87.000.

Twente Convenience Products b.v.: *See—*
Spilles, Theodor, 4,238,201, Cl. 44-51.000.

Tyler, Hugh J., to Robertshaw Controls Company. Method of making an electrical heater construction. 4,237,608, Cl. 29-857.000.

U.B.M. Hover Systems: *See—*
Bristow, Ian R., 4,237,992, Cl. 180-116.000.

Uchimura, Ryoji: *See—*
Harita, Akira; Morimoto, Tadashi; Kanatani, Toshio; and Uchimura, Ryoji, 4,238,121, Cl. 266-218.000.

Uchiyama, Takashi; Ohtaki, Shohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Flash camera system with daylight cutout control. 4,238,149, Cl. 354-128.000.

Ueda, Hiraki: *See—*
Sato, Tadao; Ueda, Hiraki; and Nakagawa, Kazuyuki, 4,238,423, Cl. 260-968.000.

Ueda, Tatehito: *See—*
Toda, Tadahide; and Ueda, Tatehito, 4,237,837, Cl. 123-119.00A.

Ueda, Toshitsugu; Ra, Seiki; and Noguchi, Masanori, to Yokogawa Electric Works, Ltd. Displaced position detecting device. 4,238,844, Cl. 367-117.000.

Uehara, Haruo; and Miyoshi, Michizo, to Haruo Uehara; and Tokyo Shibaura Denki Kabushiki Kaisha. Plate type condensers. 4,237,970, Cl. 165-110.000.

Uejima, Norikatsu: *See—*
Noguchi, Masaaki; Tanaka, Taro; Uejima, Norikatsu; Tanaka, Yukiyasu, deceased; Tanaka, Koichiro, successor; and Miyazaki, Mihoko, successor, 4,237,831, Cl. 123-51.0BA.

Uemori, Michie: *See—*
Uemori, Yukio; Uemori, Shigeko; Uemori, Terue; Uemori, Michie; Kamoshita, Tuguo; and Kamoshita, Masako, 4,237,639, Cl. 43-18.00R.

Uemori, Shigeko: *See—*
Uemori, Yukio; Uemori, Shigeko; Uemori, Terue; Uemori, Michie; Kamoshita, Tuguo; and Kamoshita, Masako, 4,237,639, Cl. 43-18.00R.

Uemori, Terue: *See—*
Uemori, Yukio; Uemori, Shigeko; Uemori, Terue; Uemori, Michie; Kamoshita, Tuguo; and Kamoshita, Masako, 4,237,639, Cl. 43-18.00R.

Uemori, Yukio; Uemori, Shigeko; Uemori, Terue; Uemori, Michie; Kamoshita, Tuguo; and Kamoshita, Masako. Telescopic fishing rod having means for extending and contracting same. 4,237,639, Cl. 43-18.00R.

Uenaka, Akimitsu: *See—*
Mizuguchi, Ryuzo; Takahashi, Atsushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,238,609, Cl. 544-158.000.

Uenishi, Akira: *See—*
Mathusima, Tokunori; Sato, Takeshi; and Uenishi, Akira, 4,237,668, Cl. 52-249.000.

Ueno, Atsuyuki, to Katsuhiro Okuho. Continuous electrolytic treatment of circulating washings in the plating process and an apparatus therefor. 4,238,314, Cl. 204-52.00Y.

Ueno, Yoshiki; and Hattori, Tadashi, to Nippon Soken, Inc. Air-fuel ratio detecting system. 4,237,839, Cl. 123-119.0EC.

Uetani, Yoshio; Taniguchi, Yasuyoshi; Yokoyama, Kenichi; Matsushima, Seiichi; and Kirihara, Sonae, to Hitachi Maxell, Ltd. Leakproof alkaline cell and its production. 4,238,555, Cl. 429-163.000.

Umann, Harry M.: *See—*
Riegelman, Harry M.; Paganelli, Anthony C.; Walker, John A.; Borden, Norris; Lawhead, Stephen A.; and Umann, Harry M., 4,237,560, Cl. 4-7.000.

Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Ishizuka, Masaaki; Morishima, Hajime; Matsumoto, Ikuo; and Yamamoto, Takuzo, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Pharmacological compound with immunopotentiating activity and production and uses thereof. 4,238,507, Cl. 424-319.000.

Umezawa, Hamao: *See—*
Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,238,391, Cl. 260-112.50R.

Union Carbide Corporation: *See—*
Reichle, Walter T., 4,238,627, Cl. 568-730.000.

Uniroyal, Inc.: *See—*
Rim, Yong S.; Nudenberg, Walter; Miller, Robert; and Cangelosi, Phillip J., 4,238,578, Cl. 525-309.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Bird, Roger; and Webb, Allen E., 4,238,420, Cl. 260-645.000.
Bird, Roger; and Webb, Allen E., 4,238,421, Cl. 260-645.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See—*
Hay, Andrew G.; and Mason, Peter R., 4,238,828, Cl. 364-559.000.
Hayward, Alan T. J., 4,237,921, Cl. 137-268.000.

U.S. Divers Co.: *See—*
Merrifield, Daniel B., 4,237,917, Cl. 137-116.300.

United States Gypsum Company: *See—*
Kinkade, William A.; and McCleary, Robert E., 4,238,238, Cl. 106-110.000.
Stone, Richard F., 4,238,445, Cl. 264-234.000.

United States of America
Agriculture: *See—*
Cobb, David L.; Doyle, Brian L.; Webster, James A.; and Smith, David H., Jr., 4,237,984, Cl. 172-554.000.

Air Force: *See—*
Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,238,197, Cl. 23-230.0HC.
Geary, Joseph M.; and Holmes, David F., 4,238,827, Cl. 364-521.000.
Griffin, Warren R., 4,238,602, Cl. 528-299.000.
Harp, Robert S.; and Russell, Kenneth J., 4,238,747, Cl. 333-228.000.
Redmond, William G., 4,238,716, Cl. 318-314.000.
von Gierke, Henning E.; and Cannon, Mark W., Jr., 4,238,772, Cl. 358-166.000.

America: *See—*
Albro, Phillip W.; Chae, Kun; Luster, Michael I.; and McKinney, James D., 4,238,472, Cl. 424-1.000.

Army: *See—*
French, John A., 4,238,090, Cl. 244-3.190.
Hannigan, Joseph F., 4,238,785, Cl. 343-112.00D.
Shreve, James S., 4,238,797, Cl. 343-100.0SA.

Energy: *See—*
Ahrens, Frederick W.; and Kartsounes, George T., 4,237,692, Cl. 60-659.000.
DeLuca, William H.; Hornstra, Fred, Jr; Gelb, George H.; Berman, Baruch; and Moede, Larry W., 4,238,721, Cl. 320-18.000.
Greiner, Norman R., 4,238,141, Cl. 350-162.00R.
Karplus, Henry H. B.; and Forster George A., 4,238,725, Cl. 324-56.000.
Liu, Chain T; Inouye, Henry; and Schaffhauser, Anthony C., 4,238,229, Cl. 75-122.000.

National Aeronautics & Space Administration: *See—*
Kinzler, Jack A., 4,237,662, Cl. 52-108.000.

Navy: *See—*
Bucaro, Joseph A.; and Carome, Edward F., 4,238,856, Cl. 455-614.000.
Champagne, Louis F., 4,238,742, Cl. 331-94.50G.
Gustafson, Paul R., 4,238,464, Cl. 423-230.000.
Keller, Teddy M.; and Griffith, James R., 4,238,601, Cl. 528-206.000.
McCool, John M.; Widrow, Bernard; Zeidler, James R.; Hearn, Robert H.; and Chabries, Douglas M., 4,238,746, Cl. 333-166.000.
Siegel, Moses; Cahall, Everett; Dunning, David; and Hammond, Joseph, 4,238,093, Cl. 244-63.000.

U.S. Philips Corporation: *See—*
Bril, Thijs W.; and Postma, Lambertus, 4,238,277, Cl. 156-643.000.
Carasso, Marino G.; Verboom, Johannes J.; and de Haan, Maarten R., 4,238,843, Cl. 365-234.000.
Dijkmans, Eise C.; and Brockmann, Klaus-Dieter K., 4,238,644, Cl. 179-81.00R.
Monnier, Michel J. C.; Monneraye, Marc A.; and Foucher, Claude, 4,238,527, Cl. 427-55.000.
Naaijer, Geert J., 4,238,820, Cl. 363-43.000.
Schiek, Burkhard; Schilz, Wolfram; and Jacobson, Rolf, 4,238,795, Cl. 343-14.000.

United States Steel Corporation: *See—*
Aiken, John E.; and Didycz, William J., 4,238,460, Cl. 423-210.000.
Golas, Eugene A.; and Rege, Robert A., 4,238,227, Cl. 75-58.000.
Jarrett, Robert P.; and Tresouthick, Stewart W., 4,238,237, Cl. 106-100.000.

United States Vacuumite Corporation: *See—*
Phillips, Harold L., 4,238,430, Cl. 264-15.000.

United Technologies Corporation: *See—*
Eckler, Thomas A.; and Manty, Brian A., 4,238,310, Cl. 204-252.000.
Robideau, Brian A.; and Niiler, Juri, 4,238,170, Cl. 415-172.00A.

University of Delaware: *See—*
Hunsperger, Robert G., 4,238,759, Cl. 357-28.000.
Zikakis, John P., 4,238,566, Cl. 435-189.000.

University of Utah: *See—*
Shabtai, Joseph, 4,238,364, Cl. 252-455.00R.

Uno, Hitoshi; Nagai, Yasutaka; and Nakamura, Hideo, to Dainippon Pharmaceutical Co., Ltd. Dibenz[b,f]oxepin and dibenzo[b,f]thiepin derivatives, process for preparation thereof, method of using the same, and compositions thereof. 4,238,620, Cl. 549-13.000.

Unvala, Hoshang A., to Perkin-Elmer Corporation, The. Curvature correction. 4,238,830, Cl. 364-573.000.

UOP Inc.: *See—*
Antos, George J., 4,238,363, Cl. 252-439.000.
Antos, George J., 4,238,365, Cl. 252-441.000.
Antos, George J., 4,238,366, Cl. 252-441.000.
Maffet, Vere, 4,237,618, Cl. 34-12.000.
Tu, Hosheng; and Rojo, Juana E., 4,238,243, Cl. 127-46.00B.

Uphoff, John W., to Brunswick Corporation. Composition and process for delustering plastisol films. 4,238,382, Cl. 260-33.4SB.

Upjohn Company, The: *See—*
Johnson, Roy A., 4,238,605, Cl. 542-422.000.
Morton, Douglas R., Jr., 4,238,414, Cl. 260-563.00P.
Roseman, Theodore J.; Carpenter, Osmer C.; Baker, Richard W.; and Ayres, James W., 4,237,888, Cl. 128-270.000.
Wiley, Paul F.; and Houser, David J., 4,238,398, Cl. 260-340.300.

Urquhart, Andrew W.: *See—*
Williams, Cedric D.; Urquhart, Andrew W.; Walker, James L.; Proebstle, Richard A.; and Black, Timothy J., 4,238,251, Cl. 148-133.000.

Urushida, Yoshihisa, to Citizen Watch Co., Ltd. Anesthesia apparatus. 4,237,925, Cl. 137-552.000.

Urushizaki, Sakae. Adhesive tape applicator. 4,238,271, Cl. 156-523.000.

Usenko, Vladimir I.: *See—*
Korzhov, Mikhail A.; Novikov, Leonid N.; Makarov, Vyacheslav N.; Onkova, Olga L.; Mishunin, Vladimir V.; Usenko, Vladimir I.; and Bendersky, Alexandr F., 4,237,848, Cl. 123-242.000.

Uskokovic, Milan R.: *See—*
Grethe, Guenter; Uskokovic, Milan R.; and Sereno, John, 4,238,399, Cl. 260-345.90R.

Usui, Koichi: *See—*
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,238,346, Cl. 252-174.250.

Valdez, Arthur F. Guitar body with improved neck structure. 4,237,765, Cl. 84-293.000.

Valleylab, Inc.: *See—*
Gonser, Donald I., 4,237,887, Cl. 128-303.140.

Van Mark Products Corporation: *See—*
Onisko, William, 4,237,716, Cl. 72-319.000.

Van Anrooy, Peter H.: *See—*
Rzeszewski, Theodore S.; and Van Anrooy, Peter H., 4,238,769, Cl. 358-154.000.

Vance, Ian A. W., to International Standard Electric Corporation. Transmitter/receiver for single channel duplex communication system. 4,238,850, Cl. 370-27.000.

Vandenbossche, Christian; Danneels, Laurent; and Vanhumbeeck, Jacky, to Siemens Aktiengesellschaft. Process for the determination of the content of solid, dissolved and with water immiscible organic substances in water. 4,238,297, Cl. 204-1.00T.

Van den Bossche, Henri A., to National Distillers and Chemical Corporation. Catalyst spray nozzle. 4,238,453, Cl. 422-131.000.

Vandenhoeck, J. Paul. Self-cleaning heat exchanger. 4,237,962, Cl. 165-1.000.

van der Lely, Cornelis. Mowing machine. 4,237,679, Cl. 56-13.600.

Van der Wiele, Gerrit. Process for stabilizing hydraulic binding agent and briquettes prepared therefrom. 4,238,235, Cl. 106-89.000.

Vandling, John M., to Exxon Research & Engineering Co. Facsimile receiver signaling. 4,238,775, Cl. 358-257.000.

Vanhumbeeck, Jacky: *See—*
Vandenbossche, Christian; Danneels, Laurent; and Vanhumbeeck, Jacky, 4,238,297, Cl. 204-1.00T.

Van Mechelen, Bernard. Reciprocating wind engine. 4,238,171, Cl. 416-67.000.

Van Mullekom, Hubert P., to Ruti-Te Strake B.V. Apparatus for forming a supply coil from a thread supplied from a yarn stock. 4,238,080, Cl. 242-47.120.

Varadan, Rajan, to Roper Industries, Inc. Oldham type coupling and pump embodying the same. 4,237,704, Cl. 64-31.000.

Varian Associates, Inc.: *See—*
Muller, Luciano, 4,238,735, Cl. 324-310.000.

Varta Batterie, A.G.: *See—*
Schulte, Heinrich; and Kirchhoff, Werner, 4,238,557, Cl. 429-212.000.

Vasalos, Iacovos A.; Ford, William D.; and Hsieh, Chuan-Kang R., to Standard Oil Company (Indiana). Catalytic cracking with reduced emission of noxious gases. 4,238,317, Cl. 208-120.000.

Veach, Billy B. R.: *See—*
Connor, Frank G.; and Veach, Billy B. R., 4,237,850, Cl. 123-557.000.

Veitscher Magnesitwerke-Actien-Gesellschaft: *See—*
Weiss, Franz; Waisnix, Franz; Baumgartner, Friedrich; and Zach, Werner, 4,238,076, Cl. 239-676.000.

Velikoselsky, Nikolai D.: *See—*
Azovtsev, Alexandr A.; Velikoselsky, Nikolai D.; Vinogradov, Sergei S.; Vorontsov, Alexei E.; Kuznetsov, Lev E.; Podbeltsev, Viktor I.; Polevikov, Mikhail E.; Sviridov, Georgy M.; Fadeev, Valery G.; and Cherevaty, Anatoly A., 4,238,037, Cl. 212-3.00R.

Verboom, Johannes J.: *See—*
Carasso, Marino G.; Verboom, Johannes J.; and de Haan, Maarten R., 4,238,843, Cl. 365-234.000.

Vercellotti, Leonard C.; and Johnson, Richard A., to Westinghouse Electric Corp. Capacitive angular displacement transducer for remote meter reading. 4,238,781, Cl. 340-200.000.

Verdol S.A.: *See—*
Mathiolon, Henri; and Hourmagne, Jean, 4,237,683, Cl. 57-58.860.

Vianova Kunstharz, A.G.: *See—*
Pampouchidis, Georgios, 4,238,594, Cl. 528-69.000.

Vickers Limited: *See—*
Osmotherley, Owen B.; and Lowes, John M., 4,238,067, Cl. 228-107.000.

Victor Company of Japan, Ltd.: *See—*
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Villavicencio, Eduardo J., to Process Evaluation & Development Corporation. Bagasse preparation. 4,237,582, Cl. 19-7.000.

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Vinick, Fredric J., to Pfizer Inc. Purification of L-aspartyl-L-phenylalanine alkyl esters. 4,238,392, Cl. 260-112.50R.

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Azovtsev, Alexandr A.; Velikoselsky, Nikolai D.; Vinogradov, Sergei S.; Vorontsov, Alexei E.; Kuznetsov, Lev E.; Podbeltsev, Viktor I.; Polevikov, Mikhail E.; Sviridov, Georgy M.; Fadeev, Valery G.; and Cherevaty, Anatoly A., 4,238,037, Cl. 212-3.00R.

Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Korolkov, Anatoly G.; Popov, Jury S.; Rozenfeld, Lev M.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M. Electrical machine having an improved cooling system for a rotary superconductive winding. 4,238,700, Cl. 310-52.000.

Virginia Door Co.: *See—*
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Voest-Alpine Aktiengesellschaft: *See—*
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Vogel, Karl: *See—*
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Vogel, Roger F.: *See—*
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Vogt, Kuno J. Easy opening top closure member for a container. 4,238,046, Cl. 220-269.000.

Voinich, Leonid K.: *See—*
Brimmer, Alexandr A.; Berezov, Semen I.; Deinego, Jury B.; Demidov, Vladimir Y.; Voinich, Leonid K.; and White, Lorell, 4,237,748, Cl. 74-732.000.

Volk, Murray E.: *See—*
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Volkmann, Josef F., to Hi-Shear Corporation. Blind fastener. 4,237,768, Cl. 85-73.000.

Vonder, David L., to GTE Automatic Electric Laboratories Incorporated. Cam actuated switching device. 4,238,655, Cl. 200-153.0LA.

von Gierke, Henning E.; and Cannon, Mark W., Jr., to United States of America, Air Force. Image enhancement using on-line spatial filtering. 4,238,772, Cl. 358-166.000.

Vorontsov, Alexandr I.: *See—*
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Vratny, Frederick, to Bell Telephone Laboratories, Incorporated. High-power X-ray source. 4,238,682, Cl. 250-420.000.

Wacula, Klaus P.; and Emmerling, Karl, to Diehl GmbH & Co. Incendiary projectile. 4,237,787, Cl. 102-52.000.

Wagner, David P., to Illinois Tool Works Inc. Fastener unit for clamping plastic workpieces. 4,238,165, Cl. 403-408.000.

Wagner, Kuno: *See—*
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Wagner, Laurence. Anti-theft fastener. 4,237,949, Cl. 151-67.000.

Wahl, Thomas V., Jr., to Caterpillar Tractor Co. Magnetic governor drive coupling. 4,237,703, Cl. 64-28.00M.

Waisnix, Franz: *See—*
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Walker, George W., to Caterpillar Tractor Co. Fluid flow shutoff valve. 4,237,926, Cl. 137-565.000.

Walker, James L.: *See—*
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Walker, John A.: *See—*
Riegelman, Harry M.; Paganelli, Anthony C.; Walker, John A.; Borden, Norris; Lawhead, Stephen A.; and Umann, Harry M., 4,237,560, Cl. 4-7.000.

Walker, Loren H., to General Electric Company. Method and apparatus for a variable frequency inverter system having commutation fault detection and correction capabilities. 4,238,821, Cl. 363-58.000.

Wallace, John M. Head lamp control circuit. 4,238,709, Cl. 315-291.000.

Wallis, Roger E.; and Chamberlain, Michael R., to Wiggins Teape Group Limited, The. Photographic support. 4,238,280, Cl. 162-157.00R.

Wallot, George P., to General Electric Company. Circuit for selective individual operation of multiple arc discharge lamps. 4,238,711, Cl. 315-324.000.

Wamser, Christian A.: *See—*
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Wang, Chih-Chung, to Kennecott Copper Corporation. Tubing with copper-boron carbide composite facing and methods for its production. 4,238,299, Cl. 204-16.000.

Ward, Lowell G.: *See—*
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Warren, Brian T.; and Spicer, John W., to Miles Laboratories, Inc. 1-(4-Cyano-phenoxy)-2-hydroxy-3-[2-(5-1H-tetrazolyl)-chromon-5-yloxy]-propane and salts thereof. 4,238,495, Cl. 424-269.000.

Warren, Lynda K.: *See—*
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Warren, W. Thomas, to Xerox Corporation. Stitching method and apparatus for multiple nozzle ink jet printers. 4,238,804, Cl. 346-75.000.

Warshaw, Saul; and Loveland, Winton S., to Loveshaw Corporation, The. Tape pressing roller set applying different wipe down pressures. 4,238,270, Cl. 156-468.000.

Wartes, Lloyd L., to Ecothermia, Inc. Solar collector for gaseous heat exchange media. 4,237,870, Cl. 126-450.000.

Waser, Shlomo: *See—*
Ghest, Robert C.; Birkner, John M.; Waser, Shlomo; and Chua, Hua T., 4,238,833, Cl. 364-760.000.

Washkewicz, Donald E., to Parker-Hannifin Corporation. Method of making an elastomeric hose. 4,238,260, Cl. 156-149.000.

Watanabe, Eiki; and Anzai, Nobuo, to Mitsubishi Denki Kabushiki Kaisha. Deceleration controlling apparatus for elevator. 4,238,005, Cl. 187-29.00R.

Watanabe, Itaru: *See—*
Koshiga, Fusao; Tanaka, Jinkichi; Watanabe, Itaru; Suzuki, Motoaki; Kojima, Toshifumi; Matsubara, Hiroyoshi; Osuka, Tatsumi; Takeshige, Kenji; Nagamine, Takashi; and Hirano, Osamu, 4,238,659, Cl. 219-61.000.

Watanabe, Sakuji: *See—*
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Watanabe, Tsuyoshi: *See—*
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Watson, Kenneth, to Telegan Limited. Control system for a burner. 4,238,185, Cl. 431-76.000.

Wean United, Inc.: *See—*
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Weddigen, Gert; Houpert, Bernd; and Gerlach, Monika, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical storage cell. 4,238,553, Cl. 429-104.000.

Wedemeyer, Karlfried: *See—*
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Weems, Sterling J.; and McCurdy, Harold W., to Westinghouse Electric Corp. Nuclear reactor condenser door arrangement. 4,238,289, Cl. 176-38.000.

Wegener, Walter: *See—*
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Wehde, Heinz, to TELDIX GmbH. Apparatus for monitoring the yarn produced by an open-end spinning turbine. 4,238,789, Cl. 340-677.000.

Weibrecht, Edwin C.: *See—*
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Keith, Dennis D.; and Weigele, Manfred, 4,238,622, Cl. 560-39.000.

Weihrauch, Georg, to Coronet-Werke Heinrich Schlerf GmbH. Device for releasably securing a cleaning implement to a handle. 4,237,573, Cl. 15-145.000.

Weinberg, Norman L., to Minrad Corporation. Radiographic image enhancement. 4,238,563, Cl. 430-367.000.

Weir, Henry J., to Beta S.A. Apparatus for folding and stacking of pieces of laundry. 4,238,060, Cl. 223-37.000.

Weise, Stanley A., to Dresser Industries, Inc. Valve for hydraulic setting packer setting tool and method of setting a hydraulically settable packer therewith. 4,237,979, Cl. 166-315.000.

Weiss, Alvin H. Glycolaldehyde or ethylene glycol from formaldehyde. 4,238,418, Cl. 260-602.000.

Weiss, Franz; Waisnix, Franz; Baumgartner, Friedrich; and Zach, Werner, to Veitscher Magnesitwerke-Actien-Gesellschaft. Apparatus for building up and repairing the refractory lining of industrial furnaces and hot-running vessels. 4,238,076, Cl. 239-676.000.

Welch, Anthony H. E., to Dorgard Limited. Releasable retaining means and fire door control system. 4,237,578, Cl. 16-48.500.

Welch, Jay V.: *See—*
Ellerbe, Roger A.; Welch, Jay V.; and Miller, Roy L., 4,238,068, Cl. 229-39.00R.

Welch, Melvin B.: *See—*
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Wells, Peter M., Jr.; and Oprins, Johannes A. E., to Ideal Industries, Inc. Voltage tester housing with prod retaining channels. 4,238,728, Cl. 324-149.000.

Wells, Roger D.: *See—*
Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., 4,238,805, Cl. 346-75.000.

Welsch, John H.; and Nicely, Charles W., to Metropolitan Wire Corporation. Adjustable shelving. 4,237,798, Cl. 108-111.000.

Welsch, Walter N.; and Fleckenstein, Elwin H., to Dynabrade, Inc. Quick change adapter for mounting rotatable grinding elements. 4,237,659, Cl. 51-168.000.

Wenger Corporation: *See—*
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Wenger, Jerry A.: *See—*
Clausen, Herman A.; Boeddeker, David R.; Johnson, Logan W.; and Wenger, Jerry A., 4,238,097, Cl. 248-188.700.

Wepner, Joachim; and Zuhlke, Jochen, to Peddinghaus, Rolf. Process and equipment for the production of semi-finished sections of accurate weight or volume for cold working or hot forming. 4,238,718, Cl. 318-626.000.

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Western Kentucky University: *See—*
Holy, Norman L.; Logan, William A.; and Stein, Karl D., 4,238,358, Cl. 252-431.00C.

Westfall, Kirk M. Hydrodynamically and aerodynamically designed boat. 4,237,810, Cl. 114-272.000.

Westinghouse Air Brake Company: *See—*
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Duke, James M., 4,237,968, Cl. 165-70.000.
Goldstein, Norman P.; and Todt, William H., 4,238,676, Cl. 250-370.000.
Immel, Ralph B., 4,238,756, Cl. 338-304.000.
Kasner, William H.; Toth, Vincent A.; and Pleasance, Lyn D., 4,238,741, Cl. 331-94.5PE.
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Wetterhorn, Richard H., to Dresser Industries, Inc. Pressure measuring sub-assembly and amplifier support therefore. 4,237,738, Cl. 73-740.000.

Whalley, Wilfrid B., to Critical Systems, Inc. Apparatus for heating tissue and employing protection against transients. 4,237,898, Cl. 128-422.000.

Wheeler, Raymond R. Carrier for garment hangers. 4,238,062, Cl. 224-45.00T.

White, Dwain M., to General Electric Company. Urethane-coupled block polymers of quinone-coupled polyphenylene oxides. 4,238,581, Cl. 525-395.000.

White, Dwain M., to General Electric Company. Block polymers of polyphenylene oxide and polystyrene. 4,238,584, Cl. 525-534.000.

White, Dwain M.: *See—*
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White, Maurice J. E. Dental product. 4,237,911, Cl. 132-89.000.
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Wiebalck, Rainar. Model aircraft with altitude change indicating means. 4,238,791, Cl. 340-694.000.
Wiener, Dieter; Koch, Klaus; and Pomp, Jurgen, to Liebherr-Verzahntechnik GmbH. Dressing tool for the grinding wheel of a gear grinding machine. 4,237,852, Cl. 125-11.00R.
Wiese, Wolfgang: *See—*
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Wiley, Paul F.; and Houser, David J., to Upjohn Company, The. Antibiotics 7(R)-0-alkylnogalarols. 4,238,398, Cl. 260-340.300.
Wilhelm Fette GmbH: *See—*
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Williams, Cedric D.; Urquhart, Andrew W.; Walker, James L.; Proebstle, Richard A.; and Black, Timothy J., to General Electric Company. Zirconium alloy heat treatment process and product. 4,238,251, Cl. 148-133.000.
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Williams, James R. Adjustable locator for furring strips. 4,237,614, Cl. 33-180.00R.
Williams, John L., to Mead Corporation, The. Automatic forward-feed shelf. 4,238,022, Cl. 193-32.000.
Williamson, David T. N., to Molins Limited; and Smith, John C., Jr. Manufacturing processes using machine tools. 4,237,598, Cl. 29-568.000.
Willingham, Wendell D., to Owens-Illinois, Inc. Core pin cooling for high speed injection molding apparatus. 4,238,106, Cl. 249-79.000.
Wilmes, Richard J., to Andersen Corporation. Sliding door unit. 4,237,664, Cl. 52-209.000.
Wilson, Alfred P., to Standard Oil Company (Indiana). Compositions of ethylene-propylene-diene ionic polymers and poly(alpha-methylstyrene). 4,238,376, Cl. 260-23.70M.
Wilson, Gunnar T.: *See—*
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Wilson, Phillip M., to Kobe, Inc. Hydraulic well pumping method. 4,237,976, Cl. 166-297.000.
Wingard, Robert E., Jr.: *See—*
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Winter, Kevin J. Hand held tool appliance. 4,237,762, Cl. 83-745.000.
Witzel, Frank; Puglia, Wayne J.; Clark, K. Warren; and Mackay, Donald A. M., to Life Savers Inc. Chewing cum capable of releasing finely divided water-insoluble materials therefrom. 4,238,475, Cl. 424-48.000.
Wolf, Bernard A. Fluid processor apparatus and method. 4,238,326, Cl. 210-23.00R.
Wolf, Franz J. Method of making a two-part pressure relief valve. 4,237,593, Cl. 29-157.10R.
Wolff, Robert, to Better Built Machinery Corporation. Steam sterilizing process. 4,238,447, Cl. 422-26.000.
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Wong, Patrick S. L.; and Pharriss, Bruce B., to Alza Corporation. Delivery system with mated members for storing and releasing a plurality of beneficial agents. 4,237,885, Cl. 128-260.000.
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Woolhouse, Geoffrey R.; Huggins, Harold A.; and Collins, David W., to Exxon Research & Engineering Co. Method of cleaving semiconductor diode laser wafers. 4,237,601, Cl. 29-583.000.
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Work, Gerald L., to Wilbert, Inc. Combination burial vault and casket and funeral and burial method or system. 4,237,590, Cl. 27-35.000.
Wossner, Felix; and Handke, Gunther, to Fichtel & Sachs AG. Vibration damper for vehicles. 4,238,009, Cl. 188-315.000.
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Yagupov, Alexandr V., to Severo-Kavkazsky Gorno-Metallurgichesky Institute. Apparatus for disintegrating a lumped material. 4,238,078, Cl. 241-46.020.
Yamada, Kazuo; Mikami, Koji; and Imaizumi, Shigetake, to Mitsubishi Aluminum Kabushiki Kaisha. Aluminum alloy for cladding excellent in sacrificial anode property and erosion-corrosion resistance. 4,238,233, Cl. 75-146.000.
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Yamamoto, Tomio; Hanafusa, Hideyuki; Seno, Kouji; Mihara, Toshiro; and Ishida, Isoshiro, to Futec Inc. Method of examining the surface of a continuously cast metal strip for detection of scarfs appearing thereon and apparatus for the same. 4,237,959, Cl. 164-4.000.
Yamao, Chishiro. Sliding door. 4,237,655, Cl. 49-252.000.
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Yasukawa, Shozo; Nakamura, Akinori; and Yamada, Takamitsu, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Arc furnace for making steel from directly reduced iron. 4,238,632, Cl. 13-9.00R.
Yasumatsu, Jun, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seatbelt system. 4,238,129, Cl. 280-802.000.
Yates, Derek N.; and Presta, John C., to Celanese Corporation. Fiber reinforced composite shaft with metallic connector sleeves mounted by a knurl interlock. 4,238,539, Cl. 428-36.000.
Yates, Derek N.; and Presta, John C., to Celanese Corporation. Fiber reinforced composite shaft with metallic connector sleeves mounted by connector ring interlock. 4,238,540, Cl. 428-36.000.
Yates, Leonard S., to International Business Machines Corporation. Apparatus for coordinating real time transfer of data from a processor to a magnetic media device. 4,238,834, Cl. 364-900.000.

Yeh, Richard S. Cards for learning pronunciations. 4,237,624, Cl. 35-35.00C.
Yelland, Michael, to Imperial Chemical Industries Limited. Anthraquinone dyes. 4,238,400, Cl. 260-372.000.
Ygnard, Michel C. M., to Societe Anonyme Francaise du Ferodo. Brake having a ring-like braking member. 4,238,007, Cl. 188-76.000.
Yokogawa Electric Works, Ltd.: *See—*
Ueda, Toshitsugu; Ra, Seiki; and Noguchi, Masanori, 4,238,844, Cl. 367-117.000.
Yokoyama, Kazuo; Nichiyama, Ryuji; and Yonezawa, Taketoshi, to Matsushita Electric Industrial Co., Ltd. Magnetic head and method for preparing the same. 4,238,215, Cl. 65-43.000.
Yokoyama, Kenichi: *See—*
Uetani, Yoshio; Taniguchi, Yasuyoshi; Yokoyama, Kenichi; Matsushima, Seiichi; and Kirihara, Sonae, 4,238,555, Cl. 429-163.000.
Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Biasing arrangement for a push-pull amplifier. 4,238,737, Cl. 330-255.000.
Yonemori, Yoshinori: *See—*
Kobayashi, Toshiyuki; Nakai, Hideharu; Kai, Isao; and Yonemori, Yoshinori, 4,237,878, Cl. 128-214.00E.
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Yokoyama, Kazuo; Nichiyama, Ryuji; and Yonezawa, Taketoshi, 4,238,215, Cl. 65-43.000.
Yoshida, Kei, to Bell Telephone Laboratories, Incorporated. Gold electroplating process. 4,238,300, Cl. 204-46.00G.
Yoshida Kogyo Co., Ltd.: *See—*
Hatakeyama, Yoshiharu; and Kizawa, Ichiro, 4,238,042, Cl. 215-334.000.
Yoshida Kogyo K. K.: *See—*
Sawada, Mitsuo; and Morita, Toyoo, 4,237,604, Cl. 29-766.000.
Yoshida, Motoharu; and Masai, Hiroto, to Aisin Seiki Kabushiki Kaisha. Viscous fluid coupling device. 4,238,016, Cl. 192-58.00B.
Yoshida, Yuzuru, to Aupac Kabushiki Kaisha. Brush device for a miniature electric motor. 4,238,703, Cl. 310-242.000.
Yoshihara, Hideo; Kiuchi, Mikiho; Nakayama, Satoshi; Hayasaka, Toa; and Matsui, Junji, to Nippon Electric Co., Ltd. Soft x-ray source and method for manufacturing the same. 4,238,706, Cl. 313-330.000.
Yoshikawa, Kiyomitsu: *See—*
Hirakawa, Tadashi; Yoshikawa, Kiyomitsu; and Kusubayashi, Toshiaki, 4,238,024, Cl. 198-425.000.
Yoshikawa, Ryoichi, to Canon Kabushiki Kaisha. Pentaprism mount assembly. 4,238,151, Cl. 354-152.000.
Yoshino, Hirokazu: *See—*
Tsuboka, Eiichi; Kimura, Takeji; Yoshino, Hirokazu; Fujita, Tatuo; and Nakazawa, Masao, 4,238,773, Cl. 358-183.000.
Yoshioka, Hiroshi: *See—*
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Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,238,391, Cl. 260-112.50R.
Young, John O. Coil spring compressing tool. 4,237,594, Cl. 29-227.000.
Young, Randall A., to Stauffer Chemical Company. Method for oil-treating insoluble sulfur. 4,238,470, Cl. 423-567.00R.
Young, Rodney C.: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,238,493, Cl. 424-263.000.
Roantree, Michael L.; and Young, Rodney C., 4,238,494, Cl. 424-263.000.
Zabielski, Frank; and Spector, George. Handi crutch. 4,237,915, Cl. 135-68.000.
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Zakharova, Maia S.; Polyakov, Nikolai G.; Lapitsky, Viktor N.; Ioffe, Benyamin A.; Kalnyn, Robert K.; Krymtsov, Anatoly V.; Podolsky, Vladimir, deceased; by Podolsky, Sergei V., executor; and by Podolskaya, Natalia V., executor. Method of and apparatus for electrodynamic separation of nonmagnetic free-flowing materials. 4,238,323, Cl. 209-212.000.
Zally, William J.: *See—*
Field, George F.; and Zally, William J., 4,238,610, Cl. 544-283.000.
Zambrano, Adolfo R.; and Hansen, Barry J., to Hanna Mining Company, The. Absorption of sulfur dioxide from gases by ferrous sulfate. 4,238,466, Cl. 423-244.000.
Zanier, Stelio: *See—*
Bettanini, Carlo; Zanier, Stelio; and Enrici, Margherita, 4,238,223, Cl. 75-10.00R.
Bettanini, Carlo; Zanier, Stelio; and Enrici, Margherita, 4,238,224, Cl. 75-10.00A.
Zantzinger, Richard C., Jr. Multiple-row tobacco harvesting machine. 4,237,681, Cl. 56-27.500.
Zapara, Gerald A.; and Zapara, Lyle G. Laminated wood warehouse support structure. 4,237,797, Cl. 108-59.000.
Zapara, Lyle G.: *See—*
Zapara, Gerald A.; and Zapara, Lyle G., 4,237,797, Cl. 108-59.000.
Zapparoli, Giorgio; and Tommasino, Luigi, to Comitato Nazionale per l'Energia Nucleare—CNEN. Apparatus for electrochemical development of nuclear radiation tracks. 4,238,309, Cl. 204-195.00R.
Zborowski, Ronald W., to RCA Corporation. Parallel operation of multiple TV transmitters. 4,238,855, Cl. 455-103.000.
Zeidler, James R.: *See—*
McCool, John M.; Widrow, Bernard; Zeidler, James R.; Hearn, Robert H.; and Chabries, Douglas M., 4,238,746, Cl. 333-166.000.
Zeiffer, Dieter F.: *See—*
Clifford, Graham F.; and Zeiffer, Dieter F., 4,237,818, Cl. 118-410.000.
Zeltzer, Lee B. Waterbed construction. 4,237,564, Cl. 5-400.000.
Zengel, Hans; Bergfeld, Manfred; Zielke, Rainer; and Klimesch, Erich, to Akzona Incorporated. Process for the preparation of isocyanate derivatives of aliphatic, cycloaliphatic, and araliphatic compounds. 4,238,404, Cl. 260-453.00P.
Zielke, Rainer: *See—*
Zengel, Hans; Bergfeld, Manfred; Zielke, Rainer; and Klimesch, Erich, 4,238,404, Cl. 260-453.00P.
Zievers, James F., to Industrial Filter Corporation. Process for recovering heavy metal using insoluble starch-xanthates. 4,238,329, Cl. 210-36.000.
Zikakis, John P., to University of Delaware. Xanthine oxidase. 4,238,566, Cl. 435-189.000.
Zingaro, Josephine, executrix: *See—*
Sicignano, Albert; Zingaro, William P., deceased; and Zingaro, Josephine, executrix, 4,238,529, Cl. 427-160.000.
Zingaro, William P., deceased: *See—*
Sicignano, Albert; Zingaro, William P., deceased; and Zingaro, Josephine, executrix, 4,238,529, Cl. 427-160.000.
Zinniger, Theodore C., to Kaiser Aluminum & Chemical Corporation. Direct chill casting method with coolant removal. 4,237,961, Cl. 164-89.000.
Ziolo, Ronald F., to Xerox Corporation. Low density magnetic polymer carrier materials produced by metal carbonyl thermal decomposition. 4,238,558, Cl. 430-108.000.
Zoecon Corporation: *See—*
Henrick, Clive A., 4,238,614, Cl. 546-301.000.
Zommer, Jury A.: *See—*
Kalnin, Robert K.; Ioffe, Benyamin A.; Zommer, Jury A.; Sermons, Gunar Y.; Kern, Ivan I.; and Kipers, Jury J., 4,238,658, Cl. 219-9.500.
Zucker, Jerry, to Hudson Pulp & Paper Corp. Digester system for delivering wood chips in an even layer into a digester. 4,238,285, Cl. 162-242.000.
Zucker, Jerry, to Raybestos-Manhattan, Inc. Method for improved recovery of tall oil from black liquors. 4,238,304, Cl. 204-131.000.
Zuhlke, Jochen: *See—*
Wepner, Joachim; and Zuhlke, Jochen, 4,238,718, Cl. 318-626.000.
Zverev, Anatoly T.: *See—*
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Zweig, Walter L.: *See—*
Boettcher, Charles W., Jr.; Hamilton, Billy H.; and Zweig, Walter L., 4,238,688, Cl. 307-20.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Krautkramer-Branson, Incorporated: *See—*
Niklas, Ludwig, Re. 30,443, Cl. 73-602.000.

Niklas, Ludwig, to Krautkramer-Branson, Incorporated. Real-time ultrasonic imaging apparatus. Re. 30,443, Cl. 73-602.000.
Spann, Donald C. Orthopedic support. Re. 30,444, Cl. 128-80.00A.

LIST OF DESIGN PATENTEES

A B Svenska Bakugnsfabriken: *See—*
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Bondeson, Leif S., to Platmanufaktur AB. Free-standing refuse chute. 257,611, 12-9-80, Cl. D7-194.000.
Branner, Leah R.; and Carrothers, Lea. Signal wand. 257,614, 12-9-80, Cl. D10-114.000.
Brown, Robert H. Entry pool for an amusement water slide. 257,618, 12-9-80, Cl. D21-252.000.
Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., to MSI Data Corporation. Customer satisfaction terminal, or the like. 257,616, 12-9-80, Cl. D14-45.000.
Carrothers, Lea: *See—*
Branner, Leah R.; and Carrothers, Lea, 257,614, Cl. D10-114.000.
Chartier, Lenore R. Hair curl protector. 257,620, 12-9-80, Cl. D28-40.000.
Collins, Walter W.: *See—*
Goldin, Jerry H.; and Collins, Walter W., 257,612, Cl. D8-99.000.
Cyplik, Kathryn L., to Beatrice Foods Co. Flexible covering for partitions or the like. 257,598, 12-9-80, Cl. D6-139.000.
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Cyplik, Kathryn L., to Beatrice Foods Co. Flexible covering for partitions or the like. 257,600, 12-9-80, Cl. D6-139.000.
Cyplik, Kathryn L., to Beatrice Foods Co. Panel for partitions or the like. 257,601, 12-9-80, Cl. D6-139.000.
Cyplik, Kathryn L., to Beatrice Foods Co. Panel for partitions or the like. 257,602, 12-9-80, Cl. D6-139.000.
Cyplik, Kathryn L., to Beatrice Foods Co. Panel for partitions or the like. 257,603, 12-9-80, Cl. D6-139.000.
Cyplik, Kathryn L., to Beatrice Foods Co. Panel for partitions or the like. 257,604, 12-9-80, Cl. D6-139.000.
Cyplik, Kathryn L., to Beatrice Foods Co. Flexible covering for partitions or the like. 257,605, 12-9-80, Cl. D6-139.000.
Cyplik, Kathryn L., to Beatrice Foods Co. Flexible covering for partitions or the like. 257,606, 12-9-80, Cl. D6-139.000.
Eastman, Robert E., II; and Gray, Dale W. Tracking line storage container for a bow. 257,619, 12-9-80, Cl. D22-5.000.
Eliasson, Nils, to A B Svenska Bakugnsfabriken. Rotatable carrier for a carriage in a baking-, roasting- or similar oven. 257,609, 12-9-80, Cl. D7-129.000.
Excel Plastics Products, Inc.: *See—*
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Goldin, Jerry H.; and Collins, Walter W. Side folding pocket knife. 257,612, 12-9-80, Cl. D8-99.000.
Gray, Dale W.: *See—*
Eastman, Robert E., II; and Gray, Dale W., 257,619, Cl. D22-5.000.
Gruenewald, Manfred, to Excel Plastics Products, Inc. Extension cord holder. 257,613, 12-9-80, Cl. D8-359.000.
Hester, Gerald P.: *See—*
Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., 257,616, Cl. D14-45.000.
Horikoshi, Tatsuo, to Yamaha Hatsudoki Kabushiki Kaisha. Wheel for motorcycle. 257,615, 12-9-80, Cl. D12-205.000.
Husted, Martin D.: *See—*
Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., 257,616, Cl. D14-45.000.
International Silver Company: *See—*
Knope, William J., 257,610, Cl. D7-137.000.
Knope, William J., to International Silver Company. Knife. 257,610, 12-9-80, Cl. D7-137.000.
MSI Data Corporation: *See—*
Cadotte, Ernest R.; Hester, Gerald P.; and Husted, Martin D., 257,616, Cl. D14-45.000.
Platmanufaktur AB: *See—*
Bondeson, Leif S., 257,611, Cl. D7-194.000.
Rosenbloom, Percy, III, to Technical Materials, Inc. Work apron or the like. 257,596, 12-9-80, Cl. D2-229.000.
Smith, Franklin G. Microwave cooking pan and cover. 257,607, 12-9-80, Cl. D7-17.000.
Technical Materials, Inc.: *See—*
Rosenbloom, Percy, III, 257,596, Cl. D2-229.000.
Ueno, Yoshio, to Asics Corporation. Cleat plate for a sport shoe sole. 257,597, 12-9-80, Cl. D2-317.000.
Villalpando, Miguel C. Tamale making apparatus. 257,608, 12-9-80, Cl. D7-43.000.
Wolkenfeld, Michael Z. Gem holder for color evaluating. 257,617, 12-9-80, Cl. D15-140.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Horikoshi, Tatsuo, 257,615, Cl. D12-205.000.

CLASSIFICATION OF PATENTS

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368 R 4,237,794

CLASS 106
22 4,238,234
89 4,238,235
90 4,238,236
100 4,238,237
110 4,238,238
116 4,238,239
120 4,238,240
281 R 4,238,241
288 B 4,238,242

CLASS 108
12 4,237,795
22 4,237,796
59 4,237,797
111 4,237,798

CLASS 109
2 4,237,799

CLASS 110
216 4,237,800
336 4,237,801

CLASS 112
79 A 4,237,802
158 E 4,237,803
168 4,237,804
262.1 4,237,805
265.2 4,237,806
278 4,237,807

CLASS 114
170 4,237,808
202 4,237,809
272 4,237,810
273 4,237,811

CLASS 115
70 4,237,812

CLASS 116
4,237,813

CLASS 118
24 4,237,814
63 4,237,815
249 4,237,816
307 4,237,817
410 4,237,818
658 4,237,819

CLASS 119
51 R 4,237,820
60 4,237,821
85 4,237,822

CLASS 122
4 D 4,237,823
235 R 4,237,824
406 ST 4,237,825

CLASS 123
25 R 4,237,826
30 C 4,237,828
30 D 4,237,827
32 EE 4,237,829
32 EL 4,237,830
51 BA 4,237,831
59 EC 4,237,832
97 B 4,237,833
115 4,237,834
117 R 4,237,835
119 A 4,237,837
4,237,840
119 E 4,237,836
119 EC 4,237,838
4,237,839
124 B 4,237,841
124 R 4,237,842
145 A 4,237,843
148 E 4,237,844
191 A 4,237,845
193 P 4,237,846
195 R 4,237,847
242 4,237,848
513 4,237,849
557 4,237,850

CLASS 124
16 4,237,851

CLASS 125
11 R 4,237,852
37 4,237,853

CLASS 126
285 B 4,237,855
285 R 4,237,854
299 C 4,237,856
343.5 A 4,237,857
360 R 4,237,858
400 4,237,859
415 4,237,860
417 4,237,861
420 4,237,862
422 4,237,863
425 4,237,864
429 4,237,865
433 4,237,866
441 4,237,867
443 4,237,868
450 4,237,869
4,237,870

CLASS 127
46 B 4,238,243

CLASS 128
4 4,237,871
24 R 4,237,872
77 4,237,873
80 A Re.30,444
80 H 4,237,874
92 BA 4,237,875
138 R 4,237,876
204.15 4,237,877
214 E 4,237,878
214 F 4,237,881
214 G 4,237,879
4,237,880
218 N 4,237,882
4,237,883
222 4,237,884
260 4,237,885
270 4,237,888
287 4,237,889
4,237,890
303.13 4,237,886
303.14 4,237,887
4,237,891
339 4,237,892
341 4,237,893
349 R 4,237,894
419 PG 4,237,895
4,237,897
419 R 4,237,896
422 4,237,898
4,237,899
630 4,237,900
660 4,237,901
4,237,902
708 4,237,903
725 4,237,904
743 4,237,906
746 4,237,905

CLASS 131

23 A 4,237,907
61 R 4,237,908
128 4,237,909

CLASS 132

7 4,237,910
89 4,237,911

CLASS 134

22 R 4,238,244
57 R 4,237,912
133 4,238,245
167 C 4,237,913

CLASS 135

4 R 4,237,914
68 4,237,915
69 4,237,916

CLASS 136

89 HY 4,238,246
89 PC 4,238,247

CLASS 137

116 4,237,918
116.3 4,237,917
216 4,237,919
243.3 4,237,920
268 4,237,921
493 4,237,922
495 4,237,923
510 4,237,924
552 4,237,925
565 4,237,926
587 4,237,927
590 4,237,928
596 4,237,929
596.16 4,237,930
624.18 4,237,932
625.5 4,237,931
625.63 4,237,933
637 4,237,934
860 4,237,935

CLASS 138

90 4,237,936
97 4,237,937
107 4,237,938
109 4,237,939
172 4,237,940

CLASS 139

1 C 4,237,941

CLASS 140

105 4,237,942

CLASS 141

284 4,237,943

CLASS 144

316 4,237,944

CLASS 145

3.32 4,237,945
52 4,237,946

CLASS 148

2 4,238,248
4,238,249
6.1 4,238,250
133 4,238,251
171 4,238,252

CLASS 149

19.6 4,238,253
29 4,238,254
60 4,238,255

CLASS 150

39 4,237,947

CLASS 151

22 4,237,948
67 4,237,949

CLASS 152

175 4,237,950
242 4,237,951
330 RF 4,237,952
361 FP 4,237,953
362 R 4,237,954

CLASS 156

65 4,238,256
71 4,238,257
120 4,238,258
131 4,238,259
149 4,238,260
157 4,238,261
166 4,238,262
202 4,238,263
212 4,238,264
221 4,238,265
243 4,238,266
380 4,238,267
398 4,238,268

465 4,238,269
468 4,238,270
523 4,238,271
527 4,238,272
552 4,238,273
617 SP 4,238,274
626 4,238,275
634 4,238,276
643 4,238,277
657 4,238,278
664 4,238,279

CLASS 157

13 4,237,955

CLASS 160

120 4,237,956
178 R 4,237,957
330 4,237,958

CLASS 162

60 4,238,281
76 4,238,282
139 4,238,283
157 R 4,238,280
207 4,238,284
242 4,238,285
352 4,238,286
358 4,238,287

CLASS 164

4 4,237,959
4,237,960
89 4,237,961

CLASS 165

1 4,237,962
4,237,963
4,237,964
2 4,237,965
12 4,237,966
43 4,237,967
70 4,237,968
71 4,237,969
110 4,237,970
171 4,237,971

CLASS 166

54.5 4,237,972
59 4,237,973
281 4,237,974
4,237,975
297 4,237,976
309 4,237,977
311 4,237,978
315 4,237,979
317 4,237,980

CLASS 168

4 4,237,981

CLASS 169

37 4,237,982

CLASS 172

42 4,237,983
554 4,237,984
676 4,237,985
805 4,237,986

CLASS 173

117 4,237,987

CLASS 174

23 C 4,238,638
73 R 4,238,639
87 4,238,640
88 C 4,238,641

CLASS 176

36 R 4,238,288
38 4,238,289
4,238,290
4,238,291

CLASS 177

189 4,237,988
210 C 4,237,989

CLASS 179

1 GC 4,238,642
39 4,238,643
81 A 4,238,645
81 R 4,238,644
100.41 D 4,238,646
103 4,238,647
170 D 4,238,648
175.2 D 4,238,649

CLASS 180

7 R 4,237,990
74 4,237,991
77 TC 4,238,008
116 4,237,992
133 4,237,993
179 4,237,994
210 4,237,995
229 4,237,996

272 4,237,997

CLASS 181

175 4,237,998

CLASS 182

19 4,237,999
136 4,238,000
153 4,238,001

CLASS 185

27 4,238,002

CLASS 187

8.71 4,238,003
9 E 4,238,004
29 R 4,238,005

CLASS 188

59 4,238,006
76 4,238,007
315 4,238,009

CLASS 191

31 4,238,010

CLASS 192

3.56 4,238,011
48.91 4,238,012
54 4,238,013
4,238,014
58 B 4,238,015
4,238,016
82 T 4,238,017
98 4,238,018
99 A 4,238,019
103 FA 4,238,020
141 4,238,021

CLASS 193

32 4,238,022

CLASS 198

388 4,238,023
425 4,238,024
450 4,238,025
460 4,238,026
504 4,238,027
731 4,238,028
781 4,238,029

CLASS 200

4 4,238,650
83 P 4,238,651
84 B 4,238,652
153 J 4,238,653
153 LA 4,238,655
153 LB 4,238,654
283 4,238,656
308 4,238,657

CLASS 202

257 4,238,292
270 4,238,293

CLASS 203

72 4,238,294
83 4,238,295
100 4,238,296

CLASS 204

1 T 4,238,297
4,238,298
16 4,238,299
46 G 4,238,300
52 Y 4,238,314
59 R 4,238,301
95 4,238,302
98 4,238,303
131 4,238,304
180 P 4,238,305
4,238,306
4,238,307
195 R 4,238,309
195 S 4,238,308
252 4,238,310
290 R 4,238,311
298 4,238,312
300 R 4,238,313

CLASS 206

313 4,238,030
453 4,238,031
507 4,238,032
534 4,238,033

CLASS 208

11 LE 4,238,315
58 4,238,316
120 4,238,317
4,238,318
138 4,238,319
254 H 4,238,320
310 Z 4,238,321

CLASS 209

3 4,238,322
212 4,238,323

255 4,238,324

CLASS 210

20 4,238,325
23 R 4,238,326
31 C 4,238,327
36 4,238,328
4,238,329
43 4,238,330
59 4,238,331
71 4,238,332
73 W 4,238,333
75 4,238,334
80 4,238,335
83 4,238,336
179 4,238,337
195.4 4,238,338
321 B 4,238,340

CLASS 211

1.5 4,238,034
74 4,238,035

CLASS 212

3 R 4,238,036
4,238,037
89 4,238,038

CLASS 213

61 4,238,039

CLASS 215

11 E 4,238,040
12 R 4,238,041
334 4,238,042

CLASS 219

9.5 4,238,658
61 4,238,659
69 G 4,238,660
121 LN 4,238,661
4,238,662
121 P 4,238,663
230 4,238,664
238 4,238,665
318 4,238,666
390 4,238,667
399 4,238,668
405 4,238,669
413 4,238,670
421 4,238,671
502 4,238,672

CLASS 220

2.1 R 4,238,043
4 F 4,238,044
90.4 4,238,045
269 4,238,046
306 4,238,047
307 4,238,048
331 4,238,049
458 4,238,050

CLASS 221

205 4,238,051

CLASS 222

43 4,238,052
129.1 4,238,053
131 4,238,054
162 4,238,055
181 4,238,056
192 4,238,057
368 4,238,058
529 4,238,059

CLASS 223

37 4,238,060
111 4,238,061

CLASS 224

42.23 4,238,091
45 S 4,238,063
45 T 4,238,062

CLASS 225

2 4,238,064
47 4,238,065

CLASS 227

39 4,238,066

CLASS 228

107 4,238,067

CLASS 229

39 R 4,238,068
52 B 4,238,069
87 R 4,238,070

CLASS 236

49 4,238,071

CLASS 239

1 4,238,072
127 4,238,073
199 4,238,074
533.4 4,238,075
676 4,238,076

707 4,238,077

CLASS 241

46.02 4,238,078
248 4,238,079
296 4,237,589

CLASS 242

47.01 4,238,081
47.12 4,238,080
56.2 4,238,082
74 4,238,083
75.51 4,238,084
84.2 4,238,085
96 4,238,086
107.4 A 4,238,087
192 4,238,088

CLASS 244

3.13 4,238,089
3.19 4,238,090
54 4,238,092
63 4,238,093
91 4,238,094
115 4,238,095

CLASS 248

75 4,238,096
188.7 4,238,097
217.2 4,238,098
430 4,238,099
439 4,238,100
441 R 4,238,101
543 4,238,102
544 4,238,103
566 4,238,104

CLASS 249

78 4,238,105
79 4,238,106
83 4,238,107

CLASS 250

202 4,238,673
334 4,238,674
353 4,238,675
370 4,238,676
381 4,238,678
385 4,238,679
397 4,238,680
402 4,238,681
420 4,238,682
421 4,238,683
484 4,238,684
492 A 4,238,685
4,238,686

CLASS 251

6 4,238,108
28 4,238,109
129 4,238,110
193 4,238,111
324 4,238,112

CLASS 252

62.54 4,238,341
62.61 4,238,342
63 4,238,343
174.11 4,238,344
174.12 4,238,345
174.25 4,238,346
175 4,238,347
391 4,238,348
392 4,238,349
4,238,350
403 4,238,351
408 4,238,352
428 4,238,353
429 B 4,238,354
4,238,355
430 4,238,356
431 C 4,238,358
431 N 4,238,357
437 4,238,359
438 4,238,360
4,238,361
439 4,238,362
4,238,363
441 4,238,365
4,238,366
455 R 4,238,364
455 Z 4,238,367
4,238,368
458 4,238,369
461 4,238,370
465 4,238,371
466 PT 4,238,372
542 4,238,373

CLASS 254

86 R 4,238,113
88 4,238,114
106 4,238,115
166 4,238,116

CLASS 256

65 4,238,117

CLASS 260

17.4 GC 4,238,374
18 S 4,238,375
22 S 4,238,393
23.7 M 4,238,376
28 R 4,238,377
29.2 TN 4,238,378
29.3 4,238,379
29.7 SQ 4,238,380
31.2 R 4,238,381
33.4 SB 4,238,382
33.6 AQ 4,238,383
37 EP 4,238,385
37 R 4,238,384
42.21 4,238,386
42.29 4,238,387
45.8 NB 4,238,388
112.5 R 4,238,389
4,238,390
4,238,391
4,238,392
299 4,238,394
326 N 4,238,395
326.2 4,238,396
326.25 4,238,397
340.3 4,238,398
345.9 R 4,238,399
372 4,238,400
448.8 R 4,238,401
4,238,402
449.5 4,238,403
453 P 4,238,404
464 4,238,405
465 D 4,238,406
465 E 4,238,407
465.8 R 4,238,408
501.17 4,238,409
513 R 4,238,410
513.7 4,238,411
545 R 4,238,412
4,238,413
563 P 4,238,414
586 P 4,238,415
593 A 4,238,417
593 H 4,238,416
602 4,238,418
604 HF 4,238,419
645 4,238,420
4,238,421
945 4,238,422
968 4,238,423
979 4,238,424

CLASS 261

81 4,238,425
114 JP 4,238,426

CLASS 264

7 4,238,427
13 4,238,428
4,238,429
15 4,238,430
40.5 4,238,431
40.7 4,238,432
60 4,238,433
63 4,238,434
75 4,238,435
81 4,238,436
102 4,238,437
119 4,238,438
168 4,238,439
176 F 4,238,440
206 4,238,441
4,238,442
210.7 4,238,443
226 4,238,444
234 4,238,445
250 4,238,446

CLASS 266

46 4,238,118
100 4,238,119
179 4,238,120
218 4,238,121
251 4,238,122

CLASS 269

41 4,238,123
97 4,238,124

CLASS 271

3 4,238,125
3.1 4,238,126

CLASS 273

143 R 4,238,127

CLASS 280

703 4,238,128
802 4,238,129

CLASS 282

27.5 4,238,130

CLASS 285

38 4,238,131

39 4,238,132

CLASS 290

1 R 4,238,687

CLASS 292

347 4,238,133

CLASS 294

1 CA 4,238,134

CLASS 297

468 4,238,135

CLASS 299

2 4,238,136

CLASS 307

20 4,238,688
42 4,238,689
44 4,238,690
66 4,238,691
106 4,238,692
221 D 4,238,693
238 4,238,694
268 4,238,697
350 4,238,695
360 4,238,696

CLASS 308

3 R 4,238,137
4,238,138

CLASS 310

27 4,238,698
4,238,699
52 4,238,700
64 4,238,701
179 4,238,702
242 4,238,703
260 4,238,339

CLASS 312

7 R 4,238,139

CLASS 313

113 4,238,704
221 4,238,705
330 4,238,706

CLASS 315

175 4,238,707
289 4,238,708
291 4,238,709
307 4,238,710
324 4,238,711
393 4,238,712
397 4,238,713
408 4,238,714

CLASS 318

135 4,238,715
314 4,238,716
341 4,238,717
626 4,238,718
716 4,238,719
800 4,238,720

CLASS 320

18 4,238,721
25 4,238,722

CLASS 323

24 4,238,723
80 4,238,724

CLASS 324

56 4,238,725
57 R 4,238,726
77 B 4,238,727
149 4,238,728
152 4,238,729
4,238,730
154 R 4,238,731
158 D 4,238,732
158 MG 4,238,733
228 4,238,734
310 4,238,735

CLASS 328

169 4,238,736

CLASS 330

255 4,238,737
256 4,238,738

CLASS 331

12 4,238,739

17 4,238,740
94.5 G 4,238,742
94.5 PE 4,238,741
94.5 T 4,238,743

CLASS 333

132 4,238,744
164 4,238,745
166 4,238,746
228 4,238,747

CLASS 335

56 4,238,748
63 4,238,749
173 4,238,750
213 4,238,751

CLASS 336

73 4,238,752
178 4,238,753

CLASS 338

174 4,238,754
176 4,238,755
304 4,238,756

CLASS 339

186 M 4,238,140

CLASS 340

33 4,238,778
146.1 E 4,238,779
146.3 H 4,238,780
200 4,238,781
4,238,782
207 R 4,238,783
347 NT 4,238,784
378.4 4,238,786
384 E 4,238,787
515 4,238,788
629 4,238,677
677 4,238,789
684 4,238,790
694 4,238,791
707 4,238,792
781 4,238,793

CLASS 343

5 PC 4,238,794
14 4,238,795
17.1 R 4,238,796
100 SA 4,238,797
112 D 4,238,785
700 MS 4,238,798
715 4,238,799
4,238,800
4,238,801
765 4,238,802

CLASS 346

1.1 4,238,803
75 4,238,804
4,238,805
76 PH 4,238,806
140 R 4,238,807

CLASS 350

162 R 4,238,141

CLASS 351

7 4,238,142

CLASS 352

72 4,238,144
130 4,238,145
140 4,238,143

CLASS 354

53 4,238,146
77 4,238,147
112 4,238,148
128 4,238,149
145 4,238,150
152 4,238,151
189 4,238,152
195 4,238,153
198 4,238,154

CLASS 355

50 4,238,155
52 4,238,156

CLASS 356

3 4,238,157
241 4,238,158

CLASS 357

25 4,238,757
4,238,758
28 4,238,759
30 4,238,760
38 4,238,761
49 4,238,762
68 4,238,763
71 4,238,764

CLASS 358

43 4,238,765
86 4,238,766
107 4,238,767
135 4,238,768
154 4,238,769
4,238,770
165 4,238,771
166 4,238,772
183 4,238,773
242 4,238,774
257 4,238,775

CLASS 360

10 4,238,776
38 4,238,777
74.2 4,238,808
131 4,238,809

CLASS 361

91 4,238,810
92 4,238,811
106 4,238,812
154 4,238,813

CLASS 362

13 4,238,814
218 4,238,815
277 4,238,816
309 4,238,817
413 4,238,818
419 4,238,819

CLASS 363

43 4,238,820
58 4,238,821
107 4,238,822
138 4,238,823

CLASS 364

449 4,238,824
510 4,238,825
515 4,238,826
521 4,238,827
559 4,238,828
561 4,238,829
573 4,238,830
608 4,238,831
705 4,238,832
760 4,238,833
900 4,238,834
4,238,835

CLASS 365

12 4,238,836
28 4,238,837
69 4,238,838
96 4,238,839
119 4,238,840
203 4,238,841
222 4,238,842
234 4,238,843

CLASS 366

327 4,238,159

CLASS 367

117 4,238,844
183 4,238,845

CLASS 368

89 4,238,847
93 4,238,846
276 4,238,848

CLASS 370

11 4,238,849
27 4,238,850
94 4,238,851

CLASS 371

40 4,238,852

CLASS 375

2 4,238,853
4,238,854
4,238,505
319 4,238,506
4,238,507
324 4,238,508
358 4,238,509

CLASS 425

6 4,238,173
19 4,238,174
83.1 4,238,175
85 4,238,176
150 4,238,177
367 4,238,178
394 4,238,179
403 4,238,180
543 4,238,181
566 4,238,182

CLASS 426

5 4,238,510
15 4,238,511
20 4,238,512
59 4,238,513
62 4,238,514
104 4,238,515
231 4,238,516
250 4,238,517
540 4,238,518
549 4,238,519
573 4,238,520
580 4,238,521

CLASS 427

2 4,238,522
4 4,238,523
7 4,238,524
42 4,238,525
44 4,238,526
55 4,238,527
96 4,238,528
160 4,238,529
173 4,238,530
242 4,238,531
309 4,238,532
359 4,238,533
376 D 4,238,534
388 C 4,238,535
421 4,238,536

CLASS 428

35 4,238,537
36 4,238,538
4,238,539
4,238,540
43 4,238,541
58 4,238,542
63 4,238,543
71 4,238,544
270 4,238,545
306 4,238,546
366 4,238,547
480 4,238,548
484 4,238,549
586 4,238,550
660 4,238,551

CLASS 429

101 4,238,552
104 4,238,553
105 4,238,554
163 4,238,555
190 4,238,556
212 4,238,557

CLASS 430

106 4,238,562
108 4,238,558
156 4,238,559
162 4,238,560
253 4,238,561
367 4,238,563
381 4,238,564

CLASS 431

2 4,238,183
59 4,238,184
76 4,238,185

CLASS 432

10 4,238,186
116 4,238,187

CLASS 433

5 4,238,188
74 4,238,189

CLASS 435

7 4,238,565
189 4,238,566
252 4,238,567
285 4,238,568

CLASS 455

103 4,238,855
614 4,238,856

CLASS 521

52 4,238,569
57 4,238,570
62 4,238,571
77 4,238,572

CLASS 525

110 4,238,573
130 4,238,574
212 4,238,575
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Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

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Search fee	300.00
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Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
June 17, 1980. *Commissioner of Patents and Trademarks.*

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37 CFR Part 1

IMPLEMENTATION OF THE PATENT COOPERATION TREATY; RULE PROMULGATION

Correction

In FR Doc. 78-12832 appearing at page 20458 in the issue of Thursday, May 11, 1978, on page 20464, third column, the last sentence of paragraph (f) of § 1.84 should read as follows:

"Reference signs not mentioned in the description shall not appear in the drawing, and vice versa."

BILLING CODE 1505-01-M

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

Re. 27,654, Re. S.N. 166,971, Filed Jul. 8, 1980, Cl. 144/229, CUTTERHEAD STRUCTURE, Frederic F. Chapman, et al., Owner of Record: *Hawker Siddeley Canada, Ltd., Vancouver, British Columbia, Canada,* Attorney or Agent: John B. Young, et al., Ex. Gp.: 324

3,195,868, Re. S.N. 190,011, Filed Oct. 1, 1980, Cl. 366/85, CONTINUOUS MIXER, Bernard A. Loomans, et al., Owner of Record: *Beker Perkins Inc., New York, N.Y.,* Attorney or Agent: John F. Learman, et al., Ex. Gp.: 242

3,554,618, Re. S.N. 192,172, Filed Sep. 29, 1980, Cl. 308/2, RAILROAD TRUCKS, James A. Ditzler, et al., Owner of Record: *The Polymer Corporation, Reading, Pa.,* Attorney or Agent: Richard O. Church, Ex. Gp.: 243

3,859,437, Re. S.N. 117,239, Filed Jan. 31, 1980, Cl. 424/238, REDUCING CHOLESTEROL LEVELS, Alan Hugh Weigand, Owner of Record: *Intellectual Property Development Corporation, New Rochelle, N.Y.,* Attorney or Agent: William H. Saltzman, Ex. Gp.: 125

3,887,557, Re. S.N. 190,054, Filed Sep. 23, 1980, Cl. 544/279, PIPERAZINE DERIVATIVES AND PROCESSES FOR PREPARATION THEREOF, Shinsaku Minami, et al., Owner of Record: *Dainippon Pharmaceutical Company, Ltd., Osaka, Japan,* Attorney or Agent: Leonard W. Sherman, et al., Ex. Gp.: 122

4,114,495, Re. S.N. 188,006, Filed Sep. 17, 1980, Cl. 84/101, CHANNEL PROCESSOR, Norio Tomisawa, Owner of Record: *Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan,* Attorney or Agent: Robert Spensley, et al., Ex. Gp.: 217

4,115,319, Re. S.N. 187,734, Filed Sep. 16, 1980, Cl. 252/429 B, CATALYSTS AND CATALYST COMPONENTS FOR POLYMERIZING OLEFINS, Umberto Scata, et al., Owner of Record: *Montedison S.p.A., Milan, Italy,* Attorney or Agent: Patricia O. Peake, Ex. Gp.: 117

4,117,285, Re. S.N. 187,996, Filed Sep. 17, 1980, Cl. 200/76, SNAP ACTION CIRCUIT BREAKER, George S. Harper, Owner of Record: *Airpax Electronics Incorporated, Cambridge, Md.,* Attorney or Agent: James E. Nolan, et al., Ex. Gp.: 243

4,130,421, Re. S.N. 189,379, Filed Sep. 22, 1980, Cl. 75/154, FREE MACHINING Cu-Ni-Sn ALLOYS, John Travis Plewes, et al., Owner of Record: *Bell Telephone Laboratories, Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 111

4,164,201, Re. S.N. 192,197, Filed Sep. 30, 1980, Cl. 119/81, GROUND-SUPPORTED POULTRY DRINKING FOUNTAIN, Robert A. Vanderhye, Owner of Record: *Interfarm Corporation, McLean, Va.,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 333

4,189,699, Re. S.N. 188,010, Filed Sep. 17, 1980, Cl. 335/229, LIMITED-ROTATION MOTOR WITH INTEGRAL DISPLACEMENT TRANSDUCER, Edward F. Burke, Jr., Owner of Record: *MFE Corporation, Salem, N.H.,* Attorney or Agent: Robert A. Cesari, et al., Ex. Gp.: 212

4,209,714, Re. S.N. 178,457, Filed Aug. 15, 1980, Cl. 307/229, LOGARITHMIC AMPLIFIER, Yukihiko Miyamoto, Owner of Record: *Trio Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Richard L. Aitken, Ex. Gp.: 254

PATENT NOTICES

Certificates of Correction for the Week of Dec. 16, 1980

Re. 29,997	4,166,036	4,211,730	4,221,007
Re. 30,259	4,170,423	4,211,853	4,221,048
Re. 30,334	4,176,209	4,212,859	4,221,198
Re. 30,377	4,183,551	4,213,248	4,221,578
D. 257,131	4,183,890	4,213,778	4,221,071
3,970,620	4,185,992	4,214,054	4,222,341
4,008,261	4,192,635	4,215,202	4,222,385
4,011,209	4,194,529	4,215,250	4,222,497
4,032,530	4,195,324	4,215,574	4,222,533
4,038,920	4,198,128	4,215,951	4,222,732
4,106,412	4,198,269	4,216,178	4,222,748
4,110,028	4,200,574	4,216,364	4,223,054
4,118,809	4,203,972	4,216,570	4,223,204
4,126,914	4,205,230	4,216,881	4,223,248
4,134,859	4,205,575	4,216,954	4,223,631
4,135,329	4,207,225	4,217,370	4,223,838
4,138,428	4,207,392	4,218,407	4,223,869
4,138,825	4,209,943	4,219,517	4,225,110
4,142,922	4,210,105	4,219,908	4,225,264
4,143,145	4,211,073	4,219,911	4,225,670
4,144,371	4,211,279	4,220,709	4,225,891
4,155,759	4,211,519	4,220,919	4,226,930
			4,230,976

Dedication

3,571,862.—*Albert W. Zemek,* Binghamton, N.Y. BELTED AXIAL LEAD ELECTRONIC COMPONENT SPLICING CLIP. Patent dated Mar. 23, 1971. Dedication filed Aug. 21, 1980, by the assignee, *Universal Instruments Corporation.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedication

4,011,731.—*Gershon Meckler,* Atlanta, Ga. AIR CONDITIONING APPARATUS UTILIZING SOLAR ENERGY AND METHOD. Patent dated Mar. 15, 1977. Disclaimer and Dedication filed Sept. 12, 1980, by the assignee, *Gershon Meckler Associates, P.C.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Errata

All reference to Patent No. 4,226,709 to Jakhin Boas Popper of Israel, "Vibrating Surface Apparatus" appearing in the OFFICIAL GAZETTE of Oct. 7, 1980 should be deleted since no patent was granted.

The drawing in Patent No. 4,220,709, Richard A. de Mauriac of New York for "Heat Developable Imaging Materials and Process" appearing in the OFFICIAL GAZETTE of Sept. 2, 1980 appeared in error. No drawing should have appeared for this patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

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Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licenses upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6-147,417. Dynamic Binary Fourier Filtered Imaging System. Filed May 6, 1980.

Patent application 6-149,793. Stable Ultraviolet Bandpass Chemical Filter. Filed May 14, 1980.

Patent application 6-150,522. Lens System Having Wide Angle Objectives. Filed May 16, 1980.

Patent 4,032,441. Method for Reclaiming Used Hydraulic Fluid. Filed June 30, 1976. Patented June 28, 1977. Not available NTIS.

Patent 4,205,428. Planar Liquid Crystal Matrix Array Chip. Filed Feb. 23, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,207,495. Means for Improving the Collector Efficiency of an Emitting Sole Crossed Field Amplifier. Filed Aug. 30, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,542. Multiple Shock Aerodynamic Window. Filed Apr. 20, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,547. Reflection Mode Notch Filter. Filed Nov. 1, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,889. Injection System for Suspension and Solutions. Filed Oct. 27, 1978. Patented June 17, 1980. Not available NTIS.

Patent 4,208,129. Sensitive Laser Spectroscopy Measurement System. Filed June 30, 1978. Patented June 17, 1980. Not available NTIS.

Patent 4,208,729. Automatic Data Restore Apparatus for MNOS Temporary Store Memory. Filed Mar. 8, 1979. Patented June 17, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-037,603. Hydrogen Isotope Separation. Filed May 10, 1979.

Patent application 6-050,407. Selective Screening Methods for Selecting and Identifying Hyper-Cellulolytic Microbial Mutants; Hyper-Cellulolytic Mutant Microorganisms; and Processes for Their Utilization. Filed June 20, 1979.

Patent application 6-061,152. One-Directional Uniformly Coated Fibers, Method of Preparation, and Uses Therefor. Filed July 26, 1979.

Patent 4,166,990. Core/Coil Assembly for Use in Superconducting Magnets and Method for Assembling the Same. Filed Aug. 12, 1977. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,173,660. Method of Preparing a Thermoluminescent Phosphor. Filed July 13, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,181,538. Method for Making Defect-Free Zone by Laser-Annealing of Doped Silicon. Filed Sept. 26, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,190,637. Graphite Having Improved Thermal Stress Resistance and Method of Preparation. Filed July 18, 1978. Patented Feb. 26, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, VA 22217

Patent application 6–126,580. Transducer Array Crossover Network. Filed Mar. 3, 1980.

Patent application 6–137,066. Multiwavelength Self-Pumped Solid State Laser. Filed Apr. 3, 1980.

Patent application 6–138,773. Small Hydrophone That is Directional at Low Frequencies. Filed Apr. 10, 1980.

Patent application 6–140,352. Multi-Color Tunable Filter. Filed Apr. 14, 1980.

Patent application 6–143,257. Electrical Waveform Synthesizer. Filed Apr. 24, 1980.

Patent application 6–143,398. Method and Apparatus for Obtaining Enhanced NMR Signals. Filed Apr. 24, 1980.

Patent application 6–147,413. Switching Quadrature Detector. Filed May 6, 1980.

Patent application 6–147,992. Low-Barrier-Height Epitaxial GaGaAs Mixer Diode. Filed May 8, 1980.

Patent application 6–150,382. Pivotal Support With Independent Adjusting Elements and Locking Means. Filed May 21, 1980.

Patent application 6–152,456. Seafloor Attachment Bolts. Filed May 22, 1980.

Patent application 6–153,123. Combination Exhaust and Relief/Venting Valve. Filed May 27, 1980.

Patent application 6–153,987. Magnetoplasmadynamic Switch. Filed May 28, 1980.

Patent application 6–157,126. Phase-Slipped Time Delay and Integration Scanning System. Filed June 6, 1980.

Patent application 6–157,750. Burst on Target Simulator Device for Training With Rockets. Filed June 9, 1980.

Patent application 6–160,034. Heterojunction and Schottky Barrier EBS Targets. Filed June 16, 1980.

Patent application 6–160,050. Melting Method for High-Homogeneity Precise-Composition Nickel-Titanium Alloys. Filed June 16, 1980.

Patent application 6–160,697. Dead-Faced Electrical Connector With Electromagnetic Vulnerability Protection. Filed June 18, 1980.

Patent application 6–161,183. Integral-Shadow-Grid-Controlled Porosity Dispenser Cathode. Filed June 19, 1980.

Patent application 6–162,347. Luminescent Hafnia Composition. Filed June 23, 1980.

Patent 4,178,404. Immersed Reticle. Filed Feb. 6, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,186,190. Method of Treating Burns Using a Poly-epsilon-Caprolactone. Filed Nov. 13, 1978. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,190,327. Deformable Liquid Mirror. Filed Oct. 16, 1978. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,195,962. Platform Loading System. Filed Jan. 29, 1976. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,197,517. High Speed Frequency Tunable Microwave Filter. Filed Nov. 3, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,543. Display Processor for Aircraft Landing System. Filed Feb. 13, 1979. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,198,632. Transponder Reply Limiting by Means of Recognition of Fixed Interrogation Periods. Filed June 10, 1971. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,200,873. Folded Tapered Coaxial Cavity-Backed Annular Slot Antenna. Filed Sept. 5, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,200,919. Apparatus for Expanding the Memory of a Mini-Computer System. Filed Dec. 5, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,201,618. Apparatus for Curing Adhesively Joined Fiber Optic Elements. Filed July 21, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,955. Method of Producing Population Inversion and Lasing at Short Wavelengths by Charge Transfer. Filed Mar. 22, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,987. Method for Determining Antenna Near-Fields From Measurements on a Spherical Surface. Filed Mar. 3, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,203,165. Aconstic Filter. Filed Oct. 24, 1956. Patented May 13, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 6–153,240. JFET Oscillator. Filed May 27, 1980.

Patent application 6–153,246. An Implantable Electrical Device. Filed May 27, 1980.

Patent 4,204,037. Method and Automated Apparatus for Detecting Coliform Organisms. Filed Apr. 4, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,204,402. Reduction of Nitric Oxide Emissions From a Combustor. Filed Sept. 8, 1977. Patented May 27, 1980. Not available NTIS.

Patent 4,204,544. Simultaneous Muscle Force and Displacement Transducer. Filed Sept. 30, 1977. Patented May 27, 1980. Not available NTIS.

Patent 4,205,229. Cooled Echelle Grating Spectrometer. Filed Oct. 31, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,206,383. Miniature Cyclotron Resonance Ion Source Using Small Permanent Magnet. Filed Sept. 11, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,207,024. Composite Seal for Turbomachinery. Filed Aug. 4, 1978. Patented June 10, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 322–4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738–5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 6, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus: Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-25-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process. and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-27-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials: Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	4-16-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-78
DESIGNS, GROUP 290—Vacant. Industrial Arts: Household, Personal and Fine Arts.	10-10-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking: Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-4-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery: Toiletry; Printing; Typewriters; Information Dissemination.	7-30-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-24-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports: Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware: Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during September 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,102,270 to 3,105,236, inclusive
Plant Patents ..... Numbers 2,277 to 2,286, inclusive

REISSUES

DECEMBER 16, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,445

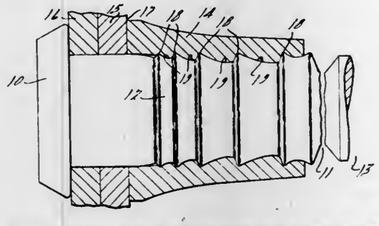
FASTENER WITH PROPORTIONED STRENGTH LOCK GROOVES

John H. Ruhl, Tustin, Calif., assignor to Huck Manufacturing Company, Detroit, Mich.

Original No. 3,915,053, dated Oct. 28, 1975, Ser. No. 500,583, Aug. 26, 1974. Application for reissue Aug. 17, 1978, Ser. No. 934,880

Int. Cl.[2] **F16B** *19/05*

U.S. Cl. 85—7 **9 Claims**



1. A fastener having a head and a shank portion, and a swage collar member *adapted to be* fastened thereon for holding workpieces,

said fastener having *a plurality of* at least three *each of* differently proportioned strength locking annular shoulder and groove means *alternatingly arranged along the shank portion* for providing a predetermined desired load distribution across the shank portion which *load distribution* is generally coextensive with the collar to the sheet line of the [workpiece] *workpieces*, said plurality of locking shoulder *means* and groove means being non-uniform in dimensions and wherein, *said collar when swaged onto said shank substantially fills said at least three groove means,*

each of said groove means increases in size *in both axial and radial dimensions* as distance from the sheet line increases *with the resultant shear areas of said groove means increasing substantially in size from the sheet line* and,

each of said shoulder means increase substantially in size in an axial direction as distance from the sheet line increases whereby the resultant shear areas of said shoulder means similarly substantially increase, and

said shoulder *means* and groove means provide proportioned stiffness such that the *said* shoulder *means* and groove means fail at approximately the same load to thereby provide the maximum strength for the fastener and being operative to prevent shear stress from being taken up at only a shoulder which is closely adjacent to the sheet line.

Re. 30,446

APPARATUS FOR DETECTING TEMPERATURE VARIATIONS OVER SELECTED REGIONS OF LIVING TISSUE, AND METHOD THEREOF

Phillip H. Meyers, New Orleans, La., and Franklin M. Greene, Flushing, N.Y., assignors to E-Z-Em Company, Inc., Westbury, N.Y.

Original No. 4,135,497, dated Jan. 23, 1979, Ser. No. 779,264, Mar. 18, 1977. Application for reissue Mar. 16, 1979, Ser. No. 21,112

Int. Cl.[3] **A61B** *10/00*

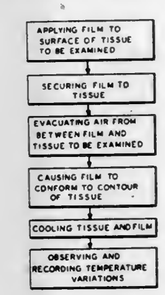
U.S. Cl. 128—736 **16 Claims**

1. A method of detecting temperature variations over selected regions of the breasts of a woman within a predetermined range of temperatures, and which method utilizes [liquid crystals enclosed between] *an* elastic flexible [sheets which represent a composite] film, *having temperature responsive liquid crystals*, and which crystals are responsive to changes in skin temperatures of said breasts to display a color pattern on said film representative of said temperature variations, said method comprising:

(a) wrapping said film around the breasts to be examined,

(b) securing said film in position around said breasts;

(c) positioning a first end of a tubular member and a spacer adjacent said first end in a region spaced from the edges of said film and between said breasts, said spacer providing



communication between said first end of said tubular member and the region under said film;

(d) connecting the opposite end of said tubular member to a vacuum source;

(e) evacuating air from between said film and said breasts;

(f) causing said film to stretch and conform to the contour of said breasts without materially deforming said breasts; and

(g) observing the color pattern produced on said film representative of the temperature variations over said breasts.

Re. 30,447

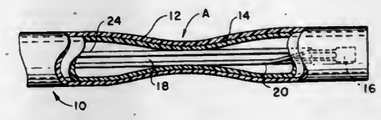
INSULATING CONNECTOR

Patrick V. Loyd, Woodbine, and Samuel M. Mills, University Park, both of Md., assignors to J. L. Clark Manufacturing Co., Rockford, Ill.

Original No. 3,814,139, dated Jun. 4, 1974, Ser. No. 282,977, Aug. 23, 1972. Application for reissue Feb. 23, 1979, Ser. No. 14,494

Int. Cl.[3] **F16L** *9/12*

U.S. Cl. 138—141 **8 Claims**



1. An electrical connector comprising a laminated tubular member, said tubular member having a squeezable spirally wound heat-shrinkable dielectric outer layer, and a relatively soft innermost layer bonded directly to said outer layer, said innermost layer consisting essentially of a synthetic polymeric pressure-sensitive adhesive at ambient temperatures and having a flow temperature lower than the temperature required to heat shrink said outer layer whereby opposed portions of said innermost layer may be adhesively secured to each other and to a conductor disposed therein by squeezing the connector prior to heat shrinking said outer layer.

Re. 30,448

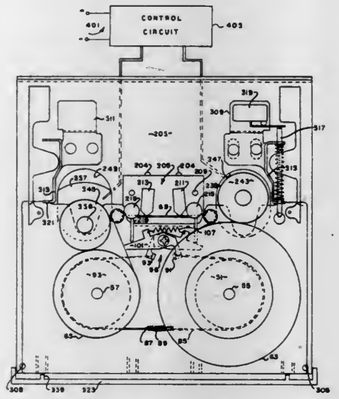
TAPE RECORDER SYSTEM

Bansi K. Shroff, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

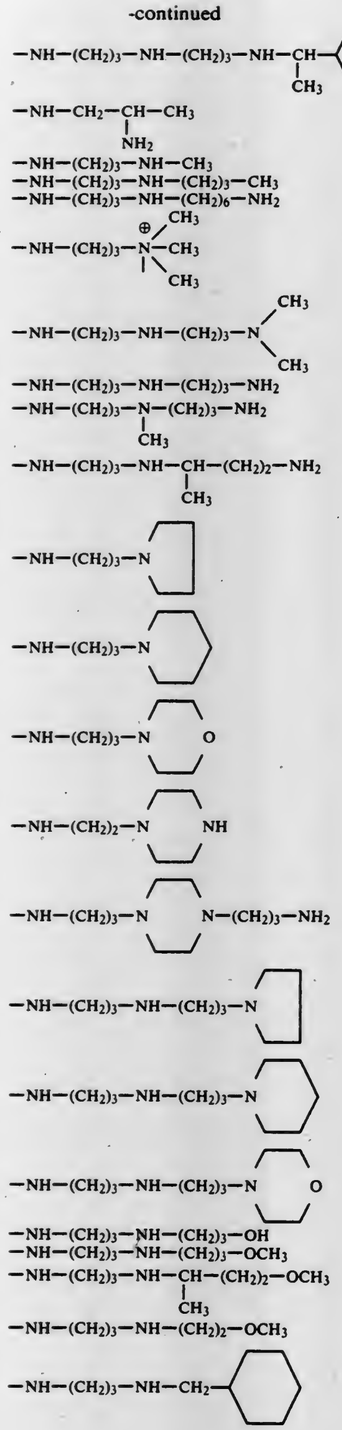
Original No. 4,095,758, dated Jun. 20, 1978, Ser. No. 635,941, Nov. 28, 1975. Application for reissue Jan. 15, 1979, Ser. No. 3,621

Int. Cl.³ G11B *15/32, 15/46, 15/60, 23/10*

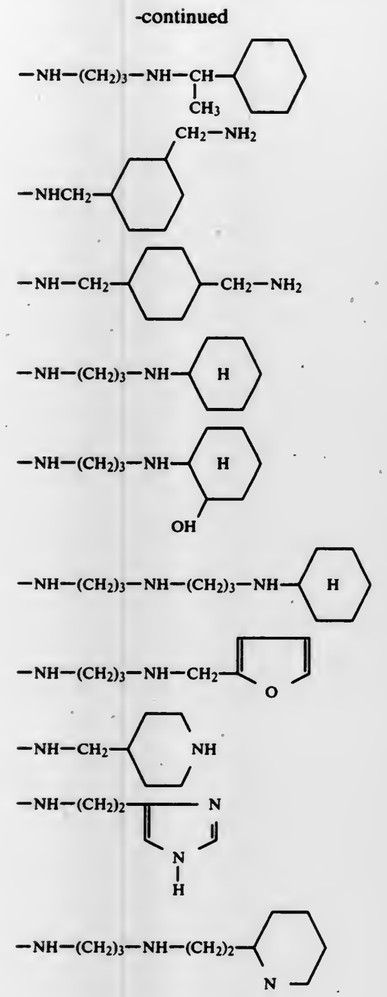
U.S. Cl. 242—192 **19 Claims**



-continued



-continued



Re. 30,452

3-PHENOXYMORPHINANS AND DERIVATIVES THEREOF

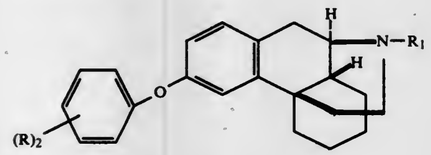
Ernest Mohacsi, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Original No. 4,113,729, dated Sep. 12, 1978, Ser. No. 811,233, Jun. 29, 1977. Continuation-in-part of Ser. No. 748,022, Dec. 6, 1976, abandoned. Application for reissue Oct. 15, 1979, Ser. No. 85,072

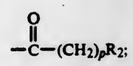
Int. Cl.[3] **C07D** *221/28, 217/18;* **A61K** *31/485*

U.S. Cl. 546—74 **18 Claims**

1. A compound of the formula



wherein R is halo, lower alkyl, lower alkoxy, hydroxy, nitro or hydrogen; R_1 is hydrogen, lower alkenyl containing from 2 to 7 carbon atoms, $—CH_2—(CH_2)_pR_2$, and



R_2 is phenyl, cyclo-lower alkyl containing from 3 to 6 carbon atoms, or a 5 or 6 membered heteroaromatic ring containing a hetero atom selected from the group consisting of oxygen, nitrogen and sulfur; p is an integer from 0 to 3; and n is an integer from 1 to 5; and the lower alkoxy and lower alkyl substituents contain from 1 to 7 carbon atoms and pharmaceutically acceptable salts thereof.

PATENTS

GRANTED DEC. 16, 1980

ERRATA

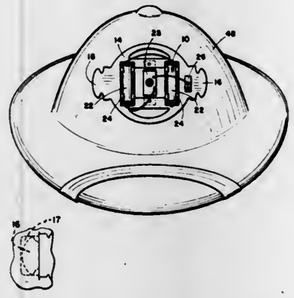
For CLASS	See PATENT NO.
126–443	4,238,873
434–351	4,238,893
131–021 R	4,238,993
493–004	4,238,994
440–040	4,239,013
081–462	4,239,068
239–265.17	4,239,155
242–025 R	4,239,187
493–444	4,239,201
414–478	4,239,275
362–348	4,239,369
400–197	4,239,426
424–088	4,239,498
424–130	4,239,622
424–244	4,239,684
564–092	4,239,699
564–157	4,239,700
564–015	4,239,701
568–435	4,239,702
568–431	4,239,703
568–487	4,239,704
568–487	4,239,705
568–484	4,239,706
570–130	4,239,707
536–029	4,239,905
536–056	4,239,906
536–120	4,239,907
542–416	4,239,908
542–422	4,239,909
375–113	4,239,934
343–007 PL	4,240,076
318–114	4,240,141

PATENTS

GRANTED DECEMBER 16, 1980

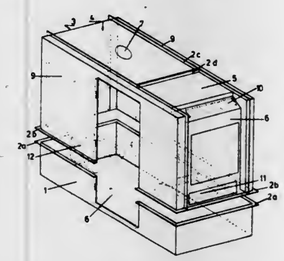
GENERAL AND MECHANICAL

4,238,857
SELF-CONTAINED AIR CONDITIONING UNIT FOR PERSONS
William A. Waters, 3648 E. 49th St., Tulsa, Okla. 74135
Division of Ser. No. 563,066, Mar. 28, 1975, Pat. No. 4,141,083, which is a continuation-in-part of Ser. No. 387,956, Aug. 13, 1974, Pat. No. 3,881,198. This application Sep. 22, 1978, Ser. No. 944,857
Int. Cl.³ A42C *5/04*
U.S. Cl. 2—171.3 **15 Claims**



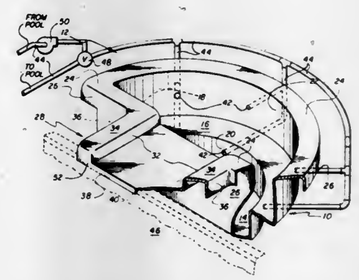
1. A self-contained detachable air conditioning unit for headwear and comprising housing means having grid element means provided therein permitting air flow therethrough, power means carried by said grid element means and extending into the interior of the housing means, impeller means carried by the power means and encased within the housing means and being rotatable by the power means for pulling air into the housing through said grid element means and discharging air from the housing, power supply means operably connected with the power means for selective activation thereof, and securing means provided on the housing means and cooperating between the housing means and headwear for removably securing the self-contained air conditioning unit to the headwear without alteration of the overall configuration and function of the headwear whereby said self-contained detachable air conditioning unit may be removed from the headwear for permitting conventional use of the headwear.

4,238,858
ABLUTION OR TOILET COMPARTMENT
Hans H. Maihart, Brühlerstrasse 79/2/2, 2340 Mödling, Austria
Filed Apr. 18, 1979, Ser. No. 31,144
Claims priority, application Austria, Apr. 20, 1978, 2802/78
Int. Cl.³ A47K *4/00*
U.S. Cl. 4—546 **7 Claims**



1. In an ablution compartment including a base tray having a periphery and a plurality of booth elements supported on said base tray, the improvement wherein said booth elements comprise a plurality of first wall elements and a plurality of second wall elements; each said first wall element being of an angled configuration having a single, substantially planar wall limb and a single, substantially planar ceiling limb arranged at right angles to the wall limb; each said second wall element having a wall surface and connecting two said first wall elements to one another; the wall limbs of said first wall elements and the wall surfaces of said second wall elements together forming an all-around enclosure above said base tray; the improvement further comprising securing means for tightly attaching said booth elements to one another and to said periphery of said base tray.

4,238,859
SPILL-OVER SPA
Sterling P. Badon, Jr., Carencro, La., assignor to Majestic Sales, Inc., Lafayette, La.
Filed Jun. 28, 1979, Ser. No. 52,837
Int. Cl.³ E04H *3/18*
U.S. Cl. 4—509 **3 Claims**



1. A device for installing adjacent an existing swimming pool for retaining a body of fluid for providing physical relaxation, therapy and enjoyment, said device communicating with the pool in a manner so as to preserve the integrity of the existing pool, said device comprising:

a body having a floor, a semi-annular seat, and sidewall means including a front wall, a lower circular wall, and an upper circular wall, said floor and sidewall means defining an enclosure for retaining a body of fluid,

an upper peripheral edge portion connected to said sidewall means and including a side edge portion to provide structural support for the device when installed, and

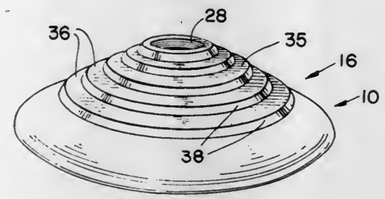
a transition section formed on and extending laterally outwardly from said body for permitting fluid within the device to flow from said device through said transition section and into the adjacent swimming pool, said transition section having a lower surface, a pair of sidewalls, a top edge portion joined to said upper peripheral edge portion of said sidewall means, an outer edge portion, and a spillway, said transition section lower surface including a downwardly extending lip depending from the edge of said transition section lower surface which engages an upper inner edge surface of the adjacent swimming pool to preclude the flow of fluid along the underside of the transition section.

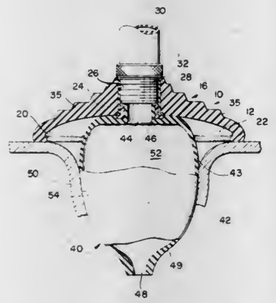
4,238,860

WATER-PRESSURE, DRAIN-CLEANING DEVICE

Russel H. Dixon, 630 Tustin Ave., Newport Beach, Calif. 92663

Filed Jun. 13, 1979, Ser. No. 48,057
Int. Cl.³ E03D *11/00*
U.S. Cl. 4—256 **3 Claims**





1. A water-pressure, drain-cleaning device in combination with a water hose comprising:
a cup-like body member having an outer ringed wall and an inner arcuate domed wall;
an inner cup chamber defined by said inner arcuate domed wall and an annular lip member formed at the terminating annular edge of said inner arcuate wall;
said outer ringed wall defined by a plurality of annular rim members arranged contiguously to each other, each having a different size diameter defining sealing means when disposed over a corresponding opening of a drain;
wherein each of said annular rim members includes a flat sealing surface and an inclined sealing surface for positive sealing engagement with said drain opening;
said cup-like body including a central bore communicating with said cup chamber, said bore having a threaded sleeve member affixed therein to removably receive said water hose therein from either side of said sleeve member; and
a removable plug fitting having an inlet port and an outlet port, said inlet port being adapted to be secured to said threaded sleeve member of said cup body, said plug fitting being formed from a resilient material so as to expand under water pressure, whereby said plug fitting conforms to the configuration of said adjacent drain opening.

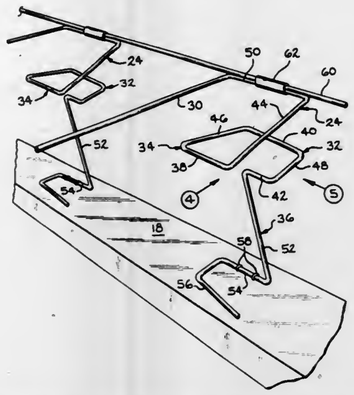
4,238,861

BOX SPRING ASSEMBLY WITH LIMITED DEFLECTION FORMED WIRE SPRINGS

Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed May 14, 1979, Ser. No. 38,536
Int. Cl.³ A47C *23/02, 23/00*
U.S. Cl. 5—247 **8 Claims**

1. In a box spring assembly which includes a generally rectangular frame, a plurality of limited deflection wire springs mounted on said frame and connected to each other so as to yieldably resist downwardly directed bedding loads, each of said springs being formed of spring steel wire and having an elongated body portion arranged above said frame and downwardly extending end portions, each of said end portions having an upper section and a lower section, said upper section comprising a plurality of substantially horizontal torsion bars and a plurality of angularly arranged connecting bars connected to and extending between said torsion bars, said torsion



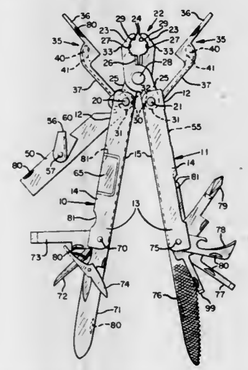
bars being movable in response to torsional stressing thereof to enable downward yieldable collapsing deflection of said upper section, said torsion bars and connecting bars in said upper section being relatively arranged so that the upper one of said connecting bars engages the lower one of said torsion bars in the fully deflected condition of said upper section, said lower section comprising an an upwardly extending column of wire, and means mounting said column on said frame.

4,238,862

POCKET MULTIPLE TOOL

Timothy S. Leatherman, 2010 NE. 91st Ave., Portland, Oreg. 97220

Filed Jul. 13, 1978, Ser. No. 924,180
Int. Cl.³ B25B *7/22*
U.S. Cl. 7—128 **23 Claims**



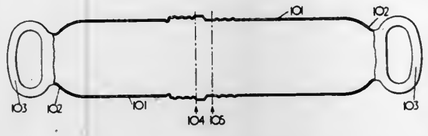
1. A multiple instrument comprising a pair of cross jaw pliers having a pair of plier jaws pivotally connected together between nose ends and shank ends of the jaws, a first auxiliary jaw pivoted to said shank end of one of said cross jaws and engagable with said nose end of the other cross jaw, and a second auxiliary jaw pivoted to said shank end of the other cross jaw and engagable with said nose end of said one cross jaw, said auxiliary jaws being disengagable from said nose end of said cross jaws when using said cross jaws.

4,238,863

METHOD OF WASHING ARTICLES OF CLOTHING

Earl S. Tupper, Nassau, The Bahamas, assignor to TUPI (Panama) S.A., Panama City, Panama

Continuation of Ser. No. 634,555, Nov. 24, 1975, abandoned, which is a continuation of Ser. No. 260,250, Jun. 6, 1972, abandoned. This application May 26, 1978, Ser. No. 910,036
Claims priority, application United Kingdom, Jun. 8, 1971, 19750/71; Jul. 30, 1971, 36067/71
Int. Cl.³ D06F *1/00, 1/10, 51/00*
U.S. Cl. 8—150 **1 Claim**



1. A method of washing articles of clothing comprising the steps of
(a) providing an elongated substantially tubular member of substantially rigid construction and made of a synthetic plastic material, said member being closed at each end, and each such end having a rounded configuration, at least one end being provided with a suitable handle for gripping, and a watertight disengageable closure intermediate the ends of said member, said tubular member having a plurality of undulating regions situated along its longitudinal axis and intruding transversely into the interior thereof to a substantial extent sufficient to promote turbulence of the water and tumbling of articles of clothing when the member is partly filled with water and said articles of clothing and shaken and thereby aid in the washing of said articles of clothing in said water, said intruding regions being visible in one longitudinal cross section but not visible in the longitudinal cross section at right angles thereto, said intruding regions being located to define an essentially unconstricting internal space within the tubular member in order to facilitate general transfer of water and articles of clothing from one end thereof to the other, and a transversely extending perforated plate disposed within at least one end of the member;
(b) releasing said disengageable closure;
(c) introducing articles of clothing and water into said member;
(d) replacing said closure;
(e) vigorously agitating said clothing by shaking said member;
(f) grasping said handle;
(g) whirling said tubular member for centrifugally removing excess water from said articles of clothing such that water passes through said perforated plate and is collected within said end of the member across which said perforated plate lies; and
(h) releasing said collected water and said clothing separately from said member.

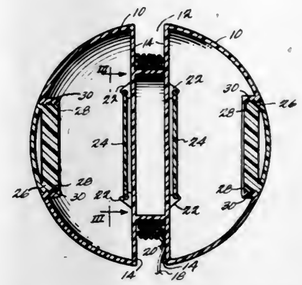
4,238,864

DIVER'S FLOATER

Gregory Kealoha, 1234 13th Ave., Honolulu, Hi. 96816

Filed Jun. 20, 1978, Ser. No. 917,362
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 R **13 Claims**

1. A diver's floater comprising:
a float body having an average specific gravity less than that of water;
flexible means, having one end attached to said float body, for connecting said float body to said diver, said flexible means being wound around said float body during storage; and
retaining means, attached to said float body and operatively associated with said flexible means, for maintaining preselected points of said flexible means proximate said float body until a predetermined force is applied to said flexible means, said preselected points being separated by a distance greater than the circumference of said float body,



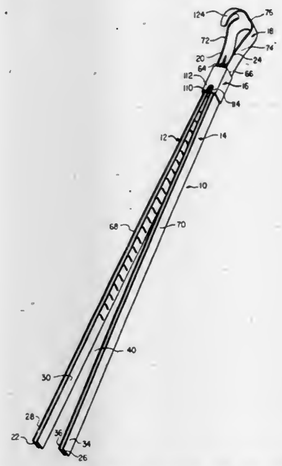
and said retaining means for preventing more than preselected lengths of said flexible means from unwinding from said float body until said predetermined force is applied to said flexible means, said lengths being greater than the circumference of said float body.

4,238,865

BOOT SUPPORT DEVICE

Bertil Ingemann, Kristinelund, 235 00 Vellinge, and Bertil Persson, Kerstis Vag 12 Hjarup, 222 48 Lund, both of Sweden

Continuation-in-part of Ser. No. 788,970, Apr. 19, 1977, abandoned. This application Apr. 4, 1979, Ser. No. 27,119
Claims priority, application Sweden, Apr. 21, 1976, 7604559
Int. Cl.² A43D *5/00*; A44B *21/00*; A47F *7/08*
U.S. Cl. 12—114.8 **22 Claims**



1. A boot support device for boots having upstanding legs with inside surfaces, the boot support device comprising:
(a) a pair of shanks;
(b) said shanks including means for engaging the inside surfaces of the legs of the boots and for pressing the legs against each other, each shank having a first and a second end, said first ends of both shanks being disposed adjacent each other and second ends of both shanks being disposed adjacent each other;
(c) means for effecting a rocking movement between said shanks by engagement of said shanks with each other, said rocking means being disposed closer to said first ends of said shanks than said second ends, said shanks each includ-

ing sections diverging from each other in a direction from said rocking means toward said first ends, said shanks including first portions, each first portion extending from said rocking means to said first end of one shank, said shanks also including second portions, each second portion extending from said rocking means to said second end of one shank;

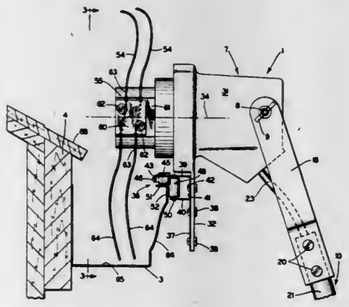
(d) whereby pressure exerted on said diverging sections of said shanks to urge said diverging sections together effects rocking of said shanks with respect to each other about said rocking means to in turn effect spreading apart of said second portions of said shanks to thereby facilitate insertion of said shanks into the legs of the boots.

4,238,866

RAIN GUTTER CLEANING DEVICE

Nelson D. Taylor, 734 Maplewood Ave., Sheffield Lake, Ohio 44054

Filed Aug. 14, 1979, Ser. No. 66,440
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—23 **10 Claims**



1. A device for cleaning leaves and other debris from rain-collecting gutters consisting of:

(a) rigid handle means;

(b) motor means pivotally mounted on one end of the handle means and having a rotatable shaft;

(c) switch means mounted on the opposite end of the handle means for actuation of the motor means;

(d) means mounted on the motor means shaft for securely clamping a plurality of sections of flexible line on the shaft for rotation with said shaft;

(e) each of the sections of flexible line having a preformed configuration having a portion extending in a generally radially outwardly direction and then an integrally connected portion extending in a generally concavely curve direction toward the direction of rotation of the shaft; and

(f) roller means mounted on the motor means for engagement with the outer edge of a gutter to facilitate movement of the motor means therealong, whereby the sections of line when rotated by the motor means shaft will scoop leaves and other debris from the gutter due to the preformed configuration of the line.

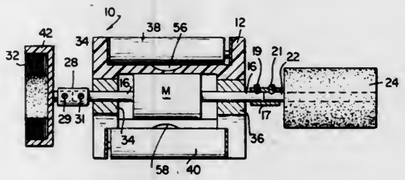
4,238,867

TUBE ABRADING TOOL

Salvatore Ruggero, and Joseph Ruggero, both of 84-05 101st Ave., Ozone Park, N.Y. 11416

Filed Jul. 27, 1979, Ser. No. 61,189
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—88 **3 Claims**

1. A tool for abrading the terminal ends of tubing comprising an I-shaped housing having a cylindrical central portion of fixed diameter and flange portions on opposite ends of said cylindrical portion each having the same diameter, which diameter is greater than the fixed diameter of the central cylindrical portion, the central cylindrical portion of said housing having a pair of indentations formed therein on diametrically opposed sides which indentations serve as a holding means for said tool during use, electrical contacts mounted on opposed inner surfaces of said flange members, said flange members adapted to support a longitudinally oriented electrical battery between the inner opposed surfaces thereof in electrical contact with the electrical contacts thereon, an electric motor mounted in the cylindrical central portion of said housing having electrical connection to the electrical contacts on the housing flanges whereby electrical power can be conveyed to operate the motor, said electric motor having two shafts mounted for rotation by said motor extending longitudinally



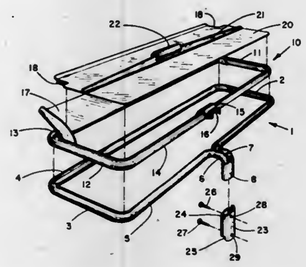
from opposite ends of said housing, a male abrasive member including a wire brush secured to one of said shafts and a female abrasive member including a wire brush secured to the other end of said shafts, said female abrasive member adapted for enveloping and rotatably and abrasively engaging the outer surface of an end of the length of tubing, said male abrasive member adapted for insertion into and rotatably and abrasively engaging the inner surface of the end of a length of tubing so that both the inner and outer surfaces of the end of the length of tubing may be abraided to permit subsequent joining of the tubing to a like abraided tubing to form a continuous length of tubing.

4,238,868

REFUSE BAG HOLDER

Gerd Sternberg, 6785 W. Garden Grove, Las Vegas, Nev. 89103

Filed Apr. 30, 1979, Ser. No. 34,398
Int. Cl.³ A47F *13/08*
U.S. Cl. 15—257.4 **7 Claims**



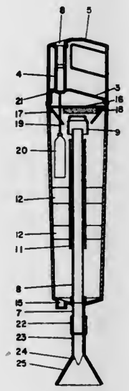
1. A refuse bag holder for supporting disposable plastic refuse bags comprises a rigid rectangular bag-supporting loop, an annular clamping frame having a slot along the bottom portion thereof, said slot dimensioned to forcibly receive the bag-supporting loop, the cross-section of the bag-supporting loop being of similar shape to the cross-section of the clamping frame such that a refuse bag clamped therebetween is frictionally retained in place, and a flat, rigid scoop extending outwardly from the clamping frame, and handle means located on a side of the refuse bag holder opposite the scoop, said handle means also comprising mounting means for removably attaching the refuse bag holder to a structure.

4,238,869

LIQUID ASPIRATOR

Fernand Lachance, 330, 153e Rue Est, Ville St-Georges, Beauce, Quebec, Canada (G5Y 2J6)

Filed Nov. 24, 1978, Ser. No. 963,367
Claims priority, application Canada, Mar. 20, 1978, 299285
Int. Cl.³ A47L *7/00*
U.S. Cl. 15—353 **9 Claims**



1. A liquid aspirator for removing liquids from a flooring surface attachable to a vacuum cleaner comprising, in combination:

an elongated body-reservoir for retaining collected liquid therein including a liquid pick-up nozzle means at the lower end thereof and a unitary closure lid at the other, and a central tube positioned in the central axis of and extending substantially through said body-reservoir, the lower end of said tube communicating with said liquid pick-up nozzle means and the upper end thereof terminating adjacent said closure lid, the interior of said body-reservoir including a plurality of braces extending between the opposing inner walls of said body-reservoir to support the inner walls of said body-reservoir, preventing buckling of said supported inner walls due to suction present in said body-reservoir while said aspirator is in use,

inverted cup means spaced radially about the upper end of said tube for directing the flow of liquid therethrough downward from said tube away from said unitary closure lid and into said reservoir,

said closure lid including an integral handle means for holding and moving said liquid aspirator in use and attachment means defining a channel in flow communication with said body-reservoir for receiving the hose of a vacuum cleaner,

liquid attenuating filter means positioned between said body-reservoir and said closure lid for retaining the sprayed water which may be discharged past said inverted cup, and

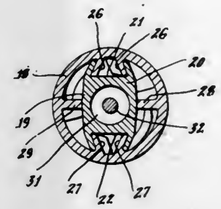
valve means for occluding air communication between said body-reservoir and said vacuum cleaner attachment means when the liquid in said body-reservoir reaches a predetermined level, said valve means including a float slidably retained within said body-reservoir actuating a rod and, in turn, a valve positioned within the channel of said attachment means.

4,238,870

BRUSH-BEATER ROLLER FOR A VACUUM CLEANER

Karl L. Fahlen, Marsta, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation of Ser. No. 897,446, Apr. 18, 1978, abandoned.
This application Jul. 16, 1979, Ser. No. 57,551
Claims priority, application Sweden, Apr. 29, 1977, 7705003
Int. Cl.³ A47L *5/30*; A46B *13/02*
U.S. Cl. 15—389 **5 Claims**



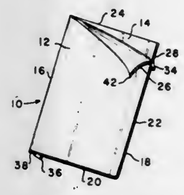
2. A brush-beater roller mounted in a vacuum cleaner housing of a vacuum cleaner comprising: an elongated roller body of a generally rectangular cross section having two short sides, means supporting said roller in said housing, a drive belt pulley on said roller body, the latter being helically twisted about its longitudinal axis and provided with a continuous dovetail slot along the entire length of said roller body in each of said short sides, a pair of brush bristle holders and a beater bar being adapted to be accommodated in said dovetail slots, said beater bar being grooved on a part of its length corresponding to the width of said belt pulley, one of said brush bristle holders and said beater bar at one end of said roller body being provided with projections which extend laterally toward the long side of said roller body, shoulders on said roller body coacting with said projections thereby preventing movement of said beater bar and brush bristle holder toward the opposite end of said roller body, and obliquely inwardly directed projections on said drive belt pulley inserted in said dovetail slots, said pulley being an integral ring that is slid onto the roller body with said brush strip and beater bar, and said inwardly directed projections sliding in said slots for final alignment.

4,238,871

SLIDE FASTENER INSTALLATION

Robert E. Cannon, Meadville, Pa., assignor to Textron, Inc., Providence, R.I.

Filed May 19, 1978, Ser. No. 907,633
Int. Cl.² A44B *19/00*
U.S. Cl. 24—205.11 R **12 Claims**



1. A slide fastener comprising a pair of slide fastener stringer tape sections;

a plurality of slide fastener coupling elements mounted on each stringer tape section, each coupling element having a head portion and a pair of legs extending therefrom;

at least one slider entrained on the coupling elements of the two stringer tape sections for movement therealong; and

a separating end stop at one end of the slide fastener, the separating end stop including a retaining end stop on one stringer tape section to retain the slider thereon and a

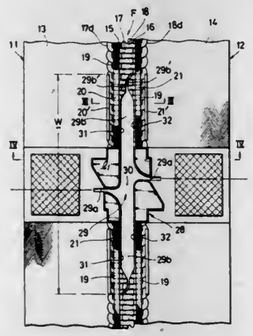
separating end device on the other stringer tape section, the separating end device including a plurality of substantially undeformed severed pairs of leg portions of coupling elements from which the head portions have been removed and a thermoplastic film folded over the severed leg portions and bonded to the opposite sides of the other stringer tape section, said thermoplastic film reinforcing the other stringer tape section and severed leg portions and being sufficiently thin to permit movement of the separating end device through the slider.

4,238,872

SEPARABLE SLIDE FASTENER CHAIN AND A METHOD OF PRODUCING THE SAME

Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 9, 1979, Ser. No. 82,621
Claims priority, application Japan, Oct. 11, 1978, 53-124940
Int. Cl.³ A44B *19/36*
U.S. Cl. 24—205.11 F **4 Claims**



1. A separable slide fastener chain comprising a pair of oppositely disposed stringers of continuous length each having a support tape and a fastener element formed from a plastic monofilament into a continuous structure having coupling head portions and secured by sewn seams to a longitudinal inner edge of the respective tape, said fastener element being fused together over a predetermined length of the two coupled stringers at predetermined intervals, and a composite pin-forming structure located centrally of the fused length of the fastener element and cut out to produce a multi-form aperture having a pair of bay portions extending transversely of the fastener chain and oppositely disposed in point-symmetry relation and a pair of elongated canal portions extending longitudinally closely along the sewn seams, said composite structure being subdivisible across said bay portions into two identical pairs of slider-lock pin members and inserting pin members.

4,238,873

APPARATUS FOR COLLECTING AND TRANSPORTING HEAT ENERGY

Matthew W. Frank, and Donald E. Oberbeck, both of Boulder, Colo., assignors to Entropy Limited, Boulder, Colo.

Filed Mar. 13, 1978, Ser. No. 885,501
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **13 Claims**

1. An apparatus for collecting and transporting thermal energy as the vapor of a selected fluid, from a heat source having an intensity sufficient to vaporize the fluid, and to a location where condensation will occur, and comprising:

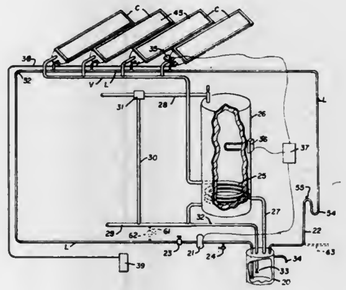
(a) an elongated heat absorption chamber exposed to the heat source and positioned substantially horizontally to provide an elongated lower portion within the chamber constituting a sump to hold a puddle of said fluid and an elongated upper portion above the puddle constituting a vapor space;

(b) a vapor transport conduit extended from the chamber above the puddle and to said location; and

(c) a fluid inflow means adapted to supply fluid to the puddle and maintain the level of the puddle as fluid therein evaporates when the chamber is heated;

wherein said fluid inflow means includes:

(d) a fluid supply line adjacent to the chamber and means to partially fill the fluid supply line to a substantially constant free surface fluid level which is essentially the same as the fluid level of the puddle;



(e) a conduit connecting the supply line and the sump which is below the said fluid levels to form a trap to provide continuous communication of fluid from the supply line to the puddle;

(f) a means to balance the pressures in the chamber and in the fluid supply line to maintain the aforesaid same fluid levels in the chambers and in the supply line; and

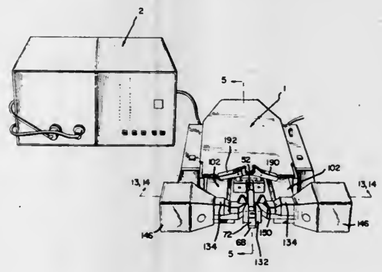
(g) the source end of the fluid supply line being above the heat absorption chamber to permit a continuous flow of fluid to be supplied from a high point in the line and to flow past the chamber.

4,238,874

TOOLING WITH STEPPING MOTOR DRIVE

William B. Chandler, Winston-Salem; John D. Davis, Lexington, and Ronald G. Sergeant, Winston-Salem, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 31, 1978, Ser. No. 929,742
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—33 M **11 Claims**



1. In apparatus, having an anvil for mounting an electrical connector, tooling for trimming and inserting electrical wires of a multiple wire cable into successively arranged electrical contacts contained in an electrical connector mounted on said anvil, and a stepping motor drive for transporting and repeatedly stopping the tooling successively in alignment with the contacts preparatory to insertion of corresponding trimmed wires therein, the improvement comprising:

a carriage fixedly mounting said tooling thereon,

said carriage and said tooling being connected as a unit to said stepping motor drive and being transported by said stepping motor drive as a unit along an electrical connector mounted on said anvil,

said carriage engages said anvil before and after mounting of an electrical connector thereon, and

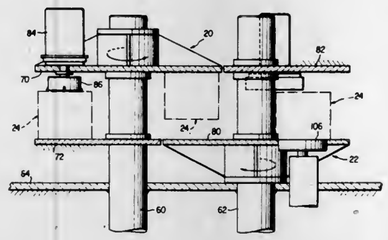
said carriage includes means for engaging and following a reference surface of said connector during transport along said connector and during precise alignment of said tooling with each successive contact in said electrical connector during wire trimming and insertion of a trimmed wire into each successive contact.

4,238,875

METHOD OF AND APPARATUS FOR PERFORMING WORK FUNCTIONS ON ARTICLES FROM OPPOSITE ENDS OF THE ARTICLES

Robert J. Van Sickle, Richmond, Va., assignor to Rail Bearing Service, Richmond, Va.

Filed Mar. 15, 1979, Ser. No. 20,731
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—148.4 S **27 Claims**



1. A method of performing work functions on articles from opposite ends of said articles with the aid of twin turrets, a first of said turrets being elevated with respect to the second to present a bottom datum surface while the second of said turrets presents a top datum surface, said method comprising the steps of

a. conveying articles seriatim to a first work station beneath said bottom datum surface,

b. lifting and holding an article to travel with and be associated with said bottom datum surface,

c. indexing said article with said first turret,

d. performing work functions on said article from beneath said article while it is associated with said bottom datum surface,

e. transferring said article to said top datum surface of said second turret,

f. indexing said article with said second turret,

g. performing work functions on said article from above said article while it is on said top datum surface,

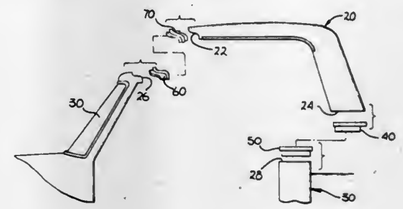
h. and removing said article from said second turret.

4,238,876

METHOD FOR CONVERTING HARD TOP VEHICLES TO REMOVABLE TOP VEHICLES

Gary S. Monroe, Encino; Robert L. Contreras, both of 21601 Erwin St. #285, Woodland Hills, Calif. 91367, and Gregory C. Hummel, 1832 N. Naomi, Burbank, Calif. 91505, assignors to Gary S. Monroe; Robert L. Contreras; Gregory C. Hummel and Barry A. Russell, all of Los Angeles, Calif.

Filed Sep. 5, 1978, Ser. No. 939,230
Int. Cl.³ B22D *19/10*; B23P *7/00*
U.S. Cl. 29—401.1 **5 Claims**



1. A method for converting a hardtop vehicle to a removable hardtop vehicle comprising the steps of:

(a) severing a predetermined portion of the roof of a vehicle from the body of the vehicle thereby exposing the cavity between the inner and outer walls of said roof and vehicle;

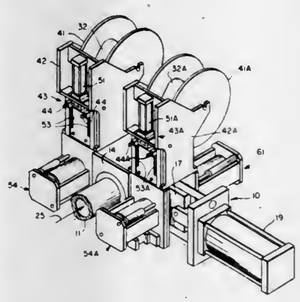
(b) providing the severed portion of the roof and the body portion of the vehicle with joining means for removably rejoining said severed portion to said body portion said joining means having lip portions to conceal the edges of said severed portions and of said vehicle and further having a body portion extending into the cavity between the inner and outer walls of said roof and vehicle.

4,238,877

FABRICATION OF SCREEN DEVICES

Willard E. Rapp, Griggstown, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,633
Int. Cl.³ B29F *3/00*
U.S. Cl. 29—402.11 **9 Claims**



1. The method of replacing the used screen devices of a screen mechanism employed to screen the extrudate of a plastics extruder, the screen mechanism having at least first and second screen receiving recesses and being movable between a first and second position, in the first position, the first recess being outside of the path of the extrudate at a first standby station while the second recess is in the path of the extrudate and, in the second position, the second recess being outside of the path of the extrudate at a second standby station while the

first recess is in the path of the extrudate, which method comprises the steps of:

(a) moving the screen mechanism to the first position to position the first recess at the first standby station;

(b) removing any used screens from the first recess at the first standby station;

(c) feeding a first elongated carrier having a plurality of screen elements connected thereto into the first standby station such as to align one of the screen elements thereof with the first recess when the first recess is positioned in the first standby station;

(d) removing an aligned screen element from the first carrier strip;

(e) inserting the screen element removed in step (d) into the first recess;

(f) moving the screen mechanism to the second position to position the second recess at the second standby station;

(g) removing any used screen devices from the second recess at the second standby station;

(h) feeding a second elongated carrier having a plurality of screen elements connected thereto into the second standby station such as to align one of the screen elements thereof with the second recess when the second recess is positioned in the second standby station;

(i) removing the aligned screen element from the second carrier strip; and

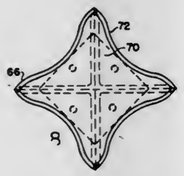
(j) inserting the screen element removed in step (i) into the second recess.

4,238,878

METHOD AND APPARATUS FOR FORMING SHROUD

Robert H. Stamm, Canton, and Fred E. Krause, Detroit, both of Mich., assignors to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed Mar. 9, 1979, Ser. No. 18,263
Int. Cl.³ B21D *26/02, 39/04;* B23P *11/02, 19/00*
U.S. Cl. 29—421 R **15 Claims**



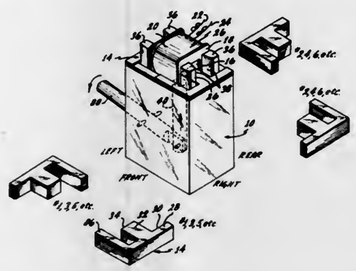
1. The method of producing controlled collapse of an elongated thin sheet metal tube of square cross-section having four initially flat sides, a length up to about fifteen feet and sides approximately six to nine inches in width, which comprises placing the tube on an elongated mandrel having four elongated rigid tube corner support portions with peripherally adjacent support portions separated to provide clear spaces into which side walls of the tube may be displaced, in which the dimension between diametrically opposite tube engaging surfaces of the corner support portions is slightly less than the internal dimension between opposite corners of the tube, sealing the ends of the tube, and evacuating the interior of the tube, to produce a controlled collapse of the tube in which its corners collapse radially inwardly to engage the radially outer tube engaging surfaces of the corner support portions and its initially flat sides are collapsed inwardly by atmospheric pressure to assume an inward curvature controlled by the separation between the tube engaging surfaces of the tube supports.

4,238,879

LAMINATED INDUCTOR STACKING AND CALIBRATING APPARATUS

Cyril P. Zurlinden, III, 5635 Pineglen Rd., La Crescenta, Calif. 91214; Charles W. Howe, 8259 Kyle St., Sunland, Calif. 91040, and John M. Podry, 4953 Del Monte Rd., La Canada, Calif. 91011

Filed Aug. 16, 1978, Ser. No. 933,992
Int. Cl.² H01F *41/02*
U.S. Cl. 29—705 **9 Claims**



1. Apparatus to facilitate manual assembly and subsequent calibration of the type of inductor which includes a wire-wound bobbin having a hollow core extending from left to right for ease of description, and which further includes plate-like laminations each having an arm extending from an edge of the body of the lamination, the arms extending axially into the core from the left and right ends of the core, the ends of the arms being spaced apart to define an air gap within the bobbin, the laminations which extend into the core from the right end being stacked one on top of another with their arms in registration to form a right hand stack, the laminations which extend into the core from the left end being stacked one on top of another with their arms in registration to form a left hand stack, the laminations of the right hand stack being interleaved between the laminations of the left hand stack, said apparatus comprising:

first support means for supporting the bobbin;

second support means including a substantially flat surface surrounding an area recessed below said flat surface to support the stacks of laminations;

a first pair of vertically-extending indexing posts located to the right of the bobbin and spaced sufficiently far apart to permit the arms of the laminations of the right hand stack to be inserted between them into the core of the bobbin;

a second pair of vertically-extending indexing posts located to the left of the bobbin and spaced sufficiently far apart to permit the arms of the laminations of the left hand stack to be inserted between them into the core of the bobbin;

said first pair of indexing posts located far enough to the right of said second pair of indexing posts that after each lamination has been inserted with the edge of its body against said indexing posts, the ends of the arms of the laminations are spaced to provide a predetermined air gap;

said indexing posts extending upwardly from the plane of the substantially flat surface of said second support means while the laminations are being stacked and being movable vertically under control of an operator after the laminations have been stacked to permit movement of the stacked laminations in directions parallel to the substantially flat surface of said second support means;

a first set of vice-like jaws which move along the substantially flat surface of said second support means in a front-rear direction perpendicular to the left-right direction to close against the stacks of laminations under control of an operator to bring the front edges of the laminations into registration and the rear edges of the laminations into registration;

a second set of vice-like jaws which close in the left-right direction along said substantially flat surface to force the right hand stack and the left hand stack together under control of an operator to reduce the width of the air gap;

at least one set of said first and said second set of jaws being less wide than the width of the inductor in a direction perpendicular to the direction of closure, to prevent the sets of jaws from interfering with each other; and further comprising,

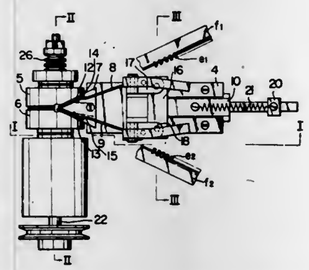
an impedance comparator electrically connected to the inductor and including a display indicative of the difference between the inductance of the inductor being calibrated and the inductance of a standard inductor as said second set of jaws is closed by the operator, to indicate to the operator when the inductance of the inductor being calibrated is approaching the inductance of the standard inductor.

4,238,880

ASSEMBLING APPARATUS FOR SLIDE FASTENER STRINGERS

Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Dec. 12, 1978, Ser. No. 968,801
Claims priority, application Japan, Dec. 15, 1977, 52/151125
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—766 **4 Claims**



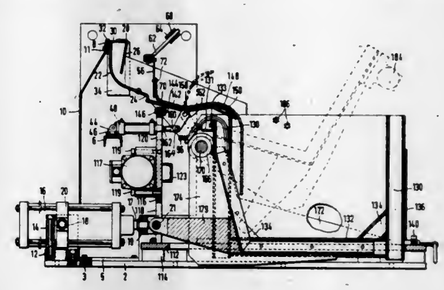
1. An assembling apparatus for a pair of fastener stringers each having a row of fastener elements therealong, comprising a pair of pulling rollers rotatably mounted close to each other on a driving shaft with a space therebetween, a pair of auxiliary rollers in contact with the pulling rollers and providing therewith a pair of inlet nips for pulling the respective stringers, and a binder member fixedly position at the inlet nip side of said pulling rollers and having a pair of guide grooves for directing the stringers into the respective nips, characterized in that a pair of probes are each mounted for freely transversely entering or withdrawing from a guide groove in said binder member for the fastener elements, said probes serving to detect leading fastener elements on a leading stringer and to retard the advancement of the leading stringer when the fastener elements thereon come in contact with a respective probe, and a differential transmission mechanism connected between said pulling rollers for retarding one of the pulling rollers which is advancing the leading stringer and simultaneously accelerating the other of the pulling rollers which is advancing the other stringer to longitudinally align mismatched rows of elements on the pair of stringers.

4,238,881

APPARATUS FOR ASSEMBLING ELONGATED PIECES INTO BUNDLES

Bodo Missmahl, Düsseldorf, and Georg Streit, Mettmann, both of Fed. Rep. of Germany, assignors to Malmedie & Co. Maschinenfabrik GmbH, Düesseldorf, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,123
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826738
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—822 **16 Claims**



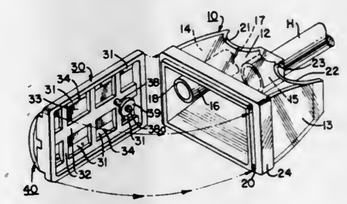
1. Apparatus for assembling straight pieces of wire, directed and cut to length, comprising: a base frame; a support frame mounted elastically to the base frame; jolting means for jolting the support frame; guide sheet arrangement attached at least in part to the support frame for transporting and directing the wire pieces; assembling means comprising at least a rocking lever which can be controllably lifted up or lowered down; and bundling means for providing a belt band to bundle a defined amount of wire pieces.

4,238,882

RESERVOIR SAFETY RAZOR

Jack R. Harrison, Sr., 9209 Ferndale Rd., Dallas, Tex. 75238

Filed Sep. 26, 1979, Ser. No. 78,984
Int. Cl.³ B26B *21/00*
U.S. Cl. 30—41 **9 Claims**



1. A reservoir safety razor of the type including a handle and a body portion attached to the handle and operative to contain a shaving liquid and to support a razor blade oriented crosswise of the handle, said body portion comprising:

a reservoir fixed at one end to the handle and having an opening extending across the other end of the reservoir and oriented crosswise of the handle;

a filling tube in the reservoir passing through said one end thereof alongside the handle and extending substantially to and facing toward said opening;

a head removeably attachable to said reservoir to close said opening, the head having outer surfaces oriented crosswise of the handle and supporting said blade in operative shaving position, the head having multiple capillary-size ports extending from the reservoir through said outer surfaces and into communication with surfaces of the blade which overlie the ports;

a cap supported by the head and overlying the blade to urge it toward said outer surface; and

valve means supported by the head and moveable toward and away from the filling tube, the valve means being buoyant in the saving liquid so that it tends to close the filling tube when the razor is held with its handle extending upwardly.

4,238,883

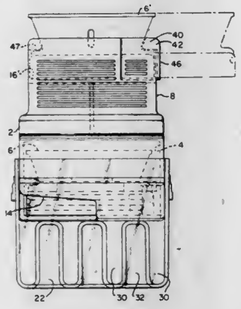
SCRAPER ASSEMBLY WITH BLADE LOCK MEANS

Chester F. Jacobson, Southboro, and Norman D. Poisson, Andover, both of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 894,596, Apr. 7, 1978, Pat. No. 4,182,033. This application Jun. 15, 1979, Ser. No. 49,038

Int. Cl.³ B26B *5/00*

U.S. Cl. 30—162 **5 Claims**



1. A scraper assembly comprising a housing having two generally parallel elongated sides interconnected by first and second ends and having a head portion adapted to receive and retain a blade unit, and a cover member adapted to cover said blade unit retained by said head portion, said cover member having two generally parallel elongated walls engageable with said sides respectively, and first and second end walls engageable with said ends respectively, said cover member and said head portion being provided with detent and recess means to facilitate engagement of said cover member and said head portion and to facilitate removal of said cover member and said head portion and to facilitate removal of said cover member from said head portion, said cover member being further adapted to cover portions of said housing remote from said head portion, said cover member being releasably retained by engagement with a second portion of said housing and completely separable therefrom, said cover member, when in engagement with said second portion of said housing remote from said blade unit being adapted to serve as a grip portion for said assembly, whereby said cover member may be selectively positioned to cover said blade unit and may be removed therefrom and positioned on said housing remote from said blade unit to expose said blade unit for scraping operations, and may be completely removed from the remainder of said assembly, and lock means for locking said blade unit in said head portion.

4,238,884

ORBITAL JIG SAW

Richard E. Walton, II, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 19, 1979, Ser. No. 50,043

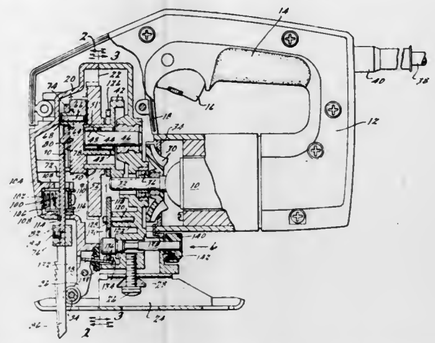
Int. Cl.³ B23D *49/00*; B27B *11/00*

U.S. Cl. 30—393 **25 Claims**

1. An orbit adjusting mechanism for an orbital jig saw having a casing containing a motor driven reciprocal saw blade carrier and oscillating orbital drive means, and a movable saw blade guide supported by the causing and positioned to engage the trailing edge of a reciprocating saw blade carried by the saw blade carrier, said mechanism comprising:

a level supported by said casing for pivotal movement about a first axis, said lever being operatively connected to said orbital drive means so that the latter causes said lever to oscillate about said first axis;

motion translating means movably supported by said casing, said motion translating means engaging said oscillating lever in all operative positions thereof and coacting with said saw blade guide, whereby motion of said oscillating lever is transmitted to said saw blade guide; and



orbit adjusting means for moving said motion translating means with respect to said oscillating lever from a first position in which said motion translating means engages said lever at a first point aligned with said first axis, wherein no motion is transmitted to said motion translating means by said oscillating lever, to a second position in which said motion translating means engages said lever at a second point space from said first point, wherein substantial motion is transmitted to said motion translating means and hence said saw blade guide by said oscillating lever.

4,238,885

INSTRUMENT FOR MEASUREMENT AND VERIFICATION OF LINEAR DIMENSIONS

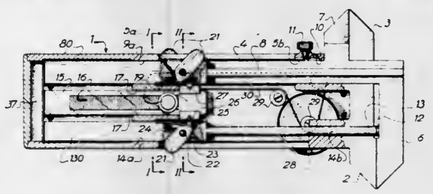
Georges Lendi, Crissier, and Nicolae Voinescu, Lausanne, both of Switzerland, assignors to Tesa S.A., Renens, Switzerland

Filed Jun. 8, 1979, Ser. No. 46,655

Claims priority, application Switzerland, Jun. 19, 1978, 6636/78

Int. Cl.³ G01B *7/02, 7/26*

U.S. Cl. 33—143 L **10 Claims**



1. An instrument for the measurement and verification of linear dimensions, comprising a body equipped with a fixed external feeler and a fixed internal feeler, a perch mounted in a slideway in the body and equipped with an external feeler and an internal feeler cooperating with the corresponding fixed feelers of the body, a depth feeler gauge independent of the body, said depth feeler gauge mounted in a second slideway of the body, a perch locking member, a contact member fixedly arranged on the external feeler of the perch, opposite the external feeler of the body, a feeler rod movable in a third slideway of the body and cooperating with the fixed contact member of the external feeler of the perch, a measurement transducer interposed between the body and said perch, depth gauge and feeler rod for translating the displacements thereof into measurement values, said measurement transducer having a movable member independent of the perch, depth gauge and feeler rod, at least one selective coupling device interposed between said movable member of the measurement transducer and said perch, depth gauge and feeler rod, and a display device for the display of the measurement values of the measurement transducer, said display device equipped with a zeroing control.

4,238,886

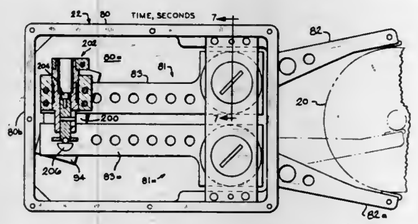
METHOD AND APPARATUS FOR CONTROLLING THE GRINDING OF WORKPIECES

Bernard J. Brown, 1307 Russell Road, Ann Arbor, Mich.

Division of Ser. No. 794,364, May 6, 1977, Pat. No. 4,139,969. This application Aug. 14, 1978, Ser. No. 933,265

Int. Cl.³ G01B *7/12*

U.S. Cl. 33—149 J **8 Claims**



1. A gauge for measuring a workpiece comprising a frame, a pair of caliper assemblies movably mounted on said frame for engaging the surface of a workpiece, means for measuring the relative movement between said caliper assemblies to provide a measurement of the size of said workpiece, at least one of said caliper assemblies including a first arm pivotally mounted for engaging a workpiece, a second arm pivotally mounted for movement within a predetermined range of movement, means interconnecting said first and second arms enabling relative pivotal movement therebetween, and means intermediate said first and second arms at their pivotal connection for releasably maintaining said first and second arms in relatively fixed adjusted positions during the measuring of a workpiece so that the pivotal movement of said first arm is transmitted to said second arm, said releasable maintaining means being operable to enable an initial adjustng movement of said first arm relative to said second arm to a plurality of positions to accommodate a variety of initial sizes of workpieces so that when said first arm is in any of said plurality of positions said second arm remains movable with said predetermined range in response to a measuring movement of said first arm as a selected workpiece is being measured.

4,238,887

QUICK RELEASE BALL BEARING HEIGHT GAUGE

John McLaughlin, 46 Spring St., Brockton, Mass. 02401

Continuation-in-part of Ser. No. 751,398, Dec. 17, 1976, abandoned. This application Sep. 27, 1978, Ser. No. 946,338

Int. Cl.³ G01B *3/18*

U.S. Cl. 33—163 **5 Claims**

1. An adjustable ball bearing release nut in combination with a precise mechanical locating device comprising,

base means

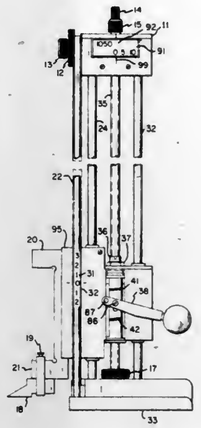
release nut means,

precision threaded screw means for receiving said nut means attached to said base,

location indicating means affixed to said release nut means,

ball bearing holder means within said release nut means,

thread encircling ball bearing means interposed between the screw thread of said theaded screw means, and a corresponding ball bearing holder means within said release nut means,



means for selectively urging said ball bearings of said ball bearing means in and out of screw thread engagement within said release nut means,

means for tightening the ball bearings about said precision threaded screw when in an engaged position.

4,238,888

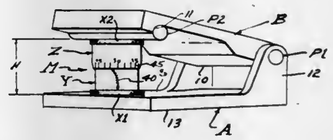
DIRECT READING MICROMETER FOR SINE-BAR ELEVATION

Wesley R. Goldsmith, 3387 Moore Street, Mar Vista, Calif. 90066

Filed Nov. 11, 1976, Ser. No. 740,813

Int. Cl.³ G01B *3/18, 3/30*

U.S. Cl. 33—174 S **22 Claims**



1. The combination of a sine-bar and micrometer for directly reading angular displacements of the sine-bar:

the sine-bar including, a bar supportably engaged by spaced and parallel plugs with one plug carried by and on an axis above a base presenting a surface plane and with the other plug on an axis movably spaced above said plane for height positioning;

the micrometer including, a pair of extensible anvils carried by a barrel and thimble respectively and disposed on a common axis with oppositely disposed anvil faces normal to said common axis and engageable with the said surface plane and second mentioned plug respectively, an extension screw of uniform thread pitch interconnecting the barrel and thimble on said common axis, a circumferentially recurved index line extending axially on the barrel and with axially spaced calibrations in degrees of sine-bar angularity as related to said thread pitch and recurvedly displaced with respect to rotation of the extension screw, and circumferential calibrations in minutes of sine-bar angularity on a skirt of the thimble and rotatable over the barrel to be positioned in reference to said recurved index

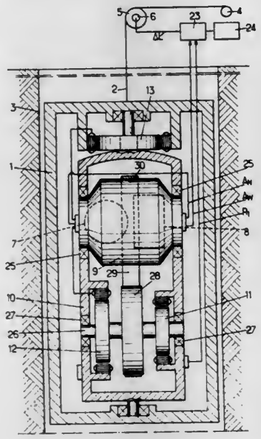
line as related to said thread pitch to establish elevation of the second mentioned plug for sine-bar angularity.

4,238,889

DEVICES FOR THE AZIMUTH AND SLOPE SCANNING OF A DRILLING LINE

Jacques Barriac, Plaisir, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique Sagem, Paris, France

Filed Nov. 21, 1978, Ser. No. 962,679
Claims priority, application France, Dec. 2, 1977, 77 36334
Int. Cl.³ G01C *9/06*; E21B *47/022*
U.S. Cl. 33—304 **5 Claims**



1. A device for the azimuth and slope scanning of a drilling line, comprising a gyroscope and an accelerometer station disposed in a container suspended from a cable so as to be able to travel through the drilling line to be scanned, an inner frame and an outer frame, characterized by the fact that,

the gyroscope and the accelerometer station are mounted in the inner frame,

the inner frame is pivotably mounted in the outer frame along an axis which is perpendicular both to the axis of rotation of the gyroscope and to the axis of the drilling line,

the outer frame is pivotably mounted in the container along the longitudinal axis of said container which will be that of the drilling line during the passage of the container,

the gyroscope is of the double servo-control type and has two axes of sensitivity (G_1, G_2), i.e. a first axis (G_1) perpendicular to the axis of the drilling line and a second axis (G_2) perpendicular to the first axis (G_1) and oriented so that the plane defined by the axes (G_1) and (G_2) is vertical,

the accelerometer station is of the servo-controlled mass type and has two axes of sensitivity (A_1, A_2), i.e. a first axis (A_1) parallel to the axis of rotation of the gyroscope and a second axis (A_2) parallel to the pivoting axis of the inner frame in relation to the outer frame,

an angular position detector is provided for measuring the angular movements of the inner frame in relation to the outer frame,

a first motor is provided for rotating the inner frame in relation to the outer frame, this first motor being controlled by the stabilization error information delivered by the gyroscope and corresponding to its first axis of sensitivity,

and a second motor is provided for rotating the outer frame in relation to the container, this second motor being controlled by the stabilization error information delivered by the gyroscope and corresponding to its second axis of sensitivity (G_2),

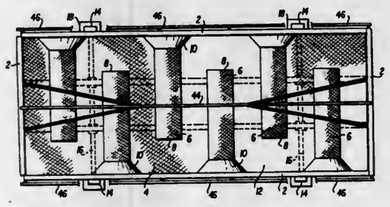
and a precessional circuit internal to the gyroscope is provided for imposing on said gyroscope a precession controlled proportionally to the slope of the axis of rotation of the gyroscope in relation to the horizontal plane so as to maintain this axis of rotation in a horizontal plane, preferably in a North-South orientation.

4,238,890

METHOD AND APPARATUS FOR FIELD-DRYING HARVESTED CROPS

Joel E. Curtis, Chickasha, and Thornton D. Hall, Fort Cobb, both of Okla., assignors to Gold Kist, Inc., Atlanta, Ga.

Division of Ser. No. 2,567, Jan. 11, 1979. This application Aug. 24, 1979, Ser. No. 69,296
Int. Cl.³ F26B *5/00*
U.S. Cl. 34—22 **3 Claims**



1. The method of open-field drying of freshly harvested field crops, comprising the steps of:

establishing a bulk body of said crops;

providing for the unimpeded flow of air through all exterior boundaries of said body;

establishing a first row of air passages extending inwardly from one side of said body, spaced upwardly from the bottom of said body and terminating at an inner end spaced from the side of said body opposite said one side;

establishing a second row of air passages to extend inwardly from said opposite side of said body, spaced upwardly from said bottom and terminating at an inner end spaced from said one side and establishing the passages of said second row to extend, alternately, between the passages of said first row; and

directing natural currents of ambient air into one of said rows of air passages.

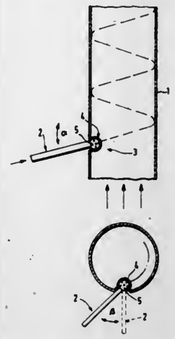
4,238,891

ARRANGEMENT FOR DRYING AND PREHEATING OF COKING COAL

Horst Fach, Essen, and Joachim F. Meckel, Heiligenhaus, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 21,109
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811927
Int. Cl.³ F26B *17/10*
U.S. Cl. 34—57 R **5 Claims**

1. An arrangement for drying and preheating coking coal, comprising a transport tube for transporting coal in a stream of carrier gas; a feed conduit for feeding hot gas into said transport tube, said feed conduit being movable relative to said tube so as to vary the conditions of feeding said hot gas into said transport tube; and a gas permeable ball-and-socket joint



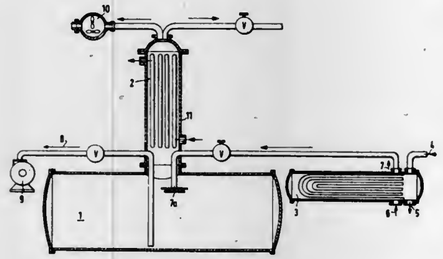
which movably connects said feed conduit with said transport tube.

4,238,892

APPARATUS FOR CLEANING CONTAINERS

Horst Geiss, Blumenstr. 9, 8871 Unterknoringen, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,235
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2748830
Int. Cl.³ B08B *9/08*
U.S. Cl. 34—85 **4 Claims**



1. Apparatus for cleaning containers comprising a head assembly engageable with an opening in a container, said head assembly having means for introducing cleaning vapour into the container through said opening, means for removing condensate through said opening from adjacent the bottom of the container, means including a cooler for receiving vapour through said opening from the container, and exhaust fan means connected to said vapour receiving means for extracting vapour from the container through said cooler.

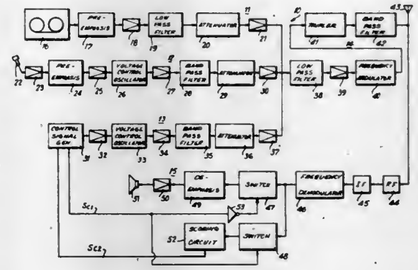
4,238,893

SIGNAL TRANSMISSION IN TEACHING SYSTEM

Michimasa Komatsubara, and Ikuo Shimizu, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 3, 1978, Ser. No. 957,348
Claims priority, application Japan, Nov. 8, 1977, 52-133949
Int. Cl.³ G09B *7/077*, *19/06*
U.S. Cl. 434—351 **12 Claims**

1. A teaching system comprising a master station including at least one source of main signals in a first frequency band, a source of audio signals, a source of control signals, and signal transmission apparatus comprising means for modulating a subcarrier with said audio signals so as to provide a first auxiliary signal in a frequency band removed from said first frequency band, means for modulating a subcarrier with said control signals so as to provide a second auxiliary signal in a frequency band removed from said first frequency band and said frequency band of the first auxiliary signal, means for multiplexing said main signals and said first and second auxiliary signals so as to provide a composite signal therefrom, means for modulating a carrier of predetermined frequency with said composite signal, and transmitting means for transmitting said carrier modulated with the composite signal; and at least one student station spaced from said master station and at each of which there are situated reception means tunable to said predetermined frequency of said carrier, demodulating



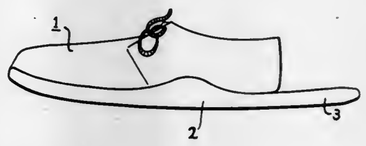
means for obtaining said composite signal from the received modulated carrier, and filter means for separating said main, audio, and control signals from the demodulated composite signal; wherein said control signals from said source include a plurality of command signals each associated with a respective student station to selectively control the operation of the associated respective student station, and each said student station includes control circuitry responsive to its respective command signal so that each said student station is selectively controlled in response to said respective command signal notwithstanding that said control signals are also received by other such student stations.

4,238,894

ARTICLE OF FOOTWEAR WITH A BACKWARD EXTENSION TO THE SOLE

David P. Evans, 32 Gloucester Rd., Almondsbury, Bristol, BS12 4HA, England

Filed Oct. 10, 1978, Ser. No. 949,563
Int. Cl.³ A43B *13/00*
U.S. Cl. 36—25 R **2 Claims**



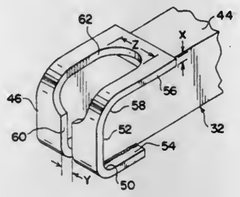
1. An article of footwear as hereinbefore defined, including a ground-engaging sole and an upper part carried by the sole which are adapted for the article to be worn by a wearer of a certain shoe size, in which article of footwear, an integral portion of the sole extends backwards at least one inch behind the plane which is the coronal plane containing the posterior aspect of the heel of the wearer when the article is worn by a wearer of the shoe size for which the article is adapted, the article of footwear being such that such a wearer, when wearing it, can lean backwards so that the coronal plane containing the centre of gravity of the wearer is between the coronal plane containing the posterior aspect of the heel of the wearer and the coronal plane containing the posterior point of contact of the said portion with the ground, without the wearer tipping over.

4,238,895

LIFT ARM WITH IMPROVED CHAIN CONNECTOR

Vernon L. Hetrick, Fairview Park, Ohio, assignor to Meyer Products, Inc., Cleveland, Ohio

Filed Apr. 16, 1979, Ser. No. 30,283
Int. Cl.[3] E01H 5/00
U.S. Cl. 37—41 3 Claims



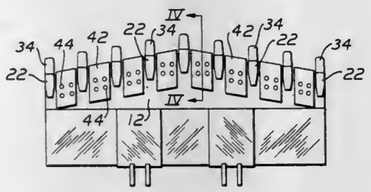
1. In a lift arm for raising a plow blade from a roadway when said lift arm is pivoted upwardly by a hydraulic cylinder, said lift arm including an elongated body portion having an end for receiving a chain which chain extends in a selected direction from said blade and means for pivotally mounting said lift arm about an axis spaced from said chain receiving end, said chain to be used with said lift arm including a series of interconnected links each having a known length, a known thickness and a known width, and a chain receiving member secured to said chain receiving end, an improvement comprising: said chain receiving member having an upwardly facing generally concave chain engaging surface extending in a selected arcuate path in a generally vertical direction, said concave surface facing generally in a direction aligned with said selected direction of said chain, a slot extending through a portion of said concave surface in a direction generally parallel to said selected arcuate path, said slot having a width slightly greater than the thickness of said link, whereby one link of said chain can be restrained in said slot by said concave surface and remains generally perpendicular to said concave surface regardless of the relative positions of said chain and said concave surface, an opening in said elongated body portion between said chain receiving member and said means for pivotally mounting said lift arm, said opening having a width slightly greater than the width of said link, whereby said chain extends through said opening downwardly from said lift arm when the link is restrained in said slot.

4,238,896

CUTTING EDGE ASSEMBLY FOR A LOADER BUCKET

William E. Lanz, Joliet, and Visvaldis A. Stepe, Willow Springs, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 846,004, Oct. 27, 1977, abandoned.
This application Aug. 24, 1979, Ser. No. 69,426
Int. Cl.[3] E02F 9/28
U.S. Cl. 37—141 R 5 Claims



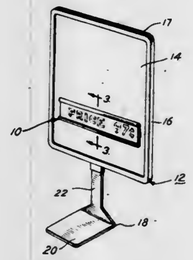
1. A cutting edge assembly for an earthmoving machine, comprising:
(a) a base;
(b) a plurality of separate tooth adapters being spaced apart along said base;
(c) first means for fastening each of said adapters to said base;
(d) a plurality of separate cutting edges, each of said cutting edges being in position between two adjacent said adapters and being laterally spaced from said two adjacent adapters; and
(e) second means for removably fastening each of said cutting edges to said base and being adapted for coupling only through said base and said cutting edges.

4,238,897

TWO FACED DISPLAY HOLDER

Thomas L. Byers, Del City, Okla., assignor to Central Sales Promotions, Inc., Oklahoma City, Okla.

Filed Mar. 30, 1978, Ser. No. 891,523
Int. Cl.[3] G09F 3/18
U.S. Cl. 40—16.2 9 Claims



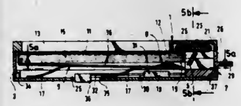
1. Apparatus for presenting two, opposed displays, utilized with two objects of visual observation and comprising, in combination:
an elongated first display member having a first back surface and first display means for receiving and retaining one of said objects of visual observation; and
an elongated second display member having a second back surface and second display means for receiving and retaining the other of said objects of visual observation;
said first display member and said second display member co-operating to define means for releasably connecting said first and second display members in a connected position wherein said first back surface and said second back surface are substantially adjacent; and
said connecting means including an elongated, L-shaped first connector portion and an elongated second connector portion integrally formed on said first display member and an elongated, L-shaped first mating connector portion and an elongated second mating connector portion integrally formed on said second display member, said first mating connector portion substantially identical to said first connector portion and said second mating connector portion substantially identical to said second connector portion, said first connector portion including a flexible first post section and an arm section, said first post section projecting outwardly from said first back surface, having an outer end and a first post section width in the plane of the first back surface, said arm section angled substantially perpendicularly from said outer end and having an arm section width in the plane of the first back surface, said second connector portion including a second flexible post section, said second flexible post section projecting outwardly from said first back surface at a distance in the plane of said first back surface from said first post section substantially equal to said arm section width and a distance from the arm section substantially equal to said first post section width, said first mating connector portion including a first flexible mating post section and a mating arm section, said mating post section projecting outwardly from said first back surface, having an outer end and a mating post section width in the plane of the second back surface substantially equal to said first post section width, said mating arm section angled substantially perpendicularly from said outer end of said mating post section and having a mating arm section width in the plane of the second back surface substantially equal to the arm section width of the arm section, and said second mating connector portion including a second flexible mating post section, said second mating post section projecting outwardly from said second back surface at a distance in the plane of said second back surface from said first mating post section substantially equal to said mating arm section width and a distance from the mating arm section substantially equal to said first mating post section width, said arm section and said mating arm section interacting for retaining said mating connector portion between said first connector portion and said second connector portion when said first display member and said second display member are in said connected position.

4,238,898

PICTURE VIEWER

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Filed Sep. 18, 1978, Ser. No. 943,365
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742346
Int. Cl.[3] G09F 11/30
U.S. Cl. 40—513 20 Claims



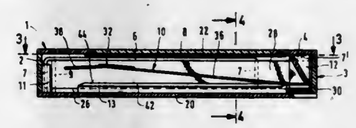
1. A picture viewer for a pile of pictures, comprising
enclosure means including a frame defining a viewing window and a slider reciprocably mounted on the frame, the frame and slider having relative obverse and reverse sliding movements in opposite directions along the window, the enclosure means also defining a picture compartment to contain the pile of pictures and having first and second ends, one end of the compartment being adjacent the window through which a picture at one end of the pile is displayed,
a picture changing mechanism adjacent the picture compartment and presenting a displayed picture to the window, the picture changing mechanism moving the displayed picture away from the window and into the pile and removing a new picture off one end of the pile and moving the new picture to the window for display in response to such relative observe and reverse movement of the frame and slider,
said picture changing mechanism including a pile transporter, and an individual picture transporter on the frame and movable therewith, the pile transporter being disposed at one side of the compartment to engage one side of the pile of pictures, the individual picture transporter being disposed at a first end of the compartment to engage an individual picture at the corresponding end of the pile of pictures, spring means at the second end of the compartment and urging the pile of pictures toward said individual picture transporter,
the individual picture transporter having a rotary driver with a retentive driving surface confronting the end of the compartment to engage the face of the individual picture at the end of the pile, and
driving means connected with the rotary driver and the slider and rotating said driver in response to sliding movement of the slider relative to the frame.

4,238,899

PICTURE VIEWER

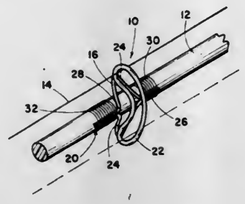
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Filed Sep. 18, 1978, Ser. No. 943,364
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742345
Int. Cl.[3] G09F 11/30
U.S. Cl. 40—513 26 Claims



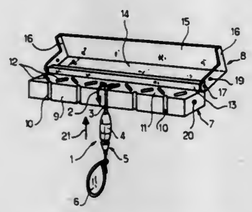
1. A picture viewer for a pile of pictures, comprising
enclosure means including a frame defining a viewing window and a slider reciprocably mounted on the frame, the frame and slider having relative obverse and reverse sliding movements in opposite directions along the window, the enclosure means also defining a picture compartment having one end adjacent the window to contain a pile of pictures with a picture at one end disposed at said one end of the compartment and adjacent the window,
a picture changing mechanism adjacent the picture compartment and presenting a displayed picture to the window, the picture changing mechanism moving the displayed picture away from the window and into the pile and removing a new picture off one end of the pile and moving the new picture to the window for display in response to such obverse and reverse movement of the frame and slider,
said picture changing mechanism including a pile transporter and an individual picture transporter, one of the transporters being connected with the frame and movable therewith and the other of the transporters being connected with the slider and movable therewith, the pile transporter being disposed at one side of the compartment to engage one side of the pile of pictures, the picture transporter being disposed at one end of the compartment to engage an individual picture at the corresponding end of the pile of pictures, the transporters producing relative movement of the pile of pictures and of the individual picture for presenting the individual picture at the window for display, and
the picture changing mechanism also including support elements on the enclosure means and adjacent the window supporting the picture being displayed, and operating means connected with the support elements and moving the support elements out of supporting relation to the displayed picture to release the displayed picture and make provision to support an individual picture removed by the transporter from the pile and then reinserted.

4,238,900
FISHING POLE EYE
Leroy G. Cunningham, 1515 S. 118 E. Ave., Tulsa, Okla. 74138
Filed Dec. 4, 1978, Ser. No. 965,987
The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.
Int. Cl.[3] A01K *87/04*
U.S. Cl. 43—24 5 Claims



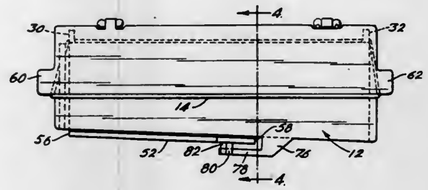
1. An eye for a fishing pole having a fishing line and comprising attachment means engagable with the outer periphery of the pole for securing the eye thereto, and elongated arcuate loop means carried by the attachment means, said loop means including an arcuate opening having an internal length sufficiently long to surround slightly more than one half the circumferential distance around the outer periphery of the pole for receiving the fishing line therethrough, one end of said opening being of a substantially semi-circular configuration, the opposite end of said opening being of a substantially semi-circular configuration, and the center line of each of said ends being in alignment with each other and in alignment with the center of the pole.

4,238,901
SPINNER-CASE
Rene' Martinet, 51, rue Jean Richepin, 76620 Le Havre, France, and Luc Meinerad, 161, rue Victor Hugo, 76600 Le Havre, France
Filed Mar. 14, 1979, Ser. No. 20,499
Claims priority, application France, Nov. 17, 1978, 78 32552
Int. Cl.[3] A01K *97/06*
U.S. Cl. 43—57.5 R 13 Claims



1. A case for tidying fishing spinners, which comprises a body having at least a peripheral surface and at least a wall member adjacent and substantially perpendicular to said peripheral surface, said peripheral surface being provided with a series of parallel recesses each extending in a direction substantially perpendicular to said wall member for receiving the shank of the hook of a spinner, said wall member being formed adjacent each said recess with a pair of holes for receiving two adjacent arms of the hook of a spinner, said holes of each of said pair of holes being substantially centered on axes which cross adjacent each said recess, said axes being angularly spaced at about 120° with respect to each other, said recess consisting in a substantially cylindrical groove formed in said peripheral surface, and a cover member hingedly mounted on said body, said cover member comprising two mutually perpendicular walls defining a back portion and a flange portion and being movable with respect to said body towards at least a position relative to said body wherein said back portion of said cover member extends substantially parallel to and separated from said wall member and said flange portion of said cover member extends substantially parallel to said peripheral surface, at a distance therefrom in the direction opposite to said wall member.

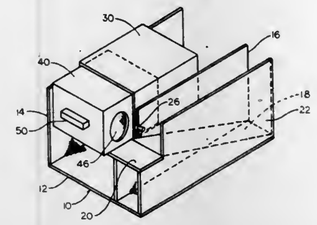
4,238,902
ANIMAL TRAP
Gordon D. Holl, Kenas Rd., North Wales, Pa. 19454, and Gene A. Marcolina, 8803 Cheltenham Ave., Wyndmoor, Pa. 19118
Filed Apr. 19, 1979, Ser. No. 31,510
Int. Cl.[3] A01M *23/18*
U.S. Cl. 43—61 12 Claims



1. An animal trap comprising:
an elongated box having an opening extending substantially the full length of said box in the direction of elongation;
means providing a closure of a size sufficient to close said opening substantially completely;
hinge means connecting said box and said enclosure and arranged to allow said closure to swing from an open position in which an animal may enter the interior of said box to a closed position in which an animal within the box is substantially completely enclosed;
means for urging said closure toward said closed position;
animal-actuable trigger means located adjacent one end of the box for temporarily holding said closure in said open position against the action of said urging means, said trigger means being movable, when activated by an animal, to permit said closure to move to its closed position under the action of said urging means; and
shield means secured to said trap for denying access to said trigger means to the animal except when the body of the animal is positioned so that, upon activation of the trigger, said closure is able to close under the action of said urging means and thereby enclose the animal within the enclosure;
in which said elongated box comprises five sides with four sides extending substantially in the same direction from a fifth side, said four sides comprising two opposite short sides and two opposite long sides, and said opening being located opposite the fifth side and defined by the free edges of said four sides, and in which said shield means comprises a shield member connected to and extending from one of said long sides in the direction away from the fifth side and extending longitudinally from a location adjacent said trigger means to an intermediate location between said short sides.

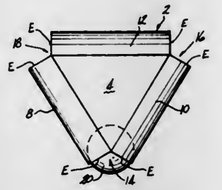
4,238,903
ANIMAL TRAP
Louis J. Mazzei, 1408 E. Fountain Way, Fresno, Calif. 93704
Filed May 29, 1979, Ser. No. 43,447
Int. Cl.[3] A01M *23/20*
U.S. Cl. 43—61 2 Claims

1. An animal trap comprising:
a trap receptacle having an entry opening, and including a slide-in entry box, a trap box, said slide-in entry box and being slidable into said trap box, whereby when an animal to be trapped enters said said entry opening in said trap receptacle, said trap receptacle becomes unbalanced and shifts to a vertical upstanding position, causing the slide-in entry box to slide into the trap box;



a base including a pair of vertically upstanding side members; and,
pivot means on said pair of vertially upstanding side members for balancing said trap receptacle in a substantially horizontal position.

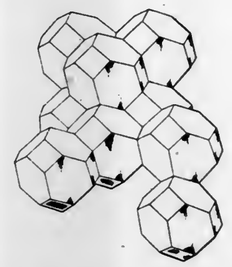
4,238,904
TOY DISPLAYING ERRATIC TUMBLING MOVEMENT
Dorothy M. Lang, 181 Dunk Rock Rd., Guilford, Conn. 06437
Filed Jun. 4, 1979, Ser. No. 44,843
Int. Cl.[3] A63H *33/00*
U.S. Cl. 46—1 R 3 Claims



1. An erratic movement toy comprising:
(a) a hollow housing, said housing including:
(i) two major triangular planar surfaces which are spaced apart from and generally parallel to each other;
(ii) convexly curved side walls interconnecting corresponding edges of said triangular planar surfaces;
(iii) said housing having open corner portions between adjacent ones of said side walls; and
(b) a spherical body confined within the interior of said housing and freely movable therein, said spherical body providing means for causing said housing to tumble from one of said triangular planar surfaces to the other when said housing is disposed on an inclined supporting surface, and said open corner portions of said housing being sized to allow said spherical body to protrude through said open corner portions to provide a relatively smooth curved surface extending between corresponding corners of said triangular planar surfaces.

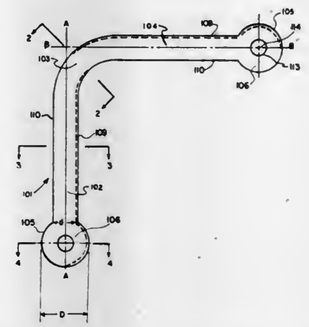
4,238,905
SCULPTURAL OBJECTS
Richard MacGraw, II, 600 W. 113th St., New York, N.Y. 10025
Continuation-in-part of Ser. No. 673,140, Apr. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 164,588, Jul. 21, 1971, abandoned. This application Aug. 17, 1978, Ser. No. 934,531
Int. Cl.[3] A63H *33/06, 33/26*
U.S. Cl. 46—25 4 Claims

1. Sculptural objects comprising a plurality of identical geometric solid units each having a plurality of faces of at least two different polygonal shapes and collectively capable of random assembly into close packing spatial arrangements wherein there are no overlapping edges or interstices between abutting units, the mutually opposed similarly configured faces of each unit respectively having first and second magnet means of fixed oppositely oriented magnetic polarity, the magnetic poles of said first magnet means of one unit and the magnetic poles of the second magnet means of another unit being thus cooperable magnetically in selected pairs to join said units together in a predetermined manner and in a close packing arrangement, each said unit being a truncated regular octahedron and said magnet means being bar magnets one located at



each polyhedron face, said bar magnets in the polar square polygonal faces having their north and south poles oriented along a circumferential line dividing pairs of opposite sides of said polar square faces, the magnets located in the equatorial square faces having their north and south poles oriented along a line bisecting pairs of opposite angles of said equatorial square faces in a circumferential direction and the magnets located in the hexagonal faces having their north and south poles oriented along lines bisecting pairs of opposite angles of said hexagonal faces and passing through points lying in a circumferential direction parallel to latitudinal circles.

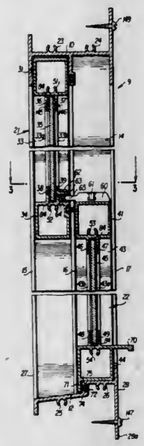
4,238,906
FLYING TOY
Joseph Bradford, Sr., 11145 Cypress Glenn, Baton Rouge, La. 70807
Filed Sep. 25, 1978, Ser. No. 923,041
Int. Cl.[3] A63H *27/00*; A63B *65/08*
U.S. Cl. 46—74 D 5 Claims



1. In a flying device of the boomerang type having two airfoil arms disposed in a horizontal plane and extending from a center portion along respective horizontal axes which intersect at an angle of at least ninety degrees, the improvement wherein each arm carries at its outer end an annular-shaped stabilizer having:
concentric inner and outer peripheries which are disposed

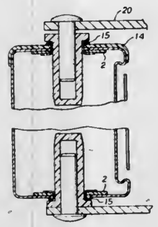
essentially in the same horizontal plane, the inner periphery defining a center opening through the stabilizer;
an annular bottom surface extending between the inner and outer peripheries of the stabilizer; and
a convex annular top surface extending between the inner and outer peripheries of the stabilizer, wherein the convex annular top surface is relatively more convex in shape than the annular bottom surface.

4,238,907
SHALLOW DOUBLE HUNG WINDOW
Charles A. Swan, P.O. Box 10 Dory Dr., Gulf Harbors, New Port Richey, Fla. 33552
Continuation-in-part of Ser. No. 758,866, Jan. 12, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,344
Int. Cl.³ E05D *13/10*
U.S. Cl. 49—446 **6 Claims**



1. A pair of block and tackle sash balances in combination with a double hung window not greater than substantially two inches in over-all thickness, each balance comprising a rod having a U-shaped cross-section, a tension spring extending within said rod connected to one end thereof, a block and tackle mechanism within said rod connected to the other end of said spring, a cable of said block and tackle mechanism extending from the other end of said rod, the window comprising a jamb with a pair of inward grooves and a corresponding pair of outward grooves each defined by U-shaped sides provided side-by-side in said jamb, the innermost interior facing said side of said jamb comprising a perimeter part having apertures for connective means therein which is coplanar and extends outwardly relative to the remainder of said jamb, a pair of window panels each with a stile having a U-shaped cross-section on one vertical side thereof, the legs of each said stile received in a corresponding said interior groove defining a longitudinal space having a substantially rectangular cross-section, each said stile defining an outwardly facing longitudinal groove at the outer end of each said leg thereof, a pile sealing strip received entirely along the length of each said longitudinal groove, such said pile strip bearing against a corresponding side of an interior groove in said jamb whereby each said space is sealed, a said balance received in each said inward groove and having said cable affixed thereto whereby each said balance is urged upwardly, a headpiece attached to the top of each said stile, a stop member mounted on the top of each said rod, said stop member having an inclined surface adapted to cooperate with a mating inclined surface provided on said headpiece whereby the urging of said stop member against said headpiece urges said window panel in a lateral direction away from the corresponding said inward groove, said window being for installation on an existing framework of a porch or room wherein said frame work consists essentially of beams having a thickness of substantially two inches.

4,238,908
FORMED METAL PANELS
Donald A. Bunce, Irby, England, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Aug. 14, 1978, Ser. No. 933,429
Claims priority, application United Kingdom, Aug. 16, 1977, 34383/77
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—501 **1 Claim**

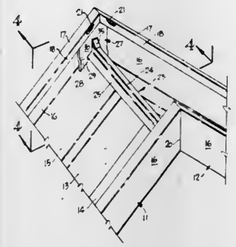


1. A rectangular refrigerator door panel formed from a single sheet of sheet material, comprising a central panel of rectangular shape, an integral outer wall on each side of said central panel joined at its inner side to said central panel at a first fold and extending substantially perpendicular to said central panel, an integral channel portion joined at a second fold to the outer side of each outer wall and extending around all sides of the panel and toward the center of the panel generally parallel to said central panel, said channel portion including a pair of spaced, parallel, inner and outer channel walls joined together by an integral inner end wall away from said panel outer wall, said channel portion including an outer end wall extending between said inner channel wall and said second fold and defining a gap with said outer channel wall, said outer end wall having a re-entrant portion adjacent said inner channel wall, a resilient gasket carried in said channel portion and extending outwardly from said gap over said outer channel wall, said gasket having a portion extending into said re-entrant portion to retain said gasket in place within said channel portion, said panel having one outer wall which at both end intersections with adjacent other outer walls has a tab bent at a right angle to underlie a portion of the adjacent outer wall, and a hollow rivet at each end extending through the adjacent tab and other outer wall to define a hinge axis and serve as bearings for opposed hinge pintles.

4,238,909
METAL DOOR FRAME ASSEMBLY
John Mutton, Northfield, Australia, assignor to Rollform Pty. Ltd., Northfield, Australia
Filed Mar. 8, 1979, Ser. No. 18,664
Claims priority, application Australia, Mar. 10, 1978, PD3682
Int. Cl.³ E06B *1/04*
U.S. Cl. 49—504 **7 Claims**

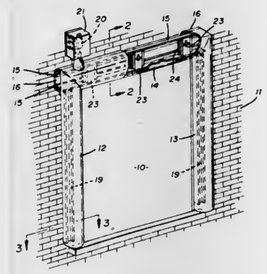
1. In a metal door frame comprising two jambs and a lintel, all of the same cross-sectional shape, which said shape includes a central striker portion flanked on its two sides by an inner web and an outer web respectively, each web having a respective end flange which itself terminates in an inturned flange, each inturned flange terminating in a return flange, and mitre joints between the jambs and lintel, each mitre joint comprising:
a mitre edge on the jamb and a mitre edge on the lintel contiguous therewith,

aperture edges defining tab apertures in the return flanges of both the jamb and lintel,
a bridging strip extending between the facing surfaces of the end flanges, and having wings which respectively bear against the web inner surfaces of the jamb and lintel adjacent the mitre edges, and



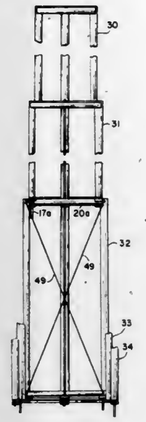
a pair of locking plates each having a pair of tabs which engage the aperture edges of respective said tab apertures in the jamb and lintel, each said locking plate also bearing against the bridging strip.

4,238,910
MOUNTING FOR INFLATABLE DOCK SEAL
Larry O'Neal, 4953 Timbercrest Dr., Canfield, Ohio 44406
Filed Mar. 16, 1979, Ser. No. 21,028
Int. Cl.³ E04B *1/34*
U.S. Cl. 52—2 **3 Claims**



1. An inflatable dock seal and mounting therefor for positioning said dock seal on a wall above and beside a dock opening therein and comprising at least one inflatable member arranged in an inverted U-shape and having an upper horizontal section and a pair of spaced vertical sections, flexible non-inflatable longitudinally positioned channel-like fastening members on the exterior of each of said sections, said fastening members each being integral and U-shaped with the open side facing toward a corresponding section of said inflatable member and having out-turned flanges thereon, said flanges being continuously attached to said corresponding section of said inflatable member, rigid elongated structural members slidably positioned in each of said fastening members, a plurality of threaded bolt-like members positioned in said wall adjacent said dock opening and arranged for detachable engagement in a plurality of openings formed in said elongated structural members, butterfly nuts disposed on said bolt-like members and wherein said openings in said structural members are shaped to register with said butterfly nuts when in one position on said bolt-like members and means for inflating said inflatable member.

4,238,911
TELESCOPING COLUMNS
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and John T. Mazur, Sebastian, Fla.
Filed Sep. 29, 1978, Ser. No. 946,991
Int. Cl.³ E04H *12/18*
U.S. Cl. 52—111 **9 Claims**



1. A telescoping column, having a base end and a tip end, comprising:
an outermost, an innermost, and at least one intermediate rigid structural sections nested within one another;
said outermost section and each of said at least one intermediate sections including a plurality of screws extending longitudinally therealong and rotatably attached thereto, said plurality of screws threadingly engaging an adjacent structural section and further including rotating means to selectively rotate said plurality of screws of said outermost and each of said at least one intermediate sections.

4,238,912
ROOFING SYSTEMS
Robert W. G. MacDonald, Templestowe, Australia, assignor to Solar Thermal Consultants Pty. Limited, Canberra, Australia
Filed Mar. 27, 1978, Ser. No. 890,905
Int. Cl.³ E04H *14/00*
U.S. Cl. 52—173 R **1 Claim**



1. A modular roofing assembly comprising: a plurality of tray modules each of which is capable of accommodating at least one solar collector, each tray module being formed of a generally planar rectangular bottom wall, an upstanding transverse continuous side wall extending along each of the two opposite transverse side edges of the bottom wall, and a continuous substantially U-shaped hooking flange extending along each of the two opposite longitudinal side edges of the bottom wall, one of the hooking flanges having a lower free arm disposed below and parallel to its respective side edge and the other hooking flange having an upper free arm disposed above and parallel to its respective side edge, the upper free arm of

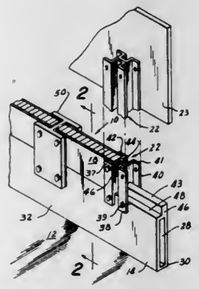
one module being hooked to the lower free arm of an adjoining module; the upper edge of each of said upstanding transverse walls terminating in a substantially U-shaped flange having a free arm extending downwardly within the confines of the respective module; and a clip connecting the side wall of one module to the side wall of an adjoining module, the clip having an open-ended channel receiving the top edge portions of the adjoining side walls and their respective U-shaped flanges, the free arnm of each adjoining flange being biased outwardly relative to its respective module and being restrained by the opposing side walls of the open-ended channel within the clip.

4,238,913

BULKHEAD STRUCTURE

Ronald Holmes, Stoney Brook, N.Y., assignor to Advanced Structures Corp., Deer Park, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,483
Int. Cl.³ B63B *3/56*; E04B *2/00*
U.S. Cl. 52—238 **8 Claims**



1. A bulkhead structure for partitioning a ship deck comprising a bulkhead panel means being constituted of a first metal comprising aluminum, a base member comprising a U-shaped channel constituted of a second metal comprising steel permanently affixed to said deck for receiving said panel means adjacent the deck surface, corrosion prevention means comprising a polymeric material disposed between said panel means and said base member to prevent contact of said first and second metals, and further characterized in that said panel means comprises a lower panel having a first end affixedly received in said base member, and an upper panel of honeycombed construction and further comprising means to disconnectably interconnect said upper and lower panels, so that said upper panel can be removed with said lower panel remaining in said channel.

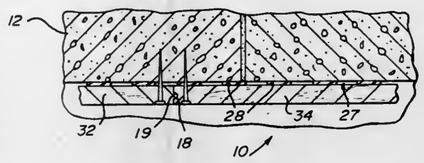
4,238,914

RESILIENTLY CUSHIONED ADHESIVE-APPLIED REBOUND WALL SURFACING SYSTEM AND METHOD OF CONSTRUCTION

Ray E. Omholt, Mid-Atlantic Park, 590 Grove Rd., Thorofare, N.J. 08086

Continuation-in-part of Ser. No. 339,496, Mar. 8, 1973, Pat. No. 3,893,275. This application Jul. 7, 1975, Ser. No. 593,608
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—309.3 **13 Claims**

8. A resiliently cushioned rebound wall surfacing system to be secured to a substantially continuous vertical receiving surface comprising a plurality of wall members secured to said receiving surface, the outer surfaces of said wall members lying in a substantially vertical plane, an elastomeric trowelable non-shrinking material which is adhesive and cohesive when cured located between said wall members and said receiving surface, said material being applied in its uncured state to at least one of the rear faces of said wall members and said receiving surface, said material having a thickened consistency so that said material is trowelable when applied, said uncured material being displaced upon the application of force on a wall member against the receiving surface such that said wall member is spaced from said receiving surface a predetermined distance by said material, said elastomeric material in its cured



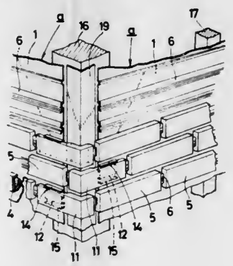
state having a specific height when not under load, and being deformable with desired cushioning to a lesser height when under load and returning substantially to said original height when said load is released.

4,238,915

TILE SETTING ASSEMBLY, TILE WALL AND METHOD FOR BUILDING A TILE WALL

Yoshio Yoshida, No. 1 Ohodori 9-chome, and Takeshi Tanizaki, No. 1 Kitashichijyo Nishi 16-chome, both of Chuoh-ku, Sapporo, Hokkaido, Japan

Filed Aug. 29, 1978, Ser. No. 938,307
Claims priority, application Japan, Dec. 15, 1977, 52/149959
Int. Cl.² E04B *1/38*
U.S. Cl. 52—510 **7 Claims**



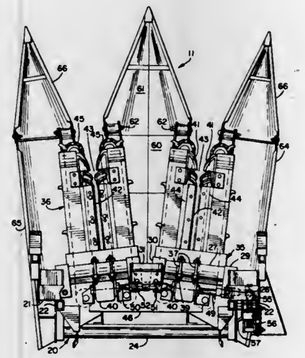
1. A tile setting assembly for buildings having horizontally spaced pillars, comprising:
(a) at least one panel which spans at least two pillars of the building, said panel having a plurality of equally spaced and parallel position indexing projections extending the entire length of said panel horizontally along one surface thereof;
(b) first tiles having first mating engaging means;
(c) second tiles having second mating engaging means;
(d) first tile holding members secured to said panel, said first tile holding members abutting against said projections and each having first engaging means for holding said first tiles by first engaging means; and
(e) second tile holding members secured to said panel, said second tile holding members abutting against said projections and each having second engaging means for holding said second tiles by second mating engaging means.

4,238,916

CORN SNAPPING HEADER FRAME

Elmer M. Kesl, Downers Grove; Henry H. Quade, Palos Heights, and Peter Sammarco, Downers Grove, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 6, 1979, Ser. No. 64,145
Int. Cl.³ A01D *45/02, 45/00*
U.S. Cl. 56—106 **6 Claims**



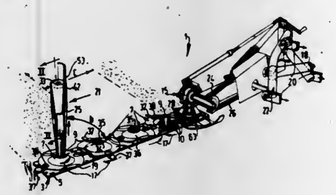
1. A two row corn snapping header for use in combination with a forage harvester comprising:
a main frame including beam extending at right angles to the path of travel of said harvester across both rows;
left and right transverse beam assemblies, each of said assemblies having a first end pivotally mounted on said main frame beam for swinging about a generally vertical axis and a second end attachable to said frame beam in one of a plurality of positions, the portion of said beam assembly between said first and second ends being a transverse beam forwardly offset from said main frame beam at an obtuse angle to the path of travel of said harvester;
a corn snapping unit mounted on each of said transverse beam assemblies and having a crop passage disposed perpendicularly of said transverse beam for receiving corn stalks, said corn snapping units having means for removing the corn ears from the stalks and for moving them rearwardly to said forage harvester,
and means operatively associated with said forage harvester for driving said snapping units.

4,238,917

MOWING DEVICE

Pieter A. Oosterling, and Hendricus C. Van Staveren, both of Nieuw-Vennep, Netherlands, assignors to Vicon N.V., Nieuw-Vennep, Netherlands

Continuation of Ser. No. 870,208, Jan. 17, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,679
Claims priority, application Netherlands, Jan. 19, 1977, 7700541; Nov. 7, 1977, 7712265
Int. Cl.³ A01D *57/20*
U.S. Cl. 56—192 **19 Claims**



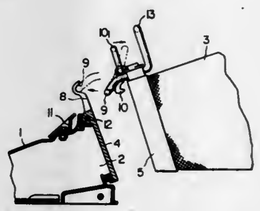
1. A mowing device comprising, in combination:
a horizontally elongate carrier and mounting means for attaching the carrier to a vehicle such that the carrier may be moved over the field in the direction of movement while extending transversely of the direction of such movement;
cutting means carried by said carrier for cutting at least one crop swath having a width greater than the width of a desired windrow; and
crop deflecting means connected to said carrier for conforming said one swath to the desired windrow width, said crop deflecting means comprising at least one endless flexible member, spaced guide means about which said endless member is trained, and drive means for driving said endless member, said guide means comprising first and second elements, the first element being disposed adjacent said carrier and being rotatable about a generally upright axis and the second element being disposed in trailing, laterally offset relation to said first element and being rotatable about an axis substantially parallel with said generally upright axis, the offset relation of said second element being such as to position a flight of said endless member at an acute angle with the longitudinal axis of said carrier, and the axes of said elements during operation being disposed in fixed relation with respect to each other.

4,238,918

DEVICE FOR FIXING A GRASS COLLECTING BAG ONTO A ROTARY TYPE LAWN MOWING MACHINE

Kazuo Saruhashi, Kamifukuoka, and Takeo Ogano, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 14,863
Claims priority, application Japan, Mar. 7, 1978, 53-29013
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—202 **1 Claim**



1. A device for tightly fastening a grass collecting bag on a rotary type lawn mowing machine, comprising:
(a) a machine body having a grass clipping discharge port at one end thereof;
(b) a lid provided at said grass clipping discharge port of said lawn mowing machine in a pivotally oscillatable manner and being constantly biased toward its closing direction to close said grass clipping discharge port;
(c) a cut grass collecting bag to be butt-connected to said grass clipping discharge port in a communicative manner;
(d) locking means to tightly fasten said grass collecting bag with said machine body at said grass clipping discharge port, said locking means being provided on the top part of both said lid and grass collecting bag, and comprising a lever integrally formed with, and extending upward from, said swingable lid at the top surface part of said grass clipping discharge port, and a projected portion being an integral part of a carrying handle for said grass collecting bag and to be engaged with said lever, said carrying handle and said projected portion integral therewith being in a substantially rectangular form, and said lid swinging upwardly inward of said grass collecting bag when said locking means are engaged to communicate said said grass clipping discharge port and said glass collecting bag; and
(e) hook means comprising a hook bracket having a hook

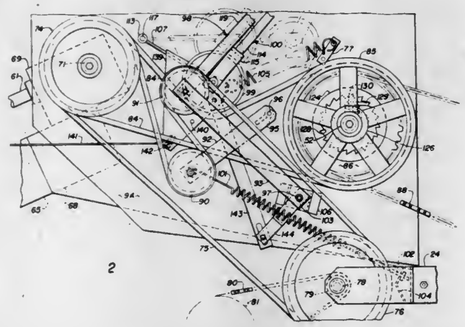
receiving hole therein, the bracket and hole defining boundary thereof constituting an engagement hole, fixedly secured on one top surface part of the mouth frame of the grass collecting bag and which is constantly biased toward the engaging direction with said engagement hole, an operating lever to directly oscillate said hook around a shaft when joining said grass collecting bag to said machine body, said hook means being positioned in the rectangular region defined by said carrying handle and projected portion so as to enable said operating lever for the hook to be readily gripped together with said handle when the grass collecting bag is fastened with, or removed from, said grass clipping discharge port, and a hanger to hang and hold the rear end part of said grass collecting bag to avoid unexpected removal thereof from said machine body.

4,238,919

AUTOMATIC BALE EJECTION DRIVE OVERRIDE MEANS

Charles A. Parrish, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Mar. 29, 1979, Ser. No. 25,171
Int. Cl.³ A01F *15/00*
U.S. Cl. 56—341 **14 Claims**



1. In a crop roll forming machine having a pickup, a tailgate movable in an arcuate path of travel between a first point and a second point, an upper bale forming means reversibly movable in a first direction and an opposing second direction, a lower bale forming means movable in at least a first direction of travel, the upper and lower bale forming means generally defining therebetween a roll forming region, and drive means connectable to the upper and lower bale forming means effective to automatically reverse the movement of the upper bale forming means when the tailgate is elevated beyond a predetermined point in its arcuate path of travel and to stop the travel of the lower bale forming means, the improvement comprising:

selectively actuatable control means cooperative with the drive means such that when activated the movement of the upper bale forming means continues to move in the first direction and the lower bale forming means continues to travel in the first direction to eject a partially formed crop roll from the roll forming region.

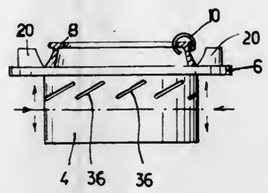
4,238,920

DEVICE FOR REVOLVING-RING SPINNING

Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, France

Filed Apr. 26, 1979, Ser. No. 33,422
Claims priority, application France, May 9, 1978, 78 13619
Int. Cl.³ D01H *7/56*
U.S. Cl. 57—124 **8 Claims**

1. A spinning or twisting device comprising an annular support, a rotary ring, a fluid bearing arranged on said annular support for supporting said rotary ring for rotation, and a traveler slidably engaged on said rotary ring and effecting



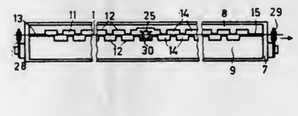
rotation of said ring, wherein controlling means are provided for obtaining a predetermined differential rotational speed between said rotary ring and said traveler.

4,238,921

COOLING DEVICE AND METHOD FOR COOLING A HEATED TRAVELLING THREAD

Arnold Steck, Wattwil, and Armin Wirz, Ossingen, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Apr. 18, 1979, Ser. No. 31,305
Claims priority, application Switzerland, Apr. 19, 1978, 4183/78
Int. Cl.³ D01H *7/46, 13/26*
U.S. Cl. 57—284 **23 Claims**



14. In combination with a texturing machine having a heating device for heating a travelling thread and a false twist spindle for imparting a false twist to the thread; a cooling device between said heating device and said false twist spindle for cooling the thread, said cooling device having a duct defining a thread path between a thread entry opening and a thread outlet opening and having a plurality of chambers disposed in mutually offset relation along said path, said chambers being arranged whereby a cooling medium entering said duct is repeatedly deflected in a zig-zag manner along said path under a vigorous vortex formation.

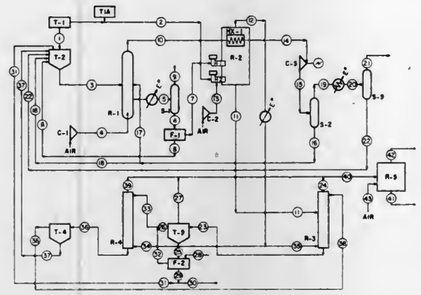
4,238,922

PROCESS FOR THE PRODUCTION OF POWER FROM CRUDE FUELS CONTAINING HIGH CONCENTRATIONS OF SULFUR

Wayne B. Gitchel, Rothschild, Wis., assignor to Sterling Drug Inc., New York, N.Y.

Filed May 11, 1979, Ser. No. 38,299
Int. Cl.³ F02C *7/00*
U.S. Cl. 60—39.05 **11 Claims**

1. A process for the production of power from a crude sulfur bearing fuel which comprises subjecting the crude sulfur bearing fuel to wet oxidation in the presence of an alkaline earth metal carbonate, utilizing the steam and compressed gases from the wet oxidation in power production, separating insoluble ash and sulfate salt from the wet oxidation reactor blowdown, mixing the ash and sulfate salt with a portion of the same or a different fuel, reacting the mixture at a high temperature under reducing conditions to produce the corresponding alkaline earth metal sulfide, and treating the alkaline earth metal



sulfide with water and carbon dioxide to regenerate alkaline earth carbonate and release hydrogen sulfide.

4,238,923

METHOD OF LOW TEMPERATURE HEAT UTILIZATION FOR ATMOSPHERIC PRESSURE COAL GASIFICATION

Richard E. Waryasz, Chicopee, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 22, 1979, Ser. No. 51,330
Int. Cl.³ F02B *43/08;* F02C *6/18*
U.S. Cl. 60—39.12 **3 Claims**

1. A power generating plant comprising a coal gasifier in which gaseous fuel is generated, an air heater which supplies heated air to the gasifier, a gas cleanup complex downstream of the gasifier, a steam generator fired by the gaseous fuel, a gas turbine fired by said gaseous fuel, a booster fan downstream of the gas cleanup complex, a booster fan inlet heater upstream of the booster fan, a fuel preheater upstream of the steam generator for heating the gaseous fuel, a low temperature liquid couplant heat exchanger heated by the combustion exhaust gases from the steam generator, the liquid heated in the low temperature liquid couplant being used for heating in the air heater, the booster fan inlet heater, and the fuel preheater.

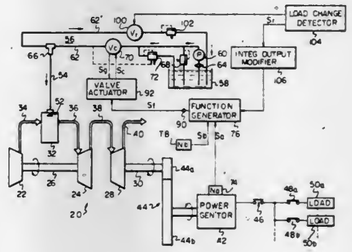
4,238,924

CONTROL SYSTEM

Hidetoshi Kanegae, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 4, 1978, Ser. No. 948,344
Claims priority, application Japan, Dec. 23, 1977, 52-156055
Int. Cl.³ F02C *9/04*
U.S. Cl. 60—39.28 R **17 Claims**

1. An output control system for a gas turbine having a fuel combustor and a fuel supply circuit for the fuel combustor, comprising a fuel flow control valve provided in said fuel supply circuit and operable for continuously varying the flow rate of fuel therethrough; turbine output detecting means responsive to the variation in the output speed of the gas turbine for producing an output signal variable with the detected turbine output speed; turbine output preset means for producing a signal representative of a desired output speed of the gas turbine; a function generating circuit connected to said turbine output detecting means and said turbine output preset means and including a subtractor operative to produce an analog signal which is continuously variable in magnitude with the difference between the detected and desired turbine output speeds represented respectively by the signal from the turbine output detecting and preset means, and an integrator connected to said subtractor and operative to produce an analog output signal representative of the time integral of said difference represented by the output signal from said subtractor, said



function generator circuit being operative to produce an analog output signal continuously variable in magnitude with the output signal from said integrator; valve actuating means electrically connected between said function generating circuit and said fuel flow control valve for continuously varying the opening degree of the fuel flow control valve in accordance with the analog output signal from the function generating circuit; load-change detecting means responsive to the variation in the amount of load on the gas turbine and operative to produce an output signal having a limited time duration in response to an abrupt change in the amount of load on the gas turbine; and integrator output modifying means connected between said load-change detecting means and the integrator of said function generating circuit and operative to modify the output signal of the integrator to vary at an increased rate at least for a period of time corresponding to the duration of the output signal from said load-change detecting means.

4,238,925

GAS TURBINE SYSTEM WITH OXYGEN VAPOR-FUEL SYSTEM

Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences Inc., Geneva, N.Y.

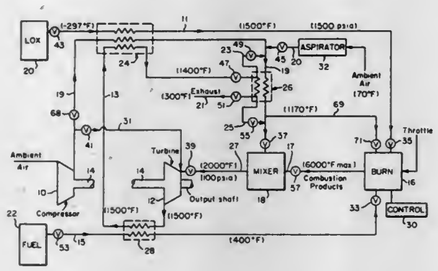
Continuation-in-part of Ser. No. 879,969, Feb. 21, 1978, abandoned, and Ser. No. 889,851, Mar. 24, 1978, and Ser. No. 890,456, Mar. 27, 1978, Pat. No. 4,169,017. This application Sep. 11, 1978, Ser. No. 941,298
Int. Cl.³ F02C *3/20*
U.S. Cl. 60—39.46 R **23 Claims**

1. In a gas turbine comprising a compressor, a first turbine connected by a shaft to said compressor, an output shaft connected to said turbine, a throttle, a burn chamber, a duct from the burn chamber to the turbine, means for feeding ambient air from said compressor to said turbine, a tank for liquid fuel, means for feeding fuel from said tank to said burn chamber, control means for generating an intermittent burn-cool operating cycle comprising a burn phase followed by a cool phase, means for storing a cryogenic oxidant, means for vaporizing said cryogenic oxidant and feeding the vaporized oxidant to said burn chamber, means for feeding said fuel to said burn chamber, and means for burning said fuel and vaporized oxi-

dant in the entirety of said burn chamber during said burn phase whereby gases fed from said burn chamber to said turbine during said burn phase include hot combustion product gases, the improvement including:

means for vaporizing said liquid fuel;

a mixer located intermediate said burn chamber and an inlet to said turbine for mixing said hot combustion product



gases with dilutant gases, said dilutant gases including heated air,

means for feeding ambient air to a heating means and means for feeding the heated air to said mixer;

means for feeding exhaust gases from said turbine to said mixer; and

means for exhausting exhaust gases to the atmosphere.

4,238,926

LIQUID PROCESSING

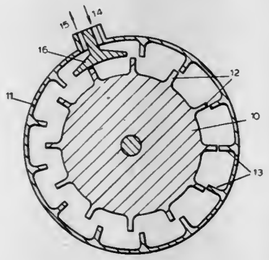
Ernest A. Timby, Frimley, and Rodney H. Walsh, Hindhead, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sep. 18, 1978, Ser. No. 943,090

Claims priority, application United Kingdom, Sep. 22, 1977, 39607/77

Int. Cl.³ F02C *9/04*; B64D *37/32*

U.S. Cl. 60—39.46 R **9 Claims**



1. Aircraft fuel supply apparatus comprising a fuel tank, primary pump means, a main degrader and a relief degrader arranged in parallel, a filter, a flow meter, a heat exchanger, a high pressure pump and a flow control unit, in substantially the order herein listed, each said degrader incorporating:

a cylindrical stator having vanes projecting substantially radially inwardly,

a cylindrical rotor concentrically inside said stator and having vanes projecting radially outwardly, there being thus formed an annular chamber between said rotor and said stator,

an inlet to the chamber, and

an outlet to the chamber at a substantial circumferential distance downstream of said inlet,

said stator vanes and said rotor vanes being bounded by common radial planes

the radial length of said vanes being between 2.5% and 20% of the stator vane pitch circle diameter, and

said rotor being rotatable within said stator to subject fuel in the stator to shear and acceleration forces before it emerges at said outlet,

said apparatus being arranged and operative such that said primary pump means supplies fuel from said fuel tank to at least one of said degraders whence the fuel passes via said filter, said flow meter, said heat exchanger, said high pressure pump and said flow control unit to a fuel burner, and said degraders being operative in consort during periods of relatively high fuel demand and one alone in periods of relatively low fuel demand.

4,238,927

ROTARY EXCHANGER FOR GAS TURBINE INSTALLATIONS

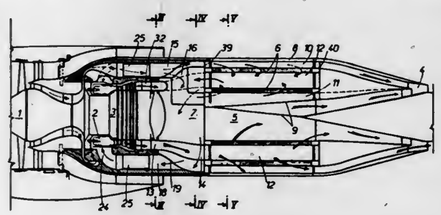
Raymond J. M. Joubert, Savigny sur Orge, and Jean G. Bouiller, Brunoy, both of France, assignors to Societe' Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Dec. 1, 1978, Ser. No. 965,342

Claims priority, application France, Dec. 5, 1977, 77 37108

Int. Cl.³ F02C *7/105*

U.S. Cl. 60—39.51 H **14 Claims**



1. A rotary heat exchanger for gas turbine installations, comprising thermal exchange matrices, in the form of a cylindrical ring rotatable about the axis of the turbine, two fixed housings, rotary drive means for the said cylindrical ring between said two fixed housings, gaseous fluid passages between the housings and the exchange matrices, fixed rings forming the ends of the housings and between which the cylindrical ring turns, means for the distribution of the fluids, a circumferential sealing device interposed between said fixed rings and the ends of the cylindrical ring, an axial sealing device, separating the passage of the hot and cold fluids between two cylindrical sectors of the exchange matrices, characterized in that it comprises at least two annular exchange matrices, which are concentric with respect to the axis of the turbine, said matrices being separated by a cylindrical annular space, defining a passage for fluids, a circumferential sealing device, comprised in part by the inside and outside edges of the exchange matrices and by concentric cylinders of a frictional material, which cooperates with the axial edges of the exchange matrix, each cylinder being attached to fixed rings by support means, characterized in that the support means have annular chambers in which U-profiled rings are placed, having centering means and attached to the fixed ring, the space between the rings and the lateral walls of the annular chambers receiving the concentric cylinders of a frictional material.

4,238,928

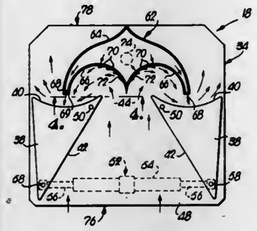
HYDRAULIC ENGINE

Vekoslav A. Stupica, 2911 N. 73rd Pl., Kansas City, Kans. 66109

Filed Feb. 14, 1979, Ser. No. 11,808

Int. Cl.³ B63H *11/04*

U.S. Cl. 60—221 **12 Claims**



1. A hydraulic engine for propelling a water-borne conveyance along a path of travel through the water, said engine comprising:

structure presenting an impingement surface;

means for creating a pressurized stream of water;

means for directing said pressurized stream against said impingement surface,

said impingement surface and stream-directing means being cooperatively oriented such that said stream of pressurized water is directed generally parallel to said path of travel, and the water of said stream is thence directed by said impingement surface in a direction generally opposite to said path of travel;

means for mounting said surface-presenting structure and said stream-directing means on said conveyance below the water line thereof and in a disposition for propelling said conveyance along said path, when said stream-creating and directing means operate; and

flow-directing means for directing a flow of water, in addition to said pressurized stream of water, against said impingement surface as said conveyance moves along said path of travel.

4,238,929

ARRANGEMENT TO COOL OIL IN HYDRAULIC CONTROL SYSTEM OF AUTOMATIC TRANSMISSION FOR INDUSTRIAL VEHICLE

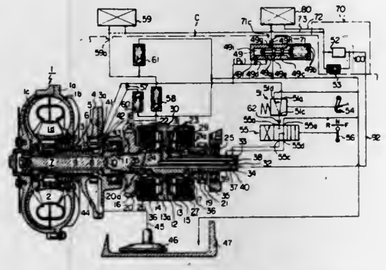
Kazuyoshi Fujioka, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 26, 1979, Ser. No. 52,134

Claims priority, application Japan, Jun. 27, 1978, 53/76937

Int. Cl.³ F16D *33/00*

U.S. Cl. 60—336 **11 Claims**



1. An arrangement to cool the oil in a hydraulic control system of an automatic transmission for an industrial vehicle, the automatic transmission including a hydrokinetic torque converter, the arrangement comprising:

a transmission case;

an operating pressure feed line;

a pressure regulator valve to regulate the magnitude of pressure in said operating pressure feed line, said pressure regulator valve including a drain port, a lubricating oil feed port and a hydraulic pressure responsive valve element that is displaceable to uncover said lubricating oil feed port before it uncovers said drain port upon regulating operation thereof;

feed passage means for feeding the oil under pressure from said operating pressure feed line to the torque converter and exhaust passage means for exhausting the oil from the torque converter;

said transmission case being formed with two connectors, a first one of which communicates with said exhaust passage means;

means for cooperating with said transmission case to define a passage interconnecting said lubricating oil feed port and a second one of said connectors;

whereby an oil cooler can be connected to any one of said first and second connectors or two oil coolers can be connected to said first and second connectors, respectively.

4,238,930

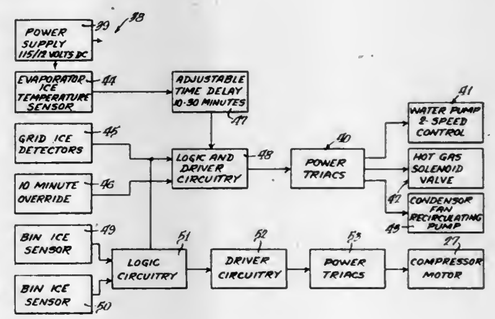
ICE MAKER APPARATUS

Stephen J. Hogan, Boulder, Colo., and Roger L. Nyland, Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 26, 1978, Ser. No. 972,657

Int. Cl.³ F25C *1/00*

U.S. Cl. 62—138 **25 Claims**



1. In an ice maker having a refrigerated ice-forming plate and means for flowing water in heat transfer association with said plate to build up a layer of ice thereon, the improvement comprising:

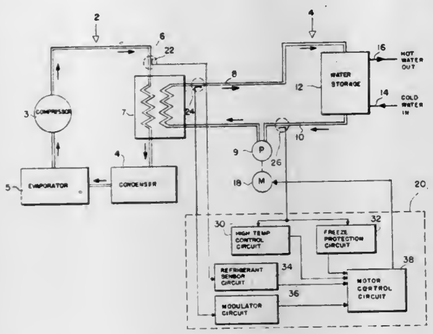
sensing means for sensing the building of the ice layer to a first preselected initial thickness; and

timer control means for changing the rate of ice layer formation while causing continued flowing of the water for a preselected period of time subsequent to said sensing means sensing said preselected initial thickness on said plate thereby to provide an improved controlled increase of the thickness of the ice layer to a second, desired, final thickness.

4,238,931
WASTE HEAT RECOVERY SYSTEM CONTROLLER

Scott Campbell, Melbourne, Fla., assignor to Energy Conservation Unlimited, Inc., Longwood, Fla.

Filed Jan. 25, 1979, Ser. No. 6,269
Int. Cl.³ F25B 39/04
U.S. Cl. 62—183 13 Claims



1. In a system having a subsystem for recovery of waste heat from a medium utilizing a heat exchanger and a transfer fluid, and having a pump for circulation of the transfer fluid, the method of control of the subsystem comprising the steps of:

pumping the transfer fluid through the heat exchanger;

sensing the temperature of the transfer fluid after exiting the heat exchanger in a manner proportional to such sensed temperature;

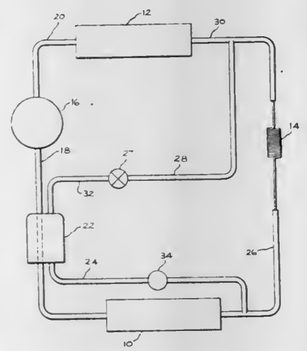
sensing the waste heat medium temperature at the input of the heat exchanger; and

maintaining a minimun rate of flow of the transfer fluid through a heat exchanger without regard to such outlet temperature when the waste heat medium temperature is greater than a first pre-selected value.

4,238,932
HIGH PRESSURE CHARGE STORAGE SYSTEM

Paul D. Schrader, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jul. 23, 1979, Ser. No. 59,714
Int. Cl.³ F25B 41/00
U.S. Cl. 62—197 3 Claims



1. In a refrigeration system including a compressor, condenser, an expansion device dividing said system between high and low pressure sides, an evaporator, and a suction line in series connected to form a closed refrigerant circuit, a refrigerant control means comprising:

a storage volume in heat exchange relation with said suction line, including first and second openings,

means defining a low-pressure conduit communicating with said first opening and the low side of said refrigeration system at a point intermediate said expansion device and the inlet of said evaporator,

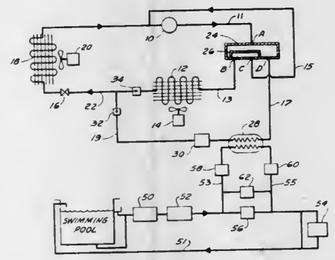
means defining a high pressure conduit communicating with said second opening and the high side of said refrigeration system at a point intermediate the outlet of said condenser and said expansion device,

pressure-responsive one-way valve means in said high pressure conduit being operable for permitting high-pressure liquid refrigerant flow into said storage volume when a predetermined high pressure is sensed to maintain said high pressure side of said system below said predetermined high pressure by returning said refrigerant to said system through said low pressure conduit.

4,238,933
ENERGY CONSERVING VAPOR COMPRESSION AIR CONDITIONING SYSTEM

Murray Coombs, 20206 Germain St., Chatsworth, Calif. 91311

Filed Mar. 3, 1978, Ser. No. 883,229
Int. Cl.³ F25B 27/02, 13/00
U.S. Cl. 62—238 E 12 Claims



1. An energy conserving vapor compression air conditioning system, comprising

a compressor,

an evaporator,

an air cooled condenser,

conduit means for connecting said compressor, said evaporator, and said air cooled condenser into a continuous loop,

a liquid cooled condenser connected to said conduit means in parallel with said air cooled condenser,

means for selectively providing a refrigerant flowing through said conduit means to either said air cooled condenser or said liquid cooled condenser, and

means for exhausting excess refrigerant from the non-selected condenser and returning the excess refrigerant to the selected condenser.

4,238,934
CONSTANT TEMPERATURE BOX

Masashi Hotta, Osaka, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Apr. 24, 1979, Ser. No. 32,957
Claims priority, application Japan, Apr. 28, 1978, 53-57980
Int. Cl.³ F25D 3/08, 3/10
U.S. Cl. 62—457 3 Claims

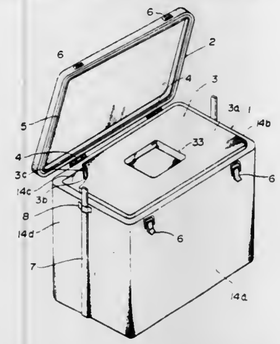
1. A portable constant temperature box for cooling or warming the box contents at a constant temperature, comprising:

(a) a body defining an inner space for receiving objects to be kept warm or cold, said body having an upper opening and comprising side walls and a bottom wall which are of adiabatic constructions,

(b) a lid of adiabatic construction pivoted to the upper portion of said body to open or close said upper opening,

(c) means for tightly closing said upper opening with said lid,

(d) a container forming a cooling or heating source supported horizontally at an uppermost portion of said body, said container projecting upwardly from the uppermost portion of said box body and comprising an airtight, flat, hollow container having a small height for receiving liquid serving as the cooling or heating medium and a



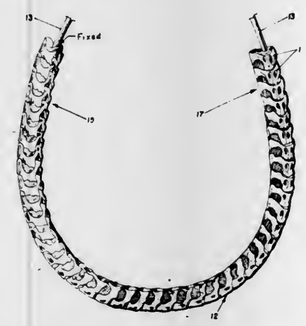
liquid intake and a stopper for closing said intake, said container having at an upper wall thereof a recess for receiving small articles and an upper wall of adiabatic construction except for a portion thereof which forms at least the bottom of said recess, said portion having a heat-transferable construction; and

(e) support means for horizontally supporting said container at an uppermost portion of said body.

4,238,935
METHOD FOR MANUFACTURING A CHAIN FROM THE VERTEBRA OF AN ANIMAL

Paul-Marie B. Oudet, Avenue Marcellin Poncet, 84560 Menerbes, and Jean-Marie P. Oudet, Tour Athenes 75, rue du Javelot, 75645 Paris, both of France

Filed Aug. 16, 1978, Ser. No. 934,164
Claims priority, application France, Aug. 23, 1977, 77 25685; Apr. 17, 1978, 78 11229
Int. Cl.³ A44C 11/00; F16G 13/00
U.S. Cl. 63—2 16 Claims



1. In a method for manufacturing a chain, particularly for ornamental use, the steps of:

taking a vertebra from an original vertebral column of an animal,

removing the projecting parts including the spinous process and the points of fixation of the ribs from said vertebra to give the vertebra a regular shape to form a vertebra module,

reproducing the so obtained vertebra module, said reproduced modules conserving the surfaces of articulation of the original vertebra, and

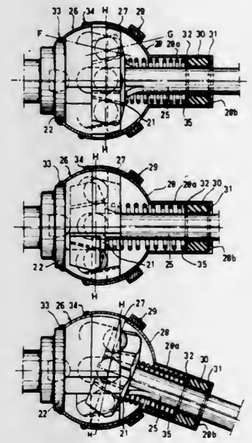
fitting these reproduced modules in one another in the manner of the original vertebral column, and joining them by means of a supple cord on which said reproduced modules are threaded to maintain these modules fitted to one another.

15. A chain obtained by the method of claim 1.

4,238,936
UNIVERSAL HOMOKINETIC JOINT

Gaston Devos, "La Reale", 06230 Villefranche-sur-Mer, France

Filed Mar. 8, 1979, Ser. No. 18,559
Claims priority, application France, Apr. 28, 1978, 78 12668
Int. Cl.³ F16D 3/30
U.S. Cl. 64—21 5 Claims



1. A homokinetic joint for the transmission of a torque between two ends by balls engaged in the races made in said ends, comprising an inner end and an outer end, at least two tracks whereof each is constituted by two semicylindrical grooves made respectively in the inner end and the outer end, each of said grooves having its diameter in cross-section contained in the bisecting plane passing through the geometrical centre of the joint and the geometrical centre of the ball contained in the groove, oriented diagonally in accordance with the bisectrix of the angle between a radial axis, passing through the geometrical centre of said ball and said geometrical centre of the joint and perpendicular to the longitudinal axis of the corresponding end, and an axis perpendicular to said radial axis and passing through the geometrical centre of the ball in question, as a result of which each of the balls is made to roll and to be guided between two poles located on the radial axis and two other poles located on the axis perpendicular to the radial axis which has the effect of constantly and imperatively maintaining the geometrical centres of the balls of the bisecting plane of the respective longitudinal axes of the two ends and of causing the balls to transmit the torque in two rotation directions of the joint, the unitary pressure on the balls being considerably decreased in one of the two rotation directions.

4,238,937

FABRIC MANIPULATING DEVICE FOR MANIPULATING THE LOOPS OF A KNITTED FABRIC

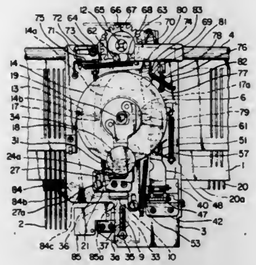
Mitsuo Nakaoka, Kodaira, Japan, assignor to Silver Seiko, Ltd., Kodaira, Japan

Filed Jul. 5, 1979, Ser. No. 54,944

Claims priority, application Japan, Oct. 31, 1978, 53-148881[U]

Int. Cl.[3] D04B *7/00*

U.S. Cl. 66—60 H 14 Claims



1. In a fabric manipulating device for manipulating a knitted fabric on a knitting machine of the type having a needle bed that includes a plurality of latch needles mounted therein for individual movement in a longitudinal direction and a row of sinker elements fixed thereon in an alternate relationship with the latch needles, each needle having a latch and a butt thereon, the improvement comprising:

a carrier slidably mounted on said needle bed;

a needle member mounted on said carrier for movement in the longitudinal direction thereof across said row of said sinker elements from and to an initial position outside the range of said needles and having a hook at a rear end thereof and a latch pivotable to open and close said hook;

cam means mounted on said carrier for engagement with said butts of said needles to position same along the length thereof;

positioning means for releasably fixing said carrier in any of the needle positions so as to permit said needle member to move in a side-by-side relation with a particular needle;

loop control means for controlling needle loops to position a particular needle loop on said particular needle in a predetermined fixed position; and

a manually operated actuator mechanism on said carrier including a cam for actuating said needle member to move first from said initial position to project into said particular loop under control of said loop control means and then to said initial position to catch said particular loop at the hook thereof whereupon an old loop which may have been on said needle member is knocked over therefrom.

4,238,938

WASHING MACHINE AND ACCUMULATOR DEVICE THEREFOR

John F. Spear, Dorking, England, assignor to Universal Towel Company Limited, Sussex, England

Filed Aug. 9, 1978, Ser. No. 932,369

Claims priority, application United Kingdom, Aug. 12, 1977, 33978/77

Int. Cl.[3] D06F *29/00, 35/00*; B65H *17/02, 17/44*

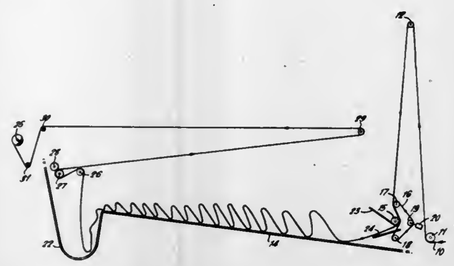
U.S. Cl. 68—13 R 13 Claims

1. An accumulator device for temporarily storing a towel used in continuous feed towel cabinets as it passes through a towel washing machine comprising:

accumulator means through which the towel is passed for storing a portion of the towel in loosely formed folds;

first drive means for feeding the towel into the accumulator means at a predetermined input speed;

second drive means independent of said first drive means for removing the towel from the accumulator means at a variable speed greater than the predetermined input speed, said variable speed continuously increasing with the amount of towel removed from said accumulator means; and



means for limiting the speed of said second drive means to prevent the towel from being withdrawn from the accumulator means at a speed faster than a predetermined maximum output speed.

4,238,939

APPARATUS FOR THE CONTINUOUS THERMAL TREATMENT OF FLEXIBLE SHEET MATERIAL

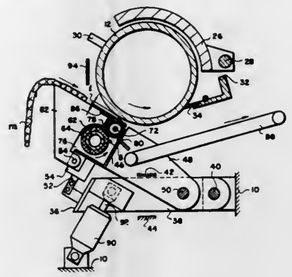
Zdenek Miculka, Otrokovice; Vladislav Janirek, Gottwaldov; Vladimir Rektorik, Otrokovice, and Karel Bajak, Krnov, all of Czechoslovakia, assignors to Vyzkumny ustav kozedelny, Gottwaldov, Czechoslovakia

Filed Mar. 29, 1979, Ser. No. 25,271

Claims priority, application Czechoslovakia, Mar. 31, 1978, 2065/78

Int. Cl.[3] C14B *1/06, 17/00*

U.S. Cl. 69—43 9 Claims



1. The apparatus for the continuous thermal treatment of flexible sheet material such as skins, leathers and the like comprising a frame, a heated cylinder rotatably mounted on said frame and a presser cylinder arranged in parallel relation to the heated cylinder and spaced therefrom to permit passage of the sheet material therebetween, means for mounting the presser cylinder and for regulating the spacing between the presser and heated cylinders comprising a lever member pivotably carried by the frame, a beam member extending generally parallel to the presser cylinder and mounted pivotably on said lever member, a drive cylinder rotatably carried by said frame on the side of said presser cylinder remote from said heated cylinder and extending parallel to said presser cylinder, said presser cylinder being freely supported on said drive cylinder and rotatable thereby, means for selectively pivoting said beam member for regulating the spacing between said presser and heated cylinders, and means for selectively pivoting said lever member relative to said frame.

4,238,940

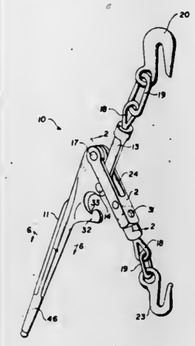
VARIATION IN SELF SECURING THEFT PROOF CHAIN BINDER

Delmer L. McWhorter, 929 Drever St., West Sacramento, Calif. 95691

Filed Apr. 30, 1979, Ser. No. 34,870

Int. Cl.[3] E05B *73/00*

U.S. Cl. 70—14 9 Claims



1. A chain binder comprising a handle, an upper and lower pivot point on said handle, a bifurcated clevis arm disposed on said upper pivot point, a bar pivotally connected to the lower pivot point whereby said bar extends through the clevis arms, and a securing mechanism disposed within said clevis section comprising a first hole extending along the longitudinal axial extent of said clevis section, a second hole disposed proximate to the top portion of said first hole orthogonally thereto, a third hole orthogonally disposed to both said first and second holes downward from said second hole and extending through said clevis section, spring means disposed in said first hole at the top, a latch bolt disposed below said spring, means disposed in said second hole to move said latch bolt, and a spur disposed on said handle having a notch to register with said third hole whereby when said spur enters said third hole, said latch bolt rides upwardly in said first hole and latches against the notch disposed on said spur.

4,238,941

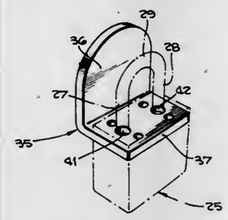
SECURITY SHIELD FOR PADLOCK

David Halopoff, 7460 Bandini Blvd., Los Angeles, Calif. 90040

Filed Sep. 11, 1978, Ser. No. 941,296

Int. Cl.[3] E05B *67/38*

U.S. Cl. 70—56 9 Claims



1. A security shield for protection of a padlock of the type which has a body and a shackle, the shackle having legs and an end portion joining the legs arranged so that the legs have an open position and a locked position, said shield comprising a guard section and an anchor section, said guard section having a guarding position spaced laterially at a substantial distance from said legs and said end portion and overlying the shackle at one side only of said shackle when the shackle is in locked position, said anchor section having a mounting on the body, both sections having positions relative to each other providing a clear space enabling the shackle to move clear of the body to open position.

4,238,942

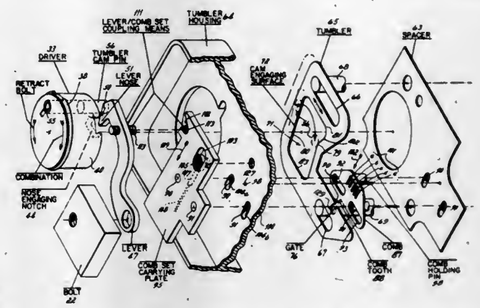
DIRECT DIAL COMBINATION LOCK WITH DRIVER-CAMMED RECIPROCATING TUMBLERS AND SCRAMBLED COMBS

Joseph J. Parrock, Sr., Milford, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Feb. 23, 1979, Ser. No. 14,351

Int. Cl.[3] E05B *37/00*

U.S. Cl. 70—299 25 Claims



1. In a direct dial combination lock of the type wherein a driver is rotated to position tumblers, the driver is sequentially indexed axially to disengage the respective tumblers after such positioning, and a lever is movable into connection with the driver for operating a bolt after the tumblers are properly positioned, the improvement comprising,

means mounting said tumblers for reciprocating movement,

a rotary cam operated by the driver and engageable within each tumbler to cam the tumbler back and forth in said reciprocating movement as the driver is rotated,

a set of combs respectively cooperable with gates presented by the tumblers,

the respective combs being receivable in the gates when the corresponding tumblers have been moved to positions of alignment with respect to the combs, and

coupling means between the lever and the comb set for holding the comb set away from the tumblers until the lever is moved toward connection with the driver for withdrawing the bolt.

4,238,943

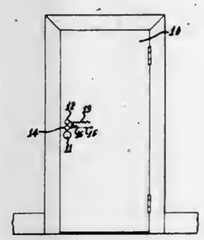
DEAD BOLT LOCK ACCESSORY

Mathew F. Betkouski, 5132 Whitsett Ave., North Hollywood, Calif. 91607

Filed May 14, 1979, Ser. No. 38,785

Int. Cl.[3] E05B *13/00*

U.S. Cl. 70—416 11 Claims



1. A dead bolt lock accessory for mounting on vertical surface to function a time delay in unlocking the lock comprising (1) a first elongated arm attached to the inside manually

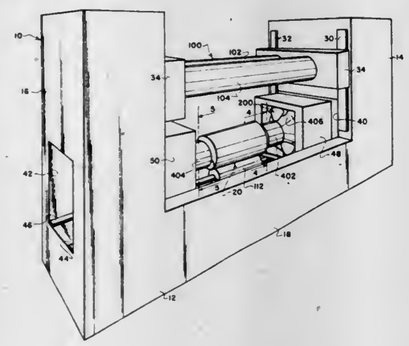
operated handle of a dead bolt lock, the arm containing a series of regularly spaced vertically upward projections of increasing vertical length as distance from the axis of rotation of said handle increases, (2) mounted vertically above or below said dead bolt handle a fixed post and a collar rotatably attached to said post, said collar carrying a spring biased radially slideable pin which is capable of engaging a hole in said fixed post, said collar having fixed to it a second elongated arm substantially the same length as said first elongated arm and positioned in vertical alignment with said first elongated arm, said second elongated arm having a smooth level surface, a constant cross section, and a weighted portion at its free end; and (3) a linking member slideably attached to both the first and second elongated arms by a first and second eye, respectively, said first eye having a vertical length at least as large as the vertical length of the largest of said projections and said second eye being slightly larger than and loosely slideable over said second elongated arm, the connection between said first and second eyes being offset such that said first eye is more distant from said axis of rotation than the second eye is from the axis of said post.

4,238,944

ROLLING OF STEPPED SHAFTS

James C. Duffy, South Euclid, Ohio

Filed Jan. 11, 1979, Ser. No. 2,676
Int. Cl.³ B21H *1/18*
U.S. Cl. 72—84 **20 Claims**



1. A method of forming a stepped shaft from a solid metal member having a longitudinal axis extending substantially centrally through the member between opposite ends thereof, comprising the steps of:

(a) engaging the outer surface of the member with a first set of roll means for rotating the member about the longitudinal axis and for compressing the outer surface of the member to form a workpiece having a rolled outer surface of a desired first diameter extending along at least a desired first length of the workpiece;

(b) engaging the workpiece with a second set of roll means at a first predetermined location intermediate the opposite ends of the workpiece and rotating the workpiece about the longitudinal axis relative to the second set of roll means while, at the same time, moving the second set of roll means substantially radially inwardly toward the longitudinal axis to diminish the diameter of the workpiece near such first location to provide a shaft region of a desired second diameter; and

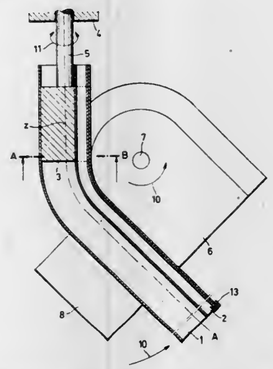
(c) moving the workpiece and the second set of roll means with respect to each other in a direction paralleling the longitudinal axis while continuing to rotate the workpiece relative to the second set of roll means, thereby extending the axial length of the second diameter region along a desired second length of the workpiece.

4,238,945

APPARATUS FOR BENDING A JACKETED TUBE

Fritz Busse, Hilden; Hans-Walter Busch, and Peter Michelatsch, both of Solingen, all of Fed. Rep. of Germany, assignors to Rigobert Schwarze, Cologne, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 973,073
Int. Cl.³ B21D *9/05*
U.S. Cl. 72—150 **6 Claims**



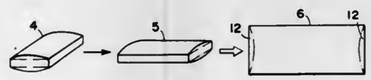
1. An arrangement for bending, especially cold bending, an elongated jacketed tube including an outer tube and an inner tube extending inside the outer tube, said arrangement comprising bending core means, including at least one bending core fittingly received in the outer tube and having at least one recess extending along the elongation of said core and operative for receiving the inner tube; means for bending the jacketed tube about an axis normal to the longitudinal axis of the jacketed tube to thereby bend the inner and outer tubes simultaneously with said means for bending the jacketed tube being disposed adjacent said bending core and provided with means for holding the jacketed tube; and said bending core further comprising means for varying eccentricity of the inner tube relative the outer tube during the bending of the inner and outer tubes simultaneously.

4,238,946

METHOD FOR ROLLING METAL PLATE

Kazuya Tsubota, Okayama, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 891,188, Mar. 29, 1978, abandoned. This application Aug. 21, 1979, Ser. No. 68,436
Claims priority, application Japan, Apr. 4, 1977, 52-38306
Int. Cl.³ B21B *1/00*
U.S. Cl. 72—199 **14 Claims**



1. A method for rolling metal plate to form a thinner plate having a desired thickness comprising the steps of:

rolling the metal plate in a longitudinal direction at a predetermined broadside ratio, said ratio being the final plate width divided by the initial plate width, to form a first metal plate having edge and crop portions;

sizing the first metal plate such that a central portion of said first plate in a section parallel to said longitudinal direction is greater in thickness than that of the end portions thereof if the edges of the first metal plate are spool shaped or sizing the first metal plate such that a central portion of the first plate in a section parallel to a longitudinal direction thereof is less in thickness than that of the end portions thereof if the edges of the first plate are barrel shaped;

rotating the sized first metal plate 90° in a horizontal plane;

rolling the first metal plate to form a second plate;

sizing the second plate such that the central portion of the second plate in a section normal to said longitudinal direction thereof is thinner than the end portions thereof if the crop portions of the second plate bulge outwardly or sizing the second plate such that the central portion of the second plate in a section normal to a longitudinal direction thereof is thicker than the end portions thereof if the crop portions of the second plate are sunken;

rotating the second metal plate 90° in a horizontal plane; and

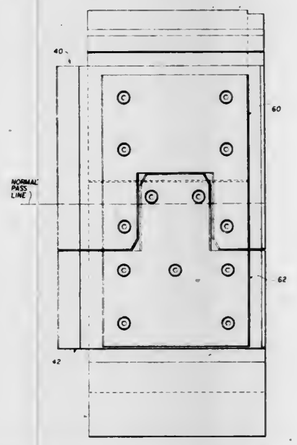
rolling the second plate.

4,238,947

WORK ROLL CHOCK ASSEMBLY FOR A ROLLING MILL

Howard A. Graham, Belleville, Ill., and Charles Palubiak, St. Louis, Mo., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed May 9, 1979, Ser. No. 37,935
Int. Cl.³ B21B *31/02*
U.S. Cl. 72—237 **21 Claims**



1. A rolling mill stand comprising upper and lower work roll chocks adapted to be removably mounted in the window of a mill housing, upper and lower work rolls supported in said chocks and cooperating to define a pass line for material to be rolled therebetween, a pair of liner plates rigidly mounted on each of said upper and lower work roll chocks for aligning the chocks in a mill housing window, said chocks each having vertical support surfaces thereon including portions extending both above and below the pass line defined by the work rolls supported in the chocks, said vertical support surfaces underlying and providing support for said liner plates mounted on the chocks, said liner plates each also including portions extending both above and below said pass line.

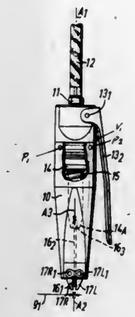
4,238,948

CRIMPING AND CUTTING TOOL

Edwin J. Rose, Fareham, England, assignor to Elite Engineering Limited, England

Filed Feb. 22, 1979, Ser. No. 13,912
Int. Cl.³ B21F *5/00*; B25B *25/00*
U.S. Cl. 72—332 **11 Claims**

1. A crimping and cutting tool, for wire, or the like, comprising: a pair of relatively movable jaws, means for closing said jaws in use to crimp a wire therebetween to form a crimping gap, said jaws also defining a surface located at the crimping gap and the said surface being shaped and oriented for defining



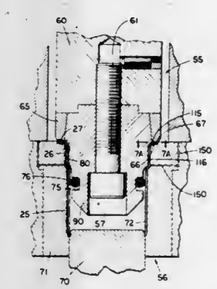
a pathway across the wire being crimped at said crimping gap, a movable cutting blade and means for moving said blade along said surface for cutting the wire at said surface and at said jaws.

4,238,949

PROCESS AND APPARATUS FOR MAKING METAL OUTERS AND INNERS

Ralph E. Roper, Indianapolis, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 691,720, Jun. 1, 1976, abandoned, Continuation-in-part of Ser. No. 622,269, Oct. 14, 1975, abandoned. This application Aug. 28, 1978, Ser. No. 937,278
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—358 **12 Claims**



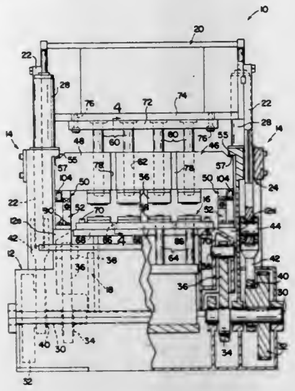
1. A process for making a metal annular member of precise tolerances which comprises placing an annular sheet metal blank between a punch and an external die, forcing the annular blank into the external die by means of the punch so that the external die reduces the outside diameter of the blank, maintaining said external die in continuous contact with the portion of said blank that is reduced in diameter, causing at least a portion of the inside diameter of the blank to contract as dictated by said reduction of the outside diameter and without interference with the punch, seating one end of the blank against a ridge surrounding the inside of the external die, and driving the punch axially inside the annular blank and the external die until the punch seats against the other end of the blank thereby forming the blank into the desired annular member configuration as determined by the configuration of the punch and the external die and the ridge thereon.

4,238,950

BOLSTER ARRANGEMENT FOR OPPOSED SLIDE DOUBLE ACTING PRESS

Louis F. Carrieri, LaGrange Park, and Edwin A. Spanke, Oak Forest, both of Ill., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Apr. 9, 1979, Ser. No. 28,274
Int. Cl.³ B21J *13/02*
U.S. Cl. 72—446 **21 Claims**



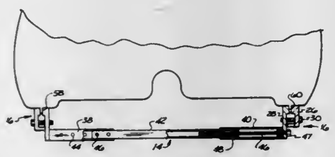
1. A press comprising, frame means, upper slide means supported by said frame means for vertical reciprocation, lower slide means supported by said frame means for vertical reciprocation, bolster means between said upper and lower slide means, means to reciprocate said upper and lower slide means toward and away from said bolster means, means supporting said bolster means for horizontal displacement relative to said frame means from a first position between said upper and lower slide means and a second position outwardly adjacent said frame means, and means releaseably interengaging said bolster means with said frame means when said bolster means is in said first position.

4,238,951

PORTABLE AUTOMOBILE STRAIGHTENING DEVICE

James D. Grainger, and Harold A. Grainger, both of Wichita, Kans., assignors to Grainger Bros., Inc., Wichita, Kans.

Filed Oct. 2, 1978, Ser. No. 948,019
Int. Cl.³ B21D *1/12*; B25B *5/14*; B23Q *9/02*
U.S. Cl. 72—457 **5 Claims**



1. Apparatus for clamping a damaged unibody vehicle structure for purposes of straightening, which is adapted to be manually secured to the underside of the vehicle body along the pinch welds, comprising:

a lightweight rigid rectangular frame constructed of two parallel side members and two parallel end members, the ends of each side member being attached to the ends of each end member forming a corner;

a gusset plate attached to each corner forming a rigid joint, and attachment point means on the gusset plate for supporting force applying apparatus; said side and end member including telescoping means therein to vary the length of said members, the telescoping means on the end members includes at least two sections, a jack screw anchored between the two sections with an exposed lug nut thereon for turning the screw into a fixed nut attached to one of said sections;

locking means on each telescoping means for preventing any telescoping movement between said sections; and

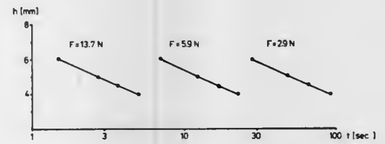
clamping means attached to the frame at each corner thereof adapted to grip the pinch weld along each side of the vehicle body, the clamping means and frame being sufficiently shallow in depth and light in weight to be manually mounted to an unelevated vehicle.

4,238,952

METHOD OF DETERMINING CHARACTERISTIC RHEOLOGICAL QUANTITIES OF VISCOELASTIC MATERIALS

Rüdiger Koopmann, Langenfeld, and Richard Juffa, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 47,977
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827593
Int. Cl.³ G01N *25/02*
U.S. Cl. 73—15.6 **3 Claims**



1. A method of determining characteristic rheological quantities of viscoelastic materials, comprising the steps of:

preheating at least two uniform cylindrical samples of the same batch to a specific temperature;

compressively loading each sample with a force on its opposite faces so as to compress the sample to a predetermined height, each force differing from the other and resulting in a testing period of between 5 and 150 seconds;

unloading the sample; and during loading and unloading in each case, measuring the period over a section of the deformation path in which the sample is at less than 60% of its original height.

4,238,953

EMISSION TEST METHOD FOR FLOATING ROOF SEALS AND APPARATUS USEFUL THEREFOR

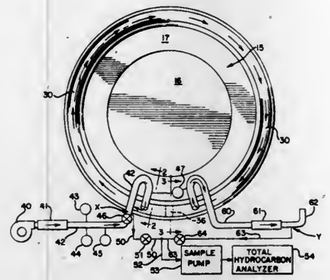
Royce J. Laverman, South Holland, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 887,185, Mar. 16, 1978, abandoned. This application May 16, 1979, Ser. No. 39,508
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 **39 Claims**

1. A method of testing the effectiveness against leakage of a seal in a gap between two surfaces which comprises:

positioning and securing an envelope means to span the seal and gap and extend to the two surfaces to thereby form an enclosed cavity or space defined by the two surfaces, the seal therebetween and the envelope means;

feeding a gas stream into the cavity and removing the gas stream from the cavity; and



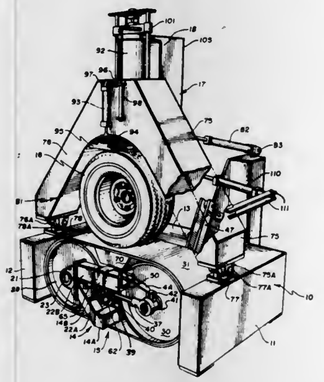
analyzing the removed gas stream for any potential contaminant which leaks past the seal in the gap.

4,238,954

FLAT BELT TIRE TESTER

William J. Langer, Eden Prairie, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed Feb. 23, 1979, Ser. No. 14,436
Int. Cl.³ G01M *17/02*
U.S. Cl. 73—146 **15 Claims**



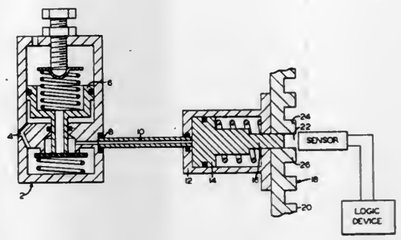
1. A tire testing machine of the flat belt type comprising a first frame assembly, a pair of rotatable drum members mounted on said frame assembly, an endless belt mounted over said drum members and having one length extending between said drum members generally in a plane, a second tire support frame, means to mount the second frame to said first frame assembly about a camber axis which lies substantially along the surface of the one length of the belt and which is generally perpendicular to the axis of rotation of said drum members, means on the second tire support frame to rotatably mount a tire to be tested in position to be moved to engage said one length, and means to control the angular position of said second tire support frame about said camber axis.

4,238,955

TIRE-PRESSURE MONITORING DEVICE

Erich Reinecke, Burgdorf, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 16,767
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813058
Int. Cl.³ B60C *23/02*
U.S. Cl. 73—146.5 **5 Claims**



1. Pneumatic tire-pressure monitoring apparatus for use with vehicles also equipped with an anti-skid device operable responsively to brake control pulses resulting from variations of angular velocity of the wheel for preventing lock-up of the wheel during braking operations, said tire-pressure monitoring apparatus comprising:

(a) a display panel operable responsively to variations of actuating pulses for indicating tire-pressure deterioration;

(b) an annular toothed member concentrically rotatable with the tire and having a plurality of equi-angularly arranged spaces peripherally formed thereon alternately between equi-angularly spaced teeth, all of said spaces, except one, being of equal dimension, said toothed member being operable for generating a magnetic field during rotation;

(c) a sliding pin member operably disposed in said one space between two adjacent ones of said teeth and normally occupying a normal position in which the dimension of said one space is maintained identical to that of the other spaces;

(d) a sensing device deployed in the proximity of said magnetic field and cooperating therewith for generating a series of tire-pressure indicating pulses of equal magnitude when said pin is in its said normal position, and being operable responsively to an irregular pattern of said magnetic field effected when said pin is slidably moved in said space out of its said normal position for producing a series of tire-pressure indicating pulses of irregular magnitude;

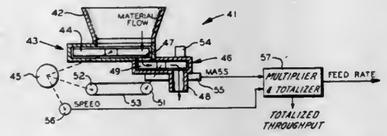
(e) a control circuit connected to said sensing device for receiving both said brake control and tire-pressure indicating pulses and being operable for directing said brake control pulses to the anti-skid device when said tire-pressure indicating pulses are of equal magnitude, and for blocking out said brake control pulses, upon occurrence of said tire-pressure indicating pulses of irregular magnitude, and diverting said tire-pressure indicating pulses of irregular magnitude to said display panel; and

(f) means connected to the tire-pressure and operable responsively to a reduction of such pressure of a certain degree or more for effecting movement of said pin in said one space.

4,238,956
RADIATION ATTENUATION WEIGHING SYSTEM FOR A VERTICAL MATERIAL FEEDER

Joseph T. Sniezek, Keewatin, Canada; Paul W. Chase, Anoka, Minn., and Wendell D. Miller, Austin, Tex., assignors to Ramsey Engineering Company, St. Paul, Minn.

Filed Aug. 21, 1978, Ser. No. 934,737
Int. Cl.[2] G01F *1/00, 1/66;* G01N *9/24*
U.S. Cl. 73—861.01 15 Claims



1. An apparatus for weighing particulate material being fed through a vertical material feeder, the feeder including a storage bin from which the material is fed, a prefeeder agitator for discharging the material from the bin, a feeder bowl for receiving the material from the prefeeder agitator and discharging the material from the vertical material feeder, the weighing apparatus comprising:

a source of radiation positioned on one side of the path of travel of the material through the feeder bowl;

a radiation detection means positioned on the side of said path of travel opposite said radiation source, said detection means being responsive to the radiation received from said radiation source through the material for generating a signal representing the mass of the material in said path between said radiation source and said detection means;

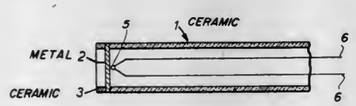
means for generating a signal representing the speed at which the material is moving along said path; and

means responsive to said mass signal and said speed signal for generating a signal representing the rate at which the material is being fed through the vertical material feeder.

4,238,957
PYROMETRIC SHEATH AND PROCESS

Frank P. Bailey, Huntingdale, and Clive K. Coogan, Canterbury, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jun. 28, 1978, Ser. No. 919,832
Int. Cl.[3] G01K *1/08, 7/00*
U.S. Cl. 73—343 R 9 Claims

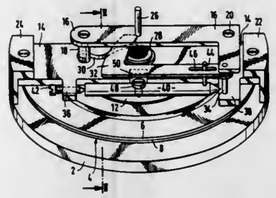


1. In a pyrometric sheath for temperature sensors comprising a hollow tubular body of a material having relatively poor thermal transmission qualities, and, disposed in an opening towards one end of the body to close the opening, a partition of relatively high thermal conductance having an outer face exposed to the exterior of the body and an inner face exposed to the hollow interior of the body, the improvement wherein, the partition is a metal foil disc of a thickness between 0.05 mm and 0.5 mm which includes a metal selected from the group consisting of metals having atomic numbers between 21 and 28 inclusive in the first transition series between 39 and 47 inclusive in the second transition series and between 57 and 79 inclusive in the third transition series, and which has a melting point not below 600° C., said hollow body is a refractory oxide ceramic selected from the group consisting of oxides of metals of groups II, III, IV, VIII of the Periodic Classification of the Elements and mixtures of such oxides; the partition is hermetically sealed about its whole periphery to said hollow body by being bonded thereto; and the partition is electrically and thermally isolated at said periphery.

4,238,958
BAROMETER

Heinz Dostmann, Wertheim-Reicholzheim, Fed. Rep. of Germany, assignor to Dostmann GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,994
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851359
Int. Cl.[3] G01L *7/12*
U.S. Cl. 73—386 11 Claims

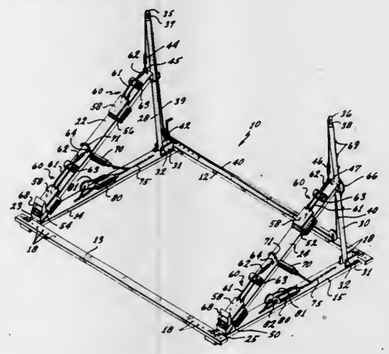


1. A barometer comprising a substantially planer stabilized membrane capsule, a base plate supporting the membrane capsule on one side thereof, pointer drive means disposed on the other side of the membrane capsule and including two substantially parallel plates fixed with respect to the base plates, a pointer shaft rotatably mounted in the two plates and a pivotably mounted drive element engaged with the pointer shaft to rotate same in response to the pivoting movement thereof and transmission means for coupling the membrane capsule to the pointer drive means, the transmission means comprising a rotatable lever shaft, a first lever arm mounted on the lever shaft for rotation therewith and coupled to the drive element to pivot same in response to rotation of the lever shaft and an elongated second lever arm mounted on the lever shaft for rotation therewith and having a free end abutting directly on the membrane capsule to effect rotation of the lever shaft in response to movement of the membrane capsule and wherein the longitudinal axis of the second lever arm extends obliquely relative to the plane of the membrane capsule.

4,238,959
AUTOMOBILE SUSPENSION DYNAMIC SIMULATOR

John C. McCann, 4034 Agua Dulce Blvd., La Mesa, Calif. 92041

Filed Feb. 14, 1979, Ser. No. 12,232
Int. Cl.[3] G01L *5/00;* G01M *17/04*
U.S. Cl. 73—432 SD 9 Claims



1. An automobile suspension dynamic simulator comprising:

a base;

automobile support means having hinge means along one lateral side pivotally connecting it to said base; said automobile support means comprising first and second tilting platform boards, said boards having a first and a second end, one of said ends of each of said boards being connected to said hinge means;

means for lifting the other lateral side of said automobile support means upwardly along an arcuate path;

a first pair of load measuring devices mounted atop said automobile support means adjacent its front end for positioning beneath the front tires of an automobile;

a second pair of laterally spaced load measuring devices mounted atop said automobile support means adjacent its rear end for positioning beneath the rear tires of an automobile;

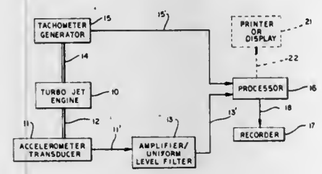
a first tension load force applying means having its one end attached to said base in the area substantially beneath said first pair of laterally spaced load measuring devices, the other end of said first tension load force applying means passing vertically upwardly through an aperture in said automobile support means for attachment to structure on the automobiles front end through which passes the automobiles front center of gravity; and

a second tension load force applying means having its one end attached to said base in the area substantially beneath said second pair of laterally spaced load measuring devices, the other end of said second tension load force applying means passing vertically upwardly through an aperture in said automobile support means for attachment to structure on the automobile's rear end through which passes the automobile's rear axle center of gravity, whereby tilting the automobile laterally, side load effects on the automobile can be measured to evaluate dynamic conditions.

4,238,960
MEANS FOR BALANCING ROTORS OF A MACHINE

George C. Curtis; Joe A. McInturff, both of Marietta; Herbert J. Rubel, Atlanta, and William F. Wall, Marietta, all of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Nov. 27, 1978, Ser. No. 964,258
Int. Cl.[3] G01M *1/16*
U.S. Cl. 73—462 4 Claims



1. Means for balancing multiple rotors of a machine comprising:

an accelerometer transducer connected to said machine to receive the total vibration of all said rotors at all operating speeds and produce a single output signal;

an amplifier and uniform level filter connected to said transducer to receive said single output signal and raise it to a predetermined substantially constant level signal over the entire speed range of said machine, said filter having components selected to simultaneously compensate for both the frequency dependence of said single output signal and the variable displacement allowables of said rotors;

a generator connected to each machine rotor to produce a continuous sinusoidal output signal proportional to the position and speed of its associated rotor, each said generator being indexed to its said rotor;

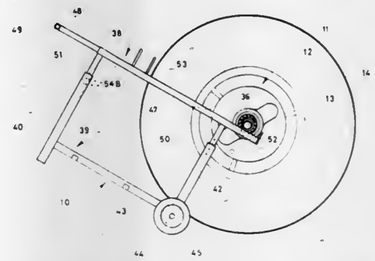
a processor connected to said filter and to each said generator to alternately receive the respective constant level signal and the continuous, proportional output signals aforesaid and produce a corresponding output signal for each rotor to be balanced; and

recording means connected to said processor to receive and retain each said corresponding output signal.

4,238,961
APPARATUS FOR USE IN BALANCING BUS AND TRUCK WHEELS

James A. Johnson, 59 Ocean House Rd., Cape Elizabeth, Me. 04107

Filed Oct. 9, 1979, Ser. No. 82,879
Int. Cl.[3] G01M *1/04, 1/12*
U.S. Cl. 73—480 14 Claims



1. In combination a stand for use in balancing a large wheel such as a truck or bus wheel and an assembly in which said wheel is to be incorporated, said assembly including a shaft and means operable to connect said wheel thereto with the shaft axially thereof with the shaft ends protruding, said stand including a pair of laterally spaced wheel supporting members, each member including an upwardly disposed hook at its front end and a stop spaced rearwardly thereof, and stable supporting structure for said members having a wheel receiving chamber open at the front of the stand and upwardly between said members and of a length and depth greater than the radius of said wheel with said supported members rearwardly and downwardly inclined, said hooks extending forwardly from the front of the structure and the stops rearwardly thereof, said stand tiltable forwardly from its stable position to lower said hooks into a position to receive said shaft with the wheel in alignment with the chamber, the length of the structure such that mechanical advantage is afforded the user in returning the stand to its stable position, the wheel then being lifted, the shaft rotatably held against the stops with the wheel free to rotate relative to the stand, said stops spaced rearwardly with respect to the front of the stand to insure the stability thereof while the wheel is being tested for imbalance.

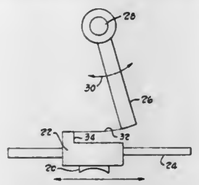
4,238,962
TRANSDUCER DRIVE FOR ULTRASONIC IMAGING

Jon C. Taenzer, Palo Alto, Calif., assignor to Picker Corporation, Northford, Conn.

Filed Aug. 30, 1978, Ser. No. 938,073
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—633 14 Claims

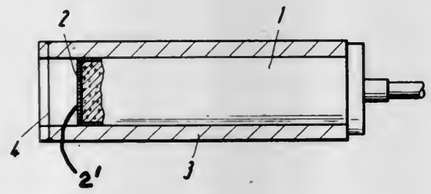
1. A transducer drive system for a real time scanned ultrasonic imaging system, the drive system comprising:

(a) structure for mounting the transducer for substantially linear, reciprocal motion along a path;
(b) a drive member supported for oscillatory movement; and



(c) a compliant element coupling between the drive member and the transducer.

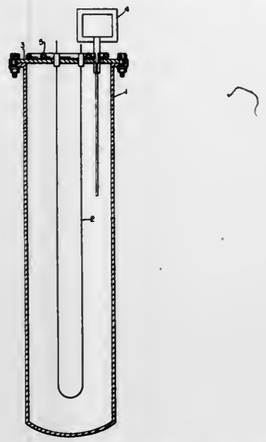
4,238,963
TEST HEAD FOR ULTRASONIC TESTING OF STRUCTURAL MATERIAL
Karl Ries, Mülheim; Dieter Lather, Rheurdt; Dieter Kaiser, Mülheim; Kurt Hannoschöck, Sonsbeck, and Günter Simoneit, Mülheim, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Jun. 5, 1978, Ser. No. 912,712
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1977, 2726400
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—644 **3 Claims**



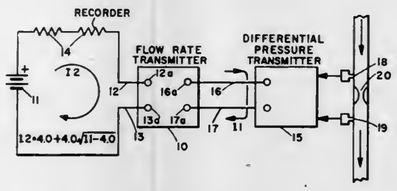
1. Transducer head for ultrasonic testing of structural materials having a transducing surface, comprising:
a means for defining an acoustic wave propagative path in front of the surface; and
a calibration reflector disposed across the path in front of the said surface and at a distance therefrom for intercepting a central portion and reflecting a small portion of any ultrasonic energy launched by the transducer, but permitting the major portion of that energy to pass said reflector on both sides due to the extension of the reflector across the path of the energy.

4,238,964
VACUUM GAUGE
Raymond A. Wolf, Albany, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Sep. 20, 1979, Ser. No. 77,321
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—714 **2 Claims**

2. A means for measuring small increments of pressure variations below atmospheric pressure of fluid reactants in a container which reactants are solid at atmospheric conditions, comprising:
a housing mounted on a lid of a container, said housing having insulated walls defining an insulation chamber in said housing;
a pressure sensing device mounted on said housing in said insulation chamber;
heating means in said housing for maintaining said insulation chamber at a temperature sufficiently high to maintain reactants whose pressure is being measured by said pressure sensing device in a vapor phase within said pressure sensing device; and
an extended heat conductive hollow tube connecting said pressure sensing device to reactants located in the container, said tube being thermally isolated from the container to substantially prevent heat loss to that container, whereby it is substantially insured that reactants whose pressure is being measured by said pressure sensing means remain in a vapor phase within said tube and said pressure sensing device.

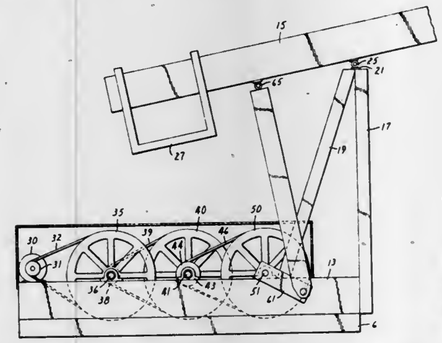


4,238,965
TWO WIRE FLOW RATE TRANSMITTER
David J. Mate, San Diego, Calif., assignor to Action Instruments Company, Inc., San Diego, Calif.
Filed Sep. 15, 1978, Ser. No. 942,610
Int. Cl.³ G01F *1/38*
U.S. Cl. 73—861.48 **10 Claims**



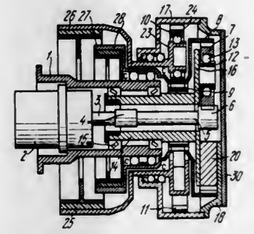
1. A flow rate transmitter for use in a two wire transmitter system that includes a differential pressure transmitter, a DC voltage supply, and a pair of wires connecting said voltage supply across said differential pressure transmitter said differential pressure transmitter being operable to pass a DC loop current I_1 through said wires representative of a pressure drop through an orifice; said flow rate transmitter being comprised of:
current sensing means having terminals which connect in series with said wires for passing said loop current I_1 and generating a first voltage representative thereof;
means for generating a second voltage proportional to the square root of said first voltage;
means for generating a third voltage proportional to said second voltage minus said first voltage;
voltage controller variable resistance means having terminals which connect in parallel with said pair of wires for passing a DC current I_3 therebetween proportional to said third voltage wherein the sum I_1+I_3 is representative of flow rate through said orifice; and
DC-DC voltage converter means having terminals which connect in series with said wires for passing current I, and for drawing power therefrom to energize all said means in said flow rate transmitter.

4,238,966
BELT DRIVE FOR PUMP JACK
Russell R. Carlson, Wessington Springs, S. Dak. 57382, and John J. Tschetter, P.O. Box 315, Huron, S. Dak. 57350
Filed Jan. 5, 1978, Ser. No. 867,132
Int. Cl.³ F16H *21/32*
U.S. Cl. 74—41 **1 Claim**



1. A pump operating mechanism for a pump jack which comprises:
a walking beam having counterweights on said beam including a head,
a fram pivotally supporting said walking beam for oscillating movement of a head about said supporting frame and,
a drive mechanism for driving said walking beam to oscillate the same, said drive mechanism comprising:
a drive motor having a drive sheave,
a first driven shaft having a driven sheave and a smaller drive sheave,
a second driven shaft having a driven sheave and a smaller drive sheave,
a third driven shaft having a driven sheave and having a radial crank arm secured thereto,
said driven sheaves being of equal diameter,
three series of drive belts connecting said drive sheaves to a driven sheave to drive the first shaft from said motor driven sheave, to drive the second shaft from the drive sheave on the first shaft and to drive the third shaft from the drive sheave on the second shaft, and
a drive link connecting said crank arms, to said walking beam for pivoting the same about said supporting frame upon operation of said motor, wherein said drive reduction is approximately 109 to 1, wherein said drive reduction is afforded by a drive sheave 4 inches in diameter driven from said drive motor, said second and third drive sheaves being approximately 5 and 7 inches in diameter respectively, and said driven sheaves being 25 inches in diameter.

4,238,967
DRIVING ARRANGEMENT
Dmitry P. Volkov, Kolpachny pereulok, 6, kv. 101, Moscow; Stanislav V. Bondarenko, ulitsa 2 Proletarskaya, 5, kv. 17, Mytischi Moskovskoi oblasti; Alexandr F. Krainev, Izmailovsky prospekt, 91, korpus 3, kv. 56; Evgeny A. Kazakov, ulitsa Polyarnaya, 3, korpus 2, kv. 10, both of Moscow; Sergei A. Surkov, ulitsa Galyanovskaya, 3a, korpus 2, kv. 155, Moscow; Valentin A. Kritsky, ulitsa Kalinina, 98a, Kamyshin Volgogradskoi oblasti; Nikolai N. Schekin, ulitsa Nekrasova, 19, kv. 17, Kamyshin Volgogradskoi oblasti; Vladimir M. Maljuk, 3 mikroraion, 10, kv. 51, Kamyshin Volgogradskoi oblasti; Leonid V. Zaitsev, Flotskaya ulitsa, 7, korpus 5, kv. 750, Moscow; Nikolai K. Grechin, Frunzenskaya naberezhnaya, 42, kv. 26, Moscow; Genrikh L. Bogorodsky, Sirenevy bulvar, 65, korpus 1, kv. 80, Moscow; Gleb K. Dobrinsky, Tenistaya ulitsa, 13a, kv. 52, and Gennady P. Koshelenko, ulitsa Posmetnogo, 33, kv. 45, both of Odessa, all of U.S.S.R.
Filed Jan. 24, 1978, Ser. No. 872,327
Int. Cl.³ F16H *57/10*
U.S. Cl. 74—758 **5 Claims**

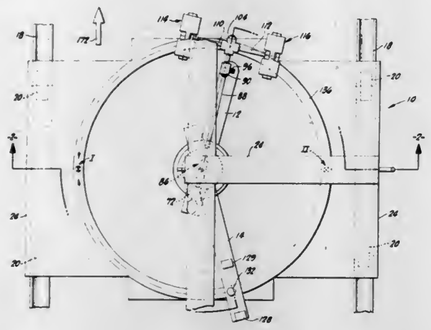


1. In a driving arrangement comprising planetary gearing means adapted to transmit driving torque to an output driven member including a hub enclosed with a drum and journalled in a supporting structure on bearing means, said drum being adapted to take up the load of a moving object, an improvement consists in that said hub enclosed within said drum is connected with the latter with aid of end face discs rigidly fixed, respectively, to said hub and to said drum, these discs, in their turn, being interconnected rigidly with aid of intermediate elements extending between the planet pinions of said planetary gearing means perpendicularly to the plane of rotation thereof, the shafts of said planetary gearing means being rigidly connected with one of these discs.

4,238,968
DEVICE FOR CONVERSION OF CENTRIFUGAL FORCE TO LINEAR FORCE AND MOTION
Robert L. Cook, 605 Wilson Ave., Vallejo, Calif. 94590
Filed Sep. 25, 1978, Ser. No. 945,245
Int. Cl.³ F16H *33/20*
U.S. Cl. 74—84 R **11 Claims**

1. Device for conversion of centrifugal force to linear force and motion comprising:
a. first arm rotating in a circular path about an axis producing centrifugal force on the axis;
b. a second arm rotating in a circular path about the axis of said first arm in a direction opposite to said first arm at a rotational speed equal to said first arm;
c. mass positioned at the end of said first arm;
d. means for transferring a portion of said mass from the end of said first arm to the end of said second arm and vice versa at two selected points in the rotational path of said arms spaced by one hundred eighty degrees, thus producing an imbalanced centrifugal force on the axis during one

hundred eighty degrees of the circular path of said first arm;



e. means for canceling a component of the imbalanced centrifugal force.

4,238,969

MECHANICAL GEARING FOR ROLLER BLINDS AND AWNINGS

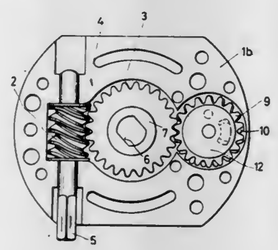
Bruno Krause, Heiligenhaus, Fed. Rep. of Germany, assignor to Klafft & Klüppelholz, Heiligenhaus, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,085

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823134

Int. Cl.³ F16H *57/10, 1/16*

U.S. Cl. 74—411.5 **6 Claims**



1. Transmission for roller blinds and awnings with a self-locking worm wheel drive having a worm wheel, comprising

a housing formed in two parts,

a shaft being mounted in said housing,

the worm wheel drive being mounted on an end of said shaft,

an abutment means disposed in said housing for limitation of the number of rotations of the shaft in the unwinding direction, said abutment means comprises:

an abutment pinion having a number of teeth, said abutment pinion meshing with said worm wheel;

a locking disc having a different number of teeth than that of said abutment pinion, said locking disc meshing with said worm wheel, said locking disc and said abutment pinion being mounted coaxial to each other in said housing;

an abutment pin axially moveably disposed in said abutment pinion;

an abutment secured to said housing;

spring means for prestressing said abutment pin,

said locking disc being formed with a slot displaceably operatively adjacent said abutment pin,

said abutment pin operatively engages said abutment in a predetermined position with said pin extending through said slot.

4,238,970

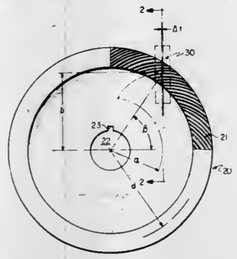
BEVOLUTE GEAR SYSTEM

Willis M. Carter, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Feb. 23, 1978, Ser. No. 880,368

Int. Cl.³ F16H *55/08*

U.S. Cl. 74—457 **6 Claims**



1. A gearing system for transmitting torque between non-intersecting axes disposed at a predetermined angle with respect to each other comprising:

a pinion gear mounted on one of said axes and including teeth which are shaped in the form of an involute spiral; and

a wheel gear in meshing engagement with said pinion gear and including teeth which are shaped in the form of an involute spiral, said wheel gear being mounted on a second axis at said predetermined angle to the axis of the pinion gear;

said axis of said pinion gear being offset from the axis of the wheel gear and the centerline of the pinion gear being tangential to a base circle of the wheel gear from which the involute teeth of the wheel gear are generated, whereby the offset positioning of the pinion gear forms a bevolute angle at the center of the wheel gear between a line passing from the center of said wheel gear to the center of said pinion gear and a line passing from the center of said wheel gear normal to the tangent line from the centerline of said pinion gear to said base circle;

said pinion gear having external involute teeth being positioned on the outer peripheral surface of said pinion gear and being in conjugate meshing engagement with said wheel gear which is a substantially flat, face gear.

4,238,971

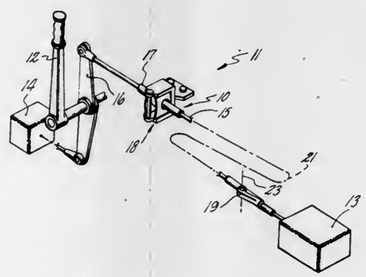
RELEASABLE PUSH-PULL SHEATHED CABLE CONTROL SYSTEM

Armand F. Amelio, Yonkers, N.Y., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 18, 1978, Ser. No. 970,763

Int. Cl.³ G05G *9/00;* **F16C** *1/26;* **F16D** *9/00*

U.S. Cl. 74—471 R **16 Claims**



1. A control system comprising:

(A) a control cable adapted to extend between the control input and output and shaped to form at least one looped portion;

(B) a sheath enveloping the cable and extending for substantially the full length thereof so that said cable may be moved within said sheath in push-pull fashion,

(C) first means fixedly positioning said sheath at one end of said looped portion,

(D) second means to fixedly position said sheath at the other end of said looped portion during normal control system operation and to release the sheath and cable in response to attempted push-pull cable following a cable jam anywhere within the sheath or within the control output, thereby establishing compression or tension loading on the cable within the sheath resulting in deformation loading on the cable-sheath loop portion to be reacted by the first and second positioning means and thereby release the cable and sheath from the second positioning means, said second positioning means comprising:

(1) a housing adapted to be fixed in position,

(2) a ball member connected to the exterior of such sheath and positioned in said housing,

(3) spring members positioned on opposite sides of said ball member, and

(4) means to releasably secure said spring members in said housing so that said spring members and said ball member are normally positioned by said housing and so that, if the cable jams anywhere within the sheath or the control output, sufficient tension or compression loading of the cable will cause deformation of the cable-sheath loop portion and thereby cause said ball member to bear against one of said spring members so as to cause deflection thereof and release thereof from said housing member, to thereby free the jammed cable, sheath and ball member from said housing.

4,238,972

REMOTE CONTROL MECHANISMS

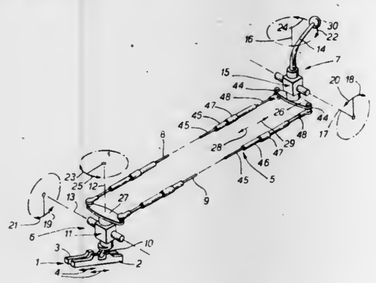
James F. Hemens, Billericay, England, assignor to Teleflex Morse Limited, Basildon, England

Filed Aug. 21, 1978, Ser. No. 934,743

Claims priority, application United Kingdom, Sep. 29, 1977, 40593/77; Jan. 4, 1978, 235/78

Int. Cl.³ B60K *20/04*

U.S. Cl. 74—473 P **36 Claims**



1. A remote control mechanism comprising push-pull control links operatively connected at one end to spaced locations of a beam, said beam being pivotally movable about mutually displaced first and second axes, said axes are rotational axes of a Hooke's-type coupling, said spaced locations of said beam moving equally in the same direction upon pivoting of said beam about said first axis, said spaced locations of said beam moving in opposite directions relative to said control links upon pivoting of said beam about said second axis, one of said axes being fixed and the other axis rotating about said one axis when said beam is pivoted about said one axis, paired coincident movement of said control links being complementary to both said spaced locations of said beam moving equally in said same direction, and differential relative movement of said control links being complementary to said spaced locations of said beam moving in said opposite directions.

4,238,973

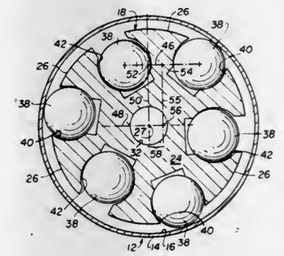
FLEXIBLE RECIPROCATING MECHANICAL CONTROL

Vincent Polo, 222 N. Ocean Blvd., Delray Beach, Fla. 33444, and Sergio R. Panunzio, 36 Hollywood Ct., Rockville Centre, N.Y. 11570

Filed Jan. 5, 1978, Ser. No. 867,009

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 R **11 Claims**



1. In a reciprocating mechanical control for axial movement within a housing of a selected cross-sectional configuration, said control comprising:

a plurality of carrier members having a curved peripheral surface, each of said carriers including a plurality of tracks on the peripheral surface thereof, said plurality of tracks each being an endless track carrying rollable bearing elements which move in said respective track through load bearing and non-load bearing positions and therebetween in a single plane, said load bearing and non-load bearing positions being substantially parallel and each of said tracks being positioned on the peripheral surface of each said carrier so that a radius of the carrier perpendicular to a line defined perpendicular to and connecting said load bearing and non-load bearing positions intersects said line at a point thereon other than at the midpoint of said line, whereby said rollable bearing elements in said load bearing position cooperate with the housing to support and guide said carriers for axial movement in the housing:

joint means for interposition between adjacent carriers to space the same from one another and to enable pivoted relative movement therebetween, said joint means being laterally spaced from the defines of the housing to position said joint means for non-frictional axial movement relative to the housing,

each said endless track comprising a working portion to position the bearing elements in their load bearing position with a surface of each of the bearing elements projecting beyond the periphery of said carrier member for engagement with the defines of the housing,

an idler portion to position the bearing elements in their non-load bearing position with the surfaces of the bearing elements withdrawn within said carrier member spaced from the periphery thereof and out of engagement with the housing,

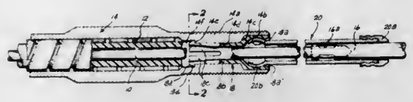
and interconnecting portions forming continuous extensions of said working and idler portions to complete each said endless track to enable circulating movement of the rollable bearing elements endlessly along said track.

4,238,974

UNIVERSAL SEAL AND SUPPORT GUIDE FOR PUSH-PULL CABLE TERMINALS

Harry E. Fawcett, Tacoma, Wash., assignor to Cablecraft, Inc., Tacoma, Wash.

Continuation-in-part of Ser. No. 968,435, Dec. 11, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,860
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **14 Claims**



1. In combination with a flexible coaxial push-pull cable including coaxial outer and inner cable members, said outer cable member having a terminal tubular fitting thereon, said tubular fitting having an open-end receptacle through which said inner cable member passes, said inner cable member projecting axially beyond said terminal tubular fitting and having a terminal rod-like extension fitting thereon, said inner cable member being longitudinally slidable in said outer cable member to project by varying distances beyond said tubular fitting and being subject to bending flexure relative thereto,

a resiliently deformable socket tube having a shank portion and having on one end socket means forming a hollow ball-and-socket joint socket element,

a support tube slidably engaging said rod-like fitting, said support tube having on one end a hollow ball-and-socket joint ball element retentively engageable in said socket means in universally pivotal sealed relationship therewith,

said open-end receptacle of said terminal tubular fitting being formed and dimensioned to snugly receive by longitudinal insertion said socket tube including said shank portion and said socket means thereof with said ball element retained by said socket means, whereby said terminal tubular fitting forms a seal with said socket tube and prevents expansion of said socket means under attempted dislodgement force applied to said support tube relative to said socket tube,

said support tube and said socket tube having cooperable stop surfaces interengageable upon predetermined angular movement of said support tube out of coaxial alignment with said socket tube so as to limit flexure of said cable inner member.

4,238,975

SELF-CENTERING PUSH-PULL CABLE APPARATUS

Thomas L. Jones, Adrian, Mich., assignor to Acco Industries Inc., Trumbull, Conn.

Filed Jun. 2, 1978, Ser. No. 911,823
Int. Cl.³ F16C *1/10*; G05G *1/00*
U.S. Cl. 74—502 **10 Claims**



1. A self-centering, push-pull cable apparatus comprising:

(a) an outer elongated cable sheath;

(b) a core element disposed internally of said sheath for sliding, reciprocating movement therein;

(c) a first member connected to the cable sheath in at least partially surrounding relationship with the core element;

(d) a second member connected to the core element in at least partially surrounding relationship therewith and having a portion disposed in axial, overlapping relationship with said first member for reciprocating, axial movement relative thereto upon similar movement of the core element reltive to the cable sheath as caused by the application of an input load to the core element; and

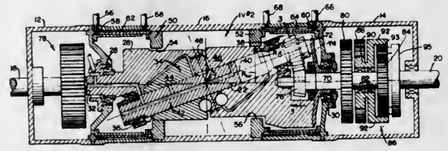
(e) spring means interconnecting said first and second members for normally holding them in a neutral, axial position and returning them to said neutral position after release of any input load being applied to the core element and causing axial movement of one of said members relative to the other in either axial direction from said neutral position, said spring means being disposed between said first and second members at the overlapped ends thereof, and extending along the overlapped end of the first member with its opposite ends fixed against axial movement in the same direction at the same time.

4,238,976

INFINITELY VARIABLE POWER TRANSMISSION AND SYSTEM

Yves J. Kemper, Birmingham, Mich., assignor to Vadetec Corporation, Troy, Mich.

Filed Oct. 19, 1978, Ser. No. 952,790
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—682 **12 Claims**



1. In a power transmission system having a system input, a system output and infinitely variable power transmitting means coupling said input and said output to drive said system output at a range of speeds variable in relation to the speed of said system input, said power transmitting means comprising:

first and second I.V. transmission units each having a unit input, a unit output and means for varying the output/input speed ratio infinitely between minimum and maximum values;

means coupling said unit inputs to said system input;

an epicyclic gear train having first and second gear inputs and a gear output;

means coupling said gear output to said system output;

means coupling said unit output of each of said first and second units to said first and second gear inputs, respectively; and

means for independently controlling the speed ratio of each of said first and second units to divide substantially equally between said units, the power transmitted between said system input and system output over a major portion of the range of system output speeds.

4,238,977

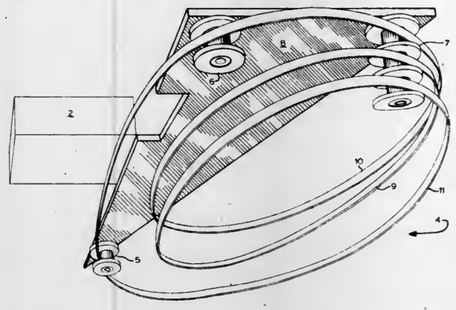
BANDSAW GRINDER BLADE SUPPORT

Dulin L. Annas, Rte. 7, Box 511-U, Hickory, N.C. 28601, and Richard M. Teague, Rte. 1, Box 297, Taylorsville, N.C. 28681

Filed Mar. 29, 1979, Ser. No. 25,013
Int. Cl.³ B23D *63/12*
U.S. Cl. 76—25 R **6 Claims**

1. A bandsaw grinder support means for supporting at least a portion of a bandsaw blade in the vertical position as its teeth are being ground adapted to be used in combination with a means to intermittently advance said bandsaw blade to position same for grinding and a reciprocating grinding means adapted to reciprocate into and out of contact with each saw blade tooth of the bandsaw blade as it is advanced into a grinding position, said support means comprising first, second and third rotatable pulley means, each having a circumferential groove

in their outer periphery, spaced apart one from another and lying in a common plane, adapted to be disposed above and



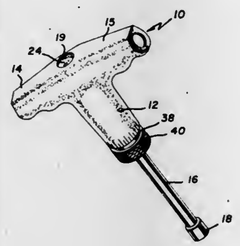
below said advancing and grinding means and said third pulley means having a plurality of grooves in its outer periphery.

4,238,978

TORQUE WRENCH

Richard P. Leone, Wayland, Mass., assignor to Lowell Corporation, Worcester, Mass.

Filed Mar. 16, 1979, Ser. No. 21,087
Int. Cl.³ B25B *19/00*
U.S. Cl. 81—480 **7 Claims**



1. A torque wrench comprising;

(a) a housing,

(b) an output shaft within the housing mounted for rotation about its central longitudinal axis,

(c) a clutch cam located within the housing and operatively connected to the output shaft for rotation therewith, said clutch cam having a frusto-conical outer surface, the central longitudinal axis of the output shaft, said clutch cam also having a recessed flat surface that is parallel to said axis,

(d) a clutch ball mounted within the housing for movement toward and away from said flat surface along a line which is substantially transverse to said longitudinal axis,

(e) a spring for resiliently biasing the clutch ball into said recess for driving engagment with the clutch cam, whereby rotation of the housing about said longitudinal axis will cause rotation of the output shaft, said clutch ball being movable out of said recess onto said outer surface against the biasing means for disengagement of the clutch ball cam for a predetermined maximum torque of the output shaft, and

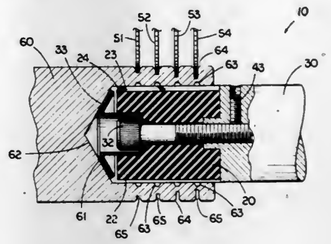
(f) adjusting means for adjustably positioning the clutch cam along its central longitudinal axis and thereby varying the position of the clutch ball along the length of the recess for selectively varying the amount of torque required to move the ball from the recess to said conical surface.

4,238,979

STABILIZING DEVICE FOR HOLLOW WORKPIECES

Arnold R. Jines, 6822 Balmoral Rd., Indianapolis, Ind. 46241

Filed Jul. 25, 1979, Ser. No. 60,395
Int. Cl.³ B23B *25/00, 23/02, 5/22*
U.S. Cl. 82—38 R **17 Claims**



1. A stabilizing device for stabilizing the rotation of a workpiece positioned in a chuck, the workpiece having an inside surface portion defining a hole, said device comprising:

(a) a workpiece engaging member including compressible, elastic material, said material having an outside surface portion adapted to engage the inside surface portion of the workpiece,

(b) means for mounting said workpiece engaging member such that it may freely rotate about the central axis of the chuck, and

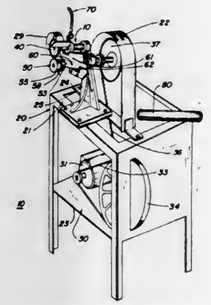
(c) means for frictionally coupling the rotation of said workpiece engaging member with the rotation of the chuck, said coupling means including means for axially compressing said material such that said material radially expands to frictionally grip the inside surface portion of the workpiece.

4,238,980

TIRE STRIPPING APPARATUS

Floyd L. Frame, 3035 E Chinden Blvd., Meridian, Id. 83642

Filed Apr. 16, 1979, Ser. No. 30,130
Int. Cl.³ B23B *3/06, 3/04*
U.S. Cl. 82—54 **4 Claims**



1. Tire stripping apparatus comprising:

housing means;

drive means mounted on said housing means;

cutting means rotatably mounted on said housing means and drivingly connected to said drive means;

a substantially L-shaped guide member, including a vertically planar portion and a horizontally planar portion, mounted on said housing and operable to guide a tire portion of pre-selected width into said cutting means;

tire feed means rotatably mounted on said housing means and drivingly connected to said drive means, said feed means including two coaxial and horizontally spaced rollers including a first substantially cylindrical roller

located adjacent said guide means and a second roller of substantially frusto-conical shape outwardly spaced from said first roller to define an annular shearing slot operable to receive said cutting means, said second roller operable to force a tire inwardly against the vertical portion of said guide means whereby an angular ring may be cut from a tire placed in a horizontal position and a continuous strip may be cut from a tire placed in a substantially vertical position; and

cutter control means operable to control displacement of said cutting means relative to said feed means.

4,238,981

ELECTRIC CABLE PROCESSING

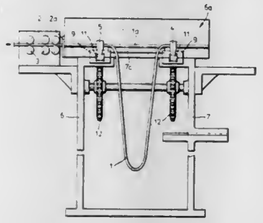
Walter Karl, Sydney, Australia, assignor to Utilux Pty. Limited, Australia

Filed Jan. 24, 1979, Ser. No. 6,179

Claims priority, application Australia, Feb. 1, 1978, PD3213

Int. Cl.[3] B26D *7/06*; H01R *43/04*; B26D *5/00*

U.S. Cl. 83—151 **14 Claims**



1. Apparatus for handling electrical cables comprising:

(a) a supply path for the cable extending from a supply location to a downstream end position,

(b) means for advancing electrical cable substantially in its axial direction along said supply path,

(c) first upstream gripping means and second downstream gripping means positionable at spaced locations along said supply path and selectively operable for gripping respectively a trailing end portion and a leading end portion of a length of cable,

(d) displacement means selectively operable for displacing the first and second gripping means laterally of the supply path for carrying the length of cable to a work station,

(e) guide means disposed between said spaced locations and displaceable relative to said supply path between a guiding position in which the cable is guided as it is advanced toward said downstream end position and a retracted position,

(f) means for retaining the leading end portion of the cable at or adjacent said downstream end position,

(g) retraction means selectively operable to retract the guide means from the guiding position to the retracted position in which the guide means permits, on further operation of the advancing means, the cable to form a loop between said spaced locations with said retaining means retaining the leading end portion of the cable, and

(h) means for severing the length of cable from said supply upstream of the first gripping means.

4,238,982

PROGRAMMABLE PERFORATOR HEAD

Vernon A. Mock, 2250 Linneman, Glenview, Ill. 60025

Filed Jul. 13, 1979, Ser. No. 57,210

Int. Cl.[3] G26F *1/20*

U.S. Cl. 83—332 **3 Claims**

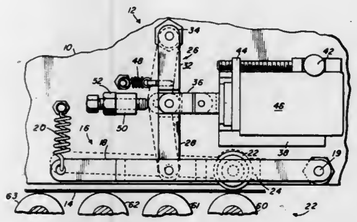
1. A sheet perforator head comprising:

(a) a frame adapted to be mounted above a sheet feed table;

(b) a horizontally-disposed arm pivoted at one end to the frame about an axis perpendicularly disposed to the direction of feed on the sheet feed table;

(c) a return spring operationally connected to the other end of said arm and adapted to lift the arm from the sheet on the feed table;

(d) a perforating wheel rotationally mounted in a leveraged position on said arm and having its axis of rotation above



and perpendicularly disposed to the direction of feed on the sheet feed table; and

(e) a toggle actuating means mounted on the frame above the arm and operationally connected in leveraged position between a pivot pin on said arm and a pivot means on said frame arranged in perpendicular relation to the direction of feed on the sheet feed table.

4,238,983

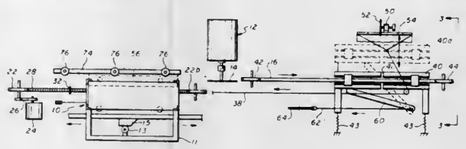
MACHINE FOR MAKING WOOD STAKES

Mark Westmoreland, 1500 Alexander Dr., Baytown, Tex. 77520

Filed Jun. 11, 1979, Ser. No. 47,368

Int. Cl.[3] B27B *27/08, 5/16*

U.S. Cl. 83—408 **11 Claims**



1. A machine for manufacturing wood stakes cut from pre-pointed boards comprising:

a first station, said first station including

a first cutting means for cutting a longitudinal slice of said board,

carriage means for holding a plurality of said boards, being reciprocally movable and having means for sequentially presenting a predetermined width of at least one of said boards to the cutting means for cutting said longitudinal slice as said board is moved longitudinally with respect to said first cutting means,

an endless conveyor having at least one linkage means engagable with said carriage means for moving said carriage means to a position whereby said presented board may be sliced longitudinally by said cutting means and thereafter said linkage means disengages from said carriage means,

means for returning said carriage means to its original position,

a second endless conveyor for receiving said longitudinal slice of board;

a second station, including

a second cutting means, mounted transverse to said second endless conveyor means for bisecting said slice of board,

ejection means for ejecting said slice of wood from said second endless conveyor means and for presenting said slice of board to said second cutting means.

4,238,984

ELECTRONIC MUSICAL INSTRUMENT

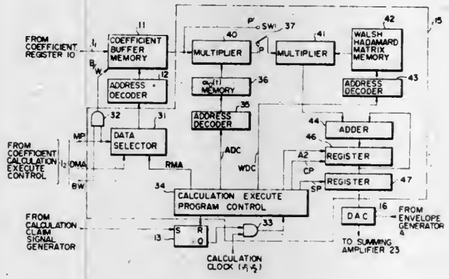
Hironori Watanabe, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Dec. 20, 1977, Ser. No. 862,430

Claims priority, application Japan, Dec. 20, 1976, 51-153107; Dec. 20, 1976, 51-153108; Dec. 20, 1976, 51-153109

Int. Cl.[3] G10H *1/00, 1/02*

U.S. Cl. 84—1.01 **11 Claims**



1. An electronic musical instrument comprising:

a first memory for storing coefficients for a plurality of tones in coded form;

a circuit for reading out required ones of the coefficients from the first memory and for calculating composite coefficients for logic orthogonal functions so as to provide a tone selected by a tone selector;

a second memory for temporarily storing the calculated composite coefficients and sequentially sending them to a plurality of waveshape calculators;

a plurality of waveshape calculators for calculating amplitude values of a required tone waveshape from the composite coefficients supplied from the second memory;

means for intermittently actuating the plurality of waveshape calculators at a frequency which is greater than the musical note frequency corresponding to a key being depressed;

D-A converters for converting to analog form the amplitude values calculated by the waveshape calculators and represented in digital form;

a circuit for producing a musical note having an envelope corresponding to depression and releasing of a key;

an envelope generator having means for switchingly connecting a plurality of capacitive elements to the resistance network on a time shared basis in reply to depression and releasing of a plurality of keys to control charging and discharging of the capacitive elements, thereby forming an envelope, wherein the resistance network is composed of variable resistors for setting an attack speed, a decay speed and a sustain level, respectively, and wherein the connecting means is composed of analog gate circuits, each selecting one of the variable resistors and switching it to another on a time shared basis, and which further includes means for detecting that the envelope has attenuated down to a preset voltage level, and means for indicating an attack level to have reached a predetermined voltage.

2. An electronic musical instrument comprising:

a first memory for storing in digital form a plurality of sets of coefficients of logic orthogonal functions for a plurality of tones;

an adder for adding some of the sets of coefficients selected by a tone selector into a composite set of coefficients;

a second memory for temporarily storing the computed composite set of coefficients; and

waveshape calculating means and calculation request means for calculating the amplitude of a musical note waveshape at one sample point at a frequency calculation rate higher than at least the note frequency and independent of the musical note frequency in response to a request for calculation, the calculating means stopping upon each calculation of the amplitude value and not calculating the amplitude value at the subsequent sample point until the next request for calculation is provided, and in which the musical note period is established by providing the request for calculation repetitively at a rate proportional to the musical note frequency, said calculating means further comprising:

a third memory having a first timing means for sequentially writing therein the coefficients of the second memory and a second timing means for reading therefrom the coefficients for the waveshape amplitude calculation;

a fourth memory for storing n order logic orthogonal functions;

a first multiplier for multiplying data from the third and fourth memories;

means for accumulating a predetermined number of results of multiplication from the first multiplier;

means for producing a signal indicating the completion of the calculation of the waveshape amplitude at one sample point;

a register for holding one already calculated amplitude value while the waveshape calculation is suspended; and

a D-A converter for converting the calculated amplitude value in digital form to an analog quantity.

4,238,985

ELECTRONIC MUSICAL INSTRUMENT

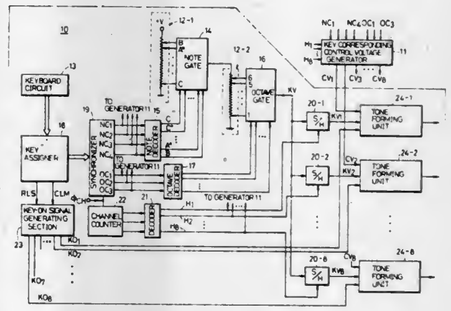
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 770,718, Feb. 22, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,723

Claims priority, application Japan, Feb. 27, 1976, 51/21327

Int. Cl.[3] G10H *1/12, 1/18*

U.S. Cl. 84—1.01 **6 Claims**



1. An electronic musical instrument comprising:

a plurality of keys, each key corresponding to a respective musical tone;

means for generating a pitch voltage corresponding to the octave and note of a depressed key, said pitch voltage having a value substantially defining the tone pitch of a musical tone signal corresponding to said depressed key;

means for generating, independently of said pitch voltage, a control voltage having a value assigned to said depressed key which is nondefinitive of said tone pitch;

means for generating the musical tone signal in response to said pitch voltage and including means for modifying such

musical tone elements of said musical tone signal as tone pitch, tone color and tone volume; and

means for directing said control voltage to said musical tone element modifying means to modify at least one of said musical tone elements of the musical tone signal at least partially in accordance with said control voltage, said musical tone element modifying means comprising

means for varying an oscillation frequency of a voltage-controlled type oscillator in response to said control voltage,

means for varying the duty factor of a rectangular wave conversion circuit connected to said voltage-controlled type oscillator in response to said control voltage, and

means for varying cut-off frequencies of a low-pass filter and a high-pass filter connected in series at an output of said rectangular wave conversion circuit in response to said control voltage.

4,238,986

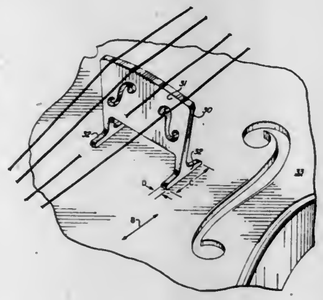
METHOD FOR ALTERING TONAL CHARACTERISTICS OF A STRINGED MUSICAL INSTRUMENT

L. John Twiford, 4640 E. Lewis, Phoenix, Ariz. 85008

Continuation-in-part of Ser. No. 831,236, Sep. 7, 1977, abandoned. This application Feb. 27, 1979, Ser. No. 15,852

Int. Cl.³ G10D *3/04*

U.S. Cl. 84—309 **1 Claim**



1. In a method for constructing a stringed instrument of the violin family including the steps of

forming an elongate hollow tone-producing structure having a curved upper table surface formed of wood, the grain of which extends longitudinally of the elongate structure and internal tone-affecting components

forming an elongate neck extending forwardly of the tone-producing structure and including a fingerboard portion, a plurality of transversely spaced tunable strings under tension, attached at their forward ends to the outer end of said neck and at their other ends to the rear portion of said tone-producing structure, and

mounting an upstanding bridge member mounted transversely on the table between the forward and rear edges thereof, to maintain said tunable strings spaced above said fingerboard and said table, said bridge having feet which contact said upper table surface which extends transversely across said table and perpendicular to the grain of the wood from which said table is formed

the improvement whereby the tonal characteristics of said instrument are altered without structural modifications to said tone-producing structure, comprising the steps of:

(a) removing said bridge member having said transversely extending feet;

(b) increasing the sonority, projection and bombastic tonal qualities of said instrument without modification of said tone-producing structure, by fitting said instrument with a bridge which includes a pair of symmetrical elongate feet formed integrally therewith, forming the contact between the bridge and the table of said instrument, said feet having bottom surfaces extending at right angles to said bridge in directions substantially parallel to the grain of the wood from which said table is formed and shaped, contoured and dimensioned to continuously contact said curved table along lines which are longer than the width of said feet; and

(c) maintaining said tone-producing structure and said internal components in their original condition.

4,238,987

EXPANSION DOWEL FOR SPACED MOUNTING OF PARTS ON A SUPPORT STRUCTURE

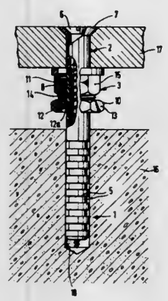
Gerd Siebrecht-Reuter, Deutenhausen, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 25, 1978, Ser. No. 936,919

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739235

Int. Cl.³ E04B *1/38;* **F16B** *13/04*

U.S. Cl. 85—83 **7 Claims**



1. Expansion dowel assembly for insertion into a bore hole in a support structure for supporting a part in spaced relation from the support structure, comprising an axially elongated sleeve-like expansion member arranged to be inserted into a bore hole and having a front end inserted first into the bore hole and a rear end, said sleeve-like expansion member having a first axially extending portion extending from the front end thereof for a part of the axial length thereof, said first portion arranged to be inserted into and expanded into holding contact with the surface of the bore hole, and a second axially extending portion extending from the rear end of said expansion member for a part of the axial length thereof toward said first portion and arranged to project outwardly from the bore hole, means for expanding said first portion, a stop member secured on said second portion and movably adjustable thereon in the axial direction thereof for holding a part on said second portion between said stop member and the rear end of said expansion member, wherein the improvement comprises that said stop member includes a locking member axially displaceable along and securable to said second portion, and a supporting member mounted on said locking member and being axially adjustable in the direction between said locking member and the rear end of said expansion member so that a part can be supported against said supporting member on the rear end side thereof and held in spaced relation to the support structure containing the bore hole, said supporting member is annularly shaped and is disposed in threaded engagement with said locking member, said locking member is annular in shape and has an inner surface, at least one elastic lug secured to and extending inwardly from the inner surface of said locking member and being displaceably engageable with said second portion for securing said stop member thereon, said second portion of said expansion member has at least one rack formed therein with said rack extending in the axial direction of said expansion member, said rack having a number of teeth spaced apart in the axial direction of said expansion member and said teeth extending transversely of the axial direction of said expansion member

and for only a portion of the circumferential periphery of said expansion member, and said lug on said locking member arranged to interengage in said rack in the space between two adjacent said teeth thereof, and said locking member being rotatable relative to said expansion member so that said lug can be displaced by the rotation movement out of interengagement said rack.

4,238,988

DEVICE FOR RECEIVING AND HANDLING PROPELLANT POWDERS

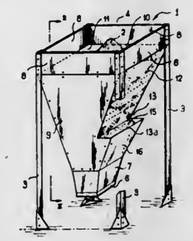
Pierre Fontaine, Paris, France, assignor to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 18, 1978, Ser. No. 970,141

Claims priority, application France, Dec. 23, 1977, 77 38952; Nov. 20, 1978, 78 32613

Int. Cl.³ F42B *33/00, 37/00*

U.S. Cl. 86—1 R **9 Claims**



1. Device for receiving or handling a propellant powder, possessing an upper charging orifice for the powder, which comprises a side vent possessing means for preventing the powder from escaping through this vent, and a portion in the side wall of the device, which is located approximately between the vent and the charging orifice, made of a material which can be detroyed under the conjugate action of the pressure applied by the powder and the flames generated on the outside of the device near this zone.

4,238,989

DEVICE FOR FEEDING CHANNEL FOR AMMUNITION FOR AUTOMATIC GUN

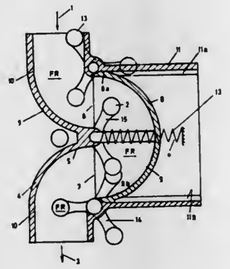
Bertil Bredin, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 17, 1978, Ser. No. 952,226

Claims priority, application Sweden, Oct. 26, 1977, 7712031

Int. Cl.³ F41D *10/38*

U.S. Cl. 89—33 BB **14 Claims**



1. Apparatus for feeding ammunition in an automatic gun of the type having a magazine and a feeding channel extending between the magazine and the gun, said feeding channel having an inner wall, said apparatus comprising:

first and second curved sections provided in said feeding channel, each section having a mouth;

guide wall means extending across said mouths, said guide means comprising a curved inner surface, said inner surface constituting an extension of the inner wall of said feeding channel;

means supporting said guide wall means for permitting said guide wall means to be displaced away from and toward said mouths, said supporting means comprising a supporting surface extending between said mouths and said guide wall means, the length of said supporting surface being dependent upon the degree of displacement of said guide wall means from said mouths.

4,238,990

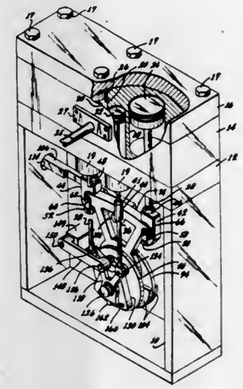
RECIPROCATING ENGINE WITH IMPROVED POWER OUTPUT LINKAGE

John H. Hedger, P.O. Box 357, Lakeside, Calif. 92040

Filed Dec. 18, 1978, Ser. No. 970,448

Int. Cl.³ F01B *1/00;* **F01L** *31/00*

U.S. Cl. 91—186 **2 Claims**



1. In a fluid driven reciprocating engine which comprises an engine block containing at least two parallel cylinders, a piston located in each of said cylinders for parallel reciprocating movement therein, piston rods rigidly connected at one end to each of said pistons extending out of said cylinders along the cylinder centerlines into a housing containing connecting means operatively connecting the other end of each of said piston rods to a single crank pin on a rotary output shaft, and valve means within said block for selectively supplying fluid to and exhausting fluid from said cylinders above and below said pistons, the improvement wherein said connecting means is a single rigid plate having an approximately isosceles triangle configuration, with an opening surrounding said crank pin at the apex and flexible connecting means at each of the other corners for connection to said other end of said piston rods, said other piston rod ends have a roughly "C" shaped configuration partially surrounding said plate corners and flat links having spaced apart holes to connect between bolts in holes in said corners and bolts in said other piston rod ends, said links lying along lines substantially parallel to said piston rods.

4,238,991

THREE-POSITION ACTUATOR

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

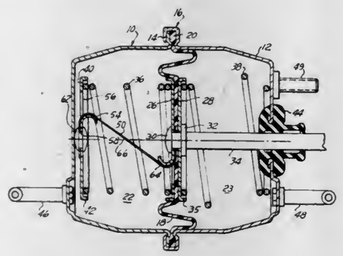
Filed Jan. 5, 1979, Ser. No. 1,057

Int. Cl.³ F01B *11/02*

U.S. Cl. 92—85 A **18 Claims**

1. A three position fluid pressure operated actuator comprising a casing, a single flexible diaphragm in said casing having

its periphery connected around a zone intermediate the ends of said casing and dividing the interior of said casing to a pair of pressure chambers, flat plate means connected to the central portion of said diaphragm leaving a flexible annular portion between said plate means and the periphery of said diaphragm, said plate means providing spring seats at opposite sides of said diaphragm, a first compression spring in one of said chambers connected between one end of said casing and the adjacent spring seat urging said plate means in a first direction, spring means in said other chamber comprising a floating spring seat movable therein between a position at the other end of said casing and a position spaced inwardly therefrom, a compression spring acting between said floating spring seat and the spring seat connected to the adjacent side of said diaphragm, connector means comprising a single flexible non-resilient strap connected between said last mentioned spring seat and



said floating spring seat acting to limit separation between said seat and plate to approximately one-half of the total travel of said diaphragm in said casing, a rigid actuator rod connected at one end to said diaphragm and extending through an opening at one end of said casing, and fluid pressure connections to said pressure chambers.

6. A three position fluid pressure operated actuator comprising a casing, a flexible diaphragm having its periphery connected around an intermediate zone of said casing and dividing said casing into separate pressure chambers, said diaphragm having a flat rigid plate connected to the central portion thereof, a spring seat movable in said casing toward and away from said plate, a spring interposed between said seat and said plate, a single flexible non-resilient strap connected at its end portions to central portions of said seat and plate to limit separation therebetween while permitting substantially free relative movement therebetween into substantial juxtaposition.

4,238,992

PUMP DIAPHRAGM

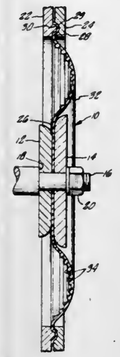
Alan D. Tuck, Jr., Upland, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

Filed Oct. 30, 1978, Ser. No. 956,189

Int. Cl.³ F16J 3/02

U.S. Cl. 92—103.5 D **4 Claims**

1. A diaphragm including an inner attachment portion, an outer attachment portion and a sheet-like, annular flexure portion made of a synthetic resin polymer bounded by said inner and outer attachment portions and having a concaved, fluid pressure receiving side, wherein the improvement comprises concentric, continuous ribs spaced substantially uniformly across the width of said fluid pressure receiving side of



said flexure portion such that said surface is substantially sinusoidal in a radial direction.

4,238,993

APPARATUS FOR MONITORING FILTER ROD SECTIONS IN FILTER TIPPING MACHINES

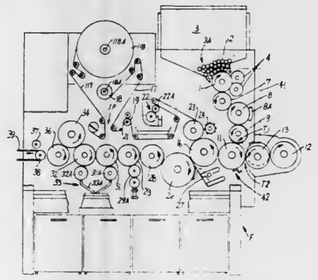
Peter Brand, Hamburg; Peter Pinck, Gross-Hansdorf, and Anton Baier, Wentorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,696

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742856

Int. Cl.³ B31C 11/00

U.S. Cl. 131—21 R **13 Claims**



1. In a machine for producing filter cigarettes or analogous smokers' products wherein one end of a tobacco-containing first rod-shaped component is connected with a coaxial filter component of unit length by an adhesive-coated uniting band which is convoluted around the filter component and the adjacent end of the first component, the combination of means for transporting successive pairs of coaxial first components sideways along a first path wherein the first components of each pair are separated from each other by a gap; means for transporting a series of filter components of double unit length along a second path toward and into a first portion of said first path so that successive filter components of said series enter the gaps between successive pairs of first components; means for draping discrete adhesive-coated uniting bands around successive filter components of double unit length and the adjacent ends of corresponding pairs of first components in a second portion of said first path; means for monitoring said second path ahead of said second portion of said first path, including means for generating signals in response to detection of the absence of filter components of double unit length; and

means for moving the first components of the corresponding pairs axially toward each other in response to said signals and ahead of said second portion of said first path.

4,238,994

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING THE PRODUCTION OF COMPOSITE FILTER MOUTHPIECES FOR CIGARETTES OR THE LIKE

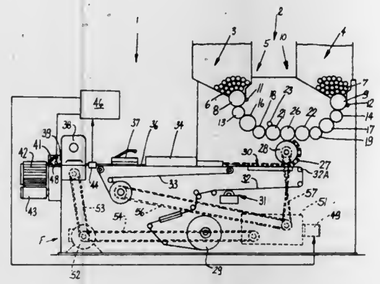
Friedo Koch, Wohltorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,240

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806552

Int. Cl.³ A24C 5/50

U.S. Cl. 493—4 **22 Claims**



1. A method of producing and controlling the production of composite mouthpieces for use in the manufacture of filter cigarettes or the like, comprising the steps of assembling a continuous filter rod consisting of several types of alternating dissimilar filler rod sections which absorb radiation to a different degree; conveying the filler rod lengthwise along a predetermined path; draping the filler rod into a web of wrapping material to form a filter rod wherein the web constitutes a tube surrounding the filler rod; directing a beam of radiation against one of said rods in a first portion of said path whereby different types of sections absorb radiation to a different degree; monitoring the characteristics of said beam subsequent to impingement upon said one rod and generating first signals in response to changes of such characteristics; generating second signals in response to movement of successive unit lengths of sections of at least one type along said path, each unit length being a small fraction of the overall length of a section of satisfactory length; and counting the number of second signals which are generated subsequent to the generation of a first signal.

4,238,995

TOASTER CONTROL

Louis S. Polster, 1017 Fairmount Rd., Burbank, Calif. 91501

Filed May 30, 1978, Ser. No. 910,195

Int. Cl.³ A47J 27/62

U.S. Cl. 99—331 **5 Claims**

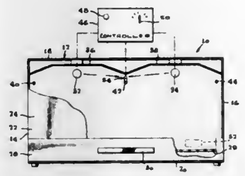
1. A toaster for the cooking of a food item, said toaster comprising:

a housing;

a support surface for supporting a food item to be cooked within said housing;

an elongated quartz-iodide lamp in said housing spaced from and parallel to said support surface; and

an elongated temperature-resistance transducer in the form of a probe positioned within said housing, said transducer being coextensive with and parallel to said lamp for sensing the heat energy from both the ambient temperature within said housing and the radiance of said lamp for producing a signal corresponding to said heat energy; and



control means operatively connected to said lamp and to said transducer for turning off said lamp at a predetermined time when the heat energy of both the ambient temperature within said housing and also the radiance of said lamp have been sufficient to cook a food item supported on said support surface.

4,238,996

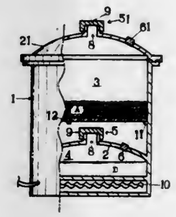
TWO-STAGED PRESSURE COOKER

Muneaki Okuyama, 60-13 Ohyama Higashicho, Itabashi Ku, Tokyo, Japan

Filed Sep. 27, 1977, Ser. No. 837,352

Int. Cl.³ A47J 37/12

U.S. Cl. 99—352 **9 Claims**



1. A two-staged pressure cooking apparatus comprising:

a vessel having a closed bottom and an open top;

upper lid means removably sealed onto said vessel for closing said top thereof and for sealing the interior of said vessel in a pressure-tight manner;

lower lid means positioned within said vessel and extending across said vessel at a location for dividing said interior of said vessel into a lower chamber to receive therein water and an upper chamber separate from said lower chamber and to contain food to be cooked;

heating means mounted adjacent said lower chamber, for heating, water contained therein to its boiling point, thereby generating steam, the pressure of which builds up in said lower chamber;

first pressure regulating means in said lower lid means for, when the pressure of said steam in said lower chamber builds up to a predetermined level, passing said steam from said lower chamber through said lower lid means and into said upper chamber, whereby food in said upper chamber will be cooked by said steam;

first safety relief valve means, in said lower lid means at a position spaced from said first pressure regulating means, for preventing said pressure in said lower chamber from building up to an abnormally excessive and dangerous level;

second pressure regulating means in said upper lid means for, when the pressure of said steam in said upper chamber

builds up to a predetermined level, venting said steam from said upper chamber through said upper lid means to the atmosphere; and

second safety relief valve means, in said upper lid means at a position spaced from said second pressure regulating means, for preventing said pressure in said upper chamber from building up to an abnormally excessive and dangerous level.

4,238,997

APPARATUS FOR BLANCHING SAUERKRAUT

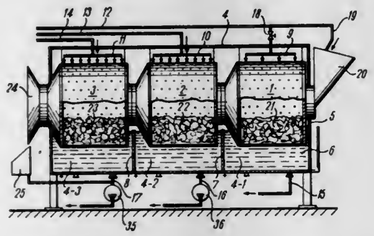
Eckhart Hengstenberg, Mettingerstrasse 109, D-7300 Esslingen, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,281

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844430

Int. Cl.³ A23B *7/06*

U.S. Cl. 99—483 **5 Claims**



1. An apparatus for blanching sauerkraut comprising, a rotatable perforated sheet metal drum unit having an inlet zone and an outlet zone for passage of sauerkraut therethrough and a receptacle for holding a supply of brine through which the sauerkraut is arranged to travel, further wherein a series of drums comprising said unit are arranged seriatim with the sauerkraut being advanced through each of said drums from said inlet zone to said outlet zone, said receptacle being positioned to provide spaced areas for said brine and within which each said drum unit can rotate, heating apparatus for said brine and flow control means to supply heated brine from said drum in said oulet zone to the next adjacent drum in succession.

4,238,998

METHODS OF PORTIONING AND PORTIONING MACHINES

Michael T. A. Herring, 51 Longell Hills, Costessey, Norwich, and Richard Knight, 54 Church St., Deeping St. James, both of England

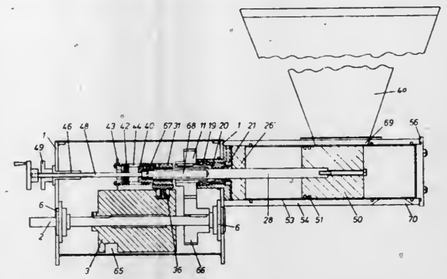
Filed Jan. 18, 1979, Ser. No. 4,379

Claims priority, application United Kingdom, Jan. 24, 1978, 2770/78

Int. Cl.³ B30B *11/22*

U.S. Cl. 100—41 **22 Claims**

1. A method of portioning a compressible viscous material such as a food product comprising introducing an unmeasured quantity of the material into a cylindrical chamber having piston means therein, compacting said material to a predetermined density in the chamber by said piston means and then discharging a predetermined portion of the compacted material from the chamber by opening an extrusion orifice communicating with the chamber, applying extrusion pressure to the material in the chamber by said piston means and reducing the volume of the chamber by a predetermined amount which is substantially less than the original volume of the chamber to



extrude the predetermined portion of the compacted material through said extrusion orifice.

4,238,999

ROTARY CYLINDRICAL SCREEN PRINTING APPARATUS FOR SPECULARLY PRINTING EQUAL PATTERNS AND/OR COLORS ONTO THE OPPOSITE FACES OF FABRICS OR THE LIKE

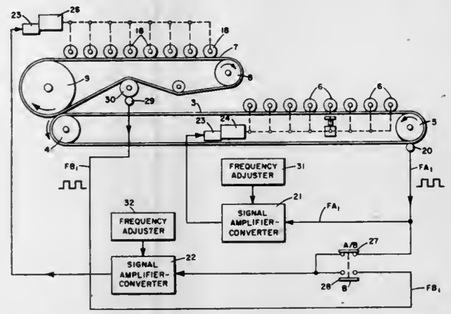
Adolfo Giani, Bergamo; Mario Panseri, Ranica, and Umberto Mascioni, Azzio, all of Italy, assignors to Reggiani Macchine S.p.A., Bergano, Italy

Filed Nov. 6, 1978, Ser. No. 957,841

Claims priority, application Italy, Nov. 7, 1977, 29402 A77

Int. Cl.³ B41F *15/12*

U.S. Cl. 101—116 **6 Claims**



1. A rotary cylindrical-screen printing apparatus for specularly printing equal patterns or colors onto the opposite faces of a fabric comprising: first and second rotary cylindrical screen printing machines of the type having a carrier belt and transmission roller for supporting and moving fabric with respect to a printing roller, said machines being connected with each other, said first machine being supported above said second machine;

means for feeding said fabric to said second machine, whereby printing on one face occurs;

means for feeding printed fabric exiting said second machine to said first machine whereby the opposite face of the fabric is printed;

said upper machine transmission roller having a diameter equal to at least twice the diameter of the transmission roller of the underlying machine;

means for synchronizing the speeds of the printing rollers of the two machines, including a transducer means interlocked to the speed of the belt of one machine, having an outgoing frequency signal sent to first and second electrohydraulic motors for controlling the printing rollers of each machine; and

means for synchronizing the speed and phase of the two belts by interlocking the speed of the belt of one machine with the speed of the other belt comprising digital-analog converter means for effecting a comparison between the speeds of the two belts so as to emit an outgoing signal for the correction of speed and synchronization; and

means for controlling the speed of each belt in response to said outgoing signal whereby said belts are synchronized.

4,239,000

SELECTIVELY BLOCKED MATRIX-FORM STENCIL AND METHOD OF USE

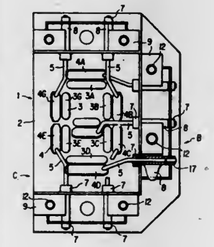
Sinya Takeuchi, Kobe, Japan, assignor to Kobe Steel, Limited, Kobe, Japan

Filed Jun. 28, 1978, Ser. No. 919,919

Claims priority, application Japan, Jul. 5, 1977, 52-80729; Jul. 5, 1977, 52-80730

Int. Cl.³ B41M *1/12*

U.S. Cl. 101—129 **9 Claims**



1. A marking method of spraying paint onto a material to be marked through a stencil having a group of separate openings arranged in an optional pattern to form a predetermined character, said character comprising a single independently meaningful symbol, at least some of said openings not individually forming independently meaningful symbols, said method comprising the steps of:

positioning a paint spray source in operative relation to said openings;

positioning said stencil between said source of spray paint and said material;

utilizing plate means to close all of said openings not needed to form said character to be marked; and

forming said character by spraying said paint adjacent said stencil for a finite period of time;

whereby said material is not marked through those openings which are closed.

4,239,001

MULTICOLOR ROTOGRAVURE PRINTING SYSTEM

Hiroshi Kataoka, 5-8, Asahi 1-chome, Iyomishimak-shi, Ehime-ken, Japan

Continuation-in-part of Ser. No. 871,632, Jan. 23, 1978, abandoned. This application Mar. 12, 1979, Ser. No. 19,834

Claims priority, application Japan, Sep. 14, 1977, 52-109927

Int. Cl.³ B41F *9/02, 9/18, 13/40*

U.S. Cl. 101—152 **6 Claims**

1. A multicolor rotogravure printing system comprising

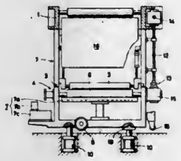
(a) a main frame comprised essentially of an elongated support beam means having two ends and of sufficient length to accommodate a plurality of printing stations side-by-side, and two legs fixedly supporting the support beam means at the two ends;

(b) a rotary main drive shaft extending over the length of the support beam means for providing rotational motion; and

(c) a monochromatic printing unit at each one of the printing stations, each printing unit including

(1) an upper structure having a lower surface, the upper structure being fixedly suspended from the elongated support beam means of the main frame and comprising an impression roll mounted at a fixed distance from the beam means, a drier, a series of sheet guide rollers, a first positioner means on the lower surface of the upper structure, and a vertical drive shaft having one end coupled to the main drive shaft and receiving the rotational motion therefrom and an opposite end carrying one half of a coupling,

(2) a movable lower structure having an upper surface and comprising a plate cylinder having a rotatable axle, a gear box at an end of the plate cylinder axle, the gear box including the other half of the coupling, the coupling halves being complementary and being engageable with each other for transmitting the rotational



motion to the plate cylinder axle, an inking device, wheels for moving the lower structure away from the upper structure, and second positioner means on the upper surface of the lower structure, the first and second positioner means being complementary, and

(3) vertical motion means mounted at each printing station below the lower structure and arranged for raising the lower structure into engagement with the upper structure, said engagement including engagement of the first and second positioner means and of the coupling halves whereby the printing system is put in condition for operation upon moving the lower structure into the printing station and actuating the vertical motion means.

4,239,002

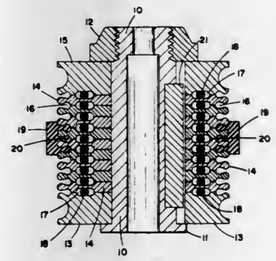
PRINTING CODER

David Rosenstein, 2808 Zarthan Ave. S., Minneapolis, Minn. 55416

Filed Jun. 4, 1979, Ser. No. 44,864

Int. Cl.³ B41F *27/06*

U.S. Cl. 101—377 **6 Claims**



1. A magazine for holding printing type on a cylindrical coder, comprising:

a. a plurality of coaxially stacked equal diameter discs having spaces at their outer edges between adjacent discs for receiving the backing ribs of a print type;

b. means located radially inward between adjacent discs for yieldably urging the discs apart axially; and

c. means for axially releasably compacting the discs together to compress said yieldable means whereby the discs se-

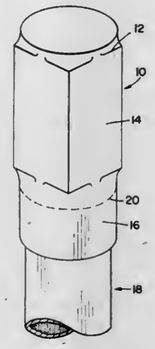
curely grasp the inserted type backing ribs at the outer edges of the discs.

4,239,003

METHOD FOR TRANSMITTING DETONATION AT A SHARP ANGLE

Jacob Savitt, Capitola, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1978, Ser. No. 933,327
Int. Cl.³ C06C *5/06*
U.S. Cl. 102—27 R **3 Claims**



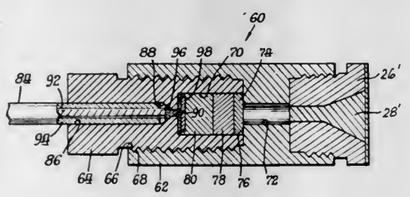
1. A method for transmitting detonations at a sharp angle in either direction comprising the step of shaping a donor and an acceptor end tip to a configuration such that when placed in contact with each other said donor and acceptor end tips are in planar contact, said shaping step being accomplished by:
(a) placing a cylindrical end tip cup in a die having a cavity of said configuration;
(b) loading an explosive into said cup; and
(c) applying a force to said explosive sufficient to deform the walls of said cup against the walls of said die.

4,239,004

DELAY DETONATOR DEVICE

Edward A. Day, Rancho Santa Fe, Calif.; Glenn E. Seay, Los Alamos, N. Mex., and Perry B. Ritter, Encinitas, Calif., assignors to Systems, Science & Software, LaJolla, Calif.

Division of Ser. No. 703,601, Jul. 8, 1976, Pat. No. 4,144,814. This application Feb. 12, 1979, Ser. No. 11,150
Int. Cl.³ F42B *3/12*; F42C *19/12*
U.S. Cl. 102—28 R **22 Claims**



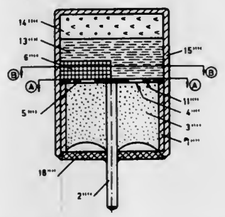
1. A delay detonating device comprising:
a generally cylindrical body having a chamber therewithin, a first bore extending from a first end of said chamber, said first bore diameter being smaller than the diameter of said chamber so as to define a generally annular shoulder at the first end of said chamber, the second end communicating with a second bore through a small aperture, the diameter of said aperture being substantially smaller than the diameter of said bore and of said chamber;
an impactor disk positioned within said chamber abutting said shoulder adjacent said first bore and covering the same, said impactor disk having a thickness and being of a material that results in the central portion inside of said shoulder being sheared and accelerated down said first bore toward the far end thereof as a unitary piece, the thickness substantially preventing tumbling of the central portion during travel to prevent escape of explosive gases between the central portion and the wall of said first bore;
a charge of secondary type explosive being located adjacent said impactor disk within said chamber;
a charge of a delay mixture being positioned adjacent said donor secondary explosive within said chamber, said delay mixture having a slow burning rate so that initiation of burning at one end produces a predetermined time delay before the opposite end is burned, the burning thereof being substantially non-gassing so as to not appreciably affect the pressure within said chamber;
a valve means overlying said aperture and spaced a small distance therefrom; and,
a charge of secondary explosive located within said aperture extending at least partially into said second bore and under said valve means so as to hold the valve means a small distance away from the aperture.

4,239,005

DEVICE FOR AN ELECTRIC IGNITER

Björn Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Apr. 11, 1978, Ser. No. 895,406
Claims priority, application Sweden, Apr. 19, 1977, 7704436
Int. Cl.³ F42C *11/00*
U.S. Cl. 102—28 R **3 Claims**



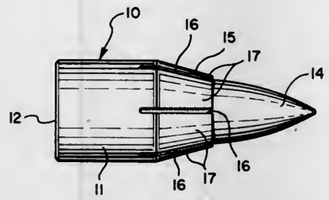
1. Electric ignition apparatus for igniting a pyrotechnical ignition charge at particular time delays corresponding to input triggering voltages, comprising:
electrically conducting container means for containing said ignition charge and for defining a closed, pressurized ignition area;
support means having an outer electrically conducting shell unit disposed within said container means and in electrical contact with said container means, said support means having an end support portion and an electrode unit positioned in an insulated, spaced relation to said shell unit within said container means, the electrode unit extending outside said container means to receive said input triggering voltages;
a first heating element means and a second heating element means connected in series and supported on the end support portion of said support means, the first heating element means electrically connected to said electrode unit and the second heating element means electrically connected to said outer conducting shell, said first heating element means dimensioned to heat to an ignition temperature in response to at least a first level of applied input triggering voltage and said second heating element means disposed adjacent at least a portion of said ignition charge and dimensioned to heat to an ignition temperature to ignite the ignition charge in response to at least a second higher level of applied input triggering voltage, and
at least one pyrotechnical delay means positioned adjacent said first heating element means at one end and adjacent at least a portion of said ignition charge at another end, said delay means burning at a particular rate after being ignited by said first heating element and igniting said ignition charge after a time delay defined by the dimensions of said delay means.

4,239,006

SELF LUBRICATING SABOT

Richard D. Kelson, 6074 Wending La., Hunter, Utah 84120

Filed Jul. 27, 1978, Ser. No. 928,512
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—93 **6 Claims**



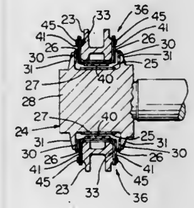
1. A unitary one piece plastic sabot for projection through a rifled gun barrel which sabot is constructed from a nylon resin having dispersed particles of a solid lubricant throughout, said sabot consisting of a cylindrical sleeve having a back imperforate closed end and an open forward end defining a cylindrical projectile cavity said sleeve tapering gradually inwardly from a predetermined point on said sleeve to the forward end thereof and containing a plurality of equidistantly radially spaced slots extending axially from said open forward end a predetermined distance, said distance being less than the length of the cavity and at least as great as the lengths of the tapered portion of the sleeve.

4,239,007

RAILWAY TRUCK PEDESTAL LINER

Donald L. Kleykamp, Springboro, and Peter J. Neroni, Dayton, both of Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 13, 1979, Ser. No. 30,036
Int. Cl.³ B61F *5/32*; F16C *27/02, 33/20, 33/24*
U.S. Cl. 105—225 **10 Claims**



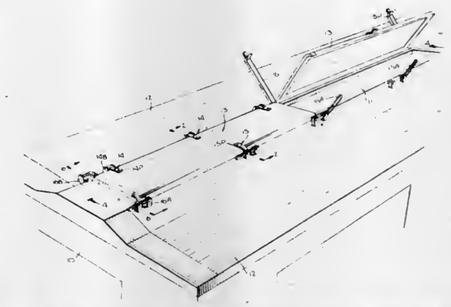
1. In a pedestal liner for a railway vehicle wherein said vehicle comprises; pedestal trucks comprising pairs of pedestal legs and a journal box disposed between each pair of pedestal legs, each journal box having a vertically disposed planar central guide surface and a pair of spaced vertically disposed parallel side surfaces disposed on opposite sides of said guide surface; said pedestal liner being roughly U-shaped having a bight and a pair of parallel legs and being for disposal between an associated pedestal leg and journal box and comprising a continuous uninterrupted metal backing material defining said bight and parallel legs; the improvement comprising, a first antifriction material for said bight supported by said backing material and adapted to engage said guide surface, a second antifriction material for said parallel legs supported by said backing material and adapted to engage said side surfaces, said backing material providing optimum structural support for said antifriction materials, and said first and second antifriction materials being polymeric materials having different wear characteristics.

4,239,008

LIGHTWEIGHT RAILWAY CAR HATCH COVER

Edward B. Conlon, Garnerville, N.Y., assignor to Baltek Corporation, Northvale, N.J.

Filed Oct. 17, 1978, Ser. No. 952,100
Int. Cl.³ B61D *7/00, 17/16, 39/00*
U.S. Cl. 105—377 **7 Claims**



1. A set of at least two light-weight covers of high strength and rigidity adapted to sealably close a rectangular hatch in the wall of a structure such as a railway hopper car having a walkway on each side of the hatch, said hatch having a coaming running along its perimeter, each cover closing a respective portion of the hatch and comprising:
(A) an end grain balsa wood core panel, the edges of the panel having a plurality of longitudinally extending cuts extending partially therein to permit rolling of the edges;
(B) thin inner and outer skins bonded to the faces of the panel and covering the edges thereof to form a sandwich laminate of high rigidity, structural strength and providing thermal insulation;
(C) compressible gaskets secured to the underside of the laminate adjacent the edges thereof to engage and press against the coaming to seal said hatch, the edges of the laminate being in a rolled formation to define canopies which protectively shield the coaming and the gaskets;
(D) means hinging the cover to one side of the structure; and
(E) means latching the cover to the other side of the structure.

4,239,009

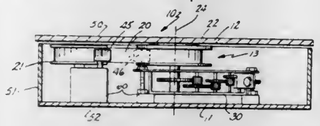
PORTABLE TURNTABLE FOR MICROWAVE OVEN

Emmett M. Cunningham, Alexandria, Va., assignor to Plastics, Inc., St. Paul, Minn.

Continuation of Ser. No. 908,087, May 22, 1978. This application Aug. 29, 1979, Ser. No. 70,746
Int. Cl.³ A47B *11/00, 85/00*
U.S. Cl. 108—20 **15 Claims**

15. A portable self-contained turntable for rotating foodstuffs in a microwave oven cavity comprising:
a base for engaging a load supporting surface in the oven cavity;
a table for receiving foodstuffs, said table being rotatably mounted on said base; and
drive means mounted on said portable self-contained turntable for rotatably driving said table from within the oven cavity, said drive means comprising:
an energy storing spring;

a spring storage reel, said spring being stored on said storage wheel;
an output reel mounted on said turntable; and
an escapement mechanism connected to said output reel, said escapement comprising:



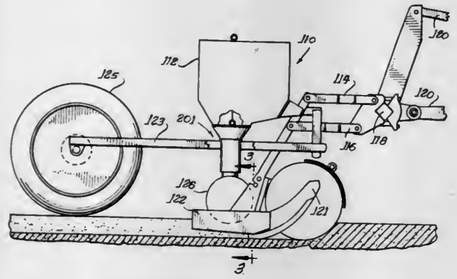
a gear step-up transmission; and
means for limiting the rotation of said transmission and thus regulating the speed of said turntable, said means for limiting rotation limiting movement of said transmission to a step-like motion.

4,239,010

MICROWAVE SEED SENSOR FOR FIELD SEED PLANTER

Raymond D. Amburn, Sterling Heights, Mich., assignor to Dickey-john Corporation, Auburn, Ill.

Continuation-in-part of Ser. No. 750,309, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 737,298, Nov. 1, 1976, abandoned. This application Jun. 29, 1979, Ser. No. 53,556
Int. Cl.³ A01C *1/00*; A01G *7/04*; G08B *21/00*
U.S. Cl. 111—1 **10 Claims**



1. In a seed planter including a seed hopper for containing a supply of seeds, said seed hopper having a seed outlet, seed delivery means connected with said seed outlet for delivering seeds therefrom to the ground to be planted, and means connected with said seed delivery means for sensing seeds being delivered thereby and providing signal means in response thereto, wherein said last-mentioned means comprise: means forming a confined path of travel for seeds, a source of microwave energy positioned for directing microwave energy in said confined path of travel for seeds, means for substantially confining microwave energy to a predetermined portion of said confined path of travel and said microwave source including microwave detector means for detecting a disturbance in said microwave energy due to the passage of a seed along said predetermined portion of said confined path of travel to provide said signal means.

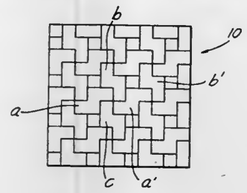
4,239,011

NEEDLEPOINT EMBROIDERING METHOD

Diane M. Schultz, P. O. Box 9742, Glendale, Calif. 91208

Filed Feb. 21, 1979, Ser. No. 13,619
Int. Cl.³ D05C *3/00*
U.S. Cl. 112—266.1 **5 Claims**

1. A method of transferring a repetitive pattern from a source to a mesh fabric base including the steps of applying stitch length tracings of said pattern to a transparent sheet which has delineated thereon a grid of the same mesh size as said fabric base, aligning the grid of said transparent sheet with



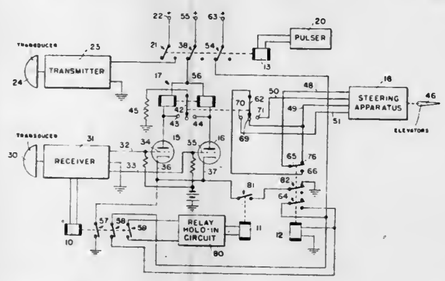
the mesh of said fabric base with the traced pattern overlying the location on the fabric base to which the pattern is to be transferred, and embroidering threads into the fabric base underlying the stitch length tracings on the transparent sheet.

4,239,012

HOMING TORPEDO CONTROL APPARATUS

Stephen Kowalyshyn, Ellicott City, and John C. Voorhees, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 15, 1960, Ser. No. 76,080
Int. Cl.³ F42B *19/01, 19/06*
U.S. Cl. 114—23 **2 Claims**



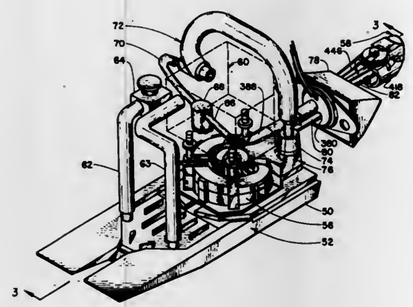
2. In an echo-ranging torpedo wherein spurious and true-target echo signals may be received in the listening periods between repetitive search-pulse transmission instants, in combination: a receiver operative to convert received echo signals to steering command signals having characteristics corresponding to echo-source direction, said receiver including a target-recognition circuit and a gating relay which operates, with inherent delay, in response to recognition of each true-target echo signal; a steering control circuit, including steering relay and switch means, adapted to place said steering relay and switch means in a condition corresponding to echo-source direction as derived by said steering control circuit, when operative, from said steering command signals; means applying said steering command signals to said steering control circuit; means controlled by operation of said gating relay, in response to each reception and recognition of a true-target echo signal, to render said steering control circuit operative to respond to steering command signals stemming from subsequent echo signals during a predetermined interval, of the order of a few listening periods, following each said reception and recognition of a true-target echo signal, and steering apparatus responsive, when rendered effective, to said steering relay and switch means condition; said gating relay, when operated, controlling said steering apparatus to render it effective to respond to said steering relay and switch means condition.

4,239,013

PROPELLING MEANS

Hendrick W. Haynes, P.O. Box 66152, Seattle, Wash. 98166

Continuation-in-part of Ser. No. 691,448, Jun. 1, 1976, abandoned. This application Oct. 21, 1977, Ser. No. 844,215
Int. Cl.³ B63H *21/00*
U.S. Cl. 440—40 **21 Claims**



1. A combination of a boat and a boat propelling means, with a motor having a motor drive shaft, said combination comprising:
an impeller housing having a hollow chamber therein, said housing being adapted to fit into the bottom of the boat, wherein said housing includes inlet and outlet passageways which communicate with said hollow chamber;
a heat exchanger located beneath the bottom of the boat for cooling motor fluid, a portion of said heat exchanger being in contact with said impeller housing, said heat exchanger having an opening therethrough which connects with the inlet passageway in said impeller housing, so as to allow fluid to enter into said hollow chamber;
an impeller mounted in said hollow chamber in such a manner that, when said impeller is rotated, fluid entering the inlet passageway in said impeller housing is forced through said outlet passageway, thereby resulting in propulsion of the boat; and
coupling means transmitting the rotation of the motor drive shaft to said impeller.

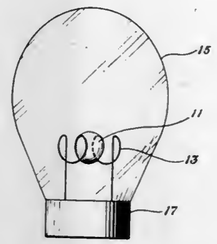
20. Combined control means for steering a vehicle and controlling the operation of a motor, comprising:
a control shaft mounted for in and out movement and for rotational movement;
first means on said control shaft for receiving a steering line connected to a vehicle steering assembly, wherein when the steering line is operatively connected to said receiving means, the vehicle may be steered by rotation of said shaft;
a motor control lever mounted in a predetermined relationship with said control shaft and further mounted to be rotatable about a fixed point, said motor control lever including means for receiving a motor control line, wherein when the motor control line is operatively connected to said motor control lever, rotation of said motor control lever results in a change in motor speed; and
second means mounted on said control shaft to mate with a portion of said motor control lever, said second means having such a contour that in and out movement of said control shaft results in a rotation of said motor control lever and hence a corresponding change in motor speed.

4,239,014

SUSPENDED DROPLET SHOCK DETECTOR

Ulyss R. Rubey, Lewisville, Tex., assignor to Detectors, Inc., Graham, Tex.

Filed Jan. 22, 1979, Ser. No. 5,439
Int. Cl.³ G01P *15/03*
U.S. Cl. 116—203 **4 Claims**



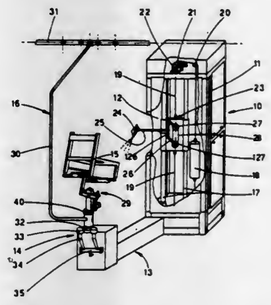
1. An apparatus which responds to an acceleration greater than a predetermined acceleration, which comprises:
a. a droplet of liquid within a container;
b. a holding means holding said droplet; said holding means contacting only a relatively small amount of surface less than the total surface of said droplet and yet in a manner which encloses and suspends said droplet predeterminedly spaced from a bottom wall of said container such that the mass and surface tension of said droplet forms a deformable reservoir at acceleration below said predetermined acceleration and such that when an acceleration greater than said predetermined acceleration is experienced, the inertia of the drop of liquid causes at least a portion of the drop of liquid to escape from said holding means; and
c. said holding means being attached to said container; said container sealingly surrounding said holding means such that when at least a portion of said droplet escapes from said holding means said portion will contact said container; said container presenting a visual sign upon being contacted by said portion.

4,239,015

DEVICE FOR PAINTING, SPRAYING, ENAMELLING OR TINTING OF MANUFACTURED ARTICLES IN GENERAL

Dante Novello, Manzano, and Alessandro Mengotti, Cormons, both of Italy, assignors to Mil S.p.A., Buttrio, Italy

Filed Feb. 21, 1978, Ser. No. 880,023
Int. Cl.³ B05C *5/00*; B05B *5/02*
U.S. Cl. 418—321 **9 Claims**



1. Device for painting, spraying, enamelling or tinting of manufactured articles in general, and for chairs in particular, comprising in combination:

carrier means carrying a spraying element and guide means supporting said carrier means to run vertically thereon, the carrier means having means for imparting to said spraying element an orbital motion,

said means for imparting including an arm supporting said spraying element and fixed on a rigid connecting element articulated to the extremities of two parallel arms, the arms being mounted on two wheels peripherally joined by a closed chain and mounted for rotation with respect to said carrier means, the axes of rotation of said wheels being parallel and at least one wheel being driven by a motor means;

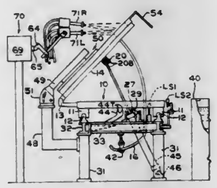
means for holding and moving the manufactured article in front of the spraying element, said holding and moving means being adjustable.

4,239,016

APPARATUS FOR HANDLING FLEXIBLE SHEET WHILE APPLYING GRADED SHADE BAND THEREON

William P. Cathers, Allison Park, and Charles W. Dorn, Jr., Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 21, 1978, Ser. No. 898,599
Int. Cl.³ B05B *5/02*; B05C *13/02*
U.S. Cl. 118—624 **2 Claims**



1. Apparatus for applying a graded coating to an elongated area of a flexible sheet of interlayer material comprising a loading and unloading chamber, a coating chamber, elongated rails extending in a straight path along a horizontal plane between said chambers, a carriage, means for moving said carriage in a straight horizontal path along said rails from said loading and unloading chamber to a given position in said coating chamber, a vacuum platen pivotally mounted on said carriage to normally rest thereon in a substantially horizontal orientation, means to apply a vacuum to said vacuum platen to support said flexible sheet thereagainst, means at said coating chamber for pivoting said vacuum platen to an oblique position angularly disposed relative to said carriage and said substantially horizontal orientation of resting on said carriage when said carriage occupies said given position at said coating chamber, electrostatic spray means for applying a highly charged spray composition of finely divided dye particles in a volatile liquid vehicle toward said elongated area of said sheet to be coated after the vacuum platen is pivoted into said oblique orientation,

said pivoting means being adapted to return said vacuum platen to said substantially horizontal orientation of mounting on said carriage at said coating chamber after said spray composition is applied, and said carriage moving means being adapted to return said carriage along said rails in said straight horizontal path to said loading and unloading chamber with said vacuum platen supported in said substantially horizontal orientation after said vacuum platen returns to said substantially horizontal orientation at said coating chamber, whereby an operator may remove said coated flexible sheet and replace the latter with another flexible sheet for coating,

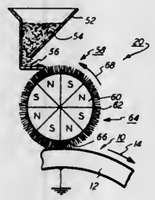
said means for pivoting said vacuum platen comprising a pair of downwardly slotted lugs extending downward from said vacuum platen and movable therewith, a pair of upwardly slotted fingers supported in fixed position at said coating chamber adjacent to and below a path taken by said downwardly slotted lugs when said carriage moves into said given position within said coating chamber wherein said slotted lugs and slotted fingers have their pairs of slots in substantial alignment, a piston cylinder located below said given position, means for supporting said piston cylinder with its bottom end pivotally attached thereto, a piston rod extending upward from said piston cylinder, a cross bar attached to the upper end of said piston rod and extending in both directions thereof longitudinally of said rails, said cross bar having a length sufficient to engage said pair of upwardly slotted fingers simultaneously when said piston is retracted or to engage said pair of downwardly slotted lugs simultaneously when said piston is extended, said piston being retracted to lower said cross bar into a lower position engaging said upwardly slotted fingers in spaced relation below said path taken by said downwardly slotted lugs to permit said carriage to move into or out of said given position wherein said pair of downwardly slotted lugs are aligned over said cross bar in closely spaced relation to said upwardly slotted fingers and said piston being extended to transfer said cross bar to an upper position engaging the upper ends of the slots of said downwardly slotted lugs while said carriage occupies said given position to pivot said vacuum platen into said oblique orientation.

4,239,017

DEVELOPMENT SYSTEM

William M. Schwarz, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jnl. 16, 1979, Ser. No. 57,867
Int. Cl.³ G03G *15/00*
U.S. Cl. 118—656 **34 Claims**



1. An apparatus for developing a latent image with magnetic particles, including:

a magnetic member having a multiplicity of conductive fibers extending outwardly from the exterior surface thereof, said magnetic member attracting the magnetic particles to the conductive fibers; and

means for moving said magnetic member to advance the particles into contact with the latent image with the free end region of at least a portion of the conductive fibers contacting the particles being deposited on the latent image to form a substantially uniform particle image.

4,239,018

HEAT DETECTOR FOR LIVESTOCK

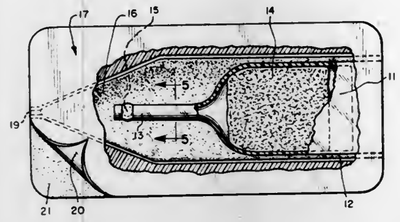
James E. Griffin, 11417 Maple Ave., Hebron, Ill. 60034, and Wayne R. Ryden, 230 Lake Ave., Barrington, Ill. 60010

Filed Dec. 29, 1978, Ser. No. 974,368
Int. Cl.³ A01K *11/00, 29/00*
U.S. Cl. 119—1 **10 Claims**

1. A pressure responsive delayed release standing heat detector for domestic animals, of the type adapted to be secured to the body of said animal in a position to be contacted by a mounting animal, comprising:

a hollow flexible container having a reservoir portion communicating with a tubular neck portion;

a body of sponge-like material enclosed in said reservoir portion and at least partially saturated with a colored indicator fluid; and



means for preventing seepage of fluid from said container and being adapted to be released in response to sustained pressure from a mounting animal on the flexible container and indicator fluid being expelled from said sponge-like material.

4,239,019

MARINE SPECIMEN COLLECTOR

Timothy Andrews, 7794 E. Walnut Ave., Ontario, Calif. 91761

Filed Aug. 27, 1979, Ser. No. 69,843
Int. Cl.³ A01K *79/00*
U.S. Cl. 119—3 **4 Claims**

1. A marine specimen collector comprising:

a nozzle,

a container having a cylindrical portion and front and rear closures closing the ends of said cylindrical portion, said cylindrical portion having an outlet formed in the wall thereof, said front closure having an inlet formed therein in fluid communication with said nozzle, said rear closure having at least one bearing mounted therein,

a piston rod slideably mounted in said bearing, the external end thereof being adapted for application of force to said piston rod,

a piston slideably mounted within said cylindrical portion of said container and affixed to the internal end of said piston rod, said piston being moveable between said inlet and said outlet,

means biasing said piston toward said rear closure,

a trigger housing mounted on said cylindrical portion,

sear means mounted within said trigger housing for holding said piston in biased position adjacent said inlet, and

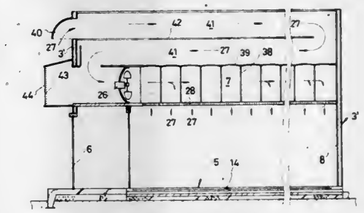
trigger means mounted in said trigger housing for releasing said sear allowing movement of said piston away from said inlet.

4,239,020

HOUSE AND METHOD FOR LIVESTOCK RAISING

Shin Kiyokawa, Sohka, and Shokichi Sakaguchi, Misato, both of Japan, assignors to Misato Plaheat Mfg. Ltd., Sohka, Japan

Filed Apr. 16, 1979, Ser. No. 30,642
Claims priority, application Japan, Feb. 22, 1979, 54/20138
Int. Cl.³ A01K *1/00*; F24F *7/06*
U.S. Cl. 119—16 **6 Claims**



1. A substantially closed livestock house comprising roof, ceiling, floor and side walls, which includes:

a heat insulating member applied about the roof and side walls comprising broken paper fragments processed for fire retardation;

a planar heating device disposed below the floor comprising a planar heat-generating element made of a plate of a synthetic resin containing carbon powder mixed therein or a fabric coated on impregnated with such synthetic powder, a pair of electrodes and a covering member;

an air inlet opening in one of the side walls near the uppermost portion of the side wall;

a fan arranged to pull outside air into the house and distribute it within the house;

at least one exhaust window in at least one side wall for effecting natural exhaust of air;

at least one duct formed with the ceiling as a bottom side, with the bottom side having a plurality of openings, the duct being arranged on the downstream side of the fan to receive the outside air pulled into the house by the fan;

a guide path between the air inlet and the fan for heat exchange of the outside air pulled in by the fan comprising a plate diaphragm horizontally extending longitudinally of the house so as to form an at least two-pass labyrinth from the air inlet to the fan extending the length of the house; and

one cover plate pivotally covering each exhaust window adapted to open the exhaust window responsive to a rise in the pressure in the house.

4,239,021

DISPOSABLE STORAGE CONTAINER CONVERTIBLE TO A BIRD-NESTING BOX

Michael R. P. Moore, 11724 Lovejoy, Silver Spring, Md. 20902

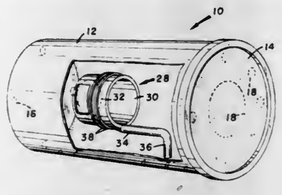
Division of Ser. No. 789,347, Apr. 21, 1977, Pat. No. 4,166,432.
This application May 29, 1979, Ser. No. 43,107
Int. Cl.³ A01K *31/00*
U.S. Cl. 119—23 **8 Claims**

1. As an article of manufacture, a substantially cylindrical storage container which typically holds a granular substance and which is sealably closed at one end by means of a snap-fit lid, which lid has a substantially planar outer surface, the storage container further comprising:

a geometrical shape formed on the planar surface of the lid,

the perimeter of the geometrical shape being pre-stressed thereabout to allow removal from the lid of the material included within the perimeter of the geometrical shape to form an access opening in the lid, the access opening having ridgeless perimetric surfaces formed about the periphery thereof; and,

a scoop member disposed within the interior of the container and having structural portions adaptable to use as a perch



member, the scoop member having a closed end and an open end, a geometrical shape being formed on the closed end of the scoop member, the perimeter of the geometrical shape being pre-stressed thereabout to allow removal from the scoop member of the material included within the perimeter of the geometrical shape, thereby to form a longitudinal channel extending through the scoop member.

4,239,022

METHOD AND APPARATUS FOR FUEL CONTROL OF AN INTERNAL COMBUSTION ENGINE DURING COLD-STARTING

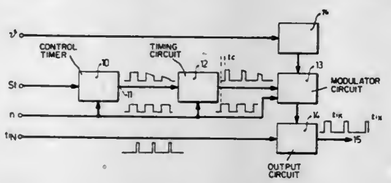
Ulrich Drews, Vaihingen-Pulverdingen; Michael Horbelt, Schwieberdingen; Hans Schnürle, Walheim; Peter Werner, Stuttgart; Otto Glöckler, Renningen; Dieter Günther, Murr, and Richard Bertsch, Asperg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,674

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728414

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—491 **10 Claims**



1. An apparatus for controlling the fuel supply to an internal combustion engine including at least one fuel injection valve and spark ignition, wherein the apparatus includes an engine rpm sensor, an engine temperature sensor, an engine start-signal generator; wherein the apparatus is further comprises of:

a control timer, axtuated by engine cranking, for generating a train of supplementary pulses synchronized with engine rotation, the amplitude of the supplementary pulses changing with time and wherein the control timer is connected to and receives the output from the engine rpm sensor and the engine start-signal generator;

a trigger pulse suppression circuit which generates a pulse suppression signal, wherein the trigger pulse suppression circuit is connected to the control timer to suppress the supplementary pulses of the control timer, and wherein the trigger pulse suppression circuit is connected to and receives the output from the engine rpm sensor and the engine start signal generator;

a modulator circuit connected to the control timer to receive the supplementary pulses, and wherein the modulator circuit is connected to the trigger pulse suppression circuit to receive the pulse suppression signal, and wherein the modulator circuit is connected to and receives the signal from the engine temperature sensor such that the modulator circuit generates valve control pulses, whose duration depends on engine temperature, engine rpm and engine start.

4,239,023

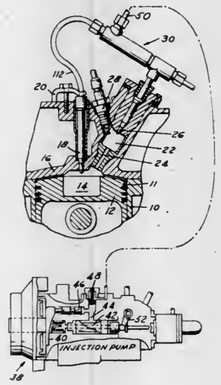
FUEL INJECTION SYSTEM FOR DUAL COMBUSTION CHAMBER ENGINE

Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1978, Ser. No. 967,555

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—275 **5 Claims**



1. A fuel injection system for an internal combustion engine having main and prechamber combustion chambers and main and prechamber fuel injectors operable respectively at higher and lower fuel pressure levels to sequentially inject fuel into the respective chambers, passage means connecting the main and prechamber chambers for the ignition of the mixture in the main chamber from the mixture in the prechamber, and spark ignition means operably associated with the prechamber for igniting the air/fuel mixture therein, the system including an engine driven fuel injection pump having a fuel output line intermittently opened and closed to discharge into the line a controlled quantity of fuel that varies as a function of the changes in engine speed and load, conduit means connecting the output line in parallel flow relationship to the main and prechamber fuel injectors, and shuttle valve means in the conduit means operably to control the supply of fuel to the main and prechamber fuel injectors as a function of the duration of supply of fuel from the output line, the shuttle valve means including a valve body having a first fuel input connected to the output line and a second fuel input connected at one end to a makeup supply source of fuel at a lower pressure level than the output line and connected at an opposite end to a fuel pressurizing control chamber, means connecting the control chamber to the prechamber injector for opening of the prechamber injector upon pressurization of the control chamber to the lower pressure level, plunger means movably associated with the control chamber and movable into the latter chamber in response to a pressure increase in the output line to above a predetermined level to pressurize the control chamber and render operable the prechamber injector to inject fuel in an amount that progressively increases as a function of the duration of injection in the output line.

4,239,024

FAIL-SAFE IGNITION COIL DWELL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

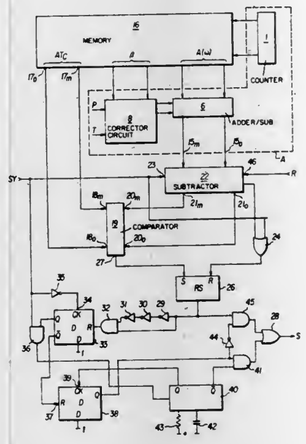
Claude Leichle, Le Pecq, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 9, 1979, Ser. No. 2,025

Claims priority, application France, Jan. 9, 1978, 78 00381

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—416 **6 Claims**



1. A fail-safe ignition coil dwell control system for internal combustion engine, in particular for automotive vehicles, said engine provided with an electronic induction coil control circuit in which is subtracted an angular reference signal and which includes a power element, current collectors placed in predetermined angular positions around a rotating element driven by the engine and coordinated by spotting means carried by the rotating element, and a digital computer associated with a read-only memory in which are stored constant coefficients that permit the calculation of data indicative of the ignition advance angle A_γ for each half-turn of the crankshaft in the case of a 4-stroke, 4-cylinder engine and a synchronization signal generator for generating a synchronization signal SY at each half-turn of the engine, said computer generating a first control signal at a predetermined instant to trigger the power element of said induction coil control circuit, comprising:

the read-only memory additionally storing current conduction time duration data related to a predetermined operation of said electronic induction coil control circuit;

means coupled to the ignition advance angle A_γ data and the current conduction time duration data stored in said read-only memory for detecting the absence of ignition spark emission based upon a comparison of the value of A_γ data and current conduction time duration data developed during each half-turn of the engine;

signal generator means coupled to said detecting means for generating in the event of the detection of an absence of ignition spark a second control signal capable of triggering the power element; and

output switching means coupled to said detecting means, said computer and said signal generator means for switching the control of the triggering of the power element from said first control signal to said second control signal;

whereby the maintenance of ignition spark emission is maintained even in the event of a computer failure.

4,239,025

RPM REGULATOR FOR FUEL INJECTION PUMPS

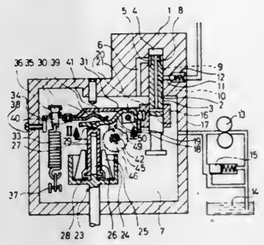
Karl Konrath, Ludwigsburg, and Manfred Schwarz, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 970,064

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1978, 2802607

Int. Cl.³ F02M *59/24, 59/42*

U.S. Cl. 123—366 **13 Claims**



1. An rpm regulator for fuel injection pumps of internal combustion engines having a starting lever, which is coupled on one side with a delivery quantity adjustment member of the injection pump and on the other side with an rpm tachometer, a drag lever to restrict starting lever movement, such that said starting lever is subjected to an rpm-dependent force that is counter to an arbitrarily variable force of a main regulator spring which engages the drag lever counter to the force of a starting spring which is arranged between the starting lever and the drag lever and is deformable up to the starting lever, such that the starting lever acts as a stop when the starting lever is against the drag lever, further wherein an additional stop means is provided which urges the starting lever counter to the direction urged by the starting spring and that this additional stop means is adjustable as a function of temperature.

4,239,026

PRESSURE LUBRICATION FOR INTERNAL COMBUSTION ENGINES

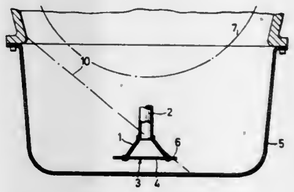
Kurt Streicher, Lohmar, and Achim zur Nieden, Porz-Urbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 13, 1976, Ser. No. 685,752

Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522605

Int. Cl.² F01M *1/00*

U.S. Cl. 123—196 R **2 Claims**



1. A pressure lubricating system for an internal combustion engine, which includes in combination: an oil pan for receiving and storing lubricating oil, a suction conduit connectable to a pump and extending into said oil pan in the central longitudinal plane of said engine and having an inlet opening at its lower end immersed in lubricating oil below the normal level of oil in

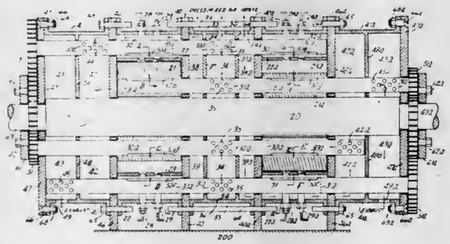
said oil pan, said suction conduit for air-free suction including a slim funnel-shaped intake with its largest inside cross section amounting to only about five times that of the cross section of the suction conduit portion adjacent said funnel-shaped intake for a cross-sectional surface ratio of 1:5, and a flat, disc-shaped member having an opening constituting said inlet opening, said disc extending outwardly beyond the perimeter of the outer surface of said funnel-shaped intake and having a flow stabilizing effect to assure that fewer air bubbles are taken along as well as for avoiding of air suctioning during low oil level and inclined positioning of said funnel-shaped intake to attain air-bubble-free flow, said funnel-shaped intake comprising two conical funnels having their wider ends fixed to each other to form a double conical intake, the narrower section of one of said funnels being connected to the suction conduit and the narrower end of the other funnel coinciding with said inlet opening.

4,239,027

ROTARY INTERNAL STAGE COMBUSTION ENGINE

Joachim E. Lay, 1749 Ridgewood, East Lansing, Mich. 48823

Filed Jul. 2, 1979, Ser. No. 54,034
Int. Cl.³ F02B *53/02, 47/08*
U.S. Cl. 123—203 **17 Claims**



2. In a rotary internal combustion engine with a rotary shaft defining a longitudinal axis of rotation and mounting dual eccentric rotors spaced apart on the shaft with each rotor mounted in a separate housing and with chamber volume defining means between the rotors and the housings so as to provide multiple variable volume gas compression compartments around each rotor, with fuel ignition means and air inlet valve means into and hot exhaust gas outlet valve means from the compartments, wherein in succession around each rotor a compressed fuel and air mixture is ignited by an ignition means in the compartments to provide the internal combustion, the improvement which comprises:

(a) multiple primary and multiple secondary compartments around each rotor each with rotary inlet and outlet valve means and with fuel injection means and ignition means;

(b) conduit means for supplying hot exhaust gas from the outlet valve means from the primary compartments through the inlet valve means to the secondary compartments;

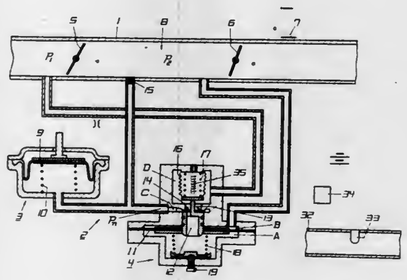
(c) a confined space with an air supply means in the conduit means between the primary and secondary compartments for receiving the hot exhaust gas from the primary compartments and for distributing the hot exhaust gases mixed with air to the secondary rotor compartments, wherein a compressed fuel and air mixture in the primary and the secondary compartments around each rotor is ignited by the ignition means in succession and wherein the fuel and air mixture in the secondary compartments is diluted with hot exhaust gas so as to provide the fuel, air and hot exhaust gas mixture which can be lean in fuel.

4,239,028

AIR FLOW MEASURING DEVICE FOR INTERNAL COMBUSTION ENGINES

Kei Kimata, Aichi; Tsugito Nakazeki, and Yoshinobu Yasuda, both of Iwata, all of Japan, assignors to N T N Toyo Bearing Co. Ltd., Osaka, Japan

Division of Ser. No. 710,126, Jul. 30, 1976, Pat. No. 4,153,018. This application May 7, 1979, Ser. No. 36,493
Claims priority, application Japan, Jul. 31, 1975, 5093972; Sep. 2, 1975, 50-106795
Int. Cl.³ F02D *7/00*
U.S. Cl. 123—389 **2 Claims**



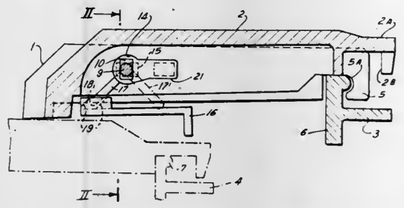
1. In an internal combustion engine having a fuel control unit, an air suction pipe means, and accelerator means, the improvement of an air fuel ratio compensating device for improving the performance of the engine, said compensating device comprising a flow detection valve positioned upstream in the air suction pipe means and operatively associated with the fuel control unit, a flow control valve positioned downstream in the air suction pipe means and in series with said flow detection valve, said flow control valve being operatively connected to the accelerator means, said flow detection valve and said flow control valve constituting an area flow meter system whereby the difference in pressure existing on opposite sides of the flow detection valve may be maintained at a predetermined value to insure that the amount of air flow is proportional to the opening area of the flow detection valve thereby permitting a determination of the amount of air flow on basis of the opening area of the flow detection valve, a feedback control mechanism for controlling said area flow meter, said control mechanism including pressure-sensitive amplifier means for detecting and amplifying the deviation of the difference in pressure and valve opening means connected to said amplifier means and operatively associated with said flow detection valve for controlling the opening and closing of said detection valve by the output from said amplifier means, and compensating means for compensating for the set value placed in the pressure-sensitive amplifier means according to the operating conditions of the internal combustion engine, and wherein said feedback control mechanism includes a pressure difference setting diaphragm actuating the amplifier means and the compensating means include a bellows interlocked to the pressure difference setting diaphragm, and a heater disposed in said bellows, said heater being adapted to be actuated according to the operating conditions of the internal combustion engine, said bellows achieving the desired compensation for the set value placed in the pressure-sensitive amplifier means according to the operating conditions of the engine.

4,239,029

GRATE FOR INDUSTRIAL FURNACES

Johannes J. Martin; Walter J. Martin, and Erich Weber, all of Munich, Fed. Rep. of Germany, assignors to Josef Martin Feuerungsbau GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,769
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808057
Int. Cl.³ F23H *1/02*
U.S. Cl. 126—163 R **28 Claims**



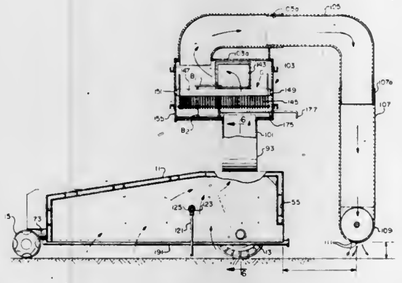
1. In a grate for an industrial furnace or the like, the combination of a support; a pair of spaced apart first elongated grate bars mounted in said support; a second elongated grate bar disposed between and movable relative to said first bars; and means for connecting said first bars to each other, including an elongated coupling member extending transversely of said bars and having first and second ends, and a retaining element disposed at each of said ends and extending transversely of said coupling member, said first bars including portions adjacent to said second bar and having first openings through which said coupling member extends and inner sides adjacent to the respective retaining elements, said second bar including at least one section disposed between said portions of said first bars and having a second opening through which said coupling member extends and which is sufficiently large to allow said second bar to move with respect to said first bars and said connecting means.

4,239,030

FIELD BURNER APPARATUS

Everett H. Benson, Rte. #1, Box 229A, Eagle Creek, Oreg. 97022

Filed Jul. 23, 1979, Ser. No. 59,809
Int. Cl.³ F23C *5/00*
U.S. Cl. 126—271.1 **10 Claims**



1. A field burner comprising a vehicle formed with a downwardly opening cavity to cover a burning area,

first means for creating a zone of elevated temperature higher than that in said cavity,

second means for withdrawing products of combustion from the cavity and directing them through said zone,

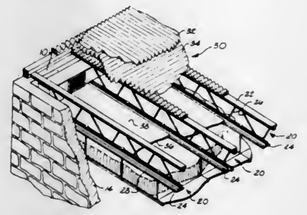
and thence discharging them onto the field forwardly of the cavity to thereby elevate the temperature of the field portion about to be covered by the cavity.

4,239,031

COMBINATION ROOF STRUCTURE AND SOLAR COLLECTOR

Floyd R. Granger, 24 Heard Dr., Greenville, S.C. 29605

Filed Oct. 30, 1978, Ser. No. 955,768
Int. Cl.³ F24J *3/02;* **F24D** *5/04*
U.S. Cl. 126—429 **3 Claims**



1. A combination roof structure and solar collector for a building having vertical side walls and end walls comprising:

a plurality of laterally spaced bar joists extending from one of said walls to an opposite wall;

said bar joists including:

(i) an elongated upper member,

(ii) an elongated lower member vertically spaced below said upper member,

(iii) braces extending between said upper member and said lower member,

(iv) laterally extending flanges projecting outwardly in opposite directions from said lower member,

a translucent panel carried on top of said upper members providing a roof structure for said building while permitting solar energy to pass therethrough;

lower panels carried on and extending between the flanges of said lower members spanning an area directly below said translucent panel;

a solar energy absorbing surface carried on said panels which are carried on said flanges;

insulation material carried below said lower panels for insulating said interior of said building from said solar energy absorbing surface;

a chamber provided between said solar energy absorbing surface and said translucent panel;

means for circulating air through said chamber absorbing heat from said solar energy absorbing surface and supplying said air to said building.

4,239,032

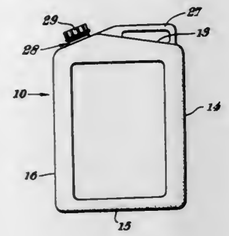
PORTABLE WATER CARRIERS

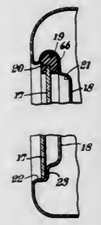
Leslie F. Irving, 60 New Rd., Bromsgrove, Worcestershire, England

Filed Feb. 21, 1978, Ser. No. 879,967
Claims priority, application United Kingdom, Feb. 23, 1977, 7533/77
Int. Cl.³ F24J *3/02;* **B65D** *23/00*
U.S. Cl. 126—437 **5 Claims**

1. A portable water container including two opposed spaced walls connected by side walls to enclose a space for the storage of water, one of said two opposed walls comprising a first, outer panel of light-transmissive material and a second, inner panel integral with the other of the opposed spaced walls and with said side walls and spaced from said first panel to form a gap, said second panel having an integral, peripheral extension portion with said first panel sealingly connected thereto, said second panel having a greater coefficient of thermal conduction than any other part of said container, whereby radiant heat

emitted by the sun and falling on said first panel passes therethrough and falls on said second panel which is thereby heated



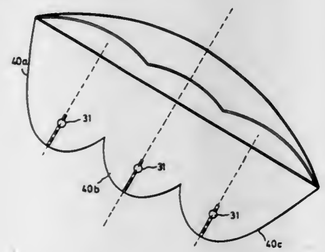


and which transmits its heat to the water stored in said container.

4,239,033
PARABOLIC REFLECTOR UNIT FOR SOLAR ENERGY COLLECTOR

Peter S. Matkovits, 17 W. Dale Ave., Glen Parva, Leicester, England

Filed Sep. 15, 1978, Ser. No. 942,795
Claims priority, application United Kingdom, Sep. 22, 1977, 39469/77
Int. Cl.³ F24J *3/02*; G02B *5/10*
U.S. Cl. 126—438 **12 Claims**



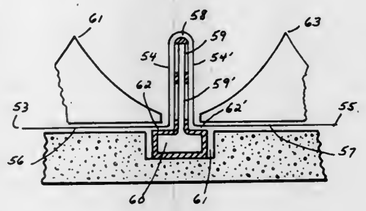
10. A parabolic reflector unit for incorporation in a solar energy utilization apparatus of the type having an elongated energy collection device, comprising:

first and second individual parabolic cylindrical reflectors mounted together with their longitudinal axes parallel, the wall of at least one of said first and second reflectors which is further from the other reflector being longer than the wall nearer the other reflector, the line of focus of each said first and second parabolic, cylindrical reflectors being situated on a respective opposite side of the axis of symmetry of said unit, a separate elongated energy collection device being mountable along each of said lines of focus.

4,239,034
SOLAR ENERGY COLLECTOR

William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54301

Filed Jul. 18, 1978, Ser. No. 925,777
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—439 **18 Claims**



1. A solar energy concentrating collector having at least one reflector surface and at least one substantially planar vertical absorber surface coacting tnerewith for the purpose of absorbing reflected solar rays,

said absorber surface being at least partially located in a plane coincident with the nadir of the reflector surface

at least one fluid conduit underlying said collector absorber surface

the absorber surface being continuous and forming a portion of said fluid conduit,

at least one horizontal extension of said continuous absorber surface being below said coacting reflector surface,

a continuous web of thin material forming said absorber surface and said horizontal extension,

spaced apart first portions of said continuous web of thin material,

an absorptive coating on said spaced first portions,

said spaced first portions being formed to define a partial enclosure of one of said fluid conduits a second portion of the said continuous web of thin material adjacent the absorptively coated portion being below said coacting reflector surface,

fluid input and output means,

said fluid conduit being cooperatively connected to said fluid input and output means.

4,239,035
SOLAR HEATING METHOD

Richard J. Brooks, and Thomas W. Marson, both of Seattle, Wash., assignors to The Chemithon Corporation, Seattle, Wash.

Filed May 24, 1978, Ser. No. 909,012
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—452 **14 Claims**

1. In a solar heating method wherein a fluid medium is heated by flowing it through a clear, inclined, panel exposed to solar radiation and having upper and lower interior surfaces spaced apart to define therebetween an inclined channel for said fluid medium, the steps comprising:

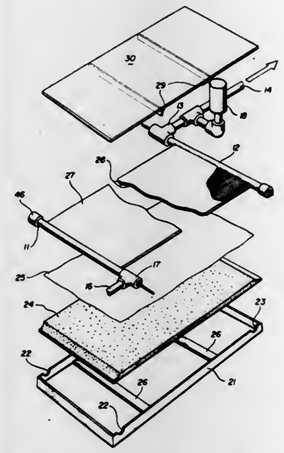
providing said fluid medium as a liquid composed essentially of water with carbon particles suspended therein;

wetting said carbon particles with a wetting agent added to said liquid;

wetting at least said upper interior panel surface with a wetting agent added to said liquid;

said wetting agents comprising an insubstantial part of said liquid;

completely filling said channel so that said liquid is in continuous uninterrupted contact with said upper interior panel surface;

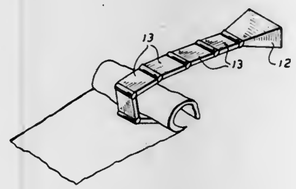


and preventing bubble formation adjacent said upper, interior panel surface; wherein said wetting agents comprise no more than 1% by volume of said liquids.

4,239,036
SURGICAL RETRACTOR

Abbott J. Krieger, 49 Nottingham Rd., Short Hills, N.J. 07078

Filed May 29, 1979, Ser. No. 43,449
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **4 Claims**



1. A surgical retractor comprising,

(a) a front end segment,

(b) a rear end segment,

(c) a plurality of intermediate generally rectangular segments disposed successively between the front end and the rear end segments.

(d) opposing portions of the intermediate segments adjacent to each other provided with transverse concavities,

(e) a longitudinal passage through the segments,

(f) a plurality of rod shaped spacers disposed between the intermediate segments,

(g) the spacers having transverse convexities in general conformity with the concavities of the adjacent intermediate segments,

(h) the spacers having longitudinal passages therethrough in general registration with the longitudinal passages in the intermediate segments,

(i) a stand,

(j) the intermediate segments in alternation with the spacers strung on the strand with their respective concavities and convexities in engagement with each other,

(k) the strand anchored at one end to the front end segment,

(l) the passage in the rear end segment having a threaded portion,

(m) a threaded plug in threaded engagement with the threaded passage in the rear end segment,

(n) the strand anchored at its other end from the front end segment to the plug,

(o) the threaded plug rotatable to exert or relax tension on the strand on which the intermediate segments and spacers are strung,

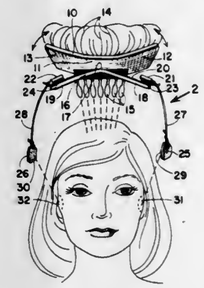
(p) the tensioning of the strand engaging the convexities and concavities into frictional engagement wih the spacers intervening between the intermediate segments, to rigidize the attitude of the segments to each other in a preselected shape in which the intermediate segments have been deflected,

(q) the relaxing of tension on the strand releasing the frictional engagement of the intermediate segments and spacers with each other until the segments become limp.

4,239,037
FACE LIFTING EQUIPMENT

David C. Fausone, 1011 N. Hilldale, Apt. 2, Beverly Hills, Calif. 90069

Filed Sep. 19, 1979, Ser. No. 77,109
Int. Cl.³ A61F *5/08*
U.S. Cl. 128—76 B **2 Claims**



1. Face lifting equipment comprising, in combination:

(a) a hairpiece having an elongated base made up of a central portion with left and right wing portions extending in opposite directions and hair secured to the top surfaces of said central and wing portions;

(b) a comb member secured to the underside of said central portion with teeth extending generally rearwardly so that said hairpiece can be anchored on top of a woman's head to blend in with the woman's hair;

(c) an elongated supporting strip underlying said base secured at its central top to said central portion of said base and having left and right arm extending generally beneath said left and right wing portions, respectively, said wing portions being bendable upwardly to expose the top surfaces of said arms, said top surfaces being covered with VELCRO;

(d) left and right pads having VELCRO for interlocking with the VELCRO on said arms;

(e) left and right adhesive elements for adhering to said woman's skin adjacent to left and right temple areas, and

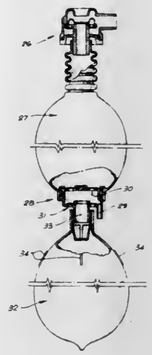
(f) left and right elastic lines connecting said adhesive elements to said pads respectively, the positions of the pads on said arms being adjustable by simply lifting the pads to separate the VELCRO facings and repositioning them closer to said central portion or further from said central portion depending on whether it is desired to increase or decrease the lifting tension on said adhesive elements.

4,239,038

MANUAL RESUSCITATORS

Ronald W. Holmes, Ringwood East, Australia, assignor to The Commonwealth Industrial Gases Limited, Australia

Filed Mar. 6, 1979, Ser. No. 18,082
Claims priority, application Australia, Mar. 7, 1978, 3620/78
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.13 **6 Claims**



1. A resuscitator valve assembly comprising a hollow valve housing defining an inlet port adapted to be connected to a self-expanding manually deflatable reservoir of breathable gas, an intermediate port adapted to be connected to patient supply means, and an exhaust port opposite said inlet port; a tubular section having a first end defining said inlet port and a second end projecting internally of said housing from said inlet port and spaced from said exhaust port and terminating in an annular valve seat, said second end further including an annular flange projecting radially therefrom; a deformable closure diaphragm overlying said valve seat and said flange and having a peripheral radially inwardly directed, channel-sectioned portion, the rim of the flange being secured within said channel-sectioned portion, said deformable closure diaphragm normally positioned on said valve seat and allowing communication between the intermediate port and the exhaust port but able to be distended by pressure at the inlet port to a position away from said valve seat it opens the inlet port and closes the exhaust port; and non-rebreathing valve means comprising at least one hole defined in said flange intermediate said rim and said tubular section second end and extending through said flange, and an annular resilient skirt projecting radially inwardly from the channel-sectioned portion of the diaphragm whereby said at least one hole is normally closed by said skirt, said non-rebreathing valve means being exposed to the inlet port when, and only when, the diaphragm is distended thereby to permit gas flow from the inlet port to the intermediate port but preventing flow in the opposite direction.

4,239,039

DUAL CONTROL VALVE FOR POSITIVE PRESSURE ARTIFICIAL RESPIRATION APPARATUS

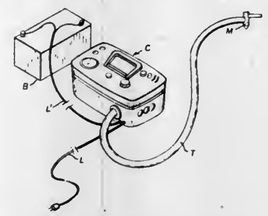
Harris A. Thompson, 175 Bellevue Dr., Boulder, Colo. 80302

Filed Feb. 28, 1979, Ser. No. 15,784
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.24 **9 Claims**

1. In a positive-pressure artificial respiration apparatus, for aiding in inspiration and expiration cycles of breathing by a patient, of the type having a continuously-operating blower connected to a blower motor mounted in a motor chamber and having a first discharge path means from said blower to a first discharge port connected to a breathing tube and a second discharge path means from said blower through said motor chamber around said motor and to a second discharge port connected to an exhaust line, the improvement comprising:

(a) a first cyclic valve means between the said first discharge port and the breathing tube to open to permit air flow from the blower and into the breathing tube and to close to stop such air flow;

(b) a second cyclic valve means between the said second discharge port and the exhaust line to open to permit air flow from the blower and into the exhaust line and to close to stop such air flow; and



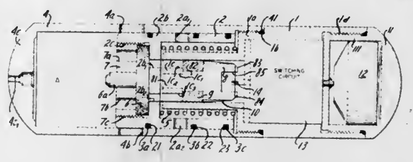
(c) an interlinking drive means to cyclically drive the said first and second cyclic valve means in opposition to close the second cyclic valve means when the first cyclic valve means is open and to open the second cyclic valve means when the first cyclic valve means is closed.

4,239,040

CAPSULE FOR MEDICAL USE

Takeshi Hosoya; Fumihiro Tanaka, and Kazuo Noguchi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 13, 1977, Ser. No. 841,985
Claims priority, application Japan, Oct. 19, 1976, 51-125234; Oct. 22, 1976, 51-126909
Int. Cl.³ A61M *31/00*
U.S. Cl. 128—213 R **9 Claims**



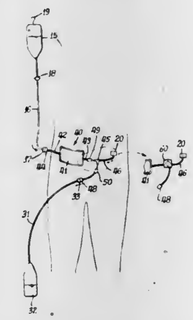
1. A capsule for medical use comprising: a cylindrical body frame having a cylindrical stepped portion; an external cylinder mounted on an end portion of said cylindrical body frame and having at least one through hole extending through a wall portion thereof; a recovery cylinder mounted for sliding movement from one position to another position within said external cylinder and having at least one through hole extending through a wall portion thereof and capable of communicating with said through hole of said external cylinder during sliding movement of said recovery cylinder in said external cylinder; biasing means for exerting a biasing force on said recovery cylinder tending to slidably move the same along said external cylinder from said one position to said another position; actuatable retaining means for releasably retaining said recovery cylinder at said one position within said external cylinder against said biasing force and operative when actuated for releasing said recovery cylinder whereby said biasing force effects sliding movement of said recovery cylinder to said another position; an electric switching circuit including receiving means for switching on the switching circuit when an externally transmitted instructing electric signal is received by said receiving means to actuate said retaining means to thereby release said recovery cylinder; and means for supplying electric power to said switching circuit to enable operation of said switching circuit; said recovery cylinder including two axially spaced chambers one of which surrounds said cylindrical stepped portion of said cylindrical body frame when said recovery cylinder is in said one position, and means for hermetically separating said one of said two chambers from the other and being disposed within said other of said two chambers; said retaining means comprising a thread hanger removably fixed and inserted into said cylindrical stepped portion of said body frame, and a thread coacting with said thread hanger for retaining said recovery cylinder at said one position against said biasing force, said thread extending over said thread hanger and having its ends secured in place by said means for hermetically separating said one of said two chambers from the other and being tensioned by said biasing means; said receiving means including a heating device for heat-cutting said thread in response to the instructing electric signal thereby releasing said recovery cylinder whereby said biasing means effects sliding movement of said recovery cylinder to said another position and during such sliding movement a sample to be collected flows through the communicating through holes of said recovery cylinder and said external cylinder into the empty space formed behind the moving recovery cylinder.

4,239,041

METHOD FOR CONTINUOUS AMBULATORY PERITONEAL DIALYSIS

Robert P. Popovich, 2928 Kassarine Pass, Austin, Tex. 78704; Jack W. Moncrief, 3633 West Lake, Austin, Tex. 78746

Division of Ser. No. 773,912, Mar. 3, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,098
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—213 A **10 Claims**



5. A method for continuous ambulatory peritoneal dialysis of a patient, the patient being unattached to automatic cycling dialysis apparatus, comprising the steps of:

infusing dialysate fluid into the patient's peritoneal cavity;

allowing the dialysate fluid to remain within the patient's pertioneal cavity for a residence period time during which the patient remains ambulatory and unattached to a dialysis fluid supply that is in a fixed location;

draining the dialysate fluid from the patient's peritoneal cavity after the time period; and

immediately repeating the aforesaid steps, the steps being repeated several times per day, every day, at intervals corresponding to the residence time period, so as to maintain a substantially constant presence of dialysate fluid within the patient at all times.

4,239,042

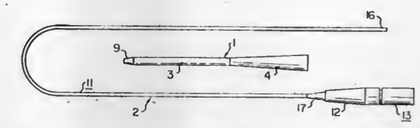
CATHETER PLACEMENT SYSTEM

Kiyoshi Asai, Kamakura, Japan, assignor to Dow Corning K.K., Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 18,214
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214.4 **6 Claims**

1. In a catheter placement system which includes a cannula; a cannula inserting device for inserting the cannula in a body, the device being adapted to be removably positioned within the cannula during insertion and including a needle longer than the cannula; and a catheter adapted for insertion into the body through the cannula after the cannula inserting device has been removed from the cannula; the improvement wherein the catheter comprises:

(a) a body portion having a double-wall structure consisting of an outer tube made of pliable, nonthrombogenic material and a reinforcing inner tube made from a pliable material having a rigidity which is higher than that of the outer tube and which is sufficiently high that the catheter does not collapse during use; and



(b) a tip portion at one end of the body portion, the tip portion being formed from a pliable nonthrombogenic material.

4,239,043

ABSORBENT MEANS FOR CATAMENIAL DEVICES

Dale A. Gellert, Aurora, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 29, 1978, Ser. No. 964,842
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **8 Claims**

1. An absorbent material consisting of:

a hydrophilic foam means selected from the group consisting of polyester foam and polyurethane foam; and

absorbency improvement means at least arrayed on the surface of said foam means, said absorbency improvement means comprising about 5 to about 35% cellulose fibers by weight of said absorbent material wherein said fibers have an average length of at least 1.0 mm and a diameter of 15–45 microns.

4,239,044

INFLATABLE CATHETER FOR A MALE URINAL

George R. Pavlinch, P.O. Box "P", Murrieta, Calif. 92362

Filed Dec. 29, 1978, Ser. No. 364
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—295 **12 Claims**

1. A male incontinence device having a receiving end adapted to be applied to a user's organ and a drain end adapted to convey the user's urine to an external urine collection means, said incontinence device comprising:

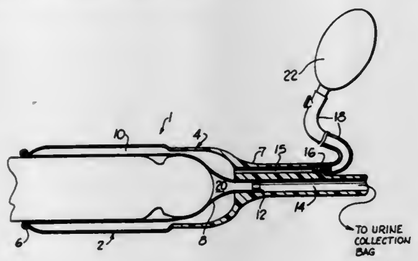
an outer tubular sheathing formed from a flexible material,

an inner tubular sheathing formed from a flexible material,

said inner and outer tubular sheathings joined together at each of the device receiving and drain ends, such that an annular, inflatable fluid chamber is formed between said inner and outer sheathings and an axially extending urine drain passage is formed at the interior of said inner sheath-

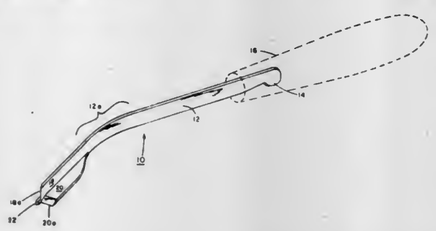
ing, said fluid chamber and said drain passage having substantially identical linear dimensions through said device,

urine conveying means having a relatively narrow diameter with respect to said urine drain passage to interconnect said inner tubular sheathing to said urine collection means, whereby to cause said inner sheathing to constrict at the drain end of said device, and



fluid source means adapted to be connected to said fluid chamber for inflating said chamber, whereby said inner sheathing is collapsed under pressure around the user's organ and said drain passage is evacuated, so that urine is extracted therefrom by means of suction when said device is connected to the urine collection means and urine backflow from the collection means to said drain passage is prohibited.

4,239,045
SURGICAL KNIFE
Allen P. Schlein, 107 Curtis Ter., Fairfield, Conn. 06430
Filed Apr. 4, 1979, Ser. No. 26,836
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **4 Claims**



4. A surgical knife for the surgical removal of the meniscus from the human knee, comprising:

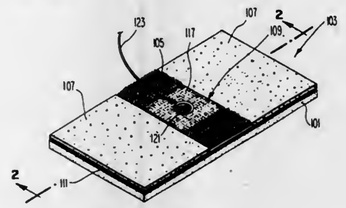
an elongated transversely flat, flexible shank having a rearward end engageable with a handle and a forward end being curved concavely near said forward end and first and second blades fixed thereon at its forward end,

said first blade being flat transversely and constituting a forward extension from the curved portion of said shank and having a transverse cutting edge across the forward end thereof,

said second blade being integrally joined to said first blade along one edge thereof and disposed on the concave side of said first blade in a plane perpendicular to the plane of said first blade, and having a width at its forward end substantially equal to the width of said first blade and extending rearwardly from the forward end of said first blade and tapered at its rearward end to merge with said shank at a point forwardly of said curved portion, said second blade having a transverse cutting edge at the forward end thereof, and

a guide number integral with said blades projecting forwardly from substantially the point of intersection of the cutting edges of said first and second blades.

4,239,046
MEDICAL ELECTRODE
Lincoln T. Ong, 5940 Fairwood Dr., Minnetonka, Minn. 55343
Filed Sep. 21, 1978, Ser. No. 944,622
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—640 **13 Claims**



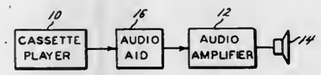
1. An electrode comprising:

a substrate having electrically conductive and adhesive properties;

a piece of electrically conductive stranded material adhesively adhered to by one side of said adhesive substrate and being in electrical connection therewith; and

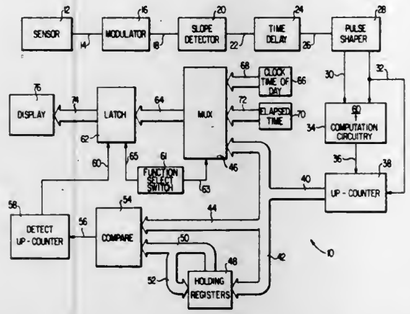
a piece of electrically conductive knitted filament material, said knitted material being sewn to said stranded material to make an electrical connection therewith.

4,239,047
METHOD AND APPARATUS FOR AURALLY DETERMINING PRESENCE OR ABSENCE OF PATHOLOGICAL STENOSIS
William L. Griggs, III; Ernest E. Serrano; Dan Page, and Charles G. Reul, all of Fort Smith, Ark., assignors to William L. Griggs, III, Fort Smith, Ark.
Filed May 22, 1978, Ser. No. 908,159
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—663 **15 Claims**



1. The method of aurally determining the presence or absence of pathological stenosis in a person's blood vessels which comprises making a sound recording of the plural-frequency sounds that are developed by a Doppler scan of said blood vessels, using said sound recording and a filter with a predetermined rejection frequency to develop electrical signals within a predetermined frequency range which can be used to aurally reproduce any stenosis-indicating sounds of a given frequency in said plural-frequency sounds, and thereafter using said sound recording and a different filter with a different predetermined rejection frequency to develop electrical signals within a different predetermined frequency range which can be used to aurally reproduce any stenosis-indicating sounds of a different frequency in said plural-frequency sounds, to make successive aural sensings of different-frequency portions of said plural-frequency sounds that are developed by said Doppler scan by making successive aural sensings of different frequency ranges of said recorded plural-frequency sounds, thereby facilitating the detecting of some hard-to-detect stenosis-indicating sounds.

4,239,048
CARDIOTACHOMETER USING AUTOCORRELATION TECHNIQUES
Robert R. Steuer, Salt Lake City, Utah, assignor to Multitronics Corporation, Salt Lake City, Utah
Filed Feb. 6, 1979, Ser. No. 9,823
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—666 **24 Claims**



1. A cardiotachometer for indicating heart rate of a user in beats per minute, said cardiotachometer comprising:

means, responsive to the heart beats of said user for producing a heart rate signal having portions representative of the beats per minute of said user's heart;

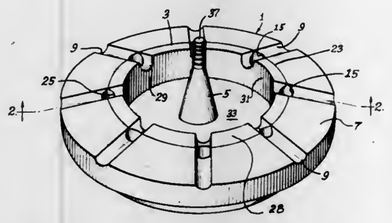
means for storing the portions of said heart rate signal;

means for comparing each of said stored portions with the most recent portion of said heart rate signal;

means for issuing a display signal when at least two of the comparisons in said comparing means is made between portions within a predetermined comparison range; and

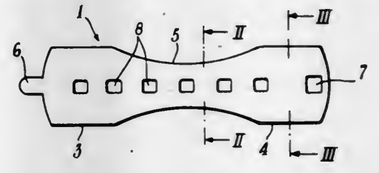
means, responsive to said display signal, for displaying said most recent portion of said heart rate signal in eye-readable format wherein heart rate in beats per minute is indicated.

4,239,049
ASHTRAY
George W. Perry, c/o Fitch, Even & Tabin 135 S. LaSalle St., Chicago, Ill. 60603
Filed May 10, 1979, Ser. No. 37,500
Int. Cl.² A24F *19/14*
U.S. Cl. 131—235 ST **7 Claims**



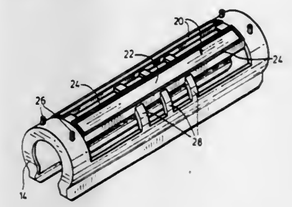
1. An ashtray comprising, in combination, (a) an outer shell having a generally flat, horizontally extending surface with an outwardly extending groove formed therein for receiving a smoking element, said outer shell also having a vertically extending wall depending downwardly from the inner edge of said horizontally extending surface, said wall having a downwardly extending recess positioned at the inner end of said outwardly extending groove, (b) a tray within said outer shell comprising an outer wall adjacent said wall of said outer shell, said outer wall having a complementary recess formed therein opposite the recess in said wall of said outer shell, an ear extending outwardly from the complementary recess in said outer wall and into the downwardly extending recess in said outer shell, said tray having a generally flat, horizontally extending surface connected at the upper end of said outer wall, said surface having a groove therein aligned with said outwardly extending groove in the surface of said outer wall, said tray also having an inner wall depending from said generally flat, horizontally extending, surface and connected to a bottom, and (c) a pedestal positioned centrally of said bottom, said pedestal having a grip positioned at the top thereof for manipulating the ashtray, whereby said tray may be caused to move relative to said outer shell and said ears can automatically clear any materials in said recesses.

4,239,050
HAIR CURLER
Ennio Leuzzi, No. 4, Via Monteverde, Rome, Italy
Filed Jan. 30, 1979, Ser. No. 7,745
Claims priority, application Italy, Feb. 7, 1978, 35596/78[U]
Int. Cl.³ A45D *2/00*
U.S. Cl. 132—40 **8 Claims**



1. A hair curler characterized in that it comprises a flattened parallelepiped shaped body having wide faces which are convex in transverse planes and narrow faces substantial lengths of which are concave with respect to the longitudinal axis of the hair curler, and means at opposite ends of the hair curler for engaging a rubber band arranged for fastening a lock of hair wound on the hair curler.

4,239,051
INTEGRALLY-FORMED POLYMERIC MATERIAL COIN HOLDER
Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada
Filed Dec. 20, 1978, Ser. No. 971,335
Claims priority, application France, Dec. 23, 1977, 53852/77
Int. Cl.³ G07D *9/00*
U.S. Cl. 133—8 R **6 Claims**



1. An integrally-formed holder for disc-like objects constructed of flexible polymeric material and comprising:

an elongate body having a generally C-shaped cross-section and a radius of curvature substantially equal to the radius of the disc-like objects, and

a continuous end wall integral with said body at each end thereof, said end walls defining a substantially C-shaped opening in each end of said body of smaller radius of curvature than the radius of curvature of said body with

the C-shaped end openings encompassing the axis of said body within their periphery,

said body having an open latticework constituted by at least two radial ribs and two longitudinal bar-like members located in parallel radially-spaced relationship one on each side of the axis of the body, each of said bar elements having a recessed surface and a perimeter extending slightly outwardly from the surface of the body,

said holder being capable of limited resilient flexure about the axis of said body to increase the radii of curvature of said body and said end wall openings to permit insertion and removal of the disc-like objects through said curvilinear extremities,

said end walls exerting a resilient force on said body during said flexure and said increase of radii of curvature urging said body to assume said radius of curvature substantially equal to the radius of said disc-like objects.

4,239,052

METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

Gifford G. McClaflin, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Feb. 21, 1979, Ser. No. 13,357
Int. Cl.[3] F17D *1/17*
U.S. Cl. 137—13 **11 Claims**

1. In the method of pumping a viscous hydrocarbon through a pipe the improvement which comprises forming an oil-in-water emulsion by adding to said hydrocarbon from about 20 to about 80 volume percent of an aqueous solution containing, as the only essential materials, an effective amount, based on said hydrocarbon, of a combination of about 50 to about 10,000 parts per million of an ethoxylated alkyl phenol and about 50 to about 10,000 parts per million of a water-soluble alkaryl sulfonate, said ethoxylated alkyl phenol being selected from the group consisting of monoalkyl phenols and dialkyl phenols, wherein the alkyl group contains from about 6 to about 15 carbon atoms, and which contains from about 25 to about 75 ethoxy groups and said water-soluble alkaryl sulfonate has a molecular weight below about 410 and is represented by the formula

$$R_{(n)}Ar—SO_3M$$

wherein Ar is an aromatic moiety which is phenyl, tolyl, xylyl, or ethylphenyl, R is a linear or branched alkyl group containing 4 to 16 carbon atoms, n is an integer of 1 or 2, M is sodium, potassium, or ammonium, and the total number of carbon atoms in the alkyl groups is in the range of 8 to 16.

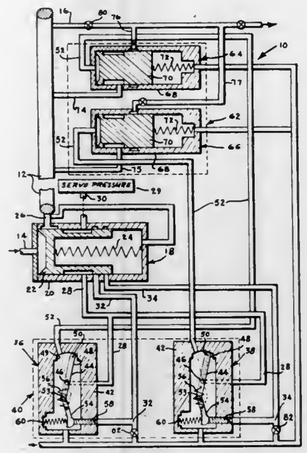
4,239,053

FUEL FLOW DISTRIBUTION SYSTEM

Richard H. Cornell, Marblehead, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 7, 1979, Ser. No. 10,091
Int. Cl.[3] G05D *11/03*
U.S. Cl. 137—110 **8 Claims**

1. A fluid flow distribution system comprising means for supplying a flow of metered fluid, means operably connected to said metered fluid supplying means for receiving and dispersing said flow of metered fluid, at least one distributor line operably connected to said fluid receiving and dispersing means for receiving said flow of metered fluid from said fluid receiving and dispersing means and dispensing said flow of metered fluid at a predetermined pressure, said metered fluid supplying means including a valve, said valve providing a signal in accordance with a change in flow through said distributor line, at least one switching means operably connected to said valve for receiving said signal therefrom and transmitting said signal, at least one on-off valve normally in the off position operably connected to said switching means for receiving said transmitted signal therefrom, said signal from said switching means actuating said on-off valve to the on position, means interconnecting said on-off valve to said fluid receiving and dispersing means and to said distributor line for providing



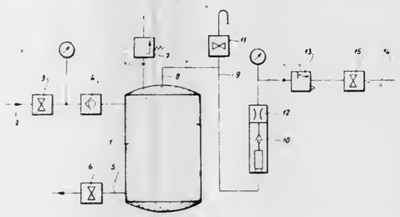
an additional path for said flow of metered fluid to flow from said fluid receiving and dispersing means to said distributor line upon said actuation of said on-off valve to said on position.

4,239,054

WATER PRESSURIZING INSTALLATION

Antoon J. Van Rijn, Hertog van Beierenstraat 7, Ter Aar, Netherlands

Filed Nov. 14, 1978, Ser. No. 960,604
Claims priority, application Netherlands, Nov. 15, 1977, 7712585
Int. Cl.[3] F04F *1/06*
U.S. Cl. 137—209 **7 Claims**



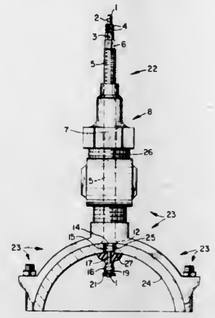
1. A water pressurizing installation as auxiliary means to be used in case of too low water pressure from the mains, characterized in that an inlet for the water supply is connected to a tank, a check valve in the supply to said tank, a separate discharge from said tank to one or more consumption discharges such as tap points, a supply duct for gas under pressure being connected to said tank separately from said supply and discharge and being provided with a float valve reacting to the amount of water in the tank to close said valve when the tank is full, the chamber of the float of said float valve together with the connection between said chamber and said tank forming a U-shaped duct wherein the volume of the float chamber from its bottom to the liquid level therein when the float valve just closes is greater than the maximum liquid volume which remains between the tank and the float chamber when gas is supplied to the tank.

4,239,055

PRESSURE PLUG

Michael Van Coffman, 1028 "C" St., Olivenhain, Calif. 92024

Filed Feb. 23, 1978, Ser. No. 880,632
Int. Cl.[2] F16K *43/00*
U.S. Cl. 137—315 **1 Claim**



1. A pressure plug for shutting off pressure in a fluid transmission line as not to interrupt the flow through the main line, comprising of a main cylindrical outer tube externally threaded its full length having one end shaped to fit a wrench, the outer end flared outward, said wrench fitting having a maximum outside diameter less than the outside diameter of the main tube, an inner cylindrical rod, externally threaded at one end, to fit one or more locking and tightening nuts, said rod having a length greater than the outer tube and an outside diameter less than the inner diameter of the outer tube, a flared tubing nut main guide internally threaded at one end to fit the outer tube and internally threaded at the other end to receive a service valve fitting, said flared tubing nut main guide configured or grooved internally to accept a sealing ring, attached to the end of the inner rod opposite to the locking and tightening nuts an elastomer plug assembly capable of being expanded externally by compression, said elastomer plug assembly utilizing pressure in transmission pipeline sealing aperture in pipeline, said elastomer plug assembly consisting of a tube of elastomer material disposed between retainers on the end of the inner rod and an elastomer seal and retainers at the point of contact with the outer tube and elastomer plug assembly.

4,239,056

VALVE SERVICE BOX HAVING MEANS FOR SECURING DIFFERENT SIZED VALVES AGAINST ROTATION

Thomas Shope, Kearny, N.J., assignor to CP Test Services-Valvco, Inc., Harrison, N.J.

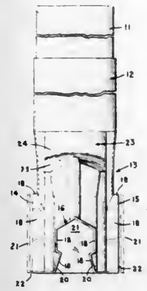
Filed Feb. 1, 1979, Ser. No. 8,618
Int. Cl.[3] F16K *27/12*
U.S. Cl. 137—370 **65 Claims**

1. A valve box comprising;

(a) at least one vertically elongated member having a generally axial passage open at the top and bottom,

(b) a hollow valve housing on the bottom of the elongated member open at its top and bottom, the open top communicating with the passage in the elongated member,

(c) the housing having at least two pairs of substantially diametrically opposed side openings each communicating with the bottom edge thereof, and



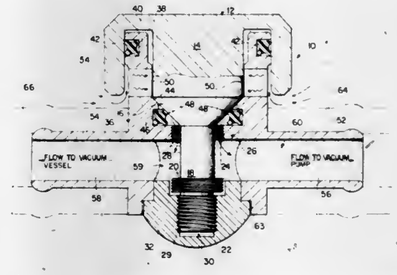
(d) a cover extending over each opening and detachably secured to the housing.

4,239,057

PRESSURE CONTROL VALVE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Kenneth H. Lambson, Salt Lake City, Utah

Filed Jul. 13, 1979, Ser. No. 57,465
Int. Cl.[3] E03B *3/18*; F16K *31/58*
U.S. Cl. 137—549 **3 Claims**



1. A control valve adapted to be connected between a vessel and a vacuum pump for controlling the pressure on the vessel, said valve comprising a housing having a bore extending therethrough the ends of which are adapted for connection to the vessel and vacuum pump, respectively,

an air inlet in said housing, filter means disposed in said air inlet for filtering air flowing through said air inlet; a valve body mounted for movement within said housing between a first, closed position wherein air flow through said air inlet and said filter means to said bore is blocked and a second, at least partially open position wherein at least some air flow through said air inlet and said filter means to said bore is provided, said valve body being mounted for movement orthogonal to said bore, said valve further including primary sealing means for preventing air flow to said bore when said valve body is in the closed position thereof, said valve body and said housing including conical mating surfaces which are brought into engagement when said valve body is in the closed position thereof, said conical surfaces disengaging during movement of said valve body away from the closed position thereof to provide a passage for air therebetween, said valve body also comprising a cylindrical surface which is disposed adjacent to said filtering means and which exposes an increasing amount of said filtering means to said passage

between said conical surfaces during movement of said valve body away from the closed position thereof;

a control member for controlling said movement of said valve body, said housing including a first threaded portion which engages a first threaded portion of said valve body, said control member comprising a rotatable control knob which, when rotated, causes translation of said valve body through the interaction of the respective portions;

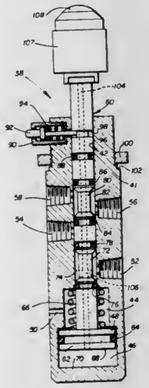
said valve body including a cylindrical portion located on the other side of said conical surface from the cylindrical surface and a second threaded portion of said valve body being formed on said cylindrical portion between said conical surface and said first threaded portion, a second threaded portion of said housing being formed in a portion of said housing located on the other side of said bore from said first threaded portion wherein said valve body including said second threaded portion is normally disengaged from the second threaded portion of said valve housing and which permits removal of said valve body from said housing only through unscrewing of said valve body from said housing through the interaction of the respective second threaded portions.

4,239,058

PULL TYPE RELAY VALVE WITH AUTOMATIC LOCKOUT

Clifford M. Peters, Longview, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 57,911
Int. Cl.³ F15B *13/042*; F16K *37/00*
U.S. Cl. 137—557 **15 Claims**



1. A valve for controlling fluid flow to and from an actuator in response to pressure changes in a pilot line, said valve comprising:

a valve body presenting a longitudinal bore therein, said bore having an enlarged inner end portion defining a piston chamber in the valve body;

a slide valve mounted in the bore for longitudinal movement between an open position for directing fluid to the actuator and a closed position for bleeding fluid from the actuator, said slide valve having an outer and extending outwardly of the valve body and adapted to be manually pulled to move the slide valve outwardly from the closed position to the open position for manual setting of the slide valve;

means biasing the slide valve inwardly toward the closed position;

a pilot port in a side portion of the valve body adapted for connection with the pilot line to sense the fluid pressure therein;

a piston carried in said piston chamber on an inner end portion of said slide valve opposite said outer end thereof, said piston presenting an inwardly facing pressure face for receiving pressurized fluid from said pilot port to hold the slide valve in the open position against the force of said biasing means; and

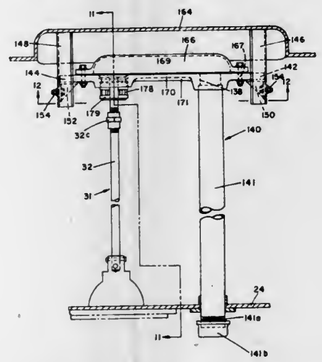
a fluid passage in the slide valve for directing fluid from said pilot port to said piston chamber for application to said pressure face of the piston, said passage extending to said pressure face of the piston and having an inlet port formed in a side portion of said slide valve at a location in fluid communication with said pilot port when said slide valve is in the open position, whereby pilot line pressure is applied from the pilot port through said inlet port and fluid passage to said piston chamber and against said pressure face of the piston to hold said slide valve in the open position when the pilot line pressure is sufficient to overcome the force of said biasing means.

4,239,059

AUTOMATIC AIR INLET AND OUTLET VALVE ASSEMBLY

Patricia S. Stoller, 4591 Amesbury Dr., Plymouth, Mich. 48170; Gerald D. Garner, 2732 Buckingham, Florissant, Mo. 63033, and John A. Krug, Jr., 340 Pralle La., St. Charles, Mo. 63301

Division of Ser. No. 808,916, Jun. 22, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,462
Int. Cl.³ F16K *24/00*
U.S. Cl. 137—587 **9 Claims**



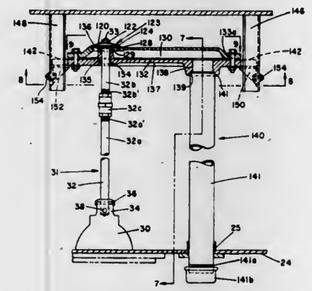
1. An automatic air inlet and outlet valve assembly which automatically opens and closes when a bottom operable tank lading valve is opened and closed comprising: an air valve mounted adjacent the top of the tank movable between opened and closed position relative to a chamber opening in a valve chamber having an upper chamber portion and a lower chamber portion; said valve chamber being in fluid communication by means of conduit means with an opening in the bottom of the tank; said air valve seating on said lower chamber portion; said air valve being automatically operated when said lading valve opens and closes by air valve linkage means including an operating shaft which extends from the lading valve up through the tank to the air valve: said conduit means attached to the bottom of the tank supporting said air valve and said air valve linkage means in position within said tank; said air valve and said air valve linkage means located below the top of the tank a distance sufficient that when the top of the tank moves downwardly relative to the tank bottom, the top of the tank will not strike the air valve or the air valve linkage means; and whereby during said downward movement of the top of the tank, said conduit means support the air valve and the air valve linkage means in position within the tank.

4,239,060

AUTOMATIC AIR INLET AND OUTLET VALVE ASSEMBLY HAVING UPPER CHAMBER OPENING

Patricia S. Stoller, Plymouth, Mich.; John A. Krug, Jr., St. Charles, and Gerald D. Garner, Florissant, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Division of Ser. No. 35,862, May 3, 1979, which is a continuation of Ser. No. 808,916, Jun. 22, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,455
Int. Cl.³ F16K *24/00*
U.S. Cl. 137—587 **12 Claims**



1. An automatic air inlet and outlet valve assembly which automatically opens and closes when a bottom operable tank lading valve is opened and closed comprising:

an air valve mounted adjacent the top of the tank movable between open and closed position relative to a chamber opening into a chamber in fluid communication by means of conduit means with an opening in the bottom of the tank; said air valve being automatically operated when said lading valve opens and closes by air valve linkage means including an operating shaft which extends from the lading valve up through the tank to the air valve; said conduit means attached to the bottom of the tank and supporting said air valve and said air valve linkage means in position within said tank; said air valve and said air valve linkage means located below the top of the tank a distance sufficient that when the top of the tank moves downwardly relative to the tank bottom, the top of the tank will not strike the air valve or the air valve linkage means; and whereby during said downward movement of the top of the tank, said support means supports the air valve and the air valve linkage means in position within the tank.

4,239,061

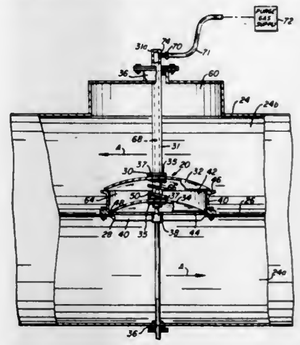
DAMPER VALVE

Harley G. Peterson, La Crescenta, Calif., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jun. 27, 1977, Ser. No. 810,657
Int. Cl.³ F16K *1/00*; B01D *46/42*
U.S. Cl. 137—614.11 **8 Claims**

1. In an elongated gas flow conducting means including valved aperture means for selectively controlling gas flow therewithin, a damper valve means comprising:

Valve seat means associated with such aperture means and including at least a pair of seat portions spaced apart in the direction of gas flow through said conducting means; a valve actuator assembly including an elongated support extending within said gas flow conducting means along an axis and axially moveable with respect to said seat portions; said actuator assembly including a valve head assembly having at least a pair of axially spaced damper valve head means carried by said elongated support and each engageable with a respective one of said seat portions and bias means cooperable with said head means and stop means on said elongated support to permit axial movement of both of said head means with respect to each other axially of said support, and said seat portions being cooperable with said valve head assembly to effect sequential engagement of said head means with the respective said seat portions upon such selective axial movement of said support means to close said conducting means to interrupt gas flow within said gas flow conducting means by forming a respective pair of sealed interfaces.

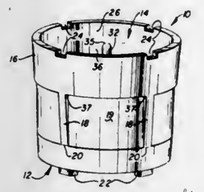


4,239,062

METHOD AND APPARATUS FOR PROTECTING PIPE THREADS

Jerry D. Callicoatte, Midland, Tex., assignor to Texas Plastics Industries, Inc., Midland, Tex.

Continuation-in-part of Ser. No. 888,169, Mar. 20, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 19,115
Int. Cl.³ B65D *59/06*
U.S. Cl. 138—96 R **17 Claims**



1. A deformable pipe thread protector comprising:

a. a hollow body member in a form of a sleeve having a central longitudinal axis and opposed ends formed by spaced planes which are perpendicular to the longitudinal axis;

b. a circumferentially outwardly extending shoulder at the marginal large diameter end, radially spaced outer ribs which are a continuation of said shoulder and which terminate in spaced relationship respective to the small diameter marginal end;

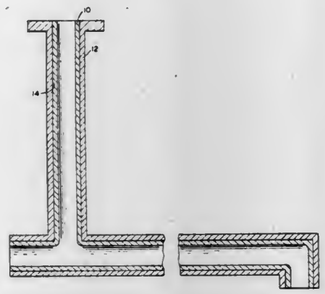
c. said ribs lie along an imaginary line which intersect at a common point located on the longitudinal axis at a location spaced from said protector apparatus.

4,239,063

MANIFOLD INSULATED WITH KNITTED IMPREGNATED SLEEVE

Richard L. Long, Rowland Heights, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 29, 1978, Ser. No. 891,255
Int. Cl.³ F16L *11/02*
U.S. Cl. 138—123 **2 Claims**



1. A thermal protection system comprising a manifold section, a knitted one piece, continuous, unseamed, configured sleeve of one thickness that is configured to fit an inside diameter surface of said manifold section to be lined, said sleeve being made of quartz fabric, said sleeve being impregnated with an uncured phenolic resin bonding agent, and said sleeve with said uncured bonding agent being cured and bonded to the inside diameter surface of said manifold section to insulate the manifold section.

4,239,064

INSULATION TUBES AND PROCESS OF MAKING SAME

Richard Gilman, Gilman, Conn. 06336

Filed Jan. 15, 1979, Ser. No. 3,262
Int. Cl.³ F16L *9/16*; B65N *81/00*; D03D *13/00*
U.S. Cl. 138—154 **21 Claims**



1. An insulation tube comprising at least two welded coiled plies, each ply being formed of a web of foamed thermoplastic polymer set into a coiled configuration, a radially facing surface of each web is welded to a radially facing surface of an adjoining web, but the axially facing edges on each coiled web are not welded together, adjacent plies being arranged such that the coils of one ply are offset from the coils of an adjacent ply, and a line defining the junction between the unwelded axial edges of each ply extends along the radially facing surface of an immediately adjacent ply, at least one ply being formed of a tearable material, such that applying a sharp axial tensile stress to the tube causes a tearing of one ply along the junction line defined by an adjacent ply so as to form a free, multi-ply coil suitable for wrapping about a pipe and the like.

14. Process for forming a unitary tube capable of being readily torn into a free helical coil, the process comprising:

(1) heating, to above the heat sealing temperature, a surface of a first web and a second web each formed of a foamed thermoplastic polymer, wherein one of the webs is formed of tearable material;

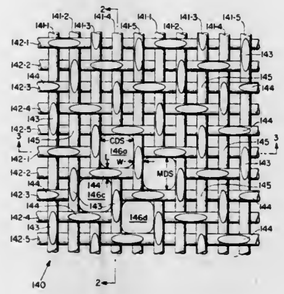
(2) coiling the two webs in an overlapping, offset relationship to form a multi-ply tube, each web forming one ply, and welding the adjacent surfaces of the two webs together but leaving free the transverse edges of each coiled web, such that the unwelded junction between adjacent edges of each ply define a spiral line along the radially facing surface of the adjacent ply in the tube.

4,239,065

PAPERMACHINE CLOTHING HAVING A SURFACE COMPRISING A BILATERALLY STAGGERED ARRAY OF WICKER-BASKET-LIKE CAVITIES

Paul D. Trokhan, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 9, 1979, Ser. No. 19,028
Int. Cl.³ D03D *15/00*
U.S. Cl. 139—383 A **17 Claims**



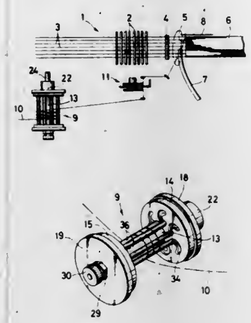
1. A loop of fabric for use on a papermaking machine, said fabric comprising a first set of filaments which filaments are disposed generally parallel with respect to each other and a second set of filaments which filaments are generally disposed in parallel relation to each other and which filaments are relatively steeply angularly disposed with respect to the filaments of said first set of filaments, said sets of filaments being interwoven and complementarily serpentinely configured to provide a predetermined first grouping of coplanar top-surface-plane crossovers of both said sets of filaments, and a predetermined second grouping of recessed sub-top-surface crossovers, said top-surface-plane corssovers being in spaced relation to define an array of wicker-basket-like cavities which cavities are disposed in a sufficiently staggered relation in both the machine direction and the cross machine direction to preclude adjacent said cavities being aligned in either the machine direction or the cross machine direction, each said cavity spanning at least one said sub-top-surface crossover and perimetrically enclosed by a picket-like-lineament comprising a plurality of said top-surface-plane crossovers.

4,239,066

YARN FEEDER

Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 17, 1979, Ser. No. 58,254
Int. Cl.³ D03D *47/36*
U.S. Cl. 139—452 **8 Claims**



1. A yarn feeder comprising:

(a) a spool having a hollow shaft and a pair of circular flanges on the ends of said hollow shaft, each of said circular flanges having a plurality of radial guide slots angularly spaced from each other;

(b) a spindle extending through said hollow shaft and rotatable therein;

(c) a pair of spaced drive gears fixed to said shaft and disposed at the axial ends of said spool;

(d) a plurality of spaced pairs of driven gears rotatably mounted on said flanges, respectively, the driven gears in each pair being axially aligned with each other, said drive gears being held in driving mesh respectively with the pairs of the driven gears; and

(e) a plurality of rods extending axially along and disposed radially around said shaft, each of said rods having a pair of end portions connected eccentrically to the respective driven gears in one pair through a corresponding pair of the guide slots in said flanges, whereby said rods can move radially outwardly from and inwardly to said shaft in response to rotation of said spindle.

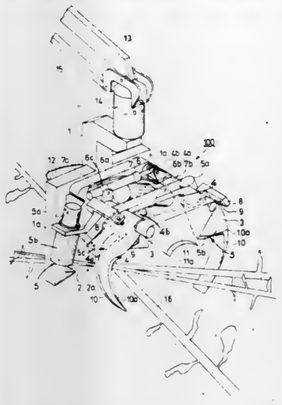
4,239,067

APPARATUS FOR BULK-LOPPING, BUCKING AND PRESTACKING IN FOREST HARVESTING

Sakari Mononen, Nurmijärvi, Finland, assignor to Finncombi Sakari Mononen Ky, Finland

Filed Dec. 18, 1978, Ser. No. 970,178
Claims priority, application Finland, Dec. 21, 1977, 773887
Int. Cl.³ B27L *1/00*; A01G *23/08*
U.S. Cl. 144—2 Z **11 Claims**

1. Apparatus for lopping one or more felled trees in bulk and bucking and prestacking the same comprising: a frame adapted to be connected to one end of a boom; a pair of lifting and lopping arms pivotally mounted at their respective ends to said frame, said arms each having a lopping blade associated therewith, and being pivotally movable between an open position wherein said arms extend substantially downwardly to engage one or more tree trunks therebetween and a closed position where said arms are moved inwardly towards each other to suitably locate the one or more tree trunks for subsequent lopping and means for feeding the one or more tree trunks past said lopping blades including at least two movable feed rolls pivotally mounted to said frame slightly spaced from each other in the longitudinal tree trunk feeding direction, said feed rolls being pivotally movable between an open position and a closed tree trunk feeding position, and at least two fixed counter-rolls mounted to said frame slightly spaced from each other in the longitudinal tree trunk feeding direction, and wherein when the feed rolls are in their closed tree trunk feeding position the axes of rotation of said feed rolls and counter-rolls



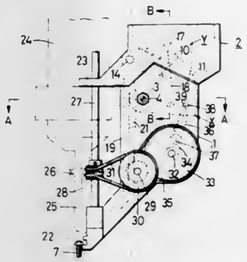
when viewed in the longitudinal tree trunk feeding direction mutually cross to define an enclosed feeding pocket whose configuration is adapted to conform to the one or more tree trunks being fed.

4,239,068

SCREW FEEDING APPARATUS

Kunimasa Maruo, 3-1-27 Nishi-Kojiya, Ohta-ku, Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 962,176
Claims priority, application Japan, Nov. 20, 1977, 52-139202
Int. Cl.³ B23Q *7/12*
U.S. Cl. 81—462 **8 Claims**



1. An apparatus for arranging and supplying screws, comprising a first oscillating member provided in an opening of a hopper and designed to guide the screws by taking threaded shafts of said screws into a guide groove while supporting said screws at their neck portions;

a second oscillating member also provided in said opening of said hopper and designed to move to and fro interlockingly with the movement of said first oscillating member apart from the upper portion of said first oscillating member by a distance substantially corresponding to the thickness of the head of said screws;

an elastic member provided in the forward end of a screw supporting means adapted to receive the screws individually each coming past through said guide groove and through a gate plate which is located in path of said screws and adapted to be closed or opened from outside of the apparatus;

a hole to receive therein a steel ball formed in the forward end portion of said screw supporting means, a distance between said hole and the forward end of said screw

supporting member being arranged to be longer than at least the thickness of the head of said screws;

an outer sleeve provided around said forward end portion of said screw supporting means in a manner that the forward end of said outer sleeve extends beyond said forward end of said screw supporting means and both are slidable with respect to each other;

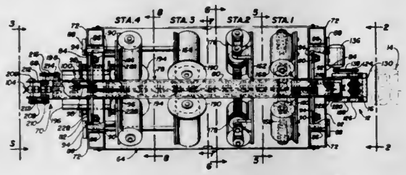
wherein said outer sleeve encircles said steel ball by its inner wall comprising a thin wall and a thick wall, said steel ball being pressed inwardly of said screw supporting means by means of said thick inner wall of said outer sleeve as the outer sleeve is moved on being contacted by the surface of the screw to be screwed in, whereby the screw being supported in the forward end of said supporting means is prevented by said steel ball from being elevated.

4,239,069

AUTOMATIC CANT PRODUCTION MACHINE

Edwin H. Zimmerman, R.D. 1, New Holland, Pa. 17557

Filed Aug. 10, 1979, Ser. No. 65,509
Int. Cl.³ B27C *9/04*
U.S. Cl. 144—39 **25 Claims**



1. A machine to produce from round logs a cant of four sides at right angles to each other and comprising in combination,

(a) an elongated base frame having log inlet means at one end and cant discharge means at the opposite end,

(b) an elongated flexible conveyor extending along said frame between said inlet and discharge means and having an upper span defining a path of movement along said frame,

(c) power means to drive said conveyor uni-directionally,

(d) means adjacent said inlet end of said frame operable to form respectively on the upper and lower surfaces of a log, pairs of adjacent grooves and each pair defining therebetween a right-angled rib-like cant corner extending along the upper and lower portions of the cant to be produced by said machine,

(e) support means on said conveyor complementary in cross-section to said cant corner in the bottom surface of said log to accurately guide and support said log along said path of movement,

(f) additional guide means parallel to said conveyor and spaced thereabove a distance substantially equal to the diagonal cross-sectional dimension of the cant to be formed by said machine and having a cross-sectional shape complementary to and engaging said cant corner in the upper surface of said log and cooperating with said support means on said conveyor to firmly engage said log for the entire movement thereof along said path of movement, and

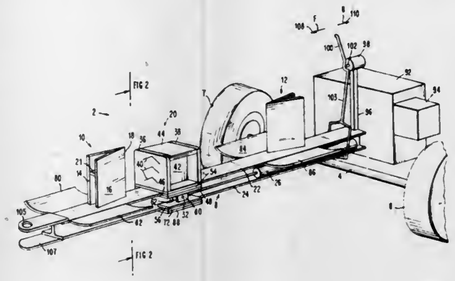
(g) cutting means spaced along said path of movement sequentially to remove slab areas and sections respectively from the opposite sides of the upper and lower portions of said log to form flat sides on said cant while said log moves only longitudinally along said path in fixed axial position from the inlet to the discharge ends of said frame as guided by said conveyor and said additional guide means in engagement with the lower and upper cant corners.

4,239,070

LOG SPLITTER

Thomas H. Burns, Holmes, N.Y., assignor to Burns Double Split, Inc., Holmes, N.Y.

Filed Apr. 20, 1979, Ser. No. 31,768
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **11 Claims**



1. A hydraulic log splitter comprising:

a fixedly mounted supporting frame;

first and second log splitting wedges mounted on said frame at fixed positions relative to one another;

ram means slideably mounted on said supporting frame for movement between said first and second log splitting wedges; and

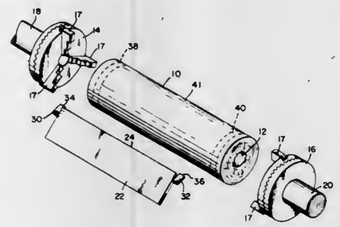
first and second two-way hydraulic cylinder means, and means on opposing sides of said frame connecting said first and second two-way hydraulic cylinders to opposite sides of said ram means for applying substantially equal forces to the opposite sides thereof, to drive said ram means towards said first log splitting wedge on the forward stroke of said first and second two-way hydraulic cylinder means, and to drive said ram means towards said second log splitting wedge on the return stroke of said first and second two-way hydraulic cylinder means.

4,239,071

SYSTEM FOR PRODUCING VENEER FROM DETERIORATED CORE LOGS

Lloyd I. Ritchie, 17810 Burke Pl. N., Seattle, Wash. 98133

Filed Feb. 22, 1979, Ser. No. 14,073
Int. Cl.² B27L *5/00*
U.S. Cl. 144—209 R **8 Claims**



1. A method of producing veneer from a deteriorated or hollow core log, comprising the steps of:

securing the log substantially at or near its outer circumferential surface by means of rotatable securing means; rotating said securing means whereby said log is rotated about its longitudinal axis;

cutting two kerfs in the log, each kerf extending around the circumference of the log; and

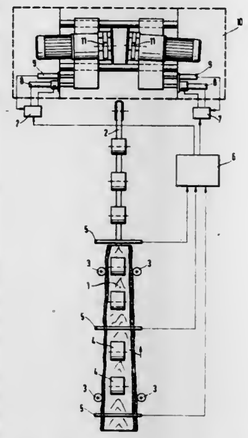
bringing a veneer blade to bear against the portion of the rotating log between the kerfs such that a sheet of veneer is cut from said log portion, the veneer blade having a length no less than the distance between the inner kerf edges and no greater than the distance between the outer kerf edges.

4,239,072

METHOD AND APPARATUS FOR EDGE-TRIMMING A BOARD

Heikki Meriläinen, Karhula, Finland, assignor to A Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Aug. 29, 1978, Ser. No. 937,757
Claims priority, application Finland, Sep. 27, 1977, 772835
Int. Cl.³ B27B *7/00*; B27C *1/08*
U.S. Cl. 144—312 **6 Claims**



3. An apparatus for edge trimming a board which has two unfinished sides, said apparatus comprising: means for centering said board symmetrically in relation to a feeding line, a measuring device mounted along said feeding line for determining the optimum trimming direction and trimming width of said board; an edge trimming device for trimming the sides of said board, said edge trimming device comprising two oppositely spaced adjustable cutter heads disposed on opposite sides of said feeding line; computer means for adjusting said cutter heads in relation to each other in response to said measuring devices determinations; said computer means defining means for longitudinally guiding the board in such a manner that it passes from the measuring device into the edge trimming device and through it without changing said board's position in relation to the feeding line and further defining means for transversely moving the said cutter heads in relation to the longitudinal axis of said board while maintaining said adjusted relationship between said cutter heads.

4,239,073

PROPELLANTS IN CASELESS AMMUNITION

Russell Reed, Jr., Ridgecrest, Calif.; William O. Munson, and John A. Peterson, both of Brigham City, Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Jan. 17, 1973, Ser. No. 329,257
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.91 **3 Claims**

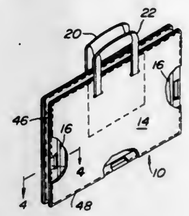
1. A gun propellant composition comprising a major amount of a finely divided deflagrating component selected from cyclotetramethylene tetranitramine, cyclotrimethylene trinitramine, ammonium nitrate, ammonium picrate, ammonium bitetrazole and mixtures thereof, and a minor amount of a binder which is poly(lauryl methacrylate).

4,239,074

CARRYING CASE

Ralph J. Kahn, Elkins Park, Pa., assignor to Schlesinger Brothers, Inc., Camden, N.J.

Filed Sep. 10, 1979, Ser. No. 74,227
Int. Cl.³ A45C *3/02, 13/36*
U.S. Cl. 150—1.6 **7 Claims**



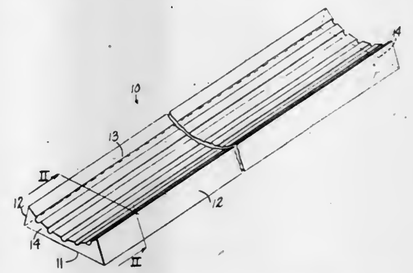
1. A carrying case comprising side panels, end panels connected to the side panels, a bottom panel connected to the lower edges of the side panels, handle means connected to the upper end portion of some of said panels, a U-shaped metal reinforcement strip for each of said side panels, a separate preformed sleeve on each of the bight portion and leg portions of said reinforcement strips, each sleeve having an extension along one edge thereof, and means securing each extension to the inner surface of one of said side panels, said means also securing each extension to an adjacent one of the end and bottom panels.

4,239,075

PROFILED TIRE TREAD

John A. Hedlund, 1300 Morrical Blvd., Findlay, Ohio 45840

Filed Jul. 14, 1977, Ser. No. 815,547
Int. Cl.³ B60C *11/00*; B29H *17/37*
U.S. Cl. 152—209 R **21 Claims**



1. A tire tread for retreading a tire casing, comprising, an elongated body portion of cured material having:

a bonding surface adapted for bonding to a tire casing, and

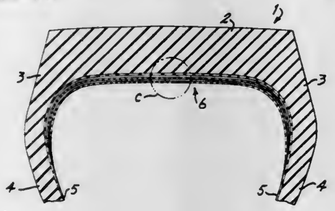
a road contacting surface adapted to engage a road, said road contacting surface being oppositely disposed and spaced apart from said bonding surface and being concave in transverse cross-sectional profile so as to resistingly assume a generally flat cross-sectional profile when said bonding surface is bonded to a tire casing.

4,239,076

PNEUMATIC TIRE WITH PUNCTURE-SEALING LINING COMPRISING VULCANIZABLE AND VULCANIZING LAYERS

Jean Chautard, Mozac, and Andre Chemizard, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jul. 13, 1979, Ser. No. 57,440
Claims priority, application France, Jul. 17, 1978, 78 21347
Int. Cl.³ B60C *21/08*
U.S. Cl. 152—347 **17 Claims**



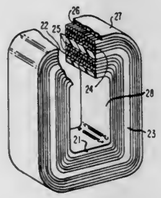
1. A pneumatic tire whose inner wall is provided, at least from one shoulder to the other, with a lining containing at least one means for sealing puncture holes, characterized by the fact that the lining comprises at least one layer of a vulcanizable sealing mixture separated by a vulcanized elastomeric partition from at least one layer of a vulcanizing mixture capable of vulcanizing the vulcanizable sealing mixture, each of the layers containing between 20% and 100% by weight of an elastomer of low molecular weight less than about 30,000, wherein the elastomer of the vulcanizable sealing mixture consists essentially of an unsaturated elastomer and wherein the elastomer of the vulcanizing mixture consists essentially of a saturated elastomer.

4,239,077

METHOD OF MAKING HEAT CURABLE ADHESIVE COATED INSULATION FOR TRANSFORMERS

George D. Dixon, Monroeville, and Edward J. Croop, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,554
Int. Cl.² B05D *3/06*
U.S. Cl. 156—272 **8 Claims**



1. A method of making a flexible, resin adhesive coated substrate comprising the steps of:

(A) applying a surface coating, on at least one side of a porous, flexible sheet material containing at least 4 wt.% moisture without appreciably impregnating the sheet, said coating consisting of a wet, heat reactive adhesive resin, having added thereto from about 10 parts to about 80 parts per 100 parts heat reactive resin of a monomer selected from the group consisting of acrylic monomer, vinyl monomer and mixtures thereof, and an amount of an ultraviolet radiation sensitive photoinitiator effective to cause polymerization of monomer in response to ultraviolet radiation;

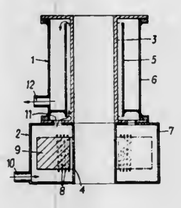
(B) applying ultraviolet radiation to the adhesive resin coating on the sheet material, in a manner and for a time effective to polymerize monomer without the application of heat so that the sheet material retains at least 3.5 wt.% moisture, to form a flexible substrate with a dry, uncured surface coating of adhesive bonded to the sheet material, said adhesive being curable by the application of heat.

4,239,078

COOLED CONTINUOUS CASTING MOULD

Bruno Tarmann, Kapfenberg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 21, 1979, Ser. No. 22,517
Claims priority, application Austria, Mar. 23, 1978, 2073/78
Int. Cl.³ B22D *27/02, 11/10*
U.S. Cl. 164—147 **9 Claims**



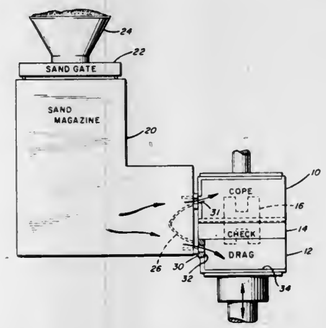
1. In a cooled continuous casting mould for a melt having an unsolidified region, said mould being of the type including a means for producing a rotating electromagnetic field of force in said unsolidified region of said melt, the improvement which is characterized in that said cooled continuous casting mould has an inner mould cavity and is designed as a compound body formed of an upper wall and a lower wall, said upper wall and said lower wall delimiting said inner mould cavity for contacting and shaping the melt during casting, said upper wall being made of a material selected from the group consisting of copper and low-alloyed copper alloys, said lower wall being made of an antimagnetic material with low electrical conductivity, said means for producing a rotating electromagnetic field of force being an induction means surrounding said lower wall.

4,239,079

SAND DEFLECTOR FOR AUTOMATIC MOLDING MACHINE

Joseph Simmons, R.D. 1, Box 163A, Morgantown, Pa. 19543

Filed May 30, 1979, Ser. No. 43,839
Int. Cl.³ B22C *15/24, 21/12*
U.S. Cl. 164—200 **6 Claims**



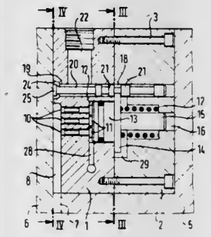
1. Apparatus for use on an automatic molding machine of the type for making a mold of a pattern by blowing sand through outlet passageways of a sand magazine into a fixed cope and a movable drag, said apparatus comprising a deflector mounted on said movable drag below an upper edge thereof and extending into the interior thereof, said deflector being a rectangular prism and having at least one sand inlet channel through said prism arranged at an angle of 19° in relation to a reference line perpendicular to a surface (62) on said deflector used for mounting said deflector in said drag, whereby sand passing from the outlet passageway of the sand magazine through the at least one sand inlet channel is deflected downwardly onto the floor of the drag and then upwardly into said pattern.

4,239,080

DIECASTING VENTING VALVE

Fritz Hodler, Chemin du Chatagny 3, CH 1820 Territet, Switzerland

Filed Nov. 16, 1978, Ser. No. 961,533
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1977, 2751431
Int. Cl.³ B22D *17/22*
U.S. Cl. 164—305 **11 Claims**



1. A venting valve arrangement for diecasting molds, said arrangement comprising a venting conduit for venting the mold cavity, at least one venting valve piston in the venting conduit, several axially parallel adjacent actuating pistons exposed to the action of the casting material, the actuating pistons and the venting valve piston having substantially parallel axes, a follower loosely interconnecting the venting valve piston with the actuating pistons, said several axially parallel adjacent actuating pistons all acting upon a common transmission piston, the follower projecting towards the venting valve piston in a radial direction with respect to said transmission piston, and means positively attaching said follower to said at least one of the venting valve pistons and with said follower providing a positive interlock of the venting valve piston with the actuating pistons.

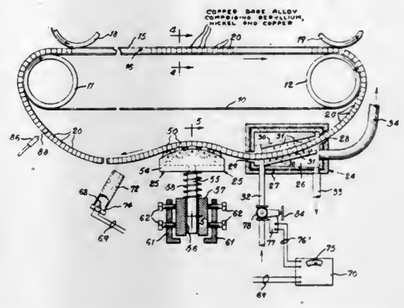
4,239,081

SIDE DAM APPARATUS FOR USE IN TWIN-BELT CONTINUOUS CASTING MACHINES

Paul J. Kranz, Westfield, N.J., assignor to Asarco Incorporated, New York, N.Y.

Filed May 30, 1979, Ser. No. 43,921
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—431 **8 Claims**

1. Side dam apparatus adapted for use in a twin-belt continuous casting machine wherein two spaced-apart side dams each revolve in a loop and travel along a casting zone from its input end to its output end between a pair of revolving spaced-apart casting belts thereby defining a moving mold, the side dams returning from the output end to the input end of the casting zone along a return path located away from the casting zone, the side dams each comprising a multiplicity of dam blocks secured to a flexible continuous securing means, the dam blocks each being formed of a copper base alloy comprising beryllium, nickel and copper, the alloy characterized by being a wrought alloy having a hardness in excess of 90 Rockwell B and a conductivity in excess of 35% IACS, the blocks being resistant to intergranular cracking over a prolonged period of exposure to elevated temperatures up to about 800° F., said alloy comprising by weight, beryllium in amount in excess of a trace but not more than 0.6% of the alloy, and the nickel in amount greater than the beryllium but not more than 2.1% of
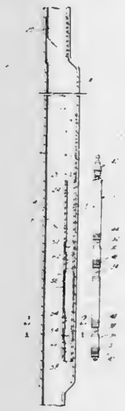


the alloy, the total of nickel plus beryllium plus copper being 99.5% minimum.

4,239,082

MULTIPLE FLOW VALVES AND SIDEPOCKET MANDREL

Ben D. Terral, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Mar. 23, 1979, Ser. No. 23,061
Int. Cl.² E21B *23/02*
U.S. Cl. 166—117.5 **1 Claim**



1. The combination of a mandrel and multiple flow control valves for use in a well tubing comprising,

a mandrel having a body with an open bore extending therethrough for alignment with the well tubing and having an offset bore adjacent the open bore,

orientation means in the open bore,

a pocket positioned inside the body in the offset bore,

a deflector guide positioned in the offset bore above the pocket,

a locking shoulder secured in the body and aligned with the pocket,

a plurality of vertically connected but independently actuated gas lift valves each having an inlet and an outlet for positioning in the pocket, each said valve having a pressure charged bellows positioned above and acting downwardly against a valve element in a direction to close said valve,

a single latch connected to the valves for engagement with the locking shoulder for locking the valves in the pocket,

said pocket being of a vertical length sufficient for receiving the valves,

a plurality of vertically spaced openings extending between the interior of the pocket and the outside of the body, one of said openings being positioned adjacent each of the inlets of said valves when the valves are installed, and

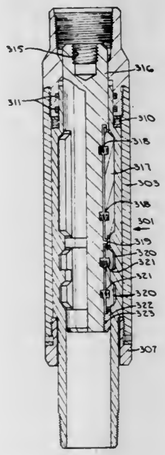
a plurality of passageways extending between the interior of the pocket and the interior of the body, one of the passageways being positioned to communicate with each of the outlets of said valves when the valves are installed.

4,239,083

METHOD AND APPARATUS FOR ROTATING TUBING CONDUITS

Raphael J. Silberman, Houston, Tex.; Frederick T. Tilton, La Habra, Calif., and Everett H. Smith, Houston, Tex., assignors to Baker International Corporation, Orange, Calif.

Filed May 7, 1979, Ser. No. 36,963
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—117.7 **10 Claims**



1. An apparatus carriable on a tubing string extendible into a subterranean well, said tubing string having an upper tubing section extendible from and above said apparatus to the top of the well and a lower tubing section extendible from and below said apparatus, said apparatus being manipulatable to rotate said lower tubing section without rotating said upper tubing section, said apparatus comprising: first and second housings, one of said housings and said lower tubing section being rotatable relative to the other of said housings; actuator means mechanically manipulatable by means extending to the top of the well, said actuator being insertable and removable within at least one of said housings for selectively applying rotation to one of said housings; and co-engaging means carried on said actuator means and one of said housings for applying rotational force to one of said housings and said lower tubing section to rotate said one housing and said lower tubing section without rotating the other of said housing and said upper tubing section.

4,239,084

ACID SOLUBLE COATING FOR WELL SCREENS

Keith W. Sharp, Sugarland, Tex., and Derry D. Sparlin, Lafayette, La., assignors to Baker International Corporation, Orange, Calif.

Division of Ser. No. 909,318, May 24, 1978, Pat. No. 4,202,411.
This application Jul. 11, 1979, Ser. No. 56,388
Int. Cl.³ E21B *37/08, 43/04, 43/08, 43/10*
U.S. Cl. 166—278 **3 Claims**

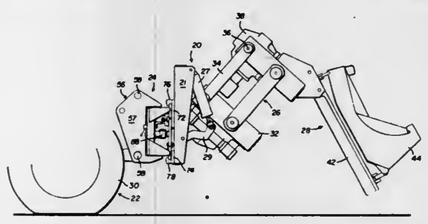
3. A method of gravel packing a washed out section in and unconsolidated formation penetrated by a well casing having perforations opening into said washed out section, comprising the steps of: (1) lowering a fluid conduit in said well, said conduit having a well liner comprising an elongate tubular member having a plurality of passageways disposed longitudinally and circumferentially of, and extending from the outer surface to the inner surface of the tubular member, and an impermeable inorganic matrix comprising the reaction product of a first reactant consisting essentially of magnesium oxide and a second reactant consisting essentially of magnesium chloride, in an aqueous solvent therefor, said matrix substantially filling said passageways and coated upon at least one of said inner and outer surfaces; (2) positioning said elongate tubular member opposite said perforations; (3) injecting through said fluid conduit and said well liner a removing solution to remove said impermeable inorganic matrix from said surfaces of said tubular member and said passageways, said removing solution comprising an aqueous carrier fluid having therein a reactant selected from the class consisting of hydrochloric acid and sulfamic acid; (4) contacting said impermeable inorganic matrix with a removing amount of said removing solution; (5) circulating a slurry of gravel in a carrier liquid in said well and into said washed out section while at least a part of said carrier liquid returns to the top of said well through said passageways and said well liner, thereby depositing said gravel in said washed out section and against said elongate tubular member; and (6) disconnecting said flow conduit from said well liner.

4,239,085

SIDE SHIFT ASSEMBLY FOR EARTH-WORKING IMPLEMENTS

Phillip G. Venable, Orion, Ill., and Rudolf Horsch, Davenport, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jul. 16, 1979, Ser. No. 57,769
Int. Cl.³ E02F *3/85*
U.S. Cl. 172—667 **13 Claims**



1. A side shift assembly for a ground working implement slidably mounted on a prime mover comprising:

a frame assembly mounted on said prime mover having laterally extending upper and lower slide rails;

an implement support bracket mounting said ground working implement on one of said slide rails for lateral movement relative to said prime mover;

an intermediate slide plate slidably mounted between said upper and lower slide rails for lateral movement relative to said slide rails;

an extensible and retractable fluid operated piston-cylinder operably connected at one end to said frame assembly and at its other end to said intermediate slide plate;

releasable latching means mounted on said slide plate for selectively connecting said slide plate to said implement support bracket, said support bracket having spaced apart connection portions and said latching means having a releasable connector selectively engageable with said connection portions on said support bracket;

said implement being laterally shiftable relative to said prime mover by said side shift assembly such that when said piston-cylinder is fully retracted and said releasable connector is engaged with one of said connection portions on said support bracket, said implement being substantially centered on said frame assembly and actuation of said piston-cylinder causing said implement to move laterally in a first direction and then back to the center of said frame assembly; and

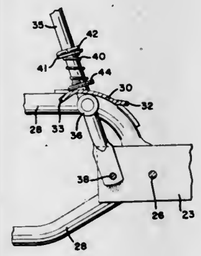
when said piston-cylinder is fully extended and said releasable connector is engaged in another of said connection portions of said support bracket, said implement being substantially centered on said frame assembly and actuation of said piston-cylinder causing said implement to move laterally in a direction opposite to said first direction and then back to the center of said frame assembly.

4,239,086

LIFTING MECHANISM WITH CAM

Robert R. Yeager, Union City, Ohio, assignor to Lambert Corporation, Dayton, Ohio

Division of Ser. No. 714,282, Aug. 13, 1976, Pat. No. 4,131,221.
This application Sep. 13, 1978, Ser. No. 942,066
Int. Cl.³ A01B *63/04*
U.S. Cl. 172—680 **2 Claims**



1. For use with a gardening apparatus, a lift mechanism for attaching the apparatus to a garden tractor and for lifting the gardening apparatus when attached thereto, the tractor including a hitch for engaging and supporting the lift mechanism, comprising:

(a) a frame bracket attachable to the tractor hitch,

(b) first pivot means defining a substantially horizontal first axis of rotation for pivotally attaching the gardening apparatus to the frame bracket for supporting and drawing the gardening apparatus and for pivoting the gardening apparatus upwardly and downwardly thereabout between respective up and down positions,

(c) a lifting handle,

(d) second pivot means pivotally attaching said lifting handle to said frame bracket for rotation about a second axis of rotation displaced from and substantially parallel to said first axis of rotation,

(e) a lift plate attachable to the gardening apparatus along a path extending toward and away from said first pivot means,

(f) means forming a slot in said lift plate, and said lifting handle being received in said slot for movement therethrough as said handle is pivoted about said second pivot,

(g) bearing means supported on said handle beneath said lift plate for engaging and camming against said lift plate to rotate the gardening apparatus about said first pivot as said handle is rotated about said second pivot to drive said bearing means against said lift plate for rapidly and easily raising and lowering the gardening apparatus, and

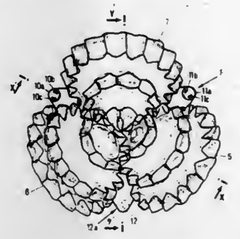
(h) spring means mounted on said lifting handle above said lift plate and in downward compression thereagainst for biasing the gardening apparatus downwardly when in the down position to augment the downward bias on the apparatus due to gravity.

4,239,087

DRILL BIT WITH SUCTION JET MEANS

Yvon Castel, Pau, and Henri Cholet, Le Pecq, both of France, assignors to Institut Francais du Petrole, France

Filed Jan. 26, 1978, Ser. No. 872,455
Claims priority, application France, Jan. 28, 1977, 77 02689
Int. Cl.² E21B *10/18*
U.S. Cl. 175—340 **13 Claims**



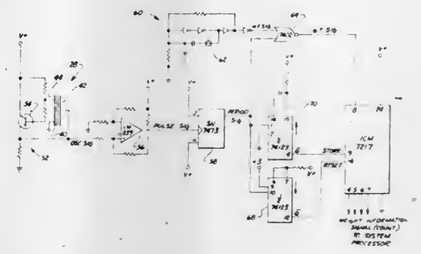
1. A drill bit comprising a body member rotatable by a bit holder, said body member being provided with a recess which can be supplied with a pressurized fluid through the bit holder, a plurality of rotatable elements carried by the body member and provided with ground cutting means in contact with the hole bottom, said body member being provided with flushing means for delivering at least one flushing fluid jet directed towards the hole bottom, said flushing means being in direct communication with said recess and opening in a first space comprised between two adjacent rotatable elements, and said body member also being provided with eduction means for the drilling fluid which has flushed the rotatable elements, said eduction means being adapted to deliver at least one upwardly directed fluid jet, said eduction means comprising at least one aperture provided in said body member and located above a second space comprised between two adjacent, rotatable elements, the flushing means of said drill bit comprising at least one flushing nozzle located in said first space, said nozzle being provided at its lower part with at least two apertures having substantially symmetrical locations on both sides of a bissector plane of said first space, said two apertures being adapted to create fluid jets respectively directed downwardly and towards the two rotatable elements between which said first space is defined, so as to contact said elements substantially at the hole bottom.

4,239,088

SCALE WITH WEIGHT-TO-PERIOD TRANSDUCER

Frank T. Check, Orange, and Keith E. Schubert, West Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 8, 1979, Ser. No. 1,622
Int. Cl.³ G01G *3/13*
U.S. Cl. 177—210 FP **9 Claims**



1. A scale comprising a frame, load carrying means for

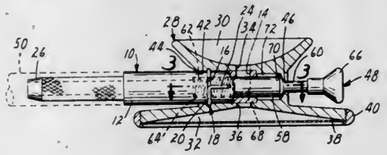
carrying an article to be weighed, transducer means, means fixedly supporting the transducer means with respect to the frame, force transmitting means interconnecting the load carrying means and the transducer means, means actuating the transducer means to provide an oscillatory signal, the period of oscillation of which varies as a function of the weight of the load and means receiving the oscillatory signal and generating a period signal indicative of full cycles of oscillation of the oscillatory signal and in response thereto measuring the duration of its period of oscillation to provide an article weight signal.

4,239,089

STETHOSCOPE CHESTPIECE

Frederick W. Nelson, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 9, 1979, Ser. No. 65,146
Int. Cl.³ A61B 7/02
U.S. Cl. 181—131 **5 Claims**



1. In a stethoscope chestpiece comprising a body member forming axially opposed diaphragm and bell microphones, said body member having a cylindrical recess interposed between said microphones; means forming aligned openings from the apex of each of said microphones communicating with said recess; a tubular shaft rotatably secured within said cylindrical recess; means forming an opening through the wall of said shaft adapted on rotation of said shaft to be aligned selectively with either of said openings in said microphones; means for rotatably securing said shaft within said recess against axial movement; and means for selectively aligning said opening in said shaft with either of said openings in said microphones, the improvement wherein said means for rotatably securing said shaft within said recess against axial movement and said means for selectively aligning said opening in said shaft with the opening in a selected one of said microphones are combined in a single spring member comprising a C-shaped portion and a leg extending axially from one end of said C-shaped portion, said C-shaped portion being positioned within a first peripheral groove having a depth at least as deep as the diameter of the spring material forming said spring member, said first groove being spaced axially from said opening in said shaft and said leg being positioned within a second axial groove having a depth at least equal to the diameter of said spring material, said second groove joining said first groove; said C-shaped portion being biased partially within a circular slot in the wall of said cylindrical recess, said circular slot having a depth which is about one-half the diameter of said spring material; and said leg being received by one of two opposed axial slots in said cylindrical recess which slots are perpendicular to said circular slot whereby upon rotational movement of said shaft said leg is biased into one of said axial slots to retain said opening in said shaft in alignment with said opening in the selected microphone.

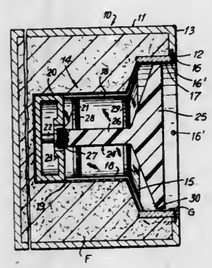
4,239,090

HIGH ACCURACY BASS REPRODUCER DEVICE

Jon G. Dahlquist, 601 Old Willets Path, Hauppauge, N.Y. 11787

Filed Mar. 29, 1979, Ser. No. 25,089
Int. Cl.³ H04R 7/16
U.S. Cl. 181—172 **7 Claims**

1. A high accuracy bass frequency sound reproducing device of the acoustical suspension type comprising an enclosure member substantially completely sealed except for an aperture, an electromagnetic transducer disposed within said enclosure and including a frame secured to said enclosure, said frame having a flange portion extending through said aperture, said flange portion including a continuous internal opening, the surfaces defining said opening being aligned parallel with the central axis of said flange, a magnet assembly on said frame including a gap defining a magnetic field, voice coil means disposed within said field and adapted to reciprocate in the direction of said axis responsive to the impression thereon of an alternating electrical current, a diaphragm assembly supported on said frame, said diaphragm assembly including an enlarged radiating portion having a rigid, free peripheral edge elongated in the direction of said axis and a reduced neck portion, said voice coil being mounted to said neck portion, suspension means interposed between said diaphragm assembly and said



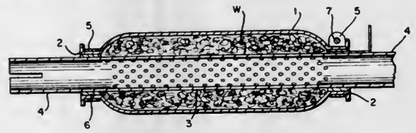
frame and engaging said diaphragm assembly and frame at at least two positions mutually offset in the direction of said axis for guiding said diaphragm assembly for said reciprocatory movements, said suspension means being attached to said diaphragm assembly at positions remote from said peripheral edge of said radiating portion, said outer peripheral edge of said radiating portion of said diaphragm and said internal opening of said flange defining therebetween a continuous circumferential gap elongated in the direction of said axis and having minimal clearances, said gap defining the sole significant flow passage between the interior and exterior of said enclosure, the total cross-sectional area of said gap being sufficiently small to maintain the acoustical stiffness reactance of the fluid medium within said enclosure at a value to restore said diaphragm assembly to a null position responsive to excursions thereof.

4,239,091

MUFFLER

Paulo M. Negrão, Largo do Arouche, no 252-apartment 501, Sao Paulo, Brazil

Filed Aug. 15, 1978, Ser. No. 933,889
Claims priority, application Brazil, Sep. 16, 1977, 5701149[U]
Int. Cl.² F01N 1/24, 7/16, 7/18
U.S. Cl. 181—243 **1 Claim**



1. A muffler, comprising a tubular synthetic resin body reinforced with glass fiber material said body having tapered extremities ending in short necks, an axial aluminum tube extending through said body, said tube being provided with extremities projecting outwardly from the body necks, said tube also being perforated in the section located inside the body, a sound-absorbent glass fiber material filling the internal space between said body and said aluminum tube, resilient gasket material interposed between said necks and said tube, said gaskets being adhered to the resin body material, clamps

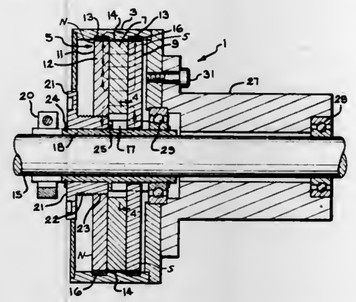
engaging around said body necks and means for tightening the clamps to retain the body parts together and to avoid leakage between the resin body and the aluminum tube.

4,239,092

ADJUSTABLE TENSIONER

Gunnar H. Janson, Dudley, Mass., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 28, 1978, Ser. No. 937,069
Int. Cl.³ F16F 15/03
U.S. Cl. 188—267 **8 Claims**



8. A magnetic tensioning device comprising a rotatable outer housing, said housing having an interior surface defining at least two radial grooves, a non-rotating shaft positioned in said housing, a magnetic assembly positioned in and spaced from said outer housing, said magnetic assembly comprising a permanent magnet, a first magnetically soft plate and a second magnetically soft plate, means securing said magnetically soft plates to opposite sides of said permanent magnet, means mounting said first plate for axial movement on said shaft, said mounting means preventing rotational movement between said first plate and said shaft, said first and second magnetically soft plates collecting and directing magnetic flux from said permanent magnet, a plurality of magnetic particles positioned between said magnetic assembly and said outer housing, said magnetic particles forming chains in the space between said magnetic assembly and said outer housing along lines of magnetic flux between said magnetic assembly and said outer housing, such chains of magnetic particles magnetically coupling said magnetic assembly and said outer housing, output means rotatably positioned on said shaft, means attaching said output means to said outer housing, and means for moving said magnetic assembly axially along said shaft to change the position of said magnetic assembly with respect to said radial grooves in said housing to vary the magnetic flux between said magnetic assembly and outer housing to in turn vary the magnetic coupling between said magnetic assembly and said outer housing whereby the resistance to turning of said outer housing and said output means is varied.

4,239,093

LUGGAGE CASE WITH BRACE

Jerry D. Eubanks, Westminster, and Charles F. Rose, Aurora, both of Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Jun. 1, 1979, Ser. No. 44,459
Int. Cl.³ A45C 13/34
U.S. Cl. 190—41 R **3 Claims**

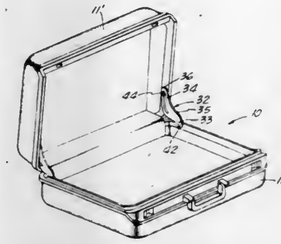
1. Apparatus for controlling the rate and extent of opening and closing a case having first and second case shell parts hinged to one another, comprising:

a plate having an elongated slot of substantially uniform width and an opening;

a first stud affixed to an inner surface of said first case shell part extending generally parallel to the hinge, which stud is rotatably received within said plate opening;

a second stud received through the slot and affixed to an inner wall of said second case shell part and terminating outwardly of said slot in an enlarged head, said second stud extending generally parallel to said first stud;

first bearing means rotatively received on the outer end of said second stud including a first portion of diameter greater than the slot width contacting the second stud enlarged head and a smaller diametral portion slidingly received within the slot;



second bearing means of diameter greater than the slot width received on the second stud with a smooth major surface facing the plate and a recessed major surface facing away from said plate; and

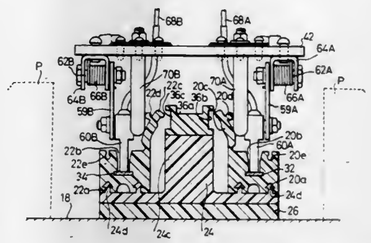
a coil spring on said second stud having parts received within the second bearing means recess and continuously resiliently urging said second bearing means against the plate to provide a resilient clamping force on the plate resisting sliding of said second stud along the slot.

4,239,094

CURRENT TRANSMITTING SYSTEM FOR TRACKWAY TYPE MOTOR VEHICLE

Hiromichi Uchiyama, Yokosuka; Eiichi Yaguchi, Yokohama; Akira Nakamura; Yoshio Maeda, both of Osaka, and Susumu Watabe, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Sumiyomo Electric Industries, Limited, Osaka, both of, Japan

Filed Jan. 3, 1979, Ser. No. 1,351
Int. Cl.³ B60M 1/34
U.S. Cl. 191—25 **32 Claims**



1. A current transmitting system comprising a bus bar mount assembly and a current collecting equipment which rides on said bus bar mount assembly to run along the same;

said bus bar mount assembly including a current carrying naked cable, an elongated body of electrically insulating flexible material having a longitudinally extending groove in which said naked cable is fixedly received, an elongated lid having first and second longitudinally extending sides, said first longitudinally extending side being integrally hinged to a section of said body so as to be swingable about said section for closing and opening said groove,

and latching means for establishing latching engagement between the second longitudinally extending side of said lid and said body on a side of the groove opposite from the section of the body to which the lid is hinged to sealingly close said groove when said lid is pressed against said body; and

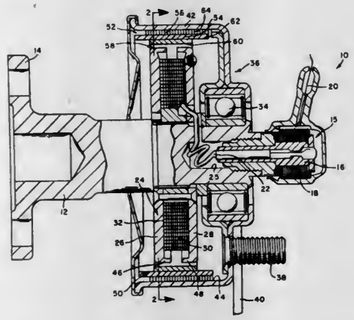
said current collecting equipment including a current collecting shoe adapted to contact said cable in said groove, a lid opending device for forcedly opening said lid upon movement of the opening device along said body in one direction thereby to enable said shoe to be in sliding contact with said naked cable in said groove, and a lid closing device for pressing the opened lid against said body upon movement of the closing device along said body in the one direction thereby to establish the latching engagement between said lid and said body.

4,239,095

SLIP BAND ELECTROMECHANICAL CLUTCH

Allen W. De Jong, Chatham, Canada, assignor to Canadian Fram Limited, Chatham, Canada

Filed Oct. 13, 1978, Ser. No. 951,103
Int. Cl.³ F16D *27/02, 47/00*
U.S. Cl. 192—84 T **21 Claims**



1. In a clutch, a pair of coaxial, relatively rotatable members comprising a driving member and a driven member, a band wrapped around one of said members, electromagnetic means carried by said one member for urging the band into driving engagement with said one member, said band including means securing said band to said other member but permitting said band to slip relative to the other member upon engagement of the clutch, said securing means thereafter providing a driving connection between said members.

4,239,096

POWER TOOL SAFETY CLUTCH

Bruno S. Smilgys, and David B. Smilgys, both of 42 Fairfield Ave., Hartford, Conn. 06114

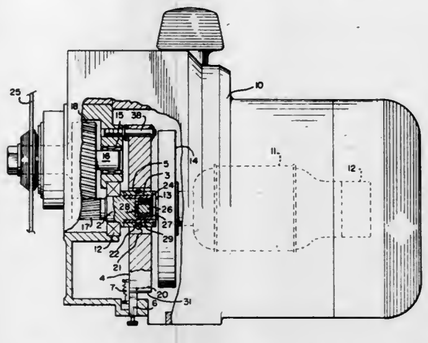
Filed Oct. 10, 1978, Ser. No. 949,898
Int. Cl.³ F16D *43/20*
U.S. Cl. 192—103 C **10 Claims**

1. A safety device for power driven tools comprising:

a motor driven spindle interconnecting a motor means and a work output means;

a wrap spring clutch interconnecting said spindle with said work output means for transmitting power therebetween; and

an inertia means operatively associated with said wrap spring clutch for initiating and effecting declutching of



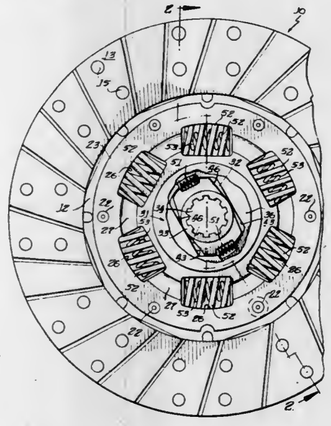
said wrap spring clutch in response to a selected movement of the power tool.

4,239,097

MULTIPLE STAGE VIBRATION DAMPER ASSEMBLY

John F. Greacen, Ypsilanti; Kerry G. Knight, Washington, and Thaddeus Lech, Jr., Roseville, all of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 14, 1978, Ser. No. 933,391
Int. Cl.³ F16D *13/68*
U.S. Cl. 192—106.2 **17 Claims**



1. A vibration damper assembly for use in a torsional coupling comprising a hub assembly operatively connected to a driven shaft, a driving plate rotatably mounted on said hub assembly, a spring retainer plate rotatably mounted on said hub assembly and secured to said driving plate for rotation therewith, said hub assembly including an inner hub and an outer hub, said inner hub having a barrel and oppositely extending flange portions having slightly converging edges tangentially intersecting said barrel and joined at the outer ends by curved edges having outwardly opening notches therein, said outer hub being sandwiched between said driving and spring retainer plates and having a central opening receiving said inner hub for limited rotation therein, said opening having a pair of parallel walls joined by a pair of curved edges complementary to the curved edges on the inner hub, each curved edge having an inwardly opening notch facing a notch in the flange portion of the inner hub, resilient means received in a pair of facing notches between said inner and outer hubs yieldably resisting

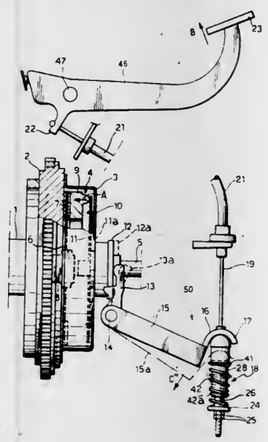
relative rotation therebetween, a plurality of circumferentially spaced aligned windows in said plates and outer hub, and at least one compression spring received within each set of windows, said relative rotation between said inner and outer hubs providing a first stage of angular displacement and said compression springs providing a second stage of angular displacement.

4,239,098

HYDRAULICALLY DAMPED AUTOMATIC PLAY COMPENSATION DEVICE FOR MOTOR VEHICLE CLUTCHES

Stefano Jacoponi, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Apr. 3, 1979, Ser. No. 26,704
Claims priority, application Italy, Apr. 12, 1978, 67809 A/78
Int. Cl.³ F16D *13/75*
U.S. Cl. 192—111 A **5 Claims**



1. Hydraulically damped automatic play compensating device for a motor vehicle clutch including:

a clutch control lever which effects a working stroke upon the application of a clutch-disengaging force thereto;

means for transmitting said force, and

a fork operable by said control lever, through said means,

wherein said play compensating device comprises, in combination:

a lever attached at one end to said fork;

means supporting said lever for pivotal movement about a pivot axis at said one end;

a hydraulic damping cylinder acted upon by the other end of said lever and filled with hydraulic fluids;

a shaft coaxial with said cylinder and slidable relative thereto, said shaft being connected by said force transmitting means to said control lever;

a piston member attached to said shaft and subdividing said cylinder into two chambers, and

flow restriction means interconnecting said two chambers,

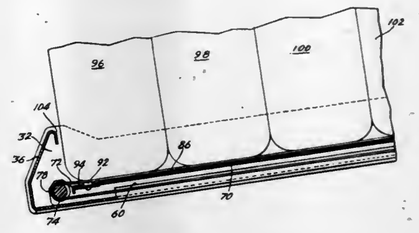
whereby, between working strokes, said cylinder is displaced relative to said shaft by an amount which compensates for wear in said clutch, the fluid pressure in said two chambers being equilibrated by flow through said restriction means, and the damping effect of said cylinder being such that, upon a subsequent working stroke, said force transmitting means transmits said force directly to said lever through said cylinder substantially without relative movement between said cylinder and said shaft.

4,239,099

AUTOMATIC FORWARD-FEED SHELF

John L. Williams, Atlanta, and Asa V. Brown, Jr., Royston, both of Ga., assignors to The Mead Corporation, Atlanta, Ga.

Filed Apr. 4, 1979, Ser. No. 26,957
Int. Cl.³ A47F *5/00*; B65G *11/00*
U.S. Cl. 193—32 **6 Claims**



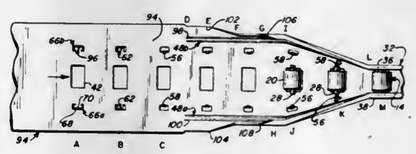
1. In a shelf having a flexible conveyor belt for supporting a plurality of articles arranged in a column and automatically feeding the articles in said column forward in a columnwise direction when the foremost article in the column is removed, at least one frictional pad located at a position underneath said conveyor belt and responsive to the presence of an article on said belt and above said position, for stopping the movement of said belt, and substantially rigid support means underlying said conveyor belt, the upper surface of said support means and the underside of said conveyor belt having a mutual coefficient of friction permitting sliding of the conveyor belt on said support means, said support means also having a recess in its upper surface, and said pad being located in said recess and having a frictional surface substantially flush with said upper surface and adapted to retard the movement of the belt by frictional engagement with the underside of the belt in response to the weight of an article located on said belt above said pad, whereby said column of articles is stopped with the foremost article located above said position.

4,239,100

PACKAGE FLOW SYSTEM

Robert L. Corey, Chicago, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Mar. 2, 1978, Ser. No. 882,731
Int. Cl.² B60G *13/11*
U.S. Cl. 193—35 R **16 Claims**



7. A package flow system, comprising:

a roller assembly including

a plurality of rollers spaced longitudinally from each other;

each of said rollers having an outer cylindrical load-supporting surface for dynamically supporting a load, a plurality of circumferentially spaced ribs extending radially inward from said cylindrical load-supporting surface, and a hub connected to said radial ribs, said hub defining a lateral axis and an axial socket extending laterally along said lateral axis, and said axial socket extending laterally outward of said cylindrical load-supporting surface;

a unitary frame assembly for rotatably supporting said rollers and including a generally channel-shaped frame

having a pair of upright side walls and an intermediate section extending between and connecting said side walls, said intermediate section positioned above said lateral axis and defining a plurality of generally rectangular roller-receiving openings spaced longitudinally from each other, each of said roller-receiving openings receiving one of said rollers and having a dimension perpendicular to said lateral axis less than the maximum diameter of the outer cylindrical load-supporting surface of said roller received in said opening, each of said side walls defining a longitudinal axis intersecting said lateral axis, each of said side walls having a longitudinal rib located beneath said longitudinal axis and having a generally U-shaped edge disposed generally beneath said longitudinal rib, and said edge having an upwardly turned flange extending generally vertically towards said intermediate section;

said unitary frame assembly including pairs of arcuate shaft sections formed from said side walls and spaced longitudinally along said side walls for rotatably supporting said rollers;

each of said pairs of arcuate shaft sections being in general horizontal alignment with each other for insertion into the axial socket of one of said rollers and comprising a first arcuate shaft section extending integrally and laterally inwardly from one of said upright side walls and a second arcuate shaft section extending integrally and laterally inwardly from the other of said upright side walls towards said first shaft section, said first and second arcuate shaft sections each having an outer surface facing generally upwardly to provide an upper bearing frame surface for said roller and said first and second arcuate shaft sections being axially spaced from each other to define an axial opening therebetween, each arcuate shaft section having the shape of an inverted U and defining an upstanding arch as viewed laterally and being tapered slightly inwardly in a downward direction toward an opposite wall, and said upper bearing surface extending greater than 180 degrees about said longitudinal axis; and

a support frame having a shelf member including rib-engaging means for snap-fitting interlocking engagement with said longitudinal ribs, and base means for engaging said U-shaped edges to support said roller assembly.

4,239,101

QUICK CHANGE APPARATUS FOR GUIDE ROLLERS

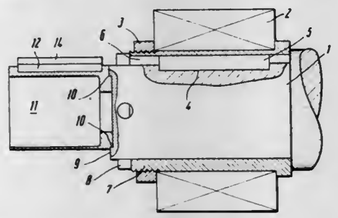
Walter Krohmann, Riegelsberg, and Ewald Gilles, Rheinberg, both of Fed. Rep. of Germany, assignors to Mannesmann Demag A.G., Duisburg, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 972,867

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757953

Int. Cl.³ B65G *39/00*

U.S. Cl. 193—37 **3 Claims**



1. In a roll mill train, including supporting shafts and roller means mounted on each of said shafts, means to align each roller means with respect to a complementary supporting shaft to facilitate placement of the roller means onto the shaft, which comprises

(a) a guide sleeve mounted to one free end of each supporting shaft,

a limited area of a portion of each guide sleeve being generally congruent with an adjacent portion of the complementary supporting shaft whereby said limited area forms a partial extension of said complementary supporting shaft, and

(c) the remaining portions of each guide sleeve being radially, inwardly offset from the remaining portions of the complementary supporting shaft whereby said remaining portions lie within the cylindrical surface defined by the imaginary projected configuration of the supporting shaft.

4,239,102

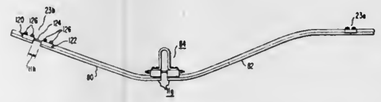
HANDRAIL APPARATUS

Henry Boltrek, Freeport, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,545

Int. Cl.³ B66B *9/14*

U.S. Cl. 198—336 **6 Claims**



1. Continuously self-adjusting handrail apparatus for use on a handrail of a transportational apparatus wherein the handrail is available to be grasped by passengers, comprising:

guide means arranged in a guide loop having first and second aligned ends,

a continuous handrail disposed on said guide means,

first and second slide block members fixed to said first and second ends, respectively, of said guide loop,

a slide bar member linking said first and second slide block members such that said first and second slide block members are slidable relative to said slide bar member,

spring means disposed to urge said first and second slide block members apart,

the loop lengths of said guide means and said handrail having a predetermined relationship wherein said spring means establishes a gap between said first and second slide block members, and maintains a tension in said handrail member, notwithstanding changes in the loop length of said handrail member over a predetermined range,

and drive means coupled to said handrail member which pushes and pulls said handrail member about said guide loop.

4,239,103

OSCILLATING FEEDING APPARATUS

Hugo Feldpausch, Wassersteige 5, 5880 Lüdenscheid, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,560

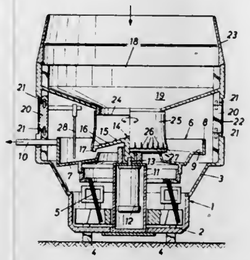
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806331

Int. Cl.³ B65G *47/12*

U.S. Cl. 198—443 **5 Claims**

1. Feeding apparatus having an oscillating cup, a housing enclosing the oscillating cup, a storage hopper on said housing, a rotatably supported conical bottom plate below said storage hopper and above said oscillating cup, a funnel leading from said storage hopper toward said bottom plate and defining therewith an annular outlet opening, means on said bottom

plate defining a spiral path, an annular flexible curtain around said funnel, extending across said annular outlet opening and



overlapping the edge of said bottom plate, and drive means for rotating said bottom plate.

4,239,104

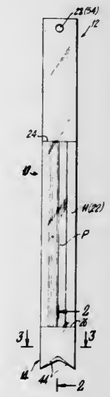
GLUED FOLDER

Harry I. Roccaforte, Western Springs, and Irvin W. Sherwood, Downers Grove, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 26, 1979, Ser. No. 60,760

Int. Cl.³ B65D *65/16, 85/68*

U.S. Cl. 206—45.33 **21 Claims**



1. A glued folder forming a generally envelope-type structure for packaging and display of an elongated product comprising:

a main display panel with top, bottom and side edges;

a lower panel hingedly connected to the bottom edge of said main display panel and disposed parallel thereto;

a side panel hingedly connected to one edge of said main display panel and disposed parallel thereto, said side panel extending from the top edge of said bottom panel to the top edge of said main display panel;

a back panel hingedly connected to the opposite edge of said main display panel and disposed parallel thereto, said back panel being adhesively connected along the inner surface thereof to the outer surface of said side and lower panels; and

said main display panel having upper and lower slots extending across the entire width and respectively spaced from the top and bottom edges thereof, with the portions of said main display panel extending between each slot and the associated top or bottom edges thereof cooperating with the back, side, and lower panels to form upper and lower closed pocket portions at the opposite ends of said folder, whereby the opposed ends of the elongated product may be received in said closed pocket portions, with the intermediate portion of said product being disposed adjacent the front surface of said main display panel, said folder thereby securely holding the product and allowing for the display of said product.

4,239,105

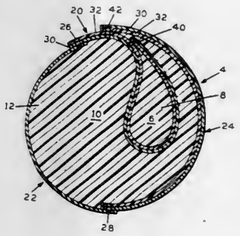
RESIN CAPSULE FOR MINING ROOF BOLTING SYSTEMS

Peter T. Gilbert, Albany, N.Y., assignor to General Electric Company, Gainesville, Fla.

Filed Aug. 2, 1979, Ser. No. 62,968

Int. Cl.³ B65D *81/32, 25/08*

U.S. Cl. 206—219 **5 Claims**



1. A multi-compartment capsule having a longitudinally extending tubular inner compartment for containing a catalyst and a longitudinally extending tubular outer campartment around said inner compartment for containing a resin composition which, when mixed and reacted with said catalyst sets and becomes a hardened mass, said capsule being formed of a composite strip having a single-ply longitudinally extending center portion with two-ply portions extending longitudinally along and heat sealed to the opposite longitudinal marginal edges of said center portions, one of said two-ply edge portions being folded back upon itself and being heat sealed to form the longitudinally extending inner compartment, the longitudinal outer edge of the other of said two-ply film strips being folded around said longitudinally extending inner compartment and being heat sealed to the outer ply of said one two-ply strip to form said outer compartment around said inner compartment.

4,239,106

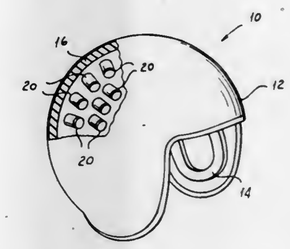
INDIVIDUALLY FITTED HELMET AND METHOD OF AND APPARATUS FOR MAKING THE SAME

Jackson A. Aileo, Carbondale, Pa., assignor to Gentex Corporation, Carbondale, Pa.

Division of Ser. No. 950,154, May 12, 1978, abandoned. This application Jan. 11, 1979, Ser. No. 2,756

Int. Cl.³ B65D *69/00;* **A42B** *3/02, 1/22*

U.S. Cl. 206—223 **1 Claim**



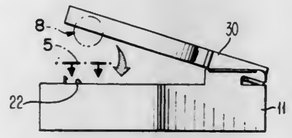
1. A kit for use in making a helmet individually fitted to the head of a wearer including an outer shell, a fixture having the shape of said outer shell and having a plurality of apertures in the region thereof corresponding to the region of the outer shell which is to receive a liner, a liner having a plurality of apertures adapted to register with said fixture apertures when

said liner is assembled in said fixture, and a plurality of spacers capable of being slidably received in said aligned apertures.

4,239,107
CARTRIDGE ASSEMBLY APPARATUS FOR TYPEWRITERS

Richard G. Boyatt, Jr., Lexington, and Donald J. Steger, Corinth, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,461
Int. Cl.³ B65D *69/00*
U.S. Cl. 206—225 **17 Claims**



1. A cartridge assembly for a typewriter, said cartridge assembly comprising in combination:
- a ribbon cartridge and a tape cartridge adapted for mating in superimposed overlapping relation to form said cartridge assembly;
- each of said cartridges having top and bottom surfaces, said bottom surfaces being positioned, when forming said cartridge assembly, in bottom to bottom relation;
- tab means projecting from the plane of one of said bottom surfaces of one of said cartridges, and means defining a slot in said tab means;
- fin means on the other of said cartridges and movable into said slot for engagement with at least a portion of said means defining said slot;
- mutually engageable means on said cartridges for limiting relative movement of said cartridges in a first direction and with respect to each other;
- a camming surface on one of said cartridges and a cam follower on the other of said cartridges, said camming surface and cam follower engageable to effect relative movement between said cartridges in said first direction until said mutually engageable means inhibit further relative motion;
- cooperating means on said cartridges to limit relative motion between said cartridges in a second direction perpendicular to said first direction, and latch means to hold said cartridges in superimposed overlapping relation.

4,239,108
VIDEO DISC CADDY

Clyde F. Coleman, Crawfordsville, and Leslie A. Torrington, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,412
Int. Cl.³ G11B *25/04*; B65D *85/30*
U.S. Cl. 206—312 **5 Claims**

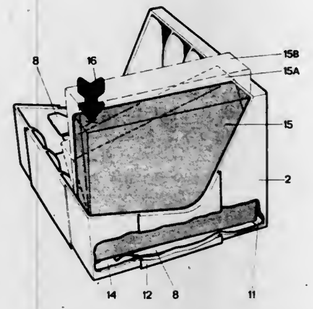


1. A protective caddy for a disc record for use with a record player; said player having an input slot through which said caddy is inserted along a path to load an enclosed record therein; said player being provided with a spine locating member, a pair of latch defeat members and a pair of spine gripper members at the end thereof remote from said input slot; said caddy comprising:
- (A) a jacket having an edge opening in communication with a record enclosing cavity; and
- (B) a substantially planar, record retaining spine having a major surface and subject to insertion into said jacket along a further path; said spine defining a first portion forming a closure for said edge opening, and a further portion for restraining planar movement of an enclosed record relative to said spine;
- said closure portion of said spine having a slot for receiving said locating member disposed in said player during arrival of said caddy at a fully inserted position in said player to locate said spine therein in the lateral direction;
- said spine being provided with a pair of latch members for releasably securing said spine to said jacket; each of said spine latch members having a free end subject to deflection along a direction substantially parallel to said major surface and perpendicular to said spine insertion path; each of said spine latch members having a protuberant element disposed near the free end thereof; each of said protuberant elements having a slanting surface remote from said free end of the respective one of said spine latch members, each of said slanting surfaces extending substantially perpendicularly to said major surface and non-perpendicularly to said spine insertion path such that engagement between said slanting surface and a portion of said jacket near said edge opening causes deflection of said spine latch member to allow insertion of said spine into said jacket; each of said protuberant elements having a square surface adjacent to said free end of the respective one of said spine latch members, and extending substantially perpendicularly to both said major surface and said spine insertion path;
- said jacket being provided with a pair of pockets for receiving said protuberant elements disposed on said spine latch members when said spine is fully seated in said jacket; each of said pockets defining a surface adjacent to said edge opening of said jacket, each of said defined surfaces being disposed substantially perpendicularly to said spine insertion path; said perpendicularly disposed surfaces of said pockets being subject to engagement with said square surfaces of said protuberant elements upon reception of the respective one of said protuberant elements into the respective one of said pockets to preclude removal of said spine from said jacket during said engagement;
- said free end of each of said spine latch members being arranged for arrival in the path of the respective one of said latch defeat members mounted in said player during insertion of said caddy into said player for effecting deflection of said spine latch members in a manner retracting said protruding elements from said pockets for freeing said spine from said jacket;
- said closure portion of said spine defining a pair of cutouts for receiving said gripper members disposed in said player in response to arrival of said caddy at said fully inserted position in said player to lock said spine to said player such that said spine having been freed from said jacket is removed therefrom, along with said enclosed record, for retention in said player during subsequent jacket withdrawal.

4,239,109
STORAGE BOX FOR SUBSTANTIALLY PARALLELEPIPEDIC TAPE AND FILM CASES

Don B. Nielsen, Vintergatan, S-502 60 Boras, and Knut J. Nielsen, Björkebacken, S-513 02 Borgstena, both of Sweden

Filed Jan. 26, 1979, Ser. No. 6,752
Int. Cl.³ B65D *85/672*
U.S. Cl. 206—387 **6 Claims**



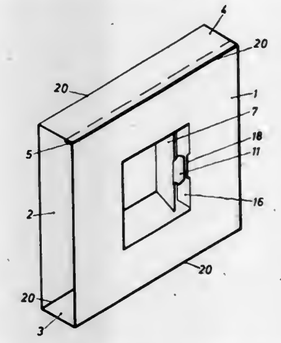
1. Storage box for substantially parallelepipedic tape and film cases, said storage box comprising a pair of parallel side walls, a front wall and a back wall parallel to each other and perpendicular to said side walls, said front and back walls being spaced apart a distance greater than the front and back walls of said case to be positioned therein, a bottom wall, a top wall spaced from the bottom wall and extending inwardly a short distance from said back wall and perpendicular thereto, said bottom wall and said top wall being arranged to receive the case therebetween, the front wall having a height from the bottom wall which is substantially half the distance from the bottom wall to the top wall, and a spring element located on the bottom wall for pressing the case towards the top wall, said spring element engaging said bottom wall adjacent said back wall and extending along a curved line toward said front wall, said spring element having a free end adjacent said front wall and spaced from said bottom wall, the relationship between the dimensions of the case and the dimensions of the storage box being such that the case can be slid under the top wall to a position between the side walls against the bias of the spring element, said spring element pivoting and biasing the case against both the front and back walls and upwards against the top wall to maintain the case in a safe storage position in the storage box, said case being removable from said storage box by applying downward pressure only on said case at a position adjacent said front wall and toward said bottom wall, whereby said free end of said spring element is moved toward said bottom wall and said case pivots toward said front wall and away from said back wall, whereby said case disengages from said top wall.

4,239,110
CONTAINER FOR PACKAGING WIRE ROLL

Peter Enke, Monheim-Baumberg; Helmut Schlickmann, Monheim; Wolfgang Kneuper, Duesseldorf; Ekkehard Frohberg, Dormagen; Arno Mink, Wuppertal, and Jürgen Weidenmüller, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 2,115
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801598
Int. Cl.³ B65D *85/67, 85/671*
U.S. Cl. 206—396 **6 Claims**

1. A container for packaging an unsupported roll of wire formed from a rectangular one-piece blank having two main side panels, a first connecting panel disposed between the two main side panels along the longitudinal direction of the blank and removably connected along two perforated folding lines to the main side panels at their lateral boundaries second connecting panel removably connected to the free lateral edge of one main side panel along a perforated folding line and a connecting strip removably connected along a perforated folding line to the free lateral edge of the other said main side panel, each main side panel having a centrally disposed opening formed by core flaps hingedly connected along one edge to the main side panels with a width equal to that of the connecting panels and having a connecting tongue hingedly connected to the free edge opposite the one edge and a connecting slit for receiving the connecting tongue of the core flap of the other main side

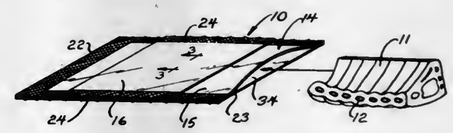


panel, the blank being erectable by infolding each of the main side panels 90° about the folding lines of the first connecting panel disposed therebetween, infolding the core flaps 90° and inserting the connecting tongues into their respective connecting slits after insertion of the unsupported roll of wire between the main side panels to define a spool therefor, infolding the second connecting panel and the connecting strip 90° about their folding lines and adhesively connecting the connecting strip to the free lateral edge of said second connecting panel defining an outer container whereby the wire can be unwound from the spool by the tearing away of the connecting panels and connecting strip along the perforated folding lines.

4,239,111
FLEXIBLE POUCH WITH CROSS-ORIENTED PUNCTURE GUARD

Roger P. Conant, Glencoe, and Raymond G. Duffy, Du Page County, both of Ill., assignors to Laminating & Coating Corporation, Schaumburg, Ill.

Filed May 21, 1979, Ser. No. 40,584
Int. Cl.³ B65D *25/36, 81/20, 85/00*
U.S. Cl. 206—484 **13 Claims**



1. A puncture-resistant pouch comprising: a flexible bag formed of synthetic resin material and defining an outer surface; and a puncture guard having an area less than that of the guard and being defined by grain-oriented, laminated synthetic resin sheets bonded to each other in cross-oriented relationship, an inner one of said sheets being bonded to said outer surface whereby the puncture guard defines an outermost portion of the pouch.

4,239,112

PLUG FOR ELIMINATING TROUBLESOME ZONES IN WELLS

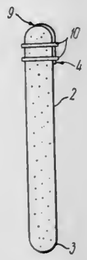
Viktor F. Rogov, ulitsa Garibaldi, 30, korpus 2, kv. 70, Moscow; Nikolai K. Lipatov, ulitsa Mekhanizatorov, 1, kv. 4, Apatity Murmanskoi oblasti; Gennady V. Patrushev, ulitsa Dmitria Donskogo, 27/3, Novosibirsk; Ruben A. Tatevosian, ulitsa Gorkogo, 4, kv. 60, and Mikhail Y. Titov, ulitsa Kominterna, 34/6, kv. 83, both of Moscow, all of U.S.S.R.

Filed Jun. 11, 1979, Ser. No. 47,249

Claims priority, application U.S.S.R., Jul. 6, 1978, 2631353

Int. Cl.³ B65D *83/00, 77/10*

U.S. Cl. 206—525 **3 Claims**



1. A plug for insertion into a well comprising an elastic waterproof envelope defining a cylindrical chamber for accomodating a plugging agent, said envelope having a closed bottom and an open top, a plugging agent comprising a dry quick-setting mixture packed into said chamber to a level below said open top to define a free envelope top portion, said top portion being folded over substantially at said level and covering a part of the outer surface of said envelope below said level and at least one elastic retaining ring circumferentially surrounding said envelope over said top portion, said retaining ring tightly closing said open top of said envelope while allowing passage therethrough of pressurized air from within said chamber.

4,239,113

COMPOSITION FOR THE PREPARATION OF BONE CEMENT

Albert Gross, and Werner Ege, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Bad Homburg, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,425

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724814

Int. Cl.³ B65D *69/00*

U.S. Cl. 206—568 **13 Claims**

1. An uncured bone cement composition which when cured forms a bone cement comprising between about

(i) 15% and 75% by weight of a mixture of inorganic materials consisting essentially of between about 90 and 99% by weight of a powdered bio-active glass ceramic of a particle size between about 10 and 200 micrometer,

said bio-active glass ceramic consists essentially of between about 20 and about 60% by weight of SiO_2, between about 5 and 40% P_2O_5, between about 2.7 and 20% Na_2O, between about 0.4 and 20% K_2O, between about 2.9 and 30% MgO, and between about 5 and 40% CaO,

and between about 5 and 10% by weight of vitreous mineral fibers between about 2 and 5 mm long, admixed with

(ii) a mixture of copolymers of methylmethacrylate and methyl acrylate.

8. The composition of claim 1 which also contains a X-ray contrast means.

4,239,114

CONTINUOUS ASSEMBLIES OF POSTAL CORRESPONDENCE UNITS

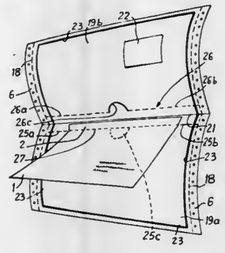
Andre M. J. Denay, Chevilly Larue, France, assignor to Société Herve & Fils S.A., Paris, France

Filed Sep. 3, 1976, Ser. No. 720,398

Claims priority, application France, Sep. 9, 1975, 75 27578

Int. Cl.³ B65D *27/10, 27/34*

U.S. Cl. 206—610 **5 Claims**



1. Continuous assembly of mailers with incorporated documents, said assembly comprising a continuous base strip divided into panels, each panel being bounded by two transverse lines of weakness providing for the accordion-folding of said continuous strip, longitudinally extending drive means along both of the side edges of said base strip enabling said strip to be driven in a printing machine, at least some of the panels having incorporated document means comprising leaf means each having a top flange and a detachable portion defined by a tear line of perforations, each leaf flange being fastened by glueing at the top of the panel and transversely of the base strip so as to be perpendicular to the direction of movement of the base strip through a printing machine, said assembly being arranged to form a plurality of sealed folders by glueing, wherein the folders are sealed after their passage through the printing machine, a tear line of perforations on said base strip extending transversely between said longitudinally extending drive means and arranged to coincide with the tear line defining said detachable portion, and wherein each panel of the base strip is divided into two flaps foldable upon one another on a fold line constituting the longitudinal median of the panel concerned, and adhesive areas extending parallel to each of the four sides of each panel and at a short distance from said sides on the front of the strip and the incorporated documents means on each panel is attached to one of the flaps while the other flap is provided with a window arranged to overlie the zone of the first element of the incorporated document means which receives the address of the addressee by direct impression of the printing machine.

4,239,115

FOLDING ICE-CREAM CARTON AND CARTON BLANK THEREFOR

Thomas W. Froom, Pittsford, N.Y., assignor to Rendoll Paper Corporation, Rochester, N.Y.

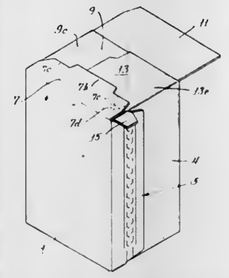
Filed Oct. 17, 1977, Ser. No. 842,747

Int. Cl.² B65D *5/70*

U.S. Cl. 206—611 **27 Claims**

1. An integral blank for forming a top-opening carton having an elongate front panel, an elongate bottom panel, an elongate rear panel, an elongate cover panel, and an elongate front cover sealing flap; said panels being articulated to one another in the order named, and said front cover sealing flap being articulated to said cover panel, by horizontal parallel score lines, and said front cover sealing flap being adapted to overlie said front panel and to be sealed thereto to form said panels into a tube having a rectangular transverse cross section in opened-up position and into a collapsed parallelogram in the folded-together position; said front and rear panels having

laterally-projecting, inner end wall-forming flaps articulated thereto by vertical score lines, each of the inner end wall-forming flaps, in the erected carton, being adapted to overlap the other inner end wall-forming flap and overlie it on only one side thereof; said bottom panel having a laterally-projecting, outer end wall-forming flap articulated to a side thereof by a vertical score line and adapted to be bent up to a position to overlie said inner end wall-forming flaps; said cover panel having a laterally-extending side cover flap articulated to a side edge thereof by a vertical score line adapted to overlie the inner end wall-forming flaps when the carton is erected; and the front cover flap having a glue-flap extension articulated to a side edge thereof by a vertical score line, which extension is adapted to be glued to said side cover flap to form, with said cover panel, a cover hinged to said rear panel and adapted to overlie the side and front panels of the assembled carton; the improvement in which there is a tuck-in tab at the edge of said side cover flap, which tab extends over the greater portion of the edge of, but is inset from the ends of the side cover flap from which it extends and from the front and rear panels of the erected carton, thereby leaving, along the edges of each said



inner end wall, a narrow strip for the application of strips of glue for fastening the outer end wall-forming flap thereto while leaving sufficient space between the glue strips for the insertion of the tuck-in tab between the inner and outer end walls, in which said other inner end wall-forming flap has a free edge extending in a straight line all the way across its face parallel to the score line which joins it to the panel from which it projects whereby, in the erected carton tube, the overlying inner end wall-forming flap lies flat against the face of said other inner end wall-forming flap all the way from said top panel to said bottom panel and in which said glue-flap extension is attached to the end of said front cover flap adjacent said side-cover flap by a vertical score line offset sufficiently to permit the glue-flap extension to overlie the side-cover flap in the erected carton and to be glued thereto by an extension of the glue strip which fastens the outer end wall-forming flap to the overlapping inner end wall-forming flap adjacent to and parallel to the side edge of the front panel whereby, in the assembled carton, the side cover flap, when the tuck-in tab thereof is inserted beneath the outer end wall-forming flap, lies flat against the overlying inner end wall-forming flap in surface to surface contact therewith throughout the length thereof.

4,239,116

APPARATUS FOR DIVERTING ARTICLES

Bernard C. Eisenberg, Rockaway, and John C. Walz, Bloomfield, both of N.J., assignors to Solbern Corp., Fairfield, N.J.

Filed Oct. 27, 1978, Ser. No. 955,202

Int. Cl.³ B07C *9/00*

U.S. Cl. 209—523 **10 Claims**

1. An apparatus for diverting articles from a conveyor moving said articles in a line along a predetermined path, the apparatus comprising:

a diverting station located adjacent the predetermined path;

at least one additional conveyor for moving articles along at least one additional path diverted from said predetermined path and extending from said diverting station;

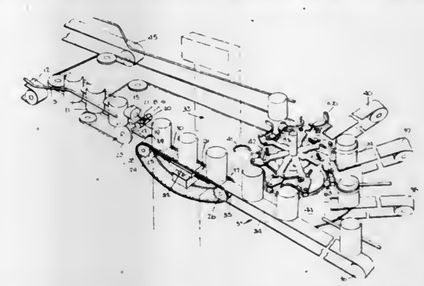
means for generating a different diverting signal corresponding to each additional conveyor;

a plurality of devices, each of which is adapted to engage a different article as it passes the diverting station for diverting the engaged article from the first conveyor;

means for supporting the engaging devices in spaced relation to each other for movement along a closed path, the diverting station and the at least one additional conveyor being located along said closed path;

means for driving the supporting means in synchronism with the conveyor extending in a predetermined path in order that an engaging device arrives at the diverting station simultaneously with the arrival of each article on the conveyor;

enabling means at an enabling station located along said closed path at a predetermined distance ahead of the diverting station and responsive to a diverting signal from the diverting signal generating means for enabling an engaging device as the device passes said enabling station to be actuated for selectively engaging an article on the



conveyor when the engaging device and the article meet at the diverting station to selectively divert the engaged article to one additional conveyor corresponding to said diverting signal;

means for actuating each enabled engaging device to divert the article corresponding thereto at the diverting station; and

means for releasing said article from said engaging device at the additional conveyor corresponding to the diverting signal, wherein

each engaging device comprises an arm pivotally mounted on said support means for movement between a first position in which the arm is free of engagement with the article at the diverting station and a second position in which the arm can engage the article to divert it from the conveyor, and wherein

said enabling means comprises means for biasing each arm toward the first position; a cam track extending from adjacent the enabling station to adjacent the additional conveyor; and a cam track follower means attached to each arm, the follower means when in contact with the cam track pivoting the arm to said second position between the diverting station and the additional conveyor.

4,239,117

HIGH SPEED DOCUMENT SORTING MEANS

Clement R. Konars, Glen Cove; Emanuel Quinci, Dix Hills, and Mario Vascotto, Bayville, all of N.Y., assignors to Halm Instrument Co., Inc., Glen Head, N.Y.

Filed Feb. 1, 1977, Ser. No. 764,764

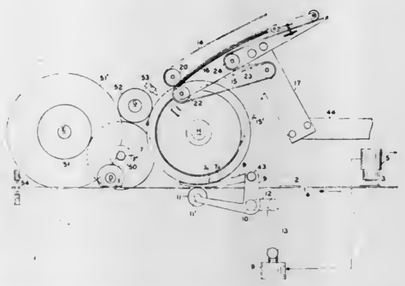
Int. Cl.³ B07C *5/00*

U.S. Cl. 209—553 **2 Claims**

1. Document processing means comprising,

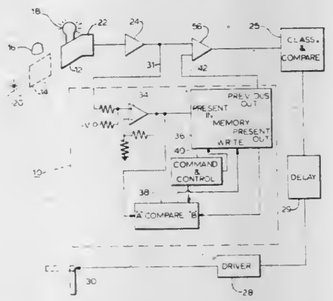
means for guiding a plurality of documents along a path at high speed,

means mounted along said path to detect identifiable documents,
a magazine mounted to receive the detected documents,
and vacuum means mounted to remove the detected documents from said path to said magazine,
the vacuum means comprising a vacuum wheel mounted a predetermined spacing over said path, said vacuum wheel having a surface speed equal to the high speed document speed, a solid wheel movably mounted below said vacuum wheel and below said path,



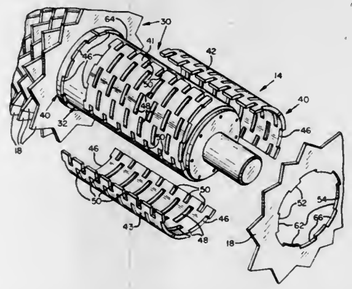
and means responsive to the detecting means to move said solid wheel up into contact with said vacuum wheel when it is desired to remove a document moving at high speed path,
a curved top guide pivotally mounted under said vacuum wheel, said top guide normally separating documents from said vacuum wheel, and means to lift said top guide in synchronism with said solid wheel so that the vacuum wheel can remove documents from said path.

4,239,118
SORTING APPARATUS HAVING AUTOMATIC NULLING ARRANGEMENT
James F. Lockett, Houston, Tex., assignor to Geosource Inc., Houston, Tex.
Filed Feb. 3, 1978, Ser. No. 874,780
Int. Cl.³ B07C 5/342
U.S. Cl. 209—581 **13 Claims**



1. In an apparatus for sorting articles having reflectance characteristics within a predetermined range of reflectances, the sort being based upon the intensity of light reflected from each article as detected against a background having a reflectance below the predetermined range of reflectances, the apparatus including a viewer for viewing an area through which the articles being sorted pass and for generating an electrical signal functionally related to the intensity of light reflected from each article and an amplifier operatively coupled to the viewer for amplifying the electrical signal, the amplifier being susceptible to d.c. offset and temperature drift, the improvement comprising:
a nulling arrangement associated with the amplifier and operable while articles are passing in spaced relation to one another through the area viewed by the viewer for correcting the effects of amplifier d.c. offset and temperature drift by generating and applying an electrical correction signal functionally related to the difference between a predetermined reference signal representative of light reflected from the background and the lowest electrical classification signal output from the viewer during a predetermined sample time period, said sample time period being longer than the time required for an article to pass through the viewed area.

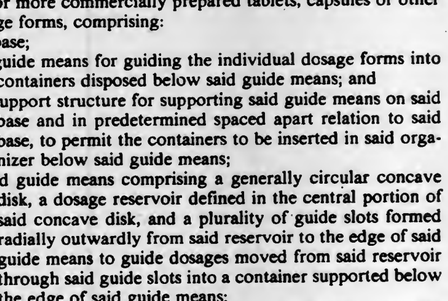
4,239,119
DISC SEPARATOR
Franz Kroell, 13405 NW. Greenwood Dr., Portland, Oreg. 97229
Filed Apr. 23, 1979, Ser. No. 32,274
Int. Cl.² B07C 9/00
U.S. Cl. 209—672 **7 Claims**



1. In a disc separator having at least one cylindrical shaft and a plurality of annular separator discs received on said shaft,
retainer means for retaining said discs, said retainer means comprising an annular sleeve member mounted exteriorly on said shaft, said annular sleeve member comprising a plurality of arcuate segments, said arcuate segments having spaced rings of arcuate circumferentially-extending slots extending therethrough,
said discs having internal splines extending into the slots.

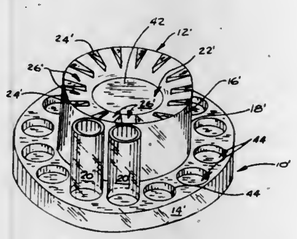
4,239,120
DEVICE FOR THE BUNKERING AND ASSORTED FEEDING OF SMALL PARTS
Klaus Stecklum, and Norbert Grief, both of Aachen, Fed. Rep. of Germany, assignors to Rhein-Nadel Automation Gesellschaft mit beschränkter Haftung, Aachen, Fed. Rep. of Germany
Filed Aug. 24, 1979, Ser. No. 69,663
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837419
Int. Cl.³ B07C 5/12
U.S. Cl. 209—682 **6 Claims**

1. In a device for the bunkering and sorted feeding of small parts, particularly to processing machines, by which the small parts are removed from a bunker space in the bottom area of the bunker, which bunker space is refillable from the top, and via an intermediate inserted lifting means are fed into an inlet prechamber of a sorting stretch section, the latter being formed for example in the shape of a vibrating conveyor, the improvement comprising
a container having an upper longitudinal edge and defining a bunker, the bunker having a bunker space,
the lifting means and the sorting stretch section are accommodated in said container,
means for partitioning said chamber into a subspace partitioned from the bunker space and defining a bunker outlet opening communicating therebetween, a bunker outlet direction thereby being defined,
said lifting means for conveying the small parts rising upwardly in a direction transversely to the bunker outlet opening,
said lifting means being arranged in said subspace of said container,



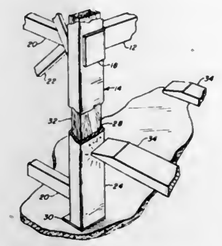
said lifting means having an upper end thereof ending in front of the inlet prechamber of said sorting stretch section,
said sorting stretch section extending on an upper longitudinal edge of said container opposite to the bunker outlet direction.

4,239,121
VITAMIN ORGANIZER
Martin Hodes, 53-54 207th Street, Bayside, N.Y. 11364
Continuation-in-part of Ser. No. 931,170, Aug. 4, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,561
Int. Cl.³ B07C 7/00
U.S. Cl. 209—703 **1 Claim**



1. A vitamin organizer for quantizing, in individual containers, complete nutritional dosage requirements in the form of one or more commercially prepared tablets, capsules or other dosage forms, comprising:
a base;
a guide means for guiding the individual dosage forms into containers disposed below said guide means; and
a support structure for supporting said guide means on said base and in predetermined spaced apart relation to said base, to permit the containers to be inserted in said organizer below said guide means;
said guide means comprising a generally circular concave disk, a dosage reservoir defined in the central portion of said concave disk, and a plurality of guide slots formed radially outwardly from said reservoir to the edge of said guide means to guide dosages moved from said reservoir through said guide slots into a container supported below the edge of said guide means;
said base comprising a generally circular disk having sockets formed therein to receive and hold the containers into which dosages are to be delivered, and sockets being disposed circumferentially around said base and generally below the end of said guide slots.

4,239,122
REINFORCED STORAGE RACK
Herbert H. Klein, Arlington Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.
Filed Mar. 2, 1978, Ser. No. 882,733
Int. Cl.³ A47F 5/00
U.S. Cl. 211—182 **18 Claims**

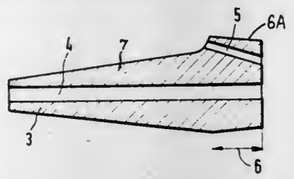


1. A reinforced storage rack, comprising:
a plurality of composite generally upright post assemblies spaced from each other in general vertical parallel relationship;
a plurality of composite generally horizontal beam assemblies spaced from each other in general horizontal parallel relationship;
connector means for connecting said composite beam assemblies to said composite post assemblies;
each of said composite post assemblies including a generally upright tubular metal post having an interior wall defining a core-receiving opening;
each of said composite beam assemblies including an elongated generally horizontal tubular metal support beam having an interior wall defining a core-receiving opening; and
at least one of said core-receiving openings having an impact and deflection resistant, substantially solid interior wooden core fixedly disposed therein which substantially spans across said core-receiving opening;
said impact and deflection resistant interior wooden core enhancing the strength and load-carrying capacity of said reinforced storage rack in an amount substantially greater than the strength of the metal support beams and posts alone and providing a reinforced storage rack for substantially resisting forklift impact, bending and excessive deflection under load.

4,239,123
RELEASABLY FIXED MOUTHPIECE AS DEVICE FOR DRINKING FROM A CONTAINER
Ludwig Lang, and Ortulf G. Lang, both of Zimmerstrasse 10-12, 61 Darmstadt, Fed. Rep. of Germany
Filed Apr. 16, 1979, Ser. No. 30,456
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817199
Int. Cl.³ A47G 21/18
U.S. Cl. 220—90.6 **1 Claim**

1. In a mouthpiece which can be releasably fixed to a container which is filled with a drinkable liquid, said container having a tear-open closure slot to thereby prevent contact by the user's mouth with said container, the improvement comprising wherein said mouthpiece has a mounting portion thereon at one end conforming to the shape of said slot in said container and a mouthpiece end at the other end, said mounting portion having an inclined external wall surface converging toward the central axis of said mouthpiece and in a direc-

tion toward said one end of said mouthpiece, the peripheral dimension of said mounting portion at the end of said inclined wall surface being less than the peripheral dimension of said slot in said container, said peripheral dimension of said mounting portion at the end adjacent said mouthpiece end being greater than said peripheral dimension of said slot in said container, said mounting portion being received in said slot and in sealing engagement with the inwardly facing peripheral wall surface of said slot, wherein said mouthpiece has a main opening extending the entire length and through the central portion



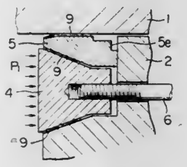
of said mouthpiece, wherein a laterally extending, short opening, separate from said main opening, is provided through said mounting portion, the ends of said short opening exiting from said mounting portion at said one end and at the juncture between said mouthpiece end and said mounting portion, wherein said slot is generally triangular in shape having a base and an apex, wherein said mounting portion is triangularly shaped also having a base and an apex alignable with said base and said apex in said slot, said short opening extending through said mounting portion adjacent said apex on said mounting portion.

4,239,124

FLUID-TIGHT CLOSURE APPARATUS

Hiroshi Inouye, Minorimachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 20, 1978, Ser. No. 952,990
Claims priority, application Japan, Oct. 28, 1977, 52/128686
Int. Cl.³ B65D *53/04, 39/08*
U.S. Cl. 220—240 **16 Claims**



1. A flight-tight closure apparatus for providing a fluid-tight seal between an inner peripheral surface of a cylindrical bore in an enclosure receiving therein a high-pressure fluid and an outer peripheral surface of an end closure wall held in said cylindrical bore, comprising:

said end closure wall including a pressure-receiving surface receiving the internal fluid pressure of the high-pressure fluid within said enclosure and a conical surface of the outer peripheral surface of said end closure wall adjacent to said pressure-receiving surface thereof, said conical surface converging toward said pressure-receiving surface;

a pressurizing ring fitted around the outer peripheral surface of said end closure wall adjacent to said pressure-receiving surface thereof for a small axial displacement, said pressurizing ring including a pressure-receiving surface in direct contact with the high-pressure fluid within said enclosure so as to be subjected to the internal fluid pressure and having an area large enough to derive a required sealing pressure from the internal fluid pressure, and outer and inner conical surfaces for producing, when said pressurizing ring is moved axially by said internal fluid pressure, a radial force acting as the sealing pressure, said inner conical surface of said pressurizing ring cooperating with said conical surface on said end closure wall to define a sealing area therebetween;

a seal ring disposed between said outer conical surface of said pressurizing ring and said inner peripheral surface of said cylindrical bore with sealing areas defined between said seal ring and said outer conical surface of said pressurizing ring and between said seal ring and said inner peripheral surface of said cylindrical bore, respectively; and

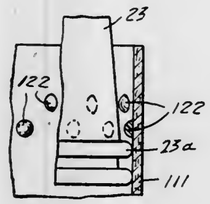
means for imparting an initial sealing surface pressure, through the axial displacement of said pressurizing ring toward said end closure wall, to said sealing areas between said outer conical surface of said pressurizing ring and said seal ring, between said inner peripheral surface of said cylindrical bore and said seal ring and between said conical surface of said end closure wall and said inner conical surface of said pressurizing ring.

4,239,125

CUP DISPENSING APPARATUS

Thomas D. Pawlowski, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 12, 1979, Ser. No. 3,087
Int. Cl.³ A47F *1/06*
U.S. Cl. 221—65 **31 Claims**



25. Cup dispensing apparatus comprising: a sleeve of flexible and resilient material for containing a stack of nested cups, said sleeve including at least one set of a plurality of generally axially extending circumferentially spaced wall defining strips of uniform length; circumferentially aligned means intermediate ends of said strips defining weakened foldable regions; and detent means comprising beads of hot melt adhesive disposed toward one end of and adherent to the inner surface of said sleeve, said beads being circumferentially spaced about the sleeve in at least one substantially circular row for engagement by the rim of a cup to retain said stack of nested cups in said sleeve, said sleeve being collapsible by folding of said strips about said weakened foldable regions and about ends thereof upon forcibly urging ends of said sleeve relatively toward one another as cups are removed past said detent means, from said stack, thereby to maintain engagement of said detent means with a cup rim.

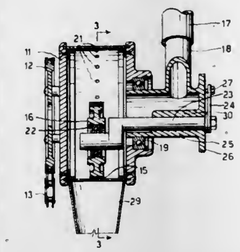
4,239,126

SEED SOWER HAVING APERTURED PICK-UP MEMBER

George M. Dobson, 293 Clanfield Rd.; Donald T. Zerner, 108 Hyde St., both of North Rockhampton, Queensland, Australia (4701), and Austin J. Dobson, 4 West St., Rockhampton, Queensland, Australia (4700)

Filed Jun. 1, 1979, Ser. No. 44,581
Claims priority, application Australia, Nov. 30, 1977, PD2610; Jan. 16, 1979, PD7373
Int. Cl.³ A01C *7/04*
U.S. Cl. 221—211 **8 Claims**

1. A seed sower including an apertured driven pick-up member in the form of a rotatable drum having spaced apertures in communication with a suction means and which apertures move through seed storage means in such manner that single seeds are picked up at the apertures by suction and held over each aperture and carried to a discharge locality and released for planting, characterized in that the pick-up member is hollow and is provided with an internal sealing member having an exterior surface which contacts the interior of each filled aperture adjacent the discharge locality thereby sealing off the suction and allowing each seed to travel to the discharge locality, said internal sealing member comprising a rotatable roller having a rotational axis which is spaced from the rotational axis of said drum, said roller being provided with a plurality of outwardly extending tines on the exterior surface thereof, each of said tines being arranged to project through an adjacent aperture of the rotatable drum and thereby push the held seed away from its respective aperture to the discharge locality.

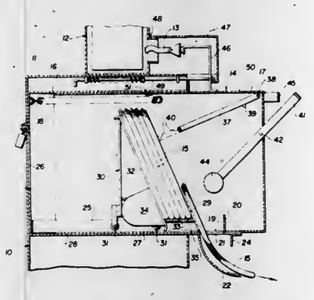


4,239,127

GRAVITY ASSISTED NEWSPAPER VENDING MACHINE WITH CUSTOMER-OPERATED NEWSPAPER LIFT DEVICE

Walter K. Owens, P.O. Box 1032, Crestview, Fla. 32536

Filed Feb. 26, 1979, Ser. No. 14,920
Int. Cl.³ B65G *59/08*
U.S. Cl. 221—259 **10 Claims**



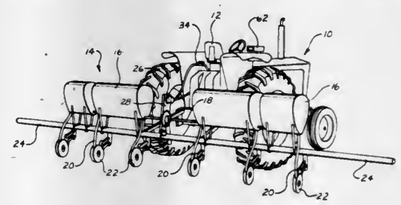
1. A newspaper vending machine comprising a stable support, a coin mechanism on said support including a control element released for movement when proper coins are placed in the mechanism, a storage compartment for newspapers on the support including a fixed box-like housing section having an open end and a movable box-like housing section telescoped within the fixed housing section and having a connection with said control element, spring means biasing the movable housing section to a retracted position in the fixed housing section, the fixed and movable housing sections having newspaper outlet openings in their bottoms adapted to register when the movable housing section is extended from the fixed housing section to a newspaper dispensing position, supporting means for an inclined stack of newspapers in the fixed housing section including a forward abutment plate to lap the lower edge portion of a forwardmost newspaper in the stack, a rear rest plate for the stack, and power means to advance the rest plate toward the abutment plate automatically as each forwardmost newspaper is dispensed through said outlet openings, and manual means on the movable housing section to lift each forwardmost newspaper in the stack and release its lower edge portion from behind the abutment plate and to shift the movable housing section to an extended newspaper dispensing position with said outlet openings in registry.

4,239,128

PRODUCT DISPENSING MEASURING DEVICE

Russell D. Longnecker, P.O. Box 731, Mt. Vernon, Wash. 98273

Filed Apr. 20, 1979, Ser. No. 31,842
Int. Cl.³ B67D *5/24*
U.S. Cl. 222—1 **18 Claims**



10. An apparatus especially adapted to measure the rate of rotation of an apparatus such as an auger to dispense agricultural products, said apparatus comprising,

a. a housing structure,

b. a shaft rotatably mounted to said housing structure so as to be permitted to rotate about a non-linear longitudinal axis relative to said housing structure,

c. a pick up means fixedly mounted to said shaft and having plurality of equally spaced radially outwardly projecting teeth on a circumference thereof, said tooth means following a rotational path as said shaft rotates,

d. mounting means rotatably attached to said shaft and directly mounted thereto independent of said housing structure at a location adjacent to said pick-up means so as to maintain a substantially constant position relative to said shaft and said pick-up means as said shaft rotates and,

e. pick-up counting means affixed to said mounting means positioned adjacent said rotational path to measure rate of revolution of said pick-up wheel means as said pick-up wheel means rotates with said shaft.

4,239,129

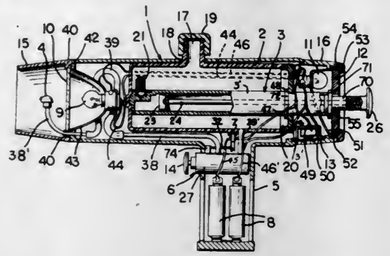
WATER PISTOL AND/OR FLASHLIGHT STRUCTURE

Gary F. Esposito, 5862 Lexington Ave., Portage, Ind. 46368

Filed Nov. 29, 1978, Ser. No. 964,680
Int. Cl.³ F41B *9/00*
U.S. Cl. 222—79 **35 Claims**

1. A toy comprising an elongated housing having a chamber therein for a liquid, a pump including a piston having an exposed rod end extending rearwardly of said toy facilitating

manual operation for building up an appreciable amount of pressure in said chamber for ejecting a stream of liquid there-



from an appreciable distance substantially forwardly of said toy, and means for controlling the ejection.

4,239,130
OIL CADDY
Lawrence J. Altadonna, 2859 Gatling Dr., St. Louis, Mo. 63129
Filed Apr. 18, 1979, Ser. No. 31,174
Int. Cl.³ B65B *39/00*; B67B *7/24*
U.S. Cl. 222—131 **2 Claims**



1. Apparatus for storing a cylindrical can container of oil or the like on a motor vehicle, comprising

a canister having an open upper end and being of such internal width as to accept and support a can container inserted through the open upper end, and being of such height that a portion of such can container so supported will extend above the canister upper end,

mounting bracket means, formed in a vertical plane, to mount the canister to a motor vehicle, and

a funnel-like member having a larger receiving end including means for mounting to the open upper end of the canister, a smaller opposite discharging end terminating in a spout, and an intermediate tapered wall portion,

said intermediate tapered wall portion having, radially inward of the means for mounting to the canister and spaced toward the opposite discharging end of the funnel, means to graspingly engage the end of such can container, together with

removable stopper means to close the spout.

4,239,131
SELF-PRIMING LIQUID DISPENSER
Ken Emert, 17215 SW. 85th Ave., Miami, Fla. 33157, and Dan Rogers, 2910 SW. 120th Rd., Miami, Fla. 33155
Filed Nov. 28, 1977, Ser. No. 855,198
Int. Cl.³ G01F *11/02*
U.S. Cl. 222—135 **4 Claims**

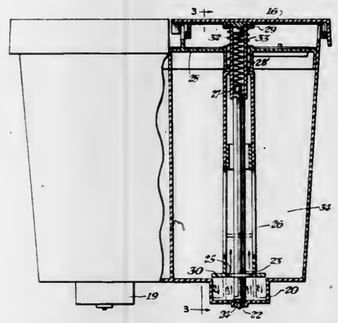
1. A liquid dispenser, comprising:

a container having a first opening in it through which liquid may be added to said container, a second opening in it through which liquid may be dispensed from said container, and a third opening in the top of said container,

a rod shaped member disposed within said container having a distal end capable of blocking said second opening,

a circularly disc shaped member connected to and extending perpendicularly from said rod near said distal end,

a first hollow cylindrically shaped member which extends the length of said container, the internal circumference of said first cylindrically shaped member being nearly equal to the circumference of said disc, said circularly disc shaped member slidable within said first hollow cylindrically shaped member,



a hollow cylindrically shaped extension connected to said first cylindrically shaped member, said extension movably protruding out said third opening of said container, the proximal end of said rod shaped member slidable within said hollow extension,

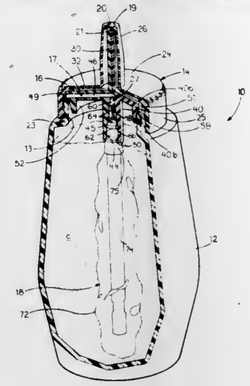
a flat circularly shaped plate extending perpendicularly and outwardly from the distal end of said first cylindrically shaped member,

a second cylindrically shaped member surrounding said second opening, said second member having an internal circumference equal to the external circumference of said plate, said distal end of said first cylindrically shaped member slidable within said second cylindrically shaped member.

4,239,132
APPARATUS FOR FACILITATING INFLOW THROUGH CLOSURE THREADS OF DISPENSER
John J. Mueller, Woodbury, Minn., and Glenn L. Beall, Gurnee, Ill., assignors to Containaire, Inc., Cleveland, Ohio
Filed Oct. 31, 1978, Ser. No. 956,236
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—212 **17 Claims**

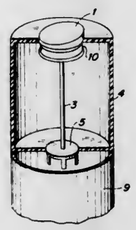
14. A member for forming a one-way inlet conduit for a dispenser, comprising a unitary annular support portion constructed to form a seal ring between a closure and a container about an opening of the container, said annular support portion being relatively narrow in the radial direction to provide a large central passageway through the member, and including a circular locating flange inset peripherally, a conduit portion defining an internal passageway within the member and extending from said annular portion inward beyond the annular portion, with an opening at the outer periphery of the annular support portion and at an inner end of the conduit portion

located centrally of the annular support portion, and a one-way valve in the conduit portion inwardly of the annular support



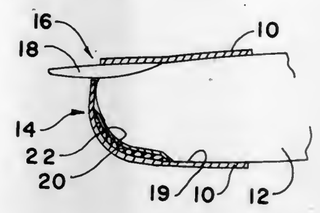
portion limiting flow through the passageway to a direction inwardly from the opening of the support portion.

4,239,133
METERED DISPENSERS
Joseph R. Turnage, P.O. Box 1091, Morehead City, N.C. 28557
Filed May 22, 1978, Ser. No. 908,368
Int. Cl.³ B65D *47/06*
U.S. Cl. 222—476 **1 Claim**



1. A dispenser for metering a fluid product comprising a product portion chamber, an upper valve member including a valve seat at the upper and lower edges thereof disposed in an opening at one end of the portion chamber, said upper valve member having a discharge passageway extending therethrough between the upper and lower valve edge seats and terminating above the upper valve edge seat, a lower valve member disposed in a second opening at the opposite end of the portion chamber, a plurality of posts extending from the lower valve member for centering the same in the second opening, a valve rod connecting the upper and lower valve members such that when said upper valve member discharge passageway is sealed the second opening and lower valve member are in an open position to facilitate filling the portion chamber and when the second opening is closed by the lower valve member the upper valve member discharge passageway is open permitting the portion chamber product to be dispensed.

4,239,134
FLEXIBLE THIMBLE
Carole Joy, 144 Arcadia Ave., Santa Clara, Calif. 95051
Continuation of Ser. No. 570,261, Apr. 21, 1975, abandoned.
This application Jun. 11, 1976, Ser. No. 695,209
Int. Cl.² D05B *91/04*
U.S. Cl. 223—101 **1 Claim**



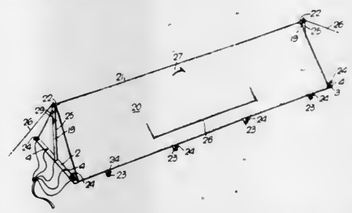
1. A thimble for use in sewing with a needle comprising:

(a) a tapered tubular shell formed from a flexible material, said shell conforming to the shape of a finger inside said shell and sensation to touch being maintained with the finger from needle pressure communicating with said shell, and said shell having a closed end thereof, said closed end having an opening therein over an annular section of the closed end for providing access for a fingernail;

(b) a protective means disposed in said closed end of said shell for preventing penetration of sharp objects, said protective means being substantially impenetrable to sharp objects and being substantially oval in shape such that said protective means covers only the ball portion of the finger tip inside said shell; and,

(c) means for securing said protective means against an inside surface of said shell wherein said means for securing said protective means comprises a flexible fabric material.

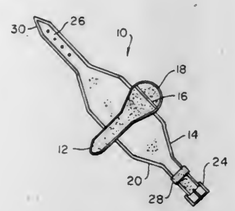
4,239,135
MULTIPURPOSE RUCKSACK
Francis T. Armstrong, 67 Station Rd., Banchory, Kincardineshire, Scotland
Filed Aug. 13, 1979, Ser. No. 66,293
Int. Cl.³ A47G *9/00*
U.S. Cl. 224—154 **1 Claim**



1. A multipurpose rucksack comprising an outer surface which has an inner lining which can be erected into the form of a tent having a ridge with the outer surface as the undersurface of the tent, the outer surface having a pocket to fit over a conventional frame which can be strapped to a wearer and also having means for receiving spacer bars for supporting the erected tent, reinforced margins at the ends of the outer surface, a plurality of cords attached at spaced apart locations along each margin and joined to a length of stout rope, and two spacer bars each provided with spaced apart slots, the spacer bars being alternatively useable with guy ropes to support the ends of the ridge when the tent is pitched on the ground and with the cords inserted in the slots to maintain the margins in a substantially straight condition when the tent is hung by means of the stout ropes in the manner of a hammock clear of

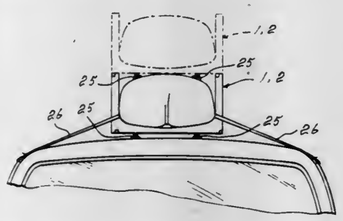
the ground between two spaced apart supports and the ends of the ridge are supported simply by guy ropes.

4,239,136
KEY BAND
Edward J. Godwin, 9609 Grandville, Detroit, Mich. 48228
Filed May 7, 1979, Ser. No. 36,784
Int. Cl.³ A45C *11/42*
U.S. Cl. 224—219 **5 Claims**



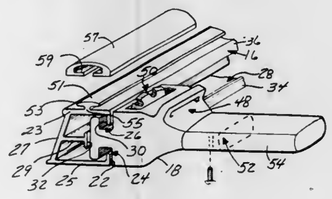
1. A key band comprising a flexible key holder compartment for completely containing a key positioned therein including top and bottom portions separated by sides and ends, said top portion having a slot positioned at one end thereof through which a key may be inserted in and removed from the compartment, which key holder compartment has a length from the slot to the other end thereof slightly larger than the length of a key to be contained therein and said top portion of said key holder compartment having a portion converted upwardly on the side of the slot away from the one end thereof and a portion concaved downwardly on the side of the slot adjacent the one end thereof, the total displacement of the convexed and concaved portions of the top portion at the slot being such that the slot is normally closed to prevent a key from sliding therefrom longitudinally, and an elongated wrist band to which the key holder compartment is secured for securing the key holder compartment to a person's wrist.

4,239,137
BOAT CARRIER AND STAND DEVICE
Pierre Arcouette, 39 Montagne St., Apt. 21, Granby, Canada
Filed Apr. 27, 1979, Ser. No. 33,565
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—319 **5 Claims**



1. A boat carrier and stand device comprising a pair of transverse frames and a pair of longitudinal connector rods removably joining said transverse frames one to the other, each transverse frame of generally U-shape and rectangular outline and each having opposite faces extending generally flat and parallel to each other, each transverse frame defining an intermediate portion and a pair of elongated side legs projecting upwardly from the ends of said intermediate portion for straddling a boat resting on said intermediate portion, said intermediate portion having a flat bottom wall and each side leg having an external side face which is flat and straight and which is perpendicular to said bottom face of said intermediate portion, and each of said transverse frames including socket elements and complementary projection elements cooperatively interengaging similar socket elements and projection elements of other adjoining boat carrier and stand devices and of another transverse frame of the same boat carrier and stand device when said rods are removed from said transverse frames, said socket elements and complementary projection elements including a first set of such elements complementarily arranged on the opposite flat faces of said transverse frames for producing complementary inter-engagement of said socket elements and complementary projection elements when said transverse frames are stacked directly one on another, a second set of such elements complementarily arranged on the opposite ends of said opposite elongated side legs whereby said carrier and stand devices can be stacked one on top of the other with the corresponding side legs in respective vertical alignment and a third set of such elements complementarily arranged on the external side face of each of said side legs for inter-engagement when said carrier and stand devices are juxtaposed side by side.

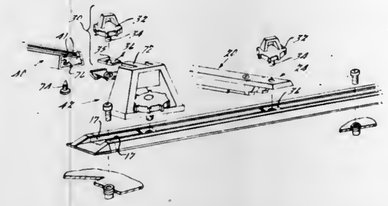
4,239,138
ARTICLE CARRIER COMPRISING SLOTTED SIDE RAIL WITH SLIDABLE CROSS-RAIL AND BRACKET THEREFOR
Daniel J. Kowalski, Ortonville, Mich., assignor to Four Star Corporation, Troy, Mich.
Filed Jun. 11, 1979, Ser. No. 46,995
Int. Cl.³ B60R *7/00*
U.S. Cl. 224—321 **2 Claims**



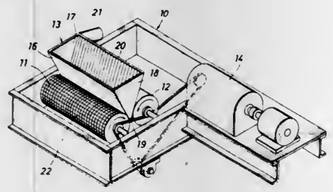
1. A movable cross-rail assembly for an automotive-mounted article carrier comprising:
a side rail attached to the vehicle;
a bracket-receiving slot formed along an inner surface of the side rail;
a movable cross-rail receiving bracket engaging the slot for movement therealong, said bracket including
a base section engageable with the slot,
an inner section interconnected to the base section;
means for receiving a cross-rail formed on the bracket; and
means for releasably locking the bracket along the slot, said locking means including
a disc rotatably mounted to the bracket, said disc having a plurality of radial slits projecting inward a distance from a periphery thereof,
a spring detent being normally biased into at least one of said slits to provide a ratchet to releasably retain said disc against rotation.

4,239,139
SLIDING TIE DOWN VEHICLE LUGGAGE CARRIER
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed Feb. 5, 1979, Ser. No. 9,608
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—324 **27 Claims**

1. An integral tie down element for use in a luggage carrier system, comprising
an annular portion,
a loop portion, including two columns integrally connected to said annular portion at radially outward positions from the center of said annular portion, and
threaded means for clamping said tie down to said luggage carrier system, separate from said annular portion and said loop portion and capable of being integrally connected to said annular portion, said annular and loop portions being made of a plastic material, and said threaded means for clamping being made of metal.



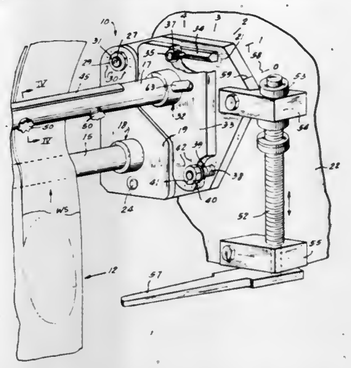
4,239,140
METHOD FOR PRODUCING CATALYST PELLETS OF UNIFORM SIZE
Charles G. Collins, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Division of Ser. No. 776,340, Mar. 10, 1977, Pat. No. 4,139,134, which is a continuation-in-part of Ser. No. 621,710, Oct. 14, 1975, abandoned. This application Nov. 24, 1978, Ser. No. 963,486
Int. Cl.³ B26F *3/00*
U.S. Cl. 225—4 **3 Claims**



1. A method for preparing catalyst pellets of uniform size from non-flexible long extruded catalyst strands, said strands having a diameter greater than 0.03125 inch, which comprises feeding said catalyst strands at right angles to the nip of rotating rolls wherein one roll has a compressible surface and the other roll has a non-compressible convoluted surface and breaking said catalyst strands into discreet pellets as they pass through the nip of said rolls.

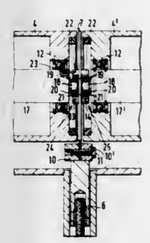
4,239,141
WEB SPREADER
Kenneth G. Frye, Lee, Mass., assignor to Lenox Machine Company, Inc., Lenox, Mass.
Continuation of Ser. No. 810,576, Jun. 27, 1977, abandoned. This application Nov. 22, 1978, Ser. No. 963,014
Int. Cl.³ B65H *17/32*
U.S. Cl. 226—7 **29 Claims**

26. A method of operating a web strip orienter, wherein a hollow bar has a limited wrap area longitudinally therealong and across which web strips running between a web strip source and other equipment are caused to travel in passing through the orienter, and comprising:
providing said bar with a primary bowed relation to the web strips and guiding the web strips in laterally oriented relation in travelling across the limited wrap area of said bar;
selectively effecting secondary adjustments of the limited wrap area of said bar incrementally along its length, without altering said primary bowed relation, by adjusting a saddle member mounted on said bar and providing said limited wrap area, and thereby effecting adjustment to compensate for variations in web thickness, bulk or length;



and providing flotation air to the wrap area surface of said saddle member from within said hollow bar through means within the hollow bar by which adjusting of said saddle member is effected.

4,239,142
BROAD-DRAWING APPARATUS
Herbert Schönmeier, Dusseldorf, and Hartmut Dropczynski, Dormagen, both of Fed. Rep. of Germany, assignors to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Sep. 26, 1979, Ser. No. 78,990
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843204
Int. Cl.³ B65H *17/20*
U.S. Cl. 226—194 **3 Claims**



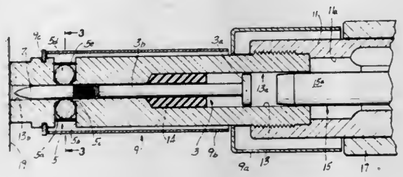
1. A broad-drawing apparatus for moving webs of material such as paper, comprising: a roll having a plurality of individual roll sections mounted on shaft sections, a two-part thrust bearing for determining the degree of curvature being provided for the two adjacent shaft sections of every two adjacent roll sections, ball-and-socket bearing for each shaft section, wherein the ball-and-socket bearings of adjacent shaft sections are disposed side by side on opposite sides of the thrust bearing and wherein each thrust-bearing part of each two part thrust bearing carries one of the adjacent ball-and-socket bearings.

4,239,143

DRIVER ASSEMBLY FOR SMALL-DIAMETER FASTENERS

Peter W. Johnson, Toronto, Canada, assignor to Olin Corporation, New Haven, Conn.

Filed May 21, 1979, Ser. No. 41,027
Int. Cl.³ B25C *1/14, 1/18*
U.S. Cl. 227—10 **9 Claims**



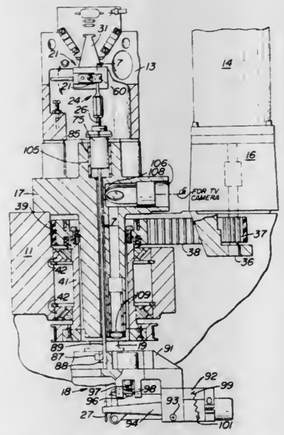
6. A driver assembly, for use with a powder-actuated tool having a tool piston, comprising a tubular muzzle adpter adapted to be carried by the muzzle end of the barrel of the tool, an adapter piston operatively disposed in said muzzle adapter, and retention means on said muzzle adapter for retaining a fastener therein prior to driving thereof, said muzzle adapter being formed with an axial through bore, said bore comprising first and second portions, said first portion being adapted to slidingly admit the shank of the tool piston, said second portion being of substantially smaller diameter than said first portion, and said adapter piston comprising an adapter piston head, skidingly fitted in said first portion of said muzzle adapter bore, and an adapter piston shank, slidingly fitted in said second portion thereof.

4,239,144

APPARATUS FOR WIRE BONDING

Richard J. Elles, Philadelphia; Frederick W. Kulicke, Jr.; Moshe E. Sade, both of Horsham, and Albert Soffa, Wynnewood, all of Pa., assignors to Kulicke & Soffa Industries, Inc., Horsham, Pa.

Filed Nov. 22, 1978, Ser. No. 963,167
Int. Cl.³ B23K *19/04*
U.S. Cl. 228—1 R **24 Claims**



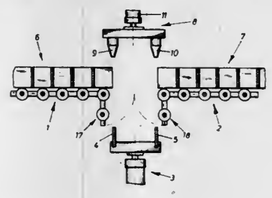
1. Apparatus for fine wire bonding of the type having a rotatable bonding head, the combination comprising:
- a fixed machine frame,
- a theta drive motor mounted on said frame,
- a hollow cylindrical sleeve rotatably mounted on said frame for rotational movement by said theta drive motor,
- a bonding tool holder mounted on said hollow cylindrical sleeve for rotation by said theta drive motor,
- a bonding tool adapted to be mounted in said bonding tool holder,
- said bonding tool holder comprising means for mounting a bonding tool at the center of rotation of said hollow cylindrical sleeve,
- a Z-drive motor mounted on said frame for actuating vertical movement of said bonding tool, and
- means coupling said Z-drive motor to said bonding tool holder axially aligned with the center of rotation of said hollow cylindrical sleeve, whereby rotational movement of said hollow cylindrical sleeve does not impart vertical movement to said bonding tool.

4,239,145

APPARATUS FOR WELDING EDGE BARS TO BAR GRATES

Hans Martin, Arfkamp 14, and Wilhelm Herbst, Vockengraben 30, both of 4424 Stadtlohn, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,249
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746866
Int. Cl.³ B23K *37/04*
U.S. Cl. 228—6 R **3 Claims**



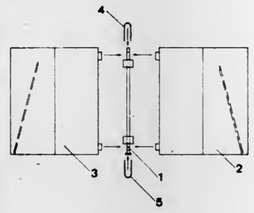
1. An apparatus for welding edge bars to the edges of support bars and filling bars of bar grates comprising:
- a work station;
- a first rollerway section disposed on a first side of said work station for supporting and transporting bar grates;
- a second rollerway section disposed on a second side of said work station for supporting and transporting bar grates;
- transporting means comprising at least a third rollerway section movable into and out of the region of said work station for transporting the bar grates between said first and second rollerway sections;
- means for moving said at least third rollerway section out of a space between facing ends of said first and second rollerway sections during a welding operation and for moving said at least third rollerway section into said space during the transporting of bar grates from said first to said second rollerway section;
- means for holding a pair of edge bars;
- means for moving said edge bar holding means into said space during the welding operation and for moving said edge bar holding means out of said space during the transporting of bar grates from said first to said second rollerway sections;
- means for welding edge bars to the support and filling bars of bar grates, said welding means being movably disposed at said work station, said apparatus including stop means aligned along the transporting direction of said rollerway sections, means for guiding a bar grate into alignment with said stop means to align the bar grate in a first direction, and means for moving a bar grate into alignment with an edge bar when it is held by said holding means at said work station to align a bar grate in a second direction.

4,239,146

COLLAPSIBLE BOX WITH TWO COMPARTMENTS

Per S. Göranson, Lille Pers väg 4, S-311 00 Falkenberg, Sweden

Filed Jun. 21, 1978, Ser. No. 917,601
Claims priority, application Sweden, Jul. 1, 1977, 7707648
Int. Cl.³ B65D *5/36*
U.S. Cl. 229—15 **5 Claims**



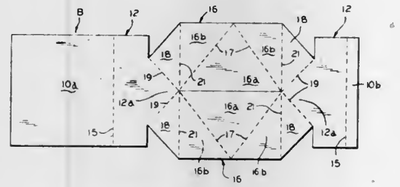
1. A collapsible box with two compartments having a common partition wall and a pair of wall-and-bottom assemblies characterized in that the common partition wall is provided with means for connecting a wall-and-bottom assembly to each side of said partition wall, each of said wall-and-bottom assemblies comprising a main wall, foldable side walls and a bottom which is pivotally connected to the main wall at the underside of the main wall, each of said foldable side walls having a first side edge pivotally connected to said side edge of the main wall and having a second side edge engaged with a said connection means on the partition wall, each of said foldable side walls being formed of two sections which are pivotally connected together at a location between said side edges thereof.

4,239,147

HEAVY DUTY PARTITION

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 29, 1979, Ser. No. 89,044
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—15 **3 Claims**



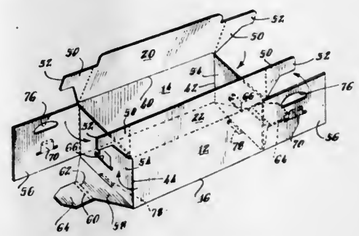
1. A heavy duty partition, formed of a unitary tube of foldable paperboard, for use within an outer container or wrapper, comprising:
- (a) a bottom wall;
- (b) a pair of opposed side walls foldably joined at their lower edges to opposed side edges of said bottom wall and upstanding therefrom;
- (c) each of said side walls presenting a pair of upwardly converging edges;
- (d) a central wall extending normally between said side walls and including a pair of panels disposed in face-to-face relation which each other;
- (e) gusset means foldably joining opposed ends of each of said central wall panels to adjacent converging edges of related side walls;
- (f) each of said gusset means including a pair of generally triangular gusset elements foldably joined to each other with:
  - (i) one of said gusset elements being foldably joined to an adjacent converging edge of a related side wall and disposed in face-to-face relation therewith;
  - (ii) the other of said gusset elements being formed from material of a related central wall panel and being foldably joined thereto along a diagonal fold line to accommodate the erection of said partition from said tube.

4,239,148

STORAGE BOX

John F. Sorenson, St. Paul, and Frank W. Locke, Minneapolis, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 9, 1979, Ser. No. 55,906
Int. Cl.³ B65D *5/30, 5/22, 5/24*
U.S. Cl. 229—36 **9 Claims**



1. A one-piece storage box comprising:
- a bottom wall having a first and second pair of opposed, parallel edges,
- a side wall connected to each of the first pair of opposed edges of said bottom wall,
- an end wall connected to each of the second pair of opposed edges of said bottom wall, each of said end walls including
- a pair of overlapping end panels, each of said overlapping end panels being connected to an edge of one of said side walls and a third end panel connected to one of said second pair of opposed edges of said bottom wall overlapping said pair of end panels, said end panels having means therebetween for locking said panels together, said locking means including
- a pair of registered openings in said pair of overlapping end panels,
- a bendable tab on said third end panel received through said registered openings and said pair of overlapping end panels and bent downwardly within the interior of said box, and
- a tab on the outermost one of said pair of overlapping end panels of each end wall hinged to an edge of the registered opening in said one overlapping end panel, said tab received through the other one of said registered openings in said other one of said pair of overlapping end panels and bent relative thereto,
- a top flap for forming a top wall for said storage box connected to an edge of each of said side walls,
- the outermost one of said pair of overlapping end panels of each end wall including an opening other than said registered opening therethrough, and
- each of said top flaps including a bendable tab extension extending from opposite ends thereof received within said other opening in each of said outermost ones of said pair of overlapping end panels of each end wall.

4,239,149

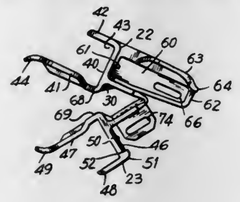
COMBINATION CLIP AND SEAL CONSTRUCTION FOR SHIPPING CONTAINERS

Julius B. Kupersmit, 145-80 228th St., Springfield Gardens, N.Y. 11413

Filed Jul. 16, 1979, Ser. No. 58,017
Int. Cl.³ B65D *45/00*
U.S. Cl. 229—45 R **3 Claims**

1. In a combination container having a pair of selectively

abuttable walls having aligned openings therein, and an expandable clip simultaneously engaging the edges of said aligned openings to maintain said walls in abutted relation, the improvement comprising: said clip having first and second sections relatively movable between a first position in which the overall size of said clip is relatively diminished, and a



second position in which the overall size is relatively enlarged to engage said edges of said openings in said container, said clip having a plurality of openings therein which are placed in alignment when said clip is in said second position; and elongated seal means penetrating said last-mentioned openings to prevent movement of said sections from said second positon.

4,239,150

FOLDING CARTONS FOR LIQUIDS

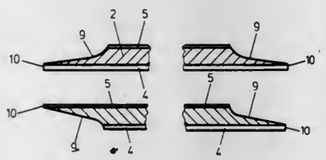
Werner Schadowski, Linnich, and Heinrich Bellut, Myhl, both of Fed. Rep. of Germany, assignors to PKL Papier- und Kunststoff Werke, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 960,537

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750901

Int. Cl.³ B65D *5/42*

U.S. Cl. 229—48 R **6 Claims**



1. In a carton for liquids folded from a sheet of packaging material wherein the carton has a lapped seam with a protected edge, the improvement which comprises providing the protected edge with a wedge-like tapered profile, wherein the taper is relatively more pronounced adjacent where it joins the rest of the sheet material and is relatively less pronounced therebeyond toward its tip, whereby the thickness of the sheet material is reduced along the protected edge.

4,239,151

METHOD AND APPARATUS FOR REDUCING THE NUMBER OF REJECTED DOCUMENTS WHEN READING BAR CODES

Mats A. Enser, and Nils G. Stalberg, both of Lidingö, Sweden, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 902,468, May 3, 1978, abandoned. This application Apr. 19, 1979, Ser. No. 31,656

Int. Cl.³ G06K *5/00, 7/08, 7/10;* G11B *25/04*

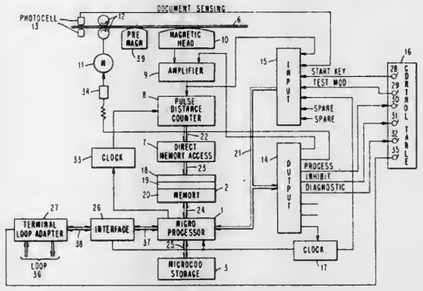
U.S. Cl. 235—437 **7 Claims**

1. A method for reducing the number of rejected documents when reading and decoding character information recorded on a document in a bar code based on the distance between adjacent bars comprising:

producing electrical pulses representing the bars by feeding the document containing the bars passed a reading means,

counting the time between each two pulses with a counter and storing the counts produced by the counter in strings representating individual characters where the counts are positioned in the string in the order in which the related pulses were produced by the reading means,

performing a plurality of decoding steps each involving comparing each string of counts with valid combinations of counts, the first step using the unmodified stored string



in the comparison on an assumption that there are no errors in counts, the second step using a first modification of the stored string in the comparison on an assumption that a correctable error of a first type exists in the counts, the third step using a second modification of the stored string in the comparison based on an assumption that a correctable error of a second type exists in the counts, interrupting the decoding at any step producing a valid decoding of a character, and transferring such a valid decoding to user means.

4,239,152

TEMPERATURE RESPONSIVE VALVE ASSEMBLY

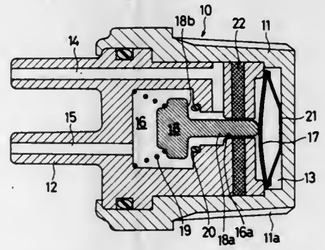
Kazuhiko Kitamura, and Atsushi Satomoto, both of Tokyo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 620,680, Oct. 8, 1975, abandoned. This application Oct. 22, 1979, Ser. No. 87,185

Claims priority, application Japan, Oct. 29, 1974, 49-53509; May 5, 1975, 50-124645

Int. Cl.³ G05D *23/10*

U.S. Cl. 236—48 R **2 Claims**



1. A temperature responsive valve assembly comprising a cup-shaped housing of heat conductive material adapted to be disposed within a fluid the temperature of which is to be sensed for controlling the valve assembly and a valve body of non-heat conductive material secured in said housing means with one end thereof spaced from the bottom of said cup-shaped housing to define a chamber, a bore located in said one end of said valve body, passage means in said valve body including

first and second fluid passages adapted to contain a fluid to be controlled by the valve assembly, said first and second passages each opening into the bottom of said bore with a flat valve seat surrounding one of said passages, a valve member slidably disposed within said bore in said valve body, said valve member having a flat surface engagable with said flat valve seat, a bimetallic snap disc member disposed in said chamber with the center thereof in engagement with said valve member, first spring means disposed in said chamber between the bottom of said cup-shaped housing and said bimetallic snap disc member, second spring means in said bore between the bottom of said bore and said valve member, said first and second spring means maintaining said bimetallic snap disc member and said valve member in operative engagement with each other and a gap provided between the inner surface of said bore and the outer periphery of said valve member to facilitate the reciprocation of said valve member within said bore, said gap being as small as possible so that the fluid flow from said fluid passages into said chamber will be so minimum that it can be neglected.

4,239,153

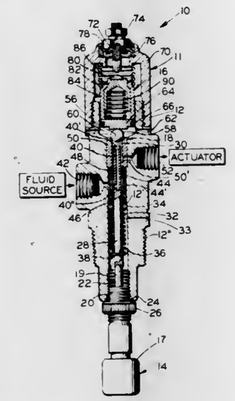
MULTIPLE TEMPERATURE ACTUATED FLUID-ELECTRIC CONTROL DEVICE

Larry E. Monigold, and Ronald G. Cadwell, both of Cadillac, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Dec. 29, 1978, Ser. No. 974,449

Int. Cl.³ G05D *23/12*

U.S. Cl. 236—86 **6 Claims**



1. A temperature responsive control device having sequential fluid flow control and electrical circuit control functions comprising:

a body having a passage with a thermoexpansion element on one end thereof and a slide pin with an inner hollow nose in said passage, said slide pin being shiftable by said element; an inlet port and an outlet port communicant with said passage and with each other through said slide pin hollow nose; a ball valve in said passage including a valve seat and a ball valve element engageable by said slide pin nose to close said hollow nose and to also shift said ball valve element off said valve seat to open said ball valve; a vent port in said body communicable with said outlet port through said ball valve when said ball valve is open; an electrical switch subassembly on the opposite side of said ball valve from said slide pin, shiftable plunger means between said ball valve element and said electrical switch subassembly, shiftable toward the latter by shifting of said ball valve element off said valve seat, said plunger means comprising a plunger in engagement with said ball valve element, a sleeve extending toward said electrical switch subassembly, and at least one inner element telescopically fitted within said sleeve and movable therein, first spring means for biasing said plunger means away from said electrical switch subassembly and toward said ball valve element, so that shifting of said plunger means is against the bias of said first spring means to cause said inner element to actuate said electrical switch subassembly sequentially to the opening of said valve, whereby said control element causes sequential control of functions in response to increasing temperature, the first control step being directly by said ball valve, and the second control step being indirectly by said ball valve causing shifting of said switch subassembly, second spring means between said inner element and said plunger for biasing said inner element and plunger to a telescopically extended position relative to each other while allowing telescopic contraction thereof to accommodate overtravel movement of said plunger by said ball valve element, said first spring means having greater biasing force than said second spring means; and means for sealing said electrical switch subassembly within said body and from said ball valve and said passage.

4,239,154

THERMALLY RESPONSIVE VALVE

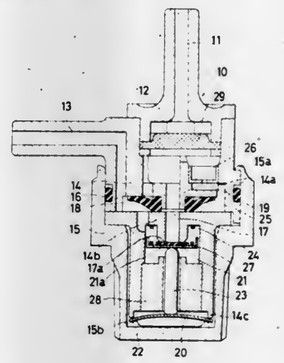
Masami Inada, Kariya; Nobuyuki Hashimoto, and Atsushi Satomoto, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Apr. 16, 1979, Ser. No. 30,366

Claims priority, application Japan, May 25, 1978, 53-70919

Int. Cl.³ G05D *23/08*

U.S. Cl. 236—87 **3 Claims**



1. A thermally responsive valve comprising a body provided with an inlet port and an outlet port and separated into an upper portion and a lower portion spaced from said upper portion;

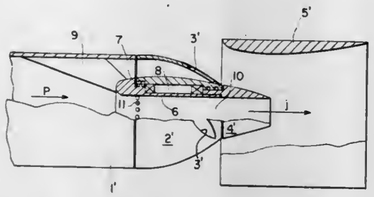
first, second, and third passages arranged in parallel to one another provided in said body and connecting said inlet port with said outlet port respectively, wherein a part of said first passage is defined by said lower and upper portions of said body and the space therebetween, and a part of said third passage encloses said part of said first passage defined by said space;

a bimetal operated valve disposed in said first passage; and

a check-valve having a base and a lip portion and having said base portion positioned between said third passage and said first passage for permitting fluid flow only from said inlet port to said outlet port, wherein said checkvalve is made of elastic material and said base is disposed between and sealingly contacts said upper portion and said lower portion to maintain a fluid-tight sealing therebetween and to fluid tightly separate said parts of said first and third passages and wherein said lip portion permits fluid flow

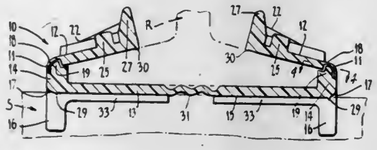
through said second passage only from said inlet to said outlet.

4,239,155
CORE-FLOW ROTARY JET
Joseph V. Foa, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 30, 1979, Ser. No. 43,927
Int. Cl.³ B63H *25/46*
U.S. Cl. 239—265.17 **19 Claims**



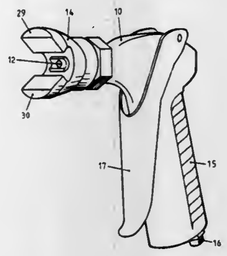
1. A core-flow rotary jet comprising:
a source of pressurized first fluid,
rotor means including at least one nozzle,
a supply duct connected between said source of first fluid and said rotor means,
a shrouded afterbody disposed behind, and coaxially with, the rotor such that said pressurized first fluid issuing from said at least one nozzle induces flow of ambient second fluid through said shroud, and
means for diverting a portion of said first fluid from said rotor and through a centrally disposed passage in said afterbody,
whereby fluid exiting from said central passage entrains said first and second fluids along the outer surface of said afterbody such that flow separation of said fluids along said afterbody surface is reduced.

4,239,156
PAD FOR RAILWAY RAIL FASTENINGS
David H. Skinner, Donvale, and Jeffrey H. Brown, Armadale, both of Australia, assignors to The Broken Hill Proprietary Company Limited, Victoria, Australia
Filed Dec. 12, 1978, Ser. No. 968,813
Claims priority, application Australia, Dec. 23, 1977, PD2885
Int. Cl.³ E01B *9/68*
U.S. Cl. 238—277 **9 Claims**



2. An insulation pad for rails on sleepers, said pad comprising a base section adapted, in use, to be interposed between a rail and an underlying sleeper, and two upper sections adapted, in use, to extend over the respective upper surfaces of the rail foot, said upper sections being formed integrally with said base section, wherein the upper sections are hingedly connected to the respective side edges of the base section, which hinges are formed by sections of pad material of reduced thickness, and wherein the upper sections and the associated side edges of the base section adjacent the respective hinges incorporate alternating interlocking knuckle and groove arrangements for resisting differential movement between the upper sections and the base section longitudinally of said hinges.

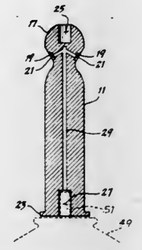
4,239,157
HIGH PRESSURE SPRAY GUN
Anders G. Fasth, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Mar. 26, 1979, Ser. No. 23,588
Claims priority, application Sweden, Apr. 11, 1978, 7804033
Int. Cl.³ B05B *1/04*
U.S. Cl. 239—288.5 **4 Claims**



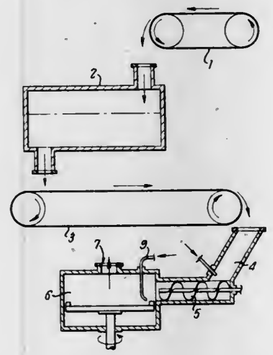
1. In an airless high pressure spray gun, comprising:
a gun body (**10**);
a spray material valve (**11**) disposed in the gun body;
a spray forming nozzle (**12**) having a geometric axis (**31**); and
a safety head (**14**) coupled to said nozzle (**12**) and including two protector studs (**29, 30**) extending in the spraying direction from the nozzle (**12**), said protector studs extending respectively on each side of the geometric axis (**31**) of the nozzle (**12**), each of said protector studs comprising a transverse ridge (**34**) which is spaced transversely from said geometric axis (**31**) and which is axially spaced from the nozzle (**12**) in the spraying direction, said ridge being disposed out of reach of the spray jet formed by the nozzle and said ridge being arranged in an opposed relationship to an identical ridge (**35**) of the other of said protector studs to form a gap between the ridges (**34,35**);
said protector studs (**29, 30**), between said ridges (**34, 35**) and the spray forming nozzle (**12**), together forming an open ended part-cylindrical chamber (**41**) the geometric axis of which is substantially perpendicular to the geometric axis (**31**) of the spray forming nozzle (**12**), said part-cylindrical chamber (**41**) extending to the vicinity of the spray opening of said nozzle (**12**) and said part-cylindrical chamber (**41**) having a diameter which exceeds the width of said gap between said opposed ridges (**34, 35**).

4,239,158
SPRAY HEAD EXTENSION FOR PRESSURE DISPENSERS
William H. Gates, Santa Ana, Calif., assignor to George L. Moyles and Roy Shook, both of Fullerton, Calif., part interest to each
Filed Apr. 23, 1979, Ser. No. 32,400
Int. Cl.³ B05B *7/24*; B65D *83/14*
U.S. Cl. 239—567 **6 Claims**

1. An elongated fluid conduit closed at one end, the other end thereof having a socket constructed and arranged to receive and fixedly engage a depressible valve stem of a pressurized container, the valve stem communicating with said fluid conduit to release the contents of the pressurized container into said fluid conduit when the closed end of said fluid conduit is pressed against a fixed surface thereby depressing the valve stem, said fluid conduit having a plurality of tubular openings therethrough adjacent said closed end thereof for dispersing from said fluid conduit the contents of the pressurized container released thereinto, said plurality of tubular openings being angled outwardly and back toward said other end so as to disperse the contents of the pressurized container outwardly from said fluid conduit and backwardly toward said other end.



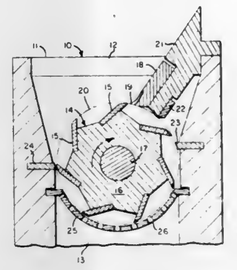
4,239,159
PRODUCTION OF FINE METAL POWDERS
Dereck R. Johns, Hillsborough, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Feb. 13, 1979, Ser. No. 11,749
Claims priority, application United Kingdom, Feb. 13, 1978, 5612/78
Int. Cl.³ B02C *23/24*
U.S. Cl. 241—23 **3 Claims**



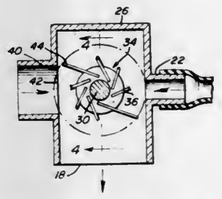
1. A method of comminuting oversize ductile metal powder particles produced by water or gas atomization comprising the steps of impacting the particles to increase their length to thickness ratio thus producing generally elongated flattened particles, cooling the elongated particles to a temperature at which the elongated particles become embrittled and further comminuting the embrittled particles to produce relatively fine powder.

4,239,160
FILM SHREDDER
William E. Hawkins, and C. George Huskey, both of Circleville, Ohio, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed May 17, 1979, Ser. No. 39,945
Int. Cl.³ B02C *18/16, 18/44*
U.S. Cl. 241—222 **7 Claims**

1. A device for shredding laterally extended film material of indefinite length comprising
(a) a housing with an inlet and an outlet,
(b) cutting means rotatably mounted in the housing and having a smooth cutting edge,
(c) a stationary knife having a serrated edge mounted on the housing with the serrated edge positioned at the periphery of the path of the smooth cutting edge of the rotatable cutting means and with the serrated edge projecting into and directed toward the housing inlet against the direction of rotation of the rotatable cutting means.



4,239,161
COKE GRINDER
Owen R. Waltrip, Roseville, Calif., assignor to Nuclear Supreme, Casper, Wyo.
Filed Mar. 27, 1979, Ser. No. 24,327
Int. Cl.³ B02C *18/18*
U.S. Cl. 241—46.02 **8 Claims**

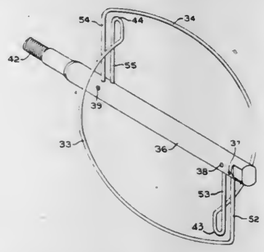


1. In a device for comminuting coke logs, including a housing having an infeed opening therein forming a fixed cutting edge, and a rotor body enclosed within the housing and rotatable in one direction about a rotational axis, said rotor body having an outer cylindrical surface from which a plurality of cutting blades project, each of said cutting blades having an outer cutting tip radially spaced from the outer surface and a radially inner end, the improvement residing in slot means formed in the rotor body for holding each of said blades at a predetermined forward angle at the outer surface in the direction of rotation relative to a radial line extending from the rotational axis, anchoring means extending radially into the rotor body from said outer surface between the blades for engagement with each of said blades intermediate the outer cutting tip and the inner end, and means connected to the housing for introducing coke logs at a predetermined infeed rate through said infeed opening in a direction transverse to said rotational axis, said housing having an outlet opening positioned below the infeed opening from which coke is gravitationally discharged.

4,239,162
FIBER TRAVERSING SPIRAL
Herbert W. Barch, Natrona Heights, and Rudolph Blair, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jun. 1, 1979, Ser. No. 44,604
Int. Cl.³ B65H *54/28*
U.S. Cl. 242—43 R **5 Claims**

1. A spiral traversing device comprising a rotatable axle, a first wire strand support means generally in an oval planar

shape, a second wire strand support means generally in an oval planar shape, two wire support means for said first wire strand support means, two wire support means for said second wire strand support means, the wire support means for the first and second wire strand support means being constructed to maintain said first and second wire support means at generally equal distances from said axle at all points in an oval planar shape and at an angle such that the plane of said wire ovals is at an angle to said axle, said wire support means for said first strand support means being affixed to the axle at spaced apart fixed distances along said axle thereby defining the length of the oval, said second wire support means for said second strand support means being affixed to the axle at spaced apart fixed distances along said axle thereby defining the length of the



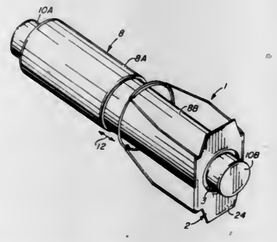
oval, the point of attachment of the wire strand support means to said first strand support means being higher than the point of attachment of the adjacent wire support means to said second strand support means at one point above the axle, and the point of attachment of the wire support means to said first wire strand support means being lower than the point of attachment of the adjacent wire support means to said second wire strand support means at its other point of attachment to the axle to thereby permit strand riding on said second wire strand support means to transfer from said second wire strand support means to said first wire strand support means at one end of said axle and from said first wire strand support means to said second wire strand support means at the opposite end of said axle.

4,239,163

ROLL HOLDER FRICTION BRAKE

Glen H. Christian, 901 S. Sarnoff Dr., Tucson, Ariz. 85710

Filed Jan. 21, 1980, Ser. No. 113,593
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.2 **10 Claims**



1. A brake device for a paper roll holder, the roll holder including

(i) a spindle assembly including first and second telescoping sections, the first and second telescoping sections being cylindrical and aligned along a first axis, the first telescoping section, having a first diameter, the first and second telescoping sections being biased outwardly from each other along the first axis,

(ii) a spindle support, and

(iii) first and second bearing ends for engaging the spindle support, the first and second bearing ends being attached, respectively, to the free ends of the first and second telescoping sections, the first and second bearing ends being aligned with the first axis, the first bearing means having a second diameter, the second diameter being less than the first diameter,

said brake device comprising in combination:

a. base plate means for frictionally engaging a first portion of the spindle support to tend to resist rotation of the paper roll, said base plate means having a hole therein, said hole having a third diameter which is less than the first diameter and greater than the second diameter, the first bearing end passing through said hole, said base plate means having first and second opposed faces, a portion of the first face frictionally engaging the first portion of the spindle support; and

b. core-engaging means attached to the second face of said base plate means for snuggly engaging the inner surface of a core on which the paper roll is wound to cause said base plate means to rotate with the paper roll, the spring bias causing the first telescoping section to press the first surface of said base plate means, causing a second portion of the second face of said base plate means to be pressed against the first portion of the spindle support to effect said frictional engaging,

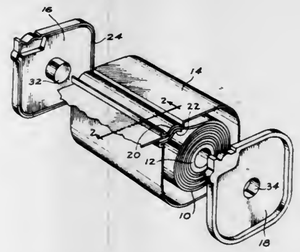
whereby said brake device slows free rotation of the paper roll, preventing excessive unwinding of the paper roll.

4,239,164

LIGHT LOCK FOR ROLL DISPENSING CONTAINER

Clive D. Barnsbee, Webster, and Marvin G. Decker, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,499
Int. Cl.³ B65H *19/02*
U.S. Cl. 242—55.53 **1 Claim**



1. In a container having a generally tubular casing member and a pair of laterally opposed end walls enclosing a chamber for a roll of strip material with a light-sensitive, abradable layer, the improvement comprising:

a first elongated lip on the casing member extending in a direction substantially axially of the casing member;

a second elongated lip on the casing member substantially parallel to said first lip, said second lip being movable toward and away from said first lip to form therebetween a variable width slot which (1) communicates with the chamber, (2) provides a path through which strip material may be tensioned and pulled from the chamber with its light-sensitive layer toward said first lip and (3) is curved partially about an axis that is transverse to the direction of movement of strip material being pulled through the slot and is located on the same side of said slot as said second lip;

an annular recess on each of said end walls for receiving one end of the casing member and said lips, said annular recesses being enlarged in the region of said second lip for permitting movement of said second lip away from said first lip;

means for rotatably supporting a roll of strip material in the chamber with resistance of the roll turning; and

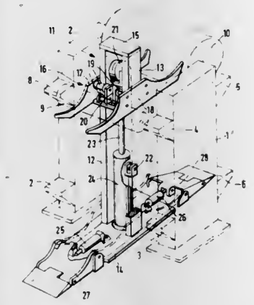
resilient means for urging said second lip toward said first lip to clamp in said curved slot a portion of the strip material between said first and second lips with a predetermined pressure, whereby tension produced in said strip material is pulling it from the chamber produces a resultant force which opposes the force of said resilient means to at least partially relieve the pressure of the light sensitive layer of the strip material against said first lip.

4,239,165

UNWINDING STAND FOR A PLURALITY OF ROLLS OF MATERIAL

Peter Weiss, Neuss, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 33,924
Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819295
Int. Cl.³ B65H *19/30*
U.S. Cl. 242—58.6 **6 Claims**



1. In an unwinding stand for a plurality of rolls of material having elevating means for raising individual rolls of material to the level of bearing brackets mounted on stand columns and disposed on either side of the unwinding stand, the improvement wherein the elevating means comprises: a guide column disposed between the stand columns; an elevating platform with dual outriggers; and means guiding the elevating platform on said guide column for the loading of the bearing-brackets disposed on both sides of the stand with rolls of material.

4,239,166

POWER-DRIVEN REWIND DEVICE OF A CAMERA

Koichi Daitoku, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

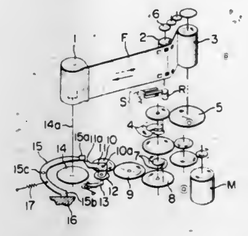
Filed Sep. 13, 1979, Ser. No. 75,332
Claims priority, application Japan, Sep. 14, 1978, 53/125459[U]
Int. Cl.³ G03B *1/04*
U.S. Cl. 242—71.6 **5 Claims**

1. In a device for driving, by a motor, a first spool shaft for supplying the film of a camera and a second spool shaft for taking up the supplied film, the improvement in a power-driven rewind device for rewinding the film taken up on said second spool shaft onto said first spool shaft comprising:

(a) first gear means (14) coupled to and rotatable with said first spool shaft;

(b) second gear means (10) operatively associated with the rotation of said motor when said film is rewound;

(c) third gear means (12) meshing with both of said first and said second gear means and displaceable between a coupled position for enabling the transmission of the rotation of said motor to said first spool shaft and a disengaged position in which said third gear means is retracted from said coupled position to cut off said transmission; and



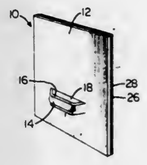
(d) change-over means (11) operatively associated with the rotation of said second gear means to displace said third gear means to said coupled position.

4,239,167

WALL-MOUNTED EYEGLASS HOLDER

G. William Lane, 2555 Cherryridge Rd., Englewood, Colo. 80110

Filed Jan. 23, 1979, Ser. No. 5,684
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—205 A **6 Claims**



1. In an eyeglass holder adapted for supporting a pair of eyeglasses on a flat surface wherein a pair of eyeglasses have a lens frame and temple bars pivotally connected to opposite sides of said frame, the improvement comprising:

a substantially planar body panel;

holder-securing means on one surface of said body panel adapted for supporting said body panel on a flat surface; and

a substantially rigid support bracket in the form of an arch projecting forwardly away from the plane of said body panel and defining a temple bar-receiving opening between said arch and said body panel sized to permit free insertion of one of said temple bars of said eyeglasses therethrough until the pivotal connection between the temple piece and the frame engages said support bracket with said frame facing away from said body panel, said arch provided with eyeglass supporting means in the form of a reinforcing portion of generally V-shaped cross-sectional configuration extending lengthwise of said arch in spaced, substantially parallel relation to said body panel.

4,239,168

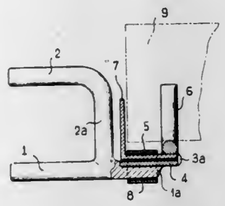
RETAINING DEVICE FOR AN OBSTACLE RAIL

Louis Colonna des Princes, Haras de Vauptain, 78530 Buc, France

Filed Jan. 30, 1979, Ser. No. 7,927
Claims priority, application France, Mar. 9, 1978, 78 06788
Int. Cl.³ A63B *5/02*; A01K *15/02*; F16M *13/00*
U.S. Cl. 248—293 **8 Claims**

1. A retaining device for an obstacle rail comprising a mounting-piece including means for securing the retaining device at an adjustable level on a side-post or the like, the retaining device further comprising a U-shaped member

adapted to receive and support a portion of a rail and a hinge having two plates connected by a hinge-pin which is parallel to a said rail in the supported position of a said rail, one of the plates being rigidly secured to the U-shaped member and being movable between a rest position in which the U-shaped mem-



ber is adapted to serve as a rail support and a position in which the U-shaped member is adapted to release a supported rail, the other plate being secured to the mounting piece and being adapted to serve as a stop for the U-shaped member in the rest position.

4,239,169

DISPLAY STAND

John DeSantis, 115 Overlook Ave., Staten Island, N.Y. 10304

Filed Aug. 20, 1979, Ser. No. 67,739
Int. Cl.³ F16M *11/00*; F16B *7/10*
U.S. Cl. 248—412 **8 Claims**



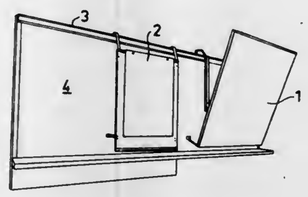
1. A display stand comprising first and second telescopically engaged elongated stand elements, said first element having an inner end received within said second element and a remote outer end; said first end having an inclined face located at an angle to the longitudinal axis of said first element; an elongated rod extending through said first element from a first end adjacent the first end of said first stand element to a second end extending beyond the second end of the first stand element; a cam member secured to the first end of the rod in position to engage the inclined face of said first stand element; said second end of the rod being threaded, and a nut threadedly engaged with said rod and bearing against the second end of said first stand element whereby rotation of the nut in a first direction moves said cam against said inclined face and wedges it between said inside face and the inner surface of said second stand element to lock said elements together; and rotation of said nut in an opposite direction moves the cam away from said inclined face and the inner surface of said second stand element to permit said stand elements to telescope with respect to one another.

4,239,170

MEANS FOR SUPPORTING A WRITING BOARD OR THE LIKE

Sten Planebo, Järfälla, Sweden, assignor to Pendax Interior AB, Stockholm, Sweden

Filed Jan. 3, 1978, Ser. No. 866,231
Claims priority, application Sweden, Jan. 4, 1977, 7700055; Oct. 7, 1977, 7711300
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—441 B **2 Claims**



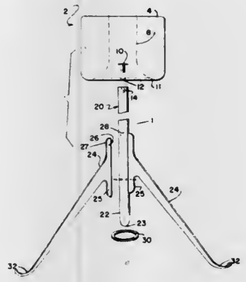
1. Supporting means for a writing board, overhead screen, notice board or the like comprising a pair of upper arms disposed alongside one another and spaced by a certain distance, said arms being fastened to the board and displaceably suspended from upper arm ends disposed in fixed horizontal fitting means, said supporting means also including a pair of lower arms fastened to the board and supported by a fixed wall, characterized in that the pair of upper arms have downwardly opened recess means defined in their upper ends, which recess means surround a rail of the fitting means, the arms of one of said pairs of arms being swingable in relation to the arms of the second pair of arms and in relation to a horizontal axis; and further comprising means for rendering said upper arms swingable relative to the board, wherein said upper ends terminate in a cube and wherein said recess means comprise a recess formed in each cube, and means for supporting each cube pivotally in the horizontal plane of the upper arms to permit the upper arms to swing in two directions from a neutral position.

4,239,171

BOOK SUPPORT

Edward Huls, and Christina Huls, both of 4801 Kahala Ave., Honolulu, Hi. 96816

Filed Jan. 31, 1978, Ser. No. 873,811
Int. Cl.² F16M *13/00*
U.S. Cl. 248—558 **14 Claims**



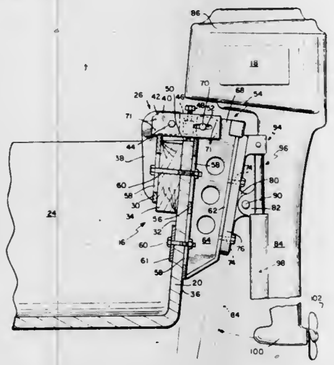
1. A reading stand apparatus comprising a book holding support means, a pole having openings in a lower portion for attaching legs, connecting means for connecting the pole to the book holding support means, a plurality of legs having elongated shank portions and having proximal and distal ends, the proximal ends having elongated fastening means connected to the pole in upward angular relation to the shanks, securing dowels connected to the elongated fastening means at the proximal ends for engaging the openings in the lower portion of the pole, clamping means connected to the elongated fastening means for holding proximal ends against the pole.

4,239,172

ENGINE MOUNT FOR MARINE CRAFT

Gordon Spitzmesser, 1405 Cherokee Dr., West Columbia, S.C. 29169

Filed May 25, 1979, Ser. No. 42,527
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—641 **12 Claims**



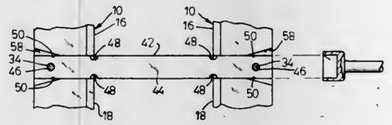
9. An engine mount for a marine craft outboard engine comprising first means for mounting over the vertically upper edge of the marine craft transom, second means for attachment to the first means, means for selectively movably attaching the second means from the first, and means for mounting the engine rearwardly of the second means, the engine mounting means including an engine carrier which permits tilting movement of the engine to position the axis of rotation of the engine propeller such that it points downwardly away from the transom and upwardly toward the transom.

4,239,173

CONCRETE CONSTRUCTION FORM AND TIE ROD

Robert D. Sawyer, 10308 W. Bluemound Rd., Apt. 220, Wauwatosa, Wis. 53226

Filed Apr. 13, 1978, Ser. No. 895,747
Int. Cl.³ E04G *17/08*
U.S. Cl. 249—41 **7 Claims**



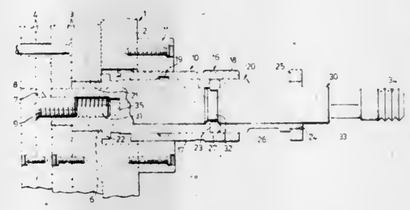
1. In combination: a concrete construction form for use in casting concrete, said concrete construction form having opposed faces, one of said faces defining a concrete forming surface, a top wall, a bottom wall, and planar vertical side walls, said side walls including front and rear edges and one of said side walls including a groove extending transverse to said edges and therebetween, and a bore in said groove through said vertical side wall, said bore having an axis generally parallel to said opposed faces, and said groove having a flared portion from said bore toward said rear edge; and a tie rod comprising an elongated, thin, planar metal bar having opposed faces, edges and opposite ends, and having a hole extending through at least one of said opposite ends and transverse to said opposed faces, and said bar having a reduced thickness in a plane extending transverse to the longitudinal axis of said bar and extending through one of said holes whereby said tie rod can be fractured along said plane by twisting the end of said bar, said at least one of said opposite ends positioned in said groove with said hole in said tie rod coaxially aligned with said bore, and with an end portion of said one of said ends extending into said flared portion of said groove.

4,239,174

TWO STEP EJECTOR STRUCTURE FOR A MOLD FOR INJECTION MOLDING OR THE LIKE

Hans Muller, Femte Villagatan 12, 502 44 Boras, and Nils G. Nilsson, Bergslanten, 520 15 Hokerum, both of Sweden

Filed Nov. 14, 1979, Ser. No. 94,126
Claims priority, application Sweden, Nov. 14, 1978, 7811723
Int. Cl.² B29C *7/00*; B29F *1/14*
U.S. Cl. 249—67 **5 Claims**



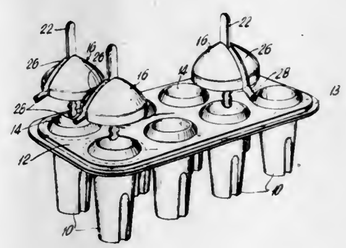
1. A two-step ejector structure for molds for injection molding and the like comprising, (i) a first ejector member to be directly acted upon for ejection and to act upon an ejector pin carrier which is to be displaced in the first and second ejector steps, and a second ejector member acting upon a second ejector pin carrier which is to be displaced only in the first ejector step and (ii) coupling means to accomplish the movement of said second ejector member during a predetermined first portion of the ejector movement of the first ejector member and thereafter release said first ejector member from said second ejector member and lock said second ejector member to a member securedly connected to a tool.

4,239,175

MOLD FOR FORMING FROZEN FOOD PRODUCT AND CAP MEMBER THEREFOR

Paul Straubinger, 21-33 28th St., Astoria, N.Y. 11105

Filed Nov. 19, 1979, Ser. No. 95,404
Int. Cl.³ A23G *9/26*
U.S. Cl. 249—92 **9 Claims**



1. In a mold for preparing a frozen food product from a liquid, comprising at least one cup member each adapted to retain a liquid food product and having a respective cap member adapted to fit thereover, each said cap member having a generally domed shaped central portion and including a handle

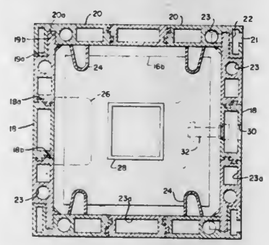
portion extending from the outer surface of said central portion and an anchoring portion adapted to extend centrally within the respective cup member, whereby liquid retained in each said cup member may be made to freeze about the respective anchoring portion and said cap member may then be removed and inverted to form a respective drip tray adapted to catch drippings from the frozen product, the improvement comprising a respective straw member communicating interiorly of each said central portion and extending outwardly from said central portion to enable liquid caught in said central portion to be drawn off by the user.

4,239,176

CONCRETE CONSTRUCTION SYSTEM

Rafael D. Salazar, 6425 SW. 96th St., Miami, Fla. 33156

Filed May 30, 1978, Ser. No. 910,860
Int. Cl.³ B22D *19/04*; B41B *11/58*
U.S. Cl. 249—97 **8 Claims**



1. A mold assembly for forming pre-cast concrete structures, said mold assembly comprising:

a plurality of forming walls, each of said forming walls including a plurality of longitudinal extrusions adapted for releasable interlocking engagement to enable assembly and disassembly of each of said forming walls, at least one of said forming walls being a bottom wall to be supported on a horizontal surface, at least two of said forming walls being engaged with opposed parallel longitudinal sides of said one forming wall to define mold corners and at least a portion of one of said forming walls opposite said bottom wall being open to provide a pouring inlet;

a pair of end caps to close the mold at each end;

fastening means to secure said pair of end caps to said plurality of forming walls; and

each of said extrusions being of generally rectangular cross-section and hollow to provide an outside wall, an inside wall and a pair of edge walls, the edge walls of at least two adjacent extrusions having complementing channel and ridge formations in interlocking relationship, and at said mold corners said extrusions having interlocking edges defined by a complementing tongue and groove connection whereby the mold may be assembled by interconnecting said extrusions in a manner to form a rigid structure suitable for receiving concrete poured through said pouring inlet.

4,239,177

ELECTRICALLY OPERATED VALVE WITH BALANCED PORT DESIGN

Steven E. Williams, St. Louis, Mo., and Bernard L. Kunz, Collinsville, Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 20, 1978, Ser. No. 897,951
Int. Cl.³ F16K *31/04*; G05D *23/08*
U.S. Cl. 251—11 **6 Claims**

1. A valve, comprising:

a valve body having an inlet, an outlet, a main flow passageway between said inlet and said outlet, and a valve seat in said passage, one of said outlet and said inlet being at relatively lower pressure than the other of said inlet and said outlet;

a piston assembly including a shaft mounted for movement with respect to said valve seat, said piston assembly including means for closing said valve;

means defining a first chamber part on one side of said valve seat;

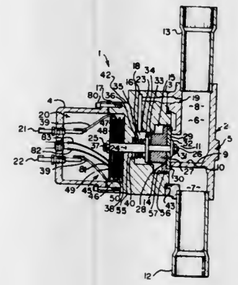
means for defining a second chamber part on the same side of said valve seat as said first chamber part;

means for connecting one of said first and said second chamber parts with one of said inlet and said outlet;

means for connecting the other of said first and said second chamber parts with the other of said inlet and said outlet;

means for biasing said piston toward a closed position;

heat motor means mounted to said valve body and operatively connected to said piston, said heat motor means comprising a plurality of heater elements and a plurality of disc pairs mounted in heat transfer relationship with one another, expansion of said discs in one direction acting to move said piston assembly toward an open position;



means at least partially carried by said shaft to prevent migration of flow to said heat motor so that operation of said valve is independent of the fluid variables carried by the valve, said last mentioned means including at least one flow path connectable between one of said first and second chambers and the relatively lower pressure at one of said inlet and said outlet, said means for defining said first chamber part comprises a top plate mounted to said valve body, said top plate including a chamber having first and second diametric sections for delimiting said first and second chamber parts, said piston assembly including a shaft, a piston mounted to a first end of said shaft, said piston being carried in said first chamber part, and seal means carried on said shaft and in said second chamber part, said seal means preventing fluid communication between said first and second chamber parts, said seal means and said low pressure connectable flow path comprising said migration preventing means.

4,239,178

MANUAL ACTUATOR FOR MOTOR DRIVEN CONTROL VALVE

Hans O. Engel, and Wolfgang Lueneburg, both of, Hanau, Fed. Rep. of Germany, assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1979, Ser. No. 38,438
Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821100
Int. Cl.³ F16K *31/52, 31/14*
U.S. Cl. 251—14 **10 Claims**

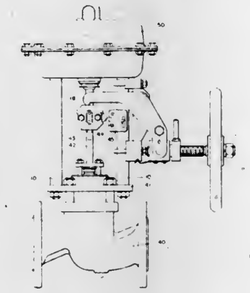
1. A control valve actuator comprising

a valve housing,

a valve stem projecting from said housing,

a motor actuator mounted by spaced apart studs on said valve housing, said motor actuator acting by means of said valve stem on the valve, and

a manual actuator laterally mounted on the studs and acting on said valve stem by means of a lever-type actuating



means terminating in a cam contacting said valve stem, characterized in that the lever-type actuating means is pivotally attached to one of the studs and is shaped as a fork having a pair of legs extending past respective sides of said one stud to said valve stem and terminating at one end as said cam.

4,239,179

QUANTITY CONTROL VALVE FOR CONTROLLING THE QUANTITY OF A PRESSURE MEDIUM

Roland Geier, Viale Europa 72a, I-25100 Brescia, Italy

Filed Aug. 14, 1978, Ser. No. 933,435
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737153
Int. Cl.³ F16K *31/04*
U.S. Cl. 251—38 **2 Claims**



1. A quantity control valve for controlling the quantity of a pressure medium comprising:

(a) a valve-receiving housing (1) having a pressure medium inlet (A) and outlet (B) and an internal shoulder,

(b) an electric motor (2) supported by the housing and capable of producing angular displacement in either sense of rotation,

(c) a pinion (3),

(d) a threaded nut (5) rotatably mounted within the housing and being driven by the motor through the pinion,

(e) a bush (11) fixed in the housing,

(f) a threaded spigot (7) coating with the nut and being axially movable relative to the bush,

(g) a valve cone (103),

(h) a sleeve (102) fixed to the valve cone and having a control opening (106) therethrough,

(i) a position piston (101) connected to the spigot and being longitudinally slidable therewith and relative to the sleeve,

(j) a pressure spring (104) supported between the housing shoulder and the valve cone,

(k) a non-return valve (107),

(l) a valve seat (108) for the seating of the valve cone in closed position,

(m) a first annular chamber (109) in the housing,

(n) a central conduit (112) in the valve cone,

(o) a radial connection (110) and nozzle (111) connecting between the first annular chamber and control conduit,

(p) a radial duct (113) and connecting spring chamber (114),

(q) a second annular chamber (115),

(r) a third chamber (116),

(s) a central through bore (117), '(t) a fourth chamber (118),

(u) and means for pulsing the motor (2) for achieving pinion (3) rotation through a certain angle and axial displacement of the spigot (7) according to a transmission ratio as determined by the thread pitch of the nut (5),

all adapted and arranged for the stepwise movement of the position piston (101) and following movement of the valve cone (103) and covering of the control opening (106) by the position piston (101) in the attainment of a progressive rise with the valve cone (103) closing on the valve seat (108) in a valve closure mode and for the resultant passage of the pressure medium from the inlet (A) firstly to the first annular chamber (109) and the central conduit (112) and secondly via radial duct (113) into spring chamber (114) for pressurizing the valve cone (103) and thirdly via control opening (106) into second annular chamber (115) and third chamber (116) to the closed non-return valve (107) and fourthly via central through bore (117) to the fourth chamber (118) with the clearance of the control opening (106) being controlled by the movement of the position piston (101) responsively to the upward movement of the spigot (7) according to the driving of the motor (2) and with the valve cone (103) remaining closed until the travel limiting valve is actuated for the opening of the non-return valve (107) with consequent pressure drops in the spring chamber (114) and second annular chamber (115) and fourth annular chamber (118) and third chamber (116) and the lifting of the valve cone (103) from valve seat (108) against the pressure of pressure spring (104) for the covering of the control opening (106) by the position piston (101).

4,239,180

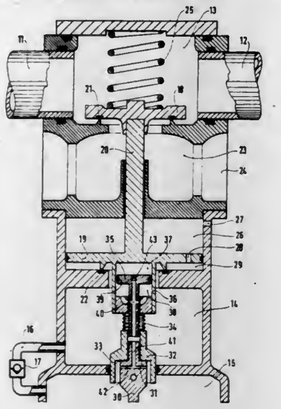
COMPENSATED FORCE VALVE WITH TWO SEATS

Edmond Thuries, Pusignan; Bernard Raynaud, Caluire, and Armand Scarato, Lyon, all of France, assignors to Delle-Alsthom, Villeurbanne, France

Filed Feb. 7, 1979, Ser. No. 10,282
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—51 **4 Claims**

1. A compensated force valve with two seats, said valve including a first piston and second piston which are connected together by a common shaft, means for mounting said pistons within said valve so as to move commonly toward and away from respective underlying seats, the upper face of the first piston being acted on by a spring and by the compressed gas to be exhausted, the lower face of the second piston being acted on by a compressed gas, and an externally actuated control rod acting on the valve for controlling said exhausting of compressed gas, the improvement comprising an intermediate moving structure interposed between said control rod and said second piston, said intermediate moving structure being constituted by a piston-cylinder assembly including a control cylin-

der and a control piston slidable therein, said control cylinder being integral with said second piston and operatively contacting a stop integral with said control rod and a compression spring biasing the piston-cylinder assembly to return position relative to said rod, whereby there is reduced valve actuating time and reduced control return time with the intermediate moving structure providing improved dampening of the moving parts of said compensated force valve.



4. A valve according to claim 1, wherein the rod of said control piston projects internally of a sheath which abuts against said stop of said control rod when the valve closes and when the valve begins to open, when the control piston compresses the gas in the chamber of the cylinder and moves at the same time as the control rod and which moves away from the stop at the end of the opening of the valve when the latter moves at a higher speed than the control rod

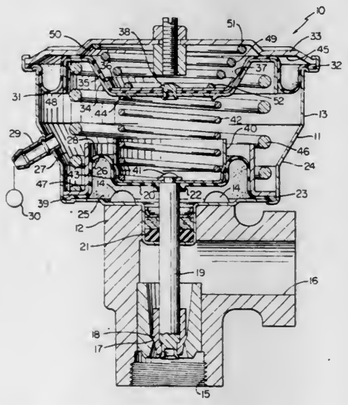
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4,239,181

VALVE POSITIONER AND METHOD OF MAKING THE SAME

Harold G. Brakebill, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 22, 1978, Ser. No. 908,209
Int. Cl.³ F16K *31/126*; F01B *19/00*; F02M *25/06*
U.S. Cl. 251—61.5 **2 Claims**



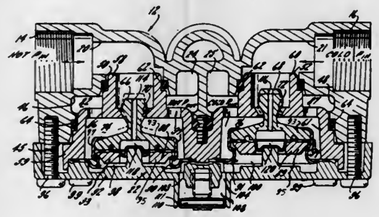
1. In a self-contained valve positioner having a single valve positioner housing including an actuator portion and having a pneumatically operated actuator means therein carrying a main valve member to position said main valve member relative to a main valve seat in a valve unit in relation to the magnitude of a single pneumatic signal directed to said valve positioner and being utilized as the fluid source therein for pneumatically operating said actuator means, said actuator means having means in said housing to cause said actuator means to progressively open,said valve member as said signal being directed to said valve positioner progressively increases from a first value to a second value and thereafter to progressively close said valve member as said signal being directed to said valve positioner progressively increases from said second value to a third value, said actuator means including a first flexible diaphragm operatively interconnected to said main valve member and being movable in relation to the pressure differential acting across the same, said means of said actuator means comprising a second flexible diaphragm not attached to said main valve member, said first diaphragm and said second diaphragm being spaced from each other and defining a chamber therebetween that receives said pneumatic signal therein, a first compression spring disposed in said chamber and having opposed ends respectively acting on said first diaphragm and said second diaphragm, the improvement comprising a second compression spring disposed in said chamber and having opposed ends, one of said ends of said second spring bearing against said housing and the other of said ends of said second spring acting on a retaining means on said second diaphragm such that said second diaphragm is moved toward said valve member against the bias of both said first and second compression springs as said signal increases from said second value to said third value.

4,239,182

DIAPHRAGM MOVABLE WALL ASSEMBLY FOR HYDRAULIC SYSTEMS

Don C. Arnold, Palatine; Julio D. Silletti, Rockford; Richard L. Ritzenthaler, Alden, all of Ill., and Thomas J. Wilcox, East Troy, Wis., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Division of Ser. No. 739,082, Nov. 5, 1976, Pat. No. 4,174,726.
This application Mar. 8, 1979, Ser. No. 18,786
Int. Cl.³ F16K *31/365*
U.S. Cl. 251—61.2 **1 Claim**



1. A diaphragm movable wall assembly for use in fluid systems including housing means, valve means in said housing means, and a cylindrical fluid chamber within said housing means associated with each said valve means, said diaphragm movable wall assembly comprising:

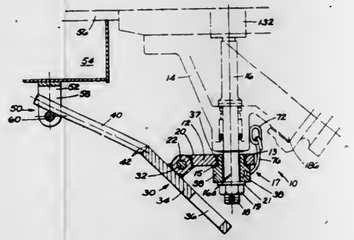
a circular nonperforated diaphragm having an outer rim for clamping the diaphragm to extend across and divide said fluid chamber of said housing means with one side of said diaphragm sealed from the other side of said diaphragm, a pair of circular elements having a diameter smaller than said diaphragm, a tubular ring securing said elements in assembled form with said diaphragm clamped between said elements and having an annular flexible section free of said elements and inward of said rim to support said assembled elements and said diaphragm as a movable wall assembly in said chamber, means including a stem and valve member carried by one of said elements for operating said valve means, and means for counterbalancing fluid pressure acting on said valve member including an opening in the center of said other element to permit a free section of said diaphragm to float in the opening for counter-balancing purposes, and a passage in said valve stem for admitting liquid from said chamber to said free section of said diaphragm.

4,239,183

HANDLE ASSEMBLY FOR BOTTOM OUTLET VALVE

Glennon L. Basler, and Richard J. Wempe, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,372
Int. Cl.³ F16K *35/00, 27/03*
U.S. Cl. 251—144 **8 Claims**



1. An operating handle assembly for a bottom operable railway tank car lading valve comprising:

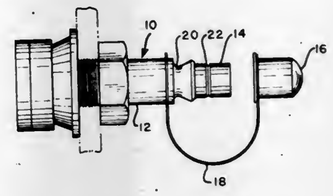
a tank car bottom outlet chamber having an operating shaft passing therethrough to move a valve closure between open and closed positions; said operating shaft including an operating shaft non-round connection portion at its lower end; an adapter plate extending horizontally outwardly from said operating shaft connection portion and including an adapter plate opening through which said operating shaft passes with clearance; said shaft non-round connection portion comprising an upper cylindrical portion which rotates within said adapter plate opening, and a lower non-round portion and wherein said lower non-round portion defines a shoulder which supports said adapter plate; said adapter plate having a distal end; hinge means attached to the distal end; a handle assembly attached to said adapter plate with said hinge means; said handle assembly including a handle connection portion having a non-round slot adapted in one position to engage said non-round connection portion; a handle shaft portion extending upwardly and away from said handle connection portion; said handle shaft portion removably held in place by a bracket located above said shaft connection portion; whereby when said shaft handle portion is in position within said bracket, said handle connection portion is spaced below said adapter plate and said operating shaft connection portion; and whereby said handle is pivotable about said hinge means to an engaged position in which said handle connection portion abuts the lower surface of said adapter plate and said handle connection portion engages said lower non-round portion and said handle is rotatable to move the valve closure between open and closed positions, and whereby after use said handle assembly and said adapter plate are rotatable about said upper cylindrical portion without rotating said operating shaft until said handle aligns with said bracket and said handle shaft portion is reinserted in said bracket.

4,239,184

VALVE STEM

Walter H. Dudar, 1227 Levee St., Dallas, Tex. 75207

Continuation of Ser. No. 890,200, Mar. 27, 1978, abandoned, which is a continuation of Ser. No. 749,228, Dec. 10, 1976, abandoned. This application Apr. 3, 1979, Ser. No. 26,545
Int. Cl.³ F16K *51/00*; B65B *3/00*
U.S. Cl. 251—149.6 **5 Claims**



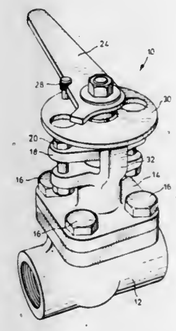
1. A valve stem for a vehicle tire comprising a body portion sized to receive and hold in operative position a valve core to control passage of air into and out of a tire, said valve stem having a plurality of separate grooves recessed into the body portion of the stem on the outside of the stem and at an area of the stem remote from the tire, said grooves being separate from each other and unconnected to each other, each of said grooves being positioned and of different sizes to accept and removably lock quick connect couplers of various sizes to the stem.

4,239,185

VALVE

Walter D. Lowe, 41 Hawksbury Dr., Willowdale, Ontario, Canada (M2K 1M4)

Filed Mar. 29, 1979, Ser. No. 24,980
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—164 **1 Claim**



1. A valve comprising:

a body with a through flow passage;

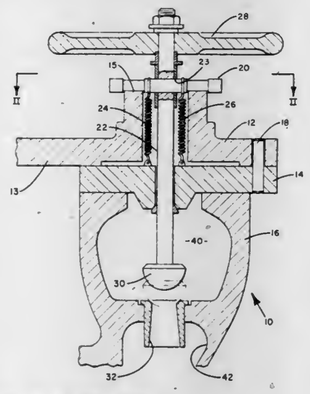
a metal plug having a tapered cylindrical wall extending transversely across said through flow passage;

a metal ring-shaped seat on each of the opposed sides of the tapered cylindrical wall of said plug, each ring-shaped seat being supported in a through flow passage and extending beyond the body toward the plug;

said plug being formed with a through transversely extending opening at said tapered cylindrical wall and being seatable in sealing relation against said seats with its opening misaligned with said through flow passage of said body whereby to close said through opening of said body to flow;

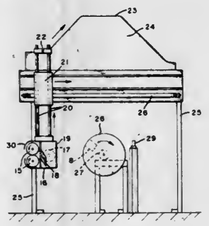
a stem for said metal plug having an axis and having a threaded portion;
a mounting nut in threaded engagement with said threaded portion of said stem;
a seat on said body for said mounting nut shaped to receive and support said nut, said nut being freely rotatable into contact with the body seat while the metal plug is seated in the metal ring-shaped seats with predetermined seating pressure and position;
clamping means for clamping said nut in any selected rotational position and in rigid relation with respect to said body seat and sealing it in said body, whereby the nut can be clamped rigidly with respect to the body to select a substantially infinitely variable range of opening and closing torques;
said plug being mounted on one end of said stem, the other end of said stem being accessible to rotate the stem whereby to rotate the plug between the ring-shaped seats and simultaneously move it transversely of the through flow passage in the body in the direction of increasing diameter of the taper of the plug to turn the opening in the plug from nonalignment with the through flow passage in the body to alignment with the through flow passage in the body whereby to establish flow through the valve and to lift it from the ring-shaped seats in the axial direction of the stem to relieve the tightness of the sealing relation of the plug with the ring-shaped seats; and
connecting means connecting said stem with said plug for relative movement in the direction transverse of the longitudinal axis of said stem.

4,239,186
TRIP VALVE CONSTRUCTION
Prem Pratap, Pittsburgh, Pa., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Apr. 18, 1979, Ser. No. 31,233
Int. Cl.³ F16K *31/524*
U.S. Cl. 251—255 **3 Claims**



1. A trip valve comprising:
a valve body including a valve bonnet having a valve seat and a trip lever having a cam-like surface formed at the top thereof, said trip lever overlying the valve bonnet and being joined thereto for permitting movement of the lever relative to the bonnet;
a valve stem movably disposed within the valve body and only movable in a linear path and including a horizontally extending hole formed substantially adjacent to and vertically above the cam-like surface of the trip lever, and valve means formed at the other end thereof and only linearly movable between seat disengaged and seat engaged positions with respect to the valve seat in accordance with movement of the valve stem;
a trip pin passing through the hole formed in the valve stem and supported upon the cam-like surface of the trip lever;
force generating means for urging the valve stem into closed seat engaged position, with a first portion of the cam-like surface of the trip lever generating a force in opposition to the force generated by said force generating means for urging the valve stem and valve means into the open seat disengaged position, said cam-like surface being movable relative to the trip pin through the movement of the trip lever for moving said valve means between said seat disengaged and seat engaged positions; and
said force generating means including a pair of tension springs, with one end of each spring attached to the trip pin and the other end attached to a non-movable portion of the trip valve, with the springs urging the valve stem through attachment to the trip pin towards the seat engaged position of the valve means.

4,239,187
WINDER STRING-UP METHOD AND APPARATUS
Beryl A. Boggs, Richmond, Va.; Mandayam C. Narasimhan, Seekonk, Mass., and Hsin L. Li, Parsippany, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Filed Jul. 2, 1979, Ser. No. 54,352
Int. Cl.³ B65H *54/00, 65/00, 75/28*
U.S. Cl. 242—25 R **7 Claims**

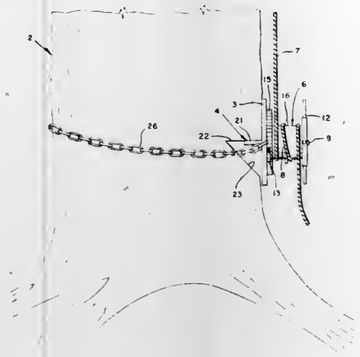


1. A method for the inline string-up of a rapidly advancing filament from a continuous forming operation onto a rotating winding wheel, comprising the steps:
(a) passing the leading portion of said filament into the nip of two counterrotating brush rollers having a peripheral velocity exceeding the velocity of said filament to the extent sufficient to produce a sliding frictional tensioning of the advancing segment of said filament;
(b) moving said brush rollers along a predetermined path passing over said winding wheel to lay a segment of said filament onto the rotating winding surface of said winding wheel; and
(c) cutting said filament within its contact arc on the winding surface and securing the leading portion of the advancing segment of said filament onto the winding surface, whereupon winding of the advancing filament onto said winding wheel proceeds.

4,239,188
TREE HANDLING DEVICE
Edwin L. Hobbs, 10 Lance Ct., Moraga, Calif. 94556
Filed Apr. 30, 1979, Ser. No. 34,463
Int. Cl.³ B66C *23/60*
U.S. Cl. 254—376 **11 Claims**

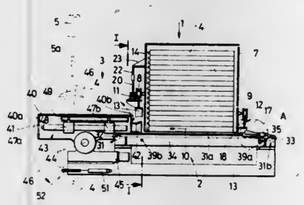
10. A load handling device comprising:
a. a base (3);
b. means (4) attached to said base and adapted for temporary secure engagement with a tree trunk;
c. a cylindrical member (6) mounted on said base and positioned with its longitudinal axis generally at right angles to the axis of said tree;

d. winch means (59) attached to said base;
e. an elongated flexible member (71) mounted on said winch means adapted for encircling said tree trunk;
f. hook means (73) mounted on said base spaced from said winch means;



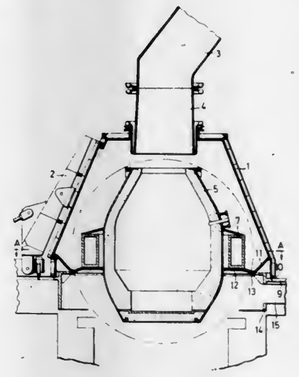
g. catch means (72) mounted on the end of said elongated member for engagement with said hook means; and
h. ratchet means (67) and (69) mounted adjacent said winch means for holding said strap at a preset position.

4,239,189
HANDLING APPARATUS FOR PROBE TUBES TO BE ATTACHED TO TEMPERATURE GAGE AND/OR SAMPLING LANCES IN THE METALLURGICAL FIELD
Helmut Scherff, Neukirchen-Vluyn, Fed. Rep. of Germany, assignor to Mannesmann Demag A.G., Duisburg, Fed. Rep. of Germany
Filed Aug. 31, 1979, Ser. No. 71,733
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1978, 2839255
Int. Cl.³ C21B *7/24*
U.S. Cl. 266—79 **10 Claims**



1. Apparatus for transferring probe tubes, to be attached to a temperature gage or sampling lance in metallurgical operations, comprising
(a) a storage tank for a plurality of probe tubes;
(b) a transfer mechanism for receiving a selected probe from said storage tank and moving it to a position for engagement with a lance or gage;
(c) a feed mechanism for selecting and moving a probe tube from said storage tank to said transfer mechanism;
(d) said transfer mechanism rotatable from a horizontal receiving position to a vertical feeding position for said probe tubes; the improvement characterized by
(e) a plurality of vertically stacked probe tubes positioned in said storage tank;
(f) an opening in the front wall of said storage tank adjacent the bottom row of each stack of probe tubes;
(g) said probe tubes movable out of said front opening into said transfer mechanism;
(h) an opening in the rear walls of said storage tank, adjacent the bottom row of each stack of probe tubes; and
(i) said feed mechanism extending through said rear openings to engage and feed selected ones of said probe tubes to said transfer mechanism.

4,239,190
STRUCTURE FOR COLLECTING EXHAUST GASES FROM A CONVERTER
Jörg P. Baum, Essen, Fed. Rep. of Germany, assignor to Verfahrenstechnik Dr. Ing. Kurt Baum, Essen, Fed. Rep. of Germany
Filed May 2, 1979, Ser. No. 35,212
Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821379
Int. Cl.³ C21C *5/38*
U.S. Cl. 266—158 **8 Claims**



1. A structure including a converter for refining pig iron into steel, said converter includes a vessel normally arranged in an upwardly extending position and having a normally upwardly extending axis, an upper end and a lower end each extending transversely of the axis and the upper end forming an opening, and means for collecting exhaust gases from said converter vessel, said means comprises walls forming a hood-like chamber, said walls comprise a top wall spaced above the opening in the upper end of said converter vessel in the upwardly extending position thereof, said top wall having an opening therein for connection to an exhaust gas line, and side walls extending downwardly from said top wall and spaced outwardly from and extending around said converter vessel, wherein the improvement comprises that said side walls have lower ends located between the upper and lower ends of said converter vessel, said converter includes a support ring secured to said vessel and located outside of and encircling said vessel between the upper and lower ends thereof and said support ring extending substantially normally of the upwardly extending axis of said vessel, and a collar encircling said vessel and attached to said vessel and said support ring, said collar extending substantially normally of the upwardly extending axis of said vessel and projecting radially outwardly from said support ring toward the lower ends of said side walls to bear into a juxtaposed relationship, means for pivotally mounting said support ring within said hood-like chamber about a pivot axis extending transversely of the normally upwardly extending axis of said vessel so that said support ring along with said collar and said vessel can be pivoted about the pivot axis relative to said means forming said hood-like chamber, and the maximum dimension of said support ring, collar and vessel from said pivot axis being such that said support ring, collar and vessel pivot on a turning circle not greater than the inside diameter of the lower ends of said side walls encircling said

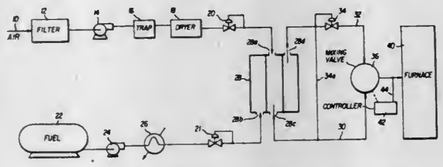
support ring and collar, said support ring being located between and spaced from the upper and lower ends of said vessel and the lower ends of said side walls extending downwardly at least to the region of said support ring with said lower ends laterally enclosing said vessel above the lower end of said vessel so that the lower end of said vessel is located below and is accessible from the exterior of said side walls.

4,239,191

APPARATUS FOR CONTROLLING COMBUSTION IN A METAL MELTING FURNACE

Milton E. Berry, and Ronald L. Pariani, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 879,034, Feb. 21, 1978, Pat. No. 4,211,555.
This application Aug. 3, 1979, Ser. No. 63,485
Int. Cl.³ C21D *11/00*
U.S. Cl. 266—200 **9 Claims**



1. Apparatus for separately treating the components of a gaseous fuel mixture prior to their mixing for use in a metallurgical melting furnace to yield a gaseous mixture having a predetermined and constant mass ratio of its component gases, comprising:

means for supplying a first gaseous fuel component having a characteristic temperature and pressure, said first component being an oxygen containing fluid;

means for supplying a second gaseous fuel component having a characteristic temperature and pressure, said second component being a hydrocarbon containing fluid;

means for substantially equalizing the temperatures of said first and second components without intermixing said components;

means for equalizing the pressures of said first and second components without intermixing said components; and

means for mixing said first and second components in a predetermined volume ratio, whereby the resulting gaseous fuel mixture has a predetermined and constant mass ratio of said component gases due to their previously equalized temperature and pressure.

4,239,192

METHOD AND APPARATUS FOR IMPROVING THE EFFICIENCY OF THE DEOXIDATION, DESULFURIZATION AND PURIFICATION OF STEEL IN THE POURING LADLE

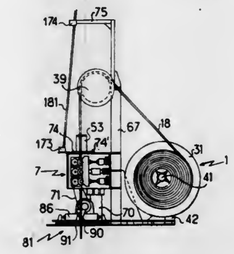
Fernand Morival, Avenue Monier, 59178 Hasnon, France

Filed Aug. 28, 1978, Ser. No. 937,325
Claims priority, application France, Sep. 2, 1977, 77 27525
Int. Cl.³ C21C *7/00*
U.S. Cl. 266—216 **19 Claims**

1. Apparatus for improving the efficiency of the deoxidation, desulfurization and purification of molten steel in a pouring ladle, including means for injecting a band of metal into molten steel in a ladle, a supply of bands disposed proximate said injection means, and a drive assembly located above and proximate to the molten steel in the ladle for pulling on a band to direct it downward, maintain it in straight condition and propel it toward the ladle so it enters the surface of the liquid steel perpendicularly, the said drive assembly includng a series of drive rollers on one side of the band and a series of mating rollers on the other side of the band, to grip and drive the band, the mating rollers being mounted on a yoke which can be moved toward and away from the drive rollers by the action of rams, characterized by means to inject a selected quantity of addition products and of a band of metal which is as rectilinear as possible, comprising:

(a) means for precisely metering the length of a band supplied to the molten steel,

(b) receptacles for containing the addition products adapted to be fixed to the lower end of each band, the material



constituting the receptacles being chosen so as to be destroyed only at the moment when the receptacle has reached the bottom of a ladle full of molten steel with the band which pushes it there, and

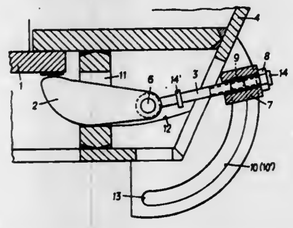
(c) a trapdoor above the ladle for supporting the receptacles and adapted to open at the moment of the descent of a band with the receptacle which it pushes downward.

4,239,193

CONVERTER BOTTOM FASTENING ARRANGEMENT

Manfred Eysn, Linz, Austria, and Daniel Meyer, Neuves Maisons, France, assignors to Voest-Alpine Aktiengesellschaft, Austria and Société Sidérurgique Châtillon Neuves Maisons, France

Filed Mar. 22, 1979, Ser. No. 22,824
Claims priority, application Austria, Apr. 5, 1978, 2382/78
Int. Cl.³ C21C *5/42*
U.S. Cl. 266—243 **8 Claims**



1. In a converter bottom fastening arrangement to be used in a converter construction comprising:

a removable converter bottom;

a converter jacket defining a bottom opening to be covered by said removable converter bottom;

a supporting construction connected to said converter jacket;

a plurality of rocker-shaped clamping levers peripherally arranged about said removable converter bottom for securing said removable converter bottom to said converter construction, said plurality of rocker-shaped clamping levers being displaceable into and out of an engagement position with said removable converter bottom and having outer ends facing said converter jacket; and

bracing means being provided for supporting said outer ends with respect to said converter construction, the improvement which is characterized in that

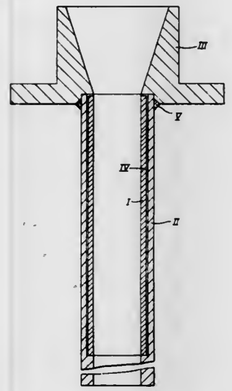
a curved guideway is provided and guide means are provided on said bracing means, said bracing means being guided by said guide means along the curved guideway between a vertical bracing position and a released position.

4,239,194

TUYERE FOR THE BOTTOM OF A STEELWORKS CONVERTER

Michel J. Debaise, Mont-sur-Marchienne, Belgium, assignor to Hainaut-Sambre Societe Anonyme, Belgium

Filed Jun. 21, 1979, Ser. No. 50,880
Claims priority, application Belgium, Jun. 23, 1978, 868431
Int. Cl.³ C21B *7/16*
U.S. Cl. 266—270 **13 Claims**



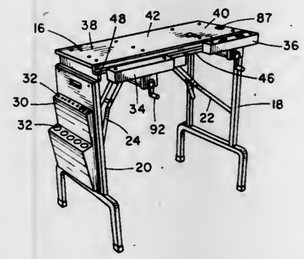
1. A tuyere for the bottom of a steelworks converter, comprising a cylindrical tube, and a convergent duct the narrower end of which is connected to one end of the tube, for introducing a refining fluid into the tube, and an internal sheath of abrasion-resistant material, the sheath being coaxial with the tube and inserted in the internal wall of the tube over a length of 150 to 300 mm extending from the point at which the convergent duct is connected to the tube.

4,239,195

WORKBENCH

John P. Oltman, Cedar Falls, Iowa, and Emerson V. Purkapile, Chicago, Ill., assignors to Waterloo Industries, Inc., Waterloo, Iowa

Filed Jul. 2, 1979, Ser. No. 54,231
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—16 **19 Claims**



1. An improved workbench comprising, in combination:

(a) a top with a side edge rail;

(b) collapsible legs attached to and supporting the top;

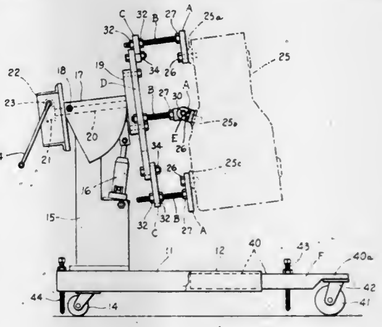
(c) a vise member affixed to the top, said vise member including a gripping jaw in opposed relation to the side rail of the top, said vise member also including means for separately adjusting the spacing of the attached gripping jaw from the side rail; said means for adjusting including three slidably telescoped members, mounted for telescopic movement transversely with respect to the side edge rail; the outside member connected to the gripping jaw, the middle member including adjustable ratchet means for engaging cooperative means attached to the bench and thereby providing means for gross adjustment of the gripping head with respect to the side rail, the inside member including means for simultaneous movement with the outside member with respect to the middle member to thereby provide fine adjustment of the gripping jaw or release of the ratchet means.

4,239,196

ENGINE STAND

James E. Hanger, P.O. Box 16, Panama City, Fla. 32401

Filed May 9, 1979, Ser. No. 37,403
Int. Cl.³ B25B *11/00*
U.S. Cl. 269—17 **3 Claims**



1. A motor mounting apparatus for use on an engine stand having a wheeled base with a vertical stand carried thereby and a rotatable upright face plate on said stand comprising:

a plurality of threaded members attachable to said engine;

a plurality of substantially horizontal threaded studs receivable upon said threaded members;

a plurality of transfer bar members attachable to said studs;

a mounting plate attachable to said transfer bar members and to said face plate;

said transfer bar members having elongated slots therein facilitating adjustable positioning of the transfer bars upon said mounting plate;

a vertically disposed hydraulic ram for raising and lowering said face plate, and

forwardly extensible wheeled load leveling elements carried by said base.

4,239,197

APPARATUS FOR SUPPORTING A DOOR DURING PROCESSING

James H. Olstad, 3808 W. Eisenhower Blvd., Loveland, Colo. 80537

Filed Nov. 20, 1979, Ser. No. 96,039
Int. Cl.³ B23Q *3/00*
U.S. Cl. 269—68 **8 Claims**

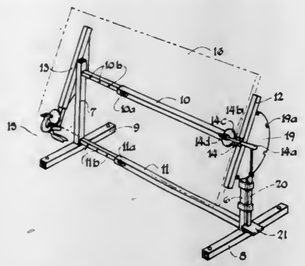
1. Apparatus for supporting a door during processing and applying fixtures thereto prior to installing in a doorway comprising:

a rigid elongated frame including vertical supports at each end thereof;

a pair of lateral door-supporting cross arms individually pivotally connected to said vertical supports;

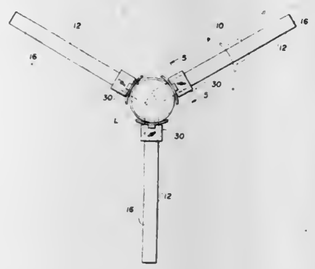
a first clamp secured to one of said cross arms near its pivotal

connection to one of said vertical supports and manually operable to clamp a door thereto;
a second clamp secured to the outer end of the other of said cross arms and manually operable to clamp a door thereto;



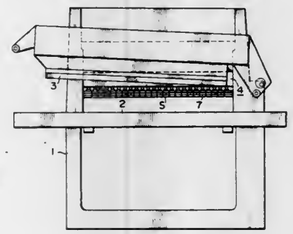
an indexing plate depending from one of said cross arms adjacent its vertical support and including a slot for each desired angular position of said cross arms;
and a spring-biased manually releasable latch for engaging a selected slot of said indexing plate effective to dispose an attached door in a desired position.

4,239,198
LOG HOLDER
William H. Trupp, 901 Sandy La., Gastonia, N.C. 28052
Filed Jun. 13, 1979, Ser. No. 48,292
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—156 **6 Claims**



1. A log holder for supporting a log in a vertical position comprising base means and a plurality of retainer means slidable on said base means, said retainer means including locking means for adjustably locking said retainer means to the base means and collar means for contacting the log,
said base means including at least three interconnected, horizontally extending supports, each support having a lower planar portion, an upper planar portion and a web interconnecting said lower and said upper planar portions and one of said retainer means being slidably mounted on each of said supports,
said retainer means further including a shoe portion having a T-shaped slot in the lower portion thereof, said T-shaped slot defining a first planar surface and a pair of oppositely projecting legs, said legs spaced from and beneath said upper planar portion of said support and adapted to move up and into frictional engagement with said upper planar portion when said locking means is actuated,
said T-shaped slot extending through the complete lower portion of said shoe portion, said locking means including a first means adapted to be moved into the horizontal opening portion of said T-shaped slot, and against the upper planer portion of said support, whereby the shoe portion is raised to bring said legs of said shoe portion into frictional engagement with said support upper planar portion, said locking means further including a second means affixed to said first means to facilitate the movement of said first means.

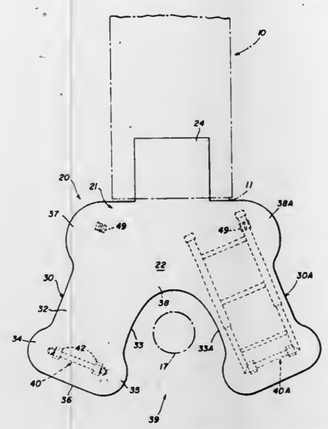
4,239,199
CLAMPING APPARATUS FOR A GUILLOTINE TYPE CUTTER
Isamu Miura, 6/16,3, Ryusen, Taito-ku, Tokyo, Japan
Filed Sep. 12, 1978, Ser. No. 941,717
Claims priority, application Japan, Sep. 16, 1977, 52/110532; May 29, 1978, 53/63349
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—266 **3 Claims**



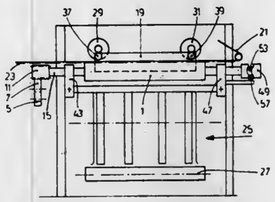
1. A clamp for a guillotine having a cutting blade movable vertically upwardly from and downwardly towards a table supporting material to be severed, said clamp being positioned adjacent said guillotine blade and extending along said blade for contact with the material to be cut and for pressing the material against the table during cutting operation, the improvement wherein said clamp comprises:
a plurality of adjacent, aligned partial presser feet defining individual clamping surfaces for pressing the cutting material,
means for independently displacing the partial presser feet in a direction away from said table in accordance to the reaction force generated during pressing of the cutting material against the table,
and said clamp further comprising a connecting piece for connecting any pair of adjoining partial presser feet to cause said adjacent, adjoining partial presser feet to be displaceable as a unit.

4,239,200
FOOT-ANKLE SURGICAL TABLE
Shahan K. Sarrafian, 4343 Davis, Skokie, Ill. 60076, and Vahram K. Sarrafian, 4100 Chester Dr., Glenview, Ill. 60025
Filed Feb. 5, 1979, Ser. No. 9,259
Int. Cl.³ A61G *13/00*
U.S. Cl. 269—328 **16 Claims**

1. A table for detachable coupling to a surgical table and for supporting simultaneously both of the legs and feet of a patient during surgical procedures, said table comprising a body member, two branches on one end of said body member diverging outwardly therefrom and defining therebetween an access space for accommodating a surgeon, each of said branches having an upper surface dimensioned for receiving a corresponding one of a patient's fully-extended legs and feet thereon, and coupling means extending from the other end of said body member opposite said branches for detachably coupling said body member to the associated surgical table, each of said branches having a length as measured from the outer end thereof to the inner end of said access space which is substantially greater than the length of said body member is measured from the inner end of said access space to the inner end of said coupling means.

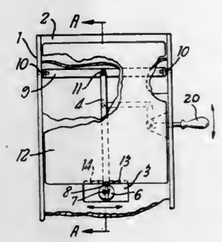


4,239,201
PLEAT-AND-PINCH FOLDING APPARATUS
Johannes Richter, Augsburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany
Filed Mar. 2, 1979, Ser. No. 16,989
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815077
Int. Cl.³ B65H *45/18*
U.S. Cl. 493—444 **9 Claims**



1. For use with a rotary printing press to form a paper sheet, or stack of paper sheets (23) with a fold line extending longitudinally in a direction of transport feed of the sheet, or stack of sheets through the printing machine, a pleat-and-pinch folding apparatus having
an elongated reciprocating pleating blade (19) positioned parallel to the direction of feed of the sheet and reciprocating transverse to its major dimension;
two pinch rollers (1, 3) located beneath the pleating blade (19) and defining an elongated nip therebetween positioned parallel to the direction of feed of the sheet to receive the sheet or sheets upon being pushed into the nip by the reciprocating blade,
and comprising, in accordance with the invention, a pleating blade suspension means (29, 31, 37, 39) moving the pleating blade (19) in a longitudinal direction parallel to its length during reciprocating movement of the blade; and
roller moving means (41, 43, 45, 47, 15, 17, 49, 51) for moving the pinch rollers axially in a longitudinal direction parallel to the feed direction, wherein the longitudinal movement of both the pleating blade and pinch rollers is effected simultaneously with the sheet or sheets being pushed by said blade into said nip for folding the sheet or sheets.

4,239,202
SHEET DISPENSER
George F. A. M. Turner, Ingatestone, England, assignor to Ciba-Geigy AG, Basel, Switzerland
Filed Mar. 16, 1978, Ser. No. 887,270
Claims priority, application United Kingdom, Mar. 23, 1977, 12180/77
Int. Cl.³ B65H *3/00*
U.S. Cl. 271—18 **4 Claims**

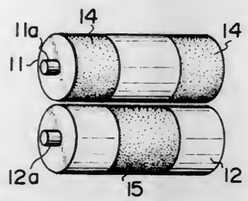


1. A sheet dispenser for dispensing sheets from a stack one at a time, each sheet having a notch along the bottom edge as it is held in the stack, the stack comprising alternate first and second sheets with the notch in all the first sheets being aligned in a first row and the notch in all the second sheets being aligned in a second row, the dispenser comprising a housing in which the stack is inclined vertically in a stack holder, the bottom the the stack resting on a side-ways movable stack support member, to one end of which is attached a sheet separator member which in the inoperative position of the dispenser abuts a face-portion of the bottom edge of the topmost sheet of the stack thus keeping the stack in the holder, the abutted portion of the sheet being smaller than any notch in the sheets of the stack, said stack support member being mounted on one end of a pendulum which is positioned on the opposite side of the stack holder to that side which supports the film stack, the said pendulum being pivotally mounted so that the sheet separator member, which is mounted on the stack support member which is in its turn mounted on the pendulum, is caused to abut the film stack; together with means to move the stack support member across and beneath the sheet stack so that the sheet separator member is stopped at the notch position in the topmost sheet thus abutting the next-to-topmost sheet so enabling the topmost sheet to fall by gravity from the stack over the sheet separator member and means to move the stack support member in the opposite direction which causes the topmost sheet to separate from the stack if it has not already separated, the said stack support member being so mounted in relation to the stack holder that the sheet separator member always abuts either the topmost sheet in the stack or the next-to-topmost sheet through the notch in the topmost sheet.

4,239,203
PAPER DELIVERY ROLLER SYSTEM
Isamu Uchida, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed Dec. 9, 1977, Ser. No. 859,081
Claims priority, application Japan, Dec. 10, 1976, 51/165733[U]
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—122 **1 Claim**

1. A paper delivery roller system comprising a feed roller 11 and return roller 12 of identical axial length disposed in a delivery zone so as to form a gap therebetween, said rollers 11 and 12 being rotated in the same direction so that frictional

forces acting in reverse directions are given to the upper and lower faces of the outermost sheet in a stack of sheets of paper stored in a store zone whereby the sheets of paper stored in the store zone are delivered one by one into the gap between said rollers **11** and **12**, said paper delivery roller system being characterized by said rollers **11** and **12** having frictional surfaces **14**



and **15** of the same material thereon respectively and the axial length of the frictional surfaces **14** of the feed roller **11** being larger than the axial length of the frictional surfaces **15** of the return roller **12** and each of the frictional surfaces of one of the rollers being in opposed relation to each of the non-frictional surfaces of the other.

4,239,204

CONSTRUCTION OF A COUNTING SECTION IN A PAPER COUNTING MACHINE

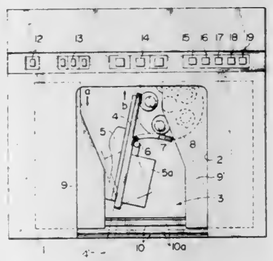
Tuyoshi Miyagawa, and Junichi Arikawa, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,129

Claims priority, application Japan, Apr. 25, 1978, 53-56341[U]

Int. Cl.³ B65H *1/02*

U.S. Cl. 271—171 **5 Claims**



1. A paper counting machine wherein a stack of papers charged on a holder is sucked and deflected one sheet at a time by a number of suction shafts to be counter, characterized in that a counting section including the holder and the suction shafts is disposed within a recess formed on the top of the body of the machine, noise-proof covers are openably mounted on the body above the recess to seal or release the counting section, and an upper edge of the body in front of the recess is constructed to be in substantially a same horizontal plane as the upper surface of the supporting plate of the holder whereby when the larger size of the papers is charged on the supporting plate with the covers being opened, the portions of the lower edges of the larger size papers are supported on the upper edge of the body.

4,239,205

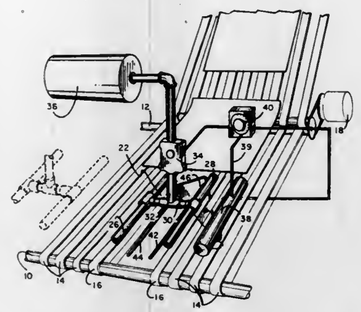
SMALL PIECE STACKER AND COUNTER

Michel Bourque, North Berwick, Me., assignor to B. B. & D, Associates, Biddeford, Me.

Filed Apr. 16, 1979, Ser. No. 30,099

Int. Cl.³ B65H *29/24, 33/08*

U.S. Cl. 271—175 **4 Claims**



1. A small laundry piece stacker and counter for use in association with laundry ironing machines comprising:

conveyor belt means having a space defined between an inner pair of said conveyor belts, said space being a distance less than the width of said piece;

a stationary blow-down member including elongated first and second blow-down pipes arrayed parallel to one another in a plane above said area between said inner conveyor belts aligned with the movement of the pieces, said first and second blow-down pipes each having a plurality of apertures defined at the bottom thereof;

air supply means adapted to blow air through said apertures in said blow-down pipes;

air supply control means interposed between said air supply means and said blow-down pipes;

detector means adapted to detect the positioning thereunder of a piece being moved along said conveyor belts, said detector adapted such that when it detects the presence of said piece, it activates said air supply control means thereby allowing air to pass from said air supply means through said apertures in said blow-down pipes whereby the pieces are blown down between the inner conveyor belts and catch means disposed below said blow-down pipes onto which said pieces are blown when air passes through said blown-down pipe aperatures, said first blow-down pipe being situated to one side of said catch means and said second blow-down pipe being situated to the other side of said catch means.

4,239,206

SHEET FEEDING APPARATUS

Masaharu Matsuo, No. 17-3, Higashi Komagata 3-chome, Sumida-ku, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,539

Claims priority, application Japan, Feb. 27, 1978, 53-20888; Feb. 27, 1978, 53-20889; Mar. 1, 1978, 53-22039

Int. Cl.³ B65H *5/16, 9/04*

U.S. Cl. 271—271 **7 Claims**

1. Sheet feeding apparatus comprising:

(a) a support defining a plane of sheet movement;

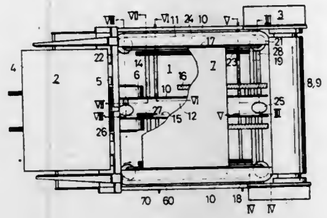
(b) an elongated conveying member extending in a closed loop;

(c) drive means on said support for moving said member in a path having two reversing portions arcuate about respective axes of curvature, a feeding portion substantially straight and parallel to said plane, and a return portion,

(1) said axes intersecting said plane,

(2) said feeding and return portions connecting said reversing portions;

(d) a sheet engaging dog fastened to a part of said conveying member for movement in said plane while said part moves in said feeding portion and for movement about said axes of curvature in respective arcs having smaller radii of curvature than said reversing portions when said part moves in said reversing portions;



(e) guide means on said support for limiting movement of a sheet engaged by said dog transversely relative to the direction of movement of said conveying member in said feeding portion, said guide means having a face elongated in said direction and transverse to said plane, adjusting means for moving said face transversely relative to said direction, and said drive means are secured to said guide means for movement of said feeding and reversing portions with said face.

4,239,207

DEVICE FOR DRIVING A SIMULATED FLYING OBJECT

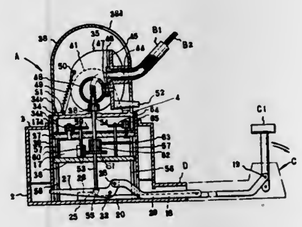
Toyotsugu Ogasawara, Tateishi, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1978, Ser. No. 965,431

Claims priority, application Japan, Dec. 3, 1977, 52/162295[U]

Int. Cl.³ A63H *27/04*

U.S. Cl. 272—31 A **9 Claims**



1. A device for driving a simulated flying object comprising a housing, an upwardly extending shaft mounted in said housing and extending outwardly from said housing in the upward direction, said shaft being displaceable in the axial direction thereof and movable relative to said housing, a rotary structure mounted on said housing and arranged to rotate around the axis of said shaft, said rotary structure comprising a turntable extending transversely of said shaft with said shaft extending through said turntable, a swingable support mounted on and extending upwardly from said turntable, said swingable support arranged to pivot about an axis extending transversely of said shaft, an elongated supporting arm secured at one end to said swingable support and extending outwardly thereform transversely of the axis of said shaft, said arm having an axis extending in the elongated direction thereof, said flying object being secured to the other end of said supporting arm spaced outwardly from said swingable support, an electric motor mounted in said housing, gear means driven by said electric motor for rotating said shaft for rotating said turntable around said shaft and for selectively rotating said support arm about the axis of said arm, means mounted on said housing for movement in the upward direction relative to said housing for engagement with said swingable support for pivoting said swingable support about the axis thereof so that said supporting arm secured thereto can be swung in an arc in an upwardly extending plane extending transversely of the pivot axis of said swingable support, manually operable control means for controlling the movement of said flying object comprising a first handle lever arranged to actuate said electric motor and for axially displacing said shaft for selectively engaging said gear means for rotating said support arm about the axis of said arm, and said gear means includes first gears for driving said shaft, second gears for rotating said turntable from said shaft and third gears for rotating said supporting arm from said shaft.

4,239,208

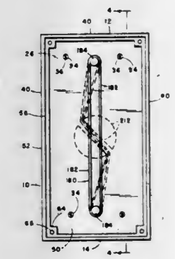
WRIST AND FOREARM CONDITIONER AND EXERCISER

Billy D. Walls, Box J, Mondamin, Iowa 51557

Filed Sep. 27, 1978, Ser. No. 946,120

Int. Cl.³ A63B *21/00*

U.S. Cl. 272—67 **13 Claims**



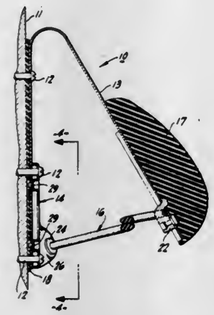
1. A wrist and forearm conditioner and exerciser comprising a frame, a handle carrier rotatably mounted on said frame for rotation about an axis, a handle, means mounting said handle on said carrier, said handle being adapted to be gripped by an operator's hand and twisted for rotating said carrier, resilient means mounted on said frame, means interconnecting said carrier and said resilient means whereby when said handle is twisted and said carrier is rotated then said resilient means becomes increasingly tensioned as said carrier is increasingly rotated, said handle being sufficiently similar to a tennis racquet handle that said handle has such a size and shape that the average man when gripping said handle with one hand can have the majority of the length of his fingers and also a portion of the palm of his hand in engagement with and applying pressure on said handle at one time, said resilient means being of a strength providing sufficient resistance to handle rotation that substantial wrist and forearm exercise is provided for a person as he rotates said handle, said substantial exercise being measurable as being an amount reasonably to be expected to be useful in an exerciser to be repeatedly used for strengthening a person's wrist and forearm for such activities as golf, tennis and hand-ball, said frame having holes through a portion thereof, said holes extending substantially parallel to said axis for assisting the mounting of said frame on a vertical wall, said frame enclosing said resilient means at times of use, said frame having a forward side, a rearward side, and right and left sides, and top and bottom sides, said handle permanently extending forwardly from said forward side of said frame.

4,239,209

PUNCHING BAG SIMULATOR

Donald B. Curchod, Saratoga, Calif., assignor to American Fitness, Inc., Woodside, Calif.

Filed Nov. 24, 1978, Ser. No. 963,342
Int. Cl.³ A63B 69/24
U.S. Cl. 272—76 **2 Claims**



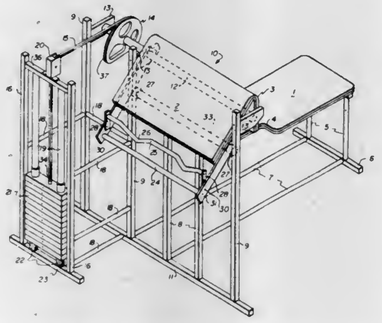
1. An exercise device for simulating the action of a punching bag of a type normally hung from above to be hit to move in various directions in response thereto comprising a resilient generally V-shaped body member having diverging arms including a support arm for mounting the device upon an upright surface in an inverted Vee position, and a reciprocating arm movable between advanced and retracted positions with respect to said support arm to a degree simulating the movement of a speed bag, a compressible target pad mounted on said reciprocating arm adjacent to its free end, the arms of said body member being joined by a resilient hinge portion, said hinge portion being twistable to permit the reciprocating arm to be deflected laterally with respect to said support arm, and elastic means serving to restrain and control the rebound movement of said reciprocating arm, the last named means being connected between the free end of said arm and a stationary anchor point, said hinge portion permitting deflecting and twisting movements of said reciprocating arm so that the target pad may be struck from side-to-side by the fists in simulating the action of a speed bag.

4,239,210

ARM CURL MACHINE

Lloyd J. Lambert, Jr., c/o Dynamics Health Equipment Manuf. Co., Inc. 1538 College Ave., South Houston, Tex. 77587

Filed Jan. 31, 1979, Ser. No. 7,966
Int. Cl.³ A63B 21/06
U.S. Cl. 272—118 **9 Claims**



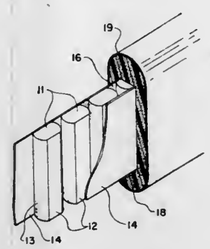
1. An arm curl machine comprising, in combination, a frame, a seat for an exerciser connected to said frame, a weight cage on said frame, weight means disposed in said weight cage for vertical movement between a rest position and an elevated position, stop means on said frame, hand grip means pivotally mounted on said frame for pivotal movement upwardly by said exerciser from a stop position defined by said stop means and drive means operatively connected to said hand grip means for moving said weight means from said rest position corresponding to the stop position of said hand grip means into said elevated position thereby providing an arm curl exercise for said exerciser.

4,239,211

PROCESS OF PRODUCING A WEIGHTED EXERCISING DEVICE

C. William Wilkerson, 7709 Audubon Dr., Raleigh, N.C. 27609

Filed Oct. 16, 1978, Ser. No. 951,504
Int. Cl.³ A63B 21/12
U.S. Cl. 272—119 **5 Claims**



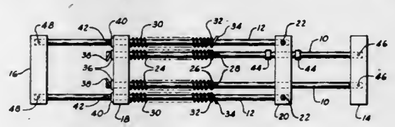
1. The process of producing a weighted device comprising: bonding a plurality of elongated weight means in spaced relationship to a web means to form a weighted web; bonding a strap means to one end of said weighted web; and permanently encapsulating said weighted web within a pliable, closed cell material whereby an improved weighted device is produced.

4,239,212

PUSH-PULL EXERCISE DEVICE

Donald D. Hickey, 317B Hayden St., Sayre, Pa. 18840

Filed May 3, 1979, Ser. No. 35,638
Int. Cl.³ A63B 21/02
U.S. Cl. 272—141 **9 Claims**



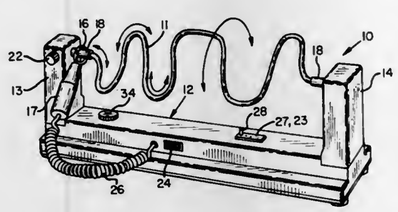
1. An exercise device comprising: first and second pairs of parallel rods having inner overlapping ends and outer projecting ends, said second pair of rods straddling said first pair of rods, a first transverse abutment member on the inner ends of said first pair of rods and slidably receiving said second pair of rods, a second transverse member connecting the inner ends of said second pair of rods and slidably receiving said first pair of rods, a first pair of coil springs respective ones of which are telescoped over respective ones of said first pair of rods with the ends of the springs that are adjacent said first transverse member being positioned to receive compressive force from said first transverse member, first retainers fixed to said first pair of rods for opposing compressive force from the other end of said springs, a second pair of coil springs respective ones of which are telescoped over respective ones of said second pair of rods with the ends of the springs that are adjacent said first transverse member being positioned to receive compressive force from said first transverse member, second retainers positioned on said second pair of rods for opposing compressive force from the other end of said springs, third retainers for preventing said first pair of rods from being pulled out of said first transverse member, fourth retainers limiting movement of said first transverse member outwardly of said second pair of rods, and handles on the outer ends of said first and second pairs of rods, and whereby both pushing and pulling of said handles are opposed by compressive action of one or more of the springs.

4,239,213

STEADINESS TESTING GAME

Arthur B. Jarvis, 46 Alexander Ave., San Rafael, Calif. 94901

Filed May 4, 1979, Ser. No. 35,831
Int. Cl.³ A63F 9/00
U.S. Cl. 273—1 E **2 Claims**



2. A steadiness testing game, comprising:
a base;
a convoluted electrically conductive track member having ends connected into the base;
pivotal mounting means providing for rotary adjustment of the position of the conductive track on the base along a generally horizontal axis and comprising, at one end of the conductive track, a conductive sleeve mounted in the base, with the conductive track having a generally cylindrical end closely fitted in the sleeve;
an electrically conductive ring positioned circumjacent the electrically conductive track member, have a clearance over the track member and adapted to be moved over the track member from one end to the other;
a handle attached to the conductive ring, permitting manipulation of the ring by a user;
a signal device connected to a power source; and
an electrical circuit connecting the conductive sleeve and track member, the conductive ring, and the signal device and power source such that contact of the ring with the track member closes the circuit and activates the power source;
whereby the steadiness of the user is tested as he attempts to move the ring over the track member avoiding contact of the two conductive members, which will cause the signal device to be activated.

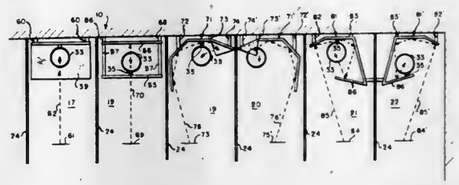
4,239,214

BASKETBALL SHOT MAKING GAME WITH A MULTIPLICITY OF BACKBOARD AND HOOP ARRANGEMENTS

Reeve R. Brenner, 1356 E. 8th St., Brooklyn, N.Y. 11230

Filed Nov. 15, 1978, Ser. No. 960,964
Int. Cl.³ A63B 63/08, 71/02
U.S. Cl. 273—1.5 R **14 Claims**

1. In a basketball shot making game comprising a court surface and a plurality of spaced apart backboards disposed above said court surface, each of said backboards being associated with a basket hoop adapted to receive a shot basketball caromed thereinto off said associated backboard; the improvement comprising a first predetermined angulated relationship for one of said backboards, said one backboard comprising a first plurality of carom surfaces with said one backboard being supported above said court surface with said associated basket hoop being disposed in a plane substantially parallel to the plane of said court surface, said first plurality of carom surfaces including at least one carom surface disposed in a plane angled with respect to a plane normal to the plane of said associated basket hoop, said first plurality of carom surfaces defining said first predetermined angulated relationship, said first predetermined angulated relationship defining a first associated carom flight path for depositing said shot basketball into said basket hoop associated therewith; and a second predetermined angulated relationship for a different one of said backboards, said different one of said backboards comprising a second plurality of carom surfaces with said different one backboard being supported above said court surface with said associated basket hoop being disposed in a plane substantially parallel to the plane of said court surface, said second plurality of carom surfaces including at least one carom surface disposed in a plane angled with respect to both a plane normal to the plane of said associated basket hoop and a plane parallel to the plane of said associated basket hoop, said second plurality of carom surfaces defining said predtermined angulated relationship,



said second predetermined angulated relationship being different from said first predetermined angulated relationship and defining a second associated carom flight path for depositing said shot basketball into said basket hoop associated therewith, said first and second associated carom flight paths being different, said first carom flight path intercepting the flight of said shot basketball and requiring said intercepted shot basketball to travel along a substantially horizontal trajectory with respect to said associated basket hoop between said one carom surface and said associated basket hoop in order to ultimately deposit said shot basketball into said associated basket hoop, said second carom flight path intercepting the flight of said shot basketball and requiring said intercepted shot basketball to travel along a substantially vertical trajectory with respect to said associated basket hoop between said one carom surface and said basket hoop in order to ultimately deposit said shot basketball into said associated basket hoop, said plurality of backboards being arrayed above said court surface in a course defined by a plurality of shot making stations with one of said backboards being disposed at each of said shot making stations, whereby a different shot making carom strategy is required at each of said stations.

4,239,215

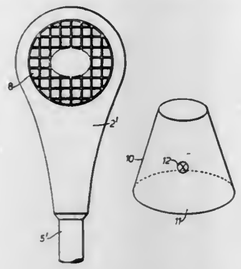
DEVICES FOR PRACTISING BALL-GAME STROKE PLAY

Eric Farr, Newburgh, Scotland, assignor to Tecsports of Oxford Limited, Great Britain

Continuation of Ser. No. 773,319, Mar. 1, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,608
Claims priority, application United Kingdom, Mar. 4, 1976, 8804/76; Jul. 8, 1976, 28457/76
Int. Cl.³ A63B 61/00
U.S. Cl. 273—29 A **3 Claims**

1. Apparatus for simulating and practising ball-game stroke play comprising a device for simulating and practicing ball-game stroke play, the device comprising a handle portion and a head portion; wherein the device has an overall length, a weight, and a weight distribution each of which is similar to that of a conventional ball-game racquet which the device is

arranged to simulate; and wherein the head portion comprises a solid mass of resiliently flexible material, the device being such that when held by its handle portion and its head portion is stroked against a weighted target and head portion is resiliently displaced relative to the handle portion producing a



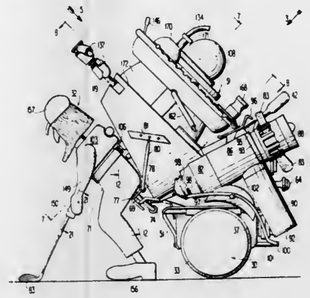
sensation, for the user, similar to that of striking a ball with the conventional ball-game raquet; and a target against which the device can be stroked, the target being a hollow flexible member having an opening through which a suitable material may be passed to weight the target.

4,239,216
GOLFER'S GREENS KEEPING AID
Frank L. Bauer, 903 Valmont Ct., Wyomissing, Pa. 19610
Filed Dec. 7, 1978, Ser. No. 967,299
Int. Cl.³ A63B 57/00
U.S. Cl. 273—32 B **7 Claims**



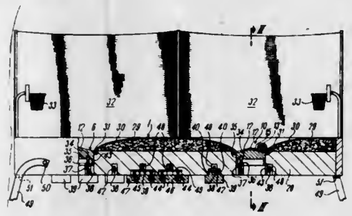
1. A golfer's aid comprising:
(a) a casing having a central axial bore and a lower end adapted to be received in the shaft of a golf club, the upper end of said casing having an annular groove encircling said central axial bore;
(b) an elongated symmetrical tool nestable within the bore of said casing for storage and removable therefrom for repairing dents in the green;
(c) a token carrier connected to said tool and providing a handle grip thereon, and connected to an annular skirt symmetrically spaced from the elongated tool and adapted to enter said groove; and
(d) means for latching said tool in the casing.

4,239,217
TABLE TOP GOLF GAME APPARATUS
Omar M. Thieme, and Ruby M. Thieme, both of 403 Vancil St., South Fulton, Tenn. 42041
Filed Jul. 9, 1979, Ser. No. 55,972
Int. Cl.³ A63F 7/06
U.S. Cl. 273—87.4 **26 Claims**



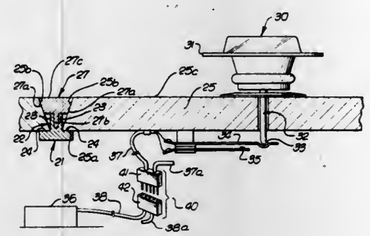
1. An apparatus unit for use in playing an indoor game resembling golf comprising a wheeled maneuver assembly, an actuator assembly mounted on said wheeled maneuver assembly, cooperative means on said assemblies to adjust the yaw of the actuator assembly relative to the maneuver assembly, a golfing figure including a rotational club holding section and a base section, cooperative means on said maneuver assembly and golfing figure base section to releasably couple the golfing figure to the maneuver assembly, cooperative rotational drive means on the actuator assembly and golfing figure rotational section, and manually operated means on the actuator assembly to activate said rotational drive means.

4,239,218
BASKETBALL TABLE GAME
Andreas Kreuzer, Rossbergstrasse 53, D-7022 Leinfelden-Echterdingen, Fed. Rep. of Germany
Filed Dec. 22, 1978, Ser. No. 972,620
Int. Cl.³ A63F 7/06, 7/24
U.S. Cl. 273—85 E **15 Claims**



1. A basketball table game comprising:
(a) a playing field in a generally horizontal plane, said playing field having an upper surface and opposite ends;
(b) a basket goal at each said end;
(c) said upper surface of said playing field including a plurality of depressions, said depressions providing unevenness in the playing field in the vertical direction, whereby a ball placed upon the playing field always rolls into a depression;
(d) a basketball ejector in each depression, each of said ejectors including recesses for receiving a ball in a precise position; and
(e) means for abruptly displacing each said ejector in the upward direction to produce a throwing motion and for rotating each said ejector to selectively determine the direction in which the ball is thrown by the abrupt upward displacement of the ejector.

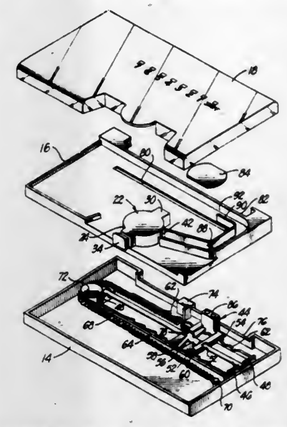
4,239,219
PINBALL APPARATUS WITH REPLACEABLE MODULAR BARRIER SUPPORTS
Robert W. Haefliger, 1872 Alpine Dr., San Marino, Calif. 91108
Filed Mar. 26, 1979, Ser. No. 23,596
Int. Cl.² A63D 3/02
U.S. Cl. 273—121 A **7 Claims**



1. In a pinball type machine, the combination comprising
(a) a support,
(b) multiple deck elements and elongated retainers removably carried by the support so as to provide upwardly exposed surfaces over which a ball is rollable, and
(c) separate structures respectively carried on multiple of the deck elements to be engaged by the rolling ball,
(d) said support comprising a lattice like framework defining upward openings sized to receive and interfit with said deck elements,
(e) each said structure including a part projecting upwardly of a deck element and deflectible by the ball rolling on the upwardly exposed surface of said deck element, and an electrical switch located entirely beneath the deck element, said part operatively connected to the switch such that the switch is operated in response to deflection of said part, there being counter circuitry connected with said switch via a releasable electrical connection which is established in conjunction with placing the deck element onto the support,
(f) each such part confined by the vertical boundaries of a single one of said deck elements and being entirely free of connection to others of said parts above said deck elements.

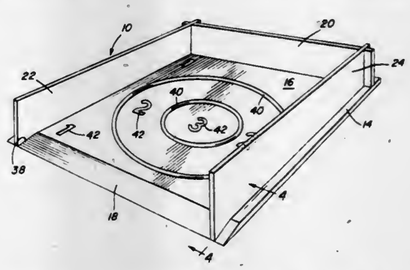
4,239,220
TARGET GAME AND COMPONENTS THEREOF
Toshiaki Kurita, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 27, 1978, Ser. No. 946,202
Claims priority, application Japan, Sep. 28, 1977, 52-130276
Int. Cl.³ F41J 7/00
U.S. Cl. 273—127 R **2 Claims**

1. A target apparatus which includes
a support member, target means movably supported on said support member so as to be capable of being moved along a path in which the improvement comprises:
motive means connected to said target means for moving said target means along said path from adjacent to a first end thereof to adjacent to a second end thereof,
escapement means having a ratchet means and a pivotally mounted escapement lever means for controlling the motion of said target means along said path from adjacent to the first end thereof to adjacent to the second end thereof,
said ratchet means being mounted on said support and said escapement lever means being movably mounted on said target means,
said ratchet means including two ratchet racks, each of which is located parallel to said path, one of said racks being located so that the vertical walls of its teeth face toward said first end, the other of said racks having teeth shaped so as to pivot said escapement lever means into engagement with the first of said racks,
said escapement lever means being pivotally mounted on



said target means so as to be capable of being pivoted between positions in which said lever means engages either one of said racks but does not engage the other,
said escapement lever means being responsive to said target means being engaged by a projectile so as to permit said motive means to incrementally advance said target means along said path from adjacent to the first end thereof to adjacent to the second end thereof in successive increments each time said target means is engaged by a projectile.

4,239,221
GAME DEVICE
Albert N. Griffin, 1321 Stagecoach Rd. SE., Albuquerque, N. Mex. 87123
Filed Jan. 23, 1979, Ser. No. 5,901
Int. Cl.³ A63B 71/06
U.S. Cl. 273—127 R **6 Claims**



1. A game device comprising a target in the form of a box-like structure having one open side with an inclined ramp surface along the open side and a target area inwardly of the open side and cubical bodies rollable toward the target for positioning on the target area, said target area including concentrically defined areas with scoring indicia thereon, each cubical body including six flat surfaces with scoring indicia thereon cooperating with the scoring indicia on the target areas to score points to play various games, said target including a bottom panel with the ramp formed along one edge thereof by bevelling the edge of the panel, a pair of parallel upstanding side fences attached to the bottom panel and an end fence attached to the bottom panel in parallel relation to the ramp and at the opposite edge of the bottom panel, means detachably connecting each of the fences to the bottom panel and means detachably interconnecting each end of the end

fence to an adjacent end of a side fence, the bottom edge of each side fence including a downwardly slanted end portion conforming with and engaging the ramp.

4,239,222

PINBALL GAME FLIPPER MECHANISM

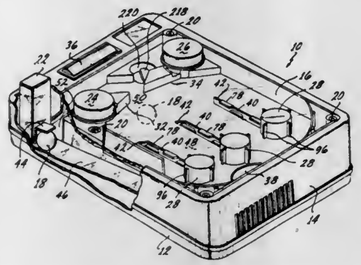
Noritoshi Hori, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,214

Claims priority, application Japan, Aug. 11, 1978, 53-110674[U]

Int. Cl.³ A63B 71/00

U.S. Cl. 273—129 W **4 Claims**



1. A flipper mechanism for use with a pinball game having a playing surface and at least one object which is propelled by said flipper mechanism across said playing surface which comprises:

said playing surface including at least one upstanding boss projecting upwardly from said surface, said boss including a hollow interior;

a flipper member having a hub section and a finger section, said finger section including a striking surface for contacting and accelerating said object across said playing surface, said hub portion including a bearing means fitting over and rotating about said upstanding boss on said playing surface, at least a portion of said hub portion having a generally cylindrical-like surface which includes a spirally inclined cam means integrally formed on said cylindrical-like surface;

a button member, said button member including a top surface, a cylindrical skirt extending from said top surface, and a peg extending from the underside of said top surface downwardly from said top surface and essentially centralized within the interior of said skirt;

a cam follower means located on the interior of said skirt and projecting toward said peg;

said hub portion of said flipper member fitting over said upstanding boss locating said flipper member on said playing surface, said peg slidably fitting into said hollow interior of said boss locating said button member over said flipper member and positioning said cam follower means in operative association with said spirally inclined cam means such that when said button member is depressed toward said playing surface said cam follower means slides against said spirally inclined cam means rotating said flipper member about said upstanding boss.

4,239,223

NOVELTY GAME DRINKING GLASS

Michael C. Wilson, 735 Forest Ave., Glen Ellyn, Ill. 60137

Filed Jan. 20, 1978, Ser. No. 870,948

Int. Cl.³ A63F 5/02

U.S. Cl. 273—138 R **12 Claims**

1. A novelty game drinking glass device for containing beverages as well as entertaining, amusing and interesting a user, said device comprising:

drink receptacle means having integrally formed and substantially transparent partition means,

said partition means being positioned upwardly from the bottom end of said drink receptacle means to form a bottom recess portion at said bottom end,

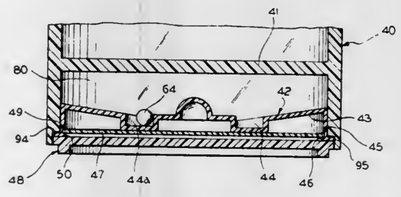
said partition means segregating said contained beverage from said bottom recess portion,

novelty game means positioned within said bottom recess portion and positioned so as to be visible by said user through said substantially transparent partition means,

said novelty game means restrainably positioned within said recess portion of said drink receptacle means by recess closure means,

said recess closure means additionally providing a liquid impervious seal to said bottom recess portion so as to preclude the undesirable leakage of liquids into said bottom recess portion when said drinking glass device is washed;

said novelty game means comprising ball placement game means including



moveable ball means within said recess portion,

ball field means positioned substantially on top of said recess closure means which support said moveable ball means,

said ball field means comprising a transparent elevated sculptured element having planar surface portions on which said ball may move and crevice portions into which said ball may fall as a result of movement imparted to the ball by the user, at least one indicia associated with said sculptured element, said indicia further being associated with a planar surface portion, or with a crevice portion which the user may desire or not desire said ball to be deposited therein,

said indicia being embodied by graphic card means having means cooperating with said sculptured element for alignment of said indicia with said planar surface portions and said crevices of said sculptured element and positioned under said sculptured element,

all of said indicia on said graphic card means being wholly visible through said sculptured element and in turn said substantially transparent partition means.

4,239,224

DRIVE AND INDEXING MECHANISM FOR A ROTATABLE DRUM CHANCE DEVICE

Louis Stanley, Beverly Hills, Australia, assignor to Galexie Manufacturing Pty. Ltd., Sydney, Australia

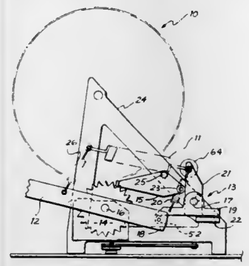
Filed Mar. 23, 1978, Ser. No. 889,592

Int. Cl.³ A63F 5/04

U.S. Cl. 273—143 R **23 Claims**

4. A drive mechanism comprising: a drive lever mounted intermediate its ends on a shaft for pivotal movement about the axis of the shaft enabling movement on the end of the lever in a driving direction along a predetermined path; a driven shaft; driven means mounted on said driven shaft and engageable with said end of said lever so that upon rotation thereof in said driving direction rotation of said lever causes rotation of said driven shaft, said driven means including a stop member fixed to said driven shaft, a movable member rotatably mounted on said shaft and engageable with said stop member to limit rotation of said movable member about said shaft between a driven

first angular position and a non-driven second angular position, said movable member being rotatable by said end of the lever



to be moved thereby to drive said shaft in a driven direction by said stop member.

4,239,225

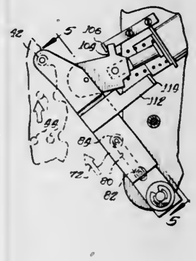
ROTATABLE DISC STOP APPARATUS

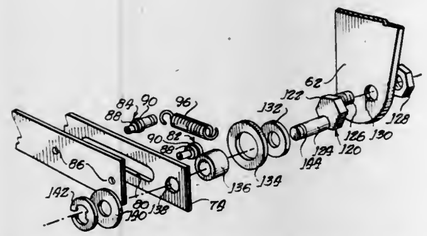
Walter M. Burnside, Waukegan, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,353

Int. Cl.³ A63F 5/04

U.S. Cl. 273—143 R **13 Claims**





1. Apparatus for stopping a rotating reel of the type that is used in an amusement or game device and which has an associated circular disc with a plurality of recessed notches positioned along the circumference thereof, said notches being adapted to receive a stop member for stopping rotation of the disc and reel, said apparatus comprising:

an elongated index arm means having attachment means at a first end portion for pivotally attaching the index arm means to a stationary support and having a stop member at the opposite second end portion thereof for engagement with one of the notches when said index arm means is pivoted toward said disc, said index arm means comprising two members that are slideable relative to one another from a first unextended position to a second extended position and means interconnecting said two members for biasing the same toward said unextended position, one of said members carrying said stop member, the other member having said attachment means associated therewith, said members moving from said first position toward said second position in opposition to the resistance of said biasing means responsive to said stop member engaging one of said notches of the rotating disc to cushion the shock of engagement; and,

means attached to said index arm means for pivoting the same so that said stop member is moved into and out of engagement with one of said notches.

4,239,226

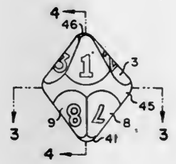
RANDOM NUMBER GENERATOR

E. Frederick Palmer, 6905 Washington Ave., University City, Mo. 63130

Filed Sep. 29, 1978, Ser. No. 946,953

Int. Cl.³ A63F 9/04

U.S. Cl. 273—146 **5 Claims**



1. A ten-sided die, having a center axis through the apexes of two regular five-sided identical pyramids, each with flat, planar faces and a planar base, joined base to base and rotated 36° with respect to one another, the equatorial plane defined by said bases being perpendicular to said axis, said plane being bounded by a circle with said axis as a center, said circle having a radius no greater than that of a circle tangent to the projection, on an extension of said plane, of the flat faces of said pyramids, the outer surface of said die immediately contiguous the said plane being formed by a convex surface of revolution of an arc of finite radius, symmetrical with respect to the plane, about said axis, whereby the boundary of each face along the said outer surface is arcuate, the dimension of said die along said center axis being no less than the diameter of said circle, and indicia on said faces.

4,239,227

ATHLETIC SWING TRAINING DEVICE AND METHOD

Leighton I. Davis, 729 Stagecoach SE., Albuquerque, N. Mex.

Filed Jul. 12, 1979, Ser. No. 56,945

Int. Cl.³ A63B 69/36

U.S. Cl. 273—186 A **54 Claims**



1. In an athletic swing timing training device including an athletic striking implement having a grip portion, an impact portion for striking a playing object and a flexible shaft interconnecting said grip and impact portions, the improvement comprising:

indicating means actuatable to stroboscopically illuminate said implement to visually freeze its apparent position; and

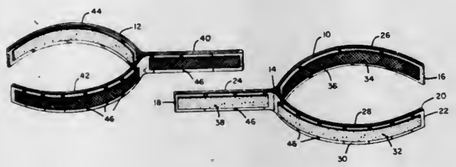
sensing means carried by said implement for detecting flexural movement of said shaft and actuating said indicating means when said shaft completes a predetermined pattern of flexural movement.

4,239,228

GOLF SWING TRAINING DEVICE

Benjamin F. J. Norman, 201 - 93rd Ave., N.E., Blaine, Minn. 55434, and Clifford R. Brown, 7830 NE. Jackson, Fridley, Minn. 55421

Filed Mar. 23, 1979, Ser. No. 23,402
Int. Cl.³ A63B 69/36
U.S. Cl. 273—189 R **3 Claims**



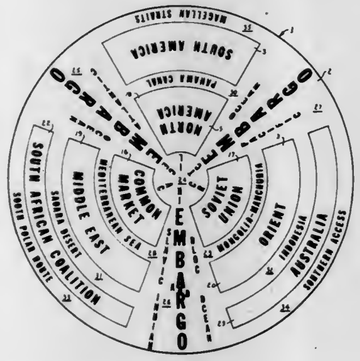
1. A restraint device for use in improving a golfer's swing, comprising:
(a) first and second Y-shaped, flexible strap members each having a stem portion and two branch portions extending from said stem portion, there being a strip of fabric having one element of a two-element Velcro fastener affixed to the inside surface of one branch of each of said Y-shaped strap members and a strip of fabric having the other element of a two-element Velcro fastener affixed to the outside surface of the other branch of each of said Y-shaped strap members; and
(b) further Velcro strip fastener means for separably joining said stem portions of said first and second Y-shaped strap members together with the branch portions of each generally extending in opposite directions, the arrangement being such that when said elements of said separable fasteners are engaged, said branch portions form segments of arm engaging loops.

4,239,229

GAME BOARD APPARATUS

Rolland S. Crossley, 4617 Forest, Kansas City, Mo. 64110

Continuation-in-part of Ser. No. 781,412, Mar. 25, 1977, abandoned. This application Jul. 25, 1978, Ser. No. 927,762
Int. Cl.³ A63F 3/00
U.S. Cl. 273—255 **12 Claims**



1. A game apparatus, comprising:
(a) a game board having a playing area divided into a plurality of separate regions; each of said regions representing a different cartel, and being assigned a separate name;
(b) a plurality of contest tokens associated with each player; said contest tokens are movable about said playing area between adjacent cartels for occupying a cartel, challenging opposing players to the right to occupy a cartel, and for defending such a challenge; said contest tokens being unlimitedly available;
(c) a plurality of battle computers operating cooperatively with said contest tokens for determining outcomes of challenges by opposing players; said battle computers allowing each of said opposing players to preselect the number of contest tokens to be risked in a particular challenge and providing a probability of success for said challenge; said battle computers also allowing each of said opposite players to choose indicia for a particular battle plan without knowledge of the plan chosen by opposing players until the chosen plans of all players are set in said battle computers; said battle computers also including means for comparing the indicia of opposing players and determining an outcome wherein the risked contest tokens of at least one of said opposing players may be removed from the playing area;
(d) a plurality of resource tokens; each of said resource tokens being related to one of a set of at least two different resources; resource tokens for each of the resources being limited in number; each of said resource tokens having a defined cooperative exchange relationship with said contest tokens; said contest tokens being used in the playing area being limited by such an exchange relationship;
(e) means for retaining therein excess resource tokens which are not associated with any cartel and forming among the players a common market place for exchanging a quantity of one resource for a quantity of another resource;
(f) a resource calculator having the name of each cartel noted thereon and designating each of said resources; said resource calculator including:
(1) means generating a fixed production index and a fixed consumption index related to the production index for each resource of each cartel; production and consumption indexes for each cartel being different but interrelated;
(2) means for defining an exchange relationship of surplus resources of one of the cartels and contest tokens;
(3) means establishing an exchange rate for exchanging a quantity of a first resource for a quantity of a second resource where said second resource has been exhausted within one of said cartels; and
(g) whereby in playing said game, each player receives resource tokens in accordance with said generating means for each cartel which the player occupies and must balance production and consumption of each resource for each of the cartels occupied by the player, and withholds selected resources from the market place and exchanges surplus resource tokens for contest tokens and challenges opposing players for the right to occupy a cartel, so as to ultimately obtain simultaneous occupation of a preselected, game-ending number of said cartels.

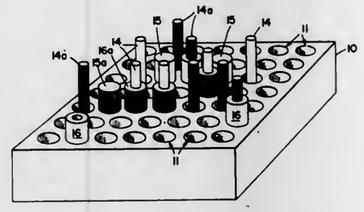
4,239,230

PEG BOARD GAME

Philip L. Shoptaugh, 611 Blair Ave., Piedmont, Calif. 94611

Filed Dec. 28, 1978, Ser. No. 974,167
Int. Cl.³ A63F 3/00
U.S. Cl. 273—264 **13 Claims**

1. In a game, the combination comprising:
(a) a plurality of first playing pieces each having a cross-sectional configuration of given maximum external dimension;
(b) a plurality of second playing pieces having an annular cross-sectional configuration dimensioned to surround said given maximum external dimension of the cross-sectional configuration of each of said plurality of first playing pieces when aligned therewith;
(c) a plurality of third playing pieces each having a cross-sectional configuration different from the cross-sectional configuration of said first and second playing pieces and each dimensioned to overlap said cross-sectional configurations of at least said plurality of said first playing pieces or said plurality of second playing pieces when aligned therewith; and
(d) a playing board having a plurality of playing fields each comprising a first hole dimensioned to receive one of said plurality of first playing pieces, said first hole having a second hole countersunk therewith at one surface of said playing board and dimensioned to receive one of said plurality of second playing pieces;
whereby one of said plurality of first playing pieces and one of said plurality of second playing pieces may be played simultaneously with each other at any one of said plurality of playing fields of said playing board with said second playing piece surrounding said first playing piece and each may be moved independently of the other to another playing field and whereby the playing of one of said plurality of third playing pieces at a given playing field of said playing board will physically block the playing of at least said plurality of first playing pieces or said plurality of second playing pieces at said given playing field.

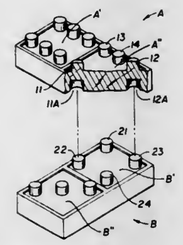


4,239,231

THREE-DIMENSIONAL DOMINO GAME

David G. Henderson, 506 Sanchez St., San Francisco, Calif. 94114

Filed Jul. 28, 1978, Ser. No. 929,081
Int. Cl.³ A63F 9/20
U.S. Cl. 273—293 **4 Claims**



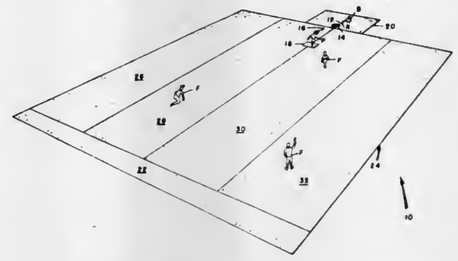
1. In a domino-like game of skill, a set of 28 dominoes, each having two indicia segments and having:
(a) from 0 through 6 indicia in the form of raised pegs located in any of the same seven possible locations on the top surface of each segment, all raised pegs in the set being of the same size and shape, and,
(b) the same number of sockets in the under surface of each segment as there are raised pegs on the top surface, all sockets being complementary to the raised pegs and one socket being directly below each raised peg; and,
wherein the set includes one domino representing each possible combination of two numbers, each segment representing the number corresponding to the number of pegs it bears,
whereby the segments of each of said dominoes will nest upon or under identical and certain non-identical segments of other of said dominoes, when the sockets of an upper domino receive the pegs of a lower domino.

4,239,232

GAME OF CADDY

Vernon O. Durham, Sr., 200 11th Ave., Baltimore, Md. 21225

Filed Nov. 29, 1978, Ser. No. 964,477
Int. Cl.³ A63B 67/00
U.S. Cl. 273—341 **5 Claims**



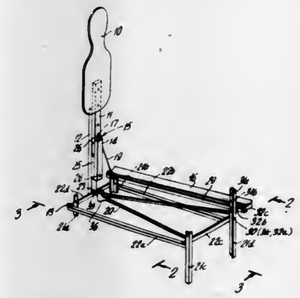
1. A game for at least two players having playing rules and a scoring system, comprising:
a structured playing field having a pitching area, a batting area, a fielding area, and a bonus scoring area, said areas being separate and adjacent to each other;
a pitching target ring means, said pitching target ring means being formed of segments and having interlocking elements for locking the segments together, said pitching target ring means being located within said batting area;
a caddy means for pitching toward said pitching target ring means;
a means for controlling and batting said caddy means in a specified manner, said means for controlling and batting said caddy being tapered on the control end thereof in three directions at specified angles.

4,239,233

FIREARM TRAINING DEVICE

Paul Paquet, 163 Fulton Rd., Mamaroneck, N.Y. 10543

Filed Aug. 10, 1979, Ser. No. 65,646
Int. Cl.³ F41J 5/00
U.S. Cl. 273—383 **7 Claims**



1. A firearm training device comprising:
a frame having a plurality of spaced legs projecting upwardly and a crossmember extending between each adjacent leg to form a rigid structure,

a target mounted to the crossmember at one end of the frame,

an inclined slide mounted to the frame and extending downwardly from one leg thereof to a second leg, said second leg being mounted to the crossmember having the target thereon,,

first trigger means coupled to the target crossmember and second trigger means mounted at the lower end of the slide to become actuated after a predetermined time interval,

a slingshot coupled at its ends to a pair of spaced legs and, under tension, at an intermediate point to the second trigger means,

a projectile positioned in the intermediate portion of the slingshot to be fired at a trainee,

blocking means coupled to the target and pivotable against the slide upon actuation of the first trigger means to prevent the second trigger means from operating,

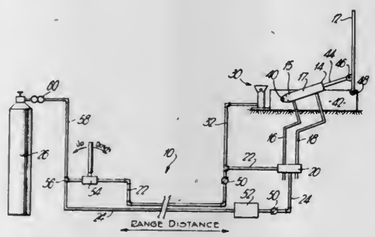
whereby the first trigger means becomes actuated if the target is hit before the second trigger means becomes actuated thereby preventing the slingshot from operating due to the blocking means but if the second trigger means is actuated before the target is hit, the slingshot fires a projectile at the trainee, causing sufficient pain to influence the trainee's efforts.

4,239,234

PNEUMATIC TARGET SYSTEM

Frederick D. Ward, St. Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 23, 1979, Ser. No. 5,740
Int. Cl.³ F41J 7/04
U.S. Cl. 273—391 **7 Claims**



4. An apparatus adapted for use in a target indicating system having a target plate, said apparatus being operative to indicate a strike on the target plate, and comprising:

a housing defining a cylinder therein, one portion of said cylinder being adapted to be in flow communication with and pressurizeable by a source of pressurized gas;

a piston having a stem portion and a head portion in sealed engagement with the cylinder, and being slideably moveable in said cylinder, the piston having a bleed channel therein that is adapted to place the pressurizeable portion of the cylinder in flow communication with atmosphere;

biasing means operatively connected to said piston to selectively move the same;

valve means for closing said bleed channel; and

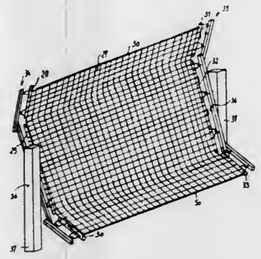
a motion-sensitive weight adapted to be removeably supported by the stem portion of the piston, said weight being operative to activate said valve means to keep said bleed channel closed, said weight being supported in a manner so as to be displaceable in response to vibrations generated by a strike on the target plate enabling deactivation of the valve means by pressure in said cylinder to uncover said bleed channel and thereby cause rapid depressurization of the cylinder and a correspondingly rapid lowering of the target plate to indicate a strike thereof.

4,239,235

TRAINING DEVICE FOR FOOTBALL OR FOR ALL GAMES USING A SMALL OR LARGE BALL

Remy G. Torres, 1 rue de la Scie, Seyssinet Pariset, Isere, France

Filed Jan. 6, 1978, Ser. No. 867,476
Claims priority, application France, Jan. 6, 1977, 77 00943; Nov. 10, 1977, 77 345281
Int. Cl.³ A63B 67/00
U.S. Cl. 273—395 **7 Claims**



1. A training device for rebounding a game ball comprising:

at least one pair of substantially parallel spaced apart elongated rigid upright members;

an inextensible net stretched between said at least one pair of substantially parallel rigid upright members;

elastic means attached to said at least one pair of substantially parallel rigid upright members and extending outward from said net;

at least one pair of elongated terminal stiffeners, each stiffener being substantially parallel to and spaced from said respective upright member and being attached to said elastic means, said at least one pair of terminal stiffeners further being mounted adjacent said at least one pair of substantially parallel rigid upright members such that said at least one of said pair of substantially parallel rigid upright members, said one pair of terminal stiffeners and said elastic means cooperate to form a stretched out inextensible net structure for rebounding a game ball; and

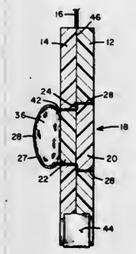
means for pivotally mounting each of said stiffeners to an upright support structure to thereby render said net angularly adjustable relative to a support surface.

4,239,236

TARGET LIFE EXTENDER

Roger R. Parham, 613 South Sneve Ave., and Glenn D. Adler, 212 South LaSalle, both of Sioux Falls, S. Dak. 57103

Filed May 11, 1979, Ser. No. 38,343
Int. Cl.³ F41J 3/00
U.S. Cl. 273—403 **5 Claims**



1. An archery target comprising:

(a) at least one sheet of foamed plastic material of predetermined size and thickness dimensions, said sheet having a central opening of a predetermined diameter;

(b) a replaceable bullseye member comprising first and second circular disks of foamed plastic material bonded together along abutting major surfaces thereof, said first disk of a diameter corresponding to said predetermined diameter of said opening in said one sheet and said second disk of a greater diameter;

(c) a flexible tubular sleeve member having one closed end and one open end; and

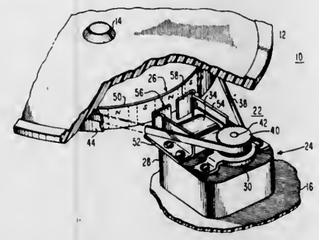
(d) a resilient pad member contained within said flexible sleeve member and abutting said closed end of said sleeve member, said open end of said sleeve member surrounding the side surfaces of one of said first or second disks when said replaceable bullseye member is inserted in said central opening or openings.

4,239,237

TURNTABLE DRIVE SYSTEM FOR VIDEO DISC PLAYER

Gerald D. Pyles, Danville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 42,919
Int. Cl.³ A02P 5/46
U.S. Cl. 274—1 E **5 Claims**



1. A turntable drive system comprising:

(a) a housing;

(b) a turntable rotatably mounted in said housing;

(c) turntable rotating means including a stator and a rotor; said stator consisting of a core defining an airgap for receiving said rotor, and a field winding for establishing an alternating magnetic flux of a given frequency in said core;

(d) yieldable means for coupling said rotor to said turntable to cause said turntable to rotate;

(e) turntable speed control means including a pair of pole pieces, means coupled to said core for diverting a portion of said magnetic flux to said pair of pole pieces, and a ring mounted on said turntable adjacent to said pole pieces and having a plurality of permanently magnetized poles of alternate polarity along the periphery thereof; the relationship between said given frequency and the number of said permanently magnetized poles being such that said turntable speed control means oppose deviations in the rate of rotation of said turntable from a desired rate of rotation.

4,239,238

RECORD EXTRACTING MECHANISM FOR CADDY TYPE VIDEO DISC PLAYER

Clyde F. Coleman, Crawfordsville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 81,494
Claims priority, application United Kingdom, Apr. 6, 1979, 12288/79; Apr. 6, 1979, 12290/79
Int. Cl.³ G11B 5/82, 25/04
U.S. Cl. 274—9 B **7 Claims**

3. A player for recovering prerecorded signals from a disc record removably subject to occupancy of a protective cover comprising a jacket and a record retaining spine removably located therein; said spine being provided with a latch member for releasably securing said spine to said jacket; said player comprising:

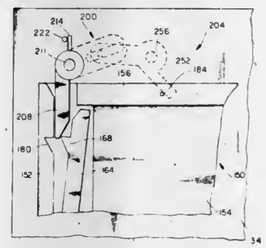
(A) a housing having an input slot into which an occupied cover is inserted along a path for loading a record therein;

(B) a turntable rotatably mounted in said housing;

(C) a guide disposed in said housing;

(D) a spine unlocking member movably-mounted in said housing and subject to deflection away from a starting position; said spine unlocking member being located along said cover insertion path when occupying said starting position thereof such that it is wedged between said spine latch member and an interior portion of said jacket during an occupied cover arrival at a fully inserted position in said player so that said spine latch member is deflected in a manner freeing said spine from said jacket;

(E) a spine gripper member movably-mounted in said housing and subject to engagement with said spine during an occupied cover arrival at said fully inserted position for securing said spine to said housing, whereby said spine, which is freed from said jacket and secured to said housing, is removed from said jacket and retained in said player resting on said guide along with an associated record during a jacket withdrawal subsequent to an occupied cover arrival at said fully inserted position;



wherein said spine unlocking member is displaced away from said starting position to a deflected position when released from engagement with said interior portion of said jacket during said jacket withdrawal, whereby said spine latch member is freed from interference by said spine unlocking member;

(F) means for transferring said retained record from said guide to said turntable for playback; said transferring means also serving to transfer said retained record from said turntable to said guide for record retrieval;

wherein an empty jacket is inserted into said input slot along said path for retrieving said retained record resting on said guide; wherein said spine latch member, having been freed from interference by said spine unlocking member, serves to secure said spine to said jacket upon arrival of said jacket at said fully inserted position; wherein the location of said spine unlocking member occupying said deflected position is such that said empty jacket engages said deflected spine unlocking member to cause further displacement thereof during arrival of said empty jacket at said fully inserted position; and

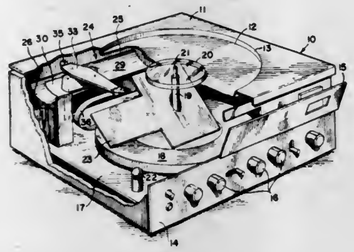
(G) means responsive to said further displacement of said spine unlocking member for effecting motion of said spine gripper member away from said spine in a manner releasing said spine from said housing so that said spine secured to said jacket effects removal of an accompanying record from said player during subsequent cover withdrawal.

4,239,239

PHONOGRAPH TONE ARM SYSTEM

Earl E. Masterson, Minneapolis, Minn., assignor to Masterson Engineering Inc., St. Louis Park, Minn.

Filed Jun. 28, 1979, Ser. No. 52,730
Int. Cl.³ G11B *03/38*
U.S. Cl. 274—23 A **9 Claims**



1. A phonograph tone arm system comprising:
low friction tone arm support means, said support means further comprising:
support member defining a linear substantially horizontal path of travel having an axially curvilinear upper surface in the form of a circular cylinder segment;
floating member supported above and disposed to travel along said support member, said floating member having an axially curvilinear lower surface juxtaposed and matching the shape of said upper surface of said support member, said lower surface of said floating member having an elongated recessed area therein defining with said upper surface of said support member a hollow plenum;
fluid supply means for supplying an amount of pressurized gaseous fluid to said plenum chamber through at least one fluid supply opening in said support member sufficient to produce free flotation of said floating member above said support member and wherein the longitudinal dimension of said plenum in cooperation with the said at least one fluid supply opening is such that the said at least one fluid supply opening is in communication with said plenum at all times during normal linear displacement of said floating member to play a storage medium such that fluid escapes only about the peripheral edges of said plenum;
tone arm means carried by said floating member said tone arm means including pickup means adapted to traverse a phonograph record along a radial path during the linear displacement of said floating member;
signal conducting means for conducting signals from said pickup means to a signal processing means.

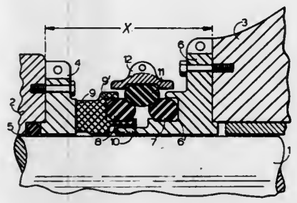
4,239,240

ROTARY MECHANICAL FACE SEALS

Samuel C. W. Wilkinson, Chichester, England, assignor to Crane Packing Limited, Slough, England

Filed Aug. 7, 1979, Ser. No. 64,369
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—84 **8 Claims**

1. A rotary mechanical face seal assembly comprising an annular seal face member having an axis, an annular seat, said seat and said seal face member being relatively rotatable about said axis and being in mutual rubbing contact over radial faces thereof, said seat being axially fixed and said seal face member being axially movable, an axially fixed structure with which said seal face member is associated, and with respect to which said seal face member is non-rotatable, a first annular surface associated with said seal face member and a second annular surface associated with said structure, said surfaces being inclined with respect to said axis and converging towards one another, and a hoop-like circumferentially stressed ring, said ring making line contact with said first and second surfaces, thereby forming a seal with each of said surfaces and at the same time having a wedging action by virtue of its circumferential stress, such as to urge said surfaces axially apart and thereby urge said seal face member axially into rubbing contact with said seat.

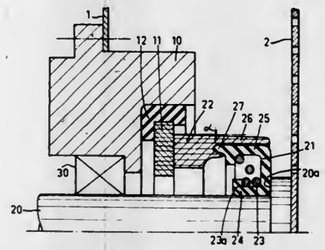


4,239,241

FLUID SEAL ASSEMBLY

Jean Menager, Luxembourg, Luxembourg, assignor to Societe Internationale de Mecanique Industrielle S.A., Luxembourg, Luxembourg

Filed Aug. 28, 1979, Ser. No. 70,520
Claims priority, application France, Sep. 14, 1978, 78 26491
Int. Cl.³ F16J *15/38*
U.S. Cl. 277—87 **3 Claims**



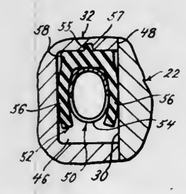
1. A fluid seal assembly to be mounted between a fixed part and a rotary shaft, comprising a slide ring secured to a resilient sealing member attached to the shaft and urged by a spring into engagement with a counter-ring secured to the fixed part, said slide ring having an axial extension embracing the resilient sealing member, wherein the slide ring has a smooth external surface which tapers inwardly in the direction remote from the sliding surface thereof.

4,239,242

PIPE UNION AND SEAL

William G. Burns, 23 Barberry La., St. Louis, Mo. 63122

Filed Dec. 18, 1978, Ser. No. 970,541
Int. Cl.³ F16J *15/12, 15/32*
U.S. Cl. 277—153 **5 Claims**



1. A pipe union and seal in combination comprising:

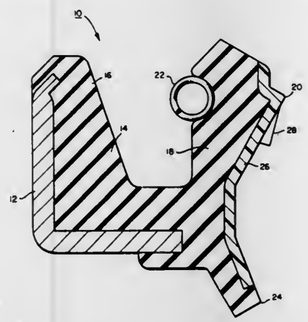
(a) A first pipe member having a central passageway therethrough, a flange having a substantially flat sealing surface, said flange having a shoulder,
(b) A fastening member having an inwardly extending flange with a central passageway adapted to fit around said first pipe member, said inwardly extending flange adapted to abut said shoulder as said fastening member is fitted over said first pipe member, and thread means formed on the inner surface of said fastening means,
(c) A second pipe member having a central passageway therethrough, thread means formed on the outer surface of said second pipe member and adapted to receive and engage the thread means of the fastening member, said second pipe member having a face opposing the sealing surface of said first pipe member, means defining a trough in said face for receiving and retaining a sealing means, and
(d) A compound sealing means positioned in said trough, said seal having a central spring and a U-shaped outer shell surrounding said spring with the open end of said shell being disposed radially inwardly so that increased pressure within the central passageway increases the sealing engagement between each leg of the shell and its corresponding surface.

4,239,243

MOLDED LIP SEAL WITH POLYTETRAFLUOROETHYLENE LINER AND METHOD FOR MAKING THE SAME

Dean R. Bainard, Clover, S.C., and Dennis N. Denton, Gastonia, N.C., assignors to Garlock Inc., Longview, Tex.

Division of Ser. No. 746,392, Dec. 1, 1976, Pat. No. 4,171,561.
This application Apr. 4, 1979, Ser. No. 27,003
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—153 **10 Claims**



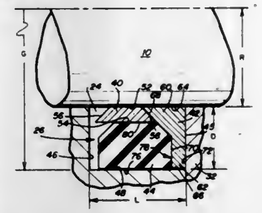
5. A shaft seal comprising an annular metal shell, an annular elastomeric body having a molded lip, said elastomeric body having an annular heel portion and an annular flex portion extending axially inwardly from a radially inner portion of said heel portion, said elastomeric body being generally U-shaped in radial cross-section, with the opening of the U facing axially inwardly, said heel portion having a radially outer, axially extending surface bonded to said shell, said molded lip having bonded thereto a hydraulically formed liner of uniform thickness of sintered polytetrafluoroethylene, said body being molded simultaneously with said liner being hydraulically formed from a ring of sintered polytetrafluoroethylene and bonded to said elastomeric body, and a plurality of hydraulically formed hydrodynamic pumping elements on a shaft-engaging surface of said liner and formed simultaneously with said liner being formed.

4,239,244

HYDRAULIC PISTON ROD SEAL

Robert G. Brent, Arlington, Tex., assignor to Textron, Inc., Providence, R.I.

Filed May 26, 1978, Ser. No. 910,008
Int. Cl.³ F16J *9/16*
U.S. Cl. 277—188 R **21 Claims**



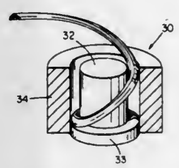
1. In a hydraulic cylinder, a three-part seal to be fixed in a gland formed on the first of two mating cylindrical structures, said gland having a bottom wall confronting the second cylindrical structure, wherein fluid under pressure is to be contained forward of said gland comprising:
(a) a continuous nondeformable bearing ring in said gland having a cylindrical surface for contact with the surface of the second of said cylindrical structures and having an annular surface facing away from said second of said cylindrical structures and having a conical rearward facing end surface diverging outwardly from said first cylindrical surface;
(b) a continuous nondeformable backup seal ring having a forward facing conical end surface mating with the rearward facing conical end surface of said bearing ring; and
(c) a continuous compressible resilient ring in said gland on the side of said bearing ring opposite said second cylindrical structure contacting the bearing ring, the seal ring and gland bottom wall whereby pressure on said resilient ring transmits pressure to said bearing ring and backup seal ring to engage said rings against the second cylindrical structure.

4,239,245

PACKING SEALS AND METHOD OF MAKING

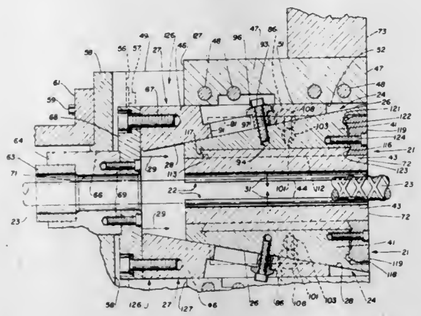
Richard J. Giglio, Tewksbury; Robert B. Bogosh, Burlington, both of Mass., and David A. Lasnier, Londonderry, N.H., assignors to A. W. Chesterton Company, Stoneham, Mass.

Filed Dec. 7, 1979, Ser. No. 101,635
Int. Cl.³ F16J *15/44, 15/54;* B29C *17/02*
U.S. Cl. 277—203 **9 Claims**



1. A method of making a packing seal comprising:
compression molding a thermo-setting plastic in a spiral mold under heat so as to form a partially-cured spiral seal,
removing said partially-cured spiral seal from said mold and winding it on a mandrel,
applying heat to said mandrel and partially-cured seal so as to cure said seal, and
removing said seal from said mandrel.
9. A packing seal made in accordance with the method of claims 1 or 2.

4,239,246
RIGID CHUCK ASSEMBLY
James W. Howlett, 746 Folger Ave., Berkeley, Calif. 94710
Filed Dec. 22, 1978, Ser. No. 972,273
Int. Cl.³ B23B *31/10*
U.S. Cl. 279—121 **7 Claims**



1. A chuck assembly for rigidly gripping an elongated reinforcing bar having a plurality of ribs or protrusions thereon to enable machining thereof by a machine tool or the like, said chuck assembly including a pair of jaw members each having a first side formed to engage said reinforcing bar and an oppositely facing second side formed with an elongated surface extending along said second side, said jaw members being mounted in equal, relatively spaced apart relation about a longitudinally extending central axis for receipt and gripping of said reinforcing bar therebetween, said jaw members each being further mounted to said assembly for reciprocation of the first sides thereof toward and away from said central axis; a pair of wedge members mounted to said assembly and each including an elongated jaw engaging surface mounted in sliding engagement with said second side of each of said jaw members; and containment means formed with load supporting surfaces slidably engaging sides of said wedge members facing away from said jaw members for support thereof, said wedge members each being mounted to said assembly intermediate said containment means and said jaw members and being movable in a direction along said central axis to urge said jaw members toward said central axis and generate lateral gripping forces between said jaw members, wherein the improvement in said chuck assembly comprises:

said first sides of said jaw members each being formed for line contact with said reinforcing bar along lines extending along said central axis;

said first sides being further formed with a length dimension equal to at least 4 times twice the distance from said first sides of said jaw members to said central axis when said first sides first engage said reinforcing bar; and

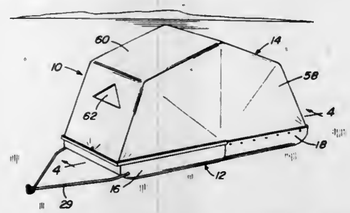
said jaw engaging surface on each of said wedge members and said load supporting surfaces on said containment means each extending axially along said central axis substantially coextensively with and over a distance at least substantially equal to the length of said first sides of said jaw members.

4,239,247
PORTABLE ANGLING HOUSE
James E. Hinz, Rte. 2, Box 98, Osakis, Minn. 56360
Filed Mar. 16, 1979, Ser. No. 21,436
Int. Cl.³ E04B *1/347*
U.S. Cl. 280—12 S **5 Claims**

1. A portable, collapsible angling house comprising, in combination:

a base portion comprising a first section and a second section, said second section being received in said first section when the angling house is in its collapsed configuration and said second section extending from said first section when the angling house is in its erect configuration, and a pair of runners formed in said first section positioned longitudinally of said first section and on either side of a raised central area of said first section,

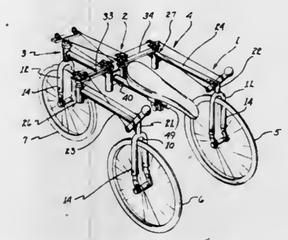
a first angling hole disposed in said central raised section of said first base portion for communicating the interior of said angling house with a support surface;



a top structure comprising a plurality of frame members radially extending from a common mounting position disposed on one of said base sections and foldable into that section; and

fabric covering attached to said frame members, said second section having a configuration similar to said first section with a pair of runners disposed on either side of a raised center portion and a second angling hole disposed in the raised center portion of said second section.

4,239,248
COLLAPSIBLE WALKER
Marion H. Ewers, 306 S. Broadway, Marlow, Okla. 73055
Filed Oct. 10, 1978, Ser. No. 949,916
Int. Cl.³ B62M *1/00*
U.S. Cl. 280—42 **7 Claims**



1. A three-wheeled walker comprising:

(a) a frame comprising two spaced approximately parallel first bars disposed horizontally relative to ground level; two second bars each hingedly connected at one end to said first bars for horizontal movement, the other ends of said second bars approaching each other; a third bar to which said other ends of said second bars are hingedly connected for horizontal movement intermediate the ends of said third bar;

(b) seat means carried by a first end of said third bar between said spaced first bars;

(c) first wheel means attached to said first bars in supporting relationship;

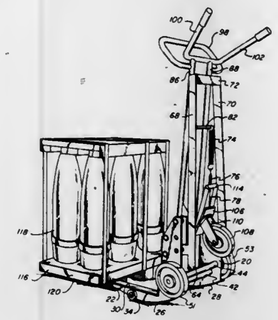
(d) second wheel means steerably attached to the second end of said third bar in supporting relationship thereto;

(e) remote control means adapted to steer said second wheel means;

(f) detent means for releasably locking said first, second and third bars into a fixed operative position relative to each other;

whereby said walker may be folded for transportation and storage and unfolded and locked into place for use.

4,239,249
PROJECTILE PALLET TRUCK
John M. Sprague, Mt. Carroll, Ill., assignor to United States of America, Washington, D.C.
Filed Apr. 27, 1979, Ser. No. 33,936
Int. Cl.³ B62B *1/08*
U.S. Cl. 280—47.2 **6 Claims**



1. A projectile pallet hand truck comprising:

a base frame including a pair of spaced L-shaped plates having lower legs forming truck forks, said forks having curved bottom surfaces, said forks having fork wheels thereon, said plates having upper legs with a pair of support wheels thereon, said plates having a pluralty of connecting members therebetween to maintain said plates in spaced relationship,

said plates having a first pair of said connecting members near the lower ends of said upper legs, one of said first pair being tubular to receive an axle, an axle extending therethrough, said support wheels being attached to said axle,

a third support wheel affixed to a second pair of said connecting members,

said frame having an upright position wherein said fork wheels engage a floor surface and said support wheels are above said floor surface, said frame also having a support position whereby said support wheels engage said floor surface and said fork wheels are above said floor surface, and

means connected to said base frame for rocking said frame on said fork curved bottom surfaces between said positions,

said means including a handle section,

said handle section having arms extending upwardly from one of said second pair of connecting members on said base frame, said arms and said forks supporting a load thereon when said frame is in said support position,

said base frame being raised above said floor surface and supported by said support wheels when in said support position.

4,239,250
HITCH POSITIONING MECHANISM
Russell W. Tolle, P.O. Box 261, Chanute, Kans. 66720
Filed Mar. 5, 1979, Ser. No. 17,347
Int. Cl.³ B60D *1/14*
U.S. Cl. 280—446 B **6 Claims**

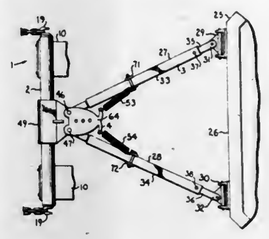
1. A mechanism adapted for attachment to a hitch; and hitch characterized by having first and second arms and a support member, said support member having a pivotal attachment to each of said first and second arms near one end thereof and the opposite ends of said arms being pivotal and spaced at a fixed distance relative to each other respectively; said mechanism comprising:

(a) first and second tension means being substantially equivalent with respect to the tension developed respectively upon elongation thereof; one end of said first and second tension means being attached medially and at an equal distance along said first and second arms respectively;

(b) lever arm means being attached near one end thereof to and extending generally perpendicularly from said support member;

(c) said one end of said lever arm means being attached to said support member whereat said first and second arms form said pivotal attachment to said support member respectively; and

(d) said tension means being attached to said lever arm means at an equal distance spaced apart from said one end thereof and at laterally spaced apart locations thereon



characterized by the tension in each of said tension means developing a vector force passing through said pivotal attachment to said support member of the arm opposite the arm to which said tension means is attached respectively when said support member is in said parallel position, whereby the tension in each said tension means is equal and at a minimum whenever said support means is in said parallel position thereby forming a state of equilibrium tension and the tension in both tension means are unequal whenever said support member is deflected from said parallel position thereby forming a state of equilibrium and urging said support member to return to said parallel position.

4,239,251
COMPENSATING HITCH
Alvin N. Rocksvold, Woodland, Calif., assignor to Marvin Landplane, Woodland, Calif.
Filed Jul. 26, 1979, Ser. No. 60,865
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—446 A **8 Claims**



1. A compensating hitch adapted for coupling between a three-point draft system at the rear end of a tractor and the front end of a trailing earthworking implement in three-point draft relation to the latter; said compensating hitch comprising an upstanding front frame including a front cross beam and a central post upstanding therefrom, means to connect said front frame with the three-point draft system of the tractor, a rear cross beam in spaced parallel relation to the front cross beam, rigid longitudinal arms on and projecting forward from the ends of the rear cross beam, means transversely pivoting the longitudinal arms at their front ends in connection with the corresponding ends of the front cross beam, a central link upstanding above the rear cross beam, means transversely pivoting the link at its lower end in connection with the rear cross beam, a bellcrank lever disposed rearward of the upper portion of the upstanding central link, the bellcrank lever incuding an upper forwardly projecting leg and a rear depending leg, means transversely pivoting the upper end of the link

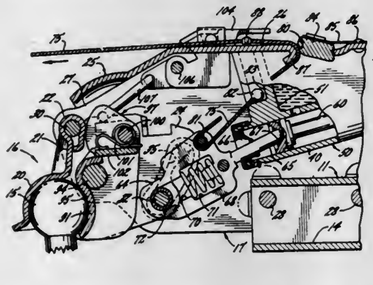
in connection with the front end of the upper forwardly projecting leg of the bellcrank lever, a separate link extending longitudinally between the bellcrank lever and the post in adjacent but clearance relation to the upstanding central link, means transversely pivoting said separate link at the front end in connection with the post and at the rear end with the lower end of the rear depending leg of the bellcrank lever, and means to connect the ends of the rear cross beam, and the bellcrank lever at its elbow, to the front end of the implement in three-point draft relation.

4,239,252

TRAILER HITCH AND BRAKE ACTUATING ASSEMBLY

Larry C. Huetsch, Rockford; James P. Swanson, Winnebago, and Stephen E. Nyquist, Cherry Valley, all of Ill., assignors to Atwood Vacuum Machine Company, Rockford, Ill.

Division of Ser. No. 910,100, May 30, 1978. This application Oct. 30, 1979, Ser. No. 89,489
Int. Cl.[3] B60D 1/06; B60T 7/20
U.S. Cl. 280—446 R 2 Claims



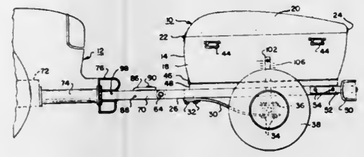
1. An assembly for hitching a trailer to a ball on a towing vehicle and for automatically actuating the brakes of the trailer when the latter overruns the towing vehicle, said assembly comprising a forward unit adapted to be coupled removably to the ball, a rear unit adapted to be carried by the trailer and interconnected with the forward unit to pivot relative to the forward unit about a first laterally extending axis located above the ball, means carried by said rear unit and operable to apply the brakes of the trailer in response to relative pivoting of said units when the trailer overruns the towing vehicle, said forward unit comprising a head having a downwardly and rearwardly opening socket for receiving the ball, a clamp connected to said head to pivot about a second laterally extending axis between released and locked positions, said clamp closing the rear of said socket and retaining the ball in said socket when said clamp is in said locked position, a latch movable with said clamp and connected to said clamp to pivot relative to the clamp about a third laterally extending axis located above said second axis, said latch being movable about said third axis from a released position to an intermediately latched position and then to a fully latched position, said latch permitting said clamp to move to its released position when said latch is in its released position, a manually operable lever mounted on said rear unit to pivot about a fourth laterally extending axis between a released position and a locked position, a link connected pivotally between said lever and said latch and operable to move said latch to its released position when said lever is manually moved to its released position, a spring acting between said clamp and said latch and urging said latch to its intermediately latched position after said lever has been moved to its released position and has been manually released, said latch being biased into engagement with said head when said latch is in its intermediately latched position and serving to hold said clamp in its locked position.

4,239,253

BODY EXTENDER

Richard R. Golze, 637 Kingsley Trail, Bloomfield Hills, Mich. 15090

Filed Apr. 21, 1978, Ser. No. 898,976
Int. Cl.[3] B62D 63/06; B60D 1/00
U.S. Cl. 280—460 R 7 Claims



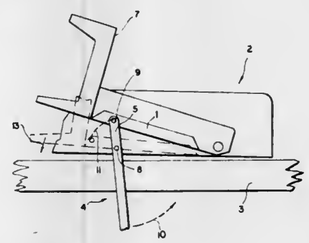
1. A vehicle body extender for attachment to a vehicle comprising a frame, at least one housing supported by said frame, said frame resiliently attached to an axle by spring means, wheels rotatably mounted at each end of said axle, said frame comprising at least two frame members longitudinally extending and oriented toward the vehicle to which said extender is to be coupled, connecting means to rigidly connect said longitudinally extending frame members to said vehicle, said longitudinally extending frame members are each provided with a pivotal connecting means to permit said extender and said vehicle to move vertically with respect to one another, said vehicle having a frame and being provided with a rear bumper means attached to said frame of said vehicle by energy absorption means, said bumper means receiving each said frame members for rigid attachment thereto, said bumper means includes a recess to receive each of said frame members and each said longitudinally extending frame member terminates in said recess in an abutting relation with a stop means provided at the inward end of said recess and near where said energy absorption means connects to said bumper means to be in substantial longitudinal alignment.

4,239,254

BINDING ACTUATED SKI BRAKE

Tilo Riedel, Eching, Fed. Rep. of Germany, assignor to Etablissements Francois Salomon & Fils, Annecy Haute-Savole, France

Continuation-in-part of Ser. No. 707,453, Jul. 21, 1976, abandoned. This application May 15, 1978, Ser. No. 906,129
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1975, 2532736
The portion of the term of this patent subsequent to Feb. 6, 1996, has been disclaimed.
Int. Cl.[3] A63C 7/10
U.S. Cl. 280—605 7 Claims



6. In combination:
an elongated ski having an upper surface and constituting a first component;
clamp means on said ski constituting a second component and movable toward and away from said ski about a clamp axis transverse to said ski and generally parallel to said

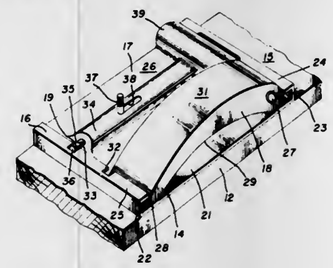
surface for securing a skiboot to and freeing same from said ski;
an elongated brake element having a laterl projection;
means defining between said brake element and one of said components a first pivot spaced from said projection for pivoting of said brake element about an element axis transverse to said ski and generally parallel to said surface on said one component and displacement of said projection relative to said one component and a second pivot for pivoting of said brake element about an upright axis transverse to said ski and to said surface relative to said one component; and
guide means on the other of said components and having a recess receiving said projection for pivoting of said brake element from a rest position generally parallel to said ski to a braking position generally transverse to said ski on displacement of said clamp means from a down position relatively close to said ski to an up position relatively far from said ski and for pivoting of said brake element laterally about said upright axis when in said rest position from a position adjacent said ski to a position at least partially overlying said surface.

4,239,255

SKI ATTACHMENT

Ronald B. Boudreau, Patterson Rd., Shirley, Mass. 01464, and John P. Crossin, 69 Peabody Dr., Stowe, Mass. 01775

Filed Dec. 28, 1978, Ser. No. 973,853
Int. Cl.[3] A63C 7/10
U.S. Cl. 280—605 5 Claims



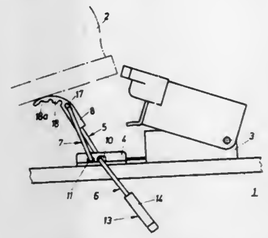
1. Ski attachment, comprising:
(a) a rectangular base plate adapted to be fastened to the upper surface of a ski and having a track at each transverse end, each of said tracks consisting of a vertical end wall and a flange extending horizontally and inwardly from the upper edge of the vertical wall,
(b) a generally rectangular movable plate extending between the said end walls and fitting snugly under the flanges for sliding movement transversely of the ski between an operative position and an inoperative position, said movable plate having a width which is a selected amount less than the width of the ski,
(c) a pawl having a thickness in the transverse direction of the ski which is generally equal to said selected amount, one end of said pawl being mounted on the movable plate for pivotal movement about a horizontal axis adjacent the forward end of the base, and the other end of the pawl lying over the base plate and under the flange of the rearward flange when the movable plate is in the inoperative position, so that the pawl is prevented from pivoting about said horizontal axis, said pawl lying outside of the ski and the rearward flange when the movable plate is in the operative position, so that the pawl is free to pivot about said horizontal axis,
(d) a detent for selectively locking the movable element against transverse sliding in either said inoperative position or said operative position, and
(e) means for biasing said other end of the pawl against the base plate when the movable plate is in said inoperative position and for biasing said other end against the ground when the movable plate is in said operative position.

4,239,256

SKI BRAKE

Erwin Krob, Vienna, and Erwin Weigl, Brunn am Gebirge, both of Austria, assignors to TMC Corporation, Zug, Switzerland

Continuation of Ser. No. 824,709, Aug. 15, 1977, abandoned. This application Jun. 22, 1979, Ser. No. 51,183
Claims priority, application Austria, Sep. 16, 1976, 6891/76
Int. Cl.[3] A63C 17/10
U.S. Cl. 280—605 16 Claims



1. A ski brake for preventing free flight of a ski upon the release thereof from a ski boot, comprising:
a mounting plate on the upper surface of said ski;
a first U-shaped wire bar mounted on said mounting plate by first mounting means for pivotal movement between an inoperative position wherein a first bight of said wire bar lies substantially along said upper surface and an operative position wherein said first bight is upstanding from said upper surface, the legs of said U-shaped wire bar each having a segment therein bent to extend at a right angle to the longitudinal axis of said ski, said leg segments being axially aligned and defining the pivot axle for said first U-shaped wire bar;
at least one brake arm mounted on said first U-shaped wire bar and adapted to swing from a position wherein it lies along a longitudinal edge of the ski into a position in which it projects below a running surface of the ski upon movement of said first bight between said inoperative position and said operative position;
a second U-shaped spring wire bar mounted on said mounting plate by second mounting means for pivotal movement about an axis spaced along the longitudinal axis of said ski from and parallel to said pivot axle and between an inoperative position wherein a second bight of said wire bar lies substantially along said upper surface of said ski and an operative position wherein said second bight is upstanding from said upper surface of said ski;
spring means bearing upon said second U-shaped spring wire bar for biasing same into said operative position;
a stepping plate connected to said first bight by third mounting means and connected to said second bight by fourth mounting means; and
one of said mounting means comprising lost motion connection means for facilitating a compensation for the change in spacing between said first and second U-shaped bars when said first and second U-shaped wire bars are pivoted simultaneously between said inoperative positions and said operative positions whereby said spring means provides the sole force to effect a movement of both of said first and second U-shaped bars simultaneously from said inoperative position to said operative position without deformation of said first U-shaped bar.

4,239,257

CROSS COUNTRY SKI BINDING

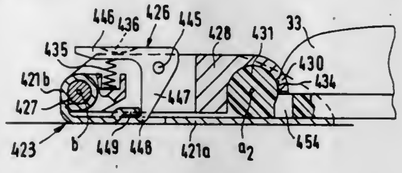
Peter Biermann, Leonberg; Rudi Feucht, Weissach; Manfred Schmidt, Sindelfingen, and Ralf Storandt, Leonberg, all of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Fed. Rep. of Germany

Filed Feb. 22, 1978, Ser. No. 880,110

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707626

Int. Cl.³ A63C *9/18*

U.S. Cl. 280—615 **20 Claims**



1. Cross country ski binding apparatus comprising:

a ski boot having a forward sole extension formed as a unitary portion of the material forming the sole of the ski boot,

forward ski boot support element means fixedly attachable to a ski, said support element means including means supportingly engageable with the forward sole extension of the ski boot while permitting lifting of the rear part of said ski boot from the ski,

and latching means for engaging said support element means with said forward sole extension to latch said sole extension to said ski while permitting hinged movement of the ski boot with respect to said ski about a hinge articulation axis extending crosswise to the ski,

said forward sole extension extending a short distance beyond the toe part of the shoe, the forward end of the sole extension forming a hinge articulation part cooperating with the latching means and the support element means to permit said hinged movement about said articulation axis extending through said articulation part,

wherein said latching means includes retaining jaw means for restraining movement of said ski boot in lateral directions and a locking member for clamping said forward sole extension against upward movements, and wherein, by means of an arcuate transverse member that engages behind the hinge articulation part in a depression in the forward sole extension, the locking member is in engagement with the forward sole extension, clamping it toward the front against lateral jaw parts of said retaining jaw means.

4,239,258

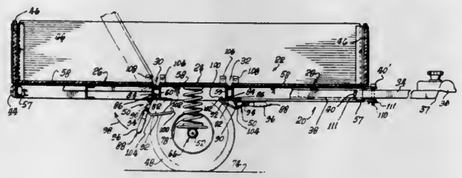
FOLD-UP TRAILER ASSEMBLY

Frank H. Burris, 4165 Oak Hollow Rd., Claremont, Calif. 91711

Filed Dec. 11, 1978, Ser. No. 968,455

Int. Cl.³ B62D *63/00*

U.S. Cl. 280—639 **10 Claims**



1. A trailer being foldable for storage and being extendable for transporting loads over the ground, comprising:

a forward bed portion;

a rear bed portion;

a center bed portion positioned between said forward and rear bed portions and generally parallel to the ground;

first transverse hinge means connecting said forward bed portion to said center bed portion for rotation of said forward bed portion between a horizontal position planar with said center bed portion and a vertical position perpendicular to and generally above said center bed portion;

second transverse hinge means connecting said rear bed portion to said center bed portion for rotation of said rear bed portion between a horizontal position planar with said center bed portion and a vertical position perpendicular to and generally above said center bed portion;

first lock means connected between said center bed portion and said forward bed portion for selectively retaining said center and forward bed portions in planar orientation with respect to each other for transporting loads;

second lock means connected between said center bed portion and said rear bed portion for selectively retaining said center and rear bed portions in planar orientation with respect to each other for transporting loads; and

a wheel assembly connected to said center bed portion for supporting said trailer on the ground.

4,239,259

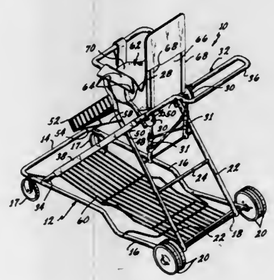
HEIGHT ADJUSTABLE INFANT STROLLER-HIGH CHAIR

Virginia R. Martinez, Apt. H-11, 451 Casselman St., Chula Vista, Calif. 92010

Filed Apr. 6, 1979, Ser. No. 27,608

Int. Cl.³ B62B *7/08*

U.S. Cl. 280—649 **8 Claims**



1. An improved height adjustable infant stroller-high chair apparatus comprising in combination:

a seat member

supporting means for positioning said seat member at a selected elevation for positioning said seat member through a plurality of different selected vertical elevations; and leveling means positioned between said seat member and said supporting means selectively adjustable for maintaining the infant supporting surface of said seat member substantially parallel with said infant supporting surface at each of said plurality of different selected vertical elevations,

said supporting means comprises, a pair of first and second diagonally disposed and pivotally attached frame members, a pair of frame support members each having a pivotal attachment to each pair of said frame members, a plurality of slots located along the inner surface of each of the first frame members for selectively positioning the pivotal connection between said first and second frame members, a seat member support bracket, said seat member support bracket having a first pivotal attachment to one end of each of the second frame members and a second pivotal attachment to said seat leveling means and a pair of telescoping members each pivotly connected between said seat leveling means and one of said second frame members.

4,239,260

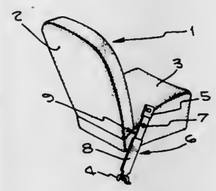
ADJUSTABLE EMERGENCY LOCKING BUCKLE ANCHOR

William M. Hollowell, Pacific Palisades, Calif., assignor to American Safety Equipment Corporation, San Fernando, Calif.

Filed Jun. 25, 1979, Ser. No. 51,696

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—806 **11 Claims**



1. An adjustable emergency locking anchor means for mounting a safety restraint buckle at a substantially fixed location relative to an adjustable vehicle seat to be maintained adjacent to a seat occupant's hip during fore and aft adjustment of said seat, said adjustable emergency locking anchor means comprising:

floor anchor means for securing said buckle to said vehicle floor only upon application of an emergency restraining force in excess of a predetermined amount to said buckle; and

seat anchor means adjustably attached to said floor anchor means at one end and connected to said buckle on the other end for securing said buckle to said seat during application of normal restraining forces less than said predetermined amount;

locking means between said floor anchor and said seat anchor means for locking said floor anchor to said seat anchor;

means responsive to said emergency restraining force for actuating said locking means, whereby said buckle is maintained in the same position relative to said occupant's hip as said seat is adjustably moved fore and aft and is secured to said floor upon application of an emergency restraining force on said buckle relative said seat of an amount in excess of a predetermined amount.

4,239,261

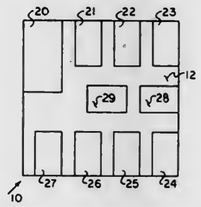
MICRO-MARKING LABEL AND APPARATUS

Robert H. Richardson, 8361 Sylvan Dr., Melbourne, Fla. 32901

Filed Aug. 24, 1978, Ser. No. 936,241

Int. Cl.³ G09F *3/03*

U.S. Cl. 283—21 **6 Claims**



1. A micro-marking label to be applied to articles for identification, comprising:

a micro-sized plate of such size so as to be substantially invisible to casual observation when juxtaposed with the article to be identified;

identification indicia comprising a plurality of adjacent digital areas generally arranged about the periphery of an exposed surface of said plate, with each of said digital areas being precharacterized in one of a first optical condition and a second optical condition for identifying a digital bit of data; and

a substantially transparent sealant coupled over said exposed surface of said plate and onto the article to be identified for covering and sealing said plate, with said exposed surface visible, to the adjacent surface of the article to be identified, whereby upon close examination said digital areas comprising said identification indicia upon said microsized plate may be sequentially interpreted in order to digitally decode the message thereon.

4,239,262

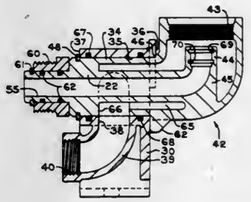
PUMP END SWIVEL FOR HOSE

Carroll P. Krupp, and Ivan T. Straga, both of Akron, Ohio, assignors to B. F. Goodrich, Akron, Ohio

Filed May 7, 1979, Ser. No. 36,719

Int. Cl.³ F16L *3/16, 39/04*

U.S. Cl. 285—61 **15 Claims**



1. A pump end swivel for mounting on an island adjacent to a gasoline pump, said swivel having a base member, an elbow assembly mounted in said base member for rotation about a horizontal axis in a plane parallel to the side of the pump, said elbow assembly having one end connected to a coaxial hose for dispensing liquid fuel and collecting fuel vapors, said elbow assembly having an outer elbow member integral with an inner elbow member, said outer elbow cooperative with said inner elbow to define an annular passageway for the passage of vapor, said inner elbow having a passageway for the passage of fuel, and an abutment means mounted on said elbow assembly cooperative with stop means on said base member for limiting the rotative movement of said elbow assembly relative to said base member.

4,239,263

SPHERICAL CONNECTOR HAVING INTEGRALLY FORMED OUTLETS

Henry H. George, Louisville, Ky., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Jan. 18, 1979, Ser. No. 4,250

Int. Cl.³ F16L *41/00*

U.S. Cl. 285—150 **5 Claims**

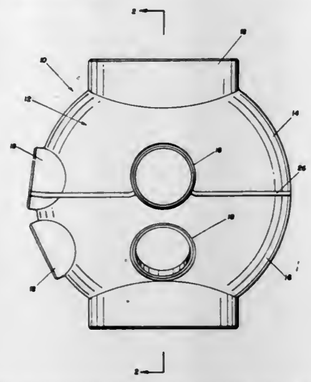
1. A structural fitting for connecting tubular members, said fitting including:

a hollow spherical body comprising a pair of hollow hemispherical members joined at their bases,

there being a circular line of attachment defined by the intersection of said bases; and

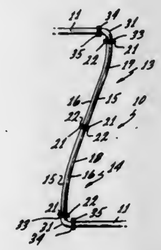
at least a pair of tubular protuberances integrally formed

from the wall of said body and extending radially outwardly therefrom,



one of said protuberances passing through said line of attachment.

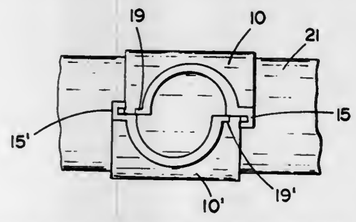
4,239,264
THERMAL EXPANSION JOINT FOR PIPES
Karl K. Evans, 8439 San Gabriel Ave., South Gate, Calif. 90280
Filed Jun. 14, 1979, Ser. No. 48,345
Int. Cl.³ F16L *51/00*
U.S. Cl. 285—173 **4 Claims**



1. In a pipe line formed in two lengths, an expansion joint comprising:
a pipe section having a wall made of two semi-cylindrical metallic wall parts wherein one wall part is made of a metal having a higher coefficient of thermal expansion than the coefficient of thermal expansion of the metal forming the other wall part;
an elbow coupled at each end of said pipe section;
one of said elbows being coupled to one of said lengths of said pipe line so that said section forms an angle with said one length and the metal with the higher thermal coefficient of expansion is disposed on the outside of said one elbow; and
the other of said elbows being coupled to the other length of said pipe length pipe line and also to said pipe section.

4,239,265
ATTACHMENTS FOR PIPES
Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn. 55343
Filed Sep. 15, 1978, Ser. No. 942,648
Int. Cl.³ F16L *41/04*
U.S. Cl. 285—197 **2 Claims**

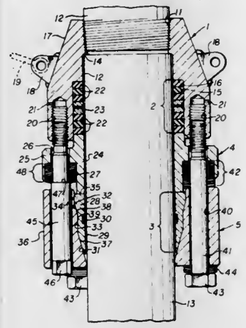
1. A branch connector for forming a branch line to a primary tubing without cutting of the primary tubing comprising:
a first mating member having a surface for engaging a portion of a primary tubing, said first mating member having a general rectangular shape with a first corner and a second corner located on one side of said surface for engaging a portion of the primary tubing and a third corner and a fourth corner located on the opposite side of said surface for engaging a portion of the primary tubing, a first lip located on said first corner, a second lip located on said second corner, a third lip located on said third corner and a fourth lip located on said fourth corner, said first mating member having a second surface thereon for engaging an insert;
a second mating member having a surface for engaging a further portion of the primary tubing, said second mating member having a general rectangular shape with a first corner and a second corner located on one side of said surface for engaging a further portion of the primary tubing and a third corner and a fourth corner located on the opposite side of said surface for engaging a further portion of the primary tubing, said second mating member having a first lip located on said first corner, a second lip located on said second corner, a third lip located on said third corner and a fourth lip located on said fourth corner;
said second mating member having a second surface thereon for engaging an insert;
said second surface of said first mating member having a



threaded surface thereon and said second surface of said second mating member having a threaded surface thereon, each of said threaded surfaces having a thread thereon with at least a double pitch so that when said first mating member is assembled to said second mating member said lips on said first mating member and said lips on said second mating member coact to hold said first mating member to said second mating member to thereby produce a threaded recess operable for engaging a threaded insert; a threaded insert having threads having the same pitch as the threaded recess formed by coaction of said second surface of said first mating member and said second surface on said second mating member, said threaded insert operable for insertion into said threaded recess;
said first mating member and said second mating member operable for forming engagement to a primary tubing through coaction of said first lip, said second lip, said third lip and said fourth lip on said first mating member to said first lip, said second lip, said third lip and said fourth lip on said second mating member; whereby said mating members are identical and the coaction to produce said engagement is provided by sliding interaction of said lips on said first mating member with said lips on said second mating member.

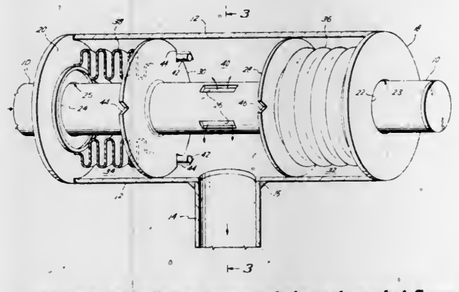
4,239,266
PIPE CONNECTOR APPARATUS
Charles R. Mynhier, Houston, Tex., assignor to Bill B. Berryhill, Bellaire, Tex.
Filed Jan. 16, 1978, Ser. No. 869,821
Int. Cl.³ F16L *21/04*
U.S. Cl. 285—323 **21 Claims**

1. Apparatus for connecting a cylindrical first member to a second member comprising:
tubular body means adapted to receive one end of said first member and having means for connecting said body means to said second member;
gripping means carried by said body means and movable from a radially expanded position, in which said one end of said first member may be axially received by and displaced from said body means, to a radially contracted position gripping the exterior of said first member and preventing its axial displacement from said body means;
annular seal means carried by said body means and movable from a relaxed position, in which said one end of said first member may be axially received therein, to a compressed position, sealingly engaging said one end of said first member; and



an actuating assembly carried by said body means, including a gripper load ring engageable with said gripping means and axially movable relative to said body means for moving said gripping means to said contracted position, and including a seal load ring engageable with said seal means and axially movable relative to said body means for moving said seal means to said compressed position; said actuating assembly including first actuating means for simultaneously applying axial forces to said gripper load ring and said seal load ring for effecting said axial movements thereof and second actuating means for applying axial forces to said seal load ring without applying axial forces to said gripper load ring.

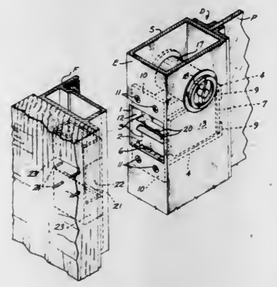
4,239,267
INTERNAL-BELLOWS, PRESSURE-BALANCED, ANGLED-FLOWPATH EXPANSION JOINT
Roger D. Hudson, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sep. 10, 1979, Ser. No. 74,179
Int. Cl.³ F16L *51/02*
U.S. Cl. 285—228 **4 Claims**



1. An internal-bellows, pressure-balanced, angled-flowpath expansion joint which comprises:
a first conduit member closed off at one end and having flow slots cut in said member near its closed end so that fluid can pass from the interior of said member to its exterior or from its exterior to its interior;
a second conduit member of larger diameter than the first conduit member and fitted around said first conduit member, said second conduit member being concentric with said first conduit member, both ends of said second conduit member extending past the flow slots cut in said first conduit member, but each end member being on opposite sides of the flow slots and the end nearer the closed end of said first conduit member not extending past said closed-end;
a third conduit member extending from said second conduit at a definite discrete angle, said third conduit being in fluid communication with the interior of said first conduit through a hole cut in the wall of said second conduit and the flow slots cut in said first conduit so that there can be free flow of a fluid between said first conduit member and said third conduit member, said third conduit being rigidly and sealably connected to said second conduit around the hole cut in said second conduit;
a first and a second annular end member, the first annular end member being rigidly and sealably connected at or near that end of said second conduit member which is closest to the closed-off end of said first conduit member and the second annular end member being connected at or near that end of said second conduit member which is furthest away from the closed-off end of said first conduit member, both of said annular end members extending sufficiently inward from said second conduit member toward said first conduit member until only a small annular gap is left between said first conduit member and each of said annular end members to provide slow controlled leak paths for fluid normally flowing between said first and third conduits should a rupture occur in the bellows defined below, both of which annular end members are axially spaced along said first conduit away from the flow slots cut in said first conduit;
a first and a second annular support ring, the first of which annular support rings is rigidly and sealably connected to and around said first conduit member between the flow slots cut in said first conduit and said first end member, a space being left between said first end member and said first support ring,
the second of which annular support rings is rigidly and sealably connected to and around said first conduit member between the flow slots cut in said first conduit member and said second end member, a space being left between said second support ring and said second end member,
both of said annular support rings extending outwardly from said first conduit member until they contact the interior wall of said second conduit member and provide slidable contact surfaces for movement of said first conduit member with respect to said second conduit member;
a first annular flexible bellows fitted in the annular space defined by said first and second conduits, said first annular end member, and said first annular support ring, with one end of said first annular bellows connected to said first annular end member and the other end connected to said first annular support ring so that pressurized fluid normally flowing between said first and third conduits which leaks past said slidable contacting surface formed between the external annular surface of said first annular support ring and the internal surface of said second conduit member will pressurize the external surface of said first annular bellows rather than its internal surface;
a second annular flexible bellows fitted in the annular space defined by said first conduit, said second conduit, said second annular end member, and said second annular ring support; one end of said second annular flexible bellows being connected to said second annular end member and the other end connected to said second annular support ring so that any pressurized fluid normally flowing between said first and third conduits which leaks past the slidable contacting surface formed between the interior

surface of said second conduit and the external annular surface of said second annular support ring will pressurize the external surface of said second bellows as opposed to its internal surfaces.

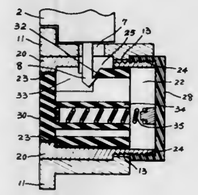
4,239,268
SLIDING DOOR LOCK
Harlan H. Rider, 10502 - 203 Ave. East, Sumner, Wash. 98390
Continuation-in-part of Ser. No. 832,737, Sep. 12, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,307
Int. Cl.³ E05B *65/08*; E05C *5/00*
U.S. Cl. 292—5 **23 Claims**



1. Locking mechanism for a closure member openable relative to a frame member, such members having respective normally registered apertures in corresponding edges thereof, said locking mechanism comprising:
bolt means carried by one of the members and having an outer end portion movable through the member edge apertures between a projected position in which said bolt means bridges between the members and a retracted position in which the bolt means does not bridge between the members;
an elongated latch leaf carried by the bolt-carrying member adjacent to the edge aperture of such member for swinging transversely of the length of said latch leaf through the member edge apertures and having an inner face normally disposed in the path of movement of said bolt means outer end portion, said latch leaf having a latch flange movable by swinging of said latch leaf from an unlocked position in which said latch flange is positioned inward of the face of the apertured edge of the bolt-carrying member to a locking position in which said flange is projected outward beyond the apertured edge of the bolt-carrying member and engages behind an edge of the aperture in the other member for locking the closure member to the frame member;
pivot pin means mounting said latch leaf for swinging about and axis stationary relative to the bolt-carrying member, said pivot pin means being located inward of the face of the apertured edge of the bolt-carrying member; and
means for moving said bolt means from retracted position to butt said outer end portion of said bolt means against said inner face of said latch leaf and swing said latch leaf latch flange to locking position and for moving said bolt means outer end portion to projected position bridging between the two members.

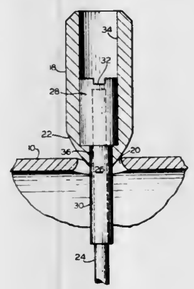
4,239,269
LUGGAGE LOCK
Chih-Chang Chiang, 2nd Floor, 38, Nanking West Rd., Taipei, Taiwan
Filed Jan. 2, 1979, Ser. No. 244
Int. Cl.³ E05C *1/10*
U.S. Cl. 292—175 **6 Claims**

1. A luggage lock for locking together the two shells of a luggage case, said lock comprising:
(a) a housing having a front end portion, a rear end portion and a body wall interconnecting said front and rear end portions; said housing formed having a first opening extending from said front end portion to said rear end portion, and a second opening forming in said body wall and interconnecting with said first opening; said housing adapted to be received within an opening in one of the luggage case shells;
(b) closure means removably mounted on the rear end portion of said housing when the housing is positioned in the luggage case shell for securing said housing in its mounted position;
(c) a button member reciprocally mounted within said housing for movement between a retracted position and a projected position; said button having a front finger engaging portion and a body wall; and said body wall formed having an opening aligned with the body wall opening of the housing when the button is mounted therein;



(d) a spring member extending between said button member and said closure means for urging said button in the direction of the retracted position thereof;
(e) a hook adapted to be mounted on the other one of the luggage case shells and positioned with its hook end projecting through the aligned openings in said housing and said button body walls when the luggage case is closed; and
(f) a portion of the button body wall defining the rear edge of said body wall opening projecting into the path of travel of said hook whereby said hook end engages and overlies said edge portion when the luggage case is closed to fasten said lock, and wherein said lock is unfastened by displacing said button to its projected position, against the action of said spring, to disengage said hook end from said edge portion to permit the luggage case to be opened.

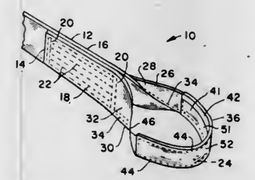
4,239,270
KEY-REMINDER AUTOMOTIVE DOOR LOCKING SYSTEM
Thomas L. Bridges, Box 345 Mohonk Rd., High Falls, N.Y. 12440
Filed Aug. 3, 1978, Ser. No. 930,735
Int. Cl.³ E05C *21/00*
U.S. Cl. 292—347 **20 Claims**



1. In an improved locking of the type having a door lock

mounted in a door casing, said door lock being of the type having a rod operable between an advanced and a retracted position through an aperture in the door casing, the improvement comprising:
a knob having a top and a bottom and having outside dimensions larger in size, at least near its bottom, than the casing aperture so as to substantially prevent its entry into the casing, and also having a bore therein for receiving a connector member, said bore having a cavity communicating with a relatively narrower channel opening at the bottom of the knob, said cavity having an opening at the top of the knob so as to provide access to the interior of the knob; and
a connector member slideably fit within the cavity, said connector member being attached to the rod through the channel, but being too large to pass therethrough,
the depth of the cavity being sufficient to permit movement of the connector member with the rod from its retracted position to its advanced position without protruding substantially through the top of the knob even when the bottom of the knob is in contact with the door casing.

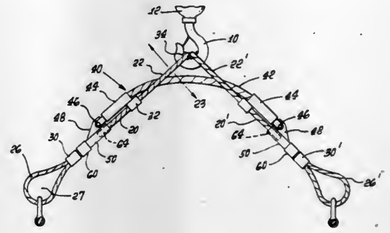
4,239,271
LOOP FOR FLEXIBLE STRAP
Delbert E. Beasley, Tampa, and Francis E. Jones, Riverview, both of Fla., assignors to Banks Wire Rope Slings, Inc., Tampa, Fla.
Filed Nov. 27, 1978, Ser. No. 963,820
Int. Cl.³ B66C *1/18*
U.S. Cl. 294—74 **11 Claims**



1. A reversible protected loop for a flexible strap, comprising in combination:
first means for securing the terminal end of the flexible strap to an adjacent area of the flexible strap creating the loop thereby;
second means for securing a fold of the flexible strap within the loop thereby creating a folded region of increased strap thickness and decreased strap width;
a protective cover completely encompassing said folded region of the flexible strap; and
a twist interposed in the loop enabling alternate sides of said protective cover to be positioned within the loop.

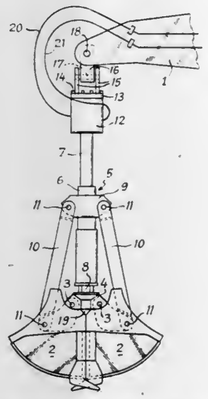
4,239,272
RIGGING SLING WITH SEPARATOR
Gerald L. Corbett, c/o Fluor So. Africa, P. O. Box 505, Springs 1560 Transvaal, South Africa
Filed Nov. 20, 1979, Ser. No. 96,031
Int. Cl.³ B66C *1/20*
U.S. Cl. 294—74 **9 Claims**

1. A rigging sling for lifting objects, and comprising:
first and second lifting cables, each having eye means at each end for connection to a hook or the like;
first and second sleeves, with said first sleeve slidably carried on said first cable between said eye means thereof and with said second sleeve slidably carried on said second cable between said eye means thereof; and



a third cable connected at one end of said first sleeve and at the other end of said second sleeve.

4,239,273
DEVICE FOR THE ROTARY ASSEMBLY OF A MEMBER CONTROLLED BY PRESSURIZED FLUID
Gerard P. Dodemont, Crepy en Valois, and Christian H. Viallefont, Meaux, both of France, assignors to Poclain, France
Filed Nov. 29, 1978, Ser. No. 964,719
Claims priority, application France, Dec. 6, 1977, 77 36747
Int. Cl.³ B66C *1/00*
U.S. Cl. 294—88 **11 Claims**



1. A device for controlling the operation of a tool member by pressurized fluid comprising:
a body having at least first and second shoulders and two main conduits adapted to be selectively supplied with said pressurized fluid;
a rotary member adapted to rotate with respect to said body and having first and second shoulders disposed in opposing relation to said first and second shoulders, respectively, of said body for maintaining said rotary member in an axial position with respect to said body, said rotary member including two inner pipes for conveying said pressurized fluid to control the tool member;
two circular grooves disposed between the rotary member and the body, with at least one of said inner pipes and one of said main conduits opening into one of the two circular grooves, and the other main conduit opening into the other circular groove;
a shuttle valve having two inlet connections and an outlet connection; and
an inner conduit disposed in one of said body and rotary member and including a first portion which connects a first of the two main conduits to a first of the two inlet connections of the shuttle valve, a second portion which connects the second of the main conduits to the second of

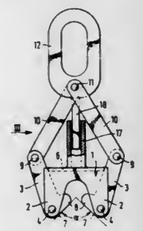
the two inlet connections of said shuttle value, and a third portion which connects said first shoulder of said one of said body and rotary member in which said inner conduit is disposed to the outlet connection of the shuttle valve, wherein the pressure of the fluid which is selectively supplied to one of said main conduits is adapted to produce a resultant force on said first shoulder of the other of said body and rotary member for causing said second shoulders of said body and rotary member to firmly abut against each other to lock these latter shoulders and consequently, said rotary member and said body, for preventing relative rotation therebetween.

4,239,274

SELF-TIGHTENING CLAMP FOR THE SUSPENSION OF GLASS SHEETS

Waldemar Linberg, Herzogenrath; Mario Roth, and Hans-Peter Siemonsen, both of Aachen, all of Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Jun. 12, 1979, Ser. No. 47,695
Claims priority, application France, Jun. 15, 1978, 78 17910
Int. Cl.³ B66C *1/48*
U.S. Cl. 294—114 **5 Claims**



1. In a self-tightening clamp adapted on closure to suspend a sheet of glass for heat treatment wherein said clamp includes a stirrup, a lever pivotally mounted on each end of said stirrup having a sheet engaging stud at an end thereof above the pivot point of the lever, an arm pivotally mounted on the end of each said lever opposite said stud, and a suspension link pivotally connected to the end of each arm opposite said lever; the improvement comprising in that said stirrup and said suspension link each has a vertically extending guide member with the members cooperating together to assure that said stirrup may move vertically with respect to said suspension link during opening and closing of said clamp, in having stops associated with said stirrup which limit pivotal movement of the levers and associated studs towards each other whereby said studs on a complete closure of the clamp are spaced apart slightly less than the thickness of a glass sheet which they are adapted to engage, and wherein the lower flanks of the studs in the position limited by the stops form an angle less than 120° with respect to each other.

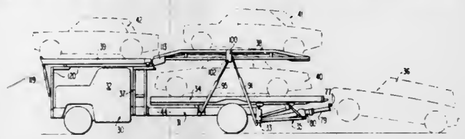
4,239,275

VEHICLE TRANSPORTER

David C. Horneys, Shippensburg, and Gerald L. Pool, Greencastle, both of Pa., assignors to Jerr-Dan Corporation, Greencastle, Pa.

Filed Mar. 5, 1979, Ser. No. 17,199
Int. Cl.³ B60J *9/00*
U.S. Cl. 414—478 **16 Claims**

1. A vehicle transporter comprising a mobile support having a normally level frame, a horizontally extensible and retractable lower deck on said frame and being tiltable to an inclined position relative to said frame following horizontal extension of the lower deck, an adjustable ground-engaging stabilizing means on said frame to support the lower deck during its horizontal extension and to allow tilting of the lower deck to said inclined position following said extension, a support structure rising from said frame to an elevation substantially above the lower deck, an upper deck above the lower deck and having its forward end pivoted to said support structure, power means interconnecting said frame and upper deck and operable to elevate the upper deck to an inclined position



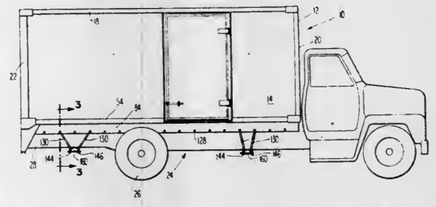
above the pivotal connection of the upper deck with said support structure and also operable to lower the upper deck to an inclined position below said pivotal connection, whereby the rear end of the upper deck may rest upon and be supported by the lower deck when the latter is in its inclined position, the lower and upper decks then forming a substantially continuous inclined ramp for vehicles.

4,239,276

TRUCK BODY FLOOR CONSTRUCTION AND TIE-DOWN MEANS

William A. Bertolini, 115-65 Undercliff Ter., Kinnelon, N.J. 07405

Filed Mar. 20, 1978, Ser. No. 887,948
Int. Cl.³ B60R *27/00*
U.S. Cl. 296—37.6 **10 Claims**



1. In a vehicle, a combined floor construction and tie-down means comprising lower longitudinal side rails, longitudinal floor boards extending transversely of the body and secured to said side rails, a wheeled frame including longitudinal inboard frame rails, substantially Z-shaped members secured beneath said floor boards and resting on said frame rails, and means clamping said Z-shaped members to said frame rails wherein said clamping means includes longitudinally spaced holes provided in said Z-shaped members, substantially C-shaped bolts including upper portions extending through a pair of said holes on the same side of said Z-shaped members, said C-shaped bolts having lower portions extending beneath said frame rails, and means securing the lower ends of said C-shaped bolts so that said bolts pull said Z-shaped members against said frame rails and said C-shaped bolts extend at a downwardly converging angle relative to each other.

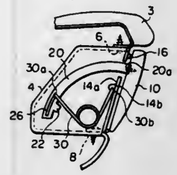
4,239,277

LID MOUNTINGS FOR AUTOMOBILE INTERIOR STORAGE CABINETS

Takaaki Oda, Musashi-murayama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 20, 1978, Ser. No. 971,443
Claims priority, application Japan, Jan. 13, 1978, 53/3136[U]
Int. Cl.³ B60R *5/00*
U.S. Cl. 296—37.12 **7 Claims**

1. Automobile interior storage cabinet comprising
a body of the cabinet defining an opening,
a lid hingedly mounted on the cabinet body to cover the opening and adapted to be releasably held in a closed position,
stop means for stopping the turning movement of the lid in an open position,
means biasing the lid toward the closed position, and



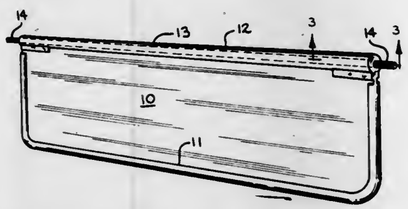
a lost motion connection between the lid and the biasing means for rendering the biasing means active on the lid only after the lid turns toward the open position exceeding a predetermined angular position.

4,239,278

VEHICLE SUN VISOR

Robert T. Skilliter, Jr., Genoa, Ohio, assignor to The ACME Specialty Manufacturing Co., Toledo, Ohio

Continuation-in-part of Ser. No. 776,259, Mar. 10, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 6,888
Int. Cl.³ B60J *3/00*
U.S. Cl. 296—97 F **6 Claims**



1. A vehicle sun visor having a top edge, opposed side edges and a lower edge, said visor to be interposed between the vehicle operator and a light source, comprising a tinted transparent flat panel molded from a resinous material, said panel having an enlarged and substantially transparent bead of the same material formed integrally therewith, said bead extending substantially along the entire periphery of said panel said enlarged bead extending across the entire lower edge preventing said lower edge from acting as a cutting edge, a rod encapsulated integrally within the bead along said top edge of said panel to reinforce said panel, said rod extending from a point adjacent one side edge to a point adjacent said opposed side edge, whereby said encapsulated rod gives structural strength across the entire top edge of said panel, and means for mounting said sun visor to a vehicle.

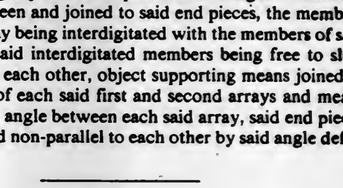
4,239,279

VEHICLE ROOF COVERING INSTALLATION

Albert J. Gonas, Grosse Pointe; Marvin A. Packett, Detroit, and Donald A. Street, Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 792,652, May 2, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 936,767
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—210 **5 Claims**

1. Method of installing a flexible sheet roof covering on a vehicle body having a roof structure including a roof panel and laterally spaced sail panels, comprising the steps of:
preforming a first substrate panel to a shape conforming to one of the sail panels and a portion of the roof panel and a second substrate panel to a shape conforming to the other sail panel and a portion of the roof panel, said first and second substrate panels having edge portions adapted for mating overlap by which the first and second substrate panels may be joined together to provide a substrate panel assembly having an extent substantially equal to the extent of the flexible sheet roof covering;
gauging the width of the lateral spacing of the sail panels of a selected vehicle body;



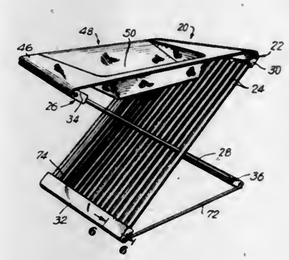
joining the edge portions of the first and second substrate panels to provide a substrate assembly having a width gauged to the lateral spacing of the sail panels of the selected vehicle body to provide an assembled substrate sized to precisely overlie the roof and sail panels of the selected vehicle body;
adhesively securing the flexible sheet roof covering on the substrate assembly;
and mounting and securing the substrate assembly on the vehicle body.

4,239,280

FOLDING SUPPORT CONSTRUCTION

Mitchell N. Ackerman, 155 W. 13th St., New York, N.Y. 10011

Filed Jan. 19, 1978, Ser. No. 870,920
Int. Cl.³ A47C *4/00*; F16M *11/32*
U.S. Cl. 297—18 **7 Claims**



1. A folding support comprising first and second arrays, said arrays including a pair of end pieces and elongated members extending between and joined to said end pieces, the members of said first array being interdigitated with the members of said second array, said interdigitated members being free to slide with respect to each other, object supporting means joined to one end piece of each said first and second arrays and means for defining the angle between each said array, said end pieces being positioned non-parallel to each other by said angle defining means.

4,239,281

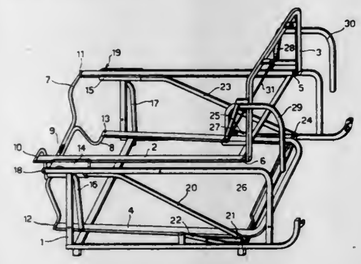
CHAIR OR SOFA CONVERTIBLE INTO A BED

Sebastiano Luca', Barba, Italy, assignor to Lukas Beddy di Luca Sebastiano & C.S.a.s., Barba, Italy

Filed May 1, 1979, Ser. No. 35,046
Int. Cl.² A47C *17/10*
U.S. Cl. 297—108 **4 Claims**

1. In a mechanism for an armchair or couch convertible into a bed, of the type including

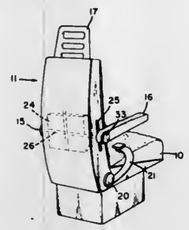
a fixed support frame,
an articulated movable frame,
pivotal attachment means pivotally attaching said movable frame to said fixed support frame, said pivotal attachment means permitting said movable frame to rotate thereabout between a first end position above said fixed frame and a second end position to one side of said fixed frame, said mechanism being adapted for use as a chair or couch when said movable frame is in said first position and being adapted for use as a bed when said movable frame is in said second position,
an upholstery seat and seat back for use when said mechanism is arranged as an armchair being attached to said movable frame on one face thereof, and
a mattress for use when said mechanism is arranged for use as a bed being attached to said movable frame on the other face thereof,
the improvement wherein said movable frame includes first and second sub-frames,



main pivot means pivotally mounting said first sub-frame at one end thereof to said fixed frame,
lever means suspending one end of said second sub-frame, at each side thereof, from said first sub-frame, and
lever system means suspending the other end of said second sub-frame, at each side thereof, from said fixed frame by means of a crosspiece connected at opposite ends to said lever system means and which passes underneath said other end of said second frame means without being fixedly connected thereto, said lever system means being also connected to said first sub-frame whereby when said mechanism is in said position for use as a chair or couch said second sub-frame lies below said first sub-frame and when said first sub-frame is turned about said main pivot means connecting it to said fixed frame said lever means at said first end of said second sub-frame and said lever means at said other end of said second sub-frame operate to raise said second sub-frame to a position substantially level with the said first sub-frame and coplanar therewith.

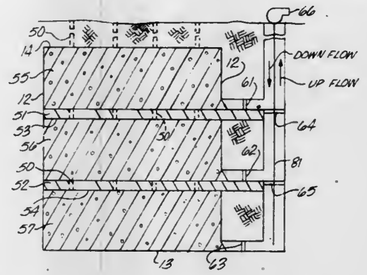
4,239,282
PILOT SEAT
Thomas H. White, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 18, 1978, Ser. No. 970,725
Int. Cl.[2] A47C *7/46, 7/54*
U.S. Cl. 297—284 **9 Claims**

1. A seat assembly particularly adapted for a pilot comprising:
(a) a seat portion;
(b) a backrest;
(c) a pair of armrests;
(d) said backrest having a separately adjustable lumbar support;
(e) said armrests being interconnected to said lumbar support for unison adjustment therewith, relative to said backrest;



(f) unitary adjustment means coupled to both said armrests and said lumbar support for simultaneously raising or lowering said armrests and said lumbar support.

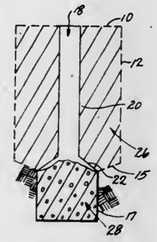
4,239,283
IN SITU OIL SHALE RETORT WITH INTERMEDIATE GAS CONTROL
Richard D. Ridley, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.
Filed Mar. 5, 1979, Ser. No. 17,348
Int. Cl.[3] E21B *43/247*; E21C *41/10*
U.S. Cl. 299—2 **44 Claims**



20. A method for forming an in situ oil shale retort in a subterranean formation containing oil shale and having a plurality of strata of formation extending through a retort site, at least one stratum of formation having a relatively lower kerogen content than the average kerogen content of formation within the retort site, the method comprising the steps of:
forming a plurality of vertically extending holes through a portion of the subterranean formation within the retort site; and
forming at least an upper and a lower fragmented permeable mass of formation particles containing oil shale within the retort site, leaving between the upper and lower fragmented masses an intervening zone of unfragmented formation containing at least one stratum of formation having a relatively lower kerogen content than the average kerogen content of formation within the retort site, said zone of unfragmented formation having a plurality of such vertically extending holes for distributing fluid from the upper fragmented mass directly into the lower fragmented mass.

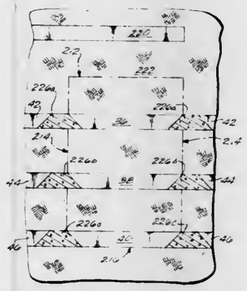
40. An in situ oil shale retort in a subterranean formation containing oil shale comprising:
a plurality of vertically spaced apart fragmented permeable masses of formation particles containing oil shale including an upper fragmented mass and at least one lower fragmented mass substantially directly below said upper fragmented mass and separated from said upper fragmented mass by a zone of unfragmented formation containing a plurality of vertically extending holes therethrough for distributing fluid from the upper fragmented mass directly into the lower fragmented mass.

4,239,284
SITU RETORT WITH HIGH GRADE FRAGMENTED OIL SHALE ZONE ADJACENT THE LOWER BOUNDARY
Richard D. Ridley, and Robert J. Fernandes, both of Bakersfield, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.
Filed Mar. 5, 1979, Ser. No. 17,432
Int. Cl.[3] E21C *41/10*
U.S. Cl. 299—2 **18 Claims**



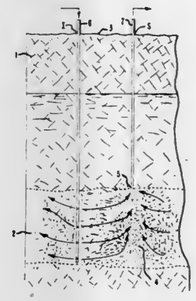
11. A method of forming an in situ oil shale retort in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, said fragmented mass having top, bottom and side boundaries, comprising the steps of:
excavating a first portion of formation from within such boundaries within a layer of formation having an average kerogen content less than the average kerogen content of the oil shale within such boundaries to form a lower void;
excavating a second portion of formation from within such boundaries to form an upper void vertically above the lower void;
dropping fragmented formation particles formed by excavation of the upper void from the upper void into the lower void for forming a lower moiety of a fragmented mass of formation particles in the in situ oil shale retort;
explosively expanding a third portion of formation within the boundaries of the retort toward such upper void for forming an upper moiety of the fragmented mass in the retort.

4,239,285
METHOD OF ATTENUATING AIRBLAST FROM DETONATING EXPLOSIVE IN AN IN SITU OIL SHALE RETORT
Gordon B. French, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.
Continuation of Ser. No. 840,856, Oct. 11, 1977. This application Jun. 20, 1979, Ser. No. 50,425
Int. Cl.[3] E21C *41/10*
U.S. Cl. 299—2 **41 Claims**



30. In a method for forming an in situ oil shale retort in a subterranean formation containing oil shale, in which at least one means for access is excavated to a retort site in the formation containing oil shale and at least one void is excavated in formation within the retort site, leaving a remaining portion of unfragmented formation within the retort site adjacent the void, and in which explosive is placed in such a portion of unfragmented formation and detonated to explosively expand such portion of unfragmented formation toward such a void for forming an in situ retort containing a fragmented permeable mass of formation particles containing oil shale, the improvement comprising the steps of:
providing a permeable barrier between such void and each means for access for reducing the effective transverse cross section of each means for access; and
confining gas from such explosive expansion by limiting flow of such gas from the retort site by means of the smaller cross section available for gas flow through such a permeable barrier so as to attenuate airblast in each means for access.

4,239,286
IN SITU LEACHING OF ORE BODIES
David L. Coursen, Mercersburg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 382,845, Jul. 26, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,750
Int. Cl.[3] E21B *43/28*; E21C *41/14*
U.S. Cl. 299—4 **23 Claims**



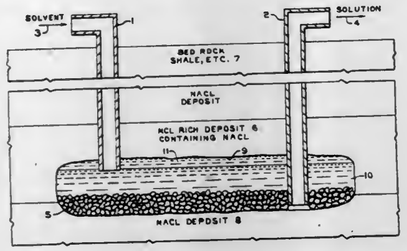
16. An improved process for recovering metal values by in-situ leaching an ore body located below the water table which comprises:
a. forming a rubblized zone in an ore body whereby the rubblized zone contains fractured metal bearing ore particles;
b. injecting a leach solution through one or more injection wells located in the ore body adjacent to but outside the rubblized zone, the leach solution solubilizing metal values in the ore body and in the rubblized zone; and
c. recovering a metal containing leach solution through one or more production wells located in the rubblized zone.

4,239,287
SOLUTION MINING POTASSIUM CHLORIDE FROM HEATED SUBTERRANEAN CAVITIES
Elmar L. Goldsmith, Regina, Canada, assignor to PPG Industries Canada, Ltd., Regina, Canada
Filed Feb. 1, 1979, Ser. No. 8,314
Int. Cl.[2] E21C *41/08*
U.S. Cl. 299—4 **17 Claims**

1. A method of solution mining potassium chloride from a cavity in a subterranean ore deposit containing potassium chloride and sodium chloride, in which cavity ore has been rubblized to effect a large contact surface area, comprising:
A. solution mining the ore rubble at a first temperature for a

time sufficient to determine the mining rate for that temperature;

B. adjusting the temperature of the cavity solution to a temperature determined to be near the highest temperature, based on the surface area calculated from the mining rate at the first temperature, at which the invariant com-



position is achievable at the solvent dissolving rate at the adjusted temperature;

C. solution mining the ore near the adjusted temperature; and

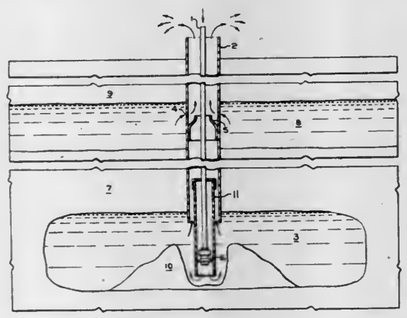
D. withdrawing solution near the invariant composition of the adjusted temperature.

4,239,288

SOLUTION MINING METHOD UTILIZING SUB-SURFACE AQUIFER

Robert E. Thompson, Moose Jaw, and Henry A. Antemuik, Regina, both of Canada, assignors to PPG Industries Canada, Ltd., Regina, Canada

Filed Feb. 1, 1979, Ser. No. 8,449
Int. Cl.[2] E21B *43/28*
U.S. Cl. 299—5 **10 Claims**



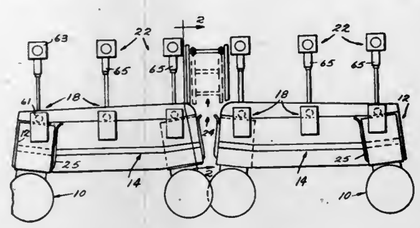
1. In the method of solution mining a mineral from a subterranean deposit thereof by introducing into the deposit an aqueous solvent and withdrawing from the deposit through a conduit a solution richer in the mineral and wherein above the deposit is a water bearing formation traversed by the conduit, an improvement comprising establishing through the wall of the conduit communication between the water bearing formation and the conduit and creating a pressure differential across that wall of the conduit to effect dilution of the solution being withdrawn, thereby avoiding plugging of the conduit caused by precipitation of the mineral.

4,239,289

MANEUVERABLE FULL FACE MINER

James C. Justice, and Frank A. Delli-Gatti, both of Beckley, W. Va., assignors to Coaltex, Incorporated, Beckley, W. Va.

Filed Mar. 14, 1979, Ser. No. 20,492
Int. Cl.[3] E21C *25/52*
U.S. Cl. 299—18 **15 Claims**



1. A full face miner for mining a seam, comprising

a pair of cutting heads rotatable about axes spaced from each other along the face being mined;

means for rotating each of said cutting heads axis to effect cutting;

means for mounting said cutting heads for reciprocal longitudinal movement toward and away from each other, to effect shearing, along the face being mined;

means for moving said cutting heads on said mounting means in reciprocal longitudinal movement to effect shearing;

means for supporting the roof of the cut seam and for anchoring said mounting means in stationary position within the seam during reciprocal movement of said cutting heads with respect to said mounting means;

means for sumping said cutting heads; and

means for conveying cut material away from the face to be mined, said conveying means comprising means for conveying cut material along the face being mined, and means for conveying cut material away from and perpendicular to the face being mined; said means for conveying cut material along the face being mined consisting essentially of a plow operatively mounted to and longitudinally movable with each of said cutting heads.

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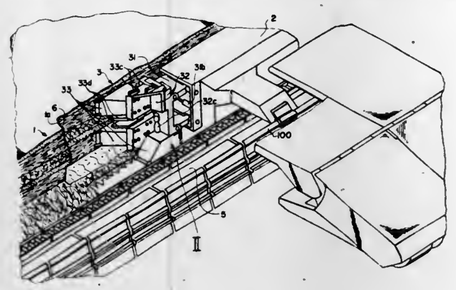
HYDROMECHANICAL PLANER WITH CUTTING AND BREAKING HEADS

Heinrich Goris, Hamminkeln; Roland Günther, Wesel; Kurt Ogorek, Oberhausen, and Karl-Heinz Schwarting, Voerde, all of Fed. Rep. of Germany, assignors to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 56,842
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832319
Int. Cl.[3] E21C *27/34, 25/60*
U.S. Cl. 299—34 **19 Claims**

1. A hydromatic planer particularly for mining materials in a mining seam, comprising a planer housing, at least one cutting and breaking head mounted on said housing, each head including a first and vertically arranged support member, a second support member mounted on said first support member for upward and downward movement relative to said first support member, a first adjustment means connected between said first support member and said housing for adjusting said cutting and breaking head upwardly and downwardly relative to said housing, second adjustment means between said second support member and said first support member for adjusting said second support member upwardly and downwardly relative to said first support member, at least one first cutting and breaking wedge mounted on said second support member for adjustable movement relative to said second support member and having a wedge shaped cutting edge disposed in a first plane

for engagement in the mining seam, and at least one second cutting and breaking wedge adjustably mounted on said first support member for movement relatively thereto having a wedge shaped cutting edge disposed in a second plane at sub-



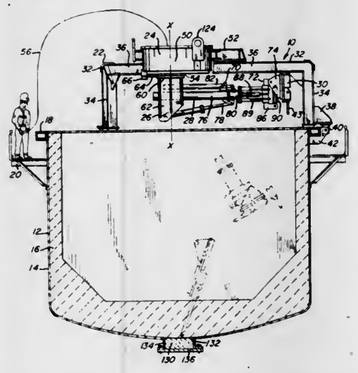
stantially right angles to said first plane, and nozzle means associated with each of said first and second cutting and breaking wedges for directing a fluid stream against the seam to make an incision in the seam.

4,239,291

INDUSTRIAL METALLURGICAL DELINING ASSEMBLY

Lawrence Skendrovic, West Mifflin, Pa., assignor to William M. Bailey Company, Washington, Pa.

Filed Jun. 13, 1978, Ser. No. 914,998
Int. Cl.[3] E21C *3/00*
U.S. Cl. 299—70 **16 Claims**



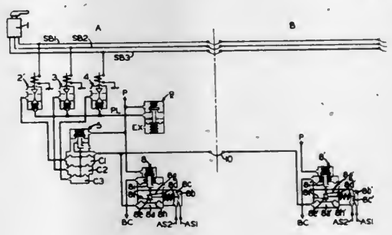
1. An industrial metallurgical delining assembly for dislodging and removing refractory or other material from upwardly open metallurgical process vessels comprising: frame supporting means adapted to be carried by such a vessel adjacent an upper end portion thereof; said frame supporting means including a plurality of transversely spaced generally vertically extending leg sections supporting a generally horizontally extending support section adjacent their upper ends thereby spacing said support section upwardly from the upper end of such a vessel; turntable means carried by said support section and having a boom support portion thereof depending thereunder and rotatable about a generally vertically extending axis; extensible and articulatory elongated boom means pivotally carried by said boom support portion adjacent one axial end thereof; work means carried by said boom means adjacent the free end thereof and operable to selectively carry dislodging means and removal means for the dislodging of such material and the subsequent removal thereof from such a vessel; said turntable means being cooperable with said boom means to provide access to substantially all interior portions of such a vessel as well as to the exterior thereof adjacent the upper end thereof for the dislodging and removal of such material from such a vessel; and the vertical spacing between the uppermost end of such vessel and said support section being sufficient to provide clearance for said removal means to remove such dislodged material between said leg sections and over the upper end portion of such vessel to a location outwardly from such vessel.

4,239,292

BRAKE GEAR FOR VEHICLES

Minoru Nagase, Kobe, Japan, assignor to The Nippon Air Brake Co., Ltd, Kobe, Japan

Filed Mar. 19, 1979, Ser. No. 21,741
Claims priority, application Japan, Apr. 7, 1978, 53-41482
Int. Cl.[3] B60T *13/74*
U.S. Cl. 303—3 **5 Claims**



1. For use in a railway train, a brake control system for providing load-adaptive braking on each car of the train in accordance with the respective load condition of each car and an electric brake command signal effective at a single one of the cars comprising:

(a) a fluid pressure operable brake cylinder device on each said car;

(b) means associated with said single one of the cars for converting the electric brake command signal thereat to a corresponding fluid pressure brake command signal;

(c) a source of fluid pressure;

(d) a fluid pressure regulator device having an input connected to said source of fluid pressure and an output connected to said converting means for supplying thereto a predetermined level of fluid pressure, whereby said fluid pressure brake command signal is limited to a maximum value corresponding to said predetermined level of supply fluid pressure; and

(e) means associated with each car for pressurizing said brake cylinder device thereof in accordance with said fluid pressure brake command signal and the respective car load condition to provide said load-adaptive braking on each car.

4,239,293

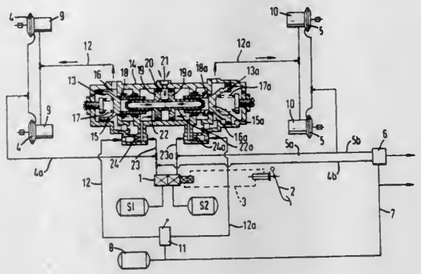
VEHICLE BRAKING SYSTEM WITH VALVING TO CONTROL SPRING APPLIED BRAKES AND FLUID ACTUATED SERVICE BRAKE UNITS

Wilbur M. Page, Lincoln, England, assignor to Clayton Dewandre Company Limited, Lincoln, England

Filed Mar. 20, 1979, Ser. No. 22,096
Claims priority, application United Kingdom, Mar. 22, 1978, 11398/78
Int. Cl.[3] B60T *13/00*
U.S. Cl. 303—6 M **5 Claims**

1. A vehicle braking system of the kind incorporating two circuits serving driven and non-driven axles respectively in which both fluid actuated service brake units and spring brake units are provided on both axles, comprising a hand control valve for venting the spring brake units for braking purposes, driver operated fluid valve means for effecting actuation of the

fluid actuated units, and relay valve means operable on failure of the service braking in either circuit and responsive to the service pressure in the other circuit to provide a graduated actuation of the spring brake units in the circuit where service braking had failed, at least one of the spring brake units in the circuit where service braking had failed, at least one of the spring brake on the driven axles and the relay valve means controlling operations



of such units, being so constructed as to attenuate the force applied by the spring brake units on the driven axle, the relay valve means comprising two relay valves each controlling the supply of fluid to the spring brake unit on one of the axles and operable, when the service pressure in the said one circuit fails, in response to the service pressure in the other circuit, to control venting of the associated spring brakes.

4,239,294

MOTORCYCLE HYDRAULIC BRAKE SYSTEM WITH BRAKE FORCE REGULATOR

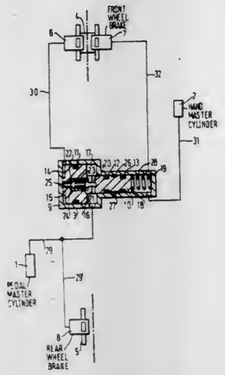
Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 26, 1979, Ser. No. 60,935

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837963

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **5 Claims**



1. A motorcycle hydraulic brake system having a brake force regulator comprising:

a first brake circuit having a pedal master cylinder connected directly to a rear wheel brake and acting through said regulator on a first brake caliper of dual-circuit front-wheel brake;

a second brake circuit having a hand master cylinder acting through said regulator on a second brake caliper of said front-wheel brake; and

said regulator includes

a pressure reducing valve disposed in said first brake circuit between said pedal master cylinder and said first brake caliper and controlled by pressure of said second brake circuit,

said reducing valve providing regulated pressure to said first brake caliper, and

said rear wheel brake is provided with non-regulated pressure directly from said pedal master cylinder.

4,239,295

CIRCUIT FOR PREVENTING THE WHEEL VELOCITY FROM EXCEEDING THE VEHICLE VELOCITY IN VEHICLES WITH ANTILOCKING BRAKE SYSTEMS

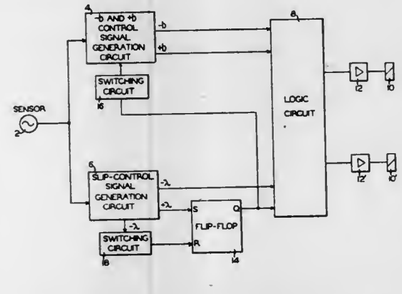
Konrad Rode, Hanover, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,661

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740419

Int. Cl.³ B60T *8/08*

U.S. Cl. 303—106 **2 Claims**



1. Switching circuit arrangement for preventing the wheel velocity from exceeding the vehicle velocity in an anti-skid vehicular braking system, a first threshold stage for generating deceleration and acceleration control signals, a second threshold stage for generating positive and negative slip control signals, and a logic circuit for evaluating the control signals controlling the brake pressure; characterized by, switching means being activated by a positive slip control signal for blocking the first threshold stage from generating the deceleration and acceleration control signals which blocking can be eliminated by the presence of a negative slip control signal.

4,239,296

CONTROL VALVE ASSEMBLIES

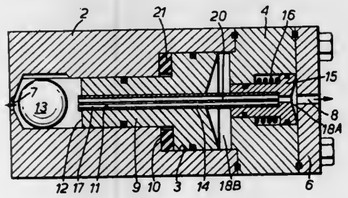
Manfred Kaub, Rhens, Fed. Rep. of Germany, assignor to Girling Limited, Birmingham, England

Filed May 9, 1979, Ser. No. 37,287

Claims priority, application United Kingdom, May 9, 1978, 18550/78

Int. Cl.³ B60T *8/00*

U.S. Cl. 303—24 A **5 Claims**



1. A control valve assembly for a vehicle braking system, comprising a housing having an inlet and an outlet, and a bore

between said inlet and outlet, a valve controlling communication between said inlet and said outlet, a control piston movable in said bore, said valve having a valve seat carried by said control piston and an inertiaresponsive member movable into engagement with said valve seat to close said valve at a predetermined deceleration of the vehicle, and disabling means operable in response to the pressure at said outlet to hold said valve open, said disabling means comprising an auxiliary piston, a rod connected to said auxiliary piston, and resilient means biasing said auxiliary piston to an inoperative position, said auxiliary piston having stepped opposed faces subjected to outlet pressure and being movable, in response to a predetermined outlet pressure, against the force of the resilient means to cause said rod to hold said inertia-responsive member off said valve seat, said rod having therein a passageway which at all times permits the passage of fluid between chambers located on opposite sides of said auxiliary piston.

4,239,297

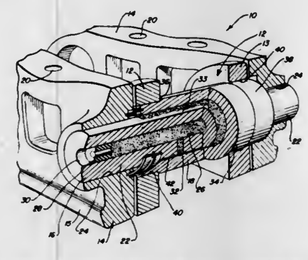
RADIAL FACE SEAL

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1978, Ser. No. 969,028

Int. Cl.³ B62D *55/20*; F16J *15/36*

U.S. Cl. 305—11 **12 Claims**



1. A seal (58) between two relatively rotatable piece parts (14,18), a cylindrically-shaped sealing ring (60) seated in a slot (72) in a facing surface (52) of one of said piece parts (14), a second cylindrically-shaped sealing ring (64) seated in a slot (74) in a facing surface (44) of the other of said piece parts (18), an inwardly flared lip (62) on the distal end of one of said sealing rings (60,64), an outwardly flared lip (66) on the distal end of the other of said sealing rings (60,64), and said outwardly flared lip (66) on said one sealing ring (60,64) sealingly engaging the inwardly flared lip (62) on said other sealing ring (60,64).

4,239,298

ROLLING BEARING FOR LINEAR MOVEMENT HAVING CAGE EXTENDING BEYOND OUTER SLEEVE

Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 7, 1978, Ser. No. 884,190

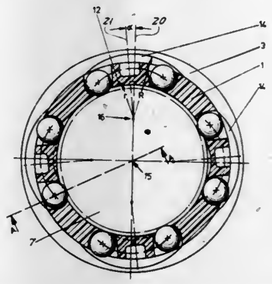
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711882

The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.

Int. Cl.³ F16C *31/06*

U.S. Cl. 308—6 C **9 Claims**

1. In a rolling bearing adapted for relative axial movement with respect to a shaft, and including a cage with axially extending pairs of first and second guideways for loaded and unloaded rolling elements respectively and circular reversing guideways at the axial ends of and interconnecting each pair of first and second guideways, to form continuous paths, endless rows of rolling elements in said paths, and outer sleeve surrounding said cage and having an axial length substantially equal to the lengths of said first and second guideways, whereby the ends of said cage having said reversing guideways project axially beyond said outer sleeve, and end rings mounted to radially outwardly cover said projecting ends; the improvement wherein the radially inward surfaces of said semicircular guideways, with respect to the axis of said bearing, are radially outwardly convex and said end rings have



concave recesses in their inner surfaces and radially surrounding said semicircular guideways, the centers of curvature of said surfaces of each semicircular guideway and the corresponding recess of said end ring being on a common axis parallel to said bearing axis, the centers of said second guideways being displaced radially outwardly in said cage from the centers of said first guideways, whereby rolling elements in said second guideways are held out of contact with said shaft.

4,239,299

BALL BEARING FOR LINEAR MOTION

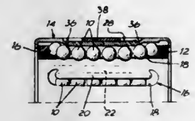
Alfred Hoffmann, Bilthoven, Netherlands; Carl Ullberg, Göteborg, Sweden; Hendrik Rekers, Nieuwegein, Netherlands; Horst M. Ernst, Eltingshausen, Fed. Rep. of Germany; Manfred Brandenstein, Aschfeld, Fed. Rep. of Germany; Armin Olschewski, Schweinfurt, Fed. Rep. of Germany; Toni Schulz, Dittelbrunn, Fed. Rep. of Germany, and Lothar Walter, Schweinfurt, Fed. Rep. of Germany, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Apr. 4, 1979, Ser. No. 26,589

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814371; Jul. 5, 1978, 2829499

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **14 Claims**



1. In a ball bearing for linear motion including a cage with oval guideways and an outer sleeve receiving said cage, said sleeve having parallel axially extending raceway sections with a transition at each end for receiving balls under load, each transition extending radially outwardly from the respective raceway section; the improvement wherein each transition has a radially weakened portion extending transversely of the respective raceway section.

4,239,300

HYDROSTATIC BEARING

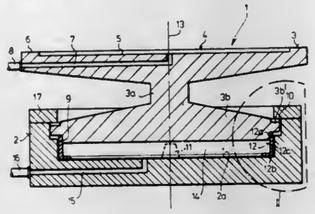
Josef Adler, Nieder-Ramstadt, Fed. Rep. of Germany, assignor to Polysius AG, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,159

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805711

Int. Cl.³ F16C *17/06, 32/06, 39/04*

U.S. Cl. 308—9 **20 Claims**



1. A hydrostatic bearing for rotating machine parts, more particularly a radial bearing for heavy machine parts, such as drums, comprising a fixed bearing pedestal defining an upwardly facing recess, a bearing shoe mounted in said recess for limited wobbling movement about a bearing axis extending upwardly through the recess of said bearing pedestal and for hydraulic adjustment relative to the rotating machine part, said bearing shoe including an upper surface defining a recess, and means for supplying the recess of said bearing shoe and the recess of said bearing pedestal with a hydraulic carrier medium, a hydraulically operable supporting membrane movably connecting said bearing shoe to said bearing pedestal about the recess of said bearing pedestal characterised in that the supporting membrane comprises an annular jacket zone which is deformable substantially parallel to the bearing axis.

4,239,301

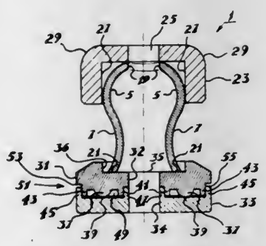
FLEXIBLE SPRING BEARING

Hans U. Pannwitz, P.O. Box 67, Odessa, Fla. 33556

Continuation-in-part of Ser. No. 834,903, Sep. 20, 1977, Pat. No. 4,175,804. This application Apr. 25, 1979, Ser. No. 33,200

Int. Cl.³ F16C *21/00*

U.S. Cl. 308—35 **23 Claims**



1. An improved bearing, comprising in combination:
a substantially cylindrical configuration having an aperture therein;
a main bearing race disposed at an end portion of said cylindrical configuration;
a thrust race disposed adjacent to said main bearing race;
bearing means interposed between said main bearing race and said thrust race enabling rotation therebetween;
said bearing means comprising a plurality of protrusions established concentric with said cylindrical configuration;
each of said plurality of protrusions being at least partially annular about said cylindrical configuration;
main bearing skirt means extending annularly from said main bearing race and concentric with said cylindrical configuration; and
thrust race skirt means extending annularly from said thrust race for cooperation with said main bearing skirt means for forming a rotatable seal therebetween.

4,239,302

SIDEBEARERS

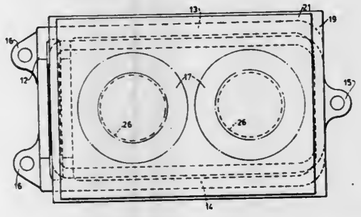
Robert S. Morris, Cheltenham, England, assignor to Gloucester Railway Carriage & Wagon Company Limited, England

Filed Apr. 13, 1978, Ser. No. 896,339

Claims priority, application United Kingdom, Apr. 14, 1977, 15468/77

Int. Cl.³ H01H *1/50*; B61F *3/00*

U.S. Cl. 308—138 **6 Claims**



1. A sidebearer for a railway bogie vehicle, comprising first and second housing elements which cooperate to form a housing within which spring means are disposed, the first housing element being connected, in use, to the bogie and the second housing element carrying a friction pad which, in use, is biassed into engagement with a rubbing plate attached to the vehicle underframe, said first and second housing elements being provided with interengaging guide formations ensuring guided relative movement of the elements under and against the action of the spring means, which guide formations include two parallel spaced walls only at one end of one of the housing elements and a wall at the corresponding end of the other housing element which fits between said two parallel spaced walls as a close sliding fit, the two parallel walls being on said first housing element, the two parallel walls extending, in use, to positions adjacent the friction pad, whereby the positions of engagement between the walls are located in close proximity to the line of action of the drag forces applied, in use, to the friction pad.

4,239,303

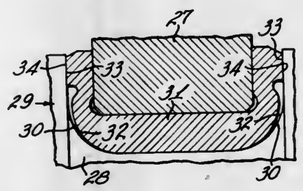
FULL CONTACT CRANKSHAFT BEARING

Robert R. Backlin, Dolton, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 4, 1978, Ser. No. 965,945

Int. Cl.³ F16C *17/10, 3/06*

U.S. Cl. 308—167 **10 Claims**



1. A journal bearing comprising, a journal, two complementary bushing shells, said journal defining fillet radii to reduce the journal stress at the ends of said journal, fillet radii of smaller radii on said bushing shells providing a gradually increasing clearance between fillets from a lubricating oil film thickness on the axial journal surface to the radial portions of the fillets, a restricted flow passage means defined by abutment surfaces located axially outwardly from the extreme radial portions of said bushing shell fillets for trapping oil to increase the bearing load carrying capacity substantially across the full width of said journal bearing.

4,239,304

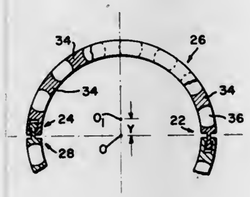
BEARING SPLIT CAGE

Teruaki Wakunami, Sagamihara, Japan, assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 28, 1979, Ser. No. 24,611

Int. Cl.³ F16C *33/50*

U.S. Cl. 308—217 **4 Claims**



1. A roller bearing cage comprising: a pair of cage pieces, said cage pieces having interconnected connector means, each connector means being constructed to prevent the separation of the cage pieces and having at least one circumferential surface in slidable contact with at least one circumferential surface of the other connector means, said connector means also being constructed to permit limited relative circumferential movement of the cage pieces to permit the enlargement and reduction of the diameter of the cage.

4,239,305

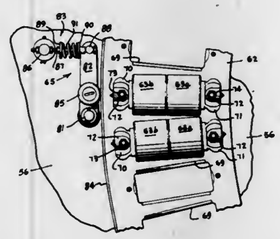
LIVE ROLLER CIRCLE FOR POWER SHOVELS AND THE LIKE

George B. Baron, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 24, 1979, Ser. No. 6,553

Int. Cl.³ F16C *19/30*

U.S. Cl. 308—222 **3 Claims**



1. An improved live roller circle structure for a large heavy-duty machine, such as a power shovel, which is subject to large eccentric loads wherein said machine includes a lower frame, an upper frame rotatably mounted on said lower frame by said live roller circle, wherein said roller circle structure includes a lower rail mounted on said lower frame, said lower rail having a width which exceeds 5% of the mean diameter of said roller circle, a roller cage structure, a plurality of pins mounted on said roller cage structure, rollers mounted on said pins and supported in rolling contact with said lower rail and an upper rail mounted on said upper frame and supported on said rollers, said upper rail having a width substantially equal to that of said lower rail and wherein said roller circle is arranged with respect to said upper and lower frames and said eccentric load is of a value as to cause the center of gravity of the machine to travel beyond the diameter of said roller circle under normal operating conditions, said improved live roller circle further comprising: a set of at least two cylindrical rollers mounted on each pin of said roller cage structure of said live roller circle.

4,239,306

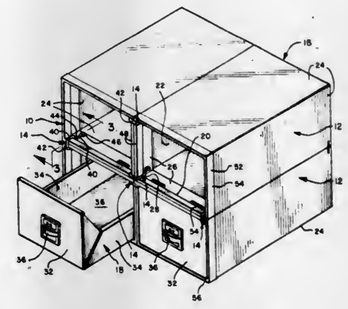
FILE FRAME

Gerald R. Klaus, St. Charles, Ill., assignor to Fellowes Manufacturing Company, Itasca, Ill.

Filed Nov. 27, 1978, Ser. No. 963,996

Int. Cl.³ A47B *87/00*; F16B *12/00*

U.S. Cl. 312—111 **8 Claims**



1. An improved framed shell housing comprising, in combination:
a fiberboard shell having at least three side wall panels;
said side wall panels being formed with hingedly connected extension panels, folded inwardly so as to lie adjacent their respective side wall panels, said side wall panels and their respective extension panels forming forward edges about their hinged connections, and said forward edges of said side wall panels forming collectively an open end of said shell;
wherein said shell further includes a notch at each corner formed by said side wall panels at said open end of said shell; and
a continuous peripheral frame for said open end of said shell, said frame having substantially the same peripheral dimensions as a periphery of said shell defined by said side wall panels rearward of said open end, said frame including, in combination, a first and a second spaced-apart leg member, a base member, said base member interconnecting said leg members and thereby forming a channel, and a continuous rigid bar, said rigid bar being disposed within said channel adjacent said base member, said frame receiving said forward edges within said channel and said rigid bar being disposed between said base member and said forward edges.

4,239,307

STORAGE AND DEMONSTRATION DEVICE PARTICULARLY FOR CARD-TYPE DISPLAY OBJECTS

Eduard H. Schweizer, 5101 Boarsheed Rd., Minnetonka, Minn. 55343

Filed Aug. 25, 1978, Ser. No. 936,894

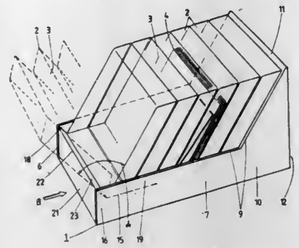
Claims priority, application Switzerland, Sep. 2, 1977, 10721/77

Int. Cl.² A47B *63/00*

U.S. Cl. 312—183 **3 Claims**

1. Storage and demonstration device for flat card-shaped display objects, comprising:
an oblique-angled rectangular closed container having a multiple segmented cover and a stand, said stand having a base section, a pair of parallel side panels, a front section and a rear section, each of said front and rear sections being provided with inclined support elements,

said cover being formed by a number of segments consecutively arranged at specific intervals between said front and rear sections and retained in said stand in such a manner that they can be tilted from a position oriented towards said rear section to a position oriented towards said front section and vice versa, said segments defining compartments for the objects, said compartments being closed



when said segments occupy the position oriented towards said rear section,

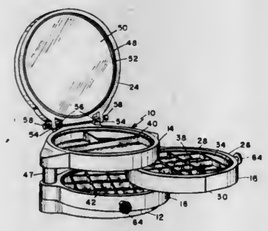
said segments being shaped as hoods open on the sides facing said rear section, having flat side and top wall sections extending towards said rear section and forming said closed cover when said segments are in the positions oriented towards said rear section.

4,239,308

DISPLAY TRAY ASSEMBLY

Paul W. Bradley, 3740 Sioux Ave., San Diego, Calif. 92117

Filed Mar. 29, 1979, Ser. No. 25,281
Int. Cl.³ A47B *47/00*
U.S. Cl. 312—201 **6 Claims**



1. A display tray assembly comprising:

a base,

at least two pivot posts adapted to be secured to and extend upwardly from said base,

at least two pivoting trays,

a first of said pivoting trays adapted for being supported on a first of said posts,

a second of said pivoting trays adapted for being supported by a second of said posts,

said pivoting trays comprising a generally ring-shaped wall supporting a removable tray and having a plurality of storage compartments,

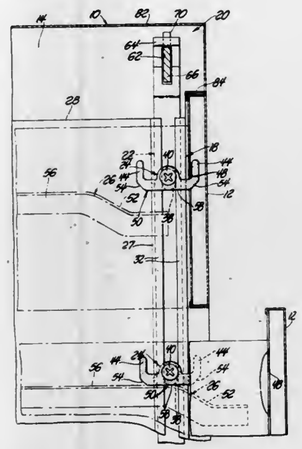
said pivot post comprising means for supporting said pivoting trays at a predetermined height, and for supporting said trays for pivoting movement from a position between said pivot posts, and a position at least 90° from a line connecting said pivot posts.

4,239,309

FILING CABINET INCLUDING DRAWER INTERLOCK

Eugene A. De Fouw, Holland, and Peter M. Baker, Mattawan, both of Mich., assignors to Lear Siegler, Inc., Kalamazoo, Mich.

Filed Jul. 31, 1979, Ser. No. 62,394
Int. Cl.³ E05B *65/46*; E05C *7/06*
U.S. Cl. 312—221 **11 Claims**



1. In a file cabinet having side panels and a plurality of vertically arranged drawers supported between the side panels for movement between open and closed positions, an interlock for the drawers comprising: an inner panel fixedly mounted on one of the side panels; spaced slides extending vertically on the inner panel; a vertically extending interlock bar positioned between the slides and the adjacent side panel; a plurality of lock members respectively associated with the drawers; each lock member including a vertically elongated guide that extends outwardly between the spaced slides and is fixedly secured to the interlock bar so as to support the bar for translational movement in a vertical direction between lower and upper positions; each lock member also including an upwardly extending hook located laterally inward from the spaced slides on the inner panel so as to engage the associated drawer in the closed position thereof with the bar in its upper position in order to maintain the drawer closed; each drawer being movable to the open position thereof free of the associated lock member hook with the bar in its lower position toward which gravity biases the bar; each lock member having a slide surface located laterally inward from the inner panel; an actuator on each drawer including a ramp that engages the slide surface of the associated lock member upon an initial opening drawer movement so as to move the interlock bar to its upper position and thereby lock each other drawer in its closed position; and each actuator also including a horizontal slideway that engages the slide surface on the associated lock member upon further drawer opening to maintain the interlock bar in its upper position until the drawer is closed whereupon the bar moves to its lower position so that any selected drawer can then be opened.

4,239,310

CONTAINER DOOR AND BACK THEREFOR

Delmar E. Benjamin, Monroe, Ohio, assignor to The Celotex Corporation, Tampa, Fla.

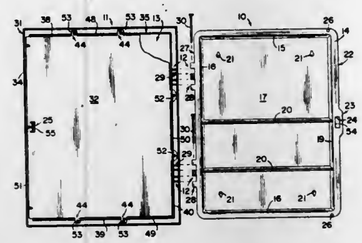
Filed Apr. 2, 1979, Ser. No. 26,278
Int. Cl.³ A47B *55/00*
U.S. Cl. 312—227 **39 Claims**

1. A door for attachment to a container comprising:

(a) a frame having an opening therein and a front and a rear surface,

(b) a rearwardly extending border located upon said frame rear surface at a distance inward of the inner edge of said frame defining said opening therein, said frame border having at least one slot located along its rearmost edge,

(c) an object fitted in said frame and contacting the portion of the rear surface thereof between said frame border and said frame inner edge, with said at least one frame border



slot being adjacent to and to the rear of the back surface of said object, and

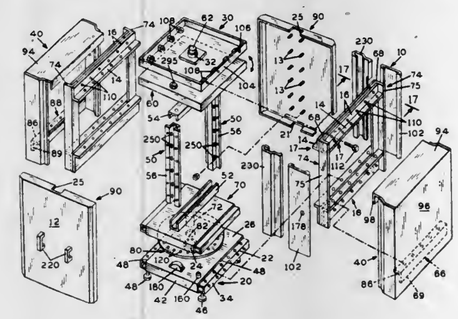
(d) a door back disposed behind and contacting said object back surface, said door back having at least one tab projecting from an edge thereof, said at least one tab being dimensioned to fit into said at least one frame border slot, whereby said object is held in place in said frame.

4,239,311

SUB-ASSEMBLIES FOR ROTARY STORAGE CABINET

Sherwood S. Brownlee, Waynesboro; Frederick H. Grubb, Jr., Stuarts Draft, and Warren G. Lohr, Aroda, all of Va., assignors to Acme Visible Records, Inc., Crozet, Va.

Filed Oct. 6, 1978, Ser. No. 949,260
Int. Cl.³ A47B *46/00*
U.S. Cl. 312—305 **4 Claims**



1. A kit for assembly of a rotary filing cabinet having a stationary housing and a rotor mounted in said housing, said kit comprising the following subassemblies for the housing:

(a) a base,

(b) an open rectangular pilaster frame, and

(c) an upper frame pan; said kit also including the following subassemblies for the rotor:

(a) a rectangular swivel base,

(b) a single open rectangular frame, and

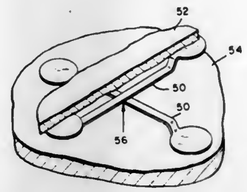
(c) an upper frame pan; and said kit including ball bearing means for supporting said rotor base on said housing base.

4,239,312

PARALLEL INTERCONNECT FOR PLANAR ARRAYS

Jon H. Myer, Woodland Hills, and Jan Grinberg, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 29, 1978, Ser. No. 964,550
Int. Cl.³ H05K *1/08*
U.S. Cl. 339—17 N **7 Claims**



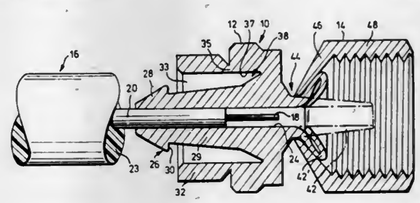
1. For use in electrically interconnecting a plurality of stacked integrated circuit wafers, each having top and bottom surfaces, and through which electric signal paths extend between the surfaces, a microinterconnect comprising first and second metallic microspring bridges electrically connected respectively to said signal paths and respectively secured at their ends to the surfaces of their respective wafers with their central portions spaced from said wafer surfaces to impart a yieldable spring characteristic to said bridges, said bridges on said surfaces of adjacent wafers facing one another and being in resilient contact for electrically coupling said wafers .

4,239,313

SWIVEL CONNECTOR

William W. Parr, 313 Little Ave., Barrie, Ontario, Canada (L4N 2Z8)

Filed Nov. 14, 1978, Ser. No. 960,570
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—89 C **5 Claims**

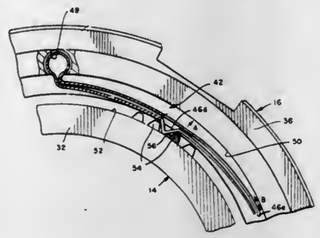


1. A connector for a coaxial cable of the kind which has a central conductor surrounded by a first insulative sheath, in turn enwrapped by a filamented conductor, in turn surrounded by a second insulative sheath, the connector comprising:

a conductive body defining an open-ended bore through which said first sheath can be received from one end of the bore,

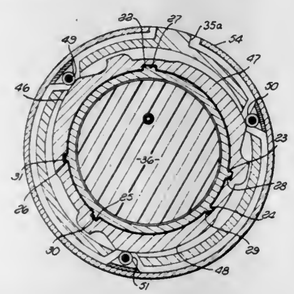
and a swivel nut at the other end of said bore formed initially integral with said body through a weak bridge portion capable of rupture to free the swivel nut, there being distortable means provided to capture the swivel nut with respect to the body after rupture.

4,239,314
ELECTRICAL CONNECTOR
Norman R. Anderson, Brookfield, and Vladimir Tomsa, Chicago, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Apr. 11, 1979, Ser. No. 29,240
Int. Cl.³ H01R 13/54
U.S. Cl. 339—89 M 18 Claims



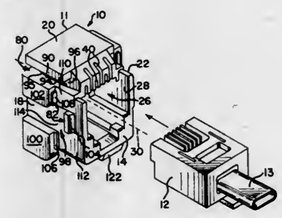
1. An electrical connector comprising first and second connector members, each connector member including interengageable contact means adapted for axial connection in electrical engagement with the contact means of the other connector;
a coupling ring carried by one of said connector members for rotation relative thereto;
complementary interengaging connection means between said coupling ring and the other of said connector members; and
detent means between said coupling ring and said one connector member, said detent means including a radially deflectable leaf spring on one of said coupling ring or said one connector member, said leaf spring including at least a pair of superimposed leaf portions, a detent protrusion on one of said leaf portions between the ends thereof, and the other of said leaf portions providing a backup means against said one leaf portion to distribute flexing stresses along the length thereof and to limit bending or flexing in the area of said detent protrusion.

4,239,315
ELECTRICAL CONNECTOR
Leonard Lacaze, Jr., San Juan Capistrano, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 18, 1978, Ser. No. 970,276
Int. Cl.³ H01R 13/639
U.S. Cl. 339—89 M 10 Claims



1. An electrical connector comprising:
a hollow cylindrical shell; a hollow cylindrical barrel, said shell and said barrel having a telescoping connection, said shell and said barrel having a keyed connection to permit axial movement relative to each other, said keyed connection preventing rotational movement relative to each other; first and second insulators fixed inside said shell and said barrel, respectively, said first and second insulators carrying first and second contacts, respectively, one contact being a socket contact, the other contact being a pin contact, said shell and said barrel having abutting end surfaces when said contacts are mated; a coupling nut having a rear portion threaded to said barrel in a manner, when turned in a predetermined direction relative to said barrel and said shell, to cause said end surfaces to be drawn into mutual engagement, and said contact to be mated, said shell and the forward portion of said coupling nut, having engagement means preventing axial movement of said coupling nut and said shell relative to each other in one angular position of said nut relative to said shell and allowing axial disengagment therebetween in a second angular position of said nut relative to said shell; and detent means responsive to rotation of said coupling nut past a point in said predetermined direction for applying a force to said coupling nut in the self-same said predetermined direction.

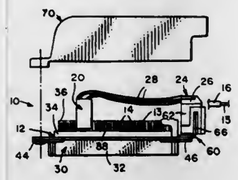
4,239,316
ELECTRICAL CONNECTORS AND ASSEMBLIES THEREFOR
Tedford H. Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed May 3, 1978, Ser. No. 902,330
Int. Cl.³ H01R 13/62; H02B 1/04
U.S. Cl. 339—91 R 42 Claims



12. An electrical connector adapted to be mounted in a support member comprising:
a housing including a front wall having an aperture therein, a back wall and a plurality of sidewalls defining a cavity for receiving a mating electrical connector through said aperture;
a plurality of contact elements mounted on said housing and having active contact portions including free ends projecting into said cavity for electrical engagement with said mating electrical connector;
barrier means releasably engageable with said housing and insertable within said cavity for separating and aligning the active portions of said contact elements and for preventing access through said aperture to the free ends of said active contact portions; and
means for mounting said connector housing in said support member.

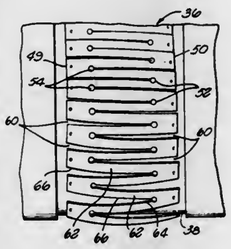
4,239,317
ELECTRICAL CONNECTOR
David L. Hesse, and Joseph Warywoda, both of Chicago, Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Jan. 2, 1979, Ser. No. 318
Int. Cl.³ H01R 27/02
U.S. Cl. 339—91 R 8 Claims

1. An electrical connector for mating with a complementary connector having a plurality of fixed contact elements, comprising:
support means;
first adapter means, including an associated set of electrical contacts lesser in number than the contacts of said complementary connector, constructed and arranged for disposition at any preselected one of a predetermined plurality of positions on said support means, for adapting the electrical connector for mating engagement with only selected ones of the fixed contact elements of said complementary electrical connector according to the position of said first adapter means on said support means to change the circuit through the connectors;
complementary mounting means on said support means and said first adapter means for releasably securing said first adapter means at any one of said preselected positions;



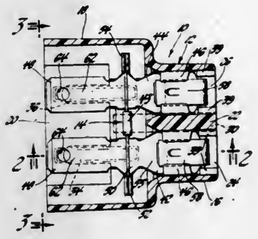
second adapter means, including an associated set of electrical contacts, supported by said support means in a fixed position for mating engagement with selected contact elements of a second complementary electrical connector; and
conductor means for electrically interconnecting said associated sets of electrical contacts of said first and second adapter means.

4,239,318
ELECTRICAL CONNECTOR SHIELD
Lawrence Schwartz, Huntington Beach, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jul. 23, 1979, Ser. No. 59,785
Int. Cl.³ H01R 13/658
U.S. Cl. 339—143 R 21 Claims



1. In an electrical connector comprising plug and receptacle connector members having contacts therein which engage upon axial mating of said connector members along a center axis thereof, said plug connector member having a barrel slidable into the shell of said receptacle connector member, and shielding means for said contacts disposed between the outer surface of said barrel and the inner surface of said shell, said shielding means comprising an annular band formed of resilient metal being convexly curved in the longitudinal direction, said band having alternating slots therein opening at the opposite edges thereof, the improvement which comprises:
at least one side of each said slot being skewed relative to said axis and being higher than the other side of the slot; and
said band having a sufficient radial height and interference fit with respect to said shell whereby upon mating of said plug and receptacle connector members, said shell will radially compress said band to cause said slots to substantially completely close.

4,239,319
ELECTRICAL COMPONENT PACKAGE FOR INTERCONNECTION BETWEEN PLUG AND SOCKET CONNECTORS
Joseph H. Gladd; Theodore H. Horrell, Jr., both of Cortland, and Robert G. Plyler, Vienna, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1978, Ser. No. 959,990
Int. Cl.³ H01R 13/28
U.S. Cl. 339—147 R 1 Claim



1. An electrical component package for interconnection between matable plug and socket connectors having male and female terminals of mating configuration,
said package comprising a connector body of dielectric material having a plug portion at an end thereof and a socket portion at an opposite end thereof, said plug portion, and said socket portion being adapted to be connected respectively with a socket connector and a plug connector which is matable with the socket connector,
said connector body having a pair of laterally spaced terminal cavities open at an end thereof and communicating with a common cavity which is open at an opposite end thereof,
a pair of hermaphroditic terminals each having an elongated generally flat body having box-like female and male blade contacts of mating configuration formed on opposite longitudinal ends thereof which are matable respectively with male and female terminals of the socket and plug connectors,
said male blade contact having a raised central platform which extends into the median portion of the flat body to stiffen the terminal and increase the effective thickness of the male blade contact when inserted upside-down into a female terminal shaped like the female contact, and
an electrical component having a pair of wire leads connected respectively with the pair of hermaphroditic terminals at a lateral extension of the median portion of the elongated generally flat body, to form a subassembly which is insertable into the connector body via the common cavity,
each of said pair of hermaphroditic terminals having one contact latched in a respective one of said pair of laterally spaced terminal cavities and positioning the other contact and the electrical component in the common cavity.

4,239,320
ELECTRICAL CONNECTOR
David L. Hesse, Chicago; Ronald F. Krolak, North Riverside, and Jiulio E. Perna, Naperville, all of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Jan. 2, 1979, Ser. No. 317
Int. Cl.³ H01R 27/02
U.S. Cl. 339—154 A 18 Claims

1. An electrical connector for mating with a complementary

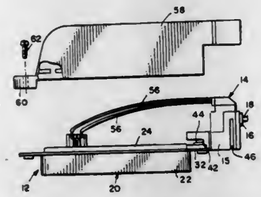
connector having a plurality of fixed contact elements, comprising:

housing means defining a cavity;

insert means including an insert element constructed and arranged for disposition at any preselected one of a predetermined plurality of positions within said cavity;

mounting means for releasably securing said insert means at any one of said preslected positions;

contact means, lesser in number than the contact elements of said complementary connector, supported by said insert



means for mating engagement with selected contact elements of said complementary electrical connector according to the position of said insert means within said cavity to change the circuit through the connectors; and

an adapter connector member on said housing means at a position spaced from said cavity, contact means supported by said adapter connector member for mating engagement with contact elements of a second complementary electrical connector, said contact means of said adapter connector member being electrically connected to said contact means on said insert means.

4,239,321

CONTACT ELEMENT WITH INTERIOR SUPPORT

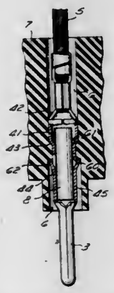
Erhard Bauer, Rappenau, Fed. Rep. of Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jul. 11, 1979, Ser. No. 56,471

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830620

Int. Cl.³ H01R *13/04*

U.S. Cl. 339—276 T **6 Claims**



1. A contact element for insertion into an insulating housing, said contact element comprising: an elongate formed sheet metal body having a terminal end for connection to a wire, a contact end and a locking portion intermediate said two ends, said locking portion including at least one outwardly projecting resilient tab for engaging the housing to anchor the contact element therein; and a stiffening pin in the interior of said locking portion forming an inward stop for limiting inward deflection of said at least one tab.

4,239,322

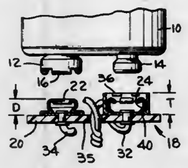
POLARITY PROTECTOR

Walter H. Gordon, Jr., Huntington, Conn., assignor to General Electric Company, New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,102

Int. Cl.³ H01R *13/64, 13/58*

U.S. Cl. 339—184 M **4 Claims**



1. A battery terminal harness for connection to a battery, the harness having a first male stud terminal adapted to be coupled to a first female battery terminal of one polarity and a second harness female terminal adapted to be coupled to a second male stud battery terminal of the opposite polarity, the improvement in said harness comprising,

an insulating support member,

said male and female harness terminals each mounted on and extending a fixed distance from said support member and each adapted to mate electrically with its opposite battery terminal,

an insulating washer-like cover member axially removably secured solely to the female of said harness terminals,

said washer cover member having an axial height exceeding the fixed distance of said harness terminals, and

wire means locked through said support member connecting each harness terminal with an electric circuit,

whereby the washer cover member prevents contact between said female harness terminal and said female battery terminal but permits contact between said female harness terminal and said male stud battery terminal to preclude reverse polarity contact of said harness and battery terminals at all times.

4,239,323

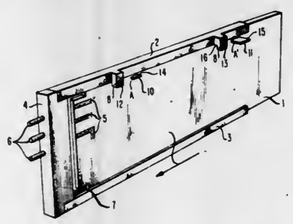
CIRCUIT BOARD KEYING ARRANGEMENT

Peter J. Tamburro, Hanover Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 8, 1979, Ser. No. 10,362

Int. Cl.³ H01R *13/64*

U.S. Cl. 339—186 M **3 Claims**



1. For use with plug-in circuit boards and circuit board receptacles having first and second guide rails for guiding the insertion of boards into the receptacles, a keying arrangement for preventing the insertion of boards into any but correct receptacles, comprising

a first projection located on a said board in one of a plurality of first coded surface locations colinearly arranged along the board in the direction of insertion of said board into a receptacle,

a second projection located on said board in an associated one of a like plurality of second coded locations also colinearly arranged in the direction of insertion of said board, each of the first locations being associated with a different one of the second locations and associated ones of the first and second locations being ordered in opposite directions, wherein each pair of associated first and second locations defines a unique circuit board key, and

first and second stops in a said receptacle designed to receive said board, the first and second stops being associated, respectively, with the first and second projections and located in said receptacle in the same spatial relationship as their respective associated projections, the arrangement being CHARACTERIZED IN THAT

the first and second locations are proximate to and parallel to one edge of the board associated with one of the guide rails,

both of the first and second stops are fixedly attached to said one of the guide rails on a side thereof corresponding to the side of the board containing the projections,

both the first and second stops have a dimension perpendicular to the direction of insertion and parallel to the surface of the board spanning both the first and second projections,

an initial one of the projections to enter the receptacle during board insertion has a dimension perpendicular to the board surface which is less than the corresponding dimension of the remaining projection, and

an initial stop encountered by the initial projection is displaced further from the board surface than the remaining stop by an amount greater than the dimension of said initial projection and less than the corresponding dimension of the remaining projection.

4,239,324

TERMINAL BLOCK FOR PRINTED CIRCUITS

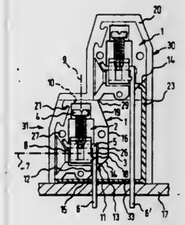
Paul P. Stenz, Detmold, Fed. Rep. of Germany, assignor to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,702

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833313

Int. Cl.³ H01R *9/22, 23/72*

U.S. Cl. 339—198 G **8 Claims**



1. An electrical terminal block for printed circuits, comprising: a plurality of terminals each having an insulating casing with an internal space, a connector bar in the internal space of the casing having at an end thereof a tag projecting from the casing, through a first aperture provided in the casing, for connection to a printed circuit, and clamping means in the internal space of the casing for clamping an external conductor to the connector bar, said clamping means including a clamping screw, the casing being provided with a second aperture for insertion of a said external conductor, and having a first external surface substantially parallel to the axis of the clamping screw and opposite the said second aperture, a second external surface substantially parallel to the insertion direction for an external conductor, and a third external surface disposed between, adjoining, and oblique with respect to the said first and second surfaces, the first aperture being in the said third external surface; the said terminals being disposed in a stepped configuration comprising one upper row of said terminals above at least one bottom row of said terminals with a horizontal offset of the terminals in the upper row relative to those in the bottom row(s) equivalent to half the width of one terminal, the terminals of the upper row having front edges bearing on the terminals of a bottom terminal row; and retaining plates which are offset in accordance with the horizontal offset of the terminal rows and are latched at least on the terminal block ends.

4,239,325

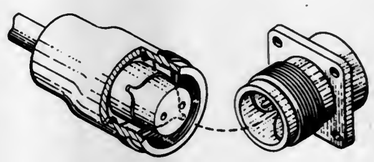
SELF-ALIGNING MULTI-PIN CONNECTOR

Thomas E. Tyson, 2686 Coldsprings Dr., Xenia, Ohio 45385

Filed Apr. 12, 1979, Ser. No. 29,582

Int. Cl.³ H01R *13/631*

U.S. Cl. 339—89 M **6 Claims**



1. A connector comprising:

a. first and second body members adapted to be joined and separated by relative movement of said body members along a common axis;

b. cooperative retaining means on each of said body members arranged to interlock with said body members in joined condition;

c. at least one of said body members having a rotatable connection to its corresponding retaining means; and

d. cooperative cams of mirrored relationship on each body member, each cam having curvilinear contoured surfaces terminated by a key and keyway.

4,239,326

HOLOGRAPHIC SCANNER FOR RECONSTRUCTING A SCANNING LIGHT SPOT INSENSITIVE TO A MECHANICAL WOBBLE

Charles J. Kramer, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1976, Ser. No. 708,245

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—3.71 **1 Claim**

1. A holographic raster scanning system including:

a source of coherent light,

a hologram disposed in the path of a reconstruction light wavefront and a principal light ray thereof from said source and mounted for rotation to effect the transverse movement of said hologram relative to said wavefront and said principal light ray,

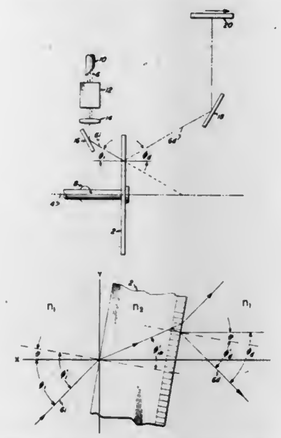
said hologram effective to transmit said wavefront and said principal light ray, incident thereon at an angle of incidence ϕ_i, and to diffract said principal ray at a first order diffraction angle ϕ_d, to reconstruct an image wavefront forming a spot of light for scanning when said hologram is rotated,

said hologram being disposed relative to said principal light ray such that said angles of incidence and diffraction are substantially equal,

said wavefront and said hologram being further disposed so that said wavefront is substantially radially symmetrical relative to the axis of rotation of said hologram, said symmetry being achieved by directing said wavefront so that

its apparent, or real, origin is a point on said hologram axis of rotation

whereby the reconstructed image wavefront propagating



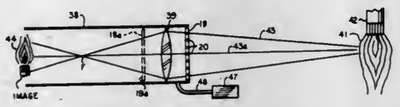
from said hologram and the projected spot of light are substantially invariant in the presence of varying degrees of tilt of said hologram relative to said principal light ray when said hologram is rotating.

4,239,327

OPAQUE PERFORATED FILTER

Roy W. Grant, 529 Wilshire La., Santa Maria, Calif. 93454

Filed Mar. 6, 1978, Ser. No. 883,884
Int. Cl.³ G02B *7/04*
U.S. Cl. 350—17 **4 Claims**



1. The combination for viewing by the human eye a brightly lighted object, comprising:

a. a telescope having an objective lens and an eyepiece lens, said eyepiece being of the type for viewing by a human eye;

b. and an opaque filter disposed at the objective lens having a plurality of windows of approximately equal size and approximately uniform distribution; said combination further characterized in that the viewed image is of reduced intensity, but is otherwise unaffected.

4,239,328

COLLAPSIBLE BINOCULAR AND BLANK THEREFOR

Harry L. Justice, Sr., 4210 Reading Rd., Richmond, Va. 23222; Harry L. Justice, Jr., 4-9-1 Yotsugi, Katsushika-ku, Tokyo 124, and Yoshinori Watanuma, 3-9-6 Yahiro, Sumida-k u, Tokyo-to, both of Japan

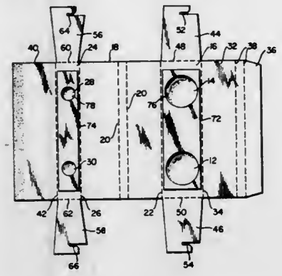
Filed Jul. 18, 1978, Ser. No. 925,772
Claims priority, application Japan, Dec. 10, 1977, 52-165884
Int. Cl.³ G02B *7/02*
U.S. Cl. 350—70 **16 Claims**

1. A collapsible binocular having a housing formed of semi-rigid sheet material comprising:

front and rear lens mounting panels,

top and bottom panels, each being hingedly connected to both of said lens mounting panels, said top and bottom panels each having a pair of transverse fold lines substantially parallel to and spaced from said lens mounting panels,

each of said lens mounting panels being provided with end flaps at each end thereof hingedly connected therewith, the end flaps of the rear lens mounting panel being hingedly connected to the end flaps of the front mounting panel for forming end walls of said binocular,



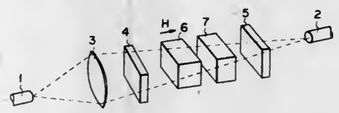
whereby pressure application on said lens mounting panels urging said lens mounting panels toward each other causes outward deflection of said top and bottom panels and folding of said top and bottom panels along said transverse fold lines for collapsing said binocular and the collapsed binocular having a thickness approximately equal to the spacing of the lines of said pairs of fold lines.

4,239,329

OPTICAL NONRECIPROCAL DEVICE

Takao Matsumoto, Yokosuka, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jul. 26, 1979, Ser. No. 60,881
Claims priority, application Japan, Aug. 4, 1978, 53-95221; Nov. 17, 1978, 53-141862; Dec. 26, 1978, 53-162976; Feb. 26, 1979, 54-21678
Int. Cl.³ G02B *5/14*; G02F *1/09*
U.S. Cl. 350—96.15 **7 Claims**



1. An optical nonreciprocal device adapted to optically couple together two opposed optical fibers, said device comprising:

light focusing and transmitting means located in an optical path between said two optical fibers on a side of either one of said optical fibers for converging and diverging light propagating through said optical path;

a plurality of anisotropic crystal members interposed between said light focusing and transmitting means and the other optical fiber, while the thicknesses of said anisotropic crystal members being set to predetermined values such that the light is separated into ordinary ray and extraordinary ray and then said ordinary ray and said extraordinary ray are synthesized again to be transmitted to the other optical fiber while said ordinary ray and said extraordinary ray propagate in a forward direction, and that said ordinary ray and said extraordinary ray propagating from said other optical fiber in a reverse direction would not superpose each other at an excitation end of said one optical fiber; and

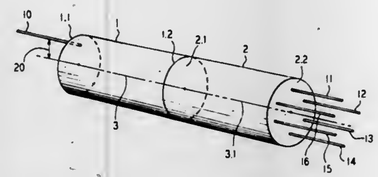
magneto-optical members having a predetermined polarization rotating angle and interposed between any two of said plurality of anisotropic crystal members for imparting a predetermined polarization rotation to said separated ordinary and extraordinary rays while they propagate through said optical path.

4,239,330

MULTIPLE OPTICAL SWITCH

Arthur Ashkin, Rumson, and Walter J. Tomlinson, III, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 18, 1978, Ser. No. 952,282
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.18 **11 Claims**



1. Apparatus for selectively coupling light which comprises:

first (1) and second (2) graded refractive index rods, each of said first and said second rods propagating light therethrough in substantially a sinusoidal path and having a length approximately equal to one-quarter of the period of the sinusoidal path, each of said first and said second rods further having first (1.2 and 2.1) and second (1.1 and 2.2) end surfaces;

an optical source (10) terminated at said second surface (1.1) of said first rod at a predetermined distance from the common lens axis (3 and 3.1); and

a plurality of optical receptors (11–16) terminated at said second surface (2.2) of said second rod at said predetermined distance from said common lens axis at a plurality of angular displacements about said common lens axis;

characterized in that said apparatus further comprises:

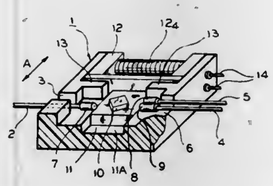
means (30 and 31) for supporting said first and said second rods in axially aligned fashion with their first surfaces abutting in substantially parallel relation to define a common lens axis in such a manner that said second rod is rotatable about said common lens axis while maintaining said first surfaces in said substantially parallel relation.

4,239,331

MECHANICAL OPTICAL SWITCHING DEVICE

Tsutomu Aoyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1978, Ser. No. 968,698
Claims priority, application Japan, Dec. 15, 1977, 52/151292
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.20 **4 Claims**



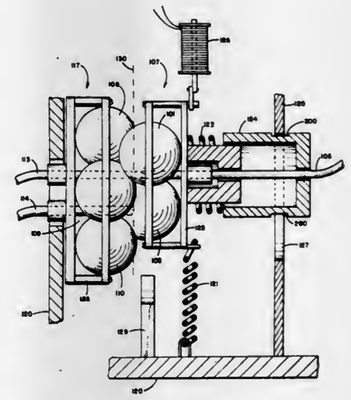
1. A mechanical optical switching device comprising: an optical fiber means on the input side of said switching device; first lens means for collimating an incident light beam emitted from said input-side optical fiber and into said switching device; at least one transparent dielectric plate means with a uniform refractive index disposed at a position which receives said light collimated by said first lens means, said transparent dielectric plate means changing the optical transmission path of said light beam after it has passed through said first lens means; a plurality of second lens means positioned to selectively receive light from said plate means, said second lens means focusing the light beam passed through said first lens means; a plurality of optical fiber means on the output-side of said switching device for receiving said light beam emerging through said second lens means; and means for driving said dielectric plate to selectively switch the optical axis of said input-side fiber.

4,239,332

SELF-ALIGNING FIBER OPTIC RELAY

Michael Inbar, Torrance, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Apr. 13, 1979, Ser. No. 29,624
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.20 **30 Claims**



1. An apparatus for switchably establishing an optical connection between the end of a first optical fiber and the end of a member of a set of optical fibers, comprising:

first means for mechanically securing said first optical fiber near the end;

second means for mechanically securing each optical fiber of said set of optical fiber near its end;

bias means for biasing said first means and said second means against each other;

said first and second means having cooperative surfaces shaped to cause said first means to assume one of a specifiable set of mechanically stable positions against said second means when biased by said bias means, said positions including an alignment position in which the end of said first optical fiber is in optical alignment with the end of an optical fiber of said set;

switch means for moving said first and second means with respect to each other between said alignment position and other of said mechanically stable positions;

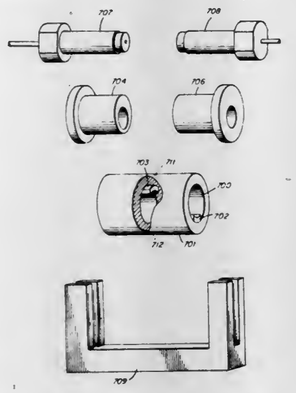
said cooperative surfaces of said first and second means each including plural similarily sized dome-like projections from said first and second means, respectively.

4,239,333

NON-TWIST ECCENTRIC COUPLER

Mark L. Dakss, Sudbury; George J. Meslener, Acton, and Samuel M. Stone, Lynnfield, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 4, 1978, Ser. No. 966,170
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.21 **8 Claims**



1. In combination, apparatus for coupling one optical fiber to another, comprising

(a) a first connector plug for housing said one optical fiber, said first plug having a main cylindrical surface such that said one fiber is interiorly oriented with respect to said surface, said plug having a shoulder associated therewith, said shoulder having a pair of flat, parallel surfaces separated by a fixed distance;

(b) a second connector plug for housing said another optical fiber, said second plug having a main cylindrical surface such that said another fiber is interiorly oriented with respect to said surface, said second plug having a shoulder associated therewith, said second shoulder having a pair of flat, parallel surfaces separated by said fixed distance;

(c) a first sleeve having a longitudinal eccentric hole therethrough just large enough so that said main cylindrical surface of said first plug can rotatably fit therewithin;

(d) a second sleeve having a longitudinal eccentric hole therethrough just large enough so that said main cylindrical surface of said second plug can rotatably fit therewithin;

(e) first means for supporting said first sleeve for rotational movement about a first axis;

(f) second means for supporting said second sleeve for rotational movement about a second axis; said second axis being parallel to, but not co-linear with said first axis;

(g) first slotted means, associated with said first support means, for receiving said flat surfaces of said first plug; and

(h) second slotted means, associated with said second support means, for receiving said flat surfaces of said second plug.

4,239,334

OPTICAL THREE ROD WAVEGUIDE CONNECTOR

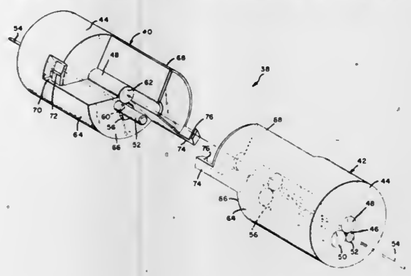
Tore R. Johnson, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 26, 1979, Ser. No. 15,565
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.21 **9 Claims**

1. In an optical waveguide connector of the type having a pair of matingly engaged connector bodies, each body provided with three rods radially cooperating to define an elongate interstitial space for receiving a corresponding waveguide, the improvement comprising:

two of said rods of each connector body having diameters larger than the diameter of a third rod, said interstitial space defined by said rods being of oversized sectional dimension in relation to the diametric size of a waveguide received therein and having a diameter variable within a specified range;

said third smaller rod and one of said two larger-diameter rods of each connector body axially projecting forward



respective distances from the other of said two rods with a forward length of said corresponding waveguide engagingly received therebetween, and

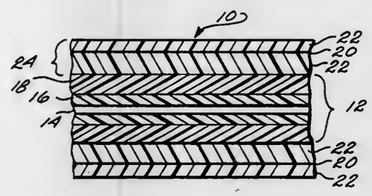
said third smaller rod axially projecting forward from said one of said two rods to radially engage and wedge the forward length of waveguide of the opposite connector body against the corresponding forward projecting rods of the other connector body, whereby the forward lengths of both waveguides each are wedged between two said third smaller diametered rods and one said larger diametered rod.

4,239,335

FIBER REINFORCED OPTICAL FIBER CABLE

Kenneth M. Stiles, San Dimas, Calif., assignor to Sea-Log Corporation, Pasadena, Calif.

Continuation of Ser. No. 600,202, Jul. 30, 1975, Pat. No. ;4,113,349. This application Aug. 28, 1978, Ser. No. 937,138
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.23 **17 Claims**



1. An optical cable comprising:

(a) an elongate optical fiber surrounded by a coating of an elastomer having a high coefficient of thermal expansion; and

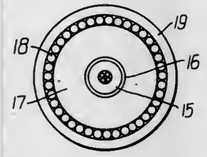
(b) an outer shell comprising a set resin surrounding the elastomer coating, the resin of the outer shell being set when said elastomer coating is in a thermally expanded state, said outer shell having a coefficient of thermal expansion less than the coefficient of thermal expansion of said elastomer coating and wherein the ratio of coefficients of thermal expansion of the elastomer coating to said outer shell is from about 3:1 to about 30:1, said outer shell being substantially constrained by said elastomer coating when in its thermally non-expanded state from imparting radial compressive forces on said optical fiber.

4,239,336

OPTICAL COMMUNICATION CABLE

Colin S. Parfree, Harlow, and Peter Worthington, Southampton, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,678
Claims priority, application United Kingdom, Dec. 5, 1977, 50610/77; Dec. 13, 1977, 51773/77
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.23 **7 Claims**



1. An optical fiber cable, comprising:

at least one optical fiber;

a tubular electrical conductor disposed about said optical fiber and having a wall that is thick compared with the diameter of said optical fiber;

an external sheath including a layer of dielectric material disposed about said tubular conductor; and

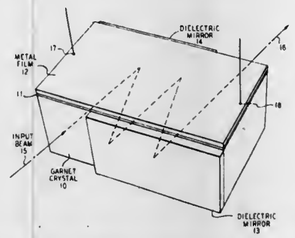
a tubular strength member overlying said layer of dielectric material.

4,239,337

MAGNETO-OPTIC MODULATOR USING DIELECTRIC MIRRORS

Joe C. Campbell, Middletown, N.J.; Kam-Yin Lau, Pasadena, Calif., and Julian Stone, Rumson, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 8, 1979, Ser. No. 46,954
Int. Cl.³ G02F 1/09
U.S. Cl. 350—151 **10 Claims**



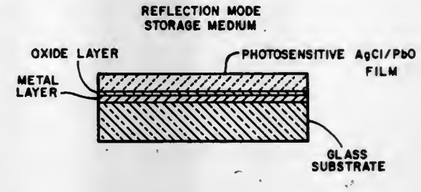
6. A bounce-cavity magneto-optic modulator for amplitude modulation of the intensity of a linearly polarized input light beam in response to an input signal comprising, a magneto-optic medium having opposite parallel surfaces, reflecting means mounted on each of said parallel surfaces of said medium for reflecting said input light beam in a zig-zag path in said medium, and magnetic field means responsive to said input signal for changing the magnetic field in said medium so as to change the polarization of said input light beam, characterized in that said reflecting means includes at least one multilayered dielectric mirror.

4,239,338

SILVER HALIDE OPTICAL INFORMATION STORAGE MEDIA

Nicholas F. Borrelli, Elmira, and Peter L. Young, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,813
Int. Cl.³ G02B 5/30; G01D 15/24
U.S. Cl. 350—155 **12 Claims**



1. A visibly absorbing, optically bleachable inorganic film comprising multiple polycrystalline silver chloride layers containing crystals of additively colored silver chloride, having a thickness not exceeding about 2 microns, which exhibits, in the optically unbleached state, a light transmittance at 6300 Å not exceeding about 0.3 and a light transmittance at 8500 Å of at least about 0.5.

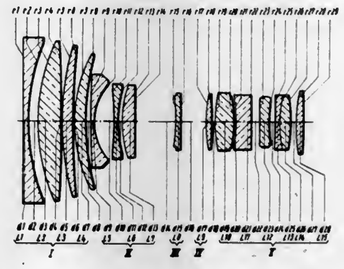
2. A multilayer photosensitive inorganic film having a thickness not exceeding about 2 microns and comprising alternating layers of PbO and AgCl, including at least three AgCl layers comprising additively colored AgCl crystals, wherein the film has, in the optically unbleached state, a light transmittance at 6300 Å not exceeding about 0.3 and a light transmittance at 8500 Å of at least about 0.5.

4,239,339

VARIFOCAL OBJECTIVE FOR PHOTOGRAPHIC CAMERA

Werner Wagner, Odernheim, Fed. Rep. of Germany, assignor to Jos. Schneider GmbH & Co. and Optische Werke Kreuznach, both of Bad Kreuznach, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,532
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830202
Int. Cl.³ G02B 15/18
U.S. Cl. 350—184 **11 Claims**



1. In an optical objective with an adjustable front group and a fixed rear group, said front group consisting of a substantially stationary positive first component, an axially shiftable negative second component, an axially shiftable negative third component and a fixed positive fourth component, said second and third components having first limiting positions relatively close to said first component and remote from each other for establishing a minimum overall focal length F_{min} and having second limiting positions relatively remote from said first component and close to each other for establishing a maximum

overall focal length F_{max}, the axial shifting of said second and third components between said first and second limiting positions thereof being correlated to project an image of an object upon a receiving surface in a plane separated from said rear group by an invariable back-focal distance,

the improvement wherein said first, second, third and fourth components and said rear group having respective individual focal lengths f_I, f_{II}, f_{III}, f_{IV}, f_V whose absolute values are of the order of magnitude of the diagonal FD of the projected image, said first component consisting of a negative front lens L1 followed by three positive lenses L2, L3, L4, said second component consisting of two negative lenses L5, L6 followed by a positive lens L7, said third component consisting of a negative lens L8, said fourth component consisting of a positive lens L9, said front lens L1 having a rear surface of radius r2, said lens L2 having a front surface of radius r3, said lens L6 being separated from lenses L5 and L7 by respective air spaces d10 and d12, said lenses L5 and L6 having rear surfaces of respective radii r10 and r12, said lens L7 having a front surface of radius r13, the following conditions being satisfied:

$f_I \geqq FD$,

$|f_{II}| \leqq FD$,

$|f_{III}| \geqq FD$,

$f_{IV} \leqq 0.5(|f_{II}| + |f_{III}|)$,

$r3 < r2$,

$d10 > 2d12$,

$r13 < 0.6(r10 + r12)$,

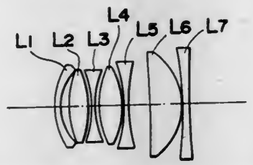
the distances of said second component from said first component in said first and second limiting positions differing from each other by less than 0.6FD, the distances of said third component from said second component in said first and second limiting positions differing from each other by less than $0.5f_{II}$.

4,239,340

CONVERSION LENS SYSTEM

Shuji Ogino, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1978, Ser. No. 947,736
Claims priority, application Japan, Oct. 4, 1977, 52-119793
Int. Cl.[3] G02B *9/60, 9/62, 9/64*
U.S. Cl. 350—214 12 Claims



1. A conversion lens system of a negative total focal length to be attached to an exchangeable objective lens system at the image side thereof for converting the focal length of the objective lens system into a greater value, which conversion lens system is of seven single lens elements comprising:

a first negative meniscus lens element convex to the object side;

a second biconvex lens element located at the image side of the first lens element;

a third biconcave lens element located at the image side of the second element;

a fourth biconvex lens element located at the image side of the third element;

a fifth negative lens element located at the image side of the fourth element, the absolute value of the radius of curvature of the image side of the fifth element being greater than that of the object side surface of the fifth element;

a sixth positive lens element located at the image side of the fifth element, the absolute value of the radius of the curvature of the object side surface of the sixth element being greater than that of the image side surface of the sixth element; and

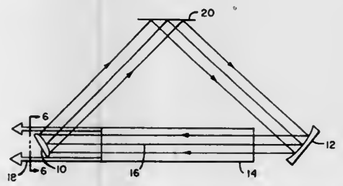
a seventh biconcave lens element located at the image side of the sixth element.

4,239,341

UNSTABLE OPTICAL RESONATORS WITH TILTED SPHERICAL MIRRORS

Charles M. Cason, III; James F. Perkins, and Robert W. Jones, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1978, Ser. No. 956,137
Int. Cl.[3] H01S *3/083*
U.S. Cl. 350—294 7 Claims



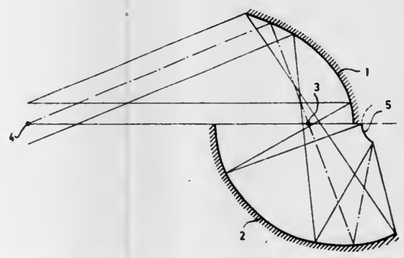
1. A collimated-output unstable resonator comprising a pair of spherical mirrors tilted at substantial angles of about 10° to about 70° relative to an axis therebetween and separated a predetermined distance, one of said spherical mirrors having a smaller reflective dimension than that of the other and having a generally rectangular peripheral shape, and mirror means mounted relative to said spherical mirrors so as to complete a continuous optical path with said mirrors to establish a continuous feedback path, and said spherical mirrors being shaped and tilted sufficiently relative to each other to cause an asymmetric magnification collimated-output in x and y directions to be produced in a generally rectangular shape at said one of said spherical mirrors.

4,239,342

OPTICAL FOCUSING SYSTEM WITH TWO ELLIPSOIDAL MIRRORS

Friedrich Aurin, Heidenheim-Schnaitheim, and Helmut Knutti, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed May 16, 1979, Ser. No. 39,563
Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822579
Int. Cl.[3] G02B *5/10*
U.S. Cl. 350—294 2 Claims



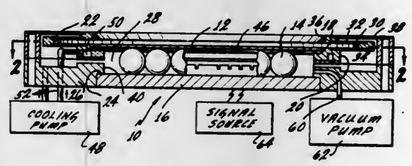
1. An optical focusing system comprising two mirrors having reflecting surfaces in the shape of ellipsoids of revolution, characterized by the fact that the mirrors are so positioned relative to each other that the second mathematical focal point of the first ellipsoid of revolution coincides substantially with the first mathematical focal point of the second ellipsoid of revolution, counting the focal points in the direction of passage of the light, and that the entrance pupil of the focusing system lies substantially in the first mathematical focal point of the first ellipsoid of revolution, and that furthermore, with a given vertex radius of curvature of the major-axis vertex of the second ellipsoid of revolution, the ratio of the length of the major axis to the length of the minor axis of this second ellipsoid of revolution is so selected that the isoplanasie condition for the elimination of the coma of third order is satisfied.

4,239,343

ACTUATOR CONFIGURATION FOR A DEFORMABLE MIRROR

Edwin H. Wrench, La Jolla, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Sep. 4, 1979, Ser. No. 72,463
Int. Cl.[3] G02B *5/10*
U.S. Cl. 350—295 7 Claims



1. A deformable mirror for use in an optical system to displace a radiant beam, comprising:

a bimorph piezoelectric actuator backplate,

an array of piezoelectric linear actuators supported on said backplate and having spherical surfaces,

a mirrored faceplate,

means for holding said mirrored faceplate against said spherical surfaces, and

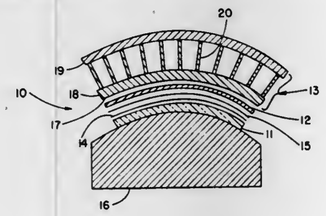
means for applying electrical signals to said actuators to deform said mirrored faceplate.

4,239,344

REFLECTOR FOR SOLAR COLLECTORS

Karl Wildenrotter, Munich, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,643
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738595
Int. Cl.[3] G02B *5/08*
U.S. Cl. 350—310 1 Claim



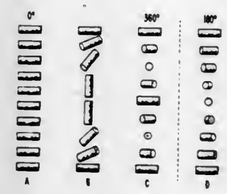
1. In a reflector for solar collectors, including a glass plate having one side mirror-coated, the improvement comprising: said glass plate having a thickness less than that required for the glass thickness of a self-supporting glass plate; a support member for said glass plate, said glass plate having the mirror-coated side thereof bonded to said support member, said support member comprising at least one support plate, and rib-like stiffener means being connected with said support plate; and a foil arranged and bonded intermediate said glass plate and said support member.

4,239,345

BISTABLE LIQUID CRYSTAL TWIST CELL

Dwight W. Berreman, New Providence, and William R. Heffner, Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1979, Ser. No. 30,172
Int. Cl.[3] G02F *1/137*
U.S. Cl. 350—331 R 11 Claims



1. A liquid crystal cell comprising

(1) a liquid comprising liquid crystal; and

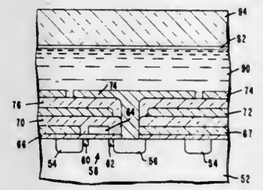
(2) bounding surfaces which align liquid crystal adjacent the surfaces, and which include means to apply switching energy; the invention characterized in that the liquid crystal comprises a cholesteric liquid crystal, in that the cell has at least two stable states, in that the twist of the liquid crystal is constrained to a value other than its unstrained value in at least one of the stable states, in that the liquid crystal is substantially free of disclinations and walls in the stable states, and in that the cell may be switched between at least two stable states without passing a disclination across the active region.

4,239,346

COMPACT LIQUID CRYSTAL DISPLAY SYSTEM

Randahl B. Lloyd, San Marcos, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 23, 1979, Ser. No. 41,572
Int. Cl.[3] G02F *1/133*
U.S. Cl. 350—334 6 Claims



1. A liquid crystal display panel for providing a pictorial display comprising in combination:

(a) a semiconductor backplate of a first conductivity type having a first surface and a second surface;

(b) a plurality of substantially parallel, equally spaced conductive gate buses on the first surface of said semiconductor backplate;

(c) a plurality of substantially parallel, equally spaced drain bus diffusions of a second conductivity type formed within said semiconductor backplate, said drain bus diffusions being orthogonal to and electrically insulated from said gate buses;

(d) a field-effect transistor (FET) formed within each cell area defined by the intersection of an adjacent pair of gate buses with an adjacent pair of drain bus diffusions;

(e) a coplanar array of closely spaced, reflective back elec-

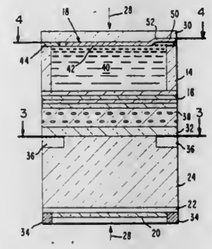
trodes, each of said back electrodes overlying one of said FETs and being in electrical connection with the source thereof;
(f) a transparent electrode spaced from said coplanar array of reflective electrodes; and
(g) liquid crystal material confined between said front and back electrodes, and defining an array of portions, each portion overlying a reflective back electrode;
(h) the gate of each of said FETs in electrical connection with one of said conductive gate buses and the drain of each of said FETs comprising a portion of one of said drain bus diffusions so that there is provided a dense matrix of individually addressable reflective electrodes whereby there may be applied to each overlying portion of said liquid crystal material a video analog voltage.

4,239,347

SEMICONDUCTOR LIGHT VALVE HAVING IMPROVED COUNTERELECTRODE STRUCTURE

Paul O. Braatz, Canoga Park; Knen Chow, Thousand Oaks, and Jan Grinberg, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 29, 1979, Ser. No. 43,077
Int. Cl.³ G02F *1/135*
U.S. Cl. 350—336 **9 Claims**



1. In light valve of the type wherein a layer of liquid crystal material lies intermediate a transparent counterelectrode and a photosensitive semiconductor substrate having an upper surface and a lower surface, said upper surface including a highly doped peripheral channel stop region, the improvement which comprises said transparent counterelectrode overlying essentially only that portion of said upper surface which lies within said peripheral channel stop.

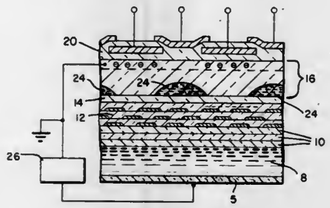
4,239,348

HIGH RESOLUTION AC SILICON MOS LIGHT-VALVE SUBSTRATE

Jan Grinberg, Los Angeles; Michael Waldner, Woodland Hills; Paul Q. Braatz, Los Angeles, and Alexander D. Jacobson, Topanga, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 967,444, Dec. 7, 1978, abandoned, which is a continuation of Ser. No. 834,856, Sep. 19, 1977, abandoned. This application Nov. 30, 1979, Ser. No. 99,381
Int. Cl.³ G02F *1/135*
U.S. Cl. 350—342 **1 Claim**

1. An alternating current driven liquid crystal light valve including in combination;
(a) an AC activated liquid crystal layer;
(b) interface means adjacent said liquid crystal layer for optically isolating said liquid crystal layer from the remaining portion of the structure;
(c) a light valve substrate structure including a dielectric layer adjacent said interface means and a semiconductor body of predetermined thickness and conductivity adjacent said dielectric layer;
(d) means for applying across said light valve substrate an AC biasing electric field which depletes said semiconductor body of mobile charge carriers during a portion of the AC cycle whereby signal representing charge carriers in said semiconductor body transfer while said body is depleted of mobile charge carriers under the influence of said electric field; and



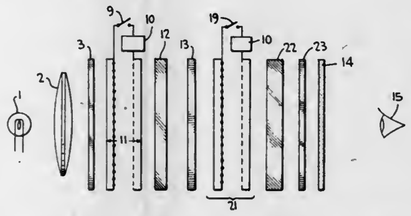
(e) means in said semiconductor body for focusing said signal representing charge carriers for improved spatial resolution of said signal.

4,239,349

ARRANGEMENT FOR A POLYCHROME DISPLAY

Terry J. Scheffer, No. 20, Lindenhof, Wettingen, Switzerland

Filed Jun. 7, 1974, Ser. No. 477,541
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1973, 2329618
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—347 R **8 Claims**



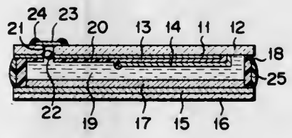
1. An arrangement for a polychrome display, comprising in serial association a light source, a linear polarizing filter, at least one electro-optical nematic liquid crystal rotating element adapted to rotate the plane of polarization of a light ray when no electrical potential is applied and to leave the plane of polarization unchanged when potential is applied, a passive birefringent retardation plate and a further neutral linear polarizing filter forming an assembly.

4,239,350

ELECTROCHROMIC DISPLAY DEVICE

Hiroshi Morita, Tokyo, and Hiroshi Washida, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 18, 1979, Ser. No. 31,877
Claims priority, application Japan, Apr. 24, 1978, 53-47684; Apr. 24, 1978, 53-47687
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **9 Claims**



1. An electrochromic display device comprising:

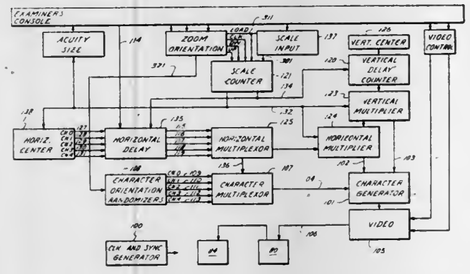
a display electrode;
a counter electrode spaced from the display electrode;
an electrolyte filled in the space between the display electrode and the counter electrode;
a first coloring crystalline layer formed on the display electrode, containing electrochromic material and having a specific pattern; and
a second coloring amorphous layer laid on the first coloring layer and containing electrochromic material.

4,239,351

APPARATUS FOR GENERATING AND DISPLAYING VISUAL ACUITY TARGETS

Robert E. Williams, Pearland; Thomas A. Decker, Houston; Charles Kurtzman, Houston, and Christian L. Kuether, Houston, all of Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Sep. 26, 1978, Ser. No. 945,943
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—36 **23 Claims**



1. An apparatus for generating and displaying visual acuity targets comprising,
an electronic display device for displaying visual acuity testing targets,
an electronic memory connected to said device containing a code for constructing a multiplicity of acuity targets for presentation to the display device,
means connected to the memory for varying the size of said targets presented to the display device,
means connected to the memory for presenting the targets in various orientations,
control means for selective actuation of the size varying means and the orientation means, and
means for varying the size of said targets includes means for varying the vertical and horizontal dimensions of the target about a single central point so target location does not change as size is varied.

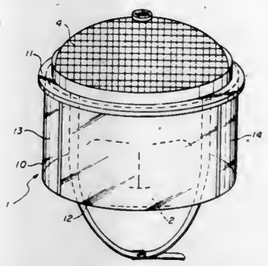
4,239,352

HEAD-SUPPORTED OPTIC SHIELD

E. J. Dockal, 8606 Kellett La., Houston, Tex. 77028

Filed Jul. 20, 1979, Ser. No. 59,257
Int. Cl.³ G02C *7/08*
U.S. Cl. 351—57 **8 Claims**

1. A head-supported optic shield comprising
an annular supporting member adapted to be worn on the head of the user,
a continuous cylindrical shield supported on said annular supporting member, surrounding the head of the wearer and extending from above to substantially below the level of the eyes of the wearer,
said cylindrical shield being constructed of an optically clear material, substantially all of which comprises optical lens material of differing optical focus,
means supporting said shield for rotary movement between fixed positions on said supporting member, and



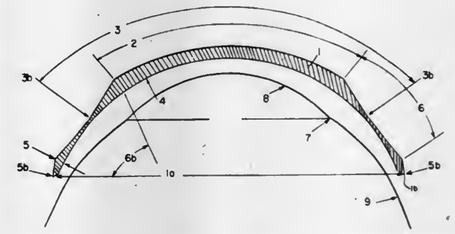
said cylindrical shield being rotatable about the head of the wearer while being worn between fixed positions of different optical focus.

4,239,353

CONTACT LENSES HAVING SPECIALLY PROFILED CROSS SECTIONS

Bruno Koller, Hasengasse 23, 6 Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,432
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2749144
Int. Cl.³ G02C *7/04*
U.S. Cl. 351—160 H **1 Claim**



1. An optical contact lens comprising body means forming a circular optical lens having a configuration to approximately conform to the contour of a human eye,
said body means having a central optical section approximately conforming to the curve of the cornea of a human eye and a peripheral section to be situated adjacent the scleral curve of a human eye and terminating at a thin peripheral edge of the body means,
said body means further including a zone interconnecting said central optical section and said peripheral section,
a portion of said zone having a thickness less than the thickness of said central section and said peripheral section, said portion being adapted to be positioned approximately adjacent the limbus of the eye at a position spaced from said optical section,
said zone permitting said peripheral section to flex relative to said central optical section and automatically conform to the particular curvature of the sclera of an individual's eye,
said peripheral section having a continuous variable thickness respectively increasing from said peripheral edge and said zone creating an external apex spaced from said edge at the maximum thickness thereof and spaced from said portion of said zone, and
said body means having a pair of intersecting outer surfaces respectively extending from said central optical section

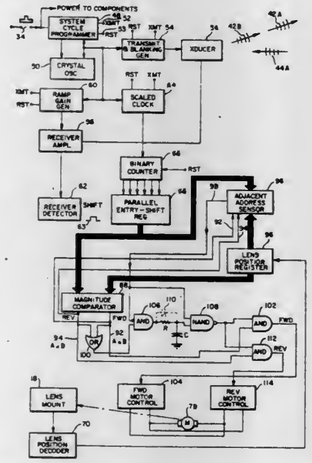
and said apex to create said portion of said zone at the intersection thereof.

4,239,354

AUTOFOCUS MOVIE CAMERA HAVING IMPROVED FOCUS RESPONSE

Edwin K. Shenk, Westford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1979, Ser. No. 277
Int. Cl.³ G03B *3/10*; G05B *5/01, 19/29*
U.S. Cl. 352—140 **8 Claims**



1. In an autofocusing camera having a displaceable lens,
means for determining subject distance,
control means energizeable for displacing said lens to a location selected in accordance with said distance determining means to thereby focus an image of the subject on the camera focal plane,
said control means including encoder means responsive to lens displacement for producing a plurality of discrete signals, each representative of displacement of said lens to within a respective positional zone of said lens,
and said control means including means for terminating displacement of said lens within a positional zone selected in accordance with said distance determining means, the improvement comprising:
that said displacement terminating means includes,
means for generating a signal representative of said lens at a positional zone immediately adjacent said selected positional zone; and
means responsive to said adjacent positional zone signal for de-energizing said lens displacing control means for a predetermined period of time and for reenergizing said lens displacing control means if said displaceable lens is not positioned to within said selected positional zone within said predetermined period of time.

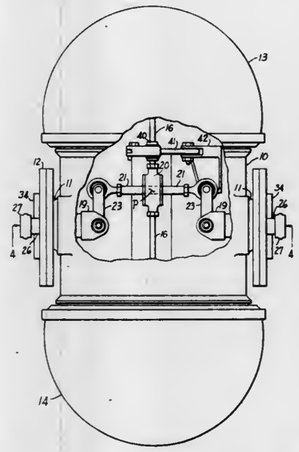
4,239,355

VISUAL SIMULATOR PROJECTION SYSTEM

Hughie A. Brown, Jr., Dallas, and Joe L. Walker, Grand Prairie, both of Tex., assignors to Vought Corporation, Dallas, Tex.

Filed Feb. 5, 1979, Ser. No. 9,989
Int. Cl.³ G03B *21/20*
U.S. Cl. 353—87 **9 Claims**

1. A projection system for projecting a visual image onto the internal surface of a spherical viewing surface comprising:
(a) first and second hemispherical transparencies bearing a projectable image, said transparencies separated and supported by gimbal means adapted to simultaneously rotate said transparencies about mutually perpendicular X, Y and Z axes at a point displaced from the center of said spherical viewing surface,
(b) lamp support structure supporting a pair of spaced light sources, each of said light sources positioned at pre-determined positions which represent a single point displaced from the geometric center of the sphere formed by said first and second hemispherical transparencies, and



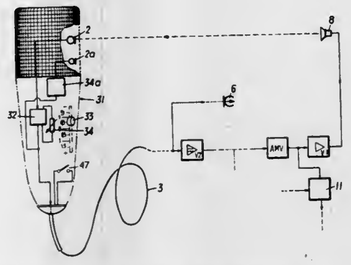
(c) mechanical linkage means interconnecting said lamp support structure and a fixed point external to said gimbal means for maintaining said lamp support structure in a fixed spatial relation with the center of said sphere and the center of said spherical viewing surface regardless of the attitude of said gimbal means.

4,239,356

SYSTEM FOR THE PERFORMANCE OF PHOTOGRAPHING WITH A MOTION PICTURE CAMERA, STILL PICTURE CAMERA OR TELEVISION CAMERA

Otto Freudenschuss; Otto Kantner, and Gerd Kittag, all of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Feb. 21, 1979, Ser. No. 13,656
Claims priority, application Austria, Feb. 28, 1978, 1407/78
Int. Cl.³ G03B *3/00, 17/18, 17/38*; H04N *5/26*
U.S. Cl. 354—23 R **13 Claims**



1. A device for photographing a photographic object constituting a performer, with a camera, such as motion picture cameras, still picture cameras or television cameras, particularly of direct sound-movie picture photography, the camera having a camera lens, comprising

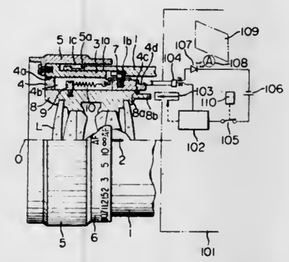
transformer means for emitting a running time measurement signal,
signal receiving means for receiving said measurement signal from said transformer means,
one of said means being disposed at the camera, and the other of said means being spaced apart a distance from said one means and being associated with the photographic object, the time of travel of said running time measurement signal from said transformer means to said receiving means defining a running time corresponding to said distance,
distance determining means for determining an effective time value of said running time measurement signal,
signal transmitting means for transmitting the measurement signal at least from said signal receiving means to said distance determining means,
means for adjusting the focal plane of the camera lens,
delay means for operatively delaying the running time measurement signal,
means for adjusting the delay time of said delay means,
said delay means for changing said effective time value of said running time measurement signal such that with the delay time being shorter than a predetermined delay time the focal plane of the camera lens is adjustable ahead of a focal setting corresponding to said predetermined delay time, and with a delay time longer than the predetermined delay time the focal plane of the camera lens is adjustable behind a focal setting corresponding to said predetermined delay time.

4,239,357

CAMERA FOR AUTOMATIC AND MANUAL FOCUSING

Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,520
Claims priority, application Japan, Feb. 17, 1978, 53-16602
Int. Cl.³ G03B *7/08, 3/00*
U.S. Cl. 354—25 **5 Claims**



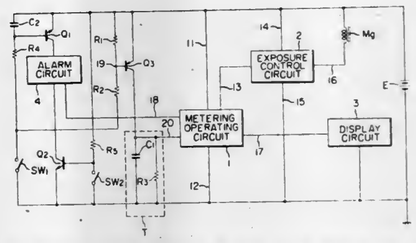
1. A camera which permits automatic focusing and manual focusing comprising:
(1) an objective lens structure capable of assuming a condition ready for the automatic focusing and a condition ready for the manual focusing, said objective lens structure having a focusing lens, a lens supporting member for said focusing lens and manual focusing operating means movable by external operation to move said lens supporting member when said structure is in the condition ready for the manual focusing;
(2) an automatic focusing device for measuring the distance to an object to be photographed and moving said lens supporting member in accordance with the measured distance irrespectively of said manual focusing operating means; and
(3) means responsive to said manual focusing operating means to render said automatic focusing device operative when said manual focusing operating means occupies a specific position.

4,239,358

ALARM DEVICE CONTROL SYSTEM IN A CAMERA

Yoshiaki Ohtsubo, Kawasaki; Shigeo Akasaka, Kodaira; Sakuji Watanabe, Warabi; Mikio Takemae, Yokohama; Ryuzo Motoori, Kawasaki, and Yasunori Kitamura, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 7, 1979, Ser. No. 73,425
Claims priority, application Japan, Sep. 14, 1978, 53-125458[U]
Int. Cl.³ G03B *17/18*
U.S. Cl. 354—60 E **4 Claims**



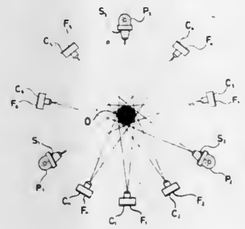
1. An alarm device control system in a camera having a metering device (1) for measuring the brightness of an object and generating an output corresponding to a proper exposure value, and an alarm device (4) for receiving the output of said metering device as input and giving an alarm when the proper exposure value does not satisfy predetermined photographing conditions such as the limit of hand-held shooting and the like, said system comprising:
switch means (SW_1, R_4, C_2, Q_1, R_2, R_1, Q_3) adapted to become operative in response to operation of a shutter release member, said metering device and said alarm device being related to said switch means such that said metering device is operated when said switch means becomes operative and that said alarm device is operated when said switch means becomes operative and said alarm device becomes inoperative when said switch means becomes inoperative; and
a preparatory power source device (C_1, R_3) for maintaining said metering device operative for a predetermined time after said switch means has become inoperative.

4,239,359

STEREOPHOTOGRAPHIC PROCESS FOR PRODUCING WORKS OF SCULPTURE

Isao Morioka, 3-23, Ookayama 2-chome, Meguro-ku, Tokyo, Japan

Filed Feb. 1, 1979, Ser. No. 8,534
Claims priority, application Japan, Feb. 28, 1978, 53-22503
Int. Cl.³ G03B *35/08*; B44C *3/06*
U.S. Cl. 354—113 **3 Claims**



1. In a stereophotographic process for producing works of sculpture by arranging a number of cameras and a number of projectors, each fitted with a screen having a number of paral-

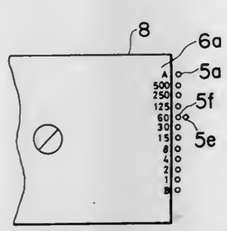
lel stripes, in a circle around an object so as to face the latter, taking pictures of said object simultaneously with said camera while said striped screens are being projected thereon by said projectors, replacing said projectors and cameras by an increased number of projectors arranged in similar positions to face instead a mass of material to be modeled which is placed at the center, projecting the pictures as well as said screens fitted in said projectors on said mass of material, and then modeling said material until the stripes of the same sources on said screens and pictures projected are in coincidence on the material surface, the improvement which comprises fitting each pair of adjacent projectors with a picture for one and a screen for the other to match, when projected, on said material surface, either said picture or screen being positive and the other being negative, lighting only such matchable projectors to project stripes (s''') which combine the stripes (s' and s'') of said positives and negatives in coincidence and form fringelike projections of unusual brightness and darkness appearing on both sides of said stripes (s''') as indications of unmatched stripes, and then modeling said material by eliminating the portions represented by said projections until an original model of uniform lightness is reached.

4,239,360

INDICATION DEVICE IN THE FINDER OF A SINGLE-LENS REFLEX CAMERA

Fumio Urano, Omiya, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1978, Ser. No. 906,527
Claims priority, application Japan, May 23, 1977, 52/66198[U]
Int. Cl.³ G03B *17/20, 15/02*
U.S. Cl. 354—128 **3 Claims**



1. In an indication device in the finder of a single-lens reflex camera in which characters representing exposure values are arranged in said finder and exposure value indicating elements are arranged so as to indicate said characters, respectively, wherein the improvement is characterized in that an electric flash indicating element for indicating the readiness of an electric flash is located among said exposure value indicating elements so that a user of the camera need not shift his eye from the exposure value indicating elements in order to see said electric flash indicating element, wherein said characters indicate shutter speed values, and wherein said electric flash indicating element also indicates the X synchronization shutter speed.

4,239,361

CAMERA HAVING ELECTRONIC STROBE FLASH APPARATUS CHARGEABLE DURING VIEWFINDER FRAMING OF A SCENE

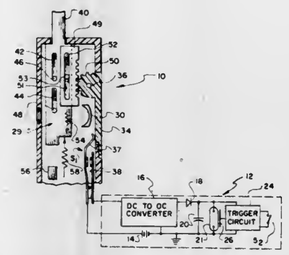
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1980, Ser. No. 111,427
Int. Cl.³ G03B *15/03, 13/02, 17/38*
U.S. Cl. 354—145 **4 Claims**

1. In a camera having a viewfinder, chargeable electronic strobe flash apparatus, and actuatable switch means having first and second conditions for respectively preventing and causing the charging of said strobe flash apparatus, the improvement comprising:

(a) a cover member mounted for movement between a viewfinder-covering position for preventing a photographic scene from being framed within said viewfinder, and a viewfinder-uncovering position for permitting the scene to be framed within said viewfinder;

(b) a release member movably mounted for pre-exposure movement to a position to effect a photographic exposure; and



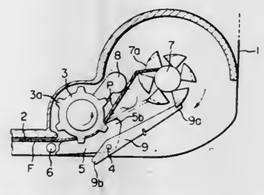
(c) means, coupling said release member to said cover member and said switch means, for (1) moving said cover member from its viewfinder-covering position into its viewfinder-uncovering position and (2) causing said switch means to assume its second condition during pre-exposure movement of said release member, thereby to cause the charging of said strobe flash apparatus while the scene is being framed within said viewfinder and before the exposure is effected.

4,239,362

CAMERA FILM ADVANCING APPARATUS

Akira Katayama, and Toshiaki Hozumi, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,842
Claims priority, application Japan, May 13, 1978, 53/56144
Int. Cl.³ G03B *1/24*; B65H *75/28*
U.S. Cl. 354—212 **3 Claims**



1. In a film advancing apparatus for a camera, comprising a film take-up spool for taking up the film thereon, the spool being formed at its periphery with a plurality of longitudinal slots; a sprocket for advancing the film to the take-up spool; first and second film guide members disposed between the sprocket and the take-up spool and opposed to each other, wherein a leading portion of the film advanced by the sprocket is led to the take-up spool through a space formed between the first and second film guide members so that the leading portion is caught in one of the slots to be taken up by the take-up spool, the improvement comprising:

means defining recess on the periphery of said take-up spool between adjacent slots;

the first film guide member being disposed to guide the leading portion of the film advanced by the sprocket to the space formed between the first and second guide members; and

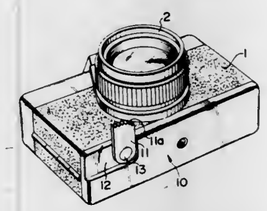
an end of the second film guide member being disposed for movement into one of the recesses of the take-up spool.

4,239,363

ELECTRONICALLY CONTROLLED SELF-TIMER FOR CAMERA

Yuichi Sato, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1979, Ser. No. 11,437
Claims priority, application Japan, Mar. 15, 1978, 53-33962
Int. Cl.³ G03B *9/64, 17/00, 17/38*
U.S. Cl. 354—238 **8 Claims**



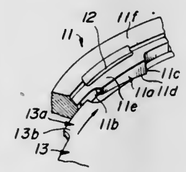
6. A camera comprising an electronically controlled self-timer, a self-timer switch for enabling operation of said self-timer, a self-timer operating member for actuating said self-timer switch and movable between an inoperative position and an operative position, said self-timer operating member being completely disposed within a recess formed in the camera body when said operating member is in said inoperative position, and said self-timer operating member extending out of said recess and in the same plane as the bottom surface of the camera body when in said operative position to stabilize said camera on a surface on which it is to be placed.

4,239,364

CAMERA BODY MOUNT

Kiyoshi Doi, Tokyo, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,368
Claims priority, application Japan Oct. 24, 1977, 142765
Int. Cl.³ G02B *7/02*; G03B *17/14*
U.S. Cl. 354—286 **12 Claims**



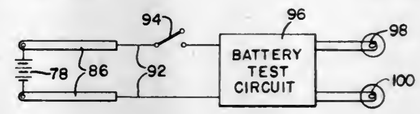
7. A one-piece, annular-shaped camera body mount of resilient material and having a first annular engagement surface facing in an outward direction and a plurality of radially-inward projecting and annularly spaced apart engagement claws whose lengths extend in the annular direction of said body mount, each said engagement claw having tapered configuration narrowing in axial direction along its length providing respective inwardly and outwardly facing surfaces thereof which are displaced radially inward with respect to said first annular engagement surface, said tapered configurations of all of said claws being tapered in the same annular direction, and means defining an elongated, annularly extending recess associated with each of said engagement claws to enhance the resilience of the claw in the axial direction in the vicinity of the recess.

4,239,365

ACCESSORY FOR ADAPTING CAMERAS TO SMALL FORMAT PHOTOGRAPHIC FILM UNITS

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 7, 1979, Ser. No. 36,813
Int. Cl.³ G03B *17/00, 17/26, 17/28*
U.S. Cl. 354—295 **13 Claims**



1. An accessory for adapting small format film packs to a camera, the camera having a film pack well with a front access opening, a floor and interior dimensions designed to complement exterior dimensions of a standard film pack containing relatively large format film units, the camera also having battery contacts presented on the floor of the film pack well in a position to be engaged by a sheet-like battery having terminals presented through the bottom of the standard film pack, said accessory comprising:

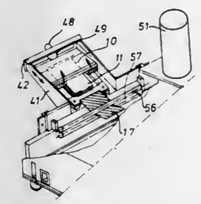
a housing having exterior planar dimensions complementing the interior dimensions of the film pack well of the camera and defining in part, a front-opening chamber to receive a small format film pack, said housing including a front wall to be positioned at the access opening of the film pack well and also defining means to receive and retain an electric storage battery, and means in said housing presented visibly at said front wall to indicate the charge status of a battery retained therein.

4,239,366

DAYLIGHT UNLOADING SYSTEM FOR MICROFICHE CASETTES

Leo N. Vackier, 's-Gravenwezel, and Lucien P. Van der Vliet, Hoboken, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Apr. 16, 1979, Ser. No. 30,530
Claims priority, application United Kingdom, Apr. 18, 1978, 15242/78
Int. Cl.³ G01N *23/04*
U.S. Cl. 354—310 **8 Claims**



1. A device for automatically unloading a microfiche cassette unit of the type having a bottom into which the microfiche film is placed, a cover hingedly connected to said bottom adjacent one end of the same for opening to permit introduction and removal of the microfiche film, the hinged end of said bottom at least partially projecting outwardly from the hinge axis, and disengageable latching means at the opposite ends of said bottom and cover for latching the same together when the cover is in closed position, which device comprises:

a housing capable of being light-tightly closed and having an opening via which a locked microfiche cassette unit may be introduced with the latched end in leading relation,

means within said housing for supporting the side edges of said cassette unit with said cover facing downward,

means within said housing for disengaging said latching means of said microfiche cassette unit when the latter is introduced into said housing, and

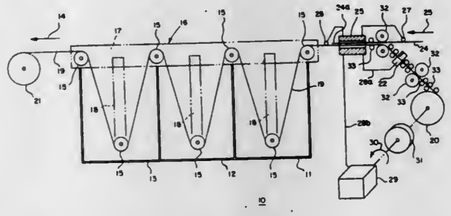
means operable within said housing to exert a downwardly directed force upon the outwardly projecting end portion of the cassette bottom opposite said latched end to positively pivot said bottom about said hinge axis relative to the cover and open the leading end of said cassette for release of said microfiche film.

4,239,367

CONTINUOUS-BAND WEB TRANSPORT

Henry F. Hope, 3192 Huntingdon Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, Wynadotte Rd., Willow Grove, Pa. 19090

Filed Mar. 14, 1979, Ser. No. 20,448
Int. Cl.³ G03D *3/13*
U.S. Cl. 354—319 **18 Claims**



1. The method of processing webs such as photographic film strips or papers through an automatic processing machine, comprising the steps of

threading a leader tape through the machine,

transporting the tape through the machine,

automatically attaching the leading end portion of a web to be processed to the tape at the inlet of the machine, while the tape is being transported through the machine,

automatically severing the tape at a point such that the portion of the tape which has been threaded through the machine remains attached to the web, the severing step being performed while the tape is being transported through the machine,

transporting the tape followed by the web through the machine, and

automatically attaching the portion of the leader tape which was severed from the web to the trailing end portion of the web when that trailing end portion reaches the inlet of the machine.

4,239,368

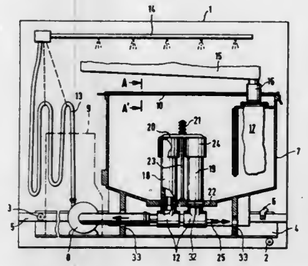
APPARATUS FOR DEVELOPING PRINTING PLATES COMPRISING A TANK IN WHICH PROCESSING LIQUID IS CONTAINED

Dieter Krause; Dieter Töpfer, both of Wiesbaden, and Wolfgang Salzburg, Kriftel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,790
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 7808341[U]
Int. Cl.³ G03D *3/06*
U.S. Cl. 354—325 **8 Claims**

1. In apparatus for developing printing plates, comprising at least one tank in which a processing liquid is contained and at least one filter means through which the processing liquid is passed on its flow path from or to the tank,

the improvement comprising means mounting the filter means within the tank without a filter housing of its own, means mounting the tank on carriage means which is supported on roller means and is adapted to be withdrawn from the apparatus, said tank means including lid means which covers the tank and through which a tube extends into the tank, said lid means being fixedly mounted in guide means in the apparatus, and further including track



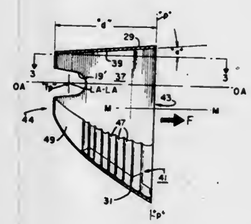
means against which said roller means are adapted to run to guide the carriage means which is displaceable together with the tank.

4,239,369

CAMERA AND REFLECTOR HAVING OFFSET OPTICAL AND MECHANICAL AXES

George J. English, Reading, and Robert E. Levin, South Hamilton, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 20, 1978, Ser. No. 961,894
Int. Cl.³ G03B *15/03*; F21V *7/06*
U.S. Cl. 362—348 **13 Claims**



1. A reflector for being fixedly oriented within a photographic camera to provide a controlled pattern of light from a light source located within said reflector on a planar subject field located an established distance from said camera, said reflector including an optical axis and comprising:

a plurality of internal specular reflective surfaces; and

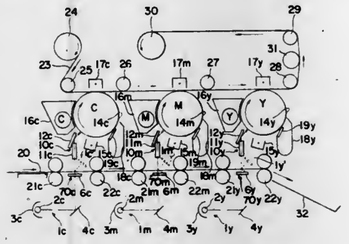
at least one internal surface having a diffusing region thereon, said specular reflective surfaces and said surface having said diffusing region thereon defining an open end within said reflector such that the mechanical axis of said open end and said optical axis of said reflector pass through said open end and are oriented therein in an offset relationship, said specular surfaces and said diffusing region directly reflecting light from said light source toward said subject field such that said field receives light from both specularly and diffusely reflective surfaces.

4,239,370

ELECTROPHOTOCOPYING MACHINE FOR PRODUCTION OF COLORED PHOTOCOPIES

Takaji Kurita, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 15, 1977, Ser. No. 861,006
Claims priority, application Japan, Dec. 20, 1976, 51-153817; May 17, 1977, 52-57258
Int. Cl.³ G03G *15/01*
U.S. Cl. 355—4 **4 Claims**



1. An electrophotocopying machine comprising:

a plurality of means for production of colored images to be transferred onto a copy paper and respectively corresponding to particular color component portions of an original multicolor document to be copied, each of said production means including a movable photosensitive medium for forming thereon an image of one of said color component portions, focussing means at an exposure station adjacent said photosensitive medium for projecting colored light carrying the image of said original document onto said photosensitive medium, said focussing means including an optical fiber bundle made of a plurality of optical fibers for producing a focussed erect image and an odd number of mirrors for reflecting the image projected by said optical fiber bundle onto said photosensitive medium and developing means adjacent said photosensitive medium for developing the latent image formed on said photosensitive medium for transfer to copy paper;

original document transport means for moving said original document past said focussing means of the plurality of production means synchronously with the movement of the photosensitive medium in each production means;

said photosensitive medium being movable in a path at least part of which is substantially parallel to the path of the original document and in the same direction as the direction of movement of the original document;

image transfer means adjacent the photosensitive medium at a transfer station in each production means which is along said part of said path of said photosensitive medium for transferring said developed image from said photosensitive medium to copy paper at said transfer station;

copy paper transport means for moving copy paper past the transfer stations synchronously with the movement of the original document and in the same direction as the direction in which the original document is moved;

the respective ones of said plurality of production means being positioned next to one another in succession in a line for forming on said copy paper successive single color component portions, the distance between each of the successive exposure stations being greater than the distance between each of the successive transfer stations; and

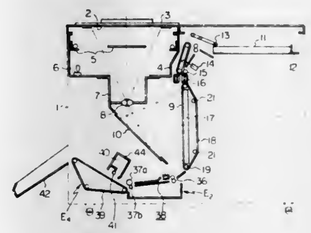
adjustment means adjacent the path of the copy paper for adjusting the length of the path over which said copy paper is transported between said transfer stations of said production means, whereby said copy paper is synchronously and continuously moved in the same direction as said original document through said plurality of production means, said adjustment means comprising a roller, slide elements in which the opposite ends of said roller are rotatably mounted, said photocopying machine having fixed wall portions having slots therein in which said slide elements are slidable, and a screw and spring means on opposite sides of said slides, said screws being externally adjustable for moving said slides against the action of said springs.

4,239,371

ELECTROPHOTOGRAPHIC COPYING MACHINES

Yousuke Igarashi, Tachikawa; Minehiro Sakata, Hachioji; Shuichi Kudo, Tama; Yasuyuki Yokoyama, and Masanori Kai, both of Hachioji, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,553
Claims priority, application Japan, Jul. 29, 1977, 52-91191; Jul. 29, 1977, 52-91192; Jul. 29, 1977, 52-101508; Jul. 29, 1977, 52-101510; Aug. 15, 1977, 52-108882; Aug. 15, 1977, 52-108884
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 CH **30 Claims**



1. An electrophotographic copying machine comprising:

housing means;

means for supporting an original to be copied comprising a transparent window disposed at the upper surface of the housing means, the transparent window being so constructed that its length is longer than the length of originals of various sizes to be copied;

original depressing plate means constructed and disposed to cover the transparent window and having a white undersurface facing the entire surface of said window;

means for positioning a sheet of photosensitive paper in a predetermined stationary position with its surface disposed at substantially a right angle to the surface of the transparent window;

means for feeding sheets of photosensitive paper one by one to the positioning means;

exposure means disposed in the housing means comprising a source of light constructed and disposed to illuminate the entire surface of the transparent window, and optical means constructed and disposed to expose the paper in said predetermined stationary position to the light image from the entire surface of the transparent window, said optical means comprising a projection lens and a reflective mirror disposed in that order along the optical passage so that the lens projects the light image to the paper via said mirror with the leading edge of the positioned paper substantially registered with the forward end of the light image projected from the original;

charging means for depositing an electrostatic charge on the surface of the paper while the paper is fed to the positioning means;

and control means for controlling the charging means to deposit the charge over a fixed length of the paper beginning with its leading edge and less than its total length, said fixed length being at least as long as the projected light image corresponding to the longest original to be copied, but shorter than the projected light image corresponding to the window;

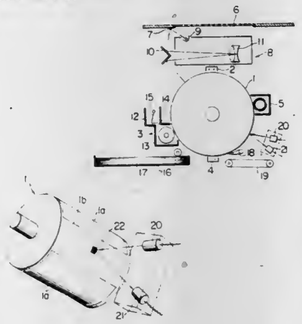
whereby a first portion of the paper is exposed to the light image projected from the original, while a second portion of the paper adjacent the first paper portion is exposed to

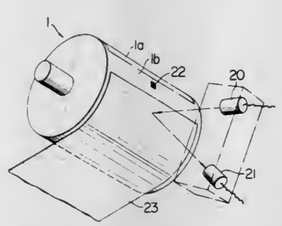
the light image projected from the marginal white surface portion of the depressing plate means adjacent said original, thereby preventing the formation of a black frame on the paper.

4,239,372
TRANSFER TYPE ELECTROPHOTOGRAPHIC COPYING MACHINE

Fumio Iwai, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,348
Claims priority, application Japan, Oct. 27, 1977, 52-129150
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **1 Claim**



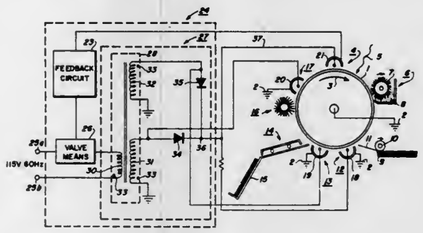


1. In a transfer type electrophotographic copying machine having a movable photosensitive member, change means therefor, a copy board adapted to support an original to be copied, means for illuminating said original, an optical system for producing an image of the illuminated original upon the charged photosensitive member, developing means for developing the image of the original on said member, means transferring the developed image to a transfer sheet of predetermined length in contact with said photosensitive member, means separating the transfer sheet from the photosensitive member, and cleaning means for cleaning said photosensitive member after the developed image has been produced, the improvment comprising an indexing image mounted adjacent one end of said copy board in the path of said illuminating means and said optical system and in longitudinal alignment with the original to be copied, whereby said indexing image is developed on said photosensitive member upon an area not occupied by the reproduced image of the original but in the path of said developing means and intermediate both the ends of the produced image of the original and of the ends of the transfer sheet, a single source of light directed against said photosensitive member in the path of both said reproduced image of the original and the reproduced image of said indexing image, said light source being positioned intermediate said separating means and said cleaning means relative to said photosensitive member, means measuring the amount of light reflected by said light source from said photosensitive member, said last means producing a voltage in accordance with the amount of reflected light, means controlling the amount of toner fed to said developing means, means for halting operation of said copying machine, first comparison means for comparing the voltage produced by said single source of light as reflected by said reproduced indexing image against a predetermined voltage standard which is adapted to actuate said toner controlling means, and a second comparison means for comparing the voltage produced by the same light from said single source that is reflected from said photosensitive member in the presence or absence of a transfer sheet which is adapted to halt operation of said copying machine if a transfer sheet is present.

4,239,373
FULL WAVE RECTIFICATION APPARATUS FOR OPERATION OF DC COROTRONS

Donald J. Weikel, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1978, Ser. No. 956,814
Int. Cl.³ G03G *15/02*
U.S. Cl. 355—14 CH **7 Claims**

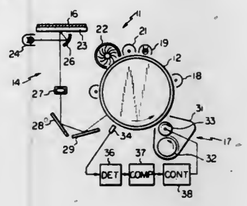


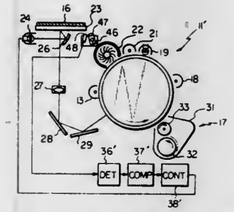
1. An electrostatographic machine comprising
an imaging member including an imaging surface on which latent electrostatic images are formed including a conductive layer having means for coupling to an electrical potential,
development means for developing the latent image with a toner material to form a toner image corresponding to the latent image,
a DC transfer corotron including at least one wire spaced from the conductive layer of the imaging member for establishing a corona generating electric field between them for depositing electrostatic charge on the backside of a support member adjacent the imaging surface for transferring a toner image from the imaging surface to the front side of a support member and
power supply circuit means coupled to the corotron for applying to it an unfiltered, full wave rectified AC voltage having an amplitude that exceeds a threshold level for corona generation from about 40 to about 80 percent of its wavelength for creating transfer and stripping electric fields capable of compensating for variations in a support member including variation in thickness and moisture content wherein transfer fields are those associated with the transfer of toner images to a support member and stripping fields are those associated with separating a support member from adjacent the imaging member after charge is deposited on the backside of the support member.

4,239,374
ELECTROSTATOGRAPHIC APPARATUS COMPRISING AUTOMATIC DOCUMENT TYPE DETERMINATION MEANS

Susumu Tatsumi; Masumi Ikesue; Masao Hosaka, and Nobuo Kasahara, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 7, 1978, Ser. No. 967,233
Claims priority, application Japan, Dec. 29, 1977, 52-160315
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 E **19 Claims**





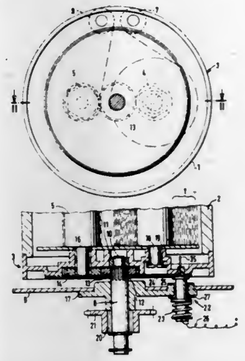
1. An electrostatographic apparatus including a photoconductive member, imaging means for focussing a light image of an original document onto the photoconductive member to form an electrostatic image and developing means for developing the electrostatic image to form a toner image, characterized by comprising:
sensor means for sensing an optical density of the document;
computing means for receiving an output of the sensor means and determining whether the document is a printed document or a photographic document in accordance with a predetermined criteria; and
control means for controlling a variable operating parameter of the apparatus in accordance with a first predetermined function of sensed optical density when the computing means determines that the document is a printed document or a second predetermined function of sensed optical density when the computing means determines that the document is a photographic document.

4,239,375
IMAGE CARRIER DRUM FOR AN ELECTROPHOTOGRAPHIC COPIER

Jürgen Eisbein, and Helmut Wegmann, both of Gerlingen, Fed. Rep. of Germany, assignors to Develop Dr. Eisbein GmbH & Co., Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 76,815
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840891
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—16 **14 Claims**

1. An intermediate image carrier drum for an electrophotographic copier, the drum being rotatably mounted in the copier and comprising a web of photoconducting material adapated to be arranged on an outer surface of the drum, a supply roll means for accommodating a supply of the photoconducting, a takeup roll means for receiving the photoconducting material from the supply roll means, the supply roll means and the takeup roll means being rotatably mounted in an interior of the drum, means for guiding the photoconducting material from the supply roll means out of the interior of the drum and along an outer surface of the drum to the takeup roll means, and means for coupling the takeup roll means to a drive means so as to enable a stepwise fed of the photoconducting material, characterized in that a pair of pin means are provided for rotatably mounting the drum in the copier, one of said pin means being circumferentially rotatable relative to the drum, a gear means is non-rotatably connected with said one of said pin

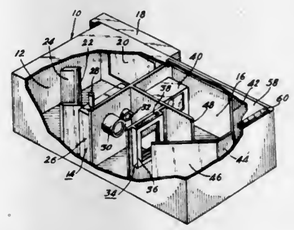


means, the coupling means includes a further gear means mounted on the takeup roll means in meshing engagement with said gear means, a free wheel means is interposed between said one of said pin means and the drive means, and in that said drive means is a reversible drive motor which, in a first direction of rotation drives another component of the copier and in an opposite direction of rotation drives said one of said pin means.

4,239,376
PRINT MAKER

Arne A. Wyller, Vinterbrinksvägen 51, S-13300 Saltsjöbaden, Sweden

Filed Jan. 18, 1979, Ser. No. 4,437
Int. Cl.³ G03B *27/32, 27/52*
U.S. Cl. 355—27 **8 Claims**



1. An apparatus for making prints from slides or transparencies, comprising:
a housing having first, second and third compartments, each of said compartments being adjacent the other, and at least the first compartment being light tight;
a lens-shutter assembly disposed between the first and second compartments, defining an inner wall;
a slide station, having means for holding a slide or transparency to be copied, disposed between the second and third compartments, defining another inner wall;
the first compartment having means for attaching a film pack to an outer wall, in operable relation to the lens-shutter assembly, said compartment being light tight when said film pack is attached, and further having at least one

mirror optically interposed between the lens-shutter assembly and the film pack;

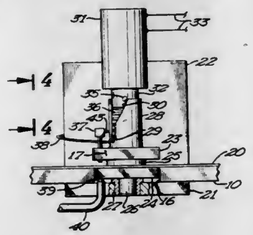
the third compartment having first and second portions partially separated by a baffle wall and optically connected by light reflecting and diffusing panels, and having means for removeably mounting an artificial light source at the end of the compartment optically opposite from the slide station, whereby an optical path may be established, originating in the third compartment, at the defined opposite end, being reflected by the light diffusing panels through the slide station, passing through the lens-shutter assembly and being reflected by the at least one mirror onto the film pack.

4,239,377

PHOTOGRAPHIC PRINTER

William R. Rasmussen, Jr., Bloomington, Minn., assignor to Lucht Engineering, Inc., Minneapolis, Minn.

Filed Apr. 30, 1979, Ser. No. 34,547
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—29 **9 Claims**



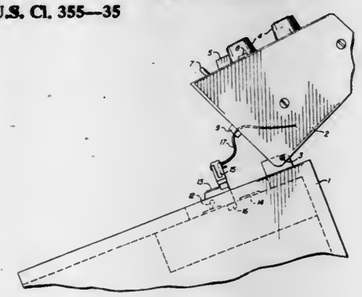
1. In a photographic printer of the type wherein photosensitive photographic material is automatically advanced through an exposure area and having means for marking said photographic material intermediate adjacent exposure locations, the improvement wherein said marking means comprises means rotatable between a first position wherein said marking means is out of said exposure area and a second position wherein said marking means is in marking relation with photographic material within said exposure area.

4,239,378

PHOTOGRAPHIC PRINTING APPARATUS

Keith Aston, Banstead, England, assignor to Durst (U.K.) Ltd., Epsom, England

Filed Apr. 30, 1979, Ser. No. 34,366
Claims priority, application United Kingdom, May 31, 1978, 25067/78
Int. Cl.³ G03B *27/76*
U.S. Cl. 355—35 **10 Claims**



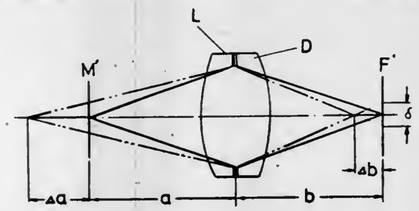
1. A photographic printer having a plurality of controls, a control unit with some of said controls mounted thereon in continuously exposed positions, the control unit being pivotally mounted to the body of the printer for movement between a first position, in which selected controls for the printer are concealed between the control unit and the body of the printer, and a second position, in which said selected controls are exposed.

4,239,379

METHOD AND APPARATUS FOR SCAN-PHOTOGRAPHING A SUBJECT SUCH AS A MODEL

Yukio Tomita, Osaka, and Taketaro Nishio, Hiroshima, both of Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd. and Dainippon Screen Mfg. Co., Ltd., both of, Japan

Filed Mar. 8, 1978, Ser. No. 884,635
Claims priority, application Japan, Mar. 26, 1977, 52/33788
Int. Cl.³ G03B *27/68*
U.S. Cl. 355—52 **11 Claims**



1. A method of scan-photographing an image of a subject comprising the following steps:

projecting the image of the subject onto a sensitive film through an optical system having a lens and an aperture integrally incorporated therein; and

synchronously scan-photographing onto the sensitive film while said subject and said sensitive film are moved along parallel planes at right angles to the optical axis of said lens and in opposite directions to each other with respect to said optical system, said subject and said sensitive film being moved at predetermined speeds thereby producing an orthographically projected photograph of the image of said subject onto said sensitive film.

3. An apparatus for scan-photographing an image of a subject comprising:

an optical system having a lens and an aperture integrally incorporated therein;

a first moving means for movably positioning said subject in a first plane on one side of said optical system;

second moving means for movably positioning said sensitive film in a second plane, parallel to said first plane, and on the other side of said optical system, whereby the image of said subject is projected onto said sensitive film through said optical system; and

means for synchronously moving said first moving means and said second moving means at predetermined speeds within said first and second parallel planes at right angles to the optical axis of the lens and in opposite directions to each other with respect to said optical system.

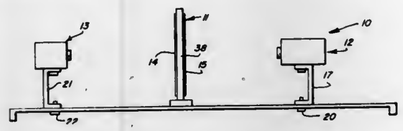
4,239,380

IMAGE PROCESSING APPARATUS AND METHODS

Morton Goldsholl, c/o Goldsholl Associates, 402 Frontage Rd., Northfield, Ill. 60093

Filed Feb. 9, 1979, Ser. No. 10,514
Int. Cl.³ G03B *41/00, 27/68, 27/32*
U.S. Cl. 355—52 **14 Claims**

1. Image processing apparatus comprising: means defining a primary image plane from which light of non-uniform hue and intensity emanates so as to define a primary image, and an array of optical elements disposed in side-by-side relation to each other and in closely adjacent relation to said primary image plane and arranged to develop from a primary image a resultant image divided into contiguous modular portions each



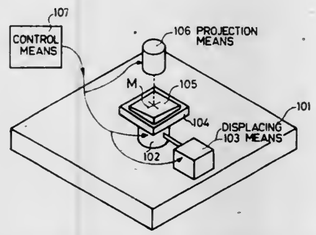
being produced by one of said optical elements from a portion of a primary image which is aligned therewith and which is substantially separate from the portions aligned with adjacent optical elements.

4,239,381

OPTICAL PROJECTION SYSTEM EQUIPPED WITH A PLATE POSITIONER

Michel Lacombat; Jean C. Graffin, and Robert Antoine, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 19, 1979, Ser. No. 49,500
Claims priority, application France, Jun. 23, 1978, 78 18835
Int. Cl.³ G03B *27/60, 27/42*
U.S. Cl. 355—53 **5 Claims**



1. An optical projection system equipped with a plate positioner of the type comprising a spherical bearing adjustable for height and angular position-setting, a plate supported by said spherical bearing and having a free face to be positioned in a reference plane, a lens defining said reference plane, and means for controlling the movements of said spherical bearing, wherein said optical system further comprises at least one set of extensible jacks which are rigidly fixed to the lens and the ends of which are located in the reference plane in the outwardly displaced position of the jacks, the control means being adapted to apply the free face of said plate against the outwardly displaced ends of said jacks and then to lock the spherical bearing in the position thus determined.

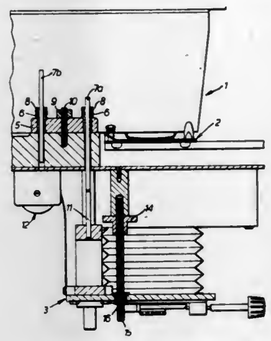
4,239,382

PHOTOGRAPHIC PRINTING OR ENLARGING APPARATUS

Keith Aston, Banstead, and John G. Long, Leatherhead, both of England, assignors to Durst (U.K.) Ltd., Epsom, England

Filed Apr. 30, 1979, Ser. No. 34,418
Claims priority, application United Kingdom, May 31, 1978, 25068/78
Int. Cl.³ G03B *27/52; G02B 15/14, 7/04*
U.S. Cl. 355—63 **7 Claims**

1. Photographic reproduction apparatus comprising: a negative carrier, a lens stage movable towards and away from the carrier and yieldably urged in one of those directions and a positioning device comprising a single push rod releasably secured to the body for movement in the direction of its length and arranged to be extending to an operative position and secured against movement relative to the body and held in that position by means of a locking member which, when the push rod is in its operating position, can be moved into or out of locking engagement by rotating the positioning device about the axis of the push rod; means securing said positioning device to a part of the apparatus fixed relative to the negative carrier



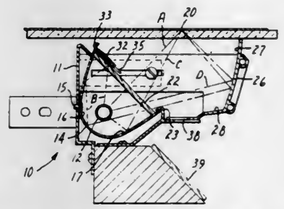
so that the push rod engages the lens stage, or a part of the apparatus connected to the lens stage, and fixes the position of the lens stage relative to the negative carrier to a position determined by the setting of the push rod relative to said body.

4,239,383

ILLUMINATION MEANS FOR ELECTROGRAPHIC REPRODUCTION

John A. Peterson, Hastings, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 17, 1979, Ser. No. 76,297
Int. Cl.³ G03B *27/54*
U.S. Cl. 355—67 **5 Claims**



1. An illumination means for concentrating and directing light within an electrographic reproduction machine comprising

a frame;

a light source mounted to said frame;

a primary elliptical reflector attached to said frame and positioned to partially envelop said light source, said primary reflector having opposing first and second sides with an opening therebetween such that said opening is generally perpendicular to the elliptical axis of said primary reflector, and being disposed to reflect a portion of the light emerging from said light source through said opening and onto a predetermined area;

a secondary elliptical reflector attached on said frame adjacent the second side of said primary reflector disposed to reflect toward the predetermined area the light emerging from said light source toward said secondary reflector and a portion of the light reflected from said primary which would not otherwise be incident at said predetermined area from said primary reflector;

a generally flat reflector fixed across a portion of the opening of said primary reflector adjacent its first side to reflect a portion of the light emerging from said light source that would not otherwise be incident on said predtermined area, back toward said primary reflector so as to be reflected toward said secondary reflector.

4,239,384

METHOD AND APPARATUS FOR AUTOMATICALLY RECOGNIZING PHOTOGRAPHIC ORIGINALS UNSUITABLE FOR COPYING

Helmut Treiber, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 966,314

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753632

Int. Cl.³ G03B *27/52*; G01N *21/59*

U.S. Cl. 355—68 **23 Claims**

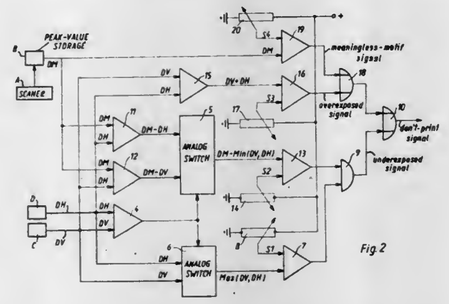


Fig. 2

20. An apparatus for automatically evaluating photographic originals with respect to suitability for copying, comprising, in combination,

means subdividing the image-bearing surface of the originals into a central zone and at least one zone surrounding the central zone;

photoelectric scanning means of the type producing a small scanning spot operative for breaking down the image content of the central zone into constituent surface elements corresponding to the scanning spot and deriving from such constituent surface elements a maximum-density signal indicating the density of the maximum-density one of the constituent surface elements; and

signal-processing means generating a don't-copy-meaningless-motif signal when the maximum-density signal exceeds a preselected limit value.

4,239,385

PHOTOGRAPHIC COPYING MACHINE WITH MEANS FOR VARYING EXPOSURE ACROSS THE SURFACE OF THE ORIGINAL COPIED

Friedrich Hujer, Grunwald, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,455

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820965

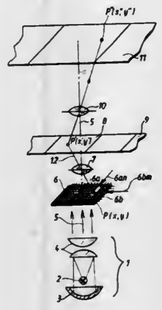
Int. Cl.³ G03B *27/72*

U.S. Cl. 355—71 **13 Claims**

1. In a photographic copying machine which utilizes light from a projector to print an image of a transparent original upon a photosensitive medium by projecting the light through the original to impinge upon the medium after passing through the original, an improvement designed to individually vary image intensity of extremely small subregions of the image printed on the medium when the subregions in aggregate form the image in its entirety, comprising:

an extremely large number of extremely small variable-density grey filters arranged in an array, each such grey filter being individually variable and corresponding to one of the subregions of the image, the array being located intermediate the projector and the original to individually vary intensity of light projected through corresponding subregions of the original; and

a control connected to each of the grey filters and varying the densities thereof to individually vary intensity of each



subregion of the image and thereby, in the aggregate, vary the intensity of the image in its entirety.

4,239,386

PRINTING TRANSPARENCIES

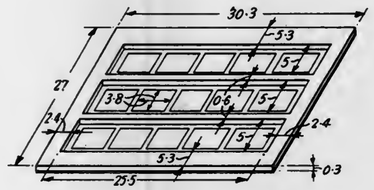
Michael H. Moore, Ilford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 10, 1979, Ser. No. 65,692

Claims priority, application United Kingdom, Aug. 10, 1978, 32879/78

Int. Cl.³ G03B *27/44, 27/04*

U.S. Cl. 355—77 **4 Claims**



1. A method of printing a set of mounted transparencies which comprises placing in a predetermined manner a first frame loaded with a first set of mounted transparencies over a sheet of print material and effecting a first exposure, taking up the said first frame and placing in a predetermined manner a second frame loaded with a second set of mounted transparencies over the same sheet of print material and effecting a second exposure, the said second frame being so constructed that each of the mounted transparencies when loaded thereon and placed over the print material is over an area thereof which is masked during the first exposure either by the borders of the mounts of the first set of mounted transparencies or by the framework of the frame and the areas of the print material which are exposed during the first exposure are masked during the second exposure by the borders of the mounts of the second set of transparencies or by the framework of the said second frame.

4,239,387

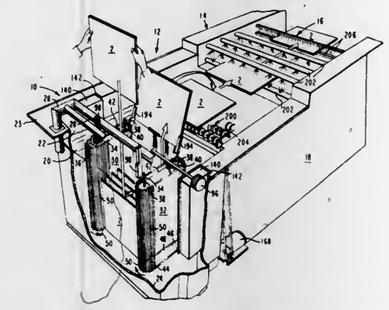
COMPACT TRANSPORT APPARATUS ESPECIALLY FOR REMOVAL OF MATERIAL BY ULTRASONIC ASSIST

James M. Ahrens, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1979, Ser. No. 24,799

Int. Cl.³ G03B *27/30*; G03D *17/00*

U.S. Cl. 355—100 **5 Claims**



4. An apparatus for transporting a series of objects through a treatment zone comprising:

a. a structure defining the treatment zone having a feed side and a discharge side;

b. conveyor means within the zone having a series of closely spaced open receptacles for receiving each successive object in the series and moving the objects in closely spaced relationship through the zone to the discharged side thereof;

c. means communicating with the feed side of the zone for transferring each successive object in the series into a conveyor receptacle when the conveyor is stopped;

d. means communicating with the discharged side of the zone for removing each successive object in the series from the conveyor receptacle in which it was passed through the zone when the conveyor is stopped and discharging it from the zone; and

e. means for stopping the movement of the conveyor and simultaneously actuating the feed transfer means and the discharge means and further means for resuming the movement of the conveyor upon the completion of the feed transfer and discharge functions.

4,239,388

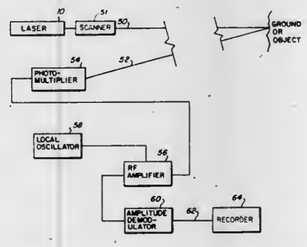
TIME DOMAIN LASER RECONNAISSANCE TECHNIQUE

Leland D. Green, Sierra Madre, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1974, Ser. No. 494,008

Int. Cl.³ G01C *3/08*; H04N *7/00*

U.S. Cl. 356—5 **1 Claim**



1. Apparatus for producing a video signal representing the reflectivity of a surface remote from the source of a scanning light beam, said surface having vertical details, comprising:

a mode-locked laser for generating a pulsed light beam having a predetermined repetition rate and high harmonic content,

means for transmitting said pulsed light beam to said remote surface, said transmitting means causing said pulsed light beam to successively scan portions of said remote surface,

a photodetector for receiving the light beam reflected from said scanned surface and generating an electrical signal in response thereto, the repetition rate and phase of said pulsed light beam being substantially constant during the time said light beam is generated and thereafter received by said photodetector, said electrical signal having an amplitude corresponding to the reflectivity and vertical geometry of the surface scanned by said pulsed light beam,

a local oscillator,

a narrow band RF amplifier, tuned to a harmonic of the pulse repetition rate of said laser, having one input coupled to said photodetector and a second input coupled to said local oscillator whereby a signal is produced at the output of said amplifier having an intermediate frequency equal to the difference between the photodetector output frequency and the local oscillator frequency,

means coupled to said amplifier output for amplitude demodulating said intermediate frequency signal for generating said video signal, and

means coupled to said demodulating means for recording said video signal.

4,239,389

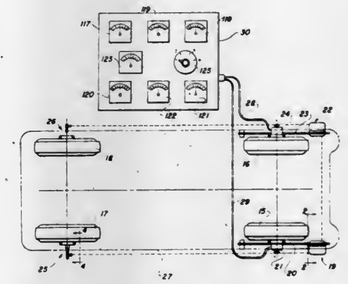
VEHICLE WHEEL AND BODY ALIGNMENT DIAGNOSING SYSTEM

William J. Hollandsworth, Town and Country, and Dean O. Grubbs, Manchester, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Dec. 6, 1978, Ser. No. 967,072

Int. Cl.³ G01B *11/26*

U.S. Cl. 356—155 **20 Claims**



1. Apparatus for use in finding the alignment characteristics of first and second sets of vehicle wheels relative to each other and with respect to the vehicle body, said apparatus comprising: alignment scanning means carried by each wheel of a first set for projecting a beam of radiant energy transversely and longitudinally of the vehicle body; radiant energy reflecting means selectively carried by each of a second set of wheels and the adjacent vehicle body in position for reflecting the radiant energy beams projected longitudinally from said scanning means; first signal generating means carried by each of said scanning means positioned to be energized by the transversely projected radiant energy beam; second signal generating means carried by each of said scanning means positioned to be energized by the longitudinally projected radiant energy beam; and signal receiving and computing means connected to said first and second signal generating means carried by each of said

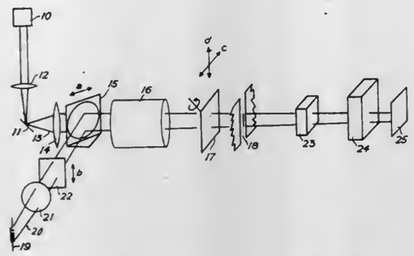
scanning means for calculating wheel and body alignment characteristics.

4,239,390

METHOD OF OBTAINING HIGH RESOLUTION LIGHT SCATTERING SPECTRA

James R. Scherer, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 4, 1979, Ser. No. 35,965
Int. Cl.³ G01J *3/44, 3/30*
U.S. Cl. 356—307 **11 Claims**



8. An apparatus for obtaining by means of optical components a high resolution scattering spectrum from irradiation of a sample without disturbing the position of the sample, said spectrum being free of artifacts due to the presence of said optical components, which comprises in combination

(a) means for irradiating the sample with monochromatic light to produce scattered light,

(b) means for collecting the scattered light from the irradiated sample,

(c) a white light source of known emissivity,

(d) means for polarizing the light from the white light source,

(e) means for passing the scattered light from the irradiated sample and the light from the white light source simultaneously through the optical components,

(f) means for dispersing into a plurality of wavelengths the so-passed scattered light and light from the white light source,

(g) means for selectively measuring at each wavelength the intensities of the scattered light from the sample and the light from the white light source,

(h) means for ratioing the so-measured light intensities from the irradiated sample and the white light source to yield light intensities representative solely of the scattered light from the irradiated sample,

(i) means for storing the so-ratioed light intensities, and

(j) means for displaying the so-ratioed light intensities as a function of wavelength.

4,239,391

MODULAR MOTORIZED POLARIZERS FOR A SPECTROFLUOROMETER

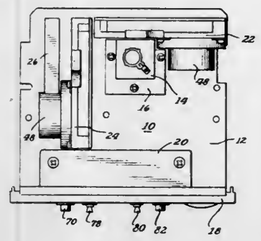
David L. Lessner, Baltimore; James H. Macemon, Severna Park; George M. Coker, Jr, and Charles E. Hodgson, both of Silver Spring, all of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 12, 1979, Ser. No. 29,317
Int. Cl.³ G01J *3/30, 4/00*
U.S. Cl. 356—318 **19 Claims**

1. In a spectrofluorometer including an excitation monochromator, an emission monochromator and a base supporting a cell holder through which a light beam is transmitted, the improvement comprising, in combination:

a first polarizer module including a polarizing filter that is rotatable and including a motor drive for rotating the filter, said first polarizer module having plug-in means for rapid plug-in connection to said base;

a second polarizer module including a polarizing filter that is rotatable and including a motor drive for rotating the filter, said second polarizer module having plug-in means for rapid plug-in connection to said base; and



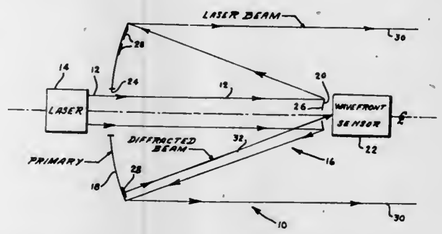
one of said first and second polarizer modules being adapted for positioning between the excitation monochromator and the cell holder and the other of said first and second polarizer modules being adapted for positioning between the cell holder and the emission monochromator.

4,239,392

GRATING OUTPUT WAVEFRONT SAMPLING SYSTEM

Richard H. Pohle, Monta Vista, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 7, 1978, Ser. No. 922,602
Int. Cl.² G01B *9/02*; G02B *5/18*
U.S. Cl. 356—354 **10 Claims**



1. A grating output wavefront sampling system comprising means for providing a quasi-monochromatic beam of light and a beam expander in optical alignment with said quasi-monochromatic beam of light, said beam expander having:

(a) means in optical alignment with said beam of light for diverging and directing said beam of light,

(b) means in optical alignment with said divergent beam of light for reflecting a portion of said beam of light, the wavefront of said reflected portion of said beam of light having tilt and wavefront accuracy characteristics associated therewith, means on said reflecting means for diffracting another portion of said beam, the wavefront of said diffracted portion of said beam of light having tilt and wavefront accuracy characteristics associated therewith, and

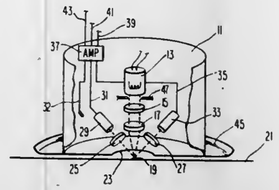
(c) means in optical alignment with said diffracted portion of said beam of light for sensing said characteristics of said wavefront of said diffracted portion of said beam, said wavefront characteristics of said diffracted portion of said beam of light having a predetermined relationship with respect to said wavefront characteristics of said reflected portion of said beam of light whereby sensing said wavefront characteristics of said diffracted portion of said beam of light provides information about said wavefront characteristics of said reflected portion of said beam of light.

4,239,393

OPTICAL DENSITY SCANNING HEAD

Philip E. Tobias, 1872 Watson Rd., Abington, Pa. 19001

Filed Oct. 13, 1978, Ser. No. 951,149
Int. Cl.³ G01N *21/27*
U.S. Cl. 356—407 **6 Claims**



1. A scanning head for transmitting white light to an area of a sheet of material, which area is characterized by a single color, in order to have part of the transmitted light absorbed thereby and the remainder of said light reflected and monitored so that said color and its optical density can be determined comprising in combination: housing means having a substantially hollow center section; a source of white light disposed in said hollow center section; a lens arrangement disposed in said hollow center section to direct light from said light source to a small section of said area characterized by a single color; first, second and third light filter means disposed in said housing a substantial distance one from the other and further disposed to simultaneously receive said reflected light and each respectively formed to only pass a different one of red, green and blue light reflected from said area characterized by said single color; and first, second and third photosensitive devices respectively disposed to receive the filtered light from a different but associated one of said first, second and third light filter means to produce simultaneously three electrical signals each of which is indicative of the optical density of a different one of the colors cyan, magenta and yellow which is present at said area.

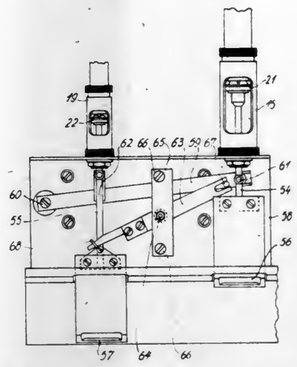
4,239,394

LIQUID ANALYZING APPARATUS

Poul E. Aegidius, Helsinge; Miloslav Zakora, Hillerod, and Jorgen F. Nielsen, Allerod, all of Denmark, assignors to A/S Foss Electric, Hillerod, Denmark

Filed Apr. 7, 1978, Ser. No. 894,389
Claims priority, application U.S.S.R., Apr. 8, 1977, 2480802
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—436 **17 Claims**

1. A liquid analyzing apparatus for determining the fat content of milk samples or the like, comprising means for mixing a liquid sample with diluent and means for homogenizing the mixture of the liquid sample and diluent and for passing the homogenized mixture to photometric measuring means adapted to measure a constituent of the sample in the mixture, the homogenizing means and the photometric measuring means being arranged within a body which is made from a heat conductive material and which has means for thermostatically controlling the temperature of said body, said mixing means comprising a dosage piston pump for the diluent and a dosage piston pump for the liquid sample, the pistons of said pumps being interconnected by a lever system so as to control movement thereof in accordance with a predetermined ratio or relationship.

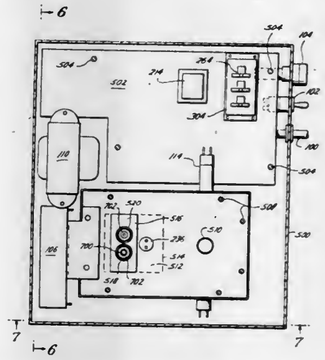


4,239,395

RADIOGRAPHIC IMAGING SYSTEM QUALITY MONITOR

James E. Modisette, 12108 Radium, San Antonio, Tex. 78216

Filed Aug. 7, 1978, Ser. No. 931,589
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—443 **12 Claims**



1. A radiographic imaging quality monitor system comprising:

first exposure means for exposing a portion of a photosensitive material to a first intensity of even illumination,

second exposure means for exposing a second portion of said photosensitive material to a second intensity of even illumination,

measuring means including only a single light source for measuring the developed density of the first and second portion of said photosensitive material,

signal processing means responsive to said measuring means for simultaneously evaluating the density of said first portion and said second portion,

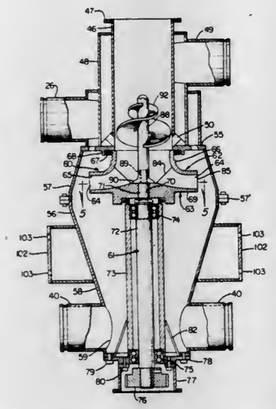
display means responsive to said signal processing means for displaying the density of said first and second portions.

4,239,396

METHOD AND APPARATUS FOR BLENDING LIQUIDS AND SOLIDS

Jorge O. Arribau, Englewood, and Russell J. Dorn, Aurora, both of Colo., assignors to Condor Engineering & Manufacturing, Inc., Henderson, Colo.

Filed Jan. 25, 1979, Ser. No. 6,277
Int. Cl.³ B28C *5/16, 5/13*
U.S. Cl. 366—2 **19 Claims**



1. The method for continuously intermixing solid particulate material with a liquid comprising the steps of:

axially directing a liquid stream through a liquid conduit in outer concentric relation to a solids inlet conduit; and

axially directing solid particulate material through the inner solids conduit and discharging the solid particulate material from the solids conduit into the inlet of an impeller zone which is isolated from the liquid stream, and radially directing the solids through the impeller zone under a centrifugal force sufficient to intercept the liquid flowing through the inlet conduit and become intimately intermixed with the liquid stream for discharge of the solid materials under liquid suspension through a common discharge outlet.

4,239,397

METHOD FOR MANUFACTURING SHOTCRETE STRUCTURES USING A MATERIAL HAVING HIGH IMPACT RESISTANCE AND OPTIMUM DEFORMATION PROPERTIES

Bertil Sandell, Hovås, Hovås, Sweden 430 80, and Göte Liljegren, Myntvägen 22, Växjö, Sweden

Continuation of Ser. No. 790,389, Apr. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 600,079, Jul. 29, 1975, abandoned. This application Sep. 21, 1978, Ser. No. 944,312
Claims priority, application Sweden, Aug. 2, 1974, 7409963
Int. Cl.³ B05D *1/12*
U.S. Cl. 366—3 **7 Claims**

1. In a method of manufacturing shotcrete structures using a material having high impact resistance and optimum deformation properties, comprising in combination the steps of:

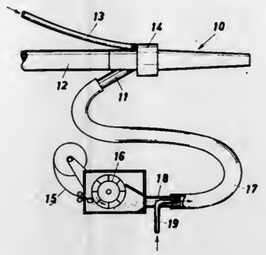
A. pneumatically conveying a dry mixture of a water-activatable, binding agent and ballast material to an application nozzle having an outlet,

B. mixing said dry mixture with a fibrous reinforcing material,

C. introducing water into the application nozzle upstream of the nozzle outlet and activating the binding agent in the mixture which is to be pneumatically projected at a high velocity on to a surface, and

D. spraying the activated mixture of water activated binding material, ballast material and fibrous reinforcing material onto a portion of a shotcrete structure being produced, the improvement comprising:

E. introducing said dry mixture and said fibrous reinforcing material into the application nozzle in separate independent streams and effecting the mixing of said dry mixture with said fibrous reinforcing material within the application nozzle upstream of where the water is introduced into the application nozzle.

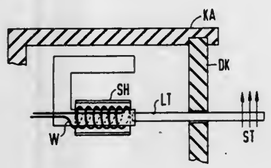


4,239,398

DEVICE FOR ATTENUATING NOISE EMITTED TO THE ENVIRONMENT BY NOISE-GENERATING AGGREGATES HAVING SIMULTANEOUS DISSIPATION OF HEAT

Wilhelm Reitner, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,994
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1977, 2739886
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **3 Claims**



1. A device for the attenuation of noises emitted to the environment by a mosaic printer writing head and for simultaneously dissipating heat, comprising:

a plurality of magnet systems and respective printing needles, each of said magnet systems comprising a magnet, a pivotally mounted armature carrying a respective printing needle, and a winding about a portion of said magnet energizable to cause said magnet to attract said armature;

a pot-shaped housing of noise-attenuating material housing said plurality of magnet systems;

a cover of noise-attenuating material sealing said housing;

a U-shaped shroud of heat conducting material surrounding and common to all of said windings of said plurality of magnet systems; and

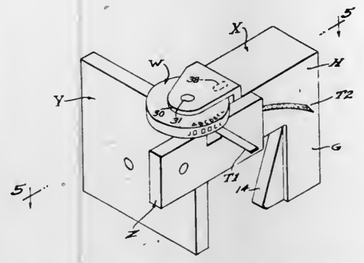
a heat-conducting conduit comprising a heat-conducting line connected to said shroud and extending through and out of said housing.

4,239,399

PORTABLE SHRINK TUBING MARKER GUN

Dick E. Johnstun, 27472 Via Olmo, Misson Viejo, Calif. 92675

Filed Feb. 22, 1979, Ser. No. 14,049
Int. Cl.³ B41J *1/52*
U.S. Cl. 400—128 **30 Claims**



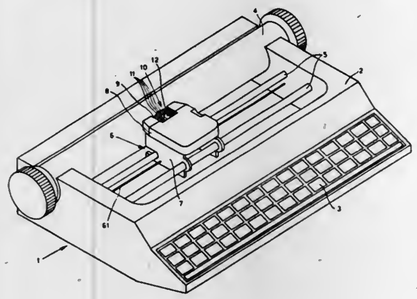
1. A portable tubing marker for transferring material from a printing tape and onto said tubing in flattened form, and including; a grip means carrying opposedly shiftable character and platen members and a manually operable lever actuated drive means shifting said members together and having right angularly geared drive and secondary shafts carrying and alternately rotating separate tubing and tape drive rollers, a supply of the flattened tubing engaged with and alternately advanced by said tubing drive roller and issuing therefrom in juxtaposed relation to and above the platen member, and a supply of the printing tape engaged with and alternately advanced by said tape drive roller and issuing therefrom in normal relation over one side of the tubing and in juxtaposed relation to and below the character member, actuation of the drive means opposedly shifting said character and platen members pressing the tape against the tubing for impression of the indicia of the character members thereon.

4,239,400

ELECTRONICALLY CONTROLLED PRINTING UNIT

Alberto Giolitti, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Jun. 28, 1978, Ser. No. 920,076
Claims priority, application Italy, Jul. 29, 1977, 68772 A/77
Int. Cl.³ B41J *1/30*
U.S. Cl. 400—144.2 **27 Claims**



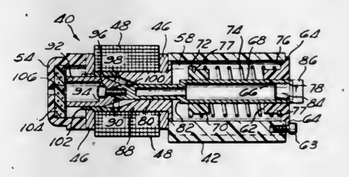
16. In a printing device comprising a platen, a printing assembly movable on a guide along the platen and including a type bearing element and a hammer for printing a desired type of said type bearing element, and actuating means for controlling the selection of said desired type and the operation of said hammer and a given number of functions of said assembly, the combination comprising kinematic chains actuatable for operating said hammer and the given number of functions of said printing assembly, a motor shaft for selecting the types of said type bearing element, a movable mechanical store including a plurality of command elements associated to said hammer and to said given functions and movable between an inoperative and an operative position, at least one transducer disposed adjacent to said store for cooperating with said command elements in response to the movement of said store, and means actuating said transducer for selectively moving said command elements into said operative position for causing one of said command elements on said operative position to couple said mechanical store with said motor shaft to be moved thereby and the other of said command elements positioned on said operative position to selectively connect said kinematic chains with said motor shaft for the operation of said hammer and said given functions in response to the movement of said mechanical store, and means for supporting said motor shaft, said hammer and said kinematic chains on said printing assembly.

4,239,401

IMPACT PRINTER HAMMER ASSEMBLY

John R. Veale, Manhattan Beach, Calif., assignor to Plessey Peripheral Systems, Irvine, Calif.

Filed Nov. 1, 1978, Ser. No. 956,736
Int. Cl.³ B41J *1/08, 9/00*
U.S. Cl. 400—144.2 **10 Claims**



1. A hammer assembly for a high speed impact printer, comprising:

a solenoid having a coil and an axially apertured pole piece, said pole piece having a conically shaped recessed surface;

an axially movable armature within said solenoid, said armature having a tapered conical leading surface substantially parallel to the recessed surface of said pole piece, said parallel conical surfaces producing a constant magnetic field characterized by parallel lines of force of uniform density, said coil being energized by a constant current whereby the constancy of said magnetic field is enhanced, said armature being propelled toward said pole piece by the magnetic attraction of said constant field when said coil is energized by said constant current; and

hammer means rigidly connected to said armature to form a unitized armature/hammer element, for striking a print element in said printer, said hammer means being uniformly accelerated due to said constant field and axially moved a substantially long distance through said pole piece armature by the movement of said armature.

4,239,402

DETACHABLE WIRE MATRIX PRINT HEAD MOUNTING STRUCTURE

Friedrich Jung, Erlangen, and Wilfried Rettke, Nuremberg, both of Fed. Rep. of Germany, assignors to Triumph Werke Nurnberg A.G., Nuremberg, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,225
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800390
Int. Cl.³ B41J *3/12, 29/00*
U.S. Cl. 400—175 **1 Claim**

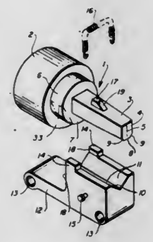
1. Mounting structure for securely removably holding a matrix print head with its planar printing face opposite a parallel printing plane comprising

a support structure having a profile defined by a first planar

surface parallel to said printing face and intersecting planar surfaces at right angles to said first planar surface,

said matrix print head having a profile complementary to the profile of said support structure whereby said matrix print head is supported against movement in the direction of said parallel printing plane by engagement with said first planar surface of said support structure and against lateral movement by said intersecting planar surfaces of said support structure,

anchor studs extending outwardly from said support means,



said matrix print head having an abutment located at a distance from said planar printing face greater than the distance of said anchor studs from said planar printing face, and

a spring having its ends secured to said anchor studs and resiliently embracing said matrix print head to urge said matrix print head into mating engagement with said intersecting planar surfaces of said support structure, and

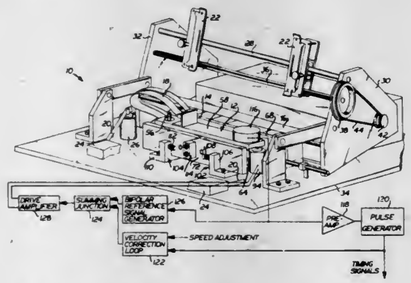
said spring acting against said abutment on said matrix print head to urge said matrix print head toward said first planar surface on said support structure.

4,239,403

COUNTERBALANCED BIDIRECTIONAL SHUTTLE DRIVE

Jerry Matula, Westminster; Glen R. Radke, Fountain Valley, and Gordon B. Barrus, El Segundo, all of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed Jan. 30, 1979, Ser. No. 7,789
Int. Cl.³ B41J *19/04, 19/14*
U.S. Cl. 400—322 **17 Claims**



1. An arrangement for bidirectionally driving a printing mechanism relative to a printable medium in a line printer comprising the combination of:

a pair of circular elements mounted in spaced-apart relation for rotation about a pair of generally parallel axes;

a band formed into an endless loop encircling a portion of each of the circular elements and extending between the circular elements on opposite sides of the circular elements;

a printing mechanism coupled to the band between the circular elements on one side of the circular elements;

an elongated element coupled to the band between the circular elements on the other side of the circular elements;

means for defining opposite limits of movement of the band; and

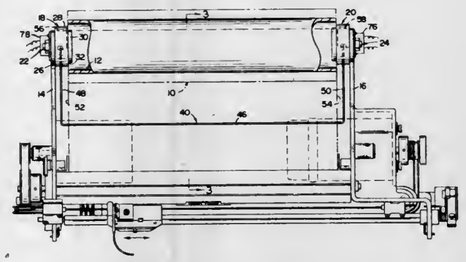
means for bidirectionally driving the band between the opposite limits of movement thereof so as to bidirectionally drive the printing mechanism, the printing mechanism and the elongated element each having a length greater than the distance between the pair of generally parallel axes so as to bridge the space between the pair of circular elements.

4,239,404

PAPER MANAGEMENT SYSTEM FOR A PRINTING DEVICE

Fred A. DeFilipps, Maitland; Roy O. Lipper; Luther R. Winters, Jr., both of Orlando; Larry A. Nordstrom, Oviedo, and Daniel J. Szechy, Sanford, all of Fla., assignors to Scope Data Incorporated, Orlando, Fla.

Filed Aug. 17, 1978, Ser. No. 934,597
Int. Cl.³ B41J *11/26*
U.S. Cl. 400—613 **9 Claims**



1. In a printing device having a frame and including a rotatable paper drive roller and a fixed paper guide positioned adjacent said drive roller to form a path between said drive roller and said paper guide for passing a length of paper, and a dispenser coupled to said frame for rotatably supporting a length of material wound upon a cylindrical core having first and second ends, said core plus said material having a first radius when full and a second radius when material is depleted, a paper quantity indicating system comprising:

a. means coupled to said frame at a point adjacent the first end of said core at a radial position between the first radius and the second radius for transmitting a signal toward the second end of said core in a direction parallel to the axis of said core;

b. means coupled to said frame at a point adjacent the second end of said core in axial alignment with said transmitting means for detecting said signal when the path between said transmitter means and said detecting means is uncovered after a predetermined amount of material remains on said core;

c. a groove in said drive roller at a first position;

d. an aperture in said paper guide adjacent said first position; and

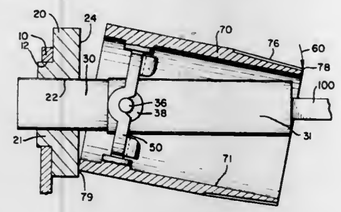
e. indicator means coupled to said printing device at a location adjacent said aperture and having an arm biased to a first position through said aperture into said groove when paper is absent from said path, said arm being deflected into a second position when said groove is covered by paper within said path.

4,239,405

FORM ALIGNING KNOB

Arthur C. Van Horne, Santa Clara, and James E. Young, La Honda, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed Jan. 11, 1979, Ser. No. 2,694
Int. Cl.³ B41J *15/00*
U.S. Cl. 400—616.1 **3 Claims**



1. A form aligning mechanism for use in a printing device, such as a high speed printer, said printing device comprising a frame and a drive means for rotating a driven shaft so as to advance a form in said printing device, said form aligning mechanism comprising:

a bearing means coupled to the frame of said printing device;

a hub member having a bore therein to receive a portion of said driven shaft, said hub member being connected to said driven shaft so as to rotate as a unit therewith and said hub member mounted for rotation in said bearing means;

a knob means concentrically mounted with respect to said driven shaft and said hub member and joined to said hub member by a universal joint;

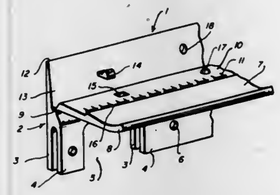
said knob means further being biased so as to normally contact said bearing means around the entire perimeter of one end of said knob means such that application of a force to the other end of said knob means pivots said knob means about a point on said one end of said knob means which point moves radially inwardly toward said driven shaft to mechanically translate said force to a longitudinal displacement of the driven shaft thereby disengaging said driven shaft from said drive means and enabling said driven shaft for rotation in response to rotation of said knob means.

4,239,406

HINGED SINGLE PIECE ALIGNING SCALE FOR TYPEWRITERS

Otto Glück, Schoneck, and Norbert Jakovski, Frankfurt, both of Fed. Rep. of Germany, assignors to Triumph Werke Nurnberg A.G., Nurnberg, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,531
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829935
Int. Cl.³ B41F *13/10*
U.S. Cl. 400—645 **5 Claims**



1. A single piece paper guide device comprising

a body portion having an upper edge and a lower edge,

means on said body portion for securing said device to a typewriter,

a paper guide portion,

an integral web hingedly securing said paper guide portion to said body portion located between the upper and lower edges of said body portion whereby said guide portion may be pivoted from a working position parallel to and adjacent said body portion to a service position at an angle to said body portion, and

aligning scale indicia located on the side of said paper guide portion facing said body portion,

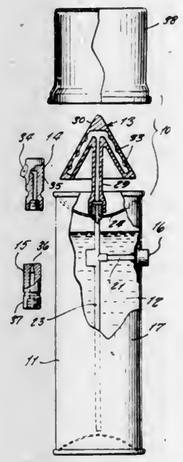
said indicia being so positioned as to be below the upper edge of said body portion when said paper guide portion is in working position.

4,239,407

HARD TO REACH PLACES SPRAY CAN

Hester L. Knight, 788 Bayview Ave., Amityville, N.Y. 11701

Filed Feb. 22, 1979, Ser. No. 14,239
Int. Cl.³ A46B *11/02*
U.S. Cl. 401—190 **1 Claim**



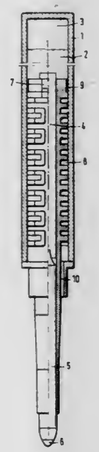
1. A hard-to-reach-places spray can, comprising in combination, an aerosol pressure can, containing a liquid for being dispensed, a dispensing pipe extending vertically outward of a top of said can, an outward end of said pipe being threaded and selectively fitted with one of a plurality of different design nozzles screwed thereupon, and a longitudinally intermediate portion of said pipe inside said can having a shut-off valve; a pushbutton on a side of said can pushing against one end of a pin so as to hold open said valve, said valve comprising an annular groove around said pin for selective alignment with a central opening of said pipe; and a first of said nozzles comprising an umbrella-like, conical shaped head which at its apex is integral with an upper end of a tubular stem, said head being made of a knitted sponge material, a plurality of radially extending passages inside said head, a radially inward end of said passages communicating with an upper end of a central opening of said stem, and a plurality of spray holes along said radially extending passages.

4,239,408

FOUNTAIN PEN WITH IMPROVED INK FLOW CONTROL

Otto Mutschler, Ludolf-Krehl-Str. 21, D-6900 Heidelberg, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,730
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808910
Int. Cl.³ B43K 7/02
U.S. Cl. 401—217 8 Claims



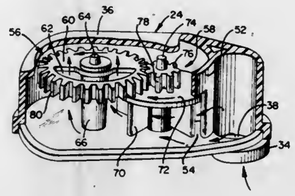
1. In a fountain pen comprising an elongated housing having first end and a second end spaced apart in the elongated direction, the first end of said housing being open and the second end being closed, an elongated feed bar located within said housing and extending into the open first end of said housing toward the second end thereof, said feed bar having a first end and a second end spaced apart in the elongated direction thereof, the first end of said feed bar spaced outwardly from the first end of said housing and the second end of said feed bar located within said housing and spaced from the first and second ends of said housing, the interior of said housing forming an ink reservoir between the second end of said housing and the second end of said feed bar, a writing point projecting outwardly from the first end of said feed bar in the direction away from said housing, means for supplying ink from said ink reservoir to said writing point, at least said first feed bar forming a first passageway for admitting atmospheric air into the ink reservoir for replacing the ink supply from said ink reservoir to said writing point, wherein the improvement comprises that said means for supplying ink comprises an ink feeding member in communication with said writing point, and an elongated flow controlling member extending through said feed bar in the elongated direction thereof and connecting said ink feeding member and said ink reservoir, said ink feeding member having an effective flow cross section therethrough transversely of the elongated direction of said feed far and said flow controlling member having an effective flow section therethrough transverse of the elongated direction of said feed bar with the effective flow section of said flow controlling member being smaller than the effective flow section of said ink feeding member.

4,239,409

BRUSH ASSEMBLY WITH PULSATING WATER JET DISCHARGE

Leonard Osrow, Great Neck, N.Y., assignor to Osrow Products Co., Inc., Glen Cove, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,999
Int. Cl.³ A61H 9/00
U.S. Cl. 401—281 17 Claims



1. A brush assembly which comprises:
a brush block member having a face, a multiplicity of bristles mounted on said face and defining a clear space;
a discharge device, said discharge device being situated in said space;
said discharge device comprising a hollow housing, said housing having a first water inlet at one end and means comprising at least two discharge orifices spaced apart from said first inlet in a symmetrical pattern about an axis normal to said face;
a valve member mounted in said housing for rotation about said axis, said valve member having a valve port establishing fluid communication sequentially between said first inlet and one of said orifices, then with portions of both of said orifices, then with the other of said orifices and then with portions of both orifices in a repeating cycle;
means in said housing defining a water flow passage between said first inlet and said valve port for conducting water from said first inlet to said valve port, said water flow passage including a constricted passageway in communication with said first inlet;
a second water inlet situated in said brush assembly and in fluid communication with said first water inlet, said second inlet including means for attachment to a pressurized water line;
turbine means in said housing and situated in said water flow passage immediately downstream of said constricted passageway; and
means kinematically connecting said turbine means to said valve member for rotating said valve member in response to the flow of water through said flow passage.

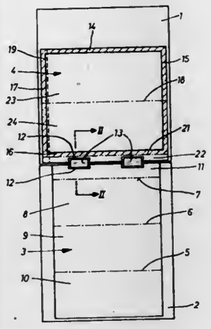
4,239,410

STATIONERY BOOKLET

Mery Pianta, Krähbühlstrasse 135, Zürich, Switzerland

Filed Feb. 1, 1979, Ser. No. 9,270
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805689
Int. Cl.³ B42F 3/02
U.S. Cl. 402—20 5 Claims

1. A stationery booklet comprising:
a first cover;
a second cover;
a ring binding hinging said first and second covers together along one adjacent edge of each said cover;
a plurality of stationery sheets independently attached to and individually separable from said booklet along a perforated line lying parallel to the bound edge of said covers, each said sheet being writable on either side and foldable with other stationery sheets without any sheet being detached from said booklet; and
a plurality of marginally gummed open envelopes attached to and individually separable from said booklet along a perforated line lying parallel to the bound edge of said covers, each said open envelope being able to receive, to be individually foldable with, and to enclose at least one of



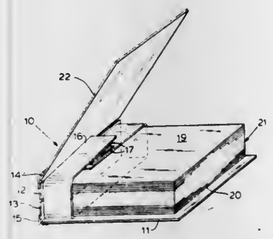
said unseparated stationery sheets within the gummed margins to form an envelope with stationery sheets enclosed, prior to said envelope and stationery sheets being detached from said booklet.

4,239,411

LOCKING DEVICE FOR VISIBLE RECORD BINDERS

Henry Moliard, 942 Avenida Central, Guadalupe (S.V.), Costa Rica

Filed Mar. 9, 1979, Ser. No. 19,088
Int. Cl.³ B42F 13/00
U.S. Cl. 402—77 9 Claims



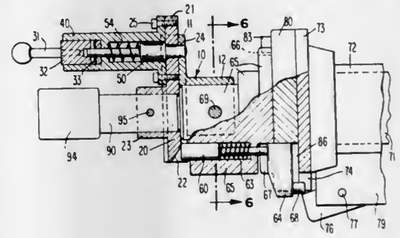
1. A visible record loose-leaf binder for pages of perforated strip sheet material in partially overlapped relation comprising:
a pair of rigid angle strips having legs in right angle relation;
hinges connecting free end edges of one leg of each strip to permit swinging of the strips from a closed position with the hinged legs in aligned superimposed relation and the other legs extending therefrom to provide a channel to an open position with the hinged legs in back to back relation and the other legs extending outwardly therefrom in opposite directions to provide opposed L-configurations;
first and second sets of prongs spaced along the length of the other legs of the angle strips cooperating to define closed end rings when the angle strips are in the closed channel position and defining upwardly projecting hooks when the strips are in the open L-configuration,
said prongs projecting through the perforations of the strips in both the open and closed positions;
a tape secured to the other leg of one strip having free ends adapted to be wrapped around the other strip in the closed channel position of the strips;
means carried by said free ends of the tape releasably securable to lock the strips in the closed position;
book covers hinged to the angle strips independently swingable with respect to said strips from closed positions overlying the closed channel position of the strips and tape to open positions exposing the sheet material,
whereby said covers may be opened and closed while said strips and tape remain locked in a closed position; and
compensating pads of strips between the pages having the strips arranged thereon to cooperate with the pages for forming a stack of uniform thickness along the full lengths of the angle strips.

4,239,412

CONNECTOR MEANS

William F. Hogan, Westville, N.J., assignor to Spectrum X-Ray Corporation, Westville, N.J.

Filed Feb. 16, 1979, Ser. No. 12,958
Int. Cl.³ F16B 1/00
U.S. Cl. 403—182 4 Claims



1. Connector means for quick connection and disconnection of coaxially aligned first and second cylindrical shaft members in preselected angular orientation with respect to each other, said second shaft member having an end flange, said connector means comprising:
a. an adapter connectable to said end flange of said second cylindrical members, said adapter including a portion having a key-hole shaped cross-section;
b. a locking-bracket receiver having a lateral portion of circular C-shaped cross-section for receiving the cylindrical upper portion of said key-hole shaped adapter;
c. said receiver having a vertical portion of flattened C-shape cross-section forming a chamber, said vertical portion including an upward extension having a hole for receiving a lock pin;
d. a locking bracket having a body portion having a cylindrical bore for receiving said first cylindrical member, said bracket having a vertical extension corresponding to the vertical extension of said receiver, said extension having a hole therethrough for receiving a lock pin;
e. a housing having a lock pin therein;
f. means mounting said housing onto said vertical extension of said locking bracket such that said lock pin is aligned with said hole;
g. spring means urging said lock pin toward said hole in said locking-bracket extension;
h. lever-and-cam means for maintaining said lock pin in said holes in said locking bracket and receiver, and for retracting said lock pin, and for maintaining said lock pin retracted.

4,239,413

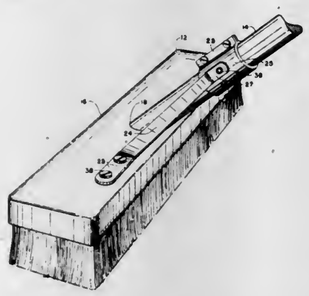
HANDLE BRACE

Joseph Wludyka, 7521 Branch St., Hollywood, Fla. 33024

Filed Jun. 21, 1978, Ser. No. 917,641
Int. Cl.³ B25G 3/00; F16B 9/02
U.S. Cl. 403—263 1 Claim

1. A handle brace for use with a push broom having a handle rod (14) and a broom block (16), the block having a bore (18) to receive a threaded end of the broom handle rod, said handle brace comprising a cylindrically shaped adjustable clamping

member (22) through which said handle rod is inserted, said cylindrically shaped clamping member having an axially extending slit therein, normally spaced apart lips (23) extending outwardly from said clamping member at said slit, each lip having complementary bolt receiving apertures therein, said clamping member having internally extending protuberances (25) therein to press into said handle rod when the clamping member is tightened, bolts (30) extending through said bolt apertures in said lips, and nuts 31 for tightening said bolts to clamp said clamping member about a handle rod (14) extending



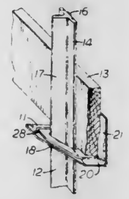
therethrough, two pivot rivets (34 and 36) extending from opposite sides of said clamping member, a pair of flat brace struts (24 and 26) each having an angular extension (27 and 29) at each end, the angular extension at one end of each strut extending at right angles to the other angular extension of said same strut, one angular end of each strut being pivoted on one of said pivot rivets, the second angular end of each strut having screw receiving apertures, and screws (36 and 38) extending through said screw receiving apertures for securing said struts to the broom block to thus firmly secure the broom block to the broom handle rod.

4,239,414

BRACKET FOR ATTACHING RAILS TO STEEL FENCE POSTS

Charles H. Williamson, 823 E. 5th St., Galesburg, Ill. 61401

Filed Nov. 19, 1979, Ser. No. 95,772
Int. Cl.³ F16B *9/00*
U.S. Cl. 403—387 **4 Claims**



1. A bracket for attaching a rail to a steel post having a T-shaped crosssection, the post being the type having a bar, a pair of flanges and a plurality of spaced lugs, said flanges extending in opposite directions from a first edge of said bar, said lugs projecting from said first edge outwardly from a line intermediate said pair of flanges, said bracket comprising:

a formed piece of thin rigid material having first and second parallel bends to define between said bends a generally horizontal bottom rest for said rail and adjacent each of said first and second bends first and second turned-up sides respectively, said first and second sides being turned up at respective predetermined first and second angles to said rest, said rest having a width approximately equal to the width of said rail plus the depth of said lugs,

said first side having an opening for positioning said first side around said post, said opening having a base line within said first bend and a short side opposite said base line, said short side being positioned with respect to said base like an apex of an isosceles triangle, said base line being just long enough to extend across said flanges and said short side being only long enough to extend across a second edge of said bar, an altitude between said base and said short side being somewhat greater than the depth of said bar plus the depth of said lugs, said opening having adjacent each of the ends of said base along respective sides thereof respective portions substantially perpendicular to said base, said perpendicular portions extending along said respective sides of said opening a distance at least equal to the depth of said lugs to provide clearance for said base to be moved over said lugs while said post extends through said openings,

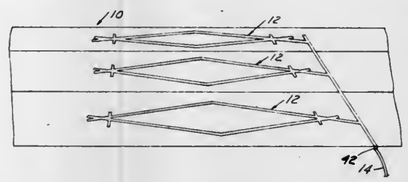
said first angle included between said first side and said rest being an obtuse angle, said second angle being determined such that said second side while said bracket is supporting said post bears against a side of said rail while an opposite side of said rail bears against at least one of said lugs, the sum of said first and second angles being determined such that said short side of said opening while said rail is being supported bears against said second edge of said bar to position said base against said flanges and an upper edge of one of said lugs immediately below said rest, and the height of a portion of said second side opposite said post being determined with respect to said first and second angles such that an upper edge of said second side while said rail is removed can be moved toward said flanges sufficiently to permit said first side to be rotated to the extent required to move said bracket along said post over said lugs.

4,239,415

METHOD OF INSTALLING MAGNETIC SENSOR LOOPS IN A MULTIPLE LANE HIGHWAY

Wendell A. Blikken, 952 S. Grove, Ypsilanti, Mich. 48197

Filed Nov. 6, 1978, Ser. No. 958,112
Int. Cl.³ E01F *11/00*
U.S. Cl. 404—75 **9 Claims**



9. A method of installing magnetic sensor loops in a multiple lane highway comprising the steps of

(a) locating on the surface of a highway lane a test loop having contour which is adjustable in the plane of said surface, said test loop being of the type which detects proximity of an automotive vehicle by a resulting variation in loop inductance,

(c) varying the lateral contour of said test loop while maintaining a steady electrical signal therein until said test loop is responsive to an automotive vehicle substantially within said lane and is unresponsive to a said vehicle in the next-adjacent lane, and then

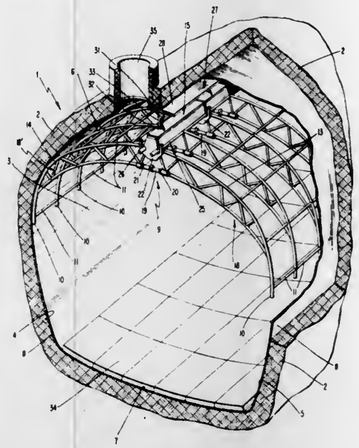
(d) permanently installing a magnetic sensor loop in said lane at the location and adjusted contour of said test loop.

4,239,416

LINED CAVITY IN THE EARTH

Bruno Borca, and Emilio Ruscelli, both of Milan, Italy, assignors to Pirelli Furlanis Applicazioni Indrauliche, Milan, Italy

Filed Sep. 15, 1978, Ser. No. 942,592
Claims priority, application Italy, Sep. 19, 1977, 27658 A/77
Int. Cl.³ B65G *5/00*
U.S. Cl. 405—53 **19 Claims**



1. A water tight underground cavity structure comprising an underground cavity, a casing of flexible and impermeable material placed in direct contact with the walls of said cavity, a substantially bi-dimensioned resilient reticular member disposed within said casing and having a shape corresponding to at least a portion of the top surface of said cavity, said reticular member contacting with and pressing said casing against said cavity walls, and means for varying the conformation of said reticular member to the walls of said cavity.

4,239,417

MULTI-PURPOSE MARINE STRUCTURE

Arvid Slatten; Harald Bech, and Olav Olsen, all of Oslo, Norway, assignors to A/S Hoyer-Ellefsen, Ing. T. Furuholmen A/S and Ing. F. Selmer A/S, both of Oslo, Norway

Filed Nov. 16, 1978, Ser. No. 961,205
Claims priority, application Norway, Nov. 23, 1977, 774004; Sep. 1, 1978, 783000
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—195 **10 Claims**



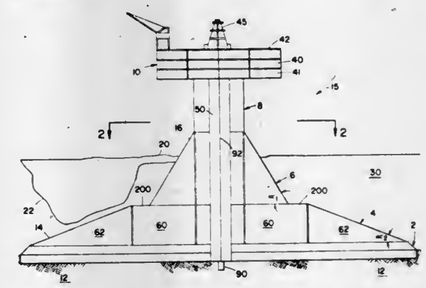
1. A multi-purpose marine structure for installing on a sea bed and intended to be completely submerged below water when in use comprising an outer peripheral body intended to be founded on a sea bed, said peripheral body comprising a tubular ring-formed body of concrete, the base of which is constructed and arranged to rest on a sea bed along its entire base periphery and an inner, centrally arranged, tapered hollow section of concrete, said tapered section being formed as a cone or polyhedron and having a lower end rigidly fixed to the outer peripheral body and tapering upwardly and inwardly therefrom, said inner section and outer peripheral body together forming a monolithic integral concrete unit, the inner tapered section being fixed to the outer peripheral body along the inner periphery of said peripheral body.

4,239,418

ARCTIC MULTI-ANGLE CONICAL STRUCTURE HAVING A DISCONTINUOUS OUTER SURFACE

James C. Pearce, Claremont, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 891,422, Mar. 29, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 34,046
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—211 **29 Claims**



1. An offshore structure for use in a body of water that contains ice masses, comprising

a lower portion having a first circumferential wall substantially in the shape of a first truncated cone so that the wall of said lower portion is inclined at an angle to the horizontal, said first circumferential wall providing a ramp-like surface means for receiving ice masses moving relative to and in contact with said structure so as to elevate said ice above its natural level to cause said ice to fail in flexure adjacent said structure;

means for affixing said lower portion to the bottom of a body of water; and

an upper portion coaxially positionable above said lower portion, said upper portion having a second circumferential wall substantially in the shape of a second truncated cone so that the wall of said upper portion is inclined at an angle to the horizontal, said second circumferential wall providing a ramp-like surface means for receiving ice masses moving relative to and in contact with said structure so as to elevate said ice above its natural level to cause said ice to fail in flexure adjacent said structure, the angle of inclination from the horizontal of the wall of said upper portion being greater than the angle of inclination from the horizontal of the wall of said lower portion and the cross-sectional diameter of the wall of said upper portion being less than the cross-sectional diameter at the top of the wall of said lower portion so that there exists a step-like section between the wall of said upper portion and the wall of said lower portion.

4,239,419

PRECAST CONCRETE THREADED PILINGS

William F. Gillen, Jr., 6518 Lamb Rd., New Orleans, La. 70126

Continuation-in-part of Ser. No. 738,124, Nov. 2, 1976, abandoned, and a continuation-in-part of Ser. No. 670,978, Mar. 26, 1976, abandoned. This application Oct. 27, 1977, Ser. No. 844,962

Int. Cl.[2] E02D 5/56

U.S. Cl. 405—232 32 Claims



1. A precast, threaded, concrete pile, comprising:

(a) a metallic upper portion providing connection means for the application of rotational driving force thereto for driving the pile down into the ground by rotating it;

(b) a metallic reinforcement core integrally connected to said upper portion extending at least substantially down the full length of the pile; and

(c) a generally circular shaped longitudinally extended, cementitious body precast about and embedding said core, said body having an outer surface provided with only a single continuous set of substantially equally spaced spiral screw threads along at least substantially the entire length thereof; whereby, in being rotatably driven at the head, the reinforcing core of the pile rather than the concrete directly carries the torsional and tensile forces created in the pile during its insertion.

4,239,420

INSTALLATION FOR THE AUTOMATIC AND ACCOUNTED STORAGE AND DISTRIBUTION OF CASH

Jacques Thibonnier, Fontenay-sous-Bois; Pierre-Rene Douard, Versailles, and Jean M. L. Thepot, Paris, all of France, assignors to Compagnie due Roneo and Fluidelec, Paris, France

Filed Dec. 20, 1978, Ser. No. 971,236

Claims priority, application France, Dec. 29, 1977, 77 39702

Int. Cl.[3] B65G 51/40

U.S. Cl. 406—2 7 Claims

1. An installation for the automatic and accounted storage and distribution of cash between an inlet-outlet unit and a unit for storing said cash and forming strong room, which installation comprises:

a plurality of cartridges, substantially cylindrical in shape, which can be loaded with a predetermined quantity of cash, and forming a container for conveying and storing the said cash,

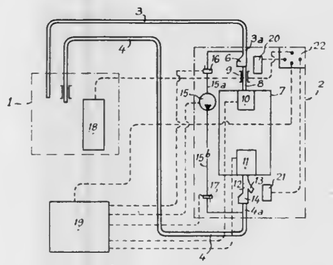
a tubular assembly extending between the inlet-outlet unit and the strong room comprising:

a conveying line for conveying the cartridges from the inlet-outlet unit to the strong room,

a cartridge removal line connecting the strong room to the inlet-outlet unit,

at least one blowing system situated in the strong room whose suction tube is selectively connected to the conveying line and to the atmosphere and whose delivery tube is selectively connected to the atmosphere and to the removal line,

a valve mechanism mounted at the end of each of the aforesaid lines and inside the strong room and which makes it possible to pneumatically isolate the said lines from the strong room whilst letting the cartridges through,



a cartridge storage device connecting in the strong room, the conveying line to the removal line between the aforesaid valve mechanism, and being provided with means for conveying the cartridges,

a logic device of a central unit whose inlet is connected to at least one control desk situated in the inlet-outlet unit and whose outlet is connected to the blowing system and to the conveying means provided in the storage device,

an accounting device comprising a reversible counter, connected to the inlet and to the outlet of the storage device.

4,239,421

VERTICAL SILO FOR FLUID BULK MATERIAL WITH AN INNER BLENDING CHAMBER

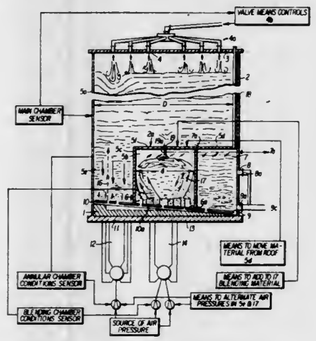
Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Hamburg, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,440

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657596; Dec. 18, 1976, 2657597

Int. Cl.[3] B65G 69/06

U.S. Cl. 406—12 14 Claims



1. A silo for fluid bulk material, comprising:

a vertical silo wall enclosure having a floor at its bottom and a cap closing its top; said silo wall enclosure having at least one silo outlet orifice at its bottom; at least one valve controlled material inlet opening in the silo cap for supplying material to the silo; a vertical blending chamber of

dimensions substantially smaller than those of the silo, and arranged centrally on the silo floor; said blending chamber having a roof and a side wall spaced radially inwardly from the silo wall enclosure, defining a narrow semi-annular space therewith; a plurality of passages formed through the blending chamber side wall at its bottom for conducting material from the silo into the blending chamber; aeration means to supply pressurized air through the floor of the silo; homogenization means to supply pressurized air through the floor of the blending chamber, an outer annular zone of the floor of the blending chamber being free of the homogenization means, defining a passive zone, whereby pressurized air introduced into the blending chamber spaced radially inwardly from the side wall of the blending chamber is enabled to expand outwardly into the passive zone spaced above the passages formed through the blending chamber side wall, said outer annular zone occupying at least 10% of the entire floor area of the blending chamber;

said blending chamber having aeration means separate from the aeration means of the silo floor;

a source of air pressure;

ducts with valve means connected to the aeration means of the silo floor area;

ducts with valve means connected to the aeration means of the floor of the blending chamber;

means to alternate air pressures in the silo floor and in the blending chamber floor;

means to sense the conditions in the silo chamber and the blending chamber, respectively; and

means to control the admittance of pressures to the silo floor and to the blending chamber floor, respectively, in response to the variations in the pressures between the main chamber and the blending chamber.

4,239,422

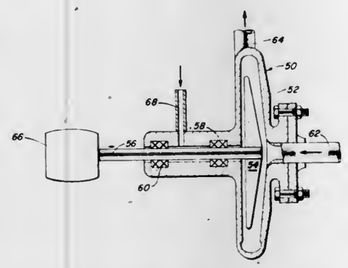
FLUSHING FLUID FOR CENTRIFUGAL PUMPS USED IN THE PIPELINING OF SLURRIES

James T. Clancey, Pittsburgh, Pa., assignor to Conoco, Inc., Stamford, Conn.

Filed Oct. 4, 1979, Ser. No. 81,749

Int. Cl.[3] B65G 53/30

U.S. Cl. 406—47 6 Claims



1. In a method for transporting an aqueous slurry of particulate solids in a pipeline wherein said aqueous slurry has an effective viscosity greater than water and is pumped through said pipeline by at least one centrifugal pump wherein a flushing fluid is used to maintain the bearing surfaces in said centrifugal pump substantially free of said particulate solids, the improvement comprising: the use of a thickened aqueous flushing fluid, said thickened aqueous flushing fluid consisting essentially of an aqueous solution and a thickening agent in an amount sufficient to increase the viscosity of said thickened aqueous flushing fluid to at least about 80 percent of the viscosity of said aqueous slurry.

4,239,423

APPARATUS FOR HYDRAULICALLY TRANSPORTING PARTICULATE SOLID MATERIAL

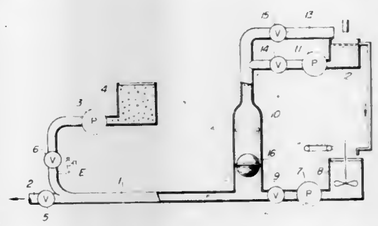
Masakatsu Sakamoto, Matsudo; Kenji Uchida, Kashiwa; Isao Honma, Abiko, and Yukisbige Kamino, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 22, 1979, Ser. No. 22,948

Claims priority, application Japan, Mar. 24, 1978, 53-33094

Int. Cl.[3] B65G 53/30

U.S. Cl. 406—47 5 Claims



1. An apparatus for hydraulically transporting particulate solid material comprising:

at least one horizontal feed pipe having at least two ends for temporarily storing a mixture of liquid and the particulate solid material to be transported;

a high-pressure mixture transport pipe fluidly connected to one end of said horizontal feed pipe through a valve;

low-pressure mixture feed means fluidly connected to the one end of said horizontal feed pipe through a valve;

a vertical pipe fluidly connected at one end thereof to the other end of said horizontal feed pipe, said vertical pipe mounting therein a float having a specific gravity selected such that the float is located in the liquid-to-liquid interface formed by a driving liquid and an intermediate liquid in the vertical pipe at all times and moves in elevational movement therein as the liquid-to-liquid interface shifts its position, to keep the driving liquid and the intermediate liquid from mixing with each other;

high-pressure driving liquid feed means fluidly connected to the other end of said vertical pipe through a valve;

a driving liquid return pipe fluidly connected at one end thereof to said other end of said vertical pipe through a valve, said driving liquid return pipe being connected at the other end thereof to said high pressure driving liquid feed means; and

means for sealing therein said intermediate liquid having a specific gravity higher than that of said driving liquid and lower than that of said mixture, said intermediate liquid sealing means being located in a lower portion of said vertical pipe and in a portion of said horizontal feed pipe disposed near the connection between the vertical pipe and the horizontal feed pipe.

4,239,424

METHOD AND APPARATUS FOR DISTRIBUTION OF GRANULAR MATERIAL IN A RAILWAY HOPPER CAR

John D. Pavolka, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jul. 25, 1979, Ser. No. 60,248

Int. Cl.[3] B65G 53/40

U.S. Cl. 406—157 4 Claims

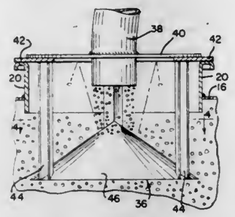
1. A portable distribution device for evenly spreading granular material conveyed in a loading hose providing a moving airstream into a covered hopper car having a hatch opening in a roof and having upstanding coaming associated therewith, the improvement comprising:

a deflector cone located below the roof and in alignment with said hatch opening;

strut means connected with and extending upwardly from the deflector cone;

strut mounting means removably positioned on said coaming, said strut means connected with said strut mounting means to support the deflector cone within said hopper car;

a shield member extending across the hatch opening to prevent material from bouncing from the deflector cone



and having opening means adapted to surround the loading hose, said shield member being connected to said loading hose and being positionable therewith, and

said deflector cone having a diameter smaller than said hatch opening thereby facilitating insertion and removal of said distribution device.

4,239,425

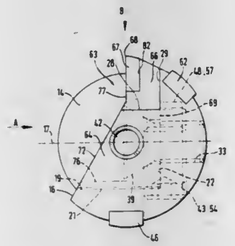
CHUCKING REAMER

Georg Striegl, Winterlingen, Fed. Rep. of Germany, assignor to Firma August Beck, Winterlingen, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,069

Int. Cl.³ B23B *29/02*

U.S. Cl. 408—181 **8 Claims**



1. A chucking reamer comprising:

(a) a head having a flattened section, commencing on the shaft, the outer face of this section having essentially the shape of a secant;

(b) a crescent-shaped recess, bounded by a curved face and a bottom face, running from the flattened section into the head;

(c) an inner threaded hole provided in the head, running from the central area of the bottom face into which thread the shank of a fixing screw can be screwed;

(d) two narrow, flush bases adjacent to the bottom face and on both sides of it, extending in the longitudinal direction of the shank substantially parallel with the fixing screw;

(e) a support face adjacent to the bottom face and on both sides of it, extending in the longitudinal direction of the shank substantially perpendicular to the fixing screw, intersecting the flush bases and terminating in the front of the head together with one of the flush bases;

(f) a centering hole in the front of the head;

(g) two headless screw holes provided in the head substantially axially parallel with each other, positioned in the head according to a secant, and each opening in one of the flush bases;

(h) headless screws screwed into the headless screw holes, each of which acts on a thrust piece whose area of thrust action is located in the region of the flush base and support face;

(i) a cutter device having a flat lower side in contact with the support face and a back ridge in contact with the thrust pieces;

(j) a crescent-shaped body in the crescent-shaped recess which is traversed by the fixing screw which retains the cutting device by means of the crescent-shaped body;

(k) guide plates on the head; and

comprising the improvements in which

(l) the cutter device and the crescent-shaped body are in one piece and comprise a basic body of steel and a carbide cutter embedded in the basic body;

(m) the fixing screw has a conical head and the crescent-shaped body has a conical recess; and

(n) the geometrical longitudinal axis of the inner thread in the perpendicular direction to the cutting edge of the carbide cutter, and the plane of the bottom face, is eccentric in relation to the geometrical longitudinal axis of the conical recess, to the extent that when the basic body is to be moved to the smallest radius position, the shank of the fixing screw experiences a bending stress.

4,239,426

METHOD OF TRANSPORTING AND STORING MIXED FUEL AND PLANT THEREFOR

Yasuyuki Nakabayashi, Yokohama; Kenichi Nagata, Ichihara, and Shozo Fukuda, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha; Electric Power Development Co. Ltd. and Misui Engineering & Shipbuilding Co. Ltd., all of Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,433

Int. Cl.³ B65G *53/30*

U.S. Cl. 406—197 **5 Claims**

1. A method of preparing and transporting a coal-oil mixture comprising mainly coal and one of crude or heavy oil comprising the steps of taking coal at a source location and pulverizing the coal to a particle size of approximately 70μ—6 mm, transferring the pulverized coal at the source location into a container, supplying one of crude or heavy oil into the container and mixing the oil with the pulverized coal, adjusting the proportion of coal and oil in the container into the range of 40:60–50:40 for affording smooth conveyance of the coal-oil mixture, free of moisture and additive and with the ratio of coal and oil in the range of 40:60–50:50 from the container through a pipeline to a transfer point facility, collecting the conveyed coal-oil mixture in a vessel at a transfer point facility and adjusting the ratio of coal to oil in the vessel in the range of 65:35–85:15 by settling the pulverized coal and separating the coal from the oil and storing the adjusted coal-oil mixture in the vessel until the mixture is to be transported from the transfer point facility and storing the oil in the separate tank, adding oil to the adjusted coal-oil mixture in the vessel to bring the mixture into the range of 40:60–50:50, and transporting the coal-oil mixture.

4,239,427

BORING TOOL

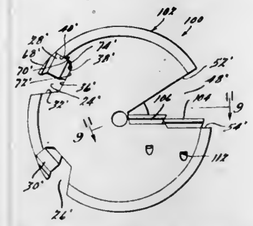
Richard E. Walton, II, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 28, 1979, Ser. No. 79,858

Int. Cl.³ B23B *51/00*

U.S. Cl. 408—213 **27 Claims**

1. In a boring tool for cutting a generally circular hole including a generally cylindrical shaped body of a predetermined diameter, a driving shaft extending axially outwardly from one side of said body for rotationally driving said body, said boring tool further including at least one spur cutter secured to said body and operative to cut a ring of a predetermined width, and a predetermined number of substantially identical planer blades secured to said body, each of said planer blades having a predetermined cutting width, said predetermined number being an integer substantially equal to or greater



than the radius of said body portion less said predetermined width divided by said predetermined cutting width.

4,239,428

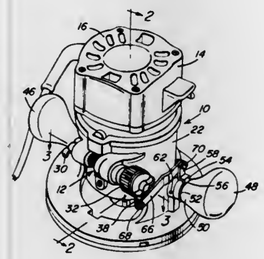
ROUTER ADJUSTMENT ATTACHMENT

James A. Berzina, 2812 W. Kingston Cir., Grand Island, Nebr. 68801

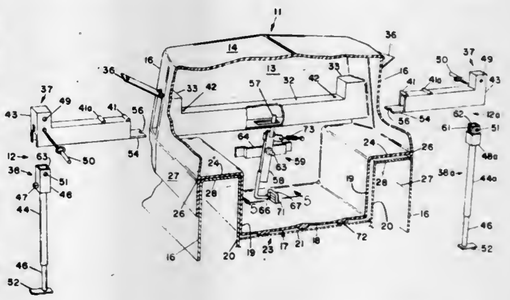
Filed May 24, 1979, Ser. No. 42,604

Int. Cl.³ B23C *1/20*

U.S. Cl. 409—182 **6 Claims**



1. In combination with a router assembly including a router sub-assembly vertically adjustable relative to a supportive base plate through the utilization of a sub-assembly supported rack gear and a pinion gear meshed with the rack gear and journaled from the base, said base including a handle portion for directional control of said router assembly during routing operations, means oscillatably supporting said handle portion from said base, connecting means operatively connecting said handle portion and pinion gear for oscillation of the latter in response to oscillation of the former, said connecting means including first and second lever arms operatively connected to said pinion gear and handle portion, respectively, for angular displacement therewith, and an elongated connecting link having its opposite ends pivotally connected to said lever arms.



4,239,429

COLLAPSIBLE TRAILER HITCH BUMPER BLOCK EXCESSIVE IMPACT PROTECTION ASSEMBLY

Patricia S. Stoller, Plymouth, Mich.; James C. Hammonds, St. Charles, and Ronald D. Van Dyke, Florissant, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

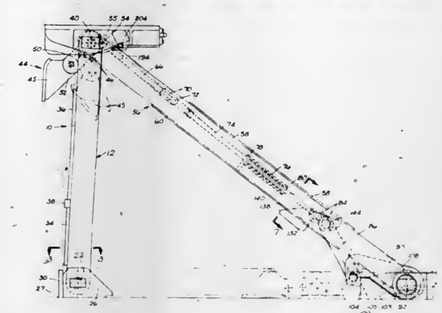
Filed Jan. 31, 1979, Ser. No. 8,300

Int. Cl.³ B60P *3/06;* **B61D** *3/16;* **B61K** *13/00;* **B62D** *53/10*

U.S. Cl. 410—59 **5 Claims**

1. In a tractor operated railway trailer hitch including a vertical strut and a diagonal strut supporting a fifth wheel, the improvement comprising:

a bumper block assembly including at least one bumper block support plate pivotably mounted about a first pin in said fifth wheel; a bumper block laterally spaced from said bumper block support plate and pivotably mounted about a second pin extending through said bumper block support plate and said bumper block; said bumper block including a generally vertical surface adapted adapted to be contacted by a tractor and a body portion including a first opening to receive said second pin; a third pin extending through said bumper block and said bumper block support plate; said third pin designed to shear at a predetermined applied load; whereby if the tractor applies a load to said bumper block and to said third pin above said predetermined load, said third pin will shear off and said bumper block will pivot about said second pin, and whereby the remainder of the hitch operating mechanism, which might normally be damaged by such an impact to said bumper block, is protected from such hard impact by said third pin.



4,239,430

JACK AND TIE-DOWN SYSTEM FOR A VEHICLE MOUNTED CARGO UNIT

Richard L. Groene, 1800 Fuller Rd., West Des Moines, Iowa 50265

Filed Jul. 18, 1979, Ser. No. 58,482

Int. Cl.³ B60P *3/32*

U.S. Cl. 410—68 **5 Claims**

1. In a jack and tie-down system for a vehicle mounted cargo unit having a front wall and a bottom wall, and wherein the vehicle has opposite side walls, said system comprising:

(a) a pair of linearly extendible and retractible front jack assemblies for supporting said cargo unit, each of which includes a support structure and a detachable jack unit;

(b) a transversely extended open ended storage chamber means for said jack assemblies secured to the front wall of said unit,

(c) means movably mounted each support structure within said chamber means for movement longitudinally thereof to an operating position projected outwardly from one end of said chamber means, and to a storage position within said chamber means,

(d) coacting means at one end of each jack unit and at the outer end of an associated support structure for detachably connecting a jack unit in a suspended position when a support structure is in the operating position therefor,

each jack unit, when retracted and detached from an associated support sturcture being receivable within said support structure for movement therewith to said storage position,

(e) means on said cargo unit for releasably locking said cargo unit for transport with said vehicle including a latch member having an actuator portion projected within said chamber means, and

(f) means for yieldably urging said latch member to a release position of said locking means,

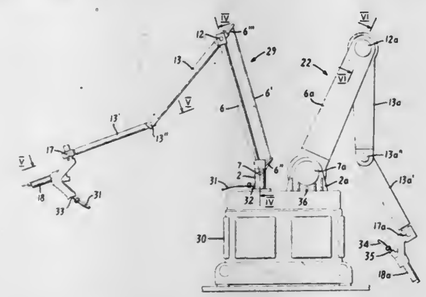
(g) said actuator portion, on movement of the support structures to the storage positions therefor, being engageable by at least one of said support structures for movement against the action of said yieldable means to a lock position of said locking means.

4,239,431

LIGHT-WEIGHT PROGRAM CONTROLLER

Giorgio Davini, Milan, Italy, assignor to Basfer S.r.L., Milan, Italy

Continuation-in-part of Ser. No. 598,688, Jul. 24, 1975, abandoned. This application Jul. 13, 1977, Ser. No. 815,440
Claims priority, application Italy, Oct. 22, 1974, 28662 A/74
Int. Cl.³ B05B *13/00;* B25J *9/00;* G05B *19/42*
U.S. Cl. 414—1 **3 Claims**



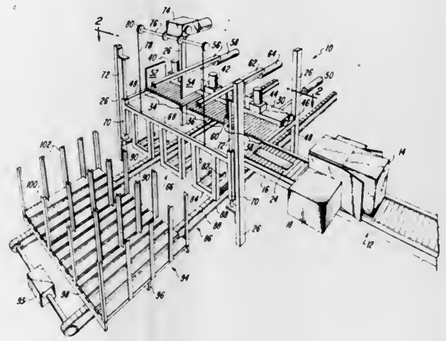
1. For use with a robot having a relatively massive multiple-arm system having a free end moved controllably in a work space in three dimensions under command of command signals, means to mount on said free end a tool to be positioned in said work space and progressively moved in said space, a manually operable teaching system mountable in said work space in which the robot is to move said free end and tool thereon and having a lightweight multiple-arm system constructed symmetrical to the multiple-arm system of said robot with a second free end for mounting thereon a second tool similar to the first-mentioned tool movable manually in said work space progressively in three dimensions in a work pattern in said work space corresponding to desired movement of the first-mentioned tool in said work space, means to develop signals representative of the spatial work pattern of movement of said second free end of the teaching system and a tool thereon, means to memorize said signals, and means to apply command signals to said multiple-arm system of the robot developed from said memorized signals and to cause the multiple-arm system of the robot and first-mentioned free end to duplicate the movements of the free end of the teaching system effected within said work space.

4,239,432

ARTICLE HANDLING APPARATUS CAPABLE OF REVERSIBLY LOADING AND UNLOADING ARTICLES IN PREDETERMINED ROWS

Raymond Richardson, Englewood, Colo., assignor to Nolan Systems Inc., Denver, Colo.

Filed Mar. 13, 1979, Ser. No. 20,185
Int. Cl.³ B65H *31/30*
U.S. Cl. 414—110 **22 Claims**



1. Article handling apparatus, comprising in combination:

first means for delivering a predetermined plurality of articles in a spaced apart serial manner;

second means operatively arranged for receiving the predetermined plurality of articles delivered from said first means, said second means including means for separating each of said articles into a predetermined spaced apart linear configuration with adjacent articles in the linear configuration being spaced at predetermined intervals, said second means defining an intermediate conveying path upon which the articles are received and separated;

third means for simultaneously transferring the predetermined plurality of articles from the intermediate conveying path while maintaining the predetermined linear configuration, said third means further vertically moving the predetermined linear configuration of articles with respect to the intermediate conveying path;

a container including means defining a generally planar article supporting surface and means for partitioning said container into at least one linear row of spaced apart compartments, each row being formed of a plurality of linearly aligned compartments, the number of compartments in each row being at least equal to the predetermined plurality of articles in the predetermined linear configuration, the partitioning means further spacing adjacent compartments in each row at approximately the same intervals at which adjacent articles are spaced in the predetermined linear configuration;

fourth means for operatively positioning said container with the compartments of one row in parallel alignment with predetermined linear configuration of articles during at least a portion of the movement of the articles by said third means; and

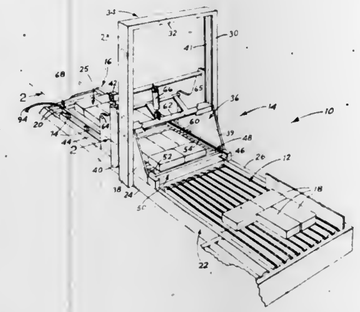
said third means further transferring all of the articles in the predetermined linear configuration into the row of compartments of the container with one article being received in each compartment of the row.

4,239,433

PALLETIZER WITH ROLLER-ASSISTED OFF-FEED DEVICE

Edward W. Hanson, Anaheim, Calif., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Aug. 8, 1978, Ser. No. 931,435
Int. Cl.³ B65G *57/03*
U.S. Cl. 414—84 **2 Claims**



1. Apparatus for stacking articles on a stacking platform comprising

a carriage mounted for horizontal shifting between an extended position overlying said stacking platform and a retracted position spaced from said platform, said carriage including a plurality of article-support rollers mounted for rotation about substantially horizontal axes extending transversely of the path traveled by said carriage as it moves from its extended to its retracted position,

first and second elongate members disposed along the path of travel of said carriage above said stacking platform, and mounted for relative shifting toward and away from one another, to effect shifting of the second member between first and second positions, respectively,

biasing means yieldably biasing said first and second members toward one another,

an inflatable/deflatable hose operatively interposed between said first and second members to shift said members apart upon inflation of said hose, and

an elongate element mounted on said second member and extending horizontally along the path of travel of said carriage, said element having a frictional surface positioned to engage said rollers when said second member is shifted to its second position, causing the rollers to rotate to off-load articles from the carriage as the carriage is moved from its extended to its retracted position.

4,239,434

WEIGHT CODED DELIVERY CONVEYOR SYSTEM

Donald N. Gannon, Dallas, Tex., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 9, 1979, Ser. No. 28,570
Int. Cl.³ B65G *47/50;* G05B *19/18;* G01G *23/38;* G06F *15/04*
U.S. Cl. 414—136 **8 Claims**

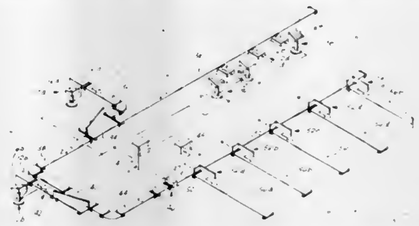
1. An apparatus for sorting items comprising:

a conveyor for carrying the items to be sorted;

a plurality of receiving stations located along said conveyor for receiving said items to be sorted, each of said receiving stations including first weighing means for sensing the weight of each item and for producing a signal representative of the weight, each receiving station further including manual input means operable to produce a signal representative of a predetermined destination of each of said items;

computational means operably associated with said receiving stations, said computational means including memory means for storing said weight representative signal for each item along with the associated destination representative signal for that item and data retrieval means for selectively retrieving said weight and destination representative signals;

a recognition unit located in the path of said conveyor downstream of said receiving stations for identifying each item according to the stored weight representative signal, said recognition unit including a second weighing means for sensing the weight of said items as they pass through said recognition unit and producing a second weight representative signal, said recognition unit being operably associated with said computational means to match said



second weight representative signal with the stored weight representative signals to identify said item in said recognition unit and said data retrieval means being operable upon such identification to retrieve the stored predetermined destination representative signal associated with said weight identified item;

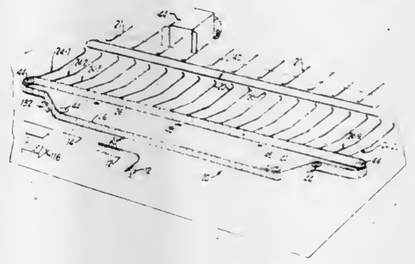
transfer means operably associated with said computational means and said conveyor, said transfer means including item removal means for removing said identified item from said conveyor at said predetermined destination downstream from said recognition unit in response to said retrieved destination representative signal.

4,239,435

APPARATUS AND METHOD FOR ASSEMBLYING RANDOMLY ARRANGED ARTICLES

Donald J. Weiss, Berkeley Heights, and Bernard S. Speckhart, Short Hills, both of N.J., assignors to White Machine Company, Inc., Kenilworth, N.J.

Filed May 16, 1979, Ser. No. 39,672
Int. Cl.³ B65G *47/50*
U.S. Cl. 414—136 **39 Claims**



1. Apparatus for selectively distributing a plurality of unordered articles in predetermined orders comprising:

a plurality of receiving stations, each of said plurality of stations for receiving a plurality of selectively distributed ones of said plurality of articles in a predetermined order;

conveyor means for releasably supporting said plurality of unordered articles to be selectively distributed and for displacing releasably supported ones of said plurality of unordered articles in a path adjacent to said plurality of receiving stations, and said conveyor means having at least one portion for receiving said plurality of unordered

articles sequentially and releasably supporting said plurality of unordered articles in the sequence received;

release means at each of said plurality of receiving stations for selectively releasing an article from said conveyor means for distribution to said receiving station;

means at each of said plurality of receiving stations for identifying each article displaced thereby by said conveyor means as a function of said article's position in said sequence of unordered articles; and

means for selectively activating said release means at each of said plurality of receiving stations when an article being displaced thereby by said conveyor means is to be distributed to that receiving station and is the next succeeding article in said predetermined order to be distributed thereto, said means for selectively actuating said release means being responsive to said means for identifying.

4,239,436

WAREHOUSING APPARATUS FOR MOVING GOODS

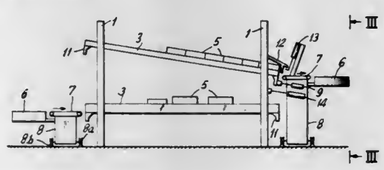
Anton Wildenaur, Bergheidengasse 8/3/2, A-1130-Wien, Austria

Continuation of Ser. No. 604,533, Aug. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 511,279, Oct. 2, 1974, abandoned, which is a continuation of Ser. No. 224,662, Feb. 9, 1972, abandoned. This application Apr. 10, 1978, Ser. No. 895,052

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1971, 2106053; Mar. 2, 1971, 2109832

Int. Cl.[3] **B65G** *65/00, 1/06*

U.S. Cl. 414—276 **4 Claims**



1. Warehousing apparatus comprising a support rack, said rack comprising spaced vertical posts and horizontal beams supported on and extending between said posts, elongated shelves each having a first end and a second end spaced from the first end in the elongated direction of said shelves, said shelves supported on said horizontal beams at horizontally spaced positions, said shelves arranged for supporting and storing individual and separate items of goods, wherein the improvement comprises first means supported on said horizontal beams at the support positions for said shelves for supporting said shelves in a movable condition so that said shelves can be slidably displaced relative to said rack and to said first means while remaining in the supported condition, said first means comprises rollers mounted on said horizontal beams and supporting said shelves at positions spaced between the first and second ends of said shelves so that said shelves can be slidably moved relative to said rollers and to said rack, second means selectively displaceably positionable into operative engagement with at least certain ones of said shelves for moveably displacing the selected said shelf in the supported position in the elongated direction thereof in a reciprocating manner for moving items of goods located on the selected said shelf between the first and second ends thereof, said second means including a movable carriage for supplying items of goods to and removing items of goods from the first and second ends of said shelves, a vibrator, said moveable carriage supporting said vibrator for positioning said vibrator at one end of one of said shelves, said vibrator having a contact member displaceable into contact with the shelf for transmitting the vibratory movement to the shelf and displacing the items of goods thereon between the first and second ends thereof, a stabilizer member attached to said moveable carriage and moveable into engagement with said rack for securing said rack and moveable carriage together to limit the movement of said rack and carriage due to the vibratory action of said vibrator, said contact member of said vibrator comprising a piston assembly including a piston rod displaceable by fluid pressure into contact with the shelf to be vibrated, a shelf coupling attached to the end of said piston rod and arranged to engage said shelf to be vibrated, and said shelf having a downwardly extending projection at at least one of its first and second ends, and said shelf coupling comprising a fork-like member arranged to intermesh with said projection for transmitting the vibrating action to said shelf.

4,239,437

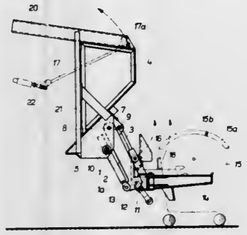
HEAVY DUTY RECEPTACLE UNLOADING DEVICE FOR TRUCKS

Jakob Naab, Mainz, Fed. Rep. of Germany, assignor to Zoller-Kipper GmbH, Mainz-Laubenheim, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 927,526

Int. Cl.[3] **B65F** *3/04*

U.S. Cl. 414—408 **18 Claims**



1. A lifting-tilting apparatus for emptying large and heavy receptacles into collecting containers, particularly garbage receptacles into garbage collecting vehicles, comprising in combination:

(a) a lifting device **13, 14** for gripping said receptacles,

(b) pivoting arms **2** having means for mounting said lifting device **13, 14** for raising and swinging-in movement along a predetermined lifting path and a swinging-in path respectively,

(c) said pivoting arms **2** having lugs **12** by which they are actuated,

(d) a pour-in device **4**,

(e) elongate cylinder-piston assemblies **1** engageable with the lugs **12** of the pivoting arms **2** to drive the same,

(f) said assemblies **1** extending roughly parallel to said pivoting arms **2**,

(g) mounting plates **5** secured to the pour-in device **4**,

(h) means **8** pivotally attaching said pivoting arms to said mounting plates for movement about a horizontal axis **8**,

(i) said lugs **12** extending below the plane of said horizontal pivotal axis **8**,

(j) means **10** supporting the cylinder-piston assemblies on said mounting plates, and

(k) mechanism **3** carried by said mounting plates **5**, positively driving said lifting device **13, 14** both in said lifting path and in said swinging-in path in response to the tilting motion of the pivoting arms **2**, as directly effected by said piston-cylinder assemblies **1**.

4,239,438

DEVICE FOR LIFTING AND CARRYING LOADS ON TOP OF PICKUP TRUCKS

Clifford R. Everson, 1408 - 16th Ave., Camanche, Iowa 52730

Filed Dec. 4, 1978, Ser. No. 966,379

Int. Cl.[3] **B60P** *9/00*

U.S. Cl. 414—462 **4 Claims**

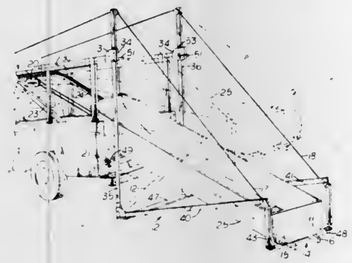
1. A loading and carrying device to be attached to a pickup truck comprising:

a fixed frame having a plurality of spaced standards to be attached to each side of a bed of the pickup truck, a fixed member attached to said standards along each side of said bed, said fixed members having respective rear portions terminating about even with the rear end of said bed and front portions extending from said bed forwardly substantially horizontally above the cab of said pickup truck,

a rail fastened along the inside of each side of said fixed frame, each of said rails having a slanting portion extending upwardly and forwardly from the rear end of a floor of said bed, a gradually curved portion above a front portion of said bed and a horizontal portion extending forwardly above said cab,

a carrying frame having for support a front and a rear cross member connected respectively across the front and the rear end thereof, the ends of said front cross member having movable supporting means constrained in adjacent ones of said rails and readily movable therealong,

a pivotal supporting frame having on each side thereof an upright member connected to said fixed frame, said upright members during operation of said loading and carrying device being rigidly positioned vertically behind said bed of said pickup with respective lower ends positioned



behind and below said bed of said puckup, a guiding member for each side of said pivotal supporting frame, each of said guiding members having a pivotal end pivotally connected to said lower end of said respective upright member, said guiding members being free to rotate about said respective pivotal ends in planes of the respective sides of said frames and having respective load-carrying ends opposite said pivotal ends,

pivotal connecting means pivotally connecting each end of said rear cross member of said carrying frame to the adjacent one of said load-carrying ends of said guiding members, and

hoisting means connected between said fixed frame and said guiding members, said hoisting means operable to rotate said guiding members about said pivotal ends for moving said rear cross member between a lower position near the ground and an upper position adjacent said rear ends of said fixed members while simultaneous moving said front cross member along said rails, thereby moving said carrying frame between a slanting position at the rear of said pickup truck and a substantially horizontal position over said cab and said bed.

4,239,439

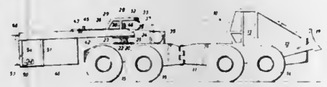
LOG SKIDDER

Leon Blagg, Bertram, Tex., assignor to Rolligon Corporation, Stafford, Tex.

Filed Sep. 15, 1978, Ser. No. 942,473

Int. Cl.[3] **B60P** *1/04*

U.S. Cl. 414—494 **13 Claims**



1. A log skidder apparatus for use with a vehicle having a fifth wheel located over the rear wheels thereof comprising:

log carrier means pivotally attached to said fifth wheel and including are elongated trough extending beyond the rear of said vehicle and adapted to be lowered to a position where a surface thereof rests on the ground;

first means for pulling a log toward said vehicle and disposing portions of said log and said trough in overlapping relationship; and

second means for causing said elongated trough to abut the bottom surface of the log thus securing said overlapping portions together as a substantially rigid assembly with said surface off of the ground, whereby during skidding the weight of the log that is supported by the vehicle is carried solely at the fifth wheel, and the rear end of said log is skidded on the ground.

4,239,440

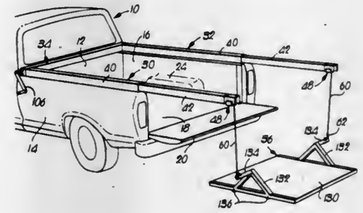
RETRACTABLE LOAD LIFTING AND MOVING APPARATUS PARTICULARLY ADAPTED FOR USE ON MOTOR VEHICLES

Larry R. James, 26260 W. 135th St., Olathe, Kans. 66061

Filed Feb. 1, 1979, Ser. No. 8,390

Int. Cl.[3] **B60P** *1/54*

U.S. Cl. 414—542 **11 Claims**



1. In load lifting and moving apparatus, which is particularly adapted for use on a vehicle having a load receiving space that is at least partially enclosed by bottom structure located above ground level and by body structure located above said bottom structure and that is provided with a zone of vertical and lateral clearance adjacent one extremity of said bottom structure for horizontal passage of a load into or out of said space:

horizontally extensible boom means including base structure rigidly mountable on said body structure and elongate boom structure reciprocably carried by said base structure and longitudinally shiftable relative to the latter between a retracted condition in which said boom structure is distally disposed inwardly relative to the plane of said clearance zone and an extended condition in which said boom structure extends substantially horizontally from said base structure and distally outwardly beyond the plane of said clearance zone;

first selectively actuatable means carried by said base structure;

means for operably coupling said first actuatable means with said boom structure for shifting the latter between said retracted and extended conditions thereof;

winch means carried by said boom structure adjacent the distal extremity of the latter and including elongate flexible means and rotatable means to which said flexible means is secured and upon which said flexible means may be wound to permit taking up and paying out of said flexible means when said rotatable means is rotated in a corresponding direction;

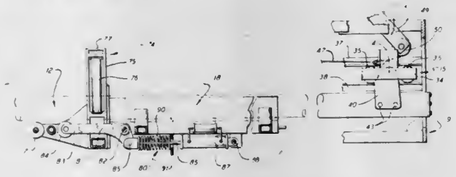
means for operably coupling said flexible means into supporting relationship with a load to be lifted and moved;

second selectively actuatable means carried by said base structure; and

means for operably coupling said second actuatable means with said winch means for rotating said rotatable means in

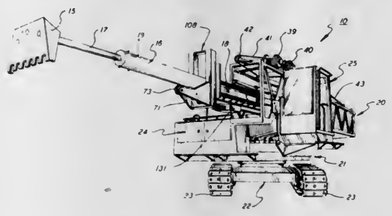
either direction for taking up and paying out said flexible means to lift and lower said load respectively,
said base structure being open at the extremity thereof nearest the plane of said clearance zone and provided with a cavity therein communicating with said open extremity for receiving at least a portion of the length of said boom structure therewithin,
said boom structure being in telescoped relationship with said base structure and at least partially received within said cavity of the latter.

4,239,441
SUPPORT FOR TOOL HANDLING BOOM
James J. Maynard, Marcellus, N.Y., assignor to Syracuse Supply Company, Syracuse, N.Y.
Filed Apr. 23, 1979, Ser. No. 32,369
Int. Cl.³ F27D *3/15*
U.S. Cl. 414—587 **14 Claims**



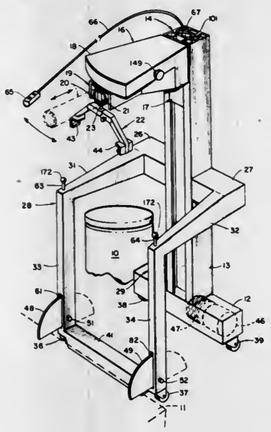
1. In a device of the type wherein an elongated boom is supported toward its back end in a pivot whereby the boom is able to rotate in a vertical plane and has a conditioning tool affixed to the front end thereof, apparatus for supporting the body of the boom forward of the pivot that includes
a cradle having an open top for encompassing a portion of said body of the boom,
a rest mounted in the cradle beneath the boom upon which the boom is able to be seated,
a lever arm mounted in the cradle beneath the boom that is arranged to rotate in the same plane as said boom,
a follower mounted in one end of the lever arm that is arranged to ride in contact against the bottom of the boom,
a spring means acting against the opposite end of the lever arm for biasing the follower against the boom,
a shock absorber also arranged to act against the opposite end of the lever arm for dampening downwardly acting loads that are suddenly applied to the follower.

4,239,442
APPARATUS FOR MANEUVERING A CONDITIONING TOOL WITHIN A FURNACE
James J. Maynard, Marcellus, N.Y., assignor to Syracuse Supply Company, Syracuse, N.Y.
Filed Apr. 23, 1979, Ser. No. 32,370
Int. Cl.³ F27D *3/15*
U.S. Cl. 414—587 **16 Claims**



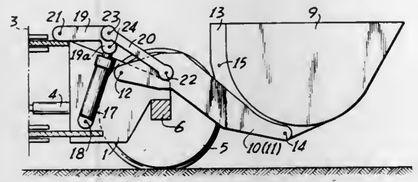
1. Apparatus for adjusting the vertical positioning of a tool support including
a base frame,
a generally horizontally-aligned gantry positioned over the base frame having a tool support boom movably mounted therein which extends outwardly from the front of the gantry,
horizontally-aligned front and rear pivot means affixed to the gantry in a spaced-apart parallel relationship,
a first adjusting means being arranged to act between the base frame and the front pivot means for raising and lowering the gantry in regard to the base frame,
a second adjusting means being arranged to act between the base frame and the rear pivot means for raising and lowering the gantry in regard to the base frame, and
a link being rotatably supported at one end in one of said pivot means and being rotatably supported at the other end within said base frame.

4,239,443
MOBILE HOIST
Ambrose L. Rysewyk, Elgin, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Feb. 28, 1979, Ser. No. 16,058
Int. Cl.³ B66C *19/00*
U.S. Cl. 414—618 **18 Claims**



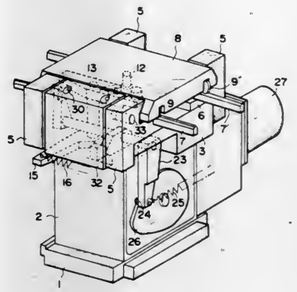
1. A hoist, which comprises:
an elongated housing;
a standard extending upwardly from said housing;
a plurality of interconnected elevating slides mounted on the standard for successive extension relative to each other;
a boom extending from one of said slides;
a pair of crossarms extending from opposite sides of said standard in directions which are substantially parallel to the housing and orthogonal with respect to said boom;
a pair of inverted parallel L-shaped arms each having a horizontally extending section connected to one end of one of said crossarms and a downwardly extending section, said L-shaped arms being spaced apart to define an article receiving space therebetween;
a clamp connected to and extending downwardly from the boom toward the article receiving space between the inverted L-shaped arms for gripping an article positioned within the space; and
a means mounted within said housing for successively actuating the slides to lift an article gripped by said clamp.

4,239,444
POWER SHOVEL
Michael Schmelzer, Trier, Fed. Rep. of Germany, assignor to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany
Filed Mar. 28, 1978, Ser. No. 891,029
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714276
Int. Cl.³ B66F *9/00*
U.S. Cl. 414—685 **6 Claims**



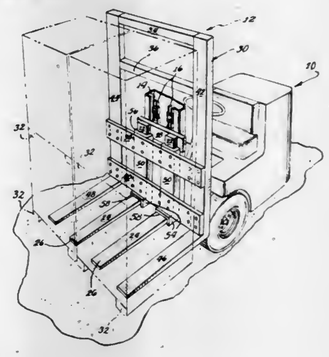
1. A vehicular power shovel particularly suitable for underground use within limited available space comprising:
a front vehicle section and a rear vehicle section;
means pivotally interconnecting said front and rear vehicle sections together to enable relative pivotal movement therebetween about a substantially vertical pivot axis;
said front vehicle section being located forwardly of said rear vehicle section taken relative to the normal direction of travel of said power shovel;
front frame means contained in said front vehicle section;
drive means including a front axle located in said front vehicle section;
a loading shovel member located forwardly of said front axle;
lift arm means having said loading shovel supported at one end thereof and having an opposite end pivotally mounted on said front frame means at a point rearwardly of said front axle;
toggle lever means including an intermediate buckling joint pivotally mounted between said front frame means and said lift arm means to transmit power to said lift arm means, said toggle lever means being connected to said front frame means at a point rearwardly of said pivotal mounting of said opposite end of said lift arm means to said front frame means; and
power cylinder means pivotally mounted between said front frame means and said toggle lever means for actuating said shovel member through said toggle lever means and said lift arm means;
said power cylinder means being pivotally connected with said toggle lever means at a point other than said buckling joint located rearwardly of said pivotal mounting of said opposite end of said lift arm means to said front frame means;
with each of said mounting of said toggle lever means to said front frame means, said buckling joint of said toggle lever means, and said connection of said power cylinder means to said toggle lever means being all located rearwardly of said front axle;
said power cylinder means, including said pivotal connection thereof to said toggle lever means and to said front frame means, being located rearwardly of said pivoted mounting of said lift arm means on said front frame means.

4,239,445
POSITIONING APPARATUS FOR TRANSFERRING PALLETS
Fumihiro Ozawa, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Chiba, Japan
Filed Oct. 19, 1977, Ser. No. 843,681
Claims priority, application Japan, Oct. 19, 1976, 51-125230
Int. Cl.³ B65G *47/74*
U.S. Cl. 414—749 **2 Claims**



1. A pallet positioning apparatus, for use in a linear station machine or the like, comprising: a bed having an upper surface; guide members defining a pallet transfer path mounted on the upper bed surface; a pallet having a lower surface including means for cooperating with said guide members to allow said guide members to guide said pallet travelling along said guide members, and a positioning pin mounted on the lower surface of said pallet; means for advancing said pallet along the pallet transfer path; a positioning lever rotatably mounted on said bed and having a longitudinally extending axis located intermediate said guide members, a roller mounted at the end of said positioning lever, and a member having a base surface mounted on said positioning lever adjacent said roller and defining a space therebetween dimensioned to receive said pallet positioning pin; biasing means for biasing said positioning lever to rotate for engaging said positioning pin on the lower surface of said pallet between said roller and said base surface opposite said roller for stopping said pallet on said guide members; and means for rotating said positioning lever to disengage said positioning pin to release said pallet.

4,239,446
ADAPTER FOR A FORK LIFT TRUCK
Theodore Vucinic, 5402 Ninth Ave., Countryside, Ill. 60525
Filed Jul. 10, 1978, Ser. No. 923,301
Int. Cl.³ B66C *3/00*
U.S. Cl. 414—785 **5 Claims**



1. An attachment, for standard fork lift vehicles that include

a pair of L-shaped lift members that provide forwardly extending pallet-engaging tines, each pallet-engaging tine having a distal toe portion and a root portion, and upwardly extending posts, for converting the vehicle from one that can only lift a single width pallet stack, said attachment comprising, in combination:

laterally elongated frame means of a lateral width to supportingly cooperate with a pair of adjacent single width pallets;

attachment means on said frame means for selective connection of said frame means to said pair of L-shaped lift members by supporting engagement of said frame means on the root portions of said pallet-engaging tines and by embracing portions of said upwardly extending posts; and

said frame means including two forwardly projecting tines, each of said tines spaced laterally outward from said pallet-engaging tines and positioned so as to be located substantially in the plane of said pallet-engaging tines to which the frame means are to connect, whereby two adjacent pairs of pallet-lifting tine means are provided, said pairs of tine means permitting the vehicle to be selectively used to simultaneously lift two adjacent single width pallet stacks.

4,239,447

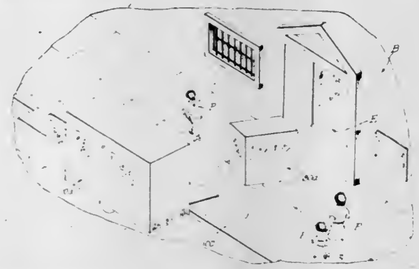
ARMORED MONEY-DELIVERING VEHICLE

Bert Bach, 270 West End Ave., New York, N.Y. 10023

Continuation of Ser. No. 796,733, May 13, 1977, abandoned. This application May 8, 1978, Ser. No. 903,520

Int. Cl.³ F41H *7/00*

U.S. Cl. 414—786 **1 Claim**



1. Method of delivering money or the like to a bank in separately motorized and steerable armored main and satellite trucks of which the satellite truck is of sufficiently small size to pass through the hereinafter mentioned pedestrian entrance to the bank, comprising driving the main truck on designated public driveways to the bank and parking it next to a pedestrian walkway outside the bank while carrying the satellite truck on the main truck; placing money into the satellite truck; stationing a person in the protected interior of the satellite truck while the same is carried by the main truck; while the main truck is parked outside the bank, lowering the satellite truck onto the ground for driving thereon; and for delivery of the money in the satellite truck to the bank, driving and steering the lowered satellite truck by the person therein on the pedestrian walkway in any pedestrian traffic thereon and through a pedestrian entrance into the interior of the bank or to a depository located along the pedestrian walkway outside the bank.

4,239,448

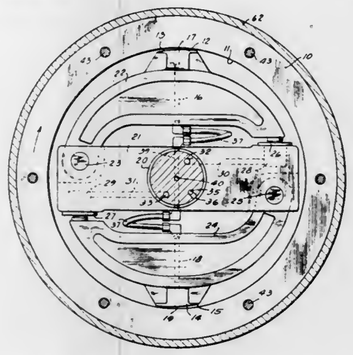
HIGH PRESSURE PUMP FOR FLUID JET SLITTER

Edwin X. Graf, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 25, 1977, Ser. No. 844,911

Int. Cl.³ F04D *1/12*

U.S. Cl. 415—89 **3 Claims**



1. A high-pressure liquid pump comprising in combination:

a pump shell having an annular smooth inwardly facing surface for carrying a film of liquid;

a hydraulic shoe having an outer convexly curved working face for coacting close running engagement with said shell surface;

a shoe support for positioning the shoe with its working face adjacent said annular surface;

a passage through the shoe with an entry opening in the shoe working face for conducting away high-pressure liquid from the hydraulic wedge built up between the shoe and shell surface;

and power means for driving said shell in rotation continuously moving the inwardly facing surface of the shell past the shoe and continuously forming the hydraulic wedge forcing liquid through the shoe passage at high pressure;

said shoe support including a pivotal arm supported on an axis for movement of the shoe toward and away from the pump shell surface with pressure control means connected to the pivotal arm for forcing the arm to pivot in direction to urge the shoe toward said shell surface.

4,239,449

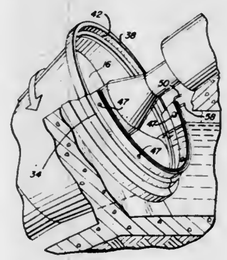
SCREW PUMP CONSTRUCTION

William J. Bauer, 422 S. Park Rd., LaGrange, Ill. 60525

Filed Nov. 24, 1978, Ser. No. 963,388

Int. Cl.³ F04D *3/00*

U.S. Cl. 415—73 **2 Claims**



1. A pumping system comprising an inclined screw pump having a casing with a lower intake end disposed in a lower liquid level and an upper discharge end discharging into an open channel disposed above said lower liquid level; compartment-forming blade means disposed within said casing joined to the inner periphery thereof; means mounting said blade-means and casing for rotatable movement whereby liquid enters said pump intake end and is conveyed along the length of said blade means to said pump discharge end; said pump discharge end being flared to a maximum diameter at the terminal end thereof; an annular projecting lip extending from said terminal end concentric with the pump longitudinal axis; stationary sealing strips mounted adjacent the rotatable end of said pump casing slidably engaging said pump projecting lip in fluid-sealing engagement; said sealing strips effecting a fluid seal between said rotating pump discharge end and said channel whereby said pump liquid discharge is forced to flow away from said pump in said open channel; the lowest point on said pump discharge end being disposed in said open channel and said stationary sealing strips extending to a height above the liquid level in said open channel.

4,239,450

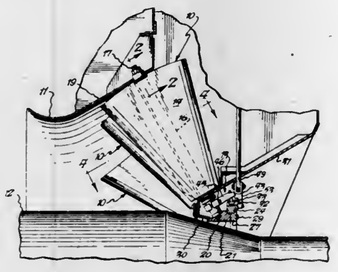
ADJUSTING MECHANISM FOR VARIABLE INLET VANE

Lawrence J. Geitner, Angola, and Christian C. Herbeck, Kenmore, both of N.Y., assignors to Buffalo Forge Company, Buffalo, N.Y.

Filed May 17, 1979, Ser. No. 39,588

Int. Cl.³ F04D *29/46*

U.S. Cl. 415—160 **4 Claims**



1. A variable inlet vane adjusting construction comprising a hub, a vane having an axis mounted transversely to the axis of said hub, first pivot means mounting said vane for pivotal movement on said hub, an adjusting ring, means mounting said adjusting ring for circumferential sliding movement on said hub about said axis of said hub, a plurality of circumferentially spaced axial slots on said adjusting ring, first opposed sides on said slots, a bearing of substantially solid rectangular configuration in each of said axial slots, each of said bearings having opposite second sides in face-to-face slidable engagement with said first sides, a plurality of pin members each having first and second end portions, second pivot means pivotally mounting said first end portion of each pin member on one of said bearings for movement relative to said bearing in three planes, a plurality of levers having first and second ends, means for fixedly attaching said first end of each of said levers to a vane, and means for fixedly attaching said second ends of each said levers to a second end of each of said pins, whereby rotation of said adjusting ring causes pivotal movement of said vanes while said first and second sides remain in full face-to-face engagement.

4,239,451

DEVICE TO FASTEN A SEAL TO THE GUIDE VANES OF A TURBINE ENGINE

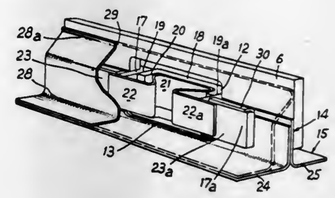
Michel A. Bouru, Moissy Cramayel, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed May 30, 1979, Ser. No. 43,612

Claims priority, application France, Jun. 1, 1978, 78 18973

Int. Cl.³ F01D *11/08*

U.S. Cl. 415—170 R **6 Claims**



1. In a device to fasten a seal on guide vanes of a turbine engine consisting of sectors, each of which comprises a plurality of blades and having a radial inner flange upon which a ring carrying a seal is secured, the improvement wherein the ring carrying the seal has a radial wing resting against said inner flange and is provided with cutouts arranged so as to coincide with corresponding cutouts provided on the flange, wherein U shaped clips are engaged securing, along the opposing edges of the cutouts, the radial wing of the seal ring against the inner flange, said clips being retained in place by a locking device between said clips and resting with its opposite faces against the backs of the clips, retention of the clips in place being ensured by a Ω shaped resilient fastener, engaging and secured in a recess of the locking device and resting with its wings against the lateral faces of the clips.

4,239,452

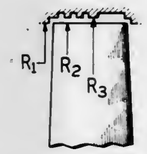
BLADE TIP SHROUD FOR A COMPRESSION STAGE OF A GAS TURBINE ENGINE

Frank Roberts, Jr., Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1978, Ser. No. 919,186

Int. Cl.² F01D *11/08*

U.S. Cl. 415—172 A **16 Claims**



1. A compression stage for an axial flow rotary machine, which comprises:

a case forming a portion of the outer wall of the flow path for working medium gases of the fan stage;

a shroud housed in said fan case and having

a first inwardly facing surface,

a second inwardly facing surface recessed from said first surface wherein the second surface has a plurality of surface discontinuities formed therein; and

a plurality of unshrouded compression blades each having a tip which extends into line on line relationship with the first inwardly facing surface of said shroud at the design operating condition of the compression stage.

4,239,453

MEANS FOR REDUCING CAVITATION-INDUCED EROSION OF CENTRIFUGAL PUMPS

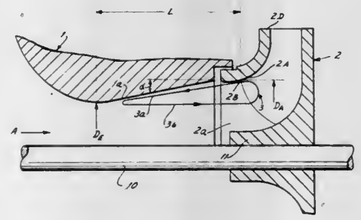
Peter Hergt, Ludwigshafen; Peter Buschsieper, Freinsheim, and Heinz-Bernd Matthias, Frankenthal, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker AG., Frankenthal, Fed. Rep. of Germany

Continuation of Ser. No. 747,616, Dec. 6, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,624

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1975, 2588403

Int. Cl.[3] F01D *25/24*

U.S. Cl. 415—182 **10 Claims**



1. In a centrifugal pump with a wide range of operating points without cavitation, a combination comprising a rotary impeller including a plurality of vanes and having an annular intake for admission of fluid, an inlet edge where said vanes begin, and an internal surface located immediately downstream of said inlet edge and diverging in the direction of fluid flow at an angle of between 8 and 20 degrees; and a cavitation-reducing diffuser located upstream of said intake, said diffuser defining a passage having a first cross section of smaller area which is remote from and a second cross section of larger area which is nearer to said intake, the area of said first cross section being between one-half and nine-tenths of the area of said second cross section and insuring the maximum flow rate at the design duty point.

4,239,454

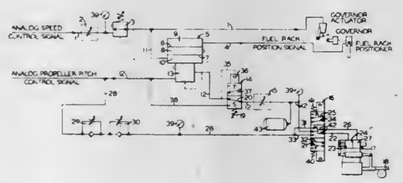
OVERLOAD PROTECTION CONTROL CIRCUIT FOR MARINE ENGINES

Paul E. Olson, Lexington, Ky., assignor to American Standard Inc., Lexington, Ky.

Filed Aug. 24, 1978, Ser. No. 936,670

Int. Cl.[3] B63H *3/10*

U.S. Cl. 416—27 **5 Claims**



1. An overload protection circuit for a marine engine comprising:

(a) servo-positioning means including a double-acting piston device and gear means connected thereto and operable thereby for setting propeller pitch, either forward or reverse, in accordance with the predominating one of respective opposing fluid pressure signals acting on opposite sides of said piston device;

(b) relay valve means including a pair of opposingly arranged pressure chambers;

(c) first conduit means for transmitting an operator-initiated fluid pressure speed control signal to one of said pressure chambers of said relay valve means and to a fuel rack positioner device, said fuel rack positioner being effective for producing a backfeed fuel rack position signal transmitted to the other of said pressure chambers of said relay valve means,

(d) said relay valve means being operable for producing a fluid pressure propeller pitch correction signal, in accordance with the ratio of said speed control signal and said fuel rack position signal, and transmitting said correction signal to one side of said opposite sides of said double-acting piston device and effecting both direction and degree of propeller pitch accordingly;

(e) second conduit means for transmitting an operator-initiated fluid pressure propeller pitch control signal to the other side of said opposite sides of said piston device and cooperating with said correction signal for setting the position of the piston device and consequently propeller pitch in accordance with the relationship of the respective fluid pressure signals acting concurrently on said opposite sides,

(f) said piston device being operable to assume a neutral position in which propeller pitch is zero when the pressures acting on said opposite sides are equal; and

(g) overload limiting valve means interposed in said second conduit means between said relay valve means and said servo-positioning means, said overload limiting valve means having a preset pressure limit and being operable responsively to said correction signal at a pressure exceeding said pre-set pressure limit, to a certain supply position in which said fluid pressure pitch control signal is communicated concurrently to both said opposite sides of said piston device for effecting operation thereof to its said neutral position in which propeller pitch is reduced to zero.

4,239,455

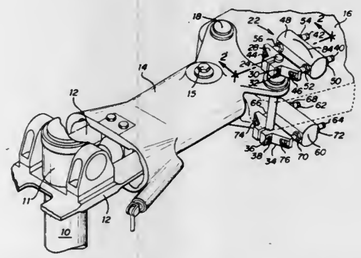
BLADE-MOUNTED CENTRIFUGAL PENDULUM

Willem Broekhuizen; Troy M. Gaffey, both of Arlington; Mukund M. Joglekar, Euless, and William D. Neathery, Fort Worth, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Sep. 11, 1978, Ser. No. 941,134

Int. Cl.[3] B64C *27/32*

U.S. Cl. 416—145 **10 Claims**



1. Apparatus for reducing vibrations at the hub of a helicopter rotor assembly which has a plurality of blades, each affixed to a blade grip that is secured to the hub which is mounted on a rotatable mast, the combination comprising:

(a) a pair of pivot means, one extending through each said grip diametrically opposed and equidistant from the axis of said mast and substantially perpendicular to the chord axis of the blade adjacent said pivot means, and

(b) masses mounted in the form of simple pendulums, two on each said pivot means and symmetrical to the feathering axis of the adjacent blade.

4,239,456

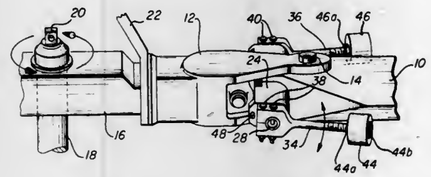
ROTOR BLADE OUT-OF-PLANE CENTRIFUGAL PENDULUMS

Mukund M. Joglekar, Euless; Troy M. Gaffey; Willem Broekhuizen, both of Arlington, and William D. Neathery, Fort Worth, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed May 10, 1979, Ser. No. 37,658

Int. Cl.[3] B64C *27/32*

U.S. Cl. 416—145 **15 Claims**



1. Apparatus for reducing oscillatory shear forces in a helicopter rotor assembly having a plurality of blades, each blade affixed to a blade grip which is secured to a hub that is mounted on a rotatable mast, the combination comprising:

(a) a set of pivot means, one pivot means corresponding with each said grip and said blade affixed thereto, said pivot means equidistant from the axis of said mast and each pivot means substantially parallel to the chord plane of the corresponding blade, and

(b) masses mounted in the form of simple pendulums, two on each said pivot means, said masses on each of said pivot means further mounted for rotation with the corresponding blade about the pitch axis thereof.

4,239,457

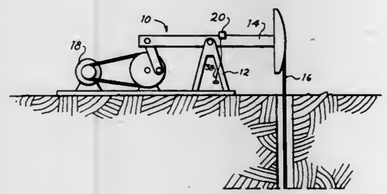
REMOTE RESET

R. C. Langford, Box 227, Rule, Tex. 79547

Filed Jun. 28, 1979, Ser. No. 52,791

Int. Cl.[3] F04B *49/00*

U.S. Cl. 417—33 **8 Claims**



1. In a vibration switch having

a. a housing,

b. electrical conductors entering said housing,

c. vibration elements within said housing for changing the resistence between said electrical conductors responsive to vibration,

d. a reset button on said housing for resetting said vibration elements within the housing to their original condition,

e. said vibration switch mounted at a remote location, wherein the improvement comprises the improved structure for pushing said reset button and thus resetting the switch:

f. a pivot pin mounted on the housing of the vibration switch,

g. a finger pivoted to the pin,

h. a spring biasing the finger away from the reset button,

i. a cord attached to the finger so that when the cord is pulled the finger pushes against the button resetting the same.

5. On an oil well having

a. sucker rod,

b. a pump jack for reciprocating said sucker rod,

c. said pump jack including

(i) samson post, and

(ii) a walking beam, and

d. a vibration switch including

e. a housing,

f. electrical conductors entering said housing,

g. vibration elements within said housing for changing the resistence between said electrical conductors responsive to vibration,

h. a reset button on said housing for resetting said vibration elements within the housing to their original condition,

j. said vibration switch mounted on the pump jack at a remote location,

wherein the improvement comprises the improved structure for pushing said reset button and thus resetting the switch:

k. a pivot pin mounted on the housing of the vibration switch,

m. a finger pivoted to the pin,

n. a spring biasing the finger away from the reset button,

o. a cord attached to the finger so that when the cord is pulled the finger pushes against the button resetting the same.

4,239,458

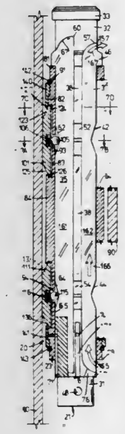
OIL WELL UNLOADING APPARATUS AND PROCESS

Connie M. Yeatts, P.O. Box 366, Bridgeport, Tex. 76026

Filed Dec. 5, 1978, Ser. No. 966,619

Int. Cl.[3] F04B *47/12*

U.S. Cl. 417—60 **6 Claims**



1. An oil well unloading apparatus comprising an inner core assembly and an outer shell assembly;

(a) said inner core assembly extending longitudinally and located slidably in a longitudinal direction within said shell assembly,

(1) said inner core assembly comprising an upper head member, a plate assembly and a lower foot, all firmly attached together;

(i) said plate assembly comprising a plurality of like spaced apart axially symmetrically arrayed rigid longitudinally extending flat plates, each of said plates having a longitudinally extending radial edge, each of said plates attached to said foot and to said head member,

(ii) each of said plates having (a) an upper shoulder extending radially of said plate's radial edge and (b) a lower tangentially and downward extending surface extending toward an adjacent plate of said plate assembly in a first circumferential direction,

(2) said foot having at its top a lower inlet orifice sealing surface located below said tangentially and downward extending surface and said lower orifice sealing surface extending radially of said radial edge of said plates,

(3) said head member comprising a rigid plate extending transversely of the length of said plates and attached to the top thereof,

(b) said outer shell assembly comprising a base shell unit and a set of seal units, said set comprising a plurality of like seal units,

(1) said base shell unit being a hollow rigid member and having at its bottom a transversely extending upper inlet orifice sealing surface and said base shell unit having at its top an upper rigid edge having a greater internal diameter than the external diameter of the radial edges of said plates,

(2) said seal units each having an outer surface in the shape of a hollow cylindrical segment, said cylindrical segment being a portion of a right circular cylinder with a central longitudinal axis parallel to the length of said base shell unit, said set of seal units circumscribing said base shell unit and attached thereto movably,

(3) holding means on said base shell unit extending radially of and engaging a portion of each said seal unit,

(4) said seal units having a portion that extends radially beyond the radial extent of said base shell unit,

(5) longitudinal and radially extending openings in said base shell unit and in each of said seal units, and keying members in said openings for radial motion of each said seal unit with respect to said base shell unit,

(6) securing means between said core unit and base shell unit for providing only relative longitudinal movement of said core assembly and said base shell unit,

(c) each plate shoulder of said core assembly extending above said base shell unit upper edge, said lower inlet orifice sealing surface on said core assembly foot being located below said transversely extending upper inlet orifice sealing surface of said base shell unit, and means extending between said core assembly and said shell assembly for releasably holding said core assembly on one position against longitudinal motion relative to said outer shell assembly.

4,239,459

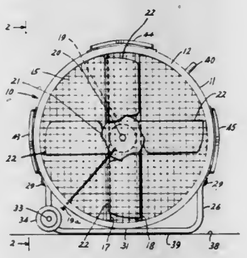
FAN WITH ADJUSTABLE LEGS FOR IMPROVING BUILDING HEATING AND COOLING

John V. Felter, P.O. Box 38271, Houston, Tex. 77088

Division of Ser. No. 875,335, Feb. 6, 1978, abandoned. This application Jul. 27, 1979, Ser. No. 61,487

Int. Cl.³ F04B *21/00*; F16M *11/38*

U.S. Cl. 417—234 **6 Claims**



1. Air propelling apparatus, comprising a housing having an air inlet in line with an air outlet, means for supporting an electric motor within said housing with its shaft in line between said inlet and said outlet, blade means carried by said shaft circularly spaced and outwardly disposed therearound, means for connecting said electric motor to an electric power source to enable operation of said electric motor, said housing including at least three leg means spaced about said air inlet for supporting said housing means with said air inlet and said air outlet in line vertically, each said leg means comprising angular bar means pivotally fixed at each of its ends to said housing adjacent the edge of said air inlet and each being movable between a first position against the exterior of said housing and a second position parallel with the wall of said housing and extending therefrom, and detent means for releasably restraining each end of each said bar means in each of said first and second positions.

4,239,460

CRYOGENIC PUMP FOR LIQUID GASES

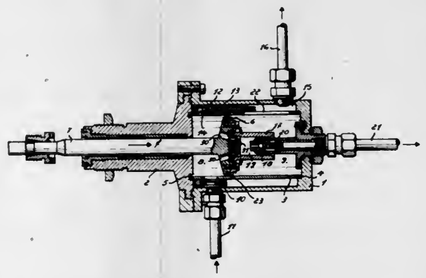
Roland Gölz, Ecublens, Switzerland, assignor to Socsil S.A., Ecublens, Switzerland

Filed Sep. 19, 1978, Ser. No. 943,625

Claims priority, application Switzerland, Oct. 19, 1977, 12733/77

Int. Cl.³ F04B *3/00, 25/02*

U.S. Cl. 417—251 **4 Claims**



1. A cryogenic pump for liquid gases, comprising a housing, a cylinder within the housing, a piston reciprocable in the cylinder and dividing the cylinder into a suction chamber and an evacuation chamber on opposite sides of the piston, a one-way valve for admitting liquefied gas into said suction chamber, an overflow duct for exhausting fluid from said evacuation chamber, said overflow duct being permanently and directly connected to said evacuation chamber, said suction chamber being permanently connected to an inlet duct through said one-way valve, a piston rigidly fixed to the housing and extending into said evacuation chamber, a high pressure outlet of said pump extending through said piston, a one-way valve permitting flow of liquefied gas through said outlet only in an outlet direction, a skirt carried by said movable piston and cooperating with said fixed piston to define a compression chamber, a one-way valve permitting flow of liquefied gas through said piston from said suction chamber into said compression chamber, another one-way valve that connects the suction chamber to the overflow duct for evacuation from the suction chamber of that fluid which is in excess of the liquefied gas necessary to fill said compression chamber, and means directly interconnecting said suction chamber with said outlet duct when said piston is adjacent the end of its movement into he evacuation chamber, thereby to exhaust from said suction chamber any said gas which is in vapor phase.

4,239,461

COMPRESSOR INDUCTION SYSTEM

John P. Elson, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Nov. 6, 1978, Ser. No. 958,357

Int. Cl.³ F04B *39/00*

U.S. Cl. 417—312 **21 Claims**

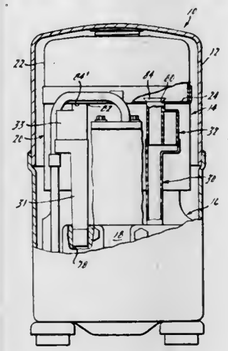
1. A hermetic compressor comprising:

an outer shell;

compressor means mounted within said shell;

motor means secured to said compressor means; and

elongated suction conduit means having one end secured to said compressor means, said suction conduit means defining a relatively unrestricted suction gas flow path therethrough for conducting suction gas from the interior of said shell to said compressor means, said suction conduit means including an elongated substantially closed noise



attenuating chamber having a longitudinal axis disposed in substantially parallel offset relationship to the axis of said suction gas conduit, said chamber being positioned intermediate the ends of said conduit and an opening in said conduit for placing said chamber in communication with said suction gas flow path.

4,239,462

HEAT BARRIER FOR MOTOR-PUMP AGGREGATES

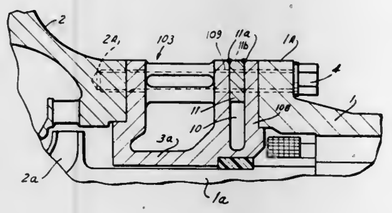
Holger Dach; Christian Klepp; Günter Koll, all of Frankenthal; Josef Lacroix, Weidenthal; Heinz-Bernd Matthias, Frankenthal, and Horst Vogel, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,752

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710443

Int. Cl.³ F04B *39/06*

U.S. Cl. 417—373 **8 Claims**



1. In a motor-pump aggregate, particularly for conveying of fluids which are maintained at an elevated temperature, the combination of a motor housing; a pump housing spaced apart from said motor housing; a heat barrier interposed between said housings and including spaced-apart first and second end portions respectively abutting against said motor housing and said pump housing, and a plurality of heat dissipating elements extending between and rigid with said end portions and forming two concentric annuli of different diameters; and means for fastening said heat barrier to said housings, including connectors forming an annulus concentric with and having a diameter between those of said annuli of heat dissipating elements.

4,239,463

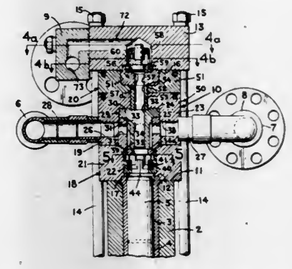
RECIPROCATING PLUNGER PUMP WITH IMPROVED LIQUID END VALVE ASSEMBLY

Charles Yaindl, Harrison, N.J., assignor to Worthington Pump, Inc., Mountainside, N.J.

Filed Sep. 28, 1978, Ser. No. 946,557

Int. Cl.³ F04B *21/00, 39/08*

U.S. Cl. 417—454 **9 Claims**



1. In a reciprocating plunger pump having, at least one pumping chamber, a plunger connected for reciprocating movement in said plunger chamber, common inlet manifold means for delivering fluid to be pumped, common outlet manifold means for passing pumped fluid from said reciprocating plunger pump, and valve assembly means having a discharge passage extending end to end therethrough connected to said plunger pump for communication with and in the longitudinal axis of the pumping chamber,

a. multi-element suction inlet assembly means removably connected in said valve assembly means and having the end of said discharge passage adjacent the pump chamber extending therethrough,

b. said suction inlet assembly means having, a suction inlet passage radially outward, concentric to and parallel to said pumping chamber end of the discharge passage and having one end connected to the inlet manifold means to receive fluid to be pumped therefrom and communicating at the opposite end with means on the suction inlet assembly means defining a suction inlet port for delivering the fluid to be pumped to the pumping chamber,

c. suction inlet valve head means disposed to normally maintain said suction inlet port closed and movable to open said suction inlet port on downward movement of said plunger, and

d. an independent discharge outlet assembly removably connected in said valve assembly means at the end of the fining a discharge port in communication with the outlet manifold for delivering pumped fluid thereto, and

e. discharge outlet valve head means operative to normally close the discharge port and movable to open position on upward movement of said plunger.

4,239,464

BLOOD PUMP

Lars Hein, Horsholm, Denmark, assignor to Polystan A/S, Herlev, Denmark

Filed Oct. 10, 1978, Ser. No. 950,116

Claims priority, application Denmark, Oct. 14, 1977, 4574/77

Int. Cl.³ F04B *43/14*

U.S. Cl. 417—474 **4 Claims**

1. A blood pump comprising:

an elongated flexible tube defining a flow path for the blood;

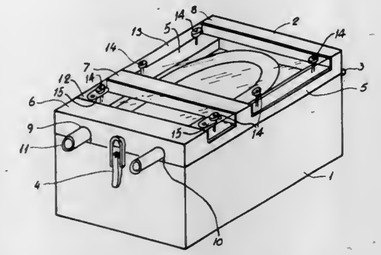
inlet valve means for selectively restricting flow through said tube at a first longitudinal position along said tube, said inlet valve means comprising a first flat-surfaced plunger valve and a first fixed flat wall portion disposed in movable spaced relation on opposite sides of said tube at said first position;

outlet valve means for selectively restricting flow through

said tube at a second longitudinal position along said tube, said outlet valve means comprising a second flat-surfaced plunger valve and a second fixed flat wall portion disposed in movable spaced relation on opposite sides of said tube at said second position;

displacement means comprising a third plunger valve and a third fixed wall portion disposed in movable spaced relation on opposite sides of said tube at a third position intermediate said first and second positions;

actuator means for selectively actuating said first, second and third plungers for movement toward and away from



said first, second and third wall portions, respectively, in a prescribed sequence so as to sequentially restrict said tube at said first, second and third positions; and

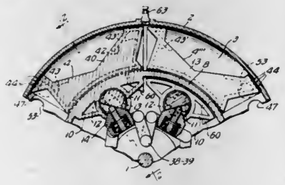
adjustment means for limiting the restriction of said flow tube at least at one of said first and second positions by adjusting said spaced relation of at least one of said first and second fixed flat wall section such that a passage for blood flow through said tube is provided when the tube is in its most restricted condition at said at least one position, said passage having a length in the flow direction of at least 5 mm and having a restriction height of less than 0.5 mm.

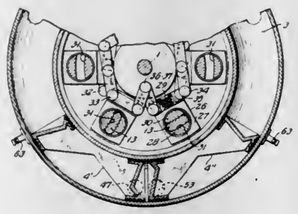
4,239,465

ROTARY MOTOR WITH ALTERNATING PISTONS

Claude Guillaume, 57b rue de la Paix-57, Rombas, France

Filed May 30, 1978, Ser. No. 910,288
Claims priority, application France, Jun. 3, 1977, 77 17019
Int. Cl.³ F01C *1/063*
U.S. Cl. 418—35 **15 Claims**





1. A rotary internal combustion motor comprising a toroidal chamber, a stationary casing for mounting said chamber and for mounting machinery of said motor adjacent to said chamber and in the vicinity of the axis of said chamber, a rotor mounted on said casing for rotation coaxially with said toroidal chamber, at least two pistons movable relative to each other in said toroidal chamber in motion swinging about said axis of said chamber, coupling means for locking each of said pistons, in the circumferential direction about said axis, alternately to said rotor and to said casing, in such a way that each piston is locked to said rotor and unlocked from said casing while the other is locked to said casing and unlocked from said rotor, and further comprising the improvement which consists, at least, in that:

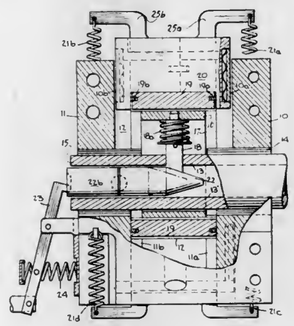
said coupling means comprise members arranged to engage and to disengage by relative movement having a component of circumferential movement about said axis and to provide by swiveling a transition between completely circumferential movement at the beginning of engagement and an at least partially radial movement at the end of engagement and also a swiveled transition preparatory for disengagement by circumferential sliding movement.

4,239,466

ROTARY MACHINE WITH ADJUSTABLE MEANS FOR ITS ECCENTRIC ROTOR

Harold G. Abbey, 11 Goldsmith Dr., Holmdel, N.J. 07733

Continuation-in-part of Ser. No. 586,925, Jun. 18, 1975, abandoned. This application Jan. 22, 1979, Ser. No. 5,479
Int. Cl.³ F04C *23/00, 29/10*
U.S. Cl. 418—11 **10 Claims**



1. In a rotary machine, the combination comprising:

(A) a stator provided with a cavity having a continuous inner wall;

(B) a driven shaft coaxially mounted in said cavity;

(C) a circular rotor supported on said shaft and having a ring freely mounted thereon, the rotor acting as a crank causing said ring, which functions as a piston, to undergo orbital motion in said cavity with its zenith in rolling contact with said inner wall, said rotor having a body provided internally with an elongated slot through which said shaft passes, said slot extending in a direction normal to the axis of said shaft;

(D) adjustable means to displace said rotor relative to said shaft from a zero position in which the axis of the rotor is aligned with the axis of the shaft to positions in which the rotor is eccentric with respect thereto within the limits of the slot, thereby to vary the eccentricity of said rotor and hence the capacity of the machine, said adjustable means including a bolt axially shiftable within a longitudinal bore in said shaft and terminating in a cam engaging one end of a pin disposed within said slot at right angles to said shaft, the other end of said pin engaging the inner wall of the rotor body in the middle portion along the width thereof whereby an axial shift of said bolt causes lateral displacement of said rotor relative to the shaft; and

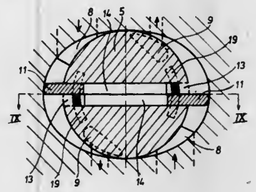
(E) a helical bias spring disposed in said slot and surrounding said pin to urge said rotor body against the ring to maintain the zenith of the ring in contact with the inner wall of the cavity throughout said orbital movement.

4,239,467

ROTARY COMPRESSOR WITH VALVED LIQUID INJECTION THROUGH THE ROTOR

Rune V. Glanvall, Norrkoping, Sweden, assignor to Stal Refrigeration AB, Norrkoping, Switzerland

Filed Oct. 12, 1978, Ser. No. 950,558
Claims priority, application Sweden, Oct. 13, 1977, 7711558
Int. Cl.³ F04C *29/02, 29/08*
U.S. Cl. 418—76 **4 Claims**



1. A rotary compressor of the sliding vane type comprising a housing having an inner surface and provided with inlet ports for a gas to be compressed and with outlet ports for compressed gas, a cylindrical rotor journalled in the housing for rotation about an axis and having slots opening through the peripheral surface of the rotor, vanes movable in said slots generally radially of the rotor and adapted to slide sealingly against said inner surface of the housing, the vanes being movable periodically inward and outward in the slots during rotation of the rotor, working chambers being formed between the rotor, said inner surface of the housing and the vanes, the rotor having conduits for liquid injection, said conduits having inlets in at least one end wall of the rotor and having outlets in said peripheral surface of the rotor toward the working chambers, and valve members movable in response to movement of the vanes and operable to open and close said conduits between said inlets and outlets in synchronization with said periodic moving of the vanes, the housing having internal end walls opposing the end walls of the cylindrical rotor, said outlet ports being located in at least one of said housing end walls, the rotor conduits including recesses coacting with said outlet ports to form outlet paths for compressed gas, said valve members being piston elements movable in said recesses at locations diametrically opposite respective vanes, the piston elements being operable periodically, during rotation of the rotor, to gradually fill said recesses and simultaneously block liquid flow through the rotor conduits.

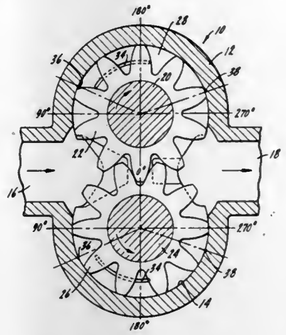
4,239,468

APPARATUS FOR CONTROLLING PRESSURE DISTRIBUTION IN GEAR PUMP

Brian W. Smith, Wooster, Ohio, assignor to The Rexroth Corporation, Bethlehem, Pa.

Filed Sep. 8, 1978, Ser. No. 940,808
Int. Cl.³ F04C *2/18*
U.S. Cl. 418—78 **16 Claims**

1. In a pressure plate adapted for use in a gear pump including a pair of gears defining pockets between adjacent teeth thereof, said pockets normally being sealed from communication with the pump inlet and outlet as said teeth rotate between inlet and outlet seal points; the improvement comprising slip



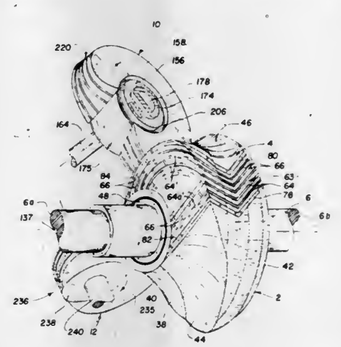
passage means defined by said pressure plate, said slip passage means communicating selected ones of said sealed pockets.

4,239,469

SEALS FOR A ROTARY MACHINE

Gail W. Kemp, 9622 Vinewood Dr., Dallas, Tex. 75228

Continuation-in-part of Ser. No. 779,172, Mar. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 544,427, Jan. 27, 1975, Pat. No. 4,013,046. This application Dec. 5, 1977, Ser. No. 857,208
Int. Cl.³ F01C *1/08, 19/04;* **F04C** *27/00*
U.S. Cl. 418—117 **33 Claims**



1. Improved seal apparatus for use in a rotary engine wherein a rotor is secured to a shaft which extends through end walls of a housing, the rotor being rotatively disposed in a circular working section in a hollow housing and cooperating with a rotating divider valve and a rotating compression-expansion valve to divide the hollow interior of the housing into an intake-compression space and an expansion-exhaust space, the improved seal apparatus comprising: a plurality of spaced seal bars being individually recessed in grooves in a piston formed on the rotor, said seal bars being adapted to seal between the piston and the housing in a direction normal to the direction or rotation of the rotor; said seal bars further being substantially flush with the adjacent piston surface; means to urge said seal bars into a sealing position against the housing, connector means radially restraining said seal bars and allowing limited circumferential movement of said seal bars; runner bars connecting said seal bars, said runner bars connecting forward and trailing seal bars to said piston, said seal bars and spaced runners substantially conforming to the adjacent piston surface contour, said grooves having sufficient clearance to accommodate movement of a seal bar relative to radial in and

out movement of the runner bars and thermal expansion and contraction, said seal bars having a joint formed therein, said joint being adapted to permit spreading of the seal bars to allow assembly on the piston and return of the seal bars to a position wherein they are substantially flush with the surface of the piston.

4,239,470

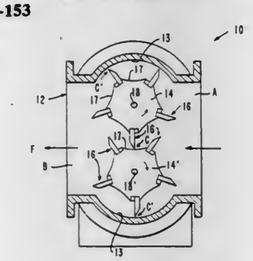
THICK STOCK PUMP HAVING FLEXIBLE BLADES

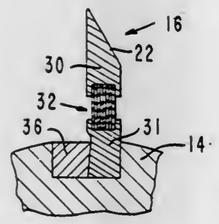
Michael I. Sherman, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 940,741, Sep. 8, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 14,363

Int. Cl.³ F04C *18/02*

U.S. Cl. 418—153 **1 Claim**





1. A pump for pumping high consistency material, comprising:

means for defining a closed pumping chamber, said chamber having an inlet and an outlet;

a pair of rotors in the pumping chamber;

means for transforming rotation of said rotors into linear pumping of high consistency material so that a head of about 10–170 ft. can be achieved during pumping of high consistency material and so that damage will not occur to the pump when tramp metal or the like is contained within the high consistency material pumped, said means comprising a plurality of blades associated with each rotor and extending radially therefrom which remain rigid during pumping of high consistency material but flex only so as to prevent damage to any pump components when tramp metal or the like is encountered thereby;

each said blade comprising a tip portion of relatively rigid material and a base portion of relatively rigid material, and an intermediate portion connecting said tip and base portions, said intermediate portion being flexible so that said blade flexes only at said intermediate portion when tramp metal or the like is encountered thereby;

means for rotating said rotors in opposite angular directions, said means including a shaft associated with each rotor; and

means for mounting said rotor shafts so that each blade from one rotor sequentially cooperates with but does not substantially engage a circumferential surface of the other rotor intermediate two blades of the other rotor, during continued rotation of said rotors, and so that each blade sequentially cooperates with but does not substantially engage an interior portion of said means defining a closed pumping chamber during continued rotation of said rotors.

4,239,471

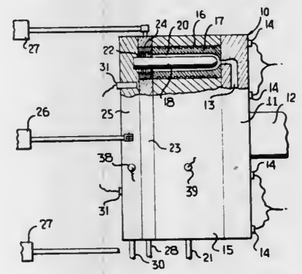
THERMAL ALIGNMENT OF CORES AND CAVITIES IN MULTI-CAVITY INJECTION MOLDS

Nareshwar Swaroop, Mount Vernon, Ohio, assignor to The Continental Group, Inc., New York, N.Y.

Filed Dec. 6, 1979, Ser. No. 100,793

Int. Cl.² B29F *1/08*

U.S. Cl. 425—144 **8 Claims**



1. In a multi-cavity injection mold assembly comprising a cavity retainer plate having therein a plurality of mold cavities, a core projecting into each mold cavity, and a core retainer plate; coolant means for cooling said mold cavities, said cavity retainer plate and said core retainer plate: the improvement comprising heating elements in said core retainer plate and control means for said heating elements for maintaining said core retainer plate at the same temperature as said cavity retainer plate.

4,239,472

CLAMPING RING FOR VACUUM-FORMING APPARATUS

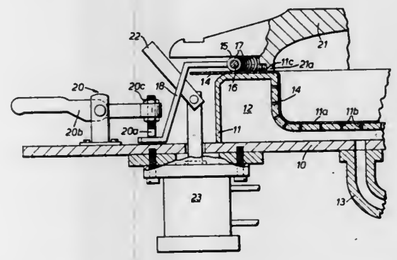
Geoffrey R. Atkinson, Rothersthorpe, and Alan J. Edwards, Northampton, both of England, assignors to UOP Inc., Des Plaines, Ill.

Filed May 22, 1979, Ser. No. 41,470

Claims priority, application United Kingdom, May 26, 1978, 23273/78

Int. Cl.² B29C *17/00*

U.S. Cl. 425—388 **5 Claims**



1. In apparatus for use in the vacuum-forming of sheet material in a mould, a clamping ring for slidably engaging the sheet material and clamping it to the mould, the clamping ring comprising a plurality of rollers rotatably mounted axially on a single annular support in close proximity to each other.

4,239,473

MANDREL WITH RETRACTABLE SEGMENTS

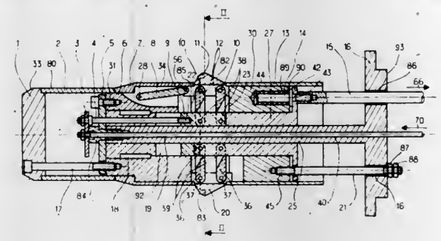
H. Lucien Fulhaber, Cernay, France, assignor to Papenmeier France Sarl, Dannemarie, France

Filed Jun. 27, 1979, Ser. No. 52,579

Claims priority, application France, Jun. 30, 1978, 78 19709

Int. Cl.² B29C *17/00*; B29D *23/00*

U.S. Cl. 425—392 **13 Claims**



1. A mandrel with at least two shaping cylindrical surfaces, successively arranged in axial extension of one another between the free mandrel end and a mounting flange, comprising a first and a second row of moveable segments which can assume a first extended position in which the radially outer surface of the segments associated alternately with the different rows in the peripheral direction form a continuous torus which separates the two cylindrical shaping surfaces from one another, and which can assume a second retracted position in which the distance from the radially outer surface thereof to the axis is smaller than the radius of the cylindrical shaping surfaces and the segments of one row can be axially displaced with respect to those of the other row, further comprising actuating means for bringing about the extension and retraction movements, wherein said actuating means comprises a first and a second bush which are arranged in axially moveable manner within the first and the second shaping surfaces respectively and on which the segments of the first and second rows of segments are pivotably mounted by means of two parallel, axially displaced joints, and wherein orthogonal support surfaces are provided for the axial retaining of the segments during their radial movement together with means for displacing the first and the second bush respectively.

4,239,474

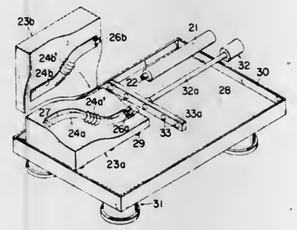
APPARATUS FOR MOLDING A PLASTIC PIPE

Tatsuya Nakagawa, Matsudo, Japan, assignor to Excell Corporation, Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,210

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—525 **9 Claims**



1. An apparatus for molding a plastic pipe comprising a lower mold half having a top surface provided with a first groove of a desired shape, an upper mold half having a bottom surface provided with a second groove of a shape corresponding to the shape of the first groove, said first and second grooves defining a mold cavity when said top and bottom surfaces are in contact, a parison extruder including a nozzle for discharging a parison into and along the first groove of said lower mold half, means for changing horizontally the relative position between said lower mold half and said parison extruder, means for changing vertically the relative position between said lower mold half and said parison extruder to maintain a predetermined distance therebetween, and means for injecting pressurized gas into the parison in the mold cavity for shaping as defined by the mold cavity, wherein the means for changing said relative horizontal and vertical positions are operable during discharging of the parison.

4,239,475

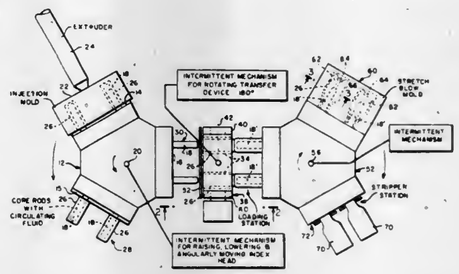
APPARATUS FOR MAKING ORIENTED CONTAINERS

Dewey Rainville, Westfield, N.J., assignor to Rainville Company, Inc., Middlesex, N.J.

Filed Dec. 18, 1978, Ser. No. 970,382

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—526 **14 Claims**



1. Blow molding apparatus for making plastic containers including in combination a first indexing head having an injection station, a treating station and a stripper station at angularly spaced locations around the perimeter of the first indexing head, a second indexing head having angularly related operational stations including a transfer station, a blow station and a stripper station around the perimeter of the second indexing head, core rods extending from the angularly related faces of both indexing heads, a transfer device located between the stripper station of the first indexing head and the transfer station of the second indexing head, and means to move the transfer device into a position to receive parisons stripped from core rods of the first indexing head, and into a position to supply parisons, that have been stripped from the first indexing head, to core rods of the second indexing head.

4,239,476

MOLD FOR PRODUCING MOLDINGS FROM A PLASTIC COMPOUND

Hans F. Somberg, S-123 57, Farsta, Sweden

Filed Oct. 2, 1979, Ser. No. 81,160

Claims priority, application Sweden, Oct. 3, 1978, 7810352

Int. Cl.² B29F *1/00*

U.S. Cl. 425—556 **6 Claims**

1. A mold for producing moldings from a plastic compound, comprising

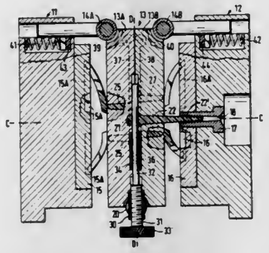
an intermediate mold part having two mold part members disposed side by side on a mold axis,

a pair of outer mold parts on opposite sides of the intermediate mold part, each outer mold part defining a mold cavity jointly with the adjacent face of the adjacent mold part member, one of the outer mold parts having a feed channel for the plastic compound,

means mounting the outer and intermediate mold parts for relative movement of the outer mold parts and the mold part members along the mold axis between a closed position in which confronting faces of the mold part members

engage one another and each outer mold part engages the adjacent one of the mold part members and an open position in which the mold part members are spread apart from one another and from the outer mold parts,

means on said confronting faces of the mold part members defining a feed cavity, which in the closed position of the mold communicates with the feed channel of said one outer mold part, and sections of runner channels extending from the feed cavity to the mold cavities,



an extractor positioned centrally of the mold part members, the extractor in the closed position of the mold extending into the feed cavity so as to become surrounded by the plastic compound introduced into the mold through the feed channel, and

means mounting the extractor for movement with respect to the mold part members in a direction parallel to the mold axis.

4,239,477

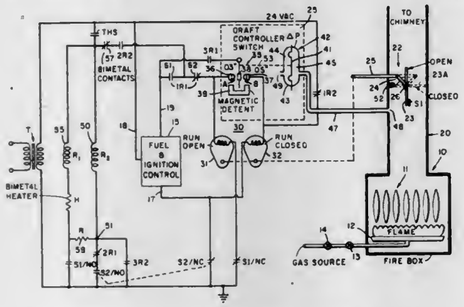
FURNACE IGNITION SYSTEM WITH DRAFT CONTROL AND LOSS-OF-DRAFT PROTECTION

Thomas E. Hayes, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Nov. 13, 1978, Ser. No. 959,765

Int. Cl.³ F23N *3/00*

U.S. Cl. 431—20 **8 Claims**



1. In combination with a furnace having a firebox and adapted to be connected to a source of fuel by means of fuel control means, a movable element movable between a closed and an open position for controlling the flow of air through a firebox of said furnace, and a thermostat for generating a call for heat signal from a space to be heated by said furnace, the improvement comprising: flue means for communicating combustion gases from said firebox to a chimney and substantially free of losses to the atmosphere between said firebox and chimney; motor means responsive to a run open signal for operating said movable element toward said open position and responsive to a run closed signal for operating said element toward said closed position; first limit switch means actuated when said movable element is in said open postion; second limit switch means actuated when said movable element is in said closed position; holding circuit means responsive to a call for heat signal only when said second limit switch means is actuated for generating an initial run open signal to said motor means; controller means including pressure sensing means responsive to the pressure in said flue means for generating a run open signal when the draft in said flue means is less than a first predetermined value, and for generating a run closed signal when the draft in said flue means is greater than a second predetermined value, said controller means generating neither of said signals when the draft is between said first and second predetermined values; enabling circuit means responsive to the actuation of said first limit switch means when said movable element is in said open position for interrupting said initial run open signal and for then enabling said controller means to couple said run open and run closed signals to said motor means, and for energizing said fuel control means; timing means for actuating timing switch means a predetermined time after said timing means is energized, said timing means being connected in circuit with said enabling circuit means to be energized when said enabling circuit means is energized, said timing switch means being connected in circuit with said thermostat contacts and said controller means to de-energize said controller means and said fuel control circuit said predetermined time after said timing means is energized if said timing means is not de-energized in said predetermined time; said first limit switch means deactuating said timing circuit means when said movable element is moved from said fully open position in response to the establishment of a normal draft.

4,239,478

CHECK CIRCUIT FOR COMBUSTION PROCESS CONTROL TIMER

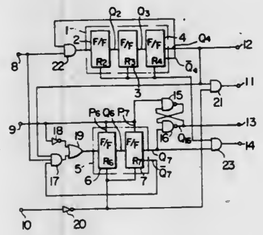
Toshio Tanaka, Toride, and Sumio Nakagawa, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 7, 1978, Ser. No. 940,369

Claims priority, application Japan, Sep. 16, 1977, 52/110587

Int. Cl.³ F23N *5/24*; F23Q *23/00, 9/08*; F23N *5/00*

U.S. Cl. 431—24 **13 Claims**



1. A check circuit for checking operation of a timer for producing various timing signals to control combustion processes by dividing frequency of a reference clock pulse signal comprising:

a first input terminal for receiving an external reference clock pulse signal;

a second input terminal for receiving an external command signal for commanding initiation of the combustion processes;

a first timer circuit constituted by a plurality of flip-flops arranged to produce a predetermined timing by dividing frequency of said reference clock signal, said first timer circuit including a clock input terminal and an output terminal, each of said flip-flops having a preset terminal connected to said second input terminal;

a first logic gate having inputs respectively connected to said first and second input terminals and an output connected to said clock input terminal of said first timer circuit for inverting the state of said first timer circuit in response to said combustion process initiation command signal;

a flip-flop circuit having input terminals respectively connected to the output terminal of said first timer circuit and said second input terminal; and

a first output terminal connected to the output terminal of said flip-flop circuit thereby to supply the output signal of said flip-flop circuit as a first driving signal to a first external control circuit to be connected to said first output terminal.

4,239,479

FLUIDIZED BED COMBUSTION

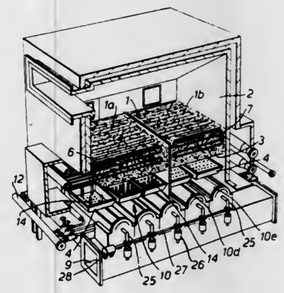
Alan F. Hodgkin, Hertfordshire, England, assignor to Babcock & Wilcox Limited, London, England

Filed Jul. 24, 1978, Ser. No. 927,035

Claims priority, application United Kingdom, Jul. 26, 1977, 31287/77

Int. Cl.³ F23D *19/00*

U.S. Cl. 431—170 **7 Claims**



1. A fluidised bed combustor having means for the supply of combustion air through the base of the bed, the means including two or more sources of air extending side-by-side and the combustor being such that the bed may tilt during operation about an axis extending longitudinally of the sources so that the depth of the bed above any source varies relatively to the depth of the bed above any other source with the angle of tilt, and means for controlling the supply of air from each source so that, throughout a range of tilting, as one source moves downwardly relative to another, the rate at which air is supplied from that source increases automatically relatively to the rate at which air is supplied from the other source.

4,239,480

FLUID BED FURNACE AND PILOT LIGHT ASSEMBLY

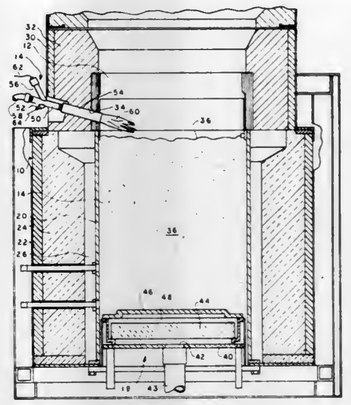
Charles E. Hyre, Chesterton, Ind., assignor to Fennell Corporation, Harvey, Ill.

Filed Nov. 6, 1978, Ser. No. 958,139

Int. Cl.³ F23Q *3/00*; F23D *19/02*

U.S. Cl. 431—264 **3 Claims**

1. A pilot light assembly for use in a fluid bed furnace of the type having a fluid bed comprising a material which fluidizes upon being subjected to a flow of a gas mixture therethrough and a burner for burning a fuel mixture for providing the fluidizing gas mixture at an elevated temperature, said pilot light assembly comprising: ignition means for providing a pilot flame; pilot flame confining means for directing said pilot flame into the furnace fluid bed above the fluidizable material for causing said pilot flame to ignite the burner fuel mixture; and pilot flame detecting means for sensing the presence of said pilot flame and enabling the supply of fuel mixture to the burner, said ignition means including a tubular housing and said pilot flame confining means comprising a tubular extension mounted to said ignition means tubular housing, said pilot flame detecting means including a rod member projecting into said tubular housing in the path of said pilot flame, said pilot light assembly further comprising a tubular member for supporting said rod member therein, said tubular housing and said tubular extension being axially aligned and said tubular member communicating with and extending from said tubular housing.



4,239,481

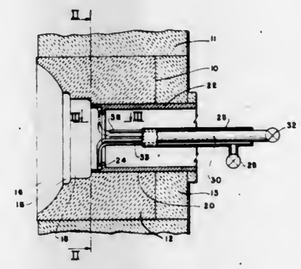
DOUBLE ORIFICE VORTEX BURNER FOR LOW OR HIGH WOBBE FUELS

Charles W. Morck, Jr., Philadelphia, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Jun. 19, 1978, Ser. No. 916,756

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—284 **22 Claims**



1. A vortex burner for burning either high or low Wobbe fueis comprising:

(a) a burner block having a cup-shaped recess at one surface of said block and an opening extending from the base of said cup-shaped recess and extending to the opposite surface of said block;

(b) a burner tube adjacent to and extending through said block opening, and terminating in the vicinity of the base of said cup-shaped recess, said burner tube having an annular shaped fence extending from its inner surface, said fence being disposed on the burner tube toward the base of said cup-shaped recess;

(c) a first feed pipe disposed within said burner tube;

(d) a second feed pipe disposed within said first feed pipe, said first feed pipe being capable of carrying a first fuel gas through its opening not occupied by the second feed pipe, said second feed pipe being capable of carrying a second fuel gas of either a higher or lower Wobbe index than that of said first fuel gas;

(e) a first set of gas distribution tubes extending from said first feed pipe, through the fence opening such that the terminal orifices of said tubes are at least in proximity to

the front surface of said fence, said first set of gas distribution tubes being capable of carrying the first fuel gas which flows through that portion of the first feed pipe not occupied by said second feed pipe; and

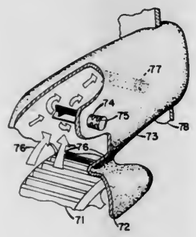
(f) a second set of gas distribution tubes extending from said second feed pipe, through the fence opening such that the terminal orifices of said tubes are at least in proximity to the front surface of said fence, said second set of gas distribution tubes being capable of carrying the second fuel gas which flows through the second feed pipe.

4,239,482

FUEL BURNER WITH AIR-DEFLECTING OBJECT AND METHOD THEREFOR

Edward P. Durfee, 12 Granite St., Milford, N.H. 03055

Filed Apr. 12, 1978, Ser. No. 895,702
Int. Cl.³ F23D *13/40*
U.S. Cl. 431—354 **16 Claims**



1. An improved fuel burner of the type having an air blower in a housing that is in communication with a blast tube (such housing and blast tube being collectively called the "air passageway"), such air blower giving rise to an air flow in the air passageway, wherein the improvement comprises:

an object, for deflecting a portion of the air flow, such object being sufficiently small so that it is capable of being mounted in the air passageway without causing an undesirable extent of interference with operation of the fuel burner, wherein such object as mounted includes a single protrusion from the inside surface of the air passageway, such protrusion having two prolongated spans lying in different planes and joined along a common edge so as to form a rod of generally V-shaped cross-section; and

means for mounting the object in the air passageway, such means including a gently tapered cylinder, having a larger end and a smaller end, the smaller end of which is rigidly attached to one end of the object (such object and tapered cylinder in combination being called the "device", having an "object end" at the non-attached end of the object and a "head" at the non-attached larger end of the tapered cylinder) so that the object can be mounted by insertion of the device, object end first, into a suitably formed hole in the air passageway and thereafter by engagement of the tapered cylinder, against the air passageway walls that form the hole, by tapping on the head of the device.

4,239,483

METHOD OF CONTROLLING STEEL STRIP TEMPERATURE IN CONTINUOUS HEATING EQUIPMENT

Hiroshi Iida; Ikuo Umehara, and Yasuo Takeda, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 950,521, Oct. 11, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 91,818
Claims priority, application Japan, Oct. 20, 1977, 52/125092
Int. Cl.³ F27B *9/28;* **C21D** *9/54*
U.S. Cl. 432—8 **9 Claims**

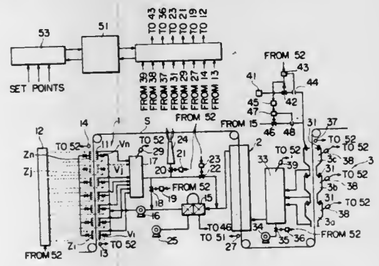
1. A method of controlling steel strip temperature in continuous heating equipment having a preheating zone and a subsequent rapid heating zone through which a strip having different thicknesses and prepared by welding together strips of different thickness is continuously transported at a fixed speed so that the strip temperature constantly reaches a given desired temperature at the exit end of the rapid heating zone irrespective of strip thickness, which method comprises:

arranging a number of individually controllable preheating units side-by-side in the preheating zone in the direction of strip travel for directing heating gas against the strip;

prefixing the in-operation length of the preheating zone irrespective of strip thickness for operation of the equipment for heating uniform thickness strip;

presetting the temperature of the rapid-heating zone according to the thickness of uniform thickness strip which is to be heated in said equipment so that the strip constantly acquires the desired temperature at the exit end thereof;

preheating uniform thickness strip during transport of the



strip in the preheating zone of the prefixed in-operation length and then rapidly heating the strip in the rapid heating zone which is at the preset temperature to attain the desired strip temperature at the exit end of said equipment; and

when transporting strip having a preceding portion having one thickness for which the operating conditions of the equipment have been set and a following portion having a different thickness from that of the preceding portion and which is connected to said preceding portion, changing the preset temperature of the rapid heating zone from that for the preceding portion to a temperature optimum for the following portion and adjusting the in-operation length of the preheating zone, during the transitional period in which the actual temperature of the rapid heating zone changes to the second preset level, to attain the desired strip temperature at the exit end of said equipment.

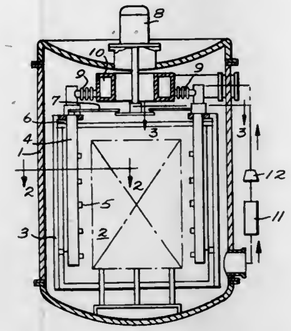
4,239,484

VACUUM OVEN WITH GAS COOLING DEVICE

Rolf Schuster, Hanau, Fed. Rep. of Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,779
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839807
Int. Cl.³ F27D *15/02*
U.S. Cl. 432—77 **1 Claim**

1. A vacuum oven having a heating chamber and gas cooling means adapted to blow on a charge in the heating chamber of the oven with a cooling medium from nozzles arranged around the oven, said nozzles being arranged parallel to the axis of said oven and being positioned on gas inlet tubes rotatable around the axis of the oven; and drive means for reciprocating motion wherein the heating chamber is provided with heat insulation and the gas inlet tubes project one-sidely out of the heat insulation chamber and are connected on these outer ends via flexi-



ble tube means with a fixed gas supply system and connected to said drive means for reciprocating movement.

4,239,485

TAPED PRODUCTS PROCESSOR

Larry J. Marshall, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 931,545, Aug. 7, 1978, which is a division of Ser. No. 721,700, Sep. 9, 1976, abandoned. This application Feb. 16, 1979, Ser. No. 12,954
Int. Cl.³ F27B *9/00;* **F27D** *3/00;* **F26B** *13/30*
U.S. Cl. 432—121 **6 Claims**

1. A conditioned atmosphere process apparatus comprising a product path;

a manifold having a first inlet, a first passageway extending to said first inlet, a first outlet, and a second passageway extending from said first outlet, said first inlet including an elongate inlet nozzle, said first outlet including an elongate outlet nozzle, said inlet nozzle and said outlet nozzle opening toward said product path with said elongate dimensions along said product path, said inlet nozzle being positioned centrally within said outlet nozzle and spaced inwardly from the periphery of said outlet nozzle;

an elongate baffle positioned across said product path from said inlet nozzle and said outlet nozzle and being concaved toward said nozzles, said first inlet exhausting outwardly from said inlet nozzle toward said baffle across said product path;

a conditioned atmosphere source extending to said first passageway;

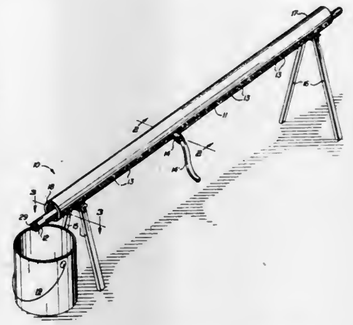
a vacuum means associated with said second passageway having a flow rate capacity greater than that of said conditioned atmosphere source.

4,239,486

THAWING ASSEMBLY FOR CLOGGED ASPHALT PIPES

Manuel D. Gomez, 935 E. Morning Star, Tempe, Ariz. 85283

Filed Apr. 27, 1979, Ser. No. 33,970
Int. Cl.³ F24J *3/00*
U.S. Cl. 432—225 **5 Claims**



1. A pipe section heating assembly comprising:

an elongated hollow metallic casing having a plurality of apertures arranged along at least a part of its length for extending thereinto,

a fuel consuming heating torch arranged to extend through at least one of said apertures for burning within said casing,

a support assembly for holding said casing in an angular position with a supporting surface for said heating assembly so that one end of said casing is at an elevated position with respect to its other end,

said casing being capable of supporting a pipe section therein along its length,

whereby when said torch is ignited, the heat from the burning gases will heat the pipe section sufficiently to thaw matterial clogging its interior, and

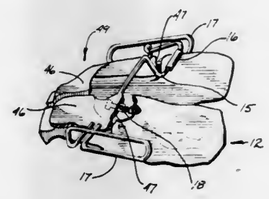
a clamp fastened to said other end of said casing longitudinally thereof and extending beyond its free end for grasping and holding the pipe section therein.

4,239,487

REMOVABLE ORTHODONTIC APPLIANCE

Dwight Murdock, Minneapolis, Minn., assignor to Universal Dynamics, Inc., Minneapolis, Minn.

Filed Jul. 20, 1979, Ser. No. 59,267
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—7 **12 Claims**



1. An orthodontic appliance comprising

(a) a U-shaped plastic body adapted to fit within the mouth adjacent the inner sides of the upper and lower teeth, the closed end being adjacent the front teeth and being separated at the approximate midpoint to divide the plastic body into slightly spaced apart matching halves;

(b) means disposed across the separation of the closed end of

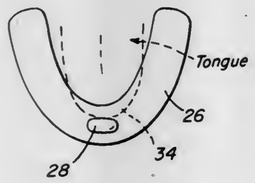
the plastic body for connecting the two halves and allowing each half to be moved apart laterally;
(c) a palatal wire connected across the sides of the plastic body and adapted to extend into the palatal area and towards the rear of the mouth, the wire being separated at its approximate midpoint;
(d) means for slideably connecting the free ends of the palatal wire for allowing lateral movement thereof; and
(e) a pair of buccal wires, each attached to an outer side of the plastic body, the wires adapted to abut the teeth on the outer sides thereof.

4,239,488

ENCAPSULATED DENTURE ADHESIVE AND METHOD OF USE

Vance A. Sempler, R.D. #1, Box 101, Millport, N.Y. 14864

Filed Jun. 15, 1979, Ser. No. 48,998
Int. Cl.³ A61C *13/22*
U.S. Cl. 433—180 **8 Claims**



1. A denture adhesive capsule for bonding a denture plate in the oral cavity of a wearer comprising a capsule shell and a denture adhesive contained hermetically within the shell, the adhesive being releasable from the capsule when the capsule is inserted in the oral cavity of the wearer and compressed thereon by the denture plate, the capsule shell being a composition which undergoes liquefaction at a temperature at or slightly below normal human body temperature, whereby said compression causes the adhesive to form a bonding layer between the denture plate and the oral cavity.

4,239,489

DENTAL THREADED TAPERED POST WITH VENT

Alan G. Ellman, 1 Auerbach La., Lawrence, N.Y. 11516, and Jon C. Garito, 22 Deering La., East Rockaway, N.Y. 11558

Filed Feb. 5, 1979, Ser. No. 9,514
Int. Cl.³ A61C *13/08*
U.S. Cl. 433—220 **10 Claims**



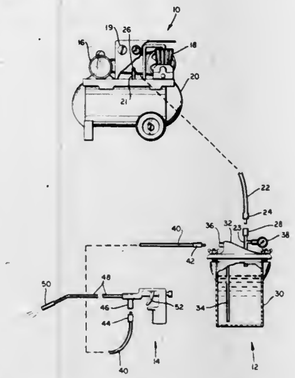
1. A dental post for mounting in a tooth root canal, comprising an elongated metal member having on its exterior along substantially its entire length a fine helical thread, said metal member being constituted of a tapered lower part extending along substantially one-half to three-quarters of its full length and coaxial therewith a cylindrical upper part, said metal member having a vent extending along its full length, a head element having an internal threaded hole in threaded engagement with the upper part of said metal member, and means on the head element for receiving screw driving means for screwing the post into the root canal.

4,239,490

CARPET DYEING SYSTEM

David Kelly, Dalton, Ga.; Michael Vidal, Lakeworth, Fla., and Saul Rosenthal, Dalton, Ga., assignors to Professional Chemical & Color, Inc., Dalton, Ga.

Filed Mar. 16, 1979, Ser. No. 21,223
Int. Cl.³ D06P *00/00, 1/38*
U.S. Cl. 8—499 **3 Claims**



1. A method of dyeing a tufted nylon pile carpet on location comprising the sequential steps of:
spraying an aqueous solution of a dye liquor downwardly into upwardly extending nylon pile of the carpet, said dye liquor being at a temperature between approximately 60° F. and 212° F., said dye liquor being sprayed from an airless sprayer having a nozzle, said dye liquor being sprayed from said nozzle at a pressure of between approximately 40 and 45 pounds per square inch and said nozzle being approximately eight inches from said pile to provide uniform penetration of said dye liquor into said pile and to avoid overwetting of said carpet;
said dye liquor being selected from the group consisting of:
an aqueous solution of an acid dye having one or more sulphonic acid reactive groups;
an aqueous solution of an acid premetallized dye having one or more sulphonic acid reactive groups; and
an aqueous solution of a direct dye having one or more sulphonic acid reactive groups; and
brushing the pile of the carpet to assure sufficient penetration and uniform application of said dye liquor into said nylon pile.

4,239,491

DYEING AND PRINTING OF TEXTILES WITH DISPERSE DYES

Ulrich Baumgarte, Limburgerhof; Knut Oppenlaender, Ludwigshafen; Harald Schlueter, Weisenheim; Harro Petersen, Frankenthal; Norbert Greif, Bobenheim, and Rainer Strickler, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 103,074
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855188
Int. Cl.³ D06P *3/82;* **C09B** *67/00*
U.S. Cl. 8—532 **4 Claims**

1. An improved process for dyeing or printing water-swellable cellulosic fibers and mixtures of said cellulosic fibers with synthetic fibers by contacting the fibers throughout with a dye liquor or print paste which contains, as essential ingredients, water in an amount sufficient to swell the cellulosic fibers, a water-insoluble disperse dye and a water-soluble solvent which maintains swelling of the cellulose if water is removed and which is a solvent for the disperse dye, and heating the contacted fibers to effect fixation of the dye, the improvement comprising using as water-soluble solvent a mixture of
(a) 99 to 1% by weight of a compound selected from the group consisting of polyethylene glycol having a molecular weight of from 300 to 5,000, block copolymers of ethylene oxide and propylene oxide containing from 10 to 100 propylene oxide units and 8 to 300 ethylene oxide units, monoethers, diethers or esters of carboxylic acids of 2 to 20 carbon atoms, and mono- and biscarbamates of the said polyethylene glycol and the said block copolymers, and
(b) from 1 to 99% by weight of a polyoxyalkylated amine containing at least 3 ethylene oxide units.

4,239,492

METHOD OF PREPARING VASCULAR GRAFTS OF HUMAN AND OTHER UMBILICAL CORD ORIGINS FOR TISSUE INGROWTH

Daniel G. Holman, 12743 Radisson Rd. NE., Blaine, Minn. 55434; Robert A. Ersek, 5416 Diamondhead Dr. East, Bay St. Louis, Miss. 39520, and Arthur A. Beisang, 2263 Dellwood, Roseville, Minn. 55113

Continuation of Ser. No. 872,606, Jan. 26, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,381
Int. Cl.³ C14C *1/00*
U.S. Cl. 8—94.11 **3 Claims**

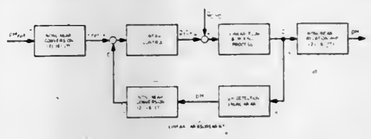
1. The method of preparing an umbilical cord for implantation in a human body which method comprises the steps of:
(a) roughening the outer surface of the cord prior to implantation, with the individual abrasions of the cord extending through the outer membrane of said cord, thus having a rough and textured surface area containing small hair-like projections;
(b) flushing the cord and thereafter mounting the cord upon a mandrel of the desired configuration;
(c) immersing the mounted cord and mandrel into an aqueous solution of ethyl alcohol containing more than about 70% of ethyl alcohol; and
(d) thereafter immersing the mounted cord in an aqueous solution of aldehyde selected from the group consisting of dialdehyde starch and/or gluteraldehyde containing more than about 1% of said aldehyde in water for a period sufficiently long to permit the configuration to become fixed.

4,239,493

METHOD AND APPARATUS FOR CONTROLLING THE PH

Antti J. Nieml, Kauniainen, and Pentti K. Jutila, Helsinki, both of Finland, assignors to Pentti Jutila, Helsinki, Finland, a part interest

Filed Jun. 7, 1978, Ser. No. 913,471
Claims priority, application Finland, Jun. 7, 1977, 771810
Int. Cl.³ G05B *13/02;* **G05D** *21/02*
U.S. Cl. 23—230 A **5 Claims**



1. In a method for controlling pH in a continuous flow vessel which is entered by a process material through a feed channel and by controlling chemical solution through a control channel and in which the pH is measured at the output part of the vessel in order to effect the control by controlling the feed of the control chemical by the feedback method, the value of a reference variable being given and expressed by a pH number, a combination of steps which comprises:

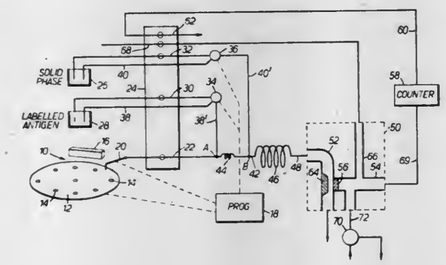
(a) transforming the result of the pH measurement to the hydrogen ion concentration,
(b) transforming likewise the reference value given as a pH number to the corresponding hydrogen ion concentration,
(c) determining, by means of an equation describing dissociation equilibria in the solution, a final feedback quantity which is a function of the concentration quantity in step (a),
(d) determining, by means of said equation, a final reference value which is a function of the concentration quantity in step (b),
(e) forming a control deviation as the difference of the final reference value in step (d) and of the final feedback quantity in step (c), and
(f) controlling the feed of the controlling chemical on the basis of said control deviation, typically using a linear controller and an actuator controlled thereby.

4,239,494

PHASE SEPARATOR FOR CONTINUOUS-FLOW ANALYTICAL SYSTEMS

John A. Clements, Wallington, England, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 23, 1978, Ser. No. 954,000
Claims priority, application United Kingdom, Oct. 25, 1977, 44420/77
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 R **12 Claims**



1. A continuous-flow analytical system, comprising:
a first conduit for passing successive liquid samples each containing, at least, a solid phase and liquid phase, said liquid samples being separated, at least, by an occluding air segment,
a second conduit communicating with said first conduit across a filter element;
means for positively pumping at least a portion of said liquid phase through said filter element in a first direction and along said second conduit, said solid phase being substantially precluded from passing through said filter element,
means for flowing a wash liquid along said second conduit and through said filter element in a second direction during passage of said air segment over said filter element to ensure non-clogging of said filter element by said solid phase, and means for analyzing said liquid phase.

10. In a method of continuous-flow analysis of successive liquid samples, each separated by, at least, an occluding air segment, which comprises forming a reaction mixture of each sample with, at least a solid phase particulate reactant, and pumping said reaction mixture along a first conduit, the improvement which comprises providing a second conduit communicating with said first conduit across a filter element, periodically positively pumping at least a portion of the liquid from the first conduit through said filter element into said second conduit, the solid phase being prevented from entering the second conduit by said filter element; subjecting said liquid portion to analysis, and periodically flowing a wash liquid from said second conduit through said filter element into said first conduit, said flow of wash liquid being controlled to occur when an air segment is in contact with said filter element to prevent clogging of the filter element by the solid phase.

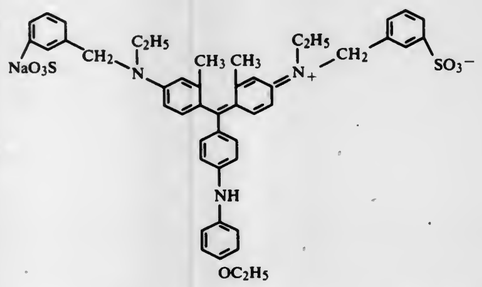
4,239,495

DETERMINATION OF PROTEIN

E. Melvin Gindler, and Nadine Miller, both of Rockford, Ill., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Feb. 12, 1979, Ser. No. 11,226
Int. Cl.[3] G01N *33/16*; C09K *3/00*
U.S. Cl. 23—230 B **14 Claims**

1. An aqueous reagent system for the quantitative determination of protein, said reagent system having a pH of between about 0 and 1 and comprising a dye structurally represented as:



a monobasic strong acid having a pK_a of less than 3, a polybasic phosphonic acid, and a water soluble, nonionic surfactant characterized as being a block copolymer containing terminal polyethylene oxide segments separated by a polypropylene oxide segment, said ingredients being present in an amount such that said system exhibits substantially the same reactivity to different proteins and, when mixed with a protein containing sample, forms a stable colored protein dye complex which follows Beer's law.

4,239,496

GAS CYCLE FLUID ENERGY PROCESS FOR FORMING COAL-IN-OIL MIXTURES

Joseph W. Cochran, Clearwater, Fla., assignor to ComCo, Pittsburgh, Pa.

Filed Dec. 6, 1978, Ser. No. 966,780
Int. Cl.[3] C10L *1/32*
U.S. Cl. 44—51 **6 Claims**

1. In a process for forming coal-oil mixtures for combustion comprising the steps of:
(a) pulverizing moisture-containing coal in a fluid energy pulverizer by use at a substantially dry noncombustible gas stream, introduced thereto at an elevated temperature and pressure;
(b) evacuating the pulverized coal from said pulverizer in the noncombustible gas stream,
(c) then separating the pulverized coal from the noncombustible gas stream; and
(d) then mixing the pulverized coal with oil, wherein the improvement comprises the additional steps of:
(e) heating a stream of air by bringing said stream into heat exchange relation with the noncombustible gas stream after the pulverized coal has been removed from said gas stream; and then
(f) drying the moisture containing coal with said heated stream of air before said coal is pulverized.

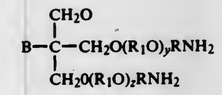
4,239,497

ADDITIVES FOR HYDROCARBON OILS

Gary W. Y. Kwong, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 8, 1979, Ser. No. 92,385
Int. Cl.[3] C10L *1/18, 1/22*
U.S. Cl. 44—72 **13 Claims**

1. A composition comprising a major amount of a hydrocarbon oil containing from about 0.0001% to about 1% of the reaction product of 1 molar proportion of a poly(oxyalkylene)amine, $A—(R_1O)_n—RNH_2$, wherein
a. R is an alkylene moiety containing from 2 to about 10 carbon atoms;
b. R_1 is independently selected from the group consisting of alkylene moieties containing from 2 to about 10 carbon atoms;
c. n is an integer from about 2 to about 50;
d. A is selected from the group consisting of H_2N, alkoxy, where the carbonaceous portion contains from 1 to about 40 carbon atoms, and



wherein B is selected from the group consisting of hydrogen and alkyl containing from about 1 to about 10 carbon atoms, and y, z, are integers from 1 to about 10;
with about 0.5 to about 2.0 molar proportion of an epihalohydrin selected from the group consisting of epihalohydrin, 1-halo-3,4-epoxybutane, 1-halo-2,3-epoxybutane, 1-halo-4,5-epoxypentane and 1-halo-3,4-epoxypentane, at a temperature from about 40° C. to about 150° C. in the presence of an inorganic base.

4,239,498

METHOD OF PREPARING THYMIC FACTORS AND COMPOSITION

Allyn H. Rule, 43 Grove Hill Ave., Newtonville, Mass. 02160

Filed Nov. 27, 1978, Ser. No. 963,676
Int. Cl.[3] A61K *39/00, 35/12, 37/00*; C07G *7/00*
U.S. Cl. 424—88 **24 Claims**

1. A process for recovering fractions having immunological properties, the steps which comprise:
collecting thymus glands of neo-natal vertebrates aseptically upon slaughter and removing fat and connective tissue;
comminuting said glands in a cold aqueous solution;
removing fat and cellular debris produced during the comminution and recovering a solution;
heating said solution to between 60° and 85° C. whereby the solution is sterilized and proteins are precipitated;
rapidly chilling the solution to less than about 4° C., removing the precipitate and recovering the solution;
precipitating sub-cellular material and recovering the solution;
admixing the solution with a water miscible organic nonpolar solvent to form a mixture with between about 10 and 50% by volume solvent and the balance solution, whereby a precipitate will form, and recovering the precipitate which contains an immunological suppressor factor.

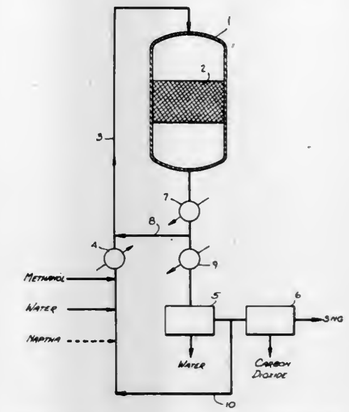
4,239,499

PRODUCTION OF A FUEL GAS AND SYNTHETIC NATURAL GAS FROM METHANOL

William C. Pfefferle, Middletown, N.J., assignor to Engelhard Minerals and Chemicals Corporation, Iselin, N.J.

Continuation of Ser. No. 599,863, Jul. 28, 1975, abandoned. This application Nov. 15, 1977, Ser. No. 851,661
Int. Cl.[3] C01B *2/14*
U.S. Cl. 48—197 R **10 Claims**

1. A single-stage catalytic process for making a fuel gas, said process comprising passing a gaseous feed comprised of methanol and steam, in a reactor, over a catalyst comprised of Group VIII metal on a support at a pressure in the range of from about 800 psig to about 2500 psig and a temperature in the range of from about 350° C. to about 500° C., maintaining said gaseous feed in a completely vaporized state while passing said gaseous feed through said reactor whereby said gaseous feed is reformed entirely in the vapor phase to a gaseous product mixture containing at least about 90% methane by volume on a dry carbon dioxide-free basis.

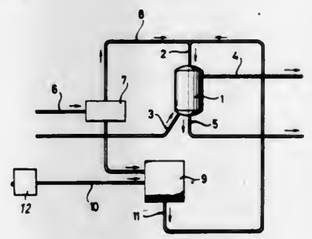


4,239,500

PROCESS FOR THE UTILIZATION OF WASTE PRODUCT TAR-DUST IN GASIFICATION OF GRANULAR FUEL UNDER PRESSURE, ESPECIALLY OF BITUMINOUS COAL

Wolfgang Ratzeburg, Essen, Fed. Rep. of Germany, assignor to Steag A.G., Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 852,146, Nov. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 720,254, Sep. 3, 1976, abandoned. This application Mar. 14, 1979, Ser. No. 20,335
Int. Cl.[3] C10J *3/16*
U.S. Cl. 48—202 **3 Claims**



1. In the process of gasifying coal be feeding particulate coal and steam into a pressure generator for interreaction therein to produce a gas effluent containing tar-dust, and recycling the tar-dust produced thereby, the improvement comprising:
(a) feeding said coal into a separator, thereby producing a first portion of relatively large particle size and at least a second portion of relatively small particle size,
(b) feeding steam and said first portion of relatively larger particle size into said generator to crack the coal particles and produce effluent gas from the generator containing tar-dust as a waste product,
(c) recovering said tar-dust from said effluent gas and admixing said tar-dust with said second portion of particulate

coal feed of relatively smaller particle size to bind the latter into pellets of sufficient weight whereby they are capable of being conveyed to a lower zone of said pressure generator, and

(d) feeding said pelletized second portion of relatively smaller particle size and tar-dust to the upper portion said pressure generator concurrently with said first portion of particulate coal of relatively larger particle size, causing said pelletized second portion to pass downwardly in said pressure generator to a lower zone thereof, whereby the tar, dispersed in the pellets, undergoes cracking at high temperatures upon reaching the lower zone of said pressure generator.

4,239,501

METHOD FOR PRESERVING THE GRINDING CHARACTERISTICS OF A GRINDING TOOL

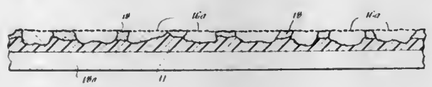
John C. J. Wirth, 98 Ponus Ave., Norwalk, Conn. 06850

Continuation of Ser. No. 739,355, Nov. 5, 1976, Pat. No. 4,095,961, which is a continuation of Ser. No. 548,107, Feb. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 191,844, Oct. 26, 1971, abandoned, and Ser. No. 501,093, Aug. 27, 1974, abandoned, said Ser. No. 191,844, and Ser. No. 501,093, each is a continuation-in-part of Ser. No. 166,093, Jul. 26, 1971, Pat. No. 3,833,346. This application Mar. 7, 1978, Ser. No. 884,267

The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.

Int. Cl.³ B24B *17/00*; C08G *51/12*

U.S. Cl. 51—281 R **8 Claims**



1. Method for preserving the cutting or grinding characteristics of a cutting or grinding tool while maintaining the surface integrity of a metal workpiece at an accelerated rate of cutting or grinding comprising;

effecting contact and relative motion between said workpiece and a cutting or grinding edge of a cutting or grinding tool;

applying to the interface between the edge of said cutting or grinding tool and said workpiece, an effective amount of at least one inorganic compound which will undergo melting without decomposition and which is neither explosive nor flammable upon exposure to the frictional heat generated at said interface during periods of such contact and relative motion, said compound being free of sulfur and/or halogen, stable under conditions of use, and having a reversible solid—liquid phase transition in the range of 70° F. to 1000° F., a decomposition temperature of at least 100° F. above the melting temperature and a latent heat of melting greater than 10 cal/gm.;

whereby, said compound, upon exposure to said frictional heat, undergoes melting and reduces the surface temperature generated at said interface by the heat absorption due to heating said compound to the melting point, the latent heat of melting of said compound and the additional heat absorption of the molten compound, while simultaneously forming a lubricating liquid film at said interface.

4,239,502

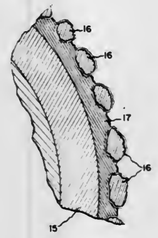
DIAMOND AND CUBIC BORON NITRIDE GRINDING WHEELS WITH IMPROVED SILVER ALLOY BONDS

Glen A. Slack, Scotia, and Warren S. Knapp, Amersterdam, both of N.Y., assignors to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 773,095, Feb. 28, 1977, abandoned, and a continuation-in-part of Ser. No. 645,786, Dec. 31, 1975, abandoned. This application Nov. 17, 1978, Ser. No. 961,722

Int. Cl.³ E21B *9/36*; B23K *1/20*

U.S. Cl. 51—295 **2 Claims**



1. A grinding wheel comprising a plurality of particles selected from the group consisting of diamond and CBN, a rim portion having coefficient of thermal expansion substantially matching the coefficient of thermal expansion of said body and being made of a metal selected from the group consisting of molybdenum and tungsten, said particles being distributed over the surface of said rim portion and bonded thereto with a silver-base alloy bonding layer consisting essentially in atom percent of 0.1 to 15 percent manganese, 0.1 to 5 percent zirconium, and the balance silver, said alloy bonded chemically to said body.

4,239,503

SOFT ACTING PHENOL-FORMALDEHYDE RESIN BONDED GRINDING WHEEL

Denis I. Harris, Upper Nazeing, and Luke Staples, St. Albans, both of England, assignors to Norton Company, Worcester, Mass.

Filed May 21, 1976, Ser. No. 688,532

Claims priority, application United Kingdom, Aug. 4, 1975, 32479/75

Int. Cl.³ C08J *5/14*

U.S. Cl. 51—298 **8 Claims**

1. A bonded abrasive product comprising abrasive grain and a thermoset polymeric bond, wherein the improvement comprises:

A thermoset polymeric bond based on the reaction product of a phenol and an aldehyde in a molar ratio of said phenol to said aldehyde of greater than 1, and wherein said reaction product is cured by a methylene group donor, said donor being present in sufficient quantity so as to provide from 0.3 to less than 1.2% by weight of methylene groups, based on the weight of said methylene group donor and said reaction product of said phenol and said aldehyde.

4,239,504

FREE BASE AMINO ALCOHOLS AS ELECTROSTATIC PRECIPITATOR EFFICIENCY ENHANCERS

David M. Polizzotti, Yardley, and Joe C. Steelhammer, Lansdale, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 29,414, Apr. 12, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 140,287

Int. Cl.³ B03C *1/00*

U.S. Cl. 55—5 **20 Claims**

1. In an electrostatic precipitator, a method for removing particles from a particle-laden gas stream which method comprises electrically charging the particles by passing the gas stream through an ionization field and attracting the thus-charged particles to a grounded collecting electrode for collection, the improvement comprising: prior to collection of the particles distributing across the gas stream within the ionization field from about 1 to 200 parts of effective free base amino alcohol additive per million parts of gas to enhance the efficiency of particle removal.

4,239,505

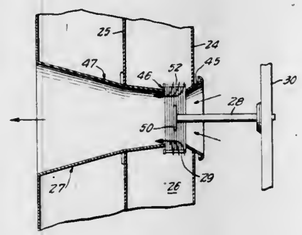
PURGE GAS CONDITIONING OF HIGH INTENSITY IONIZATION SYSTEM FOR PARTICLE REMOVAL

Raymond F. Drnevich, Clarence Center, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,297

Int. Cl.³ B03C *3/80*

U.S. Cl. 55—12 **6 Claims**



1. In a method for removing high resistivity particles from a feed gas stream in which the particles entrained in said feed gas streams are electrostatically charged by passage through a flow-restricted high intensity corona discharge throat-shaped region between an annular outer wall as a corona collecting anode and a discharge cathode closely spaced from and surrounded by said outer wall, purge gas is introduced through a multiplicity of conical shaped vanes contiguous to each other and axially spaced in the longitudinal direction of feed gas flow to form restricted openings therebetween in said outer wall and into said throat-spaced region to form a thin film of purge gas flow along said outer wall in substantially the same direction as said feed gas flow and reduce back corona, and the electrostatically charged particles are thereafter separated from the gas stream, the improvement comprising controlling the flow rate of the purge gas to be at least equal to the purge gas flow rate defined by Equation (1) but less than the purge gas flow rate defined by Equation (2) as follows:

$$Q_p \text{ is equal to or greater than } 6VmWs \quad (1)$$

$$Q_p \text{ is equal to or less than } 4CFM/\text{ft} \quad (2)$$

wherein

$$Q_p = Q/C, \text{ and} \quad (3)$$

$$C = N\pi D, \text{ with} \quad (4)$$

Q_p=purge gas flow rate per total restricted openings circumferential length (CFM/ft),

V_m=feed gas flow rate past said discharge cathode (fps),

W_s=average width of restricted openings as measured normal to the direction of feed gas flow (ft),

Q=actual purge flow rate (CFM),

N=the total number of restricted openings in said outer wall, and

D=effective inner diameter of said outer wall (ft);

and controlling the relative moisture saturation of the purge gas such that the minimum level RS_p is in accordance with Equation (5) and the maximum level is below that resulting in condensation on said outer wall as follows:

$$RS_p \text{ is equal to or greater than } 0.00073 \log_{10} \rho_{300°F.}/(1.82-0.122 \log_{lp} \rho_{300°\ F.}+0.052 \log_{10} RSS_m) \quad (5)$$

where

ρ=the average particle resistivity measured at 300° F. and

RS_m=the relative moisture saturation level of the feed gas stream.

4,239,506

USE OF AQUEOUS, NON-SWEEP LIQUID DURING MEMBRANE SEPARATION

Edward F. Steigelmann, and Robert D. Hughes, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 498,112, Aug. 16, 1974, abandoned. This application Jul. 9, 1976, Ser. No. 703,942

Int. Cl.³ B01D *59/10*

U.S. Cl. 55—16 **19 Claims**

1. In a process for separating an aliphatically-unsaturated hydrocarbon from a fluid mixture comprising

contacting said mixture containing said aliphatically-unsaturated hydrocabon with a first side of an essentially solid, water-insoluble, hydrophilic semi-permeable membrane having therein an aqueous liquid barrier having metal-containing ions which combine with said aliphatically-unsaturated hydrocarbon to form a water-soluble complex,

the partial pressure of said aliphatically-unsaturated hydrocarbon on a second side of the semi-permeable membrane being sufficiently less than the partial pressure of said aliphatically-unsaturated hydrocarbon in said mixture to provide the separated aliphatically-unsaturated hydrocarbon on the second side of the semi-permeable membrane,

removing said separated aliphatically-unsaturated hydrocarbon from the vicinity of the second side of the semi-permeable membrane, the improvement comprising contacting the second side of the semi-permeable membrane with an aqueous, non-sweep liquid medium during said aliphatically-unsaturated hydrocarbon separation in an amount sufficient to reduce the loss of water from said aqueous liquid barrier during said separation.

2. The process of claim 1 wherein said fluid mixture is gaseous.

4,239,507

METHOD OF SEPARATION OF A GAS FROM A GAS MIXTURE

Robert Benoit, 3 rue de Moscou, 91300 Massy; Jacques Machefer, 46 rue Vital, 75016 Paris; Jacques Mauvisseau, 45 rue Ribéra, 75016 Paris, and Pierre Plurien, 37 Parc d'Ardenay, 91120 Palaiseau, all of France

Filed Sep. 27, 1978, Ser. No. 946,357

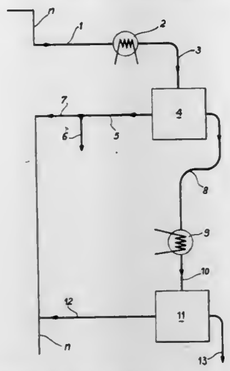
Claims priority, application France, Oct. 6, 1977, 77 30069

Int. Cl.² B01D *59/12*

U.S. Cl. 55—16 **5 Claims**

1. A method of separation of a gas from a gas mixture in which said gas is the most readily condensable of the gases of said mixture, wherein said gas mixture is passed in contact with at least one microporous barrier having a permeability of 100×10^{-7} to 1000×10^{-7} moles of air/cm²/min./cmHg, a pore radii of between 10 to 100 Å, the partial pressure of said most readily condensable gas and/or the temperature of said gas mixture is adjusted as a function of the mean pore radius of

said barrier so as to ensure capillary condensation of said condensable gas at the pore inlets of said barrier and to induce a



flow of said condensed gas along to pores and across said barrier, and the gas which has thus condensed is then collected.

4,239,508

CUMENE RECOVERY

Steven L. Rock, Doylestown, Pa., and James S. Clovis, Mougins, France, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 5, 1979, Ser. No. 45,714
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—59 **10 Claims**

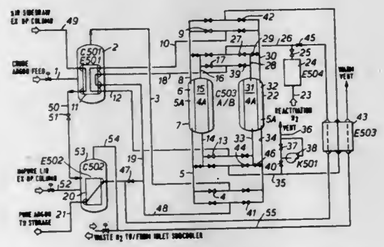
1. A process for removing cumene vapors from a cumene containing vapor stream comprising the steps of passing said vapor stream through a mass or bed of a substantially dry, hydrophobic, macroreticular, water insoluble, cross-linked polymer consisting essentially of from about 20% to 100% by weight of divinylbenzene, the balance being ethylvinylbenzene or styrene or mixtures thereof but not more than 50% of either ethylvinylbenzene or styrene, until the capacity of the polymer to remove cumene is substantially exhausted, desorbing said cumene from said mass or bed of said polymer by passing steam through said mass or bed and again passing a cumene containing vapor stream through the wet mass or bed of polymer.

4,239,509

METHOD OF PURIFYING CRUDE ARGON

Bernard R. Bligh, Hampton Hill, and Stephen J. Godber, Woking, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 30, 1979, Ser. No. 43,946
Claims priority, application United Kingdom, May 31, 1978, 25890/78
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—66 **6 Claims**



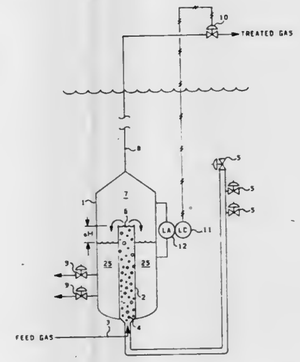
1. A method for purifying crude argon containing argon, oxygen and nitrogen which method comprises the steps of reducing the amount of nitrogen in the crude argon to between a trace and 0.15% (by volume) by passing the crude argon through a first bed of 5 A and/or 13X molecular sieves surrounding and in thermal contact with a second bed of 4 A molecular sieve with a wall separating said 5 A and or 13 X molecular sieve from said 4 A molecular sieve and passing the remaining oxygen and argon, together with residual nitrogen, through said second bed to separate the oxygen and argon, the temperature of the 5 A and or 13 X molecular sieve, crude argon and the remaining oxygen and argon being such that the remaining oxygen and argon passes through a volume of 4A molecular sieve which is wholly maintained at or colder than −250° F.

4,239,510

NATURAL GAS PURIFICATION

George E. Hays, and Charles F. Cook, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 19, 1979, Ser. No. 4,789
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—68 **9 Claims**



1. A method for removing CO_2 from a gas comprising natural gas and CO_2, said method comprising:
introducing sea water as an absorbent into the lower portion of a contacting zone of an absorber which absorber is submerged in sea water, which sea water is the source of said absorbent,
introducing said gas into said contacting zone and into contact with said absorbent,
having the gas and the absorbent flow cocurrently upward through said contacting zone producing CO_2-rich sea water and unabsorbed gas,
accumulating said unabsorbed gas near the top of the absorber,
recovering said unabsorbed gas therefrom, and
discharging said CO_2-rich sea water from the absorber and into the surrounding sea water via discharge means.

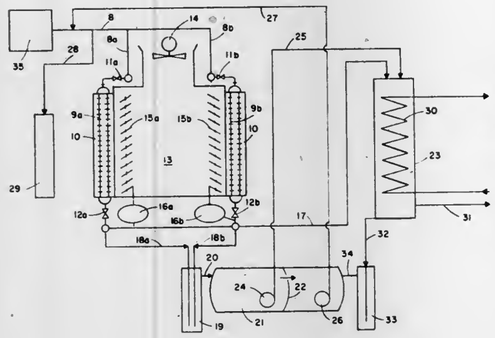
4,239,511

PROCESS AND APPARATUS FOR COOLING COKE OVEN GAS

Friedrich-Paul Austermühle, Kaarst, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 14, 1978, Ser. No. 969,338
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—84 **18 Claims**

1. A process for cooling process gas containing naphthalene, comprising:
(a) cooling said process gas to a temperature above the dew point of naphthalene by conducting said process gas through a first heat exchange means wherein air is used as the cooling medium;
(b) conducting said process gas from said first heat exchange means, at said temperature above the dew point of said naphthalene, to a second heat exchange means wherein liquid is used as the cooling medium;
(c) cooling said process gas to a temperature below the dew point of said naphthalene within said second heat exchange means; and
(d) conducting said process gas from said second heat exchange medium,



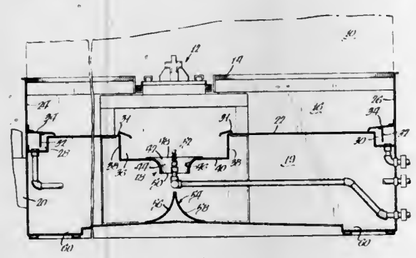
(e) condensing a portion of the process gas into a liquid condensate within said first heat exchange means;
(f) separating said condensate from said process gas after said process gas is conducted from said first heat exchange means;
(g) conducting said condensate to said second heat exchange means; and
(h) flushing said second heat exchange means with said condensate.

4,239,512

AIR WASHER PARTICULARLY FOR PAINT SPRAY BOOTHS

Frank L. Dobias, Livonia, Mich., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Continuation-in-part of Ser. No. 817,577, Jul. 21, 1977, abandoned. This application Feb. 13, 1978, Ser. No. 877,005
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—90 **10 Claims**



1. A method of removing contaminants from a gas comprising the steps of: generating at least one substantially continuous sheet of washing liquid across the entrance to a streamline flow-passage having a smoothly curved convex interior surface progressively decreasing in cross-sectional area from its entrance to its exit, the sheet of washing liquid emanating from the axis of the streamline flow-passage substantially perpendicular to said axis at the entrance of said flow passage and completely covering the cross-sectional area of the flow-passage adjacent the entrance thereof; simultaneously moving a gas into the entrance of the flow passage and through the sheet of liquid for admixing the gas and the liquid; substantially simultaneously accelerating the gas and washing liquid entrained therein through said flow-passage at continuously accelerating velocity in a substantially laminar unidirectional flow free of discernible turbulence; discharging the gas and washing liquid from said flow-passage and decelerating the gas outwardly of the flow-passage for separating the gas from the liquid and wetted contaminants.

4,239,513

SEPARATION OF PARTICLES FROM GASEOUS FLUID FLOWS

Egbert Paul, Beethoven-Str. 40, 7310 Plochingen, and Karl Reither, Freiheitsstr. 45, 5210 Troisdorf-Spich, both of Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,728
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2731996
Int. Cl.³ B03C *3/01, 3/45, 3/78*; B01D *45/16*
U.S. Cl. 55—118 **3 Claims**



1. A separator device for the continuous separation of foreign particulate matter including drops of moisture and dust from a gaseous fluid flow, comprising:
stationary wall means for deflecting said fluid flow and subjecting the same to centrifugal force to separate said particulate matter and collect said particulate matter on or adjacent said stationary wall means, said stationary wall means comprising a plurality of substantially S-shaped and spirally curved laminae which are inserted axially one into another to define a plurality of passages located adjacent and parallel to one another to permit simultaneous fluid flow therethrough, the width of each said passage being substantially smaller than the length thereof, and each of said passages having a part at which the cross-section narrows and another subsequent part at which the cross-section widens in the direction of fluid flow and wherein each of said passages is curved spirally first through 360° in one direction of deflection with increasing curvature and then through 360° in the opposite direction with decreasing curvature, wherein each of said spirally curved laminae comprises first, second, third and fourth semi-cylindrical portions, wherein said first portion is connected contiguously to said second portion curving in the same direction as said first portion, said second portion having a radius approximately twice that of said first portion, said second portion is connected contiguously to said third portion, said third portion having the same radius as said second portion but curving in the opposite direction, and said third portion is connected contiguously to said fourth portion, said fourth portion curving in the same direction as said third portion and having a radius approximately half that of said third portion; and
spacer means for holding said laminae in defined positions relative to one another.

4,239,514

ELECTROSTATIC PRECIPITATOR WITH PRECIPITATOR ELECTRODES

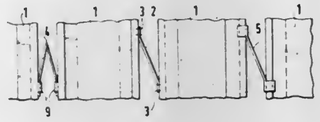
Gerd Junkers, Bad Homburg, Fed. Rep. of Germany, assignor to Saarbergwerke Aktiengesellschaft, Saarbrücken, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,301

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2711858

Int. Cl.³ B03C *3/08, 3/47*

U.S. Cl. 55—145 **17 Claims**



1. An electrostatic precipitator comprising a number of precipitator electrodes; a number of discharge electrodes; and means for supporting said precipitator electrodes in rows adjacent to one another and in pairs opposite each other and said discharge electrodes at equal distances from the precipitator electrodes of the respective pairs, and said support means including spring elements interposed between said precipitator electrodes, each of said spring elements being connected to two adjacent precipitator electrodes of the same row.

4,239,515

GAS-LIQUID CONTACT REACTION APPARATUS

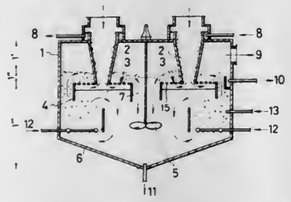
Hiroshi Yanagioka, Yokohama; Atsushi Futami, Tokyo; Masatake Shinsenji, and Minoru Tanaka, both of Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 823,463, Aug. 10, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 9,504

Claims priority, application Japan, Aug. 10, 1976, 51-94540

Int. Cl.³ B01D *47/02*

U.S. Cl. 55—223 **5 Claims**



1. Gas-liquid contact reaction apparatus comprising a vessel having a liquid therein, said vessel being provided with funnel-shaped gas introducing means extending from the top of the vessel downwardly to a substantially central portion of the vessel, said gas introducing means having at its lower open end a flared skirt-like perforated gas dispersing means and a non-perforated side wall member disposed around the lower end periphery of said gas dispersing means, said gas dispersing means being disposed completely below the liquid level and adapted to form above the same a froth layer of a mixture of a solid, liquid and gas, whereby when gas is introduced into the vessel there is formed in the vessel a splash separating section above said froth layer of a solid, liquid and gas mixture, an intermediate solid-gas-liquid contact section including said froth layer, and a lower solid precipitating section below said froth layer, said splash separating section including means comprising a space for separating gas from a splash liquid and a gas outlet for allowing gas to flow from said space, said solid-gas-liquid contact section including means positioned below and contiguous with said splash separating section comprising a lower end portion of said gas introducing means introducing the gas into the end portion for dispersing the gas through said skirt-like perforated gas dispersing means, for preventing the gas from escaping by the side wall member and for compressing the liquid beneath said gas dispersing means, such that the level of the liquid beneath the gas dispersing means is lower than the level of the liquid in said solid-gas-liquid contact section and wherein a space is formed between said gas dispersing means and the level of the liquid below the gas dispersing means, said gas dispersing means being positioned with respect to said gas introducing means such that the gas is forced to bubble up through the gas dispersing means to rise through the liquid in the solid-gas-liquid contact section and wherein the solids are introduced into the end portion together with the gas through the open bottom below said gas dispersing means, thus avoiding plugging of the gas dispersing means, and said solid precipitating section is positioned below and contiguous with said contact section and has a stirrer and an air introducing means therein for forming a suspension containing solid particles and for causing circulation, thereby making an exchange between a mixture of solid, gas and liquid thereabove.

4,239,516

POROUS MEDIA TO SEPARATE GASES LIQUID DROPLETS AND/OR SOLID PARTICLES FROM GASES OR VAPORS AND COALESCE ENTRAINED DROPLETS

Max Klein, 257 Riveredge Rd., Tinton Falls, N.J. 07724

Continuation-in-part of Ser. No. 877,190, Feb. 13, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,472

Int. Cl.³ B01D *39/16, 46/00*

U.S. Cl. 55—389 **15 Claims**

1. A gas-vapor treating mat which comprises (a) glass fibers, of about 6.3 millimeters long and below a length at which they are prone to roping and from about 3 to about 12 microns in diameter, intermixed in the range of from about 4 to about 45 parts with (b) from about 5 to about 50 parts of micro-bits of any of an expanded, thermoplastic styrene-polymer, an expanded lower polyolefin selected from polyethylene to polymethylpentene, and a flexible foamed polyurethane, each said polymer being non-brittle in its initial expanded form; said intermixed glass fibers and polymer micro-bits being held together in sheet or elongated web form and permeable to any of a gaseous and vaporous fluid stream by (c) a binding agent distributed throughout the intermixture of the glass fibers and micro-bits in an amount and manner sufficient to hold them together in the herein noted form and without destroying their permeability, which agent is selected from (i) a compatible organic binder insoluble in cold water and soluble in hot water and inert to the glass fibers, the micro-bits and any other mat constituent as well as to any gas or vapor or entrained droplets or aerosols and fine particles that are to contact the mat and (ii) a cobeat of cotton fibers and any of the micro-bits; whereby the mat has tensile strength from about 0.2 to about 5.3 kilograms per centimeter.

4,239,517

FRACTIONATOR FEED TANK PRESSURE CONTROL

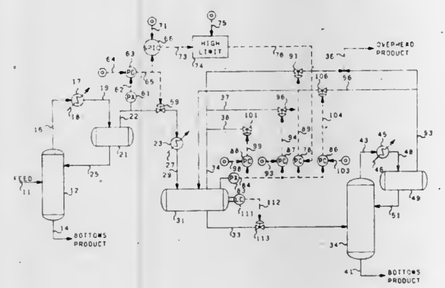
Grover R. Campbell, Old Ocean, and James W. Hobbs, Sweeny, both of Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 23, 1979, Ser. No. 69,154

Int. Cl.³ B01D *3/42*

U.S. Cl. 62—37 **9 Claims**

1. Apparatus comprising:
a first fractional distillation column means;
means for passing a feed stream into said first fractional distillation column means;
first condensing means;
first accumulator means;
means for withdrawing an overhead vapor stream from an upper portion of said first fractional distillation column means and for passing said overhead vapor stream through said first condensing means to said first accumulator means;
a second condensing means;
a feed tank means;
means for withdrawing at least a portion of the vapor from said first accumulator means and for passing the thus withdrawn vapor from said first accumulator means through said second condensing means to produce condensate which is passed to said feed tank means;
a first control valve means operably located in said means for withdrawing at least a portion of the vapor from said first accumulator means so as to control the flow rate of vapor from said first accumulator means;
a second fractional distillation column means;
means for withdrawing at least a portion of the condensate in said feed tank means and for providing the thus withdrawn condensate from said feed tank means as a feed stream to said second fractional distillation column means;
means for withdrawing at least a portion of the vapor in said feed tank means as an overhead product from said first fractional distillation column means;
means for establishing a first signal representative of the pressure in said first accumulator means;



means for establishing a second signal representative of the desired pressure in said first accumulator means;
means for establishing, responsive to said first signal and said second signal, a third signal responsive to the difference between said first signal and said second signal;
means for manipulating said first control valve means in response to said third signal to thereby maintain a desired pressure in said first accumulator means;
means for establishing a fourth signal representative of a desired valve position for said first control valve means;
means for establishing, responsive to said third signal and said fourth signal, a fifth signal responsive to the difference between said third signal and said fourth signal;
means for establishing a sixth signal representative of the pressure in said feed tank means;
means, responsive to said fifth signal and said sixth signal, for establishing a seventh signal responsive to the difference between said fifth signal and said sixth signal; and
means for manipulating the pressure in said feed tank means in response to said seventh signal, the pressure in said first overhead accumulator means and the pressure in said feed tank means being manipulated so as to maintain a desired valve position for said first control valve means.

4,239,518

REFRIGERATED CASE WITH MOVABLE FAN PANEL

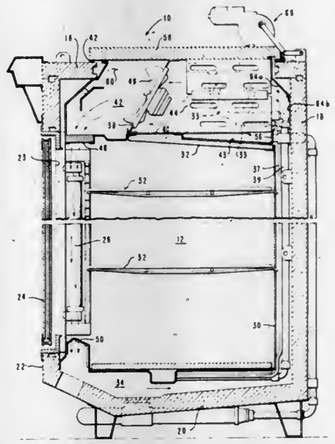
Melvin W. Steelman, Leesburg, Fla., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed Jun. 12, 1979, Ser. No. 47,869

Int. Cl.³ F25D *19/00, 21/10*

U.S. Cl. 62—449 **15 Claims**

1. A refrigerated case, comprising:
an outer cabinet;
an inner cabinet spaced from said outer cabinet;
air flow duct means for conveying a flowing airstream around at least a substantial portion of the exterior of the inner cabinet;
a plenum chamber between said inner and outer cabinets communicating with said duct means, said plenum chamber having a closable opening for communicating said plenum chamber with the ambient atmosphere;
closure means mounted to said case and moveable between at least closed and open positions with respect to said closable opening for closing said plenum chamber from and opening said plenum chamber to communication with the ambient atmosphere;
air circulating and cooling means mounted to said closure means, such that, in the closed position of said closure



means, said air circulating and cooling means are disposed in said plenum chamber for drawing air through said cooling means and propelling said cooled air through said duct means around said inner cabinet, and, in the open position of said closure means, said air circulating and cooling means are exposed to the ambient atmosphere; and
baffle means coupled with said closure means for closing off said duct means from communication with said plenum chamber when said closure means is in said open position and for opening communication between said plenum chamber and said duct means when said closure means is in said closed position.

4,239,519

INORGANIC GELS AND CERAMIC PAPERS, FILMS, FIBERS, BOARDS, AND COATINGS MADE THEREFROM

George H. Beall, Big Flats; David G. Grossman, Corning; Syed N. Hoda, Horseheads, and Karen R. Kubinski, Elmira Heights, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,907

Int. Cl.³ C03B *37/075, 37/025, 32/00, 27/02*

U.S. Cl. 65—2 **248 Claims**

1. A method for preparing inorganic films and fibers containing crystals consisting essentially of an exchanged lithium and/or sodium water-swelling mica selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, polylithionite, fluorpolylithionite, phlogopite, and fluorphlogopite, which consists in the steps of:
(a) melting a batch for a glass consisting essentially, expressed in weight percent on the oxide basis, of 0–9%

Li_2O and/or 2–10% Na_2O, 2–14% Li_2O+Na_2O, 0–20% B_2O_3, 0–10% Al_2O_3, 15–38% MgO, 50–70% SiO_2, and 0–12% F;

(b) simultaneously cooling said melt to a temperature between about 900°–1050° C. to shape the melt into a body to cause phase separation and nucleation to take place therein;

(c) further cooling said body to a temperature between about 700°–900° C. and maintaining that temperature for a time sufficient to effect the development of crystals therein selected from the group of magnesium metasilicate, lithium disilicate, sodium magnesium silicate, and silica, where said composition is essentially free from fluoride, and/or of a lithium and/or sodium water-swelling mica selected from the group of fluorhectorite, boron fluorphlogopite, and solid solutions between those and between those and other structurally-compatible species selected from the group of fluortalc, fluorpolylithionite, and fluorphlogopite, where said composition contains significant fluoride, said body being fully or predominantly crystalline;

(d) exposing said body to a water-containing gaseous atmosphere having a relative humidity of at least 50% at a temperature between about 200°–400° C. for a time sufficient to either partially or totally convert the said crystals of magnesium metasilicate, lithium disilicate, sodium magnesium silicate, and silica into structures selected from the group of hydroxyl hectorite, hydroxyl boron phlogopite, and solid solutions between those and/or to partially or totally convert the said fluoride-containing crystals into the hydroxyl equivalents thereof;

(e) contacting said body with a polar liquid for a time sufficient to cause swelling and disintegration thereof accompanied with the formation of a gel;

(f) adjusting the solid:liquid ratio of said gel to a desired fluidity;

(g) preparing a fiber or film of said gel;

(h) contacting said fiber or film with a source of large cations for a time sufficient to cause an ion exchange reaction to occur between said large cations and the Li^+ and/or Na^+ ions from the interlayer of said crystals; and then

(i) drying said fiber or film.

19. A method according to claim **1** wherein said fiber or film is prepared by contacting said gel having the desired fluidity with a flocculating agent to form a skin or membrane at the interface therebetween and thereafter drawing off said skin or membrane to renew the contact between said gel and flocculating agent.

23. A method for forming a fiber according to claim **19** wherein said contact between said gel and flocculating agent is made by injecting said gel as a thin stream into a flocculating agent-containing liquid and, thereafter, pulling a continuous fiber or group of fibers from said liquid.

4,239,520

SPONTANEOUSLY FORMED MACHINABLE GLASS-CERAMICS

David G. Grossman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

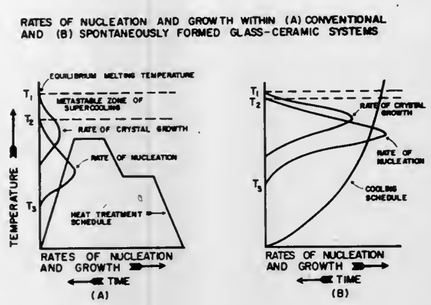
Filed Mar. 19, 1975, Ser. No. 559,787
Int. Cl.³ C03B *27/00, 32/00;* C03C *3/22*
U.S. Cl. 65—33 **3 Claims**

1. A method for making a highly crystalline glass-ceramic article exhibiting good machinability characteristics consisting essentially of fluormica crystals dispersed within a glassy matrix, said crystals constituting at least 50% by volume of said article, which comprises the steps of:

(a) melting a batch for a glass consisting essentially, by weight on the oxide basis as calculated from the batch, of about 6–11% K_2O, 1.7–4% Li_2O, 17–25% MgO, 50–65% SiO_2, and 5–8.5% F.;

(b) simultaneously cooling said melt to a temperature about 800°–1000° C. and shaping a glass body therefrom at a rate between about 10°–1000° C./minute to obtain phase separation and nucleation therein;

(c) further cooling said shaped glass body and exposing said



glass body to a temperature between about 600°–850° C. for a sufficient length of time to cause crystallization of the fluormica crystals in said glass body; and then

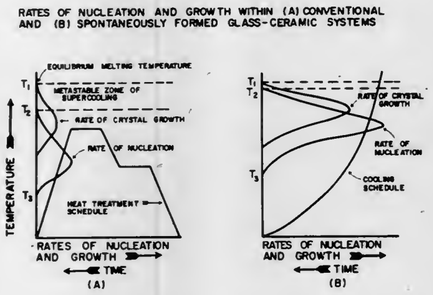
(d) cooling the crystallized body to room temperature.

4,239,521

SPONTANEOUSLY-FORMED ALPHA-QUARTZ GLASS-CERAMICS

George H. Beall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,786
Int. Cl.³ C03B *27/00, 32/00;* C03C *3/22*
U.S. Cl. 65—33 **3 Claims**



1. A method for making a highly crystalline glass-ceramic article consisting essentially of alpha-quartz solid solution and rutile crystals homogeneously dispersed within a glassy matrix, said crystals constituting at least 50% by volume of said article, which comprises the steps of:

(a) melting a batch for a glass consisting essentially, by weight on the oxide basis, of about 2.5–6% Li_2O, 5–11% Al_2O_3, 1.5–7.5% B_2O_3, 60–75% SiO_2, and 6–13% TiO_2;

(b) simultaneously cooling said melt at a rate between about 10°–1000° C./minute to a temperature about 900°–1050° C. to shape said melt into a glass body and secure phase separation and nucleation therein;

(c) further cooling said shaped glass body and exposing said glass body to a temperature between about 650°–900° C., for a sufficient length of time to cause crystallization of the alpha-quartz solid solution and rutile crystals in said glass body; and then

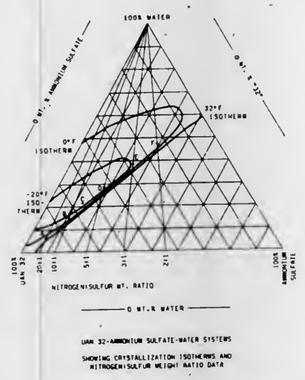
(d) cooling the crystallized body to room temperature.

4,239,522

FERTILIZER SOLUTIONS CONTAINING SULFUR AND HAVING LOW CRYSTALLIZATION TEMPERATURE

Joseph F. Wilson; Lawrence M. Fodor, and Joseph R. Kenton, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 13, 1979, Ser. No. 48,102
Int. Cl.³ C05C *1/00, 9/00, 3/00*
U.S. Cl. 71—29 **22 Claims**



UAN 32-AMMONIUM SULFATE-WATER SYSTEMS SHOWING CRYSTALLIZATION ISOTHERMS AND NITROGEN:SULFUR WEIGHT RATIO DATA

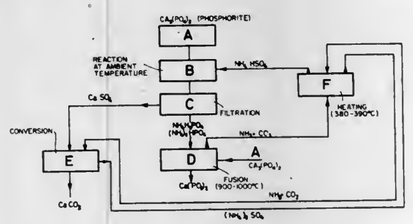
1. A substantially stable nitrogen sulfur aqueous liquid fertilizer solution prepared by a process which comprises admixing water, ammonium nitrate, urea, and ammonium sulfate, in proportions sufficient to establish a composition in the range of about 1.5:1 to 25:1 weight ratio N:S and exhibiting a crystallization temperature below about 32° F.

4,239,523

METHOD FOR MANUFACTURING PHOSPHATIC FERTILIZERS HAVING A HIGH CONCENTRATION, PARTICULARLY CALCIUM METAPHOSPHATE $CA(PO_3)_2$

Vittorio Spada, Infanta Maria Teresa St., No. 21, Madrid, Spain

Filed Jul. 25, 1978, Ser. No. 927,935
Claims priority, application Spain, Jan. 31, 1978, 466.522
Int. Cl.³ C05B *17/00;* C01B *25/01*
U.S. Cl. 71—33 **2 Claims**



1. A method for manufacturing phosphatic fertilizers having a high concentration of calcium metaphosphate, comprising reacting phosphorite with an aqueous solution containing three mols of ammonium bisulphate per mol of calcium phosphate in the phosphorite, said reaction being conducted at ambient temperature, wherein said reaction produces a precipitate of calcium sulphate and an aqueous solution of mono- and diammonium phosphates, separating said precipitate from the last-named solution, then admixing a mineral containing calcium phosphate with said last-named solution of mono- and diammonium phosphates and heating the resultant mixture in a furnace to produce molten calcium metaphosphate, and removing the molten calcium metaphosphate from the furnace.

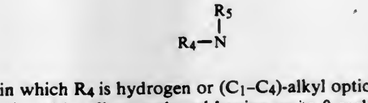
4,239,524

THIADIAZOLYL UREAS WITH HERBICIDAL EFFECT

Ludwig Nüsslein; Friedrich Arndt, and Reinhart Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 730,570, Oct. 7, 1976, abandoned, which is a continuation of Ser. No. 624,123, Oct. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 393,598, Aug. 31, 1973, abandoned. This application Mar. 5, 1979, Ser. No. 17,135
Int. Cl.³ A01N *43/82*
U.S. Cl. 71—90 **9 Claims**

1. A method of preventing weed growth in potato plant cultures, comprising applying to said cultures a composition consisting essentially of a compound of the formula



wherein

R_1 is an alkyl radical of 4 to 8 carbon atoms, and

n is 1 or 2,

in an amount sufficient to provide between about 0.1 to 5 kg of said compound per hectare, whereby weed growth is prevented without causing substantial damage to said potato plants.

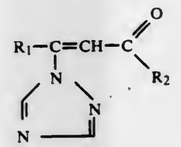
4,239,525

1,2,4-TRIAZOLE DERIVATIVES

Günther Heubach; Burkhard Sachse, both of Kelkheim, and Helmut Bürstell, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,437
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826760
Int. Cl.³ A01N *43/82;* C07D *249/08*
U.S. Cl. 71—92 **8 Claims**

1. A 1,2,4-triazole derivative of the formula I


(I)

in which

R_1 denotes methyl or phenyl optionally substituted by halogen, (C_1–C_4)alkyl or (C_1–C_4)-alkoxy, and

R_2 denotes the group R_3O— in which R_3 is alkyl, having up to 12 carbon atoms, which may be substituted additionally by halogen, (C_1–C_4)alkoxy or alkoxycarbonyl having up to 8 carbon atoms; or is alkinyl having up to 3 carbon atoms; or is cycloalkyl having up to 6 carbon atoms and optionally substituted additionally by (C_1–C_4)alkyl; or is phenyl optionally substituted by halogen or F_3C—, or

R_2 denotes



in which R_4 is hydrogen or (C_1–C_4)-alkyl optionally substituted by alkoxycarbonyl having up to 8 carbon atoms, and R_5 is (C_1–C_4)alkyl or phenyl optionally substituted by halogen, F_3C—, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, phenoxy or halophenoxy.

6. A method of controlling plant infestation which com-

prises treating said plants with a compound as defined in claim 1.

7. A method of regulating plant growth which comprises treating said plants with a compound as defined in claim 1.

4,239,526

SUBSTITUTED UREAS AS SUGARCANE RIPENERS

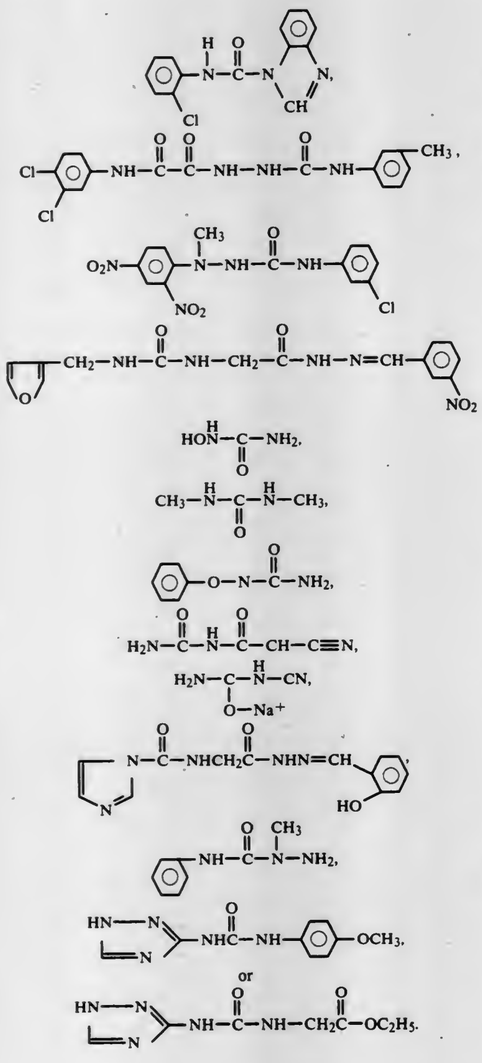
Sidney R. Siemer, Fresno, Calif., assignor to W. R. Grace & Co., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 71,959

Int. Cl.³ A01N *43/08, 43/50, 43/52, 43/64, 47/28, 47/30*

U.S. Cl. 71—92 **19 Claims**

1. A process for modifying the ripening of sugarcane plants so as to increase their yield of sucrose which comprises applying a substituted urea in a sucrose increasing amount directly to the cane plants at a time from about 2–10 weeks prior to harvest; said substituted urea being a member of the group consisting of



4,239,527

2-(PYRIDYLTHIO)PYRIDINE-N-OXIDES

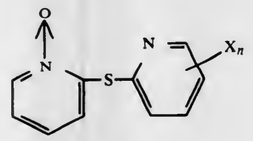
John J. D'Amico, Olivette, and David E. Schafer, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 24, 1978, Ser. No. 963,487

Int. Cl.³ A01N *43/40*

U.S. Cl. 71—94 **12 Claims**

1. A method of reducing injury to sorghum crop plants due to the application thereto of α-haloacetanilide herbicide which comprises applying to the plant locus a safening effective amount of a compound having the formula



wherein X is halogen and n is 4.

4,239,528

PLANT GROWTH REGULATING COMPOSITIONS AND METHODS USING ALPHA-ISOCYANOCARBOXYLIC ACID COMPOUNDS

Rolf Schröder, Wuppertal, and Klaus Lürssen, Berg. Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

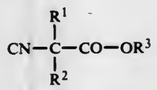
Filed Oct. 27, 1978, Ser. No. 955,436

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751782

Int. Cl.³ A01N *37/34*

U.S. Cl. 71—105 **21 Claims**

1. Plant growth regulating composition containing as active ingredient, in an effective amount to regulate plant growth, an α-isocyanocarboxylic acid compound of the formula



wherein

R^1 and R^2 together represent an alkylene chain with 2 to 5 carbon atoms and

R^3 is hydrogen, alkyl of up to 20 carbon atoms, aryl of 6 or 10 carbon atoms, aralkyl of 6 or 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the alkyl moiety, or carbalkoxyalkyl of 1 to 4 carbon atoms in each alkyl moiety

in admixture with a solid or liquefied gaseous diluent or carrier or in admixture with a liquid diluent or inert carrier containing a surface active agent.

4,239,529

PROCESS FOR BENEFICIATING SULFIDE ORES

James K. Kindig, Arvada, and Ronald L. Turner, Golden, both of Colo., assignors to Hazen Research, Inc., Gorden, Colo.

Continuation-in-part of Ser. No. 921,584, Jul. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 868,416, Jan. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 658,258, Feb. 17, 1976, abandoned. This application Oct. 22, 1979, Ser. No. 86,830

Int. Cl.³ C22B *1/00*

U.S. Cl. 75—1 R **52 Claims**

1. A process for beneficiating sulfide ores from gangue, excluding coal, which comprises contacting the sulfide ore with a metal containing compound under conditions which cause the metal containing compound to react substantially at the surface of the metal sulfide particles to the substantial

exclusion of the gangue particles so as to alter the surface characteristics of the metal sulfide values thereby causing a selective enhancement of the magnetic susceptibility of one or more metal sulfide values of the ore to the exclusion of the gangue in order to permit a physical separation between the metal sulfide values and the gangue.

8. A process for the beneficiation of a metal sulfide ore from gangue, excluding coal, wherein the ore is treated with from about 0.1 to 100 kilograms of a metal containing compound per metric ton of ore at a temperature within a range of 125° C. less than the general decomposition temperature of the metal containing compound in a specific system for the ore being treated for a period of time from about 0.05 to about 4 hours to cause the metal containing compound to react substantially at the surface of the metal sulfide particles to the substantial exclusion of the gangue particles so as to alter the surface characteristics of the metal sulfide values thereby causing a selective enhancement of the magnetic susceptibility of one or more metal sulfide values contained in the ore to the exclusion of the gangue so as to permit a physical separation between the metal sulfide values and the gangue.

25. A process for the beneficiation of a metal sulfide ore from gangue, excluding coal, selected from the group consisting of galena, molybdenite, sphalerite, bornite, cinnabar, arsenopyrite, smaltite, chalcocite, chalcopyrite, orpiment, realgar, pentlandite in pyrrhotite, stibnite and tetrahedrite which comprises for the ore in a specific system contacting the sulfide ore with an iron containing compound selected from the group consisting of ferrous chloride, ferric chloride, ferrocene, ferric acetylacetonate and iron pentacarbonyl at a temperature within a range of 125° C. less than the general decomposition temperature of the iron containing compound in the specific system for the ore being treated for a period of time from about 0.15 to about 2 hours to cause the iron containing compound to react substantially at the surface of the metal sulfide particles to the substantial exclusion of the gangue particles so as to alter the surface characteristics of the metal sulfide values thereby causing a selective enhancement of the magnetic susceptibility of one or more metal sulfide values of the ore to the exclusion of the gangue in order to permit a magnetic separation between the metal sulfide values and the gangue.

4,239,530

PROCESS FOR PRODUCING METALLIZED IRON PELLETS

Mehmet A. Goksel, Houghton, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Jan. 10, 1979, Ser. No. 2,257

Int. Cl.³ C21B *13/08*

U.S. Cl. 75—34 **24 Claims**

1. A process for producing hardened, discrete pellets containing a substantial proportion of metallic iron from a finely-divided, iron oxide-containing material comprising the steps of:

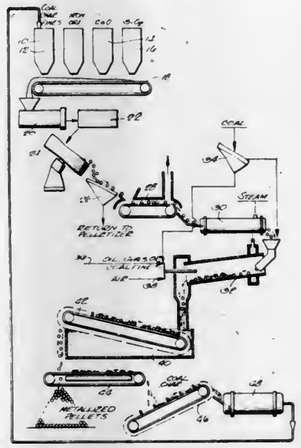
(a) preparing a moistened starting mixture including the iron oxide-containing material, a finely-divided carbonaceous material in an amount at least sufficient to reduce all the iron oxide to metallic iron, about 1 to about 30 weight % of a finely-divided bonding agent selected from a group consisting of the oxides, hydroxides and carbonates of calcium and magnesium, and mixtures thereof, and 0 up to about 3 weight % of a finely-divided siliceous material, as available SiO_2 capable of reacting with said bonding agent to form silicate or hydrosilicate bonds therewith, with a total available SiO_2 in said mixture being at least 0.5 weight percent; the weight percentages being based upon the total weight of the dry solids in said mixture;

(b) forming discrete, green pellets from said starting mixture;

(c) drying said green pellets to a moisture content of about 5% or less;

(d) hydrothermally hardening said green pellets by contacting them with steam at a temperature of about 100 to about 250° C. for a time period sufficient for said bonding agent to from silicate or hydrosilicate bonds with the available SiO_2 and produce hardened and integrally bonded masses;

(e) introducing said hardened pellets, without substantially modifying their composition, into a reduction furnace adapted to tumble said pellets; and



(f) metallizing said hardened pellets by continuously tumbling them in the reduction furnace, at a reduction temperature of about 1033° C. up to the melting point of the metallized pellets and while maintaining the overall atmosphere inside the furnace substantially non-oxidizing, for a time period sufficient to reduce a substantial portion of the iron oxide in said pellets to metallic iron.

4,239,531

SPONGE RING FEED FOR IODIDE CRYSTAL BAR CELLS

Mark B. Siddall, Albany, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Mar. 12, 1979, Ser. No. 19,328

Int. Cl.³ C22B *34/14;* **C01G** *25/04, 27/04*

U.S. Cl. 75—84.4 **3 Claims**

1. A method of purifying metal in an iodide crystal bar cell wherein the metal is fed into the cell and reacted therein with iodine under heat and pressure to produce pure metal, the improvement comprising loading zirconium or hafnium sponge compact in the cell in the form of self-supporting ring shaped compacts placed one on top of each other thus allowing the loading of the cell without the necessity of a supporting screen.

4,239,532

ADDITION AND MEASUREMENT OF GASES DISSOLVED IN MOLTEN METALS

Ties Allersma, Pittsburgh, and James E. Simpson, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 11, 1978, Ser. No. 968,604

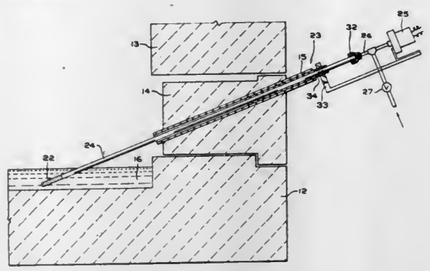
Int. Cl.³ C22B *9/00;* **G01F** *3/24*

U.S. Cl. 75—93 R **10 Claims**

1. Apparatus for measuring at least one dissolved gas in a liquid comprising:

a probe having a unitary outer wall to define a passageway within said probe, a portion of said outer wall to be submerged in the liquid permeable with respect to the at least one gas to be measured but impermeable to the liquid containing the at least one dissolved gas and the remaining

wall portion impermeable to both the at least one gas and the liquid;



means for drawing a vacuum on said passageway; and means for measuring gas pressure in said probe.

4,239,533

MAGNETIC ALLOY HAVING A LOW MELTING POINT

Takeshi Miyazaki, Omiya, Japan, assignor to Hitachi Metals, Ltd., Japan

Filed May 9, 1978, Ser. No. 904,321
Claims priority, application Japan, Feb. 6, 1978, 53-12206
Int. Cl.³ C22C *19/00*
U.S. Cl. 75—134 F **2 Claims**

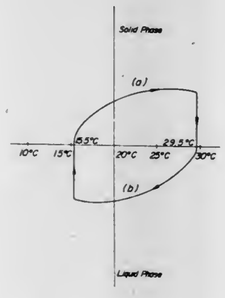
1. A magnet alloy which consists essentially of Co, Ni and Pd, the content of Co being in the range of from 20 to 70 weight %, the content of Ni being in the range of 29 to 80 weight %, and the content of Pd being at least 35 weight %, said alloy having a magnetic flux density value B_{100} of at least 2000 G and a melting point of not more than 1350° C.

4,239,534

GA-CU ALLOY FOR USE IN EXCHANGEABLE ELECTRODE FOR AN EVAPORATION SYSTEM

Kazuhisa Taketoshi, Sagamihara, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,291
Claims priority, application Japan, Sep. 9, 1978, 53-110236
Int. Cl.³ C22C *30/02, 30/04*
U.S. Cl. 75—134 T **5 Claims**



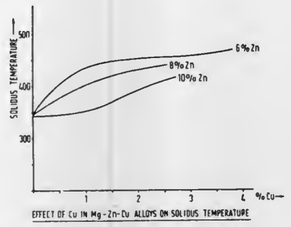
1. Ga-Cu alloy having the formula of $Ga_{1-x}Cu_x$, wherein x is a composition ratio parameter of Ga and Cu in a range of $0.0001 \leqq x \leqq 0.05$.

4,239,535

MAGNESIUM ALLOYS

John F. King, 19 Brookside Crescent, Greenmount, Bury, and William Unsworth, 2 Ilkeston Dr., Aspull, Wigan, Lancs., both of England

Filed May 31, 1979, Ser. No. 44,272
Claims priority, application United Kingdom, May 31, 1978, 24941/78
Int. Cl.³ C22F *1/06*
U.S. Cl. 75—168 D **9 Claims**



EFFECT OF Cu IN Mg-Zn-Cu ALLOYS ON SOLIDUS TEMPERATURE

1. A magnesium alloy consisting essentially of the following constituents by weight (apart from impurities):
Zinc: 2–10%
Copper: 0.5–5%
Magnesium: Remainder aluminum being absent.

4,239,536

SURFACE-COATED SINTERED HARD BODY

Takaharu Yamamoto; Tsuyoshi Asai; Naoji Fujimori, and Masaaki Tobioka, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 8, 1978, Ser. No. 940,617
Claims priority, application Japan, Sep. 9, 1977, 52/107943; Nov. 28, 1977, 52/143080
Int. Cl.³ C22C *1/05, 29/00*
U.S. Cl. 75—238 **7 Claims**

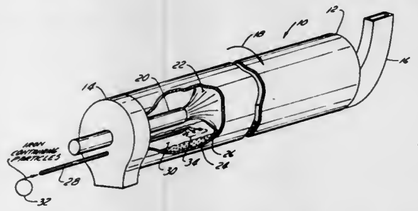
1. A surface-coated sintered hard body, which comprises a sintered hard alloy and at least one coating layer thereon comprising at least one material selected from boronitrides and borocarbonitrides of Group IVa, Va and VIa elements.

4,239,537

PROCESS FOR THE PREPARATION OF FERRO LIME

Allen R. Job, Pincourt, Canada, assignor to Domtar Inc., Montreal, Canada

Filed May 14, 1979, Ser. No. 38,588
Int. Cl.³ C01F *11/00*; C01G *49/00*
U.S. Cl. 75—257 **10 Claims**



1. A method of producing at least one of ferro-lime and ferro-dolime in a rotating kiln having an inlet end and a discharge end and a flame extending along said kiln to heat the kiln to the required temperature for calcination, introducing a calcinable alkali earth composition at the inlet end of said kiln, calcining said composition and heating said composition to a temperature to substantially instantaneously combine with iron contained in particles injected to the kiln, injecting said particles having a maximum dimension of less than ¼ inch into said kiln and onto the surface of said calcined composition between the discharge end of said kiln and said flame and where said calcined composition is at a temperature to instantaneously react with said iron, instantaneously combining said iron content of said particles with said calcined composition thereby to form a product comprising at least one of ferro-lime and ferro-dolime in said kiln and withdrawing said product from the discharge end of said kiln.

4,239,538

CATALYTIC PRIMER

Nathan Feldstein, Kendall Park, N.J., assignor to Surface Technology, Inc., Princeton, N.J.

Division of Ser. No. 550,435, Feb. 18, 1975, Pat. No. 3,993,848. This application Mar. 30, 1976, Ser. No. 672,045
Int. Cl.³ C23C *3/02*
U.S. Cl. 106—1.11 **3 Claims**

1. An improved catalytic primer composition for use in the electroless plating of non-metallic substrates comprised of the admixture, in aqueous media, of stannous ions, copper ions, and a linking agent capable of forming additional sites on said substrate for adsorption of stannous ions wherein stannous ions are in excess to copper ions and further wherein said linking agent is selected from the group consisting of phenol, cresol and mixtures thereof.

4,239,539

AMINOSILANE MODIFIED ZINC-RICH COATING COMPOSITIONS

Thomas Ginsberg, Piscataway, and Lawrence G. Kaufman, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,513
Int. Cl.³ C09D *5/10*; C23F *11/00*
U.S. Cl. 106—1.17 **11 Claims**

1. A composition for protecting ferrous metals from corrosion comprising particulate zinc, an unhydrolyzed or a partially hydrolyzed organic silicate hydrolyzed up to about 40% and a hardening amount of an aminoorganosilicon acylamino compound having the formula:

$$X_{3-a}Si-RN(R^2N)_t CHCHCNH-(R^2N)_x R^4$$

(with R_a^1, R^3, R^3, Q, Q, O, R^3 as substituents)

wherein:
X is an alkoxy radical having 1 to 6 carbon atoms;
R is a alkylene radical having 1 to 4 carbon atoms;
R^1 is hydrogen or an alkyl radical having 1 to 4 carbon atoms;
R^2 is an alkylene radical having 2 to 4 carbon atoms;
R^3 is a monovalent radical selected from the group consisting of hydrogen alkyl having 1 to 20 carbon atoms or phenyl;
R^4 is a monovalent radical selected from the group consisting of alkyl having 1 to 20 carbon atoms, phenyl or silyl having the formula:

$$-R-Si(R_a^1)-X_{3-a}$$

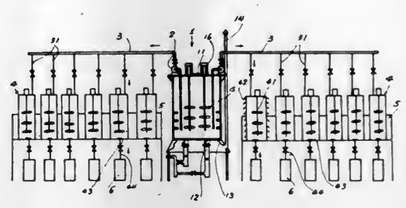
wherein X, R and R^1 are as defined above;
Q is a monovalent radical selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, phenyl or an ester radical having the formula —$COOR^5$ wherein R^5 is alkyl having 1 to 4 carbon atoms;
a is an integer having values of 0 to 2 and t and x are each integers having a value of 0 to 4; with the proviso that when x is at least 1, R^4 can also be hydrogen.

4,239,540

MILKY CURING AGENT FOR CONCRETE AND PREPARATION METHOD THEREOF

Chen Hsin-Chu, No. 34-7, Hsin-Tang-Pu, Pa-Li Hsiang Taipei Hsien, Taiwan

Filed Nov. 21, 1979, Ser. No. 96,611
Int. Cl.³ C08L *91/00*
U.S. Cl. 106—12 **2 Claims**



1. A milky concrete curing agent produced by mixing paraffin wax, cocoanut oil, soybean oil, linseed oil, stearic acid, Hexacosanic acid and water which are slowly heated and thoroughly agitated until the wax is completely dissolved, raising the reaction temperature to 83° to 88° C. and adding ethyl cyanuric ester as the emulsifying agent, and reacting the mixture with agitation for 2.5 hours within said temperature range to complete the emulsification.

4,239,541

MILDEW SEALING COATING COMPOSITION AND METHOD OF USING

Emanuel F. Marek, Wonder Lake, and Alex H. Migdal, Hoffman Estates, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jun. 29, 1978, Ser. No. 920,342
Int. Cl.² C09D *5/14*
U.S. Cl. 106—15.05 **4 Claims**

1. A diaphanous mildew sealing, coating composition comprising water containing latex particles coalescable into a film at room temperature emulsified therein, an alkaline-stable mildewcidal agent present in an amount sufficient to kill mildew contacted by the composition, and a nonvolatile, relatively insoluble, alkaline earth compound selected from the group consisting of the oxides and hydroxides of barium, said compound being present in a weight percent of about 0.006 to about 0.03 times its equivalent weight.

4,239,542

WATER-SOLUBLE FLAME RETARDER AND PROCESS FOR PREPARING THE SAME

Tsukuru Kinoshita; Shuji Masuda, both of Tokushima, and Tetuo Hasegawa, Naruto, all of Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Jun. 1, 1979, Ser. No. 44,695
Claims priority, application Japan, Dec. 7, 1978, 53-152305
Int. Cl.³ C09D *5/18*
U.S. Cl. 106—18.14 **9 Claims**

1. A water-soluble flame retarder comprising (1) a condensed ammonium phosphate having an average degree of condensation of not more than 60 and (2) 5 to 70 parts by weight, based on 100 parts by weight of said condensed ammonium phosphate, of a mixture containing 50% to 70% by weight of biuret and 20% to 30% by weight of triuret based on the weight of the mixture, said mixture being produced from urea in the presence of a condensed ammonium phosphate.

4,239,543

NON-CRUSTING JET INK AND METHOD OF MAKING SAME

J. Donald Beasley, Arlington Heights, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 833,786, Sep. 16, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 11,003

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—22 **18 Claims**

1. An ink composition comprising (based on 100 parts by weight of the total ink composition) from about 2 to about 80 parts water, from about 20 to about 97 parts of a lower alkylene glycol selected from the group consisting of ethylene glycol and propylene glycol, from about 1 to about 7 parts of a coloring material which is highly soluble in both water and the lower alkylene glycol and has high tinctorial power and is resistant to fading by light, is chemically stable for long periods in both water and the viscosity increaser, said ink composition further characterized by its ability to reduce the evolution of gases at reduced pressure and an adjusted pH in the range of from 3 to 6, inclusive.

4,239,544

JET DROP PRINTING INK COMPOSITION

Joseph G. Strem, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

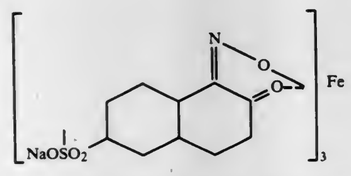
Filed Apr. 23, 1979, Ser. No. 32,082

Int. Cl.³ C09D *11/02*

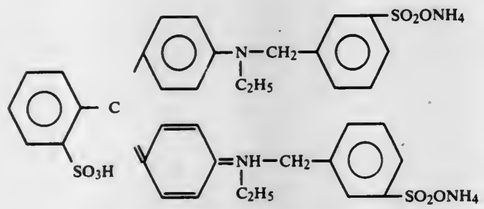
U.S. Cl. 106—22 **6 Claims**

1. A jet drop printing ink comprising:

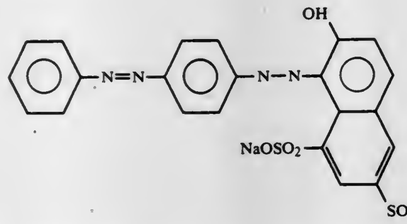
about 3.8 weight percent of a dye having the chemical formula



about 2.2. weight percent of a dye having the chemical formula



about 1.0 weight percent of a dye having the chemical formula



and balance water, said ink being infrared absorbent at wavelengths utilized by optical character readers and appearing visually black to the human eye.

4,239,545

CELLULOSE DERIVATIVE REVERSE OSMOSIS MEMBRANE AND CASTING SOLUTION AND ADDITIVE FOR PREPARING THE SAME

Tadahiro Uemura, Kyoto, and Masaru Kurihara, Otsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 10, 1978, Ser. No. 932,533

Int. Cl.³ C08L *1/12, 1/28*

U.S. Cl. 106—181 **10 Claims**

1. In a casting solution for the preparation of a membrane of a cellulose derivative selected from the group consisting of cellulose ether and cellulose ester, having a good balance of membrane separation characteristics, said solution containing said cellulose derivative, and an organic water soluble solvent therefor, the improvement which comprises including a tetracarboxylic acid represented by the following formula:

$$R—(CO_2H)_4$$

wherein R is a tetravalent aliphatic or alicyclic organic radical having from 2 to 10 carbon atoms, whereby the membrane which is prepared has not more than 0.2 voids per 0.844 mm^2.

4,239,546

HYDROCARBON POLYMERS TO IMPROVE THE HARDNESS OF WAXES

Stephen E. Russell; Phillip M. Story, and Charles S. Letcher, all of Tulsa, Okla., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 21, 1978, Ser. No. 926,763

Int. Cl.³ C08L *91/06;* **C09D** *3/393*

U.S. Cl. 106—270 **11 Claims**

1. A wax blend characterized by the presence of sufficient hydrocarbon polymer to improve the hardness of the wax, said hydrocarbon polymer having congealing and melting points which are essentially no higher than those of its starting materials, said hydrocarbon polymer prepared by polymerizing a hydrocarbon starting material consisting primarily of alpha olefins and which is a solid at room temperature, in the presence of a source of free radicals under pressure of less than 500 psi but sufficient to keep the reactants from vaporizing at a temperature of about 40° to 250° C.

4,239,547

RECYCLING SPENT ASPHALTIC CONCRETE

William C. McBee, and Thomas A. Sullivan, both of Boulder City, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 12, 1979, Ser. No. 2,829

Int. Cl.³ C08L *95/00*

U.S. Cl. 106—274 **4 Claims**

1. A process for recycling spent embrittled asphaltic concrete, said spent concrete consisting essentially of asphalt of increased viscosity and graded mineral aggregate, comprising (1) crushing, (2) heating to a temperature of about 120° to 150° C. in a substantially nonoxidizing atmosphere, (3) mixing the heated material with sulfur, or a mixture of sulfur and asphalt, at 120° to 150° C. and for a time sufficient to permit thorough mixing and reaction between the sulfur and the asphalt fraction of the spent concrete, the amount of sulfur being about 20 to 50 percent by weight of the asphalt in the concrete, whereby the viscosity of the asphalt is lowered and its penetration point is increased with minimal lowering of the softening point.

4,239,548

TITANIUM DIOXIDE PIGMENT

Brian Barnard, Middlesbrough, and William T. Laverick, Sedgefield, both of England, assignors to Tioxide Group Limited, Billingham, England

Filed Dec. 6, 1979, Ser. No. 100,716

Claims priority, application United Kingdom, Dec. 21, 1978, 49610/78; Nov. 20, 1979, 40132/79

Int. Cl.³ C09C *1/36*

U.S. Cl. 106—300 **18 Claims**

1. A titanium dioxide pigment comprising particles of rutile titanium dioxide having an inner coating comprising cerium and phosphate radicals and an outer coating covering the inner coating and comprising aluminium and phosphate radicals.

4,239,549

EASILY WATER-DISPERSED FORMULATIONS OF FINELY DIVIDED PHTHALOCYANINES

Wolfgang Fabian, Wilhelmsfeld; Joachim Kranz, Ludwigshafen, and Guenter Stoeckelmann, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 15, 1977, Ser. No. 815,986

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2632214

Int. Cl.³ C09B *47/04;* **D06P** *3/14, 3/60*

U.S. Cl. 106—308 Q **16 Claims**

1. An easily water-dispersed phthalocyanine pigment formulation which contains, based on the total weight of the formulation,

(a) from 70 to 95 percent by weight of a finely dividied phthalocyanine pigment of which the mean primary particle size is less than 0.5 μm, and

(b) from 30 to 5 percent by weight of at least one alkylbenzenesulfonic acid or alkylnaphthalenesulfonic acid having from 1 to 3 alkyl of 8 to 20 carbon atoms in each alkyl, said at least one sulfonic acid being present in free acid form or in the form of its water-soluble salt, the formulation being obtained by introducing and mixing the pigment (a) and the acid (b), in any sequence, into an inert aprotic solvent having a boiling point below 135° C., stirring or kneading the resulting mixture at from room temperature up to the boiling point of said aprotic solvent until an homogenous dispersion has formed from which a dried sample is dispersible in water without leaving any significant residue, and then removing the aprotic solvent.

4,239,550

FLOWING AGENT FOR CONCRETE AND MORTAR AND PROCESS FOR PRODUCING THE SAME

Leo Köhler, Bobenheim, Fed. Rep. of Germany, assignor to Firma Holmen GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,812

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803923; Mar. 14, 1978, 2811098

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—314 **15 Claims**

1. A flowing agent for concrete and mortar comprising a mixture of lignin sulfonate and sulfomethylated or ring-sulfonated aromatic compounds selected from the group consisting of phenol, napthalene, cresol and a mixture thereof, wherein said mixture is after-condensed and after-sulfitized.

4,239,551

BRUSH ARRANGEMENT AND SEQUENCING FOR TURNTABLE CAR WASH

Judson L. Smith, 5432 Lighthouse La., Tempe, Ariz. 85283

Filed Apr. 23, 1979, Ser. No. 32,226

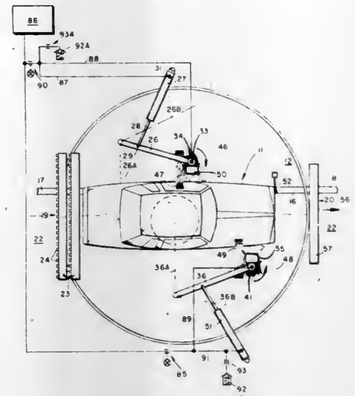
Int. Cl.³ B08B *7/00*

U.S. Cl. 134—6 **23 Claims**

1. A method of scrubbing the exterior of a vehicle comprising the steps of:

moving the vehicle onto a turntable;

applying powered scrubbing means to a front end portion of the vehicle as the vehicle is moved onto the turntable and thereby power scrubbing the front end portion of the vehicle as it is moved onto the turntable;



rotating the turntable to rotate the vehicle; and

power scrubbing side and rear portions of the vehicle with the same powered scrubbing means as the vehicle is rotated.

4,239,552

MACHINE DISHWASHING, USING POLYHYDRIC ALCOHOLS, CARBOXYLIC ACIDS AND OR ESTERS OF THESE AS RINSING AGENTS

Johannes Perner, Neustadt; Dieter Stoeckigt, Ludwigshafen; Paul Diessel, Mannheim; Franz Merger, Frankenthal, and Juergen Paetsch, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,776

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833991

Int. Cl.³ C11D *1/72, 3/20, 7/08, 7/26*

U.S. Cl. 134—28 **7 Claims**

1. In a process for the machine washing of dishes, using several cleaning and rinsing cycles, the rinsing being carried out with oxyalkylated compounds containing active hydrogen atoms and solubilizers, with or without monohydric or polyhydric alcohols, the improvement wherein a rinsing liquor concentrate is employed which contains dihydric, trihydric or tetrahydric alcohols, monobasic carboxylic or hydroxycarboxylic acids, or mixtures of these, the alcohols and carboxylic acids being of 5 to 9 carbon atoms, of which one carbon atoms is quaternary, the alcoholic hydroxyl groups being exclusively primary, and the carboxyl group being bonded to the quaternary carbon atom, the amount of compound containing a quaternary carbon atom being at least about 0.2% by weight based on the weight of the concentrate.

4,239,553

THIN FILM PHOTOVOLTAIC CELLS HAVING INCREASED DURABILITY AND OPERATING LIFE AND METHOD FOR MAKING SAME

Allen M. Barnett, Newark; James V. Masi, Wilmington, and Robert B. Hall, Newark, all of Del., assignors to University of Delaware, Newark, Del.

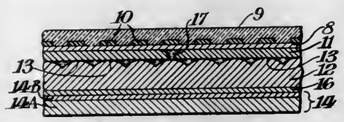
Filed May 29, 1979, Ser. No. 43,316

Int. Cl.³ H01L *31/06;* **B05D** *5/12*

U.S. Cl. 136—256 **15 Claims**

1. In a photovoltaic device of the type comprising a first electrical contact means, a layer of absorber material in ohmic electrical contact with said first electrical contact means, trans-

parent encapsulation means overlying said first electrical contact means and said absorber a layer of collector material in rectifying electrical contact with said absorber and forming a junction therewith, and a second electrical contact means in ohmic electrical contact with said collector, the improvement being said encapsulant means comprises a composite layer of a barrier member and an overlying thin layer of glass, said barrier member having a thickness between 100 and 10,000 angstroms, said glass being bonded directly to said barrier member, said barrier member being made of a material which is



chemically and electrically compatible with the material of said absorber, and said barrier member material being capable of minimizing passage of oxygen and of bonding glass and of reducing the tendency of glass to crack and microfissure thereby facilitating bonding said layer of glass to the remainder of said device and minimizing the occurrence of cracks and microfissures in said layer of glass and minimizing the passage of oxygen and moisture and air through any cracks or microfissures in said layer of glass to preserve the stoichiometry of said underlying, absorber material.

4,239,554

SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE

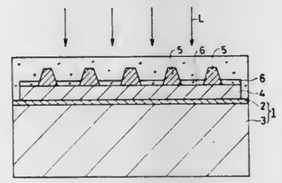
Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 58,077

Claims priority, application Japan, Jul. 17, 1978, 53-86867; Jul. 17, 1978, 53-86868

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—255 **7 Claims**



1. A semiconductor photoelectric conversion device employing a semiconductor layer having at least one inter-semiconductor heterojunction, which comprises at least a first non-single-crystal semiconductor region having a first energy gap, a second non-single-crystal semiconductor region having a second energy gap different from the first energy gap, and a third non-single-crystal semiconductor region defined between the first and second semiconductor regions to serve as a heterojunction, and wherein the third semiconductor region has an energy gap which successively changes from the first energy gap on the side of the first semiconductor region to the second energy gap on the side of the second semiconductor region, and wherein the semiconductor layer has doped therein a recombination center neutralizer and a conductive material.

4,239,555

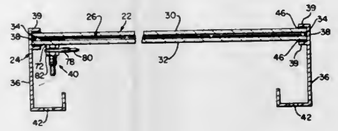
ENCAPSULATED SOLAR CELL ARRAY

Ronald S. Scharlack, Brookline, and Eric Tornstrom, Acton, both of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Jul. 30, 1979, Ser. No. 61,634

Int. Cl.³ H01L *31/04*

U.S. Cl. 136—251 **7 Claims**



1. In a solar panel sub-assembly comprising in combination:
an array of photovoltaic cells responsive to solar radiation electrically interconnected to one another by a plurality of electrical conductors;
an enclosure supporting said array, said enclosure including a rear cover, a front cover transmissive to solar radiation to which said cells are responsive, and a peripheral seal sealing together in spaced-apart relationship said front and rear covers, said front and rear covers being of sheet-like form having substantially flat surfaces; and
a plurality of terminals suitable for electrically connecting said array to a load external to said enclosure, each of said terminals penetrating through a portion of said enclosure and being electrically connected to a selected one of said cells by an electrical conductor;
the improvement wherein at least one of said terminals is tubular in form whereby an elastomer transmissive to said solar radiation to which said cells are responsive may, while fluid, be injected into said enclosure through said at least one terminal to encapsulate said array.

4,239,556

SENSITIZED STAINLESS STEEL HAVING INTEGRAL NORMALIZED SURFACE REGION

Harvey E. Cline, Stanford, Calif.; Thomas R. Anthony, and Harvey D. Solomon, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,238

Int. Cl.³ B32B *38/40*; C21D *1/34*; C22C *38/40*

U.S. Cl. 148—38 **5 Claims**

1. An article of manufacture comprising
a discrete body of an austenitic grade of stainless steel including a sensitized core with an integral outer surface region of normalized austenite steel formed in situ from the core and encompassing said core to a depth in the range of from about 1×10^{-2} cm to 1 cm and to impart passivity to the stainless steel body in a corrosive environment, said region being characterized by having the chromium content thereof homogenized throughout said region with substantially all precipitated carbides being absent from said region, including the grain boundaries, said region being further characterized in that the chemical composition of said region is the same as the chemical composition of said core.



4,239,558

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES UTILIZING EPITAXIAL DEPOSITION AND TRIPLE DIFFUSION
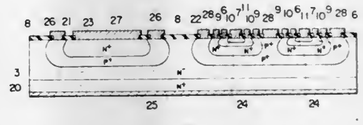
Mitsuharu Morishita, and Shiroh Iwatani, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Himeji, Japan

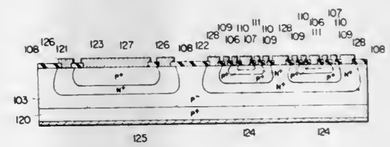
Filed May 30, 1979, Ser. No. 43,873

Claims priority, application Japan, Jun. 1, 1978, 53-66869; Jul. 3, 1978, 53-81159

Int. Cl.³ H01L *21/20, 21/22*

U.S. Cl. 148—175 **9 Claims**





4,239,557

THERMALLY STABLE SINTERED POROUS METAL ARTICLES

Edward L. Thellmann, Walton Hills, and Anton L. Gombach, Euclid, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 644,124, Dec. 24, 1975, abandoned.

This application Jan. 11, 1978, Ser. No. 868,693

Int. Cl.³ C21D *1/00*; B22F *3/24, 3/10*; H01B *1/02*

U.S. Cl. 148—126 **3 Claims**

1. A method of producing a porous sintered metal anode which is both electrically conductive and essentially physically thermally stable in that the porosity of said anode does not significantly change when subsequently exposed to a temperature approaching the original sintering temperature of said sintered metal anode which method comprises the steps of:
preparing a mixture of base metal particles consisting essentially of from about 70 to about 95 weight percent of a metal selected from the group consisting of nickel, cobalt, iron and mixtures thereof with said particles having a particle size ranging from about 0.1 microns to about 200 microns and from about 5 to about 30 weight percent of conductive dispersoid particles consisting essentially of a metal selected from the group consisting of chromium, tungsten, molybdenum and mixtures thereof with said particles having a particle size ranging from about 0.01 microns to about 50 microns;
forming said mixture into an anode of the desired shape;
heating said formed anode to a sintering temperature which is at least about 75% of the melting point of said base metal particles, said melting point being in degrees Fahrenheit, to form a sintered anode;
compacting said sintered anode to a degree sufficient to cause it to have a porosity ranging from about 55 to 85 percent; and
subjecting said so-compacted anode to a temperature sufficient to anneal the same.

1. A method of manufacturing a semiconductor device having at least one power transistor and a plurality of transistors for small signals formed on one semiconductor substrate, comprising the steps of:
preparing a highly doped semiconductor substrate of one conductivity type,
providing a semiconductor layer of said one conductivity type on an entire surface of said substrate, said semiconductor layer having a high specific resistance,
simultaneously providing at least a first and a second highly doped semiconductor regions of the other conductivity type in and around the surface portion of said semiconductor layer, said first region serving as a base region for said power transistor and said second region forming separation regions for said plurality of transistors for small signals,
providing a highly doped, third semiconductor region of said one conductivity type in said first highly doped semiconductor region of said other conductivity type and simultaneously providing a plurality of highly doped, fourth semiconductor regions of said one conductivity type in said second semiconductor region,
providing a highly doped, fifth semiconductor regions of said other conductivity type in each of said fourth semiconductor regions simultaneously,
simultaneously providing a highly doped, sixth semiconductor regions of said one conductivity type in each of said fifth semiconductor regions, and
providing electrodes on said substrate, said first region, said third region, said fourth regions, said fifth regions and said sixth regions, respectively.

4,239,559

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE BY CONTROLLED DIFFUSION BETWEEN ADJACENT LAYERS

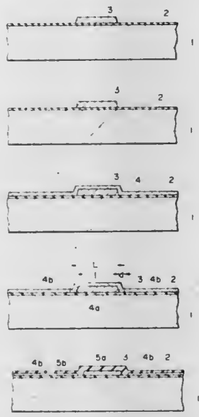
Satoru Ito, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Apr. 17, 1979, Ser. No. 30,812

Claims priority, application Japan, Apr. 21, 1978, 53-46531; Apr. 24, 1978, 53-47763; Apr. 24, 1978, 53-47764; Apr. 24, 1978, 53-47766

Int. Cl.³ H01L *21/225, 21/31*

U.S. Cl. 148—188 **23 Claims**



1. A method for fabricating a semiconductor device which comprises the steps of forming an impurity-containing layer over a certain region of a substrate, forming a semiconductor layer over another region of the substrate and contiguous to the impurity-containing layer, and doping the impurity contained in the impurity-containing layer into the semiconductor layer to selectively form an impurity-containing semiconductor region, contiguous to the impurity-containing layer, and an impurity-free semiconductor region in the semiconductor layer, wherein said impurity-containing layer and the impurity-free semiconductor region in the semiconductor layer are spaced from each other by said impurity-containing semiconductor region.

4,239,560

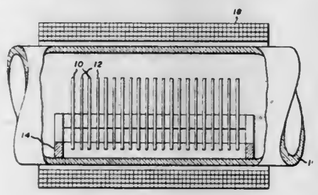
OPEN TUBE ALUMINUM OXIDE DISC DIFFUSION

Mike F. Chang, Liverpool; David K. Hartman, Manlius; Richard W. Kennedy, Skaneateles; Alfred Roesch, Auburn, all of N.Y., and Henri B. Assalit, Torrance, Calif., assignors to General Electric Company, Auburn, N.Y.

Filed May 21, 1979, Ser. No. 40,881

Int. Cl.³ H01L *21/223*

U.S. Cl. 148—189 **16 Claims**



1. A method for diffusing aluminum into a semiconductor comprising:

(a) disposing a semiconductor wafer in a diffusion tube;

(b) disposing a single crystal sapphire source wafer in said tube; and

(c) heating said tube to a temperature in excess of 1000° C.

4,239,561

PLATEAU PROPELLANT COMPOSITIONS

Albert T. Camp, Welcome, Md.; Elmer R. Csanady, Washington, D.C., and Paul R. Mosher, Indian Head, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1973, Ser. No. 421,363

Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.8 **10 Claims**

1. In a double base propellant plasticized by primary bonded nitrate esters, the improvement comprising adding about 0.2 to about 2 weight percent of monobasic cupric β-resorcylate as a ballistic modifier.

4,239,562

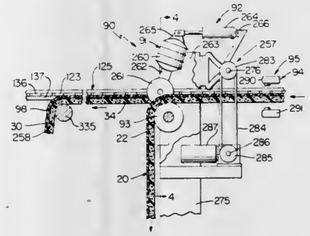
APPARATUS FOR AND METHOD OF DETECTING RELEASE TAPE SANDWICHED BETWEEN LAYERS OF A CARPETING STRIP

Michael E. McLean, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Apr. 10, 1979, Ser. No. 28,783

Int. Cl.³ B32B *5/00*

U.S. Cl. 156—64 **20 Claims**



1. In an apparatus for continuously making carpeting strip having integral joining means; said apparatus comprising means for continuously moving a wear layer having a bottom surface and opposed side edges in a rectilinear path; a device for fixing a release tape against said bottom surface adjacent an associated side edge portion of said wear layer; said release tape defining a free part of said wear layer disposed thereagainst; and means for forming a compressible backing material against said bottom surface and against said tape so that said tape isolates a portion of said backing material from said wear layer and is sandwiched there-between; said tape being removable and serving to isolate adhesive comprising said integral joining means; the improvement comprising; a photoelectric apparatus for detecting said release tape in its concealed sandwiched position.

4,239,563

PROCESS FOR THE USE OF VINYL ACETATE-ETHYLENE COPOLYMER EMULSIONS TO ADHERE FIBERS TO CARPET BACKING

John G. Iacoviello, Somerville, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 866,984, Jan. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 505,962, Sep. 16, 1974, abandoned, which is a division of Ser. No. 195,018, Nov. 2, 1971, abandoned. This application Sep. 5, 1979, Ser. No. 72,747

Int. Cl.³ B32B *27/04*

U.S. Cl. 156—72 **7 Claims**

1. The process for adhering fibers to carpet backing which comprises applying a polymeric emulsion containing as the only adhesive polymeric component a vinyl acetate-ethylene copolymer consisting of between about 61 and about 68 parts by weight of vinyl acetate per hundred parts of said copolymer, between about 32 and about 38 parts by weight of ethylene per hundred parts of said copolymer and up to about 0.7 parts by weight of another monomer selected from the group consisting of maleic acid, triallyl cyanurate and mixtures thereof per hundred parts of said copolymer; a dispersant in an amount between about 0.1 part and about 3 parts per hundred parts of said copolymer; and a thickening agent in an amount between 0.1 part and about 4 parts per hundred parts of said copolymer to the carpet backing material, removing excess polymeric emulsion and drying the emulsion thereby causing the fibers to adhere to the carpet backing material; said emulsion having a glass transition temperature of between about −35° C. and about −10° C.

4,239,564

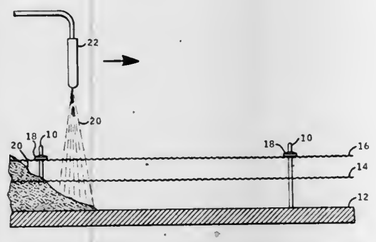
METHOD FOR COATING A STRUCTURE WITH A UNIFORM FOAM LAYER

Gary C. Krumweide, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 502,586, Sep. 3, 1974, abandoned. This application Jul. 30, 1976, Ser. No. 710,041

Int. Cl.³ B32B *31/18, 5/20*

U.S. Cl. 156—79 **5 Claims**



1. A method of forming a coating of low, uniform, density foam to a uniform thickness on a surface, which method comprises the steps of:

securing a plurality of spaced upstanding studs to a surface to be coated with foam;

stretching taut a sheet of screen material having at least about 70% open area;

lowering said screen over said studs to a selected distance above said surface;

releasing said screen so that said screen is supported by frictional engagement with said studs;

projecting a foamable liquid material through said screen in a manner producing a substantially uniform coating over said surface;

expanding said foam until the foam coating extends through said screen;

at least partially curing said foam to a self-sustaining state; and

stripping away said screen, carrying therewith the foam which has expanded through said screen.

4,239,565

OFF-THE-HIGHWAY RADIAL TIRE BUILDING SYSTEM

Virgil E. Henley, Akron; James R. Hineborg, Cuyahoga Falls, and Donald H. Nixdorf, Canton, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 29, 1974, Ser. No. 528,175

Int. Cl.³ B29H *17/10*

U.S. Cl. 156—126 **21 Claims**

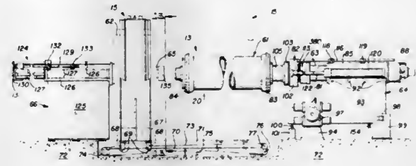
1. A method of making a pneumatic tire comprising the steps of:

A. positioning a tire carcass around an inflatable detachable building drum positioned on a first shaft;

B. forming a breaker assembly around a collapsible breaker building drum positioned on a second shaft coaxial with said first shaft;

C. transporting said breaker assembly by a breaker transport support means from said breaker building drum to around said detachable building drum;

D. inflating said detachable building drum and said tire carcass thereon to a toric shape and mating said carcass with said beaker assembly;



E. stitching said breaker assembly to said tire carcass;

F. applying tread rubber to said stitched breaker assembly and tire carcass to form an assembled tire; and

G. dismounting said detachable building drum with said assembled tire in an inflated toric configuration thereon from said first shaft.

4,239,566

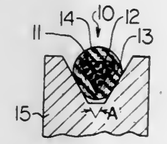
METHOD OF FORMING A ROUND SELF ORIENTING POWER TRANSMISSION BELT WITH A TRIANGULAR CORE

Anderson W. Howerton, Nixa, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 929,608, Jul. 31, 1978, Pat. No. 4,215,589. This application Nov. 1, 1979, Ser. No. 90,216

Int. Cl.³ B29D *29/00;* **B29H** *7/22;* **F16G** *1/28*

U.S. Cl. 156—137 **7 Claims**



1. A method for manufacturing an endless power transmission belt having a round cross-section and a triangular core which comprises the steps of

(a) providing a triangular core comprising a plurality of longitudinally extending load-carrying members embedded in a rubber compound;

(b) wrapping said core with at least two layers of rubberized fabric; and

(c) curing at least a portion of the length of the resulting wrapped core in a curing mold having a round cross-section.

4,239,567

REMOVABLY HOLDING PLANAR ARTICLES FOR POLISHING OPERATIONS

Richard H. Winings, Berks County, Pa., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,810

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—154 **12 Claims**

1. A method of removably mounting at least one planar article on a microcellular polyurethane surface for polishing such article, comprising:

treating the surface with an organic acid selected from the group consisting of citric, propionic, formic, and acetic

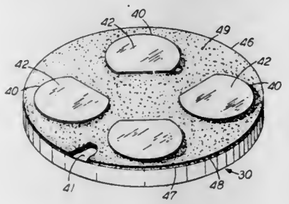
acid to promote adhesion of the article to the surface by activating the surface; and

positioning the planar article on the activated surface such that the article becomes adhered to such surface sufficiently to retain the article securely against lateral, shear forces experienced during polishing the article.

8. A method of removably mounting silicon wafers on a microcellular, polyurethane foam sheet having a relatively hard, but flexible surface for polishing such wafers comprising:

bonding the sheet to a wafer carrier, the hard surface of the sheet being exposed for mounting wafers;

treating the exposed surface of the sheet with an aqueous solution of an organic acid selected from the group consisting of citric, propionic, formic, and acetic acid to



promote adhesion of the article to the surface by activating the surface;

scraping the treated surface of the sheet to further activate the surface and to substantially remove any excess solution from the surface;

positioning the wafers on the treated surface such that the wafers become adhered to such surface sufficiently to retain the wafers securely against lateral, shear forces experienced during polishing the wafers;

polishing the wafers, the wafers remaining positioned on the mounting sheet; and

demounting the wafers from the sheet by applying a force to the wafers in a direction normal to and away from the sheet.

4,239,568

METHOD OF MANUFACTURING A BALL

Kazuyasu Takazawa, Tokyo, Japan, assignor to Tachikara Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1978, Ser. No. 922,754

Claims priority, application Japan, Feb. 2, 1978, 53/10875

Int. Cl.³ B32B *31/02;* B29C *17/02;* A63B *41/08, 45/00*

U.S. Cl. 156—155 **4 Claims**



1. A method of manufacturing a ball, comprising:

manufacturing a spherical hollow body of a brittle frangible material;

adhering a first number N of four-sided polygonal-shaped cloth strips on said spherical hollow body in such a manner that the cloth strips overlap at the margins thereof to provide a first layer of a bag body;

adhering a second number N-1 of four-sided polygonal-shaped cloth strips on said bag body in overlying relation with respective ones of said cloth strips of said first layer to form a second layer of said bag body, with said second cloth strips overlapping each other at the margins thereof at the overlaps of the margins of said first cloth strips, such that all but one of said first cloth strips is covered by a respective second cloth strip;

collapsing said brittle spherical hollow body into pieces within said bag body, and thereafter cutting an opening through said still uncovered one of said cloth strips of said first layer of said bag body;

taking the collapsed pieces of said spherical hollow body out of said bag body through said opening;

providing a tube inflatable to a round configuration and having a valve for such inflating;

coating the exterior of said tube with a lubricant;

inserting said tube in a folded condition through said opening into said bag body such that said valve protrudes out of said bag body through said opening;

adhering the turned-up edges of said opening to the base of said tube valve;

providing another four-sided polygonal-shaped second cloth strip with an aperture and adhering said another second cloth strip in overlying relation on said uncovered one of said first cloth strips with said valve extending out through said aperture and the portion of said another second cloth strip surrounding said aperture overlying said edges of said opening in said one of said first cloth strips, to complete said second layer of cloth strips with said tube inside said bag body;

inflating said tube to provide an interior support for said bag body to thereby maintain the bag body with a spherical shape while maintaining a lubricated contact between the inflated tube and the bag body;

adhering thin, narrow, rubber ribbons atop the overlapping margins of said second cloth strips of said bag body while leaving a portion of each of said second cloth strips exposed between the surrounding ribbons;

forming low outwardly-projecting protrusions on and extending longitudinally along said ribbons;

sizing four-sided polygonal leather sheets to fit snugly upon the respective second cloth layer areas bounded by said low protrusions; and

adhering said sized leather sheets to respective ones of said second cloth strips while using said protrusions to help guide the edges of said leather sheets into position on said bag body so that said sized leather sheets are snugly bounded by said protrusions.

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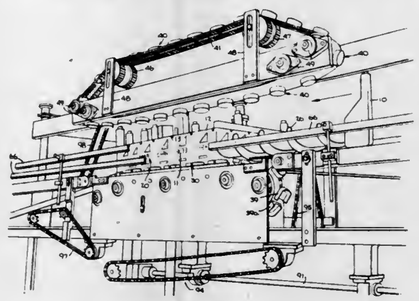
HEAT TRANSFER LABELING MACHINE

Albert J. Harvey, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,372

Int. Cl.² B65C *3/26;* B44C *57/08*

U.S. Cl. 156—156 **37 Claims**



1. An apparatus for continuously applying heat transfer labels carried on a web to individual articles to be decorated at a decorating station which comprises:

conveying means for continuously carrying said articles to a decorating station;

a plurality of receptacle means disposed adjacent to said conveying means suitable for receiving and holding said articles as they pass through said decorating station;

means for continuously driving said receptacle means containing the article to be decorated therein through said decorating station;

means for driving said label carrying web through said decorating station;

means for heating the labels on said web prior to arrival at said decorating station;

means for engaging and inflating said article while at said decorating station;

means for urging said heated label into engagement with said article to be decorated at said decorating station; and

means for conveying said decorated article away from said decorating station.

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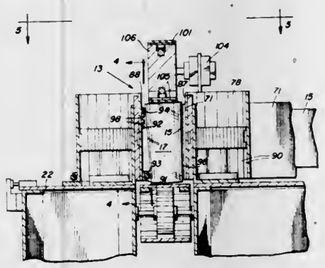
METHOD AND MACHINE FOR TRANSFERRING INDICIA TO TAPERED ARTICLES

Daniel Kerwin, Lombard, Ill., assignor to The Meyercord Co., Carol Stream, Ill.

Filed Oct. 10, 1978, Ser. No. 949,527

Int. Cl.³ B65C *3/16*

U.S. Cl. 156—163 **7 Claims**



1. The method of applying indicia to a series of articles, the indicia comprising a series of spaced decals on an elongated web, said method comprising the steps of moving a series of articles between spaced belt means, moving the indicia in spaced apart relation across one of the belt means and along a generally linear path, utilizing the other of the belt means to tip the articles to place a side of each article in a plane parallel to the indicia, the articles moving in a linear path parallel to the path of the indicia, and utilizing the belt means to roll the articles over the indicia during said movements and while said articles are tipped to produce slippage between the articles and the indicia.

2. A machine for applying indicia to a succession of tapered articles while the articles are in movement, the indicia being removably attached to an elongated web and being spaced on said web, said indicia comprising decals, said machine comprising an indicia transfer section including two spaced apart belt means, web transport means for moving the web through said section and across one of said belt means and the portion of the web extending across said belt means moving in a generally linear direction, article transport means for moving a series of spaced apart tapered articles through said section and closely adjacent said portion of the web, said belt means including means for tipping said articles as they move through said section to place the side of each tapered article which is adjacent the web in a plane which is parallel to the plane of said portion of the web, and said belt means pressing each of said articles against said portion of the web and rolling the article along said portion of the web and over an indicium as the article moves through the transfer section, whereby the web and the articles are moved in parallel linear paths while the articles are held in the tipped position as they roll over the indicia, said movement in parallel linear paths producing slippage between the surfaces of the articles and the decals.

4,239,571

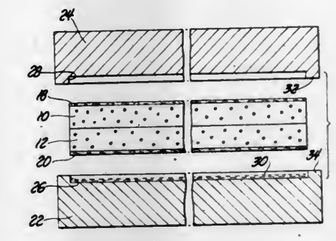
METHOD FOR MAKING A COMPOSITE STRUCTURE

A. Lawrence Cobb, Rochester, Mich., assignor to Composite Technology Corporation, Troy, Mich.

Filed Oct. 25, 1978, Ser. No. 954,704

Int. Cl.³ B32B *31/12, 31/20*

U.S. Cl. 156—196 **5 Claims**



1. The method of forming a composite structure comprising providing a first layer of open-cell, resilient foam material, impregnating said first foam layer with a first thermosetting resin system, providing a second layer of open-cell foam material, impregnating said second foam layer with a second thermosetting resin system, only said second resin system including a mold-release material incorporated therein, placing said first and second resin-impregnated foam layers in abutting relationship, overlaying each of the non-abutting surfaces of said respective foam layers with a layer of fibrous reinforcing material, providing a two-part mold, applying a mold-release material to the surface of one part of said two-part mold, applying a thermosetting gel coat over said mold-release material, placing the uncured and reinforced foam materials within the mold such that the second foam layer impregnated with the mold-release containing resin system is positioned adjacent the non-coated mold part and the first resin-impregnated foam layer is positioned adjacent the coated mold part, moving said mold parts toward each other so as to compress said foam layers whereby the open cells thereof are filled with their respective resin systems and curing said resin systems and gel coat while maintaining the foam layers in their compressed condition.

4,239,572

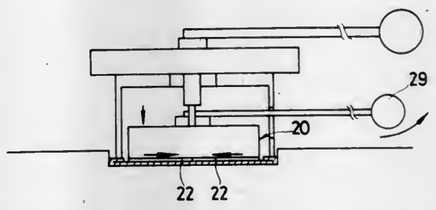
METHOD AND APPARATUS FOR FOLDING AND WELDING THE MARGINAL EDGES OF A COVER SHEET

Keiji Tomita, Tondabayashi, Japan, assignor to Kabushiki Kaisha Tomita Sangyo, Osaka, Japan

Filed Mar. 29, 1979, Ser. No. 25,145

Int. Cl.³ B32B *3/04;* B31B *1/52*

U.S. Cl. 156—227 **7 Claims**



1. Apparatus for folding the marginal edges of a sheet material upon itself, said apparatus comprising:

a table means having a recess therein over which a sheet material may be placed;
an edge erecting means having a plurality of horizontally movable erecting frames;
an edge folding means having a plurality of horizontally movable folding frames;
resilient connection means for resiliently connecting said edge folding means to said edge erecting means, said connecting means supporting said edge erecting means above said recess; and,
means for moving said edge folding means and said edge erecting means vertically.

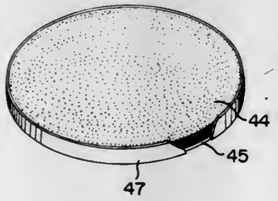
6. A method for folding the marginal edges of a sheet material upon itself said method comprising the steps of:
providing a table with a recess therein;
disposing said sheet material over said recess;
lowering a set of erecting frames into said recess until said erecting frames press said sheet material against the bottom of said recess;
horizontally extending said erecting frames to press said sheet material against lateral edges of said recess to vertically erect the marginal edges of said sheet material;
lowering a set of folding frames onto the surface of said table adjacent said recess;
drawing said folding frames inwardly toward said recess to fold said erected marginal edges horizontally; and,
drawing said erecting frames inwardly while said folding frames are still in contact with said folded marginal edges whereby said folded marginal edges are brought into surface contact with the unfolded portion of said sheet material.

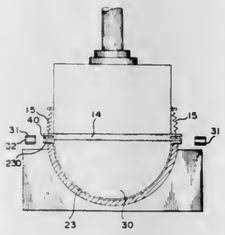
4,239,573

METHOD AND EQUIPMENT FOR MANUFACTURE OF TARGET BOARDS FOR DARTS OR ARCHERY

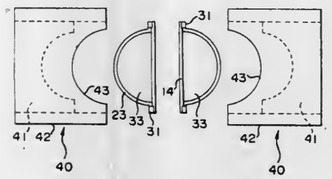
Edward W. J. Wu, 62, Wu Chuan Si Er St.,, Taichung, Taiwan

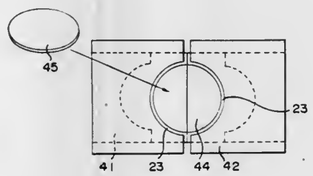
Filed Apr. 30, 1979, Ser. No. 34,753
Int. Cl.[3] B29C *19/00, 9/00;* **A63B** *63/00;* **B32B** *3/02*
U.S. Cl. 156—245 **1 Claim**

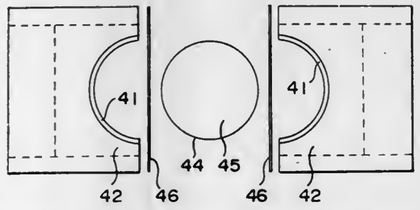




1. A method of forming a target board for darts or archery comprising the steps of:
providing a planar upper mold face with a plurality of straight grooves, said grooves being equally spaced at a pitch equal to the thickness of a target board;
providing an arcuate lower mold face with a plurality of arcuate grooves which correspond in position and pitch with said straight grooves;
placing an upper clamp member in each of said straight grooves;
releasably attaching said upper clamp members to said upper mold face;
placing a lower clamp member in each of said arcuate grooves;
placing a bunch of hemp fibers on said arcuate lower mold face;
forcing said upper mold face toward said lower mold face and tightly pressing said bunch of hemp fibers into a tightly pressed hemp bundle;
detaching said upper clamp members from said upper mold face;
releasably coupling each of said upper clamp members to a corresponding one of said lower clamp members to maintain said hemp fibers tightly pressed together;







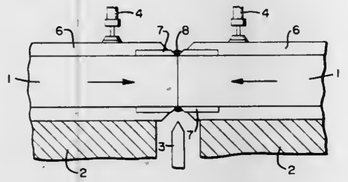
moving said upper mold face away from said hemp bundle;
removing said hemp bundle and clamp members from said lower mold face with said clamp members remaining on said bundle;
cutting said hemp bundle between said clamp members and forming a plurality of clamped semi-circular board pieces;
placing each of a pair of clamped board pieces in a mold with a planar portion of each piece facing a planar portion of the other piece;
forcing said pair of pieces together to form a circular board having a pair of planar faces;
decoupling said clamp members on each piece;
removing said decoupled clamp members from each piece of said pair of pieces;
increasing the pressure pressing said pieces of said pair of pieces together;
applying adhesive to one of said board planar faces;
adhering a reinforcing plate to said one board planar face while said board remains under pressure;
releasing said board;
placing a pair of ring members adjacent the circular periphery of said board;
forcing said ring members around said board periphery;
securing said ring members together to form a protective ring around the outer periphery of said board; and
placing decoration on said reinforcing plate.

4,239,574

PROCESS AND APPARATUS FOR THE WELDING OF SYNTHETIC RESIN STRUCTURES

Heinrich Aust, Hennef; Wolfgang Budich, Troisdorf-Sieglar; Heinz Nowak, Siegburg, and Franz Primessing, Niederkassel-Mondorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Fed. Rep. of Germany

Continuation of Ser. No. 682,199, May 3, 1976, abandoned, which is a continuation-in-part of Ser. No. 449,344, Mar. 8, 1974, abandoned. This application Mar. 7, 1978, Ser. No. 884,239
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1973, 2312362
Int. Cl.[2] B29C *27/06*
U.S. Cl. 156—267 **22 Claims**



1. In a process for welding end faces of synthetic resin profile elements together, wherein in step (a) the end faces of the profile elements to be welded together are heated by being brought into contact with a heating plate until initial melting occurs; in step (b) the heating plate is removed from between the end faces and the softened end faces are pressed together to form a weld seam and in step (c) a weld bead formed when said end faces are pressed together is removed, the improvement wherein during steps (a) and (b) each profile element is positioned between and guided by at least two wedge-like converging guide rail means that engage the profile element on at least two opposing outside surfaces thereof, each guide rail means including a leading edge that is parallel to and spaced from the end faces of the profile elements to be welded whereby a melting zone is left vacant and the weld bead formation is restricted to a minimum space so that the weld bead formation can be removed in step (c) while said profile elements are still in the warm condition; the end faces of said profile elements are pressed together in step (b) until the leading edges of the guide rail means almost contact one another whereby a portion of the weld bead formation is trimmed off and during step (c) the remaining portion of the weld bead formation is removed while said profile elements are positioned between said guide rail means by moving a scraper means transversely across the leading edges of said guide rail means while the profile elements are still in the warm condition.

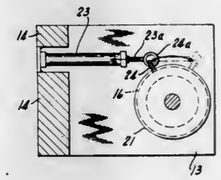
20. An auxiliary apparatus for a welding machine for welding together and for removal of a weld bead formation of synthetic resin profile elements coated with a cover layer of thermoplastic material, wherein said auxiliary apparatus includes a heating plate, and displaceable guide means at least partially encompassing the profile elements and extending into close proximity to the end faces of the profile elements to be welded together, said guide means being displaceable relative to one another such that the end faces of the profile elements to be welded are contacted with said heating plate to effect melting thereof, the heating plate is moved from between the end faces and the guide means are further displaced to compress the profile elements together to cause the formation of a weld seam and a weld bead, and wherein each guide means comprises at least two wedge-shaped converging guide rails for engaging the profile elements on at least two opposing outside surfaces thereof, each guide rail including a leading edge that is parallel to and spaced from the end faces of the profile elements to be welded whereby a welding zone is left vacant and the welding bead formation is restricted to a minimum space by the external guide rails preventing further transmission of heat and compression of said profile elements so that the weld bead formation can be removed while said profile elements are still in the warm condition; the guide means being displaceable towards each other to press the end faces of said profile elements together until the leading edges of the guide rails almost contact one another and a portion of the weld bead formation is trimmed off and said guide means being maintained at a stationary position while the remaining portion of the weld bead formation is removed by a scraper means while said profile elements are positioned in the warm condition between said guide means whereby said cover layers provide a continuous coating in the zone of the weld seam.

4,239,575

METHOD AND APPARATUS FOR MOVEMENT OF HEATED THERMOPLASTIC ELEMENTS FOR SHEAR-FUSION BONDING OF SUCH THERMOPLASTIC ELEMENTS

Alfred F. Leatherman, Columbus, Ohio, assignor to William C. Heller, Jr., Milwaukee, Wis.

Filed Oct. 26, 1978, Ser. No. 955,142
Int. Cl.[3] B29C *9/02*
U.S. Cl. 156—272 **32 Claims**



1. A method of fusion bonding plastic elements over extended interface surfaces, comprising heating the interface material to a fusion bonding temperature from a separate thermal energy source and thereby softening the interface material of said plastic elements independently of movement of said elements, subjecting the softened interface material to a high rate shear force movement in the plane of the interface to lower the viscosity of the interface material and cause said interface material to bondably flow, said shear force movement being insufficient to establish significant heating of said interface, and holding the interface surfaces while in the flowing state in firm engagement to create a fusion bond.

4,239,576

PROCESS FOR MOUNTING ELECTRONIC PARTS

Yasuo Taki, Hirakata; Yoshihiko Misawa, Katano; Shigeru Araki, Katano; Kazuhiro Mori, Katano, and Souhei Tanaka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

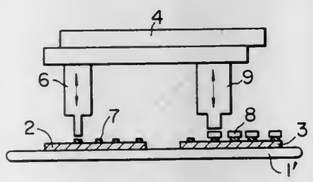
Filed Jul. 17, 1979, Ser. No. 58,319
Claims priority, application Japan, Jul. 19, 1978, 53-88833; Jan. 18, 1979, 54-4530
Int. Cl.[1] B32B *31/26*
U.S. Cl. 156—297 **5 Claims**

1. A process for mounting electronic parts comprising the steps of:
preparing a plurality of substrates on each of which a plurality of electronic parts are to be mounted;
disposing said substrates on first movable means in a relation

in which said substrates are maintained in predetermined relative positions;

disposing dispenser means for dispensing a bonding material for bonding the electronic parts to each of said substrates and mounting means for mounting the electronic parts on each of said substrates, on second movable means in a relation in which said dispenser means and said mounting means are maintained in the same relative positions as those of said substrates on said first movable means;

moving said second movable means relative to said first movable means according to a predetermined program while actuating said dispenser means and said mounting means, thereby dispensing the bonding material from said



dispenser means to predetermined points on the substrate positioned relative to said dispenser means, while, at the same time, mounting the electronic parts by said mounting means at predetermined positions on the substrate positioned relative to said mounting means;

subsequently transferring said first-mentioned substrate from the position associated with said dispenser means to the position associated with said mounting means by said first movable means; and

repeating the above steps thereby sequentially carrying out dispensing of the bonding material to the same points on said substrates and mounting of the electronic parts at the same positions on said substrates.

4,239,577

HIGH MOISTURE WOOD LAMINATING PROCESS

Seymour Hartman, Mahopac, and Timothy M. Brown, Holmes, both of N.Y., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 9, 1979, Ser. No. 28,234
Int. Cl.³ B32B *31/20, 21/08, 5/14*
U.S. Cl. 156—312 **10 Claims**

1. A process for making wood laminates from a plurality of wood plies which comprises:

(a) providing two surface plies having a moisture content of from 7 to 25% based on the dry weight of the wood;

(b) providing a center ply having a moisture content which is at least 1% and which is less than the moisture content of the surface plies;

(c) applying an adhesive to the mating surfaces of the plies;

(d) assembling a panel of the plurality of wood plies by mating the surfaces to which the adhesive has been applied; and

(e) pressing the assembled plies under conditions of pressure, temperature and time effective to cure the adhesive.

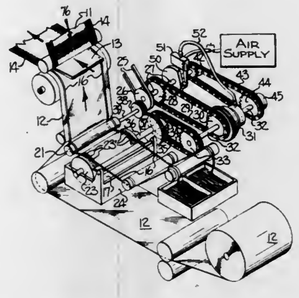
4,239,578

APPARATUS FOR INSERTING ELASTIC STRIPS DURING THE MANUFACTURE OF ELASTIC LEG DISPOSABLE DIAPERS

Graves T. Gore, Aiken, S.C., assignor to Riegel Textile Corporation, Greenville, S.C.

Filed Oct. 16, 1979, Ser. No. 85,382
Int. Cl.³ B65H *25/00*
U.S. Cl. 156—361 **5 Claims**

1. In an apparatus for attaching elastic strips in elastic leg disposable diapers having gathered and extendible side portions in the crotch area during the manufacture of such diapers in moving serially-interconnected form in an assembly machine and including means for feeding continuous elastic strips into desired position in the diaper for adhesive attachment therein and means for alternately stretching and relaxing predetermined lengths of the elastic strips during the feeding thereof for attaching the stretched lengths to the crotch area and the substantially relaxed lengths to the outer waist areas continuously along the longitudinal edges of the diapers; the improvement of said means for alternately stretching and relaxing predetermined lengths of the continuous elastic strips comprising: selectively variable drive means connected with



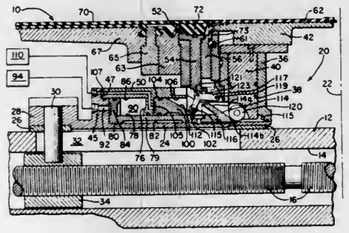
said elastic strip feeding means for driving said feeding means at a first speed substantially equal to the speed of movement of the serially-interconnected diapers in the assembly machine for maintaining the elastic strips in relaxed condition and at a second speed less than the speed of movement of the serially-interconnected diapers in the assembly machine for stretching the elastic strips; and control means operatively connected with said drive means for alternately actuating said drive means for the first and second speeds of feed of the elastic strips for alternately stretching and relaxing predetermined lengths of the elastic strips.

4,239,579

TIRE BUILDING DRUM

Gilbert A. Felten, Kehlen, Luxembourg, and Jean-Marc Dupommier, Athus, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 25, 1979, Ser. No. 42,399
Int. Cl.³ B29H *17/16, 17/22*
U.S. Cl. 156—398 **10 Claims**



1. A tire building drum having a center shaft and including a center membrane and an inflatable turn-up bladder having an elastic nose ring formed integrally thereof in close axially fixed relation to an associated end of the center membrane to form a flat cylindrical building surface; a rigid drum end assembly including a mounting sleeve mounted coaxially on and slidable along the center shaft; bead seating means arranged coaxially of and spaced circumferentially around said sleeve and mounted in said assembly to expand said elastic nose ring radially of the shaft; drum shoulder forming means mounted in said assembly for movement radially of the shaft to expand said associated end of the center membrane adjacent to said elastic

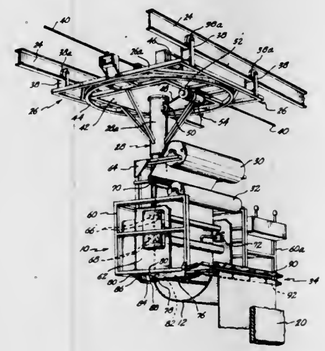
nose ring; first means disposed coaxially of and around said sleeve for movement axially thereof to effect uniform radially outward force and movement of one of said bead seating means and said drum shoulder forming means independently of the other thereof; and second means disposed coaxially of and around said sleeve for movement axially thereof to effect uniform radially outward force and movement of the other of said bead seating means and drum shoulder means independently of said one thereof.

4,239,580

IMPREGNATED FABRIC APPLICATOR WITH VIBRATING APPLICATOR ROLLS

Frank E. Ives, 2402 M St. N.E., Auburn, Wash. 98002

Filed Jul. 31, 1978, Ser. No. 929,779
Int. Cl.³ B29C *27/22;* **B21B** *13/02*
U.S. Cl. 156—468 **12 Claims**



1. An apparatus for applying a liquid saturated fabric to a surface comprising:

a frame including means for holding and dispensing a roll of fabric, impregnating means for saturating said fabric with a liquid, and means for dispensing said fabric from said roll of fabric to said impregnating means,

a subframe, and a first set of generally axially aligned applicator rolls, and first mounting means for mounting said applicator rolls for rotational movement on said subframe, said applicator rolls being serially coupled to each other and to said subframe by flexible axles generally coaxially aligned with said applicator rolls, said flexible axles allowing said applicator rolls to move transversely relative to the axes of said applicator rolls,

second mounting means for mounting said subframe on said frame for swinging movement about an axis generally parallel to the axes of said applicator rolls, said applicator rolls being adapted to receive said fabric from said impregnating means and being adapted to apply said fabric to said surface as said frame moves relative to said surface, and

means affixed directly to each of said applicator rolls for vibrating said applicator rolls in a direction transverse to the axes of said applicator rolls.

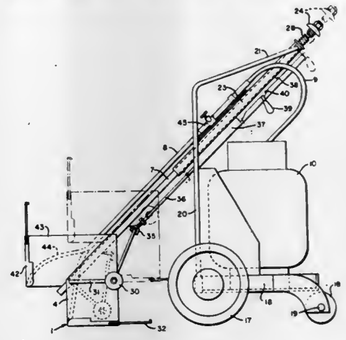
4,239,581

APPARATUS FOR SEALING LAP JOINTS OF FUSIBLE ROOFING SHEETS

John N. Lang, 46 Allpark Ave., Pittsburgh, Pa. 15216

Filed Apr. 23, 1979, Ser. No. 32,352
Int. Cl.³ B32B *31/00, 31/12;* **B29C** *25/00;* **F23C** *5/00*
U.S. Cl. 156—497 **8 Claims**

1. Apparatus for sealing lap joints of fusible roofing sheets, said apparatus comprising a burner provided with a flame chamber formed by substantially flat upper and lower walls connected by side walls and a front end wall, the flame chamber having a forwardly located fuel inlet and an open rear end, a conduit for connecting said inlet to a fuel source, means connected to one side of the burner for inserting it between the overlapping layers of a lap joint and for sliding it forward along the joint while flame heats said upper and lower walls and issues from the rear end of said chamber to fuse said overlapping layers together, hold-down means extending transversely of said upper wall and spaced above it when in inoperative position for receiving the upper layer of a lap joint between the hold-down means and said upper wall, and manually operable means for lowering said hold-down means into operating position directly above said upper wall and in close proximity thereto for engaging the upper surface of the upper layer of a lap joint and holding that layer down on the upper wall as the burner is moved forward.

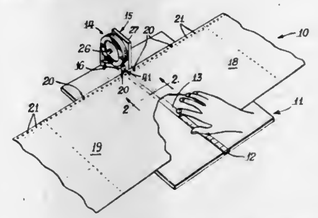


4,239,582

DATA FORM SPLICER

Thomas F. McGrath, R.R. #1, Box 259, Tinley Park, Ill. 60477

Filed Mar. 28, 1980, Ser. No. 134,779
Int. Cl.³ G03D *15/04;* **B65H** *21/00, 69/06*
U.S. Cl. 156—505 **4 Claims**



1. Apparatus for splicing computer print out data forms and the like having a plurality of spaced openings punched along a margin thereof comprising: a planar staging table having an upper work surface formed with an elongated groove recessed inwardly of and extending across said work surface; said groove having a planar bottom and marginal portions overhanging lateral margins of said bottom for holding a length of splicing tape having adhesive coating over one surface in said groove with its adhesive coating facing upwardly; tape supply means located over one end of said slotted groove whereby said tape may be manually fed into one end of said groove; means adjacent said supply means for severing said tape, spaced locating means extending upwardly from said work surface for engaging spaced openings in said data form margins to locate the same on said work surface such that adjacently opposed edges thereof are disposed centrally over the longitudinal axis of said groove whereby a length of tape located in the bottom of said groove may be adhered to the data form portions located thereover by pressing such form portions downwardly onto said tape's adhesive surface.

4,239,583

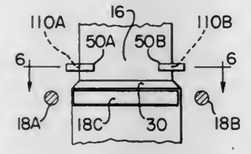
METHOD AND APPARATUS FOR CRYSTAL GROWTH CONTROL

Arthur E. Hatch, Waltham, and Douglas A. Yates, Burlington, both of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Continuation of Ser. No. 798,456, May 19, 1977. This application Jun. 7, 1979, Ser. No. 46,552

Int. Cl.³ C03B *15/34*

U.S. Cl. 156—601 **25 Claims**



1. Apparatus for growing a crystalline ribbon-shaped body of selected material having oppositely disposed edges along its length, said apparatus comprising (1) growing means for growing and pulling said crystalline body from a growth pool of melt supplied by a capillary die, said growing means including first and second heater means for selectively providing heat to the respective portions of said growth pool adjacent said edges of said body, and (2) means for replenishing said growth pool with melt provided from a reservoir supply of melt, said growth pool being characterized by a meniscus which joins said body above said capillary die at a solid/liquid interface, said apparatus further comprising:

means for observing at least a portion of said body above said meniscus at each of said oppositely disposed edges against a contrasting background, and

control means for independently maintaining each of said observed portions of said edges at a select spatial position with respect to a predetermined reference position as well as to each other, said control means including means for selectively controlling said first and second heater means so as to control the temperature of the portion of said growth pool of melt adjacent each of said edges.

4,239,584

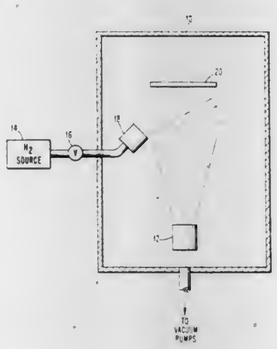
MOLECULAR-BEAM EPITAXY SYSTEM AND METHOD INCLUDING HYDROGEN TREATMENT

Chin-An Chang, Peekskill; Leroy L. Chang, Mohegan, and Leo Esaki, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 800,827, May 26, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,912

Int. Cl.³ B05D *3/06*

U.S. Cl. 156—612 **2 Claims**



1. In a molecular-beam epitaxy process for the epitaxial growth of compound semiconductor films in an enclosed vacuum chamber including at least one source material selected from the group comprising gallium, arsenic, aluminum and tin, and a substrate on which the source material is epitaxially grown, the improvement comprising the steps of providing a source of hydrogen, and the step of introducing a controlled relatively low volume of said hydrogen from said hydrogen source through a control valve into said vacuum chamber while said source material is being epitaxially grown on said substrate for changing the physical properties of the surface of said epitaxially grown material on said substrate by combining with and removing any oxygen present on the surface of said epitaxially grown material on said substrate for increasing the adsorption properties of said epitaxially grown material.

4,239,585

PROCESS FOR THE PRODUCTION OF HIGH PURITY SILICON MONOCRYSTALS HAVING A LOW OXYGEN CONTENT

Franz Köhl, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,518

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758888

Int. Cl.³ C30B *15/00*

U.S. Cl. 156—617 SP **3 Claims**

1. An improved process for the production of high purity silicon monocrystals having a low oxygen content of the Czochralski crucible-drawing type wherein polycrystalline silicon is melted in a crucible to produce a melt and a seed crystal is then dipped into the melt and is continuously drawn therefrom while being rotated so as to produce a growing monocrystalline silicon rod, which is withdrawn from the melt, the improvement comprising:

initially withdrawing the crystallized silicon rod from the melt while rotating said rod at a speed within the range of from 3 to 6 rev/min and increasing the rotational speed by 0.5 to 2 rev/min per 10 cm of crystallized silicon rod.

4,239,586

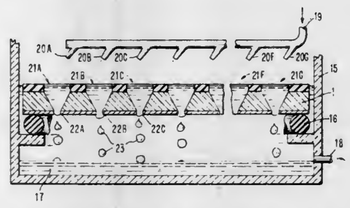
ETCHING OF MULTIPLE HOLES OF UNIFORM SIZE

Richard A. Ghez, Millwood; John B. Gunn, Mt. Kisco, both of N.Y.; Robert Hammer, Brookfield Center, Conn., and James A. Van Vechten, Millwood, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,490

Int. Cl.³ H01L *21/306*

U.S. Cl. 156—644 **6 Claims**



1. In the fabrication of one or more holes passing through a substrate, each hole having at least one specific dimension intended to be closely controlled by the technique of etching said substrate with an etching agent having a meniscus extending across the hole, the improvement comprising:

providing an interdependent relationship between the force on said meniscus and the surface tension of a fluid, said relationship being operable to terminate etching by removal of etchant from each hole when the hole is etched to said particular dimension.

4,239,587

METHOD OF MANUFACTURING A THIN-FILM MAGNETIC HEAD WITH A NICKEL-IRON PATTERN HAVING INCLINED EDGES

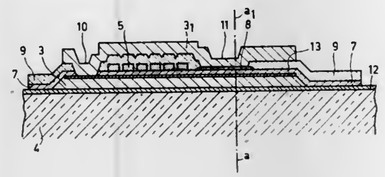
Gerrit J. Koel, and Lambertus Postma, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,685

Claims priority, application Netherlands, Aug. 29, 1977, 7709481

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—659.1 **3 Claims**



1. A method of manufacturing a thin-film magnetic head, the method including the steps of forming a layer of a nickel-iron alloy on a substrate, forming a photoresist pattern over the nickel-iron alloy layer, and chemically etching the nickel-iron layer so as to form a pattern having sloping sides, wherein a top thickness of the nickel-iron layer remote from the substrate has a higher iron content than the iron content of the remainder of the nickel-iron alloy layer.

4,239,588

METHOD OF EFFECTIVELY UTILIZING THERMAL ENERGY IN SPRAY DRYING

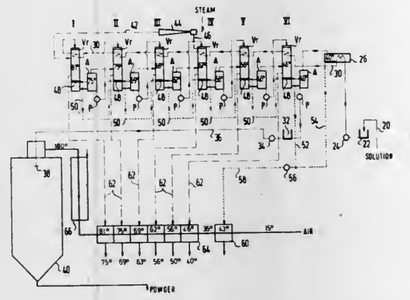
Joachim Engelhardt, Marxzell-Burbach, Fed. Rep. of Germany, assignor to Wiegand Karlsruhe GmbH, Ettlingen, Fed. Rep. of Germany

Continuation of Ser. No. 843,273, Oct. 18, 1977, abandoned. This application Mar. 27, 1979, Ser. No. 24,253

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1976, 2648219

Int. Cl.³ B01D *1/18, 1/26*

U.S. Cl. 159—48 R **5 Claims**



1. A method of effectively utilizing thermal energy supplied to a solution of a solid product in a volatile solvent which comprises:

(a) heating said solution in a multiple-effect evaporator by sequential heat exchange of said solution with a condensible gas in respective effects at different temperatures and pressures to convert said gas to a liquid phase, and to convert a portion of said solvent to a gaseous phase in each effect until a liquid concentrate is formed from said solution;

(b) separately withdrawing respective portions of one of said phases from each of at least two of said effects;

(c) passing a gaseous fluid sequentially through at least two stages of a heating arrangement having a plurality of stages;

(d) heating said gaseous fluid in said at least two stages by heat exchange with the portions of the phases respectively withdrawn from said at least two effects;

(e) contacting said concentrate with an amount of the heated gaseous fluid sufficient to evaporate the remaining solvent from said concentrate;

and wherein said withdrawn one phase is said liquid phase and is returned to one of said effects after heat exchange with said gaseous fluid in one of said two stages.

4,239,589

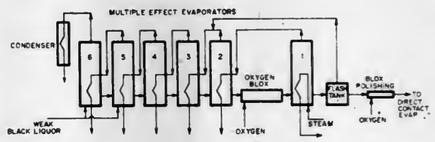
PROCESS FOR OXIDATION OF BLACK LIQUOR

Edward F. Elton, Bethlehem; Andrew J. Patrylak, Wescosville, and Joseph G. Santangelo, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 2, 1978, Ser. No. 947,802

Int. Cl.³ D21C *11/10, 11/14*

U.S. Cl. 162—31 **13 Claims**



1. In the oxidation of black liquor obtained from wood pulping with sulfur-containing compounds in a system employing multiple effect evaporation for concentration of such liquor, the improvement which comprises utilizing the heat evolved in the oxidation reaction to reduce the external heat requirement for evaporation of the black liquor supplied to such evaporation, such reduction in external heat requirement being effected by (a) subjecting the total sulfur content of the black liquor introduced to said multiple effect evaporation to such oxidation, (b) employing oxygen gas of high O_2 concentration for said oxidation, and (c) conducting the oxidation at superatmospheric pressure during a stage of black liquor flow through the multiple effect evaporation or immediately subsequent to the final evaporation stage in the direction of liquor flow through said multiple effect evaporation; flashing the oxidized liquor from said final evaporating stage and returning the flashed vapors to the multiple effect evaporation to augment heating in at least one effect by combining the flashed vapors with vapors leaving an evaporation effect located upstream of the oxidation stage in the direction of black liquor flow, said evaporation effect being operated at higher pressure than that of the effect into which the black liquor is first introduced.

4,239,590

METHOD OF MAINTAINING UNIFORMITY OF FIBROUS MATERIAL FED TO A CONTINUOUS DIGESTER

James R. Prough, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Division of Ser. No. 815,200, Jul. 12, 1977, Pat. No. 4,146,422, which is a continuation of Ser. No. 717,390, Aug. 24, 1976, abandoned, which is a continuation of Ser. No. 526,064, Nov. 21, 1974, which is a continuation of Ser. No. 320,827, Jan. 3, 1973. This application Jan. 11, 1979, Ser. No. 2,762

Int. Cl.³ D21C *7/12;* **D21F** *1/08*

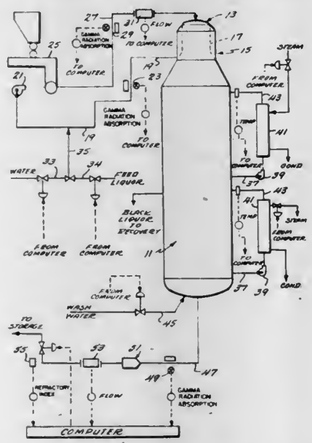
U.S. Cl. 162—49 **1 Claim**

1. A method of maintaining uniformity of the amount of cellulosic fibrous material fed to a continuous pulp digester in

a feeding process in which the material is continuously introduced into a liquid to form a liquid-material slurry which is continuously conveyed to the inlet end of the continuous digester where the material is continuously separated from the main body of the liquid and continuously deposited into the digester inlet while the separated liquid is continuously recirculated to form a part of the slurry, said method comprising the steps of

continuously measuring the gamma radiation absorption of the slurry so as to derive continuous measurements which are a function of any continuous variations in the combined densities of the material and the liquid of the slurry resulting from (1) continuous variations in the amount of material in the slurry alone, or (2) continuous variations in the density of liquid portion thereof alone, or (3) continuous variations in both (1) and (2);

continuously measuring the total flow of the slurry;



continuously measuring the gamma radiation absorption of the recirculated liquid so as to derive continuous measurements which are a function of any continuous variation in the density of the liquid of the slurry;

utilizing the continuous gamma radiation absorption measurements of the recirculated liquid and the flow measurement of the slurry to compensate for variations in the continuous gamma radiation absorption measurements of the slurry resulting from variations in the density of the liquid of the slurry to thereby obtain a continuous indication of any variation in the amount of material in the slurry; and

utilizing the continuous indication of any variation in the amount of material in the slurry to change the amount of material in the slurry in a manner tending to make the amount of material in the slurry uniform.

4,239,591

MANUFACTURE OF AN NON-LAMINATED PAPER WEB HAVING REGIONS OF INCREASED THICKNESS

David R. Blake, 11200 Killarney, Onsted, Mich. 49265

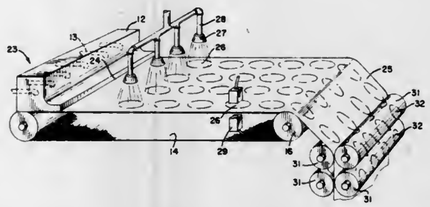
Filed Oct. 19, 1978, Ser. No. 952,624

Int. Cl.[3] D21H *5/02*; D21F *1/00*

U.S. Cl. 162—109 **7 Claims**

1. An improvement in a papermaking machine of the fourdrinier type including means for flowing a quantity of pulp stock onto an endless forming screen positioned therebelow to produce a paper web of substantially uniform thickness, said improvement comprising at least one spraying head spaced from the web in the web forming area, means for supplying pulp to said at least one spraying head, said at least one spraying head being directed toward said web to spray additional quantities of pulp stock onto the uniform thickness web, and means to periodically interrupt the deposition of additional pulp stock by said spraying head to create a plurality of isolated regions of increased thickness corresponding to said at least one spraying head integral with the paper web, and roller means downstream from said web forming area for compressing said web to form a paper sheet, said roller means comprising a web-engaging surface comformable with said region of increased thickness to form a paper sheet having a corresponding region of increased thickness.

6. A papermaking process comprising the steps of flowing a quantity of pulp stock onto an endless forming screen to form



a paper web of substantially uniform thickness, periodically spraying additional quantities of pulp stock from at least one sprayhead onto the web in the web forming area to form isolated regions of increased thickness corresponding to the deposition of pulp from said at least one sprayhead, said thickened regions forming an integral part of said web, and compressing said web with roller means downstream of said web forming area to form a paper sheet, said roller means comprising a web-engaging surface conformable with said region of increased thickness.

4,239,592

STARCH BLEND, PROCESS OF SIZING PAPER THEREWITH, AND PRODUCT THEREOF

Lawrence A. Gaspar, Lebanon; Martin Tessler, Edison, and Alexander R. Malcolm, Middlesex, all of N.J., assignors to National Starch and Chemical Corp., Bridgewater, N.J.

Filed Nov. 15, 1976, Ser. No. 741,605

Int. Cl.[3] D21H *3/28*

U.S. Cl. 162—175 **23 Claims**

1. A paper or paperboard product having applied to the surface thereof a sizing amount of dispersion of a starch blend of 1–20 parts of a hydrophobic starch and 99–80 parts of a non-hydrophobic starch, said hydrophobic starch being a starch monoester of a dicarboxylic acid in which the two carboxylic acid groups are positioned on adjacent carbons, said dicarboxylic acids being selected from the group consisting of aliphatic, aromatic, cycloaliphatic, bicycloaliphatic dicarboxylic acids and alkyl and fluorine, chlorine, and bromine substituted derivatives thereof; and said dicarboxylic acids or substituted dicarboxylic acids have a total of 8–22 carbon atoms.

18. A starch blend comprising 1–20 parts of a hydrophobic starch and 99–80 parts of a non-hydrophobic starch, said hydrophobic starch being a starch monoester of a dicarboxylic acid in which the two carboxylic acid groups are positioned on adjacent carbons, said dicarboxylic acids selected from the group consisting of aliphatic, aromatic, cycloaliphatic, bicycloaliphatic dicarboxylic acids and alkyl and fluorine, chlorine and bromine substituted derivatives thereof; and said dicarboxylic acids or substituted dicarboxylic acids have a total of 8–22 carbon atoms.

4,239,593

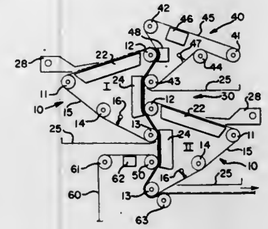
MULTIPLY PAPERBOARD MACHINE

Earl W. Dunsmoor, Jr., Manhattan Beach, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 22, 1979, Ser. No. 5,135

Int. Cl.[3] D21F *1/00*

U.S. Cl. 162—303 **6 Claims**



1. A multiply paperboard manufacturing machine comprising:

A. a top fibrous ply holding and wet pressing unit having:

four horizontally positioned spaced-apart rolls equally spaced from a vertical plane normal to the axes of the rolls, with said rolls being a tail roll, head roll, foot roll and guide roll, parallel to each other,

a fibrous ply forming endless fabric belt wound over the four rolls,

the run of fabric belt between the head roll and the tail roll being inclined,

a vacuum box beneath a run of the fabric belt extending from the tail roll to the head roll, and

a high vacuum box behind a run of the fabric belt extending from the head roll to the foot roll;

B. a plurality of fibrous ply forming apparatus, with each such apparatus comprising:

four horizontally positioned spaced-apart rolls equally spaced from a vertical plane normal to the axes of the rolls, with said rolls being a tail roll, head roll, foot roll and guide roll, parallel to each other,

a fibrous ply forming endless fabric belt wound over the four rolls,

the run of fabric between the head roll and the tail roll being inclined,

a low-vacuum box beneath a run of the fabric belt extending from the tail roll to the head roll for dewatering a forming fibrous ply deposited on said fabric run,

a high-vacuum box behind a front face run of the fabric belt extending vertically from the head roll to the foot roll, said run constituting an apparatus front face, and

a headbox positioned to deposit a fibrous ply on the fabric belt run between the tail roll and the head roll;

the plurality of fibrous ply forming apparatus being positioned in a substantially vertical arrangement with the front face of every other apparatus fronting on, and being on, the same side of a vertical line;

the vertically an uppermost forming apparatus for a first fibrous ply being positioned to have its head roll opposite and close to the vacuum box of the holding unit behind the run of the fabric belt extending from the head roll to the foot roll of the holding unit;

the head roll of the second and subsequent ply forming apparatus being positioned opposite and close to the lower portion of the high-vacuum box of the next higher fibrous ply forming apparatus;

the foot roll of each fibrous ply forming apparatus, except the lowermost apparatus, being positioned opposite and close to the upper portion of the high-vacuum box of the next lower fibrous ply forming apparatus; and

C. a bottom pressure roll opposite and close to the lower portion of the high-vacuum box of the lowermost fibrous ply forming apparatus.

4,239,594

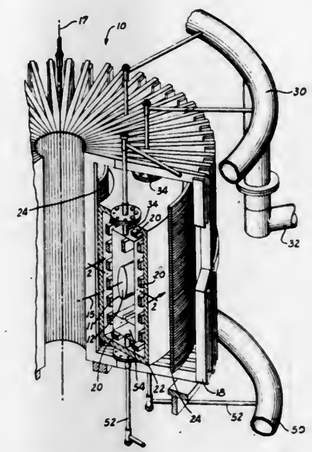
CONTROL OF IMPURITIES IN TOROIDAL PLASMA DEVICES

Tihiro Ohkawa, La Jolla, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1975, Ser. No. 608,985

Int. Cl.[2] G21B *1/00*

U.S. Cl. 176—9 **2 Claims**



1. Toroidal plasma confinement apparatus having a positive ion toroidal magnetic drift in a direction along the major toroidal axis including means for the control of impurity flow into a hydrogen plasma comprising means for providing a toroidal magnetic field in which the plasma is embedded, means for providing a toroidal current in the plasma and for generating a poloidal magnetic field in which the plasma is embedded, means for providing an axisymmetric source of hydrogen in a minor azimuthal zone adjacent the plasma and displaced from the plasma in a direction along the major toroidal axis opposite the direction of positive ion toroidal drift, and an axisymmetric particle sink in a minor azimuthal zone adjacent the plasma and displaced from the plasma along the major toroidal axis in the direction of positive ion toroidal drift, the source strength of said axisymmetric source of hydrogen being at least

$$\frac{2}{eRB_{To}}\left(\frac{1}{n_i}\frac{\partial p_i}{\partial r}-\frac{1}{n_i Z_1}\frac{\partial p_I}{\partial r}\right)$$

particles per second for reversal of impurity flow such that said source replenishes protons lost from the plasma by the positive ion toroidal drift to eliminate circulation flow of impurity ions along the flux lines of the toroidal and poloidal magnetic fields which otherwise would result in net impurity influx into the plasma.

4,239,595

DATA SYSTEM FOR AUTOMATIC FLUX MAPPING APPLICATIONS

Robert M. Oates, Murrysville; James A. Neuner, Rich Land, both of Pa.; Robert D. Couch, Jr., Baltimore, and Alan M. Kasinoff, Pikesville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 11, 1979, Ser. No. 2,630

Int. Cl.[3] G21C *17/00*

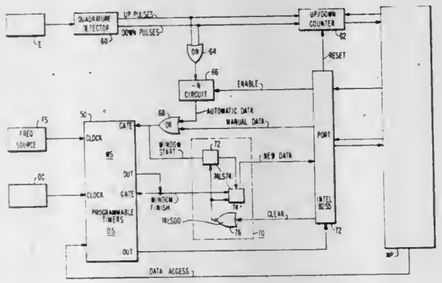
U.S. Cl. 176—19 R **9 Claims**

1. In a nuclear reactor flux mapping system including one or more neutron detectors operable to be driven into and out of

the reactor core along any one of a number of pre-established paths in response to a mechanical drive mechanism and drive control circuitry, said detector producing an electrical signal indicative of the neutron activity within the reactor core, the combination of;

a converter means for converting the electrical signal of a detector to a pulse rate indication of the measured neutron activity;

a data collection system including a control means and a programmable timer means having a first and second section, said control means producing an output indicative of the position of said detector within said reactor core, said first section of said programmable timer means having a clock input, a gate input and an output, a reference



frequency means being connected to the clock input of said first section, said output of said control means being connected to the gate input of said first section, said first section producing a data window output of a predetermined duration, said second section of said programmable timer means having a clock input and a gate input, said data window output of said first section being supplied as the gate input to said second section, said pulse rate output of said converter means being supplied as the clock input to said second section, said second section producing a measurement of neutron activity within said data window in accordance with the position of the detector within said reactor core, and

means connected to said second section to access said neutron activity measurement information.

4,239,596

PASSIVE RESIDUAL HEAT REMOVAL SYSTEM FOR NUCLEAR POWER PLANT

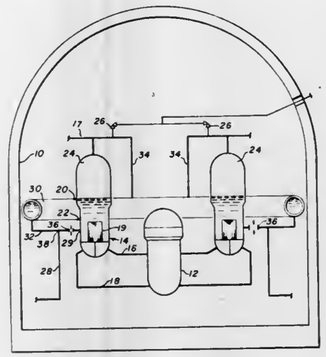
Frank Bevilacqua, Windsor; Vincent M. Callaghan, West Granby, both of Conn., and James L. Van Fleet, Tokyo, Japan, assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 16, 1977, Ser. No. 861,229
Int. Cl.[2] G21C *15/18*
U.S. Cl. 176—37 **9 Claims**

1. In a nuclear steam supply power plant having a pressurized water reactor in fluid communication with the primary tube side of a steam generator, the secondary shell side of which has a steam volume above a water volume, the water volume having upper and lower design level limits, the plant further including a normal feedwater supply line to the secondary side of the steam generator and a safety valve connected to the secondary side of the steam generator, a system for passively dissipating the residual heat of the reactor after a shutdown, comprising:

an enclosed reservoir located at an elevation at least that of the lower level limit and having a height substantially equal to the difference in elevation between the upper and lower level limits and having a predetermined volume chosen according to the amount of residual energy desired to be dissipated; and

means for passively and automatically supplying water under the force of gravity from said reservoir to the secondary side of the steam generator upon a loss of flow in



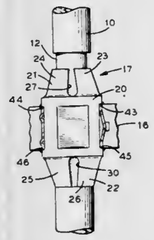
the normal feedwater line, whereby the steam generator water level is maintained between the level limits so long as there is water in said reservoir.

4,239,597

NUCLEAR FUEL SPACER GRID

David W. Christiansen, Kennewick, Wash., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 30, 1978, Ser. No. 891,792
Int. Cl.[2] G21C *3/30*
U.S. Cl. 176—78 **5 Claims**



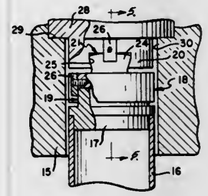
1. In a nuclear fuel assembly structure of the type having a plurality of fuel elements transversely separated by a fuel element spacer grid, the improvement comprising a tubular structural support for the fuel assembly, the tubular structural support having a longitudinal axis, a smooth outer surface free from protuberances, and a recessed intermediate surface formed in a portion of the outer surface of the tubular structural support, the recessed intermediate surface having longitudinally spaced flanges, said flanges connecting the smooth outer surface to the recessed intermediate surface, a spacer grid retainer generally enclosing at least a portion of the recessed intermediate surface between the longitudinally spaced flanges, said spacer grid retainer having a plurality of detents thereupon for engaging said spacer grid, and a plurality of resilient slotted fingers on the spacer grid retainer, the fingers protruding from the retainer into the recessed intermediate surface formed in the smooth outer surface of the tubular structural support in order to bear against the recessed intermediate surface and to selectively engage the flanges, said spacer grid retainer being secured at a predetermined position relative to the tubular structural support determined by the engagement of the fingers with the recessed intermediate surface of the tubular support structure.

4,239,598

NUCLEAR REACTOR HEAT TRANSPORT SYSTEM COMPONENT LOW FRICTION SUPPORT SYSTEM

Elman E. Wade, Ruffs Dale, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 31, 1978, Ser. No. 956,319
Int. Cl.[3] G21C *13/04*
U.S. Cl. 176—87 **7 Claims**



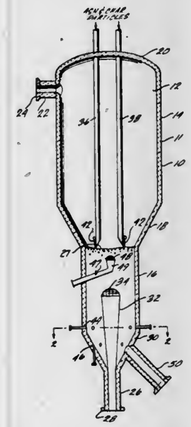
1. A support column capable of limited lateral deflection upon application of a limited orthogonal force to the top thereof comprising an elongated pipe, means establishing two longitudinally displaced curved surfaces constituting part of the surfaces of two large diameter horizontal cylinders having horizontal axes of curvature intersecting at right angles, said curved surfaces extending horizontally across the column at top and bottom of the column, and means establishing two longitudinally displaced, plane, horizontal surfaces at top and at bottom of column, said curved cylindrical surfaces bearing on the plane, horizontal surfaces.

4,239,599

PROCESS FOR STRIPPING OIL FROM FLUIDIZED ASH AND CHAR PARTICLES TO PREPARE THE PARTICLES FOR DECARBONIZATION

Charles K. Choi, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Division of Ser. No. 719,274, Aug. 31, 1976, Pat. No. 4,116,823, which is a continuation-in-part of Ser. No. 603,874, Aug. 11, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 936,098
Int. Cl.[3] C10B *49/16, 53/02*; B09B *3/00*
U.S. Cl. 201—2.5 **1 Claim**



1. In a process for the pyrolysis of organic solid waste wherein a high density particulate inorganic heat source is combined with particulate organic solid waste and transported through a flash pyrolysis zone which yields from pyrolysis of the particulate organic solid waste, a low density particulate carbon containing solid residue of pyrolysis, pyrolytic oils and gases, which in admixture with the high density particulate inorganic heat source pass through at least one cyclone separator which separates particles of the high density particulate heat source and low density particulate carbon containing solid residue of pyrolysis with some entrained pyrolytic oil from the balance of the pyrolytic oils and gases, the steps of preparing separated particles of high density particulate heat source and low density particulate carbon containing solid residue of pyrolysis for feed to a decarbonization zone where the high density particulate inorganic heat source is heated and the low density particulate carbon containing solid residue of pyrolysis converted to high density particulate inorganic heat source which comprises:

(a) transferring the separated particles of high density particulate inorganic solid heat source and low density particulate carbon containing solid residue of pyrolysis to a fluidized bed of particles of high density particulate inorganic solid heat source and low density particulate carbon containing solid residue of pyrolysis contained in a vessel having a gas expansion zone above the fluidized bed;

(b) injecting jets of a gas horizontally and vertically at the lower end of the fluidized bed to strip the pyrolytic oil from the particles and maintain the particles of the fluidized bed in a fluidized state;

(c) passing the gas and stripped oil from the fluidized bed through the gas expansion zone and outwards of the vessel;

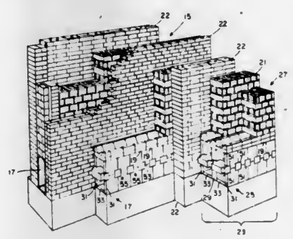
(d) removing from a point intermediate of the fluidized bed a mixture of the high density particulate inorganic solid heat source and low density particulate carbon containing solid residue of pyrolysis for transfer to the decarbonization zone.

4,239,600

TALL COKE OVEN SOLE FLUE

William D. Edgar, Allison Park, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jan. 30, 1980, Ser. No. 116,859
Int. Cl.[3] C10B *5/00, 29/02*
U.S. Cl. 202—138 **10 Claims**



1. In combination with a slot-type coke oven, a sole flue comprising:

(a) at least one floor liner of refractory material, positioned to form the bottom of a sole flue;

(b) a pair of side liner walls, each of which is composed of at least two vertical courses of refractory side liners, each said course of refractory side liners being composed of at least one refractory side liner, the lowermost portion of the lowermost course of said pair of side liner walls being maintained apart by said bottom of said sole flue;

(c) at least one rider tile, positioned to form the top of said sole flue, said at least one rider tile which includes means for maintaining uppermost portions of the uppermost course of said pair of side liner walls apart, to the same extent that said lowermost portions of said lowermost courses of said pair of side liner walls is maintained apart by said bottom of said sole flue, said at least one rider tile

including a plurality of ports for conducting gases therethrough; and

(d) refractory means for maintaining apart each of said pair of side liner walls from the other, and those portions of each successive course of said pair of side liner walls which are adjacent the horizontal joints which are created between each said successive courses of said pair of said side liner walls and which are also adjacent the vertical joints which are created between each two successive side liners in each said course of side liners, said means for maintaining apart operating to maintain apart those portions of said pair of side liner walls which are adjacent to both said horizontal joints and said vertical joints to the same extent that said lowermost course of said pair of side liner walls is maintained apart by said at least one floor liner.

4,239,601

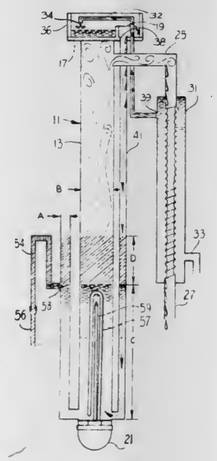
WATER DISTILLER WITH VOLATILE POLLUTANTS REMOVAL STAGE

Kenneth D. Lemoine, P.O. Box 476, Gravette, Ark. 72736

Continuation of Ser. No. 973,237, Dec. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 914,928, Jun. 12, 1978. This application Nov. 27, 1979, Ser. No. 97,820

Int. Cl.³ B01D *3/42;* **C02F** *1/04*

U.S. Cl. 202—176 **13 Claims**



1. Distillation apparatus comprising,

a boiler having at least one opening at the bottom thereof,

a heater for heating the liquid content of said boiler,

a vapor column in the form of a vertically elongated cylindrical chamber receiving vapor produced in said boiler,

a vapor column outlet near the top of said vapor column,

a condenser adjacent said column with a central vapor channel and a surrounding liquid cooling jacket having an inlet and an outlet, the top of said channel being connected to said vapor column outlet and the bottom of said channel having a distilled liquid outlet,

a container of substantial area open to the atmosphere having a surface in heat exchanging relation with the interior of said vapor column,

a conduit for liquid extending from the outlet of said jacket to the interior of said container,

means including an opening at the bottom of said container for conveying liquid from said container to said boiler,

an overflow tube connected to said opening at the bottom of said boiler and extending upward to an opening to the atmosphere above the desired level of liquid in said boiler, and a downwardly extending drain conduit connected into said overflow tube at the vertical level of the minimum desired liquid level in said boiler.

4,239,602

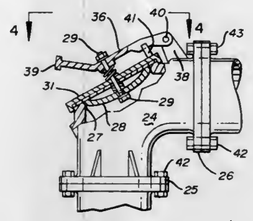
ASCENSION PIPE ELBOW LID FOR COKE OVENS

James B. La Bate, Beaver Falls, Pa., assignor to Insul Company, Inc., East Palestine, Ohio

Filed Jul. 23, 1979, Ser. No. 59,909

Int. Cl.³ C10B *27/00*

U.S. Cl. 202—242 **6 Claims**



1. An improved ascension pipe elbow for coke ovens wherein the elbow has an angularly disposed circular shoulder in an upper portion thereof defining a vent opening in said elbow, the improvement consisting of a lid, means on the elbow hinging the lid thereto for arcuate movement toward and away from said vent opening, an inverted dome-shaped circular baffle and means attaching said baffle to said lid, said baffle positioned for location through said vent opening and substantially within said ascension elbow when said lid is closed, an insulating gasket of refractory fibrous material positioned between said lid and said inverted dome-shaped baffle with the peripheral edge of said gasket normally engaged between said lid and said circular shoulder on the ascension elbow surrounding the vent opening therein so as to normally seal the same.

4,239,603

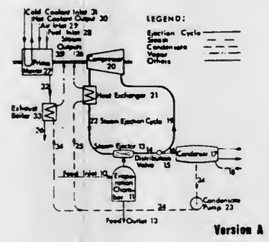
FUEL-EFFICIENT GENERATION OF EJECTING STEAM

Dan Egosi, 7 Ben Gurion Blvd., Tel Aviv, Israel

Filed Feb. 22, 1978, Ser. No. 879,856

Int. Cl.³ B01D *1/28;* **C02F** *1/06*

U.S. Cl. 203—11 **26 Claims**



1. In combination with a process employing steam ejection that includes inflowing an aqueous substance into a flash evaporation means for vaporizing water from the substance, discharging the substance remaining after said vaporization, supplying ejecting steam at a first pressure and a first enthalpy level to ejector means operatively connected to the flash evaporating means for creating and maintaining an under-pressure in said flash evaporation means and for evacuating and subsequently thermo-compressing the vaporized water from the flash evaporation means to a second pressure and second enthalpy level lower than the respective first pressure and first enthalpy level, a method for the continuous regeneration of ejecting steam, the method comprising:

(a) employing a predetermined quantity of ejecting steam in a returning conduit including said ejector means;

(b) expanding said ejecting steam in said ejector means to said second pressure and second enthalpy level;

(c) recompressing said expanded ejecting steam with mechanical compression means to its initial first pressure, and an enthalpy level at least equal to said first enthalpy level;

(d) repeating steps (b) and (c) in a continuous cycle, whereby the predetermined quantity of ejecting steam is continuously regenerated without condensing it and without using a boiler to regenerate it;

(e) branching off from the flow of steam/vapor mix exiting from the ejector means that part of the flow which is in excess of the initial recompressed ejecting steam flow, leaving thereby the predetermined quantity of ejecting steam flow for the continuous implementation of steps (b) and (c); and

(f) condensing the branched-off flow.

4,239,604

SELECTIVE LAYER FOR ABSORBING COMPARTMENT OF SOLAR COLLECTORS

Faramarz S. Mahdjuri, Via S. Sebastiano 33, Bergamo, Italy

Filed May 21, 1979, Ser. No. 40,521

Claims priority, application Switzerland, Jun. 2, 1978, 6033/78

Int. Cl.³ C25D *9/08;* **F24J** *3/02*

U.S. Cl. 204—56 R **7 Claims**

1. An electrolytic method for applying a black layer to a metal substrate with said black layer having an absorption coefficient greater than 0.9 for the solar spectrum and an emissivity of less than 0.1 for infrared thermal radiation up to 400° K., characterized in that the electrolyte utilized consist solely of an aqueous solution of one or more water-soluble thiocyanates selected from the group consisting of iron thiocyanate, cobalt thiocyanate, and nickel thiocyanate.

4,239,605

METHOD FOR THE ELECTROLYTIC PREPARATION OF NARWEDINE-TYPE DIENONES

Radoslav Y. Vlahov; Dikran A. Krikoryan; Maria S. Zagorova; Maya H. Hinova, and Stoyan P. Parushev, all of Sofia, Bulgaria, assignors to Edinen Centar Po Chimia, Sofia, Bulgaria

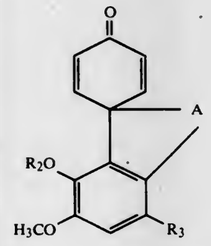
Filed Nov. 14, 1979, Ser. No. 94,351

Claims priority, application Bulgaria, Nov. 21, 1978, 42315; Nov. 21, 1978, 41458

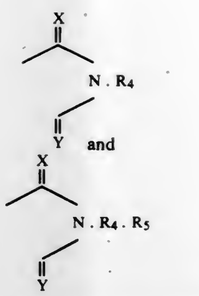
Int. Cl.³ C25B *3/00*

U.S. Cl. 204—59 R **2 Claims**

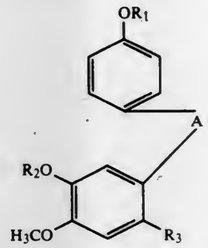
1. Method for the preparation of narwedine-type dienones and derivatives thereof of the formula



wherein A is selected from the group consisting of



X and Y being selected from the group consisting of H_2 and O, R_2 and R_4 being low order alkylic groups selected from the group consisting of $CH_2C_6H_5$ and $CH_2C_6H_4OCH_3$, R_3 being a halogen atom and R_5 being $HClO_4$ and similar salts of an organic or inorganic acid which comprises electrochemically oxidizing a diphenolic compound of the formula



wherein R_1 is selected from the group consisting of low order alkylic groups of the formula $CH_2C_6H_5$ and $CH_2C_6H_4OCH_3$ and R_2 and R_3 are as defined above, said oxidizing being effected at an anode potential ranging from 1.1 to 1.7 volts in the presence of a solvent and a conductive salt.

4,239,606

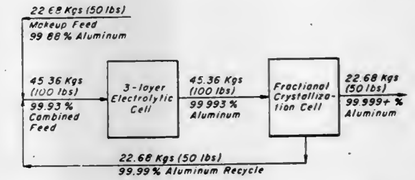
PRODUCTION OF EXTREME PURITY ALUMINUM

Robert K. Dawless, Monroeville, and Stanley C. Jacobs, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 973,141, Dec. 26, 1979. This application Dec. 26, 1979, Ser. No. 107,149

Int. Cl.³ C25C *3/06*

U.S. Cl. 204—67 **4 Claims**



1. An improved process for purifying aluminum containing impurities comprising:

(a) providing an electrolytic cell for the purification of aluminum, the cell of the type having a bottom layer of molten aluminum constituting an anode layer and having a top layer of molten aluminum constituting a cathode layer, the anode layer separated from the cathode layer by an electrolyte layer, the cell having a floor of carbonaceous material and walls comprised of

(i) an outer insulating refractory layer; and

(ii) an inner refractory liner fabricated from high purity bricks containing at least 90 wt.% alumina, the bricks bonded together with a high purity cement resistant to attack by molten aluminum and molten salt.

(b) introducing aluminum to the cell;

(c) electrolytically transporting aluminum from said anode layer through said electrolyte layer to said cathode layer while leaving said impurities in said anode layer thereby partially purifying said aluminum;

(d) thereafter, removing a portion of said partially purified molten aluminum from said cathode layer;

(e) fractionally crystallizing said molten aluminum portion in a crystallization cell to remove eutectic impurities therefrom by solidifying a fraction of said molten aluminum, said solid fraction having a higher purity than the constituting the remaining molten aluminum fraction, thereby concentrating said eutectic impurites in said molten fraction; and

(f) separating said molten fraction from said solid fraction to provide said purified aluminum.

4,239,607

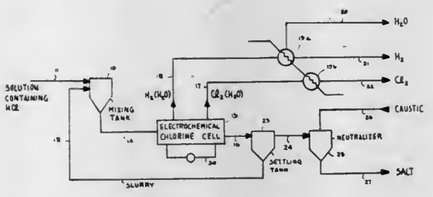
ELECTROCHEMICAL CHLORINE PRODUCTION PROCESS

Henri J. R. Maget, 80 Arbuelo Way, Los Altos, Calif. 94022

Continuation of Ser. No. 821,337, Aug. 3, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,309

Int. Cl.³ C25B *1/02, 1/26*

U.S. Cl. 204—128 **9 Claims**



1. A process for converting a halogen acid into a halogen comprising the steps of providing an aqueous slurry of electrically conductive electrocatalytic particles that are noncorrosive and adsorbent to the halogen acid, mixing the halogen acid with the slurry to form a flowable mixture in which the halogen acid is adsorbed on the particle surfaces, providing a cell having a cathode, an electrode spaced from the cathode and a cation permselective membrane between the electrode and the cathode, the membrane being impermeable to the slurry particles and being exposed to a volume in which the flowable mixture can freely circulate in contact with the electrode, introducing the flowable mixture in contact with the electrode and the membrane, continuously agitating the flowable mixture in the cell, causing current to flow from the electrode to the cathode through the flowable mixture and the membrane so as to produce an anodic reaction between the particles and the halogen acid adsorbed thereon thereby to liberate gaseous halogen, and collecting the gaseous halogen.

4,239,608

METHOD FOR PRODUCING PIEZOELECTRIC POLYMERIC MATERIAL

Philippos Pantelis, Ipswich, England, assignor to Post Office, London, England

Filed Jul. 19, 1978, Ser. No. 927,587

Claims priority, application United Kingdom, Jul. 19, 1977, 30237/77

Int. Cl.² B01J *1/10;* **C08F** *8/00*

U.S. Cl. 204—159.17 **7 Claims**

1. A method of enhancing the piezoelectric voltage coefficient of a polymeric material exhibiting piezoelectric properties, the method including the step of exposing the material whilst in an atmosphere inert with respect to the material and at substantially room temperature to a quantity of γ radiation lying within the range of from 1 Mrad to 200 Mrads (both limits included) after which the material is subjected to a poling treatment whereby the piezoelectric voltage coefficient of the material is increased over that obtained by subjecting the material without prior irradiation to said poling treatment.

4,239,609

PHOTOPOLYMERIZABLE COATING AND RECORDING MATERIALS CONTAINING A PHOTOINITIATOR AND AN ORGANIC HALOGEN COMPOUND

Helmut Barzynski, Bad Duerkheim, and Dietrich Saenger, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 974,622

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759164

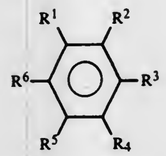
Int. Cl.³ C08F *2/50*

U.S. Cl. 204—159.23 **5 Claims**

1. A photopolymerizable coating and recording material comprising at least one photopolymerizable olefinically unsaturated organic compound and containing, as the activated photoinitiator system,

(a) at least one aromatic carbonyl compound that, when exposed to actinic light, forms free radicals which initiate polymerization, and

(b) a halogenated hydrocarbon of the formula



wherein two of the substituents R^1 and R^4 denote $-CHCl_2$, while the remaining substituents are identical or different and are inert with respect to the dichloromethyl groups, do not interfere with the photopolymerization or with the absorptivity of (b) of less than 20 (liter$\times$mol$^{-1}\times$cm^{-1}), at a wavelength range λ of from 315 to 400 nm, the amount of (b) containing dichloromethyl groups being at least 0.5% by weight of the whole composition, and being from 0.2 to 12 parts by weight per part by weight of aromatic carbonyl compound (a).

4,239,610

DEVICE FOR THE PRODUCTION OF ANODIZED MATERIAL

Harald Severus-Laubenfeld, Schaffhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation-in-part of Ser. No. 926,280, Jul. 20, 1978, Pat. No. 4,127,177, Division of Ser. No. 764,001, Jan. 31, 1977, abandoned, which is a continuation of Ser. No. 489,417, Jul. 17, 1974, abandoned. This application Jun. 22, 1979, Ser. No. 51,453

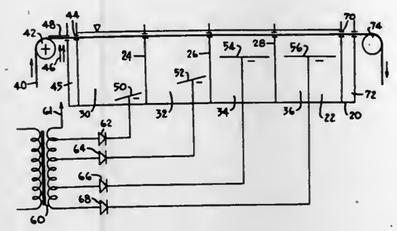
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1973, 2340962

Int. Cl.³ C25D *11/04*

U.S. Cl. 204—211 **9 Claims**

1. A device for the production of anodized aluminum or aluminum alloy foil in strip form in an electrolyte bath which comprises: an entry point to said bath; an anode roll spaced from said entry point and bath over which the foil passes on its way to said entry point and bath; a plurality of cathodes in said electrolyte bath through which the foil passes; and means to increase the effect of said cathodes on said foil with increasing

distance of the foil in the electrolyte from the point of entry in order to compensate for increased electrical resistance by



virtue of oxide growth and achieve uniform oxidation over the entire length of the bath.

4,239,611

MAGNETRON SPUTTERING DEVICES

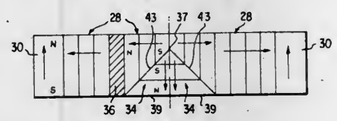
Charles F. Morrison, Jr., Boulder, Colo., assignor to Vac-Tec Systems, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 19,284, Mar. 9, 1979, which is a continuation-in-part of Ser. No. 946,370, Sep. 27, 1978, which is a continuation-in-part of Ser. No. 935,358, Aug. 21, 1978, Pat. No. 4,162,954. This application Jun. 11, 1979, Ser. No. 47,248

The portion of the term of this patent subsequent to Dec. 25, 1996, has been disclaimed.

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **62 Claims**



1. A magnetically enhanced sputtering device comprising

a cathode, at least a portion of which is provided with a sputtering surface;

an anode spaced from said cathode for establishing an electric field therebetween; and

first magnet means for establishing a magnetic field where at least some of the lines of force of the field extend over said sputtering surface, said first magnet means being disposed on the side of said cathode opposite said sputtering surface and extending along a line substantially parallel to at least a portion of said sputtering surface, and where the flux in said first magnet means extends between a first and second poles thereof; and

second magnet means for causing a majority of the said lines of force of said magnetic field to extend over said sputtering surface where at least some of the flux in said second magnet means is inclined at an angle with respect to the flux in said first magnet means so that said second magnet means at least partially blocks the flux from said first magnet means from extending on the side thereof opposite said cathode.

4,239,612

AUTOMATIC ELECTROPHORESIS APPARATUS

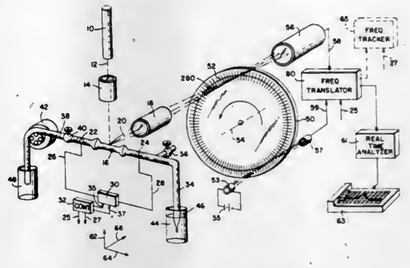
Philip J. Goetz, Pleasantville, N.Y., assignor to Pen Kem, Inc., Croton-On-Hudson, N.Y.

Division of Ser. No. 767,770, Feb. 11, 1977. This application Feb. 28, 1979, Ser. No. 16,181

Int. Cl.³ G01N *27/26, 27/28, 27/30*

U.S. Cl. 204—299 R **15 Claims**

1. A chamber for use in applying an electric field comprising an elongate tubular member and a conductive layer bonded to a portion of the surface of said tubular member serving as an electrode, said conductive layer being bonded to a portion on the interior surface of said tubular member, and



wherein said conductive layer includes a further portion on the exterior surface of said tubular member, said conductive layer further portion being electrically connected to said first-mentioned conductive layer.

4,239,613

DEASHED COAL FROM NITRIC ACID OXIDATION OF AQUEOUS COAL SLURRY

Johann G. Schulz, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 7, 1979, Ser. No. 46,441

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 LE **13 Claims**

1. Novel deashed coal obtained by oxidizing an aqueous coal slurry containing from about 40 to about 95 weight percent water with aqueous nitric acid, separating from the resulting product an aqueous phase and a solid phase, extracting the solid phase with a solvent, removing the solvent from the extract, and then heating the extract at a temperature of about 100° to about 500° C. and a pressure of about 10 millimeters of mercury to about atmospheric pressure in an inert atmosphere to remove volatile material therefrom.

4,239,614

HYDROCARBON CONVERSION PROCESS WITH ANNULAR GUARD BEDS

Le Roi E. Hutchings, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 898,342, Apr. 21, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,601

Int. Cl.³ C10G *47/12, 65/02*

U.S. Cl. 208—108 **4 Claims**

1. A catalytic hydrocarbon conversion process to more efficiently prevent plugging of the inlet surface of the catalyst bed which comprises the steps of:

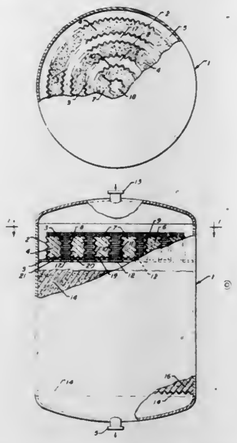
(a) passing a feed stream comprising hydrogen and hydrocarbonaceous reactants into an upper end of a reaction zone maintained at hydrocarbon conversion conditions;

(b) dividing the feed stream into a number of portions and passing each portion through one of a plurality of separated annular beds of particulate material located within the upper one-third of the reaction zone, with the annular beds of particulate material being radially spaced apart, concentric about the vertical major axis of the reaction zone and located at substantially the same vertical elevation within the reaction zone, and with the flow of the feed stream through each of the annular beds of particulate material being inward through both cylindrical sides of at lease an upper portion of the annular bed and outward through a lower portion of the annular bed;

(c) recombining the portions of the feed stream at a point below the annular beds of particulate material;

(d) passing the feed stream downward through a cylindrical bed of catalyst which is at least four times greater in

volume than the particulate material contained within the annular beds; and,



(e) removing a reaction zone effluent stream from a lower portion of the reaction zone.

4,239,615

HIGH OCTANE FCC PROCESS

Hosheng Tu, Shorewood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 8,823, Feb. 2, 1979. This application Dec. 19, 1979, Ser. No. 105,318
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—120 **14 Claims**

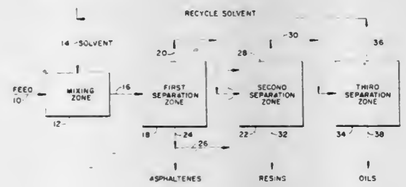
1. A process for cracking a hydrocarbon charge stock which comprises contacting said charge stock with a catalytic composite comprising a zeolitic crystalline aluminosilicate dispersed in a silica-alumina matrix and manufactured by:
(a) dispersing a zeolitic crystalline aluminosilicate in water to prepare a slurry;
(b) preparing a gelation product by mixing together in an aqueous medium an inorganic aluminum salt, an anionic polyacrylamide and an alkali-metal silicate;
(c) adding said slurry to said gelation product to obtain a slurry gel; and
(d) spray drying said slurry gel at a temperature sufficient to decompose said organic polymer.

4,239,616

SOLVENT DEASPHALTING

Junior A. Gearhart, Oklahoma City, Okla., assignor to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Filed Jul. 23, 1979, Ser. No. 59,719
Int. Cl.³ C10G *21/00*
U.S. Cl. 208—309 **8 Claims**



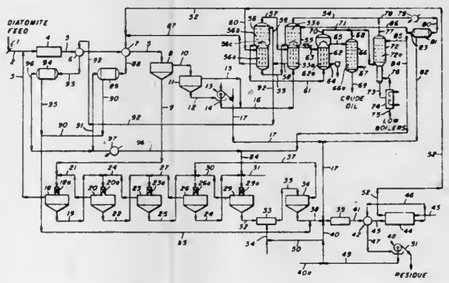
1. A deasphalting process comprising:
providing a heavy hydrocarbon material;
providing a solvent;
admixing said heavy hydrocarbon material with said solvent in a mixing zone to form a mixture;
introducing said mixture into a first separation zone maintained at an elevated temperature and pressure to effect a separation of said mixture into a first light phase comprising oils, resins and solvent and a first heavy phase comprising asphaltenes and some solvent;
introducing said first light phase into a second separation zone maintained at a temperature level higher than the temperature in the first separation zone and at an elevated pressure to effect a separation of said first light phase into a second light phase comprising oils, entrained resins and solvent which collects in an upper portion of said second separation zone and a second heavy phase comprising resins and some solvent;
withdrawing said first heavy phase from said first separation zone;
introducing at least a portion of said first heavy phase into said upper portion of said second separation zone to contact said second light phase and settle therethrough to remove at least a portion of the entrained resins;
introducing said second light phase after contact with said first heavy phase into a third separation zone maintained at an elevated temperature and pressure to effect a separation of said second light phase into a third light phase comprising solvent and a third heavy phase comprising oils; and
recovering the third heavy phase as a product.

4,239,617

PROCESS AND APPARATUS FOR SOLVENT EXTRACTION OF OIL FROM OIL-CONTAINING DIATOMITE ORE

George B. Karnofsky, 1163 Firwood Dr., Pittsburgh, Pa. 15243

Division of Ser. No. 905,861, May 15, 1978, Pat. No. 4,167,470. This application Feb. 22, 1979, Ser. No. 13,906
Int. Cl.³ C10G *21/28*
U.S. Cl. 208—321 **3 Claims**



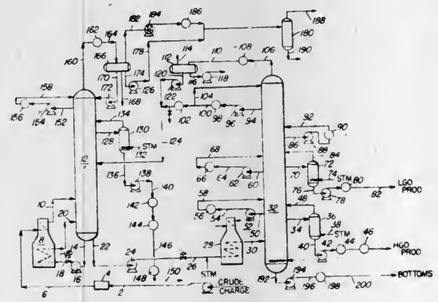
1. In a multiple effect evaporation process employing effects with heating jackets, for the separation and recovery of a volatile solvent and a solute from a solution thereof, derived from a solvent extraction process, the solvent having a boiling point below that of the solute, and the liquid solute containing a major portion of nonvolatile components and a minor portion of components that are volatile but higher boiling than said solvent, the improvement comprising:
(a) passing vapor generated in any one effect of said multiple effect evaporation process, from which liquid is discharged, through a fractional distillation zone in which said vapor is countercurrently scrubbed with reflux liquid from which a scrubbed solvent vapor and liquid are discharged;
(b) condensing, in the heating jacket of the next effect the scrubbed solvent vapor discharged from said fractional distillation zone to form a condensate;
(c) returning a portion of said condensate to said fractional distillation zone as said reflux liquid, and recycling the remainder of said condensate to said solvent extraction process; and
(d) combining the liquid discharged from said fractional distillation zone, comprising substantially all of said volatile components that enter said fractional distillation zone in said vapor, with liquid discharged from said any one effect.

4,239,618

TWIN TOWER DISTILLATION OF CRUDE OIL

Alfred M. Peiser, Rocky Hill, N.J.; Ronald I. Graham, Yardley, and Joseph R. McClernon, Morrisville, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 10, 1979, Ser. No. 37,794
Int. Cl.³ C10G *7/00*
U.S. Cl. 208—355 **5 Claims**



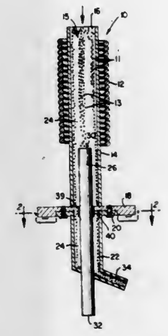
1. A method for fractionating crude oil into component streams suitable for further processing which comprises,
partially heating a crude oil stream to a temperature sufficient to separate a kerosene boiling range material into a low boiling fraction and a higher boiling range kerosene fraction in a first separation zone,
withdrawing the higher boiling range kerosene fraction along with higher boiling material of the crude oil charge from said first separation zone, heating the withdrawn material in the presence of steam to a higher temperature than initially heated and passing the heated higher boiling material to a second separation zone,
separating the material charged to the second separation zone into a heavy gas oil fraction, a light gas oil fraction, a kerosene and lighter fraction and a bottoms fraction higher boiling than the separated heavy gas oil fraction,
cooling and condensing the kerosene and lighter fraction of said second separation operation to form a low temperature condensate fraction comprising kerosene, passing the low temperature condensate fraction comprising kerosene to said first separation zone above the charge point of said partially heated crude oil, and separating the condensate fraction comprising kerosene in an upper portion of said first separation at lower temperatures permitting the recovery of kerosene boiling range material, naphtha boiling range material and materials lower boiling than naphtha.

4,239,619

PROCESS AND APPARATUS FOR SEPARATING MAGNETIC PARTICLES WITHIN AN ORE

Frank F. Aplan, State College, Pa., and Timothy M. Todd, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 962,113, Nov. 20, 1978, abandoned, which is a continuation of Ser. No. 811,593, Jun. 30, 1977, abandoned, which is a continuation of Ser. No. 630,440, Nov. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 489,124, Jul. 17, 1974, abandoned, which is a continuation of Ser. No. 95,447, Dec. 7, 1970, abandoned. This application May 7, 1979, Ser. No. 36,695
Int. Cl.³ B03G *1/14*
U.S. Cl. 209—214 **13 Claims**



1. A process for separating magnetically susceptible particles from nonmagnetically susceptible particles within an ore material comprising:
(a) adding the ore material in a particulate form to a carrier medium;
(b) passing the ore containing carrier medium through an unobstructed confined zone surrounded by a superconducting solenoid magnet which provides a magnetic field in excess of about 15,000 gauss generated by said superconducting solenoid magnet such that essentially no magnetic field gradient forces are provided in said confined zone while substantial magnetic field gradient forces are provided only in the end regions outside said confined zone which are adjacent the entrance and exit of said zone and such that said magnetically susceptible particles within the ore are separated from said nonmagnetically susceptible particles only in said end regions where said ore enters and exits said confined zone; and
(c) mechanically separating the peripheral magnetic particles in the ore-containing carrier medium from the central nonmagnetic particles in said carrier medium only in said end region adjacent said confined zone.

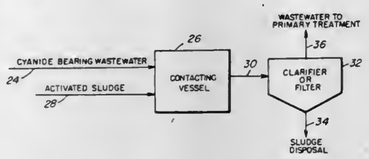
11. An apparatus for separating magnetically susceptible particles within an ore material comprising a first hollow member defining a confined zone therein; a super-conducting magnetic means disposed along a portion of the axial length of said first hollow member whereby a magnetic field is generated in relation to said confined zone such that essentially no magnetic field gradient forces are provided in said confined zone while at the same time substantial magnetic field gradient forces are provided only in the end regions outside said confined zone which are adjacent the entrance and exit of said confined zone and such that said magnetically susceptible particles within the ore are separated from the nomagnetically susceptible particles in the ore only in said end regions where the ore enters and exits said confined zone; a second hollow member smaller than and concentrically disposed within said first hollow member and axially positioned below said magnetic field; and means for directing the output from said first and said second hollow members in separate directions.

4,239,620

CYANIDE REMOVAL FROM WASTEWATERS

Brian E. Doll, Westmont, N.J.; Vernon F. Coty, West Chester, Pa., and Philip P. Lifland, Woodbury, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,418
Int. Cl.³ C02F *1/28, 3/00*
U.S. Cl. 210—601 **5 Claims**



2. A method for improving the removal of complex metal cyanides from industrial wastewater which comprises,

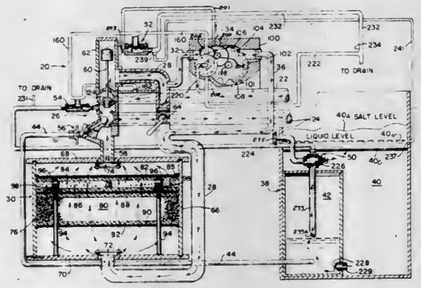
contacting at a pH within the range of 3–6 a water stream comprising complex metal cyanides with sufficient biological sludge obtained from a wastewater treating facility to remove a major portion of said complex cyanides from said wastewater and thereafter passing the wastewater of reduced complex cyanides through said wastewater treating facility, including biological treatment thereof.

4,239,621

FLUID TREATING METHOD

Don E. Heskett, Villa Park, Ill., assignor to Fluid Power Research, Inc., Windsor, Wis.

Continuation of Ser. No. 856,168, Nov. 30, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 14,826
Int. Cl.³ B01J *39/00*
U.S. Cl. 210—687 **2 Claims**



1. A method of treating hard water containing sulfur compounds to simultaneously soften said water and remove said sulfur compounds therefrom, said method comprising removing said sulfur compounds from said hard water by passing said water containing said sulfur compounds through a bed of cation exchange resin particles having a particle size below 50 mesh measured on a dry basis, said bed of cation exchange resin material being characterized by the ion exchange resin particles being in surface to surface contact with each other and in substantially tightly packed relationship to each other.

4,239,622

PROCESS FOR THE DISINFECTION OF WATER

John W. Ridgway, Tilehurst, England, assignor to Interox Chemicals Limited, London, England

Filed May 17, 1978, Ser. No. 907,018
Claims priority, application United Kingdom, May 27, 1977, 22597/77
Int. Cl.³ C02F *1/50, 1/76*
U.S. Cl. 424—130 **4 Claims**

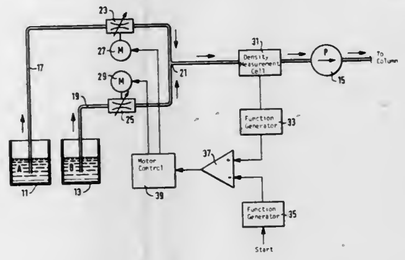
1. A process for disinfecting a water supply employing as disinfectant, in combination, 0.025–0.1 ppm monochloroamine and 0.1 to 0.5 ppm hydrogen peroxide in the water supply.

4,239,623

APPARATUS FOR PRODUCING GRADIENT ELUTION IN A LIQUID CHROMATOGRAPHIC SYSTEM

Helge Schrenker, Karlsruhe, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 7, 1980, Ser. No. 110,285
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905160
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—96.1 **3 Claims**



1. An apparatus for producing gradient elution in a liquid chromatographic system, said apparatus comprising

variable dosing means for at least two different solvents said dosing means including variable flow resistances for said solvents;

mixing means for mixing said solvents and delivering a solvent mixture;

pump means for feeding said solvent mixture to a chromatographic column;

density measuring means for measuring the density of said solvent mixture said density being a function of the mixing ratio of said different solvents; and

control means responsive to said density measuring means for adjusting said flow resistances in accordance with a given nominal density curve corresponding to a desired elution gradient.

4,239,624

APPARATUS FOR MEMBRANE FILTRATION HAVING AN IMPROVED DESALTING EFFECT

Cornelis van Zon, Zwolle, Netherlands, assignor to Wafilin B.V., Zwolle, Netherlands

Filed Oct. 27, 1978, Ser. No. 955,331
Claims priority, application Netherlands, Oct. 27, 1977, 7711845
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—236 **13 Claims**

1. An apparatus for membrane filtration comprising:

a vessel provided with a liquid inlet for the supply of liquid to be treated,

a liquid outlet for the discharge of treated liquid,

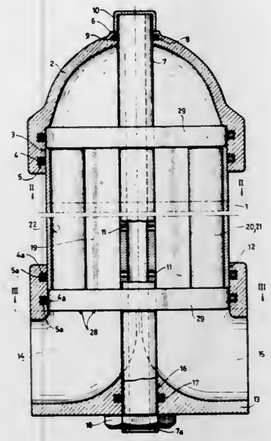
a permeate discharge tube,

two rows of round supporting tubes surrounded by a vessel wall and formed into an inner row and an outer row,

each of said supporting tubes in the inner row and the outer row supporting internally a non-woven tube upon which a filtration membrane is attached internally,

said two rows of supporting tubes contacting each other in a longitudinal direction,

wherein the centers of the cross sections of the supporting tubes in the outer row and the centers of the cross sections of the supporting tubes in the inner row are on the circumference of two concentric circles formed by the two rows of supporting tubes.

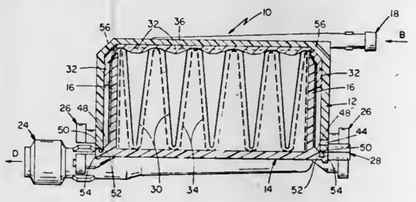


4,239,625

POTTING PLEATED MEMBRANE

Dennis J. Hlavinka, Lakewood, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 810,956, Jun. 29, 1977, abandoned. This application Apr. 25, 1979, Ser. No. 33,205
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.3 **28 Claims**



26. In a fluid flow transfer apparatus comprising a housing, a pleated membrane contained within said housing and having its tips on at least one side thereof bonded to the interior of said housing by potting material, and spacers positioned within the folds of said membrane opposite the membrane side to be bonded, the improvement wherein there is controlled penetration of potting material into spaces separating said folds on the side which is bonded and said membrane tips are crushed against and conformed to the shape of their respective said spacers so that during operation of the apparatus the tendency of the membrane tips to peel away from the potting material and in toward the spacers is resisted, thereby preventing formation of a fluid-shunting flow passage between the membrane tips and the potting material.

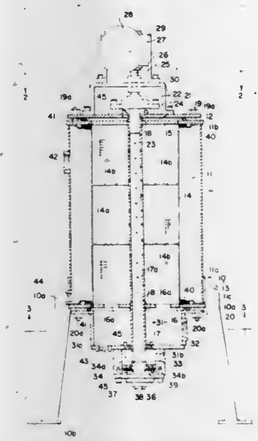
4,239,626

FILTER FOR REMOVING FINES

Michael Vamvakas, Rocky River, Ohio, assignor to Niagara Bottle Washer Manufacturing Co., Cleveland, Ohio

Filed Feb. 21, 1979, Ser. No. 13,674
Int. Cl.³ B01D *33/06, 23/06, 35/16*
U.S. Cl. 210—333.01 **4 Claims**

1. A filter for removing loose particles carried in a liquid stream, comprising a frame, an imperforate cylindrical tank wall mounted on said frame, a generally hollow generally perforated shaft rotatably mounted on said frame and extending axially through said tank, a cylindrical perforated drum concentric and rigid with said shaft and spaced between said shaft and said tank, said drum having closely spaced perforations all over, a closed circular end for one end of said drum extending between said drum and said shaft and rigidly secured to said shaft, a perforated circular end for the other end of said drum extending between said drum and said shaft and rigidly secured to said shaft said hollow shaft extending outwardly beyond each of said ends, annular partial end plates on said frame rigidly secured to said tank at its opposite ends, said partial end plates extending from said tank to locations adjacent said drum and substantially co-planar with said circular ends, a continuous annular seal at each of said locations secured to the associated partial end plate and engaging said drum, a discharge chamber on said frame downstream from said drum at the perforated end thereof and in communciation therewith, a discharge outlet for said chamber for cleansed liquid, an inlet device at the opposite end of said tank for inlet of dirty liquid, a source of back-flushing liquid communicating with one end of said hollow generally perforated shaft, said shaft passing through said discharge chamber and being imperforate there, a controlled exit in said tank for disposal of back-flushed material, and an electrical motor drivingly connected with one end of said hollow shaft.



4,239,627

FILTERING MEMBER AND METHOD FOR MANUFACTURING THE SAME

Yoneji Wada, 32-2-1324 Takashimadaira 2-chome, Itabashi-ku, Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 73,034
Claims priority, application Japan, Mar. 16, 1979, 54-34621[U]
Int. Cl.³ B01D *27/04*
U.S. Cl. 210—484 **6 Claims**

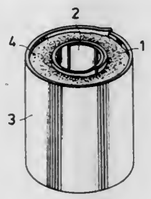
4. A method for manufacturing a filtering member for use in filtering impurities of different sizes contained in a fluid in a bulk filtering mode comprising:

preparing a rectangular sheet of resilient and uniformly porous material;

clamping the sheet between a pair of resilient plates; and

winding an assembly of the sheet and the resilient plates by one turn into a substantially cylindrical body having a central hollow space in such a manner that an outer portion of the cylindrical body is stretched and an inner

portion of the cylindrical body is compressed, and the cylindrical body has a porosity gradient which decreases



gradually towards the center hollow space viewed in a radial direction.

4,239,628

OPTIMIZING COSURFACTANT IN MICROEMULSION FOR SPECIFIC OIL

James E. Vinatieri, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 10, 1978, Ser. No. 894,878
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—8.55 D **9 Claims**

1. A process for preparing an aqueous surfactant system comprising:

(a) preparing a surfactant system comprising brine, a petroleum sulfonate, and a cosurfactant having a solubility in water within the range of 0.5 to 20 grams per 100 grams of water;

(b) mixing the resulting surfactant system with oil corresponding to that to be produced, allowing the system to equilibrate and form three phases, an upper predominantly oil phase, a middle microemulsion phase, and a lower predominantly aqueous phase;

(c) analyzing the upper and lower phases for cosurfactant content; and

(d) preparing a new surfactant system utilizing a cosurfactant of differing solubility from that of (a) so as to give a system which on equilibration with oil will result in the distribution of the cosurfactant more nearly equally into said upper and lower phases.

4,239,629

CARBOXYMETHYLHYDROXYETHYL CELLULOSE IN DRILLING, WORKOVER AND COMPLETION FLUIDS

Charles A. Sauber, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 5, 1978, Ser. No. 912,689
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 C **8 Claims**

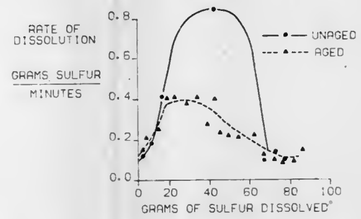
1. A gel obtained in a water of any salinity by bringing together a viscosity increasing amount of carboxymethylhydroxyethyl cellulose and a compound selected from the group consisting of alkali metal and ammonium dichromates, in the absence of a reducing agent, said compound being present in the approximate range of from about 0.25 to about 5 pounds per barrel of the gel.

4,239,630

METHOD FOR DISSOLVING SULFUR DEPOSITS RAPIDLY

Fred T. Atkinson, Calgary, Canada; Shelby P. Sharp, Tulsa, Okla., and Lamar F. Sudduth, Glenwood, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 820,652, Aug. 1, 1977, abandoned. This application Nov. 29, 1978, Ser. No. 965,138
Int. Cl.³ E21B *43/00*; C23G *5/02*
U.S. Cl. 252—8.55 B **8 Claims**



1. A method of dissolving a deposit of elemental sulfur involving the steps of:

(a) first preparing a liquid sulfur solvent composition, not in contact with said deposit of elemental sulfur to be dissolved and possessing improved kinetics relative to the dissolution of elemental sulfur, consisting of a dialkyl disulfide wherein at least one part by weight of an aliphatic saturated unsubstituted amine has been added per 100 parts by weight of said dialkyl disulfide and wherein from about 5 to 40 parts by weight of solid sulfur has been added per 100 parts by weight of said dialkyl disulfide, and

(b) then placing said sulfur solvent composition, prepared in step (a), in contact with said deposit of elemental sulfur to be dissolved, thus dissolving said deposit.

4,239,631

CATIONIC SURFACTANT COMPOSITIONS COMPATIBLE WITH ANIONIC SURFACTANTS

Herman Brown, Teaneck, N.J., assignor to Finetex Incorporated, Elmwood Park, N.J.

Continuation-in-part of Ser. No. 17,186, Mar. 5, 1979, abandoned. This application Dec. 11, 1979, Ser. No. 102,555
Int. Cl.³ C11D *1/4, 1/62*; D06M *0/00*
U.S. Cl. 252—8.75 **14 Claims**

1. A cationic surfactant composition which is compatible with anionic surfactants, and which in aqueous admixture therewith provides a system useful in simultaneous cleansing and conditioning of hair, fabrics, textiles and the like; said composition comprising:

a mixture of the diethyl sulfate salts of the cyanoethylated fatty acid amides

$$\mathrm{RCONH{-}CH_2{-}CH_2{-}N(CH_2{-}CH_2{-}CN){-}CH_2{-}CH_2NH{-}CH_2{-}CH_2CN}, \text{ and}$$

$$\mathrm{RCONH{-}CH_2{-}CH_2{-}N(CH_2{-}CH_2{-}CN){-}CH_2{-}CH_2NHCOR},$$

where R is an unbranched hydrocarbon chain, having from 17 to 21 carbon atoms, and said salts being in the respective ratio by mole percent of the active ingredients of said mixture of from about 1:2 to about 1:3.

4,239,632

LUBRICANT COMPOSITION

George H. Baile, Beach Haven, N.J., assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Mar. 14, 1979, Ser. No. 20,433
Int. Cl.³ C10M *5/00, 7/00*
U.S. Cl. 252—12 **11 Claims**

1. In a lubricating composition for prolonged use in contact with a bearing surface at elevated operating temperatures, said composition having a matrix consisting essentially of about 20 to about 50% of a polymer selected from the group consisting of polyethylene and polymethylpentene, said polymer having an average molecular weight in the range from about 1 to about 5 million, said matrix being in the form of a firm, tough, solid gel containing about 50 to about 60% of an oil of lubricating viscosity uniformly distributed therethrough whereby said composition has an oily surface due to the exudation of oil from said matrix, the improvement which comprises:

about 20 to about 50% of a heat conductive agent incorporated in said composition,

whereby said heat conductive agent dissipates heat produced at a bearing surface in contact with said lubricating composition under operating conditions thereby improving the performance of said lubricating composition in withstanding elevated operating temperatures and in resisting breakdown of the gel matrix under prolonged use or elevated temperature, said percentages being by weight of the entire composition.

4,239,633

MOLYBDENUM COMPLEXES OF ASHLESS POLYOL ESTER DISPERSANTS AS FRICTION-REDUCING ANTIWEAR ADDITIVES FOR LUBRICATING OILS

Antonio Gutierrez, Mercerville, and Stanley J. Brois, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 4, 1979, Ser. No. 45,066
Int. Cl.³ C10M *1/48*
U.S. Cl. 252—32.7 E **5 Claims**

1. A lubricating oil composition comprising a major proportion of mineral oil and a minor but friction-reducing amount of an oil-soluble molybdenum complex of a polyol ester lubricating oil dispersant, said dispersant having from 0.5 to 10 wt.% molybdenum based on the weight of said dispersant, said polyol ester being the reaction product of a C_2–C_{100} polyhydric alcohol with either (a) a C_8–C_{400} hydrocarbyl substituted C_4–C_{10} dicarboxylic acid, anhydride or ester or (b) a mono- or dithio-bis-(lactone alkanoic acid anhydride ester), mono- or dithio-bis-(alkene dioic acid or anhydride or ester) or dithio-bis-(alkane dioic acid, anhydride or ester) acylating agent, said agent containing a hydrocarbyl or substituted hydrocarbyl group having from 1 to about 10,000 carbon atoms.

2. A lubricating oil composition according to claim 1 further comprising an oil-soluble active sulfur donor selected from the group consisting of metal dihydrocarbyl dithiophosphates and the corresponding precursor esters thereof, phosphosulfurized pinenes, sulfurized olefins and hydrocarbons, sulfurized fatty esters and sulfurized alkyl phenols, said composition providing from about 0.01 to 2.0 weight percent molybdenum and said sulfur donor being present in at least 0.25 weight percent, all of said weight percents being based on the total weight of said composition.

5. A concentrate comprising from 5 to 80 wt.% of the combination of an oil-soluble molybdenum complex of a polyol ester dispersant, the polyol ester being the reaction product of a C_2–C_{100} polyhydric alcohol and either (a) a C_8–C_{100} hydrocarbyl substituted C_4–C_{10} dicarboxylic acid, anhydride or ester or (b) a mono- or di-thio-bis-(lactone alkanoic acid anhydride or ester), mono- or dithio-bis-(alkene dioic acid or anhydride or ester), or dithio-bis-(alkane dioic acid or anhydride or ester) acylating agent, said agent containing a hydrocarbyl or substituted hydrocarbyl group having from about 1 to 10,000 carbon atoms, said complex having from 0.5 to 10 wt.% molybdenum based on the weight of said dispersant and from about 0.1 to 10 parts by weight of active sulfur donor per part by weight of said complex, said sulfur donor being a member of the group consisting of metal dihydrocarbyl dithiophosphates and the corresponding precursor esters thereof, phosphosulfurized pinenes, sulfurized olefins and hydrocarbons, sulfurized fatty esters and sulfurized alkyl phenols, and 20 to 95 wt.% of an additive concentrate solvent selected from the group consisting of kerosene, mineral oil, synthetic oil or naphtha.

4,239,634

LUBRICATING OIL CONTAINING A SURFACE ACTIVE AGENT

Pierre D. Marin, Rouen; Marcel Prillieux, and Robert Tirtiaux, both of Mont-Saint-Aignan, all of France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 845,813, Oct. 27, 1977, abandoned, which is a division of Ser. No. 648,120, Jan. 9, 1976, abandoned. This application May 14, 1979, Ser. No. 38,529
Claims priority, application United Kingdom, Jan. 17, 1975, 2123/75
Int. Cl.³ C10M *1/06, 1/20, 1/32, 1/38*
U.S. Cl. 252—33 **5 Claims**

1. An emulsifiable lubricating oil composition comprising mineral lubricating oil and within the range of 1 to 50 wt. %, of a salt, which is a surface active agent for oil in water emulsions of an alkarylsulphonic acid the mean molecular weight of which is between about 400 and 1000 and an organic base, said organic base being the addition product of 1 to 10 moles of ethylene oxide per mole of triethanolamine.

4,239,635

NOVEL DIAMIDE AND LUBRICANTS CONTAINING SAME

Walter E. Rieder, Arcadia, Calif., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jun. 11, 1979, Ser. No. 47,285
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—34 **25 Claims**

1. A carboxylic acid group terminated polyoxyalkylene diamide and the alkali metal, ammonium or organic amine salt thereof having the following formula

$$_n(\mathrm{HOOC})\text{–}R^1(\mathrm{COO^-Z^+})_a\text{–}\mathrm{C(=O)H}\text{–}\mathrm{N}\text{–}R\text{–}\mathrm{N}\text{–}\mathrm{HC(=O)}\text{–}R^2(\mathrm{COOH})_m(\mathrm{COO^-Z^+})_b$$

wherein

R is the divalent polyoxyalkylene chain radical residue of an amine terminated polyoxyalkylene diamine absent the terminal amine groups,

R^1 and R^2 are the same or different and are selected from the group consisting of aliphatic, aromatic, cycloaliphatic, arylaliphatic, alkyl aromatic, thiodialiphatic, halogen substituted aliphatic or halogen substituted aromatic radicals and having a free valence of a+n+1 and b+m+1 respectively,

Z is an organic amine cation, ammonium ion or alkali metal ion,

a is 0 to 3,

b is 0 to 3,

n is 0 to 3,

m is 0 to 3,

a+n is 0 to 3,

b+m is 0 to 3 and

a+b+m+n is 1 to 6.

14. A metal working composition comprising (a) a substance selected from the group consisting of natural oil, synthetic oil and water and (b) from 0.01% to 99% by weight based on the total weight of the composition of a carboxylic acid group

terminated polyoxyalkylene diamide or the alkali metal, ammonium or organic amine salt thereof according to claim 1.

4,239,636

THIO-BIS-(ALKYL LACTONE ACID ESTERS) AND THIO-BIS-(HYDROCARBYL DIACID ESTERS) ARE USEFUL ADDITIVES FOR LUBRICATING COMPOSITIONS

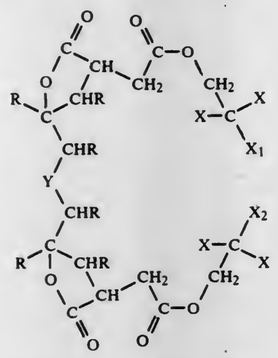
Stanley J. Brois, Westfield, and Antonio Gutierrez, Mercerville, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 768,265, Feb. 14, 1977, Pat. No. 4,123,373, and Ser. No. 806,326, Jun. 13, 1977, Pat. No. 4,167,514, which is a division of Ser. No. 726,206, Sep. 24, 1976, Pat. No. 4,062,786. This application Oct. 23, 1978, Ser. No. 954,051

Int. Cl.³ C10M *1/38*

U.S. Cl. 252—48.6 **6 Claims**

1. A lubricating oil composition comprising a major amount of lubricating oil and at least a dispersing amount of a macrocyclic-like additive represented by the formula



wherein R is selected from the group consisting of hydrogen, hydrocarbyl and substituted hydrocarbyl containing from 1 to 10,000, preferably 12 to 200, carbons with the restriction that at least one R has at least about 4 carbons; the bridging or coupling element, Y, is selected from the group consisting of S (thio), S-S (dithio), S═O (sulfinyl), SO_2 (sulfonyl), Se (seleno), $S—(CH_2)_zS—$ where z is a number of from 2 to 10, X, X_1 and X_2 are selected from the group consisting of hydrogen, alkyl, hydroxyl, acyloxy, hydroxyalkyl, $CH_2OCH_2C(CH_2OH)_3$, and $—O(CH_2—CH_2O)_nH$ where n is 1 to 50.

4,239,637

MAGNETIC MATERIAL FOR RECORDING MEDIA

Tunehide Naruse, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 7, 1979, Ser. No. 10,265

Claims priority, application Japan, Feb. 10, 1978, 53/14774

Int. Cl.³ C04B *35/26, 35/36, 35/38*

U.S. Cl. 252—62.54 **3 Claims**

1. A magnetic material for magnetic recording media, comprising:

acicular particles of a magnetic substance selected from the group consisting of γ—Fe_2O_3, Co-containing γ—Fe_2O_3, and Co-containing Fe_3O_4, said acicular particles having a mean length in the range of from about 0.3 μm to about 2.0 μm; and

particles of a ferrite selected from the group consisting of Mn-ferrite, Zn-ferrite and Mn—Zn ferrite, said particles of said ferrite amounting to from about 0.5% to about 20% by weight of said acicular particles and having a generally spherical particle shape and a mean particle size in the range of from about 0.2 μm to about 2.0 μm.

4,239,638

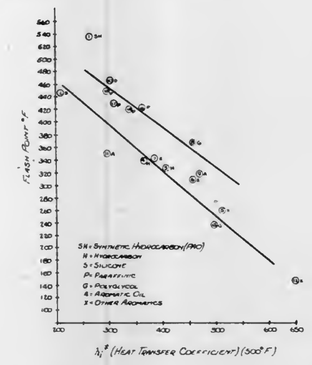
USE OF SYNTHETIC HYDROCARBON OILS AS HEAT TRANSFER FLUIDS

David Beretta, Middlebury; Frederick C. Loveless, Cheshire, and Walter Nudenberg, Newtown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 853,935, Nov. 22, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,511

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—73 **32 Claims**



1. In a heat transfer system comprising heat source means, heat sink means, a heat transfer fluid and means for conducting said heat transfer fluid between said source means and said sink means; the improvement comprising using as said heat transfer fluid in said system a hydrocarbon oil produced from homopolymers, copolymers, or combinations thereof, of alpha olefin monomers having from six to twelve carbon atoms, said oil having a pour point of no higher than −35° F., a kinematic viscosity no higher than 25 centistokes at 210° F., and a flash point of at least 530° F.

4,239,639

GRANULAR DETERGENT COMPOSITION COMPRISING AIR-SENSITIVE MATERIAL IN PROTECTIVE BAG

Lawrence A. Gilbert, Fairfield, and Jeffrey R. Leist, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 19, 1979, Ser. No. 50,032

Int. Cl.³ B32B *15/08, 15/12;* B65D *75/26, 81/22*

U.S. Cl. 252—90 **7 Claims**

1. A granular detergent composition comprising at least one air-sensitive ingredient in a pouch formed by heat sealing a laminate comprising:

(a) an outer layer of a material having a melting point greater than about 350° F., selected from the group consisting of: oriented polypropylene, polyester, and cellophane and mixtures thereof, having a thickness of from about 0.0005 to about 0.001 inch;

(b) a layer of aluminum foil having a thickness of from about 0.0003 to about 0.0005 inch;

(c) a layer of paper having a basis weight per ream of from about 25 pounds to about 50 pounds; and

(d) an inner layer of a material having a thickness of from about 0.001 to about 0.002 inch and a melting point between about 150° and 350° F., selected from the group consisting of polyethylene, wax, and mixtures thereof, said material being a hot melt glue, said pouch comprising a structure which can be destructively rearranged to form a reclosable spout.

5. The composition of claim 1 in which the air-sensitive material is selected from the group consisting of chlorinated trisodium orthophosphate, sodium dichloroisocyanurate, potassium dichloroisocyanurate, sodium silicates and potassium silicates having SiO_2:Na_2O and SiO_2:K_2O ratios of from about 1:1 to about 3.6:1 and mixtures thereof.

4,239,640

MANUFACTURE OF DETERGENTS

Thomas A. Williams, Beckermet, and Douglas E. Mather, Hillcrest, both of England, assignors to Albright & Wilson Ltd., Oldbury, England

Filed Oct. 31, 1977, Ser. No. 847,379

Claims priority, application United Kingdom, Nov. 2, 1976, 45509/76

Int. Cl.² C11D *7/54*

U.S. Cl. 252—95 **9 Claims**

1. In the process for the manufacture of a solid powder detergent having as one constituent an ethoxylated alcohol or mixture thereof in which the average carbon number of the alcohol moiety is 10–18 and the average chain length of the polyethoxy moiety is 6–12 ethoxy radicals per molecule wherein said ethoxylated alcohol in liquid form is added to a spray-dried powder detergent mixture containing from 1 to 7% by weight residual unbound water, the improvement comprising

mixing said ethoxylated alcohol in aqueous solution with said powder mixture, said ethoxylated alcohol in aqueous solution having a concentration of alcohol higher than the minimum at which a gel is formed and in sufficient proportion so that when admixed with said spray-dried mixture including said residual unbound water, said aqueous ethoxylated alcohol forms an immobile gel on the powders forming said spray-dried mixture.

4,239,641

USE OF POLYHYDRIC ALCOHOLS, CARBOXYLIC ACIDS, HYDROXY-CARBOXYLIC ACIDS AND/OR THEIR ESTERS WITH POLYHYDRIC ALCOHOLS AS VISCOSITY REGULATORS

Johannes Perner, Neustadt; Paul Diessel, Mannheim; Dieter Stoeckigt, Ludwigshafen; Franz Merger, Frankenthal, and Juergen Paetsch, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,777

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834073

Int. Cl.³ C11D *3/065, 3/20, 3/43, 11/02*

U.S. Cl. 252—142 **6 Claims**

1. A method for regulating the viscosity of aqueous slurries of detergents and cleansers, wherein there are added to the slurries, as viscosity regulators, dihydric, trihydric or tetrahydric aliphatic alcohols, monobasic aliphatic carboxylic acids, hydroxycarboxylic acids, esters of the said alcohols and the said acids or mixtures of these, in which compounds the alcohols, carboxylic acids and hydroxycarboxylic acids, and the individual components of the esters, are of 5 to 9 carbon atoms, of which one is a quaternary atom, the alcohols and hydroxycarboxylic acids carry exclusively primary alcohol groups, and the carboxylic acids and hydroxycarboxylic acids have the carboxyl group bonded to the quaternary carbon atom, the amount of said regulators being at least 1% by weight based on the solids content of the slurries, said regulators acting to reduce the viscosity of the slurries and to stabilize the slurries against fluctuations in viscosity.

2. The method of claim 1, wherein trimethylolpropane, neopentyl glycol, pentaerythritol or a mixture of these is employed as the polyhydric alcohol.

4,239,642

STABILIZATION OF HALOGENATED POLYOLS FOR POLYURETHANE PRODUCTION

Harry V. DePaul, Eddystone, Pa., and John R. Panchak, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 29, 1979, Ser. No. 53,441

Int. Cl.³ C08G *18/14, 18/18, 18/34;* C09K *3/00*

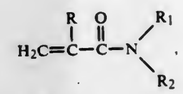
U.S. Cl. 252—182 **11 Claims**

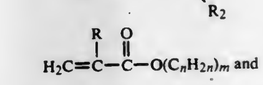
1. A stabilized premix composition for preparation of fire retardant polyurethane foam by reaction with a tertiary amine polyurethane catalyst and an organic isocyanate, said composition being stable as to deactivation of said catalyst and comprising: a halogenated polyol, said catalyst, and a stabilizing amount of a vinyl monomer compound, said monomer being a condensation product of acrylic or methacrylic acid with an alcohol or amine.

8. A stabilized premix composition for preparation of fire retardant polyurethane foam by reaction with organic isocyanate, said composition comprising in parts by weight:

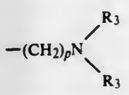
halogenated polyether polyol	100
chlorofluorocarbon blowing agent	45
dimethylethanolamine	3.5
vinyl monomer	2 to 4

said vinyl monomer corresponding to a formula from the group consisting of

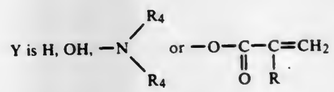




wherein R is H or CH_3; R_1 is H, an alkyl radical of 1 to 4 carbon atoms or a hydroxyalkyl radical of 2 to 3 carbon atoms; R_2 is an alkyl radical of 1 to 4 carbon atoms, a hydroxyalkyl radical of 2 to 3 carbon atoms or a substituted aminoalkyl group of the formula



wherein each R_3 is independently an alkyl radical of 1 to 4 carbon atoms or a hydroxyalkyl radical of 2 to 3 carbon atoms, and p is 2 to 4;



wherein each R_4 is independently an alkyl radical of 1 to 4 carbon atoms m is 1, and n is 1 to 12; provided that n is 2 when Y is OH or



B is hydrogen or an alkyl radical of 2 to 4 carbon atoms, r is 3 or 4, t being zero when r is 4 and t being one when r is 3.

4,239,643

PEROXIDE STABILIZATION

Xavier Kowalski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1979, Ser. No. 403
Int. Cl.³ C11D *3/06, 3/395, 7/56*
U.S. Cl. 252—182 **5 Claims**

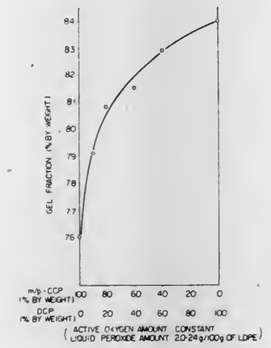
1. An essentially anhydrous composition containing metal sequestering compounds comprising alkali metal polyphosphate and alkali metal diethylene triamine penta(methylene phosphonate) in a weight ratio of said polyphosphate to said phosphonate from about 10:1 to about 1:5.

4,239,644

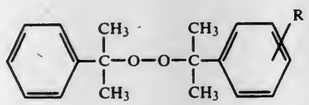
LIQUID PEROXIDE COMPOSITION

Hirohiko Nambu, Iwakuni; Kenichi Mizuno, and Tetuhiro Matumoto, both of Otake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,499
Int. Cl.³ C08C *19/04;* **C08F** *8/06;* **C07C** *179/14*
U.S. Cl. 252—186 **8 Claims**



1. A peroxide composition which is liquid at 25° C. and which can be used as a liquid cross-linking agent for high polymers, comprising (A) dicumyl peroxide and (B) a peroxide represented by the following general formula:



wherein R stands for an alkyl group having 1 to 3 carbon atoms,
at an (A)/(B) weight ratio of from 70/30 to 5/95.

4,239,645

PHOSPHATE BASE LASER GLASSES

Tetsuro Izumitani, Hino, and Michitaka Tsuru, Akishima, both of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed Mar. 17, 1976, Ser. No. 667,756
Claims priority, application Japan, Mar. 18, 1975, 50-32696
Int. Cl.² C03C *3/16;* **C09K** *11/42, 11/46;* **C03C** *3/28*
U.S. Cl. 252—301.4 P **3 Claims**

1. A phosphate base laser glass possessing an induced emission cross section σ of 4.50×10^{-20} cm², a non-linear refractive index coefficient n_2 of 1.13 to 1.24×10^{-13} e.s.u., an acid resistance weight loss Da of 0.15 to 0.17% by weight and a devitrification resistance Tg/LT of 0.470 to 0.485, consisting of
(i) 58 to 67% P_2O_5,
(ii) 4 to 10% Al_2O_3,
(iii) 9 to 15% Li_2O,
(iv) 4 to 10% Na_2O,
(v) 0 to 12% CaO, 0 to 12% MgO, 0 to 12% CaF_2, 0 to 12% MgF_2, the total proportion of said CaO, MgO, CaF_2 and MgF_2 being 5 to 12%,
(vi) 0 to 3% Y_2O_3,
(vii) 0.2 to 0.8% Nb_2O_5, and
(viii) 0.2 to 1.5% Nd_2O_3,
said percentages being by mole.

4,239,646

MICROSPHERIC OPACIFYING AGENTS AND METHOD FOR THEIR PRODUCTION

David N. Vincent, Glenview, and Ronald Golden, Mt. Prospect, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 23, 1974, Ser. No. 508,322
Int. Cl.³ B01J *13/02;* **C08J** *9/28*
U.S. Cl. 252—316 **23 Claims**



1. A process for the preparation of substantially spherical, opacifying particles, which process comprises admixing an aqueous, partially condensed, aldehyde condensation product with an oily material and a surface-active emulsifying agent to form a water-in-oil emulsion, admixing an amphiphilic acid catalyst with said emulsion and polymerizing said aldehyde condensation product in a polymerization zone to form substantially spherical, polymerized particles, said particles being substantially solid throughout.

18. Opacifying agents consisting essentially of substantially spherical super-particles, each of said super-particles having a substantially spherical, discontinuous shell composed of agglomerated discrete, secondary particles formed from an aldehyde condensation product, said shell surrounding a substantially spherical hollow core, said secondary particles being substantially spherical and substantially solid throughout.

4,239,647

METHOD AND APPARATUS FOR MANUFACTURING AMMONIA SYNTHESIS GAS FROM A STREAM OF GAS RICH IN HYDROGEN AND A STREAM OF NITROGEN

Brian A. McNeil, Chessington, United Kingdom, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 25, 1980, Ser. No. 115,302
Claims priority, application United Kingdom, Mar. 8, 1979, 08136/79; Nov. 2, 1979, 38046/79
Int. Cl.³ C01B *2/02;* **F25J** *3/00*
U.S. Cl. 252—377 **4 Claims**

1. A method for manufacturing ammonia synthesis gas from a stream rich in hydrogen and a stream of nitrogen which method comprises the steps of:
(a) cooling said stream of nitrogen and said stream rich in hydrogen in a first heat exchanger to a temperature which, when said nitrogen leaving said first heat exchanger is at or above its critical pressure, is between 8° C. and 28° C. above its critical temperature;
(b) introducing said stream rich in hydrogen leaving said first heat exchanger into the bottom of a second heat exchanger and cooling said stream rich in hydrogen as it passes upwardly through said second heat exchanger;
(c) introducing said stream rich in hydrogen leaving said second heat exchanger into the lower portion of a nitrogen wash column;
(d) cooling part of said stream of nitrogen leaving said first heat exchanger to below its critical termperature in a third heat exchanger arranged with its warm end uppermost;
(e) introducing said stream of nitrogen leaving said third heat exchanger into the top of said nitrogen wash column to act as reflux;
(f) dividing the vapour consisting essentially of hydrogen and nitrogen from the top of said nitrogen wash column into two streams;
(g) passing one of said streams through said second heat exchanger in countercurrent flow to said stream rich in hydrogen;
(h) passing the other of said streams through said third heat exchanger in countercurrent flow to said stream of nitrogen;
(i) combining said one and said other streams leaving said second and third heat exchangers respectively and the balance of said stream of nitrogen leaving said first heat exchanger to form ammonia synthesis gas;
(j) passing said ammonia synthesis gas through said first heat exchanger in countercurrent flow to said stream rich in hydrogen and said stream of nitrogen;
(k) expanding liquid (containing impurities washed out of said stream rich in hydrogen and nitrogen) leaving the bottom of said nitrogen wash column and passing the two phase mixture thus forward through said second heat exchanger wherein it vaporises in countercurrent flow to said stream rich in hydrogen and passing said vapour through said first heat exchanger in countercurrent flow to said stream rich in hydrogen and said stream of nitrogen.

4,239,648

TELOMERIC PHOSPHORUS CORROSION INHIBITING COMPOSITIONS

Alan Marshall, Macclesfield, and Norman Richardson, Middleton, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

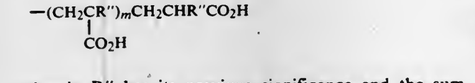
Filed Jul. 12, 1979, Ser. No. 57,155
Claims priority, application United Kingdom, Jul. 19, 1978, 30419/78
Int. Cl.³ C23F *11/16, 11/18*
U.S. Cl. 252—389 A **18 Claims**

1. A composition for inhibiting the corrosion of ferrous metal in contact with aqueous systems comprising
(a) a product comprising a telomeric compound of the formula:



I

and salts thereof, wherein R'' is hydrogen or a methyl or ethyl residue, R is hydrogen, a straight- or branched alkyl residue, having from 1 to 18 carbon atoms, a cycloalkyl residue having from 5 to 12 carbon atoms, an aryl residue, an aralkyl residue, a residue of formula:



wherein R'' has its previous significance and the sum n+m is zero or an integer of at the most 100, or a residue—OX wherein X is hydrogen or a straight- or branched alkyl residue having from 1 to 4 carbon atoms and R' is a residue—OX wherein X has its previous significance; or a salt thereof; and
(b) one or more compounds selected from:
(i) a zinc salt
(ii) a polyphosphate
(iii) a silicate and/or
(iv) a molybdate.

4,239,649

CHOLESTEROL STANDARD

E. Melvin Gindler, and Louis M. Mezei, both of Rockford, Ill., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Jan. 25, 1979, Ser. No. 6,377
Int. Cl.³ G01N *33/16;* **C09K** *3/00*
U.S. Cl. 252—408 **9 Claims**

1. A standard solution useful in the quantitative determination of cholesterol consisting essentially of a predetermined amount of cholesterol, a water miscible alcohol present in an amount sufficient to dissolve said cholesterol to thereby form a solution, and a long chain alkyl substituted betaine solution in both water and alcohol and present in an amount such that said solution, as prepared, has extended mechanical stability and can be fashioned into an aqueous calibrator solution without precipitation of cholesterol.

4,239,650

PROCESS FOR THE MANUFACTURE OF A MIXED CATALYST

Rainer Franke, Frankfurt am Main, and Bernd Diedrich, Eschborn, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,320
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752577
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **20 Claims**

1. A process for the production of a catalyst consisting of a compound containing a transition metal and an activator, which comprises reacting a halogen-containing titanium compound of the formula $TiX_n(OR_1)_{4-n}$, in which n is from 1 to 4, X is chlorine or bromine and R_1 is a hydrocarbon radical of from 1 to 12 carbon atoms with a metal alcoholate of the formula $[Me^1_x(OR)_v]Me^2_yMe^3_zH_w$, in which Me^1, Me^2, and Me^3 are the same or not all the same and each is a metal of main group I, II, III or IV or subgroup I, II, IV or V of the Periodic Table of the elements, R is a hydrocarbon radical of from 1 to 20 carbon atoms, x is an integer of from 1 to 5; y is an integer of from 0 to 2; z is an integer of from zero to 2; v is an integer of from 2 to 8; and w is either zero or 1, with the proviso that

$$(\text{valency of } Me^1)\cdot x + (\text{valency of } Me^2)\cdot y + (\text{valency of } Me^3)\cdot z + w = v;$$

washing the solid reaction product which is insoluble in hydrocarbons in an inert dispersion medium until halogen can no longer be detected in the dispersion medium after washing, reacting the washed product with an acid halide of an element of main group III or IV or subgroup IV of the Periodic Table, and reacting the acid halide reaction product with an organoaluminum compound.

4,239,651

CRACKING CATALYST AND METHOD OF PRODUCING THE SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Aug. 21, 1978, Ser. No. 935,628
Int. Cl.³ B01J *27/24, 27/02, 29/06*
U.S. Cl. 252—438 **12 Claims**

1. The process of producing a cracking catalyst which com-

prises forming a silica-alumina gel having a SiO_2:Al_2O_3 molar ratio from about 1.5 to 1.7 and associated with sodium ions and mixing said gel with an ammonium salt solution, separating an ammoniated gel from the solution, said gel containing NH_4+ ions associated with the gel in an amount in excess of about 3% by weight expressed as NH_3 and sodium expressed as Na_2O less than about 1% based on the gel on a volatile free basis and treating said ammoniated gel by exchanging the ammonium cation with a solution of alkaline earth metal salt at a pH of about 5.5 or less to reduce the NH_4 content of the gel to less than about 2.5% by weight expressed as NH_3 and the Na expressed as Na_2O to less than about 1% by weight of the exchanged gel all on a volatile free basis and separating said exchanged gel.

4,239,652

CATALYSTS FOR CATALYTIC HYDROREFORMING OR FOR PRODUCING AROMATIC HYDROCARBONS

Jean-Francois Le Page, Rueil-Malmaison; Germain Martino, Poissy, and Jean Miquel, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 29, 1979, Ser. No. 53,156

Claims priority, application France, Jun. 29, 1978, 78 20132

Int. Cl.³ B01J *27/08, 27/10*

U.S. Cl. 252—441 **3 Claims**

1. A catalyst containing an alumina carrier and, by weight with respect to the carrier, from 0.05 to 0.6% of at least one noble metal of the platinum family, from 0.005 to 5% of antimony, from 0.01 to 4% of a metal selected from gallium, indium and thallium and from 0.1 to 10% of halogen.

4,239,653

PROCESS FOR THE PREPARATION OF NON-PYROPHORIC PALLADIUM CATALYSTS

János Bodnár, Budapest, and György Lugosi, Felsogöd, György L. Nagg, all of Hungary, assignors to Chinoin Gyogyszer, Budapest, Hungary

Filed Nov. 27, 1978, Ser. No. 963,882

Int. Cl.³ B01J *21/18, 23/44*

U.S. Cl. 252—447 **18 Claims**

1. A process for the preparation of a non-pyrophoric palladium catalyst having controlled particle size and activity, comprising:

(a) suspending active charcoal of homogeneous pore distribution in a diluted solution of palladium salt or palladium salt complex in the presence of an alcohol to effect sorption of said palladium salts or palladium salt complex by said active charcoal, thereby forming a catalyst charcoal;

(b) filtering said catalyst charcoal from said solution of palladium salt or palladium salt complex followed by;

(c) treating the sorbed palladium or palladium salt complex with an alkali, thereby forming a hydroxide of palladium and thereafter;

(d) reducing the hydroxide of palladium to palladium, thereby forming a palladium catalyst.

4,239,654

HYDROCARBON CRACKING CATALYST AND PROCESS UTILIZING THE SAME

Elroy M. Gladrow, and William E. Winter, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 31, 1979, Ser. No. 44,394

Int. Cl.³ B01J *29/06, 29/08*

U.S. Cl. 252—455 Z **11 Claims**

1. A catalyst comprising:

(a) an ultrastable Y-type crystalline alumino-silicate zeolite having less than about 1 weight percent rare earth metals, calculated as the elemental metal, based on the zeolite;

(b) a small pore crystalline ZSM-type zeolite; and

(c) a catalytic inorganic oxide matrix.

4,239,655

PROCESS FOR THE PRODUCTION OF BONDED ZEOLITE BODIES

Takehisa Inoue, Tokyo, and Kazuo Tsunoi, Kamakura, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,756

Claims priority, application Japan, Nov. 16, 1977, 52-136622

Int. Cl.³ B01J *29/06*

U.S. Cl. 252—455 Z **6 Claims**

1. A process for the production of bonded zeolite bodies which comprises mixing zeolite with water and polycarboxylic acid having at least two carboxyl groups and not more than ten carbon atoms except those of carboxyl groups, forming the mixture into shaped bodies, and drying and calcining the shaped bodies.

4,239,656

CATALYST FOR PURIFYING EXHAUST GASES AND CARRIER FOR THE CATALYST

Yoshiyasu Fujitani; Hideaki Muraki, both of Nagoya; Shiroh Kondoh, Aichi, and Kouji Yokota, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Apr. 4, 1979, Ser. No. 27,037

Claims priority, application Japan, Apr. 4, 1978, 53-40077; Apr. 12, 1978, 53-42743

Int. Cl.³ B01J *21/04, 23/10, 23/58*

U.S. Cl. 252—462 **11 Claims**

1. A catalyst for reducing nitrogen oxide, carbon monoxide and hydrocarbons in exhaust gases, consisting essentially of: a porous alumina-magnesia spinel carrier containing from 0.05 to 20% by weight of ceria based on the spinel, said porous carrier having an average pore diameter of 0.01 to 2 microns; and a metal supported thereon selected from the group consisting of platinum, palladium and mixtures thereof.

4,239,657

MANUFACTURE OF CARBONYL COMPOUNDS

Axel Nissen, Leimen; Gerd Heiien, Frankenthal; Ekkehard Sapper, Ludwigshafen; Werner Fliege, Otterstadt, and Arnold Wittwer, Ludwidshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 801,112, May 31, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,646

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625541

Int. Cl.³ B01J *23/80, 23/82, 23/84*

U.S. Cl. 252—464 **2 Claims**

1. A catalyst consisting essentially of (a) 3 to 50 percent by weight, calculated as metal, of a mixture of cobalt and nickel, (b) from 1 to 10 percent of zinc, calculated as oxide and (c) a catalytically active amount, of a metal selected from the group consisting of iron, arsenic, antimony, bismuth, gallium, indium, thallium, germanium, tin, lead, cadmium and mercury, on a chemically inert carrier, said catalyst being formed by absorbing on the carrier an aqueous solution of a soluble compound of each of (a) and (b), drying, calcining and reducing the so impregnated carrier and applying a compound of (c) to said impregnated carrier, which catalyst is thereafter pretreated by heating, annealing and reducing the impregnated carrier.

4,239,658

CATALYSTS FOR THE CONVERSION OF RELATIVELY LOW MOLECULAR WEIGHT HYDROCARBONS TO HIGHER MOLECULAR WEIGHT HYDROCARBONS AND THE REGENERATION OF THE CATALYSTS

Howard L. Mitchell, III, and Robert H. Waghorne, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 903,814, May 8, 1978, Pat. No. 4,172,810. This application Apr. 5, 1979, Ser. No. 27,246

Int. Cl.³ B01J *21/04, 23/10, 23/58, 23/64*

U.S. Cl. 252—465 **39 Claims**

1. A multi-functional regenerable catalyst-reagent composition suitable for the oligomerization of hydrocarbons which comprises (1) a Group VIII noble metal having an atomic number of 45 or greater, nickel, or a Group I-B noble metal having an atomic number of 47 or greater, (2) a Group VI-B metal oxide which is capable of being reduced to a lower oxide, and (3) a Group II-A metal selected from the group consisting of magnesium and strontium, composited with a spinel-coated refractory support, or calcium composited with a non-zinc containing spinel-coated refractory support.

4,239,659

DETERGENT COMPOSITIONS CONTAINING NONIONIC AND CATIONIC SURFACTANTS, THE CATIONIC SURFACTANT HAVING A LONG ALKYL CHAIN OF FROM ABOUT 20 TO ABOUT 30 CARBON ATOMS

Alan P. Murphy, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 15, 1978, Ser. No. 969,909

Int. Cl.³ C11D *1/835*

U.S. Cl. 252—524 **34 Claims**

1. A detergent composition, containing from 0 to about 20% phosphate materials, comprising from about 5% to about 100% of a surfactant mixture consisting essentially of:

(a) a nonionic surfactant having an HLB of from about 5 to about 17; and

(b) a cationic surfactant having the formula $R(R')_3N^+Z^-$, wherein R is an alkyl group containing an average of from about 20 to about 30 carbon atoms, each R' is an alkyl or hydroxyalkyl group containing from 1 to 4 carbon atoms, or a benzyl group with no more than one R' in a molecule being benzyl, and Z is an anion selected from the group consisting of halides, hydroxide, nitrate, sulfate, and alkyl sulfates;

the ratio, by weight, of said nonionic surfactant to said cationic surfactant being from about 3:1 to about 15:1.

4,239,660

DETERGENT COMPOSITION COMPRISING A HYDROLYZABLE CATIONIC SURFACTANT AND SPECIFIC ALKALINITY SOURCE

Gary W. Kingry, Nishinomiya, Japan, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 864,135, Dec. 23, 1977, abandoned. This application Dec. 13, 1978, Ser. No. 969,115

Int. Cl.³ C11D *1/835, 3/10, 3/04*

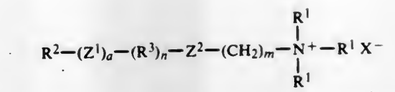
U.S. Cl. 252—528 **32 Claims**

1. A laundry detergent composition which comprises:

(a) from about 2% to about 95% of a surfactant mixture consisting essentially of:

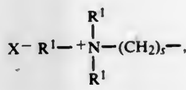
(1) a nonionic surfactant having an HLB of from about 5 to about 17; and

(2) a cationic surfactant selected from the group consisting of:

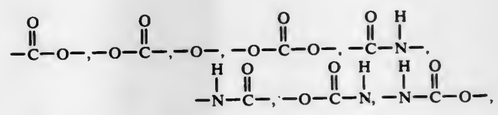


(i)

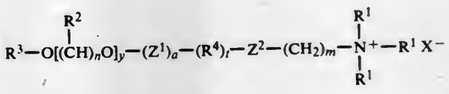
wherein each R^1 is C_1 to C_4 alkyl or hydroxyalkyl; R^2 is C_5 to C_{30} straight or branched chain alkyl, alkenyl, alkylbenzyl, or alkyl phenyl group or



wherein s is from 0 to 5; R^3 is C_1 to C_{20} alkylene or alkenylene; a is 0 or 1, n is 0 or 1, and a is 1 only when n is 1; m is from 1 to 5; Z^1 and Z^2 are each selected from the group consisting of:

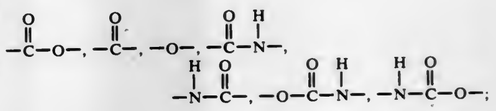


and wherein at least one of said groups is selected from the group consisting of ester, reverse ester, amide and reverse amide and X is an anion which makes the surfactant at least water-dispersible;

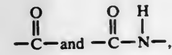


(ii)

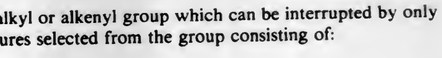
wherein each R^1 is C_1 to C_4 alkyl or hydroxyalkyl; each R^2 is either hydrogen or C_1 to C_3 alkyl; R^3 is C_4 to C_{30} straight or branched chain alkyl, alkenyl or alkylbenzyl, R^4 is C_1 to C_{10} alkylene or alkenylene; n is from 2 to 4; y is from 1 to 20; a is 0 or 1, t is 0 or 1, and a can be 1 only when t is 1; m is from 1 to 5; Z^2 is selected from the group consisting of



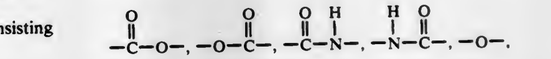
Z^1 is selected from the group consisting of



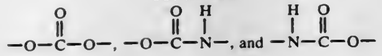
said selections being made so that



is an alkyl or alkenyl group which can be interrupted by only structures selected from the group consisting of:



-continued



and wherein at least one of said Z^1 and Z^2 groups is selected from the group consisting of ester, reverse ester, amide, and reverse amide; and X is an anion which makes the surfactant at least water-dispersible; and

(iii) mixtures thereof;

wherein the ratio of said nonionic surfactant to said cationic surfactant is in the range of from about 1:1 to about 100:1; and

(b) from about 1% to about 25% of an inorganic alkaline component selected from the group consisting of borax decahydrate, borax pentahydrate, sodium carbonate, and mixtures thereof, and which is present in an amount such that the detergent composition forms a solution having a pH of from about 8 to about 10 within about 3 minutes after it is placed in 100° F. water at a concentration of about 0.15%.

4,239,661

SURFACE-TREATING AGENT ADAPTED FOR INTERMEDIATE PRODUCTS OF A SEMICONDUCTOR DEVICE

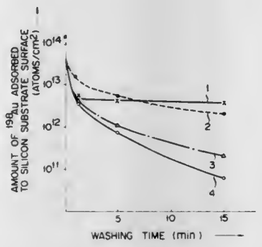
Hisashi Muraoka, Yokohama; Masafumi Asano, Yokosuka; Taizo Ohashi, Kanagawa, and Yuzo Shimazaki, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Division of Ser. No. 718,911, Aug. 30, 1976. This application Jul. 21, 1978, Ser. No. 927,139

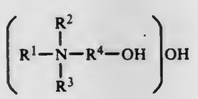
Claims priority, application Japan, Nov. 26, 1975, 50-140721; Nov. 26, 1975, 50-140722; Nov. 26, 1975, 50-140723; Nov. 26, 1975, 50-140724; Nov. 26, 1975, 50-140725; Nov. 26, 1976, 50-140726

Int. Cl.³ C11D *3/26, 3/30, 7/32*

U.S. Cl. 252—541 **32 Claims**



1. A method for cleaning the surface of an intermediate product obtained in the manufacture of a semiconductor device which comprises bringing the surface of said intermediate product into contact with an aqueous solution at a temperature and for a time effective to clean the surface of said intermediate product, the aqueous solution containing an effective amount within the range of 0.01 to 20% by weight of at least one trialkyl(hydroxyalkyl) ammonium hydroxide expressed by the formula:



where R^1, R^2, and R^3 are alkyl groups each having one to four carbon atoms, and R^4 is an alkylene group having two to four carbon atoms.

4,239,662

LIQUID DETERGENT COMPOSITIONS

Osamu Okumura, Funabashi; Takenobu Sakatani; Toshinobu Kashiwada, both of Chiba, and Kiyotaka Tokuyama, Funabashi, all of Japan, assignors to The Lion Fat and Oil Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,519

Claims priority, application Japan, Feb. 17, 1978, 53-17237

Int. Cl.³ C11D *1/14, 1/83*

U.S. Cl. 252—555 **4 Claims**

1. A liquid detergent composition consisting essentially of:

(a) water

(b) from 5 to 40% by weight of a magnesium α-olefinsalfonate having from 10 to 20 carbon atoms,

(c) from 1 to 8% by weight of an addition product of a primary alcohol having from 3 to 13 carbon atoms with an average of from 1 to 20 moles of ethylene oxide per mole of said primary alcohol, or an addition product of a secondary alcohol having from 9 to 18 carbon atoms with an average of from 3 to 15 moles of ethylene oxide per mole of said secondary alcohol, and

(d) from 0.2 to 5% by weight of magnesium sulfate, said constituents b, c and d being in dissolved form and the weight thereof being by weight of the composition.

4,239,663

METHOD, COMPOSITION AND PRODUCT WITH IMPROVED ADHESION BETWEEN A METAL MEMBER AND A CONTIGUOUS RUBBER SKIM STOCK

Frederick J. Ravagnani, Uniontown, and Steven E. Schonfeld, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 824,767, Aug. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 824,780, Aug. 15, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,451

Int. Cl.³ C08L *7/00, 9/00*

U.S. Cl. 260—5 **12 Claims**

1. In a cured rubber skim stock of conventional composition, said stock being bonded to at least one metal member contained within said stock, the improvement wherein a minor proportion of para-aminobenzoic acid or a cobalt salt of para-aminobenzoic acid is incorporated into said stock prior to curing.

4,239,664

ANTI-THROMBOGENIC PVP-HEPARIN POLYMER

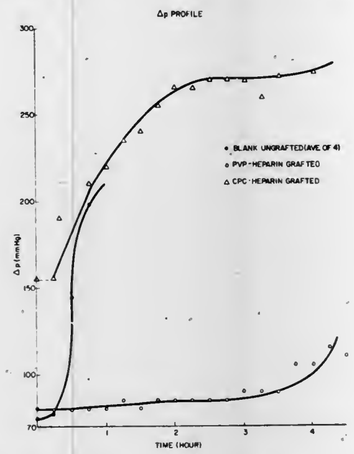
Lin-Nar Teng, and Gottfried Schmer, both of Seattle, Wash., assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 778,974, Mar. 18, 1977, abandoned. This application Oct. 31, 1978, Ser. No. 956,049

Int. Cl.³ C08L *5/10*

U.S. Cl. 260—17.4 R **1 Claim**

1. An anti-thrombogenic chloroform soluble polymer compound where the PVP has a molecular weight of 10,000 to 360,000 and heparin has a normal molecular weight of 6,000 to 20,000 consisting essentially of a covalently bound poly-N-vinyl pyrrolidinone (PVP)-heparin formed by activating PVP with thionyl chloride to form an imidoyl ion and bonding



heparin, said polymer compound being useful as a protracted i.v. therapeutic drug in humans.

4,239,666

LIGNIN MODIFIED FRICTION MATERIAL

Michael G. Jacko, Southfield, Mich., and Robert F. Gager, Troy, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 842,870, Oct. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 570,106, Apr. 21, 1975, abandoned. This application Mar. 2, 1979, Ser. No. 17,012

Int. Cl.³ C08L *61/10, 97/00*

U.S. Cl. 260—17.5 **13 Claims**

1. An organic friction material comprising:

10 to 55% by weight of asbestos;

1 to 25% by weight of organic modifier materials selected from a group consisting of rubber scraps, latex, crude molasses, and asphaltic base materials;

1 to 50% by weight of inorganic modifier materials selected from a group consisting of graphite, carbon, barytes, whiting, talc, rottenstone, silica, and alumina;

0 to 25% by weight of cashew nut powders;

10 to 30% by weight of thermosetting phenolic aldehyde resin; and

2 to 15% by weight of lignin, said lignin and said phenolic aldehyde resin being cured in the presence of heat to form a binder for retaining the asbestos, inorganic modifiers, organic modifiers, and cashew nut powders in a fixed relationship to establish a composition having a substantially uniform coefficient of friction up to 650° F.

4,239,667

METHOD FOR PREPARING POLYURETHANE COATINGS FROM A NEUTRAL SUBSTANCE OF MIXED SOAP

Väinö Erä, , assignors to Oy Kaukas AB, Lappeenranta, Finland

Continuation of Ser. No. 870,300, Jan. 18, 1978, abandoned. This application Jan. 24, 1979, Ser. No. 6,309

Claims priority, application Finland, Feb. 16, 1977, 770496

Int. Cl.³ C08G *18/30*

U.S. Cl. 260—18 TN **4 Claims**

1. A method for preparing polyurethane coatings from a polyol component, a triisocyanate, and a catalyst by forming a mixture of said components and by polymerization of same at a raised temperature, wherein the polyol component has a hydroxyl number in the range of 60 to 100 and consists essentially of fatty alcohols and sterols.

4,239,665

NOVOLAK RESINS CONTAINING LACTOSE AND/OR GALACTOSE

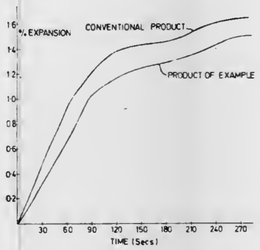
Alan C. Richards, Wokingham, and Riaz A. Khan, Sonning, both of England, assignors to Talres Development (N.A.) N.V., Curacao, Netherlands Antilles

Filed May 30, 1979, Ser. No. 43,759

Claims priority, application United Kingdom, May 31, 1978, 25586/78

Int. Cl.³ C08L *5/00*

U.S. Cl. 260—17.2 **12 Claims**



1. A method of preparing a novolak resin, wherein a phenol, formaldehyde and a reducing sugar selected from the group consisting of lactose, galactose and mixtures thereof are condensed in an acid catalysed reaction.

4,239,668

ORGANOTHIOL-CONTAINING SILOXANE RESINS

Harold A. Clark, Cape Coral, Fla., and Loren A. Haluska, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 20, 1978, Ser. No. 962,362

Int. Cl.³ C08J *3/02, 83/04*

U.S. Cl. 260—29.2 M **2 Claims**

1. A pigment-free aqueous composition consisting essentially of a dispersion of colloidal silica in lower aliphatic alcohol-water solution, or a dispersion of colloidal silica in ether-esters of ethylene or propylene glycol-water solution, of a partial condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from HSR'— and $(HS)_2R'$— wherein R' is selected from a group consisting of a divalent or trivalent aliphatic hydrocarbon radical having 1–6 carbon atoms and phenylene, the colloidal silica being present in the amount of 34 to 50 weight percent and the amount of $RSi(OH)_3$ being 50 to 66 weight percent both being based on the total solids in the composition, said composition containing 10–50 weight percent solids, said composition containing sufficient acid to provide a pH in the range of 2.5 to 5.5.

4,239,669

AQUEOUS EMULSION POLYMERIZATION OF VINYL MONOMERS USING MIXTURES OF EMULSIFIERS

Charles M. Scott, Fair Oak, and Alan A. J. Feast, Chandlers Ford, both of England, assignors to I.S.R. Holding SARL, Luxembourg

Filed Dec. 19, 1978, Ser. No. 971,095

Claims priority, application United Kingdom, Dec. 19, 1977, 52725/77

Int. Cl.³ C08F *12/08;* C08L *25/04*

U.S. Cl. 260—29.6 R **13 Claims**

1. An emulsion polymerisation process which comprises (1) subjecting an intimate aqueous dispersion of monomer material comprising (A) at least one vinyl aromatic monomer selected from the group consisting of styrene, ar-alkyl styrene, halo-styrene, alpha methyl styrene and alpha ethyl styrene as the only monomer; (B) a mixture of at least one vinyl aromatic monomer selected from the group consisting of styrene, ar-alkyl styrene, halo-styrene, alpha methyl styrene and alpha ethyl styrene with not to exceed 30% by weight of at least one unsaturated nitrile or (C) a mixture of at least one vinyl aromatic monomer selected from the group consisting of styrene, ar-alkyl styrene, halo-styrene, alpha methyl styrene and alpha ethyl styrene with not to exceed about 40 mole % of at least one conjugated diene, the ratio of monomers in mixtures of (B) or (C) being such as to yield a thermoplastic product, with 1.0 to 2.0 parts per hundred parts of monomer on a weight basis of primary emulsifier which is the sodium or potassium salt of an organic carboxylic and having 12 to 20 carbon atoms or of rosin acid, 1.0 to 2.0 parts per hundred parts of monomer of secondary emulsifier and which is an alkali metal salt of a naphthalene sulphonic acid-formaldehyde condensate and free radical initiator to a rapid polymerisation in a continuous flow agitated reaction such that the reaction is carried out at 80° C. to 100° C. and (2) continuously removing the formed latex.

4,239,670

FLAME RETARDANT LATEXES

David S. Moorman, Houston, Tex., assignor to Witco Chemical Company, New York, N.Y.

Filed Sep. 8, 1978, Ser. No. 940,472

Int. Cl.³ C08L *31/04, 33/08, 9/08, 9/10*

U.S. Cl. 260—29.6 MP **10 Claims**

1. In a latex otherwise unstable to diammonium phosphate, the improvement wherein said latex has added thereto an effective flame-retardant amount of an additive comprising from one to five parts by weight of ammonium bromide to one part by weight of diammonium phosphate.

4,239,671

DISPERSIONS OF HYDROPHILIC ACRYLIC RESINS

Herbert Fink, Bickenbach; Klaus Huebner, Ober-Ramstadt-Eiche; Horst Dinklage, Darmstadt-Arheilgen, and Hans Ottofrickenstein, Darmstadt-Eberstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

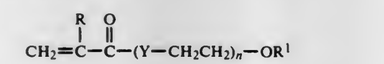
Continuation-in-part of Ser. No. 955,796, Oct. 30, 1978, abandoned. This application Mar. 13, 1979, Ser. No. 20,037

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1978, 2749386

Int. Cl.³ C08L *31/02*

U.S. Cl. 260—29.6 TA **7 Claims**

1. An aqueous dispersion of a hydrophilic copolymer prepared by polymerizing, in an aqueous medium, a monomer mixture comprising: (1) a member selected from the group consisting of lower alkyl acrylates and methacrylates; (2) a compound of the formula



wherein

R is hydrogen or methyl,

R^1 is hydrogen or alkyl having 1 to 4 carbon atoms,

Y is oxygen or $—NR^2—$,

R^2 is hydrogen or alkyl having 1 to 4 carbon atoms, and n is an integer from 1 to 25; (3) up to 8 percent, by weight of the copolymer, of a member selected from the group consisting of copolymerizable carboxylic acids and salts of such acids; and (4) a mixture of monomers capable of cross-linking said copolymer, said mixture consisting of 1 to 1.5 percent of N-methylol-methacrylamide and 0.5–1 percent of methacrylamide, said percentages being by weight of said copolymer.

4,239,672

AQUEOUS COATING EMULSIONS AND PROCESS FOR PRODUCING SAME

Herbert Zima, and Gert Dworak, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Apr. 26, 1979, Ser. No. 33,804

Claims priority, application Austria, Apr. 27, 1978, 3022/78

Int. Cl.³ C08L *47/00*

U.S. Cl. 260—29.7 H **17 Claims**

1. A coating composition comprising an acidic, anionic emulsifying agent containing aqueous emulsion of an adduct of an alpha,beta-ethylenically unsaturated carboxylic acid to an alka-diene polymer having a micro-structure of 50 to 100% of 1,4-cis-, 0–50% of 1,4-trans-, and 0–50% of 1,2-vinylconfiguration, and an average molecular weight of between 500 and 10,000 (measured by vapor pressure osmosis), said adduct having an acid content calculated in maleic anhydride units of 12.5 to 25% by weight of the adduct.

4,239,673

COMPOSITION OF A POLYPHENYLENE ETHER, A BLOCK COPOLYMER OF A VINYL AROMATIC COMPOUND AND A CONJUGATED DIENE AND A POLYOLEFIN

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 839,106, Oct. 3, 1977, Pat. No. 4,166,055. This application Apr. 3, 1979, Ser. No. 26,657

Int. Cl.³ C08K *5/49, 53/00*

U.S. Cl. 260—30.6 R **18 Claims**

1. A thermoplastic composition, having high impact strength, comprising

(a) a polyphenylene ether resin or a composition comprising a polyphenylene ether resin and a styrene homopolymer or random copolymer resin and

(b) a synergistic, impact strength-improving combination comprising (i) an elastomeric unhydrogenated block copolymer of a vinyl aromatic compound (A) and $(A)^1$ and a conjugated diene (B), of the A-B-A^1 type, the center block B being of higher molecular weight than that of the combined terminal blocks A and A' and (ii) a polyolefin resin, component (b) being present in an amount of from about 5 to about 30% by weight of the total resinous components of the composition.

16. A composition as defined in claim 1 including up to about 25% by weight of a plasticizer.

17. A composition as defined in claim 16 wherein said plasticizer is triphenyl phosphate.

4,239,674

OXYGEN-CURABLE MERCAPTOORGANOSILOXANE COMPOSITIONS CATALYZED BY COBALTOCENE COMPOUNDS AND METHOD OF FORMING HIGHER MOLECULAR WEIGHT PRODUCTS THEREFROM

Gary R. Homan, and Chi-long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

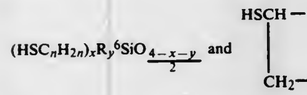
Filed Aug. 2, 1979, Ser. No. 63,017

Int. Cl.³ C08L *83/08*

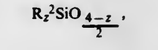
U.S. Cl. 260—37 SB **24 Claims**

1. A composition, stable in the absence of oxygen, which comprises a product obtained by mixing the following substantially in the absence of oxygen

(A) 100 parts by weight of at least one mercapto-functional organosiloxane, said mercapto-functional organosiloxane having an average of at least two mercapto-functional siloxane units per molecule selected from the group consisting of mercapto-functional siloxane units of the average unit formula



any other siloxane units present having the average unit formula



wherein

each R^2 is a hydroxyl radical or an organic radical selected from the group consisting of R^6 and 3,3,3-trifluoropropyl radicals,

each R^6 is R^5 or OR^1,

each R^5 is an alkyl radical of 1 to 4 inclusive carbon atoms or phenyl radical,

each R^1 is an alkyl radical of 1 to 4 inclusive carbon atoms,

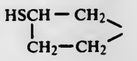
n has a value of from 2 to 4 inclusive,

w has a value of from 0 to 1 inclusive,

x has a value of from 1 to 2 inclusive,

y has a value of from 0 to 2 inclusive,

z has a value of from 0 to 3 inclusive and the sum of x+y has a value of from 1 to 3 inclusive, and the ratio of total R^5, $HSC_nH_{2n}—$,



and 3,3,3-trifluoropropyl radicals to silicon atoms in the mercapto-functional organosiloxane is in the range of 0.98/1 to 3.00/1;

(B) 0-200 parts by weight of at least one filler; and

(C) a catalytic amount of a cobaltocene of a formula $(R^3C_5H_4)Co(C_5H_4R^4)$ wherein each R^3 and R^4 is a hydrogen atom or methyl.

22. The composition as claimed in claim 1 which contains at least one filler.

4,239,675

LOW DENSITY FILLERS AND PIGMENTS

Thomas H. Ferrigno, Trenton, N.J. 08618

Continuation of Ser. No. 842,436, Oct. 14, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,901

Int. Cl.³ C08L *6/20*

U.S. Cl. 260—39 SB **14 Claims**

1. A product adapted for use as a filler and pigment in paints, plastics, and caulking compositions comprising from 65% to 85% by weight of particulate material having an average equivalent spherical diameter from about 0.1 to about 30 micrometers and from about 15% to 35% by weight of aldehyde condensate resin including additives, said product being generally spheroidal and having voids therein, said product having a density which is at least about 20% to 70% less than that of the materials of which the product is composed.

4,239,676

COATING COMPOSITIONS COMPRISING POLYMER BLENDS

Walter J. Wilkinson, Wilbraham, and Irving Serlin, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed May 11, 1979, Ser. No. 38,048

Int. Cl.³ C08K *3/36;* C08L *61/28*

U.S. Cl. 260—39 P **10 Claims**

1. A coating composition comprising an intimate blend of from about 50 to about 90 parts by weight of a poly(vinyl acetal), from about 5 to about 40 parts by weight of an alkoxymethyl polyaminotriazine and from about 5 to about 30 parts by weight of an oligomer of styrene or α-methylstyrene of molecular weight in the range of about 300 to about 500.

4,239,677

MODIFIED POLYESTER COMPOSITIONS

Ronald L. Dieck, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 8, 1979, Ser. No. 1,539

Int. Cl.³ C08K *3/40;* C08L *67/00, 67/06*

U.S. Cl. 260—40 R **20 Claims**

1. A thermoplastic composition comprising:

(a) a polyester composition comprising:

(i) a poly(1,4-butylene terephthalate) resin;

(ii) a blend of a poly(1,4-butylene terephthalate) resin and a poly(ethylene terephthalate) resin;

(iii) a block copolyester of poly(1,4-butylene terephthalate) and an aromatic with aliphatic or aliphatic polyester;

(iv) a blend of (iii) and a poly(ethylene terephthalate) resin; or

(v) a blend of (iii) and a poly(1,4-butylene terephthalate) resin; and

(b) an impact modifier therefor comprising a combination of:

(i) a linear or branched rubbery polyester end blocked copolymer of a vinyl aromatic and a conjugated diene, a polyester end blocked homopolymer of a conjugated diene, vinyl aromatic or a mixture thereof and

(ii) an aromatic polycarbonate resin, in an amount of up to 60 parts per 100 parts by weight of (a) and (b) together.

12. A composition as defined in claim 1 which also includes (c) a filler, reinforcing agent or a mixture thereof in an amount of from about 1 to about 60 parts by weight per 100 parts by weight of (a), (b) and (c) together.

13. A thermoplastic composition as defined in claim 12 wherein component (c) comprises (c)(i) fibrous glass.

4,239,678

FLAME RETARDANT THERMOPLASTIC COMPOSITIONS

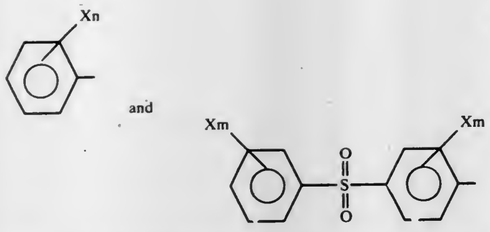
Joseph B. Williams, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 6, 1978, Ser. No. 867,450

Int. Cl.³ C08K *5/42*

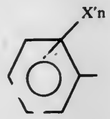
U.S. Cl. 260—42.18 **18 Claims**

1. A flame retardant thermoplastic composition comprising an organic sulfonate flame retardant additive of the general formula $RSO_3—M^+$ or $(RSO_3—)_2M'^{++}$, where M^+ is an alkali metal ion, M'^{++} is an alkaline earth metal ion, and R is chosen from the group consisting of



and

where each X is independently chosen from the group consisting of fluorine, bromine, iodine, NO_2 and



where X' is the same as X, and n=0–5, m=0–4 and n and m are not more than 1 on any single carbon atom;
in admixture with a polymer, or a blend of polymers, selected from the group consisting essentially of polyarylsulfone, polyarylethersulfone, polyphenylsulfide, blends of a polyarylethersulfone and a polyarylsulfone, blends of a polyarylethersulfone and a polyphenylsulfide, blends of a polyarylsulfone and a polyphenylsulfide, blends of a acrylonitrile-butadiene-styrene copolymer (ABS) and a polyarylsulfone, blends of an acrylonitrile-butadiene-styrene copolymer (ABS) and a polyarylethersulfone, blends of an acrylonitrile-butadiene-styrene copolymer (ABS) and a polyphenylsulfide, and blends of an acrylonitrile-butadiene-styrene copolymer (ABS), together with two or three polymers selected from the group consisting of polyarylsulfones, polyarylethersulfones and polyphenylsulfides.

4,239,679

HIGH BULK DENSITY RIGID POLY(VINYL CHLORIDE) RESIN POWDER COMPOSITION AND PREPARATION THEREOF

James A. Rolls, Painesville, and Kenneth L. Brenis, South Euclid, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 27, 1979, Ser. No. 52,458
Int. Cl.³ C08K *3/26*
U.S. Cl. 260—42.49 **8 Claims**

1. In a method for preparing a densified rigid poly(vinyl chloride) resin powder composition which comprises blending together a particulate, suspension-polymerized poly(vinyl chloride) resin and, based on the weight of the resin, from 0.10 to 7 percent of a heat stabilizer therefor, from 0–20 percent of resinous impact modifier, from 0.1–5 percent of nonresinous lubricant, from 0 to about 5 percent of resinous processing aid and from 0.1–20 percent of filler in a high shear mixing apparatus until the temperature of the blending mixture is raised by frictional heat to a temperature ranging from 320°–360° F. prior to removing the blended composition from the mixing apparatus and subsequently cooling said composition with agitation, the improvement which comprises adding from 0 percent to about 80 percent of the total filler requirement to the blending composition during the high shear mixing thereof, and thereafter incorporating from about 20 percent to 100 percent of said total filler requirement into the composition after it has been cooled to a temperature no greater than 175° F. in the cooler, whereby a rigid poly(vinyl chloride) resin powder composition having satisfactory free flow characteristics for application in multi-screw extrusion equipment is produced.

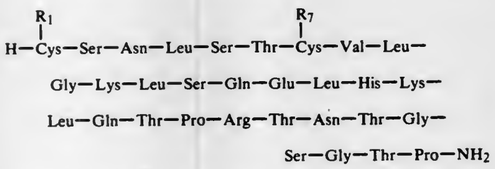
4,239,680

SYNTHESIS OF BIOLOGICALLY ACTIVE PEPTIDES

John L. Hughes, Kankakee; Jay K. Seyler, Bourbonnais, and Robert C. Liu, Kankakee, all of Ill., assignors to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 722,747, Sep. 13, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,456
Int. Cl.³ C07C *103/52*; C08L *37/00*
U.S. Cl. 260—112.5 T **2 Claims**

1. A peptide having the structure:



H—Cys—Ser—Asn—Leu—Ser—Thr—Cys—Val—Leu—
Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—
Leu—Gln—Thr—Pro—Arg—Thr—Asn—Thr—Gly—
Ser—Gly—Thr—Pro—NH_2

where one of R_1 and R_7 is S-n-alkyl and the other is H.

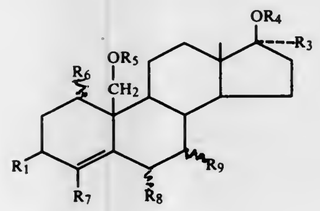
4,239,681

ANDROST-4-EN-19-OLS

Joyce F. Grunwell, Hamilton, and Vladimir Petrow, Cincinnati, both of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 329,849, Feb. 5, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 461,011
Int. Cl.³ C07J *7/00*
U.S. Cl. 260—239.55 R **4 Claims**

1. An androst-4-en-19-ol having the formula



wherein
R_1 is selected from the group consisting of oxo and hydroxy;
R_3 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkenyl having from 2 to 6 carbon atoms and lower alkynyl having from 2 to 6 carbon atoms, and R_3 and OR_4 when taken together is oxo;
R_4 and R_5 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 3 carbon atoms, trialkylsilyl in which the alkyl group has from 1 to 5 carbon atoms, triphenylsilyl, 2-tetrahydropyranyl, 4-tetrahydropyranyl, 1-cycloalkenyl having from 5 to 7 carbon atoms, 1-methoxycycloalkyl and 1-ethoxycycloalkyl in which the cycloalkyl group has from 5 to 7 carbon atoms, with the proviso that R_4 and R_5 cannot both be hydrogen at the same time, and with the further proviso that when R_4 is 2-tetrahydropyranyl and R_6, R_7, R_8 and R_9 are all hydrogen, then R_3 and R_5 cannot both be hydrogen and R_1 cannot be oxo;
R_6, R_7, R_8 and R_9 are hydrogen and methyl with the proviso that when R_1 is oxo, R_4 is hydrogen, acyl or when taken together with R_3 is oxo, R_5 is hydrogen and R_9 is methyl, then R_6, R_7 and R_8 cannot all be hydrogen at the same time.

4,239,682

PURIFICATION OF CAPROLACTAM

Harry Danziger, and Bernd-Ulrich Kaiser, both Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 10, 1976, Ser. No. 740,416
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1975, 2550934
Int. Cl.³ C07D *20/16*
U.S. Cl. 260—239.3 A **2 Claims**

1. A process for the purification of acid-containing crude caprolactam obtained by the rearrangement of cyclohexanone oxime, which comprises mixing the crude caprolactam with from 0.8 to 2.0 equivalents of a base, based on the acid in the crude caprolactam, so as to adjust the pH to from 4 to 11, from 3 to 6 parts by weight of toluene, based on the caprolactam, and from 2 10 parts by weight of water, based on the inorganic constituents, resulting in the formation of an organic phase and an aqueous phase having two layers; and removing the upper aqueous layer which contains substantially all the impurities.

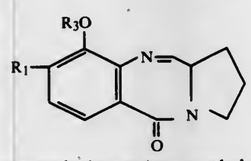
4,239,683

PYRROLO BENZODIAZEPINE COMPOUNDS

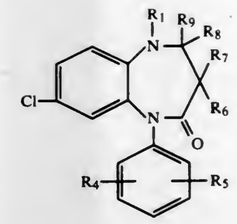
Atuyuki Takanabe; Yoshio Arakawa, both of Hirakata; Yoshio Kagitani, Kashihara; Yasuo Ueda, Hirakata; Daisuke Satoh, Tokushima, and Nobuhiko Komatsu, Tokyo, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Division of Ser. No. 947,418, Oct. 2, 1977, Pat. No. 4,185,016. This application May 25, 1979, Ser. No. 42,449
Claims priority, application Japan, Dec. 27, 1977, 52/156684
Int. Cl.³ C07D *487/04*
U.S. Cl. 260—239.3 T **7 Claims**

1. A compound represented by the following formula:



wherein R_1 represents hydrogen atom, methyl group, hydroxy group or methoxy group; and R_3 represents hydrogen atom or acetyl group.



wherein R_1 is hydrogen, lower alkyl, or unsaturated lower aliphatic hydrocarbon; R_4 and R_5 are the same or different and each is hydrogen, halogen, lower alkyl, lower alkoxy, or trifluoromethyl, but if one of R_4 and R_5 is halogen or trifluoromethyl and the other of R_4 and R_5 is hydrogen, then the halogen or trifluoromethyl substituent is in the para-position; and R_6, R_7, R_8, and R_9 are the same or different and each is hydrogen or lower alkyl.

16. The method of producing a sedative sedative effect in a patient which comprises orally administering to said patient an effective amount of a compound as in claim 1.

4,239,685

PROCESS FOR THE PREPARATION OF PHTHALOCYANINE PIGMENTS

Daniel Pigasse, Chantilly, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Feb. 14, 1979, Ser. No. 12,169
Claims priority, application France, Feb. 21, 1978, 78 04832
Int. Cl.³ C09B *47/04*
U.S. Cl. 260—314.5 **17 Claims**

1. A process for the preparation of a phthalocyanine pigment from a press paste of phthalocyanine obtained by hydrolysis of a sulphuric solution of phthalocyanine, which consists in incorporating while stirring in said press paste a member selected from the group consisting of from 1% to 20% by weight with respect to the weight of phthalocyanine of a water-insoluble crystallizing solvent and a mixture of said water-insoluble crystallizing solvent with from 1% to 20% by weight with respect to the phthalocyanine of a non-crystallizing solvent, then removing said solvent or solvents and drying the paste, and collecting the pigments thus obtained.

4,239,684

1,5'-BENZODIAZEPINE-2-ONES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

Oskar Bub, Ludwigshafen am Rhein, Fed. Rep. of Germany, assignor to Knoll AG, Ludwigshafen am Rhein, Fed. Rep. of Germany

Division of Ser. No. 765,696, Feb. 4, 1977, Pat. No. 4,108,852, which is a continuation of Ser. No. 020,413, Mar. 17, 1970, abandoned. This application Jun. 2, 1978, Ser. No. 911,831
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1969, 1913536; Oct. 24, 1969, 1953647
Int. Cl.³ C07D *243/12*; A61K *31/55*
U.S. Cl. 424—244 **17 Claims**

1. A 1-aryl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepin-2-one of the formula

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4,239,686

PROCESS FOR PRODUCING PHTHALIMIDO DERIVATIVES

Teruyuki Misumi; Kyogo Tanaka, both of Yokohama, and Osamu Okuno, Kamakura, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1978, Ser. No. 962,639
Int. Cl.³ C07D *209/50*
U.S. Cl. 260—325 PH **18 Claims**

1. A process for producing a 3-iminohaloisoinodoline-1-one which comprises treating a halophthalodinitrile with
(a) a reagent selected from the group consisting of ammonia, an organic amine, or mixtures thereof, and
(b) hydrogen peroxide,
in a treatment medium comprising a mixture of water and water-miscible organic solvent.

4,239,687

CYCLOPENTA[C]PYRROLE DERIVATIVES

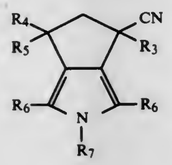
Malcolm R. Bell, and Rudolf Oesterlin, both of East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 839,328, Oct. 4, 1977, Pat. No. 4,140,854, which is a division of Ser. No. 703,949, Jul. 9, 1976, Pat. No. 4,098,797, which is a division of Ser. No. 558,807, Mar. 17, 1975, Pat. No. 4,008,250, which is a continuation-in-part of Ser. No. 346,005, Mar. 29, 1973, Pat. No. 3,928,380. This application Jul. 27, 1978, Ser. No. 928,456

Int. Cl.³ C07D *209/02, 401/02*

U.S. Cl. 260—326.27 **5 Claims**

1. A compound having the formula



where each of R_3, R_4 and R_5 is hydrogen or methyl; each R_6 group is the same or different hydrogen, formyl, and lower-alkane-1,3-diol ketals thereof, hydroxymethyl, carboxy, —CO—O-lower-alkyl, chloromethyl, dichloromethyl, trichloromethyl, hydroxycyanomethyl or lower-alkyl; and R_7 is lower-alkylene-CO—O-lower-alkyl or 2-pyridyl.

4,239,688

HERBICIDAL N-(HALOACETYL)-N-(N'-METHYLENEPYRROLIDONYL-2-MERCAPTOALKYLANILINES

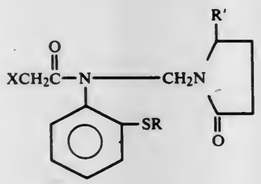
Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,354

Int. Cl.³ A01N *9/22;* **C07D** *207/27*

U.S. Cl. 260—326.43 **16 Claims**

1. Herbicidal compounds having the formula:



where

R is alkyl having 1–6 carbon atoms, alkenyl having 2–6 carbon atoms, cycloalkyl having 4–6 carbon atoms, unsubstituted or substituted with alkyl of 1–4 carbon atoms, or alkyleneoxyalkyl of 2–8 carbon atoms,

R' is hydrogen or alkyl of 1–3 carbon atoms, and

X is chloro or bromo.

4,239,689

TOTAL SYNTHESIS OF THE UTERO-EVACUANT SUBSTANCE D,L-ZOAPATANOL

Vinayak V. Kane, Princeton, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 18, 1978, Ser. No. 970,727

Int. Cl.³ C07D *313/04*

U.S. Cl. 260—333 **4 Claims**

A method for the synthesis of racemic 2S*, 3R*–6E–(2"-hydroxyethylidene)-2-methyl-2-(4',8'-dimethyl-5'-oxo-7'-nonenyl)-oxepan-3-ol is described. The naturally occurring product, 2S, 3R–6E–(2"-hydroxyethylidene)-2-methyl-2-(4',8'-dimethyl-5'-oxo-7'-nonenyl)-oxepan-3-ol, is one of the active components of the zoapatle plant.

4,239,690

ANTIBIOTICS PRODUCED BY *CYTOSPORA SP.* W.F.P.L. 13A

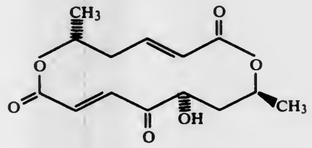
Sarangamat Gurusiddaiah; Robert C. Ronald; James A. Magnuson, and Bruce A. McFadden, all of Pullman, Wash., assignors to Washington State University Research Foundation, Pullman, Wash.

Division of Ser. No. 882,492, Mar. 1, 1978. This application Oct. 22, 1979, Ser. No. 87,177

Int. Cl.³ C07D *321/00*

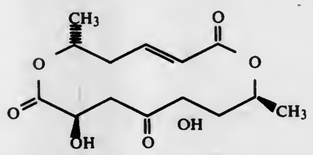
U.S. Cl. 260—340.2 **4 Claims**

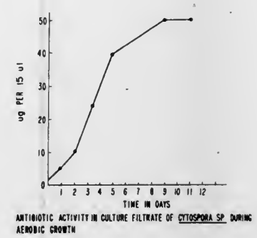
1. A macrocyclic polylactone corresponding to the formula:



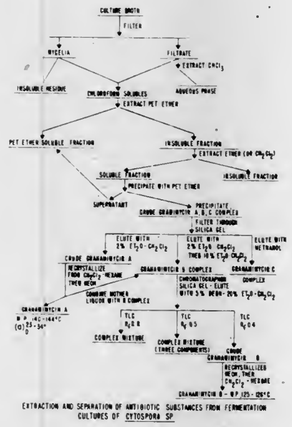
and pharmacalogically acceptable esters thereof.

4. A macrocyclic polylactone corresponding to the formula





ANTIBIOTIC ACTIVITY IN CULTURE FILTRATE OF CYTOSPORA SP. DURING AEROBIC GROWTH



EXTRACTION AND SEPARATION OF ANTIBIOTIC SUBSTANCES FROM FERMENTATION CULTURES OF CYTOSPORA SP.

4,239,691

CONVERSION OF NON-ALPHA-TOCOPHEROLS TO ALPHA-TOCOPHEROLS

Donald R. Nelan, and Charles H. Foster, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,555

Int. Cl.³ C07D *311/72*

U.S. Cl. 260—345.5 **9 Claims**

1. In the process for producing alpha-tocopherol from non-alpha-tocopherols having at least one hydrogen atom in the benzene nucleus comprising reacting the tocopherol with a formaldehyde source, the improvement comprising carrying out said reaction at a temperature of at least about 175° C. in the presence of a catalytic amount of an acidic ion exchange resin and subjecting the reaction mixture to catalytic hydrogenation.

4,239,692

OLIGOMERIC IMINIC DERIVATIVES OF ALUMINUM HYDRIDE AND METHOD FOR THEIR PREPARATION

Giovanni Dozzi, Milan; Salvatore Cucinella, and Tito Salvatori, both of San Donato Milanese, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Mar. 15, 1979, Ser. No. 20,837

Claims priority, application Italy, Apr. 12, 1978, 22221 A/78

Int. Cl.³ C07F *5/06*

U.S. Cl. 260—448 R **2 Claims**

1. Oligomeric derivatives of aluminum having a tridimensional "open cage" structure of the formula:

$$[HAlN—R'—XR''_m)_i(H_2AlNH—R'—XR''_m)_j]$$

wherein:

(a) R' is (i) a linear, branched or aryl-substituted bivalent hydrocarbon aliphatic radical having from 1 to 20 carbon atoms, (ii) a bivalent cycloaliphatic radical or alkyl- or arylsubstituted bivalent cycloaliphatic radical or (iii) an aromatic or alkylsubstituted aromatic bivalent radical having from 1 to 20 carbon atoms,

(b) X is a nitrogen or an oxygen atom,

(c) R'' is (i) a linear, branched or aryl-substituted aliphatic hydrocarbon radical having from 1 to 20 carbon atoms, (ii) a cycloaliphatic hydrocarbon radical or alkyl or arylsubstituted hydrocarbon radical having from 1 to 20 carbon atoms, or (iii) an aromatic or alkylsubstituted aromatic radical having from 1 to 20 carbon atoms,

(d) m is a function of the nature of X and is equal to v − 1, v being the valence of X and wherein m is greater than 1 the radicals R'' can be equal to, or different from, each other,

(e) +j equals z, z being an integer between 4 and 20 and in addition i can be equal to j or different from j.

4,239,693

PROCESS FOR PRODUCTION OF METHANOL

Robert A. McCallister, Mountain Lakes, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jun. 22, 1979, Ser. No. 51,325

Int. Cl.³ C07C *31/04, 29/16*

U.S. Cl. 260—449.5 **4 Claims**

1. In a process for the production of methanol including reforming, energy recovery, compression and synthesis reaction stages, wherein a purged gas at an elevated pressure is removed from said synthesis reaction stage, the improvement comprising the steps of

(a) passing said purged gas through an expander, said expander being operatively connected to a compressor, so as to recover energy from said purged gasline pressure and to use said energy to drive said compressor,

(b) combusting said expanded purged gas with an oxygen-containing gas to obtain a heated exhaust gas, said heated exhaust gas including oxygen,

(c) expanding said heated exhaust gas to recover energy therefrom, and

(d) passing said expanded heated exhaust gas to said reformed stage, a portion of said heated exhaust gas containing oxygen being combusted with a fuel in said reforming stage to generate heat for use in said reforming stage.

4,239,694

BIS-DICYANOALKYL ARENE COMPOUNDS

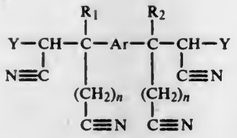
Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1979, Ser. No. 107,473

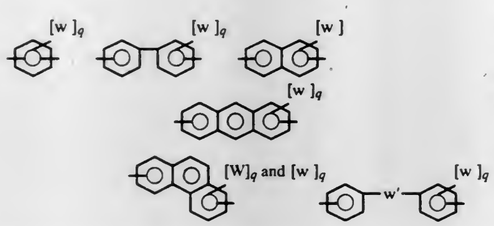
Int. Cl.³ C07C *121/66, 121/75*

U.S. Cl. 260—465 D **10 Claims**

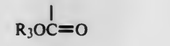
1. A bis-dicyanoalkyl arene compound of the formula



wherein Ar is a C_{6-20} arylene radical selected from the group consisting of:



wherein w in each occurrence is halo, nitro, or a C_{1-10} radical selected from alkyl, aryl, alkaryl, aralkyl, haloalkyl, haloaryl, aryloxy and alkoxy; q is an integer from zero to 4; and w' is oxygen, sulfur, alkylene, oxyalkylene, alkylenedioxy, or polyoxyalkylene; R_1, R_2 individually are hydrogen or alkyl, aryl, aralkyl, or alkaryl radicals containing up to 10 carbon atoms; Y is hydrogen or



where R_3 is an alkyl radical containing 1 to 10 carbon atoms; and both n's are zeros or ones, provided that when both n's are zeros, Y is

and when both n's are ones, Y is hydrogen.

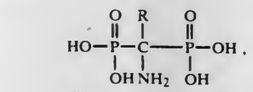
4,239,695

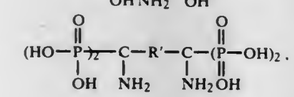
METHOD OF PREPARING PHOSPHONATES FROM NITRILES

Bong J. Chai, West Covina, and Fred D. Muggee, Anaheim, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

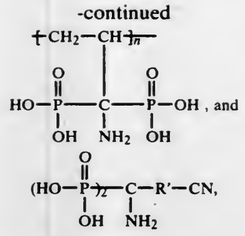
Filed Mar. 24, 1977, Ser. No. 780,883
Int. Cl.³ C07F *9/38*; C07C *121/16*; C07D *213/53*
U.S. Cl. 260—502.5 **11 Claims**

1. The process for producing aminophosphonic acids having the following formulae,

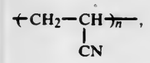




-continued



wherein R is a saturated or unsaturated aliphatic radical having 1–22 carbon atoms or phenyl or benzyl or naphthyl radical or substituted aliphatic or aromatic radicals, R' is a difunctional aliphatic bridging radical having 1–10 carbon atoms, and n is ≧2, comprising reacting at a temperature of from about 100° C. to about 200° C. a mixture consisting essentially of phosphorous acid and an organonitrile selected from the group consisting essentially of R—CN, NC—R'—CN and



R being a saturated or unsaturated aliphatic radical, or phenyl, benzyl or naphthyl or substituted aliphatic or aromatic radical, R' being an aliphatic bridging radical, and n being a positive integer of 2 or greater.

4,239,696

PROCESS FOR THE PRODUCTION OF ALKYL SULFONIC ACIDS

Gerd Schreyer, Wildaustrasse 22; Friedhelm Geiger, Theodor-Heuss-Strasse 11, and Jörg Hensel, Grünaustrasse 3, all of 6450 Hanau 9, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 654,063, Feb. 2, 1976, abandoned. This application Feb. 4, 1976, Ser. No. 655,017
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1975, 2504235
Int. Cl.³ C07C *143/02*
U.S. Cl. 260—513 R **13 Claims**

1. A process for the production of an alkylsulfonic acid comprising oxidizing an alkyl mercaptan or a dialkyl disulfide with hydrogen peroxide in a liquid alkylsulfonic acid reaction medium free of percarboxylic acids and carboxylic acids, there being employed 1 to 35% of alkylsulfonic acid based on the amount of alkyl mercaptan or dialkyl disulfide.

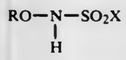
4,239,697

O-SUBSTITUTED N-HYDROXYSULFAMID ACID HALIDES AND THEIR PREPARATION

Adolf Parg, Bad Durkheim, and Gerhard Hamprecht, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 38,172, May 11, 1979. This application Oct. 1, 1979, Ser. No. 80,506
Int. Cl.³ C07C *143/14, 143/21*
U.S. Cl. 260—543 R **6 Claims**

1. A O-substituted N-hydroxysulfamic acid halide of the formula



I

where R is alkyl of 1 to 20 carbons, alkyl of 2 to 20 carbons substituted by 1 to 3 alkoxy groups of 1 to 7 carbons, cycloalkyl of 4 to 8 carbon atoms or said groups further substituted by chlorine, bromine, alkyl or alkoxy each of 1 to 4 carbon atoms,

carbalkoxy of 2 to 4 carbon atoms or cycloalkyl of 4 to 6 carbon atoms and X is halogen.

4,239,698

PROCESS FOR PREPARING CARBOXYLIC ACID ANHYDRIDES

Tomiya Isshiki, Tokyo; Yasuhiko Kijima, Matsodo, and Yuh Miyauchi, Mastsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 949,853
Claims priority, application Japan, Oct. 11, 1977, 52-121772
Int. Cl.³ C07C *51/54, 51/56*
U.S. Cl. 260—549 **5 Claims**

1. In a process for preparing a carboxylic acid anhydride by reacting an aliphatic carboxylic acid ester or an ether with carbon monoxide in the presence of a nickel component, an iodine component and a trivalent nitrogen-group element component in an aliphatic carboxylic acid solvent, the improvement which comprises using a catalyst system consisting essentially of (1) elemental nickel or a nickel compound, (2) iodine or an iodine compound and (3) an organic compound of a trivalent nitrogen-group element, wherein said iodine or iodine compound is selected from the following formulae (I) to (IV),

$$RX_n \qquad (I)$$

wherein R represents hydrogen, alkyl or alkylene, X represents an iodine or bromine atom, n represents an integer of 1 to 3, and at least one of n X's is an iodine atom,

$$I_2 \text{ or } I_3^- \qquad (II)$$

$$RCOI \qquad (III)$$

wherein R represents alkyl, and

$$MI_2 \qquad (IV)$$

wherein M represents an alkaline earth metal, and is used in an amount such that the free iodine or iodine compound not chemically combined with said nickel or nickel compound or with said organic compound of a trivalent nitrogen-group element is present in an amount of at least 0.2 mole, as elemental iodine, per mole of each of said organic compound of a trivalent nitrogen-group element and said nickel or nickel compound.

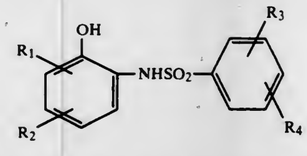
4,239,699

SULFONAMIDOPHENOLS, METAL COMPLEXES THEREOF, AND SOLUTIONS CONTAINING SUCH COMPOUNDS FOR USE IN EXTRACTION OF METAL VALUES

Kenneth D. MacKay, Circle Pines, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

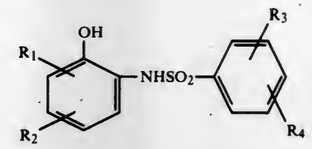
Filed May 24, 1978, Ser. No. 909,224
Int. Cl.³ C07C *143/78, 143/79*; B01D *11/04*
U.S. Cl. 564—92 **32 Claims**

1. Compounds of the structure:



wherein R_1 and R_2, which may be the same or different, are selected from the group consisting of hydrogen, linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, halogen, nitro, cyano, trifluoromethyl and methylsulfonyl, with the proviso that both R_1 and R_2 are not alkyl and R_3 and R_4, which may be the same or different, are selected from the group consisting of hydrogen and linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, said compounds being further characterized as having solubilities of at least 2% by weight in essentially water-immiscible liquid hydrocarbon solvents.

17. A composition of matter consisting essentially of a solution of sulfonamidophenol in an essentially water-immiscible liquid hydrocarbon solvent, said solution containing at least 2% by weight of said sulonamidophenol, said sulfonamidophenol being selected from compounds of structure:



wherein R_1 and R_2, which may be the same or different, are selected from the group consisting of hydrogen, linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, halogen, nitro, cyano, trifluoromethyl, and methylsulfonyl, with the proviso that both R_1 and R_2 are not alkyl and R_3 and R_4, which may be the same or different, are selected from the group consisting of hydrogen and linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms.

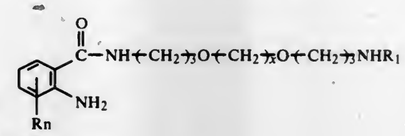
4,239,700

ISATOIC ANHYDRIDE DERIVATIVES AND USE AS CHAIN-EXTENDERS

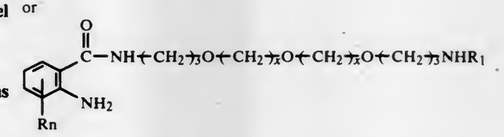
Edward T. Marquis, and Ernest L. Yeakey, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 949,833, Oct. 10, 1978, Pat. No. 4,194,070.
This application May 22, 1979, Ser. No. 41,360
Int. Cl.³ C07C *103/22*
U.S. Cl. 564—157 **5 Claims**

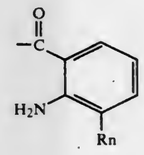
1. A compound of the formula:



or



where R is selected from the group consisting of hydrogen, alkyl, nitro, halo, hydroxy, amino and cyano, n is a number of 1–4, x is a number of from 2 to 6 and R_1 is hydrogen or



4,239,701

TERNARY SALTS OF TRIS(AMINOMETHYL)PHOSPHINES AND THEIR OXIDES

Arlen W. Frank, Slidell; Donald J. Daigle, New Orleans, and Russell M. H. Kullman, Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 964,854, Nov. 29, 1978, Pat. No. 4,196,149. This application Jul. 26, 1979, Ser. No. 61,322

Int. Cl.³ C07C *85/20*

U.S. Cl. 564—15 **3 Claims**

1. A process for preparing a ternary salt of tris(aminomethyl)phosphine oxide which comprises hydrolyzing a tris(N-carbalkoxyaminomethyl)phosphine oxide having the formula:

$$(R'O_2CNHCH_2)_3PO$$

wherein R' is an alkyl radical having from 1 to 6 carbon atoms, with six or more parts of a hydrohalic acid HX, where X is a halogen, until all three of the acyl-nitrogen bonds are cleaved, and recovering the product therefrom.

4,239,702

PROCESS FOR PREPARING AROMATIC ALDEHYDES AND ALCOHOLS

Paolo deWitt, and Maria O. Tinti, both of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Italy

Filed Jan. 18, 1979, Ser. No. 4,447

Claims priority, application Italy, Jan. 27, 1978, 47811 A/78; Jan. 4, 1979, 47537 A/79

Int. Cl.³ C07C *45/29, 29/136*

U.S. Cl. 568—435 **5 Claims**

1. Process for producing a benzyl alcohol comprising the steps of:

(1) reacting at 5°–10° C., at atmospheric pressure, an aromatic acid chosen in the group formed by benzoic acid or benzoic acid substituted with lower-alkyl radicals, lower alkoxy groups, chlorine and bromine, with ethyl or isobutyl chloroformiate, in the presence of an anhydrous base or an anhydrous solvent, inert in respect to the reagents, obtaining the corresponding mixed anhydride; and

(2) hydrogenizing by catalysis the mixed anhydride of step (1) at 55°–65° C., at 150–250 pounds/inch² for 8–12 hours in the presence of a palladium on charcoal hydrogenation catalyst, obtaining the corresponding benzyl alcohol.

3. Process for producing benzaldehyde comprising the steps of:

(1) reacting at 5°–10° C., at atmospheric pressure, an aromatic acid chosen in the group formed by benzoic acid or benzoic acid substituted with lower alkyl-radicals, lower alkoxy-groups, chlorine and bromine, with ethyl or isobutyl chloroformiate, in the presence of an anhydrous base or an anhydrous solvent, inert in respect to the reagents, obtaining the corresponding mixed anhydride;

(2) hydrogenizing by catalysis the mixed anhydride of step (1) at 55°–65° C., at 150–250 pounds/inch² for 8–12 hours in the presence of a palladium on charcoal hydrogenation catalyst, obtaining the corresponding benzyl alcohol; and

(3) oxidizing the benzyl alcohol of step (2) to the corresponding aldehyde using as oxidizing agent an aqueous solution of a compound which liberates hypochlorite ions in the presence of a phase transfer catalyst, chosen among the quaternary ammonium salts formed by three hydrocarbonic chains C_8–C_{10} and by a methyl group.

4,239,703

PROCESS FOR THE PREPARATION OF TEREPHTHALIC, ISOPHTHALIC AND PHTHALIC DIALDEHYDES

Günther Bernhardt, St. Augustin, and Gerhard Daum, Cologne, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,826

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834051

Int. Cl.³ C07C *45/29*

U.S. Cl. 568—431 **15 Claims**

1. A process for the preparation of a terephthalic, isophthalic or phthalic dialdehyde which comprises heating a xylylene glycol in the vapor phase at a temperature between 250° and 500° C. in the presence of an oxygen-containing gas, water vapor, and in the presence of a silver dehydrogenation catalyst.

4,239,704

PROCESS FOR PRODUCING ACETALDEHYDE

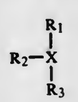
Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 957,130, Nov. 2, 1978, and Ser. No. 936,717, Aug. 25, 1978. This application May 25, 1979, Ser. No. 42,330

Int. Cl.³ C07C *47/06*

U.S. Cl. 568—487 **22 Claims**

1. A process for selectively producing acetaldehyde which comprises introducing into a reaction zone (1) methanol, (2) hydrogen, (3) carbon monoxide, (4) a cobalt entity selected from the group consisting of a cobalt carbonyl, a hydrido cobalt carbonyl and a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, (5) a ligand selected from the group consisting of an arsenic and antimony base ligands defined by the following formula:



wherein X is a member selected from the group consisting of trivalent arsenic or trivalent antimony: and R_1, R_2 and R_3 are either alike or different members selected from the group consisting of alkyl, phenyl and alkyl substituted phenyl radicals, with the provision that at least one R group is phenyl or alkyl substituted phenyl, and (6) an iodine compound and then subjecting the contents of said reaction zone to an elevated temperature and an elevated pressure for a time sufficient to convert methanol to acetaldehyde, the cobalt entity and the ligand entity being present in a molar ratio of about 20:1 to about 1:10, the cobalt entity and the iodine entity being present in a molar ratio of about 100:1 to about 1:2, the weight percent of combined cobalt entity, ligand entity and iodine entity being about 0.01 to about 10, based on methanol, the carbon monoxide and hydrogen being present in a molar ratio of about 1:10 to about 10:1, the reaction temperature being about 150° to about 250° C., the reaction pressure being about 1000 to about 10,000 pounds per square inch gauge and the reaction period being about 0.5 to about 10 hours.

4,239,705

PROCESS FOR PRODUCING ACETALDEHYDE

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

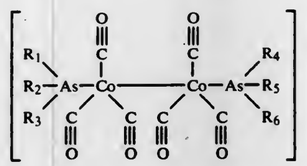
Continuation-in-part of Ser. No. 936,718, Aug. 25, 1978, abandoned. This application May 25, 1979, Ser. No. 42,427

Int. Cl.³ C07C *47/06*

U.S. Cl. 568—487 **12 Claims**

1. A process for selectively producing acetaldehyde which

comprises introducing into a reaction zone (1) methanol, (2) hydrogen, (3) carbon monoxide, (4) an arsenic-cobalt tricarbonyl complex defined by the following formula:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are members selected from the group consisting of phenyl and alkyl substituted phenyl and (5) an iodine compound, the arsenic-cobalt tricarbonyl complex and the iodine entity being present in a molar ratio of about 100:1 to about 1:100, the weight percent of combined cobalt tricarbonyl complex and the iodine entity, as elements, being present in the range of about 0.01 to about 10 percent, the molar ratio of carbon monoxide to hydrogen being about 1:10 to about 10:1, and then subjecting the contents of said reaction zone to an elevated temperature of about 150° to about 250° C. and an elevated pressure of about 1000 to about 6000 pounds per square inch gauge for a time within the range of about 0.5 to about 10 hours sufficient to convert methanol to acetaldehyde.

4,239,706

PREPARATION OF CROTONALDEHYDES

Rolf Fischer, Heidelberg, and Hans-Martin Weitz, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

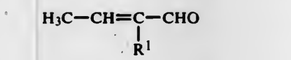
Filed Mar. 14, 1979, Ser. No. 20,458

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1978, 2815539

Int. Cl.³ C07C *47/21*

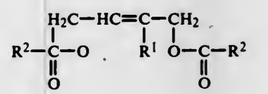
U.S. Cl. 568—484 **6 Claims**

1. A process for the preparation of a crotonaldehyde of the formula



I

where R_1 is hydrogen or alkyl of 1-7 carbon atoms, wherein a 1,4-diacyloxy-but-2ene of the formula



II

where R^1 has the above meansings and R^2 is hydrogen or alkyl of 1–7 carbon atoms, is reacted with water in the presence of a cation exchanger at a temperature of from 0° to 200° C.

4,239,707

NOVEL 8-SUBSTITUTED BICYCLO(3,2,)-OCTANES

Albertus J. Mulder, Amsterdam, Netherlands, and Pieter A. Verbrugge, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

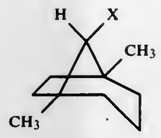
Filed Dec. 21, 1979, Ser. No. 106,227

Claims priority, application United Kingdom, Dec. 29, 1978, 50280/78

Int. Cl.³ C07C *17/08, 119/02*

U.S. Cl. 570—130 **8 Claims**

1. 1,5-Dimethylbicyclo[3,2,1]octanes of the formula I:



(I)

wherein X represents a halogen atom selected from the class consisting of fluorine, chlorine, bromine and iodine or a cyanide group.

4,239,708

P-PHENYLENE BIS[IMINO(THIOCARBONYL)] DIPHOSPHORAMIDIC ACID ESTERS AS ANTHELMENTIC AGENTS

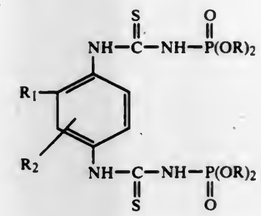
Goro Asato, Titusville, and John A. Pankavich, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 903,293, May 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 819,304, Jul. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 719,225, Aug. 31, 1976, abandoned. This application Mar. 1, 1979, Ser. No. 16,678

Int. Cl.³ C07F *9/24*; A01N *57/28*

U.S. Cl. 260—926 **17 Claims**

1. An anthelmintic diphosphoramidate compound of the structure:



wherein R is alkyl (C_1–C_4); R_1 represents a member selected from the group consisting of alkyl (C_1–C_4), chloro, bromo, iodo, R_3O, R_3S and CF_3; R_2 represents hydrogen methyl and chloro; R_3 represents a member selected from the group consisting of alkyl (C_1–C_4), benzyl and phenyl.

4,239,709

PROCESS FOR PREPARING OPTICALLY ACTIVE OXAZAPHOSPHORINS

Tadao Sato, Tokushima, Japan, assignor to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

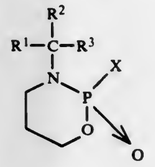
Filed May 29, 1979, Ser. No. 43,462

Claims priority, application Japan, May 29, 1978, 53-64681

Int. Cl.³ C07F *9/24*

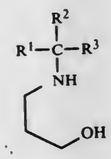
U.S. Cl. 260—974 **14 Claims**

1. A process for preparing an optically active oxazaphosphorin derivative represented by the general formula,



wherein R^1, R^2 and R^3 are respectively different from each other, and are each hydrogen atom, a lower alkyl group, an aralkyl group, or an aryl group; and X is a halogen atom,

which is prepared by reacting an optically active aminoalcohol represented by the general formula,



wherein R^1, R^2 and R^3 are the same as defined above with a phosphor compound represented by the general formula,

POX_3

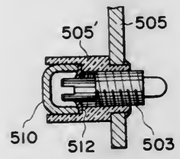
wherein X is a halogen atom.

4,239,710

DEVICE FOR CHECKING RANDOM ADJUSTMENT OF ADJUSTABLE PARTS OF CARBURETOR

Motoki Sato, Nagoya, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan

Filed Feb. 21, 1979, Ser. No. 13,644
Claims priority, application Japan, Mar. 3, 1978, 53/24867
Int. Cl.³ F16K *35/10*
U.S. Cl. 261—65 **12 Claims**



2. A device for checking random adjustment of an adjustable part of a carburetor comprising a cover attached to the operating head portion of an adjusting screw such that said cover can never be removed without being deformed, whereby the exposure of said operating head for adjusting purpose cannot be made without breaking said cover, said device further comprising means provided in connection with said cover and adapted for preventing said screw from being naturally loosened, wherein

a stopper is mounted on said adjusting screw, said adjusting screw is screwed into a screw holder into which said cover is forced, such that said stopper is pressed by said cover so as to be pressingly retained by said screw.

7. A device for checking random adjustment of adjustable parts of a carburetor, comprising

an adjusting screw means for optimizing the mixing ratio of fuel and air to be introduced into an internal combustion engine and having an operating head portion,

means comprising an engagement portion at said head portion thereof adapted for operable engagement with an adjusting tool,

a screw holder having a bore, said adjusting screw means is inserted into said bore,

a cover fixed to said screw holder and enclosing the entire surface of said operating head portion of said adjusting screw means such that said operating head portion of said adjusting screw means can be put into an operable condition by breaking said cover,

prevention means in connection with said cover for preventing said screw means from being naturally loosened by itself,

said prevention means comprises a pin fixedly connected to said cover,

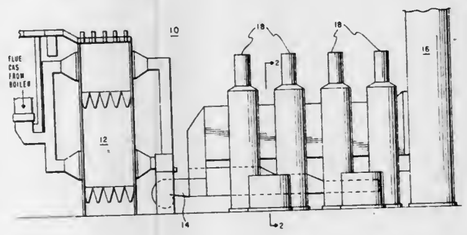
said cover closely fits into said screw holder with said pin driven into said adjusting screw means.

4,239,711

ABSORBER TOWER MAINTENANCE ISOLATION SYSTEM

David C. Dick, Richardson, and James M. Hurt, Jr., Duncanville, both of Tex., assignors to Texas Utilities Services, Inc., Dallas, Tex.

Filed Feb. 16, 1979, Ser. No. 13,188
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—109 **20 Claims**



1. An absorber tower maintenance isolation system for a flue gas desulphurization system used in a steam electric generating plant having a steam generator, a flue gas duct for conveying flue gas from the steam generator, at least one absorber tower connected to the flue gas duct by inlet and outlet ducts for receiving, desulphurizing, and returning the flue gas to the flue gas duct, dampers within the inlet and outlet ducts for regulating the flow of the flue gas, and a chimney for receiving the desulphurized flue gas and discharging it to the atmosphere comprising:

an inlet blank-off plate attached to the entrance to each absorber tower inlet duct from the flue gas duct;

an outlet blank-off plate attached to the exit from each absorber tower outlet duct to the flue gas duct; and,

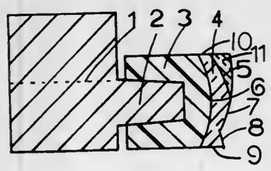
means for opening and closing the inlet and outlet blankoff plates to isolate the absorber tower for maintenance purposes without interruption of the steam generator operation.

4,239,712

METHOD OF MAKING BIFOCAL CONTACT LENSES

Charles W. Neefe, Big Spring, Tex., assignor to Neefe Optical Laboratory, Big Spring, Tex.

Continuation-in-part of Ser. No. 972,526, Dec. 22, 1978, which is a continuation-in-part of Ser. No. 874,934, Feb. 3, 1978, Pat. No. 4,150,073, which is a continuation-in-part of Ser. No. 793,388, May 25, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,822
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1 **7 Claims**



1. A method of making a bifocal lens comprising the steps of: Providing a positive lens mold having a first surface curvature

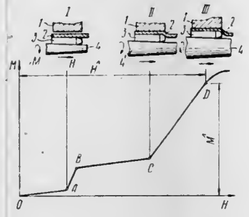
corresponding to the curve required on one surface of the finished lens, and a second surface corresponding to the edge surface of the finished lens with the second surface extending from the first surface curvature a distance greater than the height of the thickness of the lens, forming a negative mold from the positive mold by applying a softened resinous material against the first surface curvature and the second surface of the positive mold to form an open top cylinder from the resinous material with an image of the first surface curvature as the bottom of the cylinder and the image of the second surface as the walls of the cylinder, removing the positive lens mold from the negative lens mold, filling the resinous cylinder of the negative mold with a liquid monomer lens material allowing the liquid monomer lens material to polymerize to form a solid monolithic mass within the resinous cylinder of the negative mold having one finished optical surface molded by the negative image of the first surface curvature formed in the bottom of the resinous cylinder, providing an eccentric rotation while cutting and polishing a second optical surface on the polymerized lens material, to produce a prism lens having a thin apex and thicker base, while the lens material is supported within the resinous cylinder, covering the polished surface of the prism lens with a protective layer of polymer material placing the lens a second time upon the eccentric with the thin apex positioned at the same location that the thicker base was positioned the first time, and the second position of the thick base being the same as the first position of the thin apex, cutting a third optical surface having a selected radius shorter than the second radius, polishing the third radius, removing the lens from the resinous cylinder of the negative mold and removing the protective polymer layer.

4,239,713

METHOD AND MACHINE FOR EXPANDING TUBES IN A TUBE WALL

Viktor M. Brif, and Leonid M. Brif, both of ulitsa Dvinskaya, 14, kv. 14., Volograd, U.S.S.R.

Filed Jun. 22, 1978, Ser. No. 918,825
Int. Cl.³ B21D *39/06;* **B29C** *27/12*
U.S. Cl. 264—40.1 **6 Claims**



1. A method of expanding tubes in a tube wall, comprising the steps of: acting upon the tube with a roller-type rolling tool to expand the tube, measuring simultaneously a variable effort and a linear displacement variable, as caused by said acting, which variables define the magnitudes of stresses and deformations occurring during expanding, said measuring being conducted successively at three operationwise stages, viz. the stage of elastic deformation of the tube, the stage of plastic deformation of the tube until the moment of the engagement of the external surface thereof with the surface of the opening in the tube wall, and the stage of elastic deformation of the tube wall, and optimizing the control over the expanding operation by the variable effort and the linear displacement variable to obtain maximum strength and fluid-tightness of the assembly of the tube in the tube wall, in accordance with the geometric dimensions and the mechanical properties of the respective materials of the tube and of the tube wall.

4,239,714

METHOD FOR MODIFYING THE PORE SIZE DISTRIBUTION OF A MICROPOROUS SEPARATION MEDIUM

Robert E. Sparks, Kirkwood, Mo.; Mariam M. Wahab, Columbus, Ohio, and Norbert S. Mason, Clayton, Mo., assignors to Washington University, St. Louis, Mo.

Filed Nov. 15, 1978, Ser. No. 960,745
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—45.5 **8 Claims**

1. A method of modifying the pore size distribution of a microporous separation medium so as to provide it with a sharp upper cut-off of preselected molecular size, comprising the steps of:

(a) filling the pores of said separation medium with a volatile liquid;

(b) evaporating a controlled amount of said volatile liquid from said separation medium so as to lower the level of said liquid within said pores to below the bulk surface of said separation medium and thereby form voids at the entrances to said pores;

(c) applying to said bulk surface of said separation medium a concentrated solution of a pore-blocking agent, said pore-blocking agent being a material which is insoluble in said volatile liquid and capable of being insolubilized in said solution and whose molecular size distribution has a lower limit corresponding to said preselected molecular size, whereby said pore-blocking agent selectively enters only those pores larger than said preselected size and remains in said voids at the entrances to said pores;

(d) removing excess pore-blocking agent solution from said bulk surface of said separation medium; and

(e) insolubilizing said pore-blocking agent so as to immobilize it within said voids and thereby obstruct the entrances to all said pores larger than said preselected size.

4,239,715

METHOD FOR MANUFACTURING AN ELONGATED STRIP BEARING

George C. Pratt, Chorleywood, England, assignor to The Glacier Metal Company Limited, Middlesex, England

Continuation of Ser. No. 707,211, Jul. 21, 1976, abandoned, which is a continuation of Ser. No. 605,207, Aug. 15, 1975, abandoned, which is a continuation of Ser. No. 217,302, Jan. 12, 1972, abandoned. This application Oct. 31, 1977, Ser. No. 847,046
Claims priority, application United Kingdom, Jan. 13, 1971, 1611/71
Int. Cl.² B28B *1/08;* **B05D** *3/02*
U.S. Cl. 264—70 **4 Claims**



1. A method of making a multi-layered elongated strip bearing, one layer of said bearing being defined by a solid backing strip and another layer thereof being defined by a layer of particulate powder bearing material bonded to said backing strip, said method comprising the steps of:

A. providing a container having vertical side walls and an open bottom, one of said side walls defining a vertically reciprocating downstream wall of said container, said downstream wall having a bottom edge which is beveled upwardly toward the inside of said container,

B. maintaining a supply of said powder within said container in direct contact with a vertical inside wall of said downstream wall to a height disposed above an upper end of a vertical reciprocation stroke of said downstream wall,

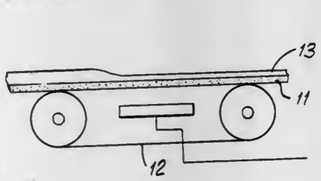
C. feeding a solid backing strip beneath said container so that some of said powder is deposited onto said backing strip,
D. advancing said powder-carrying backing strip toward said downstream wall and beneath said bottom edge,
E. vertically reciprocating said downstream wall as said strip passes therebeneath such that:
i. at the top of said reciprocation stroke said bottom edge is out of contact with powder on said strip and exposes for uninhibited downstream travel a height of uncompacted powder on said backing strip extending from said strip to said bottom edge so that such uncompacted powder moves downstream to a position beneath said bottom edge, and
ii. at the bottom of said reciprocation stroke said bottom edge is disposed at a predetermined location above said backing strip and compacts powder disposed therebeneath, and
F. thereafter heating the compacted powder material and backing strip to bond together particles of said powder and bond such particles to said backing strip.

4,239,716

GYPSUM MOLDINGS AS BUILDING MATERIALS AND METHODS MANUFACTURING THE SAID GYPSUM MOLDINGS

Nobumasa Ishida; Yasuo Yamada, both of Nagoya, and Hideki Jinno, Aichi, all of Japan, assignors to Nippon Hardboard Co. Ltd., Nagoya, Japan

Filed May 26, 1978, Ser. No. 909,938
Claims priority, application Japan, May 30, 1977, 52-63756; Aug. 13, 1977, 52-97119; Aug. 19, 1977, 52-99982; Oct. 20, 1977, 52-125954; Oct. 20, 1977, 52-125955
Int. Cl.³ B28B *1/26*
U.S. Cl. 264—86 **6 Claims**



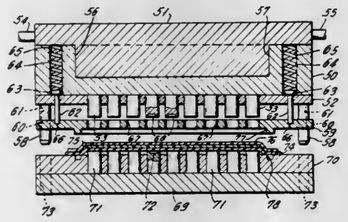
1. A method of manufacturing gypsum moldings useful as building materials which comprises molding an admixture of fibrous α-calcium sulfate hemihydrate with reinforcing agents in the presence of water, heat curing the resulting moldings and drying the resulting heat-cured moldings.

4,239,717

COMPRESSION MOLDING PROCEDURE FOR LIQUID POLYESTER RESINS

Paul Wintner, 1420 Freeport Loop, Brooklyn, N.Y. 11239

Filed May 2, 1979, Ser. No. 35,257
Int. Cl.³ B29G *1/00*
U.S. Cl. 264—108 **14 Claims**



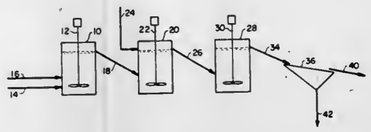
1. A process for heat and pressure molding of a thermosetting resinous composition, wherein the mold comprises upper and lower mold parts which are relatively movable between an open condition, a partially closed condition and a fully closed condition, wherein at least one of the mold parts includes mold cavities into which the resinous compositions may be compressed, the process comprising the steps of:
applying a heat-hardenable, substantially liquid, polymerizable, resinous composition between the mold parts while they are in the open condition;
moving the mold parts to a semi-closed condition so that the upper mold part is contacting the resinous composition, without applying molding pressure thereto;
holding the mold parts at the semi-closed condition for a period of time sufficient to apply heat to and to heat the resinous composition by applying heat at at least one of the mold parts; applying heat to at least one mold part at an elevated temperature so that the heat is applied to the resinous composition for the period of time;
thereafter moving the mold parts to the closed condition, at which elevated pressure is applied to the resinous composition for forcing the resinous composition into the mold cavities, while maintaining the mold parts at elevated temperatures.

4,239,718

PROCESS FOR AGGLOMERATING FINELY DIVIDED CARBONACEOUS SOLIDS

Philip J. Dudt, Scenery Hill, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Apr. 18, 1979, Ser. No. 31,250
Int. Cl.³ B01J *2/06*
U.S. Cl. 264—117 **5 Claims**



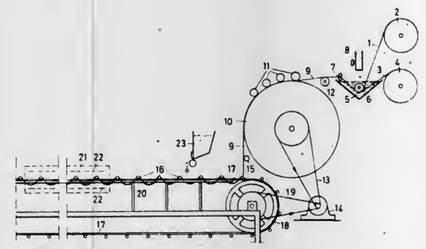
1. In a process for agglomerating finely divided carbonaceous solids in an aqueous slurry containing about 10 to 40 weight percent finely divided solids, said finely divided solids comprising said finely divided carbonaceous solids and finely divided inroganic solids said process comprising:
(a) mixing said slurry with an amount of oil to produce agglomerates of said carbonaceous solids containing from about 12 to 15 weight percent oil; and,
(b) recovering said agglomerates as a product,
an improvement comprising:
(c) admixing said oil in an amount of about 40 to 70 weight percent based on the weight of said finely divided solids with said slurry to produce a mixture of said oil and said slurry; and
(d) admixing clean finely divided carbonaceous solids with said mixture at a mixing rate of about 0.3 to 1.25 hp/ft³ to invert said mixture and produce agglomerates of said carbonaceous solids and oil, said agglomerates containing from about 12 to 15 weight percent oil,
whereby a slurry containing said finely divided carbonaceous solids which do not agglomerate upon mixing with from about 10 to 30 weight percent oil based on the weight of said carbonaceous solids can be agglomerated.

4,239,719

METHOD FOR CONTINUOUS PRODUCTION OF CORRUGATED SHEETS

Asbjorn Ronning, Sandefjord, Norway, assignor to Steni A/S, Sandefjord, Norway

Continuation of Ser. No. 592,933, Jul. 3, 1975, abandoned. This application Jul. 25, 1977, Ser. No. 818,851
Claims priority, application Norway, Jul. 11, 1974, 742529
Int. Cl.³ B29D *3/02;* **B29G** *5/00*
U.S. Cl. 264—137 **5 Claims**



1. A method of continuous production of rigid transversely corrugated sheets comprising a material impregnated with a thermosetting binding agent, said method comprising:
impregnating a flexible sheet of material with a thermosetting binding agent;
moving an elongated substantially horizontally disposed endless carrier, having a plurality of substantially equally spaced apart transversely extending rod-like elements with no sheet-supporting structure between them, at a given adjustable linear speed;
forming corrugations, which are freely downwardly hanging only under their own weight, of desired shape in the flexible sheet between the rod-like elements in the open spaces therebetween by feeding the impregnated flexible sheet onto the moving elongated carrier at an adjustable linear speed which is greater than said given speed and by simultaneously only supporting the flexible sheet only on the rod-like elements of the moving carrier in an essentially horizontal disposition at longitudinally substantially constantly spaced intervals;
heating the still flexible corrugated sheet to cure the binding agent and rigidify the sheet while the sheet is advanced through a curing zone by said rod-like elements with the corrugations hanging freely downwardly between the rod-like elements, and removing said sheet from said carrier in rigid corrugated form.

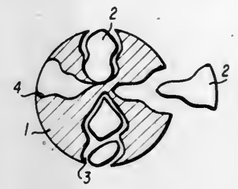
4,239,720

FIBER STRUCTURES OF SPLIT MULTICOMPONENT FIBERS AND PROCESS THEREFOR

Klaus Gerlach, Obernau; Nikolaus Mathes, Breuberg, and Friedbert Wechs, Worth am Main, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 1, 1979, Ser. No. 16,560
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 7806419[U]; Mar. 3, 1978, 7806496[U]; Mar. 3, 1978, 7806500[U]; Mar. 3, 1978, 7806518[U]; Mar. 3, 1978, 7806531[U]; Mar. 3, 1978, 7806532[U]; Mar. 3, 1978, 7806543[U]; Mar. 3, 1978, 2809346; Dec. 23, 1978, 2856091; Jan. 25, 1979, 2902758
Int. Cl.² D02G *3/00*
U.S. Cl. 264—147 **30 Claims**

1. A process for making fiber structures by splitting multicomponent fibers by treatment with an organic solvent, comprising treating shrinkable, essentially nonset multicomponent fibers comprising at least two incompatible components, which are arranged over the cross section of the fiber so as to form as to form a matrix and a plurality of segments, said segments comprising from about 20% to about 80% of the total cross section and at least three segments being arranged peripherally without being completely embedded in the matrix component, with a liquid or gaseous organic solvent which will lower the zero shrinkage temperature of one of the matrix polymer or the segment polymer by at least 160° C., and in which the polymer components of the fiber exhibit a differential shrinkage, said treatment being carried out at a temperature and for a time sufficient to entirely or partly split said multicomponent fibers into separate segments.

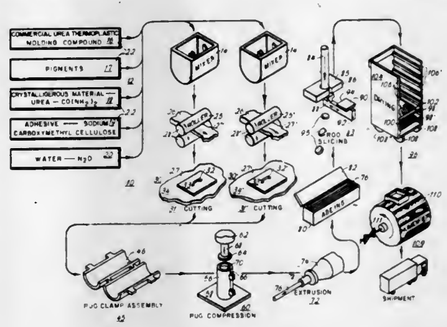


4,239,721

PROCESS FOR THE MANUFACTURE OF PATTERNED UREA THERMOPLASTIC MOLDING COMPOUND PREFORMS TO BE USED FOR THE PRODUCTION OF CONSISTENTLY PATTERNED BUTTONS WITH MOLDED HOLES

Leonard R. Nitzberg, 1413 Buckeye La., Knoxville, Tenn. 37919

Filed Jan. 12, 1979, Ser. No. 3,000
Int. Cl.³ B29C *17/00, 25/00;* **B29G** *2/00*
U.S. Cl. 264—157 **15 Claims**



1. A method of producing consistently patterned and pigmented preforms of urea thermosetting plastic molding compound, which preforms may be molded into buttons and the like comprising the steps of:
mixing selected amounts of the dry constituents which include urea thermosetting plastic molding compound, color pigments, crystalline urea and hydrophillic adhesives;
adding and mixing a selected amount of water with said dry constituents to obtain a preform material;
compressing said preform material;
extruding said compressed preform material to obtain rods of said preform material having a desired size and cross section;
aging said extruded preform material;
dividing said rod of preform material into preforms or blanks having a selected thickness; and
adjusting the amount of water in said preforms such that said preforms are suitable for molding into buttons and the like having a desired configuration.

4,239,722

PROCESS FOR THE PRODUCTION OF HYDROPHILIC FIBRES

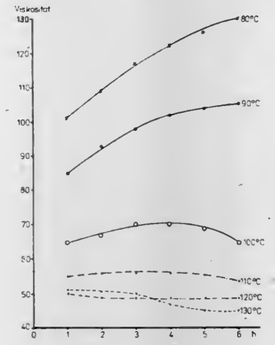
Ulrich Reinehr, Dormagen; Herman-Josef Jungverdorben, Grevenbroich; Toni Herbertz, Dormagen; Joachim Dross, Dormagen, and Rolf-Burkhard Hirsch, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 9, 1977, Ser. No. 859,216

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657144

Int. Cl.³ D02G *3/00*

U.S. Cl. 264—206 **11 Claims**



1. In the process of producing hydrophilic filaments or fibers by dry spinning a solution comprising a solvent consisting essentially of dimethyl formamide, 19 to 40 by weight of a filament forming synthetic polymer containing at least 50 percent acrylonitrile units and from 5 to 50 percent by weight based on the solvent and polymer, of a substance which is essentially a non-solvent for the polymer and has a higher boiling point than the solvent used and is readily miscible with the solvent and with a liquid suitable as a washing liquid for the filaments or fibers to form filaments or fibers, and washing the said substance out of the filaments or fibers; the improvement comprising preparing a suspension of said constituents of the spinning solution, heating the suspension and leaving it for a period of from 1 to 15 minutes at a temperature of from 30° C. to 60° C. above the temperature at which the suspension becomes optically homogeneous and thereafter dry-spinning the solution and washing said substance out of the filaments or fibers.

4,239,723

TIRE MOLD PRESS OPERATING METHOD

Walter G. Williams, Danville, Va., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 955,074, Oct. 26, 1978, Pat. No. 4,184,823. This application Aug. 9, 1979, Ser. No. 65,026

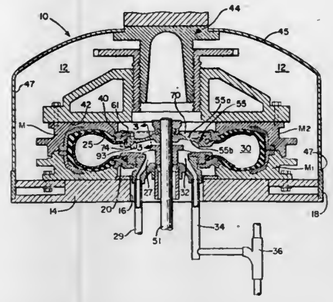
Int. Cl.² B29H *5/02*

U.S. Cl. 264—315 **4 Claims**

1. A method of draining condensate from the upper surface of the top center plate of a steam dome-type tire curing press wherein condensate tends to accumulate in a pool on the upper surface of said top plate which surface is exposed to steam in the steam dome, said method comprising providing a flow passage through said top plate from its upper surface exposed to steam and condensate to its lower surface exposed to fluid pressures exerted within the tire cavity;

maintaining said passage closed to fluid flow while pressure in said cavity exceeds the pressure in said steam dome;

and causing said passage to open to flow of condensate therethrough from said upper to said lower surface only when pressure acting on said lower surface is less than the pressure acting on said upper surface;



whereby condensate on said upper surface is drained into said cavity.

4,239,724

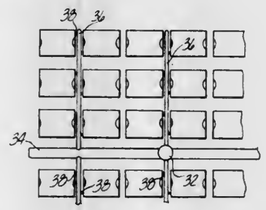
METHOD FOR MAKING VALUED PLASTIC ARTICLES SUCH AS GAME TILES

Robert Adell, Bloomfield Hills, Mich., assignor to U.S. Product Development Co., Novi, Mich.

Filed Sep. 5, 1978, Ser. No. 939,679

Int. Cl.² B29F *1/14, 1/06*

U.S. Cl. 264—328.8 **1 Claim**



1. In the method of making valued, two-faced plastic articles, such as game tiles and the like, wherein each article is first made by molding and then value-designating indicia is applied to a face thereof and wherein the molding of each article is conducted in a mold cavity defined by a pair of separable members with one member forming one face of the article and the other member forming the other face, and upon separation of the mold members, the molded article is forcibly ejected by ejector means in said one mold member which imparts an indentation pattern to said one face and which also causes the article to be severed from residual plastic, the improvement for yielding an article which, after having been ejected, allows its value-designating indicia to be applied to either of its two faces without regard to which faces of other molded articles value-designating indicia are applied so that the non-indicia-containing faces of the article and other molded articles appear essentially identical, said improvement comprising providing a fixed protuberance pattern in the other mold member which, during molding of the article, creates an indentation pattern in the other face of the article essentially identical to the indentation pattern imparted to the one face of the article by said ejector means.

4,239,725

LOW TEMPERATURE CURABLE ORGANIC RESIN COMPOSITIONS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 58,318, Jul. 17, 1979, and a continuation-in-part of Ser. No. 962,997, Nov. 22, 1978, which is a continuation-in-part of Ser. No. 861,127, Dec. 16, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,280

Int. Cl.³ C08F *4/44*

U.S. Cl. 264—328.6 **8 Claims**

1. A method for molding a shaped part from a cationically polymerizable organic material which comprises

(1) blending under reaction injection molding conditions a mixture comprising

(E) a cationically polymerizable organic material, and

(F) an effective amount of a catalyst comprising

(vii) a diaryl iodonium salt,

(viii) 0.1 to 10 parts, per part of (vii) of a copper salt and

(ix) 0.5 part to 10 parts, per part of (iv) of a reducing agent,

(2) injecting the resulting mixture of (1) into a heated mold and

(3) recovering the molded part resulting from step (2).

4,239,726

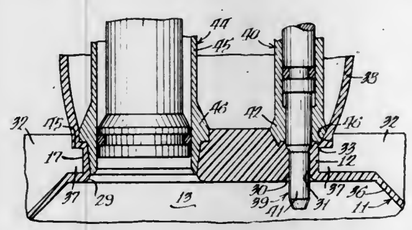
METHOD FOR FORMING, FILLING AND SEALING A CONTAINER HAVING PLURAL CLOSURES

Gerhard H. Weiler, South Barrington, and Henry Komendowski, Des Plaines, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Apr. 17, 1978, Ser. No. 896,978

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—525 **3 Claims**



1. A method for forming, filling and sealing a container made from a thermoplastic material which comprises the steps of

providing an open assembly of mold parts defining a container-forming cavity and provided with means for constricting a parison;

extruding between said mold parts a parison of said thermoplastic material in the form of a semi-solid, elongated hollow tube;

closing said assembly of mold parts about said parison so as to confine a portion thereof between said mold parts and within said container-forming cavity while pinching closed one end of the confined parison portion and deforming the other end of said confined parison portion to provide a constriction defining a pair of access apertures into the confined parison portion;

severing a predetermined length of the extruded parison so as to provide an open-ended parison portion above the confined parison portion and unitary therewith;

temporarily sealing one of said access apertures by applying to the deformed parison portion defining said one access aperture a first mandrel equipped with an elongated, extensible compression molding member and with an annular molding surface coacting with said mold parts so as to form a weakened flange about said one access aperture;

extending said compression molding member into said one access aperture so as to form a container neck portion having a bore of predetermined configuration and communicating with said one access aperture;

temporarily sealing the other of said access apertures by applying to the deformed parison portion defining said other access aperture a second mandrel equipped with a blowing tube and a filling tube and terminating in a ring-like molding ram so as to form a second container neck portion having a bore of predetermined configuration and communicating with said other access aperture;

blow-forming said confined parison portion through said blowing tube so as to produce a container body conforming to configuration of said mold cavity;

filling the formed container body with a desired contents;

removing both of said mandrels from said deformed parison portions;

positioning closure-forming mold parts about said open-ended parison portion; and

operating said closure-forming mold parts so as to form individual closures for both of said access apertures unitary with said container body.

4,239,727

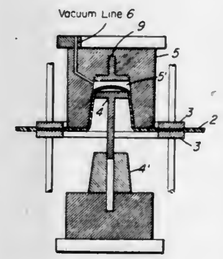
METHOD AND APPARATUS FOR THERMOFORMING THERMOPLASTIC FOAM ARTICLES

Donald W. Myers, and Samantha L. Vivlamore, both of Canandaigua, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,836

Int. Cl.³ B29C *17/03*; B29D *27/00*

U.S. Cl. 264—550 **5 Claims**



1. A method of thermoforming thermoplastic foam articles comprising, in sequence, the steps of:

a. preheating a sheet of thermoplastic foam stock material;

b. clamping said preheated stock material in a fixed position between matched male and female mold members;

c. initially partially deforming said preheated stock material toward a forming cavity of said female mold by extending a plug member from said male mold member;

d. maintaining said stock material in a partially deformed condition with said plug extended for an interval of from about 0.1 to about 2.0 seconds without substantial cooling of said stock material;

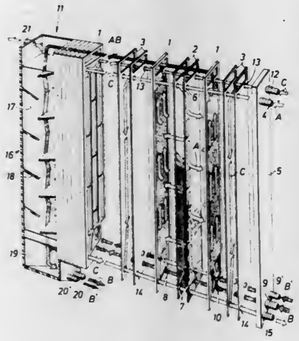
e. completely forming said article by drawing said partially formed preheated sheet into a forming cavity by vacuum and closing the matched male mold member to chill the stock material and set a final shape therein.

4,239,728

APPARATUS AND METHOD FOR THE DIFFUSION OF SUBSTANCES BETWEEN TWO FLUIDS SEPARATED BY A SEMIPERMEABLE MEMBRANE

Kaj O. Stenberg, Staffanstorp, and Lars J. C. Traven, Lund, both of Sweden, assignors to Gambro AB, Sweden

Filed Jan. 24, 1979, Ser. No. 6,248
Claims priority, application Sweden, Feb. 2, 1978, 7801231
Int. Cl.³ A61M *1/03*
U.S. Cl. 422—46 **21 Claims**



1. A diffusion apparatus for the diffusion of a gas into a liquid comprising:

a pair of semi-permeable membranes each having first and second opposing surfaces and arranged with said first surfaces facing one another and said second surfaces facing away from one another, said semi-permeable membranes each being permeable to at least a portion of said gas;

first introduction means for introducing said gas between said pair of semi-permeable membranes to be conducted along said first surfaces thereof;

a pair of spacing plates arranged in juxtaposition to said second surfaces of said pair of semi-permeable membranes, said spacing plates including flow channels therein for conducting said liquid along said second surfaces of said semi-permeable membranes;

second introduction means for introducing said liquid into said flow channels of said spacing plates to be conducted therethrough along said second surfaces of said semi-permeable membranes, whereby at least a first part of said portion of said gas diffuses through said semi-permeable membranes into said liquid to form bubbles of said diffused gas of a first size in said liquid; and

mixing means associated with each of said semi-permeable membranes for directly mixing the second part of said gas into said liquid as said liquid is conducted through said flow channels along said second surfaces of said semi-permeable membranes so as to form bubbles of a second size larger than said first size in said liquid.

4,239,729

OXYGENATOR

Hiroshi Hasegawa, Chofu, and Hiromichi Fukasawa, Fuchu, both of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,518
Claims priority, application Japan, Jun. 6, 1978, 53-68064; Mar. 28, 1979, 54-40380[U]
Int. Cl.³ A61M *1/03*
U.S. Cl. 422—48 **13 Claims**

1. An oxygenator, comprising:

an elongated hollow housing having a longitudinally extending axis;

a bundle of porous hollow fibers made of polyolefin resin arranged within the housing in the axial direction thereof, each fiber having an inner diameter of 100 to 300μ, a wall thickness of 10 to 50μ, an average pore size of 200 to 1,000Å and a porosity of 20 to 80%;

an oxygen chamber formed between the outer surface of the fiber bundle and the inner surface of the housing;

inlet and outlet oxygen ports extending through the wall of the housing so as to communicate with the oxygen chamber;

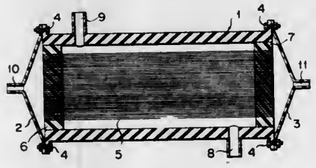
partition walls supporting the end portions of the hollow fibers, separating the open ends of the hollow fibers from the oxygen chamber and defining the length of the oxygen chamber; and

inlet and outlet blood ports communicating with the interior space of each of the hollow fibers;

the hollow fibers having polar radicals introduced into at least the outer surfaces of the polyolefin resin of the hollow fiber at the portions supported by the partition walls.

9. An oxygenator, comprising:

an elongated hollow housing having a longitudinally extending axis;



a bundle of porous hollow fibers made of polyolefin resin arranged within the housing in the axial direction thereof, each fiber having an inner diameter of 100 to 300μ, a wall thickness of 10 to 50μ, an average pore size of 200 to 1,000Å and a porosity of 20 to 80%;

an oxygen chamber formed between the outer surface of the fiber bundle and the inner surface of the housing;

inlet and outlet oxygen ports extending through the wall of the housing so as to communicate with the oxygen chamber;

partition walls supporting the end portions of the hollow fibers, separating the open ends of the hollow fibers from the oxygen chamber and defining the length of the oxygen chamber;

inlet and outlet blood ports communicating with the interior space of each of the hollow fibers; and

a radially inwardly directed projection provided on an inner wall of the housing for fastening a central portion, in the lengthwise direction, of the hollow fiber bundle relative to the housing.

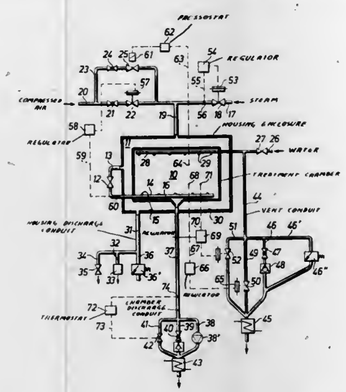
4,239,730

AUTOCLAVE APPARATUS FOR STERILIZING OBJECTS

Hans A. Fahlvik, Sloinge, and Kurt E. Sandquist, Getinge, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation of Ser. No. 762,346, Jan. 25, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,734
Claims priority, application Sweden, Jan. 26, 1976, 7600739
The portion of the term of this patent subsequent to Nov. 28, 1997, has been disclaimed.
Int. Cl.³ A61L *2/06, 2/24*
U.S. Cl. 422—109 **4 Claims**

1. In an autoclave for sterilizing objects comprising a treatment chamber, a supply conduit for steam, a supply conduit for compressed air, a discharge conduit, and a vent conduit, said autoclave being provided with a control system having a plurality of adjusting controlling valves, each of said adjusting controlling valves being operative with a respective steam supply conduit, compressed air supply conduit, discharge conduit and vent conduit whereby said steam supply conduit is opened for heating of said chamber with the objects therein to sterilizing temperatures, whereupon before the sterilizing period occurs a first valve in the vent conduit and a second valve



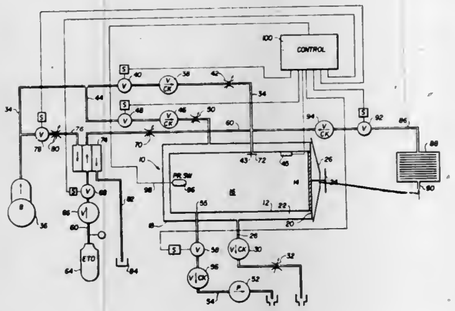
in the compressed air conduit are opened so that initially only the steam is supplied to said chamber until a given condition has been reached therein, said steam being thereafter replaced by means of a mixture of said steam and said compressed air.

4,239,731

APPARATUS FOR BIOCIDAL STERILIZATION USING CYCLIC SUBATMOSPHERIC PRESSURE CONDITIONING

John R. Gillis, Harborcreek, and Frank E. Halleck, Erie, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Division of Ser. No. 850,846, Nov. 11, 1977, Pat. No. 4,203,943.
This application Nov. 21, 1979, Ser. No. 96,489
Int. Cl.³ A61L *5/00, 1/00, 3/00*
U.S. Cl. 422—112 **9 Claims**



1. Apparatus for conditioning goods in a sealed chamber and for subsequently sterilizing said goods with a chemical biocidal agent, the conditioning including moistening and heating to a desired temperature by subjecting the chamber and goods to a plurality of cyclic pressure pulses between predetermined subatmospheric pressure levels,

comprising, in combination,

a conditioning and sterilizing chamber capable of being evacuated to desired vacuum levels and operable within a maximum prescribed leakage rate,

first inlet conduit means connecting the chamber to a second inlet conduit means connecting the chamber to a source of a chemically biocidal agent source of conditioning vapor,

first inlet valve means connected in the first inlet conduit means and second inlet valve means connected in the second inlet conduit means and including power means for operating said second valve means to control the flow of chemical biocidal agent into the chamber including power means for operating said first valve means to control the flow of conditioning vapor into the chamber,

evacuation means for evacuating the chamber,

exhaust conduit means connecting the chamber to the evacuation means,

exhaust valve means connected in the exhaust conduit means and including power means for operating the exhaust valve to control the flow through the exhaust conduit to thereby control evacuation of the chamber by the evacuation means,

pressure sensing means including means for sensing lower and upper predetermined subatmospheric pressure levels in the chamber and for transmitting a signal in response to the sensing of such pressure levels, and

control means including

means responsive to signals from the pressure sensing means including,

means for generating operating signals for subjecting the chamber to a plurality of cyclic subatmospheric pressure pulses independent of preselected time intervals, and

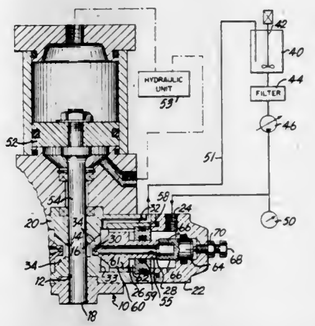
means for operating the power means of the exhaust and first inlet valve means in response to the generated operating signals to non-simultaneously and alternately open the exhaust valve means and close the first inlet valve means to exhaust the chamber to a lower predetermined subatmospheric pressure and to close the exhaust valve means and open the first inlet valve means to increase the pressure within the chamber to an upper predetermined subatmospheric pressure to control such cyclic subatmospheric pressure pulsing, said control means further including means operable at the termination of said conditioning for opening said second inlet valve means for initiating chemical biocidal sterilization.

4,239,732

HIGH VELOCITY MIXING SYSTEM

Fritz W. Schneider, Strasslach-Hailafing, Fed. Rep. of Germany, assignor to The Martin Sweets Company, Inc., Louisville, Ky.

Filed Apr. 13, 1979, Ser. No. 29,669
Int. Cl.³ B01J *14/00*; B67D *5/56*; F16K *11/07*
U.S. Cl. 422—133 **14 Claims**



1. A mixing head for a high velocity reaction injection apparatus for mixing and dispensing at least two liquid components, each of the components supplied under pressure from a delivery system including a recirculation line to enable circulation of the respective component when the components are not being mixed, comprising:

(a) a housing defining a mixing chamber with an inlet for each component and an outlet for dispensing the mixed components;

(b) means for injecting each component through a different

one of the inlets into the mixing chamber including means for directing the component through a flow accelerating passage prior to injection into the mixing chamber, for imparting a pressure drop in the component on the downstream side of the passage, and a recirculation outlet communicating with the downstream side of the passage and adapted to be connected to the respective recirculation line;

(c) means for selectively blocking each inlet for interrupting the delivery of each component and thereby increasing the pressure of the component in the injection means downstream of the passage; and

(d) means responsive to increased pressure downstream of the passage for directing the flow from the passage through the recirculation outlet when the inlet is blocked and for interrupting the flow through the recirculation outlet when the inlet is open and the component may be injected into the mixing chamber.

4,239,733

CATALYTIC CONVERTER HAVING A MONOLITH WITH SUPPORT AND SEAL MEANS THEREFOR

Michael R. Foster, Columbiaville, and Jack E. Smith, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 16, 1979, Ser. No. 30,125
Int. Cl.³ F01N *3/28, 7/16, 7/18*
U.S. Cl. 422—179 **2 Claims**



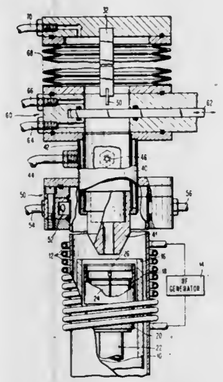
1. In a catalytic converter for internal combustion engine exhaust gases and of the type having a catalyst coated monolith of frangible material and cylindrical shape supported about the cylindrical surface thereof in a correspondingly shaped portion of a sheet metal clamshell type housing by a wire mesh sleeve which is mounted in the cylindrical space therebetween and is radially compressed a predetermined amount during converter assembly so as to retain resilient radial support and also relative axial location of the monolith as the housing expands with heat: the improvement comprising in combination, a radially ribbed cylindrical portion integral with the housing extending about the cylindrical surface of the monolith adjacent one end thereof and adjoining the portion of the housing extending about the wire mesh sleeve, said ribbed portion providing a radially stiffened housing portion at said one end of the monolith and also an axially confined interior cylindrical surface in the housing, said axially confined interior cylindrical housing surface cooperating with the cylindrical surface of the monolith to provide a radially confined annular seal accommodating space therebetween having partial axial confinement at the housing and a radial width dimension prior to converter heat up that is substantially larger than that of the space for the wire mesh sleeve, and cylindrical seal means of resilient heat expandable intumescent material for mounting in said seal accommodating space, said seal means having an expansion rate substantially greater than that of the housing and a preassembly radial thickness substantially smaller than that of the wire mesh sleeve but larger by a predetermined amount than said radial width dimension of said seal accommodating space so that the seal means is tightly received between the housing and the monolith during assembly of the converter and then in swelling on first heat up of the converter is resisted by said stiffened housing portion and is caused to exert restraining pressure between said stiffened housing portion and the monolith to establish and thereafter maintain tight sealing between the housing and monolith at the one end thereof while also remaining sufficiently resilient to assist the wire mesh sleeve in providing resilient radial support of the monolith and also relative axial location thereof as the housing expands with heat.

4,239,734

METHOD AND APPARATUS FOR FORMING SILICON CRYSTALLINE BODIES

Theodore F. Ciszek, Salt Point, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 677,579, Apr. 16, 1976, Pat. No. 4,116,641. This application Jul. 13, 1978, Ser. No. 924,329
Int. Cl.³ C30B *15/34*
U.S. Cl. 422—246 **7 Claims**



1. Apparatus for forming an elongated crystalline ribbon-shaped body comprising:

means for providing a substantially constant source of molten material to be formed into said body;

a die having at least one capillary therein positioned partially submerged into said molten material so that the molten material moves into said capillary;

several inert gas parts positioned along each of the principal two sides of said body for directing different controlled amounts of inert gas to segments of the liquid-solid crystal interface so as to maintain the desired growth temeprature distribution across the interface of said body; and

means for growing and pulling said body from said capillary.

4,239,735

REMOVAL OF IMPURITES FROM CLAY

Judith A. Eisele, Verdi; Donald J. Bauer, and Paul R. Bremner, both of Reno, all of Nev., assignors to The United States of America, as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 6, 1979, Ser. No. 72,957
Int. Cl.³ C01F *7/22*
U.S. Cl. 423—126 **18 Claims**

1. A method for producing substantially pure alumina from aluminum-containing calcined kaolin clay, comprising the steps of:

(a) contacting the calcined clay with a solution comprising at least 36 weight percent hydrochloric acid, whereby said acid reacts with said clay to form soluble and insoluble reaction products, said insoluble products containing a major proportion of the aluminum content of said clay;

(b) maintaining said concentration of hydrochloric acid at at least 36 weight percent;

(c) separating the solids portion of the clay-reaction product-acid mixture from the liquid portion;

(d) washing said solids portion with a solution having a concentration of at least 36 weight percent hydrochloric acid;

(e) solubilizing the aluminum contained in said solids portion by contacting with water having a temperature of about 25° to 100° C., or with a solution comprising about 26 weight percent hydrochloric acid and applying sufficient heat to drive off the hydrochloric acid content of the resulting solution, to separate it from the remainder thereof;

(f) precipitating said aluminum as substantially uncontaminated crystals of $AlCl_3.6H_2O$; and

(g) converting said crystals of $AlCl_3.6H_2O$ to alumina.

4,239,736

METHOD FOR INCREASING THE BRIGHTNESS OF LIMESTONE

Douglas H. Fenske, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 26, 1979, Ser. No. 15,089
Int. Cl.³ G01F *11/18*
U.S. Cl. 423—173 **9 Claims**

1. A method for improving the brightness of limestone, containing at least a small amount of iron comprising grinding said limestone and forming a limestone slurry, adding an acidic flocculating agent to the slurry in amounts sufficient to provide a pH between about 7 and 9, adding a bleaching agent to the slurry in at least an amount sufficient to react with any iron present and separating the flocculate from the slurry.

4,239,737

METHOD FOR REMOVING SULFUR DIOXIDE

Erminio Ermini, Genoa-Quarto, Italy, assignor to Italsider S.p.A., Genoa, Italy

Continuation-in-part of Ser. No. 867,449, Jan. 6, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,004
Claims priority, application Italy, Jan. 14, 1977, 12421 A/77
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **7 Claims**

1. A method for removing sulfur dioxide contained in a mixture of combustion gases comprising:

contacting the mixture of gases containing sulfur dioxide with a countercurrent flow of an alkaline absorption solution having a pH of about 9–12 and containing both sodium hydroxide and manganic hydroxide in amounts effective to react with the sulfur dioxide, either the gaseous mixture or the absorbing solution or both also containing oxygen, whereby the sulfur dioxide is absorbed in the absorbing solution and undergoes reaction in two different stages:

(a) a first absorption stage wherein sulfur dioxide is absorbed in the alkaline solution and reacts with the sodium hydroxide to form sodium sulfite, which takes place until the pH of the solution is reduced to about 6–7 and

(b) a second absorption stage wherein the sulfur dioxide is absorbed in the absorption solution at a pH of about 6–7 and the sulfur dioxide reacts with manganic hydroxide, to form manganic sulfite and wherein in both stages the manganese and sodium sulfites are transformed into the corresponding manganese and sodium sulfates by the action of said oxygen on the presence of the manganic ion and also by the direct oxidizing action of the manganic ion,

regenerating the manganic hydroxide by adding sodium hydroxide to the spent absorption solution until the pH of the spent solution is about 9–12 and blowing air into the spent absorption solution in order to transform the manganese sulfate into manganic hydroxide and

regenerating sodium hydroxide by adding calcium hydrate to the spent absorption solution in excess of the amount necessary to transform the sodium sulfate therein to sodium hydroxide and calcium sulfate.

4,239,738

METHOD FOR PRODUCING BORON TRICHLORIDE

Kenneth W. Richardson, Canton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 7, 1979, Ser. No. 101,988
Int. Cl.³ C01B *35/06*
U.S. Cl. 423—292 **8 Claims**

1. In the process of producing boron trichloride by chlorination of borate ester wherein chlorine and borate ester are introduced into a liquid inert organic solvent in a reactor, thereby establishing a liquid reaction medium, and gaseous products of the chlorination reaction and vaporized solvent are removed from the reactor, the improvement which comprises, in combination, the steps of

(a) condensing vaporized solvent removed from the reactor in a heat exchange zone and returning the condensed solvent to the liquid reaction medium;

(b) removing a portion of the liquid reaction medium from the reactor and forwarding liquid reaction medium thus removed to an externally cooled heat extraction zone wherein the liquid reaction medium is cooled; and

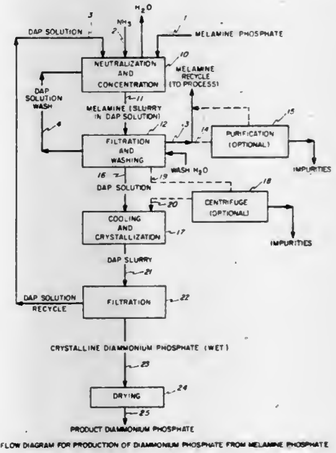
(c) returning cooled liquid reaction medium to the reactor, thereby controlling the temperature of the liquid reaction medium within the reactor.

4,239,739

MANUFACTURE OF PURIFIED DIAMMONIUM PHOSPHATE

Richard C. Sheridan, Sheffield, and John F. McCullough, Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Nov. 6, 1979, Ser. No. 91,853
Int. Cl.³ C01B *15/16*
U.S. Cl. 423—308 **4 Claims**



FLOW DIAGRAM FOR PRODUCTION OF DIAMMONIUM PHOSPHATE FROM MELAMINE PHOSPHATE

1. A process for the production of purified diammonium phosphate, which comprises the steps of:

(1) simultaneousiy introducing into reacting means a stream of relatively concentrated diammonium phosphate solution, a stream of melamine phosphate, a stream of anhydrous ammonia, and a stream of relatively dilute diammonium phosphate wash solution, said stream of relatively dilute diammonium phosphate wash solution recovered from a later-mentioned filtering and washing means, said streams of diammonium phosphate solutions and said stream of melamine phosphate proportioned to one another to maintain in said reactor means a diammonium phosphate:melamine phosphate weight ratio ranging from about 1.5 to about 15, and said stream of anhydrous ammo-

nia proportioned so as to maintain a pH in said reacting means ranging from about 7.0 to about 10.0;
(2) maintaining a temperature in said reacting means between about 25° C. and about 115° C. and maintaining the materials therein for a period of time ranging from about 1 to about 30 minutes to thereby form therein a slurry comprising diammonium phosphate solution and melamine crystals;
(3) removing at least a portion of said slurry from said reacting means and introducing same into filtering and washing means; removing from said filtering and washing means a substantially saturated solution of diammonium phosphate; recovering melamine crystals in said filtering and washing means and washing same with a stream of water; removing said washed melamine crystals for recycle to said reacting means; and removing the resulting relatively dilute diammonium phosphate wash solution for introduction into said reactor means in step (1) supra;
(4) introducing said substantially saturated diammonium phosphate removed from said filtering and washing means in step (3) supra into cooling and crystallizing means wherein same is cooled to a temperature ranging from about 0° C. to about 100° C., said cooling of said substantially saturated diammonium phosphate solution therein resulting in supersaturation of the resulting cooled solution and precipitation therein of crystals of diammonium phosphate yielding a slurry thereof;
(5) removing from said cooling and crystallizing means the resulting slurry of diammonium phosphate crystals and relatively concentrated diammonium phosphate solution, and introducing same into filtration means;
(6) separating in said filtration means the resulting relatively concentrated diammonium phosphate solution, removing same therefrom and introducing same into said reacting means; simultaneously removing from said filtration means the resulting crystalline diammonium phosphate; introducing same into drying means; and recovering from said drying means the resulting diammonium phosphate as product.

4,239,740

PRODUCTION OF HIGH PURITY SILICON BY A HETEROGENEOUS ARC HEATER REDUCTION

Francis J. Harvey, II; David F. Ciliberti; Thomas N. Meyer, all of Murrysville, and Maurice G. Fey, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 25, 1979, Ser. No. 42,474
Int. Cl.³ C01B *33/02;* C01F *11/20;* C01D *3/00*
U.S. Cl. 423—350 **5 Claims**

1. A process for producing high purity silicon comprising the steps of:
a. providing an arc heater having tubular electrodes axially spaced of each other and forming an arc chamber communicating with an upstream reaction chamber and with a downstream thermal treatment chamber,
b. striking an electric arc in an axial gap between the electrodes,
c. introducing through the axial gap an arc gas selected from the group consisting of hydrogen and a mixture of hydrogen and an inert gas to provide an elongated arc stream extending into the arc chamber,
d. feeding into the upstream reaction chamber a quantity of a metal reductant selected from the group consisting of an alkali metal and an alkaline-earth metal at a temperature range between the melting point and boiling point of the metal reductant,
e. feeding into the upstream reaction chamber a quantity of silicon halide to prereact with the metal reductant to produce droplets of reaction products including solid silicon particles mixed with liquid metal salt co-product and unreacted liquid metal reductant,
f. flowing the reaction products through the arc heater at a temperature greater than the boiling point of the salt to convert the reaction products into a mixture including the droplets of silicon, metal salt vapor, gaseous metal reductant and silicon halide,
g. flowing the mixture through the thermal treatment chamber to effect the reaction between vaporized unreacted metal reductant and silicon halide to produce small droplets of silicon which merge with larger silicon droplets from step (e), and
h. separating the mixture of silicon droplets and salt vapor.

4,239,741

PROCESS FOR PRODUCING HYDRAZINE SULFATE

Tomiya Isshiki; Tetsuo Tomita, both of Tokyo; Toshiaki Kozaki; Osamu Aoki, both of Matsudo; Mitsuo Abe, Tokyo; Norio Takeda; Mitsuo Miura, both of Matsudo; Yoshiyuki Aoki, Tokyo; Takao Kondo, Tokyo, and Kaoru Tsuyuki, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,166
Claims priority, application Japan, Nov. 7, 1977, 52/133322
Int. Cl.³ C01B *21/54*
U.S. Cl. 423—388 **7 Claims**

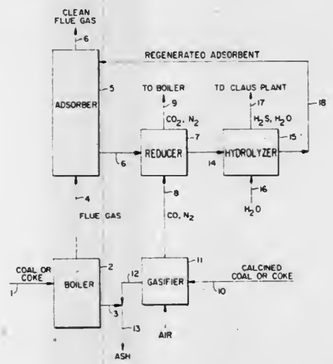
1. A process for producing hydrazine sulfate by hydrolysis of benzophenoneazines by sulfuric acid, which comprises using sulfuric acid having a concentration of from 40 to 60% by weight in an amount of 1.5 to 20 times by mole of the stoichiometric amount in the hydrolysis.

4,239,742

PROCESS FOR IMPROVING A GAS CONTAINING A MINOR AMOUNT OF SULFUR DIOXIDE IMPURITY AND PRODUCING A HYDROGEN SULFIDE-RICH GAS

William A. Blanton, Jr., Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 26, 1978, Ser. No. 919,207
Int. Cl.³ C01B *17/16, 17/00;* B01J *8/00*
U.S. Cl. 423—563 **7 Claims**



1. A process for removing sulfur oxides from a feed gas, comprising the steps of:
(a) adsorbing sulfur oxides from said feed gas into an adsorbent at adsorption conditions including a temperature of about 90° C. to about 345° C., said adsorbent comprising a composite of sodium and vanadium as oxides or vanadate salts and a porous support including at least 80 weight percent alumina, and withdrawing the resulting gas from contact with said adsorbent;
(b) converting sulfur in adsorbed sulfur oxides to sulfide form in said adsorbent by contacting said adsorbent with a reducing gas comprising carbon monoxide and containing less than 1 volume percent water at a temperature of about 370° C. to about 815° C.; and
(c) forming hydrogen sulfide by contacting the absorbent resulting from step (b) with steam at a temperature of about 90° C. to about 815° C.

4,239,743

CARRIER-BOUND IMMUNOGLOBULIN FISSION PRODUCT AND ITS USE IN IMMUNOLOGIC ANALYSES

Hans H. Sedlacek, and Friedrich R. Seiler, both of Marburg, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,283
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2731992; Apr. 28, 1978, 2818739
Int. Cl.² G01N *33/16;* A61K *39/00*
U.S. Cl. 424—1 **13 Claims**

1. An Fc-sensitive reagent consisting essentially of an immunoglobulin fission product having an immunologically-functioning Fc-portion, said product being bound to a carrier by adhesion or chemical reaction.

4. A method for determining an Fc-reactant, which method comprises contacting a liquid containing said Fc-reactant with an Fc-sensitive reagent as in claim 1, separating the carrier from the liquid, reacting the Fc-reactant bound to the carrier with an antibody reacting with said Fc-reactant but not capable of undergoing a cross-reaction with said immunoglobulin fission product, and determining the antibody.

4,239,744

RADIORECEPTOR ASSAY FOR BENZODIAZEPINES IN PLASMA AND OTHER BIOLOGICAL SPECIMENS

Steven M. Paul, Silver Spring, and Phil Skolnick, Bethesda, both of Md., assignors to United States of America, Washington, D.C.

Filed Oct. 10, 1978, Ser. No. 949,689
Int. Cl.² G01N *33/16;* A61K *43/00*
U.S. Cl. 424—1 **7 Claims**

1. A radioreceptor assay method for routinely determining the concentration of pharmacologically-active benzodiazepines, their pharmacologically-active metabolites, and mixtures thereof contained in a biological specimen selected from the group consisting of blood plasma, urine, cerebral spinal fluid, and saliva comprising:
(a) diluting the biological specimen with water;
(b) adding perchloric acid to the diluted biological specimen obtained in step (a) to obtain a mixture containing the protein of the biological specimen which is precipitated by said perchloric acid as well as the protein-free remainder of the biological specimen which is present as a supernatant liquid;
(c) separating the supernatant liquid containing the protein-free remainder of the biological specimen obtained in step (b) from the protein precipitate;
(d) diluting the supernatant liquid separated in step (c) with distilled water;
(e) adding at least about 1 ml of a synaptosomal membranes suspension, containing about from 0.5 to 5.0 mg of protein per ml of said synaptosomal membranes suspension, to the diluted supernatant liquid obtained in step (d);
(f) adding tritiated diazepam or tritated flunitrazepam, each having a specific radioactivity of about from 10 to 100 Ci/mmol, to the mixture containing the synaptosomal membranes and the supernatant liquid obtained in step (e);
(g) incubating the radioactive mixture obtained in step (f) at a temperature of about from 0° C. to 4° C. for about from 15 to 60 minutes;
(h) terminating the incubation carried out in step (g) with a wash containing about 5 ml of icecold 50 nM Tris buffer at a pH of about 7.4;
(i) filtering the incubate obtained in step (h) to obtain a mass comprising the said synaptosomal membranes and the tritiated diazepam or flunitrazepam bound thereto retained in the filter;
(j) washing the filter and mass retained therein obtained in step (i) with about 5 ml of said ice-cold buffer, and drying the said filter and mass retained therein;
(k) suspending the dried filter and mass retained therein obtained in step (j) in a liquid scintillatioin fluor; and
(l) measuring the radiation of said mass in the fluor of step (k) with a liquid scintillation counter from which measurements the concentratin of the benzodiazepines or their pharmacologically-active metabolites present in the biological specimen are determined.

4,239,745

ANTIBIOTIC DETECTION METHOD

Stanley E. Charm, Newton, Mass., assignor to Penicillin Assays, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 853,541, Nov. 21, 1977, abandoned, Ser. No. 914,414, Jun. 12, 1978. This application Nov. 22, 1978, Ser. No. 963,146
Int. Cl.² G01N *33/16;* A61K *43/00;* B65D *81/32*
U.S. Cl. 424—1 **24 Claims**

1. A process for detecting the presence of an antibiotic in a liquid sample, said process comprising the steps of:
A. incubating the sample with cells of a microorganism, said microorganism being sensitive to said antibiotic and having receptor sites capable of binding to said antibiotic, said incubation being conducted under conditions to allow antibiotic molecules, if present in the sample, to bind to said receptor sites;
B. incubating the mixture of step A with a tagged antibiotic capable of binding with said receptor sites;
C. separating the cells from the liquid;
D. determining the amount of tagged antibiotic associated either with the separated cells or with the liquid; and
E. comparing the determination of step D with a standard to obtain an indication of the presence of antibiotic in the sample.

4,239,746

COMPLEMENT FIXATION TEST EMPLOYING REACTANTS IN A DISPOSABLE PACKAGE

Dezsö I. Bartos, Buchenweg 3, 5024 Pulheim, Fed. Rep. of Germany, and Jerzy Rybczynski, Kolding, Denmark, assignors to Dezsö Istvan Bartos, Pulheim, Fed. Rep. of Germany

Division of Ser. No. 888,041, Mar. 16, 1978, Pat. No. 4,162,003, which is a continuation of Ser. No. 793,653, May 4, 1977, abandoned, and Ser. No. 693,801, Jun. 7, 1976, abandoned, and Ser. No. 483,659, Jun. 27, 1974, abandoned. This application Apr. 13, 1979, Ser. No. 29,806
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1973, 2333434
Int. Cl.³ G01N *33/50, 33/52*
U.S. Cl. 424—12 **2 Claims**

1. A process for carrying out a serological investigation in a disposable package comprising a chemically inert transparent reaction vessel for performing a serological complement fixation test which contains reactants for said test comprising an antigen or antibodies to the antigen to be detected, hemolytic amboceptor and complement, said reactants being preserved in said vessel in frozen or freeze-dried form, each having been deep frozen or freeze-dried to form a separate layer or having been deep frozen or freeze-dried in separate areas of said vessel wherein said process comprises bringing said reactants into solution by thawing or adding a solvent for suitable adjustment of proportions of said reactants, adding 0.25 ml. of the patient's serum, which may contain the respective antigen or antibodies to be detected, incubating the resulting solution at 37° C. to effect a binding reaction and to use up the complement with formation of antigen-antibody complex, adding 2% sheep's erythrocyte suspension, again incubating at 37° C., then assessing the degree of haemolysis.

4,239,747

DICARBOXYLIC ACID BIS(3,5-DICARBAMOYL-2,4,6-TRIIODOANILIDES) USEFUL AS X-RAY CONTRAST AGENTS

Heinrich Pfeiffer, and Ulrich Speck, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

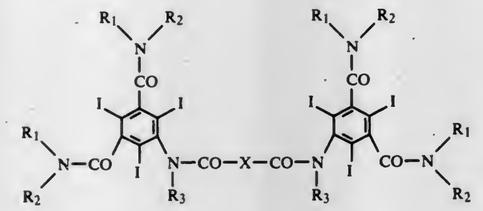
Continuation of Ser. No. 806,384, Jun. 14, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 2,901

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628517

Int. Cl.[3] **C07C** *103/78;* **A61K** *29/02;* **C07C** *63/24*

U.S. Cl. 424—5 **20 Claims**

1. A compound of the formula



wherein

R_1 is alkyl of 2–8 carbon atoms substituted by 1–5 hydroxyl on separate carbon atoms thereof, other than the α-carbon atom;

R_2 is hydrogen, alkyl of up to 4 carbon atoms or R_1;

R_3 is hydrogen or alkyl of 1–4 carbon atoms;

X is a direct bond or straight-chain or branched-chain alkylene, oxaalkylene, dioxaalkylene, or trioxaalkylene of up to 6 carbon atoms, wherein the oxygen atoms of the di- and trioxaalkylenes are separated from each other and from the ends thereof by at least one methylene.

20. A method for conducting a radiological examination of a patient which comprises administering thereto prior to examination a radiopaque amount of a compound of claim 1.

4,239,748

INORGANIC SALTS OF 2.8-DICARBOXY-4,6-DIOXO-10-PROPYL-4H,6H-BENZO(1,2-b:5,4b')DIPYRAN USEFUL FOR THE TREATMENT OF ASTHMA AND HAY FEVER

Hugh Cairns; Kenneth Brown, both of Loughborough, and Roger E. C. Altouyan, Wilmslow, all of England, assignors to Fisons Limited, London, England

Filed Nov. 27, 1978, Ser. No. 963,813

Claims priority, application United Kingdom, Nov. 30, 1977, 49764/77

Int. Cl.[2] **A61L** *9/04;* **A61K** *31/35;* **C07D** *311/78*

U.S. Cl. 424—45 **12 Claims**

1. A salt of 2,8-dicarboxy-4,6-dioxo-10-propyl-4H,6H-benzo(1,2-b:5,4-b')dipyran with a pharmaceutically acceptable inorganic cation, the salt having a solubility of less than 3% w/w in water at 20.5° C.

12. A method of treatment of asthma or hay fever, which comprises administration of a salt according to claim 1 to a patient suffering from such a condition.

4,239,749

NEISSERIA GONORRHOEAE VACCINE

Thomas M. Buchanan, Seattle, Wash., assignor to United States of America, Washington, D.C.

Division of Ser. No. 889,343, Mar. 23, 1978. This application Sep. 27, 1979, Ser. No. 79,556

Int. Cl.[3] **A61K** *39/02*

U.S. Cl. 424—92 **1 Claim**

1. POMP antigen free of contaminants which are toxic to humans characterized by the ability to elicit a bactericidal response in humans, having subunits with molecular weights of from 34,000 to 39,000 Daltons, containing both hydrophobic and hydrophilic groups and having a carbohydrate content of about 4% and a protein content of about 96% by weight.

4,239,750

ANIMAL FEEDS CONTAINING A MIXTURE OF LINCOMYCIN OR OLEANDOMYCIN AND PROTEOLYTIC ENZYMES

Günter Hiller, Erkrath, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,281

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802398

Int. Cl.[3] **A23K** *1/17, 1/165*

U.S. Cl. 424—94 **12 Claims**

1. A high efficiency animal feed for chickens and pigs comprising carbohydrates, protein and fats and containing from 1 to 250 ppm of an antibiotic selected from the group consisting of lincomycin and oleandomycin, and a content of acid proteolytic enzymes with a wide spectrum of activity in the range of between a pH of 2.5 and 6.5 in such an amount that the enzymatic activity is from 0.05 to 2.5 mTU/gm of said animal feed.

4,239,751

ANTIBIOTIC SUBSTANCES

Carolina Coronelli; Grazia Beretta; Maria R. Bardone, and Francesco Parenti, all of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Continuation of Ser. No. 847,641, Nov. 1, 1977, abandoned, which is a continuation of Ser. No. 661,910, Feb. 27, 1976, abandoned. This application Apr. 16, 1979, Ser. No. 30,492

Claims priority, application United Kingdom, Mar. 5, 1975, 9057/75

Int. Cl.[2] **A61K** *35/00*

U.S. Cl. 424—118 **7 Claims**

1. The antibiotic substance named teichomycin A_2 having the following characteristics:

(1) Melting point: 260° C. (with decomposition);

(2) Elemental analysis (average of three determinations): C=54.20%; H=5.70%; N=6.80%; Cl=3.30%; O (by difference)=30%;

(3) Ultraviolet absorption spectrum (FIG. 1):

Solvent	λ_{max} (nm)	$E^{1\%}_{1cm.}$
phosphate buffer pH 7.38	278	55
hydrochloric acid 0.1 N	278	53
sodium hydroxide 0.1 N	297	74;

(4) I.R. absorption spectrum in nujol mull (FIG. 2): The most important absorption bands occur at the following frequencies (cm^{-1}): 3300 (broad), ~2900 (nujol), 1720 (shoulder), 1660, 1600 (shoulder), ~1500, 1455 (nujol), 1375 (nujol), 1235, 1190–930, 850, 720 (broad);

(5) Solubility: soluble in aqueous solution at pH 7.0, aqueous sodium bicarbonate, diluted aqueous solutions of alkali hydroxides, methanol-water mixtures; partially soluble in methanol and ethanol; insoluble in diluted mineral acids and in non-polar organic solvents;

(6) Characteristic reactions:

Fehling	positive
Tollens	positive
$KMnO_4$	positive
$FeCl_3$	positive
H_2SO_4 concentrated	dark violet color
Folin Ciocolteu	positive
Griess	negative
Antrone	negative

-continued

Schiff	negative;

(7) Potentiometric titrations: an ionizable function is potentiometrically evidenced in water solutions with a pKa value=4.9; a basic function is evidenced by titration with $HClO_4$ in DMSO solutions; the equivalent weight determined accordingly is 1170;

(8) Chromatographic pattern:

(a) on Whatman Paper No. 1, a cotton fibre cellulose filter paper with the following characteristics; weight, 85–95 g/m^2; thickness, 0.16 mm; ash content, 0.06–0.07%:

	ELUTING SYSTEM	Rf
(1)	Butanol saturated with phosphate buffer m/15 pH 6.0	0.0
(2)	Butanol saturated with water containing 2% of p-toluenesulfonic acid	0.13
(3)	Butanol saturated with water containing 2% ammonium hydroxide	0.0
(4)	Phosphate buffer M/15 pH 6.0 saturated with butanol	0.25
(5)	20% Aqueous solution of NH_4Cl	0.0
(6)	Butanol:methanol:water (40:10:20) with 0.75% of methyl orange	0.37
(7)	Butanol:methanol:water (40:10:20)	0.41
(8)	Ethyl acetate saturated with water	0.0
(9)	n-propanol:n-butanol:NH_4OH 10 N (2:3:4)	0.43

(b) on silica gel thin layer

ELUTING SYSTEM	Rf
n-propanol:ethyl acetate: concentrated NH_4OH (2:1:2)	0.1.

4,239,752

O-DEMETHYLSELDOMYCIN FACTOR 5 DERIVATIVES

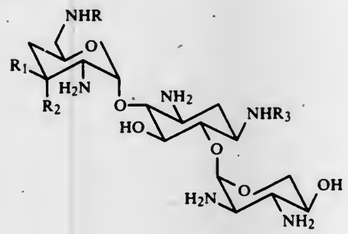
Ronald E. Carney, Gurnee; Robert L. Devault; James B. McAlpine, both of Libertyville, and Arthur C. Sinclair, Lake Forest, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,255

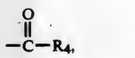
Int. Cl.[3] **A61K** *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **14 Claims**

1. A 3-O-demethylseldomycin factor 5 derivative represented by the formula



wherein: R is hydrogen or loweralkyl; R_1 and R_2 can be either hydrogen or hydroxy with the limitation that both R_1 and R_2 cannot be hydroxy; R_3 is selected from the group consisting of hydrogen, loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, aminohydroxyloweralkyl, N-loweralkylaminoloweralkyl or



and R_4 is selected from the group consisting of loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, aminohydroxyloweralkyl and N-loweralkylaminohydroxyloweralkyl, with the limitation that when R_1 is hydroxy, R_3 cannot be hydrogen when R is hydrogen, and the pharmaceutically acceptable salts thereof.

14. A pharmaceutical composition comprising an antibacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

4,239,753

COMPOSITION OF MATTER AND PROCESS

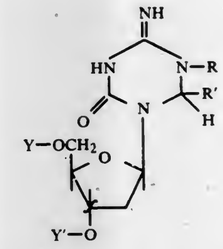
Harvey I. Skulnick, Oshtemo Township, Kalamazoo County, and Harold E. Renis, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 802,504, Jun. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 715,663, Jun. 19, 1976. This application Dec. 12, 1978, Ser. No. 968,876

Int. Cl.[3] **A61K** *31/71, 31/70*

U.S. Cl. 424—181 **22 Claims**

1. A process for treating susceptible DNA viral infectious disease in humans and animals which comprises administering to said human or animal viral host a therapeutic amount for treating susceptible DNA viral infections of a compound of the formula:



wherein R' is selected from the group consisting of hydrogen and lower alkyl; Y is selected from the group consisting of hydrogen, carboxacyl of from 1 to 18 carbon atoms, and phosphono; Y' is selected from the group consisting of hydrogen and carboxacyl of from 1 through 18 carbon atoms; R is selected from the group consisting of hydrogen, methyl, ethyl, n-propyl, isopropyl, phenyl, benzyl, cyclopropyl, loweralkoxylower-alkyl, and lower-alkylthiolower-alkyl; and pharmaceutically acceptable salts thereof, in combination with a pharmaceutical carrier.

4,239,754

LIPOSOMES CONTAINING HEPARIN AND A PROCESS FOR OBTAINING THEM

Edgar Sache, Bures-sur-Yvette, and Henri Bertrand, Chatillon-sur-Bagneux, both of France, assignors to Choay, S.A., Paris, France

Filed Oct. 25, 1977, Ser. No. 845,106

Claims priority, application United Kingdom, Oct. 23, 1976, 44132/76; Aug. 16, 1977, 33410/77

Int. Cl.[3] **A01N** *43/16*

U.S. Cl. 424—183 **2 Claims**

1. A method for the control of blood coagulability in vivo comprising orally adminstering in an amount effective to control blood coagulation a pharmaceutical composition comprising orally administrable heparin-liposomes, the lipids of which are formed of non-toxic physiologically acceptable and metab-

olizable phospholipids, with heparin retained therein or thereon in association with a pharmaceutical vehicle.

2. A method for the control of blood coagulability in vivo comprising orally administering in an amount effective to control blood coagulation a pharmaceutical composition comprising orally administrable heparin-liposomes, the lipids of which comprise lecithin, with heparin retained therein or thereon in association with a pharmaceutical vehicle.

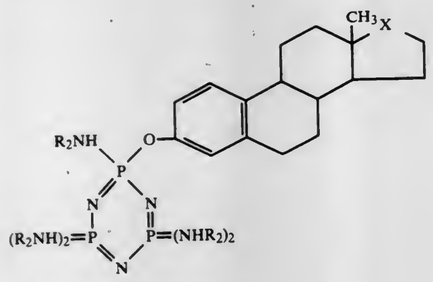
4,239,755

STEROIDAL CYCLOTRIPHOSPHAZENES

Harry R. Allcock; Timothy J. Fuller, and Kiyotoshi Matsumura, all of State College, Pa., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jun. 28, 1979, Ser. No. 52,728
Int. Cl.³ A01N *9/36;* **A61K** *31/66;* **C07J** *43/00*
U.S. Cl. 424—209 **9 Claims**

1. A compound of the formula



wherein
R_2 is alkyl of 1–4 carbon atoms and
X is CH_2 or C=O.

8. A slow release steroidal medicament, comprising a compound of claim 1, in admixture with a pharmaceutically acceptable carrier.

4,239,756

FATTY ALDEHYDES IN THE THERAPY OF ARTERIOSCLEROSIS

Wilhelm Hörrmann, Staltacherstr. 34, D 8121 Iffeldorf, Obb, Fed. Rep. of Germany

Division of Ser. No. 787,902, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 682,309, May 3, 1976, abandoned, which is a continuation-in-part of Ser. No. 600,375, Jul. 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 450,458, Mar. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 274,754, Jul. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 805,934, Feb. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 634,884, May 1, 1967, abandoned, which is a continuation-in-part of Ser. No. 412,862, Nov. 20, 1964, abandoned, which is a continuation-in-part of Ser. No. 211,827, Jul. 24, 1962, abandoned, which is a continuation-in-part of Ser. No. 824,798, Jul. 3, 1959, abandoned. This application May 22, 1978, Ser. No. 908,365
Int. Cl.² A61K *31/11, 31/335, 31/575*
U.S. Cl. 424—238 **1 Claim**

1. A method of treating arteriosclerosis in a patient comprising administered to said patient 50 mg/kg-150 mg/kg daily of at least one of the geometric and optical isomers of
6-n-dodecenoic aldehyde
8-n-hexadecenoic aldehyde
6,12-n-octadecadienoic aldehyde or
8,16-n-tetracosadienoic-2-hydroxy-aldehyde per se or as an ether of glycerol or physiological acids of bile, said isomer being in the form of capsule or emulsion.

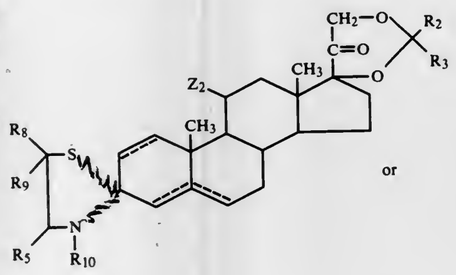
4,239,757

THIAZOLIDINE PRODRUGS FOR THE IMPROVED DELIVERY OF ANTI-INFLAMMATORY CORTICOSTEROIDS

Nicholas S. Bodor, Gainesville, Fla., and Kenneth B. Sloan, Eudora, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

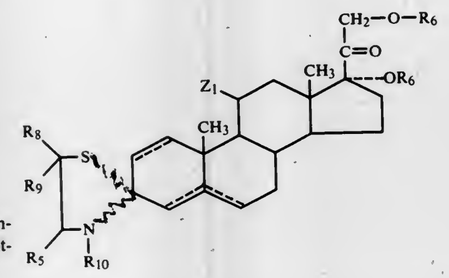
Continuation-in-part of Ser. No. 924,305, Jul. 13, 1978, abandoned. This application Jul. 24, 1979, Ser. No. 60,220
Int. Cl.³ C07J *71/00*
U.S. Cl. 424—241 **32 Claims**

1. A compound having the structural formula



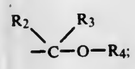
(I)

or

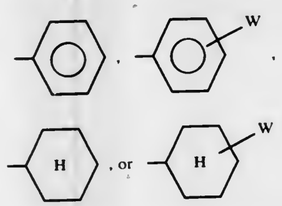


(II)

wherein Z_1 is=0 or β—OH; Z_2 is=0, β—OH or β—OR_1; R_1 represents a radical of the formula

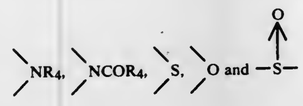


R_4 is H or C_1–C_{10} alkyl; R_2 and R_3, which may be the same or different, are each C_1–C_8 alkyl, or substituted C_1–C_8 alkyl, wherein at least one of the hydrogen atoms therein has been replaced with a member selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, a halogen atom (Cl, Br, I), —$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2SR_4$, wherein R_4 is defined as above; one of R_2 and R_3 can further represent H; R_2 and R_3 can each further represent a radical of the formula

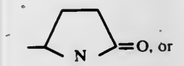


wherein W represents a member selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, a halogen atom (Cl, Br, I),

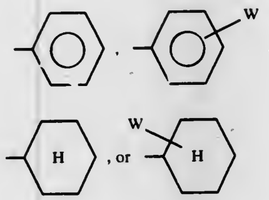
—$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2SR_4$, wherein R_4 is defined as above; or R_2 and R_3 taken together can further represent —$(CH_2)_n$— wherein n is an integer of 5 to 7, or —$(CH_2)_n$— wherein n is defined as above and wherein one or more carbon atoms has been replaced with a member selected from the group consisting of



wherein R_4 is defined as above; R_6 is H or —COR_7, with the proviso that at least one of the R_6's in formula (II) is H; R_7 is C_1–C_{12} alkyl, C_5–C_7 cycloalkyl, C_2–C_{12} alkenyl or C_5–C_7 cycloalkenyl, or substituted C_1–C_{12} alkyl, substituted C_5–C_7 cycloalkyl, substituted C_2–C_{12} alkenyl or substituted C_5–C_7 cycloalkenyl wherein the substituents are selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, a halogen atom (Cl, Br, I), —$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2SR_4$, wherein R_4 is defined as above; R_7 can further represent a radical of the formula



an alkylene-$(CO)_mNR_2R_3$ radical wherein m is 0 or 1, the alkylene portion is straight or branched and contains 1 to 6 carbon atoms and R_2 and R_3 are defined as before; or R_7 can be an imidazolyl or a 2-, 3- or 4-pyridyl group, or a substituted imidazolyl or 2-, 3- or 4-pyridyl group wherein at least one of the hydrogen atoms has been replaced with a member selected from the group consisting of —$N(R_4)_2$, —$CON(R_4)_2$, —SOR_4, a halogen atom (Cl, Br, I), —$COOR_4$, —$COOCH_2N(R_4)_2$ and —$COOCH_2SR_4$ wherein R_4 is defined as above; or R_7 represents a radical of the formula



wherein W is defined as above; R_8 and R_9, which may be the same or different, are each H or C_1–C_8 alkyl; R_5 is —$COOR_{11}$; R_{10} is H, —COR_{11} or —$COOR_{11}$; R_{11} is C_5–C_{20} alkyl, C_2–C_{20} alkenyl, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkyl-aryl, phenyl or C_1–C_4 alkyl-substituted phenyl; when R_{10} is other than H, then R_{11} can also be H or C_1–C_4 alkyl; with the proviso that when R_{10} is H, then the compound of formula (I) or (II) can be in the form of a pharmaceutically acceptable acid addition salt; the dotted line at the 1(2)-position indicates the presence of either a single or a double bond at the 1(2)-position; and the dotted lines at the 4(5)- and 5(6)-positions indicate the presence of a double bond at either the 4(5)- or the 5(6)-position.

31. A pharmaceutical composition of matter comprising an anti-inflammatory effective amount of a compound of claim 1, in combination with a nontoxic, pharmaceutically acceptable, inert carrier therefor.

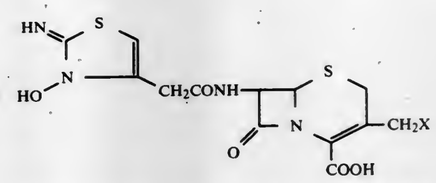
4,239,758

CEPHALOSPORINS

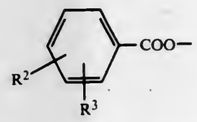
Mitsuo Numata; Masayoshi Yamaoka, both of Osaka; Isao Minamida, Kyoto; Mitsuru Shiraishi, Osaka, and Tatsuo Nishimura, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Division of Ser. No. 783,230, Mar. 31, 1977, Pat. No. 4,172,891. This application May 31, 1979, Ser. No. 44,215
Claims priority, application Japan, Apr. 2, 1976, 51/37374
Int. Cl.³ C07D *501/34*
U.S. Cl. 424—246 **12 Claims**

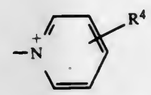
1. A cephalosporin derivative of the formula:



wherein X is hydrogen, hydroxyl, an acyloxy selected from the group consisting of alkylcarbonyloxy group of 2 to 4 carbon atoms; acetyloxy group substituted by an alkylcarbonyl group of 2 to 4 carbon atoms; phenylacetyloxy group which may be substituted at the α-position by hydroxyl, sulfo or amino group; alkylcarbonyloxy group of 2 to 4 carbon atoms as substituted by a carboxyl group; and a group of the formula:



wherein R^2 and R^3, respectively, represent hydrogen, carboxyl, carboethoxycarbamoyl carboethoxysulfamoyl or nitro, alkoxy containing from 1 to 4 carbon atoms, carbamoyloxy or a quaternary ammonium group of the formula:



wherein R^4 is hydrogen, methyl, carbamoyl, carboxy, sulfonic or methoxy, or a pharmaceutically acceptable salt or ester thereof.

12. A pharmaceutical antibiotic composition containing a therapeutically effective amount of the compound claimed in claim 1 together with a pharmaceutically acceptable excipient or diluent therefor.

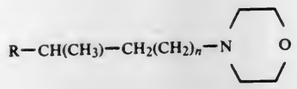
4,239,759

MORPHOLINO CONTAINING COMPOUNDS, COMPOSITIONS AND USE THEREOF

Joachim Gante; Hans-Adolf Kurmeier; Erich Schacht; Werner Mehrhof; Dieter Orth; Albrecht Wild, and Zdenek Simane, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 624,762, Oct. 22, 1975, Pat. No. 4,110,447. This application Apr. 11, 1978, Ser. No. 895,417
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1974, 2450989; May 28, 1975, 2523565
Int. Cl.³ C07D *295/06;* **A61K** *31/535*
U.S. Cl. 424—248.4 **4 Claims**

1. An araliphatic nitrogen compound of the formula



wherein R is 4-biphenylyl monosubstituted or polysubstituted by F, Cl and/or Br; and n is 0, 1 or 2, or a physiologically acceptable acid addition salt thereof.

3. A pharmaceutical composition comprising in unit dosage form an antiinflammatorily effective amount of a compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

4,239,760

COMBATING FUNGI AND BACTERIA WITH 3-AZOLYL-BENZO-1,2,4-TRIAZINES AND 1-OXIDES THEREOF

Klaus Sasse, Berg.-Gladbach; Walter Gauss, Cologne; Paul-Ernst Frohberger, Leverkusen; Peter Kraus, Cologne, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

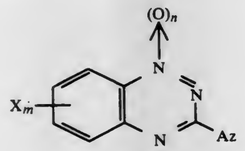
Filed Jan. 8, 1979, Ser. No. 2,053

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802488

Int. Cl.[3] **C07D** *253/08;* **A61K** *31/415, 31/53;* **C07D** *403/04*

U.S. Cl. 424—249 **9 Claims**

1. A method of combating phytopathogenic fungi or bacteria which comprises applying to the fungi or bacteria, or to a habitat thereof, a fungicidally or bactericidally effective amount of a compound of the formula



in which

X represents halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylmercapto, C_1–C_4 alkylsulphonyl, nitro or trifluoromethyl,

m represents 0, 1, 2, 3 or 4, the substituents X being selected independently of one another when m is 2 or more,

n represents 0 or 1 and

Az represents a five-membered hetero-aromatic ring with 2 or 3 nitrogen atoms, which is bonded via nitrogen and which can be optionally substituted by alkyl, alkoxy or alkylmercapto with 1 to 6 carbon atoms in each case, halogen, hydroxyl, phenyl, phenalkyl, NH_2, a monoalkylamino or dialkylamino group with 1 to 2 carbon atoms in the or each alkyl group, C_{1-4}-alkoxy-C_{1-4}-alkoxy, lower alkanoyl amino, carboxyl, a carboxylic acid ester or optionally N-C_{1-4}-alkyl-substituted carboxamido group or cyano.

4,239,761

BASICALLY SUBSTITUTED UREAS AND PROCESSES FOR THE TREATMENT OF VIRUS DISEASES

Rolf Rebling; Gerhard Scheffler; Klaus Pressler, all of Bielefeld, and Klaus D. Schenk, Steinhagen, all of Fed. Rep. of Germany, assignors to Asta-werke Aktiengesellschaft, Chemische Fabrik, Bielefeld, Fed. Rep. of Germany

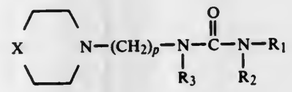
Filed Aug. 23, 1979, Ser. No. 69,335

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837794

Int. Cl.[3] **C07D** *295/10, 295/16, 295/22;* **A61K** *31/495*

U.S. Cl. 424—250 **5 Claims**

1. Basically substituted ureas of the general Formula I



wherein

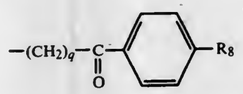
X is the group R_4—N<,

p is 2 or 3,

R_1 is an alkyl group having from 6 to 18 carbon atoms,

R_2 and R_3, which may be the same or different from each other, are methyl or ethyl and

R_4 is the methyl sulfonyl group, the diethyl carbamoyl group or the group



wherein q is 1 or 2 and R_8 is methyl, methoxy, chlorine or bromine, and the pharmacologically acceptable salts thereof.

4. Process for the treatment of humans or animals suffering from a diseases caused by viruses comprising administering to said human or animal a compound according to claim 1 topically in a dose ranging from 0.005 to 0.3 percent by weight or parenterally in a daily dose ranging from 5 to 250 mg per kg body weight of the human or animal to be treated.

4,239,762

COMBATING INSECTS WITH SUBSTITUTED 5-PHENYLCARBAMOYL-BARBITURIC ACIDS

Wolfgang Krämer, Wuppertal; Erich Klauke, Odenthal, and Peter Roessler, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

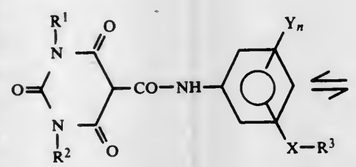
Filed Jul. 9, 1979, Ser. No. 55,572

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832698

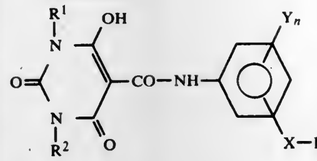
Int. Cl.[3] **A01N** *43/54;* **C07D** *239/62*

U.S. Cl. 424—254 **9 Claims**

1. A 5-substituted-phenyl carbamoyl-barbituric acid of the formula



-continued



in which

R^1 represents hydrogen or alkyl with 1 to 4 carbon atoms,

R^2 represents hydrogen or alkyl with 1 to 4 carbon atoms,

R^3 represents halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms, or phenyl substituted by halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms,

X represents oxygen or sulphur,

Y represents halogen or halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms, and

n represents 0, 1 or 2, or

X—R^3 and Y in the ortho-position to one another conjointly may alternatively represent the —O—CF_2—O—CF_2- group,

or a salt thereof with a physiologically tolerated base.

7. An arthropodicidal composition containing as active ingredient an arthropodicidally effective amount of a compound or salt according to claim 1 in admixture with a diluent.

4,239,763

α-BLOCKING AGENTS IN THE TREATMENT OF OBESITY

Maria Milavec, St. Louis, France, and Heribert Wagner, Pfeffingen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

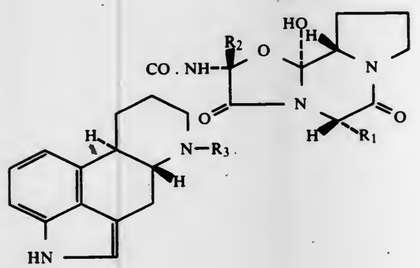
Continuation of Ser. No. 952,380, Oct. 18, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,055

Claims priority, application United Kingdom, Oct. 24, 1977, 44147/77

Int. Cl.[3] **A61K** *31/48*

U.S. Cl. 424—261 **4 Claims**

1. A method of treating obesity or reducing body weight in animals in need of such treatment which comprises administering to said animals a therapeutically effective amount of a 9,10-dihydro-ergot-peptide of the formula



wherein

R_1 is isopropyl, isobutyl, sec. butyl or benzyl,

R_2 is methyl, ethyl or isopropyl and

R_3 is methyl or isopropyl.

4,239,764

SUBSTITUTED 2-PHENYLAMINO-2-IMIDAZOLINES AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, and Wolfgang Hoefke, Budenheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

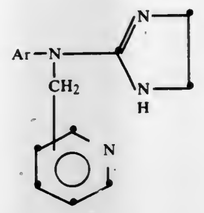
Filed Jul. 16, 1979, Ser. No. 57,582

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831143

Int. Cl.[3] **A61K** *31/415;* **C07D** *401/02*

U.S. Cl. 424—263 **3 Claims**

1. A compound of the formula



(I)

wherein Ar represents a radical selected from the group consisting of 2,6-dichlorophenyl, 2,5-dichlorophenyl, 2-chloro-6-methylphenyl, 2-chloro-4-methylphenyl, 2,6-dichloro-4-bromophenyl, 4-cyanophenyl, 2,5-dimethoxyphenyl, and 2-methyl-5-fluorophenyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

2. A bradycardiac pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective bradycardiac amount of a compound of claim 1.

4,239,765

FLUORENYL-AZOLYLMETHYL-CARBINOL COMPOUNDS AND THEIR MEDICINAL USE

Erik Regel; Karl Büchel; Ingo Haller, and Manfred Plempel, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

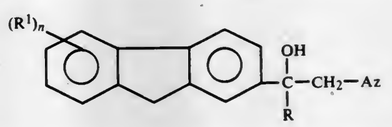
Filed Nov. 9, 1979, Ser. No. 92,804

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851143

Int. Cl.[3] **C07D** *233/60;* **A61K** *31/415; 31/41*

U.S. Cl. 424—269 **14 Claims**

1. A fluorenyl-azolylmethyl-carbinol of the formula



(I)

or a physiologically acceptable acid addition salt thereof in which Az denotes an imidazol-1-yl, 1,2,4-triazol-1-yl or 1,3,4-triazol-1-yl radical, R denotes a phenyl, benzyl, naphthyl, naphthylmethyl, tetrahydronaphthyl or tetrahydronaphthylmethyl radical optionally substituted by halogen, straight-chain or branched alkyl or alkoxy with in each case 1 to 4 carbon atoms, or halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, R^1 denotes a fluorine, chlorine or bromine atom or an alkyl group with 1 to 4 carbon atoms, and n is 0, 1 or 2.

12. A method of combating mycoses in warm-blooded animals which comprises administering to the animals an antimycotically effective amount of an active compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,239,766

COMBATING FUNGI WITH 1-(4-PHENOXY)-3,3-DIMETHYL-2-(N-HALOGENOALKYLMERCAPTO-CARBAMOYLOXY)-1-(1,2,4-TRIAZOL-1-YL)-BUTANES

Wolfgang Krämer; Karl H. Büchel, both of Wuppertal; Engelbert Kühle, Bergisch-Gladbach; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Beandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

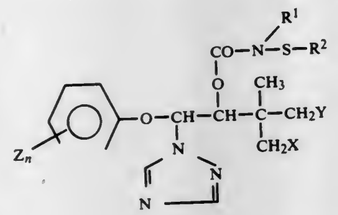
Filed Jun. 7, 1979, Ser. No. 46,283

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2827968

Int. Cl.³ A01N *47/12;* **C07D** *249/08*

U.S. Cl. 424—269 **12 Claims**

1. A 1-(4-phenoxy)-3,3-dimethyl-2-(N-halogenoalkylmercapto-carbamoyloxy)-1-(1,2,4-triazol-1-yl)-butane of the formula



in which

R^1 is alkyl with 1 to 4 carbon atoms, phenyl or phenyl substituted with halogen, alkyl with 1 or 2 carbon atoms, cyano or nitro,

R^2 is halogenoalkyl with 1 or 2 carbon atoms and up to 5 halogen atoms,

X is hydrogen or halogen,

Y is hydrogen or halogen,

Z each independently is halogen; cyano; nitro; alkyl with up to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms; alkoxycarbonyl with a total of up to 5 carbon atoms; alkoxy with up to 2 carbon atoms; alkylthio with up to 2 carbon atoms; or optionally substituted phenyl, optionally substituted phenoxy or optionally substituted phenylalkyl with 1 or 2 carbon atoms in the alkyl part, the optional substituents on the phenyl nuclei being selected from halogen, amino, cyano, nitro and alkyl with 1 or 2 carbon atoms, the alkyl part of the phenylalkyl radical being optionally substituted by alkylcarbonyloxy with a total of up to 3 carbon atoms; and

n is 0,1,2,3,4 or 5,

and physiologically acceptable acid addition salts and metal salt complexes thereof.

11. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,239,767

ANTIMYCOTIC DIARYLOXY-IMIDAZOLYL-O,N-ACETALS

Karl H. Büchel, Leverkusen; Wolfgang Krämer, and Manfred Plempel, both of Wuppertal-Elberfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

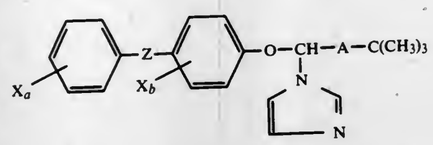
Filed Nov. 6, 1975, Ser. No. 629,215

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1974, 2455954

Int. Cl.³ A61K *31/415;* **C07D** *233/60*

U.S. Cl. 424—273 R **139 Claims**

101. A method of treating mycoses in humans and animals which comprises administering to a human or animal in need thereof an anti-mycotically effective amount of a compound of the formula



(I)

or a pharmaceutically acceptable, nontoxic salt thereof, wherein

X and Y are each halo, lower alkyl, lower alkoxy, halo(-lower alkylthio), nitro, amino, lower alkylamino or di(-lower alkyl)amino;

Z is methylene, oxygen, sulphur, sulphonyl, lower alkoxymethylene or a keto moiety;

A is a keto moiety or the moiety C(OH)R, wherein R is hydrogen or lower alkyl;

a and b are each integers from 0 to 3; and Z is a direct bond when A is the moiety C(OH)R as above defined, in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

4,239,768

METHOD FOR RELIEVING IRRITABLE BOWEL SYNDROME SYMPTOMS

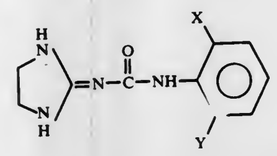
Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Dec. 22, 1978, Ser. No. 972,580

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **6 Claims**

1. A method for relieving the symptoms associated with irritable bowel syndrome which comprises administering to an animal having said syndrome a therapeutically effective amount of a urea compound represented by the formula



wherein X and Y are selected from methyl, ethyl, chloro and bromo; and pharmaceutically acceptable salts thereof.

4,239,769

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Barry J. Price, Hertford; John W. Clitherow, Sawbridgeworth; Michael D. Dowle, Ware; Roger Hayes, Digswell, and John Bradshaw, Ware, all of England, assignors to Allen & Hanburys Limited, London, England

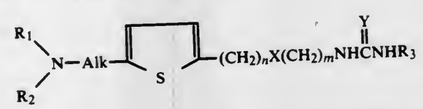
Filed May 5, 1978, Ser. No. 903,116

Claims priority, application United Kingdom, May 17, 1977, 20659/77

Int. Cl.³ A61K *31/38;* **C07D** *333/20, 333/24, 409/06*

U.S. Cl. 424—274 **19 Claims**

1. A compound of the formula



(I)

and physiologicially acceptable salts and hydrates thereof, in which

R_1 and R_2, which may be the same or different, represent hydrogen or lower alkyl, or

R_1 and R_2, together with the nitrogen atom to which they are attached form the pyrrolidino ring;

R_3 represents hydrogen, lower alkyl, lower alkenyl or alkoxyalkyl;

X represents —O—, —S— or —CH_2—;

Y represents =S, =O, =NR_5 or =CHR_6; in which R_5 is hydrogen, nitro, cyano, lower alkyl, aryl, alkylsulphonyl or arylsulphonyl and R_6 represents nitro, alkylsulphonyl or arylsulphonyl;

m is an integer from 2 to 4 inclusive;

n is 1 or 2 or, when X is S or CH_2, n is zero, 1 or 2; and Alk denotes a straight or branched alkylene chain of 1 to 6 carbon atoms.

12. A pharmaceutical composition for treating a condition of hypersecretion of gastric acid mediated through histamine H_2-receptors comprising an effective amount of a compound as claimed in claim 1 in association with a pharmaceutically acceptable carrier or diluent.

18. A method of treating a condition of hypersecretion of gastric acid mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as claimed in claim 1 to relieve said condition.

4,239,770

SUBSTITUTED 2-PYRROLIDINONES FOR COUNTERACTING CEREBRAL INSUFFICIENCY

Emilio Kyburz, Reinach, and Werner Aschwanden, Ettingen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

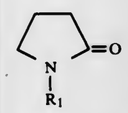
Filed Feb. 2, 1979, Ser. No. 8,674

Claims priority, application Switzerland, Feb. 10, 1978, 1404/78

Int. Cl.³ A61K *31/40*

U.S. Cl. 424—274 **2 Claims**

1. A method of counteracting cerebral insufficiency and improving intellectual capacity in a mammal comprising administering to said mammal, in an amount sufficient to counteract cerebral insufficiency and improve intellectual capacity, a compound of the formula



I

wherein R1 is o-methoxybenzoyl, m-methoxybenzyl, p-methoxybenzyl or p-fluorobenzyl, and a pharmaceutically acceptable inert carrier material.

4,239,771

WATER-SOLUBLE SALTS OF TIENILIC ACID

Jacqueline S. Laforest nee Boutillier du Retail, Vincennes, and Pierre A. R. Bessin, Chilly-Mazarin, both of France, assignors to Albert Rolland S.A., Paris, France

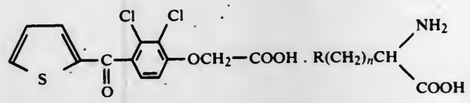
Filed Jul. 28, 1978, Ser. No. 929,114

Claims priority, application France, Aug. 4, 1977, 77 24061

Int. Cl.³ A61K *31/38;* **C07D** *333/28*

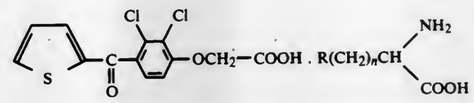
U.S. Cl. 424—275 **7 Claims**

1. A water-soluble salt of 2,3-dichloro-4-(2-thienylcarbonyl)-phenoxyacetic acid and an amino acid of the formula:



in which n is an integer of 1 to 5 and R represents an amino or guanidino group.

7. A method of treatment which method comprises administering to a human patient in need of such treatment a diuretically or uricosurically effective amount of a water-soluble salt of 2,3-dichloro-4-(2-thienylcarbonyl)-phenoxyacetic acid and an amino acid of the formula:



in which n is an integer of 1 to 5 and R represents an amino on guanidino group.

4,239,772

ALLYL AND PROPYL ZEARALENONE DERIVATIVES AND THEIR USE AS GROWTH PROMOTING AGENTS

Mohammed T. Shipchandler, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed May 30, 1979, Ser. No. 43,801

Int. Cl.³ C07D *313/00;* **A61K** *31/365*

U.S. Cl. 424—279 **7 Claims**

1. 4-O-Allylzearalenone.

7. A method for producing a growth-promoting effect in an animal comprises administering to the animal a sufficient amount of a compound of claim 1, 2, 3 or 4 to promote the growth of the animal.

4,239,773

INSECTICIDAL ESTERS OF CERTAIN SUBSTITUTED 7-OXABICYCLO[2.2.1]2,5-HEPTADIENE METHANOLS

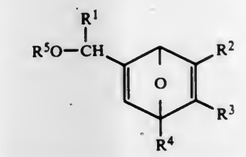
William A. Van Saun, Jr., Titusville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 11,334, Feb. 12, 1979, abandoned. This application Dec. 17, 1979, Ser. No. 104,201

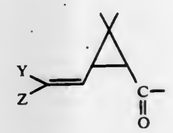
Int. Cl.³ A01N *45/12;* **C07D** *307/00*

U.S. Cl. 424—285 **8 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, an ethynyl group, a cyano group, a haloalkyl group, an aminocarbonyl group, or an aminothioxomethyl group; R^2 and R^3, the same or different, are nitro, halogen, cyano, lower alkyloxycarbonyl, lower alkylsulfinyl, lower alkylsulfonyl, or the group —$CONR^6R^7$ or —$SO_2NR^6R^7$ where R^6 and R^7 are independently hydrogen, lower alkyl, or halo(lower)alkyl; R^4 is phenyl, benzyl or benzoyl, optionally substituted with halogen or lower alkyl; R^5 is 2,2,3,3-tetramethylcyclopropylcarbonyl, 1-(4-chlorophenyl)-2-methylpropyl-1-carbonyl, or a cyclopropanecarboxylic acid residue of the formula



wherein Y and Z, the same or different, are hydrogen, halogen,

lower alkyl, haloalkyl, phenyl optionally substituted with halogen or lower alkyl, or phenylthio optionally substituted with halogen or lower alkyl.

7. A method for controlling insects which comprises applying to the insect or to a locus where control is desired an insecticidally effective amount of the compound of claims 1, 2, 3, 4, or 5.

4,239,774

PESTICIDAL COMPOSITIONS CONTAINNG 1,3,5-TRIAZAPENTA-1,4-DIENE AND ORGANO-TIN OXIDE COMPOUNDS

John C. Kerry, and David M. Weighton, both of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

Continuation of Ser. No. 920,156, Jun. 29, 1978, abandoned. This application Nov. 16, 1979, Ser. No. 94,838

Claims priority, application United Kingdom, Jul. 1, 1977, 27539/77

Int. Cl.³ A01N *55/04, 37/52*

U.S. Cl. 424—288 **8 Claims**

1. An acaricidal composition comprising as essential active ingredients 1,5-di-(2,4-dimethylphenyl)-3-methyl-1,3,5-triazapenta-1,4-diene and an organo-tin compound selected from the group consisting of tricyclohexyltin hydroxide and di[tri-(2-methyl-2-phenylpropyl)tin]oxide, the essential active ingredients being present in a ratio of between 1:4 to 4:1 by weight.

4,239,775

2-(1-METHYLPROPYN-2-YL-THIO)-PHENYL-N-METHYLCARBAMATE AND ITS USE FOR COMBATING PESTS OF THE ACARINA ORDER

Hans-Peter Loeffler, Ludwigshafen; Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

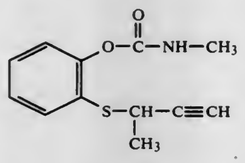
Filed Aug. 15, 1979, Ser. No. 66,554

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837407

Int. Cl.³ C07C *125/067;* **A61K** *31/27*

U.S. Cl. 424—300 **2 Claims**

1. 2-(1-methylpropyn-2-yl-thio)-phenyl-N-methylcarbamate of the formula



2. A process for combating pests from Acarina order, wherein 2-(1-methylpropyn-2-yl-thio)-phenyl-N-methylcarbamate is allowed to act on the pests or their habitat.

4,239,776

ANTI-ANDROGENIC AMIDES

Alasdair T. Glen, and Richard W. Bayles, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

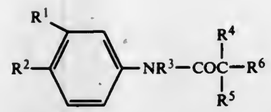
Filed Oct. 10, 1978, Ser. No. 950,142

Claims priority, application United Kingdom, Oct. 12, 1977, 42454/77

Int. Cl.³ A61K *31/275;* **C07C** *121/78*

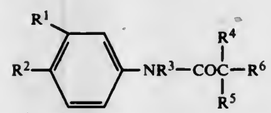
U.S. Cl. 424—304 **8 Claims**

1. An acylanilide of the formula:



wherein R^1 is cyano, nitro, trifluoromethyl or iodo, or has the formula $—CONR^{11}R^{12}$, and wherein R^2 is cyano, nitro, trifluoromethyl, chloro, bromo or iodo, or has the formula $—CONR^{11}R^{12}$, wherein R^{11} and R^{12}, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms; wherein R^3 is hydrogen or alkyl of up to 4 carbon atoms; wherein either R^4 and R^5, which may be the same or different, each is alkyl of up to 4 carbon atoms; or R^4 and R^5 are joined together with the adjacent carbon atom to form cycloalkyl of 3 or 4 carbon atoms; and wherein R^6 is hydrogen, hydroxy, halogen, alkyl, hydroxyalkyl or alkoxy each of up to 4 carbon atoms, or acyloxy of up to 15 carbon atoms provided that at least one of R^1 and R^2 is cyano.

8. A method of producing an antiandrogenic effect in a warm-blooded animal in need of such an effect which comprises administering to said animal an effective amount of an acylanilide of the formula:



wherein at least one of R^1 and R^2 is cyano and wherein the other of R^1 and R^2 is cyano, nitro, trifluoromethyl, chloro, bromo or iodo, or has the formula $—CONR^{11}R^{12}$, wherein R^{11} and R^{12}, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms; wherein R^3 is hydrogen or alkyl of up to 4 carbon atoms; wherein either R^4 and R^5, which may be the same or different, each is alkyl of up to 4 carbon atoms; or R^4 and R^5 are joined together with the adjacent carbon atom to form cycloalkyl of 3 or 4 carbon atoms; and wherein R^6 is hydrogen, hydroxy, halogen, alkyl, hydroxy-alkyl or alkoxy each of up to 4 carbon atoms, or acyloxy of up to 15 carbon atoms; provided that when R^2 is cyano; R^3 and R^6 are both hydrogen and R^4 and R^5 are both methyl, R^1 is not chloro.

4,239,777

(−)-α-CYANO-M-PHENOXYBENZYL(+)-α-ISOPROPYL-4-DIFLUOROMETHOXYPHENYLACETATE

Gerald Berkelhammer, Princeton, and Venkataraman Kameswaran, Princeton Junction, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,199,595, which is a continuation-in-part of Ser. No. 814,600, Jul. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 728,818, Oct. 1, 1976, abandoned. This application Nov. 28, 1979, Ser. No. 98,001

Int. Cl.³ A01N *37/34;* **C07C** *121/75*

U.S. Cl. 424—304 **4 Claims**

1. The compound (−)-α-cyano-m-phenoxybenzyl-(+)-α-isopropyl-4-difluoromethoxyphenylacetate.

2. A method for controlling insects and acarina comprising contacting the insects and acarina, their habitat, breeding grounds or feed, with an insecticidally or acaricidally effective amount of (−)-α-cyano-m-phenoxybenzyl(+)-α-isopropyl-4-difluoromethoxyphenylacetate.

4,239,778

AZAPROSTANOIC ACID ANALOGS AND THEIR USE AS INHIBITORS OF PLATELET AGGREGATION

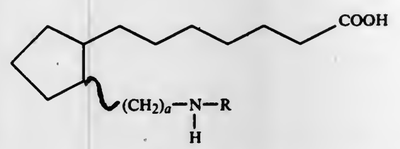
Duane L. Venton, Villa Park; Guy C. Le Breton, Chicago, both of Ill., and Steven E. Enke, Lutz, Fla., assignors to The University of Illinois Foundation, Urbana, Ill.

Filed Sep. 12, 1978, Ser. No. 941,678

Int. Cl.³ C07C *101/04;* **A61K** *31/557*

U.S. Cl. 424—305 **9 Claims**

1. Azaprostanoic acids of the formula



wherein: R is C_1 to C_8 alkyl or benzyl; and a has a value of from 0 to 6 inclusive, and their pharmaceutically acceptable salts and lower alkyl esters.

4,239,779

USE OF PHENYLGLYOXYLIC ACIDS AND DERIVATIVES THEREOF IN THE TREATMENT OF ISCHEMIC HEART DISEASE

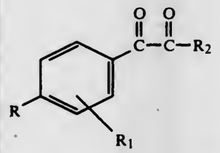
Ian T. Barnish, Ramsgate; Peter E. Cross, Canterbury; John C. Danilewicz, Ash, Nr. Canterbury; Malcolm Morville, Margate, all of England, and Michael G. Page, Waterford, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 915,904, Jun. 16, 1978. This application Sep. 14, 1979, Ser. No. 75,730

Int. Cl.³ A61K *31/19, 31/235*

U.S. Cl. 424—317 **8 Claims**

1. A method for treating ischemic heart disease in a human subject having such condition which comprises orally or parenterally administering to said human subject an ischemic heart disease treating amount of a compound selected from the group consisting of a compound of the formula



wherein R is selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, hydroxy, alkoxy having from one to four carbon atoms, alkylthio having from one to five carbon atoms, alkanoyloxy having from two to four carbon atoms, chloro, fluoro, bromo and iodo; R_1 is selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, chloro, fluoro, bromo and iodo; R_2 is selected from the group consisting of hydroxy or alkoxy having from one to four carbon atoms; and a pharmaceutically acceptable base salt wherein R_2 is hydroxy.

4,239,780

PHOSPHOLIPASE A_2 INHIBITION

Donald P. Wallach, Richland, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

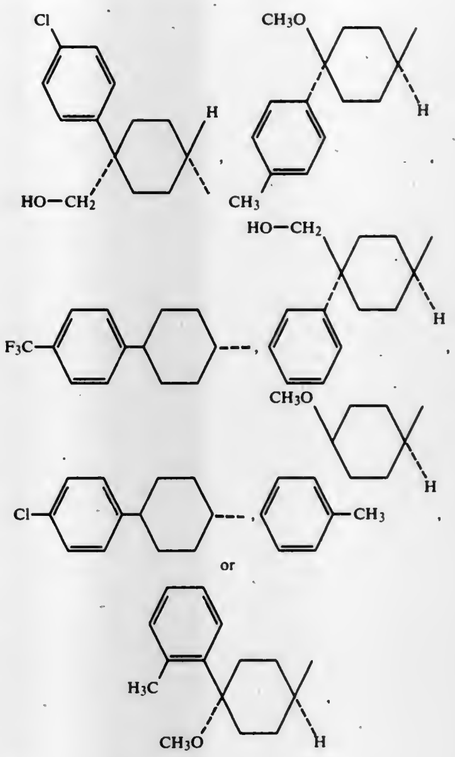
Filed Oct. 11, 1979, Ser. No. 84,022

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **1 Claim**

1. A method for treating a phospholipase A_2 mediated condition (PMC) in a mammal suffering from the development of said PMC which comprises administering to said mammal an amount of a compound of formula I:

wherein R_1 is $R_1—N(R_3)—CH_2—CH_2—CH_2—R_2$



or

R_2 is

R_3 is H or CH_3, with the proviso that R_3 is $-CH_3$ only when R_1 is

or a pharmacologically acceptable acid addition salt or salt hydrate thereof, effective to treat said PMC.

4,239,781

METHOD FOR TREATING SKIN AILMENTS

Roy Edwards, 1415 Highland Dr., Solana Beach, Calif. 92075

Continuation of Ser. No. 876,203, Feb. 9, 1978, abandoned. This application May 3, 1979, Ser. No. 35,604

Int. Cl.³ A61K *31/08*

U.S. Cl. 424—342 **3 Claims**

1. A method of treating skin ailments, comprising flaking of the skin, athlete's foot, dandruff and eczema consisting of

topically applying to the portion of the skin in an amount to wet the skin, a composition consisting of a polyalkylene glycol as the active ingredient.

4,239,782

FISH FOOD COMPOSITION AND A PROCESS FOR ENHANCING THE COLOR OF FISH

Robert Cinquemani, New Hyde Park, N.Y., assignor to Aquatic Diet Technology Inc., Farmingdale, L. I., N.Y.

Filed Apr. 16, 1979, Ser. No. 29,916
Int. Cl.³ C12K *1/00*
U.S. Cl. 426—2 **5 Claims**

1. A method of enhancing the color of new born fish comprising the steps of:

feeding the fish an edible proteinaceous fish food composition until they are five to eight weeks old;

thereafter feeding said fish a combination of an edible fish food composition comprising proteins, carbohydrates and fats and further including testosterone in an amount ranging from 0.003% to 0.018% by weight of the total combination and an organic pigmenting agent in an amount ranging from 0.5% to 1% by weight of the total combination, and wherein said organic pigmenting agent is selected from the group consisting of carotenoids, Canthaxantin, lutein, apo-carotonal, and marigold; and

continuing said feeding step for as long as color enhancement is desired.

4,239,783

REDUCTION OF MIXING TIME OF YEAST LEAVENED DOUGH COMPOSITIONS

Louis A. Wollermann, Olathe, Kans.; Dugan A. Rucker, Kansas City, Mo., and Jack K. Krum, Leawood, Kans., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 687,048, May 17, 1976, abandoned.
This application Nov. 18, 1977, Ser. No. 852,834
Int. Cl.³ A21D *2/14*
U.S. Cl. 426—25 **4 Claims**

1. In a process for the preparation of a yeast leavened dough composition by the straight dough and sponge and dough mixing processes wherein the dough is developed by mixing together 100 parts by weight of flour, from 50 to 70 parts by weight of water, and yeast leavening,

the improvement comprising reducing the mixing time required to develop said dough incorporating in said composition from 0.001 to 0.015 parts by weight of an additive selected from the group consisting of sorbic acid and the sodium, potassium and calcium salts of sorbic acid and mixing said composition to develop said dough for a time substantially less than the time required to develop said dough without the additive.

4,239,784

METHOD FOR PREPARING FOOD PRODUCTS FROM A SUSPENSION OF MILK PROTEINS WITH TEXTURIZATION

Richard J. Guiraud, and Michel R. Arnaud, both of Vendome, France, assignors to Fromageries Bel, societe anonyme, Paris, France

Continuation of Ser. No. 742,911, Nov. 17, 1976, abandoned.
This application Jul. 6, 1978, Ser. No. 922,450
Claims priority, application France, Dec. 5, 1975, 75 37374
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—104 **26 Claims**

1. A method for preparing food products from a hydrated paste based on milk proteins, comprising the steps of

(1) providing a hydrated paste of milk proteins comprising a homogeneous mixture prepared from an aqueous casein suspension wherein the content of milk proteins with respect to the paste is about 10% to about 45%, the water content is about 35 to about 85% and the dry material content is at least equal to about 15% wherein said milk proteins further contain phosphorous in amount effective to produce phosphocaseinate bridges;

(2) molding said paste to prepare a texturized product in the form of ribbons, fibers, granules or bits, and

(3) subjecting the paste to a thermal treatment at a temperature between about 50° C. and about 150° C., for a time sufficient and up to about 3 hours to produce phosphocaseinate bridges between casein molecules.

4,239,785

METHOD FOR MAKING JERKY

Eldon N. Roth, 99 Madera Ct., San Ramon, Calif. 94583

Filed Nov. 15, 1978, Ser. No. 960,936
Int. Cl.³ A23B *4/02*; A23L *1/31*
U.S. Cl. 426—266 **7 Claims**

1. In a method for manufacturing jerky, the steps comprising

grinding or otherwise dividing selected jerky type materials to have a desired extrudable consistency,

blending the divided materials with curing agents and seasonings selected for jerky preparation,

providing a refrigerated rotating drum having a peripheral heat transfer surface,

applying the blended material onto the heat transfer surface of the drum to form a uniform thickness sheet upon its heat transfer surface and maintaining the blended material in intimate contact with the heat transfer surface,

cooling said sheet of blended material upon the heat transfer surface of the drum to form a solidified sheet suitable for cutting,

removing said sheet of cooled, blended material from the drum and cutting it into individual jerky strips, and

transferring the individual strips of jerky from the cutting station and transporting them through a drying chamber means for removing excess moisture from the individual jerky strips.

4,239,786

COFFEE WHITENER AND USE OF FLUID SHORTENING THEREIN

Cecilia Gilmore, and Donald E. Miller, both of Strongsville, Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,994
Int. Cl.³ A23C *11/02*
U.S. Cl. 426—601 **19 Claims**

1. A method for the manufacture of a fluid composition useful as a coffee whitener which comprises mixing together as major ingredients a sweetener, a water-dispersible protein, a lipid system, and water;

wherein said lipid system is a shortening comprising hydrogenated, beta-forming, predominantly C_{16}-C_{18} fat which is bland in flavor having an IV between about 85–100 and an SFI at 50° F. of about 10–18; and stably suspended therein, a crystalline, normally solid phase fat or fatty acid derived food stabilizer component in an amount sufficient to form a stable shortening dispersion; and an emulsifying amount of an oil/water emulsifier;

said shortening at room temperature being pumpable but sufficiently stiff to resist phase separation of ingredients;

said mixing being carried out while metering said shortening into remaining ingredients of the composition.

4,239,787

SEMITRANSPARENT AND DURABLE PHOTOLITHOGRAPHY MASKS

John A. Rentschler, Brick Township, Ocean County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 25, 1979, Ser. No. 51,848
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **4 Claims**

1. A method of producing photolithography masks, transparent to a portion of the visible spectrum, comprising the steps of:

(a) depositing positive photoresist (**14**) onto a light transparent substrate (**15**) to achieve a uniform coating;

(b) baking the deposited photoresist to fix the same;

(c) selectively exposing said photoresist to ultraviolet radiation;

(d) developing said photoresist to remove the exposed portions thereof and further CHARACTERIZED BY the step of

(e) bombarding said photoresist with electrons and ions in a predominantly nitrogen atmosphere to convert said photoresist to a material opaque to ultraviolet light.

4,239,788

METHOD FOR THE PRODUCTION OF SEMICONDUCTOR DEVICES USING ELECTRON BEAM DELINEATION

William A. Beck, Ellicott City, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 15, 1979, Ser. No. 49,003
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—43.1 **9 Claims**

1. A process for forming a delineated vapor deposition grown film of a deposition material on a substrate wherein the film is grown by exposing the substrate to the vapor of the deposition material comprising the steps of:

irradiating preselected areas of the substrate, in the presence of a carbon containing gas, with a first electron beam which is capable of altering the surface properties of said preselected areas, heating said substrate to a temperature at which carbon deposits on the irradiated areas, allowing carbon to deposit on said preselected areas, and then

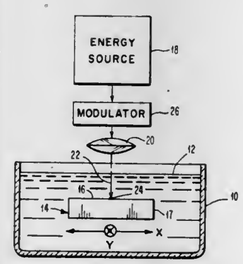
exposing the substrate to the vapor of the deposition material, whereby little or no deposition material will deposit on said preselected areas but will deposit on the areas of the substrate which were not exposed to the electron beam.

4,239,789

MASKLESS METHOD FOR ELECTROLESS PLATING PATTERNS

Samuel E. Blum, White Plains; Zlata Kovac, Somers, and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1979, Ser. No. 37,073
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 **7 Claims**



1. A method for selectively electrolessly plating of a surface of a workpiece comprising the steps of:

contacting the surface with a non-photo decomposable electroless plating solution; and

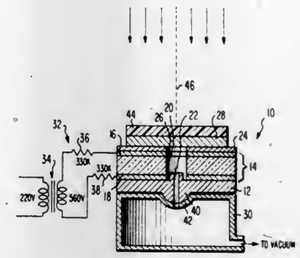
directing an energy beam onto the workpiece to locally heat the surface to promote enhanced plating.

4,239,790

METHOD OF DEFINING A PHOTORESIST LAYER

Wolfram A. Bösenberg, Monmouth Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 12, 1979, Ser. No. 75,162
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **5 Claims**



1. A method for defining a photoresist layer comprising the steps of:

(a) applying a photoresist layer onto a substrate;

(b) vibrating said substrate, the vibratory motion being along a single axis; and

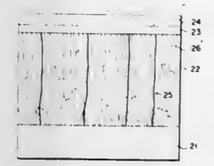
(c) exposing said photoresist layer with light having an optical axis substantially parallel to said single axis, the wavelength of said light being selected to expose said photoresist layer, and the amplitude of said vibratory motion being approximately one wavelength.

4,239,791

METHOD OF MANUFACTURING AN INPUT SCREEN FOR AN IMAGE INTENSIFIER

Tomiya Sonoda, Machida, and Hiroshi Washida, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 29, 1978, Ser. No. 964,519
Claims priority, application Japan, Dec. 5, 1977, 52-145149
Int. Cl.² G01T *1/16*
U.S. Cl. 427—64 **8 Claims**



1. A method of manufacturing an input screen for an image intensifier comprising the steps of:

(1) depositing a phosphor of alkaline metal halide on one side of a substrate to produce a phosphor layer consisting of columnar crystals extending in a direction substantially perpendicular to the plane of the substrate;

(2) treating the surface of the phosphor layer with a liquid material having a lower boiling point than 100° C. which liquid is incapable of dissolving the deposited phosphor, and producing cracks in said phosphor layer extending in a direction substantially perpendicular to the plane of the substrate, thereby forming a large number of optically independent phosphor blocks defined by said cracks; and

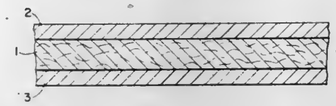
(3) depositing a photoemissive layer on the thus deposited and coated phosphor layer.

4,239,792

SURFACE WIPING DEVICE

Raymond J. Ludwa, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 5, 1979, Ser. No. 9,722
Int. Cl.³ B32B *27/14*
U.S. Cl. 428—198 **10 Claims**



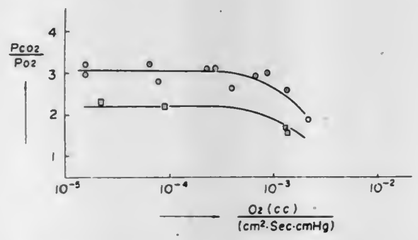
1. A disposable surface wiping device comprising one inner absorbent element and at least two surface contacting elements wherein said surface wiping device has an absorbent capacity greater than about 5.9 grams per gram of device, a dry horizontal wicking rate less than about 16 seconds, a wet horizontal wicking rate less than about 16 seconds, a distribution factor of from about 0.2 to about 1.7, and an effective use time greater than about 40 seconds; wherein said surface contacting elements each have an absorbent capacity greater than about 6.5 grams per gram of element, a wet horizontal wicking rate less than about 27 seconds, and a compressibility of from about 15 to about 35%; wherein said inner absorbent element has an absorbent capacity greater than about 6.5 grams per gram of element, a dry horizontal wicking rate less than about 30 seconds, and a wet horizontal wicking rate less than about 20 seconds; and wherein said surface wiping device is strong enough for practical use and leaves a wiped surface essentially dry.

4,239,793

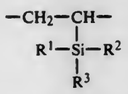
GAS SEPARATION MEMBRANE

Junichi Matsuura, Kamakura, and Yukio Yamaguchi, Tokyo, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,442
Claims priority, application Japan, Oct. 14, 1977, 52-123183
Int. Cl.² B32B *15/06*; B01D *59/12, 13/00*
U.S. Cl. 428—216 **7 Claims**

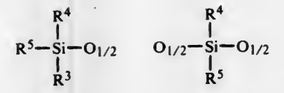


1. A gas separation membrane which comprises a mixture of (A) a polyvinyltriorganosilane having main units of the formula



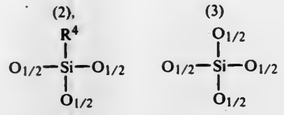
(1)

wherein R^1 represents a hydrogen atom, an alkyl, a cycloalkyl or an aryl group, and R^2 and R^3 independently represent an alkyl, a cycloalkyl or an aryl group; and (B) an organopolysiloxane having main units selected from the group consisting of:



(2),

(3)



(4), and

(5)

wherein R^4, R^5 and R^6 are selected from the group consisting of alkoxy, hydroxy, hydrogen, and the same or different unsubstituted or halogen-substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl or alkaryl groups; or R^4, R^5, R^6 taken together may form a ring, and $O_{\frac{1}{2}}$ represents an oxygen atom connected to two Si atoms in a Si—O—Si bond;

wherein the ratio of polyvinylorganosilane and organopolysiloxane is 1:0.05 to 1 by weight; and

wherein the viscosity of the polysilane is greater than about 50 cm^3/g.

4,239,794

PROCESS OF DISPERSING ELECTRO-CONDUCTIVE CARBON BLACK AND WEB PRODUCT MADE THEREBY

Adrien W. Allard, Colora, Md., assignor to Ludlow Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 733,137, Oct. 18, 1976. This application Aug. 4, 1978, Ser. No. 931,142
Int. Cl.³ B32B *5/30, 27/02, 27/14, 33/00*
U.S. Cl. 428—219 **4 Claims**

1. An electroconductive sheet formed of a permeable nonwoven fibrous web comprising a maximum surface electroresistivity of about 200,000 ohms per square and carrying electroconductive an carbon black coating on the surfaces of the fibers from which said sheet is formed, said sheet being formed by a process comprising the steps of

(1) dispersing said conductive carbon black in a latex binder using an effective quantity of a dispersing agent selected from a chlorinated organic dispersing agents and an organic phosphate dispersing agents,

(2) impregnating the resulting dispersion of carbon black into said web and coating the surface of said fibers with said dispersion, and

(3) drying residual water from the surface of the fibers, leaving a thin coating of carbon block dispersed on the surfaces of said fibers.

4,239,795

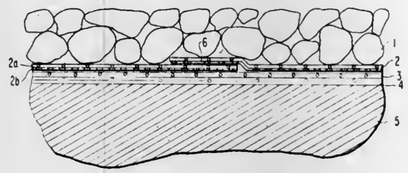
PROTECTIVE LAYER FOR SURFACE SEALS IN BUILDING CONSTRUCTION, UNDERGROUND CONSTRUCTION, AND CIVIL ENGINEERING CONSTRUCTION

Karl Haage, Troisdorf-Spich, and Dieter Scharff, Troisdorf-Sieglar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 596,765, Jul. 17, 1975, abandoned. This application Jul. 22, 1977, Ser. No. 818,232
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1974, 2434328
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.
Int. Cl.² B32B *5/04*; E04B *1/66*; B32B *27/12*
U.S. Cl. 428—247 **25 Claims**

1. A protective covering for the protection of surface seals against mechanical damage due to a load or impact of a sharp-edged material in building construction, underground construction, and civil engineering construction, said covering comprising a composite of an elastic, tough, waterproof thermoplastic synthetic resin topcoat bonded to a resilient lattice-like fabric having fibers joined together at junctions that yield under the effect of a load, said topcoat consisting of two layers of thermoplastic synthetic resin having differing compositions, an upper topcoat layer having a higher weatherability due to the addition of stabilizers and a lower filler content as compared to a lower topcoat layer.

14. A terrace construction which comprises a load-bearing



substrate, at least one thermoplastic film sheet overlying said load-bearing substrate, a protective covering comprising a composite of an elastic, tough, waterproof thermoplastic synthetic resin topcoat bonded to a resilient lattice-like fabric having fibers joined together at junctions that yield under the effect of a load, said top-coat consisting of two layers of thermoplastic synthetic resin having differing compositions, an upper top-coat layer having a higher weatherability due to the addition of stabilizers and a lower filler content as compared to a lower top-coat layer, and a gravel load placed on said protective covering.

4,239,796

IN-MOLD COATING OF STRUCTURAL FOAMS AND RESULTANT PRODUCT

Henry Shanoski, and Richard M. Griffith, both of Akron, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 21, 1979, Ser. No. 50,902
Int. Cl.³ B32B *5/18*; B29D *27/00*
U.S. Cl. 428—315 **10 Claims**

1. The method which comprises in-mold coating a molded structural foam part of a thermoplastic resin selected from the group consisting of an aromatic polycarbonate resin and an ABS polymer resin with a thermosetting in-mold coating composition and heating said composition at a temperature not in excess of about 200° F. for from about 1 to 10 minutes at a pressure of from about 25 to 50 p.s.i. to cure the same to form an adherent, hard and glossy coating, said in-mold coating composition comprising

(a) an ethylenically unsaturated polyester having an average molecular weight of from about 1,000 to 4,500 and

(b) at least one ethylenically unsaturated monomer having from one to four polymerizable unsaturated carbon-to-carbon double bonds, said monomer being present in an amount sufficient to copolymerize with and crosslink said unsaturated polyester to form a hard, adherent, glossy and thermoset coating, in admixture with

(c) an organic free radical peroxide initiator in an amount of from about 1.5 to 6% by weight based on the weight of the unsaturated polyester and the unsaturated monomer and

(d) an accelerator for said peroxide initiator in an amount not in excess of about 1.0% by weight based on the weight of the unsaturated polyester and the unsaturated monomer.

6. The product produced by the method of claim 1.

4,239,797

NON-SKID FLOOR TILE

Peter R. Sachs, New Windsor, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 946,943
Int. Cl.³ B32B *5/16, 19/04*
U.S. Cl. 428—327 **12 Claims**

1. Non-skid vinyl floor tile having embedded in the surface of the tile base thereof between about 1 and about 5 grams per sq. ft. of tile base surface of particulate thermoplastic material in the size range between about 1/32 inch and about 3/32 inch, said particulate material having a hardness of not more than about Rockewell M-100 and a Taber abrasion weight loss of not more than about 75 mg per 1000 cycles using CS-17 wheels and 1000 gram weights wherein said particulate material protrudes from the surface of the tile.

7. Process for making non-skid vinyl floor tile which comprises:

a. First forming a vinyl tile base;

b. then distributing on the tile base between about 1 and about 5 grams per sq. ft. of tile base surface of particulate thermoplastic material in the size range between about 1/32 and about 3/32 inch, said particulate material having a hardness of not more than about Rockwell M-100 and a Taber abrasion weight loss of not more than about 75 mg per 1000 cycles using CS-17 wheels and 1000 gram weights; and

c. then pressing the particulate material into the surface of the tile so that said particulate material protrudes from the surface of the tile.

4,239,798

ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE

Siegfried H. Schroeter, Schenectady, and Daniel R. Olson, Clifton Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 1, 1978, Ser. No. 956,873
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.
Int. Cl.² G02B *1/10*; B32B *27/30, 27/08*
U.S. Cl. 428—331 **23 Claims**

1. A shaped non-opaque coated polycarbonate article having improved abrasion and chemical solvent resistance comprising a polycarbonate substrate having disposed on at least one surface thereof (i) an adhesion promoting primer layer consisting essentially of a thermoplastic acrylic polymer; and (ii) disposed on said primer layer a durably adhered top coat layer consisting essentially of a colloidal silica filled thermoset organopolysiloxane, said thermoset organopolysiloxane being the condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidoxypropyl radical and the gamma-methacryloxypropyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$.

4,239,799

BLENDS OF BUTYL RUBBER AND POLYMERS OF VINYLIDENE CHLORIDE

Alan S. Weinberg, Greenville, S.C., and Mario Gillio-Tos, Rho, Italy, assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 740,448, Oct. 27, 1976, abandoned. This application Dec. 9, 1977, Ser. No. 858,938
Int. Cl.³ B32B *27/08*; C08L *91/00*
U.S. Cl. 428—335 **12 Claims**

1. A film of packaging material formed from a composition of matter consisting essentially of a mixture of

(a) 85 to 99 parts by weight of a vinylidene chloride interpolymer having from about 51 to about 95 parts by weight vinylidene chloride, thermally plasticized by

(b) 1 to 15 parts by weight of butyl rubber, based on 100

parts of composition weight said composition having a substantially unimpaired oxygen permeability as compared to the oxygen permeability of said interpolymer without said butyl rubber, and

(c) an epoxy compound in an amount from about 1 to 5 parts by weight and 2-ethyl hexyldiphenyl phosphate in an amount up to about 10 parts by weight, said vinylidene chloride interpolymer being present in an amount such that the total amount of the recited components is 100 parts by weight.

5. The film of claim 1 wherein the thickness of the film is from about 1 to about 2 mils and the oxygen permeability is from about 25 to about 60 cc. at 73° F.

4,239,800

GLASS FIBER COATING COMPOSITION

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 604,367, Aug. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 535,389, Dec. 23, 1974, abandoned. This application Jan. 31, 1979, Ser. No. 7,859

Int. Cl.[2] **B29H** *9/10, 9/04*

U.S. Cl. 428—374 **16 Claims**

7. A glass fiber tire cord having thereon the dried residue of an aqueous coating composition comprising in parts by weight on a dry solids basis and also the latex on the basis of 100 parts of total elastomer:

10–30 neoprene latex,

70–90 styrene-butadiene-vinyl-pyridine latex,

4–20 resorcinol formaldehyde resin,

2–6 resorcinol,

1–3 formaldehyde, and up to 1.5 hexamethylene tetramine.

4,239,801

SYNTHETIC FIBERS HAVING IMPROVED ANTISTATIC PROPERTIES

Robert B. Login, Middletown, Pa., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 859,359, Dec. 12, 1977, abandoned, which is a division of Ser. No. 739,497, Nov. 8, 1976, Pat. No. 4,080,315. This application Mar. 5, 1979, Ser. No. 17,184

Int. Cl.[2] **D02G** *3/00*

U.S. Cl. 428—364 **6 Claims**

1. A synthetic polymeric fiber having incorporated therein about 1 to about 15 percent by weight of a polyester antistatic agent prepared by reacting an N,N-bis(hydroxyalkyl) taurine metal salt with an organic polycarboxylic acid reactant.

4,239,802

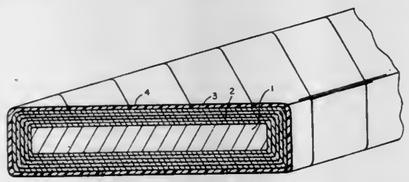
ANAEROBIC RESIN CURING SYSTEM

James D. B. Smith, Wilkins Township, Allegheny County, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 672,895, Apr. 2, 1976, abandoned. This application Jan. 29, 1979, Ser. No. 7,051

Int. Cl.[3] **B05D** *5/12*

U.S. Cl. 428—377 **28 Claims**



1. An article comprising a conductor covered with insulation which is impregnated with a cured anaerobic resin.

9. A method of forming a cured, resinous coating on an article comprising applying an anaerobic resin to said article in the presence of oxygen, and placing said article in a gaseous atmosphere which does not contain oxygen.

16. A method of continuously insulating wire comprising passing said wire through an anaerobic resin, thence through a gaseous atmosphere which does not contain oxygen.

4,239,803

ETHYLENE POLYMER COMPOSITION

Toshio Ohzeki, Urawa; Mitsuo Akutsu, Tokyo; Yutaka Nakahara, Iwatsuki; Tohru Haruna, Okegawa; Motonobu Minagawa, Koshigawa, and Masahiro Nonoyama, Shiraoka, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

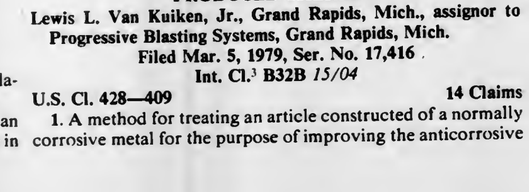
Filed Jun. 14, 1977, Ser. No. 806,511

Claims priority, application Japan, Jun. 17, 1976, 51-71427

Int. Cl.[3] **C07C** *153/09*

U.S. Cl. 428—379 **18 Claims**

1. An ester of an alkylthioalkylenecarboxylic acid with a polycarbocyclic polyhydric phenol having the formula:



in which R is an alkyl group having from 1 to 32 carbon atoms, A is a residue of a polycarbocyclic phenol having 2 to 4 benzene rings each substituted with one phenolic hydroxyl group and connected through oxygen, sulfur, $-CH_2S-CH_2-$, or saturated aliphatic hydrocarbon cycloaliphatic hydrocarbon, or hydroxyaryl-substituted aliphatic hydrocarbon groups, R' is an alkylene, phenylene, alkenylene, alkylenethioalkylene, alkylenedithioalkylene, or alkylenethioalkylenethioalkylene group having up to 12 carbon atoms, m is 0 or 1, n is an integer from 1 to 5, a is an integer from 1 to 4, b, c, d, and e are integers from 0 to 3, provided that the sum of a, b, and c is an integer from 2 to 4, and when c is not zero, the sum of d and e is an integer from 1 to 3.

10. A composition capable of enhancing the tensile strength of an ethylene polymer upon heating at 150° C. comprising (A) at least one organic peroxide or organic azo compound initiator of cross-linking having a half-life measured at 110° C. in the range from 0.1 to 100 hours and (B) at least one ester according to claim 1, in which the portions of (A) to (B) range from 100 to 1 to 1 to 2.

15. An ethylene polymer composition having, as a result of cross-linking in the presence of at least one organic peroxide or organic azo compound initiator of cross-linking having a half-life measured at 110° C. in the range from 0.1 to 100 hours, a tensile strength of at least 130 kg/cm^2, comprising an ethylene polymer which is low density polyethylene, high density polyethylene, or a copolymer of at least 75% ethylene with not more than 25% of at least one co-monomer which is propylene, 1-butene, 1-hexene, vinyl acetate, or ethylene acrylate, and from 0.01 to 2% of an ester according to claim 1.

18. An ethylene polymer composition according to claim 15 in the form of insulation on a conductor of electricity.

4,239,804

METHOD FOR TREATING METAL ARTICLES FOR RUST CORROSION PROTECTION AND ARTICLE PRODUCED THEREBY

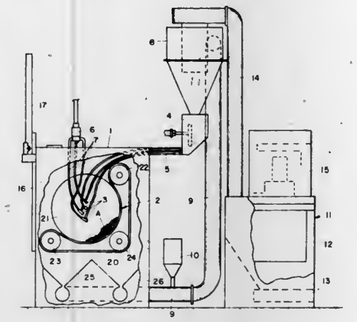
Lewis L. Van Kuiken, Jr., Grand Rapids, Mich., assignor to Progressive Blasting Systems, Grand Rapids, Mich.

Filed Mar. 5, 1979, Ser. No. 17,416

Int. Cl.[3] **B32B** *15/04*

U.S. Cl. 428—409 **14 Claims**

1. A method for treating an article constructed of a normally corrosive metal for the purpose of improving the anticorrosive characteristics thereof comprising the steps of dry blasting the surfaces of said article with propelled glass beads to compressibly peen the surfaces thereof without the glass beads adhering thereto, and thereafter applying a protective coating to said peened surfaces.



12. An article specifically treated for the purpose of corrosion protection comprising a substrate having a surface constructed of a normally corrosive metallic material, such surface having been compressibly peened by blasts of glass beads without the beads adhering to the said surface; and a corrosion protective surface finish on said surface.

4,239,805

METHOD OF DEPOSITING A LAYER OF MAGNETIC BUBBLE DOMAIN MATERIAL ON A MONOCRYSTALLINE SUBSTRATE

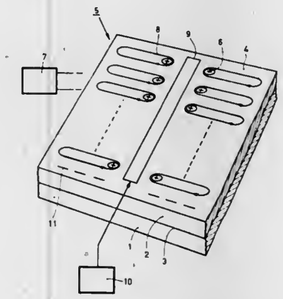
Herman D. Jonker, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,678

Claims priority, application Netherlands, Dec. 13, 1977, 7713759

Int. Cl.[3] **B32B** *9/04;* **H01F** *10/02*

U.S. Cl. 428—446 **4 Claims**



1. A method of depositing an epitaxial layer of a magnetic bubble domain material of rare earth-iron garnet on a monocrystalline substrate, in which method a quantity of starting material is heated so as to form a uniform melt, then cooled to a supersaturated condition at a temperature substantially equal to a temperature T_g, and after which the substrate is contacted with the melt until an epitaxial layer of the desired thickness has been deposited on the substrate, wherein a starting material is chosen which provides an epitaxial layer represented by an atomic formula in which the iron ions are partly substituted by two types of non-magnetic ions, one type, if substituted alone, would give rise to a material with

$$(d/dT_g)\ 4\pi M_s < 0,$$

the other type, if substituted alone, would give rise to a material with

$$(d/dT_g)\ 4\pi M_s > 0,$$

the atomic ratio between the quantities of the two types of non-magnetic ions being chosen such that at T_g

$$1/H_o\ (d/dT_g)\ H_o \text{ is zero or substantially zero,}$$

wherein

$4\pi M_s$ is the saturation magnetization of the material, and

H_o is the bubble domain collapse field.

4. A magnetic bubble domain layer on a substrate comprising a layer of magnetic bubble domain material of rare earth-iron garnet deposited epitaxially on a monocrystalline substrate while using the method of claim 1, 2 or 3.

4,239,806

LAMINATES

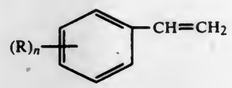
Henry L. Hsieh, and Floyd E. Naylor, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 813,583, Jul. 7, 1977, Pat. No. 4,178,275, which is a division of Ser. No. 636,488, Dec. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 141,996, May 10, 1971, abandoned. This application Apr. 16, 1979, Ser. No. 30,483

Int. Cl.[3] **B32B** *15/08, 27/04*

U.S. Cl. 428—462 **19 Claims**

1. A plurality of layers having between adjacent surfaces thereof as a bonding material therefor an adhesive composition comprising as the rubbery component a radial block copolymer produced by the polymerization of a conjugated diene, styrene, and a hydrocarbyl-substituted styrene of the formula



in which R is a hydrocarbyl radical containing 1 to 12 carbon atoms selected from the group consisting of alkyl, cycloalkyl, aryl, alkenyl, cycloalkenyl, and combinations thereof and n is an integer having a value within the range of 1 to 5, said block copolymer having an inherent viscosity within the range of from about 0.5 to about 3, said conjugated diene containing 4 to 12 carbon atoms per molecule, the weight ratio of conjugated diene to the total weight of said styrene and hydrocarbyl-substituted styrene being within the range of from about 50 to 50 to about 90 to 10, and the ratio of said hydrocarbyl-substituted styrene to the total of said conjugated diene, styrene, and hydrocarbyl-substituted styrene being within the range of from about 1 to about 20 parts by weight of said hydrocarbyl-substituted styrene per 100 parts by weight of the total of said conjugated diene, styrene, and hydrocarbyl-substituted styrene and further wherein said rubbery block copolymer can be represented by the general formula $(A—B)_xZ$ wherein A is a resinous (nonrubbery) polymer block and B is a rubbery polymer block and wherein Z represents the residue from a coupling agent which is capable of coupling two or more (A—B—) polymer blocks together and wherein x represents the number of (A—B—) polymer blocks thus coupled and is greater than two.

4,239,807

POLYAMIDE COATED BASE MATERIAL HAVING AN INTERMEDIATE LAYER OF POLYBUTADIENE

Rainer Feldmann, Marl, and Klaus Gorke, Haltern-Lavesum, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,581

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825707

Int. Cl.³ B05D *3/02*

U.S. Cl. 428—462 **11 Claims**

1. A method of coating a base material with a polyamide coating comprising:

applying to said base material an aqueous dispersion containing in a concentration of about 1 to 70% by weight a liquid polybutadiene having a dynamic viscosity from about 70 to 30,000 millipascal seconds and having a configuration of 40 to 95% of cis-1,4-polybutadiene, 0 to 30% of trans-1,4-polybutadiene, 1 to 60% of 1,2-polybutadiene and, referred to the total polybutadiene, 0.5 to 10% by weight of an emulsifier;

drying said liquid polybutadiene to form an intermediate layer; and

applying polyamide powder to said intermediate layer with sintering to form a polyamide coated base material.

4,239,808

IN-MOLD COATING OF SHEET MOLDING COMPOUND MOLDINGS

Sigurdur I. Arnason, Fenwick, Mich., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 814,502, Jul. 11, 1977, abandoned. This application Jun. 13, 1979, Ser. No. 48,305

Int. Cl.³ B29C *5/00*

U.S. Cl. 428—482 **3 Claims**

1. In a method of coating a rigid automotive part made from sheet moulding compound, after the part is formed between two mold halves and cured, by the injection of the coating composition into a space formed by separating one of the mold halves from the part while maintaining the mold in a sealed condition and then curing the coating composition, the improvement characterized by the coating composition consisting essentially of vinyl ester resin formed by the reaction of a polyepoxide resin with an unsaturated monocarboxylic acid.

3. The product produced by the method of claim 1.

4,239,809

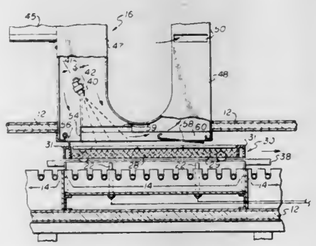
METHOD FOR QUALITY FILM FORMATION

Curtis M. Lampkin; Guy A. Roderick, and Robert B. Nikodem, all of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Filed Mar. 15, 1978, Ser. No. 886,891

Int. Cl.² B05D *5/12*

U.S. Cl. 427—74 **11 Claims**



1. A method of forming a photovoltaic cell, comprising:

forming a spray composed substantially of a film-forming material,

selecting a portion of said spray having preferred characteristics,

selecting a portion of the surface of a glass substrate, and

controlling deposition of said selected portion of said spray to substantially said selected portion of the surface of said substrate.

4,239,810

METHOD OF MAKING SILICON PHOTOVOLTAIC CELLS

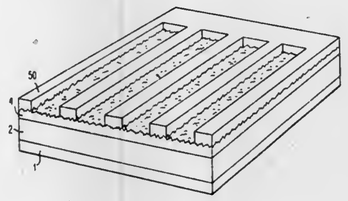
Oussama Alameddine, Schoenaich; Marian Briska, and Klaus P. Thiel, both of Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,540

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754652

Int. Cl.³ H01L *31/18*

U.S. Cl. 427—75 **13 Claims**



1. A method of making silicon solar cells and other silicon photovoltaic cells and comprising the steps of

forming a silicon element having a metallic electrode coating on one surface of said element,

applying to the other surface of said element a coating comprising aluminum and silicon,

heating said coated element at a temperature below the eutectic temperature of aluminum-silicon to form an anti-reflective coating of a fine matrix of silicon pyramids doped with aluminum,

said matrix having an overlying aluminum coating, and removing a portion of said aluminum coating to expose said matrix for use as a photovoltaic cell.

4,239,811

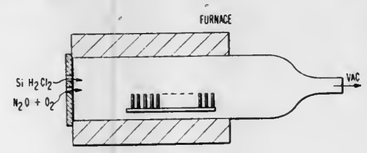
LOW PRESSURE CHEMICAL VAPOR DEPOSITION OF SILICON DIOXIDE WITH OXYGEN ENHANCEMENT OF THE CHLOROSILANE-NITROUS OXIDE REACTION

Bernard M. Kemlage, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1979, Ser. No. 66,965

Int. Cl.³ C23C *11/00*

U.S. Cl. 427—95 **10 Claims**



1. A method for forming a silicon dioxide layer on a semiconductor substrate in a furnace heated reaction zone of a chemical vapor deposition reactor having an input end for gaseous reactants wherein the said layer is not subject to degradation during subsequent oxidation cycles comprising:

mixing a gaseous chlorosilane with nitrous oxide gas in the reactor; and

adding oxygen gas between about 0.25% to 10% by volume of total reactive gas mixture to said chlorosilane and nitrous oxide gases in the said reaction zone where the temperature is between about 800° C. to 1200° C. in a pressure of less than about 5 torr to deposit said silicon dioxide layer onto said substrate.

4,239,812

SOLDERING FLUX

Kenneth G. Boynton, Wilton, N.H., assignor to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 654,366, Feb. 2, 1976, which is a division of Ser. No. 469,536, May 13, 1974, Pat. No. 3,973,322. This application Jan. 30, 1978, Ser. No. 873,208

Int. Cl.³ B05D *3/00;* **B23K** *35/34;* **C08L** *91/06, 93/04*

U.S. Cl. 427—96 **16 Claims**



1. A new use for a wax, as a combination cement, and a carrier for a flux active agent, for mass applying to an apertured circuit board prior to mass solder joining electrical and electronic components to said board, comprising the steps of:

(1) providing a wax which: (a) is compatible with said flux active agent and said solder, (b) has a melting point below that of said solder, and (c) is capable of forming a solid matrix in which said components and said board are retained in a fixed relationship;

(2) heating said wax in combination with said flux active agent so as to produce a liquid mixture of said wax and said flux active agent;

(3) applying said resulting liquid mixture onto said circuit board so as to fill said board apertures at least in part; and

(4) hardening said liquid mixture in said apertures.

4,239,813

PROCESS FOR FORMING PRINTED WIRING BY ELECTROLESS DEPOSITION

Kanji Murakami; Mineo Kawamoto; Yoichi Matsuda; Motoyo Wajima, and Hirosada Morishita, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 25, 1979, Ser. No. 33,218

Claims priority, application Japan, Apr. 25, 1978, 53/48331

Int. Cl.³ C23C *3/02;* **H01B** *5/14*

U.S. Cl. 427—98 **8 Claims**

1. A process for forming printed wiring on an insulating substrate by using electroless deposition which comprises

forming an adhesive layer containing a photo-setting substance on the substrate,

exposing the adhesive layer to actinic light imagewisely so as to irradiate only portions other than those forming wiring,

treating the surface of the substrate with a roughening solution so as to roughen the portions not exposed to actinic light,

treating the surface of the substrate with a catalyst solution for activation for electroless deposition,

contacting the surface of the substrate with a stripper for the catalyst, and

conducting electroless deposition so as to form prescribed wiring on the substrate.

4,239,814

METHOD OF PRODUCING ELECTRICALLY INSULATING, HIGHLY FLEXIBLE AND/OR SOLDERABLE COATINGS

Klaus Nagel, Wuppertal, Fed. Rep. of Germany, assignor to Herberts Gesellschaft mit beschrankter Haftung, Wuppertal, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,650

Claims priority, application Austria, Sep. 19, 1977, 126699/77

Int. Cl.³ B05D *3/02, 7/20;* **H01B** *3/42*

U.S. Cl. 427—120 **10 Claims**

6. A solution for the production of electrically insulating highly flexible and/or solderable coatings on electric conductors or fibre materials, said solution comprising:

(i) isocyanates masked with compunds having reactive hydrogen atoms in the molecule and selected from the group consisting of acid amides having 1 to 2 amide hydrogen atoms, hydroxylamine, reaction products of hydroxylamine with carbonyl compounds, imines having an imine hydrogen atom, and lactams with melting or sublimation points below 25° C.;

(ii) polyester resins and modified polyester resins selected from the group consisting of imide-modified polyester resins, amide-modified polyester resins and, mixtures thereof, said polyester resins and modified polyester resins having a content of terminal hydroxyl groups of from 1 to 16% by weight and being derived from compounds selected from the group consisting of polyhydric alcohols, aliphatic carboxylic acids, polybasic carboxylic acids having carboxyl groups bonded to an aromatic ring, and amino group containing compounds; and

(iii) solvents having from 1 to 10 carbon atoms, a boiling point of at most 250° C. and being selected from the group consisting of araliphatic ketones, aliphatic ketones, araliphatic alcohols, aliphatic alcohols, ether oxygen-containing araliphatic alcohols, ether oxygen-containing aliphatic alcohols, araliphatic ketoalcohols, esterified aliphatic alcohols, and esterified araliphatic alcohols.

4,239,815

METHOD OF PRODUCING RECORDING SHEETS

Hajime Kato, and Yasuhiro Ogata, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Dec. 7, 1978, Ser. No. 967,460

Claims priority, application Japan, Dec. 7, 1977, 52-146877

Int. Cl.³ B41M *3/12*

U.S. Cl. 427—150 **12 Claims**

1. A method of producing a recording sheet which comprises coating a support first with a coating composition containing a water-soluble polyvalent metal salt and then with a coating composition containing an alkali metal salt or ammonium salt of an aromatic carboxylic acid.

4,239,816

ORGANIC ADDITIVES FOR ORGANOMETALLIC COMPOSITIONS

J. Shannon Breininger, Gibsonia, and Charles B. Greenberg, Murrysville, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,663

Int. Cl.³ B05D *1/02, 3/02, 5/06;* **C01C** *17/25*

U.S. Cl. 427—168 **7 Claims**

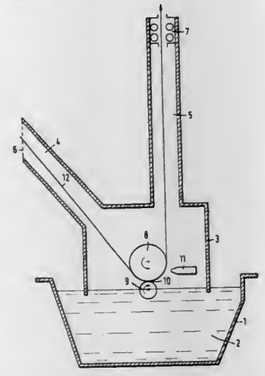
1. In a method for forming metal oxide films by contacting a hot surface with a coating composition comprising an organometallic coating reactant which thermally decomposes to a metal oxide, the improvement which comprises adding to said coating composition a relatively nontoxic organic compound having a boiling point of at least 200° C.

4,239,817

PROCESS AND APPARATUS FOR COATING ONE SIDE OF A METAL STRIP WITH MOLTEN METAL

Joachim Koenitzer; Heinrich Schmitz, both of Dinslaken, and Kurt Jindra, Voerde, all of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hütte, Duisburg, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 33,898
Int. Cl.³ C23C *1/16*
U.S. Cl. 427—211 **11 Claims**



1. A process for coating one side of a metal strip with a molten metal from a melting bath, comprising the steps of

continuously conveying a previously cleaned and heated metal strip through a protective gas atmosphere partially around a supporting roller and above the level of the melting bath of the molten metal for bringing the metal strip into contact with the molten metal,

supporting the metal strip on a rear or reverse side thereof on the supporting roller in the area of contact with the molten metal, and

conveying the molten metal from the melting bath towards the supported area of the strip with a scoop roller immersed in the melting bath by more than half its surface area but only by part, which scoop roller together with the supporting roller forms an adjustable slot for the passage therebetween of the metal strip.

4,239,818

PROCESS AND MATERIAL FOR TREATING STEEL WALLS AND FANS IN ELECTRICAL PRECIPITATION INSTALLATIONS WITH MICRON COLLOIDAL GRAPHITE PARTICLES

Michael D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 956,497, Nov. 1, 1978, Pat. No. 4,187,334. This application Jul. 20, 1979, Ser. No. 59,303
Int. Cl.³ B05D *7/22, 3/02, 3/00, 3/12*
U.S. Cl. 427—236 **5 Claims**

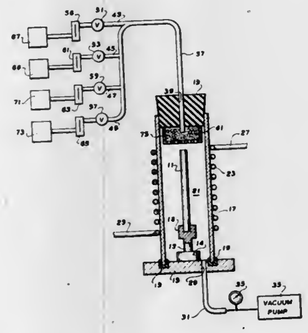
1. A process of treating the inner steel walls and fluid handling and moving devices in electrical precipitation installations that consists essentially of the steps of cleaning said steel walls and devices, penetrating a liquid suspension of micro micron particles of graphite into said cleaned steel walls and devices so as to build up a smooth adhering and lubricating coating on said steel walls and devices, said suspension including substantially between about 5% to 25% micro micron particles of graphite by weight, between about 34% to 75% by weight of a solution of water and sodium silicate, with the sodium silicate present at about 40% of the solution, between about 2% to 10% by weight concentrated hydrochloric acid, between about 33% and 75% by weight of a solution of water and carboxy vinyl polymer resin wherein the resin is present in amounts between about 1% to 10% of the solution and between about 15% to 20% by weight water and drying said coating to form a slick smooth surface.

4,239,819

DEPOSITION METHOD AND PRODUCTS

Robert A. Holzl, La Canada, Calif., assignor to Chemetal Corporation, Pacoima, Calif.

Continuation-in-part of Ser. No. 797,059, May 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 588,390, Jun. 18, 1975, Pat. No. 4,040,870, which is a continuation-in-part of Ser. No. 358,110, May 7, 1973, abandoned. This application Dec. 11, 1978, Ser. No. 968,074
Int. Cl.³ C23C *11/08*
U.S. Cl. 427—255.2 **29 Claims**



1. A method for depositing a hard, fine grained alloy onto a substrate, comprising providing a volatile, gaseous halide of a metal or semi-metal, partially reducing the volatile halide in a first reaction zone by a gaseous reducing agent or particulate metal or semi-metal which is the same as the metal or semi-metal of the volatile halide to be reduced, said first reaction zone having a first pressure and separated from the surface of said substrate, flowing said partially reduced halide into a second reaction zone maintained at a pressure lower than the pressure in said first reaction zone and containing said substrate, providing a gaseous alloying agent in said second reaction zone, and depositing a liquid phase intermediate compound onto a substrate within said second reaction zone, and thermochemically reacting the liquid phase on the substrate to produce the fine grained alloy.

27. A hard metal alloy produced from a volatile halide of a metal partially reduced to form a liquid compound containing said alloy which is deposited onto a substrate and thermochemically reacted to produce said alloy, said alloy comprised of a metal selected from the class consisting of aluminum, hafnium, columbium, zirconium and tantalum, and an alloying element selected from the class consisting of nitrogen, boron, carbon and silicon, said alloy being free of columnar crystals and having a crystal structure consisting of fine and substantially equiaxial grains less than about 1 micron in diameter.

4,239,820

METHOD FOR CREATING A SIMULATED STONE SURFACE OR THE LIKE

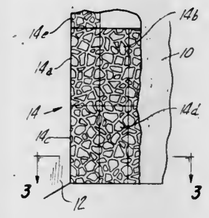
Silvano E. Salvador, 20490 Melvin, Livonia, Mich. 48152

Continuation of Ser. No. 702,505, Jul. 6, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 875,531
Int. Cl.³ B05D *1/32, 3/12, 5/00*
U.S. Cl. 427—272 **1 Claim**

1. The method of creating a simulated stone surface or the like on a surface area which comprises the steps of:

(a) preparing first and second rectangular patterns, each pattern having one adhesive side and having a series of interconnected mortar line simulating strip portions extending in a plurality of directions with open areas there-

between, said step of preparing including (i) partially die cutting sheet material to the desired pattern configuration while leaving the die-cut portions in place, (ii) coating the sheet material with said adhesive, and (iii) removing and discarding the die-cut portions of the sheet material other than the interconnected mortar line strip portions, each of said patterns having a plurality of the strip portions terminating with uniform widths at the edges of the rectangular pattern at each of a plurality of preselected locations, the distance between two adjacent ones of said locations along a first edge of said rectangular pattern differing substantially from the distance between at least two other adjacent ones of said locations along said first edge of said rectangular pattern, said locations along said first edge of said rectangular pattern having locations and spacings along said first edge from an edge perpendicular to said



first edge the same as the locations and spacings along a second edge of said rectangular pattern parallel with said first edge, so that the unifrom width terminations of the strip portions along said first or second edges of each pattern are aligned into abutting mating relationship when the first or second edge of the first pattern abutts the first or second edge of the second pattern;

(b) adhering said first and second patterns in said mateable abutting relationship to the surface area by means of their respectiive adhesive sides; applying a plastic settable composition to the surface area overlying

(c) at least the open areas of the first and second patterns; and

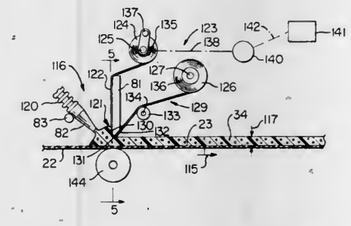
(d) thereafter removing the first and second patterns from the surface area together with any of the composition overlying said mortar line strip portions.

4,239,821

APPARATUS FOR AND METHOD OF COATING A WEAR LAYER OF A CARPETING STRIP WITH CURABLE LATEX FOAM

Michael E. McLean; Rufus N. Ensley, both of Waynesville; Doyle V. Haren, Clyde, all of N.C., and Anthony J. Alcaraz, Petersburg, Va., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 10, 1979, Ser. No. 28,784
Int. Cl.³ B32B *3/00;* B05D *3/12, 3/02;* B05C *3/02*
U.S. Cl. 427—358 **20 Claims**



15. In a method of continuously making carpeting strip comprising; continuously moving a wear layer having a bottom surface in a rectilinear path; continuously coating said bottom surface with a thickness of latex foam during continuous movement of said wear layer; and continuously coating step comprising supporting a coating knife in spaced relation at a fixed position above said bottom surface to define a controlled thickness of said latex foam and continuously providing said latex foam through a nozzle upstream of said knife during continuous movement of said wear layer; and curing said latex foam to define a compressible backing material for said wear layer of said carpeting strip; the improvement in said method wherein said continuously coating step comprises replacing a foam engaging portion of said knife while continuously using said knife to define said controlled thickness of foam.

4,239,822

PROPYLENE/POLYSTYRENE COMPOSITION AND METHOD FOR COATING

Theodore L. McGee, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 836,835, Sep. 26, 1977, Pat. No. 4,183,845. This application Jun. 22, 1979, Ser. No. 51,070
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—358 **5 Claims**

1. A process of coating a substrate with an extruded film of a polymer blend comprising:

providing a blend of polystyrene and a polypropylene having a melt flow rate, as determined by ASTM-1238-G, within the range of about 30 to about 40 grams per ten minutes, the ratio of polypropylene to polystyrene in the blend being within the range of about 5:1 to 2:1;

extruding said polymer blend without substantial degradation at a melt temperature of about 475° F. to about 575° F. to contact said substrate;

passing said coated substrate to contact a chill roll maintained at a temperature of about 120°–200° F. to form an adhered layer of said extruded polymer blend on said substrate.

4,239,823

AUTOMOBILE SOUND INSULATING PANEL AND METHOD OF MAKING SAME

Anthony J. Alcaraz, Petersburg; Christopher W. Chandler, Sandston; Thomas G. Edmundson, Midlothian, all of Va., and James P. Nolan, deceased, late of Chester, Va. (by Evelyn L. Nolan, executrix), assignors to Dayco Corporation, Dayton, Ohio

Filed Feb. 21, 1979, Ser. No. 13,651
Int. Cl.³ B05D *1/30*
U.S. Cl. 427—420 **8 Claims**

1. In a method of making a sound insulating panel for an automobile and comprising the steps of, forming a contoured fibrous pad, coating said pad with a liquid plastisol layer, and curing said plastisol layer, the improvement wherein said coating step comprises the steps of continuously moving said pad on a conveyor having openings therein, disposing an open top elongate trough vertically above said conveyor and pad, and flowing entirely by gravity a solid curtain of liquid foamed plastisol from said trough against at least one surface of said pad while continuously moving said pad thereunder, said curtain extending across one full dimension of said pad while moving said pad at a constant speed through said curtain, said liquid foamed plastisol upon curing thereof defining a foamed plastisol layer bonded against said pad, said layer having randomly disposed air pockets throughout which serve to reduce the overall weight of said panel while improving the acoustical properties thereof.

4,239,824

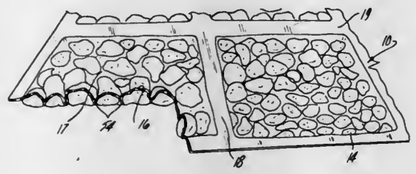
LANDSCAPE BLANKET

Walter Kasten, Franklin, Mich., assignor to X Incorporated, Franklin, Mich.

Division of Ser. No. 847,399, Oct. 31, 1977, Pat. No. 4,154,637, which is a continuation-in-part of Ser. No. 747,979, Dec. 6, 1976, abandoned. This application Dec. 4, 1978, Ser. No. 965,948

Int. Cl.[2] B44F *7/00*

U.S. Cl. 428—13 **10 Claims**



1. A landscape blanket for covering the ground comprising; particles of stone material of irregular size arranged in a single, random layer in contacting relation to each other and to form irregular surfaces at opposite sides of said layer, a pair of thin and transparent sheets of flexible resin film of substantially uniform thickness disposed on and contacting opposite sides of said layer of particles and conforming to and being bonded to a substantial surface portion at opposite sides of said layer to encapsulate and hold said stone particles in flexible adjacent relationship to each other, said sheets of resin forming irregular finished surfaces at opposite sides of said blanket.

4,239,825

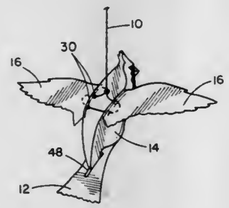
BIRD ORNAMENT

William P. Kaulfuss, Wilmette, and Robert H. Kaulfuss, Northbrook, both of Ill., assignors to Kaulfuss Designers Incorporated, Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,354

Int. Cl.[2] A63H *33/16;* **G09F** *1/08*

U.S. Cl. 428—16 **4 Claims**



1. A manually assembled bird ornament comprising:

a paper blank having a specie of bird printed thereon, said blank having a pair of body portions, a pair of wing portions and a tail portion, each of said portions being defined by a crease line in the blank, said body portions being intermediate said wing portions and said tail portion and carrying integral locking tabs thereon, said tail portion having a slot therein adapted to receive said tabs to accurately depict the bird in a lifelike position when the body portions are manually folded along a pair of said crease lines to positions wherein said body portions are substantially parallel to each other, said wing portions being folded outwardly and substantially perpendicular to said body portions when the body portions are brought into parallelism, and means carried on said body portions for suspending the ornament in said lifelike position from a fixture.

4,239,826

MULTI-LAYER BARRIER FILM

Jack E. Knott, II, Menasha, and James C. Wang, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 28, 1978, Ser. No. 973,925

Int. Cl.[3] B32B *9/04, 27/08*

U.S. Cl. 428—35 **26 Claims**

1. A delamination resistant multi-layer structure comprising a barrier layer of a substantially pure polymer or copolymer of vinyl alcohol having less than about 1.5 mole percent remaining vinyl acetate groups and an adjacent adherent layer consisting essentially of a partially hydrolyzed vinyl acetate polymer or copolymer which has at least about 5 mole percent remaining vinyl acetate groups.

17. A delamination resistant coextruded multi-layer structure comprising

(a) a core layer of a substantially pure ethylene vinyl alcohol copolymer having less than about 1.5 mole percent remaining vinyl acetate groups;

(b) an adherent layer adhered on each side of the core layer, the adherent layer consisting essentially of partially hydrolyzed polyvinyl acetate or partially hydrolyzed ethylene-vinyl acetate copolymer, to result in a polymer having at least about 5 mole percent remaining vinyl acetate groups;

(c) an outer polymer layer over at least one of the adherent layers, the outer layers being independently selected from the group which consists of polyethylene, polypropylene, ethylene vinyl acetate copolymer, ethylene acrylic acid copolymer, blends of two or more of the foregoing polymers, nylon, and ionomers.

4,239,827

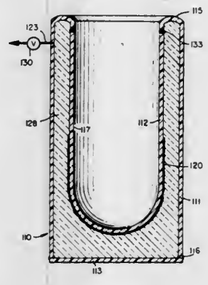
FLAME-SPRAYED THERMOPLASTIC SUBSTRATE IS COATED WITH AN ADHESIVE LAYER WHICH BONDS PARTICLES OF AN ADSORBENT LIKE CARBON TO THE SUBSTRATE

Frank Notaro, Amherst, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,601

Int. Cl.[3] B05D *1/08, 1/10;* **B65D** *11/16, 11/20, 85/70*

U.S. Cl. 428—35 **15 Claims**



1. A thermoplastic polymeric wall member having a surface flame-sprayed with a material selected from the group consisting of carbon, ceramics, metals, metal oxides, metal alloys, and mixtures thereof, with a substantially single pellet layer of activated carbon pellets adhesively bonded to the flame-sprayed surface.

2. An enclosed double-walled insulation space bounded by a thermoplastic polymeric wall member according to claim 1, wherein the activated carbon-coated surface is disposed interiorly in the insulation space.

3. A method of forming a particulate coating on a thermoplastic polymeric surface, comprising the steps of:

(a) flame spraying said thermoplastic polymeric surface with a material having a surface free energy which is greater than that of said thermoplastic polymeric surface;

(b) applying adhesive to the flame-sprayed thermoplastic polymeric surface; and

(c) applying a particulate material to the adhesive-applied, flame-sprayed thermoplastic polymeric surface, whereby said particulate material is adhesively bonded to the flame-sprayed surface to form said particulate coating thereon.

4,239,828

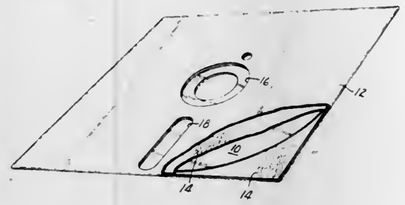
SELF-LUBRICATING MAGNETIC RECORDING DISKETTE

Constance J. Knope, Roseville, and Kent A. Kirkevold, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 512,474, Oct. 7, 1974, abandoned. This application Mar. 29, 1976, Ser. No. 671,573

Int. Cl.[2] B32B *3/02*

U.S. Cl. 428—64 **9 Claims**



1. Method of extending the useful life of a flexible magnetic recording disk which is contained in an envelope to which a wiping fabric is attached in facing relationship to the disk comprising the steps of

(1) applying to the wiping fabric a dilute solution of a lubricant primarily comprising a highly fluorinated alkyl polyether having a viscosity index as herein defined of about 10–130, and

(2) evaporating the solvent to provide about 1–20 parts by weight of the lubricant per 100 parts by weight of the fabric.

4. A diskette comprising an envelope containing a flexible magnetic recording disk and a tissue-like wiping fabric attached to the envelope in facing relationship to the disk, characterized by the fact that

the fabric is impregnated with a lubricant primarily comprising a highly fluorinated alkyl polyether having a viscosity index as herein defined of about 10–130, there being about 1–20 parts by weight of the polyether per 100 parts by weight of the fabric.

4,239,829

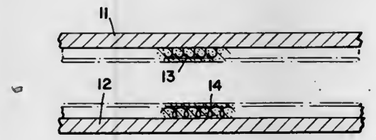
ADHESIVE BONDING OF HOOK AND LOOP TYPE FABRIC SURFACES

Howard S. Cohen, 2001 Lincoln St., Berkeley, Calif. 94709

Filed Feb. 4, 1980, Ser. No. 118,456

Int. Cl.[3] B32B *3/06, 7/10, 31/12*

U.S. Cl. 428—86 **4 Claims**



1. A method for permanently bonding two objects, comprising the steps of securing a hook fabric portion to one of said objects, securing a loop fabric portion to the other of said objects, said hook and loop portions being adapted for mutual engagement and retention upon impingement, applying a resin compound to one of said portions, applying a resin catalyst to the other of said portions, bringing said objects together to impinge said hook and loop portions and intermix said resin and catalyst, said hook and loop portions mutually engaging to retain said objects together while said resin and catalyst react, thereafter curing said resin and catalyst to form a hardened, fiber reinforced resin bond between said portions.

3. A construction for joining permanently two objects, comprising a first member joined to a first object and including a hook fabric portion extending outwardly therefrom, a second member joined to a second object and including a loop fabric portion extending outwardly therefrom, said hook fabric portion engaging said loop fabric portion, and an adhesive compound layer in which said hook and loop fabric portions are embedded, said adhesive compound joining permanently said first and second members.

4,239,830

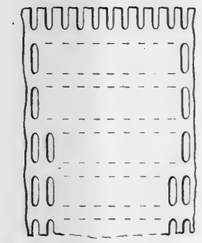
WEBBED PLASTIC TUBING

Harry Ball, 116 Wyckoff Ave., Piscataway, N.J. 08854

Filed Mar. 29, 1979, Ser. No. 24,961

Int. Cl.[3] B29C *17/14*

U.S. Cl. 428—136 **7 Claims**



1. A method for making non-woven webbed plastic tubing, comprising the steps of:

forming a tubular member by extruding a thermoplastic polymer onto the smaller diameter end of an elongated cylindrical shaft having a larger diameter other end constituting a mandrel, with a frustoconical transition portion between said ends;

cooling the extruded tubular member to a temperature at which the polymer is still warm and plastic;

cutting a plurality of slits in the cooled tubular member by reciprocating against said smaller diameter end of said shaft adjacent said transition portion, a plurality of longitudinally oriented knife blades disposed radially of said shaft, to form a corresponding plurality of longitudinally elongated slits in said cooled tubular member; and

moving said cooled slitted tubular member along said shaft, through said transition region and onto said mandrel to enlarge the diameter of said tubular member and increase the size of the slits therein.

7. A product made by the process of one of claims 2, 3, 4, 5, 6 or 1.

4,239,831

PROTECTED LUMBER

Thomas W. E. Pattenden, Mississauga, Canada, assignor to Du Pont Canada, Inc., Montreal, Canada

Filed May 23, 1979, Ser. No. 41,602

Int. Cl.[3] B32B *23/02*

U.S. Cl. 428—193 **11 Claims**

1. A lumber cover having a top panel, two side panels and two end panels, said panels being made of a wrapping material selected from the group consisting of (a) a fabric made from woven oriented tapes of polyethylene, said fabric being coated

with a layer of polyethylene at least about 15 μm in thickness containing a particulate metallic filler selected from the group consisting of aluminum, brass and bronze, in an amount sufficient to provide a light transmittance through the wrapping material in the 450 to 700 nm wavelength range of less than about 30%, and (b) a fabric made from woven oriented tapes of polypropylene, said fabric being coated with a layer of polypropylene at least about 15 μm in thickness containing a particulate metallic filler selected from the group consisting of aluminum, brass and bronze, in an amount sufficient to provide a light transmittance through the wrapping material in the 450 to 700 nm wavelength range of less than about 30%, said panels being of a size such that the cover substantially conforms to a rectangular prismoidal stack of lumber.

4,239,832

ADHESIVELY CORRECTABLE TRANSFER MEDIUM WITH DELAYED ALTERATION RESISTANCE CHARACTERISTICS

Victor Barouh, Old Westbury; George Rottmann, Jackson Heights, and Salvatore DeSimone, Brooklyn, all of N.Y., assignors to Eaton Allen Corp., Brooklyn, N.Y.

Division of Ser. No. 817,773, Jul. 21, 1977, which is a continuation-in-part of Ser. No. 781,023, Mar. 24, 1977, Pat. No. 4,161,551. This application Nov. 30, 1978, Ser. No. 965,166
The portion of the term of this patent subsequent to Jul. 17, 1996, has been disclaimed.
Int. Cl.³ B41J *31/05, 31/06;* B41M *3/14*
U.S. Cl. 428—539 **4 Claims**



1. In a typewriter ribbon having a thin flexible substratum and an image yielding transfer layer capable of producing indicia which, in connection with typing bond, are initially adhesively removable and exhibit a delayed alteration resistance, wherein the improvement comprises said transfer layer including a water soluble salt which reacts with paper, said water soluble salt being selected from the group consisting of cupric chloride, ammonium acetate, calcium thoicyanate, potassium acetate, barium chloride, potassium permanganate, lithium acetate, iodine trichloride and strontium hydroxide.

4,239,833

GRID OF PRECIOUS METALS FOR THE RECOVERY OF PLATINUM METALS ESCAPING FROM A CATALYST DURING THE REACTION, AND ESPECIALLY OF PLATINUM DURING OXIDATION OF AMMONIA

Tadeusz Retmaniak; Mieczyslaw Marek; Pawel Polak; Andrzej Brzeski, all of Warsaw; Janusz Nyc, Ursus, wy; Boleslaw Skowronski, Pulawy; Kazimierz Kozlowski, Pulawy; Antoni Springwald, Pulawy; Henryka Weglarska-Zagorna, Pulawy; Eugeniusz Blasiak, Chorzow; Jerzy Studencki, and Andrzej Skalski, both of Pulawy, all of Poland, assignors to Mennica Panstwowa, Warsaw and Instytut Nawozow Sztucznych, Pulawy, both of, Poland

Filed Dec. 28, 1978, Ser. No. 973,984
Int. Cl.³ B22F *3/00*
U.S. Cl. 428—567 **3 Claims**

1. In a grid of precious metals for the recovery of platinum metals escaping from a catalyst during the reaction, especially of platinum during oxidation of ammonia, wherein the grid contains wires of different thickness in the weave which are made of the known precious metals used for the recovery, the improvements which are characterized in that for pressureless catalytic processes the difference in the thickness of wires in the weave is from 30% to 400%, for medium-pressure catalytic processes the difference in the thickness of the wires is from 60% to 600%, for high-pressure catalytic processes the difference in the thickness of the wires is from 100% to 1000%, and in that the thicker wires in the weave are arranged between every 10 to 200 of the thinner wires.

4,239,834

METAL SUBSTRATE FORMATION WITH TORX RECESS MANDREL

James R. Cunningham, Collegeville, Pa., assignor to Matthey Bishop Incorporated, Malvern, Pa.

Filed Dec. 29, 1978, Ser. No. 974,503
Int. Cl.³ B23B *33/00*
U.S. Cl. 428—592 **9 Claims**



1. A metal substrate comprising an elongated Inconel mandrel having a body and first and second ends; a plurality of wrappings of metal substrate material disposed around said mandrel, and including alternate layers of planar metal foil and corrugated metal foil; means for maintaining said wrappings and mandrel integral; said mandrel having a drilled hole in said first end thereof; and a torx recess formed in said mandrel second end, said second end being headless and having a slight taper from the mandrel body toward the second end.

2. A method of high speed production of metal substrates, utilizing a winding machine, comprising the steps of

providing an elongated mandrel having a body and first and second ends, a drilled hole being provided in the first end of the mandrel, and a torx recess in the second end of the mandrel, with the second end being headless and having a slight taper from the mandrel body toward the second end;

affixing a web of metal substrate material to the mandrel, the web including a first web of substantially planar metal foil and a second web of corrugated metal foil;

automatically indexing the torx recess of the mandrel into operative engagement with a male drive bit of the winding machine;

rotating the male drive bit to wrap the web of metal substrate material around the mandrel, while the web of metal substrate material is fed to the mandrel and while maintaining tension on the web of metal substrate material, until a metal substrate of desired size is obtained; and

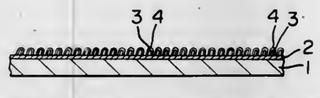
cutting the web of metal substrate material, and attaching the cut end thereof to underlying portion of the metal substrate.

4,239,835

MAGNETIC RECORDING MEDIUM

Yasuo Iijima; Koichi Shinohara, both of Kobe; Takashi Fujita; Masaru Odagiri, both of Kawanishi, and Toshiaki Kunieda, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 13, 1977, Ser. No. 815,301
Claims priority, application Japan, Jul. 15, 1976, 51/84829; Sep. 24, 1976, 51/115271; Sep. 28, 1976, 51/116932; Nov. 5, 1976, 51/133378
Int. Cl.³ H01F *1/06, 1/33*
U.S. Cl. 428—611 **9 Claims**



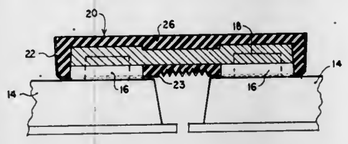
1. A thin metal film type magnetic recording medium which comprises a plastic film or non-magnetic metal substrate, a thin film less than about 3000 Å thick of a ferromagnetic metal or alloy having a columnar crystal structure inclined at an angle of less than 60° relative to the normal to said substrate wherein the columnar crystals are substantially the same height, having been continuously formed by vacuum deposition, and a layer of an oxide of a ferromagnetic metal or alloy coated on said columnar crystals.

4,239,836

SYSTEM FOR PROTECTING AND SEALING INTERCELL CONNECTING LINKS AND POLES OF INDUSTRIAL BATTERIES

William A. Picciolo, King, N.C., assignor to Douglas Battery Manufacturing Co., Winston-Salem, N.C.

Filed Apr. 16, 1979, Ser. No. 30,110
Int. Cl.³ H01M *2/34*
U.S. Cl. 429—65 **2 Claims**



1. In an apparatus for protecting and sealing poles and intercell connecting links of industrial batteries of the type in which a plurality of cells are grouped together and wherein a pole of one cell is connected to a pole of an adjacent cell by means of a connecting link, the improvement in said apparatus which comprises:

(a) a retaining cap including a bottom wall, side wall, and an open top;

(b) said bottom wall including openings therein corresponding in size, shape, and spacing to the poles of adjacent battery cells which are received, when assembled, through the upper ends of the cells and are joined by said connecting link;

(c) said bottom wall, when assembled lying between said connecting link and the upper surface of the corresponding cell; and

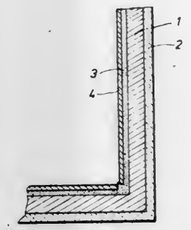
(d) said retaining cap containing an encapsulating mixture surrounding said connecting link and substantially the entire exposed cell terminal cover bushing, said encapsulating mixture being a substance having the capabilities of flowing in its uncured state, resealing itself after puncture, remaining stable during exposure to a broad range of temperatures, resisting adherence to styrene and lead, and resisting damage from sulfuric acid.

4,239,837

ELECTROCHEMICAL STORAGE CELL

Bernd Hartmann, Sandhausen, and Herbert Kleinschmager, Eppelheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,805
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1978, 2814905
Int. Cl.² H01M *10/38*
U.S. Cl. 429—104 **16 Claims**



1. An electrochemical storage cell or battery with at least one anode chamber for an alkali metal as the anolyte and with at least one cathode chamber for a sulfur-containing catholyte substance, with the anode chamber and the cathode chamber separated from each other by an alkali-ion-conducting solid electrolyte and the cell confined by a cell wall of metal, particularly of a light metal or steel, the improvement comprising a protective layer having two sublayers consisting of an inner sublayer adjacent the cell wall and an outer sublayer adjacent the inner sublayer for long-life corrosion protection of the metal cell wall, by applying to the metal cell wall, at least to that part of the metal cell wall which is in contact with the catholyte substance, a foil of corrosion-resistant material 0.01 to 0.2 mm thick as the outer sublayer by means of a conductive adhesive as the inner sublayer which retains its adhesive properties at operating temperatures of the cell, and a protective layer of corrosion-resistant material applied to the outside of the cell housing in addition to the layer applied to the cell wall on the inside.

4,239,838

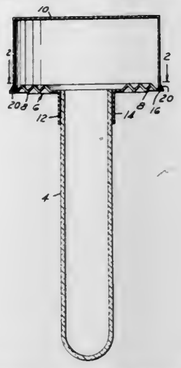
ENERGY CONVERSION DEVICE WITH IMPROVED SEAL

Gerald R. Miller, Salt Lake City, and Anil V. Virkar, Midvale, both of Utah, assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 5, 1979, Ser. No. 91,284
Int. Cl.³ H01M *2/00*
U.S. Cl. 429—104 **22 Claims**

1. In an energy conversion device comprising a cation-permeable casing, which is a barrier to mass liquid transfer, sealed to and supported by one surface of a member, wherein the improvement consists essentially of said sealing member comprising a metal substrate which (i) bears a non-conductive

and corrosion resistant coating on the major surface to which said casing is sealed and (ii) is corrugated so as to render it



flexible, thereby allowing said member to move relative to said casing without cracking the seal therebetween.

4,239,839

MULTI-CELL BATTERIES

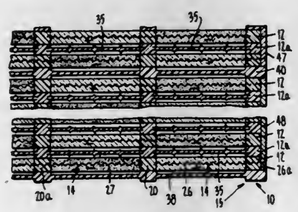
William L. McDowall, Glen Waverley, and Alan K. Maplesden, Kew, both of Australia, assignors to Dunlop Australia Limited, Melbourne, Australia

Filed May 30, 1979, Ser. No. 43,822

Claims priority, application United Kingdom, May 31, 1978, 25532/78

Int. Cl.³ H01M *2/24*

U.S. Cl. 429—154 **3 Claims**



1. A multi-cell battery comprising:

a first assembly of frames,

a second assembly of frames, and

barrier means interposed between said first and second assemblies of frames for electrically and chemically isolating said first and second assemblies from one another;

each of said first and second assemblies of frames comprising:

a plurality of frames secured together in side by side relation, each frame of each assembly having spaced division elements defining with the perimeter of the frame a plurality of support areas arranged side by side across the width of the frame, the perimeter and division elements of the frames in the respective assemblies being secured together in sealed relation so that the perimeters form outer walls of the battery and the division elements form partitions between adjacent cells of the battery, the frame at one end of each assembly of frames having the perimeter and division elements thereof secured in sealed relation to respective opposite sides of the barrier means,

individual masses of active battery material supported in each support area of the frames in each assembly so that each support area forms a plate of the battery, the active battery material in respective areas being selected so that adjacent areas in the same frame form plates of opposite polarity and corresponding areas in adjacent frames of the same assembly form plates of opposite polarity, and

an electrolyte porous insulating separator member between the active battery material of opposite polarity in said corresponding areas,

the first and second assemblies of frames thereby forming independent multi-cell batteries on opposite sides of the barrier means.

4,239,840

PRESSURE CONTACT CONSTRUCTION FOR DRYCELL BATTERIES

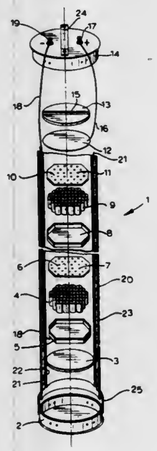
Ashok K. Puri, Toronto, Canada, assignor to Union Carbide Canada Limited, Toronto, Canada

Continuation-in-part of Ser. No. 902,015, May 1, 1978, abandoned. This application Nov. 14, 1979, Ser. No. 93,964

Claims priority, application Canada, Jun. 15, 1977, 280561

Int. Cl.³ H01M *6/42*

U.S. Cl. 429—159 **5 Claims**



1. A battery canister comprising:

(a) a first set of drycell batteries positioned in a first electrically conductive tray of polygonal configuration and having an upturned edge thereon wherein said batteries are firmly positioned in said tray providing a tight fitting for said batteries, the negative terminals of said batteries being connected in parallel by contact with the base of said tray;

(b) a second set of drycell batteries positioned in a second electrically conductive tray of polygonal configuration and having an upturned edge thereon wherein said batteries are firmly positioned in said tray, the negative terminals of said batteries being connected in parallel by contact with the base of said tray;

(c) said second tray being stacked above said first tray wherein the positive terminals of said first set of drycell batteries are connected in parallel by contact with the bottom surface of said second tray, said second tray being aligned with respect to said first tray whereby the positive terminals of said first set of drycell batteries are positioned below the negative terminals of said second set of drycell batteries and connected in series therewith by pressure contact providing a tight overall construction, each of said first tray and second tray being of pliant material to conform to the countour of the contacting terminals of the batteries on the adjacent tray;

(d) each of said first tray and second tray being positioned within a sealed casing and electrically insulated therefrom, the base of said first tray being connected to a negative terminal on said casing and the positive terminals of said second set of drycell batteries being connected to a positive terminal on said casing.

4,239,841

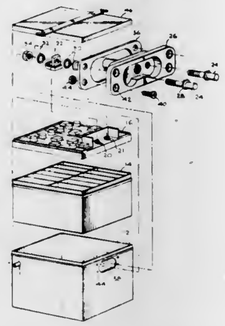
AIRCRAFT BATTERY

David L. Rorer, Redlands, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 10, 1979, Ser. No. 101,419

Int. Cl.³ H01M *2/02*

U.S. Cl. 429—179 **3 Claims**



1. An aircraft battery comprising a housing having an aperture in a wall thereof, a casing having a pair of electrical conductors leading therefrom, a cover for the casing through which the pair of conductors protrude, a pair of electrically conductive members each connected to one of the conductors and having an aperture therein aligned with the aperture in the wall of the housing, a receptacle positioned within the aperture in the wall of the housing and having apertures therethrough aligned with the apertures in the pair of members, a pair of electrically conductive pins each threaded at one end and having a surface thereon adapted to receive a wrench for rotating it about its axis, each pin being positioned with its threaded end passing through the apertures in the receptacle and the member and its other end extending beyond the housing, and means for securing the threaded ends of the pins to the members.

4,239,842

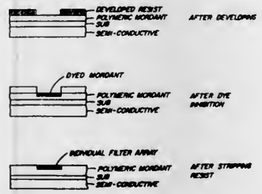
COLOR FILTER ARRAYS, COLOR IMAGING DEVICES AND METHODS OF MAKING SAME

Mohammad A. Sandhu, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 913,150, Jun. 6, 1978, Pat. No. 4,196,010. This application Sep. 13, 1979, Ser. No. 75,387

Int. Cl.³ G03C *5/00, 11/00*

U.S. Cl. 430—7 **25 Claims**



1. In a method for producing a color filter array containing a transparent, polymeric receiving layer capable of receiving a dye comprising the steps of:

A. coating a layer of photoresist over said receiving layer;

B. exposing said photoresist to a pattern representing a set of filter elements;

C. developing said photoresist to obtain window areas in said photoresist layer corresponding to said pattern;

D. diffusing heat-transferable dye into said dye-receiving layer through said window areas so as to form dyed filter elements corresponding to said pattern; and

E. removing the remaining portion of said photoresist;

the improvement wherein said receiving layer comprises an amorphous, solvent-soluble, aromatic polyester having recurring units derived from the condensation residue of a diol and a carbonic or diacarboxylic acid, at least 30 mole percent of said recurring units containing a saturated gem-bivalent radical having a saturated polycyclic three-dimensional structure that includes a saturated bicyclic atomic bridge hydrocarbon ring member.

4,239,843

METHOD OF STABILIZING ORGANIC SUBSTRATES AGAINST THE ACTION OF LIGHT

Hiroshi Hara, Asaka, and Yoshiaki Suzuki, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

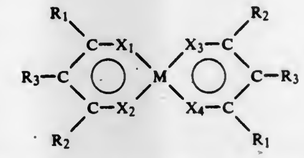
Filed Oct. 30, 1978, Ser. No. 955,839

Claims priority, application Japan, Oct. 28, 1977, 52-129348

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—17 **12 Claims**

8. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or an adjacent layer contains a compound of the formula (I) in an amount sufficient to improve the light fastness of said color photographic material



(I)

where M represents a metal atom selected from the group consisting of Cu, Co, Ni, Pd and Pt; X_1, X_2, X_3 and X_4 each represents an oxygen or sulfur atom; R_1 and R_2 each represents an alkyl, an aryl, a cycloalkyl an oxocyclo alkyl, or a heterocyclic group which may be substituted or unsubstituted and which is attached to the carbon atom on the chelate ring directly or through a divalent connecting group; R_3 represents a hydrogen atom, an alkyl, an aryl, a cycloalkyl, an oxo-cycloalkyl group or hetercyclic group which may be substituted or unsubstituted and which may be attached to the carbon atom on the chelate ring directly or through a divalent connecting group; R_1, R_2 and R_3 may be the same or different and R_1 and R_3, or R_2 and R_3 may combine to form the non-metallic atoms necessary to complete a 5-, 6- or 7-membered nucleus.

4,239,844

ELECTROPHOTOCONDUCTIVE CD S SE MATERIALS WITH CU AND CL

Sixdeniel Faria, and Vincent Chiola, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 779,069, Mar. 18, 1977, abandoned, which is a continuation of Ser. No. 706,625, Jul. 19, 1976, abandoned, which is a continuation of Ser. No. 577,539, May 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 476,694, Jun. 5, 1974, abandoned. This application Mar. 5, 1979, Ser. No. 17,517

Int. Cl.³ G03G *5/08*

U.S. Cl. 430—67 **1 Claim**

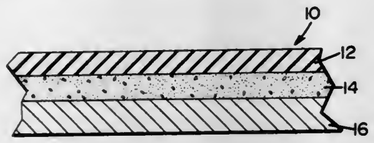
1. An electrophotographic member consisting essentially of:

(a) an electrically conductive base;

(b) a layer of a particulate electrophotoconductive material having a thickness of from about 40 to about 60 micrometers overlying said base, said material consisting essentially of an activated cadmium sulfo-selenide having the molecular formula:

$$Cd(S_xSe_{1-x}):yCu\bullet ZCl$$

wherein x is from about 0.95 to about 0.998, y is from about 0.0001 to about 0.001, and z is from about 0.001 to about 0.0015 and having an average particle size of up to about 3.2 micrometers and about 95% of the particles in the 1 to 5 micrometer range as measured by the Coulter Counter method; and



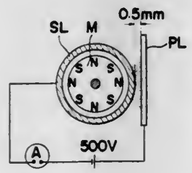
(c) an electrically insulative optically transparent layer overlying said electrophotoconductive layer having a thickness of from about 20 to about 40 micrometers, said member exhibiting initial contrast voltage of at least about 800 volts.

4,239,845

ELECTROPHOTOGRAPHIC COPYING METHOD USING TWO TONERS ON MAGNETIC BRUSH

Susumu Tanaka, Sakai; Koji Nagai, and Sanzi Inagaki, both of Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 1, 1979, Ser. No. 16,609
Claims priority, application Japan, Mar. 9, 1978, 53/27246
Int. Cl.³ G03G *13/09, 13/22, 9/14*
U.S. Cl. 430—122 **5 Claims**



1. An electrophotographic copying method which comprises the steps of:

a. forming an electrostatic latent image on a photoconductive support member, said electrostatic latent image being comprised of an image area and a non-image area;

b. developing the electrostatic latent image to a toner image with a developing material consisting of a particulate, magnetic toner having a volume resistivity of about 10^{10} to 10^{13} Ω-cm and a particulate, non-magnetic, electrically insulating toner;

said magnetic toner being present in an amount of 85 to 98% and said non-magnetic toner being present in an amount of 2 to 15%, said percentages being based on the total weight of the development material;

said development, being effected by the magnetic brush method and comprising:

(i) triboelectrically charging said magnetic and non-magnetic toners, the polarity of said non-magnetic toner being opposite that of said electrostatic latent image and the polarity of said magnetic toner being the same as that of said electrostatic latent image,

(ii) magnetically attracting said developing material to the surface of a sleeve having a magnet housed therein to form a magnetic brush thereon and

(iii) contacting said electrostatic latent image with said magnetic brush whereby particles of both magnetic and non-magnetic toner are deposited on and adhere to said image area and particles of said magnetic toner are deposited on and adhere to said non-image area;

and during said development applying a bias voltage of the same polarity but of a higher value than the potential of the non-image area of said latent image, to avoid deposition of particles of non-magnetic particles on said non-image area and to permit the magnetic toner to overcome the magnetic force exerted thereon by said magnet in said sleeve;

b. transferring the particles of both of the magnetic and non-magnetic toners, which have been deposited on the image area of the electrostatic latent image, from the photoconductive support member to a sheet of final support material by means of a corona charge technique; and

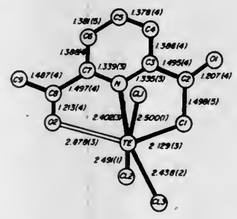
c. fixing the toner image so transferred to the sheet of final support material.

4,239,846

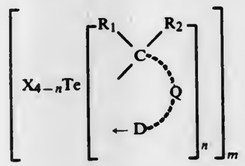
TELLURIUM (IV) COMPOUNDS AND COMPOSITIONS

Henry J. Gysling, and Sylvia A. Gardner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1978, Ser. No. 894,863
Int. Cl.³ G03C *5/54, 1/00, 5/24, 1/02*
U.S. Cl. 430—202 **26 Claims**



1. An image-forming combination comprising (i) a tellurium-(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

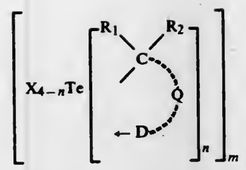
X is an anion;

n is 1; and

m is an integer from 1 to 500;

as an oxidizing agent, and (ii) a reducing agent.

8. An amplification element comprising a support having coated thereon an image-forming combination comprising (i) a tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

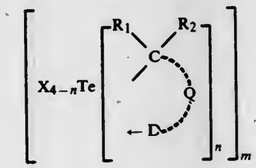
X is an anion;

n is 1; and

m is an integer from 1 to 500,

as an oxidizing agent, and (ii) a reducing agent.

15. A photothermographic element comprising a support having coated thereon, in reactive association, (a) a photosensitive metal compound, and (b) an image-forming combination comprising (i) a tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

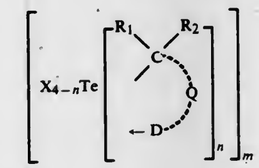
X is an anion;

n is 1; and

m is an integer from 1 to 500,

as an oxidizing agent, and (ii) a reducing agent.

24. A process for forming an image comprising the step of contacting an imagewise distribution of physically developable catalyst with an image-forming combination comprising (i) a tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

X is an anion;

n is 1; and

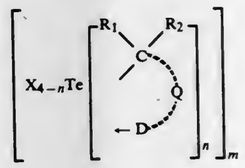
m is an integer from 1 to 500,

as an oxidizing agent, and (ii) a reducing agent.

26. In a process for forming an image comprising the steps of:

(1) imagewise exposing a photosensitive layer comprising a photographic metal salt; and

(2) diffusing unexposed photographic metal salt from said photosensitive layer into a developer layer comprising an image-forming combination where said unexposed salt is reduced and catalyzes an image-forming reaction, thereby forming a positive image in said developer layer, the improvement wherein said image-forming combination comprises (i) a tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

X is an anion;

n is 1; and

m is an integer from 1 to 500,

as an oxidizing agent, and (ii) a reducing agent.

4,239,847

PHOTOGRAPHIC ELEMENTS CONTAINING POLYMERS WHICH COORDINATE WITH METAL IONS

William C. Archie, Jr., and Gerald A. Campbell, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,477
Int. Cl.³ G03C *1/40, 5/54*
U.S. Cl. 430—213 **20 Claims**

1. An image transfer film unit comprising:

(1) a support having thereon at least one layer containing a photosensitive silver halide emulsion having associated therewith a dye ligand or dye ligand forming material;

(2) a dye image-receiving layer comprising a dye mordant; and

(3) an alkaline processing composition and means for discharging same within said film unit in contact with said photosensitive layer;

said film unit containing a silver halide developing agent, the improvement wherein there is present either in the dye image-receiving layer containing the dye mordant or in a layer adjacent to said dye mordant layer, a polymer containing groups

which form coordination complexes with metal ions, said polymer having associated therewith a source of metal ions wherein the stability constant of a complex of the polymer and metal ions is at least 10^{10}, said metal ions being on the side of the mordant layer opposite that closest to the said dye ligand or dye ligand forming material-containing layer.

4,239,848

PHOTOCROSSLINKABLE CARBONYL-CONTAINING POLYMERIC COMPOSITION AND ELEMENT WITH COBALT COMPLEX

Anthony Adin, and John C. Wilson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 918,865, Jun. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,852, Jan. 27, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,541

Int. Cl.[2] G03C *1/00, 1/68*

U.S. Cl. 430—270 **24 Claims**

1. A photocrosslinked composition, comprising,

as the major portion thereof, a polymeric binder containing a recurring unit bearing one or more carbonyl groups capable of reacting with an amine to form a crosslinked carbinolamine; and

as a minor portion thereof, a thermally stable, reducible cobalt(III) complex containing amine ligands.

4,239,849

POLYMERS FOR AQUEOUS PROCESSED PHOTORESISTS

Melvin A. Lipson, and Eugene Zador, both of Fullerton, Calif., assignors to Dynachem Corporation, Santa Ana, Calif.

Continuation of Ser. No. 841,161, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 727,498, Sep. 28, 1976, abandoned, which is a continuation of Ser. No. 511,929, Oct. 4, 1974, abandoned. This application Jun. 19, 1978, Ser. No. 916,433

Int. Cl.[2] G03C *1/68*

U.S. Cl. 430—281 **11 Claims**

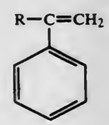
1. A photopolymerizable composition in the form of a dry film on a support capable of being formed into rolls and exhibiting improved cold flow properties comprising:

(A) from 10 to 60 parts by weight of one or more addition polymerizable non-gaseous ethylenically unsaturated compounds having a boiling point above 100° C.;

(B) a photo-initiated free-radical generating addition polymerization initiating system; and

(C) from 40 to 90 parts by weight of a preformed macromolecular polymeric binding agent which is a polymer of

40 to 60 parts of a first monomeric material which contains one or more styrene-type compounds selected from the group having the general formula:



wherein R is hydrogen, an alkyl group having from 1 to 6 carbon atoms or a halo group or ring-substituted derivative thereof;

15 to 45 percent of a second monomeric material which contains one or more compounds selected from the group comprising alkyl acrylate, alkyl methacrylate, hydroxyalkyl acrylate or an hydroxyalkyl methacrylate wherein the alkyl groups have from 1 to 6 carbon atoms and the hydroxyalkyl groups have from 2 to 6 carbon atoms; and

15 to 40 percent of a third monomeric material which contains one or more aipha, beta-unsaturated carboxyl-containing monomers having from 3 to 15 carbon atoms;

the preformed macromolecular binding agent, when dissolved in methyl ethyl ketone to form a 40% solution, having a viscosity of at least 2,000 centipoises on the Brookfield Viscometer;

the photopolymerizable composition being soluble in an aqueous alkali solution having a pH of from 9 to 14 having a Sward hardness number of from 10 to 20 when in the form of a 1 mil thick film and a Sward hardness number of from 8 to 14 when in the form of 2 mil thick film.

4,239,850

PHOTOPOLYMERIZABLE COMPOSITION

Nobuyuki Kita; Toshio Uchida, both of Shizuoka; Sadaharu Ikeda, Asaka, and Shigeru Sato, Minami-Ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Nov. 22, 1978, Ser. No. 962,850

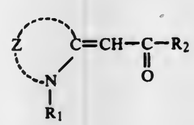
Claims priority, application Japan, Nov. 29, 1977, 52-142272

Int. Cl.[3] G03C *1/68*

U.S. Cl. 430—281 **14 Claims**

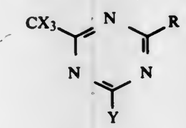
1. In a photopolymerizable composition comprising a monomer having at lest two ethylenically unsaturated bonds which is capable of photopolymerization upon exposure to actinic radiation, a photopolymerization initiator and, optionally, a linear organic polymer, the improvement which comprises said photopolymerization initiator comprising a combination of at least one compound represented by the formula (I)

(I)



wherein Z represents the non-metal atoms necessary to form a nitrogen containing heterocyclic nucleus, R_1 represents an alkyl group or a substituted alkyl group, and R_2 represents an alkyl group or an aryl group, and at least one compound represented by the formula (II)

(II)



wherein X represents a halogen atom, Y represents $-CH_3$, $-NH_2$, $-NHR'$, $-NR'_2$ or $-OR'$ wherein R' represents an alkyl group or an aryl group, and R represents an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or a substituted alkenyl group and wherein said photopolymerization initiator is present in an amount of 1 to 10% by weight based on the total weight of the polymerizable ethylenically unsaturated compound and the linear organic high molecular weight compounds and wherein the ratio of the compound represented by formula (I) to the compound represented by formula (II) of said photopolymerization initiator is 4:1 to 1:4.

4,239,851

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kozo Aoki, and Yukio Yokota, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 1, 1979, Ser. No. 8,442

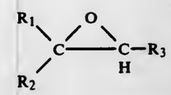
Claims priority, application Japan, Feb. 2, 1978, 53/10684

Int. Cl.[3] G03C *5/50, 1/40*

U.S. Cl. 430—377 **11 Claims**

1. A process for forming a photographic light-sensitive material which comprises dissolving an oil-soluble photographic additive in an epoxy compound of the formula (II):

(II)



wherein R_1, R_2 and R_3 each represents an alkyl or a substituted alkyl group having 1 to 40 carbon atoms, an alkoxycarbonyl or substituted alkoxycarbonyl group having 1 to 40 carbon atoms or a hydrogen atom provided that at least one of R_1, R_2 and R_3 is an alkyl group substituted by an alkoxycarbonyl group, an aryloxycarbonyl group or an aryloxy group having 8 to 40 carbon atoms and the sum of the number of carbon atoms of R_1, R_2 and R_3 is 8 to 60.

4,239,852

ANTIBIOTIC DETECTION METHOD

Stanley E. Charm, Newton, Mass., assignor to Penicillin Assays, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 853,541, Nov. 21, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,414

Int. Cl.[2] G01N *31/14*

U.S. Cl. 435—32 **17 Claims**

1. A process for detecting the presence of an antibiotic in a liquid sample, said process comprising the steps of:

A. incubating the sample with cell parts of a microorganism, sensitive to said antibiotic, said cell parts having receptor sites capable of binding to said antibiotic, said incubation being conducted under conditions to allow antibiotic molecules, if present in the sample, to bind to said receptor sites;

B. incubating the mixture of step A with an enzyme-tagged substance capable of binding with said receptor sites;

C. separating the cell parts from the liquid;

D. determining the amount of enzyme-tagged substance associated either with the separated cell parts or with the liquid; and

E. comparing the determination of step D with a standard to obtain an indication of the presence of antibiotic in the sample.

4,239,853

ANTIBIOTIC TESTING METHOD AND APPARATUS HAVING A CHANNELIZED RESERVOIR

Rex L. Bradley, 6620 Manor Rd., Austin, Tex. 78751

Filed Jan. 22, 1979, Ser. No. 5,351

The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.

Int. Cl.[3] C12Q *1/20;* C12M *1/20*

U.S. Cl. 435—33 **21 Claims**

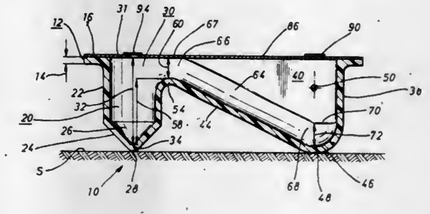
1. In an apparatus for testing the effects of an antibiotic or chemical on bacterial or biochemical substances, said apparatus being of the type having:

(a) a plurality of side-by-side test chambers each adapted to receive therein a bacterial or biochemical substance, each test chamber being separated from the next-adjacent test chamber by a side wall;

(b) a common reservoir disposed adjacent each of the test chambers, the reservoir being separated from each of the test chambers by a barrier having a height less than the height of the side walls, the reservoir having an axis of rotation extending therethrough;

wherein the improvement comprises:

an array of guide walls disposed within the reservoir, each guide wall merging into one of the side walls and cooperating with its next-adjacent guide wall to define an array of channels, each channel communicating with one of the test chambers and each adapted to channelize a liquid disposed in the reservoir into the test chamber with which it is associated upon rotation of the apparatus about the axis of rotation such that a flow of liquid is maintained from the reservoir to each test chamber even if the apparatus is tilted during rotation thereof about the axis of rotation.



21. A method for testing the effects of an antibiotic or chemical on bacterial or biochemical substances comprising the steps of:

introducing a liquid suspension containing an antibiotic or chemical to be tested into a common reservoir of a test apparatus until the level liquid in the reservoir lies above the lower end of an array of guide walls disposed within the reservoir;

rotating the apparatus about an axis of rotation to cause a channelized flow of liquid from the reservoir into each of a plurality of test chambers disposed in fluid communication with the reservoir; and

observing each of the plurality of test chambers to test the affects of the antibiotic or chemical on the bacterial or biochemical substances.

4,239,854

ENZYME-IMMOBILIZATION CARRIERS AND PREPARATION THEREOF

Hideo Hirohara; Shigeyasu Nabeshima, both of Ibaraki, and Tsuneyuki Nagase, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 24, 1978, Ser. No. 899,466

Int. Cl.[3] C09J *8/00;* C08G *2/00*

U.S. Cl. 521—31 **12 Claims**

1. An enzyme-immobilization carrier which comprises a macroporous, synthetic amphoteric ion-exchange resin having a specific surface area of at least 1 m^2/g-resin containing macropores with a pore diameter of 100 Å to 2,000 Å, of which total volume is at least 0.1 cc/g-resin; said resin comprising (a) a phenol resin matrix having a primary amino group, secondary amino group, tertiary amino group, quaternary ammonium group or a mixture thereof as an anion-exchanger and a carboxymethyl group linked to the matrix through a phenolic ether linkage or to said primary or secondary amino group, wherein the cation=exchange capacity due to the carboxymethyl group is not less than 0.5 meq/g-resin and the anion-exchange capacity due to the amino group, substituted amino groups or the mixture thereof is not less than 1 meq/g-resin, or (b) a polystyrene or polyvinyl chloride matrix having at least a primary amino group, secondary amino group or a mixture thereof as an anion-exchanger and a carboxymethyl group linked to said primary or secondary amino group, wherein the cation-exchange capacity due to the carboxymethyl group is not less than 0.5 meq/g-resin and the anion-exchange capacity

due to the amino group, substituted amino groups or the mixture thereof is not less than 1 meq/g-resin.

6. A process for producing an enzyme-immobilization carrier comprising a macroporous, synthetic amphoteric ion-exchange resin having a carboxymethyl group of which the cation-exchange capacity is not less than 0.5 meq/g-resin and an amino group, a substituted amino group or a mixture thereof which the anion-exchange capacities are not less than 1 meq/g-resin, which comprises reacting a compound of the formula:

$$XCH_2COOY$$

wherein X is halogen and Y is hydrogen or an alkali metal with (a) granules or beads of a solid, macroporous phenol resin having a primary amino group, a secondary amino group or a mixture thereof, or (b) beads of a macroporous polystyrene or polyvinyl chloride resin having a primary amino group, secondary amino group or a mixture thereof, having a specific surface area of at least 1 m^2g-resin and containing macropores of which the total volume of those with a pore diameter from 100 Å to 2,000 Å is at least 0.1 cc/g-resin in the presence of an alkaline compound.

4,239,855

POLYURETHANE CATALYSTS AND METHOD OF USE

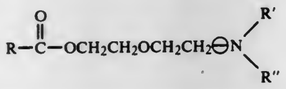
Robert L. Zimmerman, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Jul. 21, 1978, Ser. No. 927,244

Int. Cl.³ C08G *18/20, 18/18;* C07C *93/16, 93/26*

U.S. Cl. 521—115 **6 Claims**

1. A method for producing a polyurethane which comprises reacting an organic polyisocyanate with an organic polyester polyol or polyether polyol in the presence of a catalytic amount of a compound having the following structural formula:



where R is a radical selected from the group consisting of lower alkyl, lower alkenyl and phenyl and R′ and R″ are either independently lower alkyl or when taken together with the adjacent nitrogen atom form a morpholino radical.

4,239,856

METHOD FOR PREPARING HIGH-RESILIENT FLEXIBLE URETHANE FOAMS

Richard L. Rowton, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,303

Int. Cl.³ C08G *18/14, 18/32*

U.S. Cl. 521—118 **2 Claims**

1. In a process of preventing splits in high-resilient, flexible polyurethane foam which is the reaction product of a polyether triol of about 5000 to 7000 molecular weight and a methylene diphenyl diisocyanate modified to assume a liquid form and in the presence of water as the only blowing agent, the improvement which comprises

reacting the components in the presence of from about 0.2 to about 2.0 parts by weight of diethanolamine per 100 parts by weight of triol.

4,239,857

PROCESS FOR PRODUCING SOLID OR MICROCELLULAR POLYURETHANE ELASTOMERS HAVING IMPROVED GREEN STRENGTH

Bill D. Harper, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 29, 1978, Ser. No. 920,458

Int. Cl.³ C08G *18/14, 18/24, 18/79*

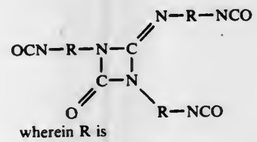
U.S. Cl. 521—121 **37 Claims**

1. A process for producing a solid or microcellular polyether polyurethane elastomer having improved green strength which comprises forming and curing a reaction mixture containing:

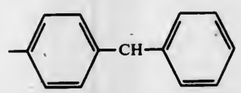
(a) a polyether polyol,

(b) a diol extender selected from the group consisting of short-chain alkane diols, short-chain cycloaliphatic diols, and short-chain oxyalkylene glycols,

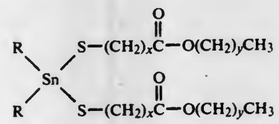
(c) an organic polyisocyanate in an amount that provides from 0.8 to 1.3 isocyanato groups per active-hydrogen group in the reaction mixture, wherein said organic polyisocyanate comprises a major amount of 4,4′-diphenylmethane diisocyanate and a minor amount of



wherein R is



(d) from about 0.200 to about 0.400 parts by weight per 100 parts by weight of the active hydrogen-containing components in the reaction mixture of a dialkyltin dimercaptide carboxylic acid ester catalyst of the formula:



wherein R is an alkyl group selected from the group consisting of methyl, butyl and octyl, x is an integer of from 1 to 4 and y is an integer of from 1 to 10, said catalyst being present in from about 1.5 to about 8 times a catalytic amount,

said reaction mixture containing from 95 to 25 parts by weight of (a) and from 5 to 75 parts by weight of (b) per 100 parts by weight of (a) and (b), with the proviso that when a microcellular polyether polyurethane is being produced, the reaction mixture also contains:

(e) a blowing agent in an amount sufficient to produce a microcellular structure in the elastomer.

4,239,858

COATING COMPOSITIONS COMPRISING POLYMER BLENDS

Irving Serlin, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed May 11, 1979, Ser. No. 38,157

The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.

Int. Cl.³ C08L *25/06*

U.S. Cl. 525—57 **6 Claims**

1. A coating composition comprising an intimate polymer

blend of from about 40 to about 90 parts by weight of a polyvinyl acetal and from about 10 to about 60 parts by weight of a homopolymer of styrene or α-methylstyrene of molecular weight in the range of about 500 to about 1500 wherein the poly(vinyl acetal) is an interpolymer of a C_5 to C_9 vinyl acetal, a C_4 to C_{10} vinyl carboxylate and vinyl alcohol, of weight average molecular weight in the range of about 20,000 to 500,000, comprising less than about 30 weight percent vinyl carboxylate units and from about 5 to about 21 weight percent of vinyl alcohol units.

4,239,859

HIGH IMPACT POLYSTYRENE BLEND COMPOSITIONS

Charles R. Miller, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 29, 1979, Ser. No. 70,559

Int. Cl.³ C08L *53/02*

U.S. Cl. 525—98 **10 Claims**

1. A polymeric composition comprising a mixture of 100 parts by weight of a styrene polymer and about 15 to about 50 parts by weight of an AB block copolymer, said polymeric composition being obtained by intimately mixing said styrene polymer and said AB block copolymer at an elevated mixing temperature sufficient to provide impact improvement but below the decomposition temperature of said polymers wherein

(a) said A block is a polymer block of a monoalkenyl arene having a weight average molecular weight between about 20,000 and about 150,000,

(b) the weight percent of said A block in said block copolymer is between about 15 percent by weight and about 35 percent by weight; and

(c) said B block is a polymer block of butadiene having a vinyl 1,2 configuration of 20 percent or greater.

4,239,860

AMINE TERMINATED POLYMERS AND THE FORMATION OF BLOCK COPOLYMERS

William L. Hergenrother; Richard A. Schwarz; Richard J. Ambrose, all of Akron, and Robert A. Hayes, Cuyahoga Falls, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 848,962, Nov. 7, 1977, Pat. No. 4,151,222, which is a continuation-in-part of Ser. No. 574,676, May 5, 1975, Pat. No. 4,070,344. This application Mar. 5, 1979, Ser. No. 17,672

Int. Cl.³ C08F *26/00*

U.S. Cl. 525—131 **18 Claims**

1. A urethane block copolymer composition, comprising:

an amine terminated polymer connected to a urethane polymer constituent to form the urethane block copolymer;

said amine terminated polymer being an end capped polymer formed by the reaction of an anionically prepared polymer and a single polyisocyanate or polyisothiocyanate compound so that at least one unreacted isocyanate or isothiocyanate end portion exists wherein said unreacted isocyanate or isothiocyanate end portion has been converted to an amine group;

said anionically prepared polymer being a homopolymer or a copolymer, said homopolymer made from monomers selected from the class consisting of conjugated diene, vinyl substituted aromatic, vinyl substituted pyridine, vinyl substituted quinoline, and a compound selected from the class consisting of

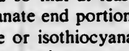
1. CH_2=CACN wherein A is CN, CF_3, CH_3 or H;
2. CH_2=$CACO_2R$ wherein A is CO_2R, SO_2R, CH_3 or H;
3. CH_2=$CANO_2$ wherein A is Cl, CH_3 or H;
4. CH_2=$CACON(R)_2$ wherein A is CH_3 or H;

wherein R is a 1 to 15 carbon atom alkyl, a 4 to 15 carbon atom cycloalkyl, an aryl, a 1 to 15 carbon atom alkyl substituted aryl, a 4 to 15 carbon atom cycloalkyl substituted aryl, or hydrogen,

said copolymer made from monomers of conjugated dienes and vinyl substituted aromatics;

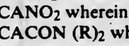
said amine terminated polymer having a molecular weight of from about 3,000 to about 100,000;

said polyisocyanate and said polyisothiocyanate having the formula



wherein R is an aliphatic containing from 2 to about 20 carbon atoms, a cycloaliphatic containing from 4 to about 20 carbon atoms, an aromatic containing from 6 to about 20 carbon atoms, and combinations thereof, n is an integer of 2 or 3 and X is selected from the class consisting of oxygen and sulfur;

said urethane polymer constituent being the reaction product of polyhydroxy compounds having at least two hydroxyl groups and a polyisocyanate having the formula



wherein R is an aliphatic containing from 2 to about 20 carbon atoms, a cycloaliphatic containing from 4 to about 20 carbon atoms, an aromatic containing from 6 to about 20 carbon atoms, and combinations thereof, n is an integer of 2 or 3 and X is selected from the class consisting of oxygen and sulfur;

the amount of said urethane polymer ranging from about 5% to about 95% based upon the total weight of said block copolymer, and the molecular weight of said urethane polymer constituent ranging from about 1,000 to about 100,000.

4,239,861

POLYVINYL CHLORIDE-POLYCARBONATE ALLOYS

Hans-Eberhard Braese; Winfried Fischer; Dietrich Hardt, all of Cologne; Richard Prinz, Leverkusen, and Volker Serini, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 14, 1975, Ser. No. 541,011

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1974, 2402175

Int. Cl.³ C08L *67/06*

U.S. Cl. 525—151 **9 Claims**

1. A polymer composition comprising:

(a) from 20 to 90% by weight of a member selected from the group consisting of (i) vinyl chloride homopolymer and (ii) a copolymer consisting of copolymerized vinyl chloride and up to 30% by weight of a monomer selected from the group consisting of vinylidene chloride; vinylidene fluoride; vinyl acetate; vinyl propionate; vinyl benzoate; acrylic acid; methacrylic acid; alkyl esters, amides and nitriles of acrylic and methacrylic acids; maleic acid esters; maleic imides; vinyl ethers; ethylene; propylene and butylene, and

(b) from 80 to 10% by weight of at least one aromatic polycarbonate which is a polyester of carbonic acid derived from a dihydroxyl compound in which the hydroxyl groups are directly attached to one or more aromatic rings.

4,239,862

THERMOPLASTIC ELASTOMER CONTAINING LONG CHAIN ALIPHATIC ALCOHOL

Demetreos N. Matthews, Bethany; Walter Nudenberg, and Henno A. Petersen, both of Newtown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,307
Int. Cl.[3] C08L *23/16*
U.S. Cl. 525—240 10 Claims

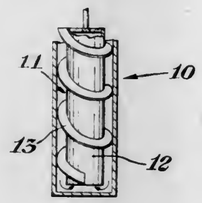
1. A thermoplastic elastomer comprising a blend of:
(A) a monoolefin copolymer rubber which is a copolymer of ethylene and an alpha-monoolefin of the formula CH_2=CHR where R is an alkyl radical having 1 to 12 carbon atoms, and optionally a copolymerizable diene termonomer;
(B) a crystalline polyolefin resin;
(C) a long-chain aliphatic alcohol having at least 16 carbon atoms;
(D) optionally an amorphous non-elastomeric polypropylene homopolymer or amorphous non-elastomeric copolymer of propylene with another monoolefin; and
(E) optionally a naphthenic or paraffinic extender oil;
the said ingredients being present in the following proportions, expressed as percentages by weight based on the total weight of (A), (B), (C), (D) and (E):
from 15 to 80% of (A);
from 15 to 80% of (B);
from 3 to 40% of (C);
from 0 to 45% of (D); and
from 0 to 40% of (E).

4,239,863

PROCESS FOR THE POLYMERIZATION OF ACRYLONITRILE-BUTADIENE-STYRENE RESINS

Corwin J. Bredeweg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1979, Ser. No. 52,706
Int. Cl.[3] C08F *291/02*
U.S. Cl. 525—263 6 Claims



1. A process for the preparation of acrylonitrile-butadiene-styrene resins wherein styrene and acrylonitrile are copolymerized in the presence of a soluble butadiene reinforcing rubber, the butadiene rubber being dissolved in a mixture of acrylonitrile and styrene, initiating polymerization of the styrene and acrylonitrile thereby causing the rubber under the influence of agitation to separate in the form of a plurality of particles having average diameters of about 0.2 to about 5 microns, continuing polymerization of the styrene and acrylonitrile until from about 50 to about 90 weight percent of the styrene and acrylonitrile have copolymerized, removing at least a majority of non-volatile material therefrom and recovering an ABS polymer, the improvement which comprises incorporating within the ABS solution prior to polymerization a free radical polymerization initiating material which is a tertiary butyl peroxy ester having a 10 hour half-life of between about 50° and 95° C., or mixtures thereof.

4,239,864

ELIMINATION OF STABILIZER FOR HIGH NITRILE RESINS BY USING A LATEX DEWATERING EXTRUDER FOR PRODUCT RECOVERY

William J. Miloscia, Shaker Heights, and Louis R. Trott, Streetsboro, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 930,447, Aug. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 874,092, Jan. 31, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,145
Int. Cl.[2] C08L *55/02*
U.S. Cl. 525—316 4 Claims

1. In the process for recovering solids having good stability against loss of impact strength and resin yellowing from a polymeric latex polymer wherein said polymer is composed of 100 parts by weight of the polymerization product of the monomers
(A) at least 50% by weight of at least one nitrile having the structure

$$CH_2{=}C(R)CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and
(B) up to 50% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of
1. styrene,
2. an ester having the structure

$$CH_2{=}C(R_1)COOR_2$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,
3. an alpha-olefin having the structure

$$CH_2{=}C(R')R''$$

wherein R' and R'' are alkyl groups having from 1 to 7 carbon atoms,
4. a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, and
5. vinyl acetate, wherein said monomers are copolymerized in the presence of from 0 to 40 parts by weight of
(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally at least one comonomer selected from the group consisting of styrene, a nitrile monomer having the structure

$$CH_2{=}C(R)CN$$

wherein R has the foregoing designation, and an ester having the structure

$$CH_2{=}C(R_1)COOR_2$$

wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer, the improvement comprising passing said polymeric latex through a screw extruder at a temperature above 150° F. without the use of an oxidizing or thermal degradation stabilizer.

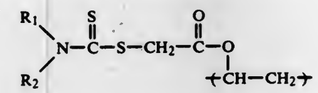
4,239,865

POLYVINYL (DIALKYLTHIOCARBAMOYLTHIO)ACETATE RESIN, METHOD FOR PRODUCING SAME AND HEAVY METALS-REMOVING AGENT COMPRISING SAME

Ryohkichi Tarao, Yokosukashi; Kanji Kaku, Yokohamashi; Masaki Hayashi, Yokohamashi; Takao Nakamura, Yokohamashi, and Shigeo Ohishi, Funabashishi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Nov. 9, 1977, Ser. No. 849,923
Claims priority, application Japan, Nov. 17, 1976, 51/137984
Int. Cl.[3] C08F *8/34;* C02B *1/42*
U.S. Cl. 525—327 10 Claims

1. An agent for removing heavy metals selected from the group consisting of Hg, Cu and Cr, which agent comprises a polyvinyl(dialkylthiocarbamoylthio)acetate resin which is a polymer having a unit expressed by the formula



wherein R_1 and R_2 each represent hydrogen atom or an alkyl group of C_1–C_5 and is a reaction product of a vinyl acetate polymer with a tetraalkylthiuramdisulfide, said agent being insoluble in benzene and having the ability to remove metals selected from the group consisting of Hg, Cu and Cr from solutions containing the same.

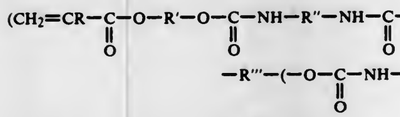
4,239,866

CURABLE COATING COMPOSITION

Christian Reitel, Heidelberg, and Lutz Goethlich, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

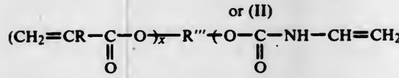
Continuation of Ser. No. 821,550, Aug. 3, 1977, abandoned. This application May 25, 1979, Ser. No. 42,564
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636426; Aug. 13, 1976, 2636428
Int. Cl.[3] C08L *27/00*
U.S. Cl. 525—440 9 Claims

1. A radiation-curable binder for coating compositions which binder comprises one or more olefinically unsaturated compounds of the general formula (I)



(I)

or (II)



(II)

where x and y may be identical or different and each is a number from 1 to 5, R is hydrogen or methyl, R' is a divalent linear or branched radical of 2 to 16 carbon atoms which may or may not contain oxa groups, or is a divalent cycloaliphatic radical of 5 to 12 carbon atoms, R'' is a divalent linear or branched aliphatic, cycloaliphatic or aromatic radical of 6 to 15 carbon atoms and R''' is a radical which is derived from a polyhydric alcohol, a polyether-ol or a polyester-ol and which has a valency corresponding to the sum of x+y, with or without additional other radiation-curable olefinically unsaturated compounds having acrylyl radicals.

4,239,867

INHIBITED CURABLE SOLVENTLESS ORGANOPOLYSILOXANE COMPOSITIONS

Gary E. Legrow, and Laura A. Gauthier, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 4, 1979, Ser. No. 44,893
Int. Cl.[3] C08L *83/06*
U.S. Cl. 525—478 29 Claims

1. An improved curable composition comprising
(a) an organopolysiloxane containing from 67 to 85 mol percent $C_6H_5SiO_{3/2}$ units and 33 to 15 mol percent of $CH_2{=}CH(CH_3)_2SiO_{\frac{1}{2}}$ units, said organopolysiloxane having an average of at least 8 silicon atoms per molecule;
(b) a silicon hydride containing polysiloxane crosslinker for (a), said (b) being present in an amount sufficient to provide about 0.9 to 1.1 mol of silicon hydride per mol of $CH_2{=}CHSi\equiv$ present in (a) and (e);
(c) a platinum catalyst of the formula $[(C_4H_9)_3PPtCl_2]_2$;
(d) a catalyst inhibitor of the general formula $R^1R^2R^3N$ wherein R^1, R^2 and R^3 are each monovalent alkyl radicals containing from 1 to 28 carbon atoms, there is a total of from 12 to 30 carbon atoms in the molecule; and
(e) a reactive diluent of the formula

$$[CH_2{=}CH(CH_3)_2SiO]_2Si(C_6H_5)_2.$$

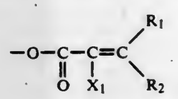
4,239,868

CROSS-LINKABLE STRUCTURALLY COLORED POLYMERS, THEIR PREPARATION AND THEIR USE IN COMPOSITIONS FOR COATINGS

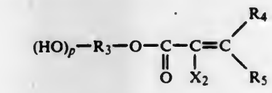
Evelyne J. M. Bonnet, Mont Saint Aignan, and Philippe Y. E. Gangneux, Bihorel, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Jan. 24, 1978, Ser. No. 871,912
Claims priority, application France, Jan. 28, 1977, 77 02390
Int. Cl.[3] C08L *33/08, 39/04*
U.S. Cl. 525—279 7 Claims

1. A structurally colored polymer having a number-average molecular weight between 1000 and 12,880 g and carrying m hydroxy functions and n groups of the formula:



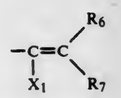
in which X_1 is a member selected from hydrogen and methyl, R_1 and R_2 are the same or different and represent a member selected from hydrogen and methyl, m is a number from 0 to 49 and n is a number from 2 to 70 such that the sum m+n is from 7 to 70 and the ratio m/n is from 0 to 2.4, said polymer being obtained by:
(a) first preparing a structurally colored oligomer containing m+n hydroxy functions, m and n being as defined above, by free radical polymerization of one or more monomers of the formula:



(I)

in which X_2 is a member selected from hydrogen and methyl, R_4 and R_5 are the same or different and represent a member selected from hydrogen and methyl, R_3 is an

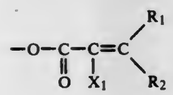
aliphatic linear or branched hydrocarbon containing from 2 to 7 carbon atoms or said hydrocarbon substituted by chlorine, and p is equal to 1 or 2, in the presence of one or more dyestuffs containing one or two groups of the formula:



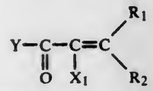
(III)

in which X_1 is as defined above, and R_6 and R_7 are the same or different and represent a member selected from hydrogen and methyl, and containing no group reactive towards hydroxy functions, and

(b) converting n hydroxy functions of the oligomer prepared in (a) into groups of the formula:



by reaction of the said oligomer with a compound of the formula:



(II)

in which Y is a member selected from chlorine and bromine, and X_1, R_1, R_2 have the same definition as above, in the absence of dyestuff, the amount of compound of formula (II) introduced being calculated to act on n of the hydroxy functions of the oligomer formed in (a), the total amount of dyestuff used representing 0.5% to 20% by weight of the whole of the compounds used.

4,239,869

PHENOLIC RESINS WITH IMPROVED LOW TEMPERATURE PROCESSING STABILITY

Myron C. Annis, North Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 915,335, Jun. 13, 1978. This application Apr. 13, 1979, Ser. No. 29,946

Int. Cl.³ C08G *8/10, 8/28*

U.S. Cl. 525—503 **4 Claims**

1. A phenolic novolac molding composition having improved low temperature processing stability comprising a phenol-aldehyde resin containing about 0.63 to 0.68 mole aldehyde per mole of phenol, and having a heterogeneity index in the range of about 1.5 to 2, a melt viscosity in the range of 500 to 1200 centipoises at 135° C., and a brittle point of 63° to 70° C. clear.

4,239,870

PROCESS FOR COUNTERING EFFECTS OF FAST POISONS IN CONTINUOUS OLEFIN POLYMERIZATION

Richard L. Smith, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 18, 1979, Ser. No. 58,587

Int. Cl.³ C08F *2/06, 2/14*

U.S. Cl. 526—59 **38 Claims**

1. In a continuous process for producing an olefin polymer wherein feed comprising at least one polymerizable olefin monomer and at least one polymerization initiator or catalyst are continuously brought into contact under polymerization conditions in a polymerization zone in the presence of olefin polymer, the improvement consisting essentially of contacting at least a portion of said feed which contains fast poisons with at least one suitable scavenging agent in a scavenging zone separate from the polymerization zone under conditions such that at least a portion of said fast poisons are inactivated without causing any significant amount of polymerization in said scavenging zone, and then contacting the product resulting from the scavenging zone with said initiator or catalyst in said polymerization zone under conditions sufficient to produce said olefin polymer.

4,239,871

PROCESS FOR POLYMERIZATION OF BUTENE

Kunisuke Fukui, Ohtake, Japan, assignor to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,420

Claims priority, application Japan, Nov. 28, 1978, 53/146045

Int. Cl.³ C08F *2/14, 110/08*

U.S. Cl. 526—73 **3 Claims**

1. In a process for the polymerization of butene-1 in a liquid aliphatic hydrocarbon medium in the presence of a catalyst composed of a titanium trihalide and an organoaluminum compound which comprises initially polymerizing a minor part of the butene-1 at a temperature within a range sufficiently low that a slurry of polymer in said medium is produced and then increasing the temperature of polymerization so that the greater part of the butene-1 is polymerized within a high temperature range higher than that of the initial polymerization but not at a temperature so high that the polymer formed dissolves in said medium; the improvement wherein

(1) the initial polymerization is carried out at a temperature of not more than 20° C. in the presence of said titanium trihalide in an amount of not less than 50 millimoles and up to 1,000 millimoles per liter of said medium, and then

(2) the polymerization is carried out in the presence or absence of said medium at a temperature of 25° C. to less than 48° C. in the presence of said titanium trihalide in an amount up to one-fifth of that of the initial polymerization.

4,239,872

OLEFINE POLYMERIZATION WITH SUPPORTED CATALYSTS

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 17, 1979, Ser. No. 86,013

Int. Cl.³ C08F *4/62, 4/66, 4/68*

U.S. Cl. 526—105 **13 Claims**

1. In a polymerization process for the production of a normally solid polymer, the steps of contacting a charging stock comprising ethylene or a mixture of ethylene and a mono-olefinic hydrocarbon having 2 to 4 carbon atoms, inclusive, per molecule with a catalyst prepared by:

(a) impregnating a silica or alumina support with a transition metal salt decomposable upon calcination to the oxide wherein said metal is selected from the group consisting of vanadium, titanium, chromium and mixtures thereof;

(b) calcining the metal impregnated support at a temperature ranging from about 450° C. to about 1000° C.;

(c) impregnating the calcined support with a solution of aluminum hydride; and

(d) heating the hydride impregnated support in hydrogen at a temperature of from about 200° C. to about 600° C.

4,239,873

PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS, CATALYST EMPLOYED IN SAID PROCESS AND METHOD FOR THE PREPARATION THEREOF

Sebastiano Cesca, San Donato Milanese; Alberto Greco, Dresano; Guglielmo Bertolini, Pavia, and Mario Bruzzone, San Donato Milanese, all of Italy, assignors to Snamprogetti, San Donato Milanese, Italy

Continuation of Ser. No. 568,169, Apr. 15, 1975, abandoned. This application Dec. 23, 1977, Ser. No. 863,695

Claims priority, application Italy, Apr. 17, 1974, 21517 A/74

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—114 **6 Claims**

1. A process for the polymerization of an alpha-olefin, wherein the reaction is carried out in the presence of a two-component catalyst system consisting of: (a) a member of the group consisting of the alkyl-halides, alkyl-derivatives and hydrides of the metals belonging to the first three groups of the Periodic System, and (b) the combination product of titanium trichloride and a chloride of another transition metal, derived from the reaction of $TiCl_4$ and a carbonyl compound of said other transition metal, finely dispersed and carried on a material of high superficial area selected from the group consisting of the chlorinated oxides of the elements belonging to the 2nd to the 4th groups of the Periodic System.

4,239,874

CYCLOPENTENE COPOLYMERIZATION PROCESS

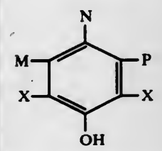
Eilert A. Ofstead, Cuyahoga Falls, and Michael L. Senyek, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 831,202, Sep. 7, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 12,990

Int. Cl.³ C08F *4/62, 232/00*

U.S. Cl. 526—143 **3 Claims**

1. A process for the preparation of substantially gel-free, rubbery copolymers of cyclopentene and dicyclopentadiene comprising polymerizing mixtures of cyclopentene and dicyclopentadiene containing from 10 to 60 percent by weight of dicyclopentadiene in an aliphatic, cycloaliphatic or aromatic solvent, and wherein the polymerization is conducted in a single stage continuous polymerization reactor in the presence of a catalyst system comprising (A) a soluble tungsten halide or oxyhalide, (B) at least one compound selected from the group consisting of trialkylaluminum compounds, dialkylaluminum halides, alkylaluminum sesquihalides and alkylaluminum dichlorides, (C) at least one hydroxy compound selected from the group consisting of aliphatic alcohols and aliphatic alcohols substituted with alkoxy or aryloxy groups, and (D) a polyhalogenated phenol of the general formula:



(D)

where X is chlorine or bromine and M, N and P are selected from the group consisting of H, Cl and Br, and wherein the molar ratio of A:B:C:D lies within the range of 1:0.5–5:0.5–2:-1–3.

4,239,875

METHOD FOR PRODUCING PREPOLYMERS BASED ON VINYL MONOMERS

Irina A. Voronkova, prospekt Tsiolkovskogo, 47, kv.10, Dzerzhinsk Gorkovskoi oblasti; Tatyana I. Radbil, Kuznechikha-1, 3, kv. 8, Gorky; Nikolai A. Mikhalev, prospekt Tsiolkovskogo, 79a, kv. 64, Dzerzhinsk Gorkovskoi oblasti; Boris P. Shtarkman, prospekt Lenina, 65, kv. 63, Dzerzhinsk Gorkovskoi oblasti; Valery A. Fomin, ulitsa Pirogova, 16b, kv. 12, Dzerzhinsk Gorkovskoi oblasti, and Volf S. Etlis, prospekt Dzerzhinskogo, 4, kv. 46, Dzerzhinsk Gorkovskoi oblasti, all of U.S.S.R.

Filed Jan. 24, 1977, Ser. No. 761,899

Int. Cl.³ C08F *2/00, 4/34, 220/14*

U.S. Cl. 526—214 **7 Claims**

1. A method for producing prepolymers from vinyl monomers selected from the group consisting of methacrylic acid esters, a mixture of esters of methacrylic and acrylic acids, styrene and a mixture of styrene with methacrylic acid esters, consisting of mass polymerization of vinyl monomers selected from the group consisting of methacrylic acid esters, a mixture of esters of methacrylic and acrylic acids, styrene and a mixture of styrene with methacrylic acid esters; said polymerization being conducted at a temperature 90° to 160° C. in the medium of a gas selected from the group consisting of air, oxygen-enriched air and an inert gas, in the presence of an initiating system consisting of:

(1) peresters of the general formula



where R is aryl, alkyl, isoalkyl, methyl carbitol, phenyl carbitol or benzyl carbitol in an amount of 0.05 to 3.0 wt. parts per 100 wt. parts of said vinyl monomer and

(2) the following components selected from the group consisting of:

(a) sulfur-containing organic acids with bivalent sulfur in an amount of 0.2–3.0 wt. parts per 100 wt. parts of said vinyl monomer,

(b) esters of sulfur-containing organic acids with bivalent sulfur in an amount of 0.2–3.0 wt. parts per 100 wt. parts of said vinyl monomer,

(c) a mixture of mercaptans with 4 to 20 carbon atoms in the chain and sulfur-containing organic acids in an amount of 0.3–2.5 wt. parts per 100 parts of said vinyl monomer, taken in a weight ratio of 0.1–0.5:0.2.2, respectively.

4,239,876

METHOD OF MAKING POLYMERIZABLE LIQUID MIXTURES

Peter J. Arndt, Seeheim-Jugenheim; Joachim Lowitz, Alsbach, and Franz Wenzel, Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 86,953

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848627

Int. Cl.³ C07C *103/54*

U.S. Cl. 526—287 **4 Claims**

1. A method for making a liquid, directly-polymerizable mixture of acrylamide and a quaternization-product of a tertiary aminoalkyl ester or tertiary aminoalkyl amide of acrylic acid or of methacrylic acid which method comprises reacting said ester or amide with an alkylating agent in the absence of water while said ester or amide is in admixture with acrylamide such that the acrylamide is from 30 to 80 percent by weight of the mixture.

4,239,877

SOLVENTLESS SILICONE RESINS

George F. Roedel, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 873,802, Jan. 31, 1978, Pat. No. 4,160,858.
This application Nov. 24, 1978, Ser. No. 963,640
Int. Cl.[3] C08G *77/06*
U.S. Cl. 528—14 2 Claims

1. A silicone paint comprising a solventless silicone resin having an alkoxy content varying from 7 to 14% by weight and a viscosity at 100% solids varying from 200 to 5,000 centipoise at 25° C. comprising (a) adding to organo chlorosilanes of the formula,

$$R_aSiCl_{4-a}$$

where R is selected from the class consisting of alkyl radicals, cycloalkyl radicals, alkenyl radicals, aryl radicals and fluoroalkyl radicals all having up to 8 carbon atoms and mixtures thereof where a is 1 or 2, from 0.05 to 0.2 part of water and from 0.1 to 1 part of an aliphatic alcohol of up to 3 carbon atoms per part of organochlorosilane to form a silicone alkoxylate; (b) heating the alkoxylate to reflux (c) inserting additional amounts of said aliphatic alcohol to said alkoxylate and removing said alcohol until the acid-content of said alkoxylate is below 1000 parts per million; (d) adding an alkali metal hydroxide to said alkoxylate until its acid content does not exceed 100 parts per million (e) adding water to said alkoxylate such that the amount of water that is added from 0.2 to 0.8 moles of water per mole of hydrocarbonoxy radicals in said alkoxylate; and (f) heating said alkoylate so as to effect the hydrolysis reaction with the additional water to obtain the desired resin product wherein in said silicone paint there is present at 100% solids the silicone resin and from 0.05 to 4.0% by weight of the silicone resin of a curing catalysts selected from the class consisting of metal salts of carboxylic acids where the metal ion varies from manganese to zinc in the Periodic Table with the exception of iron and amine functional silanes and mixtures thereof.

4,239,878

PROCESS FOR PREPARING CATIONIC ELECTRODEPOSITION-COATING RESIN USING MONOFUNCTIONAL BLOCKING AGENTS AND TERTIARY AMINES HAVING AT LEAST TWO HYDROXY GROUPS

Yoshimichi Kobayashi, Yokohama; Yukio Tsuge, Kawasaki, and Susumu Hirako, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,891
Claims priority, application Japan, May 26, 1978, 53/63138
Int. Cl.[3] C08G *18/12, 18/80*
U.S. Cl. 528—45 11 Claims

1. A process for preparing a cationic electrodeposition-coating resin, which comprises:

reacting a polyisocyanate with a polyol and a monofunctional blocking agent in relative amounts such that the molar quantity of isocyanate groups of polyisocyanate is in excess of the total molar amount of hydroxyl groups in said polyol and reactive functional groups in said monofunctional blocking agent thereby synthesizing an intermediate which contains said excess of isocyanate groups;

reacting a tertiary amine having at least two hydroxyl groups with said intermediate in amounts such that there is at least a 1:1 molar correspondance of hydroxyl groups relative to the free isocyanate groups in said intermediate; and

reacting the tertiary amine groups in the reaction product of said intermediate and said tertiary amine with an acid to form amine salt groups.

4,239,879

THERMOPLASTIC POLYURETHANE PREPARED FROM A POLY-1,2-PROPYLENE ETHER GLYCOL, A LOW MOLECULAR WEIGHT GLYCOL AND 2,4-TOLYLENE DIISOCYANATE

Hubert J. Fabris; Robert J. Herold, both of Akron, and Arden E. Schmucker, Alliance, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 25, 1979, Ser. No. 51,788
Int. Cl.[3] C08G *18/48*
U.S. Cl. 528—76 5 Claims

1. A thermoplastic, linear and segmented poly-1,2-propylene ether urethane consisting essentially of the reaction product of (1) tolylene diisocyanate comprising from about 55% to 100% by weight of 2,4-tolylene diisocyanate and the balance 2,6-tolylene diisocyanate, (2) a glycol selected from the group consisting of ethylene glycol, 2,3-butane diol and neopentyl glycol and mixtures thereof and (3) a poly-1,2-propylene ether glycol having an average molecular weight of from 3,300 to 14,000, the equivalent ratio of the diisocyanate to the glycols being from about 0.98 to 1.08:1, the weight ratio of the urethane segments (tolylene diisocyanate plus ethylene glycol, 2,3-butane diol and/or neopentyl glycol) to poly-1,2-propylene ether segments being from about 0.4:1.0 to 1.5:1.0, the glass transition temperature of the poly-1,2-propylene ether segments of the polyurethane being below about −30° C., the poly-1,2-propylene ether glycol having been made by the reaction of propylene oxide with a low molecular weight aliphatic glycol using a polymerization catalyst of the double metal cyanide complex class and the polyurethane having a 100% modulus of at least about 400 p.s.i.

4,239,880

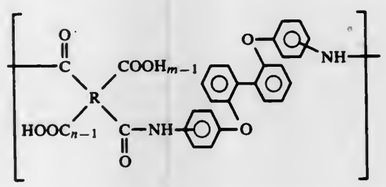
AROMATIC DIAMINES AND THEIR USE AS POLYCONDENSATION COMPONENTS FOR THE MANUFACTURE OF POLYAMIDE, POLYAMIDE-IMIDE AND POLYIMIDE POLYMERS

Roland Darms, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 963,058, Nov. 22, 1978, Pat. No. 4,196,144, which is a continuation of Ser. No. 802,922, Jun. 2, 1977, abandoned. This application Jul. 17, 1979, Ser. No. 58,340
Claims priority, application Switzerland, Jun. 15, 1976, 7593/76
Int. Cl.[3] C07C *79/10, 93/06;* C08G *8/02*
U.S. Cl. 528—125 7 Claims

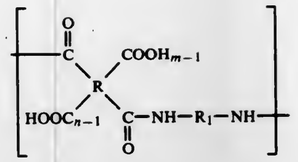
1. A polyamide, a polyamide-amide-acid or a polyamide-acid which consists of 1 to 100 mol% of structural elements of the formula VI

(VI)



and of 0 to 99 mol% of structural elements of the formula VII

(VII)



in which the NH groups in formula VI independently of one another are bonded to the benzene nucleus in the o-, m- or p-position and the individual m, n, R and R_1 independently of one another have the following meanings: m and n denote the number 1 or 2, R denotes an aliphatic radical with at least two carbon atoms or a cycloaliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, the carbonamide groups and carboxyl groups being bonded to different carbon atoms and, if R denotes a cyclic radical and at least one of m and n denotes the number 2, the carboxyl groups each being in the ortho-position relative to a carbonamide group, and R_1 denotes an aliphatic radical with at least two carbon atoms or a cycloaliphatic, araliphatic, carbocyclic-aromatic or heterocyclic-aromatic radical, and also the corresponding derivative which has been cyclised to the imide.

4,239,881

PHENAL-UREA-FORMALDEHYDE CONDENSATION PRODUCT

Walter Hasselman, Jr., Scarsdale, N.Y., assignor to C.P. Chemical Company, Inc., White Plains, N.Y.

Continuation of Ser. No. 497,738, Aug. 15, 1974, abandoned.
This application Dec. 27, 1978, Ser. No. 973,683
Int. Cl.[3] C08J *9/30*
U.S. Cl. 528—164 3 Claims

1. A composition for the preparation of foamed structures by frothing with a aqueous surfactant-hardener solution comprising a phenol-urea-formaldehyde condensation product in which the phenol is present in the amount of from about 1 to about 20 percent by weight, the urea is present in the amount of from about 23 to about 48 percent by weight and the formaldehyde is present in the amount of from about 42 to about 70 percent by weight, the ratio of formaldehyde to urea being in the range of from about 1 to about 3 parts formaldehyde to about 1 part urea, said condensation product having a viscosity at room temperature in the range of about 30 to about 36 seconds on a No. 1 Zahn cup and a pH maintained in the range of from about 6 to about 8.

4,239,882

PROCESS FOR PRODUCING POLYESTER

Tsuneo Kimura; Katsuhisa Kohyama; Takehiro Okada, and Katsuyuki Sakata, all of Kita-Kyushu, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Sep. 3, 1975, Ser. No. 609,964
Claims priority, application Japan, Sep. 3, 1974, 49-10117
Int. Cl.[3] C08G *17/013*
U.S. Cl. 528—209 7 Claims

1. In a process for producing a polyester by esterification or interesterification of an aromatic dicarboxylic acid or an alkyl ester thereof with 1,4-butanediol followed by polycondensation of the resulting ester, an improvement comprising reusing the mixture of water, tetrahydrofuran and 1,4-butanediol distilled from the polycondensation step without purification as a starting material for production of more polyester.

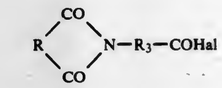
4,239,883

POLYIMIDE PREPARATION FROM IMIDO ACYL HALIDE

Horst Stenzenberger, Dossenheim, Fed. Rep. of Germany, assignor to Technochemie GmbH Verfahrenstechnik, Heidelberg, Fed. Rep. of Germany

Filed Jul. 8, 1976, Ser. No. 703,548
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 2530571
Int. Cl.[3] C08G *69/26, 73/10*
U.S. Cl. 528—322 17 Claims

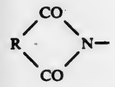
1. In a process of producing a polyimide prepolymer, the step which comprises reacting a difunctional amine with an acid halide of the formula



in which

Hal is halogen,

the group of the formula



is an unsaturated dicarboxylic acid imido group, and

the group of the formula $-R_3-CO-$ is an acyl group attached to the imido nitrogen atom,

to yield a polyimide prepolymer convertible by heating into a macromolecular polyimide.

4,239,884

PROCESS FOR ISOLATION OF SOLID POLYMERS

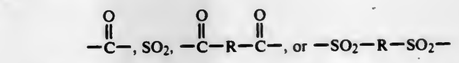
Klaus J. Dahl, Atherton, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Aug. 11, 1975, Ser. No. 603,635
Int. Cl.[3] C08G *33/10*
U.S. Cl. 528—486 12 Claims

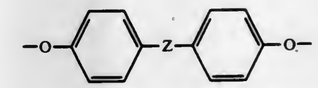
1. In a Friedel-Crafts catalyzed polymerization reaction for the preparation of a crystalline polymer, said reaction being selected from the group consisting of

$$n(X-A-X)+n(H-B-H)\rightarrow 2n-1HX+X(AB)_nH$$

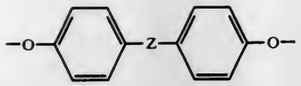
wherein A is



and wherein X is halogen, hydroxy, or alkoxy; and wherein R is alkylene, aryl substituted alkylene, arylene or substituted arylene, or polynuclear aromatic either fused ring or joined by one or more bridging groups such as oxygen, sulfur or a moiety of the structure



wherein Z is propylidene, CO, SO_2, or a chemical bond and wherein B is arylene or substructured arylene, or a polynuclear aromatic, either fused ring or joined by one or more bridging groups such as CO, oxygen, sulfur or a moiety of the structure



wherein Z is as defined above, and wherein n is the degree of polymerization and is at least about 5 and

$$n(XDH) \rightarrow_{n-1} HX + X(D)_nH$$

wherein X is as defined above and wherein D is CO—B— or —SO_2B— wherein B is as defined above, wherein at least one molar equivalent of said Friedel-Crafts catalyst is present per carbonyl or sulfonyl group in the monomeric reactants, wherein said polymerization results in the formation of a complex between said Friedel-Crafts catalyst and polymer produced by said reaction, said complex being soluble in the polymerization medium, and wherein said polymerization reaction is carried out in a solvent, said solvent being present in an amount at least sufficient to dissolve the monomeric species present at the start of said polymerization, the improvement comprising treating said reaction mixture comprising polymer-catalyst complex and solvent with a base having a pK_a of at least about 4.5 as measured in water in an amount at least equimolar to the catalyst present, but less than an amount which will precipitate the polymer, said base being at least partially soluble in said reaction solvent, being stable in said polymerization reaction medium and not forming a stable adduct with said polymer products to thereby decompose said polymer-catalyst complex and form a base-catalyst complex, admixing the base treated reaction mixture with a material which is a non-solvent for the polymer and the base-catalyst complex but which is mixable with the reaction solvent to thereby precipitate the polymer and base-catalyst complex, removing the reaction solvent from the base treated reaction mixture, and separating the precipitated polymer from the precipitated base-catalyst complex.

4,239,885

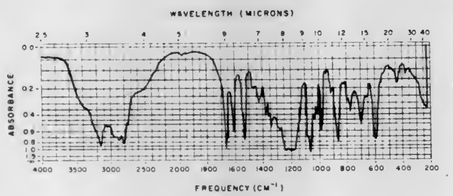
PROCESS FOR THE PREPARATION OF DIACETONE ACRYLAMIDE

Henry Richmond, White House Station, N.J., assignor to American Cyanamid Company, Stamford, Conn.

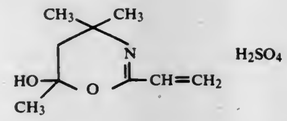
Continuation-in-part of Ser. No. 859,623, Dec. 12, 1977, abandoned. This application Jun. 28, 1978, Ser. No. 920,040

Int. Cl.[3] **C07D** *413/12;* **C07C** *97/16*

U.S. Cl. 544—97 **1 Claim**



1. The compound of the formula:



4,239,886

SALTS OF N-ACYLAMINOHYDROXYNAPHTHALENESULPHONIC ACIDS

Peter Wild, Alten Buseck, and Horst Nickel, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

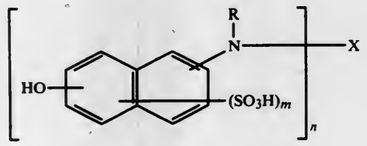
Filed Feb. 16, 1979, Ser. No. 12,946

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2806951

Int. Cl.[3] **C07D** *265/30;* **C07C** *93/04;* **C07D** *295/08*

U.S. Cl. 544—170 **7 Claims**

1. Salts of N-acylaminohydroxynaphthalenesulphonic acids which, in the form of the free acid, correspond to the formula



(I)

wherein

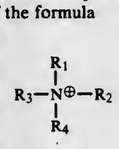
R denotes hydrogen or alkyl,

X denotes the radical of a monovalent or divalent acyl group,

m denotes 1 or 2 and

n denotes 1 or 2,

and wherein at least one of the sulphonic acid groups contains, as a cation, a cation of the formula

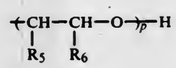


wherein

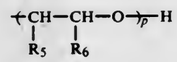
R_1 and R_2 independently of one another denote C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl or R_3, or

R_1 and R_2, together with the nitrogen atom, denote piperidinyl, morpholinyl or pyrrolinyl,

R_3 denotes the group



R_4 denotes hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl or the group



R_5 and R_6 denote hydrogen, methyl or ethyl and p represents an integer between 1 and 10.

4,239,887

PYRIDOTHIENOTRIAZINES

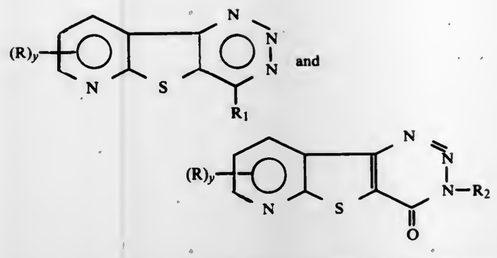
Raymond D. Youssefyeh, Tarrytown, N.Y., and Jeffrey D. Wilson, Durham, N.C., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,853

Int. Cl.[3] **C07D** *513/14*

U.S. Cl. 544—184 **26 Claims**

1. A compound of the formula



wherein R and R_1 are independently hydrogen, alkyl, alkenyl, alkynyl, aryl, aralkyl, halogen, alkoxy, alkenyloxy, alkynyloxy, alkylamino, alkanoylamino, carbalkoxy, carbalkoxyamino, alkanoyloxy or trihaloalkyl; y is an integer from 1 to 3; and R_2 is alkyl, alkenyl, alkynyl, aryl, aralkyl, alkanoyl or carbalkoxy; wherein the alkyl, alkenyl, alkynyl, alkoxy, alkanoyl and carbalkoxy groups contain up to 7 carbon atoms and the aryl and aralkyl groups contain up to 10 carbon atoms, with the proviso that when R_1 is hydroxy, R is not hydrogen.

4,239,888

1-PHENYLURACILS

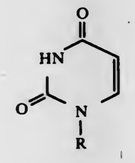
Max W. Miller, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,407

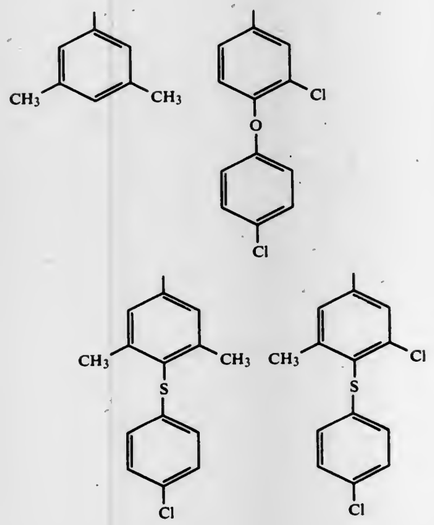
Int. Cl.[2] **C07D** *239/54*

U.S. Cl. 544—309 **2 Claims**

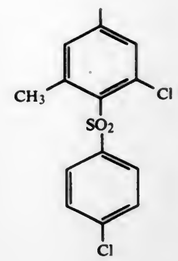
1. A compound of the formula



wherein R is



-continued



4,239,889

3-(N-HETEROCYCLYL)ISOXAZOLIDINE FUNGICIDES

Pieter ten Haken, Eastling, and Shirley B. Webb, Sheldwich, near Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

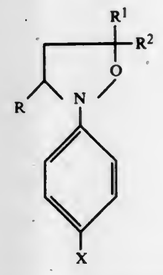
Filed Jun. 14, 1979, Ser. No. 48,424

Claims priority, application United Kingdom, Jun. 27, 1978, 27979/78

Int. Cl.[3] **C07D** *413/04*

U.S. Cl. 544—335 **4 Claims**

1. A compound of the formula



wherein R is 2-pyrazinyl or 5-pyrimidinyl, X is chlorine or fluorine, and

(a) R^1 is hydrogen and R^2 is alkoxy of one or two carbon atoms, or

(b) R^1 and R^2 each is methyl.

4,239,890

OCTAHYDRO-3,5-ETHENO- AND 3,5-ETHANOBENZO[G]QUINOLINES

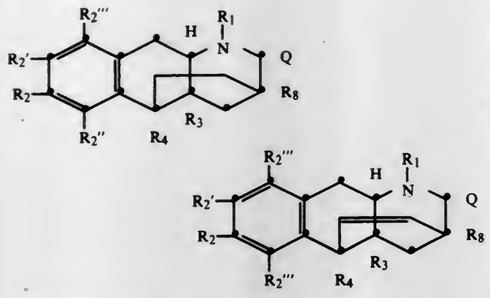
William F. Michne, Poestenkill, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 877,166, Feb. 13, 1978, Pat. No. 4,180,667, which is a continuation-in-part of Ser. No. 741,227, Nov., 1976, Pat. No. 4,100,164, which is a continuation-in-part of Ser. No. 695,977, Jun. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 576,313, May 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 471,571, May 20, 1974, Pat. No. 3,932,422. This application Feb. 5, 1979, Ser. No. 9,483

Int. Cl.[3] **C07D** *215/14*

U.S. Cl. 546—74 **23 Claims**

1. A compound having one of the formulas



where R_1 is hydrogen, lower-alkyl, lower-alkanoyl (only when R_4 is hydrogen), lower-alkenyl, lower-alkynyl, halo-lower-alkenyl, cycloalkyl, cycloalkyl-lower-alkyl, 2- or 3-furyl-methyl, or such 2- or 3-furylmethyl substituted on the unsubstituted ring carbon atoms by from one to three methyl groups, phenyl-lower-alkyl, or phenyl-lower-alkyl substituted in the phenyl ring by from one to two members of the group consisting of halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, amino, lower-alkanoylamino or a single methylenedioxy attached to adjacent carbon atoms; R_2, R_2', R_2'' and R_2''' are each hydrogen, or three of them are hydrogen and the fourth is halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, nitro, amino, lower-alkanoylamino, lower-alkoxycarbonylamino or phenyl, or two of the adjacent such groups together are methylenedioxy; R_3 is hydrogen or lower-alkyl; R_4 is hydrogen, lower-alkyl, lower-alkoxy-lower-alkyl, hydroxy-lower-alkyl, lower-alkylthio-lower-alkyl, lower-alkylsulfinyl-lower-alkyl, phenylthio-lower-alkyl, phenylsulfinyl-lower-alkyl, lower-alkenyl or halo-lower-alkyl, or R_3 and R_4 together are divalent lower-alkylene, $-(CH_2)_n-$, where n is one of the integers 3 or 4; and Q is oxo, H_2, CH-lower-alkyl, CH-cycloalkyl, CH-lower-alkylcycloalkyl, CH-phenyl or CH-lower-alkylphenyl, or the latter two groups substituted in the phenyl ring by from one to two members of the group consisting of lower-alkyl, lower-alkoxy, lower-alkylmercapto, trifluoromethyl or methylenedioxy attached to adjacent carbon atoms; R_8 is hydrogen or lower-alkyl; or an acid addition salt thereof.

4,239,891

SUBSTITUTED PIPERIDINE HYDROXAMIDES, THEIR PREPARATION, AND THEIR USE AS LIGHT STABILIZERS

Hartmut Wiezer, Gersthofen; Gerhard Pfahler, Augsburg, and Norbert Mayer, Gersthofen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

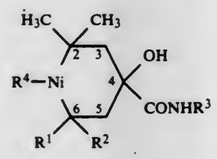
Filed Sep. 18, 1978, Ser. No. 942,991

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742582

Int. Cl.³ C07D *211/48*; C08K *5/34*

U.S. Cl. 546—242 **1 Claim**

1. A process for the preparation of piperidine hydroxyamides of the formula



in which

R^1 and R^2 are methyl;

R^3 is tertiary alkyl of 4–8 carbons; and

R^4 is hydrogen or alkyl of 1–4 carbons,

which comprises reacting 2,2,6,6-tetramethyl-4-hydroxy-4-cyanopiperidine in an organic solvent with a tertiary alcohol of 4 to 8 carbons or an olefin of the same number of carbons, with addition of sulfuric acid as catalyst, in which process when an olefin is used at least an equimolar amount of water is added after the reaction is complete.

4,239,892

PROCESS FOR PREPARING PYRIDINE BASES

Tetsuya Miyake, Tokyo; Kohji Noguchi, and Kazuo Imamura, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 841,083, Oct. 11, 1977, Pat. No. 4,179,576. This application Jul. 27, 1979, Ser. No. 61,335

Claims priority, application Japan, Oct. 27, 1976, 51-128192; Oct. 27, 1976, 51-128194; Oct. 27, 1976, 51-128195

Int. Cl.³ C07D *213/10*

U.S. Cl. 546—251 **12 Claims**

1. A process for preparing pyridine bases from acetaldehyde and ammonia by gas phase catalytic reaction, wherein the gas phase catalytic reaction is carried out at a temperature of 300° to 550° C. and at a space velocity of 200 to 10,000 hr^{-1} in the presence of a catalyst prepared by subjecting silica-alumina to ion exchange with ions of a member selected from the group consisting of manganese, nickel, iron, cobalt, silver, copper and silver plus sodium to adsorb the ions on said silica-alumina wherein the silica/alumina weight ratio is in the range of from 98/2 to 50/50 and wherein the catalyst contains the ions in an amount of 0.01 to 1.2 milliequivalents per gram of silica-alumina.

4,239,893

DIHYDROPYRIDINE DERIVATIVES

Charles Pigerol, Saint-Ouen; Marie-Madeleine Chandavoine, and Paul de C. de Fillain, both of Sisteron, all of France, assignors to Labaz, Paris, France

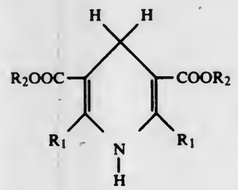
Continuation-in-part of Ser. No. 918,065, Jun. 22, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,189

Claims priority, application France, Oct. 14, 1977, 77 30992

Int. Cl.³ C07D *213/55*

U.S. Cl. 546—321 **12 Claims**

1. A compound of the general formula:



wherein R_1 represents a branched- or straight-chain alkyl group containing from 1 to 16 carbon atoms, a branched- or straight-chain alkenyl group containing from 4 to 12 carbon atoms, a straight-chain phenylalkyl radical in which the alkyl chain contains from 1 to 6 carbon atoms, R_2 represents a straight-chain alkyl group containing from 1 to 18 carbon atoms, a branched- or straight-chain alkenyl or alkynyl group containing from 3 to 11 carbon atoms, an ω-halogenoethyl radical, a benzyl radical substituted on the para- or ortho-position by a halogen atom or a methyl or methoxy radical, or a radical of the formula $R_4—O—(CH_2)_n—$, wherein n is 2, 3 or 4 and R_4 represents a branched- or straight-chain alkyl group containing from 1 to 4 carbon atoms, substituted on the ω-position by a halogen atom or by a methoxy radical, with the proviso that when R_1 represents a methyl radical, R_2 does not represent an alkyl radical.

4,239,894

THIAZOLE DERIVATIVES

Guenther Seybold, Ludwigshafen, and Heinz Eilingsfeld, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

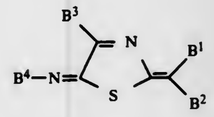
Filed Jun. 29, 1978, Ser. No. 920,638

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732221

Int. Cl.³ C07D *277/20*

U.S. Cl. 548—194 **5 Claims**

1. A compound of the formula



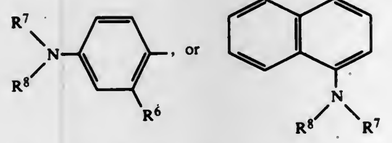
where

B^1 and B^2 are cyano, alkanoyl of 1 to 4 carbon atoms, benzoyl which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms or by alkoxy of 1 to 4 carbon atoms, $COOB^5$ or



B^3 is phenyl which is unsubstituted or is monosubstituted or polysubstituted by chlorine, bromine, alkoxy of 1 to 8 carbon atoms, alkyl of 1 to 8 carbon atoms, phenoxy, alkylmercapto of 1 to 4 carbon atoms, phenylmercapto, β-cyanoethoxy, β-C_1- to C_4-alkoxycarbonyl-ethoxy or β-cyanoethylthio, or is thienyl,

B^4 is a radical of the formula



B^5 is alkyl of 1 to 8 carbon atoms, or is alkyl of 2 or 3 carbon atoms substituted by alkoxy of 1 to 8 carbon atoms, chlorine, bromine, phenyl or C_1 to C_4-alkoxyethoxy,

B^6 and B^7 independently of one another are hydrogen, alkyl of 1 to 8 carbon atoms or alkyl of 2 or 3 carbon atoms which is substituted by alkoxy of 1 to 4 carbon atoms, C_1- to C_4-alkoxyethoxy, phenoxyethoxy, cyano, C_1 to C_4-alkoxycarbonyl, alkanoyloxy of 1 to 4 carbon atoms or phenyl, or are cyclohexyl or phenyl,

B^6 and B^7 together with the nitrogen may also be pyrrolidino, piperidino or morpholino,

R^6 is hydrogen, chlorine, bromine, methyl, hydroxyl, alkoxy of 1 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms or benzoylamino,

R^7 and R^8 independently of one another are hydrogen or alkyl of 1 to 5 carbon atoms which is unsubstituted or substituted by hydroxyl, chlorine, cyano, alkoxy of 1 to 4 carbon atoms, alkanoyloxy of 1 to 4 carbon atoms or C_1- to C_4-alkoxycarbonyl, or are allyl, cyclohexyl, benzyl, phenylethyl or phenyl.

4,239,895

PROCESS FOR PRODUCING 1-HYDROXYMETHYLIMIDAZOLES

Toni Dockner, Meckenheim; Anton Frank, Ludwigshafen; Uwe Kempe, Heidelberg; Matthias Wetzler, and Helmut Karn, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

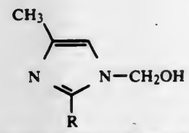
Division of Ser. No. 3,966, Jan. 16, 1979, abandoned. This application Aug. 8, 1979, Ser. No. 64,860

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825547

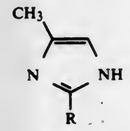
Int. Cl.³ C07D *233/60*

U.S. Cl. 548—341 **6 Claims**

1. A process for the preparation of a compound of the formula 1



where R is hydrogen or alkyl of 1 to 18 carbon atoms, which comprises: reacting an imidazole of the formula 2



where R has the meanings given above, with paraformaldehyde or trioxane, at from 40° to 150° C.

4,239,896

5-(OPTIONALLY SUBSTITUTED 2-AMINOPHENYL)-1H-PYRAZOLE-3-METHANOL

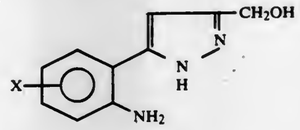
B. Richard Vogt, Yardley, Pa., and Ligaya M. Simpkins, Allentown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 969,642, Dec. 13, 1978, Pat. No. 4,198,412. This application Oct. 18, 1979, Ser. No. 86,236

Int. Cl.³ C07D *231/12*

U.S. Cl. 548—378 **2 Claims**

1. A compound of the formula



wherein X is hydrogen, lower alkyl, lower alkoxy, halogen or trifluoromethyl.

4,239,897

THIOPHENE COMPOUNDS AND THEIR MANUFACTURE

Phillip Rossy, Ludwigshafen, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

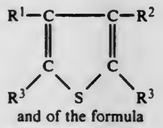
Continuation of Ser. No. 784,571, Apr. 4, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,655

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615885; Jan. 3, 1977, 2700215; Jan. 3, 1977, 2700262

Int. Cl.[3] **C07D** *333/00, 333/18*

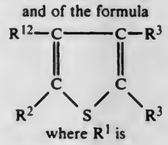
U.S. Cl. 549—61 **9 Claims**

1. A process for the manufacture of thiophene compounds of the formula



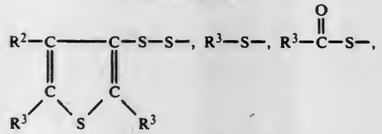
I

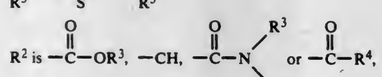
and of the formula



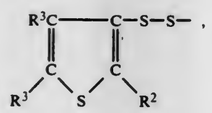
Ia

where R^1 is

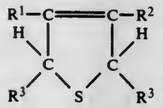


R^2 is 

the individual radicals R^3 and R^4 may be identical or different and each is an aliphatic, cycloaliphatic, araliphatic or aromatic radical, and R^3 may also be hydrogen, R^{12} has the meanings of R^1 or is



wherein dihydrothiophenes of the formula



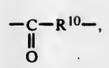
II

where R^1, R^2 and R^3 have the above meanings, are dehydrogenated with chlorides or bromides of phosphoric acid or sulfuric acid, with chlorine, bromine or iodine, or with N-halogen compounds of the formula

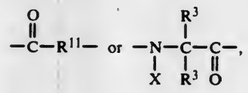


IV

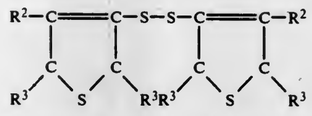
where X is chlorine or bromine, R^9 is hydrogen or



the individual radicals R^{10} may be identical or different and each is an aliphatic, araliphatic or aromatic radical, the two radicals R^{10} may also together be

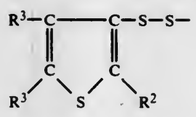


where R^3 and X have the above meanings and R^{11} is alkylene, or when disulfide-(3,3')-bis-(dihydrothiophenes) of the formula

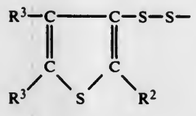


IIa

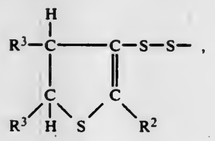
where R^2 and R^3 have the above meanings, or dihydrothiophenes of the formula



where R^{13} has the meanings of R^{12} or, if R^{12} is



R^{13} may also be



are dehydrogenerated with chlorides or bromides of sulfuric acid or with chlorine.

4,239,898

NOVEL 4-(SUBSTITUTED-AMINOPHENOXY)-3-THIOPHENEMETHANOLS

Jeffery B. Press, Tuxedo, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 11, 1980, Ser. No. 120,198

Int. Cl.[3] **C07D** *333/16;* **A01K** *31/38*

U.S. Cl. 549—65 **4 Claims**

1. The compound 4-(o-methylaminophenoxy)-3-thiophenemethanol.

2. The compound 4-[2-(methlamino)-p-tolyloxy]-3-thiophenemethanol.

3. The compound N-ethyl-6'-[4-(hydroxymethyl)-3-thienyloxy]-m-acetotoluidide.

4. The compound 4-(2-dimethylamino-p-tolyloxy)-3-thiophenemethanol hydrochloride.

4,239,899

VARIOUS 15-DEOXY-16-HYDROXY-16-ETHYNYL AND 16-ETHYNYLSUBSTITUTED PROSTAGLANDINS

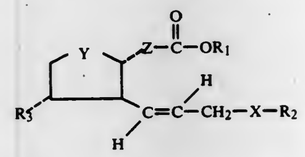
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 857,714, Dec. 5, 1977, Pat. No. 4,191,699, which is a continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Sep. 13, 1979, Ser. No. 74,941

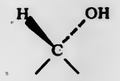
Int. Cl.[3] **C07C** *177/00;* **C07F** *7/08*

U.S. Cl. 556—438 **35 Claims**

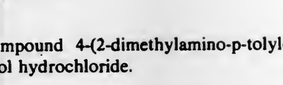
1. An optically active compound of the formula:



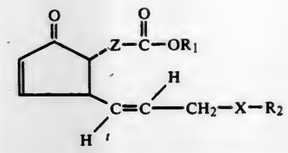
wherein Y is a divalent moiety of the formula:



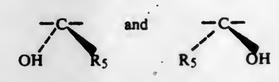
R_1 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl; R_2 is selected from the group consisting of C_3 to C_7 alkyl; R_3 is selected from the group consisting of hydrogen and hydroxy; X is selected from the group consisting of a divalent moiety of the formula:



wherein R_5 is selected from the group consisting of 1-propynyl, ethynyl and trimethylsilylethynyl; Z is selected from the group consisting of a divalent moiety of the formula: $-(CH_2)_6-$, $-(CH_2)_4-S-CH_2-$ and $-(CH_2)_4-O-CH_2-$; the racemic mixture thereof; and, when R_1 is hydrogen, the pharmacologically acceptable salts thereof.



wherein R_1 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl; R_2 is selected from the group consisting of C_3 to C_7 alkyl; X is selected from the group consisting of a divalent moiety of the formula:



wherein R_5 is selected from the group consisting of ethynyl, 2-propynyl and trimethylsilylethynyl; Z is

cis

$$-CH_2-CH=CH-(CH_2)_3-;$$

the racemic mixture thereof; and, when R_1 is hydrogen, the pharmacologically acceptable salts thereof.

4,239,900

VARIOUS 15-DEOXY-16-HYDROXY-16-ETHYNYL AND 16-ETHYNYLSUBSTITUTED PROSTAGLANDINS

Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 857,849, Dec. 5, 1977, Pat. No. 4,190,597, which is a continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Sep. 13, 1979, Ser. No. 74,942

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 556—438 **21 Claims**

1. An optically active compound of the formula:

4,239,901

PYRAZOL-1-YLPHENYLACETIC ACIDS

Georg Rainer, Constance, Fed. Rep. of Germany, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

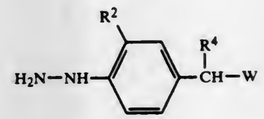
Filed Oct. 12, 1977, Ser. No. 841,382

Claims priority, application Switzerland, Oct. 14, 1976, 13138/76

Int. Cl.[3] **C07C** *109/10;* **C07D** *231/10*

U.S. Cl. 560—34 **13 Claims**

1. A compound of the formula



wherein

R^2 is a halo,

R^4 is —H or lower alkyl,

W is —CN or —CO—Y and

Y is —OH, di(lower)alkylamino, lower alkoxy or benzyloxy.

4,239,902

N-CARBOXYACYLAMINOACID ESTERS, PROCESSES FOR THEIR PRODUCTION AND THEIR DIAGNOSTIC USE

Eugen Schnabel, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

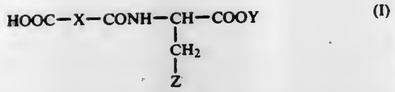
Filed Mar. 8, 1979, Ser. No. 18,701

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1978, 2815555

Int. Cl.[3] **C07C** *101/08;* **G01N** *31/00*

U.S. Cl. 560—41 **6 Claims**

1. A compound of the formula



(I)

in which

X denotes o-phenylene, straight-chain C_2 to C_4 alkylene, straight-chain, C_2 to C_4 alkylene or C_2 to C_4 alkenylene substituted by C_1 to C_4 alkyl,

Y denotes α-naphthyl, β-naphthyl, phenyl or 4-nitrophenyl and

Z denotes phenyl, indolyl, or phenyl or indolyl substituted by hydroxyl.

4,239,903

2-AMINOTETRALIN DERIVATIVES AND PROCESS FOR PRODUCING THE SAME

Sumiro Isoda; Munefumi Kanao; Yoshifumi Ichikawa; Takeshi Hashizume; Kiyoshi Irie, and Yoshio Kasai, all of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

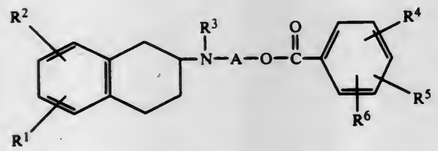
Filed May 16, 1978, Ser. No. 906,510

Claims priority, application Japan, May 17, 1977, 52/56837

Int. Cl.³ C07C *69/84*

U.S. Cl. 560—73 **12 Claims**

1. A compound represented by the following general formula (I)



(I)

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom, an alkoxy group or, when taken together, R^1 and R^2 represent an alkylenedioxy group; R^3 represents an alkyl group or a cycloalkyl group, R^4, R^5 and R^6, which may be the same or different, each represents a hydrogen atom, an alkoxy group, an alkyl group, a halogen atom, a hydroxyl group or, when two of R^4, R^5 and R^6 are taken together, they represent an alkylenedioxy group; and A represents a straight or branched chain alkylene group having 2 to 10 carbon atoms or an alkylene group having 2 to 10 carbon and interrupted with an oxygen atom forming an ether bond therein, and the therapeutically useful acid-addition salts thereof.

4,239,904

PROCESS FOR THE PREPARATION OF URETHANES

Haven S. Kesling, Jr., Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 882,520, Mar. 1, 1978, abandoned, which is a continuation of Ser. No. 754,150, Dec. 27, 1976, abandoned. This application Jun. 6, 1979, Ser. No. 45,882

Int. Cl.³ C07C *125/065*

U.S. Cl. 560—157 **16 Claims**

1. A process for the preparation of urethanes which comprises reacting, at a temperature of about 60° to 300° C. and a pressure of about 1 to 700 atmospheres a tertiary aliphatic or cycloaliphatic amine, an alcohol and carbon monoxide in the presence of a salt selected from copper I salts, copper II salts and mixtures of these, oxygen or an oxygen-containing gas mixture present in an amount less than the minimum amount necessary to form an explosive mixture of carbon monoxide and oxygen and a dehydrating agent.

4,239,905

1-β-D-ARABINOFURANOSYLCYTOSINE-5'-OLEYL PHOSPHATE AND SALTS THEREOF

Kenjiro Kodama, and Manami Morozumi, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi and Mineo Saneyoshi, Sapporo, both of, Japan

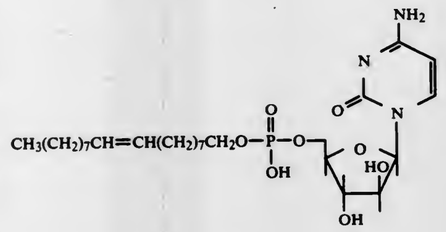
Filed Jun. 18, 1979, Ser. No. 49,636

Claims priority, application Japan, Jun. 20, 1978, 53-73699

Int. Cl.³ C07H *17/00, 15/12*

U.S. Cl. 536—29 **2 Claims**

1. 1-β-D-Arabinofuranosylcytosine-5'-oleyl phosphate or a pharmaceutically-acceptable salt thereof, said phosphate being represented by the structural formula.



4,239,906

METHOD FOR OBTAINING A PURIFIED CELLULOSE PRODUCT FROM CORN HULLS

Richard L. Antrim; Yuk-Charn Chan, both of Clinton; John R. Crary, Jr., and Donald W. Harris, both of Camanche, all of Iowa, assignors to Standard Brands Incorporated, Wilton, Conn.

Filed Jun. 7, 1979, Ser. No. 46,584

Int. Cl.³ C08B *1/00, 37/14*

U.S. Cl. 536—56 **14 Claims**

1. In a method for treating corn hulls whereby the corn hulls are treated to solubilize non-carbohydrate material and to provide an impure cellulose product containing hemicellulose, the improvement comprising treating said cellulose product under acidic conditions whereby the hemicellulose is solubilized and a purified cellulose product having present at least about 70 percent alpha-cellulose, on a dry weight basis, is obtained.

4,239,907

PREPARATION OF LOW VISCOSITY POLYETHER POLYOLS

William C. Bedoit, Jr., 2305 Stannye Dr., Louisville, Ky. 40222

Filed Jan. 15, 1979, Ser. No. 3,236

Int. Cl.³ C07C *41/00*; C07H *15/04*

U.S. Cl. 536—120 **19 Claims**

1. In a process for preparing a polyether polyol which comprises reacting a polyhydric water-soluble initiator with ethylene oxide and an alkylene oxide in the presence of ammonia or an alkanolamine or a primary alkylamine or alkylene diamine, the improvement which comprises:

mixing and reacting the water-soluble polyhydric initiator and ammonia or alkanolamine, having two to four carbon atoms, or primary mono alkylamine having two to four carbon atoms, or diprimary amine having three to about six carbon atoms, or alkylene diamine having from two to six carbon atoms, in the presence of added water with ethylene oxide and the alkylene oxide at an elevated temperature not greater than about 110° C. in the absence of an added alkoxylation catalyst.

4,239,908

N-ARALKENYL-N'-CYANO-N''-(HETEROCYCLYLTHIOALKYL)-GUANIDINES

Gilbert W. Adelstein, Evanston, Ill., assignor to G.D. Searle & Co., Skokie, Ill.

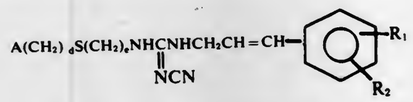
Filed Dec. 10, 1979, Ser. No. 101,923

Int. Cl.³ C07D *263/34, 233/54, 277/26, 307/38*

U.S. Cl. 542—416 **16 Claims**

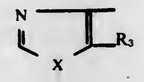
Please amend the above-identified application as follows:

Claim 1 (Amended) A compound of the formula

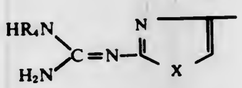


or [its] *a* pharmacologically acceptable salt *thereof* [;], wherein A is of the formula:

1.

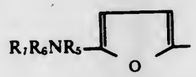


2.



or

3.

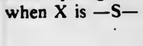


wherein R_1 and R_2 can be the same or different and each represents hydrogen, halogen, hydroxy, trifluoromethyl, alkoxy containing 1 to 7 carbon atoms and either unsubstituted or substituted by aryl or cycloalkyl, or amino either unsubstituted or substituted with at least one acyl or alkyl, each containing 1 to 7 carbon atoms, the alkyl being unsubstituted or substituted by aryl or cycloalkyl; or R_1 and R_2 are interconnected forming a group having terminal oxygen atoms which are separated by methylene or ethylene and which are attached to adjacent carbon atoms on the phenyl ring;

X represents —O—, —S—, or —N—;

R_3 represtns hydrogen, halogen or alkyl containing 1 to 7 carbon atoms:

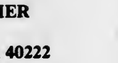
R_4 represents hydrogen or alkyl contining 1 to 7 carbon atoms when X is —S— or —N— and represents hydrogen when S is O;



R_5 is alkylene of 1 to 6 carbon atoms;

R_6 and R_7 can be the same or different and each represents hydrogen, cycloalkyl or alkyl, each containing 1 to 7 carbon atoms, the alkyl either unsubstituted or substituted by aryl; or R_6 and R_7 are interconnected forming with the nitrogen atom in formula 3 a 5- or 6- membered ring which can include oxygen; and

d is 0, 1 or 2 and e is 2 or 3 when A is of formula 1 or 3; d is 1 or 2 and e is 2 or 3 when A is of formula 2 and X is —S— or —N—; d is 1 land e is 2 when A is of formula 2 and X is —O—; and the sum of d and e is 3 or 4.



16. The compound of claim 1 being N-cyano-N'-[2-(((5-methyl-1H-imidazol-4-yl)methyl)thio)ethyl]-N''-(3-phenyl-2-propen-1-yl)guanidine hydrochloride.

4,239,909

2-DECARBOXY-2-AMINOMETHYL-9-DEOXY-5,9α-EPOXY-2,3,4,5-TETRADEHYDRO-PGF$_1$ COMPOUNDS

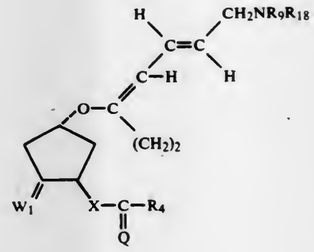
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 936,295, Aug. 23, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,460

Int. Cl.³ C07D *311/74*

U.S. Cl. 542—422 **8 Claims**

1. A 4Z compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;

wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and

wherein R_4 is

(1) —CR_5R_6—C_gH_{2g}—CH_3 or

(2) —CR_5R_6—Z—(Ph)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7—, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;

wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive; and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,239,910

MANUFACTURE OF BUTENEDIOL DIESTERS

Hans-Martin Weitz, Bad Duerkheim; Rolf Platz, Mannheim, and Juergen Hartig, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 18, 1977, Ser. No. 779,284

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1976, 2611423

Int. Cl.³ C07C *67/055, 69/08, 69/16*

U.S. Cl. 560—244 **7 Claims**

1. In a one-step liquid phase process for the manufacture of butenediol diesters by reacting liquid butadiene, molecular oxygen and a carboxylic acid in a reaction chamber and in the presence of an effective amount of an acyloxylation catalyst containing platium or palladium, the improvement which comprises:

using an ester of the carboxylic acid with a short-chain aliphatic alcohol in place of the carboxylic acid and

carrying out the reaction in the presence of an effective amount of a hydrolysis catalyst and at least 1 mole of water per mole of butadiene to be converted.

4,239,911

MANUFACTURE OF GLYCOL ESTERS

Hans-Martin Weitz, Bad Duerkheim, and Juergen Hartig, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 24, 1977, Ser. No. 800,922

Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623562

Int. Cl.³ C07C *67/05, 69/08, 69/16*

U.S. Cl. 560—246 **6 Claims**

1. In a one-step liquid phase process for the manufacture of ethylene glycol diformate or diacetate or 1,2-propylene glycol diformate or diacetate by reacting ethylene or propylene, molecular oxygen and the appropriate carboxylic acid in a reaction chamber and in the presence of an effective amount of oxyacylation catalyst containing a compound of a transition metal selected from the group of Te, Ce, Sb, Mn, V, Ga, As and Co in conjuction with a halogen or a hydrohalic acid, the improvement which comprises:

using an ester of formic acid or acetic acid with a short-chain aliphatic alcohol of 1–5 carbon atoms in place of the carboxylic acid and

carrying out the reaction in the presence of an effective amount of an hydrolysis catalyst and not less than 1 mole of water per mole of olefin converted.

4,239,912

PROCESS FOR RESOLVING DL-MANDELIC ACID WITH NOVEL 2-BENZYLAMINO-1-BUTANOLS

Imre A. Halmos, Summit, N.J., assignor to American Cyanamid Company, Stamford, Conn.

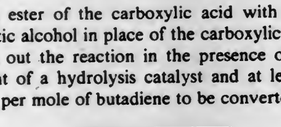
Continuation of Ser. No. 831,024, Sep. 6, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 968,041

Int. Cl.³ C07B *19/00*

U.S. Cl. 562—401 **6 Claims**

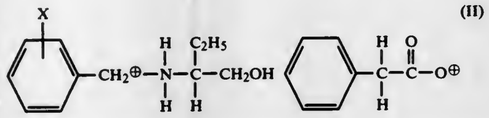
1. A process for resolving DL-mandelic acid which comprises:

(a) reacting about equimolecular amounts of DL-mandelic acid and an optically active 2-benzylamino-1-butanol represented by formula (I),



(I)

wherein X represents chloro, bromo, fluoro, or nitro, at about 40°–50° C. in a two-phase mother liquor, consisting of a mixture of a water phase and a water immiscible organic phase, said organic phase being a lower alkyl ester of a lower aliphatic carboxylic acid selected from ethyl acetate, n-propyl acetate, isopropyl acetate, ethyl propionate, n-propyl propionate, or isopropyl propionate, or mixtures thereof, to form a mandelate salt represented by formula (II),



(II)

(b) cooling the reaction mixture to crystallize said mandelate salt;

(c) separating the crude mandelate salt from the two-phase mother liquor;

(d) recrystallizing or slurrying the crude mandelate salt in a solvent medium selected from water, methanol, ethanol, or isopropanol, or mixtures thereof, to obtain an optically pure mandelate salt;

(e) alkalizing the water phase of the two-phase mother liquor obtained in step (c);

(f) separating the alkalized water phase from the organic phase;

(g) agitating the optically pure mandelate salt from step (d) and the organic phase from step (f) with about 1.05 to 1.10 moles of aqueous sodium or potassium hydroxide per mole of mandelate salt at ambient temperature to hydrolyze said salt and form a clear two-phase liquid mixture consisting of an organic phase containing an optically active compound of formula (I) and an alkalized aqueous phase containing the sodium or potassium salt of an optically active mandelic acid;

(h) recovering the aqueous phase from step (g) and reacting said salt of an optically active mandelic acid with about an equimolecular amount of an organic dicarboxylic acid selected from oxalic, tartaric, maleic, malonic, or fumaric acid, at about 25°–40° C. to form a mixture of an optically active mandelic acid and a mono-sodium or potassium salt of said dicarboxylic acid having a low solubility in water;

(i) cooling the reaction mixture to ambient temperature and diluting the same with a water-soluble organic liquid solvent selected from the group consisting of acetone, methanol, ethanol, n-propanol, and isopropanol to complete the precipitation of said salt of said dicarboxylic acid;

(j) separating said salt of said dicarboxylic acid;

(k) removing said water-soluble organic solvent; and

(l) recovering D-(−) or L-(+)-mandelic acid from said mother liquor.

4,239,913

PROCESS FOR PREPARING 2-HYDROXYNAPHTHALENECARBOXYLIC ACIDS

Ryuzo Ueno, Nishinomiya; Hiroaki Tsuchiya, Kobe; Yasukazu Muramoto, Itami, and Yoshihiko Kuwae, Amagasaki, all of Japan, assignors to Kabushiki Kaisha Veno Seiyaku Oyo Kenkyujo, Osaka, Japan

Filed Aug. 15, 1978, Ser. No. 933,902

Claims priority, application Japan, Oct. 25, 1977, 52-127274; Oct. 26, 1977, 52-127642

Int. Cl.³ C07C *51/15*

U.S. Cl. 562—425 **13 Claims**

1. In a process for preparing 2-hydroxynaphthalene-carboxylic acid by the reaction of an alkali β-naphtholate with carbon dioxide, the improvement which comprises reacting a liquid mixture of the alkali β-naphtholate, 0.05 to 3 moles of β-naphthol per mole of the alkali β-naphtholate and 0.1 to 5 times the weight of the alkali β-naphtholate of light oil or kerosene with carbon dioxide under a carbon dioxide pressure of not more than 15 kg/cm².G at a temperature of at least 180° C.

4,239,914

PROCESS FOR PREPARING 2-(6′-METHOXY-2′-NAPHTHYL)-PROPIONIC ACID

Stefano Campolmi; Maria G. Felicioli, both of Novara; Vittorio Carletti, Meda, and Roberto Santi, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

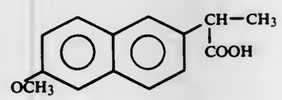
Filed May 21, 1979, Ser. No. 40,955

Claims priority, application Italy, May 22, 1978, 23652 A/78

Int. Cl.³ C07C *65/00, 65/11*

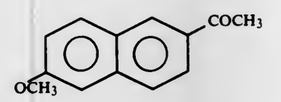
U.S. Cl. 562—466 **29 Claims**

1. Process for preparing (2-(6′-methoxy-2′-naphthyl)-propionic acid of the formula:



(I)

characterized in that 2-acetyl-6-methoxynaphthalene having the formula:



(II)

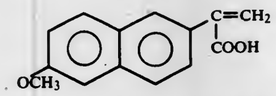
is reacted in organic solvents with a system consisting of:

(a) a haloform selected from $CHCl_3$ and $CHBr_3$,

(b) an aqueous solution of an inorganic base selected from NaOH and KOH, and

(c) a compound selected from the crown-ethers and the hydrocarbyl salts of quaternary ammonium and phosphonium,

at a temperature comprised between approximately 0° and 50° C., and in that from the resulting 2-(6′-methoxy-2′-naphthyl)-acrylic acid of formula:



(III)

acid (I) is obtained by hydrogenation in the presence of a catalyst selected from rhodium and palladium catalysts.

4,239,915

PERFLUOROALKYL CARBOXYLIC ACIDS

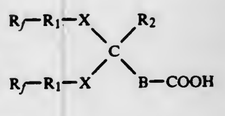
Robert A. Falk, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 2, 1976, Ser. No. 747,114

Int. Cl.³ C07C *51/347*

U.S. Cl. 562—481 **11 Claims**

1. A perfluoroalkyl acid for the formula



wherein

R_f is perfluoroalkyl of 1 to 18 carbon atoms, or said perfluoroalkyl substituted by perfluoroalkoxy of 2 to 6 carbon atoms;

R_1 is branched or straight chain alkylene of 1 to 12 carbon atoms, alkylenethioalkylene of 2 to 12 carbon atoms, alkyleneoxyalkylene of 2 to 12 carbon atoms, or alkyleneiminoalkylene of 2 to 12 carbon atoms where the nitrogen atom contains as a third substituent, hydrogen or alkyl of 1 to 6 carbon atoms;

X is —S—, —SO— or —SO_2—;

R_2 is hydrogen, straight or branched alkyl of 1 to 6 carbon atoms, phenyl, alkyl substituted phenyl of up to 18 carbon atoms or —B—COOH; and

B is a covalent bond or alkylene of up to 18 carbon atoms.

4,239,916

ISOCYANURATE FOAM CATALYST

Robert L. Zimmerman; Edward E. McEntire, both of Austin, and Howard P. Klein, Houston, all of Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 837,348, Sep. 28, 1977, abandoned, which is a division of Ser. No. 747,452, Dec. 3, 1976, Pat. No. 4,099,014, which is a division of Ser. No. 644,494, Dec. 29, 1975, Pat. No. 4,026,836. This application Oct. 30, 1978, Ser. No. 956,293

Int. Cl.³ C07C *101/30*

U.S. Cl. 562—574 **2 Claims**

1. A compound useful as an isocyanurate group formation catalyst which has a structural formula as follows:



where the radicals represented by R are hydroxy lower alkyl and M is selected from the group consisting of sodium, potassium, cesium, lithium, and rubidium.

4,239,917

BARIUM OXIDE CATALYZED ETHOXYLATION

Kang Yang, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 916,421, Jun. 16, 1978, abandoned. This application Jul. 2, 1979, Ser. No. 54,322

Int. Cl.³ C07C *41/03*

U.S. Cl. 568—618 **9 Claims**

1. A method for the ethoxylation of alkanols comprising contacting said alkanols with ethylene oxide in the presence of a catalyst selected from the group consisting of barium oxide, barium hydroxide, hydrated barium hydroxide or barium metal at a temperature of from about 200° F. to about 500° F.

4,239,918

META, PARA-SUBSTITUTED ISOPROPYLIDENE BISPHENOLS AND METHODS FOR MAKING

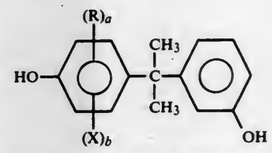
Donald E. Keeley, Menlo Park, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 6, 1978, Ser. No. 966,895

Int. Cl.³ C07C *43/205, 39/16, 41/00*

U.S. Cl. 568—640 **7 Claims**

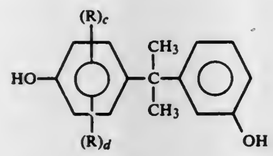
1. Bisphenols of the formula,



where R is a monovalent radical selected from $C_{(1-8)}$ alkyl

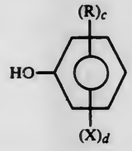
radicals, and $C_{(1-4)}$ alkoxy radicals, X is a halogen radical selected from chloro and bromo, a is a whole number having a value of from 0 to 3 inclusive, b is a whole number having a value of 0 to 2 inclusive and the sum of a+b has a value of 0 to 4 inclusive.

6. A method for making a bisphenol of the formula,

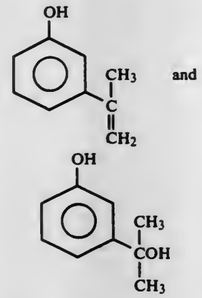


which comprises

(A) effecting reaction between a phenol of the formula,



and a meta-substituted phenol selected from the class consisting of



and

in the presence of an acid catalyst and at a temperature of from 0° C. to 100° C., and

(B) recovering the bisphenol from the mixture of (1),

where R is a monovalent radical selected from $C_{(1-8)}$ alkyl radicals $C_{(1-4)}$ alkoxy radicals, X is a halogen radical selected from chloro and bromo, c is a whole number equal to 0 to 3 inclusive, d is a whole number equal to 0 to 2 inclusive and the sum of c and d is equal to 0 to 4 inclusive.

4,239,919

PROCESS FOR OBTAINING BISPHENOLS

Thomas J. Hairston, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 12, 1979, Ser. No. 47,854

Int. Cl.³ C07C *39/12*

U.S. Cl. 568—727 **19 Claims**

1. The process for preparing a bisphenol which comprises reacting a phenol, or substituted phenol, having a reactive hydrogen in the para-position on the aromatic ring, with a reactive bis alkenyl ether, wherein the olefinic unsaturation is in the alpha position with respect to the ether linkage, in the presence of a suitable strong acid catalyst, and wherein the reaction temperature is maintained within the range of from about 45° to about 120° C. for a period of time of from about 6 to about 300 minutes.

4,239,920

PROCESS FOR PREPARING 6-ISOBORNYL-3,4-XYLENOL

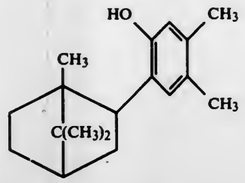
Maria L. Del Conte, Trieste, Italy, assignor to Farmatis, S.p.A., Milan, Italy

Filed Mar. 27, 1979, Ser. No. 24,208

Int. Cl.³ C07C *39/15, 39/17*

U.S. Cl. 568—734 **4 Claims**

1. A process for preparing 6-isobornyl-3,4-xylenol of formula



wherein camphene and 3,4-dimethylphenol benzylether are condensed in an inert anhydrous organic solvent in the presence of a Friedel-Crafts catalyst at a temperature of about 0° C., and the 6-isobornyl-3,4-xylenol benzylether thus obtained is debenzylated by hydrogenation in the presence of a hydrogenation catalyst chosen from the group consisting of Pb, Pt and their compounds.

4,239,921

PROCESS FOR PURIFICATION OF CRUDE RESORCINOL

Isao Hashimoto; Hiroaki Nakagawa, both of Iwakuni; Toru Taguchi, Ichihara, and Hirohiko Nambu, Iwakuni, all of Japan, assignors to Mitsu, Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 10, 1979, Ser. No. 56,231

Claims priority, application Japan, Jul. 10, 1978, 53/82902

Int. Cl.³ C07C *37/70*

U.S. Cl. 568—753 **9 Claims**

1. In a process for purification of crude resorcinol derived from an acid-cleavage product of m-diisopropylbenzene dihydroperoxide and containing impurities having higher boiling points than resorcinol, the improvement wherein of said crude resorcinol is recrystallized from a mixed solvent consisting of

(a) about 0.5 to about 5 times the weight of resorcinol of an aromatic hydrocarbon which contains 6 to 10 carbon atoms and is liquid at 20° C., and

(b) about 0.1 to about 0.7 time the weight of resorcinol of at least one compound selected from the group consisting of alkyl phenols having a C_1–C_4 alkyl group and acyl phenols derived from C_2–C_4 aliphatic monocarboxylic acids.

4,239,922

XYLOSE AND XYLITOL SEPARATELY PURIFIED IN SAME ION EXCHANGER

Theodor Riehm, Heidelberg; Theodor Auel, Ilvesheim, and Wilhelm Spatz, Ober-Kainsbach, all of Fed. Rep. of Germany, assignors to Benckiser-Knapsack GmbH, Ladenburg, Fed. Rep. of Germany

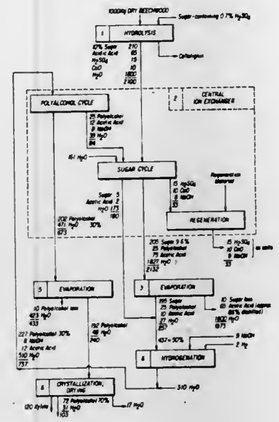
Filed Jun. 13, 1979, Ser. No. 48,074

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827477

Int. Cl.³ C07C *31/18*

U.S. Cl. 568—863 **7 Claims**

1. A process for producing xylitol comprising the steps of: decomposing the wood of deciduous trees or annual plants with dilute mineral acid at elevated temperatures to produce a solution containing principally xylose sugar with minor proportions of acetic acid and mineral salts; subjecting the sugar solution to ion exchange treatment and decolorization in an exchanger; hydrogenating the sugar solution to produce a polyalcohol solution containing principally xylitol; subjecting the polyalcohol solution to an ion exchange treatment; and



thereafter recovering xylitol from the solution; said exchange treatment of the sugar solution and exchange treatment of the polyalcohol solution being effected in separate sugar and polyalcohol cycles in the same exchanger.

4,239,923

LINALOOL FROM DIMETHYLOCTADIENE VIA EPOXIDE AND CYCLOOCTENOL

Aaldert J. deJong, and Hendricus J. Heijmen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 844,956, Oct. 25, 1977. This application Nov. 2, 1979, Ser. No. 90,769

Claims priority, application United Kingdom, Nov. 1, 1976, 45309/76

Int. Cl.³ C07C *33/02*

U.S. Cl. 568—875 **2 Claims**

1. A process for preparation of alpha-linalool which comprises:

(a) epoxidizing 1,5-dimethylcycloocta-1,5-diene by reaction with an alkyl hydroperoxide in the presence of a catalyst selected from the class consisting of titanium and molybdenum to afford 5,6-epoxy-1,5-dimethyl-1-cyclooctene;

(b) reducing the 5,6-epoxy-1,5-dimethyl-1-cyclooctene product of step (a) by reaction with an alkali metal selected from the class consisting of sodium, potassium and lithium in the presence of an amino compound selected from the class consisting of liquid ammonia, ethylene diamine, diethylamine, pyridine and hexamethylphosphoric acid triamide to form 1,5-dimethylcyclooct-1-en-5-ol; and

(c) thermally isomerizing the 1,5-dimethylcyclooct-1-en-5-ol product of step (b) at a temperature in the range of 350° to 650° C. to afford alpha-linalool.

4,239,924

ETHANOL FROM METHANOL

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

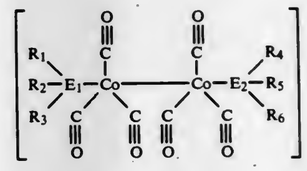
Continuation-in-part of Ser. No. 930,339, Aug. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 876,109, Feb. 8, 1978, abandoned. This application May 25, 1979, Ser. No. 42,426

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.³ C07C *27/00*

U.S. Cl. 568—902 **25 Claims**

1. A process for selectively producing ethanol which comprises introducing into a reaction zone (1) methanol, (2) hydrogen, (3) carbon monoxide, (4) a cobalt tricarbonyl complex defined by the following formula:



wherein each of E_1 and E_2 is trivalent phosphorus; and R_1, R_2, R_3, R_4, R_5 and R_6 are alike members selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms; and aryl radicals having from six to 20 carbon atoms; (5) an iodine compound and (6) a ruthenium compound and then subjecting the contents of said reaction zone to an elevated temperature and an elevated pressure for a time sufficient to convert methanol to ethanol.

4,239,925

ETHANOL FROM METHANOL

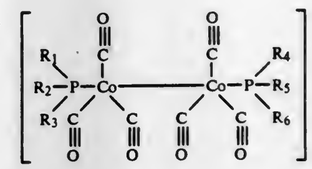
Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 863,743, Dec. 23, 1977, abandoned. This application May 25, 1979, Ser. No. 42,516

Int. Cl.³ C07C *27/00*

U.S. Cl. 568—902 **17 Claims**

1. A process for the homologation of methanol to ethanol which comprises introducing into a reaction zone methanol, hydrogen, carbon monoxide, a cobalt tricarbonyl complex of the formula:

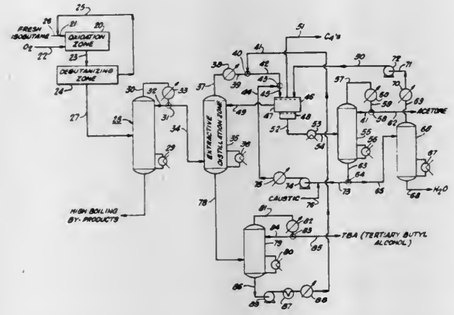


wherein R_1, R_2, R_3, R_4, R_5 and R_6 are aryl radicals having from six to 20 carbon atoms, and an iodine promoter and then subjecting the contents of said reaction zone to an elevated temperature and an elevated pressure for a time period sufficient to convert methanol to ethanol.

4,239,926
REMOVING WATER FROM TERTIARY BUTYL ALCOHOL

Henry R. Grane, Springfield; John C. Jubin, Jr., Wallingford, and G. Richard Worrell, Media, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 25, 1979, Ser. No. 51,561
Int. Cl.³ B01D 3/40; C07C 29/30
U.S. Cl. 568—910 **6 Claims**



1. In the method in which oxygen reacts with isobutane in an isobutane oxidation zone to provide tertiary butyl alcohol as a principal product and in which water is among the byproducts, and in which the tertiary butyl alcohol is employed for blending into gasoline, thus necessitating a smaller amount of water in the tertiary butyl alcohol than formed as a byproduct from the oxidation of isobutane, the improvement in drying the tertiary butyl alcohol which consists of:

directing a stream of wet tertiary butyl alcohol into an extractive distillation zone, and directing a stream of xylene downwardly through said extractive distillation zone while vaporizing a major portion of the water from the tertiary butyl alcohol, and withdrawing overhead vapors of water and other volatilized components;

transferring from the bottom of said extractive distillation zone a liquid stream comprising xylene and tertiary butyl alcohol to the middle of a distillation zone designated as a xylene stripping zone, and removing from the bottom of said xylene stripping zone a stream of recyclable xylene, and withdrawing overhead from said xylene stripping zone a stream of vapor of substantially dry tertiary butyl alcohol.

4,239,927
REMOVAL OF ORGANIC CHLORIDES FROM SYNTHETIC OILS

James A. Brennan, Cherry Hill, and Henry D. Norris, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,226
Int. Cl.³ C07C 15/107
U.S. Cl. 585—24 **14 Claims**

1. A process for making an oil of lubricating viscosity by the steps comprising:

(1) reacting a C_8–C_{10} olefin in the presence of an aluminum halide catalyst to give a polymer containing from 20 to 150 carbon atoms, preferably 30 to 100 carbon atoms, and, without removing the aluminum halide,

(2) contacting the total reaction mixture from

(1) with a monocyclic aromatic compound.

8. A product obtained by the steps comprising:

(1) reacting a C_8–C_{10} olefin in the presence of an aluminum halide catalyst to give a polymer containing from 20 to 150 carbon atoms, preferably 30 to 100 carbon atoms, and, without removing the aluminum halide,

(2) contacting the total reaction mixture from

(1) with a monocyclic aromatic compound.

4,239,928
PROCESS FOR PREPARING ALKYL-SUBSTITUTED AROMATIC COMPOUNDS

Kunimasa Takahashi, and Takashi Yokoi, both of Ami, Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Tokyo, Japan

Filed Feb. 13, 1979, Ser. No. 11,949
Claims priority, application Japan, Feb. 15, 1978, 53-15330
Int. Cl.² C07C 15/02, 5/36
U.S. Cl. 585—431 **10 Claims**

1. In a process for preparing corresponding alkyl-substituted aromatic compounds by the gas phase catalytic dehydrogenation of vinylcycloalkenes in contact with a dehydrogenation catalyst supported on a carrier, the improvement comprising said catalytic dehydrogenation being carried out

(i) using a dehydrogenation catalyst in which at least one of elements belonging to periods 5 and 6 in the group VIII of the periodic table selected from the group consisting of palladium, rhodium, platinum, iridium and ruthenium is supported on active carbon

(ii) by introducing steam into the reaction system,

(iii) but without introducing hydrogen into the reaction system,

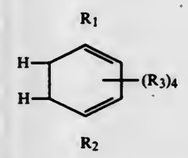
(iv) at conditions of temperatures ranging from 300° C. to less than 350° C. and pressures less than 2.5 atm (absolute pressure), wherein a liquid hourly space velocity (LHSV) is set at about 5 hr^{-1} or less when the catalytic dehydrogenation is effected in the presence of said catalyst in which palladium alone is supported on active carbon.

4,239,929
AROMATIZATION OF DIENES IN THE LIQUID PHASE

Divakaran Masilamani, Morristown, and Milorad M. Rogic, Whippany, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 1, 1978, Ser. No. 956,756
Int. Cl.³ C07C 5/20, 15/10
U.S. Cl. 585—442 **11 Claims**

1. A method of producing aromatic compounds which comprises reacting in the liquid phase sulfur dioxide with a diene selected from the group consisting of alkyl cyclo-hexa-1,3-dienes of the formula:

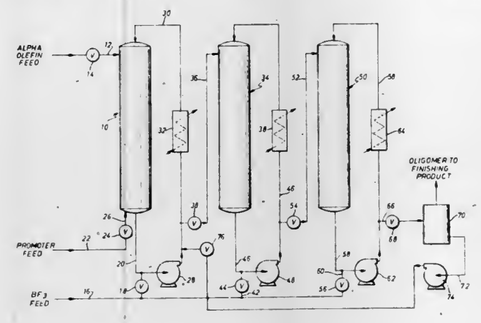


where R_1 is alkyl of 1–6 carbons, R_2 is hydrogen or alkyl of 1–6 carbons and R_3 is independently at each occurrence hydrogen or alkyl of 1–6 carbons, and cyclohexa-1,4-dienes, under conditions producing the corresponding aromatic compound, including, when the diene is an alkyl cyclohexa-1,3-diene, the presence of oxygen.

4,239,930
CONTINUOUS OLIGOMERIZATION PROCESS

N. Lee Allphin, Pineburst; Fred S. Valentine, Houston, and Gary W. Grams, Spring, all of Tex., assignors to Pearsall Chemical Company, Houston, Tex.

Filed May 17, 1979, Ser. No. 39,832
Int. Cl.³ C07C 2/02
U.S. Cl. 585—517 **15 Claims**



1. In a process for the continuous production of an oligomer product having a desirable oligomer distribution, said process involving the oligomerization of a C_8–C_{12} alpha-olefin monomer in the presence of a promoted boron trifluoride catalyst, the improvement wherein the oligomerization is carried out in a system comprising a plurality of loop recycle reactors in series, such that:

(a) the total residence time of alpha-olefin monomer/oligomer product in said system is from about one to two hours; and

(b) the flow rate through each of said plurality of loop recycle reactors affects a turnover of contents in each reactor at least once every five minutes.

4,239,931
HF ALKYLATIOR PROCESS

Michael Z. Mikulicz, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

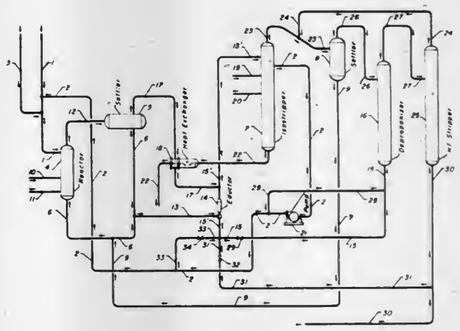
Filed Nov. 5, 1979, Ser. No. 91,659
Int. Cl.³ C07C 2/58
U.S. Cl. 585—723 **11 Claims**

1. A process for the hydrofluoric acid-catalyzed alkylation of an olefin with an isoparaffin utilizing an isoparaffin stripping column-integrated acid catalyst regeneration system which comprises the steps of:

(a) reacting said olefin with said isoparaffin in an alkylation reaction zone in admixture with a hydrofluoric acid catalyst at alkylation reaction conditions resulting in a reaction product effluent comprising a normally liquid alkylate product, unreacted isoparaffin, hydrofluoric acid catalyst, and polymer products;

(b) introducing said reaction zone effluent into a separation zone, and settling said mixture into an acid-immiscible hydrocarbon phase and a polymer-containing acid phase;

(c) recovering and recycling a first portion of said acid phase to said reaction zone;



(d) recovering and heating said hydrocarbon phase to increase the solubility potential of hydrofluoric acid therein;

(e) recovering and transferring a second portion of said acid phase to the suction inlet of an eductor and entraining said acid phase in a C_3–C_4 paraffinic hydrocarbon pumping fluid charged therethrough;

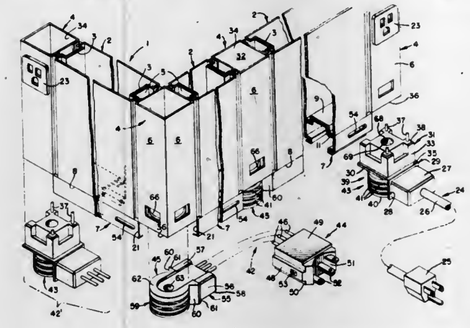
(f) admixing the acid-containing eductor effluent with said heated hydrocarbon phase; and,

(g) introducing the resulting mixture into a stripping column and stripping a polymer-free acid catalyst therefrom by means of a counterflowing isoparaffin-containing stream, separating an intermediate isoparaffin fraction from said column, and recovering a polymer-containing, normally liquid, alkylate bottoms product.

4,239,932
PARTITION WIRING SYSTEM

Melvin A. Textoris, Struthers, and Richard Rauschenberg, North Jackson, both of Ohio, assignors to GF Business Equipment, Inc., Youngstown, Ohio

Filed Jan. 18, 1979, Ser. No. 4,452
Int. Cl.³ H02G *3/00*
U.S. Cl. 174—48 **16 Claims**



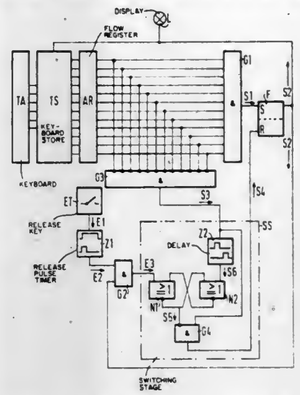
1. A partition assembly including a wiring system, said assembly including, a panel having a bottom and two lateral edges, a post attached to each said lateral edge, an electrical raceway having an interior mounted beneath said panel bottom, a harness assembly disposed within said electrical raceway, said harness assembly including a male connector and a female connector joined by a plurality of harness wires, means slidably mounting at least a portion of said two connectors within said electrical raceway interior at the respective ends thereof, said female connector including a head disposed beneath one of said posts having peripheral female electrical contact means therein, the other of said posts having an additional female connector therebeneath, said additional female connector provided with a head having peripheral female electrical contact means therein, said male connector having a plurality of male electrical contact means projecting from one end thereof removably insertable within the adjacent said female electrical contact means of said additional female connector, at least one electrical outlet mounted on said partition assembly, outlet wires electrically joining each said outlet with said harness assembly, and an electrical supply line joined to said additional female connector and its electrical contact means whereby current delivered by said supply line to said additional female connector is transmitted by said harness assembly to provide current to all said connectors and outlets.

4,239,933
CIRCUIT ARRANGEMENT FOR RELEASING A KEYBOARD STORE IN TELEPRINTERS OR DATA PRINTERS

Gerd J. Güenther, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,057
Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820673
Int. Cl.³ H04L *13/08*
U.S. Cl. 178—17.5 **8 Claims**

1. A circuit arrangement for releasing a keyboard store in teleprinters or data printers, comprising a keyboard store, a flip-flop, means operatively connecting said flip-flop to the keyboard store for setting said flip-flop when said store becomes full, with said flip-flop thereby producing a blocking signal for preventing the input of further characters into the keyboard store, a release key actuatable to produce a release signal which enables further input of characters into the keyboard store, means for producing an empty signal when the keyboard store has become empty, and a switching stage to

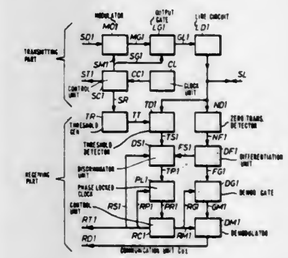


which said release signal and said empty signal are supplied, for producing a signal for resetting said flip-flop.

4,239,934
MEANS AND AN APPARATUS FOR SYNCHRONIZING AN ORTHOGONAL DIPHASE CODE RECEIVER

Birger L. Andren, Handen, and Lars T. E. Svensson, Skärholmen, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Nov. 24, 1978, Ser. No. 963,206
Claims priority, application Sweden, Dec. 2, 1978, 7713697
Int. Cl.³ H04L *7/08*
U.S. Cl. 375—113 **6 Claims**



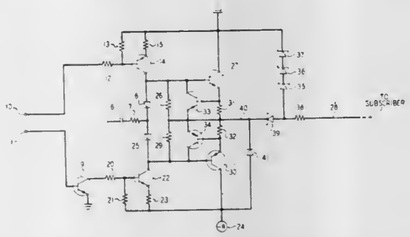
1. In a communication system which transfers bursts of digital signals by means of orthogonal diphase code, the method of synchronizing a receiver to the phase position of the signals being transmitted on a line from a transmitter comprising the steps of: (1) in each burst of signals providing a starting pulse having a polarity which is opposite to the polarity of the following signal element, (2) detecting in the receiver said starting pulse by comparison of the levels of the incoming signals arriving at the receiver with a threshold value, and (3) generating a synchronizing signal for the receiver in response to the first zero transition of received signals following said starting pulse.

4,239,935

RINGING GENERATOR

Barry S. Bosik, Parsippany, and Frank P. Tuhy, Jr., Montville, both of NJ, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1979, Ser. No. 34,200
Int. Cl.³ H04M *1/66*
U.S. Cl. 179—84 R **10 Claims**



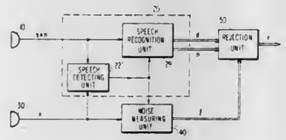
1. A ringing signal generator for operating telephone ringers CHARACTERIZED BY
a capacitor,
means for alternately and linearly charging and discharging said capacitor, and
means responsive to said capacitor charging means for supplying trapezoidal ringer signals to said telephone line.

4,239,936

SPEECH RECOGNITION SYSTEM

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 974,274
Claims priority, application Japan, Dec. 28, 1977, 52-157966; Dec. 28, 1977, 52-157967; Dec. 28, 1977, 52-157969
Int. Cl.³ G10L *1/00*; H03G *3/32*
U.S. Cl. 179—1 SD **7 Claims**



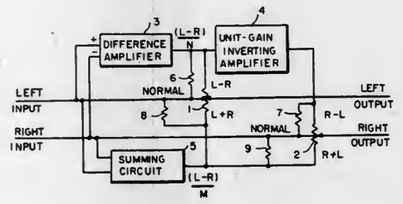
6. A speech recognition system comprising:
a speech microphone provided to pick up input speech signals;
means for calculating the amplitude of the speech signals picked up by said speech microphone;
a noise microphone provided to pick up ambient noises;
means for calculating the intensity of the noises picked up by said noise microphone;
a speech-signal detecting unit for determining speech signal durations by monitoring the amplitude of said speech signals compensated for by the intensity of said noises;
a recognition unit for recognizing said input speech signals given in speech signal durations; and
a rejection unit which, when the intensity of said noise exceeding a predetermined standard value is detected in any of said speech signal durations, rejects the recognition results determined by said recognition unit.

4,239,937

STEREO SEPARATION CONTROL

Frank S. Kampmann, 8 Belknap St., Arlington, Mass. 02174

Filed Jan. 2, 1979, Ser. No. 528
Int. Cl.³ H04S *1/00*
U.S. Cl. 179—1 G **16 Claims**



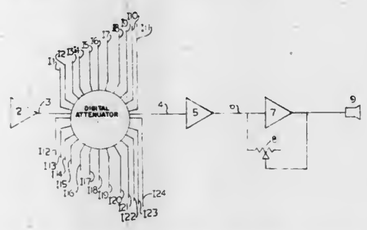
1. Circuitry for use over the audio frequency range and responsive to first and second stereo audio input signals, L_{in} and R_{in}, for producing at least one of first and second audio output signals, L_{out} and R_{out}, said circuitry comprising stereo signal mixing circuitry including a first variable control means having a parameter, K, capable of varying over a range $-1 \leqq K \leqq +1$ second variable control means having a parameter, K', capable of varying over a range $-1 \leqq K' \leqq +1$; said first variable control means being responsive to said first and second input signals for selectively controlling the proportions of said first input signal and said second input signal to produce said first output signal such that the relationship between said first and second input signals and said first output signal is proportional to $(L_{in})(1-K)+(K)(L_{in}+R_{in})/(M)$ for $0 \leqq K \leqq +1$, and to $(L_{in})(1+K)-(K)(L_{in}-R_{in})/(N)$ for $-1 \leqq K \leqq 0$; said second variable control means being responsive to said first and second input signals for selectively controlling the proportions of said second input signal and said first input signal such that the relationship between said first and second input signals and said second output signal is proportional to $(R_{in})(1-K')+(K')(L_{in}+R_{in})/(M)$ for $0 \leqq K' \leqq +1$, and to $(R_{in})(1+K)-(K')(R_{in}-L_{in})/(N)$ for $-1 \leqq K' \leqq 0$, where 1/M is an instantaneous sum factor the value of which is adjustable and 1/N is an instantaneous difference factor the value of which is adjustable.

4,239,938

MULTIPLE INPUT SIGNAL DIGITAL ATTENUATOR FOR COMBINED OUTPUT

Robert A. Ponto, Louisville, Ky., assignor to Innovative Electronics Design, Louisville, Ky.

Filed Jan. 17, 1979, Ser. No. 4,197
Int. Cl.³ H04M *1/60*
U.S. Cl. 179—1 VL **7 Claims**



1. Digital attenuator means to stepwise modify a program signal to be controlled including:
(a) signal pulse generator means to provide repeated pulse-like counting signals;
(b) first counter means having:
(i) counter input means to receive said counting signals;

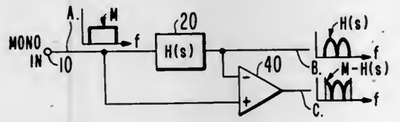
(ii) multiple first counter output means each providing a first counter output signal when activated;
(iii) first counter control means to count said counting signals and selectively activate and deactivate each of said first counter output means in selected patterns in response to selected numbers of counting signals so said first counter provides a selected pattern of first counter output signals from a portion of said first counter output means to define a first counter output control cycle;
(c) multiplex means having:
(i) a selected number of multiplex signal inputs each adapted to receive a single bit binary input signal from selected signal generator source means;
(ii) multiplex output means to selectively receive said binary input signals from said multiplex signal inputs;
(iii) Multiplex control means having input means to receive said first counter output signals and selectively and individually connect selected multiplex inputs to said multiplex output means during a first counter cycle to transfer said binary input signals to said multiplex output in response to receipt of said first counter output signals;
(d) second counter means to count the number of binary signals received from said multiplex output means during a selected time period and transfer the counted signals as a binary attenuator control number to second counter output means;
(e) attenuator means having:
(i) multiple parallel attenuator inputs each adapted to be selectively activated and each adapted to receive said program signal to be controlled and a portion thereof having mutually different electrical impedance valves;
(ii) attenuator output means adapted to receive an attenuated program signal from the portion of said attenuator inputs which are activated; and
(iii) attenuator control means including attenuator switch means connected to said second counter output means to receive said second counter binary attenuator control member and adapted to activate selected attenuator inputs to provide an attenuated output program signal.

4,239,939

STEREOPHONIC SOUND SYNTHESIZER

Patrick D. Griffis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 18,905
Int. Cl.³ H04S *5/00*
U.S. Cl. 179—1 GP **24 Claims**



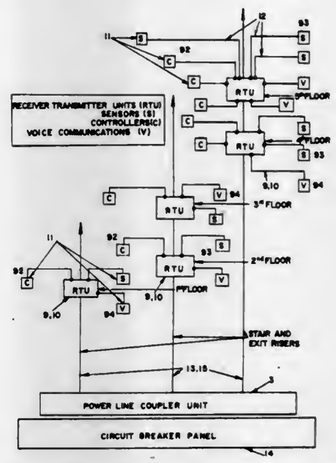
20. In a television receiver including a kinescope, a stereo synthesizer for producing synthesized stereo sound signals from a source of monophonic input signals comprising:
first and second loudspeakers located on either side of said kinescope;
a first signal responsive to said monophonic input signals and having an output coupled to said first loudspeaker for producing a first synthesized stereo sound signal, said first channel exhibiting an amplitude versus frequency response characteristic with a first notch of minimum amplitude at a frequency below the average first formant frequency of the human voice, and a second notch of minimum amplitude at a frequency above the average third formant frequency of the human voice; and
a second signal channel responsive to said monophonic input signals and having an output coupled to said second loudspeaker for producing a second synthesized stereo sound signal, said second channel exhibiting an amplitude versus frequency response characteristic with a notch of minimum amplitude at a frequency intermediate the average first and second formant frequencies of the human voice, wherein said first and second response characteristics exhibit respective equal amplitudes at a first frequency substantially equal to the average frequency of maximum intensity of the human voice, and at a second frequency substantially equal to the average second formant frequency of the human voice.

4,239,940

CARRIER CURRENT COMMUNICATIONS SYSTEM

Bertrand Dorfman, c/o Codata Corporation, 520 Nuber Ave., Mt. Vernon, N.Y. 10550

Division of Ser. No. 757,736, Jan. 7, 1977, Pat. No. 4,139,735.
This application Dec. 26, 1978, Ser. No. 973,157
Int. Cl.³ H04M *11/00*; H04H *1/08*
U.S. Cl. 179—2.51 **18 Claims**



11. A carrier current communications system for a large building having AC power distribution means including stairwell exit and landing light power distribution risers comprising:
(a) carrier current transmission means for transmitting signals,
(b) carrier current receiving means for receiving signals, and
(c) means for coupling the transmission means and the receiving means to portions of the AC power distribution means which are secure from excessive loading and physical disruption comprising means for coupling to the stairwell exit and landing risers for carrier current communications therebetween.

4,239,941

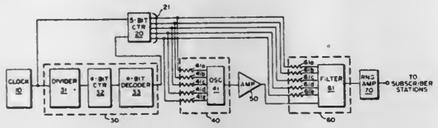
RINGING SIGNAL GENERATOR

John A. Gauthier; David M. Shaver, and John R. Ramsay, all of Brockville, Canada, assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 1, 1979, Ser. No. 16,672
Int. Cl.³ H04M *1/26*
U.S. Cl. 179—84 R **10 Claims**

1. A ringing signal generator for use in a telephone communication system connectable to a plurality of telephone substations including at least a first substation responsive to a first ringing signal frequency and a second substation responsive to a second ringing signal frequency, said ringing signal generator comprising:

clock means operated to generate a plurality of periodic clock pulses;
timing means connected to said clock means, periodically operated in response to a first predetermined number of said clock pulses to generate a first timing signal;
counting means connected to said clock means and to said timing means operated in response to said first timing signal to count said clock pulses and generate a plurality



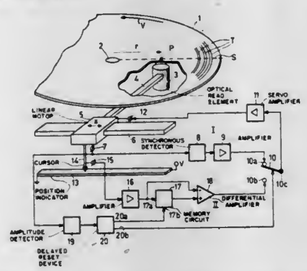
of sequential enabling signals, each associated with a different count of said counting means; and
variable frequency signaling means connected to said counting means, operated in response to said sequential enabling signals to generate a ringing signal comprising a plurality of different frequencies, each associated with a different one of said enabling signals, for sequential transmission to said plurality of telephone substations.

4,239,942

DUAL RADIAL POSITION SERVO TO COMPENSATE FOR RADIAL TRACKING FAILURE IN AN OPTICAL DISC PLAYER

Antonius A. M. Van Alem, and Cornelis H. J. Vos, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,273
Claims priority, application Netherlands, Aug. 22, 1978, 7808638
Int. Cl.³ G11B *21/10*
U.S. Cl. 179—100.1 G **6 Claims**



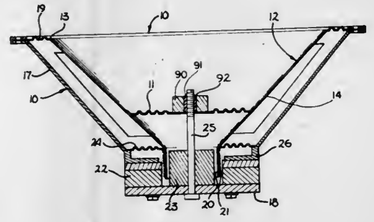
1. An improved apparatus for reading a disk-shaped record carrier, on which information is recorded in accordance with a pattern of substantially concentric tracks, which apparatus comprises a read element which cooperates with the record carrier, a positioning member carrying said read element for moving said read element in a radial direction, and a first servo control loop operating in response to indicia on the record carrier for controlling the position of the position member, which first servo control loop is provided with a measuring system for measuring the radial positional deviation of the scanning point on the record carrier relative to a desired track, which point is determined by the read element and a drive means for the positioning member, said drive means being coupled to said measuring system, the improvement being characterized in that the apparatus is provided with
a control circuit means for detecting a failure of said first servo control loop and for generating a first control signal in response to a detected failure in the radial control servo loop,
and switching means coupled to said control circuit means, for rendering the first servo control loop inoperative and for at least substantially simultaneously rendering a second servo control loop operative upon the occurrence of the first control signal, said second servo control loop being provided with a position indicator for supplying a position signal which is representative of the radial position of the read element and is independent of said record carrier indicia, a memory circuit means, which is coupled to said position indicator and to the control circuit, for storing and preserving the value of the position signal at the instant of the occurrence of the first control signal, a differential amplifier for determining the difference between said stored value and the instantaneous value of the position signal, and application means for the application of the difference signal to the drive means of the positioning member.

4,239,943

ADJUSTABLE DUAL SPIDER FOR A LOUDSPEAKER

Eugene J. Czerwinski, Studio City, Calif., assignor to Cerwin Vega, Inc., Arleta, Calif.

Continuation of Ser. No. 852,219, Nov. 17, 1977, abandoned.
This application Jan. 18, 1979, Ser. No. 4,591
Int. Cl.³ H04R *9/04*
U.S. Cl. 179—115.5 VC **2 Claims**



2. A stabilizing spider arrangement for use in combination with
a. a conically shaped diaphragm having a front peripheral edge, an external sidewall, an internal sidewall and a base peripheral edge;
b. a cylindrically shaped voice coil member which is mechanically coupled to the diaphragm adjacent to its peripheral edge;
c. a voice coil which is mechanically coupled to the voice coil member;
d. a ring-shaped magnet which is disposed about the voice coil member;
e. a pole piece which is disposed within the voice coil member with the ring-shaped magnet and the pole piece creating a magnetic gap therebetween;
f. a frame that includes a conically shaped portion with an internal sidewall which receives the conically-shaped diaphragm and a base portion which receives the ring-shaped magnet, the voice coil member and the pole piece; and
g. a centering spider which mechanically couples the base portion of the frame to the base peripheral edge of the diaphragm, said stabilizing spider arrangement comprising:
i. a stabilizing spider which is mechanically coupled to the internal sidewall of the diaphragm;

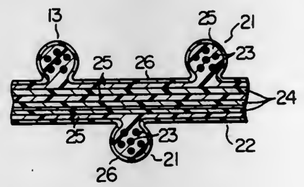
ii. a mass which is mechanically coupled to said stabilizing spider at its center;
iii. a rod which is mechanically coupled to the pole piece and which is disposed perpendicularly thereto at its center; and
iv. a cylindrical Teflon bearing which may be inserted into a hole in said mass so that said mass may slidably engage said rod in order to provide an axial centering of said stabilizing spider arrangement.

4,239,944

SPIDER OF LOUDSPEAKER

Isao Obara; Atsuya Kamada, both of Kamakura, and Aizo Kaneda, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 22, 1979, Ser. No. 5,247
Claims priority, application Japan, Jan. 20, 1978, 53-4388
Int. Cl.³ H04R *9/06*
U.S. Cl. 179—115.5 VC **4 Claims**



1. A spider of a loudspeaker comprising:
a spider base material including a plurality of warp yarns and a plurality of weft yarns formed of a bundle of a plurality of inorganic fibers, said plurality of warp yarns being disposed in substantially parallel, spaced relation to one another and said plurality of weft yarns also being disposed in substantially parallel, spaced relation to one another, and said plurality of warp yarns and said plurality of weft yarns being arranged to cross one another in a plain-weave;
a thermosetting synthetic resinous material coating applied to said plurality of warp yarns and said plurality of weft yarns of said spider base material in a manner to provide a gap between the adjacent warp yarns and between the adjacent weft yarns and so as to connect the warp yarns and the weft yarns together at the crossings;
a thermoplastic synthetic resinous material coating applied to the surface of said thermosetting synthetic resinous material coating; and
a plurality of corrugations in the form of concentric circles formed in said spider base material, having said thermosetting synthetic resinous material coating and said thermoplastic synthetic resinous material coating, by heating and pressing.

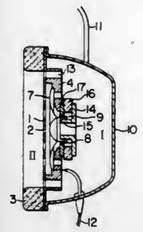
4,239,945

SEALED HEADPHONE

Nobuhisa Atoji, Toyonaka; Shoichi Kusomoto, Matsubara, and Kazue Sato, Kodoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 12, 1977, Ser. No. 859,815
Claims priority, application Japan, Dec. 15, 1976, 51 151103
Int. Cl.³ H04R *1/10*
U.S. Cl. 179—182 R **6 Claims**

1. A sealed headphone comprising:
a pad attached to a front side of a mounting plate having sound apertures formed therethrough,
an electro-acoustic transducer having a vibrating element for emitting sounds from the front and rear surface of said element attached to a rear side of said mounting plate,
a sound sealed casing covering the rear side of said electro-acoustic transducer to provide an enclosed rear space within said casing which receives sounds emitted from the rear surface of said element,
first coupling apertures provided in said mounting plate for coupling the rear space within said casing with a front listening space in front of said mounting plate,
said sound apertures channeling sound generated from a front surface of said vibrating element of said electro-



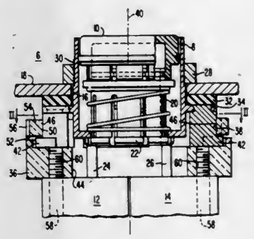
acoustic transducer forwardly into said front listening space, and said first coupling apertures channeling sound generated from a rear surface of said vibrating element within said casing into said front listening space, and
an acoustic-mechanical resonance circuit for improving the high frequency response of said headphone consisting of a volume compliance of said front space, a different volume compliance of said rear space and an acoustic mass reactance of said coupling apertures.

4,239,946

SWITCH OPERATOR WITH SWITCH-MOUNTING ADAPTER

Robert J. Johnston, Patterson Heights; Dominic Colista, Harmony Township, Beaver County; Stephen G. Layciak, Brighton Township, Beaver County, and Stephen S. Dobrosielski, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1979, Ser. No. 45,450
Int. Cl.³ H01R *33/28*
U.S. Cl. 200—51.13 **5 Claims**



1. A switch comprising at least one switch-operating element and a movable selector member, said element comprising a reciprocable plunger, a tubular housing enclosing the member with one end of the member extending from one end of the housing, the other end of the member having means for actuating the plunger, mounting means for mounting the element on the housing and comprising an adapter, the mounting means also comprising a bayonet-type joint including at least two spaced pins having enlarged heads and corresponding spaced pin-receiving slots, the pins and enlarged heads being fixedly mounted in place, one of the pins and slots being on the housing and the other being on the adapter, one of the housing and adapter being rotatable relative to the other to effect locking engagement of the pin heads within the slots, the element being attached to the adapter, the spaced pins extending longitudi-

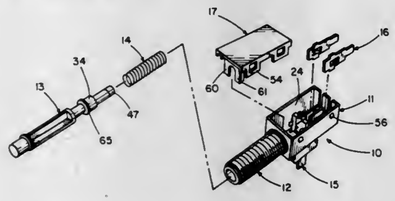
nally of the switch with the enlarged heads extending radially from the corresponding pins, and each slots having a longitudinally-extending pins-receiving portion and having a head-receiving portion extending radially of the pin-receiving portion, whereby the inner-fitting radially-extending portions retain the housing and adapter against longitudinal separation when said element is actuated.

4,239,947

CRUISE CONTROL SWITCH ASSEMBLY

Edward J. Breitung, Springfield, and Ronald J. Hickman, Rochester, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Nov. 9, 1978, Ser. No. 959,410
Int. Cl.³ H01H *3/14*
U.S. Cl. 200—61.89 **16 Claims**



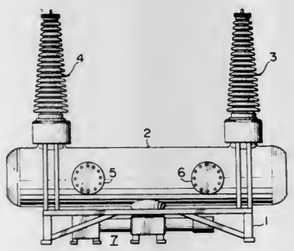
1. A switch having a single actuator for opening and closing two sets of contacts, comprising; a housing, a first set of contacts in the housing, a second independent set of contacts in the housing, a plunger reciprocable in the housing and having an end extending from the housing adapted to be engaged by an external element to actuate both sets of contacts, and a spring biasing the plunger outwardly from the housing, said plunger having a conductive portion fixed thereto in such manner as to prohibit relative movement with respect to said plunger and so dimensioned that it is selectively slideably engageable between and against the first set of contacts in the housing to close the contacts, said plunger having a non-conductive cam portion engageable with the second contacts for actuating the second set of contacts whereby movement of the plunger from the external element causes actuation of the first and second sets of contacts.

4,239,948

GROUNDED SUPPORT TANK TYPE GAS CIRCUIT BREAKER

Masanori Tsukushi; Kunio Hirasawa, both of Hitachi, and Katsuichi Kashimura, Takahagi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 21, 1976, Ser. No. 707,350
Claims priority, application Japan, Jul. 30, 1975, 50-92058
Int. Cl.³ H01H *33/54*
U.S. Cl. 200—148 R **12 Claims**



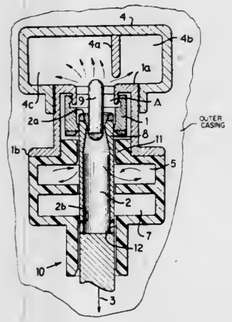
1. A grounded support tank type gas circuit breaker comprising a cylindrical tank maintained at ground potential and filled thereinside with an arc-extinguishing gas, at least one breaking unit disposed within said tank along the axis of said tank, a first support means for supporting said breaking unit in electrically insulated relation from said tank, a capacitor unit disposed within said tank in substantially axially aligned relation with said breaking unit with its axis extending along an extension of the central axis of said breaking unit, said capacitor unit including a plurality of capacitor elements and a hollow cylindrical insulating support member for receiving said capacitor elements therein, a second support means for supporting a line side conductor of said breaking unit in electrically insulated relation from said tank and for receiving impact forces due to a closing operation of the breaking unit, means for electrically connecting one end of said capacitor unit to the line side conductor of said breaking unit while allowing movement of said line side conductor due to said impact forces, and means for mechanically fixedly connecting the other end of said capacitor unit to said tank.

4,239,949

SELF-EXTINGUISHING TYPE CIRCUIT INTERRUPTER

Masami Kii; Yoshihiro Ueda, and Koji Ibuki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,548
Claims priority, application Japan, Mar. 24, 1977, 52/32917; Mar. 24, 1977, 52/32918
Int. Cl.³ H01H *33/74*
U.S. Cl. 200—148 R **5 Claims**



1. A circuit interrupter, comprising: a casing for containing an arc extinguishing gas in use; a pair of separable electrical contact elements disposed within said casing, said contact elements having a contacting position wherein said contact elements are in physical contact, and at least one of said contact elements being movable to separate said contact elements and establish an electric arc in use between said separable contact elements; arc containing means comprising a chamber with said contact elements disposed therein for containing an electric arc established in use upon separation of said contact elements; a first pressure chamber opening into said arc containing chamber for storing arc extinguishing gas at a raised pressure raised by the energy of the arc established between the separated contact elements and for puffing the arc extinguishing gas into the arc containing chamber at the raised pressure to extinguish the arc when the arc current decreases sufficiently close to zero; at least a second pressure chamber for storing arc extinguishing gas at a raised pressure and having an opening which opens into said arc containing chamber for puffing the arc extinguishing gas at the raised pressure to extinguish the arc when the arc current decreases sufficiently close to zero; and gas flow control means comprised of said movable contact element for closing said first and second pressure chambers when said contact elements are in the contacting position, for opening said first pressure chamber when

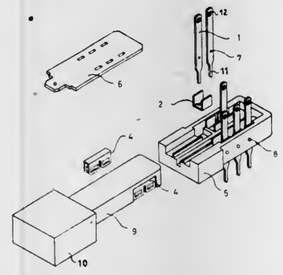
said contact elements separate and an arc is formed therebetween to increase the gas pressure within said first chamber, for releasing the gas at a raised pressure from said first chamber through said arc containing chamber to effectuate a first blast of high pressure gas and extinguish the arc within said arc containing chamber as said contact elements further separate, and for releasing the gas at a raised pressure from said second chamber through said arc containing chamber to effectuate a second blast of high pressure gas and extinguish any remaining arc within said arc containing chamber as said contact elements separate still further.

4,239,950

PUSHBUTTON SWITCH

Klaus Hinze, and Klaus B. Wisskirchen, both of Berlin, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 15,951
Int. Cl.³ H01H *15/09, 15/06, 15/22, 1/42*
U.S. Cl. 200—254 **3 Claims**



1. A pushbutton switch comprising, in combination:
a longitudinally extending housing having at least a pair of cavities therein for receiving fixed contacts;
a slider movably mounted in said housing and in the longitudinal direction of said housing;
a pair of longitudinally spaced U-shaped fixed contacts respectively fixedly mounted in said cavities, each of said U-shaped fixed contacts having a base portion engaging the bottom of the respective cavity and having at least one slot in said base portion for receiving a blade contact therein;
a U-shaped movable contact mounted to said slider for receiving and conductively engaging one leg of said U-shaped fixed contacts between the pair of legs of said U-shaped movable contact; and,
a pair of blade contacts respectively extending through and conductively engaging said slot of said U-shaped contacts and extending beyond the housing in opposite directions.

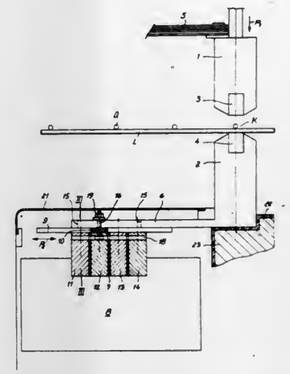
4,239,951

MULTISPOT GRID-WELDING MACHINE

Hans Gött; Josef Ritter; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwickoungs-Gesellschaft mbH, Graz, Austria

Filed Jan. 17, 1979, Ser. No. 4,228
Claims priority, application Austria, Jan. 20, 1978, 436/78
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—56 **3 Claims**

1. In a multispot mesh welding machine having a welding zone and defining a working plane of the mesh and having a plurality of busbars extending across said machine transversely to the working plane, said mesh welding machine further comprising a row of electrode holders on one side of said working plane of said mesh, each of said electrode holders having a supporting surface and being adapted to be in operative connection with an adjustable switching device movable with respect to a corresponding electrode holder, said switching device being adapted to connect said electrode holder to a selected one of said busbars or to disconnect said electrode holder from all of said busbars, the contact surfaces of said busbars and the supporting surfaces of said electrode holders being arranged in staggered relation with respect to one another, each of said electrode holders being provided with a



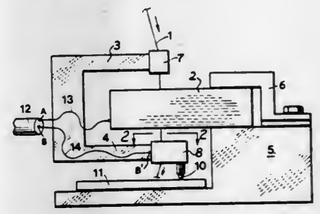
contact tongue, said contact tongue protruding beyond the welding zone and extending across the contact surfaces of all of said busbars and being operatively connected to said adjustable switching member, said switching member being located between said contact tongue and the contact surfaces of said busbars.

4,239,952

ELECTRODE WIRE EDM APPARATUS

Heinz Rhyner, 25, chemin de la Naz, Bernex, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Apr. 2, 1979, Ser. No. 26,446
Claims priority, application Switzerland, Apr. 14, 1978, 4013/78
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **2 Claims**



1. In a device for applying current pulses across a machining zone between an electrode wire and an electrode workpiece in an EDM apparatus wherein said electrode wire and said workpiece are displaced one relative to the other according to a predetermined cutting path cut by said electrode wire in said workpiece, said electrode wire being stretched and displaced along its longitudinal axis between a pair of spaced apart guide arms, said device comprising a first sliding contact mounted on one of said guide arms in engagement with said electrode wire and connected to a terminal of a pulse generator and a second sliding contact mounted on said one of said guide arms proximate said first sliding contact, the improvement comprising at least one capacitor supported proximate said first and second contacts and connected across said first and second contacts, and a metallic electrically conductive plate mounted on the

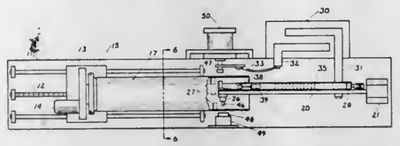
frame of said EDM apparatus and electrically connected to said workpiece, said second contact being in electrical sliding contact with the surface of said plate.

4,239,953

RESISTANCE WELDING APPARATUS

John C. Bock, Madison, Wis., assignor to Bock Corporation, Madison, Wis.

Filed Nov. 16, 1978, Ser. No. 961,365
Int. Cl.³ B23K *11/00, 11/32*
U.S. Cl. 219—79 **5 Claims**



1. Resistance welding apparatus for welding metal pieces to the inside surface of a metal tube, comprising:
(a) means for holding the tube in which the pieces are to be welded;
(b) an elongated electrically conductive electrode arm rigidly cantilever mounted at one end to allow insertion into the tube in which the pieces are to be welded, said electrode arm being selectively flexible in one direction normal to its length to allow its free end to flex more easily in the one said selected direction;
(c) feeding means for feeding a plurality of the pieces to be welded in single file along said electrode arm to the free end of said arm;
(d) an end support mounted to and electrically connected to the free end of said electrode arm for receiving and holding the pieces to be welded in proper position for welding to the inside of the tube;
(e) a drive cylinder mounted to said electrode arm and having a plunger, said drive cylinder being mounted to said electrode arm in position to have said plunger press against the inside surface of the tube to drive said electrode arm in its direction of selected flexibility such that pieces to be welded held by said end support are driven into firm contact with the inside surface of the tube; and
(f) means for passing an electrical current through said electrode arm to the piece to be welded on said end support, and through the tube to weld said piece to the tube.

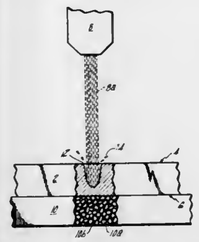
4,239,954

BACKER FOR ELECTRON BEAM HOLE DRILLING

Curtiss G. Howard, Manchester, Conn.; Lester W. Jordan, Cranston, R.I., and Chester E. Yaworsky, Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 861,776, Dec. 19, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,594
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 EH **12 Claims**

1. A method for drilling a hole with an energy beam, such as an electron beam, through a workpiece having an entrance surface toward which the beam propagates and through which it first penetrates, and an exit surface which the beam last penetrates, comprising:
(a) intimately contacting a backer with the exit surface, the backer being characterized by a particulate bonded together with a binder, the particulate and binder having properties which avoid forming reaction products deleterious to the workpiece during hole drilling and the backer being further characterized by being adapted to removal, at least in part, as a liquid after drilling;
(b) directing an energy beam onto a portion of the entrance surface with an intensity sufficient to produce a hole in the workpiece, penetrate the exit surface, and generate within the backer gaseous products sufficient to expel molten workpiece material from the hole at the entrance surface in a direction opposite to the beam propagation; and



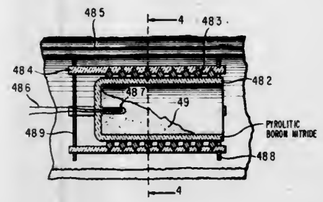
(c) removing the backer by converting it to at least a partial liquid state with a means which does not adversely affect the workpiece.

4,239,955

EFFUSION CELLS FOR MOLECULAR BEAM EPITAXY APPARATUS

Alfred Y. Cho, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 755,663, Dec. 30, 1976, Pat. No. 4,137,865. This application Oct. 30, 1978, Ser. No. 956,065
Int. Cl.³ H01L *21/203;* H05B *3/06*
U.S. Cl. 219—271 **1 Claim**



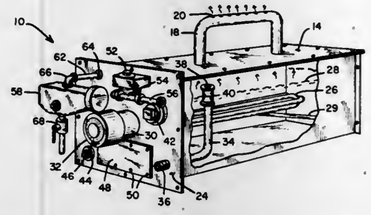
1. A molecular beam epitaxy apparatus comprising an evacuated growth chamber and at least one improved effusion cell for generating a molecular beam from a source material, said improved effusion cell comprising:
an elongated cylindrical Pyrolytic Boron Nitride crucible having an opening at one end thereof to permit egress of said beam,
a heating coil surrounding and in heat transfer relationship with said crucible,
a plurality of ceramic rods, extending essentially parallel to the cylinder axis and having notches along their length, for engaging said coil and firmly pressing said coil onto the outer surface of said crucible;
a retaining ring to secure said ceramic rods near said one end of the crucible,
an apertured disc to secure said ceramic rods near the other end of the crucible; and
a radiation heat shield surrounding the crucible, coil and rod assembly.

4,239,956

ELECTRIC STEAM HUMIDIFIER

Bernard W. Morton, Minnetonka, Minn., assignor to Dri-Steem Humidifier Co., Inc., Hopkins, Minn.

Filed Jul. 31, 1978, Ser. No. 929,271
Int. Cl.³ F24F *6/18*
U.S. Cl. 219—272 **5 Claims**



1. A humidifier unit for use with a forced air heating system comprising:
(a) a rectangular container having a face plate on one end thereof and a removable top plate member having vapor outlet means therein;
(b) electrically operated valve means attached to said face plate for controlling the flow of water into said container;
(c) an immersible heater element having a first portion thereof disposed in said container at a predetermined elevation and a second portion extending through and attached to said face plate;
(d) a float operated control device affixed to said face plate and electrically connected to said valve means and to said heater element for opening said valve when the depth of water in said container falls below a first level and for closing said valve when the depth of water in said container reaches a second predetermined level, said control device opening the circuit to said heater element when the depth of the water in said container falls a predetermined distance below said first level;
(e) a drain tube member having an open upper end mounted within said container and having the other end thereof extending outwardly therefrom, said drain tube having an aperture formed through the side wall thereof a predetermined distance below the upper open end thereof, the top of the aperature in said drain tube corresponding to said second predetermined level and the bottom of said aperature corresponding to said third predetermined level.

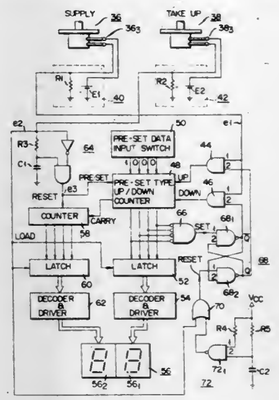
4,239,957

DISPLAY APPARATUS FOR TAPE RUNNING POSITIONS

Ken Satoh, and Kenzi Furuta, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1978, Ser. No. 944,061
Claims priority, application Japan, Sep. 30, 1977, 52-117556
Int. Cl.³ H03K *21/18*
U.S. Cl. 235—92 DN **14 Claims**

1. A display apparatus for tape running positions comprising: a tape transport system in which the rotational speeds of a first reel and a second reel change in accordance with the amount of tape running, a first signal generator for producing m number of pulses constituting a first signal e_1 for each revolution of the first reel, a second signal generator for generating n number of pulses constituting a second signal e_2 for each revolution of the second reel, counter means for counting the repetitive number of first signals e_1 occurring during one period of second signal e_2, data preset means for providing to the counter means preset data to offset the count value counted by the counter means at an initial stage of tape running, in order to assign the display depending on the first signal e_1 sensed during one period of the second signal e_2 at the initial stage of tape running to the start point of the tape running position, and display means connected to a count output circuit of the counter means in order to perform a numerical display corresponding to the tape running amount, said counter means comprising an up/down counter preset by a third signal e_3 having the same period as of said second signal e_2 and occurring behind the second signal e_2, a logic circuit for providing a set signal when the count output of said up/down counter becomes zero in order that, upon completion of the cancelling operation of the count by the preset data provided by said data



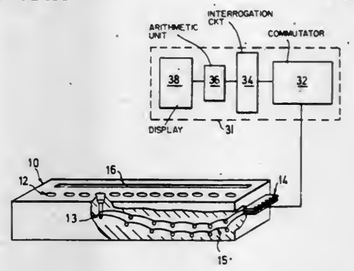
preset means, the display at the start point of the tape running position is rendered zero; a flip-flop set by the set signal of said logical circuit and reset by the second signal e_2, and a gate circuit for applying the first signal e_1 to the down-count input terminal of said up/down counter when said flip-flop is reset, and for applying the first signal e_1 to the up-count input terminal of said up/down counter when said flip-flop is set.

4,239,958

APPARATUS FOR USE IN ORDERING TRIALS

David W. Pritty, Glasgow, Scotland, assignor to University of Strathclyde, Glasgow, Scotland

Continuation-in-part of Ser. No. 830,015, Aug. 30, 1977, abandoned. This application Mar. 13, 1979, Ser. No. 20,248
Int. Cl.³ G06M *3/14*
U.S. Cl. 235—92 AC **4 Claims**



1. In apparatus for use in conducting Ordering Trials,
a set of counters respectively having unique characteristics the sequential ordering of which is to be undertaken by a subject,
a holder having a set of identical locations respectively for receiving a said counter,
each counter comprising at least one electrical circuit element the electrical characteristic of which uniquely identifies that counter, the holder comprising a plurality of electrical conductors associated respectively with said locations, interengageable electrical terminals provided at said locations and on the counters such that when a particular location receives a particular counter the electrical

circuit element of that counter is connected electrically to the pertaining electrical conductors, read-out means connected to said electrical conductors, said read-out means incorporating interrogation circuitry which is operable to determine the electrical characteristics of the counters in the respective locations, and an arithmetic unit operating according to a predetermined algorithm and connected to the output of the interrogation circuitry to provide a measure of the result of a trial,

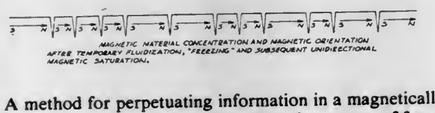
each counter having a resistive electrical circuit element, and said interrogation circuitry comprises a reference impedance in the form of a capacitor connectible in series with said circuit element and with a source of reference voltage, the voltage across the capacitor being fed as one input of a comparator having as its other input a voltage of value very much less than said reference voltage, the output of the comparator being connected to a two-input AND gate having its output connected to a counter, and its other input connected to a clock pulse generator.

4,239,959

PERPETUATION OF INFORMATION IN MAGNETICALLY RECORDED MEDIUM

Robert P. Gutterman, Bethesda, Md., assignor to General Kinetics Incorporated, Rockville, Md.

Filed Mar. 23, 1977, Ser. No. 780,537
Int. Cl.[3] G06K *19/06*; G11B *5/02, 5/74*
U.S. Cl. 235—493 **10 Claims**



1. A method for perpetuating information in a magnetically recorded medium, in which a support bearing a zone of ferromagnetic particles substantially homogeneously distributed in a layer of substantially uniform thickness, firm, softenable plastic carrier has been written upon with a series of spatially discrete magnetic pulses,

said method comprising:

(a) softening the plastic carrier sufficiently to permit relative translational movement of said particles, whereby relative translational movement will occur due to magnetic forces among the particles, causing local non-uniformities in the homogeneity of distribution of said particles, in a pattern which mimics in said zone said series of spatially discrete magnetic pulses; and

(b) hardening and irreversibly setting the plastic carrier to preserve said pattern,

whereby, even if said zone were to be degaussed, the information that was recorded in a series of spatially discrete magnetic pulses can thereafter be retrieved at will, by remagnetizing the zone and magnetically reading said pattern of local non-uniformities.

4,239,960

RECIRCULATING LIGHT AMPLIFIER WITH OPTICAL FEEDBACK

Filippo B. Galluppi, North Hills, N.Y., assignor to Venus Scientific Inc., Farmingdale, N.Y.

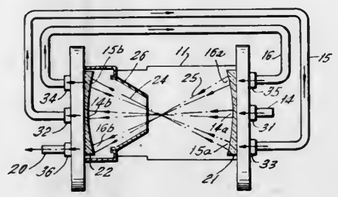
Filed Jul. 30, 1979, Ser. No. 61,845
Int. Cl.[3] H01J *31/50*
U.S. Cl. 250—213 VT **12 Claims**

1. A light amplification device, comprising:

a light intensifier tube including an input end face and an output end face, said light intensifier tube intensifying an image input onto said input end face and reproducing said image in intensified form on said output end face;

means for inputting an image to be intensified onto a first portion of said input end face whereby an intensified image is reproduced on a first portion of said output end face; and

optical feedback means for feeding back said intensified image reproduced on said output end face and for inputting said intensified image onto a second portion of said



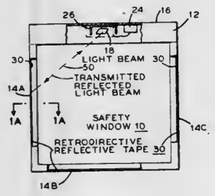
input end face which does not overlap said first portion of said input end face whereby a reintensified image is reproduced on a second portion of said output end face.

4,239,961

PHOTOELECTRIC LIGHT CURTAIN USING RETROREFLECTOR

Theodore Lasar, 40 First Ave., New York, N.Y. 10009

Filed Jan. 23, 1979, Ser. No. 5,721
Int. Cl.[2] G01D *21/04*
U.S. Cl. 250—221 **8 Claims**



1. A relatively low-cost photoelectric machine access safety device comprising:

(a) an integral rectangular support structure having separable sides with each of three sides having an inside surface enclosing a guarded area through which an associated machine is accessed;

(b) retrodirective reflective means mounted in a continuous path on each of the three inside surfaces and facing the guarded area;

(c) integral photoelectric light transmission and receiving means mounted on the inside surface of the fourth side for generating a control signal when transmitted light is not received;

(d) rotatable mirror means positioned adjacent the mid-point on the inside surface of the fourth side and adapted to reflect a light beam transmitted by said photoelectric means directly to said retrodirective reflective means at a varying incidence angle and back along the same light path directly to said photoelectric means;

(e) rotating means mounted on the fourth side for rotating said rotatable mirror so that the reflected light beam scans all of the guarded area whereby any body within the guarded area will interrupt the scanning light beam causing said photoelectric means to generate a control signal;

(f) control means mounted on said support structure coupled to said photoelectric means and responsive to a control signal for stopping the associated machine accessed through the guard area; and

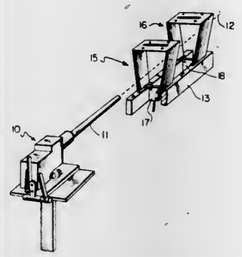
(g) U-shaped retrodirective reflective means mounted between said rotatable mirror means and the fourth side for reflecting the light beam, when said rotatable mirror means is scanning the fourth side, for preventing false operation of said control means.

4,239,962

SUNSHIELD AND LIGHT DIFFUSER

Kenneth L. Oehler, Box 840, 501 Noton St., Pflugerville, Tex. 78660

Filed Oct. 12, 1978, Ser. No. 950,686
Int. Cl.[3] G06M *7/00*
U.S. Cl. 250—222 R **6 Claims**



1. An apparatus for use in combination with a ballistic characteristic measuring system of the type having first and second photosensitive elements, means for mounting the elements along the path of a projectile in an environment exposed to daylight with the light responsive portions of the elements directed toward segments of the path so that each of the photosensitive elements responds to changes in light incident thereon to produce a signal evidencing the passage of a projectile, and circuit means connected to the photosensitive elements for measuring the time interval between changes in the light level, the apparatus comprising

at least one generally U-shaped light shield means for preventing direct sunlight illumination of the projectile path segments toward which the light sensitive portions of the photosensitive elements are directed; and

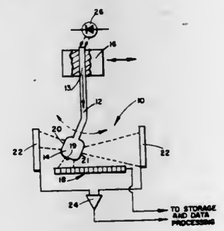
means for mounting said at least one light shield means in a position to generally surround said path segments between the source and said light sensitive portions.

4,239,963

FIBER OPTIC ACCELEROMETER

Rudolf R. August, Laguna Beach; Virgil H. Strahan, Orange; Kenneth A. James, Corona Del Mar, and Donald K. Nichols, Long Beach, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 26, 1978, Ser. No. 928,222
Int. Cl.[2] G01D *5/34*
U.S. Cl. 250—231 R **9 Claims**



1. An accelerometer comprising at least one elongated optical fiber, said accelerometer including:

a support structure, a first end of said optical fiber suspended from said support structure,

a light source positioned in proximity to the first end of said optical fiber to supply light thereto,

the second end of said optical fiber having a multiport terminal formed thereat to receive light transmitted from said source thereof,

a first light sensor positioned adjacent the second end of said optical fiber and responsive to light transmitted therethrough, and

at least a pair of additional light sensors, each of said pair of additional light sensors positioned adjacent different ports of said multiport terminal and responsive to respective light signals emitted therefrom,

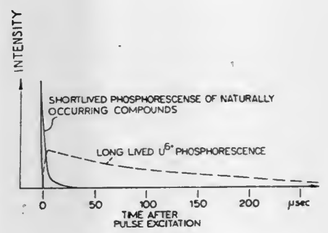
said first light sensor and said additional pair of light sensors providing an indication of the position of the second end of said optical fiber when forces that are applied to said support structure cause said optical fiber to oscillate.

4,239,964

METHOD FOR URANIUM DETERMINATION

John C. Robbins, Alliston, and John D. Kinrade, Ottawa, both of Canada, assignors to Scintrex Limited, Concord, Canada

Continuation-in-part of Ser. No. 879,647, Feb. 21, 1978, which is a continuation-in-part of Ser. No. 693,212, Jun. 4, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 955,787
Int. Cl.[2] G01V *5/00*; G01N *21/38*
U.S. Cl. 250—255 **26 Claims**



1. A method of detecting uranium compounds in a translucent sample through utilization of the anomalously long life time of phosphorescence of the uranyl ion in concentration levels of less than about one part per million, comprising the steps of:

exciting the uranyl ions in the sample by projecting electromagnetic energy;

terminating said projection of electromagnetic energy into the sample; and

measuring the decay with time of the uranium phosphorescence after the termination of the incident electromagnetic radiation.

4,239,965

METHOD AND APPARATUS FOR NEUTRON INDUCED GAMMA RAY LOGGING FOR DIRECT POROSITY IDENTIFICATION

Donald W. Oliver, and Richard B. Culver, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 5, 1979, Ser. No. 17,307
Int. Cl.[3] G01V *5/00*
U.S. Cl. 250—270 **13 Claims**

4. A method of well logging, comprising the steps of:

irradiating the region surrounding a borehole with high energy neutrons;

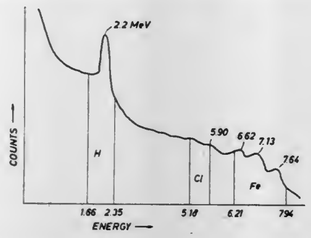
detecting radiations emanating from said irradiated region;

generating first electrical signals responsive to said detected radiation relating to the hydrogen content of said irradiated region;

generating second electrical signals responsive to said detected radiation relating to the chlorine content of said irradiated region;

generating third electrical signals responsive to said detected radiation relating to the iron content of said irradiated region;

combining said first and second electrical signals to provide



a fourth electrical signal representing a salinity corrected hydrogen indications; and

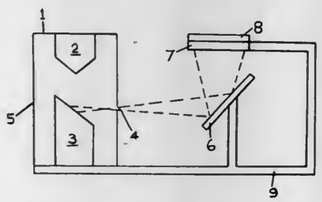
combining said third and fourth electrical signals to provide a porosity indication substantially free of borehole salinity and formation salinity effects.

4,239,966

DETECTION OF ATOMS USING MONOCHROMATIC X-RAYS

Chia G. Wang, P.O. Box 211, Millwood, N.Y. 10546

Filed Aug. 29, 1979, Ser. No. 70,586
Int. Cl.³ G01N *23/20*
U.S. Cl. 250—275 **11 Claims**



6. Apparatus for detecting, in a specimen, atoms, of an element having an atomic number of at least 20, comprising a source of monochromatic X-rays having a wavelength to induce an inner shell ionization of said atoms with subsequent auger cascade, and means for detecting the auger electrons emitted by the cascade, wherein the detecting means is a photographic emulsion which includes substantially no atoms of the element, the photographic emulsion being a layer disposed closely adjacent the specimen.

4,239,967

TRACE WATER MEASUREMENT

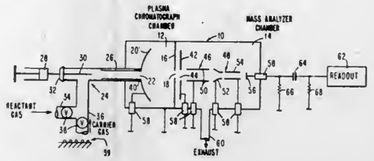
Timothy W. Carr, Poughkeepsie; Edwin A. Corl, Wappingers Falls, and Carl G. Majtenyi, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,959
Int. Cl.³ B01D *59/44*
U.S. Cl. 250—281 **8 Claims**

1. A method of measuring the amount of water in an atmosphere comprising the steps of:

treating the atmosphere in such a manner as to produce a number of $O(H_2O)_2^-$ ions that is proportional to the amount of water in said atmosphere;

measuring the amount of said ions contained in said atmosphere; and



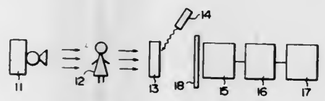
comparing said measurement to calibration data to obtain an indication of the amount of water in said atmosphere.

4,239,968

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING A RADIATION IMAGE

Noboru Kotera; Syusaku Eguchi, both of Odawara; Junji Miyahara, Minami-ashigara; Seiji Matsumoto, Minami-ashigara, and Hisatoyo Kato, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 12, 1979, Ser. No. 57,091
Claims priority, application Japan, Jul. 12, 1978, 53-84744
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.1 **10 Claims**



1. A method for recording and reproducing a radiation image comprising the steps of (i) causing a visible ray- or infrared ray-stimulable phosphor to absorb a radiation passing through an object, (ii) stimulating said phosphor with stimulation rays selected from visible rays and infrared rays to release the energy of the radiation stored therein as fluorescent light, and (iii) detecting said fluorescent light characterized in that said phosphor is at least one phosphor selected from the group of alkaline earth metal fluorohalide phosphors represented by the formula

$$(Ba_{1-x}M^{II}_x)FX:yA$$

wherein M^{II} is at least one divalent metal selected from the group consisting of Mg, Ca, Sr, Zn and Cd, X is at least one halogen selected from the group consisting of Cl, Br and I, A is at least one element selected from the group consisting of Eu, Tb, Ce, Tm, Dy, Pr, Ho, Nd, Yb and Er, and x and y are numbers satisfying the conditions of $0 \leqq x \leqq 0.6$ and $0 \leqq y \leqq 0.2$, and that the wavelength of said stimulation rays is not less than 500 nm.

4,239,969

ARTICLE INSPECTION APPARATUS WITH PROTECTIVE CHAMBER HAVING ARTICLE-LOADING FACILITY

David J. Haas, Suffern; Nick Galetta, Yonkers, and Adolf Juner, City Island, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,434
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—359 **23 Claims**

1. An article inspection apparatus capable of continuous operation for at least part of the operating time thereof, comprising:

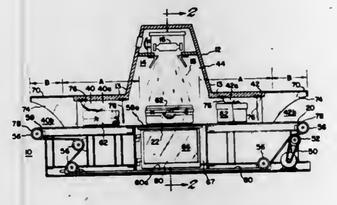
(a) chamber defining means that are substantially impermeable to x-rays and that comprise a first portion comprising

entry and exit portions and a second portion located between said entry and exit portions;

(b) an x-ray source for directing x-rays to the chamber at said second portion of said means;

(c) flexible x-ray shielding means disposed at said entry and exit portions;

(d) said entry and exit portions both comprising respective first and second regions, said first regions being removed from said chamber second portion and said second regions being located between said second portion and their respective said first regions, said second regions comprising completely enclosed tunnels communicating with said second portion and with said first regions, said first regions comprising top and partial side wall members with said top wall members extending out for the entire length of said first regions, and said side wall members having a cutaway at the end thereof more remote from said second portion, said cutaway extending downwardly from said top wall toward said second region;



(e) an article transport system having a first part thereof disposed at said chamber second portion and at least a second part thereof disposed at said first chamber portion, said article transport system serving to carry said article through said chamber second portion; and

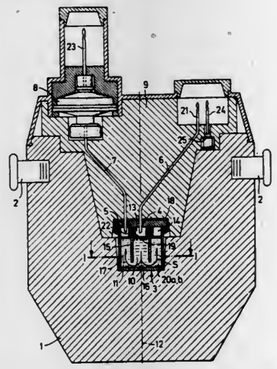
(f) means for converting said x-rays passing through said chamber second portion and said article into a visual image.

4,239,970

RADIONUCLIDE GENERATOR

Wolfram Eckhardt, Tegernheim, and Johann Hausladen, Regensburg, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 4, 1979, Ser. No. 937
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800496
Int. Cl.³ G21G *1/00*
U.S. Cl. 250—432 PD **8 Claims**



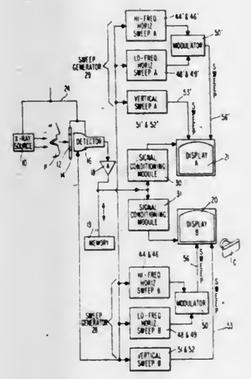
1. Apparatus for the generation of a daughter radionuclide from a parent nuclide comprising a support medium for adsorption of the parent nuclide, means for containing said support medium, inlet means for introducing eluant and outlet means for removing eluate, wherein the containing means defines a curved path for the passage of eluant through the support medium between inlet and outlet means.

4,239,971

SIMULTANEOUSLY DISPLAYING VARYING TOMOGRAPHIC IMAGES OF DENTAL ARCH WITH SINGLE PANORAMIC X-RAY EXPOSURE

Robert H. Cushman, Princeton, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 5, 1979, Ser. No. 82,373
Int. Cl.³ G03B *41/16*
U.S. Cl. 250—439 P **16 Claims**



1. A method of providing simultaneous multiple panoramic tomographic images of focal trough of a patient's dental arch by means of exposure thereto of X-radiation from a single continuous X-ray panoramic scan of said dental arch wherein said patient is seated in a chair capable of movement in the path of said X-radiations which are generated from a stationary X-ray origin point traveling in a circular orbit about said patient's dental arch, said X-radiations passing through a collimating slot immediately subsequent to passing through said dental arch, the combination therewith of the improvement comprising the steps of

detecting said X-radiations passing through said slot by detector sweeps to form electric signals proportional to intensity of the detected X-radiations, said electric signals being representative of a slot image of said dental arch being instantaneously panoramically scanned by said X-radiations,

directing said signals representing said instantaneous slot image into an oscilloscope display screen while simultaneously sweeping successive instantaneous slot images representative of said dental arch being panoramically scanned across length of said display screen in a period of time substantially equivalent to period of time of said circular orbit by means of a wobbulated sweep generator,

synchronizing said detector sweeps and display sweeps to insure proper relative positioning of said slot images on said display screen, and

adjusting said wobbulated sweeps on said display screen to sharply focus a tomographic area of interest of said dental arch.

4,239,972

DEVICE FOR COMPUTED TOMOGRAPHY

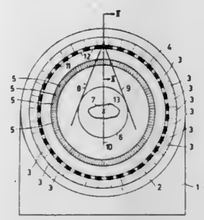
Wolfgang Wagner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,434

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1978, 2817912; May 19, 1978, 2821870

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—445 T **14 Claims**



1. A device for examining an object comprising:

a plurality of individually controlled radiation source means, disposed in a planar array around the object, which function to irradiate the object, from different directions, with a beam of penetrating radiation, and

a closed array of radiation detectors, disposed around the object within the array of source means and lying substantially in the plane thereof, the detectors functioning to measure radiation from the source means which is transmitted through the object and being at least partially transmissive of radiation from the source means to the object.

4,239,973

DEVICE FOR THE SURFACE TREATMENT OF FILM WEBS BY MEANS OF ELECTRICAL CORONA DISCHARGE

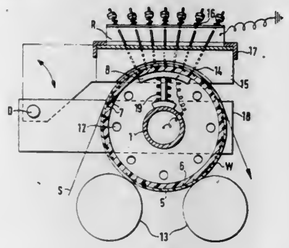
Andreas Kolbe, Wiesbaden, and Peter Dinter, Hallgarten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,468

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753750

Int. Cl.³ B01J *19/12*

U.S. Cl. 250—531 **19 Claims**



1. A device for the surface treatment of film webs by means of an electrical corona discharge in order to render the surface suitable for printing or to increase its bonding strength, comprising:

at least one grounded counter-electrode comprised of a point electrode;

at least one roll electrode rotatably positioned adjacent to said counter-electrode, said roll electrode comprising an outer tube comprised of dielectric material, an inner tube comprised of dielectric material removably fitted coaxially inside of said outer tube and a plurality of electrodes carried on the outside surface of said inner tube; and

means for supplying an A.C. voltage to said electrodes.

4,239,974

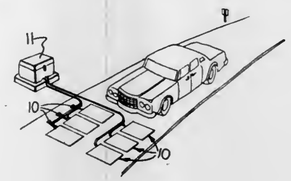
ELECTRICAL POWER GENERATING SYSTEM

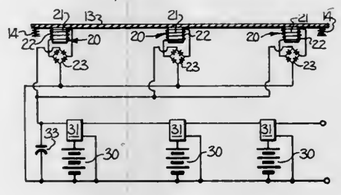
Robert E. Swander, 1413 Hill Rd. - Apt. 13, and Richard E. St. Pierre, 436 Westham Ridge Rd., both of Charlotte, N.C. 28210

Filed Feb. 9, 1979, Ser. No. 10,521

Int. Cl.³ H02P *9/04;* **H02J** *7/00;* **H02K** *35/00*

U.S. Cl. 290—1 R **4 Claims**





1. A generating system for producing electrical power from otherwise wasted energy expended by motor vehicles moving along a roadway, said generating system comprising a plate mounted for vibrational movement in a roadway so that motor vehicles moving along a roadway and passing over the plate will impart vibrational movement to the plate, a plurality of individual induction coils cooperating with said plate, each comprising a permanent magnet and a cooperating winding at least one of said magnet and said winding being mounted for direct engagement by said plate to provide reciprocating movement relative to the other upon vibrational movement of said plate for thereby generating an induced oscillating current in the winding as a result of the vibrational movement of said plate, respective individual rectifiers connected to each of said individual induction coils and each being operable for producing a rectified direct current from the respective oscillating electrical currents, a storage battery, and means connecting the outputs of the respective individual rectifiers to said storage battery for combining the respective rectified direct currents from the individual induction coils and storing the electrical power in said battery until needed.

4,239,975

ENERGY PRODUCING SYSTEM

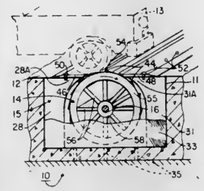
Arthur B. Chiappetti, 10600 S. Oakley, Chicago, Ill. 60643

Filed Apr. 30, 1979, Ser. No. 34,231

Int. Cl.³ N02P *9/04*

U.S. Cl. 290—1 R **6 Claims**

1. In an energy producing system having energy generating means and apparatus for driving said energy generating means, said apparatus comprising: housing means mounted in the ground at the surface of a road or the like, said housing having a top wall being disposed substantially flush with the upper surface of the road, said top wall having means defining an opening therein; movable means being mounted at least partially within said housing and at least partially extending through said opening in the path of travel of wheels supporting the vehicles moving along the road for engaging the tires of the vehicles seriatim; and coupling means connected drivingly between said movable means and said generating means for transmitting the motion of said movable means to said generating means; said coupling means including a flywheel journaled for rotation about its axis for storing energy in response to said movable means; said movable means including a drum rotatably mounted about its axis and having a portion thereof extending at least partially within said housing means and at least partially extending through the opening transversely to the path of travel of vehicles moving along the road; said drum having a diameter substantially greater than the diameter of at least some of the tires of the vehicles rolling thereover; said drum including a plurality of elongated resilient strips extending axially along the outer periphery thereof for engagement with the tires of vehicles moving along the road, said strips being triangular in cross section and having a radially extending face and a sloping face.



4,239,976

FLOATING ELECTRIC GENERATOR USING THE DRIVING ENERGY OF WATER

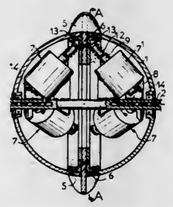
Louis-Jean Collard, 16 Avenue Anatole France, 63130 Royat-Puy-De-Dome, France

Filed Mar. 29, 1978, Ser. No. 891,227

Claims priority, application France, Mar. 29, 1977, 77 10332; Feb. 21, 1978, 78 05781

Int. Cl.³ F03B *13/00*

U.S. Cl. 290—42 **21 Claims**



1. Floating electric power generator using water energy in the form of a hollow volumetric body capable of floating or navigating in a natural or artificial water-course and mounted for free rotation around a fixed horizontal shaft, the projecting ends of which are connected by means of moorings to a berthing station, while the periphery thereof includes blades for its rotational drive by the energy produced by the water stream,

characterized in that said body forms a rotary shell permitting internally by reason of its volumetric hollow section the mounting of a plurality of electric generators disposed in a plane, each one of said generators being connected mechanically by its stator to the fixed shaft while the rotor is driven in rotation by the periphery of said shell by means of a driving device for the production of electric power by the assembly of said generators,

characterized further in that the driving device of each generator is formed by a head mounted elastically at the end of a spindle that is returned elastically and associated with the rotor for abutting action on one of the faces of a flange connecting diametrally to the inside of the hollow section of the shell and bearing along the appropriate diameter in order to constitute a speed multiplying device,

characterized further in that the stator of each generator is hingedly mounted on the stationary shaft for the adjustable angular pivoting thereof in relation to the flange so that the driving head is presented along a circle of varying diameter for varying the speed.

4,239,977

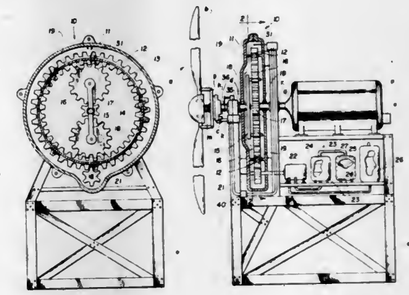
SURGE-ACCEPTING ACCUMULATOR TRANSMISSION FOR WINDMILLS AND THE LIKE

Warren A. Strutman, St. Louis, Mo., assignor to Lisa Strutman, Boone County; Lauren Strutman and Jerome A. Gross, both of St. Louis County, all of, Mo., a part interest to each

Filed Sep. 27, 1978, Ser. No. 946,199

Int. Cl.³ F03D *9/00;* **H02P** *9/04;* **F16D** *31/02*

U.S. Cl. 290—44 **11 Claims**



1. A wind-driven generator comprising

A. an electrical generator,

B. a wind-responsive rotor mounted on a rotor shaft,

C. a speed-increasing transmission having

(i) an input shaft coupled to the rotor shaft,

(ii) an output shaft coupled to the generator, and

(iii) alternative output means differentially coupled to the output shaft, together with

D. means, coupled to said alternative output means, to receive and accumulate energy, exerting and maintaining on said alternative output means a reactive torque increasing with rotation of said alternative output means caused by an increase of power delivered by the rotor,

whereby at a design operating condition, rotor shaft torque is so balanced by such reactive torque as to normally transmit power to said output shaft only, and rotor power fluctuations will cause or permit angular movements of the alternative output means in such sense as to smooth the delivery of power to the output shaft.

4,239,978

METHOD AND SYSTEM TO SUPPLY ELECTRICAL ENERGY TO A SELF-CONTAINED ELECTRICAL NETWORK AT MULTIPLE VOLTAGE LEVEL, MULTIPLE POWER RANGE, PARTICULARLY FOR MOBILE APPLICATION

Wolfgang Kofink, Aichwald, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,923

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810201

Int. Cl.³ H02J *1/00*

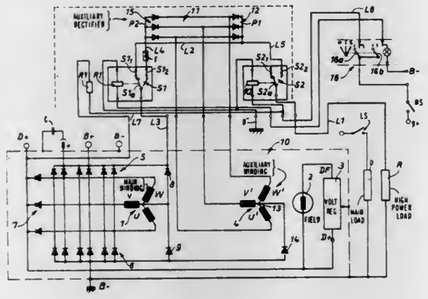
U.S. Cl. 307—16 **13 Claims**

1. In a self-contained electrical network having an a-c generator (**10**) having two groups of armature windings (**1**—U, V, W; **4**—U', V', W');

two groups of rectifiers (5, 6; 11), one each being connected to a respective armature winding group to provide respective d-c outputs,

a method of supplying electrical energy at multiple voltage levels in multiple power ranges comprising, in accordance with the invention, the steps of selectively connecting the d-c outputs of the rectifier groups in series;

supplying a first load (Q) from a first group of rectifiers (5, 6) associated with a first group of armature windings (1) at a voltage level which is determined by the rectified volt-



ages from the windings (1) associated with said first rectifier group;

supplying a second load (R) from the series connected first and second rectifier groups (5, 6; 11) and hence at a voltage level which is the sum of the rectified voltages from said first and second groups of windings (1, 4);

and, upon disconnection of the second load (R), connecting said second rectifier group (11) in parallel with said first rectifier group (5, 6) to supply the first load (Q) with power derived from both said windings (1, 4) and from both said rectifier groups.

4,239,979

MEMBRANE CONTACTOR

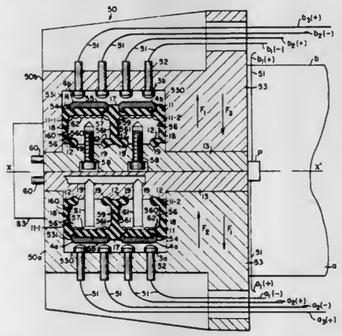
Maurice Chapuis, Sayat, and Jean-Yves Machat, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Nov. 29, 1978, Ser. No. 964,661

Claims priority, application France, May 12, 1977, 77 36796; Oct. 23, 1978, 78 30273

Int. Cl.³ H01H *35/34*

U.S. Cl. 307—118 **16 Claims**



1. Contactor comprising at least two fixed studs, at least one movable stud capable of making or breaking an electric contact between the two fixed studs, and at least one membrane which can deform under the action of a fluid, the movable stud being fastened to the membrane in such a manner that the movable stud is isolated from the two fixed studs in position of rest, characterized by the following features:

(a) the membrane comprises the following two parts:

at least one substantially nondeformable base and to which the movable stud is fastened; and

flanks which are elastic with respect to the base and firmly attached to the base, the deformation of the membrane being obtained substantially solely by stretching of the flanks, this deformation causing a displacement of the base and therefore a displacement of the movable stud;

(b) the return of the membrane to its position of rest being obtained substantially solely by the elasticity of the flanks;

(c) the base and the flanks define at least one cavity in which is arranged at least in part a membrane holder; the corresponding fixed and movable studs being located on the outside of this cavity;

(d) means are provided for introducing the fluid between the membrane and the membrane holder or for evacuating the fluid from between the membrane and the membrane holder;

(e) the base being in contact with the membrane holder only in its position of rest; and

(f) the membrane holder being capable of guiding the flanks during the deformation of the membrane.

4,239,980

INTEGRATED CIRCUIT HAVING AN OPERATION VOLTAGE SUPPLYING DEPLETION TYPE MISFET OF HIGH BREAKDOWN VOLTAGE STRUCTURE

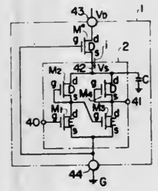
Akira Takanashi, Kokubunji, and Kenzo Masuda, Tokorozawa, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 4, 1978, Ser. No. 931,006

Claims priority, application Japan, Sep. 14, 1977, 52/109876

Int. Cl.³ H03K *19/094*

U.S. Cl. 307—205 **16 Claims**



1. A monolithic semiconductor integrated circuit having a transistor circuit which includes a depletion type MISFET to the gate of which is applied a reference voltage,

characterized in that said transistor circuit includes a plurality of load MISFETs and a plurality of driving MISFETs, said depletion type MISFET being connected in series with at least one of said load MISFETs and at least one of said driving MISFETs between a power source voltage terminal and the reference voltage, the sources of said load MISFETs being connected to said reference voltage through the drain-source electric paths of said driving MISFET, the drains of said load MISFETs being connected commonly to the source of said depletion type MISFET, said depletion type MISFET having its drain connected to said power source voltage terminal, wherein said depletion type MISFET has a high breakdown voltage structure such that the breakdown voltage between its drain and the substrate is higher than the breakdown voltage across the junction between said substrate and the drains of said plurality of load MISFETs.

4,239,981

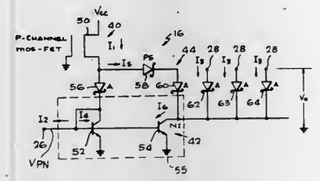
FAST SEMICONDUCTOR DIGITAL LOGIC INVERTER GATE

Rex J. Crookshanks, Palos Verdes Estates, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 760,514, Jan. 19, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,629

Int. Cl.³ H03K *19/20, 19/177*

U.S. Cl. 307—214 **33 Claims**



1. A logic inverter gate having an input with an input voltge thereat and an output with an output voltage thereat, the gate output conducting a current which varies nonlinearly as the input voltage varies between different first and second magnitudes, the gate including a first semiconductor junction having a given forward biased voltage drop, a second semiconductor junction different from the first junction and having a forward biased voltage drop different from the first junction and circuitry coupling the first and second junctions between the input and the output of the gate to establish a first voltage limit beyond which the gate input voltage cannot go and a second voltage limit different from the first limit beyond which the gate output voltage cannot go whenever the gate input is at the first voltage limit, the difference between the first and second voltage limits being controlled in accordance with the difference between the forward biased voltage drops of the first and second semiconductor junctions.

4,239,982

FAULT-TOLERANT CLOCK SYSTEM

T. Basil Smith, Sudbury; John R. Howatt, Waltham, and John F. McKenna, Jr., Gloucester, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jun. 14, 1978, Ser. No. 915,469

Int. Cl.³ H03K *3/00*

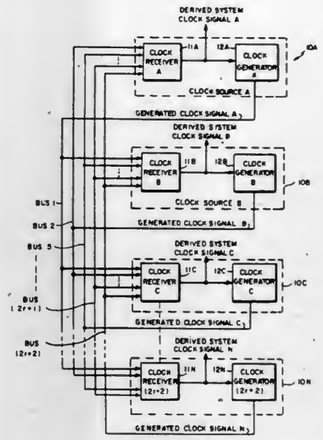
U.S. Cl. 307—219 **6 Claims**

1. A fault-tolerant clock system which provides for correct derivation of system clock signals from a plurality of (2r+2) clock sources despite r failures of individual clock sources, where r is a positive integer, said system comprising,

a plurality of (2r+2) clock signal sources, each clock signal source comprising a clock receiver for providing a derived system clock signal and a clock generator for providing a generated clock signal,

each said clock receiver being responsive to the (2r+1) generated clock signals of only the other (2r+1) of said (2r+2) clock sources for providing a derived system clock signal having only the frequency components of the clock signals of the unfailed clock sources of said (2r+1) clock sources and which is in phase with the unfailed clock sources,

each of said clock generators being responsive to the derived system clock signal from its respective receiver for producing a generated clock signal which is presented to the clock receivers of the other said clock sources, said generator being synchronized to the same frequency and phase as its derived system clock signal input.



4,239,983

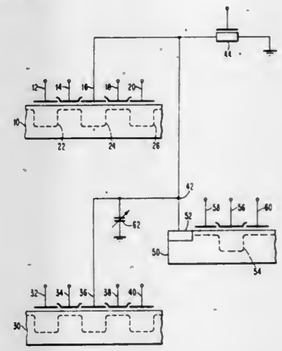
NON-DESTRUCTIVE CHARGE TRANSFER DEVICE DIFFERENCING CIRCUIT

Nathan P. Edwards, Darien, Conn., and James M. White, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,211

Int. Cl.³ G11C *19/28*; H01L *29/78*

U.S. Cl. 307—221 D **7 Claims**



1. A charge transfer device differencing circuit for producing a quantity Qc of electrical charge carriers equal to and representative of the algebraic difference between the values of two original quantities of electrical charge carriers Qa and Qb comprising means for producing a first pair of discrete charge packets $|Qa^+|$ and $|Qa^-|$ representative of said charge quantity Qa and a second pair of discrete charge packets $|Qb^+|$ and $|Qb^-|$ representative of said charge quantity Qb,

first and second charge transfer shift registers having outputs connected to a common node and responsive respectively to said first and second pairs of discrete charge packets for producing voltage changes on said common node representative respectively of the combination of charge packets $|Qa^-|$, $|Qb^+|$, $|Qa^+|$ and $|Qb^-|$,

said first and second charge transfer device shift registers each including a semiconductor substrate for sustaining a

plurality of potential wells for containing electrical charge carriers and electrodes proximate said substrate for shifting quantities of electrical charge carriers into and out of said potential wells, one of said electrodes of said first shift register and a corresponding one of said electrodes of said second shift register being connected at said common node,

and a third charge transfer shift register connected to said first and second shift registers at said common node and responsive to said voltage changes on said common node for producing a first charge packet quantity $|Qc^+|$ and a second charge packet $|Qc^-|$,

wherein said charge packets $|Qc^+|$ and $|Qc^-|$ are representative of a value Qc which is equal to the algebraic difference value Qa-Qb, said third charge transfer shift register including a semiconductor substrate for sustaining at least one potential well for containing charge carriers, a plurality of electrodes proximate said substrate for shifting charge carriers into and out of said at least one potential well, and an input diffusion region in said substrate connected to said common node for producing charge carriers in response to potential levels on said common node, and therein said means for producing said first pair of discrete charge packets designated $|Qa^+|$ and $|Qa^-|$ representative of said first charge quantity designated Qa, and said second pair of discrete charge packets designated $|Qb^+|$ and $|Qb^-|$ representative of said second charge quantity designated Qb includes means for shifting charge packet $|Qa^-|$ and charge packet $|Qb^+|$ respectively into and out of said potential wells proximate said one of said electrodes of said first shift registers connected to said common node and said corresponding one of said electrodes of said second shift register connected to said common node wherein shifting charge packets $|Qa^-|$ and $|Qb^+|$ out of said respective potential wells produces a first voltage level change on said common node, said means for shifting thereafter shifting said charge packets $|Qa^+|$ and $|Qb^-|$ into said same respective potential wells to produce a second voltage level change on said common node, said resulting voltage value on said common node interacting with said input diffusion causing a corresponding first charge packet $|Qc^+|$ to be produced in said third shift register, and wherein shifting said charge packets $|Qa^+|$ and $|Qb^-|$ out of said same respective potential wells produces a third voltage level change on said common node, said means for shifting thereafter shifting said charge packets $|Qa^-|$ and $|Qb^+|$ into said same respective potential wells to produce a fourth voltage level change on said common node, said resulting voltage value on said common node interacting with said input diffusion causing a second charge packet $|Qc^-|$ to be produced in said third shift register, and wherein said charge packets $|Qc^+|$ and $|Qc^-|$ in said third shift register is equal to and representative of said algebraic difference value Qa−Qb.

4,239,984

SIGNAL SYSTEM

Isao Kondo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1978, Ser. No. 868,379
Claims priority, application Japan, Feb. 22, 1977, 52/18956
Int. Cl.³ H03K *5/08*
U.S. Cl. 307—237 **4 Claims**

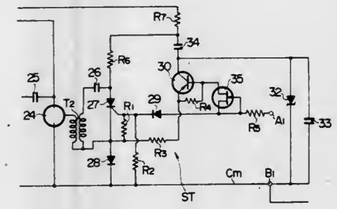
1. A signal system for controlling a switching element in response to a selectively applied switching signal, said switching element having first and second terminals and a control input, said switching element having a conductive path established between said control input and one of said first and second terminals responsive to said switching signal, said switching element requiring a control input signal exceeding a predetermined value applied to said control input to cause conduction between said first and second terminals, said signal system comprising:

input means for receiving said selectively applied switching signal;

circuit means for coupling said selectively applied switching signal from said input means to said conductive path normally established between said control input and said one of said first and second terminals of said switching element to establish a signal path therebetween;

transistor means having a signal receiving input and first and second electrodes, said signal receiving input and said first electrode of said transistor means being connected to said signal path established by said circuit means;

means for selectively supplying a bias voltage to the second electrode of said transistor means, said transistor means acting upon an application of said bias voltage to limit the magnitude of current between said first electrode and said



signal receiving input, said transistor means acting absent the application of said bias voltage to conduct current of increased magnitude between said signal receiving means and said first electrode;

field effect transistor means having a gate electrode and a drain and a source providing a drain to source signal path, said drain to source signal path being connected between said input means and the said signal receiving input of said transistor means, and

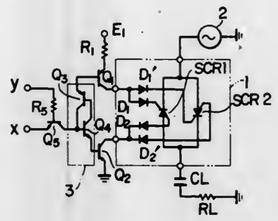
current controlling means coupled between said gate electrode and said source for limiting the magnitude of current in said drain to source signal path to a value which is less than said predetermined value of said control input signal necessary to cause said switching element to conduct, to prevent signals applied to said input means from rendering said switching element conductive absent the application of said bias voltage to said transistor means.

4,239,985

TRIGGER CIRCUIT FOR A THYRISTOR

Ichiro Ohhinata, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 28, 1978, Ser. No. 891,002
Claims priority, application Japan, Mar. 3, 1977, 52-34550
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 G **9 Claims**



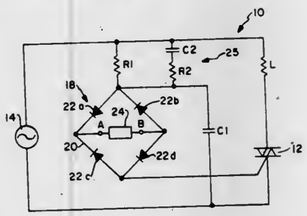
1. A trigger circuit for a thyristor comprising at least one of each of an NPN transistor and a PNP transistor for triggering a 4-terminal thyristor by feeding a collector current of said PNP transistor into a cathode gate thereof and taking out a collector current of said NPN transistor from an anode gate thereof, a power supply connected to an emitter of one of said NPN and PNP transistors, and switching means having a self-holding function and connected between bases of said NPN and PNP transistors, wherein said switching means comprises a PNPN switch, an anode of said PNPN switch being connected to the base of said PNP transistor ad a cathode of said PNPN switch being connected to the base of said NPN transistor.

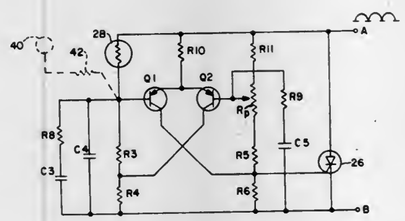
4,239,986

POWER CONTROL ARRANGEMENT AND CONTROL CIRCUIT ESPECIALLY SUITABLE FOR USE THEREWITH

Robert C. Dobkin, Hillsborough, Calif., assignor to Hyrbrinetics, Inc., Santa Rosa, Calif.

Filed Sep. 8, 1978, Ser. No. 940,733
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 B **24 Claims**





1. A power control circuit, comprising:

(a) a cycling voltage supply adapted to supply power to a load;

(b) a gated switching device adapted to pass current in at least one of two opposite directions, said switching device and load being connected across said voltage supply;

(c) a capacitor connected with said voltage supply so as to be charged thereby;

(d) control means connected with said voltage supply and connecting said capacitor to the gate of said switching device under predetermined conditions to initiate discharge of said capacitor into said gate for producing a sufficiently large current pulse to actuate said device and cause it to conduct during a given cycle of said voltage supply said control means including means for initiating discharge of said capacitor for causing said switching device to conduct only at a time during said given cycle when the voltage is moving away from zero;

(e) means for reducing the voltage supplied to said control means for operation thereof; and

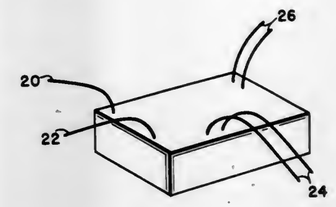
(f) means connecting said voltage supply to said control means in phase leading relationship compared to that of said switching device for causing said control means to initiate discharge of said capacitor for causing said switching device a conduct closer to zero voltage during said given cycle.

4,239,987

SWITCHING CIRCUIT FOR CONTROLLING VARIOUS APPLIANCES

Patrick M. Heffernan, Scottsdale, Ariz., assignor to Sumari Engineering, Tempe, Ariz.

Filed Oct. 13, 1978, Ser. No. 951,069
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 B **7 Claims**



1. An electronic circuit for controlling the application of AC power to a load, comprising:

switching means for placing said circuit in "on" and "off" modes, said AC power being applied to said load during the "on" mode;

first means coupled to said switching means for controlling the duration of the "on" mode, said first means comprising:

a first transistor having a base coupled to said switching means;

a timing capacitor coupled to the collector of said first transistor, which timing capacitor is charged to a predetermined voltage when a positive voltage on the base of said first transistor is removed by said switching means, said capacitor triggering said switching means into its "off" mode when said predetermined voltage is reached; and

resistive means coupled to said timing capacitor for controlling its rate of charge; and

second means coupled to said first means and responsive to said switching means for applying said AC power to said load, said second means comprising:

a power triac coupled to said load;

a pilot triac coupled to said power triac for switching said power triac on and off; and

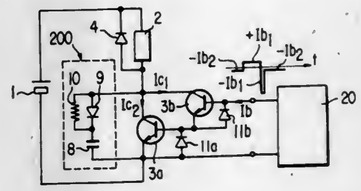
a second transistor coupled to said pilot triac and to said switching means for turning said pilot triac on.

4,239,988

TURN OFF METHOD FOR POWER TRANSISTOR SWITCH

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 701,495, Jul. 1, 1976, abandoned, which is a division of Ser. No. 567,995, Apr. 14, 1975, Pat. No. 4,010,387. This application Aug. 18, 1977, Ser. No. 825,719
Claims priority, application Japan, May 11, 1974, 49/52517
Int. Cl.² H03K *17/60*
U.S. Cl. 307—254 **2 Claims**



1. A turn-off method for a power transistor switch, the

power transistor switch including a first transistor having an emitter, a collector and a base for ON-OFF switching, said first transistor being connected in series in a path connecting a power source and a load, a second transistor having a collector and an emitter which are connected between the collector-base of said first transistor, and a diode connected in reverse parallel between the base-emitter of said second transistor, the turn-off method comprising the steps of:

applying a first base reverse bias between the base of said second transistor and the emitter of said first transistor, continuously applying a second base reverse bias between the base of said second transistor and the emitter of said first transistor, the absolute quantity of the first base reverse bias being larger than that of the second base reverse bias, and suppressing with a reapplied voltage suppressing means a reapplied voltage which is reapplied between the emitter and the collector of said first transistor during the transition period for switching said first transistor to the OFF state.

4,239,989

METHOD AND APPARATUS FOR DRIVING A TRANSISTOR OPERATED IN SATURATION

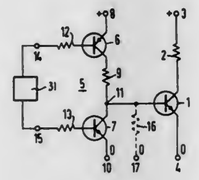
Antonio Brajder, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 29, 1977, Ser. No. 837,805

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644507

Int. Cl.³ H03K *17/00*

U.S. Cl. 307—255 **10 Claims**



1. A method for driving at least one transistor which is operated in saturation comprising:

applying a control voltage to the base of said transistor for operating said transistor in a current-conducting state;

applying a cut-off voltage to the base of said transistor for operating said transistor in a cut-off state;

and preceding the application of said cut-off voltage, applying a further voltage for a predetermined desaturation time interval which depends upon the storage time of said transistor to the base of said transistor, said further voltage corresponding to the voltage at the base of said transistor for which the base current of said transistor is approximately zero.

4,239,990

CLOCK VOLTAGE GENERATOR FOR SEMICONDUCTOR MEMORY WITH REDUCED POWER DISSIPATION

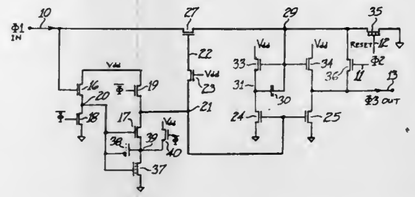
Ngai H. Hong, Galveston; Edmund A. Reese, Sugar Land, and Donald J. Redwine, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 7, 1978, Ser. No. 940,221

Int. Cl.³ H03K *5/135, 17/16, 17/284*

U.S. Cl. 307—262 **6 Claims**

1. A clock generator circuit comprising: an input terminal for receiving a reference clock voltage; a delay circuit connected to the input terminal and producing a delayed intermediate voltage at an output; a driver circuit having an input connected to receive said output and producing a high level delayed clock voltage at an output terminal; the improvement wherein the driver circuit includes in addition a pair of controlled switching devices each having a current path and a control element, the current path of one of the pair of switching devices being connected between said output terminal and a high voltage node, the current path of the other of the pair of switching devices being connected between said high voltage



node and a reference potential, the control elements of the pair of switching devices being connected together and to a reset clock voltage occurring after said delayed intermediate voltage, whereby said output terminal and said high voltage node are both discharged for reset without establishing a direct current path to reference potential.

4,239,991

CLOCK VOLTAGE GENERATOR FOR SEMICONDUCTOR MEMORY

Ngai H. Hong, Galveston, and Edmund A. Reese, Sugar Land, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 7, 1978, Ser. No. 940,222

Int. Cl.³ H03K *5/135, 17/16, 17/284*

U.S. Cl. 307—262 **9 Claims**

1. A clock generator circuit comprising: an input for receiving a reference clock voltage; a delay circuit connected to the input and producing a delayed voltage at an output; a driver circuit connected to receive said output and producing a high level delayed clock voltage; the improvement wherein the delay circuit includes a pair of controlled switching devices each having a current path and a control element, the current paths of the pair of switching devices being connected in series between said output and a reference potential, the control elements of the pair of switching devices being connected together and coupled to the input, means for separately precharging said output and a node between the current paths of the pair of switching devices prior to an operating cycle, the switching device having its current path connected between said node and reference potential having a higher threshold than the other of said pair of switching devices.

4,239,992

FREQUENCY TRACKING ADJUSTABLE DUTY CYCLE RATIO PULSE GENERATOR

Derrick O. Perkins, Raleigh, N.C., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Sep. 14, 1978, Ser. No. 942,311

Int. Cl.³ H03K *3/017, 5/04*

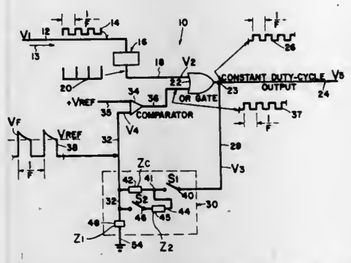
U.S. Cl. 307—265 **4 Claims**

1. Apparatus for creating a train of square pulses of adjustable period and duty cycle ratio, responsive to a train of trigger pulses of selected period, comprising:

(a) a source of trigger pulses of selected period;

(b) at least a two input OR gate means adapted to receive said trigger pulses at a first input, and to output a "high" voltage for the duration of said trigger pulses;

(c) feedback means from the output of said OR gate means, through a first switch means and a capacitive impedance, to a second input of said OR gate means, said second input



also connected to ground through a first resistor R1 and providing a feedback voltage;

(d) shunt means comprising a second switch means and a second resistor in series across said capacitive impedance;

whereby so long as said feedback voltage is greater than a selected voltage, the output voltage of said OR gate means will be held high; and when said feedback voltage is less than said selected voltage, said output of said OR gate means will be low, and said first switch means will open and said second switch means will close.

4,239,993

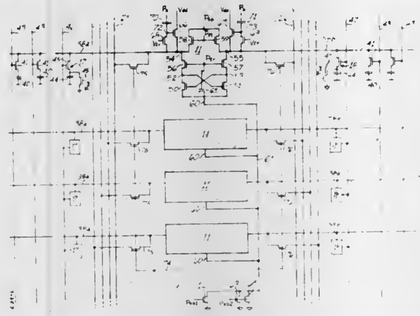
HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER WITH ACTIVE LOADS

Joseph C. McAlexander, III, Sugar Land; Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 22, 1978, Ser. No. 944,822

Int. Cl.³ H03K *5/24, 3/356;* G11C *7/00*

U.S. Cl. 307—355 **10 Claims**



1. A sense amplifier for a semiconductor memory device of the type having an array of rows and columns of memory cells with each column split into two column line halves and sense amplifiers connected to pairs of sense nodes at the ends of each pair of column line havles, comprising:

a pair of cross-coupled driver transistors, a pair of coupling transistors, at least one grounding transistor and a pair of pull-up transistors, each of the transistors having a current path and a control electrode,

means connecting the current path of each of the coupling transistors in series with the current path of a separate one of the driver transistors between one of the sense nodes and a grounding node and connecting the current path of said at least one grounding transistor between the grounding node and reference potential,

the current paths of the pull-up transistors being connected separately between the sense nodes and a supply of a given voltage level,

means for precharging the sense nodes to said voltage level prior to an active operating cycle,

means for addressing a selected row of the memory cells in the array at a given time in the beginning of said operating cycle at a voltage of said voltage level,

means for applying a clock voltage to turn on said at least one grounding transistor at a first time subsequent to the said given time in the beginning of an active operating cycle,

coupling means separately connecting the control electrodes of the pull-up transistors to the sense nodes, the coupling means being conductive only for a given voltage differential during the active operating cycle,

means to boost the voltage on the control electrode of one of the pull-up transistors to higher than said voltage level at a time in the active operating cycle just following the second time,

means to maintain the voltage on the control electrodes of the coupling transistors at higher than said voltage level prior to the beginning of active operating cycle and shifting the level of said voltage level during the active operating cycle,

and means for addressing said selected row of the memory cells at a voltage higher than said voltage level at a time during said active cycle after said first time.

4,239,994

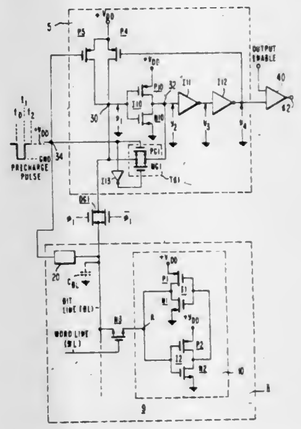
ASYMMETRICALLY PRECHARGED SENSE AMPLIFIER

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,747

Int. Cl.³ H03K *5/153, 3/356;* G11C *7/06*

U.S. Cl. 307—359 **15 Claims**



1. A sense amplifier comprising:

an inverter having a signal input terminal, a signal output terminal, and first and second power terminals for receiving an operating potential therebetween and exhibiting a transition point between first and second logic conditions at its output signal terminal responsive to a particular voltage being applied to its input signal terminal;

means for supplying recurring precharge pulses;

selectively enabled feedback means responsive to each pre-

charge pulse for completing a feedback connection from the output signal terminal of said inverter to its input signal terminal only for the duration of each precharge pulse; said feedback means including a feedback transistor having a conduction path and a control electrode and wherein the conduction path of said feedback transistor is connected between the input and the output of said inverter;

selectively enabled bias means responsive to each precharge pulse applying an offset current during each precharge pulse to the signal input terminal of said inverter of such polarity that the input signal terminal of said inverter adjusts to a value which is offset from said particular voltage, for predisposing the signal at the output signal terminal of said inverter to exhibit said first logic condition at the conclusion of each precharge pulse, said selectively enabled biasing means including a biasing transistor having its conduction path connected between said one of said first and second power terminals and said input of said inverter; and wherein said selectively enabled feedback and biasing means include means for turning on said feedback and biasing transistors concurrently, for the duration of each precharge pulse, and for turning them off concurrently during intervals between succeeding precharge pulses; and

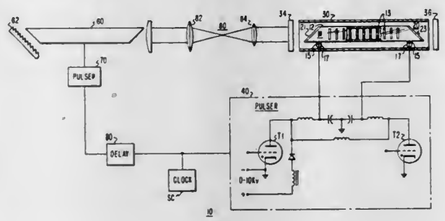
means for selectively applying signals to be sensed to the input signal terminal of said inverter, at selected times, each of which times follows the inception of a precharge pulse.

4,239,995

METAL VAPOR RAMAN FREQUENCY SHIFTER

Donald W. Feldman; Lelland A. Weaver, both of Pittsburgh, and Chi-Sheng Liu, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1979, Ser. No. 15,845
Int. Cl.[2] H03F *7/00*
U.S. Cl. 307—426 **17 Claims**



1. A method of operating an all-hot Raman discharge cell to produce shifted Raman radiation from dissociated metal species, comprising the steps of:

filling the Raman discharge cell with a molecular vapor medium selected from a group consisting of the halide, complex halides, or oxide of a metal of interest;

pulsing said molecular vapor medium in said Raman discharge cell with an electrical discharge current to dissociate said molecular vapor medium into metal atoms, and halogens or oxygen atoms, for a predetermined afterglow period, after which period recombination occurs producing the original species of said molecular vapor medium; and

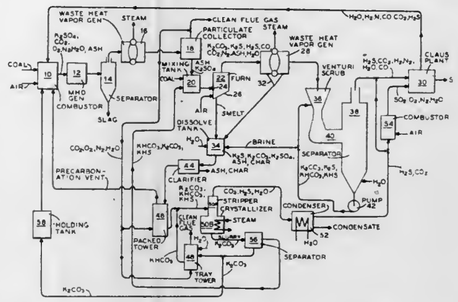
pumping said metal atoms during said afterglow period with a laser pulse generated external to said Raman discharge cell to develop Raman interaction with the dissociated metal atoms and produce a shifted Raman radiation discharge output from said Raman discharge cell.

4,239,996

POTASSIUM CARBONATE RECOVERY

Rohinton K. Bhada, Homeworth; Howard B. Lange, Jr., and Stephen S. Strom, both of Alliance, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed May 29, 1975, Ser. No. 582,066
Int. Cl.[2] H02K *45/00*; C01B *17/02*; C01D *7/00*
U.S. Cl. 310—11 **3 Claims**



1. In the production of electricity in an MHD generator including firing a sulfur-containing fuel in the presence of air and potassium carbonate to produce a high temperature seeded gas, passing the seeded gas through the generator to produce electricity and wherein the potassium carbonate seed reacts with the sulfur to form potassium sulfate, cooling the generator discharge gas through indirect heat exchange, recovering the potassium sulfate from the cooled gas, and converting the potassium sulfate to potassium carbonate crystals and a saturated solution including potassium salts, the improvement comprising the steps of:

a. mixing coal and the saturated solution including potassium salts with said potassium sulfate,

b. firing said mixture in the presence of 60 to 90 percent of stoichiometric air to produce a molten smelt including potassium sulfide and a gas including potassium salts under reducing conditions,

c. cooling the potassium salts-containing gas through indirect heat exchange,

d. passing said last named gas through a liquid spray contact zone to recover substantially all of the potassium salts therefrom,

e. adding water and said recovered potassium salts to the smelt to form a solution including potassium sulfide and potassium carbonate,

f. clarifying said last named solution,

g. contacting said last named solution with a gas including carbon dioxide in sufficient amount to form a precarbonated solution including potassium carbonate and potassium bisulfide,

h. adding a slurry including potassium bicarbonate to the precarbonated solution to form a mixture including potassium bicarbonate and potassium bisulfide,

i. heating the mixture to produce a gas including hydrogen sulfide and a slurry including potassium carbonate crystals,

j. firing at least some of said hydrogen sulfide-containing gas in the presence of air to produce a gas including sulfur dioxide,

k. mixing the remainder of said hydrogen sulfide-containing gas with the gas discharged from said spray contact zone,

l. reacting the gas mixture with said sulfur dioxide to form sulfur,

m. recovering the potassium carbonate crystals from the last named slurry by separating out said saturated solution including potassium salts,

n. recycling the saturated solution including potassium salts for mixing with the potassium sulfate and coal, and

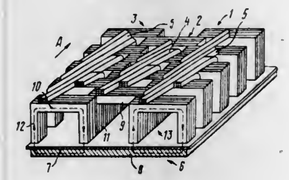
o. recycling the potassium carbonate crystals for use as seeding material for said MHD generator.

4,239,997

LINEAR INDUCTION MOTOR

Alexandr D. Popov, pereulok Rynochny, 44; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu; Vladimir A. Trofimov, selo Balakleya, pereulok Tikhy, 8, Cherkasskaya oblast; Vasily I. Bocharov, Novocherkassk, pereulok Knizhny, 5, and Jury V. Kuprianov, Novocherkassk, ulitsa Svobody, 11, kv. 11, both of Rostovskaya oblast, all of U.S.S.R.

Filed Nov. 21, 1978, Ser. No. 962,783
Int. Cl.[3] H02K *41/07*
U.S. Cl. 310—13 **3 Claims**



1. A linear induction motor comprising an inductor including:

one row of first U-shaped transversely laminated cores, each first core having legs and a connecting yoke;

a first distributed polyphase winding enveloping said row of first U-shaped transversely laminated cores;

at least one but not more than two rows of second U-shaped transversely laminated cores, each second core having legs and a connecting yoke, one leg of each said second cores being arranged between respective legs of two of said first U-shaped transversely laminated cores;

a second distributed polyphase winding enveloping each row of the second U-shaped transversely laminated cores;

two toothless active zones defined by alternating and adjoining legs of said first and second U-shaped transversely laminated cores;

a secondary element interacting through said toothless active zones with said inductor; said secondary element including

a magnetically conductive base and

an electrically conductive part arranged upon said magnetically conductive base.

4,239,998

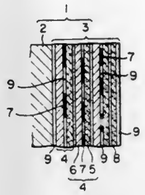
METHOD FOR ELECTRICALLY INSULATING AN ELECTRICALLY CONDUCTING ARTICLE AND PRODUCT PRODUCED THEREBY

Takeshi Hakamada, Hitachi; Hideyo Hirata, Ibaraki, and Toshio Katoh, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 14, 1978, Ser. No. 886,422
Claims priority, application Japan, Mar. 19, 1977, 52-30750
Int. Cl.[2] H02K *15/12*; H01F *27/30*; H01B *7/00*
U.S. Cl. 310—45 **21 Claims**

1. A method for electrically insulating an electrically conducting article which conprises winding an insulating tape containing a first resin around an electrically conducting article, impregnating the wound insulating tape with a second resin, and curing the second resin, thereby forming an insulating layer around the electrically conducting article, characterized by the first resin being a silicone resin, by the second resin being a resin having a larger force of adhesion between the windings of the tape, after curing, than said first resin, after curing, and by a ratio of the second resin b to the first resin a being 0.5:1 to 5:1 by weight.

7. An electrically insulated, electrically conducting article comprising an electrically conducting article and an insulating



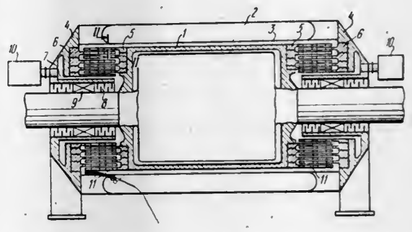
layer comprising an insulating tape wound around the electrically conducting article, produced by the method of claim 1.

4,239,999

SUPER-CONDUCTIVE ELECTRICAL MACHINE HAVING AN IMPROVED SYSTEM FOR MAINTAINING VACUUM IN THE STATOR/ROTOR SPACE

Alexandr A. Vinokurov, ulitsa Polzunova, 31, kv. 314; Gennady S. Gorbunov, ulitsa Polzunova, 35, kv. 42; Jury S. Popov, ulitsa Bariernaya, 16, kv. 14, all of Novosibirsk; Jury V. Skachkov, Nevsky prospekt, 125, kv. 13, Leningrad; Iosif F. Filippov, ulitsa Pulkovskogo, 17, kv. 39, Leningrad, and Gary M. Khutoretsky, ulitsa Altaiskaya, 20, kv. 5, Leningrad, all of U.S.S.R.

Filed Nov. 28, 1977, Ser. No. 855,314
Claims priority, application U.S.S.R., Nov. 30, 1976, 2421858
Int. Cl.[2] H02K *9/00*
U.S. Cl. 310—52 **1 Claim**

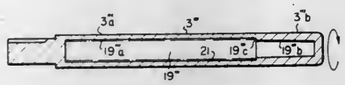


1. A cryogen-cooled electrical machine comprising: a hollow stator and a rotor rotatably mounted within said hollow stator with an annular gap therebetween; each end of said machine having at least two cylindrical shells disposed concentrically with a clearance therebetween, one of said shells being movable and supported in a cantilevered fashion by said rotor on an end face thereof and the other being stationary and supported in a cantilevered fashion by the stator on an end faced thereof thereof opposite said end face of said rotor; said shells having ports serving to achieve and maintain vacuum in said gap between said hollow stator and said rotor, said ports in said rotor-supported shells having axes which form an acute angle α with tangent lines drawn to said shell periphery from the points where said axes intersect the envelope of said shell in the direction of rotation of said rotor, and said ports in said stator-supported shells having axes which form an angle $\beta=180°-\alpha$ with tangent lines drawn to said shell periphery from the points where said axes intersect the envelope of said shell.

4,240,000
ROTARY ELECTRIC MACHINE WITH A HEAT PIPE FOR COOLING

Keiichi Harano, Sagamihara, and Shigeaki Oyama, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,630
Claims priority, application Japan, Nov. 17, 1977, 52-137266
Int. Cl.³ H02K 9/00
U.S. Cl. 310—54 2 Claims

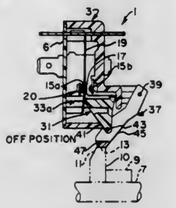


1. A rotary electric motor having a heat pipe therein for cooling the motor, said heat pipe having a first portion positioned within a heating zone and a second portion positioned within a cooling zone, said heat pipe comprising a rotary shaft having an axial hole formed therein, said axial hole having a first diameter in said heating zone and a second diameter in said cooling zone, wherein said second diameter is less than said first diameter, at least one step means formed in said axial hole between said first portion and said second portion thereof, said step means preventing a layer of working fluid formed on the wall of the axial hole in said first portion from flowing into said second portion, wherein the height of said step means is at least $\alpha D_1/4$ where α is the ratio of volume of the working fluid to the volume of the axial hole in said first portion and D_1 is the diameter of the hole in said first portion.

4,240,001
MOTOR STARTING SWITCH

Eugene F. Hildebrandt, Ferguson; Thomas V. Ottersbach, Normandy, and Wayne J. DeVries, St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 31, 1978, Ser. No. 938,455
Int. Cl.³ H02K 11/00
U.S. Cl. 310—68 E 14 Claims

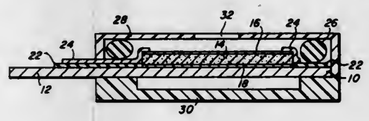


1. A motor starting switch and an electric motor, the latter having a shaft rotatable about its longitudinal axis and a centrifugal actuator mounted on said shaft for rotation therewith, said centrifugal actuator having an actuator member movable axially with respect to said shaft between a run position and an off position, said actuator member being movable from its off position to its run position upon said shaft rotating at a predetermined speed and being movable from its run position toward its off position upon slowing of the shaft, said actuator member having an actuating surface generally facing toward its off position and another surface contiguous to said actuating surface, said switch comprising a housing rigidly mounted with respect to said motor, at least one set of contacts within said housing including one contact fixed with respect to said housing and another contact movable with respect thereto between a closed position in which said contacts are in electrical contact with one another and an open position in which electrical contact therebetween is broken, a slider member movable within said housing along a line of action generally parallel to said longitudinal axis of said shaft, a lever pivotally secured to said housing having an inclined surface engageable by said actuating surface of said actuator member as the latter moves from its run toward its off position thereby to effect sliding movement of said slider member in one direction in said housing for moving said movable contact from one of its said positions to another of its said positions and said lever further having a bottom surface contiguous to said inclined surface engageable by said other surface of said actuator member as the latter moves further toward its off position thereby to hold said movable contact in its said other position.

4,240,002
PIEZOELECTRIC TRANSDUCER ARRANGEMENT WITH INTEGRAL TERMINALS AND HOUSING

Kenneth F. Tosi, Plantation, and John M. McKee, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1979, Ser. No. 26,624
Int. Cl.³ H01L 41/08
U.S. Cl. 310—324 4 Claims



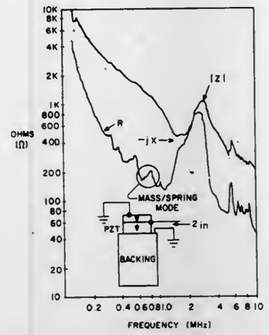
1. A transducer device as for a miniature radio apparatus and comprising:
- a planar metal diaphragm having at least one peripherally projecting portion;
- a planar electromechanical element having a surface area less than the surface area of said diaphragm and having electrodes formed on the opposing faces of said element;
- non-insulating mounting means for affixing a first face of the electromechanical element centrally of the diaphragm;
- a thin insulating layer formed on the diaphragm and adjacent at least a portion of the electromechanical element and extending onto one projecting portion of the diaphragm;
- conductive means formed on at least a portion of a second face of the electromechanical element and on a portion of the insulating layer including the insulated area on the projecting portion of the diaphragm but not in electrical contact with the diaphragm, whereby the exposed projecting portion of the diaphragm and the conductive means formed on the projecting portion provide terminals for the device; and
- housing means for peripherally holding and retaining the diaphragm, having a sound aperture adjacent the second face of the electromechanical element, and having a second aperture for allowing the peripherally projecting portion of the diaphragm, including the extended portion of the insulating layer and the conductive means, to extend beyond the housing means.

4,240,003
APPARATUS AND METHOD FOR SUPPRESSING MASS/SPRING MODE IN ACOUSTIC IMAGING TRANSDUCERS

John D. Larson, III, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 12, 1979, Ser. No. 20,007
Int. Cl.³ H01L 41/08
U.S. Cl. 310—326 3 Claims

1. An acoustic imaging transducer comprising:
an acoustic absorbing backing; and
a plurality of piezoelectric elements affixed to a surface of the backing for radiating and receiving acoustic waves, each of said elements including suppression means for

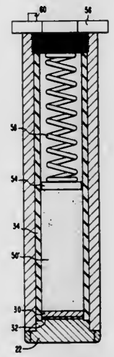


suppressing spurious acoustic waves produced by mass/spring mode vibration.

4,240,004
ULTRASONIC TRANSDUCER WITH CHEMICAL-SETTING INORGANIC CEMENT BACKING FOR OPERATION AT HIGH TEMPERATURES

Robert L. Coleman, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 20, 1978, Ser. No. 944,040
Int. Cl.² H01L 41/10
U.S. Cl. 310—327 5 Claims

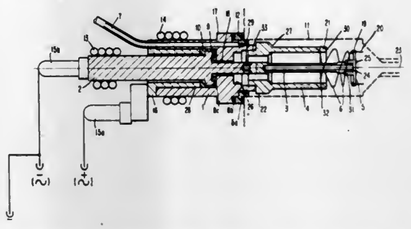


1. A transducer for high temperature operation comprising:
(a) an active transducer element having front and rear active surfaces;
(b) a backing member abutting said rear surface;
(c) said backing member comprising a chemical-setting inorganic cement powder blended with a powdered metal and to which water has been added to bring about a chemical reaction resulting in the solidification of the blend, the blend being suitably dried and thereafter baked.

4,240,005
APPARATUS FOR THE GENERATION OF PRIMARY ELECTRONS FROM A CATHODE

Roderich Keller, Darmstadt, Fed. Rep. of Germany, assignor to GSI Gesellschaft fuer Schwerionenforschung m.b.H., Darmstadt, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,764
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842506
Int. Cl.³ H01J 1/15
U.S. Cl. 313—231 8 Claims



1. Apparatus for generating primary electrons from a cathode for maintaining forced gas discharges, said apparatus comprising a body; concentric energy supply conductors mounted on said body, the first of said conductors being a hollow cylinder and the second conductor extending centrally through and beyond said cylinder and carrying said cathode at its free end, said cathode being in the form of a plate having an electron discharge face; and at least one heating filament electrically connected between said cathode and said cylinder.

4,240,006
PHOTOCONDUCTIVE LAYER AND TARGET STRUCTURE FOR IMAGE PICKUP TUBE

Hiromichi Kurokawa, Yokohama; Yasuo Nakamura, Atsugi; Masayoshi Gando, Kanagawa; Haruhiko Okada, Ebina; Masaru Yamazaki, Sagamihara, and Hideo Yamanaka, Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,646
Claims priority, application Japan, Dec. 26, 1977, 52-156916
Int. Cl.³ H01J 29/45, 31/38
U.S. Cl. 313—386 7 Claims



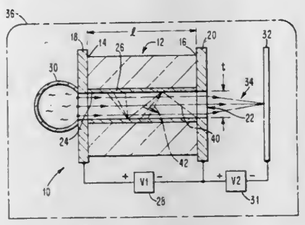
1. An image pick-up tube having a target structure comprising a transparent substrate, a transparent conductive layer on said substrate, a photo-conductive layer comprising selenium over said conductive layer, and a semi-insulating oxide layer intervened between said conductive layer and said photoconductive layer, characterized in that said semi-insulating oxide layer comprises at least one IIb metal in the periodic table selected from the group consisting of zinc and cadmium, and at least one IVa metal in the periodic table selected from the group consisting of tin and germanium, wherein said photoconductive layer further comprises tellurium Te and arsenic As, and wherein said oxide layer is made of $Cd_{2-x}Zn_xSnO_4$ $(1 \leqq x \leqq 2)$.

4,240,007

MICROCHANNEL ION GUN

Russell W. Dreyfus, Mt. Kisco; Nicholas A. Penebre, Chappaqua, and Richard A. McCorkle, South Salem, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,496
Int. Cl.³ H01J *27/02, 43/02*
U.S. Cl. 315—111.8 **13 Claims**



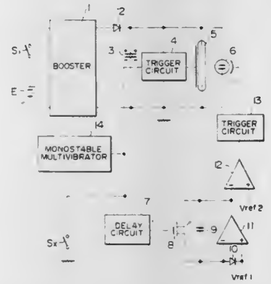
1. An ion gun for locally exposing a target which comprises:
a high resistance body having a first and a second end which are specially separated;
a first electrode attached to said first end;
a second electrode attached to said second end;
a capillary passage having a surface which passes through said first electrode, said high resistance body, and said second electrode,
said surface having a composition such that it is partially conducting and has a secondary electron emission coefficient greater than unity;
means for maintaining said first electrode at an electric potential above said second electrode; and
a source of ionizable material adjacent to said first electrode and communicating with said capillary passage.

4,240,008

AUTOMATIC ELECTRONIC FLASH LIGHT DEVICE

Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 9, 1979, Ser. No. 10,690
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—151 **3 Claims**



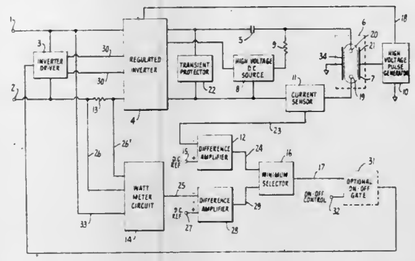
1. An automatic electronic flash light device having a flash light tube, and means for triggering said tube, and in which an electric discharge of the flash light tube is terminated when the integrated amount of the light reflected by an object to be photographed and illuminated by the flash light from the flash light tube has reached a predetermined value comprising: an integrated circuit which integrates the amount of light reflected by the object, and a delay circuit, said integrating circuit being started by a signal applied thereto by said delay circuit, said signal being delayed so as to be generated after said triggering means have triggered said flash light tube.

4,240,009

ELECTRONIC BALLAST

Jon D. Paul, 145 Bluxome St., San Francisco, Calif. 94107

Filed Feb. 27, 1978, Ser. No. 881,190
Int. Cl.³ H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—224 **17 Claims**



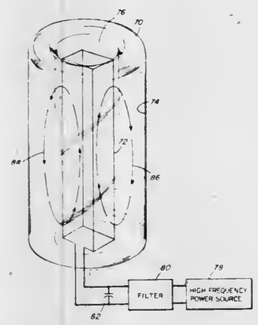
1. An electronic ballast for starting and operating at least one gaseous discharge lamp including:
(a) means providing a source of d-c electrical input power;
(b) a regulated inverter connected to the source for producing a-c output power;
(c) an inverter driver controlling and driving the regulated inverter; and
(d) control circuit means for the inverter driver sensing the input d-c power and output a-c current to provide constant current a-c power from the inverter during lamp warmup and constant wattage a-c power thereafter.

4,240,010

ELECTRODELESS FLUORESCENT LIGHT SOURCE HAVING REDUCED FAR FIELD ELECTROMAGNETIC RADIATION LEVELS

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 18, 1979, Ser. No. 49,773
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—248 **14 Claims**



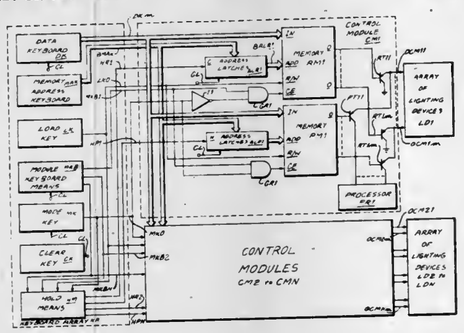
1. An electromagnetic discharge apparatus comprising:
an electrodeless lamp having an envelope made of a light transmitting substance, said envelope having on its inner surface a phosphor coating which emits visible light upon absorption of ultraviolet radiation, said envelope enclosing a fill material which emits ultraviolet radiation during electromagnetic discharge; and
means for excitation of the discharge in said electrodeless lamp by high frequency power, said excitation means including induction coil means located in sufficiently close proximity to said lamp to cause discharge, said induction coil means including a conductor configured to generally outline the shape of a regular polygonal prism having an even number of side faces and an even number of side edges formed by the intersections of said side faces, said conductor being configured to run parallel to and coincide with said side edges in such a direction that, at any instant of time, current in the conductor on adjacent side edges of said prism flows toward opposite ends of said prism, said induction coil means thereby including a plurality of current loops, each having an individual magnetic dipole moment which emits electromagnetic radiation, and having a net magnetic dipole moment which is the vector sum of said individual magnetic dipole moments, said current loops being configured so that each individual magnetic dipole moment is offset by other individual magnetic dipole moments in order to minimize said net magnetic dipole moment, whereby the magnitude of the far field electromagnetic radiation, produced directly by said induction coil means, is minimized.

4,240,011

KEYBOARD OPERATED CONTROLLER

Frank Dinges, 176 W. 87th St., New York, N.Y. 10024, and Tartaglio, Robert L., c/o Design Circuit Inc., 141 5th Ave., New York, N.Y. 10010

Filed Jul. 17, 1978, Ser. No. 925,039
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—292 **11 Claims**



1. Apparatus for controlling the operation of a plurality of electrically actuatable devices comprising a memory means including a plurality of addressed multiposition registers, each position of a register corresponding to one of the electrically actuatable devices and being adapted for storing an indicium to establish a desired state of the device, there being a plurality of positions corresponding to the electrically actuatable devices, addressing means for receiving an address for selecting respective of said addressed multiposition registers to limit the controls of the positions for controlling the electrically actuatable devices, and address input means for generating and transmitting addresses to said addressing means, said address input means comprising a finger operated keyboard including capacitance-type touch keys to provide rapid selection of addresses for use in discotheque type lighting.

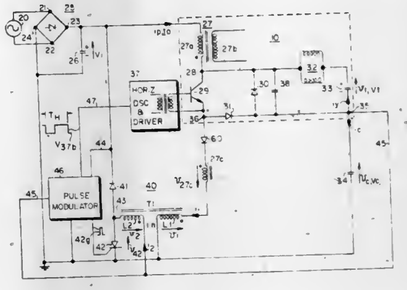
4,240,012

REGULATED DEFLECTION CIRCUIT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 98,922
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—408 **10 Claims**

1. A regulated deflection circuit, comprising:
a deflection winding;
a voltage source for developing a first DC voltage;
a trace capacitance coupled to said voltage source for developing a trace voltage;
trace switching means coupled to said deflection winding for applying said trace voltage to said deflection winding to generate a trace deflection current each deflection cycle when said trace switching means is conductive, a retrace pulse voltage being developed across said deflection winding when said trace switching means is cut off during a retrace interval of each deflection cycle;
means including a regulator transformer with first and second windings for establishing a second substantially DC voltage across first and second terminals, said first winding coupled to said trace switching means and one of said first and second terminals for applying said second DC voltage to said first winding to generate current in said first winding, said trace voltage constrained to assume a voltage representative of the difference in voltage between said first and second DC voltages, said second winding conducting current when the current in said first winding is cut off at the initiation of said retrace interval;
second switching means coupled to said second winding, the conduction of said second switching means controlling the current in said second winding to vary said second voltage; and
control means coupled to said second switching means and responsive to a deflection circuit quantity for altering the conduction of said second switching means to regulate said deflection circuit quantity.



4,240,013

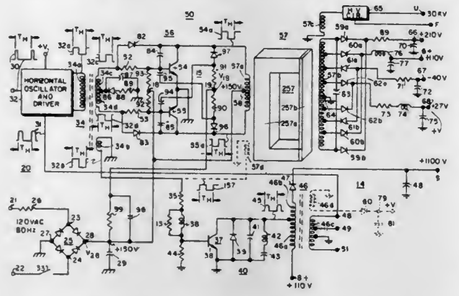
HORIZONTAL DEFLECTION AND POWER SUPPLY CIRCUIT WITH A START-UP ARRANGEMENT

Werner F. Wedam, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,083
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—411 **10 Claims**

1. A deflection and power supply circuit with a start-up arrangement, comprising:
an oscillator for providing an alternating current drive voltage;
a power supply including output switching means coupled to said oscillator and responsive to said alternating current drive voltage for developing a supply voltage for a deflection circuit;
an energization voltage developed from one of said power supply and said deflection circuit and coupled to said oscillator for energizing said oscillator into oscillation, said energizing voltage being developed after the elapse of a start-up interval; and

means for enabling said output switching means to self-oscillate during said start-up interval and to cease self-oscillating when said oscillator develops said alternating current drive voltage.



4,240,014

PRECISION MOTOR SPEED CONTROL SYSTEM

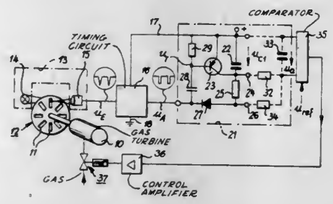
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,373

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755343

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—328 **27 Claims**



1. Speed control system for a motor (**10, 63, 110, 125**) having a controlled energy supply (**37, 97, 120**);

speed signal generating means (**11-15;75-86; 121; 132; 133, 134**) providing a series of speed needle pulses (u_E) having a repetition rate representative of speed of rotation of the motor;

a commanded timing element (**16, 51, 62**) providing a pulse train forming a characteristic representative of a commanded speed and furnishing a sequence of essentially square wave output pulses (u_E) of a controlled

pulse length (T_S) separated by controlled pulse gaps in which, when the motor is operating at essentially the commanded speed, the controlled length of the pulses is just slightly shorter than the recurrence time interval (T_i) of the speed needle pulses and in which the pulse gaps between the pulses have a width such that the needle pulses fall within said pulse gaps;

a storage element (**22**);

charge means (**17, 25, 27**) connected to and charging said storage element (**22**) at a predetermined rate during the difference (ΔT) between said recurrence time interval (T_i) of the needle pulses (u_E) and said pulse length of the essentially square wave output pulses (u_A);

discharge means (**23**) connected to and discharging said storage element after elapse of at least a portion of the time period (T_S) of the pulse (u_A)of the control pulse length;

speed error signal generating means (**35, 94**) generating a control signal, connected to and controlled by the charge on said storage element and having an output controlling said controlled energy supply as function of deviation of actual essentially instantaneous motor speed from commanded motor speed,

and comprising, in accordance with the invention

an override discharge circuit (**55, 61, 68**) connected to and responsive to said speed needle pulses (u_E) and connected to and controlling said commanded timing element (**16, 51, 62**) to reset said timing element to provide a new pulse train and, further, to discharge said storage element (**22**)

to prevent simulation of a low-speed condition if the difference between actual speed and commanded speed is substantial.

4,240,015

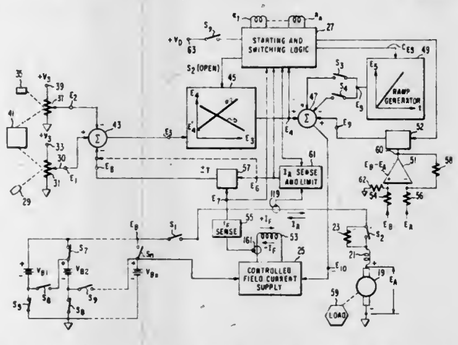
CONTROL SYSTEM AND METHOD FOR OPERATING A DC MOTOR

Kevin E. White, Washington Township, Warren County, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 15, 1977, Ser. No. 824,544

Int. Cl.² H02P *5/40*

U.S. Cl. 318—338 **5 Claims**



1. A system for operating a DC motor having at least one independent field winding and an armature winding, over a plurality of speed ranges, comprising:

a plurality of DC voltage supply means;

switching means repsonsive to different ones of a plurality of switching control signals, for selectively connecting certain ones of said plurality of DC voltage supply means into one of a plurality of possible circuit configurations, for applying a particular fixed level of DC output voltage therefrom across said armature winding, for operating said motor over a particular speed range;

adjustable DC current supply means responsive to a current magnitude signal, for selectively supplying a magnitude of current to said field winding directly proportional to the magnitude of said current magnitude signal necessary for obtaining and maintaining a desired speed within a particular speed range;

speed selection means for producing said current magnitude signal; and

controller means responsive to the field current above base speed attaining a predetermined value, for continuously adjusting the amplitude of said current magnitude signal to change the magnitude of the field current towards a value for decreasing the magnitude of the armature current and while so operating, also being responsive to the first occurring one of the field current attaining a predetermined minimum magnitude concurrent with negative armature current, the field current attaining a first predetermined maximum magnitude concurrent with positive armature current, the armature current reducing to substantially zero, for then producing a first switching control signal for operating said switching means to disconnect said DC output voltage from across said armature winding, for next producing a second switching control signal for operating said switching means to first connect the plurality of DC voltage supply means into a different configuration producing a different level of DC output voltage, and thereafter a third switching control signal for operating said switching means to connect this new level of voltage across said armature winding, thereby changing the speed range with a substantially reduced magnitude of current being switched by said switching means.

4,240,016

POSITIONING DEVICE FOR AN INDUSTRIAL ROBOT

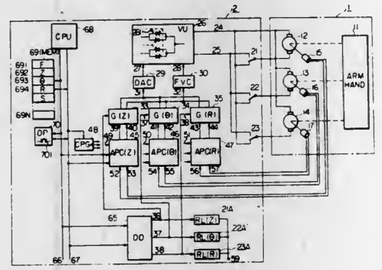
Hajimu Inaba, and Hideo Miyashita, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Feb. 1, 1979, Ser. No. 8,518

Claims priority, application Japan, Feb. 10, 1978, 53/13628

Int. Cl.³ G05B *11/32*

U.S. Cl. 318—562 **1 Claim**



1. A positioning system for an apparatus said system comprising:

(a) a plurality of motors, each motor effecting motion along a different axis;

(b) a plurality of detectors for detecting the motion of said apparatus along each of said axes;

(c) a plurality of relay switching means;

(d) a single velocity control means coupled to said plurality of motors through said plurality of relay switching means;

(e) a digital to analog converter;

(f) a plurality of axis position control means each in series with a gate means coupled in series with said velocity control means through said digital to analog converter;

(g) a digital output means, the output of said digital output means being connected to said plurality of relay means for actuating said relay means and to the control inputs of said gate means;

(h) memory means coupled to the input of said digital output means; and

(i) a central processing means coupled to said memory means and said digital output means for controlling said memory means and said digital output means.

4,240,017

CONTROL METHOD IN AN INTERMITTENTLY MOVING MECHANISM AND A SHIFT REGISTER FOR CARRYING OUT THE METHOD

Hiroshi Uekusa, Chiba, Japan, assignor to Yoshino Kogyosho Co., Ltd., Japan

Filed Jul. 21, 1977, Ser. No. 817,684

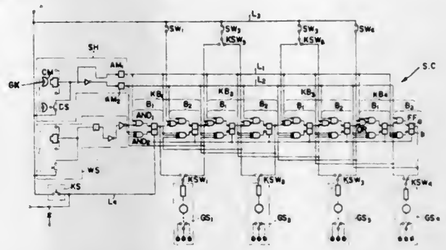
Int. Cl.² G05B *19/26*

U.S. Cl. 318—600 **7 Claims**

1. A control method for commands for an intermittently moving mechanism for inspecting and machining products while said mechanism is being intermittently moved through a plurality of stations, comprising the steps of:

(a) providing alternately occuring shift signals, one of said shift signals corresponding to the moving period of said intermittent mechanism and the other of said shift signals corresponding to the stopping period of said intermittent mechanism, to a plurality of sequentially connected process blocks respectively corresponding to said plurality of stations, said process blocks having connected first and second block portions to form a plurality of sequentially connected block portions;

(b) selecting said first block portion or said second block portion of said process blocks for reception of a work signal;



(c) providing said work signal to the selected block portion of a process block upon the occurrence of a process at the station corresponding to said process block;

(d) entering said work signal into said selected block portion upon the occurrence of said one shift signal to produce outputs of said selected block portion of an output signal to the next succeeding block portion and of a feedback signal to the next preceeding block portion; and

(e) cancelling any outputs of said next preceeding block portion by said feedback signal upon occurrence of said other shift signal.

4,240,018

Patent Not Issued For This Number

4,240,019

Patent Not Issued For This Number

4,240,020

CONTROL SYSTEM FOR SUPPRESSING TORQUE RIPPLE IN SYNCHRONOUS MOTOR

Toshiaki Okuyama; Yuzuru Kubota; Hiroshi Nagase, all of Hitachi, and Katsunori Suzuki, Takahagi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 30, 1978, Ser. No. 920,699

Claims priority, application Japan, Jul. 4, 1977, 52/79133

Int. Cl.³ H02P *7/28*

U.S. Cl. 318—721 **6 Claims**

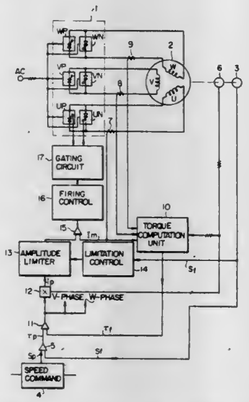
1. A control system for suppressing torque ripple of a synchronous motor, comprising:

(a) the synchronous motor having multi-phase armature windings and a field winding;

(b) a frequency converter for supplying AC current of variable frequencies to said armature windings;

(c) a position detector for producing a sinusoidal waveform signal in dependence on the rotational position of said synchronous motor and having a substantially constant amplitude independent of the rotational speed of said motor;

(d) compensation means for compensating the armature reaction of said synchronous motor;
(e) current detector means for detecting armature current of said synchronous motor;
(f) torque computation circuit for arithmetically determining actual torque value from said sinusoidal waveform position signal and said armature current; and



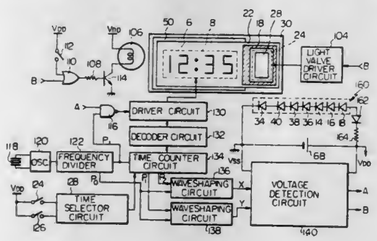
(g) control means for controlling output current of said frequency converter in response to deviation of said actual torque value from a command torque value for suppressing torque ripple of said synchronous motor even at low motor speeds.

4,240,021

SOLAR CELL BATTERY CHARGING CONTROL SYSTEM

Yoshinobu Kashima, Tanashi, and Makoto Yoshida, Tokorozawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 12, 1978, Ser. No. 905,615
Claims priority, application Japan, May 20, 1977, 52-57652; Jul. 29, 1977, 52-90986; Sep. 16, 1977, 52-111370; Dec. 22, 1977, 52-153609
Int. Cl.³ H02J *7/00*; H01L *31/00*
U.S. Cl. 320—2 **8 Claims**



1. A solar battery charging control system having a storage battery and a plurality of solar cells connected in series with said storage battery to charge said storage battery, comprising:
detection means for detecting a battery charge level and generating an output signal when said battery charge level exceeds a predetermined value;
a driver circuit for generating a drive signal responsive to said output signal; and
heavy load means responsive to said drive signal to discharge said storage battery thereby preventing overcharging of said storage battery, said heavy load means discharging said battery for a predetermined interval of time, the duration of said predetermined interval of time being determined by said output signal from said detection means.

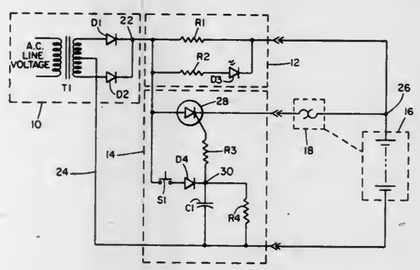
4. A solar cell battery charging control system having a storage battery, and a plurality of solar cells connected in series for charging said storage battery, comprising:
detection means for detecting a battery charge level and generating an output signal when said battery charge level exceeds a predetermined value; and
a liquid crystal cell functioning as a light control valve to control a level of light incident upon at least one of said plurality of solar cells responsive to said output signal.

4,240,022

BATTERY CHARGING CIRCUIT FOR PORTABLE POWER TOOL

David C. Kilinskis, Chicago, and Louis J. Vassos, Park Ridge, both of Ill., assignors to Skil Corporation, Chicago, Ill.

Filed Mar. 29, 1978, Ser. No. 891,305
Int. Cl.³ H02J *7/10*
U.S. Cl. 320—23 **11 Claims**



1. A circuit for recharging battery cells comprising:
(a) terminals for connecting the circuit to a current source,
(b) a fast charge section in circuit between said terminals and said battery cells for charging said cells at a maximum rate, said fast charge section including:
an SCR including a gate electrode completing a circuit path from the source to said battery cells,
means for enabling said SCR during a portion of each half cycle of said current source including a capacitor connected to said gate electrode and initiating means for charging said capacitor to a voltage sufficient to produce a current exceeding the gate threshold of said SCR,
(c) means for temporarily interrupting the circuit from the current source through said fast charge section when said cells approach full charge, said interrupting means including a normally closed thermostat in thermal relation with said cells, said thermostat opening due to the heat produced by said cells when they approach full charge,
(d) means for disabling said fast charge section upon operation of said interrupting means to prevent further charging at said maximum rate.

4,240,023

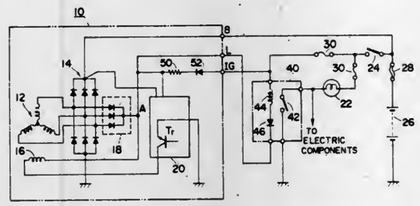
DEVICE FOR INDICATING THE RATE OF CHARGE IN AN AC GENERATOR

Takayoshi Masutani, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 29, 1978, Ser. No. 974,437
Claims priority, application Japan, Feb. 20, 1978, 53-18760; Feb. 20, 1978, 53-21054[U]
Int. Cl.³ H02J *9/14*
U.S. Cl. 322—99 **5 Claims**

1. A device for indicating the rate of charge in an AC generator for a vehicle comprising an exciting diode for feeding electric current to a field coil and a contactless regulator, and

whose output end is connected to a battery mounted on the vehicle for charging, characterized in that:
a relay coil is provided between output end of said exciting diode and one end of an electric power switch, the other end of which is connected to said battery;



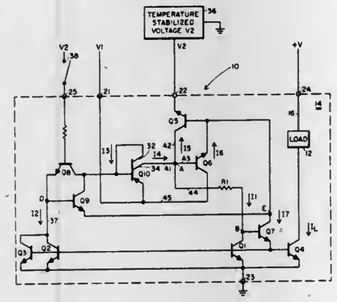
a reverse-current preventive diode is connected to said relay coil in series and in a manner that said field coil is on a cathode side of said preventive diode;
a normally open contact closing through the excitation of said relay coil is provided; and
the device for indicating the rate of charge is connected to said battery through said normally open contact.

4,240,024

TEMPERATURE COMPENSATED CURRENT SOURCE

Tom L. Blackburn, San Jose, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 15, 1979, Ser. No. 12,254
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—4 **16 Claims**



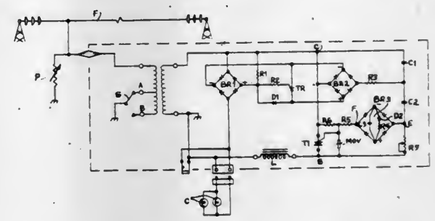
1. A temperature compensated current source which is suitable for manufacture in integrated circuit form comprising:
first, second and third DC supply terminals;
a plurality of transistors of the same conductivity type;
a first resistor;
first means electrically connecting one end of said first resistor to said first terminal and through series connected base-emitter junction diodes of a prescribed number of ones of said transistors to said second terminal; and
second means electrically connecting the other end of said first resistor through series connected base-emitter junction diodes of the same prescribed number of others of said transistors to said third terminal for establishing a voltage across said first resistor that is substantially constant and independent of temperature variations for setting a reference current in it and one of said other transistors when said terminals are connected to suitable supply voltages.

4,240,025

FEEDING SYSTEM FOR INCANDESCENT LAMPS BY OVERHEAD WIRES OF TRANSMISSION LINES

Raymond Berthiaume, Ste-Julie, Canada, assignor to Hydro-Quebec, Montreal, Canada

Filed Sep. 18, 1978, Ser. No. 942,976
Claims priority, application Canada, Apr. 13, 1978, 301090
Int. Cl.³ H05B *41/392*; H02J *11/00*; G05F *1/44*
U.S. Cl. 323—8 **11 Claims**



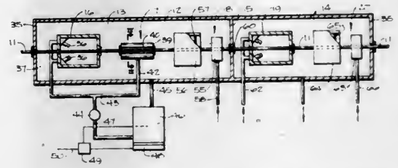
1. A system for feeding incandescent lamps of beacons with capacitive energy extracted from an insulated section of the overhead wire of a power transmission line, comprising
means for transforming said energy from the overhead wire into AC current supplying at least one of said incandescent lamps;
a regulation circuit mounted in shunt with said transforming circuit for controlling the flow of said AC current feeding said at least one incandescent lamp, said regulation circuit comprising a switching circuit for regulating said AC current flow and a control circuit operatively connected to said switching circuit to command the switching time thereof; and
a current detection circuit mounted in series with said at least one incandescent lamp and so-connected with the control circuit as to monitor the switching time of said switching circuit, said detection circuit comprising a switching unit for feeding said incandescent lamp during a time interval determined by said control circuit of said switching circuit, said detection circuit further acting on said control circuit so as to advance the switching time of said switching circuit for diverting to ground the energy extracted from the overhead wire.

4,240,026

DETECTION OF FAULTS IN THE INSULATION OF AN ELECTRICAL CONDUCTOR USING A LIQUID ELECTROLYTE

Peter Murphy, Longueuil; Yvon O. Dionne, Chateauquay; Jerry J. Kral, Montreal, and John Stefaniszyn, Beaconsfield, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

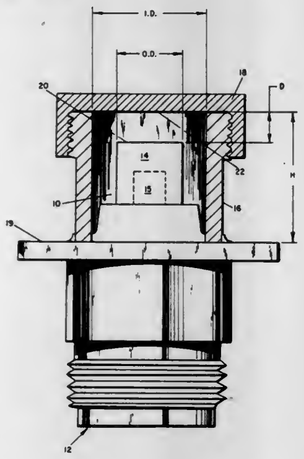
Filed Jun. 21, 1979, Ser. No. 50,770
Int. Cl.³ G01R *31/2*
U.S. Cl. 324—54 **16 Claims**



1. Apparatus for the detection of faults in the insulation of a conductor having at least one electrically conductive core and an insulating layer on the core, comprising;
a housing;
means in said housing for holding a liquid electrolyte; means

for passing an insulated conductor through said electrolyte;
means for applying a regulated DC supply to said electrolyte; means for grounding the electrically conductive core of a conductor;
means connected to the electrolyte to detect any change in electrical bias between said electrolyte and said core;
means for producing a signal indicative of a change in said bias when said change is above a predetermined value.

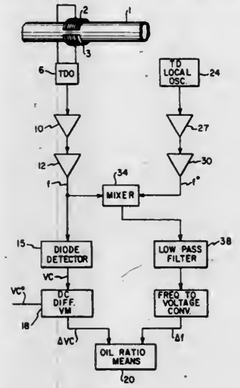
4,240,027
ELECTROMAGNETIC METHOD FOR THE NONINVASIVE ANALYSIS OF CELL MEMBRANE PHYSIOLOGY AND PHARMACOLOGY
Lawrence E. Larsen, Silver Spring, and John H. Jacobi, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 31, 1978, Ser. No. 938,625
Int. Cl.[3] G01R *27/26*
U.S. Cl. 324—57 R **6 Claims**



1. A method for noninvasive analysis of cell membrane physiology and pharmacology by measurement of the reflection coefficient with electromagnetic energy in the high frequency band applied to cellular suspensions in order to evaluate the selective permeability thereof comprising the steps of subjecting a sample of cell suspension to two port automatic network analysis step-wise over a plurality of preselected frequencies in the high frequency band and measuring the reflection coefficient thereof for each of the plurality of preselected frequencies and calculating the complex permittivity at each of the plurality of preselected frequencies to determine contrast between the introcellular and extracellular spaces based upon the dispersion of complex permittivity.

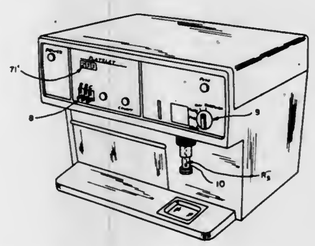
4,240,028
MEANS AND METHOD FOR DETERMINING WATER SATURATION OF OIL
Lorne A. Davis, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Apr. 27, 1979, Ser. No. 33,937
Int. Cl.[3] G01R *27/26*
U.S. Cl. 324—61 R **8 Claims**

1. Apparatus for determining the water saturation of a fluid flowing in a pipe or of a core sample, comprising sensing means spatially arranged with the fluid or core sample for providing a signal whose amplitude and frequency corresponds to the water saturation, difference means connected to the sensing means for providing a difference signal corresponding to the voltage difference between the signal from the sensing means and a reference level established for the signal from the sensing means for substantial 100% water saturation, local oscillator means for providing a local signal whose frequency corresponds to a substantially 100% water saturation condition, mixer means connected to the sensing means and to the local oscillator means for providing a signal having a frequency that corresponds to the difference between the frequencies of the



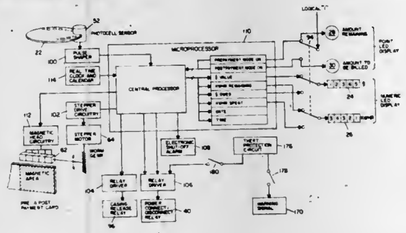
signals from the sensing means and the local oscillator means, converter means connected to the mixer means for providing a DC voltage whose amplitude corresponds to the frequency of the mixer means signal, and oil ratio means connected to the difference means and to the converter means for providing an output corresponding to the water saturation of the fluid or core sample in accordance with the signals from the difference means and the converter means.

4,240,029
APPARATUS FOR COUNTING PARTICLES IN A LIQUID SUSPENSION
John L. Haynes, Redwood City, Calif., assignor to Becton Dickinson & Company, Rutherford, N.J.
Continuation-in-part of Ser. No. 780,402, Mar. 23, 1977, Pat. No. 4,165,484. This application Apr. 20, 1979, Ser. No. 31,770
Int. Cl.[3] G01R *27/22*
U.S. Cl. 324—71 CP **9 Claims**



1. Apparatus for counting platelets and red blood cells in a sample of blood comprising: means for separately counting platelets and red blood cells of said blood sample including means for sensing their relative sizes by the magnitude of electrical pulses from an aperture type transducer having an assumed noise level, said platelets having normal lower and upper limits of size distribution and said red blood cells having a normal lower limit of size distribution; first voltage reference means set at approximately the upper limit of the assumed noise level of said transducer; second voltage reference means set at approximately the lower limit of normal platelet pulses; third voltage reference means set above the upper limit of normal platelet pulses; fourth voltage reference means set below the lower limit of normal red blood cell pulses; means for counting electrical pulses greater than said first voltage reference but less than said second voltage reference and comparing such count to a corresponding platelet count; means for counting electrical pulses greater than said third voltage reference but less than said fourth voltage reference and comparing such count to a corresponding platelet count.

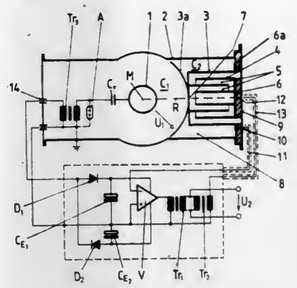
4,240,030
INTELLIGENT ELECTRIC UTILITY METER
Jess R. Bateman, 1516 Esplanade Ave., Redondo Beach, Calif. 90277; Robert L. Carpenter, 12,032 Freeman Ave., and Ross K. Smith, 5435 W. 124th St., both of Hawthorne, Calif. 90250
Filed Dec. 14, 1978, Ser. No. 969,303
Int. Cl.[3] G01R *1/00*
U.S. Cl. 324—110 **15 Claims**



1. An improved electric utility meter unit of the type having a meter housing, means for connecting the unit to external power lines, means for connecting the power from the lines to the structure to which the meter unit is associated, and electromechanical measuring means for determining the quantity of electricity passing into the structure, wherein the improvement comprises:
receptacle means, including a slot in said unit, for receiving a thin rectangular card, such as a credit card, having encodable medium included in its structure;
circuit means included in said unit for monitoring and regulating the electricity supplied to said structure;
transducer means for interchanging digital information between said card medium and said circuit means;
interface means, adapted to work in conjunction with said electromechanical measuring means, for converting the resulting quantity of electricity to a form usable by said circuit means and for transferring said converted quantity to said circuit means; and
indicator means, controlled by said circuit means, for numerically displaying an indication of the quantity of electricity passing to said structure in a time interval determined upon said insertion of said card.

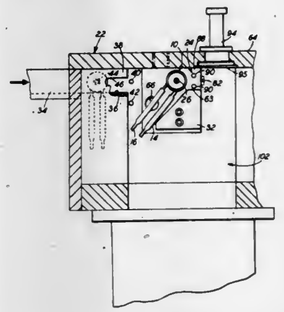
4,240,031
DEVICE FOR MEASURING THE POTENTIAL OF AN ALTERNATING CURRENT CARRYING INNER CONDUCTOR OF AN ENCASED HIGH-VOLTAGE SWITCHING MECHANISM
Andreas Siegenthaler, Monchaltorf, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland
Filed Feb. 27, 1979, Ser. No. 15,646
Claims priority, application Switzerland, Mar. 23, 1978, 3206/78
Int. Cl.[3] G01R *15/04*
U.S. Cl. 324—126 **9 Claims**

1. A device for measuring the electrical potential of an inner conductor of a high-voltage switching mechanism having a grounded metal casing which is filled with an insulating material, comprising:
a first capacitor located within the insulator filled casing including a high voltage electrode comprised of said inner conductor and a test electrode;
an amplifier having an input terminal connected to said test electrode; and



a second capacitor located within said insulator filled casing which is connected to said first capacitor and coupled to said amplifier in a feedback path.

4,240,032
TRANSPORTING AND ORIENTING AN ARTICLE USING A MOVABLE CARRIER INSERTED INTO AN INDENTATION IN THE ARTICLE
Everett C. Johnson, Sinking Springs, and Arthur G. Naylor, Wyomissing, both of Pa., assignors to Western Electric Company, Inc., New York, N.Y.
Filed Oct. 31, 1977, Ser. No. 847,279
Int. Cl.[3] G01R *31/02, 31/22*; B65G *47/24*
U.S. Cl. 324—158 F **9 Claims**



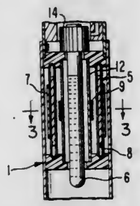
1. A method of transporting, orienting and testing an electronic component having a body portion, at least one lead extending from the body portion, and an indentation, said method comprising:
placing a pin into the indentation of the electronic component when at least one lead is extending approximately vertically downward, thereby holding the component movably against a substantially flat surface having an abutment mounted to said surface; and
moving the pin to a test station thereby sliding the component along the surface to contact the vertically downward lead of the component with the abutment to pivot the component about the pin to position the lead which was vertically downward into a substantially horizontal orientation at the test station; and
engaging the lead with testing contacts at the test station to perform a test on the component.

4,240,033

METHOD AND APPARATUS FOR PREVENTING IONIZATION INDUCED NOISE IN DECOUPLER EXPERIMENTS

Marvin H. Anderson, Mountain View; George Chmyz, Palo Alto; Carl D. Daus, Santa Clara, and George D. Kneip, Jr., Menlo Park, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 26, 1979, Ser. No. 23,939
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—321 **5 Claims**



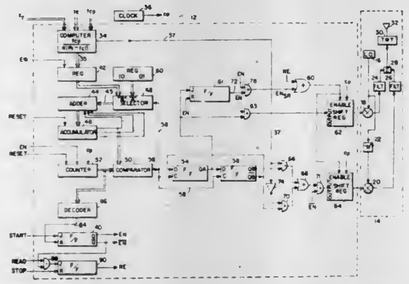
1. In an NMR spectrometer, comprising a superconducting magnet having a axial bore therethrough, a probe structure for containing, in operation, a sample to be investigated in the magnetic field of said superconducting magnet, an RF decoupler coil, said RF decoupler coil located adjacent the sample area within said probe, a double walled vacuum envelop assembly, said assembly having the space between said walls substantially evacuated, said assembly being located, in operation, between said RF decoupler coil and said sample zone of said probe, said space between said walls of said assembly including a material substantially filling said space for decreasing the collisional probability of excited ions in the space between the walls of said envelop.

4,240,034

DIGITAL FREQUENCY SYNTHESIZER

Oscar Lowenschuss, Goleta, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 11, 1978, Ser. No. 941,818
Int. Cl.³ H03K *3/78*
U.S. Cl. 328—14 **5 Claims**



1. A digital frequency synthesizer adapted to produce a signal having a frequency f, comprising:

(a) counter means, responsive to clock pulse signals having a pulse repetition frequency f_{cp}, for producing a first digital word representative of the number of counted clock pulses;

(b) adding means for cumulatively numerically adding a second digital word representative of f_{cp}/nf (where n is an even integer) each time a control signal indicates that the whole number portion of the cumulatively numerically added second digital word equals the first digital word;

(c) comparator means fed by the first digital word and the whole number portion of the cumulatively numerically added second digital word for producing the control signal, such control signal being indicative of whether the whole number portion of the cumulatively numerically added second digital word is equal to or unequal to the first digital word; and

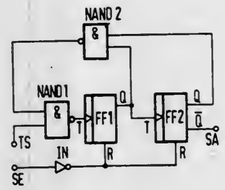
(d) output means responsive to the control signal for producing a signal having a frequency related to the frequency f.

4,240,035

DIGITAL DEMODULATOR ON A SEMICONDUCTOR BASE

Reinhard Täuber, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,137
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811753
Int. Cl.³ H03K *13/01*
U.S. Cl. 329—50 **7 Claims**



7. A digital demodulator, comprising:

first and second flip-flops and first and second NAND gates;

a reset input means of each flip-flop for connection to a signal to be demodulated;

a first logic input means of the first NAND gate for connection to an auxiliary signal;

a logic output means of the second flip-flop for providing a demodulated signal;

a logic output of the first NAND gate connecting to a pulse input of the first flip-flop;

a pulse output of the first flip-flop connecting to a first logic input of the second NAND gate and a pulse input of the second flip-flop;

a pulse output of the second flip-flop connecting to a second logic input of the second NAND gate; and

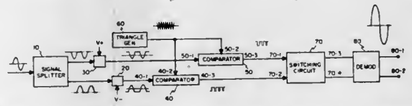
a logic output of the second NAND gate connecting to a second logic input of the first NAND gate.

4,240,036

LINEARIZED THREE-STATE SWITCHING AMPLIFIER

Thomas P. Kohler, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,615
Int. Cl.³ H03F *3/38*
U.S. Cl. 330—10 **6 Claims**



1. A pulse width modulated switching amplifier for amplifying an analog signal comprising:

(a) means for receiving the analog signal and producing positive and negative signals representative of positive and negative excursions of the analog signal, respectively;

(b) a first level shifter for receiving the positive signal and producing a first replica signal having the same waveshape as the positive signal but varying above and below a predetermined reference level;

(c) a second level shifter for receiving the negative signal and producing a second replica signal having the same waveshape as the negative signal but varying above and below the predetermined reference level;

(d) a signal generator for producing a linear switching signal having a constant amplitude and alternating at a constant rate above and below the predetermined reference level;

(e) a first comparator for summing the magnitudes of the first replica signal and the switching signal and producing a first type of control signal when the sum is positive and producing a second type of control signal when the sum is negative;

(f) a second comparator for summing the magnitudes of the second replica signal and the switching signal and producing the first type of control signal when the sum is positive and producing the second type of control signal when the sum is negative;

(g) a switching circuit adapted to receive said control signals from the comparators and effective to produce an output pulse of one polarity when both comparators are producing the first type of control signal, an output pulse of the opposite polarity when both comparators are producing the second type of control signal and no output when the comparators are producing unlike control signals; and

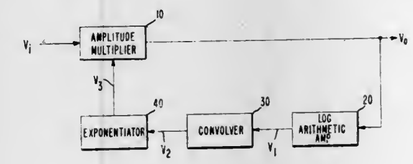
(h) a demodulator for receiving the output pulses and producing an amplified replica of the analog signal.

4,240,037

HOMOMORPHIC AUTOMATIC GAIN CONTROL

Lawrence M. Rubin, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 6, 1979, Ser. No. 46,072
Int. Cl.³ G05B *5/00*
U.S. Cl. 330—127 **7 Claims**



1. An automatic gain control system, comprising the combination of:

a multiplying means, having input, output and feedback terminals, for multiplying the levels of input and feedback signals; and

homomorphic means, connected between the output and feedback terminals, for providing a feedback signal from the output terminal to said feedback terminals so as to compress the input signal to a predetermined level.

4,240,038

PREAMPLIFIER

Kenichi Hasegawa, Neyagawa; Hiroshi Taniguchi, Hirakata, and Sadafumi Kitamura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

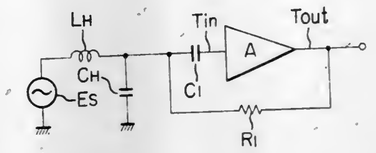
Filed Mar. 13, 1978, Ser. No. 885,513
Claims priority, application Japan, Mar. 23, 1977, 52/32453
Int. Cl.³ H03F *1/26*; H04N *5/76*
U.S. Cl. 330—149 **6 Claims**

1. A preamplifier for amplifying, a low level angularly modulated signal reproduced from a magnetic recording medium, said signal having at least an upper sideband and a predetermined carrier frequency, comprising:

signal input means including a resonant circuit comprising the inductance of a magnetic head and a capacitor, the resonant frequency of said resonant circuit being equal to or higher than said carrier frequency;

an amplifier having an input terminal coupled to said signal input means, and an output terminal; and

negative feedback circuit means including resistance means



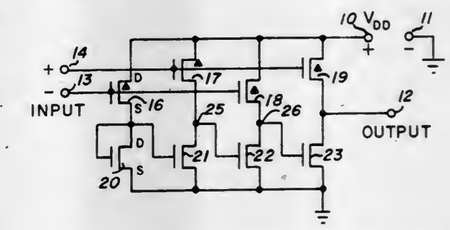
coupled between said input terminal and said output terminal for reducing the noise in said upper sideband at the output terminal of said amplifier gain of said amplifier in the vicinity of said resonant frequency.

4,240,039

MOS DIFFERENTIAL AMPLIFIER

Stephen K. Mihalich, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 11, 1979, Ser. No. 47,450
Int. Cl.³ H03F *3/45, 3/16*
U.S. Cl. 330—253 **5 Claims**



1. A linear differential amplifier circuit having first and second differential input terminals and an output terminal, said circuit being adapted for MOS construction and comprising:

first and second supply rails connectible to a source of operating potential;

first, second, third and fourth stages, each of which comprises a depletion transistor connected in series with an enhancement transistor, the juncture thereof providing a stage output node, said depletion transistor having a drain electrode coupled to said first rail and said enhancement transistor having a source electrode coupled to said second rail;

means for coupling the gate electrode of said enhancement transistor in said first stage to said output node of said first stage;

means for coupling the gate electrode of said enhancement transistor of said second stage to said output node of said first stage;

means for coupling the gate electrode of said enhancement transistor of said third stage to said output node of second stage;

means for coupling the gate electrode of the enhancement transistor of said fourth stage to said output node of said third stage, said output node of said fourth stage providing said output terminal of said amplifier circuit;

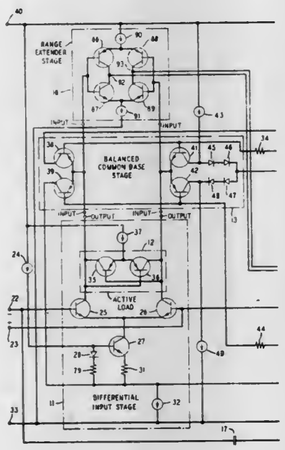
means for coupling said first input terminal to the gate electrodes of the depletion transistors in said second and fourth stages; and

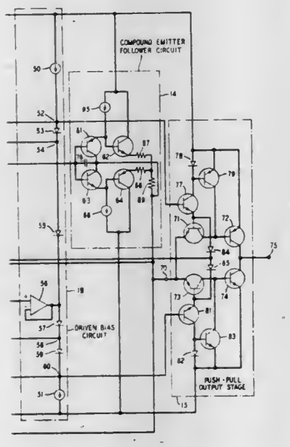
means for coupling said second input terminal to the gate electrodes of said depletion transistors in said first and third stages.

4,240,040
OPERATIONAL AMPLIFIER

Veikko R. Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 11, 1974, Ser. No. 441,352
Int. Cl.[2] H03F *3/26*
U.S. Cl. 330—255 25 Claims





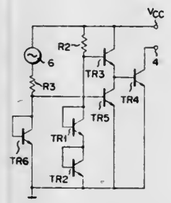
16. In an operational amplifier circuit of the type including an output terminal, an inverting input terminal, a noninverting input terminal, a differential input stage; a common base stage connected to the output terminals of said differential input stage, and a push-pull output stage, the improvement comprising:

driven bias means, responsive to the signal applied to said noninverting input terminal for controlling the bias voltage applied to said differential input stage, said common base stage and said output stage, each of said controlled bias voltages related to said signal at said noninverting input terminal by a predetermined voltage differential.

4,240,041
HIGH-FREQUENCY AMPLIFIER CIRCUIT

Masaru Hashimoto, Ayase, and Motoaki Yoshinaga, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 5, 1979, Ser. No. 45,842
Claims priority, application Japan, Jun. 10, 1978, 53/70128
Int. Cl.[3] H03F *3/04, 3/34*
U.S. Cl. 330—288 6 Claims



6. A high-frequency amplifier circuit comprising:

input and output terminals,

first and second power supply terminals,

a first PN junction device coupled between said input terminal and said first power supply terminal,

current source means,

a series circuit of a plurality of PN junction devices coupled between said current source means and said first power supply terminal,

a first transistor with its base coupled to the junction between said current source means and said series circuit of the PN junction devices, and collector coupled to said second power supply terminal,

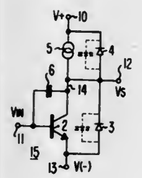
a second transistor with its base coupled to the emitter of said first transistor, emitter coupled to said first power supply terminal, and collector coupled to said output terminal, and

control means coupled between the base of said second transistor and said first power supply terminal, whereby the base potential of said second transistor is controlled in response to an input signal supplied to said input terminal.

4,240,042
BANDWIDTH LIMITED LARGE SIGNAL IC AMPLIFIER STAGE

Thomas J. Robe, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,237
Int. Cl.[3] H03F *1/26, 3/19*
U.S. Cl. 330—302 6 Claims



1. An amplifier stage comprising:

first and second terminals for applying relatively positive and relatively negative supply potentials thereto;

third and fourth terminals for supplying input and output signals respectively;

a transistor having input, common and output electrodes respectively connected to the third, second and fourth terminals;

load means connected between the first and fourth terminals;

means for by-passing said fourth terminal to said first terminal for relatively high frequencies including

first pn junction diode means connected in reverse-biased poling between the first and fourth terminals;

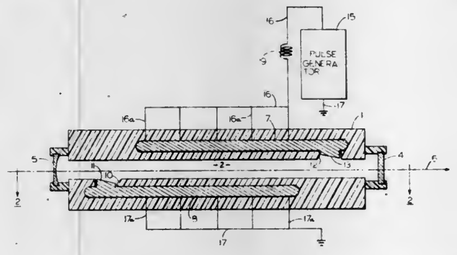
means for by-passing said fourth terminal to said second terminal for relatively high frequencies including

second pn junction diode means connected in reverse-biased poling between the second and fourth terminals whereby the first and second pn junction diode means are constrained from conducting in the forward direction and the sum of the capacitance associated with their pn junctions remains relatively constant for applied signal variations.

4,240,043
TRANSVERSE-LONGITUDINAL SEQUENTIAL DISCHARGE EXCITATION OF HIGH-PRESSURE LASER

Dietmar E. Rothe, Rancho Palos Verdes, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Dec. 7, 1978, Ser. No. 967,409
Int. Cl.[3] H01S *3/097*
U.S. Cl. 331—94.5 PE 9 Claims



1. An electric discharge excited gas laser comprising a gas volume defined by a dielectric body having an elongated open central space, beam-forming reflector means mounted on said body at respective ends of said volume, an elongated cathode electrode and an elongated anode electrode in said body substantially parallel to each other on opposite sides of said gas volume, each said electrode having a projection portion extending from one end thereof toward the opposite side of said gas volume, said projections being at opposite respective longitudinal ends of said gas volume, and said electrodes being embedded in said dielectric body except for having said projections, only, exposed directly to said gas volume, said electrodes forming a transverse predischarge path between the major, embedded, portions of their lengths and a longitudinal main discharge path between said projections.

4,240,044
PULSED LASER ELECTRODE ASSEMBLY

Theodore S. Fahlen, San Jose, and David J. Clark, Whittier, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 16, 1979, Ser. No. 57,927
Int. Cl.[3] H01S *3/00*
U.S. Cl. 331—94.5 PE 7 Claims

1. Laser electrodes for a gas discharge laser having a housing and power supply means comprising

an elongated conductive bar constituting an anode supported on and within said housing,

an elongated cathode coextensive with and parallel to and spaced from said anode and supported on and within said housing, the space between said anode and cathode constituting the laser discharge gap,

means for connecting said power supply means across said anode and said cathode for producing an electric discharge in said gap,

said cathode comprising:

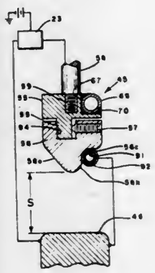
a carrier bar,

a cathode bar mounted on said carrier bar between said anode and said carrier bar,

means for adjusting the spacing between said cathode bar and said anode comprising:

a longitudinal tongue on one of said bars,

a longitudinal groove in the other of said bars adapted to receive said tongue,



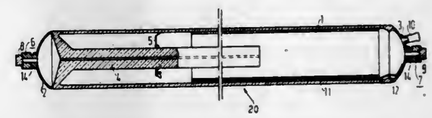
the depth of insertion of said tongue in said groove being variable and corresponding to the spacing between sad bars, and

lock means on said one of said bars engageable with said tongue for releasably engaging the latter whereby to lock said bars together.

4,240,045
GAS LASER HAVING A CYLINDRICAL DISCHARGE TUBE

Hans Golser, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,118
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 77192393[U]
Int. Cl.[3] H01S *3/03*
U.S. Cl. 331—94.5 D 1 Claim



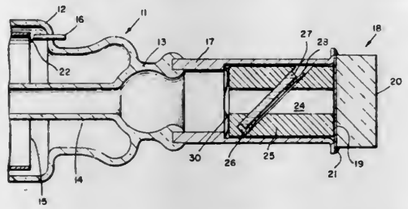
1. In a gas laser having a cylindrical discharge tube comprising a glass casing being sealed at its two ends by end caps, each of said end caps supporting a tubular metal component, each of the metal components supporting a reflector of an optical resonator and having a wall with a weakened, axial portion to enable an adjustment of the reflectors of the optical resonator, said casing having a capillary extending coaxially along a portion thereof with said capillary being permanently connected to the glass casing of the discharge tube adjacent one end cap and being supported in the casing by at least one spring element at an axially displaced position, a cold cathode being disposed in the casing adjacent the other of the two end caps and surrounding a portion of the capillary tube, said other end cap being a metal end cap and being connected to said cold cathode, and the metal component of the one cap being the anode, the improvement comprising the glass casing having a length of at least 40 cm and an outer diameter of at least 35 mm, said one end cap supporting said anode consisting of an insulating material, said capillary consisting of a ceramic and being glazed to said glass casing, and said casing containing a helium neon mixture so that the gas laser is a helium neon gas laser with an output power of at least 10 mW.

4,240,046

MOUNT FOR A LASER BREWSTER ANGLE WINDOW

William P. Kolb, Jr., Carlsbad, and Keith G. Schmidt, Vista, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 10, 1978, Ser. No. 949,826
Int. Cl.³ H01S 3/02
U.S. Cl. 331—94.5 D 3 Claims



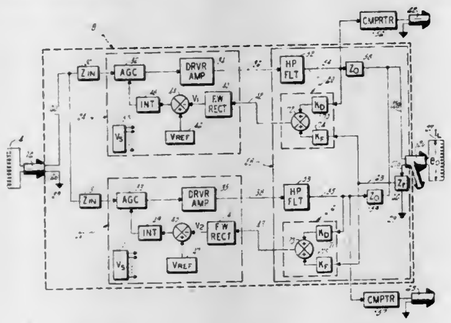
1. A Brewster window mount comprising:
an elongated annular sleeve having a transverse slot disposed at the Brewster angle for supporting a Brewster window mounted within said slot;
a Brewster window disposed within said slot; and
a leaf spring disposed within said transverse slot and adjacent to said Brewster window for maintaining said window in place.

4,240,047

MECHANICAL RESONATOR OSCILLATOR HAVING REDUNDANT PARALLEL DRIVE CIRCUITS

Charles M. Rabinowitz, Bloomfield, and Donald A. Camp, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 29, 1979, Ser. No. 53,452
Int. Cl.³ H03B 5/30
U.S. Cl. 331—154 6 Claims



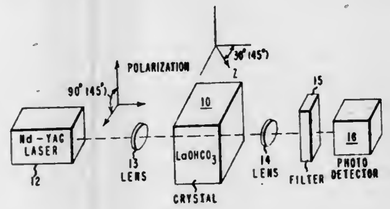
1. An improved mechanical oscillator of the type which includes a mechanical resonator and a resonator driver connected in a regenerative signal loop in which the driver receives the resonant frequency signal of the resonator and provides, in response thereto, a constant magnitude drive signal of equal frequency and supporting phase to the resonator to maintain a minimum amplitude for the resonant frequency signal, the improvement being a resonator driver comprising:
first and second signal amplifier means, each responsive to the resonant frequency signal from the resonator and each responsive to an associated sum feedback signal presented thereto, said first and second amplifier means each including a signal source for providing a reference signal definitive of the selected constant magnitude of the drive signal and each further including variable gain amplifier means responsive to said reference signal and said sum feedback signal for providing a gain amplification factor at a present value in dependence on a present difference signal magnitude therebetween, said first and second amplifiers each providing an output signal at a magnitude equal to the product of said amplification factor and the resonant frequency signal from the resonator; and
coupling network means, connected for response to said first and second amplifier means, for providing at an output thereof the drive signal at a constant magnitude equal to a proportionate sum of said output signal magnitudes, said network means providing to each of said first and second amplifier means separate sum feedback signals, each at a magnitude in dependence jointly on the drive signal magnitude and the associated amplifier means output signal magnitude.

4,240,048

NONLINEAR OPTICAL DEVICE

Fredrick C. Zumsteg, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 780,342, Mar. 23, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,865
Int. Cl.³ H02M 5/04; H03F 7/00
U.S. Cl. 332—7.51 14 Claims



1. Useful nonlinear optical device comprising:
(a) the crystal which:
(1) consists essentially of the compound of the formula $LnF_x(OH)_{1-x}CO_3$ wherein Ln is La, Eu or Gd and x is 0 to 1;
(2) is transparent to the radiation propagating therethrough; and
(3) has $\bar{6}$ or $\bar{6}m2$ symmetry;
(b) means for directing incident coherent plane polarized electromagnetic radiation of one or more frequencies into the crystal; and
(c) means for extracting from the crystal emerging coherent electromagnetic radiation having at least one frequency different from any frequency in the incident radiation, the crystal being positioned so that the angle between its optic axis and the direction of propagation of the incident radiation is such that the incident and emerging radiation are phase-matched within the crystal.

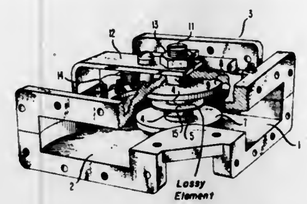
4,240,049

WAVEGUIDE JUNCTION CIRCULATOR HAVING SPURIOUS MODE ABSORBING MEANS

Joseph J. Kostelnick, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1979, Ser. No. 78,554
Int. Cl.³ H01P 1/39, 1/162
U.S. Cl. 333—1.1 8 Claims

1. A microwave circulator comprising at least three waveguide sections (1, 2 and 3) converging at a central junction, a body of nonreciprocal gyromagnetic material (4) disposed at said junction to receive a microwave signal transmitted through said waveguide sections, and means (9 and 10) for applying a magnetic field of said body CHARACTERIZED IN THAT there is further included means for absorbing spurious modes created in said body comprising an element (15) including a thin layer (17) of lossy material disposed around a



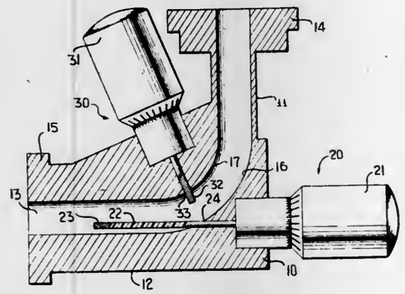
portion of the exterior surface of said body and perpendicular to the electric field of the transmitted signal.

4,240,050

TWO STUB TUNER IN WAVEGUIDE BEND

Robert C. Powell, Gaithersburg, Md., assignor to Weinschel Engineering Co., Inc., Gaithersburg, Md.

Filed Jun. 29, 1979, Ser. No. 53,343
Int. Cl.³ H01P 1/02
U.S. Cl. 333—33 9 Claims



1. A waveguide tuner for permitting adjustment to cancel out undesired reflected energy waves in a waveguide transmission system, said tuner comprising:
a waveguide bend adapted to be inserted in said waveguide transmission system and having first and second legs subtending an angle other than 180° between one another;
phase tuning means including a dielectric rod having a metal slug at one end thereof, said rod extending along said first leg from a first location in said waveguide bend intermediate said first and second legs, and further including first control means for selectively translating said rod and slug longitudinally along said first leg; and
magnitude tuning means including a metal stub extending transversely into said waveguide bend from a second location proximate said first location, and further comprising second control means for selectively varying the length of extension of said stub transversely into said waveguide bend.

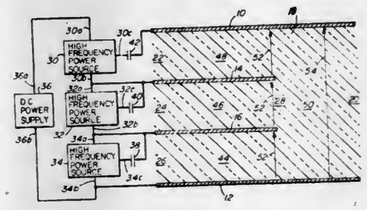
4,240,051

HIGH FREQUENCY POWER COMBINER OR POWER DIVIDER

Paul O. Haugsjaa, Acton, and Joseph M. Lech, Westford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 29, 1979, Ser. No. 53,499
Int. Cl.³ H01P 5/12
U.S. Cl. 333—127 24 Claims

1. An apparatus for combining outputs of a plurality of serially connected high frequency power sources, each of said power source outputs being coupled to a reference potential for the next serially connected power source, said apparatus comprising:
a plurality of input ports, each having a different reference potential, for receiving high frequency power from the outputs of said serially connected high frequency power sources;
an output port; and
a sandwiched power combination structure configured to define a power combination region, a plurality of parallel input transmission lines coupled between said input ports and said power combination region, and an output transmission line coupled between said power combination region and said output port, said structure including
two outer conductive layers which extend from said input ports to said power combination region to form outer conductors of said input transmission lines and which



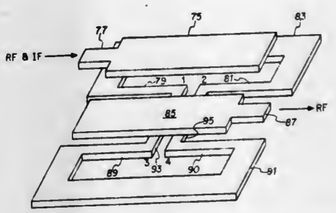
extend from said power combination region to said output port to form said output transmission line,
at least one intermediate conductive layer which extends from said input ports to said power combination region to form an inner conductor of said input transmission lines and which terminates in said power combination region, thereby forming said region,
said intermediate conductive layer acting as a power signal conductor for one input transmission line and as a reference potential conductor for the adjacent input transmission line, and
a dielectric layer between each pair of adjacent conductive layers
whereby high frequency power from said serially connected power sources propagates along each of said parallel input transmission lines, combines in said power combination region, and propagates along said output transmission line to said output port.

4,240,052

BALUN FILTER APPARATUS

Ben R. Hallford, Wylie, and Bruce C. Lutz, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 12, 1979, Ser. No. 84,287
Int. Cl.³ H01P 1/203, 5/10; H03H 7/42, 7/09
U.S. Cl. 333—202 12 Claims



1. Signal isolation apparatus for isolating first frequency f_1 signals from second frequency f_2 signals comprising, in combination:
ground plane means;

first and second (f_2 wavelength)/4 stubs extending from said ground plane means toward a first common area;

third and fourth (f_2 wavelength)/4 stubs extending from said ground plane means toward a second common area wherein said first common area and said second common area are separated by a distance of at least (f_2 wavelength)/4;

input signal transmission line means juxtaposed but separated from said first and second stubs; and

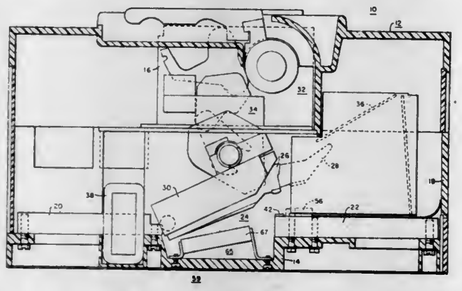
output signal transmission line means juxtaposed but separated from said third and fourth stubs.

4,240,053

CIRCUIT BREAKER UTILIZING IMPROVED CURRENT CARRYING CONDUCTOR SYSTEM

Hugh A. Nelson, Plum Borough; John A. Wafer, Monroeville; Paul P. Koren, North Strabane Township, Washington County; Nicholas A. Salemi, Pittsburgh, and Alfred E. Maier, Chippewa, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1976, Ser. No. 755,769
Int. Cl.³ H01H *71/00, 73/36*
U.S. Cl. 335—16 **15 Claims**



1. A circuit breaker comprising:

first and second spaced-apart stationary contacts;

a plurality of movable contacts pivotally connected to said first stationary contact and operable together between open and closed positions with respect to said second stationary contact, said movable contacts, when in said closed position, conducting electrical current between said first and second stationary contacts;

means for effecting movement of said movable contacts between said open and closed positions;

a repulsion member made of an electrically conducting material disposed adjacent said movable contacts distal from said second stationary contact, the current flow through said movable contacts when in said closed position including an eddy current flow in said repulsion member causing a magnetic repulsion force between said repulsion member and said movable contacts, said magnetic repulsion force moving said movable contacts into increased pressure engagement with said second stationary contacts, said repulsion member including a plurality of fins extending outwardly therefrom, said fins being disposed intermediate said movable contacts; and

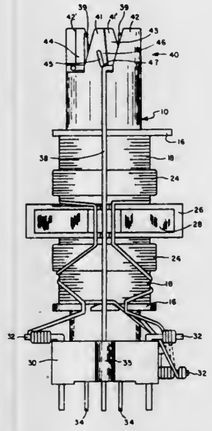
an attraction member made of a soft magnetic material disposed adjacent said movable contacts and said second stationary contact, the current flow through said movable contacts when in said closed position generating a magnetic field passing through said attraction member causing a magnetic attraction force between said attraction member and said movable contacts, said magnetic attraction force moving said movable contacts into increased pressure engagement with said second stationary contact, said repulsion member and said attraction member being disposed adjacent and on opposite sides of said plurality of movable contacts.

4,240,054

ARRANGEMENT FOR LOCKING A REED CAPSULE WITHIN A MAGNETIC LATCHING REED SWITCH ASSEMBLY

Sigitas Miknaitis, Clarendon Hills, and Charles J. Stastny, La Grange Park, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 16, 1979, Ser. No. 12,627
Int. Cl.³ H01H *1/66, 51/00*
U.S. Cl. 335—152 **6 Claims**



1. Reed capsule locking means, for a magnetic latching reed switch, said reed switch including a bobbin having a base portion, a longitudinal channel therein, a reed capsule switching element disposed in said longitudinal channel having a first electrical lead extending through said base portion and a second electrical lead extending upward from said bobbin, a return strap including a transverse section connected to said second electrical lead and a longitudinal section extending downward adjacent to the exterior of said bobbin, said locking means comprising:

a bobbin crown including at least first and second upstanding arms disposed about the periphery of said channel and forming a slot therebetween including a closed termination on one end; and

a deflectable member formed from a portion of said first upstanding arm adjacent to said slot and adapted to deflect inward when said return strap transverse section is inserted into said slot and returned outward when said strap is fully seated in said slot termination end, locking said reed capsule switching element to said bobbin.

4,240,055

RELEASE TYPE ELECTROMAGNETIC DEVICE FOR CAMERA

Masami Shimizu, Tokyo; Teiji Hashimoto, Kawasaki; Hideaki Miyakawa; Masanori Uchidoi, both of Yokohama; Hiroshi Aizawa, Kawasaki, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1977, Ser. No. 847,744
Claims priority, application Japan, Nov. 15, 1976, 51-137117
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—234 **3 Claims**

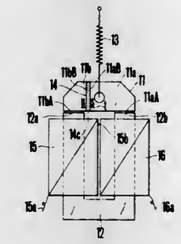
1. A release type electromagnetic device for a camera, comprising:

(a) integrally constructed pole pieces made of one of soft magnetic iron and 45 permalloy;

(b) a rare-earth permanent magnet;

(c) a normally de-energized coil operatively associated with said pole pieces and operable, when energized, to generate a magnetic flux opposing the magnetic flux of said permanent magnet; and

(d) a movable, magnetizable armature which has pole faces and is disposed close to the ends of said pole pieces, said armature being made of one of soft magnetic iron and 45



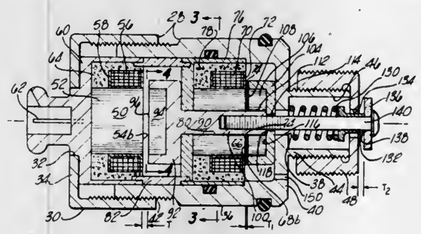
permalloy, said permanent magnet being fixed between and completely separating the pole faces of said armature; only said pole pieces, said pole faces, and said permanent magnet forming a closed magnetic path; the permanent magnet having a thickness which is small relative to the total length of the magnetic path of the device.

4,240,056

MULTI-STAGE SOLENOID ACTUATOR FOR EXTENDED STROKE

Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 4, 1979, Ser. No. 71,915
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—267 **9 Claims**



1. An apparatus comprising:

a housing defining a chamber therein and including a wall having at least a first opening there-through;

a first electromagnet located within said chamber opposite said first opening for producing a first magnetic field in response to electric command signals input thereto;

a second electromagnet having a passage therein, and located within said chamber between and apart from said first electromagnet and said wall for producing a second magnetic field in response to electric command signals input thereto;

an armature comprising:

a first member having a first pole face opposingly situated relative to said first electromagnet and responsive to said first magnetic field and maintained in the absence of command signals a first distance from said first electromagnet and having a portion extending opposite from said first pole face slidably received within and extending through said passage,

a second member located within said chamber between said second electromagnet and said wall having a second pole face thereon opposing situated relative to said second electromagnet and responsive to said second magnetic field wherein said second pole face is maintained in the absence of command signals, a second distance apart from said second electromagnet, said second member further including a second passage sized to telescopically receive said portion and a narrower coaxial third passage extending therethrough, said second member further including a shoulder joining said second and said third passages for engaging said extending portion,

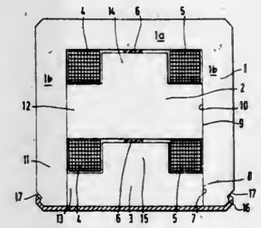
a piston means slidably received through said third passage and operatively connected to said portion for biasing said portion against said shoulder to space said first and said second pole faces apart from said first and said second electromagnets.

4,240,057

INDUCTIVE ELEMENT CONSTRUCTION, PARTICULARLY FLUORESCENT LAMP BALLAST

Friedrich Decher, Oberursel, and Günther Bachorz, Urbach, both of Fed. Rep. of Germany, assignors to Firma Hermann SCHWABE, Urbach, Fed. Rep. of Germany

Filed Aug. 17, 1979, Ser. No. 67,339
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836401
Int. Cl.³ H01F *27/26*
U.S. Cl. 336—165 **9 Claims**



1. Inductive element construction, particularly for a fluorescent lamp ballast or transformer, comprising

an outer, essentially U-shaped core structure (**1**, **100**) of one-piece construction having a connecting cross element (**1***a*, **101***a*) and two parallel leg elements (**1***b*, **101***b*);

a separate closing cross element (**3**, **3'**) positioned between the open ends of the parallel leg elements and in magnetically coupled engagement therewith, to form a closed outer magnetic circuit;

a separate central cross element (**2**, **2'**, **2''**) positioned between the parallel leg elements (**1***b*, **101***b*) and located intermediate the connecting cross element (**1***a*, **101***a*) and the closing cross element (**3**, **3'**);

central longitudinal core elements (**14**, **15**, **14'**, **14''**) extending parallel to said leg elements (**1***b*, **101***b*) and being located intermediate the longitudinal extend of said cross elements,

and electrical winding means (**4**, **5**) wound over one of said central core elements,

wherein, in accordance with the invention,

the central longitudinal core elements (**14**, **15**, **14'**, **14''**) terminate short of engagement with at least one of the facing cross elements to form at least one air gap (**6**, **20**, **22**) therewith,

at least one central longitudinal core element being integral with one of said separate cross elements, said one separate cross element being longitudinally slidably positionable with respect to an adjacent parallel leg element to permit adjustment of the width of the air gap;

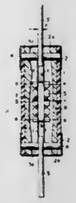
and wherein the outer end face surfaces (**7**, **9**) of said separate core elements are in magnetically coupled engagement with the inner facing surfaces (**8**, **10**) of the parallel leg elements (**1***b*, **101***b*) to form a contacting magnetic circuit therewith.

4,240,058

FUSE TERMINAL CONNECTOR FOR ONE OR MORE ELECTRIC FUSES

Frederick J. Kozacka, South Hampton, and Richard A. Belcher, Hampton Falls, both of N.H., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 20, 1979, Ser. No. 68,238
Int. Cl.³ H01F *7/08*
U.S. Cl. 337—231 **5 Claims**



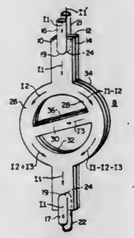
1. An electric fuse comprising a tubular casing of electric insulating material, an arc-quenching filler inside said casing, a fusible element inside said arc-quenching filler, a pair of terminal caps closing said casing to retain said arc-quenching filler in said casing, a pair of blade contacts projecting through the end surfaces of said pair of caps from the outside of said casing to the inside thereof, said pair of blade contacts each having a perforation situated inside said casing and a pair of support pins each projecting through said casing into said perforation in one of said pair of blade contacts wherein the novel feature comprises a pair of intermediate electroconductive elements of sheet metal of which each has a first substantially planar arm conductively affixed to one end of said fusible element, of which each has a second substantially planar arm arranged in spaced relation from and parallel to said first arm conductively affixed to the axially inner ends of one said pair of blade contacts, each of said pair of intermediate electroconductive elements further including substantially planar tie means arranged in angular relation to and conductively connecting the axially outer end of each first arm to the axially inner end of each second arm.

4,240,059

CURRENT DIVIDER FOR A CURRENT SENSING TRANSDUCER

Joachim E. Wolf, and Philip F. Locke, Jr., both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 5, 1979, Ser. No. 27,432
Int. Cl.³ H01C *7/00*
U.S. Cl. 338—49 **8 Claims**



1. A current divider formed by an integral conductor for splitting a widely varying current to be sampled into fixed and predetermined fractions thereof, comprising:

opposite terminal ends;

a first major current path extending between said terminal ends;

a second major current path extending between said terminal ends;

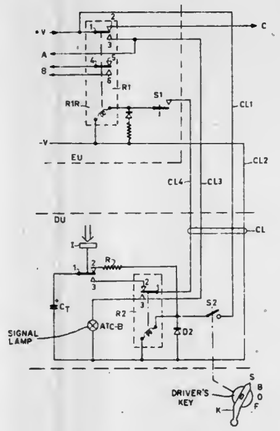
and a shunting current path having a fixed cross-sectional area and extending between a first fixed and predetermined point on said first major current path and a second fixed and predetermined point on said second major current path, said first and second points being displaced from a null position and having slightly different voltage potentials, a predetermined fraction of said current to be sampled flows in said shunting current path in response to said different voltage potentials of said first and second points, said predetermined fractional value of current flows independently of the ratio of the cross-sectional areas of said current paths such that said current flowing in said shunting current path is increased by increasing said displacement from said null position and decreased by decreasing said displacement from said null position.

4,240,060

METHOD AND DEVICE FOR SWITCHING-OFF A SUPERVISION SYSTEM

Lars-Göran T. Andersson, Järfälla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,895
Claims priority, application Sweden, Dec. 29, 1975, 7514653
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—47 **10 Claims**



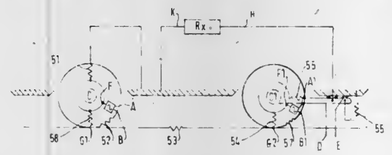
1. A circuit device for switching-off a supervision system which provides electronic processing of supervision information supplied thereto and to initiate, dependent on the result of said processing, at least one predetermined supervision function by influencing the operating condition of at least one control loop comprising, first and second operating members having first and second positions, a contact device coupled to said control loop and responsive to said first and second operating members whereby the contact device may be activated to block said supervision function, the contact device including a plurality of individual contact elements connected to said one control loop and arranged to control the control loop so that the associated supervision function is blocked when the contact device is activated, a time controlled activation current loop coupled to the contact device and comprising a time circuit arranged to allow an activation current to be supplied to the contact device during a predetermined period of time, a first contact member responsive to the first operating member and arranged to close the time controlled activation current loop when said first operating member is brought to its second position, and a time independent activation current loop coupled to the contact device and comprising a second contact member in series with one further contact element which conducts a current during said predetermined period of time, said second contact member being connected so as to close the time independent activation current loop when the second operating member is moved to a second position within said predetermined period of time.

4,240,061

DEVICES FOR THE MEASUREMENT OF THE PHYSICAL STATE OF A PNEUMATIC TIRE

Ellis Cohen, Glasgow, Scotland, assignor to Dunlop Limited, London, England

Filed Feb. 23, 1979, Ser. No. 14,614
Claims priority, application United Kingdom, Mar. 4, 1978, 8680/78; Nov. 30, 1978, 46730/78
Int. Cl.³ B60C *23/04*
U.S. Cl. 340—58 **7 Claims**



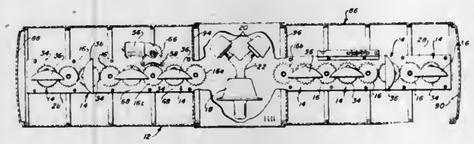
1. A system for conveying to the driver of a vehicle information concerning the physical state of a pneumatic tire fitted to a wheel of the vehicle comprising a sensing device associated with the tire and mounted on the tire or wheel for rotation therewith, a signaling device incorporated in or associated with the sensing device to generate an electrical signal bearing a known relationship to the physical state to which the sensing device is responsive, a transmitting element associated with the tire to which said electrical signal is communicated, a receiving element arranged to be in communication with the transmitting element in an electrical circuit path means comprising a portion of the tire in contact with the ground or road surface on which the vehicle is supported, the ground or road surface, and an indicating device responsive to signals received by the receiving element.

4,240,062

FLASHING LIGHT WARNING SYSTEM FOR VEHICLES

Earl W. Gosswiller, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Filed Jan. 9, 1978, Ser. No. 868,075
Int. Cl.³ B60Q *1/46*; B61L *29/24*; G02B *5/12*; F21V *21/30*
U.S. Cl. 340—81 R **8 Claims**



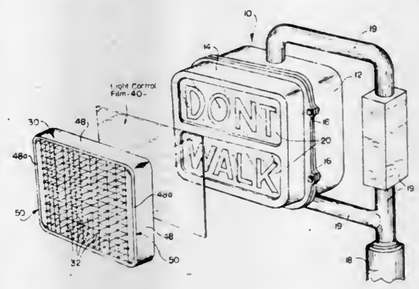
1. A flashing light warning system for mounting on the roof of a vehicle comprising, in combination, at least four individual light assemblies each including a light source and reflector, said reflector portion of each of said light assemblies being rotatable about a generally vertical axis for producing generally horizontal light flashes in different radial directions, said light assemblies being mounted in a common housing in generally side-by-side relation spaced transversely across the width of a vehicle roof on which said housing is mounted, certain of said reflectors being oriented in different rotational positions with respect to other reflectors to produce a predetermined sequence of flashes from different ones of said light assemblies, each of said reflectors being interconnected with one another to maintain the relative orientation between them during rotation thereof, and motor drive means for conjointly rotating said reflectors.

4,240,063

VISOR ASSEMBLY FOR PEDESTRIAN TRAFFIC SIGNAL

Samuel Gould, San Pedro, and James S. Gould, Los Alamitos, both of Calif., assignors to Indicator Controls Corp., Gardena, Calif.

Filed Jul. 23, 1979, Ser. No. 59,545
Int. Cl.³ E01F *9/00*; F21V *17/00*
U.S. Cl. 340—119 **2 Claims**



1. In combination with a pedestrian traffic signal of the type having legends selectively illuminated by light sources within the housing of the signal, a grating mounted on the housing in front of the legends composed of a multiplicity of intersecting webs forming a plurality of openings through which the legends are exposed and illuminated by the light sources within the housing; a frame extending around and supporting the webs, said frame having a rim portion extending inwardly from the perimeter of the frame in coplanar relationship with the front of the frame; and at least one elongated bracket having two integral elongated portions positioned at essentially 90° to one another, one of the portions extending under the surface of the rim, and the other of the portions abutting the surface of an adjacent one of said webs and being slotted to receive the webs intersecting said adjacent one of said webs, the respective portions of said bracket being attached to said rim and to said adjacent one of said webs.

4,240,064

POWER LIMITING CIRCUIT FOR BAR CODE READER

Rathindra N. DevChoudhury, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 11, 1978, Ser. No. 941,503
Int. Cl.² G06K *7/14*
U.S. Cl. 340—146.3 AG **14 Claims**

1. A circuit for intermittently supplying power to a sensing system comprising,

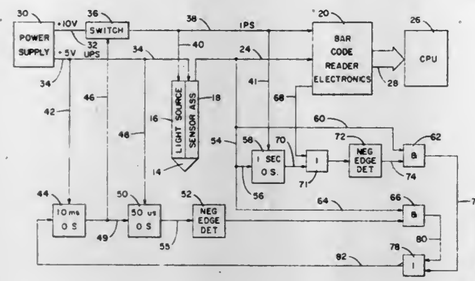
(a) sensing means for providing a first control signal when in a sensing position and a second control signal when in a non-sensing position;

(b) switch means operable to supply power to the sensing system;

(c) first circuit means coupled to said sensing means and said switch means, said circuit means including a plurality of first signal generating means for intermittently enabling said switch means for a first predetermined time period and disabling said switch means for a second predetermined time period in response to the generation of said

second control signal by said sensing means, said circuit means being disabled upon the generation of said first control signal by said sensing means to enable said switch means to supply power to the sensing system;

(d) and second circuit means coupled to said sensing means and said first circuit means, said second circuit means



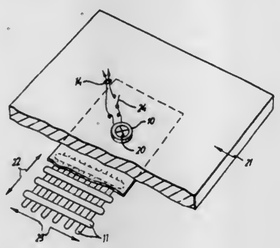
includes a second signal generating means operated to maintain said first circuit means in a disabled condition for a third predetermined time period in response to the generation of said first control signal by said sensing means whereby the switch means is enabled to supply power to the sensing means for said third predetermined time period.

4,240,065

POSITION SENSING APPARATUS

Ernest Howbrook, Cheadle Hulme, England, assignor to Wigmore Professional Data Services Ltd., London, England

Filed Dec. 13, 1978, Ser. No. 969,214
Int. Cl.³ G08C *21/00*; H04N *1/00*
U.S. Cl. 340—146.3 SY **7 Claims**



1. Position sensing apparatus comprising:

a first coil arrangement comprising a multiplicity of at least three coil loops each shaped to have a length greater than its width and mounted with their major axes lateral to each other and occupying a defined area;

a second coil arrangement positioned so as to be loosely coupled electromagnetically to the first coil arrangement over said defined area;

means for applying an alternating current input signal to one coil arrangement;

phase shifting units connected with the coil loops of the first coil arrangement so that the coil loops and units define a network having a progressive angle phase change characteristic; and

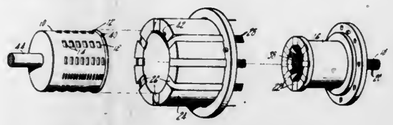
output terminals for said network so that at the output terminals, a signal is produced which is characterized by progressive phase shift to be unambiguously representative of the relative positioning of the two coil arrangements.

4,240,066

CYLINDRICAL ENCODER FOR USE WITH FIBER OPTICS

Thomas G. Lenox, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 14, 1979, Ser. No. 48,430
Int. Cl.³ G05B *11/18*; G06F *3/14*; G08C *9/06*
U.S. Cl. 340—870.29 **4 Claims**



1. In a fiber optic encoding device of the type having a transmitting head including a plurality of light ways and a receiving head including a plurality of light ways corresponding to the light ways of the transmitting head and of the type having a code plate disposed between the transmitting and receiving heads for encoding a position signal, the improvement which comprises:

a code plate formed to a cylindrical geometry and which effects encoding by being translated between the transmitting head and the receiving head; and

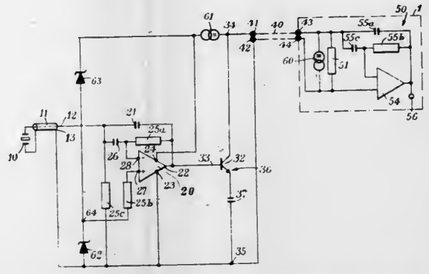
transmitting and receiving heads oriented for transmission of an encoding signal radially across the cylindrical code plate.

4,240,067

DEVICE FOR THE TRANSMISSION BY LOAD VARIATION OF AN ALTERNATING ANALOG SIGNAL FROM A SENSOR

Jacques Forme, Paris, France, assignor to Societe Chauvin Arnoux, Paris, France

Filed Apr. 12, 1979, Ser. No. 29,440
Claims priority, application France, Apr. 18, 1978, 78 11352
Int. Cl.³ G08C *19/10*
U.S. Cl. 340—870.37 **6 Claims**



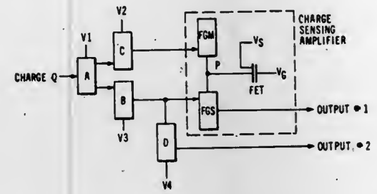
1. In a device for transmitting an alternating analog signal from a sensor to a measurement room remote from the sensor, comprising a measuring preamplifier located in the vicinity of the sensor for providing a preamplified signal from the analog signal of the sensor, a transmission line having two conductors for conveying the preamplified signal to the measurement room, an electronic measuring circuit located in the measurement room and receiving the transmitted preamplified signal for providing an output signal representing the signal from the sensor, and a power supply circuit located in the measurement room and comprising a constant DC current generator connected to supply terminals of the measuring preamplifier through the transmission line, the improvement consisting in that an electric charge generator is inserted between the preamplifier and the transmission line for generating an electric charge proportional to the preamplified signal received at its input, and the electronic measuring circuit comprises an electric charge amplifier.

4,240,068

CCD ANALOG TO DIGITAL CONVERTER

Roland J. Handy, Northridge, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 23, 1978, Ser. No. 918,251
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **6 Claims**



1. An analog to digital converter utilizing charge coupled technology comprising:

input gate means for receiving the applied analog packet of charge,

second gate means in charge transfer proximity to said input gate means for receiving charge therefrom in excess of a predetermined level,

third gate means also in charge transfer proximity to said input gate means for receiving charge therefrom below a predetermined level,

fourth gate means in charge transfer proximity to said second gate means for receiving any said excess charge received from said input gate means,

fifth gate means in charge transfer proximity to said third and fourtth gate means and directly responsive to the presence of said excess charge in said fourth gate means to thereby inhibit the transfer of any charge in said third gate means when said fourth gate means detects any of said excess charge transferred by said second gate means, and

sixth gate means in charge transfer proximity to said third gate means for receiving and transferring any said charge below said predetermined level received from said input gate means subsequent to when said fifth gate means was inhibited due to the presence of said excess charge in said fourth gate means and thus blocked the receipt and transfer of charge from said third gate means, the output from said fifth and sixth gate means being one of three pairs of digital logic voltage signals representing the presence of charge received, an excess of charge received, or no charge received, respectively, at said input gate means.

4,240,069

ANGLE CODER WITH VARIABLE INPUT ANGLE

Francois M. L. Hullein, Nantes, and Jean-Claude A. M. Cadet, Nort S. Erdre, both of France, assignors to Societe d'Etudes, Recherches et Constructions Electroniques SERCEL, Carquefou, France

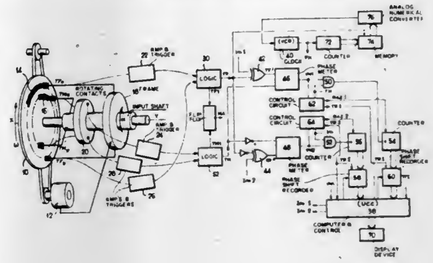
Filed Oct. 17, 1978, Ser. No. 952,210
Claims priority, application France, Oct. 20, 1977, 77 31615
Int. Cl.³ G08C *9/06*; H03K *13/02*
U.S. Cl. 340—347 P **12 Claims**

1. In an angular coder of the type comprising a rotating disk bearing a series of regular angularly spaced radial markings capable of being detected by at least one stationary reference detector, and a mobile measuring detector mounted on a rotatable shaft having an axis coaxial to the axis of rotation of the disk, the detectors facing the path of the rotating radial markings, said coder comprising means for measuring the angular offset between the detectors, said means comprising means for measuring a first time interval which is the time interval separating the passage of a marking in front of one of the detectors and an immediately subsequent passage of a marking in front of another detector,

the improvement comprising:

means for measuring a second time interval which is the time interval separating the passage of a substantially middle point between two successive markings in front of a detector and the immediately subsequent passage of a marking in front of another detector,

means for determining whether a time interval measured



has a value between one fraction x and another fraction y of the duration separating the passage of two consecutive markings in front of a detector,

means responsive to said determining means for recording either the first or second time interval according to the determination made,

means for repeating the measurement and recording of the first or second time interval for successive markings passing in front of said one detector, and

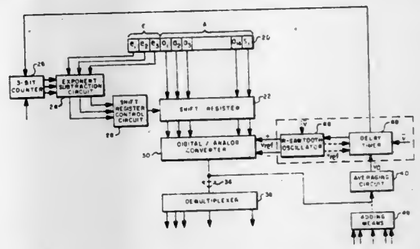
means for calculating an average of the successive recorded measurements.

4,240,070

VARIABLE DIGITAL TO ANALOG CONVERTER

Klaus Helbig, Zeist, Netherlands, and Eike Rietsch, Celle-Wietzenbruch, Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 843,926, Oct. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 588,535, Jun. 19, 1975, abandoned. This application Jul. 19, 1979, Ser. No. 59,089
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1974, 2430018
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 DA **11 Claims**



1. An improved method for converting and steplessly compressing digital values of signals with a wide dynamic range into analog signals and for subsequent visual display and monitoring purposes, each digital value being represented as floating point number in the form

$$Q = \pm AB^{K-E}$$

wherein A represents a mantissa, B represents a radix—prefer-

ably 2,4,8,16—, E represents an exponent, and K represents a binary number—, subjecting said floating point number Q to a D/A-converter-, and providing a variable reference voltage V_R for controlling the digital-analog conversion of said floating point number Q; said improvement comprising the steps of

(1) periodically generating said reference voltage V_R in a sawtooth oscillator in a manner that the amplitude rises exponentially from a predetermined minimum value V_o to a predetermined maximum BV_o value during each reference voltage cycle;

(2) synchronizing said reference voltage cycle in accordance with said conversion cycle so that the reference voltage is equal or an integer fraction of said conversion cycle;

(3) providing a voltage V_{ref} taken from said voltage V_R at an instant of time, determined by a delay timer, within the reference voltage cycle, said instant of time being controlled by averages of the previously determined analog signal; and

(4) supplying said voltage V_{ref} of said reference voltage V_R to a holding circuit for performing the digital/analog conversion of said floating point number Q during said synchronized reference voltage cycle.

4,240,071

DIGITAL CIRCUIT FOR CONDITIONING THE OPERATION OF A MOTOR VEHICLE UPON THE TESTED MOTOR ABILITY OF THE OPERATOR

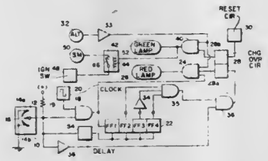
Takeshi Ochiai, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 814,393, Jul. 11, 1977, abandoned. This application Mar. 13, 1979, Ser. No. 20,050

Claims priority, application Japan, Jul. 9, 1976, 51-82328

Int. Cl.³ G08B *23/00;* B60K *27/08*

U.S. Cl. 340—576 **1 Claim**



1. An apparatus for prohibiting operation of a motor vehicle by a person with impaired motor ability comprising:

an operating force sensor giving a vehicle driver a static regulation test whereby said driver must exert a predetermined force on said sensor for a predetermined time, said sensor comprising a hydraulic switch provided in a brake pipe which comprises a movable contact which is movable in accordance with a brake pedal and connected to an electric source and stationary contacts provided at given intervals at opposite sides of said movable contact and which are grounded;

a pulse generator for generating pulses with a given period;

a first AND circuit provided between said operating force sensor and said pulse generator and having its inputs coupled to said movable contact and an output of said pulse generator;

a counting circuit which is connected to an output of said first AND circuit and which counts output pulses thereof;

a judging circuit which is connected to an output end of said counting circuit, said judging circuit judging if a counted value of the counting circuit meets a given value and sends out an output only when the counting value meets given value;

a second AND circuit provided between said judging circuit and said operating force circuit having one input connected to an output of said judging circuit and the other input coupled to said movable contact via an inverter;

a transfer circuit having a first and second outputs, said transfer circuit having an input coupled to an output of said second AND circuit, said transfer circuit normally producing only an output signal on said first output, said transfer circuit further only producing an output signal on said second output when said second AND circuit generates an output signal;

a third AND circuit having its inputs coupled to said first output of said transfer circuit, said first AND circuit and an electric generator through an inverter;

a first indicator which is connected to an output of said third AND circuit indicates the operating condition of said operating force sensor and which comprises a lamp which flashes in accordance with the output pulses of said first AND circuit whereby said vehicle driver counts the number of flashes and releases the pressure applied to the operating force sensor when said driver has counted said given value of flashes;

a fourth AND circuit having its inputs coupled to said electric generator via an inverter and said second output of said transfer circuit;

a second indicator which is connected to an output of said fourth AND circuit indicates that the driver has applied said predetermined force on said sensor for said predetermined time and has counted the given value of flashes of said first indicator; and

a relay circuit which is connected to an output of said fourth AND circuit in parallel with said second indicator, said relay circuit comprising an ignition switch, a normally open contact for controlling electric conduction with a starter motor and a coil for operating said normally open contact.

4,240,072

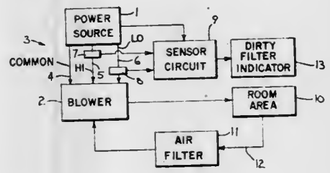
LOAD INDICATOR FOR AN AIR CLEANER

Thomas P. Fowler, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Mar. 19, 1979, Ser. No. 21,720

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—664 **6 Claims**



1. A load indicator to provide an early warning of a contaminated air cleaner within an air movement system by monitoring the electrical energy supplied through an energy conducting circuit lead to an air movement fan within the air movement system used for conducting air to a designated area, said load indicator comprising energy sensor means including a closed loop flux conducting circuit removably connected to surround said conducting circuit lead to generate a magnetic flux signal output substantially proportional to the energy flow through said lead, and indicating means having an input connected to operatively respond to said flux signal output to provide an early warning signal indicating a contaminated air cleaner by sensing a decrease in the magnitude of electrical energy flowing through the circuit lead.

4,240,073

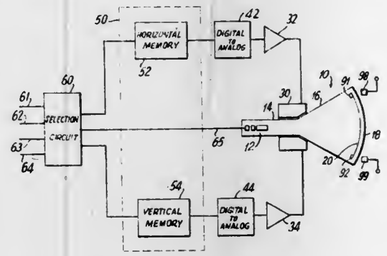
CATHODE RAY TUBE DISPLAY SYSTEM WITH DISPLAY LOCATION MEMORY

Peter Seats, Boonton, N.J., and Henry O. Marcy, Oak Brook, Ill., assignors to Thomas Electronics, Inc., Wayne, N.J.

Filed May 15, 1978, Ser. No. 906,051

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—703 **25 Claims**



1. A multicolor display apparatus comprising

a cathode ray tube having an electron gun for emitting an electron beam and an electron beam activated display screen comprising a plurality of elements,

a memory for recording the addresses of locations of such elements on the display screen,

address selection circuit means connected to the memory to cause the memory to provide the address of a selected location, and

electron beam deflection means responsive to the output of the memory for deflecting the electron beam to the location having the address specified by the memory output.

4,240,074

ELECTRICAL DIGITAL DISPLAY INDICATORS

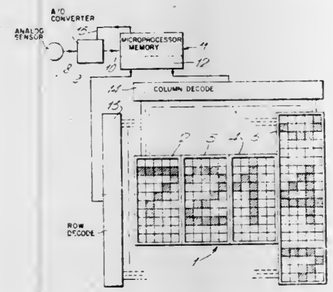
Harry Gibson, Bredon, and Peter F. Maycock, Cheltenham, both of England, assignors to Smiths Industries Limited, Cricklewood, England

Filed Feb. 12, 1979, Ser. No. 11,588

Claims priority, application United Kingdom, Feb. 17, 1978, 6406/78

Int. Cl.² G08B *25/00;* G06F *3/14;* G09F *9/32*

U.S. Cl. 340—753 **12 Claims**



1. An electrical indicator for providing a digital display representation of the value of an input variable, the indicator including a plurality of adjacent display areas, each said display area comprising a matrix array of electrically energisable elements that are arranged to be selectively energised to provide a display representation of a digit of a plural digit number, and energising means effecting displacement of the least-significant digit of said number within its respective display area in accordance with change in value of said input variable, the said energising means effecting displacement of a more-significant digit of said number within its respective display area in synchronism with an adjacent less-significant digit only when said energising means effects displacement of said less-significant digit between its highest value and its lowest value, the said more-significant digit remaining stationary within its respective display area for all other changes in value of said input variable.

4,240,075

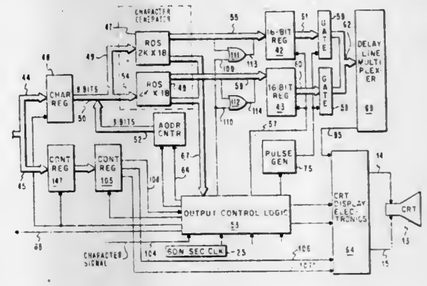
TEXT PROCESSING AND DISPLAY SYSTEM WITH MEANS FOR REARRANGING THE SPATIAL FORMAT OF A SELECTABLE SECTION OF DISPLAYED DATA

Charles R. Bringol, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,894

Int. Cl.³ G06F *3/153*

U.S. Cl. 340—798 **13 Claims**



1. A text processing and display system comprising:

a display device for simultaneously displaying a plurality of lines of alphanumeric characters,

matrix storage means for storing data representative of the positions of the displayed characters in successive lines of ordered storage locations spatially corresponding to the positions of said characters in said display,

means for sequentially storing the coded data representations of said displayed characters in the same sequence as said ordered storage locations of said position representative data for said respective characters in said matrix storage means,

repetitive display scanning means for traversing ordered character display positions in successive lines on said display device,

means for scanning the ordered storage locations in said matrix storage means in synchronization with said display scanning,

means for accessing the data representations for characters being displayed when said matrix scanning means senses a stored character position, and

means for applying signals representative of said character data being displayed to said display device in response to said accessed character representation.

4,240,076

STARTING CIRCUIT FOR AUTOMATIC FREQUENCY CONTROL ARRANGEMENT

James Williamson, Franklin, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 5, 1978, Ser. No. 912,600

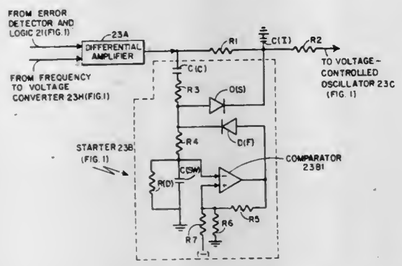
Int. Cl.³ G01S *13/00;* H03B *3/04*

U.S. Cl. 343—7 PL **1 Claim**

1. In an inverse receiver using a first local oscillator whose frequency is to be automatically controlled to track a Doppler-shifted echo signal, the control signal for such purpose being derived from the output signal of a voltage-controlled oscillator tunable through a frequency spectrum encompassing the

range of possible Doppler shift frequencies of echo signals to be received, circuitry for initiating and maintaining operation of the voltage-controlled oscillator, such circuitry comprising:

(a) means for initially setting the frequency of the voltage-controlled oscillator at a frequency higher than the highest possible Doppler shift frequencies and then decreasing the frequency of the voltage-controlled oscillator to



sweep through the range of possible Doppler shift frequencies; and

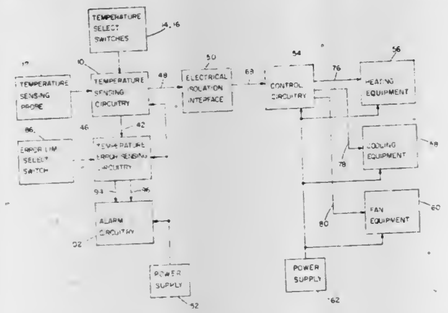
(b) means for then sensing when the frequency of the voltage-controlled oscillator equals the Doppler shift frequency of the Doppler-shifted echo signal and thereafter controlling the frequency of the voltage-controlled oscillator to track such Doppler shift frequency.

4,240,077

THERMOSTAT

Paul R. Hughes, Sudbury, and John E. Campbell, Brookline, both of Mass., assignors to United Brands Company, New York, N.Y.

Filed Mar. 2, 1978, Ser. No. 882,885
Int. Cl.³ G08B *23/00, 21/00;* F25B *49/00;* G05D *23/24*
U.S. Cl. 340—500 **12 Claims**



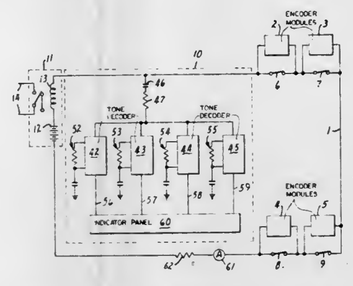
1. A temperature monitoring and control circuit for monitoring the temperature of products within an enclosure which can have various critical temperature characteristics, comprising a bridge circuit formed by temperature sensing and reference branches that provide respectively temperature signal and reference signal outputs, said bridge circuit including means to vary a desired set point temperature at which said outputs are equal, a bridge amplifier having as inputs said temperature signal and reference signal outputs and constructed to generate an error signal output dependent upon the difference between said inputs, a temperature control means responsive to said error signal, effective to change the thermal condition in said enclosure in a sense to reduced said error signal, and an error sensing alarm-activating circuit which includes upper and lower detectors, each detector having as one input a function of said error signal and as a second input, respectively, upper and lower reference values, each detector having an output serving as an alarm activating signal, respectively for upper and lower danger conditions, and a control means independent of said bridge circuit and bridge amplifier connected to selectively adjust said error sensing alarm-activating circuit to simultaneously vary the effective threshholds of both of said detectors thereby to enable variation of the size of the error signal required to establish an alarm-activating condition in a manner that is independent of the set point temperature and of said temperature control means.

4,240,078

FREQUENCY SELECTIVE ANNUNCIATOR SYSTEM

Donald A. Jalonen, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 7, 1978, Ser. No. 913,288
Int. Cl.³ G08B *25/00*
U.S. Cl. 340—524 **3 Claims**



1. An electronic annunciator system comprising

a conductive loop having a plurality of switch elements in series in said loop, said switch elements being openable upon the occurrence of a selected event,

a D.C. power source for generating a supervisory voltage and supervisory current in said loop, the polarity of said power source defining a positive side and a negative side for an opened switch element,

a plurality of oscillators, one associated with each switch element, each generating individual identifying A.C. signals and having a positive supply lead, a negative supply lead and an output signal lead, said signal lead being connected to said loop through a resistor,

a plurality of impedance means comprising a resistor and capacitor which are connected in series, each of said impedance means being connected in parallel with an associated one of said switch elements such that the capacitor is connected to said negative side and said resistor is connected to said positive side of said switch element for providing a bandpass filter permitting said A.C. signals from a said oscillator to bypass open switch elements,

said positive supply lead of each oscillator being connected at the junction of the resistor and capacitor of an associated one of said impedance means and said negative supply lead being connected to said negative side of said associated switch element such that opening of said switch element energizes said oscillator and said impedance means acts as a power supply filter to stabilize the loop voltage and current used by said oscillators, and

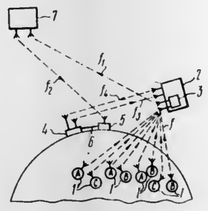
frequency decoder means coupled to said loop, responsive to the frequency identifying signals of said oscillators for individually indicating the operation of said oscillators.

4,240,079

SYSTEM FOR LOCATING MOBILE OBJECTS IN DISTRESS

Viktor A. Zhilin, Vitebsky prospekt, 81, korpus 1, kv. 72, Leningrad, U.S.S.R.

Filed Aug. 24, 1978, Ser. No. 936,648
Claims priority, application U.S.S.R., Feb. 7, 1978, 2571001
Int. Cl.³ H04B *7/00*
U.S. Cl. 343—100 ST **6 Claims**



1. A system for location of mobile objects in distress comprising:

emergency radio stations each provided on one of the mobile objects and energized in the event of trouble with said mobile objects for transmission of distress messages by means of phase-shift-keyed signals occupying the common frequency band and representing a sequence of two components alternating in accordance with the message transmitted, said emergency radio stations being subdivided into groups each having a particular pattern of each of said components of said phase-shift-keyed signal;

at least one low orbiting earth satellite for retransmission of the signals emitted by said emergency radio stations;

at least one receiving station for reception of the signals retransmitted by said low orbiting earth satellite, reproduction of transmitted messages, and location of said mobile objects;

at least one control station for tracking of said earth satellite and measurement of the ephemeris thereof;

a communication link for connection of said receiving station with said control station;

said receiving station comprises a receiving antenna, a receiver having an input and an output, said input of said receiver being connected to said receiving antenna, a reference-frequency oscillator having an output, a plurality of signal processing means equal in number to said groups of emergency radio stations, and a computer for calculation of the coordinates of said emergency radio stations having a first input and a second input, said first input of said computer being connected with said communication link;

each of said signal processing means comprising: a first filter and a second filter matched to said first and second components, respectively, of the signals emitted by the emergency radio stations belonging to one of said groups of said emergency radio stations, each of said filters having an input connected with said output of said receiver, and an output;

a first detector and a second detector each having an input and an output, said inputs of said first and second detectors being connected with said outputs of said first and second filters, respectively;

an adder having a first input and a second input and an output, said first and second inputs of said adder being connected with said outputs of said first and second detectors, respectively;

tracking systems with a second-order astaticism for measurement of the running phase of the envelopes of the signals received from said emergency radio stations, each of said tracking systems having a first and a second input and a first and a second output; said first inputs of said tracking systems being connected with said output of said reference-frequency oscillator;

said first outputs of said tracking systems being connected with said second input of said computer;

gates equal in number to said tracking systems, said gates each having a signal input, inhibit inputs with their number equal to the number of said tracking systems minus one, and an output, said signal input of each of said gates being connected to said input of said adder, said output of each of said gates being connected to said second input of one of said tracking systems, said inhibit inputs of each of said gates being connected with said second outputs of the remaining tracking systems, respectively; and

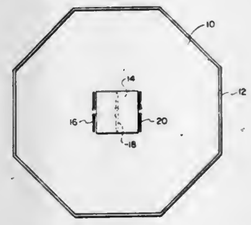
decoders for decoding of the messages transmitted by said emergency radio stations, the number of said decoders being equal to that of said tracking systems, each of said decoders having a first input, a second input, and a control input, said first and second inputs of each of said decoders being connected with said outputs of said first and second detectors, respectively, said control input of each of said decoders being connected with said second output of one of said tracking systems.

4,240,080

SHORT BACKFIRE ANTENNA WITH SUM AND ERROR PATTERNS

Oakley M. Woodward, Princeton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 19, 1979, Ser. No. 95,731
Int. Cl.³ H01Q *19/185, 25/02*
U.S. Cl. 343—817 **10 Claims**



1. A radio-frequency directional antenna comprising:

a first reflector plate having an axially extending peripheral rim;

a second reflector disc disposed centrally and parallel to said first plate and spaced from said plate and rim at a given distance along a common longitudinal axis, the width of said second reflector being a relatively small fraction of that of said first reflector;

a plurality of parallel dipole feed elements positioned symmetrically about said axis at a given distance between said first and second reflectors; and

means for applying electromagnetic energy to said dipole feed elements to provide sum and error radiation distribution patterns in the H-plane.

4,240,081

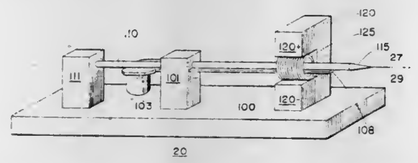
INK JET PRINTING

Edmund B. Devitt, Wayland, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Oct. 13, 1978, Ser. No. 951,101
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **10 Claims**

1. Apparatus for forming images on a record member with droplets of ink, comprising:

a. a record member;
b. means for projecting a stream of ink toward the record member, said projecting means including an ink projecting member in the form of a capillary tube having two ends with an axis along which the ink is projected, a nozzle capping said capillary tube at one end, means for supplying ink to the capillary tube under pressure to cause a stream of the ink to be projected from the nozzle toward the record member, and a capillary tube mount to which the capillary tube is fixed at the end opposite said nozzle;
c. a driving member which is joined to said ink projecting member, comprising a metal reed, a reed clamp located at the midsection of said capillary tube before the end of the reed to fix the metal reed in position, and means for inducing microscopic longitudinal vibrations of the joined metal reed and capillary tube, yoked to said metal reed between said capillary tube mount and said reed clamp, comprising an ultrasonic transducing means yoked to an end of said metal reed, away from said nozzle, including a metal paddle extension of said metal reed which is of the same thickness as the metal reed, but of greater width, and a piezoelectric ceramic element appended to the underside of the metal paddle extension and of considerably greater thickness than said metal paddle extension, with a potential difference being applied between said metal paddle extension and a lower surface of said piezoelectric ceramic element to cause a microscopic vibration of the element, a longitudinal component of which is transmitted through said metal paddle extension to said metal reed;



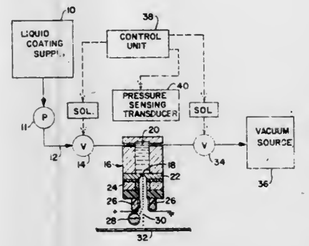
d. means for inducing a macroscopic oscillation of the joined ink projecting member and driving member at a resonant frequency of the joined members, said oscillation being in a direction substantially transverse to the axis of the projecting means, whereby the stream of ink is projected within a plane of trajectory variation defined by the axis of the projecting means and the direction of oscillation;
e. closed loop feedback means for ensuring that the joined projecting member and driving member oscillate at or near the resonant frequency of the driving member over time;
f. means for electrostatically charging drops of ink at a point at which the stream breaks up into individual drops;
g. means for controlling said charging means to form two charge groups having either a "deflection" or a "no deflection" charge on drops emerging from the projecting means during predetermined portions of the oscillation period;
h. means for inducing the deflection of drops bearing a "deflection" charge in a direction substantially transverse to the plane of trajectory variation, while allowing the drops bearing a "no deflection" charge to remain on course;
i. means for intercepting drops in one of the two charge groups after deflection of the drops bearing a "deflection" charge; and
j. means for causing a relative movement of the record member in a direction substantially transverse to the plane of trajectory variation, whereby the drops of the nonintercepted charge group are deposited on the record member to form an image.

4,240,082

MOMENTUMLESS SHUTDOWN OF A JET DROP RECORDER

James H. Yu, Spring Valley, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 28, 1979, Ser. No. 15,887
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **10 Claims**



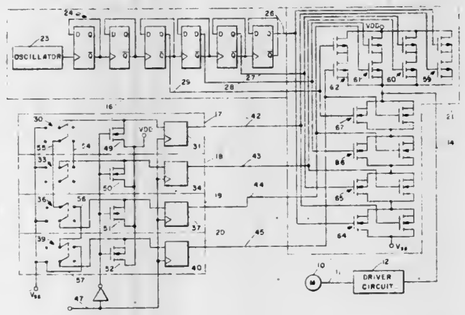
1. In a jet drop coating system comprising a coating head provided with a plurality of orifices and a manifold for delivery of liquid coating material to said orifices, improved momentumless shutdown apparatus comprising:
an inlet in said coating head,
an inlet valve means connected to said inlet,
an outlet in said coating head,
an outlet valve means connected to said outlet,
a source of vacuum connected to said outlet valve means, and
controller means, in electrical connection with said inlet valve means, said outlet valve means, and said manifold, for closing said inlet valve means and opening said outlet valve means at a point when the pressure in said manifold is slightly above the minimum pressure required to maintain jet straightness.

4,240,083

PROGRAMMABLE STRIP CHART RECORDER

John C. Stires, III, Box 988, Rambla de las Flores, Rancho Santa Fe, Calif. 92067

Filed Sep. 28, 1978, Ser. No. 946,795
Int. Cl.² G01D *15/24*
U.S. Cl. 346—136 **4 Claims**



1. A strip chart recorder, comprising
a stepper motor for advancing a recording medium from a roll by a predetermined distance upon each step of the motor; and
a recording duration controller coupled to the motor for controlling the frequency at which the motor is stepped;
wherein the controller comprises:
selector means for selectively varying the frequency at which the motor is stepped; and

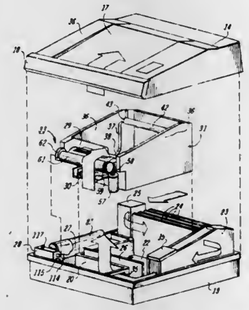
wherein the selector means comprises:
timing means having a given number of outputs for providing timing pulses at different predetermined frequencies at different respective outputs;
a like number of frequency selection means, each including a switch for selecting one of said predetermined frequencies, and means for providing an enabling signal in response to the actuation of the switch; and
logic means coupled to the timing means and the given number of frequency selection means for providing a control signal for stepping the motor at the predetermined frequency associated with said enabling signal provided by the frequency selection means that includes said actuated switch.

4,240,084

ELECTROGRAPHIC RECORDER WITH WRITING, DEVELOPING AND DRIVING ASSEMBLY

Thomas A. Tacklind, San Jose, and Ian Turner, Sunnyvale, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1979, Ser. No. 79,675
Int. Cl.³ G01D *15/06*; G03G *15/00*
U.S. Cl. 346—153 **7 Claims**



1. An electrographic recorder including a housing within which are located a support chassis for storing and feeding a supply of record bearing material, means for storing liquid developer material, electical control means, and writing means electromechanically connected to said electrical control means, said recorder being characterized by including
a unit assembly comprising developing means, driving means for transporting said record bearing material and means for receiving said writing means, and
means for mounting said unit assembly upon said support chassis,
whereby said developing means, said driving means and said writing means, when accepted in said receiving means, are each located relative to one another in their proper operative position and alignment for feeding and marking the record bearing material.

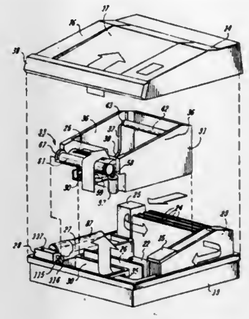
4,240,085

ELECTROGRAPHIC RECORDER

Thomas A. Tacklind, San Jose, and Ian Turner, Sunnyvale, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1979, Ser. No. 79,677
Int. Cl.³ G01D *15/06*; G03G *15/00*
U.S. Cl. 346—153 **18 Claims**

1. An electrographic recorder of modular construction including a trough-like rectangular base for receiving machine components and a cover overlying said base to define an enclosure therewith, said recorder being characterized by
a plurality of zones within said enclosure including
a liquid developer zone within which are disposed all liquid containing elements, and
an air plenum zone through which air is driven, and
a rectangular support chassis having walls extending upwardly towards said cover, said chassis being substantially



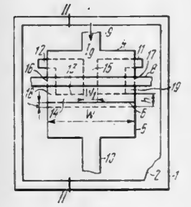
centrally located on said base, and wherein said liquid developer zone and said air plenum zone cumulatively surround the four sides thereof.

4,240,086

FILM CRYOTRON

Petr E. Kandyba, korpus 438, kv. 11, Moscow, 103498; Dmitry P. Kolesnikov, korpus 301b, kv. 111, Moscow, 103482; Nina I. Komarovskikh, korpus 431, kv. 116, Moscow, 103498; Vadim P. Lavrischev, ploschad Junosti, 4, kv. 22, Moscow; Gennady M. Lapir, korpus 851, kv. 69, Moscow, 103527; Vladimir I. Makhov, korpus 406, kv. 84, Moscow, 103498; Vasily K. Semenov, and Anatoly N. Samus, both of korpus 337, kv. 4, Moscow, 103482, all of U.S.S.R.

Filed Nov. 9, 1978, Ser. No. 959,246
Claims priority, application U.S.S.R., Nov. 25, 1977, 2550720; Jun. 26, 1978, 2630151
Int. Cl.³ H01L *27/12*
U.S. Cl. 357—4 **4 Claims**



1. A film cryotron comprising:
a superconducting ground plane;
a first superconducting electrode arranged on said superconducting ground plane and electrically insulated therefrom;
a second superconducting electrode arranged on said superconducting ground plane and electrically insulated therefrom;
an elongated distributed Josephson junction for interconnecting said first superconducting electrode and said second superconducting electrode;
respective supply lines connected to said first and second superconducting electrodes, respectively;
a first hole provided in said superconducting ground plane opposite a given one of said first superconducting electrode and said second superconducting electrode;
a second hole provided in said superconducting ground plane opposite said given one of said first superconducting electrode and said second superconducting electrode;
at least one superconducting control line arranged above

said given one of said first superconducting electrode and said second superconducting electrode;

said first and second holes being arranged so as to form a first screened portion in said given one of said first superconducting electrode and said second superconducting electrode, said first screened portion being shaped as a strip extending along and adjacent to said Josephson junction and having ends and a middle portion;

said first and second holes being arranged so as to form a second screened portion interposed between said first and second holes and connecting said supply line to the middle portion of said first screened portion;

a control line intersecting said given one of said first superconducting electrode and said second superconducting electrode to form points of intersection therebetween;

said first and second holes being arranged so as to form a third screened portion comprising two halves which connect the ends of said first screened portion to the points of intersection of said control line and said electrode;

said first screened portion being connected to said second screened portion and said third screened portion, respectively, so as to define respective widths of said second screened portion and said third screened portion at said connection with said first screened portion, said first screened portion being of a certain width, the widths of said second and third screened portions at the points of their connection to said first portion being no greater than the certain width of said first screened portion.

4,240,087

SCREENING ELECTRODES FOR OPTICAL SEMICONDUCTOR COMPONENTS

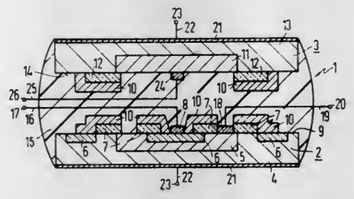
Gerhard Krause, Rosenheim, and Werner Spaeth, Holzkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 745,356, Nov. 26, 1976. This application Nov. 2, 1978, Ser. No. 956,906

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1975, 2554626

Int. Cl.³ H01L *21/12*

U.S. Cl. 357—19 **12 Claims**



1. In an optoelectronic coupler having a semiconducting optical transmitter with a p-n junction, a semiconducting optical receiver with a p-n junction, and a transparent sealing compound interposed therebetween, the improvement comprising an insulating layer overlying a portion of at least one of the two semiconductor zones forming one of said p-n junctions, said insulating layer being disposed in the path of optical radiation passing from said transmitter to said receiver and a transparent, electrically conductive screen layer overlying said insulating layer, said screen layer being electrically connected to one of said two semiconductor zones.

4,240,088

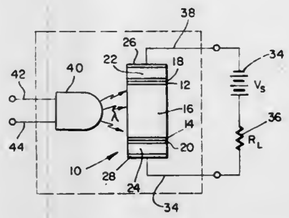
SEMICONDUCTOR HIGH-VOLTAGE SWITCH

William C. Myers, Burlington, Mass., assignor to Semicon, Inc., Burlington, Mass.

Continuation of Ser. No. 871,952, Jan. 24, 1978, abandoned, which is a continuation of Ser. No. 682,992, May 4, 1976, abandoned, which is a continuation of Ser. No. 475,721, Jun. 3, 1974, abandoned. This application Aug. 8, 1979, Ser. No. 64,661

Int. Cl.³ H01L *31/12*

U.S. Cl. 357—19 **9 Claims**



1. A high voltage, high speed switch comprising: A. at least one PIN diode connected in a reverse-bias direction between a voltage source and a load, said diode including at least one essentially planar major lateral surface, a P-conductivity type region, an N-conductivity type region, an essentially intrinsic I region between the P region and the N region and a planar P-I junction and a planar N-I junction oriented substantially normal to said lateral surface, the intrinsic region of said diode being exposed at said lateral surface and being of sufficient dimension between the P and N regions to sustain reverse voltages of about one thousand volts or more; and

B. an optical source positioned immediately adjacent said lateral surface of said diode

(1) oriented, when energized, to direct radiation onto the exposed intrinsic region of said diode through said lateral surface to thereby generate charge carriers in sufficient quantity to couple said source to said load, and

(2) connected for energization separately from said PIN diode.

4,240,089

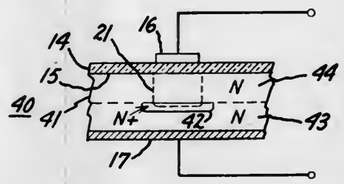
LINEARIZED CHARGE TRANSFER DEVICES

William E. Engeler, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 591,637, Jun. 30, 1975, abandoned. This application Oct. 18, 1978, Ser. No. 952,413

Int. Cl.³ H01L *29/78;* **G11C** *19/28*

U.S. Cl. 357—24 **1 Claim**



1. In combination,

a substrate of one conductivity type semiconductor material having a first layer and a second layer, said first layer being of substantially uniform thickness and overlying said second layer, the resistivity of said first layer being substantially greater than the resistivity of said second layer,

an insulator overlying said first layer,

a conductor member overlying said insulator member,

said second layer includes a first region of low resistivity and a second region of higher resistivity, said first region underlying said conductor member and substantially coextensive with said conductor member in a plane through said first region parallel to the plane of said conductor member, said first region being bounded within said plane by said second region,

means for applying a voltage between said conductor member and said second layer to deplete entirely of majority carriers the portion of said first layer underlying said conductor member and to deplete at least a portion of said second layer underlying said conductor member, said first layer being sufficiently thick so that substantially all of the potential drop produced by said voltage in said layers appears across said first layer,

means for introducing charge in the form of minority carriers corresponding to a signal into said portion of said first layer in a manner to cause the surface potential thereof to change in absolute magnitude while still maintaining depletion in at least a portion of said second layer whereby the change in surface potential of said depleted portion of said first layer is substantially linearly proportional to the charge introduced therein.

4,240,090

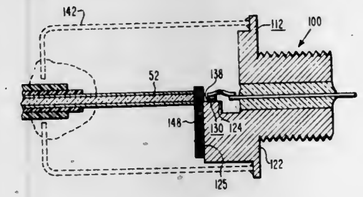
ELECTROLUMINESCENT SEMICONDUCTOR DEVICE WITH FIBER-OPTIC FACE PLATE

Frederick R. Hughes, Lancaster, and Paul Nyul, New Holland, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 14, 1978, Ser. No. 915,309

Int. Cl.³ H01L *27/14, 31/00, 23/02*

U.S. Cl. 357—30 **8 Claims**



1. An electroluminescent semiconductor device comprising:

an electroluminescent semiconductor element having regions of opposite conductivity type forming a PN junction therebetween and a light emitting surface extending transversely across the PN junction, said electroluminescent semiconductor element adapted to emit a beam of light from the light emitting surface, and

a fiber optic face plate extending across said light emitting surface of the electroluminescent semiconductor element so that the light beam emitted from the electroluminescent semiconductor element will pass through the face plate.

4,240,091

SEMICONDUCTOR CONTROLLED RECTIFIER DEVICE WITH SMALL AREA DV/DT SELF-PROTECTING MEANS

Tsutomu Yatsuo; Atsuo Watanabe, and Yoshiteru Shimizu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 22, 1979, Ser. No. 68,571

Claims priority, application Japan, Aug. 23, 1978, 53-101820

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **8 Claims**

1. A self-protected semiconductor controlled rectifier device comprising:

(i) a main thyristor section including,

a first layer of a first conductivity type,

a second layer of a second conductivity type, being adjacent to said first layer for forming a first PN junction therewith,

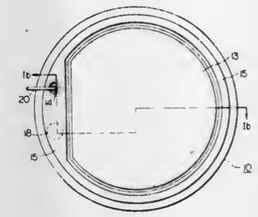
a third layer of said first conductivity type, being adjacent to said second layer for forming a second PN junction therewith,

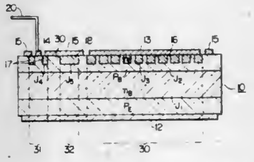
a fourth layer of said second conductivity type, being ajacent to said third layer for forming a third PN junction and having an exposed surface,

a first main electrode in ohmic contact with at least the surface of said first layer, and

a second main electrode in ohmic contact with at least the surface of said fourth layer;

(ii) a pilot thyristor section including said first, second, and third layers, said first electrode, and a fifth layer, said fifth layer being isolated from said fourth layer by said third layer, adjacent to said third layer for forming a fourth PN junction therewith, having an exposed surface, being smaller in area than said fourth layer, and being adapted to operate in association with said main thyristor thereby to turn on said main thyristor section when said pilot thyristor section is turned on;





(iii) an auxiliary pilot thyristor section including said first, second, and third layers, said first main electrode, and a sixth layer of said second conductivity type, said sixth layer being isolated from said fourth layer, having an exposed surface, forming a fifth PN junction with said third layer, and being smaller in area than said fourth area;

(iv) a gate means in contact with a part of the surface of said third layer for turning on said pilot thyristor section in response to a gate signal being applied to said gate means;

(v) first auxiliary gate means being in contact with said fifth layer; and

(vi) second auxiliary gate means being in contact with said sixth layer;

the improvement wherein:

(vii) said auxiliary pilot thyristor section is triggered with a voltage increasing rate dV/dt lower than those of said pilot thyristor section and said main thyristor section, and

(viii) the whole peripheral region of said fifth PN junction is short-circuited by said second auxiliary gate means.

4,240,092

RANDOM ACCESS MEMORY CELL WITH DIFFERENT CAPACITOR AND TRANSISTOR OXIDE THICKNESS

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

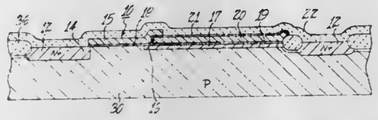
Filed Sep. 13, 1976, Ser. No. 722,841

Int. Cl.³ H01L *27/04, 29/78*

U.S. Cl. 357—41 **18 Claims**

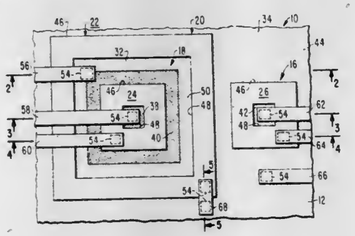
1. An N-channel silicon gate random access memory cell having an insulated gate field effect transistor and a capacitor, said transistor having a source-to-drain path and a gate, comprising:

(a) a body of P-type silicon having a major face;
(b) an N+ type region defined in said major face and defining one end of said source-to-drain path of said transistor;
(c) a capacitor region in said major face spaced from said N+ type region and defining a lower plate of said capacitor, said capacitor region being ion implanted with N-type conductivity determining impurity;
(d) a thin oxide dielectric layer overlying said capacitor region;
(e) a first layer of polycrystalline silicon overlying said dielectric layer and defining an upper plate of said capacitor;
(f) an insulating coating over said first layer of polycrystalline silicon;
(g) a transistor channel region in said major face between said N+ type region and said capacitor region, the channel region defining said source-to-drain path;
(h) a thin gate oxide layer overlying said channel region, the



thin gate oxide layer being substantially thicker than said thin oxide dielectric layer;
(i) a second layer of polycrystalline silicon overlying said gate oxide layer to define said gate of said transistor and also partly overlying said first layer of polycrystalline silicon but insulated therefrom by said insulating coating;
(j) an insulating layer overlying said second layer of polycrystalline silicon;
(k) a conductive layer overlying said insulating layer and contacting said second layer of polycrystalline silicon through an aperture in said insulating layer at a contact area;
(l) means for supplying logic signals to said N+ type region at at least two voltage levels, one of the levels being at a reference potential and the other being a positive voltage compared to the reference potential;
(m) means for applying a bias voltage to said first layer of polycrystalline silicon, the bias voltage having a magnitude about half said positive voltage.

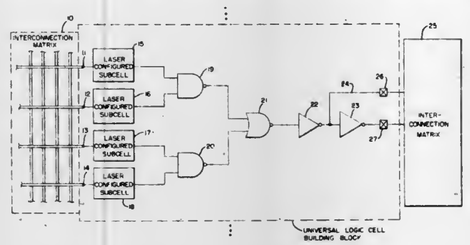
4,240,093
INTEGRATED CIRCUIT DEVICE INCLUDING BOTH N-CHANNEL AND P-CHANNEL INSULATED GATE FIELD EFFECT TRANSISTORS
Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 585,874, Jun. 11, 1975, abandoned. This application Dec. 10, 1976, Ser. No. 749,410
Int. Cl.³ H01L *27/02, 29/78, 29/34*
U.S. Cl. 357—42 **11 Claims**



1. An integrated circuit device comprising:
(a) a body of semiconductor material predominantly of one conductivity type, said body having a surface;
(b) a first frame-like structure including a layer of insulating material on said surface and a layer of conductive material on said layer of insulating material, said first frame-like structure having a closed geometry which encloses a first portion of said surface and separates said first portion of said surface from a second portion of said surface;
(c) a well region having a conductivity type opposite that of said body, said well region extending into said body only from said first portion of said surface;
(d) means for making ohmic contact to said well region, said means being totally surrounded by said first frame-like structure and comprising a part of said first portion of said surface;
(e) at least one semiconductor device extending into said well region from said first portion of said surface, said semiconductor device comprising:
(i) a second frame-like structure including a layer of insulating material on said first portion of said surface and a layer of conductive material on said layer of insulating material, said second frame-like structure having a closed geometry separating an outer portion of said first portion of said surface from an inner portion of said first portion of said surface;
(ii) a first region of the same conductivity type as said body extending into said well region from said inner portion of said first portion of said surface, said first region being surrounded by said second frame-like structure;
(iii) a second region of the same conductivity type as said body extending into said well region from said outer portion of said first portion of said surface, said second region surrounding said second frame-like structure;
(f) at least one semiconductor device extending into said body from said second portion of said surface, said semiconductor device comprising:
(i) a third frame-like structure including a layer of insulating material on said second portion of said surface and a layer of conductive material on said layer of insulating material, said third frame-like structure having a closed geometry separating an outer portion of said second portion of said surface from an inner portion of said second portion of said surface,
(ii) a third region of opposite conductivity type to said body extending into said body from said inner portion of said second portion of said surface, said third region being surrounded by said third frame-like structure;
(iii) a fourth region of opposite conductivity type to said body extending into said body from said outer portion of said second portion of said surface, said fourth region surrounding said third frame-like structure.

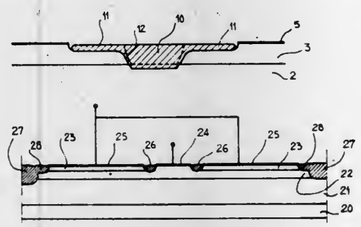
4,240,094
LASER-CONFIGURED LOGIC ARRAY
Jim M. Mader, Indialantic, Fla., assignor to Harris Corporation, Cleveland, Ohio
Filed Mar. 20, 1978, Ser. No. 887,968
Int. Cl.³ H01L *21/88, 29/52, 27/10*
U.S. Cl. 357—45 **37 Claims**

33. A logic circuit device comprising:
a semiconductor substrate which contains a plurality of logic elements from which the logic circuit device is formed, each logic element containing a plurality of semiconductor elements together with intraelement semiconductor and metallization connection paths, and interconnection pathways by way of which said logic elements are connected together, and
prescribed portions of selected ones of said logic elements having been altered by the impingement of electromagnetic energy thereon with selected portions of said semiconductor connection paths having been disconnected and selected portions of said metallization connection paths having been interconnected to selected semiconductor material of said logic elements to define the transfer



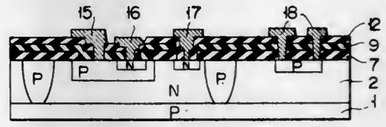
function of said selected ones of said logic elements to cause said logic circuit device to perform a specified logic operation.

4,240,095
GROOVING AND GLASSIVATING METHOD FOR SEMICONDUCTOR WAFERS
Pierre C. Rossetti, Fontenay aux Roses, France, assignor to Le Silicium Semiconducteur SSC, Paris, France
Filed Nov. 21, 1978, Ser. No. 962,802
Claims priority, application France, Nov. 28, 1977, 77 35732
Int. Cl.³ H01L *27/12*
U.S. Cl. 357—49 **8 Claims**



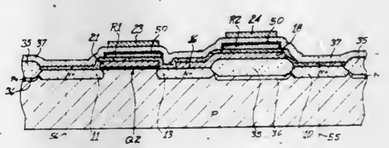
1. A structure for passivating a semiconductor wafer at the limits of the elementary chips to be obtained therefrom in accordance with a selected pattern, said wafer having alternate layers of different semiconductive material, said structure having at least one first groove depending from a surface of said wafer in accordance with said pattern and at least one second groove substantially centered within said first groove in accordance with said pattern, said second groove being deeper and narrower relative to said first groove, a stepped groove for receiving a passivating agent being thereby obtained wherein said second groove intersects an interface between alternate layers and said first groove does not reach said interface.

4,240,096
FLUORINE-DOPED P TYPE SILICON
Shunichi Hiraki, Yokohama; Kuniaki Kumamaru, Kawasaki; Masaharu Aoyama, Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Oct. 19, 1978, Ser. No. 952,777
Claims priority, application Japan, Oct. 20, 1977, 52-125070
Int. Cl.³ H01L *29/167*
U.S. Cl. 357—63 **4 Claims**



1. A semiconductor device comprising a fluorine ion implantation region which is selectively formed in an N type Group IV semiconductor body and further activated, said region thereby constituting a P type region.

4,240,097
FIELD-EFFECT TRANSISTOR STRUCTURE IN MULTILEVEL POLYCRYSTALLINE SILICON
Joseph H. Raymond, Jr., Katy, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 31, 1977, Ser. No. 801,697
Int. Cl.³ H01L *23/48, 29/46, 29/54*
U.S. Cl. 357—71 **4 Claims**



1. A field-effect transistor device comprising a semiconductor body, the first layer being doped with conductivity-determining impurity at a first level to function as a conductor, conductive means connected to the first layer to apply bias voltage thereto, a second layer of crystalline silicon on said face overlying at least part of the first layer and insulated therefrom by a thin insulating layer of thickness such that the voltage on the first layer significantly influences conduction in the second level through said thin insulating layer, the second level including a part which is closely adjacent and overlying the first level and which is doped with conductivity-determining impurity at a second level which is less than said first level to function as an element having more impedence than said first level, and regions connected to opposite ends of said part and containing conductivity-determining impurity to render the regions more highly conductive than said part.

4,240,098
SEMICONDUCTOR OPTOELECTRONIC DEVICE PACKAGE
Peter S. Zory, Ossining; Frederick W. Scholl, Riverdale, and Harry F. Lockwood, New York, all of N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Sep. 28, 1978, Ser. No. 946,592
Int. Cl.³ H01L *23/02, 23/12, 39/02*
U.S. Cl. 357—74 **21 Claims**

1. A semiconductor optoelectronic device package comprising:
(a) a metallic stud comprising pedestal and screw portions of high thermal conductivity material;
(b) an elongated insulator tab, a portion of the bottom of

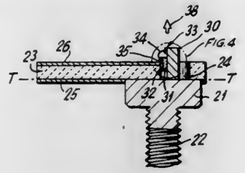
which is mounted on top of said stud, said insulator tab provided with (1) an opening therethrough at the mounted end, (2) an electrically conducting path along the bottom of said insulator tab, perpendicular to and making electrical contact to said stud and (3) at least one electrically conducting path on the top of said insulator tab, perpendicular to an axial plane of said stud, terminating at said opening;

(c) a block comprising high thermal conductivity material including

(1) at least one isolation pad configured on said block, at least a portion of which supports an electrically conducting coating, insulated from said block and

(2) at least one optoelectronic semiconductor device comprising adjacent regions of opposite conductivity forming at least one p-n junction and mounted on said block, one of said regions being electrically and thermally connected to said block, another of said regions being electrically connected to said conductive portion of said isolation pad,

said block being mounted through the opening in the insulator tab and attached to the top of said stud to provide electrical and thermal conductivity therebetween, said block being positioned relative to said stud to provide light propagation to or from said semiconductor device in a direction substantially coaxial with the stud and positioned relative to said insulator tab such that at least one of the top conducting paths is proximate to the conductive layer on said isolation pad.



4,240,099

SEMICONDUCTOR DEVICE PLASTIC JACKET HAVING FIRST AND SECOND ANNULAR SHEET METAL STRIPS WITH CORRUGATED OUTER EDGES EMBEDDED IN SAID PLASTIC JACKET

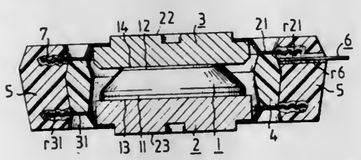
Jürgen Brandt; Ludwig Herold; Wolfgang Pikorz, and Alois Sonntag, all of Warstein, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,607

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810416

Int. Cl.³ H01L 23/42, 23/44, 23/46

U.S. Cl. 357—79 **5 Claims**



1. A high performance wafer-shaped semiconductor device including a wafer-shaped semiconductor element having first and second opposed major surfaces; first and second electrodes on the first and second major surfaces respectively of said semiconductor element; first and second cylindrical metal bodies each having an inner surface contacting said first and second electrodes, respectively, and an outer surface, said metal bodies serving as means for making electrical connections to said semiconductor element and for dissipating heat; an insulating ring enclosing and centering said metal bodies and said semiconductor element; and a plastic jacket surrounding said insulating ring for tightly encasing said semiconductor element wherein the improvement comprises

first and second annular sheet metal strips each having an inner edge region fastened to an outer surface of a corresponding cylindrical metal body and a corrugated chemically roughened outer edge region embedded in said plastic jacket; and

a powder coating on said chemically roughened outer edge regions, whereby a reliable bond is obtained between said plastic jacket and said metal strips to obtain a pressure and oil-tight housing for said semiconductor device.

4,240,100

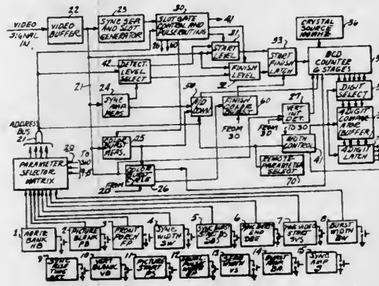
TELEVISION INTERVAL TIMER EMPLOYING DIGITAL TECHNIQUES

Jonathan M. Gorbold, Park Ridge, and David H. Slim, Cresskill, both of N.J., assignors to Marconi Electronics, Inc., Northvale, N.J.

Filed Mar. 8, 1979, Ser. No. 18,457

Int. Cl.³ H04N 9/62

U.S. Cl. 358—10 **22 Claims**



1. Apparatus for measuring the time duration of parameters associated with a television signal, said parameters to be measured associated with a conventional television signal and having timing intervals which are predetermined according to standards associated with said television signal, comprising:

(a) means responsive to said television signal to provide a timing signal synchronized thereto and consisting of a predetermined number of equally spaced pulses indicative of a television line,

(b) selectable means operative to select any one of a given number of parameters to be measured,

(c) logic means responsive to said selectable means and said timing signal to generate a control signal containing a selected number of said pulses which are indicative of the timing interval of said parameter, within said television signal,

(d) reference means responsive to said selectable means and operative to provide a reference level for determining whether said television signal exhibits a level within predetermined limits for said parameter selected,

(e) counting means responsive to said reference means and said control signal for providing a count indicative of said timing interval of said parameter when said television signal exhibits said level within said predetermined limits,

(f) means coupled to said counting means for displaying said count whereby the timing interval associated with said parameter is displayed.

4,240,101

TELEVISION STANDARDS CONVERSION

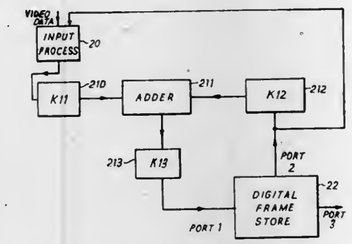
Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants, Limited, Berkshire, England

Continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Feb. 27, 1979, Ser. No. 15,699

Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul. 26, 1977, 31355/77; Jul. 26, 1977, 31356/77; Jul. 26, 1977, 31357/77; Jul. 26, 1977, 31358/77; Jul. 29, 1977, 31996/77; Sep. 14, 1978, 36837/78; Sep. 14, 1978, 36838/78

Int. Cl.³ H04N 9/42

U.S. Cl. 358—11 **31 Claims**



1. A digital standards converter for video signals comprising:

processor means for synthesising picture points from adjacent picture point information derived from the video signals from at least one field;

video storage means for storing the information from at least one field; and

digital persistence means for effecting movement interpolation between incoming and stored information.

24. A converter according to claim 1 including means for generating a colour code to accompany the video data indicative of whether the video data contains chrominance or luminance information.

4,240,102

IDENTIFICATION SYSTEM FOR SECAM OR SECAM/PAL COLOR TELEVISION RECEIVERS

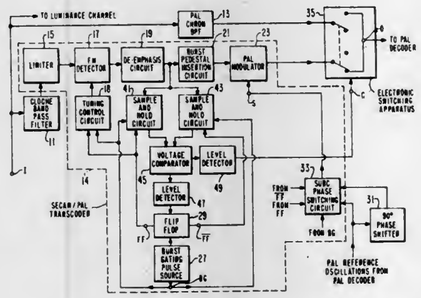
William H. Groeneweg, Ottenbach, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,942

Claims priority, application United Kingdom, Mar. 16, 1978, 10457/78

Int. Cl.³ H04N 9/50, 9/42

U.S. Cl. 358—11 **2 Claims**



1. In a color television receiver subject to reception of composite color television signals inclusive of a chrominance component enclosed in SECAM format; said SECAM-encoded chrominance component comprising, during image portions of alternate line intervals, a first subcarrier frequency modulated in accordance with a first color-difference signal, and during image portions of the intervening line intervals, a second subcarrier frequency modulated in accordance with a second color-difference signal, with a lead-in burst of oscillations at the center frequency of said first subcarrier preceding the image portion of each of said alternate line intervals, and with a lead-in burst of oscillations at the center frequency of said second subcarrier preceding the image portion of each of said intervening line intervals; apparatus comprising:

an FM detector, responsive to the received signals, and subject to operation in either a first mode with center frequency tuning corresponding to the center frequency of said first subcarrier, or a second mode with center frequency tuning corresponding to the center frequency of said second subcarrier;

a triggered flip-flop circuit for providing, when enabled, a pair of half line rate wave outputs of mutually opposite phase;

a source of line rate pulses timed to substantially coincide with the periods of appearance of said lead-in bursts;

means, responsive to said line rate pulses and to one of said pair of half line rate wave outputs, for controlling the operating mode of said FM detector such that said FM detector operates in respectively different ones of said modes during the image portions of successive line intervals but operates in only said first mode during each period of lead-in burst appearance;

first sampling means, coupled to receive an output of said FM detector, and responsive to said line rate pulses and to said one of said pair of half line rate wave outputs, for sampling the output of said FM detector only during alternate ones of said periods of appearance of lead-in bursts;

second sampling means, coupled to receive said output of said FM detector, and responsive to said line rate pulses and to the other of said pair of half line rate wave outputs, for sampling the output of said FM detector only during the intervening ones of said periods of appearance of said lead-in bursts;

means for comparing the output levels of said first and second sampling means; and

means, responsive to an output of said comparing means, for disabling said flip-flop circuit only when the output level of a given one of said sampling means significantly exceeds the output level of the other of said sampling means.

4,240,103

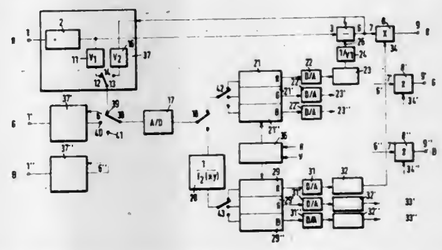
METHOD FOR THE ADDITIVE AND MULTIPLICATIVE SPURIOUS SIGNAL COMPENSATION

Dieter Poetsch, Ober Ramstadt, and Werner Becker, Mainz, both of Fed. Rep. of Germany, assignors to Robert GmbH Bosch, Stuttgart, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,257

Int. Cl.³ H04N 9/535, 5/34

U.S. Cl. 358—21 R **8 Claims**



5. Apparatus for compensating for spurious signals in a video signal comprising a subtraction stage (4) having a first input (3) to which is applied a video signal to be corrected and a second

input (26), means for deriving a first signal from the black level of the video signal, a first store (21) having an input for receiving the first signal and having an output connected to the second input (26) of the subtraction stage (4), the store (21) also having control inputs connected to outputs from counting means (36) for synchronising the read-out of the signals in the store (21) with the video signal, a multiplication stage (8) having a first input (7) connected to an output (6) from the subtraction stage (4), a reciprocal value stage (28) having an input connected to the output (6) from the subtraction stage (4), means for deriving a second signal from the white level of the video signal, and a second store (29) for storing the second signal, and having an input to which is connected to the output from the reciprocal value stage (28) and control inputs connected to outputs from counting means (36), the second stage (29) further having an output connected to a second input (34) of the multiplication stage (8), a corrected video signal being extracted from an output (9) of the multiplication stage.

8. A circuit according to claim 5 for spurious signal compensation in more than one video signal channel, wherein a plurality of first (21, 21', 21'') and second stores (29, 29', 29''), D/A converters (22, 22', 22'' or 31, 31', 31''), amplifiers (11, 11', 11'', 16, 16', 16'') and attenuators (24, 24', 24'', 33, 33', 33'') are provided corresponding in number to the number of video signal channels (R,G,B), and wherein a single A/D converter (17) is provided between the amplifiers (11, 11', 11'', 16, 16', 61'') and the stores (21, 21', 21'', 29, 29', 29''), an output from which converter is connected to a third changeover switch (38) for the various video signal channels (R,G,B), said third switch (38) having an output connected to the first changeover switch (18), and a single reciprocal value stage (28) is provided between the first changeover switch (18) and the stores (29, 29', 29'') for the correction of multiplicative spurious signals, a fourth changeover switch (43) being connected between an output from the reciprocal value stage (18) and inputs to the stores (29, 29', 29'') and the first changeover switch (18) being also connected directly through a fifth changeover switch (42) to the stores (21, 21', 21'') for the correction of additive spurious signals.

4,240,104

MEASUREMENT OF CHROMA KEY AREA IN TELEVISION SYSTEMS

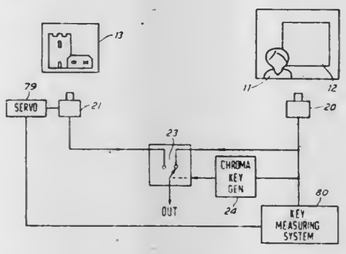
Richard J. Taylor, London, and Paul R. N. Kellar, Newbury, both of England, assignors to Quantel Limited, Berkshire, England

Filed Jan. 22, 1979, Ser. No. 5,533

Claims priority, application United Kingdom, Jan. 30, 1978, 3702/78

Int. Cl.³ H04N 9/535

U.S. Cl. 358—22 **17 Claims**



1. A chroma key area measurement system comprising means for measuring the position of each side of the key area within the television picture including spacial filter means for providing a smoothing facility for removing uncertainty of size or position if the key area is degraded and means responsive to the first mentioned means for measuring the position of the top and bottom of the key area within the television picture to determine the size and position of the incoming chroma key area whereby the system output is indicative of the key area size and position.

4,240,105

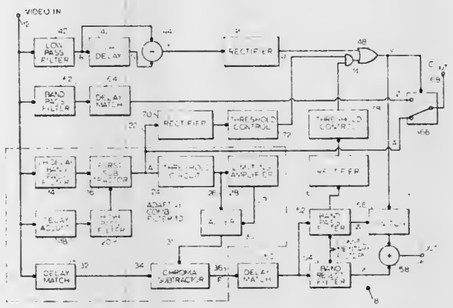
METHOD AND APPARATUS FOR SEPARATION OF CHROMINANCE AND LUMINANCE WITH ADAPTIVE COMB FILTERING IN A QUADRATURE MODULATED COLOR TELEVISION SYSTEM

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022, assignor to Yves C. Faroudja, Los Altos Hills, Calif.

Filed Aug. 20, 1979, Ser. No. 68,215

Int. Cl.³ H04N 9/535

U.S. Cl. 358—31 **12 Claims**



1. An improved system for separation of chrominance and luminance information in a quadrature modulated color television signal and similar periodically recurrent analog signals having interleaved, e.g., chrominance and luminance sidebands, said system comprising:

an input;

an output;

comb filtering means connected to said input for selectively separating chrominance and luminance components from said signal and for providing a combed chrominance output and a combed luminance output;

low frequency luminance vertical transition detector means connected to said input for detecting vertical amplitude transitions occurring at adjacent horizontal scanning lines and for thereby providing a first switching signal independent of transition direction;

simultaneous chrominance and luminance transition detector means connected to said adaptive comb filtering means for detecting simultaneous chrominance and high frequency luminance transitions in either direction above predetermined minimum threshold values and for thereby providing a second switching signal;

switched low pass filter means selectively connected to said combed luminance output of said adaptive comb filtering means, said vertical transition detector means and said chrominance and luminance detector, and responsive to one or both of said first or second switching signals, for providing at said output chrominance frequency band band-reject filtered luminance in lieu of combed luminance during an interval corresponding to one or both of said switching signals.

4,240,106

VIDEO NOISE REDUCTION

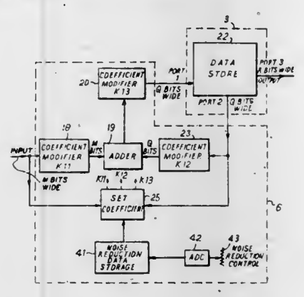
Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants, Limited, Berkshire, England

Continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Feb. 27, 1979, Ser. No. 15,989

Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul. 26, 1977, 31356/77; Jul. 26, 1977, 31357/77; Jul. 26, 1977, 31358/77; Sep. 14, 1978, 36838/78

Int. Cl.³ H04N 9/535

U.S. Cl. 358—36 **31 Claims**



1. A video noise reduction system for incoming video information derived from a plurality of picture points, said system comprising:

coefficient modifier means for modifying at least a portion of the incoming picture point information;

video storage means for storing the modified picture point information;

adder means for adding at least a portion of the stored picture point information to at least a portion of corresponding picture point information from an incoming field to provide noise reduced picture point information at the store output; and

control means for adjusting the degree of modification effected by the coefficient modifier means in dependence on whether luminance or chrominance components are present when picture movement is occuring.

4,240,107

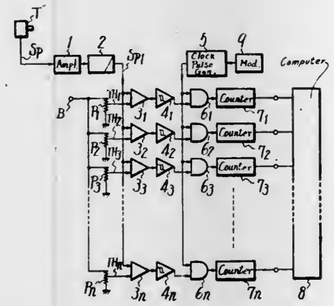
APPARATUS AND METHOD FOR PATTERN INFORMATION PROCESSING

Hajime Yoshida, Chofu, Japan, assignor to Hajime Industries, Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,494

Int. Cl.³ H04N 7/18

U.S. Cl. 358—93 **4 Claims**



1. A pattern information processing method comprising the steps of:

(a) picking up an object by scanning with an image sensor to produce a video signal corresponding to said object;

(b) dividing said video signal by a plurality of threshold levels which are different from one another;

(c) gating clock pulse trains with said divided video signals to produce clock pulse trains corresponding to said plurality of threshold levels;

(d) counting said clock pulse trains to provide a number series which represents a pattern of said scanned object; and

(e) modulating said clock pulse train during said scanning whereby a number of said clock pulses counted in at least two different equal portions of said video signal differ from each other.

4,240,108

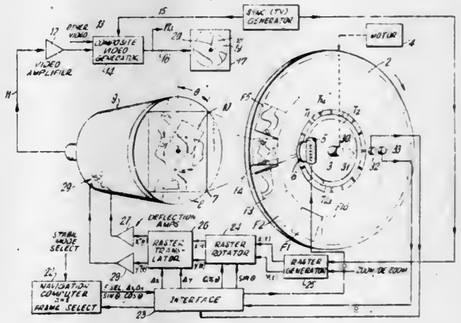
VEHICLE CONTROLLED RASTER DISPLAY SYSTEM

Paul M. Levy, Dix Hills, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,807

Int. Cl.² H04N 7/00

U.S. Cl. 358—103 **10 Claims**



1. A map display system particularly adapted for airborne use in confined locations for displaying location of an airborne vehicle relative to the terrain comprising:

(1) means forming an image of the segment of said terrain contiguous to the position of said vehicle;

(2) means for generating a raster for scanning a selected region of said terrain segment image;

(3) said image forming means being configured such that said terrain segment image remains fixed while said vehicle is moving in a contiguous relation to said terrain segment;

(4) means responsive to vehicle movement for deriving navigational data related to the position of said vehicle relative to said terrain;

(5) electronic beam deflection means responsive to said navigational data means for continuously displacing said raster to traverse the regions of said image in duplication of the vehicle traverse relative to said terrain;

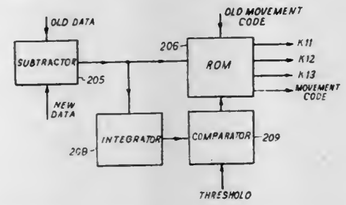
(6) video generating means responsive to the raster-image interface for converting said region of said terrain segment image into video segments; and

(7) display means responsive to said video signals.

4,240,109
VIDEO MOVEMENT DETECTION

Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants, Limited, Berkshire, England

Continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Feb. 27, 1979, Ser. No. 15,700
Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul. 26, 1977, 31355/77; Jul. 26, 1977, 31356/77; Jul. 26, 1977, 31357/77; Sep. 14, 1978, 36838/78
Int. Cl.³ H04N 7/18
U.S. Cl. 358—105 23 Claims

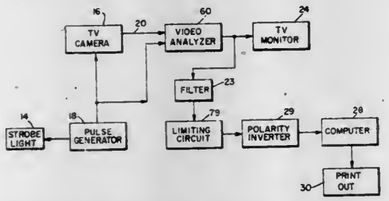


1. A movement detector for detecting picture point movement in video data in the presence of noise comprising: input means for measuring the difference between incoming data from a selected number of picture points on one field with data from a selected number of corresponding picture points from a previous field adjacent the picture point for which movement is to be determined, and output means for providing a control signal in dependence on the measured difference between the selected picture points from said input means.

4,240,110
INSPECTION OF ELONGATED MATERIAL

James W. Henry, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,510
Int. Cl.³ H04N 7/18
U.S. Cl. 358—107 10 Claims

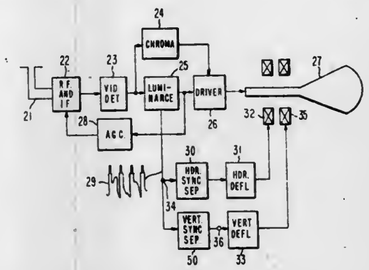


1. Apparatus for determining information relative to surface irregularities in elongated material comprising
(A) a television camera positioned such that its field of view is a portion of the elongated material,
(B) light means positioned adjacent the path of said elongated material such as to illuminate said elongated material at an angle to cause a pattern of light and shadowed areas,
(C) means synchronizing said television camera and light means such that a television frame is initiated during an illumination, and a video signal is formed of the illuminated material,
(D) means for filtering low frequency signal components from the composite video signal caused by different illumination intensities on relatively large areas of said elongated material, and
(E) means for using the digitized signal as a source of information in the inspection of said elongated material.

4,240,111
VERTICAL SYNC SEPARATOR

William H. Meise, Wrightstown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 4, 1979, Ser. No. 26,814
Int. Cl.³ H04N 5/10
U.S. Cl. 358—154 20 Claims

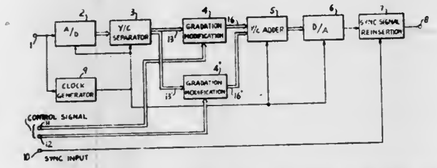


1. A pulse compression vertical sync separator for a television receiver, comprising:
an input terminal for coupling an input signal that includes a vertical sync signal;
a delay line coupled to said input terminal for storing successive portions of said input signal, the capacity of said delay line sufficient to store a uniquely profiled portion of said vertical sync signal;
sampling means coupled to said delay line for sampling the values of said successive portions;
pulse compression means coupled to said sampling means and responsive to the sampled values for forming a compressed pulse upon the occurrence of said vertical sync signal; and
output means coupled to said pulse compression means for forming an output signal in response to said compressed pulse.

4,240,112
DIGITAL VIDEO EFFECT EQUIPMENT

Masao Inaba; Atsumi Sugimoto, and Shigeru Miyahara, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,592
Claims priority, application Japan, Apr. 5, 1978, 53-40749
Int. Cl.³ H04N 5/14, 9/535
U.S. Cl. 358—160 4 Claims

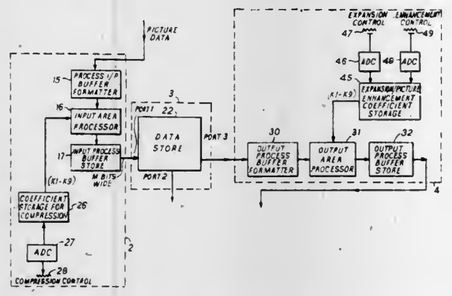


1. Digital video effects apparatus for providing special video effects by controlling the number of quantization levels for each sample of an incoming television video signal, the apparatus comprising: means for converting said incoming television video signal into a digital video signal with each video sample represented by a predetermined number of binary bits; a gradation modifying circuit for decreasing the gradation represented by said digitized video signal; and means for converting the output of said gradation modifying circuit into an analog signal to reproduce said television video signal with said special effects, said gradation modifying circuits further including means for changing the (N+1)th bit, counted from the MSB of said digital video signal, to a logical "1" level and the (N+2)th bit and all less significant bits to a logical "0" level.

4,240,113
PICTURE MANIPULATION IN VIDEO SYSTEMS

Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants, Limited, Berkshire, England

Continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Feb. 27, 1979, Ser. No. 15,676
Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul. 26, 1977, 31355/77; Jul. 26, 1977, 31356/77; Sep. 14, 1978, 36839/78
Int. Cl.³ H04N 3/22
U.S. Cl. 358—180 27 Claims

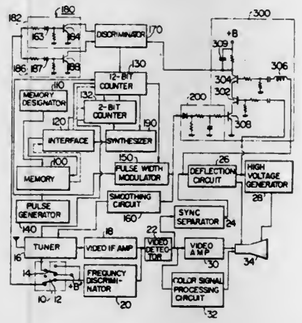


1. A video system for manipulating picture information in the form of a plurality of picture points comprising adaptive processing means for receiving a number of picture points from more than one field to provide a synthesised picture point from information on a number of existing picture points adjacent said synthesised picture point and from more than one field; and
selector means for determining the portions of information used from the picture points from each field in dependence on picture movement therebetween.

4,240,114
CHANNEL SELECTION SYSTEM FOR TELEVISION RECEIVER

Kiyoshi Fushimi, and Keizo Shimizu, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 23, 1978, Ser. No. 918,450
Claims priority, application Japan, Jun. 27, 1977, 52-75539
Int. Cl.³ H04N 5/44
U.S. Cl. 358—193.1 10 Claims

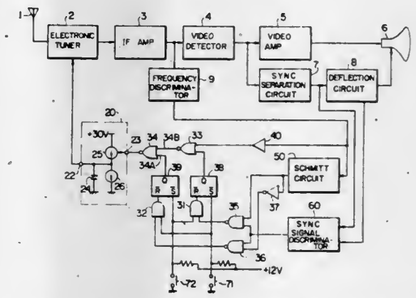


1. In a channel selection system for a television received comprising:
a tuner operatively tuned to an active station for receiving a television broadcasting signal of said tuned active station and for converting said received television broadcasting signal to a video intermediate frequency signal;
band scan means for causing said tuner to search for an active station over a predetermined television frequency band;
a voltage generator supplied with said video intermediate frequency signal for generating a voltage as a function of the frequency difference between said video intermediate frequency signal and a reference frequency; and
a sync separator for separating from said video intermediate frequency signal a sync pulse;
the improvement comprising:
a first detector connected to said voltage generator for generating a first detection signal when it detects a voltage change of said voltage from said maximum value to said minimum value, and vice versa;
a second detector connected to said sync separator for generating a second detection signal when said sync pulse is generated in said sync separator; and
a stopping means for stopping scanning a receiving frequency of said tuner and holding said receiving frequency of said tuner at the frequency said band scan means stops scanning, when all of said first and second detection signals are supplied thereto.

4,240,115
CHANNEL SELECTION VOLTAGE GENERATOR

Masanori Kamiya, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Dec. 11, 1978, Ser. No. 968,260
Claims priority, application Japan, Jul. 26, 1978, 53-90476
Int. Cl.³ H03J 7/26; H04B 1/26
U.S. Cl. 358—193.1 8 Claims



1. A channel selection voltage generator for an electronic tuner having a receiving frequency and a tuning frequency, comprising:
a frequency discriminator connectable to said electronic tuner for producing a discrimination signal, said discrimination signal having a magnitude which is at a center value when said tuning frequency and said receiving frequency are in a predetermined relationship and changes between an upper limit and a lower limit in accordance with a frequency deviation from said relationship as said tuning frequency deviates from said receiving frequency;
a sweep voltage generator including a capacitor for producing a control voltage to be supplied to said tuner for control of said tuning frequency, a first constant current source for supplying a first constant current to said capacitor to perform with respect to said capacitor one operation selected from (a) charging said capacitor and (b) discharging said capacitor, to change the voltage across said capacitor in one of (c) increasing voltage direction and (d) decreasing voltage direction, and a second constant current source for supplying a second constant current higher than said first constant current to said capaci-

tor to change the voltage across said capacitor in the other direction selected from (c) and (d); and

a control means connected between said second constant current source and said frequency discriminator for maintaining said second constant current source in one state selected from (e) an operative state and (f) an inoperative state so that said discrimination signal decreases when said discrimination signal is higher than said center value of said discrimination signal and maintaining said second constant current source in the other state selected from (e) and (f) so that said discrimination signal increases when said discrimination signal is lower than said center value, and

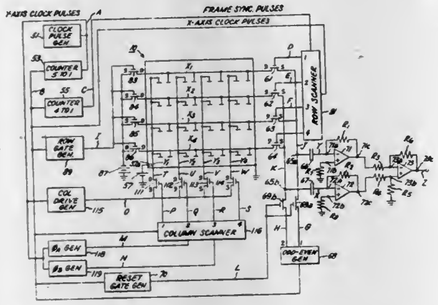
wherein said control means includes a holding means for maintaining said second constant current source in any one of (e) said operative state and (f) said inoperative state to change the voltage across said capacitor irrespective of said discrimination signal from said frequency discriminator, and a release means for releasing said holding means to cause said second constant current source to assume one of (e) said operative state and (f) said inoperative state in response to said discrimination signal when said discrimination signal reaches one of said upper limit and said lower limit as the voltage across said capacitor changes.

4,240,116

SOLID STATE IMAGING APPARATUS

Harold W. Tomlinson, Jr., Milford, Conn., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 22, 1979, Ser. No. 68,631
Int. Cl.³ H01J 39/12; H04N 3/14
U.S. Cl. 358—213 **1 Claim**



1. In combination,

a substrate of semiconductor material having a major surface,

a plurality of first conductive plates, each overlying and in insulated relationship to said major surface and forming a first conductor-insulator-semiconductor capacitor with said substrate,

a plurality of second conductive plates, each adjacent a respective first conductive plate to form a plurality of pairs of plates, said pairs of plates being arranged in a matrix of rows and columns, each of said second conductive plates overlying and in insulated relationship to said major surface and forming a second conductor-insulator-semiconductor capacitor with said substrate, each coupled to a respective first conductor-insulator-semiconductor capacitor,

a plurality of row conductor lines, the first conductive plates in each of said rows connected to a respective row conductor line,

a plurality of column conductor lines, the second conductive plates in each of said columns connected to a respective column conductor line,

a first voltage means for providing a first voltage between said row conductor lines and said substrate to deplete the first portions of said substrate lying under said first conductive plate of majority charge carriers and provide an absolute potential of a first value therein,

a second voltage means for providing a second voltage between said column conductor lines and said substrate to deplete the second portions of said substrate lying under said second conductive plate of majority carriers and providing an absolute potential of a second value therein, said second value being greater than said first value,

means for storing charge in said first and second portions of said substrate,

means for addressing each pair of adjacent rows in sequence during a respective first period of time, each row being included in two successive pairs of rows whereby each row is addressed during an initial first period and also during a succeeding first period thereof,

means for providing each of the lines of an addressed pair of rows with said first voltage during said initial first period thereof and with a zero reference potential during said succeeding first period thereof, said column lines being set at zero reference voltage at the beginning of the initial first period of a row of said addressed pair, the row line of the preceding row of said addressed pair being reduced to zero reference potential at the beginning of the initial first period of said one row causes charge in the first storage regions of said preceding row to be injected simultaneously into said substrate,

means for increasing said second voltage on each of said column conductor lines in sequence during said initial first period of said one row when the row line thereof is at said first voltage and the preceding row line of said pair is at zero reference potential to deplete a respective pair of second portions of said substrate lying thereunder of majority charge carriers to provide an absolute potential in said second portions of said second value therein whereby charge stored in said first portions of said row of said addressed pair of rows is transferred in sequence into respective second portions thereof and produces a video signal of one polarity on the row line thereof and whereby another video signal of said one polarity is produced on the preceding row line of said addressed pair,

means for decreasing said second voltage on each of said column conductor lines in sequence during an initial first period of a succeeding row of a succeeding addressed pair of rows to zero reference potential when the row line thereof is at said first voltage and said one row line is at zero reference potential whereby charge stored in the second portions of said succeeding row is transferred in sequence into respective first portions thereof and produces a video signal of opposite polarity on the row line thereof and whereby another video signal of said opposite polarity is produced on said one row line, said one row line being at said zero reference potential and each of said column conductor lines being reduced in sequence to zero reference potential causes charge in each of the second storage regions of said one row to be injected in sequence into said substrate,

means for sensing in sequence the signals induced on each of the row lines of said addressed pair during the transfer of charge from the second portions to the first portions of said substrate associated therewith,

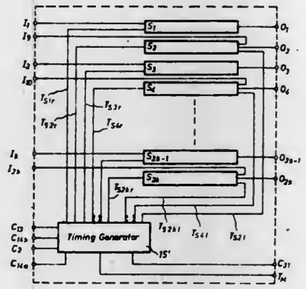
means for obtaining a difference signal for each pair of signals appearing on the row lines of said addressed pair of rows.

4,240,117

APPARATUS FOR ELECTRO-OPTICALLY RECORDING PICTORIAL INFORMATION FOR A FACSIMILE TRANSMISSION SYSTEM

Klaus Wellendorf, Kitzeberg, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Division of Ser. No. 803,143, Jun. 3, 1977, which is a continuation-in-part of Ser. No. 679,087, Apr. 21, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,913
Int. Cl.³ H04N 1/204, 1/10, 1/40
U.S. Cl. 358—296 **1 Claim**



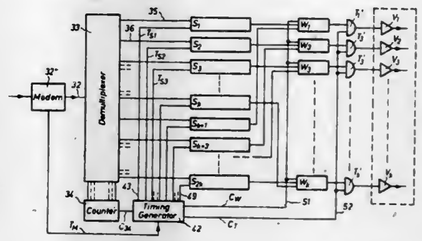
1. A facsimile system, comprising a transmitter for a picture, a scanning head, means to generate a lateral back and forth scanning motion between said scanning head and said picture and means to generate a step-by-step crossfeed motion of said scanning head relative to said picture for moving it one step after each scanning pass of said scanning head 90 degrees to the direction of said scanning motion, said scanning head comprising a plurality of photo-electronic sensing means for sensing said picture, said sensing means being arranged in a row 90 degrees to the direction of said scanning motion, whereby each element of said row reads one single picture line of a plurality of adjacent parallel picture lines covered with each pass of said scanning motion, the output signals of said row of sensing means supplied to a first group of random access memory means corresponding to the number of sensing means in which one single picture line is stored in each of said memory means and after one pass of said scanning head a second group of memory means is supplied with the signals of adjacent single picture lines during the next pass and after said scanning head has made one crossfeed step, a switch for switching the outputs of said sensing means between said first and second group of random access memory means so that the second group is loaded with the signals of the next group of adjacent single picture lines, a multiplexer receiving the outputs of said first group of memory means while said sensing means is connected to said second group of memory means and said multiplexer is alternately switched to the first and second groups of memory means by a counter, a receiver with a demultiplexer which receives input signals from said multiplexer, a third group of random access memory means receiving signals from said demultiplexer such that in each single memory means of said third group there is formed a single picture line, said third group of memory means adapted to be read out in parallel, a receiver multiple element scanning head connectible to said third group of memory means and the picture line-signal of each memory means activating one single recording element of said scanning head, a fourth group of random memory means in the receiver for storing the signals of the adjacent picture lines of the next pass for recording adjacent lines receiving the output of said demultiplexer and alternately connected to said receiver multi-element scanning head.

4,240,118

METHOD FOR ELECTRO-OPTICALLY SENSING, TRANSMITTING PICTORIAL INFORMATION

Klaus Wellendorf, Kitzeberg, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Division of Ser. No. 803,143, Jun. 3, 1977, which is a continuation-in-part of Ser. No. 679,087, Apr. 21, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,765
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1975, 2518370
Int. Cl.³ H04N 1/24, 1/10, 1/40
U.S. Cl. 358—296 **1 Claim**



1. The method of electro-optically scanning and transmitting and recording picture patterns comprising the steps of, (1) scanning said pattern with a scanning head by aligning a scanning head with k multiple sensing elements for sensing, (2) sequentially distributing for storing to a first group of shift registers the signals from said k multiple sensing elements so that individual lines are sequentially stored in different shift registers, (3) advancing said scanning head one space horizontally, (4) repeating steps 2 and 3 until each of the first group of k shift registers contain a line of information, (5) advancing the scanning head vertically to new lines, (6) advancing the outputs of said scanning head to a second group of k shift registers for storing so that as individual lines are scanned signals are sequentially stored in the second group of shift registers, (7) advancing the scanning head one space horizontally, (8) repeating steps 6 and 7 until said second group of shift registers each contain a line of information, (9) advancing the scanning head vertically to new lines, (10) repeating steps 1 through 9 until the entire pattern has been scanned, (11) sequentially transmitting the individual line information from said first group of k shift registers to a transmitting means so that the line information is serially sent over a transmitting medium while steps 6 through 9 are being performed, (12) sequentially transmitting by shifting the individual line information from said second group of k shift registers to a transmitting means so that line information is serially transmitted through a transmitting medium while steps 1–5 are being performed, (13) receiving from the transmitting medium signals representative of k lines of incomimg series information and sequentially recording by storing the signals line by line in a stored group of k shift registers until k lines are stored, (14) connecting incoming received series line information to a fourth group of k shift registers until k lines are stored, (15) while step 14 is being performed connecting said third group of k shift registers to a writing head having k writing elements for simultaneously recording k lines of information stored in said third group of k shift registers as the k element writing heads are shifted laterally across a recording meium (16) shifting the k element writing head vertically relative to the medium (17) while step 13 is being performed connecting said fourth group of k shift registers to the k element writing head for simultaneously recording k lines of information stored in said fourth group of k shift registers as the k element writing head are shifted laterally across the recording medium, and (18) repeating steps 1–5 until all transmitted information has been recorded.

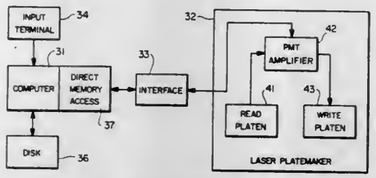
4,240,119
COMPUTERIZED LASER ENGRAVING SYSTEM AND METHOD

Lyle K. Norton, Costa Mesa; Robert J. Prichard, Anaheim, and Margit K. Ochi, Newport Beach, all of Calif., assignors to EOCOM Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 892,485, Mar. 31, 1978, abandoned. This application Jun. 5, 1978, Ser. No. 912,505

Int. Cl.³ G03F *7/02;* **G06F** *3/12*

U.S. Cl. 358—297 **8 Claims**



1. In a method for imaging data on a surface scanned by a writing beam, the steps of: scanning copy with a reading beam to form a read data signal representative of the copy, storing the read data signal in a compressed format in the memory of a computer, inputting additional data through the computer and storing a signal representative thereof in the compressed format in the computer memory, decompressing selected portions of the stored signals to provide signals representative of read beam data and computer input data to be imaged together on the writing surface, and modulating the writing beam with the decompressed signal to form an image of the selected read beam data and the selected computer input data on the writing surface.

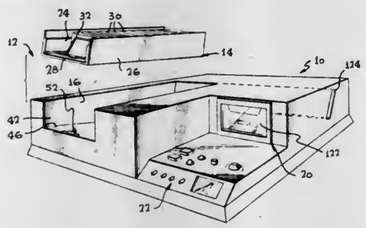
4,240,120
CASSETTE-TO-CASSETTE DUPLICATOR

Murray N. Padwa, 18710 Canasta St., Tarzana, Calif. 91356

Filed Jan. 18, 1979, Ser. No. 4,461

Int. Cl.³ G11B *5/86, 15/68*

U.S. Cl. 360—15 **22 Claims**



1. A cassette-to-cassette duplicator comprising:

a base;

a magazine assembly mounted on said base, said magazine assembly being for the sequential feeding of duplicate cassettes, each including magnetic tape, for the sequential recording of information on the magnetic tapes therein;

a changer assembly mounted on said base and positioned to receive cassettes from said magazine assembly, said changer assembly having means thereon for moving duplicate cassettes from a cassette receiving position to a cassette recording position; and

a tape transport, said tape transport including a cassette carriage into which a duplicate cassette is delivered by said changer assembly, said tape transport having a tape recording position into which said cassette carriage delivers a duplicate cassette, said tape transport also having a separate cassette playback position at which a master cassette can be played back, said tape transport having drive means for driving both the master cassette and the duplicate cassette delivered by said cassette carriage so that information pre-recorded on said master cassette can be recorded onto said duplicate cassette;

said magazine assembly comprising a magazine receiver mounted on said base and a magazine detachably mounted therein, said magazine being for containing a plurality of magnetic tape-containing duplicate cassettes for delivering them sequentially to said changer assembly, said magazine being mounted at an acute angle relative to the horizontal so said duplicate cassettes are urged by gravity toward said changer assembly at a force determined by said angle.

4,240,121
BROADBAND MAGNETIC TAPE TRANSDUCER HEAD

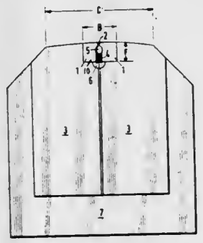
Rudolf Prochnow, Darmstadt-Eberstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 18, 1979, Ser. No. 4,382

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804380

Int. Cl.³ G11B *5/22, 5/20*

U.S. Cl. 360—122 **4 Claims**



1. Broadband magnetic tape transducer head adapted to have a magnetic tape pass over a head surface thereof to transduce signals of various frequencies comprising

a pair of pole pieces (1, 1) of magnetically active homogenious material to conduct magnetic flux therein, separated by a gap (2), the extend (B) of the pole pieces, in the direction of relative movement between the head and the tape being at least three times as long as the wave length of the lowest frequency signal to be transduced,

tape support elements (3) of wear-resistant, non-magnetic material located adjacent the pole pieces (1) to form an extended support surface with the pole pieces for tape engaging said head,

a yoke (10) connecting said pole pieces , said yoke having a minimum cross section (E) which is small with respect to the minimum cross section (D) of the pole pieces;

and a single winding (4) closely wound about said yoke (10).

4,240,122
PROTECTIVE DEVICE

John E. Smith, Cambridge, Ohio, assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 26, 1979, Ser. No. 23,960

Int. Cl.³ H02H *7/04;* **H01H** *85/02*

U.S. Cl. 361—41 **8 Claims**

1. A protective device comprising:

a support affixed to the outer wall of an enclosure and extending therein;

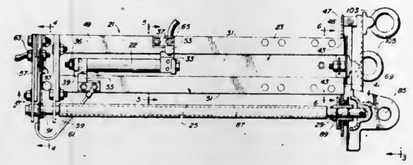
a removable fuse holder movably mounted on said support and bearing a fuse which may be replaced, said fuse holder being removable from the enclosure without generally exposing the interior of said enclosure;

stationary contacts mounted on said support to be engaged by movable contacts on said fuse holder when said fuse holder is fully inserted;

a load switch affixed to said support to break the conductive path to said stationary contacts, thus ensuring that said fuse holder does not function as a switch when said fuse holder is inserted into or removed from the enclosure;

a load switch actuator for opening and closing said load switch, said load switch actuator mounted on said support and extending to a point outside the enclosure; and

a handle for said load switch actuator mounted on the end of said load switch actuator outside the enclosure, a lock portion of said handle adapted to engage said fuse holder when said load switch is closed to provide an interlock to prevent insertion or removal of said fuse holder unless said load switch is open.



4,240,123
POWER BREAKER SYSTEM

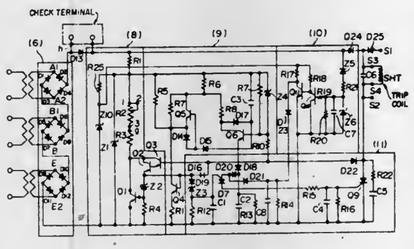
Shigenori Hotta, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,729

Claims priority, application Japan, Aug. 8, 1978, 53-108725[U]

Int. Cl.³ H02H *3/093*

U.S. Cl. 361—96 **5 Claims**



1. In a power breaker system comprising a main breaker connected to a power source; a plurality of feeder circuit breakers connected between said main breaker and each of plural loads so as to break selectively only the feeder circuit breaker in a fault circuit when a load short-circuit is caused, an improvement which comprises a long-timing breaking delay circuit and a short-timing breaking delay circuit for delaying the total circuit breaking time by a trip mechanism of said main breaker and a current limiting device for limiting a fault current below a predetermined level, said short-timing breaking delay circuit being comprised of a Zener diode and a transistor both of which are in the on-state when a fault current passing through said main breaker increases over a predetermined level, said short-timing breaking delay circuit further including a capacitor that is charged by the output from said transistor to provide an actuating signal to said trip mechanism; said long-timing breaking delay circuit being comprised of a Zener diode, first and second switching means and a capacitor, said first switch means being operable and said second switch means being inoperable when a normal current is passed through said main breaker, said first switch means being inoperable and said second switch means being operable when a fault current passing through said main breaker decreases under a predetermined level; said capacitor of said long-timing breaking delay circuit being charged by an output from said second switch means to provide an actuating signal to said trip mechanism.

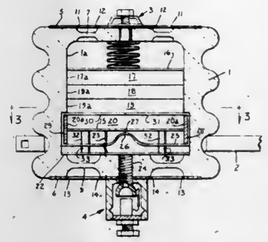
4,240,124
SURGE ARRESTER HAVING COAXIAL SHUNT GAP

Arthur C. Westrom, Stone Mountain, Ga., assignor to Kearney-National Inc., Atlanta, Ga.

Filed Jun. 1, 1979, Ser. No. 44,559

Int. Cl.³ H02H *3/22, 9/04*

U.S. Cl. 361—127 **9 Claims**



1. An electric surge arrester comprising a housing, a plurality of stacked varistor blocks in said housing, a pair of terminals extending through apertures formed in said housing and respectively connected to the end ones of said stacked varistor blocks, an electrode disposed in spaced coaxial alignment with said stacked blocks and interposed between one of said terminals and the adjacent one of said varistor blocks to establish a gap between said electrode and the adjacent part of said adjacent one of said varistor blocks, and shunt means interconnected with said electrode and with a part of said adjacent block remote from said electrode so as to provide a by-pass shunt circuit around said adjacent varistor block in coordination with the development of an overvoltage surge condition and the establishment of an arc across said gap.

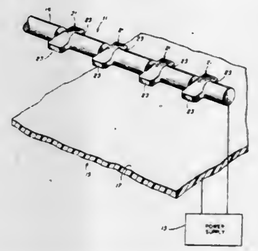
4,240,125
CORONA GENERATING ELEMENT

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corp., Bedford, Mass.

Continuation-in-part of Ser. No. 898,730, Apr. 24, 1978, abandoned. This application Apr. 11, 1979, Ser. No. 28,641

Int. Cl.³ H01T *19/04*

U.S. Cl. 361—230 **30 Claims**



1. A corona generating element for use in applying a uniform electrostatic charge to the surface of a photoconductive member comprising a strand of metal wire having a plurality of identical thin portions along its length, the thickness of the thin portions being less than the thickness of the body of the wire, the thin portions being located at closely spaced intervals, each thin portion terminating in at least one edge constituting a corona emission surface, whereby, when a source of high voltage is connected to the corona generating element a corona will be generated along the edge of the thin portions and

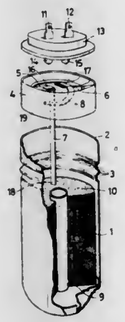
a substantially uniform corona will be generated along the length of the metal wire.

4,240,126

ELECTRIC CAPACITOR CONSTRUCTED TO PREVENT EXPLOSION

Enrico Sanvito, Monza, Italy, assignor to ICAR Industria Condensatori Applicazioni Elettroelettroniche S.p.A., Milan, Italy

Filed Feb. 16, 1979, Ser. No. 12,815
Int. Cl.³ H01G 1/11
U.S. Cl. 361—274 **6 Claims**



1. An electrical capacitor comprising:
a generally cup-shaped casing;
a plurality of capacitor plates having dielectric material therebetween disposed in said casing, said plates forming a plate assembly having opposite ends;
an annular member disposed in said casing above said capacitor plate plate assembly and having a peripheral wall which abuts the casing along the peripheral length of said wall;
first and second resilient support members projecting generally radially inward from said peripheral wall of said annular member, said members being resiliently moveable toward said capacitor plate assembly;
first and second conductors supported by said first and second support members, respectively, in contact with respective ends of said capacitor plate assembly;
a cover closing the upper end of said housing above said annular member;
first and second terminals supported by said cover in pressure contact with said first and second conductors, respectively, to urge the conductors toward the capacitor plate assembly by resiliently bending said resilient support members; and
axially deformable wall section means forming a part of said housing disposed between said cover and said annular member for elongated said part of said housing in response to internal pressurization in said housing, the resulting elongation being sufficient to move said cover away from said annular member and remove said terminals from contact with said conductors.

4,240,127

METALLIZED FILM CAPACITOR AND METHOD OF MANUFACTURE

William J. Fanning, Glen Ellyn, and Otto T. Masopust, Jr., Cicero, both of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,182
Int. Cl.³ H01G 1/015
U.S. Cl. 361—304 **28 Claims**

1. A rolled film capacitor blank, which comprises:
a pair of convoluted films, each having a metal coated surface engaging a non-metal coated surface of the other film;
each of said films having a non-coated continuous linear area formed in and running along the length of each of the respective metallized surfaces wherein the continuous non-coated areas on each of the respective films are in overlaying positions on the core and peripheral convolutions and the continuous non-coated areas on each of the respective films extend to and run along opposed margins of the respective films for the remainder of the convolutions.



4,240,128

ALUMINUM CATHODE FOIL FOR ELECTROLYTIC CAPACITORS INCLUDING A COPPER CONTENT CONTENT

Leendert G. Van Alphen, Nijmegen; Justinus W. H. G. Slakhorst, Hengelo, and Pieter M. Vogel, Zwolle, all of Netherlands, assignors to Aluminium Industrie Vaassen B.V., Vaassen, Netherlands and U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 945,935
Claims priority, application Netherlands, Oct. 3, 1977, 7710775
Int. Cl.³ B01J 17/00; H01G 9/00
U.S. Cl. 361—433 **7 Claims**

1. A cathode foil of aluminum for electrolytic capacitors, characterized in that the foil consists of aluminum having a content of copper between 0.15 and 5.7 weight % and a total of contaminations of not more than 2 weight % wherein said contaminations consist of less than 1.0 weight % of iron.

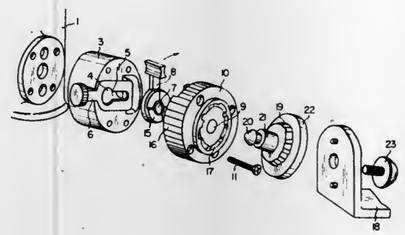
4,240,129

HOLDING DEVICE FOR ATTACHING A DEVICE SUCH AS A CAMERA BRACKET

Michio Kawazoe, 30-11 5 chome, Higashi, Narita Suginami ku, Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,474
Claims priority, application Japan, Oct. 31, 1977, 52-147020[U]
Int. Cl.² G03B 15/02
U.S. Cl. 362—3 **8 Claims**

1. A holding device for attaching a member such as a strobe grip to a camera bracket or the like which comprises a first retainer with an insertion hole in the center, a lock lever with a release hole and a locking slit which communicates with the release hole, a clamp lever with a central hole, and a second retainer with a central through-hole, and the first retainer, the lock lever, the clamp lever, and the second retainer, being arranged in the above order and the first retainer, the clamp lever, and the second retainer being secured to the member with screws, the lock lever being lengthwise controlled by a locking spring which reacts against a force pushing lengthwise on the lock lever in the release operation and controlled axially by a compression spring which presses a part of the side of the clamp lever, opposed faces of the clamp lever and the second retainer having the shape of such an inclined cam that the clamp lever can be moved against the compression spring toward the member when turning the clamp lever in the tightening direction, the second retainer being engaged with a jack so as to hold the jack, the jack being engaged with the second retainer and a pin with a head in the center thereof which is engageable with the locking slit, a bracket being attached to the jack with a screw.

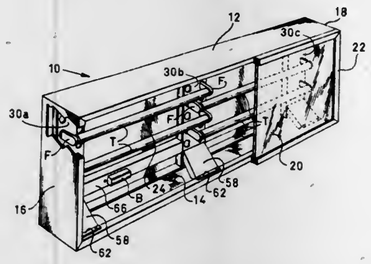


4,240,130

RACEWAY FOR SIGN BOX

Johann Stilling, Apt. A1001, 1141 Royal York Rd., Islington, Canada

Filed Mar. 13, 1978, Ser. No. 885,960
Int. Cl.³ F21S 3/00
U.S. Cl. 362—217 **13 Claims**



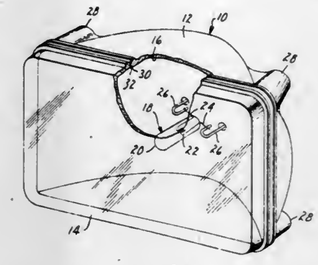
1. An electrical raceway for incorporation in a sign box to provide structural reinforcement to such sign box when incorporated therein so as to extend between spaced apart walls thereof, for the mounting of receptacles for elongated electrical lighting tubes in a plurality of different positions and for housing electrical conductors connected to such receptacles for the supply of electricity thereto and which raceway comprises;
an elongated channel having a base web with mutually spaced apart side walls projecting forwardly therefrom;
a front cover releasably secured on said channel;
side edge flanges adapted releasably to engage said side walls of said channel, and being adapted to be disposed within such a sign box between such spaced apart walls thereof with such electrical conductors disposed therewithin, and,
two mutually parallel series of electrical receptacle opening zones formed in said front cover, the zones of a first said series being adapted to have left-handed receptacles mounted therein and the zones of a second said series being adapted to have right handed receptacles mounted therein, said zones being arranged offset from one another so that elongated lighting tubes fitted in such receptacles mounted in said zone of said first said series extend across said zone of said second said series, and vice-versa.

4,240,131

SEALED LIGHTING ELEMENT ASSEMBLY

Donald E. Albrecht, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 14, 1979, Ser. No. 20,315
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 **18 Claims**



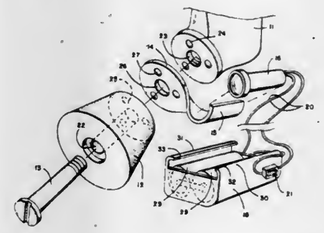
1. A sealed lighting element assembly comprising a housing and a cover therefor, at least a portion of said housing or said cover being light transmissive, said housing or said cover being adapted to support a lighting element within said assembly, said housing and said cover having cooperating portions which are joined with an actinic light cured sealant derived from an admixture of epoxy-containing material and vinyl terminated acrylonitrile-butadiene polymer.

4,240,132

ROLLER SKATE LIGHT ASSEMBLY

Bobbie L. Wickman, Thousand Oaks, Calif., assignor to Midnight Rollers Inc., Ventura, Calif.

Filed Dec. 10, 1979, Ser. No. 101,814
Int. Cl.³ F21L 15/08; A63C 17/14
U.S. Cl. 362—103 **4 Claims**



1. A light assembly for a roller skate having a skate frame with a toe stop member and threaded bolt for securing the toe stop member to the under front portion of the skate frame ahead of the front skate wheels, said light assembly including, in combination:
(a) an integral disc member having a radially outwardly extending strip portion twisted through a given angle and thence curved about an axis to define a concave shaped cradle;
(b) a lightbulb and reflector structure supported in a generally cylindrical body dimensioned to be received and secured in said cradle, said disc having a central opening so that it can be sandwiched between said toe stop and under front portion of said skate frame with said threaded bolt passing through said disc to thereby secure the disc to the skate frame, said given angle of twisting of said strip

portion being such that the axis of said cradle and cylindrical body supported therein is generally horizontal when said skate is level; and,

(c) battery means for energizing said light bulb to thereby provide a light for said roller skate which can be secured to and removed from said roller skate without having to make any alterations in the structure of said roller skate.

4,240,133

QUASIMONOCHROMATIC LIGHT SOURCE

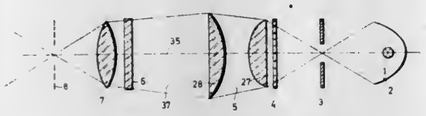
Diether Haina, Hähnlein; Willi Poth, Rossdorf, and Wilhelm Waidelich, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen-und Umweltforschung mbH, München, Neuherberg, Fed. Rep. of Germany

Filed Apr. 19, 1978, Ser. No. 897,865

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717233

Int. Cl.³ F21V *9/00, 29/00*

U.S. Cl. 362—293 **8 Claims**



1. In a light source producing an exit beam of high energy density and including a lamp with a cold light mirror, a heat protection filter in the path of the beam produced by the lamp, and means for cooling the heat protection filter, the improvement comprising: an interference filter disposed in the beam path; and projection optics disposed in the beam path downstream of said heat protection filter, with respect to the direction of the beam; and wherein said means for cooling comprise an axial ventilator arranged to transport a steady stream of cooling air from the downstream end to the upstream end of said condenser while brushing over the surface of one side of said heat protection filter and flowing past said lamp with its cold light mirror, and said interference filter is disposed in said optics and downstream of said heat protection filter; whereby said source produces nearly monochromatic radiation.

4,240,134

SWITCHING REGULATOR

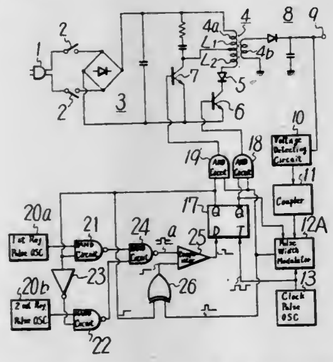
Hiroshi Nakazawa, Kawagoe, and Yasuharu Baba, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,389

Claims priority, application Japan, Apr. 17, 1978, 53/44994

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **10 Claims**



1. In a switching regulator including a DC voltage source having first and second DC output terminals, a switching transformer having a magnetic core, first and second primary windings and a secondary winding, a first switching transistor connected in series between said first and second DC output terminals through said first primary winding, a second switching transistor connected in series between said first and second DC output terminals through said first and second primary windings, rectifying means connected across said secondary winding, a load connected to said rectifying means, a clock pulse oscillator having two outputs, a pulse width modulator supplied with both outputs of said clock pulse oscillator and said rectifying means so as to produce a PWM control signal the duty of which is proportional to the voltage of said rectifying means; and switching means for selectively supplying said PWM control signal to one of said first and second switching transistors in response to the circumstances of said load; said switching regulator further comprising control means for narrowing the duty of said PWM control signal when said switching means is operated to supply said PWM control signal from one of said first and second switching transistors to the other so as to eliminate an excessive drive to the other of said switching transistors.

4,240,135

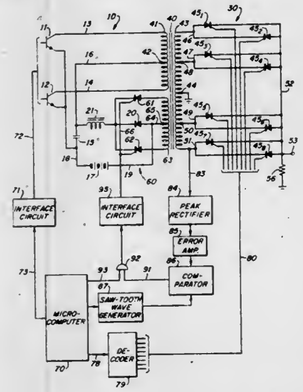
REGULATED CYCLOCONVERTER CIRCUIT

Edwin M. Schaefer, III, North Aurora, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 29, 1979, Ser. No. 42,804

Int. Cl.³ H02M *7/48*

U.S. Cl. 363—43 **5 Claims**



1. A power supply circuit comprising an inverter circuit means comprising a pair of circuit loops each including one-half of a primary winding of a transformer, a first common conducting path connected at one end to a center-tap of said primary winding, said first common conducting path including a direct current battery source, and first switching means for alternately connecting the other end of said first common conducting path in each of said loops; cycloconverter circuit means comprising a bank of second switching means connected to predetermined taps of a first secondary winding of said transformer, and first control means for selectively energizing said second switching means for selecting voltages of a first and a second, higher magnitude appearing on said first secondary winding; regulator circuit means comprising voltage monitoring circuit means associated with said first secondary winding for generating output signals indicative of voltage magnitudes appearing on said first secondary winding, a pair of circuit loops each including one-half of a second secondary winding of said transformer, a second common conducting path including a segment of said first common conducting path connected at one end to a center-tap of said second secondary winding, and third switching means for connecting said halves of said second secondary winding to the other end of said

segment of said first common conducting path; comparator circuit means operated responsive to said output signals for generating error signals of a duration representative to said voltage magnitudes appearing on said first secondary winding, second control means for controlling said third switching means operated responsive to said error signals for adding voltages on said halves of said second secondary winding to voltage outputs of said battery source, and means for energizing said second control means only when said voltages of said first magnitude are selected by said cycloconverter circuit means.

4,240,136

APPARATUS FOR INSERTING INSTRUCTIONS IN A CONTROL SEQUENCE IN A STORED PROGRAM CONTROLLED TELECOMMUNICATION SYSTEM

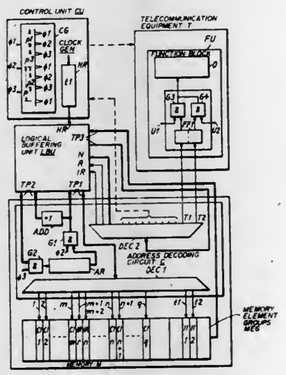
Hans O. S. Kjoller, Västerhaninge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Feb. 13, 1978, Ser. No. 876,881

Claims priority, application Sweden, Feb. 28, 1977, 7702208

Int. Cl.³ G06F *9/32, 13/00*

U.S. Cl. 364—200 **4 Claims**



1. In a stored program controlled equipment having an operating device to be controlled, a clock pulse generator for generating sequences of timing pulses wherein adjacent timing pulses within one of the sequences establishes the clock pulse period of the equipment, an addressed memory means having an address input, an instruction output and a plurality of addressed memory element groups for storing control instructions which are read in responsive to received addresses, an address generator means having an input means and an output means and being response to said timing pulses for sequentially generating said addresses of the memory element groups to be read, and an instruction decoder means having an input and a plurality of outputs for generating control signals, apparatus for introducing one of a plurality of insertion instructions at a point in the sequence of control instructions, said apparatus comprising:

a first memory element group in the memory means for storing the insertion instruction; means for storing the address of said first memory element group; and a logical buffer unit, said logical buffer unit comprising a logical switching means having first and second address inputs for receiving addresses, an output for transmitting the address received by one of the address inputs, and a control input for controlling which of the received addresses is transmitted, a buffer register means having an input for receiving information including at least the address of an instruction and an output for transmitting therefrom after a one-clock pulse period the information received at its input, means for connecting the output of said logical switching means to the input means of said address generator means, means for connecting the output means of said address generator means to the first address input of said logical switching means, means for connecting an output of the instruction decoder means to the control input of said logical switching means, means for connecting an output of the instruction decoder means to the second address input of said logical switching means, means for connecting the output means of said address generator means to the address input of the addressed memory means, means for connecting the instruction output of the addressed memory means to the input of said buffer register means, means for connecting the output of said buffer register means to the input of the instruction decoder means, controlled gating means having a control input for connecting said means for storing the address of said first memory element group to the second address input of said logical switching means, and means for connecting an output of the instruction decoder means to the control input of said controlled gating means; a second memory element group having an address at said point in the sequence of control instructions, said second memory element group storing first indicia for indicating that an insertion reference is to be performed and second indicia for indicating that the address of said first memory element group should be fetched; and a third memory element group having the next address after the point, said third memory element group storing said first indicia and third indicia for indicating the address of the next control instruction in the sequence; said decoder means decoding said first indicia to a signal fed to the control input of said logical switching means, decoding said second indicia to a signal fed to the control input of said controlled gating means, and feeding said third indicia to the second address input of said logical switching means whereby an insertion instruction is introduced into the sequence of control instructions.

4,240,137

COMPUTER FOR DIRECTLY EXECUTING A PROGRAM INCLUDING A PLURALITY OF STRUCTURED BLOCKS

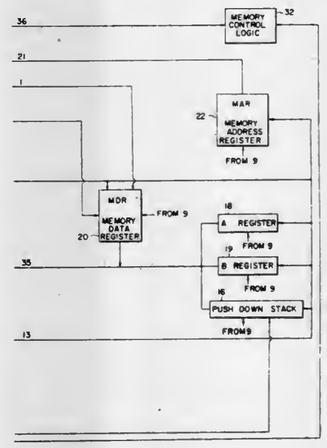
Yoshihiro Matsumoto, and Hajime Kurii, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jun. 26, 1978, Ser. No. 919,297

Claims priority, application Japan, Feb. 13, 1978, 53/14141

Int. Cl.³ G06F *9/40*

U.S. Cl. 364—200 **9 Claims**

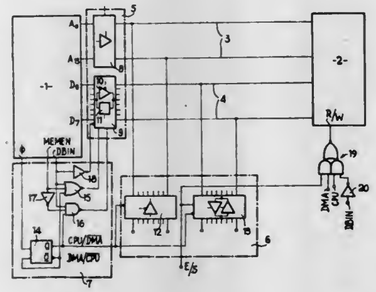


1. A computer for directly executing a program including a plurality of structured blocks, comprising:

a main memory device for storing said program;

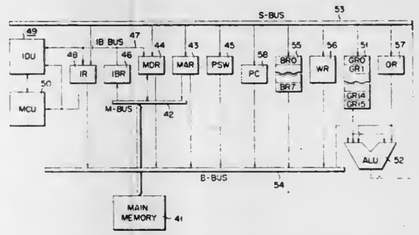
a program counter for designating an address of an instruction to be executed;
a first register for storing an entry address of a first block of said program;
a second register for storing an entry address of a second block of said program;
a push down stack for storing an entry address of a third block of said program;
means for causing said program counter to designate a predetermined address for reading an instruction from said main memory device thereby reading out from said main memory device said entry address of an instruction of the contents of either one of said first, second and third blocks of the program;
means for causing the storage of said read out entry address in said first and second registers and in said push down stack respectively;
means for unloading the content of the first register, second register, or popping up said push down stack and for storing the content of one of said first register, second register, or push down stack in said program counter; and
means for producing an instruction for popping up said push down stack and for discarding an entry address derived therefrom in response to a predetermined instruction in one of said blocks.

4,240,138
SYSTEM FOR DIRECT ACCESS TO A MEMORY ASSOCIATED WITH A MICROPROCESSOR
Gerard Chauvel, Cagnes-sur-Mer, France, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 3, 1978, Ser. No. 948,284
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **2 Claims**



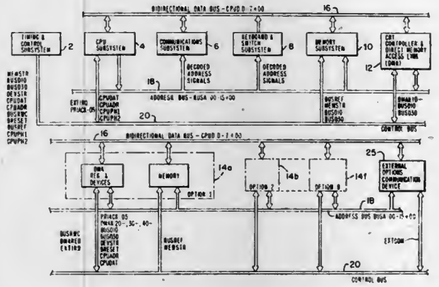
1. A data processing system comprising:
memory means for providing the contents of memory locations therein a predetermined response time after receiving the location addresses thereof;
data processing means for providing, during a first memory access period, a primary access control signal and a first memory location address, and for receiving, during a consecutive, second memory access period, the contents provided by the memory means in response thereto, the first and second memory access periods being at least equal to the response time of the memory means;
buffer interface circuit means for
applying, in an enabled condition, a memory location address provided by said data processing means to said memory means and for receiving the contents provided by the memory means in response thereto, and for providing, in a disabled condition, the received contents to the data processing means;
direct access interface means for applying, in an enabled condition, a received second memory location address to the memory means, and for receiving and providing, in the enabled condition, the contents provided by the memory means in response thereto; and
data flow control means for receiving the primary access control signal and an asynchronous, secondary access control signal, for enabling only said direct access interface means for at least said response time in response to receiving only the secondary access control signal, and for enabling said buffer interface means for at least said response time in response to receiving the primary access control signal.

4,240,139
ADDRESS GENERATING SYSTEM
Yasuo Fukuda, Higashimurayama; Michio Arai, Kawasaki, and Hidemi Yamamoto, Kunitachi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Sep. 14, 1978, Ser. No. 942,452
Claims priority, application Japan, Sep. 22, 1977, 52-113233; Sep. 22, 1977, 52-113234
Int. Cl.³ G11C *8/00*
U.S. Cl. 364—200 **9 Claims**



1. In a data processor having a main memory; a memory address register which is connected to said main memory through a memory bus and to a source bus and in which an address to access said main memory is latched; a memory data register which is connected through the memory bus to said main memory and to the source bus and in which data read out from said main memory or to be loaded into the same is latched in accordance with the address latched in said memory address register; a program status word which is connected to the source bus and a destination bus and in which interrupt levels and condition flags are set; wherein the improvement comprises:
an instruction buffer register which is connected through the memory bus to said main memory and stores an instruction read out from said main memory, said instruction including a plurality of address modification fields and a field for selecting one of these address modification fields;
an instruction register which is connected through an instruction buffer bus to said instruction buffer register and stores the instruction;
instruction judging control means which is connected through the instruction buffer bus to said instruction register and judges the instruction stored in said instruction register to produce microinstructions corresponding to the instruction;
microprogram control unit connected to said instruction judging control means to control the microinstructions outputted from said instruction judging control means;
a working register connected to the source bus and the destination bus and used as a temporary buffer in execution of the microinstructions; and
address modifying means for performing a desired address modification on the basis of the result of judgment by said instruction judging control means as to the field for selecting either of the address modification fields.

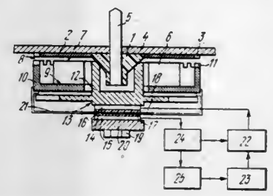
4,240,140
CRT DISPLAY TERMINAL PRIORITY INTERRUPT APPARATUS FOR GENERATING VECTORED ADDRESSES
John P. Stafford, Nashua, N.H.; Minoru Inoshita, Glendale, Ariz., and Gerald N. Winfrey, Billerica, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Dec. 26, 1978, Ser. No. 973,462
Int. Cl.³ G06F *9/36, 9/46*
U.S. Cl. 364—200 **5 Claims**



1. A cathode ray tube display terminal system comprising:
a system bus;
a memory subsystem, including a plurality of memory locations for storing a plurality of interrupt routines, coupled to said system bus;
a central processor subsystem coupled to said system bus and to said memory subsystem including central processor means for generating interrupt address signals indicative of a memory location of said memory system;
a first plurality of peripheral subsystems coupled in common to said system bus, to said central processor subsystem and to said memory subsystem, each of said first plurality of peripheral subsystems including means for generating a unique interrupt request signal in a first state when requesting access to said memory subsystem; and,
said central processor subsystem including interrupt means responsive to said unique interrupt request signal in said first state from a selected one of said first plurality of peripheral subsystems having a predetermined priority for modifying said interrupt address signals, said modified interrupt address signals being indicative of a first starting address location referencing a selected one of said plurality of interrupt routines for processing the interrupt request of said selected one of said first plurality of peripheral subsystems by said central processor subsystem.

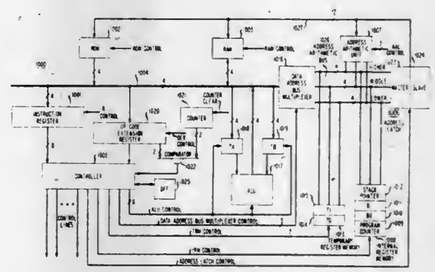
4,240,141
VIBRATION MOTOR
Petr E. Vasiliev, ulitsa Ugnyagyasju, 9, kv. 17, Vilnjus; Vladimir S. Dvornin, derevnya Pagirai, 8, kv. 13, Vilnjussky raion; Alexandr V. Kondratiev, prospekt Kosmonavtov, 43, kv. 72, and Vladimir F. Kravchenko, ulitsa Venuolisa, 4, kv. 12, both of Vilnjus, all of U.S.S.R.
Filed Apr. 27, 1979, Ser. No. 34,016
Int. Cl.³ H02K *33/00*
U.S. Cl. 318—114 **4 Claims**

1. A vibration motor comprising: a concentrator of torsional vibrations; a rotor held firmly against the end face of said concentrator; a magnetic field source located under said rotor at the side of said concentrator and having a power sufficient to hold said rotor in tight contact with said concentrator a magnetic circuit enclosing said magnetic field source; a movable part of said magnetic circuit, rigidly attached to said rotor and fashioned as a disk; slots equispaced along a circumference of said disk; a stationary part of said magnetic circuit, separated from said movable part thereof by an air gap and encircling said magnetic field source; peripheral slots in said stationary part, which are identical to said disk slots and arranged opposite to them; said magnetic field source and magnetic circuit forming a rotational speed pickup for said rotor; a piezoelectric cell unit adjoining said concentrator; a high-frequency electric oscillator whose output is connected with said piezoelectric



cell unit; and adjustable d-c power supply source whose output is connected with the input of said oscillator; a frequency detector whose output is connected with the input of said d-c power supply source and whose input is connected with the output of said rotor speed pickup.

4,240,142
DATA PROCESSING APPARATUS PROVIDING AUTOINCREMENTING OF MEMORY POINTER REGISTERS
Donald E. Blahut, Holmdel; David H. Copp, Morristown, and Daniel C. Stanzione, Marlboro, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 29, 1978, Ser. No. 974,361
Int. Cl.³ G06F *9/32*
U.S. Cl. 364—200 **2 Claims**



1. A CPU of a data processing system designed for executing a program of stored instructions through a sequence of instruction cycles, the CPU including means for retrieving stored instructions and data comprising operands and op-code extension words from memory means, the memory means having a multiplicity of memory locations each having a distinct address; a plurality of memory pointer registers, each for storing an address of a memory location containing data; an op-code extension register for storing an op-code extension word; means for transferring a retrieved op-code extension word to the op-code extension register, the op-code extension register having designated bit positions each corresponding to a different one of the memory pointer registers, the contents of the op-code extension register being changed only when the CPU executes an instruction for transferring a newly selected op-code extension word to the op-code extension register; and means responsive to the contents of the designated bit positions of the op-code extension register for adding during an instruc-

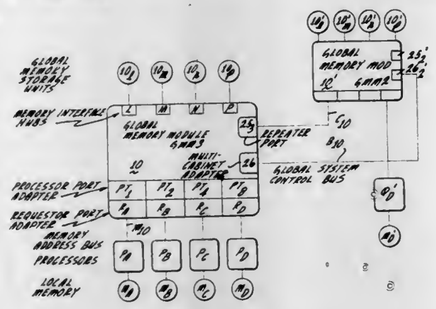
tion cycle a fixed quantity to each address stored in memory pointer registers having corresponding designated bit positions containing a first binary state and leaving unaltered each address in memory pointer registers having corresponding designated bit positions containing a second binary state.

4,240,143

HIERARCHICAL MULTI-PROCESSOR NETWORK FOR MEMORY SHARING

John O. Besemer, Cerritos, Calif., and Clifford J. Bellamy, Malvern, Australia, assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 22, 1978, Ser. No. 972,431
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **11 Claims**



1. In a network for the coupling of processor-groups, forming a system "III" to processor-groups forming a system "II", to processor-groups forming a system "I", to processor-groups forming a system "0", and wherein each of said processor-groups includes processors having individual bus connections to a common memory-communication-coupling module unique to that system to form a single system "X", and wherein a plurality of memory-communication-coupling modules of systems X . . . II, I, 0 are interconnected in order to establish higher level and lower level systems whereby processors in higher level systems are master over processors in lower level systems, thus to establish a hierarchy of systems, and wherein said memory-communication-coupling modules in each system have memory storage units which are organized to provide a numerically hierarchical system of address values wherein each higher level system will have memory storage units with addresses of a higher number than the memory storage units in lower level systems, the network comprising:

(a) a plurality of memory-communication-coupling modules connected to form upper and lower level systems of processors and memories, each of said memory-communication-coupling modules including:

(a1) a memory controller for controlling access to memory storage units and including:

(a1-1) a plurality of interface hub means, each hub means interfacing a discrete memory storage unit;

(a1-2) a plurality of discrete memory storage units organized to have sequentially increasing unit numbers (i) and wherein each unit provides memory locations having addresses which increase sequentially in value from lower numbered (i-1) memory storage units;

(a1-3) a repeater port means for conveying memory request addresses which are greater in value than the highest memory address available in the memory storage units of a coupling module;

(a2) a plurality of input port means individually connected to a plurality of processors, each of said input port means including:

(a2-1) a requestor port adapter for each connected processor for transmitting memory request signals and commands from the connected processor to said memory controller in said memory-communication-coupling module;

(a2-2) a processor port adapter for each connected processor for transmitting system control signals from the connected processor to a system controller in said memory-communication-coupling module;

(a3) a repeater bus connected to said repeater port means for transmitting, to an upper level system, memory addresses having larger values than those available in a coupling module;

(a4) a system controller for controlling data transmission and communications between processors;

(b) a plurality of processors, each of which includes its own local memory, each of said processors being exclusively connected to one of said input port means of said memory-communication-coupling module and designated as a local processor to that communication-coupling module, and wherein a group of processors connected to a common memory-communication-coupling module form a system;

(c) a system control bus connected to said system controller for communicating control signals to/from the system controller of a higher level memory-communication-coupling module;

(d) means to permit the sharing, by at least two processors, of the same memory storage unit (i), said means to permit sharing including:

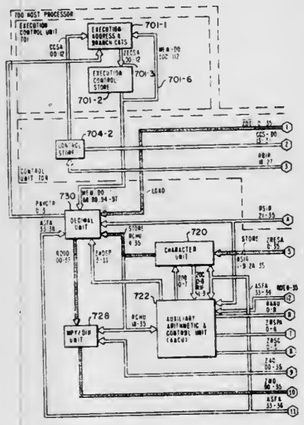
(d1) access register means in each of said processor port adapters wherein said access register means is programmed to determine which address locations in a selected memory storage unit in the hierarchy may or may not be read from, or be written into, by the requesting processor connected to the port adapter holding that particular access register means.

4,240,144

LONG OPERAND ALIGNMENT AND MERGE OPERATION

Jerry L. Kindell, Glendale, and Richard T. Flynn, Peoria, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1979, Ser. No. 399
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **16 Claims**



13. A data processing system comprising:

memory means for storing operands and instrutions, each instruction including descriptor information for describing characteristics of said operands, and an operation code portion specifying a decimal numeric operation performed by said system;

decimal unit coupled to said memory means for receiving said signals indicative of said descriptor information, and also for transferring operands between said memory means and said decimal unit, in response to signals indicative of said decimal numeric instruction;

executing means coupled to said decimal unit for receiving a first and a second operand of said operands for performing an operation specified by said decimal numeric instruction and generating long operand words for transfer to said decimal unit in response to signals indicative of said decimal numeric instruction;

said decimal unit being responsive to said decimal numeric instruction signals for generating start write signals and send data signals;

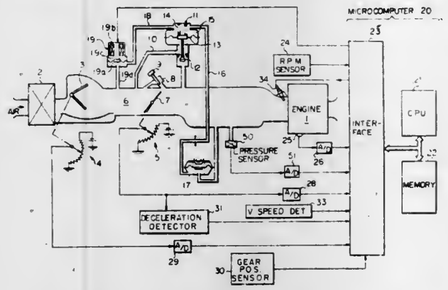
said executing means being responsive to said send data signals for sending said long operand words to said decimal unit and said memory means being responsive to said start write signals for receiving said long operand words from said decimal unit.

4,240,145

CLOSED LOOP CONTROLLED AUXILIARY AIR DELIVERY SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tsuneomi Yano, and Haruo Yuzawa, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 30, 1978, Ser. No. 965,467
Claims priority, application Japan, Dec. 1, 1977, 52/143309; Dec. 1, 1977, 52/143310
Int. Cl.³ G06F *7/70*; F02M *23/06, 23/08*
U.S. Cl. 364—431 **10 Claims**



1. A method for controlling an internal combustion engine having a main air intake passage for introducing air into said engine, a throttle control valve in said main air intake passage, an auxiliary air intake passage for partially passing air from an upstream side to a downstream side of said throttle control valve, a second control valve in said auxiliary passage, and a vacuum pressure sensor provided downstream of said throttle control valve, the method comprising the steps of:

detecting when deceleration of said engine is started;

measuring the length of time from the occurrence of said deceleration;

sensing vacuum pressure downstream of said throttle control value with said vacuum pressure sensor;

generating a first binary signal representative of the vacuum pressure sensed by said vacuum pressure sensor;

generating a second binary signal representative of a reference intake vacuum pressure according to a function defining a desired relationship between said length of time and the intake vacuum pressure sensed by said vacuum pressure sensor;

comparing said first binary signal with said second binary signal to generate a control signal representative of the difference between said sensed vacuum pressure and said reference vacuum pressure; and

controlling said second control valve in response to said control signal to reduce the difference between said sensed vacuum pressure and said reference vacuum pressure substantially to zero.

4. A control system for use in an internal combustion engine having a main air intake passage for introducing air to said engine, a throttle control valve in said main intake passage and an auxiliary air intake passage connected to said main intake passage for partially passing air from an upstream side to a downstream sine of the throttle control valve, comprising:

an engine deceleration detector for detecting when deceleration of said engine is started;

means for detecting intake vacuum pressure in said main intake passage downstream of said throttle control valve;

a programmed microcomputer responsive to said deceleration detector and said vacuum pressure detecting means and operative for

detecting a difference between said detected vacuum pressure and a reference vacuum pressure from a function defining a desired relationship between the length of time from the occurrence of said engine deceleration and the intake vacuum pressure in said main intake passage at the downstream side of said throttle control valve; and

generating a control signal representing said difference; and

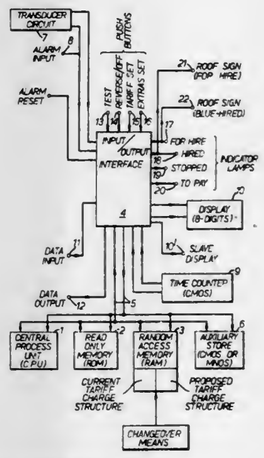
means provided in said auxiliary air intake passage for controlling the air passing therethrough in response to said control signal to reduce said difference substantially to zero.

4,240,146

INDICATING DEVICES

Christopher W. Iles, Newton Ferrers, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed May 26, 1978, Ser. No. 843,748
Int. Cl.³ G07B *13/00*
U.S. Cl. 364—467 **11 Claims**



1. A taximeter comprising:

processing means for calculating a taxi fare;

random access memory means having first and second memory areas for storing tariff information;

date input means operable under the control of the processing means for loading the first memory area with said tariff information relating to a first tariff and for loading the second memory area with said tariff information relating to a second tariff;

coupling means for coupling the first memory area with the processing means so as to enable the processing means to calculate a taxi fare in accordance with the first tariff; and

changeover means operable in response to a predetermined

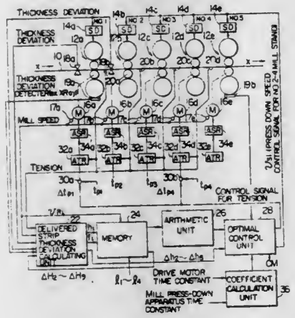
command signal for coupling the processing means with the second memory area so as to enable the processing means to calculate thereafter a further taxi fare in accordance with the second tariff.

4,240,147

GAUGE CONTROL METHOD AND SYSTEM FOR ROLLING MILL

Yasuo Morooka; Shinya Tanifuji, and Shigemichi Matsuka, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 780,788, Mar. 24, 1977, abandoned. This application Jun. 7, 1978, Ser. No. 913,455
Claims priority, application Japan, Mar. 26, 1976, 51-33294
Int. Cl.³ G06F *15/46*; B21B *37/12*
U.S. Cl. 364—472 **13 Claims**



1. A system for minimizing deviations in the delivered strip thickness in a tandem rolling mill, comprising:

means for sampling one of thicknesses and thickness deviations of the strip at the entry and delivery sides of each rolling stand of the tandem mill during rolling operation with a predetermined sampling period;

a calculating unit for determining the time rate of change of the incoming thickness of the strip at each rolling stand as a function of the sampled values thereof and the sampling period;

an optimal control unit receiving the outputs of said sampling means and said calculating unit for determining an optimal value of a control parameter for mill operation effective to control the delivery thickness of the strip at each rolling stand, the optimal value satisfying a predetermined evaluating function which is a function of at lease one of the time rate of change of the incoming thickness, the delivery thickness and thickness deviation of the strip at each rolling stand, and said control parameter; and

means for controlling the mill operation on the basis of said optimal value determined for each rolling stand.

8. A method for controlling the strip thickness out of a tandem rolling mill to a desired value, comprising the steps of:

sampling one of thicknesses and thickness deviations of the strip at the entry and delivery sides of a respective mill stand of the tandem rolling mill during rolling operation with a predetermined sampling period and generating electrical signals in accordance therewith;

determining the time rate of change of the incoming thickness of the strip at respective mill stands as a function of the generated electrical signals of the sampled values thereof and the sampling period and generating electrical signals in accordance therewith;

obtaining optimal values of control variables at respective mill stands in response to the generated electrical signals of the time rate of change of thickness of the strip and generating electrical signals in accordance therewith, the values being obtained for satisfying a predetermined evaluating function; and

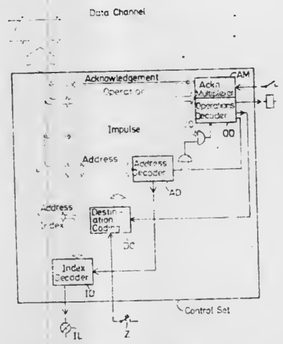
automatically controlling the tandem rolling mill in response to the generated electrical signals of the optimal values obtained so as to maintain the optimal values and minimize deviations in the delivered strip thickness.

4,240,148

CENTRALLY CONTROLLED CONVEYOR SYSTEM

Ferdinand Thoma, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,874
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748448
Int. Cl.³ G06F *15/20*; B65G *43/00*
U.S. Cl. 364—478 **11 Claims**



1. A conveyor system comprising a dispatching and receiving station having

(a) a station-individual control set, control and signal devices for the station coupled with said control set, a multiconductor address line and an acknowledgement line coupled with the control set, said control set having a destination selection device,

(b) address decoding means comprising an address decoder for receiving station individual address information from the address line and for comparing the same with an assigned individual address for identifying said station, said address decoding means being operable for responding to the received address information when coincidence is present with respect to said assigned individual address for enabling coupling with the acknowledgement line,

(c) an operation decoder which can be switched ready for operation by means of an actuation signal from the address decoder, a multiconductor control line for coupling with the operation decoder when switched ready for operation for rendering said operation decoder effective, after receipt of operation information from the control line, to effect a destination information transfer operation,

(d) a destination selection device connected to the address line in parallel with the assigned address decoder for the transmission of destination information identifying a desired receiver station to the address line,

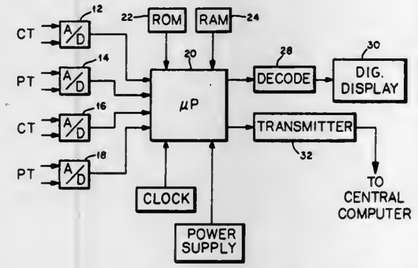
(e) said station being responsive to address information in accordance with transmitted destination information on the address line, and said operation decoder being responsive to operation information from the control line for actuating said control and signal devices in effecting conveyor processes to and from said station.

4,240,149

MEASURING SYSTEM

David L. Fletcher, and Walter O. Stadlin, both of North Wales, Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Feb. 16, 1979, Ser. No. 12,632
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—483 **5 Claims**



1. The method for measuring a parameter whose value is calculable as the integral with time of a function of at least one variable which has a value following a periodic wave form, comprising the steps of:

sampling the value of said variable periodically at a frequency asynchronous with said wave form; and

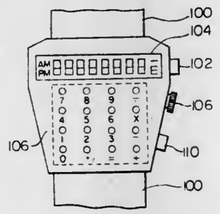
periodically calculating the value of the integral of the function in accordance with the sum of the values for the function determined in accordance with the values of all of the samples taken during the time between said calculations.

4,240,150

PORTABLE TIMEPIECE CALCULATOR WITH POWER SAVINGS FEATURE

Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and Takashi Yamada, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1978, Ser. No. 885,733
Claims priority, application Japan, Mar. 15, 1977, 52/27595; Mar. 18, 1977, 52/30026; Mar. 23, 1977, 52/31833; Apr. 18, 1977, 52/44251
Int. Cl.³ G06F *7/48, 15/02*; G04B *19/30*
U.S. Cl. 364—705 **1 Claim**



1. A portable timepiece calculator, comprising: an oscillator circuit for providing a time base signal;

a timing pulse generator for generating pulses in response to said time base signal;

a keyboard having numeric keys and functions keys, for supplying key input signals when actuated;

a frequency divider for providing a standard time signal in response to said time base signal;

an interrupt signal generation circuit responsive to said standard time signal and said key input signals, respectively, for generating an interrupt signal;

an address selection circuit responsive to said interrupt signal for generating a timekeeping operation address signal and a calculation operation address signal;

a control circuit responsive to said timekeeping operation address signal and said calculation operation address signal for generating a first control signal and a second control signal, respectively, said control circuit being responsive to said key input signals and said calculation operation address signal for enabling the supply of said time base signal to said timing pulse generator, for thereby enabling the operation of said timing pulse generator;

calculation circuit means responsive to said timing pulses and said key input signals to perform a calculation and provide calculated data;

an hours, minutes and seconds register and a calculation register for storing hours, minutes and seconds information and said calculated data, respectively;

a selector responsive to said first control signal to connect said hours, minutes and seconds register with said calculation circuit means to provide a first loop in which time information is circulated, said selector responsive to said second control signal to connect said calculation register with said calculation circuit means to provide a second loop in which calculated data is circulated; and

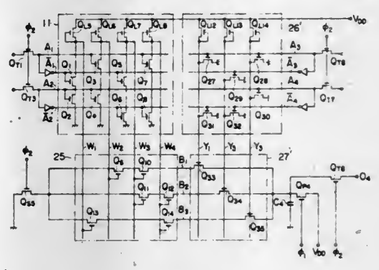
a display device responsive to said time information and said calculated data to provide displays of said time information and said calculated data.

4,240,151

SEMICONDUCTOR READ ONLY MEMORY

Hiroto Kawagoe, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Continuation of Ser. No. 656,854, Feb. 10, 1976, abandoned. This application Jan. 25, 1978, Ser. No. 875,012
Claims priority, application Japan, Feb. 10, 1975, 50-16280
Int. Cl.³ G11C *17/06*
U.S. Cl. 365—104 **34 Claims**



14. A logic circuit comprising:

a plurality of field effect transistors being selectively arrayed along a plurality of rows and columns so that the transistors arrayed along the each row are connected in series with one another between a common output terminal and another common terminal;

a plurality of row address lines, for applying a row address signal in accordance with a row address code pattern, being arrayed along prescribed ones of said plural columns at any one of which said each row has at least one selection field effect transistor of said plural field effect transistors, respective ones of said plural row address lines being connected to the gates of said selection transistors at said respective rows in accordance with said row address code pattern so that said at least one selection field effect transistor at only one of said plural rows is allowed to become conductive in response to said row address signal; and

a plurality of column address lines, for applying a column address signal in accordance with a column address code pattern, being arrayed along the others of said plural columns at which said each row has the memory field

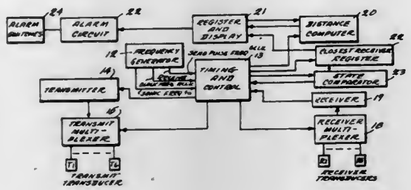
effect transistors other than said at least one selection field effect transistor of said plural field effect transistors, respective ones of said plural column address lines being connected to the gates of said memory transistors in accordance with said column address code pattern to apply said column address signal.

4,240,152

OBJECT INDICATOR FOR MOVING VEHICLES

Robert L. Duncan, P.O. Box 887, Radford, Va. 24141, and Paris H. Wiley, 205 Maywood St., Blacksburg, Va. 24060

Filed Jun. 15, 1978, Ser. No. 915,728
Int. Cl.³ G01S *15/42, 15/93*
U.S. Cl. 367—108 **14 Claims**



1. A system for locating and determining the distance of a first object with respect to a receiver transducer mounted on a reference object using ultrasonic wave pulses comprising:

(a) at least three transducers; wherein at least two of said three transducers operate as receiver transducers and at least one of said three transducers operates as a transmitter transducer; and

(b) means for sequentially activating each of said transducers such that each pair of one transmitter transducer and one receiver transducer pair is activated for a period of time commensurate with the range of the system prior to activating another transmitter transducer and receiver transducer pair; and

(c) means for simultaneously determining distance and location of said object with respect to said transducers including means for identifying the transmitter transducer of that one said transmitter transducer and receiver transducer pair which is activated which is receiving an ultrasonic wave return pulse from said first object within said range of the system and means for automatically calculating at which one of a plurality of discrete different distances within said range at which said first object is positioned relative to said one of said transmitter transducer and receiver transducer pairs which is activated, based upon elapsed time between the activation of one transmitter transducer and receiver transducer pair and said ultrasonic wave pulse return.

4,240,153

BIORHYTHM DISPLAY DEVICE

Raymond L. Merritt, 32 Lakeside Dr., Little Rock, Ark. 72204

Filed Feb. 13, 1978, Ser. No. 877,574
Int. Cl.³ G04B *19/24, 19/02;* G06C *3/00;* G09D *3/00*
U.S. Cl. 368—28 **4 Claims**

1. A biorhythm calculating and display device comprising;

a first endless belt marked with a sinusoidal pattern for indicating a physical biorhythm function;

a second endless belt marked with a sinusoidal pattern for indicating the emotional biorhythm function;

a third endless belt marked with a sinusoidal pattern for indicating the intellectual biorhythm function;

said first, second and third belts comprising thereof overlying one another throughout a substantial portion of the length of each belt to thereby provide a composite biorhythm display image;

a viewing area in which said composite biorhythm image is visibly disposed;

means for illuminating said viewing area;

first spool means for suspending and rotating said first belt;

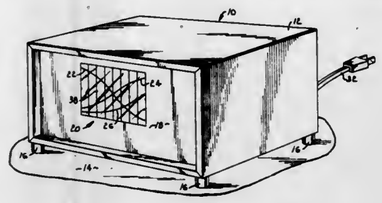
second spool means for suspending and rotating said second belt;

third spool means for suspending and rotating said third belt;

spring biased means for tensioning each of said first, second and third belts;

motor means for powering the calculating and display device;

first manually adjustable gear means operable in a first position to couple said first spool means to said motor means



and operable in a second position to disengage said first spool means from said motor means and to synchronize said first belt with the physical biorhythm function of an individual;

second manually adjustable gear means operable in a first position to couple said second spool means to said motor means and operable in a second position to disengage said second spool means from said motor means and to synchronize said second belt with the emotional biorhythm function of an individual; and,

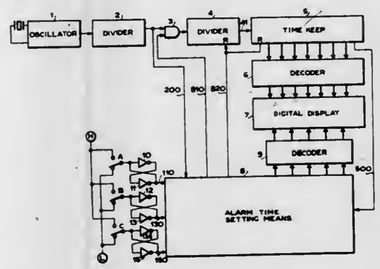
third manually adjustable gear means operable in a first position to couple said third spool means to said motor means and operable in a second position to disengage said third spool means from said motor means and to synchronize said third belt with the intellectual biorhythm function of an individual.

4,240,154

ELECTRONIC DIGITAL STOP WATCH

Mitsuo Sekine, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,443
Claims priority, application Japan, Jul. 8, 1977, 52/81804
Int. Cl.³ G04B *23/02;* G04C *21/00;* G04F *8/00*
U.S. Cl. 368—72 **18 Claims**



1. An electronic digital stop watch comprising: a time standard signal generator; a frequency divider for dividing the frequency of said time standard signal to form a time unit signal, means for keeping a time in accordance with the frequency of said time unit signal; alarm control means which

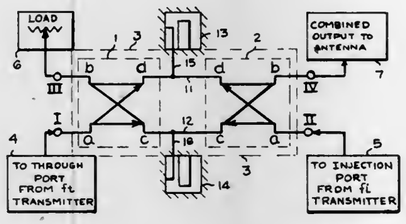
comprises a presettable down counter, manually operable means for presetting a desired alarm time in said presettable down counter, means for detecting the relationship between the time kept in said time-keeping means and the alarm time set in said presettable down counter to generate an alarm signal, and an audible signal generator energized by said alarm signal; and a display device for indicating the time kept in said time-keeping means or the time preset in said presettable down counter.

4,240,155

DIPLEXER AND MULTIPLEXER

Thomas J. Vaughan, Manchester, N.H., assignor to Micro Communications, Inc., Manchester, N.H.

Filed Jun. 28, 1978, Ser. No. 920,004
Int. Cl.³ H04J *1/08*
U.S. Cl. 370—69 **22 Claims**



1. A high frequency signal combiner for combining the power of two different frequency signals ft and fi in a common transmission line comprising,

(a) two directional couplers, an ft coupler and an fi coupler,

(b) means for coupling ft to a port of the ft coupler

(c) means for coupling fi to a port of the fi coupler,

(d) an output to the common transmission line from a port of the fi coupler and

(e) means including a transmission line stub and a tuned circuit for coupling together other ports of the ft and fi couplers that readily transmit ft signals from the ft coupler to the fi coupler while reflecting fi signals from the fi coupler back to the fi coupler,

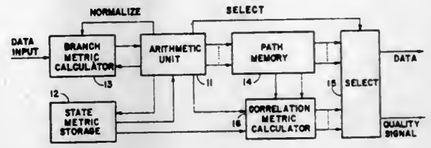
(f) whereby substantially all of the ft and fi signal power to the couplers is fed from the output to the common transmission line.

4,240,156

CONCATENATED ERROR CORRECTING SYSTEM

George D. Doland, 1602 Redway La., Houston, Tex.

Filed Mar. 29, 1979, Ser. No. 25,079
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—43 **8 Claims**



1. A Modified Viterbi Decoder Process, said moficiations to a conventional Viterbi Decoder Process comprising the steps as follows:

(a) algebraically adding the state metric scores for each state transition one constraint length prior to the output terminal of each branch in the search length path memory,

(b) subtracting the state metric scores for each state transition at the output terminal of each branch in the search length path memory,

(c) selecting the correlation metric value derived by said steps (a) and (b) above for the branch which is selected for the information bit output of said Modified Viterbi Decoder, and

(d) providing said selected correlation metric values as the output soft decision quality signal for the said information bit.

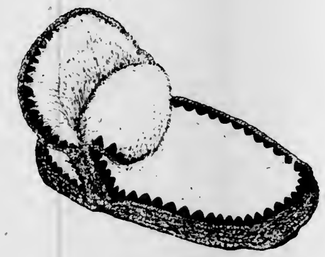
DESIGNS

DECEMBER 16, 1980

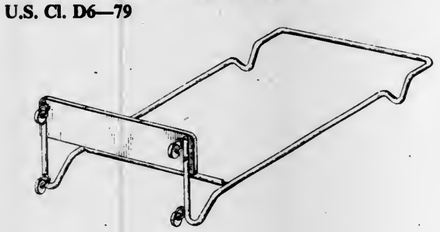
257,621
WORKMAN'S JACKET
Matti Viio, Box 563, 191 05 Sollentuna, Sweden
Filed May 2, 1978, Ser. No. 902,154
Claims priority, application Sweden, Nov. 2, 1977, 2224
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—187



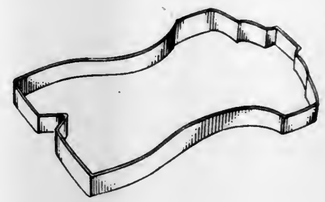
257,622
SLIPPER
Dawn V. Eskelsen, Bulls Rd., Kerikeri, New Zealand
Filed Oct. 17, 1978, Ser. No. 952,044
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—266



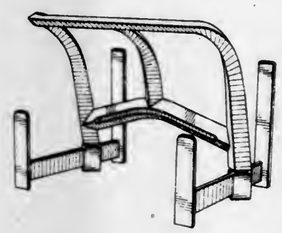
257,623
MOBILE BED FRAME
Richard C. Bue, Chaska, and Earl L. Luckes, Minnetonka, both of Minn., assignors to Sico Incorporated, Minneapolis, Minn.
Filed May 18, 1978, Ser. No. 907,314
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



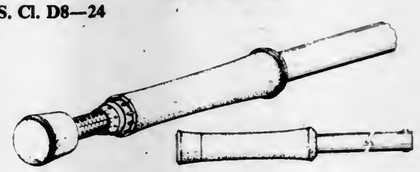
257,624
COOKIE CUTTER
Ethel Keller, 13846 N. 41st Ave., Phoenix, Ariz. 85023
Filed Sep. 19, 1977, Ser. No. 834,096
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—44



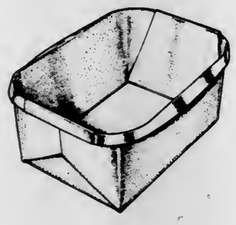
257,625
FIREPLACE GRATE
David H. Dent, 2550 Marra Rd., Occidental, Calif. 95465
Filed Feb. 17, 1978, Ser. No. 878,580
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207



257,626
TORQUE WRENCH LEVER
Bosko Grabovac, Mission Viejo, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.
Filed Oct. 12, 1977, Ser. No. 841,547
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—24



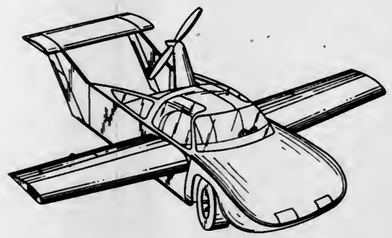
257,627
PACKAGING TRAY
Rolf U. Andersson, Lund, Sweden, assignor to AB Akerlund & Rausing, Sweden
Filed Aug. 18, 1977, Ser. No. 825,677
Claims priority, application Sweden, Sep. 2, 1977, 77486
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



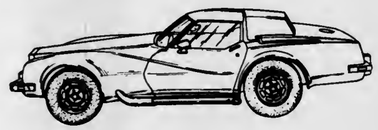
257,628
SPINDLE FOR A LOBSTER TRAP BUOY
Emile Plante, 74 Badgers Island, Kittery, Me. 03904
Filed Sep. 15, 1978, Ser. No. 942,679
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—121



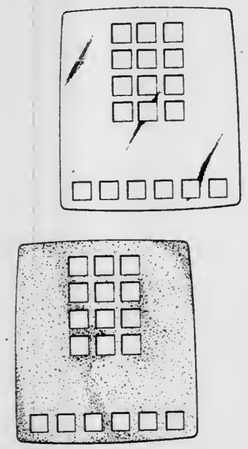
257,629
CONVERTIBLE AIRPLANE AND AUTOMOBILE
Harvey R. Miller, 3655 E. Amazon, Eugene, Oreg. 97405
Continuation-in-part of Ser. No. 841,220, Oct. 11, 1977, abandoned. This application May 23, 1979, Ser. No. 41,712
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—4



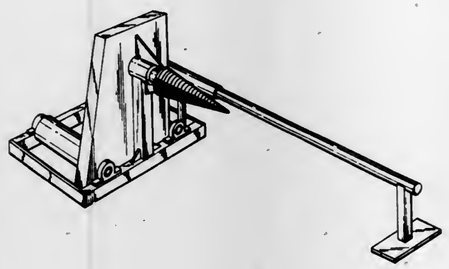
257,630
AUTOMOBILE
Leslie N. Dunham, 234 Division St., Boonton, N.J. 07005
Filed Nov. 10, 1978, Ser. No. 961,229
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92



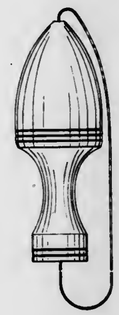
257,631
ADHESIVE PUSH-BUTTON TELEPHONE ATTACHMENT
Allen R. LeCornu, 275 S. Logan St., Denver, Colo. 80209
Filed Apr. 14, 1978, Ser. No. 896,324
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



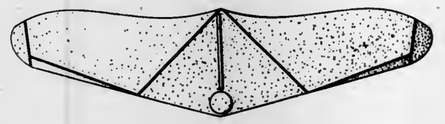
257,632
LOG SPLITTER
Richard L. Barger, Washington Court House, Ohio, assignor to Scope Manufacturing Company, Washington Court House, Ohio
Filed Mar. 22, 1978, Ser. No. 889,052
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—127



257,633
SKILL TOY
John M. Garcia, 855 Wintergreen Ave., Hamden, Conn. 06514
Filed Jul. 31, 1978, Ser. No. 929,828
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—62



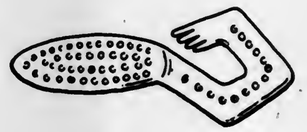
257,634
AERIAL TOY
Gary L. Miller, 10300 E. Service Rd., Denair, Calif. 95316, and Robert M. Hibdon, 1421 Ashwood, Modesto, Calif. 95350
Filed May 11, 1979, Ser. No. 905,112
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88



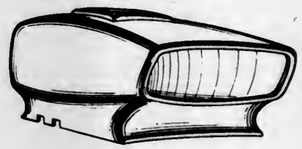
257,635
TOY SWORD
Ronald Carreiro, 28 Sargent Rd., South Weymouth, Mass. 02190
Filed Dec. 11, 1978, Ser. No. 968,396
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109



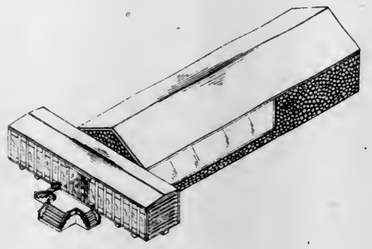
257,636
ARTIFICIAL FISHING LURE
William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C.
Filed Mar. 8, 1979, Ser. No. 18,574
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



257,637
VEHICLE ROOF MOUNTED AIR CONDITIONER COWLING
Joseph M. Armbruster, Lighthouse Point, Fla., assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed Jul. 11, 1978, Ser. No. 923,670
Term of patent 3½ years
Int. Cl. D23—*04*
U.S. Cl. D23—142



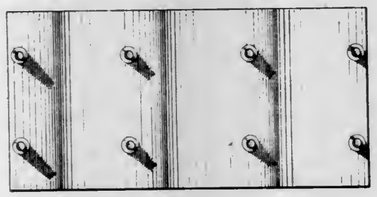
257,638
RAILROAD RESTAURANT
Gary M. Levin, 940 E. 19 St., Brooklyn, N.Y. 11230
Filed Jul. 27, 1978, Ser. No. 928,387
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—11



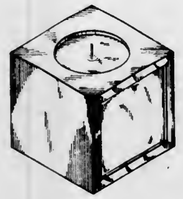
257,639
POST FOR STORAGE RACKING
Kenneth G. Reid, West Vancouver, and Jerome R. Dinn, Burnaby, both of Canada, assignors to Pacific Steel Ltd., New Westminster, Canada
Filed Jun. 14, 1978, Ser. No. 915,953
Term of patent 14 years
Int. Cl. D25—*01, 99*
U.S. Cl. D25—78



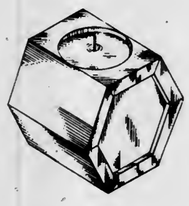
257,640
TEMPERATURE INSULATING FOAM PANEL
Albert L. Hughey, Carmel, and Paul B. Hughey, Indianapolis, both of Ind., assignors to Vantage Construction Company Incorporated
Filed Dec. 21, 1978, Ser. No. 971,948
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—96



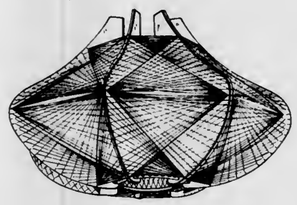
257,641
CANDLE
Stephen P. Taylor, 225 Roosevelt Ave., Louisville, Colo. 80027
Filed Dec. 26, 1978, Ser. No. 973,391
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—6



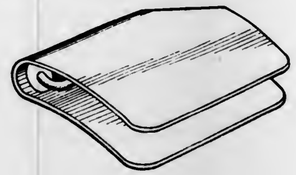
257,642
CANDLE
Stephen P. Taylor, 225 Roosevelt Ave., Louisville, Colo. 80027
Filed Dec. 26, 1978, Ser. No. 973,393
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—6



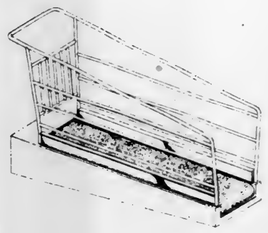
257,643
LUMINAIRE
Frederic Zurcher, 701 Willow La., Geneva, Ill. 60134
Filed May 23, 1978, Ser. No. 908,897
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—85



257,644
LAMP SHADE
Bruno Gecchelin, Milan, Italy, assignor to Skipper S.p.A., Milan, Italy
Filed Jun. 23, 1978, Ser. No. 918,661
Claims priority, application Italy, Jan. 18, 1978, 20495 A/78
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—118



257,645
RAILING FOR A DOG TREADMILL
Roger R. Ruetenik, W. Lake Rd., Vermilion, Ohio 44089
Filed Oct. 2, 1978, Ser. No. 947,852
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A Ahlstrom Osakeyhtio: *See—*
Merilainen, Heikki, 4,239,072, Cl. 144-312.000.

A/S Foss Electric: *See—*
Aegidius, Poul E.; Zakora, Miloslav; and Nielsen, Jorgen F., 4,239,394, Cl. 356-436.000.

A/S Hoyer-Ellefsen, Ing. T. Furuholmen A/S: *See—*
Slatten, Arvid; Bech, Harald; and Olsen, Olav, 4,239,417, Cl. 405-195.000.

A. W. Chesterton Company: *See—*
Giglio, Richard J.; Bogosh, Robert B.; and Lasnier, David A., 4,239,245, Cl. 277-203.000.

Abbey, Harold G. Rotary machine with adjustable means for its eccentric rotor. 4,239,466, Cl. 418-11.000.

Abbott Laboratories: *See—*
Carney, Ronald E.; Devault, Robert L.; McAlpine, James B.; and Sinclair, Arthur C., 4,239,752, Cl. 424-180.000.

Abe, Mitsuo: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.

Acco Industries Inc.: *See—*
Jones, Thomas L., 4,238,975, Cl. 74-502.000.

ACF Industries, Incorporated: *See—*
Basler, Glennon L.; and Wempe, Richard J., 4,239,183, Cl. 251-144.000.
Peters, Clifford M., 4,239,058, Cl. 137-557.000.
Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., 4,239,060, Cl. 137-587.000.
Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., 4,239,429, Cl. 410-59.000.

Ackeret, Peter, to Licirvest AG. Picture viewer. 4,238,898, Cl. 40-513.000.

Ackeret, Peter, to Licinvest AG. Picture viewer. 4,238,899, Cl. 40-513.000.

Ackerman, Mitchell N. Folding support construction. 4,239,280, Cl. 297-18.000.

ACME Specialty Manufacturing Co., The: *See—*
Skilliter, Robert T., Jr., 4,239,278, Cl. 296-97.00F.

Acme Visible Records, Inc.: *See—*
Brownlee, Sherwood S.; Grubb, Frederick H., Jr.; and Lohr, Warren G., 4,239,311, Cl. 312-305.000.

Action Instruments Company, Inc.: *See—*
Mate, David J., 4,238,965, Cl. 73-861.480.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,238,985, Cl. 84-1.010.

Adell, Robert, to U.S. Product Development Co. Method for making valued plastic articles such as game tiles. 4,239,724, Cl. 264-328.800.

Adelstein, Gilbert W., to G.D. Searle & Co. N-aralkenyl-N'-cyano-N''-(heterocyclylthioalkyl)-guanidines. 4,239,908, Cl. 542-416.000.

Adin, Anthony; and Wilson, John C., to Eastman Kodak Company. Photocrosslinkable carbonyl-containing polymeric composition and element with cobalt complex. 4,239,848, Cl. 430-270.000.

Adler, Glenn D.: *See—*
Parham, Roger R.; and Adler, Glenn D., 4,239,236, Cl. 273-403.000.

Adler, Josef, to Polysius AG. Hydrostatic bearing. 4,239,300, Cl. 308-9.000.

Adolphi, Heinrich: *See—*
Loeffler, Hans-Peter; Kiehs, Karl; and Adolphi, Heinrich, 4,239,775, Cl. 424-300.000.

Advanced Structures Corp.: *See—*
Holmes, Ronald, 4,238,913, Cl. 52-238.000.

Aegidius, Poul E.; Zakora, Miloslav; and Nielsen, Jorgen F., to A/S Foss Electric. Liquid analyzing apparatus. 4,239,394, Cl. 356-436.000.

AGFA-Gevaert AG: *See—*
Hujer, Friedrich, 4,239,385, Cl. 355-71.000.
Treiber, Helmut, 4,239,384, Cl. 355-68.000.

AGFA-Gevaert N.V.: *See—*
Vackier, Leo N.; and Van der Vliet, Lucien P., 4,239,366, Cl. 354-310.000.

Ahrens, James M., to Du Pont de Nemours, E. I., and Company. Compact transport apparatus especially for removal of material by ultrasonic assist. 4,239,387, Cl. 355-100.000.

Aileo, Jackspn A., to Gentex Corporation. Individually fitted helmet and method of and apparatus for making the same. 4,239,106, Cl. 206-223.000.

Air Products and Chemicals, Inc.: *See—*
Bligh, Bernard R.; and Godber, Stephen J., 4,239,509, Cl. 55-66.000.
DePaul, Harry V.; and Panchak, John R., 4,239,642, Cl. 252-182.000.
Elton, Edward F.; Patrylak, Andrew J.; and Santangelo, Joseph G., 4,239,589, Cl. 162-31.000.
Iacoviello, John G., 4,239,563, Cl. 156-72.000.
Johns, Dereck R., 4,239,159, Cl. 241-23.000.
McNeil, Brian A., 4,239,647, Cl. 252-377.000.

Aisan Industry Co., Ltd.: *See—*
Sato, Motoki, 4,239,710, Cl. 261-65.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Inada, Masami; Hashimoto, Nobuyuki; and Satomoto, Atsushi, 4,239,154, Cl. 236-87.000.
Kitamura, Kazuhiko; and Satomoto, Atsushi, 4,239,152, Cl. 236-48.00R.

Aizawa, Hiroshi: *See—*
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.

Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Turn off method for power transistor switch. 4,239,988, Cl. 307-254.000.

Akasaka, Shigeo: *See—*
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.

Akashi, Shunji, to Yoshida Kogyo K.K. Separable slide fastener chain and a method of producing the same. 4,238,872, Cl. 24-205.11F.

Aktiebolaget Bofors: *See—*
Bredin, Bertil, 4,238,989, Cl. 89-33.0BB.
Simmons, Bjorn, 4,239,005, Cl. 102-28.00R.

Aktiebolaget Electrolux: *See—*
Fahlen, Karl L., 4,238,870, Cl. 15-389.000.
Fahlvik, Hans A.; and Sandquist, Kurt E., 4,239,730, Cl. 422-109.000.

Akutsu, Mitsuo: *See—*
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, 4,239,803, Cl. 428-379.000.

Akzona Incorporated: *See—*
Gerlach, Klaus; Mathes, Nikolaus; and Wechs, Friedbert, 4,239,720, Cl. 264-147.000.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Cracking catalyst and method of producing the same. 4,239,651, Cl. 252-438.000.

Alameddine, Oussama; Briska, Marian; and Thiel, Klaus P., to International Business Machines Corporation. Method of making silicon photovoltaic cells. 4,239,810, Cl. 427-75.000.

Albert Rolland S.A.: *See—*
Laforest nee Boutillier du Retail, Jacqueline S.; and Bessin, Pierre A. R., 4,239,771, Cl. 424-275.000.

Albrecht, Donald E., to Minnesota Mining and Manufacturing Company. Sealed lighting element assembly. 4,240,131, Cl. 362-267.000.

Albright & Wilson Ltd.: *See—*
Williams, Thomas A.; and Mather, Douglas E., 4,239,640, Cl. 252-95.000.

Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased (by Nolan, Evelyn L., executrix), to Dayco Corporation. Automobile sound insulating panel and method of making same. 4,239,823, Cl. 427-420.000.

Alcaraz, Anthony J.: *See—*
McLean, Michael E.; Ensley, Rufus N.; Haren, Doyle V.; and Alcaraz, Anthony J., 4,239,821, Cl. 427-358.000.

Allard, Adrien W., to Ludlow Corporation. Process of dispersing electro-conductive carbon black and web product made thereby. 4,239,794, Cl. 428-219.000.

Allcock, Harry R.; Fuller, Timothy J.; and Matsumura, Kiyotoshi, to United States of America, Health, Education and Welfare. Steroidal cyclotriphosphazenes. 4,239,755, Cl. 424-209.000.

Allegheny Ludlum Industries, Inc.: *See—*
George, Henry H., 4,239,263, Cl. 285-150.000.

Allen & Hanburys Limited: *See—*
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.

Allersma, Ties; and Simpson, James E., to PPG Industries, Inc. Addition and measurement of gases dissolved in molten metals. 4,239,532, Cl. 75-93.00R.

Allied Chemical Corporation: *See—*
Boggs, Beryl A.; Narasimhan, Mandayam C.; and Li, Hsin L., 4,239,187, Cl. 242-25.00R.
Masilamani, Divakaran; and Rogic, Milorad M., 4,239,929, Cl. 585-442.000.

Allis-Chalmers Corporation: *See—*
Backlin, Robert R., 4,239,303, Cl. 308-167.000.

Allphin, N. Lee; Valentine, Fred S.; and Grams, Gary W., to Pearsall Chemical Company. Continuous oligomerization process. 4,239,930, Cl. 585-517.000.

Altadonna, Lawrence J. Oil caddy. 4,239,130, Cl. 222-131.000.

Altouyan, Roger E. C.: *See—*
Cairns, Hugh; Brown, Kenneth; and Altouyan, Roger E. C., 4,239,748, Cl. 424-45.000.

Aluminium Industrie Vaassen B.V.: *See—*
Van Alphen, Leendert G.; Slakhorst, Justinus W. H. G.; and Vogel, Pieter M., 4,240,128, Cl. 361-433.000.

Aluminum Company of America: *See—*
Dawless, Robert K.; and Jacobs, Stanley C., 4,239,606, Cl. 204-67.000.

Ambrose, Richard J.: *See—*
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,239,860, Cl. 525-131.000.

Amburn, Raymond D., to Dickey-john Corporation. Microwave seed sensor for field seed planter. 4,239,010, Cl. 111-1.000.

Amelio, Armand F., to United Technologies Corporation. Releasable push-pull sheathed cable control system. 4,238,971, Cl. 74-471.00R.

American Can Company: *See—*
Knott, Jack E., II; and Wang, James C., 4,239,826, Cl. 428-35.000.
McGee, Theodore L., 4,239,822, Cl. 427-358.000.
Pawlowski, Thomas D., 4,239,125, Cl. 221-65.000.

American Cyanamid Company: *See—*
Asato, Goro; and Pankavich, John A., 4,239,708, Cl. 260-926.000.
Berkelhammer, Gerald; and Kameswaran, Venkataraman, 4,239,777, Cl. 424-304.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,899, Cl. 556-438.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,900, Cl. 556-438.000.
Halmos, Imre A., 4,239,912, Cl. 562-401.000.
Press, Jeffery B., 4,239,898, Cl. 549-65.000.
Richmond, Henry, 4,239,885, Cl. 544-97.000.

American Fitness, Inc.: *See—*
Curchod, Donald B., 4,239,209, Cl. 272-76.000.

American Safety Equipment Corporation: *See—*
Hollowell, William M., 4,239,260, Cl. 280-806.000.

American Standard Inc.: *See—*
Olson, Paul E., 4,239,454, Cl. 416-27.000.

American Sterilizer Company: *See—*
Gillis, John R.; and Halleck, Frank E., 4,239,731, Cl. 422-112.000.

AMP Incorporated: *See—*
Chandler, William B.; Davis, John D.; and Sergeant, Ronald G., 4,238,874, Cl. 29-33.00M.
Johnson, Tore R., 4,239,334, Cl. 350-96.210.

Ampex Corporation: *See—*
Crookshanks, Rex J., 4,239,981, Cl. 307-214.000.

Anderson, Marvin H.; Chmyz, George; Daus, Carl D.; and Kneip, George D., Jr., to Varian Associates, Inc. Method and apparatus for preventing ionization induced noise in decoupler experiments. 4,240,033, Cl. 324-321.000.

Anderson, Norman R.; and Tomsa, Vladimir, to Bunker Ramo Corporation. Electrical connector. 4,239,314, Cl. 339-89.00M.

Andersson, Lars-Goran T., to U.S. Philips Corporation. Method and device for switching-off a supervision system. 4,240,060, Cl. 340-47.000.

Andren, Birger L.; and Svensson, Lars T. E., to Telefonaktiebolaget L M Ericsson. Means and an apparatus for synchronizing an orthogonal diphase code receiver. 4,239,934, Cl. 375-113.000.

Andrews, Timothy. Marine specimen collector. 4,239,019, Cl. 119-3.000.

Anic S.p.A.: *See—*
Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, 4,239,692, Cl. 260-448.00R.

Annas, Dulin L.; and Teague, Richard M. Bandsaw grinder blade support. 4,238,977, Cl. 76-25.00R.

Annis, Myron C., to Hooker Chemicals & Plastics Corp. Phenolic resins with improved low temperature processing stability. 4,239,869, Cl. 525-503.000.

Antemuik, Henry A.: *See—*
Thompson, Robert E.; and Antemuik, Henry A., 4,239,288, Cl. 299-5.000.

Anthony, Thomas R.: *See—*
Cline, Harvey E.; Anthony, Thomas R.; and Solomon, Harvey D., 4,239,556, Cl. 148-38.000.

Antoine, Robert: *See—*
Lacombat, Michel; Graffin, Jean C.; and Antoine, Robert, 4,239,381, Cl. 355-53.000.

Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., to Standard Brands Incorporated. Method for obtaining a purified cellulose product from corn hulls. 4,239,906, Cl. 536-56.000.

Aoki, Kozo; and Yokota, Yukio, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,239,851, Cl. 430-377.000.

Aoki, Osamu: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.

Aoki, Yoshiyuki: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.

Aoyama, Masaharu: *See—*
Hiraki, Shunichi; Kumamaru, Kuniaki; Aoyama, Masaharu; and Yonezawa, Toshio, 4,240,096, Cl. 357-63.000.

Aoyama, Tsutomu, to Nippon Electric Co., Ltd. Mechanical optical switching device. 4,239,331, Cl. 350-96.200.

Aplan, Frank F.; and Todd, Timothy M., to Union Carbide Corporation. Process and apparatus for separating magnetic particles within an ore. 4,239,619, Cl. 209-214.000.

Aquatic Diet Technology Inc.: *See—*
Cinquemani, Robert, 4,239,782, Cl. 426-2.000.

Arai, Michio: *See—*
Fukuda, Yasuo; Arai, Michio; and Yamamoto, Hidemi, 4,240,139, Cl. 364-200.000.

Arakawa, Yoshio: *See—*
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.

Araki, Shigeru: *See—*
Taki, Yasuo; Misawa, Yoshihiko; Araki, Shigeru; Mori, Kazuhiro; and Tanaka, Souhei, 4,239,576, Cl. 156-297.000.

Archie, William C., Jr.; and Campbell, Gerald A., to Eastman Kodak Company. Photographic elements containing polymers which coordinate with metal ions. 4,239,847, Cl. 430-213.000.

Arcouette, Pierre. Boat carrier and stand device. 4,239,137, Cl. 224-319.000.

Argus Chemical Corporation: *See—*
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, 4,239,803, Cl. 428-379.000.

Arikawa, Junichi: *See—*
Miyagawa, Tuyoshi; and Arikawa, Junichi, 4,239,204, Cl. 271-171.000.

Armour and Company: *See—*
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., 4,239,680, Cl. 260-112.50T.

Armstrong, Francis T. Multipurpose rucksack. 4,239,135, Cl. 224-154.000.

Arnason, Sigurdur I., to General Tire & Rubber Company, The. In-mold coating of sheet molding compound moldings. 4,239,808, Cl. 428-482.000.

Arnaud, Michel R.: *See—*
Guiraud, Richard J.; and Arnaud, Michel R., 4,239,784, Cl. 426-104.000.

Arndt, Friedrich: *See—*
Nusslein, Ludwig; Arndt, Friedrich; and Rusch, Reinhart, 4,239,524, Cl. 71-90.000.

Arndt, Peter J.; Lowitz, Joachim; and Wenzel, Franz, to Rohm GmbH. Method of making polymerizable liquid mixtures. 4,239,876, Cl. 526-287.000.

Arnold, Don C.; Silletti, Julio D.; Ritzenthaler, Richard L.; and Wilcox, Thomas J., to Elkay Manufacturing Company. Diaphragm movable wall assembly for hydraulic systems. 4,239,182, Cl. 251-61.200.

Arribau, Jorge O.; and Dorn, Russell J., to Condor Engineering & Manufacturing, Inc. Method and apparatus for blending liquids and solids. 4,239,396, Cl. 366-2.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Misumi, Teruyuki; Tanaka, Kyogo; and Okuno, Osamu, 4,239,686, Cl. 260-325.0PH.
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, 4,239,892, Cl. 546-251.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Urano, Fumio, 4,239,360, Cl. 354-128.000.

Asai, Kiyoshi, to Dow Corning K.K. Catheter placement system. 4,239,042, Cl. 128-214.400.

Asai, Tsuyoshi: *See—*
Yamamoto, Takaharu; Asai, Tsuyoshi; Fujimori, Naoji; and Tobioka, Masa-aki, 4,239,536, Cl. 75-238.000.

Asano, Masafumi: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,239,661, Cl. 252-541.000.

Asarco Incorporated: *See—*
Kranz, Paul J., 4,239,081, Cl. 164-431.000.

Asato, Goro; and Pankavich, John A., to American Cyanamid Company. P-Phenylene bis[imino(thiocarbonyl)] diphosphoramidic acid esters as anthelmentic agents. 4,239,708, Cl. 260-926.000.

Aschwanden, Werner: *See—*
Kyburz, Emilio; and Aschwanden, Werner, 4,239,770, Cl. 424-274.000.

Ashkin, Arthur; and Tomlinson, Walter J., III, to Bell Telephone Laboratories, Incorporated. Multiple optical switch. 4,239,330, Cl. 350-96.180.

Assalit, Henri B.: *See—*
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.

Asta-werke Aktiengesellschaft, Chemische Fabrik: *See—*
Rebling, Rolf; Scheffler, Gerhard; Pressler, Klaus; and Schenk, Klaus D., 4,239,761, Cl. 424-250.000.

Aston, Keith, to Durst (U.K.) Ltd. Photographic printing apparatus. 4,239,378, Cl. 355-35.000.

Aston, Keith; and Long, John G., to Durst (U.K.) Ltd. Photographic printing or enlarging apparatus. 4,239,382, Cl. 355-63.000.

Ateliers des Charmilles S.A.: *See—*
Rhyner, Heinz, 4,239,952, Cl. 219-69.00W.

Atkinson, Fred T.; Sharp, Shelby P.; and Sudduth, Lamar F., to Standard Oil Company (Indiana). Method for dissolving sulfur deposits rapidly. 4,239,630, Cl. 252-8.55B.

Atkinson, Geoffrey R.; and Edwards, Alan J., to UOP Inc. Clamping ring for vacuum-forming apparatus. 4,239,472, Cl. 425-388.000.

Atlantic Richfield Company: *See—*
Grane, Henry R.; Jubin, John C., Jr.; and Worrell, G. Richard, 4,239,926, Cl. 568-910.000.

Kesling, Haven S., Jr., 4,239,904, Cl. 560-157.000.

Atlas Copco Aktiebolag: *See—*
Fasth, Anders G., 4,239,157, Cl. 239-288.500.

Atoji, Nobuhisa; Kusomoto, Shoichi; and Sato, Kazue, to Matsushita Electric Industrial Co., Ltd. Sealed headphone. 4,239,945, Cl. 179-182.00R.

Atwood Vacuum Machine Company: *See—*
Huetsch, Larry C.; Swanson, James P.; and Nyquist, Stephen E., 4,239,252, Cl. 280-446.00R.

Auel, Theodor: *See—*
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August Beck, Firma. *See—*
Striegl, Georg, 4,239,425, Cl. 408-181.000.

August, Rudolf R.; Strahan, Virgil H.; James, Kenneth A.; and Nichols, Donald K., to Rockwell International Corporation. Fiber optic accelerometer. 4,239,963, Cl. 250-231.00R.

Aurin, Friedrich; and Knutti, Helmut, to Zeiss-Stiftung, Carl. Optical focusing system with two ellipsoidal mirrors. 4,239,342, Cl. 350-294.000.

Aust, Heinrich; Budich, Wolfgang; Nowak, Heinz; and Primessing, Franz, to Dynamit Nobel AG. Process and apparatus for the welding of synthetic resin structures. 4,239,574, Cl. 156-267.000.

Austermuhle, Friedrich-Paul, to Krupp-Koppers GmbH. Process and apparatus for cooling coke oven gas. 4,239,511, Cl. 55-84.000.

Automatic Liquid Packaging, Inc.: *See—*
Weiler, Gerhard H.; and Komendowski, Henry, 4,239,726, Cl. 264-525.000.

B. B. & D. Associates: *See—*
Bourque, Michel, 4,239,205, Cl. 271-175.000.

B. F. Goodrich: *See—*
Krupp, Carroll P.; and Straga, Ivan T., 4,239,262, Cl. 285-61.000.

Baba, Yasuharu: *See—*
Nakazawa, Hiroshi; and Baba, Yasuharu, 4,240,134, Cl. 363-21.000.

Babcock & Wilcox Company, The: *See—*
Bhada, Rohinton K.; Lange, Howard B., Jr.; and Strom, Stephen S., 4,239,996, Cl. 310-11.000.
Christiansen, David W., 4,239,597, Cl. 176-78.000.

Babcock & Wilcox Limited: *See—*
Hodgkin, Alan F., 4,239,479, Cl. 431-170.000.

Bach, Bert. Armored money-delivering vehicle. 4,239,447, Cl. 414-786.000.

Bachorz, Gunther: *See—*
Decher, Friedrich; and Bachorz, Gunther, 4,240,057, Cl. 336-165.000.

Backlin, Robert R., to Allis-Chalmers Corporation. Full contact crankshaft bearing. 4,239,303, Cl. 308-167.000.

Badon, Sterling P., Jr., to Majestic Sales, Inc. Spill-over spa. 4,238,859, Cl. 4-509.000.

Baier, Anton: *See—*
Brand, Peter; Pinck, Peter; and Baier, Anton, 4,238,993, Cl. 131-21.00R.

Baile, George H., to SKF Industries, Inc. Lubricant composition. 4,239,632, Cl. 252-12.000.

Bailey, Frank P.; and Coogan, Clive K., to Commonwealth Scientific and Industrial Research Organization. Pyrometric sheath and process. 4,238,957, Cl. 73-343.00R.

Bainard, Dean R.; and Denton, Dennis N., to Garlock Inc. Molded lip seal with polytetrafluoroethylene liner and method for making the same. 4,239,243, Cl. 277-153.000.

Bajak, Karel: *See—*
Miculka, Zdenek; Janirek, Vladislav; Rektorik, Vladimir; and Bajak, Karel, 4,238,939, Cl. 69-43.000.

Baker International Corporation: *See—*
Sharp, Keith W.; and Sparlin, Derry D., 4,239,084, Cl. 166-278.000.
Silberman, Raphael J.; Tilton, Frederick T.; and Smith, Everett H., 4,239,083, Cl. 166-117.700.

Baker, Peter M.: *See—*
De Fouw, Eugene A.; and Baker, Peter M., 4,239,309, Cl. 312-221.000.

Ball, Harry. Webbed plastic tubing. 4,239,830, Cl. 428-136.000.

Bally Manufacturing Corporation: *See—*
Burnside, Walter M., 4,239,225, Cl. 273-143.00R.

Baltek Corporation: *See—*
Conlon, Edward B., 4,239,008, Cl. 105-377.000.

Banks Wire Rope Slings, Inc.: *See—*
Beasley, Delbert E.; and Jones, Francis E., 4,239,271, Cl. 294-74.000.

Barch, Herbert W.; and Blair, Rudolph, to PPG Industries, Inc. Fiber traversing spiral. 4,239,162, Cl. 242-43.00R.

Bardone, Maria R.: *See—*
Coronelli, Carolina; Beretta, Grazia; Bardone, Maria R.; and Parenti, Francesco, 4,239,751, Cl. 424-118.000.

Barnard, Brian; and Laverick, William T., to Tioxide Group Limited. Titanium dioxide pigment. 4,239,548, Cl. 106-300.000.

Barnett, Allen M.; Masi, James V.; and Hall, Robert B., to University of Delaware. Thin film photovoltaic cells having increased durability and operating life and method for making same. 4,239,553, Cl. 136-256.000.

Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., to Pfizer Inc. Use of phenylglyoxylic acids and derivatives thereof in the treatment of ischemic heart disease. 4,239,779, Cl. 424-317.000.

Barnsbee, Clive D.; and Decker, Marvin G., to Eastman Kodak Company. Light lock for roll dispensing container. 4,239,164, Cl. 242-55.530.

Baron, George B., to Dresser Industries, Inc. Live roller circle for power shovels and the like. 4,239,305, Cl. 308-222.000.

Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, to Eaton Allen Corp. Adhesively correctable transfer medium with delayed alteration resistance characteristics. 4,239,832, Cl. 428-539.000.

Barriac, Jacques, to Societe d'Applications Generales d'Electricite et de Mecanique Sagem. Devices for the azimuth and slope scanning of a drilling line. 4,238,889, Cl. 33-304.000.

Barrus, Gordon B.: *See—*
Matula, Jerry; Radke, Glen R.; and Barrus, Gordon B., 4,239,403, Cl. 400-322.000.

Bartos, Dezso I.; and Rybczynski, Jerzy, to Bartos, Dezso Istvan. Complement fixation test employing reactants in a disposable package. 4,239,746, Cl. 424-12.000.

Bartos, Dezso Istvan: *See—*
Bartos, Dezso I.; and Rybczynski, Jerzy, 4,239,746, Cl. 424-12.000.

Barzynski, Helmut; and Saenger, Dietrich, to BASF Aktiengesellschaft. Photopolymerizable coating and recording materials containing a photoinitiator and an organic halogen compound. 4,239,609, Cl. 204-159.230.

BASF Aktiengesellschaft: *See—*
Barzynski, Helmut; and Saenger, Dietrich, 4,239,609, Cl. 204-159.230.
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,239,895, Cl. 548-341.000.
Fabian, Wolfgang; Kranz, Joachim; and Stoeckelmann, Guenter, 4,239,549, Cl. 106-308.00Q.
Fischer, Rolf; and Weitz, Hans-Martin, 4,239,706, Cl. 568-484.000.
Loeffler, Hans-Peter; Kiehs, Karl; and Adolphi, Heinrich, 4,239,775, Cl. 424-300.000.
Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,239,657, Cl. 252-464.000.
Parg, Adolf; and Hamprecht, Gerhard, 4,239,697, Cl. 260-543.00R.
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, 4,239,641, Cl. 252-142.000.
Reitel, Christian; and Goethlich, Lutz, 4,239,866, Cl. 525-440.000.
Rossy, Phillip; and Hoffmann, Werner, 4,239,897, Cl. 549-61.000.
Seybold, Guenther; and Eilingsfeld, Heinz, 4,239,894, Cl. 548-194.000.
Weitz, Hans-Martin; Platz, Rolf; and Hartig, Juergen, 4,239,910, Cl. 560-244.000.
Weitz, Hans-Martin; and Hartig, Juergen, 4,239,911, Cl. 560-246.000.

BASF Wyandotte Corporation: *See—*
Login, Robert B., 4,239,801, Cl. 428-364.000.

Basfer S.r.L.: *See—*
Davini, Giorgio, 4,239,431, Cl. 414-1.000.

Basler, Glennon L.; and Wempe, Richard J., to ACF Industries, Incorporated. Handle assembly for bottom outlet valve. 4,239,183, Cl. 251-144.000.

Bateman, Jess R.; Carpenter, Robert L.; and Smith, Ross K. Intelligent electric utility meter. 4,240,030, Cl. 324-110.000.

Bauer, Donald J.: *See—*
Eisele, Judith A.; Bauer, Donald J.; and Bremner, Paul R., 4,239,735, Cl. 423-126.000.

Bauer, Erhard, to Bunker Ramo Corporation. Contact element with interior support. 4,239,321, Cl. 339-276.00T.

Bauer, Frank L. Golfer's greens keeping aid. 4,239,216, Cl. 273-32.00B.

Bauer, William J. Screw pump construction. 4,239,449, Cl. 415-73.000.

Baum, Jorg P., to Verfahrenstechnik Dr. Ing. Kurt Baum. Structure for collecting exhaust gases from a converter. 4,239,190, Cl. 266-158.000.

Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, to BASF Aktiengesellschaft. Dyeing and printing of textiles with disperse dyes. 4,239,491, Cl. 8-532.000.

Baxter Travenol Laboratories, Inc.: *See—*
Lessner, David L.; Macemon, James H.; Coker, George M., Jr; and Hodgson, Charles E., 4,239,391, Cl. 356-318.000.

Bayer Aktiengesellschaft: *See—*
Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, 4,239,861, Cl. 525-151.000.
Buchel, Karl H.; Kramer, Wolfgang; and Plempel, Manfred, 4,239,767, Cl. 424-273.00R.
Danziger, Harry; and Kaiser, Bernd-Ulrich, 4,239,682, Cl. 260-239.30A.
Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, 4,239,110, Cl. 206-396.000.
Koopmann, Rudiger; and Juffa, Richard, 4,238,952, Cl. 73-15.600.
Kramer, Wolfgang; Klauke, Erich; and Roessler, Peter, 4,239,762, Cl. 424-254.000.
Kramer, Wolfgang; Buchel, Karl H.; Kuhle, Engelbert; Frohberger, Paul-Ernst; and Beandes, Wilhelm, 4,239,766, Cl. 424-269.000.
Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, 4,239,765, Cl. 424-269.000.
Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, 4,239,722, Cl. 264-206.000.
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.

Schnabel, Eugen, 4,239,902, Cl. 560-41.000.
Schroder, Rolf; and Lurssen, Klaus, 4,239,528, Cl. 71-105.000.
Wild, Peter; and Nickel, Horst, 4,239,886, Cl. 544-170.000.

Bayles, Richard W.: *See—*
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Baylor College of Medicine: *See—*
Williams, Robert E.; Decker, Thomas A.; Kurtzman, Charles; and Kuether, Christian L., 4,239,351, Cl. 351-36.000.

BBC Brown, Boveri & Company Limited: *See—*
Siegenthaler, Andreas, 4,240,031, Cl. 324-126.000.

Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., to Corning Glass Works. Inorganic gels and ceramic papers, films, fibers, boards, and coatings made therefrom. 4,239,519, Cl. 65-2.000.

Beall, George H., to Corning Glass Works. Spontaneously-formed alpha-quartz glass-ceramics. 4,239,521, Cl. 65-33.000.

Beall, Glenn L.: *See—*
Mueller, John J.; and Beall, Glenn L., 4,239,132, Cl. 222-212.000.

Beandes, Wilhelm: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Kuhle, Engelbert; Frohberger, Paul-Ernst; and Beandes, Wilhelm, 4,239,766, Cl. 424-269.000.

Beasley, Delbert E.; and Jones, Francis E., to Banks Wire Rope Slings, Inc. Loop for flexible strap. 4,239,271, Cl. 294-74.000.

Beasley, J. Donald, to Gould Inc. Non-crusting jet ink and method of making same. 4,239,543, Cl. 106-22.000.

Bech, Harald: *See—*
Slatten, Arvid; Bech, Harald; and Olsen, Olav, 4,239,417, Cl. 405-195.000.

Beck, William A., to Martin Marietta Corporation. Method for the production of semiconductor devices using electron beam delineation. 4,239,788, Cl. 427-43.100.

Becker, Werner: *See—*
Poetsch, Dieter; and Becker, Werner, 4,240,103, Cl. 358-21.00R.

Becton Dickinson & Company: *See—*
Haynes, John L., 4,240,029, Cl. 324-71.0CP.

Bedoit, William C., Jr. Preparation of low viscosity polyether polyols. 4,239,907, Cl. 536-120.000.

Behringwerke Aktiengesellschaft: *See—*
Sedlacek, Hans H.; and Seiler, Friedrich R., 4,239,743, Cl. 424-1.000.

Beisang, Arthur A.: *See—*
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A., 4,239,492, Cl. 8-94.110.

Belcher, Richard A.: *See—*
Kozacka, Frederick J.; and Belcher, Richard A., 4,240,058, Cl. 337-231.000.

Bell, Malcolm R.; and Oesterlin, Rudolf, to Sterling Drug Inc. Cyclopenta[c]pyrrole derivatives. 4,239,687, Cl. 260-326.270.

Bell Telephone Laboratories, Incorporated: *See—*
Ashkin, Arthur; and Tomlinson, Walter J., III, 4,239,330, Cl. 350-96.180.
Berreman, Dwight W.; and Heffner, William R., 4,239,345, Cl. 350-331.00R.
Blahut, Donald E.; Copp, David H.; and Stanzione, Daniel C., 4,240,142, Cl. 364-200.000.
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Campbell, Joe C.; Lau, Kam-Yin; and Stone, Julian, 4,239,337, Cl. 350-151.000.
Cho, Alfred Y., 4,239,955, Cl. 219-271.000.
Kostelnick, Joseph J., 4,240,049, Cl. 333-1.100.
Rentschler, John A., 4,239,787, Cl. 427-38.000.
Saari, Veikko R., 4,240,040, Cl. 330-255.000.
Schaefer, Edwin M., III, 4,240,135, Cl. 363-43.000.
Tamburro, Peter J., 4,239,323, Cl. 339-186.00M.

Bellamy, Clifford J.: *See—*
Besemer, John O.; and Bellamy, Clifford J., 4,240,143, Cl. 364-200.000.

Bellut, Heinrich: *See—*
Schadowski, Werner; and Bellut, Heinrich, 4,239,150, Cl. 229-48.00R.

Beloit Corporation: *See—*
Graf, Edwin X., 4,239,448, Cl. 415-89.000.

Benckiser-Knapsack GmbH: *See—*
Riehm, Theodor; Auel, Theodor; and Spatz, Wilhelm, 4,239,922, Cl. 568-863.000.

Bendix Corporation, The: *See—*
Jacko, Michael G.; and Gager, Robert F., 4,239,666, Cl. 260-17.500.
Mayer, Endre A., 4,240,056, Cl. 335-267.000.

Benjamin, Delmar E., to Celotex Corporation, The. Container door and back therefor. 4,239,310, Cl. 312-227.000.

Benoit, Robert; Machefer, Jacques; Mauvisseau, Jacques; and Plurien, Pierre. Method of separation of a gas from a gas mixture. 4,239,507, Cl. 55-16.000.

Benson, Everett H. Field burner apparatus. 4,239,030, Cl. 126-271.100.

Beretta, David; Loveless, Frederick C.; and Nudenberg, Walter, to Uniroyal, Inc. Use of synthetic hydrocarbon oils as heat transfer fluids. 4,239,638, Cl. 252-73.000.

Beretta, Grazia: *See—*
Coronelli; Carolina; Beretta, Grazia; Bardone, Maria R.; and Parenti, Francesco, 4,239,751, Cl. 424-118.000.

Bergwerksverband GmbH: *See—*
Fach, Horst; and Meckel, Joachim F., 4,238,891, Cl. 34-57.00R.

Berkelhammer, Gerald; and Kameswaran, Venkataraman, to American Cyanamid Company. (−)-α-Cyano-m-phenoxybenzyl(+)-α-isopropyl-4-difluoromethoxyphenylacetate. 4,239,777, Cl. 424-304.000.

Bernhardt, Gunther; and Daum, Gerhard, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of terephthalic, isophthalic and phthalic dialdehydes. 4,239,703, Cl. 568-431.000.

Berreman, Dwight W.; and Heffner, William R., to Bell Telephone Laboratories, Incorporated. Bistable liquid crystal twist cell. 4,239,345, Cl. 350-331.00R.

Berry, Milton E.; and Pariani, Ronald L., to Southwire Company. Apparatus for controlling combustion in a metal melting furnace. 4,239,191, Cl. 266-200.000.

Berryhill, Bill B.: *See—*
Mynhier, Charles R., 4,239,266, Cl. 285-323.000.

Berthiaume, Raymond, to Hydro-Quebec. Feeding system for incandescent lamps by overhead wires of transmission lines. 4,240,025, Cl. 323-8.000.

Bertolini, Guglielmo: *See—*
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,239,873, Cl. 526-114.000.

Bertolini, William A. Truck body floor construction and tie-down means. 4,239,276, Cl. 296-37.600.

Bertrand, Henri: *See—*
Sache, Edgar; and Bertrand, Henri, 4,239,754, Cl. 424-183.000.

Bertsch, Richard: *See—*
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.

Berzina, James A. Router adjustment attachment. 4,239,428, Cl. 409-182.000.

Besemer, John O.; and Bellamy, Clifford J., to Burroughs Corporation. Hierarchical multi-processor network for memory sharing. 4,240,143, Cl. 364-200.000.

Bessin, Pierre A. R.: *See—*
Laforest nee Boutillier du Retail, Jacqueline S.; and Bessin, Pierre A. R., 4,239,771, Cl. 424-275.000.

Betkouski, Mathew F. Dead bolt lock accessory. 4,238,943, Cl. 70-416.000.

Betz Laboratories, Inc.: *See—*
Polizzotti, David M.; and Steelhammer, Joe C., 4,239,504, Cl. 55-5.000.

Bevilacqua, Frank; Callaghan, Vincent M.; and Van Fleet, James L., to Combustion Engineering, Inc. Passive residual heat removal system for nuclear power plant. 4,239,596, Cl. 176-37.000.

Bhada, Rohinton K.; Lange, Howard B., Jr.; and Strom, Stephen S., to Babcock & Wilcox Company, The. Potassium carbonate recovery. 4,239,996, Cl. 310-11.000.

Biermann, Peter; Feucht, Rudi; Schmidt, Manfred; and Storandt, Ralf, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Cross country ski binding. 4,239,257, Cl. 280-615.000.

Binks Manufacturing Company: *See—*
Dobias, Frank L., 4,239,512, Cl. 55-90.000.

Black & Decker Inc.: *See—*
Walton, Richard E., II, 4,238,884, Cl. 30-393.000.
Walton, Richard E., II, 4,239,427, Cl. 408-213.000.

Blackburn, Tom L., to GTE Automatic Electric Laboratories Incorporated. Temperature compensated current source. 4,240,024, Cl. 323-4.000.

Blagg, Leon, to Rolligon Corporation. Log skidder. 4,239,439, Cl. 414-494.000.

Blahut, Donald E.; Copp, David H.; and Stanzione, Daniel C., to Bell Telephone Laboratories, Incorporated. Data processing apparatus providing autoincrementing of memory pointer registers. 4,240,142, Cl. 364-200.000.

Blair, Rudolph: *See—*
Barch, Herbert W.; and Blair, Rudolph, 4,239,162, Cl. 242-43.00R.

Blake, David R. Manufacture of an non-laminated paper web having regions of increased thickness. 4,239,591, Cl. 162-109.000.

Blanton, William A., Jr., to Chevron Research Company. Process for improving a gas containing a minor amount of sulfur dioxide impurity and producing a hydrogen sulfide-rich gas. 4,239,742, Cl. 423-563.000.

Blasiak, Eugeniusz: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Bligh, Bernard R.; and Godber, Stephen J., to Air Products and Chemicals, Inc. Method of purifying crude argon. 4,239,509, Cl. 55-66.000.

Blikken, Wendell A. Method of installing magnetic sensor loops in a multiple lane highway. 4,239,415, Cl. 404-75.000.

Blum, Samuel E.; Kovac, Zlata; and von Gutfeld, Robert J., to International Business Machines Corporation. Maskless method for electroless plating patterns. 4,239,789, Cl. 427-53.100.

Bocharov, Vasily I.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Bocharov, Vasily I.; and Kuprianov, Jury V., 4,239,997, Cl. 310-13.000.

Bock Corporation: *See—*
Bock, John C., 4,239,953, Cl. 219-79.000.

Bock, John C., to Bock Corporation. Resistance welding apparatus. 4,239,953, Cl. 219-79.000.

Bodnar, Janos; and Lugosi, Gyorgy, to Chinoin Gyogyszer. Process for the preparation of non-pyrophoric palladium catalysts. 4,239,653, Cl. 252-447.000.

Bodor, Nicholas S.; and Sloan, Kenneth B., to INTERx Research Corporation. Thiazolidine prodrugs for the improved delivery of anti-inflammatory corticosteroids. 4,239,757, Cl. 424-241.000.

Boehringer Ingelheim GmbH: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, 4,239,764, Cl. 424-263.000.

Boeing Company, The: *See—*
Gannon, Donald N., 4,239,434, Cl. 414-136.000.
White, Thomas H., 4,239,282, Cl. 297-284.000.

Boggs, Beryl A.; Narasimhan, Mandayam C.; and Li, Hsin L., to Allied Chemical Corporation. Winder string-up method and apparatus. 4,239,187, Cl. 242-25.00R.

Bogorodsky, Genrikh L.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Bogosh, Robert B.: *See—*
Giglio, Richard J.; Bogosh, Robert B.; and Lasnier, David A., 4,239,245, Cl. 277-203.000.

Boltrek, Henry, to Westinghouse Electric Corp. Handrail apparatus. 4,239,102, Cl. 198-336.000.

Bondarenko, Stanislav V.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Bonnet, Evelyne J. M.; and Gangneux, Philippe Y. E., to Produits Chimiques Ugine Kuhlmann. Cross-linkable structurally colored polymers, their preparation and their use in compositions for coatings. 4,239,868, Cl. 525-279.000.

Boots Company Limited, The: *See—*
Kerry, John C.; and Weighton, David M., 4,239,774, Cl. 424-288.000.

Borca, Bruno; and Ruscelli, Emilio, to Pirelli Furlanis Applicazioni Indrauliche. Lined cavity in the earth. 4,239,416, Cl. 405-53.000.

Borg-Warner Corporation: *See—*
Greacen, John F.; Knight, Kerry G.; and Lech, Thaddeus, Jr., 4,239,097, Cl. 192-106.200.

Borrelli, Nicholas F.; and Young, Peter L., to Corning Glass Works. Silver halide optical information storage media. 4,239,338, Cl. 350-155.000.

Bosch, Robert GmbH: *See—*
Poetsch, Dieter; and Becker, Werner, 4,240,103, Cl. 358-21.00R.

Bosenberg, Wolfram A., to RCA Corporation. Method of defining a photoresist layer. 4,239,790, Cl. 427-54.100.

Bosik, Barry S.; and Tuhy, Frank P., Jr., to Bell Telephone Laboratories, Incorporated. Ringing generator. 4,239,935, Cl. 179-84.00R.

Bott, John A. Sliding tie down vehicle luggage carrier. 4,239,139, Cl. 224-324.000.

Boudreau, Ronald B.; and Crossin, John P. Ski attachment. 4,239,255, Cl. 280-605.000.

Bouiller, Jean G.: *See—*
Joubert, Raymond J. M.; and Bouiller, Jean G., 4,238,927, Cl. 60-39.51H.

Bourque, Michel, to B. B. & D. Associates. Small piece stacker and counter. 4,239,205, Cl. 271-175.000.

Bouru, Michel A., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device to fasten a seal to the guide vanes of a turbine engine. 4,239,451, Cl. 415-170.00R.

Boyatt, Richard G., Jr.; and Steger, Donald J., to International Business Machines Corporation. Cartridge assembly apparatus for typewriters. 4,239,107, Cl. 206-225.000.

Boynton, Kenneth G., to Cooper Industries, Inc. Soldering flux. 4,239,812, Cl. 427-96.000.

Bozik, John E.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,704, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,705, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,924, Cl. 568-902.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,925, Cl. 568-902.000.

Braatz, Paul O.; Chow, Kuen; and Grinberg, Jan, to Hughes Aircraft Company. Semiconductor light valve having improved counterelectrode structure. 4,239,347, Cl. 350-336.000.

Braatz, Paul Q.: *See—*
Grinberg, Jan; Waldner, Michael; Braatz, Paul Q.; and Jacobson, Alexander D., 4,239,348, Cl. 350-342.000.

Bradford, Joseph, Sr. Flying toy. 4,238,906, Cl. 46-74.00D.

Bradley, Paul W. Display tray assembly. 4,239,308, Cl. 312-201.000.

Bradley, Rex L. Antibiotic testing method and apparatus having a channelized reservoir. 4,239,853, Cl. 435-33.000.

Bradshaw, John: *See—*
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.

Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, to Bayer Aktiengesellschaft. Polyvinyl chloride-polycarbonate alloys. 4,239,861, Cl. 525-151.000.

Brajder, Antonio, to Siemens Aktiengesellschaft. Method and apparatus for driving a transistor operated in saturation. 4,239,989, Cl. 307-255.000.

Brakebill, Harold G., to Robertshaw Controls Company. Valve positioner and method of making the same. 4,239,181, Cl. 251-61.500.

Brand, Peter; Pinck, Peter; and Baier, Anton, to Hauni-Werke Korber & Co. KG. Apparatus for monitoring filter rod sections in filter tipping machines. 4,238,993, Cl. 131-21.00R.

Brandenstein, Manfred: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,239,298, Cl. 308-6.00C.
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor device plastic jacket having first and second annular sheet metal strips with corrugated outer edges embedded in said plastic jacket. 4,240,099, Cl. 357-79.000.

Bredeweg, Corwin J., to Dow Chemical Company, The. Process for the polymerization of acrylonitrile-butadiene-styrene resins. 4,239,863, Cl. 525-263.000.

Bredin, Bertil, to Aktiebolaget Bofors. Device for feeding channel for ammunition for automatic gun. 4,238,989, Cl. 89-33.0BB.

Breininger, J. Shannon; and Greenberg, Charles B., to PPG Industries, Inc. Organic additives for organometallic compositions. 4,239,816, Cl. 427-168.000.

Breitung, Edward J.; and Hickman, Ronald J., to Stewart-Warner Corporation. Cruise control switch assembly. 4,239,947, Cl. 200-61.890.

Bremner, Paul R.: *See—*
Eisele, Judith A.; Bauer, Donald J.; and Bremner, Paul R., 4,239,735, Cl. 423-126.000.

Brenis, Kenneth L.: *See—*
Rolls, James A.; and Brenis, Kenneth L., 4,239,679, Cl. 260-42.490.

Brennan, James A.; and Norris, Henry D., to Mobil Oil Corporation. Removal of organic chlorides from synthetic oils. 4,239,927, Cl. 585-24.000.

Brenner, Reeve R. Basketball shot making game with a multiplicity of backboard and hoop arrangements. 4,239,214, Cl. 273-1.50R.

Brent, Robert G., to Textron, Inc. Hydraulic piston rod seal. 4,239,244, Cl. 277-188.00R.

Bridges, Thomas L. Key-reminder automotive door locking system. 4,239,270, Cl. 292-347.000.

Brif, Leonid M.: *See—*
Brif, Viktor M.; and Brif, Leonid M., 4,239,713, Cl. 264-40.100.

Brif, Viktor M.; and Brif, Leonid M. Method and machine for expanding tubes in a tube wall. 4,239,713, Cl. 264-40.100.

Bringol, Charles R., to International Business Machines Corporation. Text processing and display system with means for rearranging the spatial format of a selectable section of displayed data. 4,240,075, Cl. 340-798.000.

Briska, Marian: *See—*
Alameddine, Oussama; Briska, Marian; and Thiel, Klaus P., 4,239,810, Cl. 427-75.000.

Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., to Textron, Inc. Blade-mounted centrifugal pendulum. 4,239,455, Cl. 416-145.000.

Broekhuizen, Willem: *See—*
Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., 4,239,456, Cl. 416-145.000.

Brois, Stanley J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Thio-bis-(alkyl lactone acid esters) and thio-bis-(hydrocarbyl diacid esters) are useful additives for lubricating compositions. 4,239,636, Cl. 252-48.600.

Brois, Stanley J.: *See—*
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Broken Hill Proprietary Company Limited, The: *See—*
Skinner, David H.; and Brown, Jeffrey H., 4,239,156, Cl. 238-277.000.

Brooks & Perkins, Incorporated: *See—*
Stamm, Robert H.; and Krause, Fred E., 4,238,878, Cl. 29-421.00R.

Brooks, Richard J.; and Marson, Thomas W., to Chemithon Corporation, The. Solar heating method. 4,239,035, Cl. 126-452.000.

Brown, Asa V., Jr.: *See—*
Williams, John L.; and Brown, Asa V., Jr., 4,239,099, Cl. 193-32.000.

Brown, Bernard J. Method and apparatus for controlling the grinding of workpieces. 4,238,886, Cl. 33-149.00J.

Brown, Boveri & Cie Aktiengesellschaft: *See—*
Hartmann, Bernd; and Kleinschmager, Herbert, 4,239,837, Cl. 429-104.000.

Brown, Clifford R.: *See—*
Norman, Benjamin F. J.; and Brown, Clifford R., 4,239,228, Cl. 273-189.00R.

Brown, Herman, to Finetex Incorporated. Cationic surfactant compositions compatible with anionic surfactants. 4,239,631, Cl. 252-8.750.

Brown, Hughie A., Jr.; and Walker, Joe L., to Vought Corporation. Visual simulator projection system. 4,239,355, Cl. 353-87.000.

Brown, Jeffrey H.: *See—*
Skinner, David H.; and Brown, Jeffrey H., 4,239,156, Cl. 238-277.000.

Brown, Kenneth: *See—*
Cairns, Hugh; Brown, Kenneth; and Altouyan, Roger E. C., 4,239,748, Cl. 424-45.000.

Brown, Timothy M.: *See—*
Hartman, Seymour; and Brown, Timothy M., 4,239,577, Cl. 156-312.000.

Brownlee, Sherwood S.; Grubb, Frederick H., Jr.; and Lohr, Warren G., to Acme Visible Records, Inc. Sub-assemblies for rotary storage cabinet. 4,239,311, Cl. 312-305.000.

Bruzzone, Mario: *See—*
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,239,873, Cl. 526-114.000.

Brzeski, Andrzej: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Bub, Oskar, to Knoll AG. 1,5'-Benzodiazepine-2-ones, pharmaceutical compositions thereof and method of use thereof. 4,239,684, Cl. 424-244.000.

Buchanan, Thomas M., to United States of America, America. *Neisseria gonorrhoeae* vaccine. 4,239,749, Cl. 424-92.000.

Buchel, Karl: *See—*
Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, 4,239,765, Cl. 424-269.000.

Buchel, Karl H.; Kramer, Wolfgang; and Plempel, Manfred, to Bayer Aktiengesellschaft. Antimycotic diaryloxy-imidazolyl-O,N-acetals. 4,239,767, Cl. 424-273.00R.

Buchel, Karl H.: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Kuhle, Engelbert; Frohberger, Paul-Ernst; and Beandes, Wilhelm, 4,239,766, Cl. 424-269.000.

Budich, Wolfgang: *See—*
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Buffalo Forge Company: *See—*
Geitner, Lawrence J.; and Herbeck, Christian C., 4,239,450, Cl. 415-160.000.

Buhrer, Carl F., to GTE Laboratories Incorporated. Electrodeless fluorescent light source having reduced far field electromagnetic radiation levels. 4,240,010, Cl. 315-248.000.

Bunce, Donald A., to White Consolidated Industries, Inc. Formed metal panels. 4,238,908, Cl. 49-501.000.

Bunker Ramo Corporation: *See—*
Anderson, Norman R.; and Tomsa, Vladimir, 4,239,314, Cl. 339-89.00M.
Bauer, Erhard, 4,239,321, Cl. 339-276.00T.
Hesse, David L.; and Warywoda, Joseph, 4,239,317, Cl. 339-91.00R.
Hesse, David L.; Krolak, Ronald F.; and Perna, Jiulio E., 4,239,320, Cl. 339-154.00A.
Spaulding, Tedford H., 4,239,316, Cl. 339-91.00R.

Burgdorf, Jochen, to ITT Industries, Inc. Motorcycle hydraulic brake system with brake force regulator. 4,239,294, Cl. 303-6.00C.

Burns Double Split, Inc.: *See—*
Burns, Thomas H., 4,239,070, Cl. 144-193.00A.

Burns, Thomas H., to Burns Double Split, Inc. Log splitter. 4,239,070, Cl. 144-193.00A.

Burns, William G. Pipe union and seal. 4,239,242, Cl. 277-153.000.

Burnside, Walter M., to Bally Manufacturing Corporation. Rotatable disc stop apparatus. 4,239,225, Cl. 273-143.00R.

Burris, Frank H. Fold-up trailer assembly. 4,239,258, Cl. 280-639.000.

Burroughs Corporation: *See—*
Besemer, John O.; and Bellamy, Clifford J., 4,240,143, Cl. 364-200.000.

Burstell, Helmut: *See—*
Heubach, Gunther; Sachse, Burkhard; and Burstell, Helmut, 4,239,525, Cl. 71-92.000.

Busch, Hans-Walter: *See—*
Busse, Fritz; Busch, Hans-Walter; and Michelatsch, Peter, 4,238,945, Cl. 72-150.000.

Buschsieper, Peter: *See—*
Hergt, Peter; Buschsieper, Peter; and Matthias, Heinz-Bernd, 4,239,453, Cl. 415-182.000.

Busse, Fritz; Busch, Hans-Walter; and Michelatsch, Peter, to Schwarze, Rigobert. Apparatus for bending a jacketed tube. 4,238,945, Cl. 72-150.000.

Byers, Thomas L., to Central Sales Promotions, Inc. Two faced display holder. 4,238,897, Cl. 40-16.200.

Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Rainer, Georg, 4,239,901, Cl. 560-34.000.

C. A. Weidmuller KG: *See—*
Stenz, Paul P., 4,239,324, Cl. 339-198.00G.

C.P. Chemical Company, Inc.: *See—*
Hasselman, Walter, Jr., 4,239,881, Cl. 528-164.000.

Cablecraft, Inc.: *See—*
Fawcett, Harry E., 4,238,974, Cl. 74-501.00R.

Cadet, Jean-Claude A. M.: *See—*
Hullein, Francois M. L.; and Cadet, Jean-Claude A. M., 4,240,069, Cl. 340-347.00P.

Cadwell, Ronald G.: *See—*
Monigold, Larry E.; and Cadwell, Ronald G., 4,239,153, Cl. 236-86.000.

Cairns, Hugh; Brown, Kenneth; and Altouyan, Roger E. C., to Fisons Limited. Inorganic salts of 2,8-dicarboxy-4,6-dioxo-10-propyl-4H,6H-benzo(1,2-b:5,4-b')dipyran useful for the treatment of asthma and hay fever. 4,239,748, Cl. 424-45.000.

Callaghan, Vincent M.: *See—*
Bevilacqua, Frank; Callaghan, Vincent M.; and Van Fleet, James L., 4,239,596, Cl. 176-37.000.

Callicoatte, Jerry D., to Texas Plastics Industries, Inc. Method and apparatus for protecting pipe threads. 4,239,062, Cl. 138-96.00R.

Camco, Incorporated: *See—*
Terral, Ben D., 4,239,082, Cl. 166-117.500.

Camp, Albert T.; Csanady, Elmer R.; and Mosher, Paul R., to United States of America, Navy. Plateau propellant compositions. 4,239,561, Cl. 149-19.800.

Camp, Donald A.: *See—*
Rabinowitz, Charles M.; and Camp, Donald A., 4,240,047, Cl. 331-154.000.

Campbell, Gerald A.: *See—*
Archie, William C., Jr.; and Campbell, Gerald A., 4,239,847, Cl. 430-213.000.

Campbell, Grover R.; and Hobbs, James W., to Phillips Petroleum Company. Fractionator feed tank pressure control. 4,239,517, Cl. 62-37.000.

Campbell, Joe C.; Lau, Kam-Yin; and Stone, Julian, to Bell Telephone Laboratories, Incorporated. Magneto-optic modulator using dielectric mirrors. 4,239,337, Cl. 350-151.000.

Campbell, John E.: *See—*
Hughes, Paul R.; and Campbell, John E., 4,240,077, Cl. 340-500.000.

Campbell, Scott, to Energy Conservation Unlimited, Inc. Waste heat recovery system controller. 4,238,931, Cl. 62-183.000.

Campolmi, Stefano; Felicioli, Maria G.; Carletti, Vittorio; and Santi, Roberto, to Montedison S.p.A. Process for preparing 2-(6'-methoxy-2'-naphthyl)-propionic acid. 4,239,914, Cl. 562-466.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Ward, Frederick D., 4,239,234, Cl. 273-391.000.

Canadian Fram Limited: *See—*
De Jong, Allen W., 4,239,095, Cl. 192-84.00T.

Cannon, Robert E., to Textron, Inc. Slide fastener installation. 4,238,871, Cl. 24-205.11R.

Canon Kabushiki Kaisha: *See—*
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.

Carletti, Vittorio: *See—*
Campolmi, Stefano; Felicioli, Maria G.; Carletti, Vittorio; and Santi, Roberto, 4,239,914, Cl. 562-466.000.

Carlson, Russell R.; and Tschetter, John J. Belt drive for pump jack. 4,238,966, Cl. 74-41.000.

Carney, Ronald E.; Devault, Robert L.; McAlpine, James B.; and Sinclair, Arthur C., to Abbott Laboratories. O-Demethylseldomycin factor 5 derivatives. 4,239,752, Cl. 424-180.000.

Carpenter, Robert L.: *See—*
Bateman, Jess R.; Carpenter, Robert L.; and Smith, Ross K., 4,240,030, Cl. 324-110.000.

Carr, Timothy W.; Corl, Edwin A.; and Majtenyi, Carl G., to International Business Machines Corporation. Trace water measurement. 4,239,967, Cl. 250-281.000.

Carrier Corporation: *See—*
Pratap, Prem, 4,239,186, Cl. 251-255.000.

Carrieri, Louis F.; and Spanke, Edwin A., to Gulf & Western Manufacturing Company. Bolster arrangement for opposed slide double acting press. 4,238,950, Cl. 72-446.000.

Carter, Willis M., to University of Kentucky Research Foundation, The. Bevolute gear system. 4,238,970, Cl. 74-457.000.

Cason, Charles M., III; Perkins, James F.; and Jones, Robert W., to United States of America, Army. Unstable optical resonators with tilted spherical mirrors. 4,239,341, Cl. 350-294.000.

Castel, Yvon; and Cholet, Henri, to Institut Francais du Petrole. Drill bit with suction jet means. 4,239,087, Cl. 175-340.000.

Caterpillar Tractor Co.: *See—*
Lanz, William E.; and Stepe, Visvaldis A., 4,238,896, Cl. 37-141.00R.
Livesay, Richard E., 4,239,297, Cl. 305-11.000.

Cathers, William P.; and Dorn, Charles W., Jr., to PPG Industries, Inc. Apparatus for handling flexible sheet while applying graded shade band thereon. 4,239,016, Cl. 118-624.000.

Celotex Corporation, The: *See—*
Benjamin, Delmar E., 4,239,310, Cl. 312-227.000.

Central Sales Promotions, Inc.: *See—*
Byers, Thomas L., 4,238,897, Cl. 40-16.200.

Cerwin Vega, Inc.: *See—*
Czerwinski, Eugene J., 4,239,943, Cl. 179-115.5VC.

Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, to Snamprogetti. Process for the polymerization of alpha-olefins, catalyst employed in said process and method for the preparation thereof. 4,239,873, Cl. 526-114.000.

Chai, Bong J.; and Muggee, Fred D., to Magna Corporation. Method of preparing phosphonates from nitriles. 4,239,695, Cl. 260-502.500.

Champion International Corporation: *See—*
Hartman, Seymour; and Brown, Timothy M., 4,239,577, Cl. 156-312.000.
Roccaforte, Harry I.; and Sherwood, Irvin W., 4,239,104, Cl. 206-45.330.
Sorenson, John F.; and Locke, Frank W., 4,239,148, Cl. 229-36.000.
Vincent, David N.; and Golden, Ronald, 4,239,646, Cl. 252-316.000.

Chan, Yuk-Charn: *See—*
Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., 4,239,906, Cl. 536-56.000.

Chandavoine, Marie-Madeleine: *See—*
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Fillain, Paul de C., 4,239,893, Cl. 546-321.000.

Chandler, Christopher W.: *See—*
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.

Chandler, William B.; Davis, John D.; and Sergeant, Ronald G., to AMP Incorporated. Tooling with stepping motor drive. 4,238,874, Cl. 29-33.00M.

Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, to International Business Machines Corporation. Molecular-beam epitaxy system and method including hydrogen treatment. 4,239,584, Cl. 156-612.000.

Chang, Leroy L.: *See—*
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, 4,239,584, Cl. 156-612.000.

Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., to General Electric Company. Open tube aluminum oxide disc diffusion. 4,239,560, Cl. 148-189.000.

Chapuis, Maurice; and Machat, Jean-Yves, to Compagnie Generale des Etablissements Michelin. Membrane contactor. 4,239,979, Cl. 307-118.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Smith, T. Basil; Howatt, John R.; and McKenna, John F., Jr., 4,239,982, Cl. 307-219.000.

Charm, Stanley E., to Penicillin Assays, Inc. Antibiotic detection method. 4,239,745, Cl. 424-1.000.

Charm, Stanley E., to Penicillin Assays, Inc. Antibiotic detection method. 4,239,852, Cl. 435-32.000.

Chase, Paul W.: *See—*
Sniezek, Joseph T.; Chase, Paul W.; and Miller, Wendell D., 4,238,956, Cl. 73-861.010.

Chautard, Jean; and Chemizard, Andre, to Compagnie Generale des Etablissements Michelin. Pneumatic tire with puncture-sealing lining comprising vulcanizable and vulcanizing layers. 4,239,076, Cl. 152-347.000.

Chauvel, Gerard, to Texas Instruments Incorporated. System for direct access to a memory associated with a microprocessor. 4,240,138, Cl. 364-200.000.

Check, Frank T.; and Schubert, Keith E., to Pitney Bowes Inc. Scale with weight-to-period transducer. 4,239,088, Cl. 177-210.0FP.

Chemetal Corporation: *See—*
Holzl, Robert A., 4,239,819, Cl. 427-255.200.

Chemische Werke Huls AG: *See—*
Feldmann, Rainer; and Gorke, Klaus, 4,239,807, Cl. 428-462.000.

Chemithon Corporation, The: *See—*
Brooks, Richard J.; and Marson, Thomas W., 4,239,035, Cl. 126-452.000.

Chemizard, Andre: *See—*
Chautard, Jean; and Chemizard, Andre, 4,239,076, Cl. 152-347.000.

Chen, Sow-Mei L.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,899, Cl. 556-438.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,900, Cl. 556-438.000.

Chevron Research Company: *See—*
Blanton, William A., Jr., 4,239,742, Cl. 423-563.000.
Pearce, James C., 4,239,418, Cl. 405-211.000.

Chiang, Chih-Chang. Luggage lock. 4,239,269, Cl. 292-175.000.

Chiappetti, Arthur B. Energy producing system. 4,239,975, Cl. 290-1.00R.

Chicago Bridge & Iron Company: *See—*
Laverman, Royce J., 4,238,953, Cl. 73-40.700.

Chinoin Gyogyszer: *See—*
Bodnar, Janos; and Lugosi, Gyorgy, 4,239,653, Cl. 252-447.000.

Chiola, Vincent: *See—*
Faria, Sixdeniel; and Chiola, Vincent, 4,239.844, Cl. 430-67.000.

Chisso Corporation: *See—*
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.

Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Yanagioka, Hiroshi; Futami, Atsushi; Shinsenji, Masatake; and Tanaka, Minoru, 4,239,515, Cl. 55-223.000.

Chmyz, George: *See—*
Anderson, Marvin H.; Chmyz, George; Daus, Carl D.; and Kneip, George D., Jr., 4,240,033, Cl. 324-321.000.

Cho, Alfred Y., to Bell Telephone Laboratories, Incorporated. Effusion cells for molecular beam epitaxy apparatus. 4,239,955, Cl. 219-271.000.

Choay, S.A.: *See—*
Sache, Edgar; and Bertrand, Henri, 4,239,754, Cl. 424-183.000.

Choi, Charles K., to Occidental Petroleum Corporation. Process for stripping oil from fluidized ash and char particles to prepare the particles for decarbonization. 4,239,599, Cl. 201-2.500.

Cholet, Henri: *See—*
Castel, Yvon; and Cholet, Henri, 4,239,087, Cl. 175-340.000.

Chow, Kuen: *See—*
Braatz, Paul O.; Chow, Kuen; and Grinberg, Jan, 4,239,347, Cl. 350-336.000.

Christian, Glen H. Roll holder friction brake. 4,239,163, Cl. 242-55.200.

Christiansen, David W., to Babcock & Wilcox Company, The. Nuclear fuel spacer grid. 4,239,597, Cl. 176-78.000.

Ciba-Geigy AG: *See—*
Moore, Michael H., 4,239,386, Cl. 355-77.000.
Turner, George F. A. M., 4,239,202, Cl. 271-18.000.

Ciba-Geigy Corporation: *See—*
Darms, Roland, 4,239,880, Cl. 528-125.000.
Falk, Robert A., 4,239,915, Cl. 562-481.000.
Marshall, Alan; and Richardson, Norman, 4,239,648, Cl. 252-389.00A.

Ciliberti, David F.: *See—*
Harvey, Francis J., II; Ciliberti, David F.; Meyer, Thomas N.; and Fey, Maurice G., 4,239,740, Cl. 423-350.000.

Cincinnati Milacron Inc.: *See—*
Rieder, Walter E., 4,239,635, Cl. 252-34.000.

Cinquemani, Robert, to Aquatic Diet Technology Inc. Fish food composition and a process for enhancing the color of fish. 4,239,782, Cl. 426-2.000.

Ciszek, Theodore F., to International Business Machines Corporation. Method and apparatus for forming silicon crystalline bodies. 4,239,734, Cl. 422-246.000.

Citizen Watch Co., Ltd.: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,240,150, Cl. 364-705.000.
Kashima, Yoshinobu; and Yoshida, Makoto, 4,240,021, Cl. 320-2.000.
Sekine, Mitsuo, 4,240,154, Cl. 368-72.000.

Clancey, James T., to Conoco, Inc. Flushing fluid for centrifugal pumps used in the pipelining of slurries. 4,239,422, Cl. 406-47.000.

Clark, David J.: *See—*
Fahlen, Theodore S.; and Clark, David J., 4,240,044, Cl. 331-94.5PE.

Clark, Harold A.; and Haluska, Loren A., to Dow Corning Corporation. Organothiol-containing siloxane resins. 4,239,668, Cl. 260-29.20M.

Claudius Peters AG: *See—*
Krauss, Werner, 4,239,421, Cl. 406-12.000.

Clayton Dewandre Company Limited: *See—*
Page, Wilbur M., 4,239,293, Cl. 303-6.00M.

Clements, John A., to Technicon Instruments Corporation. Phase separator for continuous-flow analytical systems. 4,239,494, Cl. 23-230.00R.

Cline, Harvey E.; Anthony, Thomas R.; and Solomon, Harvey D., to General Electric Company. Sensitized stainless steel having integral normalized surface region. 4,239,556, Cl. 148-38.000.

Clitherow, John W.: *See—*
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.

Clovis, James S.: *See—*
Rock, Steven L.; and Clovis, James S., 4,239,508, Cl. 55-59.000.

Coaltex, Incorporated: *See—*
Justice, James C.; and Delli-Gatti, Frank A., 4,239,289, Cl. 299-18.000.

Cobb, A. Lawrence, to Composite Technology Corporation. Method for making a composite structure. 4,239,571, Cl. 156-196.000.

Cobe Laboratories, Inc.: *See—*
Hlavinka, Dennis J., 4,239,625, Cl. 210-321.300.

Cochran, Joseph W., to ComCo. Gas cycle fluid energy process for forming coal-in-oil mixtures. 4,239,496, Cl. 44-51.000.

Cohen, Ellis, to Dunlop Limited. Devices for the measurement of the physical state of a pneumatic tire. 4,240,061, Cl. 340-58.000.

Cohen, Howard S. Adhesive bonding of hook and loop type fabric surfaces. 4,239,829, Cl. 428-86.000.

Coker, George M., Jr: *See—*
Lessner, David L.; Macemon, James H.; Coker, George M., Jr; and Hodgson, Charles E., 4,239,391, Cl. 356-318.000.

Coleman, Clyde F.; and Torrington, Leslie A., to RCA Corporation. Video disc caddy. 4,239,108, Cl. 206-312.000.

Coleman, Clyde F., to RCA Corporation. Record extracting mechanism for caddy type video disc player. 4,239,238, Cl. 274-9.00B.

Coleman, Robert L., to Westinghouse Electric Corp. Ultrasonic transducer with chemical-setting inorganic cement backing for operation at high temperatures. 4,240,004, Cl. 310-327.000.

Colista, Dominic: *See—*
Johnston, Robert J.; Colista, Dominic; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,239,946, Cl. 200-51.130.

Collard, Louis-Jean. Floating electric generator using the driving energy of water. 4,239,976, Cl. 290-42.000.

Collins, Charles G., to Shell Oil Company. Method for producing catalyst pellets of uniform size. 4,239,140, Cl. 225-4.000.

Colonna des Princes, Louis. Retaining device for an obstacle rail. 4,239,168, Cl. 248-293.000.

Columbia Machine, Inc.: *See—*
Hanson, Edward W., 4,239,433, Cl. 414-84.000.

Combustion Engineering, Inc.: *See—*
Bevilacqua, Frank; Callaghan, Vincent M.; and Van Fleet, James L., 4,239,596, Cl. 176-37.000.
Waryasz, Richard E., 4,238,923, Cl. 60-39.120.

ComCo: *See—*
Cochran, Joseph W., 4,239,496, Cl. 44-51.000.

Commonwealth Industrial Gases Limited, The: *See—*
Holmes, Ronald W., 4,239,038, Cl. 128-205.130.

Commonwealth Scientific and Industrial Research Organization: *See—*
Bailey, Frank P.; and Coogan, Clive K., 4,238,957, Cl. 73-343.00R.

Compagnie due Roneo and Fluidelec: *See—*
Thibonnier, Jacques; Douard, Pierre-Rene; and Thepot, Jean M. L., 4,239,420, Cl. 406-2.000.

Compagnie Generale des Etablissements Michelin: *See—*
Chapuis, Maurice; and Machat, Jean-Yves, 4,239,979, Cl. 307-118.000.
Chautard, Jean; and Chemizard, Andre, 4,239,076, Cl. 152-347.000.

Composite Technology Corporation: *See—*
Cobb, A. Lawrence, 4,239,571, Cl. 156-196.000.

Conant, Roger P.; and Duffy, Raymond G., to Laminating & Coating Corporation. Flexible pouch with cross-oriented puncture guard. 4,239,111, Cl. 206-484.000.
Condor Engineering & Manufacturing, Inc.: *See—*
Arribau, Jorge O.; and Dorn, Russell J., 4,239,396, Cl. 366-2.000.
Conlon, Edward B., to Baltek Corporation. Lightweight railway car hatch cover. 4,239,008, Cl. 105-377.000.
Conoco, Inc.: *See—*
Clancey, James T., 4,239,422, Cl. 406-47.000.
McClaflin, Gifford G., 4,239,052, Cl. 137-13.000.
Yang, Kang, 4,239,917, Cl. 568-618.000.
Containaire, Inc.: *See—*
Mueller, John J.; and Beall, Glenn L., 4,239,132, Cl. 222-212.000.
Container Corporation of America: *See—*
Dunsmoor, Earl W., Jr., 4,239,593, Cl. 162-303.000.
Gardner, Jeffrey M., 4,239,147, Cl. 229-15.000.
Continental Group, Inc., The: *See—*
Swaroop, Nareshwar, 4,239,471, Cl. 425-144.000.
Continental Oil Company: *See—*
Dudt, Philip J., 4,239,718, Cl. 264-117.000.
Contreras, Robert L.: *See—*
Monroe, Gary S.; Contreras, Robert L.; and Hummel, Gregory C., 4,238,876, Cl. 29-401.100.
Coogan, Clive K.: *See—*
Bailey, Frank P.; and Coogan, Clive K., 4,238,957, Cl. 73-343.00R.
Cook, Charles F.: *See—*
Hays, George E.; and Cook, Charles F., 4,239,510, Cl. 55-68.000.
Cook, Robert L. Device for conversion of centrifugal force to linear force and motion. 4,238,968, Cl. 74-84.00R.
Coombs, Murray. Energy conserving vapor compression air conditioning system. 4,238,933, Cl. 62-238.00E.
Cooper Industries, Inc.: *See—*
Boynton, Kenneth G., 4,239,812, Cl. 427-96.000.
Copeland Corporation: *See—*
Elson, John P., 4,239,461, Cl. 417-312.000.
Copp, David H.: *See—*
Blahut, Donald E.; Copp, David H.; and Stanzione, Daniel C., 4,240,142, Cl. 364-200.000.
Corbett, Gerald L. Rigging sling with separator. 4,239,272, Cl. 294-74.000.
Corey, Robert L., to Unarco Industries, Inc. Package flow system. 4,239,100, Cl. 193-35.00R.
Corl, Edwin A.: *See—*
Carr, Timothy W.; Corl, Edwin A.; and Majtenyi, Carl G., 4,239,967, Cl. 250-281.000.
Cornell, Richard H., to United States of America, Air Force. Fuel flow distribution system. 4,239,053, Cl. 137-110.000.
Corning Glass Works: *See—*
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,239,519, Cl. 65-2.000.
Beall, George H., 4,239,521, Cl. 65-33.000.
Borrelli, Nicholas F.; and Young, Peter L., 4,239,338, Cl. 350-155.000.
Grossman, David G., 4,239,520, Cl. 65-33.000.
Coronelli, Carolina; Beretta, Grazia; Bardone, Maria R.; and Parenti, Francesco, to Gruppo Lepetit S.p.A. Antibiotic substances. 4,239,751, Cl. 424-118.000.
Coty, Vernon F.: *See—*
Doll, Brian E.; Coty, Vernon F.; and Lifland, Philip P., 4,239,620, Cl. 210-601.000.
Couch, Robert D., Jr.: *See—*
Oates, Robert M.; Neuner, James A.; Couch, Robert D., Jr.; and Kasinoff, Alan M., 4,239,595, Cl. 176-19.00R.
Coulter Systems Corp.: *See—*
Kuehnle, Manfred R., 4,240,125, Cl. 361-230.000.
Coursen, David L., to Du Pont de Nemours, E. I., and Company. In situ leaching of ore bodies. 4,239,286, Cl. 299-4.000.
CP Test Services-Valvco, Inc.: *See—*
Shope, Thomas, 4,239,056, Cl. 137-370.000.
Crane Packing Limited: *See—*
Wilkinson, Samuel C. W., 4,239,240, Cl. 277-84.000.
Crary, John R., Jr.: *See—*
Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., 4,239,906, Cl. 536-56.000.
Crivello, James V., to General Electric Company. Low temperature curable organic resin compositions. 4,239,725, Cl. 264-328.600.
Crookshanks, Rex J., to Ampex Corporation. Fast semiconductor digital logic inverter gate. 4,239,981, Cl. 307-214.000.
Croop, Edward J.: *See—*
Dixon, George D.; and Croop, Edward J., 4,239,077, Cl. 156-272.000.
Cross, Peter E.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.
Crossin, John P.: *See—*
Boudreau, Ronald B.; and Crossin, John P., 4,239,255, Cl. 280-605.000.
Crossley, Rolland S. Game board apparatus. 4,239,229, Cl. 273-255.000.
Csanady, Elmer R.: *See—*
Camp, Albert T.; Csanady, Elmer R.; and Mosher, Paul R., 4,239,561, Cl. 149-19.800.
Cucinella, Salvatore: *See—*
Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, 4,239,692, Cl. 260-448.00R.
Culver, Richard B.: *See—*
Oliver, Donald W.; and Culver, Richard B., 4,239,965, Cl. 250-270.000.
Cunningham, Emmett M., to Plastics, Inc. Portable turntable for microwave oven. 4,239,009, Cl. 108-20.000.
Cunningham, James R., to Matthey Bishop Incorporated. Metal substrate formation with torx recess mandrel. 4,239,834, Cl. 428-592.000.
Cunningham, Leroy G. Fishing pole eye. 4,238,900, Cl. 43-24.000.
Curchod, Donald B., to American Fitness, Inc. Punching bag simulator. 4,239,209, Cl. 272-76.000.
Curtis, George C.; McInturff, Joe A.; Rubel, Herbert J.; and Wall, William F., to Lockheed Corporation. Means for balancing rotors of a machine. 4,238,960, Cl. 73-462.000.
Curtis, Joel E.; and Hall, Thornton D., to Gold Kist, Inc. Method and apparatus for field-drying harvested crops. 4,238,890, Cl. 34-22.000.
Cushman, Robert H., to Pennwalt Corporation. Simultaneously displaying varying tomographic images of dental arch with single panoramic X-ray exposure. 4,239,971, Cl. 250-439.00P.
Czerwinski, Eugene J., to Cerwin Vega, Inc. Adjustable dual spider for a loudspeaker. 4,239,943, Cl. 179-115.5VC.
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, to Klein, Schanzlin & Becker Aktiengesellschaft. Heat barrier for motor-pump aggregates. 4,239,462, Cl. 417-373.000.
Dahl, Klaus J., to Raychem Corporation. Process for isolation of solid polymers. 4,239,884, Cl. 528-486.000.
Dahlquist, Jon G. High accuracy bass reproducer device. 4,239,090, Cl. 181-172.000.
Daigle, Donald J.: *See—*
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,239,701, Cl. 564-15.000.
Daiichi Seiyaku Co., Ltd.: *See—*
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Tomita, Yukio; and Nishio, Taketaro, 4,239,379, Cl. 355-52.000.
Daitoku, Koichi, to Nippon Kogaku K.K. Power-driven rewind device of a camera. 4,239,166, Cl. 242-71.600.
Dakss, Mark L.; Meslener, George J.; and Stone, Samuel M., to GTE Laboratories Incorporated. Non-twist eccentric coupler. 4,239,333, Cl. 350-96.210.
D'Amico, John J.; and Schafer, David E., to Monsanto Company. 2-(Pyridylthio)pyridine-N-oxides. 4,239,527, Cl. 71-94.000.
Dana Corporation: *See—*
Janson, Gunnar H., 4,239,092, Cl. 188-267.000.
Danilewicz, John C.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.
Danziger, Harry; and Kaiser, Bernd-Ulrich, to Bayer Aktiengesellschaft. Purification of caprolactam. 4,239,682, Cl. 260-239.30A.
Darms, Roland, to Ciba-Geigy Corporation. Aromatic diamines and their use as polycondensation components for the manufacture of polyamide, polyamide-imide and polyimide polymers. 4,239,880, Cl. 528-125.000.
Dataproducts Corporation: *See—*
Van Horne, Arthur C.; and Young, James E., 4,239,405, Cl. 400-616.100.
Daum, Gerhard: *See—*
Bernhardt, Gunther; and Daum, Gerhard, 4,239,703, Cl. 568-431.000.
Daus, Carl D.: *See—*
Anderson, Marvin H.; Chmyz, George; Daus, Carl D.; and Kneip, George D., Jr., 4,240,033, Cl. 324-321.000.
Davini, Giorgio, to Basfer S.r.L. Light-weight program controller. 4,239,431, Cl. 414-1.000.
Davis, John D.: *See—*
Chandler, William B.; Davis, John D.; and Sergeant, Ronald G., 4,238,874, Cl. 29-33.00M.
Davis, Leighton I. Athletic swing training device and method. 4,239,227, Cl. 273-186.00A.
Davis, Lorne A., Jr., to Texaco Inc. Means and method for determining water saturation of oil. 4,240,028, Cl. 324-61.00R.
Dawless, Robert K.; and Jacobs, Stanley C., to Aluminum Company of America. Production of extreme purity aluminum. 4,239,606, Cl. 204-67.000.
Day, Edward A.; Seay, Glenn E.; and Ritter, Perry B., to Systems, Science & Software. Delay detonator device. 4,239,004, Cl. 102-28.00R.
Dayco Corporation: *See—*
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.
Howerton, Anderson W., 4,239,566, Cl. 156-137.000.
Kleykamp, Donald L.; and Neroni, Peter J., 4,239,007, Cl. 105-225.000.
McLean, Michael E., 4,239,562, Cl. 156-64.000.
McLean, Michael E.; Ensley, Rufus N.; Haren, Doyle V.; and Alcaraz, Anthony J., 4,239,821, Cl. 427-358.000.
Debaise, Michel J., to Hainaut-Sambre Societe Anonyme. Tuyere for the bottom of a steelworks converter. 4,239,194, Cl. 266-270.000.
Decher, Friedrich; and Bachorz, Gunther, to Hermann SCHWABE, Firma. Inductive element construction, particularly fluorescent lamp ballast. 4,240,057, Cl. 336-165.000.

Decker, Marvin G.: *See—*
Barnsbee, Clive D.; and Decker, Marvin G., 4,239,164, Cl. 242-55.530.
Decker, Thomas A.: *See—*
Williams, Robert E.; Decker, Thomas A.; Kurtzman, Charles; and Kuether, Christian L., 4,239,351, Cl. 351-36.000.
DeFilipps, Fred A.; Lipper, Roy O.; Winters, Luther R., Jr.; Nordstrom, Larry A.; and Szechy, Daniel J., to Scope Data Incorporated. Paper management system for a printing device. 4,239,404, Cl. 400-613.000.
de Fillain, Paul de C.: *See—*
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Fillain Paul de C., 4,239,893, Cl. 546-321.000.
De Fouw, Eugene A.; and Baker, Peter M., to Lear Siegler, Inc. Filing cabinet including drawer interlock. 4,239,309, Cl. 312-221.000.
deJong, Aaldert J.; and Heijmen, Hendricus J., to Shell Oil Company. Linalool from dimethyloctadiene via epoxide and cyclooctenol. 4,239,923, Cl. 568-875.000.
De Jong, Allen W., to Canadian Fram Limited. Slip band electromechanical clutch. 4,239,095, Cl. 192-84.00T.
Del Conte, Maria L., to Farmatis, S.p.A. Process for preparing 6-isobornyl-3,4-xylenol. 4,239,920, Cl. 568-734.000.
Delle-Alsthom: *See—*
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, 4,239,180, Cl. 251-51.000.
Delli-Gatti, Frank A.: *See—*
Justice, James C.; and Delli-Gatti, Frank A., 4,239,289, Cl. 299-18.000.
Denay, Andre M. J., to Societe Herve & Fils S.A. Continuous assemblies of postal correspondence units. 4,239,114, Cl. 206-610.000.
Dennison Manufacturing Company: *See—*
Devitt, Edmund B., 4,240,081, Cl. 346-75.000.
Denton, Dennis N.: *See—*
Bainard, Dean R.; and Denton, Dennis N., 4,239,243, Cl. 277-153.000.
DePaul, Harry V.; and Panchak, John R., to Air Products and Chemicals, Inc. Stabilization of halogenated polyols for polyurethane production. 4,239,642, Cl. 252-182.000.
DeSantis, John. Display stand. 4,239,169, Cl. 248-412.000.
DeSimone, Salvatore: *See—*
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, 4,239,832, Cl. 428-539.000.
DeSoto, Inc.: *See—*
Marek, Emanuel F.; and Migdal, Alex H., 4,239,541, Cl. 106-15.050.
Detectors, Inc.: *See—*
Rubey, Ulyss R., 4,239,014, Cl. 116-203.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Schuster, Rolf, 4,239,484, Cl. 432-77.000.
Deutsche Texaco Aktiengesellschaft: *See—*
Helbig, Klaus; and Rietsch, Eike, 4,240,070, Cl. 340-347.0DA.
Devault, Robert L.: *See—*
Carney, Ronald E.; Devault, Robert L.; McAlpine, James B.; and Sinclair, Arthur C., 4,239,752, Cl. 424-180.000.
DevChoudhury, Rathindra N., to NCR Corporation. Power limiting circuit for bar code reader. 4,240,064, Cl. 340-146.3AG.
Develop Dr. Eisbein GmbH & Co.: *See—*
Eisbein, Jurgen; and Wegmann, Helmut, 4,239,375, Cl. 355-16.000.
Devitt, Edmund B., to Dennison Manufacturing Company. Ink jet printing. 4,240,081, Cl. 346-75.000.
Devos, Gaston. Universal homokinetic joint. 4,238,936, Cl. 64-21.000.
DeVries, Wayne J.: *See—*
Hildebrandt, Eugene F.; Ottersbach, Thomas V.; and DeVries, Wayne J., 4,240,001, Cl. 310-68.00E.
deWitt, Paolo; and Tinti, Maria O., to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Process for preparing aromatic aldehydes and alcohols. 4,239,702, Cl. 568-435.000.
Diamond International Corporation: *See—*
Harvey, Albert J., 4,239,569, Cl. 156-156.000.
Diamond Shamrock Corporation: *See—*
Rolls, James A.; and Brenis, Kenneth L., 4,239,679, Cl. 260-42.490.
Dick, David C.; and Hurt, James M., Jr., to Texas Utilities Services, Inc. Absorber tower maintenance isolation system. 4,239,711, Cl. 261-109.000.
Dickey-john Corporation: *See—*
Amburn, Raymond D., 4,239,010, Cl. 111-1.000.
Didier Engineering GmbH: *See—*
Fach, Horst; and Meckel, Joachim F., 4,238,891, Cl. 34-57.00R.
Dieck, Ronald L., to General Electric Company. Modified polyester compositions. 4,239,677, Cl. 260-40.00R.
Diedrich, Bernd: *See—*
Franke, Rainer; and Diedrich, Bernd, 4,239,650, Cl. 252-429.00B.
Diessel, Paul: *See—*
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, 4,239,641, Cl. 252-142.000.
Dinges, Frank; and Tartaglio, Robert L. Keyboard operated controller. 4,240,011, Cl. 315-292.000.
Dingwall, Andrew G. F., to RCA Corporation. Integrated circuit device including both N-channel and P-channel insulated gate field effect transistors. 4,240,093, Cl. 357-42.000.
Dinklage, Horst: *See—*
Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, 4,239,671, Cl. 260-29.6TA.
Dinter, Peter: *See—*
Kolbe, Andreas; and Dinter, Peter, 4,239,973, Cl. 250-531.000.
Dionne, Yvon O.: *See—*
Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, 4,240,026, Cl. 324-54.000.
Dixon, George D.; and Croop, Edward J., to Westinghouse Electric Corp. Method of making heat curable adhesive coated insulation for transformers. 4,239,077, Cl. 156-272.000.
Dixon, Russel H. Water-pressure, drain-cleaning device. 4,238,860, Cl. 4-256.000.
Dobias, Frank L., to Binks Manufacturing Company. Air washer particularly for paint spray booths. 4,239,512, Cl. 55-90.000.
Dobkin, Robert C., to Hyrbrinetics, Inc. Power control arrangement and control circuit especially suitable for use therewith. 4,239,986, Cl. 307-252.00B.
Dobrinsky, Gleb K.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.
Dobrosielski, Stephen S.: *See—*
Johnston, Robert J.; Colista, Dominic; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,239,946, Cl. 200-51.130.
Dobson, Austin J.: *See—*
Dobson, George M.; Zerner, Donald T.; and Dobson, Austin J., 4,239,126, Cl. 221-211.000.
Dobson, George M.; Zerner, Donald T.; and Dobson, Austin J. Seed sower having apertured pick-up member. 4,239,126, Cl. 221-211.000.
Dockal, E. J. Head-supported optic shield. 4,239,352, Cl. 351-57.000.
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, to BASF Aktiengesellschaft. Process for producing 1-hydroxymethylimidazoles. 4,239,895, Cl. 548-341.000.
Dr. Ing. Rudolf Hell GmbH: *See—*
Wellendorf, Klaus; and Sommer, Ruediger, 4,240,117, Cl. 358-296.000.
Wellendorf, Klaus; and Sommer, Ruediger, 4,240,118, Cl. 358-296.000.
Dodemont, Gerard P.; and Viallefont, Christian H., to Poclain. Device for the rotary assembly of a member controlled by pressurized fluid. 4,239,273, Cl. 294-88.000.
Doi, Kiyoshi. Camera body mount. 4,239,364, Cl. 354-286.000.
Doland, George D. Concatenated error correcting system. 4,240,156, Cl. 371-43.000.
Doll, Brian E.; Coty, Vernon F.; and Lifland, Philip P., to Mobil Oil Corporation. Cyanide removal from wastewaters. 4,239,620, Cl. 210-601.000.
Domtar Inc.: *See—*
Job, Allen R., 4,239,537, Cl. 75-257.000.
Dorfman, Bertrand. Carrier current communications system. 4,239,940, Cl. 179-2.510.
Dorn, Charles W., Jr.: *See—*
Cathers, William P.; and Dorn, Charles W., Jr., 4,239,016, Cl. 118-624.000.
Dorn, Russell J.: *See—*
Arribau, Jorge O.; and Dorn, Russell J., 4,239,396, Cl. 366-2.000.
Dostmann GmbH & Co. KG: *See—*
Dostmann, Heinz, 4,238,958, Cl. 73-386.000.
Dostmann, Heinz, to Dostmann GmbH & Co. KG. Barometer. 4,238,958, Cl. 73-386.000.
Douard, Pierre-Rene: *See—*
Thibonnier, Jacques; Douard, Pierre-Rene; and Thepot, Jean M. L., 4,239,420, Cl. 406-2.000.
Douglas Battery Manufacturing Co.: *See—*
Picciolo, William A., 4,239,836, Cl. 429-65.000.
Dow Chemical Company, The: *See—*
Bredeweg, Corwin J., 4,239,863, Cl. 525-263.000.
Hairston, Thomas J., 4,239,919, Cl. 568-727.000.
Hudson, Roger D., 4,239,267, Cl. 285-228.000.
Woo, Edmund P., 4,239,694, Cl. 260-465.00D.
Dow Corning Corporation: *See—*
Clark, Harold A.; and Haluska, Loren A., 4,239,668, Cl. 260-29.20M.
Homan, Gary R.; and Lee, Chi-long, 4,239,674, Cl. 260-37.0SB.
Legrow, Gary E.; and Gauthier, Laura A., 4,239,867, Cl. 525-478.000.
Dow Corning K.K.: *See—*
Asai, Kiyoshi, 4,239,042, Cl. 128-214.400.
Dowle, Michael D.: *See—*
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.
Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, to Anic S.p.A. Oligomeric iminic derivatives of aluminum hydride and method for the ir preparation. 4,239,692, Cl. 260-448.00R.
Dresser Industries, Inc.: *See—*
Baron, George B., 4,239,305, Cl. 308-222.000.
Fenske, Douglas H., 4,239,736, Cl. 423-173.000.
Oliver, Donald W.; and Culver, Richard B., 4,239,965, Cl. 250-270.000.
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, to Robert Bosch GmbH. Method and apparatus for fuel control of an internal combustion engine during cold-starting. 4,239,022, Cl. 123-491.000.
Dreyfus, Russell W.; Penebre, Nicholas A.; and McCorkle, Richard A., to International Business Machines Corporation. Microchannel ion gun. 4,240,007, Cl. 315-111.800.
Dri-Steem Humidifier Co., Inc.: *See—*
Morton, Bernard W., 4,239,956, Cl. 219-272.000.

Drnevich, Raymond F., to Union Carbide Corporation. Purge gas conditioning of high intensity ionization system for particle removal. 4,239,505, Cl. 55-12.000.

Dropczynski, Hartmut: *See—*
Schonmeier, Herbert; and Dropczynski, Hartmut, 4,239,142, Cl. 226-194.000.

Dross, Joachim: *See—*
Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, 4,239,722, Cl. 264-206.000.

Du Pont Canada, Inc.: *See—*
Pattenden, Thomas W. E., 4,239,831, Cl. 428-193.000.

Dudar, Walter H. Valve stem. 4,239,184, Cl. 251-149.600.

Dudt, Philip J., to Continental Oil Company. Process for agglomerating finely divided carbonaceous solids. 4,239,718, Cl. 264-117.000.

Duffy, James C. Rolling of stepped shafts. 4,238,944, Cl. 72-84.000.

Duffy, Raymond G.: *See—*
Conant, Roger P.; and Duffy, Raymond G., 4,239,111, Cl. 206-484.000.

Duncan, Robert L.; and Wiley, Paris H. Object indicator for moving vehicles. 4,240,152, Cl. 367-108.000.

Dunlop Australia Limited: *See—*
McDowall, William L.; and Maplesden, Alan K., 4,239,839, Cl. 429-154.000.

Dunlop Limited: *See—*
Cohen, Ellis, 4,240,061, Cl. 340-58.000.

Dunsmoor, Earl W., Jr., to Container Corporation of America. Multi-ply paperboard machine. 4,239,593, Cl. 162-303.000.

Dupommier, Jean-Marc: *See—*
Felten, Gilbert A.; and Dupommier, Jean-Marc, 4,239,579, Cl. 156-398.000.

Du Pont de Nemours, E. I., and Company: *See—*
Ahrens, James M., 4,239,387, Cl. 355-100.000.
Coursen, David L., 4,239,286, Cl. 299-4.000.
Hawkins, William E.; and Huskey, C. George, 4,239,160, Cl. 241-222.000.
Zumsteg, Fredrick C., 4,240,048, Cl. 332-7.510.

Durfee, Edward P. Fuel burner with air-deflecting object and method therefor. 4,239,482, Cl. 431-354.000.

Durham, Vernon O., Sr. Game of caddy. 4,239,232, Cl. 273-341.000.

Durst (U.K.) Ltd.: *See—*
Aston, Keith, 4,239,378, Cl. 355-35.000.
Aston, Keith; and Long, John G., 4,239,382, Cl. 355-63.000.

Dvornin, Vladimir S.: *See—*
Vasiliev, Petr E.; Dvornin, Vladimir S.; Kondratiev, Alexandr V.; and Kravchenko, Vladimir F., 4,240,141, Cl. 318-114.000.

Dworak, Gert: *See—*
Zima, Herbert; and Dworak, Gert, 4,239,672. Cl. 260-29.70H.

Dynachem Corporation: *See—*
Lipson, Melvin A.; and Zador, Eugene, 4,239,849, Cl. 430-281.000.

Dynamit Nobel AG: *See—*
Aust, Heinrich; Budich, Wolfgang; Nowak, Heinz; and Primessing, Franz, 4,239,574, Cl. 156-267.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Bernhardt, Gunther; and Daum, Gerhard, 4,239,703, Cl. 568-431.000.
Haage, Karl; and Scharff, Dieter, 4,239,795, Cl. 428-247.000.

E. R. Squibb & Sons, Inc.: *See—*
Eckhardt, Wolfram; and Hausladen, Johann. 4,239,970, Cl. 250-432.0PD.
Vogt, B. Richard; and Simpkins, Ligaya M., 4,239,896, Cl. 548-378.000.

Eastman Kodak Company: *See—*
Adin, Anthony; and Wilson, John C., 4,239,848, Cl. 430-270.000.
Archie, William C., Jr.; and Campbell, Gerald A., 4,239,847, Cl. 430-213.000.
Barnsbee, Clive D.; and Decker, Marvin G., 4,239,164, Cl. 242-55.530.
Gysling, Henry J.; and Gardner, Sylvia A., 4,239,846, Cl. 430-202.000.
Harvey, Donald M., 4,239,361, Cl. 354-145.000.
Henry, James W., 4,240,110, Cl. 358-107.000.
Nelan, Donald R.; and Foster, Charles H., 4,239,691, Cl. 260-345.500.
Sandhu, Mohammad A., 4,239,842, Cl. 430-7.000.

Eaton Allen Corp.: *See—*
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, 4,239,832, Cl. 428-539.000.

Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, to Citizen Watch Co., Ltd. Portable timepiece calculator with power savings feature. 4,240,150, Cl. 364-705.000.

Eckhardt, Wolfram; and Hausladen, Johann, to E. R. Squibb & Sons, Inc. Radionuclide generator. 4,239,970, Cl. 250-432.0PD.

Edgar, William D., to Koppers Company, Inc. Tall coke oven sole flue. 4,239,600, Cl. 202-138.000.

Edinen Centar Po Chimia: *See—*
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., 4,239,605, Cl. 204-59.00R.

Edmundson, Thomas G.: *See—*
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.

Edwards, Alan J.: *See—*
Atkinson, Geoffrey R.; and Edwards, Alan J., 4,239,472, Cl. 425-388.000.

Edwards, Nathan P.; and White, James M., to International Business Machines Corporation. Non-destructive charge transfer device differencing circuit. 4,239,983, Cl. 307-221.00D.

Edwards, Roy. Method for treating skin ailments. 4,239,781, Cl. 424-342.000.

Ege, Werner: *See—*
Gross, Albert; and Ege, Werner, 4,239,113, Cl. 206-568.000.

Egosi, Dan. Fuel-efficient generation of ejecting steam. 4,239,603, Cl. 203-11.000.

Eguchi, Syusaku: *See—*
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.

Eilingsfeld, Heinz: *See—*
Seybold, Guenther; and Eilingsfeld, Heinz, 4,239,894, Cl. 548-194.000.

Eisbein, Jurgen; and Wegmann, Helmut, to Develop Dr. Eisbein GmbH & Co. Image carrier drum for an electrophotographic copier. 4,239,375, Cl. 355-16.000.

Eisele, Judith A.; Bauer, Donald J.; and Bremner, Paul R., to United States of America, Interior. Removal of impurites from clay. 4,239,735, Cl. 423-126.000.

Eisenberg, Bernard C.; and Walz, John C., to Solbern Corp. Apparatus for diverting articles. 4,239,116, Cl. 209-523.000.

Electric Power Development Co. Ltd.: *See—*
Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, 4,239,426, Cl. 406-197.000.

Elite Engineering Limited: *See—*
Rose, Edwin J., 4,238,948, Cl. 72-332.000.

Elkay Manufacturing Company: *See—*
Arnold, Don C.; Silletti, Julio D.; Ritzenthaler, Richard L.; and Wilcox, Thomas J., 4,239,182, Cl. 251-61.200.

Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, to Kulicke & Soffa Industries, Inc. Apparatus for wire bonding. 4.239,144, Cl. 228-1.00R.

Ellman, Alan G.; and Garito, Jon C. Dental threaded tapered post with vent. 4,239,489, Cl. 433-220.000.

Elson, John P., to Copeland Corporation. Compressor induction system. 4,239,461, Cl. 417-312.000.

Elton, Edward F.; Patrylak, Andrew J.; and Santangelo, Joseph G., to Air Products and Chemicals, Inc. Process for oxidation of black liquor. 4,239,589, Cl. 162-31.000.

Emerson Electric Co.: *See—*
Hildebrandt, Eugene F.; Ottersbach, Thomas V.; and DeVries, Wayne J., 4,240,001, Cl. 310-68.00E.
Williams, Steven E.; and Kunz, Bernard L., 4,239,177, Cl. 251-11.000.

Emert, Ken; and Rogers, Dan. Self-priming liquid dispenser. 4,239,131, Cl. 222-135.000.

Energy Conservation Unlimited, Inc.: *See—*
Campbell, Scott, 4,238,931, Cl. 62-183.000.

Engel, Hans O.; and Lueneburg, Wolfgang, to Honeywell Inc. Manual actuator for motor driven control valve. 4,239,178, Cl. 251-14.000.

Engeler, William E., to General Electric Company. Linearized charge transfer devices. 4,240,089, Cl. 357-24.000.

Engelhard Minerals and Chemicals Corporation: *See—*
Pfefferle, William C., 4,239,499, Cl. 48-197.00R.

Engelhardt, Joachim, to Wiegand Karlsruhe GmbH. Method of effectively utilizing thermal energy in spray drying. 4,239,588, Cl. 159-48.00R.

English, George J.; and Levin, Robert E., to GTE Products Corporation. Camera and reflector having offset optical and mechanical axes. 4,239,369, Cl. 362-348.000.

Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, to Bayer Aktiengesellschaft. Container for packaging wire roll. 4,239,110, Cl. 206-396.000.

Enke, Steven E.: *See—*
Venton, Duane L.; Le Breton, Guy C.; and Enke, Steven E., 4,239,778, Cl. 424-305.000.

Enser, Mats A.; and Stalberg, Nils G., to International Business Machines Corporation. Method and apparatus for reducing the number of rejected documents when reading bar codes. 4,239,151, Cl. 235-437.000.

Ensley, Rufus N.: *See—*
McLean, Michael E.; Ensley, Rufus N.; Haren, Doyle V.; and Alcaraz, Anthony J., 4,239,821, Cl. 427-358.000.

Entropy Limited: *See—*
Frank, Matthew W.; and Oberbeck, Donald E., 4,238,873, Cl. 126-443.000.

EOCOM Corporation: *See—*
Norton, Lyle K.; Prichard, Robert J.; and Ochi, Margit K., 4,240,119, Cl. 358-297.000.

Era, Vaino; and Lindberg, J. Johan, to Oy Kaukas AB. Method for preparing polyurethane coatings from a neutral substance of mixed soap. 4,239,667, Cl. 260-18.0TN.

Ermini, Erminio, to Italsider S.p.A. Method for removing sulfur dioxide. 4,239,737, Cl. 423-242.000.

Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Rolling bearing for linear movement having cage extending beyond outer sleeve. 4,239,298, Cl. 308-6.00C.

Ernst, Horst M.: *See—*
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Ersek, Robert A.: *See—*
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A., 4,239,492, Cl. 8-94.110.

Esaki, Leo: *See—*
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, 4,239,584, Cl. 156-612.000.

Esposito, Gary F. Water pistol and/or flashlight structure. 4,239,129, Cl. 222-79.000.

Etablissements Francois Salomon & Fils: *See—*
Riedel, Tilo, 4,239,254, Cl. 280-605.000.

Etlis, Volf S.: *See—*
Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.

Eubanks, Jerry D.; and Rose, Charles F., to Samsonite Corporation. Luggage case with brace. 4,239,093, Cl. 190-41.00R.

Evans, David P. Article of footwear with a backward extension to the sole. 4,238,894, Cl. 36-25.00R.

Evans, Karl K. Thermal expansion joint for pipes. 4,239,264, Cl. 285-173.000.

Everson, Clifford R. Device for lifting and carrying loads on top of pickup trucks. 4,239,438, Cl. 414-462.000.

EVG Entwickoungs-Gesellschaft mbH: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,239,951, Cl. 219-56.000.

Ewers, Marion H. Collapsible walker. 4,239,248, Cl. 280-42.000.

Excell Corporation: *See—*
Nakagawa, Tatsuya, 4,239,474, Cl. 425-525.000.

Exxon Research & Engineering Co.: *See—*
Brois, Stanley J.; and Gutierrez, Antonio, 4,239,636, Cl. 252-48.600.
Gladrow, Elroy M.; and Winter, William E., 4,239,654, Cl. 252-455.00Z.
Gutierrez, Antonio; and Brois, Stanley J., 4,239,633, Cl. 252-32.70E.
Marin, Pierre D.; Prillieux, Marcel; and Tirtiaux, Robert, 4,239,634, Cl. 252-33.000.
Mitchell, Howard L., III; and Waghorne, Robert H., 4,239,658, Cl. 252-465.000.
White, Kevin E., 4,240,015, Cl. 318-338.000.
Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., 4,240,098, Cl. 357-74.000.

Eysn, Manfred; and Meyer, Daniel, to Voest-Alpine Aktiengesellschaft; and Societe Siderurgique Chatillon Neuves Maisons. Converter bottom fastening arrangement. 4,239,193, Cl. 266-243.000.

Fabian, Wolfgang; Kranz, Joachim; and Stoeckelmann, Guenter, to BASF Aktiengesellschaft. Easily water-dispersed formulations of finely divided phthalocyanines. 4,239,549, Cl. 106-308.00Q.

Fabris, Hubert J.; Herold, Robert J.; and Schmucker, Arden E., to General Tire & Rubber Company, The. Thermoplastic polyurethane prepared from a poly-1,2-propylene ether glycol, a low molecular weight glycol and 2,4-tolylene diisocyanate. 4,239,879, Cl. 528-76.000.

Fach, Horst; and Meckel, Joachim F., to Bergwerksverband GmbH; and Didier Engineering GmbH. Arrangement for drying and preheating of coking coal. 4,238,891, Cl. 34-57.00R.

Fahlen, Karl L., to Aktiebolaget Electrolux. Brush-beater roller for a vacuum cleaner. 4,238,870, Cl. 15-389.000.

Fahlen, Theodore S.; and Clark, David J., to GTE Products Corporation. Pulsed laser electrode assembly. 4,240,044, Cl. 331-94.5PE.

Fahlvik, Hans A.; and Sandquist, Kurt E., to Aktiebolaget Electrolux. Autoclave apparatus for sterilizing objects. 4,239,730, Cl. 422-109.000.

Falk, Robert A., to Ciba-Geigy Corporation. Perfluoroalkyl carboxylic acids. 4,239,915, Cl. 562-481.000.

Fanning, William J.; and Masopust, Otto T., Jr., to Western Electric Company, Inc. Metallized film capacitor and method of manufacture. 4,240,127, Cl. 361-304.000.

Faria, Sixdeniel; and Chiola, Vincent, to GTE Products Corporation. Electrophotoconductive Cd S Se materials with Cu and Cl. 4,239,844, Cl. 430-67.000.

Farmatis, S.p.A.: *See—*
Del Conte, Maria L., 4,239,920, Cl. 568-734.000.

Faroudja, Yves C., to Faroudja, Yves C. Method and apparatus for separation of chrominance and luminance with adaptive comb filtering in a quadrature modulated color television system. 4,240,105, Cl. 358-31.000.

Farr, Eric, to Tecsports of Oxford Limited. Devices for practising ball-game stroke play. 4,239,215, Cl. 273-29.00A.

Fasth, Anders G., to Atlas Copco Aktiebolag. High pressure spray gun. 4,239,157, Cl. 239-288.500.

Fausone, David C. Face lifting equipment. 4,239,037, Cl. 128-76.00B.

Fawcett, Harry E., to Cablecraft, Inc. Universal seal and support guide for push-pull cable terminals. 4,238,974, Cl. 74-501.00R.

Feast, Alan A. J.: *See—*
Scott, Charles M.; and Feast, Alan A. J., 4,239,669, Cl. 260-29.60R.

Federal Signal Corporation: *See—*
Gosswiller, Earl W., 4,240,062, Cl. 340-81.00R.

Feldman, Donald W.; Weaver, Lelland A.; and Liu, Chi-Sheng, to Westinghouse Electric Corp. Metal vapor Raman frequency shifter. 4,239,995, Cl. 307-426.000.

Feldmann, Rainer; and Gorke, Klaus, to Chemische Werke Huls AG. Polyamide coated base material having an intermediate layer of polybutadiene. 4,239,807, Cl. 428-462.000.

Feldpausch, Hugo. Oscillating feeding apparatus. 4,239,103, Cl. 198-443.000.

Feldstein, Nathan, to Surface Technology, Inc. Catalytic primer. 4,239,538, Cl. 106-1.110.

Felicioli, Maria G.: *See—*
Campolmi, Stefano; Felicioli, Maria G.; Carletti, Vittorio; and Santi, Roberto, 4,239,914, Cl. 562-466.000.

Fellowes Manufacturing Company: *See—*
Klaus, Gerald R., 4,239,306, Cl. 312-111.000.

Felten, Gilbert A.; and Dupommier, Jean-Marc, to Goodyear Tire & Rubber Company, The. Tire building drum. 4,239,579, Cl. 156-398.000.

Felter, John V. Fan with adjustable legs for improving building heating and cooling. 4,239,459, Cl. 417-234.000.

Fennell Corporation: *See—*
Hyre, Charles E., 4,239,480, Cl. 431-264.000.

Fenske, Douglas H., to Dresser Industries, Inc. Method for increasing the brightness of limestone. 4,239,736, Cl. 423-173.000.

Fernandes, Robert J.: *See—*
Ridley, Richard D.; and Fernandes, Robert J., 4,239,284, Cl. 299-2.000.

Ferrigno, Thomas H. Low density fillers and pigments. 4,239,675, Cl. 260-39.0SB.

Ferro Manufacturing Corporation: *See—*
Pickles, Joseph, 4,238,991, Cl. 92-85.00A.

Feucht, Rudi: *See—*
Biermann, Peter; Feucht, Rudi; Schmidt, Manfred; and Storandt, Ralf, 4,239,257, Cl. 280-615.000.

Fey, Maurice G.: *See—*
Harvey, Francis J., II; Ciliberti, David F.; Meyer, Thomas N.; and Fey, Maurice G., 4,239,740, Cl. 423-350.000.

Fiat Auto S.p.A.: *See—*
Jacoponi, Stefano, 4,239,098, Cl. 192-111.00A.

Filippov, Iosif F.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.

Filtrol Corporation: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,239,651, Cl. 252-438.000.

Finetex Incorporated: *See—*
Brown, Herman, 4,239,631, Cl. 252-8.750.

Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, to Rohm GmbH. Dispersions of hydrophilic acrylic resins. 4,239,671, Cl. 260-29.6TA.

Finncombi Sakari Mononen Ky: *See—*
Mononen, Sakari, 4,239,067, Cl. 144-2.00Z.

Firestone Tire & Rubber Company, The: *See—*
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,239,860, Cl. 525-131.000.
Ravagnani, Frederick J.; and Schonfeld, Steven E., 4,239,663, Cl. 260-5.000.

Fischer, Rolf; and Weitz, Hans-Martin, to BASF Aktiengesellschaft. Preparation of crotonaldehydes. 4,239,706, Cl. 568-484.000.

Fischer, Winfried: *See—*
Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, 4,239,861, Cl. 525-151.000.

Fisons Limited: *See—*
Cairns, Hugh; Brown, Kenneth; and Altouyan, Roger E. C., 4,239,748, Cl. 424-45.000.

Fletcher, David L.; and Stadlin, Walter O., to Leeds & Northrup Company. Measuring system. 4,240,149, Cl. 364-483.000.

Fliege, Werner: *See—*
Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,239,657, Cl. 252-464.000.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. Various 15-deoxy-16-hydroxy-16-ethynyl and 16-ethynylsubstituted prostaglandins. 4,239,899, Cl. 556-438.000.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. Various 15-deoxy-16-hydroxy-16-ethynyl and 16-ethynylsubstituted prostaglandins. 4,239,900, Cl. 556-438.000.

Fluid Power Research, Inc.: *See—*
Heskett, Don E., 4,239,621, Cl. 210-687.000.

Flynn, Richard T.: *See—*
Kindell, Jerry L.; and Flynn, Richard T., 4,240,144, Cl. 364-200.000.

FMC Corporation: *See—*
Van Saun, William A., Jr., 4,239,773, Cl. 424-285.000.

Foa, Joseph V., to United States of America, Navy. Core-flow rotary jet. 4,239,155, Cl. 239-265.170.

Fodor, Lawrence M.: *See—*
Wilson, Joseph F.; Fodor, Lawrence M.; and Kenton, Joseph R., 4,239,522, Cl. 71-29.000.

Fomin, Valery A.: *See—*
Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.

Fontaine, Pierre, to Societe Nationale des Poudres et Explosifs. Device for receiving and handling propellant powders. 4,238,988, Cl. 86-1.00R.

Ford Motor Company: *See—*
Miller, Gerald R.; and Virkar, Anil V., 4,239,838, Cl. 429-104.000.
Simko, Aladar O., 4,239,023, Cl. 123-275.000.

Forme, Jacques, to Societe Chauvin Arnoux. Device for the transmission by load variation of an alternating analog signal from a sensor. 4,240,067, Cl. 340-870.370.

Foster, Charles H.: *See—*
Nelan, Donald R.; and Foster, Charles H., 4,239,691, Cl. 260-345.500.

Foster, Michael R.; and Smith, Jack E., to General Motors Corporation. Catalytic converter having a monolith with support and seal means therefor. 4,239,733, Cl. 422-179.000.

Foster Wheeler Energy Corporation: *See—*
McCallister, Robert A., 4,239,693, Cl. 260-449.500.

Four Star Corporation: *See—*
Kowalski, Daniel J., 4,239,138, Cl. 224-321.000.

Fowler, Thomas P., to Research Products Corporation. Load indicator for an air cleaner. 4,240,072, Cl. 340-664.000.

Frame, Floyd L. Tire stripping apparatus. 4,238,980, Cl. 82-54.000.

Frank, Anton: *See—*
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,239,895, Cl. 548-341.000.

Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., to United States of America, Agriculture. Ternary salts of tris(aminomethyl)phosphines and their oxides. 4,239,701, Cl. 564-15.000.

Frank, Matthew W.; and Oberbeck, Donald E., to Entropy Limited. Apparatus for collecting and transporting heat energy. 4,238,873, Cl. 126-443.000.

Franke, Rainer; and Diedrich, Bernd, to Hoechst Aktiengesellschaft. Process for the manufacture of a mixed catalyst. 4,239,650, Cl. 252-429.00B.

French, Gordon B., to Occidental Oil Shale, Inc. Method of attenuating airblast from detonating explosive in an in situ oil shale retort. 4,239,285, Cl. 299-2.000.

Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, to Vockenhuber, Karl; and Hauser, Raimund. System for the performance of photographing with a motion picture camera, still picture camera or television camera. 4,239,356, Cl. 354-23.00R.

Frohberg, Ekkehard: *See—*
Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, 4,239,110, Cl. 206-396.000.

Frohberger, Paul-Ernst: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Kuhle, Engelbert; Frohberger, Paul-Ernst; and Beandes, Wilhelm, 4,239,766, Cl. 424-269.000.
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.

Fromageries Bel, societe anonyme: *See—*
Guiraud, Richard J.; and Arnaud, Michel R., 4,239,784, Cl. 426-104.000.

Froom, Thomas W., to Rendoll Paper Corporation. Folding ice-cream carton and carton blank therefor. 4,239,115, Cl. 206-611.000.

Frye, Kenneth G., to Lenox Machine Company, Inc. Web spreader. 4,239,141, Cl. 226-7.000.

Fuji Photo Film Co., Ltd.: *See—*
Aoki, Kozo; and Yokota, Yukio, 4,239,851, Cl. 430-377.000.
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,239,843, Cl. 430-17.000.
Kato, Hajime; and Ogata, Yasuhiro, 4,239,815, Cl. 427-150.000.
Kita, Nobuyuki; Uchida, Toshio; Ikeda, Sadaharu; and Sato, Shigeru, 4,239,850, Cl. 430-281.000.
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.

Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo, 4,240,008, Cl. 315-151.000.

Fujimori, Naoji: *See—*
Yamamoto, Takaharu; Asai, Tsuyoshi; Fujimori, Naoji; and Tobioka, Masa-aki, 4,239,536, Cl. 75-238.000.

Fujioka, Kazuyoshi, to Nissan Motor Company, Limited. Arrangement to cool oil in hydraulic control system of automatic transmission for industrial vehicle. 4,238,929, Cl. 60-336.000.

Fujita, Takashi: *See—*
Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, 4,239,835, Cl. 428-611.000.

Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Catalyst for purifying exhaust gases and carrier for the catalyst. 4,239,656, Cl. 252-462.000.

Fujitsu Fanuc Limited: *See—*
Harano, Keiichi; and Oyama, Shigeaki, 4,240,000, Cl. 310-54.000.
Inaba, Hajimu; and Miyashita, Hideo, 4,240,016, Cl. 318-562.000.

Fukasawa, Hiromichi: *See—*
Hasegawa, Hiroshi; and Fukasawa, Hiromichi, 4,239,729, Cl. 422-48.000.

Fukuda, Shozo: *See—*
Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, 4,239,426, Cl. 406-197.000.

Fukuda, Yasuo; Arai, Michio; and Yamamoto, Hidemi, to Tokyo Shibaura Denki Kabushiki Kaisha. Address generating system. 4,240,139, Cl. 364-200.000.

Fukui, Kunisuke, to Mitsui Petrochemical Industries Ltd. Process for polymerization of butene. 4,239,871, Cl. 526-73.000.

Fulhaber, H. Lucien, to Papenmeier France Sarl. Mandrel with retractable segments. 4,239,473, Cl. 425-392.000.

Fuller, Timothy J.: *See—*
Allcock, Harry R.; Fuller, Timothy J.; and Matsumura, Kiyotoshi, 4,239,755, Cl. 424-209.000.

Furuta, Kenzi: *See—*
Satoh, Ken; and Furuta, Kenzi, 4,239,957, Cl. 235-92.0DN.

Fushimi, Kiyoshi; and Shimizu, Keizo, to Hitachi, Ltd. Channel selection system for television receiver. 4,240,114, Cl. 358-193.100.

Futami, Atsushi: *See—*
Yanagioka, Hiroshi; Futami, Atsushi; Shinsenji, Masatake; and Tanaka, Minoru, 4,239,515, Cl. 55-223.000.

G.D. Searle & Co.: *See—*
Adelstein, Gilbert W., 4,239,908, Cl. 542-416.000.

GAF Corporation: *See—*
Sachs, Peter R., 4,239,797, Cl. 428-327.000.
Schneider, Louis; and Graham, David E., 4,239,688, Cl. 260-326.430.

Gaffey, Troy M.: *See—*
Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., 4,239,455, Cl. 416-145.000.
Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., 4,239,456, Cl. 416-145.000.

Gager, Robert F.: *See—*
Jacko, Michael G.; and Gager, Robert F., 4,239,666, Cl. 260-17.500.

Galetta, Nick: *See—*
Haas, David J.; Galetta, Nick; and Juner, Adolf, 4,239,969, Cl. 250-359.000.

Galexie Manufacturing Pty. Ltd.: *See—*
Stanley, Louis, 4,239,224, Cl. 273-143.00R.

Galluppi, Filippo B., to Venus Scientific Inc. Recirculating light amplifier with optical feedback. 4,239,960, Cl. 250-213.0VT.

Gambro AB: *See—*
Stenberg, Kaj O.; and Traven, Lars J. C., 4,239,728, Cl. 422-46.000.

Gando, Masayoshi: *See—*
Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, 4,240,006, Cl. 313-386.000.

Gangneux, Philippe Y. E.: *See—*
Bonnet, Evelyne J. M.; and Gangneux, Philippe Y. E., 4,239,868, Cl. 525-279.000.

Gannon, Donald N., to Boeing Company, The. Weight coded delivery conveyor system. 4,239,434, Cl. 414-136.000.

Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, to Merck Patent Gesellschaft mit beschrankter Haftung. Morpholino containing compounds, compositions and use thereof. 4,239,759, Cl. 424-248.400.

Gardner, Jeffrey M., to Container Corporation of America. Heavy duty partition. 4,239,147, Cl. 229-15.000.

Gardner, Sylvia A.: *See—*
Gysling, Henry J.; and Gardner, Sylvia A., 4,239,846, Cl. 430-202.000.

Garito, Jon C.: *See—*
Ellman, Alan G.; and Garito, Jon C., 4,239,489, Cl. 433-220.000.

Garlock Inc.: *See—*
Bainard, Dean R.; and Denton, Dennis N., 4,239,243, Cl. 277-153.000.

Garner, Gerald D.: *See—*
Stoller, Patricia S.; Garner, Gerald D.; and Krug, John A., Jr., 4,239,059, Cl. 137-587.000.
Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., 4,239,060, Cl. 137-587.000.

Gaspar, Lawrence A.; Tessler, Martin; and Malcolm, Alexander R., to National Starch and Chemical Corp. Starch blend, process of sizing paper therewith, and product thereof. 4,239,592, Cl. 162-175.000.

Gates, William H., to Moyles, George L.; and Shook, Roy, part interest to each. Spray head extension for pressure dispensers. 4,239,158, Cl. 239-567.000.

Gauss, Walter: *See—*
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.

Gauthier, John A.; Shaver, David M.; and Ramsay, John R., to GTE Automatic Electric Laboratories Incorporated. Ringing signal generator. 4,239,941, Cl. 179-84.00R.

Gauthier, Laura A.: *See—*
Legrow, Gary E.; and Gauthier, Laura A., 4,239,867, Cl. 525-478.000.

Gearhart, Junior A., to Kerr-McGee Refining Corporation. Solvent deasphalting. 4,239,616, Cl. 208-309.000.

Geier, Roland. Quantity control valve for controlling the quantity of a pressure medium. 4,239,179, Cl. 251-38.000.

Geiger, Friedhelm: *See—*
Schreyer, Gerd; Geiger, Friedhelm; and Hensel, Jorg, 4,239,696, Cl. 260-513.00R.

Geiss, Horst. Apparatus for cleaning containers. 4,238,892, Cl. 34-85.000.

Geitner, Lawrence J.; and Herbeck, Christian C., to Buffalo Forge Company. Adjusting mechanism for variable inlet vane. 4,239,450, Cl. 415-160.000.

Gellert, Dale A., to Procter & Gamble Company, The. Absorbent means for catamenial devices. 4,239,043, Cl. 128-285.000.

General Dynamics Corporation: *See—*
Krumweide, Gary C., 4,239,564, Cl. 156-79.000.
Wrench, Edwin H., 4,239,343, Cl. 350-295.000.

General Electric Company: *See—*
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.
Cline, Harvey E.; Anthony, Thomas R.; and Solomon, Harvey D., 4,239,556, Cl. 148-38.000.
Crivello, James V., 4,239,725, Cl. 264-328.600.
Dieck, Ronald L., 4,239,677, Cl. 260-40.00R.
Engeler, William E., 4,240,089, Cl. 357-24.000.
Gilbert, Peter T., 4,239,105, Cl. 206-219.000.
Gordon, Walter H., Jr., 4,239,322, Cl. 339-184.00M.

Keeley, Donald E., 4,239,918, Cl. 568-640.000.
Kohler, Thomas P., 4,240,036, Cl. 330-10.000.
Lee, Gim F., Jr., 4,239,673, Cl. 260-30.60R.
Roedel, George F., 4,239,877, Cl. 528-14.000.
Schrader, Paul D., 4,238,932, Cl. 62-197.000.
Schroeter, Siegfried H.; and Olson, Daniel R., 4,239,798, Cl. 428-331.000.
Slack, Glen A.; and Knapp, Warren S., 4,239,502, Cl. 51-295.000.
Tomlinson, Harold W., Jr., 4,240,116, Cl. 358-213.000.
Williams, Joseph B., 4,239,678, Cl. 260-42.180.

General Kinetics Incorporated: *See—*
Gutterman, Robert P., 4,239,959, Cl. 235-493.000.

General Motors Corporation: *See—*
Foster, Michael R.; and Smith, Jack E., 4,239,733, Cl. 422-179.000.
Gladd, Joseph H.; Horrell, Theodore H., Jr.; and Plyler, Robert G., 4,239,319, Cl. 339-147.00R.
Gonas, Albert J.; Packett, Marvin A.; and Street, Donald A., 4,239,279, Cl. 296-210.000.

General Tire & Rubber Company, The: *See—*
Arnason, Sigurdur I., 4,239,808, Cl. 428-482.000.
Fabris, Hubert J.; Herold, Robert J.; and Schmucker, Arden E., 4,239,879, Cl. 528-76.000.
Henley, Virgil E.; Hineborg, James R.; and Nixdorf, Donald H., 4,239,565, Cl. 156-126.000.
Roper, Ralph E., 4,238,949, Cl. 72-358.000.
Shanoski, Henry; and Griffith, Richard M., 4,239,796, Cl. 428-315.000.

Gentex Corporation: *See—*
Aileo, Jackson A., 4,239,106, Cl. 206-223.000.

George, Henry H., to Allegheny Ludlum Industries, Inc. Spherical connector having integrally formed outlets. 4,239,263, Cl. 285-150.000.

Geosource Inc.: *See—*
Lockett, James F., 4,239,118, Cl. 209-581.000.

Gerlach, Klaus; Mathes, Nikolaus; and Wechs, Friedbert, to Akzona Incorporated. Fiber structures of split multicomponent fibers and process therefor. 4,239,720, Cl. 264-147.000.

Gesellschaft fur Strahlen-und Umweltforschung mbH, Munchen: *See—*
Haina, Diether; Poth, Willi; and Waidelich, Wilhelm, 4,240,133, Cl. 362-293.000.

GF Business Equipment, Inc.: *See—*
Textoris, Melvin A.; and Rauschenberg, Richard, 4,239,932, Cl. 174-48.000.

Ghez, Richard A.; Gunn, John B.; Hammer, Robert; and Van Vechten, James A., to International Business Machines Corporation. Etching of multiple holes of uniform size. 4,239,586, Cl. 156-644.000.

Giani, Adolfo; Panseri, Mario; and Mascioni, Umberto, to Reggiani Macchine S.p.A. Rotary cylindrical screen printing apparatus for specularly printing equal patterns and/or colors onto the opposite faces of fabrics or the like. 4,238,999, Cl. 101-116.000.

Gibson, Harry; and Maycock, Peter F., to Smiths Industries Limited. Electrical digital display indicators. 4,240,074, Cl. 340-753.000.

Giglio, Richard J.; Bogosh, Robert B.; and Lasnier, David A., to A. W. Chesterton Company. Packing seals and method of making. 4,239,245, Cl. 277-203.000.

Gilbert, Lawrence A.; and Leist, Jeffrey R., to Procter & Gamble Company, The. Granular detergent composition comprising air-sensitive material in protective bag. 4,239,639, Cl. 252-90.000.

Gilbert, Peter T., to General Electric Company. Resin capsule for mining roof bolting systems. 4,239,105, Cl. 206-219.000.

Gillen, William F., Jr. Precast concrete threaded pilings. 4,239,419, Cl. 405-232.000.

Gilles, Ewald: *See—*
Krohmann, Walter; and Gilles, Ewald, 4,239,101, Cl. 193-37.000.

Gillette Company, The: *See—*
Jacobson, Chester F.; and Poisson, Norman D., 4,238,883, Cl. 30-162.000.

Gillio-Tos, Mario: *See—*
Weinberg, Alan S.; and Gillio-Tos, Mario, 4,239,799, Cl. 428-335.000.

Gillis, John R.; and Halleck, Frank E., to American Sterilizer Company. Apparatus for biocidal sterilization using cyclic subatmospheric pressure conditioning. 4,239,731, Cl. 422-112.000.

Gilman, Richard. Insulation tubes and process of making same. 4,239,064, Cl. 138-154.000.

Gilmore, Cecilia; and Miller, Donald E., to SCM Corporation. Coffee whitener and use of fluid shortening therein. 4,239,786, Cl. 426-601.000.

Gindler, E. Melvin; and Miller, Nadine, to Sherwood Medical Industries Inc. Determination of protein. 4,239,495, Cl. 23-230.00B.

Gindler, E. Melvin; and Mezei, Louis M., to Sherwood Medical Industries Inc. Cholesterol standard. 4,239,649, Cl. 252-408.000.

Ginsberg, Thomas; and Kaufman, Lawrence G., to Union Carbide Corporation. Aminosilane modified zinc-rich coating compositions. 4,239,539, Cl. 106-1.170.

Giolitti, Alberto, to Ing. C. Olivetti & C., S.p.A. Electronically controlled printing unit. 4,239,400, Cl. 400-144.200.

Girgis, Mikhail M., to PPG Industries, Inc. Glass fiber coating composition. 4,239,800, Cl. 428-374.000.

Girling Limited: *See—*
Kaub, Manfred, 4,239,296, Cl. 303-24.00A.

Gitchel, Wayne B., to Sterling Drug Inc. Process for the production of power from crude fuels containing high concentrations of sulfur. 4,238,922, Cl. 60-39.050.

Glacier Metal Company Limited, The: *See—*
Pratt, George C., 4,239,715, Cl. 264-70.000.

Gladd, Joseph H.; Horrell, Theodore H., Jr.; and Plyler, Robert G., to General Motors Corporation. Electrical component package for interconnection between plug and socket connectors. 4,239,319, Cl. 339-147.00R.

Gladrow, Elroy M.; and Winter, William E., to Exxon Research & Engineering Co. Hydrocarbon cracking catalyst and process utilizing the same. 4,239,654, Cl. 252-455.00Z.

Glanvall, Rune V., to Stal Refrigeration AB. Rotary compressor with valved liquid injection through the rotor. 4,239,467, Cl. 418-76.000.

Glen, Alasdair T.; and Bayles, Richard W., to Imperial Chemical Industries Limited. Anti-androgenic amides. 4,239,776, Cl. 424-304.000.

Glockler, Otto: *See—*
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.

Gloucester Railway Carriage & Wagon Company Limited: *See—*
Morris, Robert S., 4,239,302, Cl. 308-138.000.

Gluck, Otto; and Jakovski, Norbert, to Triumph Werke Nurnberg A.G. Hinged single piece aligning scale for typewriters. 4,239,406, Cl. 400-645.000.

Godber, Stephen J.: *See—*
Bligh, Bernard R.; and Godber, Stephen J., 4,239,509, Cl. 55-66.000.

Godwin, Edward J. Key band. 4,239,136, Cl. 224-219.000.

Goethlich, Lutz: *See—*
Reitel, Christian; and Goethlich, Lutz, 4,239,866, Cl. 525-440.000.

Goetz, Philip J., to Pen Kem, Inc. Automatic electrophoresis apparatus. 4,239,612, Cl. 204-299.00R.

Goksel, Mehmet A., to Michigan Technological University, Board of Control of. Process for producing metallized iron pellets. 4,239,530, Cl. 75-34.000.

Gold Kist, Inc.: *See—*
Curtis, Joel E.; and Hall, Thornton D., 4,238,890, Cl. 34-22.000.

Golden, Ronald: *See—*
Vincent, David N.; and Golden, Ronald, 4,239,646, Cl. 252-316.000.

Goldsholl, Morton. Image processing apparatus and methods. 4,239,380, Cl. 355-52.000.

Goldsmith, Elmar L., to PPG Industries Canada, Ltd. Solution mining potassium chloride from heated subterranean cavities. 4,239,287, Cl. 299-4.000.

Goldsmith, Wesley R. Direct reading micrometer for sine-bar elevation. 4,238,888, Cl. 33-174.00S.

Golser, Hans, to Siemens Aktiengesellschaft. Gas laser having a cylindrical discharge tube. 4,240,045, Cl. 331-94.50D.

Golz, Roland, to Socsil S.A. Cryogenic pump for liquid gases. 4,239,460, Cl. 417-251.000.

Golze, Richard R. Body extender. 4,239,253, Cl. 280-460.00R.

Gombach, Anton L.: *See—*
Thellmann, Edward L.; and Gombach, Anton L., 4,239,557, Cl. 148-126.000.

Gomez, Manuel D. Thawing assembly for clogged asphalt pipes. 4,239,486, Cl. 432-225.000.

Gonas, Albert J.; Packett, Marvin A.; and Street, Donald A., to General Motors Corporation. Vehicle roof covering installation. 4,239,279, Cl. 296-210.000.

Goodyear Tire & Rubber Company, The: *See—*
Felten, Gilbert A.; and Dupommier, Jean-Marc, 4,239,579, Cl. 156-398.000.
Ofstead, Eilert A.; and Senyek, Michael L., 4,239,874, Cl. 526-143.000.
Williams, Walter G., 4,239,723, Cl. 264-315.000.

Goranson, Per S. Collapsible box with two compartments. 4,239,146, Cl. 229-15.000.

Gorbold, Jonathan M.; and Slim, David H., to Marconi Electronics, Inc. Television interval timer employing digital techniques. 4,240,100, Cl. 358-10.000.

Gorbunov, Gennady S.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.

Gordon, Walter H., Jr., to General Electric Company. Polarity protector. 4,239,322, Cl. 339-184.00M.

Gore, Graves T., to Riegel Textile Corporation. Apparatus for inserting elastic strips during the manufacture of elastic leg disposable diapers. 4,239,578, Cl. 156-361.000.

Goris, Heinrich; Gunther, Roland; Ogorek, Kurt; and Schwarting, Karl-Heinz, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Hydromechanical planer with cutting and breaking heads. 4,239,290, Cl. 299-34.000.

Gorke, Klaus: *See—*
Feldmann, Rainer; and Gorke, Klaus, 4,239,807, Cl. 428-462.000.

Gosswiller, Earl W., to Federal Signal Corporation. Flashing light warning system for vehicles. 4,240,062, Cl. 340-81.00R.

Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwickoungs-Gesellschaft mbH. Multispot grid-welding machine. 4,239,951, Cl. 219-56.000.

Gould Inc.: *See—*
Beasley, J. Donald, 4,239,543, Cl. 106-22.000.
Kozacka, Frederick J.; and Belcher, Richard A., 4,240,058, Cl. 337-231.000.
Thellmann, Edward L.; and Gombach, Anton L., 4,239,557, Cl. 148-126.000.

Gould, James S.: *See—*
Gould, Samuel; and Gould, James S., 4,240,063, Cl. 340-119.000.

Gould, Samuel; and Gould, James S., to Indicator Controls Corp. Visor assembly for pedestrian traffic signal. 4,240,063, Cl. 340-119.000.

Graf, Edwin X., to Beloit Corporation. High pressure pump for fluid jet slitter. 4,239,448, Cl. 415-89.000.
Graffin, Jean C.: *See—*
Lacombat, Michel; Graffin, Jean C.; and Antoine, Robert, 4,239,381, Cl. 355-53.000.
Graham, David E.: *See—*
Schneider, Louis; and Graham, David E., 4,239,688, Cl. 260-326.430.
Graham, Howard A.; and Palubiak, Charles, to National Steel Corporation. Work roll chock assembly for a rolling mill. 4,238,947, Cl. 72-237.000.
Graham, Ronald I.: *See—*
Peiser, Alfred M.; Graham, Ronald I.; and McClernon, Joseph R., 4,239,618, Cl. 208-355.000.
Grainger Bros., Inc.: *See—*
Grainger, James D.; and Grainger, Harold A., 4,238,951, Cl. 72-457.000.
Grainger, Harold A.: *See—*
Grainger, James D.; and Grainger, Harold A., 4,238,951, Cl. 72-457.000.
Grainger, James D.; and Grainger, Harold A., to Grainger Bros., Inc. Portable automobile straightening device. 4,238,951, Cl. 72-457.000.
Grams, Gary W.: *See—*
Allphin, N. Lee; Valentine, Fred S.; and Grams, Gary W., 4,239,930, Cl. 585-517.000.
Grane, Henry R.; Jubin, John C., Jr.; and Worrell, G. Richard, to Atlantic Richfield Company. Removing water from tertiary butyl alcohol. 4,239,926, Cl. 568-910.000.
Granger, Floyd R. Combination roof structure and solar collector. 4,239,031, Cl. 126-429.000.
Grant, Roy W. Opaque perforated filter. 4,239,327, Cl. 350-17.000.
Greacen, John F.; Knight, Kerry G.; and Lech, Thaddeus, Jr., to Borg-Warner Corporation. Multiple stage vibration damper assembly. 4,239,097, Cl. 192-106.200.
Grechin, Nikolai K.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.
Greco, Alberto: *See—*
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,239,873, Cl. 526-114.000.
Green Cross Corporation, The: *See—*
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.
Green, Leland D., to United States of America, Air Force. Time domain laser reconnaissance technique. 4,239,388, Cl. 356-5.000.
Greenberg, Charles B.: *See—*
Breininger, J. Shannon; and Greenberg, Charles B., 4,239,816, Cl. 427-168.000.
Greif, Norbert: *See—*
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.
Grief, Norbert: *See—*
Stecklum, Klaus; and Grief, Norbert, 4,239,120, Cl. 209-682.000.
Griffin, Albert N. Game device. 4,239,221, Cl. 273-127.00R.
Griffin, James E.; and Ryden, Wayne R. Heat detector for livestock. 4,239,018, Cl. 119-1.000.
Griffis, Patrick D., to RCA Corporation. Stereophonic sound synthesizer. 4,239,939, Cl. 179-1.0GP.
Griffith, Richard M.: *See—*
Shanoski, Henry; and Griffith, Richard M., 4,239,796, Cl. 428-315.000.
Griggs, William L., III; Serrano, Ernest E.; Page, Dan; and Reul, Charles G., to Griggs, William L., III. Method and apparatus for aurally determining presence or absence of pathological stenosis. 4,239,047, Cl. 128-663.000.
Grinberg, Jan; Waldner, Michael; Braatz, Paul Q.; and Jacobson, Alexander D., to Hughes Aircraft Company. High resolution AC silicon MOS light-valve substrate. 4,239,348, Cl. 350-342.000.
Grinberg, Jan: *See—*
Braatz, Paul O.; Chow, Kuen; and Grinberg, Jan, 4,239,347, Cl. 350-336.000.
Myer, Jon H.; and Grinberg, Jan, 4,239,312, Cl. 339-17.00N.
Groene, Richard L. Jack and tie-down system for a vehicle mounted cargo unit. 4,239,430, Cl. 410-68.000.
Groeneweg, William H., to RCA Corporation. Identification system for SECAM or SECAM/PAL color television receivers. 4,240,102, Cl. 358-11.000.
Gross, Albert; and Ege, Werner, to Kulzer & Co. GmbH. Composition for the preparation of bone cement. 4,239,113, Cl. 206-568.000.
Gross, Jerome A.: *See—*
Strutman, Warren A., 4,239,977, Cl. 290-44.000.
Grossman, David G., to Corning Glass Works. Spontaneously formed machinable glass-ceramics. 4,239,520, Cl. 65-33.000.
Grossman, David G.: *See—*
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,239,519, Cl. 65-2.000.
Grubb, Frederick H., Jr.: *See—*
Brownlee, Sherwood S.; Grubb, Frederick H., Jr.; and Lohr, Warren G., 4,239,311, Cl. 312-305.000.
Grubbs, Dean O.: *See—*
Hollandsworth, William J.; and Grubbs, Dean O., 4,239,389, Cl. 356-155.000.
Grudzinskas, Charles V.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,899, Cl. 556-438.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,900, Cl. 556-438.000.
Grumman Aerospace Corporation: *See—*
Levy, Paul M., 4,240,108, Cl. 358-103.000.
Grunwell, Joyce F.; and Petrow, Vladimir, to Richardson-Merrell Inc. Androst-4-en-19-ols. 4,239,681, Cl. 260-239.55R.
Gruppo Lepetit S.p.A.: *See—*
Coronelli, Carolina; Beretta, Grazia; Bardone, Maria R.; and Parenti, Francesco, 4,239,751, Cl. 424-118.000.
GSI Gesellschaft fuer Schwerionenforschung m.b.H.: *See—*
Keller, Roderich, 4,240,005, Cl. 313-231.000.
GTE Automatic Electric Laboratories Incorporated: *See—*
Blackburn, Tom L., 4,240,024, Cl. 323-4.000.
Gauthier, John A.; Shaver, David M.; and Ramsay, John R., 4,239,941, Cl. 179-84.00R.
Miknaitis, Sigitas; and Stastny, Charles J., 4,240,054, Cl. 335-152.000.
GTE Laboratories Incorporated: *See—*
Buhrer, Carl F., 4,240,010, Cl. 315-248.000.
Dakss, Mark L.; Meslener, George J.; and Stone, Samuel M., 4,239,333, Cl. 350-96.210.
Haugsjaa, Paul O.; and Lech, Joseph M., 4,240,051, Cl. 333-127.000.
GTE Products Corporation: *See—*
English, George J.; and Levin, Robert E., 4,239,369, Cl. 362-348.000.
Fahlen, Theodore S.; and Clark, David J., 4,240,044, Cl. 331-94.5PE.
Faria, Sixdeniel; and Chiola, Vincent, 4,239,844, Cl. 430-67.000.
Guenther, Gerd J., to Siemens Aktiengesellschaft. Circuit arrangement for releasing a keyboard store in teleprinters or data printers. 4,239,933, Cl. 178-17.500.
Guillaume, Claude. Rotary motor with alternating pistons. 4,239,465, Cl. 418-35.000.
Guiraud, Richard J.; and Arnaud, Michel R., to Fromageries Bel, societe anonyme. Method for preparing food products from a suspension of milk proteins with texturization. 4,239,784, Cl. 426-104.000.
Gulf Research & Development Company: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,704, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,705, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,924, Cl. 568-902.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,925, Cl. 568-902.000.
Schulz, Johann G., 4,239,613, Cl. 208-8.0LE.
Gulf & Western Manufacturing Company: *See—*
Carrieri, Louis F.; and Spanke, Edwin A., 4,238,950, Cl. 72-446.000.
Gunn, John B.: *See—*
Ghez, Richard A.; Gunn, John B.; Hammer, Robert; and Van Vechten, James A., 4,239,586, Cl. 156-644.000.
Gunther, Dieter: *See—*
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.
Gunther, Roland: *See—*
Goris, Heinrich; Gunther, Roland; Ogorek, Kurt; and Schwarting, Karl-Heinz, 4,239,290, Cl. 299-34.000.
Gurusiddaiah, Sarangamat; Ronald, Robert C.; Magnuson, James A.; and McFadden, Bruce A., to Washington State University Research Foundation. Antibiotics produced by *Cytospora sp.* W.F.P.L. 13A. 4,239,690, Cl. 260-340.200.
Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Goris, Heinrich; Gunther, Roland; Ogorek, Kurt; and Schwarting, Karl-Heinz, 4,239,290, Cl. 299-34.000.
Schmelzer, Michael, 4,239,444, Cl. 414-685.000.
Gutierrez, Antonio; and Brois, Stanley J., to Exxon Research & Engineering Co. Molybdenum complexes of ashless polyol ester dispersants as friction-reducing antiwear additives for lubricating oils. 4,239,633, Cl. 252-32.70E.
Gutierrez, Antonio: *See—*
Brois, Stanley J.; and Gutierrez, Antonio, 4,239,636, Cl. 252-48.600.
Gutterman, Robert P., to General Kinetics Incorporated. Perpetuation of information in magnetically recorded medium. 4,239,959, Cl. 235-493.000.
Gysling, Henry J.; and Gardner, Sylvia A., to Eastman Kodak Company. Tellurium (IV) compounds and compositions. 4,239,846, Cl. 430-202.000.
Haage, Karl; and Scharff, Dieter, to Dynamit Nobel Aktiengesellschaft. Protective layer for surface seals in building construction, underground construction, and civil engineering construction. 4,239,795, Cl. 428-247.000.
Haas, David J.; Galetta, Nick; and Juner, Adolf, to North American Philips Corporation. Article inspection apparatus with protective chamber having article-loading facility. 4,239,969, Cl. 250-359.000.
Haefliger, Robert W. Pinball apparatus with replaceable modular barrier supports. 4,239,219, Cl. 273-121.00A.
Haina, Diether; Poth, Willi; and Waidelich, Wilhelm, to Gesellschaft fur Strahlen-und Umweltforschung mbH, Munchen. Quasimonochromatic light source. 4,240,133, Cl. 362-293.000.

Hainaut-Sambre Societe Anonyme: *See—*
Debaise, Michel J., 4,239,194, Cl. 266-270.000.
Hairston, Thomas J., to Dow Chemical Company, The. Process for obtaining bisphenols. 4,239,919, Cl. 568-727.000.
Hajime Industries, Ltd.: *See—*
Yoshida, Hajime, 4,240,107, Cl. 358-93.000.
Hakamada, Takeshi; Hirata, Hideyo; and Katoh, Toshio, to Hitachi, Ltd. Method for electrically insulating an electrically conducting article and product produced thereby. 4,239,998, Cl. 310-45.000.
Hall, Robert B.: *See—*
Barnett, Allen M.; Masi, James V.; and Hall, Robert B., 4,239,553, Cl. 136-256.000.
Hall, Thornton D.: *See—*
Curtis, Joel E.; and Hall, Thornton D., 4,238,890, Cl. 34-22.000.
Halleck, Frank E.: *See—*
Gillis, John R.; and Halleck, Frank E., 4,239,731, Cl. 422-112.000.
Haller, Ingo: *See—*
Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, 4,239,765, Cl. 424-269.000.
Hallford, Ben R.; and Lutz, Bruce C., to Rockwell International Corporation. Balun filter apparatus. 4,240,052, Cl. 333-202.000.
Halm Instrument Co., Inc.: *See—*
Konars, Clement R.; Quinci, Emanuel; and Vascotto, Mario, 4,239,117, Cl. 209-553.000.
Halmos, Imre A., to American Cyanamid Company. Process for resolving DL-Mandelic acid with novel 2-benzylamino-1-butanols. 4,239,912, Cl. 562-401.000.
Halopoff, David. Security shield for padlock. 4,238,941, Cl. 70-56.000.
Haluska, Loren A.: *See—*
Clark, Harold A.; and Haluska, Loren A., 4,239,668, Cl. 260-29.20M.
Hammer, Robert: *See—*
Ghez, Richard A.; Gunn, John B.; Hammer, Robert; and Van Vechten, James A., 4,239,586, Cl. 156-644.000.
Hammonds, James C.: *See—*
Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., 4,239,429, Cl. 410-59.000.
Hamprecht, Gerhard: *See—*
Parg, Adolf; and Hamprecht, Gerhard, 4,239,697, Cl. 260-543.00R.
Handy, Roland J., to Xerox Corporation. CCD Analog to digital converter. 4,240,068, Cl. 340-347.0AD.
Hanger, James E. Engine stand. 4,239,196, Cl. 269-17.000.
Hannoschock, Kurt: *See—*
Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, 4,238,963, Cl. 73-644.000.
Hanson, Edward W., to Columbia Machine, Inc. Palletizer with roller-assisted off-feed device. 4,239,433, Cl. 414-84.000.
Hara, Hiroshi; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method of stabilizing organic substrates against the action of light. 4,239,843, Cl. 430-17.000.
Harano, Keiichi; and Oyama, Shigeaki, to Fujitsu Fanuc Limited. Rotary electric machine with a heat pipe for cooling. 4,240,000, Cl. 310-54.000.
Hardt, Dietrich: *See—*
Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, 4,239,861, Cl. 525-151.000.
Haren, Doyle V.: *See—*
McLean, Michael E.; Ensley, Rufus N.; Haren, Doyle V.; and Alcaraz, Anthony J., 4,239,821, Cl. 427-358.000.
Harper, Bill D., to Union Carbide Corporation. Process for producing solid or microcellular polyurethane elastomers having improved green strength. 4,239,857, Cl. 521-121.000.
Harris Corporation: *See—*
Mader, Jim M., 4,240,094, Cl. 357-45.000.
Harris, Denis I.; and Staples, Luke, to Norton Company. Soft acting phenol-formaldehyde resin bonded grinding wheel. 4,239,503, Cl. 51-298.000.
Harris, Donald W.: *See—*
Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., 4,239,906, Cl. 536-56.000.
Harrison, Jack R., Sr. Reservoir safety razor. 4,238,882, Cl. 30-41.000.
Hartig, Juergen: *See—*
Weitz, Hans-Martin; Platz, Rolf; and Hartig, Juergen, 4,239,910, Cl. 560-244.000.
Weitz, Hans-Martin; and Hartig, Juergen, 4,239,911, Cl. 560-246.000.
Hartman, David K.: *See—*
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.
Hartman, Seymour; and Brown, Timothy M., to Champion International Corporation. High moisture wood laminating process. 4,239,577, Cl. 156-312.000.
Hartmann, Bernd; and Kleinschmager, Herbert, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical storage cell. 4,239,837, Cl. 429-104.000.
Haruna, Tohru: *See—*
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, 4,239,803, Cl. 428-379.000.
Harvey, Albert J., to Diamond International Corporation. Heat transfer labeling machine. 4,239,569, Cl. 156-156.000.
Harvey, Donald M., to Eastman Kodak Company. Camera having electronic strobe flash apparatus chargeable during viewfinder framing of a scene. 4,239,361, Cl. 354-145.000.
Harvey, Francis J., II; Ciliberti, David F.; Meyer, Thomas N.; and Fey, Maurice G., to Westinghouse Electric Corp. Production of high purity silicon by a heterogeneous arc heater reduction. 4,239,740, Cl. 423-350.000.
Hasegawa, Hiroshi; and Fukasawa, Hiromichi, to Terumo Corporation. Oxygenator. 4,239,729, Cl. 422-48.000.
Hasegawa, Kenichi; Taniguchi, Hiroshi; and Kitamura, Sadafumi, to Matsushita Electric Industrial Co., Ltd. Preamplifier. 4,240,038, Cl. 330-149.000.
Hasegawa, Tetuo: *See—*
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, 4,239,542, Cl. 106-18.140.
Hashimoto, Isao; Nakagawa, Hiroaki; Taguchi, Toru; and Nambu, Hirohiko, to Mitsu, Petrochemical Industries, Ltd. Process for purification of crude resorcinol. 4,239,921, Cl. 568-753.000.
Hashimoto, Masaru; and Yoshinaga, Motoaki, to Tokyo Shibaura Denki Kabushiki Kaisha. High-frequency amplifier circuit. 4,240,041, Cl. 330-288.000.
Hashimoto, Nobuyuki: *See—*
Inada, Masami; Hashimoto, Nobuyuki; and Satomoto, Atsushi, 4,239,154, Cl. 236-87.000.
Hashimoto, Teiji: *See—*
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.
Hashizume, Takeshi: *See—*
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.
Hasselman, Walter, Jr., to C.P. Chemical Company, Inc. Phenal-urea-formaldehyde condensation product. 4,239,881, Cl. 528-164.000.
Hatch, Arthur E.; and Yates, Douglas A., to Mobil Tyco Solar Energy Corporation. Method and apparatus for crystal growth control. 4,239,583, Cl. 156-601.000.
Haugsjaa, Paul O.; and Lech, Joseph M., to GTE Laboratories Incorporated. High frequency power combiner or power divider. 4,240,051, Cl. 333-127.000.
Hauni-Werke Korber & Co. KG: *See—*
Brand, Peter; Pinck, Peter; and Baier, Anton, 4,238,993, Cl. 131-21.00R.
Koch, Friedo, 4,238,994, Cl. 493-4.000.
Hauser, Raimund: *See—*
Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, 4,239,356, Cl. 354-23.00R.
Hausladen, Johann: *See—*
Eckhardt, Wolfram; and Hausladen, Johann, 4,239,970, Cl. 250-432.0PD.
Hawkins, William E.; and Huskey, C. George, to Du Pont de Nemours, E. I., and Company. Film shredder. 4,239,160, Cl. 241-222.000.
Hayashi, Masaki: *See—*
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.
Hayes, Robert A.: *See—*
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,239,860, Cl. 525-131.000.
Hayes, Roger: *See—*
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, 4,239,769, Cl. 424-274.000.
Hayes, Thomas E., to Johnson Controls, Inc. Furnace ignition system with draft control and loss-of-draft protection. 4,239,477, Cl. 431-20.000.
Haynes, Hendrick W. Propelling means. 4,239,013, Cl. 440-40.000.
Haynes, John L., to Becton Dickinson & Company. Apparatus for counting particles in a liquid suspension. 4,240,029, Cl. 324-71.0CP.
Hays, George E.; and Cook, Charles F., to Phillips Petroleum Company. Natural gas purification. 4,239,510, Cl. 55-68.000.
Hazen Research, Inc.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,239,529, Cl. 75-1.00R.
Hedger, John H. Reciprocating engine with improved power output linkage. 4,238,990, Cl. 91-186.000.
Hedlund, John A. Profiled tire tread. 4,239,075, Cl. 152-209.00R.
Heffernan, Patrick M., to Sumari Engineering. Switching circuit for controlling various appliances. 4,239,987, Cl. 307-252.00B.
Heffner, William R.: *See—*
Berreman, Dwight W.; and Heffner, William R., 4,239,345, Cl. 350-331.00R.
Heiien, Gerd: *See—*
Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,239,657, Cl. 252-464.000.
Heijmen, Hendricus J.: *See—*
deJong, Aaldert J.; and Heijmen, Hendricus J., 4,239,923, Cl. 568-875.000.
Hein, Lars, to Polystan A/S. Blood pump. 4,239,464, Cl. 417-474.000.
Helbig, Klaus; and Rietsch, Eike, to Deutsche Texaco Aktiengesellschaft. Variable digital to analog converter. 4,240,070, Cl. 340-347.0DA.
Heller, William C., Jr.: *See—*
Leatherman, Alfred F., 4,239,575, Cl. 156-272.000.
Hemens, James F., to Teleflex Morse Limited. Remote control mechanisms. 4,238,972, Cl. 74-473.00P.
Henderson, David G. Three-dimensional domino game. 4,239,231, Cl. 273-293.000.
Hengstenberg, Eckhart. Apparatus for blanching sauerkraut. 4,238,997, Cl. 99-483.000.
Henkel Corporation: *See—*
MacKay, Kenneth D., 4,239,699, Cl. 564-92.000.
Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See—*
Hiller, Gunter, 4,239,750, Cl. 424-94.000.

Henley, Virgil E.; Hineborg, James R.; and Nixdorf, Donald H., to General Tire & Rubber Company, The. Off-the-highway radial tire building system. 4,239,565, Cl. 156-126.000.
Henry, James W., to Eastman Kodak Company. Inspection of elongated material. 4,240,110, Cl. 358-107.000.
Hensel, Jorg: *See—*
Schreyer, Gerd; Geiger, Friedhelm; and Hensel, Jorg, 4,239,696, Cl. 260-513.00R.
Herbeck, Christian C.: *See—*
Geitner, Lawrence J.; and Herbeck, Christian C., 4,239,450, Cl. 415-160.000.
Herberts Gesellschaft mit beschrankter Haftung: *See—*
Nagel, Klaus, 4,239,814, Cl. 427-120.000.
Herbertz, Toni: *See—*
Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, 4,239,722, Cl. 264-206.000.
Herbst, Wilhelm: *See—*
Martin, Hans; and Herbst, Wilhelm, 4,239,145, Cl. 228-6.00R.
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., to Firestone Tire & Rubber Company, The. Amine terminated polymers and the formation of block copolymers. 4,239,860, Cl. 525-131.00.
Hergt, Peter; Buschsieper, Peter; and Matthias, Heinz-Bernd, to Klein, Schanzlin & Becker AG. Means for reducing cavitation-induced erosion of centrifugal pumps. 4,239,453, Cl. 415-182.000.
Hermann SCHWABE, Firma: *See—*
Decher, Friedrich; and Bachorz, Gunther, 4,240,057, Cl. 336-165.000.
Herold, Ludwig: *See—*
Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, 4,240,099, Cl. 357-79.000.
Herold, Robert J.: *See—*
Fabris, Hubert J.; Herold, Robert J.; and Schmucker, Arden E., 4,239,879, Cl. 528-76.000.
Herring, Michael T. A.; and Knight, Richard. Methods of portioning and portioning machines. 4,238,998, Cl. 100-41.000.
Heskett, Don E., to Fluid Power Research, Inc. Fluid treating method. 4,239,621, Cl. 210-687.000.
Hesse, David L.; and Warywoda, Joseph, to Bunker Ramo Corporation. Electrical connector. 4,239,317, Cl. 339-91.00R.
Hesse, David L.; Krolak, Ronald F.; and Perna, Jiulio E., to Bunker Ramo Corporation. Electrical connector. 4,239,320, Cl. 339-154.00A.
Hetrick, Vernon L., to Meyer Products, Inc. Lift arm with improved chain connector. 4,238,895, Cl. 37-41.000.
Heubach, Gunther; Sachse, Burkhard; and Burstell, Helmut, to Hoechst Aktiengesellschaft. 1,2,4-Triazole derivatives. 4,239,525, Cl. 71-92.000.
Hewlett-Packard Company: *See—*
Larson, John D., III, 4,240,003, Cl. 310-326.000.
Schrenker, Helge, 4,239,623, Cl. 210-96.100.
Hickey, Donald D. Push-pull exercise device. 4,239,212, Cl. 272-141.000.
Hickman, Ronald J.: *See—*
Breitung, Edward J.; and Hickman, Ronald J., 4,239,947, Cl. 200-61.890.
Hildebrandt, Eugene F.; Ottersbach, Thomas V.; and DeVries, Wayne J., to Emerson Electric Co. Motor starting switch. 4,240,001, Cl. 310-68.00E.
Hiller, Gunter, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Animal feeds containing a mixture of lincomycin or oleandomycin and proteolytic enzymes. 4,239,750, Cl. 424-94.000.
Hilti Aktiengesellschaft: *See—*
Siebrecht-Reuter, Gerd, 4,238,987, Cl. 85-83.000.
Hineborg, James R.: *See—*
Henley, Virgil E.; Hineborg, James R.; and Nixdorf, Donald H., 4,239,565, Cl. 156-126.000.
Hinova, Maya H.: *See—*
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., 4,239,605, Cl. 204-59.00R.
Hinz, James E. Portable angling house. 4,239,247, Cl. 280-12.00S.
Hinze, Klaus; and Wisskirchen, Klaus B., to ITT Industries, Inc. Push-button switch. 4,239,950, Cl. 200-254.000.
Hiraki, Shunichi; Kumamaru, Kuniaki; Aoyama, Masaharu; and Yonezawa, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorine-doped P type silicon. 4,240,096, Cl. 357-63.000.
Hirako, Susumu: *See—*
Kobayashi, Yoshimichi; Tsuge, Yukio; and Hirako, Susumu, 4,239,878, Cl. 528-45.000.
Hirasawa, Kunio: *See—*
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Hirata, Hideyo: *See—*
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Hirohara, Hideo; Nabeshima, Shigeyasu; and Nagase, Tsuneyuki, to Sumitomo Chemical Company, Limited. Enzyme-immobilization carriers and preparation thereof. 4,239,854, Cl. 521-31.000.
Hirsch, Rolf-Burkhard: *See—*
Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, 4,239,722, Cl. 264-206.000.
Hitachi, Ltd.: *See—*
Fushimi, Kiyoshi; and Shimizu, Keizo, 4,240,114, Cl. 358-193.100.
Hakamada, Takeshi; Hirata, Hideyo; and Katoh, Toshio, 4,239,998, Cl. 310-45.000.
Inouye, Hiroshi, 4,239,124, Cl. 220-240.000.
Ito, Satoru, 4,239,559, Cl. 148-188.000.
Kamiya, Masanori, 4,240,115, Cl. 358-193.100.
Kawagoe, Hiroto, 4,240,151, Cl. 365-104.000.
Morooka, Yasuo; Tanifuji, Shinya; and Matsuka, Shigemichi, 4,240,147, Cl. 364-472.000.
Murakami, Kanji; Kawamoto, Mineo; Matsuda, Yoichi; Wajima, Motoyo; and Morishita, Hirosada, 4,239,813, Cl. 427-98.000.
Obara, Isao; Kamada, Atsuya; and Kaneda, Aizo, 4,239,944, Cl. 179-115.5VC.
Ohhinata, Ichiro, 4,239,985, Cl. 307-252.00G.
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,240,020, Cl. 318-721.000.
Sakamoto, Masakatsu; Uchida, Kenji; Honma, Isao; and Kamino, Yukishige, 4,239,423, Cl. 406-47.000.
Takanashi, Akira; and Masuda, Kenzo, 4,239,980, Cl. 307-205.000.
Tanaka, Toshio; and Nakagawa, Sumio, 4,239,478, Cl. 431-24.000.
Tsukushi, Masanori; Hirasawa, Kunio; and Kashimura, Katsuichi, 4,239,948, Cl. 200-148.00R.
Yatsuo, Tsutomu; Watanabe, Atsuo; and Shimizu, Yoshiteru, 4,240,091, Cl. 357-38.000.
Hitachi Metals, Ltd.: *See—*
Miyazaki, Takeshi, 4,239,533, Cl. 75-134.00F.
Hitachi Shipbuilding & Engineering Co., Ltd.: *See—*
Tomita, Yukio; and Nishio, Taketaro, 4,239,379, Cl. 355-52.000.
Hlavinka, Dennis J., to Cobe Laboratories, Inc. Potting pleated membrane. 4,239,625, Cl. 210-321.300.
Hobbs, Edwin L. Tree handling device. 4,239,188, Cl. 254-376.000.
Hobbs, James W.: *See—*
Campbell, Grover R.; and Hobbs, James W., 4,239,517, Cl. 62-37.000.
Hoda, Syed N.: *See—*
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,239,519, Cl. 65-2.000.
Hodes, Martin. Vitamin organizer. 4,239,121, Cl. 209-703.000.
Hodgkin, Alan F., to Babcock & Wilcox Limited. Fluidized bed combustion. 4,239,479, Cl. 431-170.000.
Hodgson, Charles E.: *See—*
Lessner, David L.; Macemon, James H.; Coker, George M., Jr; and Hodgson, Charles E., 4,239,391, Cl. 356-318.000.
Hodler, Fritz. Diecasting venting valve. 4,239,080, Cl. 164-305.000.
Hoechst Aktiengesellschaft: *See—*
Franke, Rainer; and Diedrich, Bernd, 4,239,650, Cl. 252-429.00B.
Heubach, Gunther; Sachse, Burkhard; and Burstell, Helmut, 4,239,525, Cl. 71-92.000.
Kolbe, Andreas; and Dinter, Peter, 4,239,973, Cl. 250-531.000.
Krause, Dieter; Topfer, Dieter; and Salzburg, Wolfgang, 4,239,368, Cl. 354-325.000.
Wiezer, Hartmut; Pfahler, Gerhard; and Mayer, Norbert, 4,239,891, Cl. 546-242.000.
Hoefke, Wolfgang: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, 4,239,764, Cl. 424-263.000.
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, to SKF Industrial Trading & Development Company B.V. Ball bearing for linear motion. 4,239,299, Cl. 308-6.00C.
Hoffmann-La Roche Inc.: *See—*
Kyburz, Emilio; and Aschwanden, Werner, 4,239,770, Cl. 424-274.000.
Hoffmann, Werner: *See—*
Rossy, Phillip; and Hoffmann, Werner, 4,239,897, Cl. 549-61.000.
Hogan, Stephen J.; and Nyland, Roger L., to Whirlpool Corporation. Ice maker apparatus. 4,238,930, Cl. 62-138.000.
Hogan, William F., to Spectrum X-Ray Corporation. Connector means. 4,239,412, Cl. 403-182.000.
Holl, Gordon D.; and Marcolina, Gene A. Animal trap. 4,238,902, Cl. 43-61.000.
Hollandsworth, William J.; and Grubbs, Dean O., to Hunter Engineering Company. Vehicle wheel and body alignment diagnosing system. 4,239,389, Cl. 356-155.000.
Hollowell, William M., to American Safety Equipment Corporation. Adjustable emergency locking buckle anchor. 4,239,260, Cl. 280-806.000.
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A. Method of preparing vascular grafts of human and other umbilical cord origins for tissue ingrowth. 4,239,492, Cl. 8-94.110.
Holmen GmbH, Firma: *See—*
Kohler, Leo, 4,239,550, Cl. 106-314.000.
Holmes, Gordon W., to Professional Packaging Limited. Integrally-formed polymeric material coin holder. 4,239,051, Cl. 133-8.00R.
Holmes, Ronald, to Advanced Structures Corp. Bulkhead structure. 4,238,913, Cl. 52-238.000.
Holmes, Ronald W., to Commonwealth Industrial Gases Limited, The. Manual resuscitators. 4,239,038, Cl. 128-205.130.
Holzl, Robert A., to Chemetal Corporation. Deposition method and products. 4,239,819, Cl. 427-255.200.
Homan, Gary R.; and Lee, Chi-long, to Dow Corning Corporation. Oxygen-curable mercaptoorganosiloxane compositions catalyzed by cobaltocene compounds and method of forming higher molecular weight products therefrom. 4,239,674, Cl. 260-37.0SB.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Saruhashi, Kazuo; and Ogano, Takeo, 4,238,918, Cl. 56-202.000.

Honeywell Inc.: *See—*
Engel, Hans O.; and Lueneburg, Wolfgang, 4,239,178, Cl. 251-14.000.
Honeywell Information Systems Inc.: *See—*
Kindell, Jerry L.; and Flynn, Richard T., 4,240,144, Cl. 364-200.000.
Stafford, John P.; Inoshita, Minoru; and Winfrey, Gerald N., 4,240,140, Cl. 364-200.000.
Hong, Ngai H.; Reese, Edmund A.; and Redwine, Donald J., to Texas Instruments Incorporated. Clock voltage generator for semiconductor memory with reduced power dissipation. 4,239,990, Cl. 307-262.000.
Hong, Ngai H.; and Reese, Edmund A., to Texas Instruments Incorporated. Clock voltage generator for semiconductor memory. 4,239,991, Cl. 307-262.000.
Honma, Isao: *See—*
Sakamoto, Masakatsu; Uchida, Kenji; Honma, Isao; and Kamino, Yukishige, 4,239,423, Cl. 406-47.000.
Hooker Chemicals & Plastics Corp.: *See—*
Annis, Myron C., 4,239,869, Cl. 525-503.000.
Hoover Universal, Inc.: *See—*
Mizelle, Ned W., 4,238,861, Cl. 5-247.000.
Hope, Henry F.; and Hope, Stephen F. Continuous-band web transport. 4,239,367, Cl. 354-319.000.
Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 4,239,367, Cl. 354-319.000.
Horbelt, Michael: *See—*
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.
Hori, Noritoshi, to Tomy Kogyo Co., Inc. Pinball game flipper mechanism. 4,239,222, Cl. 273-129.00W.
Horneys, David C.; and Pool, Gerald L., to Jerr-Dan Corporation. Vehicle transporter. 4,239,275, Cl. 414-478.000.
Horrell, Theodore H., Jr.: *See—*
Gladd, Joseph H.; Horrell, Theodore H., Jr.; and Plyler, Robert G., 4,239,319, Cl. 339-147.00R.
Horrmann, Wilhelm. Fatty aldehydes in the therapy of arteriosclerosis. 4,239,756, Cl. 424-238.000.
Horsch, Rudolf: *See—*
Venable, Phillip G.; and Horsch, Rudolf, 4,239,085, Cl. 172-667.000.
Hosaka, Masao: *See—*
Tatsumi, Susumu; Ikesue, Masumi; Hosaka, Masao; and Kasahara, Nobuo, 4,239,374, Cl. 355-14.00E.
Hosoya, Takeshi; Tanaka, Fumihiro; and Noguchi, Kazuo, to Kabushiki Kaisha Daini Seikosha. Capsule for medical use. 4,239,040, Cl. 128-213.00R.
Hotta, Masashi, to Shimano Industrial Company, Limited. Constant temperature box. 4,238,934, Cl. 62-457.000.
Hotta, Shigenori, to Mitsubishi Denki Kabushiki Kaisha. Power breaker system. 4,240,123, Cl. 361-96.000.
Howard, Curtiss G.; Jordan, Lester W.; and Yaworsky, Chester E., to United Technologies Corporation. Backer for electron beam hole drilling. 4,239,954, Cl. 219-121.0EH.
Howatt, John R.: *See—*
Smith, T. Basil; Howatt, John R.; and McKenna, John F., Jr., 4,239,982, Cl. 307-219.000.
Howbrook, Ernest, to Wigmore Professional Data Services Ltd. Position sensing apparatus. 4,240,065, Cl. 340-146.3SY.
Howe, Charles W.: *See—*
Zurlinden, Cyril P., III; Howe, Charles W.; and Podry, John M., 4,238,879, Cl. 29-705.000.
Howerton, Anderson W., to Dayco Corporation. Method of forming a round self orienting power transmission belt with a triangular core. 4,239,566, Cl. 156-137.000.
Howlett, James W. Rigid chuck assembly. 4,239,246, Cl. 279-121.000.
Hoya Glass Works, Ltd.: *See—*
Izumitani, Tetsuro; and Tsuru, Michitaka, 4,239,645, Cl. 252-301.40P.
Hozumi, Toshiaki: *See—*
Katayama, Akira; and Hozumi, Toshiaki, 4,239,362, Cl. 354-212.000.
Hsieh, Henry L.; and Naylor, Floyd E., to Phillips Petroleum Company. Laminates. 4,239,806, Cl. 428-462.000.
Hsin-Chu, Chen. Milky curing agent for concrete and preparation method thereof. 4,239,540, Cl. 106-12.000.
Hudson, Roger D., to Dow Chemical Company, The. Internal-bellows, pressure-balanced, angled-flowpath expansion joint. 4,239,267, Cl. 285-228.000.
Huebner, Klaus: *See—*
Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, 4,239,671, Cl. 260-29.6TA.
Huetsch, Larry C.; Swanson, James P.; and Nyquist, Stephen E., to Atwood Vacuum Machine Company. Trailer hitch and brake actuating assembly. 4,239,252, Cl. 280-446.00R.
Hughes Aircraft Company: *See—*
Braatz, Paul O.; Chow, Kuen; and Grinberg, Jan, 4,239,347, Cl. 350-336.000.
Grinberg, Jan; Waldner, Michael; Braatz, Paul Q.; and Jacobson, Alexander D., 4,239,348, Cl. 350-342.000.
Kolb, William P., Jr.; and Schmidt, Keith G., 4,240,046, Cl. 331-94.50D.
Lloyd, Randahl B., 4,239,346, Cl. 350-334.000.
Myer, Jon H.; and Grinberg, Jan, 4,239,312, Cl. 339-17.00N.
Rubin, Lawrence M., 4,240,037, Cl. 330-127.000.
Hughes, Frederick R.; and Nyul, Paul, to RCA Corporation. Electroluminescent semiconductor device with fiber-optic face plate. 4,240,090, Cl. 357-30.000.
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., to Armour and Company. Synthesis of biologically active peptides. 4,239,680, Cl. 260-112.50T.
Hughes, Paul R.; and Campbell, John E., to United Brands Company. Thermostat. 4,240,077, Cl. 340-500.000.
Hughes, Robert D.: *See—*
Steigelmann, Edward F.; and Hughes, Robert D., 4,239,506, Cl. 55-16.000.
Hujer, Friedrich, to AGFA-Gevaert AG. Photographic copying machine with means for varying exposure across the surface of the original copied. 4,239,385, Cl. 355-71.000.
Hullein, Francois M. L.; and Cadet, Jean-Claude A. M., to Societe d'Etudes, Recherches et Constructions Electroniques SERCEL. Angle coder with variable input angle. 4,240,069, Cl. 340-347.00P.
Huls, Christina: *See—*
Huls, Edward; and Huls, Christina, 4,239,171, Cl. 248-558.000.
Huls, Edward; and Huls, Christina. Book support. 4,239,171, Cl. 248-558.000.
Hummel, Gregory C.: *See—*
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Hunter Engineering Company: *See—*
Hollandsworth, William J.; and Grubbs, Dean O., 4,239,389, Cl. 356-155.000.
Hurt, James M., Jr.: *See—*
Dick, David C.; and Hurt, James M., Jr., 4,239,711, Cl. 261-109.000.
Huskey, C. George: *See—*
Hawkins, William E.; and Huskey, C. George, 4,239,160, Cl. 241-222.000.
Hutchings, Le Roi E., to UOP Inc. Hydrocarbon conversion process with annular guard beds. 4,239,614, Cl. 208-108.000.
Hydro-Quebec: *See—*
Berthiaume, Raymond, 4,240,025, Cl. 323-8.000.
Hyrbinetics, Inc.: *See—*
Dobkin, Robert C., 4,239,986, Cl. 307-252.00B.
Hyre, Charles E., to Fennell Corporation. Fluid bed furnace and pilot light assembly. 4,239,480, Cl. 431-264.000.
I.S.R. Holding SARL: *See—*
Scott, Charles M.; and Feast, Alan A. J., 4,239,669, Cl. 260-29.60R.
Iacoviello, John G., to Air Products and Chemicals, Inc. Process for the use of vinyl acetate-ethylene copolymer emulsions to adhere fibers to carpet backing. 4,239,563, Cl. 156-72.000.
Ibuki, Koji: *See—*
Kii, Masami; Ueda, Yoshihiro; and Ibuki, Koji, 4,239,949, Cl. 200-148.00R.
ICAR Industria Condensatori Applicazioni Elettroelettroniche S.p.A.: *See—*
Sanvito, Enrico, 4,240,126, Cl. 361-274.000.
Ichikawa, Yoshifumi: *See—*
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.
Igarashi, Yousuke; Sakata, Minehiro; Kudo, Shuichi; Yokoyama, Yasuyuki; and Kai, Masanori, to Iwatsu Electric Co., Ltd. Electrophotographic copying machines. 4,239,371, Cl. 355-14.0CH.
Iida, Hiroshi; Umehara, Ikuo; and Takeda, Yasuo, to Nippon Steel Corporation. Method of controlling steel strip temperature in continuous heating equipment. 4,239,483, Cl. 432-8.000.
Iida, Yozo, to Nippon Kogaku K.K. Camera for automatic and manual focusing. 4,239,357, Cl. 354-25.000.
Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium. 4,239,835, Cl. 428-611.000.
Ikeda, Sadaharu: *See—*
Kita, Nobuyuki; Uchida, Toshio; Ikeda, Sadaharu; and Sato, Shigeru, 4,239,850, Cl. 430-281.000.
Ikesue, Masumi: *See—*
Tatsumi, Susumu; Ikesue, Masumi; Hosaka, Masao; and Kasahara, Nobuo, 4,239,374, Cl. 355-14.00E.
Iles, Christopher W., to Plessey Handel und Investments AG. Indicating devices. 4,240,146, Cl. 364-467.000.
Imamura, Kazuo: *See—*
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, 4,239,892, Cl. 546-251.000.
Imperial Chemical Industries Limited: *See—*
Glen, Alasdair T.; and Bayles, Richard W., 4,239,776, Cl. 424-304.000.
Inaba, Hajimu; and Miyashita, Hideo, to Fujitsu Fanuc Limited. Positioning device for an industrial robot. 4,240,016, Cl. 318-562.000.
Inaba, Masao; Sugimoto, Atsumi; and Miyahara, Shigeru, to Nippon Electric Co., Ltd. Digital video effect equipment. 4,240,112, Cl. 358-160.000.
Inada, Masami; Hashimoto, Nobuyuki; and Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Thermally responsive valve. 4,239,154, Cl. 236-87.000.
Inagaki, Sanzi: *See—*
Tanaka, Susumu; Nagai, Koji; and Inagaki, Sanzi, 4,239,845, Cl. 430-122.000.
Inbar, Michael, to TRW Inc. Self-aligning fiber optic relay. 4,239,332, Cl. 350-96.200.
Indicator Controls Corp.: *See—*
Gould, Samuel; and Gould, James S., 4,240,063, Cl. 340-119.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Giolitti, Alberto, 4,239,400, Cl. 400-144.200.

Ing. F. Selmer A/S: *See—*
Slatten, Arvid; Bech, Harald; and Olsen, Olav, 4,239,417, Cl. 405-195.000.

Ingemann, Bertil; and Persson, Bertil. Boot support device. 4,238,865, Cl. 12-114.800.

Innovative Electronics Design: *See—*
Ponto, Robert A., 4,239,938, Cl. 179-1.0VL.

Inoshita, Minoru: *See—*
Stafford, John P.; Inoshita, Minoru; and Winfrey, Gerald N., 4,240,140, Cl. 364-200.000.

Inoue, Takehisa; and Tsunoi, Kazuo, to Toray Industries, Inc. Process for the production of bonded zeolite bodies. 4,239,655, Cl. 252-455.00Z.

Inouye, Hiroshi, to Hitachi, Ltd. Fluid-tight closure apparatus. 4,239,124, Cl. 220-240.000.

Institut Francais du Petrole: *See—*
Castel, Yvon; and Cholet, Henri, 4,239,087, Cl. 175-340.000.
Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean, 4,239,652, Cl. 252-441.000.

Instytut Nawozow Sztucznych: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Insul Company, Inc.: *See—*
La Bate, James B., 4,239,602, Cl. 202-242.000.

International Business Machines Corporation: *See—*
Alameddine, Oussama; Briska, Marian; and Thiel, Klaus P., 4,239,810, Cl. 427-75.000.
Blum, Samuel E.; Kovac, Zlata; and von Gutfeld, Robert J., 4,239,789, Cl. 427-53.100.
Boyatt, Richard G., Jr.; and Steger, Donald J., 4,239,107, Cl. 206-225.000.
Bringol, Charles R., 4,240,075, Cl. 340-798.000.
Carr, Timothy W.; Corl, Edwin A.; and Majtenyi, Carl G., 4,239,967, Cl. 250-281.000.
Chang, Chin-An; Chang, Leroy L.; and Esaki, Leo, 4,239,584, Cl. 156-612.000.
Ciszek, Theodore F., 4,239,734, Cl. 422-246.000.
Dreyfus, Russell W.; Penebre, Nicholas A.; and McCorkle, Richard A., 4,240,007, Cl. 315-111.800.
Edwards, Nathan P.; and White, James M., 4,239,983, Cl. 307-221.00D.
Enser, Mats A.; and Stalberg, Nils G., 4,239,151, Cl. 235-437.000.
Ghez, Richard A.; Gunn, John B.; Hammer, Robert; and Van Vechten, James A., 4,239,586, Cl. 156-644.000.
Kemlage, Bernard M., 4,239,811, Cl. 427-95.000.

International Harvester Company: *See—*
Kesl, Elmer M.; Quade, Henry H.; and Sammarco, Peter, 4,238,916, Cl. 56-106.000.

International Minerals & Chemical Corp.: *See—*
Shipchandler, Mohammed T., 4,239,772, Cl. 424-279.000.

International Standard Electric Corporation: *See—*
Parfree, Colin S.; and Worthington, Peter, 4,239,336, Cl. 350-96.230.

International Telephone and Telegraph Corporation: *See—*
Lacaze, Leonard, Jr., 4,239,315, Cl. 339-89.00M.
Schwartz, Lawrence, 4,239,318, Cl. 339-143.00R.
Wollermann, Louis A.; Rucker, Dugan A.; and Krum, Jack K., 4,239,783, Cl. 426-25.000.

Interox Chemicals Limited: *See—*
Ridgway, John W., 4,239,622, Cl. 424-130.000.

INTERx Research Corporation: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,239,757, Cl. 424-241.000.

Irie, Kiyoshi: *See—*
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.

Irving, Leslie F. Portable water carriers. 4,239,032, Cl. 126-437.000.

Ishida, Nobumasa; Yamada, Yasuo; and Jinno, Hideki, to Nippon Hardboard Co. Ltd. Gypsum moldings as building materials and methods manufacturing the said gypsum moldings. 4,239,716, Cl. 264-86.000.

Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, to Daiichi Seiyaku Co., Ltd. 2-Aminotetralin derivatives and process for producing the same. 4,239,903, Cl. 560-73.000.

Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, to Mitsubishi Gas Chemical Company, Inc. Process for preparing carboxylic acid anhydrides. 4,239,698, Cl. 260-549.000.

Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, to Mitsubishi Gas Chemical Company, Inc. Process for producing hydrazine sulfate. 4,239,741, Cl. 423-388.000.

Italsider S.p.A.: *See—*
Ermini, Erminio, 4,239,737, Cl. 423-242.000.

Ito, Satoru, to Hitachi, Ltd. Method for fabricating a semiconductor device by controlled diffusion between adjacent layers. 4,239,559, Cl. 148-188.000.

Ito, Tadashi: *See—*
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.

ITT Industries, Inc.: *See—*
Burgdorf, Jochen, 4,239,294, Cl. 303-6.00C.
Hinze, Klaus; and Wisskirchen, Klaus B., 4,239,950, Cl. 200-254.000.

Ives, Frank E. Impregnated fabric applicator with vibrating applicator rolls. 4,239,580, Cl. 156-468.000.

Iwai, Fumio, to Konishiroku Photo Industry Co., Ltd. Transfer type electrophotographic copying machine. 4,239,372, Cl. 355-14.00R.

Iwatani, Shiroh: *See—*
Morishita, Mitsuharu; and Iwatani, Shiroh, 4,239,558, Cl. 148-175.000.

Iwatsu Electric Co., Ltd.: *See—*
Igarashi, Yousuke; Sakata, Minehiro; Kudo, Shuichi; Yokoyama, Yasuyuki; and Kai, Masanori, 4,239,371, Cl. 355-14.0CH.

Izumitani, Tetsuro; and Tsuru, Michitaka, to Hoya Glass Works, Ltd. Phosphate base laser glasses. 4,239,645, Cl. 252-301.40P.

J. I. Case Company: *See—*
Venable, Phillip G.; and Horsch, Rudolf, 4,239,085, Cl. 172-667.000.

Jacko, Michael G.; and Gager, Robert F., to Bendix Corporation, The. Lignin modified friction material. 4,239,666, Cl. 260-17.500.

Jacobi, John H.: *See—*
Larsen, Lawrence E.; and Jacobi, John H., 4,240,027, Cl. 324-57.00R.

Jacobs, Stanley C.: *See—*
Dawless, Robert K.; and Jacobs, Stanley C., 4,239,606, Cl. 204-67.000.

Jacobson, Alexander D.: *See—*
Grinberg, Jan; Waldner, Michael; Braatz, Paul Q.; and Jacobson, Alexander D., 4,239,348, Cl. 350-342.000.

Jacobson, Chester F.; and Poisson, Norman D., to Gillette Company, The. Scraper assembly with blade lock means. 4,238,883, Cl. 30-162.000.

Jacoponi, Stefano, to Fiat Auto S.p.A. Hydraulically damped automatic play compensation device for motor vehicle clutches. 4,239,098, Cl. 192-111.00A.

Jagenberg Werke Aktiengesellschaft: *See—*
Schonmeier, Herbert; and Dropczynski, Hartmut, 4,239,142, Cl. 226-194.000.
Weiss, Peter, 4,239,165, Cl. 242-58.600.

Jakovski, Norbert: *See—*
Gluck, Otto; and Jakovski, Norbert, 4,239,406, Cl. 400-645.000.

Jalonen, Donald A., to Minnesota Mining and Manufacturing Company. Frequency selective annunciator system. 4,240,078, Cl. 340-524.000.

James, Kenneth A.: *See—*
August, Rudolf R.; Strahan, Virgil H.; James, Kenneth A.; and Nichols, Donald K., 4,239,963, Cl. 250-231.00R.

James, Larry R. Retractable load lifting and moving apparatus particularly adapted for use on motor vehicles. 4,239,440, Cl. 414-542.000.

Janirek, Vladislav: *See—*
Miculka, Zdenek; Janirek, Vladislav; Rektorik, Vladimir; and Bajak, Karel, 4,238,939, Cl. 69-43.000.

Janson, Gunnar H., to Dana Corporation. Adjustable tensioner. 4,239,092, Cl. 188-267.000.

Jarvis, Arthur B. Steadiness testing game. 4,239,213, Cl. 273-1.00E.

Jerr-Dan Corporation: *See—*
Horneys, David C.; and Pool, Gerald L., 4,239,275, Cl. 414-478.000.

Jindra, Kurt: *See—*
Koenitzer, Joachim; Schmitz, Heinrich; and Jindra, Kurt, 4,239,817, Cl. 427-211.000.

Jines, Arnold R. Stabilizing device for hollow workpieces. 4,238,979, Cl. 82-38.00R.

Jinno, Hideki: *See—*
Ishida, Nobumasa; Yamada, Yasuo; and Jinno, Hideki, 4,239,716, Cl. 264-86.000.

Job, Allen R., to Domtar Inc. Process for the preparation of ferro lime. 4,239,537, Cl. 75-257.000.

Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., to Textron, Inc. Rotor blade out-of-plane centrifugal pendulums. 4,239,456, Cl. 416-145.000.

Joglekar, Mukund M.: *See—*
Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., 4,239,455, Cl. 416-145.000.

Johns, Dereck R., to Air Products and Chemicals, Inc. Production of fine metal powders. 4,239,159, Cl. 241-23.000.

Johnson Controls, Inc.: *See—*
Hayes, Thomas E., 4,239,477, Cl. 431-20.000.

Johnson, Everett C.; and Naylor, Arthur G., to Western Electric Company, Inc. Transporting and orienting an article using a movable carrier inserted into an indentation in the article. 4,240,032, Cl. 324-158.00F.

Johnson, James A. Apparatus for use in balancing bus and truck wheels. 4,238,961, Cl. 73-480.000.

Johnson, Peter W., to Olin Corporation. Driver assembly for small-diameter fasteners. 4,239,143, Cl. 227-10.000.

Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-9-deoxy-5,9α-epoxy-2,3,4,5-tetradehydro-PGF$_1$ compounds. 4,239,909, Cl. 542-422.000.

Johnson, Tore R., to AMP Incorporated. Optical three rod waveguide connector. 4,239,334, Cl. 350-96.210.

Johnston, Robert J.; Colista, Dominic; Layciak, Stephen G.; and Dobrosielski, Stephen S., to Westinghouse Electric Corp. Switch operator with switch-mounting adapter. 4,239,946, Cl. 200-51.130.

Johnstun, Dick E. Portable shrink tubing marker gun. 4,239,399, Cl. 400-128.000.

Jones, Francis E.: *See—*
Beasley, Delbert E.; and Jones, Francis E., 4,239,271, Cl. 294-74.000.

Jones, Robert W.: *See—*
Cason, Charles M., III; Perkins, James F.; and Jones, Robert W., 4,239,341, Cl. 350-294.000.

Jones, Thomas L., to Acco Industries Inc. Self-centering push-pull cable apparatus. 4,238,975, Cl. 74-502.000.

Jonker, Herman D., to U.S. Philips Corporation. Method of depositing a layer of magnetic bubble domain material on a monocrystalline substrate. 4,239,805, Cl. 428-446.000.

Jordan, Lester W.: *See—*
Howard, Curtiss G.; Jordan, Lester W.; and Yaworsky, Chester E., 4,239,954, Cl. 219-121.0EH.

Josef Martin Feuerungsbau GmbH: *See—*
Martin, Johannes J.; Martin, Walter J.; and Weber, Erich, 4,239,029, Cl. 126-163.00R.

Jos. Schneider GmbH & Co.: *See—*
Wagner, Werner, 4,239,339, Cl. 350-184.000.

Joubert, Raymond J. M.; and Bouiller, Jean G., to Societe' Nationale d'Etude et de Construction de Moteurs d'Aviation. Rotary exchanger for gas turbine installations. 4,238,927, Cl. 60-39.51H.

Joy, Carole. Flexible thimble. 4,239,134, Cl. 223-101.000.

Joy Manufacturing Company: *See—*
Peterson, Harley G., 4,239,061, Cl. 137-614.110.

Jubin, John C., Jr.: *See—*
Grane, Henry R.; Jubin, John C., Jr.; and Worrell, G. Richard, 4,239,926, Cl. 568-910.000.

Juffa, Richard: *See—*
Koopmann, Rudiger; and Juffa, Richard, 4,238,952, Cl. 73-15.600.

Juner, Adolf: *See—*
Haas, David J.; Galetta, Nick; and Juner, Adolf, 4,239,969, Cl. 250-359.000.

Jung, Friedrich; and Rettke, Wilfried, to Triumph Werke Nurnberg A.G. Detachable wire matrix print head mounting structure. 4,239,402, Cl. 400-175.000.

Jungverdorben, Herman-Josef: *See—*
Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, 4,239,722, Cl. 264-206.000.

Junkers, Gerd, to Saarbergwerke Aktiengesellschaft. Electrostatic precipitator with precipitator electrodes. 4,239,514, Cl. 55-145.000.

Justice, Harry L., Jr.: *See—*
Justice, Harry L., Sr.; Justice, Harry L., Jr.; and Watanuma, Yoshinori, 4,239,328, Cl. 350-70.000.

Justice, Harry L., Sr.; Justice, Harry L., Jr.; and Watanuma, Yoshinori. Collapsible binocular and blank therefor. 4,239,328, Cl. 350-70.000.

Justice, James C.; and Delli-Gatti, Frank A., to Coaltex, Incorporated. Maneuverable full face miner. 4,239,289, Cl. 299-18.000.

Jutila, Pentti: *See—*
Niemi, Antti J.; and Jutila, Pentti K., 4,239,493, Cl. 23-230.00A.

Jutila, Pentti K.: *See—*
Niemi, Antti J.; and Jutila, Pentti K., 4,239,493, Cl. 23-230.00A.

Kabushiki Kaisha Daini Seikosha: *See—*
Hosoya, Takeshi; Tanaka, Fumihiro; and Noguchi, Kazuo, 4,239,040, Cl. 128-213.00R.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Watanabe, Hironori, 4,238,984, Cl. 84-1.010.

Kabushiki Kaisha Tomita Sangyo: *See—*
Tomita, Keiji, 4,239,572, Cl. 156-227.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,239,656, Cl. 252-462.000.

Kabushiki Kaisha Veno Seiyaku Oyo Kenkyujo: *See—*
Ueno, Ryuzo; Tsuchiya, Hiroaki; Muramoto, Yasukazu; and Kuwae, Yoshihiko, 4,239,913, Cl. 562-425.000.

Kagitani, Yoshio: *See—*
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.

Kahn, Ralph J., to Schlesinger Brothers, Inc. Carrying case. 4,239,074, Cl. 150-1.600.

Kai, Masanori: *See—*
Igarashi, Yousuke; Sakata, Minehiro; Kudo, Shuichi; Yokoyama, Yasuyuki; and Kai, Masanori, 4,239,371, Cl. 355-14.0CH.

Kaiser, Bernd-Ulrich: *See—*
Danziger, Harry; and Kaiser, Bernd-Ulrich, 4,239,682, Cl. 260-239.30A.

Kaiser, Dieter: *See—*
Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, 4,238,963, Cl. 73-644.000.

Kaku, Kanji: *See—*
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.

Kamada, Atsuya: *See—*
Obara, Isao; Kamada, Atsuya; and Kaneda, Aizo, 4,239,944, Cl. 179-115.5VC.

Kameswaran, Venkataraman: *See—*
Berkelhammer, Gerald; and Kameswaran, Venkataraman, 4,239,777, Cl. 424-304.000.

Kamino, Yukishige: *See—*
Sakamoto, Masakatsu; Uchida, Kenji; Honma, Isao; and Kamino, Yukishige, 4,239,423, Cl. 406-47.000.

Kamiya, Masanori, to Hitachi, Ltd. Channel selection voltage generator. 4,240,115, Cl. 358-193.100.

Kampmann, Frank S. Stereo separation control. 4,239,937, Cl. 179-1.00G.

Kamyr, Inc.: *See—*
Prough, James R., 4,239,590, Cl. 162-49.000.
Sherman, Michael I., 4,239,470, Cl. 418-153.000.

Kanao, Munefumi: *See—*
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.

Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N. Film cryotron. 4,240,086, Cl. 357-4.000.

Kane, Vinayak V., to Ortho Pharmaceutical Corporation. Total synthesis of the utero-evacuant substance d,l-zoapatanol. 4,239,689, Cl. 260-333.000.

Kaneda, Aizo: *See—*
Obara, Isao; Kamada, Atsuya; and Kaneda, Aizo, 4,239,944, Cl. 179-115.5VC.

Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Control system. 4,238,924, Cl. 60-39.28R.

Kantner, Otto: *See—*
Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, 4,239,356, Cl. 354-23.00R.

Karl, Walter, to Utilux Pty. Limited. Electric cable processing. 4,238,981, Cl. 83-151.000.

Karn, Helmut: *See—*
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,239,895, Cl. 548-341.000.

Karnofsky, George B. Process and apparatus for solvent extraction of oil from oil-containing diatomite ore. 4,239,617, Cl. 208-321.000.

Kasahara, Nobuo: *See—*
Tatsumi, Susumu; Ikesue, Masumi; Hosaka, Masao; and Kasahara, Nobuo, 4,239,374, Cl. 355-14.00E.

Kasai, Yoshio: *See—*
Isoda, Sumiro; Kanao, Munefumi; Ichikawa, Yoshifumi; Hashizume, Takeshi; Irie, Kiyoshi; and Kasai, Yoshio, 4,239,903, Cl. 560-73.000.

Kashima, Yoshinobu; and Yoshida, Makoto, to Citizen Watch Co., Ltd. Solar cell battery charging control system. 4,240,021, Cl. 320-2.000.

Kashimura, Katsuichi: *See—*
Tsukushi, Masanori; Hirasawa, Kunio; and Kashimura, Katsuichi, 4,239,948, Cl. 200-148.00R.

Kashiwada, Toshinobu: *See—*
Okumura, Osamu; Sakatani, Takenobu; Kashiwada, Toshinobu; and Tokuyama, Kiyotaka, 4,239,662, Cl. 252-555.000.

Kasinoff, Alan M.: *See—*
Oates, Robert M.; Neuner, James A.; Couch, Robert D., Jr.; and Kasinoff, Alan M., 4,239,595, Cl. 176-19.00R.

Kasten, Walter, to X Incorporated. Landscape blanket. 4,239,824, Cl. 428-13.000.

Kataoka, Hiroshi. Multicolor rotogravure printing system. 4,239,001, Cl. 101-152.000.

Katayama, Akira; and Hozumi, Toshiaki, to Nippon Kogaku K.K. Camera film advancing apparatus. 4,239,362, Cl. 354-212.000.

Kato, Hajime; and Ogata, Yasuhiro, to Fuji Photo Film Co., Ltd. Method of producing recording sheets. 4,239,815, Cl. 427-150.000.

Kato, Hisatoyo: *See—*
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.

Katoh, Toshio: *See—*
Hakamada, Takeshi; Hirata, Hideyo; and Katoh, Toshio, 4,239,998, Cl. 310-45.000.

Kaub, Manfred, to Girling Limited. Control valve assemblies. 4,239,296, Cl. 303-24.00A.

Kauffman, Robert N.: *See—*
Smith, James D. B.; and Kauffman, Robert N., 4,239,802, Cl. 428-377.000.

Kaufman, Lawrence G.: *See—*
Ginsberg, Thomas; and Kaufman, Lawrence G., 4,239,539, Cl. 106-1.170.

Kaulfuss Designers Incorporated: *See—*
Kaulfuss, William P.; and Kaulfuss, Robert H., 4,239,825, Cl. 428-16.000.

Kaulfuss, Robert H.: *See—*
Kaulfuss, William P.; and Kaulfuss, Robert H., 4,239,825, Cl. 428-16.000.

Kaulfuss, William P.; and Kaulfuss, Robert H., to Kaulfuss Designers Incorporated. Bird ornament. 4,239,825, Cl. 428-16.000.

Kawagoe, Hiroto, to Hitachi, Ltd. Semiconductor read only memory. 4,240,151, Cl. 365-104.000.

Kawamoto, Mineo: *See—*
Murakami, Kanji; Kawamoto, Mineo; Matsuda, Yoichi; Wajima, Motoyo; and Morishita, Hirosada, 4,239,813, Cl. 427-98.000.

Kawasaki Steel Corporation: *See—*
Tsubota, Kazuya, 4,238,946, Cl. 72-199.000.

Kawazoe, Michio. Holding device for attaching a device such as a camera bracket. 4,240,129, Cl. 362-3.000.

Kazakov, Evgeny A.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin

A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.
Kealoha, Gregory. Diver's floater. 4,238,864, Cl. 9-8.00R.
Kearney-National Inc.: *See—*
Westrom, Arthur C., 4,240,124, Cl. 361-127.000.
Keeley, Donald E., to General Electric Company. Meta, para-substituted isopropylidene bisphenols and methods for making. 4,239,918, Cl. 568-640.000.
Kellar, Paul R. N.: *See—*
Taylor, Richard J.; and Kellar, Paul R. N., 4,240,104, Cl. 358-22.000.
Keller, Roderich, to GSI Gesellschaft fuer Schwerionenforschung m.b.H. Apparatus for the generation of primary electrons from a cathode. 4,240,005, Cl. 313-231.000.
Kelly, David; Vidal, Michael; and Rosenthal, Saul, to Professional Chemical & Color, Inc. Carpet dyeing system. 4,239,490, Cl. 8-499.000.
Kelson, Richard D. Self lubricating sabot. 4,239,006, Cl. 102-93.000.
Kemlage, Bernard M., to International Business Machines Corporation. Low pressure chemical vapor deposition of silicon dioxide with oxygen enhancement of the chlorosilane-nitrous oxide reaction. 4,239,811, Cl. 427-95.000.
Kemp, Gail W. Seals for a rotary machine. 4,239,469, Cl. 418-117.000.
Kempe, Uwe: *See—*
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,239,895, Cl. 548-341.000.
Kemper, Yves J., to Vadetec Corporation. Infinitely variable power transmission and system. 4,238,976, Cl. 74-682.000.
Kennedy, Richard W.: *See—*
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.
Kenton, Joseph R.: *See—*
Wilson, Joseph F.; Fodor, Lawrence M.; and Kenton, Joseph R., 4,239,522, Cl. 71-29.000.
Kerr-McGee Refining Corporation: *See—*
Gearhart, Junior A., 4,239,616, Cl. 208-309.000.
Kerry, John C.; and Weighton, David M., to Boots Company Limited, The. Pesticidal compositions containng 1,3,5-triazapenta-1,4-diene and organo-tin oxide compounds. 4,239,774, Cl. 424-288.000.
Kerwin, Daniel, to Meyercord Co., The. Method and machine for transferring indicia to tapered articles. 4,239,570, Cl. 156-163.000.
Kesl, Elmer M.; Quade, Henry H.; and Sammarco, Peter, to International Harvester Company. Corn snapping header frame. 4,238,916, Cl. 56-106.000.
Kesling, Haven S., Jr., to Atlantic Richfield Company. Process for the preparation of urethanes. 4,239,904, Cl. 560-157.000.
Khan, Riaz A.: *See—*
Richards, Alan C.; and Khan, Riaz A., 4,239,665, Cl. 260-17.200.
Khutoretsky, Gary M.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.
Kiehs, Karl: *See—*
Loeffler, Hans-Peter; Kiehs, Karl; and Adolphi, Heinrich, 4,239,775, Cl. 424-300.000.
Kii, Masami; Ueda, Yoshihiro; and Ibuki, Koji, to Mitsubishi Denki Kabushiki Kaisha. Self-extinguishing type circuit interrupter. 4,239,949, Cl. 200-148.00R.
Kijima, Yasuhiko: *See—*
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, 4,239,698, Cl. 260-549.000.
Kilinskis, David C.; and Vassos, Louis J., to Skil Corporation. Battery charging circuit for portable power tool. 4,240,022, Cl. 320-23.000.
Kimata, Kei; Nakazeki, Tsugito; and Yasuda, Yoshinobu, to N T N Toyo Bearing Co. Ltd. Air flow measuring device for internal combustion engines. 4,239,028, Cl. 123-389.000.
Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, to Mitsubishi Chemical Industries Ltd. Process for producing polyester. 4,239,882, Cl. 528-209.000.
Kindell, Jerry L.; and Flynn, Richard T., to Honeywell Information Systems Inc. Long operand alignment and merge operation. 4,240,144, Cl. 364-200.000.
Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for beneficiating sulfide ores. 4,239,529, Cl. 75-1.00R.
King, John F.; and Unsworth, William. Magnesium alloys. 4,239,535, Cl. 75-168.00D.
King, Lloyd H., Sr. Attachments for pipes. 4,239,265, Cl. 285-197.000.
Kingry, Gary W., to Procter & Gamble Company, The. Detergent composition comprising a hydrolyzable cationic surfactant and specific alkalinity source. 4,239,660, Cl. 252-528.000.
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, to Otsuka Chemical Co., Ltd. Water-soluble flame retarder and process for preparing the same. 4,239,542, Cl. 106-18.140.
Kinrade, John D.: *See—*
Robbins, John C.; and Kinrade, John D., 4,239,964, Cl. 250-255.000.
Kirkevold, Kent A.: *See—*
Knope, Constance J.; and Kirkevold, Kent A., 4,239,828, Cl. 428-64.000.
Kita, Nobuyuki; Uchida, Toshio; Ikeda, Sadaharu; and Sato, Shigeru, to Fuji Photo Film Co., Ltd. Photopolymerizable composition. 4,239,850, Cl. 430-281.000.
Kitamura, Kazuhiko; and Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Temperature responsive valve assembly. 4,239,152, Cl. 236-48.00R.
Kitamura, Sadafumi: *See—*
Hasegawa, Kenichi; Taniguchi, Hiroshi; and Kitamura, Sadafumi, 4,240,038, Cl. 330-149.000.
Kitamura, Yasunori: *See—*
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.
Kittag, Gerd: *See—*
Freudenschuss, Otto; Kantner, Otto; and Kittag, Gerd, 4,239,356, Cl. 354-23.00R.
Kiyokawa, Shin; and Sakaguchi, Shokichi, to Misato Plaheat Mfg. Ltd. House and method for livestock raising. 4,239,020, Cl. 119-16.000.
Kjoller, Hans O. S., to Telefonaktiebolaget L M Ericsson. Apparatus for inserting instructions in a control sequence in a stored program controlled telecommunication system. 4,240,136, Cl. 364-200.000.
Klafft & Kluppelholz: *See—*
Krause, Bruno, 4,238,969, Cl. 74-411.500.
Klauke, Erich: *See—*
Kramer, Wolfgang; Klauke, Erich; and Roessler, Peter, 4,239,762, Cl. 424-254.000.
Klaus, Gerald R., to Fellowes Manufacturing Company. File frame. 4,239,306, Cl. 312-111.000.
Klein, Herbert H., to Unarco Industries, Inc. Reinforced storage rack. 4,239,122, Cl. 211-182.000.
Klein, Howard P.: *See—*
Zimmerman, Robert L.; McEntire, Edward E.; and Klein, Howard P., 4,239,916, Cl. 562-574.000.
Klein, Max. Porous media to separate gases liquid droplets and/or solid particles from gases or vapors and coalesce entrained droplets. 4,239,516, Cl. 55-389.000.
Klein, Schanzlin & Becker AG.: *See—*
Hergt, Peter; Buschsieper, Peter; and Matthias, Heinz-Bernd, 4,239,453, Cl. 415-182.000.
Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.
Kleinschmager, Herbert: *See—*
Hartmann, Bernd; and Kleinschmager, Herbert, 4,239,837, Cl. 429-104.000.
Klepp, Christian: *See—*
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.
Kleykamp, Donald L.; and Neroni, Peter J., to Dayco Corporation. Railway truck pedestal liner. 4,239,007, Cl. 105-225.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Streicher, Kurt; and Nieden, Achim zur, 4,239,026, Cl. 123-196.00R.
Knapp, Warren S.: *See—*
Slack, Glen A.; and Knapp, Warren S., 4,239,502, Cl. 51-295.000.
Kneip, George D., Jr.: *See—*
Anderson, Marvin H.; Chmyz, George; Daus, Carl D.; and Kneip, George D., Jr., 4,240,033, Cl. 324-321.000.
Kneuper, Wolfgang: *See—*
Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, 4,239,110, Cl. 206-396.000.
Knight, Hester L. Hard to reach places spray can. 4,239,407, Cl. 401-190.000.
Knight, Kerry G.: *See—*
Greacen, John F.; Knight, Kerry G.; and Lech, Thaddeus, Jr., 4,239,097, Cl. 192-106.200.
Knight, Richard: *See—*
Herring, Michael T. A.; and Knight, Richard, 4,238,998, Cl. 100-41.000.
Knoll AG: *See—*
Bub, Oskar, 4,239,684, Cl. 424-244.000.
Knope, Constance J.; and Kirkevold, Kent A., to Minnesota Mining and Manufacturing Company. Self-lubricating magnetic recording diskette. 4,239,828, Cl. 428-64.000.
Knott, Jack E., II; and Wang, James C., to American Can Company. Multi-layer barrier film. 4,239,826, Cl. 428-35.000.
Knutti, Helmut: *See—*
Aurin, Friedrich; and Knutti, Helmut, 4,239,342, Cl. 350-294.000.
Kobayashi, Yoshimichi; Tsuge, Yukio; and Hirako, Susumu, to Mitsubishi Chemical Industries Ltd. Process for preparing cationic electrodeposition-coating resin using monofunctional blocking agents and tertiary amines having at least two hydroxy groups. 4,239,878, Cl. 528-45.000.
Kobe Steel, Limited: *See—*
Takeuchi, Sinya, 4,239,000, Cl. 101-129.000.
Kobylinski, Thaddeus P.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,704, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,705, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,924, Cl. 568-902.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,239,925, Cl. 568-902.000.
Koch, Friedo, to Hauni-Werke Korber & Co. KG. Method and apparatus for monitoring and controlling the production of composite filter mouthpieces for cigarettes or the like. 4,238,994, Cl. 493-4.000.

Kodama, Kenjiro; and Morozumi, Manami, to Yamasa Shoyu Kabushiki Kaisha; and Saneyoshi, Mineo. 1-β-D-Arabinofuranosylcytosine-5'-oleyl phosphate and salts thereof. 4,239,905, Cl. 536-29.000.
Koel, Gerrit J.; and Postma, Lambertus, to U.S. Philips Corporation. Method of manufacturing a thin-film magnetic head with a nickel-iron pattern having inclined edges. 4,239,587, Cl. 156-659.100.
Koenitzer, Joachim; Schmitz, Heinrich; and Jindra, Kurt, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Process and apparatus for coating one side of a metal strip with molten metal. 4,239,817, Cl. 427-211.000.
Kofink, Wolfgang, to Robert Bosch GmbH. Method and system to supply electrical energy to a self-contained electrical network at multiple voltage level, multiple power range, particularly for mobile application. 4,239,978, Cl. 307-16.000.
Kohl, Franz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for the production of high purity silicon monocrystals having a low oxygen content. 4,239,585, Cl. 156-617.0SP.
Kohler, Leo, to Holmen GmbH, Firma. Flowing agent for concrete and mortar and process for producing the same. 4,239,550, Cl. 106-314.000.
Kohler, Thomas P., to General Electric Company. Linearized three-state switching amplifier. 4,240,036, Cl. 330-10.000.
Kohyama, Katsuhisa: *See—*
Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, 4,239,882, Cl. 528-209.000.
Kolb, William P., Jr.; and Schmidt, Keith G., to Hughes Aircraft Company. Mount for a laser Brewster angle window. 4,240,046, Cl. 331-94.50D.
Kolbe, Andreas; and Dinter, Peter, to Hoechst Aktiengesellschaft. Device for the surface treatment of film webs by means of electrical corona discharge. 4,239,973, Cl. 250-531.000.
Kolesnikov, Dmitry P.: *See—*
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N., 4,240,086, Cl. 357-4.000.
Koll, Gunter: *See—*
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.
Koller, Bruno. Contact lenses having specially profiled cross sections. 4,239,353, Cl. 351-160.00H.
Komarovskikh, Nina I.: *See—*
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N., 4,240,086, Cl. 357-4.000.
Komatsu, Nobuhiko: *See—*
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.
Komatsubara, Michimasa; and Shimizu, Ikuo, to Sony Corporation. Signal transmission in teaching system. 4,238,893, Cl. 434-351.000.
Komendowski, Henry: *See—*
Weiler, Gerhard H.; and Komendowski, Henry, 4,239,726, Cl. 264-525.000.
Konars, Clement R.; Quinci, Emanuel; and Vascotto, Mario, to Halm Instrument Co., Inc. High speed document sorting means. 4,239,117, Cl. 209-553.000.
Kondo, Isao, to Olympus Optical Co., Ltd. Signal system. 4,239,984, Cl. 307-237.000.
Kondo, Takao: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Kondoh, Shiroh: *See—*
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,239,656, Cl. 252-462.000.
Kondratiev, Alexandr V.: *See—*
Vasiliev, Petr E.; Dvornin, Vladimir S.; Kondratiev, Alexandr V.; and Kravchenko, Vladimir F., 4,240,141, Cl. 318-114.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Iwai, Fumio, 4,239,372, Cl. 355-14.00R.
Konrath, Karl; and Schwarz, Manfred, to Robert Bosch GmbH. RPM regulator for fuel injection pumps. 4,239,025, Cl. 123-366.000.
Koopmann, Rudiger; and Juffa, Richard, to Bayer Aktiengesellschaft. Method of determining characteristic rheological quantities of viscoelastic materials. 4,238,952, Cl. 73-15.600.
Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, 4,239,764, Cl. 424-263.000.
Koppers Company, Inc.: *See—*
Edgar, William D., 4,239,600, Cl. 202-138.000.
Koren, Paul P.: *See—*
Nelson, Hugh A.; Wafer, John A.; Koren, Paul P.; Salemi, Nicholas A.; and Maier, Alfred E., 4,240,053, Cl. 335-16.000.
Koshelenko, Gennady P.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.
Kostelnick, Joseph J., to Bell Telephone Laboratories, Incorporated. Waveguide junction circulator having spurious mode absorbing means. 4,240,049, Cl. 333-1.100.
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, to Fuji Photo Film Co., Ltd. Method and apparatus for recording and reproducing a radiation image. 4,239,968, Cl. 250-327.100.
Kovac, Zlata: *See—*
Blum, Samuel E.; Kovac, Zlata; and von Gutfeld, Robert J., 4,239,789, Cl. 427-53.100.
Kowalski, Daniel J., to Four Star Corporation. Article carrier comprising slotted side rail with slidable cross-rail and bracket therefor. 4,239,138, Cl. 224-321.000.
Kowalski, Xavier, to Monsanto Company. Peroxide stabilization. 4,239,643, Cl. 252-182.000.
Kowalyshyn, Stephen; and Voorhees, John C., to United States of America, Navy. Homing torpedo control apparatus. 4,239,012, Cl. 114-23.000.
Kozacka, Frederick J.; and Belcher, Richard A., to Gould Inc. Fuse terminal connector for one or more electric fuses. 4,240,058, Cl. 337-231.000.
Kozaki, Toshiaki: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Kozlowski, Kazimierz: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.
Krainev, Alexandr F.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.
Kral, Jerry J.: *See—*
Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, 4,240,026, Cl. 324-54.000.
Kramer, Charles J., to Xerox Corporation. Holographic scanner for reconstructing a scanning light spot insensitive to a mechanical wobble. 4,239,326, Cl. 350-3.710.
Kramer, Wolfgang; Klauke, Erich; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating insects with substituted 5-phenylcarbamoyl-barbituric acids. 4,239,762, Cl. 424-254.000.
Kramer, Wolfgang; Buchel, Karl H.; Kuhle, Engelbert; Frohberger, Paul-Ernst; and Beandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with 1-(4-phenoxy)-3,3-dimethyl-2-(N-halogenoalkylmercapto-carbamoyloxy)-1-(1,2,4-triazol-1-yl)-butanes. 4,239,766, Cl. 424-269.000.
Kramer, Wolfgang: *See—*
Buchel, Karl H.; Kramer, Wolfgang; and Plempel, Manfred, 4,239,767, Cl. 424-273.00R.
Kranz, Joachim: *See—*
Fabian, Wolfgang; Kranz, Joachim; and Stoeckelmann, Guenter, 4,239,549, Cl. 106-308.00Q.
Kranz, Paul J., to Asarco Incorporated. Side dam apparatus for use in twin-belt continuous casting machines. 4,239,081, Cl. 164-431.000.
Kraus, Peter: *See—*
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.
Krause, Bruno, to Klafft & Kluppelholz. Mechanical gearing for roller blinds and awnings. 4,238,969, Cl. 74-411.500.
Krause, Dieter; Topfer, Dieter; and Salzburg, Wolfgang, to Hoechst Aktiengesellschaft. Apparatus for developing printing plates comprising a tank in which processing liquid is contained. 4,239,368, Cl. 354-325.000.
Krause, Fred E.: *See—*
Stamm, Robert H.; and Krause, Fred E., 4,238,878, Cl. 29-421.00R.
Krause, Gerhard; and Spaeth, Werner, to Siemens Aktiengesellschaft. Screening electrodes for optical semiconductor components. 4,240,087, Cl. 357-19.000.
Krauss, Werner, to Claudius Peters AG. Vertical silo for fluid bulk material with an inner blending chamber. 4,239,421, Cl. 406-12.000.
Kravchenko, Vladimir F.: *See—*
Vasiliev, Petr E.; Dvornin, Vladimir S.; Kondratiev, Alexandr V.; and Kravchenko, Vladimir F., 4,240,141, Cl. 318-114.000.
Kreuzer, Andreas. Basketball table game. 4,239,218, Cl. 273-85.00E.
Krieger, Abbott J. Surgical retractor. 4,239,036, Cl. 128-20.000.
Krikoryan, Dikran A.: *See—*
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., 4,239,605, Cl. 204-59.00R.
Kritsky, Valentin A.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.
Krob, Erwin; and Weigl, Erwin, to TMC Corporation. Ski brake. 4,239,256, Cl. 280-605.000.
Kroell, Franz. Disc separator. 4,239,119, Cl. 209-672.000.
Krohmann, Walter; and Gilles, Ewald, to Mannesmann Demag A.G. Quick change apparatus for guide rollers. 4,239,101, Cl. 193-37.000.
Krolak, Ronald F.: *See—*
Hesse, David L.; Krolak, Ronald F.; and Perna, Jiulio E., 4,239,320, Cl. 339-154.00A.

Krug, John A., Jr.: *See—*
Stoller, Patricia S.; Garner, Gerald D.; and Krug, John A., Jr., 4,239,059, Cl. 137-587.000.
Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., 4,239,060, Cl. 137-587.000.

Krum, Jack K.: *See—*
Wollermann, Louis A.; Rucker, Dugan A.; and Krum, Jack K., 4,239,783, Cl. 426-25.000.

Krumweide, Gary C., to General Dynamics Corporation. Method for coating a structure with a uniform foam layer. 4,239,564, Cl. 156-79.000.

Krupp, Carroll P.; and Straga, Ivan T., to B. F. Goodrich. Pump end swivel for hose. 4,239,262, Cl. 285-61.000.

Krupp-Koppers GmbH: *See—*
Austermuhle, Friedrich-Paul, 4,239,511, Cl. 55-84.000.

Kubinski, Karen R.: *See—*
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,239,519, Cl. 65-2.000.

Kubota, Yuzuru: *See—*
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,240,020, Cl. 318-721.000.

Kudo, Shuichi: *See—*
Igarashi, Yousuke; Sakata, Minehiro; Kudo, Shuichi; Yokoyama, Yasuyuki; and Kai, Masanori, 4,239,371, Cl. 355-14.0CH.

Kuehnle, Manfred R., to Coulter Systems Corp. Corona generating element. 4,240,125, Cl. 361-230.000.

Kuether, Christian L.: *See—*
Williams, Robert E.; Decker, Thomas A.; Kurtzman, Charles; and Kuether, Christian L., 4,239,351, Cl. 351-36.000.

Kuhle, Engelbert: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Kuhle, Engelbert; Frohberger, Paul-Ernst; and Beandes, Wilhelm, 4,239,766, Cl. 424-269.000.

Kulicke, Frederick W., Jr.: *See—*
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,239,144, Cl. 228-1.00R.

Kulicke & Soffa Industries, Inc.: *See—*
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,239,144, Cl. 228-1.00R.

Kullman, Russell M. H.: *See—*
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,239,701, Cl. 564-15.000.

Kulzer & Co. GmbH: *See—*
Gross, Albert; and Ege, Werner, 4,239,113, Cl. 206-568.000.

Kumamaru, Kuniaki: *See—*
Hiraki, Shunichi; Kumamaru, Kuniaki; Aoyama, Masaharu; and Yonezawa, Toshio, 4,240,096, Cl. 357-63.000.

Kummer, Werner: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, 4,239,764, Cl. 424-263.000.

Kunieda, Toshiaki: *See—*
Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, 4,239,835, Cl. 428-611.000.

Kunz, Bernard L.: *See—*
Williams, Steven E.; and Kunz, Bernard L., 4,239,177, Cl. 251-11.000.

Kuo, Chang-Kiang, to Texas Instruments Incorporated. Random access memory cell with different capacitor and transistor oxide thickness. 4,240,092, Cl. 357-41.000.

Kupersmit, Julius B. Combination clip and seal construction for shipping containers. 4,239,149, Cl. 229-45.00R.

Kuprianov, Jury V.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Bocharov, Vasily I.; and Kuprianov, Jury V., 4,239,997, Cl. 310-13.000.

Kurihara, Masaru: *See—*
Uemura, Tadahiro; and Kurihara, Masaru, 4,239,545, Cl. 106-181.000.

Kurii, Hajime: *See—*
Matsumoto, Yoshihiro; and Kurii, Hajime, 4,240,137, Cl. 364-200.000.

Kurita, Takaji, to Minolta Camera Kabushiki Kaisha. Electrophotocopying machine for production of colored photocopies. 4,239,370, Cl. 355-4.000.

Kurita, Toshiaki, to Tomy Kogyo Co., Inc. Target game and components thereof. 4,239,220, Cl. 273-127.00R.

Kurmeier, Hans-Adolf: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, 4,239,759, Cl. 424-248.400.

Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, to Sony Corporation. Photoconductive layer and target structure for image pickup tube. 4,240,006, Cl. 313-386.000.

Kurtzman, Charles: *See—*
Williams, Robert E.; Decker, Thomas A.; Kurtzman, Charles; and Kuether, Christian L., 4,239,351, Cl. 351-36.000.

Kusomoto, Shoichi: *See—*
Atoji, Nobuhisa; Kusomoto, Shoichi; and Sato, Kazue, 4,239,945, Cl. 179-182.00R.

Kuwae, Yoshihiko: *See—*
Ueno, Ryuzo; Tsuchiya, Hiroaki; Muramoto, Yasukazu; and Kuwae, Yoshihiko, 4,239,913, Cl. 562-425.000.

Kwong, Gary W. Y., to UOP Inc. Additives for hydrocarbon oils. 4,239,497, Cl. 44-72.000.

Kyburz, Emilio; and Aschwanden, Werner, to Hoffmann-La Roche Inc. Substituted 2-pyrrolidinones for counteracting cerebral insufficiency. 4,239,770, Cl. 424-274.000.

Kysor Industrial Corporation: *See—*
Monigold, Larry E.; and Cadwell, Ronald G., 4,239,153, Cl. 236-86.000.

La Bate, James B., to Insul Company, Inc. Ascension pipe elbow lid for coke ovens. 4,239,602, Cl. 202-242.000.

LaBate, Michael D. Process and material for treating steel walls and fans in electrical precipitation installations with micron colloidal graphite particles. 4,239,818, Cl. 427-236.000.

Labaz: *See—*
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Fillain, Paul de C., 4,239,893, Cl. 546-321.000.

Lacaze, Leonard, Jr., to International Telephone and Telegraph Corporation. Electrical connector. 4,239,315, Cl. 339-89.00M.

Lachance, Fernand. Liquid aspirator. 4,238,869, Cl. 15-353.000.

Lacombat, Michel; Graffin, Jean C.; and Antoine, Robert, to Thomson-CSF. Optical projection system equipped with a plate positioner. 4,239,381, Cl. 355-53.000.

Lacroix, Josef: *See—*
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.

Laforest nee Boutillier du Retail, Jacqueline S.; and Bessin, Pierre A. R., to Albert Rolland S.A. Water-soluble salts of tienilic acid. 4,239,771, Cl. 424-275.000.

Lambert Corporation: *See—*
Yeager, Robert R., 4,239,086, Cl. 172-680.000.

Lambert, Lloyd J., Jr. Arm curl machine. 4,239,210, Cl. 272-118.000.

Lambson, Kenneth H.: *See—*
United States of America, National Aeronautics and Space Administration; and Lambson, Kenneth H., 4,239,057, Cl. 137-549.000.

Laminating & Coating Corporation: *See—*
Conant, Roger P.; and Duffy, Raymond G., 4,239,111, Cl. 206-484.000.

Lampkin, Curtis M.; Roderick, Guy A.; and Nikodem, Robert B., to Photon Power, Inc. Method for quality film formation. 4,239,809, Cl. 427-74.000.

Lane, G. William. Wall-mounted eyeglass holder. 4,239,167, Cl. 248-205.00A.

Lang, Dorothy M. Toy displaying erratic tumbling movement. 4,238,904, Cl. 46-1.00R.

Lang, John N. Apparatus for sealing lap joints of fusible roofing sheets. 4,239,581, Cl. 156-497.000.

Lang, Ludwig; and Lang, Ortulf G. Releasably fixed mouthpiece as device for drinking from a container. 4,239,123, Cl. 220-90.600.

Lang, Ortulf G.: *See—*
Lang, Ludwig; and Lang, Ortulf G., 4,239,123, Cl. 220-90.600.

Lange, Howard B., Jr.: *See—*
Bhada, Rohinton K.; Lange, Howard B., Jr.; and Strom, Stephen S., 4,239,996, Cl. 310-11.000.

Langer, William J., to MTS Systems Corporation. Flat belt tire tester. 4,238,954, Cl. 73-146.000.

Langford, R. C. Remote reset. 4,239,457, Cl. 417-33.000.

Lanz, William E.; and Stepe, Visvaldis A., to Caterpillar Tractor Co. Cutting edge assembly for a loader bucket. 4,238,896, Cl. 37-141.00R.

Lapir, Gennady M.: *See—*
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N., 4,240,086, Cl. 357-4.000.

Larsen, Lawrence E.; and Jacobi, John H., to United States of America, Army. Electromagnetic method for the noninvasive analysis of cell membrane physiology and pharmacology. 4,240,027, Cl. 324-57.00R.

Larson, John D., III, to Hewlett-Packard Company. Apparatus and method for suppressing mass/spring mode in acoustic imaging transducers. 4,240,003, Cl. 310-326.000.

Lasar, Theodore. Photoelectric light curtain using retroreflector. 4,239,961, Cl. 250-221.000.

Lasnier, David A.: *See—*
Giglio, Richard J.; Bogosh, Robert B.; and Lasnier, David A., 4,239,245, Cl. 277-203.000.

Lather, Dieter: *See—*
Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, 4,238,963, Cl. 73-644.000.

Lau, Kam-Yin: *See—*
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Laurel Bank Machine Co., Ltd.: *See—*
Miyagawa, Tuyoshi; and Arikawa, Junichi, 4,239,204, Cl. 271-171.000.
Uchida, Isamu, 4,239,203, Cl. 271-122.000.

Laverick, William T.: *See—*
Barnard, Brian; and Laverick, William T., 4,239,548, Cl. 106-300.000.

Laverman, Royce J., to Chicago Bridge & Iron Company. Emission test method for floating roof seals and apparatus useful therefor. 4,238,953, Cl. 73-40.700.

Lavrischev, Vadim P.: *See—*
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N., 4,240,086, Cl. 357-4.000.

Lay, Joachim E. Rotary internal stage combustion engine. 4,239,027, Cl. 123-203.000.

Layciak, Stephen G.: *See—*
Johnston, Robert J.; Colista, Dominic; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,239,946, Cl. 200-51.130.

Le Silicium Semiconducteur SSC: *See—*
Rossetti, Pierre C., 4,240,095, Cl. 357-49.000.

Lear Siegler, Inc.: *See—*
De Fouw, Eugene A.; and Baker, Peter M., 4,239,309, Cl. 312-221.000.

Leatherman, Alfred F., to Heller, William C., Jr. Method and apparatus for movement of heated thermoplastic elements for shear-fusion bonding of such thermoplastic elements. 4,239,575, Cl. 156-272.000.

Leatherman, Timothy S. Pocket multiple tool. 4,238,862, Cl. 7-128.000.

Le Breton, Guy C.: *See—*
Venton, Duane L.; Le Breton, Guy C.; and Enke, Steven E., 4,239,778, Cl. 424-305.000.

Lech, Joseph M.: *See—*
Haugsjaa, Paul O.; and Lech, Joseph M., 4,240,051, Cl. 333-127.000.

Lech, Thaddeus, Jr.: *See—*
Greacen, John F.; Knight, Kerry G.; and Lech, Thaddeus, Jr., 4,239,097, Cl. 192-106.200.

Le Chatelier, Jacques, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Device for revolving-ring spinning. 4,238,920, Cl. 57-124.000.

Lee, Chi-long: *See—*
Homan, Gary R.; and Lee, Chi-long, 4,239,674, Cl. 260-37.0SB.

Lee, Gim F., Jr., to General Electric Company. Composition of a polyphenylene ether, a block copolymer of a vinyl aromatic compound and a conjugated diene and a polyolefin. 4,239,673, Cl. 260-30.60R.

Leeds & Northrup Company: *See—*
Fletcher, David L.; and Stadlin, Walter O., 4,240,149, Cl. 364-483.000.

Legrow, Gary E.; and Gauthier, Laura A., to Dow Corning Corporation. Inhibited curable solventless organopolysiloxane compositions. 4,239,867, Cl. 525-478.000.

Leichle, Claude, to Regie Nationale des Usines Renault. Fail-safe ignition coil dwell control system for an internal combustion engine. 4,239,024, Cl. 123-416.000.

Leist, Jeffrey R.: *See—*
Gilbert, Lawrence A.; and Leist, Jeffrey R., 4,239,639, Cl. 252-90.000.

Lemoine, Kenneth D. Water distiller with volatile pollutants removal stage. 4,239,601, Cl. 202-176.000.

Lendi, Georges; and Voinescu, Nicolae, to Tesa S.A. Instrument for measurement and verification of linear dimensions. 4,238,885, Cl. 33-143.00L.

Lenox Machine Company, Inc.: *See—*
Frye, Kenneth G., 4,239,141, Cl. 226-7.000.

Lenox, Thomas G., to United Technologies Corporation. Cylindrical encoder for use with fiber optics. 4,240,066, Cl. 340-870.290.

Leone, Richard P., to Lowell Corporation. Torque wrench. 4,238,978, Cl. 81-480.000.

Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean, to Institut Francais du Petrole. Catalysts for catalytic hydroreforming or for producing aromatic hydrocarbons. 4,239,652, Cl. 252-441.000.

Lessner, David L.; Macemon, James H.; Coker, George M., Jr; and Hodgson, Charles E., to Baxter Travenol Laboratories, Inc. Modular motorized polarizers for a spectrofluorometer. 4,239,391, Cl. 356-318.000.

Letcher, C. S.: *See—*
Russell, Stephen E.; Story, Phillip M.; and Letcher, C. S., 4,239,546, Cl. 106-270.000.

Leuzzi, Ennio. Hair curler. 4,239,050, Cl. 132-40.000.

Levin, Robert E.: *See—*
English, George J.; and Levin, Robert E., 4,239,369, Cl. 362-348.000.

Levy, Paul M., to Grumman Aerospace Corporation. Vehicle controlled raster display system. 4,240,108, Cl. 358-103.000.

Li, Hsin L.: *See—*
Boggs, Beryl A.; Narasimhan, Mandayam C.; and Li, Hsin L., 4,239,187, Cl. 242-25.00R.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, 4,240,099, Cl. 357-79.000.

Licinvest AG: *See—*
Ackeret, Peter, 4,238,899, Cl. 40-513.000.

Licirvest AG: *See—*
Ackeret, Peter, 4,238,898, Cl. 40-513.000.

Lifland, Philip P.: *See—*
Doll, Brian E.; Coty, Vernon F.; and Lifland, Philip P., 4,239,620, Cl. 210-601.000.

Liljegren, Gote: *See—*
Sandell, Bertil; and Liljegren, Gote, 4,239,397, Cl. 366-3.000.

Linberg, Waldemar; Roth, Mario; and Siemonsen, Hans-Peter, to Saint Gobain Industries. Self-tightening clamp for the suspension of glass sheets. 4,239,274, Cl. 294-114.000.

Lindberg, J. Johan: *See—*
Era, Vaino; and Lindberg, J. Johan, 4,239,667, Cl. 260-18.0TN.

Lion Fat and Oil Co., Ltd., The: *See—*
Okumura, Osamu; Sakatani, Takenobu; Kashiwada, Toshinobu; and Tokuyama, Kiyotaka, 4,239,662, Cl. 252-555.000.

Lipatov, Nikolai K.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Patrushev, Gennady V.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,239,112, Cl. 206-525.000.

Lipper, Roy O.: *See—*
DeFilipps, Fred A.; Lipper, Roy O.; Winters, Luther R., Jr.; Nordstrom, Larry A.; and Szechy, Daniel J., 4,239,404, Cl. 400-613.000.

Lipson, Melvin A.; and Zador, Eugene, to Dynachem Corporation. Polymers for aqueous processed photoresists. 4,239,849, Cl. 430-281.000.

Liu, Chi-Sheng: *See—*
Feldman, Donald W.; Weaver, Lelland A.; and Liu, Chi-Sheng, 4,239,995, Cl. 307-426.000.

Liu, Robert C.: *See—*
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., 4,239,680, Cl. 260-112.50T.

Livesay, Richard E., to Caterpillar Tractor Co. Radial face seal. 4,239,297, Cl. 305-11.000.

Lloyd, Randahl B., to Hughes Aircraft Company. Compact liquid crystal display system. 4,239,346, Cl. 350-334.000.

Locke, Frank W.: *See—*
Sorenson, John F.; and Locke, Frank W., 4,239,148, Cl. 229-36.000.

Locke, Philip F., Jr.: *See—*
Wolf, Joachim E.; and Locke, Philip F., Jr., 4,240,059, Cl. 338-49.000.

Lockett, James F., to Geosource Inc. Sorting apparatus having automatic nulling arrangement. 4,239,118, Cl. 209-581.000.

Lockheed Corporation: *See—*
Curtis, George C.; McInturff, Joe A.; Rubel, Herbert J.; and Wall, William F., 4,238,960, Cl. 73-462.000.

Lockwood, Harry F.: *See—*
Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., 4,240,098, Cl. 357-74.000.

Loeffler, Hans-Peter; Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. 2-(1-Methylpropyn-2-yl-thio)-phenyl-N-methylcarbamate and its use for combating pests of the Acarina order. 4,239,775, Cl. 424-300.000.

Login, Robert B., to BASF Wyandotte Corporation. Synthetic fibers having improved antistatic properties. 4,239,801, Cl. 428-364.000.

Lohr, Warren G.: *See—*
Brownlee, Sherwood S.; Grubb, Frederick H., Jr.; and Lohr, Warren G., 4,239,311, Cl. 312-305.000.

Long, John G.: *See—*
Aston, Keith; and Long, John G., 4,239,382, Cl. 355-63.000.

Long, Richard L., to United States of America, Army. Manifold insulated with knitted impregnated sleeve. 4,239,063, Cl. 138-123.000.

Longnecker, Russell D. Product dispensing measuring device. 4,239,128, Cl. 222-1.000.

Loveless, Frederick C.: *See—*
Beretta, David; Loveless, Frederick C.; and Nudenberg, Walter, 4,239,638, Cl. 252-73.000.

Lowe, Walter D. Valve. 4,239,185, Cl. 251-164.000.

Lowell Corporation: *See—*
Leone, Richard P., 4,238,978, Cl. 81-480.000.

Lowenschuss, Oscar, to Raytheon Company. Digital frequency synthesizer. 4,240,034, Cl. 328-14.000.

Lowitz, Joachim: *See—*
Arndt, Peter J.; Lowitz, Joachim; and Wenzel, Franz, 4,239,876, Cl. 526-287.000.

Lowther, Frank E., to Purification Sciences Inc. Gas turbine system with oxygen vapor-fuel system. 4,238,925, Cl. 60-39.46R.

Luca', Sebastiano, to Lukas Beddy di Luca Sebastiano & C.S.a.s. Chair or sofa convertible into a bed. 4,239,281, Cl. 297-108.000.

Lucht Engineering, Inc.: *See—*
Rasmussen, William R., Jr., 4,239,377, Cl. 355-29.000.

Ludlow Corporation: *See—*
Allard, Adrien W., 4,239,794, Cl. 428-219.000.

Ludwa, Raymond J., to Procter & Gamble Company, The. Surface wiping device. 4,239,792, Cl. 428-198.000.

Lueneburg, Wolfgang: *See—*
Engel, Hans O.; and Lueneburg, Wolfgang, 4,239,178, Cl. 251-14.000.

Lugosi, Gyorgy: *See—*
Bodnar, Janos; and Lugosi, Gyorgy, 4,239,653, Cl. 252-447.000.

Lukas Beddy di Luca Sebastiano & C.S.a.s.: *See—*
Luca', Sebastiano, 4,239,281, Cl. 297-108.000.

Lurssen, Klaus: *See—*
Schroder, Rolf; and Lurssen, Klaus, 4,239,528, Cl. 71-105.000.

Lutz, Bruce C.: *See—*
Hallford, Ben R.; and Lutz, Bruce C., 4,240,052, Cl. 333-202.000.

MacDonald, Robert W. G., to Solar Thermal Consultants Pty. Limited. Roofing systems. 4,238,912, Cl. 52-173.00R.

Macemon, James H.: *See—*
Lessner, David L.; Macemon, James H.; Coker, George M., Jr; and Hodgson, Charles E., 4,239,391, Cl. 356-318.000.

MacGraw, Richard, II. Sculptural objects. 4,238,905, Cl. 46-25.000.

Machat, Jean-Yves: *See—*
Chapuis, Maurice; and Machat, Jean-Yves, 4,239,979, Cl. 307-118.000.

Machefer, Jacques: *See—*
Benoit, Robert; Machefer, Jacques; Mauvisseau, Jacques; and Plurien, Pierre, 4,239,507, Cl. 55-16.000.

MacKay, Kenneth D., to Henkel Corporation. Sulfonamidophenols, metal complexes thereof, and solutions containing such compounds for use in extraction of metal values. 4,239,699, Cl. 564-92.000.

Mader, Jim M., to Harris Corporation. Laser-configured logic array. 4,240,094, Cl. 357-45.000.

Maeda, Yoshio: *See—*
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, 4,239,094, Cl. 191-25.000.

Maget, Henri J. R. Electrochemical chlorine production process. 4,239,607, Cl. 204-128.000.

Magna Corporation: *See—*
Chai, Bong J.; and Muggee, Fred D., 4,239,695, Cl. 260-502.500.

Magnuson, James A.: *See—*
Gurusiddaiah, Sarangamat; Ronald, Robert C.; Magnuson, James A.; and McFadden, Bruce A., 4,239,690, Cl. 260-340.200.

Mahdjuri, Faramarz S. Selective layer for absorbing compartment of solar collectors. 4,239,604, Cl. 204-56.00R.

Maier, Alfred E.: *See—*
Nelson, Hugh A.; Wafer, John A.; Koren, Paul P.; Salemi, Nicholas A.; and Maier, Alfred E., 4,240,053, Cl. 335-16.000.

Maihart, Hans H. Ablution or toilet compartment. 4,238,858, Cl. 4-546.000.

Majestic Sales, Inc.: *See—*
Badon, Sterling P., Jr., 4,238,859, Cl. 4-509.000.

Majtenyi, Carl G.: *See—*
Carr, Timothy W.; Corl, Edwin A.; and Majtenyi, Carl G., 4,239,967, Cl. 250-281.000.

Makhov, Vladimir I.: *See—*
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Malcolm, Alexander R.: *See—*
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Maljuk, Vladimir M.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Malmedie & Co. Maschinenfabrik GmbH: *See—*
Missmahl, Bodo; and Streit, Georg, 4,238,881, Cl. 29-822.000.

Mannesmann Aktiengesellschaft: *See—*
Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, 4,238,963, Cl. 73-644.000.

Mannesmann Demag A.G.: *See—*
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Scherff, Helmut, 4,239,189, Cl. 266-79.000.

Maplesden, Alan K.: *See—*
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Marcolina, Gene A.: *See—*
Holl, Gordon D.; and Marcolina, Gene A., 4,238,902, Cl. 43-61.000.

Marconi Electronics, Inc.: *See—*
Gorbold, Jonathan M.; and Slim, David H., 4,240,100, Cl. 358-10.000.

Marcy, Henry O.: *See—*
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Marek, Emanuel F.; and Migdal, Alex H., to DeSoto, Inc. Mildew sealing coating composition and method of using. 4,239,541, Cl. 106-15.050.

Marek, Mieczyslaw: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Marin, Pierre D.; Prillieux, Marcel; and Tirtiaux, Robert, to Exxon Research & Engineering Co. Lubricating oil containing a surface active agent. 4,239,634, Cl. 252-33.000.

Marquis, Edward T.; and Yeakey, Ernest L., to Texaco Development Corp. Isatoic anhydride derivatives and use as chain-extenders. 4,239,700, Cl. 564-157.000.

Marshall, Alan; and Richardson, Norman, to Ciba-Geigy Corporation. Telomeric phosphorus corrosion inhibiting compositions. 4,239,648, Cl. 252-389.00A.

Marshall, Larry J., to Raychem Corporation. Taped products processor. 4,239,485, Cl. 432-121.000.

Marson, Thomas W.: *See—*
Brooks, Richard J.; and Marson, Thomas W., 4,239,035, Cl. 126-452.000.

Martin, Hans; and Herbst, Wilhelm. Apparatus for welding edge bars to bar grates. 4,239,145, Cl. 228-6.00R.

Martin, Johannes J.; Martin, Walter J.; and Weber, Erich, to Josef Martin Feuerungsbau GmbH. Grate for industrial furnaces. 4,239,029, Cl. 126-163.00R.

Martin Marietta Corporation: *See—*
Beck, William A., 4,239,788, Cl. 427-43.100.

Martin Sweets Company, Inc., The: *See—*
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Martin, Walter J.: *See—*
Martin, Johannes J.; Martin, Walter J.; and Weber, Erich, 4,239,029, Cl. 126-163.00R.

Martinet, Rene'; and Meinerad, Luc. Spinner-case. 4,238,901, Cl. 43-57.50R.

Martinez, Virginia R. Height adjustable infant stroller-high chair. 4,239,259, Cl. 280-649.000.

Martino, Germain: *See—*
Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean, 4,239,652, Cl. 252-441.000.

Maruo, Kunimasa. Screw feeding apparatus. 4,239,068, Cl. 81-462.000.

Marvin Landplane: *See—*
Rocksvold, Alvin N., 4,239,251, Cl. 280-446.00A.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Richter, Johannes, 4,239,201, Cl. 493-444.000.
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Mascioni, Umberto: *See—*
Giani, Adolfo; Panseri, Mario; and Mascioni, Umberto, 4,238,999, Cl. 101-116.000.

Masi, James V.: *See—*
Barnett, Allen M.; Masi, James V.; and Hall, Robert B., 4,239,553, Cl. 136-256.000.

Masilamani, Divakaran; and Rogic, Milorad M., to Allied Chemical Corporation. Aromatization of dienes in the liquid phase. 4,239,929, Cl. 585-442.000.

Mason, Norbert S.: *See—*
Sparks, Robert E.; Wahab, Mariam M.; and Mason, Norbert S., 4,239,714, Cl. 264-45.500.

Masopust, Otto T., Jr.: *See—*
Fanning, William J.; and Masopust, Otto T., Jr., 4,240,127, Cl. 361-304.000.

Masterson, Earl E., to Masterson Engineering Inc. Phonograph tone arm system. 4,239,239, Cl. 274-23.00A.

Masterson Engineering Inc.: *See—*
Masterson, Earl E., 4,239,239, Cl. 274-23.00A.

Masuda, Kenzo: *See—*
Takanashi, Akira; and Masuda, Kenzo, 4,239,980, Cl. 307-205.000.

Masuda, Shuji: *See—*
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, 4,239,542, Cl. 106-18.140.

Masutani, Takayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for indicating the rate of charge in an AC generator. 4,240,023, Cl. 322-99.000.

Mate, David J., to Action Instruments Company, Inc. Two wire flow rate transmitter. 4,238,965, Cl. 73-861.480.

Mather, Douglas E.: *See—*
Williams, Thomas A.; and Mather, Douglas E., 4,239,640, Cl. 252-95.000.

Mathes, Nikolaus: *See—*
Gerlach, Klaus; Mathes, Nikolaus; and Wechs, Friedbert, 4,239,720, Cl. 264-147.000.

Matkovits, Peter S. Parabolic reflector unit for solar energy collector. 4,239,033, Cl. 126-438.000.

Matsuda, Yoichi: *See—*
Murakami, Kanji; Kawamoto, Mineo; Matsuda, Yoichi; Wajima, Motoyo; and Morishita, Hirosada, 4,239,813, Cl. 427-98.000.

Matsuka, Shigemichi: *See—*
Morooka, Yasuo; Tanifuji, Shinya; and Matsuka, Shigemichi, 4,240,147, Cl. 364-472.000.

Matsumoto, Seiji: *See—*
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.

Matsumoto, Takao; to Nippon Telegraph and Telephone Public Corporation. Optical nonreciprocal device. 4,239,329, Cl. 350-96.150.

Matsumoto, Yoshihiro; and Kurii, Hajime, to Tokyo Shibaura Denki Kabushiki Kaisha. Computer for directly executing a program including a plurality of structured blocks. 4,240,137, Cl. 364-200.000.

Matsumura, Kiyotoshi: *See—*
Allcock, Harry R.; Fuller, Timothy J.; and Matsumura, Kiyotoshi, 4,239,755, Cl. 424-209.000.

Matsuo, Masaharu. Sheet feeding apparatus. 4,239,206, Cl. 271-271.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Atoji, Nobuhisa; Kusomoto, Shoichi; and Sato, Kazue, 4,239,945, Cl. 179-182.00R.
Hasegawa, Kenichi; Taniguchi, Hiroshi; and Kitamura, Sadafumi, 4,240,038, Cl. 330-149.000.
Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, 4,239,835, Cl. 428-611.000.
Taki, Yasuo; Misawa, Yoshihiko; Araki, Shigeru; Mori, Kazuhiro; and Tanaka, Souhei, 4,239,576, Cl. 156-297.000.

Matsuura, Junichi; and Yamaguchi, Yukio, to Mitsubishi Chemical Industries Ltd. Gas separation membrane. 4,239,793, Cl. 428-216.000.

Matthews, Demetreos N.; Nudenberg, Walter; and Petersen, Henno A., to Uniroyal, Inc. Thermoplastic elastomer containing long chain aliphatic alcohol. 4,239,862, Cl. 525-240.000.

Matthey Bishop Incorporated: *See—*
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Matthias, Heinz-Bernd: *See—*
Dach, Holger; Klepp, Christian; Koll, Gunter; Lacroix, Josef; Matthias, Heinz-Bernd; and Vogel, Horst, 4,239,462, Cl. 417-373.000.
Hergt, Peter; Buschsieper, Peter; and Matthias, Heinz-Bernd, 4,239,453, Cl. 415-182.000.

Matula, Jerry; Radke, Glen R.; and Barrus, Gordon B., to Printronix, Inc. Counterbalanced bidirectional shuttle drive. 4,239,403, Cl. 400-322.000.

Matumoto, Tetuhiro: *See—*
Nambu, Hirohiko; Mizuno, Kenichi; and Matumoto, Tetuhiro, 4,239,644, Cl. 252-186.000.

Mauvisseau, Jacques: *See—*
Benoit, Robert; Machefer, Jacques; Mauvisseau, Jacques; and Plurien, Pierre, 4,239,507, Cl. 55-16.000.

Maycock, Peter F.: *See—*
Gibson, Harry; and Maycock, Peter F., 4,240,074, Cl. 340-753.000.

Mayer, Endre A., to Bendix Corporation, The. Multi-stage solenoid actuator for extended stroke. 4,240,056, Cl. 335-267.000.

Mayer, Norbert: *See—*
Wiezer, Hartmut; Pfahler, Gerhard; and Mayer, Norbert, 4,239,891, Cl. 546-242.000.

Maynard, James J., to Syracuse Supply Company. Support for tool handling boom. 4,239,441, Cl. 414-587.000.

Maynard, James J., to Syracuse Supply Company. Apparatus for maneuvering a conditioning tool within a furnace. 4,239,442, Cl. 414-587.000.

Mazur, John T.: *See—*
United States of America, National Aeronautics and Space Administration; and Mazur, John T., 4,238,911, Cl. 52-111.000.

Mazzei, Louis J. Animal trap. 4,238,903, Cl. 43-61.000.

McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. High performance dynamic sense amplifier with active loads. 4,239,993, Cl. 307-355.000.

McAlpine, James B.: *See—*
Carney, Ronald E.; Devault, Robert L.; McAlpine, James B.; and Sinclair, Arthur C., 4,239,752, Cl. 424-180.000.

McBee, William C.; and Sullivan, Thomas A., to United States of America, Interior. Recycling spent asphaltic concrete. 4,239,547, Cl. 106-274.000.

McCallister, Robert A., to Foster Wheeler Energy Corporation. Process for production of methanol. 4,239,693, Cl. 260-449.500.

McCann, John C. Automobile suspension dynamic simulator. 4,238,959, Cl. 73-432.0SD.

McClaflin, Gifford G., to Conoco, Inc. Method of transporting viscous hydrocarbons. 4,239,052, Cl. 137-13.000.

McClernon, Joseph R.: *See—*
Peiser, Alfred M.; Graham, Ronald I.; and McClernon, Joseph R., 4,239,618, Cl. 208-355.000.

McCorkle, Richard A.: *See—*
Dreyfus, Russell W.; Penebre, Nicholas A.; and McCorkle, Richard A., 4,240,007, Cl. 315-111.800.

McCullough, John F.: *See—*
Sheridan, Richard C.; and McCullough, John F., 4,239,739, Cl. 423-308.000.

McDowall, William L.; and Maplesden, Alan K., to Dunlop Australia Limited. Multi-cell batteries. 4,239,839, Cl. 429-154.000.

McEntire, Edward E.: *See—*
Zimmerman, Robert L.; McEntire, Edward E.; and Klein, Howard P., 4,239,916, Cl. 562-574.000.

McFadden, Bruce A.: *See—*
Gurusiddaiah, Sarangamat; Ronald, Robert C.; Magnuson, James A.; and McFadden, Bruce A., 4,239,690, Cl. 260-340.200.

McGee, Theodore L., to American Can Company. Propylene/polystyrene composition and method for coating. 4,239,822, Cl. 427-358.000.

McGrath, Thomas F. Data form splicer. 4,239,582, Cl. 156-505.000.

McGraw-Edison Company: *See—*
Smith, John E., 4,240,122, Cl. 361-41.000.

McInturff, Joe A.: *See—*
Curtis, George C.; McInturff, Joe A.; Rubel, Herbert J.; and Wall, William F., 4,238,960, Cl. 73-462.000.

McKee, John M.: *See—*
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McKenna, John F., Jr.: *See—*
Smith, T. Basil; Howatt, John R.; and McKenna, John F., Jr., 4,239,982, Cl. 307-219.000.

McLaughlin, John. Quick release ball bearing height gauge. 4,238,887, Cl. 33-163.000.

McLean, Michael E., to Dayco Corporation. Apparatus for and method of detecting release tape sandwiched between layers of a carpeting strip. 4,239,562, Cl. 156-64.000.

McLean, Michael E.; Ensley, Rufus N.; Haren, Doyle V.; and Alcaraz, Anthony J., to Dayco Corporation. Apparatus for and method of coating a wear layer of a carpeting strip with curable latex foam. 4,239,821, Cl. 427-358.000.

McNeil, Brian A., to Air Products and Chemicals, Inc. Method and apparatus for manufacturing ammonia synthesis gas from a stream of gas rich in hydrogen and a stream of nitrogen. 4,239,647, Cl. 252-377.000.

McNeilab, Inc.: *See—*
Rasmussen, Chris R., 4,239,768, Cl. 424-273.00R.

McWhorter, Delmer L. Variation in self securing theft proof chain binder. 4,238,940, Cl. 70-14.000.

Mead Corporation, The: *See—*
Strem, Joseph G., 4,239,544, Cl. 106-22.000.
Williams, John L.; and Brown, Asa V., Jr., 4,239,099, Cl. 193-32.000.
Yu, James H., 4,240,082, Cl. 346-75.000.

Meckel, Joachim F.: *See—*
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Mehrhof, Werner: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, 4,239,759, Cl. 424-248.400.

Meinerad, Luc: *See—*
Martinet, Rene'; and Meinerad, Luc, 4,238,901, Cl. 43-57.50R.

Meise, William H., to RCA Corporation. Vertical sync separator. 4,240,111, Cl. 358-154.000.

Menager, Jean, to Societe Internationale de Mecanique Industrielle S.A. Fluid seal assembly. 4,239,241, Cl. 277-87.000.

Mengotti, Alessandro: *See—*
Novello, Dante; and Mengotti, Alessandro, 4,239,015, Cl. 418-321.000.

Mennica Panstwowa: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, 4,239,759, Cl. 424-248.400.

Merger, Franz: *See—*
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, 4,239,641, Cl. 252-142.000.

Merilainen, Heikki, to A Ahlstrom Osakeyhtio. Method and apparatus for edge-trimming a board. 4,239,072, Cl. 144-312.000.

Merritt, Raymond L. Biorhythm display device. 4,240,153, Cl. 368-28.000.

Meslener, George J.: *See—*
Dakss, Mark L.; Meslener, George J.; and Stone, Samuel M., 4,239,333, Cl. 350-96.210.

Meyer, Daniel: *See—*
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Meyer Products, Inc.: *See—*
Hetrick, Vernon L., 4,238,895, Cl. 37-41.000.

Meyer, Thomas N.: *See—*
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Meyercord Co., The: *See—*
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Mezei, Louis M.: *See—*
Gindler, E. Melvin; and Mezei, Louis M., 4,239,649, Cl. 252-408.000.

Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., to Micro Consultants, Limited. Television standards conversion. 4,240,101, Cl. 358-11.000.

Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., to Micro Consultants, Limited. Video noise reduction. 4,240,106, Cl. 358-36.000.

Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., to Micro Consultants, Limited. Video movement detection. 4,240,109, Cl. 358-105.000.

Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., to Micro Consultants, Limited. Picture manipulation in video systems. 4,240,113, Cl. 358-180.000.

Michelatsch, Peter: *See—*
Busse, Fritz; Busch, Hans-Walter; and Michelatsch, Peter, 4,238,945, Cl. 72-150.000.

Michigan Technological University, Board of Control of: *See—*
Goksel, Mehmet A., 4,239,530, Cl. 75-34.000.

Michne, William F., to Sterling Drug Inc. Octahydro-3,5-etheno- and 3,5-ethanobenzo[g]quinolines. 4,239,890, Cl. 546-74.000.

Micro Communications, Inc.: *See—*
Vaughan, Thomas J., 4,240,155, Cl. 370-69.000.

Micro Consultants, Limited: *See—*
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,101, Cl. 358-11.000.
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,106, Cl. 358-36.000.
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,109, Cl. 358-105.000.
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,113, Cl. 358-180.000.

Miculka, Zdenek; Janirek, Vladislav; Rektorik, Vladimir; and Bajak, Karel, to Vyzkumny ustav kozedelny. Apparatus for the continuous thermal treatment of flexible sheet material. 4,238,939, Cl. 69-43.000.

Midnight Rollers Inc.: *See—*
Wickman, Bobbie L., 4,240,132, Cl. 362-103.000.

Migdal, Alex H.: *See—*
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Mihalich, Stephen K., to National Semiconductor Corporation. MOS Differential amplifier. 4,240,039, Cl. 330-253.000.

Mikhalev, Nikolai A.: *See—*
Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.

Miknaitis, Sigitas; and Stastny, Charles J., to GTE Automatic Electric Laboratories Incorporated. Arrangement for locking a reed capsule within a magnetic latching reed switch assembly. 4,240,054, Cl. 335-152.000.

Mikulicz, Michael Z., to UOP Inc. HF Alkylatior process. 4,239,931, Cl. 585-723.000.

Mil S.p.A.: *See—*
Novello, Dante; and Mengotti, Alessandro, 4,239,015, Cl. 418-321.000.

Milavec, Maria; and Wagner, Heribert, to Sandoz Ltd. α-Blocking agents in the treatment of obesity. 4,239,763, Cl. 424-261.000.

Miller, Charles R., to Shell Oil Company. High impact polystyrene blend compositions. 4,239,859, Cl. 525-98.000.

Miller, Donald E.: *See—*
Gilmore, Cecilia; and Miller, Donald E., 4,239,786, Cl. 426-601.000.

Miller, Gerald R.; and Virkar, Anil V., to Ford Motor Company. Energy conversion device with improved seal. 4,239,838, Cl. 429-104.000.

Miller, Max W., to Pfizer Inc. 1-Phenyluracils. 4,239,888, Cl. 544-309.000.

Miller, Nadine: *See—*
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Miller, Wendell D.: *See—*
Sniezek, Joseph T.; Chase, Paul W.; and Miller, Wendell D., 4,238,956, Cl. 73-861.010.

Miloscia, William J.; and Trott, Louis R., to Standard Oil Company. Elimination of stabilizer for high nitrile resins by using a latex dewatering extruder for product recovery. 4,239,864, Cl. 525-316.000.

Minagawa, Motonobu: *See—*
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, 4,239,803, Cl. 428-379.000.

Minamida, Isao: *See—*
Numata, Mitsuo; Yamaoka, Masayoshi; Minamida, Isao; Shiraishi, Mitsuru; and Nishimura, Tatsuo, 4,239,758, Cl. 424-246.000.

Mink, Arno: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
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Jalonen, Donald A., 4,240,078, Cl. 340-524.000.
Knope, Constance J.; and Kirkevold, Kent A., 4,239,828, Cl. 428-64.000.
Nelson, Frederick W., 4,239,089, Cl. 181-131.000.
Peterson, John A., 4,239,383, Cl. 355-67.000.

Minolta Camera Kabushiki Kaisha: *See—*
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Ogino, Shuji, 4,239,340, Cl. 350-214.000.
Tanaka, Susumu; Nagai, Koji; and Inagaki, Sanzi, 4,239,845, Cl. 430-122.000.

Miquel, Jean: *See—*
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Misato Plaheat Mfg. Ltd.: *See—*
Kiyokawa, Shin; and Sakaguchi, Shokichi, 4,239,020, Cl. 119-16.000.

Misawa, Yoshihiko: *See—*
Taki, Yasuo; Misawa, Yoshihiko; Araki, Shigeru; Mori, Kazuhiro; and Tanaka, Souhei, 4,239,576, Cl. 156-297.000.

Missmahl, Bodo; and Streit, Georg, to Malmedie & Co. Maschinenfabrik GmbH. Apparatus for assembling elongated pieces into bundles. 4,238,881, Cl. 29-822.000.

Misui Engineering & Shipbuilding Co. Ltd.: *See—*
Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, 4,239,426, Cl. 406-197.000.

Misumi, Teruyuki; Tanaka, Kyogo; and Okuno, Osamu, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing phthalimido derivatives. 4,239,686, Cl. 260-325.0PH.

Mitchell, Howard L., III; and Waghorne, Robert H., to Exxon Research & Engineering Co. Catalysts for the conversion of relatively low molecular weight hydrocarbons to higher molecular weight hydrocarbons and the regeneration of the catalysts. 4,239,658, Cl. 252-465.000.

Mitsu, Petrochemical Industries, Ltd.: *See—*
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Mitsubishi Chemical Industries Ltd.: *See—*
Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, 4,239,882, Cl. 528-209.000.
Kobayashi, Yoshimichi; Tsuge, Yukio; and Hirako, Susumu, 4,239,878, Cl. 528-45.000.
Matsuura, Junichi; and Yamaguchi, Yukio, 4,239,793, Cl. 428-216.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Kii, Masami; Ueda, Yoshihiro; and Ibuki, Koji, 4,239,949, Cl. 200-148.00R.
Morishita, Mitsuharu; and Iwatani, Shiroh, 4,239,558, Cl. 148-175.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
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Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsubishi Petrochemical Co. Ltd.: *See—*
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Mitsui Petrochemical Industries Ltd.: *See—*
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Nambu, Hirohiko; Mizuno, Kenichi; and Matumoto, Tetuhiro, 4,239,644, Cl. 252-186.000.

Miura, Isamu. Clamping apparatus for a guillotine type cutter. 4,239,199, Cl. 269-266.000.

Miura, Mitsuo: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.

Miyagawa, Tuyoshi; and Arikawa, Junichi, to Laurel Bank Machine Co., Ltd. Construction of a counting section in a paper counting machine. 4,239,204, Cl. 271-171.000.

Miyahara, Junji: *See—*
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, 4,239,968, Cl. 250-327.100.

Miyahara, Shigeru: *See—*
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Miyakawa, Hideaki: *See—*
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.

Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing pyridine bases. 4,239,892, Cl. 546-251.000.

Miyashita, Hideo: *See—*
Inaba, Hajimu; and Miyashita, Hideo, 4,240,016, Cl. 318-562.000.

Miyauchi, Yuh: *See—*
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Miyazaki, Takeshi, to Hitachi Metals, Ltd. Magnetic alloy having a low melting point. 4,239,533, Cl. 75-134.00F.

Mizelle, Ned W., to Hoover Universal, Inc. Box spring assembly with limited deflection formed wire springs. 4,238,861, Cl. 5-247.000.

Mizuno, Kenichi: *See—*
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Mobil Oil Corporation: *See—*
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Doll, Brian E.; Coty, Vernon F.; and Lifland, Philip P., 4,239,620, Cl. 210-601.000.
Myers, Donald W.; and Vivlamore, Samantha L., 4,239,727, Cl. 264-550.000.
Peiser, Alfred M.; Graham, Ronald I.; and McClernon, Joseph R., 4,239,618, Cl. 208-355.000.

Mobil Tyco Solar Energy Corporation: *See—*
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Scharlack, Ronald S.; and Tornstrom, Eric, 4,239,555, Cl. 136-251.000.

Mock, Vernon A. Programmable perforator head. 4,238,982, Cl. 83-332.000.

Modisette, James E. Radiographic imaging system quality monitor. 4,239,395, Cl. 356-443.000.

Moliard, Henry. Locking device for visible record binders. 4,239,411, Cl. 402-77.000.

Monigold, Larry E.; and Cadwell, Ronald G., to Kysor Industrial Corporation. Multiple temperature actuated fluid-electric control device. 4,239,153, Cl. 236-86.000.

Mononen, Sakari, to Finncombi Sakari Mononen Ky. Apparatus for bulk-lopping, bucking and prestacking in forest harvesting. 4,239,067, Cl. 144-2.00Z.

Monroe, Gary S.; Contreras, Robert L.; and Hummel, Gregory C., to Monroe, Gary S.; Contreras, Robert L.; Hummel, Gregory C.; and Russell, Barry A. Method for converting hard top vehicles to removable top vehicles. 4,238,876, Cl. 29-401.100.

Monsanto Company: *See—*
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Kowalski, Xavier, 4,239,643, Cl. 252-182.000.
Serlin, Irving, 4,239,858, Cl. 525-57.000.
Wilkinson, Walter J.; and Serlin, Irving, 4,239,676, Cl. 260-39.00P.

Montedison S.p.A.: *See—*
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Moore, Michael H., to Ciba-Geigy AG. Printing transparencies. 4,239,386, Cl. 355-77.000.

Moore, Michael R. P. Disposable storage container convertible to a bird-nesting box. 4,239,021, Cl. 119-23.000.

Moorman, David S., to Witco Chemical Company. Flame retardant latexes. 4,239,670, Cl. 260-29.6MP.

Morck, Charles W., Jr., to Selas Corporation of America. Double orifice vortex burner for low or high Wobbe fuels. 4,239,481, Cl. 431-284.000.

Mori, Kazuhiro: *See—*
Taki, Yasuo; Misawa, Yoshihiko; Araki, Shigeru; Mori, Kazuhiro; and Tanaka, Souhei, 4,239,576, Cl. 156-297.000.

Morioka, Isao. Stereophotographic process for producing works of sculpture. 4,239,359, Cl. 354-113.000.

Morishita, Hirosada: *See—*
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Morishita, Mitsuharu; and Iwatani, Shiroh, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing semiconductor devices utilizing epitaxial deposition and triple diffusion. 4,239,558, Cl. 148-175.000.

Morita, Hiroshi; and Washida, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrochromic display device. 4,239,350, Cl. 350-357.000.

Morival, Fernand. Method and apparatus for improving the efficiency of the deoxidation, desulfurization and purification of steel in the pouring ladle. 4,239,192, Cl. 266-216.000.

Morooka, Yasuo; Tanifuji, Shinya; and Matsuka, Shigemichi, to Hitachi, Ltd. Gauge control method and system for rolling mill. 4,240,147, Cl. 364-472.000.

Morozumi, Manami: *See—*
Kodama, Kenjiro; and Morozumi, Manami, 4,239,905, Cl. 536-29.000.

Morris, Robert S., to Gloucester Railway Carriage & Wagon Company Limited. Sidebearers. 4,239,302, Cl. 308-138.000.

Morrison, Charles F., Jr., to Vac-Tec Systems, Inc. Magnetron sputtering devices. 4,239,611, Cl. 204-298.000.

Morton, Bernard W., to Dri-Steem Humidifier Co., Inc. Electric steam humidifier. 4,239,956, Cl. 219-272.000.

Morville, Malcolm: *See—*
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Mosher, Paul R.: *See—*
Camp, Albert T.; Csanady, Elmer R.; and Mosher, Paul R., 4,239,561, Cl. 149-19.800.

Mosler Safe Company, The: *See—*
Parrock, Joseph J., Sr., 4,238,942, Cl. 70-299.000.

Motoori, Ryuzo: *See—*
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.

Motorola, Inc.: *See—*
Tosi, Kenneth F.; and McKee, John M., 4,240,002, Cl. 310-324.000.

Moyles, George L.: *See—*
Gates, William H., 4,239,158, Cl. 239-567.000.

MTS Systems Corporation: *See—*
Langer, William J., 4,238,954, Cl. 73-146.000.

Mueller, John J.; and Beall, Glenn L., to Containaire, Inc. Apparatus for facilitating inflow through closure threads of dispenser. 4,239,132, Cl. 222-212.000.

Muggee, Fred D.: *See—*
Chai, Bong J.; and Muggee, Fred D., 4,239,695, Cl. 260-502.500.

Mulder, Albertus J.; and Verbrugge, Pieter A., to Shell Oil Company. Novel 8-substituted bicyclo(3,2,)-octanes. 4,239,707, Cl. 570-130.000.

Muller, Hans; and Nilsson, Nils G. Two step ejector structure for a mold for injection molding or the like. 4,239,174, Cl. 249-67.000.

Muller, Rolf, to Papst-Motoren KG. Precision motor speed control system. 4,240,014, Cl. 318-328.000.

Multitronics Corporation: *See—*
Steuer, Robert R., 4,239,048, Cl. 128-666.000.

Munson, William O.: *See—*
Reed, Russell, Jr.; Munson, William O.; and Peterson, John A., 4,239,073, Cl. 149-19.910.

Murakami, Kanji; Kawamoto, Mineo; Matsuda, Yoichi; Wajima, Motoyo; and Morishita, Hirosada, to Hitachi, Ltd. Process for forming printed wiring by electroless deposition. 4,239,813, Cl. 427-98.000.

Muraki, Hideaki: *See—*
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,239,656, Cl. 252-462.000.

Muramoto, Yasukazu: *See—*
Ueno, Ryuzo; Tsuchiya, Hiroaki; Muramoto, Yasukazu; and Kuwae, Yoshihiko, 4,239,913, Cl. 562-425.000.

Murasoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, to Tokyo Shibaura Electric Co., Ltd. Surface-treating agent adapted for intermediate products of a semiconductor device. 4,239,661, Cl. 252-541.000.

Murdock, Dwight, to Universal Dynamics, Inc. Removable orthodontic appliance. 4,239,487, Cl. 433-7.000.

Murphy, Alan P., to Procter & Gamble Company, The. Detergent compositions containing nonionic and cationic surfactants, the cationic surfactant having a long alkyl chain of from about 20 to about 30 carbon atoms. 4,239,659, Cl. 252-524.000.

Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, to Northern Telecom Limited. Detection of faults in the insulation of an electrical conductor using a liquid electrolyte. 4,240,026, Cl. 324-54.000.

Mutschler, Otto. Fountain pen with improved ink flow control. 4,239,408, Cl. 401-217.000.

Mutton, John, to Rollform Pty. Ltd. Metal door frame assembly. 4,238,909, Cl. 49-504.000.

Myer, Jon H.; and Grinberg, Jan, to Hughes Aircraft Company. Parallel interconnect for planar arrays. 4,239,312, Cl. 339-17.00N.

Myers, Donald W.; and Vivlamore, Samantha L., to Mobil Oil Corporation. Method and apparatus for thermoforming thermoplastic foam articles. 4,239,727, Cl. 264-550.000.

Myers, William C., to Semicon, Inc. Semiconductor high-voltage switch. 4,240,088, Cl. 357-19.000.

Mynhier, Charles R., to Berryhill, Bill B. Pipe connector apparatus. 4,239,266, Cl. 285-323.000.

N T N Toyo Bearing Co. Ltd.: *See—*
Kimata, Kei; Nakazeki, Tsugito; and Yasuda, Yoshinobu, 4,239,028, Cl. 123-389.000.

Naab, Jakob, to Zoller-Kipper GmbH. Heavy duty receptacle unloading device for trucks. 4,239,437, Cl. 414-408.000.

Nabeshima, Shigeyasu: *See—*
Hirohara, Hideo; Nabeshima, Shigeyasu; and Nagase, Tsuneyuki, 4,239,854, Cl. 521-31.000.

Nagai, Koji: *See—*
Tanaka, Susumu; Nagai, Koji; and Inagaki, Sanzi, 4,239,845, Cl. 430-122.000.

Nagase, Hiroshi: *See—*
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,240,020, Cl. 318-721.000.

Nagase, Minoru, to Nippon Air Brake Co., Ltd, The. Brake gear for vehicles. 4,239,292, Cl. 303-3.000.

Nagase, Tsuneyuki: *See—*
Hirohara, Hideo; Nabeshima, Shigeyasu; and Nagase, Tsuneyuki, 4,239,854, Cl. 521-31.000.

Nagata, Kenichi: *See—*
Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, 4,239,426, Cl. 406-197.000.

Nagel, Klaus, to Herberts Gesellschaft mit beschrankter Haftung. Method of producing electrically insulating, highly flexible and/or solderable coatings. 4,239,814, Cl. 427-120.000.

Nakabayashi, Yasuyuki; Nagata, Kenichi; and Fukuda, Shozo, to Mitsubishi Jukogyo Kabushiki Kaisha; Electric Power Development Co. Ltd.; and Misui Engineering & Shipbuilding Co. Ltd. Method of transporting and storing mixed fuel and plant therefor. 4,239,426, Cl. 406-197.000.

Nakagawa, Hiroaki: *See—*
Hashimoto, Isao; Nakagawa, Hiroaki; Taguchi, Toru; and Nambu, Hirohiko, 4,239,921, Cl. 568-753.000.

Nakagawa, Sumio: *See—*
Tanaka, Toshio; and Nakagawa, Sumio, 4,239,478, Cl. 431-24.000.

Nakagawa, Tatsuya, to Excell Corporation. Apparatus for molding a plastic pipe. 4,239,474, Cl. 425-525.000.

Nakahara, Yutaka: *See—*
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, 4,239,803, Cl. 428-379.000.

Nakamura, Akira: *See—*
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, 4,239,094, Cl. 191-25.000.

Nakamura, Takao: *See—*
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.

Nakamura, Yasuo: *See—*
Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, 4,240,006, Cl. 313-386.000.

Nakaoka, Mitsuo, to Silver Seiko, Ltd. Fabric manipulating device for manipulating the loops of a knitted fabric. 4,238,937, Cl. 66-60.00H.

Nakazawa, Hiroshi; and Baba, Yasuharu, to Sony Corporation. Switching regulator. 4,240,134, Cl. 363-21.000.

Nakazeki, Tsugito: *See—*
Kimata, Kei; Nakazeki, Tsugito; and Yasuda, Yoshinobu, 4,239,028, Cl. 123-389.000.

Nambu, Hirohiko; Mizuno, Kenichi; and Matumoto, Tetuhiro, to Mitsui Petrochemical Industries Ltd. Liquid peroxide composition. 4,239,644, Cl. 252-186.000.

Nambu, Hirohiko: *See—*
Hashimoto, Isao; Nakagawa, Hiroaki; Taguchi, Toru; and Nambu, Hirohiko, 4,239,921, Cl. 568-753.000.

Narasimhan, Mandayam C.: *See—*
Boggs, Beryl A.; Narasimhan, Mandayam C.; and Li, Hsin L., 4,239,187, Cl. 242-25.00R.

Naruse, Tunehide, to Victor Company of Japan, Limited. Magnetic material for recording media. 4,239,637, Cl. 252-62.540.

National Semiconductor Corporation: *See—*
Mihalich, Stephen K., 4,240,039, Cl. 330-253.000.

National Starch and Chemical Corp.: *See—*
Gaspar, Lawrence A.; Tessler, Martin; and Malcolm, Alexander R., 4,239,592, Cl. 162-175.000.

National Steel Corporation: *See—*
Graham, Howard A.; and Palubiak, Charles, 4,238,947, Cl. 72-237.000.

Naylor, Arthur G.: *See—*
Johnson, Everett C.; and Naylor, Arthur G., 4,240,032, Cl. 324-158.00F.

Naylor, Floyd E.: *See—*
Hsieh, Henry L.; and Naylor, Floyd E., 4,239,806, Cl. 428-462.000.

NCR Corporation: *See—*
DevChoudhury, Rathindra N., 4,240,064, Cl. 340-146.3AG.

Neathery, William D.: *See—*
Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., 4,239,455, Cl. 416-145.000.
Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., 4,239,456, Cl. 416-145.000.

Neefe, Charles W., to Neefe Optical Laboratory. Method of making bifocal contact lenses. 4,239,712, Cl. 264-1.000.

Neefe Optical Laboratory: *See—*
Neefe, Charles W., 4,239,712, Cl. 264-1.000.

Negrao, Paulo M. Muffler. 4,239,091, Cl. 181-243.000.

Nelan, Donald R.; and Foster, Charles H., to Eastman Kodak Company. Conversion of non-alpha-tocopherols to alpha-tocopherols. 4,239,691, Cl. 260-345.500.

Nelson, Frederick W., to Minnesota Mining and Manufacturing Company. Stethoscope chestpiece. 4,239,089, Cl. 181-131.000.

Nelson, Hugh A.; Wafer, John A.; Koren, Paul P.; Salemi, Nicholas A.; and Maier, Alfred E., to Westinghouse Electric Corp. Circuit breaker utilizing improved current carrying conductor system. 4,240,053, Cl. 335-16.000.

Neroni, Peter J.: *See—*
Kleykamp, Donald L.; and Neroni, Peter J., 4,239,007, Cl. 105-225.000.

Neuner, James A.: *See—*
Oates, Robert M.; Neuner, James A.; Couch, Robert D., Jr.; and Kasinoff, Alan M., 4,239,595, Cl. 176-19.00R.

Niagara Bottle Washer Manufacturing Co.: *See—*
Vamvakas, Michael, 4,239,626, Cl. 210-333.010.

Nichols, Donald K.: *See—*
August, Rudolf R.; Strahan, Virgil H.; James, Kenneth A.; and Nichols, Donald K., 4,239,963, Cl. 250-231.00R.

Nickel, Horst: *See—*
Wild, Peter; and Nickel, Horst, 4,239,886, Cl. 544-170,000.

Nieden, Achim zur: *See—*
Streicher, Kurt; and Nieden, Achim zur, 4,239,026, Cl. 123-196.00R.

Niedermeyer, William P. Solar energy collector. 4,239,034, Cl. 126-439.000.

Nielsen, Don B.; and Nielsen, Knut J. Storage box for substantially parallelepipedic tape and film cases. 4,239,109, Cl. 206-387.000.

Nielsen, Jorgen F.: *See—*
Aegidius, Poul E.; Zakora, Miloslav; and Nielsen, Jorgen F., 4,239,394, Cl. 356-436.000.

Nielsen, Knut J.: *See—*
Nielsen, Don B.; and Nielsen, Knut J., 4,239,109, Cl. 206-387.000.

Niemi, Antti J.; and Jutila, Pentti K., to Jutila, Pentti, a part interest. Method and apparatus for controlling the pH. 4,239,493, Cl. 23-230.00A.

Nikodem, Robert B.: *See—*
Lampkin, Curtis M.; Roderick, Guy A.; and Nikodem, Robert B., 4,239,809, Cl. 427-74.000.

Nilsson, Nils G.: *See—*
Muller, Hans; and Nilsson, Nils G., 4,239,174, Cl. 249-67.000.

Nippon Air Brake Co., Ltd, The: *See—*
Nagase, Minoru, 4,239,292, Cl. 303-3.000.

Nippon Electric Co., Ltd.: *See—*
Aoyama, Tsutomu, 4,239,331, Cl. 350-96.200.
Inaba, Masao; Sugimoto, Atsumi; and Miyahara, Shigeru, 4,240,112, Cl. 358-160.000.
Sakoe, Hiroaki, 4,239,936, Cl. 179-1.0SD.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Adachi, Takeshi, 4,238,985, Cl. 84-1.010.

Nippon Hardboard Co. Ltd.: *See—*
Ishida, Nobumasa; Yamada, Yasuo; and Jinno, Hideki, 4,239,716, Cl. 264-86.000.

Nippon Hoso Kyokai: *See—*
Taketoshi, Kazuhisa, 4,239,534, Cl. 75-134.00T.

Nippon Kogaku K.K.: *See—*
Daitoku, Koichi, 4,239,166, Cl. 242-71.600.
Iida, Yozo, 4,239,357, Cl. 354-25.000.
Katayama, Akira; and Hozumi, Toshiaki, 4,239,362, Cl. 354-212.000.
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.

Nippon Steel Corporation: *See—*
Iida, Hiroshi; Umehara, Ikuo; and Takeda, Yasuo, 4,239,483, Cl. 432-8.000.

Nippon Telegraph and Telephone Public Corporation: *See—*
Matsumoto, Takao, 4,239,329, Cl. 350-96.150.

Nishimura, Tatsuo: *See—*
Numata, Mitsuo; Yamaoka, Masayoshi; Minamida, Isao; Shiraishi, Mitsuru; and Nishimura, Tatsuo, 4,239,758, Cl. 424-246.000.

Nishio, Taketaro: *See—*
Tomita, Yukio; and Nishio, Taketaro, 4,239,379, Cl. 355-52.000.

Nissan Motor Company, Limited: *See—*
Fujioka, Kazuyoshi, 4,238,929, Cl. 60-336.000.
Kanegae, Hidetoshi, 4,238,924, Cl. 60-39.28R.
Oda, Takaaki, 4,239,277, Cl. 296-37.120.
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, 4,239,094, Cl. 191-25.000.
Yano, Tsuneomi; and Yuzawa, Haruo, 4,240,145, Cl. 364-431.000.

Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, to BASF Aktiengesellschaft. Manufacture of carbonyl compounds. 4,239,657, Cl. 252-464.000.

Nitzberg, Leonard R. Process for the manufacture of patterned urea thermoplastic molding compound preforms to be used for the production of consistently patterned buttons with molded holes. 4,239,721, Cl. 264-157.000.

Nixdorf, Donald H.: *See—*
Henley, Virgil E.; Hineborg, James R.; and Nixdorf, Donald H., 4,239,565, Cl. 156-126.000.

Noguchi, Kazuo: *See—*
Hosoya, Takeshi; Tanaka, Fumihiro; and Noguchi, Kazuo, 4,239,040, Cl. 128-213.00R.

Noguchi, Kohji: *See—*
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, 4,239,892, Cl. 546-251.000.

Nolan, Evelyn L., executrix: *See—*
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.

Nolan, James P., deceased: *See—*
Alcaraz, Anthony J.; Chandler, Christopher W.; Edmundson, Thomas G.; and Nolan, James P., deceased, 4,239,823, Cl. 427-420.000.

Nolan Systems Inc.: *See—*
Richardson, Raymond, 4,239,432, Cl. 414-110.000.

Nonoyama, Masahiro: *See—*
Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, 4,239,803, Cl. 428-379.000.

Nordstrom, Larry A.: *See—*
DeFilipps, Fred A.; Lipper, Roy O.; Winters, Luther R., Jr.; Nordstrom, Larry A.; and Szechy, Daniel J., 4,239,404, Cl. 400-613.000.

Norman, Benjamin F. J.; and Brown, Clifford R. Golf swing training device. 4,239,228, Cl. 273-189.00R.

Norris, Henry D.: *See—*
Brennan, James A.; and Norris, Henry D., 4,239,927, Cl. 585-24.000.

Norris, Philip R., to Polaroid Corporation. Accessory for adapting cameras to small format photographic film units. 4,239,365, Cl. 354-295.000.

North American Philips Corporation: *See—*
Haas, David J.; Galetta, Nick; and Juner, Adolf, 4,239,969, Cl. 250-359.000.

Northern Telecom Limited: *See—*
Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, 4,240,026, Cl. 324-54.000.

Northrop Corporation: *See—*
Rothe, Dietmar E., 4,240,043, Cl. 331-94.5PE.

Norton Company: *See—*
Harris, Denis I.; and Staples, Luke, 4,239,503, Cl. 51-298.000.

Norton, Lyle K.; Prichard, Robert J.; and Ochi, Margit K., to EOCOM Corporation. Computerized laser engraving system and method. 4,240,119, Cl. 358-297.000.

Notaro, Frank, to Union Carbide Corporation. Flame-sprayed thermoplastic substrate is coated with an adhesive layer which bonds particles of an adsorbent like carbon to the substrate. 4,239,827, Cl. 428-35.000.

Novello, Dante; and Mengotti, Alessandro, to Mil S.p.A. Device for painting, spraying, enamelling or tinting of manufactured articles in general. 4,239,015, Cl. 418-321.000.

Nowak, Heinz: *See—*
Aust, Heinrich; Budich, Wolfgang; Nowak, Heinz; and Primessing, Franz, 4,239,574, Cl. 156-267.000.

Nuclear Supreme: *See—*
Waltrip, Owen R., 4,239,161, Cl. 241-46.020.

Nudenberg, Walter: *See—*
Beretta, David; Loveless, Frederick C.; and Nudenberg, Walter, 4,239,638, Cl. 252-73.000.
Matthews, Demetreos N.; Nudenberg, Walter; and Petersen, Henno A., 4,239,862, Cl. 525-240.000.

Numata, Mitsuo; Yamaoka, Masayoshi; Minamida, Isao; Shiraishi, Mitsuru; and Nishimura, Tatsuo, to Takeda Chemical Industries, Ltd. Cephalosporins. 4,239,758, Cl. 424-246.000.

Numata, Saburo, to Fuji Photo Optical Co., Ltd. Automatic electronic flash light device. 4,240,008, Cl. 315-151.000.

Nusslein, Ludwig; Arndt, Friedrich; and Rusch, Reinhart, to Schering Aktiengesellschaft. Thiadiazolyl ureas with herbicidal effect. 4,239,524, Cl. 71-90.000.

Nyc, Janusz: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Nyland, Roger L.: *See—*
Hogan, Stephen J.; and Nyland, Roger L., 4,238,930, Cl. 62-138.000.

Nyquist, Stephen E.: *See—*
Huetsch, Larry C.; Swanson, James P.; and Nyquist, Stephen E., 4,239,252, Cl. 280-446.00R.

Nyul, Paul: *See—*
Hughes, Frederick R.; and Nyul, Paul, 4,240,090, Cl. 357-30.000.

Oates, Robert M.; Neuner, James A.; Couch, Robert D., Jr.; and Kasinoff, Alan M., to Westinghouse Electric Corp. Data system for automatic flux mapping applications. 4,239,595, Cl. 176-19.00R.

Obara, Isao; Kamada, Atsuya; and Kaneda, Aizo, to Hitachi, Ltd. Spider of loudspeaker. 4,239,944, Cl. 179-115.5VC.

Oberbeck, Donald E.: *See—*
Frank, Matthew W.; and Oberbeck, Donald E., 4,238,873, Cl. 126-443.000.

Occidental Oil Shale, Inc.: *See—*
French, Gordon B., 4,239,285, Cl. 299-2.000.
Ridley, Richard D., 4,239,283, Cl. 299-2.000.
Ridley, Richard D.; and Fernandes, Robert J., 4,239,284, Cl. 299-2.000.

Occidental Petroleum Corporation: *See—*
Choi, Charles K., 4,239,599, Cl. 201-2.500.

Ochi, Margit K.: *See—*
Norton, Lyle K.; Prichard, Robert J.; and Ochi, Margit K., 4,240,119, Cl. 358-297.000.

Ochiai, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Digital circuit for conditioning the operation of a motor vehicle upon the tested motor ability of the operator. 4,240,071, Cl. 340-576.000.

Oda, Takaaki, to Nissan Motor Company, Limited. Lid mountings for automobile interior storage cabinets. 4,239,277, Cl. 296-37.120.

Odagiri, Masaru: *See—*
Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, 4,239,835, Cl. 428-611.000.

Oehler, Kenneth L. Sunshield and light diffuser. 4,239,962, Cl. 250-222.00R.

Oesterlin, Rudolf: *See—*
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,239,687, Cl. 260-326.270.

Ofstead, Eilert A.; and Senyek, Michael L., to Goodyear Tire & Rubber Company, The. Cyclopentene copolymerization process. 4,239,874, Cl. 526-143.000.

Ogano, Takeo: *See—*
Saruhashi, Kazuo; and Ogano, Takeo, 4,238,918, Cl. 56-202.000.

Ogasawara, Toyotsugu, to Tomy Kogyo Co., Ltd. Device for driving a simulated flying object. 4,239,207, Cl. 272-31.00A.

Ogata, Yasuhiro: *See—*
Kato, Hajime; and Ogata, Yasuhiro, 4,239,815, Cl. 427-150.000.

Ogino, Shuji, to Minolta Camera Kabushiki Kaisha. Conversion lens system. 4,239,340, Cl. 350-214.000.

Ogorek, Kurt: *See—*
Goris, Heinrich; Gunther, Roland; Ogorek, Kurt; and Schwarting, Karl-Heinz, 4,239,290, Cl. 299-34.000.

Ohashi, Taizo: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,239,661, Cl. 252-541.000.

Ohhinata, Ichiro, to Hitachi, Ltd. Trigger circuit for a thyristor. 4,239,985, Cl. 307-252.00G.

Ohishi, Shigeo: *See—*
Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, 4,239,865, Cl. 525-327.000.

Ohkawa, Tihiro, to United States of America, Energy. Control of impurities in toroidal plasma devices. 4,239,594, Cl. 176-9.000.

Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, to Nippon Kogaku K.K. Alarm device control system in a camera. 4,239,358, Cl. 354-60.00E.

Ohzeki, Toshio; Akutsu, Mitsuo; Nakahara, Yutaka; Haruna, Tohru; Minagawa, Motonobu; and Nonoyama, Masahiro, to Argus Chemical Corporation. Ethylene polymer composition. 4,239,803, Cl. 428-379.000.

Okada, Haruhiko: *See—*
Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, 4,240,006, Cl. 313-386.000.

Okada, Takehiro: *See—*
Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, 4,239,882, Cl. 528-209.000.

Okumura, Osamu; Sakatani, Takenobu; Kashiwada, Toshinobu; and Tokuyama, Kiyotaka, to Lion Fat and Oil Co., Ltd., The. Liquid detergent compositions. 4,239,662, Cl. 252-555.000.

Okuno, Osamu: *See—*
Misumi, Teruyuki; Tanaka, Kyogo; and Okuno, Osamu, 4,239,686, Cl. 260-325.0PH.

Okuyama, Muneaki. Two-staged pressure cooker. 4,238,996, Cl. 99-352.000.

Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, to Hitachi, Ltd. Control system for suppressing torque ripple in synchronous motor. 4,240,020, Cl. 318-721.000.

Olin Corporation: *See—*
Johnson, Peter W., 4,239,143, Cl. 227-10.000.

Oliver, Donald W.; and Culver, Richard B., to Dresser Industries, Inc. Method and apparatus for neutron induced gamma ray logging for direct porosity identification. 4,239,965, Cl. 250-270.000.

Olschewski, Armin: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,239,298, Cl. 308-6.00C.
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Olsen, Olav: *See—*
Slatten, Arvid; Bech, Harald; and Olsen, Olav, 4,239,417, Cl. 405-195.000.

Olson, Daniel R.: *See—*
Schroeter, Siegfried H.; and Olson, Daniel R., 4,239,798, Cl. 428-331.000.

Olson, Paul E., to American Standard Inc. Overload protection control circuit for marine engines. 4,239,454, Cl. 416-27.000.

Olstad, James H. Apparatus for supporting a door during processing. 4,239,197, Cl. 269-68.000.

Oltman, John P.; and Purkapile, Emerson V., to Waterloo Industries, Inc. Workbench. 4,239,195, Cl. 269-16.000.

Olympus Optical Co., Ltd.: *See—*
Kondo, Isao, 4,239,984, Cl. 307-237.000.
Sato, Yuichi, 4,239,363, Cl. 354-238.000.
Satoh, Ken; and Furuta, Kenzi, 4,239,957, Cl. 235-92.0DN.

Omholt, Ray E. Resiliently cushioned adhesive-applied rebound wall surfacing system and method of construction. 4,238,914, Cl. 52-309.300.

O'Neal, Larry. Mounting for inflatable dock seal. 4,238,910, Cl. 52-2.000.

Ong, Lincoln T. Medical electrode. 4,239,046, Cl. 128-640.000.

Oosterling, Pieter A.; and Van Staveren, Hendricus C., to Vicon N.V. Mowing device. 4,238,917, Cl. 56-192.000.

Oppenlaender, Knut: *See—*
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.

Optische Werke Kreuznach: *See—*
Wagner, Werner, 4,239,339, Cl. 350-184.000.

Orth, Dieter: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, 4,239,759, Cl. 424-248.400.

Ortho Pharmaceutical Corporation: *See—*
Kane, Vinayak V., 4,239,689, Cl. 260-333.000.

Osrow, Leonard, to Osrow Products Co., Inc. Brush assembly with pulsating water jet discharge. 4,239,409, Cl. 401-281.000.

Osrow Products Co., Inc.: *See—*
Osrow, Leonard, 4,239,409, Cl. 401-281.000.

Otsuka Chemical Co., Ltd.: *See—*
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, 4,239,542, Cl. 106-18.140.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Sato, Tadao, 4,239,709, Cl. 260-974.000.

Ottersbach, Thomas V.: *See—*
Hildebrandt, Eugene F.; Ottersbach, Thomas V.; and DeVries, Wayne J., 4,240,001, Cl. 310-68.00E.

Ottofrickenstein, Hans: *See—*
Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, 4,239,671, Cl. 260-29.6TA.

Oudet, Jean-Marie P.: *See—*
Oudet, Paul-Marie B.; and Oudet, Jean-Marie P., 4,238,935, Cl. 63-2.000.

Oudet, Paul-Marie B.; and Oudet, Jean-Marie P, Method for manufacturing a chain from the vertebra of an animal. 4,238,935, Cl. 63-2.000.

Owens, Walter K. Gravity assisted newspaper vending machine with customer-operated newspaper lift device. 4,239,127, Cl. 221-259.000.

Oy Kaukas AB: *See—*
Era, Vaino; and Lindberg, J. Johan, 4,239,667, Cl. 260-18.0TN.

Oyama, Shigeaki: *See—*
Harano, Keiichi; and Oyama, Shigeaki, 4,240,000, Cl. 310-54.000.

Ozawa, Fumihiro, to Seiko Seiki Kabushiki Kaisha. Positioning apparatus for transferring pallets. 4,239,445, Cl. 414-749.000.

Packett, Marvin A.: *See—*
Gonas, Albert J.; Packett, Marvin A.; and Street, Donald A., 4,239,279, Cl. 296-210.000.

Padwa, Murray N. Cassette-to-cassette duplicator. 4,240,120, Cl. 360-15.000.

Paetsch, Juergen: *See—*
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, 4,239,641, Cl. 252-142.000.

Page, Dan: *See—*
Griggs, William L., III; Serrano, Ernest E.; Page, Dan; and Reul, Charles G., 4,239,047, Cl. 128-663.000.

Page, Michael G.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.

Page, Wilbur M., to Clayton Dewandre Company Limited. Vehicle braking system with valving to control spring applied brakes and fluid actuated service brake units. 4,239,293, Cl. 303-6.00M.

Palmer, E. Frederick. Random number generator. 4,239,226, Cl. 273-146.000.

Palubiak, Charles: *See—*
Graham, Howard A.; and Palubiak, Charles, 4,238,947, Cl. 72-237.000.

Panchak, John R.: *See—*
DePaul, Harry V.; and Panchak, John R., 4,239,642, Cl. 252-182.000.

Pankavich, John A.: *See—*
Asato, Goro; and Pankavich, John A., 4,239,708, Cl. 260-926.000.

Pannwitz, Hans U. Flexible spring bearing. 4,239,301, Cl. 308-35.000.

Panseri, Mario: *See—*
Giani, Adolfo; Panseri, Mario; and Mascioni, Umberto, 4,238,999, Cl. 101-116.000.

Pantelis, Philippos, to Post Office. Method fpr producing piezoelectric polymeric material. 4,239,608, Cl. 204-159.170.

Panunzio, Sergio R.: *See—*
Polo, Vincent; and Panunzio, Sergio R., 4,238,973, Cl. 74-501.00R.

Papenmeier France Sarl: *See—*
Fulhaber, H. Lucien, 4,239,473, Cl. 425-392.000.

Papst-Motoren KG: *See—*
Muller, Rolf, 4,240,014, Cl. 318-328.000.

Paquet, Paul. Firearm training device. 4,239,233, Cl. 273-383.000.

Parenti, Francesco: *See—*
Coronelli, Carolina; Beretta, Grazia; Bardone, Maria R.; and Parenti, Francesco, 4,239,751, Cl. 424-118.000.

Parfree, Colin S.; and Worthington, Peter, to International Standard Electric Corporation. Optical communication cable. 4,239,336, Cl. 350-96.230.

Parg, Adolf; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. O-Substituted N-hydroxysulfamid acid halides and their preparation. 4,239,697, Cl. 260-543.00R.

Parham, Roger R.; and Adler, Glenn D. Target life extender. 4,239,236, Cl. 273-403.000.

Pariani, Ronald L.: *See—*
Berry, Milton E.; and Pariani, Ronald L., 4,239,191, Cl. 266-200.000.

Parr, William W. Swivel connector. 4,239,313, Cl. 339-89.00C.

Parrish, Charles A., to Sperry Corporation. Automatic bale ejection drive override means. 4,238,919, Cl. 56-341.000.

Parrock, Joseph J., Sr., to Mosler Safe Company, The. Direct dial combination lock with driver-cammed reciprocating tumblers and scrambled combs. 4,238,942, Cl. 70-299.000.

Parushev, Stoyan P.: *See—*
Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., 4,239,605, Cl. 204-59.00R.

Patrushev, Gennady V.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Patrushev, Gennady V.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,239,112, Cl. 206-525.000.

Patrylak, Andrew J.: *See—*
Elton, Edward F.; Patrylak, Andrew J.; and Santangelo, Joseph G., 4,239,589, Cl. 162-31.000.
Pattenden, Thomas W. E., to Du Pont Canada, Inc. Protected lumber. 4,239,831, Cl. 428-193.000.
Paul, Egbert; and Reither, Karl. Separation of particles from gaseous fluid flows. 4,239,513, Cl. 55-118.000.
Paul, Jon D. Electronic ballast. 4,240,009, Cl. 315-224.000.
Paul, Steven M.; and Skolnick, Phil, to United States of America, America. Radioreceptor assay for benzodiazepines in plasma and other biological specimens. 4,239,744, Cl. 424-1.000.
Paul, Volker: *See—*
Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, 4,239,760, Cl. 424-249.000.
Pavlinch, George R. Inflatable catheter for a male urinal. 4,239,044, Cl. 128-295.000.
Pavolka, John D., to Pullman Incorporated. Method and apparatus for distribution of granular material in a railway hopper car. 4,239,424, Cl. 406-157.000.
Pawlowski, Thomas D., to American Can Company. Cup dispensing apparatus. 4,239,125, Cl. 221-65.000.
Pearce, James C., to Chevron Research Company. Arctic multi-angle conical structure having a discontinuous outer surface. 4,239,418, Cl. 405-211.000.
Pearsall Chemical Company: *See—*
Allphin, N. Lee; Valentine, Fred S.; and Grams, Gary W., 4,239,930, Cl. 585-517.000.
Peiser, Alfred M.; Graham, Ronald I.; and McClernon, Joseph R., to Mobil Oil Corporation. Twin tower distillation of crude oil. 4,239,618, Cl. 208-355.000.
Pen Kem, Inc.: *See—*
Goetz, Philip J., 4,239,612, Cl. 204-299.00R.
Pendax Interior AB: *See—*
Planebo, Sten, 4,239,170, Cl. 248-441.00B.
Penebre, Nicholas A.: *See—*
Dreyfus, Russell W.; Penebre, Nicholas A.; and McCorkle, Richard A., 4,240,007, Cl. 315-111.800.
Penicillin Assays, Inc.: *See—*
Charm, Stanley E., 4,239,745, Cl. 424-1.000.
Charm, Stanley E., 4,239,852, Cl. 435-32.000.
Pennwalt Corporation: *See—*
Cushman, Robert H., 4,239,971, Cl. 250-439.00P.
Perkins, Derrick O., to Telex Computer Products, Inc. Frequency tracking adjustable duty cycle ratio pulse generator. 4,239,992, Cl. 307-265.000.
Perkins, James F.: *See—*
Cason, Charles M., III; Perkins, James F.; and Jones, Robert W., 4,239,341, Cl. 350-294.000.
Perna, Jiulio E.: *See—*
Hesse, David L.; Krolak, Ronald F.; and Perna, Jiulio E., 4,239,320, Cl. 339-154.00A.
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, to BASF Aktiengesellschaft. Machine dishwashing, using polyhydric alcohols, carboxylic acids and or esters of these as rinsing agents. 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, to BASF Aktiengesellschaft. Use of polyhydric alcohols, carboxylic acids, hydroxy-carboxylic acids and/or their esters with polyhydric alcohols as viscosity regulators. 4,239,641, Cl. 252-142.000.
Perry, George W. Ashtray. 4,239,049, Cl. 131-235.0ST.
Persson, Bertil: *See—*
Ingemann, Bertil; and Persson, Bertil, 4,238,865, Cl. 12-114.800.
Peters, Clifford M., to ACF Industries, Incorporated. Pull type relay valve with automatic lockout. 4,239,058, Cl. 137-557.000.
Petersen, Harro: *See—*
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.
Petersen, Henno A.: *See—*
Matthews, Demetreos N.; Nudenberg, Walter; and Petersen, Henno A., 4,239,862, Cl. 525-240.000.
Peterson, Harley G., to Joy Manufacturing Company. Damper valve. 4,239,061, Cl. 137-614.110.
Peterson, John A., to Minnesota Mining and Manufacturing Company. Illumination means for electrographic reproduction. 4,239,383, Cl. 355-67.000.
Peterson, John A.: *See—*
Reed, Russell, Jr.; Munson, William O.; and Peterson, John A., 4,239,073, Cl. 149-19.910.
Petrolite Corporation: *See—*
Russell, Stephen E.; Story, Phillip M.; and Letcher, C. S., 4,239,546, Cl. 106-270.000.
Petrow, Vladimir: *See—*
Grunwell, Joyce F.; and Petrow, Vladimir, 4,239,681, Cl. 260-239.55R.
Pfahler, Gerhard: *See—*
Wiezer, Hartmut; Pfahler, Gerhard; and Mayer, Norbert, 4,239,891, Cl. 546-242.000.
Pfefferle, William C., to Engelhard Minerals and Chemicals Corporation. Production of a fuel gas and synthetic natural gas from methanol. 4,239,499, Cl. 48-197.00R.
Pfeiffer, Heinrich; and Speck, Ulrich, to Schering Aktiengesellschaft. Dicarboxylic acid bis(3,5-dicarbamoyl-2,4,6-triiodoanilides) useful as x-ray contrast agents. 4,239,747, Cl. 424-5.000.
Pfizer Inc.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,239,779, Cl. 424-317.000.
Miller, Max W., 4,239,888, Cl. 544-309.000.
Phillips Petroleum Company: *See—*
Campbell, Grover R.; and Hobbs, James W., 4,239,517, Cl. 62-37.000.
Hays, George E.; and Cook, Charles F., 4,239,510, Cl. 55-68.000.
Hsieh, Henry L.; and Naylor, Floyd E., 4,239,806, Cl. 428-462.000.
Sauber, Charles A., 4,239,629, Cl. 252-8.50C.
Smith, Richard L., 4,239,870, Cl. 526-59.000.
Vinatieri, James E., 4,239,628, Cl. 252-8.55D.
Wilson, Joseph F.; Fodor, Lawrence M.; and Kenton, Joseph R., 4,239,522, Cl. 71-29.000.
Photon Power, Inc.: *See—*
Lampkin, Curtis M.; Roderick, Guy A.; and Nikodem, Robert B., 4,239,809, Cl. 427-74.000.
Pianta, Mery. Stationery booklet. 4,239,410, Cl. 402-20.000.
Picciolo, William A., to Douglas Battery Manufacturing Co. System for protecting and sealing intercell connecting links and poles of industrial batteries. 4,239,836, Cl. 429-65.000.
Picker Corporation: *See—*
Taenzer, Jon C., 4,238,962, Cl. 73-633.000.
Pickles, Joseph, to Ferro Manufacturing Corporation. Three-position actuator. 4,238,991, Cl. 92-85.00A.
Pigasse, Daniel, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of phthalocyanine pigments. 4,239,685, Cl. 260-314.500.
Pigerol, Charles; Chandavoine, Marie-Madeleine; and de Fillain, Paul de C., to Labaz. Dihydropyridine derivatives. 4,239,893, Cl. 546-321.000.
Pikorz, Wolfgang: *See—*
Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, 4,240,099, Cl. 357-79.000.
Pinck, Peter: *See—*
Brand, Peter; Pinck, Peter; and Baier, Anton, 4,238,993, Cl. 131-21.00R.
Pirelli Furlanis Applicazioni Indrauliche: *See—*
Borca, Bruno; and Ruscelli, Emilio, 4,239,416, Cl. 405-53.000.
Pitney Bowes Inc.: *See—*
Check, Frank T.; and Schubert, Keith E., 4,239,088, Cl. 177-210.0FP.
PKL Papier- und Kunststoff Werke: *See—*
Schadowski, Werner; and Bellut, Heinrich, 4,239,150, Cl. 229-48.00R.
Planebo, Sten, to Pendax Interior AB. Means for supporting a writing board or the like. 4,239,170, Cl. 248-441.00B.
Plastics, Inc.: *See—*
Cunningham, Emmett M., 4,239,009, Cl. 108-20.000.
Platz, Rolf: *See—*
Weitz, Hans-Martin; Platz, Rolf; and Hartig, Juergen, 4,239,910, Cl. 560-244.000.
Plempel, Manfred: *See—*
Buchel, Karl H.; Kramer, Wolfgang; and Plempel, Manfred, 4,239,767, Cl. 424-273.00R.
Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, 4,239,765, Cl. 424-269.000.
Plessey Handel und Investments AG: *See—*
Iles, Christopher W., 4,240,146, Cl. 364-467.000.
Plessey Peripheral Systems: *See—*
Veale, John R., 4,239,401, Cl. 400-144.200.
Plurien, Pierre: *See—*
Benoit, Robert; Machefer, Jacques; Mauvisseau, Jacques; and Plurien, Pierre, 4,239,507, Cl. 55-16.000.
Plyler, Robert G.: *See—*
Gladd, Joseph H.; Horrell, Theodore H., Jr.; and Plyler, Robert G., 4,239,319, Cl. 339-147.00R.
Poclain: *See—*
Dodemont, Gerard P.; and Viallefont, Christian H., 4,239,273, Cl. 294-88.000.
Podry, John M.: *See—*
Zurlinden, Cyril P., III; Howe, Charles W.; and Podry, John M., 4,238,879, Cl. 29-705.000.
Poetsch, Dieter; and Becker, Werner, to Bosch, Robert GmbH. Method for the additive and multiplicative spurious signal compensation. 4,240,103, Cl. 358-21.00R.
Pohle, Richard H., to United States of America, Air Force. Grating output wavefront sampling system. 4,239,392, Cl. 356-354.000.
Poisson, Norman D.: *See—*
Jacobson, Chester F.; and Poisson, Norman D., 4,238,883, Cl. 30-162.000.
Polak, Pawel: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.
Polaroid Corporation: *See—*
Norris, Philip R., 4,239,365, Cl. 354-295.000.
Shenk, Edwin K., 4,239,354, Cl. 352-140.000.
Polizzotti, David M.; and Steelhammer, Joe C., to Betz Laboratories, Inc. Free base amino alcohols as electrostatic precipitator efficiency enhancers. 4,239,504, Cl. 55-5.000.
Polo, Vincent; and Panunzio, Sergio R. Flexible reciprocating mechanical control. 4,238,973, Cl. 74-501.00R.
Polster, Louis S. Toaster control. 4,238,995, Cl. 99-331.000.

Polysius AG: *See—*
Adler, Josef, 4,239,300, Cl. 308-9.000.
Polystan A/S: *See—*
Hein, Lars, 4,239,464, Cl. 417-474.000.
Ponto, Robert A., to Innovative Electronics Design. Multiple input signal digital attenuator for combined output. 4,239,938, Cl. 179-1.0VL.
Pool, Gerald L.: *See—*
Horneys, David C.; and Pool, Gerald L., 4,239,275, Cl. 414-478.000.
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Bocharov, Vasily I.; and Kuprianov, Jury V. Linear induction motor. 4,239,997, Cl. 310-13.000.
Popov, Jury S.: *See—*
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M., 4,239,999, Cl. 310-52.000.
Popovich, Robert P. Method for continuous ambulatory peritoneal dialysis. 4,239,041, Cl. 128-213.00A.
Post Office: *See—*
Pantelis, Philippos, 4,239,608, Cl. 204-159.170.
Postma, Lambertus: *See—*
Koel, Gerrit J.; and Postma, Lambertus, 4,239,587, Cl. 156-659.100.
Poth, Willi: *See—*
Haina, Diether; Poth, Willi; and Waidelich, Wilhelm, 4,240,133, Cl. 362-293.000.
Powell, Robert C., to Weinschel Engineering Co., Inc. Two stub tuner in waveguide bend. 4,240,050, Cl. 333-33.000.
PPG Industries Canada, Ltd.: *See—*
Goldsmith, Elmar L., 4,239,287, Cl. 299-4.000.
Thompson, Robert E.; and Antemuik, Henry A., 4,239,288, Cl. 299-5.000.
PPG Industries, Inc.: *See—*
Allersma, Ties; and Simpson, James E., 4,239,532, Cl. 75-93.00R.
Barch, Herbert W.; and Blair, Rudolph, 4,239,162, Cl. 242-43.00R.
Breininger, J. Shannon; and Greenberg, Charles B., 4,239,816, Cl. 427-168.000.
Cathers, William P.; and Dorn, Charles W., Jr., 4,239,016, Cl. 118-624.000.
Girgis, Mikhail M., 4,239,800, Cl. 428-374.000.
Richardson, Kenneth W., 4,239,738, Cl. 423-292.000.
Pratap, Prem, to Carrier Corporation. Trip valve construction. 4,239,186, Cl. 251-255.000.
Pratt, George C., to Glacier Metal Company Limited, The. Method for manufacturing an elongated strip bearing. 4,239,715, Cl. 264-70.000.
Press, Jeffery B., to American Cyanamid Company. Novel 4-(substituted-aminophenoxy)-3-thiophenemethanols. 4,239,898, Cl. 549-65.000.
Pressler, Klaus: *See—*
Rebling, Rolf; Scheffler, Gerhard; Pressler, Klaus; and Schenk, Klaus D., 4,239,761, Cl. 424-250.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for producing acetaldehyde. 4,239,704, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for producing acetaldehyde. 4,239,705, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Ethanol from methanol. 4,239,924, Cl. 568-902.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Ethanol from methanol. 4,239,925, Cl. 568-902.000.
Price, Barry J.; Clitherow, John W.; Dowle, Michael D.; Hayes, Roger; and Bradshaw, John, to Allen & Hanburys Limited. Pharmacologically active compounds. 4,239,769, Cl. 424-274.000.
Prichard, Robert J.: *See—*
Norton, Lyle K.; Prichard, Robert J.; and Ochi, Margit K., 4,240,119, Cl. 358-297.000.
Prillieux, Marcel: *See—*
Marin, Pierre D.; Prillieux, Marcel; and Tirtiaux, Robert, 4,239,634, Cl. 252-33.000.
Primessing, Franz: *See—*
Aust, Heinrich; Budich, Wolfgang; Nowak, Heinz; and Primessing, Franz, 4,239,574, Cl. 156-267.000.
Printronix, Inc.: *See—*
Matula, Jerry; Radke, Glen R.; and Barrus, Gordon B., 4,239,403, Cl. 400-322.000.
Prinz, Richard: *See—*
Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, 4,239,861, Cl. 525-151.000.
Pritty, David W., to University of Strathclyde. Apparatus for use in ordering trials. 4,239,958, Cl. 235-92.0AC.
Prochnow, Rudolf, to Robert Bosch GmbH. Broadband magnetic tape transducer head. 4,240,121, Cl. 360-122.000.
Procter & Gamble Company, The: *See—*
Gellert, Dale A., 4,239,043, Cl. 128-285.000.
Gilbert, Lawrence A.; and Leist, Jeffrey R., 4,239,639, Cl. 252-90.000.
Kingry, Gary W., 4,239,660, Cl. 252-528.000.
Ludwa, Raymond J., 4,239,792, Cl. 428-198.000.
Murphy, Alan P., 4,239,659, Cl. 252-524.000.
Trokhan, Paul D., 4,239,065, Cl. 139-383.00A.
Produits Chimiques Ugine Kuhlmann: *See—*
Bonnet, Evelyne J. M.; and Gangneux, Philippe Y. E., 4,239,868, Cl. 525-279.000.
Pigasse, Daniel, 4,239,685, Cl. 260-314.500.
Professional Chemical & Color, Inc.: *See—*
Kelly, David; Vidal, Michael; and Rosenthal, Saul, 4,239,490, Cl. 8-499.000.
Professional Packaging Limited: *See—*
Holmes, Gordon W., 4,239,051, Cl. 133-8.00R.
Progressive Blasting Systems: *See—*
Van Kuiken, Lewis L., Jr., 4,239,804, Cl. 428-409.000.
Prough, James R., to Kamyr, Inc. Method of maintaining uniformity of fibrous material fed to a continuous digester. 4,239,590, Cl. 162-49.000.
Pullman Incorporated: *See—*
Pavolka, John D., 4,239,424, Cl. 406-157.000.
Puri, Ashok K., to Union Carbide Canada Limited. Pressure contact construction for drycell batteries. 4,239,840, Cl. 429-159.000.
Purification Sciences Inc.: *See—*
Lowther, Frank E., 4,238,925, Cl. 60-39.46R.
Purkapile, Emerson V.: *See—*
Oltman, John P.; and Purkapile, Emerson V., 4,239,195, Cl. 269-16.000.
Pyles, Gerald D., to RCA Corporation. Turntable drive system for video disc player. 4,239,237, Cl. 274-1.00E.
Quade, Henry H.: *See—*
Kesl, Elmer M.; Quade, Henry H.; and Sammarco, Peter, 4,238,916, Cl. 56-106.000.
Quantel Limited: *See—*
Taylor, Richard J.; and Kellar, Paul R. N., 4,240,104, Cl. 358-22.000.
Quinci, Emanuel: *See—*
Konars, Clement R.; Quinci, Emanuel; and Vascotto, Mario, 4,239,117, Cl. 209-553.000.
Rabinowitz, Charles M.; and Camp, Donald A., to United Technologies Corporation. Mechanical resonator oscillator having redundant parallel drive circuits. 4,240,047, Cl. 331-154.000.
Radbil, Tatyana I.: *See—*
Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.
Radke, Glen R.: *See—*
Matula, Jerry; Radke, Glen R.; and Barrus, Gordon B., 4,239,403, Cl. 400-322.000.
Rail Bearing Service: *See—*
Van Sickle, Robert J., 4,238,875, Cl. 29-148.40S.
Rainer, Georg, to Byk Gulden Lomberg Chemische Fabrik GmbH. Pyrazol-1-ylphenylacetic acids. 4,239,901, Cl. 560-34.000.
Rainville Company, Inc.: *See—*
Rainville, Dewey, 4,239,475, Cl. 425-526.000.
Rainville, Dewey, to Rainville Company, Inc. Apparatus for making oriented containers. 4,239,475, Cl. 425-526.000.
Ramsay, John R.: *See—*
Gauthier, John A.; Shaver, David M.; and Ramsay, John R., 4,239,941, Cl. 179-84.00R.
Ramsey Engineering Company: *See—*
Sniezek, Joseph T.; Chase, Paul W.; and Miller, Wendell D., 4,238,956, Cl. 73-861.010.
Rao, G. R. Mohan: *See—*
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,239,993, Cl. 307-355.000.
Rapp, Willard E., to Western Electric Company, Inc. Fabrication of screen devices. 4,238,877, Cl. 29-402.110.
Rasmussen, Chris R., to McNeilab, Inc. Method for relieving irritable bowel syndrome symptoms. 4,239,768, Cl. 424-273.00R.
Rasmussen, William R., Jr., to Lucht Engineering, Inc. Photographic printer. 4,239,377, Cl. 355-29.000.
Ratzeburg, Wolfgang, to Steag A.G. Process for the utilization of waste product tar-dust in gasification of granular fuel under pressure, especially of bituminous coal. 4,239,500, Cl. 48-202.000.
Rauschenberg, Richard: *See—*
Textoris, Melvin A.; and Rauschenberg, Richard, 4,239,932, Cl. 174-48.000.
Ravagnani, Frederick J.; and Schonfeld, Steven E., to Firestone Tire & Rubber Company, The. Method, composition and product with improved adhesion between a metal member and a contiguous rubber skim stock. 4,239,663, Cl. 260-5.000.
Raychem Corporation: *See—*
Dahl, Klaus J., 4,239,884, Cl. 528-486.000.
Marshall, Larry J., 4,239,485, Cl. 432-121.000.
Raymond, Joseph H., Jr., to Texas Instruments Incorporated. Field-effect transistor structure in multilevel polycrystalline silicon. 4,240,097, Cl. 357-71.000.
Raynaud, Bernard: *See—*
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, 4,239,180, Cl. 251-51.000.
Raytheon Company: *See—*
Lowenschuss, Oscar, 4,240,034, Cl. 328-14.000.
Williamson, James, 4,240,076, Cl. 343-7.0PL.
RCA Corporation: *See—*
Bosenberg, Wolfram A., 4,239,790, Cl. 427-54.100.
Coleman, Clyde F.; and Torrington, Leslie A., 4,239,108, Cl. 206-312.000.
Coleman, Clyde F., 4,239,238, Cl. 274-9.00B.
Dingwall, Andrew G. F., 4,240,093, Cl. 357-42.000.
Griffis, Patrick D., 4,239,939, Cl. 179-1.0GP.
Groeneweg, William H., 4,240,102, Cl. 358-11.000.
Hughes, Frederick R.; and Nyul, Paul, 4,240,090, Cl. 357-30.000.
Meise, William H., 4,240,111, Cl. 358-154.000.
Pyles, Gerald D., 4,239,237, Cl. 274-1.00E.

Robe, Thomas J., 4,240,042, Cl. 330-302.000.
Stewart, Roger G., 4,239,994, Cl. 307-359.000.
Wedam, Werner F., 4,240,013, Cl. 315-411.000.
Willis, Donald H., 4,240,012, Cl. 315-408.000.

Rebling, Rolf; Scheffler, Gerhard; Pressler, Klaus; and Schenk, Klaus D., to Asta-werke Aktiengesellschaft, Chemische Fabrik. Basically substituted ureas and processes for the treatment of virus diseases. 4,239,761, Cl. 424-250.000.

Redwine, Donald J.: *See—*
Hong, Ngai H.; Reese, Edmund A.; and Redwine, Donald J., 4,239,990, Cl. 307-262.000.

Reed, Russell, Jr.; Munson, William O.; and Peterson, John A., to Thiokol Corporation. Propellants in caseless ammunition. 4,239,073, Cl. 149-19.910.

Reese, Edmund A.: *See—*
Hong, Ngai H.; Reese, Edmund A.; and Redwine, Donald J., 4,239,990, Cl. 307-262.000.
Hong, Ngai H.; and Reese, Edmund A., 4,239,991, Cl. 307-262.000.

Regel, Erik; Buchel, Karl; Haller, Ingo; and Plempel, Manfred, to Bayer Aktiengesellschaft. Fluorenyl-azolylmeythyl-carbinol compounds and their medicinal use. 4,239,765, Cl. 424-269.000.

Reggiani Macchine S.p.A.: *See—*
Giani, Adolfo; Panseri, Mario; and Mascioni, Umberto, 4,238,999, Cl. 101-116.000.

Regie Nationale des Usines Renault: *See—*
Leichle, Claude, 4,239,024, Cl. 123-416.000.

Reinecke, Erich, to WABCO Fahrzeugbremsen GmbH. Tire-pressure monitoring device. 4,238,955, Cl. 73-146.500.

Reinehr, Ulrich; Jungverdorben, Herman-Josef; Herbertz, Toni; Dross, Joachim; and Hirsch, Rolf-Burkhard, to Bayer Aktiengesellschaft. Process for the production of hydrophilic fibres. 4,239,722, Cl. 264-206.000.

Reitel, Christian; and Goethlich, Lutz, to BASF Aktiengesellschaft. Curable coating composition. 4,239,866, Cl. 525-440.000.

Reither, Karl: *See—*
Paul, Egbert; and Reither, Karl, 4,239,513, Cl. 55-118.000.

Reitner, Wilhelm, to Siemens Aktiengesellschaft. Device for attenuating noise emitted to the environment by noise-generating aggregates having simultaneous dissipation of heat. 4,239,398, Cl. 400-124.000.

Rekers, Hendrik: *See—*
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Rektorik, Vladimir: *See—*
Miculka, Zdenek; Janirek, Vladislav; Rektorik, Vladimir; and Bajak, Karel, 4,238,939, Cl. 69-43.000.

Rendoll Paper Corporation: *See—*
Froom, Thomas W., 4,239,115, Cl. 206-611.000.

Renis, Harold E.: *See—*
Skulnick, Harvey I.; and Renis, Harold E., 4,239,753, Cl. 424-181.000.

Rentschler, John A., to Bell Telephone Laboratories, Incorporated. Semitransparent and durable photolithography masks. 4,239,787, Cl. 427-38.000.

Research Corporation: *See—*
Teng, Lin-Nar; and Schmer, Gottfried, 4,239,664, Cl. 260-17.40R.

Research Products Corporation: *See—*
Fowler, Thomas P., 4,240,072, Cl. 340-664.000.

Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, to Mennica Panstwowa; and Instytut Nawozow Sztucznych. Grid of precious metals for the recovery of platinum metals escaping from a catalyst during the reaction, and especially of platinum during oxidation of ammonia. 4,239,833, Cl. 428-567.000.

Rettke, Wilfried: *See—*
Jung, Friedrich; and Rettke, Wilfried, 4,239,402, Cl. 400-175.000.

Reul, Charles G.: *See—*
Griggs, William L., III; Serrano, Ernest E.; Page, Dan; and Reul, Charles G., 4,239,047, Cl. 128-663.000.

Rexroth Corporation, The: *See—*
Smith, Brian W., 4,239,468, Cl. 418-78.000.

Rhein-Nadel Automation Gesellschaft mit beschrankter Haftung: *See—*
Stecklum, Klaus; and Grief, Norbert, 4,239,120, Cl. 209-682.000.

Rhyner, Heinz, to Ateliers des Charmilles S.A. Electrode wire EDM apparatus. 4,239,952, Cl. 219-69.00W.

Richards, Alan C.; and Khan, Riaz A., to Talres Development (N.A.) N.V. Novolak resins containing lactose and/or galactose. 4,239,665, Cl. 260-17.200.

Richardson, Kenneth W., to PPG Industries, Inc. Method for producing boron trichloride. 4,239,738, Cl. 423-292.000.

Richardson-Merrell Inc.: *See—*
Grunwell, Joyce F.; and Petrow, Vladimir, 4,239,681, Cl. 260-239.55R.

Richardson, Norman: *See—*
Marshall, Alan; and Richardson, Norman, 4,239,648, Cl. 252-389.00A.

Richardson, Raymond, to Nolan Systems Inc. Article handling apparatus capable of reversibly loading and unloading articles in predetermined rows. 4,239,432, Cl. 414-110.000.

Richardson, Robert H. Micro-marking label and apparatus. 4,239,261, Cl. 283-21.000.

Richmond, Henry, to American Cyanamid Company. Process for the preparation of diacetone acrylamide. 4,239,885, Cl. 544-97.000.

Richter, Johannes, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Pleat-and-pinch folding apparatus. 4,239,201, Cl. 493-444.000.

Ricoh Company, Ltd.: *See—*
Tatsumi, Susumu; Ikesue, Masumi; Hosaka, Masao; and Kasahara, Nobuo, 4,239,374, Cl. 355-14.00E.

Rider, Harlan H. Sliding door lock. 4,239,268, Cl. 292-5.000.

Ridgway, John W., to Interox Chemicals Limited. Process for the disinfection of water. 4,239,622, Cl. 424-130.000.

Ridley, Richard D., to Occidental Oil Shale, Inc. In situ oil shale retort with intermediate gas control. 4,239,283, Cl. 299-2.000.

Ridley, Richard D.; and Fernandes, Robert J., to Occidental Oil Shale, Inc. Situ retort with high grade fragmented oil shale zone adjacent the lower boundary. 4,239,284, Cl. 299-2.000.

Riedel, Tilo, to Etablissements Francois Salomon & Fils. Binding actuated ski brake. 4,239,254, Cl. 280-605.000.

Rieder, Walter E., to Cincinnati Milacron Inc. Novel diamide and lubricants containing same. 4,239,635, Cl. 252-34.000.

Riegel Textile Corporation: *See—*
Gore, Graves T., 4,239,578, Cl. 156-361.000.

Riehm, Theodor; Auel, Theodor; and Spatz, Wilhelm, to Benckiser-Knapsack GmbH. Xylose and xylitol separately purified in same ion exchanger. 4,239,922, Cl. 568-863.000.

Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, to Mannesmann Aktiengesellschaft. Test head for ultrasonic testing of structural material. 4,238,963, Cl. 73-644.000.

Rieter Machine Works, Ltd.: *See—*
Steck, Arnold; and Wirz, Armin, 4,238,921, Cl. 57-284.000.

Rietsch, Eike: *See—*
Helbig, Klaus; and Rietsch, Eike, 4,240,070, Cl. 340-347.0DA.

Ritchie, Lloyd I. System for producing veneer from deteriorated core logs. 4,239,071, Cl. 144-209.00R.

Ritter, Gerhard: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,239,951, Cl. 219-56.000.

Ritter, Josef: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,239,951, Cl. 219-56.000.

Ritter, Klaus: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,239,951, Cl. 219-56.000.

Ritter, Perry B.: *See—*
Day, Edward A.; Seay, Glenn E.; and Ritter, Perry B., 4,239,004, Cl. 102-28.00R.

Ritzenthaler, Richard L.: *See—*
Arnold, Don C.; Silletti, Julio D.; Ritzenthaler, Richard L.; and Wilcox, Thomas J., 4,239,182, Cl. 251-61.200.

Robbins, John C.; and Kinrade, John D., to Scintrex Limited. Method for uranium determination. 4,239,964, Cl. 250-255.000.

Robe, Thomas J., to RCA Corporation. Bandwidth limited large signal IC amplifier stage. 4,240,042, Cl. 330-302.000.

Robert Bosch GmbH: *See—*
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.
Kofink, Wolfgang, 4,239,978, Cl. 307-16.000.
Konrath, Karl; and Schwarz, Manfred, 4,239,025, Cl. 123-366.000.
Prochnow, Rudolf, 4,240,121, Cl. 360-122.000.

Roberts, Frank, Jr., to United Technologies Corporation. Blade tip shroud for a compression stage of a gas turbine engine. 4,239,452, Cl. 415-172.00A.

Robertshaw Controls Company: *See—*
Brakebill, Harold G., 4,239,181, Cl. 251-61.500.

Roccaforte, Harry I.; and Sherwood, Irvin W., to Champion International Corporation. Glued folder. 4,239,104, Cl. 206-45.330.

Rock, Steven L.; and Clovis, James S., to Rohm and Haas Company. Cumene recovery. 4,239,508, Cl. 55-59.000.

Rocksvold, Alvin N., to Marvin Landplane. Compensating hitch. 4,239,251, Cl. 280-446.00A.

Rockwell International Corporation: *See—*
August, Rudolf R.; Strahan, Virgil H.; James, Kenneth A.; and Nichols, Donald K., 4,239,963, Cl. 250-231.00R.
Hallford, Ben R.; and Lutz, Bruce C., 4,240,052, Cl. 333-202.000.

Rode, Konrad, to WABCO Fahrzeugbremsen GmbH. Circuit for preventing the wheel velocity from exceeding the vehicle velocity in vehicles with antilocking brake systems. 4,239,295, Cl. 303-106.000.

Roderick, Guy A.: *See—*
Lampkin, Curtis M.; Roderick, Guy A.; and Nikodem, Robert B., 4,239,809, Cl. 427-74.000.

Roedel, George F., to General Electric Company. Solventless silicone resins. 4,239,877, Cl. 528-14.000.

Roesch, Alfred: *See—*
Chang, Mike F.; Hartman, David K.; Kennedy, Richard W.; Roesch, Alfred; and Assalit, Henri B., 4,239,560, Cl. 148-189.000.

Roessler, Peter: *See—*
Kramer, Wolfgang; Klauke, Erich; and Roessler, Peter, 4,239,762, Cl. 424-254.000.

Rogers, Dan: *See—*
Emert, Ken; and Rogers, Dan, 4,239,131, Cl. 222-135.000.

Rogic, Milorad M.: *See—*
Masilamani, Divakaran; and Rogic, Milorad M., 4,239,929, Cl. 585-442.000.

Rogov, Viktor F.; Lipatov, Nikolai K.; Patrushev, Gennady V.; Tatevosian, Ruben A.; and Titov, Mikhail Y. Plug for eliminating troublesome zones in wells. 4,239,112, Cl. 206-525.000.

Rohm GmbH: *See—*
Arndt, Peter J.; Lowitz, Joachim; and Wenzel, Franz, 4,239,876, Cl. 526-287.000.
Fink, Herbert; Huebner, Klaus; Dinklage, Horst; and Ottofrickenstein, Hans, 4,239,671, Cl. 260-29.6TA.

Rohm and Haas Company: *See—*
Rock, Steven L.; and Clovis, James S., 4,239,508, Cl. 55-59.000.

Rollform Pty. Ltd.: *See—*
Mutton, John, 4,238,909, Cl. 49-504.000.

Rolligon Corporation: *See—*
Blagg, Leon, 4,239,439, Cl. 414-494.000.

Rolls, James A.; and Brenis, Kenneth L., to Diamond Shamrock Corporation. High bulk density rigid poly(vinyl chloride) resin powder composition and preparation thereof. 4,239,679, Cl. 260-42.490.

Ronald, Robert C.: *See—*
Gurusiddaiah, Sarangamat; Ronald, Robert C.; Magnuson, James A.; and McFadden, Bruce A., 4,239,690, Cl. 260-340.200.

Ronning, Asbjorn, to Steni A/S. Method for continuous production of corrugated sheets. 4,239,719, Cl. 264-137.000.

Roper, Ralph E., to General Tire & Rubber Company, The. Process and apparatus for making metal outers and inners. 4,238,949, Cl. 72-358.000.

Rorer, David L., to Teledyne Industries, Inc. Aircraft battery. 4,239,841, Cl. 429-179.000.

Rose, Charles F.: *See—*
Eubanks, Jerry D.; and Rose, Charles F., 4,239,093, Cl. 190-41.00R.

Rose, Edwin J., to Elite Engineering Limited. Crimping and cutting tool. 4,238,948, Cl. 72-332.000.

Rosenstein, David. Printing coder. 4,239,002, Cl. 101-377.000.

Rosenthal, Saul: *See—*
Kelly, David; Vidal, Michael; and Rosenthal, Saul, 4,239,490, Cl. 8-499.000.

Rossetti, Pierre C., to Le Silicium Semiconducteur SSC. Grooving and glassivating method for semiconductor wafers. 4,240,095, Cl. 357-49.000.

Rossy, Phillip; and Hoffmann, Werner, to BASF Aktiengesellschaft. Thiophene compounds and their manufacture. 4,239,897, Cl. 549-61.000.

Roth, Eldon N. Method for making jerky. 4,239,785, Cl. 426-266.000.

Roth, Mario: *See—*
Linberg, Waldemar; Roth, Mario; and Siemonsen, Hans-Peter, 4,239,274, Cl. 294-114.000.

Rothe, Dietmar E., to Northrop Corporation. Transverse-longitudinal sequential discharge excitation of high-pressure laser. 4,240,043, Cl. 331-94.5PE.

Rottmann, George: *See—*
Barouh, Victor; Rottmann, George; and DeSimone, Salvatore, 4,239,832, Cl. 428-539.000.

Rowton, Richard L., to Texaco Development Corp. Method for preparing high-resilient flexible urethane foams. 4,239,856, Cl. 521-118.000.

Rubel, Herbert J.: *See—*
Curtis, George C.; McInturff, Joe A.; Rubel, Herbert J.; and Wall, William F., 4,238,960, Cl. 73-462.000.

Rubey, Ulyss R., to Detectors, Inc. Suspended droplet shock detector. 4,239,014, Cl. 116-203.000.

Rubin, Lawrence M., to Hughes Aircraft Company. Homomorphic automatic gain control. 4,240,037, Cl. 330-127.000.

Rucker, Dugan A.: *See—*
Wollermann, Louis A.; Rucker, Dugan A.; and Krum, Jack K., 4,239,783, Cl. 426-25.000.

Ruggero, Joseph: *See—*
Ruggero, Salvatore; and Ruggero, Joseph, 4,238,867, Cl. 15-88.000.

Ruggero, Salvatore; and Ruggero, Joseph. Tube abrading tool. 4,238,867, Cl. 15-88.000.

Rule, Allyn H. Method of preparing thymic factors and composition. 4,239,498, Cl. 424-88.000.

Ruscelli, Emilio: *See—*
Borca, Bruno; and Ruscelli, Emilio, 4,239,416, Cl. 405-53.000.

Rusch, Reinhart: *See—*
Nusslein, Ludwig; Arndt, Friedrich; and Rusch, Reinhart, 4,239,524, Cl. 71-90.000.

Russell, Barry A.: *See—*
Monroe, Gary S.; Contreras, Robert L.; and Hummel, Gregory C., 4,238,876, Cl. 29-401.100.

Russell, Stephen E.; Story, Phillip M.; and Letcher, C. S., to Petrolite Corporation. Hydrocarbon polymers to improve the hardness of waxes. 4,239,546, Cl. 106-270.000.

Rybczynski, Jerzy: *See—*
Bartos, Dezso I.; and Rybczynski, Jerzy, 4,239,746, Cl. 424-12.000.

Ryden, Wayne R.: *See—*
Griffin, James E.; and Ryden, Wayne R., 4,239,018, Cl. 119-1.000.

Rysewyk, Ambrose L., to Western Electric Company, Incorporated. Mobile hoist. 4,239,443, Cl. 414-618.000.

Saarbergwerke Aktiengesellschaft: *See—*
Junkers, Gerd, 4,239,514, Cl. 55-145.000.

Saari, Veikko R., to Bell Telephone Laboratories, Incorporated. Operational amplifier. 4,240,040, Cl. 330-255.000.

Sache, Edgar; and Bertrand, Henri, to Choay, S.A. Liposomes containing heparin and a process for obtaining them. 4,239,754, Cl. 424-183.000.

Sachs, Peter R., to GAF Corporation. Non-skid floor tile. 4,239,797, Cl. 428-327.000.

Sachse, Burkhard: *See—*
Heubach, Gunther; Sachse, Burkhard; and Burstell, Helmut, 4,239,525, Cl. 71-92.000.

Sade, Moshe E.: *See—*
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,239,144, Cl. 228-1.00R.

Saenger, Dietrich: *See—*
Barzynski, Helmut; and Saenger, Dietrich, 4,239,609, Cl. 204-159.230.

Saint Gobain Industries: *See—*
Linberg, Waldemar; Roth, Mario; and Siemonsen, Hans-Peter, 4,239,274, Cl. 294-114.000.

St. Pierre, Richard E.: *See—*
Swander, Robert E.; and St. Pierre, Richard E., 4,239,974, Cl. 290-1.00R.

Sakaguchi, Shokichi: *See—*
Kiyokawa, Shin; and Sakaguchi, Shokichi, 4,239,020, Cl. 119-16.000.

Sakamoto, Masakatsu; Uchida, Kenji; Honma, Isao; and Kamino, Yukishige, to Hitachi, Ltd. Apparatus for hydraulically transporting particulate solid material. 4,239,423, Cl. 406-47.000.

Sakata, Katsuyuki: *See—*
Kimura, Tsuneo; Kohyama, Katsuhisa; Okada, Takehiro; and Sakata, Katsuyuki, 4,239,882, Cl. 528-209.000.

Sakata, Minehiro: *See—*
Igarashi, Yousuke; Sakata, Minehiro; Kudo, Shuichi; Yokoyama, Yasuyuki; and Kai, Masanori, 4,239,371, Cl. 355-14.0CH.

Sakatani, Takenobu: *See—*
Okumura, Osamu; Sakatani, Takenobu; Kashiwada, Toshinobu; and Tokuyama, Kiyotaka, 4,239,662, Cl. 252-555.000.

Sakoe, Hiroaki, to Nippon Electric Co., Ltd. Speech recognition system. 4,239,936, Cl. 179-1.0SD.

Salazar, Rafael D. Concrete construction system. 4,239,176, Cl. 249-97.000.

Salemi, Nicholas A.: *See—*
Nelson, Hugh A.; Wafer, John A.; Koren, Paul P.; Salemi, Nicholas A.; and Maier, Alfred E., 4,240,053, Cl. 335-16.000.

Salvador, Silvano E. Method for creating a simulated stone surface or the like. 4,239,820, Cl. 427-272.000.

Salvatori, Tito: *See—*
Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, 4,239,692, Cl. 260-448.00R.

Salzburg, Wolfgang: *See—*
Krause, Dieter; Topfer, Dieter; and Salzburg, Wolfgang, 4,239,368, Cl. 354-325.000.

Sammarco, Peter: *See—*
Kesl, Elmer M.; Quade, Henry H.; and Sammarco, Peter, 4,238,916, Cl. 56-106.000.

Samsonite Corporation: *See—*
Eubanks, Jerry D.; and Rose, Charles F., 4,239,093, Cl. 190-41.00R.

Samus, Anatoly N.: *See—*
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N., 4,240,086, Cl. 357-4.000.

Sandell, Bertil; and Liljegren, Gote. Method for manufacturing shotcrete structures using a material having high impact resistance and optimum deformation properties. 4,239,397, Cl. 366-3.000.

Sandhu, Mohammad A., to Eastman Kodak Company. Color filter arrays, color imaging devices and methods of making same. 4,239,842, Cl. 430-7.000.

Sandoz Ltd.: *See—*
Milavec, Maria; and Wagner, Heribert, 4,239,763, Cl. 424-261.000.

Sandquist, Kurt E.: *See—*
Fahlvik, Hans A.; and Sandquist, Kurt E., 4,239,730, Cl. 422-109.000.

Saneyoshi, Mineo: *See—*
Kodama, Kenjiro; and Morozumi, Manami, 4,239,905, Cl. 536-29.000.

Santangelo, Joseph G.: *See—*
Elton, Edward F.; Patrylak, Andrew J.; and Santangelo, Joseph G., 4,239,589, Cl. 162-31.000.

Santi, Roberto: *See—*
Campolmi, Stefano; Felicioli, Maria G.; Carletti, Vittorio; and Santi, Roberto, 4,239,914, Cl. 562-466.000.

Sanvito, Enrico, to ICAR Industria Condensatori Applicazioni Elettroelettroniche S.p.A. Electric capacitor constructed to prevent explosion. 4,240,126, Cl. 361-274.000.

Sapper, Ekkehard: *See—*
Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,239,657, Cl. 252-464.000.

Sarrafian, Shahan K.; and Sarrafian, Vahram K. Foot-ankle surgical table. 4,239,200, Cl. 269-328.000.

Sarrafian, Vahram K.: *See—*
Sarrafian, Shahan K.; and Sarrafian, Vahram K., 4,239,200, Cl. 269-328.000.

Saruhashi, Kazuo; and Ogano, Takeo, to Honda Giken Kogyo Kabushiki Kaisha. Device for fixing a grass collecting bag onto a rotary type lawn mowing machine. 4,238,918, Cl. 56-202.000.

Sasse, Klaus; Gauss, Walter; Frohberger, Paul-Ernst; Kraus, Peter; and Paul, Volker, to Bayer Aktiengesellschaft. Combating fungi and bacteria with 3-azolyl-benzo-1,2,4-triazines and 1-oxides thereof. 4,239,760, Cl. 424-249.000.

Sato, Kazue: *See—*
Atoji, Nobuhisa; Kusomoto, Shoichi; and Sato, Kazue, 4,239,945, Cl. 179-182.00R.

Sato, Motoki, to Aisan Industry Co., Ltd. Device for checking random adjustment of adjustable parts of carburetor. 4,239,710, Cl. 261-65.000.

Sato, Shigeru: *See—*
Kita, Nobuyuki; Uchida, Toshio; Ikeda, Sadaharu; and Sato, Shigeru, 4,239,850, Cl. 430-281.000.

Sato, Tadao, to Otsuka Pharmaceutical Co., Ltd. Process for preparing optically active oxazaphosphorins. 4,239,709, Cl. 260-974.000.

Sato, Yuichi, to Olympus Optical Co., Ltd. Electronically controlled self-timer for camera. 4,239,363, Cl. 354-238.000.

Satoh, Daisuke: *See—*
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.

Satoh, Ken; and Furuta, Kenzi, to Olympus Optical Co., Ltd. Display apparatus for tape running positions. 4,239,957, Cl. 235-92.0DN.

Satomoto, Atsushi: *See—*
Inada, Masami; Hashimoto, Nobuyuki; and Satomoto, Atsushi, 4,239,154, Cl. 236-87.000.
Kitamura, Kazuhiko; and Satomoto, Atsushi, 4,239,152, Cl. 236-48.00R.

Sauber, Charles A., to Phillips Petroleum Company. Carboxymethylhydroxyethyl cellulose in drilling, workover and completion fluids. 4,239,629, Cl. 252-8.50C.

Savitt, Jacob, to United States of America, Navy. Method for transmitting detonation at a sharp angle. 4,239,003, Cl. 102-27.00R.

Sawyer, Robert D. Concrete construction form and tie rod. 4,239,173, Cl. 249-41.000.

Scarato, Armand: *See—*
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, 4,239,180, Cl. 251-51.000.

Schacht, Erich: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, 4,239,759, Cl. 424-248.400.

Schadowski, Werner; and Bellut, Heinrich, to PKL Papier- und Kunststoff Werke. Folding cartons for liquids. 4,239,150, Cl. 229-48.00R.

Schaefer, Edwin M., III, to Bell Telephone Laboratories, Incorporated. Regulated cycloconverter circuit. 4,240,135, Cl. 363-43.000.

Schafer, David E.: *See—*
D'Amico, John J.; and Schafer, David E., 4,239,527, Cl. 71-94.000.

Scharff, Dieter: *See—*
Haage, Karl; and Scharff, Dieter, 4,239,795, Cl. 428-247.000.

Scharlack, Ronald S.; and Tornstrom, Eric, to Mobil Tyco Solar Energy Corporation. Encapsulated solar cell array. 4,239,555, Cl. 136-251.000.

Scheffer, Terry J. Arrangement for a polychrome display. 4,239,349, Cl. 350-347.00R.

Scheffler, Gerhard: *See—*
Rebling, Rolf; Scheffler, Gerhard; Pressler, Klaus; and Schenk, Klaus D., 4,239,761, Cl. 424-250.000.

Schekin, Nikolai N.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Schenk, Klaus D.: *See—*
Rebling, Rolf; Scheffler, Gerhard; Pressler, Klaus; and Schenk, Klaus D., 4,239,761, Cl. 424-250.000.

Scherer, James R., to United States of America, Agriculture. Method of obtaining high resolution light scattering spectra. 4,239,390, Cl. 356-307.000.

Scherff, Helmut, to Mannesmann Demag A.G. Handling apparatus for probe tubes to be attached to temperature gage and/or sampling lances in the metallurgical field. 4,239,189, Cl. 266-79.000.

Schering Aktiengesellschaft: *See—*
Nusslein, Ludwig; Arndt, Friedrich; and Rusch, Reinhart, 4,239,524, Cl. 71-90.000.
Pfeiffer, Heinrich; and Speck, Ulrich, 4,239,747, Cl. 424-5.000.

Schlein, Allen P. Surgical knife. 4,239,045, Cl. 128-305.000.

Schlesinger Brothers, Inc.: *See—*
Kahn, Ralph J., 4,239,074, Cl. 150-1.600.

Schlickmann, Helmut: *See—*
Enke, Peter; Schlickmann, Helmut; Kneuper, Wolfgang; Frohberg, Ekkehard; Mink, Arno; and Weidenmuller, Jurgen, 4,239,110, Cl. 206-396.000.

Schlueter, Harald: *See—*
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.

Schmelzer, Michael, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Power shovel. 4,239,444, Cl. 414-685.000.

Schmer, Gottfried: *See—*
Teng, Lin-Nar; and Schmer, Gottfried, 4,239,664, Cl. 260-17.40R.

Schmidt, Keith G.: *See—*
Kolb, William P., Jr.; and Schmidt, Keith G., 4,240,046, Cl. 331-94.50D.

Schmidt, Manfred: *See—*
Biermann, Peter; Feucht, Rudi; Schmidt, Manfred; and Storandt, Ralf, 4,239,257, Cl. 280-615.000.

Schmitz, Heinrich: *See—*
Koenitzer, Joachim; Schmitz, Heinrich; and Jindra, Kurt, 4,239,817, Cl. 427-211.000.

Schmucker, Arden E.: *See—*
Fabris, Hubert J.; Herold, Robert J.; and Schmucker, Arden E., 4,239,879, Cl. 528-76.000.

Schnabel, Eugen, to Bayer Aktiengesellschaft. N-Carboxyacylaminoacid esters, processes for their production and their diagnostic use. 4,239,902, Cl. 560-41.000.

Schneider, Fritz W., to Martin Sweets Company, Inc., The. High velocity mixing system. 4,239,732, Cl. 422-133.000.

Schneider, Louis; and Graham, David E., to GAF Corporation. Herbicidal N-(haloacetyl)-N-(N'-methylenepyrrolidonyl-2-mercaptoalkylanilines. 4,239,688, Cl. 260-326.430.

Schnurle, Hans: *See—*
Drews, Ulrich; Horbelt, Michael; Schnurle, Hans; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,239,022, Cl. 123-491.000.

Scholl, Frederick W.: *See—*
Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., 4,240,098, Cl. 357-74.000.

Schonfeld, Steven E.: *See—*
Ravagnani, Frederick J.; and Schonfeld, Steven E., 4,239,663, Cl. 260-5.000.

Schonmeier, Herbert; and Dropczynski, Hartmut, to Jagenberg Werke Aktiengesellschaft. Broad-drawing apparatus. 4,239,142, Cl. 226-194.000.

Schrader, Paul D., to General Electric Company. High pressure charge storage system. 4,238,932, Cl. 62-197.000.

Schrenker, Helge, to Hewlett-Packard Company. Apparatus for producing gradient elution in a liquid chromatographic system. 4,239,623, Cl. 210-96.100.

Schreyer, Gerd; Geiger, Friedhelm; and Hensel, Jorg. Process for the production of alkyl sulfonic acids. 4,239,696, Cl. 260-513.00R.

Schroder, Rolf; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Plant growth regulating compositions and methods using alpha-isocyanocarboxylic acid compounds. 4,239,528, Cl. 71-105.000.

Schroeter, Siegfried H.; and Olson, Daniel R., to General Electric Company. Abrasion resistant silicone coated polycarbonate article. 4,239,798, Cl. 428-331.000.

Schubert, Keith E.: *See—*
Check, Frank T.; and Schubert, Keith E., 4,239,088, Cl. 177-210.0FP.

Schultz, Diane M. Needlepoint embroidering method. 4,239,011, Cl. 112-266.100.

Schulz, Johann G., to Gulf Research & Development Company. Deashed coal from nitric acid oxidation of aqueous coal slurry. 4,239,613, Cl. 208-8.0LE.

Schulz, Toni: *See—*
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

Schuster, Rolf, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Vacuum oven with gas cooling device. 4,239,484, Cl. 432-77.000.

Schwarting, Karl-Heinz: *See—*
Goris, Heinrich; Gunther, Roland; Ogorek, Kurt; and Schwarting, Karl-Heinz, 4,239,290, Cl. 299-34.000.

Schwartz, Lawrence, to International Telephone and Telegraph Corporation. Electrical connector shield. 4,239,318, Cl. 339-143.00R.

Schwarz, Manfred: *See—*
Konrath, Karl; and Schwarz, Manfred, 4,239,025, Cl. 123-366.000.

Schwarz, Richard A.: *See—*
Hergenrother, William L.; Schwarz, Richard A.; Ambrose, Richard J.; and Hayes, Robert A., 4,239,860, Cl. 525-131.000.

Schwarz, William M., Jr., to Xerox Corporation. Development system. 4,239,017, Cl. 118-656.000.

Schwarze, Rigobert: *See—*
Busse, Fritz; Busch, Hans-Walter; and Michelatsch, Peter, 4,238,945, Cl. 72-150.000.

Schweizer, Eduard H. Storage and demonstration device particularly for card-type display objects. 4,239,307, Cl. 312-183.000.

Scintrex Limited: *See—*
Robbins, John C.; and Kinrade, John D., 4,239,964, Cl. 250-255.000.

SCM Corporation: *See—*
Gilmore, Cecilia; and Miller, Donald E., 4,239,786, Cl. 426-601.000.

Scope Data Incorporated: *See—*
DeFilipps, Fred A.; Lipper, Roy O.; Winters, Luther R., Jr.; Nordstrom, Larry A.; and Szechy, Daniel J., 4,239,404, Cl. 400-613.000.

Scott, Charles M.; and Feast, Alan A. J., to I.S.R. Holding SARL. Aqueous emulsion polymerization of vinyl monomers using mixtures of emulsifiers. 4,239,669, Cl. 260-29.60R.

Sea-Log Corporation: *See—*
Stiles, Kenneth M., 4,239,335, Cl. 350-96.230.

Seats, Peter; and Marcy, Henry O., to Thomas Electronics, Inc. Cathode ray tube display system with display location memory. 4,240,073, Cl. 340-703.000.

Seay, Glenn E.: *See—*
Day, Edward A.; Seay, Glenn E.; and Ritter, Perry B., 4,239,004, Cl. 102-28.00R.

Sedlacek, Hans H.; and Seiler, Friedrich R., to Behringwerke Aktiengesellschaft. Carrier-bound immunoglobulin fission product and its use in immunologic analyses. 4,239,743, Cl. 424-1.000.

Seiko Seiki Kabushiki Kaisha: *See—*
Ozawa, Fumihiro, 4,239,445, Cl. 414-749.000.

Seiler, Friedrich R.: *See—*
Sedlacek, Hans H.; and Seiler, Friedrich R., 4,239,743, Cl. 424-1.000.

Sekine, Mitsuo, to Citizen Watch Co., Ltd. Electronic digital stop watch. 4,240,154, Cl. 368-72.000.

Sekiya, Fukuo: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,240,150, Cl. 364-705.000.

Selas Corporation of America: *See—*
Morck, Charles W., Jr., 4,239,481, Cl. 431-284.000.

Semenov, Vasily K.: *See—*
Kandyba, Petr E.; Kolesnikov, Dmitry P.; Komarovskikh, Nina I.; Lavrischev, Vadim P.; Lapir, Gennady M.; Makhov, Vladimir I.; Semenov, Vasily K.; and Samus, Anatoly N., 4,240,086, Cl. 357-4.000.

Semicon, Inc.: *See—*
Myers, William C., 4,240,088, Cl. 357-19.000.

Sempler, Vance A. Encapsulated denture adhesive and method of use. 4,239,488, Cl. 433-180.000.

Senyek, Michael L.: *See—*
Ofstead, Eilert A.; and Senyek, Michael L., 4,239,874, Cl. 526-143.000.

Sergeant, Ronald G.: *See—*
Chandler, William B.; Davis, John D.; and Sergeant, Ronald G., 4,238,874, Cl. 29-33.00M.

Serini, Volker: *See—*
Braese, Hans-Eberhard; Fischer, Winfried; Hardt, Dietrich; Prinz, Richard; and Serini, Volker, 4,239,861, Cl. 525-151.000.

Serlin, Irving, to Monsanto Company. Coating compositions comprising polymer blends. 4,239,858, Cl. 525-57.000.

Serlin, Irving: *See—*
Wilkinson, Walter J.; and Serlin, Irving, 4,239,676, Cl. 260-39.00P.

Serrano, Ernest E.: *See—*
Griggs, William L., III; Serrano, Ernest E.; Page, Dan; and Reul, Charles G., 4,239,047, Cl. 128-663.000.

Severus-Laubenfeld, Harald, to Swiss Aluminium Ltd. Device for the production of anodized material. 4,239,610, Cl. 204-211.000.

Seybold, Guenther; and Eilingsfeld, Heinz, to BASF Aktiengesellschaft. Thiazole derivatives. 4,239,894, Cl. 548-194.000.

Seyler, Jay K.: *See—*
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., 4,239,680, Cl. 260-112.50T.

Shanoski, Henry; and Griffith, Richard M., to General Tire & Rubber Company, The. In-mold coating of structural foams and resultant product. 4,239,796, Cl. 428-315.000.

Sharp, Keith W.; and Sparlin, Derry D., to Baker International Corporation. Acid soluble coating for well screens. 4,239,084, Cl. 166-278.000.

Sharp, Shelby P.: *See—*
Atkinson, Fred T.; Sharp, Shelby P.; and Sudduth, Lamar F., 4,239,630, Cl. 252-8.55B.

Shaver, David M.: *See—*
Gauthier, John A.; Shaver, David M.; and Ramsay, John R., 4,239,941, Cl. 179-84.00R.

Shell Oil Company: *See—*
Collins, Charles G., 4,239,140, Cl. 225-4.000.
deJong, Aaldert J.; and Heijmen, Hendricus J., 4,239,923, Cl. 568-875.000.
Miller, Charles R., 4,239,859, Cl. 525-98.000.
Mulder, Albertus J.; and Verbrugge, Pieter A., 4,239,707, Cl. 570-130.000.
Slaugh, Lynn H., 4,239,872, Cl. 526-105.000.
ten Haken, Pieter; and Webb, Shirley B., 4,239,889, Cl. 544-335.000.

Shenk, Edwin K., to Polaroid Corporation. Autofocus movie camera having improved focus response. 4,239,354, Cl. 352-140.000.

Sheridan, Richard C.; and McCullough, John F., to Tennessee Valley Authority. Manufacture of purified diammonium phosphate. 4,239,739, Cl. 423-308.000.

Sherman, Michael I., to Kamyr, Inc. Thick stock pump having flexible blades. 4,239,470, Cl. 418-153.000.

Sherwood, Irvin W.: *See—*
Roccaforte, Harry I.; and Sherwood, Irvin W., 4,239,104, Cl. 206-45.330.

Sherwood Medical Industries Inc.: *See—*
Gindler, E. Melvin; and Miller, Nadine, 4,239,495, Cl. 23-230.00B.
Gindler, E. Melvin; and Mezei, Louis M., 4,239,649, Cl. 252-408.000.

Shimano Industrial Company, Limited: *See—*
Hotta, Masashi, 4,238,934, Cl. 62-457.000.

Shimazaki, Yuzo: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,239,661, Cl. 252-541.000.

Shimizu, Ikuo: *See—*
Komatsubara, Michimasa; and Shimizu, Ikuo, 4,238,893, Cl. 434-351.000.

Shimizu, Keizo: *See—*
Fushimi, Kiyoshi; and Shimizu, Keizo, 4,240,114, Cl. 358-193.100.

Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, to Canon Kabushiki Kaisha. Release type electromagnetic device for camera. 4,240,055, Cl. 335-234.000.

Shimizu, Yoshiteru: *See—*
Yatsuo, Tsutomu; Watanabe, Atsuo; and Shimizu, Yoshiteru, 4,240,091, Cl. 357-38.000.

Shinohara, Koichi: *See—*
Iijima, Yasuo; Shinohara, Koichi; Fujita, Takashi; Odagiri, Masaru; and Kunieda, Toshiaki, 4,239,835, Cl. 428-611.000.

Shinsenji, Masatake: *See—*
Yanagioka, Hiroshi; Futami, Atsushi; Shinsenji, Masatake; and Tanaka, Minoru, 4,239,515, Cl. 55-223.000.

Shipchandler, Mohammed T., to International Minerals & Chemical Corp. Allyl and propyl zearalenone derivatives and their use as growth promoting agents. 4,239,772, Cl. 424-279.000.

Shiraishi, Mitsuru: *See—*
Numata, Mitsuo; Yamaoka, Masayoshi; Minamida, Isao; Shiraishi, Mitsuru; and Nishimura, Tatsuo, 4,239,758, Cl. 424-246.000.

Shook, Roy: *See—*
Gates, William H., 4,239,158, Cl. 239-567.000.

Shope, Thomas, to CP Test Services-Valvco, Inc. Valve service box having means for securing different sized valves against rotation. 4,239,056, Cl. 137-370.000.

Shoptaugh, Philip L. Peg board game. 4,239,230, Cl. 273-264.000.

Shtarkman, Boris P.: *See—*
Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S., 4,239,875, Cl. 526-214.000.

Siddall, Mark B., to Teledyne Industries, Inc. Sponge ring feed for iodide crystal bar cells. 4,239,531, Cl. 75-84.400.

Siebrecht-Reuter, Gerd, to Hilti Aktiengesellschaft. Expansion dowel for spaced mounting of parts on a support structure. 4,238,987, Cl. 85-83.000.

Siegenthaler, Andreas, to BBC Brown, Boveri & Company Limited. Device for measuring the potential of an alternating current carrying inner conductor of an encased high-voltage switching mechanism. 4,240,031, Cl. 324-126.000.

Siemens Aktiengesellschaft: *See—*
Brajder, Antonio, 4,239,989, Cl. 307-255.000.
Golser, Hans, 4,240,045, Cl. 331-94.50D.
Guenther, Gerd J., 4,239,933, Cl. 178-17.500.
Krause, Gerhard; and Spaeth, Werner, 4,240,087, Cl. 357-19.000.
Reitner, Wilhelm, 4,239,398, Cl. 400-124.000.
Tauber, Reinhard, 4,240,035, Cl. 329-50.000.
Thoma, Ferdinand, 4,240,148, Cl. 364-478.000.

Siemer, Sidney R., to W. R. Grace & Co. Substituted ureas as sugarcane ripeners. 4,239,526, Cl. 71-92.000.

Siemonsen, Hans-Peter: *See—*
Linberg, Waldemar; Roth, Mario; and Siemonsen, Hans-Peter, 4,239,274, Cl. 294-114.000.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See—*
deWitt, Paolo; and Tinti, Maria O., 4,239,702, Cl. 568-435.000.

Silberman, Raphael J.; Tilton, Frederick T.; and Smith, Everett H., to Baker International Corporation. Method and apparatus for rotating tubing conduits. 4,239,083, Cl. 166-117.700.

Silletti, Julio D.: *See—*
Arnold, Don C.; Silletti, Julio D.; Ritzenthaler, Richard L.; and Wilcox, Thomas J., 4,239,182, Cl. 251-61.200.

Silver Seiko, Ltd.: *See—*
Nakaoka, Mitsuo, 4,238,937, Cl. 66-60.00H.

Simane, Zdenek: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; Orth, Dieter; Wild, Albrecht; and Simane, Zdenek, 4,239,759, Cl. 424-248.400.

Simko, Aladar O., to Ford Motor Company. Fuel injection system for dual combustion chamber engine. 4,239,023, Cl. 123-275.000.

Simmons, Bjorn, to Aktiebolaget Bofors. Device for an electric igniter. 4,239,005, Cl. 102-28.00R.

Simmons, Joseph. Sand deflector for automatic molding machine. 4,239,079, Cl. 164-200.000.

Simoneit, Gunter: *See—*
Ries, Karl; Lather, Dieter; Kaiser, Dieter; Hannoschock, Kurt; and Simoneit, Gunter, 4,238,963, Cl. 73-644.000.

Simpkins, Ligaya M.: *See—*
Vogt, B. Richard; and Simpkins, Ligaya M., 4,239,896, Cl. 548-378.000.

Simpson, James E.: *See—*
Allersma, Ties; and Simpson, James E., 4,239,532, Cl. 75-93.00R.

Sinclair, Arthur C.: *See—*
Carney, Ronald E.; Devault, Robert L.; McAlpine, James B.; and Sinclair, Arthur C., 4,239,752, Cl. 424-180.000.

Skachkov, Jury V.: *See—*
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Skalski, Andrzej: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Skendrovic, Lawrence, to William M. Bailey Company. Industrial metallurgical delining assembly. 4,239,291, Cl. 299-70.000.

SKF Industrial Trading & Development Company B.V.: *See—*
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.

SKF Industries, Inc.: *See—*
Baile, George H., 4,239,632, Cl. 252-12.000.

SKF Kugellagerfabriken GmbH: *See—*
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Skil Corporation: *See—*
Kilinskis, David C.; and Vassos, Louis J., 4,240,022, Cl. 320-23.000.

Skilliter, Robert T., Jr., to ACME Specialty Manufacturing Co., The. Vehicle sun visor. 4,239,278, Cl. 296-97.00F.

Skinner, David H.; and Brown, Jeffrey H., to Broken Hill Proprietary Company Limited, The. Pad for railway rail fastenings. 4,239,156, Cl. 238-277.000.

Skolnick, Phil: *See—*
Paul, Steven M.; and Skolnick, Phil, 4,239,744, Cl. 424-1.000.

Skowronski, Boleslaw: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Skulnick, Harvey I.; and Renis, Harold E., to Upjohn Company, The. Composition of matter and process. 4,239,753, Cl. 424-181.000.

Slack, Glen A.; and Knapp, Warren S., to General Electric Company. Diamond and cubic boron nitride grinding wheels with improved silver alloy bonds. 4,239,502, Cl. 51-295.000.

Slakhorst, Justinus W. H. G.: *See—*
Van Alphen, Leendert G.; Slakhorst, Justinus W. H. G.; and Vogel, Pieter M., 4,240,128, Cl. 361-433.000.

Slatten, Arvid; Bech, Harald; and Olsen, Olav, to A/S Hoyer-Ellefsen, Ing. T. Furuholmen A/S; and Ing. F. Selmer A/S. Multi-purpose marine structure. 4,239,417, Cl. 405-195.000.

Slaugh, Lynn H., to Shell Oil Company. Olefine polymerization with supported catalysts. 4,239,872, Cl. 526-105.000.

Slim, David H.: *See—*
Gorbold, Jonathan M.; and Slim, David H., 4,240,100, Cl. 358-10.000.

Sloan, Kenneth B.: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,239,757, Cl. 424-241.000.

Smilgys, Bruno S.; and Smilgys, David B. Power tool safety clutch. 4,239,096, Cl. 192-103.00C.

Smilgys, David B.: *See—*
Smilgys, Bruno S.; and Smilgys, David B., 4,239,096, Cl. 192-103.00C.

Smith, Brian W., to Rexroth Corporation, The. Apparatus for controlling pressure distribution in gear pump. 4,239,468, Cl. 418-78.000.

Smith, Everett H.: *See—*
Silberman, Raphael J.; Tilton, Frederick T.; and Smith, Everett H., 4,239,083, Cl. 166-117.700.

Smith, Jack E.: *See—*
Foster, Michael R.; and Smith, Jack E., 4,239,733, Cl. 422-179.000.

Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Anaerobic resin curing system. 4,239,802, Cl. 428-377.000.

Smith, John E., to McGraw-Edison Company. Protective device. 4,240,122, Cl. 361-41.000.

Smith, Judson L. Brush arrangement and sequencing for turntable car wash. 4,239,551, Cl. 134-6.000.

Smith, Richard L., to Phillips Petroleum Company. Process for countering effects of fast poisons in continuous olefin polymerization. 4,239,870, Cl. 526-59.000.

Smith, Ross K.: *See—*
Bateman, Jess R.; Carpenter, Robert L.; and Smith, Ross K., 4,240,030, Cl. 324-110.000.

Smith, T. Basil; Howatt, John R.; and McKenna, John F., Jr., to Charles Stark Draper Laboratory, Inc., The. Fault-tolerant clock system. 4,239,982, Cl. 307-219.000.

Smiths Industries Limited: *See—*
Gibson, Harry; and Maycock, Peter F., 4,240,074, Cl. 340-753.000.

Snamprogetti: *See—*
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzone, Mario, 4,239,873, Cl. 526-114.000.

Sniezek, Joseph T.; Chase, Paul W.; and Miller, Wendell D., to Ramsey Engineering Company. Radiation attenuation weighing system for a vertical material feeder. 4,238,956, Cl. 73-861.010.

Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
Le Chatelier, Jacques, 4,238,920, Cl. 57-124.000.

Societe Chauvin Arnoux: *See—*
Forme, Jacques, 4,240,067, Cl. 340-870.370.

Societe d'Applications Generales d'Electricite et de Mecanique Sagem: *See—*
Barriac, Jacques, 4,238,889, Cl. 33-304.000.

Societe d'Etudes, Recherches et Constructions Electroniques SERCEL: *See—*
Hullein, Francois M. L.; and Cadet, Jean-Claude A. M., 4,240,069, Cl. 340-347.00P.

Societe Herve & Fils S.A.: *See—*
Denay, Andre M. J., 4,239,114, Cl. 206-610.000.

Societe Internationale de Mecanique Industrielle S.A.: *See—*
Menager, Jean, 4,239,241, Cl. 277-87.000.

Societe Nationale des Poudres et Explosifs: *See—*
Fontaine, Pierre, 4,238,988, Cl. 86-1.00R.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Bouru, Michel A., 4,239,451, Cl. 415-170.00R.
Joubert, Raymond J. M.; and Bouiller, Jean G., 4,238,927, Cl. 60-39.51H.

Societe Siderurgique Chatillon Neuves Maisons: *See—*
Eysn, Manfred; and Meyer, Daniel, 4,239,193, Cl. 266-243.000.

Socsil S.A.: *See—*
Golz, Roland, 4,239,460, Cl. 417-251.000.

Soffa, Albert: *See—*
Elles, Richard J.; Kulicke, Frederick W., Jr.; Sade, Moshe E.; and Soffa, Albert, 4,239,144, Cl. 228-1.00R.

Solar Thermal Consultants Pty. Limited: *See—*
MacDonald, Robert W. G., 4,238,912, Cl. 52-173.00R.

Solbern Corp.: *See—*
Eisenberg, Bernard C.; and Walz, John C., 4,239,116, Cl. 209-523.000.

Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Bocharov, Vasily I.; and Kuprianov, Jury V., 4,239,997, Cl. 310-13.000.

Solomon, Harvey D.: *See—*
Cline, Harvey E.; Anthony, Thomas R.; and Solomon, Harvey D., 4,239,556, Cl. 148-38.000.

Somberg, Hans F. Mold for producing moldings from a plastic compound. 4,239,476, Cl. 425-556.000.

Sommer, Ruediger: *See—*
Wellendorf, Klaus; and Sommer, Ruediger, 4,240,117, Cl. 358-296.000.
Wellendorf, Klaus; and Sommer, Ruediger, 4,240,118, Cl. 358-296.000.

Sonntag, Alois: *See—*
Brandt, Jurgen; Herold, Ludwig; Pikorz, Wolfgang; and Sonntag, Alois, 4,240,099, Cl. 357-79.000.

Sonoda, Tomiya; and Washida, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing an input screen for an image intensifier. 4,239,791, Cl. 427-64.000.

Sony Corporation: *See—*
Komatsubara, Michimasa; and Shimizu, Ikuo, 4,238,893, Cl. 434-351.000.
Kurokawa, Hiromichi; Nakamura, Yasuo; Gando, Masayoshi; Okada, Haruhiko; Yamazaki, Masaru; and Yamanaka, Hideo, 4,240,006, Cl. 313-386.000.
Nakazawa, Hiroshi; and Baba, Yasuharu, 4,240,134, Cl. 363-21.000.

Sorenson, John F.; and Locke, Frank W., to Champion International Corporation. Storage box. 4,239,148, Cl. 229-36.000.

Southwire Company: *See—*
Berry, Milton E.; and Pariani, Ronald L., 4,239,191, Cl. 266-200.000.

Spada, Vittorio. Method for manufacturing phosphatic fertilizers having a high concentration, particularly calcium metaphosphate $Ca(PO_3)_2$. 4,239,523, Cl. 71-33.000.

Spaeth, Werner: *See—*
Krause, Gerhard; and Spaeth, Werner, 4,240,087, Cl. 357-19.000.

Spanke, Edwin A.: *See—*
Carrieri, Louis F.; and Spanke, Edwin A., 4,238,950, Cl. 72-446.000.

Sparks, Robert E.; Wahab, Mariam M.; and Mason, Norbert S., to Washington University. Method for modifying the pore size distribution of a microporous separation medium. 4,239,714, Cl. 264-45.500.

Sparlin, Derry D.: *See—*
Sharp, Keith W.; and Sparlin, Derry D., 4,239,084, Cl. 166-278.000.

Spatz, Wilhelm: *See—*
Riehm, Theodor; Auel, Theodor; and Spatz, Wilhelm, 4,239,922, Cl. 568-863.000.

Spaulding, Tedford H., to Bunker Ramo Corporation. Electrical connectors and assemblies therefor. 4,239,316, Cl. 339-91.00R.

Spear, John F., to Universal Towel Company Limited. Washing machine and accumulator device therefor. 4,238,938, Cl. 68-13.00R.

Speck, Ulrich: *See—*
Pfeiffer, Heinrich; and Speck, Ulrich, 4,239,747, Cl. 424-5.000.

Speckhart, Bernard S.: *See—*
Weiss, Donald J.; and Speckhart, Bernard S., 4,239,435, Cl. 414-136.000.

Spectrum X-Ray Corporation: *See—*
Hogan, William F., 4,239,412, Cl. 403-182.000.

Sperry Corporation: *See—*
Parrish, Charles A., 4,238,919, Cl. 56-341.000.

Spitzmesser, Gordon. Engine mount for marine craft. 4,239,172, Cl. 248-641.000.

Sprague, John M., to United States of America, America. Projectile pallet truck. 4,239,249, Cl. 280-47.200.

Springwald, Antoni: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Stadlin, Walter O.: *See—*
Fletcher, David L.; and Stadlin, Walter O., 4,240,149, Cl. 364-483.000.

Stafford, John P.; Inoshita, Minoru; and Winfrey, Gerald N., to Honeywell Information Systems Inc. CRT display terminal priority interrupt apparatus for generating vectored addresses. 4,240,140, Cl. 364-200.000.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, to Boehringer Ingelheim GmbH. Substituted 2-phenylamino-2-imidazolines and salts thereof. 4,239,764, Cl. 424-263.000.

Stal Refrigeration AB: *See—*
Glanvall, Rune V., 4,239,467, Cl. 418-76.000.

Stalberg, Nils G.: *See—*
Enser, Mats A.; and Stalberg, Nils G., 4,239,151, Cl. 235-437.000.

Stamires, Dennis: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,239,651, Cl. 252-438.000.

Stamm, Robert H.; and Krause, Fred E., to Brooks & Perkins, Incorporated. Method and apparatus for forming shroud. 4,238,878, Cl. 29-421.00R.

Standard Brands Incorporated: *See—*
Antrim, Richard L.; Chan, Yuk-Charn; Crary, John R., Jr.; and Harris, Donald W., 4,239,906, Cl. 536-56.000.

Standard Oil Company: *See—*
Miloscia, William J.; and Trott, Louis R., 4,239,864, Cl. 525-316.000.

Standard Oil Company (Indiana): *See—*
Atkinson, Fred T.; Sharp, Shelby P.; and Sudduth, Lamar F., 4,239,630, Cl. 252-8.55B.
Steigelmann, Edward F.; and Hughes, Robert D., 4,239,506, Cl. 55-16.000.

Stanley, Louis, to Galexie Manufacturing Pty. Ltd. Drive and indexing mechanism for a rotatable drum chance device. 4,239,224, Cl. 273-143.00R.

Stanzione, Daniel C.: *See—*
Blahut, Donald E.; Copp, David H.; and Stanzione, Daniel C., 4,240,142, Cl. 364-200.000.

Staples, Luke: *See—*
Harris, Denis I.; and Staples, Luke, 4,239,503, Cl. 51-298.000.

Stastny, Charles J.: *See—*
Miknaitis, Sigitas; and Stastny, Charles J., 4,240,054, Cl. 335-152.000.

Steag A.G.: *See—*
Ratzeburg, Wolfgang, 4,239,500, Cl. 48-202.000.

Steck, Arnold; and Wirz, Armin, to Rieter Machine Works, Ltd. Cooling device and method for cooling a heated travelling thread. 4,238,921, Cl. 57-284.000.

Stecklum, Klaus; and Grief, Norbert, to Rhein-Nadel Automation Gesellschaft mit beschrankter Haftung. Device for the bunkering and assorted feeding of small parts. 4,239,120, Cl. 209-682.000.

Steelhammer, Joe C.: *See—*
Polizzotti, David M.; and Steelhammer, Joe C., 4,239,504, Cl. 55-5.000.

Steelman, Melvin W., to Tyler Refrigeration Corporation. Refrigerated case with movable fan panel. 4,239,518, Cl. 62-449.000.

Stefaniszyn, John: *See—*
Murphy, Peter; Dionne, Yvon O.; Kral, Jerry J.; and Stefaniszyn, John, 4,240,026, Cl. 324-54.000.

Steger, Donald J.: *See—*
Boyatt, Richard G., Jr.; and Steger, Donald J., 4,239,107, Cl. 206-225.000.

Steigelmann, Edward F.; and Hughes, Robert D., to Standard Oil Company (Indiana). Use of aqueous, non-sweep liquid during membrane separation. 4,239,506, Cl. 55-16.000.

Stenberg, Kaj O.; and Traven, Lars J. C., to Gambro AB. Apparatus and method for the diffusion of substances between two fluids separated by a semipermeable membrane. 4,239,728, Cl. 422-46.000.

Steni A/S: *See—*
Ronning, Asbjorn, 4,239,719, Cl. 264-137.000.

Stenz, Paul P., to C. A. Weidmuller KG. Terminal block for printed circuits. 4,239,324, Cl. 339-198.00G.

Stenzenberger, Horst, to Technochemie GmbH Verfahrenstechnik. Polyimide preparation from imido acyl halide. 4,239,883, Cl. 528-322.000.

Stepe, Visvaldis A.: *See—*
Lanz, William E.; and Stepe, Visvaldis A., 4,238,896, Cl. 37-141.00R.

Sterling Drug Inc.: *See—*
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,239,687, Cl. 260-326.270.
Gitchel, Wayne B., 4,238,922, Cl. 60-39.050.
Michne, William F., 4,239,890, Cl. 546-74.000.

Sternberg, Gerd. Refuse bag holder. 4,238,868, Cl. 15-257.400.

Steuer, Robert R., to Multitronics Corporation. Cardiotachometer using autocorrelation techniques. 4,239,048, Cl. 128-666.000.

Stewart, Roger G., to RCA Corporation. Asymmetrically precharged sense amplifier. 4,239,994, Cl. 307-359.000.

Stewart-Warner Corporation: *See—*
Breitung, Edward J.; and Hickman, Ronald J., 4,239,947, Cl. 200-61.890.

Stiles, Kenneth M., to Sea-Log Corporation. Fiber reinforced optical fiber cable. 4,239,335, Cl. 350-96.230.

Stilling, Johann. Raceway for sign box. 4,240,130, Cl. 362-217.000.

Stires, John C., III. Programmable strip chart recorder. 4,240,083, Cl. 346-136.000.

Stoeckelmann, Guenter: *See—*
Fabian, Wolfgang; Kranz, Joachim; and Stoeckelmann, Guenter, 4,239,549, Cl. 106-308.00Q.

Stoeckigt, Dieter: *See—*
Perner, Johannes; Stoeckigt, Dieter; Diessel, Paul; Merger, Franz; and Paetsch, Juergen, 4,239,552, Cl. 134-28.000.
Perner, Johannes; Diessel, Paul; Stoeckigt, Dieter; Merger, Franz; and Paetsch, Juergen, 4,239,641, Cl. 252-142.000.

Stoller, Patricia S.; Garner, Gerald D.; and Krug, John A., Jr. Automatic air inlet and outlet valve assembly. 4,239,059, Cl. 137-587.000.

Stoller, Patricia S.; Krug, John A., Jr.; and Garner, Gerald D., to ACF Industries, Inc. Automatic air inlet and outlet valve assembly having upper chamber opening. 4,239,060, Cl. 137-587.000.

Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., to ACF Industries, Incorporated. Collapsible trailer hitch bumper block excessive impact protection assembly. 4,239,429, Cl. 410-59.000.

Stone, Julian: *See—*
Campbell, Joe C.; Lau, Kam-Yin; and Stone, Julian, 4,239,337, Cl. 350-151.000.

Stone, Samuel M.: *See—*
Dakss, Mark L.; Meslener, George J.; and Stone, Samuel M., 4,239,333, Cl. 350-96.210.

Storandt, Ralf: *See—*
Biermann, Peter; Feucht, Rudi; Schmidt, Manfred; and Storandt, Ralf, 4,239,257, Cl. 280-615.000.

Story, Phillip M.: *See—*
Russell, Stephen E.; Story, Phillip M.; and Letcher, C. S., 4,239,546, Cl. 106-270.000.

Straga, Ivan T.: *See—*
Krupp, Carroll P.; and Straga, Ivan T., 4,239,262, Cl. 285-61.000.

Strahan, Virgil H.: *See—*
August, Rudolf R.; Strahan, Virgil H.; James, Kenneth A.; and Nichols, Donald K., 4,239,963, Cl. 250-231.00R.

Straubinger, Paul. Mold for forming frozen food product and cap member therefor. 4,239,175, Cl. 249-92.000.

Street, Donald A.: *See—*
Gonas, Albert J.; Packett, Marvin A.; and Street, Donald A., 4,239,279, Cl. 296-210.000.

Streicher, Kurt; and Nieden, Achim zur, to Klockner-Humboldt-Deutz Aktiengesellschaft. Pressure lubrication for internal combustion engines. 4,239,026, Cl. 123-196.00R.

Streit, Georg: *See—*
Missmahl, Bodo; and Streit, Georg, 4,238,881, Cl. 29-822.000.

Strem, Joseph G., to Mead Corporation, The. Jet drop printing ink composition. 4,239,544, Cl. 106-22.000.

Strickler, Rainer: *See—*
Baumgarte, Ulrich; Oppenlaender, Knut; Schlueter, Harald; Petersen, Harro; Greif, Norbert; and Strickler, Rainer, 4,239,491, Cl. 8-532.000.

Striegl, Georg, to August Beck, Firma. Chucking reamer. 4,239,425, Cl. 408-181.000.

Strom, Stephen S.: *See—*
Bhada, Rohinton K.; Lange, Howard B., Jr.; and Strom, Stephen S., 4,239,996, Cl. 310-11.000.

Strutman, Lauren: *See—*
Strutman, Warren A., 4,239,977, Cl. 290-44.000.

Strutman, Lisa: *See—*
Strutman, Warren A., 4,239,977, Cl. 290-44.000.

Strutman, Warren A., to Strutman, Lisa; Strutman, Lauren; and Gross, Jerome A., a part interest to each. Surge-accepting accumulator transmission for windmills and the like. 4,239,977, Cl. 290-44.000.

Studencki, Jerzy: *See—*
Retmaniak, Tadeusz; Marek, Mieczyslaw; Polak, Pawel; Brzeski, Andrzej; Nyc, Janusz; Skowronski, Boleslaw; Kozlowski, Kazimierz; Springwald, Antoni; Weglarska-Zagorna, Henryka; Blasiak, Eugeniusz; Studencki, Jerzy; and Skalski, Andrzej, 4,239,833, Cl. 428-567.000.

Stupica, Vekoslav A. Hydraulic engine. 4,238,928, Cl. 60-221.000.

Sudduth, Lamar F.: *See—*
Atkinson, Fred T.; Sharp, Shelby P.; and Sudduth, Lamar F., 4,239,630, Cl. 252-8.55B.

Sugimoto, Atsumi: *See—*
Inaba, Masao; Sugimoto, Atsumi; and Miyahara, Shigeru, 4,240,112, Cl. 358-160.000.

Sullivan, Thomas A.: *See—*
McBee, William C.; and Sullivan, Thomas A., 4,239,547, Cl. 106-274.000.

Sumari Engineering: *See—*
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Sumitomo Chemical Company, Limited: *See—*
Hirohara, Hideo; Nabeshima, Shigeyasu; and Nagase, Tsuneyuki, 4,239,854, Cl. 521-31.000.

Sumitomo Electric Industries, Ltd.: *See—*
Yamamoto, Takaharu; Asai, Tsuyoshi; Fujimori, Naoji; and Tobioka, Masa-aki, 4,239,536, Cl. 75-238.000.

Sumiyomo Electric Industries, Limited: *See—*
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, 4,239,094, Cl. 191-25.000.

Surface Technology, Inc.: *See—*
Feldstein, Nathan, 4,239,538, Cl. 106-1.110.

Surkov, Sergei A.: *See—*
Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P., 4,238,967, Cl. 74-758.000.

Suzuki, Katsunori: *See—*
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,240,020, Cl. 318-721.000.

Suzuki, Yoshiaki: *See—*
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,239,843, Cl. 430-17.000.

Svensson, Lars T. E.: *See—*
Andren, Birger L.; and Svensson, Lars T. E., 4,239,934, Cl. 375-113.000.

Swan, Charles A. Shallow double hung window. 4,238,907, Cl. 49-446.000.

Swander, Robert E.; and St. Pierre, Richard E. Electrical power generating system. 4,239,974, Cl. 290-1.00R.

Swanson, James P.: *See—*
Huetsch, Larry C.; Swanson, James P.; and Nyquist, Stephen E., 4,239,252, Cl. 280-446.00R.

Swaroop, Nareshwar, to Continental Group, Inc., The. Thermal alignment of cores and cavities in multi-cavity injection molds. 4,239,471, Cl. 425-144.000.

Swiss Aluminium Ltd.: *See—*
Severus-Laubenfeld, Harald, 4,239,610, Cl. 204-211.000.

Syracuse Supply Company: *See—*
Maynard, James J., 4,239,441, Cl. 414-587.000.
Maynard, James J., 4,239,442, Cl. 414-587.000.

Systems, Science & Software: *See—*
Day, Edward A.; Seay, Glenn E.; and Ritter, Perry B., 4,239,004, Cl. 102-28.00R.
Szechy, Daniel J.: *See—*
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Tachikara Kabushiki Kaisha: *See—*
Takazawa, Kazuyasu, 4,239,568, Cl. 156-155.000.
Tacklind, Thomas A.; and Turner, Ian, to Xerox Corporation. Electrographic recorder with writing, developing and driving assembly. 4,240,084, Cl. 346-153.000.
Tacklind, Thomas A.; and Turner, Ian, to Xerox Corporation. Electrographic recorder. 4,240,085, Cl. 346-153.000.
Taenzer, Jon C., to Picker Corporation. Transducer drive for ultrasonic imaging. 4,238,962, Cl. 73-633.000.
Taguchi, Toru: *See—*
Hashimoto, Isao; Nakagawa, Hiroaki; Taguchi, Toru; and Nambu, Hirohiko, 4,239,921, Cl. 568-753.000.
Takahashi, Kihei, to Yoshida Kogyo K.K. Assembling apparatus for slide fastener stringers. 4,238,880, Cl. 29-766.000.
Takahashi, Kihei, to Yoshida Kogyo K.K. Yarn feeder. 4,239,066, Cl. 139-452.000.
Takahashi, Kunimasa; and Yokoi, Takashi, to Mitsubishi Petrochemical Co. Ltd. Process for preparing alkyl-substituted aromatic compounds. 4,239,928, Cl. 585-431.000.
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, to Green Cross Corporation, The. Pyrrolo benzodiazepine compounds. 4,239,683, Cl. 260-239.30T.
Takanashi, Akira; and Masuda, Kenzo, to Hitachi, Ltd. Integrated circuit having an operation voltage supplying depletion type MISFET of high breakdown voltage structure. 4,239,980, Cl. 307-205.000.
Takazawa, Kazuyasu, to Tachikara Kabushiki Kaisha. Method of manufacturing a ball. 4,239,568, Cl. 156-155.000.
Takeda Chemical Industries, Ltd.: *See—*
Numata, Mitsuo; Yamaoka, Masayoshi; Minamida, Isao; Shiraishi, Mitsuru; and Nishimura, Tatsuo, 4,239,758, Cl. 424-246.000.
Takeda, Norio: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Takeda, Yasuo: *See—*
Iida, Hiroshi; Umehara, Ikuo; and Takeda, Yasuo, 4,239,483, Cl. 432-8.000.
Takemae, Mikio: *See—*
Ohtsubo, Yoshiaki; Akasaka, Shigeo; Watanabe, Sakuji; Takemae, Mikio; Motoori, Ryuzo; and Kitamura, Yasunori, 4,239,358, Cl. 354-60.00E.
Taketoshi, Kazuhisa, to Nippon Hoso Kyokai. Ga-Cu alloy for use in exchangeable electrode for an evaporation system. 4,239,534, Cl. 75-134.00T.
Takeuchi, Sinya, to Kobe Steel, Limited. Selectively blocked matrix-form stencil and method of use. 4,239,000, Cl. 101-129.000.
Taki, Yasuo; Misawa, Yoshihiko; Araki, Shigeru; Mori, Kazuhiro; and Tanaka, Souhei, to Matsushita Electric Industrial Co., Ltd. Process for mounting electronic parts. 4,239,576, Cl. 156-297.000.
Talres Development (N.A.) N.V.: *See—*
Richards, Alan C.; and Khan, Riaz A., 4,239,665, Cl. 260-17.200.
Tamburro, Peter J., to Bell Telephone Laboratories, Incorporated. Circuit board keying arrangement. 4,239,323, Cl. 339-186.00M.
Tanaka, Fumihiro: *See—*
Hosoya, Takeshi; Tanaka, Fumihiro; and Noguchi, Kazuo, 4,239,040, Cl. 128-213.00R.
Tanaka, Kyogo: *See—*
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Tanaka, Minoru: *See—*
Yanagioka, Hiroshi; Futami, Atsushi; Shinsenji, Masatake; and Tanaka, Minoru, 4,239,515, Cl. 55-223.000.
Tanaka, Souhei: *See—*
Taki, Yasuo; Misawa, Yoshihiko; Araki, Shigeru; Mori, Kazuhiro; and Tanaka, Souhei, 4,239,576, Cl. 156-297.000.
Tanaka, Susumu; Nagai, Koji; and Inagaki, Sanzi, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying method using two toners on magnetic brush. 4,239,845, Cl. 430-122.000.
Tanaka, Toshio; and Nakagawa, Sumio, to Hitachi, Ltd. Check circuit for combustion process control timer. 4,239,478, Cl. 431-24.000.
Tanifuji, Shinya: *See—*
Morooka, Yasuo; Tanifuji, Shinya; and Matsuka, Shigemichi, 4,240,147, Cl. 364-472.000.
Taniguchi, Hiroshi: *See—*
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Tanizaki, Takeshi: *See—*
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Tarao, Ryohkichi; Kaku, Kanji; Hayashi, Masaki; Nakamura, Takao; and Ohishi, Shigeo, to Chisso Corporation. Polyvinyl (dialkylthiocarbamoylthio)acetate resin, method for producing same and heavy metals-removing agent comprising same. 4,239,865, Cl. 525-327.000.
Tarmann, Bruno, to Voest-Alpine Aktiengesellschaft. Cooled continuous casting mould. 4,239,078, Cl. 164-147.000.
Tartaglio, Robert L.: *See—*
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Tatevosian, Ruben A.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Patrushev, Gennady V.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,239,112, Cl. 206-525.000.
Tatsumi, Susumu; Ikesue, Masumi; Hosaka, Masao; and Kasahara, Nobuo, to Ricoh Company, Ltd. Electrostatographic apparatus comprising automatic document type determination means. 4,239,374, Cl. 355-14.00E.
Tauber, Reinhard, to Siemens Aktiengesellschaft. Digital demodulator on a semiconductor base. 4,240,035, Cl. 329-50.000.
Taylor, Nelson D. Rain gutter cleaning device. 4,238,866, Cl. 15-23.000.
Taylor, Richard J.; and Kellar, Paul R. N., to Quantel Limited. Measurement of chroma key area in television systems. 4,240,104, Cl. 358-22.000.
Taylor, Richard J.: *See—*
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,101, Cl. 358-11.000.
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,106, Cl. 358-36.000.
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Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,240,113, Cl. 358-180.000.
Teague, Richard M.: *See—*
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Technicon Instruments Corporation: *See—*
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Technochemie GmbH Verfahrenstechnik: *See—*
Stenzenberger, Horst, 4,239,883, Cl. 528-322.000.
Tecsports of Oxford Limited: *See—*
Farr, Eric, 4,239,215, Cl. 273-29.00A.
Teledyne Industries, Inc.: *See—*
Rorer, David L., 4,239,841, Cl. 429-179.000.
Siddall, Mark B., 4,239,531, Cl. 75-84.400.
Wolf, Raymond A., 4,238,964, Cl. 73-714.000.
Teleflex Morse Limited: *See—*
Hemens, James F., 4,238,972, Cl. 74-473.00P.
Telefonaktiebolaget L M Ericsson: *See—*
Andren, Birger L.; and Svensson, Lars T. E., 4,239,934, Cl. 375-113.000.
Kjoller, Hans O. S., 4,240,136, Cl. 364-200.000.
Telex Computer Products, Inc.: *See—*
Perkins, Derrick O., 4,239,992, Cl. 307-265.000.
Teng, Lin-Nar; and Schmer, Gottfried, to Research Corporation. Antithrombogenic PVP-heparin polymer. 4,239,664, Cl. 260-17.40R.
ten Haken, Pieter; and Webb, Shirley B., to Shell Oil Company. 3-(N-Heterocyclyl)isoxazolidine fungicides. 4,239,889, Cl. 544-335.000.
Tennessee Valley Authority: *See—*
Sheridan, Richard C.; and McCullough, John F., 4,239,739, Cl. 423-308.000.
Terral, Ben D., to Camco, Incorporated. Multiple flow valves and sidepocket mandrel. 4,239,082, Cl. 166-117.500.
Terumo Corporation: *See—*
Hasegawa, Hiroshi; and Fukasawa, Hiromichi, 4,239,729, Cl. 422-48.000.
Tesa S.A.: *See—*
Lendi, Georges; and Voinescu, Nicolae, 4,238,885, Cl. 33-143.00L.
Tessler, Martin: *See—*
Gaspar, Lawrence A.; Tessler, Martin; and Malcolm, Alexander R., 4,239,592, Cl. 162-175.000.
Texaco Development Corp.: *See—*
Marquis, Edward T.; and Yeakey, Ernest L., 4,239,700, Cl. 564-157.000.
Rowton, Richard L., 4,239,856, Cl. 521-118.000.
Zimmerman, Robert L., 4,239,855, Cl. 521-115.000.
Zimmerman, Robert L.; McEntire, Edward E.; and Klein, Howard P., 4,239,916, Cl. 562-574.000.
Texaco Inc.: *See—*
Davis, Lorne A., Jr., 4,240,028, Cl. 324-61.00R.
Texas Instruments Incorporated: *See—*
Chauvel, Gerard, 4,240,138, Cl. 364-200.000.
Hong, Ngai H.; Reese, Edmund A.; and Redwine, Donald J., 4,239,990, Cl. 307-262.000.
Hong, Ngai H.; and Reese, Edmund A., 4,239,991, Cl. 307-262.000.
Kuo, Chang-Kiang, 4,240,092, Cl. 357-41.000.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,239,993, Cl. 307-355.000.
Raymond, Joseph H., Jr., 4,240,097, Cl. 357-71.000.
Texas Plastics Industries, Inc.: *See—*
Callicoatte, Jerry D., 4,239,062, Cl. 138-96.00R.
Texas Utilities Services, Inc.: *See—*
Dick, David C.; and Hurt, James M., Jr., 4,239,711, Cl. 261-109.000.
Textoris, Melvin A.; and Rauschenberg, Richard, to GF Business Equipment, Inc. Partition wiring system. 4,239,932, Cl. 174-48.000.
Textron, Inc.: *See—*
Brent, Robert G., 4,239,244, Cl. 277-188.00R.
Broekhuizen, Willem; Gaffey, Troy M.; Joglekar, Mukund M.; and Neathery, William D., 4,239,455, Cl. 416-145.000.
Cannon, Robert E., 4,238,871, Cl. 24-205.11R.
Joglekar, Mukund M.; Gaffey, Troy M.; Broekhuizen, Willem; and Neathery, William D., 4,239,456, Cl. 416-145.000.
Thellmann, Edward L.; and Gombach, Anton L., to Gould Inc. Thermally stable sintered porous metal articles. 4,239,557, Cl. 148-126.000.
Thepot, Jean M. L.: *See—*
Thibonnier, Jacques; Douard, Pierre-Rene; and Thepot, Jean M. L., 4,239,420, Cl. 406-2.000.

Thibonnier, Jacques; Douard, Pierre-Rene; and Thepot, Jean M. L., to Compagnie due Roneo and Fluidelec. Installation for the automatic and accounted storage and distribution of cash. 4,239,420, Cl. 406-2.000.
Thiel, Klaus P.: *See—*
Alameddine, Oussama; Briska, Marian; and Thiel, Klaus P., 4,239,810, Cl. 427-75.000.
Thieme, Omar M.; and Thieme, Ruby M. Table top golf game apparatus. 4,239,217, Cl. 273-87.400.
Thieme, Ruby M.: *See—*
Thieme, Omar M.; and Thieme, Ruby M., 4,239,217, Cl. 273-87.400.
Thiokol Corporation: *See—*
Reed, Russell, Jr.; Munson, William O.; and Peterson, John A., 4,239,073, Cl. 149-19.910.
Thoma, Ferdinand, to Siemens Aktiengesellschaft. Centrally controlled conveyor system. 4,240,148, Cl. 364-478.000.
Thomas Electronics, Inc.: *See—*
Seats, Peter; and Marcy, Henry O., 4,240,073, Cl. 340-703.000.
Thompson, Harris A. Dual control valve for positive pressure artificial respiration apparatus. 4,239,039, Cl. 128-205.240.
Thompson, Robert E.; and Antemuik, Henry A., to PPG Industries Canada, Ltd. Solution mining method utilizing sub-surface aquifer. 4,239,288, Cl. 299-5.000.
Thomson-CSF: *See—*
Lacombat, Michel; Graffin, Jean C.; and Antoine, Robert, 4,239,381, Cl. 355-53.000.
Thuries, Edmond; Raynaud, Bernard; and Scarato, Armand, to Delle-Alsthom. Compensated force valve with two seats. 4,239,180, Cl. 251-51.000.
Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See—*
Koenitzer, Joachim; Schmitz, Heinrich; and Jindra, Kurt, 4,239,817, Cl. 427-211.000.
Tilton, Frederick T.: *See—*
Silberman, Raphael J.; Tilton, Frederick T.; and Smith, Everett H., 4,239,083, Cl. 166-117.700.
Timby, Ernest A.; and Walsh, Rodney H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid processing. 4,238,926, Cl. 60-39.46R.
Tinti, Maria O.: *See—*
deWitt, Paolo; and Tinti, Maria O., 4,239,702, Cl. 568-435.000.
Tioxide Group Limited: *See—*
Barnard, Brian; and Laverick, William T., 4,239,548, Cl. 106-300.000.
Tirtiaux, Robert: *See—*
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Titov, Mikhail Y.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Patrushev, Gennady V.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,239,112, Cl. 206-525.000.
TMC Corporation: *See—*
Krob, Erwin; and Weigl, Erwin, 4,239,256, Cl. 280-605.000.
Tobias, Philip E. Optical density scanning head. 4,239,393, Cl. 356-407.000.
Tobioka, Masa-aki: *See—*
Yamamoto, Takaharu; Asai, Tsuyoshi; Fujimori, Naoji; and Tobioka, Masa-aki, 4,239,536, Cl. 75-238.000.
Todd, Timothy M.: *See—*
Aplan, Frank F.; and Todd, Timothy M., 4,239,619, Cl. 209-214.000.
Tokuyama, Kiyotaka: *See—*
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Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fukuda, Yasuo; Arai, Michio; and Yamamoto, Hidemi, 4,240,139, Cl. 364-200.000.
Hashimoto, Masaru; and Yoshinaga, Motoaki, 4,240,041, Cl. 330-288.000.
Hiraki, Shunichi; Kumamaru, Kuniaki; Aoyama, Masaharu; and Yonezawa, Toshio, 4,240,096, Cl. 357-63.000.
Matsumoto, Yoshihiro; and Kurii, Hajime, 4,240,137, Cl. 364-200.000.
Morita, Hiroshi; and Washida, Hiroshi, 4,239,350, Cl. 350-357.000.
Sonoda, Tomiya; and Washida, Hiroshi, 4,239,791, Cl. 427-64.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,239,661, Cl. 252-541.000.
Tolle, Russell W. Hitch positioning mechanism. 4,239,250, Cl. 280-446.00B.
Tomita, Keiji, to Kabushiki Kaisha Tomita Sangyo. Method and apparatus for folding and welding the marginal edges of a cover sheet. 4,239,572, Cl. 156-227.000.
Tomita, Tetsuo: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Tomita, Yukio; and Nishio, Taketaro, to Hitachi Shipbuilding & Engineering Co., Ltd.; and Dainippon Screen Mfg. Co., Ltd. Method and apparatus for scan-photographing a subject such as a model. 4,239,379, Cl. 355-52.000.
Tomlinson, Harold W., Jr., to General Electric Company. Solid state imaging apparatus. 4,240,116, Cl. 358-213.000.
Tomlinson, Walter J., III: *See—*
Ashkin, Arthur; and Tomlinson, Walter J., III, 4,239,330, Cl. 350-96.180.
Tomsa, Vladimir: *See—*
Anderson, Norman R.; and Tomsa, Vladimir, 4,239,314, Cl. 339-89.00M.
Tomy Kogyo Co., Inc.: *See—*
Hori, Noritoshi, 4,239,222, Cl. 273-129.00W.
Kurita, Toshiaki, 4,239,220, Cl. 273-127.00R.
Tomy Kogyo Co., Ltd.: *See—*
Ogasawara, Toyotsugu, 4,239,207, Cl. 272-31.00A.
Topfer, Dieter: *See—*
Krause, Dieter; Topfer, Dieter; and Salzburg, Wolfgang, 4,239,368, Cl. 354-325.000.
Toray Industries, Inc.: *See—*
Inoue, Takehisa; and Tsunoi, Kazuo, 4,239,655, Cl. 252-455.00Z.
Uemura, Tadahiro; and Kurihara, Masaru, 4,239,545, Cl. 106-181.000.
Tornstrom, Eric: *See—*
Scharlack, Ronald S.; and Tornstrom, Eric, 4,239,555, Cl. 136-251.000.
Toray Industries, Inc.: *See—*
Inoue, Takehisa; and Tsunoi, Kazuo, 4,239,655, Cl. 252-455.00Z.
Uemura, Tadahiro; and Kurihara, Masaru, 4,239,545, Cl. 106-181.000.
Tornstrom, Eric: *See—*
Scharlack, Ronald S.; and Tornstrom, Eric, 4,239,555, Cl. 136-251.000.
Toray Industries, Inc.: *See—*
Inbar, Michael, 4,239,332, Cl. 350-96.200.
Tschetter, John J.: *See—*
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Tsubota, Kazuya, to Kawasaki Steel Corporation. Method for rolling metal plate. 4,238,946, Cl. 72-199.000.
Tsuchiya, Hiroaki: *See—*
Ueno, Ryuzo; Tsuchiya, Hiroaki; Muramoto, Yasukazu; and Kuwae, Yoshihiko, 4,239,913, Cl. 562-425.000.
Tsuge, Yukio: *See—*
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Tsukushi, Masanori; Hirasawa, Kunio; and Kashimura, Katsuichi, to Hitachi, Ltd. Grounded support tank type gas circuit breaker. 4,239,948, Cl. 200-148.00R.
Tsunoi, Kazuo: *See—*
Inoue, Takehisa; and Tsunoi, Kazuo, 4,239,655, Cl. 252-455.00Z.
Tsuru, Michitaka: *See—*
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Tsuyuki, Kaoru: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Kozaki, Toshiaki; Aoki, Osamu; Abe, Mitsuo; Takeda, Norio; Miura, Mitsuo; Aoki, Yoshiyuki; Kondo, Takao; and Tsuyuki, Kaoru, 4,239,741, Cl. 423-388.000.
Tu, Hosheng, to UOP Inc. High octane FCC process. 4,239,615, Cl. 208-120.000.
Tuck, Alan D., Jr., to Wilden Pump & Engineering Co. Pump diaphragm. 4,238,992, Cl. 92-103.50D.
Tuhy, Frank P., Jr.: *See—*
Bosik, Barry S.; and Tuhy, Frank P., Jr., 4,239,935, Cl. 179-84.00R.
TUP! (Panama) S.A.: *See—*
Tupper, Earl S., 4,238,863, Cl. 8-150.000.
Tupper, Earl S., to TUP! (Panama) S.A. Method of washing articles of clothing. 4,238,863, Cl. 8-150.000.
Turnage, Joseph R. Metered dispensers. 4,239,133, Cl. 222-476.000.
Turner, George F. A. M., to Ciba-Geigy AG. Sheet dispenser. 4,239,202, Cl. 271-18.000.

Turner, Ian: *See—*
Tacklind, Thomas A.; and Turner, Ian, 4,240,084, Cl. 346-153.000.
Tacklind, Thomas A.; and Turner, Ian, 4,240,085, Cl. 346-153.000.
Turner, Ronald L.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,239,529, Cl. 75-1.00R.
Twiford, L. John. Method for altering tonal characteristics of a stringed musical instrument. 4,238,986, Cl. 84-309.000.
Tyler Refrigeration Corporation: *See—*
Steelman, Melvin W., 4,239,518, Cl. 62-449.000.
Tyson, Thomas E. Self-aligning multi-pin connector. 4,239,325, Cl. 339-89.00M.
Uchida, Isamu, to Laurel Bank Machine Co., Ltd. Paper delivery roller system. 4,239,203, Cl. 271-122.000.
Uchida, Kenji: *See—*
Sakamoto, Masakatsu; Uchida, Kenji; Honma, Isao; and Kamino, Yukishige, 4,239,423, Cl. 406-47.000.
Uchida, Toshio: *See—*
Kita, Nobuyuki; Uchida, Toshio; Ikeda, Sadaharu; and Sato, Shigeru, 4,239,850, Cl. 430-281.000.
Uchidoi, Masanori: *See—*
Shimizu, Masami; Hashimoto, Teiji; Miyakawa, Hideaki; Uchidoi, Masanori; Aizawa, Hiroshi; and Ito, Tadashi, 4,240,055, Cl. 335-234.000.
Uchiyama, Hiromichi; Yaguchi, Eiichi; Nakamura, Akira; Maeda, Yoshio; and Watabe, Susumu, to Nissan Motor Company, Limited; and Sumiyomo Electric Industries, Limited. Current transmitting system for trackway type motor vehicle. 4,239,094, Cl. 191-25.000.
Ueda, Yasuo: *See—*
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,239,683, Cl. 260-239.30T.
Ueda, Yoshihiro: *See—*
Kii, Masami; Ueda, Yoshihiro; and Ibuki, Koji, 4,239,949, Cl. 200-148.00R.
Uekusa, Hiroshi, to Yoshino Kogyosho Co., Ltd. Control method in an intermittently moving mechanism and a shift register for carrying out the method. 4,240,017, Cl. 318-600.000.
Uemura, Tadahiro; and Kurihara, Masaru, to Toray Industries, Inc. Cellulose derivative reverse osmosis membrane and casting solution and additive for preparing the same. 4,239,545, Cl. 106-181.000.
Ueno, Ryuzo; Tsuchiya, Hiroaki; Muramoto, Yasukazu; and Kuwae, Yoshihiko, to Kabushiki Kaisha Veno Seiyaku Oyo Kenkyujo. Process for preparing 2-hydroxynaphthalenecarboxylic acids. 4,239,913, Cl. 562-425.000.
Ullberg, Carl: *See—*
Hoffmann, Alfred; Ullberg, Carl; Rekers, Hendrik; Ernst, Horst M.; Brandenstein, Manfred; Olschewski, Armin; Schulz, Toni; and Walter, Lothar, 4,239,299, Cl. 308-6.00C.
Umehara, Ikuo: *See—*
Iida, Hiroshi; Umehara, Ikuo; and Takeda, Yasuo, 4,239,483, Cl. 432-8.000.
Unarco Industries, Inc.: *See—*
Corey, Robert L., 4,239,100, Cl. 193-35.00R.
Klein, Herbert H., 4,239,122, Cl. 211-182.000.
Union Carbide Canada Limited: *See—*
Puri, Ashok K., 4,239,840, Cl. 429-159.000.
Union Carbide Corporation: *See—*
Aplan, Frank F.; and Todd, Timothy M., 4,239,619, Cl. 209-214.000.
Drnevich, Raymond F., 4,239,505, Cl. 55-12.000.
Ginsberg, Thomas; and Kaufman, Lawrence G., 4,239,539, Cl. 106-1.170.
Harper, Bill D., 4,239,857, Cl. 521-121.000.
Notaro, Frank, 4,239,827, Cl. 428-35.000.
Uniroyal, Inc.: *See—*
Beretta, David; Loveless, Frederick C.; and Nudenberg, Walter, 4,239,638, Cl. 252-73.000.
Matthews, Demetreos N.; Nudenberg, Walter; and Petersen, Henno A., 4,239,862, Cl. 525-240.000.
United Brands Company: *See—*
Hughes, Paul R.; and Campbell, John E., 4,240,077, Cl. 340-500.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Timby, Ernest A.; and Walsh, Rodney H., 4,238,926, Cl. 60-39.46R.
United States of America
Agriculture: *See—*
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,239,701, Cl. 564-15.000.
Scherer, James R., 4,239,390, Cl. 356-307.000.
Air Force: *See—*
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Green, Leland D., 4,239,388, Cl. 356-5.000.
Pohle, Richard H., 4,239,392, Cl. 356-354.000.
America: *See—*
Buchanan, Thomas M., 4,239,749, Cl. 424-92.000.
Paul, Steven M.; and Skolnick, Phil, 4,239,744, Cl. 424-1.000.
Sprague, John M., 4,239,249, Cl. 280-47.200.
Army: *See—*
Cason, Charles M., III; Perkins, James F.; and Jones, Robert W., 4,239,341, Cl. 350-294.000.
Larsen, Lawrence E.; and Jacobi, John H., 4,240,027, Cl. 324-57.00R.
Long, Richard L., 4,239,063, Cl. 138-123.000.
Woodward, Oakley M., 4,240,080, Cl. 343-817.000.
Energy: *See—*
Ohkawa, Tihiro, 4,239,594, Cl. 176-9.000.
Wade, Elman E., 4,239,598, Cl. 176-87.000.
Health, Education and Welfare: *See—*
Allcock, Harry R.; Fuller, Timothy J.; and Matsumura, Kiyotoshi, 4,239,755, Cl. 424-209.000.
Interior: *See—*
Eisele, Judith A.; Bauer, Donald J.; and Bremner, Paul R., 4,239,735, Cl. 423-126.000.
McBee, William C.; and Sullivan, Thomas A., 4,239,547, Cl. 106-274.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Lambson, Kenneth H. Pressure control valve. 4,239,057, Cl. 137-549.000.
Mazur, John T. Telescoping columns. 4,238,911, Cl. 52-111.000.
Navy: *See—*
Camp, Albert T.; Csanady, Elmer R.; and Mosher, Paul R., 4,239,561, Cl. 149-19.800.
Foa, Joseph V., 4,239,155, Cl. 239-265.170.
Kowalyshyn, Stephen; and Voorhees, John C., 4,239,012, Cl. 114-23.000.
Savitt, Jacob, 4,239,003, Cl. 102-27.00R.
U.S. Philips Corporation: *See—*
Andersson, Lars-Goran T., 4,240,060, Cl. 340-47.000.
Jonker, Herman D., 4,239,805, Cl. 428-446.000.
Koel, Gerrit J.; and Postma, Lambertus, 4,239,587, Cl. 156-659.100.
Van Alem, Antonius A. M.; and Vos, Cornelis H. J., 4,239,942, Cl. 179-100.10G.
Van Alphen, Leendert G.; Slakhorst, Justinus W. H. G.; and Vogel, Pieter M., 4,240,128, Cl. 361-433.000.
Wagner, Wolfgang, 4,239,972, Cl. 250-445.00T.
U.S. Product Development Co.: *See—*
Adell, Robert, 4,239,724, Cl. 264-328.800.
United Technologies Corporation: *See—*
Amelio, Armand F., 4,238,971, Cl. 74-471.00R.
Howard, Curtiss G.; Jordan, Lester W.; and Yaworsky, Chester E., 4,239,954, Cl. 219-121.0EH.
Lenox, Thomas G., 4,240,066, Cl. 340-870.290.
Rabinowitz, Charles M.; and Camp, Donald A., 4,240,047, Cl. 331-154.000.
Roberts, Frank, Jr., 4,239,452, Cl. 415-172.00A.
Universal Dynamics, Inc.: *See—*
Murdock, Dwight, 4,239,487, Cl. 433-7.000.
Universal Towel Company Limited: *See—*
Spear, John F., 4,238,938, Cl. 68-13.00R.
University of Delaware: *See—*
Barnett, Allen M.; Masi, James V.; and Hall, Robert B., 4,239,553, Cl. 136-256.000.
University of Illinois Foundation, The: *See—*
Venton, Duane L.; Le Breton, Guy C.; and Enke, Steven E., 4,239,778, Cl. 424-305.000.
University of Kentucky Research Foundation, The: *See—*
Carter, Willis M., 4,238,970, Cl. 74-457.000.
University of Strathclyde: *See—*
Pritty, David W., 4,239,958, Cl. 235-92.0AC.
Unsworth, William: *See—*
King, John F.; and Unsworth, William, 4,239,535, Cl. 75-168.00D.
UOP Inc.: *See—*
Atkinson, Geoffrey R.; and Edwards, Alan J., 4,239,472, Cl. 425-388.000.
Hutchings, Le Roi E., 4,239,614, Cl. 208-108.000.
Kwong, Gary W. Y., 4,239,497, Cl. 44-72.000.
Mikulicz, Michael Z., 4,239,931, Cl. 585-723.000.
Tu, Hosheng, 4,239,615, Cl. 208-120.000.
Upjohn Company, The: *See—*
Johnson, Roy A., 4,239,909, Cl. 542-422.000.
Skulnick, Harvey I.; and Renis, Harold E., 4,239,753, Cl. 424-181.000.
Wallach, Donald P., 4,239,780, Cl. 424-330.000.
Urano, Fumio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Indication device in the finder of a single-lens reflex camera. 4,239,360, Cl. 354-128.000.
USV Pharmaceutical Corporation: *See—*
Youssefyeh, Raymond D.; and Wilson, Jeffrey D., 4,239,887, Cl. 544-184.000.
Utilux Pty. Limited: *See—*
Karl, Walter, 4,238,981, Cl. 83-151.000.
Vac-Tec Systems, Inc.: *See—*
Morrison, Charles F., Jr., 4,239,611, Cl. 204-298.000.
Vackier, Leo N.; and Van der Vliet, Lucien P., to AGFA-Gevaert N.V. Daylight unloading system for microfiche casettes. 4,239,366, Cl. 354-310.000.
Vadetec Corporation: *See—*
Kemper, Yves J., 4,238,976, Cl. 74-682.000.
Valentine, Fred S.: *See—*
Allphin, N. Lee; Valentine, Fred S.; and Grams, Gary W., 4,239,930, Cl. 585-517.000.
Vamvakas, Michael, to Niagara Bottle Washer Manufacturing Co. Filter for removing fines. 4,239,626, Cl. 210-333.010.
Van Alem, Antonius A. M.; and Vos, Cornelis H. J., to U.S. Philips Corporation. Dual radial position servo to compensate for radial tracking failure in an optical disc player. 4,239,942, Cl. 179-100.10G.
Van Alphen, Leendert G.; Slakhorst, Justinus W. H. G.; and Vogel, Pieter M., to Aluminium Industrie Vaassen B.V.; and U.S. Philips Corporation. Aluminum including cathode foil for electrolytic capacitors including a copper content. 4,240,128, Cl. 361-433.000.
Van Coffman, Michael. Pressure plug. 4,239,055, Cl. 137-315.000.
Van der Vliet, Lucien P.: *See—*
Vackier, Leo N.; and Van der Vliet, Lucien P., 4,239,366, Cl. 354-310.000.
Van Dyke, Ronald D.: *See—*
Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., 4,239,429, Cl. 410-59.000.
Van Fleet, James L.: *See—*
Bevilacqua, Frank; Callaghan, Vincent M.; and Van Fleet, James L., 4,239,596, Cl. 176-37.000.
Van Horne, Arthur C.; and Young, James E., to Dataproducts Corporation. Form aligning knob. 4,239,405, Cl. 400-616.100.
Van Kuiken, Lewis L., Jr., to Progressive Blasting Systems. Method for treating metal articles for rust corrosion protection and article produced thereby. 4,239,804, Cl. 428-409.000.
Van Rijn, Antoon J. Water pressurizing installation. 4,239,054, Cl. 137-209.000.
Van Saun, William A., Jr., to FMC Corporation. Insecticidal esters of certain substituted 7-oxabicyclo[2.2.1]2,5-heptadiene methanols. 4,239,773, Cl. 424-285.000.
Van Sickle, Robert J., to Rail Bearing Service. Method of and apparatus for performing work functions on articles from opposite ends of the articles. 4,238,875, Cl. 29-148.40S.
Van Staveren, Hendricus C.: *See—*
Oosterling, Pieter A.; and Van Staveren, Hendricus C., 4,238,917, Cl. 56-192.000.
Van Vechten, James A.: *See—*
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van Zon, Cornelis, to Wafilin B.V. Apparatus for membrane filtration having an improved desalting effect. 4,239,624, Cl. 210-236.000.
Varian Associates, Inc.: *See—*
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Vasiliev, Petr E.; Dvornin, Vladimir S.; Kondratiev, Alexandr V.; and Kravchenko, Vladimir F. Vibration motor. 4,240,141, Cl. 318-114.000.
Vassos, Louis J.: *See—*
Kilinskis, David C.; and Vassos, Louis J., 4,240,022, Cl. 320-23.000.
Vaughan, Thomas J., to Micro Communications, Inc. Diplexer and multiplexer. 4,240,155, Cl. 370-69.000.
Veale, John R., to Plessey Peripheral Systems. Impact printer hammer assembly. 4,239,401, Cl. 400-144.200.
Venable, Phillip G.; and Horsch, Rudolf, to J. I. Case Company. Side shift assembly for earth-working implements. 4,239,085, Cl. 172-667.000.
Venton, Duane L.; Le Breton, Guy C.; and Enke, Steven E., to University of Illinois Foundation, The. Azaprostanoic acid analogs and their use as inhibitors of platelet aggregation. 4,239,778, Cl. 424-305.000.
Venus Scientific Inc.: *See—*
Galluppi, Filippo B., 4,239,960, Cl. 250-213.0VT.
Verbrugge, Pieter A.: *See—*
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Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH: *See—*
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Vianova Kunstharz, A.G.: *See—*
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Vinatieri, James E., to Phillips Petroleum Company. Optimizing cosurfactant in microemulsion for specific oil. 4,239,628, Cl. 252-8.55D.
Vincent, David N.; and Golden, Ronald, to Champion International Corporation. Microspheric opacifying agents and method for their production. 4,239,646, Cl. 252-316.000.
Vinokurov, Alexandr A.; Gorbunov, Gennady S.; Popov, Jury S.; Skachkov, Jury V.; Filippov, Iosif F.; and Khutoretsky, Gary M. Super-conductive electrical machine having an improved system for maintaining vacuum in the stator/rotor space. 4,239,999, Cl. 310-52.000.
Virkar, Anil V.: *See—*
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Vivlamore, Samantha L.: *See—*
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Vlahov, Radoslav Y.; Krikoryan, Dikran A.; Zagorova, Maria S.; Hinova, Maya H.; and Parushev, Stoyan P., to Edinen Centar Po Chimia. Method for the electrolytic preparation of narwedine-type dienones. 4,239,605, Cl. 204-59.00R.
Vockenhuber, Karl: *See—*
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Voest-Alpine Aktiengesellschaft: *See—*
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Vogt, B. Richard; and Simpkins, Ligaya M., to E. R. Squibb & Sons, Inc. 5-(Optionally substituted 2-aminophenyl)-1H-pyrazole-3-methanol. 4,239,896, Cl. 548-378.000.
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Volkov, Dmitry P.; Bondarenko, Stanislav V.; Krainev, Alexandr F.; Kazakov, Evgeny A.; Surkov, Sergei A.; Kritsky, Valentin A.; Schekin, Nikolai N.; Maljuk, Vladimir M.; Zaitsev, Leonid V.; Grechin, Nikolai K.; Bogorodsky, Genrikh L.; Dobrinsky, Gleb K.; and Koshelenko, Gennady P. Driving arrangement. 4,238,967, Cl. 74-758.000.
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Voronkova, Irina A.; Radbil, Tatyana I.; Mikhalev, Nikolai A.; Shtarkman, Boris P.; Fomin, Valery A.; and Etlis, Volf S. Method for producing prepolymers based on vinyl monomers. 4,239,875, Cl. 526-214.000.
Vos, Cornelis H. J.: *See—*
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Vought Corporation: *See—*
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Vucinic, Theodore. Adapter for a fork lift truck. 4,239,446, Cl. 414-785.000.
Vyzkumny ustav kozedelny: *See—*
Miculka, Zdenek; Janirek, Vladislav; Rektorik, Vladimir; and Bajak, Karel, 4,238,939, Cl. 69-43.000.
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Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Kohl, Franz, 4,239,585, Cl. 156-617.0SP.
Wada, Yoneji. Filtering member and method for manufacturing the same. 4,239,627, Cl. 210-484.000.
Wade, Elman E., to United States of America, Energy. Nuclear reactor heat transport system component low friction support system. 4,239,598, Cl. 176-87.000.
Wafer, John A.: *See—*
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Wagner, Werner, to Jos. Schneider GmbH & Co.; and Optische Werke Kreuznach. Varifocal objective for photographic camera. 4,239,339, Cl. 350-184.000.
Wagner, Wolfgang, to U.S. Philips Corporation. Device for computed tomography. 4,239,972, Cl. 250-445.00T.
Wahab, Mariam M.: *See—*
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Wall, William F.: *See—*
Curtis, George C.; McInturff, Joe A.; Rubel, Herbert J.; and Wall, William F., 4,238,960, Cl. 73-462.000.

Wallach, Donald P., to Upjohn Company, The. Phospholipase A_2 inhibition. 4,239,780, Cl. 424-330.000.

Walls, Billy D. Wrist and forearm conditioner and exerciser. 4,239,208, Cl. 272-67.000.

Walsh, Rodney H.: *See—*
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Walter, Lothar: *See—*
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Walton, Richard E., II, to Black & Decker Inc. Orbital jig saw. 4,238,884, Cl. 30-393.000.

Walton, Richard E., II, to Black & Decker Inc. Boring tool. 4,239,427, Cl. 408-213.000.

Waltrip, Owen R., to Nuclear Supreme. Coke grinder. 4,239,161, Cl. 241-46.020.

Walz, John C.: *See—*
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Wang, Chia G. Detection of atoms using monochromatic X-rays. 4,239,966, Cl. 250-275.000.

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Ward, Frederick D., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Pneumatic target system. 4,239,234, Cl. 273-391.000.

Waryasz, Richard E., to Combustion Engineering, Inc. Method of low temperature heat utilization for atmospheric pressure coal gasification. 4,238,923, Cl. 60-39.120.

Warywoda, Joseph: *See—*
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Washida, Hiroshi: *See—*
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Washington State University Research Foundation: *See—*
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Washington University: *See—*
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Watanabe, Hironori, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,238,984, Cl. 84-1.010.

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Waterloo Industries, Inc.: *See—*
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Waters, William A. Self-contained air conditioning unit for persons. 4,238,857, Cl. 2-171.300.

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Wegmann, Helmut: *See—*
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Weikel, Donald J., Jr., to Xerox Corporation. Full wave rectification apparatus for operation of DC corotrons. 4,239,373, Cl. 355-14.0CH.

Weiler, Gerhard H.; and Komendowski, Henry, to Automatic Liquid Packaging, Inc. Method for forming, filling and sealing a container having plural closures. 4,239,726, Cl. 264-525.000.

Weinberg, Alan S.; and Gillio-Tos, Mario, to W. R. Grace & Co. Blends of butyl rubber and polymers of vinylidene chloride. 4,239,799, Cl. 428-335.000.

Weinschel Engineering Co., Inc.: *See—*
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Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,239,900, Cl. 556-438.000.

Weiss, Peter, to Jagenberg Werke Aktiengesellschaft. Unwinding stand for a plurality of rolls of material. 4,239,165, Cl. 242-58.600.

Weitz, Hans-Martin; Platz, Rolf; and Hartig, Juergen, to BASF Aktiengesellschaft. Manufacture of butenediol diesters. 4,239,910, Cl. 560-244.000.

Weitz, Hans-Martin; and Hartig, Juergen, to BASF Aktiengesellschaft. Manufacture of glycol esters. 4,239,911, Cl. 560-246.000.

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Wellendorf, Klaus; and Sommer, Ruediger, to Dr. Ing. Rudolf Hell GmbH. Apparatus for electro-optically recording pictorial information for a facsimile transmission system. 4,240,117, Cl. 358-296.000.

Wellendorf, Klaus; and Sommer, Ruediger, to Dr. Ing. Rudolf Hell GmbH. Method for electro-optically sensing, transmitting pictorial information. 4,240,118, Cl. 358-296.000.

Wempe, Richard J.: *See—*
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Wenzel, Franz: *See—*
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Werner, Peter: *See—*
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Coleman, Robert L., 4,240,004, Cl. 310-327.000.
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Wolf, Joachim E.; and Locke, Philip F., Jr., 4,240,059, Cl. 338-49.000.

Westmoreland, Mark. Machine for making wood stakes. 4,238,983, Cl. 83-408.000.

Westrom, Arthur C., to Kearney-National Inc. Surge arrester having coaxial shunt gap. 4,240,124, Cl. 361-127.000.

Wetzler, Matthias: *See—*
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Whirlpool Corporation: *See—*
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White, James M.: *See—*
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White Machine Company, Inc.: *See—*
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White, Thomas H., to Boeing Company, The. Pilot seat. 4,239,282, Cl. 297-284.000.

Wickman, Bobbie L., to Midnight Rollers Inc. Roller skate light assembly. 4,240,132, Cl. 362-103.000.

Wiegand Karlsruhe GmbH: *See—*
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Wild, Peter; and Nickel, Horst, to Bayer Aktiengesellschaft. Salts of N-acylaminohydroxynaphthalenesulphonic acids. 4,239,886, Cl. 544-170.000.

Wilden Pump & Engineering Co.: *See—*
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Wildenaur, Anton. Warehousing apparatus for moving goods. 4,239,436, Cl. 414-276.000.

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Wilkerson, C. William. Process of producing a weighted exercising device. 4,239,211, Cl. 272-119.000.

Wilkinson, Samuel C. W., to Crane Packing Limited. Rotary mechanical face seals. 4,239,240, Cl. 277-84.000.

Wilkinson, Walter J.; and Serlin, Irving, to Monsanto Company. Coating compositions comprising polymer blends. 4,239,676, Cl. 260-39.00P.

William M. Bailey Company: *See—*
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Williams, John L.; and Brown, Asa V., Jr., to Mead Corporation, The. Automatic forward-feed shelf. 4,239,099, Cl. 193-32.000.

Williams, Joseph B., to General Electric Company. Flame retardant thermoplastic compositions. 4,239,678, Cl. 260-42.180.

Williams, Robert E.; Decker, Thomas A.; Kurtzman, Charles; and Kuether, Christian L., to Baylor College of Medicine. Apparatus for generating and displaying visual acuity targets. 4,239,351, Cl. 351-36.000.

Williams, Steven E.; and Kunz, Bernard L., to Emerson Electric Co. Electrically operated valve with balanced port design. 4,239,177, Cl. 251-11.000.

Williams, Thomas A.; and Mather, Douglas E., to Albright & Wilson Ltd. Manufacture of detergents. 4,239,640, Cl. 252-95.000.

Williams, Walter G., to Goodyear Tire & Rubber Company, The. Tire mold press operating method. 4,239,723, Cl. 264-315.000.

Williamson, Charles H. Bracket for attaching rails to steel fence posts. 4,239,414, Cl. 403-387.000.

Williamson, James, to Raytheon Company. Starting circuit for automatic frequency control arrangement. 4,240,076, Cl. 343-7.0PL.

Willis, Donald H., to RCA Corporation. Regulated deflection circuit. 4,240,012, Cl. 315-408.000.

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Wilson, Joseph F.; Fodor, Lawrence M.; and Kenton, Joseph R., to Phillips Petroleum Company. Fertilizer solutions containing sulfur and having low crystallization temperature. 4,239,522, Cl. 71-29.000.

Wilson, Michael C. Novelty game drinking glass. 4,239,223, Cl. 273-138.00R.

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Wirth, John C. J. Method for preserving the grinding characteristics of a grinding tool. 4,239,501, Cl. 51-281.00R.

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Wisskirchen, Klaus B.: *See—*
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Witco Chemical Company: *See—*
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Nissen, Axel; Heiien, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,239,657, Cl. 252-464.000.

Wludyka, Joseph. Handle brace. 4,239,413, Cl. 403-263.000.

Wolf, Joachim E.; and Locke, Philip F., Jr., to Westinghouse Electric Corp. Current divider for a current sensing transducer. 4,240,059, Cl. 338-49.000.

Wolf, Raymond A., to Teledyne Industries, Inc. Vacuum gauge. 4,238,964, Cl. 73-714.000.

Wollermann, Louis A.; Rucker, Dugan A.; and Krum, Jack K., to International Telephone and Telegraph Corporation. Reduction of mixing time of yeast leavened dough compositions. 4,239,783, Cl. 426-25.000.

Woo, Edmund P., to Dow Chemical Company, The. Bis-dicyanoalkyl arene compounds. 4,239,694, Cl. 260-465.00D.

Woodward, Oakley M., to United States of America, Army. Short backfire antenna with sum and error patterns. 4,240,080, Cl. 343-817.000.

Worrell, G. Richard: *See—*
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Worthington Pump, Inc.: *See—*
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Wrench, Edwin H., to General Dynamics Corporation. Actuator configuration for a deformable mirror. 4,239,343, Cl. 350-295.000.

Wu, Edward W. J. Method and equipment for manufacture of target boards for darts or archery. 4,239,573, Cl. 156-245.000.

Wyller, Arne A. Print maker. 4,239,376, Cl. 355-27.000.

X Incorporated: *See—*
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Xerox Corporation: *See—*
Handy, Roland J., 4,240,068, Cl. 340-347.0AD.
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Yaguchi, Eiichi: *See—*
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Yaindl, Charles, to Worthington Pump, Inc. Reciprocating plunger pump with improved liquid end valve assembly. 4,239,463, Cl. 417-454.000.

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Yamamoto, Takaharu; Asai, Tsuyoshi; Fujimori, Naoji; and Tobioka, Masa-aki, to Sumitomo Electric Industries, Ltd. Surface-coated sintered hard body. 4,239,536, Cl. 75-238.000.

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Yamazaki, Shunpei. Semiconductor photoelectric conversion device. 4,239,554, Cl. 136-255.000.

Yanagioka, Hiroshi; Futami, Atsushi; Shinsenji, Masatake; and Tanaka, Minoru, to Chiyoda Chemical Engineering & Construction Co., Ltd. Gas-liquid contact reaction apparatus. 4,239,515, Cl. 55-223.000.

Yang, Kang, to Conoco, Inc. Barium oxide catalyzed ethoxylation. 4,239,917, Cl. 568-618.000.

Yano, Tsuneomi; and Yuzawa, Haruo, to Nissan Motor Company, Limited. Closed loop controlled auxiliary air delivery system for internal combustion engine. 4,240,145, Cl. 364-431.000.

Yasuda, Yoshinobu: *See—*
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Yatsuo, Tsutomu; Watanabe, Atsuo; and Shimizu, Yoshiteru, to Hitachi, Ltd. Semiconductor controlled rectifier device with small area dV/dt self-protecting means. 4,240,091, Cl. 357-38.000.

Yaworsky, Chester E.: *See—*
Howard, Curtiss G.; Jordan, Lester W.; and Yaworsky, Chester E., 4,239,954, Cl. 219-121.0EH.

Yeager, Robert R., to Lambert Corporation. Lifting mechanism with cam. 4,239,086, Cl. 172-680.000.

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Marquis, Edward T.; and Yeakey, Ernest L., 4,239,700, Cl. 564-157.000.

Yeatts, Connie M. Oil well unloading apparatus and process. 4,239,458, Cl. 417-60.000.
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Yoshida, Hajime, to Hajime Industries, Ltd. Apparatus and method for pattern information processing. 4,240,107, Cl. 358-93.000.
Yoshida Kogyo K.K.: *See—*
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Young, Peter L.: *See—*
Borrelli, Nicholas F.; and Young, Peter L., 4,239,338, Cl. 350-155.000.
Youssefyeh, Raymond D.; and Wilson, Jeffrey D., to USV Pharmaceutical Corporation. Pyridothienotriazines. 4,239,887, Cl. 544-184.000.
Yu, James H., to Mead Corporation, The. Momentumless shutdown of a jet drop recorder. 4,240,082, Cl. 346-75.000.
Yuzawa, Haruo: *See—*
Yano, Tsuneomi; and Yuzawa, Haruo, 4,240,145, Cl. 364-431.000.
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Zeiss-Stiftung, Carl: *See—*
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Zerner, Donald T.: *See—*
Dobson, George M.; Zerner, Donald T.; and Dobson, Austin J., 4,239,126, Cl. 221-211.000.
Zhilin, Viktor A. System for locating mobile objects in distress. 4,240,079, Cl. 343-100.0ST.
Zima, Herbert; and Dworak, Gert, to Vianova Kunstharz, A.G. Aqueous coating emulsions and process for producing same. 4,239,672, Cl. 260-29.70H.
Zimmerman, Edwin H. Automatic cant production machine. 4,239,069, Cl. 144-39.000.
Zimmerman, Robert L., to Texaco Development Corp. Polyurethane catalysts and method of use. 4,239,855, Cl. 521-115.000.
Zimmerman, Robert L.; McEntire, Edward E.; and Klein, Howard P., to Texaco Development Corp. Isocyanurate foam catalyst. 4,239,916, Cl. 562-574.000.
Zoller-Kipper GmbH: *See—*
Naab, Jakob, 4,239,437, Cl. 414-408.000.
Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., to Exxon Research & Engineering Co. Semiconductor optoelectronic device package. 4,240,098, Cl. 357-74.000.
Zumsteg, Fredrick C., to Du Pont de Nemours, E. I., and Company. Nonlinear optical device. 4,240,048, Cl. 332-7.510.
Zurlinden, Cyril P., III; Howe, Charles W.; and Podry, John M. Laminated inductor stacking and calibrating apparatus. 4,238,879, Cl. 29-705.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Chimura, Hideo: *See—*
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.
DiNatale, Robert F. Photographic printing method. Re. 30,449, Cl. 355-77.000.
E-Z-Em Company, Inc.: *See—*
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Greene, Franklin M.: *See—*
Meyers, Phillip H.; and Greene, Franklin M., Re. 30,446, Cl. 128-736.000.
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Huck Manufacturing Company: *See—*
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Iannicelli, Joseph, to J. M. Huber Corporation. Surface modified pigments. Re. 30,450, Cl. 106-308.00N.
J. L. Clark Manufacturing Co.: *See—*
Loyd, Patrick V.; and Mills, Samuel M., Re. 30,447, Cl. 138-141.000.
J. M. Huber Corporation: *See—*
Iannicelli, Joseph, Re. 30,450, Cl. 106-308.00N.
Loyd, Patrick V.; and Mills, Samuel M., to J. L. Clark Manufacturing Co. Insulating connector. Re. 30,447, Cl. 138-141.000.
Maeda, Kenji: *See—*
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.
Meyers, Phillip H.; and Greene, Franklin M., to E-Z-Em Company, Inc. Apparatus for detecting temperature variations over selected regions of living tissue, and method thereof. Re. 30,446, Cl. 128-736.000.
Mills, Samuel M.: *See—*
Loyd, Patrick V.; and Mills, Samuel M., Re. 30,447, Cl. 138-141.000.
Mohacsi, Ernest, to Hoffmann-La Roche Inc. 3-Phenoxymorphinans and derivatives thereof. Re. 30,452, Cl. 546-74.000.
Nakayama, Yuya: *See—*
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.
Ruhl, John H., to Huck Manufacturing Company. Fastener with proportioned strength lock grooves. Re. 30,445, Cl. 85-7.000.
Shimada, Nobuyoshi: *See—*
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.
Shroff, Bansi K., to Honeywell Inc. Tape recorder system. Re. 30,448, Cl. 242-192.000.
Takita, Tomohisa: *See—*
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, to Zaidan Jojin Biseibutsu Kagaku Kenkyu Kai. Novel process for producing antibiotics bleomycin. Re. 30,451, Cl. 260-112.50R.
Zaidan Jojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, Re. 30,451, Cl. 260-112.50R.

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AB Akerlund & Rausing: *See—*
Andersson, Rolf U., 257,627, Cl. D9-433.000.
Andersson, Rolf U., to AB Akerlund & Rausing. Packaging tray. 257,627, 12-16-80, Cl. D9-433.000.
Armbruster, Joseph M., to Sheller-Globe Corporation. Vehicle roof mounted air conditioner cowling. 257,637, 12-16-80, Cl. D23-142.000.
Barger, Richard L., to Scope Manufacturing Company. Log splitter. 257,632, 12-16-80, Cl. D15-127.000.
Bue, Richard C.; and Luckes, Earl L., to Sico Incorporated. Mobile bed frame. 257,623, 12-16-80, Cl. D6-79.000.
Carreiro, Ronald. Toy sword. 257,635, 12-16-80, Cl. D21-109.000.
Consolidated Devices, Inc.: *See—*
Grabovac, Bosko, 257,626, Cl. D8-24.000.
Dent, David H. Fireplace grate. 257,625, 12-16-80, Cl. D7-207.000.
Dinn, Jerome R.: *See—*
Reid, Kenneth G.; and Dinn, Jerome R., 257,639, Cl. D25-78.000.
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Garcia, John M. Skill toy. 257,633, 12-16-80, Cl. D21-62.000.
Gecchelin, Bruno, to Skipper S.p.A. Lamp shade. 257,644, 12-16-80, Cl. D26-118.000.
Grabovac, Bosko, to Consolidated Devices, Inc. Torque wrench lever. 257,626, 12-16-80, Cl. D8-24.000.
Hibdon, Robert M.: *See—*
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Hughey, Albert L.; and Hughey, Paul B., to Vantage Construction Company Incorporated. Temperature insulating foam panel. 257,640, 12-16-80, Cl. D25-96.000.
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Hughey, Albert L.; and Hughey, Paul B., 257,640, Cl. D25-96.000.
Keller, Ethel. Cookie cutter. 257,624, 12-16-80, Cl. D7-44.000.
LeCornu, Allen R. Adhesive push-button telephone attachment. 257,631, 12-16-80, Cl. D14-66.000.
Levin, Gary M. Railroad restaurant. 257,638, 12-16-80, Cl. D25-11.000.
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Miller, Gary L.; and Hibdon, Robert M. Aerial toy. 257,634, 12-16-80, Cl. D21-88.000.
Miller, Harvey R. Convertible airplane and automobile. 257,629, 12-16-80, Cl. D12-4.000.
Pacific Steel Ltd.: *See—*
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Plante, Emile. Spindle for a lobster trap buoy. 257,628, 12-16-80, Cl. D10-121.000.
Reid, Kenneth G.; and Dinn, Jerome R., to Pacific Steel Ltd. Post for storage racking. 257,639, 12-16-80, Cl. D25-78.000.
Ruetenik, Roger R. Railing for a dog treadmill. 257,645, 12-16-80, Cl. D30-42.000.
Scope Manufacturing Company: *See—*
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Taylor, Stephen P. Candle. 257,642, 12-16-80, Cl. D26-6.000.
Vantage Construction Company Incorporated: *See—*
Hughey, Albert L.; and Hughey, Paul B., 257,640, Cl. D25-96.000.
Viio, Matti. Workman's jacket. 257,621, 12-16-80, Cl. D2-187.000.
Williams, William O., Jr. Artificial fishing lure. 257,636, 12-16-80, Cl. D22-27.000.
Zurcher, Frederic. Luminaire. 257,643, 12-16-80, Cl. D26-85.000.

CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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12 4,239,540
15.05 4,239,541
18.14 4,239,542
22 4,239,543
4,239,544
181 4,239,545
270 4,239,546
274 4,239,547
300 4,239,548
308 N Re.30,450
308 Q 4,239,549
314 4,239,550

CLASS 108

20 4,239,009

CLASS 111

1 4,239,010

CLASS 112

266.1 4,239,011

CLASS 114

23 4,239,012

CLASS 116

203 4,239,014

CLASS 118

624 4,239,016
656 4,239,017

CLASS 119

1 4,239,018
3 4,239,019
16 4,239,020
23 4,239,021

CLASS 123

196 R 4,239,026
203 4,239,027
275 4,239,023
366 4,239,025
389 4,239,028
416 4,239,024
491 4,239,022

CLASS 126

163 R 4,239,029
271.1 4,239,030
429 4,239,031
437 4,239,032
438 4,239,033
439 4,239,034
443 4,238,873
452 4,239,035

CLASS 128

20 4,239,036
76 B 4,239,037
205.13 4,239,038
205.24 4,239,039
213 A 4,239,041
213 R 4,239,040
214.4 4,239,042
285 4,239,043
295 4,239,044
305 4,239,045
640 4,239,046
663 4,239,047
666 4,239,048
736 Re.30,446

CLASS 131

21 R 4,238,993
235 ST 4,239,049

CLASS 132

40 4,239,050

CLASS 133

8 R 4,239,051

CLASS 134

6 4,239,551
28 4,239,552

CLASS 136

251 4,239,555
255 4,239,554
256 4,239,553

CLASS 137

13 4,239,052
110 4,239,053
209 4,239,054
315 4,239,055
370 4,239,056
549 4,239,057
557 4,239,058
587 4,239,059
4,239,060
614.11 4,239,061

CLASS 138

96 R 4,239,062
123 4,239,063
141 Re.30,447
154 4,239,064

CLASS 139

383 A 4,239,065
452 4,239,066

CLASS 144

2 Z 4,239,067
39 4,239,069
193 A 4,239,070
209 R 4,239,071
312 4,239,072

CLASS 148

38 4,239,556
126 4,239,557
175 4,239,558
188 4,239,559
189 4,239,560

CLASS 149

19.8 4,239,561
19.91 4,239,073

CLASS 150

1.6 4,239,074

CLASS 152

209 R 4,239,075
347 4,239,076

CLASS 156

64 4,239,562
72 4,239,563
79 4,239,564
126 4,239,565
137 4,239,566
154 4,239,567
155 4,239,568
156 4,239,569
163 4,239,570
196 4,239,571
227 4,239,572
245 4,239,573
267 4,239,574
272 4,239,077
4,239,575
297 4,239,576
312 4,239,577
361 4,239,578
398 4,239,579
468 4,239,580
497 4,239,581
505 4,239,582
601 4,239,583
612 4,239,584
617 SP 4,239,585
644 4,239,586
659.1 4,239,587

CLASS 159

48 R 4,239,588

CLASS 162

31 4,239,589
49 4,239,590
109 4,239,591
175 4,239,592
303 4,239,593

CLASS 164

147 4,239,078
200 4,239,079
305 4,239,080
431 4,239,081

CLASS 166

117.5 4,239,082
117.7 4,239,083
278 4,239,084

CLASS 172

667 4,239,085
680 4,239,086

CLASS 174

48 4,239,932

CLASS 175

340 4,239,087

CLASS 176

9 4,239,594
19 R 4,239,595
37 4,239,596
78 4,239,597
87 4,239,598

CLASS 177

210 FP 4,239,088

CLASS 178

17.5 4,239,933

CLASS 179

1 G 4,239,937
1 GP 4,239,939
1 SD 4,239,936
1 VL 4,239,938
2.51 4,239,940
84 R 4,239,935
4,239,941
100.1 G 4,239,942
115.5 VC 4,239,943
4,239,944
182 R 4,239,945

CLASS 181

131 4,239,089
172 4,239,090
243 4,239,091

CLASS 188

267 4,239,092

CLASS 190

41 R 4,239,093

CLASS 191

25 4,239,094

CLASS 192

84 T 4,239,095
103 C 4,239,096
106.2 4,239,097
111 A 4,239,098

CLASS 193

32 4,239,099
35 R 4,239,100
37 4,239,101

CLASS 198

336 4,239,102
443 4,239,103

CLASS 200

51.13 4,239,946
61.89 4,239,947
148 R 4,239,948
4,239,949

254	4,239,950
CLASS 201	
2.5	4,239,599
CLASS 202	
138	4,239,600
176	4,239,601
242	4,239,602
CLASS 203	
11	4,239,603
CLASS 204	
56 R	4,239,604
59 R	4,239,605
67	4,239,606
128	4,239,607
159.17	4,239,608
159.23	4,239,609
211	4,239,610
298	4,239,611
299 R	4,239,612
CLASS 206	
45.33	4,239,104
219	4,239,105
223	4,239,106
225	4,239,107
312	4,239,108
387	4,239,109
396	4,239,110
484	4,239,111
525	4,239,112
568	4,239,113
610	4,239,114
611	4,239,115
CLASS 208	
8 LE	4,239,613
108	4,239,614
120	4,239,615
309	4,239,616
321	4,239,617
355	4,239,618
CLASS 209	
214	4,239,619
523	4,239,116
553	4,239,117
581	4,239,118
672	4,239,119
682	4,239,120
703	4,239,121
CLASS 210	
96.1	4,239,623
236	4,239,624
321.3	4,239,625
333.01	4,239,626
484	4,239,627
601	4,239,620
687	4,239,621
CLASS 211	
182	4,239,122
CLASS 219	
56	4,239,951
69 W	4,239,952
79	4,239,953
121 EH	4,239,954
271	4,239,955
272	4,239,956
CLASS 220	
90.6	4,239,123
240	4,239,124
CLASS 221	
65	4,239,125
211	4,239,126
259	4,239,127
CLASS 222	
1	4,239,128
79	4,239,129
131	4,239,130
135	4,239,131
212	4,239,132
476	4,239,133
CLASS 223	
101	4,239,134
CLASS 224	
154	4,239,135
219	4,239,136
319	4,239,137
321	4,239,138
324	4,239,139
CLASS 225	
4	4,239,140
CLASS 226	
7	4,239,141
194	4,239,142
CLASS 227	
10	4,239,143
CLASS 228	
1 R	4,239,144
6 R	4,239,145
CLASS 229	
15	4,239,146
	4,239,147
36	4,239,148
45 R	4,239,149
48 R	4,239,150
CLASS 235	
92 AC	4,239,958
92 DN	4,239,957
437	4,239,151
493	4,239,959
CLASS 236	
48 R	4,239,152
86	4,239,153
87	4,239,154
CLASS 238	
277	4,239,156
CLASS 239	
265.17	4,239,155
288.5	4,239,157
567	4,239,158
CLASS 241	
23	4,239,159
46.02	4,239,161
222	4,239,160
CLASS 242	
25 R	4,239,187
43 R	4,239,162
55.2	4,239,163
55.53	4,239,164
58.6	4,239,165
71.6	4,239,166
192	Re.30,448
CLASS 248	
205 A	4,239,167
293	4,239,168
412	4,239,169
441 B	4,239,170
558	4,239,171
641	4,239,172
CLASS 249	
41	4,239,173
67	4,239,174
92	4,239,175
97	4,239,176
CLASS 250	
213 VT	4,239,960
221	4,239,961
222 R	4,239,962
231 R	4,239,963
255	4,239,964
270	4,239,965
275	4,239,966
281	4,239,967
327.1	4,239,968
359	4,239,969
432 PD	4,239,970
439 P	4,239,971
445 T	4,239,972
531	4,239,973
CLASS 251	
11	4,239,177
14	4,239,178
38	4,239,179
51	4,239,180
61.2	4,239,182
61.5	4,239,181
144	4,239,183
149.6	4,239,184
164	4,239,185
255	4,239,186
CLASS 252	
8.5 C	4,239,629
8.55 B	4,239,630
8.55 D	4,239,628
8.75	4,239,631
12	4,239,632
32.7 E	4,239,633
33	4,239,634
34	4,239,635
48.6	4,239,636
62.54	4,239,637
73	4,239,638
90	4,239,639
95	4,239,640
142	4,239,641
182	4,239,642
	4,239,643
186	4,239,644
301.4 P	4,239,645
316	4,239,646
377	4,239,647
389 A	4,239,648
408	4,239,649
429 B	4,239,650
438	4,239,651
441	4,239,652
447	4,239,653
455 Z	4,239,654
	4,239,655
462	4,239,656
464	4,239,657
465	4,239,658
524	4,239,659
528	4,239,660
541	4,239,661
555	4,239,662
CLASS 254	
376	4,239,188
CLASS 260	
5	4,239,663
17.2	4,239,665
17.4 R	4,239,664
17.5	4,239,666
18 TN	4,239,667
29.2 M	4,239,668
29.6 MP	4,239,670
29.6 R	4,239,669
29.6 TA	4,239,671
29.7 H	4,239,672
30.6 R	4,239,673
37 SB	4,239,674
39 P	4,239,676
39 SB	4,239,675
40 R	4,239,677
42.18	4,239,678
42.49	4,239,679
112.5 R	Re.30,451
112.5 T	4,239,680
239.3 A	4,239,682
239.3 T	4,239,683
239.55 R	4,239,681
314.5	4,239,685
325 PH	4,239,686
326.27	4,239,687
326.43	4,239,688
333	4,239,689
340.2	4,239,690
345.5	4,239,691
448 R	4,239,692
449.5	4,239,693
465 D	4,239,694
502.5	4,239,695
513 R	4,239,696
543 R	4,239,697
549	4,239,698
926	4,239,708
974	4,239,709
CLASS 261	
65	4,239,710
109	4,239,711
CLASS 264	
1	4,239,712
40.1	4,239,713
45.5	4,239,714
70	4,239,715
86	4,239,716
108	4,239,717
117	4,239,718
137	4,239,719
147	4,239,720
157	4,239,721
206	4,239,722
315	4,239,723
328.6	4,239,725
328.8	4,239,724
525	4,239,726
550	4,239,727
CLASS 266	
79	4,239,189
158	4,239,190
200	4,239,191
216	4,239,192
243	4,239,193
270	4,239,194
CLASS 269	
16	4,239,195
17	4,239,196
68	4,239,197
156	4,239,198
266	4,239,199
328	4,239,200
CLASS 271	
18	4,239,202
122	4,239,203
171	4,239,204
175	4,239,205
271	4,239,206
CLASS 272	
31 A	4,239,207
67	4,239,208
76	4,239,209
118	4,239,210
119	4,239,211
141	4,239,212
CLASS 273	
1 E	4,239,213
1.5 R	4,239,214
29 A	4,239,215
32 B	4,239,216
85 E	4,239,218
87.4	4,239,217
121 A	4,239,219
127 R	4,239,220
	4,239,221
129 W	4,239,222
138 R	4,239,223
143 R	4,239,224
	4,239,225
146	4,239,226
186 A	4,239,227
189 R	4,239,228
255	4,239,229
264	4,239,230
293	4,239,231
341	4,239,232
383	4,239,233
391	4,239,234
395	4,239,235
403	4,239,236
CLASS 274	
1 E	4,239,237
9 B	4,239,238
23 A	4,239,239
CLASS 277	
84	4,239,240
87	4,239,241
153	4,239,242
	4,239,243
188 R	4,239,244
203	4,239,245
CLASS 279	
121	4,239,246
CLASS 280	
12 S	4,239,247
42	4,239,248
47.2	4,239,249
446 A	4,239,251
446 B	4,239,250
446 R	4,239,252
460 R	4,239,253
605	4,239,254
	4,239,255
	4,239,256
615	4,239,257
639	4,239,258
649	4,239,259
806	4,239,260
CLASS 283	
21	4,239,261
CLASS 285	
61	4,239,262
150	4,239,263
173	4,239,264
197	4,239,265
228	4,239,267
323	4,239,266
CLASS 290	
1 R	4,239,974
	4,239,975
42	4,239,976
44	4,239,977
CLASS 292	
5	4,239,268
175	4,239,269
347	4,239,270
CLASS 294	
74	4,239,271
	4,239,272
88	4,239,273
114	4,239,274
CLASS 296	
37.12	4,239,277
37.6	4,239,276
97 F	4,239,278
210	4,239,279
CLASS 297	
18	4,239,280
108	4,239,281
284	4,239,282
CLASS 299	
2	4,239,283
	4,239,284
	4,239,285
4	4,239,286
	4,239,287
5	4,239,288
18	4,239,289
34	4,239,290
70	4,239,291
CLASS 303	
3	4,239,292
6 C	4,239,294
6 M	4,239,293
24 A	4,239,296
106	4,239,295
CLASS 305	
11	4,239,297
CLASS 307	
16	4,239,978
118	4,239,979
205	4,239,980
214	4,239,981
219	4,239,982
221 D	4,239,983
237	4,239,984
252 B	4,239,986
	4,239,987
252 G	4,239,985
254	4,239,988
255	4,239,989
262	4,239,990
	4,239,991
265	4,239,992
355	4,239,993
359	4,239,994
426	4,239,995
CLASS 308	
6 C	4,239,298
	4,239,299
9	4,239,300
35	4,239,301
138	4,239,302
167	4,239,303
217	4,239,304
222	4,239,305
CLASS 310	
11	4,239,996
13	4,239,997
45	4,239,998
52	4,239,999
54	4,240,000
68 E	4,240,001
324	4,240,002
326	4,240,003
327	4,240,004
CLASS 312	
111	4,239,306
183	4,239,307
201	4,239,308
221	4,239,309
227	4,239,310
305	4,239,311
CLASS 313	
231	4,240,005
386	4,240,006
CLASS 315	
111.8	4,240,007
151	4,240,008
224	4,240,009
248	4,240,010
292	4,240,011
408	4,240,012
411	4,240,013
CLASS 318	
114	4,240,141
328	4,240,014
338	4,240,015
562	4,240,016
600	4,240,017
721	4,240,020
CLASS 320	
2	4,240,021
23	4,240,022
CLASS 322	
99	4,240,023
CLASS 323	
4	4,240,024
8	4,240,025
CLASS 324	
54	4,240,026
57 R	4,240,027
61 R	4,240,028
71 CP	4,240,029
110	4,240,030
126	4,240,031
158 F	4,240,032
321	4,240,033
CLASS 328	
14	4,240,034
CLASS 329	
50	4,240,035
CLASS 330	
10	4,240,036
127	4,240,037
149	4,240,038
253	4,240,039
255	4,240,040
288	4,240,041
302	4,240,042
CLASS 331	
94.5 D	4,240,045
	4,240,046
94.5 PE	4,240,043
	4,240,044
154	4,240,047
CLASS 332	
7.51	4,240,048
CLASS 333	
1.1	4,240,049
33	4,240,050
127	4,240,051
202	4,240,052
CLASS 335	
16	4,240,053
152	4,240,054
234	4,240,055
267	4,240,056
CLASS 336	
165	4,240,057
CLASS 337	
231	4,240,058
CLASS 338	
49	4,240,059
CLASS 339	
17 N	4,239,312
89 C	4,239,313
89 M	4,239,314
	4,239,315
	4,239,325
91 R	4,239,316
	4,239,317
143 R	4,239,318
147 R	4,239,319
154 A	4,239,320
184 M	4,239,322
186 M	4,239,323
198 G	4,239,324
276 T	4,239,321
CLASS 340	
47	4,240,060
58	4,240,061
81 R	4,240,062
119	4,240,063
146.3 AG	4,240,064
146.3 SY	4,240,065
347 AD	4,240,068
347 DA	4,240,070
347 P	4,240,069
500	4,240,077
524	4,240,078
576	4,240,071
664	4,240,072
703	4,240,073
753	4,240,074
798	4,240,075
870.29	4,240,066
870.37	4,240,067
CLASS 343	
7 PL	4,240,076
100 ST	4,240,079
817	4,240,080
CLASS 346	
75	4,240,081
	4,240,082
136	4,240,083
153	4,240,084
	4,240,085
CLASS 350	
3.71	4,239,326
17	4,239,327
70	4,239,328
96.15	4,239,329
96.18	4,239,330
96.20	4,239,331
	4,239,332
96.21	4,239,333
	4,239,334
96.23	4,239,335
	4,239,336
151	4,239,337

155	4,239,338
184	4,239,339
214	4,239,340
294	4,239,341
	4,239,342
295	4,239,343
310	4,239,344
331 R	4,239,345
334	4,239,346
336	4,239,347
342	4,239,348
347 R	4,239,349
357	4,239,350
CLASS 351	
36	4,239,351
57	4,239,352
160 H	4,239,353
CLASS 352	
140	4,239,354
CLASS 353	
87	4,239,355
CLASS 354	
23 R	4,239,356
25	4,239,357
60 E	4,239,358
113	4,239,359
128	4,239,360
145	4,239,361
212	4,239,362
238	4,239,363
286	4,239,364
295	4,239,365
310	4,239,366
319	4,239,367
325	4,239,368
CLASS 355	
4	4,239,370
14 CH	4,239,371
	4,239,373
14 E	4,239,374
14 R	4,239,372
16	4,239,375
27	4,239,376
29	4,239,377
35	4,239,378
52	4,239,379
	4,239,380
53	4,239,381
63	4,239,382
67	4,239,383
68	4,239,384
71	4,239,385
77	Re.30,449
	4,239,386
100	4,239,387
CLASS 356	
5	4,239,388
155	4,239,389
307	4,239,390
318	4,239,391
354	4,239,392
407	4,239,393
436	4,239,394
443	4,239,395
CLASS 357	
4	4,240,086
19	4,240,087
	4,240,088
24	4,240,089
30	4,240,090
38	4,240,091
41	4,240,092
42	4,240,093
45	4,240,094
49	4,240,095
63	4,240,096
71	4,240,097
74	4,240,098
79	4,240,099
CLASS 358	
10	4,240,100
11	4,240,101
	4,240,102
21 R	4,240,103
22	4,240,104
31	4,240,105
36	4,240,106
93	4,240,107
103	4,240,108
105	4,240,109
107	4,240,110
154	4,240,111
160	4,240,112
180	4,240,113
193.1	4,240,114
	4,240,115
213	4,240,116
296	4,240,117
	4,240,118
297	4,240,119
CLASS 360	
15	4,240,120
122	4,240,121
CLASS 361	
41	4,240,122
96	4,240,123
127	4,240,124
230	4,240,125
274	4,240,126
304	4,240,127
433	4,240,128
CLASS 362	
3	4,240,129
103	4,240,132
217	4,240,130
267	4,240,131
293	4,240,133
348	4,239,369
CLASS 363	
21	4,240,134
43	4,240,135
CLASS 364	
200	4,240,136
	4,240,137
	4,240,138
	4,240,139
	4,240,140
	4,240,142
	4,240,143
	4,240,144
431	4,240,145
467	4,240,146
472	4,240,147
478	4,240,148
483	4,240,149
705	4,240,150
CLASS 365	
104	4,240,151
CLASS 366	
2	4,239,396
3	4,239,397
CLASS 367	
108	4,240,152
CLASS 368	
28	4,240,153
72	4,240,154
CLASS 370	
69	4,240,155
CLASS 371	
43	4,240,156
CLASS 375	
113	4,239,934
CLASS 400	
124	4,239,398
128	4,239,399
144.2	4,239,400
	4,239,401
175	4,239,402
322	4,239,403
613	4,239,404
616.1	4,239,405
645	4,239,406
CLASS 401	
190	4,239,407
217	4,239,408
281	4,239,409
CLASS 402	
20	4,239,410
77	4,239,411
CLASS 403	
182	4,239,412
263	4,239,413
387	4,239,414
CLASS 404	
75	4,239,415
CLASS 405	
53	4,239,416
195	4,239,417
211	4,239,418
232	4,239,419
CLASS 406	
2	4,239,420
12	4,239,421
47	4,239,422
	4,239,423
157	4,239,424
197	4,239,426
CLASS 408	
181	4,239,425
213	4,239,427
CLASS 409	
182	4,239,428
CLASS 410	
59	4,239,429
68	4,239,430
CLASS 414	
1	4,239,431
84	4,239,433
110	4,239,432
136	4,239,434
	4,239,435
276	4,239,436
408	4,239,437
462	4,239,438
478	4,239,275
494	4,239,439
542	4,239,440
587	4,239,441
	4,239,442
618	4,239,443
685	4,239,444
749	4,239,445
785	4,239,446
786	4,239,447
CLASS 415	
73	4,239,449
89	4,239,448
160	4,239,450
170 R	4,239,451
172 A	4,239,452
182	4,239,453
CLASS 416	
27	4,239,454
145	4,239,455
	4,239,456
CLASS 417	
33	4,239,457
60	4,239,458
234	4,239,459
251	4,239,460
312	4,239,461
373	4,239,462
454	4,239,463
474	4,239,464
CLASS 418	
11	4,239,466
35	4,239,465
76	4,239,467
78	4,239,468
117	4,239,469
153	4,239,470
321	4,239,015
CLASS 422	
46	4,239,728
48	4,239,729
109	4,239,730
112	4,239,731
133	4,239,732
179	4,239,733
246	4,239,734
CLASS 423	
126	4,239,735
173	4,239,736
242	4,239,737
292	4,239,738
308	4,239,739
350	4,239,740
388	4,239,741
563	4,239,742
CLASS 424	
1	4,239,743
	4,239,744
	4,239,745
5	4,239,747
12	4,239,746
45	4,239,748
88	4,239,498
92	4,239,749
94	4,239,750
118	4,239,751
130	4,239,622
180	4,239,752
181	4,239,753
183	4,239,754
209	4,239,755
238	4,239,756
241	4,239,757
244	4,239,684
246	4,239,758
248.4	4,239,759
249	4,239,760
250	4,239,761
254	4,239,762
261	4,239,763
263	4,239,764
269	4,239,765
	4,239,766
273 R	4,239,767
	4,239,768
274	4,239,769
	4,239,770
275	4,239,771
279	4,239,772
285	4,239,773
288	4,239,774
300	4,239,775
304	4,239,776
	4,239,777
305	4,239,778
317	4,239,779
330	4,239,780
342	4,239,781
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144	4,239,471
388	4,239,472
392	4,239,473
525	4,239,474
526	4,239,475
556	4,239,476
CLASS 426	
2	4,239,782
25	4,239,783
104	4,239,784
266	4,239,785
601	4,239,786
CLASS 427	
38	4,239,787
43.1	4,239,788
53.1	4,239,789
54.1	4,239,790
64	4,239,791
74	4,239,809
75	4,239,810
95	4,239,811
96	4,239,812
98	4,239,813
120	4,239,814
150	4,239,815
168	4,239,816
211	4,239,817
236	4,239,818
255.2	4,239,819
272	4,239,820
358	4,239,821
	4,239,822
420	4,239,823
CLASS 428	
13	4,239,824
16	4,239,825
35	4,239,826
	4,239,827
64	4,239,828
86	4,239,829
136	4,239,830
193	4,239,831
198	4,239,792
216	4,239,793
219	4,239,794
247	4,239,795
315	4,239,796
327	4,239,797
331	4,239,798
335	4,239,799
364	4,239,801
374	4,239,800
377	4,239,802
379	4,239,803
409	4,239,804
446	4,239,805
462	4,239,806
	4,239,807
482	4,239,808
539	4,239,832
567	4,239,833
592	4,239,834
611	4,239,835
CLASS 429	
65	4,239,836
104	4,239,837
	4,239,838
154	4,239,839
159	4,239,840
179	4,239,841
CLASS 430	
7	4,239,842
17	4,239,843
67	4,239,844
122	4,239,845
202	4,239,846
213	4,239,847
270	4,239,848
281	4,239,849
377	4,239,850
	4,239,851
CLASS 431	
20	4,239,477
24	4,239,478
170	4,239,479
264	4,239,480
284	4,239,481
354	4,239,482
CLASS 432	
8	4,239,483
77	4,239,484
121	4,239,485
225	4,239,486
CLASS 433	
7	4,239,487
180	4,239,488
220	4,239,489
CLASS 434	
351	4,238,893
CLASS 435	
32	4,239,852
33	4,239,853
CLASS 440	
40	4,239,013
CLASS 493	
4	4,238,994
444	4,239,201
CLASS 521	
31	4,239,854
115	4,239,855
118	4,239,856
121	4,239,857
CLASS 525	
57	4,239,858
98	4,239,859
131	4,239,860
151	4,239,861
240	4,239,862
263	4,239,863
279	4,239,868
316	4,239,864
327	4,239,865
440	4,239,866
478	4,239,867
503	4,239,869
CLASS 526	
59	4,239,870
73	4,239,871
105	4,239,872
114	4,239,873
143	4,239,874
214	4,239,875
287	4,239,876
CLASS 528	
14	4,239,877
45	4,239,878
76	4,239,879
125	4,239,880
164	4,239,881
209	4,239,882
322	4,239,883
486	4,239,884
CLASS 536	
29	4,239,905
56	4,239,906
120	4,239,907
CLASS 542	
416	4,239,908
422	4,239,909
CLASS 544	
97	4,239,885
170	4,239,886
184	4,239,887
309	4,239,888
335	4,239,889
CLASS 546	
74	Re.30,452
	4,239,890
242	4,239,891
251	4,239,892
321	4,239,893
CLASS 548	
194	4,239,894
341	4,239,895
378	4,239,896
CLASS 549	
61	4,239,897
65	4,239,898
CLASS 556	
438	4,239,899
	4,239,900
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34	4,239,901
41	4,239,902
73	4,239,903
157	4,239,904
244	4,239,910
246	4,239,911
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401	4,239,912
425	4,239,913
466	4,239,914
481	4,239,915
574	4,239,916
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15	4,239,701
92	4,239,699
157	4,239,700
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431	4,239,703
435	4,239,702
484	4,239,706
487	4,239,704
	4,239,705
618	4,239,917
640	4,239,918
727	4,239,919
734	4,239,920
753	4,239,921
863	4,239,922
875	4,239,923
902	4,239,924
	4,239,925
910	4,239,926
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24	4,239,927
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442	4,239,929
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723	4,239,931

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	266	257,622	D9—	433	257,627	D14—	66	257,631		109	257,635		78	257,639		85	257,643
D6—	79	257,623	D10—	121	257,628	D15—	127	257,632	D22—	27	257,636		96	257,640		118	257,644
D7—	44	257,624	D12—	4	257,629	D21—	62	257,633	D23—	142	257,637	D26—	6	257,641	D30—	42	257,645
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4 :	4,238,986		4,239,188		4,240,024		4,239,127		4,239,320		4,239,440
	4,239,486		4,239,209		4,240,029		4,239,131		4,239,380		4,239,783
	4,239,987		4,239,219		4,240,030		4,239,176		4,239,414	21 :	4,238,861
6 :	4,238,903		4,239,230		4,240,033		4,239,196		4,239,443		4,238,932
	4,238,933		4,239,231		4,240,034		4,239,261		4,239,446		4,238,970
	4,238,940		4,239,246		4,240,037		4,239,271		4,239,449		4,239,107
	4,238,941		4,239,251		4,240,039		4,239,301		4,239,495		4,239,263
	4,238,959		4,239,259		4,240,043		4,239,404		4,239,497		4,239,454
	4,239,003		4,239,260		4,240,044		4,239,413		4,239,506		4,239,907
	4,239,019		4,239,264		4,240,046		4,239,496		4,239,541		4,239,938
	4,239,213		4,239,283		4,240,063		4,239,518		4,239,543	22. :	Re.30,446
	4,239,258		4,239,285		4,240,068		4,239,668		4,239,570		4,238,859
	4,239,284		4,239,308		4,240,083		4,239,757		4,239,582		4,238,906
	4,239,399		4,239,312		4,240,084		4,239,904		4,239,614		4,239,267
	4,239,401		4,239,315		4,240,085		4,240,002		4,239,615		4,239,419
	4,239,433		4,239,318		4,240,105		4,240,094		4,239,621		4,239,654
	4,239,485		4,239,327		4,240,119	13 :	Re.30,450		4,239,646		4,239,658
	4,239,943		4,239,332		4,240,120		4,238,960		4,239,649	23 :	4,238,961
	4,240,143		4,239,335		4,240,132		4,239,099		4,239,680		4,239,205
8 :	4,238,873		4,239,343	08 :	Re.30,448		4,239,191		4,239,726	24 :	4,238,884
	4,238,930		4,239,346		4,239,039		4,239,490		4,239,752		4,239,012
9 :	4,239,452		4,239,347		4,239,093		4,240,124		4,239,778		4,239,021
01 :	4,239,341		4,239,348		4,239,167	15 :	4,238,864		4,239,825		4,239,155
04 :	4,239,163		4,239,388		4,239,197		4,239,171		4,239,908		4,239,232
	4,239,551		4,239,390		4,239,396	16 :	4,238,980		4,239,931		4,239,391
	4,239,601		4,239,392		4,239,432	17 :	Re.30,447		4,239,947		4,239,427
	4,239,980		4,239,403		4,239,529		4,238,896		4,239,975		4,239,561
	4,240,144		4,239,405		4,239,611		4,238,916		4,240,022		4,239,744
05 :	4,239,047		4,239,418		4,239,625		4,238,947		4,240,054		4,239,788
	4,240,153		4,239,526	09 :	4,238,904		4,238,950		4,240,062		4,239,794
06 :	Re.30,445		4,239,556		4,239,045		4,238,953		4,240,127		4,239,959
	4,238,860		4,239,564		4,239,064		4,238,982		4,240,135		4,240,004
	4,238,876		4,239,593		4,239,088		4,239,018	18 :	4,238,949		4,240,027
	4,238,879		4,239,594		4,239,096		4,239,049		4,238,979		4,240,050
	4,238,888		4,239,599		4,239,322		4,239,085		4,239,043	25 :	Re.30,449
	4,238,943		4,239,607		4,239,501		4,239,100		4,239,108		4,238,883
	4,238,962		4,239,635		4,239,596		4,239,104		4,239,129		4,238,887
	4,238,965		4,239,651		4,239,638		4,239,111		4,239,237		4,238,923
	4,238,968		4,239,695		4,239,862		4,239,122		4,239,238		4,238,978
	4,238,990		4,239,742		4,239,888		4,239,147		4,239,424		4,239,053
	4,238,992		4,239,781		4,239,954		4,239,182		4,239,477		4,239,092
	4,238,995		4,239,785		4,239,983		4,239,195		4,239,480		4,239,141
	4,239,004		4,239,819		4,240,047		4,239,200		4,239,677		4,239,245
	4,239,011		4,239,829		4,240,066		4,239,223		4,239,678		4,239,255
	4,239,037		4,239,841		4,240,116		4,239,225		4,239,772		4,239,333
	4,239,044		4,239,849	10 :	4,239,387		4,239,249		4,239,939		4,239,354
	4,239,055		4,239,884		4,239,553		4,239,252		4,240,012		4,239,365
	4,239,061		4,239,918		4,240,048		4,239,297	19 :	4,239,208		4,239,369
	4,239,063		4,239,963	11 :	4,239,057		4,239,303		4,239,430		4,239,498
	4,239,073		4,239,981	12 :	4,238,907		4,239,306		4,239,438		4,239,555
	4,239,134		4,239,986		4,238,911		4,239,314		4,239,906		4,239,583
	4,239,158		4,240,003		4,238,931		4,239,316	20 :	4,238,951		4,239,676

	4,239,745		4,239,714		4,239,105		4,239,133		4,239,079		4,239,118
	4,239,852		4,239,977		4,239,115		4,239,198		4,239,106		4,239,140
	4,239,858		4,240,001		4,239,117		4,239,211		4,239,144		4,239,184
	4,239,937	31 :	4,239,428		4,239,121		4,239,562		4,239,162		4,239,210
	4,239,982	32 :	4,238,868		4,239,149		4,239,821		4,239,186		4,239,244
	4,240,010		4,239,547		4,239,164		4,239,836		4,239,212		4,239,266
	4,240,051		4,239,735		4,239,169		4,239,974		4,239,216		4,239,351
	4,240,076	33 :	4,239,482		4,239,175		4,239,992		4,239,275		4,239,352
	4,240,077		4,239,812		4,239,214	39 :	4,238,866		4,239,286		4,239,355
	4,240,081		4,240,058		4,239,233		4,238,895		4,239,291		4,239,395
	4,240,088		4,240,140		4,239,253		4,238,910		4,239,334		4,239,434
	4,240,125		4,240,155		4,239,270		4,238,942		4,239,367		4,239,439
26 :	4,238,878	34 :	Re.30,452		4,239,280		4,238,944		4,239,393		4,239,455
	4,238,886		4,238,877		4,239,326		4,239,007		4,239,422		4,239,456
	4,238,975		4,239,036		4,239,338		4,239,065		4,239,481		4,239,457
	4,238,976		4,239,056		4,239,361		4,239,075		4,239,504		4,239,458
	4,238,991		4,239,081		4,239,373		4,239,086		4,239,508		4,239,459
	4,239,010		4,239,116		4,239,407		4,239,160		4,239,532		4,239,469
	4,239,023		4,239,276		4,239,409		4,239,262		4,239,567		4,239,517
	4,239,027		4,239,323		4,239,441		4,239,278		4,239,581		4,239,670
	4,239,060		4,239,330		4,239,442		4,239,305		4,239,589		4,239,700
	4,239,097		4,239,337		4,239,447		4,239,310		4,239,595		4,239,711
	4,239,136		4,239,345		4,239,450		4,239,319		4,239,598		4,239,712
	4,239,138		4,239,412		4,239,470		4,239,325		4,239,600		4,239,736
	4,239,139		4,239,435		4,239,488		4,239,461		4,239,602		4,239,809
	4,239,153		4,239,463		4,239,489		4,239,468		4,239,606		4,239,853
	4,239,279		4,239,466		4,239,502		4,239,471		4,239,613		4,239,855
	4,239,309		4,239,475		4,239,505		4,239,544		4,239,617		4,239,856
	4,239,415		4,239,499		4,239,519		4,239,557		4,239,619		4,239,859
	4,239,429		4,239,516		4,239,520		4,239,565		4,239,642		4,239,872
	4,239,512		4,239,538		4,239,521		4,239,569		4,239,704		4,239,916
	4,239,530		4,239,539		4,239,560		4,239,575		4,239,705		4,239,919
	4,239,571		4,239,563		4,239,577		4,239,626		4,239,718		4,239,930
	4,239,591		4,239,592		4,239,584		4,239,639		4,239,731		4,239,962
	4,239,666		4,239,618		4,239,586		4,239,659		4,239,740		4,239,965
	4,239,674		4,239,620		4,239,590		4,239,663		4,239,755		4,239,990
	4,239,694		4,239,631		4,239,612		4,239,679		4,239,768		4,239,991
	4,239,724		4,239,632		4,239,673		4,239,681		4,239,800		4,239,993
	4,239,733		4,239,633		4,239,687		4,239,738		4,239,801		4,240,028
	4,239,753		4,239,636		4,239,717		4,239,786		4,239,802		4,240,052
	4,239,780		4,239,675		4,239,725		4,239,792		4,239,816		4,240,075
	4,239,804		4,239,688		4,239,727		4,239,796		4,239,818		4,240,092
	4,239,808		4,239,689		4,239,734		4,239,860		4,239,834		4,240,097
	4,239,820		4,239,693		4,239,782		4,239,864		4,239,844		4,240,156
	4,239,824		4,239,708		4,239,789		4,239,874		4,239,896	49 :	4,239,006
	4,239,863		4,239,773		4,239,797		4,239,879		4,239,924		4,239,048
	4,239,909		4,239,777		4,239,798		4,239,932		4,239,925		4,239,838
	4,240,056		4,239,787		4,239,811		4,239,996		4,239,926	51 :	4,238,875
27 :	4,238,954		4,239,790		4,239,827		4,240,082		4,239,946		4,239,009
	4,239,002		4,239,830		4,239,832		4,240,122		4,239,995		4,239,187
	4,239,046		4,239,885		4,239,842	40 :	4,238,857		4,240,032		4,239,311
	4,239,089		4,239,912		4,239,846		4,238,890		4,240,049		4,239,328
	4,239,132		4,239,927		4,239,847		4,238,897		4,240,053		4,239,723
	4,239,148		4,239,929		4,239,848		4,238,900		4,240,059		4,239,823
	4,239,228		4,239,935		4,239,867		4,238,928		4,240,090		4,240,152
	4,239,239		4,239,955		4,239,869		4,239,052		4,240,111	53 :	4,238,974
	4,239,247		4,239,971		4,239,877		4,239,248		4,240,149		4,239,013
	4,239,265		4,239,994		4,239,881		4,239,510		4,239,031		4,239,035
	4,239,307		4,240,013		4,239,887		4,239,522	45 :	4,239,172		4,239,071
	4,239,377		4,240,015		4,239,890		4,239,546		4,239,243		4,239,128
	4,239,383		4,240,040		4,239,898		4,239,616		4,239,628		4,239,268
	4,239,487		4,240,042		4,239,899		4,239,628		4,239,578		4,239,282
	4,239,492		4,240,073		4,239,900		4,239,629		4,239,799		4,239,580
	4,239,699		4,240,080		4,239,915		4,239,806	46 :	4,238,966		4,239,597
	4,239,828		4,240,093		4,239,940		4,239,870		4,239,236		4,239,664
	4,239,956		4,240,100		4,239,960		4,239,917	47 :	4,239,181		4,239,690
	4,240,078		4,240,142		4,239,961	41 :	4,238,862		4,239,217		4,239,749
	4,240,131	35 :	4,239,221		4,239,966		4,238,964		4,239,691		4,239,289
29 :	4,239,059		4,239,227		4,239,967		4,239,030		4,239,721	54 :	4,239,857
	4,239,130	36 :	4,238,867		4,239,969		4,239,119		4,240,110		4,239,922
	4,239,177		4,238,905		4,240,007		4,239,531	48 :	4,238,882	55 :	4,239,034
	4,239,183		4,238,913		4,240,011	42 :	4,238,871		4,238,983		4,239,125
	4,239,226		4,238,925		4,240,036		4,238,902		4,239,014		4,239,173
	4,239,229		4,238,971		4,240,064		4,238,914		4,239,041		4,239,448
	4,239,242		4,239,008		4,240,089		4,238,919		4,239,058		4,239,822
	4,239,389		4,239,017		4,240,098		4,239,016		4,239,062		4,239,826
	4,239,527		4,239,070		4,240,108		4,239,069		4,239,082		4,239,953
	4,239,566		4,239,090	37 :	4,238,874		4,239,074		4,239,083		4,240,072
	4,239,643		4,239,102		4,238,977		4,239,077		4,239,084		

DESIGN PATENTS

6 :	257,634	08 :	257,631	12 :	257,637	23 :	257,628	34 :	257,630		257,645
04 :	257,624		257,641	17 :	257,643	25 :	257,635	36 :	257,638	41 :	257,629
06 :	257,625		257,642	18 :	257,640	27 :	257,623	39 :	257,632	45 :	257,636
	257,626	09 :	257,633								

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December 23, 1980 Volume 1001 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
June 17, 1980. *Commissioner of Patents and Trademarks.*

October 1980 Classification Orders

The reclassifications covered by the classification changes below became effective October 1980. These changes will be printed monthly. Addenda information will continue to be printed quarterly.

	Class	Subclasses
Classification Order 755, effective October 2, 1980:		
Abolished	260	551–567; 567.5; 567.6; 568–570; 570.5–570.9; 571–585.
Established	260	351.1–351.6; 453.1–453.9; 453.99; 543.1; 543.2.
	[1]564	1–512.
Title change	260	453 RW.
Classification Order 756, effective October 3, 1980:		
Abolished	210	1–84; Digests. 18; 22; 23; 25–32.
Established	210	600–808; Cross-reference art collections 900–928.
Classification Order 757, effective October 28, 1980:		
Abolished	7	141.
	81	52.3; 52.35; 52.4–52.6; 71; 72.
	144	32; 281–283; 288.
	145	50–52.
	269	321.
Established	81	429–483; Cross-reference art collections, 900; 901.
	157	14–21.
	269	329; Cross-reference art collections, 900–910.
Title change	81	53R.
Classification Order 758, effective October 31, 1980:		
Abolished	340	177–192; 194–212.
Established	340	870.01–870.44.
Classification Order 759, effective October 31, 1980:		
Abolished	260	648–660; 662–664.
Established	260	139.9.
	[2]570	101–264.

ALFRED C. MARMOR,
Administrator for Documentation, November 26, 1980.

[1] Newly established Class 564 Definitions separately available.
[2] Newly established Class 570 Definitions separately available.

National Inventor's Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 7, 1981, from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 8, 1981 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend the ceremony at 2:00 p.m. on Sunday, Feb. 8, 1981 during which time a number of inventors will be inducted into the National Inventors Hall of Fame.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 6, 1981 at 5:00 p.m. We would appreciate the cooperation of all users of the Search facilities by removing all personal property for the early closing.

SIDNEY A. DIAMOND,
Oct. 29, 1980. *Commissioner of Patents and Trademarks.*

No Change In Foreign Filing License Requirements

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbesing at 703–557–2897, or Mr. Edward Drazdowsky at 703–557–2167.

WILLIAM FELDMAN,
Date: Nov. 24, 1980. *Acting Assistant Commissioner, for Patents.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,312,548, Re. S.N. 170,259, Filed Jul. 18, 1980, Cl. 430/57, XEROGRAPHIC PLATES, Virgil W. Straughan, Owner of Record: *Xerox Corporation, Rochester, N.Y.*, Attorney or Agent: H. M. Brownrout, et al., Ex. Gp.: 166

4,047,565, Re. S.N. 192,096, Filed Sep. 29, 1980, Cl. 166/217, WELL TOOL, Charles D. Crickmer, Owner of Record: *Otis Engineering Corporation, Dallas, Tex.*, Attorney or Agent: Joe E. Edwards, et al., Ex. Gp.: 354

4,110,899, Re. S.N. 182,775, Filed Aug. 29, 1980, Cl. 29/571, METHOD FOR MANUFACTURING COMPLIMENTARY INSULATED GATE FIELD EFFECT TRANSISTORS, Kouichi Nagasawa, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 254

4,122,022, Re. S.N. 192,060, Filed Sep. 29, 1980, Cl. 252/28, METHOD FOR PREPARING CLAY-BASED GREASE COMPOSITIONS, Kenneth A. MacKenzie, et al., Owner of Record: *Shell International Research Maatschappij B.V., Hauge, Netherlands,* Attorney or Agent: B. R. Pravel, Ex. Gp.: 116

4,124,407, Re. S.N. 189,743, Filed Sep. 23, 1980, Cl. 134/3, METHOD FOR CLEANING ALUMINUM AT LOW TEMPERATURES, Robert Eric Binns, Owner of Record: *Amchem Products, Inc., Ambler, Pa.*, Attorney or Agent: Alexis Barron, et al., Ex. Gp.: 173

4,169,691, Re. S.N. 194,174, Filed Oct. 6, 1980, Cl. 409/10, MACHINE FOR TRACING THE PROFILE OF AN ORBITING STAR GEAR, Henry J. Flair, Owner of Record: *Illinois Tool Works Inc., Chicago, Ill.*, Attorney or Agent: Thomas W. Buckman, et al., Ex. Gp.: 324

PATENT NOTICES

Certificates of Correction for the Week of Dec. 23, 1980

3,555,374	4,192,954	4,213,270	4,222,912
3,856,675	4,194,113	4,213,462	4,222,926
4,032,321	4,195,141	4,214,053	4,223,024
4,032,502	4,195,840	4,215,177	4,223,102
4,035,355	4,198,418	4,215,259	4,223,110
4,045,343	4,203,063	4,215,551	4,223,537
4,050,973	4,205,062	4,216,159	4,223,546
4,101,358	4,205,233	4,216,726	4,223,596
4,102,746	4,206,262	4,216,815	4,223,734
4,115,977	4,206,782	4,217,107	4,223,824
4,131,764	4,206,946	4,217,358	4,224,171
4,132,425	4,207,887	4,217,414	4,225,158
4,178,441	4,208,314	4,218,159	4,225,385
4,180,522	4,208,504	4,219,164	4,225,946
4,180,571	4,208,712	4,220,536	4,226,338
4,182,901	4,209,912	4,221,058	4,226,400
4,183,520	4,211,453	4,221,223	4,226,609
4,186,608	4,211,825	4,221,343	4,226,724
4,187,222	4,212,109	4,221,417	4,226,963
4,187,224	4,213,084	4,221,705	4,226,969
4,189,484	4,213,129	4,222,038	

Disclaimers

4,032,974.—*Frederik Johannes Van Roessel,* Upper Saddle River, N.J. VIDEO PROCESSING CIRCUIT. Patent dated June 28, 1977. Disclaimer filed Sept. 8, 1980, by the assignee, *North America Philips Corporation.*

Hereby enters this disclaimer to claim 7 of said patent.

4,161,890.—*Alexander Goloff,* East Peoria, and *Ralph E. Denning,* Washington, Ill. FRICTION DRIVE CONTACT ZONE. Patent dated July 24, 1979. Disclaimer filed Nov. 7, 1980, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1, 2, 19 and 21–26 of said patent.

4,223,522.—*Yasushi Nomura,* Tokorozawa; *Fumio Nakajima,* Tokyo; *Kenji Yamada,* Koganei; and *Takayasu Machida,* Iruma, Japan. ELECTRONIC TIMEPIECE Patent dated Sept. 23, 1980. Disclaimer filed Oct. 24, 1980, by the assignee, *Citizen Watch Company Limited.*

The term of this patent subsequent to Dec. 19, 1995, has been disclaimed.

4,229,211.—*Donald D. Battles,* Atlanta, Ga. LADLE HEATING SYSTEM. Patent dated Oct. 21, 1980. Disclaimer filed Oct. 2, 1980, by the assignee, *The Cadre Corporation.*

The term of this patent subsequent to Sept. 22, 1997, has been disclaimed.

Dedications

3,755,911.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Dayton, Ohio. LIQUID REMOVING APPARATUS AND METHOD. Patent dated Sept. 4, 1973. Dedication filed Oct. 17, 1980, by the inventors.

Hereby dedicates to the Public the entire term of said patent.

3,757,426.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Dayton, Ohio. LIQUID REMOVING METHOD. Patent dated Sept. 11, 1973. Dedication filed Oct. 17, 1980, by the inventors.

Hereby dedicates to the Public the entire term of said patent.

3,903,343.—*Frederick Pfaff,* Cornwells Heights, Pa. METHOD FOR REDUCING SINK MARKS IN MOLDED GLASS FIBER REINFORCED UNSATUATED POLYESTER COMPOSITIONS, AND MOLDED ARTICLES THEREBY PRODUCED. Patent dated Sept. 2, 1975. Dedication filed Sept. 24, 1980, by the assignee, *Rohm and Haas Company.*

Hereby dedicates the remaining term of said patent to the Public.

4,035,961.—*Raymond E. Pemrick,* Schenectady and *Paul M. Cocanour,* Greenwich, N.Y. COATED ABRASIVE BACKING OR DIMENSIONALLY STABILIZED HEAT STRETCHED FABRIC. Patent dated July 19, 1977. Dedication filed Oct. 20, 1980, by the assignee, *Norton Company.*

Hereby dedicates to the Public the entire term of said patent.

4,140,820.—*Raymond E. Pemrick,* Schenectady and *Paul M. Cocanour,* Greenwich, N.Y. WOVEN HEAT-STRETCHED BACKING MEMBERS OF IMPROVED DIMENSIONAL STABILITY. Patent dated Feb. 20, 1979. Dedication filed Oct. 20, 1980, by the assignee, *Norton Company.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 15, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus: Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-2-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-10-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-11-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-12-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-13-79
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INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-27-79
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INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-4-78
DESIGNS, GROUP 290—Vacant. Industrial Arts; Household, Personal and Fine Arts.	1-4-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-18-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-20-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-27-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-1-79

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents ..... Numbers 2,295 to 2,323, inclusive

REISSUES

DECEMBER 23, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

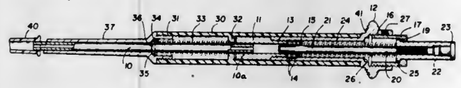
Re. 30,453
PIPETTES

Emil A. Scordato, Eastchester, and William C. Strobel, Bronx, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Original No. 3,853,012, dated Dec. 10, 1974, Ser. No. 186,023, Oct. 4, 1971. Application for reissue Mar. 19, 1979, Ser. No. 21,965

Int. Cl.³ B01L *3/02*

U.S. Cl. 73—425.6 **13 Claims**



1. A manual pipette adapted to have a disposable tip wedge fitted at one end thereof and in co-axial relationship thereto, the arrangement being such that a disposable tip is secured to the pipette only by the frictional force of the wedge fit, said pipette comprising *a piston operating member that is actuated to draw a liquid into and discharge it from a disposable tip,* a detipping member for removing a disposable tip that is wedge fitted to the pipette, said member being slideably mounted on said pipette in a direction parallel to the axis of the pipette and movable between a normal position away from a disposable tip and a position where it engages the end of a disposable tip and thereafter pushes the tip in an axial direction to free it from frictional engagement with the pipette , *resilient means for biasing said detipping member to its normal position, and means adjacent the end of the pipette remote from the end to which a disposable tip is fitted and proximate to said piston operating member for effecting a relative movement between said detipping member and a disposable tip fitted to the pipette whereby one handed operation of the pipette is facilitated when going from a pipetting to a detipping operation.*

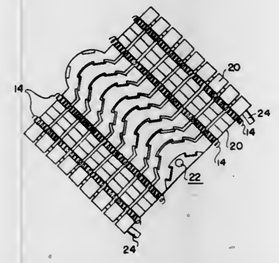
Re. 30,454
FLEXIBLE TRACK FOR ELECTRICALLY ENERGIZED MINIATURE VEHICLES

John D. Birdsall, 1262 Sunset Plaza Dr., Los Angeles, Calif. 90069

Original No. 4,095,743, dated Jun. 20, 1978, Ser. No. 745,529, Nov. 29, 1976. Continuation-in-part of Ser. No. 652,071, Jan. 26, 1976, abandoned. Application for reissue Mar. 12, 1979, Ser. No. 19,340

Int. Cl.³ A63H *18/12;* **E01B** *23/00*

U.S. Cl. 238—10 F **18 Claims**



7. A track for miniature cars, trains, or the like, comprising: an elongated structure formed of a plurality of rigid transverse members, each of said transverse members including intermediate coupling means for coupling such transverse members to the next adjacent transverse member, said elongated structure being capable of being turned laterally to curved configurations within predetermined limits; at least one elongated electric element extending along the length of said elongated structure, said electric element being formed of electrically conductive material and being capable of substantial longitudinal extension and contraction; each of said transverse members having integral longitudinally projecting members at each end thereof to be received in corresponding recesses in the ends of adjacent ones of said transverse members to serve as end couplings for the transverse members.

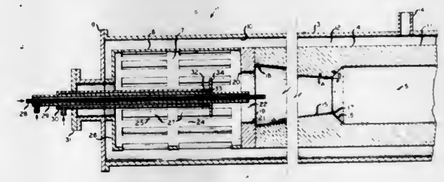
Re. 30,455
APPARATUS FOR MAKING CARBON BLACK

Eulas W. Henderson, Oregon, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Original No. 4,025,312, dated May 24, 1977, Ser. No. 652,694, Jan. 27, 1976. Application for reissue Apr. 25, 1978, Ser. No. 899,949

Int. Cl.³ B01J *10/00;* **C09C** *1/48*

U.S. Cl. 422—156 **15 Claims**



9. An apparatus for producing carbon black, said apparatus including:

a. an elongate housing;

b. a first member mounted in said housing and forming a converging/diverging venturi, said member having an upstream end;

c. first means forming a precombustion chamber in said housing adjacent to and upstream of said upstream end of said first member, said first means including a perforate member mounted in said housing and extending upstream from adjacent said upstream end of said first member, said perforate member having an upstream end wall closed to the flow of air therethrough into the precombustion chamber, a downstream opening, and a side wall with a plurality of through perforations, said side wall being spaced from an interior portion of said housing forming a space therebetween;

d. air inlet means comprising said space communicating with said precombustion chamber and only circumferentially introducing air generally tangentially into said precombustion chamber;

e. second means communicating with said precombustion chamber and operable to introduce a combustible fuel thereinto;

f. a first tubular member extending axially into said precombus-

tion chamber and operable for introducing feed oil into one of said precombustion chamber and said venturi; and

g. a second member positioned in said housing adjacent said upstream end of said first member, said second member having a through opening providing an upstream opening for the first member and thereby providing flow communication between said downstream opening of said precombustion chamber and said upstream end of said venturi whereby a burning mixture of fuel and air flows from the precombustion zone through the through opening into the venturi, said through opening being smaller than the upstream end of said venturi; and

h. means connecting the downstream end of the first means with the upstream end of the second member to prevent flow of fluid into the upstream end of the venturi except through the through opening of the second member.

Re. 30,456

2-SUBSTITUTED PHENYL-S-TRIAZOLO[5,1-a] ISOQUINOLINE COMPOUNDS

Amedeo Omodei-Sale, Voghera; Pietro Consonni, and Leonard Lerner, both of Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

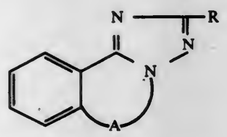
Original No. 4,075,341, dated Feb. 21, 1978, Ser. No. 636,330, Nov. 28, 1975. Continuation-in-part of Ser. No. 473,045, May 24, 1974, abandoned. Application for reissue Apr. 23, 1979, Ser. No. 32,205

Claims priority, application United Kingdom, May 25, 1973, 25163/73; Aug. 22, 1973, 39789/73

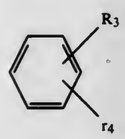
Int. Cl.[3] **C01D** *471/04;* **A61K** *31/53*

U.S. Cl. 424—258 **14 Claims**

1. A compound of the formula

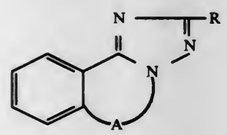


wherein A represents the group —CH_2—CH_2— or —CH=CH—; and
wherein R is substituted phenyl of the formula

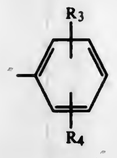


wherein one of the substituents R_3 and R_4 is located in the 3- or 4-position of the phenyl ring, and represents a lower alkoxy, lower alkenyloxy, lower alkynyloxy, fluoro, chloro, bromo, trifluoromethyl, hydroxy, cyclopropyloxy, cyclobutyloxy, cyclopentyloxy, benzyloxy, nitro or dimethylamino group and the other represents hydrogen, methoxy, fluoro, chloro or bromo; or R_3 and R_4 taken together represent a methylenedioxy group.

13. A method for preventing littering in an impregnated female animal which comprises administering to said animal an effective amount of a compound of the following formula



wherein R is substituted phenyl of the formula



wherein one of the substituents R_3 and R_4 is located in the 3- or 4-position of the phenyl ring, and represents a lower alkoxy, lower alkenyloxy, lower alkynyloxy, fluoro, chloro, bromo, trifluoromethyl, hydroxy, cyclopropyloxy, cyclobutyloxy, cyclopentyloxy, benzyloxy, nitro or dimethylamino group and the other represents hydrogen, methoxy, fluoro, chloro or bromo; or R_3 and R_4 taken together represent a methylenedioxy group; and the symbol A represents the group —CH-$_2$—CH_2— or —CH=CH—.

Re. 30,457

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and Robert J. Ife, Stevenage, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

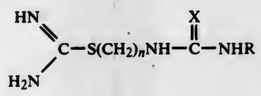
Original No. 4,084,001, dated Apr. 11, 1978, Ser. No. 744,584, Nov. 23, 1976. Application for reissue Aug. 10, 1978, Ser. No. 933,254

Claims priority, application United Kingdom, Dec. 1, 1975, 49248/75

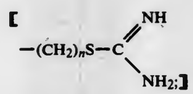
Int. Cl.[2] **A61K** *31/17*

U.S. Cl. 424—322 **9 Claims**

1. A compound of the formula



wherein n is an integer from 3 to 6; R is lower alkyl [or]



X is sulphur; or a pharmaceutically acceptable acid addition salt thereof.

Re. 30,458

DRY CELLS

Yoshio Uetani; Rokurou Ikebata; Takayuki Togo, and Tugiyasu Iwamaru, all of Ibaraki, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Original No. 3,874,932, dated Apr. 1, 1975, Ser. No. 370,433, Jun. 15, 1973. Application for reissue Dec. 30, 1977, Ser. No. 865,907

Int. Cl.[3] **H01M** *6/06*

U.S. Cl. 429—201 **14 Claims**

1. A dry cell comprising a zinc anode, a depolarizing mix and a separator which functions to separate the anode from the depolarizing mix, said depolarizing mix containing manganese dioxide as its main component and acetylene black immersed in an electrolyte *containing about 2 to 3.4 percent by weight of ammonium chloride and* having zinc chloride as its main ingredient, said depolarizing mix containing water and chlorine in an amount of about 50 to 90 parts by weight and about 5.5 to 14.5 parts by weight, respectively, per 100 parts by weight of manganese dioxide, the chlorine being present in the form of said zinc chloride or zinc chloride with added hydrochloric acid.

Re. 30,459

NITRITE ESTERS OF POLYHYDROXY POLYMERS

Richard G. Schweiger, 1324 Rimrock Dr., San Jose, Calif. 95120

Original No. 4,138,535, dated Feb. 6, 1979, Ser. No. 788,411, Apr. 18, 1977. Division of Ser. No. 669,483, Mar. 23, 1976, Pat. No. 4,035,569, which is a continuation of Ser. No. 487,196, Jul. 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 298,580, Oct. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 40,442, May 25, 1970, Pat. No. 3,702,843. Application for reissue Apr. 26, 1979, Ser. No. 33,455

Int. Cl.[3] **C08B** *5/00, 31/06, 37/00;* **C08F** *8/30*

U.S. Cl. 525—61 **21 Claims**

21. A nitrite ester of a polysaccharide having a degree of substitution of about 0.1 to 2.0.

Re. 30,460

COUPLING OF ALKALI METAL-TERMINATED POLYMERS

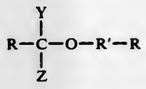
George A. Moczygemba, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Original No. 4,049,753, dated Sep. 20, 1977, Ser. No. 678,096, Apr. 19, 1976. Application for reissue Aug. 21, 1978, Ser. No. 935,202

Int. Cl. C08f *8/00, 8/02, 8/06*

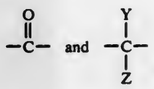
U.S. Cl. 525—334 **1 Claim**

7. A polymer having the structure



(I)

wherein the radical R is n-butyl, R' is a divalent radical selected from the group consisting of



wherein Y is selected from the group of radicals consisting of —OH and —Z wherein Z is a homopolymer of butadiene and wherein 230 polymer chains Z are present in 100 molecules of formula (I).

PATENTS

GRANTED DEC. 23, 1980

ERRATA

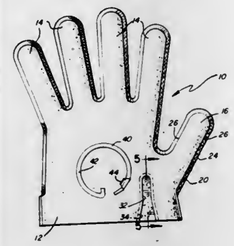
For CLASS	See PATENT NO.
434–011	4,240,212
434–194	4,240,213
368–028	4,240,249
474–144	4,240,303
254–369	4,240,309
493–196	4,240,336
493–137	4,240,337
440–040	4,240,370
355–003 DD	4,240,723
252–325	4,240,908
336–094	4,240,917
564–044	4,240,979
564–153	4,240,980
564–259	4,240,981
564–285	4,240,982
568–316	4,240,983
568–435	4,240,984
568–483	4,240,985
570–206	4,240,987
209–003.1	4,241,102
426–138	4,241,106
250–574	4,241,282
290–054	4,241,283
219–061.2	4,241,284
219–130.32	4,241,285
219–147	4,241,286
219–161	4,241,287
219–441	4,241,288
219–450	4,241,289
219–518	4,241,290
219–536	4,241,291
219–541	4,241,292
235–092 PK	4,241,293

PATENTS

GRANTED DECEMBER 23, 1980

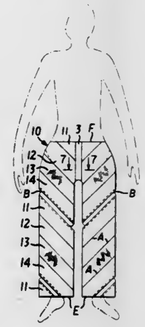
GENERAL AND MECHANICAL

4,240,157
SELF-SERVICE GASOLINE GLOVE
Russell E. Peters, Valparaiso, Ind., assignor to James D. Coburn, Portage, Ind.
Filed Dec. 19, 1977, Ser. No. 861,960
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—161 R **7 Claims**



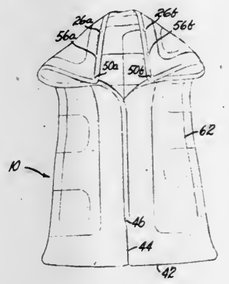
1. An interchangeable right or left hand glove for self-service gasoline dispensing, comprising a body of gasoline resistant canvas material having one face on one side, another face on the other side and side edges joining said faces, each face having a palm section, four fingers and a thumb, all of which are joined together by the side edges to form said glove body, said thumb extending laterally from one side of the palm sections, a layer of neoprene on each face of said body with the neoprene extending to and completely surrounding an opening into one end of the glove body to hold the end of said glove in open position, and fastening means secured to one side of the glove in close proximity to said open end and serving to attach the glove to a fixed object, such as the license plate on a vehicle, for inserting and removing the right or left hand without the assistance of the other hand.

4,240,158
PANTS-TYPE GARMENT AND METHOD OF MAKING THE SAME
Harry R. de Polo, 480 Park Ave., New York, N.Y. 10022
Continuation-in-part of Ser. No. 921,181, Jul. 3, 1978. This application Jul. 3, 1979, Ser. No. 54,478
Int. Cl.[2] A41D *1/06, 17/02*
U.S. Cl. 2—227 **14 Claims**



1. A pants-type garment comprising two bands of material each of which is wound helically to form a leg portion of said garment, means joining adjacent edges of adjacent convolutions of said bands, upper end portions of said material being shaped to form a body portion of said garment with a contoured edge shaped for the formation of a crotch, a crotch band having opposite side edges, means joining one of said side edges of said crotch band with said contoured edge of one leg portion, and means joining the opposite side edge of said crotch band with said contoured edge of the other leg portion to unite said two leg portions and form a body portion of said garment.

4,240,159
FILLED BODY ROBE
John C. Wrightson, Darien, Conn., assignor to Heritage Quilts, Inc., New York, N.Y.
Division of Ser. No. 828,270, Aug. 29, 1977. This application Feb. 26, 1979, Ser. No. 14,812
Int. Cl.[2] A41D *1/00*
U.S. Cl. 2—243 R **1 Claim**



1. A method of donning a quilted garment adapted to envelop a wearer thereof from below the feet to above the shoulders while allowing relatively free movement of the hands of the wearer comprising:

(a) enveloping the lower torso, legs and feet of the wearer in a sack-like structure formed by having outlying longitudinal quarter portions of a substantially rectangular quilted sheet of fabric folded towards each other and the outlying and bottom edges of which are joined together after folding to a point at about the waist of the wearer;

(b) wrapping the upper portion of the garment about the upper torso and arms of the wearer by passing the top corner of each respective said outlying longitudinal quarter portion over the corresponding shoulder and arm of the wearer to a position in close proximity to the said point at about the waist of the wearer;

(c) joining first fastening means positioned at the said top corner of each said quarter portion to corresponding and cooperating second fastening means on the outer edge of each said quarter portion positioned in close proximity to the said point at about the waist of the wearer whereby arm holes are formed for the wearer through which the hands of the wearer are free to protrude.

4,240,160
CUT AND SEWN SURGICAL STOCKINGS
Walter H. Imboden, Burlington, N.C., and David M. Lieberman, New York, N.Y., assignors to Burlington Industries Inc., Greensboro, N.C., by said Walter H. Imboden and Hoffmann-La Roche Inc., Nutley, N.J.
Filed Dec. 26, 1978, Ser. No. 972,717
Int. Cl.[2] A41B *11/00*
U.S. Cl. 2—239 **17 Claims**

1. A method of manufacturing support garments for elongated extremities comprising the steps of:

(a) providing a sheet of warp-knit power fabric, the fabric

having a lengthwise dimension of greatest stretch and power and a filling dimension in which the stretch is incidental so that desired stretch graduations can be maintained at predetermined longitudinal intervals during use;

(b) cutting out of the sheet a support garment form, the sheet being oriented during cutting so that the lengthwise di-



mension of the sheet extends circumferentially in the final garment produced and so that the filling dimension extends longitudinally in the final garment produced; and

(c) seaming the edges of the garment form to produce the final support garment, the seam extending along the dimension of elongation of the extremity on which the support garment is adapted to fit.

4,240,161

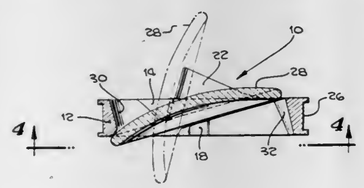
ARCUATE DISC HEART VALVE

Miles C. Huffstutler, Jr., Burnsville; Marshall S. Kriesel, St. Paul, and Lawrence Anderson, Fridley, all of Minn., assignors to Medical, Incorporated, Inver Grove Heights, Minn.

Continuation-in-part of Ser. No. 821,400, Aug. 3, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,375

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **6 Claims**



1. A heart valve comprising:

a base having a flow passage therein, said flow passage having an upstream side and a downstream side;

a free floating flow actuated disc having a generally convex downstream side and a generally concave upstream side, means for confining said disc in said passage for rotation about its own axis of revolution and for pivotal movement about a plurality of instantaneous chrodal axes from a closed position through an opening phase to an open position and from said open position through a closing phase to said closed position, the initial instantaneous pivot axis having said opening phase being offset laterally from said axis of revolution, said disc having a circular geometric base, said offset being equal to from about 0.05 to 0.20 the length of a diameter of said circular geometric base, the height of said generally concave upstream side being equal to from about 0.05 to 0.10 the length of said diameter, and said initial instantaneous pivot axis extending for a part of its length on the upstream side of said generally concave upstream side.

4,240,162

ENDOPROSTHETIC PATELLAR DEVICE

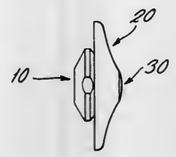
Michael B. Devas, Bexhill-on-Sea, England, assignor to National Research Development Corporation, London, England

Filed Dec. 4, 1978, Ser. No. 967,795

Claims priority, application United Kingdom, Dec. 7, 1977, 50937/77

Int. Cl.³ A61F *1/00*

U.S. Cl. 3—1.91 **8 Claims**



1. An endoprosthetic patellar device of multi-part construction comprising:

a first part adapted for securement in the posterior region of the patella,

a second part separably connected with said first part and having an exposed surface shaped to simulate the patellar articular surface, and

a third part interconnecting said first and second parts, said first and second parts being formed with axially aligned bores, and said third part being engaged by a snap-fit in said bores.

4,240,163

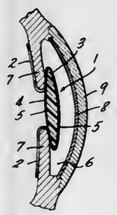
MEDICAMENT COATED INTRAOCULAR LENS

Miles A. Galin, 115 E. 38th St., New York, N.Y. 10016

Filed Jan. 31, 1979, Ser. No. 7,890

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **12 Claims**



1. An intraocular lens coated with a compatible medicament, said medicament being selected from the group consisting of a sulfated polysaccharide and ethacrylic acid.

4,240,164

DEVICE IN A TOILET FOR BIOLOGICAL DEGRADATION OF EXCREMENT

John H. Lind, Solna, Sweden, assignor to Polypur Forsaljnings AB, Sundbyberg, Sweden

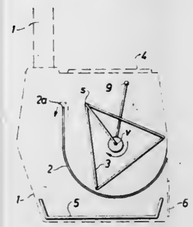
Filed Oct. 23, 1978, Ser. No. 953,369

Claims priority, application Sweden, Oct. 28, 1977, 77/12193

Int. Cl.³ A47K *11/02*; B01F *7/02*; C05F *3/04*

U.S. Cl. 4—449 **6 Claims**

1. Device in toilets for biological degradation of excrement, the device comprising a collecting vessel for excrement and for material suitable for the degradation thereof and a container for receiving a mixture of excrement and material discharged from the collecting vessel, said collecting vessel having a solid bottom portion and an upper edge above said bottom portion, said mixture being moved from the interior of said vessel over said upper edge to the exterior of said vessel when discharged from said vessel, said container having an opening located outwardly of and below said vessel upper edge to receive said discharged mixture, the mixing being performed by a cultivator rotationally supported in the collecting vessel, said cultivator comprising a wire construction running continuously between and rotationally supported by two opposed side walls of the collecting vessel and having an axis of rotation generally



lengthwise of said vessel upper edge for mixing material and excrement and discharging the mixture to the container via said upper edge of the collecting vessel, said cultivator having portions spaced axially therealong and extending radially outwardly from said axis, said portions being disposed in planes substantially perpendicular to a plane disposed perpendicular to said axis of rotation.

4,240,165

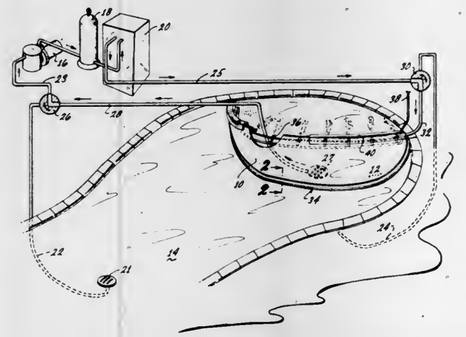
SPA INSTALLATION

George Kyrias, 31112 Via Santo Tomas, San Juan Capistrano, Calif. 92675

Filed Jan. 22, 1979, Ser. No. 4,997

Int. Cl.³ E04H *3/18, 3/20*; A47K *3/14*

U.S. Cl. 4—493 **7 Claims**



1. In a swimming pool of the type having walls and a bottom, and in which the space enclosed by the walls and bottom is normally filled with water, having a pool suction line for withdrawing water from the pool, having a pool return line for adding water to the pool, and having a pump, a filter, and a water heater connected in a series combination between the pool suction line and the pool return line so that water withdrawn from the pool may be heated and filtered before being returned to the pool, the improvement comprising in combination:

a removable partition extending across the space enclosed by the walls and bottom of the pool to partition the pool into a spa and a remaining pool space, the pool suction line and the pool return line communicating with the remaining pool space;

said partition adapted to be readily removed from the pool to permit the entire pool to be used for swimming;

a spa suction line communicating with the spa for removing water from the spa;

a spa return line communicating with the spa for adding water to the spa;

means mounting the spa return line on and along the length of said partition; and,

valve means for selectively connecting the series combination of the pump, the filter, and the water heater between said spa suction line and said spa return line so that water withdrawn from the spa may be heated, filtered, and returned to the spa;

said partition serving, when installed, to prevent intermixing of the normally warmer water in the spa with the normally cooler water in the remaining pool space to conserve heat energy.

4,240,166

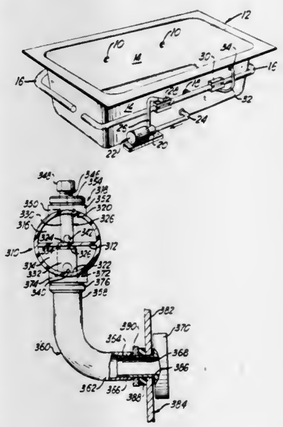
WHIRLPOOL SYSTEM

Murray Altman, Fort Lee, and Gerald J. Bellasalma, West Caldwell, both of N.J., assignors to Thermasol, Ltd., Leonia, N.J.

Filed Jan. 22, 1979, Ser. No. 5,377

Int. Cl.³ A47C *19/12*

U.S. Cl. 4—542 **30 Claims**



1. In a whirlpool system including a water receptacle, a plurality of outlets spaced around the interior of the water receptacle, a water supply channel connected to a source of water, an air supply channel connected to a source of air, and connecting means for receiving water and air from the water and air supply channels, respectively, for mixing the received water and air, and for delivering the mixed water and air to each of the outlets, the improvement wherein the water supply channel is one channel of a continuous single piece of multiple channel tubing and the air supply channel is another channel of said multiple channel tubing.

4,240,167

FLUSH VALVE CONTROL APPARATUS

Elbert G. Gilliland, 1801 Francis Rd., Knoxville, Tenn. 37919

Filed Sep. 1, 1978, Ser. No. 938,936

Int. Cl.³ E03D *1/14, 1/34*

U.S. Cl. 4—324 **6 Claims**

1. An apparatus for selectively terminating the flow of water from a conventional flush toilet which utilizes a tank, a flap valve over an outlet pipe and a trip lever, the improvement comprising:

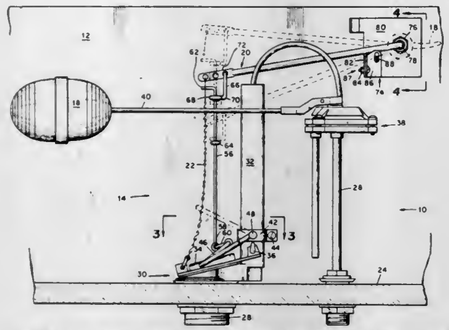
a support located inside and securely attached to said tank;

a foot for engaging the flap valve hingedly attached to said support whereby said foot may rotate downward and engage the flap valve;

a substantially vertical thrust rod having first and second

ends, said thrust rod having a first stop at said first end and second stop below said first end, said thrust rod being attached to said foot at said second end whereby downward vertical movement of said thrust rod causes said foot to rotate downward;

a thrust rod link with a first end attached to the trip lever and a second end slidably attached to said thrust rod between said first and second stops whereby a downward rotation



of the trip lever causes said second end of said link to slide vertically downward until it engages said second stop and whereby continued downward movement carries said thrust rod downward such that said foot engages said flap valve and closes said flap valve against said outlet pipe; and

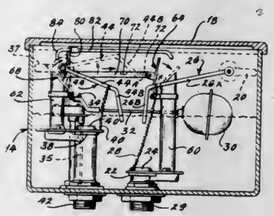
resilient means for urging said foot upward whereby said foot disengages from said flap valve when downward force on said thrust rod is removed.

4,240,168

COMBINATION COMMODE CONSTRUCTION

James I. Duke, Rte. 2, Box 5A, Curryville, Mo. 63339

Filed Mar. 12, 1979, Ser. No. 19,466
Int. Cl.³ E03D *1/14, 1/36, 5/02*
U.S. Cl. 4—326 **19 Claims**



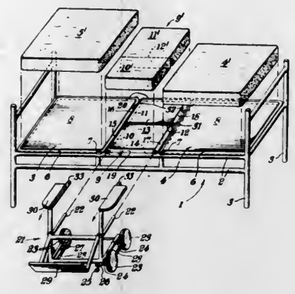
1. A water closet construction adapted to service a plurality of flush type toilet units comprising a water tank common to the plurality of toilet units for supplying flush water for each, a plurality of separate toilet unit control means on the water tank, each of which toilet unit control means is associated with a respective toilet unit and is actuatable for effecting separate and independent flushing thereof, and flushing means responsive to actuation of each of said toilet unit control means to flush the toilet unit associated therewith and to control the amount of flush water used in the flushing thereof, said flushing means including water refill means for providing refill water to said tank and said toilet units, said flushing means further including refill control means for separately and independently directing water from said water refill means to the respective toilet unit with which the actuated toilet unit control means is associated, said refill control means being further responsive to actuations of the toilet unit control means to inhibit supply of refill water to toilet units not associated with the actuated toilet unit control means.

4,240,169

PATIENT TRANSFERRING APPARATUS

Kjell E. H. Roos, Tuvängsvägen 15, 752 45 Upsala, Sweden

Filed Jan. 26, 1979, Ser. No. 6,891
Int. Cl.³ A47C *3/32;* **A61G** *7/10*
U.S. Cl. 5—60 **8 Claims**



1. An apparatus for facilitating the transfer of a person from a bed to a wheelchair comprising the combination of

a bed having

an integral frame extending the entire length of said bed and having head, foot and center sections,

a mattress having head and foot portions supported by said head and foot sections of said frame, respectively, and a center portion, and

carrying means for supporting said center portion removably supported on said center section of said frame;

at least said center portion being bendable along a line substantially parallel with the longitudinal centerline of the bed so that a section thereof on one side of the line can be pivoted upwardly into the position of a chair-like back support for the person while the other section thereof serves as a seat; and

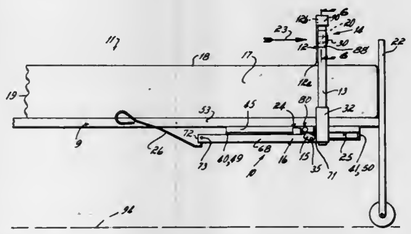
wheeled carriage means operatively associated with said carrying means and said center portion for supporting and laterally extracting said center portion and carrying means as a unit from the remainder of the bed to serve as a wheelchair.

4,240,170

ADJUSTABLE FOOT BRACE

Ollibelle Thumberger, and Harold C. Thumberger, both of 1031 Belle Ave., Hamilton, Ohio 45015

Filed Oct. 12, 1978, Ser. No. 950,566
Int. Cl.² A47C *21/00*
U.S. Cl. 5—508 **19 Claims**



1. An adjustable foot brace adapted for use with a bed, said foot brace comprising

a foot panel to be located generally adjacent the footboard end of said bed,

connector structure means connecting said foot panel to said bed's frame, said connector structure means being operable to enable said foot panel to be moved between a storage position beneath the top surface of the bed's mattress and parallel to the bed's side and a use position generally transverse to the bed's side and above the surface of the bed's mattress,

said connector structure means comprising a post on which said foot panel is mounted, said post being generally vertically movable for locating said foot panel in the storage and use positions, and

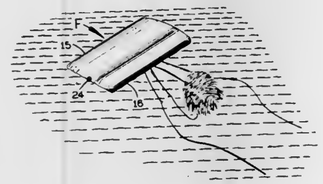
latch means cooperable with said post for holding said post in the desired position.

4,240,171

SWIMMER'S AID

William N. Parsons, 6455 Custer St., Hollywood, Fla. 33313

Filed Jul. 26, 1979, Ser. No. 60,851
Int. Cl.³ A63B *31/02*
U.S. Cl. 9—307 **9 Claims**



1. A swimmer's aid comprising;

hand grip means for engagement simultaneously by both of the swimmer's hands;

and flotation means attached to said hand grip means and extending laterally outward on each side beyond said hand grip means to provide flotation stability;

said flotation means comprising a unitary float member having an upwardly convex top surface and a downwardly convex bottom surface, said float member also having a downwardly-facing recess in its bottom midway across its lateral extent, said float member presenting downwardly-projecting flotation segments on opposite laterally outer sides of said recess;

and said hand grip means comprises a bar within said recess anchored at its opposite ends in said downwardly-projecting segments of the float member, said bar extending laterally across said recess spaced far enough from the bottom surface of the float member within said recess to permit the swimmer's fingers to extend over the bar.

4,240,172

SHOE UPPER CONFORMING MACHINE

Derek H. Garner, Leicester, England, assignor to USM Corporation, Farmington, Conn.

Filed Sep. 14, 1979, Ser. No. 75,743
Claims priority, application United Kingdom, Sep. 20, 1978, 37407/78
Int. Cl.³ A43D *23/00*
U.S. Cl. 12—14.5 **10 Claims**

1. A shoe manufacturing machine comprising:

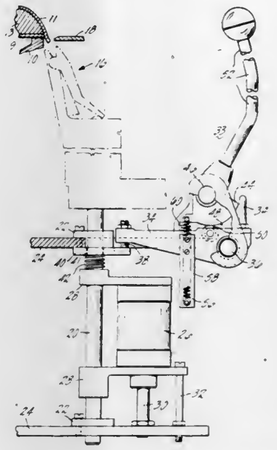
a last support with a last, a shoe upper, and an insole supported thereon;

a plurality of grippers arranged about the last support for gripping marginal portions of said shoe upper;

means for effecting relative heightwise movement between the last support and the grippers to cause said upper to be tensioned over said last;

an operator-controlled tensioning device associated with each gripper for varying at the discretion of the operator the tension in said shoe upper applied in the locality of said gripper, wherein said tensioning device comprises a lever operatively connected with said gripper associated with the device;

actuating means for effecting heightwise movement of said lever and said gripper relative to said last support, to vary the tension in said shoe upper, wherein said actuating means comprises a wedging member movable in a direction transversely of the heightwise movement of said lever



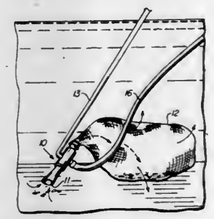
and having an inclined abutment surface, said member co-operating with a further abutment surface provided on the lever, the inclination of the wedging member and the co-efficient of friction between said member and said further abutment surface being such that the application of an upward force to the wedging member as a result of the tension in said shoe upper is insufficient to dislodge said wedging member in a direction transversely of the heightwise movement of said lever.

4,240,173

POOL VACUUM

John C. Sherrill, 547 W. Southern Hills Rd., Phoenix, Ariz. 85023

Filed Jul. 13, 1979, Ser. No. 57,211
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **9 Claims**



1. A pool vacuum including in combination:

a first intake hollow pipe section with a debris pick-up end and a discharge end wherein at least a portion of the discharge end thereof is cylindrical in cross section of a predetermined external diameter;

fluid discharge means comprising a second pipe section surrounding said discharge end of said first pipe section and spaced therefrom by first and second spacing means located substantially near the respective ends of said second pipe section to form a hollow chamber between the external surface of the discharge end of said first pipe

section and the internal surface of the second pipe section, the second spacer located near the discharge end of said first pipe section having a plurality of apertures therethrough extending substantially parallel to the axis of said first pipe section;

a third pipe section having an inlet end and an outlet end with said inlet end having an internal diameter greater than the external diameter of said first pipe section and communicating with the apertures through said second spacer, said third pipe section being bonded to one of said spacer and said second pipe section to provide a fluid-tight bond therewith; and

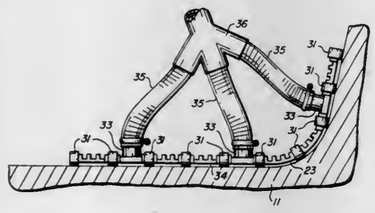
means for supplying fluid under pressure to the hollow chamber formed between said first pipe section and said second pipe section to cause the discharge of such fluid through the apertures in said second spacer into the inlet end of said third pipe section for discharge from the outlet end thereof.

4,240,174

SELF-CONTAINED MOBILE POOL CLEANING APPARATUS

James F. Thiem, 3610 E. Coolidge, Phoenix, Ariz. 85018, and Jeffrey L. Scott, 13008 N. 28th Pl., Phoenix, Ariz. 85032

Filed Jul. 30, 1979, Ser. No. 61,820
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **1 Claim**



1. A mobile self-contained vacuum cleaning apparatus for pools comprising:

a hand truck,

a housing mounted on said truck,

said housing defining inlet and outlet ports,

a filter basket mounted in said housing for receiving water from said inlet port,

a pump for drawing water through said inlet port and said basket into said housing,

a first reservoir arranged in said housing to extend longitudinally thereof for receiving water from said pump,

a second reservoir in said housing extending laterally thereof and connected to said outlet port,

a plurality of filter cartridges mounted in said housing to extend longitudinally thereof in a substantially parallel arrangement for simultaneously receiving water from said first reservoir under pressure of said pump along substantially their full lengths, filtering it and passing the water out therefrom through common ends into said second reservoir and then through said outlet port,

motor means for driving said pump,

a flexible hose connected to said inlet port for drawing water into its outer end from a pool,

a sweeper head,

said sweeper head comprising an elongated resilient body having a plurality of pairs of rotatably mounted wheels for moving the sweeper head over the pool surface,

flexible means for connecting said other end of said hose to said sweeper head,

said flexible means comprising at least a pair of passageways spacedly connected to said sweeper head for drawing water through said sweeper head and into said hose from at least a pair of spaced points along said sweeper head,

whereby said passageways deflect when the resilient body of said sweeper head deflects during movement to maintain a fluid-tight connection between said sweeper head and said connector, and

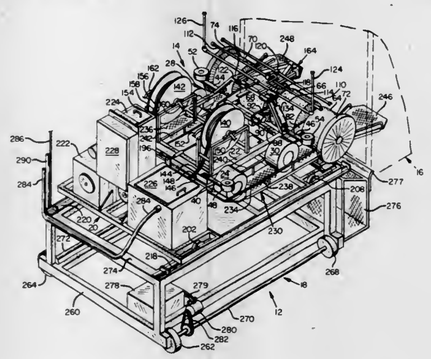
a wand hingedly connectable to said sweeper head for moving it along the bottom and walls of a pool.

4,240,175

APPARATUS FOR WASHING THE INTERIOR OF A FREIGHT CONTAINER

William A. Rogers, Portland, Oreg., assignor to Roberts Harvester, Inc., Portland, Oreg.

Filed Oct. 27, 1978, Ser. No. 955,464
Int. Cl.³ B08B *3/02, 9/00*
U.S. Cl. 15—21 E **6 Claims**



1. In an apparatus for washing the interior of an elongate, generally rectangular freight container having a bottom, a pair of sides, an open end, and a closed end,

a wash dolly having a chassis, a plurality of first support wheels, means for rotatably mounting the first support wheels to the chassis, first drive means for rotating at least one of the first support wheels, brush means for scrubbing at least the bottom of the container, second drive means for moving the brush means, spray means for discharging water adjacent the brush means, and guide means for engaging the sides of the container and maintaining the chassis and the first support wheels in proper orientation for longitudinal travel along substantially the entire length of the container;

a supply wagon having a first frame, a plurality of second support wheels, means for rotatably mounting the second support wheels to the first frame, ramp means adapted to receive and support the wash dolly and guide the wash dolly between the supply wagon and the interior of the container, means for supplying water under pressure to the spray means, and means for supplying power to the first and second drive means;

a mobile platform having a second frame, a plurality of third support wheels, means for rotatably mounting the third support wheels to the second frame, third drive means for rotating at least one of the third support wheels, means adapted to receive and support the supply wagon and guide the supply wagon to and away from the open end of the container, means mounted on the second frame for supplying power to the third drive means; and

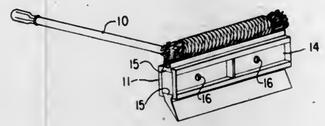
control means for causing the wash dolly to travel off of the supply wagon, into the open end of the container, along substantially the entire length of the container, and then back onto the supply wagon, and for further causing the brush means to move and the spray means to discharge water.

4,240,176

WINDSHIELD CLEANING TOOL HOLDER

Michael J. Farmer, Sioux Falls, S. Dak., assignor to Hydra Sponge Co., Inc., St. Louis, Mo.

Filed Mar. 19, 1979, Ser. No. 21,893
Int. Cl.³ A47L *13/14, 23/04*
U.S. Cl. 15—121 **5 Claims**



1. A device for interchangeably holding a plurality of windshield cleaning tools, comprising:

(a) a handle in the form of a long rod;

(b) a stationary channel member attached at its midpoint to the handle;

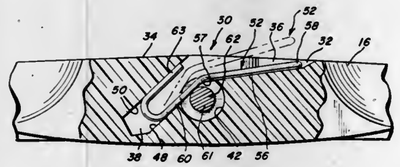
(c) a movable matching channel member adapted to be clamped to the stationary channel member in spaced parallel relationship, both channel members having facing ridges along their upper and lower edges, the ridges slanting downwardly and to either side, and one of the channel members having a rectangularly shaped spacer portion extending into the channel portion of the other channel member, the slanting ridges and the upper and lower surfaces of the spacer portion defining substantially triangular channels running along the upper and lower surfaces of the clamped together channel members; and (d) clamping means for releasably holding together the stationary and movable channel members, such that various windshield cleaning tools having spines adapted to engage the triangular channels can be inserted into such channels and clamped between the channel members.

4,240,177

CONNECTOR FOR WINDSHIELD WIPER BLADE

William H. Harbison, and Michael G. Mohnach, both of Valparaiso, Ind., assignors to The Anderson Company of Indiana, Gary, Ind.

Filed Apr. 23, 1979, Ser. No. 32,563
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **4 Claims**



1. A windshield wiper blade assembly (**10**) releasably mountable on the side of a wiper arm having a laterally extending pin (**61**) with a reduced diameter portion (**62**) between an enlarged outer end portion (**64**) and an enlarged inner end portion (**66**), said blade (**14**) having:

a pressure-distributing yoke member (**16**) molded of plastic and having parallel side walls (**44,46**) with an aperture (**42**) therethrough for receiving said laterally extending pin (**61**),

a cavity (**32**) molded in the top of said yoke member (**16**) and having spaced apart channels (**38,40**) intersecting along a chord with said aperture (**42**) in said yoke,

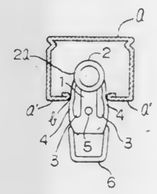
a U-shaped spring member (**52**) having parallel spaced apart legs (**54,56**) with the free ends of said legs secured in said channels (**38,40**) of said cavity (**32**), intermediate portions (**55,57**) of said legs (**54, 56**) extending in a chordal fashion across the aperture (**42**) in said yoke and tangentially bearing on the reduced diameter portion (**62**) of the pin (**61**), and said spring (**52**) having a connecting crosspiece (**58**) at the opposite end of the legs (**54,56**), said crosspiece (**58**) being seated in said cavity (**32**) so as to be recessed below the level of the yoke surface adjacent said cavity (**32**) when said spring (**52**) is bearing on said reduced diameter portion (**62**) of the pin (**61**) and further being adapted to be raised for moving the intermediate portions (**55,57**) of the spring (**52**) out of alignment with the aperture (**42**) to release the pin (**61**) for removal of the blade.

4,240,178

CURTAIN RUNNER

Kiyotsune Miki, Osaka, Japan, assignor to SM Industrial Company, Limited, Japan

Filed Dec. 14, 1978, Ser. No. 969,336
Claims priority, application Japan, Feb. 24, 1978, 53/23627[U]
Int. Cl.² A47H *15/00*
U.S. Cl. 16—93 D **4 Claims**



1. A curtain runner for use with a tubular curtain rod having a pair of guide rails opposed to each other at its bottom and a groove defined by the guide rails, the runner being T-shaped in a front view and including a head having runner portions on its opposite sides and a leg extending downward from the head, the runner being travellable along the groove with the runner portions supported on the guide rails of the curtain rod and with the leg inserted in the groove against rotation, said leg comprising synthetic resin and having a pair of vertically elongated apertures extending therethrough in parallel to the axis of the runner portion and communicating with each other at their upper ends through a slit to impart springlike elasticity to the front and rear outer walls of the leg, the runner being shiftable from its proper mounted position to a non-mounted position or from the non-mounted position to the proper mounted position by turning the leg in the groove through about 90 degrees while pressing and deforming the outer walls inward against the springlike elasticity thereof, the runner head having a width in the direction of travel of the runner approximately equal to or smaller than the width of the groove so that the runner in the non-mounted position is insertable into or withdrawable from the groove, the leg having a width in the direction of travel of the runner to render the leg insertable into or withdrawable from the groove with or without inwardly pressing the outer walls against the elasticity thereof.

4,240,179

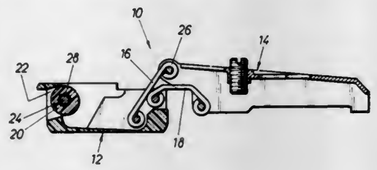
HINGE FOR CABINET DOORS

Karl Lautenschläger, Jr., Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschläger KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,414
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2753904
Int. Cl.³ E05D *11/10*
U.S. Cl. 16—139 **5 Claims**

1. A hinge for cabinet doors, said hinge being movable from a closed position to an open position and vice versa, and com-

prising: two hinge mounting parts, a linkage mechanism joining said parts, one hinge mounting part being in the form of a cup having a wall with a recess and adapted to be recessed into a mortise in the cabinet door, a resilient snap-catch element mounted stationary in the wall of said cup in part within said recess, the other hinge mounting part having an extremity



extending into said cup in said closed position and having a catch projection in the area of said extremity which during the closing movement of the hinge is engaged by the snap-catch element and behind which it is arrested in the closed position, said snap-catch element being a roller made of resiliently compressible material.

4,240,180

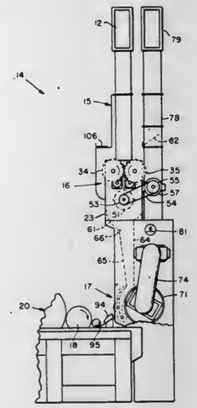
FIBER FEEDING APPARATUS FOR CARDING MACHINES AND THE LIKE

Dennis E. Wood, Fairport, N.Y.; Charles R. Auten, Charlotte; Paul L. Dellinger, Jr., Gastonia, both of N.C.; Gary M. Holland, Fort Mill, S.C., and Eddy W. Bullington, Gastonia, N.C., assignors to Rando Machine Corporation, Macedon, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,172

Int. Cl.³ D01G *15/40, 23/08*

U.S. Cl. 19—105 **16 Claims**



1. In a pneumatic fiber feeding system, apparatus for feeding fibers from a main fiber supply duct to a carding machine or the like, comprising

a vertical branch duct having a surge section in its upper end connected to said main duct to receive air-borne fibers therefrom,

a pair of feed rolls rotatably mounted in said branch duct adjacent the lower end of said surge section normally to cause a column of fibers from the supply duct to accumulate in said surge section,

a rotatable kicker roll mounted beneath said feed rolls in an opener section of said branch duct, and in registry with the nip formed between said feed rolls,

means for simultaneously driving said feed and kicker rolls, whereby fibers are fed by the feed rolls downwardly from said surge section into the path of the rotating kicker roll, which opens the fibers and directs them downwardly through a batt forming section in the lower end of said branch duct,

suction means connected to the bottom of said branch duct to maintain a pressure drop as between the air pressure in said surge and said batt forming sections, respectively, of said duct, whereby air tends to flow downwardly in said duct and through the column of fibers accumulated in said surge section,

a condenser mounted adjacent the lower end of said branch duct and having thereon a foraminous surface positioned to travel past an opening between said batt forming section and said suction means, whereby fibers which pass through said batt forming section are deposited in the form of a thin, fibrous matt on said travelling surface for delivery thereby to a carding machine or the like, and

control means on said branch duct between said surge and said batt forming sections thereof and operable selectively to adjust the rate of flow of air downwardly through said column of accumulated fibers, thereby to control the degree of compaction of the fibers in said surge section, and the rate at which said fibers are fed to said condenser.

4,240,181

WEB GUIDING DEVICE

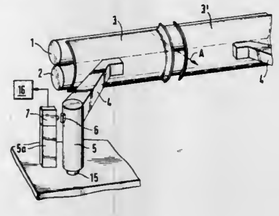
Paul G. Teichmann, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,441

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2732017

Int. Cl.³ D01G *31/00*; B65H *25/02*

U.S. Cl. 19—0.25 **11 Claims**



1. In a carding machine including a device for withdrawing and gathering a fiber web discharged by a web delivering assembly of the carding machine; the device including a guide element arranged immediately downstream of the web delivering assembly and having a web guiding face for gathering into a running sliver the web discharged by said web delivering assembly, said guiding face extending, in a normal operative position, transversely to the direction of web feed of the web delivering assembly; the improvement wherein said device comprises

(a) support means for positioning said guiding face to be movable towards and away from said web delivering assembly;

(b) switch means operatively connected with said guiding face for actuating said switch means upon movement of said guiding face away from said web delivering assembly in response to a web pressure exceeding a predetermined force; and

(c) means connected to said switch means and responsive to the actuation of said switch means.

4,240,182

ARRANGEMENT FOR OPENING TEXTILE FIBER BALES

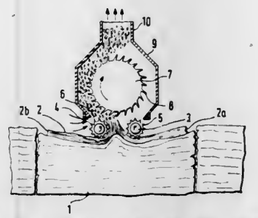
Ferdinand Leifeld, Kempen, and Jürgen Marx, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Trutzschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,270

Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819292

Int. Cl.³ D01G *7/06*

U.S. Cl. 19—81 **21 Claims**



4. An apparatus for opening textile fiber bales, particularly hard-pressed cotton bales, comprising: means for removing fiber material from above; means for transporting fiber material by layers in the plane of the layer; means for delivering fiber material to an opening element for breaking up into fiber flakes; at least one conveying roller as pressure roller for moving a layer; and an opening roller cooperating with said conveying roller.

4,240,183

FASTENER

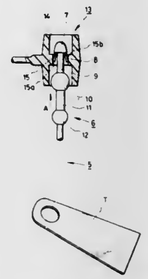
Yasukichi Sumimoto, Tokyo, and Masami Kato, Nagoya, both of Japan, assignors to Toska Co., Ltd. and Japan Bano'k Co., Ltd., both of Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 817

Claims priority, application Japan, Feb. 17, 1978, 53/19403[U]; Mar. 17, 1978, 53/29846; Jul. 31, 1978, 53/105352[U]

Int. Cl.³ B65D *63/00*

U.S. Cl. 24—16 PB **26 Claims**



1. A fastener comprising a socket having an aperture, a filament continuously extended from said socket, and an inserting part provided at the leading end of said filament and capable of being inserted into said aperture in either direction thereof and being anchored in the aperture, wherein a rigid inner flange including a guide face having the same axis as the axis of the aperture and two circular abutting faces perpendicular to said axis, said flange being formed in said aperture, said aperture thereby being symmertical about a plane perpendicular to the axis of the aperture and wherein at least one elastic tongue is formed on the inserting part, the free end of said tongue expanding outwardly in the radial direction with respect to the axis of said inserting part when it is kept in the free state and said free end of the tongue being contracted inwardly in the radial direction while it is passing through the guide face, and after said free end of the tongue has completely passed through the guide face, it returns to its original free state and is anchored to said abutting faces, whereby said inserting part is tightly connected to the socket.

4,240,184

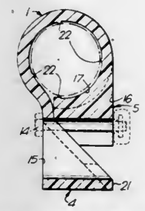
PIPE AND CABLE CLAMPS

Peter Delhees, Liverpool, and John P. Conlan, Chester, both of England, assignors to BICC Limited, London, England

Filed Nov. 2, 1978, Ser. No. 957,027

Int. Cl.³ B65D *63/00*; F16L *33/04, 47/00*

U.S. Cl. 24—279 **6 Claims**



2. A support clamp including a flexible member and fittings, integral with the flexible member or permanently attached to it, such that when the clamp is wrapped round a cable it can be secured and supported by means of said end-fittings, each said end-fitting having a planar faying surface which faying surfaces (i) are non-radial to the cable to a substantial degree when the clamp is wrapped round a circular cable with a circumference in a predetermined range; (ii) engage one another in relative positions that differ by displacement in the plane normal to the cable axis dependent on the magnitude of the circumference within that range; and (iii) extends substantially from end to end of each said end-fitting in the direction of said displacement.

4,240,185

METHOD FOR FULLING FABRIC

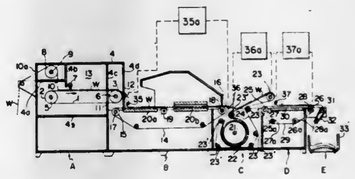
Shigeki Kondo, Inagi, Japan, assignor to Tokyo Juki Kogyo Kabushiki Kaisha, Chofu, Japan

Continuation of Ser. No. 779,832, Mar. 21, 1977, abandoned. This application Dec. 5, 1978, Ser. No. 966,754

Claims priority, application Japan, Mar. 24, 1976, 51-33026

Int. Cl.³ D06C *17/00*

U.S. Cl. 26—19 **11 Claims**



1. A method for fulling a wool-containing fabric in the form of a pliable sheet, said method comprising the steps of:

conveying said fabric sheet sequentially in order through a cooling station, a moisture applying station, and a drying station;

within said cooling station cooling said fabric sheet to a temperature below the freezing point of water and thereby expanding the spaces between the fibers of said fabric sheet;

at said moisture applying station, applying moisture to the thus cooled fabric sheet by subjecting said fabric sheet to first jets of steam at a maximum temperature of 100° C., thereby causing said fabric sheet to absorb said moisture,

and thereafter subjecting said fabric sheet to second jets of steam at a mimimum temperature of 100° C., said second jets of steam being at a higher temperature than said first jets of steam, thereby removing excess moisture from said fabric sheet and making the distribution of moisture in said fabric sheet uniform;

at said drying station drying said fabric sheet;

detecting varying tension of said fabric sheet at an area between said cooling station and said moisture applying station; and

controlling the speed of movement of said fabric sheet through said moisture applying station, in response to the amount of tension detected in said detecting step, such that said fabric sheet is maintained substantially tensionless during passage through said moisture applying station and during said steps of subjecting said fabric sheet to said first and second jets of steam.

4,240,186

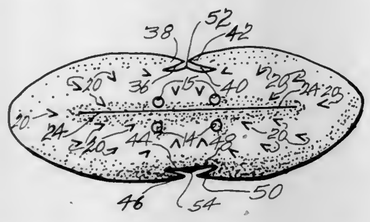
FRENUM LOCK

Charles W. Rector, 3304 Russel Rd., Centralia, Wash. 98531

Filed Sep. 21, 1979, Ser. No. 77,679

Int. Cl.³ A01N *1/00*

U.S. Cl. 27—21 **12 Claims**



1. An improvement in an expression former for insertion between the lips and the teeth and gums of a corpse, comprising a thin plate of resilient, limitedly flexible, yet substantially inelastic material, having an inherent form-sustaining double curvature overall to fit the curvature of the dental arch, said plate further having a marginal shape defining a pair of wing-like portions and a medial connecting section, and a size and shape to extend along the gums beyond the lips at all points, spurs on said plate for engagement with the mount musculature, an upper portion offset forwardly of a lower portion thereof at least in the medial section, and a substantially continuous wall connecting said offset portions thereof at least in the medial section, to define a transverse bite-indentation ridge therebetween extending along the line of nonocclusion of the forward teeth; and, wherein said improvement comprises:

a. in said medial connecting section a first dividing line and a second dividing line;

b. said first dividing line being in the direction of an adjacent wing portion and defining a first flap whose free end is distinct and separate from the medial connecting section;

c. said second dividing line being in the direction of an adjacent wing portion and defining a second flap whose free end is distinct and separate from the medial connecting section;

d. the inner part of the first flap connecting with an adjacent wing-like portion;

e. the inner part of the second flap connecting with an adjacent wing-like portion;

f. said first dividing line and said first flap and said second dividing line and said second flap permitting wider spreading of the expression forming wing-like portions on insertion into the mouth of the corpse and permitting greater adaptation to the dental arch of the corpse.

4,240,187

METHOD AND APPARATUS FOR PLACING THREAD IN A TEXTURING APPARATUS AT SUPERSONIC SPEEDS

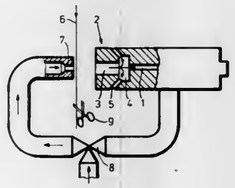
Heiko Herold, Neuss; Richard Herold; Rudolf Klee, both of Dormagen, and Edgar Muschelknautz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 30, 1978, Ser. No. 956,115

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749188

Int. Cl.³ D02G *1/12, 1/16*

U.S. Cl. 28—255 **5 Claims**



1. In a method for inserting a longitudinally extended thread through a narrow opening in a texturing nozzle perpendicular to the axis of the thread, wherein the thread has been severed downstream of the opening and is untensioned, the improvement comprising: conveying the thread through a first passage upstream of the narrow opening and having a cross section which is larger than that of the narrow opening and an annular space having a cross section which is larger than that of the first passage and disposed downstream of the first passage and upstream of the narrow opening by providing a supersonic propelling gas stream acting externally of the first passage and on the thread perpendicularly to the thread axis, and splitting the stream up upstream of the narrow opening only in the annular space into a central stream which passes through the narrow opening and a plurality of streams which are led off upstream of the narrow opening whereby insertion of the thread into the first passage and annular space is effected solely by the supersonic propelling stream.

4. In a texturing nozzle of the type having a longitudinally extending thread to be inserted through a narrow opening perpendicular to the axis of the thread and wherein the thread is severed downstream of the opening becoming untensioned and means for inserting the untensioned thread through the narrow opening, the improvement wherein the inserting means comprises: propelling gas supply means for providing a supersonic stream of gas perpendicular to the axis of the thread which stream at the entrance to the narrow opening has a cross-section larger than that of the narrow opening and means connected upstream of the narrow opening for splitting up the stream into a central stream which passes through the narrow opening and a plurality of gas streams which are let off upstream of the narrow opening wherein the stream splitting means comprises a thread inlet duct upstream of the narrow opening and having a larger cross-section than the narrow opening, an annular space connected thereto upstream of the narrow opening and downstream of the inlet duct and having a larger cross section, and a plurality of outward-leading passages only in the side of the annular space, the propelling gas supply means being external of the thread inlet duct and wherein thread insertion through the inlet duct and annular space is effected solely by the supersonic propelling stream therefrom.

4,240,188

PROCESS AND DEVICE FOR INTERLACING MULTIFILAMENT YARNS

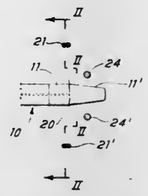
Giuseppe Zoina, Limbiate, Italy, assignor to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Apr. 25, 1979, Ser. No. 33,222

Claims priority, application Italy, Apr. 28, 1978, 22806 A/78

Int. Cl.³ D02G *1/16*

U.S. Cl. 28—274 **19 Claims**



1. A process for interlacing multifilament yarns, said process comprising:

passing a multifilament yarn through an interlacing zone while guiding the travel of said yarn by a first fixed point positioned upstream of said interlacing zone and a second fixed point positioned downstream of said interlacing zone, said first and second fixed points defining therebetween a rectilinear path;

directing a jet of gas against said yarn during passage thereof through said interlacing zone, thereby interlacing the filaments of said yarn;

applying to said yarn, only in the area thereof against which said gas jet impinges, a force, separate from the force of said gas jet, in the direction of and substantially parallel to the axis of said gas jet, thereby imparting a tension to said yarn and deviating said yarn from said rectilinear path and causing said yarn to follow a non-rectilinear trajectory between said first and second fixed points;

restraining the freedom of motion of said yarn, due to said gas jet impinging thereon, in the direction of said axis of said jet; and

restraining the freedom of motion of said yarn in opposite directions which are perpendicular both to said axis of said gas jet and to the plane of said non-rectilinear trajectory of said yarn by means of restraining surfaces which continuously diverge from said area at which said gas jet impinges on said yarn.

8. An apparatus for interlacing a multifilament yarn passing through an interlacing zone, said apparatus comprising:

first means, positioned upstream of a yarn interlacing zone, and second means, positioned downstream of said interlacing zone, for guiding movement of a multifilament yarn to be passed through said interlacing zone, said first and second guiding means defining therebetween a rectilinear path;

nozzle means, positioned adjacent said interlacing zone, for feeding and directing a jet of gas against said yarn during passage thereof through said interlacing zone, and for thereby interlacing the filaments of said yarn;

said nozzle means including a curved convex surface directed toward said yarn passing through said interlacing zone, said curved convex surface having substantially at a vertex thereof an orifice through which said gas jet issues and is directed against said yarn;

said nozzle means being positioned relative to said first and second guiding means such that said curved convex surface, only at the area thereof adjacent said orifice, forms means for applying to said yarn, only at the area thereof against which said gas jet impinges, a force in the direction of and substantially parallel to the axis of said gas jet, and for thereby imparting a tension to said yarn and deviating said yarn from said rectilinear path and causing said yarn to follow a non-rectilinear trajectory between said first and second guiding means;

first restraining means, positioned adjacent said interlacing zone, for restraining the freedom of motion of said yarn, due to said gas jet impinging thereon, in the direction of said axis of said gas jet; and

second restraining means for restraining the freedom of motion of said yarn in opposite directions which are perpendicular both to said axis of said gas jet and to the plane of said non-rectilinear trajectory of said yarn, said second restraining means comprising a pair of restraining surfaces positioned to define therebetween a space for passage of said yarn through said interlacing zone and located on opposite sides of said orifice, said restraining surfaces each having opposite ends, each said restraining surface continuously diverging from a portion thereof adjacent said orifice to said opposite ends, and adjacent ends of said pair of restraining surfaces defining openings for the free passage of gas.

4,240,189

METHOD OF PRODUCING HEAT PIPE ROLLER

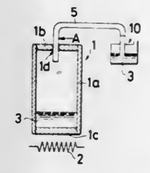
Ryoichi Namiki, Hino, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 16, 1977, Ser. No. 861,419

Claims priority, application Japan, Dec. 25, 1976, 51/157160

Int. Cl.³ B23P *15/26*; F28D *15/00*

U.S. Cl. 29—157.3 R **7 Claims**



1. A method of producing a heat pipe roller having a chamber with a heating medium therein, the heat pipe roller having a hole which opens into said chamber, comprising the steps of:

orienting the heat pipe roller upright so that the hole extends upwardly,

placing a predetermined amount of the heating medium into said chamber through the hole,

connecting the heat pipe roller with a tank in which additional heating medium is held, through a tube, one end of which is tightly connected to the hole of the heat pipe roller and the other end of which is inserted into the additional heating medium in said tank,

heating the heat pipe roller to a temperature above the boiling point of the heating medium to vaporize a portion of the heating medium in said chamber so that the vapor of the heating medium fills said chamber entirely and other gases are evacuated from the heat pipe roller through the tube and into the heating medium in said tank, letting the other gases bubble into the heating medium in said tank, and

closing said tube to seal said chamber from the outside while said heating medium is vigorously being vaporized.

4,240,190

SPECIALTY HAND TOOL

Ross N. Bray, 217 N. Main St., Lamar, Colo. 81052

Filed Aug. 22, 1979, Ser. No. 68,675

Int. Cl.³ B23P *19/04*; B25B *7/00*

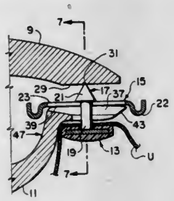
U.S. Cl. 29—268 **8 Claims**

1. A plier tool primarily for use in removing a stud retainer from about a stud on a trim button, said stud having a substantially cylindrical shaft upstanding from said trim button with a

substantially cone-shaped head atop thereof, the base of said cone-shaped head extending outwardly of said shaft for a first distance giving the stud an overall shape substantially resembling an arrow, said stud retainer having a resilient portion with a substantially circular hole therethrough of slightly smaller diameter than the width of the cone-shaped head at the base thereof, said resilient portion of said stud retainer having slits extending outwardly of said hole forming a plurality of resilient sections inherently biased toward a first position with adjacent edges of adjacent sections substantially aligned with each other, said stud being retained in said stud retainer by inserting said cone-shaped head into and through said hole in a first direction whereby said resilient sections adjacent said hole are first flexed slightly away from said first position in said first direction and then resiliently snap back to said first position as the base of said cone-shaped head passes through said hole wherein said cone-shaped head cannot pass freely through said hole in a second direction opposite to said first direction while said resilient sections are in said position, said plier tool comprising:

a pair of elongated members having respective first and second end portions and means for mounting said pair of members to each other between said respective end portions for pivotal movement relative to each other about an axis with said respective first end portions forming opposing first and second jaw members, said pair of members being movable between an open position with said jaw members spaced from each other and a closed position with said jaw members substantially abutting one another,

said first jaw member having a first surface for engaging the apex of said cone-shaped head of said stud, and



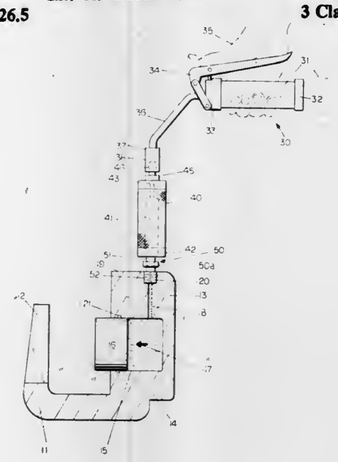
said second jaw member being bifurcated into two, free standing portions extending in directions outwardly of said pivotal axis, each of said two portions having a corresponding first edge extending outwardly of said pivotal axis from a substantially common location and together forming a first, generally U-shape with said common location being at the base of said first U-shape, said first U-shape being dimensioned to pass the base of said cone-shaped head of said stud therethrough, said second jaw member further having a surface intersecting and extending outwardly of said first edges substantially along the entire length of said first U-shape, said surface being inclined toward said first jaw member when said jaw members are in said closed, substantially abutting position, said inclined surface terminating in a second edge having a second, generally U-shape of larger dimension than said first U-shape, said second U-shaped edge being positioned closer to said first surface of said first jaw member than said first U-shaped edge when said jaw members are in said closed position whereby said jaw members in said open position can be positioned with said stud shaft between said two, free standing portions of said second jaw member and said first surface of said first jaw member abutting the apex of said cone-shaped head of said stud and said jaw members can then be moved toward said closed position wherein said resilient sections of said stud retainer abut against said larger, second U-shaped edge while the base of said cone-shaped head of said stud presses against and flexes said resilient sections immediately adjacent said hole toward said inclined surface of said second jaw member and away from said first position in said second direction opposite to said first direction until the base of said cone-shaped head passes through said hole and said resilient sections snap back to said first position thereby releasing said stud from said stud retainer.

4,240,191

METHOD AND DEVICE FOR REMOVING DISC BRAKE PISTON

Robert F. Schroyer, 215 Poinsetta Ave., Toledo, Ohio 43612

Filed Jun. 21, 1979, Ser. No. 50,876
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—426.5 **3 Claims**



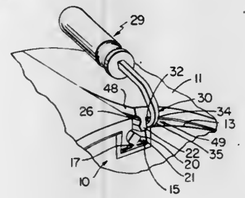
1. A method of removing a piston stuck in its cylinder located in a disc brake caliper which comprises impressing or introducing grease, under pressure, to an existing port in said caliper which, through a passageway, leads to the interior of said cylinder and continuing said introduction of grease until the passageway and interior of said cylinder are filled with grease whereupon continued introduction and/or increased pressure of said grease causes said piston to be slowly, safely and controllably expelled from said cylinder.

4,240,192

TOOL FOR AND METHOD OF REMOVING A DIE-CUTTING MAT FROM A ROTARY ANVIL

Richard F. Davis, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Jun. 22, 1979, Ser. No. 51,294
Int. Cl.³ B23P *19/04;* **B25B** *27/16*
U.S. Cl. 29—426.6 **18 Claims**



1. In a tool for removing a die-cutting mat from a rotary anvil wherein said anvil comprises, an outer substantially cylindrical surface having a pair of spaced holding surfaces extending radially inwardly from said cylindrical surface and a planar

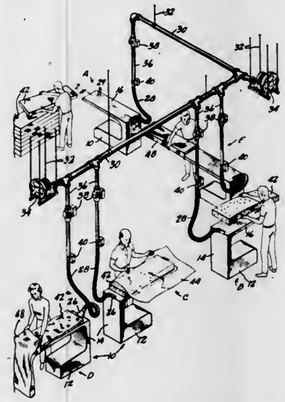
surface interconnecting the terminal inner edges of said holding surfaces, said holding surfaces and planar surface defining opposed walls and a bottom wall respectively of a longitudinal groove in said anvil and an immobile locking wedge disposed within said groove and having a fixed locking surface on each side thereof, each locking surface being spaced from an associated one of said holding surfaces to define a flange-receiving channel therebetween, and said die-cutting mat being disposed against said anvil and having opposite end portions terminating in a pair of identical flanges each disposed substantially perpendicular to the main body of said mat, each of said flanges having an inner portion adjoining said mat and an outer portion yieldingly compressed within an associated channel, each outer portion having a cooperating locking surface which is snap locked against an associated locking surface of said wedge to lock its flange in position with the outer portion yieldingly compressed within its associated channel and each outer portion having a terminal edge, the improvement wherein said tool comprises, a mat-engaging portion and a handle therefor, said mat-engaging portion having a wedge-like end adapted to be wedged between said mat and anvil to provide an initial lifting of an associated flange away from said anvil to thereby dislodge a portion of the cooperating locking surface of the associated mat flange from its locking surface of said wedge, said mat-engaging portion having a roughly semicircular portion adjoining said wedge-like end wherein said semicircular portion has a convex outside surface and a concave inside surface, said convex outside surface being adapted to engage said anvil and serve as a fulcrum for prying a terminal end portion of said associated flange from within its channel, said concave inside surface being adapted to engage a portion of said terminal edge with said wedge-like end against the inner portion of said associated flange thereby enabling pulling of said tool using said handle with said concave inside surface serving as a prying surface which dislodges the cooperating locking surface of said associated flange from the locking surface of said locking wedge along the full length of each upon pulling said tool along said cylindrical surface adjacent an associated holding surface.

4,240,193

METHOD OF STUFFING COMPRESSIBLE PRODUCTS INTO FLEXIBLE COVERS

Reuben J. Krein, Fort Smith, Ark., assignor to Coachmen Industries, Inc., Middlebury, Ind.

Division of Ser. No. 846,410, Oct. 28, 1977, abandoned. This application May 18, 1979, Ser. No. 40,391
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—451 **5 Claims**



1. A method of applying a flexible covering sheath in close-fitting relation to an air pervious expanded flexible filler, consisting of the steps of

mounting the filler upon a support having multiple openings selectively connectible with a source of subatmospheric pressure,

draping a flexible sheet of air impervious material over the filler at substantially all exposed surfaces thereof,

deaerating and shrinking said filler by connecting said support openings to said source of subatmospheric pressure

applying said sheath around said deflated filler said sheet and said support, and

separating said filler sheet and encircling sheath as a unit from said support

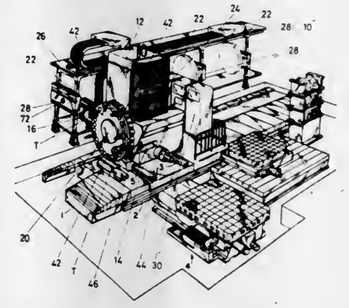
whereby said filler is re-aerated and expanded within said sheath.

4,240,194

AUTOMATIC TOOLING MACHINE

Sumiaki Inami; Haruhiko Koike, and Motohiko Yoshida, all of No. 1, Aza Norifune, Oaza Koguchi, Niwa-gun Aichi Prefecture, Japan

Continuation-in-part of Ser. No. 940,891, Sep. 11, 1978, abandoned, which is a continuation of Ser. No. 783,459, Mar. 31, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,945
Claims priority, application Japan, Apr. 9, 1976, 51/40799; Apr. 23, 1976, 51/47100; Apr. 26, 1976, 51/48140
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **11 Claims**



1. In an automatic tooling machine of the type including a spindle carrier having a spindle for supporting a machining tool, said spindle carrier including tool drum mounting means for rotatably supporting a tool drum with plural machining tools thereon, means for transferring a selected machining tool between said tool drum supported on said tool drum mounting means and said spindle, and means for selectively moving said spindle in X, Y and Z directions to position said selected machining tool in a desired operating position, the improvement comprising:

a fixedly positioned drum storage track separate from said spindle carrier and extending in a longitudinal direction, said rack including a plurality of drum support members for storing a plurality of said tool drums;

said spindle carrier having integral therewith a carriage track;

means for selectively moving said spindle carrier to a position such that said carriage track is positioned adjacent and aligned with a selected said drum support member;

means, mounted on said spindle carrier, for moving the said tool drum associated with said selected drum support member along said carriage track in a selected direction between said selected drum support member and said tool drum mounting means; and

means, mounted on said spindle carrier, for rotating said tool drum on said tool drum mounting means and for thereby

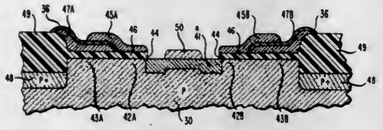
selectively rotatively aligning said tool drum with respect to said tool drum mounting means.

4,240,195

DYNAMIC RANDOM ACCESS MEMORY

James T. Clemens, Allentown; John D. Cuthbert, Bethlehem; Frank J. Procyk, Center Valley, and George M. Trout, Macungie, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 15, 1978, Ser. No. 942,861
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—571 **3 Claims**



1. A process for making a random access memory in which a plurality of memory cells are arranged in rows and columns and each memory cell includes a transistor and a capacitor with one plate of the capacitor being merged with a virtual drain zone of the transistor, which includes the steps of preparing a silicon chip which includes active portions where memory cells are to be formed and passive portions which serve to isolate the active portions CHARACTERIZED IN THAT the process includes the steps of

depositing over the silicon chip and insulated therefrom a first polycrystalline silicon layer which is patterned to provide a storage electrode over at least that region of each active portion which serves as the merged plate of the capacitor of a cell,

depositing over the chip a second polycrystalline silicon layer which is electrically insulated from the patterned electrodes of the first layer and which is thereafter suitably patterned to form both a plurality of gate electrodes, one over at least the region of each active portion which is to serve as the channel of the transistor of a cell, and a plurality of conductive lines each of which has a portion which directly contacts the silicon chip at a part of the active portion which is to serve as the source of the transistor, wherein each conductive line connects all of the transistors common to a separate column of the array,

converting the conductivity type of each active portion which is to serve as a source of a transistor, both in the region between the gate electrode and the directly contacting portion of the conductive line and in a region underlying the directly contacting portion, and

forming over the chip and insulated therefrom a second plurality of lines, each line of said second plurality electrically contacting the gate electrodes of all the transistors common to a separate row of the array.

4,240,196

FABRICATION OF TWO-LEVEL POLYSILICON DEVICES

Richard M. Jacobs, Allentown, Pa., and Ashok K. Sinha, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

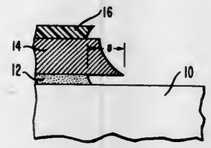
Filed Dec. 29, 1978, Ser. No. 974,337
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—578 **4 Claims**

1. A method of fabricating an LSI MOS device comprising the steps of

forming a structure that comprises, in order, on a silicon substrate (**10**): a relatively thin layer of silicon dioxide (**12**), a patterned layer (**14**) of doped polysilicon and a patterned relatively thick layer (**16**) of silicon dioxide, wherein portions of the relatively thick layer of oxide overhang portions of the polysilicon layer, at least part of each of said layers constituting a permanent constituent portion of said LSI MOS device to be fabricated,

etching the relatively thick oxide layer to remove said overhanging portions, whereby, at the same time, portions of said relatively thin layer under said polysilicon layer are undercut relative to said polysilicon layer to cause portions of said polysilicon layer to overhang said relatively thin layer,

CHARACTERIZED IN THAT said method comprises the additional steps of



etching said polysilicon layer (**14**) to remove the overhanging portions thereof,

oxidizing said etched structure to cover all exposed surface portions of said polysilicon layer and said substrate with a layer of silicon dioxide,

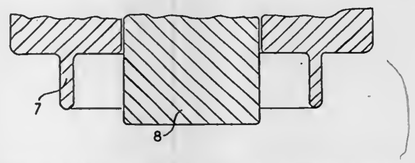
and forming another patterned layer (**22**) of doped polysilicon in overlapping spaced-apart relationship with respect to said first-mentioned layer (**14**) of polysilicon to form a two-level polysilicon structure.

4,240,197

METHOD FOR SEALING A PRIMARY CELL

Ernest E. Hamsag, Chene-Bougeries, Switzerland, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Aug. 4, 1978, Ser. No. 931,005
Claims priority, application Switzerland, Aug. 8, 1977, 9717/77
Int. Cl.³ H01M *2/04*
U.S. Cl. 29—623.2 **8 Claims**



1. A method of sealing a primary cell assembly which includes a cylindrical metal receptacle having an open end and a closed end, a sheet metal cover positioned within the open end of the receptacle, the cover having an axially extending deformed portion adjacent to a peripheral part of the cover and a hard resilient thermoplastic sealing ring positioned between the periphery of the cover and the inner side of the cylindrical wall of the receptacle, said cover being positioned in said receptacle so that a surface of the cover is exposed, the method comprising:

pressing a tool against the exposed surface of the cover of the primary cell assembly, the tool having a contacting surface which contacts part of the axially extending deformed portion of the cover;

moving the contacting surface of the tool axially toward the closed end of the receptacle, the axial movement of the contacting surface against the contacted part of the cover causing radially outward deformation of the peripheral part of said cover to radially compress said sealing ring against the inner side of the wall of the cylindrical receptacle; and

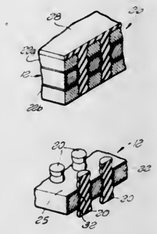
preventing inelastic radially outward deformation of the wall of the cylindrical receptacle during said axial movement of the tool.

4,240,198

METHOD OF MAKING CONDUCTIVE ELASTOMER CONNECTOR

Oscar Alonso, Westminster, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 912,381, Jun. 5, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,255
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—876 **1 Claim**



1. A method of making a conductive elastomer connector comprising the steps of:

providing three metal plates each having a set of holes therein, the holes in said sets being arranged in identical patterns;

the holes in at least one of said plates being formed by etching;

forming a nonconductive layer on said one of said plates covering the upper and lower surfaces thereof and the walls of said holes;

stacking said plates with said one plate disposed between the other two plates and with the sets of holes in the three plates aligned;

filling said holes with a conductive elastomer thereby forming conductive elastomer rods in said holes; and

removing by etching said other two plates from said one plate with said conductive elastomer rods remaining in said plate thereby extending above and below the coating on the respective top and bottom surfaces thereof.

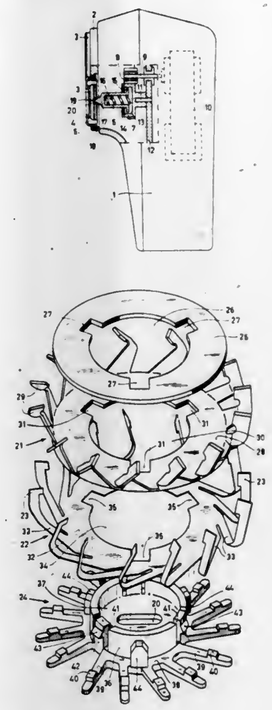
4,240,199

SHAVING APPARATUS

Ebbe Boiten; Eduard W. Tietjens, and Jochem J. De Vries, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,560
Claims priority, application Netherlands, Nov. 28, 1977, 7713046
Int. Cl.² B26B *19/14*
U.S. Cl. 30—43.6 **8 Claims**

1. A shaving apparatus having a circular shear plate provided with hair-entrance apertures and a cutting unit associated with and rotatable relative to the shear plate; said cutting unit comprising a cutting member having a circular central body, cutters extending from the circumference of said central body toward the shear plate, lead cutters respectively associated with and movable relative to the cutters, each lead cutter, with reference to the direction of rotation of the cutting unit, being positioned in front of its associated cutter, respective connecting arms extending from the lead cutters to the central body of the cutting member, and a coupling piece separate



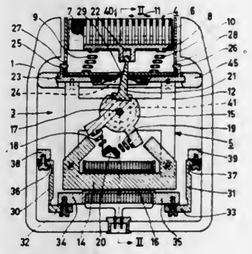
from said cutting member and said connecting arms for securing the connecting arms to said central body.

4,240,200

DRYSHAVING APPARATUS

Romuald L. Bukoschek, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,271
Claims priority, application Austria, Feb. 10, 1978, 970/78
Int. Cl.³ B26B *19/02*
U.S. Cl. 30—43.92 **5 Claims**



1. A dryshaving apparatus which comprises a housing; a shaving head including a stationary upper cutter and a cooperating lower cutter; an oscillating armature motor for driving the lower cutter in a reciprocatory oscillating movement, the shaving head and the oscillating-armature motor being connected and constituting an assembly; and means to mount the

assembly in the housing by elastic elements only, at least one of the elastic elements being a strip-shaped integral hinge extending transversely to the oscillating movement, said integral hinge being connected at one end to the assembly and at its other end to the housing, the assembly together with the elastic elements having a mechanical resonant frequency less than the oscillation frequency, divided by $\sqrt{2}$, of the parts of the assembly performing the reciprocatory oscillating movement.

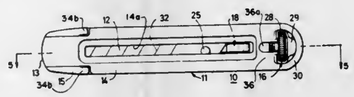
4,240,201
FOLDING KNIFE
Scott Sawby, and Steven W. Mullin, both of Rte. 1, Box 186A, Samuels, Id. 83862
Filed Aug. 13, 1979, Ser. No. 65,939
Int. Cl.³ B26B *1/04*
U.S. Cl. 30—161 **11 Claims**

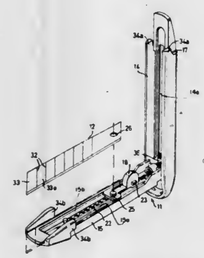


1. A folding knife, comprising:
an elongated handle having a longitudinal open blade receiving recess;
a blade having a longitudinal cutting edge extending to an outward end and a tang at an inward end;
a pin extending through the tang, pivotably mounting the blade to the handle for movement about a transverse axis between an open position projecting longitudinally from the handles and a closed position wherein the blade is received within the blade receiving recess;
a catch on the tang;
a spring on the handle;
a latch member on the spring urged against the tang for sliding over the tang and snapping into engagement with the catch when the blade is moved to the open position, securely locking the blade against pivotal movement about the pin relative to the handle;
a cam surface on the spring, adjacent the latch member and facing the blade receiving recess; and
a pushbutton actuator means on the handle, manually movable against the cam surface for moving the latch member from engagement with the catch.

4,240,202
REPLACEABLE BLADE KNIFE
Richard Gilbert, Sheffield, England, assignor to Stanley Tools Limited, Great Britain
Filed Sep. 6, 1978, Ser. No. 939,953
Claims priority, application United Kingdom, Sep. 8, 1977, 37574/77
Int. Cl.³ B26B *3/06*
U.S. Cl. 30—162 **3 Claims**

1. A retractable blade knife comprising an elongated knife handle with a narrow blade receiving opening at a forward longitudinal end thereof and having a pair of separable elongated mating handle halves on opposite sides of and defining the narrow blade receiving opening, the mating handle halves having cooperating means for relatively longitudinally sliding the mating handle halves in opposite relative longitudinal directions between unlocked and locked relative longitudinal positions thereof and a manually operable blade carrier mounted within the handle between the handle halves for supporting a blade therebetween for manually longitudinally shifting the blade between a retracted sheathed position within the handle and a forward unsheathed position extending through the blade opening, the handle having locking means for locking the handle halves together in their said locked relative positions and comprising sidewise facing, opposed cooperating shoulders on the handle halves respectively engageable to interlock the two halves together as the two halves are relatively longitudinally shifted from their said unlocked to their said locked relative positions and drive means, at the opposite longitudinal end of the handle from said forward end, manually operable to positively relatively longitudinally drive





the mating handle halves from their said unlocked to their said locked relative positions and to return the handle halves from their said locked to their said unlocked relative positions, the locking means permitting the handle halves to be separated when in their said unlocked relative positions to provide access to the blade carrier.

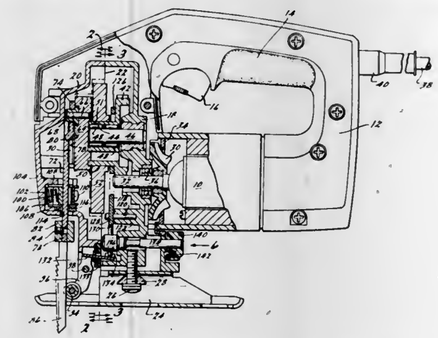
4,240,203
FLEXIBLE SAW
Robert M. Johnson, 11 Jana Dr., Weston, Conn. 06883
Continuation of Ser. No. 947,017, Sep. 29, 1978, Pat. No. 4,193,188. This application Oct. 17, 1979, Ser. No. 85,549
The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.
Int. Cl.³ B23D *45/00*
U.S. Cl. 30—166 R **7 Claims**



1. A flexible saw for sawing high branches from trees comprising:
a flexible cutting area, and

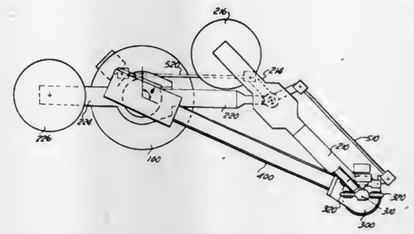
flexible holding means on each end of the flexible cutting area to oscillate the cutting area against a branch of a tree to be cut,
said cutting area including:
a flexible base member and a series of spaced apart cutting elements secured thereto, each of said spaced apart cutting elements having cutting teeth on one end thereof and a smooth surface on an opposite end thereof, the teeth on every other one of said cutting elements facing toward one end of said flexible base member and the teeth of each of said cutting elements in between every other one of said cutting elements facing towards the opposite end of said flexible base member such that the ends of each of said cutting elements having the teeth face each other and the ends of each of the cutting elements having the smooth surface face each other,
whereby teeth on each of said cutting elements facing in said one direction will cut when the cutting area is drawn in said one direction, and the teeth on each of said cutting elements facing in the other direction will be cleared of debris, and when the cutting action is reversed, vice-a-versa.

4,240,204
JIG SAW
Richard E. Walton, II, Fallston, and William D. Sauerwein, Joppa, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Jun. 19, 1979, Ser. No. 50,042
Int. Cl.³ B23D *49/00*; B27B *11/00*
U.S. Cl. 30—393 **18 Claims**



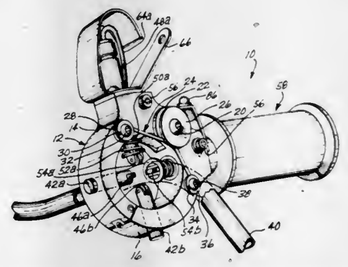
1. A drive mechanism for a jig saw, comprising:
a casing having a motor horizontally disposed therein;
a generally vertically disposed saw blade carrier vertically reciprocable by said motor and having means at its lower end for attaching a saw blade;
means defining an upper carrier support comprising a support surface in said casing slidingly engaged by the upper portion of said saw blade carrier;
means defining a lower carrier support comprising a saw blade guide attached to said casing and positioned to engage the trailing edge of a reciprocating saw blade attached to said saw blade carrier;
means defining an intermediate carrier support comprising guide means in said housing for biasing said saw blade carrier toward said support surface and a saw blade attached to said carrier against said saw blade guide, whereby said support surface and said saw blade guide determine the reciprocal axis of said saw blade carrier and saw blade;
a rotary crank plate drivingly connected to said motor; and
said support surface being disposed on said crank plate.

4,240,205
COORDINATE MEASURING MACHINE
John J. Tuss, Englewood, Ohio, assignor to The Bendix Corporation, Southfield, Mich.
Filed Aug. 20, 1979, Ser. No. 67,962
Int. Cl.³ G01B *5/02*
U.S. Cl. 33—1 M **10 Claims**



1. An apparatus for measuring a part, said apparatus comprising:
a base;
a probe for engaging the part being measured;
first and second arm members for coupling the probe to the base, said first and second arm members being coupled together at a joint and being movable through a first plane, said first arm member mounting said probe generally perpendicular to said plane and said second arm member mounted to said base;
means for counterbalancing the weight of the probe and arm members about the base, said means including a first counterbalance member coupled to said first arm member for counterbalancing the weight of the first arm member and the probe about the joint and a second counterbalance member for counterbalancing about the base the weight of the second arm member and the counterbalanced first arm member; and
means coupled between said base and probe for measuring the location of the probe as an indication of the measurement of the part being measured.

4,240,206
OVALITY MEASURING DEVICE AND METHOD
Joseph M. Baresh, and Robert E. Nash, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jan. 3, 1979, Ser. No. 611
Int. Cl.³ G01B *5/20*
U.S. Cl. 33—174 Q **17 Claims**



1. An apparatus for determining ovality of a bent tube with the apparatus comprising: head means for permitting said head to be rotated open and closed to permit placement of said head around tubing to be measured; first means disposed in said head for electromechanically diametrically measuring across a major diameter of the tubing; second means disposed in said head located at an angle of 90 degrees from said first measuring

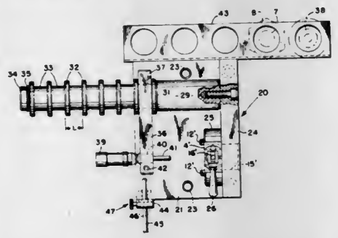
means and along the same radial plane, for electromechanically diametrically measuring across the minor diameter of the tubing; and means responsive to said first and second measuring means for electronically summing the measurements to determine and to display the ovality of the tubing.

4,240,207

TOOL PRESETTING DEVICE

Milton L. Benjamin, and David L. Beaver, both of Chagrin Falls, Ohio, assignors to Erickson Tool Company, Solon, Ohio

Filed Oct. 29, 1979, Ser. No. 89,609
Int. Cl.³ G01B *5/02*; B27G *23/00*
U.S. Cl. 33—185 R **10 Claims**



1. A device for presetting an end working tool in a tool holder having tool gripping means at one end operative selectively to permit longitudinal adjustment of the tool with respect to the tool holder and to lock the tool in adjusted position and having a shank at the other end forming a locating shoulder; said device comprising a tool holder support having a bore to slidably receive said shank for engagement of said shoulder with a locating face of said support; an elongated bar secured to said support in spaced parallel relation to the axis of said bore; said bar having a series of uniform axially spaced apart peripheral grooves; an adjustable member extending radially from said bar with one end frictionally insertable into any groove for course adjustment of said member toward and away from said locating face in increments corresponding to the spacing of said grooves; said adjustable member having fine adjustment means at its other end adapted to be adjusted toward and away from said locating face against which the end of a tool is adapted to be engaged by longitudinal adjustment of the tool with respect to said locating shoulder and locating face; said adjustable member being swingable about the axis of said bar to a position whereat said other end of said adjustable member and said fine adjustment means laterally clears said bore for axial insertion and withdrawal of said shank into and from said bore.

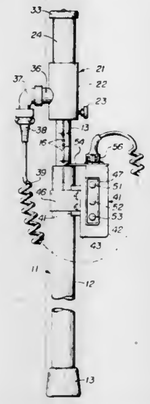
4,240,208

HAND-HELD LASER SURVEYING ROD

Marie S. Pehrson, Sparks, Nev., assignor to John V. Pehrson, Sparks, Nev.

Filed Oct. 1, 1979, Ser. No. 81,027
Int. Cl.³ G01B *15/06, 11/26*
U.S. Cl. 33—293 **6 Claims**

1. A surveying rod for use with a laser beam rotatable in a plane comprising a telescopic rod having an upper section and a lower section, each said section having height markings, a sensor attached to the upper end of said upper section, said sensor having a base having a socket for said upper end, a vertical piece mounted relative to said base, said base having a plurality of upper solar cells all at the same elevation, a plurality of center solar cells at the same elevation and below said upper cells and a plurality of lower solar cells at the same elevation and below said center cells, a readout on the upper end of said lower section, said readout comprising a box, three vertically spaced lights mounted on said box and a pointer positioned to point to said height markings, and electrical means interconnecting said sensor and said readout to illuminate one said light when said beam intercepts one of said upper cells, a second said light when said beam intercepts one of said



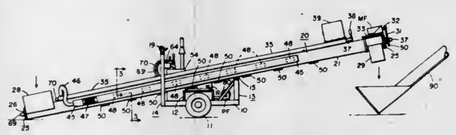
center cells and a third said light when said beam intercepts one of said lower cells.

4,240,209

METHOD OF AND APPARATUS FOR DRYING GRAIN AND THE LIKE

Earl A. Cuthbertson, 309 N. Broadway, and Bobbie G. Cuthbertson, R.R. #2, both of Toledo, Iowa 52342

Filed Jun. 19, 1978, Ser. No. 916,945
Int. Cl.³ F26B *3/00, 17/00*
U.S. Cl. 34—10 **20 Claims**



17. A method of drying grain comprising: moving the grain to be dried through first enclosure means; circulating a heated liquid from a source in heat exchange relation but not in contact with the grain in the enclosure means effective to heat the grain and expel moisture therefrom; passing the liquid after said heat exchange with the grain through air from the atmosphere in heat exchange relation effective to heat the air and then returning the liquid to the source; passing the air after said heat exchange with the liquid into the grain in the enclosure means to entrain moisture expelled from the grain by said heat exchange between the liquid and the grain; and removing said air and moisture from the enclosure means.

4,240,210

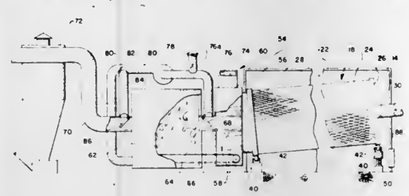
METHOD AND APPARATUS FOR UTILIZING SOLAR ENERGY IN A WATER AND WASTE MANAGEMENT SYSTEM

Barney K. Huang, 2008 Varnell Ave., Raleigh, N.C. 27612

Filed Apr. 11, 1979, Ser. No. 29,267
Int. Cl.³ F26B *3/28*
U.S. Cl. 34—39 **19 Claims**

1. A method of utilizing solar energy for drying waste material comprising the steps of: transferring the particular material, such as water or waste material, to a rotary chamber; enclosing the rotary chamber within a drying structure having a transparent wall of substantial area for allowing solar radiation to pass therethrough; draining water from the material within said rotary chamber to leave a sludge like material

therein; rotating said rotary chamber and collecting solar energy about the wall structure thereof and transferring the collected solar energy inwardly to dry the sludge material; and



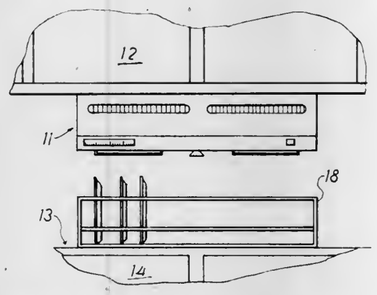
conveying the dried sludge material from the rotary chamber where the dried sludge material may be collected and suitably utilized.

4,240,211

DISH DRYING APPARATUS

Charles W. Keever, Jr., Laurel, Mont., assignor to Robert Mace and Mike Mace, both of Laurel, Mont., part interest to each

Filed Apr. 23, 1979, Ser. No. 32,395
Int. Cl.³ F26B *19/00*
U.S. Cl. 34—90 **3 Claims**



1. Dish drying apparatus attached to the bottom of a cabinet located above a counter surface, said dish drying apparatus including a housing disposed above dishholding means, said housing including a top face, a bottom face and a plurality of side faces, housing support means connecting said top face of said housing with said bottom of said cabinet, a plurality of outlet openings in the bottom face of said housing remote from said cabinet, a plurality of inlet openings in a side face of said housing, duct means connecting said outlet openings in the bottom face of said housing with said inlet openings in said side face of said housing, rotatable fan means disposed along the length of said duct means, filter means associated with said duct means, heating means disposed in said duct means for heating air being transferred therethrough, thermostatic control means associated with said heating means, electrical drive means for said rotatable fan means, switch means for said electrical drive means and said heating means, and timing means associated with said switch means.

4,240,212

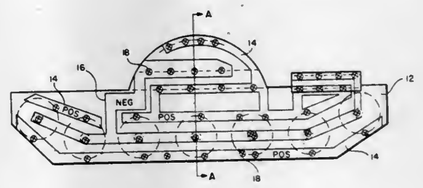
THERMAL SIGNATURE TARGETS

Albert H. Marshall, Maitland; Bon F. Shaw; George A. Siragusa, both of Winter Park, and Herbert C. Towle, Maitland, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1979, Ser. No. 50,578
Int. Cl.³ F41G *3/26*; H05B *3/02, 3/16*
U.S. Cl. 434—11 **16 Claims**

1. Structure that simulates the thermal appearance of an object by imitating the infrared signature that the object is known to provide, comprising in combination:

a mounting member having front and rear surfaces;
material that is substantially two-dimensional and of uniform linear resistivity, and that is infrared emissive when electrically activated, applied to the front surface of said member in a predetermined pattern that includes an arrangement of conductive strips overlaying said material for distributing electrical current to said material, and that are spaced such that some portions of the material will be more emissive than other portions and the relative thermal



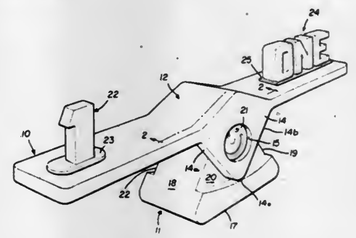
intensities over said pattern will approximate the thermal appearance of said object when the structure is electrically activated;
electrically positive and electrically negative busses affixed to the rear surface of said member opposite said member from the conductive strips on said front surface;
contacts electrically coupling said busses on said rear surface to said conductive strips on said front surface; and
a source of electrical energy coupled to said busses.

4,240,213

EDUCATIONAL AMUSEMENT DEVICE FOR MATCHING WORDS WITH NON-VERBAL SYMBOLS

Matthew R. Lutin, 1551 N. 12th Ct., Hollywood, Fla. 33020

Filed Oct. 3, 1979, Ser. No. 81,544
Int. Cl.³ G09B *19/02*
U.S. Cl. 434—194 **8 Claims**



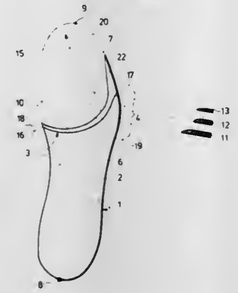
1. In an educational amusement device for teaching a player to match words with corresponding non-verbal visual symbols, said amusement device having a balance arm and means providing a horizontal pivotal fulcrum for the balance arm at its center of gravity, the improvement which comprises:
a plurality of integral first game pieces of different weights which display different non-verbal symbols;
a plurality of integral second game pieces displaying different words which correspond respectively to the non-verbal symbols displayed by said first game pieces, each of said second game pieces having the same weight as the respective first game piece which displays the corresponding non-verbal symbol;
and visual indicator means for indicating whether the balance arm is horizontally balanced by first and second game pieces of equal weight on opposite sides of its pivotal fulcrum.

4,240,214

FOOT-SUPPORTING SOLE

Rolf Sigle, and Jakob Sigle, both of Friedrich-Siller-Strasse 36, D 7014 Kornwestheim, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,089
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 7721149; Jan. 12, 1978, 2801118
Int. Cl.³ A43B *13/12, 13/14, 13/38*
U.S. Cl. 36—30 R 16 Claims



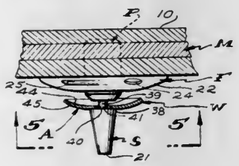
1. A sole for a shoe, said sole comprising a body having a wear resistant layer, said wear resistant layer having a contour at least in part conforming to the shape of the foot and having sections of relatively varying thickness obtaining different rigidity, one of said sections lying generally to the rear of the area of the hallux ball and extending free of the area of the hallux ball along the periphery of the sole along the outside of said foot a distance forward of the hallux ball, said one section being of greater thickness than adjacent sections including the area of the hallux ball to thereby have greater rigidity than said adjacent sections.

4,240,215

SHOE SPIKE

Mayo Broussard, 5711 Santa Monica Blvd., Hollywood, Calif. 90038

Filed Mar. 5, 1979, Ser. No. 17,457
Int. Cl.³ A43C *15/00;* A43B *5/00*
U.S. Cl. 36—67 D 18 Claims



1. In combination with a shoe having a downwardly disposed earth-engaging surface, an anti-fouling shoe spike structure carried by said shoe and having an elongate vertical earth-engaging spike depending from the earth-engaging surface of the shoe, said spike having upper and lower portions, and a soil repelling barrier being located thereon adjacent said upper portion are joined, with the lower portion free of barrier material, said barrier having a diametrical width transverse to said spike less than the length of said spike structure;

means for constraining said barrier to remain adjacent said upper portion with said lower portion remaining bare at all times during use,

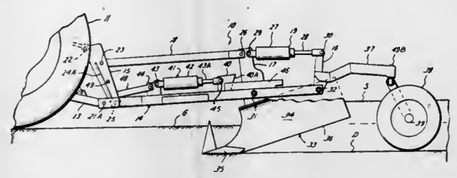
said barrier being structured to permit substantially free movement of earth upwardly relative to said earth-engaging surface and said spike and circumferentially and radially about the spike, said barrier resisting retention of damp earth on and about said spike.

4,240,216

LAND FORMING AND/OR FARMING APPARATUS

Virgil L. Martel, Nome, Tex., assignor to Lehman-H Feeder & Plow, Inc., Corpus Christi, Tex.

Filed Mar. 26, 1979, Ser. No. 24,002
Int. Cl.³ E02F *5/02*
U.S. Cl. 37—98 6 Claims



1. In land forming and/or farming apparatus, which comprises a frame adapted to be towed behind a tractor having a three point hitch, said frame including a longitudinally extending beam having a front end pivotally attachable to the lower arms of the hitch, a front post having a lower end pivotally connected to the beam and an upper end pivotally attachable to the upper arms of the hitch, a rear post pivotally connected to the beam near its rear end, an intermediate post pivotally connected to the beam intermediate the front and rear posts, a front link extending between and pivotally connected to the front and intermediate posts, a rear link extending between and pivotally connected to the intermediate and rear posts, a wheel mounted on the rear post for rolling engagement with the ground behind the blade, and an element carried by the intermediate post for engaging the ground beneath the beam, said rear link being extendible and retractable to control the elevation of said cutting edge; the improvement comprising a part mounted on the frame for guided movement longitudinally of the beam, a fluid-operated, extendible and retractable actuator having one end pivotally connected to the beam and its other end pivotally connected to said part for moving said part between a first position in which a bearing surface thereon is spaced from an oppositely facing bearing surface on one of the posts, and a second position in which it is forced against said bearing surface on the post so as to cause the upper end of the post to swing rearwardly about its pivotal connection to the beam, and thereby lift the rear end of the frame about its attachment to the three point hitch.

4,240,217

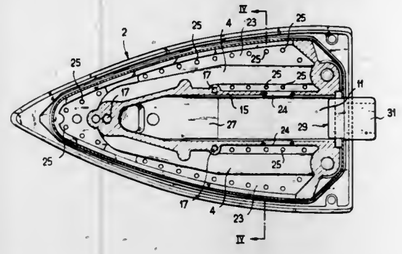
ELECTRIC STEAM IRON

Pierre Schwob, Lyons, France, assignor to SEB S.A., Selongey, France

Filed Dec. 11, 1978, Ser. No. 968,299
Claims priority, application France, Dec. 21, 1977, 77 38644
Int. Cl.³ D06F *75/18*
U.S. Cl. 38—77.83 10 Claims

1. In an electric steam iron comprising a water reservoir fitted with a device for injecting water into a vaporization chamber formed in a sole-plate which is heated by a U-shaped electric resistor, the arms of the U being disposed along the two sides of the iron which have the greatest length and the point of injection being located in the vicinity of the base of the U and said vaporization chamber being adapted to occupy at least part of the space located between the resistor arms and to communicate with a distribution chamber through a partition-wall, said distribution chamber being in communication with the exterior through discharge holes having outlets on the underface of the sole-plate; the improvement wherein the vaporization chamber occupies substantially the entire space formed between the arms of the resistor and extends to the rear

edge of the sole-plate, a communication between the two chambers being established by means of recesses formed in the partition-wall and located in the rear portion of the iron, the vaporization chamber having a substantially constant cross-



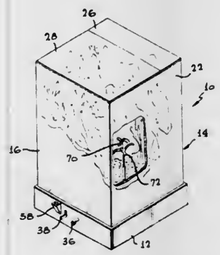
section in planes at right angles to the normal direction of forward displacement of the iron and terminates at the rear end of the iron in a pluggable orifice which has substantially the same cross-sectional area.

4,240,218

AUDIO-VISUAL DISPLAY DEVICE

Garvin S. Kotzin, 20934 Hackney St., Canoga Park, Calif. 91316

Filed Feb. 2, 1979, Ser. No. 9,278
Int. Cl.³ G09F *19/02*
U.S. Cl. 40—407 10 Claims



1. An audio-visual display device comprising:

a housing for the containment of soil and for the containment of living, natural sized plants, said housing substantially enclosing a space in which the soil and plants are located, said housing having at least one transparent area for the entry of light into the enclosed space to aid in maintaining the living plants and for inspection of the enclosed space;

a motor; capstan in said enclosed space and driven by said motor, said capstan being an upright, open-top tube;

a model mounted in said capstan, said model being mounted on the wire which extends into said open top capstan tube so that said model is removably supported in said capstan tube, said model being a reduced-scale model of a natural creature, said model being positioned among the plants in said enclosed space for moving in said enclosed space to provide animation so that motion of said model of a natural creature in said space among the plants growing therein provides the illusion of a larger space and larger plants; and

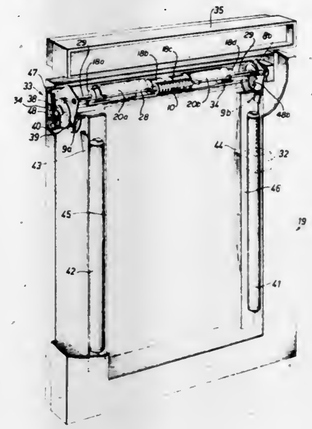
a music-producing instrument driven by said motor so that, when said capstan is moving, music is produced.

4,240,219

SYSTEM FOR DISPLAYING A NUMBER OF PICTURES, NOTICES OR SIMILAR ANNOUNCEMENTS

Peter J. T. Törnqvist, Barkassvägen 11, Lidingö, Sweden

Filed Aug. 1, 1978, Ser. No. 929,935
Claims priority, application Sweden, Aug. 9, 1977, 7709028
Int. Cl.³ G09F *11/30*
U.S. Cl. 40—476 14 Claims



1. System for displaying and changing the display of a number of pictures, notices, or the like, comprising:

a plurality of flexible sheets (1–7), each provided with pictures, notices, or the like;

suspension means (11–17) coupled to said sheets for suspension of said sheets;

a divided stacker (8*a*,8*b*) for receiving said suspension means, said stacker including means projecting beyond the sheet on either side thereof, said stacker including means for engaging said suspension means and, in doing so, storing the sheets (1–7), preferably hanging vertically;

feed means (10–18) located adjacent said stacker and adapted to displace or move the sheets (1–7) relative to the associated suspension means;

each end of each sheet being provided with a substantially stiff outer grip (21*a*–27*a*; 21*b*–27*b*), which is adapted to be gripped and moved by said feed means (10–18);

each sheet (1–7) being provided, near its respective ends, with a respective stop means (21*a*, 21*b*, etc.) to stop the relative displacement of the sheet in relation to the associated suspension means, such displacement being produced by the said feed means (10–18);

each grip member (21*a*–27*a*) being located farther away from the center of the associated sheet than is the associated stop means; and

said suspension means (11–17) each being relatively displaceable from one stop means (21*a*, etc.) at one end of the respective sheet (1–7) to its second stop means (21*b*, etc.) at the other end of the respective sheet on a display change of the flexible sheet.

4,240,220

REFLECTOR WITH ILLUMINATED INDICIA

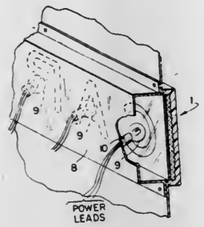
Barry Smith, 554 W. 38 St., New York, N.Y. 10018

Filed Apr. 26, 1979, Ser. No. 33,528
Int. Cl.³ G09F *13/08*
U.S. Cl. 40—564 12 Claims

1. A reflector having selectively illuminatable indicia which is readable in both its illuminated and non-illuminated states, comprising:

a translucent sheet-like material (1) having front and rear

surfaces and reflecting elements (2) on at least a portion of at least one of said front and rear surfaces;
means defining indicia on a rear surface portion of said translucent sheet-like material (1);
reflecting material on said reflecting elements, but not on said indicia defining means;
a dark, translucent, material (6) adjacent the indicia defining means on the rear surface portion of said translucent sheet-like material (1);
translucent diffusing material (7) adjacent said dark translucent material (6) and located more remote from said translucent sheet-like material (1) than said dark translucent material (6); and



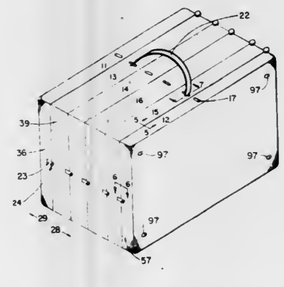
a selectively energizable light source located behind said translucent diffusing material for selectively illuminating said indicia of said translucent sheet-like material (1), said indicia appearing dark in color when viewed from the front of said translucent sheet-like material (1) and when not illuminated by said light source, and said indicia appearing substantially the same color as said translucent sheet-like material (1) when viewed from the front of said translucent sheet-like material and when illuminated by said light source.

4,240,221
STRIKE LIGHT FISHING ROD HOLDER
Gene Komarnicki, 2 Gertrude St., St. Albans, Victoria, Australia
Filed Feb. 27, 1979, Ser. No. 15,639
Claims priority, application Australia, Mar. 16, 1978, PD3737
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 **6 Claims**



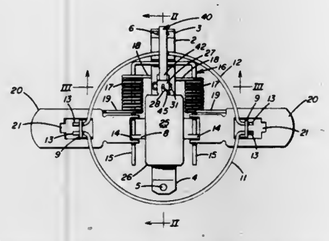
1. A fishing rod support and warning device comprising:
(a) an elongated housing having an inner wall which includes at least one rib aligned along the longitudinal axis of the housing;
(b) a contact rod having an outer end for supporting a fishing rod, and a threaded inner end for closing an electric circuit having a power source and a warning means whenever said fishing rod depresses said outer end of said contact rod;
(c) spring mounting means including a spring for resiliently mounting said threaded inner end of said contact rod within said housing, and
(d) means for altering the degree of said resilience of said spring mounting means including said outer end of said contact rod, a disc having internal threads for threadably engaging said threaded inner end of said contact rod, and a peripheral recess for receiving said housing rib.

4,240,222
TACKLE BOX
Dorris L. Covington, 701 N. Bosart, Indianapolis, Ind. 46201
Filed Dec. 26, 1978, Ser. No. 973,137
Int. Cl.³ A01K *97/06*
U.S. Cl. 43—57.5 R **19 Claims**



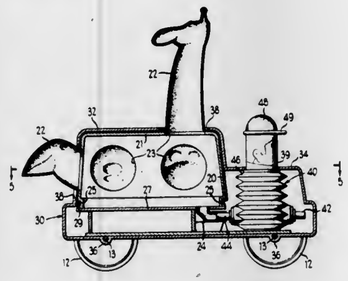
1. A tackle box comprising:
a plurality of generally rectangular housing units stacked horizontally,
each of said units having a top and at least one generally straight upstanding hinge side, with hinge means vertically spaced along said side and connected to hinge means on a next adjacent unit, each of said units being thereby hingedly connected to the next adjacent unit,
a carrying handle at the top of at least one of said units,
said hinge means having vertical hinge axes and each of said units having a swing side horizontally spaced from the hinge side, the swing sides of adjacent units being horizontally separable from each other to permit access to interiors of said units while hinge sides thereof remain connected to next adjacent units,
said hinge means being constructed to facilitate intentional disconnection of one of said units from the unit next adjacent to it,
each of said units having a hinge edge meeting a hinge edge of the next adjacent unit,
the hinge means including at least one hinge loop on each hinge edge, each loop having a circular aperture with a loop axis, the hinge loops on meeting hinge edges having their loop axes colinear and vertical, and top headed hinge pins received through the apertures of hinge loops having colinear axes to hingedly connect said loops together, but said pins being readily removable upwardly from said hinge loop apertures, to facilitate connection and disconnection of one of said units to another of said units without tools,
a handle receiver on the top of each of said units,
said handle having a central hand receiver portion and having end portions attachable to any of said receivers and attached to said handle receivers on at least two of said units,
said handle being alterable between said hand receiver portion and said end portions to facilitate spanning greater and lesser numbers of units of said plurality of units, intermediate the two units to which said end portions are attached.

4,240,223
ANIMAL TRAP
Edward J. Medvetz, 220 Lincoln St., Homer City, Pa. 15748, and Rudolph M. Yandrick, 267 S. Fourteenth St., Indiana, Pa. 15701
Filed Nov. 15, 1979, Ser. No. 94,379
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—58 **9 Claims**



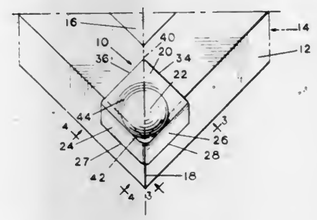
1. In an animal trap having a frame, a pair of jaws rotatably mounted on said frame, spring means on said frame to urge said jaws toward each other from the set position, a pan located between said jaws when said jaws are in the set position, means pivotally mounting said pan on said frame, a dog adapted to contact said pan and hold said jaws in the set position and means pivotally mounting said dog on said frame, the improvement comprising an opening formed in said pan and a corresponding opening formed in said dog aligned with said opening in said pan when said pan and said dog are in contact when the trap is in the set position and a frangible shear pin extending through said openings in said pan and said dog to maintain contact between said pan and said dog, whereby a controlled and adjustable trigger arrangement is provided.

4,240,224
TOY VEHICLE
Allison W. Katzman, Chicago; Burton C. Meyer, Downers Grove; Erick E. Erickson, Chicago, and Palmer J. Schoenfield, Evanston, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 29, 1978, Ser. No. 974,309
Int. Cl.³ A63H *3/06*
U.S. Cl. 46—88 **3 Claims**



1. A circus truck toy, comprising:
a vehicle frame supported by wheel means for rolling support on a suitable surface;
a rear cargo portion;
a front cab portion;
a plurality of windows in the rear cargo portion;
a flexible pneumatic sack mounted within the cargo portion, said flexible sack having a plurality of protruding portions aligned with the windows to permit the same extend outwardly upon inflation thereof;
means for giving each one of said extended protrusions the shape and appearance of an animal; and
means for pressurizing said sack.

4,240,225
CORNER GUARD
Don M. Sartain, P.O. Box 314, Wabasso, Fla. 32970
Filed Jul. 16, 1979, Ser. No. 57,567
Int. Cl.³ E05F *7/00*
U.S. Cl. 49—462 **3 Claims**



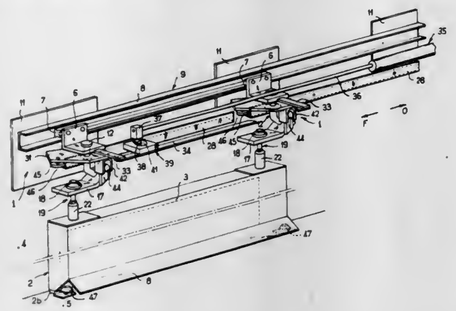
1. A corner guard for use on a window in a wall, in combination with that window, wherein,
the window includes at least one sash having a surrounding frame, the sash is swingable between open and closed positions on an axis adjacent the wall the having a swingable edge spaced from the wall when in open position, and the sash when in closed position lies closely adjacent the plane of the wall with the swinging edge consequently also closely adjacent that plane, the sash having an inner surface and an outer surface relative to its closed position, the frame being of metal or similar hard material having sharp corners which readily cause injury to the body of a person having impact therewith,
the corner guard being an integral article including a base and a boss rising therefrom, the base having a recess in an under side defined on one side by a main surface of the base, and on other sides by downwardly extending flanges on two contiguous sides of the base, the surfaces of the base that define the recess being flat and commonly intersecting and defining a sharp inside corner,
the corner guard being fitted to the outer surface of frame with the main surface of the recess engaging the outer surface of the frame, and the flanges engaging the peripheral edges of the frame, the inner surface of the frame being clear of the corner guard and correspondingly unobstructed,
whereby the sash can be moved to its closed position unimpeded by the corner guard and thereby capable of engaging any element in the window by the inner surface of the sash that it could engage without the corner guard fitted thereto,
said boss extending laterally from the base beyond both of the flanges and the corner therebetween, and the boss and those portions of the flanges at the juncture thereof together extending the full dimension of the guard in direction perpendicular to said main surface, whereby the guard at said juncture is positioned for receiving impact from all directions except in direction against the inner surface,
the material of the corner guard being softer than the metal of the frame.

4,240,226

GUIDING AND ACTUATING DEVICE FOR A SLIDING DOOR

Alexandre Georgelin, Bois Colombes, France, assignor to Faiveley S.A., Saint Ouen, France

Filed Oct. 31, 1978, Ser. No. 956,269
Claims priority, application France, Nov. 8, 1977, 77 33585
Int. Cl.[2] E05D *15/10*
U.S. Cl. 49—223 **7 Claims**



1. A guiding and actuating device for a vertical air-tight sliding door for closing an opening formed in a wall and terminating at the level of a horizontal plane which can be the floor, comprising suspension means for guiding the door in a direction parallel to the wall and means for applying said door simultaneously against said wall and against said horizontal plane when it is located opposite to the opening aforementioned, the suspension means being constituted by at least two carriages constrained by guiding means to move horizontally along the wall, each carriage being provided with a first shaft coupled by articulation means to a second shaft fixed to the door, and means for locking the articulation means being provided in order to prevent the movement of the second shaft when the door is not located opposite to the opening, wherein both shafts have vertical axes and wherein the articulation means are so arranged that the second shaft is permitted at the time of release of the locking means to carry out a movement having a component parallel to the direction of the common axis of both shafts, the locking means comprising a roller having a vertical axis mounted on a component of the articulation means and applied against a rectilinear roller track which is rigidly fixed to the wall in order to prevent said component from undergoing a rotational displacement accompanied by the second shaft, a gap being formed in the roller track in order to permit release of the roller and unlocking of the device, the first shaft being elbowed and rotatably mounted on a bent plate which is pivotally coupled to the second shaft by means of a ball-joint assembly, the closing movement of the door being carried out by rotation of said bent plate.

4,240,227

WINDOW ASSEMBLY FOR VEHICLES

Franz Hasler; Peter Wätzold, both of Wettstetten, and Steffen Freudenberg, Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union AG, Neckarsulm, Fed. Rep. of Germany

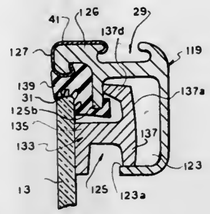
Filed Mar. 6, 1979, Ser. No. 17,833
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809721
Int. Cl.[3] E05F *11/38*
U.S. Cl. 49—348 **8 Claims**

1. A window assembly for an automotive vehicle having a body, said assembly comprising:

a window pane adapted to be raised from and lowered into said body and having at least one substantially vertical edge;

a respective substantially vertical guide rail mounted on said body and disposed along said edge;

at least one guide member directly fixed to said pane along a face thereof turned toward the interior of the vehicle and disposed inwardly of a respective one of said edges for engagement with and guidance by said rail whereby a continuous zone on said face and along said edge out-



wardly of said guide member is formed without obstruction;

sealing means on said body simultaneously engaging directly said zone of said face and said edge outwardly of said guide member at least in a closed position of the window assembly; and

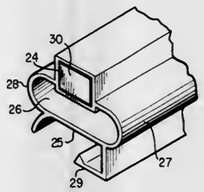
mechanism on said body for raising and lowering said pane with said guide member guided by said rail.

4,240,228

SEALING APPARATUS FOR REFRIGERATORS AND METHOD OF MANUFACTURE THEREOF

Yasuhiro Okamura, Osaka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 28, 1979, Ser. No. 15,915
Claims priority, application Japan, Mar. 2, 1978, 53-23796
Int. Cl.[3] E06B *7/16*
U.S. Cl. 49—478 **3 Claims**



1. A gasket for refrigerators, which gasket is approximately of picture-frame shape having a plurality of sides and is provided for sealing the inside margin of the door with which the storage space of a refrigerator is provided for insertion and removal of food, comprising at least a lower side of said plurality of sides consisting of soft synthetic resin and 0.2 to 1% by weight of mixed individual reinforcing fibres.

4,240,229

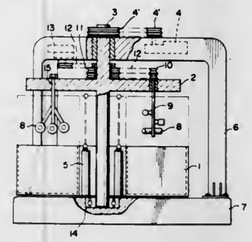
IMMERSION TYPE GRINDING APPARATUS

Ietatsu Ohno, 1-2, 1-chome, Kasuya, Setagaya-ku, Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 964,963
Int. Cl.[3] B24B *31/00*
U.S. Cl. 51—7 **3 Claims**

1. Grinding apparatus comprising in combination, a grinding tank disposed about a central axis having grinding materials therein and presenting an open mouth for receiving materials to be ground therein, a rotatable main shaft mounted substantially along the central axis of said tank and having a plate integral therewith providing a movable cover plate extending over substantially the entire mouth of said tank, a first drive

means for rotating said shaft and plate at various speeds, a plurality of workpiece shafts adapted to hold workpieces extending from said plate to enter said tank off center about said axis, and means relatively vertically moving said tank and shaft plate with its rotatable shafts to thereby enter workpieces into the grinding materials where the materials slide and flow about the workpieces as the main shaft is rotated at various selected



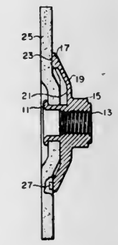
speeds of rotation with the mouth of said tank substantially closed and to remove the workpieces from the grinding materials by lifting the cover plate and workpiece shafts from said tank including at least some of said workpiece shafts mounted for rotation in said plate, and further drive means for continuously rotating said rotatable workpiece shafts at selected speeds independently from the speed of rotation of said main shaft.

4,240,230

THROW-AWAY ADAPTORS FOR GRINDING WHEELS

Salvatore Ferrantini, Buffalo, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 24, 1979, Ser. No. 5,927
Int. Cl.[3] B24D *5/16*; B24B *41/04*
U.S. Cl. 51—168 **5 Claims**



1. A unitary adaptor for distributing torque on grinding wheels comprising:

a. a hollow mandrel having an internal threaded portion in one end,

b. a disc portion having a convex face and a concave face axially extending from said mandrel,

c. said concave portion of said disc portion having a flange around the periphery thereof,

d. a plurality of equally spaced protrusions extending from said flange, adapted to be received in corresponding orifices in a grinding wheel, and

e. a plurality of rib members within said concave portion extending from said mandrel to said flange.

4,240,231

RECTILINEAR WORK FINISHING APPARATUS

Lawrence Day, 906 Willow La., Mount Prospect, Ill. 60056

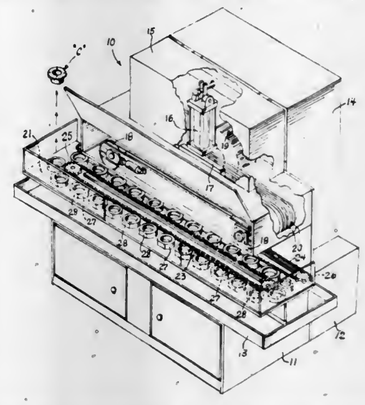
Filed Sep. 5, 1978, Ser. No. 939,361
Int. Cl.[3] B24B *5/00, 21/02, 29/00*
U.S. Cl. 51—138 **5 Claims**

1. A work piece finishing apparatus having a deck over which pieces of work to be finished are moved through an elliptical path with a linear section which passes beneath a work piece finishing belt having a continuous rotational movement about a horizontal axis comprising:

(a) a ring-like work piece carrier adapted for movement over the deck through said elliptical path and beneath the workpiece finishing belt,

(b) a work piece carrying vessel mounted on said work piece carrier, means mounting said vessel for independent rotational movement about a vertical axis with respect to said carrier,

(c) a work piece mounting plate carried by and rotatable with said vessel about said vertical axis, means mounting



said plate for independent vertical movement relative to said vessel,

(d) means for moving said work piece carrier and said work piece carrying vessel beneath the work piece finishing belt,

(e) means for rotating said work piece carrying vessel about said vertical axis independent of the movement of said vessel with said work piece carrier through said elliptical path over the deck and beneath the work piece finishing belt, and

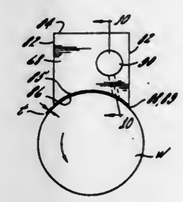
(f) means for elevating said work piece mounting plate above said vessel and into contact with the finishing belt as said vessel and said plate are rotated about said vertical axis and moved with said carrier beneath the finishing belt.

4,240,232

COATED ABRASIVE SUPERFINISHING STONE AND METHOD OF MAKING SAME

John C. Chwae, Appleton, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Dec. 30, 1977, Ser. No. 865,882
Int. Cl.[3] B24D *15/02*
U.S. Cl. 51—356 **4 Claims**



1. A superfinishing stone for micro-finish machining of a workpiece and comprising, in combination:

(a) a metallic body of block-like form;

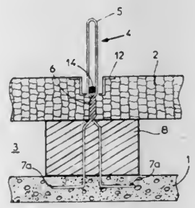
(b) means defining an arcuate contour face in said body, said contour face being substantially complementary to the contour of a workpiece to be superfinished;
(c) means defining a coolant supply passage in said body extending longitudinally of said contour face;
(d) means defining a plurality of unrestricted coolant discharge passages communicating between said coolant supply passage and said contour face;
(e) a coated abrasive liner having an area coextensive with said contour face, said liner having unrestricted apertures therethrough adapted to register with said discharge apertures in said body;
(f) means for adhesively laminating said liner to said contour face;
(g) means defining a leading edge and a trailing-edge on said contour face with respect to the direction of rotation of the workpiece; and
(h) said discharge apertures being situated adjacent the leading edge of said contour face.

4,240,233

PREFABRICATED WALL DESIGNED IN PARTICULAR FOR THE CONSTRUCTION OF DWELLING HOUSES

Michel Vercelletto, 1, rue de la Chauvinière, F-72600 Mamers, France

Filed Apr. 20, 1979, Ser. No. 31,865
Claims priority, application France, Apr. 26, 1978, 78 12295; Sep. 21, 1978, 78 27042
Int. Cl.³ E04G *9/04, 11/06;* E04B *2/28*
U.S. Cl. 52—127 **7 Claims**



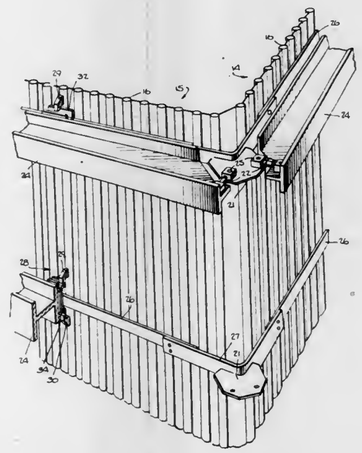
1. A prefabricated wall primarily for the construction of dwelling houses and comprising an insulating inner panel and an outer panel assembled together by coupling means so as to form between said panels an internal space which can subsequently be filled with no-fines or light concrete, wherein the insulating inner panel is provided with superposed horizontal channels fitted with U-section members or flanged channel bars having uniformly spaced slots and flush-mounted within said channels, and wherein the coupling means are provided at the ends of the wall with metallic fastening elements which pass through the slots as well as the insulating material and extend on each side of vertical upright members forming part of end beams against which the internal panel is applied, said fastening elements being bent back within the sectional members whilst the coupling means provided between the ends of said panels comprise a series of metallic fastening pins disposed at intervals and each constituted by a loop, the ends of said loop being twisted and provided with two free end extensions, the fastening pins being positioned in such a manner that the loops of said pins pass through the insulating inner panel whilst the free ends of said pins pass through packing-blocks placed within the internal space and are anchored in the outer panel.

4,240,234

ADJUSTABLE BUCKSTAY SYSTEM FOR VAPOR GENERATORS OR THE LIKE

Frantisek L. Eisinger, Demarest; Harry H. Pratt, West Orange, and Clarence C. Eich, Mountain Lakes, all of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Dec. 20, 1978, Ser. No. 971,274
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—261 **21 Claims**



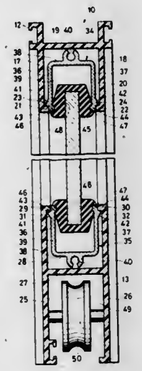
1. An adjustable buckstay system for controlling vibration in vapor generators and the like which include a plurality of vertically disposed walls defining a chamber for hot gases, said buckstay system comprising:
a buckstay beam disposed transversely adjacent each of said walls and having end portions which extend beyond the ends of the adjacent walls, whereby the end portions of adjacent buckstay beams are juxtaposed at each wall corner defined by adjacent walls of the generator;
spacer assemblies having elements connecting said buckstay beams and respective associated walls in spaced relationship and including means for permitting relative movement between said buckstay beams and respective associated generator walls due to differential thermal expansion between said walls and said beams;
a tension tie disposed transversely adjacent each of said walls between each beam and the associated wall;
corner assembly means having elements connected adjacent buckstay beam end portions to one another and also connecting adjacent tension tie ends to one another and including means for permitting relative movement of adjacent end portions due to thermal expansion of said beams;
at least one of said means for permitting relative movement between said beams and said generator walls, and between said adjacent beam end portions, including means defining a clearance of predetermined magnitude between connecting elements thereof; and
adjustment means for adjusting the magnitude of said clearance.

4,240,235

GLAZED CLOSURE ASSEMBLY

Kooichiro Nawa, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,391
Claims priority, application Japan, May 24, 1978, 53-69021[U]
Int. Cl.³ E04B *1/62*
U.S. Cl. 52—397 **4 Claims**



1. A glazed closure assembly comprising:
(a) a first pair of parallel spaced frame members made of synthetic resin and having a first pair of slots, respectively, facing toward each other;
(b) a second pair of parallel spaced frame members, perpendicular to said first pair, made of synthetic resin and having a second pair of slots, respectively, facing toward each other;
(c) a pair of parallel spaced attachments made of metal and mounted respectively in said first pair of slots, said attachments having a third pair of slots, respectively, facing toward each other and a pair of fastener-receiving means, respectively, remote from said third pair of slots and opening at the ends of said attachments which confront said second frame members;
(d) gasket means disposed in said third pair of slots and said second pair of slots;
(e) a pane of glass having its marginal edges supported by said gasket extending therearound; and
(f) fastener means extending through said second frame members threadedly into said fastener-receiving means, whereby said attachments are connected endwise to said second pair of parallel spaced frame members.

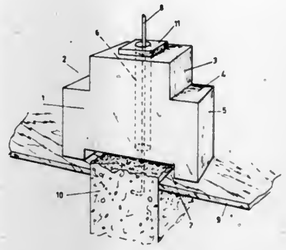
4,240,236

PROCESS FOR SETTING UP THE SHUTTERING FOR A BUILDING WALL, AND SETTING BLOCK TO BE USED IN THIS PROCESS

Adrianus Molenaar, Goes, Netherlands, assignor to Molenaar's Betonindustrie B.V., Netherlands

Filed Aug. 9, 1978, Ser. No. 932,101
Claims priority, application Netherlands, Aug. 9, 1977, 7708770
Int. Cl.² E04G *11/20*
U.S. Cl. 52—741 **6 Claims**

1. A method of accurately setting up a form for a wall of a storied building comprising the steps of
casting an upwards protruding locating rod in an underlying wall,
placing a floor form relative to said underlying wall,
fixing a guide block with a vertical bore on said floor form and around said rod,



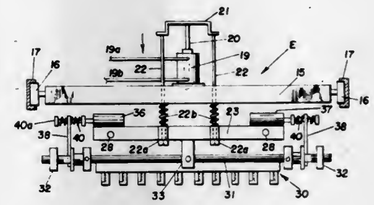
casting the floor on said floor form, and
attaching a wall form to said guide block.

4,240,237

CONTAINER LIFTING, TRANSPORTING AND RELEASING APPARATUS

Frank P. Alduk, McGary Rd., New Wilmington, Pa. 16142, and Dennis F. Alduk, Sunset Valley Rd., New Castle, Pa. 16105

Filed Oct. 30, 1978, Ser. No. 955,893
Int. Cl.³ B65B *21/18*
U.S. Cl. 53—247 **13 Claims**



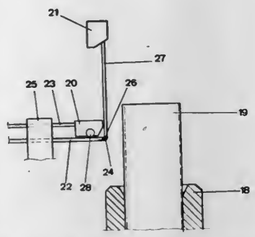
1. In an apparatus for lifting, transporting and depositing empty bottles and like hollow articles, the invention comprises:
(a) a pair of only two flat strips confined against each other in slidable face-to-face relation;
(b) supporting means on which the ends of the strips are engaged arranged to effect simultaneous sliding movement of both strips toward and away from a central position with the strips of the pair having their confronting faces in a vertical plane;
(c) the strips each having several depending equally spaced coplanar fingers thereon with one finger for each article in a row of articles to be lifted and transferred to another location, a finger on each strip forming with a cooperating finger on the other strip a pair of such fingers, the fingers of each pair being movable with their respective strips in parallel planes in such manner that, with small bottles, the fingers of each pair may be moved into and out of overlapping relation with the movement of their respective strips;
(d) each finger of each pair having a lug projecting therefrom in the direction of the plane of movement of the strip on which it is carried so that they move toward and away from each other with the relative sliding movement of the strips;
(e) the combined thickness of the strips in a plane transverse to the length of the strips being less than the width of the fingers in the plane of sliding movement of the strips.

4,240,238

GRIPPING MEANS FOR MACHINE FOR FILLING AND CLOSING FLEXIBLE TUBES

Raymond Girardier, Mont l'Hermite, France, assignor to Cotuplas S.A., Zone industrielle, Sainte Menehould, France

Filed Jun. 26, 1979, Ser. No. 52,430
Claims priority, application France, Aug. 25, 1978, 78 25438
Int. Cl.³ B65B *51/14*
U.S. Cl. 53—373 **5 Claims**



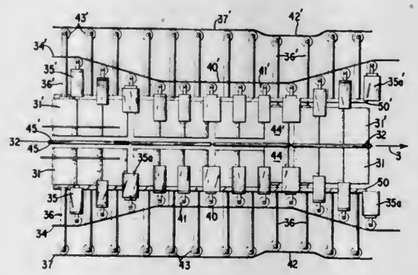
1. For use in a packaging machine, double-jaw gripping means comprising first and second jaws, control means for causing relative movement of said jaws in a common plane between an open and a closed position, means for selectively raising said first jaw relative to said second jaw and out of said common plane of the jaws, and means restricting the raising of said first jaw except in the open position of the jaws, said control means for causing relative movement of the jaws includes an elongated control member having a romote end mounting said first jaw, said means for selectively raising said first jaw including a hinged joint in said control member inward of the jaw mounting remote end.

4,240,239

METHOD AND DEVICE FOR THE INSERTION OF CANS INTO CARRIERS

Herbert A. Stelzner, Kaarst, and Peter Lau, Leichlingen, both of Fed. Rep. of Germany, assignors to Plastik-und Metallverpackung GmbH, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,936
Int. Cl.³ B65B *21/00*
U.S. Cl. 53—398 **10 Claims**



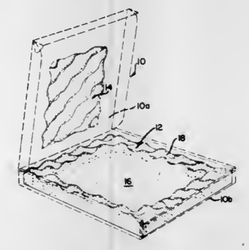
1. A method of packaging a plurality of objects having a protuberant beaded-rim into a plurality of discrete planar carriers, each having an array of bead-engaging formations disposed on opposite sides of the plane of said carrier, each bead-engaging formation comprising a resilient socket adapted to engage the protuberant beaded-rim of said objects, said method comprising the steps of sequentially grouping the objects into two packaging groups arranged identially to said array of bead-engaging formations disposed on opposite sides of the plane of said carrier; positioning said packaging groups in an insert direction with said array of bead-engaging formations of one of said discrete carriers; aligning said objects in each of said packaging groups with respect to said bead-engaging formations by inserting lateral cores between the objects of each of said packaging groups; and individually displacing the objects in each of said groups in said insertion direction on each side of said carrier toward and into engagement of said protuberant beaded-rim with the respective bead-engaging disposed on opposite sides of the plane formation of said carrier while laterally buttressing and guiding said objects by said cores, whereby said objects on each side of said carrier are simultaneously engaged with the respective bead-engaging formations.

4,240,240

METHOD OF MAKING A PACKAGE HAVING FOAM INSERTS

Joel B. Cohen, Wynnewood, Pa., assignor to Shell Container Systems, Springfield, N.J.

Filed Jul. 16, 1979, Ser. No. 57,910
Int. Cl.³ B65B *43/00*
U.S. Cl. 53—410 **11 Claims**



1. A method of making a package having first and second foam cushion inserts, comprising the steps of:
providing a package having relatively movable first and second sections, said first and second sections being movable towards and away from a closed position;
forming convolutions in at least one surface of a piece of foam material;
removing a section of foam material from said piece of foam material to form a cutout area in said piece of foam material for receiving an article, said piece of foam material with said cutout area therein defining a first foam insert and said removed section of foam material defining a second foam insert; and
applying said first and second foam inserts to said first and second sections of said package, respectively, so that said cutout area faces said second foam insert and is in alignment therewith when said first and second sections are in said closed position, whereby an article placed in said cutout area is cushioned between said first and second foam inserts when said first and second sections of said package are in said closed position.

4,240,241

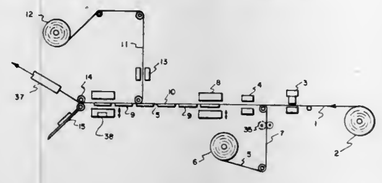
METHOD AND APPARATUS FOR MAKING A RECLOSABLE PACKAGE

Philip A. Sanborn, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Aug. 9, 1979, Ser. No. 65,300
Int. Cl.³ B65B *61/18, 31/02*
U.S. Cl. 53—412 **12 Claims**

1. A method for making a reclosable package from thermoplastic materials comprising the steps of:
(a) providing a formable web, a covering web, and a closure strip;
(b) indenting a portion of said closure strip at intervals spaced apart by approximately the desired length of the package;

(c) advancing the forming web and closure strip towards each other;
(d) sealing the lower surface of the closure strip to the forming web longitudinally in the direction of travel of the forming web;
(e) forming a cavity with a peripheral flange in said forming web so that said closure strip remains on a portion of said peripheral flange;
(f) placing a product in said cavity;
(g) covering said product with said covering web;



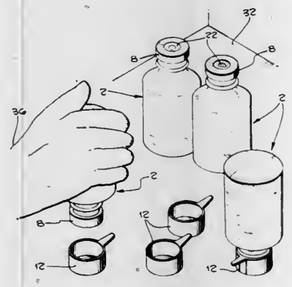
(h) evacuating the space between said webs;
(i) sealing the webs together with longitudinal and transverse seals, one longitudinal seal being adjacent and parallel to but spaced apart from the closure strip with the closure strip within the periphery of the seals, and the transverse seals being made across the closure strip where a portion of the strip had been indented; and
(j) sealing the upper surface of the closure strip to the covering web.

4,240,242

STERILE CAPPING METHOD FOR A PLURALITY OF I.V. BOTTLES

James J. Sullivan, 1349 N. Foothill Rd., Ojai, Calif. 93023, and Charles M. Grey, 1518 Conestoga Ct., Redlands, Calif. 92373

Filed Jun. 18, 1979, Ser. No. 49,931
Int. Cl.³ B65B *7/28*; B67B *3/22*
U.S. Cl. 53—471 **10 Claims**



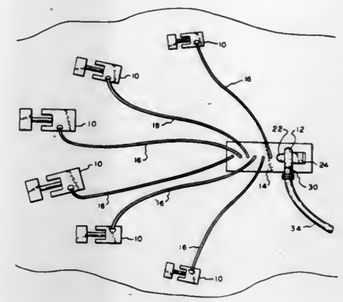
1. The method of preparing a plurality of IV bottles for administration to a patient, comprising the steps of:
sterile packaging a plurality of press-fit type, disposable I.V. bottle caps in a unitary package,
providing a working environment with a working floor,
adding desired amounts of dilutant to a plurality of I.V. bottles within said working environment,
opening the bottle cap package within said working environment and distributing the caps therein in upward facing positions on said working floor, and
sequentially pressing each of said IV bottles into a corresponding bottle cap until the caps are press-fit into sterile sealing relationship on their respective bottles.

4,240,243

INTAKE BALANCING AND SATELLITE COLLECTOR SYSTEM

Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

Filed Mar. 7, 1979, Ser. No. 18,136
Int. Cl.³ A01D *44/00*
U.S. Cl. 56—8 **1 Claim**



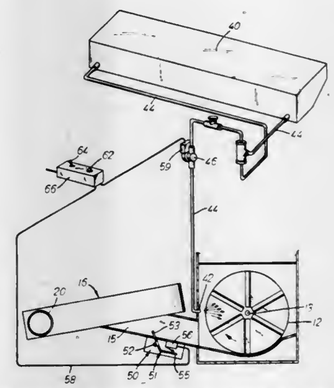
1. A method of harvesting and transporting underwater products and material including aquatic growths in the form of a slurry comprising the steps of forming a slurry at a plurality of satellite pumping stations with the products and materials being harvested, pumping the slurry of said stations to a common transfer pumping station, and sensing the flow rate of said transfer station to balance the intake of said transfer station by dilution of the slurry at the transfer station.

4,240,244

FORAGE HARVESTER HAVING WATER INJECTION MEANS TO PREVENT GUMMING

Virgil B. Martin, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.

Filed Sep. 12, 1979, Ser. No. 75,144
Int. Cl.³ B02C *18/22*
U.S. Cl. 56—16.4 **7 Claims**



1. A mobile forage harvester having means for harvesting crop material from the ground, means for chopping and blowing chopped material, and a water supply system for periodically injecting a controllable amount of water into a stream of chopped crop material as the latter passes through said harvester to thereby minimize gumming up of said material in said harvester, said system including, a source of water carried by said harvester, a discharge means for discharging water into said stream of crop material, conduit means connected between and for conducting water from said source to said discharge means, a water shut-off valve in said conduit means and

shiftable between water flow and water shut-off positions, shiftable crop flow sensing means positionable in the path of said stream of crop material and connected with said valve, said sensing means being operative by the flow of said stream of crop material to shift said shut-off valve to said water flow position to thereby cause water to be discharged into said stream of crop material.

4,240,245

DEVICE FOR BALING CUT CROPS

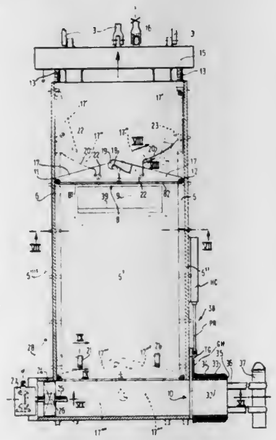
Pieter A. Oosterling, Nieuw-Vennep, and Adriaan Van Zweeden, Rijsenhout, both of Netherlands, assignors to Expert N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 738,683, Nov. 4, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,218

Claims priority, application Netherlands, Nov. 5, 1975, 7512991

Int. Cl.[3] A01D *39/00*; B30B *1/18, 7/04*

U.S. Cl. 56—341 **14 Claims**



1. An agricultural baling machine comprising, in combination:

an elongate frame assembly provided with ground-engaging wheels whereby the machine is movable over the ground, said frame assembly including a horizontally elongate baling chamber provided with an inlet port closely adjacent one end of the chamber and remote from the opposite end thereof and an end wall at said opposite end against which crop material is compressed;

loading means attached to said frame assembly for picking up the crop to be baled and discharging it into the interior of said baling chamber through said inlet port toward said end wall;

compressing means for periodically compressing the crop accumulated in said baling chamber, said compressing means comprising a compression member substantially filling the cross-sectional area of said baling chamber, and drive means for periodically moving said compression member in piston-like fashion between a normal position at said one end of the baling chamber and clearing said inlet port to that side remote fron said end wall and an extended position also clearing and leaving open said inlet port but to the opposite side thereof in closely spaced relation from said end wall whereby to form a compressed bale between said compression member and said end wall; and

means for discharging said compressed bale from said chamber while said compression member is in said extended position.

4,240,246

WIRE STRANDING MACHINE

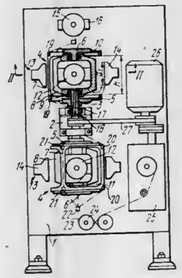
Viktor F. Groza, ulitsa Darvina, 7, kv. 12; Jury N. Sharapov, ulitsa Akademika Pavlova, 148a, kv. 16; Nikolai P. Shtykh, ulitsa 3 Internatsionala, 17, kv. 56, all of Kharkov; Khristofor S. Shakhpazov, prospekt Mira, 188, kv. 30, Moscow; Ivan N. Nedovizy, ulitsa Moskovskaya, 37, kv. 49, Magnitogorsk; Sergei F. Korovainy, ulitsa Vokzalnaya, 70, kv. 50; Valentin D. Judin, ulitsa Vokzalnaya, 72, kv. 50, both of Khartsyzsk; Nikolai P. Chernenko, ulitsa Pushkinskaya, 18, kv. 4, Orel; Vitaly S. Starchenko, Moskovskoe shosse, 157, kv. 12, Orel; Georgy A. Kalosha, Moskovskoe shosse, 161, kv. 118, Orel; Aza A. Tsybulina, ulitsa Moskovskaya, 121a, kv. 28, Magnitogorsk, and Nikolai I. Drozdov, prospekt Vernadskogo, 82, kv. 1517, Moscow, all of U.S.S.R.

Filed Sep. 4, 1979, Ser. No. 71,856

Claims priority, application U.S.S.R., Sep. 20, 1978, 2660351

Int. Cl.[3] D07B *3/12, 7/02*

U.S. Cl. 57—58.3 **2 Claims**



1. A wire stranding machine for the manufacture of metal cord strands or steel ropes from wire wound on reels comprising: a stand, a rotor vertically installed on said stand in the form of a shaft; a bearing support disposed on said stand; said rotor being installed in said bearing support about its middle portion so that the ends thereof project from said bearing support; casings secured on the ends of said rotor; bearing supports installed in said casings; reel holders adapted for holding reels being mounted in said bearing supports of said casings and being made of a magnetic material; through ducts in said rotor between the portions thereof on which said casings are secured for passing twisted wires unwound from the reels; ports in each of said casings for enabling the reels to be installed into said reel holders; guide dies secured on each said casing for passing wires being twisted; and electromagnets fixedly installed on said stand near said casings for restraining said reel holders from rotating together with said rotor and casings.

4,240,247

SPLICED JOINT OF SPUN YARN AND METHOD FOR PRODUCING SAME

Isamu Matsui; Shigeru Takasaki, both of Kyotoshi, and Hiroshi Mima, Joyoshi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

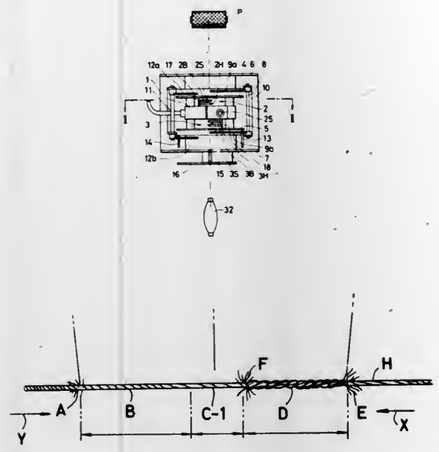
Filed Dec. 26, 1978, Ser. No. 973,176

Claims priority, application Japan, Dec. 28, 1977, 52-158392; Jan. 7, 1978, 53-678; Feb. 1, 1978, 53-10776

Int. Cl.[3] D01H *15/00*

U.S. Cl. 57—202 **10 Claims**

1. A yarn splicing method using an air nozzle knotter, characterized in that two spun yarns of which one end is introduced into a yarn inserting hole of the air nozzle knotter from one end thereof and another end is introduced into the hole from the other end thereof are arranged, and then at least one of said spun yarns is slightly slackened prior to or simultaneously with jetting of air into the spun yarns by moving a yarn presser for pressing the yarn into the yarn inserting hole and wherein the each end of the spun yarn is held at both sides of the air nozzle knotter respectively before applying jetting of air to the spun yarns.



4,240,248

DEVICES FOR TEXTURING YARNS BY IMPARTING FALSE TWIST BY FRICTION

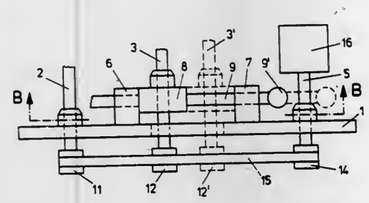
Josef Raschle, Butschwil, Switzerland, assignor to Heberlein Maschinenfabrik AG, Watwil, Switzerland

Filed Sep. 27, 1979, Ser. No. 79,367

Claims priority, application Switzerland, Sep. 27, 1978, 10064/78; Jul. 4, 1979, 6275/79

Int. Cl.[3] D02G *1/04*

U.S. Cl. 57—338 **8 Claims**



1. A device for texturing textile yarns by imparting false twist by friction, comprising three parallel shafts for carrying rotationally symmetric elements between which, in operation, a yarn can be run to be false-twisted, said shafts being located at the corners of an equilateral triangle in their operative positions, at least one of said shafts being shiftably mounted for movement between its operative position and a threading-up position in which it is located relatively away from at least one of the other shafts, at least one further shaft arranged in relation to said three shafts such that the centers of all shafts, if connected by a line, would form corners of a closed figure of at least four sides, two sides of which are sides of said equilateral triangle, means coupling said shiftably mounted shaft with another of the shafts for conjoint movement such that any changes in the circumferential length of said closed figure tended to be caused by movement of said shiftably mounted shaft are substantially compensated by conjoint movement of the coupled shafts, each of said shafts being provided with a whorl, and a substantially in-elastic endless belt drivingly linking the whorls of all shafts.

4,240,249

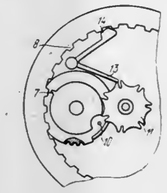
INSTANTANEOUS CALENDAR DEVICE FOR TIMEPIECES

Daniel D. Malkin, ulitsa Junykh Lenintsev, 95/13, korpus 1, kv. 31; Gennady A. Kruglov, Baltiiskaya ulitsa, 4, kv. 21; Boris A. Peredkov, ulitsa Moldagulovol, 16, korpus 2, kv. 19, and Evgeny V. Kulikov, Maly Koptevsky proezd, 6, kv. 51, all of Moscow, U.S.S.R.

Filed Mar. 5, 1979, Ser. No. 17,688

Int. Cl.[2] G04B *19/24, 19/02*

U.S. Cl. 368—28 **8 Claims**



1. An instantaneous calendar device for timepieces, comprising: a date ring with a toothed rim; a day disk; a storage of mechanical energy coupled with a gear train and having a driven disk with a projection for transferring said date ring; a seven-position Maltese mechanism interconnecting said storage and said day disk and including a Maltese cross rigidly coupled to, and in coaxial relationship with, said day disk, locking surfaces of the Maltese cross closing on the side surface of said driven disk; a pin for transferring the Maltese cross set on the periphery of an intermediate gear of the storage; and a lever lock of the date ring cooperating with the toothed rim of the date ring.

4,240,250

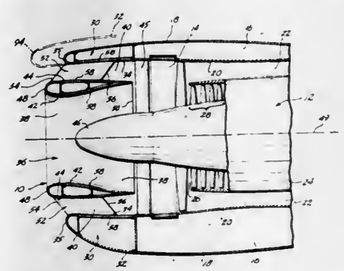
NOISE REDUCING AIR INLET FOR GAS TURBINE ENGINES

Alfred W. Harris, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 27, 1977, Ser. No. 864,665

Int. Cl.[3] F02C *7/045, 7/047*

U.S. Cl. 60—39.09 D **6 Claims**



1. A noise suppressing air inlet for use in combination with a gas turbine engine that is encased in a housing and includes a compressor stage, said air inlet comprising:

a generally tubular outer cowling for forming a forward end of said engine housing and having an annular leading edge, said outer cowling having an inner wall and an outer wall with said inner wall defining an airflow duct for directing airflow to said compressor stage, at least a portion of said inner wall a sound absorbing surface;

a generally tubular inner cowling having an annular leading

edge, an inner wall and an outer wall, said inner cowling coaxially mounted at a fixed position within said outer cowling, said inner cowling having an annular leading edge positioned forwardly of said annular leading edge of said outer cowling, at least a portion of said inner and outer walls of said inner cowling having a sound absorbing surface, said inner cowling partitioning said airflow duct into an inner airflow channel defined by said inner wall of said inner cowling and an annular outer airflow channel defined between said outer wall of said inner cowling and said inner wall of said outer cowling, said inner and outer airflow channels extending substantially over the entire axial length of said air inlet; and,

a plurality of struts for mounting said inner cowling within said outer cowling, said struts being circumferentially spaced apart from one another and extending radially from said outer wall of said inner cowling to said inner wall of said outer cowling.

4,240,251

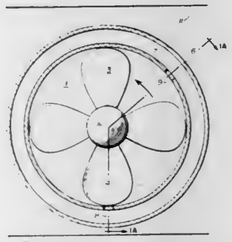
CAVITATION COMPENSATING PROPELLER NOZZLE OR DUCT

Ronald G. Fuller, P.O. Box 1522, Kingston, Ontario K7L 5C7, Canada

Continuation of Ser. No. 731,506, Oct. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 493,753, Aug. 1, 1974, Pat. No. 3,999,884. This application May 25, 1978, Ser. No. 909,529

Int. Cl.³ B63H *11/00, 1/18*

U.S. Cl. 60—221 **3 Claims**



1. A marine propulsion system comprising a nozzle or duct, at least one propeller rotatably mounted on an axis within said nozzle or duct, walls forming a closed annular passage means within the nozzle or duct, means to pressurize water entrained in the annular passage means and a second passage means for introducing said pressurized water into a discrete area coincident with a zone of cavitation adjacent to the propeller within said nozzle or duct, for the purpose of suppressing cavitation, wherein said second passage means comprise a passage communicating between said annular passage means and an area above the horizontal centerline of said duct or nozzle coincident with a zone of potential cavitation within said nozzle or duct and positioned substantially in the plane of the propeller.

4,240,252

ACOUSTICALLY-TREATED MIXER FOR A MIXED FLOW GAS TURBINE ENGINE

Donald F. Sargisson, and Vivian G. Harris, both of Cincinnati, Ohio, assignors to General Electric Company, Lynn, Mass.

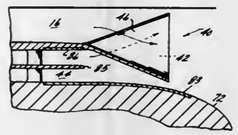
Continuation of Ser. No. 646,325, Jan. 2, 1976, abandoned. This application Jan. 19, 1978, Ser. No. 870,709

Int. Cl.² F02K *3/04, 1/26*; B64D *33/06*

U.S. Cl. 60—262 **6 Claims**

1. In a turbofan engine including an outer nacelle spaced apart from a core engine having a turbine to define an annular bypass duct therebetween, a noise reducing arrangement comprising in combination:

a lobed mixer comprising a plurality of circumferentially-spaced, alternating, convoluted cold chutes in flow communication with the bypass duct and hot chutes in flow communication with the core engine said mixer adapted to mix air flowing in said bypass duct with hot gases flowing in said core engine; and



acoustically-absorbent means positioned in the flow path within the core engine between said turbine and said hot chutes of said lobed mixer for reducing core engine noise, said acoustically-absorbent means terminating upstream of the lobed mixer.

4,240,253

ENGINE SYSTEM FOR MOTOR VEHICLE

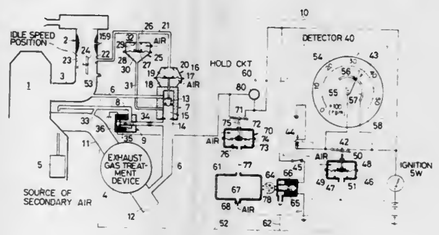
Ken Nakamura, Kawasaki; Yasuo Nakajima, Yokosuka; Kunihiko Sugihara, Ichigaya-Takasho, and Masanori Takami, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 19, 1977, Ser. No. 861,663

Claims priority, application Japan, Dec. 20, 1976, 51/153173; Dec. 21, 1976, 51/153590; Dec. 22, 1976, 51/155328

Int. Cl.³ F02M *23/08*; F01N *3/10*

U.S. Cl. 60—278 **33 Claims**



1. An engine system of a motor vehicle comprising:

an internal combustion engine;

intake means for admitting an air fuel mixture to said engine;

exhaust means, including an exhaust gas treatment device, for directing exhaust gases resulting from combustion of the air fuel mixture toward the open air;

an exhaust gas recirculation system having an exhaust gas recirculation conduit having one end connected to said exhaust means and the other end connected to said intake means for permitting a portion of the exhaust gases to pass therethrough toward said intake means to mix with the air fuel mixture, said exhaust gas recirculation system having an exhaust gas recirculation valve means for controllably passing a flow of fluid passing through said exhaust gas recirculation conduit;

a controller including detector means responsive to driving conditions of the vehicle which occur when the vehicle is driven in urban areas to produce a first output signal, and responsive to driving conditions which occur when the vehicle is driven in rural areas to produce a second output signal, said controller including means for maintaining said first and second output signals, respectively, for a given period after cessation of the conditions which induced same;

a source of secondary air;

fluid network means interconnecting said source of secondary air, an upstream section of said exhaust gas recirculation conduit of said exhaust gas recirculation valve, and said exhaust means at a position upstream of said exhaust gas treatment device;

air injection control means for permitting a portion of air from said source of secondary air to be admitted to said exhaust gas recirculation conduit through said fluid network means when said controller detects said rural driving conditions and for preventing the admission of air when said controller detects said urban driving conditions.

4,240,254

EXHAUST GAS PURIFYING APPARATUS FOR MULTICYLINDER INTERNAL COMBUSTION ENGINES

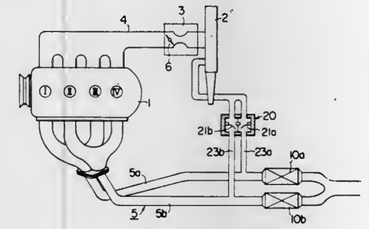
Takamichi Nakase, Gamagori; Tadashi Hattori, Okazaki; Junichiro Naito, Toyokawa, and Kenji Kondo, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 863,579, Dec. 22, 1977. This application Apr. 7, 1978, Ser. No. 894,432

Claims priority, application Japan, Dec. 26, 1976, 51/157284; Feb. 28, 1977, 52/21084; Mar. 18, 1977, 52/30855; Apr. 11, 1977, 52/41235; Oct. 12, 1977, 52/122000

Int. Cl.³ F01N *3/15*

U.S. Cl. 60—293 **1 Claim**



1. An exhaust gas purifying apparatus for a multi-cylinder internal combustion engine, comprising:

first and second exhaust pipes disposed to discharge burned gases from said cylinders to the atmosphere;

means for connecting to said first exhaust pipe a first set of cylinders which comprise a plurality of cylinders which are successively fired in the firing order of the engine;

means for connecting to said second exhaust pipe a second set of cylinders which comprise a further plurality of cylinders which are successively fired in the firing order of the engine;

a first and a second three-way catalyst respectively disposed in said first and second exhaust pipes to purify exhaust gases;

first and second secondary air supply lines respectively opening to said first and second exhaust pipes upstream of said three-way catalysts therein to supply secondary air thereto; and

first and second on-off means respectively disposed in said first and second supply lines to open and close the same for switching on and off the supply of secondary air to said first and second exhaust pipes, said first and second on-off means comprising air suction valves having reed valve members which are operable independently of each other in response to respective pulsations of the exhaust gas flow in said first and second exhaust pipes, caused respectively by successive combustions in said first and second sets of cylinders, to thereby supply the secondary air in a pulse-like manner and cause the air-fuel ratio of exhaust gases therein to vary above and below a stoichiometric air-fuel ratio.

4,240,255

INTEGRATED CONTROL DEVICE FOR A FLUID CIRCUIT AND APPLICATIONS THEREOF

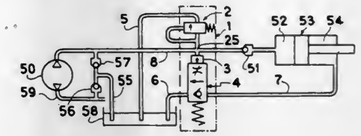
Jacques Benilan, Paris, France, assignor to Les Applications Hydrauliques R. Sarrazin S.A., Fontenay sous Bois, France

Filed May 31, 1979, Ser. No. 44,156

Claims priority, application France, Jun. 1, 1978, 78 16390

Int. Cl.³ F15B *13/042, 21/04*

U.S. Cl. 60—453 **18 Claims**



1. Integrated control device for a fluid circuit, comprising a body which is provided with passage means for incorporating the device in such a circuit, and defining a cavity extending throughout the body, a first pressure limiting stage, a second stage comprising a fluid flow check and retarding valve and means disposed between said two stages for piloting the check and retarding valve by the pressure established by the limiting stage, said first stage comprising first wall means mounted in the cavity and defining a first orifice and a first valve seat surrounding the first orifice, a first closure member movably mounted relative to the body and cooperative with the valve seat, and resiliently yieldable means biasing the first closure member against the first valve seat, said second stage comprising second wall means mounted in the cavity and defining a second orifice and a second valve seat surrounding the second orifice, a second closure member disposed in a part of said cavity and movable relative to the body and cooperative with the second valve seat, and elastically yieldable means biasing the second closure member against the second valve seat, said piloting means comprising means defining a chamber in said cavity which chamber has one end defined by said first wall means, a piloting piston slidably mounted in said chamber and having an end wall which is in direct confronting relation to said first orifice, elastically yieldable means biasing the piloting piston toward said first orifice, means maintaining the piloting piston spaced away from said first wall means and thereby providing a space in said cavity between said first wall means and the piloting piston, and rigid means combined with the piloting piston for enabling the piloting piston to urge the second closure member away from the second seat as the piloting piston moves away from said first wall means, said passage means comprising a first passageway communicating with said space and for connecting to a fluid supply part of said circuit, a second passageway for connection to a fluid return part of said circuit and communicating with a part of said cavity in which said second closure member is disposed, a third passageway for connection to a reservoir of said circuit and communicating with said chamber, and a fourth passageway for connection to said reservoir of said circuit and communicating with a side of said first wall means remote from said chamber, said first closure member and said piloting piston being in coaxial relation in said cavity.

4,240,256

PHASE-ANGLE CONTROLLER FOR STIRLING ENGINES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Allan R. McDougal, La Crescenta, Calif.

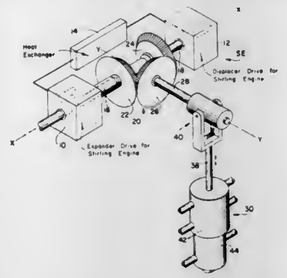
Filed Jan. 31, 1979, Ser. No. 8,208

Int. Cl.³ F02G *1/06*

U.S. Cl. 60—518 **19 Claims**

6. In combination with a phase-angle controller having a pair of coaxially aligned bevel gears, one bevel gear of said pair

being mounted on a variably torqued power output shaft for an expander portion of a Stirling engine, while the other bevel gear of the pair is mounted on a power input shaft, for a displacer portion of the Stirling engine, characterized by variable torque requirements, and a force transfer gear meshed with said pair of bevel gears, said force transfer gear being supported for reversible planetary travel by a carrier arm mounted at one end for pivotal displacement about an axis coincident with the axis of said pair of bevel gears in response to changes in reactive forces applied thereto as simultaneous changes in the torque output of said power output shaft and the torque requirements of said power input shaft occur, for thus changing the phase-angle between said shafts, phase-angle control means for selectively establishing a phase-angle between said power output shaft and said power input shaft, comprising:



A. a restraint link supported for rectilinear displacement and having one end thereof connected to said carrier arm in spaced relation with said one end of the carrier arms for restraining said force transfer gear from planetary travel; and

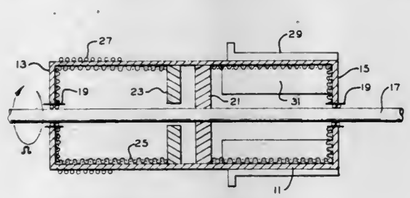
B. hydraulic control means connected with said restraint link including a double-acting piston head rigidly affixed to said link, housing means supporting said piston head for reciprocating displacement, said piston head being so arranged as to establish within the housing means a pair of coaxially aligned, variably dimensioned pressure chambers, an hydraulic fluid substantially filling each of said pressure chambers, and selectively operable pressure release means connected with each of said chambers for relieving pressure developed therewithin for releasing said restraint link for displacement in response to reactive forces applied to the link through said arm.

4,240,257

HEAT PIPE TURBO GENERATOR

Edward L. Rakowsky, Kinnelon, and Lawrence S. Galowin, Upper Saddle River, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Feb. 22, 1973, Ser. No. 334,901
Int. Cl.³ F01K *11/02*
U.S. Cl. 60—531 **16 Claims**



1. A heat pipe turbine comprising:

(a) closed container of generally cylindrical shape having its inside coated with a wick material, said wick material being saturated with a substance which is a liquid at the operating temperature of the turbine;

(b) means at one end of said container to supply heat thereto to vaporize said liquid;

(c) means at the other end of said container to condense the vaporized liquid;

(d) a shaft rotatable within said container with its axis coincident with that of said container;

(e) a turbine rotor affixed to said shaft essentially at the longitudinal center of said container;

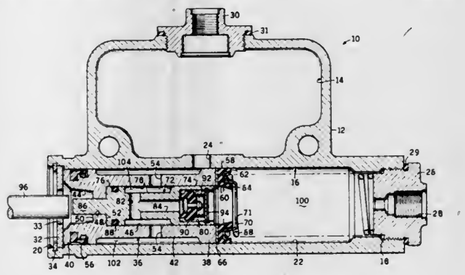
(f) a turbine stator affixed to said container on the side of said rotor nearest said first end and positioned to cooperate with said rotor to provide a turbine action whereby said vaporized liquid will pass through said turbine stator and rotor imparting relative rotation there between.

4,240,258

NON-CUP CUTTING MASTER CYLINDER

Richard W. Angert, St. Louis, and Stephen G. Palmer, Webster Groves, both of Mo., assignors to Wagner Electric Corporation, Parsippany, N.J.

Filed Nov. 7, 1978, Ser. No. 958,380
Int. Cl.³ B60T *11/28*
U.S. Cl. 60—589 **3 Claims**



1. A master cylinder comprising:

(a) a housing having an inner wall defining a cavity therein;

(b) a fluid reservoir;

(c) a fluid chamber in said cavity;

(d) a first piston movable in said cavity for increasing the fluid pressure in said fluid chamber, said first piston including a central bore therein and a socket at the rearward end thereof, said central bore and said socket each having an annular shoulder therein;

(e) a fluid path between said fluid reservoir and said fluid chamber extending through said first piston;

(f) a sealing member engaging the housing inner wall over positioned adjacent the forward end of said first piston for movement therewith;

(g) a second piston movable in said central bore in said first piston, said second piston including an extension extending into said first piston socket;

(h) said second piston being sealingly disengaged from said sealing member to open said fluid path and said second piston being in contact with the annular shoulder in said first piston central bore when said first and second pistons are in their fully released positions;

(i) said second piston being sealingly engaged with said sealing member to close said fluid path when said first piston is being moved forward in said cavity to increase the fluid pressure in said fluid chamber; and

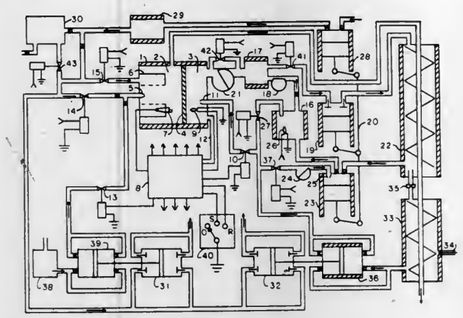
(j) a push rod being in contact with said second piston extension and with the annular shoulder in said first piston socket in order to move said first and second pistons forward in said cavity.

4,240,259

BOILER STEAM ENGINE WITH STEAM RECOVERY AND RECOMPRESSION

Ogden W. Vincent, 2166 La Miel Way, Campbell, Calif. 95008

Filed Feb. 15, 1979, Ser. No. 12,558
Int. Cl.³ F01K *1/08*
U.S. Cl. 60—670 **12 Claims**



1. A steam engine comprising:

a boiler means having a combustion chamber and having a pressurized steam chamber, said combustion chamber having a fuel injection device, an exhaust port, an oxygen port, and a fuel ignition device, said oxygen port injecting on oxygen bearing gas to be mixed with fuel during combustion, said exhaust port exhausting spend combustion gases to the atmosphere via a first pipe, said steam chamber having a water injection device for injecting pressurized water and having a temperature sensing element, an output port of said steam chamber being connected to a transducer by a second pipe, steam and water in said steam chamber being heated by combustion gases in said combustion chamber via at least one wall of said boiler, a steam port of said steam chamber being connected to the mixing port of a steam mixing means by a third pipe and valves,

said steam mixing means being a pressurized vessel with a mixing port, an output port and an input port which is connected to the output port of a steam accumulator means via a fourth pipe and valve, said mixing means mixing stem from said steam chamber with preinjected steam from said steam accumulator means,

a work means having an input that is connected to the output port of said mixing means by a fifth pipe valve, said work means doing work by steam expansion, thereby transmitting work via a drive shaft, the output of said work means exhausting steam to the input port of a steam reservoir via a sixth pipe,

said steam reservoir having a input port, an output port, and a drain port,

a steam compressor means having an output and having an input that is connected to the output port of said steam reservoir, said compressor means having a water injection device for the injection of pressurized water during compression, said steam compressor means receiving motivation energy from said work means,

said pressurized steam accumulator means having an output port and an input port that is connected to the output of said steam compressor means,

an air compressor means having an input connected to the atmosphere and an output connected to an air accumulator, said air compressor means receiving motivation energy from said work means, the output of said air accumulator being connected to an air reservoir and to said oxygen port via a seventh pipe and valves,

a pressure producing fuel pump means having an input connected to a fuel tank and an output connected to said fuel injection device by an eighth pipe and valves, said fuel pump means receiving motivation energy from said work means,

a pressure producing water pump means having an input connected to the output port of a water reservoir, the output of said water pump means connecting via a ninth pipe and valves to a plurality of water injection devices, said water pump means receiving motivation energy from said work means,

said water reservoir having an input port, an output port and a vent port that is connected to the atmosphere, the input port of said water reservoir connecting to the drain port of said steam reservoir by a tenth pipe and at least one valve, and

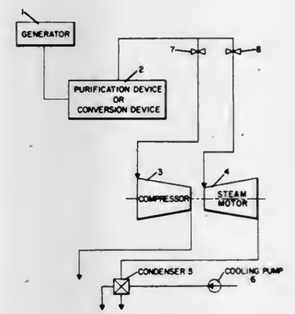
an electro-mechanical control means using electronic and mechanical signals from components as input signals, said control operating a plurality of valves in pipe lines, said control means generating output electronic signals and mechanical functions to control engine functions.

4,240,260

STEAM TREATING METHOD AND SYSTEM

Karl A. Gustafson, Njurunda, Sweden, assignor to SCA Development Aktiebolag, Sweden

Filed Nov. 8, 1978, Ser. No. 958,880
Claims priority, application Sweden, Nov. 29, 1977, 7713501
Int. Cl.³ F01K *17/00*
U.S. Cl. 60—670 **9 Claims**



1. A method of compressing low pressure steam which comprises dividing the low pressure steam into two steam flow paths, directing the first steam flow into a steam motor, in which steam motor said first steam flow is expanded so as to drive the steam motor, said steam motor being operatively connected to a compressor so that the steam motor drives the compressor, and directing the second steam flow into the compressor in which said second steam flow is compressed to a desired final pressure, said division into two steam flow paths being controlled so that the first steam flow through the steam motor generates sufficient energy to compress the second steam flow in the compressor to the desired final pressure.

4,240,261

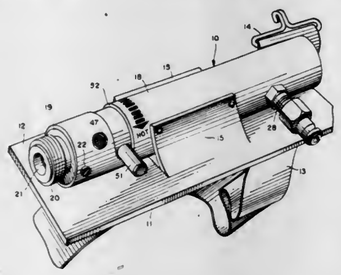
TEMPERATURE-ADJUSTABLE VORTEX TUBE ASSEMBLY

Leslie R. Inglis, Cincinnati, Ohio, assignor to Vortec Corporation, Cincinnati, Ohio

Filed Aug. 9, 1979, Ser. No. 65,093
Int. Cl.³ F25B *9/02*
U.S. Cl. 62—5 **14 Claims**

1. A temperature-adjustable vortex tube assembly comprising a vortex tube having a generator body provided with a compressed air inlet and having coaxial and oppositely-directed tubular outlets for hot and cold air, respectively; a housing defining a chamber receiving said vortex tube; said chamber having a primary outlet and a secondary outlet; a first

flow-dividing member disposed within said chamber and provided with a hot air passage and a cold air passage extending therethrough; means directing cold air from said cold air outlet of said vortex tube to said cold air passage of said first flow-dividing member and directing hot air from said hot air outlet of said vortex tube to said hot air passage of said first flow-dividing member; and a second flow-dividing member disposed within said chamber adjacent said first member and provided with a pair of separate passages extending therethrough; one of said passages of said second member communicating with said primary outlet and the other of said passages of said second member communicating with said secondary



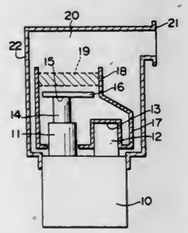
outlet; said first and second members being positioned and arranged so that air passing through the passages of said first member enter the passages of said second member and being movable relative to each other for selectively varying the proportions of air passing from the respective hot and cold air passages of said first member into each of said passages of said second member, whereby, the temperature of the air discharged from said primary outlet may be controlled by varying the relative positions of said first and second members to alter the proportions of hot and/or cold air flowing through said one passage of said second member and into said primary outlet.

4,240,262

CRYOPUMP DEVICE

Kazuaki Nakamura, Kariya, and Yutaka Momose, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 22, 1979, Ser. No. 41,422
Claims priority, application Japan, May 24, 1978, 53-61899
Int. Cl.³ B01D *8/00*
U.S. Cl. 62—55.5 **6 Claims**



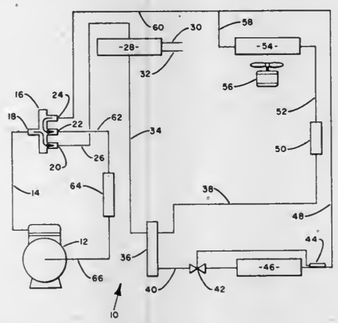
1. A cryopump device comprising a refrigerator section which has at least two expansion chamber means disposed in a space to be evacuated, shielding wall means disposed in said space and encircling said at least two expansion chamber means, said shielding wall means being formed of a thermally conductive material, said shielding wall means being in heat transfer contact with one of said at least two expansion chamber means, condensation panel means disposed inside the shielding wall means and being in heat transfer contact with the other of said at least two expansion chamber means, said shielding wall means having opening means proximate said condensation panel means for providing cooling of said space by the other expansion chamber means through said condensation panel means.

4,240,263

REFRIGERATION SYSTEM - METHOD AND APPARATUS

Thomas E. Brendel, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 3, 1979, Ser. No. 35,742
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—115 **4 Claims**



1. A refrigeration system including a first evaporator having a capillary type expansion device for controlling flow of refrigerant thereto and a second evaporator having a thermal expansion valve for controlling flow of refrigerant thereto, said system further comprising:

high pressure refrigerant vapor producing means having an inlet for receiving substantially vaporous refrigerant at a relatively low pressure and an outlet for discharging vaporous refrigerant at a relatively high pressure;

condenser means for receiving said high pressure vaporous refrigerant and for converting said vaporous refrigerant into a relatively high pressure mixture of liquid and vaporous refrigerant; and

separator means for receiving said relatively high pressure mixture from said condenser means and for separating a substantial portion of said liquid refrigerant from said vapor liquid mixture;

discharge means connected to said separator means including a first conduit for delivering said separated liquid refrigerant to said thermal expansion valve and said second evaporator, and a second conduit for delivering the remainder of said vapor liquid mixture to said capillary expansion device and said first evaporator; and

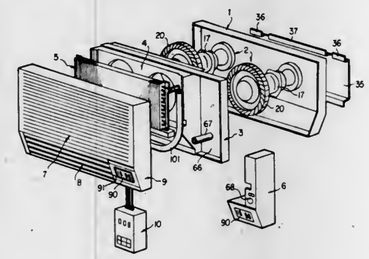
outlet means connected to said first and second evaporators for returning the refrigerant flowing therefrom to said vapor producing means.

4,240,264

INTERIOR UNIT OF A SPLIT TYPE AIR-CONDITIONING APPARATUS

Minoru Nakada; Kenji Umezu, both of Fuji; Yasuhiro Shinma, Shimada; Kazuaki Kamiyama, Fujinomiya; Yoshihiro Udagawa; Masaya Yamazaki, both of Fuji; Mitsuo Murano, Fujinomiya, and Minoru Inoue, Shimizu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 30, 1978, Ser. No. 965,044
Claims priority, application Japan, Nov. 30, 1977, 52/160788[U]
Int. Cl.³ F04B *17/00*; F24H *3/06*
U.S. Cl. 62—125 **31 Claims**



1. An interior unit of a split type air-condition apparatus comprising:

a cabinet structure having an air inlet opening for introducing air and an air outlet opening for discharging air said cabinet structure including a rear plate for mounting said fan motor, a middle frame assembled to said rear plate, said middle frame fixing said heat exchanger and having a fan shroud for housing said centrifugal fan, a front panel assembled to said middle frame and having said air inlet opening and said outlet opening on its front side;

refrigeration cycle components arranged inside said cabinet structure including a heat exchanger;

means for circulating air including a centrifugal turbo fan with a plurality of backward curved blades disposed inside said cabinet structure, said centrifugal fan having a circular part raised in a longitudinal direction in the approximate center of said fan;

means for driving said centrifugal fan including a fan motor accommodated in said raised circular part and having a motor shaft extending in said longitudinal direction, said fan being fixed to said motor shaft at the center thereof wherein said rear plate includes a circular mount raised in said longitudinal direction, said mount supporting said fan motor about the approximate center of gravity of said fan motor along a line extending in said longitudinal direction, whereby the thickness of said apparatus in said longitudinal direction and the vibration of said motor are minimized.

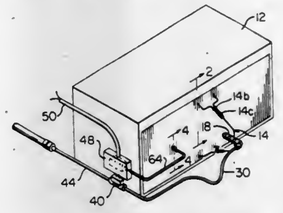
4,240,265

MIST SPRAY APPARATUS FOR AIR CONDITIONER CONDENSER

Robert L. Faxon, P.O. Box 17064, Pensacola, Fla. 32522

Continuation-in-part of Ser. No. 832,923, Sep. 13, 1977, Pat. No. 4,170,117. This application Feb. 8, 1979, Ser. No. 10,462
Int. Cl.³ F28D *5/00*
U.S. Cl. 62—171 **2 Claims**

1. Apparatus for minimizing the cost of operation of an air conditioner by applying a minimum volume of liquid mist onto a generally vertical heat exchange condenser which is a part of the air conditioning unit, the condenser including spaced fluid conduits connected to generally parallel spaced fins, said apparatus comprising a liquid spray nozzle for spraying a fine mist of liquid upon the fluid conduits of the condenser, a liquid supply line connected to said liquid spray nozzle, an electrically operated liquid control valve connected to control the flow of liquid through said supply line to said spray nozzle, a temperature sensing member positioned to receive a portion of the mist sprayed by the liquid spray nozzle and positioned to sense the temperature conditions within said condenser, the temperature sensing member being connected to control said liquid control valve, support means projecting outwardly in a cantilever manner from said condenser and supporting said liquid spray nozzle in horizontally spaced relation outwardly



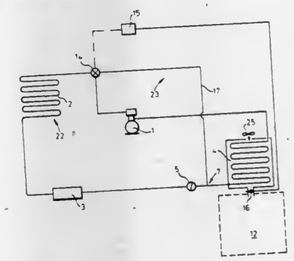
from said condenser with said liquid spray nozzle directed inwardly toward said fluid conduits and fins, said support means including a plurality of relatively adjustable elongate support members having portions for engaging a portion of said condenser, and said plurality of relatively adjustable support members being adaptable and adjustable for conveniently attaching said liquid spray nozzle to various spaced condenser conduits and various grill coverings of different air conditioning units.

4,240,266

APPORTIONING MEANS FOR REFRIGERATION SYSTEM

Gerald R. Scrine, Cambridge, and William D. M. Carter, Huntingdon, both of England, assignors to Shipowners Refrigerated Cargo Research Association, London, England

Filed Apr. 24, 1978, Ser. No. 899,077
Claims priority, application United Kingdom, Apr. 29, 1977, 18017/77
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—196 B **9 Claims**



1. In a refrigeration system for a substantially enclosed space and including a compressor, a condenser and an evaporator, conduit means connecting said compressor, condenser and evaporator to form a cooling circuit, a hot gas by-pass conduit having a first junction with said cooling circuit between the compressor and the condenser, and a second junction with said cooling circuit between the condenser and the evaporator, and means provided in the system for apportioning flow of compressed refrigerant gas from the compressor between the condenser and the by-pass conduit so that during a temperature controlling phase of refrigeration, the gas flows through both the condenser and the by-pass conduit, the apportioning means being arranged to control the relative proportions of the gas flowing through the condenser and the by-pass conduit to provide either net heating or net cooling of the enclosed space,

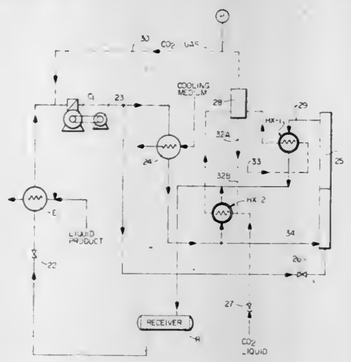
the improvement which comprises, said system including a fan to force air over the evaporator, a single temperature measuring device located at a point where the air has been cooled by being passed over the evaporator, means operable by said temperature measuring device to control operation of the apportioning means, said apportioning means being in the form of a continuously modulating valve located at said first junction of the hot gas by-pass conduit with the cooling circuit, said valve having a hot gas intake port for receiving hot gas from the compressor, a first outlet port connected to the hot gas by-pass conduit, a second outlet port connected to the cooling circuit upstream of the condenser, valve closure means, and valve control means for continuously modulating said valve closure means between a first position for closing off the first outlet port and a second position for closing off the second outlet port, whereby the hot gas may be continuously variably apportioned between said hot gas by-pass conduit and the condenser.

4,240,267

SYSTEM FOR VAPORIZING CARBON DIOXIDE UTILIZING THE HEAT BY-PRODUCT OF THE REFRIGERATION SYSTEM AS A HEAT SOURCE

Harold L. Shaw, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 4, 1978, Ser. No. 966,273
Int. Cl.[3] F25B *27/02, 13/00*
U.S. Cl. 62—238 E **15 Claims**



1. A carbonation and refrigeration system which utilizes a heat by-product from the refrigeration system to vaporize carbon dioxide liquid into CO_2 gas comprising:

refrigeration means for cooling a liquid product including a receiver for supplying a refrigerant to an evaporator means for cooling said liquid product, said refrigernat also being supplied to a compressor means for increasing the pressure of said refrigerant and a condensor means for condensing the refrigerant into a liquid;

carbonation means for introducing CO_2 gas into said liquid product, said carbonation means including a supply of liquid carbon dioxide;

first heat exchanger means for transferring a quantity of heat from said condensed liquid refrigerant to said carbon dioxide liquid;

second heat exchanger means for transferring an additional quantity of heat from said refrigerant to said carbon dioxide liquid when refrigeration load conditions of said refrigeration system fall below a predetermined level;

desuperheater means in communication with the refrigerant at the output side of said compressor for lowering the temperature thereof;

conduit means for supplying refrigerant which has passed through said condensor to said first heat exchanger means; and

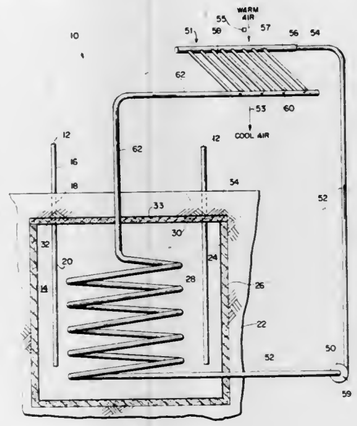
conduit means for supplying refrigerant which has passed through said desuperheater means to said second heat exchanger means.

4,240,268

GROUND COLD STORAGE AND UTILIZATION

Shao W. Yuan, 6701 Montour Dr., Falls Church, Va. 22043

Filed Oct. 13, 1978, Ser. No. 951,518
Int. Cl.[3] A25D *23/12;* F24H *7/00*
U.S. Cl. 62—260 **11 Claims**



1. A system for extracting, transmitting, storing, recovering and utilizing cold, said system comprising:

a. apparatus for extracting cold from the environment;

b. transmitting means for transmitting said cold from environment above the ground to a location below the surface of the ground; said transmitting means comprising a heat pipe,

c. storage means for storing cold, said storage means including a substance which is capable of changing phase, said substance being located at said location below the surface of the ground for receiving and storing cold transmitting thereto by said transmitting means;

d. recovery means for recovering cold from said storage means and delivering it to a second environment; and

e. utilizing means connected to said recovery means for receiving cold therefrom and dispersing said cold throughout said second environment.

4,240,269

HEAT PUMP SYSTEM

Rudy C. Bussjager, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 29, 1979, Ser. No. 43,285
Int. Cl.[3] F25B *13/00*
U.S. Cl. 62—324 A **9 Claims**

1. A heat pump system including a refrigeration circuit comprising:

a compressor having a discharge line and a suction line,

a first heat exchanger,

a second heat exchanger,

each heat exchanger including a plurality of heat transfer circuits arranged to provide series flow of refrigerant through the circuits when the heat exchanger is used as a condenser and parallel refrigerant flow through the circuits when the heat exchanger is used as an evaporator,

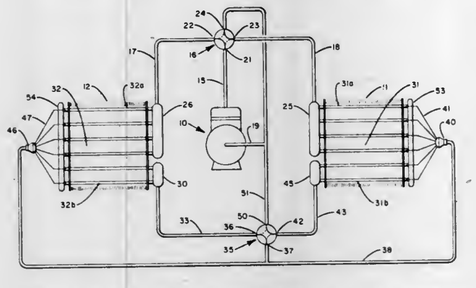
expansion means connected to each of the heat exchangers for expanding refrigerant flowing into the heat exchanger when the heat exchanger serves as an evaporator,

first reversing means connected to the compressor, the first heat exchanger and the second heat exchanger for directing refrigerant to flow in series through the circuits of the heat exchanger serving as a condenser and for receiving refrigerant from the heat exchanger serving as an evaporator,

refrigerant conduit means connecting the compressor and said heat exchangers to provide a closed refrigerant circuit,

said refrigerant conduit means having a passageway interconnecting the expansion means of said heat exchangers,

second reversing means operatively associated with the first reversing means and disposed in the refrigerant circuit



between the first and second heat exchangers for permitting refrigerant to flow from the heat exchanger operating as a condenser through said passageway into the expansion means of the other heat exchanger operating as an evaporator and for receiving refrigerant from the heat exchanger serving as the evaporator,

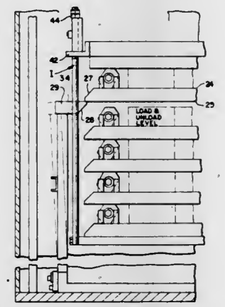
at least one of said reversing means being connected to the suction line of the compressor such that refrigerant received from the heat exchanger serving as the evaporator is directed to the compressor to form a complete refrigerant circuit.

4,240,270

ADJUSTABLE SPACERS FOR FLAT PLATE CONVEYORS

Thomas P. McLaughlin, Macedonia, Ohio, assignor to The Stouffer Corporation, Solon, Ohio

Division of Ser. No. 832,168, Sep. 12, 1977, Pat. No. 4,180,987.
This application Apr. 27, 1979, Ser. No. 33,555
Int. Cl.[3] B30B *7/02;* F25D *25/00*
U.S. Cl. 62—341 **8 Claims**



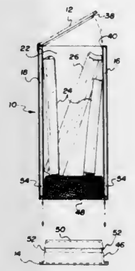
1. A spacer bar for insertion between and spacing in vertically spaced parallel relation, throughout an effective length of the bar, the flat plates of a flat plate type conveyor, said bar being elongated and having at least two pairs of longitudinally extending, transversely spaced, flat parallel side surfaces, said surfaces having at least corresponding portions disposed within corresponding different sections of the bar located throughout substantially the full effective length thereof and the transverse spacing between each pair of surfaces being different, and said bar having at least one end shaped to provide means for rotating said bar about a longitudinal axis thereof.

4,240,271

REFRIGERATED CIGARETTE PACK FACSIMILE

Susan E. Brownlow, 9776 Chestnut, Lakeside, Calif. 92040

Filed May 11, 1979, Ser. No. 37,651
Int. Cl.[3] F25D *3/08, 3/10*
U.S. Cl. 62—457 **1 Claim**



1. A refrigerated cigarette box facsimile comprising:

(a) a vertically elongated container having the general shape of a flip-top cigarette box;

(b) said container having four thin, insulated side walls and a thin, insulated lid hinged to the top of one of said side walls and pivotal from an open position into a closed position snapped tightly into the tops of said four side walls;

(c) spring means biasing said lid into the closed position;

(d) a thickened hollow bottom plug filled with chillable heat sink material;

(e) detent means defined in the bottoms of said side walls and in said plug wherein said plug is snap-fitted between the bottoms of said side walls to define the bottom of said container, and removable to permit the insertion thereof into a freezer without requiring that the contents of the container be frozen;

(f) whereby a simulated cigarette box dimensioned to fit in a shirt pocket to replace a real cigarette box, and being bottom-heavy and stable in the pocket by virtue of the thickened heat-sink bottom, is provided.

4,240,272

ARCTIC CANTEEN

Herbert R. Tiede, and Richard P. Pierzchala, both of Quantico, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 18, 1979, Ser. No. 49,690
Int. Cl.[3] F25D *3/08*
U.S. Cl. 62—457 **14 Claims**

1. A portable canteen system for controlling the temperature of comestibles contained therein regardless of the ambient temperature, comprising:

a container for holding said comestibles, said container having an opening therein;

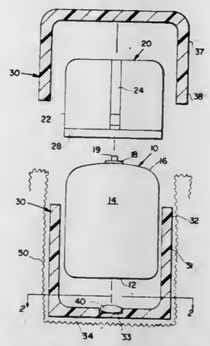
means for insulating said container from the ambient, said insulating means being cup-shaped and including side walls and a cover attached thereto; said insulating means including at least one cavity located in at least one of the side walls of said insulating means and including means for sealing each respective one of said at least one cavity from the ambient, said sealing means being pivotally attached to said respective sidewall of said insulating means at the location of said at least one cavity,

said sealing means pivoting toward, and away from, said

respective sidewall to make said at least one cavity inaccessible, and accessible, respectively, from the outside of said insulating means,

means insertable within said at least one cavity for generating a thermal change within said insulating means,

whereby when said sealing means is pivoted away from said outside of said insulating means, an actuated generating



means may be inserted into said respective cavity and said sealing means pivoted back toward said outside of said insulating means, such that said generating means will be completely sealed from the ambient, and when said generating means is manually activated and placed within said at least one cavity and in physical contact, simultaneously, with both said at least one cavity and said container, a thermal change is effected within said insulating means.

4,240,273

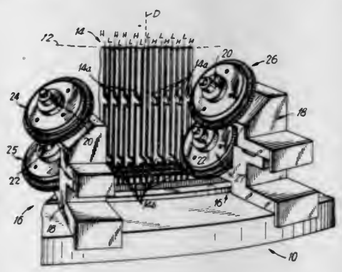
METHOD OF KNITTING AND KNITTING MACHINE ARRANGEMENT THEREFOR

Leonard Beckenstein, 15 Farm Rd., St. James, N.Y. 11780

Filed Mar. 27, 1978, Ser. No. 890,290

Int. Cl.[2] D04B *15/76*

U.S. Cl. 66—42 R **14 Claims**



1. A method of controlling a knitted pattern by arranging pattern wheels and needles on a knitting machine having a cylinder provided with a first predetermined number of uniformly spaced slots about the periphery thereof; a plurality of knitting needles arranged within said cylinder slots, each knitting needle having a hook formed thereon and a butt in spaced relation to the hook, said knitting needles being arranged in said cylinder slots in a plurality of like groups, the needles of each group having a common spacing between the needle hooks and butts which is different from that of the other groups; a plurality of yarn feeding stations for said knitting needles; the method comprising the steps of arranging a plurality of stacked pattern wheels at each yarn feeding station, each pattern wheel at each feeding station being arranged to engage only the knitting needles of one of said knitting needle groups, said pattern wheels each being provided with a second predetermined number of jack accommodating uniformly spaced slots equally spaced as said cylinder slots, said cylinder and pattern wheel slots forming a plurality of slot groups, corresponding slot groups on said cylinder and pattern wheels normally continuing to register with each other with relative movements between said cylinder and pattern wheels during the entire rotation of the cylinder; arranging needles of one of said knitting needle groups in a first of said cylinder slot groups to cooperate with a first of said pattern wheel slot groups of a corresponding one of said pattern wheels over at least one portion of said cylinder, and arranging knitting needles of another of said knitting needle groups in said first of said cylinder slot groups to cooperate with a first of said pattern wheel slot groups of a corresponding other of said pattern wheels over at least another portion of said cylinder, whereby the same slot groups in said cylinder can contain knitting needles of different knitting needle groups to selectively engage jacks placed in corresponding slot groups of different ones of said stacked pattern wheels and control the nature of the knitted pattern by selective knitting needle group placement.

4,240,274

RECIPROCATING SLED DRIVE FOR A FLAT BED KNITTING MACHINE

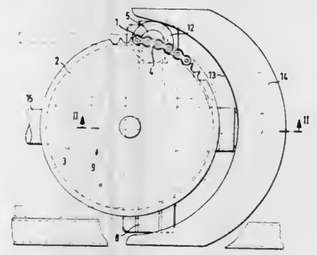
Reinhold Schimko, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Scheiber GmbH & Co. KG, Westhausen, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,821

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822293

Int. Cl.[2] D04B *7/04*

U.S. Cl. 66—64 **5 Claims**



1. A drive arrangement for a flat bed knitting machine having a reciprocating sled, an endless chain guided and driven by two sprocket wheels arranged at the opposite ends of the needle beds, and a cross slide arranged between the sled and the endless chain, characterized by: a guide surface (13) for each sprocket wheel to limit the outward movement of the cross slide (9) in the reversing area of the sled, and a force transmitting connecting element (5) slidably coupled to the cross slide (9) and engagable with the guide surface in the reversing area of the sled.

4,240,275

EYELET BAR ARRANGEMENT FOR JACQUARD EQUIPPED WARP KNITTING MACHINES

Hans Fiedler, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

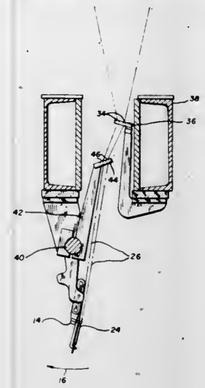
Filed Feb. 26, 1979, Ser. No. 14,813

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809391

Int. Cl.[3] D04B *23/00, 27/00*

U.S. Cl. 66—203 **5 Claims**

1. In a jacquard equipped warp knitting machine having a guide bar with a plurality of guides affixed thereon, a first eyelet bar with a plurality of eyelets disposed therein affixed to the frame of said machine, a dropper pin bar affixed to the main suspension shaft of said machine, dropper pin activator cords operatively coupled, via said eyelets, between said dropper pin



and said jacquard mechanism, the improvement comprising means for providing relatively constant tension on said dropper pin activator cords during the swing movement of said dropper bar.

4,240,276

SEAL DEVICE

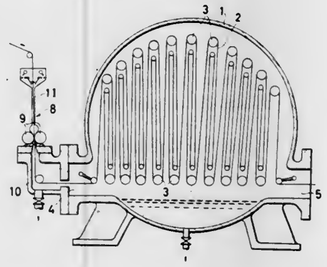
Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 91,170

Claims priority, application Japan, Nov. 7, 1978, 53-137003

Int. Cl.[3] D06B *23/18*

U.S. Cl. 68—5 E **2 Claims**



1. A seal device to be provided with a pair of seal rubber rolls for closing a cloth material inlet or outlet formed in a steamer drum body adapted for hygro-thermic treatment of a cloth material, said seal device comprising:

a tubular cloth material passage extending upward at least 400 mm above the outer side of said seal rubber rolls and having the lower end thereof provided with an opening which abuts on said rubber rolls, said opening having a transverse width a little wider than the breadth of said cloth material and measuring 3 mm or thereabout in longitudinal width;

a liquid supply mechanism adjoining the inlet part of said cloth material passage; and

a pair of weir plates disposed within said liquid supply mechanism and each said weir plate being located on an opposite side of said cloth material passing therethrough, said weir plates being in spaced relation forming a gap therebetween through which the cloth material passes, means connected to said weir plates and arranged to permit adjustment of said gap by moving said weir plates toward or away from one another thereby varying said gap.

4,240,277

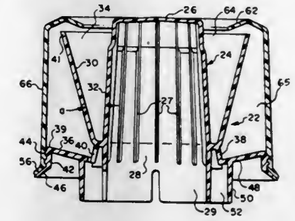
TWO-PIECE LIQUID RINSE AGENT DISPENSER FOR CLOTHES WASHING MACHINE

Philip J. Manthel, Ripon, Wis., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 15, 1979, Ser. No. 84,723

Int. Cl.[3] D06F *39/02*

U.S. Cl. 68—17 A **10 Claims**



1. A two piece liquid rinse agent dispenser for use in a clothes washing machine having a clothes basket with an open upper end and a clothes agitator extending upwardly at the central axis of said clothes basket, both of which are mounted for rapid rotation thereabout, said dispenser including in combination:

an inner annular member including a central, hollow hub having an annular side wall, a closed upper end and an open, lower end for receipt on said agitator, the hollow hub freely receiving the agitator therewithin without mechanical connection between the hub and the agitator, a first annular wall extending outwardly from said hub at a predetermined angle with respect thereto to define a first chamber between said side wall and said first annular wall, said first chamber having an open upper end, a lower annular flange joined to said hub, and first attachment means provided along the free end of said flange and an inverted cup-shaped cover dimensioned for receipt over said inner annular member having a generally cylindrical side wall, an upper end wall and an open lower end, said cover including an opening defined in said upper end wall through which said liquid rinse agent is poured into said chamber and second attachment means provided along said open, lower end of said cover, said first and second attachment means joining said cover and said inner annular member and producing a liquid tight seal therebetween upon connection of the former to the latter, the first and second attachment means constituting the sole connection between the inner annular member and the cover and connecting said inner annular member and the cover to each other solely about the respective peripheries of the free end of the flange and of the lower end of the cover, the side wall of said cover and said first annular wall of said inner annular member defining a second chamber for receipt of said liquid rinse agent upon rotation of said dispenser at a predetermined speed.

4,240,278

GATE LOCKING DEVICE

Peter J. Linder, 3109 Ramblewood Rd., Ellicott City, Md. 21043

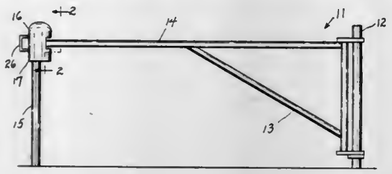
Filed Nov. 9, 1978, Ser. No. 959,157

Int. Cl.[3] E05B *65/06*

U.S. Cl. 70—101 **11 Claims**

1. A gate locking device comprising: a cap member having a side opening defined by side walls and adapted to restrictively receive the end of a horizontally swinging gate bar, said cap member defining a protected chamber at a level below the level of said side opening and separated therefrom by wall

means, said cap member being open at the bottom to provide egress to the protected chamber; means adapted to mount said cap member on a vertical gate post for limited rotation less than 360° about a vertical axis; and locking means within the protected chamber to at times lock said cap member against rotation, said locking means including disconnectable linkage



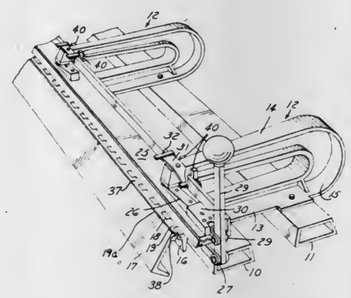
means mounted in the protected chamber and having at least one key-controlled removable link pin connection means, an interlocking element on the vertical gate post, and a retractable locking element matingly engageable with said interlocking element, said retractable locking element being connectable to said linkage means by use of a padlock.

4,240,279

SHEET METAL BRAKE

James J. Rhoades, Garden City, Mich., assignor to Tapco Products Company, Inc., Detroit, Mich.

Filed Nov. 27, 1978, Ser. No. 963,698
Int. Cl.³ B21D *11/20*
U.S. Cl. 72—319 **2 Claims**



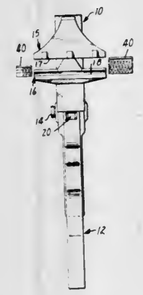
1. A brake for bending sheet metal comprising
a pair of spaced base rails,
a plurality of C-shaped members positioned on said base rails at longitudinally space points,
each said C-shaped member comprising a lower arm fixed to said rails and an upper arm spaced from and overlying said lower arm,
a first member fixed on the lower arms of said C-shaped members and having a clamping surface,
an anvil member including a horizontal portion and a vertical portion,
said vertical portion of said anvil member having notches therein,
means for clamping said anvil member on said first member to clamp a piece of sheet metal between said anvil member and said clamping surface of said first member,
a second member having a bending surface,
said anvil member having a longitudinal edge extending along said hinge line,
means resiliently mounting said anvil member on said upper arms in a manner such that said upper arms extend through said notches in said vertical portion of said anvil member,
and at least one abutting portion extending laterally on the upper arm of each said C-shaped member,
said abutting portion extending vertically from adjacent the upper end of the vertical portion of said anvil member along the side of said notch for substantially the greater portion of the length of said vertical portion and adapted to be contacted by the anvil member and thereby minimize any tendency for rotation of the anvil member when the second bending member is swung to bend a piece of sheet metal or the like clamped between the anvil member and the clamping surface of said first member.

4,240,280

HAND CRIMPING TOOL

Floyd L. Foslien, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 8, 1979, Ser. No. 10,372
Int. Cl.³ B21D *7/06*
U.S. Cl. 72—410 **7 Claims**



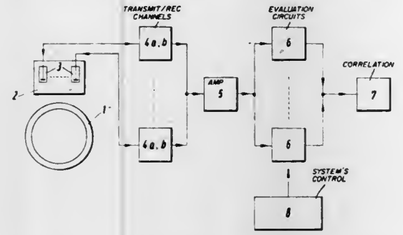
1. A hand crimping tool comprising:
a first handle,
a second handle connected to said first handle by a main pivot pin,
a first jaw and a second jaw connected to said handles for movement together upon pivoting of said handles about said main pivot pin,
a lever pivoted on said second handle, said lever being connected to said second jaw to cause said second jaw to urge said lever to pivot when force is applied to said second jaw,
a latch member pivoted on a latch pivot pin attached to said second handle, said latch member being formed to engage said lever to retain said lever against the pivoting force applied by said second jaw,
a latch pivot spring urging said latch to pivot to engage said lever,
a latching spring urging said lever to pivot to urge said lever into position for engagement by said latch member,
a trip abutment on said first handle in position to contact said latch member and cause said latch member to pivot to disengage said latch from said lever when said handles have traveled a distance sufficient to move said jaws through a predetermined crimping movement, and
a signal abutment on said second handle aligned with and spaced from said lever when it is engaged by said latch member to be struck by said lever when it is released from said latch member to provide sensory perception to the user of the completion of the predetermined crimping movement.

4,240,281

AUTOMATIC SELF-CHECKING OF TEST EQUIPMENT

Dieter Lather, Rheurdt, and Karl Ries, Mülheim an der Ruhr, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,948
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1977, 2753472
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—1 DV **15 Claims**



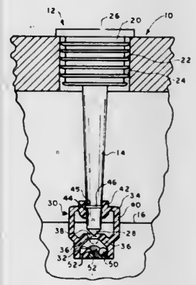
1. Method of self-checking a system for the nondestructive testing of structural materials which includes a plurality of transducers, respectively transmitters and/or receiver channels for the transducers, and signal processing stages connected to the receiver channels, said system operating with a sequence of test cycles wherein at least some of the test cycles use different ones of the transducers, comprising the steps of:
(i) generating simulated receiver signals and setting them into the receiver channels for processing by the processing stages during the said test cycles, for checking the function of the receiver channels and at least some of said stages;
(ii) generating return signals for the transducers for passage by them into the receiver channels but without using any coupling of the transducers to a test object, for processing by the processing stages during a repetition of at least some of said test cycles;
(iii) repeating at least some of said test cycles but using an external reference element for coupling to the transducers and returning thereto signals launched in transmit phases of the particular test cycles as repeated;
storing the result of the processing as per the preceding steps; and
using result differences for isolating defects in the system.

4,240,282

COMBINED LEVEL INDICATOR AND HYDROMETER

John F. Nelson, New Lenox, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 27, 1979, Ser. No. 79,639
Int. Cl.³ G01N *9/12*
U.S. Cl. 73—447 **9 Claims**



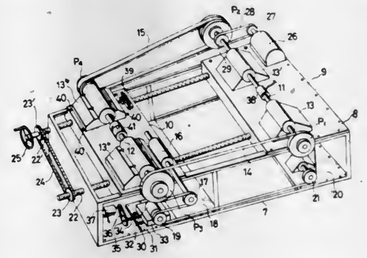
1. A combined liquid level indicator and hydrometer comprising: a light transmitting member having an outer indicating surface and reflector surface means adapted to be submerged in liquid for reflecting light to said indicating surface when the liquid is below a predetermined level; chamber means comprising an upper means and a lower means, said upper means being connectable to said member and said lower means defining a chamber which is connected to said upper means and having access means of a predetermined size in alignment with said member and positioned for submersion in said liquid, and a float smaller than said predetermined size and of a predetermined specific gravity captured in said lower chamber and moveable between upper and lower positions in accordance with the relative specific gravity of the liquid, said lower chamber being initially formed in an open condition and lockable thereafter for capturing said float within said lower chamber, said lower chamber including hinged closure means carrying at least one moveable wall arranged to pivot between an opened position and a closed locked position to form one of the walls for capturing said float within said lower chamber, and said chamber means including means for locating said float in one of said positions adjacent said access means for viewing said float through said indicating surface and for locating said float in the other of said positions for obscuring the float from view.

4,240,283

APPARATUS FOR TESTING POWER TRANSMISSION BELT

Hiroshi Takano, Miki; Yasuhiro Hashimoto, Kobe, and Mutsuo Takesako, Akashi, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Nov. 9, 1978, Ser. No. 959,132
Int. Cl.³ G01N *3/56*; G01M *13/02*
U.S. Cl. 73—7 **11 Claims**



1. In an apparatus for testing a power transmission belt including a frame, a first shaft having first and second pulleys fixed to the opposite ends thereof, a second shaft having third and fourth pulleys fixed to the opposite ends thereof, a drive belt mounted between said first and third pulleys and a test belt mounted between said second and fourth pulleys, the improvement comprising;
(a) an upper stationary plate fixedly mounted on said frame to rotatably support said first shaft,
(b) an upper movable plate slidably supported on said frame to rotatably support said second shaft at different pre-set fixed distances from said first shaft during testing in accordance with test belts of correspondingly different lengths,
(c) a first idler supported on said upper movable plate,
(d) a second idler supported on a first lower stationary plate positioned below said upper stationary plate,
(e) a third idler supported on a second lower stationary plate positioned below said upper movable plate, said drive belt being mounted between said first and third pulleys through said idlers, and one of said idlers being movably supported to change the effective length, and thus the tension, of said drive belt to maintain a constant load on said test belt, the pitch diameters of these pulleys being

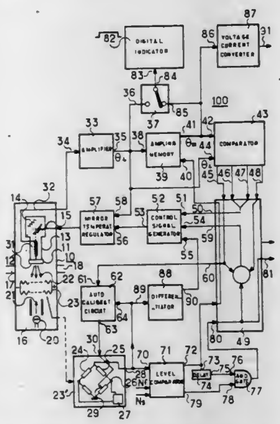
selected such that they have the relationship that $d_1:d_3=d_2:d_4$, in which d_1, d_2, d_3 and d_4 are pitch diameters of said first, second, third and fourth pulleys, respectively, whereby fatigue of the test belt is observed by visual inspection thereof.

4,240,284

METHOD AND APPARATUS FOR DETERMINING THE TEMPERATURE OF THE CONDENSATION POINT OF A SUBSTANCE

Van L. Nguyen, Antony, France, assignor to Sereg, Montrouge, France

Filed Aug. 3, 1979, Ser. No. 63,630
Int. Cl.³ G01N *25/12*
U.S. Cl. 73—17 A **25 Claims**



1. A method of determining the temperature of the condensation point of a first substance, such as light hydrocarbons, in a gas that can contain a second and more slowly condensing substance, such as heavy hydrocarbons, the method comprising the steps of:
   (a) heating a mirror placed in an enclosure arranged for the throughflow of the gas up to a temperature at least equivalent to the evaporation temperature of both substances thought to be present in the gas;
   (b) cooling the mirror relatively quickly to a temperature slightly higher than the presumed condensation temperature for the first substance, and then continuing to cool the mirror more slowly until the appearance of the first condensates on the mirror;
   (c) storing the value of the mirror temperature at which said first condensates appear; and
   (d) repeating steps (a) to (c) using the stored temperature value as the value of the presumed condensation temperature in step (b).

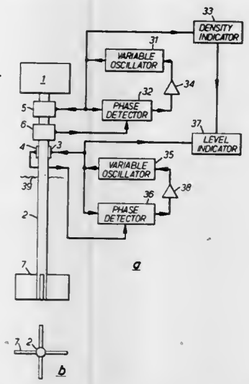
4,240,285

MEASUREMENT OF THE DENSITY OF LIQUIDS

Roger M. Langdon, Colchester, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Aug. 8, 1979, Ser. No. 64,818
Claims priority, application United Kingdom, Aug. 9, 1978, 32803/78
Int. Cl.³ G01N *9/00*; G01F *23/28*
U.S. Cl. 73—32 A **6 Claims**

1. A device for measuring the density of a liquid including a member arranged for immersion into the liquid, first transducer means for applying a torsional vibration to said member so as to move a portion of the liquid in which the member is immersed, and means for varying the frequency of the torsional vibration to produce a resonance mode, the frequency of the vibration at the resonance mode being indicative of the density of the liquid, and wherein said first transducer means for applying the torsional vibration to the member and second transducer means for sensing the resultant torsional vibration induced in the member are coupled to an elongate member arranged to be partially immersed in the liquid, one end of the elongated member being attached to a relatively massive body



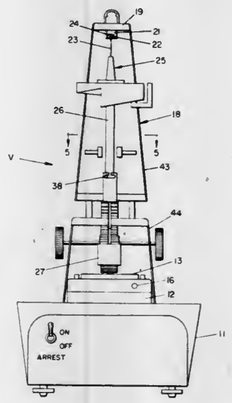
located above the surface of the liquid, the first and second transducer means also being mounted above the surface of the liquid at points adjacent to the relatively massive body, and the member being mounted at a generally free end portion of the elongated member which is remote from said first and second transducer means and thereby adapting said member for suspended immersion in the associated liquid.

4,240,286

VISCOSIMETER

Allan J. Bentz, Guilford, N.Y., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,580
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—59 **5 Claims**



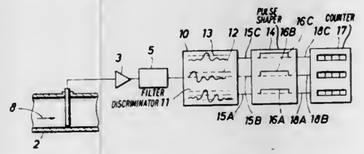
1. A viscosimeter for measuring the viscosity of liquids comprising, in combination,
   a base,
   a container for the liquid to be tested rotatably mounted on said base,
   means for heating the liquid in said container,
   an upstanding support member having an upper end mounted on said base,
   a torsion wire arranged to be detachably mounted at its upper end on said support member in a vertically extending position,
   a plunger detachably mounted on the lower end of said torsion wire for immersion in the liquid in said container,
   a vertically extending spindle operatively attached and mounted on said support member to form a torsion wire and spindle assembly whereby rotation of said container rotates said spindle and torsion wire assembly into an angular position corresponding to the drag of the liquid on said plunger immersed therein,
   transducer means for electrically sensing said angular position of said spindle and torsion wire,
   electronic readout means connected to said transducer means for indicating the viscosity of the liquid in said container,
   said transducer means comprises an arcuate plate having an inclined lower edge portion supported on said
   torsion wire and spindle assembly and
   a capacitor having a pair of spaced plates defining a gap and wherein said arcuate plate lower edge portion is disposed within said gap to a variable extent as determined by the angular position of said torsion wire and spindle assembly.

4,240,287

SAND DETECTION

Harm Mast; Jan W. Kraayeveld; Peter B. Vriezen, and Gerrit J. Wunnink, all of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 2, 1978, Ser. No. 957,265
Claims priority, application United Kingdom, Dec. 20, 1977, 52958/77
Int. Cl.³ G01N *15/07*
U.S. Cl. 73—61 R **9 Claims**



1. A method of detecting solid sand particles in a fluid flowing from a well through a conduit, comprising:
   an acoustic transducer means having a housing with a piezoelectric element disposed therein, said piezoelectric element being biased into contact with one wall of said housing, said piezoelectric element in addition being coupled to a preamplifier disposed in said housing;
   generating an electric signal by allowing the particles to impinge against the housing of said acoustic transducer means;
   filtering said signal to pass frequency components thereof in a pulse train ranging within the frequency band of about 50 kHz to about 500 kHz;
   comparing the values of the amplitudes of each said pulse train in the filtered signal with at least one predetermined range of amplitude values;
   generating for each pulse train an electric standard pulse having a predetermined time period and amplitude when the maximum amplitude of said pulse train has a value that is above said one of predetermined range of amplitude values; and,
   counting the number of standard pulses generated by said pulse train within each set predetermined period.

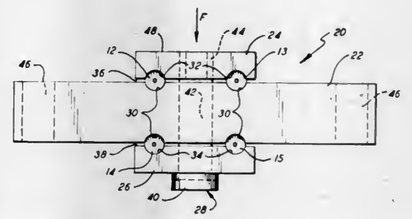
4. Means for detecting solid sand particles in a fluid flowing from a well through a conduit, comprising:
   an acoustic transducer means having a housing with a piezoelectric element disposed therein, said piezoelectric element being biased into contact with one wall of said housing, said piesoelectric element in addition being coupled to a preamplifier disposed in said housing;
   indicating means for indicating the number of impacts made by particles on the acoustic transducer means; and,
   circuitry means interconnecting said transducer means and said indicating means, said circuitry means comprising filter means for processing the electric signals generated by the transducer means to pass frequency components thereof in a pulse train ranging within the frequency band of about 50 kHz to about 500 kHz, a pulse height discriminating means and a pulse shaper means, said two latter means being adapted to form for each pulse train a standard pulse having a predetermined time period and amplitude, said standard pulse being passed on to the indicating means each time the value of the maximum amplitude of a pulse train is above a preset range of values in the filtered signal.

4,240,288

FORCE TRANSDUCER

Nicholas F. D'Antonio, 7695 Admiral Dr., Liverpool, N.Y. 13088; Richard L. Bates, 125 Hillside Way, Camillus, N.Y. 13031, and Richard W. French, 609 Vine St., Liverpool, N.Y. 13088

Continuation of Ser. No. 701,649, Jul. 1, 1976, Pat. No. 4,055,078. This application Aug. 29, 1977, Ser. No. 828,344
Int. Cl.² G01L *1/22*
U.S. Cl. 73—141 A **6 Claims**



1. A transducer comprising:
   a plurality of impedance devices connected together to form an electrical circuit, the impedance of said devices varying in response to the application of an external force to said devies, said circuit generating an output signal in response to the application of an electrical potential across said circuit, the value of said output signal depending upon the difference in impedance between said devices;
   pre-stressing means for applying predetermined force substantially equally to each of said impedance devices to effect first impedance characteristics in said circuit;
   force transmitting means for transmitting input forces to a portion of said impedance devices to vary the impedances in said portion of said devices, said force transmitting means being located in the path of the external load, said external load being applied directly to said force transmitting means to cause the output signal to be in direct response to the external load.

4,240,289

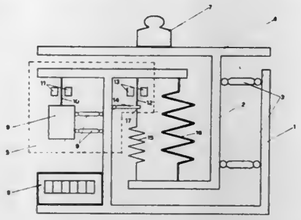
MASS AND FORCE METER

Kaspar Saner, Dübendorf, Switzerland, assignor to Wirth Gallo & Co., Zurich, Switzerland

Filed Dec. 14, 1978, Ser. No. 969,542
Claims priority, application Switzerland, Feb. 2, 1978, 1573/78
Int. Cl.³ G01L *1/04, 1/10*
U.S. Cl. 73—141 R **6 Claims**

1. A mass and force meter comprising a frame; a load support; a measuring system comprising a first and a second dynamometer, and a reference mass; a load spring fixed to said frame and to said load support, said first dynamometer being fixed to said frame, said reference mass being fixed to said first

dynamometer, said second dynamometer being fixed to said frame; and a measuring spring fixed to said second dynamometer and to said load support, said measuring spring being weaker than said load spring.

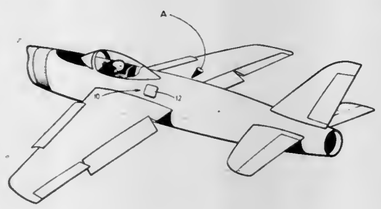


4,240,290

SKIN FRICTION MEASURING DEVICE FOR AIRCRAFT

Lawrence C. Montoya, and Donald R. Bellman, both of Lancaster, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 7, 1979, Ser. No. 64,617
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—178 R **5 Claims**



1. A skin friction measuring device for an aircraft comprising:

A. a base plate adapted to be mounted on an aircraft;

B. a friction plate adapted to be disposed in contiguous relation with an airstream as the airstream is caused to flow over the aircraft;

C. support means mounting said friction plate on said base plate in spaced relation therewith, and supporting said friction plate for skin friction induced displacement; and

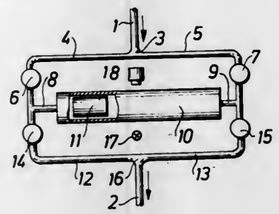
D. displacement measuring means connected to said friction plate for providing an electrical output signal indicative of the magnitude of skin friction induced displacement of said friction plate as the airstream is caused to flow thereover, including an electrical potentiometer adapted to be connected to a source of electrical potential and pivotally displaceable arm connected to the potentiometer for varying the electrical resistance of the potentiometer proportionally to pivotal displacement imparted to the arm, and motion transfer linkage interconnecting said friction plate with said arm for imparting pivotal displacement to said arm proportionally to skin friction induced displacement imparted to said friction plate as the airstream is caused to flow thereover, whereby the electrical resistance to said potentiometer is varied proportionally to the skin friction induced displacement of the friction plate.

4,240,291

FLOW METER

Roland J. E. Andersson, Bjärred; Lars-Göran Olsson, Löddekö pinge, and Bengt G. Paulsson, Lund, all of Sweden, assignors to Gambro AB, Lund, Sweden

Filed Nov. 7, 1978, Ser. No. 958,390
Claims priority, application Sweden, Nov. 9, 1977, 7712642
Int. Cl.³ G01F *11/04*
U.S. Cl. 73—861.05 **19 Claims**



1. A flow meter having an inlet and an outlet for measuring the flow rate of fluid through a conduit, comprising:

first and second flow paths connected to said inlet, third and fourth flow paths connected to said outlet;

a measuring chamber including a first port and a second port and including a float disposed therein for movement in first and second directions in response to fluid flow;

a detector for directly detecting the movement of said float while said float is moving in said first direction or in said second direction in said measuring chamber, so that the time it takes said float to pass said detector while said float is moving in said first direction or said second direction may be measured; and

means for controlling the path of fluid flow from said inlet to said outlet including operating means movable between first and second positions, whereby in said first position said operating means fluidly connects said first port to said first flow path and fluidly connects said second port to said fourth flow path, and in said second position said operating means fluidly connects said first port to said third flow path and said second port to said second flow path whereby when said operating means is in said first position said fluid is permitted to flow from said inlet through said first and fourth flow paths through said measuring chamber in said first direction so as to move said float in said first direction past said detector, and when said operating means is in said second position said fluid is permitted to flow from said inlet through said second and third flow paths through said measuring chamber in said second direction so as to move said float in said second direction, opposite to said first direction, past said detector.

4,240,292

METHOD FOR TRIGGERING ULTRASONIC FLOW METER AND ULTRASONIC FLOW METER ADAPTED FOR SAME

Eduard A. Zalessky, ulitsa Tashkentskaya, 130, kv.11, and Vladimir V. Smyshlyaev, ulitsa Michurina, 116, kv. 57, both of Kuibyshev, U.S.S.R.

Filed Feb. 28, 1979, Ser. No. 16,339
Claims priority, application U.S.S.R., Mar. 3, 1978, 2585951
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.27 **9 Claims**

1. A method for triggering an ultrasonic flow meter having a synchronized ring circuit, said method comprising the steps of

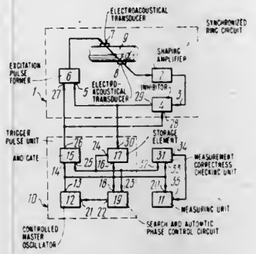
applying a train of trigger pulses to said synchronized ring circuit;

periodically turning said synchronized ring circuit on and off by said trigger pulses;

varying the repetition period of said trigger pulses within the range of possible changes of the repetition period of autocirculation pulses of said synchronized ring circuit until an autocirculation pulse is matched with a trigger pulse;

discontinuing the application of said trigger pulses to said synchronized ring circuit at the moment an autocirculation pulse is matched with a trigger pulse, by continuous automatic phase control to match the frequency of the trigger pulses with that of the autocirculation pulses; and

resuming the application of said trigger pulses to said synchronized ring circuit as soon as there are no autocirculation pulses in said synchronized ring circuit.

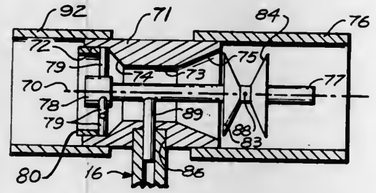


4,240,293

VORTEX GENERATING DEVICE

Nathaniel Hughes, Palm Springs, Calif., assignor to Hughes Sciences Group, Inc., Palm Springs, Calif.

Continuation-in-part of Ser. No. 886,289, Mar. 13, 1978, Pat. No. 4,189,101, and a continuation-in-part of Ser. No. 886,288, Mar. 13, 1978, Pat. No. 4,192,465. This application May 21, 1979, Ser. No. 40,557
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 **7 Claims**



1. A vortex generating device comprising:

means defining a straight passage having an inlet port and an outlet port;

a restriction formed in the passage between the inlet and outlet ports; and

first and second adjacent bluff bodies disposed between the restriction and one of the ports, the second bluff body lying between the first bluff body and the restriction to form between the bluff bodies an annular channel, the second bluff body having a flat surface facing toward the restriction.

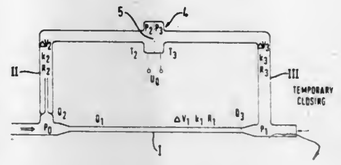
4,240,294

FLOW METER

Per-Olof Gründe, s:t Petri Kyrkogata 15, S-222 21 Lund, Sweden

Filed Dec. 15, 1978, Ser. No. 970,091
Claims priority, application Sweden, Dec. 16, 1977, 7714338
Int. Cl.³ G01F *1/38*
U.S. Cl. 73—861.47 R **15 Claims**

1. A flow meter for the registration of pulsating liquid flows, preferably for registration of small blood flows, the flow being measured by means of a differential pressure measurement over a first flow resistance (I) with the resistance R_1, and the flow meter comprising, besides the flow resistance I, also a high pressure part in the form of a flow resistance (II) and a lower pressure part in the form of a flow resistance (III) with the resistances R_2 and R_3, respectively, wherein the resistances R_1, R_2 and R_3 are selected so as to adjust the pressures on each side of the differential pressure meter in phase with each other



independent of the frequency of the flow pulsations, the flow resistances (I), (II) and (III) with the resistances R_1, R_2 and R_3, respectively, having moduli of elasticity k_1, k_2 and k_3, respectively, said factors being adapted to fulfill the following formula

$$R_2/k_2=(R_3+R_1)/k_3$$

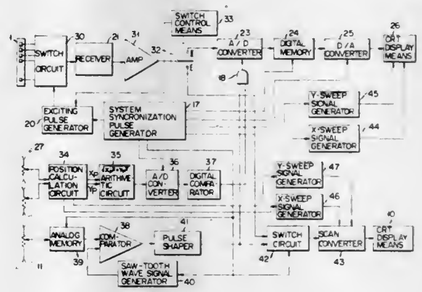
in which $1/k_1$ is approximately equal to zero, that is the flow resistance material in the main is inelastic.

4,240,295

ULTRASONIC DIAGNOSING APPARATUS

Michiyoshi Uranishi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 8, 1978, Ser. No. 958,692
Claims priority, application Japan, Nov. 10, 1977, 52-134983
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—607 **15 Claims**



1. An ultrasonic diagnosing apparatus comprising:

a probe having a plurality of transducer means for radiating ultrasonic beams toward an object to be examined and for converting ultrasonic echoes into electrical echo signals;

first display means for displaying a B-mode image of the object;

means for setting a selected C-mode cross-section to be observed and diagnosed while observing said B-mode image;

means for storing data representing the selected C-mode cross-section set by said setting means;

means for detecting the position of said probe;

means for producing control signals responsive to signals from said storing means and said detection means;

means responsive to said control signals for moving said transducer means with respect to the object;

means responsive to said control signals for electronically driving said transducer means to scan the selected C-mode cross-section;

means responsive to said control signals for processing said electrical echo signals converted by said transducer means to produce electrical signals representing the selected C-mode cross-section;

memory means responsive to said control signals for storing the electrical signals representing the selected C-mode cross-section; and

second display means coupled with said memory means for displaying an image of the selected C-mode cross-section of the object.

4,240,296

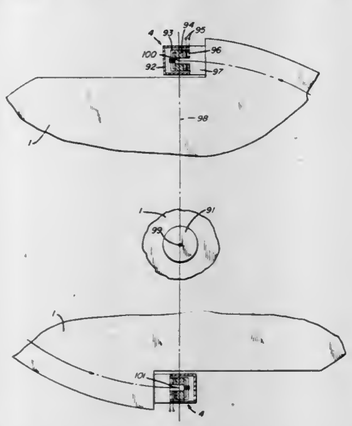
MEASUREMENT OF TORSIONAL ACCELERATION OF A ROTATING BODY

Robert M. Kolodziej, Varysburg, N.Y., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 944,526, Sep. 21, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 70,283

Int. Cl.³ G01P *15/09*

U.S. Cl. 73—650 **6 Claims**



1. A method of determining the values of acceleration torque over a range of speeds of a rotating member comprising:

mounting on a structure having vibration dampening characteristics a material pair of accelerometers each having a mass member contacting a piezoelectric member at a planar interface surface and an electrical output signal representative of the force exerted on said piezoelectric member by said mass in a direction perpendicular to said interface surface for rotation with such rotating member generally 180° about the axis of rotation of said rotating member;

positioning said accelerometers generally tangential to the rotation of such rotating member and such that the centers of mass of both of said mass members lie on a line with and generally equally spaced from the center of rotation of said rotating member;

further positioning said accelerometers such that each of said interface surfaces are parallel to such line;

summing the output signals of said accelerometers; and

accelerating said rotating member over a range of rotational velocities while analyzing such sum as representative of the acceleration torque of such rotating member as a function of speed.

4,240,297

PRESSURE GAUGE FOR SPHYGMOMANOMETERS

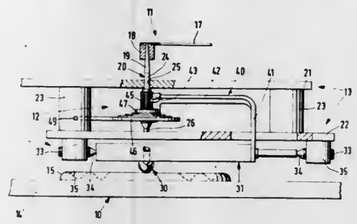
Blasius Speidel, Hochmeisterstrasse 33, 7455 Jungingen, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,410

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812755

Int. Cl.³ G01L *7/08*

U.S. Cl. 73—711 **12 Claims**



1. A pressure gauge of the type which gives a pressure indication by means of a rotating indicator comprising in combination:

a pressure gauge frame;

a sensing shaft journalled in the pressure gauge frame for rotation about a sensing shaft axis;

pressure sensing means associated with the sensing shaft and operable to transduce and convert pressure values into corresponding angular displacements of the sensing shaft;

a pointer shaft journalled in the pressure gauge frame for rotation about a pointer shaft axis which is oriented substantially perpendicularly to the sensing shaft axis, the pointer shaft carrying said rotating indicator; and

a magnifying angle gear drive connecting the sensing shaft to the pointer shaft in such a way that small angular displacements of the sensing shaft create much larger angular displacements of the pointer shaft, the angle gear drive including a gear segment on the sensing shaft and a cooperating pinion on the pointer shaft; and wherein

the pinion on the pointer shaft is a spur gear whose teeth are parallel to the pointer shaft axis;

the gear segment is in the form of a drive arm, which has one extremity fixedly attached to the sensing shaft and includes on its other extremity a tooth-carrying yoke in the shape of a sector of a thin-walled tubular body, the teeth of the gear segment extending axially and in a radial plane with respect to the sensing shaft; and

the gear segment defines a means for changing the mangification ratio of the angle gear drive to a higher or lower ratio by providing adjustability of the radial distance of the teeth-carrying yoke from the sensing shaft axis.

4,240,298

MOTION AMPLIFIER FOR CONDITION RESPONSIVE GAUGE INSTRUMENT

Richard H. Wetterhorn, Fairfield, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 708,470, Jul. 26, 1976, abandoned, which is a continuation of Ser. No. 413,483, Nov. 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 186,120, Oct. 4, 1971, abandoned. This application Dec. 12, 1977, Ser. No. 859,514

Int. Cl.² G01L *7/04*

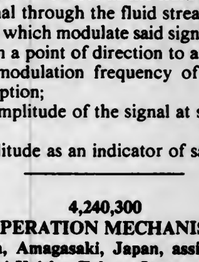
U.S. Cl. 73—732 **54 Claims**

1. A condition responsive gauge instrument comprising:

(a) a condition responsive element for producing a single output motion in response to condition changes in a pressure source to which it is connected;

(b) axis means defining a pivot axis; and

(c) a two stage motion amplifier means operably supported on said condition responsive element for floating conjoint movement therewith; said motion amplifier means cooperatively interacting in its motion path with said axis means to produce an output motion correlated to the condition change motion incurred by said condition responsive element;



(d) said amplifier means being adapted to receive its input from the produced motion of said condition responsive element whereby the first of said stages produces a multiplied output of the input received from said condition responsive element and the second stage produces a multiplied output of an input received from the output of the first stage.

4,240,299

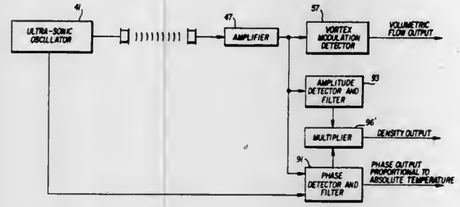
METHOD AND APPARATUS FOR DETERMINING FLUID DENSITY AND MASS FLOW

Robert D. Joy; Richard J. Mahany; Glenn A. Thorne, and Russell F. Colton, all of Cedar Rapids, Iowa, assignors to J-Tec Associates, Inc., Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 2,644, Jan. 11, 1979, abandoned. This application Jan. 11, 1980, Ser. No. 111,501

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.23 **33 Claims**



1. A method of determining the density of a fluid stream, comprising the steps of:

generating Karman vortices in the fluid stream;

directing a signal through the fluid stream toward the Karman vortices which modulate said signal, said signal being directed from a point of direction to a point of reception;

detecting the modulation frequency of the signal at said point of reception;

detecting the amplitude of the signal at said point of reception; and,

using said amplitude as an indicator of said density.

4,240,300

OPERATION MECHANISM

Katsufusa Tanaka, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

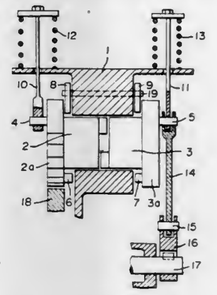
Filed Aug. 8, 1978, Ser. No. 932,083

Claims priority, application Japan, Aug. 8, 1977, 52/95431

Int. Cl.³ F16M *5/40*

U.S. Cl. 74—2 **9 Claims**

1. An operation mechanism which comprises a first resilient member for storing and releasing energy required for a reciprocal movement of a drivable member; an input shaft having a first pin for rotatably holding an end of a first rod connected to said first resilient member at an eccentric position; a second resilient member for storing and releasing energy required for returning the drivable member; and an output shaft having a second pin for rotatably holding an end of a second rod connected to the second resilient member and an end of an output rod for operating the drivable member at an eccentric position;



wherein one end of the input shaft and one end of the output shaft are facing and coaxial and a clutch for interlocking the ends of said facing shafts for one half turn with a free rotation of the other half turn is formed on said facing shafts and the output rod connected to the output shaft is reciprocally moved during intermittent movement of the input shaft and the output shaft for about a half-turn in one direction.

4,240,301

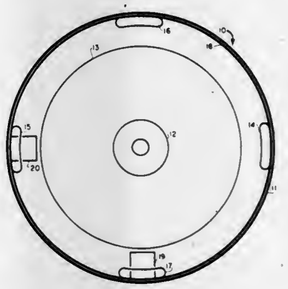
FREE GYRO MOTOR DRIVE CIRCUIT

George D. Mason, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 965,806

Int. Cl.³ G01C *19/08*

U.S. Cl. 74—5.7 **13 Claims**



1. A free gyro motor drive circuit comprising:

a gyro motor having a cylindrical housing; a shaft rotatable in said cylindrical housing; a permanent magnet mounted on said shaft; a first up-down motor coil, having an input terminal, connected in series to a second up-down motor coil, having an input terminal, each of said up-down motor coils being mounted on an internal wall of said cylindrical housing and being positioned 180° apart; and a first right-left motor coil, having an input terminal, connected in series to a second right-left motor coil, having an input terminal, each of said right-left motor coils being mounted on said internal wall of said cylindrical housing, being positioned 180° apart, and 90° from said first up-down motor coil;

first sensing means mounted on said internal wall of said cylindrical housing, mounted in line with said first up-

down motor coil, and having an output, for generating an up-down sinusoidal position signal having a frequency corresponding to the rotational speed of said gyro motor;

second sensing means; mounted on said internal wall of said cylindrical housing, mounted in line with said first right-left motor coil, located 90° from said first sensing means, and having an output; for generating a right-left sinusoidal position signal having a frequency corresponding to the rotational speed of said gyro motor;

comparing means, having an input connected to said output of said first sensing means and an output, for converting said up-down sinusoidal position signal to a constant amplitude position signal having a frequency identical to the frequency of said up-down sinusoidal position signal;

first filtering means having an input effectively connected to said output of said comparing means and an output for passing said constant amplitude position signals below a predetermined cut off frequency to obtain a fixed amplitude position signal;

absolute value circuit means, having an input operatively connected to said output of said first filtering means and an output, for converting said fixed amplitude sinusoidal position signal to a full wave rectified position signal;

second filtering means, having an input connected to said output of said absolute value circuit means and output, for changing said full wave rectified position signal to a direct current error signal;

polarity and temperature control circuit means, having an output, for determining a frequency at which said direct current error signal will change polarity and to compensate for temperature variations affecting the performance of the free gyro motor drive circuit;

a summer having an input effectively connected to said output of said second filtering means and said output of said polarity and temperature control circuit means;

first speed control circuit means, having a first input connected to said output of said first sensing means, and a second input connected to said output of said summer, for producing an up-down motor control signal having an output voltage proportional to the product of said up-down sinusoidal position signal and said direct current error signal;

second speed control circuit means, having a first input connected to said output of said second sensing means, and a second input connected to said output of said summer for producing a right-left motor control signal having an output voltage proportional to the product of said right-left sinusoidal position signal and said direct current reference signal;

first motor drive circuit means, having an input connected to said output of said first speed control circuit means, a first output effectively connected to said input terminal of said first up-down motor coil, and a second output effectively connected to said input terminal of said second up-down motor coil, for amplifying said up-down motor control signal; and

second motor drive circuit means, having an input connected to said output of said second speed control circuit means, a first output effectively connected to said input terminal of said first right-left motor coil and a second output effectively connected to said input terminal of said second right-left motor, for amplifying said right-left motor control signal.

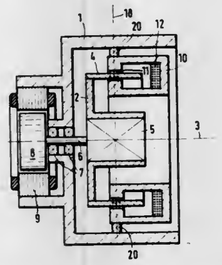
4,240,302

GYROSCOPIC INSTRUMENT

Hartmut Karnick, Kiel, Fed. Rep. of Germany, assignor to Anschütz & Co., G.m.b.H., Fed. Rep. of Germany

Filed Nov. 2, 1977, Ser. No. 847,734
Int. Cl.³ G01C *19/30;* G01P *3/49*
U.S. Cl. 74—5.46 **15 Claims**

1. In a gyroscopic instrument, the combination comprising a frame, a gyroscope rotor including a co-axial drum-shaped sleeve of a non-magnetic and electrically conductive material, means for mounting said rotor within said frame for rotation and for universal pivotal movement about axes intersecting the axis of rotation of said rotor, a magnetic device having outer magnetic pole means, inner magnetic pole means surrounded thereby and a gap therebetween, the field lines produced by said pole means extending transversely through said gap, means on said frame and on said magnetic device for so mounting said magnetic device non-rotatably as to locate said sleeve within said air gap with a radial clearance affording said sleeve pivotal movability relative to said magnetic device about said axes, and driving means carried by said frame and connected to said rotor whereby rotation of said gyroscopic rotor causes said magnetic device to induce eddy currents in said sleeve producing electro-motive forces and a resultant tendency of



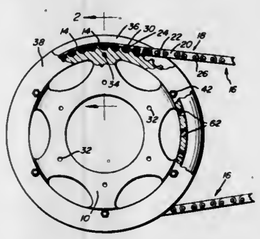
said rotor, in event of a deviation of the rotor axis from the axis of said magnetic device, to perform a precessional motion eliminating said deviation, the gap of said magnetic device being confined by a pair of evenly spaced opposed annular cylindrical faces of said pole means, the width of said faces being smaller than the axial length of said sleeve, both ends of said sleeve projecting out of said gap, said magnetic device being of a type producing in said gap a magnetic field of circumferentially uniform strength between said opposed annular faces, said magnetic field being normally located symmetrically with respect to a median plane extending transversely of said gyroscope rotor, said plane containing the point of intersection of said axes about which said universal pivotal movement takes place.

4,240,303

CHAIN SPROCKET WITH OPPOSITE FRANGIBLE SIDE GUIDE PLATES

Earnest D. Mosley, P.O. Box 4922, Greenville, Miss. 38701

Filed Sep. 27, 1978, Ser. No. 946,102
Int. Cl.² F16H *55/30, 57/04*
U.S. Cl. 474—144 **10 Claims**



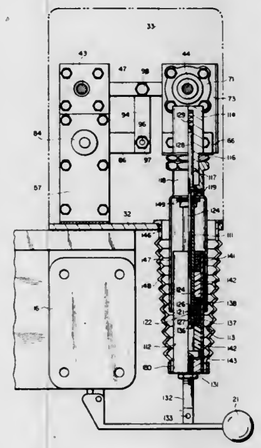
1. A chain driven wheel sprocket for use in driving the rear wheel of a racing motorcycle wherein the sprocket is driven by a sprocket chain mechanically engageable therewith, and the sprocket is provided with opposite frangible side guide flanges having at least substantially parallel opposing flange guide surfaces for retaining therebetween the sprocket chain with a total lateral clearance between the guide surfaces and chain of from 0 to about 0.050 inches, said flange guide surfaces projecting outwardly beyond the chain at least the radial height of the chain and being constructed of a non-metallic frangible material having a minimum elastic limit such that breaking of the guide flange, rather than permanent deforming thereof, occurs under lateral impact or force, whereby continued operation of the chain and sprocket is not substantially impaired after occurrence of such lateral impact or force on the guide flange.

4,240,304

VALVE OPERATING SYSTEM

Edward E. Griffiths, 6499 Trinidad Dr., San Jose, Calif. 95120

Filed Jun. 30, 1978, Ser. No. 920,674
Int. Cl.³ F16K *31/05;* G05G *9/00, 11/00, 5/06*
U.S. Cl. 74—471 R **14 Claims**



1. In a valve operator: an input member adapted to be connected to a drive source for movement in an axial direction, an axially movable output member positioned telescopically of the input member for connection to the operating member of a valve, detent means for locking the input and output members together for movement in concert, said members being free for axial movement relative to each other when not locked together by the detent means, and means for selectively actuating the detent means to lock the input and output members together.

4,240,305

RETAINING CLAMP FOR AN ADJUSTABLE STEERING COLUMN

Ermanno Denaldi, Turin, and Gian P. Rolfo, Grugliasco, both of Italy, assignors to Fiat Veicoli Industriali S.p.A., Turin, Italy

Filed Nov. 9, 1978, Ser. No. 959,133
Claims priority, application Italy, Nov. 9, 1977, 69506 A/77
Int. Cl.³ B62D *1/22*
U.S. Cl. 74—493 **9 Claims**

1. A retaining clamp for a motor vehicle steering column which is adjustable longitudinally and angularly about a pivot axis transverse its longitudinal axis, wherein said clamp comprises:

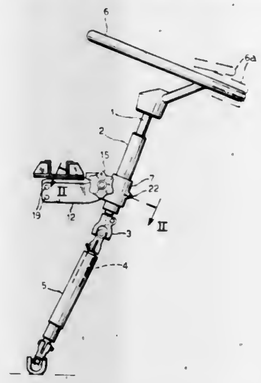
a bracket adapted to be fixed to a vehicle body cross member and having means defining said pivot axis of said steering column;

a resilient seat member defining a seat for said steering column having an axis coaxial with said longitudinal axis of said steering column in use, said seat member having two arms extending substantially in the same direction transverse to said seat axis and engaged with said bracket for pivotal movement about said pivot axis; and

a manually operable screw clamp for clamping said arms to said bracket and for simultaneously clamping said seat member against said steering column, in use, to retain it in said seat, said clamp being manually releasable to allow axial sliding movement of said steering column relative to said seat member and pivotal movement of said steering column with said seat member about said pivot axis,

wherein said screw clamp has a screw-threaded shaft which defines said pivot axis,

each of said arms of said seat member is formed with a frusto-conical surface and said bracket has two plates each having a complementary frusto-conical surface engaged with a respective frusto-conical surface on an arm, said arms being clamped between said bracket plates and said frusto-conical surfaces being wedged together on tightening of said clamping screw, said frusto-conical surfaces



acting as bearing surfaces for pivoting of said seat member when said clamp is released,

each said plate has a projection upon which said complementary frusto-conical surface is formed and which defines an aperture coaxial with said complementary frusto-conical surface;

said screw-threaded shaft extends through said apertures and has a head at one end which abuts an outer face of one of said plates and a manually rotatable knob threaded onto its opposite, screw-threaded end, said knob being adapted to exert pressure on a face of the other of said plates, and

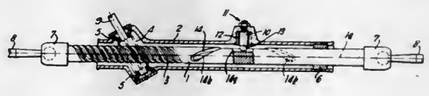
said plates are resiliently deformable such that, upon tightening of the clamp by rotation of said knob, said plates are deformed towards each other to clamp the arms of the seat member between them.

4,240,306

RACK AND PINION ASSEMBLIES

Frederick J. Adams, Clevedon, England, and Ralph M. Lehman, Chagrin Falls, Ohio, assignors to Cam Gears Limited, Hertfordshire, England

Filed Jan. 9, 1978, Ser. No. 868,114
Claims priority, application United Kingdom, Jan. 10, 1977, 722/77
Int. Cl.³ B62D *1/20*
U.S. Cl. 74—498 **3 Claims**



1. A variable ratio steering apparatus for use in effecting turning movement of a steerable vehicle wheel, said apparatus comprising a longitudinally extending rack gear movable along its longitudinal central axis to transmit an axially di-

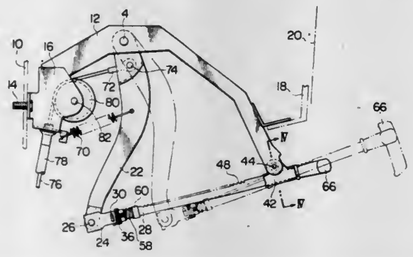
rected force, said rack gear being adapted to be connected with the steerable vehicle wheel to effect turning movement of the steerable wheel under the influence of the axially directed force, a pinion gear disposed in meshing engagement with said rack gear and adapted to be connected with a manually actuatable input member to effect movement of said rack gear along its longitudinally extending central axis in response to movement of the input member, and control means connected with said rack gear for effecting a variation in the rate of movement of said rack gear along its longitudinal central axis to thereby vary the rate of turning movement of the steerable vehicle wheel, said control means including a cam track disposed on and movable with said rack gear and a cam follower which cooperates with said cam track to effect rotational movement of said rack gear relative to said pinion gear and to hold said rack gear against rotational movement relative to said pinion gear, said cam track having a central region which extends parallel to the longitudinal central axis of said rack gear and a pair of end regions which extend from opposite ends of said central region in directions transverse to the central axis of said rack gear, said cam follower cooperating with said cam track to hold said rack gear against rotational movement during engagement of said cam follower with said central region of said cam track during one portion of the movement of said rack gear along its longitudinal central axis to thereby render said control means ineffective to vary the rate of turning movement of the steerable vehicle wheel during said one portion of the movement of said rack gear along its longitudinal central axis, said cam follower cooperating with said end regions of said cam track to effect rotational movement of said rack gear relative to said pinion gear during engagement of said cam follower with said end regions of said cam track during other portions of the movement of said rack gear along its central axis to thereby render said control means ineffective to vary the rate of turning movement of the steerable vehicle wheel during the other portions of movement of said rack gear along its longitudinal central axis.

4,240,307

PARKING BRAKES

Takeo Yamazaki, Anjoshi, and Shigeki Miyagishi, Toyotashi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariyashi, Japan

Filed Sep. 20, 1978, Ser. No. 944,204
Claims priority, application Japan, Sep. 25, 1977, 52-115055
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—503 **5 Claims**



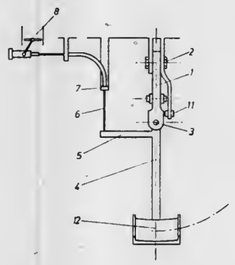
1. A hand-operated parkig brake mechanism, comprising:
a fixed bracket;
a lever having a free end pivotally mounted on a first shaft on the bracket and being connected with a brake cable;
a sleeve pivotally mounted on a second shaft on the free end of the lever, said second shaft extending normal to a plane in which the lever pivots;
a plunger having a handle at a free end to be gripped in a driver's palm for being pulled when the parking brake is applied, the plunger being rotatably connected with the sleeve whereby the plunger may rotate about its longitudinal axis through an angle and is provided with a longitudinal series of ratchet teeth;
first spring means urging said plunger toward rotation in one direction and second spring means normally urging the plunger reversely to the pulling direction of the plunger,
a guide member on the bracket for supporting the plunger slidably and swingably in the plane,
a pawl,
third spring means normally urging said pawl toward engagement with the ratchet teeth,
a locking member mounted on and longitudinally extending along the plunger in sliding fitted relation therewith, said sleeve further being provided with means for engaging the terminal end of the locking member to thereby lock the plunger against rotation around its axis,
fourth spring means normally urging the locking member toward engagement with the means for engaging the terminal end of the locking member, and
a hook at an end of the locking member adjacent the handle of the plunger at the opposite side to the driver to be gripped in the driver's palm together with the handle when the brake is applied without any conscious effort.

4,240,308

COMBINED PEDAL MECHANISM FOR COMBINED ACCELERATOR AND BRAKE PEDAL FOR MOTOR-CARS

Gösta E. Berggren, Hjälmhultsgatan 16 B, S-252 41 Helsingborg, Sweden

Continuation-in-part of Ser. No. 517,667, Oct. 24, 1974. This application Feb. 10, 1977, Ser. No. 767,470
Int. Cl.³ G05G *1/14*
U.S. Cl. 74—512 **7 Claims**



1. A pedal assembly for simultaneously and continuously controlling the brake system and the power supply system having fuel supply means for a power driven vehicle, said assembly comprising:
(a) a single pedal having a first arm portion and a second arm portion;
(b) the first arm portion being effective to move to various power supply working positions in a first plane of operation and the second arm portion being effective to move to various brake working positions in a second plane of operation normal to said first plane;
(c) said second arm portion being connected to the brake system to effect braking while at a brake working position of said second arm portion in said second plane of operation;
(d) blocking means being disposed adjacent the second arm portion and being effective to prevent unintentional operation of the second arm portion while located in a non-braking position during operation of the first arm portion; and
(e) Bowden cable means, having a first end, a second end, a casing and a wire movably disposed in said casing;
(f) the first end being connected to said power supply means of the vehicle;
(g) the second end being connected to the first arm portion

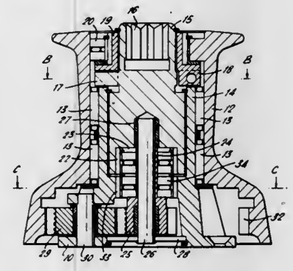
to control said power supply means while at working position of said first arm portion in said first plane of operation;
(h) said casing of said Bowden cable means at said second end being fixed to the vehicle frame a spaced distance below said first plane in the direction of braking;
(i) said wire of said Bowden cable means at said second end being attached to the first arm portion, whereby braking action of said second arm portion is effective to automatically and continuously reduce the power supply without moving the first arm portion in said first plane of operation;
(j) a movement of the first arm portion in its first plane of operation being effective to control the power supply means upon simultaneous braking of the vehicle.

4,240,309

RATCHET DEVICES

David Tyler, 6, Church Rd., Warsash, Southampton, England

Filed Mar. 6, 1978, Ser. No. 883,889
Claims priority, application United Kingdom, Mar. 7, 1977, 9428/77
Int. Cl.³ F16H *5/52*; B66D *1/30*; B25B *13/46*
U.S. Cl. 254—369 **10 Claims**



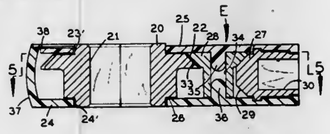
1. A winch including a drum rotatable on a normally fixed member, a driving member extending into the drum, and first and second ratchet means through which the driving member rotates the drum, the drum being rotatable in a first direction through the first ratchet means by turning the driving member in said first direction, and also being rotatable in said first direction through the second ratchet means by turning the driving member in the opposite direction, drive coupling means being provided which permit to-and-fro movement of the driving member without manual manipulation of said drive coupling means to enable the driving member to turn the drum through said second ratchet means alternately driving said drum in said first direction and moving freely in said other direction without transmitting drive to the drum.

4,240,310

SOCKET WRENCH

Edmund H. Roth, 6310 SW. 4th Pl., Margate, Fla. 33063

Filed Mar. 28, 1979, Ser. No. 24,526
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.29 **2 Claims**



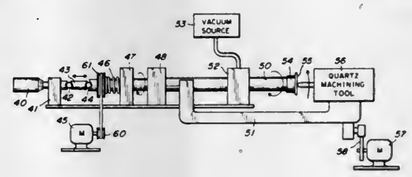
1. In a power-driven socket wrench having:
a socket member with a polygonal central opening for engaging a nut or a bolt head;
and a holder extending circumferentially around and rotatably supporting said socket member for rotation on an axis at the center of said opening;
said socket member having a series of gear teeth thereon extending circularly around its axis;
said socket member having an axial length which is substantially less than its width transverse to said opening;
said holder where it surrounds the socket member also having a dimension axially of said socket member which is substantially less than its width thereat tranversely of the socket member, whereby the holder with the rotatable socket member therein is insertable into a closely confined space;
the improvement which comprises:
a rotary input gear located in said holder completely to one side of the socket member and rotatable on an axis extending perpendicular to the rotational axis of the socket member, said input gear having an axial recess in its outer end for receiving a power-driven rotary shaft and having a series of gear teeth on its inner end extending circularly about its axis;
and an intermediate gear located in said holder at said one side of the socket member between said input gear and said socket member, said intermediate gear being rotatable on an axis extending parallel to the rotational axis of said socket member and having a circular series of gear teeth which mesh with said gear teeth on the input gear and with said gear teeth on the socket member for imparting the power drive from the input gear to the socket member.

4,240,311

QUARTZ CRYSTAL RESONATOR

William T. Shinn, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 826,488, Aug. 22, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,834
Int. Cl.³ B23B *5/40*
U.S. Cl. 82—12 **3 Claims**



1. Apparatus for providing a recessed portion of a predetermined shape in at least one of the major surfaces of a wafer, comprising:
a rotary shaft having first and second end portions, the first end portion being concave and the second end portion having means for holding a wafer;
means for rotating said rotary shaft, said rotating means including bearing means for supporting said rotary shaft, pulley means, and motor means coupled to said rotary shaft by the pulley means for rotating said rotary shaft;
machining means for machining at least one of the major surfaces of the wafer to form a recessed portion of a predetermined shape, said machining means including a machining tool, a radius arm means coupled to the machining tool at one end and a pivot support at the other end, cam means, and motor means coupled to the machining tool by the cam means for pivoting the machining tool through an arc defined by the radius arm means and the pivot support to machine at least one of the major surfaces of the wafer to form a spherical, convex recessed portion; and
measuring means for adjusting the thickness of the machined recessed portion of the wafer, said measuring means including micrometer means, support means for supporting the micrometer means, and coupling means for coupling the supported micrometer means to said rotary shaft, said

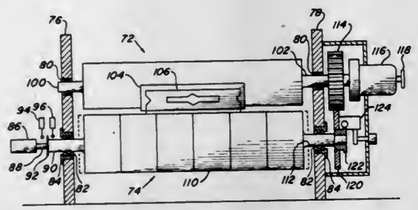
coupling means further including spring means, first and second ball bearings and an intermediate shaft with concave first and second end portions, the micrometer means including a shaft with a concave end portion, the first ball bearing engaging the concave end portion of the micrometer shaft and the concave first end portion of the intermediate shaft, the second ball bearing engaging the concave second end portion of the intermediate shaft and the concave first end portion of said rotary shaft, and the spring means engaging the support means and providing a bias force for retaining the first and second ball bearings between the respective concave end portions.

4,240,312

APPARATUS FOR IMPROVING WEAR LIFE OF ROTARY DIE CUTTER ANVIL COVERS

William F. Ward, Sr., Hampstead, Md., assignor to The Ward Machinery Company, Cockeysville, Md.

Filed May 15, 1979, Ser. No. 39,131
Int. Cl.³ B23D *25/12*; B26D *1/56*
U.S. Cl. 83—311 **4 Claims**



1. Apparatus for extending the useful life of a resilient cover on an anvil roll for a rotary die cutter comprising in combination:

a die holder roll, having die cutting rules mounted thereon, rotatable at a first selected speed;

a laterally reciprocable anvil roll, having said resilient cover thereon adapted for penetration by said die cutting rules, including a first gear associated therewith and driven by a second gear on said die holder roll, rotatable at a second selected speed different from said first selected speed of said die holder roll tending to cause said die cutting rules to penetrate said cover at first sequential circumferentially spaced locations upon successive revolutions of said anvil roll; and

speed changing means including gear means, connected between said first gear and said anvil roll, operable in response to lateral reciprocation of said anvil roll for adding to and subtracting from the speed provided by said first gear to add to and subtract from the speed of said anvil roll an amount less than the difference between said first and second selected speeds causing said die cutting rules to actually penetrate said cover at a second different location circumferentially spaced from said first different location upon substantially successive revolutions of said anvil roll.

4,240,313

ROTARY CUTTING KNIFE MOUNTING

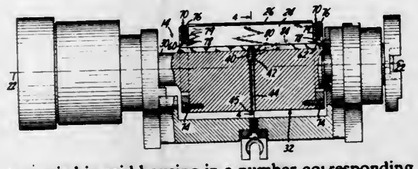
Andrew J. Gillespie, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,782
Int. Cl.³ B23D *25/00*
U.S. Cl. 83—343 **9 Claims**

1. Improved apparatus for sectioning a continuous web of the type having:

a rotary drum over which the web passes in a winding course thereon, and

a rotary cutter assembly including a housing and a plurality of cutting knives carried in said housing, the rotary drum and the cutter assembly being rotatable about parallel axes, the knives on said cutter assembly being elongated and having cutting edges thereof which are disposed parallel to said axes of rotation, said cutting edges being brought into contact with the surface of said rotary drum to effect sectioning of said web thereon during rotation of said rotary drum and said cutter assembly, wherein the improvement comprises:



pivots carried in said housing in a number corresponding to the number of cutting knives in the plurality, each knife being received on an associated one of said pivots, and

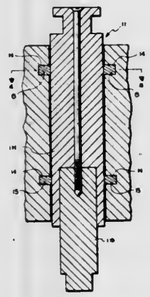
elastic means engaged with the ends of each such knife and normally applying bias directed radially inwardly of said cutter assembly to each such knife to maintain the cutting edge thereof parallel to said fixed axes and to urge each such knife against the associated pivot.

4,240,314

CENTERING AND WEAR COMPENSATING MEANS FOR PUNCH PRESSES AND THE LIKE

John W. Teeslink, Clearfield, Utah, assignor to TLC Engineering, Inc., Layton, Utah

Filed Jun. 19, 1979, Ser. No. 50,145
Int. Cl.³ B26F *1/14*
U.S. Cl. 83—635 **7 Claims**



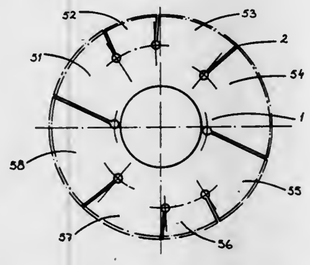
1. An improvement in punch presses and the like, including a turret having at least one machined bore therethrough adapted to receive the elongate shaft portion of a tool holder in close tolerances therein for longitudinal reciprocal movement of said shaft in said bore, the improvement, whereby the usable life of the turret bore, tool holder, tool and die of such press is significantly increased, comprising providing at least three equiangularly spaced wells of uniform depth extending into said turret from the wall of the bore therein in a direction substantially normal to the axis of said bore; positioning plugs of a resilient, long wearing, self-lubricating material, lengthwise into said wells, respectively, said plugs having a length greater than the depth of said wells, so that the plugs are compressed into the respective wells by the shaft of said tool holder when said shaft is centered in said bore, with said plugs being maintained in compressed, sliding engagement with the surface of said shaft as said shaft reciprocates in said bore.

4,240,315

CIRCULAR SAW BLADE

Jorma Tuomaala, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Feb. 8, 1979, Ser. No. 10,370
Claims priority, application Finland, Feb. 16, 1978, 780507
Int. Cl.³ B27B *33/08*
U.S. Cl. 83—848 **2 Claims**



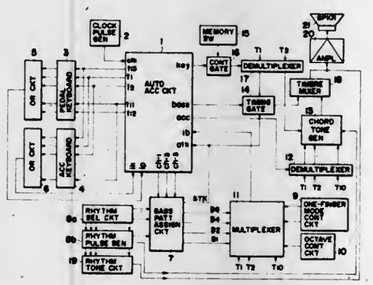
1. A circular saw blade divided into two sections by means of two radial slots which extend from the periphery of the blade inwardly almost to the eye of the blade, and each section of the blade is further divided into a plurality of sectors by means of radial slots of different length, two adjacent sectors having a different size, different weight, and different natural frequency.

4,240,316

KEYBOARD TYPE ELECTRONIC MUSICAL INSTRUMENT

Yasuhiko Okuyama; Koji Tanaka, both of Ora; Yoshiro Nakayama, Kumagaya, and Hiroshi Kato, Ageo, all of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Jun. 12, 1978, Ser. No. 914,684
Claims priority, application Japan, Jun. 17, 1977, 52-71682; Jun. 17, 1977, 52-71683; Sep. 9, 1977, 52-107980; Sep. 22, 1977, 52-114145; Nov. 7, 1977, 52-133345; Nov. 10, 1977, 52-135117
Int. Cl.³ G10H *1/38, 5/00*
U.S. Cl. 84—1.01 **13 Claims**



1. A keyboard type electronic musical instrument including a keyboard comprising a plurality of keys and corresponding key switches, said instrument comprising:

note signal generator means for generating binary information corresponding to respective notes of a keyboard sequentially and cyclically by utilizing timing pulses of a fixed frequency,

converter circuit means for sequentially decoding said binary information to form parallel signals of respectively different timings and for supplying the timing signals to respectively corresponding said key switches of said keyboard,

key switch circuit means for actuating, upon depression of at least one key of said keyboard, corresponding said key switch of said at least one depressed key so as to deliver said supplied timing signal,

OR circuit means for OR-processing all the timing signals obtained from said key switch circuit means into a key depression signal of time-divided serial timing defining one of a note and chord and for transmitting said key depression signal by one signal line of said keyboard,

note/chord detection and storage means for detecting the one of said note and chord assigned by the key depression signal of time-divided serial timing,

tone signal production means for producing a tone signal in correspondence to the detected one of said note and chord assigned by the key depression signal of time-divided serial timing, and

output means for amplifying said tone signal and driving a loudspeaker, whereby to produce the detected one of said note and chord defined by said key depression signal of time-divided serial timing;

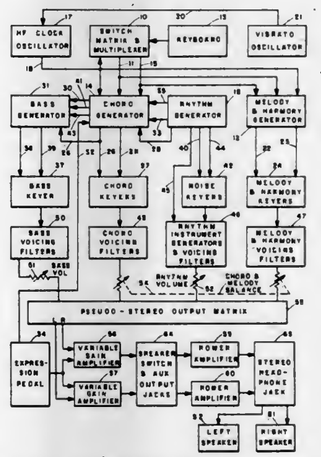
wherein said instrument further comprises waveshaping circuit means for strobing the key depression signals fed from said OR circuit means and for delaying the key depression signal with one timing, thereby minimizing an influence due to signal transmission lag between said converter circuit means and said note/chord detection and storage means.

4,240,317

ELECTRONIC MUSICAL INSTRUMENT

Gerald L. Kmetz, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 9, 1977, Ser. No. 831,876
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **3 Claims**



1. An electronic musical instrument, comprising

a keyboard having a plurality of keys for selecting predetermined musical notes in predetermined octaves;

an oscillator for providing a high frequency clock signal;

an encoder coupled to the keyboard for providing digital note address signals in response to manipulation of the keys on the keyboard, wherein the least significant bits of each said note address signal indicate a predetermined musical note and the most significant bits of each said note address signal indicate a predetermined octave;

a note generator responsive to said note address signal for providing an output frequency signal corresponding to said selected musical note in said selected octave, wherein the note generator includes

a control ROM that is responsive to said least significant bits of said note address signal for providing a note control signal;

a programmable divider that is responsive to said note control signal for dividing said high frequency clock signal to provide a signal corresponding to said predetermined musical note;

a plurality of frequency dividers connected in series to the output of the programmable divider for providing from their respective outputs a plurality of signals corresponding to said selected musical note in successively lower octaves; and

an octave multiplexer that is responsive to said most significant bits of said note address signal for selecting one of said plurality of series connected frequency dividers to provide said output frequency signal corresponding to said selected musical note in said selected octave; and

wherein the encoder comprises

a clock circuit for providing a pulsed scan clock signal;

a keyswitch matrix connected to the keyboard wherein the matrix includes columns and rows of conductors and a plurality of keyswitches, wherein each of the keyswitches is arrayed in the matrix for connecting the conductor of a given row to the conductor of a given column in response to said manipulation of a given key in the keyboard, and wherein the columns correspond to the notes in an octave and the rows correspond to a predetermined number of octaves;

a first counter connected to the clock circuit for counting the pulses in said scan clock signal to provide a count corresponding to said notes;

a second counter connected to the first counter for counting multiples of said number of notes in a octave to provide a count of said octaves;

a decoder connected to the rows of the keyswitch matrix and to the second counter for sequentially providing pulses in the rows of the keyswitch matrix corresponding to said octave count;

a multiplexer connected to the columns of the keyswitch matrix and to the first counter for scanning the columns of the keyswitch matrix at the rate of said scan clock signal to thereby provide a serial keyboard data signal including pulses provided from the keyswitch matrix in response to manipulation of the keys, wherein each pulse in said serial keyboard data signal corresponds to a selected musical note in a selected octave;

a memory connected to the first and second counters for receiving a digital scan address signal wherein the least significant bits are received from the first counter and correspond to the notes corresponding to the columns in the keyswitch matrix, and the most significant bits are received from the second counter and corresponds to said octaves corresponding to the rows in the keyswitch matrix; and

a control logic circuit including a logic gate that is enabled by a said pulse in said serial keyboard data signal for enabling the memory to store said scan address signal;

wherein the memory is connected to the note generator for providing said stored scan address signal to the note generator as said note address signal;

wherein the control logic circuit further includes

a busy signal generator coupled to the memory and responsive to said pulse in said serial keyboard data signal that enabled the memory to store said scan address signal, for generating a busy signal for so long as the key that was manipulated to provide said pulse continues to be manipulated; and

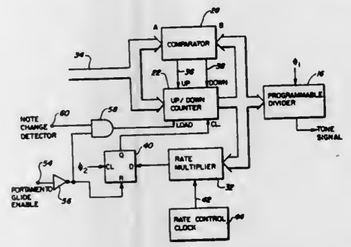
wherein the logic gate is inhibited by said busy signal from enabling the memory to store said scan address signal in response to a subsequent pulse in said serial keyboard data signal.

4,240,318

PORTAMENTO AND GLIDE TONE GENERATOR HAVING MULTIMODE CLOCK CIRCUIT

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Jul. 2, 1979, Ser. No. 53,791
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.01 **24 Claims**



1. In a musical instrument of the type having a tone generator operable in response to a clock signal for developing a tone signal having a frequency sweeping one or more musical intervals, the improvement comprising:

a rate control clock developing an output signal comprising a train of pulses having a constant repetition rate; and

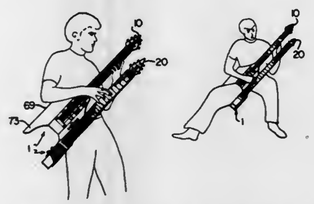
means responsive to said rate control clock and to said musical instrument for developing a clock signal for operating said tone generator, said clock signal having a repetition rate which varies exponentially with time at a rate determined according to the number of musical intervals to be swept by said tone signal.

4,240,319

ELECTRIC GUITARS

Charles C. Soupios, 69 Thomas Ave., Bethpage, N.Y. 11714

Filed Feb. 16, 1979, Ser. No. 12,791
Int. Cl.³ G10D *1/08, 3/06*
U.S. Cl. 84—263 **11 Claims**



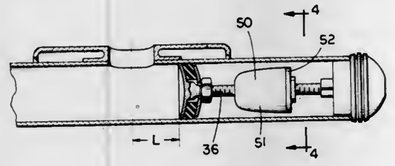
1. A multiple neck stringed musical instrument in the nature of an electric guitar adapted for two-voice play comprising a base member and a first and second stringed neck extending therefrom, said second neck extending from the base member parallel to the first neck, spaced apart therefrom, and offset laterally and longitudinally thereof whereby the played upon face of said second neck is positioned relative to the played upon face on said first neck for simultaneous independent play on each neck.

4,240,320

HEADJOINT STOPPER

James J. Pellerite, 109 N. Glenwood Ave. W., Bloomington, Ind. 47401

Continuation-in-part of Ser. No. 964,048, Nov. 27, 1978, abandoned. This application Mar. 21, 1980, Ser. No. 132,371
Int. Cl.³ G01D *7/02*
U.S. Cl. 84—384 **17 Claims**



1. A headjoint stopper for the headjoint of a flute, said headjoint stopper comprising:

a bottom disc member having a concave embouchure-hole-facing side and a back side and having an external configuration sized to fit the inside of said headjoint with metal-to-metal contact around the entire circumference of said bottom disc member providing a seal between said headjoint and disc;

a deformable sealing member positioned against said back side; and

means for compressing said deformable sealing member against said back side whereby the thickness of said deformable sealing member is decreased while the perimeter length of said deformable sealing member is increased.

14. A headjoint stopper for the headjoint of a flute, said headjoint stopper comprising:

a bottom disc member having a concave embouchure-hole-facing side and a back side and having an external configuration sized to fit the inside of said headjoint with metal-to-metal contact;

a deformable sealing member positioned against said back side;

means for compressing said deformable sealing member against said back side whereby the thickness of said deformable sealing member is descreased while the perimeter length of said deformable sealing member is increased;

a crown fitting mounted on the headjoint so as to close off the end of the headjoint and define a chamber within said headjoint and between said headjoint stopper and said crown fitting;

a stem attached to said bottom disc member and extending into said chamber; and

a cork dampener mounted on said stem within said chamber and of sufficiently small size to be spaced from the headjoint.

4,240,321

KEYBOARD ASSEMBLY FOR TOY MUSICAL INSTRUMENTS

J. Melvyn Goldenberg, Upper Saddle River, N.J., assignor to Proll Molding Company, Bloomfield, N.J.

Division of Ser. No. 889,984, Mar. 24, 1978, Pat. No. 4,168,649. This application Jun. 1, 1979, Ser. No. 44,504
Int. Cl.³ G10C *3/12*; G10D *13/08*
U.S. Cl. 84—433 **5 Claims**

1. A key adapted to be used in a keyboard assembly of a toy musical instrument, said key comprising:

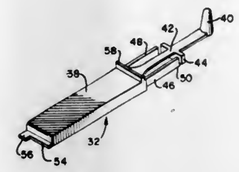
(a) a key lever;

(b) a hammer spaced from the key lever;

(c) a flexible segment intermediate said key lever and said hammer;

(d) means on said key lever adapted to secure the key in position within the instrument; and the invention comprising:

(e) cooperating means defined between the flexible segment



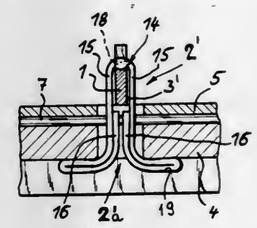
and said key lever for damping out reverberations of the hammer, said cooperating means including a stop bar formed on said flexible segment and a pair of rails projecting rearwardly from said key lever.

4,240,322

WEDGE-PIN FASTENER

Lothar Teske, Hegelstr. 1, 5000 Cologne, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,395
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 7740307[U]; May 20, 1978, 2822036
Int. Cl.³ F16B *19/02, 21/00*
U.S. Cl. 85—7 **9 Claims**



1. A fastener for joining a pair of elements, said fastener comprising:

a fastener member having an elongated stem provided at one end with an enlarged head and formed spaced from said head with a transversely throughgoing passage, said fastener member being insertable through aligned holes in said elements with said head bearing on one of said elements and said passage exposed at the other of said elements, said fastener member being formed of a plastically deformed metal strip having a U-shaped central section and a pair of outwardly and oppositely bent legs, said central section having a bight and a pair of inner sides, said strip being bent back double at said legs and having free ends received within said U-shaped central section between said sides, said sides forming said passage with said free ends, and said bight and said legs forming said head; and

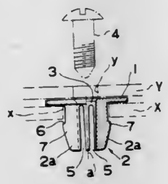
a plastically deformable elongated wedge inserted through said passage and having an intermediate portion in said passage and a pair of end portions flanking said intermediate portion and both bent laterally out of line with said intermediate portion, said wedge further having one longitudinal edge bearing in one direction on said other element and another longitudinal edge bearing in the opposite direction on said stem in said passage and forming an acute angle with said one edge.

4,240,323

PLASTIC SCREW SOCKET

Masaharu Kojima, Toyoda, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed Oct. 2, 1978, Ser. No. 947,372
Claims priority, application Japan, Oct. 8, 1977, 52-134772
Int. Cl.³ F16B *13/06*
U.S. Cl. 85—80 **2 Claims**



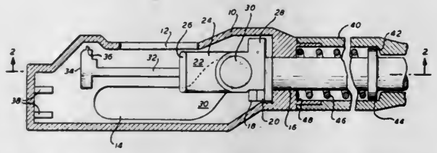
1. A plastic screw socket integrally comprising a flange designed to be brought into contact with one surface of a given panel and a leg extending perpendicularly from the lower surface of the flange and adapted to be inserted through a matched perforation provided in advance in the panel, said flange and said leg being provided with a through hole pierced vertically therethrough from the upper surface of the flange to the lower end of the leg, said leg being divided into two opposed segments by two substantially planar, parallel slits provided longitudinally therein on opposite sides of the center line of the through hole from the lower end of the leg upwardly to the vicinity of the flange, whereby insertion of a complementary screw having a diameter greater than the diameter of the through hole from above the flange into the through hole causes each of the legs to bulge outwardly and transversely relative to each other and consequently causing them to come into tight engagment with all of the inner walls of the perforation in the panel, said two slits forming said two opposed segments so arranged that they do not coincide with any of the radii drawn from the center line of the through hole.

4,240,324

AUTOMATIC GUN

William G. Smith, Burns, Ind., and Ladd Yuhash, Budd Lake, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1978, Ser. No. 955,811
Int. Cl.³ F41D *5/02*
U.S. Cl. 89—156 **9 Claims**



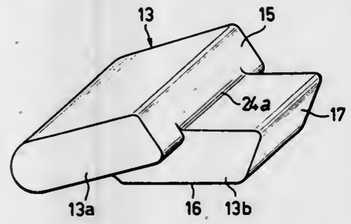
1. An automatic gun for firing a projectile by means of a separately loaded propellant case comprising:
- a receiving frame;
- an elongated barrel having a breech end transpierced by an axial bore, said barrel being mounted in said frame for reciprocation therein;
- resilient means for forwardly urging said barrel to a battery position; and
- a chamber member having a concavity shaped to hold said propellant case, said chamber member being slidably mounted on said breech end of said barrel, said chamber member being transversely displaceable from alignment with said axial bore to an unlocked position at which said concavity is accessible, said receiving frame including:
- actuating means for transversely displacing said chamber member from alignment with said axial bore to said unlocked position in response to said barrel recoiling;
- wherein said actuating means commences transverse displacement of said chamber member after said barrel recoils through an initial subinterval, and wherein said actuating means transversely displaces said chamber member to said unlocked position prior to the arrival of said barrel at a load position, said projectile being coaxially positionable behind said breech end so that further recoil from said load position causes said barrel to ensheath said projectile.

4,240,325

BREECHBLOCK FOR AN AUTOMATIC FIRING WEAPON

Ernst Hürlemann, Zürich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle, Zürich, Switzerland

Filed Oct. 30, 1978, Ser. No. 956,174
Claims priority, application Switzerland, Nov. 11, 1977, 13760/77
Int. Cl.³ F41D *3/00*
U.S. Cl. 89—190 **1 Claim**



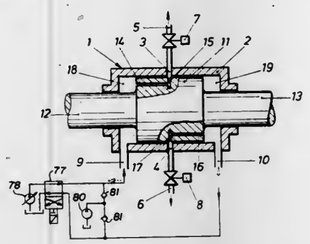
1. A breechblock for an automatic firing weapon, comprising:
- a breechblock housing;
- a breechblock body displaceably mounted in said breechblock housing;
- said breechblock body comprising a breechblock head and a control element;
- at least one locking element structured as a single-arm lever;
- said locking element being pivotably mounted at the breechblock head;
- said locking element having a locking surface and a support surface;
- said breechblock housing being provided with a latch surface;
- the locking surface of the locking element, in a forward firing position of the breechblock body, engaging with said latch surface of the breechblock housing and the support surface being engaged by the control element;
- said locking element having a front part containing the pivot axis of said locking element and a rear projection;
- said locking surface being provided at the front part and the support surface at the rear projection;
- the locking surface having a rear edge which is arranged in spaced relationship from and forwardly of the rear end of the support surface; and
- said front part of the locking element has a greater width than the rear projection.

4,240,326

HYDRAULIC VIBRATION EXCITER AND METHOD OF COOLING THEREOF

Udo Carle, Höhr-Grenzhausen, Fed. Rep. of Germany, assignor to Koehring GmbH - Bomag Division, Boppard, Fed. Rep. of Germany

Continuation of Ser. No. 769,925, Feb. 18, 1977, abandoned. This application Jun. 21, 1979, Ser. No. 50,782
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1976, 2607190
Int. Cl.³ F15B *21/02*
U.S. Cl. 91—39 **7 Claims**



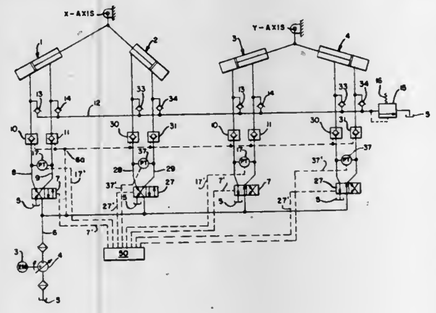
1. In a hydraulically operated vibration exciter for a vibratory compactor, which exciter includes a cylinder, a piston mounted in the cylinder for reciprocating movement therein and delimiting two cylinder chambers located at respectively opposite sides of the piston, a source of hydraulic fluid under pressure communicating with the chambers for causing a liquid column of variable volume to move to and fro between the source and each chamber, the source acting to produce a cyclic reversal in the direction of liquid flow between the source and each chamber and a cyclic variation in the pressure of the liquid between the source and each chamber, for causing the piston to undergo, relative to the cylinder, a reciprocating movement with a controllable stroke, the improvement comprising means for discharging from each chamber a quantity of heated hydraulic fluid proportional to the pressure in said chamber only when said piston is in the vicinity of the center of its stroke; and means for adding a corresponding quantity of fluid at a lower temperature to the fluid supplied by said source.

4,240,327

FLUID OPERATED LINEAR ACTUATOR CONTROL SYSTEM

Richard E. Held, Oil Springs, Ky., assignor to Harris Corporation, Cleveland, Ohio

Filed May 30, 1978, Ser. No. 910,343
Int. Cl.³ F01B *15/00, 1/00*
U.S. Cl. 91—176 **15 Claims**



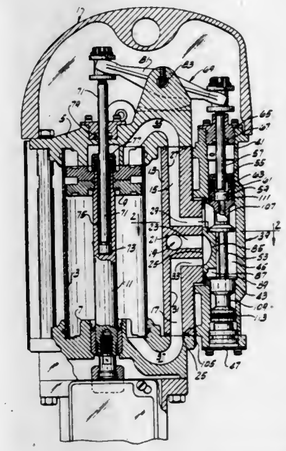
1. A fluid operated linear actuator control system for a drive arrangement of the type wherein two fluid operated linear actuators act upon a shaft at an angle with respect to each other for causing rotation thereof, comprising a pair of fluid operated linear actuators,
- a fluid pressure source including a reservoir, fluid passages connecting the fluid pressure source with each of the fluid operated linear actuators, and control means connected in each of said fluid passages for communicating a first of said actuators with fluid from said pressure source and for deactivating the other of said actuators to displace said drive arrangement under action of only said first actuator through a first arc sector, and for changing-over said communication for deactivating said one actuator and for communicating said other actuator with fluid from said pressure source causing displacement of the drive arrangement through a second arc sector, under action of only said other actuator whereby one of said actuators is in a driving mode while the other actuator is in a floating mode, and means in communication with the pressure of fluid flow into and out of each of said linear actuators and operable, when a linear actuator is in a floating mode, for adjusting fluid flows to and from a deactivated linear actuator in a manner acting to equalize fluid pressures to which opposite sides of the deactivated linear actuator are exposed.

4,240,328

VALVE MECHANISM FOR A HYDRAULIC EXPANSIBLE CHAMBER MOTOR

Jerome B. Wegmann, St. Louis County, and Jeffrey M. Kotyk, St. Louis, both of Mo., assignors to McNeil Corporation, Akron, Ohio

Filed Mar. 19, 1979, Ser. No. 21,592
Int. Cl.³ F01L *25/06, 23/00*
U.S. Cl. 91—287 **5 Claims**



1. Hydraulic valve mechanism for an expansible chamber hydraulic motor comprising a cylinder having therein a motor piston on a piston rod, said valve mechanism comprising a block having a valve face and an exhaust passage from a central main exhaust port in said face, and feed passages extending from main feed ports in said face on opposite sides of said exhaust port to the opposite ends of the cylinder, a valve chest secured in sealed relation overlying the face, said valve chest having aligned piston-receiving bores at its opposite ends with a chamber for pressurized hydraulic fluid between the bores, the outer ends of the bores being closed, a valve-actuating piston on a valve-actuating piston rod slidable at its ends in the bores, a main D-valve and an auxiliary D-valve connected

with the valve-actuating piston slidable on said face within the valve chest, said block having a central auxiliary exhaust port and auxiliary feed ports in said face with said auxiliary feed ports in the line of motion of the auxiliary D-valve on opposite sides of the auxiliary exhaust port, said block further including passages connecting the auxiliary feed ports and the ends of said bores, and means connecting the motor piston rod with the valve-actuating piston rod, said auxiliary D-valve having a surface in sliding sealing engagement with said valve face and a recess in said surface for the flow of hydraulic fluid therethrough from either one of the auxiliary feed ports to the auxiliary exhaust port, said surface and recess being so formed in relation to the feed ports that the auxiliary D-valve does not completely block hydraulic fluid flow through either one of the auxiliary feed ports at any position along its line of motion, thereby preventing hydraulic lock.

4,240,329

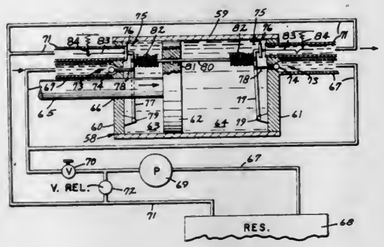
FLUID PRESSURE SERVO DETENT MECHANISM

Harold G. Inbofer, Hopkins, and James J. Kriz, Jr., Minneapolis, both of Minn., assignors to Proteus Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 825,687, Aug. 18, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,305

Int. Cl.³ F01L *23/00*

U.S. Cl. 91—342 **3 Claims**



1. A fluid pressure servo detent mechanism including:

a. a cylinder having a pair of closed end walls;

b. a piston moveable within said cylinder and providing a pressure chamber on each side thereof;

c. inlet means for introducing fluid under pressure to each of said pressure chambers to provide motion to said piston in a direction opposite to the introduction of fluid and to thereby provide expansion of such chamber;

d. outlet means for receiving fluid from each of said shambers to permit said piston to reduce the size of such chamber;

e. first valving means arranged to control each of said inlet means and positioned to be held in closed position by the fluid under pressure being delivered to the respective pressure chamber;

f. second valving means arranged to control each of said outlet means and positioned to be held in closed position by the pressure of the fluid within the respective pressure chamber;

g. link means interconnecting each of such first and second valving means whereby said first valving means of each pressure chamber is shifted to an open position when said second valving means of each pressure chamber is shifted to a closed position and said first valving means of each pressure chamber is shifted to a closed position when said second valving means of each pressure chamber is shifted to an open position; and

h. actuator means interconnecting said link means for shifting thereof to simultaneously deliver fluid under pressure to one of said pressure chambers while exhausting fluid from the other of said chambers.

4,240,330

SERVO BOOSTER ASSEMBLIES

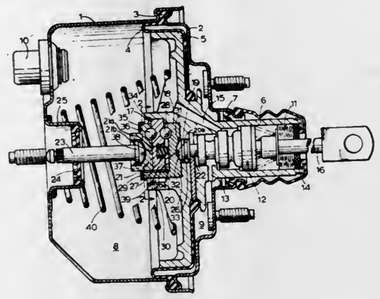
Glyn P. R. Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

Filed Jun. 12, 1978, Ser. No. 914,926

Claims priority, application United Kingdom, Jun. 11, 1977, 24462/77; Jun. 22, 1977, 26052/77

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—369 R **14 Claims**



1. A servo booster assembly for a vehicle braking system comprising a housing, an axially movable wall located in said housing, valve means controlling a fluid pressure differential applied to said movable wall, an axially movable input member adapted to be connected to a foot pedal, an axially movable output member, a first thrust assembly interposed between said input member and said output member for transmitting force from said input member to said output member, a second thrust assembly interposed between said movable wall and said output member for transmitting force from said movable wall to said output member, each thrust assembly comprising: a pair of confronting, relatively angularly movable and axially displaceable cam walls lying in planes normal to the axes of said input and output members and each having inclined circumferentially extending ramp surfaces thereon, and bearing elements located between said cam walls and engaging with said ramp surfaces; said booster assembly further comprising: means for holding one of said cam walls of said first thrust assembly against angular movement relative to one of the cam walls of the second thrust assembly and means for holding the other cam wall of said first thrust assembly against angular movement relative to the other cam wall of the second thrust assembly.

4,240,331

POWER STEERING APPARATUS FOR VEHICLE

Masao Nishikawa, Niiza; Yoshihiko Toshimitsu, and Takashi Aoki, both of Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

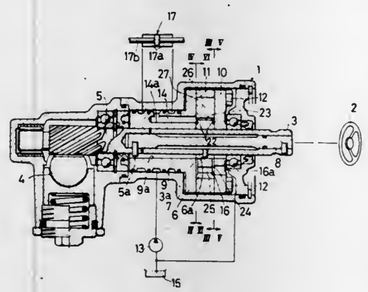
Filed Jul. 26, 1978, Ser. No. 928,076

Claims priority, application Japan, Jul. 29, 1977, 52-90261; Jul. 29, 1977, 52-90262

Int. Cl.³ F15B *13/14*

U.S. Cl. 91—434 **1 Claim**

1. A power steering apparatus for a vehicle comprising a valve housing provided with a rotary valve body arranged to be turned in one direction or the other by a turning operation of a steering shaft; an oil pressure pump; a power cylinder; an oil supply port connected to said oil pressure pump and selectively connectible with either of two cylinder ports connected to respective left and right chambers of said power cylinder; said valve housing being provided with an arcuate oil pressure reaction chamber, an intermediate partition plate extending from said valve body into said oil pressure reaction chamber to divide said chamber into two areas, each of said areas of said chamber extending on one side and the other of said plate in the turning direction of said valve body and being in respective communication with said cylinder ports, said partition plate dividing said chamber so that said areas are equal in a neutral position of said valve body in said housing, said partition plate tuning with said valve body from said neutral position to travel in said oil pressure reaction chamber during a steering operation to decrease the area on one side of the chamber while



increasing the area on the other side of the chamber, the area of the reaction chamber which is decreased by the movement of said valve body and the plate therewith being connected to the cylinder port which is placed into communication with the supply port and thereby pressurized whereas said other area of the reaction chamber is connected to tank and depressurized whereby a differential pressure is established on said plate urging the valve body to return to its initial position.

4,240,332

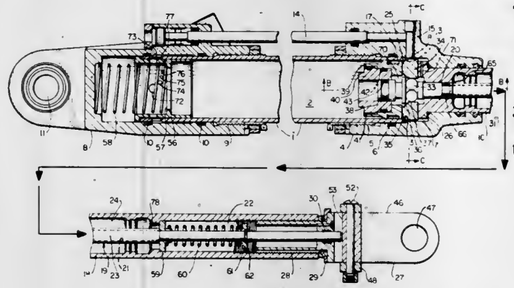
FLUID OPERATED LOCKING ACTUATOR

Edward J. Deutsch, Bellmore, N.Y., assignor to Arkwin Industries, Inc., Westbury, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,788

Int. Cl.³ F01B *25/26*

U.S. Cl. 92—5 L **9 Claims**



1. A fluid pressure actuator and locking means comprising an elongated hollow cylinder, said cylinder having a head end and a rod end, said cylinder rod end being beveled conically outward, a cylinder end cap received on each end of said cylinder, an inwardly opening annular recess between the rod end cylinder cap and said rod end of said cylinder, a fluid pressure port in said rod end cylinder cap communicating with said cylinder, a piston comprising a piston head and piston rod, said piston head being slidably received in said cylinder, sealing means on said piston head engaging the wall of said cylinder in fluid-tight relationship, a central axial passageway in said piston rod opening toward said rod end cylinder cap, dual diametrically opposed radial apertures in said piston head communicating with said passageway, an unlocking rod slidably received in said passageway, sealing means on said unlocking rod engaging the wall of said passageway in fluid-tight relationship, resilient means for biasing said unlocking rod in an outward direction from said rod end of said cylinder when said piston is in the extend position, a locking detent slidably disposed in each of said radial apertures, each of said locking detents being chamfered on its outer end for engaging the beveled rod end surface of said cylinder and being provided with a camming surface at its inner end, said camming surface having an essentially flat portion and a sloped portion, said sloped portion being nearest to said head end of said cylinder, a cage at the inner end of said unlocking rod, two rollers held in alignment normal to the center line of the piston by said cage but being unrestrained radially by said cage or unlocking rod, each said roller engaging a said camming surface as each of said detents moves, whereby with said main piston in the extend position, said detents will be cammed outwardly into said annular recess and locked in position by said rollers to lock said piston against movement and upon admission of retract fluid pressure to said rod end of said cylinder, said unlocking rod drives said rollers out of their locking position and permits said cylinder rod end to cam said detents in and unlock said piston;

said cage being provided with a central axial rod extension having a diameter greater than that of said unlocking rod and said piston head being provided with a central axial bore, said rod extension being slidably received in said bore and sealing means on said rod extension engaging the walls of said bore in a fluid-tight relationship;

said central axial passageway in said piston rod comprising an inner passageway having a diameter smaller than that of said bore receiving said rod extension, the wall of which engages said sealing means on said unlocking rod, and an outer passageway, a first central axial guide member secured within said outer passageway at its inner end, a second central axial guide spaced outwardly from said first central axial guide and secured to said unlocking rod; and

said resilient means comprising a spring contained in compression between said first and second central axial guides.

4,240,333

HYDROSTATICALLY DRIVEN ROAD ROLLERS

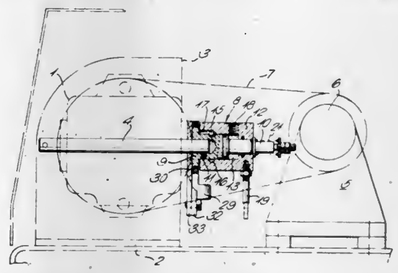
Terence R. Heathcote, Holcombe, near Bath, and Ralph G. Jefferies, Bitton, near Bristol, both of England, assignors to Stothert & Pitt Limited, Somerset, England

Filed Jul. 31, 1979, Ser. No. 62,336

Claims priority, application United Kingdom, Sep. 25, 1978, 37998/78

Int. Cl.³ F01B *3/02*; F04B *1/26*

U.S. Cl. 92—12.2 **8 Claims**

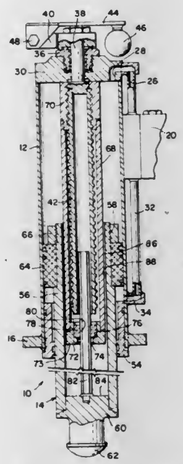


1. A hydrostatically driven road roller which includes a variable displacement swash plate pump having a swash plate control shaft connected to a manual control lever, and a dead man's handle which controls pressurization of the fluid in the fluid system, wherein said connection between said swash plate control shaft and said manual control lever includes a disconnectible device which is adapted automatically to cause said manual control lever to become ineffective when said dead man's handle is in an inoperative position.

4,240,334
MECHANICALLY LOCKABLE HYDRAULIC CYLINDER JACK

Jeffrey A. Crosser, Hampton, Iowa, assignor to United Hydraulics Corporation, Hampton, Iowa

Filed Dec. 28, 1977, Ser. No. 865,029
Int. Cl.³ F15B 15/26
U.S. Cl. 92—23 8 Claims



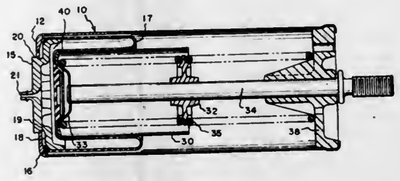
1. In a hydraulic jack comprising a cylinder and a piston rod assembly movable between a first retracted position and a second extended position relative to said cylinder, means for preventing rotation of the piston rod assembly, means for maintaining said piston rod assembly locked in said second extended position comprising a rotatable shaft extending into said cylinder, locking means operatively coupled to said shaft and movable into engagement with said piston rod assembly in response to rotation of said shaft to thereby lock said piston rod assembly in its second extended position, said locking means being adapted to reinforce said piston rod assembly in said second extended position substantially along said piston rod assembly's entire length, said cylinder including a first closed end and a second open end through which said piston rod assembly is movable, and said locking means is movable into engagement with at least a portion of said piston rod assembly located beyond the second open end of said cylinder when said piston rod assembly is in said second extended position, said shaft extending through the first closed end of said cylinder and wherein a portion of the shaft extending into said cylinder has thread means thereon and said locking means comprises a second cylinder concentrically disposed between said shaft and said first-mentioned cylinder, said second cylinder including thread means for cooperatively engaging the thread means on said shaft to lock the piston rod assembly in its extended position. The locking means reinforces the piston rod assembly in its extended position along substantially the entire length of the piston rod assembly.

4,240,335
FLOATING SEAL FOR FLUIDIC DEVICES

Edward P. Stucka, Deerfield, and Harald G. Trautmann, Glen Ellyn, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 882,685, Mar. 2, 1978, abandoned. This application Dec. 13, 1979, Ser. No. 103,246
Int. Cl.³ F16J 3/02
U.S. Cl. 92—96 16 Claims

1. A fluidic device comprising:
a housing;
connector means mounted within said housing in a manner to provide a clearance therebetween, said connector means having a nozzle exteriorly of said housing; and,
a diaphragm mounted within said housing and having a bead around the circumference of one end of said diaphragm, said bead positioned within said clearance between said connector means and said housing to form an expandable fluid chamber with said connector means, such that when

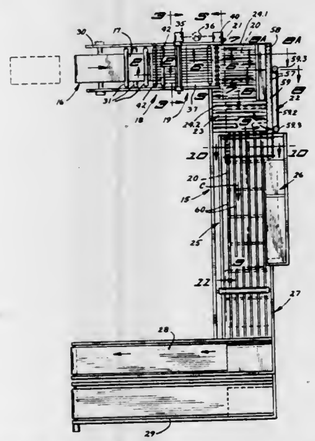


fluid is supplied to said nozzle, and to said chamber, the fluid will force said bead into sealing relation with said housing and said connector means,
said connector means, said housing and said bead being so dimensioned that, without fluid supplied to said nozzle, said connector means and said diaphragm with said bead are floating with respect to said housing.

4,240,336
BAG MAKING MACHINE

John J. Grevich, Star Prairie, and Stanley D. Denker, New Richmond, both of Wis., assignors to Nordson Corporation, Amherst, Ohio

Filed Jul. 13, 1978, Ser. No. 924,133
Int. Cl.³ B31B 1/16
U.S. Cl. 493—196 17 Claims

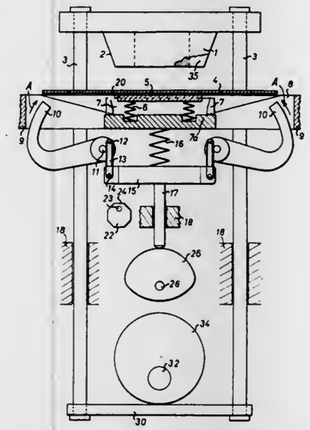


1. A machine for severing and manipulating tube segments from a continuous supply of film tube stock, comprising
a pair of continuously operating feed rolls on horizontal axes and adjoining each other to clamp, draw and feed the tube stock from the supply,
a horizontal belt conveyor adjacent said feed rolls to receive and carry the tube stock in horizontally laid out condition from the feed rolls and traveling at a speed no less than the speed of said feed rolls, the conveyor having tube stock support means at a multiplicity of locations across the width of the belt conveyor,
a cyclically operating cutting means located along and intermediate the ends of said belt conveyor and traversing a substantial portion of the width of the belt conveyor, the cutting means at once cutting transversely across the entire width of the tube stock to cut off tube segments while allowing the tube stock and tube segments to continue to travel along the belt conveyor at the speed of the belt conveyor, and
a crossfeed conveyor adjacent the delivery end of the belt and conveyor and receiving the tube segments therefrom.

4,240,337
PROCESS AND DEVICE FOR THE ERECTION OF CARDBOARD TRAYS

Toni Casutt, Blumenrain 24, 8702 Zollikon, Switzerland

Filed Aug. 17, 1978, Ser. No. 934,471
Claims priority, application Switzerland, Aug. 17, 1977, 10107/77
Int. Cl.³ B31B 1/50
U.S. Cl. 493—137 10 Claims



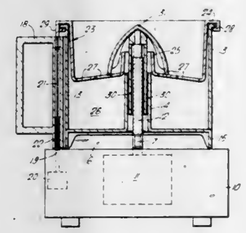
1. Method for mechanical erection of a cardboard tray, particularly for holding fruits and vegetables, in which the tray is formed from a flat blank having a base (36),
a pair of parallel side walls (38) connected to the base,
two tongues (40) each having an insertion slit (47) connected to the base and positioned transverse with respect to said walls, one at each end thereof,
and two edge parts (45) surrounding the tongues on the outside thereof, merging with the side walls, and separated from the tongue by separating cuts (43);
comprising the steps of
(a) first bending the sidewalls (38) angularly away from the level of the base (36);
(b) bending the tongues (40) angularly away from the level of the base;
(c) then engaging the central portions (50') of the edge parts (45) with mechanical fingers (10) to fold said central portions and form double ply insertion parts (50) with the mechanical fingers between the plies of the respective insertion parts;
(d) introducing the insertion parts, with the fingers therebetween, into the slits (47) of the raised tongues;
(e) and withdrawing said fingers (10) from between the plies of the insertion parts (50), said insertion parts remaining locked in said slits.

3. Apparatus for the mechanical erection of a cardboard tray, particularly for holding fruits and vegetables, from a flat blank having a base (36),
a pair of parallel side walls (38) connected to the base,
two tongs (40) each having an insertion slit (47) connected to the base and positioned transverse with respect to said walls, one at each end thereof,
and two edge parts (45) surrounding the tongues on the outside thereof, merging with the side walls, and separated from the tongue by separating cuts (43)
comprising in accordance with the invention a frame (18);
a die (1) movably mounted in the frame;
a matrix (7) provided beneath said die and a supporting plate (5) provided on said matrix;
two movable fingers means (10) mounted below said matrix;
and die moving means (30, 32, 34) to effect relative movement between the die (1) and the matrix (7),
wherein said fingers means are located oppositely from each other and positioned with respect to the edge parts (45) of the blank to engage the central portion (50') of the edge parts;
the die drive means moving the die (1) against said blank (4) to push the blank against the matrix and thus bend the sidewalls (38) and the tongue (40) with respect to the matrix to form said tray with raised side walls and end tongues;
and said finger drive means (26, 28) are synchronized with the die drive means (30, 32, 34) to then move the fingers means in engagement direction with respect to the central portions (50') of said edge parts and thereby fold said edge parts centrally into double-ply configuration with the fingers means therebetween, said finger drive means continuing control of movement of said fingers means in a direction towards the slit (47) on the raised tongues.

4,240,338
CITRUS JUICER ATTACHMENT FOR FOOD PROCESSOR

John W. McClean, Lakemba, Australia, assignor to Breville Holdings Pty. Limited, Pyrmont, Australia

Filed Aug. 1, 1979, Ser. No. 62,739
Claims priority, application Australia, Aug. 25, 1978, PD5664/78
Int. Cl.³ A23N 1/00
U.S. Cl. 99—501 8 Claims



1. A food processor consisting of a base containing an electric driving motor and electric switch means for controlling the operation of said driving motor, an aperture in the upper surface of said base through which a driving shaft from said motor projects, a substantially cylindrical food processing container open at its upper end, complementary means on said base and said container whereby said container is removably attached to the upper surface of said base with the driving motor shaft projecting through the hole in the base of the container, a sleeve in said container surrounding said hole and projecting upwardly into the container to form an annular liquid containing well around said hole, externally accessible means on said base associated with said electric switch means, characterized in that there is provided an annular trough like member fitting within said container, a circumferential flange of said trough like member resting on the upper edge of the container and supporting the member within the container, a central hole in said member fitting over said sleeve, apertures in the bottom of said member constructed to permit the passage of the juice of citrus fruit while acting to restrain the passage of pulp and pips associated therewith, means on said member arranged to cooperate with said externally accessible means and said electric switch means so that said electric switch means can be actuated only if said container is attached to said

base and said annular trough like member is in a predetermined rotational relationship with said container, complementary means on the flange of the annular member and the container acting to hold the member to the container when in said relationship, a hollow stem extending through the central hole of the said annular member and making driving connection with the motor shaft and a domed ribbed citrus juice extracting member on the upper end of said shaft said domed citrus juice extracting member covering the central hole in the bottom of the member.

4,240,339

BALE PRESSING ARRANGEMENT FOR CARDBOARD WASTES

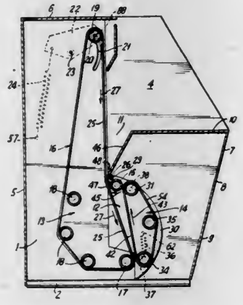
Jürgen Simonis, Wolfenbüttel, Fed. Rep. of Germany, assignor to Gebrüder Welger, Wolfenbüttel, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 17,082

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809887

Int. Cl.³ B65B *13/20*

U.S. Cl. 100—5 **33 Claims**



1. Bale pressing arrangement for cardboard waste and the like comprising a housing, said housing having an inlet for introducing material to be baled into said housing, a first conveyor belt unit located in said housing and including a plurality of spaced first rollers and an endless first conveyor belt traveling around said first rollers, a second conveyor belt unit located in said housing spaced from said first conveyor belt unit and including a pluraity of spaced second rollers and an endless second conveyor belt traveling around said second rollers, said first conveyor belt including an upwardly extending first portion, said second conveyor belt including an upwardly extending second portion with the surface of said second portion facing toward and spaced from the surface of said first portion of said first conveyor belt and forming therebetween a press chamber, means for driving said first and second conveyor belts so that said first portion and second portion forming said press chamber travel in opposite directions, said first conveyor belt supported by said first rollers and said second conveyor belt supported by said second rollers so that the first portion of said first conveyor belt and the second portion of said second conveyor belt move away from each other in the direction transverse to the direction of movement of said first and second conveyor belts for increasing the volume of said press chamber as the amount of waste material introduced into said press chamber is increased, said press chamber having a first end and a second end with the ends extending transversely of the direction of movement of said first and second belt conveyors and said first end spaced upwardly from said second end, at said first end said first and second belt conveyors being disposed in spaced relation and at least said first belt conveyor forming one side of an inlet opening for introducing the waste material into said press chamber at said first end thereof, said first conveyor belt extending generally upwardly from said inlet opening at said first end of said press chamber and forming a continuation of said first portion thereof, and means in combination with said continuation of said first portion forming an inlet chamber for supplying the material to be baled downwardly through said inlet opening into said first end of said press chamber.

4,240,340

APPARATUS FOR FORMING AND STRAPPING A PACK

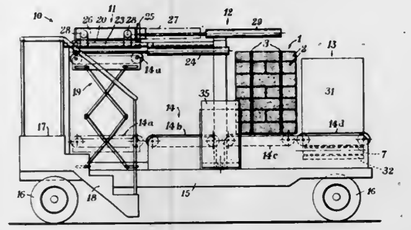
Michel Roy, Paris, France, assignor to LOGISAC Groupement d'Interet Economique Regi par l'Ordonnance, Paris, France

Division of Ser. No. 953,179, Oct. 20, 1978. This application Jul. 11, 1979, Ser. No. 56,618

Claims priority, application France, Oct. 28, 1977, 77 32684

Int. Cl.³ B65B *13/18*

U.S. Cl. 100—7 **4 Claims**



1. A machine for making a pack of unit loads, comprising a pack forming device for forming said unit loads into a plurality of superposed layers including a bottom layer and each layer having a plurality of unit loads, a strapping device for setting at least one strap in a loop around said plurality of superposed layers of unit loads, a discharge station and a conveyor system capable of transferring a pack from the pack forming device through said strapping device to said discharge station, wherein said pack forming device includes retractable means for positioning the unit loads of the bottom layer of the pack being formed, said retractable positioning means being capable when in an operative non-retracted position, to provide in the bottom layer of the pack being formed at least one free space of predetermined width and elongated configuration extending parallel to the axis of the loop formed by said at least one strap, and wherein said strapping device is so adjusted to set said at least one strap around the pack with a low tension.

4,240,341

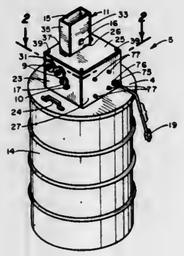
CAN CRUSHER

Robert L. Whipple, P.O. Box 108, Camino, Calif. 95709, and William F. Warren, Orangevale, Calif., assignors to Robert Whipple, Camino, Calif.

Continuation-in-part of Ser. No. 689,257, May 24, 1976, abandoned. This application Dec. 6, 1978, Ser. No. 966,970

Int. Cl.³ B30B *1/18, 9/32*

U.S. Cl. 100—49 **10 Claims**



1. A can crusher comprising:

a pair of opposed fixed walls;

laterally reciprocal mashing head means reciprocable relative to said opposed fixed walls;

means for reciprocating said reciprocal head means between said opposed fixed walls;

fixed support means for supporting a single can lengthwise between said opposed fixed walls, said support means extending laterally between said fixed walls, a distance from a midpoint of said support means to a fixed wall being greater than half the lateral extent of said support means by a predetermined amount, said predetermined amount being greater than the length of a crushed can, and said support means being fixed relative to said fixed walls and disposed beneath said reciprocal mashing head means;

can stacking and feeding means for stacking cans in a vertical row and for feeding cans one at a time to said reciprocal mashing head means, which can stacking and feeding means includes a vertical chute positioned adjacent said reciprocal head means which chute is only sized wide enough to accommodate a one-can width wide column of cans, and which vertical chute gravity feeds one can at a time to said mashing head means where a side wall of said can slidingly engages the mashing head means, said can falling lengthwise onto said fixed support means as said mashing head means moves toward either one of said fixed walls, said mashing head means engaging and crushing said can upon moving toward the opposite wall;

switch means mounted on said stacking and feeding means for activating the means for reciprocating said reciprocal head means, said switch means being adapted for activation by the impingement of a can in said stacking and feeding means;

said fixed walls having flat and parallel confronting faces;

said reciprocal head means including a single head having two opposed flat and parallel faces, each of said faces in said head being parallel to the faces of said fixed walls;

said head engaging confronting rims of a can to apply axial pressure to crush the side walls of a can between one face of said head and one of said fixed walls.

4,240,342

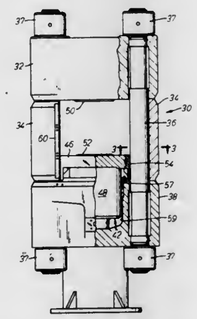
FRAME STRUCTURE FOR A PRESS ASSEMBLY

Philip T. Delmer, Shorewood, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Jun. 18, 1979, Ser. No. 49,030

Int. Cl.³ B30B *15/04*

U.S. Cl. 100—53 **8 Claims**



1. Assembly for high pressure compacting comprising:

(a) a frame structure having a pair of resistance members spaced apart from each other, a plurality of tying members each under a predetermined stress in tension and a plurality of members associated with said tying members each under a predetermined compressive load, said tying and associated compression members securing said resistance members in the spaced apart relationship;

(b) a force means comprising a movable platen located on a central vertical axis of the assembly between said tying members and guided on the inner facing surface of the tying members; and

(c) means connected to one of said resistance members for moving said platen.

4,240,343

AUTOMATIC MACHINE FOR SERIGRAPHIC PRINTING

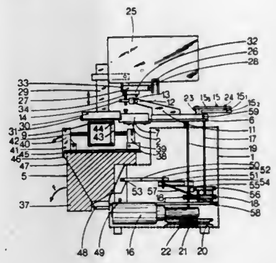
Jacques Monvoisin, Paris, France, assignor to Tecal S.A.R.L., France

Continuation-in-part of Ser. No. 850,506, Oct. 11, 1977, abandoned. This application May 1, 1979, Ser. No. 35,133

Claims priority, application France, Nov. 15, 1976, 76 34261

Int. Cl.³ B41F *15/08, 15/30, 15/42*

U.S. Cl. 101—38 R **4 Claims**



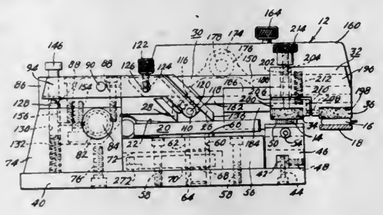
1. An automatic machine for serigraphic printing on circular articles, said machine comprising in combination: a frame structure; a slide-bar longitudinally extending in the said frame structure; screen support means mounted for reciprocating translation on said slide-bar; means for reciprocatingly moving said screen support means; a printing screen located on said screen support means; a squeegee above said screen; first means for lowering and lifting said squeegee above said screen into and out of contact, respectively, with the upper side of said screen; an article holder arranged below said screen and second means for lifting and lowering said holder for bringing said article into and out of contact, respectively, with the underside of said screen; a guide rod integrally mounted on said screen support means parallel to the said slide-bar; and first and second support members adjustably positioned on said guide rod, first and second fingers respectively mounted integral with said first and second support members, said first and second fingers being parallel to the screen and at right angles with the guide rod, said means for reciprocatingly moving said screen support means comprising motor means having an output shaft, crank and link means connected to the screen support means and gear means connecting the said output shaft to said crank and link means, said first means including an oscillating arm having one end connected to said squeegee and another end where the said oscillating arm is pivotally mounted with respect to the frame structure, said first means further including a pin fixedly mounted on the frame structure at right angles with the screen, a supporting member pivotally mounted on said pin, a camming member and a third finger being secured to said supporting member, said third finger being arranged parallel to said pin and across said guide rod for alternate engagement of said third finger with the first and second fingers, the said camming member being located for engaging the said oscillating arm and arranged for raising the said oscillating arm when the first finger is engaged by the third finger and for lowering the said oscillating arm when the second finger is engaged by the third finger.

4,240,344

HIGH SPEED UNIT PRINTER AND INKER THEREFOR

Ruslon J. Smith, Moscow, Pa., assignor to Equipment Technology Incorporated, Peckville, Pa.

Filed Sep. 6, 1979, Ser. No. 73,091
Int. Cl.³ B41F *17/00*
U.S. Cl. 101—44 **14 Claims**



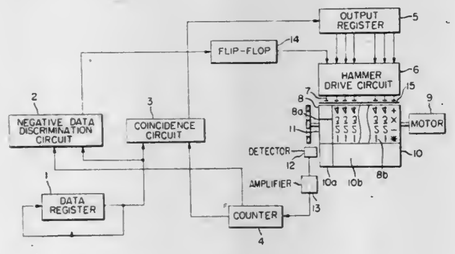
1. A high speed unit printer comprising a base, an ink disc mounted on said base and having a substantially horizontal disc surface, means for intermittently rotating said disc, a metering blade engaged with said disc surface, said metering blade having a slot in the disc-engaging edge thereof through which ink is metered in a band of uniform thickness, a collecting blade in engagement with said disc surface for diverting ink on said disc surface into a narrow stream, means for supporting a plate or type in a face-up relation adjacent said disc, a resilient inking pad and a resilient transfer pad, means supporting said inking pad and transfer pad in spaced relation, and means for cyclicly moving said pad supporting means from a first position wherein said inking pad engages said ink disc and said transfer pad engages said plate or type to a second position wherein said inking pad engages said plate or type and said transfer pad engages an article to be marked.

4,240,345

SELECTIVE DRUM PRINTER WITH AXIALLY DIVIDED MULTICOLOR INK ROLLER

Hiroshi Kyogoku, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha and Canon Denshi Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 852,537, Nov. 17, 1977, abandoned, Continuation of Ser. No. 693,484, Jun. 7, 1976, abandoned. This application Mar. 23, 1979, Ser. No. 23,275
Claims priority, application Japan, Jun. 19, 1975, 50/74760
Int. Cl.³ B41J *27/00*
U.S. Cl. 101—103 **4 Claims**



1. A printing device, comprising in combination:

(a) a character type wheel provided with a plurality of character type rings, each of which is disposed along a shaft of said character type wheel, and in which a first character type symbol for printing a mark of a particular information among a plurality of informations to be printed is arranged on one of said plurality of character rings, and a second character type symbol is arranged on the remaining character type rings for printing said plurality of informations on a printing medium;

(b) hammer means to strike said character type wheel;

(c) ink roller means including, in coaxial disposition, a first color and a second ink roller portion impregnated with ink of a second color, said first ink roller portion facing the character type ring having said first character symbol thereon, and said second ink roller portion facing the remaining character type rings;

(d) memory means capable of storing therein discriminating information to discriminate between said particular information among said plurality of informations, and one of said plurality of informations;

(e) control means to read out the contents stored in said memory means, said control means being operative in response to the position of said first character type symbol on said character type wheel and a position of said second character type symbol;

(f) a first memory to store therein said discriminating information read out of said memory means by said control means, when said particular information in said plurality of informations and said dicriminating information are stored in said memory means;

(g) a second memory to store therein said particular information read out of said memory means by said control means, when said particular information in said plurality of informations and said discriminating information are stored in said memory means; and

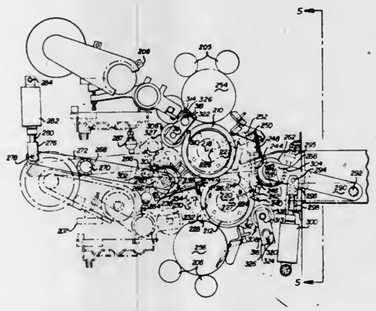
(h) drive means connected with said first and second memories, for striking said first character type symbol charged with said first color ink of said first ink roller portion on said ink roller means through said recording medium in response to said particular information stored in said first memory, and for striking said second character type symbol charged with said second color ink of said second ink roller portion on said ink roller means through said recording medium.

4,240,346

WEB PRINTING PRESS

Earl M. Landis, Sagamore Hills, Ohio; Webster C. Roberts, Noank, and James N. Crum, Stonington, both of Conn., assignors to Harris Corporation, Cleveland, Ohio

Continuation of Ser. No. 780,320, Mar. 23, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,213
Int. Cl.³ B41F *7/04, 7/12, 7/40, 13/36, 31/30, 13/54*
U.S. Cl. 101—139 **18 Claims**



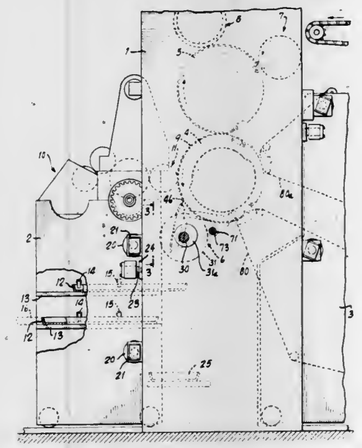
1. A web printing press comprising a plurality of printing units arranged in tandem; each of said printing units having a pair of blanket cylinders defining a printing nip therebetween, a plate cylinder associated with each blanket cylinder so as to define an offset printing arrangement, means for moving said blanket cylinders between thrown-on and thrown-off positions for printing and not printing on a web moving through the nip, dampeners for applying dampening solution to plates on said plate cylinders, inkers for applying ink to plates on said plate cylinders, and a drive motor for driving at least the blanket and plate cylinders of that unit independently of the driving of other said printing units; means for guiding the web through the nips of plural units with the blanket cylinders of at least one unit in their thrown-on position printing on the web and the blanket cylinders of another unit in their thrown-off position; and control circuit means for throwing said blanket cylinders of said another unit into printing position in timed relation to throwing said blanket cylinders of said at least one unit off while the web moves through the nips of said units, said control circuit means including means for controlling driving of the drive motor of said another unit for driving said blanket cylinders and plate cylinders of said another unit up to speed, means for controlling driving of said dampeners and inkers of said another unit to apply dampening solution and ink to the plate cylinders associated with said another unit prior to throwing said another unit on said at least one unit off.

4,240,347

BANKNOTE INTAGLIO PRINTING PRESS

Robert H. Hazelton, Bronx, and John J. Kimball, Huntington Station, both of N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed Sep. 1, 1978, Ser. No. 938,903
Int. Cl.³ B41F *9/10*
U.S. Cl. 101—153 **17 Claims**



1. A bank note intaglio printing press, comprising:

a. a main frame (**1**) supporting:
   1. a plate cylinder (**4**);
   2. an impression cylinder (**5**) cooperating with said plate cylinder;
   3. a scraper blade (**46**) cooperating with said plate cylinder;

b. a first auxiliary carriage (**2**) supporting:
   1. an ink reservoir (**10**);
   2. an ink supply means (**11**) for transferring ink from the reservoir to the plate cylinder; and
   3. ink receptacle means (**12**) for receiving ink removed from the plate cylinder by said scraper;
   4. said carriage being movable between an operating position in which the ink supply means engages the plate cylinder and a retracted position in which the ink supply means is spaced from the plate cylinder; and

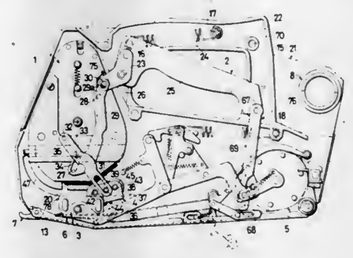
c. a second auxiliary carriage (**3**) supporting:
   1. a wiping web (**80**);
   2. supply and take-up reels (**81,90**) for the web;
   3. a wiping bar (**86**) for guiding the web in contact with the cylinder;
   4. separate pressure setting means (**124,130**) for each end of the bar; and
   5. adjustable stroke motor means (**98,100**) for advancing the web as the gap on the cylinder passes the bar;
   6. said second carriage being movable between an operating position in which the web engages the cylinder and a retracted position in which the web is spaced from the cylinder without disturbing either a pressure setting for an end of the bar or the length of said stroke.

4,240,348

INK SUPPLY DEVICES FOR PORTABLE LABELING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Continuation of Ser. No. 716,934, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 681,251, Apr. 28, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,626
Claims priority, application Japan, Sep. 12, 1975, 50-109929; Oct. 7, 1975, 50-120292; Dec. 20, 1975, 50-151236; Dec. 25, 1975, 50-154012; Feb. 5, 1976, 51-010852
Int. Cl.³ B41F *1/50;* B41K *1/42*
U.S. Cl. 101—295 **44 Claims**



1. An inking device for a labeling machine which prints labels;

said labeling machine comprising:

a frame; a printing head in said frame; at least one row of types in said printing head; said types facing toward a print positon;

means for moving said printing head toward and away from a label, whereby said types may contact the label when said types have been moved to the label;

an actuating lever movably connected to said frame to operate said labeling machine;

a yoke attached to said actuating lever and extending toward said printing head; said yoke being movable with said actuating lever; said printing head being secured to said yoke for movement therewith; said yoke having an end surface thereof facing generally in said print direction; through said yoke, said actuating lever being connected to said printing head for moving said printing head toward and away from a label;

said inking device comprising:

an inking roller; support and moving means for moving said inking roller across said types as said printing head moves toward the label and while the label is not in contact with said types;

inking roller guide means comprising a fixedly positioned and immovable guiding element supported on said frame and positioned and shaped to be in engagement with and to guide said inking roller to move over said types on a predetermined pathway with respect to said printing head; said guiding element being positioned and shaped so as to engage said inking roller at a side thereof away from the side contacted by said types and for pressing said

inking roller against said types and against force exerted by said types against said inking roller as said inking roller rolls by said types such that the cooperative engagement between said guide means and said inking roller is the sole cause of the inking pressure of said inking roller on said types; said guiding element being shaped and positioned to remain in engagement with said inking roller over the entire said predetermined pathway of said inking roller and also to cause said inking roller to press on said types with a desired pressure over said predetermined pathway;

said yoke end surface being spaced from said guide means such that at least part of said inking roller is normally positioned between them;

said guide means having a first orientation for guiding said inking roller on a pathway that crosses the direction of motion of said yoke; said end surface having a second orientation that is oblique to said first orientation;

a bearing plate connected with said inking roller and movable therewith; said bearing plate normally being in engagement with said yoke end surface, whereby upon motion of said yoke with respect to said guide means, said end surface, pressing upon said bearing plate, shifts said inking roller in one direction along said guide means;

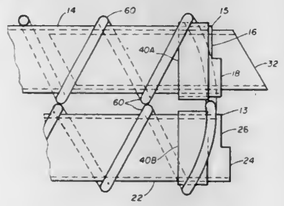
said actuating lever being connected with said inking roller to cause said inking roller to move along said predetermined pathway as said actuating lever is operated.

4,240,349

FOLDABLE LINEAR EXPLOSIVE CHARGE

Charles C. Lash, 1111 E. 25th St., Tulsa, Okla. 74114

Filed Sep. 11, 1978, Ser. No. 941,565
Int. Cl.³ F42B *3/02*
U.S. Cl. 102—24 R **11 Claims**



1. A foldable linear explosive charge (FLEC) comprising at least two units or sticks, each stick having a first end, and a second end, the first end of one stick hingedly attached to the second end of the second stick, both sticks substantially identical, each stick comprising;

(a) a thin-walled tubular member of selected material, wall thickness, diameter, and length;

(b) centering means attached to the first end of a first member, and extending beyond the end of said first member, adapted to be inserted into the second end of a second member;

whereby said centering means serves as an alignment means to ensure coaxial alignment of two members when the second end of a second member is positioned on said centering means, and in end-to-end contact with said first member;

(c) hinge means attached to said first end of said first member, and to the second end of said second member; and

(d) a helix of linear explosive compound (LEC) wrapped around and fastened to said first member, starting from said second end, to said first end, then across the joint between said first and second members, and continuing along said second member to the first end of said second member; said LEC positioned so as to cross said joint over the outer surface of said hinge means;

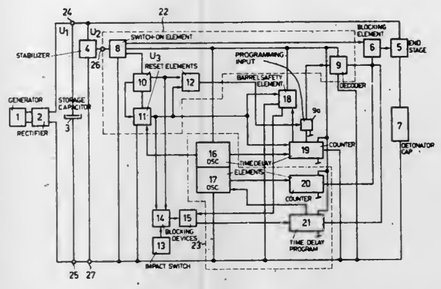
whereby when said second stick is folded about said hinge means with respect to said first stick, said LEC remains between the two parts of said hinge means.

4,240,350

ELECTRONIC FUZE

Klaus Münzel, Klingnau; Panayotis Karayannis, Zurich, and Hansjörg Naef, Buchs, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle, Zurich, Switzerland

Filed Sep. 5, 1978, Ser. No. 939,861
Claims priority, application Switzerland, Sep. 16, 1977, 11331/77
Int. Cl.³ F42C *11/06*
U.S. Cl. 102—215 **4 Claims**



1. An electronic fuze for a projectile having a barrel safety device, an ignition time-delay device, a delay-free ignition device and a self destruction device, comprising:

generator means for generating ignition energy for the projectile;

a storage capacitor for storing energy produced by the generator upon firing the projectile;

a detonator cap which is ignited by the energy stored by the storage capacitor;

an electronic circuit for the barrel safety, for ignition time-delay of the projectile upon impact, for the delay-free ignition upon impact and for the self-destruction of the projectile;

said electronic circuit comprising:

a stabilizer which is exclusively formed of components which collectively define a solid-state circuit;

resetting elements and blocking elements;

a switching-on element connected with said resetting elements and blocking elements; and

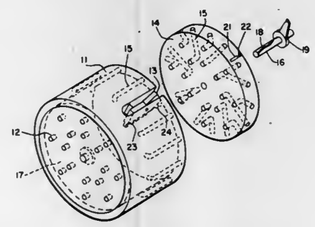
time delay elements in circuit with said resetting elements and said blocking elements and formed of components which collectively form a solid-state circuit.

4,240,351

SAFE-ARM DEVICE FOR DIRECTED WARHEAD

Anthony San Miguel, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1978, Ser. No. 970,414
Int. Cl.³ F42C *15/40*
U.S. Cl. 102—262 **20 Claims**



12. A safety and arming device comprising:

a housing having at least one explosive path therethrough;

a rotor, mounted on said housing so as to be capable of axial and rotational movement, said rotor having at least one explosive path therethrough;

means, connected to said housing, for regulating the axial and rotational movement of said rotor; and

circuit breaking means, connected to said housing and to said rotor, for providing an electrically conductive path through said rotor and said housing;

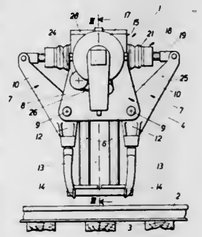
whereby said explosive paths are aligned by and said electrically conductive path established by the axial and rotational movement of said rotor.

4,240,352

MOBILE TRACK TAMPER

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Continuation-in-part of Ser. No. 834,402, Sep. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 695,733, Jnn. 14, 1976, Pat. No. 4,069,763. This application Jul. 2, 1979, Ser. No. 54,131
Claims priority, application Austria, Feb. 4, 1977, 750/77
Int. Cl.³ E01B *27/16*
U.S. Cl. 104—12 **8 Claims**



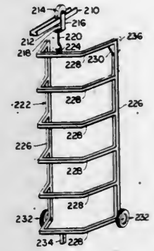
1. A mobile track tamper comprising a frame arranged for mobility on a track consisting of a multiplicity of ties and two rails fastened to the ties, a tamping head vertically movably mounted on the frame in vertical alignment with a respective one of the rails, and a power drive for vertically moving the tamping head, the tamping head including a pair of tamping tool implements arranged for reciprocation in the direction of track elongation towards and away from each other and capable of tamping ballast under respective ones of the ties upon vertical downward movement of the tamping head and immersion of the tamping tool implements in the ballast adjacent the respective ties, a carrier whereon the ballast tamping tool implements are mounted, drive means for vibrating and reciprocating the tamping tool implements mounted on the carrier and connected to the implements, the drive means comprising an eccentric shaft and reciprocating motors connected respectively to the eccentric shaft and to the tamping tool implements, a housing on the carrier through which the eccentric shaft extends and defining an oil sump in the lower portion thereof, bearings rotatably mounting the eccentric shaft in the housing, the bearings being lubricated by the oil from the sump, and each of the tamping tool implements being constituted by a rigid unit consisting essentially of a tamping tool holder having an arm having a longitudinal plane of symmetry and mounted on the carrier for pivoting in a plane vertical to the track and passing through the rail, the longitudinal plane of symmetry of the tamping tool holder arm extending in the vertical plane and the holder arm being connected to an outer end of a respective one of the reciprocating motors, the outer ends of the reciprocating motors extending through bores in the housing and being guided therein, sealing means substantially preventing oil leaking from the housing through the bores, and two arms extending transversely of the track and rigidly connected to the vertically extending arm to the left and to the right of the vertical plane, and at least one tamping tool stationary with respect to, and mounted on, each of the transversely extending holder arms and extending vertically downwardly from the holder arms for immersion in the ballast to the left and to the right of the rail.

4,240,353

ROLLER CONVEYOR CARRIAGE AND LADING SUPPORTING RACK

C. Richard Barth, 2908 Rockbrook Dr., Plano, Tex. 75074

Filed Jan. 4, 1979, Ser. No. 890
Int. Cl.³ B61B *3/00*; B61F *11/00*; B65G *17/34*
U.S. Cl. 104—93 **3 Claims**



1. In an article of manufacture adapted for transfer of products on a conveyor having hook means through stages of processing while allowing interim storage of such products, the combination comprising:

(a) a tiered carrier including suspension means with at least two vertical support legs connected to said suspension means and mounted to provide and maintain a substantially upright posture of said tiered carrier when suspended from said hook means;

(b) a plurality of vertically spaced apart support brackets rigidly connected substantially at right angles to said vertically disposed support legs;

(c) each of said support brackets forming a "U"-shaped element joined at each of its ends to said vertical support legs;

(d) said suspension means comprising the uppermost support bracket of said support brackets, a hook receiving loop mounted on said upper most bracket to supportably receive in readily removable relation said hook means, and reinforcing gussett members connecting each connection of said uppermost support bracket with said vertical support means; and

(e) said hook loop being mounted and spaced sufficiently with respect to the center of gravity of the carrier to incline said vertical support legs at an angle to the verticle when suspended to prevent products loaded on the support brackets and engaging the support legs from sliding off said support brackets while said carrier is supported from said hook means.

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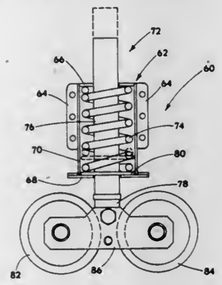
TRUCK MOUNTED RAILROAD CRANE RAIL GEAR ASSEMBLY

Timothy L. Newman, 700 N. Liberty, Jerseyville, Ill. 62050

Filed Jun. 1, 1978, Ser. No. 911,637
Int. Cl.³ B61C *13/00*
U.S. Cl. 105—215 C **5 Claims**

1. A train rail gear assembly for use with vehicle frames of truck mounted railroad cranes and other like railroad vehicles, comprising housing means having top, bottom and side walls mounted to said vehicle frame, a fluid actuated cylinder associated with said housing means and extending through the top and bottom walls of said housing means, and a compression spring extending about the fluid actuated cylinder including a piston and chamber section, the fluid actuated cylinder piston

section at its lower end being connected to a pair of rotatably mounted flanged wheels adapted for use with railroad track, the chamber section of the fluid actuated cylinder having flange means associated therewith within the housing means for engaging the bottom wall of the housing means to limit downward movement of the chamber section of the fluid actuated cylinder, said compression spring being mounted in non-compressed condition in said housing means between the flanged means of the fluid actuated cylinder chamber section



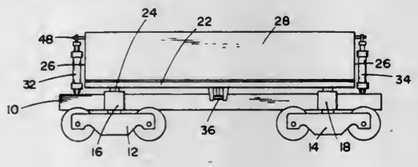
and the top wall of the housing means, said fluid actuated cylinder piston section being operable to first lower said pair of rotatably mounted flanged wheels a predetermined distance for a engagement with a railroad track, and said compression spring being thereafter compressed between the flanged means of the fluid actuated cylinder chamber section and the top wall of the housing means whereby to act as a cushion and shift weight from the vehicle frame to the compressed compression spring.

4,240,355

SIDE DUMPING RAILROAD CAR

Douglas A. Puariea, St. Paul, Minn., assignor to The Maxson Corporation, St. Paul, Minn.

Filed May 21, 1979, Ser. No. 40,484
Int. Cl.³ B61D *9/02, 9/06, 9/10*
U.S. Cl. 105—273 **1 Claim**



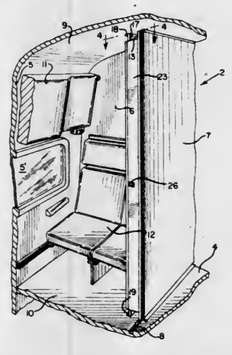
1. A side dumping railway car comprising in combination:
a plurality of wheeled trucks;
a main car frame carried on said trucks;
transverse support bolsters on said main car frame having pivot cradle means thereon;
a hopper resting in said pivot cradle means;
hydraulic cylinder means comprising a single hydraulic cylinder at each end of the car connected to a pivot point on said main car frame at one end of the cylinder and to a pivot point on the hopper at the other end of the cylinder, said pivot points positioned generally on the centerline of the car to permit generally vertical lifting of the hopper relative to the main car frame;
hopper retaining means on each side of the car adapted to hold down one side of the hopper when said hopper is raised by said hydraulic cylinder means so as to raise the hopper on the side opposite said one side, said hopper retaining means comprising a hydraulically moved engagement lug on said main car frame adapted to slide into position to hold down a reaction pin, said reaction pin connected to one side of said hopper;
an air to oil pressure intensifier on said car adapted to pump oil from a reservoir to an oil accumulator, the pressurized oil from said accumulator connected through tilt control valves to operate the hydraulic cylinders; and
an interlock valve means between said tilt control valves and a latch valve means to prevent the passage of pressurized oil to the hydraulically moved engagement lug when the hopper is raised from the main car frame, said latch valve means operated by the movement of said engagement lug into position against said reaction pin and adapted to pass pressurized oil to the lifting hydraulic cylinder means only after said engagement lug has slid into position to hold down said reaction pin.

4,240,356

MODULAR STORAGE ARRANGEMENT FOR A PASSENGER VEHICLE

Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Nov. 17, 1978, Ser. No. 961,576
Int. Cl.³ B61D *35/00*
U.S. Cl. 105—323 **11 Claims**



1. In a railway passenger vehicle having a passenger compartment including a floor and ceiling and a vertical compartment wall extending therebetween, an improved compartment storage arrangement comprising:
a vertical panel outwardly spaced from and being substantially parallel to said compartment wall and including upper and lower edge portions respectively coupled with the ceiling and floor of the compartment,
coupling means removably securing said upper and lower edge portions with said ceiling and floor,
a cabinet shell intermediate said compartment wall and panel including an inner vertical wall portion and peripheral wall portions extending outwardly therefrom to said panel about the top, rear and bottom periphery of said shell and having flange portions couplable with said panel and fastening means securing said flange portions to said panel.

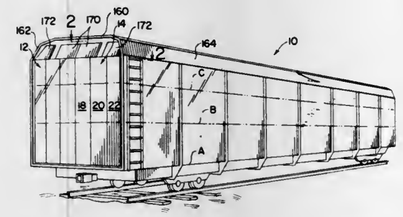
4,240,357

FOLDING RAIL CAR DOORS

Thomas E. Phillips, McDonald, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Jan. 10, 1979, Ser. No. 2,462
Int. Cl.³ B65J *1/22*
U.S. Cl. 105—378 **10 Claims**

1. In a rail car having:
an interior cavity defined partially by vertical rail car side walls and a roof structure with an inwardly and upwardly directed portion to improve car clearance,
an end opening for loading and unloading lading,
at least one door assembly including a plurality of main panels each pivotally movable with respect to the other for closing at least a portion of said end opening,
pivoted first mounting means for moving said door assembly between an open position and a closed position,
second mounting means for moving said pivoted first mounting means in directions toward and away from the intermediate portion of said rail car to permit storage of at least a portion of said door assembly along said rail car side wall and means for selective removal of said portion from storage, the improvement comprising:
top panel portions at the top of said door assembly directed angularly inwardly and spaced from each other and said roof structure,



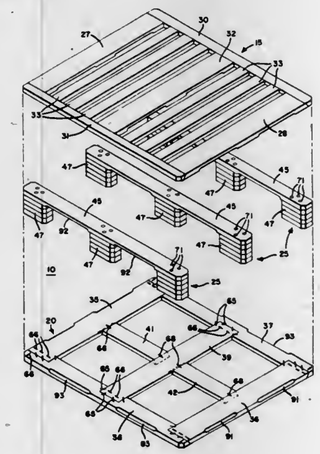
the angle of the top panel portions, the space between each of said top panel portions and every other top panel portion and the spacing of the top panel portions from said roof structure all being of such magnitude that when said door assembly is in said closed condition, said end opening portion above said door assembly is substantially closed, and when said panels are pivotally moved from said closed position to said open position and to storage along said rail car side wall, and back, each of said top panel portions clears every other top panel portion and said roof structure sufficiently for movement relative thereto.

4,240,358

WOOD PALLET

Thomas Munroe, P.O. Box 538, Far Hills Branch, Dayton, Ohio 45419

Filed Feb. 22, 1977, Ser. No. 770,422
Int. Cl.³ B65D *19/26*
U.S. Cl. 108—51.1 **3 Claims**



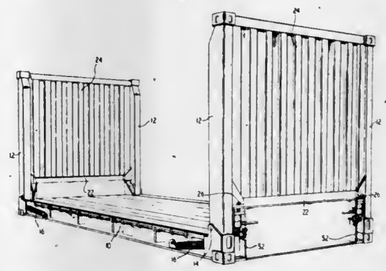
1. A wood pallet including
a top, load receiving deck;
a bottom deck;
at least two longitudinally extending stringers;
a plurality of spacer blocks attached to at least the corners of and separating said top and bottom decks;
a plurality of layers of playwood forming each spacer block;
a first plurality of nails extending into and substantially through each layer of plywood to fasten said layers together into a sturdy block;
a second plurality of nails extending through said stringers into said blocks, and
a third plurality of nails extending through each of said top and bottom decks and into said blocks to fasten said decks and blocks into a completed pallet;
said top deck including
a pair of end members; a pair of side members and a plurality of intermediate load supporting members;
said end members each including a beveled surface on the ends thereof which slope downwardly and outwardly;
said side members each including means forming inwardly facing recesses adjacent the ends thereof for receiving said end members, each recess including an end facing abutment for engaging at least a portion of said end member, and further including a complementary beveled surface for receiving and engaging said beveled surface of said end member,
whereby the interconnection between said end and side members through said beveled surfaces provide additional support to said end member and resistance against the upward forces tending to separate the end members from the spacer blocks which may be exerted against said end members as the pallet is lifted by a lifting device.

4,240,359

FREIGHT CARRIER

Peter Howe, St. Annes-on-Sea, England, assignor to Dorothy Elizabeth Howe, Lancashire, England

Filed May 19, 1978, Ser. No. 907,496
Claims priority, application United Kingdom, May 20, 1977, 21474/77
Int. Cl.³ B61D *17/06;* B65D *19/00*
U.S. Cl. 108—53.1 **3 Claims**



1. A freight carrier comprising a base structure forming a freight carrying platform and connecting apparatus for releasably connecting the carrier to a similar carrier which is stacked thereon, wherein the connecting apparatus includes interlocking means for interlocking the superposed carriers together, said interlocking means of the connecting apparatus comprising a rotatable interlocking member having a head which can pass through a hole in a base structure of the similar carrier stacked on the carrier having the interlocking means when the rotatable interlocking member is in a disengaged position on its carrier, but is prevented from passing through that hole when the rotatable member is turned into an engaged position, and clamping means for urging said interlocking means towards said base structure to thereby draw the superposed carriers together after interlocking has taken place, said clamping means including a member rotatable about a portion of said

interlocking means, said interlocking means portion being linearly slidable through said clamping means member, said clamping means further comprising a cam member fixed to the base structure in which the rotatable interlocking member is journalled, and an abutment member mounted on the rotatable interlocking member, said clamping means member comprising a second cam member mounted on the interlocking member between the fixed cam member and the abutment member and rotatable relative to the interlocking member for positively urging the interlocking member slidably towards the base structure of the carrier for clamping the carrier to the carrier stacked thereon when interlocking has been effected.

4,240,360

STACKABLE FLAT PALLET

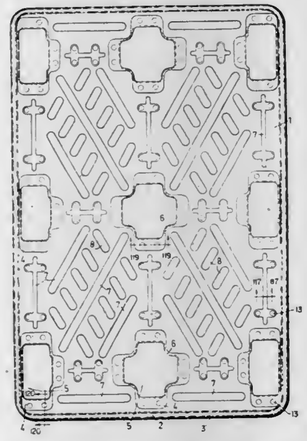
Heinz Sanders, and Horst Langmann, both of Böhmerstrasse 2, D-5800 Hagen, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,727

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730879

Int. Cl.³ B65D *19/28*

U.S. Cl. 108—53.3 **12 Claims**



1. A stackable flat pallet comprising means defining a sheet metal supporting deck and means defining sheet metal supporting feet connected to said deck, said deck being provided with a plurality of openings each located in line with a respective supporting foot and configured to correspond to the outline of its associated foot, said deck further being provided with corrugations distributed over its surface and with a folded-over edge, each of said supporting feet having a tapered, skid-like configuration and being formed, together with its associated opening in said deck, to define a cavity for receiving the correspondingly located supporting foot of a comparable pallet for stacking, and means defining horizontal flanges connected to said feet, and fastened to said deck, wherein said supporting feet and said flanges are arranged in a plurality of rows with a respective flange disposed between successive feet in each such row, said feet and flanges of each such row are together constituted by a respecfive uniform, shaped sheet metal strip, and the ends of said sheet metal strip are secured by being held in the folded-over edge of said deck.

4,240,361

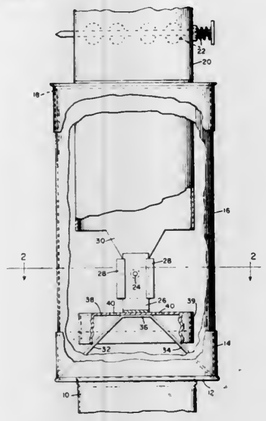
CHIMNEY SAFE HEAT SAVER

Alexander Wisniewski, 12 Cushing St., North Brookfield, Mass. 01535

Filed Feb. 21, 1979, Ser. No. 13,466

Int. Cl.³ F23J *15/00*; B01D *46/10*

U.S. Cl. 110—119 **4 Claims**



1. The safety and energy saving device for the conventional smoke pipe of a stove which comprises in combination with the conventional smoke pipe a length of pipe having a greater diameter than the conventional smoke pipe and conforming in shape thereto, and being associated therewith at the lower end thereof between the conventional smoke pipe and the stove,

an annular inverted cap supporting said length of greater diameter, said cap being supported with respect to the stove, a support in said cap, said support extending upwardly therefrom, a disc-like member on said support, apertures in said disc-like member and

a connection on said disc-like member connecting the same with respect to the lower end of the conventional smoke pipe.

4,240,362

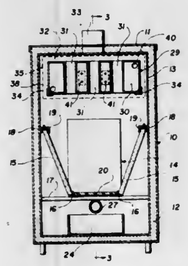
BOILER FOR DOMESTIC HEATING SYSTEMS

Arthur G. Wigdahl, 168 S. Leonard St., West Salem, Wis. 54669

Filed Nov. 28, 1978, Ser. No. 964,432

Int. Cl.³ F23B *7/00*

U.S. Cl. 110—234 **5 Claims**



1. A boiler comprising a rectangular shell, an upwardly open fire box arranged centrally in said shell and including a bottom horizontal grate and refractory side walls rising from said grate, an ash collection receptacle disposed in said shell below said grate, access doors on said shell adjacent to said fire box and said receptacle, a slide-in slide-out power module disposed horizontally in said shell above said fire box and being bodily removable from the shell through an opening provided in one wall of the shell, said power module having a multiplicity of open-ended substantially vertical fire tubes formed therethrough in the vertical direction, said fire tubes receiving hot gaseous combustion products from the open top of the fire box and passing the same in heat exchange relationship with a heating fluid being circulated continuously through said power module, exhaust means for spent gaseous combustion products opening through the top wall of said shell, said slide-in slide-out power module further comprising a substantially closed water heating chamber surrounding said fire tubes and having connections with return water and hot water supply means in a hot water heating system, and at least one electrical heating element extending within said water heating chamber in the region between adjacent rows of said fire tubes and having a connection through one end wall of said power module.

4,240,363

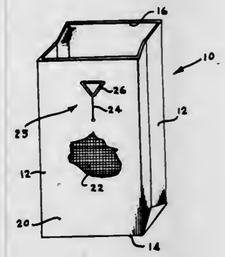
INCINERATOR BAG

Stephen R. Troy, 717 Cottonwood Dr., Severna Park, Md. 21146

Filed Aug. 3, 1979, Ser. No. 63,873

Int. Cl.³ F23G *9/00*

U.S. Cl. 110—241 **3 Claims**



1. An incinerator bag utilized for reliably and safely destroying the contents of said bag comprising a foldable enclosure having an open top portion, said enclosure having a three ply construction, said three ply construction being in the form of an inner layer of inflammable material, an outer layer of inflammable material and a middle layer of nonflammable, fireproof mesh material sandwich between said inner and outer layers of material, said mesh material having openings therein of a preselected size, said preselected size being no greater than approximately ¼ inch square, and a closure element, said closure element being in the form of an elongated wire having a fireproof handle secured to one end thereof, said closure element being removably attached to said outer layer of material for securely closing said open top portion of said enclosure and simultaneously acting as a handle for transporting said incinerator bag whereby upon incineration of said bag, said inner and outer layers of material are destroyed permitting the incineration of said contents of said bag leaving only said nonflammable, fireproof mesh material to hold the burnt remains of said contents of said bag.

4,240,364

FLUIDIZED BED START-UP APPARATUS AND METHOD

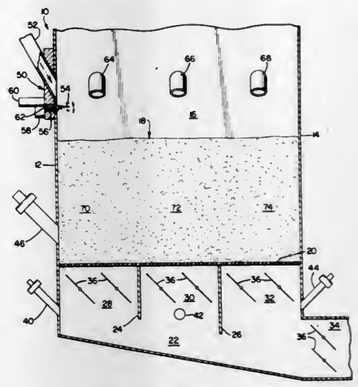
Richard W. Bryers, Flemington, and Thomas E. Taylor, Bergenfield, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 866,985, Jan. 5, 1978, Pat. No. 4,184,438. This application May 3, 1979, Ser. No. 35,618

Int. Cl.³ F23D *19/02*

U.S. Cl. 110—347 **6 Claims**

1. A method for starting a fluidized bed, comprising the steps of supporting a bed of particulate material at least a portion of which is combustible, dividing the area below said bed into a plurality of zones, selectively passing air through each zone and through the corresponding portions of said bed extending over said zones to selectively fluidize said bed portions, individually controlling the flow of air through each of said zones and therefore through said bed portions, preheating the air in



each zone as it flows through said zones, igniting the combustible portion of the particulate material extending above one of said zones, and supplying additional combustible particulate material to said bed portions.

4,240,365

MAGNETIC SEED PLANTER

Raymond D. Amburn, Sterling Heights, Mich., assignor to Dickey-john Corporation, Auburn, Ill.

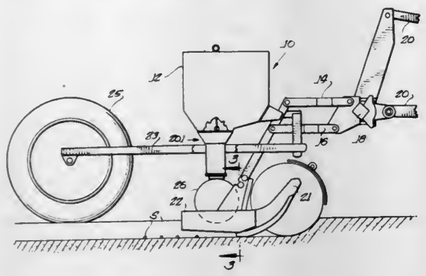
Continuation of Ser. No. 737,298, Nov. 1, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 972,823

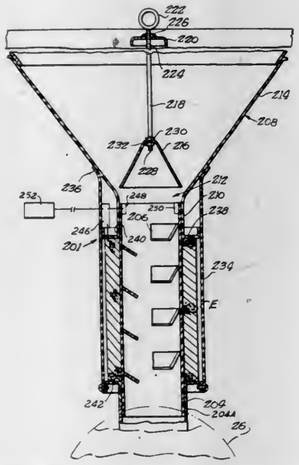
Int. Cl.³ A01C *1/00*; A01G *7/04*

U.S. Cl. 111—1 **7 Claims**

1. A mobile seed planting apparatus comprising: a supporting frame adapted to be connected to a tractor or the like; a hopper mounted on said supporting frame for containing a supply of seeds and having a seed outlet, a plurality of seed delivery means connected with said seed outlet for delivering seeds therefrom to a plurality of rows on the ground to be planted, and magnetic treatment means connected with each of said seed delivery means and including tubular conduit means forming a path of travel for seeds prior to said delivery thereof to the ground and magnetic seed treating means mounted on

said tubular conduit means for inducing a magnetic field in said path of travel for magnetically treating said seeds passing





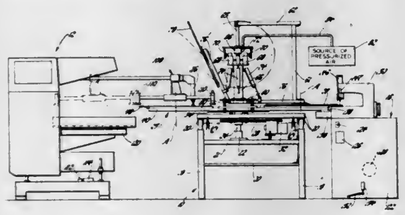
therethrough, substantially immediately prior to delivery of said seeds to the ground.

4,240,366

AUTOMATIC SEWING APPARATUS FOR AIR CUSHIONS

Stanley E. Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1978, Ser. No. 963,432
Int. Cl.[2] D05B *3/04*
U.S. Cl. 112—121.24 **3 Claims**



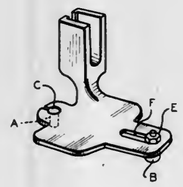
1. Apparatus for automatically sewing a pair of circular sheets of fabric together to form a restraint cushion, said apparatus comprising a base supporting a carriage for rotation about a vertical axis, a plurality of tables, means mounting said tables on said carriage for independent rotation and each of said tables being movable sequentially by the carriage from a first work station to second, third and fourth work stations which are circumferentially spaced about said carriage, a first feeder at said first work station for depositing one of said pair of circular sheets on each of said rotatable tables when the latter is located at said first work station, a second feeder at said second work station for depositing the other of said pair of sheets onto said one of said pair of sheets in concentric relationship therewith when each of said rotatable tables is located at said second work station, means mounted on said carriage and cooperating with each of said tables for holding said pair of sheets in fixed relative positions, a sewing machine at said third work station for sewing the outer peripheral portion of said sheets together when each of said tables is located at said third station and has said pair of sheets thereon, and drive means connected to said carriage for moving each of said tables sequentially from said first work station to said second, third and fourth work stations.

4,240,367

SEWING AID DEVICE

Jakob Pfuhl, Punchbowl, Australia, assignor to Katharina Pfuhl; Ingrid Pfuhl and Kate Models Pty., Limited, all of Punchbowl, Australia

Filed Aug. 20, 1974, Ser. No. 498,948
Claims priority, application Australia, Aug. 27, 1973, PB4645
Int. Cl.[2] D05B *35/00*
U.S. Cl. 112—148 **1 Claim**



1. A sewing aid device comprising:

frame means adapted to hold together in fixed relative position items to be stitched together, and provided with guide means in the form of a raised track adapted to engage with a foot mechanism on a sewing machine in such manner as to permit automatic guiding of the sewing pressure foot mechanism of the sewing machine along said guide means;

said frame means being adapted particularly for the insertion of slide fasteners into garments, comprising an elongated base member provided with a central aperture and with means for retaining a slide fastener thereon, means for holding portions of a garment in close proximity with the fastener, and said guide means in the form of a raised track for guiding a sewing pressure foot mechanism therealong;

the means for holding the garment comprising a two-part member hinged at one end to one end of said base and releasably securable to said base at the other end; and

said guide means in the form of a raised track providing a smooth raised guideway above the level of the said two-part member of substantially constant width across which guide means on a sewing machine may fit closely in such manner as to be constrained to travel along said raised track guide means.

4,240,368

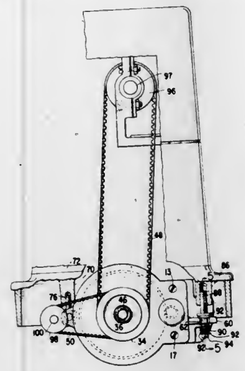
MOTORIZED DRIVE FOR A SEWING MACHINE INCLUDING BELT TENSIONING MEANS

Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 17, 1980, Ser. No. 130,792
Int. Cl.[3] D05B *69/02*
U.S. Cl. 112—220 **10 Claims**

1. In combination, a sewing machine frame; a module including a frame, a motor attached to the frame of the module, speed

reducing means which is driven by the motor, a shaft supported by the frame of the module, and a belt driving pulley which is rotatably supported on said shaft and is driven by the speed reducing means; belts on the pulley extending in different directions for driving mechanisms of the sewing machine; and means mounting the module on the frame of the machine for pivotal movement effective to set tension in one belt and translational movement effective to set tension in the other belt.

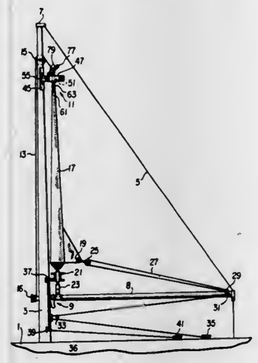


4,240,369

MAINSAIL AND/OR MIZZENSAIL FURLING DEVICE

Harold A. Molz, 17 Revell St., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 855,195, Nov. 28, 1977, Pat. No. 4,122,793. This application Sep. 25, 1978, Ser. No. 945,385
Int. Cl.[3] B63H *9/04*
U.S. Cl. 114—106 **10 Claims**



7. A masthead holding device for a mainsail and/or mizzensail furling system comprising:

(a) means for non-permanently engaging a mast including a pair of mast engaging flanges,

(b) a pair of substantially longitudinally extending arms, said flanges each being pivotally connected about a vertical axis to said arms,

(c) a swivel maintained a distance from the mast by said arms,

(d) means for connecting a halyard to said swivel,

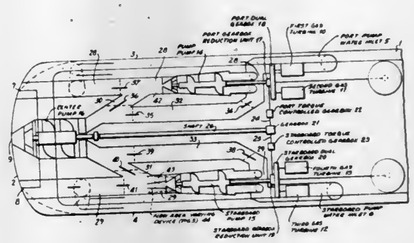
(e) means connected to said arms for maintaining said swivel substantially parallel to the mast and not rotatable relative thereto.

4,240,370

PROPULSION SYSTEM FOR HYDROFOIL, PLANING AND SEMI-PLANING SEA-GOING VESSELS

Louis Lubin, 87-01 Midland Pkwy., Jamaica Estates, N.Y. 11432

Filed Dec. 11, 1978, Ser. No. 968,484
Int. Cl.[3] B63H *11/04*
U.S. Cl. 440—40 **6 Claims**



1. A propulsion system for hydrofoil, planing and semi-planing sea-going vessels, and the like, said vessels having a hull with a bow, a stern, a port side and a starboard side, said hull having a port pump water inlet formed therethrough on its port side, a starboard pump water inlet formed therethrough on its starboard side and first. second and third water outlets formed therethrough, said propulsion system comprising

motive means in the hull;

a booster first stage system in the hull coupled to and driven by the motive means, said booster first stage system comprising a first axial water jet pump at the port pump water inlet for pumping water from said port pump water inlet and a second axial water jet pump at the starboard pump water inlet for pumping water from said starboard pump water inlet;

a second stage water jet system in the hull aft of the first stage system comprising a third axial water jet pump;

water duct means in said hull from each of the pump water inlets through the corresponding one of the first and second pumps to the corresponding one of the first and second water outlets, from each of the pump water inlets through the corresponding one of the first and second pumps and thence through the third pump, to the third water outlet, and from each of said pump water inlets through said third pump to said third water outlet, bypassing said first and second pumps;

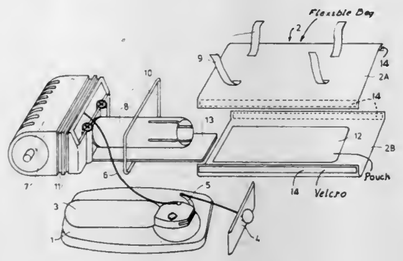
flow direction control means for selectively directing a water flow through first and second pumps simultaneously, through said first pump solely, through said second pump solely, through said third pump solely, through said first and second pumps and said third pump simultaneously, through said first pump and said third pump simultaneously and through said second pump and said third pump simultaneously; and

flow velocity control means for controlling the velocity of water pumped by each of said first and second pumps thereby controlling the velocity of water at said water outlets and, accordingly, the speed of the vessel, said flow velocity control means including first and second substantially tapered trough-like plates movably affixed to opposite points on the insides of said water duct means.

4,240,371
SIGNAL BLADDER

Theodore M. Perry, P.O. Box 8854, Auckland, New Zealand

Filed Aug. 17, 1979, Ser. No. 68,324
Claims priority, application New Zealand, Aug. 28, 1978, 188264
Int. Cl.³ B63B *45/00*; G09B *5/00*
U.S. Cl. 116—210 4 Claims

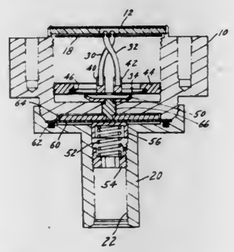


1. A signalling device for divers, comprising:
an inflatable bladder;
container means for removably holding said bladder, said container means comprising a flexible bag formed in two separable halves held together by a releasable securing means comprising strips of hooking material;
gripping means at one end of said container means for being grasped by a hand and removed from said container means;
compressed gas supply means connected to said bladder and said gripping means for supply of compressed gas to inflate said bladder upon removal of said gripping means;
line storage means for storing a flexible line;
a flexible line connected at one end to said bladder and at the other end to said line storage means; and
attaching means for attachment of the device to a diver's body or equipment and comprising flexible straps.

4,240,372
PRESSURE RESPONSIVE ANNUNCIATOR

Allen V. C. Davis, 5600 Alta Canyada Rd., La Canada, Calif. 91011

Filed Mar. 15, 1979, Ser. No. 20,717
Int. Cl.³ G01L *7/08*
U.S. Cl. 116—271 8 Claims

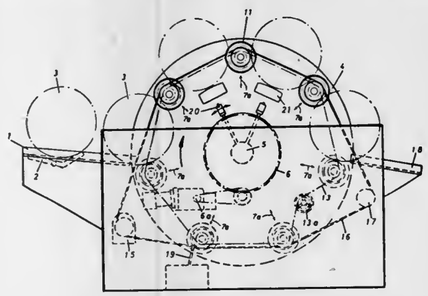


1. In combination:
a housing;
a snap action disc spring capable of preloading being in said housing and having inner and outer peripheral edges,
said disc spring having a pair of arms extending from one of its peripheral edges;
means for overcoming said preloading of said disc spring,
said overcoming means including means engaging one surface of said disc spring intermediate its inner and outer peripheral edges and being operable upon application thereto of a predetermined force to cause the preloading of said disc spring to be overcome and effect snap action thereof,
said arms undergoing movement upon such snap action having components perpendicular to the axis of said disc spring;
an indicator element;
and means coupling said indicator element and said arms,
said arms coacting to effect rotary movement of said indicator element in response to said components;

4,240,373
SPRAYCOATING APPARATUS WITH A HORIZONTAL RUN-IN FOR CYLINDRICAL BODIES

Rudolf Anger, Kirchheim-Teck, Fed. Rep. of Germany, assignor to Sprimag Spritzmaschinenbau GmbH, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 965,752
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754136
Int. Cl.³ B05C *5/00*, *13/02*
U.S. Cl. 118—301 17 Claims



1. An apparatus for spraycoating of cylindrical bodies such as barrels, bins, drums, buckets and the like, comprising:
(a) an inlet structure having a lever for controlling the run-in of cylindrical bodies into a transport system;
(b) a transport system for transporting said cylindrical bodies from said inlet structure to an outlet structure, comprising
an upright transport wheel mounted for rotation about an axis,
means for continuously rotatingly driving said transport wheel,
a plurality of adjustable-length horizontal support pins supported about said transport wheel at circumferentially spaced locations radially displaced from said axis,
a pair of rolling cones mounted on and spaced apart along each said horizontal support pin; said cones rotatable relative to said transport wheel,
means for adjusting the length of said horizontal support pins to vary the spacing between said rolling cones; and
means for rotatingly driving said rolling cones;
(c) spraycoating units mounted for spraycoating the exterior surfaces of cylindrical bodies being transported by said transport system; and
(d) an outlet structure,
whereby said cylindrical bodies are transported continuously from said inlet structure to said outlet structure with rotation of said transport wheel, each cylindrical body supported by pairs of said rolling cones mounted on adjacent said horizontal support pins and rotated about its own axis with rotation of said rolling cones.

4,240,374
MAGNETIC IMAGE DECORATOR HAVING ROTATING CYLINDERS AND KNIFE BLADES ASSOCIATED THEREWITH

Donald W. Edwards; Richard D. Kinard, both of Wilmington, Del.; Theodore J. Wirbisky, Avondale, and Richard J. Angelucci, Glenolden, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

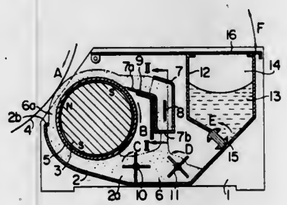
Division of Ser. No. 788,668, Apr. 18, 1977, Pat. No. 4,185,130.
This application May 29, 1979, Ser. No. 42,942
Int. Cl.³ G03G *13/09*
U.S. Cl. 118—657 8 Claims

1. A decorator for applying magnetically attractable toner particles to a latent magnetic image comprising a sump of magnetically attractable toner particles, at least one pair of rotatable cylinders partially immersed in said toner particles each of which cylinders has at least one magnetic helix in the surface thereof and each of which cylinders is a magnetic auger, a knife blade located between each of said cylinders and the latent magnetic image adapted to create a fluidized standing wave of toner particles which wave contacts the latent magnetic image.

4,240,375
APPARATUS FOR DETECTING CONCENTRATION OF TONER IN DEVELOPING POWDER

Isamu Terashima, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Apr. 11, 1978, Ser. No. 895,373
Claims priority, application Japan, Apr. 13, 1977, 52-41429; Sept. 2, 1977, 52-104831
The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.
Int. Cl.³ G03G *13/09*
U.S. Cl. 118—689 9 Claims

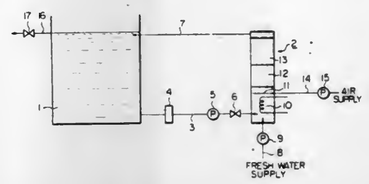


1. An apparatus for detecting the concentration of toner particles in the developing powder, the developing powder comprised of a mixture of magnetic carrier particles and pigmented toner particles, comprising means for containing said developing powder, means for transporting said developing powder in said container means to the surface to be developed, a hollow member, means for separating said developing powder from said transport means and for guiding said developing powder to said hollow member, and a sensor element operated in response to the magnetism of the developing powder flowing in said hollow member, said sensor element being formed flat and disposed in said hollow member in a manner that the flat surfaces of said sensor element are in parallel to the direction of flow of said developing powder moving in said hollow member.

4,240,376
METHOD FOR KEEPING AQUATIC ANIMALS ALIVE OVER LONG PERIODS OF TIME

Naoya Kominami; Hirokazu Fukumi; Naokuni Yamawaki, and Junji Nomura, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 802,338, Jun. 1, 1977. This application Dec. 13, 1978, Ser. No. 969,132
Claims priority, application Japan, Jun. 8, 1976, 51/66814
Int. Cl.³ A01K *63/00*
U.S. Cl. 119—2 22 Claims



1. A method for keeping aquatic animals alive over a long period of time without feeding them and in a high density in environmental water, comprising the steps of:
(A) placing aquatic animals in a density greater than 200 kg/m^3 in environmental water in a container;
(B) controlling the temperature of said environmental water so that said temperature is maintained at a temperature of from the lowest possible temperature in which said aquatic animals are able to exist to a temperature of 7° C. above said lowest possible temperature;
(C) controlling ammonia compounds in said environmental water so that the total concentration thereof does not exceed 20 ppm;
(D) controlling water-soluble organic compounds in said environmental water so that the total concentration thereof does not exceed 150 ppm;
(E) controlling carbonic acid radical in said environmental water so that it does not exceed a concentration of 1000 ppm and;
(F) regulating molecular oxygen dissolved in the environmental water so that its concentration is maintained at 3 ppm or more.

4,240,377
FLUIDIZED-BED COMPACT BOILER AND METHOD OF OPERATION

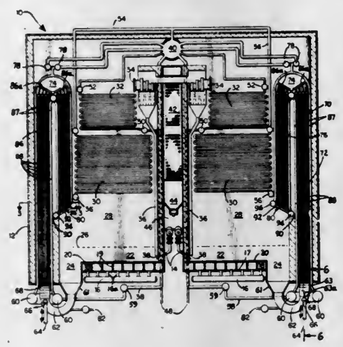
William B. Johnson, Gansett Point, Woods Hole, Cape Cod, Mass. 02543

Continuation-in-part of Ser. No. 764,052, Jan. 31, 1977, abandoned. This application Jan. 19, 1978, Ser. No. 870,696
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—4 D 55 Claims

1. An improved fluidized bed combustion and heat transfer apparatus having a combustion chamber with a fluidized bed of particulate matter generally supported on a support member adapted to permit introduction of a fluidizing gas medium into the particulate matter and an inlet for introducing a combustible fuel material into the fluidized bed, wherein the improvement comprises:
generally vertically extending heat exchange means generally separated from the fluidized bed, said heat exchange means providing a generally walled heat exchange chamber essentially free of any obstruction to fluid flow therethrough, with heat exchange fluid in the walls of said heat exchange chamber and coupled to apparatus adapted to utilize heated heat exchange fluid;
means for withdrawing a portion of the constituents of the fluidized bed and introducing said withdrawn portion into said heat exchange chamber, generally at the bottom thereof, in a generally fluidized state; and

means for reintroducing fluidized material flowing through said heat exchange chamber into the fluidized bed in the combustion chamber generally from the top of said heat exchange means,

such that said withdrawn portion of fluidized materials circu-



lates from the fluidized bed, through said heat exchange chamber in said heat exchange means and back into the fluidized bed in said combustion chamber, whereby heat associated with said withdrawn portion of fluidized material flowing through said heat exchange chamber is transferred to said heat exchange fluid through the walls of said heat exchange chamber.

4,240,378

COMBUSTION APPARATUS

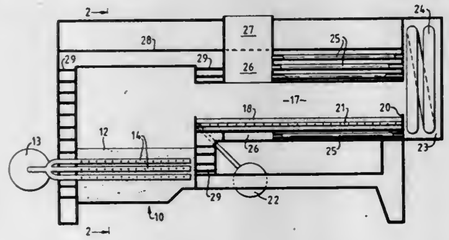
Peter B. Caplin, Energy House, Olney, Buckinghamshire, England

Filed Aug. 8, 1978, Ser. No. 931,974

Claims priority, application United Kingdom, Aug. 18, 1977, 34795/77

Int. Cl.³ B09B *3/00*

U.S. Cl. 122—4 D **6 Claims**



1. A boiler comprising a firebox to which fuel is fed having a fluidized combustion bed to which a supply of air under pressure is fed to initiate and sustain combustion, an elongated flame tube extending from said fire box and communicating at one end therewith in which combustion of said fuel may continue, an array of smoke tubes concentricly located about said flame tube and extending parallel thereto, the other end of said flame tube and the adjacent ends of said smoke tubes communicating with a chamber so that the products of combustion issuing from the flame tube are fed thereto, the free ends of said smoke tubes communicating with a chimney for exhaust and a water jacket surrounding said firebox, flame tube and smoke tubes, a superheater located within said chamber and communicating with said water jacket for the generation of superheated steam.

4,240,379

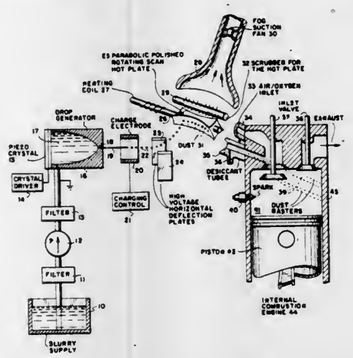
METHOD AND MEANS FOR CONTROLLING EXPLOSIVE DUST WITH COMPUTER PROGRAMMED STRATIFIED FUEL INJECTED COMBUSTION

John W. Armbruster, 475 Munroe Ave., North Tarrytown, N.Y. 10591

Filed Jun. 23, 1978, Ser. No. 918,560

Int. Cl.³ F02B *45/08, 19/04*

U.S. Cl. 123—23 **10 Claims**



1. A method for making the fueling of an engine subject to micro interval changes in fueling compatible with the speed of a high speed computer with programming and memory instruction components for carrying on computations relative to the fueling of the engine comprising the steps of,

providing fuel portions ultrasonically at micro second intervals; distributing said fuel portions in rasters of variable size; predetermining by program and memory instructions the sizes and times of provision of said fuel rasters according to rapidly changing engine load conditions;

sensing a particular engine load condition; and igniting the provided fuel raster.

4,240,380

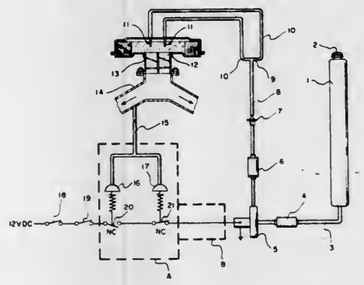
WATER INJECTION SYSTEM

Bernie L. Slagle, Rte. 206, R.D. #6, Vincentown, N.J. 08088

Filed Mar. 21, 1977, Ser. No. 779,723

Int. Cl.³ F02M *25/02*

U.S. Cl. 123—25 L **9 Claims**



1. A water injection system for an internal combustion engine having carburetor means, a plurality of combustion chambers and a manifold through which a fuel air mixture is fed to said combustion chambers comprising:

a reservoir for holding a supply of tap water;

a powered pump means and means connecting the same to said reservoir for providing pressurized water from said reservoir;

nozzle means located in the upper part of said carburetor

means, and means connecting the output of said pump means to said nozzle means;

control means for controlling the operation of said pump means;

pressure sensitive means connected to said manifold and to said control means and being responsive to the pressure within said manifold;

said pressure sensitive means and said control means activating said pump means when said pressure sensitive means senses a first predetermined pressure and deactivating said pump means when said pressure sensitive means senses a second and different predetermined pressure said pump means delivering a constant volume of water to said nozzle means regardless of the engine speed whenever said pump means is activated.

4,240,381

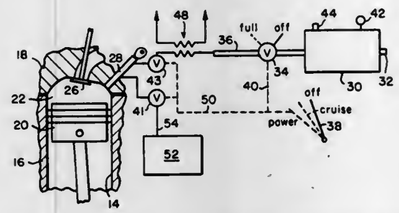
INTERNAL COMBUSTION ENGINE SYSTEM

Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences Inc., Geneva, N.Y.

Continuation-in-part of Ser. No. 972,786, Dec. 26, 1978, Ser. No. 970,320, Dec. 18, 1975, Ser. No. 955,896, Oct. 30, 1978, abandoned, Ser. No. 961,264, Nov. 26, 1978, Ser. No. 955,895, Oct. 30, 1978, abandoned, and Ser. No. 951,383, Oct. 16, 1978. This application May 8, 1979, Ser. No. 37,161

Int. Cl.³ F02B *41/00*

U.S. Cl. 123—26 **52 Claims**



1. A method for operating an internal combustion engine including at least one piston-cylinder-combustion chamber system comprising the steps of:

(a) operating each piston-cylinder-combustion chamber system to provide at least partial strokes consisting of inlet, compression, power, and exhaust strokes;

(b) operating said compression stroke with a compression ratio substantially less than the expansion ratio to provide only enough oxygen to accommodate only enough fuel to supply power cruise conditions;

(c) storing a supply of oxygen-containing compressed gas in a tank adjacent to said internal combustion engine; and

(d) increasing the power of said engine in response to throttle demand for more power than is available from said operating steps, by feeding compressed gas from said tank to each combustion chamber during the end of said compression stroke and prior to said power stroke and also feeding a corresponding additional quantity of fuel to said combustion chamber with said compressed gas.

4,240,382

SPEED SENSITIVE ELECTRONIC FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Junuthula N. Reddy, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 1, 1978, Ser. No. 901,379

Int. Cl.³ F02B *3/04*

U.S. Cl. 123—485 **18 Claims**

1. In combination with an internal combustion engine having means for generating trigger signals indicative of at least two diametrically opposite rotational positions of the engine's crankshaft, a sensor generating a load signal having a value indicative of the engine's load, and at least one electrically actuated fuel injector valve for delivering fuel to the engine in response to an injection signal, an electronic fuel control system for generating injection signals comprising:

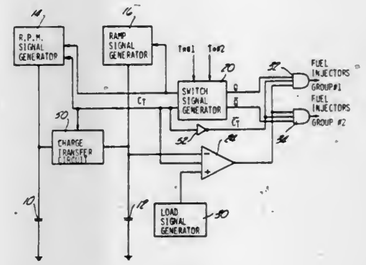
RPM signal generator means for generating in a first interval between two successively generated trigger signals a first signal, said first signal having a value variable as a predetermined function of time;

a first capacitor for storing said first signal and generating an RPM signal having a value varying with the value of said first signal;

a second capacitor for storing, in a second interval between two successive trigger signals, a sum signal having a value indicative of said RPM signal at the end of said first interval plus the integrated sum of a second signal;

switch signal generator means for generating transfer signals in response to said trigger signals, said transfer signals having a predetermined pulse width small compared to the interval between successive trigger signals;

first comparator means for comparing the value of the RPM signal stored by said first capacitor with the value of the sum signal stored by said second capacitor in response to said transfer signal to generate a discharge signal when the



value of said RPM signal is smaller than the value of said sum signal;

discharge circuit means for discharging said second capacitor in response to said discharge signal to decrease said sum signal to a value equal to the value of said RPM signal;

first ramp signal generator means for generating said second signal, said second signal increasing, during said second interval, the value of the signal stored in said second capacitor at a predetermined rate;

second comparator means receiving the load signal and said sum signal for generating said injection signal having a pulse duration equal in time to the time between the initiation of the transfer signal and the time the value of said sum signal equals the value of said load signal; and

gate means disabled by said transfer signal for transmitting said injection signals to said at least one injector valve, the disabling of said gate means limiting the duration of said transmitted injection signals to a duration equal to the time it takes said ramp signal to increase the value of said sum signal from the value of said RPM signal to the value of said load signal.

4,240,383

FUEL METERING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

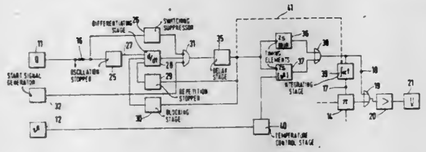
Michael Horbelt, Schwieberdingen; Hans Schnürle, Walheim; Ulrich Drews, Vaihingen-Pulverdingen, and Richard Bertsch, Asperg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,508

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814397

Int. Cl.³ F02D *5/02*

U.S. Cl. 123—492 **10 Claims**



1. A device for metering fuel in an internal combustion engine having semsors for detecting operating parameters and a fuel metering system comprising

a sensor element for the amount of air throughflow of an internal combustion engine,

an oscillation stopper circuit responsive to said sensor element and having an output,

a switching suppressor responsive to said sensor element and having an output,

a repetition stopper and a blocking stage each having an input and an output,

an acceleration detection stage including a differentiating stage and responsive to the outputs of said oscillation stopper, said repetition stopper and said blocking stage, and

an AND gate having inputs responsive to outputs of said switching suppressor and said acceleration detection stage and having an output directed to a fuel metering system.

4,240,384

INDUCTION UNITS FOR INTERNAL COMBUSTION ENGINES WITH PETROL INJECTION

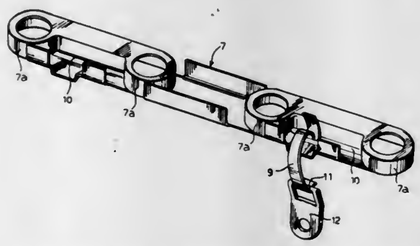
Mario Urbinati, Turin, and Alessandro Nannini, Vinovo, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed May 16, 1979, Ser. No. 39,550

Claims priority, application Italy, Jun. 26, 1978, 68493 A/78

Int. Cl.³ F02B *3/00;* **F02M** *39/00*

U.S. Cl. 123—470 **3 Claims**



1. An induction unit for an internal combustion engine with fuel injection, comprising:

a plurality of fuel injectors having parallel axes,

an induction manifold adapted to receive said injectors, said manifold having respective seats for supporting said injectors,

a retaining member for retaining each of said injectors on its respective seat in said induction manifold, and

means for securing said retaining member to said induction manifold,

wherein said securing means comprises at least one C-shaped strip spring, support means pivotably connecting one end of said strip spring to said manifold,

wherein said retaining member comprises a plate having, in correspondence with each said spring, a seat in which the other end of each said spring is releasably engageable by a snap action, and

wherein the ends of said C-shaped strip spring are disposed in a plane containing the axes of said injectors on a line parallel to said axes to provide a constant retaining force to said injectors in the direction of their axes.

4,240,385

INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES

Günter Kulke, Esslingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

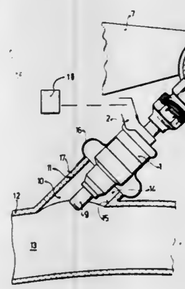
Continuation of Ser. No. 847,299, Oct. 31, 1977, Pat. No. 4,143,625. This application Feb. 13, 1979, Ser. No. 11,824

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653674

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ F02M *53/04*

U.S. Cl. 123—470 **4 Claims**



1. An injection valve for mechanically controlled feed of fuel into an intake duct of an internal combustion engine, said valve being supported by sealing means in means defining an aperture in said intake duct, the further improvement wherein:

said injection valve which includes an exterior wall is supported freely within said means defining said aperture by a bellows means.

4,240,386

VARIABLE STROKE ENGINE OR COMPRESSOR

Oliver Crist, 342 Skyline Dr., Vista, Calif. 92083

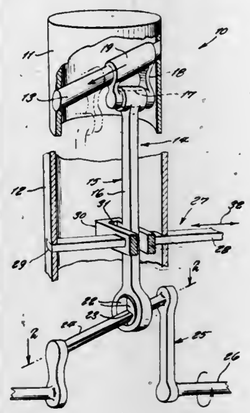
Filed Mar. 5, 1979, Ser. No. 17,562

Int. Cl.³ F02B *75/04, 75/36*

U.S. Cl. 123—48 B **4 Claims**

1. A variable stroke piston drive, comprising in combination, a cylinder, a piston slideable in said cylinder, a wrist pin in said piston, said wrist pin extending angularly inclined respective to a stroke direction of said piston; said drive also including a crankshaft, a throw arm on said crankshaft, a shaft on an outer end of said throw arm, said shaft being angularly inclined respective to a rotational axis of said crankshaft; a connecting rod assembly between said wrist pin and said throw arm shaft; and a shift mechanism for sliding said connecting rod assembly laterally along said wrist pin and said throw arm shaft, said

mechanism comprising a bar slideable transversely through said piston, a frame formed along an intermediate portion of



said bar, a slot in said frame extending transversely to said bar, and said connecting rod assembly extending through said slot.

4,240,387

INTAKE SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

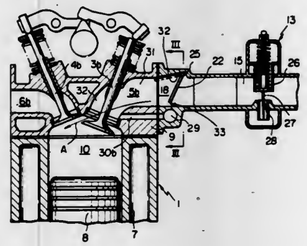
Katsuhiko Motosugi; Shuhei Toyoda; Hiroshi Takahashi, and Toshio Tanahashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 19, 1979, Ser. No. 58,758

Claims priority, application Japan, Aug. 10, 1978, 53-97599

Int. Cl.³ F02B *29/02, 31/00*

U.S. Cl. 123—52 M **19 Claims**



1. A multi-cylinder internal combustion engine having a plurality of cylinders, each having a combustion chamber and an intake valve which has a valve head, said engine comprising:

at least one intake passage common to at least two cylinders and comprising a collecting portion having an inlet, and at least two branch intake passages branched off from said collecting portion, each of said branch intake passages having an upper wall and a bottom wall and being connected to said respective combustion chamber via said corresponding intake valve;

fuel supply means arranged in the inlet of said collecting portion;

a common connecting passage;

at least two branch connecting passages each being connected to said common connecting passage and having an opening which opens into said respective branch intake passages, and;

at least two rotatable throttle valves each being arranged in said respective branch intake passage at a position upstream of the opening of said corresponding branch connecting passage and having an upper edge and a lower edge which cooperates with the bottom wall of said corresponding branch intake passage to form therebetween a mixture flow passage, the cross sectional area of which is increased as the corresponding throttle valve is rotated in accordance with an increase in the level of the load of said engine, the upper edge of each of said throttle valves cooperating with the upper wall of said corresponding branch intake passage to prevent a mixture from flowing between the upper edge of said corresponding throttle valve and the upper wall of said corresponding branch intake passage.

4,240,388

METHOD FOR CONTROLLING TIMING OF SPARK IGNITION FOR AN INTERNAL COMBUSTION ENGINE

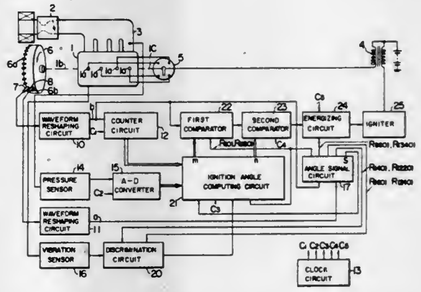
Norio Omori, Kariya; Yutaka Kawashima, Okazaki; Hideya Fujisawa, Kariya; Hisasi Kawai, Toyohashi, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Sep. 11, 1978, Ser. No. 941,207

Claims priority, application Japan, Sep. 19, 1977, 52-112351; Oct. 20, 1977, 52-126516

Int. Cl.³ F02P *11/02*

U.S. Cl. 123—425 **10 Claims**



1. A method for controlling the timing of spark ignition for an internal combustion engine having an output shaft rotated by a piston, the method comprising the steps of:

establishing a timing characteristic of spark ignition relative to operating conditions of said engine so that a maximum output torque is produced by said output shaft in each of said operating conditions;

monitoring the magnitude of load of said engine;

comparing the magnitude of load monitored by said load monitoring step with a predetermined magnitude;

detecting a first and second rotational positions of said engine before the arrival and at the arrival of said piston to the top dead center position thereof, respectively;

monitoring the magnitude of vibration of said engine by a vibration responsive means coupled to said engine;

averaging the magnitude of vibration monitored by said monitoring step during the rotation of said output shaft from said first to second rotational positions detected by said position detecting step;

comparing the magnitude of vibration monitored by said vibration monitoring step with a reference magnitude proportional to the output average value of said averaging step; and

changing the control mode of the timing of spark ignition in response to the load comparison result of said load comparing step such that the timing of spark ignition is controlled in accordance with said established timing characteristic of said establishing step and irrespective of the

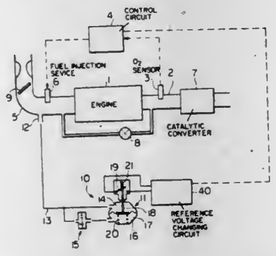
vibration comparison result of said vibration comparing step in response to the load comparison result indicative of the magnitude of load being smaller than said predetermined magnitude and that the timing of spark ignition is controlled in accordance with both said estblished timing characteristic of said establishing step and the vibration comparison result of said vibration comparing step in response to the load comparison result indicative of the magnitude of load being larger than said predetermined manitude.

4,240,389

AIR-FUEL RATIO CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Ruji Shimazaki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 18, 1978, Ser. No. 907,339
Claims priority, application Japan, Feb. 15, 1978, 53/15340
Int. Cl.³ F02B *75/10*
U.S. Cl. 123—492 **4 Claims**



1. An air-fuel ratio control device for an internal combustion engine comprising:

a first sensor provided in an exhaust passage for detecting the oxygen concentration of exhaust gas;

a control circuit having means for comparing the output voltage from said first sensor with a reference voltage so that an air-fuel ratio of the mixture being introduced into the internal combustion engine is discriminated as rich or lean with respect to stoichiometric air-fuel ratio during all operating conditions of the engine;

means for supplying fuel into an intake passage of the internal combustion engine, so that when the air-fuel ratio of the mixture is leaner than the stoichimetric air-fuel ratio the amount of fuel is increased and when the air-fuel ratio of the mixture is richer than the stoichiometric air-fuel ratio the amount of fuel is decreased;

a second sensor for detecting the accelerating operating conditions of the internal combustion engine, said second sensor having an output signal indicating engine acceleration and comprising a diaphragm-type switch having a diaphragm which is actuated by vacuum pressure drawn from the intake passage downstream of a throttle valve, said diaphragm-type switch sends an accelerating signal to the control circuit when the absolute value of intake pressure is abruptly increased; and

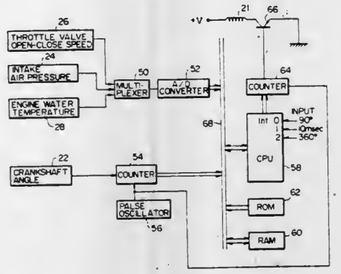
means, responsive to said output signal, for changing said reference voltage to a value different from a predetermined value so that the air-fuel ratio of the mixture being controlled is changed so as to be richer only when the internal combustion engine is in the accelerating operating conditions.

4,240,390

AIR-FUEL RATIO CONTROL SYSTEM IN INTERNAL COMBUSTION ENGINE

Keiso Takeda, Shizuoka, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 3, 1979, Ser. No. 63,395
Claims priority, application Japan, Sep. 1, 1978, 53-107726
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—480 **9 Claims**



1. An air-fuel ratio control system in an internal combustion engine comprising: a carburetor in which a basic air-fuel ratio is set on the lean side rather than at a controlled air-fuel ratio; a fuel injection valve for injecting feed of fuel so that the air-fuel ratio can attain a controlled air-fuel ratio; and a control circuit for basically controlling the fuel flowrate injected from said fuel injection valve according to RPM of the engine and an air intake pressure, and for correcting and controlling said fuel flowrate according to operating conditions of the engine during transient operating conditions, wherein said control circuit comprises: a multiplexer fed with an output from the throttle valve open-close speed sensor, an output from the intake air pressure sensor, and an output from the engine cooling water temperature sensor; an analog-digital converter for converting an output from said multiplexer into a digital value; a first counter, a pulse oscillator and a crankshaft angle sensor, said first counter counting the number of pulses generated by said pulse oscillator per output generated by said crankshaft angle sensor; a microcomputer for performing calculations based on outputs from said analog-digital converter and said first counter; a random access memory for provisionally storing constants and the like required for operation in said microcomputer; a read only memory for storing programs and the like required for fuel injection; a second counter for counting the number of pulses generated by said pulse oscillator per output generated by said microcomputer; a power transistor for on-off controlling the current flowing to an exciting coil of said fuel injection valve based on an output from said second counter; and a bus line for connecting between said components.

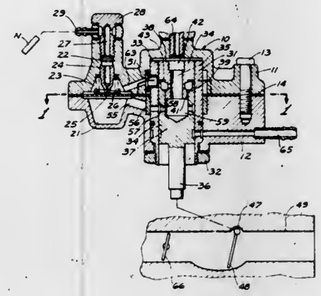
4,240,391

FUEL SUPPLY CONTROL DEVICE FOR FUEL INJECTED INTERNAL COMBUSTION ENGINE

Hidenobu Nagase, Wako; Kiyoshi Miyaki, Asaka; Hiroshi Shirakura, Kamifukuoka, and Yasuo Ohashi, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1978, Ser. No. 965,875
Claims priority, application Japan, Dec. 19, 1977, 52-152540
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—454 **6 Claims**

1. In a control device for liquid fuel supply for an internal combustion multi-cylinder engine having fuel injection nozzles, the combination of: a stationary housing having an upper part and a lower part, a metal diaphragm clamped between said housing parts, a plurality of constant differential pressure valves, each valve having an upstream cavity formed in the lower housing part and a downstream cavity formed in the upper housing part, said cavities being separated by said diaphragm, each constant differential pressure valve having a discharge passage for connection with a fuel injection nozzle, a valve body in each downstream cavity having a port closed by contact with said diaphragm, each downstream cavity containing a spring acting to apply a pressure against said diaphragm to move it in a direction to admit fuel from said upstream cavity into said valve body and discharge passage, a stationary sleeve mounted in both housing parts and extending through said diaphragm and having a central bore, a metering member mounted to turn in said bore and having a central chamber, means for delivering liquid fuel from said central



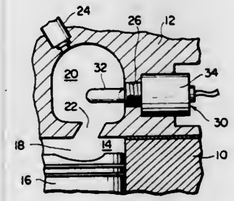
chamber to each of said downstream cavities, a substantially flat ring having a notched outer periphery and a solid inner periphery mounted on said metering member, said substantially flat ring having a notched outer periphery and a solid inner periphery having a notched periphery, said stationary sleeve having a plurality of openings communicating with notches on said substantially flat ring having a notched outer periphery and a solid inner periphery to form variable orifices, passage means in said upper housing part establishing communication between said sleeve openings and said downstream cavities, and means for turning said metering member in proportion to the rate of air flow through an air intake passage for the engine.

4,240,392

RETRACTABLE GLOW PLUG FOR DIESEL ENGINE

Yutaka Matayoshi, Kamata-motomachi; Masayuki Tamura, Yokohama, and Yoshiro Anegawa, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 17, 1979, Ser. No. 4,204
Claims priority, application Japan, Feb. 24, 1978, 53/20639
Int. Cl.³ F02B *9/08*; F02P *19/02*
U.S. Cl. 123—145 A **9 Claims**



1. A glow plug for preheating of air in a swirl-producing precombustion chamber of a compression-ignition internal combustion engine, the glow plug comprising:

a body which is adapted for fixed installation in the engine substantially without protruding into the precombustion chamber and formed therein with an elongate bore opening at one end of said body;

an electromagnet constituted of a magnet coil stationarily disposed in said bore and a member which is movably received in said bore and serves as an iron core passing through said magnet coil, so that the distance of said member from said end of said body varies as said magnet coil is energized and deenergized;

a spring disposed in said bore to bias said member in an axial direction;

a heating head of an elongate shape fixed at one end thereof to said member and partly received in said bore of said body so as to longitudinally move relative to said body through said end of said body when said member is moved, said heating head comprising therein an electric heater wire; and

seal means for preventing inflow of a gas into said bore through said end thereof;

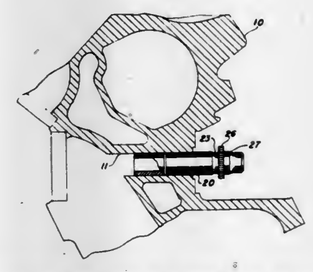
said bore, said member, said spring, and said heating head being shaped and arranged such that a major portion of said heating head protrudes from said body when said magnet coil is energized to cause said member to take a first position relatively close to said end of said body and retracts into said body when said magnet coil is deenergized to allow said member to be brought to a second position relatively remote from said one end of said body by said spring.

4,240,393

SELF LOCKING VALVE GUIDE

Jose Rosan, Jr., Newport Beach, Calif., assignor to Rosan, Inc., Newport Beach, Calif.

Filed Jan. 25, 1979, Ser. No. 6,341
Int. Cl.³ F01L *3/08*
U.S. Cl. 123—188 GC **6 Claims**



1. A self-locking valve guide for installation on a cylinder head comprising in combination a cylindrical body means, a beveled pilot means at one end thereof,

an annular groove,

an annular serrated locking flange means, installation means at the end opposite the pilot means, wherein metal is displaced from the cylinder head and compressed into said annular groove by said locking flange means to form a metal to metal lock of the valve guide into said cylinder head.

4,240,394

ROTARY ENGINE

Joachim E. Lay, 1749 Ridgewood, East Lansing, Mich. 48823

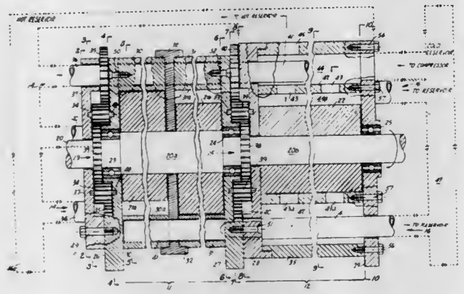
Filed Oct. 6, 1978, Ser. No. 949,196
Int. Cl.³ F02B *53/06, 53/08*
U.S. Cl. 123—214 **8 Claims**

1. In a rotary engine including a shaft mounting at least one eccentric rotor on a longitudinal axis in a closed housing such that a fluid is provided in variable volume compartments between the rotor and the housing formed by multiple sliding abutments mounted around the housing in sealing engagement

with the rotor as the rotor rotates on the axis the improvement which comprises:

(a) two separate sets of fixed radial position rotatable gears mounted around the shaft so that the sets are on opposite ends of the housing, wherein in each set a central gear is provided around the shaft and an outer gear is drivable by an intermediate gear which is drivable by the central gear;

(b) at least one rotary inlet tube and outlet tube each having a longitudinal axis mounted on the housing around the rotor parallel to the longitudinal axis of the shaft with openings in the tubes for supplying fluid to the compartments, wherein the outer gears are mounted around the inlet tube at one end of the housing and around the outlet tube at the other end of the housing to rotate the tubes



with the openings in the tubes leading into corresponding openings in the housing such that in operation periodically each compartment is provided with a fluid through the inlet tube, the rotor is rotated by the fluid and then the fluid is exhausted through the outlet tube; and

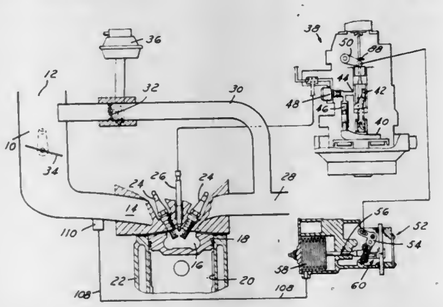
(c) a gas compressor including an eccentric compressor rotor mounted on the shaft in a compressor housing with sliding abutments mounted radially on the rotor which sealably engage an inner wall of the compressor housing to form gas compartments of variable volume as the shaft is rotated wherein the outlet tube extends outside of the compressor housing in a confined space such that the compressed gas is in a heat exchange relationship with the exhausted gas in the outlet tube to provide a regenerator for transferring heat from the exhausted gas.

4,240,395

AIR/FUEL RATIO CONTROLLER

Aladar O. Simko, Dearborn Heights, and Michael M. Schechter, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 29, 1978, Ser. No. 937,693
Int. Cl.³ F02D *1/14*; F02M *25/06*
U.S. Cl. 123—445 **23 Claims**



1. An air/fuel ratio controller for use with the fuel injection system of an internal combustion engine of the spark ignition type having an air-gas induction passage open at one end to air at ambient pressure level and connected at its other end to the engine intake manifold to be subject to manifold vacuum changes therein, a throttle valve rotatably mounted for movement across the passage to control the air-gas flow therethrough, an exhaust gas recirculation (EGR) passage means connecting engine exhaust gases to the induction passage above the closed position of the throttle valve, an EGR flow control valve mounted in the EGR passage means for movement between open and closed positions to control the volume of EGR gas flow, and an engine speed responsive positive displacement type fuel injection pump having a fuel flow output to the engine that varies in direct proportion to changes in engine speed to match fuel flow and mass air flow through the induction system of the engine over the entire speed and load range of the engine to maintain the ratio of air to fuel constant, the fuel pump having a fuel flow control lever selectively movable in opposite directions to vary the fuel flow output per cycle, the controller characterized by,

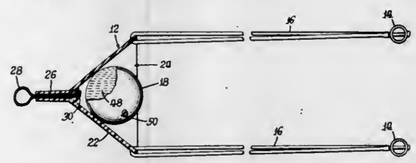
a mechanical linkage mechanism including a primary lever fixed to the pump lever for concurrent movement, an engine manifold vacuum responsive servo means, a link connecting the servo means to the primary lever for moving the primary lever and fuel lever to vary the fuel flow output as a function of changes in intake manifold vacuum indicative of changes in air flow through the induction passage to maintain the ratio of air to fuel constant, and a fuel enrichment control lever operably interconnected to the EGR valve and primary lever for modifying the movement of the primary and fuel flow levers to vary fuel flow as a function of the addition or deletion of EGR gases to the induction passage to compensate for the resulting change in percentage of air flow with respect to the total gas flow inducted to maintain a constant air/fuel ratio.

4,240,396

GAME-BALLOON LAUNCHER

William M. Randoll, 653 Loring St., San Diego, Calif. 92109

Filed Sep. 11, 1978, Ser. No. 941,130
Int. Cl.³ F41B *3/02*
U.S. Cl. 124—17 **3 Claims**



1. A game comprising

a launcher and a balloon,

the launcher including:

(a) a holder having a recess for receiving the balloon;

(b) a pair of handles;

(c) a pair of elastic strings interconnecting the holder and respective handles;

the balloon being filled with water, and easily breakable,

the launcher being separate and detached from all other mountings and instrumentalities and being of substantial size to render it practical for utilization by three persons, namely one holding each of the handles and one manipulating the holder, and the launcher being adapted for free movement of the persons so as to enable positioning of it without restriction, and the size thereof being so great as to require substantial exertion by each of the persons to manipulate the game,

the holder being adapted to be drawn in a rearward direction against the elasticity of the strings and the supporting action of the handles, and released for projecting the balloon from the holder,

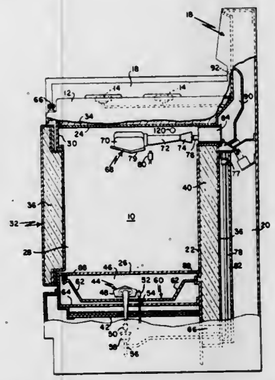
the balloon being so flexible as to readily spread a great extent in directions transverse to the direction of impact with a target, and to be easily broken upon such impact.

4,240,397

FUEL SAVER OVEN

Harry W. Seidel, Mertztown, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 24, 1979, Ser. No. 6,135
Int. Cl.³ A21B *1/00*; F24C *15/32*
U.S. Cl. 126—21 R **10 Claims**



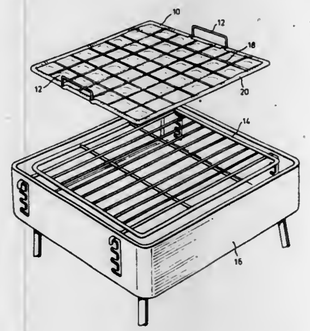
1. A gas-fueled oven comprising a plurality of walls defining an oven cavity, at least one burner in the oven cavity, means for exhausting air from said oven cavity including an exhaust vent in one of said walls, means for supplying fuel to said burner, means for thermostatically cycling the burner on and off, means for closing said vent when the burner is off, and said closing means being controlled by said cycling means.

4,240,398

CLEANING DEVICE FOR COOKER GRILLS

Arthur H. Lindop, Kilbride Post Office, Kilbride, Ontario, Canada

Filed Oct. 5, 1978, Ser. No. 948,868
Int. Cl.³ A47J *37/00*
U.S. Cl. 126—25 R **8 Claims**



1. A cleaning device for a cooker grill comprising:

a frame member of a heat-resistant material of a size to cover the part of the grill to be cleaned by a cleaning operation:

the frame member providing a supporting grid formed of intersecting grid members, the grid having a plurality of grid openings therethrough which constitute a substantially greater area of the grid than the grid members; and

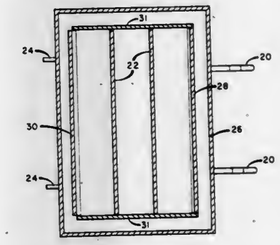
a thin flexible metal sheet mounted by the frame member to be interposed between the supporting grid and a grill to be cleaned on which the device is mounted, wherein the said supporting grid has a plurality of rectangular openings of side length between 3.5 and 7 cm. the sizes of the said grid openings and the thickness of the said thin metal sheet being such that there is upward movement of the potions of the metal sheet bridging their respective openings into the openings during the cleaning operation.

4,240,399

LOG-BURNING STOVE

James R. Choate, 2409 Sampson Rd., Rochester, N.H. 03067

Continuation-in-part of Ser. No. 789,517, Apr. 21, 1977, Pat. No. 4,131,104. This application Nov. 20, 1978, Ser. No. 962,042
Int. Cl.³ F24C *1/00*; F24B *7/00*
U.S. Cl. 126—58 **8 Claims**



1. A log-burning stove which comprises:

(a) a shell defining a combustion chamber for the combustion of logs;

(b) a flue for the discharge of gaseous combustion products derived from the combustion of the logs;

(c) an entrance in one wall of the shell and into the combustion chamber for the introduction of logs into the combustion chamber;

(d) a door having a peripheral frame structure and adapted to be placed in an opened or a closed position, and which door, in the closed upright position, seals the entrance of the combustion chamber, and which door, in the opened position, extends generally laterally outwardly adjacent to and from the lower bottom edge of the entrance of the combustion chamber;

(e) means to provide for the movement of the door between an opened and a closed position; and

(f) the improvement which comprises means to permit placement and support of a log on the door prior to entry into the combustion chamber, which means comprises

(i) a plurality of generally parallel, spaced-apart, fixed, thin, raised, guide-rail elements, the guide-rail elements in the upper surface and extending slightly above the inner surface of the plane of the door and the peripheral frame structure and positioned and spaced apart, so as to support between the guide-rail elements a log on the upper surface of the guide-rail elements,

(ii) the thin guide-rail elements secured to the inner surface of the door,

(iii) end brace elements extending generally perpendicular to the guide-rail elements, the end brace elements having an upper surface not greater than the upper surface of the guide-rail elements, the end brace elements adjacent to the ends of the guide-rail elements, to form with the upper and lower guide-rail elements an inner frame structure within, spaced apart from and of the general shape of the peripheral frame structure of the door, and

(iv) the guide-rail elements having a log-slidable upper surface adapted to permit a log to be slid on the upper surface of the elements and generally parallel to the entrance to the combustion chamber, so as to position the log in a desired position for entry into the combustion chamber, and whereby, on placing the door in the upright closed position, the positioned log on the guide-

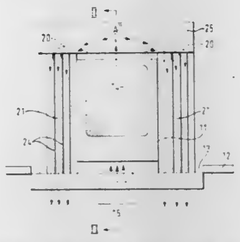
rail elements is disposed into the combustion chamber of the stove.

4,240,400

SPACE HEATER

Brian Jenkins, Birmingham, England, assignor to Holt Rogers & Co., Ltd., Worcestershire, England

Filed Jul. 24, 1978, Ser. No. 927,158
Int. Cl.³ F24C *3/04*
U.S. Cl. 126—91 R **4 Claims**



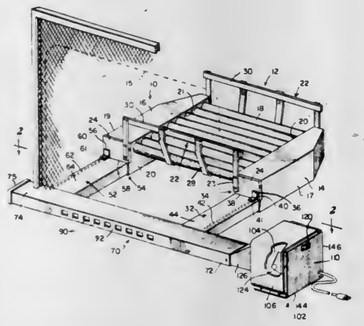
1. A room space having a floor, a gas fired space heater located in said room space above said floor, said heater comprising an upright casing having a lower part and an upper part, a sealed surface combustion burner unit located in said lower part and having a radiant plaque on one side of which combustible gas is burnt, means to feed air to the other side of said plaque, from an inlet below said floor, to provide primary air for burning of said gas, means to feed secondary air, from an inlet below said floor to the interior of said lower part on said one side of said plaque for burning of said gas, an outlet for the products of combustion at said upper part, a baffle located above said outlet to deflect said products of combustion sideways and downwards, a duct extending from a position adjacent said baffle downwardly to an exhaust located below said radiant plaque and beneath said floor.

4,240,401

FIREPLACE HEAT EXCHANGER

Amos E. Chesnut, Columbus, and Albert J. Parrigin, Scipio, both of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Feb. 21, 1978, Ser. No. 879,069
Int. Cl.³ F24B *7/00*; F23H *13/00*
U.S. Cl. 126—121 **13 Claims**



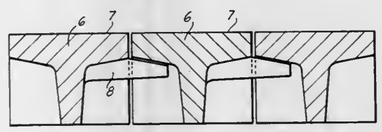
1. A fireplace heat exchanger comprising an inlet manifold, an outlet manifold and heat exchange conduit means for providing communication therebetween, the inlet manifold, outlet manifold, and heat exchange conduit means together comprising a grate, a first duct section providing communication with the inlet manifold, the first duct section being selectively telescopically connected to the inlet manifold, a second duct section providing communication with the outlet manifold, the second duct section being selectively telescopically connected to the outlet manifold, means for adjustably positioning and holding the first and second duct sections in selected telescoped orientations relative to the inlet and outlet manifolds, respectively, a blower, and a connector duct section for providing communication between the blower and first duct section, and for providing an outlet vent for heated air and for providing communication between the second duct section and the outlet vent, the connector duct section extending generally horizontally across the front of the fireplace and having first and second ends, the first duct section being connected to the connector duct section adjacent the first end and the second duct section being connected to the connector duct section adjacent the second end, the connector duct section further including an internal baffle between the outlet vent and the first end for directing air from the first end through the first duct section, the grate, and the second duct section before being exhausted through the outlet vent.

4,240,402

GRATE FOR INDUSTRIAL FURNACES

Johannes J. Martin, and Walter J. Martin, both of Munich, Fed. Rep. of Germany, assignors to Josef Martin Feuerungsbau GmbH., Munich, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,239
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805712
Int. Cl.³ F23H *13/00*
U.S. Cl. 126—152 B **10 Claims**



1. In a grate, particularly in a mechanically movable grate for use in industrial furnaces, the combination of a support; a plurality of substantially parallel elongated grate bars provided on said support and each having an end portion engaging said support, said bars further having second portions remote from the respective end portions; first coupling means for connecting said second portions of neighboring grate bars to each other against movement in a direction substantially at right angles to the longitudinal extensions of said neighboring grate bars and away from said support; and second coupling means for connecting the neighboring grate bars to each other against movement in said direction, said second coupling means being disposed intermediate said end portions and said second portions of said bars.

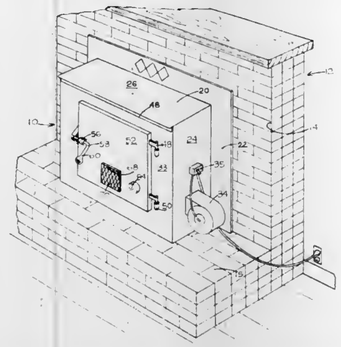
4,240,403

FIREPLACE STOVE

Bill B. Bader, 8501 Larch Ave., Cotati, Calif. 94928

Filed Oct. 20, 1978, Ser. No. 953,004
Int. Cl.³ E05C *19/06*; F23L *13/02*; F24C *15/02*
U.S. Cl. 126—193 **4 Claims**

1. In a fireplace stove having an access opening therein:
a door hinged on said stove to open and close said access opening:
a latch shaft journalled on and disposed parallel to said door;
means for turning said latch shaft;
a pair of metal strip latch fingers having substantial flexural strength extending outward from said front wall in converging relation with a space between the distal ends thereof to receive the end of said latch shaft therebetween; said fingers being biased toward said converging relation and able to flex therefrom.
said end of said latch shaft being narrow along one cross-sectional axis to be received between said fingers and relatively wide along the other cross-sectional axis to bias the converging fingers apart when said latch shaft is rotated through about 90°.

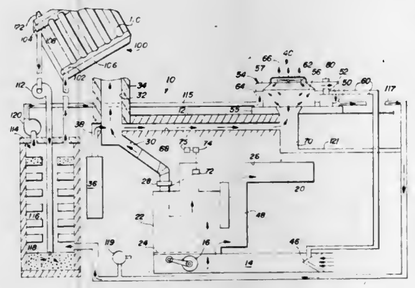


4,240,404

HEAT PUMP HAVING A TIMER ACTIVATED FURNACE

Antonino Franchina, 5219 Botsford St., Sterling Heights, Mich. 48077

Continuation-in-part of Ser. No. 968,437, Dec. 11, 1978, Pat. No. 4,202,493, which is a continuation-in-part of Ser. No. 871,493, Jan. 23, 1978, Pat. No. 4,141,490. This application Mar. 29, 1979, Ser. No. 24,969
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.³ F24D *11/00*
U.S. Cl. 126—427 **8 Claims**



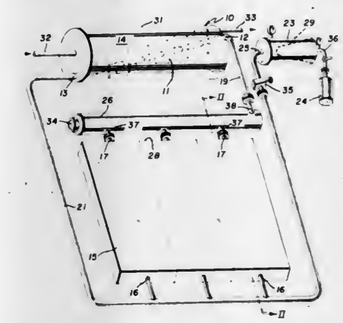
1. A heating system for a building comprising:
a hot-air duct;
a cold-air return;
a gas furnace having an inlet communicating with said cold-air return and an outlet communicating with said hot-air duct, said furnace having a combustion chamber and a heat exchanger for heating the air passing thereby from said cold-air return to said hot-air duct;
an exhaust stack for exhausting the hot gases from said combustion chamber;
a heat pump comprising a condenser with an inlet communicating with said cold-air return and an outlet communicating with said hot-air duct, said condenser heating the air passing thereby from said cold-air return to said hot-air duct, said heat pump having an evaporator located externally of said building for drawing heat from the air passing thereby;
a fan for passing air by said evaporator and heat exchanger;
a first conduit means communicating the heat stack to a first chamber surrounding said evaporator so that the heat exhausted by said furnace may be drawn from the air via said evaporator and utilized to provide heat for said building, said furnace and said heat pump respectively communicating said cold-air return to said hot-air duct;
a solar panel for heating air passed therethrough having a cold solar air inlet and a solar warmed air outlet; and
a second conduit means communicating the solar warmed air to a second chamber surrounding said evaporator so that heat from the solar warmed air may be drawn from the solar warmed air via said evaporator and utilized to provide heat for said building.

4,240,405

SOLAR WATER HEATER

Roger F. French, P.O. Box 158, Jackson, N.H. 03846

Filed Apr. 30, 1979, Ser. No. 34,475
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **14 Claims**



1. Solar water heater making use of phase-change heat transfer, comprising:
(a) a condenser having an inlet and an outlet, which condenser is in contact with the water to be heated,
(b) a solar collector having a bottom inlet and a top outlet and having an inner conduit that connects the inlet and the outlet, the conduit being suitable for exposing a heat-transfer medium in the conduit to solar energy, the collector outlet being located below the condenser,
(c) conduits joining the outlet of the collector to the inlet of the condenser and the outlet of the condenser directly to the inlet of the collector to form a closed circuit,
(d) a phase-change liquid heat transfer medium located within the circuit,
(e) an accumulator having means for regulating the pressure therein and having an inlet that is connected to the circuit below the collector, and
(f) a vapor-release drum connected in the circuit between the outlet of the solar collector and the inlet of the condenser, wherein the vapor-release drum has sufficient volume that the upper surface of the heat transfer medium always remains within the confines of the drum so that, during normal operation of the heater only the heat transfer medium which becomes vaporized is released into the inlet of the condenser.

4,240,406

SOLAR REFLECTOR STRUCTURE

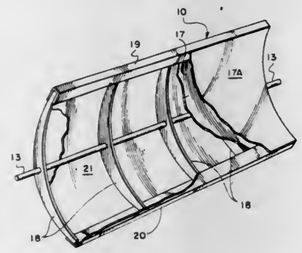
Joseph A. Hutchison, Dallas, Tex., assignor to Solar Kinetics, Inc., Dallas, Tex.

Filed Nov. 21, 1977, Ser. No. 853,213
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **7 Claims**

1. A solar reflector structure comprising
(a) a plurality of rigid bulkhead members with each of said bulkhead members having a front surface and a rear sur-

face and a top and bottom outer end, said front surface of each of said bulkhead members being formed in a predetermined contour;

(b) a rear stressed sheet metal skin rigidly affixed to at least a portion of said rear surface of each of said bulkhead members and a front, stressed sheet metal skin rigidly affixed to at least a portion of said front surface of each of said bulkhead members thereby forming a monocoque



structure wherein stresses exerted on said rear stressed skin and on said front stressed skin are distributed over the entire said reflector structure; and

(c) a reflective surface supported by said front stressed sheet metal skin, said reflective surface reflecting solar radiation on a predetermined location said reflective surface having a cross-sectional contour defined by the contour of said front surface of said bulkhead members.

4,240,407

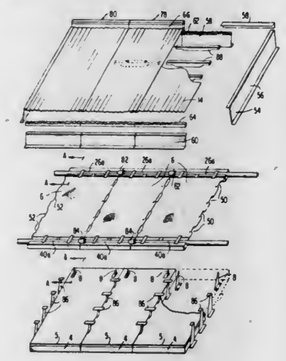
SOLAR ABSORBER PANEL, COLLECTOR ASSEMBLY AND INSTALLATION METHOD

Donald L. Spencer, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa

Continuation-in-part of Ser. No. 670,764, Mar. 26, 1976, abandoned. This application Dec. 12, 1977, Ser. No. 859,621

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—444 **28 Claims**



1. A solar collector assembly comprising,

a pair of solar absorber panels each having a fluid flow passage for a heat exchange fluid,

said solar absorber panels lying in side-by-side relation with their marginal portions in overlapping relation, said marginal portions having spaced-apart lateral recesses providing openings between said panels,

cover support brackets extending upwardly through said openings, and

a cover transmissive of solar radiant energy, said cover being supported on said cover support brackets.

4,240,408

PERITONEAL DIALYSIS APPARATUS

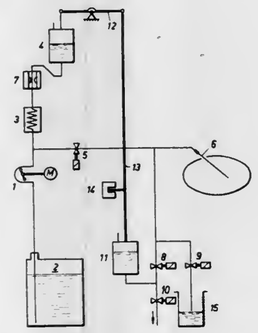
Wilfried Schael, Bad Homburg, Fed. Rep. of Germany, assignor to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,498

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755214

Int. Cl.³ A61B *19/00*; A61J *7/00*

U.S. Cl. 128—1 R **3 Claims**



1. A method for the periodic rinsing of the abdominal cavity of a patient, comprising the following steps:

(a) supporting a filling vessel (4) and a discharge vessel (11) at opposite ends of a comparing balancing means;

(b) operatively connecting both vessels through first and second valves (5, 8) to said abdominal cavity;

(c) filling said filling vessel while said first valve is closed;

(c) opening the first valve (5) for emptying the filling vessel (4) through said first valve (5) into said abdominal cavity;

(e) closing the first valve (5), opening the second valve (8) and draining the abdominal cavity into said discharge vessel (11) while simultaneously refilling said filling vessel (4);

(f) closing the second valve (8) in response to a balanced condition as sensed from said comparing balancing means when the filling vessel and the discharge vessel hold the same quantity of liquid;

(g) continuing the draining into a measuring vessel; and

(h) emptying the discharge vessel, wherein said measuring vessel provides a measure for any liquid excess being drained from said cavity in addition to the liquid supplied through said filling vessel.

4,240,409

APPARATUS FOR ASSISTING CIRCULATION OF BLOOD

William J. Robinson, Wellesley; Victor L. Poirier, Chelmsford, and Benedict D. T. Daly, Wellesley, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Feb. 21, 1979, Ser. No. 13,636

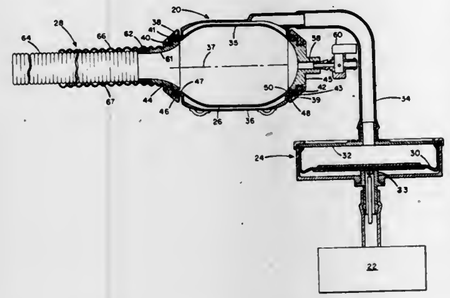
Int. Cl.³ A61B *19/00*

U.S. Cl. 128—1 D **6 Claims**

1. Apparatus for assisting circulation of the blood of a patient comprising:

a valveless blood pump with a housing positionable outside the patient, said pump including a flexible bladder symmetrical about a longitudinal axis of the pump, said bladder and said housing each having a first opening for admitting blood into and discharging blood from said bladder and each having a second opening for taking samples at an end opposite said first opening, said pump further including means for sealing said second openings;

a valveless flexible conduit for carrying blood between the interior of said bladder and the circulatory system of the patient, said conduit having a first end attached to said pump adjacent to the first opening of said bladder and an implantable second end attachable to the side of a major blood vessel within the patient on either the right or left side of the patient's heart in a manner such that said conduit terminates without extending into the lumen of said vessel;



conduit attachment means for connecting said first end of said conduit to said pump; and

means for compressing and releasing said bladder at a controlled rate.

4,240,410

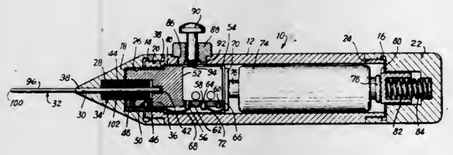
OPHTHALMIC ELECTROMAGNET

Norman C. Pickering, Sag Harbor, and Yale Fisher, New York, both of N.Y., assignors to Storz Instrument Company, St. Louis, Mo.

Filed Jan. 23, 1979, Ser. No. 6,080

Int. Cl.³ A61B *17/52*

U.S. Cl. 128—1.5 **9 Claims**



1. A miniature surgical instrument particularly adapted for removing ferrous foreign particles from an eye, said instrument comprising:

(a) a housing;

(b) a magnetizable, axially elongated probe having a body portion that is at least partially contained within said housing and a tip portion extending outwardly therefrom wherein said tip portion is made of a hydrogen-annealed Hy-Mu 80 alloy;

(c) coil means surrounding at least a part of said body portion of said probe;

(d) switch means coupled to said coil and adapted to interconnect said coil to a source of electrical energy whereby said switch means may be operated to energize said coil to thereby magnetize said probe; and

(e) battery means encompassed within said housing capable of providing electrical energy to energize said coil.

4,240,411

DEVICE FOR SEALING AN ENDOSCOPE CHANNEL

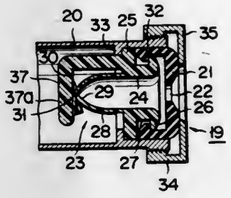
Saburo Hosono, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,428

Claims priority, application Japan, Apr. 25, 1977, 52/52438[U]

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **7 Claims**



1. In an endoscope having an operation section, an elongated sheath which has a proximal end connected to said operation section and in which channels each having two ends are formed, and a sealing device which is disposed in said operation section and which communicates with the corresponding channel, the improvement wherein said sealing device comprises a hollow cylindrical member having two ends, one end being connected to one of said two ends of the corresponding channel and a tubular member of an elastic material having two ends, one end being connected to the other end of said hollow cylindrical member and a portion adjacent to the other end of the tubular member which forms a sealing portion comprising a first part formed by substantially one half of the circumference of said portion adjacent to the other end of said tubular member and a second part formed by substantially the other half of said circumference, said first part being folded and said second part being sealingly pressed against said first part.

4,240,412

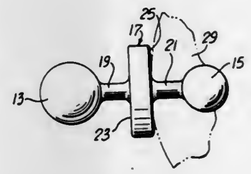
MEDICAL DEVICE

Eugene James, 5413 Via Carrizo, Laguna Hills, Calif. 92653

Filed Aug. 29, 1979, Ser. No. 70,750

Int. Cl.³ A61H *7/00*

U.S. Cl. 128—67 **3 Claims**



1. A medical device comprising:

a first relatively hard ball section, said first ball section having a smooth peripheral surface;

a second relatively hard ball section, said second ball section having a smooth peripheral surface;

an intermediate section having a peripheral surface and opposite ends;

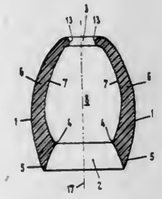
first and second generally cylindrical sections for coupling the first and second ball sections to the opposite ends of the intermediate section;

said first and second generally cylindrical sections being of about the same length and projecting from the intermediate section in generally opposite directions;

each of said first and second generally cylindrical sections having a smooth cylindrical surface;

the diameter of the first ball section being greater than the diameter of the second ball section;
the diameters of each of the first and second ball sections being greater than the diameter of each of the first and second cylindrical sections;
each of said opposite ends of said intermediate section projecting generally radially outwardly of the associated cylindrical section to define a shoulder extending radially outwardly of the associated cylindrical section;
said medical device being integrally constructed; and
said cylindrical sections being coaxial with each other and with said ball sections.

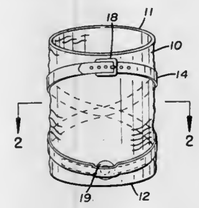
4,240,413
ERECTION HOLDER
Judith Hanus, Cham, Switzerland, assignor to Francois W. Gasser, Bern, Switzerland
Filed Mar. 21, 1979, Ser. No. 23,850
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **8 Claims**



1. An erection holder destined as an auxiliary means for enabling or prolonging an erection of the penis of a man, which holder is of sleeve-like configuration and consists of an elastic material of determined extensibility, said holder comprising a body having an outer sleeve wall surface, a hollow interior surrounded by an inner sleeve wall surface, a base end destined for coming to rest, during use, against a portion of the user's abdomen surrounding the root of his penis, and an outer end away from said base end, a first opening at said base end and a second opening, substantially opposite said first opening, at said outer end, a first inwardly directed protrusion surrounding said first opening, a circumferential tapered lip portion extending substantially axially relative to said body from adjacent said first protrusion, said lip portion being adapted to flex radially outward against the user's abdomen in the mounted position of the penis for cooperation with said first protrusion to pump blood from the abdomen into said penis, a second inwardly directed circumferential protrusion, spaced outwardly from said first protrusion, adjacent said outer end and surrounding said second opening, the wall portion of said holder intermediate said first and second protrusion being curved outwardly and said inner sleeve wall surface being concavely outwardly vaulted.

4,240,414
KNEE BRACE
Charles W. Theisler, 1749 S. Raccoon Rd., Youngstown, Ohio 44515
Filed Aug. 9, 1979, Ser. No. 65,220
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 C **4 Claims**

1. A knee brace comprising an elastic tubular sheath of a length to cover the knee joint and knee cap and knee ligaments when positioned on a wearer's knee, a single non-elastic strap secured at a point midway between its ends to said sheath in a lower front portion thereof below the knee cap so as to form two free portions, fastening means attached to the ends of the free portions for securing the ends of the free portions of the strap to one another at the upper front portion of the sheath above the knee cap, the free portions of the strap being arranged to be wrapped in opposed spiral patterns around the sheath in a crisscross manner crossing behind the knee joint, a pocket formed between said strap and said sheath at the point



of attachment of said strap to said sheath, a donut shaped semi-rigid disc positioned in said pocket so that said strap tensions said disc relative to said wearer.

4,240,415
ORTHOPEDIC CAST
Lloyd H. Wartman, Norwalk, Conn., assignor to WFR/Aquaplast Corp., Ramsey, N.J.
Continuation of Ser. No. 772,090, Feb. 25, 1974, abandoned. This application Dec. 18, 1978, Ser. No. 970,626
Int. Cl.² A61F *5/04*
U.S. Cl. 128—90 **16 Claims**

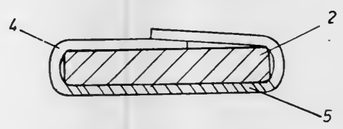


1. An orthopedic cast comprised of poly (epsilon-caprolactone) having a formula

$$-O-(CH_2)_5-CO)_x$$

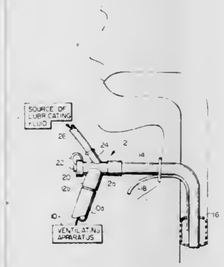
where x makes the weight average molecular weight greater than 5,000 subjected to electron radiation in the range from 0.5 to 15.0 megarads and having a melting point in the range from 50° C. to 100° C. with a half-time crystallization at 36° C. of between 0.5 minute and 10.0 minutes.

4,240,416
ABSORBENT STRUCTURE
Heinz-Horst Boich, Ilsede, Fed. Rep. of Germany, assignor to J. H. Benecke GmbH, Hanover, Fed. Rep. of Germany
Filed May 19, 1978, Ser. No. 907,727
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722860
Int. Cl.³ A61L *15/00*
U.S. Cl. 128—156 **4 Claims**



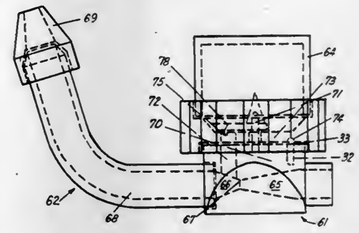
1. A composite flat structure having a high absorption capacity for medical and hygiene purposes, the structure comprising at least two layers having differing moisture absorption characteristics, one of the layers being a cover layer comprised of non-woven bonding agent-free bonded synthetic fibres and another of the layers being a storage layer located below the cover layer, the storage layer having a higher moisture absorption capacity than the cover layer, said cover layer being treated with a wetting agent and having a moisture absorption capacity such that, after adaptation to normal climate in accordance with DIN 53 802, it has a moisture content of less than 6% relative to its dry weight in accordance with DIN 53 800, and wherein the surface of the fibres of the cover layer treated with the wetting agent is capable of being wetted by the liquids to be absorbed and to pass such liquids without interruption to said storage layer so that said cover layer remains dry to the skin, said cover layer comprising moisture repellent fibres, the surfaces of which are treated with said wetting agent, and wherein said wetting agent comprises a reaction product of castor oil and ethylene oxide reacted in a molar ratio of substantially 1:40.

4,240,417
TRACHEAL TUBE ADAPTER FOR VENTILATING APPARATUS
Bernard K. Holever, 241 Cottonwood Rd., Newington, Conn. 06111
Filed Jun. 13, 1979, Ser. No. 48,095
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—203.12 **4 Claims**



1. An adapter for coupling several different devices to a tracheal tube without disconnecting the patient from a ventilating apparatus, said adapter comprising means defining a chamber and including a tracheal tube port communicating with said chamber and a respiratory port communicating with said chamber oriented at a substantial angle with respect to said tracheal tube port, means defining an opening communicating with said chamber for the insertion of a vacuum tube or the like, removable cap means for selectively closing said vacuum tube opening, means defining a port communicating with said chamber for the selective injection of a lubricating fluid into the tracheal tube, and one-way check valve means in said last mentioned port to prevent the expelling of liquids from the patient's lungs into the atmosphere.

4,240,418
APPARATUS FOR THE INHALATION OF MEDICINAL AGENTS
Gunter Rosskamp; Reiner Kolberg; Peter Gunzel, and Hans-Jurgen Porep, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany
Continuation of Ser. No. 807,269, Jun. 16, 1977, abandoned, which is a division of Ser. No. 606,737, Aug. 21, 1975, Pat. No. 4,046,146. This application Feb. 28, 1979, Ser. No. 16,042
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1974, 2440623; Jun. 2, 1975, 2524902; Jun. 30, 1975, 2529522
Int. Cl.³ A61M *15/00*
U.S. Cl. 128—203.15 **5 Claims**

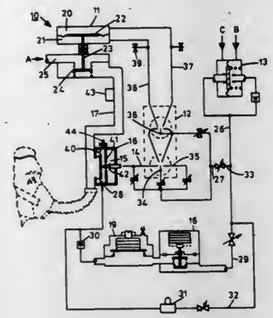


1. Apparatus for the inhalation of medicinal agents as an aerosol effluent induced by inhalation from the apparatus, comprising a housing having a venturi tubeshaped interior configuration presenting a narrow venturi constriction and including a funnel-shaped air inlet chamber having an open upstream end from which the chamber wall converges inwardly to the venturi constriction, a combined diffuser zone and an aerosol exhaust section separated from the air inlet chamber by the narrow venturi constriction, said exhaust section being elongate from the downstream end of the diffuser zone to provide an applicator having a terminal opening for insertion in a breath inhaling body orifice, the diffuser zone having its wall converging inwardly to the venturi constriction with the minimum diameter of the venturi constriction forming a longitudinally relatively short transverse venturi constrictive junction positioning the inner ends of the converging walls of the inlet chamber and the diffuser zone in proximate adjacency, said housing having a vertically disposed dispensing passage in oriented position for use transverse to the longitudinal axis of the housing and extending through one of said converging walls with a delivery end which terminates in adjacency to the venturi constriction of the venturi-like housing, a container for the medicinal agent, and means mounting said container in superposed position on said housing with the dispensing passage depending therefrom for selective dispensing of the medicinal agent through said dispensing passage by gravity to the delivery end thereof.

4,240,419
BREATHABLE GAS DELIVERY REGULATORS
Owen D. Furlong, West Coker, and Robin H. Thring, Yeovil, both of England, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, England
Filed Sep. 25, 1978, Ser. No. 945,477
Claims priority, application United Kingdom, Sep. 26, 1977, 40056/77
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.23 **15 Claims**

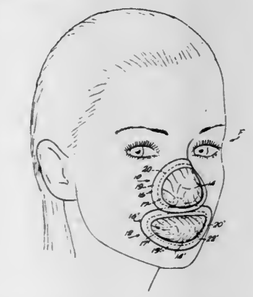
1. A breathable gas delivery regulator comprising a gas inlet for receiving a breathable gas and a gas outlet for connection to a user, a demand valve controlling communication between said gas inlet and said gas outlet, a pressure sensor for sensing the user's breathing pressure, and a servo mechanism for operating the demand valve in response to breathing pressure sig-

nals from said pressure sensor, characterised in that said servo mechanism comprises a fluidic amplifier having an output to an



actuator for the demand valve and a control port connected for response to breathing pressure signals from the pressure sensor.

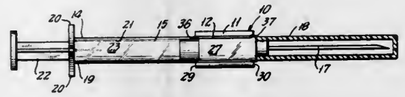
4,240,420
NOSE AND MOUTH FILTER COMBINATION
Florence Riaboy, 4819 Sorrento Ct., Cape Coral, Fla. 33904
Filed Apr. 16, 1979, Ser. No. 30,520
Int. Cl.³ A62B 7/00
U.S. Cl. 128—206.14 **1 Claim**



1. Individual nose and mouth filters, in combination, comprising a pair of central filter elements, formed of a suitable flexible filter material, a first of which is sized to loosely cover a predetermined lower area of the nose including the nostrils, and a second of which is sized to loosely cover the mouth area, each of said first and second filters including an outwardly extending peripheral portion and being provided with a continuous strip of one-sided pressure sensitive adhesive tape including an inner peripheral adhesive portion secured to said filter materials outwardly extending peripheral portion and an outwardly extending peripheral adhesive portion for secure engagement with a predetermined facial skin area of a user, the pressure sensitive tape portion of one of the filters overlying and bonded to the pressure sensitive tape portion of the other filter.

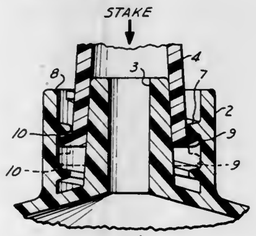
4,240,421
SYRINGE SHIELD FOR RADIOACTIVE MATERIALS
James R. Carr, 2843 Aquarius Ave., Silver Spring, Md. 20906
Filed Jun. 26, 1979, Ser. No. 52,436
Int. Cl.³ A61B 6/00
U.S. Cl. 128—215 **1 Claim**

1. In combination, a hypodermic syringe having a barrel of given length, and a shield therefor protecting a user against radioactive materials carried by said barrel, said shield including a radially flexible resilient synthetic resinous inner sleeve member of arcuate cross section extending over an arc substantially greater than 180 degrees, and bounded by an inner surface of curvature corresponding to that of the outer surface of said barrel when said sleeve is in relatively unstressed condition, and being in substantial contact with the outer surface of said barrel under relatively light tension, said sleeve member



having an outer arcuate surface; and an outer shield member of lead secured to said outer surface of said sleeve member of thickness ranging from one to two millimeters; said shield having an axial link substantially less than that of said given length, and being resiliently retained on said barrel for sliding movement there along.

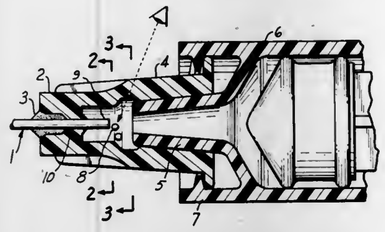
4,240,422
SYRINGE WITH NEEDLE AND METHOD OF ATTACHING SAME
Thomas A. Hazen, Glendale, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 23, 1978, Ser. No. 953,604
Int. Cl.² A61M 5/00
U.S. Cl. 128—218 N **6 Claims**



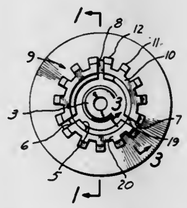
1. A syringe and attached needle hub in which the syringe has a tapered adapter surrounded by an internally threaded locking sleeve and the needle hub has at least one laterally protruding ear, wherein the improvement comprises: a longitudinal spacing between a forward surface of the needle hub's ear and a longitudinally aligned rearward surface area of a thread on the sleeve, whereby abutting pressure between the thread and needle hub ear are relieved during storage.

4,240,423
AUTOCLAVABLE TRANSPARENT NEEDLE
David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 23, 1978, Ser. No. 953,605
Int. Cl.³ A61M 5/32
U.S. Cl. 128—218 N **7 Claims**

1. An autoclavable needle comprising: a metal cannuala; an epoxy capable of firmly bonding at temperatures in excess of 200° F., which epoxy is permanently secured to the cannula; and permanently secured to this epoxy is a transparent polycarbonate hub having a deflection temperature in excess of 200° F., whereby both the metal-epoxy joint and the epoxy-polycarbonate joint remain firm when exposed to temperatures in excess of 200° F.

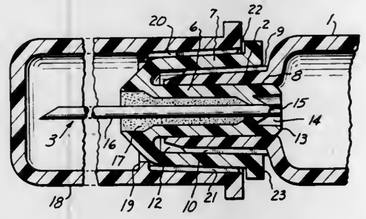


4,240,424
SYRINGE LOCKING SLEEVE
David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 23, 1978, Ser. No. 953,607
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 R **9 Claims**



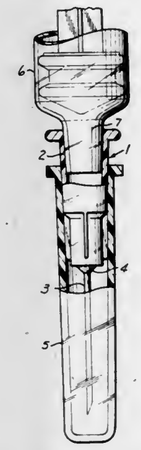
1. A thermoplastic syringe barrel with an integral laterally flexible thermoplastic locking member having a longitudinal axis, wherein the improvement comprises: an inner retention portion of the locking member for securing a needle or the like to the barrel; and at least one longitudinally extending outer spring rib integral with the retention portion said rib adapted to flex outwardly during strip ejection and without unscrewing during the molding process.

4,240,425
SYRINGE WITH PLUG TYPE NEEDLE HUB LOCK
David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 23, 1978, Ser. No. 953,608
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 N **13 Claims**



1. A syringe coupling system with a hub having an internal plug and an external skirt permanently securing a tubular syringe adapter therebetween, wherein the improvement comprises: a longitudinally extending rib capable of longitudinal strip ejection from a mold without substantial distortion on one of the hub and adapter wedgingly secured against the other; and said plug and skirt are spaced sufficiently close to each other to grippingly force the longitudinal rib against the hub or adapter to prevent longitudinal separation of the hub and adapter by manual force during use.

4,240,426
SYRINGE COUPLING SYSTEM
David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 23, 1978, Ser. No. 953,609
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 N **2 Claims**

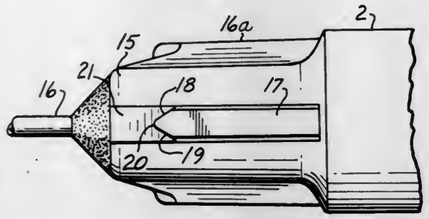


1. A syringe coupling system comprising: a cylindrical metal cannula; a polycarbonate needle hub with a longitudinal axis; which hub has a hollow forwardly opening pocket at its forward end, the pocket having an inner surface that is spaced from the metal cannula by a distance that is approximately constant or increases in a forward direction along the length of the pocket without any substantial transverse groove or undercut recess into the pocket's inner surface; an epoxy in the pocket bonding the metal cannula to the polycarbonate inner wall of the pocket with the metal-epoxy-polycarbonate joint capable of withstanding a longitudinal separation force of approximately 30 lbs. or more without the cannula pulling out of the hub; said hub having a hollow internally tapered section at its rear end; and a syringe barrel with an externally tapered adapter of a thermoplastic softer than polycarbonate wedgingly fitted into the hub's internal tapered section with the adapter being free of substantial external compression forces prior its assembly to the hub, whereby the hub will reliably stay on the adapter until intentionally removed and the hub will securely support the cannula.

4,240,427
NEEDLE WITH PROTECTOR
David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 23, 1978, Ser. No. 953,610
Int. Cl.² A61M 5/00
U.S. Cl. 128—218 N **8 Claims**

1. A needle hub and protector with interfitting ribs, wherein the improvement comprises: at least one rib on the needle hub having a forward end with a rotational shifting surface; and at least one rib on the protector having a rearward end with a

rotational shifting surface, whereby said surfaces can engage each other during axial sliding of the needle hub into the protector and automatically prevent rib abutment jamming during assembly.

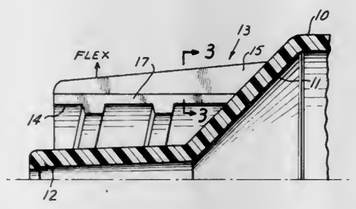


4,240,428

SEGMENTED SYRINGE LOCKING SLEEVE

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 23, 1978, Ser. No. 953,689
Int. Cl.[3] A61M 5/00
U.S. Cl. 128—218 R 7 Claims



1. A thermoplastic syringe barrel with a front wall integrally joined to a circumferentially interrupted locking sleeve with internal threads, wherein the improvement comprises: said sleeve having at least one slot that extends to within 0.050 inch of the barrel's front wall to enhance mold release flexing of the sleeve for axial strip ejection from a mold during formation and firm locking control during use.

4,240,429

NEEDLE INJECTION DEVICE FOR DELIVERING FLUID

Carl L. Shackelford, San Pablo, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Filed Jun. 14, 1979, Ser. No. 48,441
Int. Cl.[3] A61M 5/00
U.S. Cl. 128—218 NV 10 Claims

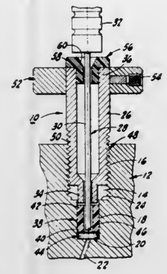
1. A needle injection device for delivering fluid through an opening in a body comprising:

a. a first bushing adapted for substantially surrounding at least a portion of the needle, said first bushing having first and second end portions;

b. a second bushing adapted for substantially surrounding at least a portion of the needle, said second bushing having a first end portion and a second end portion, said first end portion of said first bushing being adjacent said second end portion of said second bushing, said second bushing adapted for being at least partially within the opening in the body and being constructed of sealing material;

c. means for filtering the fluid intended for passage through the opening, said filtering means being adjacent said first end portion of said second bushing;

d. means for forcing said first end portion of said first bushing into contact with said second end portion of said second bushing and for forcing said first end portion of said second bushing into contact with said filtering means such that said second bushing seals the exterior of the needle and the sides of the opening.

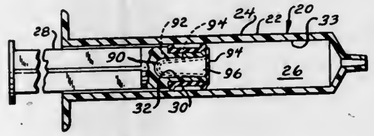


4,240,430

SYRINGE ASSEMBLY

William J. Binard; Anthony J. Ciarico, both of Cary; Leonard R. Anglada, Arlington Heights, and Bhupendra C. Patel, Elgin, all of Ill., assignors to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 853,962, Nov. 22, 1977, abandoned, which is a division of Ser. No. 776,147, Mar. 10, 1977, Pat. No. 4,074,714, which is a division of Ser. No. 702,164, Jul. 2, 1976, Pat. No. 4,030,497, which is a division of Ser. No. 627,982, Nov. 3, 1975, which is a continuation-in-part of Ser. No. 509,757, Sep. 27, 1974, abandoned. This application Jun. 29, 1979, Ser. No. 53,482
Int. Cl.[3] A61M 5/00
U.S. Cl. 128—218 P 1 Claim



1. A syringe, comprising:

a transparent barrel having a chamber for retaining fluid;

an elongated plunger having one end received in and closing the chamber for pumping fluid out of the chamber, said one plunger end including a hollow transparent member having a cavity facing the chamber through an opening and being visible outside the barrel, means for sealingly engaging against an inner surface of the barrel, and an elastic diaphragm being permanently secured to the plunger and extending across said opening and closing the cavity, said diaphragm flexing into the transparent member responsive to a predetermined pressure in the chamber to indicate when the pressure in the chamber is above the predetermined amount.

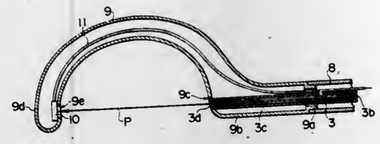
4,240,431

LASER KNIFE

Osamu Komiya, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 4, 1978, Ser. No. 902,841
Claims priority, application Japan, May 16, 1977, 52-56635; May 16, 1977, 52-62824[U]; Jun. 24, 1977, 52-83289[U]
Int. Cl.[3] A61B 17/36; H23K 9/00
U.S. Cl. 128—303.1 18 Claims

1. A laser knife comprising a tubular member adapted to be inserted into the forceps channel of an endoscope, a laser radiation transmission member having a first end and a second end, said laser radiation transmission member being disposed within said tubular member for conveying laser radiation therethrough so that laser radiation can be conveyed from said first end of said laser radiation transmission member to be emitted from said second end of said laser radiation transmission member, means for supplying laser radiation of a power sufficient to vaporize human tissue to said first end of said transmission member, acceptor means for accepting said laser radiation emitted from said second end of said laser radiation transmission member upon completion of cautery of an affected part achieved by said laser radiation, and for producing an electrical signal in response to said laser radiation, and laser control means for terminating the transmission of said laser radiation through said laser radiation transmission member in response to said electrical signal produced by said acceptor means.

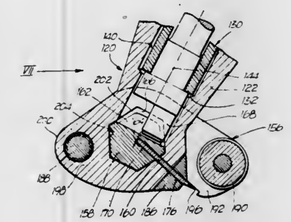


4,240,432

MUCOUS MEMBRANE CUTTER FOR MUCOGINGIVAL MEMBRANE SURGERY

Werner Mörmann, Zürich, Switzerland; Gerhard Bofinger, Immendingen-Hattingen, and Wilfried Wölfle, Bad Dürrheim, both of Fed. Rep. of Germany, assignors to Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer, Tuttlingen, Fed. Rep. of Germany

Continuation of Ser. No. 873,935, Jan. 31, 1978, Pat. No. 4,211,232. This application Sep. 13, 1979, Ser. No. 75,313
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1977, 2707523
Int. Cl.[3] A61B 17/322
U.S. Cl. 128—305.5 12 Claims



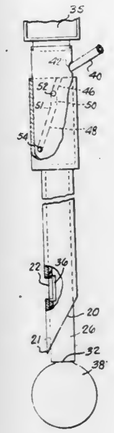
1. In a mucotome having a handle and a cutting head arranged at one end of the handle, said cutting head including a blade holder carrying a cutting blade with a cutting edge and a cutting shoe for determining the cutting depth of said cutting blade, said cutting shoe having a guide for said blade holder, along which said blade holder is reciprocally movable parallel to said cutting edge by means of a rotatable drive shaft at said cutting head, having an eccentric crank pin engageable in a cross groove in said blade holder, the improvement comprising said blade holder including a straight prismatic blade-holding bar having a longitudinally extending slit to said cutting edge for receiving said cutting blade, said cutting blade projecting out of said slit, said cutting shoe having an opening through which said cutting blade projects.

4,240,433

FLUID ASPIRATION DEVICE AND TECHNIQUE FOR REDUCING THE RISK OF COMPLICATIONS

Richard A. Bordow, 6114 Terryhill Dr., La Jolla, Calif. 92037

Filed Jul. 22, 1977, Ser. No. 818,016
Int. Cl.[3] A61B 17/34; A61M 1/00
U.S. Cl. 128—347 15 Claims



1. Apparatus for aspirating fluid from a body cavity, which comprises:

elongated substantially hollow needle means having a sharp tip at one end thereof for facilitating entry to a body cavity;

elongated substantially hollow cannula means being movably disposed within said needle means, said needle means having an opening at said one end sized such that said cannula means may be slid through said opening;

selectively inflatable balloon means connected to said cannula means so as to be positionable, upon inflation, between said tip and internal organs near said cavity for reducing the risk of puncture of said internal organs by said tip;

a first fluid intake port in the wall of said needle means spaced from said opening; and

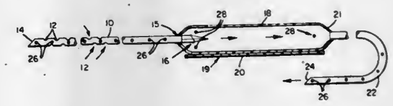
a second fluid intake port positioned in the wall of said cannula means so as to be registrable with said first fluid intake port to permit flow therethrough.

4,240,434

PERITONEO-VENOUS SHUNT

John B. Newkirk, Rte. 2, Box 302EE, Evergreen, Colo. 80439

Filed Oct. 10, 1978, Ser. No. 949,734
Int. Cl.[3] A61M 25/00
U.S. Cl. 128—350 V 5 Claims



1. An ascites shunt for completely implanting in a patient comprising:

(a) a flexible semi-rigid medically acceptable catheter for implanting in the peritoneal cavity of a patient, said catheter having an open end cut at an acute angle and a substantial portion of said catheter adjacent said open end being perforated to facilitate entry of liquid into the shunt system:

(b) a pump body secured to and in communication with the

distal end of said catheter opposite said perforated end, consisting of an enlarged, flexible, roughly tubular member of medically acceptable material;

(c) an asymetrical, one way miter valve formed as a normally closed tubular slit valve having a flatten end at the slit with a top portion and a bottom portion for one way fluid flow through the slit and constructed and arranged so that one of the top and the bottom portions moves more than the other on closing to cause a rubbing action of the top portion on the bottom portion, mounted on the end of said perforated catheter inside said pump body permitting pumping of said pump body with no reverse flow; and

(d) a second catheter secured to the outlet of said pump body, said second catheter being flexible and having its end cut off at an acute angle with a single end outlet, a plurality of absorbing markers secured in the material of the catheters and pump for ascertaining positioning of the parts by x-radiography.

4,240,435

HAIR TWEEZERS

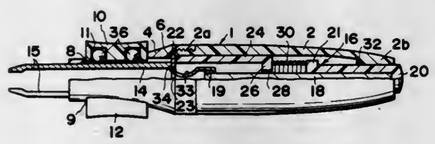
Toshio Yazawa, and Fumi Yazawa, both of 6-11-15, Motogo, Kawaguchi-shi, Saitama-ken, Japan

Filed Feb. 27, 1979, Ser. No. 15,666

Claims priority, application Japan, Oct. 3, 1978, 53-135842[U]

Int. Cl.³ A61B *17/30*

U.S. Cl. 128—354 **9 Claims**



1. Tweezers for removing hair comprising:

a cylindrical housing which has openings at one end portion thereof;

said openings being opposite to each other relative to the axis of said cylindrical housing,

a stopper member connected to the inside of said cylindrical housing;

a pincette member which has two symmetrical legs connected with each other at one end thereof;

said pincette member having tips at the other end thereof for securing a hair,

buttons secured in said openings of said cylindrical housing;

said pincette member being mounted for lengthwise movement in said housing between a retracted and an advanced position, said pincette member engaging said stopper member when in said advanced position, said buttons each being movable in a perpendicular direction relative to the axis of said housing,

said buttons each including therein rolling contact bearing means which roll on the respective legs of said pincette member during lengthwise movements of said pincette member, and

an actuator assembly for advancing and retracting said pincette member;

said actuator assembly comprising a shaft connected to the end of said pincette member, a first sleeve disposed on the inside of said housing, a second sleeve connected to said shaft, and a spiral spring disposed between said first and second sleeves,

whereby when said buttons are pressed, the pincette member is disengaged from said stopper member to thereby retract said pincette member while said pincette member is holding the hair.

4,240,436

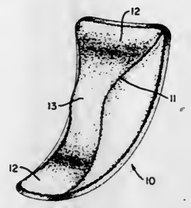
THERAPEUTIC COLD PACK

Rosa R. Singleton, 3106 Edgewood Ave., Richmond, Va. 23222

Filed Aug. 31, 1978, Ser. No. 938,336

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—403 **4 Claims**



1. A disposable cold pack having a preformed anatomical shape for treatment of the vaginal and rectal regions comprising:

A hollow anatomically-shaped cold storage pack that includes a cold storage medium, said cold storage pack being a unitary structure that completely encapsulates therein said cold storage medium, the combination of said cold storage pack and said cold storage medium being preformed such that it fits against said vaginal and rectal regions without requiring manipulation of said cold pack, an elongated base having a vaginal end and a rectal end, and two side edges, said base being preformed with a curve along its length and said curve generally conforming to the curve of the perineal area from the vaginal region to the rectal region, said rectal end being relatively narrower than said vaginal end, said two edges being concave and extending between said vaginal and rectal ends, said edges converging from said vaginal end inwardly towards said relatively narrower rectal end thereby being complementary to and readily conforming to the shape of the vaginal and rectal regions, first and second side portions extending upwardly from said side edges of said base and angled towards one another, and an elongated upward contacting surface extending from said vaginal end to said rectal end of said base and connecting the upper edges of said first and second side portions to form an enclosure, said contacting surface having side edges extending from said vaginal end to said rectal end of said base, said side edges being generally concave and curved inwardly towards one another, said first and second side portions being generally concave and inwardly curved towards said contacting surface thereby to readily conform to and complement the shape of the vaginal and rectal regions when in contact therewith, said contacting surface including at the mid-portion thereof a lengthwise elongated and outwardly protruding raised surface portion partially extending along said elongated structure, said raised surface portion being adapted for partial insertion into both said vaginal and rectal openings.

4,240,437

ELECTRIC MASSAGE APPARATUS AND METHOD

Charles J. Church, P.O. Box 1214, Middleburg, Va. 22117

Continuation-in-part of Ser. No. 819,912, Jul. 28, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,146

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—420 R **35 Claims**

1. Apparatus for treatment of animals comprising:

first electrode means;

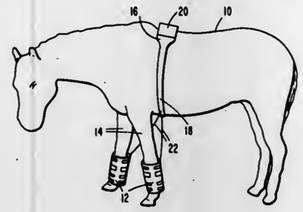
a first flexible member adapted to be fastened on an animal to hold said first electrode means in contact therewith;

second electrode means;

a second flexible member adapted to be fastened on the animal to hold said second electrode means in contact therewith;

circuit means connected to said first electrode means and to said second electrode means and capable of assuming an off condition, in which no electrical potential is applied across said first and second electrode means, a first on condition, in which a pulsating electrical potential having a first pulse characteristic, including pulse repetition rate, pulse amplitude, and pulse polarity, is applied across said first and second electrode means, and a second on condition, in which a pulsating electrical potential having a second pulse characteristic, including pulse repetition rate, pulse amplitude, and pulse polarity, is applied across said first and second electrode means; and

control means connected to said circuit means and activatable to cause said circuit means to assume its first on condition for a first preset time, to then assume its second on condition for a second preset time, and to then assume its off condition.



4,240,438

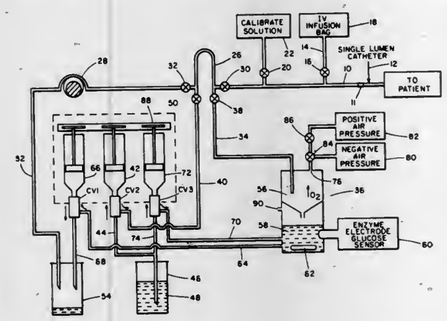
METHOD FOR MONITORING BLOOD GLUCOSE LEVELS AND ELEMENTS

Stuart J. Updike, and Mark C. Shults, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 2, 1978, Ser. No. 947,949

Int. Cl.³ A61B *5/00*; G01N *27/26*

U.S. Cl. 128—635 **16 Claims**



1. A method for monitoring blood glucose levels consisting essentially of the steps of withdrawing patient's whole blood, uniformly oxygenating increments of the patient's withdrawn blood by contacting the increment of withdrawn patient's blood with air for a sufficient length of time to effect oxygen equilibration, transferring the increment of blood after air-oxygen equilibration to a sensor having an electrode covered with a hydrophobic membrane having an etched hydrophilic surface on which glucose oxidase is immobilized whereby oxygen is consumed by reaction with glucose in the blood in the presence of the glucose oxidase, measuring rate of change in oxygen tension resulting from the reaction of glucose in the blood, said rate of change being proportional to the glucose concentration in the blood, and diluting the increment of patient's blood before measuring for rate of change in oxygen tension.

4,240,439

METHOD OF OBTAINING INFORMATION OF A SPECIFIED OR TARGET AREA OF A LIVING BODY NEAR ITS SKIN SURFACE BY THE APPLICATION OF A NUCLEAR MAGNETIC RESONANCE PHENOMENON

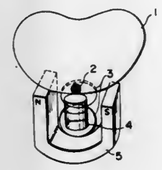
Zenuemon Abe, Sapporo; Kunio Tanaka, Asahikawa, and Fumio Sano, Sapporo, all of Japan, assignors to Hokkaido University

Continuation of Ser. No. 653,734, Jan. 30, 1976, abandoned. This application Apr. 28, 1978, Ser. No. 901,078

Claims priority, application Japan, Apr. 30, 1975, 50-52408

Int. Cl.³ A61B *5/05*

U.S. Cl. 128—653 **7 Claims**



1. A method of obtaining information of a predetermined target area in a living body near its skin surface by the application of a nuclear magnetic resonance phenomenon, comprising the steps of:

providing a static magnetic field generator in close proximity to said target area for generating a static magnetic field H_O;

providing a radio-frequency magnetic field generator in close proximity to said target area for generating a radio-frequency magnetic field H_1 having a nuclear magnetic resonance frequency f_0;

providing said radio-frequency magnetic field H_1 as a local inductive magnetic field;

applying said magnetic fields H_1 and H_0 to said target area so that said fields perpendicularly intersect each other in said target area;

focusing at least one of said magnetic fields onto a predetermined point coincident with said target area;

disposing a means for signal isolating said target area from its surrounding area adjacent to said target area to permit said at least one focused field from causing nuclear magnetic resonance signals in said surrounding area;

disposing a nuclear magnetic resonance signal detector approximately to said target area;

detecting and measuring a nuclear magnetic resonance signal from said target area.

4,240,440

METHOD AND APPARATUS FOR NUCLEAR KYMOGRAPHY PROVIDING A MOTION VERSUS TIME DISPLAY OF THE OUTER TRANSVERSE DIMENSIONS OF AN ORGAN

Mark W. Groch, Elk Grove Village, and George K. Lewis, Arlington Heights, both of Ill., assignors to Siemens Gammasonics, Inc., Skokie, Ill.

Filed Nov. 17, 1977, Ser. No. 852,418

Int. Cl.³ A61B *6/00*

U.S. Cl. 128—654 **30 Claims**

1. A method of producing a quantitatively evaluatable presentation of periodic regional myocardial wall motion of a cardiovascular system utilizing nuclear analysis, said method comprising the steps of:

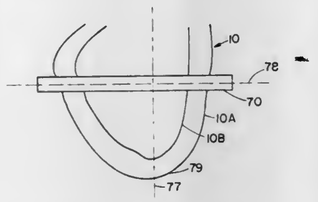
causing nuclear radioactivity to radiate from at least a portion of said cardiovascular system;

receiving the energy distribution of said radiated energy as positional events along a predetermined imaging axis as a function of time;

accumulating a plurality of successive positional energy

distributions in synchronism with said periodic regional myocardial motion; and

presenting said accumulated plurality of successive positional energy distributions in the form of a display depicting a unidimensional parameter versus time, said unidi-



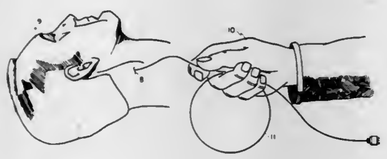
mensional parameter defining the outer transverse dimensions and variations in the outer transverse dimensions in the myocardial wall, said display depicting said regional myocardial wall motion as a function of time in order to determine selected parameters of said regional myocardial wall motion.

4,240,441

CAROTID THERMODILUTION CATHETER

Hassan H. Khalil, Alexandria, Egypt, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 10, 1978, Ser. No. 950,196
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—692 **8 Claims**



1. In a bioelectric measuring apparatus for insertion within an internal carotid artery of a living organism, including in combination, an elongated, flexible body, an electrical heater mounted thereon, and a temperature sensing device also mounted on said catheter body, the improvement comprising:

temperature transducing means mounted on said catheter body for sensing the temperature rise of said catheter body produced by said electrical heater; and

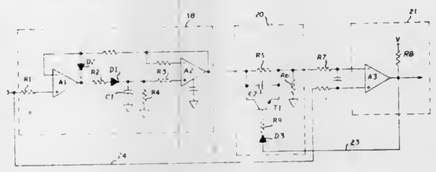
wherein said temperature sensing device and said electrical heater include wire windings having dimensions to facilitate compact placement within said organism and to achieve a predetermined surface area to blood volume flow ratio of from about 0.08 $mm^2/ml/min.$ to about 0.42 $mm^2/ml/min.$

4,240,442

VARIABLE THRESHOLD R-WAVE DETECTOR

Richard P. Andresen, Belmont; Robert M. Armington, Boston; Robert L. Cannon, III, Waltham, and Andrew J. Griffin, Framingham, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 883,096, Mar. 3, 1978, Pat. No. 4,181,135.
This application Jan. 5, 1979, Ser. No. 1,108
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—708 **7 Claims**



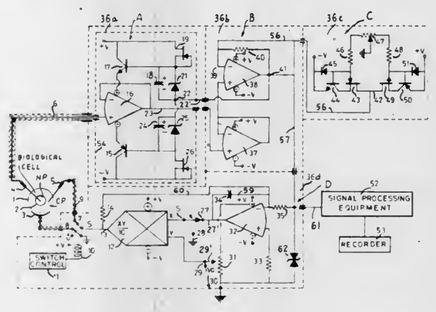
1. An improved R-wave detector comprising means responsive to a continuous ECG waveform having a series of R-waves therein for providing a value representative of the peak height of at least one R-wave in an immediately preceding limited plurality of R-waves, automatically variable scaling means for scaling one of the instant said ECG waveform and said peak height representing value to be a controllably variable percentage of the other, means for comparing said scaled one of the instant said ECG waveform and said peak height representing value with the other and providing a signal indicative of R-wave occurrence when the instant ECG waveform-based signal exceeds the peak height representing value based-signal; and means responsive to a said signal indicative of R-wave occurrence for automatically varying said scaling percentage of said variable scaling means.

4,240,443

SELECTIVE PREAMPLIFIER OF CELL POTENTIALS

Vicentiu L. Ionescu, Bucharest, Romania, assignor to Institutul de Stiinte Biologice—Bucharest, Bucharest, Romania

Filed May 10, 1978, Ser. No. 906,232
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—734 **6 Claims**



1. Apparatus for the selective detection and amplification of intranuclear and/or intracellular biopotentials comprising:

a first metallic microelectrode for collecting the intracellular and/or intranuclear action biopotentials adapted to be inserted into a biological cell;

a double screened central wire lead having two screening sheaths connected to said first metallic microelectrode;

an amplifier with unity gain control having a sufficient sensitivity to action biopotentials released by cells with a very high internal resistance, the amplifier having an input terminal and an output terminal and a plurality of stages, the input terminal of said amplifier being the input terminal of the first stage of the amplifier, said input terminal being directly coupled with the said first metallic microelectrode through the central wire of the said double screened lead, the first stage of the amplifier having a floating reference point;

a power supply circuit providing the feeding terminals of all active and passive electronic circuits and components of the said apparatus with two equal and of contrary sign stabilized voltages in comparison with a grounded null point;

first circuit means electrically connected to and separating the said floating reference point of the first stage of the amplifier from the said power supply grounded null point;

second circuit means for neutralizing the offset voltages in the stages of the said amplifier, whereby to obtain a good equality between the potential of the said floating reference point of the first stage of the amplifier and the biopotential applied, by means of said metallic mircoelectrode and said double screened lead wire to the input terminal of the said first stage, and an extremely low input capacity as well as high input resistance to the input terminal of said first stage of the amplifier;

a second metallic microelectrode functioning as a first reference electrode means for the power supply circuit allowing the first microelectrode to collect the intranuclear biopotentials only and adapted to be inserted in said biological cell; and

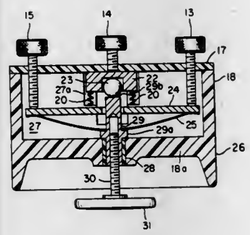
a third metallic electrode functioning as a second reference electrode means for the power supply circuit, adapted to be placed closely upon the outer surface of the cell, for allowing the first microelectrode to collect the intracellular biopotentials or both intranuclear and intracellular ones, in relation to the tip position of said first metallic microelectrode in the interior plasma of the cell under study.

4,240,444

APPARATUS FOR SENSING COUGHS

James A. Virgulto, 119 Terrace Ave., West Haven, Conn. 06516, and Peter E. Snyder, 11 Hurd Bridge Rd., Clinton, Conn. 06413

Filed Jul. 31, 1978, Ser. No. 929,637
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—782 **13 Claims**



1. A cough sensor comprising:

an annular axially extending housing;

sensing means mounted to the housing including a shaft member extending axially of the housing with a radially extending disc member on its proximal end, a concentric collar connected to the shaft and forming a distal end thereof, a leaf spring member interposed between the housing and the shaft member to resiliently urge the disc beyond the housing having a centrally located aperture through which a portion of the concentric annular collar member passes, a flange member connected to the collar member having a first shoulder bearing against the leaf spring in juxtaposition to the aperture and a second opposed shoulder, and a stop member on the housing bearing against the second shoulder for limiting axial extension of the disc beyond the housing;

means operatively associated with the housing and the sensing means to generate signals relative to movement of the shaft with respect to the housing; and

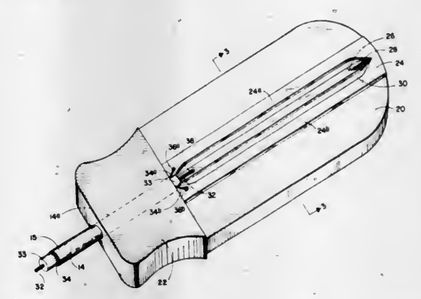
attachment means connected to the housing for securing the cough sensor in a predetermined location and attitude on the body so that the annular housing is in contact with and the disc member axially extends toward the body.

4,240,445

ELECTROMAGNETIC ENERGY COUPLER/RECEIVER APPARATUS AND METHOD

Magdy F. Iskander, Midvale, and Carl H. Durney, Salt Lake City, both of Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Oct. 23, 1978, Ser. No. 954,054
Int. Cl.³ A61N *1/40*
U.S. Cl. 128—804 **8 Claims**



1. An apparatus for coupling electromagnetic energy into a material comprising:

a substrate body of dielectric material, the body having an external surface;

an open transmission line mounted at the external surface of the dielectric substrate to accommodate access to electromagnetic fields adjacent the open transmission line, the open transmission line serving as an inducing means for inducing electromagnetic energy into the material and comprising a central strip conductor and a ground plane conductor, the central strip conductor being surrounded in spaced relationship by the ground plane conductor, the open transmission line further comprising a resistor electrically interconnecting the central strip conductor and the ground plane conductor; and

means for connecting the open transmission line with a source of electrical energy to thereby allow the open transmission line to operate as an inducing means.

7. A microwave coupler for coupling microwave energy to tissue comprising:

a dielectric substrate configurated with a surface adapted to be placed against the tissue;

an open transmission line mounted to the surface of the dielectric substrate, the open transmission line comprising a central strip conductor, a ground plane conductor, and a resistor, the central strip conductor being surrounded in spaced relationship by the ground plane conductor and electrically interconnected to the ground plane conductor by the resistor; and

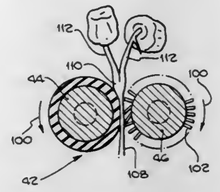
means for connecting the open transmission line to a source of electromagnetic energy, the electromagnetic energy inducing microwave energy in the open transmission line.

4,240,446

VINE CROP HARVESTER

Robert J. Raymond, 956 Diamond Dr., Santa Maria, Calif. 93454

Filed Nov. 13, 1978, Ser. No. 959,461
Int. Cl.³ A01D *45/00*
U.S. Cl. 130—30 R **7 Claims**



1. In a vine crop harvester,
an ambulatory frame,
a plurality of crop cleaning rolls supported by said frame and having spaced cylindrical surfaces,
the diameter of the crop cleaning rolls being less than the length of the crop stalks from which the crop is to be cleaned,
drive means for said rolls adapted to rotate adjacent rolls of a pair in opposite directions to grip and feed crop stalks downwardly between them and strip the fruit from the stalks,
there being sufficient space between adjacent rolls of a pair to grip and feed stalks of the crop to be cleaned but insufficient space to pass widened joints of the stalks,
and means for cyclically reversing the rotation of adjacent rolls of a pair sufficiently to move widened stalk joints which have been caught in the bight of the rolls upwardly away from the rolls for reintroduction to the rolls upon resumption of the downward progressive rotation of said rolls.

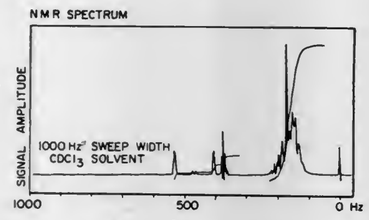
4,240,447

USE FOR PREPARING SMOKING TOBACCO COMPOSITIONS OF SPIROPYRAN DERIVATIVES

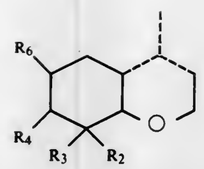
John B. Hall, Rumson; Denis E. Hruza, Sr., Brick Town, both of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Manfred H. Vock, Locust, and Joaquin F. Vinals, Red Bank, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 765,629, Feb. 4, 1977, abandoned, which is a division of Ser. No. 701,249, Jun. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 547,057, Feb. 4, 1975, abandoned. This application Apr. 6, 1979, Ser. No. 27,948
Int. Cl.³ A24B *3/12*
U.S. Cl. 131—9 **8 Claims**

EXAMPLE I



1. A smoking tobacco composition comprising smoking tobacco and intimately admixed therewith an organoleptically augmenting, enhancing or modifying quantity of a spiropyran material defined by the generic structure:



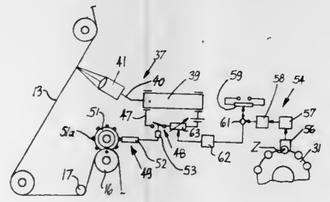
wherein R_2, R_3 and R_6 are each selected from the group consisting of hydrogen and methyl; wherein R_4 is selected from the group consisting of t-butyl and hydrogen; wherein when R_4 is t-butyl, R_2, R_3 and R_6 are each hydrogen; wherein each of the dashed lines represents a carbon-carbon single bond or a carbon-carbon double bond with at least one of the dashed lines being a carbon-carbon single bond.

4,240,448

APPARATUS FOR INCREASING THE PERMEABILITY OF WRAPPING MATERIAL FOR ROD-SHAPED SMOKERS' PRODUCTS

Uwe Heitmann, Schwarzenbek, Fed. Rep. of Germany, and Joachim Buchegger, Richmond, Va., assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 766,927, Feb. 9, 1977, Pat. No. 4,121,595. This application Aug. 21, 1978, Ser. No. 935,598
The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.
Int. Cl.³ A24B *7/14*
U.S. Cl. 131—21 R **4 Claims**



1. In a machine for the production and/or processing of rod-shaped articles which constitute or form part of smokers' products and wherein a wrapper surrounds a rod-like filler, a combination comprising a source of a web of coherent wrappers; means for draping said wrappers around the respective fillers; drive means for moving a succession of wrappers from said source along a predetermined path, including means for continuously advancing said web from said source to said draping means; at least one laser operable to emit at least one beam of coherent radiation; means for directing said beam against successive wrappers in said path whereby the wrappers are perforated at the points of impingement of said beams, said beam directing means being adjacent the path of said web intermediate said source and said draping means; and means for operating said laser in synchronism with said drive means to cause said beam to perforate selected portions of successive wrappers.

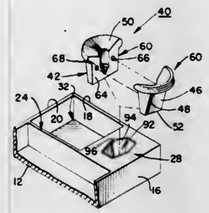
4,240,449

CIGARETTE AND CIGAR EXTINGUISHER

John C. Caravello, P.O. Box 141, Norwich, N.Y. 13815

Filed Aug. 21, 1979, Ser. No. 68,386
Int. Cl.³ A24F *13/18*
U.S. Cl. 131—235 ST **10 Claims**

1. An extinguisher for cigars and/or cigarettes comprising:
a base having a polygonal receptacle defined therein;
a snuffer for receiving cigars or cigarettes releasably mounted in said polygonal receptacle, said snuffer including a pair of sections separably connected together, each section having a body portion in the shape of an elongated semi-polygon, a semi-circular apron portion on one end of said body portion and a portion of a stepped blind-ended bore defined in said body portion to have one end thereof contacting said apron portion and extending away from said apron portion;
said snuffer portions each having locking means and a lock receiving means thereon, said snuffer body forming a



polygonal shape corresponding to the polygonal shape of said receptacle, said apron portions forming a circular apron, and said bore portions forming a stepped, blind-ended bore when said snuffer portions are mated together;
said snuffer being accommodated in said receptacle with edges of said polygonal shapes corresponding so that said snuffer is held in said receptacle in a manner which inhibits its twisting and lateral movement of said snuffer about a longitudinal axis thereof.

4,240,450

COMPOSITION AND PROCESS FOR THE TREATMENT OF KERATIN MATERIALS WITH POLYMERS

Jean-Francois Grollier; Claire Fiquet; Chantal Fourcadier, all of Paris; Claude Dubief, Versailles, and Daniele Cauwet, Crosne, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 14, 1978, Ser. No. 886,554
Claims priority, application Luxembourg, Mar. 15, 1977, 76955
Int. Cl.³ A45D *7/00*; A61K *7/08, 7/11, 7/13*
U.S. Cl. 132—7 **29 Claims**

24. Process for the treatment of keratin material comprising the steps of applying to hair a composition comprising at least one anionic polymer containing at least one of a sulfonic acid, carboxylic acid and phosphoric acid unit, said anionic polymer having a molecular weight of from about 500 to 5 million, and at least one cationic polymer in a solvent medium, said anionic and cationic polymers each being present in an amount of from about 0.01 to about 10% relative to the total weight of the composition, said composition being applied at a pH at which the combination of anionic polymer and cationic polymer does not precipitate, and subsequently, without intermediate rinsing, modifying the pH on the hair to cause the combination of anionic polymer and cationic polymer to precipitate onto said material and subsequently rinsing said material thereby to produce a conditioning effect on the hair.

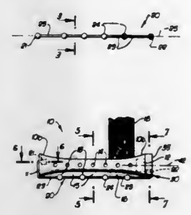
4,240,451

DIFFERENTIAL HAIR ENGAGEMENT RETAINER

Russell L. Thompson, Laguna Niguel, Calif., assignor to Helen of Troy Corporation, El Paso, Tex.

Filed Feb. 26, 1979, Ser. No. 14,808
Int. Cl.³ A45D *2/14*
U.S. Cl. 132—42 A **2 Claims**

1. A differential hair engaging retainer to be used in combination with a hair roller, and comprised of a stretchable elastomeric band extending lengthwise of the hair roller for retaining hair about said roller, the band including multiple alternating beads and rods located along the band length and forming multiple spaces between the band and said roller and between the beads, with or without hair extending therethrough, to permit lotions to pass therethrough in all positions of proximity of said stretchable band to said roller, the beads having substantially larger cross-sectional areas than the rods presented toward the roller to seat on hair wrapped about the roller.

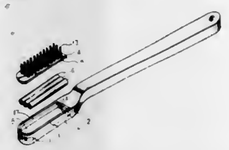


4,240,452

ELASTIC BASE TOOTHBRUSH

San-Bau Jean, No. 25, Lane 31, Min-Yo St., Lou Tong, Taiwan

Filed Sep. 13, 1979, Ser. No. 75,190
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—84 R **1 Claim**



1. An elastic base toothbrush comprises a handle with a base body having a loop groove therein, several rubber tubes, a plastic plate with rows of holes, bunches of brushes and brush bearings; wherein three holes are formed at the front end of said groove and two holes at the rear end for flowing the remaining water out; said rubber tubes are fixed within the base portion surrounded by said loop groove for providing an elastic base, said plastic plate on said rubber tubes is held by the flange above said groove, bunches of brush carried in said plate are held through said rows of holes by means of the expanded lower part of said bearings to prevent said brush escaping from the base body; the number of said rows of holes is equal to that of said rubber tubes; which is characterized in that the brush is adequately moved upward or downward according to the outline of the teeth shape by means of the elastic rubber tubes and brush bearings.

4,240,453

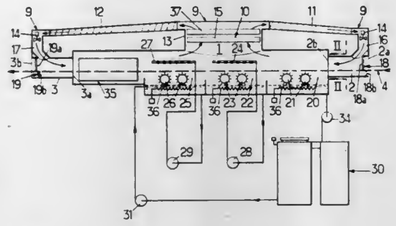
APPARATUS FOR THE TREATMENT OF SURFACES INVOLVING THE USE OF AT LEAST A SOLVENT

Jean Vial, Eaubonne, and Gerard Sauvan, Franconville, both of France, assignors to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM, Paris, France

Filed Feb. 22, 1979, Ser. No. 14,026
Claims priority, application France, Feb. 28, 1978, 78 05701
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—107 **7 Claims**

1. An apparatus for cleaning, by the action of at least one solvent, at least one surface of an article contained therein, comprising:
a. a treatment enclosure including at least one inlet lock-chamber and at least one outlet lock-chamber with an article transport means extending therebetween;
b. at least one solvent dispensing means an outlet end of which being disposed in said treatment enclosure and adjacent article transport means;
c. extraction means communicating with said treatment enclosure for extracting air-solvent vapors therefrom;
d. condensation means cooperating with said extraction means and positioned between said inlet lock-chamber and

said outlet lock-chamber and disposed so that air-solvent vapors extracted from said treatment enclosure pass therethrough for condensing the solvent vapors and recycling the solvent vapors to said treatment enclosure; and



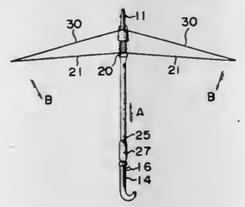
e. recycling duct means communicating with said treatment enclosure and said extraction means for recycling air that has had the solvent vapors substantially removed therefrom towards the inlet of said inlet lock-chamber and the outlet of said outlet lock-chamber.

4,240,454

AUTOMATIC UMBRELLA

Kuo L. Tsai, No. 106, Yung Chen Rd., Yung Ho Chen, Taipei Hsien, Taiwan

Filed Nov. 29, 1978, Ser. No. 964,476
Int. Cl.[2] A45B *25/16*
U.S. Cl. 135—24 **5 Claims**



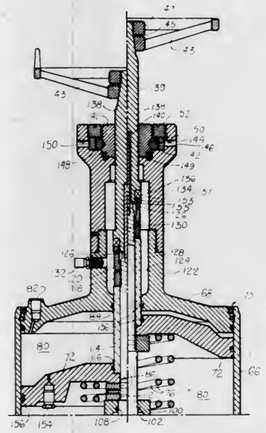
1. An improved automatic umbrella comprising:
a tapered contracting cylinder at the uppermost portion thereof, its lower portion being an expansion which has an outward divergent inside surface;
a fixing member fastened around said tapered contracting cylinder;
an umbrella cloth fastened between said tapered contracting cylinder and said fixing member;
a controlling tube, the top portion thereof being a spoke hub, the lower portion thereof being an expansion, inside of which there is provided an inner tube with several holes longitudinally arranged in line;
a main stem provided within said contracting cylinder and controlling tube;
a controlling lever within the lower portion of said main stem, having a top projecting piece, an interim projecting piece and a push button; and
a set of spokes radially pivoted upon said spoke hub;
a spring provided behind said controlling lever inside said main stem;
being characterized in that on the one hand, in a case where said improved automatic umbrella in collapsed position is to be propped open, press said push button and then said coil spring compressed will furnish a downward pressure upon said spoke hub to unfold said umbrella cloth and said interim projecting piece will project into one of said holes of said inner tube; on the other hand, while said improved automatic umbrella in open position is to be folded up, longitudinally push forward said expansion of said controlling tube and then the outward divergent inside surface of said expansion of said tapered contracting cylinder will proceed the collection of said spokes therein and, until said top projecting piece projects rightly under the bottom of said expansion of said controlling tube, said improved automatic umbrella will stay in a collapsed position.

4,240,455

HEAT RESPONSIVE BACK SEAT ARRANGEMENT FOR VALVE OPERATOR WITH MANUAL OVERRIDE

John K. McGee, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 27, 1978, Ser. No. 955,230
Int. Cl.[3] F16K *17/38, 31/143*
U.S. Cl. 137—77 **21 Claims**



1. A heat responsive back seat arrangement for a valve operator having an override, comprising:
valve housing means including valve bonnet means having a bore;
a reciprocate-in-one-sense-to-close, reciprocate-in-opposite-sense-to-open valve body having a rising valve stem connected therewith;
the valve body being enclosed within the valve housing means, with the valve stem passing out through said valve bonnet means bore;
an annular body of axially compressively loaded valve stem packing installed to form a seal between the valve bonnet means and the valve stem, yet permit axial reciprocating movement of the valve stem relative to the valve housing means;
complementary, circumferentially extending back seat, annular sealing surface bearing shoulder means on each of said valve stem and said valve bonnet means in said bore of the latter, the two respective annular sealing surfaces being disposed on their respective parts to form an extensive, surface-to-surface circumferential seal between the valve bonnet means and the valve stem only when said valve stem is reciprocated to one resultingly-defined extreme of axial movement relative to said valve housing means;
a valve operator located relatively exteriorly of said valve housing compared to said valve body by being separable therefrom by said back seat;
said valve operator including normally-cocked force-storage means effectively interposed between said valve stem and said valve housing means, to when released, axially move said valve stem to said one extreme thus making said circumferential seal of said back seat, the valve operator

including means for selectively resiliently axially loading and releasing said force-storage means;
lock-out means normally effectively interposed between said valve stem and said valve housing means, normally locking said valve stem in a resultingly-defined axially opposite extreme thereof, in which said annular sealing surfaces are axially spaced from one another and are not in circumferential sealing engagement, and in which said force-storage means is resultingly normally cocked;
the lock-out means including a thermally fusible element effectively interposed between said valve stem and said valve housing means which, in the absence of subjection to a preselected abnormally high temperature level remains an effective mechanical bridge therebetween, but which, when subjected to said preselected abnormally high temperature level softens and becomes ineffective as a mechanical bridge, thereby releasing said normally-cocked force-storage means, to axially move said valve stem to said one extreme thus making said circumferential seal of said back seat;
the lock-out means further including an override means, comprising:
joint means dividing said valve stem into two coaxially aligned, telescopically related portions, being a main stem portion and a lock-out stem portion which are normally fully telescoped into abutting relation, the valve body being mounted to said main step portion; and
means for reversibly axially partially withdrawing the lock-out stem portion relative to the main stem portion, so as to enable the main stem portion to move axially from said opposite extreme toward said one extreme and back to said opposite extreme, by use of said means for selectively resiliently axially loading and releasing said force-storage means, while said lock-out stem portion is axially partially withdrawn relative to said main stem portion even while said thermally fusible element remains interposed as a mechanical bridge between said valve stem and said valve housing;
said lock-out means further including:
a band of screw threading on said lock-out stem portion;
a drive bushing threadably mounted on said band;
a radially outwardly opening notch in said drive bushing;
a locking dog means normally forced part-way into said notch;
force-storage means associated with said locking dog means, and tending to withdraw said locking dog means from said notch;
and said thermally fusible element being constituted by a block of heat-fusible material normally effectively interposed between said locking dog means and said valve housing means, so that when said block softens due to being heated and tends to lose interposition effectiveness, said force-storage means associated with said locking dog means releases force stored therein and said locking dog means withdraws from said notch, freeing said valve stem to axially move toward said axially opposite extreme.

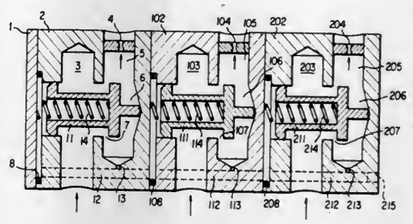
4,240,456

MODULAR ELEMENT FOR A HYDRAULIC FLOW DIVIDER UNIT

Jean F. Louviot, Saint Denis, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 8, 1979, Ser. No. 1,752
Claims priority, application France, Jan. 16, 1978, 78 01047
Int. Cl.[3] G05D *11/00*
U.S. Cl. 137—100 **5 Claims**

1. A stack of stackable modular elements for a hydraulic flow divider, each said element comprising:
a transverse bore in said element;
a stacking face in said element at one end of said transverse bore, said stacking face including a milled out depression and contacting an opposing end of an adjacent element in said stack;
an exit hole in said element at the other end of said transverse bore;
an entry hole in said element at a midportion of said bore;
an outlet pressure equalization hole passing transversely through said element from said depression of said stacking face, said outlet pressure equalization hole communicating with said exit hole, said outlet pressure equalization hole extending to the face of each said element opposing said stacking face of each said element and thereby communicating with the stacking face and outlet pressure equalization hole of the adjacent element at said opposing end in said stack; and



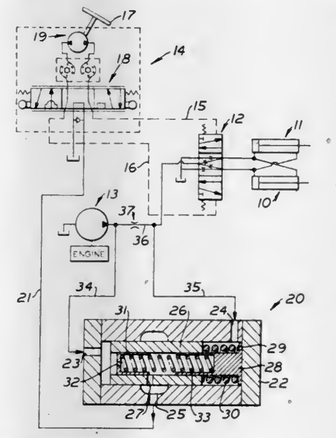
a piston received in said transverse bore and adapted to move so as to regulate the flow opening between said entry hole and said exit hole, said piston having an internal cylinder which opens into said milled out depression of said stacking face and communicating with said outlet pressure equalization hole via said milled out portion of said stacking face, said cylinder traverses said entry hole and projects into said exit hole, said piston having a face in said exit hole exposed to the pressure in said exit hole;
wherein said piston is movable as a function of the variations in the pressure between said exit hole pressure and the pressure in said milled out portion.

4,240,457

VARIABLE FLOW CONTROL VALVE FOR STEERING SYSTEMS OF ARTICULATED VEHICLES

Craig W. Riediger, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 15, 1978, Ser. No. 886,970
Int. Cl.[3] G05D *11/02*
U.S. Cl. 137—101 **8 Claims**



1. A fluid circuit comprising:
a pump,

a variable flow control valve having a housing defining first and second inlets and an outlet therein, said pump connected to said first and second inlets,

orifice means connected between said pump and said second inlet for creating a differential pressure as between said first and second inlets, and

means in said variable flow control valve for communicating a variable fluid flow from said first inlet through said outlet in response to said differential pressure including a first member reciprocally mounted in said housing and having opposite ends thereof exposed to fluid pressure from said first and second inlets, respectively, said second inlet and the end of the first member exposed thereto being open solely to fluid pressure from said orifice means, a second member reciprocally mounted in said first member and having one end thereof exposed to fluid pressure from said first inlet, port means formed through said first member communicating with said outlet for communicating fluid from said first inlet thereto, and orifice means formed in said second member for creating a differential fluid pressure thereacross and communicating said first inlet with said port means.

4,240,458

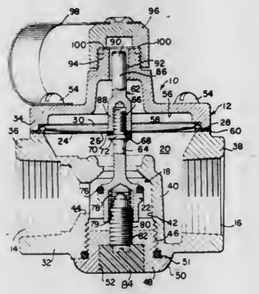
EXCESS PRESSURE SHUTOFF VALVE

Norman M. Huff, Chicago, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Continuation of Ser. No. 791,179, Apr. 27, 1977, abandoned. This application Apr. 26, 1978, Ser. No. 900,237

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—315 **20 Claims**



1. An excess pressure shutoff valve comprising:

a housing including inlet and outlet ports:

a chamber in said housing in pressure communication with at least one of said inlet and outlet ports;

a valve seat in said housing between said inlet and outlet ports;

said chamber being defined in part by a diaphragm;

a valve member movable relative to said valve seat between valve open and valve closed positions;

a stem interconnecting said diaphragm and said valve member for simultaneous movement;

said diaphragm consisting of a unitary, one-piece, fluid impervious bistable snap disc having two over-center stable positions corresponding respectively to said valve open and valve closed positions; and

a spring urging said valve member toward the valve closed position.

4,240,459

VALVE ASSEMBLY

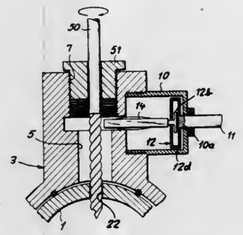
Hansjörg Trautwein, Am Stadtgarten 1, 4650 Gelsenkirchen, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 942,065

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741280

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—318 **8 Claims**



1. A valve assembly for connection to a pipe, comprising:

a housing formed with a main passage opening toward said pipe and adapted to receive a drill for penetrating a wall of said pipe;

a seal interposed between said housing and said wall around said main passage;

means for clamping said housing onto said wall around said main passage;

means for clamping said housing onto said pipe, said housing being formed with a lateral slot communicating with said main passage and with a recess open toward but opposite said slot;

an auxiliary blocking plate receivable in said slot and having a free end adapted to enter said recess upon displacement of said plate across said main passage, said housing being provided with an auxiliary passage communicating with said main passage through said slot and forming a connecting fitting;

a sleeve removably connected to said fitting;

an actuator displaceable in said sleeve toward and away from the axis of said main passage;

connecting means between said actuator and said plate for enabling displacement of said plate relative to said actuator along said axis and limited displacement transversely thereto; and

a valve unit threaded onto said housing and having a spindle extending along said main passage and a valve member engageable with said plate and formed on said spindle, said recess and said slot having coplanar faces defining respective seats turned toward and away from said pipe, respectively, said plate being provided with a projecting formation on at least one side of said plate having inclined flanks receivable in and engageable with said seat turned toward said pipe for retaining said plate against lateral displacement by fluid pressure and self-centering said plate in said seat turned toward said pipe, when said spindle is withdrawn from contact with said plate, said plate being engageable by its opposite side with the seat turned away from said pipe, said plate being engaged by said spindle and being pressed thereby against said latter seat.

4,240,460

MEANS FOR LIMITING FLOATING MOVEMENT OF GATE VALVE SEATS

Ruben G. Alaniz, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 88,876

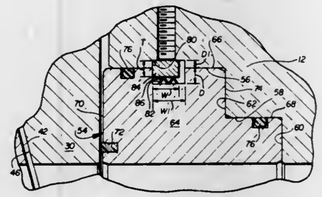
Int. Cl.³ F16K *43/00*

U.S. Cl. 137—327 **8 Claims**

1. In a gate valve having a valve body with a valve chamber

therein and inlet and outlet flow passages communicating with the valve chamber, an expanding gate valve assembly mounted within the valve chamber for movement between open and closed positions, said gate valve assembly including a gate and a segment with the gate and segment expanding laterally away from each other at the fully closed position, and an annular seat pocket about each of the flow passages:

the improvement comprising an annular seat mounted in each seat pocket for limited floating movement, the outer



circumference of said seat and the adjacent annular wall of said seat pocket having opposed annular grooves therein, and a pair of substantially semi-circular retainer ring segments mounted in said grooves and being of a thickness greater than the depth of one of the grooves to retain the annular seat within the seat pocket, the width of the ring segments being less than the width of said grooves to permit a limited floating movement of the seat within the seat pocket.

4,240,461

PIPE-FOLLOWING IRRIGATION MACHINE

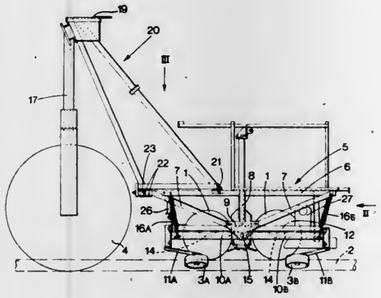
Vernon B. W. Harvey, Wimborne, England, assignor to Wright Rain Limited, Hampshire, England

Filed Jan. 9, 1979, Ser. No. 2,227

Claims priority, application United Kingdom, Mar. 14, 1978, 9984/78

Int. Cl.³ B05B *3/18*

U.S. Cl. 137—899.1 **8 Claims**



1. An irrigation machine comprising a vehicle to be guided to follow the course of a water supply pipe having a plurality of self-closing hydrants spaced apart along the length of the water supply pipe in an upper longitudinal surface thereof; a vertically-movable riser pipe carried on said vehicle and leading to an irrigation discharge device; a coupling at the lower end of said riser pipe to be coupled to each of at least some of the hydrants in succession and when so coupled to a hydrant to open a self-closing valve in the hydrant to permit water to flow through the riser pipe to the irrigation device; said vehicle comprising a main frame on which said riser pipe is mounted; guide means on said main frame engaging both sides of said water supply pipe; a sub-frame pivotally attached to said main frame to pivot about a substantially horizontal axis relatively to said main frame and traction means carried on said sub-frame and engaging the upper longitudinal surface of said water supply pipe.

4,240,462

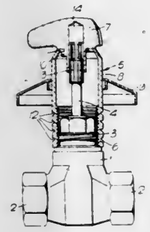
RECESSED VALVE

Norbert Bankstahl, Wolfschlugen, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,003

Int. Cl.³ F16K *27/00*

U.S. Cl. 137—377 **3 Claims**



1. A recessed valve comprising:

a valve casing having apertures for connection to supply lines;

valve means;

an actuating spindle coupled at one end to said valve means and having adjacent its other end a serrated surface portion, said serrated surface portion including a first plurality of circumferential notches each of said first plurality of notches providing a weakened portion such that said spindle may be shortened;

a protective sleeve surrounding said spindle, said protective sleeve having a radially inward projecting flange at one end, and a portion adjacent the other end having a second plurality of circumferential notches, each of said second plurality of notches providing a weakened portion such that said sleeve may be shortened; and

an actuating handle having a bore adapted to receive said other end of said spindle, said handle being rotatably mounted on said flange and including means adapted to engage said flange for limiting axial movement.

4,240,463

SAFETY VALVE ACTUATOR AND PILOT SYSTEM

Allen D. Moore, Marrero, La., assignor to Otis Engineering Corporation, Dallas, Tex.

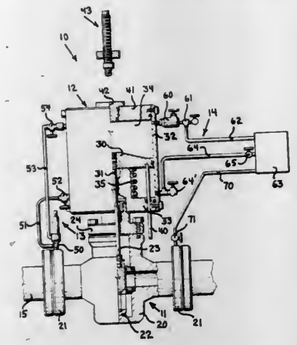
Filed Jul. 27, 1979, Ser. No. 61,497

Int. Cl.³ F16K *17/00*

U.S. Cl. 137—492.5 **14 Claims**

1. A safety valve actuator and pilot valve system for closing and reopening a normally open gate valve in a flow line responsive to a predetermined pressure value in said flow line comprising: a hydraulic valve actuator coupled with said safety valve for closing said safety valve responsive to a fluid pressure increase communicated to said actuator from said flow line; pressure responsive pilot valve means connected with said flow line; a conduit from said pilot valve means to said valve actuator for conducting operating fluid pressure to said actuator when said pilot valve functions to close said safety valve; a conduit from said flow line to said valve actuator for conducting pressure fluid from said flow line to reopen

said safety valve; and a conduit from said valve actuator to said flow line to return operating fluid from said actuator to said



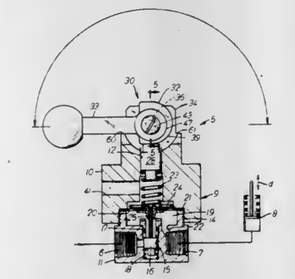
flow line after said operating fluid has been used to close said safety valve.

4,240,464

COMBINED PRESSURE CONTROL AND SHUT-OFF VALVE

Richard R. Schink, Racine, Wis., assignor to Milwaukee Cylinder Corporation, Cudahy, Wis.

Filed Oct. 24, 1979, Ser. No. 87,661
Int. Cl.³ F16K *31/524*
U.S. Cl. 137—505.42 **2 Claims**



1. A pressure gas control unit of the type comprising a body in which there is an inlet port connectable with a pressure gas source, an outlet port connectable with a device operable by pressure gas and a pressure chamber at all times communicated with said outlet port, said control unit further comprising a valve element in said body movable axially in opening and closing directions for variably restricting flow of pressure gas from said inlet port to said pressure chamber, a coaxially displaceable pressure responsive control element for said valve element having opposite surfaces, one of which is exposed in said pressure chamber, and a helical expansion spring having an inner end bearing against the opposite surface of said control element and axially confined in a bore in the body that opens outwardly to one side thereof, said control element having a connection with said valve element whereby the latter tends to be moved in its closing direction in response to increasing pressure in said pressure chamber and in its opening direction in response to biasing force exerted upon the control element by said spring, said control unit being characterized by

adjusting means for readily and quickly adjusting the value of gas pressure which said unit maintains at its outlet port to any selected one of a stepless range of values, said adjusting means comprising:

A. a cam rotatable about a cam axis;

B. supporting means mounting said cam on the body at said one side thereof, for rotation about said cam axis, said supporting means comprising

(1) a boss on the body, alongside the bore and projecting from said one side of the body, and

(2) a screw secured to said boss and projecting therefrom across said bore;

C. said cam having a cam surface which is radially spaced from said cam axis and which extends across said bore and receives the reaction of the outer end of said spring, said cam surface being so arranged that the position of said outer end of the spring along the axis of said bore depends upon the rotational position of the cam;

D. calibrating means cooperable with said supporting means for effecting bodily shifting adjustment of the cam in directions parallel to the axis of said bore, so that the unit can be calibrated to maintain a predetermined pressure at said outlet port when said cam is in a predetermined position of its rotation, said calibrating means comprising a tubular bushing

(1) having an external cylindrical surface on which said cam is journaled for rotation, and

(2) having a bushing bore which is eccentric to said cylindrical surface so that adjustment of the cam axis parallel to the axis of said bore in the body is effected by rotation of said bushing about said screw and the screw cooperates with the boss to axially clampingly retain the bushing in any position of rotation in which it may be established; and

E. means for inhibiting movement of the cam out of any rotational position in which it may be established, the last mentioned means comprising

(1) annular friction means surrounding said bushing and axially adjacent to at least one side of said cam, and

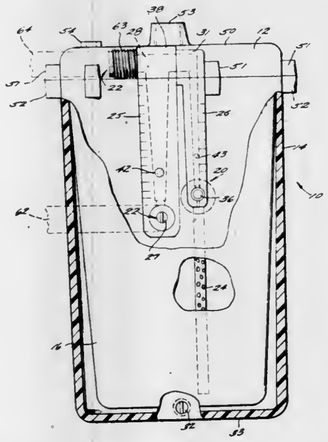
(2) an annular spring surrounding said bushing and cooperating with said screw and said boss to normally maintain said annular friction means engaged with said cam under axial clamping force.

4,240,465

MEDICATOR CONSTRUCTION

Helmut Rader, McLean, Va., assignor to Interfarm Corporation, McLean, Va.

Filed May 8, 1979, Ser. No. 37,217
Int. Cl.³ B67D *5/42;* **A01K** *7/00*
U.S. Cl. 137—564.5 **10 Claims**



1. Apparatus for metering a medicant into a water flow line and including: a flexible bladder; a housing top portion; a housing bottom portion; means for receiving said bladder so that it is disposed between said housing top and bottom portions; a water flow conduit having a first branch thereof extending into the area between said bladder and said housing bottom portion to apply pressure to squeeze said bladder, and including means extending said first branch to a second branch in said housing top portion; a medicator flow conduit including an adjustable means for metering medicant from between said bladder and said water flow conduit second branch; and a flexible tube extending from said bladder interior to said medicant metering means; wherein the improvement comprises:

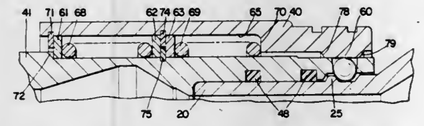
said housing top and bottom portions are formed of injection molded plastic; means defining said water flow conduit first branch and means extending said first branch are formed integrally with said housing bottom portion; and means defining said medicant flow conduit from said flexible tube to said second branch being formed integrally within said housing bottom portion; means defining said second branch being formed integrally within said housing top portion.

4,240,466

PUSH-PULL COUPLING

Eugene H. Herzan, Minnetonka, and Stanlee W. Meisinger, Plymouth, both of Minn., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 15, 1979, Ser. No. 3,172
Int. Cl.³ F16L *37/28, 37/22*
U.S. Cl. 137—614.04 **4 Claims**



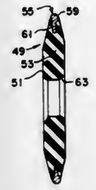
1. A fluid coupling comprising a female member and a male member insertable into the female member to effect interconnection therewith, said male member having a detent receiving recess for effecting a locking connection between said members, said female member comprising an outer sleeve member having means thereon for fixing it against axial movement, an inner section adapted for sealing engagement with said male member and axially movable therewith relative to said sleeve member, detent means supported by said inner section for axial movement therewith and engageable with said sleeve member for radial movement into and out of the detent receiving recess of said male member, spring means acting between said inner section and said sleeve member for resisting relative movement therebetween to provide one level of uncoupling force when said inner section is moved in one direction and a second lower level of coupling force when said inner section is moved in the opposite direction, said spring means comprising first and second compression springs axially disposed in an annular space between said inner section and said sleeve member and further including abutment means carried by said inner section and said sleeve member for compressively engaging both said first and second springs when said inner section is moved in one direction and for compressively engaging only said first spring when moved in the opposite direction said abutment means comprising first, second and third axially spaced abutments fixed on said sleeve member and first and second axially spaced abutments fixed on said inner section, each of said abutments being disposed at an end of said first and second springs, said second abutments being disposed between said first and second springs, said first spring being biased between said first inner section abutment and said second sleeve member abutment in said one direction and said second spring being biased between said second inner section abutment and said third sleeve member abutment in said one direction, said first spring being biased between said second inner section abutment and said first sleeve member abutment in said opposite direction.

4,240,467

VALVE ASSEMBLY

Leland F. Blatt, and L. Douglas Blatt, both of 31915 Groesbeck Highway, Fraser, Mich. 48026

Filed Jan. 15, 1979, Ser. No. 3,410
Int. Cl.³ F15B *13/042*
U.S. Cl. 137—625.66 **11 Claims**



6. A valve assembly comprising an elongated body having an axial bore defining an annular valve seat;

axially apertured end caps sealed over and secured to opposite ends of said body;

said body having a pressure port, cylinder ports and exhaust ports;

a valve spool loosely and reciprocally nested within said bore and at its ends sealed and movably supported within said bore, for controlling flow of pressure fluid through the respective ports;

first operator means on one end cap engageable with said spool, moving said spool to one control position at one end of said bore;

second operator means on the other end cap for moving said spool, when energized, to a second control position at the other end of said bore;

said spool including an axial portion and a plurality of spaced radially projecting axially spaced valve seal supporting portions, there being a series of longitudinally spaced pairs of annular grooves in said valve seal supporting portions, each defining an axial seal support of predetermined length;

and an annular apertured valve seal of flexible material loosely nested in each groove, and loosely mounted upon said axial supports, respectively;

the base of each seal having an axial width less than the length of each axial seal support;

each seal having an annular rim portion of decreasing width towards its periphery and transversely rounded at its outer edge, and of a diameter greater than said bore for flexing sealing engagement with said valve seat relative to said ports to form a fluid-tight contact with said bore;

said rim portions of said seals being movable over said valve seat with a minimum of friction and said seal bases adapted for limited axial movement on said axial supports, reducing the resistance of said spool to reciprocal control movements thereof, said seal rim outer edges rolling on said body to facilitate break-away therefrom, air pressure applied to said pressure port operatively acting upon the adjacent seals expanding them against said valve seat, creating a bubble-tight seal on said bore;

the sealing and supporting of said spool including annular channels adjacent opposite ends of said spool;

and a flexible O-ring seal nested in each channel and projecting radially outward of said spool, spacing said spool from said valve seat and serving as the sole support of said spool within said bore, said spool floating within said bore;

the rim of each valve seal being of low resiliency hard frictionless material of high Durometer creating a diaphragm action, the base of each seal being of increased resiliency and of a lower Durometer for ease of flexibility and expansion upon its axial support.

4,240,468

SOLENOID OPERATED VALVE

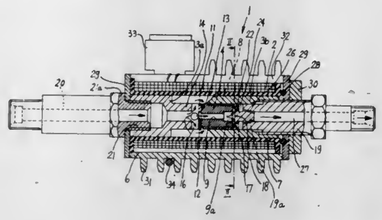
Peter Brand, and Adolf Helms, both of Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,311

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714091; Dec. 23, 1977, 2757659

Int. Cl.³ F16K *31/06*

U.S. Cl. 137—625.33 **11 Claims**



1. An electromagnetic shutoff valve for fluids, particularly for compressed gaseous fluids, comprising a tubular coil; a tubular ferromagnetic core surrounded by said coil; a fixed valve seat in said core, said seat having an end face and an annular opening provided in said end face for evacuation of fluid in open position of the valve; a ferromagnetic plunger reciprocably mounted in said core and having a first end face movable into and from sealing engagement with the end face of said seat and a second end face which is subjected to the pressure of inflowing fluid so that the fluid tends to maintain said first end face in engagement with the end face of said seat, said plunger further having a plurality of passages defining discrete paths for the flow of fluid from said second to said first end face, said passages including a first passage having a discharge end within said annular opening and a second passage having a discharge end located radially outwardly of said annular opening; and means for energizing said coil to thereby move said plunger away from said seat and permit the fluid to flow from said passages into said opening, the end face of said seat being engaged by the first end face of said plunger in deenergized condition of said coil whereby the first end face of said plunger seals said opening from said passages.

4,240,469

REVERSING VALVE CONSTRUCTION AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

Werner R. Bauer, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

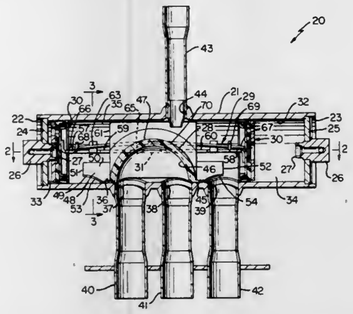
Continuation-in-part of Ser. No. 825,958, Aug. 19, 1977, Pat. No. 4,188,975. This application Nov. 6, 1978, Ser. No. 958,030

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ E03B *3/00*

U.S. Cl. 137—625.66 **15 Claims**

1. In a reversing valve construction having a housing means provided with a chamber carrying a movable valve member therein that controls port means of a valve seat means of said housing means through the relative position of passage means of said valve member relative to said port means, the improvement comprising a flexible sealing skirt carried by said valve member and extending outwardly therefrom adjacent said valve seat means so as adapted to be exposed to fluid pressure in said chamber that will act directly thereon and cause said flexible skirt to flex and engage said valve seat means in a manner to tend to sealingly conform to the contour of said valve seat means and thereby seal said passage means to said valve seat means while permitting sliding movement therebetween, biasing means in said housing means and acting on said flexible skirt to urge the same toward said valve seat means, and a piston unit disposed in said housing means and being operatively interconnected with said valve member to move the same relative to said valve seat means, said biasing means being under compression between said piston unit and said flexible skirt, said valve member being adapted to float relative to said piston unit, said port means comprising first, second, and third ports disposed in aligned relation and said passage means comprising a cavity in said valve member that will bridge said first and second ports while exposing said chamber to said third port when said valve member is in one position



thereof and will bridge said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, said flexible skirt being annular and surrounding said cavity of said valve member, said biasing means engaging said flexible skirt on opposite sides of said aligned ports, said biasing means engaging said flexible skirt in a straight line manner between opposed ends of said skirt on opposite sides of said aligned ports, said flexible skirt being an integral and homogeneous part of said valve member.

4,240,470

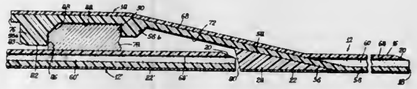
COMPOSITE PIPE HAVING AN INTEGRAL BELL END

Alex L. McPherson, Winfield, Ill.; Douglas E. Triestram, and James E. Lawrence, Jr., both of Coshocton, Ohio, assignors to Clow Corporation, Oak Brook, Ill.

Filed Feb. 21, 1978, Ser. No. 879,158

Int. Cl.³ F16L *11/02*

U.S. Cl. 138—109 **3 Claims**



1. A discrete length of composite reinforced pipe comprising a generally cylindrical tubular portion defining a spigot end and an opposite integral annular bell end adapted to receive the spigot end of a similarly configured pipe therein, said cylindrical tubular portion including an inner liner defined by a resin impregnated surfacing veil extending the full length of said cylindrical tubular portion, an annular butting area formed circumferentially of said inner liner adjacent said bell end so as to define an annular surface for abuttment with the spigot end of a mating pipe inserted into said bell end, an inner layer of resin reinforced continuous fiberglass roving formed coaxially on the outer surface of said inner liner and butting area and extending axially forwardly of said butting area to define said bell end of the pipe, said inner layer comprising a plurality of concentric layers of continuous fiberglass roving and defining an annular seal receiving groove internally of said bell end, a sand-resin core layer of substantially uniform radial thickness disposed circumferentially about said inner layer along only said cylindrical tubular portion of said pipe so as to terminate generally at said bell end and not form a part thereof, said sand-resin core having a sand to resin weight ratio in the range of approximately 80:20 to 70:30, and an outer layer comprising a plurality of concentric layers of resin inpregnated continuous fiberglass roving disposed circumferentially about said core layer and the exposed surface of said inner layer defining said bell end so as to cooperate with said inner layer in defining said bell end.

4,240,471

LOOM BACK REST MECHANISM

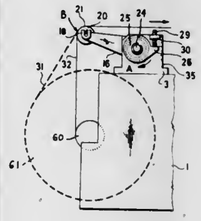
Otto Rotrekl, Brno; Vladimir Vasicek, Moravsky Krumlov, and Jindrich Henzl, Brno, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

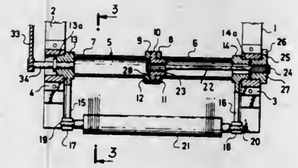
Filed Sep. 6, 1978, Ser. No. 940,105

Claims priority, application Czechoslovakia, Sep. 7, 1977, 5813-77

Int. Cl.³ D03D *49/22*

U.S. Cl. 139—114 **10 Claims**





1. A movable back rest mechanism for a loom having a fixed structure, a warp beam, and a back rest roller over which warp from the warp beam travels on its way into the loom, the back rest roller yieldably deflecting the warp as it travels from the warp beam into the loom, said mechanism comprising means for supporting and resiliently opposing deflection of the back rest roller by the warp, said last-named means comprising a torque rod extending transversely of the path of the warp fed from the warp beam into the loom, levers extending transversely of the torque rod from hubs on the levers coaxial of the torque rod, bearing means on the outer end of the levers rotatably mounting the back rest roller, means securing a first end of the torque rod against turning of such first end of the torque rod by the force imposed on the back rest roller by the warp, and means securing the second end of the torque rod to the hubs of the levers so as to turn therewith.

4,240,472

APPARATUS FOR CLEANING AND COATING CAPILLARY TUBES USEFUL IN GAS CHROMATOGRAPHY

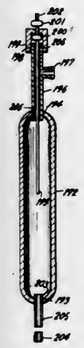
Srivas R. Srinivas, 2850 Webb Ave., Apt. 5J, Bronx, N.Y. 10468

Division of Ser. No. 681,604, Apr. 29, 1976, Pat. No. 4,086,051, which is a continuation of Ser. No. 495,500, Aug. 7, 1974, abandoned, which is a division of Ser. No. 232,583, Mar. 7, 1972, Pat. No. 3,831,555. This application Apr. 21, 1978, Ser. No. 898,776

Int. Cl.³ B63B *31/02*

U.S. Cl. 141—59 **2 Claims**

1. A device useful for cleaning and coating capillary tubes which comprises: an elongated vessel having walls capable of withstanding elevated pressures up to about 2000 psi, an elongated conduit having an inside open passageway removably inserted into one end of said elongated vessel so as to form a pressure-tight connection therewith, an elongated tube adapted with connection means at one end thereof removably fastened to the upper end of said elongated conduit so as to form a pressure tight connection therewith, said tube depending through the open passageway inside of said conduit and extending into said elongated vessel, means for connecting the top portion of said tube to auxiliary fluid lines, said elongated



conduit being adapted with means situated on the side wall thereof for connection to a vacuum line, and means removably insertable into the alternate end of said elongated vessel for forming a pressure tight connection with a capillary tube or the like, wherein a capillary tube is removably inserted in said means removably insertable into the alternate end of said elongated vessel, and wherein a desired amount of cleaning fluid is drawn into said vessel from said elongated tube by connecting said vacuum line connecting means to a vacuum source, and then said vessel is pressurized to flow the cleaning fluid out of the vessel into said capillary tube.

4,240,473

INSERT FOR INJECTING A LIQUID PRODUCT INTO A BORE

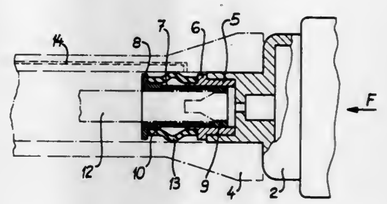
Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Jan. 16, 1979, Ser. No. 3,975

Claims priority, application France, Feb. 10, 1978, 78 04802

Int. Cl.³ B65B *3/04*; F16L *21/02*

U.S. Cl. 141—91 **4 Claims**



1. A composite insert for injecting a liquid product contained in a container into a dental handpiece provided with an inner bore and an internal abutment-forming element in said bore, which comprises:

a first rigid socket formed with an external flange and adapted to fit fixedly into a collar-shaped element surrounding the outlet aperture of said container filled with said product,

a second rigid socket extending forwardly from said first

socket and having its rear end slidable telescopically in said first socket and provided with an annular bearing surface formed on its inner peripheral surface and adapted to engage said internal abutment-forming element of said handpiece, the front end of said second insert having an external flange, and

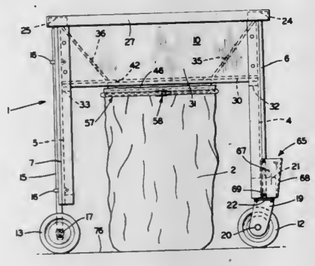
a flexible resilient sleeve surrounding the portion of said second socket externally of said first socket, opposite ends of said sleeve bearing against said external flanges of said first and second sockets, whereby the application of an axial force to said second socket bearing surface by said abutment-forming element will cause said second socket to penetrate more deeply into said first socket and the flexible resilient sleeve to undergo an elastic deformation in the form of a bead-like swollen portion thereof projecting radially outwards for engagement with the wall of the inner bore of said handpiece in order to provide a fluid-tight joint between the outlet aperture of the container and said bore.

4,240,474

BAG HOLDER AND COLLECTOR CONSTRUCTION

Harold W. Perkins, 781 Ray Ave. NW., New Philadelphia, Ohio 44663

Filed Jun. 25, 1979, Ser. No. 52,070
Int. Cl.³ B65B *1/06*
U.S. Cl. 141—231 **6 Claims**



1. An improved bag holder and collector construction including:

(a) a frame;

(b) wheels movably supporting the frame;

(c) hopper means mounted on the frame for receiving a supply of grass clippings therein, said hopper means having a pair of spaced, downwardly inwardly sloping end walls, a pair of intervening, generally vertical, side walls, and a relatively flat horizontal bottom wall, with a circular discharge opening having a diameter of approximately fifteen inches being formed in said bottom wall, said bottom wall forming a horizontal shelf area generally surrounding the discharge opening;

(d) cylindrical collar means mounted beneath the bottom wall opening for removably mounting a bag on the hopper means for receiving grass clippings discharged through said bottom wall opening;

(e) band means cooperatively engageable with the collar means for removably clamping a bag on said collar means; and

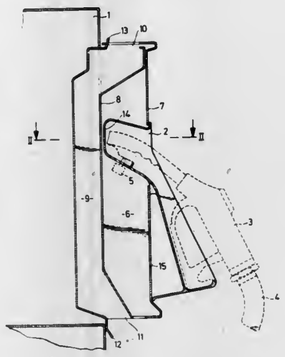
(f) said horizontal shelf area surrounding said circular discharge opening and the configuration of said sloping end walls and said vertical side walls serving to restrain grass clippings through said discharge opening during replacement of bags.

4,240,475

SAFETY MOUNTING DEVICE FOR THE NOZZLE OF A LIQUID-FUEL DISPENSING PUMP

Manfred Schulz, Einbeck, Fed. Rep. of Germany, assignor to Dresser Europe S.A., Einbeck, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,403
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807976
Int. Cl.³ B65B *3/00;* **B05B** *15/06*
U.S. Cl. 141—392 **7 Claims**



1. A safety mounting device for supporting a fuel-dispensing nozzle, having a support member and a fuel outlet opening, on the casing of a liquid fuel-dispensing pump, comprising:

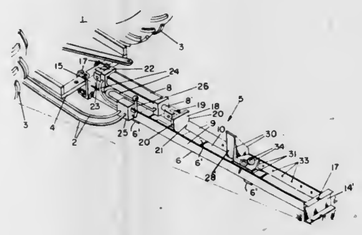
a nozzle mount housing mountable on the pump casing having generally upstanding, spaced-apart, successively-disposed front, intermediate and rear walls, said front wall and said intermediate wall at least partially defining therebetween a chamber and said intermediate wall and said rear wall at least partially defining therebetween a substantially vertical venting passage having an open, upper and lower end defining vent openings, said front wall having a receptacle defined therein in which said nozzle may be at least partially inserted, and said venting passage acting as a chimney for inducing an upward draft through the passage to carry any explosive gas mixtures which leak from the nozzle into the atmosphere.

4,240,476

HYDRAULIC LOG SPLITTING ATTACHMENT FOR A TRACTOR

Clarence G. Rattray, Rte. 1, Box 48, Reardan, Wash. 99029

Filed Dec. 14, 1978, Ser. No. 969,392
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **4 Claims**



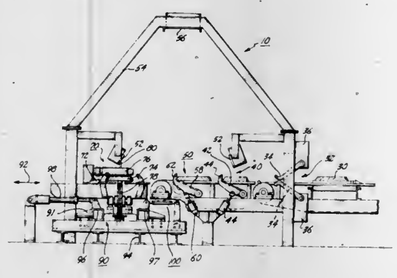
1. In a hydraulic log splitting attachment for a tractor equipped with a drawbar and a hydraulic pressure system comprising an elongated channel frame including spaced apart oppositely disposed generally V-shaped plates providing an elongated opening therebetween to accommodate said plates, embrace and retain a log to be split thereon and therebetween, butt plate means having generally V-shaped side edge cutouts interfitting said plates and slidably arranged thereon, hydraulic cylinder means on said frame with the piston thereof swivably connectable to said butt plate means, said frame having end plates on opposing ends, one end plate being pivotally connectable to said drawbar, and said cylinder being connectable to said pressure system, a cutting and splitting wedge plate means including a base portion slidably adjustable on said channel frame and spaced from said butt plate means, said wedge plate having a cutting plate upstanding from and extending at right angles relative to said base portion, said cutting plate being flat and flared outwardly at its rearward portion and having a sharpened cutting edge forwardly thereof, and said base portion projecting rearwardly of said wedge and formed with generally V-shaped base channel members interfitting said channel frame plates and slidably adjusting said wedge thereon, control valve means on said channel frame connectable to said pressure system whereby when a log is positioned between said V-shaped plates said wedge and butt plate means, and said cylinder actuated to force said butt plate means against one end of the log the other end thereof is pushed against said wedge to effect splitting thereof.

4,240,477

MOVABLE SUPPORT ASSEMBLY FOR A BOARD INFEED SYSTEM

James N. Horn, Seattle, and Lorne J. Garden, Mercer Island, both of Wash., assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed May 29, 1979, Ser. No. 43,445
Int. Cl.³ B27B *1/00, 31/06*
U.S. Cl. 144—245 R **12 Claims**



1. A movable support assembly mounted on a base for movably supporting a board infeed system, which board infeed system feeds a board having a predetermined orientation with respect to a predetermined infeed line of direction along said predetermined infeed line of direction to woodworking apparatus, the support assembly adapted to laterally move the board infeed system along a line perpendicular to the predetermined infeed line of direction, the support assembly comprising:

a movable mounting frame to which is mounted the board infeed system;

bearing means positioned between the base and the movable mounting frame providing for lateral movement of the movable mounting frame with respect to the predetermined infeed line of direction;

means coupled between the movable mounting frame and the base for laterally positioning the movable mounting frame with respect to the predetermined infeed line of direction; and

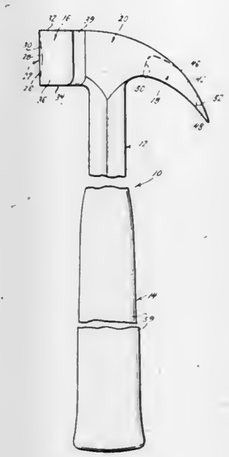
means coupled between the movable mounting frame and the base for maintaining a predetermined alignment of the movable mounting frame with respect to the predetermined infeed line of direction.

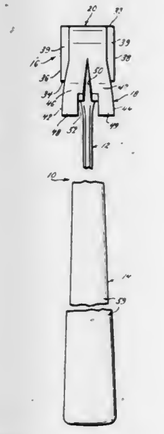
4,240,478

COMPACT HAMMER WITH RECESSED FACE AND NOTCHED CLAW

James F. Wilson, Rte. 1 Box 199, Dittmer, Mo. 63023

Filed Jan. 26, 1979, Ser. No. 6,852
Int. Cl.³ B25C *1/00*
U.S. Cl. 145—29 R **7 Claims**





1. A hammer comprising:

(a) a grippable handle,

(b) a head connected to the handle; and

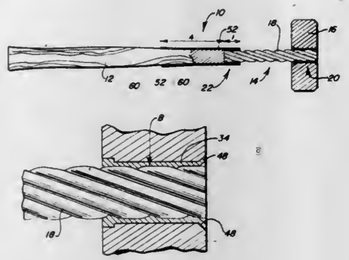
(c) the head having a front striking face recessed into the head, the recess having a plurality of inwardly inclined substantially flat surfaces.

4,240,479

TOOL HANDLE

Frank Schleffendorf, 2717 W. Agatite, Chicago, Ill. 60625

Filed Dec. 7, 1978, Ser. No. 967,227
Int. Cl.[3] B25G 1/00
U.S. Cl. 145—61 D 9 Claims



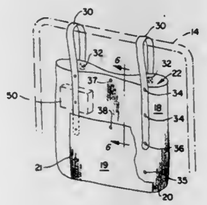
1. A tool comprising:
an elongated, generally rigid handle portion;
a tool head; and
a means for securely connecting said tool head to said handle portion and preventing relative rotation of said tool head with respect to said handle portion, said means including a wire rope having a core and a plurality of wire strands helically wound around said core defining helical depressions in the exterior surface of said rope, said connecting means also including an upper collar securing one end of said wire rope to said tool head and a lower fastening means for securing the other end of said wire rope to said handle portion, said collar having an inside surface in contact with said exterior surface of said wire rope and an outside surface in contact with said tool head, said collar inside surface being cold worked to conform to the outside surface of said wire rope and having helical ridges mating with said depressions in said exterior surface of said wire rope.

4,240,480

MULTIPLE USE BAG WITH DUAL PURPOSE STRAPS

Lucille C. Strobel, 8305 Sprague Pl., New Carrollton, Md. 20784

Filed Jun. 26, 1979, Ser. No. 52,260
Int. Cl.[3] B65D 33/06, 33/14, 33/16
U.S. Cl. 150—3 12 Claims



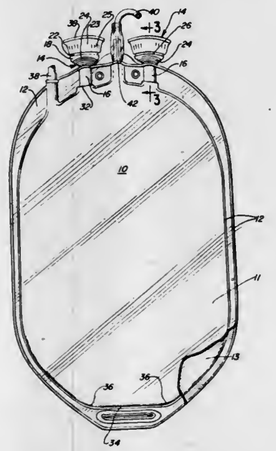
1. A multiple purpose bag having dual use suspension structure associated therewith comprising:
a main body member closed at one end and open at the other end;
a pair of straps with one end of each strap non-removably attached along one side of the body member adjacent said open end and with the other end of each strap being detachably connected by fastening means at said other end of each strap;
complementary fastening means associated with the opposite side from said one side of said main body member for detachably securing the fastening means of the detachable ends of the individual straps to the body member in at least two different positions to provide at least two strap configurations; and
further means consisting of a pocket with an opening in the same direction as the open end of the main body member provided on the body member so that when the detachable ends of said straps are secured to the body member in at least one position thereof by said complementary fastening means, the detachable ends of said straps are covered by said further means and thereby protected from inadvertent detachment from the body member.

4,240,481

SEAL FOR FLEXIBLE CONTAINER HAVING FLEXIBLE, GENERALLY CONICAL PORTIONS

Edward L. Bayham, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 5, 1979, Ser. No. 17,633
Int. Cl.[3] B65D 17/00
U.S. Cl. 150—8 21 Claims



1. An openable seal member for a container which comprises a tube adapted to extend across a sealed area of the container for flow communication between said container interior and the exterior; a flexible plastic pocket member sealing and enclosing the outer end of said tube; tear means for opening said pocket member for access to said tube, said tear means comprising a circumferential line of tearing weakness positioned about said pocket member in transverse relation to the longitudinal axis of said tube, the improvement comprising, in combination:
a flexible, generally conical portion positioned between the outer end of said tube and said tear means, diverging outwardly and constituting an inner portion of said pocket member, to define upon opening of said seal member, an enlarged, protective area surrounding the outer end of the bore of said tube.

4,240,482

BAG-LIKE LIQUID CONTAINERS, ESPECIALLY FOR MEDICAL TREATMENT

Karl G. B Andersson; Ulla I. Forsberg, and Knut I. Larka, all of Halmstad, Sweden, assignors to Duni Bila AB, Sweden

Filed Mar. 16, 1979, Ser. No. 21,065
Claims priority, application Sweden, Mar. 17, 1978, 7803093
Int. Cl.[3] B65D 33/38
U.S. Cl. 150—8 3 Claims

1. A bag-like liquid container especially intended for medical purposes welded from at least two layers of flexible flat plastic film joined at their edges to form a bag that is flat when empty, the edges of said layers of plastic film being left unjoined at one point to define an aperture in the container, and at least one closable cylindrical spout extending through said aperture in said container and intended for filling or emptying the container, said spout having its center line substantially in the plane of the container when said container is in a flat condition, said spout provided with a bowl-shaped flange formed integral with said spout, the surface of said flange merging with the



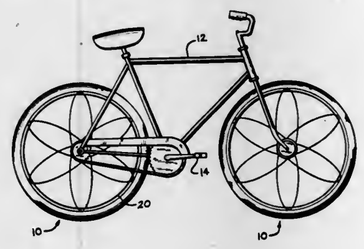
outside of said spout engaging against and welded to the interior face of said layers of plastic film so as to provide a completely impervious attachment of the spout to the container as well as a separation of the sides of the container such that the liquid flowing into and out of the container is always guaranteed a free passage, the radial cross-sectional thickness of said bowl-shaped flange diminishing toward the outer periphery of said flange.

4,240,483

SPOKED WHEEL

Bran F. Gregoric, 4685 Central Blvd., Ann Arbor, Mich. 48104

Continuation-in-part of Ser. No. 905,658, May 15, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,751
Int. Cl.[3] B60B 9/04
U.S. Cl. 152—75 5 Claims



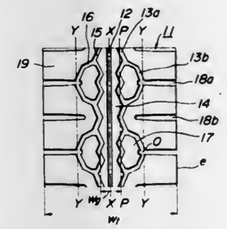
1. A wheel comprising an annular wheel rim member of generally circular shape, a hub member positioned concentrically within said wheel rim member, and energy-transferring spoke means connecting said hub member with said wheel rim member, said spoke means comprising a continuous length of wire formed into a plurality of interconnected spoke members extending radially from said hub member to circumferentially spaced apart locations on said rim member, said length of wire being wound in a tight spiral coil about said hub member and being wound partially about said rim member between adjacent ones of said spoke members, said spoke members being of arcuate shape between said hub and rim members so that the spoke member can flex in response to engagement of the portion of the wheel adjacent thereto with a supporting surface on which said wheel is rolled to thereby tighten said spiral coil, and so that said spoke members can unflex to impart a torque on said wheel when the portion of the wheel adjacent thereto approaches a position breaking contact with said supporting surface.

4,240,484

PNEUMATIC TIRE FOR LARGE SIZE AND HIGH SPEED MOTOR CYCLES TWO-WHEELED VEHICLES

Hiroshi Kojima, Hino; Takao Sakamoto, Kodaira, and Tatsuro Shimada, Fussa, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,746
Claims priority, application Japan, Jun. 9, 1978, 53/68910
Int. Cl.[3] B60C 11/04, 11/10
U.S. Cl. 152—209 R 12 Claims



1. In a pneumatic tire for large size and high speed motor cycles comprising a toroidal carcass, and a tread superimposed about a crown of said carcass and extending from a center of said crown to both sides thereof in substantially parallel with a sectional profile of said carcass to such an extent that the tread has a width larger than a maximum width between sidewalls of the tire; said tread having a rib-block pattern defined by a central groove extending in a substantially circumferential direction of the tire at the center of said crown, a plurality of circumferential grooves arranged symmetrically with respect to said central groove and a plurality of transverse grooves crossed with said circumferential grooves, the improvement characterized by defining said pattern with
a pair of first circumferential grooves arranged symmetrically with respect to said central groove in such a manner that a distance between directrixes each indicating a bisector of a maximum width of said first circumferential groove is 20–30% of tread width,
a pair of second circumferential grooves arranged symmetrically with respect to said central groove at those sides of said first circumferentials groove which are opposite to said central groove and each consisting of a common portion united with each of said first circumferential grooves and a non-common portion arranged circumferentially in a discontinuous manner independently of said common portion,
long and short transverse grooves arranged within regions located respectively between said common portion and the tread edge and between said non-common portion and the tread edge said short transverse groove communicating at one end with said non-common portion of said second circumferential groove, said long transverse grooves not communicating with said common portion of said second circumferential groove, and
the degree of zig-zag of said central groove, first and second circumferential grooves increasing from the center of the tire toward the edges whereby in the ground contact area of the blocks transverse rigidity increases as camber angle increases.

4,240,485

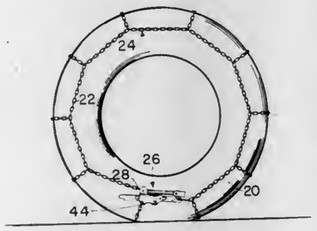
NONSKID TIRE CHAIN CONNECTOR MEANS

Forest H. Barnett, 2602 N. Baltimore, Tacoma, Wash. 98407, and Clarence E. Barnett, Redmond, Wash., assignors to Forest H. Barnett, Tacoma, Wash.

Continuation-in-part of Ser. No. 787,781, Apr. 15, 1977, Pat. No. 4,130,155. This application Oct. 30, 1978, Ser. No. 955,948

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—219 **6 Claims**



1. In a self-tightening connector for fastening together the two ends of a side connector of a nonskid tire chain assembly, a bar-shaped member of substantial length; a bar-receiving member having an opening therein for slidingly interfitting with said bar-shaped member, limiting transverse movement therebetween, and permitting relative longitudinal movement therebetween and between extended and retracted positions; ratchet means comprising engagable teeth and a pin, one thereof carried by the bar-shaped member and the other thereof carried by the bar-receiving member; spaced transverse bars carried, respectively, by said bar-receiving member and said bar-shaped member; detachable elastic means extending between and carried by said transverse bars, yieldingly urging said transverse bars toward each other and thereby said members toward retracted position and, when the side connector is attached to a tire chain and mounted on a tire, cooperating with the ratchet means in locking said two members against relative longitudinal movement toward their extended position, said ratchet means being releasable by relative angular movement of said two members.

4,240,486

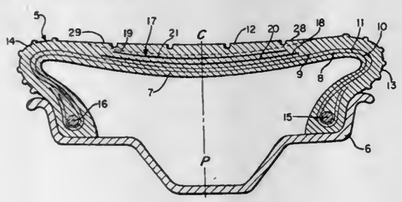
STRETCHABLE RADIAL SPARE TIRE

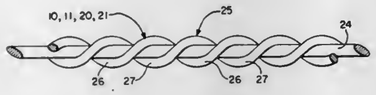
Georges J. E. Schmit, Bridel, and Thomas N. H. Welter, Keispelt, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 16, 1978, Ser. No. 916,272

Int. Cl.³ B60C *9/00;* **D02G** *3/02*

U.S. Cl. 152—330 R **9 Claims**





1. A stretchable tire, comprising:

(a) at least one carcass ply reinforced with radially oriented cords disposed at angles in the range of from 75–90 degrees relative to a centerplane containing the mid-circumferential centerline of the tread of the tire when the tire is molded, vulcanized and uninflated in a storage shape, said cords of said carcass ply being highly elongatable in an amount of from 50 to 100 percent to allow for toroidal expansion of the tire to an inflated operating shape;

(b) a fluid impervious innerliner disposed at the radially inner surface of said tire within said carcass ply;

(c) a tread and pair of sidewalls surrounding said carcass ply and terminating at a pair of annular beads;

(d) at least one belt ply of cords interposed between said carcass ply and tread for annularly reinforcing the tire, said cords of said belt ply being disposed at angles in the range of from 0–30 degrees measured from said centerplane when the tire is molded, vulcanized and uninflated in said storage shape, and also being highly elongatable in an amount of from 50 to 100 percent to allow for circumferential expansion of the tread upon inflation of the tire to said inflated operating shape;

(e) each of said reinforcement cords of said carcass ply and said belt ply consisting of a central core and at least one inextensible yarn spirally wrapped around said core, the tensile strength of said core being sufficient prior to being subjected to temperatures of vulcanization to maintain said inextensible yarn in helical relation during building of the tire and shaping to said storage shape from an unvulcanized cylindrical shape; and

(f) said core being of a material having a sufficient reduction in tensile strength when subjected to temperatures of vulcanization of the tire to permit the stretching out of said yarn after the tire is vulcanized and during expansion of the tire from said deflated storage shape with said yarn in the spirally wrapped condition to said inflated operating shape with said yarn in the stretched out condition.

4,240,487

PNEUMATIC RUBBER TIRE HAVING IMPROVED SIDEWALLS

Joginder Lal, Akron, and Paul H. Sandstrom, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 728,482, Sep. 30, 1976, abandoned. This application Oct. 5, 1978, Ser. No. 948,923

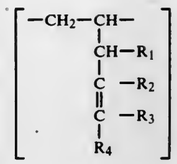
Int. Cl.³ B60C *5/04, 1/00, 13/00*

U.S. Cl. 152—355 **7 Claims**

1. A pneumatic rubber tire which comprises a generally toroidal shaped carcass with a circumferential tread, shaped beads and connecting sidewall portions extending between said tread and beads and having adhered to said sidewall portion an adherent, covulcanized outer rubbery sidewall layer extending from the general area of said bead portion towards said tread, having a 300 percent modulus at 25° C. in the range of about 500 to about 1200 pounds per square inch, where said rubbery sidewall layer is the elastomeric composition consisting essentially of, based on 100 parts by weight rubber (A) about 15 to about 60 parts by weight of rubbery polymer of at least one nonconjugated diolefin selected from the group consisting of diolefins having the formula:

$$CH_2=CH-\underset{R_1}{CH}-\underset{R_2}{C}=\underset{R_3}{C}-R_4$$

where R_1, R_2 and R_3 are hydrogen, a lower alkyl group containing up to 4 carbon atoms or an aryl group, and R_4 is a lower alkyl group containing up to 4 carbon atoms or an aryl group,



(B) about 85 to about 40 parts by weight of high unsaturation rubber selected from the group consisting of at least one of natural high cis-1,4-polyisoprene rubber, synthetic high cis-1,4-polyisoprene, high cis-1,4-polybutadiene, butadiene/styrene rubber and polyalkenylenes and (C) 0 to about 40 parts by weight of at least one low unsaturation rubber selected from an EPDM and halobutyl rubber, where said EPDM rubber is an ethylenepropylene-nonconjugated diene terpolymer containing from about 20 to 75 weight percent units derived from ethylene, from about 80 to 25 weight percent units derived from propylene, and a minor proportion of from about 1 to 15 weight percent units derived from a C_5–C_{30} nonconjugated diene and where said halobutyl rubber is a chlorinated or brominated butyl rubber prepared by copolymerization of isobutylene and isoprene to form a butyl-type rubbery copolymer containing about 95 to about 98 weight percent isobutylene and, correspondingly, about 5 to about 2 weight percent isoprene and then chlorinating or brominating said copolymer to form the halobutyl rubber containing about 0.5 to about 2.0 weight percent chlorine or bromine and about 0.5 to about 3.5 mole percent unsaturation expressed in units of carbon-to-carbon double bonds per kilogram of polymer.

4,240,488

TIRE BREAKER STRIP WITH FOLDED PLIES

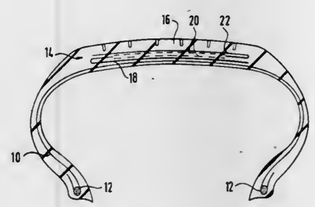
Brian L. Wilcox, Birmingham, England, assignor to Dunlop Limited, London, England

Filed Jan. 30, 1979, Ser. No. 7,687

Claims priority, application United Kingdom, Feb. 9, 1978, 5186/78; Jul. 27, 1978, 31416/78

Int. Cl.³ B60C *9/18*

U.S. Cl. 152—361 FP **9 Claims**



1. A vehicle tire of the radial carcass type and having a breaker structure comprising a first radially inwardly steel cord ply having a bias angle between 16° and 25° and having one edge thereof folded radially outwardly and axially inwardly of the tire to form a double thickness layer extending transversely of the breaker by an amount less than half the overall width of the breaker, a second steel cord ply disposed radially outwardly of said first steel cord ply and the folded edge thereof, said second steel cord ply having one edge thereof on the transversely opposite side of the breaker from the folded edge of said first steel cord ply, folded radially inwardly and axially inwardly of the tire to form a double-thickness layer extending transversely of the breaker by an amount less than half the overall width of the breaker, the axially inward edges of the folded edges being spaced apart transversely of the breaker, and at least one further cord layer located radially between the first and second steel cord plies and axially between said spaced-apart axially inward edges of the folded edges but without overlapping said folded edges, the cords of said at least one further cord layer having a bias angle of not more than 10° and being of a material which has a zero or negative temperature coefficient of expansion to provide a substantially uniform elastic modulus across the width of the breaker.

4,240,489

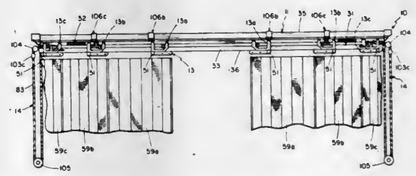
DRAPERY HANGER AND MANIPULATOR

Harold L. Madsen, 14615 S. Clark St., Dolton, Ill. 60419

Filed May 30, 1979, Ser. No. 44,342

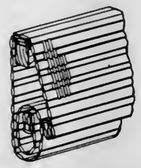
Int. Cl.³ A47H *1/00*

U.S. Cl. 160—126 **11 Claims**



1. A drapery hanger and manipulator for supportably hanging and manipulating one or more drapery curtain panels having a leading and a trailing edge comprising a traverse track bridge to be positioned over an area to be covered by drapery, said bridge having a first track means therealong to slidably support a drapery hook hanger means, said bridge having a second track means therealong to slidably support a drapery carrier means, said bridge having cam means longitudinally spaced apart therealong, drapery hook hanger means slidably supported in said first bridge track for supporting drapery hooks slidably movable along said bridge to support the drapery panels from the leading to the trailing edge thereof, drapery carriers serially slidably supported in said second bridge track for independent movement along said bridge, said carriers having a hook extension connected to respective selected ones of said series of hook hangers to cause said selected hook hangers to respectively move with said carriers, a linear drive means having forward and reverse drive means for selectively providing forward and reverse linear drive along said bridge, said carriers having forward drive receiving means adapted to sequentially receive forward drive from said linear drive means for respectively moving said panels by urging the leading edge along said bridge in a direction away from the trailing edge thereof, said carriers having reverse drive receiving means disconnectably and respectively receiving said reverse drive means to normally respectively drive said carriers in a reverse direction along said bridge for respectively moving said panels by urging the leading edge along said bridge in a direction away from the trailing edge thereof, a cam follower on one or more of said carriers and responsive to said cam means as said carriers are moved in reverse along said bridge for disconnecting respective reverse drive receiving means to selectively and respectively disconnect the reverse movement of said carriers from said linear drive means, and retainer means longitudinally spaced apart on said bridge respectively and progressively in the linear path of said drapery hook hanger means supporting the respective panel trailing edges to correspondingly retain and position said hook hanger means in groups along said bridge as said carriers are moved along said bridge, whereby said carriers can be driven in the forward direction by said forward drive means to sequentially position drapery curtain panels over a given drapery area, and in the reverse direction by said reverse drive means to individually respectively collapse or withdraw said panels from the given area to provide respective separate light openings for each panel or to selectively completely remove or collapse said panels from the given area.

4,240,490
SHADE FOR RECREATIONAL VEHICLE
Alan A. Ford, Irvine, Calif., assignor to Kirsch Company, Sturgis, Mich.
Filed Mar. 7, 1979, Ser. No. 18,298
Int. Cl.[3] E06B 9/08
U.S. Cl. 160—133 10 Claims



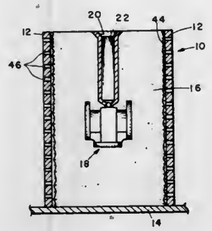
1. A window shade arrangement and means for holding same in a selected lifted position comprising:
a headrail;
a shade comprising a flexible fabric having its upper edge fixed to said headrail;
a valance likewise comprising a flexible fabric and having its upper edge fixed to said headrail;
interengageable means comprising two portions, one such portion being affixed to the lower edge of said valance and the other such portion being affixed to said shade.

4,240,491
THIN-FILM WINDOW FOR NUCLEAR INSTRUMENTS AND METHOD OF MAKING SAME
Ralph E. Bish, Freeport, and Arata Suzuki, Pittsburgh, both of Pa., assignors to Capintec Inc., Montvale, N.J.
Continuation of Ser. No. 718,674, Aug. 30, 1976, abandoned.
This application Jun. 14, 1978, Ser. No. 915,574
Int. Cl.[2] E06B 3/30, 9/24
U.S. Cl. 160—380 6 Claims



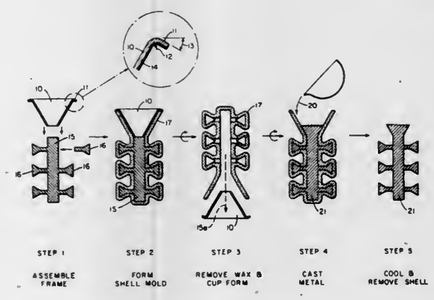
1. A thin-film window for a nuclear instrument comprising:
a frame ring having a surface which defines a first plane;
a thin film tightly stretched about said frame ring, said tightly stretched film defining a second plane substantially parallel to said first plane;
a clamp ring having a thin lip for securing said thin film about said frame ring in a tightly stretched condition, said thin lip acting as a spring to exert tension on said thin film in conjunction with said surface of said frame ring when said clamp ring is secured to said frame ring; and
securing means for securing said clamp ring to said frame ring in an area remote from said surface of said frame ring and remote from said thin lip of said clamp ring, wherein said thin lip, acting as a spring, takes up any slack between said clamp ring and said surface of said frame ring when at least one of said frame ring and clamp ring contracts in response to temperature changes so that said thin film remains fixed between said thin lip and said surface of said frame ring.

4,240,492
PROCESS OF FORMING MULTI PIECE VAPORIZABLE PATTERN FOR FOUNDRY CASTINGS
Robert B. Edwards, Niles, Mich., and Theodore D. Jayne, Painesville, Ohio, assignors to Nibco, Inc., Elkhart, Ind.
Filed Oct. 23, 1978, Ser. No. 953,553
Int. Cl.[3] B22C 7/02, 9/04
U.S. Cl. 164—34 12 Claims



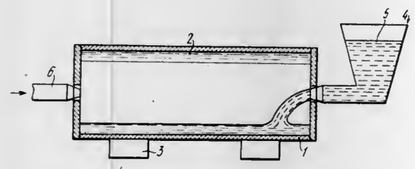
1. An improved process for casting valve bodies and the like, said process being of the type including the steps of fabricating a pattern from cellular plastic material, imbedding the pattern in dry sand within a box, said box being of the type having perforated side walls, connecting a sprue to the pattern, and pouring a metal charge into the sprue, the improvement comprising:
coating said pattern with a talc based ceramic coating for permitting the escape of gases upon vaporization of the pattern into the sand and preventing burn in of the sand into the metal charge, said coating releasing water of hydration during the casting process and having adequate refractory characteristics to withstand exposure to the metal charge without breaking down and providing geometric stability for the sand around the coated pattern, said coating further being chemically inert at the temperature of the metal charge, non-reactive with the pattern, non-adherent to the metal charge and being capable of air drying without cracking after application to the pattern.

4,240,493
SHELL INVESTMENT CASTING PROCESS
Russell F. Wilmarth, R.F.D. #5 Bade River Rd., Bedford, N.H. 03102
Filed Apr. 9, 1979, Ser. No. 28,167
Int. Cl.[3] B22C 7/00
U.S. Cl. 164—35 2 Claims



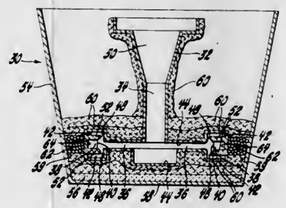
1. In a process of shell investment casting wherein a pattern of a desired object with a sprue is formed of a pattern wax, a shell mold is formed by dipping said pattern into a slurry of a refractory powder and drying, said shell mold is heated to remove said pattern wax and said object is subsequently cast in said shell mold; the improved method of forming a pouring cup into said sprue comprising attaching a hollow conical metal pouring cup form to the inlet of said sprue form, said pouring cup form opening outwardly therefrom and having a reverse rolled lip on the larger end, forming said shell mold as aforesaid and applying said slurry over said pouring cup form and up to and under said reverse rolled lip and when removing said pattern wax also removing said pouring cup form to leave a pouring cup with a rolled outer lip leading into the sprue, said rolled outer lip extending substantially beyond the outer surface of said pouring cup.

4,240,494
METHOD FOR CENTRIFUGAL CASTING OF TUBULAR METAL BLANKS
Ivan R. Kryanin, Sharikopodshipnikovskaya ulitsa, 2, kv. 68; Genrikh S. Mirzoian, Flotskaya ulitsa, 7, korpus 5, kv. 338; Nikolai N. Alexandrov, Sharikopodshipnikovskaya ulitsa, 2, kv. 126; David S. Shoshiashvili, Sumskoi proezd, 2, korpus 1, kv. 335; Viktor M. Krapukhin, Suvorovsky bulvar, 15, kv. 13, all of Moscow; Gleb S. Akubov, ulitsa Kommunarov, 212, kv. 54, Izhevsk; Evgeny V. Gerlivanov, ulitsa M. Gorkogo, 136, kv. 9, Izhevsk; Vladimir M. Lvov, ulitsa Udmurtskaya, 247, kv. 89, Izhevsk, and Mark M. Komarov, ulitsa 10 let Oktyabrya, 20, kv. 89, Izhevsk, all of U.S.S.R.
Filed Jul. 6, 1978, Ser. No. 922,582
Int. Cl.[3] B22D 13/02
U.S. Cl. 164—66 5 Claims



1. A method for centrifugal casting of tubular metal blanks, comprising the pouring of molten metal into a spinning mold at a positive pressure of 3 to 5 atmospheres of an inert gas delivered countercurrently thereinto, said mold featuring a gravitational factor at which the external surface of the tubular blank is formed wherein for the period of the pouring of metal into said mold the speed of rotation of the mold is increased to provide a gravitational factor thereof whose value exceeds by 300% said value of the gravitational factor of said mold at which the external surface of said tubular blank is formed.

4,240,495
METHOD OF MAKING CAST METAL TURBINE WHEEL WITH INTEGRAL RADIAL COLUMNAR GRAIN BLADES AND EQUIAXED GRAIN DISC
George L. Vonnegut, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 17, 1978, Ser. No. 896,709
Int. Cl.[3] B22D 27/04
U.S. Cl. 164—125 4 Claims

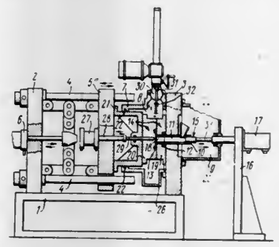


1. A method of making a cast metal turbine wheel comprising a disc with integrally formed radial blades lying in the plane of said disc, wherein the grains of the disc are predominantly equiaxed and the grains of the blades are predominantly radially oriented, comprising:
casting molten metal into a mold having a cavity defining said disc, said blades, and annular portions lying on either side of the said plane in closely spaced apart relation to the cavity portions defining said blades,
withdrawing heat from the metal retained in the cavity portions defining the blades predominantly in a radially outward direction, the metal in the annular portions serving to inhibit cooling of the metal in the blade cavities in a direction other than radially outwardly, producing thereby radially aligned grains in said blades having grain boundaries lying substantially parallel to the blades' leading and trailing edges, and
cooling the metal in the cavity portion defining the disc to produce substantially equiaxed grains.

4,240,496
HEAT-INSULATING ARTICLES
Tarek El Gammal, Aachen, Fed. Rep. of Germany, assignor to Foseco Trading A.G., Chur, Switzerland
Filed May 30, 1979, Ser. No. 43,744
Claims priority, application United Kingdom, May 30, 1978, 24480/78
Int. Cl.[3] B22C 3/00
U.S. Cl. 164—138 7 Claims

1. In a shaped, refractory, heat-insulating article, for use in a metallurgical vessel, formed of a mixture comprising a particulate refractory material and a binder, the improvement comprising the inclusion of particulate de-fibred bagasse in said mixture.

4,240,497
VACUUM METAL DIE-CASTING APPARATUS
Sergei G. Glazunov, Leninsky prospekt, 41, kv. 62; Alexei M. Khromov, Ukhtomskaya ulitsa, 36a, kv. 19; Vasily V. Merkulov, 3 Dorozhny proezd, 10, korpus 2, kv. 27; Igor B. Krjuchkov, Begovaya ulitsa, 22, korpus 16, kv. 68; Nikolai E. Klimov, Aviamotornaya ulitsa, 4, korpus 4, kv. 253, and Dmitry A. Filippov, Saratovskaya ulitsa, 8/10, kv. 138, all of Moscow, U.S.S.R.
Filed Jan. 16, 1978, Ser. No. 869,475
Int. Cl.[3] B22D 17/10, 17/14, 17/20, 18/06
U.S. Cl. 164—158 5 Claims



1. An improved multi-cycle, vacuum metal die casting apparatus not requiring depressurization during each recycle comprising: a frame; a plurality of stationary vertical plates attached to said frame; horizontal guide columns interconnecting said vertical plates; a mobile vertical plate slidably mounted between said vertical plates on said horizontal guide columns; a reciprocating drive means cooperatively associated with said mobile plate; a die holder rigidly secured to said mobile plate; a die having two halves, one half thereof being rigidly connected to said die holder, and the other half thereof, to the vertical plate separating a vacuum casting chamber from a melting chamber; a vacuum casting chamber housing being

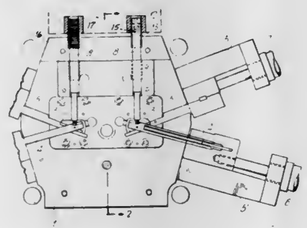
rigidly mounted on the vertical plate carrying said one half of the die; said vacuum casting chamber housing further being telescopically connected to said die holder and being provided with a spherical pivot and means for cleaning the die cavity in the form of a rod having a detachable actuating tool; sealing means provided at the connecting joints of said vacuum casting chamber housing with said die holder and said vertical plate separating said casting and said melting chambers; said die holder providing a continuous, translational mating sealing surface with the sealing means disposed between the stationary vacuum casting chamber housing and said die holder so as to permit the discharge of a finished casting without the need for depressurizing said casting chamber; a pressure chamber housing in said vertical plate connected through a gate to the cavity of said die; and means for the cyclic forced feeding of metal through said pressure chamber into said die.

4,240,498

DIE CASTING MACHINE FOR FORMING INTERNALLY-THREADED ARTICLES

Remi Frenette, 1772 Verdun, St. Bruno, Quebec, Canada

Continuation of Ser. No. 842,378, Oct. 11, 1977, abandoned.
This application Mar. 22, 1979, Ser. No. 22,845
Claims priority, application Canada, Jul. 5, 1977, 282036
Int. Cl.³ B22D *17/24*
U.S. Cl. 164—303 **3 Claims**



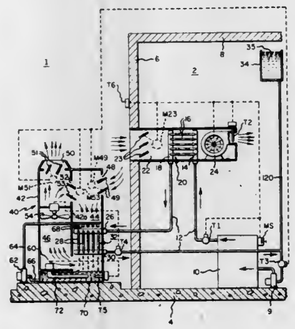
1. In a die casting machine of the type having a mold comprising a stationary mold half and a movable, driven mold half forming between them molding cavities adapted to mold articles, with at least one part formed through the mold and communicating into each of said cavities to charge a casting material into the cavities; the improvement comprising a pair of threading devices extending into said cavities at an angle with respect to the plane of operation of said molds and through respective bores formed in the mold, said devices being adapted to form a threaded hole in articles formed in said cavities; means for operating the movable mold half to move it toward and away from the stationary mold half; and driving means, independent of the operating means, mounted externally of the molds on the stationary mold half for rotating said threading devices to run them in and out of said cavities, each said threading device being axially retractable from and insertable into the cavity only by rotation by said driving means and comprising an elongated rod member having interconnected upper and lower portions, the upper portion being integrated to the external driving means and the lower portion having a first thread on its lower end and protruding into the mold cavity for casting therearound and a second thread outside the cavities and engaging corresponding threads in the mold for axially lowering and raising the lower, threaded portion of the rod member when said rod member is rotated by the external driving means; said driving means comprising a gear box detachably mounted on the stationary mold half and containing a pair of pinions and a linearly operated rack; said driving means being operable to rotate and thereby axially retract the threading devices from the cavities before the operating means moves the movable mold half away from the stationary mold half and also being operable to rotate and thereby axially insert the threading devices into the cavities after the operating means moves the movable mold half towards the stationary mold half; the upper ends of said threading rod members incorporating geared pins adapted for rotation by said pinions when the rack is linearly operated thereby raising and lowering the threading rod members.

4,240,499

BALANCED WASTE HEAT RECOVERY AND DISSIPATION SYSTEM

Walter Kals, Hastings-on-Hudson, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Filed Aug. 4, 1978, Ser. No. 930,909
Int. Cl.³ F28F *27/00*
U.S. Cl. 165—1 **14 Claims**



12. A method for selectively recovering heat from a coolant fluid wherein the latter absorbs heat from heat generating equipment and warming an enclosed air space with recovered heat while concurrently dissipating unrecovered heat, said method including the following steps:

passing said coolant fluid through said heat generating equipment to absorb heat therefrom,

passing said coolant through a first heat exchanger within an enclosed air space,

selectively passing air through said first heat exchanger and into said enclosed air space after being warmed by said first heat exchanger,

monitoring the temperature of the air passing through said first heat exchanger on the downstream side thereof and stopping the passage of air through said first heat exchanger when the temperature thereof downstream of said first heat exchanger is less than a predetermined level,

passing said coolant through a second heat exchanger to cool said coolant fluid to a predetermined temperature by dissipating excess heat not recovered by said first heat exchanger, and

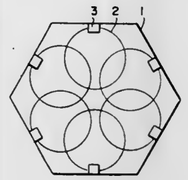
passing air through said first heat exchanger at predetermined intervals after the passage of air therethrough has stopped, sensing any temperature rise of said passage of air downstream of said first heat exchanger to or above said predetermined level as resulting from corresponding changes in operating conditions, and continuing to pass air through said first heat exchanger as long as said temperature downstream of said first heat exchanger is at or above said predetermined level.

4,240,500

HEAT EXCHANGE APPARATUS

Peter Rohner, Isernhagen, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke Gutehoffnungshuette AG, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,055
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834593
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—105 **10 Claims**



1. Heat exchange apparatus comprising at least one sealed evacuated tube wherein a heat transfer fluid flows between hot and cold zones with the fluid being evaporated in the hot zone and condensed in the cold zone, the improvement comprising:

said tube being corrugated transverse to its longitudinal axis for increased surface area, and wound to provide a plurality of windings, a first portion of each winding being in the hot zone and a second portion of each winding being in the cold zone; said apparatus further comprising:

tubular container comprised of a material of high heat conductance and formed to have a polygonal cross section within which said wound tube is axially positioned; and

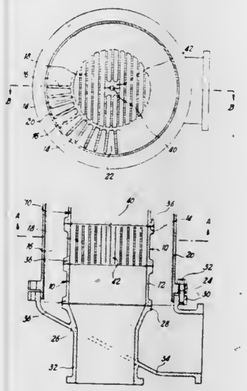
connector means comprised of a material of high heat conductance and positioned within said tubular container for attaching first portions of said plurality of windings to an interior surface of said tubular container, so as to provide a high heat conductance path from the outside surface of said tubular container to the inside surface portions of said plurality of windings in the hot zone.

4,240,501

HEAT EXCHANGER WITH JUXTAPOSED ELEMENTS

Andre L. Kovacs, 177, rue de la Convention, 75015 Paris, France

Filed Apr. 27, 1978, Ser. No. 900,476
Claims priority, application France, May 3, 1977, 77 13327
Int. Cl.³ F28F *7/02*
U.S. Cl. 165—165 **9 Claims**



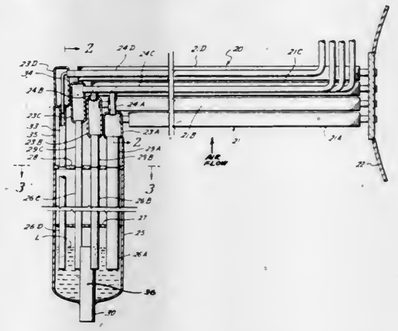
1. A heat exchanger which comprises a plurality of hollow cylindrical units, superposed contiguously on a common axis, said units having outer fins distributed on the outer periphery thereof and inner fins on the inner periphery thereof, said outer and inner fins extending outwardly and inwardly, respectively from said periphery in planes parallel to the direction of superposition of the cylindrical units and parallel to said common axis, the interior space defined by each of said hollow cylindrical units providing a first channel for circulation of a fluid along the longitudinal axis of the cylinders, and an envelope in which said cylindrical units are positioned, the inner wall of said envelope defining, with the outer wall of the superposed cylinders, a second channel for the circulation of a fluid along said axis.

4,240,502

CONDENSING HEAT EXCHANGER

Michael W. Larinoff, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Nov. 26, 1979, Ser. No. 94,117
Int. Cl.³ F28B *9/08, 9/10*
U.S. Cl. 165—112 **2 Claims**



1. A heat exchanger, comprising a tube bundle having a plurality of parallel rows of tubes adapted to be disposed in generally horizontal positions and arranged successively in the direction of air flow therepast, an inlet header for introducing vapor into one end of the tubes of the rows, a plurality of outlet headers each connecting with the opposite ends of the tubes of one row for receiving condensate and uncondensed vapor therefrom, the outlet header connecting with the tubes of each successive row having a lower end which extends below the upper end of the outlet header connecting with the tubes of the preceding row, each outlet header having an outlet from the lower end thereof, a generally upright condensate drain pot disposed beneath the outlet headers and having a plurality of water leg seal tubes therein, means connecting the outlet from each outlet header with one water leg seal tube, means for maintaining the level of condensate within the drain pot above the lower ends of the leg seal tubes so as to isolate pressure within said outlet headers from one another, means connecting one outlet header above the lower end thereof with the drain pot above the condensate level therein so as to introduce uncondensed vapor from said one outlet header into said drain pot, and means for automatically draining condensate from the pot when the vapor condensing system is shut down.

4,240,503

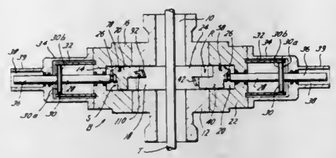
BLOWOUT PREVENTER SHEARING AND SEALING RAMS

James H. Holt, Jr., and Morris Newman, both of Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed May 1, 1979, Ser. No. 34,982
Int. Cl.³ E21B *29/00*
U.S. Cl. 166—55 **31 Claims**

20. A blowout preventer having a shearing ram for shearing an object in a bore of the blowout preventer in conjunction with another ram, comprising:

(a) a carrier block for movement to and from the bore;
(b) a shear blade mounted with an inner portion of said carrier block nearest the bore for shearing the object;
(c) a mounting tongue on said shear blade extending into a slot formed in said carrier block for supporting said shear



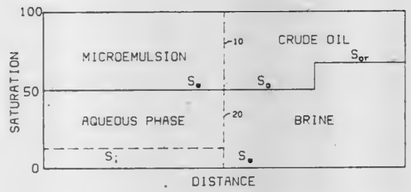
blade against downward movement on contacting the object during shearing; and
(d) fastener means insertable through openings in a front portion of said shear blade and extending rearwardly therethrough for attaching said shear blade to said carrier block.

4,240,504

SIMULTANEOUS MICROEMULSION-AQUEOUS PHASE FLOODING PROCESS

Ronald L. Reed, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 21, 1978, Ser. No. 972,118
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—273 **17 Claims**



1. A method for recovering fluids from a subterranean formation containing hydrocarbon and aqueous liquids of known viscosities which comprises:
(a) formulating a middle- or upper-phase microemulsion having a viscosity greater than said hydrocarbon and aqueous liquids;
(b) formulating an aqueous phase having a viscosity greater than said aqueous liquids, the viscosity ratio of said aqueous phase to said microemulsion substantially approximating the viscosity ratio of said aqueous liquid to said hydrocarbon liquid;
(c) simultaneously injecting into said formation through an injection well said aqueous phase and said microemulsion at an injection rate ratio which gives similar hydrocarbon, microemulsion and aqueous phase velocities through said formation;
(d) displacing said microemulsion, aqueous phase and hydrocarbon liquids through said formation to a production well; and
(e) producing said hydrocarbon liquids through said production well.

4,240,505

WELL ACIDIZING COMPOSITIONS AND METHODS

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1978, Ser. No. 902,652
The portion of the term of this patent subsequent to Oct. 25, 1994, has been disclaimed.
Int. Cl.[3] E21B *43/27*
U.S. Cl. 166—302 **22 Claims**

1. An acidic gelled composition suitable for matrix acidizing or fracture acidizing of a porous subterranean formation susceptible to attack by an acid formed upon admixing
(a) water,
(b) a water-thickening amount of a water-dispersible polymeric viscosifier selected from the group consisting of acrylamide polymers, cellulose ethers, polyalkylene oxides, polyvinyl alcohol, and polyvinylpyrrolidone,
(c) a small, but effective amount of a polyphenolic material selected from the group consisting of lignite, causticized lignite, and sulfomethylated lignite, and
(d) a small, but effective amount of an acid sufficient to cause gelation and to produce a strongly acidic gelled composition, said acid being effective for dissolving at least a portion of a formation; said polymer, said acid, and said polyphenolic material in amounts used being sufficiently compatible with each other in an aqueous dispersion thereof to permit gelation of said acidic gelled composition.

14. An acidic gelled composition suitable for matrix acidizing or fracturing acidizing of a porous subterranean formation susceptible to attack by an acid formed upon admixing
(a) water, (b) a water-thickening amount of a water-dispersible polymeric viscosifier selected from the group consisting of cellulose ethers, polyalkylene oxides, polyvinyl alcohol, and polyvinylpyrrolidone,
(c) a small, but effective amount of a flavotannin selected from the group consisting of quebracho, sulfomethylated quebracho, and causticized quebracho, and
(d) a small, but effective amount of an acid sufficient to cause gelation and to produce a strongly acidic gelled composition, said acid being effective for dissolving at least a portion of a formation; said polymer, said acid, and said flavotannin in amounts used being sufficiently compatible with each other in an aqueous dispersion thereof to permit gelation of said acidic gelled composition.

4,240,506

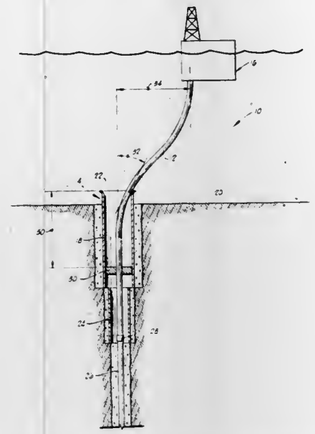
DOWNHOLE RISER ASSEMBLY

Donald W. Dareing, Houston, Tex., assignor to Conoco, Inc., Ponca City, Okla.

Filed Feb. 21, 1979, Ser. No. 13,768
Int. Cl.[3] E21B *17/01*
U.S. Cl. 166—367 **21 Claims**

1. A riser assembly, comprising:
a first tubular member, embedded in a floor of a body of water, and having an upper end extending above said floor;
a second tubular member, disposed in said first tubular member, said second tubular member being rigidly connected to said first tubular member below said floor and having an upper end connected to a structure floating on said body of water, and said first tubular member having a constant internal diameter portion extending from said rigid connection to said upper end of said first tubular member; and
said first and second tubular members being so constructed

that said second tubular member contacts said upper end of said first tubular member on said constant internal



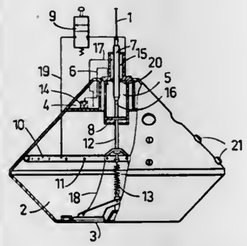
diameter portion thereof when said floating structure is offset from said first tubular member.

4,240,507

FIRE EXTINGUISHING SYSTEM HAVING A DOSAGING CYLINDER FOR AN ADDITIVE

Eero Hokkanen, Askola, Finland (07500)

Filed May 15, 1979, Ser. No. 39,386
Claims priority, application Finland, May 17, 1978, 781576
Int. Cl.[3] A62C *31/30*
U.S. Cl. 169—53 **7 Claims**



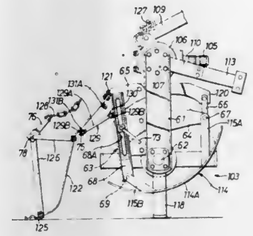
1. Apparatus for extinguishing fires, said apparatus comprising:
a first water cistern comprising a bottom and means therein defining a water exit;
a gate movably mounted in said cistern to move between a position in which said opening is closed and another position in which said opening is at least partially open;
a second cistern to hold a fire retarding additive;
transfer means in the upper part of said first cistern and connected to said second cistern to receive said additive from said second cistern said transfer means comprises a dosaging cylinder and a piston movable therein and connected to said suspension means; and
suspension means operatively connected to said transfer means to cooperate therewith to draw a quantity of said additive from said second cistern into said cylinder and to dispense at least some of said quantity into said water cistern and to return at least some of the remainder of said quantity to said second cistern.

4,240,508

POWER-DRIVEN ROTARY GROUND WORKING IMPLEMENT

Toshio Ishiguro, and Minoru Kyotani, both of Sakai, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Mar. 22, 1979, Ser. No. 23,133
Claims priority, application Japan, Mar. 23, 1978, 53/38398[U]; Apr. 18, 1978, 53/52246[U]; Apr. 18, 1978, 53/52255[U]
Int. Cl.[3] A01B *33/02, 33/12*
U.S. Cl. 172—72 **7 Claims**



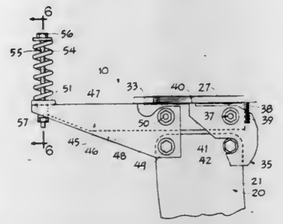
1. A power-driven rotary ground working implement comprising a frame, a rotary ground working unit supported by the frame and rotatable about a horizontal axis, transmission means provided for the working unit, a cover assembly covering the working unit, and a ground contacting stabilizer of the skid type supported by the frame on at least one side of the working unit and positioned radially inwardly from the outer periphery of the working unit, the working implement including stand means for supporting the working implement with stability as disconnected from a power vehicle, the stand means being characterized in that:
the cover assembly **4**,**104** comprises a main cover **20**, **120** fixed to the frame **2**, **102** and a movable cover **22**, **121** upwardly or downwardly connected to a rear portion of the main cover **20**, **120** by bent members **21**, **121**, the movable cover **22**, **122** being supported by a frame **27**, **127** with a suspender **28**, **128**;
the outer periphery of the working unit **3** and a rear portion **25**, **125** of the movable cover **22**, **122** are in contact with the ground at the front and rear locations spaced apart from each other on opposite sides of the bent members **21**, **121** on the movable cover **22**, **122**, the center of gravity of the working implement **1**, **101** being positioned between the front and rear contacting portions;
the outer periphery of the working unit **3** and the rear portion **25**, **125** of the movable cover **22**, **122** are made cooperative to serve as the stand means by holding means **29**, **129** provided for the movable cover **22**, **122** on at least one side of the working unit; and
the holding means **29**, **129** comprises a first engaging portion **30**, **130** provided on the frame **2**, **102** below the bent member **21**, **121** on the movable cover **22**, **122**, at least one second engaging portion **31**, **131A**, **131B** at a longitudinally intermediate side portion of the movable cover **22**, **122** and an engaging member **29A**, **129A** removably engageable with the first engaging portion **30** **130** and with the second engaging portion **131A**, **131B**, so that the engaging member **29A**, **129A** restrains the movable cover **22**, **122** from moving about the bent member **21**, **121** relative to the frame **2**, **102** when the rear portion **25**, **125** of the cover **22**, **122** is in contact with the ground and when the working implement **1**, **101** is lifted in its entirety with the rear portion **25**, **125** raised to open the working unit **3** to the rear.

4,240,509

TOOL MOUNTING ASSEMBLY FOR SOIL TILLING IMPLEMENT

Elmer K. Hansen, 801 S. Martha, Sioux City, Iowa 51102

Filed Dec. 11, 1978, Ser. No. 968,354
Int. Cl.³ A01B *61/04*
U.S. Cl. 172—269 **2 Claims**



1. A ground tool mounting assembly for supporting a shank of a ground tool to the tool bar of a soil tilling farm implement and for providing rearward pivotal movement of the tool from a ground engaging operating position to an inoperative position upon encountering an obstruction during a tilling operation, said assembly comprising:

(a) a support member,

(b) means for securing said support member to said tool bar,

(c) a link assembly pivotally connected to said support member at a first pivot connection and pivotally connected to said shank at a second pivot connection, said pivot connections permitting rearward movement of said shank upon rotation of the link assembly about said first connection,

(d) pressure means for applying a yieldable pressure on said link assembly to oppose rotation of the link assembly about said first pivot connection, and

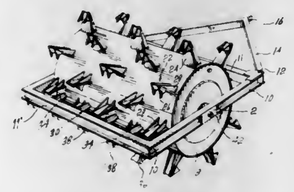
(e) coacting latch means on said shank and on said support member for releasably locking said shank to prevent rotation of said shank about said second pivot away from said ground engaging operating position, and upon initial rearward movement of the ground tool in response to said ground tool striking an obstruction, releasing said shank thereby permitting free pivotal movement of said shank and ground tool about said second pivot to said inoperative position.

4,240,510

COMBINED SCARIFIER AND BRANCH SLASHING AND CRUSHING IMPLEMENT

Armand Morin, 158-3rd Avenue, Chibougamau, Quebec G8P 1Z9, Canada

Filed Jan. 5, 1979, Ser. No. 1,221
Int. Cl.³ A01B *29/06*
U.S. Cl. 172—547 **6 Claims**



1. A combined scarifier and branch slashing and crushing implement comprising:

(a) a rectangular frame having end portions and straight front and back longitudinal portions;

(b) a cylindrical roller rotatably mounted on said end portions and extending within said frame with its axis of rotation substantially parallel to said longitudinal portions;

(c) plural rows of longitudinally spaced scarifier teeth secured to and projecting from said roller for working the soil; and

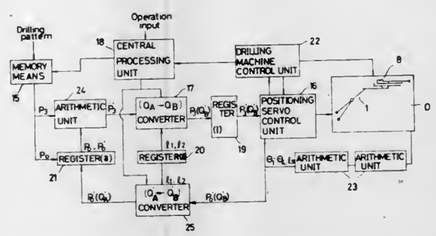
(d) stationary teeth mounted on both said front and said back longitudinal portions of said frame and projecting between said scarifier teeth, each scarifier tooth including a main plate disposed parallel to the rotational axis of said roller and a triangular plate secured to the outer end portion of said main plate and projecting from one side of said main plate in a plane substantially perpendicular to the rotational axis of the roller, said triangular plate having a first edge merging with the radially outer edge of said main plate and radially inwardly inclined relative to said main plate, and a second free edge facing said roller and substantially perpendicular to said main plate, said triangular plate forming a hook member, each of said stationary teeth including a plate portion disposed in a plane perpendicular to the rotational axis of said roller and having a free cutting edge facing said hook member, said scarifier teeth adapted to first engage the branches, roots and plant growths and then to slash and cut the same against said stationary teeth to provide a pulverized mixture which thereafter is mixed thoroughly with the soil.

4,240,511

DRILLING MACHINE CENTERING ARRANGEMENT

Toru Mashimo, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 7, 1978, Ser. No. 914,746
Claims priority, application Japan, Jun. 7, 1977, 52/66997
Int. Cl.² E21C *11/02*
U.S. Cl. 173—1 **5 Claims**



1. A centering arrangement for a drilling machine or the like which comprises,

boom means on which the drilling machine is operably mounted;

first arithmetic means connected to said boom means for calculating values of first working distance and working direction from a reference point on a drilling pattern plane to an actual reference point on a working plane immediately in front of a working face to be drilled, said first working distance and direction being calculated in a boom coordinate system and being provided as output from said first arithmetic means;

first converter means connected to said first arithmetic means for converting the values of said first working distance and direction from said boom coordinate system to a rectangular coordinate system, and providing said converted values as outputs;

a memory means for storing coordinate values of said reference point and a desired drilling point in said drilling pattern plane, said coordinate values being in said rectangular coordinate system and being supplied as output from said memory means;

second arithmetic means connected to said memory means and said first converter means for receiving the outputs of said first converter means and said memory means and for processing these values to calculate values of second working distance and working direction from said actual reference point to an actual drilling point in said working plane, said actual reference point and said actual drilling point in said working plane corresponding to said reference point and said desired drilling point in said drilling pattern plane, said second working distance and working direction being calculated in said rectangular coordinate system and being provided as output from said second arithmetic means;

a second converter means connected to said second arithmetic means for converting said second working distance and direction values from the rectangular coordinate system to the boom coordinate system, and providing said converted values as output; and,

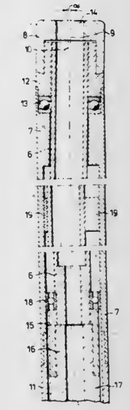
positioning servo control means connected to said second converter means and to said boom means for displacing said boom means according to said second working distance and direction supplied as output from said second converter means for bringing the drilling machine into adjustment with the actual drilling point in the working plane, and also coupled to said first arithmetic means for receiving the values for said actual drilling point calculated by said first arithmetic means as feedback upon displacement of the boom means.

4,240,512

ARRANGEMENT FOR GUIDING A BORE-CROWN OR BIT ALONG A GIVEN PATH

Mats T. Haglund, Malmstavägen 25, S-971 00 Malmberget, Sweden

Filed Feb. 26, 1979, Ser. No. 14,975
Claims priority, application Sweden, Mar. 6, 1978, 7802488
Int. Cl.³ E21B *7/08*
U.S. Cl. 175—75 **4 Claims**



1. A drilling assembly for use in earth and rock to correct misalignment of a drilled hole, including:

an outer non-rotatable guide tube,

a drive shaft rotatably mounted in the outer guide tube,

a drill bit connected to one end of the drive shaft and journalled on the outer guide tube,

a drill rod connected to the opposite end of the drive shaft,

the axis of rotation of the drill bit being angularly offset relative to the longitudinal axis of the outer guide tube, and

the longitudinal axis of the drill bit end of the drive shaft being aligned with the axis of rotation of the drill bit,

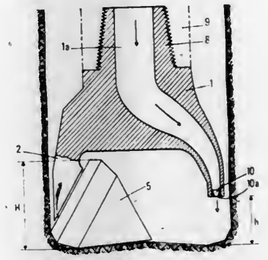
said drive shaft being bent relative to the outer guide tube with the drill rod end of the drive shaft being co-axial with the outer guide tube and the intermediate portion of the drive shaft being eccentrically journalled in the outer guide tube.

4,240,513

DRILL BIT WITH SUCTION JET MEANS

Yvon Castel, Pau, and Henri Cholet, Le Pecq, both of France, assignors to Institut Francais du Petrole, France

Filed Jan. 26, 1978, Ser. No. 872,362
Claims priority, application France, Jan. 28, 1977, 77 02689
Int. Cl.² E21B *9/08*
U.S. Cl. 175—340 **13 Claims**



1. A drill bit comprising a body member rotatable about an axis by a bit holder, said body member being provided with a recess which can be supplied with a pressurized fluid through the bit holder, a plurality of rotatable elements carried by the body member and provided with ground cutting means in contact with the hole bottom, flushing means for delivering at least one flushing jet directed towards the hole bottom, said flushing means comprising at least one nozzle having a first calibrated aperture provided in said body member and in direct communication with said recess, said first aperture opening in a first space comprised between two adjacent rotatable elements, eduction means for the drilling fluid which has flushed the rotatable elements, said eduction means being adapted to deliver at least one upwardly directed fluid jet, said eduction means comprising at least one second aperture provided in said body member and located above a second space comprised between two adjacent rotatable elements, said nozzle being arranged so as to deliver through said first calibrated aperture a flushing jet having a direction substantially parallel to the drill bit axis and said first calibrated aperture of said nozzle opening at a distance from the hole bottom comprised between $\frac{1}{3}$ H and 4/5 H, H being the height of the rotatable elements measured parallelly to the drill bit axis.

4,240,514

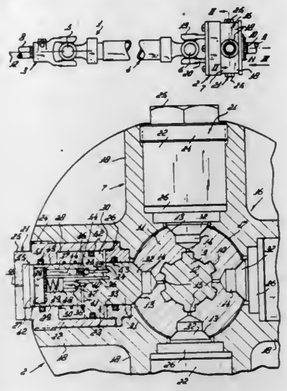
OVERLOAD COUPLINGS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Feb. 7, 1978, Ser. No. 875,948
Claims priority, application Netherlands, Feb. 11, 1977, 7701445
Int. Cl.³ B60K *25/06*; F16D *11/00*
U.S. Cl. 180—53 D **13 Claims**

1. A tractor comprising a frame and driving means connected to a driven shaft having an overload coupling, said coupling, having a part that operatively disconnects from said shaft upon torque overload, said tractor having a driver station and a signalling device that indicates overload occurrence positioned to be discernible from the station, said signalling device comprising a pressure gauge in communication with said part, said gauge and coupling being in hydraulic communication with a space that has a constant volume during normal operation, the hydrostatic pressure in said space being dependent on the torque, said shaft being an input shaft directly driven by the driving means, an output shaft being engaged by said overload coupling and said gauge indicating torque transmitted by the output shaft, at one speed of said driving means,

the output shaft having a first rotary speed and a second rotary speed that is substantially higher, the hydrostatic pressure in



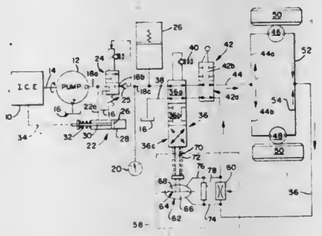
said coupling being approximately the same at both speeds and said gauge indicating the torque at each speed.

4,240,515

VEHICLE HYDRAULIC DRIVE SYSTEM

Robert W. Kirkwood, 210 Thorncliff Rd., Kenmore, N.Y. 14223

Filed Dec. 8, 1978, Ser. No. 967,776
Int. Cl.[3] B60K *1/00*
U.S. Cl. 180—165 **48 Claims**



1. A vehicle drive system comprising:

a fluid pump means with associated drive means for supplying a flow of pressurized fluid from a fluid sump to a pressurized fluid supply line;

a pressurized fluid accumulator in fluid communication with said pump means through said pressurized fluid supply line and adapted to receive pressurized fluid therein and discharge pressurized fluid therefrom;

a pressure regulating valve in fluid communication with said fluid pump means and pilot-operated in response to the pressure of the fluid flow in said supply line to a first state in which the flow of fluid is directed to said accumulator or to a second state in which the fluid flow is directed to a fluid sump;

a propulsion control valve in fluid communication with said pump means and having finite fluid control states consisting of a fully open position corresponding to a forward thrust position and a fully closed position corresponding to a neutral position;

at least one fluid motor in fluid communication with said propulsion control valve adapted to receive a flow of fluid through a supply line at full system pressure and flow rate and return said fluid through a return line when said valve is actuated to its fully open position, said fluid motor coupled to a ground-engaging traction-element;

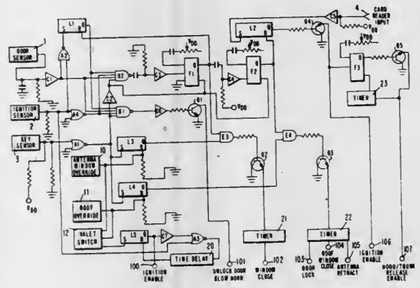
speed control means responsive to the fluid flow rate through said motor and connected to said propulsion control valve, said speed control means adapted to actuate said propulsion control valve to its fully open position when said fluid flow rate through said motor is below a selected percentage of a predetermined flow rate that corresponds to a predetermined upper speed-limit and adapted to actuate said propulsion control valve to its fully closed position when the fluid flow rate is at or above said predetermined flow rate.

4,240,516

VEHICLE SECURING AND LOCKOUT PREVENTION SYSTEM

James R. Henderson, and Larry E. Lewis, both of Detroit, Mich., assignors to Keycon Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 943,578, Sep. 18, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 4,859
Int. Cl.[3] B60R *25/04*
U.S. Cl. 180—289 **21 Claims**



1. An electronic control system for use in a motor vehicle for enabling the operation of the vehicle and securing the accessories of said motor vehicle, said vehicle having a key switched and electrically operated ignition, at least one vehicle door having a door lock, and at least one vehicle accessory, which system comprises:

(a) coding means having a predetermined code,

(b) detection and identification means for detecting and identifying said coding means and producing an enabling signal upon detection and identification of said predetermined code,

(c) enabling means responsive to said enabling signal for enabling the operation of the ignition system of the vehicle and for enabling the operation of the vehicle accessories, and

(d) securing means for automatically securing the vehicle accessories and conditioning said enabling means to disable the operation of said ignition system and accessories, said securing means being activated when at least one vehicle door is opened and closed while the ignition key is removed from the ignition switch.

4,240,517

POWERTRAIN AND INDEPENDENT SUSPENSION MOUNTING ARRANGEMENT FOR FRONT-WHEEL-DRIVE VEHICLE

John H. Harlow, Jr., Farmington Hills, and Joseph Maywood, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1979, Ser. No. 29,625
Int. Cl.[3] B60K *5/04*
U.S. Cl. 180—295 **3 Claims**

3. In a front-wheel-drive vehicle having a cradle that is cushion mounted on the vehicle body and to which independent front-suspension control arms are mounted and further having a powertrain including an engine and transmission and differential that is cushion mounted on the cradle and wherein both the engine and transmission are positioned transversely in

the vehicle body: the improvement comprising in combination, a plurality of cradle mounts supporting the cradle with all its weight at mounting points on the vehicle body, said cradle mounts including cushion and rate control means arranged so as to provide a soft substantially linear spring rate at small cradle vibration amplitudes and a non-linear spring rate at large cradle vibration amplitudes in both a fore and aft direction and a vertical direction relative to the vehicle body and a stiff substantially linear rate at all cradle vibration amplitudes in a lateral direction relative to the vehicle body, a plurality of powertrain mounts supporting the powertrain with all its weight at mounting points on the cradle, said powertrain mounts including cushion and rate control means arranged so as to provide soft substantially linear spring rates at all powertrain vibration amplitudes in the fore and aft, vertical and



lateral directions and at small powertrain vibration amplitudes in a pitching direction relative to the vehicle body and further provide a non-linear spring rate at large powertrain vibration amplitudes in the pitching direction, and powertrain pitch reaction means connected between the powertrain and a mounting point on the vehicle body, said powertrain torque reaction means including a strut extending in the fore and aft direction so as to be in either tension or compression on pitching of the powertrain depending on whether the transmission is in forward or reverse drive, said powertrain torque reaction means further including cushion and rate control means at opposite ends of said strut arranged so as to provide a soft substantially linear spring rate at small powertrain vibration amplitudes in the pitching direction and a non-linear spring rate at large powertrain vibration amplitudes in the pitching direction.

4,240,518

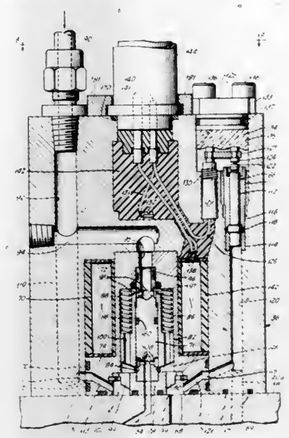
METHOD AND APPARATUS FOR MONITORING AND CONTROLLING A MULTIPLICITY OF AIR GUNS FOR SEISMIC SURVEYING

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Filed Jun. 22, 1978, Ser. No. 917,794
Int. Cl.[3] G01V *1/38*
U.S. Cl. 181—107 **44 Claims**

6. A solenoid valve assembly suitable for use in controlling the movement of a shuttle to fire an air gun, said valve assembly comprising:

a solenoid valve for initiating firing of said air gun and for shutting off the entire supply of pressurized gas to said air gun when actuated, and



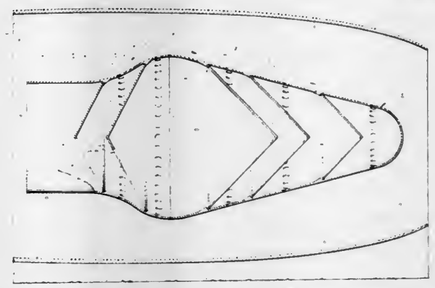
a fluid pressure sensor for detecting variations in fluid pressure caused by movement of said shuttle.

4,240,519

ACOUSTICAL TURBINE ENGINE TAIL PIPE PLUG

Thomas A. Wynosky, Madison, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 2, 1979, Ser. No. 54,099
Int. Cl.[3] F01N *1/02*; F02K *1/04*
U.S. Cl. 181—213 **3 Claims**



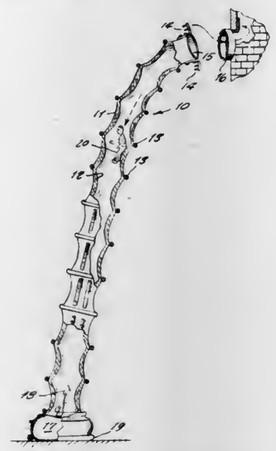
1. A muffler plug mounted in the tail pipe of a turbine power plant including a curved hollow body generated about an axis of revolution having a generally symmetrical configuration along an axial centerline, said body being spaced from the wall of the tailpipe to define therewith an annular passage for flowing the power plant's working medium, a plurality of concially shaped spaced members each having its apex located coincidental with said axial centerline and defining therewith a plurality of axially spaced subchambers, openings in said body for leading grazing flow into said subchambers from said annular passage, the base of each of said conically shpaed member bearing against said body for structurally supporting said body and said members being in compression so as to compensate for radial growth from the heat transfer from the heat from the working medium.

4,240,520

HI RISE ESCAPE TUNNELS AND SLIDE

Janet L. LaGrone, and George Spector, both of 3615 Woolworth Building, 233 Broadway, New York, N.Y. 10007

Filed Jan. 29, 1979, Ser. No. 7,652
Int. Cl.³ A62B *1/20*
U.S. Cl. 182—48 **3 Claims**



1. A high rise escape tunnel, comprising in combination, a collapsible tubing of fireproof fabric, a padding on its inner side a plurality of spaced apart metal rings mainted around an outer side of said tubing, an entry opening at an upper end of said tubing, an exit doorway near a lower end, a soft pad at said lower end for resting on a ground, said pad encompassed by a weighted ring for contacting the ground, means for connecting said entry opening to a building exit whereby said tunnel assumes curved shape having increasing inclination towards the ground, said rings having equal diameter whereby said tubing fabric sags inwardly between the rings to provide a smooth undulating curvate sliding surface in further combination with means mounted on the tubing for contracting the tubing longitudinally for storage purposes.

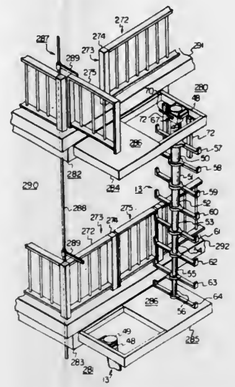
4,240,521

DRAWER TYPE EMERGENCY ESCAPE

Hiromitsu Naka, Yashio, Japan, assignor to Kabushiki Kaisha Naka Gijutsu Kenkyusho, Sapporo, Japan

Filed May 9, 1979, Ser. No. 37,335
Claims priority, application Japan, Jan. 27, 1979, 54-8464
Int. Cl.³ E06C *9/10*; B60R *3/00*
U.S. Cl. 182—84 **19 Claims**

1. A drawer type emergency escape comprising:
- a stowage box adapted to be attached to a support;
- a slidable frame adapted to be slidably extended out of and retracted into said stowage box;
- a telescopically extensible escape means attached to said slidable frame to be received into and extended out of the frame; and
- a shift mechanism including a drive arm connected to a shift handle, a slide shift link, a connection link connecting said drive arm to said slide shift link and an extensible tong means disposed between said slide shift link and slidable



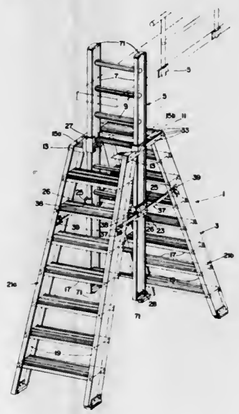
frame for extending and retracting said slidable frame out of and into said stowage box.

4,240,522

EXTENSION TRESTLE LADDER

Kenneth J. Spear, Sharon, and Donald L. Shawkey, Sandy Lake, both of Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.

Filed Dec. 11, 1978, Ser. No. 968,210
Int. Cl.³ E04G *1/30*; E06C *1/18*
U.S. Cl. 182—105 **4 Claims**



1. A locking device for locking support of the fly assembly of an extension trestle, in which the trestle is formed with a pair of supporting ladders and a fly assembly, each ladder and fly assembly comprising a pair of opposite side rails and a plurality of rungs or steps, the side rails of said supporting ladders having on the top of each side rail a bracket secured thereto and to the upper rung or step of each said ladder, the free ends of oppositely facing said brackets adapted to project toward each other outwardly of the rail with which it is associated and to overlap, means for hingedly securing said free ends of the brackets together wherefor the opposite side rails of opposite of said supporting ladders are hingedly connected at their upper end portions, opposite spreader means each pivotally secured at its outer ends to brackets secured to a mediate portion of a pair of planar spaced side rails of opposite support ladders, said spreader means each having its opposite ends pivotally secured together by connecting means, oppositely disposed generally U-shaped upper and lower sleeve guide means, the upper guide means being mounted on the means hingedly securing the top brackets together, the lower guide means being secured to the pivotal connection of said spreader means, said upper and lower sleeve guide means being spaced and aligned vertically, said fly assembly being extended or lowered by movement within the aligned sleeve guide means in a generally vertical plane by selective cooperation with a rung of the fly assembly, said device comprising:

Support means for supporting engagement of a selected rung of the fly assembly along at least one-half of the length of said rung.

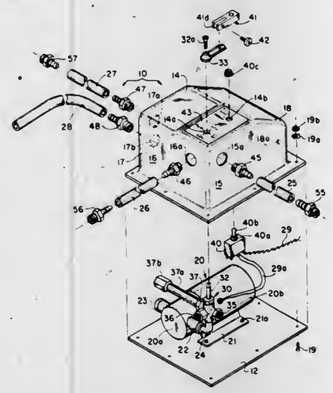
said support means being pivotally attached to the oppositely disposed upper guide means and being radially displaceable from a peselected support position, wherein the support means is disposed transverse to the plane in which the fly assembly is moveable, to an accomodating position, wherein the support means is disposed proximally away from said plane whereby said fly assembly may be moved within said plane.

4,240,523

MOTORIZED CRANKCASE OIL CHANGING SYSTEM

Jack Nestor, 110 1st Ter., San Marino Is., Miami Beach, Fla. 33139, and Raymond Zager, 946 Eve St., Delray Beach, Fla. 33444

Filed Aug. 23, 1979, Ser. No. 68,907
Int. Cl.³ F01M *11/04*
U.S. Cl. 184—1.5 **16 Claims**



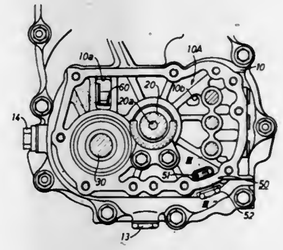
5. In a system for draining and refilling the oil of a crankcase having a hose coupling threaded into the crankcase drain opening, a central unit comprising an electric motor driving a reversible pump, a selector valve, and a three position toggle switch having a toggle projecting from a threaded neck and being wired to supply DC power from a source to said electric motor, said wiring providing for a middle, perpendicular, open circuit position for the toggle between oppositely inclined toggle positions for energizing said motor and driving said pump in "forward" or "reverse" directions to selectively "fill" or "drain" said crankcase, said pump having a pair of opposite ports, a first of said ports being connected to a drain/refill hose having an opposite end positioned within an oil discharge or an oil supply receptacle, said selector valve having a pair of ports, a stem and a perpendicularly extending handle having a longitudinal axis axtending radially from said stem for rotating the stem between "open" and "closed" positions, one of said valve ports being connected to the second of said pump ports, a hose connecting the other of said valve ports to said crankcase coupling enabling oil to be pumped directly from or into the crankcase when the valve is in said open position in accordance with the toggle switch selected position, a housing enclosing said central unit having a wall portion serving as a control panel formed with a pair of spaced openings, said valve stem extending through a first of said openings positioning the longitudinal axis of said handle in parallel spaced relation to said wall portion, said toggle switch threaded neck being secured in the second of said openings with said toggle extending perpendicular to said housing wall portion when in said open circuit position, said selector valve being orientated with respect to said housing to position the longitudinal axis of said handle in alignment with and extending toward said toggle when in said "closed" position, and latch means extending between and disengageably interlocking said handle and toggle against movement when in said "closed" and open circuit positions, respectively, said latch means including a bar pivotally mounted at one end on said valve handle to extend along said handle longitudinal axis when in said interlocking engagement and adapted to swing to an angular disengaged position, said bar having a block portion at the opposite free end formed with a transverse passageway into which said toggle extends in said interlocking engagement.

4,240,524

OIL FLOW CONTROL DEVICE FOR POWER TRANSMISSIONS

Nobuaki Katayama, and Hideaki Koga, both of Toyoto, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 29, 1978, Ser. No. 974,227
Claims priority, application Japan, Aug. 2, 1978, 53/106242[U]
Int. Cl.³ F01M *9/06*
U.S. Cl. 184—6.12 **8 Claims**



1. In a power transmission unit for a motor vehicle comprising:
- a transmission casing shaped to conform with a change-speed gearing contained therein, said change-speed gearing including an output mainshaft rotatably supported from an upright end wall of said casing; and
- an extension housing secured in a fluid-tight manner at its upright front seating face to said upright end wall to contain one end of said mainshaft extending therein from said upright end wall, said extension housing forming a lubricant chamber in open communication with the interior of said casing through the upper portion of said upright end wall;
- the improvement wherein the bottom wall of said transmission casing is formed therein with a cavity opening toward said lubricant chamber and with a through hole across said cavity to open said lubricant chamber toward the interior of said casing and exterior therethrough; and a plug element is coupled with said through hole in a fluid-tight manner to close said through hole, whereby when said plug element is partly released outwardly, said lubricant chamber is communicated with the interior of said casing through said cavity and said through hole.

4,240,525

TOY TIMING DEVICE WITH A SLIP-STICK ESCAPEMENT-LIKE MECHANISM

James F. Kubiatowicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

Division of Ser. No. 806,855, Jun. 15, 1977, Pat. No. 4,154,054.
This application Feb. 7, 1979, Ser. No. 9,939
Int. Cl.[2] F03G *1/04*
U.S. Cl. 185—38 **5 Claims**



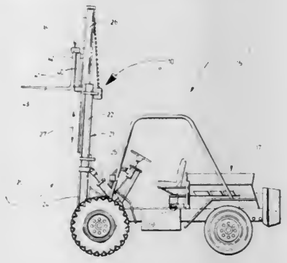
1. An escapement-like mechanism comprising:
a first member including a wall having a continuous surface;
a second member mounted on said first member to afford relative movement of said members between first and second relative positions, said second member including a projection which stays in closely spaced relationship along said surface during said relative movement;
means for biasing said members toward said first relative position; and
a length of elastic resilient material mounted on said second member in a position generally aligned in the direction of relative movement of the members, said length extending across and being unattached to the projection with part of the length of elastic material slightly compressed between the projection and said surface so that the elastic material will intermittently stick and slip against said surface to regulate movement of said members from said second position to said first position under the influence of said biasing means.

4,240,526

SAFETY DEVICE FOR FORKLIFTS AND THE LIKE

Gloria L. Sanders, 587 W. Westfield, Porterville, Calif. 93257

Filed Aug. 6, 1979, Ser. No. 64,004
Int. Cl.[3] B66B *9/20*
U.S. Cl. 187—9 R **7 Claims**



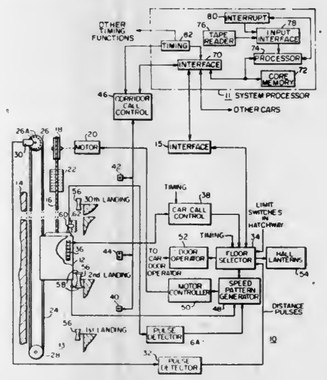
1. A safety device for use on a forklift or the like having a substantially vertical guide defining a path of travel, a carriage, means mounting the carriage for movement along the path of travel and a substantially horizontal cross member rigidly mounted on a portion of the forklift adjacent to the path of travel, and being at all times out of said path of travel the device comprising a mounting member having a slot having a dimension slightly larger than the cross member permitting fitted engagement with the cross member in supported, non-rotational relation; and a supporting member integral with and extending from said mounting member in an attitude such as to extend into said path of travel for engagement by the carriage when the mounting member is disposed in said fitted engagement.

4,240,527

ELEVATOR SYSTEM

James Vine, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 340,619, Mar. 12, 1973, abandoned.
This application May 15, 1974, Ser. No. 470,095
Int. Cl.[3] B66B *1/18*
U.S. Cl. 187—29 R **23 Claims**



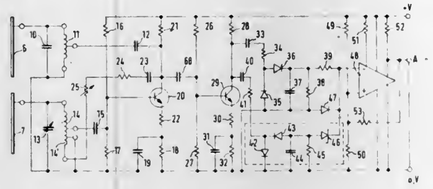
1. An elevator system comprising:
a structure having a plurality of landings,
elevator cars mounted for movement relative to the structure to serve the landings,
first call means for registering landing calls for elevator service from said plurality of landings, and providing serial call signals in response thereto,
second call means for registering car calls from said elevator cars,
control means associated with each of said elevator cars, each of saic control means controlling the operation of its associated car in response to control signals applied thereto, said control means providing serial data signals including signals indicating car position, travel and service direction and signals which indicate whether the car is in the process of serving a call,
a digital computer responsive to the serial signals of said first call means and to the serial data signals provided by the control means for each of said elevator cars, said digital computer including a memory and a program stored therein for allocating landing calls and assigning tasks to the elevator cars according to predetermined strategy, said digital computer providing serial control signals for said control means which signals control the operation of said elevator cars,
said program being divided into predetermined subsections,
first means indicating the need to run predetermined subsections of the program in response to the serial call signals provided by said first call means and the serial data signals provided by the control means of said elevator cars,
and second means serially running the subsections of the program which have a need to run, with their sequence being selected by said second means.

4,240,528

FIELD SENSOR

Hans Kraus, Rüsselheim, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 902,735
Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2719955
Int. Cl.[3] B66B *13/06*
U.S. Cl. 187—52 R **10 Claims**



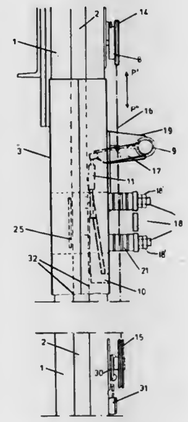
1. A field sensor control mechanism for detecting obstructions in front of the leading edges of linearly moving motor-operated sliding elevator doors, comprising at least two insulated electrodes mounted in a leading edge of a slidable door at different levels; means, including a first capacitor and a first inductor, forming a first oscillating circuit electrically connected to one of said electrodes; means, including a second capacitor and a second conductor, forming a second oscillating comparison circuit electrically connected to the other of said electrodes and having a base oscillating frequency at least substantially the same as that of said first circuit; and means including a feedback winding and an amplifier connected in circuit with said first and second circuits and operative for so coupling said first and second circuits that the oscillations of said first circuit vary as a function of capacitance changes in said electrodes.

4,240,529

VERTICAL CONVEYING APPARATUS

Peter Hagmann, Daeniken, and Lovro Markun, Suhr, both of Switzerland, assignors to Oehler-Whylen-Lagertechnik AG, Buchs bei Arrau, Switzerland

Filed Oct. 2, 1978, Ser. No. 948,097
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744986
Int. Cl.[3] B66B *5/16*
U.S. Cl. 187—90 **3 Claims**



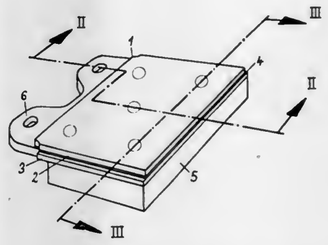
1. A vertical conveying apparatus with a lifting unit and an emergency braking system, which decelerates the speed of the lifting unit as soon as a preselected top speed is exceeded, comprising;
at least two vertically arranged guiding rails for the guiding of the movement of said lifting unit, each guiding rail having shoulders and a parallel wear strip along said shoulder;
at least two braking wedges arranged on both sides of said lifting unit for movement with said lifting unit, each wedge acting against one of said rails and each wedge being vertically displaceable relative to said lifting unit;
a lever mechanism connected to said braking wedges, said braking wedges being each floatingly suspended from lever mechanism and an endless rope drive;
an endless rope drive moving synchronously with said lifting unit constructed and arranged so that a decrease in the speed of the rope drive relative to the speed of the lifting unit causes a displacement of the braking wedges to decelerate stop the lifting unit;
supporting members for slideably receiving said wedges and to permit horizontal displacement of said wedges under wedging action;
said braking wedges instantaneously coacting in frictional full face engagement with its corresponding parallel wear strip at the shoulder of the vertical guide rail, said wedges being slideably received in said supporting member for adjustable pressing movement from gentle pressing to full force braking against said parallel wear strips;
a supporting block rigidly connected to said lifting unit;
a plurality of bolts in parallel, each fitted with cup springs, washers and fasteners to secure said supporting members to said supporting block; and
said cup springs providing spring forces in opposition to the wedging forces of said braking wedges whereby the wedge pressure may be progressively increased from gentle breaking forces to full force braking.

4,240,530

BRAKE PAD FOR DISC BRAKES

Johannes Tillenburg, Essen, Fed. Rep. of Germany, assignor to Abex Pagid Reibbelag GmbH, Essen, Fed. Rep. of Germany

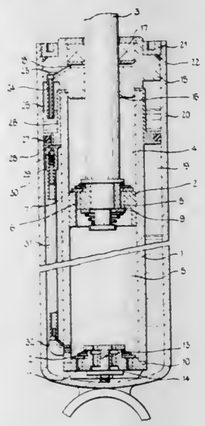
Filed May 2, 1979, Ser. No. 35,360
Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821194
Int. Cl.[3] F16D *65/12*
U.S. Cl. 188—250 E **3 Claims**



1. A brake pad for disc brakes, in particular disc brakes of motor vehicles, comprising a multi-part carrier plate and a friction lining pressed thereon, a damping layer being provided in each case between two parts of the carrier plate to separate the two parts and projections on one part of the carrier plate engaging with corresponding recesses in the other part of the carrier plate, characterized in that the parts of the carrier plate are provided with mating centering recesses and centering projections which mutually engage and have oblique centering surfaces, a slightly compressible thin, vibration-damping and heat-insulating elastic bonding layer is located between two parts of the carrier plate and the elastic bonding layer consists

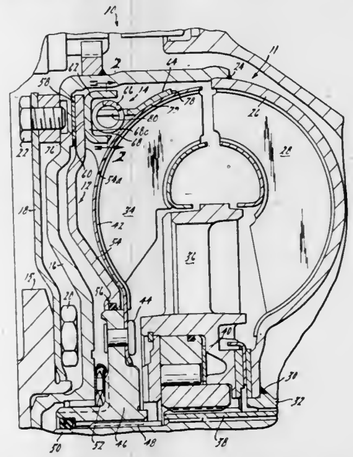
of a non-swellable material which is bonded to the parts of the carrier plate under pressure and at the temperature at which the friction lining is bonded to the carrier plate.

4,240,531
LOW-WEAR SHOCK ABSORBER
Pieter M. Postema, Oud-Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.
Filed Dec. 26, 1978, Ser. No. 544
Int. Cl.³ F16F 9/00
U.S. Cl. 188—315 **2 Claims**



1. A shock absorber comprising, in combination:
a cylinder which is divided into upper and lower cylinder chambers by a piston slidably mounted therein;
a casing surrounding said cylinder coaxially therewith and forming a reservoir chamber between the outer wall of said cylinder and the inner wall of said casing, said casing being closed at the lower end thereof;
a cap enclosing the upper ends of said cylinder and said casing;
a piston rod connected to said piston and extending through a seal-forming opening in said cap;
a passageway in said cap connecting said seal-forming opening with the upper portion of said reservoir;
a base valve mounted to the lower end of said cylinder and provided with valved passageways connecting said reservoir with said lower cylinder chamber;
an aperture in the lower end of said cylinder adjacent said base valve and connecting said lower cylinder chamber with said reservoir;
a sealing member mounted in said reservoir at the upper portion of said shock absorber and dividing said reservoir into upper and lower reservoir chambers, said member having a passageway therein connecting said upper and lower reservoir chambers;
a pipe connected between said aperture and said passageway of said member for connecting said lower cylinder chamber with said upper reservoir chamber;
a damping medium in said cylinder and partially filling said upper and lower reservoir chambers; and,
a one-way valve mounted in the passageway provided by said pipe, said one-way valve permitting said damping medium to flow from said upper reservoir chamber and into said lower cylinder chamber.

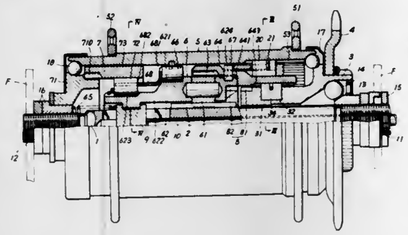
4,240,532
TORSIONAL ISOLATOR FOR TORQUE CONVERTER LOCK-UP MECHANISM
Alfred P. Blomquist, Farmington Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Sep. 21, 1978, Ser. No. 944,459
Int. Cl.³ F16D 33/00, 3/14
U.S. Cl. 192—3.28 **13 Claims**



1. In an automatic power transmission for transmitting power from an engine to a drive train of the type having a torque converter with an impeller portion and a relatively rotatable turbine portion, an annular lock-up piston member mechanically lockingly engageable with one of the portions, and torsional isolating means for damping the motion transmitted from the engine through the piston member and the portions, an improvement wherein said torsional isolating means comprises:
A. a drive ring member;
B. first means for fixedly securing said drive ring member to said piston member;
C. a driven ring member;
D. second means for fixedly securing said driven ring member to one of said torque converter portions;
E. a plurality of spring members operatively engaged between said drive and driven ring members for damping vibratory relative motion therebetween; and
F. means integrally formed with said drive member for defining a plurality of spring seats for engaging one end of each of said spring members.

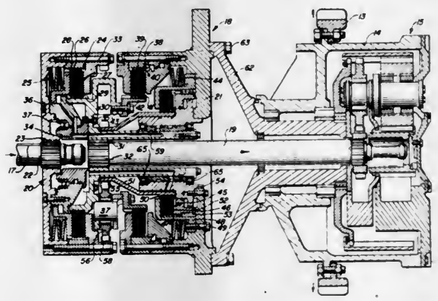
4,240,533
COASTER BRAKE HUB WITH A GEAR-TRANSMISSION
Seiji Fukui, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan
Filed Apr. 28, 1978, Ser. No. 900,862
Claims priority, application Japan, May 6, 1977, 52/52284
Int. Cl.³ F16D 41/30; F16H 57/10
U.S. Cl. 192—6 A **3 Claims**

1. A coaster brake hub having therein a gear-transmission and a back-pedalling braking mechanism comprising:
a fixed shaft;
a driving member having a sprocket and rotatably supported to one axial end of said fixed shaft;
a brake cone rigidly fixed to the other axial end of said fixed shaft;
a hub shell rotatably supported between said driving member and said brake cone;
a multiple stage gear-transmission housed within said hub shell for changeably transmitting the forward driving force from said driving member to said hub shell when said driving member rotates in a forward direction, said gear-transmission comprising a sun gear provided on said fixed shaft, a cylindrical gear frame including a plurality of planetary gears in mesh with said sun gear, a ring gear including inner teeth in mesh with said planetary gears, transmitting members provided between said gear frame and ring gear and the inner periphery of said hub shell and, means for selectively coupling the forward driving force from said driving member to one of said gear frame and ring gear;
a braking mechanism housed within said hub shell comprising at least two semi-cylindrical brake shoes, actuators for radially expanding said brake shoes pressing them against the inner periphery of said hub shell, and means for supporting said actuators to said gear frame so that said actuators are operated by reverse rotation of said gear frame;
a change-over mechanism inserted between said driving member and said gear frame, said change-over mechanism operating to forcibly intercept the force transmitting route from said driving member to said gear frame when said driving member is reversely rotated and to establish a force transmitting route from said driving member to said ring gear causing said gear frame to be reversely rotated by said ring gear, thus operating said actuators which press said brake shoes against the inner periphery of said hub shell;
said gear frame and ring gear being axially moveable and engaged together to axially move in unison, said gear frame and ring gear being selectively engaged with said driving member;



said driving member having a cylindrical extension extending within said hub shell, the extension being opposite at a substantially intermediate outer periphery thereof to the inner periphery of said ring gear and being opposite at the foremost end to said gear frame, said coaster brake hub further comprising a first transmitting means consisting of pawls and respective grooves engageable therewith provided between said intermediate portion of said extension and said opposite inner periphery of said ring gear for transmitting the forward driving force from said driving member to said ring gear, and a second transmitting means provided between the foremost end of said extension and the opposite face of said gear frame for transmitting the forward driving force from said driving member to said gear frame, said second transmitting means comprising prime cam means and subordinate cam means for engaging with said prime cam means, said prime and subordinate cam means having engaging faces respectively, said first transmitting means engaging grooves having an axial extent such that said pawls at the first transmitting means are disengaged from said engaging grooves when said prime cam means at said second transmitting means are engaged with said subordinate cam means thereof, said pawls being engaged with said engaging grooves after said prime cam means is relatively moved out of a range where said prime and subordinate cams are in driving engagement with each other, said first and second transmitting means being alternately operable, said second transmitting means including said change-over mechanism, said change-over mechanism, when said driving member is rotating reversely, forcibly moving said gear frame apart from said driving member so that the driving force from said driving member no longer passes through the second transmitting means but rather passes through the first transmitting means.

4,240,534
GEARED STEERING MEANS
Richard L. Hedgcock, and Gerald E. Whitehurst, both of East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 26, 1979, Ser. No. 11,599
Int. Cl.³ F16D 67/02; B60K 41/24
U.S. Cl. 192—13 R **10 Claims**

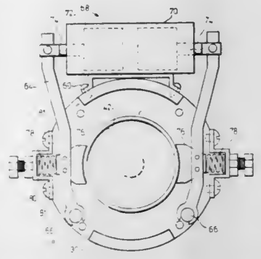


1. A geared steering clutch mechanism (**18**) for selectively driving a rotary shaft input means (**17**), a rotatable hub (**30**), connecting means (**31,32**) drivingly connecting the hub to the output means, said clutch mechanism being arranged to provide selectively a high speed connection of the input and output means, a reduced speed connection of the input and output means, and a braked condition of the output means disconnected from the input means, said clutch mechanism comprising:
a first clutch (**24**) selectively operable to connect the input means through said hub to the output means to provide a high speed connection therebetween;
speed reduction gear means (**55,56,58**);
a second clutch (**45**) selectively operable to connect the input means to the output means through said speed reduction gear means and said hub to provide a reduced speed connection therebetween, said first and second clutches being selectively arrangeable concurrently to positively disconnect the input means from the output means; and
means (**38**) for selectively retaining said hub against rotation and as a result thereof braking the output means solely through said connecting means concurrently with the arrangement of said first and second clutches to positively disconnect the input means from the output means.

4,240,535
CLUTCH AND BRAKE ASSEMBLY
Robert B. Pierce, and Robert B. Wilson, both of Scarborough, Canada, assignors to BLM Automatic Clutch Limited, Scarborough, Canada
Filed May 1, 1978, Ser. No. 91,551
Int. Cl.³ F16D 67/06, 43/18
U.S. Cl. 192—17 C **5 Claims**

1. In combination, an electric motor, a clutch assembly and another rotating unit, said electric motor having a housing, said clutch assembly having a housing, first means selectively detachably securing said motor housing to said clutch housing, said other rotating unit having a housing, second means selectively detachably securing said clutch housing to said unit housing, said clutch assembly having a drive body and a driven

body in said clutch housing, said drive body having radially movable centrifugal weights operable to engage and drive the driven body when the rotational speed of the drive body exceeds a predetermined value and to disengage from the driven body when the rotational speed of the drive body is below the predetermined value, said electric motor having an output shaft projecting from the motor housing, said drive body having an annular boss receiving the motor output shaft, said other rotating unit having a hollow input shaft, said clutch assembly having a bearing supported in the clutch housing and an output shaft supported in the bearing and projecting from the clutch housing into the input shaft of the other rotating unit, and said first and second securing means being operable to selectively detachably secure the motor housing directly to the other unit housing in the absence of the clutch assembly.

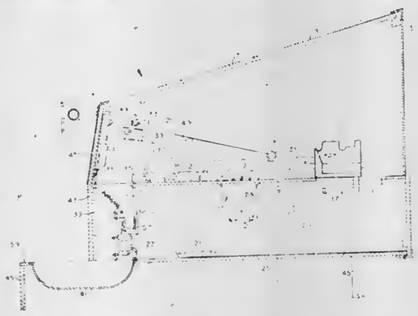


4,240,536

AMUSEMENT DEVICE

Robert E. Noell, Jr., 1799 Velma Dr., Largo, Fla. 33540

Filed Nov. 20, 1978, Ser. No. 962,363
Int. Cl.³ G07F *1/04*
U.S. Cl. 194—1 K **28 Claims**



1. In an amusement device played with a coin or token which includes an enclosure having therein a platform of finite length for retaining therein a plurality of elements selected from prizes, coins, tokens or combinations thereof, a means for feeding a coin or token from a position outside said enclosure onto said platform, reciprocating blade means having a face which extends laterally across said platform for contacting said elements on said platform and at random times causing one or more of said elements to be ejected from an edge of said platform, means located proximal to said platform for catching said ejected elements, at least one of said means so proximally located also dispensing said ejected elements to a location accessible to a player positioned outside said enclosure; the improvement comprising in combination:

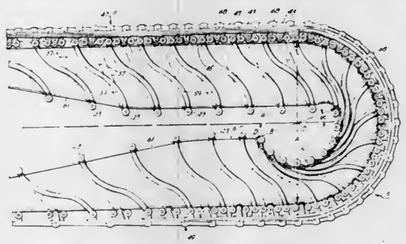
said means for feeding said coin or token onto said platform including an elongated chute located above said platform and extending a substantial distance across that portion of said platform on which said elements are located, said chute terminating in a discharge end located within a short distance from the nearest point of reciprocation of said face of the reciprocating blade means extending laterally across said platform, said chute being rotatable about a pivot connection located intermediate the ends of said chute and forming a finite angle other than 180° with said platform, said pivot connection being located forward of the said ejection edge of said platform and between the two planes defined by an extension of the lateral extremities of the face of the reciprocating blade means in the direction of reciprocation of said reciprocating blade means such that said chute may be rotated about its pivot connection so as to sweep the entire face of said reciprocating means and to be capable of being pivoted to a position parallel to said direction of reciprocation.

4,240,537

ACCELERATING AND DECELERATING HANDRAIL

Phillip E. Dunstan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 18, 1978, Ser. No. 897,263
Int. Cl.³ B66B *9/12*
U.S. Cl. 198—334 **13 Claims**



1. An accelerating and decelerating handrail comprising:

(1) a path of travel defining means for defining a vertical, oval path of travel;

(2) a plurality of overlapping flexible handrail elements mounted on said path of travel defining means for movement about said vertical, oval path of travel, said plurality of handrail elements including a plurality of interleaved first and second handrail elements; and,

(3) overlapping control means for controlling the amount of overlap between adjacent elements of said plurality of handrail elements, said overlapping control means comprising:

(a) cam means mounted inside of said path of travel defining means for controlling the position of cam follower means associated with said plurality of handrail elements, said cam means comprising a cam rail that converges toward said vertical, oval path of travel in an acceleration zone wherein the amount of handrail element overlap decreases and diverges from said vertical, oval path of travel in a deceleration zone wherein the amount of handrail element overlap increases;

(b) cam follower means associated with said plurality of handrail elements and projecting inwardly from said path of travel defining means so as to contact and be adjustably positioned by said cam means, said cam follower means comprising a plurality of arms, one arm rotatably attached at one end to each of said plurality of first handrail elements, and a plurality of rollers, one roller rotatably mounted on the opposite end of each of said arms, said rollers riding on said cam rail and acting to rotate their associated arms with respect to their associated handrail elements;

(c) flexible connecting means running between pairs of adjacent handrail elements and operatively connected to said cam follower means, such that the position of said cam follower means controls the length of said flexible connecting means running between pairs of adjacent handrail elements to thereby control the amount of handrail element overlap, said flexible connecting means comprising a plurality of first and second flexible members running between trios of adjacent handrail elements, each of said trios including two of said first handrail elements and one of said second handrail elements spaced between said two of said first handrail elements, one end of said first flexible member being affixed to one of said first handrail elements of said trios, and the other end of said first flexible member being affixed to said cam follower arm associated with said one of said first handrail elements, one end of said second flexible member being affixed to the same cam follower arm and the other end of said second flexible member being affixed to the other of said first handrail elements forming said trio, said flexible connecting means also including sheave means for coupling said first and second flexible members to said second handrail element of said trio in a manner such that when said arm associated with said one of said first handrail elements is rotated by its associated roller impinging on said cam rail, the length of said first and second flexible members running between said trio of handrail elements is varied whereby the amount of overlap between said trio of handrail elements is varied; and,

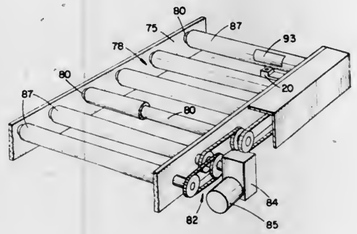
(d) drive means for moving said plurality of overlapping elements about said vertical, oval path of travel.

4,240,538

METHOD AND APPARATUS FOR ACCUMULATING AND GATING ARTICLES

Richard B. Hawkes, Easton; John N. Hobbs, Freemansburg, and Terry J. Schuerman, Allentown, all of Pa., assignors to Harris Corporation, Cleveland, Ohio

Filed Dec. 27, 1977, Ser. No. 864,235
Int. Cl.³ B65G *43/08, 47/46, 13/06*
U.S. Cl. 198—358 **3 Claims**



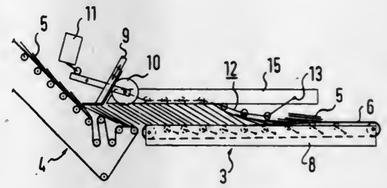
1. Apparatus for the controlled feeding of a stream of articles from an input line to an output line comprising conveyor means for receiving articles from said input line and for conveying said articles downstream toward said output line, means for driving said conveyor means, a gate for receiving articles from said conveyor means and gating said articles onto said output line, article restrictor means between said conveyor means and said gate, means for sensing the presence of an article at the entrance to said gate, means for sensing the presence of an article at said restrictor means, means for producing a control signal in response to the presence of articles at both said gate and said restrictor means, means responsive to said control signal for initiating the gating of an article to said output line and for causing said restrictor means to prevent the passage of succeeding articles to said gate during said gating operation, said conveyor means comprising a series of conveyor sections, said conveyor driving means comprising means for driving each of said sections independently, means associated with each of said conveyor sections for sensing an accumulation of articles on the adjacent downstream conveyor section and control means responsive to said accumulation sensing means for interrupting the driving of said adjacent conveyor section, each of said conveyor sections including a plurality of driven rollers upon which said articles are conveyed, each of said rollers comprising a shaft and a roller sleeve frictonally coupled to said shaft for rotation therewith, said sleeve being uncoupled from said shaft by a load of stalled articles, and said accumulation sensing means comprising a photodetector relay mounted below one of said rollers and a reflective strip carried by said roller sleeve, said relay sensing rotation or nonrotation of said strip.

4,240,539

BACKUP STATION FOR A CARTON FILLING MACHINE

Hartmut Klapp, Kaarst, Fed. Rep. of Germany, assignor to Jagen-Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,134
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825420
Int. Cl.³ B05B *1/30, 1/02*
U.S. Cl. 198—461 **7 Claims**



1. A backup station in a carton filling machine for guiding and loading premanufactured blanks into transport containers, arranged between an imbrication station and a delivery belt which includes a rotation station, the backup station comprising:

at least one support rail arranged in the direction of delivery of blanks for supporting said blanks; and

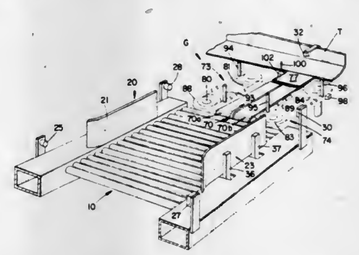
at least two conveyor belts running along said support rail, said conveyor belts being raised above the surface of said support rail during normal, non-backed up operation and being lowered by the backed-up blanks to the surface of said support rail in backed-up operation.

4,240,540

GATING METHOD AND APPARATUS

John N. Hobbs, Freemansburg, and Richard B. Hawkes, Easton, both of Pa., assignors to Harris Corporation, Cleveland, Ohio

Filed Dec. 27, 1977, Ser. No. 864,234
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—492 **6 Claims**



1. Apparatus for gating articles from a supply line to an output line, said apparatus comprising a conveyor interposed between said supply line and said output line, a pair of gating pins, pin mounting means mounting said gating pins for successive movement adjacent said conveyor in a path parallel thereto, means for cyclically driving said pin mounting means

so as to move said gating pins successively along said path parallel to said conveyor, means for driving said conveyor at a speed lower than that of said pin mounting means, said pin mounting means being adapted to position said pair of gating pins in a first position with a first of said gating pins at rest at the entrance to said conveyor to block movement of an article onto said conveyor, and the second of said gating pins being spaced along said pin mounting means from the first of said gating pins such that said first gating pin releases from and moves away from the article and said second gating pin at its speed of travel with said pin mounting means overtakes the article on said conveyor released by movement of said first pin and pushes said article onto said output line, said pin mounting means being further driven in each cycle to thereafter move said pair of gating pins to said first position with said first gating pin blocking a succeeding article to be gated from the supply line to the output line.

4,240,541

APPARATUS FOR MOVING MATERIALS

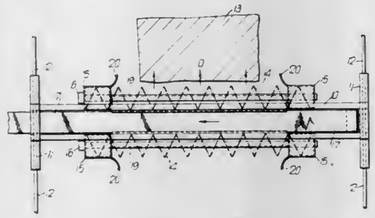
Gilbert P. Worsley, Ormskirk, England, assignor to G. P. Worsley & Company Limited, Great Britain

Filed Mar. 13, 1978, Ser. No. 886,018

Claims priority, application United Kingdom, Mar. 12, 1977, 10572/77; Aug. 9, 1977, 33229/77

Int. Cl.³ B65G *65/16*

U.S. Cl. 198—518 **4 Claims**



1. Apparatus for transferring material from a stockpile of such material at one location to another location comprising:

a frame movable in one direction toward the stockpile,

a guide plate secured to said frame with its surface extending downwardly and forwardly from said end for entering the stockpile,

shaft means carried by said frame at its forward end and rotatable about an axis transverse to said direction and spaced upwardly from said guide plate,

a plurality of blades secured to and spaced along said shaft means,

said blades each having the form of a part-turn of a helix with adjacent blades being substantially angularly displaced and the adjacent blades of a plurality of pairs being oppositely handed,

said blades extending into close proximity to the surface of the guide element,

whereby the adjacent blades of said a plurality of pairs are to produce side-to swilling of the material rearwardly of the blades and assist lifting thereof over said guide plate.

4,240,542

WALKING BEAM ACCUMULATING CONVEYOR

Douglas D. Wiknich, Utica, Mich., assignor to Harry Major Machine & Tool Co., Fraser, Mich.

Continuation of Ser. No. 889,210, Mar. 23, 1978, abandoned. This application Sep. 24, 1979, Ser. No. 78,217

Int. Cl.³ B65G *25/00;* **B63G** *43/08*

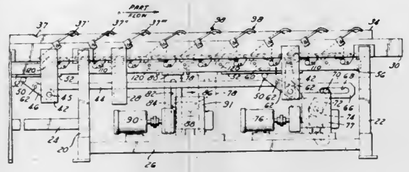
U.S. Cl. 198—751 **7 Claims**

1. In a walking beam type accumulating conveyor having a plurality of longitudinally spaced apart work stations:

transfer bars supported for movement beneath the stations through a cylce of operations wherein from a starting position the bars are first elevated, then moved longitudinally of the stations a distance corresponding to the space between the stations, then lowered and finally returning longitudinally in the opposite direction to the starting position;

carriers pivotally mounted on the transfer bars and swingable between idle and feed positions and operable in feed positions to transfer workpieces from station to station;

carrier shifting means joined to the carriers and supported on the transfer bars;



sensing means at each station in the path of the carrier shifting means during elevation of transfer bar when there is no workpiece at the station but out of the path of the carrier shifting means when there is a workpiece at the station, and

said carrier shifting means co-responsive to the elevation of the transfer bars and abutment with the sensing means to shift all carriers upstream from any empty station from idle to feed position during such elevation of the bars.

4,240,543

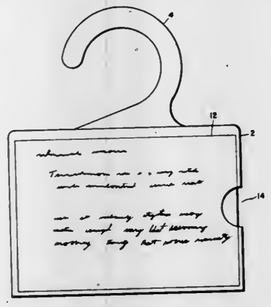
DOCUMENT DISPLAY PIECE

Phyllis L. McKee, 4005 E. Campbell, Phoeniz, Ariz. 85018

Filed Apr. 23, 1979, Ser. No. 32,136

Int. Cl.³ A45C *11/18;* **B65D** *75/04, 65/02;* **G09F** *3/18*

U.S. Cl. 206—39 **6 Claims**



1. A document holder, comprising:

first and second substantially parallel plates at least one of which is transparent for receiving a rectangular document therebetween, said first and second plates being biased against each other, rigid and joined only at a lower end thereof for supporting said document, said first plate being a transparent front plate and said second plate being a rear plate; and

suspension means comprising a hook formed integrally with an upper end of said rear plate and extending therefrom for suspending said document and said first and second plates.

4,240,544

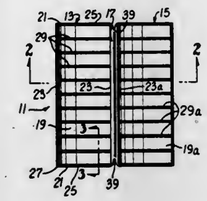
COIN HOLDER

Kenneth O. Barnhart, 13231 Flower, Garden Grove, Calif. 92640; Lawrence H. Morita, 20212 Big Bend Lane, Huntington Beach, Calif. 92646, and Rube I. Rubell, 4051 Manzanita, Irvine, Calif. 92714

Filed Apr. 6, 1979, Ser. No. 27,619

Int. Cl.³ B65D *85/00*

U.S. Cl. 206—0.82 **7 Claims**



1. A coin holder for a stack of coins of predetermined diameter and predetermined thickness, said coin holder comprising:

first and second housing sections of plastic sheet material, each of said housing sections having opposite longitudinal edges, each of said housing sections including an essentially cylindrical half section;

hinge means for hingedly joining said housing sections together along one of said opposite edges of each of said housing sections whereby said housing sections can be hingedly moved between open and closed positions, said half sections cooperating in said closed position to define a coin receiving space, said coin holder being adapted to receive the coins of predetermined diameter when said housing sections are in said open position;

at least one of said housing sections including end wall means for essentially blocking movement of the coins out of the ends of the coin holder at least when the housing sections are in said closed position;

said half sections of said first and second housing sections being resilient;

the inside diameters of said half sections of said first and second housing sections being less than said predetermined diameter whereby the resilient gripping of the coins in the coin holder by said half sections tends to maintain said housing sections in the closed position when coins are in the coin holder; and

the plastic sheet material of said housing sections being formed inwardly at predetermined regions to define a plurality of radially inwardly projecting and circumferentially extending ribs with adjacent ribs being spaced apart in even multiples of said predetermined thickness, each adjacent pair of said ribs being adapted to have a predetermined number of the coins therebetween.

4,240,545

ARTICLE CARRIER

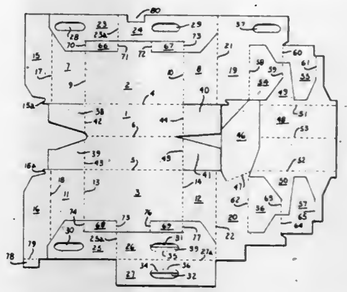
James T. Stout, Acworth, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 1, 1979, Ser. No. 80,262

Int. Cl.³ B65D *75/00*

U.S. Cl. 206—188 **9 Claims**

1. An article carrier comprising a bottom panel **(1)**, a pair of side walls **(2,3)** foldably joined respectively to the side edges of said bottom panel, end wall panels **(7,8,11,12)** foldably joined respectively to the end edges of said side walls and extending inwardly of the carrier, a pair of medial panels **(19,20)** foldably joined respectively to the inner edges of said end wall panels at one end of the carrier and extending medially inward of the carrier, a pair of riser panels **(15,16)** foldably joined respectively to the inner edges of said end wall panels at the other end of the carrier and extending medially inward of the carrier, a multiple ply handle **(23,24,25,26,27)** secured to said medial panels and said riser panels, a transverse partition strip **(66,67,68,69)** joined at one end thereof to one of said side walls and at the other end thereof to said handle and extending therebetween, a bottom reinforcement panel **(48)** disposed in flat face contacting relation with the upper surface of said bottom panel, a pair of supplementary panels **(49,50)** joined



respectively to the side edges of said bottom reinforcement panel and secured respectively in face contacting relation with the inner surfaces of said side walls, and characterized by a transverse partition **(54,55,56,57)** secured to said transverse partition strip and foldably joined to the corresponding one of said supplementary panels.

4,240,546

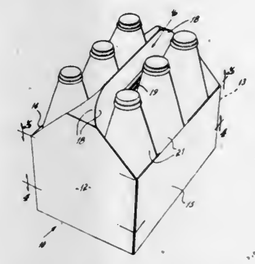
BASKET-TYPE CARRIER FOR BOTTLES AND METHOD OF FORMING THE SAME

Orison W. Stone, New Haven, Vt., assignor to Pack Image, Inc., Middlebury, Vt.

Filed Jun. 27, 1979, Ser. No. 52,491

Int. Cl.³ B65D *5/24, 5/46, 5/48, 85/62*

U.S. Cl. 206—193 **18 Claims**



1. A basket carrier for bottles comprising,

four panels initially forming a tube having top, bottom and end walls,

the top wall having at each of its four corners a gusset connection to a respective end wall,

said top wall and gussets being folded inwardly along a central fold line to form a two-ply center partition,

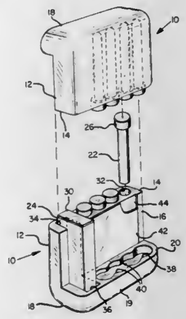
said end walls having minor flaps folded inwardly and said bottom wall having major flaps folded upwardly to form side walls spaced from said center partition, thereby providing pockets on both sides of said center partition for the receipt of bottles.

4,240,547

SPECIMEN MAILER

Billy W. Taylor, 410 Raymondale, Apt. #3, South Pasadena, Calif. 91100

Filed Nov. 27, 1978, Ser. No. 963,931
Int. Cl.³ B65D *77/22, 81/16, 85/42*
U.S. Cl. 206—204 **7 Claims**



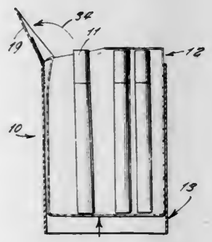
1. A reusable package for safely shipping fragile, elongate specimen containers, said package comprising: two L-shaped, matable parts of substantially identical size and shape, each said part having a long leg with a free end and an inside face, and a short leg with a free end and an inside face; the long leg and the short leg of each said part being joined together perpendicularly at ends thereof opposite said respective free ends, the long leg including means defining an elongate, laterally-enclosed aperture therein extending from an opening of said aperture in the free end of said long leg toward the corresponding short leg thereof for receiving a specimen container; the short leg of each said part including means defining a cavity therein and an opening of said cavity in the inside face of said short leg for receiving an end of a specimen container; the inside face of the short leg of one part being disposed adjacent the free end of the long leg of the other part and the end opening of the elongate, laterally-enclosed aperture in said other part opening into the opening of the cavity in said one part when said two parts are mated, such that a specimen container disposed within said elongate laterally-enclosed aperture of either part is completely enclosed by said package.

4,240,548

PUSH PACK

Joseph B. Stio, W. Lake Dr., Montauk, N.Y. 11954

Continuation of Ser. No. 914,079, Jun. 9, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 83,100
Int. Cl.³ B65H *85/10;* **B65D** *5/32*
U.S. Cl. 206—250 **1 Claim**



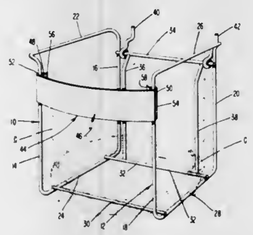
1. A push pack for cigarettes or the like, comprising in combination, a rectangular box-like carton made of folded, bendable paper around a quantity of enclosed cigarettes or the like, and a tubular sleeve in which said carton is slidable, said carton having an upwardly pivotable lid at one upper end corner thereof for access into said carton, and a mechanism for opening and closing said lid automatically when said carton is slid back and forth inside said sleeve, said lid being formed by an angular slit on each opposite side wall of said carton and an interconnecting slit across a top of said carton connecting upper ends of said angular slits, while a fold line spaced below the top edge lying transversely across an end wall of said carton intersects lower ends of said angular slits and forms a movable pivot for said lid; said lid accordingly comprising a top wall, an end wall at right angles thereto and opposite triangular side walls along side edges of said lid top, and pivot means comprising a tape with adhesive on one side, a transverse fold across said tape forming opposite end halves of said tape, said tape transverse fold being aligned adjacent to a corner of said lid formed between said lid top wall and said lid end wall, one of said tape end halves being adhered to an end wall of said sleeve, said tape transverse fold forming a stationary pivot located at the upper edge of said lid side wall, said pivot means acting as a hinge means for pivotally connecting the lid at the top edge of its end wall to the top edge of the sleeve end wall and for preventing sliding movement of the lid with respect to the sleeve, whereby upward sliding movement of the carton within the sleeve causes a buckling of the end wall of the carton whereby the movable pivot follows an arcuate path about said stationary pivot to thereby snap open said lid.

4,240,549

DISPLAY CONTAINER FOR COILED WIRE

James W. Hogg, Nashville, Tenn., assignor to Anchor Wire Corporation, Goodlettsville, Tenn.

Filed Jul. 20, 1979, Ser. No. 59,390
Int. Cl.³ B65D *85/04*
U.S. Cl. 206—303 **4 Claims**



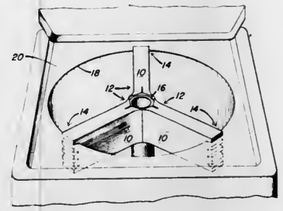
1. A display and dispensing container for coiled wire bundles comprising: a pair of wire side members having generally rectangular configuration defining the sides of said container and oriented generally parallel to each other; spaced front and rear wire lower cross members attached to and interconnecting the lower portions of said side members, the distance between said lower cross members and the distance between the vertical front portions of said pair of side members being less than the outer diameter of the coiled wire bundles; at least one upper cross member attached to and interconnecting the upper rear portions of said side members; the distance between the upper horizontal portions at a medial point at least being equal to the outer diameter of the coiled wire bundles to permit their removal; and at least two hook means attached to said upper cross member to enable the container to be hung on a peg board or like surface, each said hook means being vertically pivotal and adapted to be spaced from the outer said hook means and means to horizontally confine the wire bundles within the rack.

4,240,550

WASHING MACHINE AGITATOR BRACE

Herbert S. Collin, 35 Stillings St., Boston, Mass. 02210

Filed Dec. 20, 1979, Ser. No. 105,633
Int. Cl.³ B65D *81/06, 85/00*
U.S. Cl. 206—320 **3 Claims**



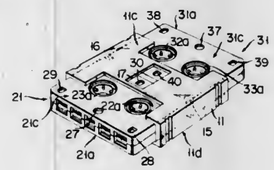
1. A bracing device for a top loading clothes washing machine having an agitator element comprising:
an elongate member formed from a relatively stiff but resiliently compressable foam plastic material, said member having an inner end and an outer end, said inner end being adapted to engage said agitator and the outer end being adapted to engage the rim of the opening of the washing machine so that when the brace is used it extends radially and outwardly from the agitator;
the inner end of the block being formed to define a vertically extending V-shaped groove adapted to engage the upper end of the agitator;
the outer end of the block being formed to define a plurality of horizontally extending vertically spaced V-shaped grooves adapted to engage the rim of the housing of the washing machine.

4,240,551

MAGNETIC TAPE CASSETTE HOLDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,798
Claims priority, application Japan, Mar. 11, 1977, 52-29953[U]; Mar. 15, 1977, 52-31648[U]; Mar. 15, 1977, 52-31649[U]
Int. Cl.³ B65D *85/672*
U.S. Cl. 206—387 **2 Claims**



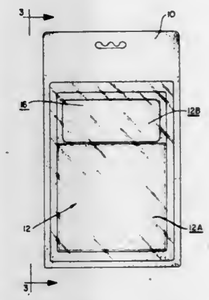
1. In combination, a pair of magnetic tape microcassettes and a magnetic tape cassette holder for receiving a pair of said tape microcassettes and for holding the tape microcassettes in their respective operable conditions without requiring removal from the holder;
each tape microcassette including:
a pair of tape hubs exposed outside the holder, a capstan insertion hole extending therethrough, cassette positioning holes formed at one surface thereof, a magnetic tape fixed at its ends to the hubs and adapted to run between the hubs, an open front end exposing the magnetic tape and a closed rear end opposite the front end; and
said magnetic cassette holder comprising:
a one-piece molded synthetic resin body having a pair of cassette receiving and holding chambers located adjacent each other in the same plane, said body having upper and lower panels which are dished toward each other and forming upper and lower surfaces of said chambers, said dished panels being adapted to elastically hold microcassettes therebetween, each chamber having an opening through which a respective microcassette is inserted, the microcassettes being received in their respective chambers in rear end-to-rear end relationship in the same plane, between said dished panels, said chambers further having at least one cutout for permitting all of the hubs, capstan insertion hole, and cassette positioning holes of a microcassette received in a chamber to be exposed for operation of the microcassette, and a stop member located between said pair of holding chambers and which is engageable with inserted microcassettes to limit insertion of said microcassettes into a chamber of the holder such that the front ends of the mirocassettes are operably exposed and said hubs, capstan insertion hole and cassette positioning holes are all operably exposed, whereby the microcassettes are held in said holder in their respective operable conditions without requiring removal from the holder for operation thereof.

4,240,552

DISPLAY PACKAGE

James W. Brown, Los Angeles, Calif., assignor to C. R. Laurence Co., Inc., Los Angeles, Calif.

Filed Mar. 12, 1979, Ser. No. 19,339
Int. Cl.³ B65D *65/16, 75/58*
U.S. Cl. 206—459 **3 Claims**



1. A display package comprising: a card forming a backing for the package, a transparent plastic member mounted on the card to form an enclosure, said enclosure having a first section of substantial depth for containing the products to be displayed by the package, and said enclosure having a second section of minimal depth positioned adjacent to said first section; and an insert contained in said second section, said insert having indicia thereon describing the contents of the first section of the enclosure.

4,240,553

FOLDING LINER FOR SHIRTS AND SIMILAR PACKAGED GARMENTS

Leo Leopold, Austrasse 65, 7140 Ludwigsburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 777,519, Mar. 14, 1977, Pat. No. 4,116,335. This application Apr. 4, 1978, Ser. No. 893,540
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1977, 2714977
The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.
Int. Cl.³ B65D *73/00*
U.S. Cl. 206—492 **9 Claims**

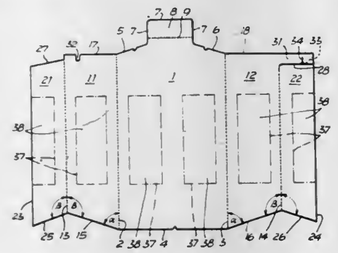
1. A folding liner designed for assembly with a man's shirt, woman's blouse, pajamas, or a similar foldable garment in a folding operation which produces a self-contained compact

package for storage, shipment and retail sales display, the folding liner comprising in combination:

an elongated, approximately rectangular center panel of a width and length which correspond substantially to the width and length of the intended package, the center panel having a top side intended to engage the shoulder portion of the garment, an oppositely located bottom side, and two substantially parallel straight longitudinal sides;

two elongated, likewise approximately rectangular inner wing panels with top and bottom sides and substantially parallel inner and outer longitudinal sides, their inner longitudinal sides forming integral junctions and lateral fold lines with the longitudinal sides of the center panel, the width of the inner wing panels being slightly less than one-half the width of the center panel; and

two elongated, likewise approximately rectangular outer wing panels with top and bottom sides and substantially parallel inner and outer longitudinal sides; their inner longitudinal sides forming integral junctions and intermediate fold lines with the outer longitudinal sides of the inner wing panels, the outer wing panels being narrower than the inner wing panels;



the folding lines thus comprising a succession of five panels which are joined at four straight fold lines along which the liner material is weakened by perforations, for the wing panels to be foldable over the center panel, so that the outer wing panels come to lie inbetween the inner wing panels and the center panel and coextensive layers of said garment are clampingly held in place between said wing panels and the center panel, respectively; and

closure means comprising a closure flap in the form of an integral lateral extension on the top side of one of the two inner wing panels and a closure notch on the top side of the other inner wing panel, so arranged that it is engageable by the closure flap, after the wing panels have been folded over the center panel, thereby creating a locking action which secures the folding liner in the folded state, thus maintaining said clamping action.

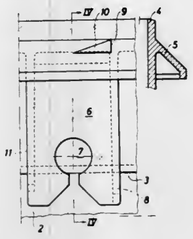
4,240,554

NESTABLE CONTAINER

Erik Bock, Kirke Hyllinge, Denmark, assignor to Superfos Emballage A/S, Vipperød, Denmark

Filed Aug. 9, 1979, Ser. No. 65,088
Claims priority, application Denmark, Aug. 24, 1978, 3735/78
Int. Cl.³ B65D *21/02*
U.S. Cl. 206—519 **6 Claims**

1. In a container of the type having a peripheral wall and a generally circular upper rim thereof defining an open container with a configuration disposed to receive a similar container in releaseable nested engagement therewith, the improvement which comprises a pair of wedge members on the container and adjacent said upper rim, said wedge members having each an abutment surface extending outwardly with respect to said wall and a guide surface inclined with respect to said abutment surface; and at least one locking member connected to said wall and extending outwardly therefrom, said locking member being positioned in relation to said wedge members such that when one container is in nested engagement with another similar underlying container, the locking member on said one container, in response to a relative rotation of said containers, will engage and ride upon the guide surface of a corresponding



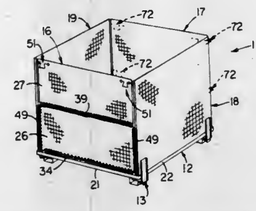
wedge member of the underlying container until said locking member comes into engagement with the abutment surface of such wedge member to secure said containers in a relative angular position established thereby.

4,240,555

COLLAPSIBLE MATERIAL HANDLING CONTAINER

Stanley J. Jurasek, Concord Township, Jackson County, Mich., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Continuation of Ser. No. 817,989, Jul. 22, 1977, abandoned, which is a division of Ser. No. 582,780, Jun. 2, 1975, Pat. No. 4,050,606. This application Dec. 22, 1978, Ser. No. 972,424
Int. Cl.³ B65D *21/02, 19/10*
U.S. Cl. 206—511 **1 Claim**



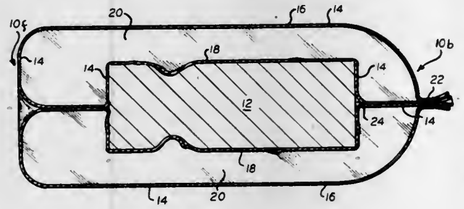
1. A collapsible material handling container comprising: a substantially rectangular, horizontal and planar base defining a bottom wall, the perimeter of said base being defined by a pair of parallel longitudinally extending side members and a pair of parallel transversely extending end members extending between the ends of said side members and defining a rectangular planar frame wherein said side members and said end members are substantially coplanar, said side members and said end members being free of upstanding walls affixed thereto; substantially parallel, upright, first and second planar side walls whose lower ends are adapted to rest on said side members of said frame; substantially parallel, upright, first and second planar end walls whose lower ends are adapted to rest on said end members of said frame, whereby said side walls and said end walls define a box-like structure when the container is in an erected condition; releasable latch means for holding said side walls and said end walls in said erected condition; first and second horizontal hinge means connecting the lower ends of said side walls to said base for hinging movement about respective first and second horizontal axes lying substantially in the plane of said frame, third and fourth vertical hinge means connecting said end walls to at least one of said side walls for hinging movement about respective third and fourth vertical hinge axes so that said side walls and said end walls can be folded into substantially flat superimposed relation on said base in the collapsed condition of said container; four rigid support legs immovably fixedly secured to said end members of said frame adjacent to the corners of said frame, said support legs comprising corresponding foot portions which project downwardly from said frame and corresponding stacking portions which project upwardly above said frame a distance substantially greater than the combined thicknesses of said side walls and said end walls so that the upper ends of said stacking portions are located above the said side walls and said end walls when same are in overlying, substantially parallel relationship to said frame in the collapsed condition of the container, the stacking portion of each of said legs consisting essentially of an upright generally planar web located adjacent the outer side of and extending substantially perpendicularly to its associated end member, said planar web being located outwardly of its associated end wall and extending vertically therealong to a position located a substantial distance above the lower edge of its associated end wall in the erected condition of said container to prevent outward bowing of its associated end wall, the webs of said stacking portions of said four legs being arranged so that the entireties of two of said webs are along one end member of said frame and outside one of said end walls and the entireties of said other two webs are along the opposite end member of said frame and outside the other of said end walls so that said end walls cannot be swung outwardly, the side members of said frame being free of said webs so as not to interfere with outward swinging of said side walls, said webs being spaced from the corners of said frame and the upper ends of said webs being positioned a substantial distance above the side and end walls when same are positioned in substantially parallel relationship to said base in the collapsed condition of the container, each of said webs having an elongated notch extending along the upper edge thereof and having upstanding stop portions at the opposite ends of the notch, the foot portion of each of the legs having a horizontally extending stacking wall underlying and secured directly to the lower edge of its associated stacking portion, said stacking wall being of lesser width than the notch of its associated stacking portion so that it can be received in the notch in the web of a like container for stacking purposes in the collapsed condition of the container and so that it can rest on the upper edge of an end wall of a like erected container, and a downwardly extending flange at the outer end of said stacking wall and offset horizontally outwardly from said web.

4,240,556

INFLATABLE PACKAGE AND METHOD OF MANUFACTURE

Andrew S. Field, 300 West 12 Street, New York, N.Y. 10014

Filed Feb. 23, 1978, Ser. No. 880,699
Int. Cl.³ B65D *81/14, 81/20*
U.S. Cl. 206—522 **5 Claims**



1. An inflatable package comprising:

a flexible re-entrant cylindrical membrane having a radially outboard portion and a radially inboard portion extending longitudinally within said outboard portion, said inboard and outboard portions defining a substantially annular chamber between said outboard portion and said inboard portion, said annular chamber being sealed from the ambient atmosphere, said package having a deflated state and an inflated state,

said package when in said deflated state having an open mouth at a first end thereof to permit insertion of an object into the space radially inward of said inboard portion of said membrane,

said membrane providing a continuous surface from said outboard portion through said mouth to said inboard portion,

inflation of said annular chamber causing said inboard portion to collapse in a direction away from said outboard portion tending to conform said inboard portion around whatever object is within said space, inflation also causing said mouth to at least partially close in all radial directions, inflation also causing an automatic adjustment of the portion of said membrane constituting said inboard portion and said outboard portion,

said package when in said inflated state having a longitudinal distance substantially greater than a radial dimension of said outboard portion, and when inflated holding whatever object is within said space in a substantially radially centered position surrounded by said annular chamber to provide an air cushion around the object.

4. The method of manufacturing an inflatable package comprising:

selecting a tubular section of flexible material having first and second open ends and having a substantially constant diameter, said section having an axial length substantially greater than twice its diameter,

folding said first open end radially inwardly and bringing said first open end axially through the tubular body into juxtaposition with said second open end, and

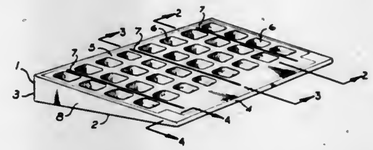
sealing said first and second open ends to one another to provide a substantially annular sealed chamber having an inboard portion and an outboard portion, whereby said constant diameter permits automatic adjustment of the portion of said material constituting said inboard portion and said outboard portion upon inflation of said chamber.

4,240,557

POLYSTYRENE FOAM STRUCTURE

Luther I. Dickens, Radford, Va., assignor to The Mead Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 698,966, Jun. 23, 1976, Pat. No. 4,144,296. This application Dec. 28, 1978, Ser. No. 973,914
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—153 **6 Claims**



1. A molded merchandise support constructed from polystyrene foam having a flat top, a thick edge, a thin edge, two sides interconnecting the two edges, and a bottom, said flat top and thick edge having at least a substantial portion of the surface covered by a protective covering bonded to the polystyrene foam, said support having a plurality of ribs for reinforcing the support in spaced relationship to each other, each rib having a depth at least equal to a major portion of the distance between the top and bottom and having a length so as to traverse at least a major portion of the distance between the thick and thin edges, each rib having at least one transfer hole filled with polystyrene foam, said transfer holes permitting the polystyrene to be transferred throughout the support during molding so the density of the support is fairly uniform.

4,240,558

SELF-PROPELLED CRANE WITH A TELESCOPIC BOOM AND ADDITIONAL BOOM MEANS

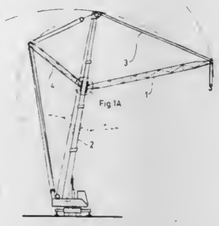
Eelis J. Mustonen, Kiveläntie 5, Kuopio, Finland

Continuation of Ser. No. 703,774, Jul. 9, 1976, abandoned. This application Apr. 21, 1978, Ser. No. 898,960

Claims priority, application Finland, Jul. 15, 1975, 752038; Feb. 16, 1976, 760375

Int. Cl.³ B66C *23/00*

U.S. Cl. 212—175 **2 Claims**



1. A self-propelled telescopic boom-type crane having a plurality of telescoping segments forming a telescopic boom pivotally mounted on a self propelled base a secondary boom having an outer and an inner end, the inner end of said secondary boom being pivotally mounted on a mounting element, said mounting element being mounted on and in longitudinal sliding relationship with respect to one of the telescoping segments of said telescopic boom, said mounting element being spaced below the top of the telescopic boom, a supporting arm having an inner and an outer end, the inner end thereof being mounted in longitudinal sliding relationship with respect to one of the telescoping segments of said telescopic boom, said supporting arm also being pivotally mounted with respect to said telescopic boom, said secondary boom and said supporting arm extending in opposite directions from the telescopic boom and being pivotally and longitudinally movable with respect to all of said segments of the telescopic boom during operation of the crane, supporting wire means for the secondary boom and the supporting arm supported on the top of the topmost segment of the telescopic boom and extending therefrom to the outer end of the secondary boom in one direction and to the outer end of the supporting arm in the oposite direction and therefrom to controllable winding means on the frame, and said secondary boom and said supporting arm being readily removable from said telescoping boom and readily reassembled thereto whereby said telescopic boom may be used together with or without the secondary boom and the supporting arm.

4,240,559

PROTECTIVE DEVICE FOR CAR COUPLER

Harry W. Nicholson, R.D. #4, Box 283, Rte. 66S, Apollo, Pa. 15613

Filed Apr. 18, 1979, Ser. No. 28,692

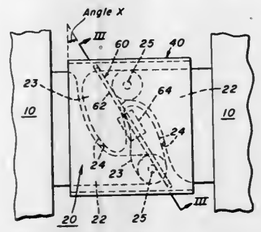
Int. Cl.³ B61G *7/14*

U.S. Cl. 213—1 R **4 Claims**

1. A protective device for a car coupler of the type such as used on railroad cars, the coupler having two members the ends of which have a generally C-shaped configuration and which engage each other for purposes of adding and towing a car, the protective shield comprising:

(a) a cover member designed to be placed over said coupler and adapted to prevent foreign materials from depositing on the members of the coupler and impeding operation thereof; and

(b) a clamping means rotatably attached to said cover, said clamping means designed to fixedly engage at least one of



the members of said coupler for purposes of maintaining said cover member over the coupler.

4,240,560

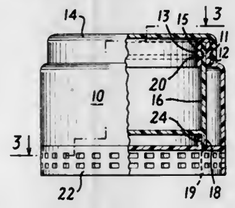
COSMETIC JAR

John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417

Filed Jul. 13, 1979, Ser. No. 57,299

Int. Cl.³ B65D *8/06*

U.S. Cl. 215—12 R **4 Claims**



1. A three-part cosmetic jar comprising an outer jar having one and other open ends, the one open end of the outer jar terminating in a double wall construction, the outer wall of which has threads formed thereon for receiving a removable cap, an inner jar of generally cylindrical shape having one open end and one closed end, the open end of which terminates in a wall which is frictionally received within the inner and outer walls of the open end of the outer jar, and a decorative base secured to the one closed end of the inner jar and abutting against the other open end of the outer jar.

4,240,561

FLANGED CONNECTION FOR PRESSURE VESSEL

Jon Hagstrom, Clarendon Hills; Thomas J. Ahl, Orland Park, and James S. Vasilion, Downers Grove, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 16, 1979, Ser. No. 39,506

Int. Cl.³ B65D *45/00, 53/00*

U.S. Cl. 220—3 **6 Claims**

1. An improved joint for removably attaching two members together comprising:

a first member having a circular opening and a circular wall surrounding the opening and projecting axially outwardly from the opening

a double curved second member with a circular periphery having an annular flange with an inner surface surrounding the first member wall,

an adjustable spacer for transmitting radial forces from the second member annular flange to the first member wall, and

means at the joint for removably securing the first and second members together.

5. In a pressure vessel having a double curved walled body with an opening and a double curved closure for the opening

of the walled body securable in place by shear studs, the joint improvement comprising:

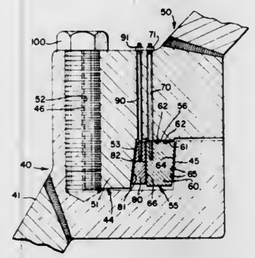
a circular trough in the walled body surrounding the opening defined by a pair of spaced apart inner and outer walls, with said inner wall being sloped,

said closure having an annular flange with an outer peripheral surface adjoining and complementary to the trough outer wall,

said closure annular flange having an inner sloped wall spaced from the trough inner wall thereby defining a sealing apparatus space,

a sealing ring in the sealing apparatus space,

said sealing ring having a top surface adapted to closely approach an inner surface of the closure with a gasket



therebetween, and also having a sloped inner surface adapted to closely approach the trough inner wall with a gasket therebetween,

means extending through the closure adapted to displace the ring in an axial direction to effect sealing by applying pressure to said gaskets,

a plurality of arcuate wedges, with outer sloped surfaces complementary to the closure flange sloped inner surface, between the sealing ring outer surface and the flange inner surface, and

means extending through the closure adapted to displace the arcuate wedges axially of, and independently of, the ring and into contact with the ring outer surface and the closure flange sloped inner surface.

4,240,562

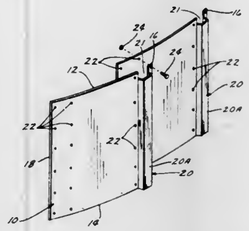
GRAIN STORAGE BIN WALL PANEL

Richard C. Holschlag, R.R. 2, New Hampton, Iowa 50659

Filed Apr. 2, 1979, Ser. No. 25,780

Int. Cl.³ B65D *6/32, 6/38, 8/12, 8/22*

U.S. Cl. 220—5 R **6 Claims**



1. A grain storage bin or the like, comprising,

a horizontal floor means,

a cylindrical wall means having inside and outside surfaces on said floor means,

said wall means comprising a plurality of sheet members of generally rectangular configuration having top, bottom, and first and second vertical side edges,

a vertical corrugation formed in each sheet member adjacent said first sides edge thereof to form a vertical brace,

the remainder of each of said sheet members being substantially smooth except for said corrugation,

the vertical brace of each sheet member being superimposed over and outside the second side edge of the laterally adjacent sheet member to place said brace on the outside surface of said wall means, said second side edge completely spanning said corrugation of the laterally adjacent sheet member to create a substantially smooth surface at the inner surface of said wall means,

fastener means for securing each sheet member to the second side edge of the laterally adjacent sheet member, said fastener means being arranged adjacent said vertical brace on opposite lateral sides thereof and vertically positioned from adjacent said top edge to adjacent said bottom edge of each sheet member such that the second side edge of each sheet member cooperates with the vertical brace superimposed thereover to form a generally rigid tubular structural member,

said wall means further comprising a plurality of tiers of said sheet members with the corrugations of each tier being in substantial vertical alignment with the corrugations of the other tiers to create substantially continuous vertical braces.

4,240,563

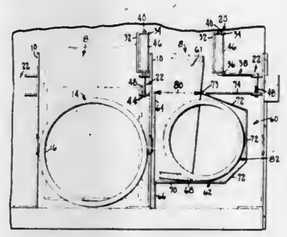
AUXILIARY DISPENSING UNIT FOR SPIRAL VENDOR

Douglas G. Lennartson, Coon Rapids, Minn., assignor to Gross-Given Manufacturing Company, Saint Paul, Minn.

Filed Oct. 27, 1978, Ser. No. 955,313

Int. Cl.³ G07F *11/36*

U.S. Cl. 221—75 **2 Claims**



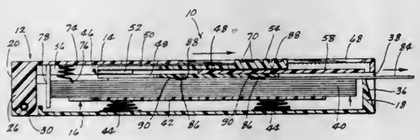
1. An improved vending machine of the type having a housing; a plurality of vertically spaced shelves contained in the housing, each of the shelves having a plurality of dispensing coils of a first pre-determined size mounted thereon; and wherein each of the first sized dispensing coils is located in a dispensing channel having a first pre-determined width; motor means releasably connected to the dispensing coils for rotating the coils in a dispensing direction; and wherein the improvement relates to at least one auxiliary dispensing unit which can be selectively used in any of the dispensing channels, wherein the auxiliary dispensing unit comprises:

(a) a replaceable insert member which is receivable inside the dispensing channel to decrease the cross-sectional width of the dispensing channel from its first width to a second and smaller width, in which the replaceable insert member includes means for holding relatively thin products in a substantially upright tilted position, and in which the product holding means includes an upper support flange horizontally offset a small distance from a side wall of the insert member such that an upper end of each product is slidably retained between the side wall and the support flange; and

(b) a second helical dispensing coil having a smaller size than the first coil and serving to replace the first coil in the dispensing channel, the second dispensing coil being operatively connected to the motor means, whereby the auxil-

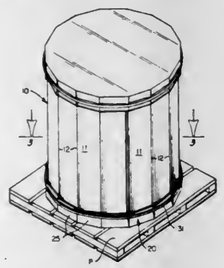
iary dispensing unit is suitable for dispensing the relatively thin products contained in the insert member between the convolutions of the second helical coil.

4,240,564
SOAP LEAF DISPENSER
William F. Pritchard, 220 Metcalf, Maxwell, Iowa 50161
Filed Feb. 22, 1979, Ser. No. 14,045
Int. Cl.[3] B65D *83/08*
U.S. Cl. 221—213 **24 Claims**



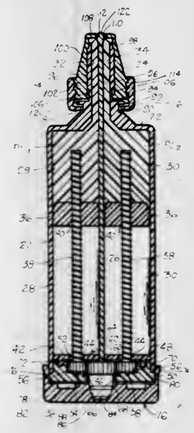
1. A soap leaf dispenser comprising
a housing adapted to support a stack of soap leaves therein, said housing having a top wall, bottom wall and opposite forward and rearward ends with an opening adjacent the forward end for the dispensing of a soap leaf therethrough,
an ejector member,
means for supporting said ejector member in said housing for fore and aft sliding movement between a forward ejecting position and a rearward retracted position,
means for sliding said ejector member between said ejecting and retracted positions,
a hold member extending downwardly from said top wall and including an end portion adapted to pierce the rearward end of said soap leaves, and
biasing means operatively associated with said ejector member for biasing a stack of soap leaves and said ejector member into engagement whereby the engaged soap leaf is dispensed through said opening in response to movement of the ejector member from the retracted position to the ejecting position therefor.

4,240,565
DRUM-LIKE FIBERBOARD CONTAINER FOR BULK MATERIAL WITH FUNNEL-LIKE DISPENSING BOTTOM
Thomas E. Croley, Worthington, Ohio, assignor to Willamette Industries, Inc., Portland, Oreg.
Filed Oct. 4, 1979, Ser. No. 81,767
Int. Cl.[3] B65D *19/06*
U.S. Cl. 222—105 **10 Claims**



1. A container assembly comprising a tubular body of fiberboard or the like with a bottom structure at its lower end and with side-wall forming panels extending upwardly at the periphery thereof, said bottom structure including support means secured to said side-wall panels; said bottom structure also including a plurality of separate segmental insert sections forming a funnel-like dispensing bottom with a central dispensing opening, each of said separate insert sections comprising an upper material-directing wall having a pair of depending wedge-shaped supporting walls each with a wider end outwardly at one of said side wall panels and extending inwardly to a point spaced from the center of the bottom structure at the dispensing opening, said support walls having lower edges supported by said support means of the bottom to support said material-directing wall so that it inclines downwardly towards said dispensing opening.

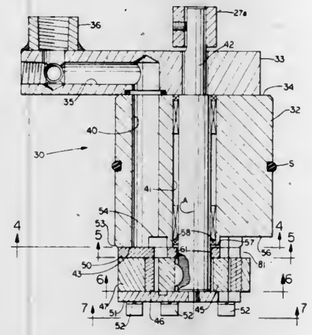
4,240,566
CAPTIVE MIXING CAP ARRANGEMENT FOR MULTIPLE CHAMBER CONTAINER
Carl P. Bergman, Pompano Beach, Fla., assignor to Whirlco, Inc., Pompano Beach, Fla.
Filed Sep. 17, 1979, Ser. No. 76,143
Int. Cl.[3] B67D *5/42*; B65D *25/44*
U.S. Cl. 222—135 **6 Claims**



1. A container, having:
wall means including a neck portion;
a captive cap of the axially movable type, said cap having opening means defining an outlet port;
an internal plug to stopper the outlet port of the cap when the cap is axially moved to one extreme;
said container wall means further including an internal web means, said wall means defining at least two internal reservoirs for contents, all on different sides of said internal longitudinal web means, said internal longitudinal web means having an outer end, said internal plug being mounted on said outer end in juxtaposition with said outlet port in said neck portion of said wall means.

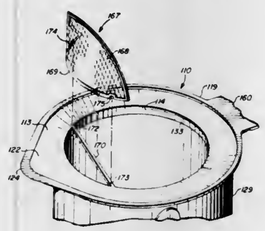
4,240,567
PUMP
James J. Gardner, Hamilton, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed May 9, 1979, Ser. No. 37,450
Int. Cl.[3] B67D *5/62*
U.S. Cl. 222—146 HE **18 Claims**

1. An improved cartridge pump for a sleeve having one end communicating with material to be pumped, said improved pump comprising:
a pump body disposed in said sleeve, and having a lower end disposed near said one end of said sleeve,
a pump ring and a pump gear operatively combined at said lower end of said pump body for pumping material,
a gear plate peripherally surrounding said ring,
a first inlet plate between said pump body and said gear plate, and partially defining a first pump inlet on an upper side of said pump ring and pump gear,
a second inlet plate disposed on an opposite side of said gear plate from said first inlet plate, and defining a second pump inlet on a lower side of said pump ring and pump gear, and



said first inlet plate and said gear plate being at least partially disposed within said sleeve, said gear plate having outer peripheral surfaces spaced from the surface of said sleeve and defining therewith a material inlet passageway operatively communicating between the inlet defined in said first inlet plate and said material at said one end of said sleeve.

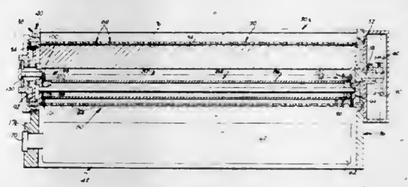
4,240,568
ATTACHMENT FOR LIQUID CARRYING CONTAINER
Danny L. Pool, Phoenix, Ariz., assignor to Robert R. Pool, Phoenix, Ariz.
Continuation-in-part of Ser. No. 853,218, Nov. 21, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,207
Int. Cl.[3] B65D *25/48*
U.S. Cl. 222—189 **2 Claims**



1. An attachment for use in combination with a liquid carrying container, which container includes an annular brim carrier proximate the top of an upright continuous sidewall, said brim having an inner peripheral surface with a bottom edge, an outer peripheral surface with a bottom edge and a gutter having inner and outer opposed sidewalls intermediate said peripheral surfaces, said attachment comprising:
(a) a body member including
i. a continuous annular ledge extending over said gutter and having an inner edge defining an opening therethrough, an outer edge, and top and bottom surfaces,
ii. engagement means depending from bottom surface of said ledge for detachably securing the body member to the brim of said container,
iii. a pouring spout having a top surface and extending radially outward from said ledge and having an outer edge, said spout having an axis of symmetry,
iv. a rim upstanding from the top surface of said ledge and

pouring spout proximate the outer edges thereof and having a terminal edge,
v. a brush wiping bar formed integral with the ledge of said body and substantially perpendicular to the axis of symmetry of the pouring spout, and
vi. a liquid straining element detachably securable to said brush wiping bar and having a plurality of apertures therethrough for passage of liquid through the opening in said ledge to said pouring spout; and
(b) a closure member including
i. a panel having top and bottom surfaces and a peripheral edge, and
ii. a continuous skirt projecting from the bottom surface of said panel proximate the peripheral edge thereof, and detachably engagable with the rim of said body member for sealingly closing the container; and
(c) hinge means including
i. a first end affixed to said body member, and
ii. a second end affixed to said closure member.

4,240,569
CARPET CLEANING POWDER DISPENSER
Walter L. Bessinger, Grand Haven, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.
Filed Jul. 3, 1978, Ser. No. 921,194
Int. Cl.[3] G01F *11/20*
U.S. Cl. 222—220 **21 Claims**



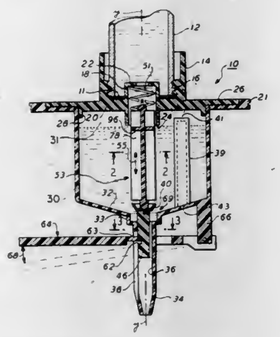
1. An apparatus for dispensing a carpet cleaning powder and which is adapted to be mounted on a vacuum cleaner having a source of vacuum, said apparatus comprising:
a hopper for containing a supply of powder, said hopper defining an elongated, lower outlet slot;
a metering drum rotatably mounted within said hopper in spaced generally parallel relationship with said outlet slot, said metering drum defining a plurality of perforations for receiving powder;
a stationary mandrel supported by said hopper and extending within said metering drum, the peripheral surface of said mandrel preventing passage of powder through said perforations to said outlet slot;
a dispensing roller rotatably mounted within said metering drum, said roller including a plurality of radially extending projections dimensioned and positioned to mesh with some of said metering drum perforations;
means operatively engaging one of said metering drum and said dispensing roller for rotating said metering drum and said dispensing roller whereby upon rotation of said metering drum, powder within said hopper will be collected within said perforations, be moved towards said outlet slot and said dispenser roller projections will push powder from said perforations allowing the powder to drop through said outlet slot, said means including an air driven motor supported on said hopper, said motor including an air inlet, an air outlet and an output shaft, said output shaft being operatively connected to said metering drum and said air outlet being adapted for connection to the vacuum source of the vacuum cleaner; and
a control valve within said air outlet for opening and closing said air outlet to thereby control the speed of the motor and the rate of dispensing of the powder.

4,240,570

DISPENSING DEVICE WITH INTERCHANGEABLE VALVES PROVIDING FREE POUR AND MEASURED POUR

Edward M. Brown, 128 Passaic Ave., Livingston, N.J. 07039, and Edward J. Towns, Normandy Heights Rd., Convent Station, N.J. 07961

Filed Jan. 29, 1979, Ser. No. 7,013
Int. Cl.³ G01F *11/38*
U.S. Cl. 222—442 **10 Claims**



5. A liquid dispensing device comprising:
a fluid storing housing,
fluid inlet and discharge conduits coupled to said housing,
a valve actuating plunger moveable in said discharge conduit, said plunger including connecting means,
a valve seat coupled to said housing adjacent said discharge conduit,
a first valve member on said plunger which mates with said valve seat to provide open and closed valves in accordance with the position of the plunger in said discharge conduit,
a valve link including a second valve member adjacent one end, said second valve member cooperating with said inlet conduit to form an inlet valve, said link including first and second connecting means each releasably selectively mating with the plunger connecting means, said second valve member engaging said inlet conduit means to form said inlet valve when one of said first and second connecting means and plunger connecting means are engaged and a continuously open inlet conduit is obtained when the other of said first and second connecting means and plunger connecting means are engaged.

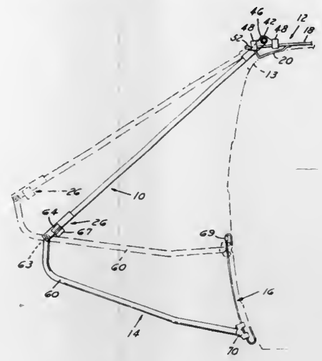
4,240,571

CAR TOP CARRIER

M. Eric Ernst, Royal Oak, Mich., assignor to Pivot Manufacturing Company, Detroit, Mich.

Filed Aug. 24, 1979, Ser. No. 69,594
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—310 **7 Claims**

1. A vehicle top carrier comprising track structure, means for mounting said track structure on the top of a vehicle, a carrier frame adapted to support luggage and the like and mounted on said track structure for movement from a generally horizontal carrying position atop the vehicle to a substantially inclined loading and unloading position laterally displaced from the top of the vehicle, a strut having its upper end pivoted to said carrier frame, a guide, means for mounting said guide in vertical position on said vehicle below said track



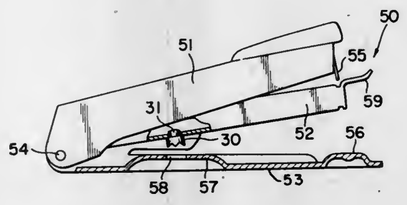
structure, and pivot means on the lower end of said strut mounted on said guide for upward and downward movement.

4,240,572

COMBINED PUNCHING AND STAPLING DEVICE

Yoshio Mitsuhashi, 79, Higashi-Kibogaoka, Asahi-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Feb. 26, 1979, Ser. No. 15,354
Int. Cl.³ B25C *5/02*
U.S. Cl. 227—76 **13 Claims**



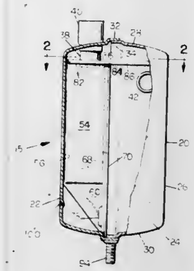
1. A combined punching and stapling device comprising: a base having an anvil on its distal end; a lever pivotally secured at its proximal end by means of a pivot pin to the proximal end of the base; a staple magazine pivotally secured at its proximal end by means of said pivot pin so as to be swingable about the pivot pin relative to the lever; a hammer fixed at the distal end of the lever so as to be movable into and through the magazine for ejecting successive staples from within the magazine and for forcing the staples against the anvil for stapling operation; a die provided on the base; a punch element fixedly mounted on the staple magazine for relative movement into and out of mating engagement with the die as the magazine and the base are pivoted toward and away from each other; and at least three sharp-edged cutting teeth formed peripherally on the distal end of the punch element, said die being in the form of a flat plate having formed therein a hole for receiving the punch element, the axis of said pivot pin lying in a plane extending transversely to the longitudinal axis of the punch element at a position thereon intermediate between the distal end thereof and a location thereon to which the punch element is allowed to advance relative to the inlet of the hole.

4,240,573

METHOD OF BRAZING A PRESSURE VESSEL WITH THERMAL RELEASE PLUG

Sharon J. Hudson, Jr., Lambertville, Mich., assignor to Sharon Manufacturing Company, Toledo, Ohio

Filed Sep. 29, 1976, Ser. No. 727,881
Int. Cl.³ B23K *1/12*
U.S. Cl. 228—184 **2 Claims**



1. A method of producing a fabricated pressure vessel having an integrally formed thermal release plug, said method comprising the steps of: forming the shell of a pressure vessel from at least two sheet metal members having an overlappping seam, producing at least one apertured well in the wall of one of said members, placing a low melting point metal pellet in said well, placing at least one piece of seam brazing metal adjacent said seam, said brazing metal having a higher melting point than said metal pellet, placing the components in a brazing furnace having a protective atmosphere, and heating said components to brazing temperature to concurrently form a pressure vessel with a brazed seam and a thermal release safety plug.

4,240,574

FLUXLESS BRAZING OF ALUMINUM IN INERT GAS

Duane J. Schmatz, Dearborn Heights, and Walter L. Winterbottom, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 13, 1978, Ser. No. 885,911
Int. Cl.³ B23K *1/19*
U.S. Cl. 228—217 **8 Claims**

5. A method of brazing an assembly of aluminum or aluminum alloy parts requiring numerous joining sites, said brazing being carried out in a gas atmosphere containing gaseous species of O_2 and H_2O, each in a concentration between 1–10 ppm, comprising:
(a) depositing a filler metal alloy at the joining sites of said assembly, the latter consisting of Al-Si-Mg, said filler metal alloy having from 0.2 to 0.6% magnesium to (i) shorten the heating time to prevent runoff of liquid filler metal and (ii) to prevent generation of excess magnesium vapor that forms MgO,
(b) heating said assembly and filler metal alloy in said gas atmosphere, said heating being continued to effect brazing without runoff of liquid filler metal and without generation of excess magnesium vapor.

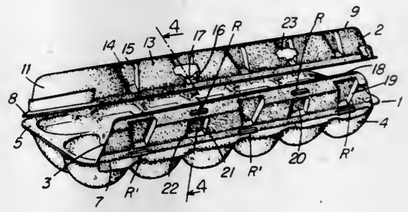
4,240,575

EGG CARTON WITH CRUSH RESISTANT TOP

Charles H. Tange, Victor, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,947
Int. Cl.³ B65D *1/24, 1/36*
U.S. Cl. 229—29 M **1 Claim**

1. In a carton adapted for the packaging of eggs and the like having
(1) a bottom tray formed to define a plurality of cells for reception of packaged articles and of a depth such that said articles are enclosed thereby for a portion less than their vertical dimension as packaged,
(2) a dished or cover resiliently hinged to the rear upper edge of said tray and having a front wall, a back wall, and end walls fixed to each other and to a top for said cover, all of such dimensions that the packaged articles are substantially enclosed within the edges of said tray, said front wall lying primarily in a plane sloping inwardly toward said top, and
(3) a latching flap hinged to the front upper edge of said tray by resilient means biasing said flap toward a position outward of vertical from said front edge; said cover and



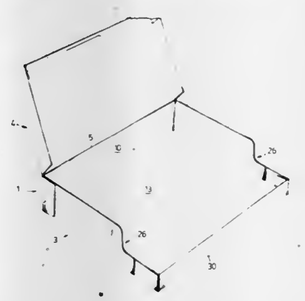
said flap having coacting means associated therewith capable of engagement upon closure of the carton in a manner to maintain such closure;
the improvement which comprises cover support ribs integrally molded on said latching flap whereby when said carton is in a closed position said ribs are in restraining contact with said carton cover front wall; said support ribs being further characterized in that they are positioned at spaced apart locations along said latching flap hinge, and along the upper edge of said latching flap adjacent said coacting means on said latching flap, whereby said support ribs support said cover and resist compressive forces applied to said carton cover and tray.

4,240,576

DISTRIBUTION PACKAGE

Karl R. Persson, Halmstad, Sweden, assignor to Duni Bila AB, Sweden

Filed May 9, 1979, Ser. No. 37,412
Claims priority, application Sweden, May 10, 1978, 7805344
Int. Cl.³ B65D *5/24, 5/66*
U.S. Cl. 229—36 **12 Claims**



1. A distribution or marketing package (1), formed by a single carton blank (2) and comprising a bottom tray (3) having a lid (4) hingedly connected to one of the sides walls (10, 43) of the tray (3) and closable thereto, which can be coupled to a front side wall opposing said side wall of said tray (3) preferably by means of a locking means (27, 47) at the free end or edge of the lid (4) in its closed position; said front side wall (16, 36, 43) of the tray being foldable in a direction outwards or forwards to a position in which characterized in that the front side

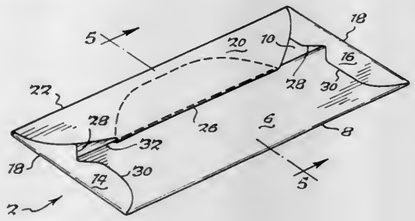
wall (16) is extended by an edge flap (20) constituting substantially a perpendicular relationship to the inside of the front side wall (16) and is fixed in this position by means of side flaps (24, 25) folded inwards from the side edges of the side wall (16) to ensure the edge flap (20) to lie flat against the inside of the lid (4) in the completely closed position of the latter making it possible to stack a plurality of filled containers one on top of the other and in the open position of the lid (4) together with the other walls at the same time to constitute a continuous border around the bottom tray (3) preventing the contents sliding out from the package after folding down the front side wall (16) to the same plane as the bottom (13) of the tray (3).

4,240,577

LOCKING ENVELOPE

Richard V. Harrigan, Tonawanda, N.Y., assignor to Niagara Envelope Co. Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 931,375, Aug. 7, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,519
Int. Cl.³ B65D *27/22*
U.S. Cl. 229—76 **3 Claims**



1. An envelope formed of a single sheet of paper or the like comprising:

a. a rectangular front panel and a rectangular back panel, said panels being folded back on each other along a common bottom edge,

b. a substantially rectangular lock flap extending from said back panel and folded back thereon along a common top edge parallel to said bottom edge,

c. an end tab extending from each end of said front panel and folded back along the end edges thereof, said end tabs enfolding and being secured to said back panel and to said lock flap by means of an adhesive encompassing a central area of each of said end tabs thereby securing said panels and lock flaps in folded condition,

d. each of said end tabs having a leading edge and a generally V-shaped notch extending a minor portion of the distance between the leading edge of each said end tabs and the adjacent end edge of said front panel but terminating short of said adhesive, said notches being located to cross and overlie the leading edge of said lock flap at acute angles relative thereto whereby a line of contact is effectively made to relieve lateral stress concentrations,

e. said front and back panels defining an envelope pocket, said back panel and said lock flap defining a lock pocket opening in the direction opposite to that of said envelope pocket,

f. a closure flap extending from said front panel and folded back thereon along a common top edge parallel to said bottom edge to overlie said lock flap, and

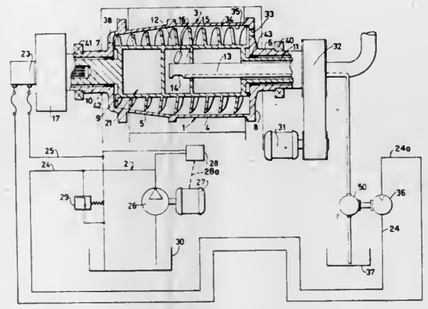
g. a tuck flap extending from said closure flap and folded back thereon along a common flap edge parallel to said top edge, said tuck flap being adapted to tuck under said lock flap and into said lock pocket to releasably secure said envelope in closed condition.

4,240,578

SOLID BOWL DECANTER CENTRIFUGES OF THE SCROLL DISCHARGE TYPE

Joseph F. Jackson, 1 W. Royd Villas, Kingcross Rd., Halifax, England

Filed Apr. 26, 1978, Ser. No. 900,215
Claims priority, application United Kingdom, May 4, 1977, 18612/77
Int. Cl.³ B04B *1/20, 9/10*
U.S. Cl. 233—7 **8 Claims**



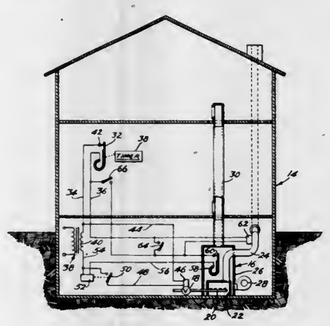
1. In a solid bowl decanter centrifuge comprising a solid, generally cylindrical bowl having a liquids outlet at one end and a solids outlet at the other end, means for rotating the bowl at a first speed, inlet pipework for introducing influent to the interior of the bowl, a scroll conveyor mounted for rotation within the bowl at a second speed, a first motor whose output shaft is coupled to the scroll conveyer to drive the scroll conveyor at a differential speed relative to the bowl, and a control means for measuring the torque applied to the scroll conveyor and for controlling the speed of the scroll conveyor in dependence upon the measured torque, the improvement comprising a pump means for pumping flocculant into said inlet pipework at a rate dependent upon the differential speed of the scroll conveyor relative to the bowl.

4,240,579

THERMOSTATICALLY CONTROLLED HEATING SYSTEM

Arnold R. Post, 133 Pelham Rd., Philadelphia, Pa. 19119

Filed Oct. 20, 1978, Ser. No. 953,005
Int. Cl.³ F24D *5/10*
U.S. Cl. 236—10 **11 Claims**



1. In a thermostatically controlled heating system for a building comprising:

a furnace having fuel burning means, flue means arranged to carry away combustion products of the fuel burned in said burning means, heat exchange means for conducting heat away from the furnace to remote parts of the building, and controllable means for effecting intermittent burning of fuel in said burning means;

first temperature-sensitive control means located in a remote part of the building, said temperature-sensitive control means being connected to said controllable means and adapted to shut off said fuel burning means when the temperature in said remote part reaches a first predetermined limit, and to turn on said fuel burning means when said temperature falls to a second predetermined limit;

means for changing said first and second predetermined limits; and

limit switch means responsive to the heat exchanger temperature for overriding the operation of said first temperature-sensitive means when the heat exchanger temperature rises to a third predetermined limit and shutting down the fuel burning means irrespective of the condition of the first temperature-sensitive control means until the heat exchanger temperature falls to a fourth predetermined limit;

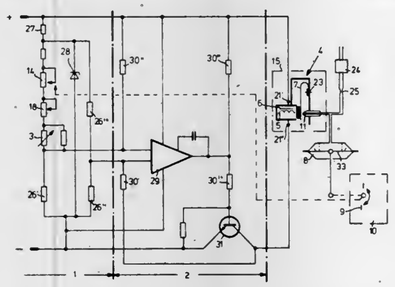
the improvement comprising second temperature-sensitive control means, responsive to the temperature of said flue means and connected to overrride the operation of said first temperature-sensitive control means, for intermittently shutting down the fuel burning means irrespective of the condition of said first temperature-sensitive means, said second temperature-sensitive control means being set to cut off operation of said fuel burning means at a predetermined maximum flue temperature above the normal steady-state maximum flue temperature, but below the flue temperature corresponding to said third predetermined limit of the heat exchanger temperature and to restore operation of said fuel burning means at a flue temperature corresponding to a heat exchanger temperature above said fourth predetermined limit.

4,240,580

TEMPERATURE DEPENDENT ELECTRONIC CONTROL SWITCH

Werner Fehr, Steinheim, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,731
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732916
Int. Cl.³ F24F *7/04*
U.S. Cl. 236—49 **9 Claims**



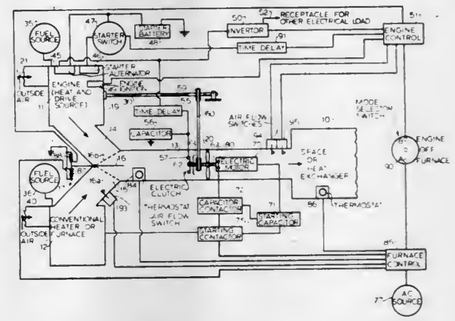
1. A temperature-dependent electronic control switch, in particular for automatic temperature control in vehicles, having one or more temperature-dependent resistors as sensors in a bridge circuit and an amplifier for the furnishing of control signals for continous adjustment of a valve element, wherein the electrical signals of the sensor are continuously amplified and fed to a magnetic coil and a magnetic field of variable force brought about, and wherein an iron strip disposed in the area of an iron core of the magnetic coil is correspondingly attracted by the variable magnetic field located before an air nozzle controlling an adjustment member for a control valve, continuously uncovers or covers the air nozzle, and thus continuously varies the air pressure before the air nozzle in accordance with the temperature, characterized in that the iron strip itself is embodied as an elastically yielding soft iron strip (7) and has a sealing surface (12) in the area of the air nozzle (11) and that a non-magnetic material (13) having a thickness and breadth adapted to the magnetic field is disposed between the iron core (6) of the magnetic coil (5) and the surface oriented toward the coil (5) of the soft iron strip (7).

4,240,581

HEATING SYSTEM AND METHOD UTILIZING RECOVERABLE ENGINE HEAT

Joe W. Fowler, Rte. 2, Box 39, Reidsville, N.C. 27320

Filed Aug. 10, 1979, Ser. No. 65,459
Int. Cl.³ F26B *3/04*
U.S. Cl. 237—12.1 **7 Claims**



1. The method of heating a space, comprising:

(a) establishing a first primary heat source comprising a fuel-fired furnace with electrically-powered control and operational means;

(b) establishing a second auxiliary heat source comprising an engine productive of recoverable heat and having a mechanically-driven shaft and a suitable shroud enabling the engine heat to be recovered by moving air past the engine through the shroud;

(c) establishing a duct system connected at one end to a space to be heated and at the other end through duct branches to each of said heat sources and with damper means enabling the space to be selectively connected to such heat sources;

(d) locating a fan in operative association with said duct system and having one drive connection to an electric motor and another drive connection to said engine shaft and associated with electric control means operable in a first mode to drive said fan with said motor, in a second mode to drive said fan with said engine and with means to automatically sense the failure of operation in one mode and to switch both the source of power and fan connection to the other mode; and

(e) at least periodically operating in said second mode and heating said space with a source of pressurized air by associating said fan with said shroud and duct associated with said engine to extract the engine heat to provide a source of pressurized heated air for heating said space.

4,240,582

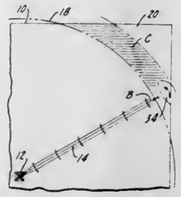
CENTER PIVOT IRRIGATION SYSTEM WITH CORNER WATERING ARRANGEMENT

John L. Anderson, Columbus, Nebr.; John C. Davidson, Alexandria, Minn.; Henry W. Schaaf, Madison, and Charles H. Meis, Genoa, both of Nebr., assignors to Lindsay Manufacturing Company, Lindsay, Nebr.

Division of Ser. No. 801,099, May 27, 1977. This application Oct. 10, 1979, Ser. No. 83,302

Int. Cl.³ B05B *3/12*

U.S. Cl. 239—11 **14 Claims**



1. A method of operating a center pivot irrigation system which is constructed for irrigating a main circular area of a field and noncircular areas outside of the main circular area in which the system includes a string of pipe supported at intervals on wheeled towers and extending outwardly from and adapted to move around a center pivot with a series of sprinkler units on the pipe string and an enlarged end gun on the outer end of the pipe string directed generally radially outwardly therefrom to irrigate the noncircular areas, including the steps of moving the pipe string past a noncircular area for a first pass, reversing its direction of movement at the end of the noncircular area back to the beginning of the noncircular area for a second pass and then reversing its direction of movement again and moving it past the noncircular area again for a third pass thereby effecting three passes by the noncircular area, two forward and one reverse, operating the sprinkler units on the main pipe string but not the enlarged end gun during at least one of the three passes, and operating the end gun but not the sprinkler units during at least one of the other two passes so that virtually all of the water pressure in the pipe string will be applied to the end gun.

4,240,583

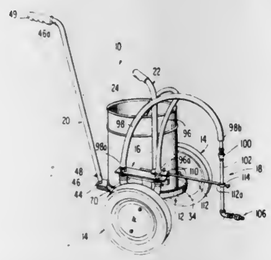
LOW COST, HIGHLY VERSATILE SELF-PUMPING VEHICLE TYPE LIQUID SPRAYER

Gary W. Hughes, Little Rock, Ark., assignor to Chemical Applicator, Inc., Little Rock, Ark.

Filed Apr. 9, 1979, Ser. No. 28,294

Int. Cl.³ B05B *9/06*

U.S. Cl. 239—157 **7 Claims**



1. In a self-pumping vehicle type liquid sprayer for spraying liquid through at least one spray nozzle assembly over a surface traversed by the sprayer from a container of liquid carried thereby and including a vehicle chassis supporting said container of liquid, side wheels mounted to the chassis for rotation about their axes to effect movement of the chassis over the surface to be sprayed, roller cam pump means carried by said sprayer and operated by vehicle wheel movement to pump liquid from the container to sprayer means carried thereby, the improvement wherein:

a transverse axle is carried by said chassis,

side wheels are mounted to the ends of said axle on opposite sides of said chassis,

a roller cam mounting bar is mounted to at least one of said wheels for rotation therewith, said roller cam mounting bar intersecting the axle, roller cams are mounted to the bar for rotation about their axes on opposite sides of said axle and for rotation with said at least one side wheel circumferentially about said axle,

a vertical pump mounting bar is fixed to said chassis and extends vertically upwardly from said axle on the same side of said wheel as said roller cam mounting bar but spaced therefrom,

a horizontal hose barb mounting bar is fixed to the upper end of said pump mounting bar and extends across said axle to overlie the axle to the same side of said wheel as said roller cam mounting bar,

a pair of hose barbs are fixedly mounted to the hose barb mounting bar and project therethrough,

a flexible pump hose encircles said roller cams and is coupled at its ends to given ends of the hose barbs projecting through said hose barb mounting plate at axially spaced positions,

a suction hose is coupled at one end to the other projecting end of one of said barbs and having the other end of said suction hose opening to the liquid in the container to be sprayed,

a discharge hose is connected at one end to the end of said other barb,

and wherein said at least one spray nozzle assembly includes a spray nozzle and means for mounting said spray nozzle to said horizontal hose barb mounting bar for effecting orthogonal adjustment of said spray nozzle to vary the height of said nozzle and its lateral position with respect to said chassis and thus the spray pattern and its density, and

means for connecting the other end of said discharge hose to said spray nozzle assembly for causing pumped liquid under pressure to spray from said spray nozzle,

whereby rotation of said wheels causes the roller cams in compression to move the points of compression of said pump hose along said pump hose to force liquid from the container by suction and by pressure through the discharge hose and said spray nozzle.

4,240,584

AGRICULTURAL VEHICLE

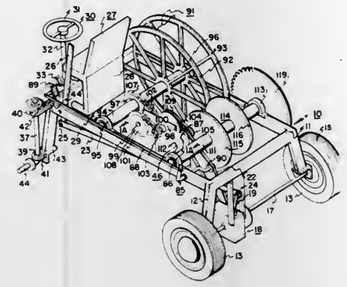
Burr Courtright, La Grande, Oreg., assignor to CH_2O, Inc., La Grande, Oreg.

Filed Oct. 26, 1978, Ser. No. 955,017

Int. Cl.³ B05B *3/18*

U.S. Cl. 239—189 **6 Claims**

1. An agricultural machine including, in combination: a wheel-supported vehicle provided with a frame supplied wheels; manually operable means mounted to said frame for steering said vehicle; a winch, including a field-anchorable winch-cable, carried by said frame; hydraulic means comprising upstanding reciprocating hydraulic jack means for selectively powering said winch to power-wind said winch-cable, whereby to move said vehicle along said winch-cable as the latter winds upon said winch; fluid-spray delivery means carried by said frame; coupling means for coupling via respective branches pressured fluid from an external source to said hydraulic means and also to said fluid-spray delivery means; and auxiliary, mechanical power means, self-contained by said



vehicle and mounted to said frame, for selectively powering said vehicle at times when said winch is non-operating.

4,240,585

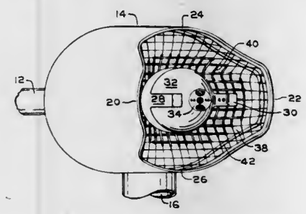
ELECTROSTATIC SPRAYING APPARATUS WITH REPELLING ELECTRODE MEANS AND GAS SHROUD

James E. Sickles, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1979, Ser. No. 42,184

Int. Cl.³ B05B *5/02*

U.S. Cl. 239—705 **20 Claims**



1. Electrostatic spraying apparatus comprising:

(a) an electrically non-conductive or dielectric housing having an opening with a perimeter;

(b) liquid atomization means mounted in said housing, said liquid atomization means being capable of dispersing a liquid into a spray of liquid particles directed outwardly through said opening of said housing;

(c) a screen extending essentially radially outwardly from said liquid atomization means and disposed substantially entirely between said liquid atomization means and said perimeter of said opening, said screen adjacent said liquid atomization means providing induction charging electrode means and the remainder of said screen being dielectric or electrically non-conductive, said induction charging electrode means being chargeable to a first polarity and being in cooperative spatial relationship with said liquid atomization means to impart an electrical charge on said liquid particles substantially simultaneously with the formation of said liquid particles to produce an electrically charged spray of liquid particles, said imparted electrical charge being of a second polarity which is opposite the polarity of said induction charging electrode means;

(d) gas inlet means to said housing for delivering a flow of gas to said housing whereby said gas exits through said opening of said housing and substantially concentrically envelops said electrically charged spray of liquid particles; and

(e) repelling electrode means mounted within said housing and spaced inwardly from said perimeter of said opening, said repelling electrode means being substantially electrically isolated from said induction charging electrode means and being chargeable to a polarity opposite the polarity of said induction charging electrode means and of the same polarity as said electrically charged spray of liquid particles to repel said electrically charged spray of liquid particles immediately prior to the exiting of said electrically charged spray of liquid from said opening.

4,240,586

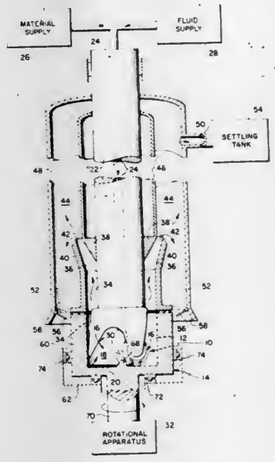
METHOD AND APPARATUS FOR CRUSHING AND CLASSIFYING PARTICULATE MATERIAL

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Dec. 21, 1978, Ser. No. 971,808

Int. Cl.³ B02C *13/14, 15/08*

U.S. Cl. 241—19 **58 Claims**



1. Apparatus for crushing friable material into particulate form, comprising:

a container having a closed and upward-opening hollow interior and defining a grinding face facing upward into the hollow interior;

grinder apparatus adapted to be positioned in the hollow interior of said container and comprising a support body and a plurality of roller members operatively and rotationally connected to the support body for confronting the grinding face of said container;

means for positioning said grinder apparatus in the hollow interior of said container with the plurality of roller member substantially confronting the grinding face of said container;

means operatively connected for effecting relative rotation of said container and said grinder apparatus;

means for introducing into the hollow interior of said continer a supply of friable material to be crushed into particles;

means for continuously supplying fluid at a predetermined flow rate to the hollow interior of said container and for directing the supplied fluid over the grinding face;

means defining at least one outlet communicating with the hollow interior for conducting particles of material within a flow of fluid exiting the hollow interior of said container, each outlet being positioned at a predetermined position spaced above the grinding face whereby the particles conducted in the flow of fluid out of said closed hollow interior must move upwardly away from the grinding face in order to exit the hollow interior of said container; and

the predetermined flow rate of supplied fluid being sufficient to transport particulate matter of a predetermined range of weights upward and away from the grinding face to each said outlet and being insufficient to remove particulate

matter of weights greater than the predetermined range from the grinding face.

4,240,587

METHOD FOR RECYCLING TIRES AND SIMILARLY COMPOUNDED MATERIALS TO RECOVER USABLE CONSTITUENTS

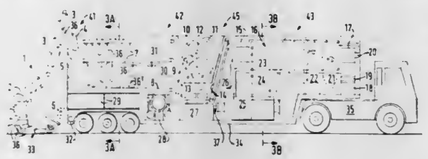
Walter Letsch, Schützenstrasse 7, D-7470 Albstadt 1, Fed. Rep. of Germany

Filed May 31, 1978, Ser. No. 911,206

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724813

Int. Cl.[2] B02C *19/00*

U.S. Cl. 241—23 **2 Claims**



1. The method of recovering reusable portions of used tires and similar rubber-compounded scrap materials containing technical rubber, metal and cord, comprising the steps of:

A. supplying scrap material primarily comprising used tires and portions thereof to a cyrogenic treatment section of a vehicular plant;

B. substantially, uniformly cooling the scrap material, by using cyrogenic gases to a relatively minimum temperature at which the scrap can be crushed and recoverable-granulates can be formed;

C. crushing the scrap material and separating rubber granulates and forming a residue comprising the remaining scrap including a mixture of rubber adhering to metal, metal beads and belts, cords comprising both synthetic and natural fibers;

D. pyrolytically-reducing the residue and producing incompletely burned, high-energy gases, including hydrocarbons, soots and scrap metal;

E. separating the scrap metal and soots; and

F. condensing said high energy gases and recovering a pyrolytic oil and operating a power plant with a portion of the gases and converting the gas energy to mechanical energy and operating conveying, cooling, crushing and separating components of said plant.

4,240,588

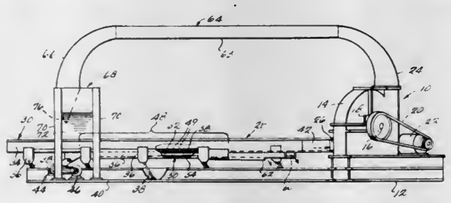
WOOD CHIPPING INSTALLATION

Oscar T. Fulghum, Jr., Wadley, Ga., assignor to Fulghum Industries, Inc., Wadley, Ga.

Filed Mar. 6, 1979, Ser. No. 17,956

Int. Cl.[3] B02C *18/22*

U.S. Cl. 241—80 **10 Claims**



1. A wood chipping installation comprising:

a chipping machine having a knife-carrying chipper disc rotating on a horizontal axis;

conveyor means for feeding wood pieces to be chipped generally horizontally into said machine at an acute angle to the plane of said disc, said conveyor means including screening means for separating chips of predetermined size and smaller chips from the material being fed to said machine by said conveyor means; and

means for transferring material chipped by said machine to said conveyor means in advance of said screening means, whereby chipped material larger than the predetermined size is fed to said machine for rechipping along with other wood pieces.

4,240,589

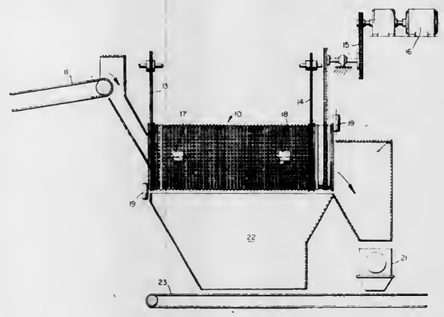
ROTARY BARK SCREEN

Alton R. Martin, Hanahan, S.C., and Henry R. Tranquilli, Brooklyn, N.Y., assignors to Westvaco Corporation, New York, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,369

Int. Cl.[3] B02C *23/08;* **B07B** *1/24*

U.S. Cl. 241—81 **1 Claim**



1. A rotary screening apparatus mounted for rotation about its longitudinal axis and having an inlet opening at one end and an outlet at the other end for effecting the coarse screening of bark and other wood waste material comprising, a self cleaning bark screen in the form of an open tubular shell oriented at a slight inclination, said shell being formed from a plurality of cylindrical hoops variably spaced from one another along the length of said shell and a plurality of longitudinally oriented bars fixedly attached to said hoops to form screen openings therebetween, the variable spacing of the cylindrical hoops serving to divide the screen into three different sections to provide fine screen openings, intermediate screen openings and coarse screen openings, means located internally of said shell and fixedly attached thereto for conveying the material through said shell, said means comprising at least one helical blade element extending the full length of said shell, and a second helical blade located internally of said shell and fixedly attached thereto which begins at the inlet of said shell and extends only for a portion of the length thereof, said second helical blade being arranged to produce a multiple pitch over the portion of the shell where the first and second helical blades overlap, a pair of chains for suspending said shell at each end thereof, means for drivingly rotating said shell, side thrust devices positioned at each side of said shell to prevent unwanted side motions, end thrust devices positioned at each end of said shell to prevent fore and aft motion of said shell, a hopper located beneath said shell for collecting the screened material from said shell, a conveyor assembly associated with said hopper for transporting the screened material to its point of use and a means at the outlet of said shell for collecting and reducing the size of any oversized unscreened material which is then deposited on said conveyor assembly.

4,240,590

BLOWER BEATER MILL

Friedrich W. Lautenschläger, Gechingen, and Hermann Hennecke, Mülheim, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

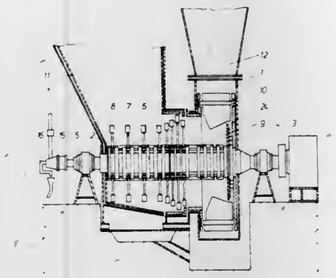
Filed Apr. 30, 1979, Ser. No. 34,364

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821637

The portion of the term of this patent subsequent to Jul. 17, 1996, has been disclaimed.

Int. Cl.[3] B02C *13/10*

U.S. Cl. 241—56 **5 Claims**



1. A blower-beater mill for drying and milling, comprising: a rotor having a beater body and an impeller; a mill shaft mounting said rotor with said beater body and said impeller and being water-cooled along a longitudinal axis; said beater body having beater arms; hub rings on said mill shaft; said beater arms being fastened between said hub rings; a casing enclosing said mill shaft up to said impeller at a spaced distance therefrom, said casing having passages for beater arms in an area of said beater body, said mill shaft having hub rings substantially surrounded by said casing on a portion of said mill shaft between said beater body and said impeller so that individual rows of beater arms may be dismantled and damaged parts of the casing may be replaced, said casing comprising individual U-shaped rings throughout its entire length, said U-shaped rings overlapping at least one of said hub rings and having vertical legs inserted into passages between said hub rings.

4,240,591

MINCER WITH AT LEAST ONE ROTARY MINCING TOOL

Karl Schnell, Mühlstrasse 28, D-7065 Winterbach, Fed. Rep. of Germany

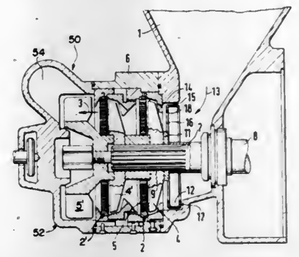
Filed Jun. 22, 1979, Ser. No. 51,137

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827369

Int. Cl.[3] B02C *18/30*

U.S. Cl. 241—82.4 **5 Claims**

1. In a mincing machine comprising a housing having an inlet for the material to be minced and a discharge for the minced material, and a mincing passage between the inlet and the discharge and having a rotatable shaft therein with at least one rotatable mincing tool affixed thereto for rotation therewith in the mincing passage, the improvement comprising a centrifugal disc affixed to the shaft for rotation therewith adjacent said inlet and in said mincing passage before said at least one mincing tool and having an annular peripheral portion with inturned radially extending end portions at each end defining with said peripheral portion an annular receiving groove for collecting hard objects therein before they move



into said mincing passage and having a passage extending axially therethrough for the materials which are to be minced.

4,240,592

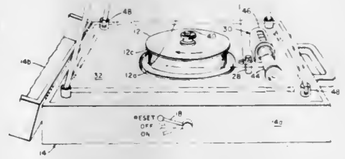
RETRIEVING APPARATUS FOR TETHERED SPORTS MISSILE

Andrew N. Russo, 96 Main St., Everett, Mass. 02149

Filed Nov. 5, 1979, Ser. No. 91,075

Int. Cl.[3] A63B *69/36*

U.S. Cl. 242—54 R **11 Claims**



1. Sports missile-retrieving apparatus comprising in combination

A. means forming a housing,

B. motor means mounted with said housing,

C. a spool member mountingly carried with said housing for generally horizontal deployment and for selective rotation by said motor means about a generally vertical spool axis,

D. first line-guiding means forming a substantially planar line-guiding path,

E. mounting means carried with the housing and being repeatedly extendable for supporting said first line-guiding means in a deployed position with said line-guiding path thereof substantially concentric with said spool member and with the plane of said path transverse to the axis of said spool member and spaced from said spool member by more than a fractional multiple of the spool diameter,

said mounting means being repeatedly collapsible from said extended position for the storage of said first line-guiding means and of said mounting means compactly with said housing,

F. a tethering line normally wound on said spool and having one end secured thereto and having means at the other end for attachment to a sports missile, and

G. second line-guiding means carried with said housing aligned with the circumference of said spool member for guiding to the spool circumference said line feeding from said first line-guiding means during said selected rotation, said second line-guiding means being arranged for ready manual release of said line therefrom and for ready manual engagement of said line therewith,

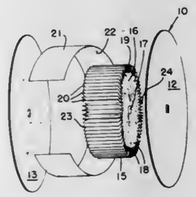
so that said line feeds off said spool element directly to said first line-guiding means and, conversely, feeds onto the spool circumference from said first line-guiding means by way of said second line-guiding means.

4,240,593

REEL HAVING HONEYCOMB CORE

Harris N. Bell, and Alexander R. Morton, both of High Point, N.C., assignors to Jiffy Manufacturing Company, Inc., Hillside, N.J.

Filed Nov. 5, 1979, Ser. No. 90,881
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—71.8 **10 Claims**



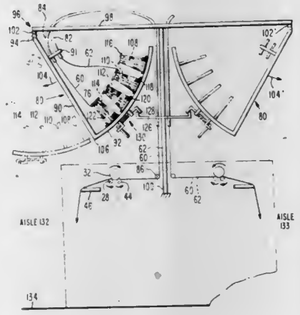
1. A reel for supporting windings of cable, wire, cord, threads, ribbons or the like comprising; a cylindrical honeycomb core having a plurality of selectively laminated sheets of flexible material, and a flange concentric with said core secured to said core.

4,240,594

CREEL

John M. David, Jr., Gainesville, Ga., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,327
Int. Cl.³ B65H *49/02*; D01H *13/04*
U.S. Cl. 242—131 **12 Claims**



1. In a yarn twisting apparatus between first and second aisles including a plurality of bobbin supporting spindles and means for twisting and winding yarn about bobbins mounted on said spindles, a creel for supporting spools of yarn to be twisted and wound by said apparatus comprising:

creel support means located at a level above said twisting and winding means and above one of said aisles,

a creel member including an arm member, a leg member, and a plurality of pegs mounted solely on the leg member, a line passing through the junction between the leg and arm members and the pivot axis being at about right angles to the leg member at the region of the leg member closest the arm member, said creel member being pivotally mounted to said support means about a single fixed pivot axis above said one aisle to permit movement of the creel leg member from a first storage position at a location above said means for twisting and winding to a second lower horizontal load position alongside said yarn twisting apparatus above said one aisle with its pegs approximately upright, and

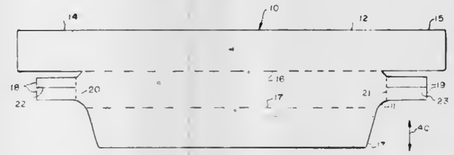
means for releaseably securing said creel member in its first position.

4,240,595

END CAP FOR CLOTH REEL

Samuel Louden, Cinnaminson, N.J., assignor to National Tube & Reel Corporation, Delran, N.J.

Filed Jan. 26, 1979, Ser. No. 6,630
Int. Cl.³ B65H *75/06*
U.S. Cl. 242—222 **5 Claims**



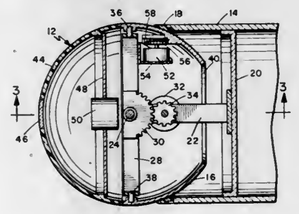
1. In a reel for cloth having a longitudinal dimension and a transverse dimension, a cardboard end cap extending about each transverse end of the reel and comprising a front wall and a first and second articulated side walls integral therewith, said first side wall being provided with extensions on each end to wrap around the longitudinal edge of the cloth reel to form a substantially smooth arcuate surface for the reel, said second articulated side wall having a length equal to or less than the width of said reel, each extension of said first side wall being wrapped around one of the longitudinal edges of the reel and said second side wall being folded onto a broad face of the reel over the end of said wrapped extensions of said first side wall.

4,240,596

ARTICULATED EYEBALL RADOME

Jay B. Winderman, Claremont, and Hans-Peter Schmid, Rancho Cucamonga, both of Calif., assignors to General Dynamics Corporation, Pomona Division, Pomona, Calif.

Filed Jul. 28, 1978, Ser. No. 929,044
Int. Cl.³ F42B *15/00*
U.S. Cl. 244—3.16 **12 Claims**



1. An articulated randome for the forward end of an airframe, said radome comprising:

an articulated spherical nose member adapted to be mounted in the forward end and define the nose of an airframe body,

mounting means for mounting said nose member for pivotal movement about first and second transverse axes,

first and second means for pivoting the nose member about said first and second transverse axes,

energy transmitting window means including an optical lens, in the forward portion of said nose member, and

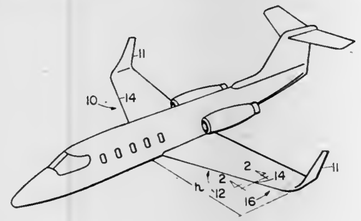
energy sensing means mounted in said nose member for receiving energy through said window means.

4,240,597

WING WITH IMPROVED LEADING EDGE FOR AIRCRAFT

Roger R. Ellis; W. Marvin Gertsen, and Norman E. Conley, all of Wichita, Kans., assignors to Gates Learjet Corporation, Wichita, Kans.

Filed Aug. 28, 1978, Ser. No. 937,348
Int. Cl.³ B64C *3/14*
U.S. Cl. 244—35 R **6 Claims**



1. A tapered wing of the high speed type with a semispan, root chord, tip chord and intermediate local chords, the wing semispan comprising:

a first wing portion extending from near the root chord to a transition point that is at least about fifty percent of semispan, the first wing portion with a leading edge having substantially a fixed radius selected from the range of about 1.2 percent to about 1.38 percent of the root chord, the transition point being where twice said fixed radius does not exceed about 100.6 percent of the wing thickness at about 5 percent of the local chord at the transition point; and

a second wing portion extending from the transition point to the tip chord, the second wing portion with a leading edge having a radius in percent of local chord which substantially equals the percent of local chord radius at said transition point.

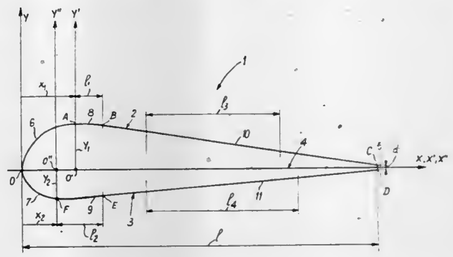
4,240,598

HIGH PERFORMANCE AERODYNAMIC AIRFOIL FOR AIRCRAFT WING

Genevieve M. G. Vinas Espin, Viroflay; Yves F. P. Marchoisne, Paris, and Michel Lazareff, Chatenay-Malabry, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jan. 25, 1979, Ser. No. 6,292
Claims priority, application France, Feb. 2, 1978, 78 02883; Oct. 13, 1978, 78 29225
Int. Cl.³ B64C *3/14, 27/46*
U.S. Cl. 244—35 R **11 Claims**

1. An aerodynamic wing airfoil comprising non-concave upper surface and lower surface, which are disposed dissymmetrically on either side of a datum axis superposed to the chord of the airfoil, which are forwardly limited along said chord by a leading edge and rearwardly by a trailing edge, and of which the respective thicknesses are counted from said chord, wherein the lower surface and upper surface respectively comprise on the one hand a first convex region of variable curvature disposed between the leading edge and their points corresponding to the maximum lower surface and upper surface thicknesses and intended to produce, partially or totally, the acceleration and depression of the fluid, and on the other hand a second region disposed between said points corresponding to the maximum lower surface and upper surface thicknesses and the trailing edge and subdivised into a first convex zone with moderately variable curvature, disposed immediately behind said points corresponding to the maximum lower surface and upper surface thicknesses and ensuring the deceleration and rapid recompression of the fluid, and into a second zone following the first and continuing to the trailing edge, this second zone presenting a zero or substantially zero curvature and extending over at least 50% and at the most 96%



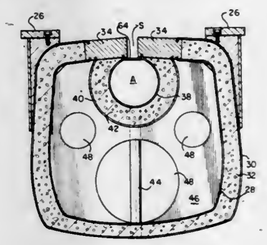
of the length of the chord, said second zone continuing more weakly the deceleration and ensuring the recompression of the fluid with a pressure gradient which diminishes in the direction of flow, said maximum thicknesses being disposed from the leading edge at a distance at the most equal to 22% of the length of said chord, and the ratio between the maximum thickness of the lower surface and the maximum thickness of the upper surface being at least equal to 0.25 and at the most equal to 1.

4,240,599

VEHICLE LAUNCHING DEVICE

Joseph Hammond, Cornwells Heights, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,883
Int. Cl.³ B64F *1/04*
U.S. Cl. 244—63 **8 Claims**

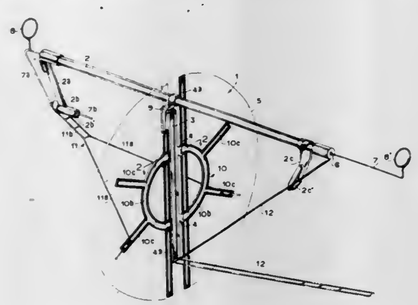


1. A pneumatic system for launching an aircraft, comprising:

an elongated frame having a closed chamber adapted to be filled with an amount of compressed air; and

a launch cylinder provided with a longitudinal slot and suspended within the chamber of said frame with the slot exposed to the atmosphere, said cylinder being coupled at one end thereof to the chamber to receive compressed air therefrom so that expansion of the compressed air into the cylinder produces a thrust pressure therein equal to pressure external to the cylinder within the chamber thereby preventing outward distortion of the cylinder along the slot during launch.

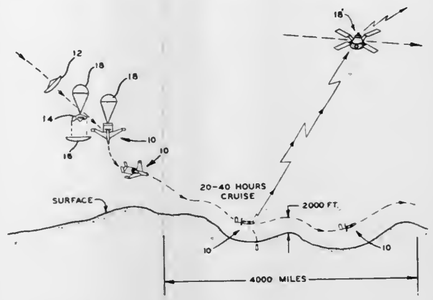
4,240,600
KITE-FLYING TOY
Tatsuo Urasaki, 4-58-7, Nanashinodai, Funabashi-shi, Chiba-ken, Japan
Filed Nov. 29, 1979, Ser. No. 98,530
Int. Cl.³ B64C *31/06*; A63H *27/08*
U.S. Cl. 244—155 R **5 Claims**



1. A kite-flying toy comprising:
(a) a lateral frame having a through hole in the axial direction thereof;
(b) an operation rod which is movably inserted in said lateral frame, and which has a folded portion for engagement at the front end thereof as well as kite string-passing portions at suitable portions thereof;
(c) a front stop member which is downwardly provided at a front portion of said lateral frame and with which will engage said folded portion of said operation rod;
(d) a vertical frame which is attached via a rotary coupling portion to nearly a central portion of said lateral frame and which downwardly extends;
(e) a pair of wing-mounting frames which are stretched via rotary portions on both sides of said vertical frame;
(f) a pair of wings mounted on said wing-mounting frames;
(g) a wing-opening means of which the ends on one side are fastened to suitable places of said pair of wing-mounting frames, and of which the end on the other side has a plurality of engaging portions formed as a unitary structure;
(h) a rear adjusting means which is fastened to the lower portion of said vertical frame and which has a plurality of hooking portions in the lengthwise direction thereof; and
(i) a rear stop member which has a hook to which will be hooked said adjusting means and which is downwardly formed from the tip of said lateral frame.

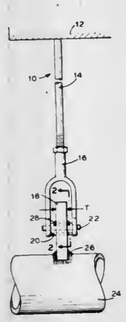
4,240,601
METHOD FOR OBSERVING THE FEATURES CHARACTERIZING THE SURFACE OF A LAND MASS
Robert D. Reed, Lancaster, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed May 30, 1979, Ser. No. 43,912
Int. Cl.³ B64G *1/62, 9/00*
U.S. Cl. 244—160 **4 Claims**

1. A method for achieving surveillance of the surface of a celestial body having a rarefied atmosphere comprising the steps of:
A. deploying from a parachute into the atmosphere a propeller-driven aircraft;
B. piloting the aircraft in a horizontal cruise mode above the surface of the body, whereby the aircraft is caused to fly over portions of the surface to be monitored; and



C. monitoring the portions of the surface during the flight of the aricraft thereover.

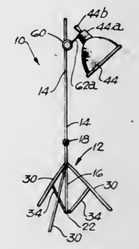
4,240,602
SUPPORT DEVICE FOR A PRESSURE VESSEL
Dennis K. McDonald, Massilon, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Mar. 19, 1979, Ser. No. 21,864
Int. Cl.³ F16L *3/12*
U.S. Cl. 248—58 **3 Claims**



1. A support structure for a pressure vessel comprising a lug plate member having one end weld secured to the pressure vessel and formed with an opening, a sleeve passing through and engaging the opening, and a pin passing through and engaging the sleeve and having its opposite ends projecting beyond the sleeve and means for engaging the ends of the pin for support of the pressure vessel, the thickness of the lug plate being less than the length of the sleeve, the sleeve length constituting the required lug plate thickness if the sleeve were not used to support the vessel thereby reducing the size of the weld to the pressure vessel from that which would be required without the sleeve.

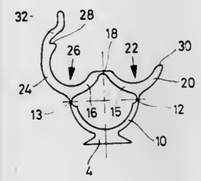
4,240,603
SUPPORT ASSEMBLY
Ned A. Chiariello, Burlington, Wis., assignor to Keystone Ferrule & Nut Corporation, Burlington, Wis.
Filed May 23, 1979, Ser. No. 41,688
Int. Cl.³ A47G *29/00*
U.S. Cl. 248—125 **8 Claims**

1. A portable stand for supporting a flood lamp or the like, comprising: a base member having a plurality of outwardly extendible legs for maintaining the base member in a stable, upright position, a plurality of separate, interconnectible extensions having an internally threaded female end and an externally threaded male end, an end of at least one of the extensions being connectible to the base member, said extensions, in cooperation with the base member, enabling the stand to have a preselected height, and extension retaining means provided on



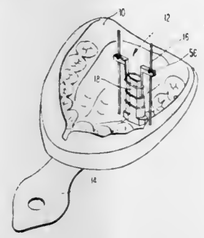
the base member for storing any one or all of the extensions on the base member when not in use, said extension retaining means including an extension engaging bracket provided with a plurality of openings for receiving the externally threaded male ends of the extensions and an extension retaining clip.

4,240,604
CLAMPING DEVICE AND ITS USE
Ulrich K. G. Brach, Zell, Fed. Rep. of Germany, assignor to Zeller-Plastik Koehn, Grabner & Co., Zell, Fed. Rep. of Germany
Filed Jan. 26, 1979, Ser. No. 6,722
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724903
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—316 D **14 Claims**



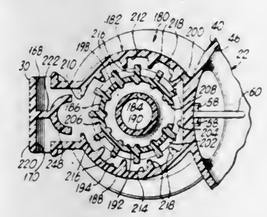
1. Holding device which has a snap-clamp provided with a fastening part, produced in one piece from plastic, especially from polypropylene, whereby the snap-clamp has a bending spring mechanism with two mutually resilient legs (spring legs) and two interconnected control levers, connected with the ends of the spring legs always by a film-hinge, and at least one of the control levers has an extension, which together with a control lever forms a gripper for an object to be held, and whereby the sum of the distances between the middle and the two outside film-hinges in case of a relaxed spring mechanism is greater than the distance between the two outside film-hinges, characterized in that the spring mechanism is a curved or angular bending spring (**10**, **10'** etc.), and in that the control levers (**15**, **16** etc.) fit into the open side of the bending spring in such a way that the sum (a+b) of the distances between the middle (**18**) and the two outside film-hinges (**12**, **13**) is only a little smaller than the uncoiled length (d) of the bending spring (**10** etc.).

4,240,605
JIG ASSEMBLY FOR PREPARING DENTAL IMPRESSIONS FOR CASTING
Robert W. Waltke, Bayside, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Sep. 17, 1979, Ser. No. 75,931
Int. Cl.³ A61C *5/10, 13/08*
U.S. Cl. 249—54 **18 Claims**



1. A jig assembly for precisely positioning paraphernalia means such as die forming means and the like with respect to a negative tooth impression provided in a negative dental mould for use in casting a dental model having at least one unitary tooth die including a stem and prepared tooth, said prepared tooth replicating said tooth forming said negative tooth impression, said unitary tooth die being removable from said model, said jig assembly comprising
pin means insertable in said dental mould adjacent said negative tooth impression and
paraphernalia means, said paraphernalia means being open ended and articulating with said pin means and positionable above said negative tooth impression in spaced relationship thereto, said paraphernalia means being continuously movable with respect to said pin means in directions substantially parallel with long axis of said pin means, and continuously movable along a plane defining buccolingual midline of said negative tooth impression normal to said pin means long axis, and continuously tiltable in said plane away from perpendicularity with said pin means long axis, and combinations of said directions; said paraphernalia means having a hollow interior for receiving die material poured into said dental mould to form said stem of said unitary tooth die, said interior of said paraphernalia means replicating configuration of said stem.

4,240,606
FILL VALVE
Dwight N. Johnson, El Toro, Calif., assignor to JH Industries, Inc., San Marcos, Calif.
Division of Ser. No. 809,382, Jun. 23, 1977, Pat. No. 4,180,096.
This application Jun. 12, 1979, Ser. No. 47,945
Int. Cl.³ F16K *47/08*
U.S. Cl. 251—127 **2 Claims**



1. A valve assembly comprising inner, intermediate and outer telescoped cylindrical walls, means providing fluid communication with the region within said inner wall, means in-

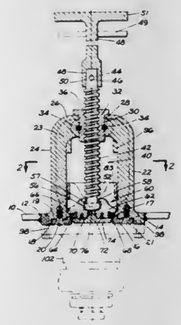
cluding a valve member engageable with one end of said inner wall for controlling fluid flow between the interior of said inner wall and the region between said inner and intermediate walls; an aperture in said intermediate wall permitting flow between said region and the space between said intermediate and outer walls, a passage permitting flow from said space to the exterior of said outer wall, said passage and said aperture being angularly spaced from one another along said space, a first plurality of baffles extending radially outward from said intermediate wall toward said outer wall, and a second plurality of baffles extending radially inward from said outer wall toward said intermediate wall, said first and second baffles being interspersed with one another between said aperture and said passage.

4,240,607

TOP OPERATED TANK CAR LADING VALVE ALSO OPERABLE FROM THE BOTTOM

Edwin S. Carlson, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,523
Int. Cl.³ F16K *27/03, 1/48*
U.S. Cl. 251—144 **9 Claims**



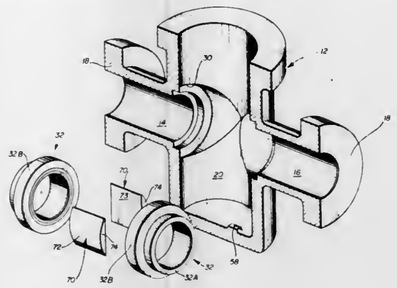
1. A top operated tank car valve assembly comprising: a mounting flange having a lower surface; said flange welded to an opening in the bottom of the tank; a valve seat located inboard of said mounting flange and above said lower surface; a valve closure plug movable vertically between open and closed positions relative to said seat; a vertically extending cage integrally attached to said mounting flange; said cage having a threaded horizontal portion; a threaded stem located within said cage horizontal portion attached to a top operator extending to the top of the tank; said stem extending within an opening in said valve closure plug; a non-round cavity formed in the bottom of said stem; said closure plug including a closure seat which engages said valve seat; said closure plug including guide means which engage a portion of said cage as the closure plug moves between open and closed positions; said closure plug including a vertical opening which communicates with said non-round cavity and extends to the lower surface of the closure plug; a closure plate located below said closure plug held in place with closure plate fasteners extending from the bottom of the closure plate into said closure plug; said closure plate including an extension which extends through said vertical opening; whereby said closure plate fasteners can be removed from the bottom of the car, providing access to the non-round cavity in the valve stem, and said closure plug may be opened from the bottom of the tank by extending a tool having a non-round portion through said vertical opening which engages said non-round cavity.

4,240,608

CONTROLLED FLOAT SEAT ARRANGEMENT FOR EXPANDING GATE VALVES

Charles C. Partridge, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,761
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—167 **7 Claims**



1. An expanding gate valve comprising:
a valve body having a substantially cylindrical flow passage and a substantially cylindrical body cavity intersecting with the flow passage to form a valve chamber, said body having a pair of spaced apart seat pockets formed about the flow passage adjacent said valve chamber;
a pair of annular valve seats mounted in the seat pockets, each seat having an inner surface facing the valve chamber;
an expanding gate assembly mounted in said body cavity for movement in a collapsed condition between open and closed positions, said gate assembly expanding to an expanded condition in both the open and closed positions to seal against said inner surfaces of the valve seats;
a pair of spacers mounted within the valve chamber on opposite sides of said gate assembly between said seats, said spacers being long enough to engage said inner surfaces of the seats to prevent both valves seats from moving inwardly far enough to contact the gate assembly when same is in the collapsed condition; and
an arcuate outer surface of each spacer having a curvature substantially equal to the curvature of the flow passage within the valve chamber, said arcuate surface contacting the valve body within the valve chamber.

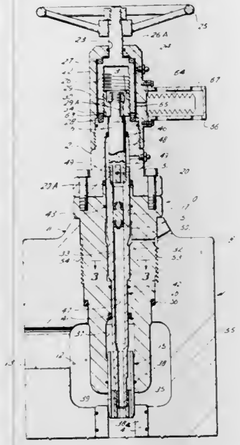
4,240,609

FLOW CONTROL APPARATUS

Guerry L. Hahn, and Gerald S. Baker, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 7, 1978, Ser. No. 931,462
Int. Cl.³ F16K *39/02*
U.S. Cl. 251—282 **6 Claims**

1. Flow control apparatus, comprising a body having a flowway therein with an inlet thereto and an outlet therefrom, a closure element reciprocable within the flowway between positions for controlling the flow of fluid from the inlet to the outlet, a stem on the closure element extending through an opening in the body, means connected to the stem for so reciprocating the closure element, said body opening having an enlarged portion to form an annular space about the stem, and said stem having a piston thereon within the space, first means sealing between the piston and enlarged portion of the body opening, second means sealing between the opening and the stem intermediate the piston and exterior of the body to form with said first sealing means a first pressure chamber within said space, and third means sealing between the opening and the stem intermediate the piston and flowway to form with said first sealing means a second pressure chamber within said space, means including a passageway connecting the flowway with the first pressure chamber in order to transmit the fluid pressure within the flowway to the effective pressure area of the piston within said first chamber, and means including a port connecting the second pressure chamber with the exterior of



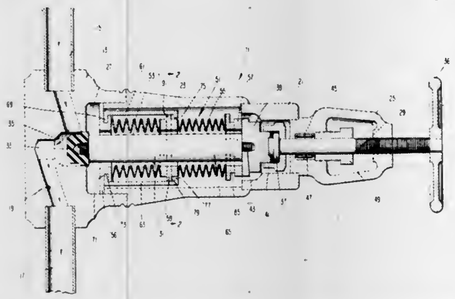
the body, in order to transmit ambient pressure to the effective pressure area of the piston within said second chamber, the effective pressure area of the piston within said first pressure chamber being substantially equal to the cross-sectional area of said stem within the third sealing means.

4,240,610

HIGH PRESSURE BELLOWS ASSEMBLY

Edward F. Trimble, Cumberland, R.I., assignor to EG & G Sealol, Inc., Warwick, R.I.

Filed May 23, 1979, Ser. No. 41,917
Int. Cl.³ F16K *31/44, 41/10*
U.S. Cl. 251—335 B **9 Claims**



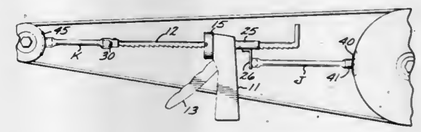
1. A high pressure bellows assembly for use within a housing having a pressure chamber and stem means mounted for longitudinal movement in the pressure chamber and extending outwardly of said housing; said bellows assembly comprising:
at least two bellows segments arranged in axially spaced tandem relationship and adapted to be positioned in said chamber around said stem means, one end of said bellows assembly having means for sealing attachment to said housing, and the other end having means for sealing attachment to said stem means, a floating collar sealingly interconnecting adjacent ends of said tandem segments;
means disposed entirely exteriorly of said bellows segments for allowing free contraction of but limiting the expansion of said bellows segments including at least one elongated restraining member axially spanning an individual one of each said bellows segments, the restraining members spanning adjacent bellows segments being arranged out of axial alignment with each other;
said at least one restraining member which spans the bellows segment attached to said housing being fixed relative to said housing and including abutment means engageable with the adjacent floating collar, said at least one restraining member which spans the bellows segment attached to said stem means being fixed relative to said stem means and including abutment means engageable with the adjacent floating collar.

4,240,611

BELT TIGHTENING APPARATUS

Ronald D. Bartlett, c/o Metropolitan Water District, Earp, Calif. 92242

Filed Aug. 28, 1978, Ser. No. 937,330
Int. Cl.³ B66F *1/04*
U.S. Cl. 254—237 **2 Claims**



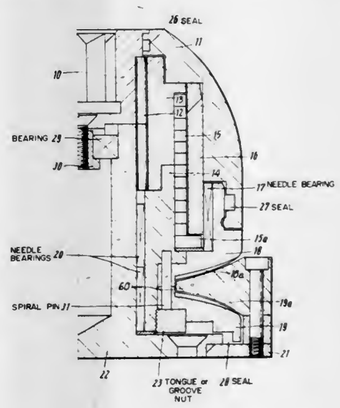
1. In a ratchet advanced caulking gun handle assembly having a ratchet bar extending therethrough and a lever for advancing said ratchet bar relative said handle assembly the improvement comprising:
a first end fitting adapted to be secured to one end of said ratchet bar including a first cantelevered projection extending laterally therefrom;
an opposing support engaged to abut said handle assembly and including a second cantelevered projection extending laterally therefrom said first and second projections being conformed for insertion between adjacent pulleys connected by a pulley belt.

4,240,612

WINCH FOR THE SLIP-FREE HAULING OF A ROPE

Walter Mehnert, Ottobrunn, Fed. Rep. of Germany, assignor to Firma Naviga-Etablissement, Vaduz, Liechtenstein

Filed Apr. 4, 1979, Ser. No. 26,944
Int. Cl.³ A62B *1/08*
U.S. Cl. 254—344 **15 Claims**



1. A winch, comprising base means, crank power input means and clamping sheave means operatively supported on said base means, power transmission means including control-

lable coupling spring means operatively interposed between said power input means and said sheave means for forming a power transmission path, and control means operatively connectable to said coupling spring means for closing, opening or partially opening said power transmission path whereby the movement, speed, acceleration, deceleration and stopping of said sheave means is precisely controllable, said power transmission means comprising upper and lower coupling members (**13, 14**), said upper coupling member (**13**) having a shoulder forming a stop limiting upward movement of said coupling spring means (**15**), said winch further comprising sleeve free wheeling means (**12**) inserted into said upper coupling member with a press fit.

4,240,613

WINCH MECHANISM

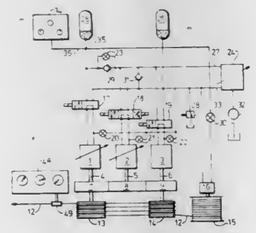
John C. Braithwaite, Broughton-in-Furness, England, assignor to Vickers Shipbuilding Group Ltd., Barrow-In Furness a, England

Filed Apr. 3, 1979, Ser. No. 26,681

Claims priority, application United Kingdom, Apr. 4, 1978, 13204/78

Int. Cl.³ B66D *1/48*

U.S. Cl. 254—315 **13 Claims**



1. A winch mechanism comprising:
a rope haulage mechanism;
a variable displacement hydraulic pump/motor;
coupling means coupling said pump/motor to said rope haulage mechanism for driving said rope haulage mechanism;
a circulating pump;
first hydraulic fluid supply line means for conveying hydraulic fluid between said circulating pump and said pump-/motor, said first hydraulic fluid supply line means including an hydraulic fluid accumulator; and
second hydraulic fluid supply line means for conveying hydraulic fluid between said circulating pump and said pump/motor, said second hydraulic fluid supply line means including an hydraulic fluid reservoir.

4,240,614

SHEAVE BLOCK AND SEAL ASSEMBLY THEREFOR

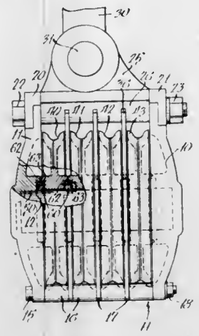
Glen S. Comer, Jr., Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 2, 1979, Ser. No. 18,952

Int. Cl.³ B66D *1/36*

U.S. Cl. 254—393 **8 Claims**

1. A seal assembly for first and second members (**11,40**) mounted on a common shaft (**12**), said members having relative rotation therebetween, said seal assembly comprising:
a spacer ring (**60**) mounted on said shaft (**12**) independently of said first and second members (**11,40**) and positioned to space the first member (**11**) from the second member (**40**); and
a pair of lip seals (**62,63**) of elastic material, one of said lip seals being mounted on the first member (**11**) and the other of said lip seals being mounted on the second member (**40**) coaxially adjacent said one lip seal, each of the lip seals having a part (**64/65**) thereof surrounding and extending



radially inwardly into sealing engagement with a radially outwardly facing surface (**59**) of the spacer ring (**60**).

4,240,615

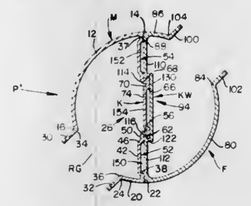
FENCE POST WITH INVERTIBLE SECTIONS

Raymond W. Sickler, Wellsburg, N.Y., assignor to Dura-Bilt Products, Inc., Wellsburg, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,020

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—60 **9 Claims**



1. A fence post comprising:
an elongate male member having a transverse outer peripheral shape of about one-half of a plane figure and a cross-piece defining one side of said male member, said male member including a key defining means extending longitudinally of said male member on said cross-piece near the longitudinal center of said cross-piece and rail attaching means on said male member; and
an elongate female member connected to said male member and having a transverse outer peripheral shape of about one-half of a plane figure and a female cross-piece defining one side of said female member, said female member including a keyway defining means extending longitudinally of said female member on said female cross-piece near the longitudinal centerline of said female cross-piece, and rail attaching means on said female member, said male key defining means slidingly engaging said female keyway defining means to attach said members together, said rail attaching means being oriented obliquely with respect to said cross-pieces.

4,240,616

APPARATUS FOR HEAT-TREATING METALLIC MATERIAL

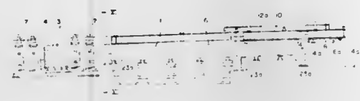
Nobuhiro Takahashi, Fukuyama, and Ken-ichi Hirata, Okayama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 874,665, Feb. 2, 1978, Pat. No. 4,188,243. This application Jul. 12, 1979, Ser. No. 56,936

Claims priority, application Japan, Feb. 8, 1977, 52-12064

Int. Cl.³ C21D *9/00, 9/08, 1/42*

U.S. Cl. 266—119 **8 Claims**



1. Apparatus for conveying metallic material to be treated in a heat-treating zone comprising: a pair of entry guide rail means and a pair of delivery guide rail means respectively provided at the entry and delivery ends of a heat treating zone including a heating unit, each of said entry and delivery guide rail means being laid and supported by a girder and having a pair of upper and lower rail surfaces; an entry car having a plurality of wheels disposed on said entry guide rail means so as to clamp said rail means from the upper and lower sides thereof and rotate on the upper and lower rail surfaces; a drive mechanism for driving said entry car without any slip between said entry car and said entry guide rail means; a delivery car having a plurality of wheels disposed on said delivery guide rail means so as to clamp the same from the upper and lower sides thereof and rotate on the upper and lower rail surfaces thereof, said delivery car further having a plurality of brakes adapted to be directly pressed against said delivery guide rail means when said delivery car is moved by said entry car with said metallic material to be treated being gripped between said entry and delivery cars; and a plurality of free rotatable rolls for supporting said metallic material gripped between said cars.

4,240,617

ULTRA LOW VOLUME PROCESSING OF AND CARTRIDGE FOR PHOTOGRAPHIC FIXER SOLUTION TO RECOVER SILVER THEREFROM

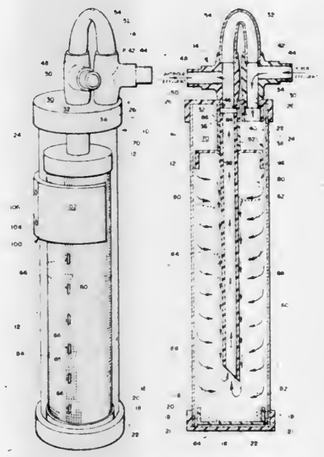
Michael T. MacKay, Sandy, Utah, assignor to B. R. MacKay & Sons. Inc., Salt Lake City, Utah

Filed Oct. 25, 1979, Ser. No. 88,257

Int. Cl.³ C22B *11/04*

U.S. Cl. 266—170 **9 Claims**

1. A tube cartridge for recovery of silver from ultra low flow volumes of used photographic fixer solution comprising:
an elongated narrow light transmitting hollow exterior tube of yieldable synthetic resinous material;
first closure means of synthetic resinous material closing the bottom of the exterior tube in fluid-tight relation, the first closure means comprising coil-centering means exposed adjacent the interior of the exterior tube;
second closure means of synthetic resinous material substantially closing the top of the exterior tube in fluid-tight relation, the second closure means comprising a concentric coil-centering sleeved port by which solution is gravity discharged from the interior sleeve and an eccentric sleeve port by which solution is introduced into the exterior tube;
a small diameter solution exit conduit of synthetic resinous material comprising an integral extension of the concentric sleeved port extending along the centerline of the exterior tube along substantially the full length of the exterior tube to a location a predetermined distance above the first closure means, the lower end of the exit conduit being open to receive solution to be discharged from the exterior tube;
a hollow coil of iron screen concentrically disposed within the exterior tube and having an inside diameter greater than the diameter of the exit tube whereby a first annular flow chamber is defined therebetween and an outside diameter less than the inside diameter of the exterior tube whereby a second annular flow chamber is defined therebetween, the coil resting concentrically upon the first closure means with the top below the second closure means so as to define an influent chamber therebetween



the concentricity being established and retained by the coil-centering means;
cap means of yieldable synthetic resinous material force-fit over the top of the coil and having a central opening of a diameter less than the diameter of the exit conduit and through which the exit conduit is force-fit to create a fluid-tight relation;
spacer means within the influent chamber interposed between the second closure means and the coil to establish and retain predetermined distance between the lower end of the exit conduit and the first closure means.

4,240,618

STIRRER FOR METALLURGICAL MELTS

Jan-Erik Ostberg, Torps Sateri, Bettna, Sweden (640 33)

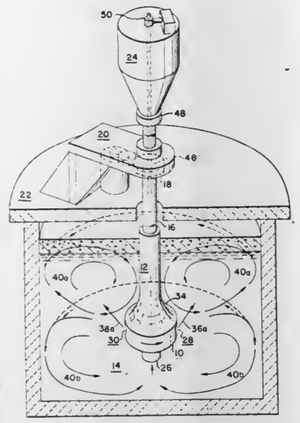
Continuation of Ser. No. 966,942, Dec. 4, 1978, which is a continuation of Ser. No. 817,727, Jul. 21, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,332

Int. Cl.³ C21C *7/00*

U.S. Cl. 266—235 **10 Claims**

1. In a vertically symmetrical mechanical stirrer adapted for submersion in a metallurgical melt, for rotation around its vertical axis, and for the mixing of additives throughout the said melt, the said stirrer having a top section operably connected to drive means and a bottom which includes an entrance canal disposed along said vertical axis and has its entrance in the said bottom of the stirrer, and at least two discharge canals in communication with the entrance canal, each canal having an exit feeding into the metallurgical melt, the improved structure comprising:
an upper body of the stirrer constituting the top section that is disposed above the exits of the discharge canals and within which upper body is axially disposed an addition canal in supply communication with the discharge canal, the symmetrical surface of the upper body consisting of a

torus conforming surface substantially free of horizontal and rectilinear surfaces; and,



eacn said discharge canal being disposed upwardly to its exit at an angle of at least 10° from the horizontal.

4,240,619

GAS SPRING FOR BALANCING THE WEIGHT OF THE LID ON THE TRUNK OF A MOTORCAR AND LIKE APPLICATIONS

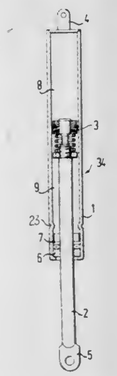
Winfried Wirges, Koblenz, and Guenter Bauschke, Neuhäusel, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,417

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734276

Int. Cl.³ E05F *15/02*; F16F *9/02*

U.S. Cl. 267—65 R **12 Claims**



1. A gas spring apparatus, comprising:

(a) a support;

(b) a structural member mounted on said support for movement in a path having a vertical component between a lowermost and topmost position;

(c) a gas spring including

(1) a cylinder defining a sealed cavity therein and having an axis,

(2) a piston rod axially movable in sealing engagement with said cylinder inward and outward of said cavity, respective axially terminal portions of said piston rod being located in said cavity and outside said cavity in all axial positions of said piston rod,

(3) a piston axially movable on said piston rod in said cavity, said piston separating two compartments of said cavity from each other,

(4) abutment means on the axially terminal portion of said piston rod in said cavity,

(5) yieldably resilient means operatively interposed between said piston and said piston rod and axially biasing said piston towards a position of abutting engagement with said abutment means, and

(6) a fluid under superatmospheric pressure filling said compartments and biasing said piston rod outward of said cavity in a predetermined axial position of the piston rod relative to said cylinder;

(d) securing means securing said piston rod and said cylinder to said support and to said structural member, respectively, in such a manner that said member is moved upward from said lowermost position thereof against the force of gravity when said piston rod moves outward of said cavity from said predetermined position, the biasing force of said fluid being insufficient for moving said member to said topmost position against said force of gravity;

(e) first valve means responsive to movement of said piston rod outward of said cavity for opening a first flow path between said compartments and to movement of said piston rod inward of said cavity for closing said flow path; and

(f) second valve means for opening a second flow path between said compartments upon axial movement of said piston away from said position of abutting engagement against the restraint of said yieldably resilient means and for closing said second flow path when said piston is in said position of abutting engagement.

4,240,620

GRIPPING ARRANGEMENT

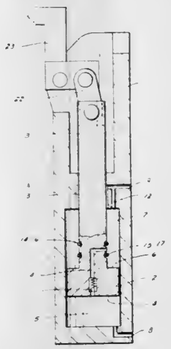
Josef-Gerhard Tünkers, Ratingen, Fed. Rep. of Germany, assignor to Tuenkers GmbH, Ratingen, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,839

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813694

Int. Cl.³ B23Q *3/02*

U.S. Cl. 269—24 **13 Claims**



1. A gripping arrangement comprising gripping means movable through a predetermined stroke between a rest and a gripping position; a cylinder including a double acting piston operatively connected to said gripping means for urging the latter from said rest to said gripping position with a predetermined pressure, said piston subdividing the interior of said cylinder into a lower cylindrical chamber and an upper annular chamber; first communication means between said cylindrical and said annular chambers for partially counteracting said pressure during a predetermined initial portion of said stroke for permitting said gripping means to move under said pressure only during the remaining portion of its stroke toward said gripping position, first connecting means for alternately supplying and withdrawing pressure medium from said cylindrical chamber; second connecting means for alternately supplying and withdrawing pressure medium from said annular chamber; and second communication means arranged between said annular chamber and said second connecting means, said second communication means being closed by said piston when said piston reaches the end portion of said stroke towards the gripping position.

4,240,621

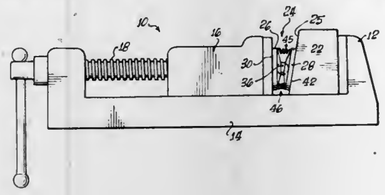
MULTIDIRECTIONAL VISE SQUARE DEVICE

Dominic Daddato, 8043 Elden Ave., Whittier, Calif. 90602

Continuation-in-part of Ser. No. 820,255, Jul. 29, 1977, abandoned. This application May 15, 1978, Ser. No. 905,848

Int. Cl.³ B25B *1/24*

U.S. Cl. 269—264 **21 Claims**



1. A unitary vise square device adapted to secure an irregularly shaped workpiece between the opposed jaws of a vise under clamping force, said device comprising:

a first plate having a jaw-engaging face and an opposite side defining a concave recess,

a second plate having a workpiece-engaging face and an opposite side defining a concave recess and confronting the first plate,

said opposite side of at least one of said first and second plates being inclined outwardly of the recess to prevent interference between the plates upon relative angular displacement therebetween,

at least one of said concave recesses comprising a spherical sector cap surface no larger than hemispherical,

a spherical bearing member configurated to interfit the confronting recesses of the first and second plates, whereby the plates are positionally adjustable through substantial relative angles to accommodate the irregular shape of the workpiece, and

resilient biasing means interconnecting the plates and securing the plates and the spherical member in a unitary assembly,

whereby the biasing means is deformable under vise clamping force to accommodate relative movement between the plates and the spherical member to secure the second plate and the workpiece under the vise clamping force.

4,240,622

MECHANISM FOR TRANSPORTING SHEETLIKE RECORDING CARRIERS

Albert Rutishauser, Rutihofstrasse 38, 8713 Werkion, Switzerland

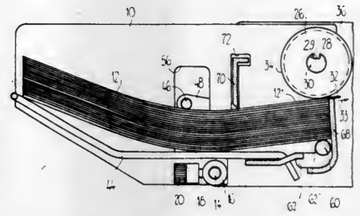
Filed Apr. 16, 1979, Ser. No. 30,380

Claims priority, application Switzerland, Apr. 18, 1978, 41257/78

Int. Cl.³ B65H *1/12*

U.S. Cl. 271—126 **11 Claims**

1. In transportation mechanism for sheetlike recording carriers including a magazine having lateral guide elements for sheets to be stacked, a singling mechanism and driving roller means for conveying only one sheet at a time from the magazine, the improvement comprising means for holding stacked sheets arched in the direction of conveyance to give said sheets stiffness in lateral direction and including physical means movably substantially perpendicularly to said lateral and conveyance directions for pushing on the stacked sheets in the middle



area thereof to to cause the stacked sheets to be arched as aforesaid.

4,240,623

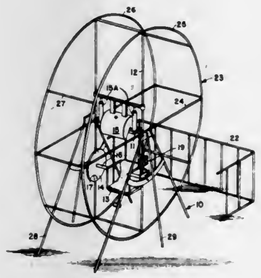
CIRCLE SWING

Paul A. Edwards, 35 E. Greenway Rd., Phoenix, Ariz. 85040

Filed Jul. 12, 1978, Ser. No. 923,717

Int. Cl.³ A63G *1/20*

U.S. Cl. 272—33 R **4 Claims**



1. A swing, comprising: a swing seat;

an adjustable counterweight;

support means whereby a person in said swing seat may, upon adjustment of said counterweight, be transported by said support means in an arc above a horizontal pivot axis;

said counterweight having a drum shaped body provided with a cutout portion lying along the longitudinal axis of said drum;

said horizontal pivot axis being located within said counterweight cutout portion while a person is mounting said swing seat;

means for maintaining the center of gravity of said counterweight nearly adjacent to said horizontal pivot axis while a person is mounting said swing seat; and interlock means for returning said counterweight by gravity when said seat is directly below said horizontal pivot axis to the position where its said center of gravity is nearly adjacent to said horizontal pivot axis before a person can dismount from said swing seat.

4,240,624

HAND GRIP EXERCISE DEVICE

Bradford W. Wilson, 1642-A Coriander, Costa Mesa, Calif. 92626

Filed Aug. 29, 1978, Ser. No. 938,094

Int. Cl.³ A63B *21/00*

U.S. Cl. 272—68 **5 Claims**

1. A hand grip exercise device comprising:

an elongated enclosure having a cavity therein, said enclosure being of a size to be grasped and squeezed by a hand of the user, said enclosure having a peripheral wall which is resiliently deformable and which can be deformed radially inwardly;

resilient deformable means in said cavity whereby manual deformation of the peripheral wall radially inwardly resiliently deforms said resilient means to thereby increase the squeezing force which the user must apply to the peripheral wall to deform the peripheral wall radially inwardly;

said enclosure including a hand grip including said peripheral wall, an end wall and a plurality of axially spaced radial projections, said end wall at least substantially closing one end of said peripheral wall, said enclosure including means at least substantially closing the other end of the peripheral wall; and

said closing means including a closure member extending across and at least substantially closing said other end of the peripheral wall and an end cap having a peripheral wall surrounding a portion of the peripheral wall of said enclosure and a transverse wall, said transverse wall being engageable with said closure member to retain the latter.

4,240,625

RECLINING CHAIR

Paul K. Meeker, Kent, Ohio, assignor to Century Products, Inc., Cleveland, Ohio

Filed Nov. 16, 1978, Ser. No. 961,382
Int. Cl.[3] A63G 9/16; A47C 1/02
U.S. Cl. 272—86 **9 Claims**



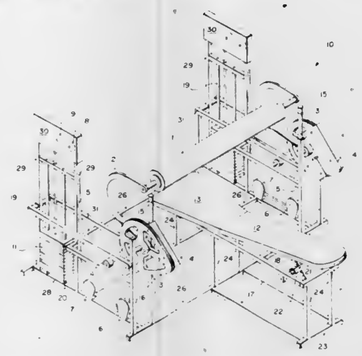
8. A swing assembly for supporting a person for swinging movement, said swing assembly comprising a base, seat means for receiving a person, said seat means having a rigid bottom, a rigid support pivotally connected with said base and said seat means, said support having a first portion disposed beneath the rigid bottom of said seat means, a second portion extending upwardly along one side of said seat means and a third portion extending upwardly along a side of said seat means opposite from said one side, first connection means for connecting said first portion of said support with said rigid bottom of said seat means and for shifting the rigid bottom of said seat means relative to said support to change the angular orientation of the rigid bottom of said seat means relative to said support and said base, second connection means for connecting said second portion of said support with said seat means and for enabling the angular orientation of the rigid bottom of said seat means to be changed relative to said second portion of said support, and third connection means for connecting said third portion of said support with said seat means and for enabling the angular orientation of the rigid bottom of said seat means to be changed relative to said third portion of said support, said second and third connection means including means for cooperating with said support and said first connection means to hold said rigid bottom of said seat means in any one of a plurality of angular orientations relative to said support during swinging movement of said seat means relative to said base.

4,240,626

ABDOMINAL WAIST MACHINE

Lloyd J. Lambert, Jr., 1538 College Ave., South Houston, Tex. 77587

Filed Nov. 8, 1978, Ser. No. 958,826
Int. Cl.[3] A63B 21/06
U.S. Cl. 272—118 **4 Claims**



1. An abdominal waist machine comprising a bench, only one padded bar overlying and extending transversely of said bench for receiving the back of the knees of a user, support bars connected at opposed end extremities of said padded bar, said support bars are connected to an axle on opposed sides of said bench carried on a frame means, a cam disposed on each axle and capable of rotating with said axle, a cable connected to each said cam, and variable weights connected to each cable at an extremity remote from said cam in which said weights are constrained to move in a substantially vertical direction whereby when said padded bar is move, said weights will translate in a vertical direction, and resistance in moving said padded bar will vary as a function of the cam and its contour and in which said bench is provided with a back portion capable of angular orientation with respect to a horizontal plane defined by an apertured shaft disposed transverse to and below a longitudinal extent of said back supported on said frame means, an adjusting bar depending from a bottom face of said back portion having plural holes along its length, said adjusting bar slideably disposed in a first said shaft aperture, and a locking pin extendable through one of said holes to lock said shaft to said bar through a second said aperture.

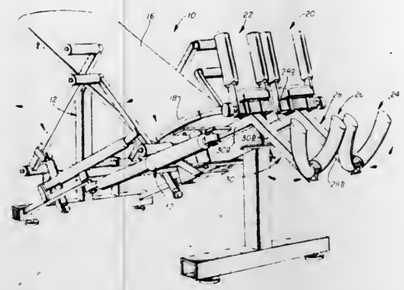
4,240,627

MULTI-PURPOSE EXERCISING DEVICE

Jerry D. Brentham, P.O. Box #599, Belton, Tex. 76513

Continuation-in-part of Ser. No. 790,051, Apr. 22, 1977, Pat. No. 4,185,818. This application Nov. 20, 1978, Ser. No. 962,067
Int. Cl.[3] A63B 21/22
U.S. Cl. 272—130 **10 Claims**

1. An exercising device comprising: a frame having a central axis; body support means on said frame adapted to support a human body such that a median axis of the human body, the axis of the human body lying substantially parallel to the spine, lies parallel to the central axis of said frame; a leg exercising means on each respective side of the central axis pivotally secured to said frame for exercising the legs of the human body when the legs are moved in a lateral direction relative to the central axis; means for resisting movement of said leg exercising means pivotally secured between said frame and said leg exercising means; arm exercising means on each side of the central axis pivotally secured to said frame for exercising the arms of the human body when the arms are moved in a longitudinal direction relative to the central axis; and means for resisting movement of said arm exercising means pivotally secured



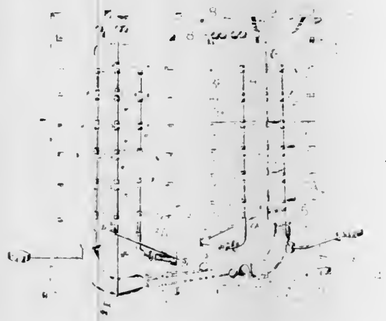
between said arm exercising means and said frame to allow simultaneous movement of said leg exercising means and said arm exercising means.

4,240,628

MANIPULATIVE SKILL GAME

Charles H. Brownfield, 4116B Royce Dr., Alexandria, La. 71301

Filed Sep. 17, 1979, Ser. No. 76,129
Int. Cl.[3] A63F 7/38
U.S. Cl. 273—1 R **6 Claims**



1. A game for manually manipulating balls from one position to another position comprising multi-levels of plates connected separately from one another by first and second manipulating rods fixedly attached to each plate and aligned with respect to one another by an aligning rod, to which each plate is pivotably connected, each plate having at least one opening through which a ball can pass, each of the first and second manipulating rods being pivotedly attached at their lower ends to first and second extension arms, respectively, extending out from said plates a sufficient distance to be manipulated by a person's hand.

4,240,629

TETHERABLE GAME BALL

Jae M. Song, 225/46 Yeunhi/dong, Ma Po/Ku, Seoul, Rep. of Korea, and Samuel B. Ligon, 5505 Emerson, Dallas, Tex. 75209

Filed Jan. 8, 1979, Ser. No. 1,742
Int. Cl.[3] A63B 39/00, 43/02
U.S. Cl. 273—58 C **3 Claims**

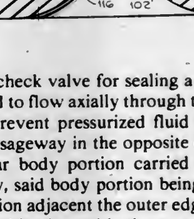
1. A game ball for being secured to a tether comprising:

a resilient spherical hollow ball having an interior surface and an exterior surface and an aperture normal to the exterior surface of said hollow ball and extending from the interior surface to the exterior surface of said hollow ball, said aperture having an inward taper beginning at said exterior surface and extending along at least a portion of the length of said aperture;

a line of predetermined length having two ends that are passed through said aperture, the line ends being secured together in the hollow portion of said ball to form a loop extending exteriorly of said spherical hollow ball for securing the tether thereto;

means for restraining the line from being pulled through said aperture;

means for distributing forces exerted between the line and said hollow ball to prevent tearing of said hollow ball by



the line, said means for restraining and said means for distributing free of fixed attachment to said ball; and

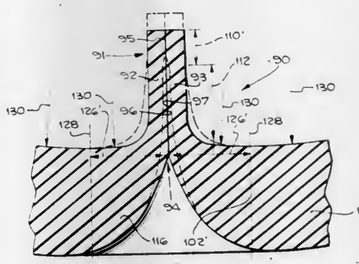
said means for restraining said line from being pulled through said aperture and said means for distributing forces including a rigid plug larger than the diameter of said aperture located entirely within said spherical hollow ball and having a hole extending therethrough with said loop passing through said hole, said rigid plug contacting an interior portion of said spherical hollow ball adjacent said aperture for distributing forces over the area of said ball that said rigid plug contacts when a force is exerted upon said line.

4,240,630

GAME BALL CHECK VALVE

Allan C. Hoffman, 2891 Rumsey Dr., Riverside, Calif. 92506

Continuation-in-part of Ser. No. 777,318, Mar. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 623,795, Oct. 20, 1975, Pat. No. 4,012,041. This application Apr. 10, 1978, Ser. No. 895,117
Int. Cl.[3] F16K 15/16; A63B 39/04
U.S. Cl. 273—61 R **5 Claims**



1. A unitary check valve for sealing a passageway to allow pressurized fluid to flow axially through the passageway in one direction and prevent pressurized fluid from flowing axially through the passageway in the opposite direction comprising:

(a) an annular body portion carried coaxially within the passageway, said body portion being thick enough in the axial direction adjacent the outer edges of the passageway that in combination with the support provided by the material defining the passageway said portion is substantially non-deformable in the axial direction; and,

(b) a sealing nipple portion carried within said body portion tapering radially inward and axially in the direction of

desired fluid flow from said body portion on one end to meet in sealed contact adjacent the opposite end, the thickness of said sealing nipple portion in the axial direction becoming increasingly thinner and correspondingly increasingly deformable in the axial direction radially inward from said one end whereby the application of fluid under pressure to said valve in the direction opposite desired fluid flow causes said nipple portion to be deformed axially into said body portion in a wedging action increasingly sealing the passageway as increased fluid pressure is applied, said taper being a smooth curve extending from a point on a line substantially normal to the axis of the passageway on said one end to a point on a line substantially parallel to the axis of the passageway on said other end whereby fluid pressure within the passageway tending to move fluid through the passageway in a non-desired direction acts normal to the axis on said nipple portion adjacent said other end to initially prevent fluid passage therethrough as it also acts axially on the rest of said nipple portion to deform said nipple portion in said wedging action into said body portion, said nipple portion being of a material having the deformion and sealing qualities of soft natural rubber, the surfaces of said nipple portion that meet during said wedging deformation into said body portion having a finish produced by a mirror-smooth mold.

4,240,631

SHAFT ASSEMBLIES FOR GOLF CLUBS

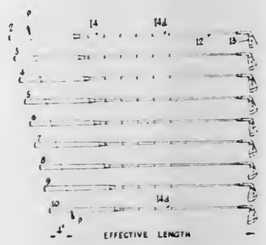
Ian C. MacDougall, 19 Knockbreck Ave., Tain, Ross-shire Scotland (IV19 1LY)

Filed Jun. 13, 1978, Ser. No. 915,192

Claims priority, application United Kingdom, Jun. 25, 1977, 26705/77

Int. Cl.³ A63B *53/00, 53/12*

U.S. Cl. 273—77 A **7 Claims**



CLUB No.	LIE ANGLE	EFFECTIVE LENGTH	CLUB Wt	EI VALUE AT "P"	PROD MOM
2	57°	34·87	14·49	17,150	505
3	58°	34·27	14·75	16,850	505
4	59°	33·69	15·00	16,550	505
5	60°	33·13	15·26	16,250	505
6	61°	32·59	15·51	15,950	505
7	62°	32·07	15·76	15,650	505
8	63°	31·58	16·00	15,350	505
9	64°	31·10	16·26	15,050	505
10	65°	30·64	16·50	14,750	505

1. In a set of golf clubs, each said golf club including a tapered handle portion and a tapered tip portion for the attachment of a golf club head thereto, each said golf club further comprising a total weight and an effective length, the improvements therein comprising:

(a) each said shaft is made from substantially identical shaft blanks,

(b) the product of said effective length multiplied by said total weight is kept substantially the same for each club in the set,

(c) the flexibility of the shafts in said set being determined by a preselected EI value, said EI value steadily reducing from the longest to the shortest club, said EI values occurring on each shaft on said tapered handle portion at a point a predetermined same distance from the end of said handle portion whereby said clubs are provided with matched playing characteristics, and

(d) each said shaft in said set has the same tip diameter.

4,240,632

BASEBALL GAME

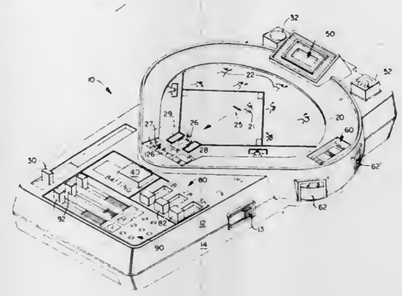
Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,411

Claims priority, application Japan, Jun. 12, 1978, 53-71156

Int. Cl.³ A63F *7/00, 9/22*

U.S. Cl. 273—88 **8 Claims**



1. A baseball game comprising:

a housing having a transparent face with a replica of a baseball diamond thereon;

a first mechanism contained within said housing for simulating the pitching of a baseball;

a second mechanism contained within said housing for simulating the swinging of a bat;

a third mechanism contained within said housing for indicating any one of a number of baseball hitting and catching situations;

a person operated control for energizing a spring for effecting later operation of the aforesaid mechanisms;

an opponent operated control for initiating said ball pitching simulation first mechanism and another control for effecting stopping of said third mechanism; and

a person operated control for the second mechanism for simulating the swinging of a bat.

4,240,633

GAME HAVING MOVABLE OBJECT AND OBJECT STRIKING MEMBER

Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 46,115

Claims priority, application Japan, Jun. 12, 1978, 53-71156

Int. Cl.³ A63F *7/00, 9/22*

U.S. Cl. 273—88 **23 Claims**

1. A game which comprises:

a housing;

an object means movably mounted in said housing;

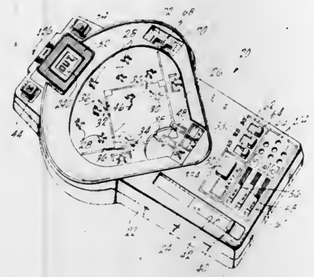
an object moving means mounted in said housing and moving said object means between a first location and a second location and including passing said object means through a strike location intermediate said first and said second locations;

a strike location determining means detecting when said object means is passing through said strike location;

a striking means movably mounted in said housing so as to move between a ready position and a strike termination position;

an activating means for actuating movement of said striking means from said ready position to said strike termination position;

detecting means operatively connected to said strike location determining means and detecting when said object



means is passing through said strike location simultaneous with when said striking means is actuated.

4,240,634

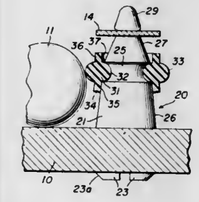
ELASTIC BAND FOR PINBALL GAME

Max Wiczer, 9122 Kedvale Ave., Skokie, Ill. 60076

Filed Jan. 15, 1979, Ser. No. 3,116

Int. Cl.³ A63B *71/00*

U.S. Cl. 273—127 R **5 Claims**



1. In a pinball game having a playfield board supporting a rolling pinball thereon, wherein the improvement comprises: a set of annularly grooved posts adapted to project upwardly from the associated playfield board; and an endless elastic band encircling said set of posts under tension, said band including an annular elastic body having an axis extending through the center thereof normal to the radii thereof, an inner annular portion on said body extending radially inwardly thereof and seated in the annular grooves of said posts, and an annular flange portion on said body extending therefrom generally in the direction of said axis coaxially therewith, said flange portion extending downwardly along said posts toward the associated playfield board, whereby said flange serves to inhibit twisting of said band and passage of an associated pinball beneath said band.

4,240,635

SLOT MACHINE DEVICE

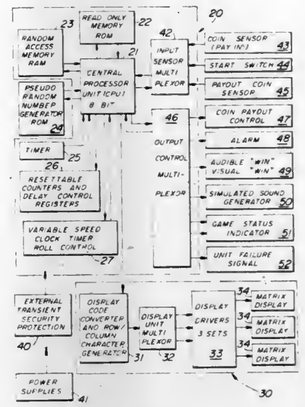
Harry Brown, 2430 Atlantic Ave., Atlantic City, N.J. 08401

Filed Mar. 9, 1979, Ser. No. 19,303

Int. Cl.³ A63F *5/04*

U.S. Cl. 273—138 A **4 Claims**

1. A slot machine device comprising changeable display means, a pseudo random number generator, a microprocessor connected between the number generator and display means for accessing former and controlling the latter to present an apparently randomly selected character, said display means comprising a matrix of activatable display elements arranged in rows and columns, character generator means connected between said microprocessor and display means and controlling activation of said display elements to present a character and to change the activated display elements to present the appearance of a moving character, and a variable speed timer connected to said microprocessor to modify the transfer rate of randomly selected character input signals from the microprocessor to said display element to simulate a decelerating mechanical wheel.



4,240,636

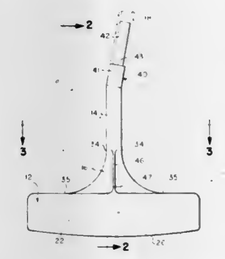
GOLF PUTTER

Ronald F. Swenson, 2719 N. Logrun Cir., Woodlands, Tex. 77380

Filed Dec. 18, 1978, Ser. No. 970,716

Int. Cl.³ A63B *53/02, 53/04*

U.S. Cl. 273—169 **3 Claims**



1. A golf putter head having a center axis of symmetry, said head defining a ball-striking face; a heel and a toe extending rearwardly from the opposite sides of the striking face; a sole having a curved surface extending rearwardly from the striking face and forming integral part with the heel and toe; a bridge part spanning between the striking face, the heel and the toe, said toe and said heel being weighted, whereby the center of gravity of said putter is substantially symmetrically located behind said striking face; a shank extending upwardly and being disposed along said center axis; a neck coupling said shank with said bridge part; a shaft-receiving hosel extending upwardly from said shank; said striking face, sole, heel and toe form an open recess therebetween and said recess extends over the majority surface of said striking face; and said striking face being integral and continuous with said sole and said bridge part.

4,240,637

PUTTING PRACTICE APPARATUS

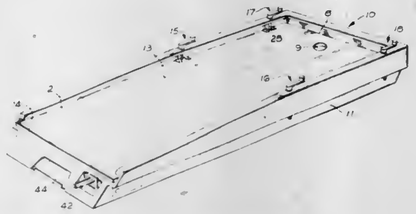
Robert Cross, 89 Wybunbury Rd., Wistaston, Nantwich, Cheshire; Terrence R. Cross, Hillside, Church Minshull, Nantwich, Cheshire, and Alvan Cross, Timber Tops, Woodland Hills, Madeley, Near Crewe, Cheshire, all of England

Filed Oct. 23, 1978, Ser. No. 953,690

Claims priority, application United Kingdom, Nov. 9, 1977, 46590/77

Int. Cl.³ A63B *69/36, 67/02*

U.S. Cl. 273—176 H **1 Claim**



1. Putting practice apparatus comprising:

a frame,

a planar deck supported by the frame and having an apertured upper surface defining a putting surface,

a plurality of spaced vertically-extending turnable threaded bolts for varying the height of at least a part of the deck and the magnitude of the slope of the deck upper surface,

the deck having a degree of deformability for allowing its contour to be varied by the changing of the height of at least one region thereof,

a plurality of spaced C-shaped locator brackets fixed to the frame and supporting a respective one of the bolts extendable therethrough,

at least one of the locator brackets being adjustable in height,

a cranklike handle attached to each bolt for permitting bolt rotation in the height adjustment function,

the deck being provided with a plurality of cutaway portions along the side edges thereof,

a captive nut being nestably receivable within each cutaway portion and threaded on the respective bolt extendable therethrough,

an encapsulating housing enclosing a respective cutaway portion and holding a respective captive nut in situ within the respective cutaway portion.

4,240,638

MICROPROCESSOR CONTROLLED GAME APPARATUS

Howard J. Morrison, Deerfield, Ill.; Ralph H. Baer, Manchester, N.H., and Jeffrey D. Breslow, Highland Park, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 6, 1978, Ser. No. 867,583

Int. Cl.³ A63F *9/00*

U.S. Cl. 273—237 **22 Claims**

1. An electronic game device comprising:

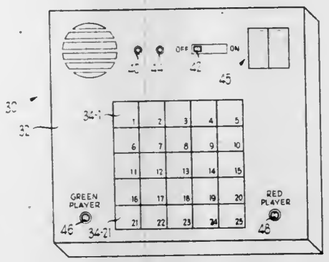
a base;

a playing field array defined on said base and including a plurality of array elements defining a respective plurality of playing field array positions, each of said array elements being manually actuatable by a participant for entering the respective playing field array position represented by each of said array elements;

means having stored therein an internally generated maze path sequence including maze path sequence elements, each of said maze path sequence elements corresponding to a respective one of said array positions in said maze path sequence corresponding to a predetermined maze path on said playing field array in terms of said array positions;

entry control means responsive to actuation of said array elements for determining the relative position of said actuated array elements in said playing field array and for comparing the relative array position of said actuated array element with a predetermined maze path sequence element of said maze path sequence to determine the agreement of said actuated array element with said predetermined maze path sequence element;

maze path means responsive to said entry control means for determining said predetermined maze path sequence element of said maze path sequence, said predetermined maze path sequence element being successively increased by one element in said maze path sequence upon said entry control means determining agreement between said actu-



ated array element and said predetermined maze path sequence element; and

sensorially perceptible indicating means responsive to said entry control means for generating a first sensorially perceptible indication corresponding to agreement of said actuated array element with said predetermined maze path sequence element, a second sensorially perceptible indication different from said first sensorially perceptible indication corresponding to non-agreement of said actuated array element with said predetermined maze path sequence element, and a third completion of game indication corresponding to the agreement of said actuated array elements and the last sequence element of said maze path sequence.

4,240,639

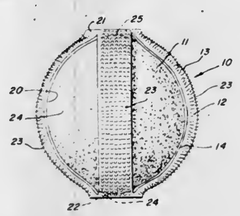
TOSS BALL CONSTRUCTION

Douglas R. Bolton, Chicago, Ill., and John M. Werling, Kansas City, Mo., assignors to Cadaco, Inc., Chicago, Ill.

Filed May 4, 1979, Ser. No. 36,250

Int. Cl.³ A63B *65/00*

U.S. Cl. 273—346 **10 Claims**



1. In a ball adapted to cling to a textile surface as an incident of being tossed thereagainst, the ball including a lightweight spherical body, the improvement comprising

a sheet of flexible Velcro fabric affixed to said body and having spread parallel slits defining therebetween longitudinal strips having a first end joined by a first end wall extending polygonally about one portion of the spherical body and an opposite end joined by a second end wall extending polygonally about a diametrically opposite portion of the spherical body, each of said end walls projecting outwardly from the surface of the spherical body and forming strong interconnections between said strips.

4,240,640

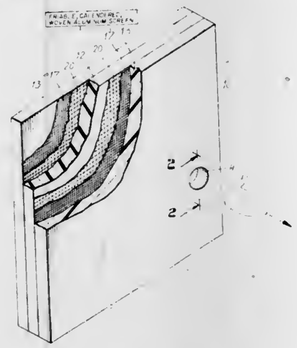
PROJECTILE PENETRATION RESPONSIVE ELECTRICALLY SHORTING TARGET

Joseph L. LaMura, West Caldwell, N.J., assignor to Joanell Laboratories, Inc., Livingston, N.J.

Filed Sep. 7, 1978, Ser. No. 940,348

Int. Cl.³ F41J *5/04*

U.S. Cl. 273—373 **10 Claims**



9. A projectile penetrating sensing target comprising a first sheet of an electrically insulating cellular polymeric resin and a pair of panels disposed along the opposite faces of and sandwiching said first sheet and being secured thereto, each of said panels including an electrode defining electrically conducting metal sheet, at least one of said metal sheets comprising a woven, friable metal wire screen and being suffiently friable to shatter to a divided state in the area of impact by a projectile penetrating said target and obviate physical contact between said electrode defining sheets following said projectile penetrating said target.

4,240,641

RECORD PLAYER

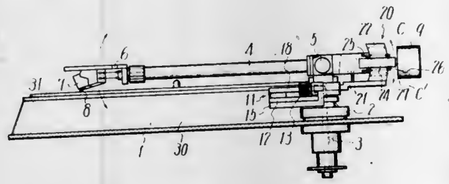
Shuichi Kimura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 8, 1979, Ser. No. 36,991

Claims priority, application Japan, May 8, 1978, 53-54308; Oct. 27, 1978, 53-132394

Int. Cl.³ G11B *3/10*

U.S. Cl. 274—23 R **9 Claims**



1. A record player comprising:

a tone arm having a stylus;

electro-magnetic means for moving said tone arm in the vertical direction with respect to a record surface;

a drive circuit connected to said electro-magnetic means;

adjusting means connected to said drive circuit for varying a current flow through said electro-magnetic means so as to vary the stylus pressure on said record surface, said adjusting means including a variable resistor, an analog-to-digital converter for converting a voltage derived from said variable resistor into a digital value, a latch circuit connected to said analog-to-digital converter, a detector circuit connected between said latch circuit and said variable resistor for detecting the absence of any change in the level of the voltage derived from said variable resistor, and a digital-to-analog converter connected between an output of said latch circuit and said electro-magnetic means; and

display means coupled to said adjusting means for displaying an indication of said stylus pressure, said display means including a digital indicator connected to the output of said latch circuit.

4,240,642

BELLEVILLE SPRING-LOADED CRESCENT SEAL

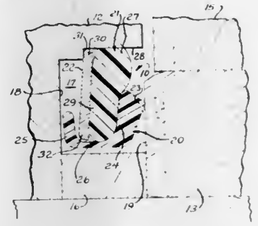
Michael A. Roussin, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US 80/00022, § 371 Date Jan. 11, 1980, § 102(e) Date Jan. 11, 1980

This PCT application filed Jan. 11, 1980, Ser. No. 133,632

Int. Cl.³ F16J *15/32, 15/34*

U.S. Cl. 277—84 **16 Claims**



1. In a joint (**11**) having a first member (**12**) and a second member (**13**) variably spaced from said first member, improved sealing structure (**10**) for providing a seal between said members across the variable space therebetween, said sealing structure comprising:

a dynamic seal element (**20**) having a lip portion (**23**) sealingly engaging said second joint member (**13**), and a load portion (**24**);

a static seal element (**21**) having a sealing portion (**27**) sealingly engaging said first joint member (**12**) and a deflectible force transfer portion (**29**) engaging said dynamic seal element load portion (**24**); and

a Belleville spring (**22**) having a first portion (**30**) positioned by said first joint member (**12**), and a second force-applying portion (**32**) forcibly engaging said force transfer portion (**29**) of the static seal element (**21**), a dynamic sealing force being developed between said dynamic seal element lip portion (**23**) and said second joint member (**13**) and a static sealing force being developed between said static seal element (**21**) and said first member (**12**) as an incident of the spring force transfer through said static seal element deflectible force transfer portion (**29**).

4,240,643

ANNULAR SEAL

Bernd Becker, Leimen; Hans Forch, Birkenau; Adam Helfrich, Waldmichelbach, and Gottfried Jung, Fürth, all of Fed. Rep. of Germany, assignors to Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,726

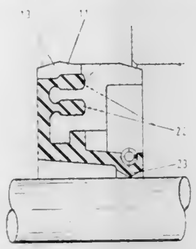
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743501

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—164 **6 Claims**

1. An annular seal comprising an annular elastomeric lip member having at least one annular rim and an annular reinforcing member for said lip member, said reinforcing member having an end face provided with a groove in which said rim is held, at least the portion of the reinforcing member that is

spaced from the groove being of flexible compressible construction and being of a diameter adjacent the groove which in uncompressed state is greater than the diameter when installed



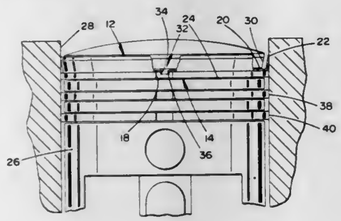
in operative position, the portion of the reinforcing member lying outside of the groove being provided with a plurality of slits dividing that portion into a plurality of segments uniformly distributed about the circumference.

4,240,644

PISTON SEAL

Jerry T. Busto, Lakewood, Colo., assignor to Gemini Seals, Inc., Lakewood, Colo.

Filed Apr. 27, 1977, Ser. No. 791,540
Int. Cl.³ F16J *9/02*
U.S. Cl. 277—194 **26 Claims**



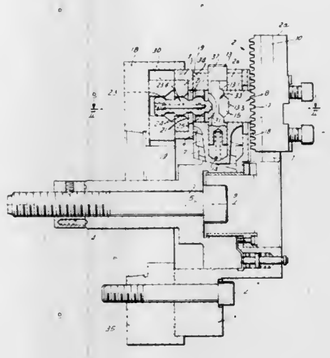
1. A piston seal for use in sealing a piston reciprocating in a cylinder of an internal combustion engine comprising cooperating first and second sealing rings adapted to seat in a common piston ring groove in stacked relationship with one another, said first ring having a thickness substantially less than said second ring and approximately between 0.005 and 0.030 inches, having a radial spring tension biasing it radially toward contact with a cylinder bore and having a radially extending portion seatable in a ring groove and an axially extending flange portion forming the outer periphery of said first ring such that it is exposed, when operating, to fluid under pressure in a cylinder which forces said axial portion radially into sealing engagement with a cylinder bore and said second ring having radial spring tension biasing it radially toward contact with a cylinder bore, and said second ring having a relatively greater thickness than said first ring and having a rectangular cross-section and disposed beneath said first ring to thereby support said first ring during operation.

4,240,645

FORCE-COMPENSATED SPLIT-JAW LATHE CHUCK

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 40,128, May 18, 1979. This application Jul. 20, 1979, Ser. No. 59,145
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832297; Aug. 18, 1978, 2836191; Oct. 17, 1978, 2845133
Int. Cl.³ B23B *31/16*
U.S. Cl. 279—1 C **10 Claims**



1. A lathe chuck comprising:

a chuck body rotatable about a chuck axis and formed with a plurality of angularly spaced and radially extending inner guides and with a plurality of angularly spaced and radially extendng outer guides;

respective inner and outer jaw parts radially displaceable in said chuck body in said inner and outer guides;

means including at least one operating element engageable with said inner jaw parts for radially displacing same in said chuck body in the respective inner guides;

respective coupling members axially displaceable in said inner jaw parts and each displaceable between a coupling position engaging the respective outer jaw part and coupling same to the respective inner jaw part for joint radial movement therewith and a decoupling position for relative radial displacement of the respective jaw parts;

respective cams radially displaceable in said inner jaw parts in engagement with the respective coupling members between radially outer positions holding the respective coupling members in said coupling positions and radially inner positions in which the respective coupling members can assume said decoupling positions;

respective weights radially displaceable on said chuck body adjacent said inner jaw parts;

respective levers centrally fulcrumed in said body and having axial back ends in radial force-transmitting engagement with said weights and axial front ends in radial force-transmitting engagement with the respective inner jaw parts, said levers being pivotal on said body first-class fashion with opposite radial displacement of the respective ends; and

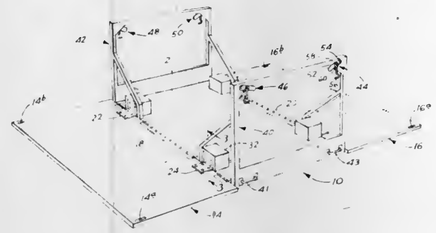
respective means for connecting said levers for going axial displacement with the respective coupling members, said levers being axially limitedly displaceable relative to the respective weights and to said body.

4,240,646

COMBINED DRUM-SET CARRIER AND PERFORMANCE PLATFORM

Donald C. Scott, 114 Baker Creek Rd., McMinnville, Oreg. 97128

Filed Jan. 25, 1979, Ser. No. 6,295
Int. Cl.³ B62B *3/02*
U.S. Cl. 280—30 **3 Claims**



1. A combined carrier and performance platform comprising

a bottom section in the form of a rigid panel which forms a central portion of said platform,

a pair of side memebers each also in the form of a rigid panel attached to opposite sides of said bottom section for swinging between raised and lowered positions, wherein said members form sides for said carrier, and coplanar side portions for said platform, respectively, and

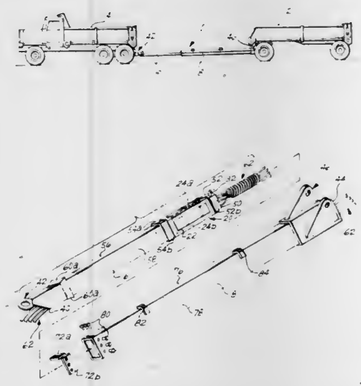
roller support means rigidly connected directly to said side members for shifting between exposed and concealed conditions with shifting of said side members between their said raised and lowered positions, respectively, said roller support means when in its said exposed condition providing ground-contacting rolling support for said bottom section and side members.

4,240,647

PRESSURE-OPERATED FRICTION LOCKING APPARATUS FOR SLIDABLY ADJUSTABLE TRUCK TRAILER COUPLING

Milburn Lewis, 18418-94th Ave. NE., Bothell, Wash. 98011

Filed Feb. 16, 1979, Ser. No. 13,195
Int. Cl.³ B62D *53/00*
U.S. Cl. 280—482 **16 Claims**



1. In an adjustable coupling apparatus for coupling a trailer to a truck and including first and second elongate, slidably engaging members that allow for adjustment of the coupling apparatus, and incorporating a releasable locking mechanism for selectively restraining such members against relative sliding movement, the improvement in said locking mechanism comprising:

friction shoe means mounted on the first member for transverse movement with respect thereto into frictional contact with the second member;

fluid pressure actuator means for selectively displacing said friction shoe in said transverse movement, wherein said actuator means comprises a hydraulic fluid actuator and has a pressurized condition in which it forces said friction shoe means into said frictional contact with the second member so as to frictionally lock said members against relative sliding movement, and has an unpressurized condition relieving said friction shoe means from said frictional contact with the second member so as to allow said relative sliding movement of said members; and

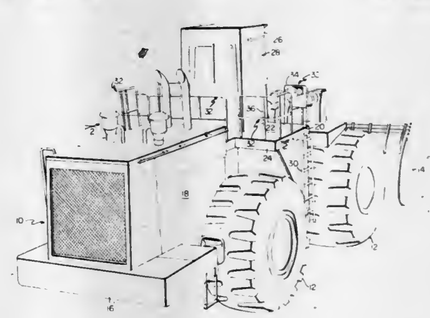
fluid control means including means for selectively applying a pressurized hydraulic fluid to said hydraulic fluid actuator for selectively causing said actuator means to selectively assume either said pressurized condition or said unpressurized condition, wherein said fluid control means includes means for converting pressurized air into pressurized hydraulic fluid for being applied to said hydraulic actuator.

4,240,648

SAFETY GUARD FOR WORK PLATFORMS

Darrel N. Starr, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 11, 1977, Ser. No. 814,597
Int. Cl.³ B60R *21/00*
U.S. Cl. 280—760 **24 Claims**



1. A guard and protective handrail assembly adapted for mounting on a work platform to afford protection and convenience to persons while on said platform, said handrail assembly including a framework with at least one side member having a base end attachable to the platform, said side member extending vertically upwardly from said platform, said platform including a substantially flat top and a depending peripheral skirt, said top having a slot therethrough disposed inward of said skirt, said side member being a tube having said base end thereof flattened, inserted in, and extended through said slot, and means fixedly attaching said flattened extended end to the underside of said platform and interiorly of the peripheral skirt, the attachment to the platform being disposed within the confines of the external perimeter of the platform and thereby preventing contact with objects external to the platform, or with a person on the work platform.

4,240,649

METER CARD PARKING SYSTEM

Herb Weber, 12 Copper Beech Pl., Merrick, N.Y. 11566

Filed Sep. 18, 1978, Ser. No. 943,129
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—13 **4 Claims**

1. A vehicle parking ticket comprising a card, a series of

indicia indicating month printed on said card, first laminated card activating area means disposed adjacent each of said series of month indicating indicia, a series of indicia indicating day of the month printed on said card, a second laminated card activating area means disposed adjacent each of said series of day indicating indicia, a series of hour indicating indicia, a third laminated card activating area means disposed adjacent each of said series of hour indicating indicia, said first, second and third



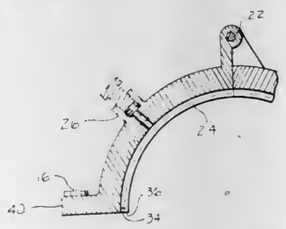
laminated card activating area means comprising a base layer containing the card face bearing indentification means printed thereon, a coating material superimposed on said base layer, said coating material adapted to be destroyed by abrasion and a design layer printed on said coating material, whereby the ticket is used by destroying the design layer and coating material through abrasion to exposed the base layer adjacent the month, date and hour indicia.

4,240,650

LEAKING WELD REPAIR CLAMP

Harold R. Adams, St. Francisville, Ill. 62460

Filed May 26, 1978, Ser. No. 910,132
Int. Cl.³ F16L *17/04, 55/16, 55/18*
U.S. Cl. 285—10 **3 Claims**



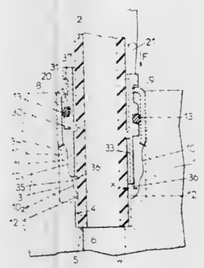
1. A clamp assembly for sealing a leaking weld and the circumferential joint between a pair of butted together pipe flanges, said clamp comprising a collar consisting of a plurality of arcuate segments adapted to be fitted around said pipe flanges, connecting means for connecting said segments around said flanges in butted relation at opposed ends of said segments, each of said segments having an inner circumferential wall provided with a main annular groove adapted to fit in registry with a joint between the pipe flanges, means for filling said groove with a fluid sealant under pressure comprising a fluid sealant filling communicating with said groove, said segments being further provided with a pair of annular border grooves on opposite sides of said main groove, and groove means in end walls of opposite segments connecting said main groove and said border grooves to provide a sealing means between said opposed end walls, said butted together segments having opposed radially extending butted together end walls provided with transverse grooves communicating the main groove with said border grooves, said main groove having a greater depth and width than said border grooves.

4,240,651

COUPLING SYSTEMS FOR CONDUITS, PARTICULARLY FOR SEMI-RIGID PLASTIC TUBES

Claude Mariaulle, Le Palais sur Vienne, France, assignor to Automatisation-Sogemo, Saint-Junien, France

Filed Jul. 14, 1978, Ser. No. 924,803
Claims priority, application France, Jul. 20, 1977, 77 22290
Int. Cl.² F16L *21/02*
U.S. Cl. 285—39 **4 Claims**



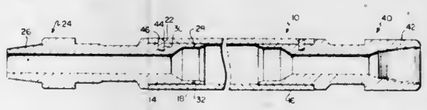
1. In a coupling system for coupling semi-rigid plastic tubes in which two ring members are provided one within the other, the outer ring member being adapted to be secured in sealing engagement in a bore within a part to which the tube is to be connected, said outer ring member having a plurality of teeth extending lengthwise of a tube inserted into said outer ring member, said teeth terminating in claws engageable with the outer wall of a tube inserted into said outer ring member, the inner ring member being movable axially within the outer ring member and having an end portion engageable with said teeth to effect disengagement of said teeth from a tube by axial movement of said inner ring member within said outer ring member in combination with first and second distinct sealing means for sealing the inner ring member and, respectively, a semi-rigid plastic tube and the outer ring member the improvement comprising an integral annular projection having a rounded contour provided on the inner surface of said inner ring member used as the first sealing means, the inner diameter of said projection being slightly smaller than the outer diameter of a tube inserted therein whereby the projection penetrates into the wall of an inserted semi-rigid plastic tube without embedding in the wall, said second sealing means comprising a toroidal sealing member positioned between the inner and outer ring members, and mounted for axial movement with said inner ring member, said first and second sealing means moving axially with said inner ring member.

4,240,652

LIGHTWEIGHT DRILL ROD

Lip F. Wong, and Benton A. Whiteman, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed May 24, 1979, Ser. No. 42,015
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—91 **1 Claim**



1. In an improved lightweight section of drill rod, which is

adapted to be coupled with like sections of drill rod in making up a drill string for use with oil well drilling rigs or the like, said section of drill rod being of the type which comprises a length of hollow cylindrical pipe made of aluminum or an aluminum alloy, where said pipe has an internally threaded female end, and a hollow steel tool joint attached to the said end of said pipe, said tool joint having an externally threaded male end which is disposed in mating engagement within the said internally threaded female end of said pipe; the improvement wherein the said externally threaded male tool joint end is provided with an outwardly open blind hole, and the said internally threaded female pipe end is provided with a hole which runs through one sidewall of said pipe, such that when said male tool joint end is matingly engaged in the said associated internally threaded female pipe end, the two said holes are in aligned relationship, and a dowel pin is snugly disposed within the two said holes, and material adjacent the exterior opening of the said hole in the said internally threaded female pipe end is peened over said dowel pin, whereby the said tool joint is permanently and securely attached to said pipe;

said internally threaded pipe end being internally relieved at its extreme end portion by an amount corresponding approximately to the height of the threads therein, and the said tool joint having an annular shoulder which mates with the said extreme end portion of said pipe when said pipe and said tool joint are matingly engaged, and said tool joint being torqued down into the said pipe end such that the said extreme end portion of said pipe carries a compressive load;

the internal threads in said pipe end and the external threads of said tool joint end being ASA 60° stub threads and a thread locking compound having been applied to said internal and external threads and to said dowel pin;

said pipe being an extrusion made of 2014 aluminum alloy in T6 temper, and said tool joint being made of SAE 4150 steel with a Brinell hardness in the range of 293 to 321;

said section of drill rod being of the type adapted for use in combination with a carousel type drilling rig and drill rod storage apparatus; and

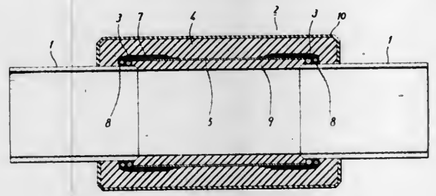
said male tool joint end having a hollow bore which increases in inside diameter toward its said externally threaded male end, and the extreme end portion of said externally threaded male tool joint end being provided with an internal chamfer of about 18°.

4,240,653

FLEXIBLE EXPANSION JOINT

Masahiro Ishigaki; Tadayoshi Ohira, both of Ibaraki; Kanji Fujita, Takarazuka, and Shin-ichiro Nomura, Takatsuki, all of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Nov. 2, 1978, Ser. No. 957,085
Claims priority, application Japan, Nov. 7, 1977, 52/133868
Int. Cl.² F16L *21/00*
U.S. Cl. 285—235 **10 Claims**



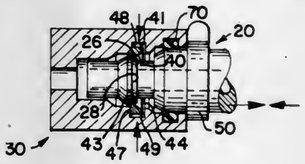
1. A flexible expansion joint, comprising: a pair of coaxial pipes defining joint portions, the adjacent ends of said pipes being axially spaced-apart from one another; an annular, circumferentially extending, stop ring secured to the outer surface of each of said pipes at a location close to said adjacent end thereof so as to protrude radially from said pipe around the circumference thereof; a tubular, flexible body coaxial with said pipes and having its opposite axial end portions sleeved on the outer surfaces of the adjacent ends of said pipes and extending axially outwardly beyond said stop rings, said body being affixed to said pipes and defining an internal, cylindrical, circumferentially closed zone between the adjacent ends of said pipes, said body having at least one annular, coaxial ply of bias cord reinforcement and at least one annular, coaxial ply of circumferential cord reinforcement disposed radially inside of said ply of bias cord reinforcement, said ply of bias cord reinforcement comprising two superposed bias cord lamina the cords of which extend at mutually opposite bias angles which bias angles are in the range of from 10° to 45° relative to the circumferential direction of said body, the opposite axial ends of said ply of bias cord reinforcement being affixed to said stop rings so that said ply of bias cord reinforcement extends axially between said stop rings, said ply of circumferential cord reinforcement comprising one ply cord which extends at an angle in the range of from 0° to 25° relative to the circumferential direction of said body, said ply of circumferential cord reinforcement extending axially between said stop rings, said tubular flexible body including an inner annular rubber layer located inside said ply of circumferential cord reinforcement and an outer annular rubber layer surrounding said ply of bias cord reinforcement, said inner and outer rubber layers being united by vulcanizing to form an integral tubular flexible body in which said ply of circumferential cord reinforcement and said ply of bias cord reinforcement are embedded between said inner and outer rubber layers.

4,240,654

HOSE END COUPLING UNIT

Dennis M. Gladieux, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Sep. 28, 1979, Ser. No. 79,755
Int. Cl.³ F16L *27/00*
U.S. Cl. 285—276 **8 Claims**



1. A hose end coupling unit, comprising:

a plug member having a leading cylindrical pilot portion end;

a socket member having axially spaced apart first and second cylindrical internal grooves around a cylindrical bore means for receiving the plug member, the first internal groove forming axially spaced innermost and outermost shoulders of different diametrical size with two bores of the bore means having different internal diameters;

an expandable interconnecting snap ring means sleeved over the pilot portion end of the plug member in an unexpanded state;

a flaring cam means including a cylindrical cam dwell portion at the enlarged flared end of the cam means on the plug member for expanding the interconnecting snap ring means into the first internal groove between the innermost and outermost shoulders, the outermost shoulder and the respective one bore having a circular opening of a size axially admitting the interconnecting snap ring means sleeved on the pilot portion end of the plug member and the innermost shoulder and the respective second bore having a circular opening of a size axially admitting the cam means and the cam dwell portion and barring the interconnecting snap ring means on the pilot portion end thereby forcing the interconnecting snap ring means to slideably expand over the cam means and into the first

internal groove and slide onto the cam dwell portion upon continued axial movement of the cam means deeper into the second bore;

the cam dwell portion having a trailing diametrically inwardly stepped cylindrical edge portion forming a radially outwardly extending shoulder means for preventing the expanded interconnecting snap ring means from returning to the pilot portion end after sliding over the cam dwell portion and snapping onto the shoulder means, the cylindrical bottom of the shoulder means of a diametrical size holding the interconnecting snap ring means thereon in the expanded state in the first internal groove between the innermost and outermost shoulders;

the plug member having first and second external cylindrical grooves, the first external groove located adjacent the shoulder means and diametrically inwardly thereof and having an axial width and cylindrical size sufficient for confining and permitting the interconnecting snap ring means to contract therein to the unexpanded state upon further axial movement of the cam means deeper into the second bore whereby the innermost shoulder barring the interconnecting snap ring means and forcing it off of the shoulder means and into the first external groove thereby unlocking the plug member from the socket member and permitting withdrawing the plug member from the socket member;

a removable spacer snap ring means carried in the second external groove in the plug member located outside of the interlocked plug and socket members for locking the plug member against the further axial movement of the cam means deeper into the second bore thereby preventing the forcing of the interconnecting snap ring means off of the shoulder means and into the first external groove;

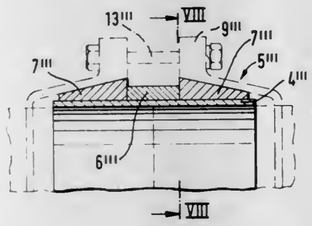
means for removing the spacer snap ring means from the second external groove preparatory to push-pulling the plug member out of the socket member; and

an O-ring seal carried in the second internal groove sealingly engaging a trailing cylindrical end portion of the plug member and sealing the bore means.

4,240,655
PIPE COUPLING

Andreas Rascher, Tannengut 2, Aarau, Switzerland (CH 5000), and Jürg Zbinden, Worbstrasse 45, Rubigen, Switzerland (CH 3113)

Filed Nov. 13, 1978, Ser. No. 959,421
Claims priority, application Switzerland, Nov. 17, 1977, 14036/77
Int. Cl.³ F16L *21/00*
U.S. Cl. 285—323 **6 Claims**



1. A coupling for abutting end portions of two at least substantially coaxial pipes, comprising a tubular inner jacket of cylindrical cross section; an outer jacket axially slidable onto said inner jacket and including two parts having respective conical surfaces which converge toward mutually spaced ends of said outer jacket, said parts having slots which extend in parallelism with the axis of the pipes over at least a predominant portion of the lengths, and are uniformly distributed over the peripheries, of said parts of said outer jacket and subdivide the latter into ring segments, and easily deformable webs extending transversely of said slots and interconnecting said ring segments, said outer jacket having a thickness exceeding that of said inner jacket at least at the mutually facing ends of said outer jacket parts; flanged clamping rings shiftable onto said outer jacket and having conical inner surfaces contacting and acting on said conical surfaces of said outer jacket parts; and means for drawing said clamping rings toward one another axially of the pipes to predominantly elastically deform said outer jacket and predominantly plastically deform said inner jacket.

4,240,656
APPARATUS FOR RETRIEVAL AND DISPOSAL OF ANIMAL EXCREMENTS

Karlheinz Eiffinger, Piccoloministr. 308, 5000 Köln 80, Fed. Rep. of Germany

Filed Oct. 5, 1978, Ser. No. 948,867
Int. Cl.³ A01K *29/00*; A47L *13/52*
U.S. Cl. 294—1 BA **18 Claims**



9. A device for the retention and disposal of animal excrement, comprising:

at least two separate scoops,

each scoop having a removable and disposable lining, each lining conforming to the interior shape of the respective scoop, and

common support means for rotatably supporting said scoops, each scoop separately and independently rotatable with respect to said common support means between an excrement retaining orientation associated with said scoop and an excrement disposal orientation associated with said scoop.

4,240,657
LOG LIFTER

James M. Feighery, 716 Mt. Sinai Rd. South, Dalton, Ga. 30720

Filed Feb. 5, 1980, Ser. No. 118,844
Int. Cl.³ A47J *49/14*
U.S. Cl. 294—11 **5 Claims**

1. A log lifter comprising a straight tubing section which is elongated and provided with a side wall slot opening through one end of the tubing section, a transverse bar member fixed to said one end of the tubing section and extending on opposite sides thereof and closing said slot at said one end, the opposite end of the slot terminating between the ends of the tubing section, a pair of spaced log engaging jaws carried by opposite ends of said bar member and projecting beyond one side of the tubing section, a reciprocating rod engaged slidably and non-rotatably in the tubing section for movement lengthwise therein and having a rear end operating handle, a coacting operating handle on the tubing section between the opposite ends of the same, and a single log engaging jaw secured to the end of said rod adjacent to the bar member and away from the operating handle of the rod and projecting through said slot and arranged in opposed relation to and substantially midway between the jaws of said pair, said single jaw being shiftable through said slot longitudinally and the opposite closed ends of the slot limiting movement of said single jaw with said rod and rod operating handle forwardly and rearwardly relative to the tubing section, and the engagement of said single jaw in said

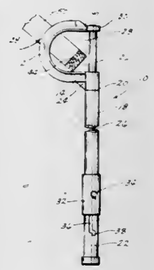


slots maintaining the tubing section and said rod in permanently assembled non-rotational relationship.

4,240,658
TRUSS LIFTING HOOK AND METHOD FOR USING SAME

Stanley Britson, White Fox Rd., Webster City, Iowa 50595

Filed Jan. 28, 1980, Ser. No. 116,041
Int. Cl.³ B25J *1/00*
U.S. Cl. 294—19 R **13 Claims**



1. An apparatus for lifting a truss including a plurality of interconnected beams, said apparatus comprising,

a generally U-shaped hook adapted to receive one of said truss beams therein, said hook including spaced apart opposite ends,

an elongated shaft having a hook end and a handle end, said hook end being connected to one end of said hook;

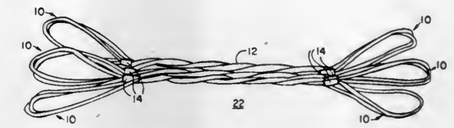
a rod connected to said shaft for longitudinal sliding movement therealong between a first position wherein said rod is substantially clear of the space between opposite ends of said hook so that a truss beam may be received therein and a second position wherein said rod extends substantially across said space whereby withdrawal of said beam between said opposite ends is prevented,

said rod being substantially co-extensive with said shaft such that the rod may be manipulated adjacent the handle end of said shaft for movement between said first and second positions.

4,240,659
HEAVY DUTY SLING CONSTRUCTION

Dennis St. Germain, Wilmington, Del., assignor to I & I Sling Company, Inc., Aston, Pa.

Filed Sep. 11, 1978, Ser. No. 940,944
The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.
Int. Cl.³ B66C *1/18*
U.S. Cl. 294—74 **7 Claims**



1. A flexible load carrying apparatus which comprises first and second slings wherein each sling is a three body part sling constructed of a single length of flexible cable and includes:

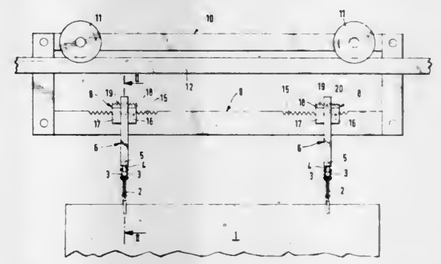
a body having three intertwined sections of said cable; and

an eye at each end of said body, each eye including two intertwined sections of said cable, each eye having at its juncture with said body an end of said cable, said ends being secured to a body section of said cable by a sleeve, said sleeve each thereby securing only two sections of said cable, and wherein said bodies of said first and second slings are intertwined and maintained intertwined by maintaining means which include the engagement of said sleeves, on a random basis, with adjacent sleeves and cables, said sleeves fitting into interstices there between thus forming an interlocking relationship, said maintaining means permitting said apparatus to be easily and readily engaged and disengaged from said slings.

4,240,660
APPARATUS FOR TRANSPORTING SHEETS OF GLASS IN A VERTICAL POSITION

Mario Roth, Aachen; Werner Pagel, Herzogenrath; Günther Schmidt, Aachen-Richterich, and Laurenz Hausmann, Gangelt, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

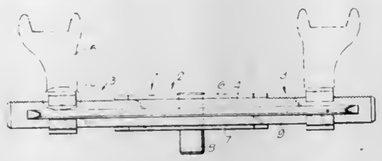
Filed Aug. 10, 1979, Ser. No. 65,734
Claims priority, application France, Aug. 11, 1978, 78 23709
Int. Cl.³ B66C *1/48*
U.S. Cl. 294—81 R **5 Claims**



1. Apparatus for transporting sheets of glass in a vertical position having tongs adapted to engage a sheet of glass, a first strap having a support face operatively connected to said tongs and a trolley supported first beam having a support face from which said first strap is suspended, the improvement comprising in that the support face of said first strap and the support face of said first beam are each provided with a plurality of teeth wherein the pitch of the teeth associated with the first beam differs from the pitch of the teeth associated with the first strap, and a first differential block having a plurality of upper teeth corresponding in shape and pitch to the teeth associated

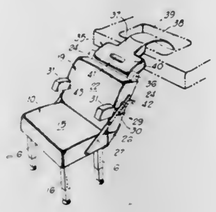
with said first strap and a plurality of lower teeth corresponding in shape and pitch to the teeth associated with the first beam whereby when said first differential block is inserted between the support faces of the first beam and the first strap, the first strap will be adjustably suspended from the first beam.

4,240,661
YOKE
Hans Ögren, Kristinehamn, Sweden, assignor to Aktiebolaget Ögrens Svets-och Mek. Verkstad, Kristinehamn, Sweden
Filed Mar. 6, 1979, Ser. No. 17,855
Int. Cl.[3] B66C *1/34*
U.S. Cl. 294—82 AH **5 Claims**



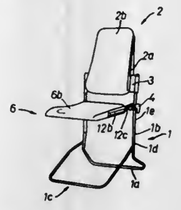
1. Yoke designed in each end to be provided with an up-right lifting fork or other support for an object to be lifted, particularly a yoke for lifting motor-cars by applying the lifting forks under an axle of the car or under other suitable lifting point and thereafter pushing the yoke upwards, characterized in that the yoke has two end portions in each of which is provided a sleeve for journaling a shaft bar of said lifting fork or corresponding support, each end portion being designed as an open box formed of two longitudinal, vertical side plates and at least one vertical end plate, said sleeve extending through said open box and having an outer diameter which is somewhat smaller than the distance between the vertical side plates, so that the sleeve may be displaced in the box between two end positions, said sleeve being securably adjustable in different positions between the end positions.

4,240,662
FOLDING SHAMPOO CHAIR
Bernice J. Anderson, 1805 Shirley St. SW., Atlanta, Ga. 30310
Filed Aug. 10, 1979, Ser. No. 65,445
Int. Cl.[3] A47C *1/04, 4/00*
U.S. Cl. 297—17 **9 Claims**



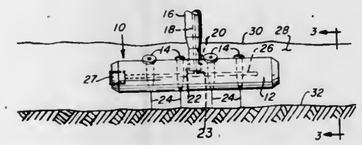
1. A folding shampoo chair comprising a seat having a bottom storage recess and a back hinged to the seat and having a rear storage recess, legs pivotally attached to the seat and being swingable to stowed positions within said recess of the seat, arm rests and a combined shoulder and head rest pivoted on said back and being swingable to stowed positions within the recess of the back, and said seat and back being swingable to folded positions with the recesses of the seat and back in opposing relationship with said legs, arm rests and shoulder and head rest therein.

4,240,663
ADJUSTABLE STACKING CHAIR
Hermann Locher, Pfeffingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Mar. 14, 1979, Ser. No. 20,546
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 7830726[U]
Int. Cl.[2] A47C *3/04, 3/34*
U.S. Cl. 297—239 **3 Claims**



1. A chair, comprising:
a frame;
a backrest fixed to said frame;
a pair of casings adjustable vertically on said frame and adapted to adjust the vertical height of said backrest and to be locked into position at a desired vertical height on said frame;
a pair of substantially parallel first seat support tubes, each of said first seat support tubes extending forwardly from one of said casings and being pivotally secured to said one of said casings by a hinge pin, said pair of first seat support tubes being adapted to be pivoted into a vertical position about said hinge pins;
a transverse member rigidly interconnecting said pair of first seat support tubes;
a seat disposed on said first seat support tubes and adapted to be moved in an axial direction along said pair of first seat support tubes; and
linear displacement means connected to said seat and disposed beneath said seat between said seat and said transverse member and adapted for axial adjustment of said seat.

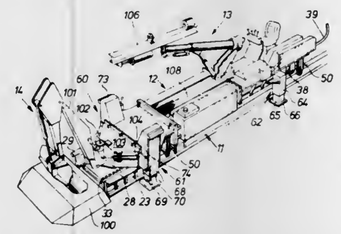
4,240,664
HYDRAULIC JET CUTTING TOOL AND METHOD
Anil Mahyera, New Dundee, and John Duff, North Bay, both of Canada, assignors to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Sep. 8, 1978, Ser. No. 940,803
Int. Cl.[3] E21C *25/60*
U.S. Cl. 299—17 **31 Claims**



1. In a fluid jet cutter means for forming an elongated kerf in a formation, a nozzle means comprising: an elongated body member; said body member including a plurality of jet nozzle portions spaced longitudinally thereof and adapted to produce respective liquid jets each of sufficient intensity to free surface material from such a formation by jet impingement cutting action upon a surface portion of such formation when said jet nozzle portions are located within a maximum standoff distance from such surface portion; said nozzle means including cutter bit means spaced longitudinally of said body for cutting such surface portion of such formation; said body member

being adapted to communicate with a source of high pressure liquid flow for supplying liquid cutting medium to said jet nozzle portions; said nozzle means being adapted for forming such a kerf in such hard formation by such freeing of surface material in conjunction with movement of said body member in the direction of the longitudinal extent thereof and along a path adjacent such surface portion; at least one pair of said jet nozzle portions being positioned to produce a respective pair of liquid jets directed generally transversely of the longitudinal axis of said body member and diverging radially outwardly therefrom; and the divergence of said pair of jets being of such magnitude as to permit said pair of jets to provide clearance, by such freeing of surface material, for the transverse extent of said body member and said cutter bit means during the forming of such a kerf in such hard formation.

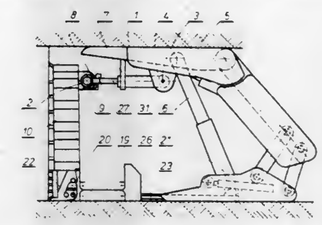
4,240,665
CONVEYOR MOUNTED VEHICLE
Terence Hubbard, Little Eaton, and Eric A. Jackson, Swanwick, both of England, assignors to Perard Engineering Limited, Ripley, England
Filed Dec. 15, 1978, Ser. No. 969,707
Claims priority, application United Kingdom, Dec. 20, 1977, 53099/77; May 31, 1978, 25975/78
Int. Cl.[2] E21C *35/20, 35/06*
U.S. Cl. 299—31 **8 Claims**



1. A power-supply apparatus for supplying electrical and hydraulic power to a longwall mining face installation, the apparatus comprising an advanceable track and a vehicle mounted on the track whereby the apparatus can be advanced as the mine face recedes, the vehicle having a base defining a platform, a hydraulic track incorporated in the base, power-supply means mounted on the platform, the power-supply means including electric supply means, hydraulic supply means connected with the electric supply means, and hydraulic and electric output points, drive means on the vehicle engageable with members fixed relative to the track for driving the vehicle along the track, extensible and retractable legs mounted on the base, hydraulic means connected with said hydraulic supply means and with said legs for effecting extension and retraction, and captivating means captivating the vehicle on the track, whereby upon extension of the legs the track is raised with the vehicle so that operation of said drive means causes advancement of the track relative to the vehicle.

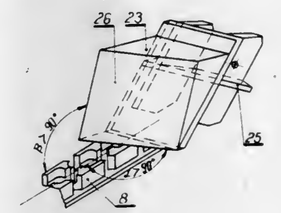
4,240,666
DEVICE FOR MINING OF THICK STRATA OF USEFUL MINERALS
Wojciech Podgórski, Bytom, and Justyn Stas, Ruda Slaska, both of Poland, assignors to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag", Gliwice, Poland
Filed Mar. 20, 1979, Ser. No. 22,264
Claims priority, application Poland, Apr. 14, 1979, 206086
Int. Cl.[3] E21C *27/34*
U.S. Cl. 299—31 **7 Claims**

1. In a device for mining thick strata of useful minerals, comprising a section of wall lining, a mining machine including a plough, conveyor means for removal of mined minerals, pressing means for urging said mining machine against the face of the strata being mined at first and second points, the first point being in the region of the floor and the second point being above the level of the reaction force of the rock being mined against the mining machine, said pressure means comprising rams extending substantially parallel to the floor and comprising an upper pressure unit fixed to a canopy of the lining, said unit including a piston rod with a guide connected with play with guides of the neighboring sections of the lining to form one sequence, said mining machine including a slide which is slidable in a vertical plane and slides on a guide, the improvement comprising a cylinder for the upper pressure unit provided with annular recesses, every second recess being connected to a first multi-position distributor fixed to another



section of the lining and connecting said cylinder to a flow-off main, every other second annular recess being connected with a second multi-position distributor fixed to another section of the lining opposite to said first distributor, said second distributor being connected to said flow-off main, said cylinder having a piston therein dividing the cylinder into two chambers, one of said chambers being connected to a supply main, said distributors all including respective levers situated within the region of movement of said plough so that said levers are deflected by said plough from respective neutral positions, and return to the neutral positions after passage of said plough, said distributors including respective slides which remain in the position to which it has been shifted.

4,240,667
DRIVING GEAR RACK CLEANER FOR A MINING MACHINE
Janusz Sedlaczek, Gliwice; Andrzej Blazewicz, Tychy; Marian Krutki, Katowice; Kazimierz Mandat, Katowice, and Tadeusz Wozniak, Katowice, all of Poland, assignors to Centralny Osrodek Projektowokonstrukcyjyn Maszyn Gorniczych "Komag", Gliwice, Poland
Filed Feb. 13, 1979, Ser. No. 11,883
Claims priority, application Poland, Feb. 22, 1978, 204864
Int. Cl.[3] E21C *29/24*
U.S. Cl. 299—43 **4 Claims**



1. A driving gear for a mining machine having a body and comprising a coil chain wound over a driving chain wheel and a jockey chain wheel, and co-operating with a rack mounted along the conveyor, the improvement comprising a sweep-off gear mounted on the body of the machine above the rack, said sweep-off gear having a sweeping-off surface disposed above the rack and extending transversely thereacross askew to the longitudinal axis of the rack and inclined to the surface of the

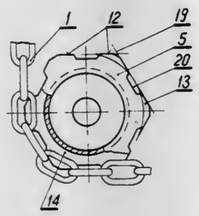
rack, and a console abutting against the lower surface of the body.

4,240,668

DRIVING DEVICE FOR MINING MACHINE

Janusz Sedlaczek, Gliwice; Andrzej Blazewicz, Tychy; Marian Krutki, Katowice; Kazimierz Mandat, Katowice, and Tadeusz Wozniak, Katowice, all of Poland, assignors to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag", Gliwice, Poland

Filed Feb. 13, 1979, Ser. No. 11,884
Claims priority, application Poland, Feb. 22, 1978, 204808
Int. Cl.³ E21C *29/02*
U.S. Cl. 299—43 **2 Claims**



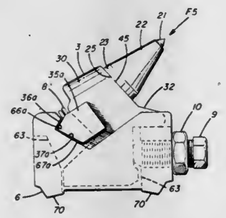
1. In a device for driving a mining machine advancing along a conveyor, comprising an endless link chain extended on a drive wheel, a reversible wheel and a plurality of directing wheels, each directing wheel including two toothed rings separated by a circumferential groove, and a rack fixed alongise the conveyor for separatively engaging said chain, the improvement wherein the teeth of the rings of the directing wheels have a shape formed of segments of sides of a regular polygon circumscribed on a circle, said polygon-shaped teeth constituting the outer outline of the directing wheels, said teeth defining a pitch circle whose radius is less than said radius of the circle circumscribing the polygon, said teeth having tips which are truncated, said directing wheels having inter-tooth spaces and being provided with recesses in said inter-tooth spaces below said pitch circle, the links of the chain which lie in a plane parallel to the axis of rotation of said wheel seating on the flanks of two neighboring teeth, whereas the links lying in a plane perpendicular to the axis of said wheel seat partially in said circumferential groove.

4,240,669

MINING CUTTER BIT HOLDER AND MOUNTING ASSEMBLIES

Lester G. Rollins, Sandy Lake, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 2, 1978, Ser. No. 947,367
Int. Cl.³ E21C *25/12*
U.S. Cl. 299—86 **72 Claims**



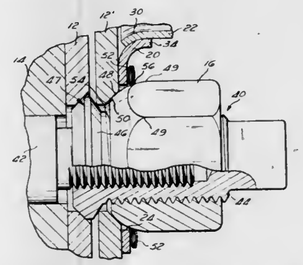
1. An assembly for mounting a cutter bit on a driven mechanism comprising:
a bit holder;
said bit holder having a bore adapted to receive a cutter bit;
a shank portion of said holder having at least one rear load bearing surface disposed on the rear of said shank portion;
at least one front load bearing surface disposed on the front of said shank portion of said holder;
a cutter base having an upwardly open socket;
said socket receiving at least a part of said shank portion of said holder;
said socket having at least one base load bearing surface to contact said rear load bearing surface;
said socket having at least one clamping means on said base for exerting a rearward force to said front load bearing surface;
said holder having a forward extension portion extending further forward than said front load bearing surface; and
said base having load bearing means in substantially abuting relationship with said forward extension for substantially fixing said holder from rotation about the axis of the socket.

4,240,670

VEHICLE WHEEL COVERS

Edward Zorn, Encino; Bert J. Sherwood, Los Angeles, and Fenton A. Liffick, Granada Hills, all of Calif., assignors to Chemplate Corporation, Los Angeles, Calif.

Filed Oct. 17, 1978, Ser. No. 952,076
Int. Cl.³ B60B *7/06*
U.S. Cl. 301—9 DN **16 Claims**



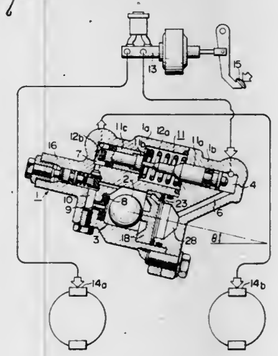
1. For a vehicle wheel mounted on an axle hub having a plurality of lug bolts which pass through openings in the wheel and secured by ramped lug nuts threaded onto the ends of said lug bolts, the ramp portion of said ramped lug nuts each having an inner ramped end normally seated within a recess of said wheel in a non-interference fit and a free outer ramped end, the improvement in mounting a wheel accessory which includes:
a mounting means having formed therein a first set of apertures slightly undersized with respect to the maximum outer diameter of said ramped lug nuts and a second set of apertures oversized with respect to said maximum outer diameter of said ramped lug nuts, the combined first and second sets of apertures being arranged in a pattern matching the pattern of said plurality of lug bolts with said first set of undersized apertures having a diameter sufficiently large to permit full seating of inner ramped ends of said ramped lug nuts securing said vehicle wheel in a non-interference fit, and said second set of oversized apertures fitting loosely around said ramped lug nuts and permitting also non-interference seating of said inner ramped ends of said ramped lug nuts; and
a plurality of resilient washers each having a normal unexpanded inner diameter undersized with respect to said maximum outer diameter of said ramped lug nuts but of sufficiently large inner diameter to allow normal seating of said inner ramped ends of said ramped lug nuts in said wheel recesses, each of said resilient washers engaging only each of the said free outer ramped ends of those of said ramped lug nuts which are surrounded by said undersized apertures, to permit a non-interference fit with said inner ramped ends of said ramped lug nuts when said ramped lug nuts are torqued into normal seating engagement with said wheel, said resilient washers being thereby urged against said mounting to secure said mounting means to said vehicle wheel.

4,240,671

BRAKING HYDRAULIC PRESSURE CONTROL UNIT FOR MOTOR VEHICLE

Harumi Ohori; Masayoshi Katagiri, and Tomoyuki Nogami, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 21, 1979, Ser. No. 13,449
Claims priority, application Japan, Jun. 22, 1978, 53-85994[U]
Int. Cl.³ B60T *8/14*
U.S. Cl. 303—6 C **4 Claims**



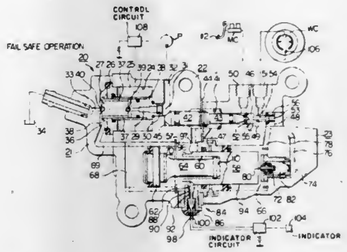
1. A braking hydraulic pressure control unit for a motor vehicle comprising:
an inlet compartment and an outlet compartment communicating with a master cylinder and rear wheel cylinders respectively;
a valve chamber directly communicating with said inlet compartment and communicating with said outlet compartment through a valve port;
a spherical valve floatingly contained in said valve chamber and closing said valve port by a force of inertia when the deceleration of the motor vehicle reaches a predetermined level; and
a differential-acting piston having pressure bearing portions facing said inlet compartment and said outlet compartment respectively;
wherein the improvement comprises an arrangement of components of said piston which includes:
a main piston portion having an end surface facing said inlet compartment;
a first piston segment operatively joined to said main piston portion and movable therewith, said first segment having an end surface facing said outlet compartment;
a second piston segment relatively movable with respect to said first segment and having an end surface facing said outlet compartment, the area of said end surface of the main piston portion being greater than that of said end surface of the first piston segment whereby an increase in pressure in the inlet compartment during an initial braking period results in said first piston portion being displaced with respect to said second piston segment.

4,240,672

SKID CONTROL SYSTEM

Masayuki Tokunaga, Tokyo, and Yoshio Otsuka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Mar. 26, 1979, Ser. No. 24,172
Claims priority, application Japan, Apr. 10, 1978, 53/41979
Int. Cl.³ B60T *8/00*
U.S. Cl. 303—92 **7 Claims**



1. A skid control system for a vehicle including a wheel brake cylinder, comprising:
a valve having an open position for a normal braking operation and having a closed position for a skid control operation;
a hydraulic pressure responsive actuator for said valve, said actuator including an expansion piston which has a large diameter portion and a small diameter portion and a normal braking position in which said expansion piston allows said valve to take said open position and a skid control position in which said expansion piston allows said valve to take said closed position;
means responsive to movement of said expansion piston for producing a signal only when said expansion piston has moved into said skid control position, said movement responsive means including a switch device,
said switch device comprising a plunger extending slidably transversely to the axis of said expansion piston and having one end which contacts with a first peripheral surface of said small diameter portion when said expansion piston is in said normal operating position and which contacts with a second peripheral surface of said large diameter portion when said expansion piston is in said skid control position, and
two electric conductors spaced from each other,
said plunger having the other end thereof spaced from said two electric conductors to disconnect same from each other when said one end of said plunger is in contact with said first peripheral surface and which contacts with said two electric conductors to connect same to each other when said one end of said plunger is in contact with said second peripheral surface.

4,240,673

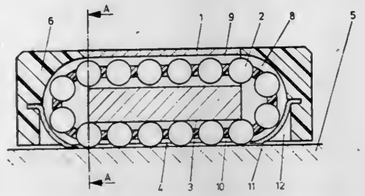
LONGITUDINALLY MOVABLE ANTIFRICTION BEARING WITH FLEXURAL TONGUE

Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,904
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 7815287[U]
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **15 Claims**

1. In an antifriction bearing for longitudinal movement with respect to a machine element, comprising a guide block having a guide for guiding an endless row of rolling elements, the

guide defining a load zone enabling the rolling elements to move between a race on the machine element and a race on the guide block, a return zone for rolling elements not under load, and a pair of end sections having reversing races joining the return zone and load zone at the respective ends thereof; the



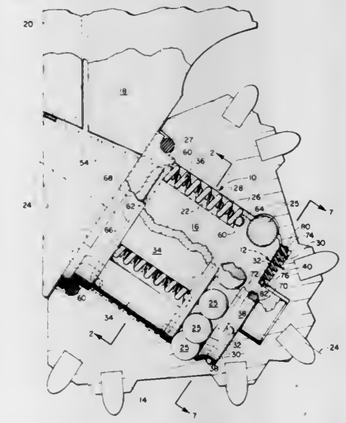
improvement wherein each said end section comprises a flexurally elastic tongue directed toward the respective ends of the load zone and forming a part of said reversing race, said tongues being mounted adjacent the respective ends of the load zone and positioned to lift rolling elements from said loading zone and direct them in respective reversing race.

4,240,674

POSITIVE LUBRICATING AND INDEXING BEARING ASSEMBLY

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Nov. 19, 1979, Ser. No. 95,532
Int. Cl.³ F16C *19/34*
U.S. Cl. 308—8.2 **31 Claims**



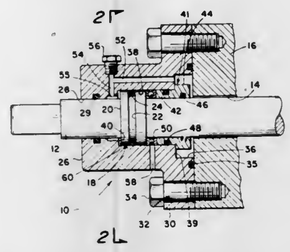
1. A bearing assembly, comprising:
means defining a pair of race members operatively retained for relative movement, each race member defining a raceway, the raceways of the pair of race members being positioned in spaced apart and opposing confronting relation;
a plurality of bearing segments movably positioned intermediate the raceways, each of said bearing segments having bearing surfaces adjoining both raceways, the bearing surfaces adjoining the raceways at surface areas substantially greater than a point contact or a line contact;
indexing means operatively interconnecting at least one of said race members and at least one of said bearing segments for moving said bearing segments relative to both raceways during relative movement of said race members;
a lubricating element carried between the raceways and in conjunction with the bearing segments, said lubricating element defining a chamber within which to receive lubricant and passageway means for communicating the lubricant from chamber to said raceways; and
means operatively associated with at least one of said race members and for expanding and contracting the chamber of said lubricating element during relative movement of said race members.

4,240,675

STUFFING GLAND

Nicholas M. Rylander, 811 Beacon Bldg., Tulsa, Okla. 74103

Filed Oct. 23, 1978, Ser. No. 953,461
Int. Cl.³ F16C *19/10, 39/04*
U.S. Cl. 308—9 **9 Claims**



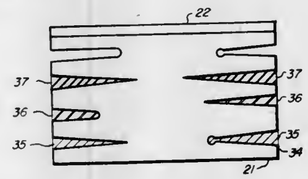
1. A stuffing gland for a shaft subjected to relatively high pressures and comprising housing means secured around the outer periphery of the shaft, outwardly extending circumferential shoulder means provided on the outer periphery of the shaft and disposed within the housing means, passageway means provided in the housing means for communicating the pressure acting on the shaft to the outboard face of the circumferential shoulder means, collar means loosely disposed around the outer periphery of the shaft and disposed within the housing means and having one end thereof open to the pressure acting on the shaft, bearing means interposed between the collar means and the circumferential shoulder means for transmitting pressure to the inboard face of the circumferential shoulder means, the cross sectional area of the circumferential shoulder means being in selected ratio with the cross sectional area of the shaft whereby pressures acting on the outboard side of the circumferential shoulder means when the movement of the collar means is limited by the housing means are equal and opposite to the pressures acting on the shaft for equalizing the forces acting on the shaft.

4,240,676

BENDING PAD THRUST BEARING

Hugh G. Anderson, Severna Park; Earl R. Quandt, Annapolis, and A. Bayne Neild, Severna Park, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1979, Ser. No. 69,191
Int. Cl.³ F16C *17/04*
U.S. Cl. 308—9 **15 Claims**



1. A thrust bearing pad for transmitting thrust loads between a rotary thrust member and a stationary thrust member, said bearing pad being rigidly attached to one of said members and comprising:

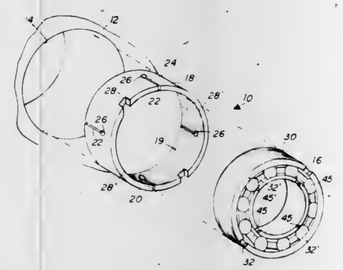
a planar base portion including means uniformly supporting said bearing pad on a member; and
a bearing face in sliding engagement with the opposite thrust member for transmitting power to said opposite thrust member while moving relative thereto, said bearing face being substantially planar and parallel to said base portion in the unstressed condition and being thermoelastically deformable in operation to assume a crowned bearing face when thrust loads are applied thereto.

4,240,677

BEARING MOUNTING DEVICE AND BEARING

Douglas L. Payne, 29155 Spoon, Madison Heights, Mich. 48071, and Peter A. Walter, 27229 Sherri Lynn Ct., Mt. Clemens, Mich. 48045

Filed Jan. 25, 1979, Ser. No. 6,343
Int. Cl.³ F16C *35/06*
U.S. Cl. 308—15 **6 Claims**



1. A bearing mounting device and a bearing including an outer race and an inner race comprising:
a radially expandable sleeve comprising radially movable segments along the periphery thereof, and a tapered, threaded bore;
the bearing outer race having a tapered, threaded outer surface complementary to the bore;
means engaging the bearing outer race for rotating the tapered threaded outer surface in the tapered threaded bore; and
means for preventing rotation of the sleeve when the bearing is being rotated.

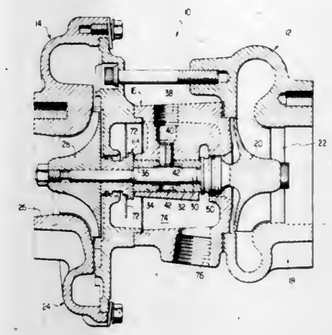
4,240,678

NON-ROTATING FLUID DAMPED COMBINATION THRUST AND JOURNAL BEARING

Charles R. Sarle, Noblesville, and Bruce R. Owen, Indianapolis, both of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Filed Feb. 22, 1979, Ser. No. 13,976
Int. Cl.³ F16C *33/10*
U.S. Cl. 308—121 **9 Claims**

1. A bearing structure for high speed rotating shafts comprising,
(a) a housing,
(b) a bore through said housing,
(c) a radial sleeve bearing positioned within said bore and having opposite ends extending beyond said bore to function as an axial thrust bearing,
(d) means anchoring said bearing to said housing against rotation and axial movement in said housing bore,
(e) a shaft rotatably journalled in said sleeve bearing, (f) abutments carried by the shaft adjacent to said bearing ends forming thrust bearings,
(g) said means for anchoring said sleeve bearing against rotational and axial movement in said housing being a hollow pin, said pin carrying thrust loads,
(h) said sleeve bearing absorbing any net thrust on said shaft thus limiting axial displacement of said shaft,
(i) said housing having a lubricant supply hole and said sleeve bearing having a first lubricant receiving hole receiving said hollow pin with said hollow pin providing a



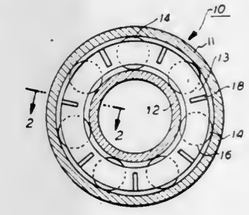
flow path for lubricant supply to said shaft and a second hole providing a flow path for lubricant supply for oil film at the bearing outside diameter.

4,240,679

FREE OIL CONTROL IN A GYRO BEARING DESIGN

Howard S. Schnoll, Oakland, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jan. 25, 1979, Ser. No. 6,413
Int. Cl.³ F16C *33/66, 33/38*
U.S. Cl. 308—187 **5 Claims**



1. An antifriction angular contact ball bearing comprising:
an outer race,
an inner race,
an integral retainer positioned between said outer and inner races having a plurality of spaced ball pockets,
a plurality of balls disposed within said retainer ball pockets, and
a plurality of elongated flat members having a portion conforming to the shape of the outer race slidably disposed in slots opening on the periphery of said retainer and contacting said outer race by means of centrifugal force whereby lubricant between said outer races and said retainer is maintained at a level to provide a consistently low friction bearing.

4,240,680

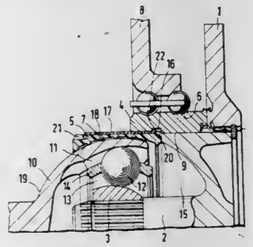
BEARING ASSEMBLY FOR A MOTOR VEHICLE WHEEL

Werner Krude, Siegburg-Kaldauen; Karl-Heinz Müller, Wissen, and Alfons Jordan, Hennef, all of Fed. Rep. of Germany, assignors to Uni-Cardan AG, Siegburg, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,077
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817546
Int. Cl.³ F16C *33/76;* F16D *3/30*
U.S. Cl. 308—187.1 **8 Claims**

1. A bearing assembly for use with a motor vehicle wheel

including an axially elongated inner bearing ring arranged to be secured to the wheel hub of the motor vehicle wheel, an outer bearing ring laterally encircling and spaced radially outwardly from said inner bearing ring, said outer bearing ring is arranged to be attached to the wheel support of the motor vehicle wheel, a constant velocity universal joint comprising an outer joint member having a hollow space, an inner joint member located within the hollow space, said inner bearing ring forming an axially extending opening with the opening having a diameter larger than the outside diameter of said outer joint member, said outer joint member extends into the opening in said inner bearing ring, said inner bearing ring arranged to releasably receive the wheel hub centered therein, said inner joint member arranged to receive and support a trunnion at-



tached to the wheel hub, said outer joint member having a spherically shaped outside surface, and a contact seal located between said inner bearing ring and the outside surface of said outer joint member, wherein the improvement comprises that said contact seal is elongated in the axial direction of said inner bearing ring and has an inwardly facing surface directed toward the outside surface of said outer joint member and an outwardly facing surface directed toward the inside surface of said inner bearing ring, said contact seal having at least two sealing lips extending inwardly from the inwardly facing surface thereof, said sealing lips spaced apart in the axial direction of said inner bearing ring and disposed in contact with the outside surface of said outer joint member, and said contact seal is fixed in the opening in said inner bearing ring.

4,240,681

TWO ROW ROLLING BEARING ASSEMBLY HAVING SINGLE PIECE INNER RING AND TWO PIECE OUTER RING

Robert Stolz, Schweinfurt, and Walter Hahn, Schonungen, both of Fed. Rep. of Germany, assignors to SKF Industries, Inc., King of Prussia, Pa.

Continuation of Ser. No. 850,794, Nov. 11, 1977, Pat. No. 4,138,169. This application Nov. 20, 1978, Ser. No. 962,175

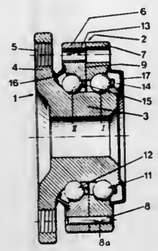
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2654607

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.[3] **F16C** *19/18, 23/08*

U.S. Cl. 308—189 R **3 Claims**

1. In a rolling bearing assembly having first and second members relatively rotatable with respect to one another and defining first and second races therebetween, rolling elements in said races and defining first and second rows respectively of said rolling elements, and means for mounting said first and second members; the improvement wherein said first member comprises first and second elements having ring-shaped portions defining running tracks for said first and second races, respectively, and means detachably holding said first and second elements together, said second member having a unitary portion on which running tracks for said first and second races are formed, said second member having a radially extending mounting flange on one side thereof, one of said rows of said rolling elements having a substantially greater number of rolling elements than the other of said rows, said first and second elements having aligned axially extending hole means distributed about their circumference for mounting said bearing



assembly, the hole means of the one of said first and second elements towards said flange being threaded.

4,240,682

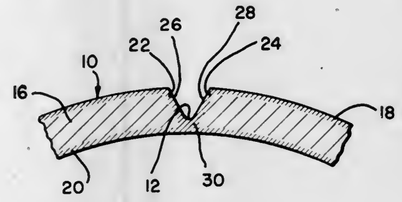
BEARING RACE

Carl F. Benson, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 15, 1979, Ser. No. 20,754

Int. Cl.[3] **F16C** *33/58, 19/24*

U.S. Cl. 308—216 **5 Claims**



4. A bearing race comprising: an annular metal member having at least one longitudinally extending groove, said annular metal member having a relatively soft metal core with a first carburized portion extending inwardly from the outer surface of the metal annular member, a second carburized portion extending outwardly from the inner surface of the annular metal member substantially the same thickness as the first carburized portion, carburized portions extending from the sides of said groove, and a carburized portion extending radially from the bottom of said groove entirely through the annular metal member having a maximum thickness twice the thickness of said first carburized portion.

4,240,683

ADJUSTABLE BEARING ASSEMBLY

Gary M. Crase, Cypress, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

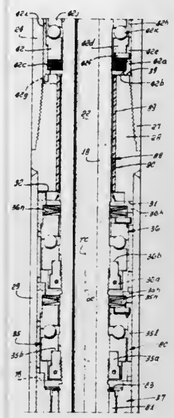
Filed Jan. 12, 1979, Ser. No. 3,004

Int. Cl.[3] **F16C** *19/12;* **E21B** *17/00*

U.S. Cl. 308—227 **25 Claims**

1. In a bearing assembly comprising a housing structure; a shaft rotatable in said housing; bearing means between said housing and said shaft for transmitting thrust between said shaft and said housing; said bearing means including one race carried by said housing; a second race carried by said shaft and bearing elements between said races; and means establishing a rotary drive connection between said shaft and said second

bearing race: the improvement wherein said means establishing a rotary drive comprises surfaces of said second race and said



shaft, one of said surfaces being eccentric and the other of said surfaces being concentric with the axis of rotation of said shaft.

4,240,684

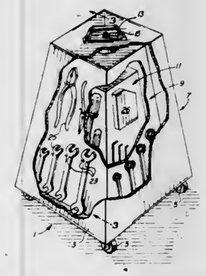
TOOL BOX INCLUDING A PLURALITY OF ROTATING NESTED PYRAMIDAL TOOL RACKS

Jack H. Henning, 5002 S. Greenway Dr., Tucson, Ariz. 85706

Filed Jun. 25, 1979, Ser. No. 51,538

Int. Cl.[3] **A47B** *31/00*

U.S. Cl. 312—202 **13 Claims**



1. A tool rack assembly comprising in combination:

a. an outer rack, said outer rack including

i. a first tool supporting panel, said first tool supporting panel partially enclosing a first region;

ii. a removable tool supporting panel, said removable tool supporting panel being engageable to said first tool supporting panel to further enclose said first region;

iii. a plurality of tool supporting elements attached, respectively, to the outer surfaces of said first tool supporting panel and said removable tool supporting panel;

iv. means for removably connecting said removable tool supporting panel to said first tool supporting panel, whereby said removable tool supporting panel can be removed, allowing access to said first region through an opening created by removal of said removable tool supporting panel;

b. an inner rack nested in said first region within said outer rack;

c. bearing means attached to said inner rack for rotatably supporting said inner rack within said outer rack enabling a user to conveniently remove said first removable tool supporting panel from said outer rack and enabling the user to easily rotate said inner rack within said outer rack to enable the user to easily reach through said opening to any tool supported on a tool supporting surface of said inner rack; and

d. a rigid cover or shell for covering said outer rack to prevent access to said first tool supporting panel and said removable tool supporting panel and further including means for securing said cover or shell over said outer rack.

4,240,685

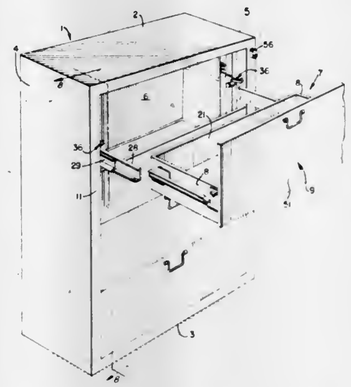
FILE LOCK AND INTERLOCK

Leo Terlecki, Youngstown, Ohio, assignor to GF Business Equipment, Inc., Youngstown, Ohio

Filed Feb. 5, 1979, Ser. No. 9,599

Int. Cl.[3] **E05B** *65/46;* **E05C** *15/04*

U.S. Cl. 312—217 **7 Claims**



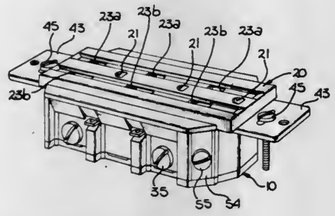
1. A file cabinet having a plurality of vertically stacked storage elements provided with interlock means for preventing the opening of more than one said element at a time, said interlock means including an interlock assembly having a plurality of vertically aligned lift bars in said cabinet for limited vertical displacement therein, guide means in said cabinet containing said lift bars, actuating means carried by each said lift bar each including rotatable lesser and greater diameter portions normally disposed immediately adjacent the next lower one of said lift bars, means mounting each said storage element within said cabinet for substantially horizontal rectilinear movement therein, activator means horizontally movable concurrently with each said storage element to engage one said actuating means to vertically displace its respective lift bar and any other lift bars thereabove, an inturned flange on each said lift bar beneath each said actuating means of the next higher lift bar, blocking means adjacent said activator means overlying said inturned flange of the next lowest lift bar when one said storage element is opened to preclude elevation of any lift bars below and thus opening of any other storage elements below, while said storage elements above said opened storage element are precluded from opening as their respective activator means is blocked from rectilinear displacement by the elevated inturned flanges of said lift bars above said opened storage element, a lock dog attached to each said lift bar and having a distal catch, said storage elements having a front provided with keeper means horizontally aligned with said lock dog catches, and means selectively operable to simultaneously elevate and lower all of said lift bars and attached lock dogs to respectively engage and disengage all said catches relative said keeper means.

4,240,686

TRIPLEX RECEPTACLE

Peter A. Kurbikoff, Agoura, Calif., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 6, 1979, Ser. No. 27,922
Int. Cl.³ H01R *4/66*
U.S. Cl. 339—14 R **10 Claims**



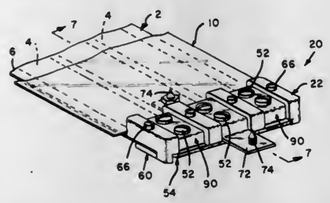
1. A triplex receptacle comprising:
a non-conductive body member defining three centrally disposed cavities;
a grounding strap engaging the upper surface of said body member, said strap including three openings disposed above said cavities and three ground prong contacts in electrical contact with said strap, each extending into one of said cavities, said strap including integral mounting ears extending beyond opposite edges of said body;
a non-conductive cover plate engaging the upper surface of said grounding strap, said plate including three ground prong openings disposed above said cavities and in alignment with said ground prong contacts and three pairs of blade openings, each pair associated with one of said ground prong openings, said blade openings being disposed along two parallel lines, one on each side of said ground prong openings;
a pair of contact members, each including three sets of contacts integrally formed with a conductive strip and power connection means for allowing power to be coupled to said strip, each of said contact members disposed in said body member such that said strip is generally parallel to the line of said aligned cavities, each set of said contacts being disposed below one of said blade openings; whereby a compact triplex receptacle is realized.

4,240,687

TRANSITION BLOCK FOR TERMINATING FLAT CONDUCTORS

Edward D. Bunnell, Palm Harbor, and Thomas J. Sotolongo, Clearwater Beach, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 30, 1979, Ser. No. 43,769
Int. Cl.³ H01R *9/08*
U.S. Cl. 339—99 R **7 Claims**



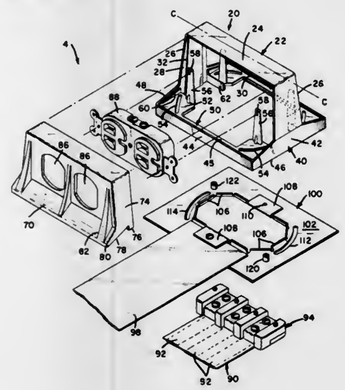
1. A transition block for interconnecting an insulated flat conductor cable to round conductors comprising:
a low profile generally rectangular dielectric body having a generally planar first surface, a generally planar second surface on the opposite side of said body from said first surface, a pair of opposed sidewalls, and a pair of opposed endwalls, said first surface having a plurality of said first planar recesses therein, said second surface having a like plurality of second planar recesses therein, said recesses communicating with one sidewall of said body, said body having a bore means therein extending perpendicularly inward from each said first recess, said bore means having threaded means therein,
a like plurality of terminals formed from conductive sheet stock, said terminals each having a generally planar first leaf, a generally planar second leaf parallel to said first leaf, and a common web, said first and second leaves being dimensioned for reception in said first and second recesses respectively, said first leaf having a hole therein, said second leaf having projections on the surface thereof facing opposite said first leaf, said projections having a height at least equal to the thickness of insulation on one side of a flat conductor,
a like plurality of screws having shanks dimensioned to fit within the holes in the first leaves and into said bore means, said shank having threads profiled to mate with said threaded means,
a termination plate dimensioned to fit over said second planar recesses,
means for securing said termination plate to said body,
whereby, said terminals may be assembled to said body with said first leaves in said first recesses, said second leaves in said second recesses, and said webs adjacent said one sidewall, said insulated flat conductor cable may be positioned adjacent to said second surface with each conductor therein adjacent to a second leaf, said termination plate may be secured to said body causing said projections to pierce said insulation and make contact with said conductors, and said screws may be inserted through said holes in said first leaves into said threaded means to secure said first leaf to said body and to provide means for terminating a round conductor.

4,240,688

FLOOR FIXTURE

Thomas J. Sotolongo, Clearwater Beach, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 1, 1979, Ser. No. 80,911
Int. Cl.³ H01R *13/506*
U.S. Cl. 339—122 F **3 Claims**



1. A floor fixture comprised of:
a housing comprised of
a base having two opposed sides and two opposed faces which define an aperture therebetween and having mounting means located on said sides,
opposed upright side walls spaced from said faces and extending from said sides to a bight extending between said sidewalls, said bight and sidewalls having a raised ridge extending around the interior thereof,

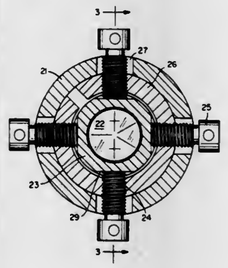
a face plate having flexible side members, said side members having a height at least equal to the distance from said bight to said mounting means of said housing, said side members having a bottom surface configured to complement said mounting means and a depth no greater than the distance from a face to said ridge of said housing whereby, said side members are flexed inward, said face plate is moved into said housing until it is against said ridge and said side members are released locking said complementary bottom surfaces against said mounting means.

4,240,689

TELESCOPE RETICLE ADJUSTING MEANS

J. Peter E. Kooi, Succasunna, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Mar. 9, 1979, Ser. No. 19,372
Int. Cl.³ G02B *27/32*
U.S. Cl. 350—10 **10 Claims**



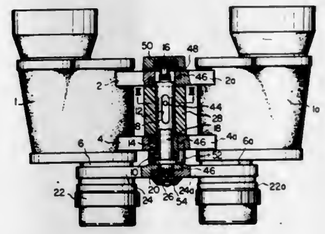
1. In an optical instrument comprising a telescope and reticle means situated in the optical path of said telescope, the improvement in means for adjusting the reticle with respect to the axis of said optical path, said improvement comprising:
(a) a telescope body of circular interior cross-section;
(b) a plurality of ports communicating between the exterior and interior of said telescope body, said ports being substantially equally spaced along an inner circumference of said body;
(c) a cylindrical collar located within and in contact with the interior of said body, the wall of said collar being longitudinally split to allow forcible expansion and compression of the diameter thereof;
(d) a plurality of tapped bores through the wall of said collar, said bores being in substantial radial alignment with said ports;
(e) reticle means comprising a reticle support situated within said collar, said support having a diameter sufficiently smaller than the inner diameter of said collar to allow freedom of radial movement of said support;
(f) a plurality of flat areas on the surface of said support, said areas being in substantial radial alignment with and perpendicular to said collar bores; and
(g) a plurality of screws in respective threaded engagement with said collar bores and contact with said flat support surface areas, said screws being of sufficient length to be manipulable from the exterior of said telescope body by way of said body ports.

4,240,690

SLIDING FINGER PLATE FOCUS ADJUSTING DEVICE FOR A BINOCULAR

Hideyuki Kimura, Ichikawa, Japan, assignor to Hideyuki Kimura and Tokyo Bussan Kabushiki Kaisha, both of, Japan

Filed Jan. 15, 1979, Ser. No. 3,785
Claims priority, application Japan, Nov. 27, 1978, 53-162999[U]
Int. Cl.³ G02B *7/06, 23/00*
U.S. Cl. 350—36 **2 Claims**



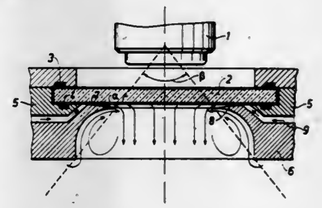
1. A focusing adjusting device for a binocular which comprises in combination:
(a) a pair of object lens barrels;
(b) a pair of ocular lens barrels slidably fitted in said object lens barrels;
(c) means for connecting said pair of object lens barrels and ocular lens barrels;
(d) a hollow cylindrical shaft, on which said connecting means are centrally hinged;
(e) a back-and-forth moving shaft inserted concentrically into said hollow cylindrical shaft, said back-and-forth moving shaft having a pin studded radially from it;
(f) a seat member in a semi-circular shape, having an axial passage through which said hollow cylindrical shaft extends, said seat member having a flattened platform; and
(g) a finger plate member slidably fitted on the top flattened platform of said seat member to move in a predetermined direction,
each of said cylindical shaft, seat member, and finger plate member havin a long hole, through which said pin from said back-and-forth moving shaft passes, said long hole in said finger plate member being formed slantly so that when the finger plate member is moved in such definite direction, said pin causes said ocular lens barrels to move back and forth along with said back-and-forth moving shaft to perform focusing operation.

4,240,691

PROTECTIVE DEVICE FOR OPTICAL ELEMENTS

Göran Holmqvist, Älvsjö; Staffan Källen, Johanneshov, and Bertil Jansson, Täby, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed May 8, 1979, Ser. No. 37,043
Claims priority, application Sweden, Jun. 15, 1978, 7806890
Int. Cl.³ G02B *7/00*
U.S. Cl. 350—63 **7 Claims**



1. A device for keeping an outer surface of an optical ele-

ment clean comprising a protective device with an opening placed in front of said surface, said opening having inner walls each having an inner and outer edge, said inner walls extending out from said surface of said optical element when said protective device is placed in front of said surface, said protective device being positioned relative to said surface so as to define a slot extending peripherally around the edge of the opening facing said surface, for forcing gas to stream through said slot, at least a part of the inner walls of the opening having a part projecting inwardly toward the axis of said optical element, said inwardly projecting part having a surface remote from said optical element which is parallel to or inclined outwardly from a symmetrical plane through said element, the surface of said inwardly projecting part facing said outer surface of the optical element and said outer surface defining at least a portion of said slot.

4,240,692

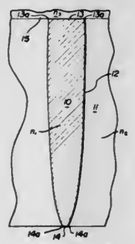
ENERGY TRANSMISSION

Roland Winston, Chicago, Ill., assignor to The University of Chicago, Chicago, Ill.

Continuation-in-part of Ser. No. 628,383, Nov. 3, 1975, abandoned. This application Dec. 17, 1975, Ser. No. 641,557

Int. Cl.³ G02B *5/14*; F24J *3/02*

U.S. Cl. 350—96.10 **24 Claims**



1. Radiant energy transmission apparatus for use in an external radiant energy transmitting medium and operative in a concentrating mode, said apparatus comprising, transmission means including:

(a) substantially concavely sloping radiant energy reflective wall means for guiding radiant energy, said wall means comprising means defining an energy inlet,

(b) means, including said energy inlet, for defining a field of acceptance for radiant energy, and

(c) a radiant energy refractive internal medium, said reflective wall means comprising an interface between said refractive internal medium and said external radiant energy transmitting medium, and said internal medium having a higher index of refraction for radiant energy then said external medium;

and radiant energy trap means operatively associated with said reflective wall means for receiving radiant energy guided by said wall means;

said concavely sloping reflective wall means having a profile curve sloped to assume the maximum possible slope consistent with totally internally reflecting onto said energy trap means the extremal energy rays which enter said energy inlet within said field of acceptance.

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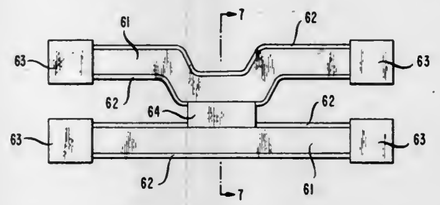
ELECTRO-OPTICAL DEVICE BASED ON ELECTROPLATING ACTION

Leo F. Johnson, Bedminster; Shobha Singh, Summit, and LeGrand G. Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 973,188

Int. Cl.³ G02B *5/14*; G09F *9/00*; G02F *1/29*

U.S. Cl. 350—96.14 **2 Claims**



1. Electro-optical device comprising first and second substrate-supported waveguides, said waveguides being essentially parallel for at least a distance, said device comprising coupling means between said waveguides along at least a portion of said distance, said coupling means comprising an electroplating medium which is in contact with said waveguides along said portion, and said coupling means further comprising electrodes for producing an electric field in a direction which is essentially perpendicular to the substrate.

4,240,694

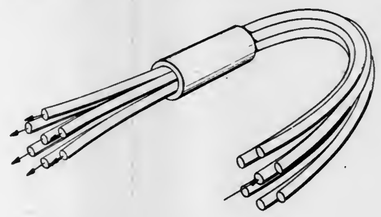
SINGLE OPTICAL FIBER DIRECTIONAL COUPLER

Jing-Jong Pan, Melbourne, Fla., assignor to Harris Communications, Cleveland, Ohio

Filed Oct. 6, 1977, Ser. No. 839,815

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.16 **7 Claims**



1. An optical fiber coupler comprising:

a coupling chamber;

a first group of single optical fibers inserted into said chamber, each of said first fibers having an end portion within said chamber free of any cladding and said first fibers being arranged such that one of said first fibers is at the center of said first group of fibers and the other said first fibers surround said centrally arranged first fiber; and,

a second group of single optical fibers inserted into said chamber, each of said second fibers having an end portion within said chamber free of any cladding and said second fibers being arranged such that one of said second fibers is at the center of said second group of fibers and the other said second fibers surround said centrally arranged second fiber, the end faces of said second fibers being arranged sufficiently close to the end faces of said first fibers such that signals traveling within each of said first fibers can be directly transmitted into a corresponding said second fiber;

whereby signals transmitted along any one of said first fibers is transferred to all of the other said first fibers through the end portions of such fibers that are free of cladding and such signals are also transferred to all of said second fibers within said coupling chamber.

4,240,695

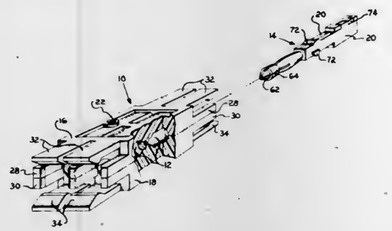
OPTICAL FIBERS CONNECTOR

Robert F. Evans, Newbury Park, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 758,323, Jan. 10, 1977, abandoned. This application Jun. 20, 1979, Ser. No. 50,426

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.21 **4 Claims**



1. A connector for optical fibers, said connector comprising:

a body having opposed aligned sockets leading to an interconnecting bore, each socket having a tapered seat adjacent the bore;

a pair of terminals, each terminal comprising a pair of elongated channel members having complementary mating surfaces, each channel member being split into fingers at one end, said fingers terminating in jaws adapted to contact and align the stripped end of an optical fiber otherwise extending through but not in contact with said members, said jaws having tapered outer surfaces, there being a terminal in each socket; and

inter-engaging latch means on said terminals and the body for holding terminals in said sockets with the tapered surfaces engaging said seats.

4,240,696

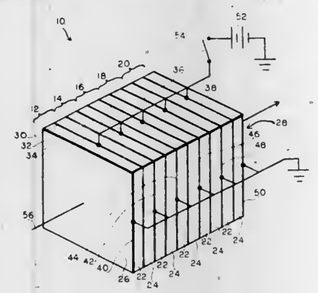
MULTILAYER ELECTRO-OPTICALLY TUNABLE FILTER

John M. Tracy, and Pochi A. Yeh, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 13, 1979, Ser. No. 93,362

Int. Cl.³ G01B *27/00*

U.S. Cl. 350—163 **9 Claims**



1. An optical filter, comprising:

a plurality of adjacent layer pairs, each pair having an incident and an emergent and including:

a first dielectric layer with a refractive index n,

a second dielectric layer with a refractive index n adjacent to said first layer, said layers having the same thickness, and

a control electrode disposed between and in electrical contact with said layers; and

a plurality of ground electrodes disposed on said layer pairs such that at least one of said ground electrodes is in electrical contact with each incident and each emergent surface,

whereby light traversing the filter may be controlled by the application of an electric potential between said control electrodes and said ground electrodes.

4,240,697

LENS SYSTEM HAVING SELECTIVELY SHIFTABLE FOCAL LENGTH

Eiichi Takano, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1976, Ser. No. 692,518

Claims priority, application Japan, Jun. 5, 1975, 50-67955; Jun. 6, 1975, 50-68763

Int. Cl.³ G02B *15/04*, *15/18*

U.S. Cl. 350—183 **8 Claims**



1. A zoom lens system having an enlarged range of variation in magnification, comprising a primary lens part consisting of a focusing front lens group and a negative variator group and a positive variator group arranged in the order recited relative to incident light from an objective, a basic lens group positioned in rear of said primary lens part, said basic lens group consisting of an exchangeable front sub-group having a negative refracting power and a fixed rear sub-group, and a focal attachment lens which is to be positioned between said primary lens part and said rear sub-group in axial alignment with each other after said front sub-group is taken off, said attachment lens comprising two lens groups axially spaced apart from each other, said attachment lens being constructed such that when said attachment lens is positioned between said primary lens part and said rear sub-group, the back focal length of said zoom lens system is the same as before said front sub-group is taken off.

4,240,698

LARGE APERTURE ZOOM LENS

Sadahiko Tsuji, Yokohama, and Yasuhisa Sato, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 925,299

Claims priority, application Japan, Jul. 22, 1977, 52-88038

Int. Cl.³ G02B *15/18*

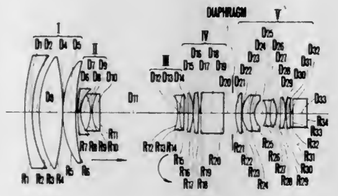
U.S. Cl. 350—184 **4 Claims**

1. A large aperture zoom lens comprising:

a first lens group for focusing with positive refractive power consisting of a negative meniscus lens whose convex surface is directed toward the object, a bi-convex lens and a positive meniscus lens whose convex surface is directed toward the object;

a second lens group for variation, said second lens group being positioned at the image side of the first lens group and consisting of a negative meniscus lens whose convex surface is directed toward the object and a negative lens

constituted of a negative lens and a positive lens cemented with each other;
a third lens group with a negative refractive power movable forward and backward for compensation and positioned at the image side of the second lens group; and
a basic lens group positioned at the image side of the third lens group;
whereby the distance D2 between the negative meniscus lens where F1 represents the focal length of the first group and the bi-convex lens in the first lens group is represented



by $0.04F1 < D2 < 0.06F1$, while an air lens with divergent effect is formed between the rear surface of the negative meniscus lens and the front surface of the bi-convex lens in the first lens group;
the third lens group consisting of a bi-concave lens and a positive lens cemented with each other;
the basic lens consisting of a sub-group for collimating the beam coming from the third lens group and an image forming lens;
whereby the relations

$$0.9 < \frac{R2}{R3} < 1$$

$$0.6F1 < R5 < 0.7F1$$

$$3\,|F2| < R7 < 4\,|F2|$$

$$0.1 < N1 - \frac{N2 + N3}{2} < 0.21$$

$$25 < \frac{\nu 2 + \nu 3}{2} - \nu 1 < 40$$

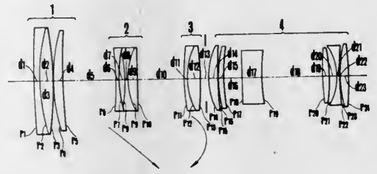
are satisfied, in which relation, R2 represents the radius of curvature of the image side surface of the negative meniscus lens in the first group, R3 is the radius of curvature of the object side surface of the bi-convex lens in the first group, D2 represents the distance between the negative meniscus lens and the bi-convex lens in the first group along the optical axis, R5 is the radius of an object side surface of the positive meniscus lens in the first group, R7 represents the radius of curvature of the first surface convex to the object in the second group, N1 and $\nu 1$ are the refractive power and the Abbe number of the negative meniscus lens in the first group with reference to the d line, N2 and $\nu 2$ are the refractive power and the Abbe number of the bi-convex lens in the first group with reference to the d line, N3 and $\nu 3$ represent the refractive power and the Abbe number of the positive meniscus lens in the first group with reference to the d line, F1 is the focal length of the first group and F2 represents the focal length of the second group.

4,240,699

ZOOM LENS HAVING EXTENDED FOCUSING RANGE

Yasuhisa Sato, Kawasaki; Sadahiko Tsuji, Yokohama, and Katsumi Tanaka, Toyko, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 737,342, Nov. 1, 1976, abandoned. This application May 3, 1978, Ser. No. 902,499
Claims priority, application Japan, Nov. 5, 1975, 50/133321
Int. Cl.³ G02B *15/18*
U.S. Cl. 350—184 **3 Claims**



1. A zoom lens having a focusing range extended toward shorter object distances and comprising:
a focusing lens component having a positive refractive power, composed of a biconvex lens means followed by a positive meniscus lens of forward convexity, axially movable for focusing;
a variation lens component having a negative refractive power, axially movable for variation in focal length of said zoom lens and positioned on the image side of said focusing lens component;
a compensation lens component positioned on the image side of said variation lens component and axially movable along with said variation lens component;
a basic lens component having a positive refractive power and positioned on the image side of said compensation lens component; and
said focusing lens component fulfilling the following relationship,

$$0.8 < \phi_3/\phi_1 < 1.0$$

wherein
ϕ_1 is the refractive power of the frontmost lens surface of said biconvex lens means within said focusing lens component;
ϕ_3 is the refractive power of the rearmost lens surface of said biconvex lens means within said focusing lens component.

4,240,700

WIDE ANGLE ZOOM LENS HAVING A HIGH VARIATION RATIO

Ryota Ogawa, Kawagoe; Sadao Okudaira, Ranzan, and Satoru Tachihara, Wako, all of Japan, assignors to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1978, Ser. No. 929,763
Claims priority, application Japan, Jul. 30, 1977, 52-91846
Int. Cl.³ G02B *15/16*
U.S. Cl. 350—184 **12 Claims**

1. A wide angle zoom lens system exhibiting a high variation zoom ratio, said wide angle zoom lens system comprising in order from the object side a first lens group I having a positive focal length f_I, a second lens group II having a negative focal length f_{II}, a third lens group III having a positive focal length f_{III}, said second lens group II and said third lens group III being axially movable along the optical axis so that each produces a component of said increasing variation effect, characterized by:
(a) the amount of axial movement X_I(f) of the first lens group I and the amount of axial movement X_{III}(f) of the third lens group III satisfying the following conditions:

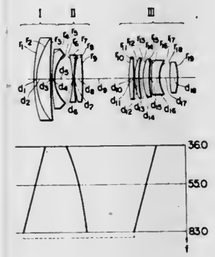
$$X_I(f) = k(f) \cdot X_{III}(f), \text{ and} \quad (1)$$

$$0 \leqq k(f) \leqq 3.0; \quad (2)$$

(b) the lens system having a high zoom variation ratio equal to or greater than 2 times; and,
(c) the lens system satisfying the following conditions:

$$1.70 < f_I/f_S < 5.0 \quad (3)$$

$$0.60 < |f_{II}|/f_S < 1.50 \quad (4)$$



$$0 < l_{I\text{-}II}/f_S < 0.2 \quad (5)$$

$$0.6 < l_{II\text{-}III}/f_S < 1.8 \quad (6)$$

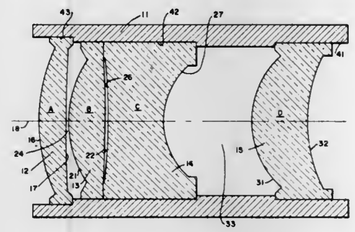
wherein:
f_S is the overall focal length at the wide angle position;
$l_{I\text{-}II}$ is the aerial space between the first lens group I and the second lens group II at the wide angle position; and
$l_{II\text{-}III}$ is the aerial space between the second lens group II and the third lens group III at the wide angle position.

4,240,701

ALL PLASTIC PROJECTION LENS ASSEMBLY WITH ASPHERIC SURFACE

John D. Lytle, San Jose, Calif.; assignor to M.U. Engineering & Manufacturing, Inc., Mountain View, Calif.

Filed Jun. 12, 1978, Ser. No. 914,395
Int. Cl.³ G02B *3/04, 9/34*
U.S. Cl. 350—189 **15 Claims**



1. A lens assembly comprising a lens cell and at least four separate airspaced lens elements mounted in said cell and identified as first, second, third and fourth lens elements, each of said lens elements having first and second optical surfaces, each of said lens elements being injection molded of a plastic material, the second surface of the fourth lens element having an aspheric surface, said aspheric surface having an aspheric SAG Z equal to

$$\frac{CY^2}{1 + [1 - C^2Y^2]^{\frac{1}{2}}} + DY^4 + EY^6$$

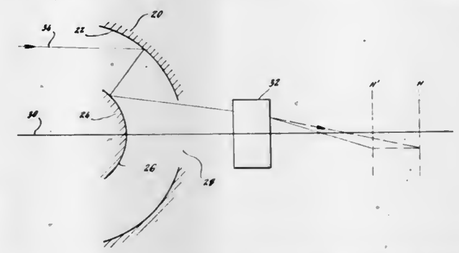
where
C=0.07366
$D = 3.23589 \times 10^{-4}$
$E = 6.34843 \times 10^{-6}$.

4,240,702

FIELD CORRECTOR FOR TWO MIRROR OBJECTIVE SYSTEMS

Raul E. Casas, Danbury, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 8, 1978, Ser. No. 940,743
Int. Cl.³ G02B *17/00*
U.S. Cl. 350—200 **11 Claims**



1. In a two mirror optical system having a primary aspheric mirror with a primary reflecting surface and a secondary aspheric mirror with a secondary reflecting surface, said primary and secondary reflecting surfaces facing towards each other such that a ray incident to said primary reflecting surface is reflected towards said secondary surface, said ray then being reflected by said secondary reflecting surface back towards said primary reflecting surface, said primary mirror defining an aperture thereon, said aperture being so positioned that said ray reflected by said secondary reflecting surface passes through said aperture,
the improvement comprising a field group corrector having net negative power, said field group corrector being positioned behind said aperture to receive said ray passing through said aperture, said negative field group corrector having a characteristic aberration which is opposite in sign to the characteristic Petzval curvature aberration of said primary and secondary mirrors,
said negative field group corrector causing the object principal point (H) and the image principal point (H^1) to be located outside said negative field group corrector and disposed relative to said negative field group corrector to speed up the f number speed of said optical system,
whereby the total aberration of said optical system is corrected because of reduction of said Petzval curvature aberration by said opposite sign aberration of said negative field group corrector and the f number of the optical system is speeded up.

4,240,703

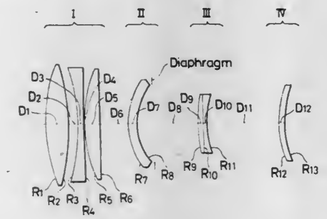
TELEPHOTO LENS

Kikuo Momiyama, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1978, Ser. No. 918,353
Claims priority, application Japan, Jun. 28, 1977, 52-76728
Int. Cl.³ G02G *9/62*; G02B *9/64*
U.S. Cl. 350—214 **9 Claims**

1. A telephoto lens comprising:
a first lens group consisting of a plurality of lenses, having a

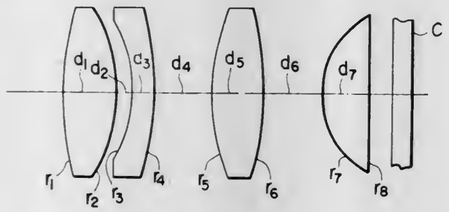
positive refractive power and being fixed during the focusing of said telephoto lens;
a second lens group having a negative refractive power, positioned rearwardly of said first lens group and being fixed during the focusing of said telephoto lens;
a third lens group having a negative refractive power, positioned rearwardly of said second lens group and axially moving for focusing of said telephoto lens; and
a fourth lens group having a positive refractive power, positioned rearwardly of said third lens group; and characterized by the following relationships referring to a total focal length of unity:



$1.379 \leqq f_4 \leqq 5.663$
$0.0913 \leqq S_3 \leqq 0.1662$
$1.4345 \leqq |f_2| \leqq 2.307$
$(0.0524/0.1517) \leqq S_1/S_2 \leqq (0.0917/0.0804)$

wherein f2 is the focal length of said second lens group; f4 is the focal length of said fourth lens group; S1 is the axial separation between said first lens group and said second lens group; S2 is the axial separation between said second lens group and said third lens group; and S3 is the axial separation between said third lens group and said fourth lens group.

4,240,704
OBJECTIVE FOR VIDEO DISKS
Atsuo Goto, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 21, 1978, Ser. No. 962,804
Claims priority, application Japan, Nov. 29, 1977, 52-142166
Int. Cl.³ G02B *9/34*
U.S. Cl. 350—220 **5 Claims**



1. An objective for video disks comprising a first, second, third and fourth lenses, said first lens being a biconvex lens, said second lens being a negative lens, said third lens being a positive lens, said fourth lens being a positive lens, said objective for video disks satisfying the following conditions:

$0.75 < r_3/r_2 < 1.0$ (1)

$0.8 < |r_3|/f < 1.1,\ r_3 < 0$ (2)

$0.4 < r_7/f < 0.65$ (3)

$0.2 < d_7/f < 0.4$ (4)

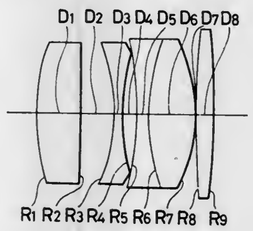
$0 < d_2/f < 0.12$ (5)

$1.1f < d_4 + d_5 + d_6 < 1.3f$ (6)

$-0.46 < f/r_6 < 0.08$ (7)

wherein reference symbol r_2 represents the radius of curvature of the surface on the second lens side of the first lens, reference symbol r_3 represents the radius of curvature of the surface on the first lens side of the second lens, reference symbol r_7 represents the radius of curvature of the surface on the third lens side of the fourth lens, reference symbol f represents the focal length of the lens system as a whole, reference symbols d_2, d_4 and d_6 respectively represent airspaces between the first and second lenses, between the second and third lenses and between the third and fourth lenses, reference symbols d_5 and d_7 respectively represent thicknesses of the third and fourth lenses, and reference symbol r_6 represents the radius of curvature of the surface on the fourth lens side of the third lens.

4,240,705
FIVE ELEMENT PHOTOGRAPHIC OBJECTIVE
Kazuo Fujibayashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 19, 1978, Ser. No. 943,615
Claims priority, application Japan, Sep. 22, 1977, 52/114165
Int. Cl.³ G02B *9/34*
U.S. Cl. 350—220 **4 Claims**



1. An objective lens system comprising, from front to rear, a positive first lens with the front surface convex toward the front, a bi-concave second lens, a positive third lens consisting of a negative element and a bi-convex lens element cemented together at their adjoining surface, and a bi-convex fourth lens, and fulfilling the following requirements:

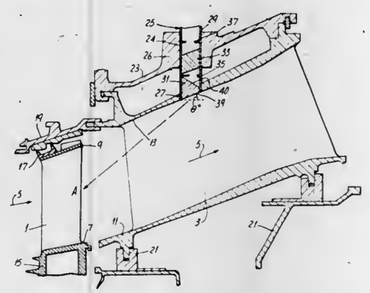
$0.595 \leqq |R_8| / |R_9| < 1.34$, where $R_9 < 0$ (1)
$0.0287f \leqq D_4 \leqq 0.0551f$ (2)
$0.095 \leqq N_1 - N_2 \leqq 0.156$ (3)
$0.1669f \leqq D_5 + D_6 \leqq 0.20f$ (4)
$\frac{0.08}{f} \leqq \frac{N_4 - N_3}{R_6} \leqq \frac{0.29}{f}$ (5)
$0.5f \leqq |R_3| \leqq 0.53799f$, where $R_3 < 0$ (6)

wherein f is the focal length of the entire lens system; Ri is the radius of curvature of the i-th surface counting from the front; Di is the i-th axial thickness or air separation; and Ni is the index of refraction of the i-th lens element.

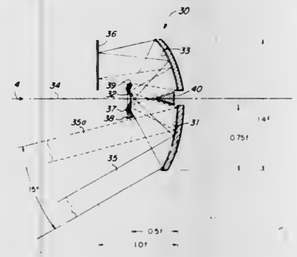
4,240,706
OPTICAL PROBE
Joseph Douglas, Belper, England, assignor to Rolls-Royce Limited, London, England
Filed Nov. 13, 1979, Ser. No. 93,161
Claims priority, application United Kingdom, Dec. 8, 1978, 47764/78
Int. Cl.³ G02B *5/04*
U.S. Cl. 350—286 **10 Claims**

1. An optical probe for observing an object within a fluid flow passage through a wall of said passage, said probe having an objective element for directing rays into an optical path within said probe thereby to observe, on said object, a location

which is offset from said optical path as notionally extended from said probe into said flow passage, wherein said objective element of said probe comprises objective prism means whose front and rear faces are inclined with respect to each other so that when said probe is positioned correctly with respect to said wall of said passage, said front face of said prism means lies substantially flush with the internal wall surface of said passage, the included angle between said front and rear faces of said prism means being such that, for rays of a preselected wavelength, said prism means refracts into said probe and along said optical path substantially only those rays which approach said front face at a preselected angle of incidence, said preselected angle of incidence being related to the position within said flow passage of said location to be observed.

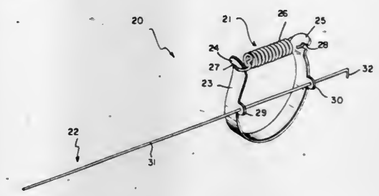


4,240,707
ALL-REFLECTIVE THREE ELEMENT OBJECTIVE
William B. Wetherell, Stoneham, and David A. Womble, Lunenberg, both of Mass., assignors to Itek Corporation, Lexington, Mass.
Filed Dec. 7, 1978, Ser. No. 967,535
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—294 **10 Claims**



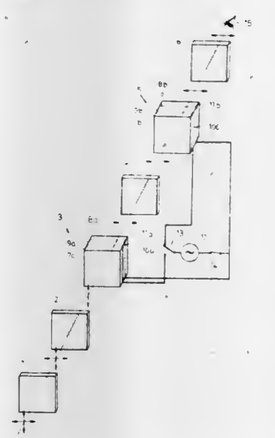
7. An all-reflecting optical system for imaging distant objects, said optical system having an optical axis and comprising:
a. a positive concave primary mirror for receiving light from a distant object;
b. a negative convex secondary mirror for receiving light reflected from said primary mirror; and
c. a positive concave tertiary mirror for receiving light reflected from said secondary mirror and for, in turn, reflecting said light to an image plane for forming an image of said object thereat, wherein
d. said primary mirror, and hence said optical system, has an eccentric field of view in that said field of view is entirely on one side of said optical axis, and wherein said image is also located entirely on one side of said optical axis.

4,240,708
MICROSCOPE REMOTE CONTROL FOCUS ATTACHMENT
William A. Bell, R.R.2, Heim Rd., Chandler, Ind. 47610
Filed Feb. 9, 1979, Ser. No. 10,813
Int. Cl.³ G02B *7/04*
U.S. Cl. 350—321 **4 Claims**



1. An attachment for focusing a microscope while operating a microscope stage, comprising a thin strap shaped to engage and drive the circumference at a microscope focusing control, said strap carrying a wire-like rod extending radially from the strap to provide an extended surface adjacent the controls for operation of the microscope stage.

4,240,709
MULTIPLE LAYER PROTECTIVE GLASS, PARTICULARLY A PROTECTIVE GLASS FOR A WELDING SHIELD
Ake Hörnell, Gagnef, Sweden, assignor to ESAB Aktiebolag, Gothenburg, Sweden
Filed Apr. 24, 1979, Ser. No. 33,011
Claims priority, application Sweden, Apr. 24, 1978, 7804630
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—335 **9 Claims**



1. A multiple layer protective glass, particularly a protective glass for a welding shield, for damping the light transmission, the layers of which are in turn comprised at least of a first polarizer, a first electrooptical cell, a second polarizer, a second electrooptical cell and a third polarizer, the electooptical cells consisting of liquid crystals enclosed between transparent parallel plates coated with electrically conducting layers, said crystals being arranged in their non-excited condition to form a helically twisted structure for rotating the plane of polarization of the passing polarized light, characterized by the fact that the planes of polarization of the first and the second polarizer (2, 4) are at right angles to each other, that the planes of polarization of the second and the third polarizer (4, 6) enclose an angle which is between 0° and 60°, the angle of rotation of

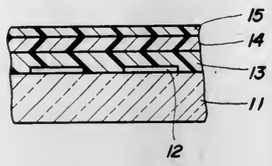
the helical structure formed by the liquid crystals in the second electrooptical cell (**5**) being between 90° and 30° and the said angle and the angle of rotation being complementary angles, and means (**13**) for exciting the two electrooptical cells (**3, 5**) in opposite modes by the application of a voltage between the conducting layers (**10***a*, **11***a*; **10***b*, **11***b*) of the electrooptical cell.

4,240,710

HOLDING PLATE FOR A TWISTED NEMATIC ALIGNMENT FIELD EFFECT MODE (TNFEM) LIQUID CRYSTAL DISPLAY

Syuichi Kozaki, Nara; Kiyoshi Toda; Fumiaki Funada, both of Yamatokoriyama, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1978, Ser. No. 938,480
Claims priority, application Japan, Sep. 6, 1977, 52/107425
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—339 R **24 Claims**



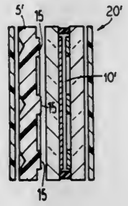
1. A holding plate for a twisted nematic field effect mode liquid crystal display comprising:
a support;
conductive electrodes formed on said support;
a SiO_2 layer formed over said support and said conductive electrodes;
a first SiO layer formed on said SiO_2 layer, said first SiO layer being slant deposited at a first acute angle from the plane of said support and from a first direction along the plane of said support; and
a second SiO layer formed on said first SiO layer, said second SiO layer being slant deposited at a second acute angle from the plane of said support and from a second direction along the plane of said support, said second acute angle being smaller than said first acute angle, said second direction being substantially normal to said first direction.

4,240,711

DISPLAY DEVICE COMPRISING A LIQUID CRYSTAL CELL WITH LIGHT VALVES

Günter Baur, Freiburg; Waldemar Greubel; Hans Krüger, both of Munich, and Alois Schauer, Gruenwald, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,366
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706355
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—345 **5 Claims**



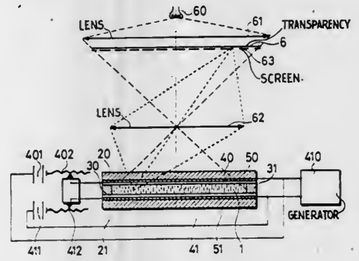
1. In a device having a light valve containing a medium which can be switched zone-wise between at least two different optical states, the zone-wise switching being between character shaped electrode segments on one surface of said medium and an electrode of the opposite surface of said medium, a light trap in the form of a plate-shaped body disposed behind the medium of the light valve when taken in the direction of observation of the device, said body consisting of a material having an index of refraction greater than 1 and containing fluorescent particles emitting a fluorescent light when exposed to an excitation light, said body possessing a light emergent window for the fluorescent light at the rear of each of the switchable zones of the light valve, the improvement comprising each of the light emergent windows comprising a groove in the rear surface of the body and a light scattering surface on the front surface of the body, said light scattering surface being restricted to the region of said front surface directly behind said character shaped electrode segment.

4,240,712

THERMO-OPTIQUE SMECTIC LIQUID-CRYSTAL STORAGE DISPLAY

Lydie Thirant, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 867,459, Jan. 6, 1978, abandoned, which is a continuation of Ser. No. 643,866, Dec. 23, 1975, abandoned. This application Feb. 2, 1979, Ser. No. 9,092
Claims priority, application France, Dec. 24, 1974, 74 42640
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—351 **21 Claims**



1. A method utilizing a thermo-optical effect for storing images in the form of light scattering points in a thin layer of a material exhibiting a smectic mesophase in a first temperature range and comprising the steps of:
(a) enclosing said layers between walls for imposing to said layer a first uniform orientation;
(b) temporarily applying to said layer a first electric field for substituting for said first uniform orientation a second uniform orientation perpendicular thereto;
(c) maintaining said layer to a first value in said first temperature range;
(d) temporarily raising the temperature of at least parts of said layer from said first value to a second value in said first temperature range.

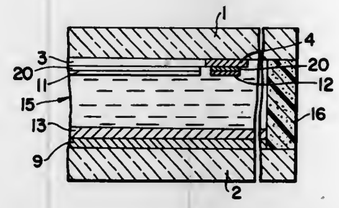
4,240,713

ELECTRODE BARRIER LAYER FOR HYDROGEN-COLORED ELECTROCHROMIC DISPLAYS

Marshall Leibowitz, Ridgefield, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Nov. 8, 1978, Ser. No. 958,903
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **12 Claims**

1. In an electrochromic display comprising a first substrate with a transparent metal oxide electrode and image-forming electrochromic layer thereon, a second spaced substrate with a counter electrode and an ion-conducting layer between the substrates, wherein coloration of the electrochromic layer is attributed to the incorporation of protons in the layer under the influence of an applied electrical field with the attendant generation of some harmful atomic hydrogen therein, the improvement for increasing the useful life of the display comprising:



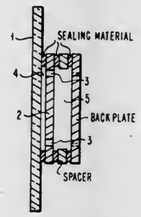
a transparent hydrogen barrier layer disposed between the metal oxide electrode and associated electrochromic layer for minimizing destructive reaction between said electrode and atomic hydrogen resulting from coloration of the electrochromic layer, said barrier layer being electron permeable under the influence of the applied field so that electrons necessary for coloration can pass between the electrode and electrochromic layer.

4,240,714

EXTENDED LIFE ELECTROCHROMIC DISPLAY CELL

Clayton V. Wilbur, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,055
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **5 Claims**



1. An electrochromic display cell comprising:
a transparent front electrode;
a back electrode in spaced relation to said front electrode;
means positioned between said front electrode and said back electrode defining a display chamber containing an electrochromic solution; and
means associated with said display chamber providing a reservoir confining said electrochromic solution and means to permit the continuous flow of said solution between said reservoir and said chamber during usage.

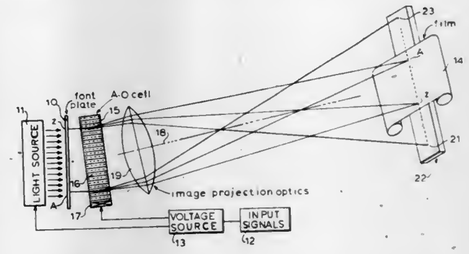
4,240,715

GRAPHIC SYMBOL LINE POSITION CONTROL MEANS FOR HIGH SPEED PRINTING

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Apr. 2, 1979, Ser. No. 26,420
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.³ G02F *1/33*
U.S. Cl. 350—358 **3 Claims**

1. In a graphic symbol line position control means,
a laser source of light,
font plate means for providing an array of graphic symbols and means for exposing symbols of said array, selectively,
to light from said laser source for providing any one of a plurality of individual graphic symbol shaped sources of light;
a light responsive record medium;
said array of graphic symbols and said record medium positioned, respectively, at first and second ends of graphic symbol shaped light beam optical paths of said line position control means;
optical means positioned along an optical axis of said line position control means intermediate said array of graphic symbols and said record medium for projecting an image of a graphic symbol selectively exposed to light from said laser source toward said record medium;
acousto-optic light reflector means, including acoustic wave generator means and an interaction medium, positioned intermediate said array of graphic symbols and said optical means positioned along said optical axis;
a source of ultrasonic frequency voltages and means for connecting voltages from said source to said light reflector means for an establishing of any of a number of different acoustic wave light reflecting conditions within said light reflector means; wherein the improvement comprises:



(a) means for exposing a predetermined one of said graphic symbols of the array to light from said laser source and establishing, simultaneously, a predetermined one of said light reflecting conditions within said light reflector means, said established light reflecting condition controlling a directing of light from said predetermined one of said symbols to said record medium and an exposing of said medium to a light image of said symbol so as to effect a coinciding of said image with a point of reference display position at said record medium;
(b) means for exposing another predetermined one of said graphic symbols of the array to light from said laser source and establishing, simultaneously, another predetermined one of said light reflecting conditions within said light reflector means, said other established light reflecting condition controlling a directing of light from said other predetermined one of said symbols to said record medium and an exposing of said medium to a light image of said other symbol so as to effect a coinciding of said image with any one of a plurality of secondary display positions in relation to said point of reference display position at said record medium.

4,240,716

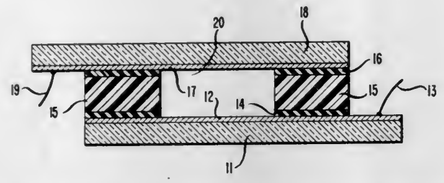
ELECTRODEPOSITION DISPLAY DEVICE

Irfan Camlibel, Stirling; Shobha Singh, Summit; LeGrand G. Van Uitert, Morristown, and George J. Zydzik, Columbia, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1978, Ser. No. 969,773
Int. Cl.³ G02F 1/17
U.S. Cl. 350—[illegible] **20 Claims**

1. An electrodeposition display system comprising
(a) positive and negative electrodes

(b) electrolyte comprising organic solvent, silver-containing ionic species, and a mixed opacifier; in which electrical activation of the positive and negative electrodes produces an electrical action which leads to electrodeposition



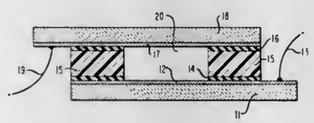
of a partially opaque silver species thereby altering the optical contrast of the display characterized in that the opacifier comprises a solid semiconducting substance and a solid insulator substance which are light in color and chemically compatible with the electrolyte.

4,240,717

ELECTRODEPOSITION DISPLAY DEVICE

Irfan Camlibel, Stirling; Shobha Singh, Summit; LeGrand G. Van Uitert, Morristown, and George J. Zydzik, Columbia, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 972,706
Int. Cl.[3] G02F *1/29*
U.S. Cl. 350—363 **26 Claims**



1. An electrodeposition display comprising:
(a) positive and negative electrodes;
(b) electrolyte comprising organic solvent, silver-containing ionic species and ionic species containing at least one element selected from the group consisting of iodine, bromine and chlorine in which electrical activation of the positive and negative electrodes produces an electrical action which leads to electrodeposition of a partially opaque silver species thereby altering the optical contrast of the display; CHARACTERIZED IN THAT the electrolyte comprises substituted ammonium halide selected from the group consisting of substituted ammonium iodide, substituted ammonium bromide and substituted ammonium chloride.

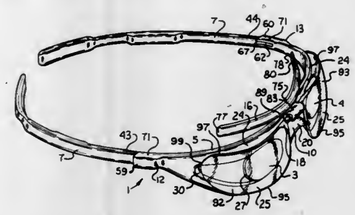
4,240,718

SPORTS SPECTACLE STRUCTURE

Max F. Wichers, Main Mall, White Lakes Center, 3636 Topeka Blvd., Topeka, Kans. 66611

Filed Jan. 26, 1978, Ser. No. 872,683
Int. Cl.[3] G02C *11/08, 3/00*
U.S. Cl. 351—62 **8 Claims**

1. A spectacle structure for use in sports and the like to protect the wearer's eyes from moving objects comprising:
(a) a wrap-around front frame member having portions curvingly extended around the front of the head and rearward of the eyes of a person wearing the spectacle structure at a level adjacent to the eyes, said front frame member having portions for engaging selected areas of the front of the person's head and including a centrally positioned bridge portion with respective slightly elastically resilient upper and lower bow portions extended laterally outwardly therefrom and curved rearwardly in converging relation and joining in rearwardly positioned end portions, said bow portions being separated and forming spaced apart guard members defining elongated, rearwardly curved, generally tear-drop shaped openings extending rearward of the eyes of a person wearing the spectacle structure and permitting vision therethrough with the guard members protecting a person's eyes from large objects;
(b) lens means having substantially lesser curved horizontal axes than said rearwardly curved openings and mounted within a portion of said openings forwardly of a wearer's eyes adjacent said bridge portion, said lens means being



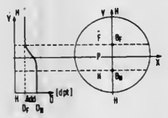
contractively supported by said upper and lower bow portions, said openings having substantial space portions not covered by the area of the lens means and extending in curved relation outwardly and rearwardly of said lens means exposing a lateral end of said lens means; and
(c) head engaging means connected to said end portions of said front frame member and extending rearwardly therefrom and cooperating with said front frame portions for engaging selected areas of the person's head for maintaining said front frame member in position on the wearer's head and the lens means in aligned position relative to the person's eyes.

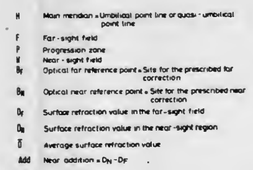
4,240,719

PROGRESSIVE OPHTHALMIC LENS

Gunter Guilino, Munich, and Rudolf Barth, Hohenkirchen, both of Fed. Rep. of Germany, assignors to Optisch Werke G. Rodenstock, Munich, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 775,391
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610203
Int. Cl.[3] G02C *7/02*
U.S. Cl. 351—169 **18 Claims**





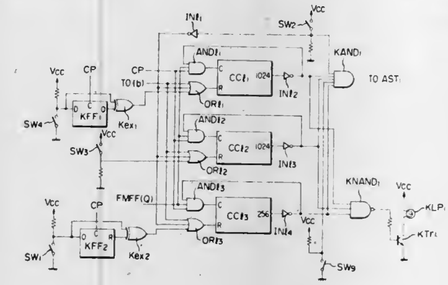
1. In an Ophthalmic lens with a surface which has a far-sight field with surface refraction values corresponding to far sight in its upper region, a near-sight field which has surface refraction values corresponding to near sight in its lower section, is divided into left and right sections by a main meridian, the points of which are least approximate umbilical points wherein a progression zone is provided between the upper region continuously changing into the surface refraction values of the lower section, with lines of equal average surface refraction value intersecting the main meridian in the upper and lower sections being extended on both ends to the periphery of the ophthalmic lens, the improvement wherein at least one portion of the points of the main meridian have a finite difference between the two main curvatures which amounts to more than $0.01/(n-1)100$ and less than $0.25/(n-1)100$ cm^{-1} where n is index of refraction.

4,240,720

MOTION PICTURE CAMERA

Noritsugu Hirata, Yokohama, and Hiroyuki Takimoto, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1978, Ser. No. 934,335
Claims priority, application Japan, Aug. 23, 1977, 52-101260
Int. Cl.[3] G03B *31/02*
U.S. Cl. 352—170 **2 Claims**



1. A motion picture camera comprising:
(a) film feeding means including a motor-driven intermittent feed mechanism and a continuous feed mechanism;
(b) loop sensing means for sensing the length of film loop between said intermittent feed mechanism and said continuous feed mechanism to output different signals in accordance with the film loop length;
(c) motor-speed control means for changing over the speed of an intermittent film feed motor in accordance with the signal from said loop sensing means;
(d) control means adapted to output a signal when the signal from said loop sensing means is maintained at a predetermined value for a predetermined time period; and
(e) means for stopping said motor in accordance with the signal from said control means.

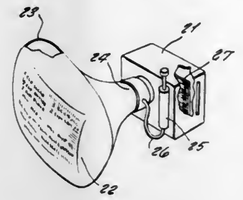
4,240,721

COOKING WITH RECIPES THROUGH IMPROVED VIEWING MACHINE OR WALL SCREEN PROJECTION

Paul A. Drop, Sr., 16850 Alcross, Covina, Calif. 91722

Filed Apr. 19, 1979, Ser. No. 31,617
Int. Cl.[3] G03B *21/10, 21/58*
U.S. Cl. 353—74 **2 Claims**

1. A means of cooking with projected recipes, comprising, in combination, a projector containing a lamp therewithin, a lens opening at its front fitted with a lens, a slide receivable in said projector, a recipe printed on said slide, so that light rays from said lamp project an image of said recipe outwardly of said lens, and a screen upon which said image is projected; said



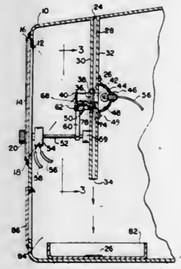
screen comprising an inflatable transluscent balloon having a neck portion mounted around said lens, and a hand-operated air pump mounted on said projector, said air pump being connected by a hose to said neck portion of said balloon, for selective size of inflation of said balloon and said image thereupon.

4,240,722

INFORMATION DATA MICROFILM PROJECTOR FOR VEHICLES

Frederick R. Brecht, 3241 Duncan Ave., Sarasota, Fla. 33579

Filed Feb. 1, 1979, Ser. No. 8,411
Int. Cl.[3] G03B *21/10*
U.S. Cl. 353—12 **7 Claims**

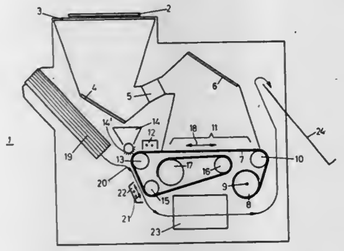


1. A vehicular information data display system comprising a rear projection screen, a gravity chute having a portion disposed substantially parallel to said rear projection screen, an aperture window in said chute, an illumination device mounted on said chute behind said aperture window, a lens system mounted on said chute in front of said aperture window, said illumination device, aperture window and lens system being optically substantially aligned with the center of said rear projection screen, a transparency card bearing information data indicia and adapted to be gravity fed in said chute, means for arresting said transparency card in said chute in register with said aperture window, and means for turning "on" and "off" said illumination device and for turning "on" and "off" said arresting means, wherein said window aperture, illumination device and lens system are disposed along an optical axis eccentric relative to the center line of said chute for projecting on said screen a lateral half of said transparency card.

4,240,723
PROCESS FOR ELECTROGRAPHIC IMAGE PRODUCTION AND AN APPARATUS FOR CARRYING OUT THIS PROCESS

Gabor Forgo, Zurich, Switzerland, assignor to Elfotec A.G., Zumikon, Switzerland

Filed May 16, 1975, Ser. No. 578,249
Claims priority, application Fed. Rep. of Germany, May 20, 1974, 2424350
Int. Cl.[3] G03G *15/00, 21/00*
U.S. Cl. 355—3 DD
4 Claims



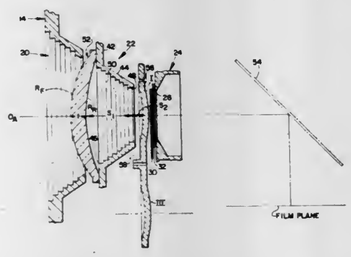
1. A process for electrographic image production, in which a latent image on an intermediate image carrier capable of being developed with a toner is developed with a one component toner and said intermediate image carrier is cleaned, comprising both developing the latent image on the intermediate image carrier and also cleaning the intermediate image carrier with at least one magnetic brush in the absence of applied voltage, wherein a magnetic one-component toner comprising a core of at least magnetizable material covered by a layer of only limited conductivity is used to form the brush-form coating on the magnetic brush.

3. An apparatus for carrying out the process according to claim 1, wherein at least one magnetic brush (14,25), includes a brush-like coating (14',25') comprising a magnetic one-component toner comprising a core of at least magnetizable material covered by a layer of only limited conductivity is provided for developing a latent image on an intermediate carrier and for removing toner residues from the intermediate image carrier, both in the absence of applied voltage.

4,240,724
ZONE FOCUSING OPTICAL SYSTEM

Bruce K. Johnson, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.

Filed Oct. 1, 1979, Ser. No. 80,433
Int. Cl.[3] G03B *3/00*
U.S. Cl. 354—197
8 Claims



1. A zone focusing optical system for use with photographic camera apparatus of the type which includes means for facilitating the positioning of film in a plane in which it may be exposed and providing a path of predetermined length along which light can be directed through an entrance aperture thereof toward the plane, said system comprising:

means for defining an opaque housing structured to admit light from a scene into the apparatus light path entrance, said housing including an open-ended section having spaced apart inlet and outlet apertures optically aligned with respect to one another and with the apparatus light path entrance along an axis which extends through the center of the apparatus light path entrance, said section including intermediate opaque convergent portions which connect said inlet and outlet apertures thereof for excluding light from entering said housing, said outlet aperture being positioned adjacent the apparatus light path entrance and spaced forwardly thereof by a predetermined distance;

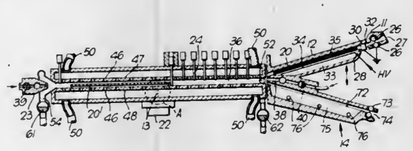
a prime lens of predetermined positive power mounted in optical registration with said inlet aperture and structured to refract all the chief rays from all image forming bundles of rays originating at a predetermined object distance from said prime lens, less than infinity, so that said chief rays pass through the center of said outlet aperture and are imaged over the film plane; and

a lens disk including a plurality of angularly spaced apart light refracting zones each of which is structured to optically cooperate with said prime lens to in combination therewith image an object at a different distance from said prime lens than said predetermined object distance from said prime lens, said lens disk being mounted behind said outlet aperture in said predetermined space between said outlet aperture and the apparatus light path entrance for rotation such that each light refracting zone thereof can be selectively indexed into optical registration with said outlet aperture, said outlet aperture operating to define the active light refracting area of each of said light refracting zones and to define a maximum aperture stop for each of said light refracting zones in combination with said prime lens.

4,240,725
ELECTROSTATIC CAMERA

Harry A. H. Spence-Bate, Morley, Western Australia 6062, Australia, and Timothy Bain-Smith, Charing, England, assignors to Harry Arthur Hele Spence-Bate, Morley, Australia

Filed Nov. 21, 1979, Ser. No. 96,516
Claims priority, application United Kingdom, Nov. 30, 1978, 46704/78
Int. Cl.[3] G03B *17/50, 26/42, 27/60;* G03G *15/00*
U.S. Cl. 354—3
11 Claims

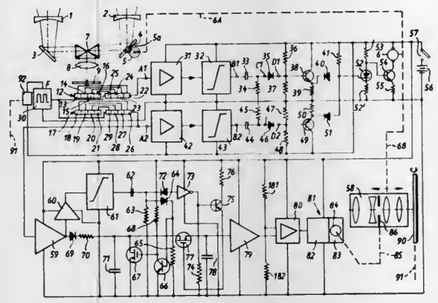


1. A recording camera having a camera lens, plates mounted to the camera in the region of the lens, said plates defining a gas cushion chamber, means for maintaining a cushion of gas in said chamber so as to support a film in a plurality of X and Y positions relative to said lens, means for moving said film across said chamber to any of the plurality of X and Y positions and means for directing at least one imaging fluid on to said film within said chamber after exposure.

4,240,726
PHOTOGRAPHIC APPARATUS WITH AUTOMATIC FOCUSING MEANS

Richard Wick, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,495
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705104
Int. Cl.[3] G03B *3/10, 7/08*
U.S. Cl. 354—25
3 Claims

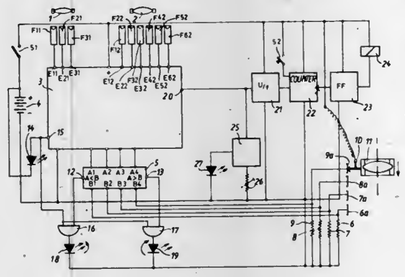


1. In a photographic apparatus, the combination of exposure control means; focusing means; monitoring means including first and second generating means for generating first and second signals, each including a separate group of photosensitive elements; a split image optical system for directing separate first and second images of a selected portion of a scenen onto said groups of said photosensitive elements, respectively; first adjusting means for simultaneously adjusting said focusing means and said optical system in dependence on said first and second signals; and second adjusting means for adjusting said exposure control means in dependence only on said first signals.

4,240,727
FOCUSSING SYSTEM

Peter Lermann, Narring; Istvan Cocron, Münich, and Günter Fauth, Unterbaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 2,938
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801393
Int. Cl.[3] G03B *3/10;* G01C *3/08;* H01J *40/14*
U.S. Cl. 354—25
4 Claims



1. A focussing system for a photographic camera having a camera objective which is adjustable to a number of different subject-distance settings, comprising:

a first photodetector array fixed to the camera and including a first plurality of adjoining photodetectors;

a second photodetector array fixed to the camera and including a second plurality of photodetectors, the second plurality exceeding the first plurality by a number dependent upon the number of different subject-distance settings of the objective;

first optical means fixed to the camera and operative for projecting an image of a subject onto the first photodetector array in such a manner as to prevent any substantial shift between such projected image and the photodetectors in the first photodetector array when objective distance to such subject corresponds to one of the subject-distance settings to which the objective may be adjusted;

second optical means fixed to the camera and operative for projecting another image of said subject onto the second photodetector array in such a manner as to induce a shift between the projected image and the photodetectors of the second photodetector array with such shift being dependent upon that one of the subject-distance settings which corresponds to objective distance to said subject;

a signal-evaluating circuit connected to all photodetectors in the first and second photodecetor arrays in such a manner as to divide the photodetectors in the second photodetector array into a successive plurality of groups, each such group including a like number of adjoining photodetectors and overlapping an adjoining group by a like number of photodetectors, whereby each such group corresponds to a respective one of the subject-distance settings of the objective,

the signal-evaluating circuit including an averager, a subtractor, a comparator and a comparison evaluator, the averager generating an average signal representing an average of all output signals produced by all photodetectors in the second photodetector array, the subtractor subtracting the average signal from each output signal from each photodetector to produce corresponding intermediate signals associated with the photodetectors, the comparator comprising an intermediate signal associated with each individual photodetector in the first photodetector array with an intermediate signal associated with an individual photodetector within each group of photodetectors in the second photodetector array and producing a plurality of difference signals each characteristic of a corresponding comparison, and the comparison evaluator evaluating all such difference signals and selecting that difference signal in which the intermediate signals best approximate each other, whereby a best corresponding group and a corresponding best subject-distance setting of the objective are identified.

4,240,728
PHOTOGRAPHIC CAMERA SHUTTER ELECTROMAGNETIC SYSTEM FOR CONTROLLING PHOTOGRAPHIC LIGHT ADMITTED TO CAMERA

Erwin Wiedmann, Essingen, and Horst Stacklies, Aalen, both of Fed. Rep. of Germany, assignors to Prontor-Werk Alfred Gauthier GmbH, Wildbad, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 918,870
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728824
Int. Cl.[3] G03B *7/08, 9/00;* H02K *41/02*
U.S. Cl. 354—38
34 Claims

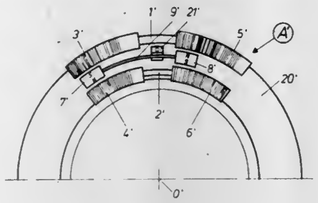
1. Photographic camera light admitting apparatus comprising

drivable control means arranged for reciprocal movement along a path for controlling the photographic light admitted to the camera, and

an electromagnetic driving system arranged for reciprocally driving the control means,

the electromagnetic driving system including an assembly having separate correspondingly opposed coacting reciprocally oppositely energizable electromagnetic field coil means stationarily arranged in substantially commonly coextensive linearly extending and transversely spaced apart relation and defining an intervening correspond-

ingly linearly extending magnetic field space therebetween, and movable permanent magnet means arranged correspondingly bilaterally between the correspondingly opposed coacting stationary field coil means for reciprocal movement linearly along and through such intervening field space bilaterally between such opposed station-



ary field coil means in response to the corresponding opposite energization of the stationary field coil means and operatively connected for driving the control means concordantly along such path, whereby to control the photographic light admitted to the camera in dependence upon the energization of the field coil means.

4,240,729

MULTIPLE IMAGE CAMERA

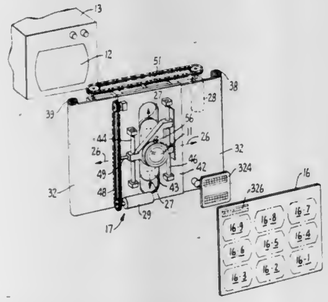
Howard H. Barney, Los Altos Hills, Calif., assignor to Dunn Instruments, Inc., San Francisco, Calif.

Continuation of Ser. No. 619,450, Oct. 3, 1975, Pat. No. 4,027,315. This application Feb. 14, 1977, Ser. No. 768,688

The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.

Int. Cl.³ G03B *29/00*

U.S. Cl. 354—76 **10 Claims**



1. Apparatus for photographing a plurality of displays onto a sheet of film, comprising

a lens adapted to receive light from a display tube;

holder means for holding a sheet of film a spaced distance from said lens; and

positioning means for relatively moving said lens and said holder means into a plurality of desired juxtapositions whereat said lens projects an image of the display on said display tube onto the film in a plurality of corresponding positions, said positioning means comprising first and second photoelectric position signal generating means for producing first and second position signals representing the actual juxtaposition of said lens and said holder means in a first coordinate direction and a second coordinate direction.

4,240,730

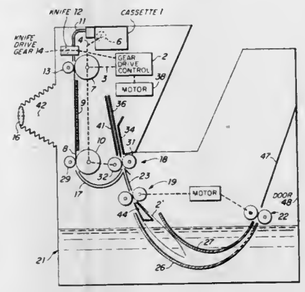
UNIQUE GEAR DRIVE MECHANISM FOR CAMERA-PROCESSOR

Dennis Dodge, Amherst, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 10, 1979, Ser. No. 83,428

Int. Cl.³ G03B *17/50*

U.S. Cl. 354—90 **8 Claims**



1. In a camera-processor having a film transport drive gear means (**7, 69**), a film drive gear means (**57, 58, 6**), a knife drive gear means (**64, 67, 14**), an exposure station (**8, 9**), an improved gear drive control means comprising:

a. a rocker (**5**) having a centrally mounted gear (**52**) thereon and first and second outer gears (**56, 54**) mounted thereon and positioned to be in engagement with said centrally mounted gear;

b. motor means **38** having a shaft (**51**) for rotating said centrally mounted gear via shaft coupling means (**50**) which also tends to cause rotation of said rocker in the same direction as the direction of rotation of said shaft;

c. motor control means (**55**) for rotating said shaft in a first direction to cause said first outer gear to drive said transport drive gear means and simultaneously cause said second outer gear to drive said film cassette drive gear means when said rocker member assumes a first position, thereby to drive said film from said cassette and to actuate said transport drive gear means;

d. a rocker latch device (**63, 65, 71**), which unblocks the path of motion of said first outer gear when said rocker latch device assumes a first non-engaging position which blocks the path of motion of said first outer gear when said rocker latch device assumes a second engaging position;

e. rocker latch control means (**60**) for causing said rocker latch device to selectively assume said first or second position;

f. means for causing said shaft to turn in a second direction opposite said first direction and to cause said rocker latch device to assume said second rocker latch position, thereby to arrest said rocker member in said second position for causing said second outer rocker gear to drive said knife drive gear means for causing the film sheet to be cut;

g. means for causing said rocker latch device to again assume said first non-engaging position to thereby enable said rocker member to assume a third position;

h. means for causing said motor shaft to turn in said second direction for causing said second outer gear to engage said film transport gear means in a third rocker position thereby to cause said cut sheet to be driven off of said exposure platen;

i. means for causing said motor shaft to turn in said first direction while said rocker device is maintained in said third position by said rocker latch device for causing said transport gear means to reverse direction to rewind said belt;

j. means for rotating said motor shaft in said first direction to rotate said rocker from said third position in said first direction to said first position while said rocker latch device again assumes said first non-engaging latch position.

4,240,731

STEREOSCOPIC CAMERA

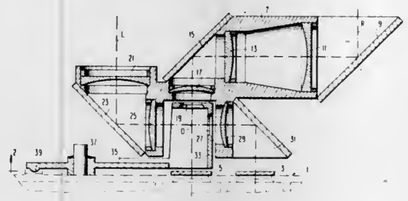
Giovanni M. Staffieri, 6933 Muzzano, Switzerland

Continuation-in-part of Ser. No. 808,696, Jun. 21, 1977, abandoned. This application Feb. 8, 1979, Ser. No. 10,230

Claims priority, application Switzerland, Jun. 24, 1976, 8060/76

Int. Cl.³ G03B *35/00*

U.S. Cl. 354—114 **8 Claims**



1. A stereoscopic camera for taking stereoscopic photographs in pairs in side-by-side zones on photograhic film, comprising two lens systems and mirror means, each lens system comprising a plurality of lenses of which at least two are disposed at right angles to each other, said mirror means comprising, for one lens system, two oblique mirrors with at least one lens therebetween and an objective lens that follows the last of said two mirrors and whose axis is parallel to the line of sight of the camera, the mirror means for the other lens system comprising two oblique mirrors oppositely inclined to the first two mirrors and having an objective lens between them which is the last lens of the system and which is disposed at right angles to the first-mentioned objective lens.

4. A stereoscopic camera for taking stereoscopic photographs in pairs in side-by-side zones on photographic film, comprising two lens systems and mirror means, each lens system comprising a plurality of lenses of which at least two are disposed at right angles to each other and a pair of diaphragms whose axes are disposed at right angles to each other, one said diaphragm being coaxial with each of said objective lenses.

4,240,732

FLASH SYSTEM CHANGEOVER DEVICE FOR THE SHUTTER OF CAMERA

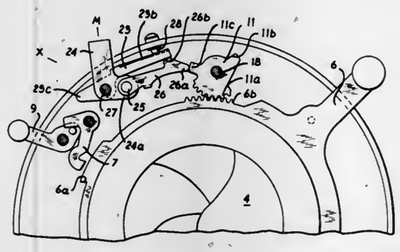
Yukio Morino; Shogo Kato, and Masanori Watanabe, all of Shikawatshi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1979, Ser. No. 18,912

Claims priority, application Japan, Mar. 10, 1978, 53/281307

Int. Cl.³ G03B *15/03*

U.S. Cl. 354—138 **5 Claims**



1. A flash system changeover device for a shutter wherein the exposure operation is performed by cancelling the retention on a shutter blade control member in the charged state by the operation of an actuating member which has previously been charged and is actuated by a shutter release operation, the device comprising: a flash system switchover member, a switching member, a synchronizing switch, and means oscillatably mounting said switching member on the changeover member to close the synchronizing switch in connection with the operation of said actuating member when said flash system changeover member is set at a first position and also so as to close said synchronizing switch in connection with the shutter blade opening operation of said shutter blade control member when said flash system changeover member is set at a second position, and wherein the synchronizing switch has contacts having relative positions which are independent of the position of the changeover member when the synchronizing switch is in the open state.

4,240,733

MOTOR DRIVEN CAMERA HAVING A DETACHABLE DRIVE UNIT

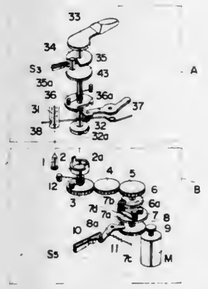
Hiroshi Ueda, Nara; Takayoshi Miyamoto, and Masatake Niwa, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1978, Ser. No. 948,768

Claims priority, application Japan, Oct. 5, 1977, 52/118994; Nov. 29, 1977, 52/142251

Int. Cl.³ G03B *1/12*

U.S. Cl. 354—173 **19 Claims**



1. A motor driven camera having a detachable drive unit including a motor, a motor drive electrical circuit for driving said motor and interconnecting means connected to said motor, the camera comprising:

a shutter;

a manual release member movably mounted on said camera;

a shutter release means engageable by said release member for releasing said shutter upon movement of said release member;

a film wind-up and shutter charge mechanism connected with said motor via said interconnecting means to be operated by said motor with said drive unit being attached to said camera, said shutter charge mechanism including a reciprocable member capable of reciprocating between an initial position and an operative position at which a film wind-up and a shutter charge is completed;

means for disconnecting said interconnecting means from said motor when said reciprocable member reaches said operative position;

means for biasing said reciprocable member to said initial position so that said reciprocable member is returned to said initial position due to the disconnection of said interconnecting means from said motor;

means for generating an electrical signal for actuating said motor drive circuit upon termination of an exposure;

a manual selector mounted on said camera for movement

between a single frame photographing position and a continuous photographing position; and

a control mechanism engageable with said selector and said manual release member for deactivating said signal generating means to prevent the generation of said signal when said manual release member is kept at the moved position with said selector being set at said single frame photographing position.

4,240,734

MOTOR-DRIVE CAMERA USING A CARTRIDGE FILM

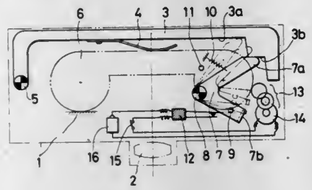
Katsuhiko Nomura, Kawagoe, and Keisuke Haraguchi, Ranzan, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 72,866

Claims priority, application Japan, Sep. 26, 1978, 53/131965[U]

Int. Cl.³ G03B *1/12*

U.S. Cl. 354—173 **7 Claims**



1. A motor-drive camera using a cartridge film comprising a coupled member actuated to open a rear cover of said camera, said member having a first end portion for abutment against an inner surface of said rear cover and a second end portion for abutment against a cartridge body wherein the position against said rear cover of said first end portion is changed depending on whether or not said cartridge film is loaded in said camera and switch means coupling an electrical current supply to motor-drive means said coupled member being to close said switch means and supply electrical current to said motor-drive means by closure said rear cover only after said cartridge film is loaded in said camera.

4,240,735

PROTECTIVE COVER FOR TAKING LENS OF CAMERA

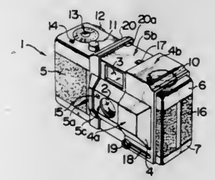
Yoshihisa Maitani, Hachioji, and Toyotaka Yamada, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 969,776

Claims priority, application Japan, Jan. 18, 1978, 53-3940

Int. Cl.³ G03B *17/02*

U.S. Cl. 354—288 **15 Claims**



1. A camera comprising:

a camera body including spaced front and rear surfaces separated by top and bottom surfaces and lateral end surfaces, the lateral end surfaces being spaced to define a predetermined lateral dimension of said camera body;

a picture taking lens disposed in said front surface of said camera body;

a finder optical system including an objective lens and an eyepiece respectively disposed in said camera body;

a loading cover for loading and unloading film in said camera body, said loading cover being disposed in said rear surface of said camera body;

a protective cover member separate from said camera body and including first and second spaced portions which extend at least partially along said front and rear surfaces of said camera body respectively;

mounting means for slidably mounting said protective cover member for lateral movement on the exterior of said camera body so that said cover member is laterally slidably movable between a first position in which said protective cover member covers said picture taking lens, said objective lens, and said eyepiece, and in which said second portion of said protective cover member is spaced from said loading cover to completely expose said loading cover, and a second position in which said picture taking lens, said objective lens and said eyepiece are exposed, said protective cover member being adapted to lie within the lateral extent of said predetermined lateral dimension of said camera body when said cover member is in said first and second positions.

4,240,736

DEVELOPING APPARATUS FOR DIAZOTYPE MATERIAL, ESPECIALLY FOR USE IN A PHOTOPRINTING MACHINE

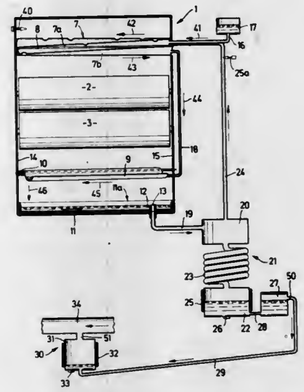
Herbert Schröter, Taunusstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 860,790

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2656901

Int. Cl.³ G03D *13/00*

U.S. Cl. 354—299 **10 Claims**



1. In a developing apparatus for developing diazotype copying material capable of being developed by an atmosphere containing gaseous ammonia and water vapor, including a developing chamber comprising at least one first, heated, inclined evaporator trough to which fresh ammonia is adapted to be fed at one side while ammonia water with a reduced ammonia content is adapted to be drained off at the other side, the ammonia water with the reduced ammonia content being adapted to form a pool, and further comprising a siphon through which the ammonia water with the reduced ammonia content and condensate formed in the developing chamber are adapted to be drained off,

the improvement that the siphon forms part of an evaporator arranged outside of the developing chamber from which a developer gas pipe leads into the developing chamber,

a heated reservoir for the ammonia water with the reduced ammonia content adapted to flow from the evaporator trough, the reservoir substantially covering the entire floor space of the developing chamber and being completely open at its top, having an opening which leads to the outside evaporator and being positioned in the chamber at such a level that the bottom of the reservoir is adapted to be completely covered by the pool of ammonia water with reduced ammonia content,

guiding means for the copying material to be developed, and said reservoir being designed as a body which is separate from the bottom of the developing chamber and is positioned above the bottom of the developing chamber and below the guiding means for the copying material; further including a socket in the reservoir and opening above the bottom of the reservoir, and a pipe connection in the bottom of the developing chamber for the ammonia water with the reduced ammonia content and for condensate.

4,240,737

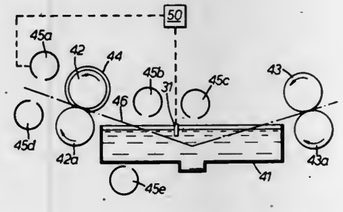
PROCESSING OF RADIATION SENSITIVE DEVICES

Leslie E. Lawson, Orpington, England, assignor to Vickers Limited, London, England

Continuation of Ser. No. 934,029, Aug. 16, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,590

Int. Cl.³ G03D *13/00*

U.S. Cl. 354—299 **9 Claims**



1. An apparatus for processing image-wise exposed radiation sensitive material which apparatus comprises:

(i) a container for developer liquid;

(ii) a means for contacting the material with the developer liquid;

(iii) a temperature sensitive member for sensing the temperature of the developer liquid and for producing an output signal in dependence on that temperature; and

(iv) a source of actinic radiation arranged in or adjacent to the apparatus so that the processing effected by the apparatus includes subjecting the material to an overall exposure prior to or during its contact with the developer liquid, the output signal being arranged to control the extent to which the material is subjected to said overall exposure.

4,240,738

LIGHT MIXING SYSTEM FOR A PHOTOGRAPHIC ENLARGER

Michael F. Praamsma, Santa Monica, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Jun. 14, 1979, Ser. No. 48,621

Int. Cl.³ G03B *27/76, 27/72, 27/00*

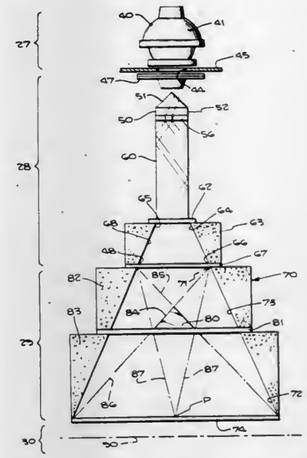
U.S. Cl. 355—1 **14 Claims**

1. In a light mixing system adapted to receive from a light source, beams of light with non-uniform random energy distribution and to mix said light beams to provide substantially uniform energy distribution at the outlet port of said system, the combination of:

a lens means having a conical surface to receive said light beams and to direct said light beams each along a path at an angle to the axis of said conical surface;

a fiber optic diffuser means comprising

a plurality of fiber optic elements each receiving light beams along said angular path, each element transmitting and reflecting said light beams, and causing each light beam to depart the exit end of said element in the form of an expanding cone of substantially the same angle as that of the



light beams at the lens means for mixing said light beams; and

means for guiding and further mixing said exiting mixed light beams to the outlet port of said mixing system.

4,240,739

ELECTROSTATIC COPYING APPARATUS

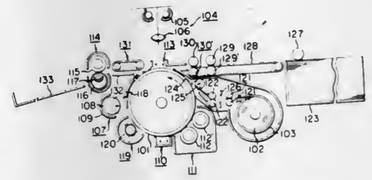
Noboru Koumura, Narashino; Toshiyuki Komatsu, Kawasaki; Katsumi Nakagawa, Tokyo; Nobuhiro Takekawa, Tokyo, and Motoharu Fujii, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1977, Ser. No. 794,224

Claims priority, application Japan, May 17, 1976, 51/56258

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 R **15 Claims**



1. An automatic printing apparatus comprising:

an image formation member for forming a master which may be repetitively subjected to a process of reproducing an original image;

means for supporting the image formation member;

a rotatable body capable of holding said image formation member on a periphery thereof;

means for withdrawing the image formation member from said supporting means and for winding said member around said rotatable body;

optical means for projecting an original image upon said image formation member on said rotatable body;

heating means for heating said image formation member on said rotatable body to form said image formation member into a master carrying a permanent developed image of the original, said heating means being movable into and out of contact with said image formation member;

recording process means for repeatedly effecting a record-

ing process including forming a latent image of the permanent image on the master, developing the latent image into a visible image and transferring the visible image onto a recording medium, said process means being located adjacent the periphery of said rotatable body;

means for bringing the recording medium into contact with the master at a transfer station for direct transfer of the visible image; and

means for removing the master from said rotatable body after termination of operation of said recording process means;

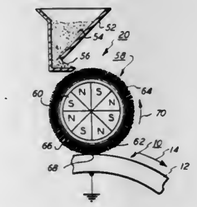
wherein the master is formed on said rotatable body and removed therefrom after recording process operations, and wherein another image formation member is then wound around the rotatable body to form another master for repeating the recording process.

4,240,740

DEVELOPMENT SYSTEM

Eugene F. Young, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 11, 1979, Ser. No. 47,615
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **22 Claims**



1. An apparatus for developing a latent image with magnetic particles, including:

an elongated tubular member having a multiplicity of magnetic fibers extending outwardly therefrom with the free end regions of at least a portion of said fibers being positioned closely adjacent to the latent image;

an elongated magnetic member disposed interiorly of said tubular member for generating a magnetic field to attract the particles to said tubular member; and

means for producing relative movement between said tubular member and said magnetic member to move the particles attracted to said tubular member into contact with the latent image so that the particles being deposited on the latent image form a substantially uniform particle image.

4,240,741

MODULAR PUNCH MARKING APPARATUS

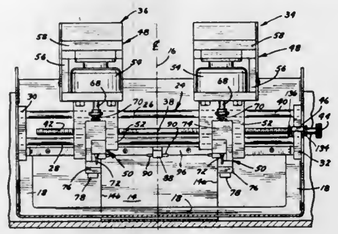
Richard D. Anderson, Maple Grove, and John A. Wedel, Minneapolis, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Aug. 6, 1979, Ser. No. 63,674
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—40 **14 Claims**

1. In a photographic printer in which indicia producing apparatus provides indicia at selected locations on a print paper strip that is transported along a paper path and is exposed to light from a photographic film original at a paper mask location, the improvement comprising:

locating means fixedly attached to the paper mask for locating the entire indicia producing apparatus in both transverse and longitudinal directions in a fixed and predetermined position with respect to the paper path;

engaging means connected to the entire indicia producing apparatus for engaging the locating means; and



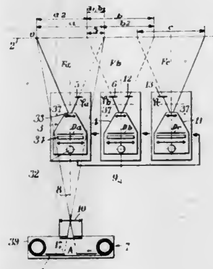
snap lock means for retaining the engaging means in an engaged relationship with the locating means in a fixed and predetermined position.

4,240,742

CONTINUOUS PHOTOSENSITIVE SUPPORT PRESENTING A SPATIAL LAP DISSOLVE, ITS APPLICATION, A PROCESS FOR OBTAINING IT AND A DEVICE FOR IMPLEMENTING THE PROCESS

Henri Fabiani, 39 Avenue du General Leclerc, 92100 Boulogne, and Alain Bret, 108 rue de Garches, 92210 Saint-Cloud, both of France

Filed Nov. 8, 1978, Ser. No. 958,729
Claims priority, application France, Sep. 11, 1977, 77 33702
Int. Cl.³ G03B *27/44*
U.S. Cl. 355—46 **10 Claims**



1. A process for forming on a photosensitive support successive images having a dissolve therebetween and derived from at least two primary light images in overlapping, partially merging areas, comprising the following steps:

(a) forming first and second primary light images on a screen while overlapping said images in part to form an area of superimposed brilliancy between said images;

(b) reducing the brilliancy of each of said primary light images in said area by interposing shutters in the paths of merging portions of the light beams forming said successive images to create a dissolve therebetween;

(c) extinguishing said second light image;

(d) disposing a photographic apparatus loaded with said photo-sensitive support in an axis coextensive with that of said first primary light image;

(e) exposing said photosensitive support to said first primary light image to form thereon a secondary image;

(f) extinguishing said first light image and re-establishing said second light image;

(g) adjusting said photographic apparatus to an axis coextensive with that of said second primary image by relative movement therebetween;

(h) advancing said photosensitive support within the photographic apparatus over a predetermined distance corresponding substantially to said relative movement; and

(i) exposing said photosensitive support to said second primary light image to complete a secondary image with a dissolve between the successive primary images.

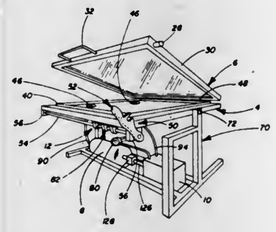
8. A system for providing an image dissolve on a continuous photosensitive support comprising a projection screen, at least two projectors for projecting, respectively, successive light images on said screen in overlapping, partially merging areas, at least two opaque shutters disposed between said projectors and said screen to reduce the brilliancy of the projected images in said overlapping areas, a photographic apparatus containing a moveable photosensitive support for receiving exposures from said light images, means within said apparatus for moving said support to positions to facilitate exposure thereof to overlapping successive images, and means for relative movement between said projectors and said photographic apparatus to permit exposure of successive images.

4,240,743

VACUUM FRAME

Joseph G. Hliboki, Old Tappan, and Paul Staudenmaier, Flanders, both of N.J., assignors to Teaneck Graphics Corp., Carlstadt, N.J.

Filed May 8, 1978, Ser. No. 904,114
Int. Cl.² G03B *27/60, 27/20*
U.S. Cl. 355—73 **11 Claims**



1. A vacuum frame, comprising:

a base section;

a cover hingably attached to said base section and including a transparent section, said cover and said base section forming a vacuum chamber therebetween when said vacuum frame is in a closed position;

a reserve vacuum tank in fluid communication with said vacuum chamber, said reserve vacuum tank adapted to create a vacuum within said vacuum chamber;

a vacuum pump means in fluid communication with said reserve vacuum tank, said vacuum pump means adapted to create a vacuum within said reserve vacuum tank; and

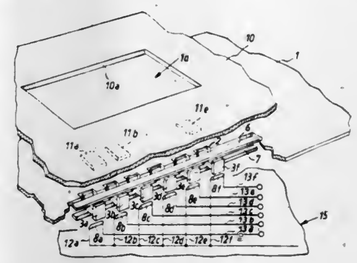
an electro-mechanical means for simultaneously regulating the vacuum pressure within said vacuum chamber and said reserve vacuum tank and the actuation of said vacuum pump means, said electro-mechanical means comprising a cam means secured to said vacuum frame for simultaneously actuating a series of valves and switches for regulating a vacuum within said vacuum chamber and said reserve vacuum tank.

4,240,744

PHOTOGRAPHIC COPYING MACHINE WITH INTERCHANGEABLE FORMAT MASKS

Heinz Rapp, Munich; Ernst Biedermann, Taufkirchen, and Dieter Wittenbrink, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 23, 1977, Ser. No. 863,867
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1976, 2659449
Int. Cl.³ G03B *27/58, 27/62*
U.S. Cl. 355—74 **13 Claims**



1. In a photographic copying machine wherein the configuration and/or dimensions of the opening in a selected one of a series of masks with openings of different size and/or shape determine the size and/or shape of the image which is reproduced on a photosensitive material and wherein each mask is provided with indicia denoting the size and/or shape of the respective opening, the combination of locating means for a selected mask; a plurality of magnetically actuatable switching elements, said switching elements forming a plurality of groups, one for each of said series of masks; and means for magnetically actuating the corresponding group of switching elements in response to placing of a selected mask in a predetermined position with respect to said locating means, including a battery of magnetic actuators adjacent to said locating means and each associated with one of said switching elements, the indicia of the mask in said predetermined position being situated adjacent to the actuators for the corresponding group of switching elements and across the respective actuators from the corresponding switching elements and being operative to effect the actuation of the corresponding switching elements by way of the adjacent actuators on placing of the selected mask in said predetermined position.

4,240,745

IMAGERY WITH CONSTANT RANGE LINES

Leland D. Green, Sierra Madre, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1974, Ser. No. 494,007
Int. Cl.³ G01C *3/08*; G01B *11/30*
U.S. Cl. 356—5 **1 Claim**

1. Apparatus for producing a range contour map of an area consisting of spaced constant range lines with equal range differences between adjacent lines, said apparatus comprising:

a mode-locked laser producing a beam of pulsed light of highly stable pulse repetition frequency;

means for splitting said beam into first and second pulsed beams;

means for scanning said area with the first beam;

first and second photodetectors, each operating to convert an optical signal at its input into an electrical signal at its output, said first photodetector receiving said first beam at its input and said second photodetector receiving at its input the light reflected from said area as a result of said scanning;

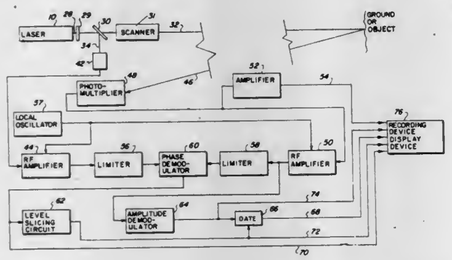
first and second radio frequency amplifiers each having a

radio frequency input and a local oscillator input and being capable of producing at its ouput a signal of frequency equal to the difference between the frequencies of signals applied to the radio frequency and local oscillator inputs, said radio frequency inputs being tuned to the same harmonic of the pulse repetition frequency of said laser;

means coupling the radio frequency inputs of said first and second radio frequency amplifiers to the outputs of said first and second photodetectors, respectively;

a common local oscillator coupled to the local oscillator inputs of said radio frequency amplifiers;

limiting means coupled to the outputs of said radio frequency amplifiers for removing the amplitude modulation of their output signals;



a phase demodulator receiving the limited signals from the outputs of said radio frequency amplifiers and producing at its output a signal of magnitude directly related to the phase difference between said limited signals;

a gate circuit having an input and an output;

means for amplitude demodulating the output signal of said second radio frequency amplifier and for applying the resulting amplitude modulation to the input of said gate circuit;

means including level sensitive means coupled between the output of said phase demodulator and said gate for inhibiting said gate whenever the phase difference between said limited signals is less than a predetermined small angle; and

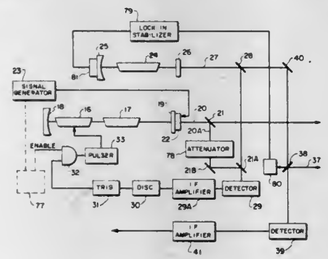
recording means coupled to the output of said gate circuit.

4,240,746

SYSTEM FOR TRANSMITTER FREQUENCY CONTROL IN COHERENT LADAR

Terence H. Courtenay, Ottawa, and James M. Cruickshank, Quebec, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defense, Ottawa, Canada

Filed Aug. 6, 1979, Ser. No. 64,294
Int. Cl.³ G01C *3/08*; H01S *3/00*
U.S. Cl. 356—5 **12 Claims**



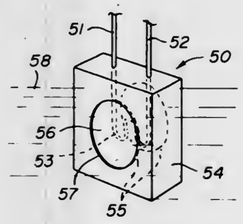
1. A laser radar system comprising a hybrid transmitter laser including a high power pulse section and a low power continuous section within a common optical cavity, a local oscillator laser, means for mixing a continuous output beam of a given frequency from the transmitter laser with the output signal frequency of the local oscillator and for providing a difference signal frequency, means for determining the instant when the transmitter frequency is offset from the local oscillator by a predetermined value, and means for causing a high powered output signal pulse to be generated by the transmitter laser at said instant and at the same frequency as said low power output.

4,240,747

REFRACTIVE-INDEX RESPONSIVE LIGHT-SIGNAL SYSTEM

Alan L. Harmer, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Continuation-in-part of Ser. No. 919,981, Jun. 28, 1978, Pat. No. 4,187,025. This application Oct. 3, 1979, Ser. No. 81,351
Int. Cl.³ G01N *21/41*
U.S. Cl. 356—133 **12 Claims**



1. A device for producing a luminous signal representing the refractive index of a liquid, comprising:

an elongated light-conducting body having an input section, an intermediate section connected to said input section and an output section connected to said intermediate section, said intermediate section being curved so that the injection of light into said body at said input section results in a luminous signal at said output section corresponding to the refractive index of said liquid, said intermediate section having a plurality of successive curvatures alternately bent in opposite directions;

a light source connected to said input section;

means responsive to said signal at said output section; and

an enclosure for said intermediate section placed at least over a region thereof to be immersed in said liquid and formed at least in part by a filter preventing particles in suspension in said liquid from depositing upon the curved intermediate section.

4,240,748

HAND-HELD OPTICAL CHARACTER RECOGNITION WAND WITH VISUAL ALIGNER

Serge L. Blanc, Los Gatos, and William R. Smith, Mountain View, both of Calif., assignors to Caere Corporation, Los Gatos, Calif.

Filed Jun. 26, 1978, Ser. No. 918,814
Int. Cl.³ G01C *15/00*
U.S. Cl. 356—138 **6 Claims**

1. An improved optical reading device comprising:

a housing;

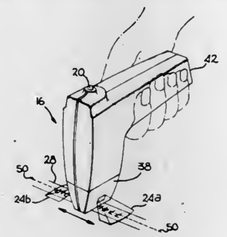
light means mounted within said housing for illuminating characters;

light detecting means mounted within said housing for detecting light;

lens means mounted within said housing for receiving light reflected from said characters which are located within an effective reading area of said device and for forming an image corresponding to said characters on said light detecting means; and

alignment means coupled to said housing for projecting a

light pattern on the surface which includes said characters, said pattern being substantially symmetrical about a vertical axis of said device which extends through the center of said effective reading area when said device is properly aligned with respect to said surface;



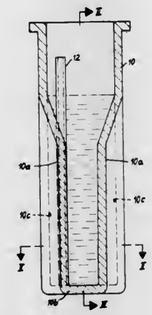
whereby by aligning said symmetrical pattern relative to said characters, said device is aligned for the reading of said characters.

4,240,749

TEST VESSEL

Erich Retzer, Maisach, Fed. Rep. of Germany, assignor to Compur-Electronic Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Oct. 12, 1978, Ser. No. 950,866
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1977, 7732771
Int. Cl.³ G01N *1/10*
U.S. Cl. 356—246 **7 Claims**



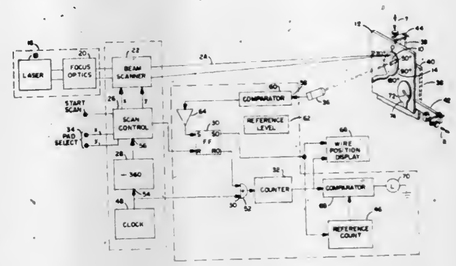
4. A test vessel for holding a quantity of liquid to be tested, said vessel having upright walls for confining liquid therein, said walls throughout a portion of the height of the vessel including, when viewed in horizontal cross-section, transparent front and rear walls substantially parallel to each other and arranged so that a testing ray may be projected through said front and rear walls and through the liquid between them, and side walls shaped to define a passage through which said ray may pass, said passage having a relatively narrow part at one point in the direction of travel of the ray and having a wider part at another point in the direction of travel of the ray, said wider part providing sufficient space to receive and retain a capillary tube in upstanding position and in a location where it will not be in the path of a ray of maximum width permitted by said narrow part.

4,240,750

AUTOMATIC CIRCUIT BOARD TESTER

Robert L. Kurtz, 10109 Bluff Dr., and William A. Hurd, 2107 Shannonhouse Rd., both of Huntsville, Ala. 35803

Continuation of Ser. No. 752,784, Dec. 20, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,870
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—394 **2 Claims**



1. An electrical circuit board testing system comprising:

a circuit board having a plurality of connective holes therethrough and electrically conductive leads of components extending along said board in discrete and varied directions to said holes;

positioning means for holding and positioning a said printed circuit board under test at a precise position, wherein a face of said board to be examined is unobscured;

a counter;

illumination means, including a laser and focusing optics, for focusing a beam of laser light onto the face of said printed circuit board held by said positioning means;

scanning means responsive to a discrete count from said counter for positioning said beam along selected paths which include paths substantially normal to and across radial lines from said holes and accordingly substantially normal to said leads on said board;

detection means spaced from said printed circuit board and spaced from and to the side of said beam for sensing the amplitude of scattered laser light from separate discrete regions of said board as said board is scanned and for providing discrete electrical outputs, each representative of the amplitude of scattered light from a discrete region of said board as it is scanned; and

reference means including an electrical memory having discrete electrical values, representative of discrete amplitude values of scattered light from a reference circuit board resulting from exposure of said reference circuit board along like said selected paths, said values being stored in said memory and located by discrete counter addresses, and said reference means including means for reading out said discrete electrical values responsive to said counter;

whereby selected paths, or a selected series of paths, of scanning may be effected in any direction and at any location on said board, and the existence and location of a conductor on the surface of said board detected and compared with the existence or location of a conductor on said reference board which lies substantially normal to a said path.

4,240,751

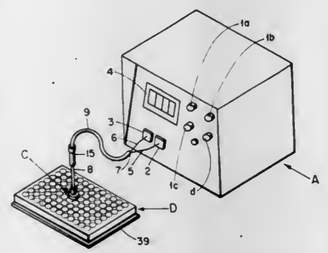
METHOD AND APPARATUS FOR SPECIFIC BINDING SUBSTANCES

Carl B. Linnecke, Los Angeles, and Daniel Wong, Orange, both of Calif., assignors to Akzona Incorporated, Asheville, N.C.

Filed Nov. 9, 1978, Ser. No. 959,386
Int. Cl.³ G01N *21/27*
U.S. Cl. 356—409 **35 Claims**

1. In combination, (1) a fiber optic colorimeter comprising a

light source, a means for detecting and measuring light, and a probe containing a plurality of optic fibers including a first light conducting means for conducting light from the light source of the colorimeter to a test sample and a second light conducting means for conducting light from the test sample to the means for detecting and measuring light of the colorimeter, and (2) a microplate having one or more wells, each of which is adapted to contain a liquid test sample for use in a predetermined colorimetric medical diagnostic test and each transparent to the light from said first light conducting means, wherein a reflective surface is disposed below the bottom of the wells of said microplate and said wells are adapted to accommodate the probe of said fiber optic colorimeter, and wherein said probe includes an attachment means fittably engaging said probe and joinable in a close-fitting engagement with an upper portion of each well in said microplate to position the probe above the well without engaging said liquid sample.



4,240,752

PROCESS AND APPARATUS FOR RECOGNIZING CLOUD DISTURBANCES IN A SAMPLE SOLUTION WHICH IS BEING SUBJECTED TO ABSORPTION PHOTOMETRY

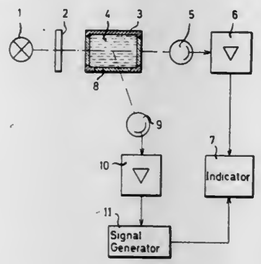
Walter Tausch, and Hans Gausmann, both of Aalen, Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 957,150

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757197

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—436 **4 Claims**



1. In apparatus for making absorption-photometric measurements upon a series of liquid samples wherein light from a source is transmitted on a first and direct path alignment through the same, there being concentration-measurement means including a photoelectric receiver positioned for response to light passing through the sample on said alignment, and means directly connected to the output of said photoelectric receiver for providing a direct indication of the concentration of a sought element in each of a succession of the samples, the improvement wherein a further photoelectric receiver and associated optical-focusing means are positioned laterally of said path alignment and are optically aligned to intersect said direct path alignment within the sample, and means independent of said concentration-measurement means and responsive to a signal output of said further photoelectric receiver for indicating for the case of each absorption measurement whether a cloud disturbance is present in the sample.

4,240,753

METHOD FOR THE QUANTITATIVE DETERMINATION OF TURBIDITIES, ESPECIALLY OF IMMUNE REACTIONS

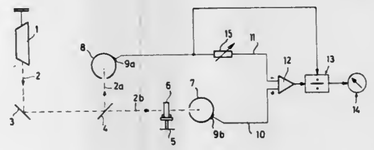
Gernot K. Brück, Cologne, Fed. Rep. of Germany, assignor to Hermann Lommel, Leverkusan and Diamant Test Gesselschaft fur Edelsteinprufungen mbH, Cologne, both of, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,711

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 27513651

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—442 **34 Claims**



1. A method for quantitative determination of very minute degrees of turbidities in a dilute test specimen comprising the steps of:

a. irradiating a test specimen with a monochromatic laser beam along a first path;

b. detecting and measuring the intensity of the laser beam emerging from the test specimen to provide a first measurement signal;

c. diverting a defined portion of the laser beam from said first path to a lateral path prior to interception of said beam by the test specimen;

d. detecting the intensity of said diverted laser beam along the lateral path to provide a reference signal;

e. subtracting said reference signal from said first signal to provide an output signal;

f. dividing said output signal by said reference signal to provide a quotient output signal corresponding to the true differential without variation effects originating with the laser light source; and,

g. responding to said quotient output signal to provide a value for turbidity.

4,240,754

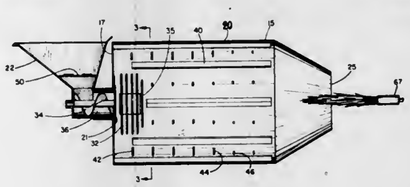
ASPHALTIC CONCRETE PATCH MIXING AND HEATING APPARATUS AND METHOD

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 871,351, Jan. 23, 1978. This application May 17, 1978, Ser. No. 906,734

Int. Cl.³ B28C *5/06, 5/42*

U.S. Cl. 366—4 **17 Claims**



1. A process for heating and mixing particles of a composition comprising asphalt and aggregate in a rotatable drum comprising placing the composition particles into the drum, introducing hot gases of combustion into said drum through a port, open to atmosphere, simultaneously rotating said drum at a speed to prevent formation of a veil or curtain of the particulate composition through said hot gases of combustion, and concurrently venting exhaust gases from said drum directly to atmosphere through said port.

4,240,755

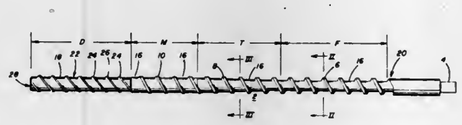
INJECTION MOLDING SCREW FOR PROCESSING HEAT SENSITIVE POLYMERIC MATERIALS

James D. Frankland, Jr., New Castle, Pa., assignor to New Castle Industries, Inc., New Castle, Pa.

Continuation of Ser. No. 797,828, May 17, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,480

Int. Cl.³ B29B *1/06*

U.S. Cl. 366—88 **5 Claims**



1. In an injection molding screw for plasticating heat sensitive polymeric materials for use in forming beverage containers while avoiding the release of objectionable constituents of said polymeric materials through thermal decomposition, said screw including an inlet end, a discharge end, means for mounting a backflow valve on said discharge end and a flighted section for applying high shear and high compression to said polymeric material, the improvement comprising:

a flighted screw section disposed between said high shear and high compression section and said discharge end of said screw, said screw section having an available volume per unit length for receiving said polymeric material that is greater than the corresponding available volume per unit length of said high shear and high compression section and having means for pumping said polymeric material to said discharge end of said screw at a rate at least equal to the pumping rate of said zone of high shear and high compression.

4,240,756

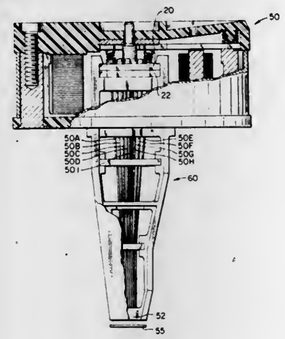
OPTIMIZED WIRE MATRIX IMPACT PRINT HEAD

Joseph P. Ku, 1083 Grebe St., Foster City, Calif. 94404, and Richard D. Trezise, 1204 Thornmill Way, San Jose, Calif. 95121

Filed Jul. 26, 1978, Ser. No. 928,200

Int. Cl.² B41J *3/12*

U.S. Cl. 400—124 **17 Claims**



1. A wire matrix impact print head commprising:

a mounting base plate;

a cap plate having a central aperture;

stylus guide means, including a first guide means having at least a first and a second support plate, with each support plate having a plurality of apertures distributed about its outer periphery, with the vertical axis of each one of said plurality of apertures in each of said plates being parallel to the axis of each of the other apertures in said plate, means for connecting said support plates one to the other contiguously and means for aligning the apertures of each of said support plates with the apertures of said other support plates, said stylus guide means being connected to said base plate;

a plurality of electromagnetic structures distributed about the outer periphery of said base plate and disposed around the topmost portion of said guide means including said first guide means, relative to said base plate, with each of said electromagnetic structures having an outer pole, a center pole coupled to said outer pole, and a coil disposed around one of said poles;

a plurality of armatures disposed radially about said topmost portion of said guide means, each of said armatures being associated with one of said electromagnetic structures to form an electromechanical actuator for transferring electromechanical energy to a stylus, and each of said armatures having a stylus engaging end and an outer end; and,

a plurality of styli carried by said guide means, each of said styli being of an elongated rod-like configuration having a free head end for engagement by the stylus engaging end of one of said armatures and a printing end for impacting a recording medium when the stylus is propelled through and said guide means by one of said actuators.

4,240,757

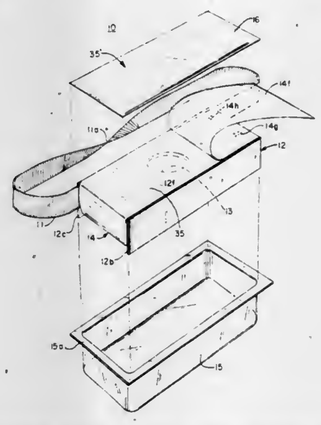
FANFOLD REPLACEMENT RIBBON PACKAGE

Samuel Y. Hanna, Nashua, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Dec. 26, 1978, Ser. No. 972,800

Int. Cl.³ B41J *33/10*

U.S. Cl. 400—196.1 **19 Claims**



1. A replacement ribbon package for use in printers having a ribbon cartridge housing and an associated printing element, said replacement ribbon package comprising:

a first package member having a flat substantially rigid central portion and at least a pair of sidewalls extending downwardly from opposing sides of said substantially rigid central portion;

a second package member comprising a tearaway strip at least partially encircling said substantially rigid central portion while exposing said sidewalls, whereby said substantially rigid central portion, said sidewalls and said

tearaway strip cooperatively form a ribbon encircling enclosure;

an elongated closed loop inked ribbon, positioned within and maintained by said ribbon encircling enclosure formed by said first and second package members in a loosely arranged fashion to aid in preventing said ribbon from being creased, a small portion of said ribbon extending outside of said ribbon encircling enclosure to facilitate placement of the ribbon about said printing element;

said tearaway strip including releasable means for releasably securing said tearaway strip about said ribbon and said first package member to facilitate sliding of said tearaway strip out from beneath the ribbon after insertion of the replacement ribbon package into a ribbon cartridge housing and releasing of said releasable means;

a substantially flat stripper plate positioned between said ribbon and said substantially rigid central portion to facilitate separation of said ribbon from said first package member after removal of said tearaway strip; and

said substantially rigid central portion having an opening to expose a central portion of said stripper plate whereby said first package member may be lifted away from said ribbon and out of the cartridge housing while said ribbon is held down by said stripper plate.

4,240,758

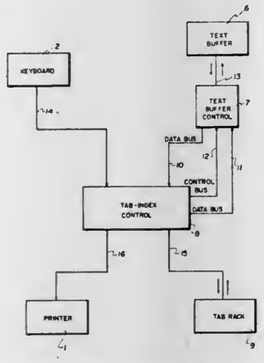
METHOD AND APPARATUS FOR ESTABLISHING TAB SETTINGS AND INDEXING PARAMETERS, AND PRINTOUTS REPRESENTING SAME, FOR A WORD PROCESSING SYSTEM

Robert G. Acosta, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1978, Ser. No. 884,055

Int. Cl.³ B41J *5/30*

U.S. Cl. 400—279 **7 Claims**



1. In a word processing system of the type including an output printer having a conventional carrier, input keyboard means for generating text codes representative of text to be printed by said output printer and instruction codes representative of the format by which said text is to be printed, memory means for storing said text codes and said instruction codes, and an electronic tab rack for storing tab codes representing tab stops for the carrier of said printer, the improvement comprising:

(a) first means responsive to said input keyboard means for generating a string of instruction codes respectively representing the beginning of the instruction code string, the indexing parameter of said format, the location of tab stops for said printer, and the termination of said instruction code string,

(b) second means for introducing said instruction code string into said memory means,

(c) third means responsive to said input keyboard means for establishing a grid of tab settings within said tab rack,

(d) fourth means for controlling the printing by said printer of a line of code characters respectively corresponding only to each of said instruction codes of said code string, and

(e) fifth means for moving the printer carrier to the respective positions of said tab settings so that the printing of each instruction code character representing the corresponding tab stop location code occurs at a position along said line of code characters corresponding to the tab setting position.

4,240,759

MECHANICAL PENCIL HAVING GUIDES TO MATCH GUIDES ON A REFILL CARTRIDGE

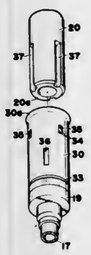
Kenji Matsumoto, Tokyo, and Gouji Sakaoka, Kawasaki, both of Japan, assignors to Pentel Kabushiki Kaisha, Nihonbashi, Japan

Filed Jul. 6, 1978, Ser. No. 922,428

Claims priority, application Japan, Jul. 19, 1977, 52/95966[U]; Jul. 29, 1977, 52/101478[U]; Mar. 31, 1978, 53/41921[U]

Int. Cl.³ B43K *21/00*

U.S. Cl. 401—85 **13 Claims**



1. A plurality of mechanical pencils each being for a different size lead and a plurality of equal size lead cartridges respectively containing different size leads, each pencil comprising an outer casing, an inner casing having a lead gripping chuck means at the forward end thereof, a spare lead cartridge receiving housing, a lead passage between said chuck means and said spare lead cartridge receiving housing, said lead gripping chuck means and said lead passage being capable of receiving only lead of a predetermined diameter, and a spring means for pressing said inner casing rearwardly along the axis thereof, said spare lead cartridge receiving housing having therein a cylindrical body, the cylindrical bodies in the respective pencils having a predetermined number of first guide means at constant intervals therearound corresponding to the predetermined diameter of lead which can be received in said lead gripping chuck means and said lead passage of that pencil, and said lead cartridges respectively having a predetermined number of second guide means thereon corresponding to the diameter of lead therein, the first guide means in a pencil for a predetermined diameter of lead and the second guide means on a lead cartridge containing that diameter of lead being engagable with each other for fitting that cartridge to that cylindrical body, and the number of first and second guide means on a pencil and a cartridge for each predetermined diameter lead being different from the number of first and second guide means on the pencils and cartridges for the other diameter of leads, whereby only cartridges containing leads having a diameter which can be accommodated in a pencil for that diameter lead can be fitted to the pencil for that diameter lead, thereby preventing misattachment of a lead cartridge having the wrong diameter leads for a pencil to the cylindrical body of that pencil.

4,240,760

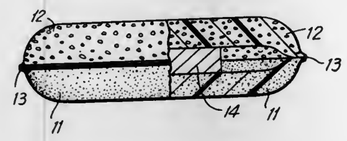
FOAM SCRUBBING DEVICE INCORPORATING A CLEANSER

Stella R. Levine, Chappaqua, N.Y., assignor to Brewster Laboratories, Inc., New York, N.Y.

Filed Jul. 21, 1978, Ser. No. 927,251

Int. Cl.³ A47K *7/02*

U.S. Cl. 401—201 **6 Claims**



1. A foam scrubbing device comprising:

a glycerine soap bar;

a first dense foam layer of a foam material having a given porosity and thickness for allowing a given amount of wetted soap to pass therethrough;

a second porous foam layer of foam material having substantially the same shape as said first layer, greater porosity and being thinner than said first dense layer for allowing about the same amount of wetted soap to pass therethrough as passes through said first dense layer;

said glycerine soap bar disposed between said first and second layers, said first and second foam layers heat sealed about the peripheral edges thereof for encapsulating said soap bar, whereby the different porosities of the two layers provide different abrasive characteristics for cleansing and scrubbing.

4,240,761

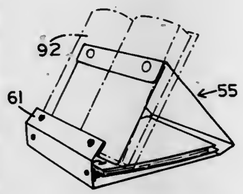
LOOSELEAF BINDER-DISPLAY STAND

Samuel O. Jacobson, 11255 Gaviota Ave., Granada Hills, Calif. 91344

Filed Jun. 28, 1979, Ser. No. 52,870

Int. Cl.³ B42F *13/40*

U.S. Cl. 402—76 **12 Claims**



1. A looseleaf binder-display stand comprising:

(a) a separator-bookrest panel hingedly connected to

(b) a cradle-pagestop panel having

(1) a first panel element hingedly connected to

(2) a second panel element hingedly connected to

(3) a third panel element, said cradle-pagestop panel hingedly connected to

(c) a first dorsum panel, said first dorsum panel hingedly connected to

(d) a second dorsum panel by

(e) a back cover panel, said second dorsum panel hingedly connected to

(f) an end panel by

(g) a front cover panel.

4,240,762

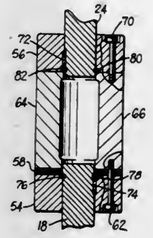
SEAL-ALIGNING RIGID COUPLING ASSEMBLY

Valenteen S. Lobanoff, Seneca Falls, N.Y., assignor to Johnston Pump Company, Glendora, Calif.

Filed Mar. 12, 1979, Ser. No. 19,482

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—24 **10 Claims**



2. An apparatus for rigidly coupling two, spaced coaxial shafts, the apparatus comprising:

a. a first cylindrical hub of uniform, substantially circular cross section, and having a concentrically located aperture along the hub axis for installing said first hub on one of said shafts at about the end thereof,

b. a second cylindrical hub of uniform, substantially circular cross section, and having a concentrically located aperture along the hub axis for installing said second hub on the other of said shafts at about the end thereof,

c. said first and second hubs having equal diameters,

d. means for radially and axially securing said hubs to the respective shafts, and

e. means for mechanically securing said hubs to each other in spaced parallel relation.

4,240,763

RESILIENT COUPLINGS

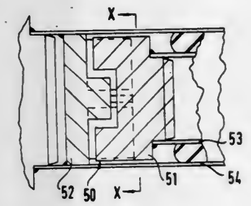
Alan F. Moore, Burbage, England, assignor to Dunlop Limited, London, England

Filed Apr. 4, 1979, Ser. No. 27,101

Claims priority, application United Kingdom, Apr. 15, 1978, 14886/78

Int. Cl.³ E21B *19/16*; F16D *1/00*

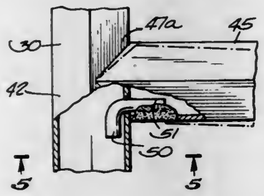
U.S. Cl. 403—203 **9 Claims**



1. A resilient coupling for transmitting torque between drive and driven shafts comprises an inner shaft nested concentrically within an outer shaft, a resilient sleeve unit of elastomeric material positioned between the shafts for resilient transmission of torque loads between the shafts up to a predetermined value and a resilient buffer unit mounted within the outer shaft for resilient transmission of torque loads between the shafts in excess of the predetermined value, the buffer unit comprising male and female spider units, each spider unit having a plurality of axially extending arms radially spaced from the normal axis of rotation of the coupling with the arms of one spider unit being intercalated with the arms of the other spider unit, respective web portions interconnecting the arms of each spider

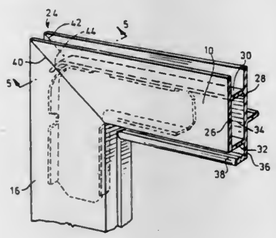
unit over at least part of the axial length thereof and a respective resilient element of elastomeric material provided between successive arms of the spider units for resilient transmission of torque loads in excess of the predetermined value.

4,240,764
DISPLAY STRUCTURE
Dieter F. Wegner, 11628 N. Shorecliff La., 2 West, Mequon, Wis. 53092
Filed Aug. 31, 1978, Ser. No. 938,609
Int. Cl.[3] B25G *3/00;* **F16B** *9/02;* **F16L** *41/00*
U.S. Cl. 403—252 **10 Claims**



1. In a display structure having a vertical post and a horizontal rail having an open end, the improvement for releasably interconnecting the post and rail and comprising said post having a salient side wall, said rail having a mating notched end, a socket opening in the salient side wall of the post and a fixed peg projecting from the rail into said notch and said peg having a shank portion supported in the open end of said rail and offset from the center thereof, and a hook portion releasably engaged through said socket opening, said socket opening being slightly oblong in the longitudinal direction of said post to accommodate swinging movement of the hook, with the juncture of said hook portion and shank portion being located within the confines of said notch and said juncture being spaced from the apex of the notch a distance only slightly greater than the wall thickness of the vertical post and positioned close to one side of said rail to enable swinging the rail into an angularly related relationship with respect to the post to support the rail from the post with the notched end of the rail interlockingly embracing the salient side wall of the post to prevent twisting of the rail with respect to the post about said fixed peg but for the interlocking of said notched end with the salient side wall of the post.

4,240,765
CORNER CONSTRUCTION
Hermann F. Offterdinger, 602 Galway Dr., Burlington, Ontario, Canada (L7L 2S8)
Filed Apr. 27, 1979, Ser. No. 34,458
Int. Cl.[2] F16D *7/04*
U.S. Cl. 403—402 **4 Claims**



1. A corner construction comprising two frame elements of substantially similar cross section having matching mitered ends brought together at a joint plane, the cross section of said frame elements comprising a portion of H-shape having two spaced parallel side walls, the cross piece of the portion of H-shape which cross piece extends between the said two parallel side walls constituting a web, a portion of the web of one element adjacent to the mitered end of that element being sheared from its respective side wall portion and pressed from the plane containing the remainder of the web to extend across the joint plane and between the side wall portion of the other element with its sheared edges engaging the said side wall portions to align the two frame elements accurately with respect to one another.

4,240,766
TRAFFIC DELINEATOR
William P. Smith, 9009 Covina, San Diego, Calif. 92126, and Dave R. Halsey, 9959 El Nopal, Santee, Calif. 92071
Filed Feb. 5, 1979, Ser. No. 9,664
Int. Cl.[3] E01F *9/00*
U.S. Cl. 404—10 **7 Claims**



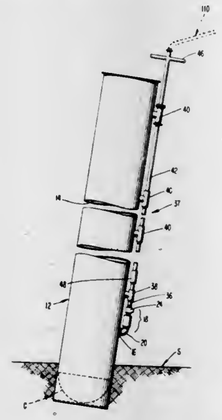
1. A readily removable device for delineating traffic lanes or the like which comprises:
an elongated tubular post made of lightweight pliable material having a cylindrical, threaded lower end;
a substantially conical base having at its apex a shallow well threaded and dimensioned to hold the lower end of the said post secured therein;
extending downward from the bottom center of said base and integrally therewith, a solid anchoring stud having a rounded lower end; and
in the ground surface, at least one sleeved dug hole shaped and dimensioned to fit closely around said stud;
said anchoring stud being free from vertical restraint in relation to said dug hole other than the combined weight of said post base and stud.

4,240,767
VALVING METHODS AND APPARATUS FOR FLOODING AND GROUTING OFFSHORE JACKET SLEEVES
Bert E. Gracia, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.
Filed Mar. 7, 1979, Ser. No. 18,401
Int. Cl.[3] E02B *17/02;* **E02D** *21/00, 27/52*
U.S. Cl. 405—227 **24 Claims**

1. A flooding and grouting valve mechanism for use in an offshore jacket of the type which is to be floated to an offshore work site, submerged onto a seabed by flooding of at least some sleeves of the jacket, and then anchored to the seabed by piles driven through the sleeves and grouted thereto, said flooding and grouting valve mechanism being attached to a sleeve and including:
means defining a flood opening for admitting ambient sea water,
means defining a grout opening for admitting grout,

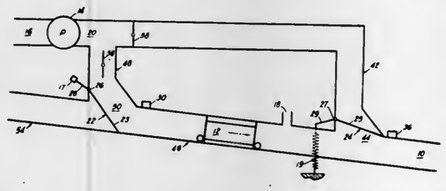
means defining a grout conduit coupled to said grout opening,
an outlet communicating with an inlet of the sleeve, which inlet communicates with a compartment within the sleeve to conduct thereto sea water or grout, and
valve means for uncovering said flood and grout openings to selectively admit sea water or grout for delivery to said compartment,
said grout conduit means including a portion forming said valve means for uncovering said flood openings.

24. A method for installing an offshore jacket onto a seabed comprising the steps of:
floating the jacket to a work site while maintaining compartments within sleeves of said jacket in a bouyant state,



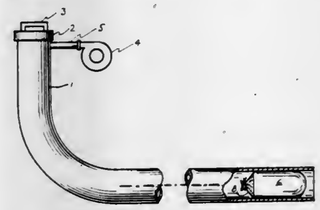
using valve actuating, conduit-defining rod means to actuate a valve mechanism on one of said sleeves of said jacket to communicate a flood opening on said valve mechanism with a flood/grout inlet of a said sleeve to admit ambient sea water through said flood/grout inlet to flood a said compartment, causing said jacket to tend to be lowered onto the seabed,
actuating said valve mechanism to block communication between said flood opening and said flood/grout inlet,
driving anchor piles through said sleeves,
supplying grout through said conduit defining rod means to a normally closed grout opening carried by said valve mechanism and,
pumping said grout through said conduit defining rod means whereby said grout forces open said grout opening and travels through said flood/grout inlet.

4,240,768
TRANSPORT SYSTEM WITH BLOCKING VALVE CONTROL
Marion R. Carstens, Atlanta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.
Continuation of Ser. No. 628,104, Nov. 3, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,648
Int. Cl.[3] B65G *51/10*
U.S. Cl. 406—19 **9 Claims**



1. In a transport system including a continuous conduit for conveying wheeled vehicles therein, at least one wheeled vehicle within said conduit, and pump means for discharging pressurized air into said conduit, the combination of:
a first overhead-suspended swingable valve adapted to move between a closed position blocking off said conduit and an open position permitting a vehicle to sweep past,
a second overhead-suspended swingable valve downstream of the first valve adapted to move between a closed position blocking off said conduit and an open position permitting a vehicle to sweep past, said first and second valves being spaced from each other,
vent means connected to the conduit between said first and second valves,
opening means urging said first and second valves to the open position,
air flow control means associated with said pump means and positioned for alternately directing air into the upper portion of the conduit and against the back of the first valve to close said first valve behind a vehicle while allowing said second valve to open under the action of said opening means ahead of said vehicle and directing air into the upper portion of the conduit and against the back of the second valve to close said second valve behind said vehicle while allowing said first valve to open under the action of said opening means, and
means responsive to the position of said vehicle for actuating said air flow control means.

4,240,769
SOLID WASTE DISPOSING SYSTEM
Octavio Diaz, Margarita SG-11, Valle Hermoso, Hormigueros, P.R. 00660
Filed Jul. 12, 1979, Ser. No. 56,830
Int. Cl.[3] B65G *51/00, 53/40*
U.S. Cl. 406—108 **1 Claim**

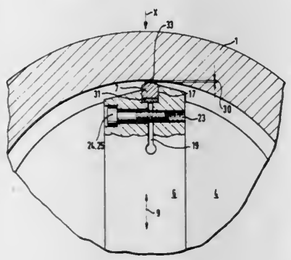


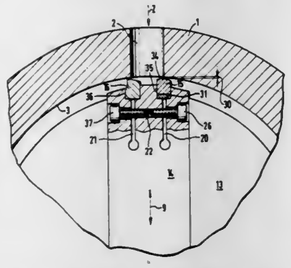
1. An improvement to pneumatic domestic type solid waste conveying systems comprising a rigid duct with a receiving end in which a flexible bag is placed to receive solid wastes, where said receiving end is capable of being closed and receiving compressed air to push said garbage bag along said duct toward the discharge end of said duct, where a positive seal of said bag against the inner surface of said duct is provided by means of an inner annular spring located inside said bag, and compressed air entering said bag through a permeable bag portion at its trailing end.

4,240,770
BORING TOOL WITH A FLOATING KNIFE
Garrj Berstein, Erkelenz, Fed. Rep. of Germany, assignor to W. Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany
Filed Aug. 14, 1978, Ser. No. 933,138
Int. Cl.[3] B23B *43/00*
U.S. Cl. 408—83 **4 Claims**

1. A boring tool with knife means for machining inner cylinder surfaces of a workpiece defining an axial direction and a radial direction, said knife means being floatable in said radial direction, said radially floatable knife means comprising cutter means and support means arranged on opposite ends of the floatable knife means, each support means being arranged

behind the respective cutter means as viewed in the axial feed advance direction of the boring tool, each support means further being recessed in the radial, floating direction of the boring tool by an extent corresponding to the allowable yielding of the cutter means, whereby said allowable yielding is limited by said support means for permitting said cutter means to pass a hole in said workpiece cylinder surface, and wherein said floatable knife means comprise separate recess means for said cutter means and for said support means, and means clamping said cutter means and said support means in the respective recess means.

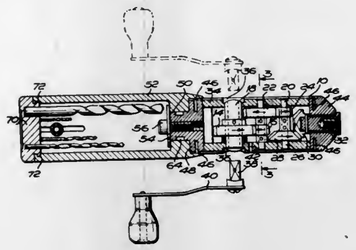




2. A boring tool with knife means for machining inner cylinder surfaces of a workpiece defining an axial direction and a radial direction, said knife means being floatable in said radial direction, said radially floating knife means comprising cutter means and support means arranged on opposite ends of the floating knife means, each of said support means being arranged behind the respective cutter means as viewed in the circumferential cutting direction of the boring tool, each support means further being recessed in the radial, floating direction of the boring tool by an extent corresponding to the allowable yielding of the cutter means, whereby said allowable yielding is limited by said support means.

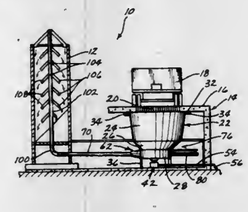
4,240,771
BREAST DRILLS
George C. Derbyshire, Sheffield, England, assignor to The Jabobs Manufacturing Company, Ltd., Sheffield, England
Filed Nov. 28, 1978, Ser. No. 964,384
Int. Cl.[3] B23B *39/10, 39/00*
U.S. Cl. 408—124 **4 Claims**

1. In a breast drill, a casing of elongate hollow form containing gearing for transmitting drive to a drill chuck, a crank handle which can be turned to transmit drive to the drill chuck, a pistol grip handle connected to the casing and being capable of angular adjustment around said casing so that it can be located at a required position in relation to the position of the crank handle, and a sleeve-like extension rotatably mounted on



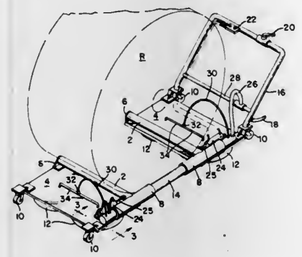
the end of the casing remote from the drill chuck and the pistol grip handle is formed integrally with said extension.

4,240,772
APPARATUS AND METHOD FOR CONVEYING GRAIN
John E. Wyatt, P.O. Box 37, Afton, Iowa 50830
Filed Nov. 14, 1977, Ser. No. 851,363
Int. Cl.[3] B65G *65/00, 1/00*
U.S. Cl. 414—299 **3 Claims**



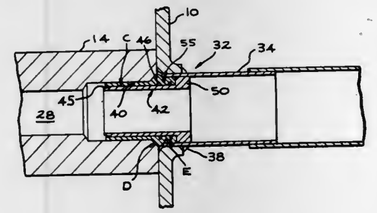
1. An apparatus for conveying grain comprising,
a housing including a bottom wall and an upright generally cylindrical side wall, said housing having an open topped chamber extended generally diametrically thereacross,
said side will including a discharge opening in communication with one end of said chamber,
a plurality of grain delivery tubes with one end portion thereof arranged in a horizontal disposition and in communication with said side wall, said end portion being generally radially directed and circumferentially spaced apart relative to said side wall,
means for supporting said housing for rotation about the upright central axis thereof whereby said chamber is rotatable to selected angular positions for registration of said discharge opening with respective ones of said tube end portions,
means for supplying grain to said chamber,
a ram movable longitudinally through said chamber for moving grain in the chamber outwardly through said discharge opening and into the end portion of a grain delivery tube registered therewith,
means for preventing the entrance of grain into the chamber behind the ram as the ram moves through the chamber,
a grain bin,
at least one of said delivery tubes including a grain discharge portion extended upwardly within said bin, said discharge portion having a plurality of vertically spaced openings therealong such that grain moved upwardly through said discharge portion by said ram is discharged into the bin through said vertically spaced openings, and
a plurality of spouts connected to said grain discharge portion in communication with respective vertically spaced openings and extended downwardly and radially outwardly therefrom, thereby to prevent backflow of grain from said bin into said grain discharge portion.

4,240,773
ROLL HANDLING APPARATUS
Melvin D. Terry, P.O. Box 7174, Seattle, Wash. 98133
Filed Sep. 5, 1978, Ser. No. 939,806
Int. Cl.[3] B65G *7/06*
U.S. Cl. 414—664 **6 Claims**



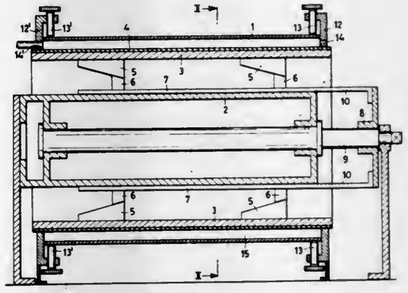
1. A device supported by air bearings, for transporting rolls of paper or the like, said device comprising:
a pair of opposing platform means designed to support a roll without damage thereto, movable relative to each other and having secured to each of their bottom surfaces at least one air bearing,
rigid means at one end of the platform means interconnecting and defining the relative movement of the platform means which are slidably mounted thereon,
means supplying air under pressure to the bearings, and
control means whereby the device may be placed adjacent the roll to be transported with the platform means extending in the direction of the axis of the roll along either side thereof and beneath the roll at a distance from each other which is less than the outer diameter of the roll whereby the roll will be lifted upon inflation of the bearings and thus transported to the desired location.

4,240,774
HERMETICALLY SEALED COMPRESSOR SUCTION TUBE AND METHOD OF ASSEMBLY
William T. Ladusaw, Jeffersontown, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Feb. 15, 1979, Ser. No. 12,280
Int. Cl.[3] F04C *29/00;* **F16L** *13/14;* **B21D** *39/04*
U.S. Cl. 418—248 **8 Claims**



1. A hermetic compressor unit comprising:
a casing including a side wall;
a compressor including a cylinder block positioned in said casing and having an outer surface adjacent the inner surface of said casing wall;
a suction passage in said block opening into said outer surface;
said casing having an opening aligned with and larger than said passage;
a suction tube having an inner diameter larger than said passage including one end portion positioned in said casing opening;
a tubular sleeve member being of greater ductility than said cylinder block includes a first portion arranged in said passage and an enlarged axially compressible portion arranged in said one end portion of said suction tube;
a tubular fitting having an end portion extending into said first portion of said tubular sleeve member with a larger diameter than the inside diameter of the first portion of the tubular sleeve and a shoulder portion extending radially outwardly to a position adjacent the inner wall of said suction tube to provide a circumferentially disposed area extending axially between said shoulder and said suction passage opening, said shoulder being in axial alignment with said compressible portion whereby axial movement of said fitting simultaneously radially compresses said first portion of said tubular sleeve in said passage to form a first seal area, and axially compresses said compressible portion in said circumferentially disposed area to form a second sealing area between said shoulder and said suction passage opening, and a third sealing area between said suction tube and said tubular fitting to seal the casing and suction tube connector to the compressor cylinder block.

4,240,775
IMPLEMENTATION FOR APPLYING A LINING TO THE INNER WALL OF A TUBULAR ARTICLE
Alberto Berni, Via Stoppani 15, Bergamo, Italy
Filed May 23, 1978, Ser. No. 908,652
Claims priority, application Italy, Jun. 2, 1977, 24315 A/77; Aug. 5, 1977, 26558 A/77
Int. Cl.[3] B29C *1/12, 27/16;* **B28B** *21/20, 21/80*
U.S. Cl. 425—110 **10 Claims**



1. A self-centering machine for applying a lining to the inner wall of a tubular article characterized in that it comprises, in combination: a uniformly variable diameter tubular implementation, a fixed bedplate having a leveladjustable roller set, a cradle mounted oscillably on said bedplate and carrying, in correspondence with the axis of oscillation, a centering head adapted to receive either end of said uniformly variable diameter tubular implementation, and having along said cradle a plurality of self-centering bearings for the tube to be lined, adjusting means acting between the swingable cradle and the implementation and adapted to have the longitudinal central axis of the implementation coinciding with the axis of the self-centering bearings, actuating means being provided for adjusting the level of the roller set, to control the oscillation of the cradle and the action of the self-centering bearings, so that one end of the variable diameter implementation is introducable in the centering head of the swingable cradle when the selfcentering bearings are open and by having the implementation slidable on the roller set placed at a certain level, the tube to be lined of one length being insertable over the implementation by sliding such tube on the roller set now arranged at a

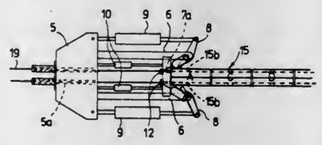
lower level than before centered on the respective self-centering bearings which are closable thereon and latched between the centering head on the one side and on a sealing ring on the other side, said implementation comprising in combination an expansible sheath or jacket of a longer length than said tube in the interior of which are provided expanding means, the cradle being tiltable upwards to permit the introduction of the coating material in the gap formed between the implementation and the tube.

4,240,776

PROCESS AND APPARATUS FOR CONTINUOUSLY PRESTRESSING CONCRETE PRODUCTS

Alister Black, Blenheim, New Zealand, assignor to Universal Development Company Ltd., Belnheim, New Zealand

Division of Ser. No. 843,622, Oct. 19, 1977, Pat. No. 4,186,169.
This application Apr. 5, 1979, Ser. No. 27,431
Claims priority, application New Zealand, Oct. 19, 1977, 182391
Int. Cl.[3] B28B *23/04*
U.S. Cl. 425—111 **6 Claims**



1. Apparatus for producing prestressed concrete products in separable moulds in a series in a production line comprising means for supplying continuous reinforcing tendons to the moulds, an elongate mould bed adapted to support a series of moulds at least part of which is adjacent a stationary tensioning frame for the apparatus, said tensioning frame being situated between the said means for supplying the reinforcing tendons to the moulds and the mould bed, means for advancing the moulds on the mould bed associated with the tensioning frame, primary anchoring means associated with the tensioning frame and adapted to grip and stress the reinforcing tendons, secondary anchoring means adapted to grip the reinforcing tendons fixed to said means for advancing the moulds on the mould bed, and latch means associated with the tensioning frame adapted to hold the moulds in a predetermined position on the mould bed whilst a prestressing force is applied to the reinforcing tendons, whereby by transferring the grip on the reinforcing tendons from the primary to the secondary anchoring means or vice versa the prestressing force can be maintained in the reinforcing tendons whilst the said means for advancing the mould on the mould bed operates to make way for a fresh mould on the mould bed.

4,240,777

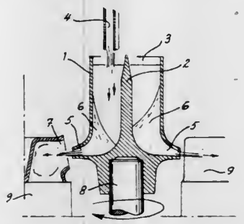
FEEDING AND MIXING NOZZLE AND METHOD FOR MIXING LIQUID RESIN MIXTURES AND FEEDING IT INTO MOLDS BY CENTRIFUGAL FORCE

Stig L. Hallerback, Vastra Frolunda, and Leif Lachonius, Surte, both of Sweden, assignors to Aktiebolaget SKF, Goteborg, Sweden

Division of Ser. No. 798,647, May 19, 1977, Pat. No. 4,162,039.
This application Feb. 21, 1979, Ser. No. 13,081
Claims priority, application Sweden, Jul. 5, 1976, 7607647
Int. Cl.[3] B29C *5/04*
U.S. Cl. 425—130 **11 Claims**

1. A method for dosing, feeding and mixing at least two substances consisting of the steps of rotating a vessel having a plurality of equiangularly spaced partition walls providing a plurality of chambers therein about its central axis at a predetermined uniform angular rate of rotation, the vessel being open at its upper end defining an inlet opening and having a plurality of outlet openings communicating with its chamber, discharging materials to be mixed at a predetermined uniform constant feed rate into the vessel from a location disposed eccentrically to the rotational axis thereof and disposing a plurality of molds to be filled adjacent the discharge openings whereby upon rotation of the vessel and molds, substantially equal quantities of the mixing material are dispensed to each of the molds.

4. A nozzle for dosing, feeding and if necessary mixing substances, comprising a rotatable vessel of cup-like form having a base, a central hub portion and an outer wall spaced radially outwardly from the hub portion, said wall defining a



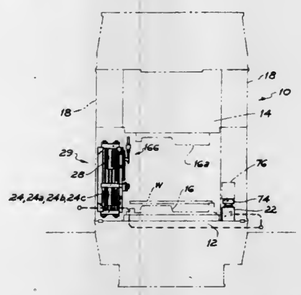
pouring opening in its upper portion and a plurality of outlet openings disposed at its lower portion, means for rotating said vessel about a central vertically disposed axis through the hub portion at a predetermined uniform angular rate, a plurality of equiangularly spaced partition walls extending between said hub portion and outer wall dividing said nozzle into a plurality of chambers, feed means located eccentrically to the axis of said hub portion for discharging materials at a predetermined uniform rate to said chambers, an outlet opening in each of said chambers, and a receiving mold at each outlet rotatable with said nozzle to receive the molding material by centrifugal force.

4,240,778

SYSTEM FOR PROVIDING FOR PARALLELISM IN FLUID POWERED PRESS OR THE LIKE

Myron I. Korytko, Erie, Pa., assignor to Efco, Inc., Erie, Pa.

Filed Aug. 27, 1979, Ser. No. 70,011
Int. Cl.[2] B30B *15/16, 15/22, 15/24*
U.S. Cl. 425—149 **22 Claims**



1. In a fluid powered press, a first platen, a second platen, at least one of said platens being movable along a predetermined axis relative to the other platen, one of said platens adapted to support a workpiece thereon, and means for compensating for tilting movement of the movable platen relative to said other platen by creating a force moment acting on said movable platen in a direction opposite to the direction of said tilting movement, said means comprising a plurality of fluid operated leveling units mounted on one of said platens and responsive to tilt of said movable platen, said movable platen being spaced from said leveling units at the start of the platen movement and

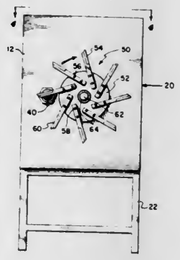
adapted to engage said leveling units at a selected position of the movable platen, a series of fluid operated slave units, each of said slave units being coupled in fluid transmitting relation to a respective of said leveling units, and a fluid operated control unit operatively coacting with said slave units, for applying force from said slave units to said control unit, upon said engagement of said movable platen with said leveling units, said control unit being operable to generate pressures in said leveling units via said slave units which will oppose tilting of said movable platen.

4,240,779

APPARATUS FOR CUTTING AN EXTRUDED PRODUCT

Bartel G. Turk, Richmond, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 627,760, Oct. 31, 1975, abandoned.
This application Aug. 23, 1978, Ser. No. 935,930
Int. Cl.[3] A01J *21/02*
U.S. Cl. 425—313 **2 Claims**



1. In a shaping device comprising an extruder means, a cutting means and a recovery means; the extruder means cooperating with the cutting means to transfer a heated, extruded food product to the recovery means, the improvement comprising:

I. a cutting means consisting essentially of a rotatable plate to serve as a base for at least one blade:
- (a) said blade having a first end and a second end and being secured to said plate at the first end of said blade;
- (b) the second end of said blade comprising a cutting edge and extending beyond an edge of said plate;
- (c) said cutting edge rotatabley and movably positioned in slideable contact with an outlet of said extruder means said outlet being substantially horizontal; and
- (d) said cutting edge having a substantially upward stroke in relation to said outlet, said cutting edge and said outlet cooperating so that all of the extruded product is thrown in an upward direction upon cutting, said upward direction providing time for said cut product to cool; and

II. an enlarged vapor permeable shroud communicating with and surrounding said rotatable plate and said at least one blade, and also communicating with atmospheric air; to thereby contain said product on said upward flight in said air and direct said product to said recovery means while permitting dissipation of heat and evaporated moisture directly into said air.

4,240,780

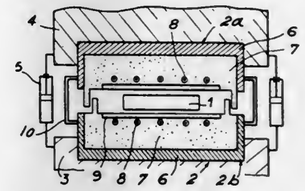
EQUIPMENT FOR SINTERING UNDER PRESSURE

Jacques P. Carcey, Charavines, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 660,041, Feb. 23, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,164
Claims priority, application France, Feb. 27, 1975, 75 06169
Int. Cl.[3] B30B *15/02*
U.S. Cl. 425—407 **2 Claims**

1. A treatment module for use in a press having a top plate and a bottom plate substantially parallel to each other and means for pressing said top plate towards said bottom press plate so as to compress an object between said plates selectively at a constant pressure or at an increasing pressure, for sintering under pressure, comprising:

an essentially non-deformable upper element (**2*a***) and an essentially non-deformable lower element (**2*d***) connected by flexible means (**10**) for holding said upper and lower members in proximity to each other while allowing them to be moved together or apart, said upper and lower elements each containing heating means interposed between an upper and lower face plate of the element, said plates of each element being rigidly spaced apart by a



compression-withstandiing filling in which said electrical heating means are embedded, and

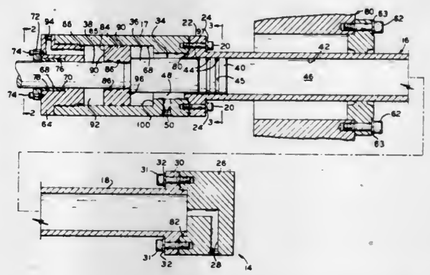
a composite container for containing material to be sintered under compression and heat, said container having a bottom wall and a top closure substantially opposite said bottom wall and also a lateral wall formed by a plurality of elements which cooperate with said bottom wall and said top closure to constitute a composite container capable of being deformed in the event the contents thereof spread laterally when pressure is applied between said bottom wall and said top closure, said bottom wall and said top closure being disposed in said module between said non-deformable upper and lower elements.

4,240,781

INJECTION MOLDING MACHINE HAVING DUAL TONNAGE TRAVERSING CYLINDER

William T. Flickinger, Marion, and Donald W. Staiger, Mount Gilead, both of Ohio, assignors to HPM Corporation, Mount Gilead, Ohio

Filed Dec. 18, 1978, Ser. No. 970,102
Int. Cl.[2] B29C *1/16;* B29F *1/00*
U.S. Cl. 425—450.1 **11 Claims**



1. In combination with an injection molding machine having a movable platen adapted to be connected to a die section, a traversing apparatus comprising:

a cylinder barrel having a first cylinder and a second cylinder,

means connected to said barrel for fixing said barrel against axial movement,

an annular first piston means slidably received in said first

cylinder, said first piston means including a first pressure face and an opening extending axially through said piston means,

a second piston means slidably received in said second cylinder and having a second pressure face smaller than said first pressure face, said second piston means including a reduced diameter portion slidably extending through the opening in said first piston means such that the pressure face of said first piston means encircles said reduced diameter portion, said first piston means being sealed against said reduced diameter portion,

said first piston means being connected to said platen,

first means for admitting fluid under pressure into said first cylinder in front of said first piston means pressure face to retract said first piston means,

second means for admitting fluid under pressure into said second cylinder in front of said second piston means pressure face to retract said second piston means,

said first piston means having a much shorter available stroke than said second piston means,

said first piston means being positioned to abut said second piston means during the retraction of said first piston means so as to partially retract said second piston means, and

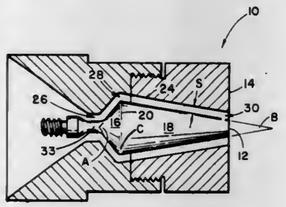
said second piston means being independently movable relative to said first piston means during at least a portion of the stroke of said second piston means.

4,240,782

EXTRUDER HEAD FOR MAKING ELASTOMER-FIBER COMPOSITE HOSE

Donald J. McPhee, Salt Lake City, Utah, and Herbert W. Gray, Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Oct. 17, 1979, Ser. No. 85,656
Int. Cl.³ B29D *7/04, 23/05*
U.S. Cl. 425—467 **7 Claims**



1. An extruder head for extruding an elastomer-fiber composite into a tubular conduit having disarranged fibers, the extruder head of the type having a coaxial pin with a support pin portion and die which together define a first annular gap with an annular inlet area between the support pin portion and die, the first annular gap conically diverging to a second annular area of at least twice the size of the inlet area wherein the improvement comprises:

coaxial extensions of the pin and die to define a second annular gap that conically converges from the second annular area to a smaller third annular gap that defines a third annular area, the first annular gap divergence rate being greater than the second annular gap convergence rate and wherein the pin and die may be selectively sized to extrude tubular conduit having an internal diameter from below 0.25 inch to about 3.0 inch with the supporting pin portion having sufficient cross section for supporting the pin.

4,240,783

COMBINED DISPLAY CONTAINER, CIGARETTE LIGHTER, CANDLE HOLDER

William Nevin, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Aug. 5, 1977, Ser. No. 822,387
Int. Cl.³ F23D *15/04*
U.S. Cl. 431—253 **4 Claims**



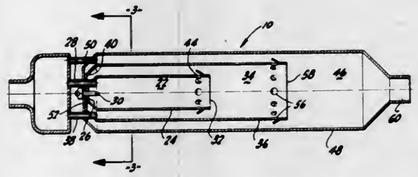
1. A decorated container comprising a transparent encompassing outer cover having a decorative insert disposed and secured within said cover and encompassed thereby including an aperature through one end of said cover having securing means for receiving and securing therethrough objects of predetermined function wherein said cover includes a neck extending from a transverse shoulder said aperture formed through said neck including a reraining within said container in the form of a vessel retaining said insert inclose abuttment with said cover, said cover having a bottom edge extending beyond nsaid insert, said vessel having a all aligned with the bottom edge of said cover, wherein a second vessel for storing articles is fitted rotatably inside first said vessel, each vessel having an opening through a bottom wall thereof, said second vessel including a top wall affixed to said cigarette lighter for manual rotation of said second vessel in order to align said openings together for dispensing articles within said second vessel.

4,240,784

THREE-STAGE LIQUID FUEL BURNER

Hector A. Dauvergne, P.O. Box 884, San Leandro, Calif. 94577

Filed Sep. 25, 1978, Ser. No. 945,228
Int. Cl.³ F23D *15/00*
U.S. Cl. 431—351 **10 Claims**



1. A three stage combustion device wherein the temperature of combustion is maintained at a level that inhibits nitrogen fixation comprising:

(a) an air delivery means for continuously delivering a defined flow of air to said combustion device;

(b) a fuel delivery means for delivering a continuous supply of fuel to said combustion device;

(c) a first combustion stage wherein said fuel delivery means includes means for emitting fuel into said first combustion stage and wherein said air delivery means includes means for delivering a portion of the defined flow of air, less than the stoichiometric requirements of the delivered fuel, to said first combustion stage;

(d) means for igniting fuel delivered to said first combustion stage wherein ignited fuel is partially combusted products of partial combustion;

(e) a second combustion stage communicating with said first combustion stage wherein the products of partial combustion are emitted to said second combustion stage and wherein said air delivery means includes means for delivering an additional portion of the defined flow of air to said second stage, which in combination with the portion of air delivered to said first stage approximates the stoichiometric requirements of the delivered fuel for substantial combustion producing products of substantial combustion; and

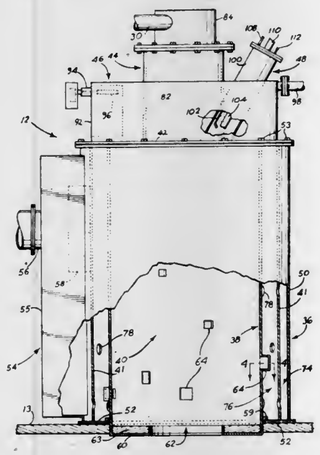
(f) a third combustion stage communicating with said second combustion stage wherein the products of substantial combustion are emitted to said third combustion stage and wherein said air delivery means includes means for delivering an additional portion of the defined flow of air to said third stage, to which in combination with the portions of air delivered to said first and second stages exceeds the stoichiometric requirements of the delivered fuel, for substantially complete combustion producing products of substantially complete combustion.

4,240,785

WOOD BURNER

John H. Crawford, Corvallis, Oreg., assignor to Leading Plywood Corporation, Corvallis, Oreg.

Filed Mar. 5, 1979, Ser. No. 17,431
Int. Cl.³ F23D *15/02*
U.S. Cl. 431—352 **9 Claims**



1. Apparatus for burning combustible particles to heat circulated air, said apparatus comprising

an upright housing,

an upright, substantially cylindrical liner disposed within said housing, forming a combustion chamber having a fuel-infeed opening at its upper end and a heated gas discharge opening at its lower end,

an upright, intermediate wall member disposed between said housing and said liner, said wall member forming, with said housing and said liner, outer and inner gas-receiving spaces, respectively, said well member having perforations allowing gas flow between said spaces,

air inlet means through which air may be injected into said outer space, with such air flowing through said perforations into said inner space, forming therein a layer of pressurized air surrounding said liner,

vent means in said liner for directing such pressurized air into the combustion chamber, substantially tangentially to the inner wall thereof, thus to establish within said chamber a vortexing gas dischargeable through said discharge opening,

particle dispersion means for supplying such particles, in dispersed form, into an upper portion of said chamber, and

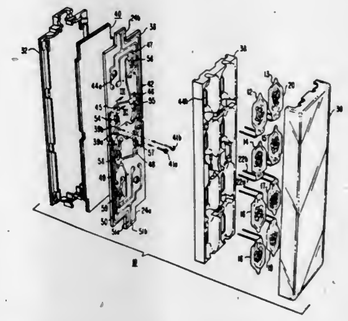
ignition means disposed adjacent said upper portion for initiating combustion of said particles therein, such combustion being supported by, and acting to heat, such vortexing gas within said chamber.

4,240,786

SWITCHING DEVICES FOR A FLASH LAMP ARRAY AND METHOD

Herman R. Heytmeijer, Hanover Township, Morris County, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1978, Ser. No. 913,777
Int. Cl.³ F21K *5/00*
U.S. Cl. 431—359 **9 Claims**



1. In combination with a flash lamp array including a plurality of flash lamps each having a vitreous envelope hermetically sealed to a pair of lead-in wires, a two-sided circuit board having sequencing circuitry affixed to one side thereof and having said lamps connected thereto to fire individually and in sequence, the improvement which comprises:

solid-state thermally activated switches located externally of said lamps affixed to said one side of said circuit board and forming a part of said sequencing circuitry, each of said switches located in close proximity to one of said flash lamps to receive thermal energy emitted by said proximate flash lamp upon its being fired and change from a non-conductive state to a conductive state, said switches comprising a uniform mixture of predetermined proportions of finely divided silver carbonate, finely divided silver oxide, and finely divided hydrophobic silica, and said mixture adhered as a unitary mass of predetermined dimensions to said circuit board by means of an organic polymer binder.

4,240,787

DRYING OVEN WITH HEAT RECLAMATION AND AIR POLLUTION CONTROL SYSTEM

Aziz A. Jamaluddin, 1912 Nursery Rd., Woodlands, Tex. 77380

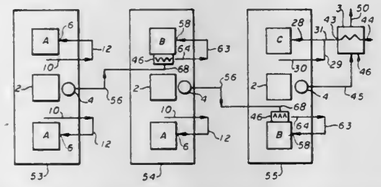
Filed Jun. 19, 1979, Ser. No. 50,085
Int. Cl.³ F27D *7/04;* **F27B** *19/00*
U.S. Cl. 432—21 **20 Claims**

15. A method of operating a plurality of side loading batch ovens in sequence which treats materials producing combustible emissions comprising

circulating large volumes of relatively low temperature air containing combustible gases from each oven at a low velocity through combustion units to oxidize part of the

combustible gases, heat said air, and return the air and combustion products to the respective ovens,

exhausting air containing combustible gases from each oven to the next succeeding oven at a predetermined low rate, completely oxidizing the combustible gases in said air exhaust to produce a low volume of high temperature combustion products, and



mixing said low volume of high temperature combustion products at a high velocity with said large volume of air circulating at low velocity from each oven through its respective combustion unit.

4,240,788

INTERMITTENT TOP FIRING TUNNEL KILN EQUIPPED WITH A BURNER HAVING A CERAMIC AIR NOZZLE

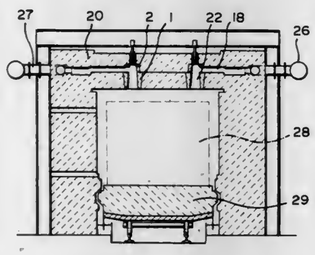
Kiyoshi Naito, Urawa, and Akio Syukuya, Kawagoe, both of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,452

Claims priority, application Japan, Jun. 14, 1978, 53-70794

Int. Cl.³ F27B *9/02;* F24H *1/00*

U.S. Cl. 432—136 **1 Claim**



1. An intermittent top firing tunnel kiln comprising kiln walls and a kiln ceiling defining a heating chamber, a burner having a air nozzle assembly mounted to the kiln ceiling, said kiln ceiling being provided with a wind box defining an air mixing chamber and with a burner tile defining a conical opening communicating at one end with said air mixing chamber and at the other end with said heating chamber, a burner support tile, an air nozzle assembly having a ceramic air nozzle mounted to said wind box via said burner support tile and communicating with said air mixing chamber, a metallic air supply pipe connected to said ceramic air nozzle, a metal fixture supporting said air nozzle assembly in said kiln ceiling, an oil nozzle assembly located at the center in said air nozzle assembly for introducing oil into said air mixing chamber, the oil nozzle assembly and the ceramic air nozzle being substantially coterminus and secondary air supply means communicating with said air mixing chamber.

4,240,789

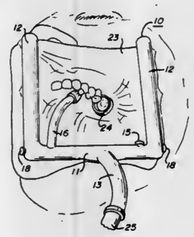
DENTAL APPLIANCE

Harold B. Rosenthaler, 8201 Henry Ave., Apt. P25, Philadelphia, Pa. 19128

Filed Sep. 12, 1978, Ser. No. 941,458

Int. Cl.³ A61C *5/14, 17/04*

U.S. Cl. 433—136 **14 Claims**



1. A rubber dam device for dental use comprising in combination,

(a) a frame including means for detachably carrying a rubber dam membrane, said means being located on said frame so that in use the rubber dam membrane is disposed between said frame and the face of a dental patient, said frame being of a size and shape requiring that it be external to the mouth of a dental patient,

(b) support means for supporting a suction tube from said frame so that one end of the suction tube is free for variable positioning,

(c) a suction tube operatively coupled to said suction tube support means, and

(d) means for connecting a suction source to the suction tube when the latter is operatively supported by said support means.

4,240,790

PROCESS FOR DYEING AND PRINTING FLAT TEXTILE MATERIAL CONTAINING SYNTHETIC FIBERS

Hans-Ulrich von der Eltz, Willibrachtstrasse 14, D 6000 Frankfurt am Main 50, Fed. Rep. of Germany, assignor to Hans-Ulrich von der Eltz, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,225

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757259

Int. Cl.³ D06P *3/82*

U.S. Cl. 8—529 **9 Claims**

1. A process for dyeing and printing flat textile articles containing synthetic fibers endowing an optimum handle to the goods comprising the steps of

(a) pretreating said textile in rope form with at least one pretreatment bath at 80°–140° C. followed by drying;

(b) impregnating said textile at full width with a dye in an aqueous medium;

(c) fixing the dyestuff;

(d) aftertreating the dyed textile again in rope form under as little tension as possible in at least two aftertreatment baths at least one of which having a temperature of 80°–140° C.; and

(e) advancing the thus treated textile through a dwelling chamber while changing the position of the folds in the textile rope.

4,240,791

DYEING METHOD FOR FIBROUS PRODUCTS

Kanji Sato; Kazuyoshi Kushibe; Masaru Nishii; Yasuhiro Kanaya, and Yasumasa Kawabe, all of Fuji, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,341

Claims priority, application Japan, Jul. 18, 1978, 53-86769

Int. Cl.³ D06P *1/22, 1/30;* C09K *3/00*

U.S. Cl. 8—465 **4 Claims**

1. A method of dyeing fibrous products comprising dyeing a fibrous product using an oxidation-reduction dyeing type dye and an aqueous alkali solution of thiourea dioxide as a reducing solution with the reduction of the dye with said aqueous alkali solution of thiourea dioxide being carried out in the presence of one or more dialdehyde compounds selected from dialdehyde compounds represented by the general formula

OHC—R—CHO (I)

in which R is a saturated or unsaturated aliphatic or aromatic organic compound radical.

4,240,792

AFTER-TREATMENT OF DYED OR PRINTED SYNTHETIC FIBERS

Ulrich Baumgarte, Limburgerhof; Sigismund Heimann, Ludwigshafen; Michele Vescia, Limburgerhof, and Johannes Winkler, Birkenau, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,587

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744607

Int. Cl.³ D06P *5/02*

U.S. Cl. 8—607 **8 Claims**

1. A process for the after-treatment of dyed or printed synthetic fibers, or of materials which consist of synthetic fibers or contain a mixture of synthetic fibers and other fibers, using an aqueous solution which contains from 0.2 to 20 g/l of a mixture of

(a) from 80 to 20 parts by weight of a reductonate selected from the group consisting of monohydroxyacetone, dihydroxyacetone, dihydroxybutanone and glycolaldehyde, and

(2) from 20 to 80 parts by weight of one or more nonionic and/or anionic surfactants, the after-treatment being carried out at from 40° to 100° C. and at a pH about 8.

4,240,793

PREPARATION OF A HIGH-HIDING AND DEEPLY COLORED PIGMENTARY FORM OF PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID BIS-(4'-ETHOXYPHENYL)-IMIDE

Fritz Graser, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 75,123

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842721

Int. Cl.³ C09B *67/00;* C07D *21/22*

U.S. Cl. 8—594 **7 Claims**

1. A process for the preparation of a high-hiding, deeply colored pigmentary form of perylene-3,4,9,10-tetracarboxylic acid bis-(4'-ethoxyphenyl)-imide by heating the finely divided crude pigment, in the form of agglomerates formed from primary particles of length 0.15 μm or less, in an organic liquid or a mixture of an organic liquid and water at from 30° to 200° C., and isolating the pigment, in which process cyclohexanone is used as the organic liquid.

4,240,794

METHOD OF PREFORMING VASCULAR GRAFTS OF HUMAN AND OTHER ANIMAL ORIGIN

Daniel G. Holman, 12743 Radisson Rd. NE., Blaine, Minn. 55434; Robert A. Ersek, 5416 Diamondhead Dr. East, Bay St. Louis, Miss. 39520, and Arthur A. Beisang, 2263 Dellwood, Roseville, Minn. 55113

Continuation of Ser. No. 872,605, Jan. 26, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 52,068

Int. Cl.³ A61L *17/00;* C14C *3/08*

U.S. Cl. 8—94.11 **3 Claims**

1. The method of conforming a human umbilical cord to a predetermined configuration for implanting in a human body which method comprises the steps of:

(a) flushing the cord and thereafter mounting the cord upon a mandrel of the desired configuration;

(b) initially immersing the mounted cord and manlvml into an aqueous solution of ethyl alcohol containing more than about 70% of ethyl alcohol until said cord is substantially dehydrated and shrunk onto said mandrel; and

(c) thereafter immersing the dehydrated and mounted cord in an aqueous solution selected from the group consisting of dialdehyde starch in water and gluteraldehyde in water, wherein said solution contains more than about 1% of said aldehyde, for a period sufficiently long to permit the configuration to become fixed.

4,240,795

TREATMENT OF TEXTILES WITH MODIFIED ALPHA-OLEFINS

William T. Hendrix, Chester, S.C., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 56,022

Int. Cl.³ D06M *13/02, 13/10, 15/30*

U.S. Cl. 8—115.6 **10 Claims**

1. In a process for treating textiles comprising impregnating a textile with a solution of a cross-linking aminoplast resin and a textile resin catalyst, the improvement wherein the solution contains about 0.05 to 5.0 percent, based on the weight of the solution, of an emulsion of an oxidized alpha-olefin having at least 20 carbon atoms, said oxidized alpha-olefin having an acid number of about 1 to about 70.

4,240,796

METHOD OF TREATING CAPILLARY FIBERS

Hikaru Nakanishi, Kawasaki, Japan, assignor to Senko Medical Instruments Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1978, Ser. No. 933,612
Claims priority, application Japan, Aug. 31, 1977, 52-104634; Jun. 7, 1978, 53-68697
Int. Cl.[3] B05D 5/00
U.S. Cl. 8—137.5 4 Claims

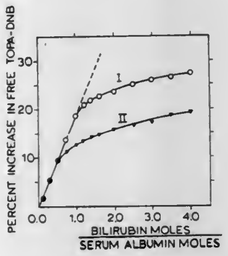
1. In the method of forming capillary fibers by extruding polymeric material into a coagulating solution while discharging an oily substance selected from the group consisting of ocytl alcohol and isopropyl myristate into the interior of said extrusion, adding glycerol thereto as a softening agent, and removing the oily substance, the improvement comprising selectively removing said oily substance without removal of said glycerol by washing said extruded fibers with carbon chloride fluoride or a mixture of carbon chloride fluoride with material capable of forming an azeotrope therewith.

4,240,797

ASSAY FOR RESERVE BILIRUBIN BINDING CAPACITY

Jen C. Hsia, Don Mills, Canada, assignor to The Governing Council of the University of Toronto, Toronto, Canada

Filed Oct. 18, 1977, Ser. No. 843,490
Int. Cl.[3] G01N 27/48, 24/00
U.S. Cl. 23—230 B 9 Claims



1. Assay method for determining values relating to the reserve bilirubin-binding capacity of a serum albumin-containing aqueous specimen comprising the steps of adding to the specimen a molar excess, in terms of albumin content, of a water-soluble spin label comprising a dianionic compound that binds to the first specific high-affinity bilirubin-binding site on the albumin, and is quantitatively displaceable from that site into solution in the presence of bilirubin, titrating the specimen with a standard bilirubin solution, subjecting the specimen with electron spin resonance spectroscopy, obtaining values indicative of changes in the height of spectral peaks associated with free spin label displacement with increased bilirubin addition, and deriving therefrom values indicative of reserve bilirubin-binding capacity.

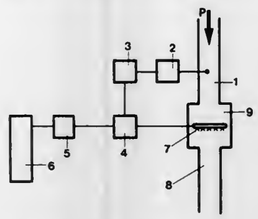
4,240,798

METHOD AND APPARATUS FOR REDUCING OZONE

Rurik Wendelin, Järfälla, and Ladislav Sipek, Täby, both of Sweden, assignors to AGA Aktiebolag, Lindingo, Sweden

Filed Jul. 5, 1979, Ser. No. 54,887
Int. Cl.[3] G01N 27/62, 27/00; G05D 7/00
U.S. Cl. 23—230 A 6 Claims

1. A method of decomposing ozone in aircraft, comprising
(a) measuring by means of an ozone-monitoring device the level of ozone at a first location upstream of a second location in a flow of air passing to the cabin of said aircraft;
(b) transmitting a signal from said monitoring device to an amplifier when the level of ozone in said first location is above a first limit level;
(c) amplifying said signal to a given value;
(d) transmitting said amplified signal to a valve means arranged to open in reference to said amplified signal, and



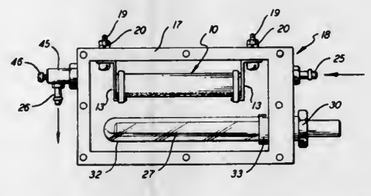
(e) feeding nitric oxide through said valve means to said second location in said air-flow.

4,240,799

SENSING THE PRESENCE OF OZONE

John D. Ryerson, Holland Patent, N.Y., assignor to Energy for Independence, Inc., Holland Patent, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,210
Int. Cl.[3] G01N 27/04; H01C 7/00
U.S. Cl. 23—232 E 16 Claims



1. The method of detecting the presence of ozone in an atmosphere including the steps of
exposing a solid state sensor that is capable of changing its conductivity in the presence of ozone to an atmosphere,
detecting the change in conductivity of said sensor upon its exposure to said atmosphere, and
flooding the sensor with ultraviolet radiation after exposure to said atmosphere to restore it to its initial pre-exposure conductive state whereby the sensor is able to carry out another detecting cycle.

4,240,800

PROCESS FOR TREATMENT OF BAGASSE FOR THE PRODUCTION OF OIL BINDERS

Karl O. P. Fischer, 302 - 124 Cook St., Chilliwack, British Columbia, Canada

Filed Oct. 23, 1978, Ser. No. 954,001
Int. Cl.[3] C10L 1/04
U.S. Cl. 44—51 3 Claims

1. A method for absorbing oil comprising spreading on such oil an absorbent comprising about 97 weight percent oleophilic, hydrophobic substantially sugar-free bagasse and about 3 weight percent water capable of taking-up an amount of oil equalling from about 15 to 20 times its weight.

4,240,801

DIESEL FUEL COMPOSITION

Edwin A. Desmond, Jr., Grosse Pointe, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 942,114, Sep. 13, 1978, abandoned. This application May 31, 1979, Ser. No. 44,310
Int. Cl.[3] C10L 1/22
U.S. Cl. 44—57 23 Claims

1. An improved fuel composition comprising a major amount of a fuel oil and a minor amount sufficient to inhibit particulate emission, of (a) a cyclopentadienyl manganese tricarbonyl, and (b) a lower alkyl or cycloalkyl nitrate.

4,240,802

INTERNAL COMBUSTION ENGINE FUEL COMPOSITION CONTAINING TOXIC AGENT FOR DISPERSION IN THE EXHAUST FUMES OF THE ENGINE

Wallace H. Nichols, Jr., 4752 Lark Ridge Cir., Sarasota, Fla. 33581

Division of Ser. No. 852,315, Nov. 17, 1977, Pat. No. 4,173,084. This application May 9, 1979, Ser. No. 37,461
Int. Cl.[3] C10L 1/20, 1/26
U.S. Cl. 44—58 10 Claims

1. An internal combustion engine gasoline fuel composition for dispensing a toxic agent through the exhaust of an internal combustion engine comprising a mixture consisting essentially of a minor amount of one or more organic toxic agents effective to control target pests and a major amount of internal combustion engine fuel selected from the group consisting of gasoline and gasoline/kerosene mixtures, the proportion of fuel in said mixture being sufficient to enable operation of an internal combustion engine fueled thereby, said toxic agents being selected from the class consisting of insecticides, fumigants and herbicides which are soluble in said fuel and refractory to fuel combustion conditions of the fueled engine, said organic toxic agents being present in said mixture in an amount at least sufficient to provide, in the exhaust of the fueled engine, an amount of said toxic agent which is effective against such target pests, said mixture optionally containing a minor amount of engine oil for use in two-cycle engines, said engine fuel being substantially completely combustible in the internal combustion engine so that the exhaust comprises the products of combustion of said fuel and said toxic agent dispersed therein in vapor form.

4,240,803

FUEL CONTAINING NOVEL DETERGENT

Harry J. Andress, Jr., Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,604
Int. Cl.[3] C10L 1/22
U.S. Cl. 44—63 6 Claims

1. A liquid hydrocarbon fuel compsition comprising fuel and a detergent amount of an alkenylsuccinimide prepared by reacting, at a temperature within the range of from about 150° C. to about 250° C., an alkenylsuccinic acid or anhydride, wherein the alkenyl is derived from a mixture of olefins having the composition:

Ingredient	% By Wt.	Other
Olefin		
C_{16}	2, maximum	
C_{18}	5–15	
C_{20}	42–50	
C_{22}	20–28	
C_{24}	6–12	
C_{26}	1–3	
C_{28}	2, maximum	
Alcohol	10, maximum	
Paraffin	5, maximum	
Iodine No.		74, minimum
Peroxide		10 ppm, maximum
Olefin types		
Vinyl	28–44	
Branched	30–50	
Internal	26–42	

with a polyalkylamine polyamine of the formula

$$NH_2—(RNH)_nR—NH_2$$

wherein R is alkylene having from 1 to 5 carbon atoms and n is from 0 to 10.

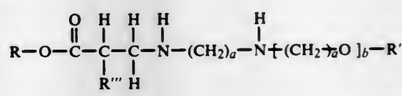
4,240,804

ALKYL ACRYLATE ADDUCTS OF POLYAMINES, ETHER AMINES AND ETHER POLYAMINES

Theodore C. Shields, Ashland, Ky., assignor to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Jan. 24, 1978, Ser. No. 871,914
Int. Cl.[3] C10L 1/22; C07C 101/26, 101/30, 69/66
U.S. Cl. 44—71 49 Claims

1. An additive suitable for liquid hydrocarbon fuels represented by the formula:



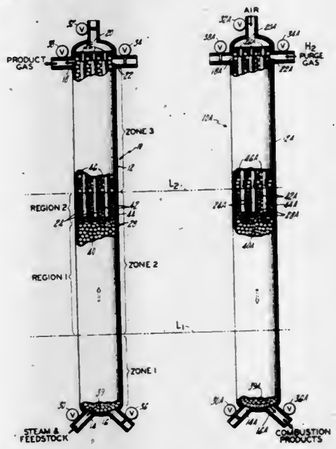
wherein R is a saturated or unsaturated straight or branched hydrocarbon chain of 2 to 30 carbon atoms provided that when b=0, R is a saturated or unsaturated straight or branched hydrocarbon chain of 8 to 30 carbon atoms; R′ is a saturated or unsaturated straight or branched hydrocarbon chain of 2 to 30 carbon atoms; R‴ is hydrogen, methyl or ethyl; a is an integer from 2 to 3; and b is 0 or 1, and mixtures thereof.

4,240,805

PROCESS FOR PRODUCING HYDROGEN CONTAINING GAS

Richard A. Sederquist, Newington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 16, 1979, Ser. No. 21,393
The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.
Int. Cl.[3] C01B 3/36, 3/38, 3/46
U.S. Cl. 48—214 R 15 Claims



1. In a method for producing a hydrogen containing gas from a hydrocarbon feedstock and steam in a reaction vessel, said vessel including three zones in series gas flow relationship, the steps of:
alternately making a hydrogen containing gas in the reaction vessel and regenerating the reaction vessel, wherein the step of making gas includes:
(a) preheating, in a first of said zones, at least the steam or a mixture of both the steam and feedstock using sensible

heat stored in material disposed within said first zone, the stored heat in said first zone having been provided by said regenerating step;

(b) cracking and reforming, in a second of said zones substantially adjacent and downstream of said first zone, a mixture of said feedstock and said preheated steam using the sensible heat in said mixture and the sensible heat stored in material disposed within said second zone, thereby producing the hydrogen containing gas, the stored heat in the second zone having been provided by said regenerating step, said second zone including a region of reform catalyst;

(c) cooling the hydrogen containing gas made in said second zone by passing said gas through a third of said zones which is substantially adjacent and downstream of said second zone and transferring heat from said gas to material disposed within said third zone; and

(d) exhausting, from the reaction vessel, said hydrogen containing gas; and wherein the step of regenerating includes:

(e) preheating, within said third zone, a hydrogen purge gas using the sensible heat in the material disposed within said third zone, the heat in said third zone being provided by step (c);

(f) preheating an oxygen containing gas carried within conduit means disposed within said reaction vessel and separate from the hydrogen purge gas using heat from within said vessel;

(g) mixing, within said second zone, said preheated oxygen containing gas from said conduit means with said preheated hydrogen purge gas from said third zone, and combusting said mixture within said second zone but outside of said region of reform catalyst to heat the material within said second zone;

(h) cooling the products of combustion from said second zone by passing said products through said first zone and transferring heat from said products to material disposed within said first zone; and

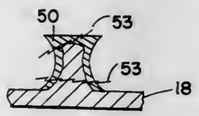
(i) exhausting from the reaction vessel, said cooled combustion products.

4,240,806

ABRADING MATERIAL

John J. Frantzen, White Bear Lake, Minn., assignor to Minnesota Micro Metal, Inc., St. Paul, Minn.

Filed Aug. 16, 1978, Ser. No. 934,206
Int. Cl.³ B24B *1/00*; B24D *11/00*; C23F *1/02*
U.S. Cl. 51—295 **6 Claims**



1. An abrading material comprising a metal sheet having a multiplicity of spaced teeth on the surface shaped so as to have a generally flat polygonal top surface with sharp cutting corners and planing edges, said corners and edges having a hardened layer at the surface to a depth that still leaves unhardened supportive metal inside, and said teeth having a base portion which is integral with the sheet and of size larger than said top surface to form a mechanically strong nonhardened support for said corners and edges, said teeth having slanted sides that slant outward from the smaller top surface to the larger base portion.

4,240,807

SUBSTRATE HAVING A THERMOPLASTIC BINDER COATING FOR USE IN FABRICATING ABRASIVE SHEETS AND ABRASIVE SHEETS MANUFACTURED THEREWITH

Frank J. Kronzer, Munising, Mich., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 2, 1976, Ser. No. 646,386
Int. Cl.³ C09K *3/14*
U.S. Cl. 51—295 **16 Claims**

1. A coated backing material for use in fabricating flexible abrasive sheets, said backing material comprising a flexible web substrate having on one surface a thermoplastic adhesive coating comprised at least in part of a polymeric latex, which coating is in a non-tacky solidified condition at ambient temperatures and which coating when heated to a temperature in the range of 150° C. to 220° C. is softened to a viscous fluid condition, said fluid condition being characterized by the fact that when abrasive grit particles are deposited on the softened coating, gravity forces alone will permit the grit particles to sink into said softened coating to the extent that said particles will become embedded therein while said coating is in said heat-softened condition, and remain firmly bonded therein after the heat is removed and the coating resolidified by cooling.

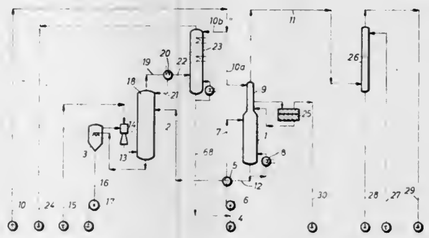
12. A flexible abrasive sheet comprising the backing material of claim 1 wherein said coating has embedded in its surface a layer of uniformly distributed abrasive grit particles, and said layer has applied thereover a grain size coating.

4,240,808

PROCESSING AQUEOUS EFFLUENT LIQUORS FROM DEGASIFICATION OR GASIFICATION OF COAL

Alfred Garber, Linz, Austria; Paul Wiesner, Oberursel, Fed. Rep. of Germany; Hans M. Stonner, Schwalbach, Fed. Rep. of Germany; Fritz Wöhler, Frankfurt am Main, Fed. Rep. of Germany, and Alfred Schmidt, Vienna, Austria, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 948,184
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744437
Int. Cl.³ B01D *19/00, 53/14*
U.S. Cl. 55—48 **2 Claims**



1. In the processing of aqueous effluent liquors which become available as a result of the degasification or gasification of coal, comprising extracting the organic impurities contained in the liquor with an organic solvent which is insoluble or has only a low solubility in water, processing the extract to form raw phenol and fresh solvent, removing residual solvent from the aqueous waste liquor by stripping with gases after the extracting step, scrubbing the gases to recover organic solvent, stripping NH_3 from the aqueous effluent liquor in a driving-off column after the extracting step, condensing overhead product of the driving-off column and recycling part of the condensate to the top of the column, including the steps of

(a) removing part of the overhead product of the driving-off column as uncondensed vapors;

(b) transferring the vapors from (a) to a scrubbing column, in steps condensing water, small amounts of ammonia and all acid gases in the upper part of said scrubbing column, and withdrawing pure ammonia overhead;

(c) withdrawing the condensate which contains all acid gases from the upper part of the scrubbing column, transferring the condensate to a separate reboiler, and heating the transferred condensate in said reboiler;

(d) withdrawing the sump product of the scrubbing column, transferring it into a pressurized de-acidification column, and withdrawing therefrom overhead under pressure the acid gases H_2S and CO_2; and

(e) recycling to the driving off column the sump product of the pressurized de-acidification column consisting of a solution high in ammonia content,

improvement which comprises

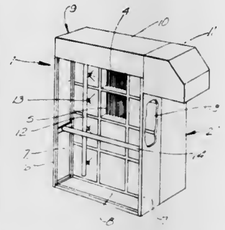
(f) feeding liquid consisting essentially of cold water at a low rate to the top of the scrubbing column of (b).

4,240,809

ELECTROSTATIC PRECIPITATOR HAVING TRAVERSING COLLECTOR WASHING MECHANISM

Carl A. Elsbernd, Cincinnati, and James C. Bricker, Waynesville, both of Ohio, assignors to United Air Specialists, Inc., Cincinnati, Ohio

Filed Apr. 11, 1979, Ser. No. 29,024
Int. Cl.³ B03C *3/78*
U.S. Cl. 55—118 **12 Claims**



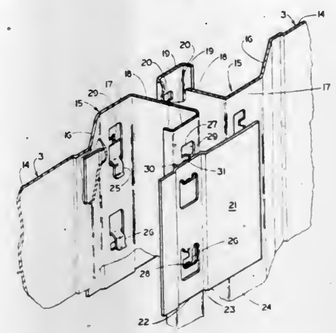
1. An electrostatic precipitator air cleaner comprising a rack-like housing, at least one precipitator cell disposed within said housing, said cell including means for collecting airborne particles admitted into said cell and an air outlet adjacent said collecting means for exhausting an airstream comprising relatively clean air from said collecting means, a vertically disposed pipe-like spray header spaced adjacent to said collecting means, at least one spray nozzle attached to said header for directing a spray of wash or rinse fluid in order to remove said particles from said collecting means, means for supplying said fluid to said nozzle, and means for traversing said header horizontally across said precipitator cell, said traversing means comprising a rail-like guide member extending the width of said precipitator cell, a trolley supporting one end of said header and mounted for reciprocating movement along said guide member between a home position and an extended position, a horizontally mounted helical drive screw extending parallel to said guide member, rail-like drive screw support means extending parallel to said rail-like guide member for rotatably supporting said drive screw along substantially its entire length, means for rotating said screw, and a follower connected to said trolley containing a gear-like member engaging said screw, rotation of said screw producing linear motion of said follower to move said header across said precipitator cell.

4,240,810

COLLECTING ELECTRODE PLATE ASSEMBLY

Alfred Frauenfelder, Zollikerberg, Switzerland, assignor to ELEX-AAF AG, Zurich, Switzerland

Filed May 16, 1979, Ser. No. 39,743
Int. Cl.³ B03C *3/47*
U.S. Cl. 55—143 **11 Claims**



1. A collecting electrode plate assembly for a flow-through housing of an electrostatic precipitator, comprising:

a collecting electrode;

electrode suspension means adapted to be supported by the housing of the precipitator;

said collecting electrode including a plurality of successively aligned similar panels pivotally suspended from said suspension means and spaced apart one from the other for swinging movement of said panels during electrode cleaning operations;

said panels each including a pair of spaced edge beam members and a central web portion extending between and connecting said beam members;

guide means at each juncture of said successive panels including a pair of guide plates disposed in opposed spaced relation on either side of the panels and spanning a respective pair of opposing edge beam members;

slot means in one of said opposing edge beam members associated with each of said plates; and

said plates each including a protruding clip portion removably positioned and contained within an associated slot means to mechanically secure the plate to said beam member, thereby aligning and retaining the panels in a common plane.

4,240,811

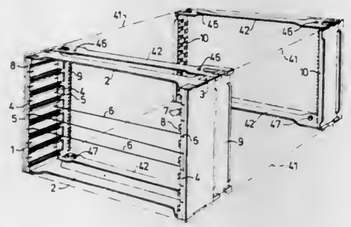
FIXING AND CONNECTING DEVICE FOR WIRES AND PLATES IN ELECTROSTATIC FILTERS

Bertil Jacobsson, Lidköping, Sweden, assignor to Elfi Elektrofilter AB, Lidköping, Sweden

Filed Jun. 12, 1979, Ser. No. 47,912
Claims priority, application Sweden, Jun. 22, 1978, 7807173
Int. Cl.³ B03C *3/08, 3/12*
U.S. Cl. 55—143 **6 Claims**

1. A fixing and connecting device for use in an electrostatic filter configuration which includes a charging section and a separation section and uses wires and plates as charging and collecting components and the charging section has two or more wire stretches between each pair of plates, the wire stretches are mutually parallel and each positioned halfway between the pairs of plates, and the separation section has mutually parallel plates with each plate having a different potential than the adjacent plates, said device for fixing the wires and plates, comprising: two identical gable components positioned parallel to and spaced apart from each other; two identical and mutually parallel spacing parts fixed to and between the ends of said gables provide a frame with quadrangu-

lar cross section; each gable in its two longest side edges being provided with a number of slits perpendicular to the longitudinal direction of said side edges; the distance between two adjacent said slits being the same for all slits; said slits enabling a length of charging wire to be wound to and fro with wire stretches between said two gables to enable the stretches of wire to be parallel and the inner faces of said gables comprise



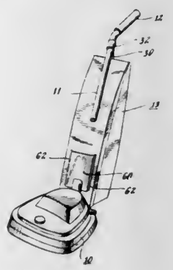
pairs of projections forming grooves between pairs of said slits and perpendicular to the longitudinal direction of said two longest side edges, said grooves enabling plates for the charging section to be received therein and further including fore and aft pairs of spaced apart supporting leg components behind said frame, each pair spaced from the other to constitute the fore and aft corners of a separation section.

4,240,812

VACUUM CLEANER BAG ASSEMBLY

Harold W. Schaefer, Bloomington; Joyce K. Thomas, and Samuel E. Hohulin, both of Lexington, all of Ill., assignors to National Union Electric Corporation, Greenwich, Conn.

Division of Ser. No. 857,094, Dec. 5, 1977. This application Jul. 9, 1979, Ser. No. 55,617
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—369 **3 Claims**



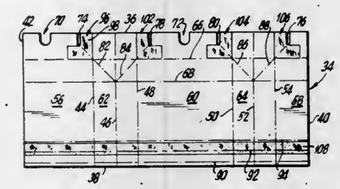
1. In an elongated porous outer bag for a vacuum cleaner, said elongated porous outer bag having an elongated closure on one side thereof, said bag extending substantially vertically from an inlet at one end for receiving air the improvement wherein said bag has a pocket affixed to the material of the lower portion of said bag on the side thereof opposite said closure, said pocket comprising a sheet of material heat sealed to the material of said porous bag, the other end of said bag being open, a flap covering said open end and being affixed only to said opposite side and extending into the bag, said closure intersecting said open end.

4,240,813

REINFORCED VACUUM CLEANER FILTER BAG

John E. Fesco, South Hempstead, N.Y., assignor to Studley Paper Company, Inc., Inwood, N.Y.

Filed Jun. 20, 1979, Ser. No. 50,418
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—381 **13 Claims**



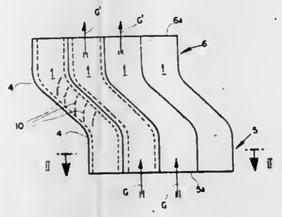
8. A blank for a vacuum cleaner filter bag, said blank comprising a sheet of air permeable filter material provided with a pair of transverse edges and a plurality of elongated fold lines for defining therebetween a first panel, side panels, and a rear panel when said blank is folded thereon, a cut-out section provided on said blank for defining access means into the filter bag, and at least one of heat, self-stick and pressure sensitive adhesive means pre-applied in stripes on said blank adjacent said transverse edges for preventing tears at the edges of the bag when in a folded condition.

4,240,814

DROPLET SEPARATOR

Ulrich Regehr, Süsterfeldstr. 65, 51 Aachen; Horst Hannemann, Herzogenrath, and Ludwig Speitkamp, Aachen, both of Fed. Rep. of Germany, assignors to Ulrich Regehr, Aachen, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 935,915
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738257
Int. Cl.³ B01D *45/16*
U.S. Cl. 55—423 **8 Claims**



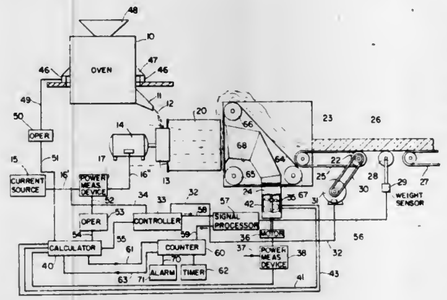
1. A droplet separator for removing drops of liquid from a gas stream comprising a stack of corrugated plates each generally planar but having a plurality of corrugations formed by alternating crests and troughs of given wavelength and amplitude with the troughs of adjacent plates registering generally with one another to define flow passages for said gas stream extending generally in a flow direction between inlet and outlet sides of the stack, the crests of said adjacent plates contacting one another between said flow passages, each of said flow passages being formed with at least two bends in the plate plane effecting direction change in the gas flowing therethrough, the corrugations all being of trapezoidal cross section, each of said flow passages being partitioned centrally by a partition extending in the direction of the amplitude of the corrugations.

4,240,815

METHOD FOR DETERMINING THE SURFACE WEIGHT OF A MINERAL WOOL MAT

Hans Brelen, Skövde; Stellan Dahlberg, Tiden, and Ulf Aberg, Skövde, all of Sweden, assignors to Rockwool Aktiebolaget, Skovde, Sweden

Filed Apr. 24, 1979, Ser. No. 33,023
Claims priority, application Sweden, Apr. 28, 1978, 7804923
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—2 **14 Claims**



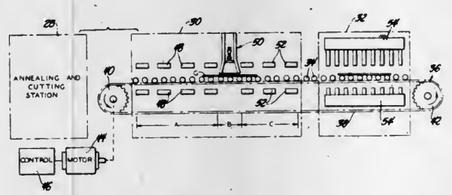
1. A method for improving the uniformity of surface weight in a mineral wool mat, produced from a mineral melt which is fibrated in a fibration unit and is introduced into a gas-formed stream providing a transport medium for the fibers, whereafter the transport medium along with the mineral fiber material carried thereby is caused to move to a movable collector band on the one side of which the mineral fiber material is deposited to form the mineral wool mat, the transport medium being caused to pass through the collector band, said method comprising measuring at least one variable which is characteristic of the transport medium and which varies in relationship to the amount of mineral wool deposited, and feeding the results of the measuring step to a control device for controlling the speed of movement of the collector band such that the speed of the collector band is varied in direct relation to the amount of mineral fiber material deposited on the collector band, whereby the mineral fiber material is deposited on the collector band with an evenly distributed surface weight.

4,240,816

METHOD AND APPARATUS FOR FORMING TEMPERED SHEET GLASS WITH A PYROLYTIC FILM IN A CONTINUOUS PROCESS

Harold A. McMaster, 420 Walter St., Woodville, Ohio 43469, and Norman C. Nitschke, 9102 Buck Rd., Perrysburg, Ohio 43551

Filed Feb. 9, 1979, Ser. No. 10,573
Int. Cl.³ C03B *27/00*; C03C *17/27*
U.S. Cl. 65—60 R **3 Claims**



1. A method for manufacturing a coated, tempered glass sheet comprising the steps of:
heating the glass sheet to a temperature sufficient for pyrolysis;
applying to the glass sheet, while at a temperature sufficient for pyrolysis, a coating composition which reacts on the surface of the glass to form a pyrolytic coating thereon;
immediately thereafter applying additional heat to the glass sheet for restoring to the glass sheet heat lost during the application of said coating, whereby the sheet is again heated to a temperature sufficient for pyrolysis;
immediately, and while the glass sheet remains at a temperature sufficient for pyrolysis, applying additional coating composition to the glass sheet thereby to form an additional thickness of pyrolytic coating thereon;
immediately thereafter applying additional heat to the coated glass sheet sufficient to heat the glass sheet to a temperature sufficient for tempering; and
then quenching the glass sheet to effect tempering.

2. Apparatus for coating a glass sheet with a pyrolytic film of predetermined thickness by applying to the glass sheet a material adapted to pyrolytically react on the surface of the glass sheet to form the pyrolytic film thereon while the glass sheet is at a temperature sufficient for pyrolysis of said material and for thereafter tempering the glass sheet, said apparatus comprising:
an initial heating zone for heating the glass sheet to said temperature;
an initial coating zone for applying said material to said glass sheet while at said temperature;
a subsequent heating zone for heating the glass sheet to said temperature;
a subsequent coating zone for applying said material to said glass sheet while at said temperature;
a station for heating the glass sheet to a temperature sufficient for tempering;
a quenching station for rapidly cooling the glass sheet to effect tempering thereof;
conveyor means for moving the glass sheet through said apparatus; and
drive means for driving said conveyor means to move the glass sheet into said initial heating zone for a period to heat the glass sheet to the temperature sufficient for pyrolysis of said material, then into a said initial coating zone for a period to apply to the glass sheet only sufficient of said material to form the pyrolytic film to a thickness less than said predetermined thickness, thereafter into said subsequent heating zone for a period to heat the glass sheet to a temperature sufficient for pyrolysis of said material; then into said subsequent coating zone for additional application of said material to said glass sheet to increase the thickness of said pyrolytic film to said predetermined thickness, and thereafter sequentially into said station for heating the glass sheet to a temperature sufficient for tempering and into said quenching station.

3. Apparatus for coating a glass sheet with a pyrolytic film of predetermined thickness by applying to the glass sheet a material adapted to pyrolytically react on the surface of the glass sheet to form the pyrolytic film thereon while the glass sheet is at a temperature sufficient for pyrolysis of said material and for thereafter tempering the glass sheet, said apparatus comprising:
a heating zone for heating the glass sheet to said temperature;
a coating zone for applying said material to said glass sheet while at said temperature;
a station for heating the glass sheet to a temperature sufficient for tempering;
a quenching station for rapidly cooling the glass sheet to effect tempering thereof;
conveyor means for moving the glass sheet through said apparatus, at least that portion of said conveyor means in said heating zone and said coating zone being reversible thereby to move the glass sheet first in one direction and then in an opposite direction;
drive means for driving said conveyor means; and
control means for actuating said drive and conveyor means to move the glass sheet into said heating zone for a period to heat the glass sheet to the temperature sufficient for pyrolysis of said material, then into said coating zone for a period to apply to the glass sheet only sufficient of said

material to form the pyrolytic film to a thickness less than said predetermined thickness, thereafter back into said heating zone for a period to heat the glass sheet to a temperature sufficient for pyrolysis of said material, then again into said coating zone for additional application of said material to said glass sheet to increase the thickness of said pyrolytic film to said predetermined thickness, and thereafter sequentially into said station for heating the glass sheet to a temperature sufficient for tempering and into said quenching station.

4,240,817

UREA RESIN FOAM MAT

Iwao Takizawa, Shiraoka; Iwao Otsubo, Tokyo, and Toru Shimizu, Shiraoka, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Dec. 16, 1976, Ser. No. 751,198
Claims priority, application Japan, Dec. 27, 1975, 50/156504
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—29 **6 Claims**

1. Urea resin foam mat which contains water absorbable and non-phytotoxic amounts of alkylene glycols and inorganic salts.

4,240,818

PROCEDURE FOR PREPARING NITROGEN-POTASSIUM FERTILIZER

Igor D. Sokolov, Zanevsky prospekt, 32, kv. 200; Jury S. Safrygin, ulitsa Dekabristov, 29, kv. 36; Alexandr V. Muraviev, prospekt Kima, 4, kv. 210, and Nina K. Andreeva, 2 Komosomolskaya ulitsa, 57, korpus 1, kv. 22, all of Leningrad, U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,747
Int. Cl.³ C05C *1/00, 5/02*
U.S. Cl. 71—59 **9 Claims**

1. A process for preparing a nitrogen-potassium fertilizer, comprising:

reacting in an aqueous medium, potassium hydrogen sulfate with a nitrate selected from the group consisting of calcium nitrate, barium nitrate, and strontium nitrate, in accordance with the following equation:

$$xK_2SO_4 \cdot yH_2SO_4 + (x+y)Me(NO_3)_2 \xrightarrow{H_2O} 2x\,KNO_3 + 2y\,HNO_3 + (x+y)MeSO_4 \downarrow$$

where Me is Ca, Sr, Ba;

treating the resulting reaction mass with ammonia to neutralize the nitric acid in accordance with the equation:

$$HNO_3 + NH_3 \xrightarrow{H_2O} NH_4NO_3;\ \text{and}$$

separating the slightly soluble sulfate from the product containing the nitrogen-potassium fertilizer.

4,240,819

METHOD FOR THE INHIBITION OF PLANT GROWTH

Charles D. Fritz, Hatfield, Pa.; Wilbur F. Evans, Kuala Lumpur, Malaysia, and Anson R. Cooke, Hatfield, Pa., assignors to Union Carbide Agricultural Products, Inc., Ambler, Pa.

Division of Ser. No. 869,386, Oct. 24, 1969, which is a continuation-in-part of Ser. No. 693,698, Dec. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 617,860, Feb. 23, 1967, abandoned. This application Jan. 28, 1972, Ser. No. 221,803
Int. Cl.³ A01N *57/20*
U.S. Cl. 71—76 **1 Claim**

1. A method for the inhibition of plant growth which comprises applying thereto an effective amount of 2-chloroethylphosphonic acid.

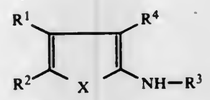
4,240,820

METHOD OF REGULATING THE GROWTH OF PLANTS

Karlfried Dickore, Leverkusen, and Klaus Lürssen, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,969
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817449
Int. Cl.³ A01N *43/08, 43/10*
U.S. Cl. 71—76 **28 Claims**

1. Method for regulating the growth of plants which method comprises applying to the plants or their habitat, effective amounts of a heterocyclic compound of the formula



(I)

in which

R^1 is alkyl of up to 6 carbon atoms, aryl of 6 on 10 carbon atoms or substituted aryl carrying at least one substituent selected from halogen, alkyl of up to 4 carbon atoms, haloalkyl of to 4 carbon atoms, alkoxy of up to 4 carbon atoms, alkylthio of up to 4 carbon atoms, alkylsulfonyl of up 4 carbon atoms and nitro;

R^2 is hydrogen, alkyl of up to 6 carbon atoms, aryl of 6 or 10 carbon atoms, or substituted aryl having at least one substituent selected from halogen, alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms and nitro,

R^3 is hydrogen or the radical



in which

Y is oxygen and

R^5 is alkyl with 1 to 6 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxyalkyl with 1 to 4 carbon atoms in the alkyl part and 1 to 4 carbon atoms in the alkoxy part, aryloxyalkyl, which has 6 or 10 carbon atoms in the aryloxy part and 1 to 4 carbon atoms in the alkyl part and optionally carrying one or more substituents on the aryloxy part selected from halogen, alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms; alkoxy with 1 to 4 carbon atoms; aryl with 6 or 10 carbon atoms, substituted aryl carrying one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms or haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy, alkylthio, and alkylsulphonyl with 1 to 4 carbon atoms and nitro; aryloxy with 6 or 10 carbon atoms substituted aryloxy having at least one substituent selected from halogen, alkyl with 1 to 4 carbon atom, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy, alkylthio, alkylsulphonyl with 1 to 4 carbon atoms and nitro; monoalkylamino with 1 to 4 carbon atoms; dialkylamino with 1 to 4 carbon atoms in each alkyl group; alkenylamino with up to 4 carbon atoms; dialkenylamino with up to 4 carbon atoms in each alkenyl group; arylamino with 6 or 10 carbon atoms substituted arylamino carrying one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms, haloalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms,

alkylthio with 1 to 4 carbon atoms, alkylsulphonyl with 1 to 4 carbon atoms and nitro

R^4 is cyano or the grouping $-COR^8$ in which R^8 is alkoxy or amino, and

X is oxygen or sulfur.

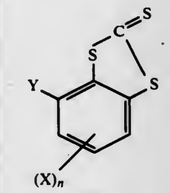
4,240,821

BIOCIDALLY-ACTIVE 1,3-BENZODITHIOLE-2-THIONE COMPOUNDS

Khalid Rasheed, Weslaco, and James D. Warkentin, McAllen, both of Tex., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

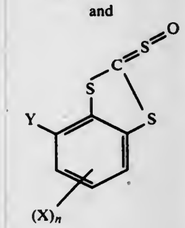
Division of Ser. No. 821,977, Aug. 4, 1977, Pat. No. 4,187,096, which is a continuation-in-part of Ser. No. 618,255, Sep. 30, 1975, Pat. No. 4,084,954. This application Nov. 8, 1979, Ser. No. 92,464
Int. Cl.³ A01N *43/28;* A61K *31/385;* C07D *409/02*
U.S. Cl. 71—90 **31 Claims**

1. A compound selected from the group consisting of those of the formulae:



I

and



II

wherein Y is selected from nitro and trifluoromethyl; X is selected from alkyl and alkenyl of up to 6 carbon atoms, nitro, trichloromethyl, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, trifluoromethylsulfoxyl, trifluoromethylsulfonyl, methoxymethyl, cyano, carboxy, halogen (F, Cl, Br, I), hydroxy, acetylamino, amino, N-phenylamino, N,N-diallylamino, alkoxy, N-morpholino, N-piperidino, N-piperazino, N-pyrrolidino, dimethylaminodithiocarbamyl, carboalkoxy, alkylthio, mono- and dialkylamino, N-alkylcarbamyl, N,N-dialkylcarbamyl, alkylsulfoxy, alkylsulfonyl, said alkyl groups containing from 1 to 4 carbon atoms; n is an integer from 1 to 3 wherein at least one of said X groups is selected from N-morpholino, N-piperidino, N-piperazino or N-pyrrolidino; and salts thereof.

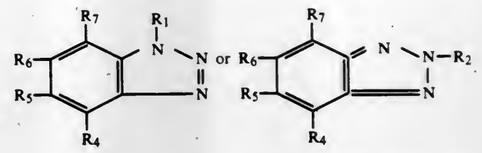
4,240,822

METHOD FOR CONTROLLING UNDESIRABLE PLANTS USING 1H-BENZOTRIAZOLE AND 2H-BENZOTRIAZOLE COMPOUNDS

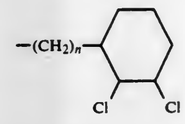
Robert E. Diehl, Lawrenceville, N.J., and Roger V. Kendall, New Haven, Vt., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 760,601, Jan. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 645,064, Dec. 29, 1975, abandoned, which is a continuation of Ser. No. 490,422, Jul. 22, 1974, abandoned. This application Dec. 4, 1978, Ser. No. 965,763
Int. Cl.³ A01N *43/64*
U.S. Cl. 71—92 **15 Claims**

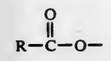
1. A method for the control of undesirable plant species comprising; applying to undesirable plants or soil containing seeds, a herbicidally effective amount of a compound having the formula:



wherein R_1 is secondary alkyl C_3-C_7; benzyl; cyclohexenyl; alkoxy C_3-C_4; acetyl; chloroacetyl; 2-butan-3-one; isobutyryl; t-butyl; methoxymethylpropyl; 2-cyclohexyl-1-one;

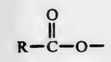


where n is 0 or 1; or $-(CH_2)_n$-cycloalkyl C_3-C_8 optionally substituted with hydroxy, alkoxy C_1-C_3, alkyl C_1-C_3, or

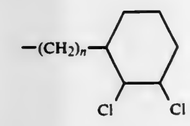


where R is hydrogen or C_1-C_2 alkyl and n is 0 or 1;

R_2 is secondary alkyl C_3-C_7; benzyl; cycloalkenyl C_3-C_8; $-(CH_2)_n$-cycloalkyl (C_3-C_8) optionally substituted with hydroxy, alkoxy C_1-C_3, alkyl C_1-C_3 or



where R is hydrogen or C_1-C_2 alkyl and n is 0 or 1; 2-cyclohexyl-1-one or



where n is 0 or 1;

R_4 represents, chloro, isothiacyano, cyano, methoxy or nitro; R_5 and R_6 and R_7 are each hydrogen wherein said compound is applied at the rate of from about 0.25 lb./acre to about 4.0 lbs./acre.

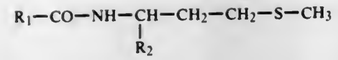
4,240,823

NEW PLANT GROWTH REGULATING COMPOSITIONS WHICH CONTAIN DERIVATIVES OF N-ACYL METHIONINE

Claude Clapot, Oullins; Jean Vial, Dardilly; Jacqueline Mourier, Lyons, and Jean C. Boch, Neris les Bains, all of France, assignors to Philagro S.A., Lyons, France

Filed Mar. 1, 1977, Ser. No. 773,278
Claims priority, application France, Mar. 24, 1976, 76 09242
Int. Cl.³ A01N *43/08, 43/40, 37/34, 31/04*
U.S. Cl. 71—98 **15 Claims**

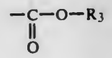
13. A process for modifying the growth of plants comprising applying to said plants a growth-modifying-effective amount of a plant growth-regulating compound of the formula



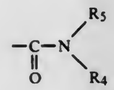
in which:

R_1 represents a hydrogen atom, an optionally halogenated (C_1 to C_{20}) alkyl radical, an optionally halogenated (C_3 to C_6) cycloalkyl radical, an optionally halogenated (C_2 to C_{20}) alkenyl radical, an optionally halogenated phenylalkenyl or phenyloxyalkenyl radical (with a C_2 to C_4 alkenyl part), a phenyl or naphthyl radical optionally substituted by one or more identical or different atoms or radicals from amongst halogen atoms, (C_1 to C_4) alkyl radicals, trifluoromethyl, nitro, cyano, m-trifluoromethylbenzoyl and o-, m-, or p-fluorobenzoyl substituted amino, hydroxyl, alkoxy (with a C_1 to C_4 alkyl part), aminosulphonyl or alkoxycarbonyl (with a C_1 to C_4 alkyl part), or a heterocyclic radical selected from the group consisting of furyl and pyridyl, and

R_2 represents a carboxylic acid group or a salt which this group can form with an inorganic base or with a primary, secondary or tertiary amine, a



group, in which R_3 is a (C_1 to C_4) alkyl radical optionally substituted by one or more hydroxyl groups, a —CN group or a



group in which R_4 and R_5, which may be identical or different, represent a hydrogen atom or a (C_1 to C_4) alkyl radical.

4,240,824

PROCESS OF MAKING NICKEL OR COBALT POWDER WITH PRECIPITATES

Larry N. Moskowitz, Mentor, and Erhard Klar, Beachwood, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 870,339, Jan. 18, 1978, Pat. No. 4,192,672. This application Oct. 4, 1979, Ser. No. 81,875

Int. Cl.³ B22D *23/08*

U.S. Cl. 75—0.5 C **9 Claims**



1. A process for making a boron-containing nickel or cobalt spray-and-fuse, self-fluxing alloy powder which comprises:

(a) forming a melt of boron- and chromium-containing nickel or cobalt alloy;

(b) cooling said melt so that precipitates of chromium carbide and/or chromium boride result in the alloy powder product, at least about 5% of said precipitates by volume of said powder having a particle size of at least about 10 microns;

(c) finely dividing said melt into alloy powder.

4,240,825

METALLOTHERMAL PROCESS FOR THE SIMULTANEOUS PRODUCTION OF MAGNESIUM AND CEMENT OR CALCIUM AND CEMENT

Istvan Tamas, Budapest, Hungary, assignor to Vasipari Kutato Intezet, Budapest, Hungary

Filed Aug. 8, 1979, Ser. No. 65,329

Int. Cl.³ C22B *45/00*

U.S. Cl. 75—67 R **10 Claims**

1. A process for the simultaneous production of magnesium and cement from calcined dolomite or calcium and cement from calcined lime, comprising reducing calcined dolomite or calcined lime under a pressure lower than 10 torr and at a temperature of 1300° to 1600° C. with a reducing agent containing silicon and aluminum in a Si:Al weight ratio of 4:1 to 1:1, wherein the total amount of silicon and aluminum comprises 50 to 100% by weight, using 100 to 200 parts by weight of said reducing agent for 600 to 800 parts by weight of calcined dolomite or 700 to 1000 parts by weight of calcined lime, and using the reducing agent and dolomite or lime in such proportions and of such composition that the produced cement contains 20 to 25% by weight of SiO_2, 6 to 12% by weight of Al_2O_3, 62 to 69% by weight of CaO, up to 2% by weight of MgO and up to 6% by weight of iron.

4,240,826

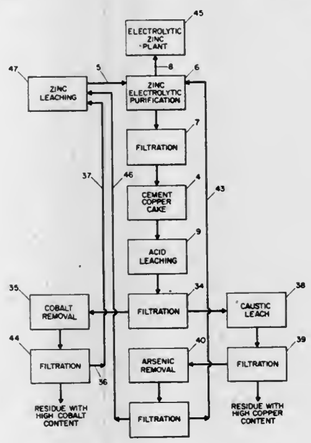
PROCESS FOR THE RECOVERY OF ARSENIC AS A ZINC ARSENATE AND ITS UTILIZATION IN THE PURIFICATION OF ZINC PLANT ELECTROLYTES

Kayo Kangas, Connaught; John Mouland, and Stan Timler, both of Timmins, all of Canada, assignors to Texasgulf Inc., Stamford, Conn.

Filed Sep. 13, 1979, Ser. No. 75,081

Int. Cl.³ C22B *3/00;* **C25C** *1/14*

U.S. Cl. 75—109 **52 Claims**



1. A process for purifying impure zinc electrolyte containing copper, cadmium, and cobalt impurities, to provide zinc electrolyte suitable for electrolytic deposition processes comprising treating impure zinc electrolyte with zinc dust and arsenic wherein all of said arsenic is provided by zinc arsenate or a portion of the arsenic is provided by zinc arsenate and a portion of the arsenic is provided by a second arsenic source; to provide jarosite leaching with an alternative source of sodium ions and to provide a cement copper cake precipitate containing substantially all of the copper, and a filtrate comprising purified electrolyte solution suitable for electrolytic deposition; wherein said zinc arsenate is obtained by:

(a) subjecting said copper containing precipitate to an acid leach to provide an acid leach filtrate and an acid leach residue;

(b) subjecting said acid leach residue to a caustic leach to provide a copper enriched residue and a caustic leach filtrate;

(c) treating said caustic leach filtrate with zinc to provide a residue containing said zinc arsenate.

4,240,827

NONMAGNETIC ALLOY STEEL HAVING IMPROVED MACHINABILITY

Kenji Aihara, and Masashi Takahashi, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries Ltd., Osaka, Japan

Filed Dec. 11, 1978, Ser. No. 968,038

Claims priority, application Japan, Dec. 12, 1977, 52/149758

Int. Cl.³ C22C *39/30*

U.S. Cl. 75—123 AA **4 Claims**

1. A non-nickel containing nonmagnetic alloy steel having improved machinability consisting essentially of by weight not more than 1.5% C, 0.1 to 1.5% Si, 5 to 30% Mn, 0.005 to 0.5% N and at least one member selected from the group consisting of 0.05 to 1.0% S, 0.05 to 1.0% Pb, 0.05 to 1.0% Se, 0.01 to 0.5% Te and 0.001 to 0.05% Ca, the balance being Fe and incidental impurities, and wherein $100/9(C\ \% + N\ \%) + 2(Mn\ \%) \geqq 25\%$.

4,240,828

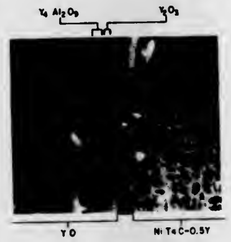
METHOD FOR MINIMIZING THE FORMATION OF A METAL-CERAMIC LAYER DURING CASTING OF SUPERALLOY MATERIALS

Irvin C. Huseby, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 847,778, Nov. 2, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,285

Int. Cl.³ C22C *19/00*

U.S. Cl. 75—135 **7 Claims**



1. A method for minimizing the formation of a reaction layer at the metal-ceramic interface when casting and directionally solidifying a superalloy material comprising the process steps of:

(a) preparing a melt of a superalloy material;

(b) adding a rare earth metal which is one selected from the group consisting of Y, Sm, Nd, Gd, Dy, Er and Yb as a dopant material to the superalloy material;

(c) casting the doped superalloy material in contact with a ceramic oxide material whose metal cation is the same rare earth metal present as a dopant material in the superalloy material, the ceramic material containing less than 1 percent by weight silica, and

(d) solidifying the cast metal while the metal is still in contact with the ceramic oxide material.

4,240,829

ALUMINUM-BASE ALLOY USED AS MATERIAL FOR GALVANIC PROTECTOR

Evgeny G. Lukin, ulitsa Dzhandosova, 69, kv. 123; Jury D. Dunaev, ulitsa Bagrationa, 15, kv. 2; Leonid F. Kozin, Sovetskaya ulitsa, 64, kv. 5; Raushan G. Sarmurzina, ulitsa Mira, 158, kv. 16; Svetlana E. Kozhirova, ulitsa 6 linia, 183-a, kv. 16; Ergali Ospanov, ulitsa Kotelnikova, 32-a, and Irina F. Silukova, 7 mikroraion, 16 kv. 16, all of Alma-Ata, U.S.S.R.

Filed Jan. 25, 1979, Ser. No. 6,963

Int. Cl.³ C22C *21/06*

U.S. Cl. 75—147 **1 Claim**

1. An electrochemically active aluminum base alloy consisting essentially of about 0.1 to 3.5 weight percent gallium, about 0.1 to 1.0 weight percent magnesium and the balance essentially aluminum.

4,240,830

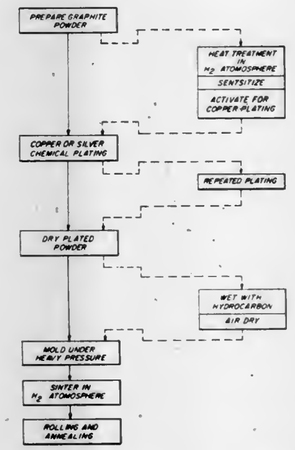
METHOD FOR MAKING SINTERED METAL-COATED GRAPHITE FOR HIGH-CURRENT COLLECTOR BRUSHES

Pang K. Lee, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1978, Ser. No. 965,014

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—212 **9 Claims**



1. A method of making an electrical contact brush comprising:

preparing a quantity of graphite powder;

heating said graphite powder in a hydrogen atmosphere to clean said powder;

mixing the cleaned powder in a plating solution containing a metal selected from the group consisting of copper and silver to plate each grain of powder with a metal coating;

drying the plated powder by heating in a hydrogen atmosphere;

wetting the dried plated powder with hydrocarbons;

molding the hydrocarbon wetted, plated powder to a desired shape under heavy pressure; and

sintering the molded powder in an atmosphere of hydrogen.

4,240,831

CORROSION-RESISTANT POWDER-METALLURGY STAINLESS STEEL POWDERS AND COMPACTS THEREFROM

David H. Ro, Cleveland Heights; Erhard Klar, Beachwood, and Charles I. Whitman, Bay Village, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,956
Int. Cl.³ B22F 3/00
U.S. Cl. 75—228 5 Claims

1. In a process for atomizing a melt of metals for producing stainless steel powder, wherein said atomizing is conducted in an oxidizing environment whereby the resulting stainless steel powder is surface-enriched in silicon oxides, the improvement for increasing the corrosion resistance of said powder or a compact thereof which comprises:

adding an effective proportion of modifier metal to said melt prior to said atomization, said modifier metal selected from the group consisting of aluminum, lead, zinc, magnesium, rare earth metals and like metals capable of enrichment about the surface of said resulting atomized stainless steel powder and effective under reductive sintering conditions in the depletion of said silicon oxides about said surface.

4,240,832

DENTAL PULP CAPPING AND CAVITY LINING COMPOSITION AND PREPARATIVE METHOD

Emil Jandourek, Livonia, Mich., assignor to Sybron Corporation, Rochester, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,389
Int. Cl.³ C09K 3/00
U.S. Cl. 106—35 13 Claims

1. A dental composition which comprises calcium hydroxide and a condensate of an ester of salicylic acid and an aldehyde selected from the group consisting of acetaldehyde, formaldehyde and its oligomers, such as paraformaldehyde and metaformaldehyde or trioxane, and where the aldehyde to salicylate ratio is from about 0.5 to 1.0 moles of aldehyde per mole of salicylate, the calcium hydroxide being present in stoichiometric excess over said condensate, which reacts with it to form a hard, rigid mass, containing free calcium hydroxide dispersed therein.

4,240,833

SHRINK-RESISTANT REFRACTORY FIBER AND PROCESS FOR MAKING SAME

Thomas A. Myles, Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 928,201, Jul. 26, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,606
Int. Cl.³ C03C 3/22; C04B 35/14, 35/44; C03C 13/00
U.S. Cl. 106—39.6 11 Claims

1. A shrink resistant flexible ceramic fiber comprising a microcrystalline combination of alumina and silica manufactured by forming amorphous fibers from a melt containing from about 40 to about 65 weight percent alumina and from about 35 to about 60 weight percent silica followed by heating the fibers to a sufficient temperature for a sufficient time to form microcrystals and cooling the fibers below the crystallization temperature before macrocrystals form, said melt being essentially free from alkali and alkaline earth metal oxides and oxides of boron, lead, copper and zinc; the ceramic fiber being capable of being exposed to a temperature of 1425° C. for 24 hours with a linear shrinkage of less than 2 percent.

4,240,834

SYNTHETIC SINGLE CRYSTAL FOR ALEXANDRITE GEM

Hisashi Machida, and Yoichiro Yoshihara, both of Otsu, Japan, assignors to Kyoto Ceramic Co., Ltd., Kyoto, Japan

Filed Sep. 14, 1979, Ser. No. 75,719
Int. Cl.³ C04B 35/44
U.S. Cl. 106—42 5 Claims

1. A synthetic chrysoberyl single crystal for an alexandrite gem, which consists essentially of aluminum oxide and beryllium oxide as the main components, and chromium and vanadium as the coloring components which produce the hue and color change characteristic of an alexandrite gem, wherein the chromium is present in an amount of about 0.00006 to 3.45% by weight based on the weight of the crystal, and the vanadium is present in an amount of about 0.00075 to about 2.95% by weight based on the crystal.

4,240,835

METHOD OF MAKING A SHAPED SILICON CARBIDE-SILICON MATRIX COMPOSITE AND ARTICLES MADE THEREBY

William Laskow, Downingtown, Pa., and Charles R. Morelock, Ballston Spa, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 946,718, Sep. 28, 1978, abandoned, which is a division of Ser. No. 572,969, Apr. 30, 1975, Pat. No. 4,141,948, which is a continuation-in-part of Ser. No. 354,106, Apr. 24, 1973, abandoned. This application Dec. 5, 1979, Ser. No. 100,579
Int. Cl.³ C04B 35/56
U.S. Cl. 106—44 12 Claims

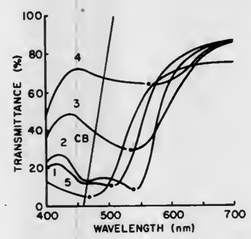
1. A shaped ceramic consisting essentially of axially aligned silicon carbide crystals in a silicon metal matrix having from about 4% by weight to about 30% by weight of carbon in a chemically combined form or as a mixture of chemically combined carbon and elemental carbon, said shaped ceramic exhibiting a density of about 2.3 to 3.0 grams/cc, a permanent elastic strain when measured at about 1000° C. of from about 0% to about 6%, and an elastic modulus of from about 30×10^6 psi to 60×10^6 psi.

4,240,836

COLORED PHOTOCHROMIC GLASSES AND METHOD

Nicholas F. Borrelli, Elmira, and Brent M. Wedding, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,435
Int. Cl.³ C03C 3/08, 3/20, 3/26
U.S. Cl. 106—47 Q 12 Claims



1. A colored silver halide-containing photochromic glass article exhibiting a surface coloration produced by the heat treatment of the photochromic glass article under flowing gaseous reducing conditions at a heat treatment temperature not exceeding about 450° C., said colored photochromic glass article exhibiting, in at least one cross-sectional dimension in the undarkened state, a spectral transmittance curve comprising at least one treatment-induced absorption peak having a peak location to the right of the line CB of FIG. 1 of the drawing.

4,240,837

CADMIUM GLASS HAVING LOW CADMIUM OXIDE SOLUBILITY

Werner F. Votava, Broadview Heights, and Thomas W. Wonnacott, Chagrin Falls, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 926,721, Jul. 21, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 111,659
Int. Cl.³ C03C 3/12, 3/04
U.S. Cl. 106—48 8 Claims

1. A cadmium glass having relatively high percentage of cadmium oxide and relatively low cadmium oxide solubility, said glass consisting essentially of in weight percent about:

CdO	42% to 46%
TiO_2	0.0% to 30%
ZrO_2	0.0% to 30%
SiO_2	10% to 60%
Al_2O_3	0.0% to 10%

said glass having a CdO solubility no greater than about 2.0% as determined by using the extraction procedure of the Brimsdown Method.

4,240,838

PIGMENTARY HARDENER-CONTAINING CURABLE SILICATE COMPOSITIONS

John E. Blasko; William G. Boberski, both of Gibsonia, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,269
Int. Cl.³ C09D 1/02, 1/04; B05D 3/02
U.S. Cl. 106—84 10 Claims

1. A curable composition, consisting essentially of:

(a) an aqueous solution or dispersion of an alkali metal or quaternary ammonium silicate;

(b) a cure promoting amount of a latent metal ion containing insolubilizing agent; and

(c) a pigmentary hardener corresponding to the formula

$$M_xM'_yO_z$$

where M is a divalent or trivalent metal ion, M' is a metal ion from Group III, IV or VIB of the Periodic Table of Elements, provided M and M' are not the same metal ion, x is 1 or 2, y is 1, 2 or 3 and z is an integer the value of which satisfies the oxidation state of the pigmentary hardener, wherein the amount of the pigmentary hardener ranges from about 1 part to about 300 parts based on 100 parts of the alkali metal or quaternary ammonium silicate solids.

4,240,839

THERMAL INSULATION MATERIAL

Charles E. Crepeau, Centre Square, and Robert F. Mulvey, Malvern, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Jun. 28, 1979, Ser. No. 52,702
Int. Cl.³ C04B 11/00
U.S. Cl. 106—88 10 Claims

1. A thermally insulating composite assembly, comprising generally at least one structural surface element and a low density cellular gypsum material positioned adjacent to said surface element, said cellular gypsum material comprising a gypsum matrix having minute cavities homogeneously distributed therein, said gypsum material having a dry density of less than about 3 pounds per cubic foot and a thermal coefficient of less than about 0.37.

4,240,840

CEMENTITIOUS COMPOSITIONS

Stephen B. Downing, High Wycombe; Desmond W. J. Osmond, Windsor; Maurice W. Skinner, Maidenhead; Edmund J. West, and David G. Dawson, both of High Wycombe, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 871,516, Jan. 23, 1978, abandoned, which is a continuation of Ser. No. 736,350, Oct. 27, 1976, Pat. No. 4,070,199. This application Apr. 26, 1978, Ser. No. 900,309
Claims priority, application United Kingdom, Oct. 28, 1975, 44369/75; Apr. 27, 1977, 17565/77
Int. Cl.³ C04B 7/353
U.S. Cl. 106—93 18 Claims

1. A homogeneous uncured cementitious composition which comprises the following initial ingredients:

(a) a hydraulic cement selected from the group consisting of cements which comprise compounds of calcium, aluminum, silicon, oxygen and/or sulfur which set and harden by reaction with water,

(b) water,

(c) a water-dispersible polymer, and

(d) a fine aggregate of which 75% by weight passes a sieve of aperture 1 mm;

wherein

(i) the ratio of water to hydraulic cement is in the range 10–28 parts by weight of water to 100 parts hydraulic cement;

(ii) the water-dispersible polymer is selected with reference to the hydraulic cement and to the selected proportions of water, cement and fine aggregate for its suitability to facilitate homogenization and to yield on homogenization a product which can be shaped under pressure and which is shape-retaining;

(iii) the ratio of water-dispersible polymer to hydraulic cement is in the range 0.1–3.0 parts by weight of water-dispersible polymer to 100 parts by weight of hydraulic cement; and

(iv) the amount of fine aggregate (d) is 5% to 75% by weight based on the weight of hydraulic cement;

and wherein the ingredients (a), (b), (c) and (d) have been jointly subjected to a homogenization process of dispersion and homogenization so that they are regularly dispersed throughout the composition such that on curing and drying, the homogeneous uncured composition yields a cured, dried cementitious material having a modulus of rupture greater than 20 MN/m^2.

4,240,841

NO-CARRIER CORRUGATING ADHESIVE

Alphonse J. DiDominicis, Woodridge, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Jul. 19, 1978, Ser. No. 926,048
Int. Cl.³ C08L 3/00
U.S. Cl. 106—211 2 Claims

1. In a high-speed, no-carrier corrugating adhesive comprising an alkaline, aqueous dispersion of partially swollen starch material formed by saponification of a starch ester having a degree of substitution of at least about 0.015 and having at least about 30% greater area under an Instron force-time heating curve and at least about 30% greater area under an Instron force-time cooling curve than unmodified starch under the same conditions, wherein the starch material comprises between about 10% to 25% by total weight of adhesive, the improvement comprising an effective amount of flow modifier up to about 4% by starch material weight, wherein said flow modifier comprises lauric acid, for improving the rheological characteristics of said dispersion to provide said adhesive with a Bostwick viscosity of less than about 75 seconds to 15 centimeters.

4,240,842

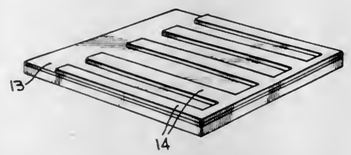
SOLAR CELL HAVING CONTACTS AND ANTIREFLECTIVE COATING

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 3,945, Jan. 16, 1979. This application Mar. 28, 1979, Ser. No. 24,784

Int. Cl.[2] H01L *31/04*

U.S. Cl. 136—256 **6 Claims**



1. A photovoltaic cell having a front surface adapted to receive light impinging thereon, an antireflective coating overlying and adhered to a major portion of said surface, and an electrical contact in the form of a pattern covering a minor portion of said surface and said coating, said contact having relatively small portions thereof extending through said coating and being in electrical contact with spaced portions of said light-receiving surface of said cell, said antireflective coating other than that part covered by said contact being continuous and uninterrupted.

4,240,843

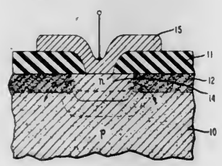
FORMING SELF-GUARDED P-N JUNCTIONS BY EPITAXIAL REGROWTH OF AMORPHOUS REGIONS USING SELECTIVE RADIATION ANNEALING

George K. Celler, Lawrenceville, and Gabriel L. Miller, Westfield, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 23, 1978, Ser. No. 908,792

Int. Cl.[3] H01L *21/263, 21/26*

U.S. Cl. 148—1.5 **5 Claims**



1. A method for making a semiconductor device comprising:
implanting ions of one conductivity type into the surface of a single crystal semiconductor substrate of the opposite conductivity type to form an ion implanted layer of essentially amorphous semiconductor overlying a substrate of essentially single crystal semiconductor, exposing a selected region of the amorphous ion implanted layer to laser radiation, the surface of said selected region being smaller than, and wholly within, the surface of the layer, the exposure to radiation being sufficient to regrow said selected region of the amorphous ion implanted layer epitaxially on the single crystal substrate thereby transforming the region to single crystal material, and forming a p-n junction with the periphery of the p-n junction in contact with the amorphous region.

4,240,844

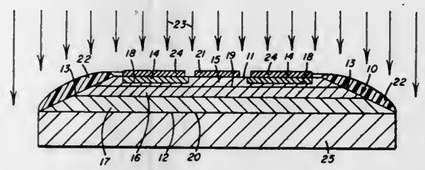
REDUCING THE SWITCHING TIME OF SEMICONDUCTOR DEVICES BY NEUTRON IRRADIATION

Patrick E. Felice, Hempfield Township, Westmoreland County; John Bartko, Monroeville; Krishan S. Tarneja, and Chang K. Chu, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1978, Ser. No. 972,302

Int. Cl.[2] H01L *21/263, 21/26*

U.S. Cl. 148—1.5 **17 Claims**



1. A method of changing the switching time and recovery charge of certain semiconductor devices comprising the steps of:
A. positioning a semiconductor device containing at least one PN junction to be exposed to a neutron radiation source of greater than 1.0 Mev.;
B. thereafter irradiating the semiconductor device with the neutron radiation source of greater than 1.0 Mev. to a dosage between 1×10^{11} and 1×10^{15} neutrons per square centimeter;
C. annealing the semiconductor device at a temperature at least as high as the highest specified temperature for storage and use.

4,240,845

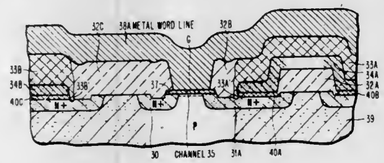
METHOD OF FABRICATING RANDOM ACCESS MEMORY DEVICE

Ronald P. Esch, San Jose, Calif.; Robert M. Folsom, Reston, Va.; Cheng-Yih Liu, Woodbridge, Va.; Vincent L. Rideout, Mohegan Lake, N.Y.; Donald A. Soderman, Vienna, Va., and George T. Wenning, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 850,762, Nov. 11, 1977. This application Feb. 4, 1980, Ser. No. 118,257

Int. Cl.[3] H01L *21/26, 21/223*

U.S. Cl. 148—1.5 **6 Claims**



1. A method of fabricating a read/write memory array on a silicon substrate of a first conductivity type having at least one planar surface, said method comprising the following steps:
(a) forming a first layer of oxide on said planar surface of said silicon substrate;
(b) opening first and second spaced apart windows in said oxide layer to expose first and second regions on said planar surface of said silicon substrate;
(c) introduce impurities of a second conductivity type through said first and second windows into said first and second regions of said silicon substrate;
(d) forming a second layer of oxide on the exposed surface of the structure;

(e) forming a layer of phosphosilicate glass (PSG) on said oxide layer;
(f) opening a third window in the PSG layer and said oxide layer to expose at least a portion of said second region of said second conductivity type;
(g) forming a thin oxide layer on the exposed surface of said second region;
(h) depositing a polysilicon layer on the exposed surface of said structure;
(i) introducing impurities of a second conductivity type into said polysilicon layer;
(j) removing a portion of the doped polysilicon layer to expose a portion of said region;
(k) forming a relatively thick oxide layer on the exposed surface of said structure;
(l) opening a fourth window in said relatively thick oxide layer to expose an area on said substrate surface extending from said first region to said second region;
(m) forming a thin oxide layer on the area of said substrate exposed by said fourth window; and
(n) depositing a conductive metal on said thin oxide layer lying on said area exposed by said fourth window.

4,240,846

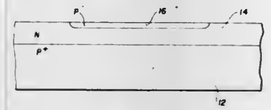
METHOD OF FABRICATING UP DIFFUSED SUBSTRATE FED LOGIC UTILIZING A TWO-STEP EPITAXIAL DEPOSITION

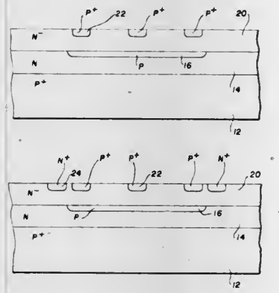
Brent R. Doyle, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 27, 1978, Ser. No. 919,632

Int. Cl.[2] H01L *21/20, 27/02*

U.S. Cl. 148—175 **12 Claims**





1. A method of fabricating a substrate fed logic semiconductor structure having an injector and complementary transistor comprising:
epitaxially forming a first N conductivity type layer on a P conductivity type substrate having a lower impurity concentration than said substrate;
depositing P conductivity type impurities at the surface of said first layer having an impurity concentration less than said first layer;
epitaxially forming a second N conductivity type layer on said first layer having an impurity concentration less than the impurity concentration of said first layer and deposited P conductivity type impurities;
depositing P conductivity type impurities in the surface of said second layer having a greater impurity concentration than said P conductivity type impurities at the surface of said first layer; and
simultaneously diffusing said P conductivity type impurities up from the surface of said first layer into said second layer and P conductivity type impurities down from the surface of said second layer to form a buried P conductivity type region between said two layers and a P conductivity type region extending from the surface of said second layer down to said buried region;
said substrate, first layer and buried region forming the emitter, base and collector of the injector transistor, respectively and said first layer, buried region and second layer form the emitter, base and collector of the complementary transistor, respectively.

4,240,847

PRODUCTION OF PLATINUM GROUP METAL LAYER ON A REFRACTORY

Max G. Chrisman, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 862,996, Dec. 21, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 954,049

Int. Cl.[3] B05D *3/02*

U.S. Cl. 156—62.2 **2 Claims**

1. A process comprising heating an article comprised of a particulate layer of a small particle size alloy composition consisting essentially of platinum and rhodium disposed intermediate a refractory substrate and a sheet of platinum group metal or an alloy thereof so as to bond said sheet to said substrate, said small particle size alloy composition being produced by a process which comprises substantially quantitatively reducing platinum and rhodium complexes in an aqueous solution and precipitating the elemental form of said alloy composition therefrom as a solid, small particle size form thereof and drying said precipitate without sinterization.

4,240,848

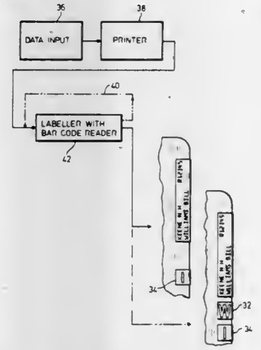
SYSTEM FOR ALPHABETICALLY LABELLING ARTICLES

Donald T. Barber, Willowdale, Canada, assignor to Datafile Limited, Willowdale, Canada

Filed Jul. 5, 1978, Ser. No. 922,187

Int. Cl.[3] B32B *31/10;* **B65C** *1/04;* **G09F** *3/02*

U.S. Cl. 156—64 **5 Claims**



1. A process for labelling a system of file folders comprising printing labels for the system where each printed label is different from other printed labels, each label having first and second fields extending its length and printed in a first field a first set of indicia and printed in a second field a second set of indicia where said second set is printed backwards and upside down relative to the first set, the first and second set of indicia being the same and peculiar to that printed label, in the same operation printing in said first label field a machine readable indicia code representative of a portion of said first set of indicia and oriented for machine reading along label's length, applying such label to a file folder by folding and locating it on a folder flap with said first label field located for application to

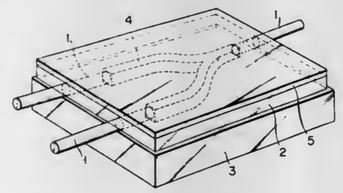
the rear side of such folder flap; each set of indicia having been printed to appear upright in its respective field with said label folded along a fold line between said fields as applied to such folder flap, machine reading such machine readable indicia code on the label and controlling by such reading step a labeller's application to such file folder flap of individual colour coded labels, each colour coded label as applied having an indicium corresponding to one of such coded indicia, said process making all file folders of said system distinguishable from one another by their labelling.

4,240,849

POLYMER OPTICAL CIRCUIT WITH OPTICAL LEAD-FIBERS AND METHOD OF FABRICATING THE SAME

Takashi Kurokawa; Norio Takato; Shigeru Oikawa, and Yuzo Katayama, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jun. 16, 1978, Ser. No. 916,062
Claims priority, application Japan, Jun. 21, 1977, 52/72755
Int. Cl.³ G02B *5/172*
U.S. Cl. 156—73.2 **8 Claims**



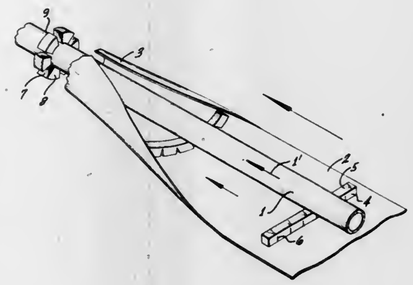
1. A method of making a polymer optical circuit which includes an optical waveguide to which optical fibers are connected as input- and output-terminals, the method comprising:
fixing with an adhesive each end portion of a plurality of optical fibers to V-shaped grooves provided on a transparent substrate at previously designed positions, the substrate having an upper peripheral portion;
casting a polymer solution, which comprises a matrix polymer, an organic solvent, a photopolymerizing monomer, a UV sensitive sensitizer and a thermal inhibitor, into a framework fixed to the upper peripheral portion of the substrate having the optical fibers;
evaporating the organic solvent contained in the cast polymer solution to form a polymer film which embeds therein the fixed optical fibers on the substrate;
placing a glass photomask having a pattern of an optical waveguide on the polymer film so as to align the pattern thereof with positions of the embedded ends of the optical fibers;
irradiating an ultra violet light on the glass photomask so as to form an original figure of an optical polymer waveguide in the polymer film, the waveguide being connected to the ends of the embedded optical fibers; and
removing the residual monomer contained in the original figure of the optical polymer waveguides by drying the polymer film fixed to the substrate in a vacuum after taking off the glass photomask from the polymer film to form a final optical waveguide contained in the polymer film.

4,240,850

MAKING THERMALLY-INSULATED TUBING

Hans-Joachim Arntz, Wedemark, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke, Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,409
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823101
Int. Cl.³ B32B *31/06, 5/20;* **B29C** *27/28*
U.S. Cl. 156—78 **3 Claims**



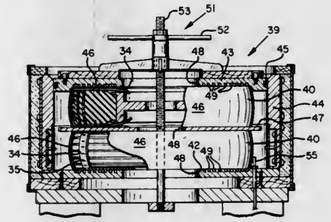
1. A method of making a thermally insulated, concentric tube system on a continuous basis which includes the steps of providing a first tube, forming a strip longitudinally into a split tube around the first tube, and closing the first tube, the improvement comprising:
placing individual strip pieces of thermally insulating material on the strip, the strip pieces extending transversely to the longitudinal direction of the tubes, the pieces being sequentially folded around the first tube to become spacers as the strip is progressively folded into the split tube, at least one axial gap remaining in each resulting spacer; and
filling space between the split tube and the first tube with foam prior to closing the split tube on account of said folding, the foam spreading axially through the gaps.

4,240,851

METHOD FOR RECAPPING SOLID TIRES WITH PRECURED, PREMOLDED TREAD

Michael J. King, Concord, Calif., assignor to Oliver Tire and Rubber Company, Oakland, Calif.

Filed Nov. 24, 1978, Ser. No. 963,223
Int. Cl.³ B29H *17/37*
U.S. Cl. 156—96 **8 Claims**



1. A method of retreading a rim-mounted solid tire with a precured, premolded tread strip, comprising:
gripping the solid tire by the rim, with an appropriate adapter;

mounting the solid tire, via the adapter, on a buffing machine and buffing the outer peripheral surface of the tire down concentrically, removing the old tread and continuing to buff the tire down below the base of the old tread;
extracting from the tire carcass metal and other fragments exposed during the buffing process;
repairing cuts and other injuries to the tire carcass, if any, including filling holes with uncured rubber, eliminating substantially all air from the holes;
applying a cement coating to the buffed surface of the tire;
applying a layer of bonding gum, including uncured rubber, to the surface of the tire over the cement coating;
applying a base layer of premolded, precured rubber over the bonding gum, to build up the tire diameter;
adhering a second bonding gum layer to the surface of the base layer;
applying a precured, premolded tread strip over the bonding gum layer;
splicing the tread strip utilizing bonding gum between the ends;
securing the splice together with a temporary securing means;
stitching the tread to the casing;
securing wicking to the built-up tire, extending from sidewall to sidewall over the tread;
applying an envelope over the built-up tire and wicking, extending over the tread and most of each sidewall;
loading the enveloped, built-up tire into a curing module having a generally cylindrical peripheral wall and relatively movable opposed wall portions for pressing against the enveloped sidewalls of the tire;
forming a sealed annular space about the envelope and within the module by urging at least one of the relatively movable opposed wall portions toward the other to engage the tire sidewalls, thereby forming a sealing annulus at each sidewall of the tire, with the envelope and wicking sandwiched between the sidewall and the adjacent wall portion of the curing module;
introducing a heated pressurized gas into the sealed annular space and maintaining it for a predetermined curing time, thereby securing the tread, bonding gum, base layer and tire carcass together by pressing them together and curing the uncured rubber while forcing out air present between the layers via the wicking;
removing the retreaded solid tire from the curing apparatus; and
removing the envelope, wicking and temporary securing means from the retreaded tire.

4,240,852

METHOD OF BONDING URETHANE FORMULATIONS TO RUBBER

Edward N. Gomberg, Hixon, Tenn., and Dana W. Somesla, Riverside, Calif., assignors to Synair Corporation, Chattanooga, Tenn.

Continuation-in-part of Ser. No. 969,632, Dec. 14, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,939
Int. Cl.³ B29H *17/36*
U.S. Cl. 156—96 **5 Claims**

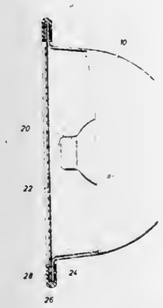
5. A method of recapping a rubber tire with a urethane formulation, comprising the steps of:
(a) buffing down the tire casing surface to remove old tread and cleaning said surface of extraneous materials;
(b) coating the buffed tire casing surface with a liquid cyanoacrylate adhesive to wet said surface with adhesive;
(c) applying an initial liquid or paste coating of an uncured urethane formulation onto said surface while said surface is still wet with the cyanoacrylate adhesive;
(d) placing said tire in a mold having an interior configuration of the desired shape of the recapped portion of the tire;
(e) injecting additional liquid or paste urethane formulation into said mold before the initial urethane has cured and filling the interior cavity of the mold;
(f) removing the recapped tire from the mold as soon as the urethane formulation has set; and
(g) allowing said urethane formulation to cure.

4,240,853

LENS CLOSURE FOR LIGHT FIXTURE AND METHOD FOR ATTACHMENT

Marvin J. Pustka, New Braunfels, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,271
Int. Cl.³ E06B *3/60;* **F21V** *11/00;* **G03B** *15/02*
U.S. Cl. 156—108 **10 Claims**



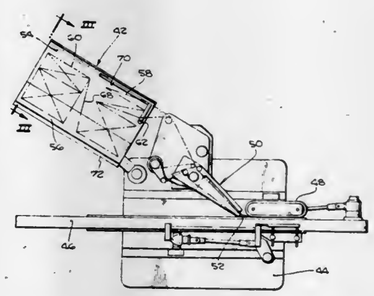
1. An improved method of securing a plastic lens to a lighting fixture of the type which has a housing with nonfront entry means to access the light source, and which includes a radially outward projecting front flange, wherein the improvement comprises:
applying an adhesive means to the outside perimeter of the radially outward projecting flange;
uniting the plastic lens with the adhesive flange;
covering the edge of the united plastic lens and the flange with a metal cored trim; and
securing the metal cored trim to the united plastic lens and flange.

4,240,854

FAN-FOLDED LABELING TECHNIQUE

Jack W. Massey; William P. Belden, both of Glendora, and Ronald A. Mabry, Covina, all of Calif., assignors to Avery International Corporation, San Marino, Calif.

Filed Oct. 31, 1978, Ser. No. 956,374
Int. Cl.³ B31F *5/00;* **B65H** *69/06*
U.S. Cl. 156—157 **11 Claims**



1. A method for efficiently handling slippery and unstable layers of fan-folded self-adhesive labels mounted on a backing

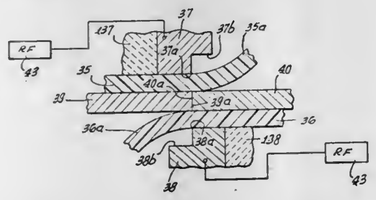
sheet comprising the steps of:
preparing self-adhesive labels on a backing tape in a fan-folded configuration to form a slippery and unstable stack of layers;
loading stacks of the slippery fan-folded labels on backing tape directly from a fan-folding label fabrication machine into rectangular four sided cassettes open at both the front and the top;
packaging the loaded cassettes to hold the fan-folded labels in the cassettes;
transporting the cassettes to the label applicator location;
mounting first and second stacks of fan-folded labels adjacent one another with the lower end of the backing tape and labels of each fan-folded stack available for splicing;
feeding said labels from the first one of said stacks into a label applicator;
applying said labels from said applicator to products as they are moving along a conveyor; and
splicing the lower end of said first stack to the upper end of said second stack of fan-folded labels without interrupting the dispensing and application of labels from the top of said first stack of fan-folded labels.

4,240,855

METHOD OF WELDING PLASTIC SHEETS EDGE-TO-EDGE

William Pennington, 317 S. West St., Anaheim, Calif. 92805

Division of Ser. No. 900,529, Apr. 27, 1978, Pat. No. 4,177,100, which is a continuation of Ser. No. 749,828, Dec. 13, 1976, abandoned. This application Aug. 15, 1979, Ser. No. 66,843
Int. Cl.³ B29C *27/04*; B65H *69/08*
U.S. Cl. 156—159 **7 Claims**



1. In the method of forming an improved weld between plastic sheets, the steps that involve:
(a) deforming two joint defining work sheets into a volumetric position substantially defined by two undeformed sample sheets positioned in edge-to-edge position, the work sheets and sample sheets having the same thickness, and
(b) heating the deformed work sheets under pressurization at said joint to soften them to form an improved weld therebetween characterized in that the sheet thickness remains the same at and proximate the weld,
(c) the work sheets being initially placed in overlapping relation, with shear dies initially provided at opposite sides of said overlapping work sheets, and with two intermediate plates initially located between the overlapping work sheets so that the plates form a joint in alignment with shear edges formed by the dies, and said deformation being effected by shearing the overlapping work sheets and relatively displacing the sheared work sheets in the directions of their thicknesses into edge-to-edge relation, said shearing and displacement of the sheets being effected by displacing the shear dies relatively toward one another.

4,240,856

CONTINUOUS RUNNING CORRUGATOR

Robert H. Craemer, and Donald J. Evans, both of Cherry Hill, N.J., assignors to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed May 5, 1978, Ser. No. 903,350
Int. Cl.² B31F *1/20*; B65G *37/00, 43/10*
U.S. Cl. 156—205 **9 Claims**



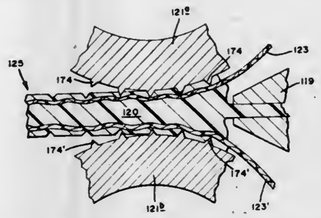
1. A method of creating a gap in a paperboard web comprising:
(a) producing a continuous paperboard web at a double facer machine,
(b) severing said web transversely when it is desired to effect an order change thereby producing a severed web section,
(c) producing a gap between the leading edge of the severed web and the trailing edge of the web section,
(d) adjusting one or more of a slitter-scorer and the cut-off for the next production order while the same are in said gap,
(e) shingling the sheets cut from said web section on a shingling conveyor operating at a first speed which is substantially below the speed of said double facer machine,
(f) maintaining at least some of said gap on said shingling conveyor between the last sheet cut from said web section and the first sheet cut from the web for the next production order by increasing the conveyor speed of the shingling conveyor to a second conveyor speed substantially higher than said first conveyor speed prior to depositing the last sheet of the web section on said shingling conveyor, using a second conveyor speed which results in a shingling ratio less than two to one, and
(g) decreasing the speed of said shingling conveyor from said second conveyor speed to said first conveyor speed after the first sheet of the new production run is deposited on the shingling conveyor.

4,240,857

FIBER REINFORCED MULTI-PLY STAMPABLE THERMOPLASTIC SHEET

Michael P. DellaVecchia, Sparta; Joseph E. Mackey, East Hanover, and Albert H. Steinberg, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 816,630, Jul. 18, 1977. This application Aug. 8, 1978, Ser. No. 931,692
Int. Cl.² B31F *1/00*
U.S. Cl. 156—209 **7 Claims**



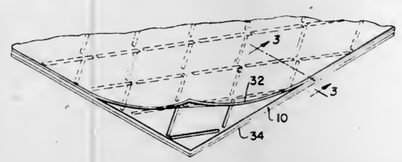
1. A process for producing a composite laminated sheet comprising the steps of:
(a) extruding a first sheet layer comprising from about 40 percent to 100 percent of thermoplastic polymer, about 0 percent to 50 percent of a particulate filler and 0 percent to 45 percent short glass fibers having a length ranging from 0.01 to ¾ of an inch and arranged in a plane generally parallel to the sheet surface;
(b) embossing said first sheet layer in a roll stack to form an embossed surface thereon containing a plurality of projections;
(c) extruding a second sheet layer comprising from about 50 percent to 100 percent of synthetic thermoplastic polymer and from 0 percent to 50 percent particulate filler, but being essentially free of glass fibers;
(d) feeding said first sheet, said second sheet and a long fiber glass mat, the fibers of which have a length of at least 1 inch, into the nip of a set of laminating rolls while the resin of the second sheet is still in a molten condition, the clearance between the rolls being less than the thickness of the sheets and glass mat being fed to the nip of said rolls, whereby the long glass mat is positioned within said second sheet during impregnation of said mat thereby and said first and second sheets are laminated into a smooth multi-ply product.

4,240,858

METHOD OF MAKING A HEXAFLEXAGON

Stewart Lamlee, 55 W. 86th St., New York, N.Y. 10024

Continuation of Ser. No. 723,325, Sep. 15, 1976, abandoned. This application May 19, 1978, Ser. No. 907,758
Int. Cl.³ B31F *3/00*
U.S. Cl. 156—211 **8 Claims**



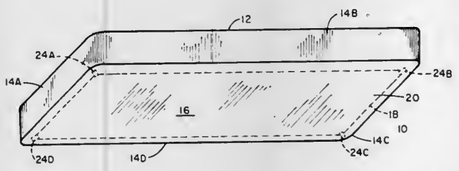
1. A method for making a plurality of hexaflexagons from a single sheet of stock material comprising the steps of:
die cutting the single sheet to form a number of parallel rows of non-intersecting zigzag slots;
adhering a first transparent sheet to one face of said die-cut single sheet to form a sandwich;
cutting said sandwich to intersect said slots and divide said die-cut sheet into a plurality of disconnected strips of discreet individual equilateral triangle portions, said strips being equal in number to the number of parallel rows, said triangle portions being connected to one another solely by said transparent sheet; and
folding each of said strips and connecting the first and last triangles of each of said strips together.

4,240,859

METHOD OF MAKING A WATER BED MATTRESS

Lynn D. Larson, 6501 Park Crest, Lincoln, Nebr. 68506

Filed May 11, 1979, Ser. No. 38,375
Int. Cl.³ B29C *17/04*
U.S. Cl. 156—245 **5 Claims**



1. A method of making a water bed mattress comprising the steps of:
vacuum forming a first sheet plastic material into five sides of a right regular parallelopiped;
cutting said sheet with an edge around its rim;
marking said rim for alignment purposes;
providing a second plastic sheet having heat resistant qualities; and
heat sealing said second plastic sheet to said rim using said alignment markers as guides, whereby a solid plastic right regular parallelopiped is formed with a heat resistant side.

4,240,860

LATEX-BASED ADHESIVES

Ernest G. Pole, Sarnia, Canada, and Roy Clark, Libertyville, Ill., assignors to Polysar Limited, Sarnia, Canada

Filed Apr. 13, 1978, Ser. No. 896,092
Claims priority, application Canada, May 13, 1977, 278372
Int. Cl.² C09J *3/12, 5/04, 5/06*
U.S. Cl. 156—327 **7 Claims**

1. A process for adhering a preformed body which is pervious to water vapour to another preformed body which comprises coating a surface of at least one of said bodies with a substantially solvent-free water-based adhesive composition comprising a rubbery polymer latex stabilized with an emulsifier which forms water-insoluble compounds with zinc and cadmium ions, an ammonium or amine sulfamate gelling agent for the latex, a zinc or cadmium ion donor compound, and sufficient ammonia or ammonia donor compound to provide a pH of above 8 to the adhesive composition, contacting the adhesive coated surface with a surface of the other body, and heating the intersurface layer of adhesive while maintaining the contact between the two bodies to cause gelation of the latex and removal of the water.

5. An adhesively bonded assembly produced by the process of claim 1.

4,240,861

PROCESS FOR THE PREPARATION OF DIHYDROXYPOLYURETHANES AND THE USE THEREOF AS ADHESIVES OR AS RAW MATERIALS FOR ADHESIVES

Walter Meckel, Neuss; Horst Müller-Albrecht, Cologne; Manfred Dollhausen, Odenthal, and Eugen Velker, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 925,582, Jul. 17, 1978, abandoned. This application May 17, 1979, Ser. No. 39,702
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734102
Int. Cl.³ C08G *18/34*
U.S. Cl. 156—331 **30 Claims**

1. In a process for bonding rubber to rubber or to other materials by coating the surfaces to be bonded with an adhesive and joining them together, the improvement wherein said adhesive is a predominately linear dihydroxypolyurethane containing from 0.01 to 1.0%, by weight, of carboxyl groups and from 0.1 to 10 milliequivalent of ionic groups per 100 g of polyurethane.

4,240,862

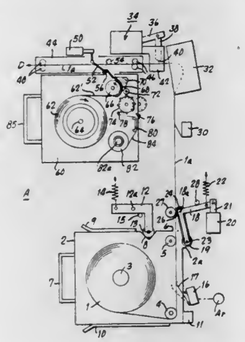
PRINTING SYSTEM FOR BOARDING PASS AND/OR BAGGAGE TAG

Kiyoshige Ishiyama, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 922,828
Claims priority, application Japan, Jul. 20, 1977, 52-87520; Jul. 21, 1977, 52-88002
Int. Cl.³ G07B *1/00*
U.S. Cl. 156—350 **23 Claims**

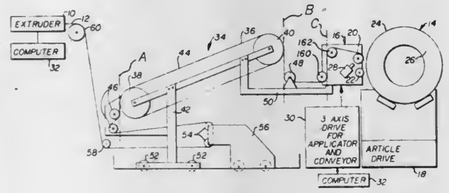
1. A printing system for a boarding pass and/or baggage tag comprising:
control means for providing instructions for printing passenger-related information;

a housing;
a printing unit contained in said housing and controlled with said control means comprising:
a roll of printing paper strip;
feeding means for drawing out said printing paper strip from said roll and advancing it within said housing;
guide means for guiding said advancing printing paper strip;
dotting printer means for printing passenger-related characters on said advancing printing paper strip in accordance with said instructions from said control means;



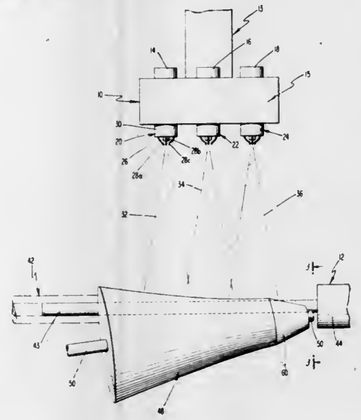
cutting means for cutting said advancing printing paper strip after being printed; and
ejecting means for ejecting said printed and cut printing paper strip from said housing;
and wherein said control means comprises pattern generator means for memorizing passenger-related characters; and
said dotting printer means comprises a thermal printing apparatus which comprises a plurality of thermal elements arranged in a line opposite the top surface of said printing paper strip and controlled by output signals from said pattern generator means.

4,240,863
CONTROL SYSTEM FOR AN ELASTOMER EXTRUSION AND APPLICATOR APPARATUS
David S. Vinton, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 12, 1979, Ser. No. 29,246
Int. Cl.³ B29H *17/37*
U.S. Cl. 156—361 **17 Claims**



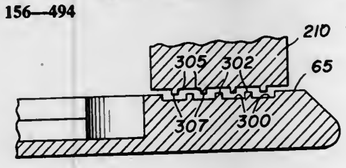
1. In a control system for an elastomer extrusion and application apparatus including:
means for receiving a continuous, moving extruded elastomeric ribbon and for providing a signal representing the rate of ribbon receipt;
a first rate dividing means receiving said ribbon receipt signal;
ribbon moving means receiving said ribbon from said receiving means for advancing the ribbon along a variable path of fixed length;
means connected to said ribbon moving means for providing a signal representing the rate of ribbon movement along said path;
a first servo system including said first rate dividing means for receiving said ribbon movement signal to operate said ribbon moving means so as to cause the ribbon to be moved in said ribbon path at a first rate higher than said rate of ribbon receipt at a fixed proportion determined by said first rate dividing means;
means for moving an article to have the ribbon applied thereto in a predetermined article path at the end of said ribbon path; and
an applicator at the end of said ribbon path for receiving the ribbon from the ribbon moving means and for applying the ribbon to an article moving in said article path and including a rotary applicator roller;
the improvement comprising:
a resolver connected to said applicator roller for providing a signal representing the rate of rotation of said roller and thus the rate of ribbon application;
a second rate dividing means receiving said ribbon receipt signal;
a second servo system including said second rate dividing means for receiving said rate of rotation signal to operate said article moving means so as to cause the article to be moved in said article path to draw ribbon off of said applicator roller at a second rate equal to or greater than said first rate at a fixed proportion determined by said second rate dividing means.

4,240,864
SPRAY SPINNING COLLECTION UNIT
Victor J. Lin, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.
Filed May 25, 1979, Ser. No. 42,695
Int. Cl.³ D04H *3/00*
U.S. Cl. 156—441 **9 Claims**



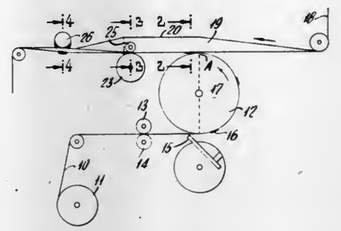
1. Spray spinning apparatus form making a tubular non-woven product of indefinite length having a predetermined radial density gradient, comprising:
spray spinning means for producing a plurality of substantially continuous filaments of synthetic resinous material, attenuating the filaments, and conveying the filaments in a stream such that the filaments have a predetermined distribution along a line passing transversely through the filament stream; and
collection means positioned transversely of the filament stream, operable to collect the filaments and form a tubular non-woven product of indefinite length therefrom, and including
mandrel means operable to receive the filaments along an axial extent thereof and having a cylindrical surface, and
press roll means operable in conjunction with the mandrel means to urge the collected filaments axially off the mandrel means as a tubular product of indefinite length, and including a contoured surface which cooperates with the cylindrical surface to define a gap of varying radial height in which the predetermined distribution of filaments is collected and compressed to a predetermined radial density gradient.

4,240,865
APPARATUS AND METHOD FOR APPLYING PLASTIC STRAP
Robert B. Kyts, Chicago, Ill., assignor to Interlake, Inc., Oak Brook, Ill.
Continuation of Ser. No. 701,306, Jun. 30, 1976, abandoned.
This application Jun. 25, 1979, Ser. No. 51,732
Int. Cl.³ B65B *13/02*
U.S. Cl. 156—494 **8 Claims**



1. Strapping apparatus for securing a length of plastic strap around an object, said apparatus comprising a frame, strap-gripping means mounted on said frame for holding the strap encircled in a loop in a tensioned condition about the object with the leading end of the strap overlapping the supply portion thereof, heating means carried by said frame adjacent to the overlapping strap portions for effecting melting of the facing portions thereof, a first pressure member carried by said frame and having a plurality of elongated and equal-width first grooves therein equidistantly spaced apart by first ribs, and a second pressure member carried by said frame and having a plurality of elongated and equal-width second ribs projecting therefrom equidistantly spaced apart by second grooves, each of said first and second grooves being rectangular in transverse cross section and having an elongated flat rectangular recessed surface, each of said first and second ribs being rectangular in transverse cross section and having an elongated flat rectangular end surface with the width of each said end surface being no greater than about one-third the width of each groove recessed surface, said end surfaces of said first and second ribs being respectively disposed centrally of and in parallel facing relationship with said second and first groove recessed surface in longitudinal alignment therewith, said pressure members being movable with respect to each other to a sealing configuration wherein said first and second ribs are disposed in equidistantly spaced-apart interdigitated relationship with said ribs and said grooves cooperating to press together therebetween the melted overlapping strap portions and to deform the overlapping strap portions in a predetermined pattern as they are pressed together, whereby the pressure of said pressure means is substantially evenly distributed throughout the interface between the melted overlapping strap portions for formation of a strong joint therebetween.

4,240,866
APPARATUS FOR MANUFACTURING A PRODUCT HAVING ELASTIC MEANS DISPOSED IN THE TRANSVERSE DIRECTION
John F. Rega, Milltown, N.J., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Oct. 18, 1979, Ser. No. 86,219
Int. Cl.³ B32B *31/08*
U.S. Cl. 156—496 **10 Claims**



2. Apparatus for intermittently applying discrete lengths of an elastic material transverse of a continuously moving web comprising;
a rotatable gripping and releasing member;
means for intermittently supplying discrete lengths of an elastic material having adhesive on one surface to the gripping portion of said gripping and releasing member;
a chute disposed adjacent and tangantial to the surface of the gripping and releasing member at the point where said member changes from gripping to releasing, said chute extending in both directions from said point;
means for conveying a web at the same linear speed as the linear speed of the rotatable gripping and releasing member over said chute with the longitudinal sides of the web straddling the chute and disposed adjacent opposite ends of said elastic material;
means for urging the longitudinal sides of the web against the surface of the rotatable gripping and releasing member just as the cut length of elastic material is released to adhere the ends of the cut length to the longitudinal sides of the web;
means disposed downstream from said chute for diverging the longitudinal sides of the web with respect to each other to flatten the web, stretch the center portion of the cut length of elastic material and adhere said center portion to the web.

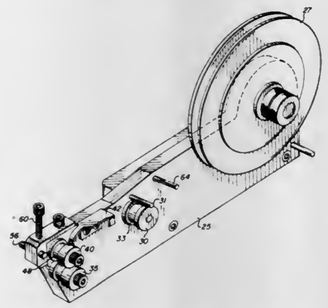
4,240,867
APPARATUS FOR DISPENSING ADHESIVE-BACKED FOIL
Herbert F. Diegel, 1524 E. Culver, Phoenix, Ariz. 85006
Filed May 3, 1978, Ser. No. 902,298
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—543 **7 Claims**

1. Apparatus for dispensing a strip of adhesive backed foil having a foil side and an adhesive side from a roll and applying the foil along and extending laterally from the edges of a substantially flat workpiece free of a peel off adhesive protective covering, the foil being of a width greater than the width of the edges of the workpiece, said apparatus comprising in combination:
(a) a frame;
(b) means for rotatably supporting the roll upon said frame;
(c) a first guide roller rotatably mounted on said frame for guiding the foil, said first guide roller including a circumferential groove of a width commensurate with the width of the foil for contactingly receiving the protective covering side of the foil;
(d) a second guide roller rotatably mounted on said frame for guiding the foil from said first guide roller to the edges of

the workpiece, said second guide roller including a circumferential groove of a width commensurate with the width of the foil for receiving the foil side of the foil and exposing the adhesive side of the foil to the edges of the workpiece, said second guide roller being vertically and horizontally positioned with respect to said first guide roller to define a Z-shaped path for the foil transported from the roll to the edges of the workpiece;

(e) each of said grooves of said first and second guide rollers having a rectangular cross-section and being of a constant depth to support the full foil width and edge of the workpiece on application of the foil to the edges of the workpiece;

(f) a peel blade disposed at the point the foil, extending from said first guide roller, contacts said second guide roller,



said peel blade being disposed intermediate the foil and the protective covering to urge peeling of the protective covering from the foil and to expose the adhesive side of the foil, which peeling is aided by the reverse curvature of the foil resulting from the supporting contact of the foil with said groove of said second guide roller; and

(g) pin means for slidingly contacting a lateral surface of the workpiece to guide the edges of the workpiece with respect to said groove of said second guide roller, said pin means including means for adjustably locating said pin means relative to said groove of said second guide roller to accommodate different thickness workpieces and determine the positional relationship between the edges of the workpiece and the foil disposed in said groove of said second guide roller.

4,240,868

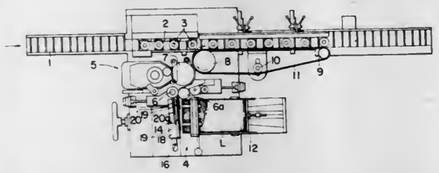
LABEL FEEDING APPARATUS

Yasuaki Nagano, Kanazawa, Japan, assignor to Shibuya Kogyo Co., Ltd., Ishikawa, Japan

Filed May 30, 1979, Ser. No. 43,721

Int. Cl.³ B65C *9/08*

U.S. Cl. 156—572 **6 Claims**



1. An apparatus for feeding labels one by one to a label sticking device which sticks labels on containers, comprising:

a label magazine storing a quantity of labels;

a guide lever pivotally supported in the vicinity of the exit of said label magazine;

a slide member slidably mounted on said guide lever;

holding means provided on said slide member for holding a label temporarily;

a first driving shaft;

a crank arm fixedly mounted on said first driving shaft;

means for connecting said slide member with said crank arm;

a second driving shaft which is driven in synchronism with said first driving shaft;

a cam fixedly provided on said second driving shaft; and

a cam follower integrally provided with said guide lever and operatively connected to said cam.

4,240,869

METHOD FOR MANUFACTURING A PHOTO CATHODE FOR ELECTRORADIOGRAPHIC AND ELECTROFLUOROSCOPIC APPARATUS

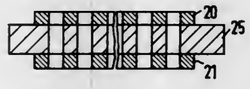
Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 962,928

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754526

Int. Cl.³ B44C *1/22;* **B23P** *15/00;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—643 **2 Claims**



1. A method for manufacturing perforated double layer foils having two outer electrically conductive layers of a material with a high atomic number and an insulating layer disposed between said two outer layers, for use as a photocathode for electroradiographic and electrofluoroscopic apparatus comprising:

(a) first briefly etching a highly insulating plastic film with a dielectric strength of at least 10^4 V/cm in an oxygen or argon-oxygen plasma;

(b) then vapor-depositing or sputtering an electrically conductive layer on both sides of the plastic film;

(c) subsequently vapor-depositing or sputtering a metallic intermediate layer of titanium onto each of said electrically conductive layers;

(d) then applying hole masks to the respective metallic intermediate layers, using a photoresist technique, such that the holes of the masks are opposite each other;

(e) then etching a hole pattern into each of the metallic intermediate layers, using said hole masks which have been applied to the intermediate layers, by means of sputter etching in an argon plasma with a partial oxygen pressure of less than 10^{-6} Torr;

(f) subsequently etching the hole pattern into the electrically conducting layers, using said hole masks applied to the metallic intermediate layer, by means of sputter etching in an argon plasma with a partial oxygen pressure higher than said pressure of 10^{-6} Torr; and

(g) finally removing those parts of the plastic film which close off the holes of the electrically conductive layers, whereby the masks of the photoresist material and of the intermediate layers are also removed.

4,240,870

FILLED PAPER

Hiroji Shibazaki, Takarazuka; Setsuji Edagawa, and Hisashi Hasegawa, both of Nishinomiya, all of Japan, assignors to Shiraishi Kogyo Kaisha, Ltd., Amagasaki, Japan

Filed Sep. 11, 1979, Ser. No. 74,317

Claims priority, application Japan, Sep. 13, 1978, 53-113423

Int. Cl.³ D21H *3/78*

U.S. Cl. 162—181 A **4 Claims**

1. A filled paper characterized in that the paper is filled with at least one of

(i) a calcium carbonate in the form of particles comprising a core about 0.5 to about 6.5 μm in average diameter and about 100 to about 4000 projections formed on the surface of the core and having a length (L) of about 0.25 to about 2.00 μm, a diameter (D) of about 0.08 to about 0.20 μm and an aspect ratio (L/D) of about 3 to about 10, the calcium carbonate having a void volume of about 1.0 to about 1.8 ml/g and an oil absorption of about 45 to about 60 ml/100 g, and

(ii) a calcium carbonate in the form of particles comprising a core about 0.2 to about 2.0 μm in average diameter and about 100 to about 4000 projections formed on the surface of the core and having a length (L) of about 0.15 to about 4.00 μm, a diameter (D) of about 0.5 to about 0.20 μm and an aspect ratio (L/D) of about 3 to about 20, the calcium carbonate having a void volume of about 1.8 to about 3.3 ml/g and an oil absorption of about 50 to about 100 ml/100 g, wherein said calcium carbonate is present in an amount of at least 5% of the dry weight of the paper obtained.

4,240,871

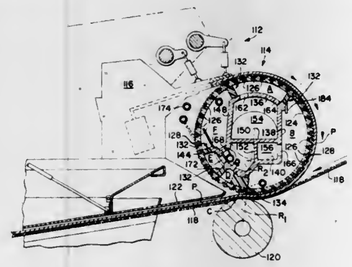
PAPER FORMING ROLL CONSTRUCTION

James H. Burkhart, Monroe, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed May 17, 1979, Ser. No. 40,012

Int. Cl.³ D21F *1/60*

U.S. Cl. 162—274 **24 Claims**



1. Paper forming roll comprising:

(a) a stationary pressure box;

(b) a generally cylindrical rotatable foraminous shell extending around said box;

(c) paper making wire on the outside surface of said shell;

(d) spacing means extending radially from said box to said shell, said spacing means being secured to said box;

(e) a plurality of circumferentially extending zones defined by said box, said shell, and said spacing means,

wherein a first one of said zones is a forming zone, a second one of said zones is a primary holding zone, a third one of said zones is a transfer zone, and at least a fourth one of said zones is a secondary holding zone for holding water during operation of said forming roll;

said box including a plurality of external walls and a plurality of internal walls defining a plurality of pressure chambers, a first one of said external walls including means providing communication between said forming zone and a first one of said pressure chambers from which vacuum for forming purposes may be achieved, a second one of said external walls extending generally vertically from one end of said first one of said external walls to partially define said primary holding zone, said generally vertical wall also including means providing vacuum communication between said primary holding zone and a second one of said pressure chambers; and

drip means located in said primary holding zone and extending generally parallel to said generally vertical wall from a circumferential extension of said first one of said external walls in the immediate vicinity of the upper end of said generally vertical wall whereby water containing fibers finding its way into said primary holding zone past the spacing means dividing said forming zone and said primary holding zone will readily fall with fibers entrained therein to the lower inner surface of said shell without impinging upon or adhering to the pressure box.

4,240,872

SUSPENSION DEVICE FOR A HEADBOX FOR PAPER AND PULP MACHINES

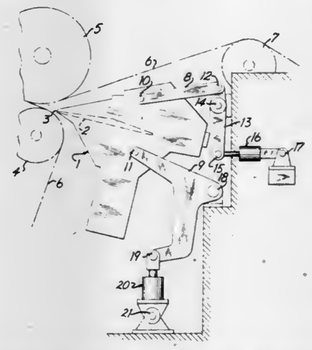
Douglas Wahren, Karlstad, Sweden, assignor to AB Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Mar. 13, 1979, Ser. No. 19,940

Claims priority, application Sweden, Mar. 17, 1978, 7803137

Int. Cl.³ D21F *1/02*

U.S. Cl. 162—344 **11 Claims**



1. Apparatus for suspending a headbox for paper and pulp machines adjustably to bring the headbox slice opening in predetermined relation to a web forming zone comprising

a first link extending generally in the direction of the slice opening and having one end near the slice opening pivotally mounted on the headbox and another end away from the slice opening movably supported on a frame,

a second link extending generally in the direction of the slice opening in spaced relation to said first link and having one end near the slice opening pivotally mounted on the headbox and another end away from the slice opening pivotally supported on said frame, said first and second links converging in the direction of the slice opening, and

means for translating one of said links in the direction of its length to move the headbox so as to adjust the position of the slice opening in relation to the web forming zone.

4,240,873

SOLENOIDAL FUSION SYSTEM

William I. Linlor, 1010 Madison Dr., Mountain View, Calif. 94040

Filed Sep. 22, 1978, Ser. No. 945,011

Int. Cl.³ G21B *1/02*

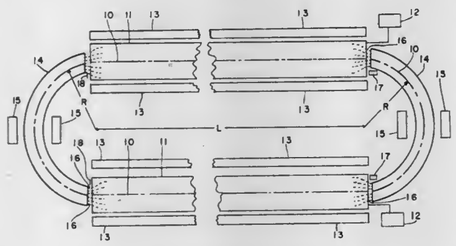
U.S. Cl. 176—3 **9 Claims**

1. In an apparatus for nuclear fusion of the type having:

a. elongated vacuum chamber means to provide an evacuatable containment volume having an axis of symmetry;
b. vacuum pump means communicating with said vacuum chamber so as to maintain a gas pressure less than 10^{-3} torr within the vacuum chamber;
c. means for producing magnetic fields so that said magnetic fields are present substantially throughout said vacuum chamber, said magnetic-field-producing means consisting of solenoidal windings so disposed that the axis of the magnetic field is essentially parallel to the axis of the elongated vacuum chamber;

an improved particle-injection apparatus comprising:

d. means for injecting fusible energetic particles having kinetic energy greater than 10^4 electron-volts, so as to enter said magnetic fields in the direction approximately perpendicular to the axis of said vacuum chamber, but having sufficient inclination so as to avoid impact on said injection means;
e. means for changing the charge state of said fusible particles while within said magnetic fields so that the resulting ions are produced within said magnetic fields to form ion beams;
f. said injection and change-in-charge-state being accomplished for a period of time so that said ion beams attain a density greater than 10^{12} particles per cubic centimeter;
g. said ion beams consisting of fusible species such as deuterons and tritons whose velocities are approximately in the



same direction and whose speeds differ so as to cause fusion reactions in overtaking collisions between said ion beams, this being stated mathematically:

$$V_D = V_T + V_{rel}$$

where V_D represents the velocity of one species of fusible ions, such as deuterons, V_T represents the velocity of another species of fusible ions, such as tritons, and V_{rel} represents the difference in velocity of said fusible species, such as deuterons and tritons;

h. said ion beams such as deuterons and tritons having approximately equal momenta per unit electric charge, this being stated mathematically:

$$M_D V_D Q_T = M_T V_T Q_D$$

where M_D and V_D represent, respectively, the mass and the velocity of one species of fusible ions, such as deuterons; and M_T and V_T represent, respectively, the mass and the velocity of another species of fusible ions, such as tritons; and Q_D and Q_T represent, respectively, the electric charges of the fusible ions, such as deuterons and tritons;
i. means for producing electrons within and in the vicinity of said ion beams so as to substantially neutralize the charge of said ion beams, thereby producing an essentially neutral plasma.

4,240,874

PROCESS FOR CONTROLLING THE REACTIVITY EFFECTS DUE TO THE POWER VARIATIONS IN PWR NUCLEAR REACTORS

Jean-Paul Millot, Elancourt, France, assignor to Framatome, Paris, France

Filed Jun. 20, 1978, Ser. No. 917,401
Int. Cl.³ G21C *7/06*
U.S. Cl. 176—22 **5 Claims**



1. A process for controlling the reactivity effects due to the power variations in a nuclear reactor using pressurized water, said process comprising moving sets of movable clusters consisting of a certain number of full-length rods of absorbent material inside the fuel units of said reactor, said rods being called full-length rods since their lengths are the same as the length of the fuel units and varying the concentration of soluble boron in the primary fluid of said reactor in order to correct long-term reactivity effects, wherein first sets of said movable clusters, at least one of which sets consisting of clusters having a reduced number of full-length rods of absorbent material has an anti-reactivity of less than 700 ppht, are moved solely as a function of the power required of the turbine, moved by the steam produced by the reactor, a second set of said movable clusters, which is composed of very absorbent clusters consisting of a great number of full-length rods of absorbent material, is simultaneously moved as a function of the difference which exists at any time between the mean temperature of the reactor core and a reference temperature, which is a function of the level of power required, said second set being movable between control limits which are defined by the mode of operation of the reactor and the state reached by the core of this reactor, and said concentration of soluble boron in said primary fluid of the reactor is varied to permit regulating the temperature by moving said second set within said control limits thereof in addition to the normal correction of long-term reactivity effects.

4,240,875

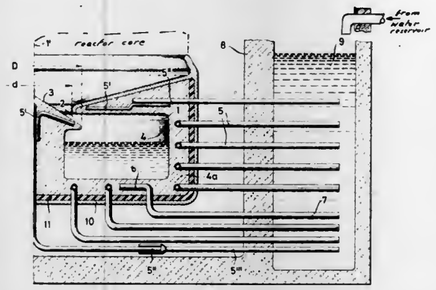
NUCLEAR ENERGY PLANT WITH COLLECTING CONTAINER FOR MELTING CORE MASSES

Werner Katscher, Jülich-Stetternich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 693,333, Jun. 7, 1976, abandoned. This application Jan. 10, 1978, Ser. No. 868,289
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1975, 2525554
Int. Cl.² G21C *15/12, 15/18*
U.S. Cl. 176—38 **5 Claims**

1. A passive emergency cooling system independently operable for a nuclear energy plant emergency which includes in combination: a reactor core, a collecting container having a heat-conducting and heat-resisting inner wall portion, an outer supporting wall and an intermediate thermal insulating layer between said inner wall portion and said outer wall, said container being arranged below said reactor core for collecting molten core masses, an outer reactor-protecting container means arranged in spaced relationship to and surrounding said collecting container, an annular cooling tank open toward the atmosphere and arranged externally accessible outside of and surrounding said said reactor-protecting container means, cooling pipes designed as heat pipes and inserted in said inner wall portion of said collecting container so that during a break

of interruption of the cooling pipes care is taken that no fission products come into the environment, one end of said heat pipes being evaporator ends extending into and terminating within said inner wall portion of said collecting container, said pipes



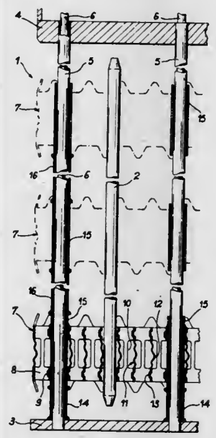
being passed through said outer reactor-protecting container means, the other end of said heat pipes being condensor ends and extending into and terminating in said cooling tank located externally accessible always to maintain cooling capability open toward the atmosphere regardless of any internal failure.

4,240,876

NUCLEAR FUEL ASSEMBLY

Jacques Delafosse, Gif-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed May 10, 1978, Ser. No. 904,484
Claims priority, application France, May 13, 1977, 77 14754
Int. Cl.³ G21C *3/30*
U.S. Cl. 176—78 **2 Claims**



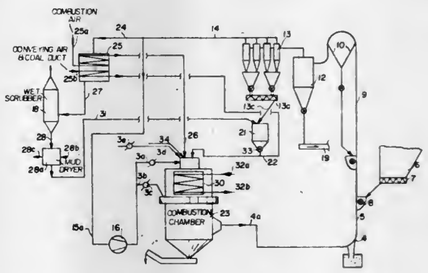
1. A nuclear fuel assembly comprising, a rigid structure formed by a top plate, a spaced, parallel, bottom end plate, and a series of tie rods connecting said plates at uniform intervals,
a bundle of clad fuel pins disposed in spaced parallel relation to each other and maintained in a uniform lattice by means of an array of grids equipped with elements adapted to support the fuel pins by resiliently pressing against said fuel pins,
a series of guide sleeves secured to the nodes of the grid lattice and through which said tie rods are slideably disposed, and
a series of tubular spacer members mounted on at least a portion of said tie rods between said bottom plate and the guide sleeves secured to the lowest of said grids and between adjacent guide sleeves, so as to support said grids and provide a clearance space between said plates and the fuel pins.

4,240,877

METHOD FOR PREHEATING COAL FOR COKING

Dieter Stahlherm, Recklinghausen; Gerhard Rutkowski, Mülheim an der Ruhr; Janos Bocsanczy, Recklinghausen, and Hans Becker, Tönisvorst, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 35,205
Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819232
Int. Cl.³ C10B *57/10, 31/00, 57/08*
U.S. Cl. 201—41 **6 Claims**



1. A method of preheating coal for coking, with an immediately following carbonization thereof, comprising, directing moist coal to be coked into hot operating gases to transfer heat and preheat the coal thereby cooling the operating gases and generating steam,
separating the cooled operating gases with a quantity of coal dust from the heated coal,
dedusting the cooled operating gases to form dedusted and cooled operating gases and a separated fine coal dust,
burning said separated fine coal dust in a combustion chamber to produce said hot operating gases,
admixing at least a part of the dedusted and cooled operating gases with said hot operating gases to produce fresh operating gases,
controlling the amount of the fine coal dust fraction removed from said operating gases during said dedusting step as a function of grain size by varying the maximum grain size up to which the fine coal dust is separated from the coal,
storing the separated fine coal dust and using the amount stored as a controlled variable for controlling the amount of fine coal dust fraction to be removed from said operating gases during said dedusting step, and
supplying a metered amount of said stored fine coal dust to the combustion chamber in which the hot operating gases are produced.

4,240,878

METHOD OF FORMING A PLATINUM LAYER ON TANTALUM

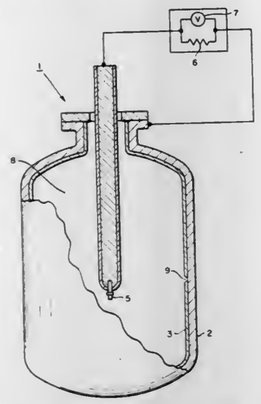
William W. Carter, Conesus, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 923,814, Jul. 12, 1978, abandoned. This application Nov. 2, 1979, Ser. No. 90,630
Int. Cl.³ G01R *31/12*
U.S. Cl. 204—1 T **4 Claims**

1. A method which comprises:
(a) forming a layer of platinum black by electrolysis on the surface of a tantalum or tantalum base alloy electrode;
(b) heating said electrode in an inert atmosphere at a temper-

ature in the range of about 1050° to 1150° C. for about 30 minutes to 60 minutes, and

(c) utilizing said electrode for the detection of faults in the glass lining of an iron or steel vessel by disposing said



electrode in a conductive medium within said vessel, and measuring the current flow between said electrode and the exposed iron or steel surface at a damage area of the glass lining, whereby the composite electrode and exposed iron or steel form a Pt-Fe cell.

4,240,879

METHODS OF MEASURING THE CONCENTRATIONS OF IONS

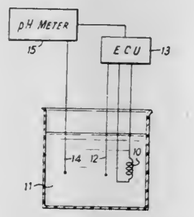
John V. Dobson, Hartlepool, England, assignor to National Research Development Corporation, London, England

Division of Ser. No. 488,244, Jul. 12, 1974. This application Jan. 21, 1977, Ser. No. 760,954

Claims priority, application United Kingdom, Jul. 18, 1973, 34132/73

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—1 T **7 Claims**



1. A method of measuring the concentration of a particular ion in a liquid, comprising the steps of

contacting the said liquid with an ion selective electrode which includes a metal and a hydride of the metal,

monitoring the concentration of hydrogen in the metal while the ion selective electrode is in contact with the said liquid by monitoring a hydrogen concentration-related property of the metal,

supplying hydrogen to the said metal while the said electrode is in contact with the said liquid during the intervals at least partially determined in accordance with said monitoring to maintain the said concentration of hydrogen from a predetermined range such that the electrode potential remains constant when measured in a solution having a constant concentration of the said particular ion, and

measuring the potential between the ion selective electrode and a reference electrode in contact with the liquid.

4,240,880

METHOD AND APPARATUS FOR SELECTIVELY PLATING A MATERIAL

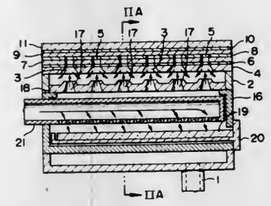
Akira Tsuchibuchi, Sayama, and Takashi Kobayashi, Itsukaichimachi, both of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,639

Claims priority, application Japan, Jul. 25, 1978, 53/90650

Int. Cl.³ C25D *5/02, 17/02*

U.S. Cl. 204—15 **10 Claims**



1. In an apparatus for selectively plating a material which comprises an outer case having an upper lid which contains a through-hole of a shape substantially equal to that of at least one portion of the material to be plated, an elastic mask plate member having an opening of a shape defining the portion to be plated over the upper lid, a movable elastic pressing plate member adapted to press and hold the material to be plated in contact with the mask plate member, an inner case within the outer case, said inner case having an upper wall and a lower wall, at least one nonelectroconductive nozzle plate mounted in the upper wall of the inner case and forming at least one plating solution jetting port to jet a plating solution onto the exposed portion of the material to be plated, each plating solution jetting port having a shape and position corresponding to the portion to be plated, the improvement wherein a replaceable soluble anode of the plating element is located with said inner case, and a plating solution feeding tube is also located within said inner case, said feeding tube including means for jetting the plating solution uniformly toward said replaceable soluble anode.

4,240,881

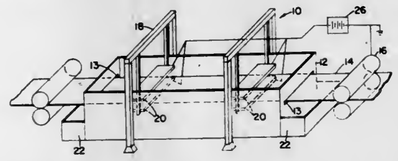
ELECTROPLATING CURRENT CONTROL

Andrew Stanya, North Royalton, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Feb. 2, 1979, Ser. No. 8,594

Int. Cl.³ C25D *7/06, 17/00*

U.S. Cl. 204—28 **26 Claims**



1. An automatic plating current control system for a plating apparatus including means for passing a workpiece through a plating bath and a plurality of power circuits for delivering a plating current to the bath, said automatic control system comprising:

(a) a reference generator for producing a reference signal representing a predetermined plating current; and

(b) closed loop feedback control circuitry coupled between the reference generator and the power circuits for sensing the total current applied by the power and controlling circuits of said current represented by said reference signal and modifying the current output of said power circuits as a function of the difference between said sensed current and the predetermined current;

(c) said reference generator including means for selectively modifying said reference signal as a function of the number of operative power circuits in said system thereby maintaining the predetermined plating current while adjusting the current output of each operative power circuit.

4,240,882

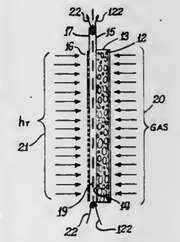
GAS FIXATION SOLAR CELL USING GAS DIFFUSION SEMICONDUCTOR ELECTRODE

Peter G. P. Ang, and Anthony F. Sammells, both of Naperville, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Nov. 8, 1979, Ser. No. 92,484

Int. Cl.³ C25B *3/00;* H01M *6/30;* C25B *1/00*

U.S. Cl. 204—75 **52 Claims**



39. A process for molecular gas photo-reduction comprising the steps:

passing molecular gas to be reduced through a hydrophobic gas diffusion region on one side of a porous matrix diffusion layer of a gas diffusion photosensitive cathode and contacting a p-type semiconductor supported by the other side of said porous matrix diffusion layer;

passing illumination through an opposing light passing anode and a liquid electrolyte in contact with said anode and said cathode to illuminate said p-type semiconductor producing a positive shift in the potential of the semiconductor causing a cathodic photocurrent, said cathodic photocurrent causing reduction of the molecular gas to a fixed state at the semiconductor-electrolyte interface with concomitant oxidation of the electrolyte at the anode;

providing ionic conductance between the cathode and anode by a flowing liquid electrolyte in contact with said cathode and anode, the anolyte and catholyte portions of the electrolyte being chemically separated by a light passing and ionic conducting separator;

providing removal of the formed fixed material from and supply of electroactive electrolyte to said cathode by said flowing electrolyte; and

passing electrons produced by oxidation of said electrolyte at said anode through an external electronic circuit to said cathode for completion of the electronic circuit, said external electronic circuit providing a bias voltage to said cathode from an external power source.

50. The process for molecular gas photoreduction of claim 39 wherein said molecular gas is nitrogen which is reduced to ammonia or hydrazine.

51. The process for molecular gas photoreduction of claim 39 wherein said molecular gas is carbon dioxide which is reduced to methanol or methane.

4,240,883

METHOD FOR ELECTROLYSIS OF AN AQUEOUS ALKALI METAL CHLORIDE SOLUTION

Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa; Kazuo Kishimoto; Takamichi Komabashiri, both of Takasago, and Toshiji Kano, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1979, Ser. No. 104,774

Claims priority, application Japan, Dec. 28, 1978, 53-163591

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **5 Claims**

1. Method for electrolysis of an aqueous alkali metal chloride solution which comprises carrying out electrolysis by maintaining a temperature of an aqueous alkali metal hydroxide liquor in a cathode compartment lower than that of the aqueous alkali metal chloride solution in an anode compartment, using an electrolytic cell which is separated by a cation exchange membrane into the anode compartment and the cathode compartment.

4,240,884

ELECTROLYTIC PRODUCTION OF ALKALI METAL HYPOHALITE

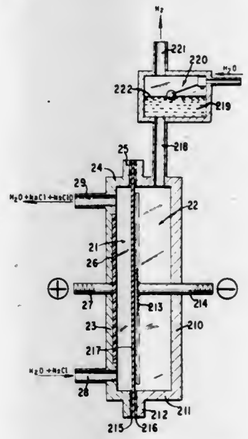
Alberto Pellegri, Luino, Italy, assignor to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Jun. 19, 1979, Ser. No. 50,143

Claims priority, application Italy, Feb. 15, 1979, 20232 A/79

Int. Cl.³ C01B *11/26;* C25B *1/26*

U.S. Cl. 204—95 **3 Claims**

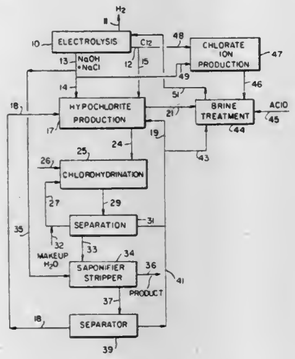


1. An electrolytic process for producing an alkali metal hypohalite solution comprising passing an aqueous alkali metal halide solution through the anode compartment of an electrolysis cell having an anode compartment and a cathode compartment separated by a fluid-impervious anion-permeable membrane with an anode in the anode compartment and a cathode in the cathode compartment, providing an aqueous support catholyte in the cathode compartment, applying an electric potential across the cell sufficient to evolve halogen at the anode and reduce water at the cathode and recovering an effluent solution from the anode compartment containing alkali metal hypohalite.

4,240,885
OXIDATION OF ORGANICS IN AQUEOUS SALT SOLUTIONS

George D. Suciu, Ridgewood, and John E. Paustian, Whippany, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jul. 30, 1979, Ser. No. 61,743
Int. Cl.[3] C25B *1/34*
U.S. Cl. 204—98 24 Claims

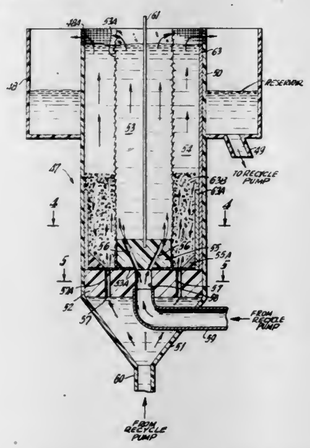


14. The process of claim 7 wherein prior to the treating the aqueous brine cell contains at least 1000 ppm of organics.

4,240,886
ELECTROWINNING USING FLUIDIZED BED APPARATUS

Donald R. Hodges, Denver; William G. Sherwood, Golden, both of Colo., and Cvetko Nikolic, Harvey, La., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 16, 1979, Ser. No. 12,778
Int. Cl.[3] C25C *1/00, 1/08*
U.S. Cl. 204—112 6 Claims



1. A process for extracting metal ions from electrolytes in a fluid bed electrolysis cell which comprises:
establishing an electrolyte bath containing at least one metal value in a fluid bed electrolysis cell comprising,
an anode disposed axially in said cell within an anode chamber surrounded by a porous diaphragm,
a cathode surrounding the porous diaphragm of said anode chamber, said cathode defining an annular cathode chamber relative to said porous diaphragm and containing a fluidizable cathode bed of electrically conductive particulate material isolated from said anode chamber,
maintaining a flow of said electrolyte through said cell by passing said electrolyte axially through said cell beneath said fluidizable cathode bed at a rate to maintain said cathode bed in a fluidized electro-chemically active cathodic state, the volume of the electro-chemically active bed ranging from about 5% to 20% greater than its static volume,
electrolytically activating said cell to effect deposition of at least one metal value on the particulate material of said fluidized bed during which gas bubbles are formed by electrolysis,
causing said flow of electrolyte leaving said cell to collect in a reversoir to permit disengagement and removal of said gas bubbles from said electrolyte,
recycling said electrolyte from said reservoir to said cell and through said anode and cathode chambers,
and continuing said electrolysis for a time sufficient to effect the desired amount of metal deposition from said electrolyte.

4,240,887
PROCESS OF WATER ELECTROLYIS

Dale E. Hall, Monroe, N.Y., assignor to The International Nickel Co., Inc., New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,966
Int. Cl.[3] C25B *1/04, 1/06*
U.S. Cl. 204—129 3 Claims



1. A process of electrolyzing water comprising passing direct current at an anode current density of at least 125 mA/cm^2 through an aqueous solution of at least 4 N alkali hydroxide maintained at a temperature of at least 60° C. between an iron-nickel alloy anode, said alloy consisting of about 37% to about 39% nickel, balance iron and a cathode.

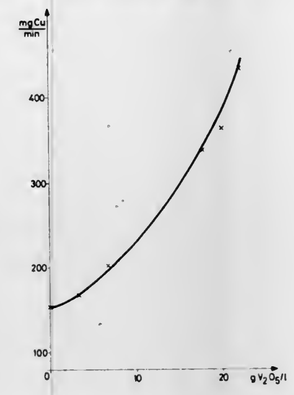
4,240,888
METHOD OF ELECTROCHEMICALLY PROCESSING METALLIC SURFACES OF WORKPIECES

Wolfgang Faul; Leander Fürst, both of Jülich, and Bertel Kastening, Hamburg, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,138
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850605
Int. Cl.[3] C25F *3/02, 3/14*
U.S. Cl. 204—129.75 4 Claims

1. A method of electrochemically processing metallic surfaces of workpieces in an electrolysis cell having an anode and a cathode, comprising the steps of:
providing in said electrolysis cell an electrolyte formed by:
suspending in said electrolyte pulverous particles of one of the group consisting of graphite and activated carbon; and
dissolving in said electrolyte one of the group consisting of a V^{+5} compound and a vanadium-containing compound adapted to form V^{+5} ions on said anode;

charging said pulverous particles on said anode so that said particles conduct an electric charge to said workpiece;
shielding said cathode so that said charged pulverous particles cannot discharge thereon; and

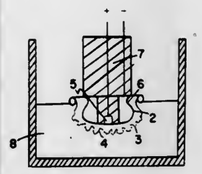


bringing a workpiece into contact with said electrolyte in such a way that said workpiece does not contact said anode and said cathode.

4,240,889
ENZYME ELECTRODE PROVIDED WITH IMMOBILIZED ENZYME MEMBRANE

Kentaro Yoda, Otsu; Rintaro Urakabe, Shiga, and Toshio Tsuchida, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Jan. 24, 1979, Ser. No. 6,070
Claims priority, application Japan, Jan. 28, 1978, 53/8590
Int. Cl.[3] C12Q *1/26*
U.S. Cl. 204—195 B 3 Claims

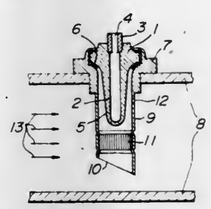


1. In an enzyme electrode useful for a polarographic determination of a slight amount of component in a test solution comprising an anode, a cathode, an immobilized enzyme membrane and an electrolyte, the improvement comprising an immobilized enzyme membrane consisting of a dense skin layer and a porous layer wherein the enzyme is immobilized onto the porous layer of the membrane, said skin layer having a selective hydrogen peroxide permeability, and said immobilized enzyme membrane being arranged so that the skin layer is an extended layer and is faced to the anode and the porous layer immobilized with the enzyme is in the position of contacting with the test solution.

4,240,890
OXYGEN PARTIAL PRESSURE MEASURING DEVICE SUITABLY ADAPTED FOR INTERNAL COMBUSTION ENGINE EXHAUST GASES

Tetsuo Watanabe, Nagoya; Shigetaka Wada, Kuwana, and Shigeo Soejima, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 846,185, Oct. 26, 1977, abandoned.
This application Feb. 12, 1979, Ser. No. 11,765
Claims priority, application Japan, Oct. 29, 1976, 51/129335
Int. Cl.[3] G01N *27/58*
U.S. Cl. 204—195 S 7 Claims



1. In an oxygen partial pressure measuring device for determining oxygen partial pressure in exhaust gases, the device comprising a cylindrical body and an oxygen concentration cell of oxygen ion conductive solid electrolyte therein, said device to be inserted into the exhaust gas stream, the improvement comprising a monolithic structure, which is formed with a multiplicity of substantially parallel channels through which said exhaust gases are burnt and become under the equilibrium condition, accommodated within said cylindrical body and so located therein that exhaust gas to be measured reaches said oxygen concentration cell after it has passed through said monolithic structure.

4,240,891
OXYGEN SENSORS

Michael J. Bannister, Glen Waverley, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jun. 6, 1979, Ser. No. 46,126
Claims priority, application Australia, Jun. 6, 1978, PD4616
Int. Cl.[3] C04B *35/48;* G01N *27/58*
U.S. Cl. 204—195 S 12 Claims

1. In an oxygen sensor comprising a pair of electrodes separated by a composite solid electrolyte material comprising an oxygen ion conductor, the improvement wherein said composite solid electrolyte material consists of 25 to 75% by vol. of oxygen ion conductor and 75 to 25% by vol. of magnesium aluminate spinel.

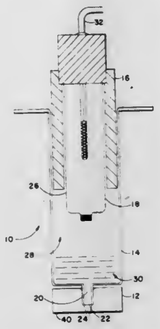
4,240,892
APPARATUS FOR MEASURING INTERNAL METAL STRESS

Olen L. Riggs, Jr., Bethany, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 935,549, Aug. 21, 1978. This application Jun. 13, 1979, Ser. No. 48,223
Int. Cl.[3] G01N *27/02*
U.S. Cl. 204—195 F 3 Claims

1. An apparatus for measuring internal stress in metals by surface testing comprising:
a half-cell assembly comprising
(a) a body having a passageway therethrough,
(b) a compressible mask having a passageway therethrough positionally disposed and mounted upon one end of the body surrounding the passageway therethrough, and being in communicating alignment,
(c) a reference electrode half-cell,
(d) a wiping collar having a passageway therethrough

positionally disposed and mounted about the reference electrode half-cell and at least partially insertable within the open end of the passageway through the body opposite the end whereon the compressible mask is positioned such that said wiping collar and reference elec-



trode are capable of axial movement within said passageway to compress a solution contained in said passageway, and

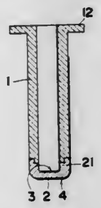
(e) a saturated electrolyte solution contained in the passageway within the body.

4,240,893

DETECTION ELEMENT FOR DETERMINING OXYGEN CONTENT AND DETECTOR FOR DETERMINING OXYGEN CONTENT USING THE SAME

Yoshiteru Hamano, Kyoto, Japan, assignor to Kyoto Ceramic Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 26, 1978, Ser. No. 972,895
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—195 S **8 Claims**



1. A detection element for determining an oxygen content in an environment subjected to rapid temperature changes, such as are encountered in the testing of exhaust gases from an internal combustion engine, comprising:

a ceramic tubular body having an open end with a stepped surface formed on the outer circumferential edge thereof;

an ion-conductive ceramic closing member having high thermal shock resistance fixed to said open end of the tubular body, wherein said closing member is substantially bowl-like in shape and fits over the end of the tubular body in engagement with the stepped surface, said closing member being glass sealed to the tubular body, whereby when the detection element is exposed to a sharp thermal gradient the expansion of the closing member will exert minimal pressure on the tubular body and the glass seal will be protected from heat by the closing member; and

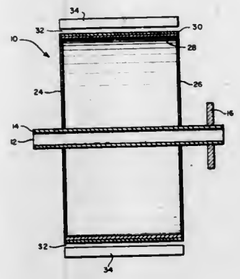
an inner and outside electrode respectively mounted on the inside and outside surface of the closing member.

4,240,894

DRUM FOR ELECTRODEPOSITED COPPER FOIL PRODUCTION

Edward Adler, 266 Arch Rd., Englewood, N.J. 07631

Filed Oct. 5, 1979, Ser. No. 82,410
Int. Cl.³ C25D *1/04, 17/12, 1/20*
U.S. Cl. 204—281 **13 Claims**



1. An improved drum structure of the type having a titanium, zirconium or tantalum stripping surface formed as an outer cylinder of titanium, zirconium or tantalum heat shrunk upon an inner support cylinder, for forming copper foil by electrodeposition onto said stripping surface and subsequent stripping therefrom; comprising:

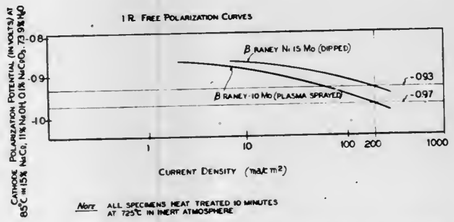
said inner support cylinder being formed with substantially at least the same elastic properties as said outer cylinder and with a substantially higher electrical conductivity and a substantially higher coefficient of thermal expansion than said outer cylinder; said inner cylinder having an outer surface provided with alternating raised portions whereby said raised portions are in intimate contact with said outer cylinder.

4,240,895

RANEY ALLOY COATED CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 29, 1979, Ser. No. 25,153
Int. Cl.³ C25B *11/06*
U.S. Cl. 204—290 R **3 Claims**



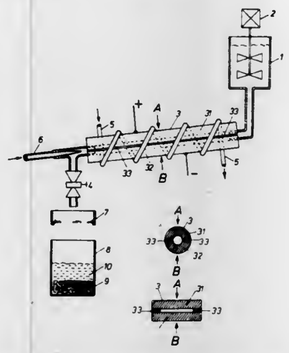
1. An improved low overvoltage electrode for use as a hydrogen evolution cathode in an electrolytic cell, the electrode being of the type that has a Raney metal surface layer in electrical contact with a conductive metal core, wherein the improvement comprises: said Raney metal surface layer is predominantly derived from adherent $Ni_xMo_{1-x}Al_3$ crystalline precursory surface layer structure, where x is no more than 0.95.

4,240,896

COLOR-TELEVISION SCREEN-COATING ROOM

Uwe Viohl, Aichwald, and Rolf Zondler, Stuttgart-Neugereut, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 901,369, May 1, 1978, Pat. No. 4,159,931.
This application Mar. 23, 1979, Ser. No. 23,230
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720668
Int. Cl.³ B03C *5/00*
U.S. Cl. 204—299 R **2 Claims**



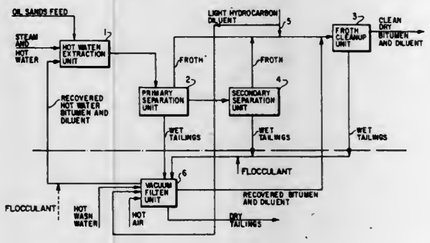
1. An arrangement for separating a red rare-earth phosphor of a color television picture tube from sediment in the drain channels of a screen-coating room including electrolysis means comprising a longitudinally divided graphite tube having tube halves and material between said halves, said tube halves serving as electrodes and said material disposed in a horizontal plane.

4,240,897

OIL SANDS HOT WATER EXTRACTION PROCESS

Thomas P. Clarke, 211 14810 51 Ave., Edmonton, Alberta, Canada (T6H 5G5)

Filed Aug. 6, 1979, Ser. No. 64,313
Claims priority, application Canada, Jun. 6, 1975, 279952
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **3 Claims**



1. An improvement in a hot water extraction process for removing bitument from oil sands, the process using a primary separating unit, a secondary separating unit and a froth clean-up unit, the improvement consisting of:

a. passing first wet tailings from the primary separating unit into a vacuum filter segment having a filter medium;

b. elutriating the first wet tailings in the filter segment with hot water;

c. decanting a portion of solid free liquid from the main body in the filter segment above the filter medium, and returning the decanted portion to the primary separating unit;

d. vacuum filtering the main body of first wet tailings through the filter medium to recover bitument and hot water and form a tailings filter cake above the filter medium;

e. passing second wet tailings from the secondary separation unit and froth clean-up unit onto the filter cake;

f. elutriating the second wet tailings in the filter segment with hot water;

g. decanting a portion of solid free liquid from the main body of second wet tailings in the filter segment above the filter cake and returning the decanted portion to the primary separating unit;

h. vacuum filtering the main body of second wet tailings through the filter cake and the filter medium to recover bitumen, hot water and diluent;

i. passing hot solvent diluent through the filter cake to extract bitumen from the cake;

j. passing hot water through the filter cake to recover more bitumen and diluent which was retained therein in step i;

k. subjecting the filter cake to vacuum to reduce its moisture content;

l. rotating the filter segment and discharging the filter cake for transportation of conventional materials handling equipment to a waste dumping site; and

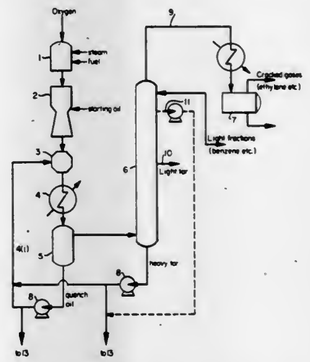
m. washing and drying the filter medium and rotating the filter segment to its original position.

4,240,898

PROCESS FOR PRODUCING HIGH QUALITY PITCH

Shimpei Gomi, Tokyo, Japan, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 12, 1978, Ser. No. 968,771
Int. Cl.² C10G *9/00, 9/14*
U.S. Cl. 208—40 **5 Claims**



1. A process for producing various pitches of high quality, which comprises the steps of: (a) adiabatically thermally cracking a starting oil in an ACR thermal cracking process at a temperature between 700° C. and 1000° C. to produce gases containing ethylene, propylene, and the like and a tar pitch having a pitch content controlled within the range of between 20 and 80 wt%; (b) heat-treating said controlled tar pitch in a heater at a temperature between about 450° C. and about 550° C. under a pressure between about 50 and 150 kg/cm²(G) for about 1 to 15 minutes; and (c) subsequently treating it in a soaker at a temperature between about 350° and about 450° C. under a pressure between about 0.5 and about 10 kg/cm²(G) for about 15 minutes to 10 hours.

4,240,899
SULFUR TRANSFER PROCESS IN CATALYTIC CRACKING

Elroy M. Gladrow; William L. Schuette, both of Baton Rouge, and Terry A. Reid, Slaughter, all of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 973,000, Dec. 26, 1978. This application Nov. 5, 1979, Ser. No. 91,153
Int. Cl.³ C10G *11/05, 11/18*
U.S. Cl. 208—120 **15 Claims**

1. In a process for cracking a sulfur-containing hydrocarbon feed in a cracking zone at cracking conditions by contact with a particulate cracking catalyst to produce C_3^+ product liquids and gases, flue gas being formed and coke and sulfur deposited on said catalyst during cracking, the catalyst is transferred to a catalyst regeneration zone wherein it is contacted with an oxygen-containing gas and the coke and sulfur deposits gasified and removed from the catalyst by burning, and the coke-depleted catalyst is recycled to said cracking zone for contact with additional fresh feed hydrocarbon,

the improvement comprising,

contacting the sulfur-containing hydrocarbon feed in the cracking zone with a catalyst composition comprising an admixture of composite particles, a major component particle in concentration of greater than 50 percent, based on the total weight of the catalyst, constituted of a Group VIII noble metal composited on an aluminosilicate zeolite-containing refractory inorganic oxide support in concentration ranging from about 1 part to about 50 parts, per million parts by weight of total catalyst, for providing principally cracking and combustion promoting functions, and a minor component particle present in the admixture in concentration of less than 50 percent, based on the total weight of the catalyst, constituted of a Group II-A metal composited with a refractory inorganic oxide support in concentration ranging from about 1 percent to about 50 percent, based on the weight of the minor component particles, to crack said feed and promote combustion reactions, and then

transferring the catalyst composition to the regeneration zone whereby sulfur is fixed on the minor component particles, sulfur dioxide is converted to sulfur trioxide and formed into a Group II-A metal sulfate thus suppressing the sulfur oxides emission which normally occurs with release of the regeneration zone flue gas, and then,

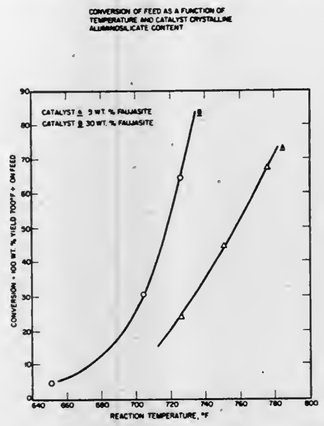
recycling the catalyst composition to the reaction zone, whereby the Group II-A metal sulfate is reacted to form from said sulfate principally hydrogen sulfide which is released with the flue gases from the reaction zone.

4,240,900
PROCESS FOR THE HYDROGENATION OF OLEFINS AND AROMATIC COMPOUNDS

John B. Gilbert, Sarnia, and H. Clarke Henry, Dartmouth, both of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 962,979, Nov. 22, 1978, abandoned, which is a continuation of Ser. No. 501,163, Aug. 28, 1974, abandoned, which is a continuation-in-part of Ser. No. 331,800, Feb. 12, 1973, abandoned. This application May 18, 1979, Ser. No. 40,226
Int. Cl.³ C10G *45/54*
U.S. Cl. 208—143 **20 Claims**

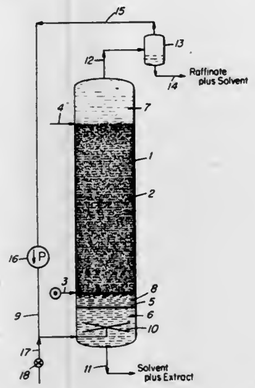
1. A process for hydrogenating the olefin and aromatic compounds present in hydrocarbon feedstocks containing less than 100 ppm of nitrogen as nitrogen-containing organic compounds which comprises contacting the feedstock with hydrogen at hydrogenating conditions, including a temperature no higher than about 720° F., in the presence of a catalyst, the catalyst comprising a mixture of (1) an amorphous base component, (2) a crystalline aluminosilicate component comprising from 5–70 wt.% of the total catalyst and having a silica/alumina mole ratio of at least 2.5 and an alkali metal content of less than about 2.0 wt.% as alkali oxide, based on the total aluminosilicate component, and (3) a hydrogenation component, wherein said catalyst is pretreated with a hydrocarbon stream containing at least 100 ppm of nitrogen as nitrogen-containing organic compounds for a time sufficient to suppress cracking activity of said catalyst before same is used to hydrogenate the low nitrogen compound content feed stock.



4,240,901
PROCESS FOR REFINING HYDROCARBON OILS

Costandi A. Audeh, Princeton, N.J., and Tsoung-yuan Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,834
Int. Cl.³ C10G *21/00*
U.S. Cl. 208—324 **6 Claims**

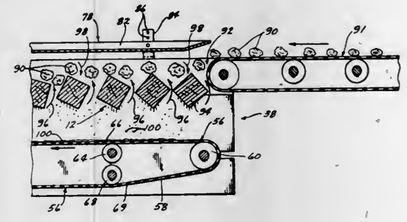


1. In a continuous solvent extraction process for removing undesirable components from a hydrocarbon oil, which process comprises introducing an asphalt-free hydrocarbon oil into the lower end of a contact zone contained in a vessel while introducing a selective solvent into the upper end of said contact zone, contacting the raw hydrocarbon oil and solvent in said contact zone at about atmospheric pressure and at a temperature at least about 150° F. but below the boiling point of said solvent thereby forming a raffinate plus solvent phase and a solvent plus extract phase, separating said phases in a settling zone within said vessel, upwardly flowing and recovering said raffinate plus solvent phase from said vessel, and downwardly flowiing and recovering said solvent plus extract phase from said vessel; the improvement, whereby improving the efficiency of said process, which comprises upwardly flowing through said contact zone an inert gas saturated with said solvent, recovering said saturated inert gas and recycling it to said contact zone.

4,240,902
APPARATUS FOR REMOVING FOREIGN MATTER FROM COTTON

John H. Agee, R.R. 2, Woodcliff, Fremont, Nebr. 68025, and Richard W. Norris, Jr., Star Rt. C, Box 398, Hobbs, N. Mex. 88240

Filed Nov. 16, 1978, Ser. No. 961,040
Int. Cl.³ B07B *1/15*
U.S. Cl. 209—241 **13 Claims**



1. In combination with a cotton gin having an intake opening for receiving cotton therein and a conveyor for supplying cotton thereto, the improvement comprising an apparatus for removing foreign matter from the cotton, said apparatus being interposed between said intake opening and conveyor and comprising,

an elongated frame means having one end portion disposed in communication with said conveyor for receiving cotton therefrom and an opposite end portion disposed in communication with said intake opening for delivering cotton thereto,

a plurality of rollers extended transversely of said frame means,

means for rotatably supporting said rollers in side-by-side closely spaced relation on said frame means whereby said rollers cooperatively define a cotton supporting conveyor surface,

means for rotating said rollers in unison whereby cotton discharged from said conveyor means onto said one end portion of the frame means is conveyed on said rollers to the opposite end portion of the frame means toward said intake opening,

said rollers having a plurality of protrusions thereon whereby said cotton is generally vertically shaken in response to rotation of said rollers, and

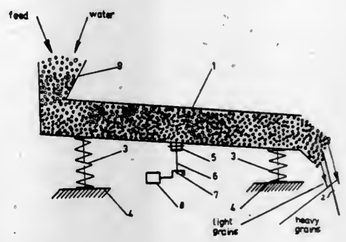
an elongated plate means disposed generally parallel to and in vertically spaced relation above said rollers at a position for rebounding cotton thrown upwardly by said rollers back to said rollers.

4,240,903
METHOD OF REVERSE STRATIFICATION

Stoycho M. Stoev; Shtilyana D. Djendova; Metodi S. Metodiev, and Kalinka I. Kresteva, all of Sofia, Bulgaria, assignors to Vish Minno Geoloshki Institute, Sofia, Bulgaria

Continuation-in-part of Ser. No. 799,783, May 23, 1977, abandoned. This application Jul. 21, 1978, Ser. No. 926,666
Claims priority, application Bulgaria, May 21, 1976, 33263
Int. Cl.³ B03B *5/48*
U.S. Cl. 209—437 **6 Claims**

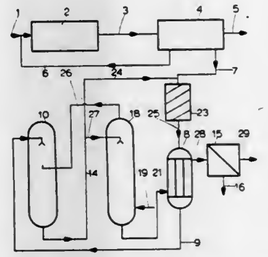
1. A method of reverse stratification of solid particulate material containing lighter and heavier particles, which comprises forming a solid material-water mixture wherein the water is present in an amount which is necessary only to coat the particles, passing said mixture along the bottom of an inclined container from the entrance end to the exit end thereof, the bottom of the container lying in one plane, and subjecting the said mixture as it passes through the container to linear vertical vibration, whereby the heavier particles rise in said mixture and the lighter particles sink in said mixture, and discharging in discrete layers along separate paths all of the stratified material from the exit end of the container, the weight of the solid material relative to the weight of the water lies in the range of 1:0.2 to 1:0.5.



4,240,904
PROCESS FOR BIOLOGICAL PURIFICATION OF WASTE WATER

Bernardus H. N. Dassen, Kerkrade, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Division of Ser. No. 917,359, Jun. 20, 1978, Pat. No. 4,190,528. This application Jul. 3, 1979, Ser. No. 54,434
Claims priority, application Netherlands, Jun. 27, 1977, 7707081
The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.
Int. Cl.³ C02F *11/14*
U.S. Cl. 210—609 **8 Claims**

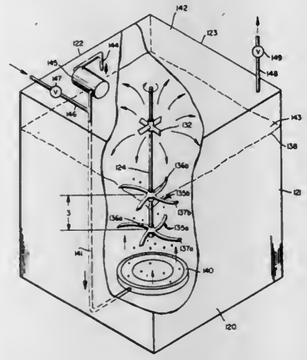


1. Process for biological purification of waste water, in which a suspension of the activated sludge formed during the purification is hydrolyzed in a basic medium and at an elevated temperature, said process being conducted by giving the suspension a pH of between about 8 and about 11 and carrying out the hydrolysis in the presence of a volatile base selected from the group consisting of ammonia and ammonium carbonate at a temperature of between about 90° C. and about 300° C., to obtain a hydrolysate containing at least one of naturally occurring amino acids or oligopeptides, desorbing at least a portion of the hydrolyzed sludge suspension to expel said volatile base, returning said volatile base to adjust said pH, and separating said hydrolysate from said suspension.

4,240,905
HIGH SOLIDS MIXTURE AERATION METHOD

Carl Scaccia, Depew, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,296
Int. Cl.³ C02F 3/20
U.S. Cl. 210—629 8 Claims



1. A method for continuously aerating a high solids concentration pseudoplastic liquid-solid mixture having a total solids concentration of at least 2.5 weight % comprising the steps of:

(a) providing a liquid-solid mixture aeration enclosure having an equivalent height H to equivalent diameter D ratio H/D between 0.5 and 5.0;

(b) providing within said enclosure:

(i) at least one vertical rotatable shaft having at least two bubble shearing means connected thereto each with at least two symmetrically disposed outwardly extending arms forming a bubble shear assembly having a maximum equivalent arm length r;

(ii) each bubble shearing means with an equivalent arm frontal width W such that W is at a valve which avoids an appreciable amount of pumping of said liquid-solids mixture by said shearing means and the W/r ratio is less than 0.1;

(iii) having a system maximum equivalent arm length R, such that the system maximum equivalent arm length R is at least 25% of the enclosure equivalent diameter D, and

(iv) said bubble shearing means being vertically spaced from each other such that the ratio of the arm frontal width W to shearing means vertical spacing S is between 0.005 and 0.04;

(c) introducing said liquid-solid mixture to said enclosure;

(d) upwardly injecting aeration gas bubbles at the lower end of said enclosure at a multiplicity of radial locations with the radius of the outermost location at least 40% of the maximum equivalent arm length r such that said gas bubbles freely rise into the liquid-solid mixture and pass through a substantial fraction of the area swept by said bubble shearing means;

(e) rotating the vertical shaft so as to provide a constant level of turbulence intensity at the level of each bubble shearing means while maintaining the shaft power density below 1.5 SHP/1000 U.S. gallon capacity of said enclosure;

(f) repeatedly shearing the freely rising gas bubbles by the rotating arms into minute gas bubbles; and

(g) continuing at least the gas bubble injection (d) and rotating (e) with minimum pumping of said liquid-solid mixture within said enclosure and such that the mixture retention time is at least 15 minutes.

4,240,906
LIQUID MEDIA CLARIFIER

Ellena L. Edmondson, 2034 Vallette Dr., Apt. 9, St. Louis, Mo. 63136

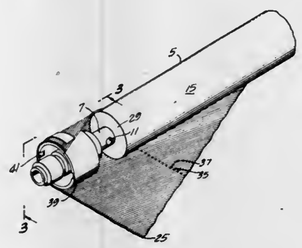
Filed Sep. 28, 1979, Ser. No. 79,587
Int. Cl.³ C02F 3/06
U.S. Cl. 210—617 6 Claims

1. A composition of matter useful to enhance the clarity of liquid media, for example, in an aquarium for containing living aquatic specimens consisting essentially of at least about 50% by volume of vermiculite particles capable of providing improved propagation of aerobic bacteria at the conditions present in said aquarium, said bacteria acting to convert waste products from said aquatic specimens, and at least about 5% by volume of particles of molecular sieves capable of removing components from said liquid media which can impart an undesirable color and/or odor to said liquid media and from about 0.1 to about 10% by volume of sodium chloride particles.

4,240,907
DIALYZER AND METHOD OF DIALYSIS

Donald J. Bentley, Newport Beach, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 813,455, Jul. 7, 1977, which is a continuation-in-part of Ser. No. 708,074, Jul. 23, 1976, abandoned. This application Jan. 18, 1979, Ser. No. 4,486
Int. Cl.³ B01D 31/00, 13/00
U.S. Cl. 210—646 4 Claims



1. A method of waste containing blood flow dialysis comprising:

tangentially admitting blood into a dialyzer blood inlet chamber;

passing said blood from said blood inlet chamber into and through a plurality of similarly spirally oriented semipermeable tubules packed between the dialyzer housing and a central dialyzer core;

passing blood wastes through the walls of said tubules into said dialysate;

passing the treated blood from said tubules into a dialyzer blood outlet chamber;

longitudinally restraining said tubules between said dialyzer blood inlet chamber and said blood outlet chamber;

tangentially removing said treated blood from a dialyzer blood outlet chamber;

radially distributing a fresh dialysate about the exterior of said tubules;

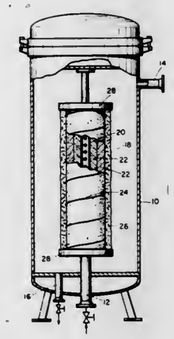
passing in a generally spirally manner said dialysate along the exterior of said tubules; and

radially removing said dialysate and blood wastes from said dialyzer.

4,240,908
COATED METAL FIBER COALESCING CELL

Robert J. Swain, Tulsa, and William D. Rutz, Sapulpa, both of Okla., assignors to Mapco, Inc., Tulsa, Okla.

Continuation of Ser. No. 708,599, Jul. 26, 1976, abandoned. This application Aug. 5, 1977, Ser. No. 822,363
Int. Cl.³ B01D 17/02, 29/32
U.S. Cl. 252—325 11 Claims



1. A method of separating oil and water dispersed in an emulsion comprising the steps of:

coating a mat of metal fibers with a layer of oleophilic material selected from a class consisting of vinyl, epoxy, acrylic, polyprophylene, polyethylene, polyvinyl chloride, Teflon and phenolic resin;

flowing the emulsion through a plurality of layers of the plastic covered mat of metal fibers in a water environment, whereby oil is coalesced and floats towards the top of the water environment; and

withdrawing the coalesced oil from the upper portion of the water environment.

5. A cell for coalescing oil droplets dispersed in a water emulsion, comprising:

an elongated perforated tube core into which the emulsion is injected;

a plurality of layers of a mat of metal fibers wound about and contiguous with said core through which the emulsion is forced to pass, the mat being formed of fibrous metal coated with a layer of oleophilic material selected from the class consisting of vinyl, epoxy, acrylic, polypropylene, polyethylene, polyvinyl, chloride, Teflon and phenolic resin, the plurality of layers of the coated metal mat providing a multi-layer cylindrical configuration; and

impervious end caps affixed to the ends of the cylindrically formed coated metal mat wound about the perforated tube, one of the end caps having an opening communicating with the interior of said center tube.

4,240,909
BORANE REDUCING RESINS FOR REMOVAL OF METAL IONS

Larry Manziek, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

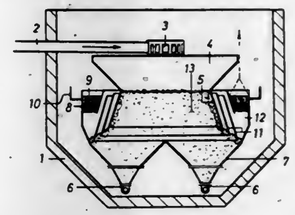
Division of Ser. No. 749,560, Dec. 10, 1976. This application Mar. 13, 1978, Ser. No. 886,221
Int. Cl.³ B01D 15/00; C02F 1/70
U.S. Cl. 210—688 10 Claims

1. A process for the removal of mercury, methyl mercury, antimony, arsenic, bismuth, silver, gold, palladium, platinum, rhodium, and iridium ions from aqueous and non-aqueous media which comprises contacting said media with a nonionic borane reducing resin which comprises a solid, cross-linked copolymer containing a plurality of amine- or phosphine-borane adduct functional groups, reducing the ions in solution by electron transfer and precipitating the reduced metals on and/or into the copolymer resin.

4,240,910
METHOD AND APPARATUS FOR CLARIFYING COKE QUENCHING WATER

Josef Stratmann; Manfred Strobel; Klaus Mrongowius, all of Recklinghausen; Franz Gödde, Stolberg-Venwegen, and Wolfgang Schrank, Aldenhoven, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,464
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850148
Int. Cl.³ B01D 35/00, 37/04
U.S. Cl. 210—769 10 Claims

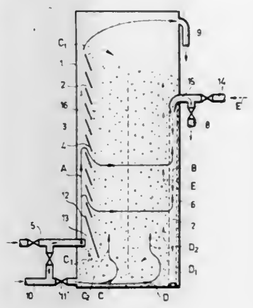


1. A method of clarifying coke quenching water where the fine portions of the solids suspended and carried along in the water are removed from the water by filtration and the clarified water is returned in an operational cycle, comprising, depositing the quenching water into the filter shaft so that the substances removed from the water themselves form a filter bed which accumulates in the shaft, continuing to pass the quenching water through the filter bed from the top to the bottom so that the solids accumulate at the top in the bed and the water is preclarified, subsequently refiltering the preclarified water in a trough basin so that it rises from the bottom to the top, directing the refiltered water into a discharge, breaking the filter bed down on its underside to remove a portion of the filter bed to substantially the same extent as is being built up on the top surface by the solids arriving with the water.

4,240,911
TOWER FILTERS WITH REVERSED WATER-JET FILTER REGENERATION

László Demeter, and Akos Demeter, both of Budapest, Hungary, assignors to Nikex Nehézipari Külkereskedelmi Vállalat, Budapest, Hungary

Filed Feb. 28, 1979, Ser. No. 16,309
Int. Cl.³ B01D 23/16, 23/24
U.S. Cl. 210—794 6 Claims



1. A process for filtering liquids flowing horizontally

through a sand filter column in a tower filter tank having a flat collecting space comprising, causing the liquid to be filtered to flow under pressure to a vertical column of a sand filter material through an inlet pipe that guides the liquid flow from the bottom of the column upward to and through vertically situated distributing gaps which guide the liquid in a horizontal direction from the front to the back of the tower through the filter material and a diametrical perforated wall into holes in a vertical collecting pipe through which the liquid flows upward to an outlet pipe on the back wall of the tower, then regenerating the filter material in the vicinity of the collecting pipe and cleaning the inside of the collecting pipe by interrupting the flow of liquid to be filtered and reversing the flow of liquid by causing wash liquid to flow under pressure through an inlet pipe at the rate of about 5–5 m/sec. to the filter material through holes in the vertical collecting pipe in a downward direction, thereby slurrying the sand filter material in the vicinity of the collecting pipe and causing grains thereof to flow upwards whereby the collecting pipe is cleared of deposited impurities and the grains of sand filter material thus slurried are washed free from impurities which are removed in the wash liquid which flows to an overflow outlet at the top of the column; whereby at the same time the remaining sand filter material in the tower is regenerated by causing the wash liquid to flow under pressure through an inlet pipe to the bottom portion of the column and cause the sand filter material to be loosened and slurried and separated from impurities which are carried by the flowing liquid upward to the overflow outlet at the top of the tower.

4. Apparatus for filtering liquids to remove impurities therefrom comprising, in combination,

a vertical tower filter tank with a flat bottom and a flat collecting space;

said tower having therein a column of filter particles separated into at least two sections by a vertical perforated wall with holes larger than the grains of the filter particles;

distributing gaps in the front section of said column comprised of non-overlapping horizontal louvered panels situated vertically with respect to each other, which gaps direct the liquid flow horizontally;

inlet means which direct the liquid under pressure to be filtered to the distributing gaps in the column, said inlet means having a means for interrupting the flow of liquid to be filtered;

at least one vertical collecting pipe with holes for receiving the horizontally flowing liquid;

outlet means attached to a side of the tower near the top of the column for receiving the filtered liquid from the collecting pipe;

overflow means at the top portion of the sides of the tower;

means with a speed accelerating throat attached to the side of the tower near the outlet means for directing wash liquid under pressure into the collecting pipe in a flow direction opposite the flow of the filtered liquid; and

means for conducting wash water into the bottom of the filter column.

4,240,912

IMMERSION DIALYZER

Albert Stumpf, Pocking, and Jan Strejcek, Iffeldorf, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

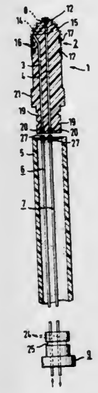
Continuation of Ser. No. 845,516, Oct. 26, 1977, abandoned. This application Apr. 25, 1979, Ser. No. 33,363

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1976, 2650730

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—321.2 **15 Claims**

1. An immersion dialyzer, comprising: an elongated holder tube having a central longitudinal axis and including therein at least one inlet pipe, at least one return pipe and closure means at one end of the tube; and a dialysis head comprising a dome-shaped working surface extending symmetrically about said central longitudinal axis and having a spiral groove therein, at least one inlet canal and at least one return canal, wherein the inlet canal and return canal terminate at different locations along the spiral groove in the working surface of the dialysis head thereby connecting the canals, a membrane stretchable over the dialysis head to cover the working surface thereof and



means for releasably holding the membrane in said stretched state on the dialysis head; and means for removably mounting the dialysis head on the other end of the holder tube and releasably connecting the inlet canal to the inlet pipe and the return canal to the return pipe.

4,240,913

WASHER AND HYDRO-EXTRACTORS

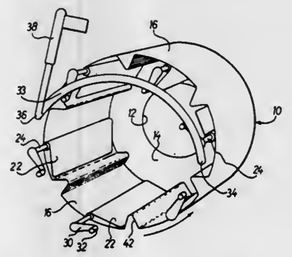
Anthony B. Burke, Huddersfield, England, assignor to Thomas Broadbent & Sons Limited, Huddersfield, England

Filed May 23, 1979, Ser. No. 41,379

Claims priority, application United Kingdom, May 26, 1978, 23343/78

Int. Cl.³ D06F *23/02, 37/06;* **B01D** *33/36*

U.S. Cl. 210—373 **4 Claims**



1. In a washer or hydro-extractor having a cylindrical basket adapted to be rotated about its longitudinal axis for liquid extracting operations on wet material placed therein, the improvement comprising a plurality of rigid flaps within the basket which are selectably pivotable about respective axes extending longitudinally of the basket, the flaps being adapted normally to lie substantially flat against the inner cylindrical surface of the basket, a respective cam follower rigidly coupled to each flap, an arcuate stripper cam pivotably attached at its one end to a fixed point, and means for pivotably displacing the stripper cam into a position in which its concave surface engages the cam followers of those flaps which, at any instant during stripping, lie in what is, at that time, the upper part of the basket whereby the latter flaps are pivoted from their normal positions for stripping caked material from said inner surface of the basket.

4,240,914

SELECTIVE PERMEABLE MEMBRANE AND PROCESS FOR PREPARING THE SAME

Akio Iwama; Yasuo Kihara, and Masao Abe, all of Ibaragi, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaragi, Japan

Filed Nov. 16, 1978, Ser. No. 961,168

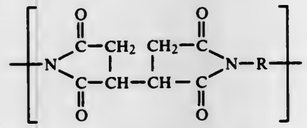
Claims priority, application Japan, Nov. 18, 1977, 52-139383

Int. Cl.³ B01D *31/00;* **B32B** *5/18*

U.S. Cl. 210—500.2 **11 Claims**



1. A selective permeable membrane having a self-supporting property, which comprises a polyimide polymer consisting essentially of a repeating unit of the formula:



wherein R is a divalent organic group wherein the polyimide polymer has an inherent viscosity of about 0.55 to 1.2 measured at 30° C.

4,240,915

DRILLING MUD VISCOSIFIER

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,171

Int. Cl.³ C09K *7/04*

U.S. Cl. 252—8.5 B **11 Claims**

1. In a water-based, clay-free drilling fluid suitable for circulating in a bore hole while drilling the bore hole into subterranean formations including water, a water-loss inhibitor, a weighting agent and a viscosifying agent, the improvement which comprises that said viscosifying agent is an aluminum hydroxide viscosifying agent formed in an aqueous medium by contacting and mixing under a high degree of agitation a water soluble alkali metal aluminate with a water soluble acidic compound selected from the group consisting of an inorganic acid or a salt of a strong acid and a weak base; said aluminate to acidic compound are in a ratio to cause the resultant aqueous medium to have a pH of at least about 8, said viscosifying agent is present in said fluid in from about 0.5 to 10 percent by weight based on the weight of the water present to impart pseudoplastic properties to said fluid and said fluid has a pH of from about 8 to about 10.3.

2. In a water-based, clay-free drilling fluid suitable for circulating in a bore hole while drilling the bore hole into subterranean formations including water, a water-loss inhibitor, a weighting agent and a viscosifying agent, the improvement which comprises that said viscosifying agent is an aluminum hydroxide viscosifying agent formed in an aqueous medium by contacting and mixing under a high degree of agitation a water soluble acidic aluminum compound selected from the group consisting of an aluminum halide, aluminum sulfate and aluminum nitrate with a water soluble base selected from the group consisting of an alkali metal hydroxide, ammonium hydroxide or an alkali metal aluminate; said aluminum compound to base are present in a ratio to cause the resultant aqueous medium to have a pH of at least about 8, said viscosifying agent is present in said fluid in from about 0.5 to 10 percent by weight based on the weight of the water present to impart pseudoplastic properties to said fluid and said fluid has a pH of from about 8 to about 10.3.

4,240,916

POUR POINT DEPRESSANT ADDITIVE FOR FUELS AND LUBRICANTS

Albert Rossi, Warren, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 515,563, Oct. 17, 1974, abandoned. This application Jul. 9, 1976, Ser. No. 704,022

Int. Cl.³ C10M *1/26*

U.S. Cl. 252—56 D **3 Claims**

1. A lubricating oil composition comprising, a major proportion of a mineral lubricating oil, and a pour point depressing amount of about 0.01 to 3.0 wt. % of an oil-soluble pour point depressing copolymer of 1,000 to 30,000 number average molecular weight consisting essentially of about equimolar proportions of maleic anhydride and 1-olefin, said 1-olefin being a mixture comprising from about 25 to 75 mole percent of a straight chain higher olefin and from about 25 to 75 mole percent of a lower olefin, said higher olefin having in the range of 20 to 24 carbon atoms and said lower olefin having 10 to 14 carbon atoms.

4,240,917

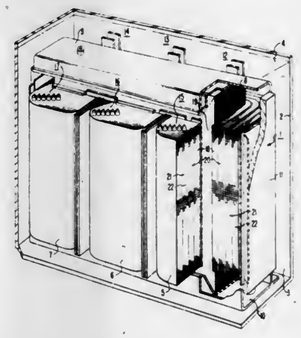
TRANSFORMER USING CATALYTICALLY HYDROGENATED BRIGHT STOCK FLUID

Henry A. Pearce, Jr., Stoneboro, and Edward J. Walsh, Hermitage, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 6, 1979, Ser. No. 27,639

Int. Cl.³ H01B *3/22*

U.S. Cl. 336—94 **6 Claims**



1. A transformer comprising a tank containing a magnetic core and a winding immersed in a fluid which comprises bright stock catalytically hydrogenated to an aromaticity of 5 to 30 percent.

4,240,918

ANTI-SOILING AND ANTI-REDEPOSITION ADJUVANTS AND DETERGENT COMPOSITIONS COMPRISED THEREOF

Alain Lagasse, Creteil, and Bernard Papillon, La Mulatiere, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 2, 1978, Ser. No. 957,058

Claims priority, application France, Nov. 2, 1977, 77 33486

Int. Cl.² C11D *7/54, 3/20, 3/26*

U.S. Cl. 252—95 **36 Claims**

1. An anti-soiling and anti-redeposition adjuvant formulation comprising (i) an anti-soiling and anti-redeposition amount of at least one polymer A, said polymer itself having anti-soiling and anti-redeposition properties, wherein said polymer A is

selected from the group consisting of a hydrophilic polyurethane, a copolyester and mixtures thereof, (ii) at least one solubilizing and dispersing agent B for the said polymer A, and (iii) at least one water repellent C present in an amount sufficient to act as a water repellent for said agent B.

23. A detergent composition comprising a detergent surfactant and the formulation as defined by claim 1.

4,240,919

THIXOTROPIC ABRASIVE LIQUID SCOURING COMPOSITION

Francis E. Chapman, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Nov. 29, 1978, Ser. No. 964,318
Int. Cl.[3] C11D *3/395, 3/14, 3/37, 17/08*
U.S. Cl. 252—95 **15 Claims**

1. A stable, liquid abrasive cleaning composition comprising:

(a) from about 1 to about 60% by weight of a water insoluble particulate abrasive selected from the group consisting of titanium dioxide, silica sand, calcium carbonate, calcium phosphate, zirconium silicate, diatomaceous earth, quartz, pumice, pumicite, whiting, perlite, tripoli, melamine, urea formaldehyde resins, ground rigid polyurethane foam, feldspar, vermiculite, calcium silicate, aluminum silicate and mixtures thereof;

(b) from 0.1 to about 10% by weight of bleach;

(c) from 0 to about 20% by weight of a non-multivalent stearate surfactant;

(d) from 0 to about 10% by weight of a bleach stable electrolyte capable of maintaining the pH of the composition within the range of 10.5 to 14;

(e) from 5 to about 20% by weight of a light density filler selected from powdered polyethylene, powdered polypropylene, powdered polystyrene, powdered polyester resin, powdered phenolic resin, powdered polysulfide, glass microspheres and hollow glass microballons;

(g) from about 0.05 to about 10% by weight of a multivalent stearate soap selected from the group consisting of aluminum monostearate, aluminum distearate, aluminum tristearate, calcium stearate, zinc stearate, magnesium stearate, barium stearate and mixtures thereof; and

(g) water, with the proviso that the composition contain at least some electrolyte or some non-multivalent stearate surfactant and that the composition is free of bodying agents selected from colloidal silica, atapulgites, smectites, diatomaceous earth and mixtures thereof.

4,240,920

DETERGENT BLEACH COMPOSITION AND PROCESS

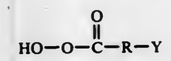
Manuel J. de Luque, Worms, Fed. Rep. of Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 27, 1979, Ser. No. 15,677
Claims priority, application Canada, Feb. 28, 1978, 297842
Int. Cl.[3] C11D *7/38, 7/18, 7/56*
U.S. Cl. 252—99 **29 Claims**

1. A process for removing stains from cotton fabrics which comprises the steps of (i) treating the fabrics with an aqueous solution of detergent bleach composition, and (ii) drying; wherein both steps take place in darkness and wherein said detergent bleach composition consists essentially of the following components, (a) surfactant, (b) peroxy bleach, and (c) porphine bleach;

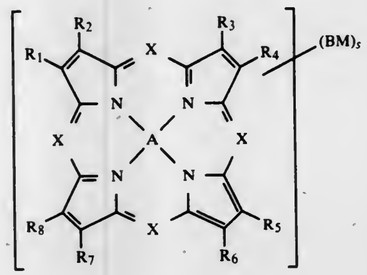
where the surfactant is from 5 to 50 wt. % based on the weight of the composition and is selected from the group consisting of anionic, nonionic, semi-polar, ampholytic and cationic surfactants;

where the peroxy bleach has an available oxygen content of from 0.2 to 5.0 wt. % based on the weight of the composition and is an inorganic peroxyhydrate selected from the group consisting of alkali metal salts of perborates, percarbonates, persulfates, persilicates, perphosphates and perpolyphosphates; urea peroxide; or an organic peroxy acid or anhydride or salt thereof having the general formula



where R is an alkylene group containing from 1 to 20 carbon atoms or a phenylene group and Y is selected from the group consisting of hydrogen, halogen, alkyl and aryl;

where the porphine bleach is from 0.001 to 0.5 wt. % based on the weight of the composition and has the general formula



wherein

each X is (=N—) or (=CY—), and the total number of (=N—) groups is 0, 1, 2, 3 or 4; wherein each Y, independently, is hydrogen or meso substituted alkyl, cycloalkyl, aralkyl, aryl, alkaryl or heteroaryl; wherein each R, independently, is hydrogen or pyrrole substituted alkyl, cycloalkyl, aralkyl, aryl, alkaryl or heteroraryl, or wherein adjacent pairs of R's are joined together with orthoarylene groups to form pyrrole substituted alicyclic or heterocyclic rings; wherein A is 2(H) atoms bonded to diagonally opposite nitrogen atoms, or Zn(II), Cd(II), Mg(II), Ca(II), Al(III), Sc(III), or Sn(IV); wherein B is an anionic, nonionic or cationic solubilizing group substituted into Y or R; wherein M is a counterion to the solubilizing groups; and wherein s is the number of solubilizing groups;

wherein,

when B is cationic, M is an anion and s is from 1 to about 8; when B is nonionic, B is polyethoxylate, M is zero, s is from 1 to about 8, and the number of condensed ethylene oxide molecles per porphine molecule is from about 8 to about 50; when B is anionic and proximate, M is cationic and s is from 3 to about 8; when B is anionic and remote, M is cationic and s is from 2 to about 8; and when B is sulfonate the number of sulfonate groups is no greater than the number of aromatic and heterocyclic substituent groups.

4,240,921

LIQUID CLEANING CONCENTRATE

Thaddeus J. Kaniecki, Pompton Plains, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 902,301, May 3, 1978, Pat. No. 4,147,652, which is a continuation-in-part of Ser. No. 750,036, Dec. 13, 1976, abandoned. This application Mar. 28, 1979, Ser. No. 24,632
Int. Cl.[3] C11D *1/72, 1/722, 1/825, 7/06*
U.S. Cl. 252—156 **3 Claims**

1. A liquid cleaning concentrate consisting essentially of:

(a) from about 10% to about 35% by weight of alkali metal hydroxide;

(b) from about 10% to about 50% by weight of

(i) a mixture of a first nonionic surfactant which is a polyoxypropylene polyoxyethylene condensate having foam depressing tendencies at less than about 40° C. and a second nonionic surfactant which is a capped ethoxylated alcohol, the weight of the first surfactant and the second surfactant are about equal; and

(ii) an alkyl glycoside or a glycidyl ether of an alcohol having 12 to 24 carbon atoms or an alkyl phenol; wherein the weight ratio of (ii) and (i) is about 5:1 to about 10:1; and

(c) the balance being water.

4,240,922

PROCESS AND AMINE-SOLVENT ABSORBENT FOR REMOVING ACIDIC GASES FROM GASEOUS MIXTURES

Guido Sartori, Linden, and David W. Savage, Summit, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 768,420, Feb. 14, 1977, Pat. No. 4,100,257. This application Sep. 22, 1977, Ser. No. 835,811
Int. Cl.[2] C09K *3/00*
U.S. Cl. 252—189 **15 Claims**

1. An amine-solvent liquid composition, comprising:

(a) an amine mixture comprised of at least 50 mol % of a sterically hindered amine and at least about 10 mol % of a tertiary amino alcohol, wherein said sterically hindered amine contains at least one secondary amino group which is part of a ring and is attached to either a secondary or tertiary carbon atom or a primary amino group attached to a tertiary carbon atom, and

(b) a nonreactive solvent for said amine mixture, said solvent being a member selected from the group consisting of sulfones; sulfoxides; glycols, mono- and diethers thereof; 1,3-dioxo compounds characterized by being a 5- to 6-membered heterocyclic ring; aromatic ethers; aromatic hydrocarbons; pryyolidones; piperidones; and mixtures thereof.

4,240,923

PROCESS AND AMINE-SOLVENT ABSORBENT FOR REMOVING ACIDIC GASES FROM GASEOUS MIXTURES

Guido Sartori, Linden, N.J., and Frederic Leder, Corona Del Mar, Calif., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 862,195, Dec. 19, 1977, Pat. No. 4,112,051, and a continuation-in-part of Ser. No. 590,427, Aug. 26, 1975, abandoned. This application May 30, 1978, Ser. No. 911,035
Int. Cl.[2] C09K *3/00*
U.S. Cl. 252—189 **25 Claims**

1. An amine-solvent liquid absorbent composition comprising:

(a) a sterically hindered amine characterized as being an amino alcohol compound containing at least one secondary amino group which is part of a ring and is attached to either a secondary or tertiary carbon atom or a primary amino group attached to a tertiary carbon atom, and

(b) a non-aqueous solvent for said amine, said solvent is selected from the group consisting of sulfones; sulfoxides; glycols, mono- and diethers thereof; 1,3-dioxo compounds characterized by being a 5- to 6-membered heterocyclic ring; aromatic ethers; aromatic hydrocarbons; pyrrolidones; piperidones; and mixtures thereof.

4,240,924

COMPOSITIONS CAPABLE OF FORMING AQUEOUS SYSTEMS HAVING PSEUDOPLASTIC PROPERTIES

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,784
Int. Cl.[3] C09K *7/04;* **B01J** *13/00*
U.S. Cl. 252—317 **10 Claims**

1. A stable, storable, solid particulate composition capable of dispersing in an aqueous system and causing said aqueous system to exhibit a high degree of pseudoplastic properties consisting essentially of a mixture of a solid, particulate alkali metal aluminate having up to about 10 percent by weight of water associated therewith and a solid, particulate, water soluble inorganic halide or nitrate salt of a metal selected from the group consisting of zinc, iron, aluminum or mixtures thereof, the ratio of alkali metal aluminate to metal salt being sufficient to cause an aqueous system containing said mixture to have an alkaline pH of from at least 8 to 11.

4,240,925

INHIBITION OF PITTING CORROSION

William S. Tait, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 2, 1978, Ser. No. 930,280
Int. Cl.[3] C23F *11/16, 11/12, 11/14*
U.S. Cl. 252—389 A **11 Claims**

1. A pitting corrosion inhibiting composition comprising a cathodic corrosion inhibitor and an anodic corrosion inhibitor, said cathodic corrosion inhibitor being a phosphoric acid ester, amide, amide-ester or combination thereof, and said anodic corrosion inhibitor being an organic compound containing at least one member of the class consisting of the carboxylic, sulfonic, sulfate and acidic SH groups.

4,240,926

STERILIZATION INDICATOR

Gerald W. McNeely, Arden, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Feb. 26, 1979, Ser. No. 15,546
Int. Cl.[3] C09K *3/00;* **C01K** *11/16;* **C01N** *21/06, 21/10, 31/22;* **C09D** *11/10*
U.S. Cl. 252—408 **5 Claims**

1. A composition capable of recording steam and dry heat sterilizations and capable of differentiating therebetween, comprising:

(1) thiobarbituric acid and (2) parabanic acid, to form a colored product.

2. A composition capable of recording steam and dry heat sterilizations and capable of differentiating therebetween, comprising:

(1) thiobarbituric acid and (2) a mixture of dimethyl oxalate and urea, to form a colored product.

4,240,927

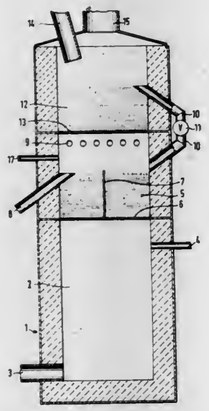
REACTOR FOR THE CONTINUOUS THERMAL TREATMENT OF SOLIDS, PARTICULARLY CARBONACEOUS ADSORBENTS AND PROCESS OF OPERATING THE SAME

Joachim Karweil, Essen; Josef Degel, Hattingen, and Dietrich Rolke, Frankfurt, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,751
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 2813227
Int. Cl.[3] B01J *20/34;* **B01D** *53/08;* **C02F** *1/28;* **C01B** *31/10*
U.S. Cl. 252—411 R **5 Claims**

1. A process for the continuous thermal regeneration of carbonaceous adsorbents in a reactor, said process comprising the steps of admitting into a combustion chamber a volume of air and a quantity of fuel which is greater than required to support combustion, so that the combustion of some of the fuel produces a propellant gas; passing the propellant gas and the excess uncombusted fuel entrained therein upwardly in the reactor for successive travel through a lower fluidizing bed, an intermediate substantially vacant regeneration space, thereafter through an upper fluidizing bed and finally through a top regeneration space from which the propellant gas is then discharged; introducing carbonaceous adsorbent material to be regenerated but not to be combusted into said top regeneration space for entry into said upper fluidizing bed; admitting air into said intermediate regeneration space to cause combustion

therein of the heretofore uncombusted excess fuel entrained in said propellant gas, so as to burn away contaminants which are present in said adsorbent material; passing the overflow of adsorbent material from the upper regeneration space in a path leading to the outside of the reactor and then reverting back into the reactor and connecting with the intermediate regeneration space, for the material to enter into the lower fluidizing bed; and withdrawing the regenerated uncombusted adsorbent material from the intermediate regeneration space to the exterior of the reactor.



2. The process of claim 1 wherein the fuel is gas or oil and is employed in a stoichiometric excess of 10 to 30% relative to the combustion air.

4,240,928

TITANIUM TRICHLORIDE CATALYST AND PROCESS FOR THE PRODUCTION THEREOF

Hiroshi Ueno, Namekawa; Naomi Inaba, Ooi; Tukuo Makishima, Kawagoe; Koh Watanabe, Kunitachi, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 774,964, Mar. 7, 1977, abandoned. This application Jul. 25, 1978, Ser. No. 927,803

Claims priority, application Japan, Mar. 8, 1976, 51-24121; Jul. 25, 1977, 52-88314

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **24 Claims**

1. A process for the production of a titanium trichloride catalyst composition comprising:

reducing titanium tetrachloride with an alkylaluminum halide of the formula R_nAlX_{3-n}, wherein R is an alkyl group having 1 to 18 carbon atoms, X is a halogen atom, and n is a numeral within the range of $1 \leqq n \leqq 3$, said alkylaluminum halide being in a proporation of about 0.5 to about 5 gram atoms as aluminum per 1 gram atom of titanium in said titanium tetrachloride, at a temperature of about −50° C. to about +30° C. to produce a reduced solids product;

contacting said reduced solids product with a dialkyl ether having alkyl groups of 4 to 5 carbon atoms each together with hexachloroethane at an elevated temperature of about 80° C. to about 90° C. for about 3 to about 7 hours, said hexachloroethane being in a proportion of at least greater than about 0.5 mol per 1 gram atom of titanium in the reduced solids product and said dialkyl ether being in a proportion of at least 1 mol per 1 mol of hexachloroethane; and

recovering the resulting treated reduced solids product as a titanium trichloride catalyst.

4,240,929

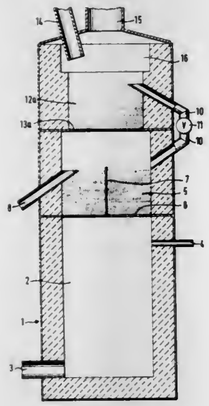
POLYMERIZATION OF OLEFINS

Richard E. Dietz, and Oscar D. Nowlin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 15, 1979, Ser. No. 3,439

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **30 Claims**



1. A catalyst composition obtained by milling a magnesium alkoxide with a milled mixture of a magnesium chloride and a titanium tetrahalide.

3. A catalyst composition in accordance with claim 1 wherein a powdered diluent is added to the composition.

5. A catalyst composition in accordance with claim 3 wherein said powdered diluent is selected from the group consisting of polyarylene sulfide.

4,240,930

CATALYST AND PROCESS FOR PRODUCING METHACRYLIC ACID

Sargis Khoobiar, Kinnelon, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Continuation-in-part of Ser. No. 973,354, Dec. 26, 1978. This application Apr. 6, 1979, Ser. No. 27,632

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—435 **1 Claim**

1. A catalyst composition suitable for the vapor-phase oxidation of methacrolein to produce methacrylic acid consisting essentially of the oxides of molybdenum, copper, phosphorus, antimony and cesium and having the formula $Mo_aCu_bP_cSb_d.Cs_eO_f$ where: a=12; b=0.05-3; c=0.1-5; d=0.1-0.5; e=0-.1-3; and f=value determined by the valence and proportions of the other elements of the formula.

4,240,931

OXIDATION CATALYSTS

Ernest C. Milberger, Solon, and Eunice K. T. Wong, Cleveland, both of Ohio, assignors to Standard Oil Company Ohio, Cleveland, Ohio

Continuation-in-part of Ser. No. 784,003, Apr. 4, 1977, Pat. No. 4,155,920. This application May 1, 1978, Ser. No. 901,888

Int. Cl.³ B01J *27/24, 29/06, 29/16, 23/10*

U.S. Cl. 252—438 **20 Claims**

1. A catalyst composition of the formula

$$A_aE_cMo_eSb_fO_x$$

wherein A is at least one element selected from the group consisting of titanium in combination with at least one element selected from the group consisting of zirconium, niobium and tantalum;

E is a member selected from the group consisting of molybdenum, tungsten, magnesium, aluminum, or nickel; and

wherein

a is a number from 0.01 to 6;

c is a number from 0 to 0.2;

e and f are numbers from 1 to 9;

x is a number which satisfies the valence requirements of the other elements present; and

wherein at least some of the molybdenum in the catalyst is maintained at a valence state below +6; and

wherein said catalyst optionally contains one or more elements selected from the group consisting of lithium, silver, cerium, cadmium, cobalt, arsenic, silicon, zinc, germanium, ruthenium, bismuth, platinum, and uranium.

4,240,932

EXCHANGED MORDENITE CATALYSTS AND PROCESSES FOR PRODUCING THE SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Jan. 18, 1979, Ser. No. 4,304

The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.

Int. Cl.³ B01J *29/18*

U.S. Cl. 252—455 Z **4 Claims**

1. A process of exchanging sodium mordenite containing sodium, expressed as Na_2O, of substantially greater than 2% of the mordenite on a volatile free basis, which comprises heating said mordenite in an acid solution or an acid solution containing NH_4 or polyvalent cations or mixtures of said cations at a temperature of about 250° F. to about 500° F. and removing mordenite from the solution, said mordenite containing sodium, expressed as Na_2O of less than 2% of the exchanged mordenite on a volatile free basis.

2. The process of claim 1 in which the polyvalent cation is a rare earth cation.

4,240,933

Pd/SiO_2 HYDROGENATION CATALYST SUITABLE FOR H_2O_2 MANUFACTURE

Harry B. Copelin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 948,036, Oct. 2, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,208

Int. Cl.² B01J *29/06, 29/12*

U.S. Cl. 252—455 R **16 Claims**

1. A catalyst consisting essentially of amorphous silica particles having deposited thereon about 0.05-5 percent by weight based on the weight of silica of at least one oxide, hydroxide or carbonate of a metal selected from zirconium, thorium, hafnium, cerium, and titanium and about 0.1-10 percent by weight based on the weight of silica of palladium metal; the metal oxide, hydroxide or carbonate being deposited before or simultaneously with the palladium metal in the form of its oxide, hydroxide or carbonate.

5. A process for preparing a supported palladium catalyst comprising (1) mixing a water-soluble palladium salt, amorphous silica particles and at least one water-soluble salt of a metal selected from zirconium, thorium, hafnium, cerium, titanium and aluminum, in an aqueous medium at a pH less than 4, the amount of said metal salt being sufficient to cause at least a major portion of the palladium present in solution to attach to the surface of the amorphous silica particles when the palladium salt is subsequently precipitated as an oxide, hydroxide or carbonate of palladium by the addition of base; and (2) adding a base to said mixture raising the pH of the aqueous medium to above about 4 causing the metal and palladium to deposit onto the silica particles as their hydroxides, oxides or carbonates.

4,240,934

REFORMING CATALYST COMPRISING IRIDIUM, ZIRCONIA, AND ALUMINA

Rodney L. Mieville, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 28, 1978, Ser. No. 946,500

Int. Cl.³ B01J *21/04, 21/06, 23/46*

U.S. Cl. 252—466 PT **4 Claims**

1. A catalyst for the reforming of hydrocarbon streams, which catalyst consists essentially of iridium as a hydrogenation component on a support of zirconia and alumina, said support comprising zirconia in an amount that falls within the range having a lower value that is greater than 3 wt.% and an upper value of about 15 wt.% zirconia or in an amount that is at least 60 wt.% zirconia.

4,240,935

KETENE DIMER PAPER SIZING COMPOSITIONS

David H. Dumas, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 22, 1978, Ser. No. 973,054

Int. Cl.³ C08L *77/06, 1/02*

U.S. Cl. 260—9 **8 Claims**

1. As an improved paper sizing composition, a ketene dimer dispersion consisting essentially of said dimer, an anionic dispersing agent selected from the group consisting of sodium lignin sulfonate, the condensation product of formaldehyde and sodium naphthalene sulfonate and mixtures thereof, a cationic resin which is the reaction product of epichlorohydrin with a polymer selected from the group consisting of (a) an aminopolyamide derived from a dicarboxylic acid and a polyalkylene polyamine having two primary amine groups and at least one secondary or tertiary amine group or (b) a condensate of cyanamide or dicyandiamide with a polyalkylene polyamine having the formula $H_2N(C_nH_{2n}NH)_xH$, wherein n is an integer 2 through 8 and x is an integer 2 or more, and water.

4,240,936

AQUEOUS INSULATIVE COATING COMPOSITIONS CONTAINING KAOLIN AND STAPLE FIBERS

William J. Henning, 220 Forest Ave., Cincinnati, Ohio 45215

Filed May 3, 1979, Ser. No. 35,462

Int. Cl.³ C08L *1/28*

U.S. Cl. 260—17 R **14 Claims**

1. An insulative aqueous coating composition containing film-forming solids consisting essentially of kaolin particles in an amount on the order of about 30% to about 90% by weight, staple fibers and a dispersing agent for said solids in the aqueous composition, said kaolin particles having a diameter less than about 50 microns.

4,240,937

ALLOY FIBERS OF RAYON AND AN ALKALI METAL OR AMMONIUM SALT OF AN AZEOTROPIC COPOLYMER OF POLYACRYLIC ACID AND METHACRYLIC ACID HAVING IMPROVED ABSORBENCY

Thomas C. Allen, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 603,483, Aug. 11, 1975, Pat. No. 4,066,584. This application Jan. 3, 1978, Ser. No. 866,797

Int. Cl.³ C08L *1/02*

U.S. Cl. 260—17.4 CL **18 Claims**

1. A highly absorbent cellulosic fiber having incorporated into the cellulosic structure an alkali metal or ammonium salt of an azotropic copolymer of acrylic acid and methacrylic acid in a weight ratio of from about 10:90 to about 90:10.

4,240,938

WATER-SOLUBLE REACTIVE POLYMER MIXTURE

Kurt Kraft; Gerd Walz, both of Wiesbaden; Thaddäus Wirth, Heidenrod, and Ernst-August Theiling, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,566

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811913; Dec. 12, 1978, 2851962

Int. Cl.³ C08G *85/00;* **C09J** *3/12, 3/14*

U.S. Cl. 260—18 EP **10 Claims**

1. A water-soluble reactive binder, characterised by a combination of at least three of the components

(a) at least one halogen-free polycarboxylic acid compound;

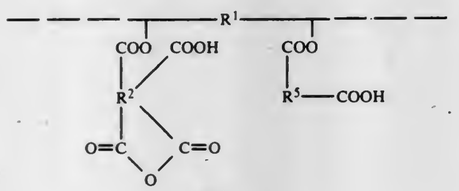
(b) at least on salt-forming substance selected from the group consisting of alkali metal, alkaline earth metal and quaternary ammonium salts, organic bases and ammonia;

(c) at least one component selected from the group consisting of

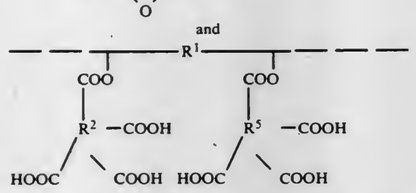
(c1) a polymer containing OH groups; and

(c2) an epoxide compound,

wherein the components (a) to (c2) are present as such or at least partially in chemically bonded form, which binder contains at least one reaction product of one of the formulae



(I)



(Ia)

based on at least three of the components (a) to (c2), wherein

R^1 represents a group derived from at least one component (c1) selected from the group consisting of (α) a polymer containing OH groups, in the form of (α1) polyesters, (α2) polymers, both with an OH number of 20 to 300, (α3) phenolic resins with an OH number of 100 to 800, and (c2) an epoxide compound;

R^2 represents a group derived from an at least tetrabasic carboxylic acid with a COOH group in the o-position relative to the ester group;

R^5 represents a group derived from an at least dibasic carboxylic acid with a COOH group in the o-position relative to the ester group, and R^5 may have the same meaning as R^2;

and the anhydride groups in formulae (I) and (Ia) are present as such or are at least partially replaced by at least one of the groups COOH and ester groups and the COOH groups are present as such or are replaced at least partially by ester groups, and wherein the free COOH groups are present in an amount of from 1 to 100% in the form of a salt of component (b).

4,240,939

WOOD FINISHING COMPOSITION

Sam Kostic, 744 Kilkeel Pl., North Vancouver, British Columbia, Canada (V7N 2X1)

Filed Feb. 21, 1979, Ser. No. 13,017

Int. Cl.³ C08L *93/02;* **C09G** *1/10*

U.S. Cl. 260—22 TN **8 Claims**

1. A wood finishing composition comprising

about three parts of volume of an alcoholic solution of white shellac;

from about one part of about two parts by volume of a solution of an oil modified polyurethane resin; and

about one part by volume of a drying oil.

4,240,940

WATER CLEAN UP AEROSOL PAINT

Ramesh C. Vasishth, Danville, and Robert S. Wang, Concord, both of Calif., assignors to Envirosol Systems International, Ltd., Orinda, Calif.

Filed Feb. 16, 1979, Ser. No. 13,331

Int. Cl.³ B67B *7/00;* **C09D** *3/64, 3/72*

U.S. Cl. 260—22 R **6 Claims**

1. In an aerosol container having propellant therein, an improved paint formulation in said container comprising: about 15–35 weight percent of a water soluble film forming resin, about 15–30 weight percent of a water soluble solvent for said resin, about 25–45 weight percent of a water insoluble solvent for said resin, and not more than about 8 weight percent of water.

4,240,941

COATING COMPOSITIONS

Richard J. Jablonski, and Denis R. Pauze, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 538,080, Jan. 2, 1975, abandoned. This application Jul. 11, 1978, Ser. No. 923,728

Int. Cl.³ C08L *67/00, 75/06*

U.S. Cl. 260—29.2 TN **18 Claims**

1. A coating composition selected from the group consisting of polyester hydantoins, polyester urethanes and mixtures thereof, said composition being reacted with a compound selected from the group consisting of an amine, ammonia and ammonium hydroxide to form a colloid in water.

4,240,942

PROCESS FOR THE PREPARATION OF AQUEOUS DISPERSIONS OR SOLUTIONS OF ISOCYANATE POLYADDITION PRODUCTS

Wolfgang Wenzel, Bergisch-Gladbach; Walter Meckel, Neuss, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,674

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734576

Int. Cl.³ C08J *3/08;* **C08L** *75/04*

U.S. Cl. 260—29.2 TN **14 Claims**

1. A process for the preparation of aqueous dispersions or solutions of isocyanate polyaddition products, characterized in that oligourethanes

(a) which have an average molecular weight of less than about 15,000,

(b) which contain from about 0-120 milliequivalents of chemically fixed ionic groups per 100 g of solid content and/or from about 0-25% by weight, based on the total weight of the oligourethane, of chemically fixed ethylene oxide units $-CH_2-CH_2-O-$ within a polyether chain and/or from about 0–30% by weight, based on the total weight of the oligourethane, of external emulsifiers which are not chemically fixed, the total quantity of the above mentioned hydrophilic groups or external emulsifiers being sufficient to ensure the dispersibility or solubility of the oligourethanes in water, and

(c) which have end groups selected from the group consisting of:

(i) primary or secondary aminic amino groups prepared from the reaction of primary or secondary diamines in which the pKb values for the two amino groups in an aqueous medium at 25° C. differ from each other by a factor of at least about 10^3 with an isocyanate terminated prepolymer;

(ii) oxazolidine end groups which decompose into aminic amino groups upon mixing the oligourethane with water; and

(iii) semicarbazide end groups prepared by reacting hydrazine, hydrazine hydrate or N-C_1–C_4-alkyl substituted hydrazines with an isocyanate terminated prepolymer are reacted in the aqueous phase with a hydrophobic chain lengthening agent which is at least difunctional and which undergoes an addition reaction or condensation reaction with the amino or semicarbazide end groups to effect chain lengthening of the oligourethanes.

4,240,943

TEXTILE FINISHING COMPOSITION

Eiichi Sugawara, Kawaguchi; Takao Endoh, Iwatsuki; Satoshi Shioume, Ageo; Tomio Kuroki, and Kazuhiro Teramae, both of Ohtsu, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo and Toyo Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed Feb. 27, 1978, Ser. No. 881,742

Int. Cl.³ C08L *61/22;* **D06M** *15/54, 15/52*

U.S. Cl. 260—29.4 R **8 Claims**

1. A textile finishing composition which comprises

(i) a water dispersible urethane prepolymer having free or heat-activatable masked terminal isocyanate groups

(ii) a glyoxal-amide adduct or bis (ε-hydroxyethyl) sulfone at a ratio of 80 to 5:20 to 95.

4,240,944

EMULSION COMPOSITION AND METHOD FOR USE IN TREATING GLASS FIBERS

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 12, 1979, Ser. No. 11,454

Int. Cl.³ C08L *23/12*

U.S. Cl. 260—29.6 NR **7 Claims**

1. A size composition for treating glass fibers comprising:

(a) an aqueous emulsion of an isotactic carboxylated polypropylene and amorphous carboxylated polypropylene,

(b) coupling agent,

(c) a film former, and

(d) lubricant.

4,240,945

SOLDER MASK COMPOSITION

Albert Gabrick, 2118 Tree Ridge Cir., Brea, Calif. 92621

Filed Jan. 31, 1979, Ser. No. 8,177

Int. Cl.³ C09D *3/52, 3/66*

U.S. Cl. 260—21 **19 Claims**

1. A composition useful as a solder masking coating which consists essentially of:

(a) a film former comprising:

(1) from 25 to about 40 weight percent of an alkyd resin of a polyester prepolymer extended with from about 25 to about 70 weight percent fatty acid;

(2) from 18 to about 27 weight percent of an alkylated amino resin selected from the class consisting of methylol-melamine and methylol-urea condensates etherified with alkanols of 1 to about 6 carbons;

(3) from 30 to about 45 weight percent Panamint earth having a particle size passing a screen size from 20 to 325 mesh, and weight contents of from 21 to 35 percent silicon, 15 to 28 percent aluminum, 2 to 3 percent calcium, and 1 to 2 percent iron, and a porosity of 45 percent; and

(4) from 2 to about 5 weight percent of a hydrocarbon polymer having a melting point no greater than about 150° C.; and

(b) sufficient organic solvent to provide a viscosity no greater than about 9,000 centipoises.

4,240,946

METHOD OF PREPARING A BITUMINUOUS BINDER AND A CONSTRUCTION MATERIAL CONTAINING THE SAME

Rudolf Hemersam, Vienna, Austria, assignor to Bunzl & Biach Aktiengesellschaft, Vienna, Austria

Continuation-in-part of Ser. No. 612,576, Sep. 11, 1975, abandoned. This application Jan. 16, 1979, Ser. No. 3,884

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—28.5 AS **35 Claims**

1. A method for preparing a bituminous, polyolefin-containing binder for a road construction material containing dispersed solid additives of a predominantly inorganic nature, which comprises mixing and homogenizing molten bitumen and polyethylene in a hot state while melting and dissolving the polyethylene in the bitumen to form a binder mass, the bitumen-polyethylene binder mass being homogenized at a temperature between 260° C. and 310° C. until a significant reduction of the viscosity of the binder mass occurs which exceeds a decrease of the viscosity of said mass attendant upon a mere rise to said temperature of said mass.

4,240,947

CROSS-LINKED ELASTOMERIC POLYESTER LATICIES

John C. Falk, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,562

Int. Cl.³ C08L *67/02, 67/06;* **C08G** *63/76*

U.S. Cl. 260—29.2 E **3 Claims**

1. A process for preparing a cross-linked polyester latex consisting of

A. Preparing a solution comprising from 95 to 80 parts by weight of a water-immiscible organic solvent, from 5 to 20 parts by weight of an aliphatic polyester elastomer and from 0.5 to 5 wt%, based on polyester, of an organic peroxide;

B. Mixing said solution with an equal volume of water containing from 1 to 10 wt%, based on polyester, of a surfactant;

C. Passing said mixture through a homogenizer to form an emulsion;

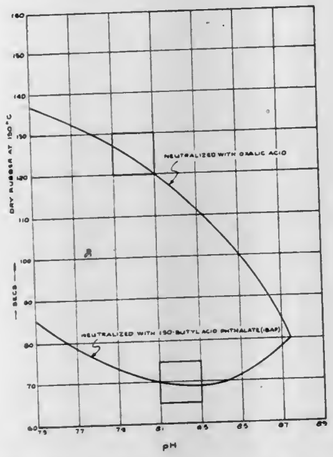
D. Heating said emulsion to remove said solvent; and

E. Further heating said emulsion to cross-link said polyester.

4,240,948
ACCELERATED RESOLE BINDER

Rodney M. Huck, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 30, 1979, Ser. No. 99,048
Int. Cl.[3] C08L 61/10
U.S. Cl. 260—29.3 5 Claims



1. A resole resin composition comprising an aqueous solution of a low resole resin with a number average molecular weight from 150 to 300 and, as curing accelerator therefore, from 0.5 to 10 percent by weight, based on the resin weight of C_1 to C_4 alkyl partial ester of an aromatic polycarboxylic acid.

4,240,949
POLYMERIC COMPOSITIONS AND PROCESS FOR THEIR PRODUCTION

Alfred Ecker, Vienna, Austria, assignor to OMV Aktiengesellschaft, Vienna, Austria

Filed Oct. 16, 1978, Ser. No. 951,588
Claims priority, application Austria, Oct. 21, 1977, 7549/77
Int. Cl.[3] C08K 5/36
U.S. Cl. 260—30.8 R 14 Claims

1. Polymeric compositions of olefinic polymers obtained by radical polymerization or additive reaction, characterized in that they contain 10 to 90 percent by weight of sulfur modified by means of at least one plasticizer and a thiophilic, nitrogen-containing compound as a viscosity regulator.

4,240,950
STABILIZED FILLER SUSPENSIONS IN POLYOLS

Wulf von Bonin, Leverkusen; Peter Vehlewald, Leichlingen, and Hans-Walter Illger, Roesrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 61,715
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834623
Int. Cl.[3] C08K 9/04; C08L 75/04
U.S. Cl. 260—37 N 6 Claims

1. A process for the production of non-disintegrating suspensions of inorganic fillers in polyhydroxyl compounds of the type used for the production of polyurethanes, comprising reacting a suspension of an inorganic filler in a polyhydroxyl compound with from 0.1 to 2%, by weight, of a polyisocyanate, based on the weight of the suspension, at a temperature of from 30° to 200° C.

4,240,951
RHEOLOGICAL CONTROL OF POLYESTER-STYRENE RESIN COMPOSITIONS

William F. Moll, Jr., Summit, and Thomas D. Thompson, III, Flemington, both of N.J., assignors to Yara Engineering Corporation, Elizabeth, N.J.

Filed Dec. 23, 1975, Ser. No. 643,797
Int. Cl.[3] C08K 3/00
U.S. Cl. 260—40 R 9 Claims

1. The method of controlling the rheological properties of polyester-styrene resin compositions comprising the steps of:
(a) reacting dimethyl benzylhydrogenated tallow amine in varying amounts with a smectite in a water system to determine an optimum level of amine on said smectite to provide a desired viscosity in said polyester-styrene resin system and a thixotropic index above about 2.5, without regard to the ion exchange capacity of the smectite,
(b) reacting the amine in the determined optimum with said smectite to provide a desired optimum level of dimethyl benzylhydrogenated tallow amine on said smectite,
(c) recovering the resulting reaction product from the water system, and
(d) adding the recovered reaction product to a polyester-styrene resin mixture to produce a desired level of viscosity.

4,240,952
METHOD OF MAKING CONCRETE FROM FLY ASH

Clarence E. Hulbert, Jr., 928 N. York, Muskogee, Okla. 74401; Liang-Tseng Fan, and Mufit Akinc, both of Manhattan, Kans., assignors to Clarence E. Hulbert, Jr., Muskogee, Okla.

Filed Jan. 15, 1979, Ser. No. 3,589
Int. Cl.[2] C04B 7/14
U.S. Cl. 260—42.13 6 Claims

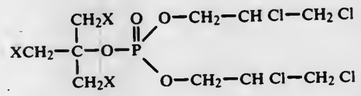
1. A method of making concrete which comprises the steps of mixing together a quantity of a cementitous material which includes fly ash as a major ingredient therein, a quantity of aggregate, a quantity of gypsum equal to about 2% by weight of the fly ash and water to form an initial mix, thereafter adding calcium chloride in an amount equal to about 3% by weight of the fly ash, further mixing and pouring the same to set.

4,240,953
HALOALKYL PHOSPHATES

James A. Albright, Ann Arbor, Mich., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 660,672, Feb. 23, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,477
The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.
Int. Cl.[3] C08K 5/53; C08F 9/09
U.S. Cl. 260—45.7 P 12 Claims

1. A compound of the formula



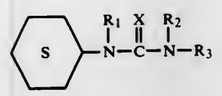
wherein each X is independently selected from the group consisting of chlorine, bromine and hydrogen.

4,240,954
POLYMERS STABILIZED AGAINST DEGRADATION BY ULTRAVIOLET RADIATION

Joseph A. Stretanski, Clinton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

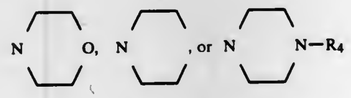
Filed Feb. 26, 1979, Ser. No. 15,552
Int. Cl.[3] C08K 5/16
U.S. Cl. 260—45.75 F 13 Claims

1. A method of stabilizing a polyolefin against degradation by ultraviolet radiation which comprises adding to said polyolefin a stabilizingly effective amount of a compound of the formula (I):



(I)

wherein X represents O or S; R_1 is cyclohexyl; R_2 represents hydrogen, a cycloalkyl radical of 4 to 6 carbon atoms, an alkyl radical of 1 to 18 carbon atoms, an alkenyl radical of 3 to 12 carbon atoms, or a hydroxyalkyl radical of 2 to 12 carbon atoms; R_3 represents the same groups as R_2 with the proviso that it may not be hydrogen, or R_2 and R_3 taken together with the N to which they are attached form



wherein R_4 represents alkyl of 1 to 8 carbon atoms.

4,240,955
OCTADECYLAMMONIUM ALPHA-OCTAMOLYBDATE AND COMPOSITION CONTAINING SAME

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 18, 1979, Ser. No. 49,252
Int. Cl.[3] C07F 11/00
U.S. Cl. 260—45.75 R 4 Claims

1. Octadecylammonium alpha-octamolybdate characterized by major X-ray diffraction peaks at "d" spacings of 17.7 A, 11.9 A and 6.81 A.

2. A smoke retarded composition comprising a vinyl chloride or vinylidene chloride polymer together with a smoke retardant amount of octadecylammonium alpha-octamolybdate characterized by major X-ray diffraction peaks at "d" spacings of 17.7 A, 11.9 A and 6.81 A.

4,240,956
TRI(DIBROMONEOPENTYL) ANTIMONITE FLAME RETARDANTS

Edward D. Weil, Hasting-on-Hudson; Alfred K. Jung, Ridgewood, and Joseph Silberberg, Brooklyn, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 20, 1979, Ser. No. 50,244
Int. Cl.[3] C08K 5/59; C07F 9/90
U.S. Cl. 260—45.75 B 8 Claims

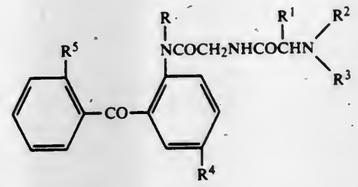
1. A process for preparing solid tri(dibromoneopentyl) antimonite which comprises contacting in a reaction medium; (1) antimony triester, and (2) dibromoneopentyl glycol; wherein the mole ratio of dibromoneopentylene glycol to antimony triester is about 3 to 2; said contact being at a temperature and for a time effective to transesterify the antimony triester.

4,240,957
DIPEPTIDE DERIVATIVES AND THEIR PRODUCTION

Kentaro Hirai, Kyoto; Teruyuki Ishiba, Takatsuki; Kazuyuki Sasakura, Tondabayashi, and Hirohiko Sugimoto, Ikeda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 601,134, Aug. 1, 1975, abandoned. This application Mar. 7, 1977, Ser. No. 775,646
Claims priority, application Japan, Aug. 6, 1974, 49-90565; Aug. 6, 1974, 49-90566
Int. Cl.[3] C07C 103/52
U.S. Cl. 260—112.5 R 19 Claims

1. A member selected from the group consisting of a compound of the formula



wherein R represents methyl, ethyl, isopropyl, butyl, pentyl, cyanomethyl, cyanoethyl, cyanopropyl, cyanobutyl, dimethylaminoethyl, diethylaminoethyl, or diethylaminopropyl; R^1 represents hydrogen, methyl, ethyl, isopropyl, butyl, pentyl, benzyl, phenethyl or phenylpropyl; R^2 represents hydrogen, methyl, ethyl, isopropyl, butyl, pentyl, benzyl, phenethyl, phenylpropyl, glycyl-glycyl, or glycyl; R^3 represents hydrogen, methyl, ethyl, isopropyl, butyl or pentyl; R^4 represents chlorine; and R^5 represents hydrogen, chlorine or fluorine, and an acid addition salt thereof.

4,240,958
PROCESS OF PREPARING SULFURIZED OLEFINS

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,602
Int. Cl.[3] C07G 17/00
U.S. Cl. 260—139 11 Claims

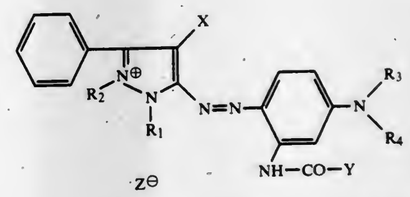
1. A process for preparing a sulfurized olefinic compound comprising reacting a C_2–C_{20} olefin and a sulfur halide in the presence of a catalytic amount of iodine, separating the intermeiate adduct thus produced from the reaction medium and thereafter sulfurizing it with an alkali metal sulfide.

4,240,959
1,2-DIALKYL-3-PHENYL-5-[4-(N-ALKYL OR N,N-DIALKYL)AMINO-2-BENZOYLAMINO-PHENYLAZO]PYRAZOLIUM DYESTUFFS

Michel M. L. Champenois, Le Mesnil Esnard, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Oct. 3, 1978, Ser. No. 948,273
Claims priority, application France, Oct. 21, 1977, 77 31712
Int. Cl.[3] C09B 29/08, 45/22; D06P 3/70
U.S. Cl. 260—147 4 Claims

1. Dyestuff of the formula:



in which R_1 and R_2 represent alkyl containing 1 to 4 carbon

atoms, R_3 represents hydrogen, methyl or ethyl, R_4 represents methyl or ethyl, X represents hydrogen or nitro, Y represents phenyl or phenyl substituted by one or two halogen atoms or nitro groups, and $Z^{\ominus}$ represents an anion.

4,240,960

TRIMETHYLSILYL SUBSTITUTED PENICILLINS

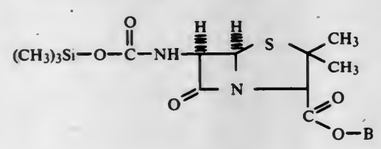
Derek Walker, Jamesville; Herbert H. Silvestri, Dewitt; Chester Sapino, East Syracuse, and David A. Johnson, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 4,780, Jan. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 970,704, Dec. 18, 1978, abandoned. This application Mar. 19, 1979, Ser. No. 21,852

Int. Cl.³ C07D *499/32*

U.S. Cl. 260—239.1 **8 Claims**

1. A compound having the formula



wherein B is an easily cleavable ester protecting group.

4,240,961

SYNTHESIS OF 2-PIPERAZINONES AND 1,4-DIAZA-2-KETO-CYCLOHEPTANES

John T. Lai, Broadview Hgts., Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 29, 1979, Ser. No. 43,294

Int. Cl.³ C07D *243/08, 241/18*

U.S. Cl. 260—239.3 R **9 Claims**

1. A method for preparing a polysubstituted 2-keto-1,4-diazacycloalkane compound comprising reacting a diamine selected from the group consisting of an acyclic 1,2-diamine and an acyclic 1,3-diamine, with a cyanohydrin acetate selected from the group consisting of an acyclic cyanohydrin acetate and a cyclic cyanohydrin acette, in the presence of (i) alkali metal hydroxide, and (ii) a haloform; forming a piperazinone when said 1,2-diamine is reacted, and a 1,4-diazepin-2-one when said 1,3-diamine is reacted; and, recovering said compound.

4,240,962

PROCESS FOR THE PREPARATION OF IMIDAZOBENZODIAZEPINES

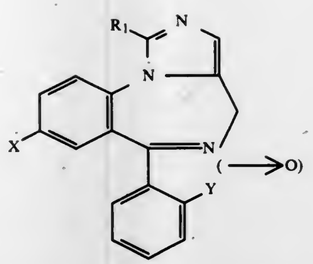
Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 60,258, Jul. 25, 1979. This application Apr. 11, 1980, Ser. No. 139,325

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.6 **1 Claim**

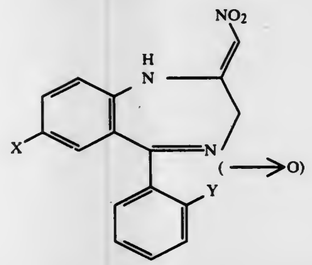
1. A process to produce a compound of the formula



wherein X is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl, Y is selected from the group consisting of hydrogen, halogen and trifluoromethyl and R_1 is hydrogen.

which comprises

(A) reacting a compound of the formula



wherein X and Y are as above with a nitrosating agent

(C) reacting the product of (A) with sodium borohydride

(D) reacting the product of (C) with formaldehyde and pivalic acid in 1,2 dichloroethane to form an oxadiazine and an imidazoline N-oxide

(E) reacting the oxadiazine of (D) with acetic acid at relux

(F) reacting the imidazoline N-oxide of (D) with acetic acid or sodium methoxide in methanol at reflux.

4,240,963

PREPARATION OF INDOLENINES

Harald Laas, Maxdorf; Axel Nissen, Leimen; Hans-Joachim Opgenorth, Frankenthal; Horst Scheuermann, Ludwigshafen; Hans-Richard Mueller, Bobenheim-Roxheim, and Wolfgang Schulte, Hassloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

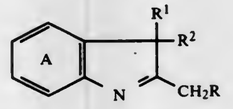
Filed Aug. 9, 1979, Ser. No. 64,981

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834607

Int. Cl.³ C07D *209/08, 263/22*

U.S. Cl. 260—319.1 **9 Claims**

1. A process for the preparation of an indolenine of the formula:

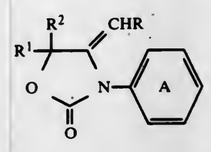


(I)

wherein R, R^1 and R^2 are C_1–C_9 alkyl or C_1–C_9 alkenyl and R^1 and R^2 may also be linked and ring A is optionally substituted with at least one substituent selected from the group consisting of chlorine, bromine, nitro, cyano, C_1–C_4 alkoxycarbonyl,

alkylsulfonyl, alkyl and alkoxy or a fused benzene ring may be attached to said A ring, comprising:

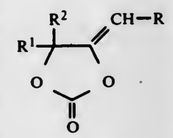
heating a compound of the formula:



(II)

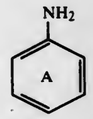
in the presence of a Lewis acid and an alkali metal halide or alkaline earth metal halide.

5. The process as claimed in claim 1, wherein said compound of formula II is prepared by reacting a compound of the formula:



III

with a compound of the formula:



IV

and is then reacted further, without isolation, as set forth in claim 5 to give said indolenine compound.

4,240,964

2-(O-HYDROXYPHENYL)-PYRROLE AND PROCESS FOR ITS PREPARATION

Horst Koenig, Ludwigshafen; Albrecht Franke, Wachenheim; Fritz-Frieder Frickel, Ludwigshafen; Wolfgang Steglich, and Norbert Engel, both of Bonn, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,906

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835439

Int. Cl.³ C07D *207/44*

U.S. Cl. 260—326.5 M **2 Claims**

1. 2-(o-Hydroxyphenyl)-pyrrole.

4,240,965

UNSYMMETRICAL PYRROLINO BENZYL QUATERNARY COMPOUNDS

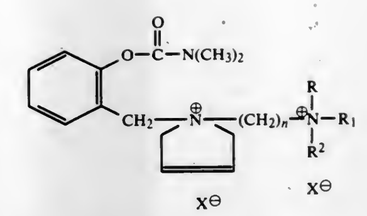
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 26, 1968, Ser. No. 701,015

Int. Cl.³ C07D *207/24*

U.S. Cl. 260—326.41 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from the group consisting of monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, nitrate, tetraphenylboronate, and hydrogen sulfate; wherein n is selected from 5–16, and wherein R, R_1, R_2 are radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, and butyl.

4,240,966

CYCLIC KETALS OF α-OXIMINO-CYCLOALKANONES

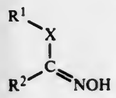
Milorad M. Rogic', Whippany; Michael D. Swerdloff, Parsippany, and Timothy R. Demmin, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 807,692, Jun. 17, 1977, abandoned, which is a division of Ser. No. 600,666, Jul. 31, 1975, Pat. No. 4,045,422, which is a continuation-in-part of Ser. No. 460,836, Apr. 15, 1974, abandoned. This application Dec. 13, 1978, Ser. No. 968,934

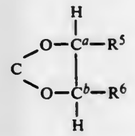
Int. Cl.³ C07D *317/44, 317/10*

U.S. Cl. 260—340.5 R **1 Claim**

1. Cyclic alpha-oximinocyclohexanone ketals characterized by the formula



wherein: together R^1, R^2 are hydrocarbon moieties forming part of a C_6 monocyclic structure and X is



wherein R^5, R^6 independently are hydrogen, phenyl, C_1–C_{10} alkyl or in combination with C^a, C^b form a cyclohexyl radical.

4,240,967

ORGANIC PIGMENTS DERIVED FROM COUMARIN

Richard C. Bingham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

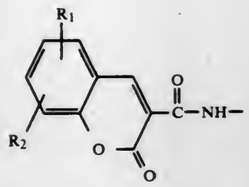
Continuation-in-part of Ser. No. 877,462, Feb. 13, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 65,863

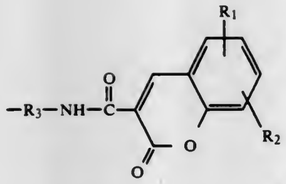
Claims priority, application Canada, Feb. 9, 1979, 321189; United Kingdom, Feb. 9, 1979, 4633/79

Int. Cl.³ C07D *311/08*

U.S. Cl. 260—343.45 **8 Claims**

1. A compound of the formula:



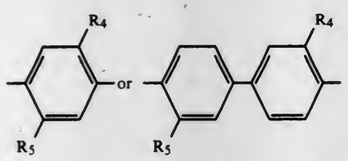


where

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine or bromine;

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, bromine or nitro; and

R_3 is



where R_4 and R_5 may be the same or different and are each hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine or bromine.

4,240,968

PROCESS FOR ISOLATING AND PURIFYING DIPHENOL BY-PRODUCTS

Clayton B. Quinn; Clayton W. Reinitz, and William Hilakos, all of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 26, 1979, Ser. No. 33,392

Int. Cl.³ C07D *311/04*

U.S. Cl. 260—345.2 **15 Claims**

1. A process for obtaining a chroman-I concentrate from a mixture of BPA by-products, said process comprising

slurrying a mixture of BPA by-products in a solvent system containing an inert, organic member until a solid is formed;

collecting said resultant solid;

washing said solid with said inert, organic member of said solvent system to form a white powder; and,

drying said powder.

4,240,969

SYNTHESIS OF MENTHOFURAN

T. L. Ho; Zia U. Din, and Sean G. Traynor, all of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,182

Int. Cl.³ C07D *307/79, 303/12*

U.S. Cl. 260—346.22 **13 Claims**

1. A process for synthesizing menthofuran comprising:

epoxidizing isopulegol under epoxidizing conditions to form isopulegol epoxide,

oxidizing the hydroxyl of said isopulegol epoxide under oxidizing conditions to form isopulegone epoxide, and

cyclodehydrating said isopulegone epoxide under cyclodehydrating conditions to form menthofuran.

4,240,970

REACTION PRODUCTS OF HYDROXY AROMATIC OR ALKYLPHENYLETHER COMPOUNDS AND ALKENYLSUCCINIC ACID, ANHYDRIDE, OR ESTER

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 709,489, Jul. 28, 1976, which is a continuation-in-part of Ser. No. 542,474, Jan. 20, 1975, abandoned. This application Dec. 18, 1979, Ser. No. 105,005

Int. Cl.³ C07D *307/60*

U.S. Cl. 260—346.74 **12 Claims**

1. A product of reaction obtained by reacting an alkenylsuccinic acid, anhydride or ester, wherein the alkenyl group is a C_{25}–C_{300} unsaturated hydrocarbon, and a hydroxy-aromatic compound and the alkyl-substituted members thereof, the reaction being run such that (1) there are from about 0.1 to about 10 moles of hydroxyaromatic compound per mole of the alkenylsuccinic compound, (2) the temperature is at from about −20° C. to about 225° C. and (3) there is a catalyst present to direct the addition of the hydroxyaromatic compound to the alkylene group of the succinic compound.

10. A product of reaction obtained by reacting an alkenylsuccinic acid, ester or anhydride, wherein the alkenyl group is a C_{25}–C_{300} unsaturated hydrocarbon, and an alkyl phenyl ether, the reaction being run such that (1) there are from about 0.1 to about 10 moles of the alkyl phenyl ether per mole of the alkenylsuccinic compound, (2) the temperature is at from about −20° C. to about 225° C. and (3) there is a catalyst present.

4,240,971

EPOXY-SULFONYLAZIDE COMPOUNDS

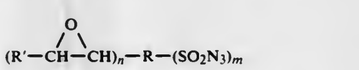
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 483,471, Jun. 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 301,003, Oct. 26, 1972, abandoned, which is a division of Ser. No. 85,300, Oct. 29, 1970, abandoned, which is a division of Ser. No. 843,230, Jul. 18, 1969, Pat. No. 3,608,604. This application Dec. 31, 1975, Ser. No. 645,761

Int. Cl.³ C07D *303/34*; C07H *15/04*; C08F *224/00*

U.S. Cl. 260—348.43 **9 Claims**

1. An epoxy-sulfonylazide compound having the general formula



where R is a polyvalent organic radical, R′ is a radical selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl and aralkyl radicals, and n and m are integers from 1 to 100.

4,240,972

CONTINUOUS PROCESS FOR CONTACTING OF TRIGLYCERIDE OILS WITH AN ACID

Theodore K. Mag, King City, and Margaret P. Reid, Don Mills, both of Canada, assignors to Canada Packers Limited, Toronto, Canada

Filed Dec. 19, 1978, Ser. No. 971,041

Int. Cl.³ C11B *3/04*; C09F *5/02*

U.S. Cl. 260—424 **9 Claims**

1. In a continuous process of contacting crude triglyceride oils with an acid to remove phosphatides and heavy metals, the improvement comprising:

continuously introducing the acid into a stream of heated oil and immediately subjecting the resulting mixture to intensive mixing action such that the acid is dispersed throughout the oil in the form of droplets smaller than about 10 microns in diameter and the phosphatides are substantially instantaneously reacted with the acid.

4,240,973

N-CYCLOHEXYL-N-METHOXYACETOACETAMIDE

Friedrich Linhart, Heidelberg; Bjoern Girgensohn, Mannheim, and Bernd Zeeh, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,775

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832102

Int. Cl.³ C07C *83/10*

U.S. Cl. 260—453 RW **1 Claim**

1. N-Cyclohexyl-N-methoxyacetoacetamide.

4,240,974

FIRE RETARDANT SULFONATE COMPOUND

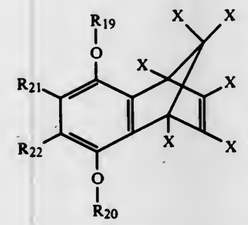
Julian R. Little, 4 Kathleen Ct., Wayne, N.J. 07470; Walter Nudenberg, 26 Sunset Rd., West Caldwell, N.J. 07006, and Yong S. Rim, 311 Redwood Ave., Paterson, N.J. 07522

Division of Ser. No. 851,989, Nov. 16, 1977, Pat. No. 4,174,451, which is a division of Ser. No. 789,006, Apr. 20, 1977, Pat. No. 4,080,408, which is a division of Ser. No. 745,065, Nov. 26, 1976, Pat. No. 4,058,568, which is a division of Ser. No. 486,482, Jul. 8, 1974, Pat. No. 4,009,200, which is a division of Ser. No. 329,177, Feb. 2, 1973, Pat. No. 3,875,236, which is a division of Ser. No. 80,747, Oct. 14, 1970, abandoned. This application Dec. 19, 1978, Ser. No. 970,914

Int. Cl.³ C07C *143/68*

U.S. Cl. 260—456 P **3 Claims**

1. A compound of the formula:



(VII)

wherein R_{19} and R_{20} are the same or different and each may be SO_2–R_{24} wherein R_{24} is lower alkyl, an aromatic nucleus of the phenyl series or a halogen substituted aromatic nucleus of the phenyl series; and R_{21} and R_{22} may be the same or different and each may be hydrogen, lower alkyl, or halogen substituted lower alkyl; and X is halogen.

4,240,975

BESTATIN

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Tomohisa Takita, Asaka; Rinzo Nishizawa, and Tetsushi Saino, both of Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

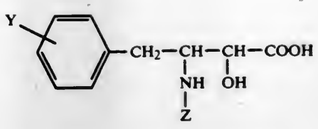
Continuation of Ser. No. 868,571, Jan. 10, 1978, abandoned, which is a division of Ser. No. 809,835, Jun. 24, 1977, Pat. No. 4,189,604, which is a continuation-in-part of Ser. No. 800,820, May 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 703,863, Jul. 9, 1976, abandoned. This application Sep. 26, 1979, Ser. No. 79,777

Claims priority, application Japan, Jul. 21, 1976, 51-85992

Int. Cl.³ C07C *69/96, 101/72*

U.S. Cl. 260—463 **27 Claims**

1. A compound having the formula



wherein Z is hydrogen or benzyloxycarbonyl and Y is benzyloxycarbonyloxy, hydroxy, chloro, methyl, nitro or amino.

4,240,976

MANUFACTURE OF 3-PENTENE NITRILE

Robert J. Benzie, and Dhafir Y. Waddan, both of Middlesbrough, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 874,225, Feb. 1, 1978, abandoned. This application Mar. 28, 1979, Ser. No. 24,550

Claims priority, application United Kingdom, Apr. 4, 1977, 14064/77

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ C07C *120/02*

U.S. Cl. 260—465.3 **9 Claims**

1. In a process for the manufacture of 3-pentenenitrile which process comprises reacting at a temperature within the range −25° C. to 200° C. a mixture of butadiene and hydrogen cyanide which is substantially completely devoid of oxygen and in the presence as catalyst of a cuprous halide complex selected from the group consisting of cuprous chloride, cuprous bromide or cuprous iodide with an organic nitrile, the catalyst being used in a catalytic amount of 0.0005 to 0.1 mole per mole of butadiene, the molar ratio of butadiene to hydrogen cyanide being 2:1 to 1:4 and the catalyst complex being formed by mixing the said cuprous halide with the said organic nitrile before or at the same time as it is mixed with the butadiene and hydrogen cyanide, the improvement wherein the process is carried out in the presence of further chloride ion, bromide ion, iodide ion or mixtures thereof provided by an inorganic source of halide ion additional to said catalytic amount of cuprous halide.

4,240,977

2-CYANOETHYL ISOCYANIDE DICHLORIDE

Gunther Beck, Leverkusen; Gerhard Dankert, Cologne, and Fritz Döring, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 964,049, Nov. 27, 1978. This application Aug. 17, 1979, Ser. No. 67,650

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753204

Int. Cl.³ C07C *121/43*

U.S. Cl. 260—465.5 R **1 Claim**

1. 2-Cyanoethyl isocyanide dichloride.

4,240,978

PROCESS FOR SULFONATION OF GAS OILS

Roy C. Berg, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 7, 1979, Ser. No. 101,296

Int. Cl.³ C07C *143/24*

U.S. Cl. 260—505 P **6 Claims**

1. A process for the production of petroleum sulfonates useful in crude oil production which comprises the steps of:

(a) passing a feed stream comprising a mixture of aromatic and paraffinic hydrocarbonaceous compounds having a molecular weight between about 250 and about 450, SO_3, and a hereinafter specified recycle stream into a sulfonation zone maintained at sulfonation conditions and effecting the sulfonation of at least a portion of said aromatic

hydrocarbonaceous compounds, and thereby forming a sulfonation zone effluent stream which comprises said paraffinic compounds, water-soluble sulfonic acids and oil-soluble sulfonic acids;

(b) separating water-soluble sulfonic acids from the sulfonation zone effluent stream by decantation;

(c) admixing a first hydrocarbon stream comprising light hydrocarbons having boiling points between 200° and 400° F. with the remaining second portion of the sulfonation zone effluent stream and separating the resultant admixture by a second decantation into a denser phase comprising water-soluble sulfonic acids and a less dense phase comprising oil-soluble sulfonic acids, said light hydrocarbons and said paraffinic hydrocarbons having a molecular weight between about 250 and 450;

(d) passing a stream of the less dense phase produced in the second decantation through a saponification zone maintained at saponification conditions including the presence of an aqueous solution of a basic chemical and thereby forming a saponification zone effluent stream comprising said light hydrocarbons, said paraffinic hydrocarbons and oil-soluble petroleum sulfonates;

(e) extracting the oil-soluble sulfonates from the saponification zone effluent stream by contacting the saponification zone effluent stream with an aqueous solution of an alkyl alcohol and thereby forming an extract stream comprising oil-soluble sulfonates and a raffinate stream comprising said light hydrocabons and said paraffinic hydrocarbon;

(f) recovering as a product the oil-soluble sulfonates from the extract stream;

(g) fractionating the raffinate stream in a fractionation zone maintained at fractionation conditions into a light fraction comprising said light hydrocarbons and a heavy fraction comprising said paraffin hydrocarbons;

(h) admixing the light fraction with the second portion of the sulfonation zone effluent as at least a portion of the first hydrocarbon stream of step (c);

(i) passing the heavy fraction through a reforming zone operated at reforming conditions effective to convert at least a portion of said paraffinic hydrocarbons into aromatic hydrocarbons having a molecular weight between 250 and about 400, and thereby forming a reforming zone effluent stream; and,

(j) passing the reforming zone effluent stream into the sulfonation zone as the recycle stream of step (a).

4,240,979

AROYLUREAS

Annegrit Baumann, Mannheim; Karl Kiehs, Lampertheim; Heinrich Adolphi, Limburgerhof, and Karl-Heinz Koenig, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

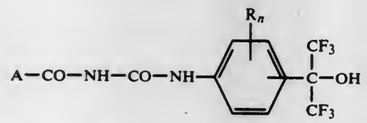
Filed Aug. 30, 1979, Ser. No. 71,552

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839462

Int. Cl.³ C07C *127/22*; A01N *9/20*

U.S. Cl. 564—44 **5 Claims**

1. An aroylurea of the formula



I,

where A denotes a phenyl radical which is mono- or polysubstituted by halogen, linear or branched alkyl of 1 to 4 carbon atoms, or linear or branched alkoxy of 1 to 4 carbon atoms, R denotes linear or branched alkyl of 1 to 4 carbon atoms or linear or branched alkoxy of 1 to 4 carbon atoms, and n denotes one of the integers 0,1 and 2.

4,240,980

PROCESS FOR THE MANUFACTURE OF N,N,N',N'-TETRAACETYLETHYLENEDIAMINE

Günther Müller-Schiedmayer, and Rudolf Aigner, both of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,258

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816174; Feb. 21, 1979, 2906606

Int. Cl.³ C07C *102/00*

U.S. Cl. 564—153 **8 Claims**

1. A process for the manufacture of N,N,N',N'-tetraacetylethylenediamine by acetylation of N,N'-diacetylethylenediamine with acetic anhydride at a temperature of from 120° to 170° C., which comprises

(a) using N,N'-diacetylethylenediamine and acetic anhydride in a weight ratio of from 1:1 to 1:10,

(b) stopping the acetylation before the reaction equilibrium between N,N'-diacetylethylenediamine and N,N,N',N'-tetraacetylethylenediamine is attained,

(c) purifying the brown-colored reaction mixture after or before the separation by crystallization of N,N,N',N'-tetraacetylethylenediamine, in order to remove the dyeing impurities, and

(d) recycling the purified and recovered reaction components not completely reacted to the acetylation.

4,240,981

PROCESS FOR THE PREPARATION OF 1,2-DIOXIMES

Riekert Kok, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 7, 1979, Ser. No. 18,386

Claims priority, application United Kingdom, Mar. 8, 1978, 9210/78

Int. Cl.³ C07C *131/00*

U.S. Cl. 564—259 **14 Claims**

1. In the process for the preparation of a product mixture containing anti, syn, and amphi isomers of 1,2-dioximes of the formula A—C(=NOH)—C(=NOH)—R, wherein A represents an aromatic group and R represents a hydrocarbyl group or a hydrogen atom, by reacting hydroxylamine with a hydroxyiminoketone reactant selected from the class consisting of hydroxyiminoketones of the formula A—C(=O)—C(=NOH)—R, hydroxyiminoketones of the formula A—C(=NOH)—C(=O)—R, and mixtures thereof, the improvement which comprises carrying out the reaction in the presence of a nickel compound capable of forming a chelate complex with the 1,2-dioxime, the mole ratio of said nickel compound to said hydroxyiminoketone reactant being in the range of from about 0.1 to 2.0, thereby obtaining a product mixture containing an increased proportion of the anti isomer of the dioximes.

4,240,982

NOVEL ONIUM SURFACTANTS

Robert F. Harris, Midland, Mich., and Earl H. Wagener, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 895,558, Apr. 12, 1978, which is a division of Ser. No. 416,308, Nov. 15, 1973, Pat. No. 4,093,663. This application May 29, 1979, Ser. No. 43,868

Int. Cl.³ C07C *91/26, 91/38*

U.S. Cl. 564—285 **13 Claims**

1. An onium surfactant corresponding to the formula $X\{(CH_2CH_2O)_mCH_2\text{-}R\text{-}CHR'\text{-}Q\oplus A\ominus\}_n$, wherein X is the hydrophobic portion of a n-valent radical derived by the removal of n-atoms of active hydrogen from an organic compound, said organic compound being a nonionic surfactant having a hydrophilic-lipophilic-balance of from 1 to about 30 and having the structural formula $X\{(CH_2CH_2O)_mH\}_n$; m is an integer of at least 1 and is the same in each of the above formulae; R is a divalent aromatic hydrocarbon radical of from 6 to about 14 carbon atoms, the chain length of which can be interrupted by oxygen or sulfur atoms; R' is hydrogen or methyl and is methyl only when R is m- or p-phenylene; $Q\oplus$ is a quaternary ammonium radical corresponding to the formula $-NR_2R_3R_3$, wherein R_2, R_3 and R_4 are each independently hydrocarbon radicals or inertly-substituted hydrocarbon radicals and wherein the total number of carbon atoms in R_2, R_3 and R_4 does not exceed 30; $A\ominus$ is a compatible anion; and n is an integer of from 1 to 5 and is the same in each of the above formulae.

4,240,983

MONOHALOGENATED KETONES

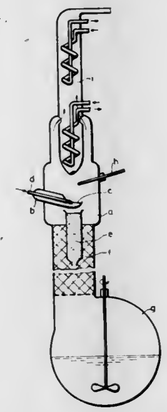
Rüdiger Schubart, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 891,563, Mar. 29, 1978, abandoned. This application Oct. 2, 1979, Ser. No. 81,224

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716895

Int. Cl.³ C07C *45/63*

U.S. Cl. 568—316 **11 Claims**



1. In a process for the preparation of a monohalogenoketone by contacting a ketone with a halogen, the improvement which comprises vaporizing said ketone in a vessel and causing the vapors thereof to pass upwardly through a defined reaction zone into a condensation zone, condensing said ketone vapors in said condensation zone and causing liquid ketone in said condensation zone to drip downwardly into a collection zone, collecting said condensed liquid ketone in said collection zone, directing halogen against the liquid ketone while in said collection zone while in the presence of water and with the exclusion of light and passing the ketone after contact with said halogen in the presence of water and with the exclusion of light into said vessel by directing condensed non-halogenated thereagainst, the reaction of said halogen with said ketone being conducted at a temperature of −20° to 120° C. employing a mol ratio of ketone to halogen of 1 to 50:1.

4,240,984

PROCESS FOR PRODUCING AROMATIC ALDEHYDES

Paolo deWitt, Turin, and Maria O. Tinti, Rome, both of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Italy

Filed Jan. 18, 1979, Ser. No. 4,448

Claims priority, application Italy, Jan. 27, 1978, 47813 A/78

Int. Cl.³ C07C *45/41*

U.S. Cl. 568—435 **10 Claims**

1. Process for preparing benzaldehyde or benzaldehyde substituted with; lower alkyl radicals, lower alkoxy groups, chlorine or bromine; starting from the corresponding aromatic acid, which comprises the following steps:

(a) reacting said aromatic acid at 0°-15° C. and at atmospheric pressure with ethyl or isobutyl chlorocarbonate, in the presence of an anhydrous base and an anhydrous solvent, inert in respect to the reagents, and obtaining the corresponding anhydride;

(b) hydrogenating directly to aldehyde the anhydride of step (a) for 6–8 hours at atmospheric pressure and at room temperature, in the presence of a hydrogenation catalyst comprising 10% by weight palladium on barium sulphate, said hydrogenation catalyst being partially poisoned before use thereof by a solution of sulphur and quinoline in an inert solvent containing between 2.5 and 6×10^{-4} by weight in sulphur and between 2 and 5×10^{-4}% by weight in quinoline.

4,240,985

ALDEHYDE SYNTHESIS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 26, 1979, Ser. No. 15,369

Int. Cl.³ C07C *47/02*

U.S. Cl. 568—483 **10 Claims**

1. A process of producing an alkyl-substituted alkanal which comprises contacting a 2,2-di-lower-alkyl tetrahydropyran bearing two hydrogen atoms in the sixth position with a strong acid selected from the group consisting of phosphoric acid, polyphosphoric acid, benzene sulfonic acid, toluene sulfonic acid, hydrochloric acid, and sulphuric acid at a temperature within the range of about 50° C. to about 200° C. at which said 2,2-di-lower-alkyl tetrahydropyran is cleaved and a 1,5-hydride shift occurs so that an alkyl-substituted alkanal is produced.

4,240,986

PROCESS FOR THE SEPARATION OF ORTHO-CHLORONITROBENZENE

James W. Priegnitz, Elgin, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 23, 1979, Ser. No. 14,656

Int. Cl.³ C07C *79/12*

U.S. Cl. 568—937 **29 Claims**

1. A process for separating ortho-chloronitrobenzene from a feed mixture comprising ortho-chloronitrobenzene and at least one other isomer of chloronitrobenzene, which process comprises contacting said mixture at adsorption conditions with an adsorbent comprising a type X or type Y zeolite containing at the exchangeable cationic sites one or more cations selected from the group consisting of Groups IA, IIA and the transition metals of the Periodic Table of Elements, selectively adsorbing ortho-chloronitrobenzene to the substantial exclusion of the remaining isomers, and thereafter recovering high-purity ortho-chloronitrobenzene.

4,240,987

CHEMICAL PROCESS

Trevor I. Martin, Burlington; Paul Szabo, Islington, both of Canada, and Sam R. Turner, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1979, Ser. No. 88,895

Int. Cl.³ C07C *25/26*

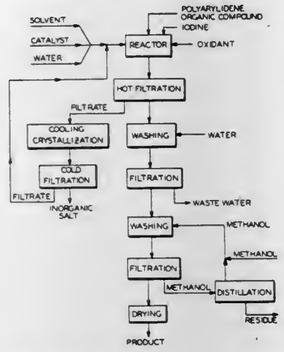
U.S. Cl. 570—206 **17 Claims**

1. A process for producing diiodinated polyarylidene compounds in high yield and purity which comprises:

(a) reacting in a suitable reactor, a polyarylidene compound with iodine in the presence of an oxidant, said oxidant being unreactive with said compound in a reaction medium comprising a solvent for said compound, water and a catalyst;

(b) recovering the reaction medium for reuse in step (a) by the steps of:

(i) removing the diiodinated aromatic compound;
(ii) precipitating the spent oxidant; and
(iii) removing the precipitated spent oxidant from the reaction medium; and



(c) recycling the reaction medium to the reactor and repeating step (a).

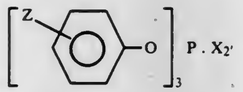
4,240,988

METHOD OF STABILIZATION OF KINETICALLY CONTROLLED TRIARYL PHOSPHITE-HALOGEN COMPOUNDS

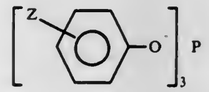
Alpheus Bingham, Jr., Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 1, 1979, Ser. No. 8,648
Int. Cl.³ C07F 9/14
U.S. Cl. 260—989 **22 Claims**

1. A method of preventing, or decreasing the rate of, the conversion of halogenating compounds of the general formula

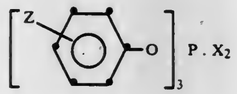


which compounds are the kinetically controlled products of the reaction of equivalent amounts of chlorine or bromine and a triaryl phosphite of the formula

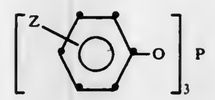


in a substantially anhydrous inert organic solvent, to the corresponding thermodynamically stable compounds, which method comprises mixing said halogenating compounds in an inert organic solvent with a stabilizing amount of a tertiary amine base, wherein in the above formulas X is Cl or Br, and Z is hydrogen, halo, C_1-C_4 alkyl or C_1-C_4 alkoxy.

10. A method of stabilizing halogenating compounds of the general formula



wherein X is Cl or Br and Z is hydrogen, halo, C_1-C_4 alkyl or C_1-C_4 alkoxy, which compounds are the kinetically controlled products of the reaction of equivalent amounts of a triaryl phosphite of the formula



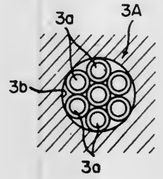
and chlorine or bromine in a substantially anhydrous inert organic solvent, which comprises mixing said halogenating compounds in an inert organic solvent with a stabilizing amount of a halide complexing agent selected from the group consisting of phosphorous pentachloride, aluminum trichloride, antimony pentachoride, stannic chloride and bromine; with the limitation that when X is Cl the halide complexing agent is not bromine.

4,240,989

CARBURETOR WITH MULTICONDUIT NOZZLE

Akinobu Moriyama; Motomi Arai, both of Yokosuka; Katsushi Yoshikawa, Yokohama, and Masaaki Saito, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 31, 1979, Ser. No. 44,326
Claims priority, application Japan, Jun. 2, 1978, 53-75947[U]
Int. Cl.³ F02M 29/00
U.S. Cl. 261—78 R **7 Claims**



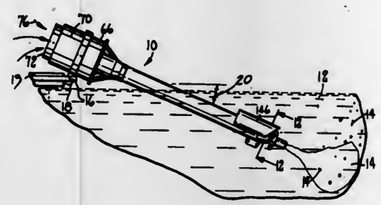
1. A carburetor assembly for an internal combustion engine, comprising:
an intake passage for supplying a combustible mixture of fuel and air to the engine;
a venturi provided in said intake passage;
a float chamber for maintaining the fuel at a predetermined level;
a narrow fuel passge communicating with said float chamber;
an air bleed communicating with said fuel passage;
an emulsion tube extending from said air bleed into said fuel passage, said emulsion tube including means for producing a homogenous mixture of the fuel from said float chamber with the air from said air bleed in such a way that the air from said air bleed emerges from said emulsion tube as fine bubbles; and
a nozzle having one end thereof communicating with said venturi and the other end thereof communicating with said fuel passage, said nozzle supplying said homogenous mixture of fuel and air bubbles to said venturi; and said nozzle having along at least the part of its length near the venturi a multiconduit structure comprising a plurality of passageways extending axially along a substantial portion of said nozzle and having a diameter so that said fine bubbles in the fuel are positively broken up to produce much smaller bubbles in the fuel when the bubbles in the fuel have passed through said multiconduit structure, without substantial increase in flow resistance.

4,240,990

AERATION PROPELLER AND APPARATUS

Harold G. Inhofer, Hopkins, and John E. De Veau, Minnetonka, both of Minn., assignors to Aeration Industries, Inc., Chaska, Minn.

PCT No. PCT/US 79/00224, § 371 Date Apr. 10, 1979 § 102(e) Date Apr. 21, 1979, PCT Pub. No. WO 79/00958, PCT Pub. Date Nov. 15, 1979.
This PCT application filed Apr. 10, 1979, Ser. No. 30,949
Int. Cl.³ B01F 3/04
U.S. Cl. 261—87 **30 Claims**



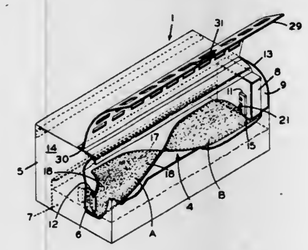
1. A propeller mechanism for use with an aeration apparatus comprising:
a support tube extending from an end of a rotatable conduit of an aeration apparatus, said support tube having gas outlet means below said propeller blades;
a plurality of propeller blades attached to the outer surface of said support tube, each of said propeller blades extending in the axial dimension of said support tube;
each propeller blade having a leading end, a tail end, an outer edge and an impelling surface, the outer edge at the leading end extending outwardly from the outer surface of said support tube at an angle less than 90°, said impelling surface facing in the direction in which said propeller mechanism is adapted to rotate, said impelling surface having a rake at a given axial position along a respective propeller blade defined by the angle at which the impelling surface is disposed with respect to a radius extending normal from the axis of the support tube, said rake changing to a more positive rake from the axial position at the leading end to the axial position at the tail end.

4,240,991

HUMIDIFIER

Melvin H. Shaub, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 3, 1979, Ser. No. 63,579
Int. Cl.³ B01F 3/04
U.S. Cl. 261—92 **9 Claims**



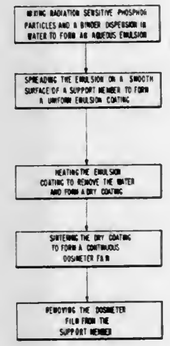
1. An evaporator type humidifier adapted to be positioned in an air stream from an air-circulating system, said humidifier comprising
(a) a housing having a water receptacle in the lower portion thereof and having an air inlet port and a humidified air outlet port;
(b) means mounted within said housing to supply water to said water receptacle and to maintain the water therein at a predetermined level; and
(c) a single elongated air-water contact means horizontally mounted in said housing with its longitudinal axis transverse to the flow path of an air stream passing between the air inlet port and the air outlet port in the housing and being adapted to be rotated around its longitudinal axis by the direct impingment of the air stream thereon, said air-water contact means comprising a one-piece structure twisted at its midpoint region into substantially the shape of a propeller with the ends thereof being in planes which are substantially perpendicular to each other, the longitudinal axis of said structure extending from one of the ends thereof through its midpoint to the other end, said air-water contact means being so positioned in said housing that its rotation causes at least a portion of each longitudinal half thereof on opposite sides of its midpoint region to alternately pass through the water in the water receptacle.

4,240,992

TECHNIQUE FOR FABRICATING RADIATION SENSITIVE DOSIMETERS

Edward M. Petrie, Pittsburgh; John G. Seidel, McCandless, and Patrick E. Felice, Lincoln Heights, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 3, 1978, Ser. No. 892,813
Int. Cl.² C09K 11/42
U.S. Cl. 264—21 **6 Claims**



1. A method of fabricating a peelable alpha responsive radiation dosimeter film, comprising the steps of,
mixing thermoluminescent radiation sensitive phosphor particles and a binder particle dispersion in water to form an aqueous emulsion of phosphor particles and binder particles in suspension, said aqueous emulsion having a viscosity of 30 centipose or greater,
spreading the emulsion onto the surface of a support member to form a uniformly thick emulsion coating, said thickness being such that the removal of water results in a dosimeter coating of a thickness which renders the dosimeter coating responsive to alpha radiation,
heating the emulsion coating to remove the water and form a dry dosimeter coating of phosphor particles and binder particles of a thickness which renders the dosimeter coating responsive to alpha radiation,
sintering the dry dosimeter coating to form a continuous alpha responsive dosimeter film, said binder being such that said dosimeter film is a peelable dosimeter film, and
peeling said alpha responsive dosimeter film from said support member.

4,240,993

MULTI-LAYER FILM CONTAINING A LAYER OF CROSSLINKED ETHYLENE/VINYL ALCOHOL COPOLYMER

Joseph Z. Sun, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Aug. 7, 1978, Ser. No. 931,635
Int. Cl.[3] B29C *25/00*
U.S. Cl. 264—22 11 Claims

1. A process for producing a multi-layer film, comprising the steps of:

providing a multi-layer structure having a substrate layer having a flexibility suitable for packaging material and a precursor layer of a copolymer of an olefin and a vinyl ester;

crosslinking said precursor layer to produce a crosslinked precursor layer with at least one crosslink per weight average molecule;

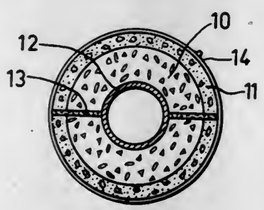
hydrolyzing said crosslinked precursor layer to produce a multi-layer film having a substrate layer and a copolymer layer of an olefin and vinyl alcohol.

4,240,994

METHOD FOR MANUFACTURING A BUILDING ELEMENT

Tor A. I. Ottenholm, 18, Hasselgatan, S-194 00, Upplands Väsby, Sweden

Continuation-in-part of Ser. No. 886,371, Mar. 14, 1978, abandoned. This application Jan. 24, 1979, Ser. No. 6,152
Claims priority, application Sweden, May 23, 1977, 7706024; Nov. 24, 1977, 7713325; Jul. 4, 1978, 7807539
Int. Cl.[3] B29H *5/26, 19/00;* B29G *7/00;* B05D *7/00*
U.S. Cl. 264—26 6 Claims



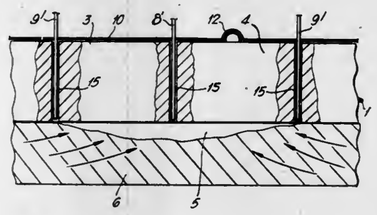
1. A method of manufacturing an insulating element comprising substantially completely coating pieces of bark in particulate form with only a thin layer of a liquid glue material, placing the coated pieces of bark in a mold which is operative to apply pressure to the coated pieces to compress said coated pieces of bark into an insulating element of desired dimensions, arranging said mold and said liquid glue coated pieces in a manner wherein said mold acts as the plates of a capacitor and said glue coated pieces of bark act as the dielectric of said capacitor during said compression step, and unifying the coated pieces of bark in said mold by applying high frequency electrical energy across the plates of said capacitor during said compression step thereby to heat all of the coated bark pieces in said mold substantially simultaneously while pressure is being applied thereto.

4,240,995

METHODS FOR PREPARING NATURAL AND ARTIFICIAL STRUCTURES

James Milne, Wigton, England, assignor to BICC Limited, London, England

Filed Aug. 8, 1978, Ser. No. 931,989
Claims priority, application United Kingdom, Aug. 12, 1977, 33933/77
Int. Cl.[3] E01C *23/10*
U.S. Cl. 264—36 10 Claims



1. A method of introducing a hardenable material in a flowable state into voids in at least a part of an artificial or natural structure adjacent an exposed surface of the structure, which structure overlies a highly porous layer, which method comprises forming at least one extractor hole through said part and into said underlying highly porous layer in the vicinity of at least one void into which hardenable material is to be introduced; forming at least one injector hole through said part and into said underlying highly porous layer at a position spaced from the void; closely fitting a flexible fluid-impermeable covering over the exposed surface, the covering having adjacent its boundary edges an endless hollow wall that surrounds and opens towards the covered surface; sealing boundary edges of the covering to the structure to form a substantially fluid-tight enclosure incorporating the hollow wall; evacuating air and any other fluid from the hollow wall and from the extractor hole and introducing hardenable material in a flowable state into the injector hole; as hardenable material appears at the outlet of the extractor hole, terminating evacuation of air and other fluid from this extractor hole and introducing hardenable material into the extractor hole; and, when hardenable material is being introduced into all injector and extractor holes, gradually bringing to a stop evacuation of air and other fluid from the hollow wall as the hardenable material in said cracks and other voids sets.

4,240,996

PROCESS FOR CONTROLLING PART DENSITY IN FAST INJECTION MOLDING MACHINES

Denes B. Hunkar, Cincinnati, Ohio, assignor to Hunkar Laboratories, Inc., Cincinnati, Ohio

Filed Apr. 9, 1979, Ser. No. 28,100
Int. Cl.[3] B29F *1/06*
U.S. Cl. 264—40.1 12 Claims

1. A method of charging, with a uniform mass of material, a molding cavity having an orifice which communicates, via a mold passage, with an injection barrel in which a ram reciprocates under control of a drive means between a fixed forward position, whereat the ram bottoms with its tip proximate the forward end of the barrel and a variable retracted position, said method comprising:

introducing material into said barrel;

retracting said ram to a specified retraction point to provide a specified amount of material between said ram tip and the forward end of said barrel;

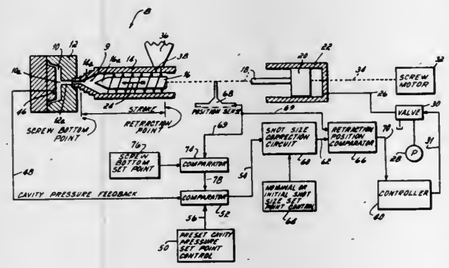
advancing said ram in a forward direction through a full stroke until said ram bottoms with its tip proximate the forward end of said barrel to thereby inject into said mold cavity via said mold orifice and passage a charge of material equal in mass to said specified amount, said ram advance being at a speed designed to complete said full stroke in approximately 1.5 seconds or less;

measuring the pressure of said injected material at the end of said stroke when said ram bottoms;

comparing the measured cavity pressure at the end of said stroke against a preset desired cavity pressure correlated to a desired charge of predetermined mass and developing an error signal correlated to the difference therebetween; and

automatically modifying said specified retraction point, and hence the length of said stroke, in response to said error signal to return said measured cavity pressure at the end of said stroke toward said preset desired cavity pressure and in turn restore the successive charge toward said desired charge of predetermined mass notwithstanding variations in material density from charge-to-charge.

7. A method of charging, with a uniform mass of material, a mold cavity having an orifice which communicates, via a mold passage, with an injection barrel in which a ram reciprocates under control of a drive means through a stroke of fixed length between a fixed forward position, whereat the ram bottoms with the forward tip of the ram proximate the forward end of the barrel, and a fixed retracted position, said method comprising:



introducing a specified amount of material into said barrel forward of said ram tip;

advancing said ram in a forward direction through a full stroke of fixed length until said ram bottoms with its tip proximate the forward end of said barrel to thereby inject into said mold cavity via said mold orifice and passage a charge of material equal in mass to said specified amount, said ram advance being at a speed designed to complete said full stroke in approximately 1.5 seconds or less;

measuring the pressure in said cavity at the end of said stroke when said ram bottoms;

comparing the measured cavity pressure at the end of said stroke against a preset desired cavity pressure correlated to a desired charge of predetermined mass and developing an error signal correlated to the difference therebetween; and

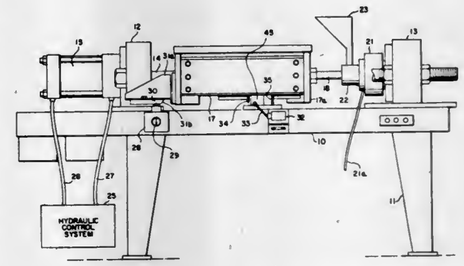
automatically modifying said specified amount of material introduced into said barrel forward of said ram tip in response to said error signal to return said measured cavity pressure at the end of said fixed length stroke toward said preset desired cavity pressure and in turn restore the successive charge toward said desired charge of predetermined mass notwithstanding variations in material density from charge to charge.

4,240,997

EXTRUSION TECHNIQUE WITH RAM SPEED CONTROL

Edward R. Jex, 475 Hickory Lance, Berwyn, Pa. 19312

Division of Ser. No. 646,897, Jan. 6, 1976, Pat. No. 4,141,678.
This application Jun. 23, 1978, Ser. No. 918,436
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.[3] B29F *3/06*
U.S. Cl. 264—40.5 29 Claims



1. In a machine for extruding material by means of a ram which propels the material through and out of the open end of a die, the machine having means for applying forces to the ram to move the ram alternately along a first path toward the die and a second path away from the die,

the improvement comprising:

means operatively associated with said force applying means for controlling the force applying means to move the ram over the end portion of the first path at a substantially constant speed,

said control means having means for compensating for variations in back pressure from the material so as to maintain the ram speed substantially constant despite such variations.

11. In the process of extruding thermosetting material using a die, a ram movable along a first path toward the die to propel the material through the die, and along a second path away from the die, and external heating means for supplying heat to the die which cooperates with the heat produced by the ram pressure to soften the material as it is propelled through the die,

the improvement which comprises:

controlling the force applied to the ram to move the ram over the end portion of the first path at a substantially constant speed, and

compensating for variations in back pressure from the material to maintain the ram speed substantially constant despite such variations.

4,240,998

PROCESS FOR THE PRODUCTION OF COMPOSITE FOAMED MATERIAL

Seymour Lichter, 137 Fairway Dr., and Frank P. Nold, Rte. 2, Box 60, both of New Castle, Ind. 47362

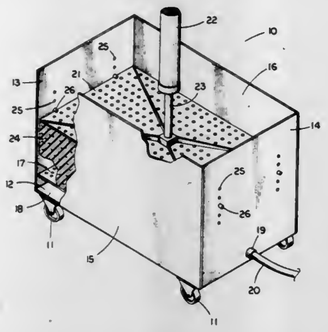
Continuation-in-part of Ser. No. 878,720, Jan. 17, 1978, abandoned. This application Apr. 5, 1979, Ser. No. 27,523
Int. Cl.[3] B29D *27/00*
U.S. Cl. 264—45.4 13 Claims

1. A process for producing a composite foamed material which comprises the steps of:

a. combining into a mix from about 4% to about 15% of expandable polystyrene beads, from about 6% to about 25% of a binder and from about 60% to about 90% of fragments of resilient, open-celled material;

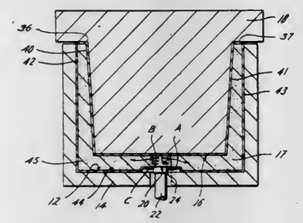
b. compressing the mix within a mold to a density of from about 5 to about 30 lbs/ft^3;

c. curing the binder while the mix is held in compression; and



d. expanding the polystyrene beads while the mix is held in compression.

4,240,999
METHOD FOR INTRODUCING MULTI-COMPONENT FOAM REACTANTS INTO MOLD FORM INVOLVING THE USE OF A FOAMING SPACER
Joseph A. Decker, Jr., Katy, Tex., assignor to Igloo Corporation, Houston, Tex.
Filed Apr. 9, 1979, Ser. No. 28,120
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—46.5 **5 Claims**

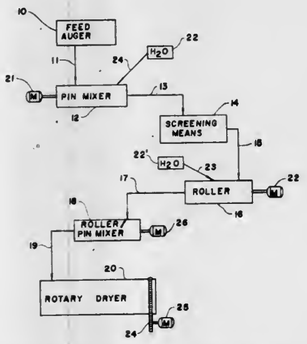


1. A method for introducing foam into a mold having an aperture in its bottom and having walls enclosing a space within the mold, the method comprising the steps of
placing the mold on a turntable,
positioning a foaming spacer having a plurality of openings therethrough within the mold so that one opening of the foaming spacer overlies the aperture of the mold and so that the foaming spacer maintains the separation between the walls of the mold,
rotating the turntable so that the mold with the foaming spacer in place is in position to receive a foam head of a foaming machine,
inserting the foam head forcefully through the aperture of the mold and into the foaming spacer, so that the foam head is held in sealing contact with the foaming spacer,
injecting foam through the head and through the openings of the foaming spacer into the space within the mold,
maintaining the head in position in the foaming spacer long enough for the foam to activate and set,
removing the head from the foaming spacer and from the aperture of the mold, and
rotating the turntable and leaving the mold containing the foam on the turntable while it rotates long enough for the foam to cure.

4,241,000
PROCESS FOR PRODUCING POLYCRYSTALLINE CUBIC ALUMINUM OXYNITRIDE
James W. McCauley, Wakefield, and Normand D. Corbin, Lynn, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Wasington, D.C.
Filed Aug. 24, 1978, Ser. No. 936,447
Int. Cl.³ C01B *21/00*; C01F *7/00*
U.S. Cl. 264—65 **3 Claims**

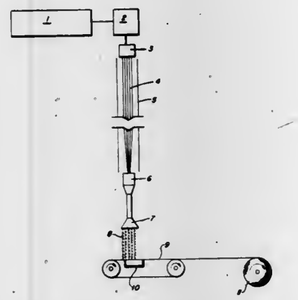
1. A method of making sintered, single phase, polycrystalline cubic aluminum oxynitride with 70–100% of theoretical density which displays isotropic optical, thermal and electrical properties, and shows essentially no chemical or physical property change after heating in air at 1100° C. which comprises in sequence the steps of
(a) compacting a mixture of fine grained powders of Al_2O_3 and 30 (±1) to 40 (±1) mole percent of AlN, by isostatic pressing of the mixture at a pressure of at least 25,000 psi,
(b) heat treating at a temperature of 1200° C. for 24 hours said compacted mixture in an oxidation free environment to a density of about 1.73 gm/cc, and
c. heating the mixture at a temperature above 1800° C. to effect reaction and sintering densification but below the temperature at which a liquid grain boundry phase forms.

4,241,001
PROCESS FOR PRODUCING PELLETIZED PIGMENTARY MATERIALS
Trevor G. Lamond, and Charles R. Cuthbertson, both of Borger, Tex., assignors to J. M. Huber Corporation, Locust, N.J.
Filed Jun. 22, 1979, Ser. No. 51,092
The portion of the term of this patent subsequent to Jun. 26, 1996, has been disclaimed.
Int. Cl.³ B01J *2/12*
U.S. Cl. 264—117 **1 Claim**



1. A process for making densified pellets of kaolin clay, talc or mixtures thereof of high bulk density, good handling and bulk flow properties, and low moisture content consisting essentially of:
(a) providing substantially dry, finely divided, pigmentary material comprising a member selected from the group consisting of kaolin clay or talc or mixtures thereof to be pelletized to be fed to pin mixing means;
(b) feeding said substantially dry, finely divided, pigmentary material to said pin mixing means;
(c) mixing said finely divided, pigmentary material in said pin mixing means;
(d) adding a quantity of water in the form of a fine spray of water to the substantially dry, finely divided, pigmentary material in an amount sufficient to bring the total moisture content of the finely divided pigmentary material to from about 17% to about 26% by weight based on the weight of said dry pigmentary material during mixing in said pin mixing means and working said moistened, pigmentary material in said pin mixing means;
(e) passing said pigmentary material from said pin mixing means on to screening means;
(f) screening said pigmentary material in said screening means to establish the pellet size;
(g) passing said pigmentary material from said screening means into a roller means for forming densified pellets of said screened pigmentary material and forming pellets of said screened pigmentary material therein and further pelletizing and polishing said pigmentary material in said roller means;
(h) passing said pelletized pigmentary material from said roller means into a rotary dryer means for drying said pellets; and
(i) drying said pellets to a moisture content of less than about 1% by weight based on the weight of said dry pigmentary material.

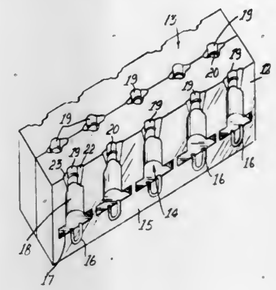
4,241,002
PROCESS FOR PRODUCING HOMOGENEOUS CURLY SYNTHETIC POLYMER FIBERS
Jack R. Knox, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Division of Ser. No. 712,845, Aug. 9, 1976, abandoned. This application May 24, 1978, Ser. No. 909,161
Int. Cl.³ D01D *5/088, 5/12, 5/22*
U.S. Cl. 264—168 **1 Claim**



1. A process for producing a fine denier, homogeneous, crystalline fiber having at least two turns per linear centimeter by extruding, at a temperature from 200°–325° C., several strands of fiber from a slowly crystallizing fiber-forming melt through a spinneret, said melt comprising a synthetic polymer composition comprising a resinous polymer of propylene having a crystallizing temperature range of not less than 10° C., which process comprises:
(a) applying a longitudinal tensile force to said fiber at a temperature above said crystallization temperature range of said polymer;
(b) orienting said fiber by said longitudinal tensile force;
(c) maintaining said tensile force at least through said crystallization temperature range; while uniformly controlling the rate of axially symmetric cooling of said fibers by reducing convection current effects.

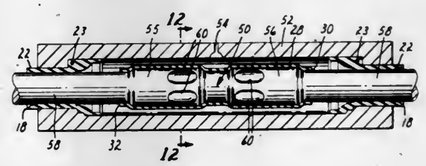
4,241,003
THERMOCOUPLES
Adrian L. Gray, Johannesburg, South Africa, assignor to Tempra Therm Limited, Boksburg North, South Africa
Filed Jan. 19, 1978, Ser. No. 870,663
Int. Cl.³ B28B *13/02*
U.S. Cl. 264—254 **10 Claims**

1. A method of manufacturing thermocouple units, which units include a body of ceramic material, a glass u-tube whose end portions are embedded in the ceramic and whose remaining portion projects beyond the front face of the ceramic, and a bi-metal junction located within the u-tube, said method comprising:
providing at least two matable mould members having internal recesses which when mated form a mould cavity conforming to the outer configuration desired for the thermocouple including particularly the projecting u-tube portion and the face of the ceramic from which it projects,
installing the u-tube in at least one mould member with the projecting portion in its conformed mould part,



mating the matable mould members to form the cavity,
orienting the mould cavity so that the front face conforming portion of the cavity is at the bottom of the cavity, and
introducing settable ceramic material into the cavity in such manner that the ceramic reaches the front face-conforming portion of the cavity from a direction opposite to the projecting u-tube portion so that the ceramic body is densest adjacent its front face.

4,241,004
HIGH VOLTAGE SPLICE
Harold C. Hervig, P.O. Box 33427, St. Paul, Minn. 55133
Division of Ser. No. 940,356, Sep. 7, 1978, Pat. No. 4,164,620. This application Apr. 23, 1979, Ser. No. 32,384
Int. Cl.³ B32B *31/06*
U.S. Cl. 264—262 **2 Claims**



1. The process for production of an insulative corona discharge suppressing shield for a splice of a high voltage line comprising the steps of
I. providing a mandrel having a shaft portion and at least one expanded portion with depressions in said expanded portion extending radially inward,
II. applying a tube of semiconductive elastomeric material of substantially uniform thickness and an unstretched diameter less than that of said shaft portion of said mandrel over the expanded portion and a portion of the shaft portion at the ends of the expanded portion of said mandrel,
III. positioning a pair of end caps on said mandrel, one spaced from each end of said tube, said end caps being of generally elongated tubular form having outer and inner ends and having outer termination segments of uniform internal and external diameter distal to said tube and inner enlarged segments having variable external diameter and

internal diameter varying from being equal to the internal diameter of said terminal segment to being greater than the external diameter of said terminal segment,

IV. placing a form or mold having a sprue opening around said ends caps,

V. injecting elastomer composition curable to insulative material through said sprue hole around said semiconductive tube and in said end caps while forcing said tube into the said depressions of said mandrel, and

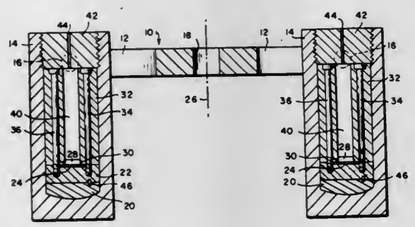
VI. curing said elastomer composition.

4,241,005

PROCESS FOR PRODUCING A MOLECULARLY ORIENTED FILM

Kenneth J. Rothschild, Newton, Mass., and Noel A. Clark, Boulder, Colo., assignors to The Trustees of Boston University, Boston, Mass.

Filed Feb. 21, 1979, Ser. No. 13,026
Int. Cl.³ B29C *5/04*
U.S. Cl. 264—311 **2 Claims**



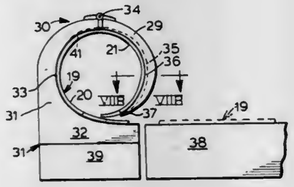
1. The process for forming a film having a thickness greater than about 10μ from molecules wherein said molecules are uniformly oriented in said film which comprises solvating or suspending said molecules in a liquid to form a liquid suspension or solution, centrifuging about a spin axis at high speed said suspension or solution onto a gravitational isopotential surface in the bucket of a swinging bucket rotor or in a rotor tube of a fixed angle rotor wherein the axis of the tube is displaced from said spin axis, and evaporating said liquid during said centrifuging at a rate sufficiently low as to prevent boiling of said liquid.

4,241,006

METHOD FOR PRODUCING A TRANSVERSELY CURVED FINGER BINDING

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Jan. 23, 1979, Ser. No. 5,826
Int. Cl.³ B29C *17/00*; B29F *5/00*
U.S. Cl. 264—322 **4 Claims**



1. A method for producing a plastic binding having a plurality of circularly formed fingers extending from a backbone portion of the plastic binding, each finger having a convex strengthening curve transverse to its longitudinal axis, comprising the steps of:

(a) providing a flat plastic binding blank having a backbone portion and a plurality of flat fingers integral with and extending from the backbone portion;

(b) heating the blank to a temperature sufficient to soften the plastic blank and permit deformation thereof;

(c) providing a two section openable tubular die, at least one of the sections having on an inner wall thereof elongated spaced-apart concave curve forming recesses running transverse to a longitudinal axis of the die, a spacing between the curve forming recesses corresponding to a spacing of the fingers;

(d) closing the die and inserting the blank into the closed die through an entranceway by lining up tips of the fingers with the curve forming recesses and sliding the tips along the recesses such that the fingers deform into the recesses during insertion so as to form the transverse strengthening curves in the fingers;

(e) cooling the formed blank; and

(f) opening and removing the formed blank.

4,241,007

METHOD OF PRODUCING WATER-ABSORBENT SOLID CLOTH-LIKE ARTICLES

Yoshihiko Tanaka; Teruhiko Sugimori, and Hideaki Habara, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1979, Ser. No. 20,839
Claims priority, application Japan, Apr. 13, 1978, 53-43579
Int. Cl.³ D21J *3/00*
U.S. Cl. 264—324 **2 Claims**



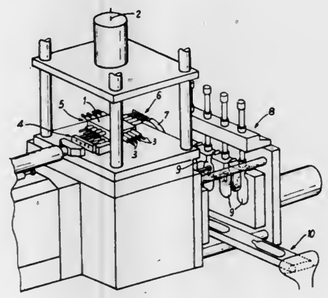
1. A method of producing a water-absorbent solid cloth-like article characterized by putting a binderless cellulosic nonwoven fabric into any desired mold and compressing and molding said binderless cellulosic nonwoven fabric under a pressure of 1100 to 1500 kg/cm² to give said fabric a water-absorption recovering property.

4,241,008

PROCESS FOR MANUFACTURE OF HOLLOW BODIES

Guy Flamand, Champforgeuil, and Jean-Francois Gregoire, Chalon-sur-Saone, both of France, assignors to Carnaud Total Interplastic, Chalon-sur-Saone, France

Filed May 2, 1978, Ser. No. 902,232
Claims priority, application France, May 6, 1977, 77 13851
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—529 **1 Claim**



1. A process for making hollow transparent bodies of polyethyleneglycol terephthalate, comprising the steps of:

(a) forming a blank in the form of a parison or preform by injecting polyethyleneglycol terephthalate around a cooled mandrel in a first mold;

(b) rapidly cooling the blank to a temperature less than or equal to the crystallization temperature of the material and above its vitreous transition temperature;

(c) separating the blank from the first mold;

(d) subjecting said blank while free of the confines of a mold and while supported only by said mandrel to a small radial and/or axial expansion to cause a slight separation of the blank with regard to the mandrel;

(e) expelling said slightly expanded blank from the mandrel and into a channel which conducts the blank directly into a second mold; and

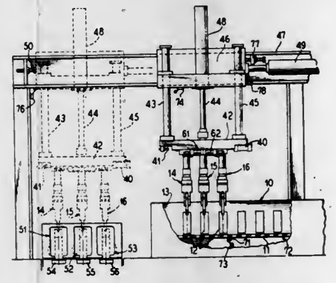
(f) rapidly expanding said blank in said second mold to expand said blank axially and/or radially to an extent sufficient to obtain bi-orientation and hardening before substantial crystallization of the material occurs.

4,241,009

PARISON PICKERS WITH VARIABLE SPACING

Nickolas N. Sokolow, Cheshire, Mass., assignor to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 808,705, Jun. 21, 1977, Pat. No. 4,106,886.
This application May 4, 1978, Ser. No. 902,899
Int. Cl.³ B29C *17/07, 17/12*
U.S. Cl. 264—532 **3 Claims**



1. The method of transporting a plurality of parisons supported on spaced supports while moving through an oven to a plurality of molds whose center-to-center spacing is different from the spacing of said parisons in moving through said oven which comprises:

grasping a group of at least three parisons while said parisons are still moving through said oven,

raising said group out of said oven,

simultaneously moving said group vertically and laterally toward said plurality of molds,

changing the intra-parison spacing between the center parison and its two adjoining neighbors during such vertical and lateral movement toward said molds to achieve a spacing required by said center-to-center mold spacing,

clamping said parisons in said molds after said spacing has been changed, and

releasing the gripping on said parisons after such clamping.

4,241,010

PRESSURE RESPONSIVE CONDITIONING CONTROL GAS STERILIZATION

Walter J. Baran, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Feb. 6, 1979, Ser. No. 9,818
Int. Cl.³ A61L *2/20, 2/24*
U.S. Cl. 422—2 **10 Claims**

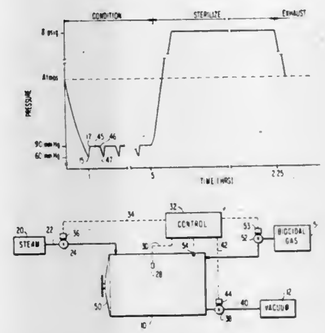
1. Method for conditioning goods for sterilization and sterilizing goods with a chemically biocidal gas in a sealable chamber capable of operating at pressures other than atmospheric, the conditioning including heating the goods to a selected temperature related to the desired sterilization temperature and moistening the goods to a desired level for such biocidal gas sterilization, with conditioning steps being free of temperature and moisture measurement requirements in the goods and in the chamber, comprising the steps, after closing the chamber to permit operation at pressures other than atmospheric, of

evacuating the chamber to a preselected subatmospheric level,

supplying a condensable conditioning vapor having heating and moisturizing properties for heating and moisturizing goods to be sterilized, such vapor having a determinable interrelationship between pressure level and temperature,

injecting such conditioning vapor into the chamber to raise chamber pressure to a second preselected subatmospheric pressure level corresponding to approximately desired sterilization temperature based on the interrelationship of pressure level and temperature of the condensable conditioning vapor,

such injecting of conditioning vapor being free of flow rate adjustment control requirements, then



holding the chamber in sealed condition for a predetermined time with evacuating and vapor injecting interrupted, then

repeating such sequence, of evacuating the chamber followed by injecting conditioning vapor to repressurize the chamber to the preselected subatmospheric pressure corresponding to approximately desired sterilizing temperature and holding the chamber in sealed condition for a predetermined time with evacuating and vapor injecting interrupted, a preselected number of times to establish desired temperature and moisture conditions in goods to be sterilized, then

adding chemically biocidal gas while the chamber is otherwise sealed to raise chamber pressure to a desired supraatmospheric pressure, and

holding such biocidal gas in the chamber for a time period to complete desired sterilization.

4,241,011

ANTIFREEZE CONTAINING CARBOXYSILOXANE METAL SALTS AND HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 347, Jan. 2, 1979. This application Sep. 24, 1979, Ser. No. 78,306
Int. Cl.³ C09K *15/32*; C23F *11/06, 11/10*
U.S. Cl. 422—13 **3 Claims**

1. In a process for inhibiting the corrosion of metals that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol, a corrosion inhibitor, and at least one organic basic

buffer compound wherein said alcohol is selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, wherein said corrosion inhibitor is present in an amount of about 0.1 percent to about 10 percent by weight of said alcohol and is a water-soluble and alcohol-soluble metal salt of a carboxysiloxane consisting essentially of groups represented by the formula:

$$\left[M_{\frac{1}{a}}OOCR \right]_b \overset{R_c'}{\underset{|}{SiO}}_{\frac{4-(b+c)}{2}} \quad (1)$$

wherein M is a cation that imparts water and alcohol solubility to the siloxane, said cation being selected from the group consisting of the sodium, potassium, lithium and rubidium cations and the tetraorgano ammonium cations, a is the valence of the cation represented by M and has a value of at least one, R is a divalent hydrocarbon group containing from 0 to 1 $M_{1/a}OOC$— groups as substituents, each $M_{1/a}OOC$— group is connected to the silicon atom through at least 2 carbon atoms of the group represented by R; R' is a monovalent hydrocarbon group, b has a value from 1 to 3 inclusive, c has a value from 0 to 2 inclusive, and (b+c) has a value from 1 to 3 inclusive, wherein said organic basic buffer is present in the amount of about 0.1 to about 1.5 percent by weight based upon the weight of said concentrate and is selected from the group consisting of orthohydroxybenzoic acid, para hydroxybenzoic acid, and mixtures thereof, and wherein said buffer serves to maintain the pH of said antifreeze or coolant above about 9 to about 11.

4,241,012

ANTIFREEZE CONTAINING AMINO SILANES, AMINO SILOXANES AND A HYDROXYBENZOIC ACID

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 464, Jan. 2, 1979. This application Sep. 24, 1979, Ser. No. 78,307

Int. Cl.³ C09K *15/32;* **C23F** *11/06, 11/10*

U.S. Cl. 422—13 **3 Claims**

1. In a process for inhibiting the corrosion of metals that come in contact with an aqueous alcohol-based antifreeze or coolant composition, the improvement wherein said composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol, a corrosion inhibitor, and a hydroxybenzoic acid pH buffer wherein said concentrate contains a corrosion inhibitor, present in the proportion of 0.01 percent to 10 percent by weight of said concentrate, and selected from the group consisting of:

(a) hydroxycarbonoxysilanes represented by the formula:

$$Z_2NRSiX_{3-b-f} \quad \text{with } R_b^5 \text{ on Si}$$

wherein Z is a member selected from the group consisting of the hydrogen atom, monovalent hydrocarbon groups, substituted monovalent hydrocarbon groups containing a substituent selected from the group consisting of the hydroxyl, amino, amido, ester, hydrocarbonoxy and cyano groups and divalent groups that are derived from oxirane compounds by the opening of the oxirane ring and that link the nitrogen atom to the silicon atom through a carbon to carbon to nitrogen bond; R is a divalent hydrocarbon group containing at least three carbon atoms; the Z_2N— group is attached to at least the third carbon removed from the silicon atom; R^5 is a member selected from the group consisting of the monovalent hydrocarbon groups and the $NH_2C_nH_{2n}$— groups where n has a value of at least 3; X is a member selected from the group consisting of the alkoxy and aroxy groups; b has a value from 0 to 2; f has a value from 0 to 2 and represents the number of said divalent groups represented by Z; and (3-b-f) has a value from 1 to 3;

(b) siloxanes consisting essentially of siloxane groups represented by the formula:

$$Z_2'NRSiO_{\frac{3-b}{2}} \quad \text{with } R_b^5 \text{ on Si}$$

wherein Z' is a member selected from the group consisting of the hydrogen atom, monovalent hydrocarbon groups, substituted monovalent hydrocarbon groups containing substituents selected from the group consisting of hydroxyl, amino, amido, ester, cyano and hydrocarbonoxy groups and R, R^5 and b have the above-defined meanings; and

(c) siloxanes consisting essentially of both the above-defined siloxane groups and silane groups having the formula:

$$R_e^6SiO_{\frac{4-e}{2}}$$

wherein R^6 is a monovalent hydrocarbon group and e has a value from 1 to 3, wherein said alcohol is selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, and wherein said pH buffer serves to maintain the pH above about 9 to about 11 and is selected from the group consisting of ortho and para hydroxybenzoic acid and mixtures thereof and is present in the proportion of about 0.1 to about 1.5 percent by weight based upon the weight of said concentrate.

4,241,013

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING AMINOSILICONE-SILICATE POLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 348, Jan. 2, 1979. This application Oct. 9, 1979, Ser. No. 82,644

Int. Cl.³ C09K *15/32;* **C23F** *11/06, 11/10*

U.S. Cl. 422—13 **2 Claims**

1. In a process for inhibiting the corrosion of metals that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol, an aminosilicone-silicate polymer corrosion inhibitor, and a hydroxybenzoic acid pH buffer and corrosion inhibitor wherein said pH buffer is present in an amount of about 0.1 percent to about 1.5 percent by weight and said polymer corrosion inhibitor is present in an amount of from 0.1 percent to 10 percent by weight all based upon the weight of said concentrate and consists essentially of:

(A) from 0.1 to 99.9 parts by weight of siloxane groups represented by the formula:

$$Z_2NRSiO_{\frac{3-a}{2}} \quad \text{with } R_a' \text{ on Si}$$

wherein Z is a member selected from the group consisting of the hydrogen atom, unsubstituted monovalent hydrocarbon groups, and substituted monovalent hydrocarbon groups containing from 0 to 1 hydroxy group as a substituent and from 0 to 1 amino group as a substituent; R is an unsubstituted divalent hydrocarbon group containing at least three carbon atoms; the Z_2N group is attached to at least the third carbon atom removed from the silicon atom; R' is an unsubstituted monovalent hydrocarbon group and a has a value from 0 to 2 inclusive and

(B) from 0.1 to 99.9 parts by weight of groups represented by the formula:

$$\left[M_{\frac{1}{b}}O \right]_c SiO_{\frac{4-c}{2}}$$

wherein M is a cation that forms a water soluble silicate selected from the group consisting of sodium, potassium, lithium, rubidium and tetra-organoammonium cations; b is the valence of the cation represented by M and has a value of at least one and c has a value from 1 to 3 inclusive and wherein said alcohol is selected from the group consisting of at least one of ethanol, methanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol and said pH buffer and corrosion inhibitor is selected from the group consisting of ortho or para hydroxybenzoic acid and mixtures thereof.

4,241,014

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ALKALI METAL SILICATE-CONTAINING ANTIFREEZE COMPOSITIONS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 351, Jan. 2, 1979. This application Oct. 9, 1979, Ser. No. 82,645

Int. Cl.³ C09K *15/32;* **C23F** *11/06, 11/10, 11/18*

U.S. Cl. 422—13 **4 Claims**

1. In a process of inhibiting the corrosion of metals that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of a major proportion of at least one alcohol selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, about 0.05 to about 0.5 percent by weight of at least one water-soluble silicate and, as a pH buffer and corrosion inhibitor, about 0.1 to about 1.5 percent by weight of at least one hydroxybenzoic acid selected from the group consisting of ortho and para hydroxybenzoic acid, wherein said water-soluble silicate has the formula:

$$M_2O(SiO_2)_n$$

wherein M is an alkali metal and n has a value of about 0.5 to about 4, and wherein said buffer serves to maintain the pH of said antifreeze above about 9 to about 11.

4,241,015

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING ORGANOSILICONE-SILICATE POLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 349, Jan. 2, 1979. This application Oct. 9, 1979, Ser. No. 82,646

Int. Cl.³ C09K *15/32;* **C23F** *11/06, 11/10*

U.S. Cl. 422—13 **6 Claims**

1. In a process for inhibiting the corrosion of metals that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol; an organosilicone-silicate polymer corrosion inhibitor; and a hydroxybenzoic acid pH buffer and corrosion inhibitor composition capable of buffering the pH in the range of above about 9 to about 11, wherein said pH buffer is selected from the group consisting of ortho hydroxybenzoic acid, para hydroxybenzoic acid, and mixtures thereof and is present in the amount of about 0.1 to about 1.5 percent by weight based upon the weight of said antifreeze; wherein said organo-silicone-silicate polymer corrosion inhibitor is present in an amount of 0.01 percent to 10 percent by weight of said concentrate; and wherein said polymer consists essentially of:

(A) 10 to 90 parts by weight of siloxane groups represented by the formula:

$$\left[M_{\frac{1}{a}}OOCR \right]_b \overset{R_c^1}{\underset{|}{SiO}}_{\frac{4-(b+c)}{2}} \quad (I)$$

wherein M is a cation that forms a water-soluble silicate selected from the group consisting of the sodium, potassium, lithium, rubidium and tetra(alkyl)ammonium cations, a is the valence of the cation represented by M and is an integer having a value of at least one, R is a member selected from the group consisting of the unsubstituted divalent hydrocarbon groups,

$$M_{\frac{1}{a}}OOC$$

substituted divalent hydrocarbon groups, each

$$M_{\frac{1}{a}}OOC \text{ group}$$

is connected to the silicon atom through at least 2 carbon atoms of the group represented by R, R^1 is a monovalent hydrocarbon group, b is an integer having a value from 1 to 3 inclusive, c is an integer having a value from 0 to 2 inclusive and (b+c) have a value from 1 to 3 inclusive and

(B) 10 to 90 parts by weight of groups represented by the formula:

$$\left[M_{\frac{1}{a}}O \right]_b SiO_{\frac{4-d}{2}} \quad (II)$$

wherein M and a have the above-defined meanings and d is an integer having a value from 1 to 3 inclusive, said parts by weight of said groups being based on 100 parts by weight of the organosilicone-silicate polymer.

4,241,016

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING ORGANOSILOXANE-SILICATE COPOLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 350, Jan. 2, 1979. This application Oct. 9, 1979, Ser. No. 82,705

Int. Cl.³ C23F *11/10*

U.S. Cl. 422—17 **2 Claims**

1. In a process for inhibiting the corrosion of metals, especially aluminum, that come in contact with an aqueous antifreeze or coolant composition, the improvement wherein said antifreeze or coolant composition consists essentially of a mixture of water and an antifreeze or coolant concentrate consisting essentially of an alcohol is selected from the group consisting of methanol, ethanol, propanol, diethylene glycol, triethylene glycol, propylene glycol, glycerol and ethylene

glycol; a water-soluble organosiloxane-silicate copolymer corrosion inhibitor; and at least one hydroxybenzoic acid pH buffer and corrosion inhibitor capable of buffering the pH in the range above about 9 to about 11 wherein said copolymer is present in the amount of from 0.01 percent to 10 percent by weight based upon the weight of said concentrate and consists essentially of:

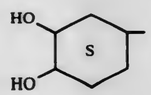
(1) 0.1 to 99.9 parts by weight of at least one member selected from the group consisting of (a) siloxane groups represented by the formula:

$$RSiO_{1.5}$$

wherein R is a member selected from the group consisting of the methyl, ethyl, phenyl and vinyl groups and (b) siloxane groups represented by the formula:

$$[YC_aH_{2a}]_b \; SiO_{\frac{4-(b+c)}{2}}$$

wherein Y is a member selected from the group consisting of the cyano group, $CH_2(OH)CH(OH)$ group, $CH_2(OH)CH(OH)CH_2$ group,



group,

$CH_2(OH)CH(OH)CH_2O$- group and $R''(OCH_2CH_2)_n(OC_3H_6)_mO$— group, wherein R'' is a member selected from the group consisting of the monovalent hydrocarbons and the hydrogen atom, n and m are integers and n has a value of at least 1, m has a value from 0 to 20 inclusive, the ratio of n to m is at least 2 to 1, a is an integer and has a value of at least 2, C_aH_{2a} is an alkylene group, the group represented by Y is separated from the silicon atom by at least two successive carbon atoms, b is an integer and has a value of from 1 to 3 inclusive, R' is a monovalent hydrocarbon group, c is an integer and has a value from 0 to 2 inclusive, (b+c) has a value from 1 to 3 inclusive; and

(2) 0.1 to 99.9 parts by weight of at least one silicate group represented by the formula:

$$\left[\frac{M_1O}{d}\right]_e \; SiO_{\frac{4-e}{2}}$$

wherein M is a cation that forms a water soluble silicate, d is the valence of the cation represented by M and has a value of at least 1 and e has a value from 1 to 3 inclusive, said parts by weight of said groups in the copolymer being based on 100 parts by weight of the copolymer wherein said pH buffer is at least one of para hydroxybenzoic acid and ortho hydroxybenzoic acid and is present in the amount of about 0.1 percent to about 1.5 percent by weight based upon the weight of said concentrate.

4,241,017

DEVICE FOR MEASURING A URINE DISCHARGE

Thomas W. Balistreri, Lake Bluff; Carl J. Steigerwald, Wauconda; Terry N. Layton, Arlington Heights; Frank K. Villari, Oak Park, all of Ill., and W. Martin Schultze, New Berlin, Wis., assignors to The Kendall Company, Boston, Mass.

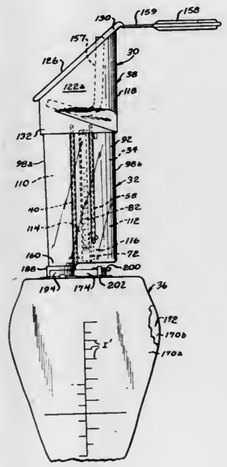
Filed Apr. 24, 1979, Ser. No. 32,820

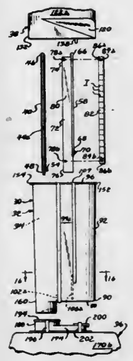
Int. Cl.³ G01F *1/20*; G01N *31/22*

U.S. Cl. 422—58 **26 Claims**

1. A device for measuring a discharge of urine, comprising:

a hollow open topped receptacle having upright walls and a lower wall defining a chamber, an elongated first upright plate extending laterally across the inside of the receptacle substantially the height of the chamber from said lower wall to a location adjacent an upper end of the receptacle, said first plate defining channel means intermediate the first plate and an upright wall of the receptacle, said first plate having slot means extending longitudinally along the first plate, and said receptacle having an elongated second upright plate extending laterally across the inside of the receptacle from a location adjacent an upper end of the receptacle to a location adjacent a lower end of the receptacle, with said second plate defining a compartment intermediate the first and second plates, passageway means intermediate the second plate and an upright wall of the receptacle, and a space adjacent said lower wall communicating between said passageway means and said compartment;





a fluid receiving member having a lower wall and sidewalls defining a cavity, an inlet port communicating with the cavity for passage of the discharge into the cavity, and a lower outlet opening communicating with the cavity for passage of the discharge out of the cavity said lower wall defining fluid flow means for directing fluid to said receiving member outlet opening;

means for releasably attaching a lower portion of the receiving member to said open top of the receptacle with said receiving member lower wall covering the channel means and compartment, and with the receiving member outlet opening communicating with the passageway means when said receiver and receptacle are in assembly; and

means for indicating the maximum height of liquid collected in said compartment.

4,241,018

APPARATUS WITH EXCHANGEABLE BURETTES

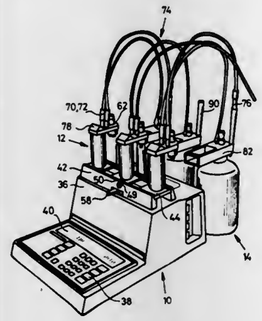
Karl Lang, Uerikon, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed May 10, 1979, Ser. No. 37,738

Claims priority, application Switzerland, Sep. 15, 1978, 9663/78

Int. Cl.³ G01N *31/16*; B01L *3/02*

U.S. Cl. 422—75 **7 Claims**



1. An apparatus with exchangeable burettes, which comprises

(a) an operating unit having an operating position,

(b) a plurality of exchangeable burettes each being selectively mountable in association with said operating unit,

(c) a plurality of supply cylinders selectively mountable on the operating unit and selectively connectable thereto in the operating position, each cylinder being associated with a respective one of the burettes, and

(d) a plurality of storage containers with a respective storage container associated with each cylinder and mounted separately from the operating unit, each storage container including a mount defining a recess for removably receiving and temporarily holding the associated supply cylinder.

4,241,019

COMBUSTIBLE GAS DETECTING ELEMENT

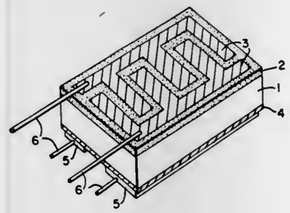
Yoshihiko Nakatani, Osaka; Seiichi Nakatani, Kadoma; Masayuki Sakai, Katano, and Michio Matsuoka, Ibaragi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 15, 1979, Ser. No. 12,557

Claims priority, application Japan, Feb. 20, 1978, 53/18948

Int. Cl.³ G01N *27/12*

U.S. Cl. 422—94 **2 Claims**



1. A combustible gas detecting element comprising 99.0 to 25 mole percent of gamma-ferric oxide (γ-Fe_2O_3), 0.5 to 70 mole percent of gamma-aluminum oxide (γ-Al_2O_3), and 0.05 to 15 mole percent, in total, of at least one member selected from the group consisting of lanthanum (La), cerium (Ce), praseodymium (Pr) and neodymium (Nd) in terms of La_2O_3, Ce_2O_3, Pr_2O_3 and Nd_2O_3, respectively.

4,241,020

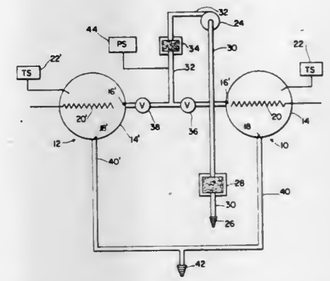
APPARATUS FOR BIOLOGICAL DECONTAMINATION AND SUBSEQUENT NEUTRALIZATION OF A SPACE

James I. Grantham, Raleigh, N.C., assignor to Certek, Inc., Raleigh, N.C.

Filed Jun. 16, 1978, Ser. No. 916,199

Int. Cl.³ A61L *2/20, 2/26*; G05D *7/00, 16/00*

U.S. Cl. 422—109 **12 Claims**



1. Apparatus for automatically and remotely decontaminating a space with formaldehyde and subsequently neutralizing the formaldehyde comprising,

a housing containing:

a formaldehyde generator which includes a totally enclosable canister for containing a formaldehyde gas generating substance and having an access opening therein, a gas tight, removable cover for said access opening, gas inlet and outlet openings, and a heater means for heating said canister to generate formaldehyde gas;

a neutralizing agent generator which includes a totally enclosable canister for containing a formaldehyde neutralizing, gas generating substance and having an access opening therein, a gas tight, removable cover for said access opening, gas inlet and outlet openings, and a heater means for heating said canister to generate neutralizing gas; said formaldehyde generator and said neutralizer generator being mounted in said housing;

pumping means in said housing for discharging a gas under pressure, the suction of which is adapted to be connected in fluid communication with the space to be decontaminated, and the discharge of which is adapted to be selectively connected in fluid communication through said formaldehyde generator or said neutralizer generator to the space to be decontaminated;

fluid connecting means for selectively connecting said pumping means through only one of said formaldehyde generator and said neutralizer generator and connectable to the space to be decontaminated;

a control means in said housing for automatically controlling the supplying of power to the components of said apparatus and the sequencing of said apparatus through a first, formaldehyde generation stage during which said formaldehyde heater means is actuated and said pumping means is energized and connected to said formaldehyde generator by said fluid connecting means; a second, formaldehyde contact stage during which said pumping means and both said heater means are de-energized; a third, neutralizer generation stage during which said neutralizer heater means is actuated and said pumping means is energized and connected to said neutralizer generator by said fluid

connecting means; and a fourth, neutralizer contact stage during which said pumping means and both said heater means are de-energized;

a control panel on said housing for externally indicating the particular stage in the operating sequence of said apparatus;

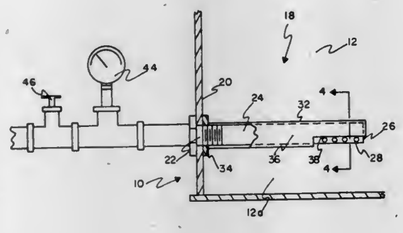
and said control means further including a system de-energizing means for preventing the resupplying of power to said control means after the power has been interrupted and a means for detecting a high-pressure condition in said fluid connecting means, and wherein after said control means has sequenced beyond said first stage of operation, said control means automatically returns to said second stage whenever power has been interrupted or whenever a high-pressure condition is detected.

4,241,021

FLUIDIZED BED REACTOR SYSTEM

Adam E. Skrzec, West Nyack, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 14, 1979, Ser. No. 39,055
Int. Cl.³ B01J *8/18*
U.S. Cl. 422—143 **4 Claims**



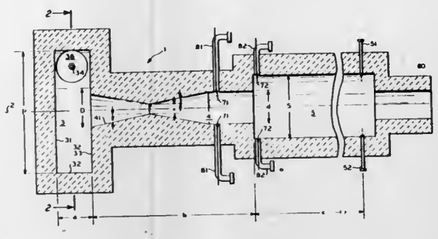
1. A fluidized bed reactor system comprising:
(a) a vessel adapted to contain a fluidized bed;
(b) a plurality of fluid injector means mounted through the vessel wall for injecting and distributing a fluidizing medium into the lower portion of the vessel, each injector means comprising:
(i) an elongated injector projecting into the vessel, the injector being withdrawably mounted through the vessel wall, and having at least one downwardly directed orifice, and
(ii) a shield means mounted to the vessel wall extending above the injector along the length of the injector for maintaining an opening in the bed when the injector is withdrawn, the opening being substantially equivalent to the length of the injector;
(c) a fluid supply means in fluid communication with each elongated injector for supplying a fluidizing medium to the fluidized bed.

4,241,022

CARBON BLACK FOR LOW-HYSTERESIS RUBBER COMPOSITIONS

Gerard Kraus, and Harold R. Hunt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 822,779, Aug. 8, 1977, which is a division of Ser. No. 681,977, Apr. 30, 1976, Pat. No. 4,071,496. This application Dec. 29, 1978, Ser. No. 974,464
Int. Cl.³ C09C *1/48*
U.S. Cl. 422—156 **7 Claims**



1. A tubular carbon black reactor comprising
(a) an upstream confining wall,
(b) communicating therewith a cylindrical precombustion section of about 9 to 12 inches diameter and about 3 to about 6 inches axial length,
(c) in open communication, axial alignment and operatively connected thereto a first reaction section wherein said first reaction section is frustoconically shaped, about 3 to 8 inches long, has an upstream diameter of about 2 to 4 inches, and converges in downstream direction at an angle between the reactor axis and the frustoconical surface in the range of about 10 to 18 degrees, the downstream diameter of the first reaction section being between about 1 to 2 inches,
(d) in open communication, axial alignment and operatively connected to the first reaction section a second reaction section of essentially cylindrical shape, the ratio of the diameter of said second reaction section to the diameter of the downstream end of the first reaction section being about 2:1 to 5:1 so that the cross-section of the reaction sections abruptly widens from said first reaction section to said second reaction section,
(e) means for generating a hot combustion gas vortex in said precombustion section,
(f) means for introducing a hydrocarbon feedstock into contact with the hot combustion gas, the locus of discharge of the hydrocarbon feed being at the reactor wall within the downstream portion of the first reaction section, and
(g) means to withdraw carbon black-containing smoke from the downstream end of said second reaction section.

4,241,023

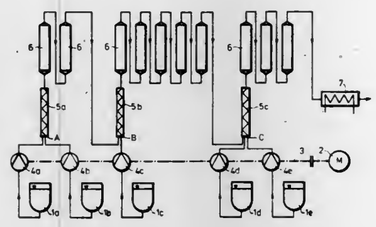
APPARATUS FOR THE CONTINUOUS PREPARATION OF PHOTOGRAPHIC EMULSIONS

Werner Wilke, Starnberg; Hans Gref, Cologne, and Hans Frenken, Odenthal-Osenau, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 8, 1978, Ser. No. 967,778
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755166
Int. Cl.³ B01J *8/10*
U.S. Cl. 422—187 **7 Claims**

1. An apparatus for the continuous preparation of photographic emulsions by a continuous flow process in which a

stream entering a pipe system flows successively through the various sections of the system corresponding to the individual stages of the process, wherein a path for mixing and ripening of the emulsion is provided which comprises multiple piston metering pumps with pump heads moving in unison, mixing paths, first junction ducts connecting the metering pumps with the mixing paths, ripening pipe packets which are arranged in series downstream of the mixing paths, second junction ducts connecting the mixing paths to the ripening pipe packets, the



ripening pipe packets being comprised of a plurality of individual pipes, the pipe packets are constructed and arranged to be replaceable as units and to be varied as to the number of pipes contained in them, the ripening pipes having a diameter which is selectable as to the stroke number of the piston metering pumps and the kinematic viscosity of the streams of emulsions so that delivery of the stream in the ripening pipes always occurs in coordination with the starting flow in the metering pumps.

4,241,024

Patent Not Issued For This Number

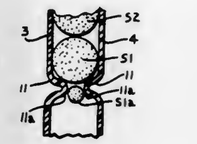
4,241,025

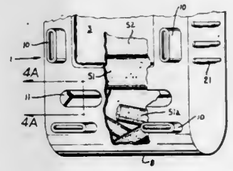
CHLORINATOR

Joel Grayson, IV, Marietta, and Donald P. Kahle, Oxford, both of Ga., assignors to Bio-Lab, Inc., Decatur, Ga.

Continuation of Ser. No. 959,591, Nov. 13, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,344
Int. Cl.³ B01D *11/02*
U.S. Cl. 422—263 **2 Claims**

1. A chlorinator arranged to float in a body of liquid to be treated and comprising cannister (1) having a bottom wall 8, a pair of side walls (3,4) and a pair of end walls (5,6) arranged to contain a vertical stack of horizontally disposed elongated chlorinator sticks (S) of similar size and shape which are slowly soluble in water, a pair of oppositely disposed side walls (3,4) of said cannister spaced apart to define one transverse dimension of said cannister which is slightly greater than the transverse dimension of said sticks (S) so as to form a single stack of sticks, apertures (10) formed in at least one of the walls of said canmister, inwardly projected protrusion means (11) formed on at least one of said oppositely disposed side walls and near the bottom (8) thereof for engaging one of said sticks and for holding said stick in spaced relation to the bottom of said cannister, said one of said sticks being slidable past said inwardly projected protrusion means (11) and into the bottom portion of said cannister after predetermined reduction in the transverse dimension thereof due to dissolution in water supplied from said body of water through said apertures (10), float means (2) including a buoyant body having a central aperture (13) whose axis is vertical and which includes a pair of diametrically opposed segments (15,16) and a central portion, each of said segments (15,16) having arcuate peripheral parts on which coupling elements (17,20) are formed for disjointably engaging coupling elements (21) formed on the end walls of said cannister (1) so as to support said cannister (1) at adjustable levels relative to said float means (2) and each of said segments (15,16) having an arcuate clearance portion (18,19) for accommodating vertical movement of said cannister (1) relative to said float means (2), and an inlet (9) having a transverse dimension slightly larger than the transverse dimension of said sticks and formed in a wall of said cannister other than one of said oppositely disposed side walls and near the top (7) thereof through which said sticks are inserted.





4,241,026

ION EXCHANGE PROCESS FOR THE RECOVERY OF URANIUM

Tsoung-yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,438
Int. Cl.² C01G *43/02*
U.S. Cl. 423—7 **6 Claims**

1. In a method for the recovery of uranium from a pregnant lixiviant by contacting an anionic ion exchange resin with said lixiviant to adsorb uranium therefrom and wherein said lixiviant contains chloride ions which inhibit the adsorption of uranyl ions, the improvement comprising employing an anionic ion exchange resin having cationic adsorption sites provided by quaternary ammonium groups having a hydroxyalkyl group as a quaternizing substituent.

4,241,027
REDUCTIVE STRIPPING PROCESS FOR THE RECOVERY OF EITHER OR BOTH URANIUM AND VANADIUM

Paul D. Bowerman, Edmond, Okla., and Michael F. Lucid, Houston, Tex., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Nov. 16, 1978, Ser. No. 961,194
Int. Cl.[2] C01G *43/02, 31/00*
U.S. Cl. 423—10 **9 Claims**

1. A process for recovering at least one specie selected from the group consisting of hexavalent uranium and pentavalent vanadium from wet process phosphoric acid comprising contacting said wet process phosphoric acid with an organic extractant dissolved in a substantially water immiscible organic diluent to separate the selected specie from the wet process phosphoric acid, disengaging the organic extractant from the wet process phosphoric acid and then contacting the organic extractant with a stripping solution to separate the extracted specie from the organic extractant for recovery, the improvement which comprises providing a stripping solution comprising a phosphoric acid solution containing trivalent vanadium in which the trivalent vanadium is used to reduce the extracted specie to a lower valence state to effect the separation from the organic extractant.

4,241,028
SORPTION OF TUNGSTEN FROM ALKALINE SOLUTIONS

S. Ralph Borrowman, Bountiful, and Paulette B. Altringer, Summit Park, both of Utah, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 4, 1979, Ser. No. 27,134
Int. Cl.[3] C01G *41/00*
U.S. Cl. 423—54 **3 Claims**

1. A process for sorption of tungsten from alkaline brines containing about 50–70 ppm tungsten and having a pH of about 7 to 8 comprising contacting the brine with ion exchange resin beads consisting essentially of an 8-hydroxyquinoline-resorcinol-formaldehyde resin, said beads being essentially spherical in shape, having diameters in the range of about 300 to 850 microns and prepared by copolymerization of the monomers in suspension in chlorobenzene, said chlorobenzene containing a dispersant in an amount to result in formation of beads of the required size and shape.

4,241,029
LIQUID/LIQUID EXTRACTION OF GALLIUM VALUES FROM BASIC AQUEOUS SOLUTIONS THEREOF

Jacques Helgorsky, Frepillon, and Alain Leveque, Paris, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 14, 1978, Ser. No. 969,470
Claims priority, application France, Dec. 15, 1977, 77 37785
Int. Cl.[3] C01G *15/00*
U.S. Cl. 423—112 **17 Claims**

1. In a process for recovering gallium values contained in a basic aqueous solution by a liquid/liquid extraction comprising contacting the basic aqueous solution with a water immiscible organic phase comprising an organic solvent and dissolved therein an organic-soluble substituted hydroxyquinoline, whereby the gallium is extracted into the organic phase; separating the organic phase from the basic aqueous solution and recovering the gallium values from the organic phase, the improvement which comprises the organic phase further comprising dissolved therein an organic carboxylic acid compound.

4,241,030
CONTINUOUS PROCESS FOR OBTAINING PURE ALUMINA FROM AN ACIDIC LIQUOR ORIGINATING FROM THE CHLOROSULPHURIC ATTACK OF AN ALUMINOUS ORE AND FOR THE PURIFICATION OF THE LIQUOR WHICH HAS BEEN FREED FROM ALUMINA

Joseph Cohen; Alain Adjemian, and Michel Ferran, all of Aix-en-Provence, France, assignors to Aluminum Pechiney, Lyons, France

Filed May 8, 1979, Ser. No. 35,439
Claims priority, application France, May 18, 1978, 78 15370
Int. Cl.[3] C01F *7/22, 7/26*
U.S. Cl. 423—126 **7 Claims**

1. A process for obtaining a purified alumina from calcined aluminous ore containing impurities of metals selected from the group consisting of iron, titanium, sodium, potassium, magnesium and calcium comprising:

(a) attacking the ore with hot chlorosulphuric acid to provide a residue and a liquor containing dissolved alumina and impurities,
(b) separating the residue from the liquor,
(c) washing the separated residue with aqueous medium to extract the solubles,
(d) recycling the wash liquor from step (c) to make up a part of the chlorosulphuric acid attacking liquor in step (a),
(e) concentrating the liquor separated in step (b) to the limit of solubility of aluminum chloride hexahydrate,
(f) adding sulphuric acid liquor to the concentrate of step (e),
(g) introducing HCl gas recycled from step (j) into the mixture from step (f) to precipitate almost all of the aluminum chloride hexahydrate,
(h) separating the liquor containing the impurities from the precipitate from step (g),
(i) degassing the liquor separated in step (h) to release HCl gas,
(j) recycling the gaseous HCl for introduction into the mixture in step (g) to precipitate almost all of the aluminum chloride hexahydrate,
(k) adding potassium ions to the degassed liquor from step (i),
(l) concentrating the liquor from step (k) to precipitate ferripotassium sulphates and sulphates of other impurities,
(m) separating the sulphuric liquor from the precipitate formed in step (l),
(n) recycling the sulphuric liquor from step (m) to the sulphating step (f), and
(o) thermally decomposing the separated aluminum chloride hexahydrate from step (h) to produce pure alumina.

4,241,031
DISSOLUTION OF NICKELIFEROUS SULFIDE MATERIAL IN HCL

Gustavo A. Meyer; John R. Carlberg, both of Arvada, Colo., and Cvetko Nikolic, Harvey, La., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 16, 1979, Ser. No. 12,781
Int. Cl.[3] C01G *53/08*
U.S. Cl. 423—150 **35 Claims**

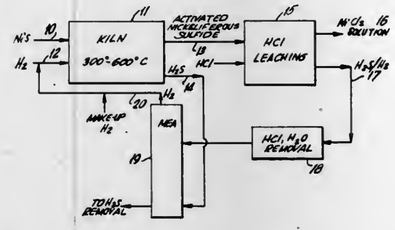
1. A method for the hydrochloric acid leaching of low-copper nickeliferous sulfide material optionally containing up to about 5% copper and having a nickel, sulfur, and optionally, cobalt content of at least about 85% by weight of said material which comprises,

selecting the nickeliferous sulfide material to be leached from the group consisting of:

(A) a thermally activated material having a S/Ni atom ratio of about 0.3 to 0.9,
(B) a material consisting essentially of a primary nickel sulfide precipitate having a S/Ni atom ratio of approximately 1, and
(C) a material having a S/Ni atom ratio of over 0.9,

leaching said selected material in accordance with the following procedure:

(I) where the material selected is (A), the material is first leached as a slurry at a selected low dissolution temperature in the range of about 50° C. to 80° C. with an amount of hydrochloric acid solution of a selected normality in the range of a about 3 N to 8 N sufficient to dissolve at least about 50% by weight of the total nickel in said material, followed by completion of said leaching at a selected high temperature in the range of over 80° C. to boiling until a terminal free acid concentration falling in the range of about 0.5 to 5 N is reached with substantially complete dissolution of the remaining nickeliferous sulfide material,
(II) where the material selected is (B), the material is leached as a slurry at a selected dissolution temperature of over 50° C. in a hydrochloric acid solution of a selected normality in the range of about 3 N to 8 N sufficient to dissolve at least about 50% of the total nickel contained in said material and provide a residue refractory to further dissolution in which the S/Ni atom ratio exceeds 1,



said residue being thereafter recovered and thermally activated to reduce the sulfur content thereof at least about 10% by weight of the total sulfur content,

said activated residue being thereafter leached again as aforesaid, with an amount of hydrochloric acid of selected normality ranging from about 3 N to 8 N sufficient to dissolve at least about 50% of the total nickel in said activated residue and provide a terminal free acid concentration of about 0.5 N to 5 N,

(III) where the material selected is (C), it is first thermally activated to reduce the sulfur content thereof at least about 10% by weight of the total sulfur content following which the activated sulfide material is leached as a slurry at a selected dissolution temperature of over 50° C. with an amount of hydrochloric acid solution of a selected normality in the range of about 3 N to 8 N sufficient to dissolve at least about 50% of the total nickel contained in said material, and provide a terminal free acid concentration of about 0.5 N to 5 N, and

thereafter collecting and purifying the resulting nickel chloride leach solution obtained.

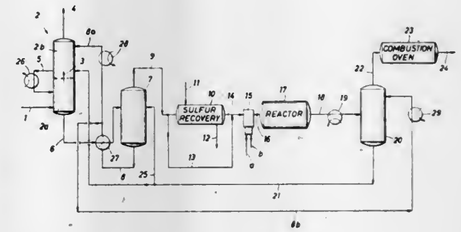
4,241,032
PROCESS FOR THE REMOVAL OF HYDROGEN SULFIDE FROM GAS STREAMS

Erik S. E. Werner; Cornelis Ouwerkerk, and Roelof Cornelisse, all of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 22, 1979, Ser. No. 41,457
Claims priority, application Netherlands, May 23, 1978, 7805550
Int. Cl.[3] B01D *53/34*
U.S. Cl. 423—226 **10 Claims**

1. A process for the treatment of a gas containing carbon dioxide, hydrogen sulfide, and organic sulfur compounds, the gas having a relatively high carbon dioxide content in relation to the hydrogen sulfide present, comprising

(a) introducing the gas into a first absorption zone where it is countercurrently contacted with a regenerable absorption liquid supplied to said zone to remove hydrogen sulfide and organic sulfide compounds under conditions which are nonselective or slightly selective in respect of the co-absorption of carbon dioxide, said first absorption zone being divided into at least two sections arranged one above the other and the gas being introduced into the lowest of the sections and the absorption liquid being supplied to an upper section, the absorption liquid being intermediately cooled outside the absorption zone before being supplied from an upper section to a lower section;
(b) passing the treated gas from the absorption zone and passing the regenerable absorption liquid, loaded with hydrogen sulfide, organic sulfur compounds, and carbon dioxide from the lower section of the absorption zone to a regeneration zone, and regenerating the absorption liquid by heating and/or stripping to yield a gas mixture containing hydrogen sulfide, oganic sulfur compounds, carbon dioxide, and a regenerated absorption liquid, a portion of which is supplied to an upper section of the first absorption zone, and a portion of which is supplied to a second absorption zone;
(c) passing a portion of the gas mixture obtained in step (b) to a catalytic reduction zone in which sulfur compounds



other than hydrogen sulfide are converted into hydrogen sulfide at temperatures between 180° and 450° C. in the presence of hydrogen and/or carbon monoxide over a catalyst suitable therefor, and passing the rest of said gas mixture to a sulfur recovery unit, and converting the hydrogen sulfide in the mixture to sulfur with recovery of the resultant sulfur and an offgas;
(d) passing the off-gas from the sulfur recovery unit to the said catalytic reduction zone in order to convert into hydrogen sulfide any remaining sulfur compounds;
(e) passing the combined gas mixture leaving the catalytic reduction zone and containing substantially hydrogen sulfide to a second absorption zone and contacting said combined gas mixture at a temperature below the dew point of water with the same regenerable absorption liquid as used in the first absorption zone, under operating conditions which are selective in respect of the co-absorption of carbon dioxide;
(f) discharging the unabsorbed portion of the combined gas mixture from step (d) and passing the absorption liquid substantially loaded with hydrogen sulfide at least partly to the upper section of the first absorption zone.

4,241,033

PROCESS FOR THE SEPARATION OF SULFUR OXIDES FROM A GASEOUS MIXTURE CONTAINING SULFUR OXIDES AND OXYGEN

Edward A. Ginger, Northbrook, and Armand J. deRosset, Clarendon Hills, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 852,393, Nov. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 748,995, Dec. 9, 1976, abandoned. This application Feb. 1, 1979, Ser. No. 8,712

Int. Cl.[3] **B01J** *8/00;* **C01B** *17/00;* **C09K** *3/00*

U.S. Cl. 423—244 **11 Claims**

1. In a process for the separation of inorganic sulfur oxides by oxidation of said inorganic sulfur oxides from a gaseous mixture containing said inorganic sulfur oxides and oxygen in which said gaseous mixture is contacted with a solid sulfur oxides acceptor comprising copper, copper oxide or a mixture thereof dispersed on a carrier material at a temperature of from about 150° C. to about 450° C. and in which said acceptor is regenerated with a reducing gas, the improvement which comprises the addition to said carrier material of about 0.01 to about 1.0 wt.% of said solid acceptor of a platinum group metal or an oxide thereof and a component of about 0.01 to about 1.0 wt.% of said solid acceptor selected from the group consisting of germanium, rhenium, tin and oxides thereof.

4,241,034

PROCESS FOR PURIFYING CYCLIC PHOSPHONITRILIC CHLORIDES

Charles H. Kolich, Farmington Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 31, 1979, Ser. No. 44,309

Int. Cl.[3] **C01B** *25/10*

U.S. Cl. 423—300 **35 Claims**

32. A process for improving the purity of phosphonitrilic chloride polymers which comprises:

(1) contacting a solution of open-chain phosphonitrilic chloride oligomers admixed with cyclic trimer, cyclic tetramer and higher cyclic oligomers of phosphonitrilic chloride in a normally liquid aliphatic hydrocarbon with aqueous lower alkylnitrile;

(2) separating the liquid hydrocarbon phase laden with cyclic trimer and some cyclic tetramer from the aqueous phase thereby produced; and

(3) recovering high purity cyclic trimer and cyclic tetramer from the hydrocarbon phase.

4,241,035

SYNTHETIC IMOGOLITE

Victor C. Farmer, Aberdeen, Scotland, assignor to National Research Development Corporation, London, England

Filed Jul. 3, 1979, Ser. No. 54,650

Claims priority, application United Kingdom, Jul. 7, 1978, 29132/78

Int. Cl.[3] **C01B** *33/26*

U.S. Cl. 423—327 **21 Claims**

1. A method of synthesising an inorganic material which is a fibrous product having tubular structure related to, or resembling, the natural product imogolite, the method comprising:

preparing an aqueous hydroxyaluminum silicate solution containing up to 0.5 molar aluminum, wherein the atomic proportion of Si:Al in the solution does not exceed 0.6:1 when the solution contains a concentration of silicon over 20 mM, the solution having a pH of 3.1 to 5.0 and having been prepared by hydrolysis in acid of aluminum alkoxide and, introduced not later than the aluminum alkoxide, tetraalkyl silicate; and digesting the solution thus prepared until a product is obtained displaying discernible electron diffraction peaks at 1.4 Å, 2.1 Å and 4.2 Å.

4,241,036

SYNTHETIC CRYSTALLINE ZEOLITE AND PROCESS FOR PREPARING SAME

Edith Flanigen, White Plains, N.Y., and Elsa R. Kellberg, Vienna, Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 655,318, Jul. 24, 1967, abandoned, which is a continuation-in-part of Ser. No. 569,805, Aug. 3, 1966, abandoned. This application Oct. 23, 1975, Ser. No. 625,091

Int. Cl.[2] **C01B** *33/28*

U.S. Cl. 423—328 **6 Claims**

1. A crystalline synthetic zeolitic molecular sieve having a composition expressed in terms of moles of oxides as

$$1.0\pm0.5M_{2/n}O:Al_2O_3:5\text{-}20SiO_2:0\text{-}10H_2O$$

wherein M represents at least one action having a valence "n", and having an x-ray powder diffraction pattern essentially as set forth in Table A.

4,241,037

PROCESS FOR PURIFYING SILICON

Luigi Pelosini, Fontaneto; Alessandro Parisi, Novara, and Sergio Pizzini, Sesto Calende, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 6, 1979, Ser. No. 91,750

Claims priority, application Italy, Nov. 9, 1978, 29622 A/78

Int. Cl.[3] **C01B** *33/02*

U.S. Cl. 423—348 **4 Claims**

1. A process for purifying silicon, characterized in that metallurgical silicon in the molten state is reacted with a barium compound selected from the class consisting of barium carbonate, barium oxide, barium hydroxide, and mixtures thereof at a temperature in the range of 1,550° to 2,000° C. and then, after cooling and crushing, the so reacted silicon is leached with a dilute inorganic acid to yield solar grade silicon having a B content not higher than 5 ppmw, and Al content lower than 1 ppmw, a P content not higher than 1 ppmw, and a total content of other metal impurities lower than 1.5 ppmw.

4,241,038

REDUCTION OF FERRIC CHLORIDE

Philip J. Gabb; Hayden Monk, and John Lumsden, all of Bristol, England, assignors to Mineral Process Licensing Corporation BV, The Hague, Netherlands

Filed May 10, 1979, Ser. No. 37,681

Claims priority, application United Kingdom, May 16, 1978, 19987/78

Int. Cl.[3] **C01G** *94/10*

U.S. Cl. 423—493 **11 Claims**

1. In a method for the reduction of ferric chloride in the presence of a reducing agent to produce ferrous chloride the improvement which comprises using a reducing agent comprising at least a major portion of sulphur monochloride.

4,241,039

METHOD OF REMOVAL OF ARSENIC FROM A SULFURIC ACID SOLUTION

Shiro Koh; Tomomichi Kudo; Michihiro Maeshima, and Tamotsu Kibayashi, all of Okayama, Japan, assignors to Dowa Mining Co. Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,872

Claims priority, application Japan, Dec. 14, 1977, 52/150175

Int. Cl.[3] **C01B** *17/90;* **C01G** *28/02*

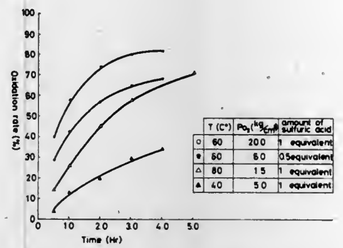
U.S. Cl. 423—531 **2 Claims**

1. A method of removal of As^{3+} from a sulfuric acid solution containing arsenic and ferrous ions which comprises:

(a) subjecting a part of said solution to oxygen under pressure so as to oxidize said ferrous ions to ferric ions;

(b) mixing the oxidized solution with the remainder of the solution under agitation in amounts such that the weight ratio of Fe^{3+}/As^{3+} in the mixture is between about 2 and 40;

(c) adjusting the pH of the mixture from step (b) to 3.5 to 4.6



to produce a precipitate which coprecipitates or adsorbs arsenic; and

(d) separating and removing the precipitates from the mixture.

4,241,040

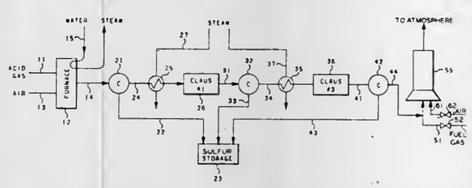
INCINERATION OF SULFUR PLANT TAIL GAS

Joe Van Pool, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 24, 1978, Ser. No. 909,079

Int. Cl.[3] **C01B** *17/50*

U.S. Cl. 423—542 **3 Claims**



1. A method for the treatment of a tail gas formed in a sulfur process, said tail gas containing less than about 236 parts per million (ppm) H_2S, said method comprising the steps of:

mixing said tail gas with a fuel gas;

supplying the mixture of said fuel gas and said tail gas to a burner means to therein convert substantially all of the H_2S in said tail gas to SO_2; and

venting the combustion product resulting from the combustion of the mixture of said fuel gas and said tail gas through a stack to the atmosphere, the conversion of substantially all of said H_2S in said tail gas to said SO_2 being accomplished at a stack temperature in the range of about 900° F. to about 950° F., said combustion product containing less than about 10 PPM H_2S.

4,241,041

METHODS FOR THE RECOVERY OF SULFUR COMPONENTS FROM FLUE GAS AND RECYCLE SODIUM SULFITE BY REDUCTION-SMELTING AND CARBONATING TO STRIP HYDROGEN SULFIDE

William G. Farin, Neenah, Wis., assignor to MEI Systems Inc., Menasha, Wis.

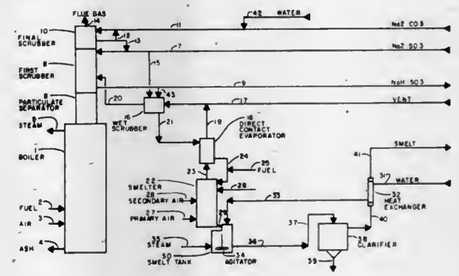
Continuation-in-part of Ser. No. 840,996, Oct. 11, 1977, Pat. No. 4,148,684, which is a continuation-in-part of Ser. No. 739,718, Nov. 8, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,490

The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.

Int. Cl.[3] **C01B** *17/00, 17/16;* **D21C** *11/02, 11/12*

U.S. Cl. 423—563 **20 Claims**

1. An improved method for utilizing a solution containing sodium sulfite to absorb sulfur dioxide from flue gas formed during the burning of sulfur-containing fuels under oxidizing conditions, separating sulfur components from the absorbed sulfur dioxide for recovery, and recycling the sodium sulfite; said method comprising the steps of: (1) burning fuel under reducing conditions to provide sufficient heat to concentrate and smelt a solution containing sodium sulfite, forming a smelt comprised primarily of sodium sulfide and sodium carbonate while releasing sulfur dioxide: (2) dissolving the smelt from step one in water to form a smelt solution; (3) precarbonating the said dissolved smelt solution from step two with a gas comprising of hydrogen sulfide, carbon dioxide and water vapor to convert the sodium sulfide component to sodium hydrosulfide and sodium carbonate, and to convert a portion of the sodium carbonate component to sodium bicarbonate while absorbing a portion of the carbon dioxide thereby reducing the carbon dioxide content in the hydrogen sulfide; (4) separating the gas components by releasing the hydrogen sulfide and contained carbon dioxide from step three for recovery; (5) desulfiding the precarbonated solution from step three by stripping said precarbonated solution with gas containing carbon dioxide and water vapor to reduce the partial pressure of the hydrogen sulfide which is released from the precarbonated solution during desulfiding and raise the temperature of the precarbonated solution by condensation, while reacting the precarbonated solution with a concentrated sodium bicarbonate solution in which the concentration of sodium bicarbonate is maintained sufficiently high to hold the partial pressure of the carbon dioxide created by the reacted concentrated sodium bicarbonate and precarbonated solutions above the



partial pressure of the carbon dioxide provided by the gas utilized for stripping during the stripping operation, thereby preventing carbonation or formation of sodium bicarbonate by carbon dioxide absorption during said stripping, while converting the sodium hydrosulfide in said reacted solution to sodium carbonate, forming a solution containing sodium carbonate and sodium bicarbonate and forming and releasing hydrogen sulfide, venting said formed and released hydrogen sulfide and a portion of the carbon dioxide and water vapor used from said stripping for use in step three; (6) pressure carbonating a portion of the solution containing sodium carbonate and sodium bicarbonate from step five with carbon dioxide gas at a pressure above 1.2 atmospheres to convert said portion into a solution containing a high concentration of sodium bicarbonate and recycling at least a portion of the solution with a high concentration of sodium bicarbonate for use in step five; (7) decarbonating the portion of solution containing sodium carbonate and sodium bicarbonate formed in step five and not used in step six by reacting with a sodium bisulfite solution at a pressure above 1.2 atmospheres to form a solution containing sodium sulfite and forming carbon dioxide, utilizing a portion of the solution containing sodium sulfite in step one and releasing the formed carbon dioxide gas at a pressure above 1.2 atmospheres for use in step six; (8) scrubbing flue gas formed in burning sulfur-containing fuels under oxidizing conditions with that portion of the solution containing sodium sulfite formed in step seven and not used in step one, forming a solution containing sodium bisulfite and utiliz-

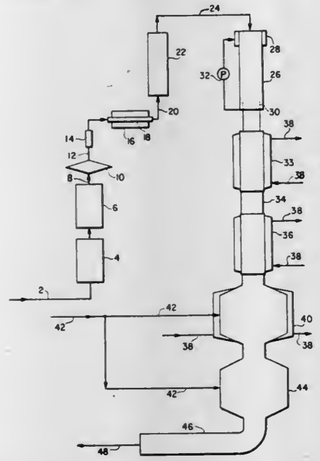
ing a portion of the solution containing sodium bisulfite for decarbonation in step seven.

4,241,042

SPHERICAL TITANIUM DIOXIDE PARTICLES AND PROCESS OF MANUFACTURE

Egon Matijevic, Potsdam, N.Y., and Mario Visca, Alessandria, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jun. 19, 1978, Ser. No. 916,883
Int. Cl.³ C01G *23/047*
U.S. Cl. 423—610 **15 Claims**



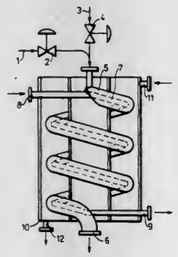
1. A method of preparing titanium dioxide, comprising:
(A) providing a liquid aerosol comprising discrete liquid droplets of a hydrolyzable titanium (IV) compound;
(B) contacting the liquid aerosol with water vapor in dynamic flow, to hydrolyze the liquid titanium (IV) compound to titanium dioxide in the form of discrete, solid, substantially spherical particles of a substantially uniform shape and size; and
(C) recovering the titanium dioxide.

4,241,043

METHOD FOR EVAPORATING SOLVENTS AND REACTING COMPONENTS IN COMPOUND MIXTURES

Hartmut Hetzel, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,288
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811902
Int. Cl.³ B01J *19/00;* B01D *1/22;* F28D *7/04, 7/10*
U.S. Cl. 423—659 **3 Claims**



1. In a method of evaporating solvents and reacting material components in compound mixtures in a continuous spiral tube, in which a thin-layered annular liquid flow is propelled by means of an internally flowing gas stream, the improvement wherein said tube comprises a continuous spiral tube within a cylindrical casing which has an inlet and an outlet for a heat exchange medium, characterized in that a second tube is arranged as a core of the spiral tube and has an inlet flange and an outlet flange for a second heat exchange medium, and wherein the gas stream is guided along the flow path in the annular shaped passage formed by said core and said spiral tube.

4,241,044

METHOD OF DIAGNOSING CANCER BY DETECTING ELEVATED ANTI-T ANTIBODY ACTIVITY

Yung D. Kim, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 28, 1978, Ser. No. 973,991
Int. Cl.² G01N *33/16;* A61K *43/00*
U.S. Cl. 424—1 **8 Claims**

8. A method of diagnosing cancer by detecting elevated levels of anti-T antibody which comprises:
mixing a biological sample from a therapeutically untreated individual with a known amount of labeled T-antigen and anti-T antibody affixed to a solid support;
allowing the affixed antibody to compete with any anti-T antibody in said sample and selectively complex with the labeled T-antigen;
separating the solid support from the reaction medium;
measuring the degree of binding of the labeled T-antigen with the affixed anti-T antibody; and
determining the amount of anti-T antibody present in said sample by comparing the degree of binding to a standard curve.

4,241,045

PURIFIED ANTIGEN TO TEST FOR *NEISSERIA GONORRHEAE* ANTIBODIES

Hassan A. Gaafar, Voorheesville, N.Y., assignor to Research Corporation, New York, N.Y.

Filed May 15, 1978, Ser. No. 905,954
Int. Cl.² G01N *33/16;* A61K *43/00*
U.S. Cl. 424—1 **17 Claims**

1. A serological method for determining the presence of *Neisseria gonorrhoeae* antibodies in human serum which comprises preparing a composition containing undiluted serum or diluted in a physiologically acceptable liquid at a dilution of about 1:2 to 1:1000, incubating with a composition containing a species specific antigen preparation produced from a growth culture of *Neisseria gonorrhoea* to form an antigen-antibody conjugate when said antibodies are present; and detecting the presence of said conjugate; the antigen being protein in nature and characterized as follows:
1. stable in boiling water for a period of one hour,
2. stable in an aqueous medium at pH values of 3–11,
3. stable when incubated with the following enzymes;
DNA—ase
RNA—ase
dextransase
neuraminidase
lysosyme,
4. isoelectric point of 4±0.2,
5. molecular weight of active subunits of 37,000–40,000 as determined by SDS-polyacrylamide gel,
6. contains 2–3% organic phosphorous,
7. soluble in water, and more soluble in aqueous media containing surface active agents; and insoluble in methanol, chloroform, and acetone,
8. reacts specifically with antibodies produced in rabbits against purified L-antigen,
9. partially soluble in 5% to 10% trichloroacetic acid.

4,241,046

METHOD OF ENCAPSULATING BIOLOGICALLY ACTIVE MATERIALS IN LIPID VESICLES

Demetrios P. Papahadjopoulos, 78 Heathwood, Williamsville, N.Y. 14221, and Francis C. Szoka, Jr., 375 Leroy Ave., Buffalo, N.Y. 14214

Continuation of Ser. No. 881,116, Feb. 24, 1978. This application Nov. 30, 1978, Ser. No. 964,815
Int. Cl.³ A01N *25/26;* A61K *9/22;* A01N *25/00*
U.S. Cl. 424—19 **1 Claim**

1. A method of killing insect pests, which comprises applying to their situs an effective amount of an effective insecticide, encapsulated in an oligolamellar lipid vesicle, said lipid vesicle having a diameter within the range of from 2000 to 4000 angstroms.

4,241,047

NOVEL MEDICINAL COMPOSITION FOR THE TREATMENT OF BILIARY LITHIASIS

Jean-Claude Lechevin, Lyons, and Jean-Noël Treilles, Lissieu-Lozanne, both of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyons, France

Filed Jul. 18, 1979, Ser. No. 815,424
Int. Cl.³ A01N *45/02;* A61K *31/575, 9/32, 9/40*
U.S. Cl. 424—33 **9 Claims**

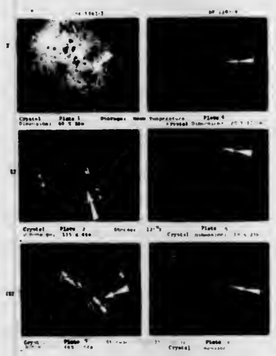
1. New medicament, which can be used in the treatment of biliary lithiasis, wherein the active principle is the association of hymecromone (4-methyl-7-hydroxycoumarine) and chenodeoxycholic acid.

4,241,048

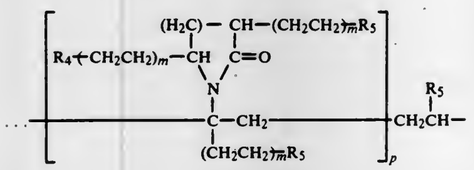
SUSPENSION COMPOSITION OF BENZOCAINE

Taras Durbak, Irvington, and Ara Nersesian, Livingston, both of N.J., assignors to Bristol-Myers Company, New York, N.Y.

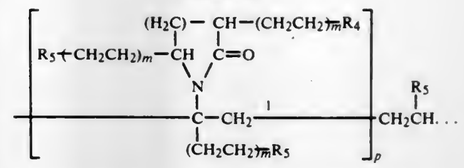
Filed May 1, 1979, Ser. No. 35,115
Int. Cl.³ A61K *31/79;* A61L *9/14*
U.S. Cl. 424—45 **19 Claims**



1. An anesthetic compositon comprising a therapeutically effective amount of powdered benzocaine suspended in an essentially anhydrous carrier and containing an effective amount of a vinylpyrrolidone and a long chain alpha-olefin copolymer of the formula:



-continued



wherein R_5 is selected from the group consisting of hydrogen and alkyl, of from 1 to about 180 carbon atoms, p is an integer of from 10 to 100, and wherein the m's independently represent a numerical value of 0 to 1; when m is zero, R_5 is hydrogen; when m is 1, R_5 is selected from the group consisting of hydrogen and alkyl of from 1 to about 180 carbon atoms, and wherein at least one of the m's in at least one of the N-vinylpyrrolidone moieties has the value of 1;

the ratio of the said copolymer to benzocaine present is in the range of from about 0.05 parts to about 4 parts of copolymer to 1 part of benzocaine which is sufficient to significantly suppress crystal growth of said benzocaine on storage.

4,241,049

STABLE DENTIFRICE

Daniel Colodney, Green Brook, and James Norfleet, Plainfield, both of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 326,811, Jan. 26, 1973, abandoned, which is a continuation of Ser. No. 126,972, Mar. 22, 1971, abandoned. This application Oct. 10, 1975, Ser. No. 621,460
Int. Cl.³ A61k *7/22*
U.S. Cl. 424—54 **8 Claims**

1. A process of preventing the separation into liquid and solid phases of an antibacterial dentifrice comprising forming the antibacterial dentifrice by adding to a single phase vehicle mass which comprises solids and liquids proportioned to cream or gel consistency and which contains about 0.01–5% by weight of flavoring oil and about 0.015–2% by weight of phosphate ion, as an antibacterial agent, 1,6-di-(p-chlorophenyl biguanido) hexane, in amount to provide about 0.01–5% by weight of the free base and about 0.25–10% by weight of a water-soluble alkaline earth metal salt of a strong acid to prevent phase separation.

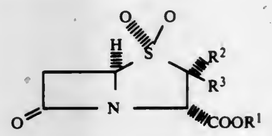
4,241,050

PENAM 1,1-DIOXIDES AS BETA-LACTAMASE INHIBITORS

Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 1, 1978, Ser. No. 938,848
Int. Cl.³ C07D *277/60;* A61K *31/425, 31/43*
U.S. Cl. 424—114 **28 Claims**

1. A compound of the formula



and the pharmaceutically acceptable base salts thereof, wherein R^1 is selected from the group consisting of hydrogen, alkanoyloxymethyl having from 3 to 7 carbon atoms, 1-(alkanoyloxy)ethyl having from 4 to 8 carbon atoms, 1-methyl-1-(alkanoyloxy)ethyl having from 5 to 9 carbon atoms, alkoxycarbonyloxymethyl having from 3 to 6 carbon atoms, 1-(alkoxycarbonyloxy)ethyl having from 4 to 7 carbon atoms, 1-methyl-1-(alkoxycarbonyloxy)ethyl having from 5 to 8 carbon atoms, 3-phthalidyl, 4-crotonolactonyl and gamma-

butyrolacton-4-yl, benzyl, 4-nitrobenzyl, benzhydryl, 2,2,2-trichloroethyl, t-butyl and phenacyl;

and R^2 and R^3 are each selected from the group consisting of hydrogen and methyl;

provided that R^2 and R^3 are not both methyl.

4,241,051

CALCITONIN

Robert B. Christie, 49 Willingdon Park Dr., Hampden Park, Eastbourne, East Sussex; John A. Parsons, 17 Ovington St., and Christopher G. Rudman, 12 Lawrence Mansions, Lordship Pl., Cheyne Walk, both of London SW3, all of England

Filed Oct. 30, 1978, Ser. No. 955,608

Claims priority, application United Kingdom, Nov. 4, 1977, 45967/77

Int. Cl.[2] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **10 Claims**

1. A method for the treatment of a patient suffering from pathological processes in bone and connective tissue of the ear which comprises the topical application of calcitonin (as hereinbefore defined) to effect control of said processes by transepithelial action at the site of application.

4,241,052

NOVEL NITROSOUREA COMPOUNDS AND PROCESS FOR PREPARING THE SAME

Kenji Tsujihara, Urawa; Masakatsu Ozeki, Wako, and Yoshihisa Arai, Urawa, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

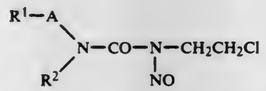
Filed May 14, 1979, Ser. No. 38,638

Claims priority, application United Kingdom, Jun. 10, 1978, 26659/78; Jan. 27, 1979, 2955/79

Int. Cl.[3] A61K *31/70;* **C07H** *13/12;* **A61K** *31/73*

U.S. Cl. 424—180 **48 Claims**

1. A nitrosourea compound of the formula:



wherein R^1 is an alicyclic group having 3 to 6 carbon atoms, phenyl, phenyl substituted with one to 3 substituents selected from the class consisting of halogen, lower alkyl, lower alkoxy, hydroxy and nitro, a heteromonocyclic group selected from the class consisting of oxiranyl, tetrahydrofuryl, 1,3-dioxolanyl, 1,4-dioxanyl, morpholino, tetrahydro-S,S-dioxo-thienyl, furyl, thienyl and pyridyl; R^2 is aldo-pentofuranosyl, aldo-pentopyranosyl, aldo-hexopyranosyl or O-aldo-hexopyranosyl-(1→4)-aldo-hexopyranosyl; and A is a single bond, straight or branched alkylene having one to 3 carbon atoms.

43. A method of treating malignant tumor cells in test animals comprising administering to said animals a therapeutically effective amount of the compound of claim 1.

4,241,053

NOVEL NITROSOUREA COMPOUNDS AND PROCESS FOR PREPARING THE SAME

Kenji Tsujihara, Urawa; Masakatsu Ozeki, Wako, and Yoshihisa Arai, Urawa, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

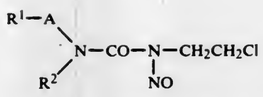
Filed Aug. 14, 1979, Ser. No. 66,421

Claims priority, application United Kingdom, Aug. 25, 1978, 34564/78; Jan. 27, 1979, 02957/79

Int. Cl.[3] A61K *31/70, 31/73;* **C07H** *13/12*

U.S. Cl. 424—180 **20 Claims**

1. A compound of the formula:



wherein R^1 is lower alkoxy, lower alkoxy-methoxy or 2-hydroxyethoxy, R^2 is aldo-pentofuranosyl, aldo-pentopyranosyl, aldo-hexopyranosyl or O-aldo-hexopyranosyl-(1→4)-aldo-hexopyranosyl, and A is straight or branched alkylene of one to four carbon atoms, said alkylene being substituted with from 0 to at least one lower alkoxy group.

20. A therapeutic composition which comprises a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,241,054

DETOXIFYING LIPOPHILIC TOXINS

Robert A. Volpenhein, and Ronald J. Jandacek, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 8, 1978, Ser. No. 967,658

Int. Cl.[3] A61K *31/70*

U.S. Cl. 424—180 **15 Claims**

1. A method for detoxifying humans and lower animals exposed to lipophilic toxins, comprising administering to a human or lower animal exposed to lipophilic toxins a therapeutically effective amount of a non-absorbable, non-digestible polyol fatty acid polyester having at least 4 fatty acid ester groups, wherein the polyol fatty acid polyester is selected from the group consisting of sugars and sugar alcohols containing from 4 to 8 hydroxyl groups esterified with fatty acid groups and wherein each fatty acid group has from about 8 to about 22 carbon atoms.

4,241,055

DERIVATIVES OF ASPIRIN

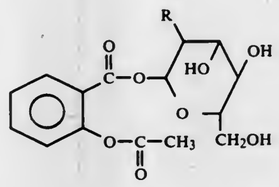
Anwar A. Hussain, Lexington, Ky.; James E. Truelove, Dounington, Pa., and Harry B. Kostenbauder, Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed May 30, 1979, Ser. No. 43,815

Int. Cl.[3] A61K *31/70;* **C07H** *13/02*

U.S. Cl. 424—180 **22 Claims**

1. An 1-O-(2'acetoxy)benzyl-α-D-2-deoxy-glucopyranose derivative having the formula



wherein R represents amino, lower monoalkylamino, lower dialkylamino, piperidino, lower alkyl, lower cycloalkyl, lower alkoxy or hydroxy-substituted lower alkyl.

2. A method for inducing an analgesic, antipyretic, antirheumatic or anti-inflammatory response in a warm-blooded animal which comprises orally administering thereto an effective amount of 1-O-(2'-acetoxy)benzoyl-α-D-2-deoxy-glucopyranose derivative as defined in claim 1.

4,241,056

PENICILLINS AND SALTS THEREOF

Bernd Wetzel, Biberach an der Riss; Wolfgang Reuter, Laupertshausen; Eberhard Woitun; Roland Maier, both of Biberach an der Riss; Uwe Lechner, Ummendorf; Hanns Goeth, and Rolf Werner, both of Bierach an der Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

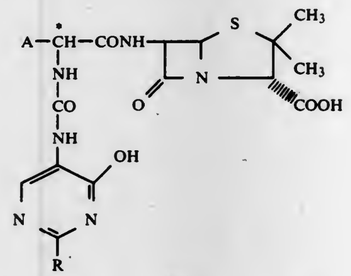
Filed Feb. 21, 1979, Ser. No. 13,006

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808153; Nov. 27, 1978, 2851226; Nov. 27, 1978, 2851270

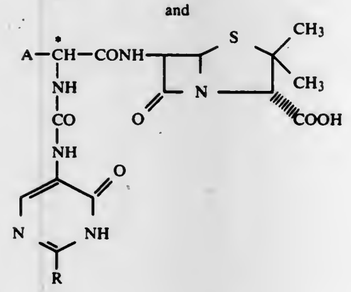
Int. Cl.[3] A61K *31/655, 31/43;* **C07D** *499/68, 499/70*

U.S. Cl. 424—226 **5 Claims**

1. A compound of the tautomeric formulas



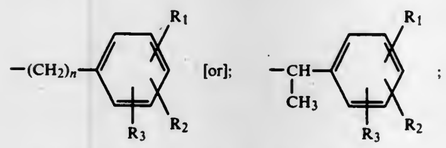
and



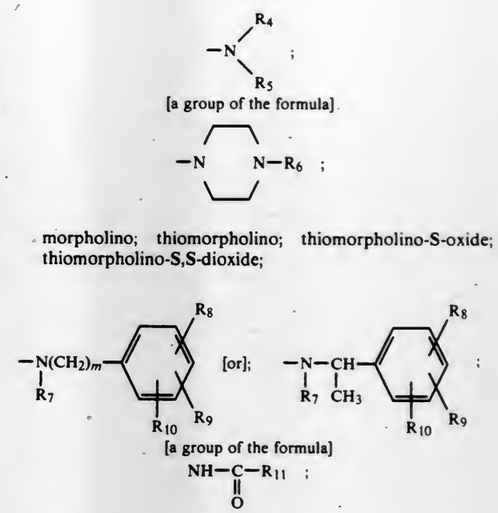
wherein

A is phenyl; 4-hydroxyphenyl; 2-thienyl; 3-thienyl; cyclohexyl; cyclohexen-1-yl; cyclohexa-1,4-dien-1-yl; phenyl disubstituted in 3,4-position, where the substituents are each chlorine, hydroxyl or methoxy;

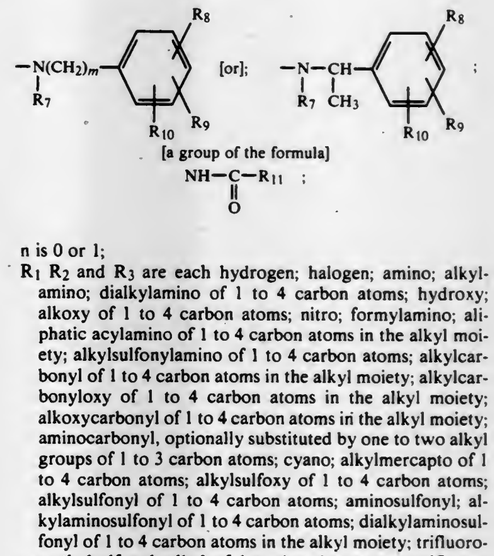
R is hydrogen; aliphatic hydrocarbyl of 1 to 8 carbon atoms optionally containing one to two double bonds or a triple bond; cyclopropyl, which may optionally be substituted with one to two methyl groups, an ethyl group or a phenyl group; cycloalkyl of 4 to 8 carbon atoms optionally containing one or more double bonds;



β-phenylethyl; γ-phenyl-propyl; β-phenylethylidine; cyclopropyl-methyl; 1-cyclopropylethyl; hydroxyl; alkoxy of 1 to 8 carbon atoms; alkenyloxy of 1 to 8 carbon atoms; cycloalkoxy of 3 to 6 carbon atoms; phenoxy; benzyloxy; mercapto; alkylmercapto of 1 to 8 carbon atoms; cycloalkylmercapto of 3 to 6 carbon atoms; phenylmercapto; benzylmercapto; p-chloro-benzylmercapto; alkylsulfinyl of 1 to 4 carbon atoms;



morpholino; thiomorpholino; thiomorpholino-S-oxide; thiomorpholino-S,S-dioxide;



n is 0 or 1;

R_1 R_2 and R_3 are each hydrogen; halogen; amino; alkylamino; dialkylamino of 1 to 4 carbon atoms; hydroxy; alkoxy of 1 to 4 carbon atoms; nitro; formylamino; aliphatic acylamino of 1 to 4 carbon atoms in the alkyl moiety; alkylsulfonylamino of 1 to 4 carbon atoms; alkylcarbonyl of 1 to 4 carbon atoms in the alkyl moiety; alkylcarbonyloxy of 1 to 4 carbon atoms in the alkyl moiety; alkoxycarbonyl of 1 to 4 carbon atoms in the alkyl moiety; aminocarbonyl, optionally substituted by one to two alkyl groups of 1 to 3 carbon atoms; cyano; alkylmercapto of 1 to 4 carbon atoms; alkylsulfoxy of 1 to 4 carbon atoms; alkylsulfonyl of 1 to 4 carbon atoms; aminosulfonyl; alkylaminosulfonyl of 1 to 4 carbon atoms; dialkylaminosulfonyl of 1 to 4 carbon atoms in the alkyl moiety; trifluoromethylsulfonyl; alkyl of 1 to 4 carbon atoms; trifluoromethyl; or phenyl;

R_4 and R_5 are each hydrogen; aliphatic hydrocarbyl of 1 to 8 carbon atoms optionally containing one to two double bonds or a triple bond; cycloalkyl of 3 to 8 carbon atoms which may be substituted with one to two methyl or ethyl groups and may contain one or more double bonds; or cycloalkyl-substituted alkyl of 3 to 8 carbon atoms in the cycloalkyl moiety and 1 to 3 carbon atoms in the alkyl moiety;

R_4 and R_5 together can also form an alkylene chain of 2 to 7 carbon atoms, so that a 3- to 8-membered heterocyclic ring is formed, which may optionally be substituted with one to two alkyl groups of 1 to 3 carbon atoms or a benzyl group, or may contain one to two double bonds or may be fused with a phenyl ring;

R_6 is hydrogen; formyl; acetyl; ethoxycarbonyl; benzyloxycarbonyl; methyl; ethyl; phenyl; or benzyl;

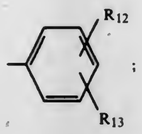
R_7 is hydrogen, methyl; or ethyl;

m is 0, 1 or 2;

R_8, R_9 and R_{10} are each hydrogen; halogen; amino; alkylamino of 1 to 6 carbon atoms; dialkylamino, where each alkyl moiety contains 1 to 6 carbon atoms; pyrrolidyl; piperidyl; hydroxyl; alkoxy of 1 to 6 carbon atoms; formylamino; formylalkylamino of 1 to 3 carbon atoms in the alkyl moiety; aliphatic acylamino of 1 to 3 carbon atoms; acylalkylamino of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 carbon atoms in the acyl moiety; trifluoroacetylamino; aminocarbonylamino; alkylaminocarbonylamino of 1 to 6 carbon atoms in the alkyl moiety; dialkylaminocarbonylamino of 1 to 6 carbon atoms in each alkyl moiety; nitro; alkylsulfonylamino of 1 to 4 carbon

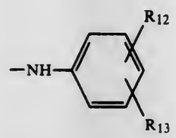
atoms in the alkyl moiety; alkylsulfonylalkylamino of 1 to 4 carbon atoms in each alkyl moiety; hydroxysulfonylamino; hydroxysulfonylalkylamino of 1 to 3 carbon atoms in the alkyl moiety; amidino; guanidino, formyl, alkylcarbonyl of 1 to 6 carbon atoms; benzoyl; alkylcarbonyloxy; alkoxycarbonyl or alkoxycarbonyloxy groups of 1 to 6 carbon atoms; formyloxy; carboxyl; aminocarbonyl; alkylaminocarbonyl of 1 to 4 carbon atoms in the alkyl moiety; dialkylaminocarbonyl of 1 to 4 carbon atoms in each alkyl moiety; aminocarboxyl; alkylaminocarboxyl of 1 to 4 carbon atoms in the alkyl moiety, dialkylaminocarboxyl of 1 to 4 carbon atoms in each alkyl moiety; alkoxycarbonylamino of 1 to 4 carbon atoms in the alkoxy moiety; alkoxycarbonylalkylamino of 1 to 4 carbon atoms in each alkyl moiety; cyano; mercapto; alkylmercapto of 1 to 6 carbon atoms; trifluoromethylmercapto; alkylsulfoxy of 1 to 6 carbon atoms; alkylsulfonyl of 1 to 6 carbon atoms; trifluoromethylsulfonyl; aminosulfonyl; alkylaminosulfonyl of 1 to 4 carbon atoms; dialkylaminosulfonyl of 1 to 4 carbon atoms; hydroxysulfonyl of 1 to 4 carbon atoms; alkoxysulfonyl of 1 to 4 carbon atoms; aminosulfonyloxy, alkylaminosulfonyloxy of 1 to 4 carbon atoms, dialkylaminosulfonyloxy groups of 1 to 4 carbon atoms in each alkyl moiety; straight or branched alkyl of 1 to 6 carbon atoms, which may contain double bonds or may be halo-substituted; azido; dialkylmethyleneimino of 2 to 6 carbon atoms in the alkyl moieties; dialkylaminomethylideneimino groups of 2 to 6 carbon atoms in the alkyl moieties; or phenyl;

R_{11} is hydrogen, alkyl of 1 to 8 carbon atoms; alkenyl of 1 to 8 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; phenyl; benzyl;



;

C_xF_{2x+1}, where x is 1, 2, 3 or 4; alkoxy of 1 to 4 carbon atoms; benzyloxy, cycloalkoxy of 3 to 6 carbon atoms; amino, alkylamino of 1 to 8 carbon atoms; dialkylamino of 1 to 8 carbon atoms in each alkyl moiety; cycloalkylamino of 3 to 6 carbon atoms; cycloalkyleneamino of 3 to 6 carbon atoms; or



;

R_{12} and R_{13} are each hydrogen; chlorine, methoxy; methyl; or benzylamino; and

R_{14} is alkyl of 1 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; benzyl; phenyl, optionally substituted with one to three methyl groups; amino; alkylamino of 1 to 6 carbon atoms; or dialkylamino of 1 to 6 carbon atons in each alkyl moiety;

or a non-toxic, pharmacologically acceptable salt thereof.

4. An antibiotic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antibiotic amount of a compound of claim **1**.

4,241,057

ANTIBIOTIC COMPOSITIONS

Kenzo Ishizuka, Amagasaki; Hiroshi Fujisawa, Toyonaka, and Etsunosuke Noda, Yao, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Division of Ser. No. 828,841, Aug. 29, 1977, Pat. No. 4,161,527.
This application Mar. 9, 1979, Ser. No. 19,185
Int. Cl.³ A61K *31/545*
U.S. Cl. 424—246 **7 Claims**

1. A vacuum-sealed vial, which contains a solid antibiotic composition comprising 7β-[2-(2-imino-4-thiazolin-4-yl)acetamido]-3-{1-[2-(N,N-dimethylamino)ethyl]-1H-tetrazol-5-yl}thiomethyl-3-cephem-4-carboxylic acid dihydrochloride or its hydrate and sodium carbonate or sodium hydrogen carbonate, the ratio of the hydrogen chloride moiety of 7β-[2-(2-imino-4-thiazolin-4-yl)acetamido]-3-{1-[2-(N,N-dimethylamino)ethyl]-1H-tetrazol-5-yl}thiomethyl-3-cephem-4-carboxylic acid dihydrochloride or its hydrate relative to said sodium carbonate or sodium hydrogen carbonate being substantially 1:1 to 2 equivalents, the pressure in the vial being in the range of from 0 to 300 mmHg.

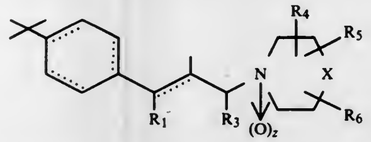
4,241,058

HETEROCYCLICS USEFUL AS FUNGICIDES AND FUNGICIDAL COMPOSITIONS THEREOF

Albert Pfiffner, Bülach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 18, 1977, Ser. No. 853,018
Claims priority, application Austria, Nov. 22, 1976, 8660/76
Int. Cl.³ C07D *295/02;* **A61K** *31/535;* **A01N** *43/84;* **C07D** *295/22*
U.S. Cl. 424—248.4 **174 Claims**

1. A compound of the formula



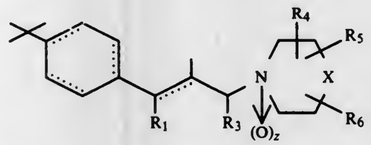
I

, wherein R_1 and R_3, independently, are hydrogen or methyl;

R_4, R_5 and R_6, independently, are hydrogen or alkyl of 1 to 4 carbon atoms, and two of R_4, R_5 and R_6 can each be bonded to the same carbon atom or together can form a fused alicyclic or aromatic six-membered ring; X is a methylene or an oxygen atom; z is zero or 1; and the dotted bonds can be hydrogenated,

or an acid addition salt of a compound thereof which is basic.

92. A fungicidal composition comprising an effective amount of at least one compound of the formula



(I)

wherein R_1 and R_3, independently, are hydrogen or methyl;

R_4, R_5 and R_6, independently, are hydrogen or alkyl of 1 to 4 carbon atoms, and two of R_4, R_5 and R_6 can each be bonded to the same carbon atom or together can form a fused alicyclic or aromatic six-membered ring; X is a methylene or an oxygen atom; z is zero or 1; and the dotted bonds can be hydrogenated,

or an acid addition salt of a compound thereof which is basic and an inert carrier material.

96. A fungicidal composition, in accordance with claim **92**, which contains 4-[3-(p-tert.butyl-phenyl)-2-methyl-propyl]-2,6-dimethyl-morpholine.

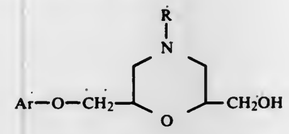
4,241,059

6-[(ARYLOXY)METHYL]-2-MORPHOLINEMETHANOL DERIVATIVES AND USE THEREOF

Frederic P. Hauck, Bridgewater, and Glenn A. Jacobs, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 17, 1979, Ser. No. 104,493
Int. Cl.³ A61K *31/535;* **C07D** *265/30*
U.S. Cl. 424—248.58 **12 Claims**

1. A compound having the structure



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl or lower alkenyl, and Ar is a monocyclic or bicyclic aromatic ring containing from 6 to 10 carbons in the ring, and physiologically acceptable acid-addition salts thereof.

11. A pharmaceutical composition for use in treating arrhythmia comprising an anti-arrhythmic effective amount of a compound as defined in claim **1** and a pharmaceutically acceptable carrier therefor.

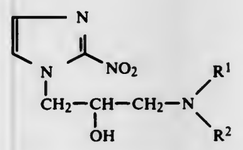
4,241,060

NITROIMIDAZOLES AND COMPOSITIONS THEREOF

Carey E. Smithen, Welwyn Garden City, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

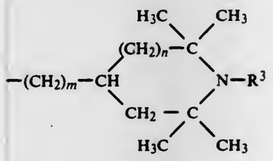
Filed Aug. 3, 1978, Ser. No. 930,622
Claims priority, application United Kingdom, Aug. 19, 1977, 34908/77; May 15, 1978, 19534/78
Int. Cl.³ C07D *413/06, 233/91;* **A61K** *31/535, 31/415*
U.S. Cl. 424—248.57 **20 Claims**

1. A compound of the formula



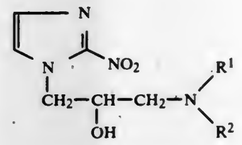
I

wherein R^1 is hydrogen, lower alkyl, hydroxy-(lower alkyl), lower cycloalkyl, aryl or lower aralkyl and R^2 is lower alkyl, hydroxy-(lower alkyl), lower cycloalkyl, aryl or lower aralkyl or a grouping of the formula



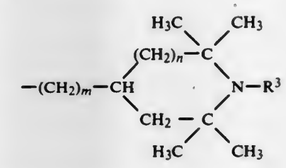
wherein m is zero and n is 1 or m is 1 and n is zero and R^3 is hydrogen, methyl or hydroxy, or R^1 and R^2 taken together with the nitrogen atom to which they are attached are a 5-membered, 6-membered or 7-membered saturated heteromonocyclic ring selected from pyrrolidino, piperidino, 3-hydroxypyrrolidino, 4-hydroxy-piperidino, 3-hydroxy-hexahydro-1H-azepino, piperazino, N-methylpiperazino, N-(2-hydroxyethyl)piperazino, morpholino, hexahydro-1H-azepino, or thiamorpholino, or an acid addition salt thereof.

20. A hypoxic cell radiosensitizing or antiprotozoal pharmaceutical preparation containing a hypoxic cell radiosensitizing amount or an antiprotozoal amount of a compound of the formula



I

wherein R^1 is hydrogen, lower alkyl, hydroxy-(lower alkyl), lower cycloalkyl, aryl or lower aralkyl and R^2 is lower alkyl, hydroxy-(lower alkyl), lower cycloalkyl, aryl or lower aralkyl or a grouping of the formula



wherein m is zero and n is 1 or m is 1 and n is zero, and R^3 is hydrogen, methyl or hydroxy, or R^1 and R^2 when taken together with the nitrogen atom to which they are attached are a 5-membered, 6-membered or 7-membered saturated heteromonocyclic ring selected from pyrrolidino, piperidino, 3-hydroxypyrrolidino, 4-hydroxypiperidino, 3-hydroxy-1H-azepino, piperazino, N-methylpiperazino, N-(2-hydroxyethyl)-piperazino, morpholino, hexahydro-1H-azepino, and thiamorpholino, or a pharmaceutically acceptable acid addition salt thereof, in association with a compatible pharmaceutical carrier material.

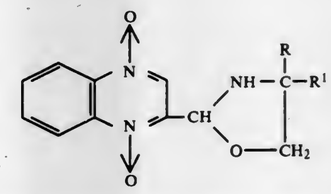
4,241,061

OXAZOLIDINYL-QUINOXALINES AND USE AS GROWTH PROMOTERS

Richard E. Ivy; Vernon V. Young, and Robert D. Williams, all of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

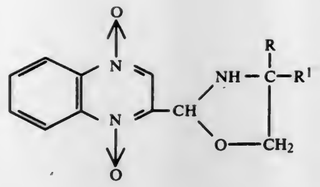
Filed May 21, 1979, Ser. No. 40,833
Int. Cl.³ C07D *413/04, 31/495*
U.S. Cl. 424—250 **15 Claims**

1. Substituted quinoxaline dioxides represented by the formula



where R and R^1 can be hydrogen, methyl, ethyl or hydroxymethyl and can be the same or different.

8. A method for promoting the growth of animals comprising incorporating in the animal's feed rations in an amount of from 50 to 150 g/ton of feed a compound represented by the formula



where R and R^1 can be hydrogen, methyl, ethyl or hydroxymethyl and can be the same or different.

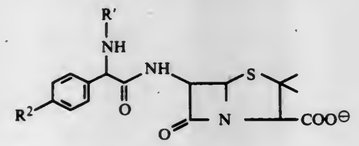
4,241,062

ANTIBACTERIAL PENICILLINS

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 29, 1979, Ser. No. 43,086
Int. Cl.³ A61K *31/505;* C07D *499/74*
U.S. Cl. 424—251 **4 Claims**

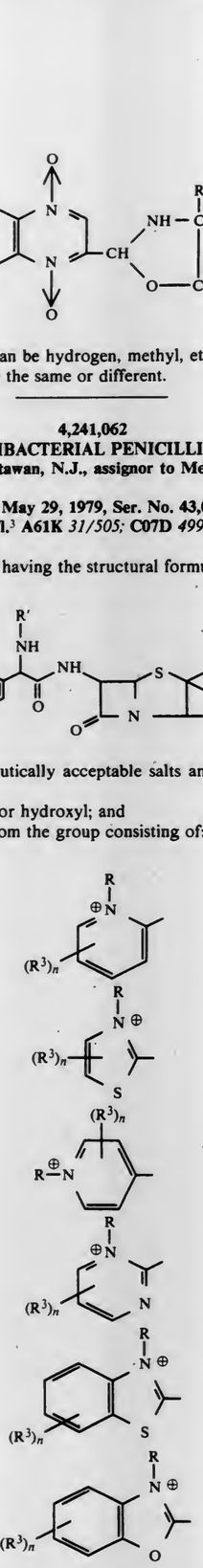
1. A compound having the structural formula:



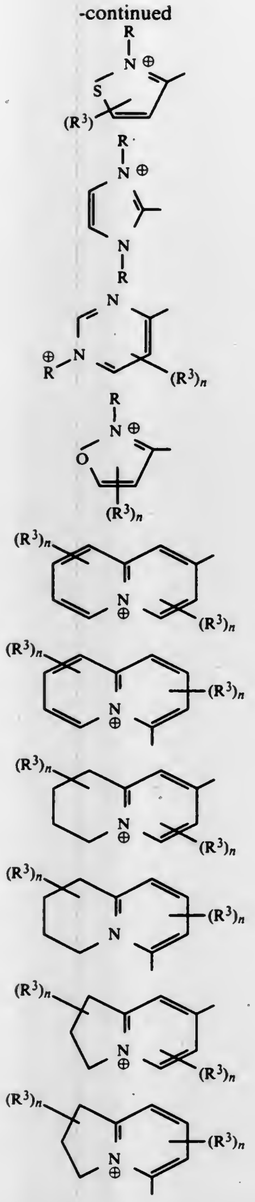
and the pharmaceutically acceptable salts and esters thereof wherein:

R^2 is hydrogen or hydroxyl; and

R′ is selected from the group consisting of:



-continued



wherein the dotted line indicates both saturated and unsaturated rings; and

wherein:

R is alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxyl (C_{1-6}), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms substituted and unsubstituted phenylalkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R^3 is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxyl, alkyl having from 1–6 carbon atoms, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxyl having 1–6 carbon atoms, phenyl and phenyloxy;

n is an integer selected from 0 to 3.

4. An antibacterial pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

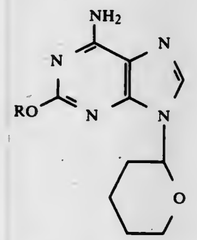
4,241,063

PURINE DERIVATIVES AND THEIR USE AS BRONCHODILATORS

Takayuki Naito, Kawasaki; Susumu Nakagawa, Tokyo; Tetsuro Yamasaki; Taka-aki Okita, both of Ichikawa, and Haruhiro Yamashita, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,240
Int. Cl.³ C07D *473/18*
U.S. Cl. 424—253 **7 Claims**

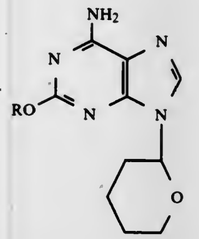
1. A compound having Formula I



(I)

wherein R is lower alkoxy 1 to 4 carbon atoms inclusive or a pharmaceutically acceptable acid addition salt thereof.

6. A bronchodilating process which comprises systemic administration to a mammal in need thereof an effective dose of from about 0.1 to 20 mg./kg. body weight of a compound of Formula I



(I)

wherein R is lower alkyl of 1 to 4 carbon atoms inclusive or a pharmaceutically acceptable acid addition salt thereof.

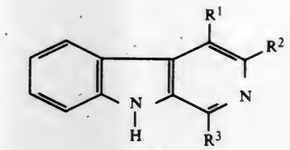
4,241,064

9H-PYRIDO[3,4-B]INDOLE DERIVATIVES

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi; Yoshitsugu Nomiyama, both of Kyoto; Tatsuhiko Kono, Suita; Masato Matsuda, Takatsuki, and Haruo Tanaka, Hikone, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

Filed Oct. 10, 1979, Ser. No. 83,419
Claims priority, application Japan, Oct. 14, 1978, 53-126352
Int. Cl.³ C07D *471/04;* A61K *31/395*
U.S. Cl. 424—256 **14 Claims**

1. A compound of the formula:

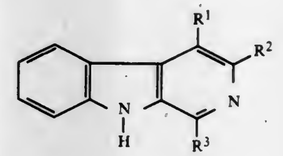


wherein

one of R^1 and R^2 is hydrogen and the other is hydroxy or —OR^4 wherein R^4 is alkanoyl of 2 to 7 carbon atoms, tosyl or mesyl, and

R^3 is hydroxymethyl, formyl, carboxy or carbalkoxy wherein alkoxy contains 1 to 6 carbon atoms.

14. The method of inhibiting uric acid formation in humans and other animals through inhibition of xanthine oxidase which comprises administering thereto an effective amount of a compound of the formula:



wherein

one of R^1 and R^2 is hydrogen and the other is hydrogen, hydroxy or —OR^4 wherein R^4 is alkanoyl of 2 to 7 carbon atoms, tosyl or mesyl, and

R^3 is hydroxymethyl, formyl, carboxy or carbalkoxy wherein alkoxy contains 1 to 6 carbon atoms.

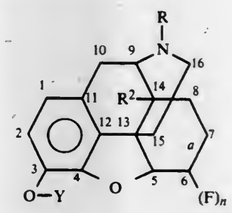
4,241,065

FLUORO ANALOGS OF HYDROCODONE AND OXYCODONE USEFUL AS ANALGESICS, NARCOTIC ANTAGONISTS OR BOTH

George A. Boswell, Jr., and Rosetta M. Henderson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 944,197, Sep. 19, 1978, abandoned. This application Jul. 2, 1979, Ser. No. 54,225
Int. Cl.³ A61K *31/485;* C07D *489/00*
U.S. Cl. 424—260 **19 Claims**

1. A compound of the formula



I

wherein

R is selected from the group consisting of hydrogen, alkyl of 1–10 carbons, allyl, methylallyl, dimethylallyl, cycloalkylmethyl of 4–7 carbon atoms, 2-furanylmethyl, 2-tetrahydrofuranylmethyl, 2-thienylmethyl, 2-thienylethyl and phenylethyl which may be ring substituted with chloro, bromo, fluoro, methoxy or 1–3 carbon alkyl substituents;

Y is H or R′;

R′ is selected from the group consisting of alkyl of 1–4 carbons and alkanoyl of 1–12 carbons;

R^2 is selected from the group consisting of hydrogen, hydroxy and alkanoate of 1–4 carbons;

n is 1 or 2; and

a is a 6,7 double bond when n=1, and a single bond when n=2;

and pharmaceutically acceptable salts of the compound.

15. The compound of claim **1** in a pharmaceutical carrier in an amount of about 0.5 to 95% by weight based on the total weight of the composition.

4,241,066

14-AMINO DERIVATIVES OF MORPHINE, METHODS OF MAKING THEM AND ANALGESIC COMPOSITIONS CONTAINING THEM

Ryszard J. Kobylecki, Patrington; Ian G. Guest, Burstwick; John W. Lewis, North Ferriby, all of England, and Gordon W. Kirby, Glasgow, Scotland, assignors to Reckitt & Colman Products Limited, London, England

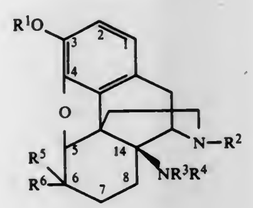
Filed Mar. 15, 1978, Ser. No. 886,833

Claims priority, application United Kingdom, Mar. 23, 1977, 12325/77

Int. Cl.[2] **A61K** *31/485;* **C07D** *489/06*

U.S. Cl. 424—260 **17 Claims**

1. A compound of the formula:



(1)

wherein

R^1 is hydrogen

R^3 is hydrogen, alkyl C_{1-12}, alkenyl C_{3-8}, cycloalkyl C_{3-7} alkyl C_{1-4}, Ar-alkyl C_{1-5} or Ar-alkenyl C_{3-5}, provided that R^3 does not contain the system — CH=CH — attached to the nitrogen atom at position 14;

R^4 is hydrogen, alkyl C_{1-8} or the group COR^7 in which

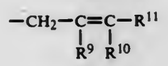
R^7 is hydrogen, alkyl C_{1-11}, alkenyl C_{2-7}, Ar, Ar-alkyl C_{1-5}, Ar-alkenyl C_{2-5}, cycloalkyl C_{3-8}, cycloalkyl C_{3-8} alkyl C_{1-3}, O-alkyl C_{1-4} or O-Ar;

Ar is phenyl or phenyl substituted by halogen, alkyl C_{1-3}, hydroxy or alkoxy C_{1-3};

R^5 is hydrogen and R^6 is hydroxy; or R^5 and R^6 are together oxygen;

the dotted line indicates an optional bond;

R^2 is hydrogen, cycloalkyl C_{3-7} alkyl C_{1-4}, propargyl or the group



in which R^9, R^{10} and R^{11} are hydrogen, methyl or chlorine; and its pharmaceutically acceptable salts.

12. A process for the preparation of a compound of Formula I as claimed in claim **1** wherein R^1 is hydrogen which process comprises treating a compound of Formula I in which R^1 is methyl with boron tribromide at a temperature in the range of from −30° to −10° C.

15. A pharmaceutical composition for the relief of pain which comprises at least one compound as claimed in claim **1** or a pharmaceutically acceptable salt thereof together with a pharmaceutically acceptable diluent or carrier.

4,241,067

14-AMINO DERIVATIVES OF MORPHINE, METHODS OF MAKING THEM AND ANALGESIC COMPOSITIONS CONTAINING THEM

Ryszard J. Kobylecki, Patrington; Ian G. Guest, Burstwick; John W. Lewis, North Ferriby, all of England, and Gordon W. Kirby, Glasgow, Scotland, assignors to Reckitt & Colman Products Limited, London, England

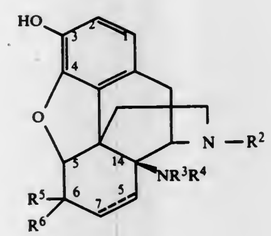
Filed Mar. 15, 1978, Ser. No. 886,834

Claims priority, application United Kingdom, Mar. 23, 1977, 12342/77

Int. Cl.[3] **A61K** *31/485;* **C07D** *489/06*

U.S. Cl. 424—260 **17 Claims**

1. A compound of the general formula:



(I)

wherein

R^2 is methyl or Ar-alkyl C_{1-5};

R^3 is hydrogen, alkyl C_{1-12}, alkenyl C_{3-8}, cycloalkyl C_{3-7} alkyl C_{1-4}, Ar-alkyl C_{1-5} or Ar-alkenyl C_{3-5}, provided that R^3 does not contain the system —CH=CH—attached to the nitrogen atom at position 14;

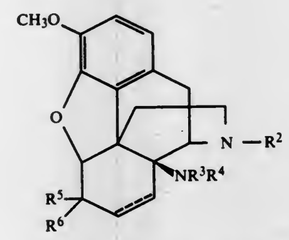
R^4 is hydrogen, alkyl C_{1-8} or the group COR^7 in which R^7 is hydrogen, alkyl C_{1-11}, alkenyl C_{2-7}, Ar, Ar-alkyl C_{1-5}, Ar-alkenyl C_{2-5}, cycloalkyl C_{3-8} or cycloalkyl C_{3-8} alkyl C_{1-3};

Ar is phenyl or phenyl subtituted by halogen, alkyl C_{1-3}, hydroxy or alkoxy C_{1-3};

R_5 is hydrogen and R^6 is hydroxy; or R^5 and R^6 are together oxygen;

the dotted line indicates an optional bond; and its pharmaceutically acceptable salts.

12. A process for the preparation of a compound as claimed in claim **1** which process comprises treating a compound of the general Formula II:



(II)

in which R^2,R^3,R^4,R^5,R^6 and the dotted line are as defined in claim **1**. with boron tribromide at a temperature in the range of from −30° to −10° C.

15. A pharmaceutical composition for the relief of pain which comprises at least one compound as claimed in claim **1**, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable diluent or carrier.

4,241,068

2-(PYRIDYL-AMINO)-BENZOIC ACIDS AND SALTS THEREOF

Kurt Schromm, Ingelheim; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth; Armin Fügner, both of Ingelheim, and Volker Jacobi, Gau-Algesheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

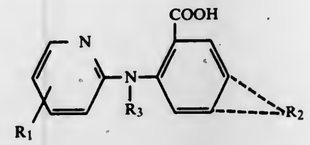
Continuation of Ser. No. 929,664, Jul. 31, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,355

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2735919

Int. Cl.[3] **A61K** *31/44, 31/455;* **C07D** *213/74, 213/80*

U.S. Cl. 424—263 **6 Claims**

1. A compound of the formula



wherein

R_1 is (a) hydrogen, lower alkyl or lower alkoxy, or (b) —CO—R_4, tetrazol-5-yl or cyano in the 4- or 5-position;

R_2 is —CO—R_4, tetrazol-5-yl, cyano or, when R_1 has one of the meanings included in (b), also hydrogen, lower alkyl, lower alkoxy or a fused benzene ring;

R_3 is hydrogen or lower alkanoyl; and

R_4 is hydroxyl, amino, hydroxy-amino, tetrazol-5-yl-amino or lower alkoxy;

an internal salt thereof, or a non-toxic salt thereof formed with a basic substance.

6. The method of preventing or relieving allergic reaction in a warm-blooded animal in need thereof, which comprises perorally, parenterally, topically or by the respiratory route administering to said animal an effective antiallergic amount of a compound of claim **1**.

4,241,069

3-METHYLENE FLAVANONES AND 3-METHYLENE CHROMANONES

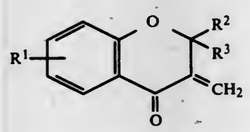
Robert T. Buckler, Edwardsburg, Mich.; Frederick E. Ward, and David L. Garling, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 4, 1979, Ser. No. 72,105

Int. Cl.[2] **C07D** *405/04;* **A61K** *31/35, 31/44;* **C07D** *311/28*

U.S. Cl. 424—263 **26 Claims**

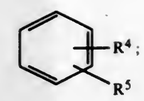
23. A method for inhibiting the growth of microorganisms which comprises applying to the locus to be inhibited an antimicrobially effective amount of a compound having the structural formula:



and pharmacologically acceptable, non-toxic salts thereof wherein:

R^1 is a member selected from the group consisting of hydrogen, Br, CH_3 and OCH_3;

R^2 is selected from the group consisting of hydrogen and and

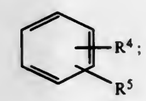


wherein

R^4 is a member selected from the group consisting of hydrogen, Br, Cl, CH_3, OCH_3, NO_2, $N(CH_3)_2$, $C(CH_3)_3$ and CH; R^5 is selected from the group consisting of hydrogen and Cl, with the proviso that when R^5 is Cl, R^4 is hydrogen or Cl; and

R^3 is selected from the group consisting of hydrogen, phenyl, 2-thienyl, 4-pyridyl and naphthyl, with the proviso that when R^3 is naphthyl, R^1 and R^2 are hydrogen.

25. A method as claimed in claim **23** wherein R^1, R^4 and R^5 are hydrogen; R^2 is



and R^3 is selected from the group consisting of phenyl, 2-thienyl and 4-pyridyl.

4,241,070

ANALGESIC BENZOMORPHAN DERIVATIVES

Junki Katsube, Toyonaka; Hiroyuki Mizote; Shuichi Harada, both of Ibaragi, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

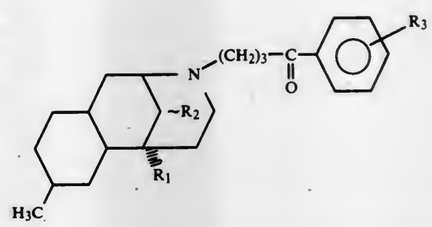
Filed Oct. 27, 1976, Ser. No. 736,072

Claims priority, application Japan, Nov. 6, 1975, 50/133868

Int. Cl.[3] **A61K** *31/445;* **C07D** *221/26*

U.S. Cl. 424—267 **10 Claims**

1. A benzomorphan derivative of the formula:



[1]

wherein R_1 and R_2 are each independently hydrogen or C_1–C_3 alkyl; and R_3 is hydrogen, halogen or C_1–C_3 alkyl, or its non-toxic, pharmaceutically acceptable acid addition salt.

10. A method for relieving a patient from pain which comprises administering an analgesically effective amount of a benzomorphan derivative as claimed in claim **1** alone or in combination with a pharmaceutically acceptable carrier or diluent.

4,241,071

ANTIDEPRESSANT (α-PHENYL-2-TOLYL)AZACYCLOALKANES

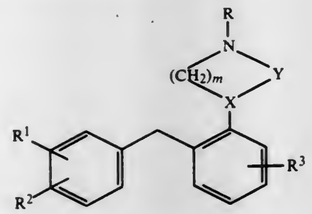
Lawrence L. Martin, Lebanon; Helen H. Ong, Whippany; Vernon B. Anderson, High Bridge, and Charles A. Crichlow, Piscataway, all of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 763,294, Jan. 27, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,791

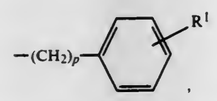
Int. Cl.³ A61K *31/445;* **C07D** *211/10, 211/22;* **A61K** *31/40*

U.S. Cl. 424—267 **24 Claims**

1. A compound of the formula



wherein X is CH; Y is $-(CH_2)_n-$; R is hydrogen, loweralkyl, phenylloweralkyl of the formula



or cycloalkylloweralkyl in which the cycloalkyl portion contains from 3 to 6 carbon atoms; R^1, R^2 and R^3 are the same or different and each can be hydrogen, halogen, alkoxy of from 1 to 2 carbon atoms, loweralkyl, hydroxy or trifluoromethyl; m is the integer 1 or 2; n is the integer 1, 2 or 3; the sum of m and n is 3 or 4; p is the integer 1, 2, 3 or 4; or a pharmaceutically acceptable acid addition salt thereof.

23. A method for treatment of depression which comprises administering to a depressed patient a pharmaceutically effective amount of an anti-depressant compound defined in claim 1.

4,241,072

SUBSTITUTED UREAS AND PROCESSES FOR THEIR PREPARATION

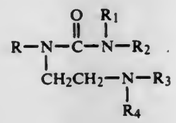
William A. Bolhofer, Frederick, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 18, 1979, Ser. No. 4,252

Int. Cl.³ A61K *31/425;* **C07D** *277/46*

U.S. Cl. 424—270 **9 Claims**

1. A compound having the formula:



wherein

R is a thiazole which may be substituted with one, or two loweralkyl group; and

R_1, R_2, R_3 and R_4 are independently loweralkyl and the pharmaceutically acceptable acid addition salts thereof.

8. A method for the inhibition of gastric acid secretions which comprise administering to a subject with excess gastric acid secretions an effective amount of a compound of claim 1.

4,241,073

TREATMENT OF IMMEDIATE HYPERSENSITIVITY DISEASES WITH ARYL HYDANTOINS

William B. Jamieson, Woking; William J. Ross, Lightwater; Robin G. Simmonds, Wokingham, and John P. Verge, Henley-on-Thames, all of England, assignors to Lilly Industries Limited, London, England

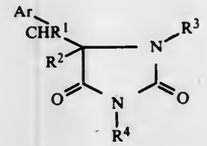
Filed May 14, 1979, Ser. No. 39,075

Claims priority, application United Kingdom, May 23, 1978, 21352/78

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **3 Claims**

1. A method of treating a mammal, including a human, for an immediate hypersensitivity condition by administering an effective amount of a compound of the formula



wherein

Ar is phenyl optionally substituted by up to three radicals selected from the group comprising C_1–C_6 alkoxy, halogen, 1,3-dioxol-2-yl, hydroxy C_1–C_4 alkoxy C_1–C_4 alkyl, phenyl, hydroxyl, nitrile, C_1–C_4 haloalkyl, C_1–C_4 alkyl, C_2–C_4 alkenyloxy, C_1–C_4 alkoxycarbonyl or phenoxy optionally substituted by C_1–C_4 haloalkyl, C_1–C_4 alkoxy or halogen;

or is thiophene optionally substituted by phenyl or by one or two C_1–C_4 alkyl groups;

R^1 and R^2 are independently hydrogen or taken together represent a chemical bond;

R^3 is hydrogen, C_1–C_6 alkyl or C_2–C_4 alkenyl; and

R^4 is C_1–C_6 alkyl, C_2–C_4 alkenyl, phenyl or benzyl.

4,241,074

PROSTAGLANDIN ANALOGUES

Frederick Cassidy, and Alexander C. Goudie, both of Harlow, England, assignors to Beecham Group Limited, Great Britain

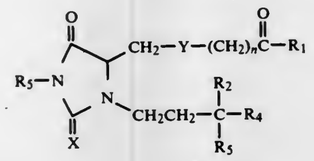
Filed Jun. 14, 1979, Ser. No. 48,514

Claims priority, application United Kingdom, Jun. 15, 1978, 27019/78

Int. Cl.³ C07D *233/40;* **A61K** *31/415*

U.S. Cl. 424—273 R **40 Claims**

1. A compound selected from the group consisting of a hydantoin derivative of the formula:



wherein

X is O, S or H_2;

Y is $-CH_2CH_2-$, $-CH{=}CH-$ or $-C{\equiv}C-$;

n has a value of 1 to 7;

R_1 is alkyl of 1 to 4 carbon atoms;

R_2 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 is hydroxy, alkanoyloxy of 1 to 4 carbon atoms or benzyl;

R_4 is alkyl of 1 to 9 carbon atoms, cycloalkyl of 3 to 8 carbon atoms or alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 3 to 8 carbon atoms, or

R_2 and R_4, together with the carbon atom to which they are attached, are cycloalkylidene of 5 to 8 carbon atoms; and

R_5 is hydrogen or alkyl of 1 to 6 carbon atoms;

and the pharmaceutically acceptable acid addition salts thereof when X is H_2.

40. A method for the treatment in humans or animals of conditions responsive to natural prostaglandins, which comprises administering to a human or animal in need thereof an effective amount of a compound according to claim 1.

4,241,075

ACARICIDAL 1-ALKYLTHIO-SUBSTITUTED AND 1-PHENYLTHIO SUBSTITUTED 2-(PHENOXYALKYL)-2-IMIDAZOLINES

Manfred Böer, Weil am Rhein, Fed. Rep. of Germany; Jozef Drabek, Oberwil, Switzerland; Günter Mattern, Liestal, Switzerland, and Walter Traber, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

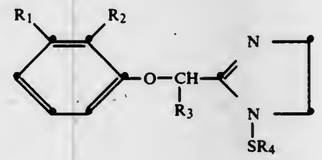
Filed Sep. 17, 1979, Ser. No. 76,107

Claims priority, application Switzerland, Sep. 27, 1978, 10086782/78; Apr. 24, 1979, 3836792/79

Int. Cl.³ A01N *43/50;* **C07D** *233/22*

U.S. Cl. 424—273 R **14 Claims**

1. A compound of the formula I



(I)

wherein R_1 and R_2 are each chlorine or methyl, R_3 is hydrogen or C_1–C_4-alkyl and R_4 is C_1–C_6-alkyl optionally mono-substituted by cyano or is phenyl optionally mono- or di-substituted by halogen and/or methyl.

8. A method of controlling pests of the order Acarina at a locus, which method comprises applying to said locus an acaricidally effective amount of a compound of the formula I as defined in claim 1.

4,241,076

HALOGENATED SUBSTITUTED MERCAPTOACYLAMINO ACIDS

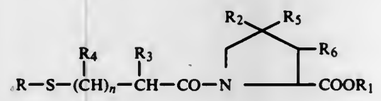
Miguel A. Ondetti, Princeton, and Peter W. Sprague, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 939,148, Sep. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 879,032, Feb. 21, 1978, abandoned. This application May 9, 1979, Ser. No. 37,255

Int. Cl.³ A61K *31/40;* **C07D** *207/16*

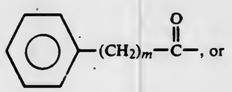
U.S. Cl. 424—274 **38 Claims**

1. A compound of the formula



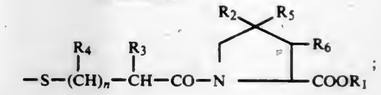
wherein

R is hydrogen, lower alkanoyl,



, or

-continued



m is zero, one, or two;

R_1 is hydrogen or lower alkyl;

R_2, R_5 and R_6 each is hydrogen or halogen;

R_3 is hydrogen, lower alkyl, halogen or trifluoromethyl provided that when n is zero R_3 is other than halogen;

R_4 is hydrogen, lower alkyl or trifluoromethyl; and n is 0 or 1; with the provisos that at least one of R_2, R_3, R_4, R_5 and R_6 as defined above is a halogen and that only R_2 and R_5 can both be halogen in the same compound; and basic salts thereof.

38. A composition useful for alleviating hypertension in a hypertensive mammal comprising from about 10 to 500 mg. of a compound of claim 1 or physiologically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

4,241,077

β-OXO-3-THIOPHENEPROPIONITRILE AND β-AMINO-2-(3)-THIOPHENEACRYLONITRILES

John W. Hanifin, Suffern, and David N. Ridge, Upper Grandview, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 936,443, Aug. 24, 1978, Pat. No. 4,189,436, which is a continuation-in-part of Ser. No. 853,980, Nov. 22, 1977, abandoned. This application Aug. 8, 1979, Ser. No. 64,673

Int. Cl.³ A61K *31/38*

U.S. Cl. 424—275 **4 Claims**

1. The method of inhibiting the progression of arthritis in a mammal which comprises administering to said mammal an effective amount of a compound selected from the group consisting β-amino-2-thiopheneacrylonitrile, β-amino-3-thiopheneacrylonitrile, β-oxo-3-thiopheneprop ionitrile and the pharmacologically acceptable cationic salt thereof.

4,241,078

FUNGICIDAL 3-(N-ACYL-N-ARYLAMINO)-GAMMA-BUTYROLACTONES AND GAMMA-BUTYROTHIOLACTONES

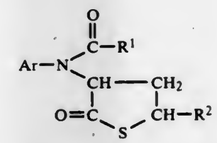
David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 847,502, Nov. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 837,121, Sep. 29, 1977, Pat. No. 4,141,989, which is a continuation-in-part of Ser. No. 731,491, Oct. 12, 1976, Pat. No. 4,107,323, which is a continuation-in-part of Ser. No. 631,351, Nov. 12, 1975, Pat. No. 4,012,519, which is a continuation-in-part of Ser. No. 548,660, Feb. 10, 1975, Pat. No. 3,933,860. This application May 29, 1979, Ser. No. 42,818

Int. Cl.³ C07D *333/36;* **A01N** *43/10*

U.S. Cl. 424—275 **11 Claims**

1. A compound of the formula



(I)

wherein Ar is phenyl, naphthyl, or phenyl or naphthyl substituted with 1 to 4 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; R^1 is hydroxymethyl, halomethyl of 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo, alkoxymethyl of 1 to 6 carbon atoms,

alkylthiomethyl of 1 to 6 carbon atoms, phenylthiomethyl, phenoxymethyl, phenylthiomethyl or phenoxymethyl substituted on the phenyl ring with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; and R^2 is hydrogen, chloro, bromo, alkyl of 1 to 6 carbon atoms, phenyl or phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo and alkyl of 1 to 6 carbon atoms.

8. A method for the control of fungi which comprises contacting said fungi or their habitats with a fungicidally effective amount of a compound of the formula defined in claim 1.

11. A fungicidal composition comprising a biologically inert carrier and a fungicidally effective amount of a compound of the formula defined in claim 1.

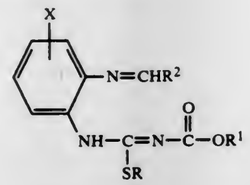
4,241,079

2-IMINO SUBSTITUTED ISOTHIOUREIDOBENZENE

Edward E. Kilbourn, Chalfont, and W. David Weir, Levittown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 4, 1978, Ser. No. 902,623
Int. Cl.³ A01N *9/14;* **C07D** *149/243*
U.S. Cl. 424—285 **50 Claims**

1. A compound of the formula:



wherein

R is alkyl, alkenyl, alkynyl, polynuclear aralkyl, mononuclear aralkyl, mononuclear aryloxy lower alkyl, cycloalkylalkyl, cyano lower alkyl, hydroxy lower alkyl, aralkenyl, alkoxylakyl, alkoxycarbonylalkyl, phthalimido lower alkyl or phenoxycarbonylalkyl;

R^1 is alkyl or lower alkoxyalkyl;

R^2 is alkyl or substituted or unsubstituted mononuclear aryl of from 4 to 6 nuclear carbon atoms, polynuclear aryl of from 10 to 14 carbon atoms and heteroaryl of from 5 to 6 nuclear atoms containing from 1 to 3 heteroatoms selected from oxygen, nitrogen or sulfur where the substituent is selected from halo, lower alkyl, lower alkoxy, di-lower alkyl amino, lower alkanoylamino, phenoxy, benzyloxy, 3,4-lower alkylenedioxyphenyl, phenylthio lower alkyl, cyano, nitro, alkylthio or phenylthio and X is hydrogen, nitro, halo, lower alkoxy, lower alkanoyl, lower alkyl, thiocyanato, a radical of the formula: Y—S(O)n wherein Y is lower alkyl, lower alkenyl, cyclo lower alkyl, pyridyl, thienyl, furyl, pyrimidyl, thiazolyl or phenyl and n is an integer of 0 to 3, X is also lower alkyl carbonylamino, lower alkoxy carbonylamino, cycloalkylcarbonylamino, a radical of the formula:



wherein Y′ is phenyl, cyclo lower alkyl, pyridyl, 2-thienyl or furyl, a radical of the formula: Y″O wherein Y″ is lower alkyl, lower alkenyl, mononuclear aralkyl, pyridyl, 2-thienyl or furyl and the nontoxic, pharmaceutically acceptable acid addition salts and amides.

4,241,080

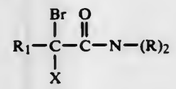
STABILIZED AQUEOUS ANTIMICROBIAL COMPOSITION

George A. Burk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 860,498, Dec. 14, 1977, abandoned. This application May 29, 1979, Ser. No. 43,064
Int. Cl.³ A01N *37/18, 37/34, 43/36, 43/40*
U.S. Cl. 424—304 **20 Claims**

1. An aqueous antimicrobial composition having a pH from about 2 to about 5 and comprising:

(a) an alpha-halogenated amide antimicrobial compound of the formula:

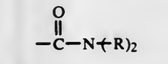


wherein:

X is hydrogen, halogen or a cyano radical;

each R group is independently hydrogen, a monovalent saturated hydrocarbon radical or an inertly substituted monovalent saturated hydrocarbon radical or the two R groups are jointly a divalent saturated hydrocarbon radical or an inertly substituted divalent saturated hydrocarbon radical which, taken with the adjacent nitrogen atom, forms a heterocyclic ring having from 4 to about 10 ring members; and

R_1 is a cyano radical or an amido radical of the formula:



wherein R is as hereinbefore defined;

(b) a water-miscible organic solvent in an amount sufficient to dissolve the halogenated amide antimicrobial, said solvent being a normally liquid polyalkylene glycol of the ethylene, trimethylene or tetramethylene series or a mono- or di-saturated hydrocarbyl ether thereof;

(c) water; and

(d) a stabilizing amount of an acid stabilizer selected from the group consisting of acetic acid and ethylenediaminetetraacetic acid, said stabilizing amount being an amount sufficient to measurably reduce the decomposition of the halogenated amide antimicrobial in the aqueous composition.

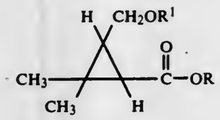
4,241,081

CYCLOPROPANECARBOXYLATE PESTICIDES

Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 953,987, Oct. 23, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,854
Int. Cl.³ A01N *53/00;* **C07C** *69/757, 121/75*
U.S. Cl. 424—304 **8 Claims**

1. A compound of the formula



wherein R^1 is an alkyl group containing from 1 to 3 carbon atoms, a benzyl group or an acetyl group and R is 3-phenoxybenzyl or α-cyano-3-phenoxybenzyl with the proviso that when R is α-cyano-3-phenoxybenzyl then alcohol moiety is in the R,S-racemic or the S-optical configuration.

8. A method of controlling pests which comprises applying to the pests or their habitat a pest controlling effective amount of a compound according to claim 1.

4,241,082

AGENTS FOR PROMOTING REPRODUCTIVE ABILITY OF DOMESTIC ANIMALS

Yoshihiko Baba, and Hiroyoshi Horikoshi, both of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,266
Claims priority, application Japan, Sep. 2, 1977, 52-105702; Jan. 27, 1978, 53-7996
Int. Cl.³ A61K *31/24, 31/22, 31/195*
U.S. Cl. 424—309 **13 Claims**

1. A veterinary composition for promoting a reproductive ability of a domestic animal suffering from a reproductive disorder which contains an active component in an amount effective to promote said reproductive ability,

said active ingredient comprising component (i) L-3,4-dihydroxyphenylalanine or a pharmaceutically acceptable substituted L-3,4-dihydroxyphenylalanine, and component (ii) at least one amino acid selected from the group consisting of L-arginine, L-ornithine, L-lysine, D-phenylalanine, L-glutamic acid and γ-aminobutyric acid, the ratio of said amino acid to said said L-3,4-dihydroxyphenylalanine or derivative thereof being between 1:10 and 10:1, and a veterinarily acceptable carrier

said pharmaceutically acceptable substituted L-3,4-dihydroxyphenylalanine being selected from the group consisting of

3,4-diacetyloxy-L-phenylalanine hydrochloride,
3,4-dipivalyloxy-L-phenylalanine perchlorate,
3,4-dihydroxy-L-phenylalanine methyl ester hydrochloride,
3,4-diacetyloxy-L-phenylalanine methyl ester hydrochloride,
3,4-dihydroxy-L-phenylalanine benzyl ester hydrochloride,
3,4-diacetyloxy-L-phenylalanine benzyl ester hydrochloride,
glycyl-3,4-diacetyloxy-L-phenylalanine methyl ester hydrochloride,
3,4-dipivalyloxy-N-(1-methyl-2-acetylvinyl)-L-phenylalanine pivaloyloxymethyl ester,
3,4-dipivalyloxy-N-(1-methyl-2-acetylvinyl)-L-phenylalanine potassium salt,
3,4-diacetyloxy-N-(1-methyl-2-acetylvinyl)-L-phenylalanine potassium salt,
N-formyl-3,4-dipivalyloxy-L-phenylalanine,
N-formyl-3,4-dipivalyloxy-L-phenylalanine pivalyloxy-L-phenylalanine pivaloyloxymethyl ester,
N-formyl-3,4-diacetyloxy-L-phenylalanine,
N-formyl-3,4-diacetyloxy-L-phenylalanine potassium salt,
glycyl-3,4-diacetyloxy-L-phenylalanine hydrochloride,
3,4-diacetyloxy-L-phenylalanylglycine hydrochloride,
3,4-dihydroxy-L-phenylalanyl-3,4-dihydroxy-L-phenylalanine hydrochloride,
3,4-diacetyloxy-L-phenylalanyl-3,4-diacetyloxy-L-phenylalanine methyl ester hydrochloride,
3,4-diacetyloxy-L-phenylalanyl-3,4-diacetyloxy-L-phenylalanine benzyl ester hydrochloride,
L-tyrosyl-3,4-dihydroxyphenylalanine,
glycyl-3,4-diacetyloxy-L-phenylalanine benzyl ester hydrochloride,
L-leucyl-3,4-dihydroxyphenylalanine, and
L-3,4-dihydroxyphenylalanine-D-alanine.

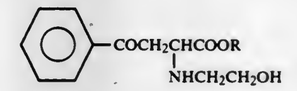
4,241,083

GERMICIDAL COMPOSITION FOR AGRICULTURE AND HORTICULTURE

Yukiteru Morikawa, Yokohama, and Hideo Nishikawa, Ibaraki, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 26, 1979, Ser. No. 88,652
Claims priority, application Japan, Oct. 27, 1978, 53-132933; Aug. 25, 1979, 54-108387
Int. Cl.³ A01N *37/10;* **C07C** *101/02, 101/30*
U.S. Cl. 424—309 **7 Claims**

1. A germicidal composition for agriculture and horticulture which comprises as an active ingredient a germicidally effective amount of a 2-(2-hydroxyethylamino)-3-benzoylpropionate or a salt thereof represented by the general formula:



wherein R a is lower alkyl group, and agriculturally acceptable adjuvants therefor.

4,241,084

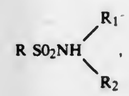
ANTIBACTERIAL AND ANTIFUNGAL COMPOSITIONS

Maurice M. Minuto, 15 Hemingway Dr., Dix Hills, N.Y. 11746

Continuation-in-part of Ser. No. 39,757, May 17, 1979, abandoned. This application Aug. 30, 1979, Ser. No. 71,311
Int. Cl.³ A61K *31/18, 31/225*
U.S. Cl. 424—313 **16 Claims**

1. A pharmaceutical composition having antibacterial and antifungal activity, which composition consists essentially of:

(a) from about 50 weight percent to about 90 weight percent of a first ingredient selected from the sulfonamides represented by the general formula



wherein R is an alkyl, aryl, alkaryl or aralkyl radical in which the alkyl moiety contains 1 to 4 carbon atoms; R_1 and R_2 each is hydrogen or an alkyl radical containing 1 to 8 carbon atoms,

(b) from about 1 weight percent to about 30 weight percent of a second ingredient selected from the group consisting of alkylene glycol and 2-ethyl 1,3-hexanediol, wherein the alkylene radical contains 5 to 8 carbon atoms, and

(c) from about 1 weight percent to about 10 weight percent of a third ingredient selected from the group consisting of alkylene glycol ester of a dicarboxylic acid wherein said alkylene radical contains 2 to 4 carbon atoms and said dicarboxylic acid is selected from the group consisting of adipic acid, glutaric acid and sebacic acid.

4,241,085

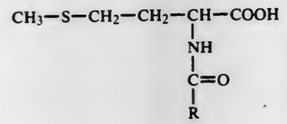
FODDER FOR RUMINANTS

Rudolf Fahnenstich, Strötzbach; Joachim Heese, Grossauheim, both of Fed. Rep. of Germany, and Dyfed Lewis, Loughborough, England, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 852,706, Nov. 18, 1977, abandoned, which is a division of Ser. No. 330,110, Feb. 16, 1973, Pat. No. 4,093,740. This application Mar. 12, 1979, Ser. No. 19,406
Int. Cl.³ A61K *31/195*
U.S. Cl. 424—319 **5 Claims**

1. A process of feeding ruminants which are cattle having a

paunch containing a microflora of bacteria and protozoa which ... mally break down added synthetic aminoacids comprising feeding them fodder which goes to the paunch, said fodder containing an N-acyl-methionine of the formula:



where R is a aliphatic hydrocarbon having 7 to 21 carbon atoms as a source of methionine which is not broken down in said paunch.

4,241,086

METHOD FOR TREATING RHEUMATISM

Jun-ichi Iwao, Takarazuka, and Tadashi Iso, Tondabayashi, both of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 5, 1979, Ser. No. 82,330
Claims priority, application Japan, Oct. 11, 1978, 53-125537
Int. Cl.[3] A61K *31/195*
U.S. Cl. 424—319 **2 Claims**

1. A method for treating rheumatism and arthritis in a mammal afflicted with at least one of the said conditions comprising administering to said mammal an effective dose of N-(2-mercapto-2-methylpropanoyl)-L-cysteine or a pharmacologically acceptable salt thereof.

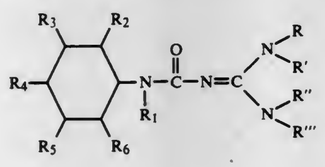
4,241,087

DYSMENORRHEA TREATMENT

Ghulam N. Mir, Buckingham; Jacqueline B. Krebs, Huntingdon Valley, and William L. Studt, Harleysville, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Apr. 2, 1979, Ser. No. 26,281
Int. Cl.[3] A61K *31/165, 31/16, 31/33, 31/155*
U.S. Cl. 424—324 **18 Claims**

1. A method for treating uterine muscle spasms associated with dysmenorrhea which comprises the oral or parenteral administration of an effective amount therefor of an amidinourea of the general formula:



where:
R_2, R_3, R_4, R_5 and R_6 may be the same or different and are:
hydrogen,
halo,
lower alkyl,
halo lower alkyl,
nitro,
lower alkoxy
hydroxy,
aryllower alkoxy,
acyloxy,
cyano,
halo lower alkoxy or
lower alkyl sulfonyl;
R and R' are hydrogen or lower alkyl;
R'' and R''' are
hydrogen,
lower alkyl,
lower alkoxy,
lower alkenyl,
cyclo alkenyl up to 9 carbon atoms,
cyclo alkyl lower alkyl,
lower alkyl,
cyclo alkyl,
aralkyl,
lower alkynyl,
halo alkyl,
hydroxy alkyl,
alkoxy alkyl,
cyano alkyl,
amino alkyl,
mono- and di- lower alkyl amino alkyl
carbamoyl alkyl,
mono- and di-carbamoyl alkyl,
carboxy alkyl,
alkoxy carbonyl alkyl,
aralkoxy carbonyl alkyl,
acyl,
acylalkyl,
alkylsulfonyl or
aralkyl sulfonyl;
R'' and R''' together may form a 5 to 7 atom ring which may include 0 to 2 hetero atoms of N, O or S;
R_1 is hydrogen or lower alkyl provided at least one of R, R', R'', and R''' is other than hydrogen; and the pharmaceutically-acceptable salts thereof.

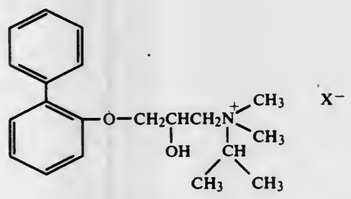
4,241,088

1-(TRIALKYLAMINO)-3-(PHENYLPHENOXY)-2-PROPANOL QUARTERNARY SALTS

Raymond E. Counsell, and Benedict R. Lucchesi, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 623,767, Oct. 20, 1975, abandoned. This application Mar. 24, 1977, Ser. No. 780,880
Int. Cl.[3] A61K *31/165*
U.S. Cl. 424—329 **2 Claims**

1. A pharmaceutical composition which comprises a therapeutically effective anti-arrhythmic amount of a compound of the formula



wherein X^- is a chloride, bromide, iodide, fluoride, sulphate, alkylsulphate, or ortho, meta or pyrophosphate anion.

4,241,089

FEEDSTUFF FOR LIVESTOCK AND MANUFACTURING THEREOF

Alain Regnault, Par Ornet, and Jean-Pierre Sachetto, St. Julien-en-Genevois, both of France, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Jun. 8, 1978, Ser. No. 913,834
Claims priority, application Switzerland, Jun. 10, 1977, 7159/77
Int. Cl.[3] A23K *1/16*
U.S. Cl. 426—2 **5 Claims**

1. Feedstuff for livestock comprising about 90 to 95 percent by weight of carbohydrates and about 2 to 10 percent by weight of a urea derivative, the latter being a crystallized glucosylurea the purity of which is at least 90% and the total chemically unbound urea and glucose of which does not exceed 10% by weight.

4,241,090

NON-ADHESIVE CHEWING GUMS AND METHOD

John J. Stroz, Monroe, Conn.; Abraham I. Bakal, Parsippany, N.J., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,756
Int. Cl.[2] A23G *3/30*
U.S. Cl. 426—4 **11 Claims**

1. A chewing gum having non-adhesive properties comprising gum base, sweetener, flavoring and from about 1 to about 15% by weight of alpha-cellulose a non-adhesive-imparting slip agent to improve chewing quality, impart non-adhesive properties to said gum and increase cud size of said gum, said chewing gum further including from 1 to about 30% by weight water, and from 0.2 to about 3% by weight of a thickener, said thickener being hydrolyzed cereal solids, malto-dextrin, modified food starch, low D.E. corn syrup solids, alginates, carrageenan, xanthan gum, gelatin, carob, tragacanth, locust bean, and other water-soluble gums, or carboxymethyl cellulose.

4,241,091

CALORIE-FREE NON-ADHESIVE CHEWING GUMS AND METHOD

John J. Stroz, Monroe, Conn.; Abraham I. Bakal, Parsippany, N.J., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,757
Int. Cl.[2] A23G *3/30*
U.S. Cl. 426—4 **15 Claims**

1. A substantially calorie-free carbohydrate-free, non-cariogenic chewing gum having non-adhesive properties consisting essentially of gum base, a substantially calorie-free sweetener, flavoring, filler, from about 1 to about 15% by weight of alpha-cellulose as a non-adhesive-imparting slip agent or texturizing agent and bulking agent, and from about 1 to about 40% by weight water, to improve chewing quality, impart non-adhesive properties to said gum and increase cud size of said gum.

4,241,092

GASIFIED CANDY DISPERSED IN A MATRIX OF SORBITOL

Joseph J. Halik, Ossining; Robert J. Ravallo, Mahopac; Gerald S. Wasserman, Spring Valley, all of N.Y., and Alfred C. Glatz, Stamford, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,482
Int. Cl.[3] A23G *3/00*
U.S. Cl. 426—96 **37 Claims**

1. A confection which comprises:
granules of gasified candy containing 0.5 to 15 cm^3 of gas/-gram of candy dispersed in a hard, binding matrix comprising crystallized sorbitol.

4,241,093

FOOD SUPPLEMENT FROM VEGETABLE PULP AND METHOD OF PREPARING SAME

Souly A. Farag, Moses Lake; John E. Hayes, Seattle, both of Wash., and Lloyd W. Norman, Wahpeton, N. Dak., assignors to U and I, Incorporated, Salt Lake City, Utah

Filed May 11, 1978, Ser. No. 905,059
Int. Cl.[2] A23L *1/277*
U.S. Cl. 426—258 **10 Claims**

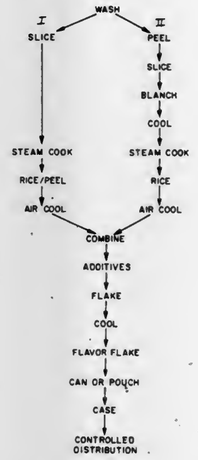
1. A process for producing a bland food supplement from water-extracted, vegetable pulp selected from the group consisting of the water-extracted pulps of sugar beets, apples, citrus peels, corn, beans, peas, and turnips, said process comprising the steps of:
(a) contacting the water-extracted pulp with an aqueous bleaching solution comprising a bleaching agent selected from the group consisting of hydrogen peroxide, an alkali metal peroxide, ammonium persulfate, sulfur dioxide, sodium hydrosulfite, sodium chlorite, sodium hypochlorite, chlorine, chlorine dioxide, and combinations thereof,
(b) separating the bleached pulp from the bleaching solution, and
(c) drying the bleached pulp to obtain a stable, free-flowing, bland food supplement having a composition by weight of about 4% to 8% water, about 7% to 9% crude protein, about 15% to 25% crude fiber, about 60% to 70% nitrogen-free extracts, and about 2.5% to 5% ash, wherein said food supplement can be used as a filler, extender, or protein binder in a variety of food products.

4,241,094

POTATO DEHYDRATION

James D. O'Neil, Minneapolis; Gregory M. Granum, Bloomington; Elmars M. Kiploks, and Charles N. Standing, both of Minneapolis, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Oct. 11, 1979, Ser. No. 83,885
Int. Cl.[3] A23L *1/216*
U.S. Cl. 426—324 **17 Claims**



1. A method of producing dehydrated potatoes, said method including:
cleaning a quantity of potatoes;
separating the potatoes into a first group and a second group before or after cleaning with the weight ratio of the first group to the second group being in the range of between about 25:75 to 75:25;
slicing the first group of potatoes;
cooking the thus sliced first group of potatoes an amount sufficient to permit ricing;
ricing the thus cooked first group of potatoes;
peeling the first group of potatoes either before slicing or during ricing;
cooling the thus riced ptatoes to a temperature of less than about 115° F.;
peeling the thus washed second group of potatoes;
slicing the thus peeled second group of potatoes;
blanching the thus sliced second group of potatoes;
cooling the thus blanched second group of potatoes to a temperature of less than about 80° F.;
cooking the thus cooled second group of potatoes an amount sufficient to permit ricing;
ricing the thus cooled second group of potatoes;
cooling the thus riced second group of potatoes to a temperature of less than about 115° F.;

combining and mixing the thus riced and subsequently cooled first group and second group of potatoes; and

dehydrating the thus combined and mixed first group and second group of potatoes to a moisture content of less than about 9% by weight.

4,241,095

METHOD FOR PREVENTING SOY SAUCE FROM PUTREFACTION

Kunihiko Shibata, Aichi; Genji Yamaguchi, Nagoya; Kimio Takeda, and Hiroshi Masai, both of Handa, all of Japan, assignors to Nakano Vinegar Co., Ltd., Handa, Japan

Filed Dec. 4, 1978, Ser. No. 965,911
Int. Cl.³ A21D *4/00*
U.S. Cl. 426—335 **4 Claims**

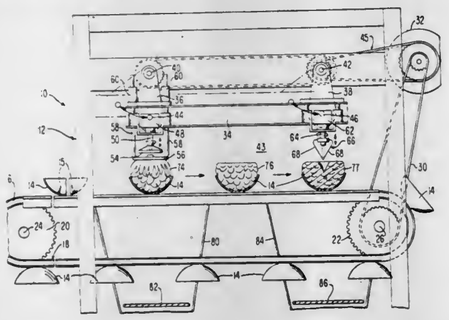
1. A method for preventing soy sauce from spoiling comprising adding to raw uncooked soy sauce before or after sterilization, a preservative solution in an amount sufficient to prevent the soy sauce from spoiling, said preservative solution consisting essentially of (a) acetic acid and (b) a salt selected from the group consisting of the sodium salt, the potassium salt, and the calcium salt of an organic acid selected from the group consisting of acetic acid, malic acid, tartaric acid, citric acid, and lactic acid, said preservative solution being added in an amount such that the content of acetic acid in the soy sauce is between 0.02 and 0.2 percent by weight, and said preservative solution containing an amount by weight of said salt which is in excess of the amount of acetic acid up to 6 times the amount of acetic acid.

4,241,096

METHOD FOR CORING CAULIFLOWER HEADS

Richard A. Shaw, Watsonville, Calif., assignor to Richard A. Shaw, Inc., Watsonville, Calif.

Division of Ser. No. 818,497, Jul. 25, 1977, Pat. No. 4,176,595. This application Mar. 15, 1979, Ser. No. 20,897
Int. Cl.³ A23P *1/00*
U.S. Cl. 426—484 **3 Claims**



1. A method of coring cauliflower heads having culls comprising: moving a plurality of cauliflower heads along a predetermined path with the base of each head extending upwardly; cutting the culls from the base of each head as it moves along a first part of said path; exerting downward forces on each head through a zone extending circumferentially of the head to hold the head against movement out of said path as the head moves along said first part of the path and as the culls are cut from the base of each head; removing the force from each head after the culls have been cut therefrom; cutting each head as the latter moves along a second part of said path after said force has been removed to cause the head to break up into parts; and collecting the culls and the parts at separate locations.

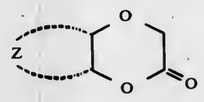
4,241,097

USE OF BENZODIONONES IN AUGMENTING OR ENHANCING THE AROMA AND TASTE OF A FOODSTUFF

Mark A. Sprecker, Sea Bright; John B. Hall, Rumson, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,071
Int. Cl.³ A23L *1/226*
U.S. Cl. 426—536 **2 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff from 0.5 ppm up to 20 ppm based on the weight of the foodstuff of a cyclic chemical compound having the structure:



wherein Z is benzo or cyclohexano.

4,241,098

FLAVORING WITH A MIXTURE OF CIS-3-HEXENAL, TRANS-2-HEXENAL, CIS-3-HEXENYL FORMATE, CIS-3-HEXENOL AND CIS-3-HEXENYL-CIS-3-HEXENOATE

Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,707
Int. Cl.³ A23L *1/226*
U.S. Cl. 426—534 **1 Claim**

1. Process for augmenting or enhancing the flavor or aroma of a foodstuff by adding to the foodstuff from 0.05 up to about 500 parts per million, of a mixture of cis-3-hexenal, trans-2-hexenal, cis-3-hexenyl formate, cis-3-hexanol and cis-3-hexenyl-cis-3-hexenoate prepared by reacting cis-3-hexenol with pyridinium chlorochromate, the mole ratio of cis-3-hexenol:-pyridinium chlorochromate initially in the reaction mass being in the range of from 1:0.5 up to 1:2, the reaction being carried out in a solvent.

4,241,099

PECTIN FORMULATIONS, PRODUCTS AND METHODS HAVING DELAYED-ACTION ACIDULANTS

Peter J. Tiemstra, 6543 Pontiac Dr., LaGrange, Ill. 60525

Filed Feb. 26, 1979, Ser. No. 15,287
Int. Cl.³ A23L *1/06*
U.S. Cl. 426—577 **16 Claims**

1. In a gelled pectin confectionery jellie product prepared from a pre-gelled formulation wherein said formulation includes an aqueous, sugar-containing component, a pectin, and sufficient acidulant to cause said pectin to set said pre-gelled formulation into the gelled product, the improvement comprising: a delayed-action acidulant which gradually introduces hydrogen ions into said formulation over a period of time sufficient to permit deposition of the formulation into a molding container in said pre-gelled state and to bring about in-situ setting of the formulation to said gelled state in said molding container, the pectin confectionery jellie has a sugar solids content above about 76 weight percent, based on the total weight of the product, said pectin is of the high methoxy type with a degree of methylation no lower than about 45 DM, the formulation contains between about 0.5 and about 3 weight percent of said pectin, based on the total weight of the sugar, the formulation contains between about 1 and about 5 weight percent of glucono-deltalactone delayed-action acidulant, based on the total weight of the sugar, said pre-gelled state has an initial pH of between about 3.8 and about 5.5, and said gelled state has a pH approximately the same as an optimum gelation pH for said pectin.

4,241,100

PROCESS FOR PRODUCING SOYBEAN MILK

Teruo Wakana, Hidaka; Kunio Okubo, Ogose, and Yutaka Hanaoka, Akishima, all of Japan, assignors to Kibun Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 704,920, Jul. 13, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,408
Claims priority, application Japan, Jul. 21, 1975, 50/88441
Int. Cl.³ A23L *2/38*
U.S. Cl. 426—598 **2 Claims**

1. A process for producing soybean milk with no undesirable beany flavor or bitterness which comprises cooking unsoaked soybeans in an aqueous medium at boiling temperature for 2–4 minutes, grinding the cooked soybeans while bringing them into contact with an about 0.1–1% sodium bicarbonate aqueous solution at a temperature above 80° C., extracting protein and water soluble components from the ground soybeans and removing substantially all of the solids from the slurry to obtain soybean milk.

4,241,101

LOW DISSIPATION FACTOR EPOXY COATING POWDER

Howard E. Saunders, Pittsburgh, and James D. B. Smith, Wilkens Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 17, 1979, Ser. No. 39,919
Int. Cl.³ C08G *59/42, 59/68*
U.S. Cl. 427—32 **16 Claims**

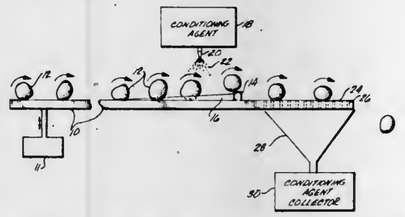
1. A solventless, non-aqueous composition which comprises (A) a solid bisphenol A epoxy resin having an EEW of about 400 to about 8000, a Durran's softening point of at least about 70° C., and less than 30 hydroxyl groups per molecule; (B) about 5 to 40 phr of a solid polyanhydride curing agent at least about 50 mole % of which is trimellitic anhydride; (C) about 0.01 to about 1 phr of a cross-linking agent having the general forma R_3SnX where each R is independently selected from alkyl, aryl, aralkyl, and alkaryl up to C_{20}, and X is selected from acetate, propionate, butyrate, halogen, and hydroxy; (D) about 0.01 to about 5 phr of an accelerator for said curing agent; and (E) about 0.1 to about 5 phr of an activator for said cross-linking agent selected from the group consisting of catechol, pyrogallol, phloroglucinol, and mixtures thereof.

4,241,102

APPARATUS AND METHOD FOR THE SELECTIVE WETTING OF PARTICLES

John R. McKinley, Claremont, and John G. Roeschlaub, Upland, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Jun. 4, 1979, Ser. No. 45,186
Int. Cl.² B05B *13/02;* B05C *3/08;* B05D *1/02*
U.S. Cl. 209—3.1 **12 Claims**



6. A method for selectively wetting particles with a selective wetting agent which agent is selective toward at least one component in the particles, coating such particles in an amount dependent upon the amount of such at least one component, the method comprising the steps of:

depositing particles to be wetted onto a horizontally extending surface capable of vibration;

vibrating the surface to impart translatory movement to particles upon the surface;

spraying the particles as the particles move along the surface with a selective wetting agent directed toward the surface;

forming a pool of the selective wetting agent upon the surface by providing a barrier upon the surface across the direction of movement of the particles along the surface such that the particles move through the formed pool;

wetting the particles with the selective wetting agent as the particles move along the surface through the spray and pool of selective wetting agent; and

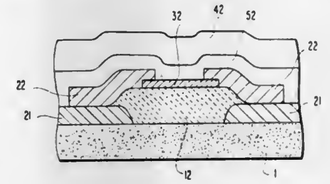
removing excess selective wetting agent from the particles.

4,241,103

METHOD OF MANUFACTURING AN INTEGRATED THERMAL PRINTING HEAD

Toshio Ohkubo; Hidehiko Katoh, and Yuji Kajiwara, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,243
Claims priority, application Japan, May 31, 1977, 52-70965[U]; Nov. 15, 1977, 52-153738[U]
Int. Cl.³ H05B *1/00*
U.S. Cl. 427—103 **4 Claims**



1. A process for manufacturing a thermal printing head comprising the steps of: screen-printing in a given pattern an electrically conductive paste over the surface of a dielectric substrate, firing the printed conductive paste to form two or more opposed thick-film lead electrodes over said substrate, screen-printing a dielectric paste between said opposed lead electrodes, firing the printed dielectric paste to form heat-insulating dielectric layer having flat top surface, forming a thin-film resistive layer on a region of the surface of said dielectric layer, forming thin-film electrically conductive members in a manner that said resistive layer be electrically connected to said thick-film lead electrodes, and forming a dielectric protective film over said resistive layer.

4,241,104

PROCESS FOR BONDING CARBON SUBSTRATES USING PARTICLES OF A THERMALLY STABLE SOLID

Christopher J. Torbet, Ann Arbor, Mich., assignor to The Fluorocarbon Company, Anaheim, Calif.

Filed Oct. 16, 1978, Ser. No. 951,333
Int. Cl.² C23C *11/00*
U.S. Cl. 427—113 **11 Claims**

1. The process for bonding carbon substrates using finely divided particles of a thermally stable solid to form a composite product which comprises:

(a) providing finely divided particles of a thermally stable solid in contact with a pair of carbon substrates;

(b) contacting said particles and substrates with a carbonizable gas; and

(c) heating the carbon substrates and the particles in the

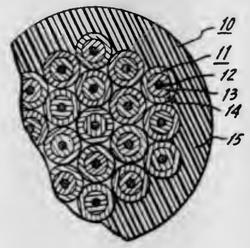
presence of a carbonizable gas which decomposes at elevated temperatures to pyrolytic carbon so that a coating of the pyrolytic carbon is deposited on the surfaces of the carbon substrates and on the particles, thereby bonding the carbon substrates and particles together to form a composite product.

4,241,105

METHOD OF PLATING THE SURFACE OF A SUBSTRATE

William T. Mayweather, Stone Mountain, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,243
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—125 **31 Claims**



1. A method of plating a dielectric surface of a substrate comprising the steps of:
(a) coating the substrate with a solution comprising a silver-pyridine complex dissolved in a non-aqueous solvent;
(b) drying the substrate;
(c) immersing the substrate in a basic solution whereby the silver-pyridine complex is converted to a silver oxide; and
(d) reducing the silver oxide to metallic silver.

4,241,106

FLOUR TORTILLAS

Orinda L. Tims, Walnut Creek, Calif., assignor to Standard Brands Incorporated, Wilton, Conn.

Filed May 29, 1979, Ser. No. 42,827
Int. Cl.³ A21D *8/00, 13/00*
U.S. Cl. 426—138 **6 Claims**

1. A tortilla having improved flexibility upon storage comprising wheat flour, water, fat and from about 1 to about 2 percent hydrophilic gum and from about 3 to about 4 percent vital wheat gluten, based on the weight of the flour used.

4,241,107

ROOF COATING PROCESS

Theodore O. Mandish, and Doneath M. Mandish, both of Rte. 2, Box 184, Titusville, Fla. 32780

Filed Apr. 14, 1978, Ser. No. 896,247
Int. Cl.³ B32B *35/00*
U.S. Cl. 427—140 **9 Claims**

1. A method for coating a roof, said method consisting essentially of the steps of:
preparing the surface of the roof to be coated by applying felt and tar thereto;
placing wire mesh over said felt and tar;
applying a roof coating mixture formed by coating expanded polymer beads with a composition consisting essentially of equal parts, by volume, dehydrated lime and hydrated alumina in combination with water having a wetting agent therein, admixing said coated beads to dry cement and sand in the ratio, by volume, of approximately 7 parts said coated beads, 2 parts said cement and ¼ part said sand, and adding thereto approximately 1%, by weight, reinforcing agent and sufficient water to obtain said roof coating mixture of a workable consistency to said prepared roof;
curing said roof coating mixture;
grinding the surface of said cured mixture; and spraying the coated roof with a sealant.

4,241,108

SPRAYABLE TITANIUM COMPOSITION

Chester E. Tracy, South River; Werner Kern, Belle Mead, and Robert D. Vibronek, Sayreville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 950,167
Int. Cl.² C08K *5/05*; B05D *1/02, 5/06, 3/02*
U.S. Cl. 427—162 **11 Claims**

1. A composition comprising:
an organometallic titanium compound,
an inert miscible ester diluent therefore, and 2-ethyl-1-hexanol in proportions such that the composition is sprayable to form a uniform film on a substrate.

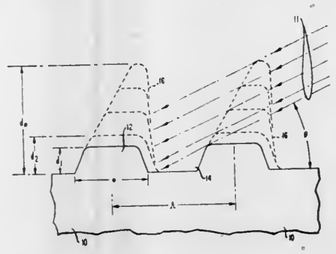
8. A mehod of applying a uniform thin antireflection coating of titanium oxide on a substrate which comprises:
spraying a composition comprising an organometallic titanium compound, an inert miscible ester diluent therefore, and 2-ethyl-1-hexanol onto said substrate,
drying said composition to remove said diluent and said 2-ethyl-1-hexanol by evaporation,
heating the resultant film in air at an initial temperature at about 70° C. and a final temperature of 350° to 400° C.,
whereby a film of titanium oxide is formed on said substrate having a refractive index of from 2.0 to 2.2.

4,241,109

TECHNIQUE FOR ALTERING THE PROFILE OF GRATING RELIEF PATTERNS

Leo F. Johnson, Bedminster, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 30, 1979, Ser. No. 34,591
Int. Cl.³ B05D *5/06*
U.S. Cl. 427—162 **10 Claims**



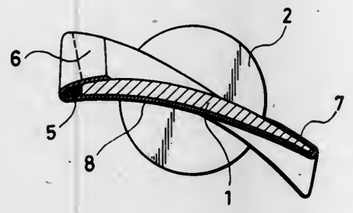
1. A method for forming a grating on the surface of a body (**10**) having a pre-existing periodic relief pattern of parallel stripes (**12**) separated by parallel grooves (**14**), said relief pattern having an aspect ratio defined by the height of the stripe divided by the period of the pattern, characterized by:
increasing the aspect ratio of said periodic relief pattern by directing a beam (**11**) of material at a shallow angle (θ) to said surface so that said stripes shadow said grooves from said beam and said material is deposited predominantly on said stripes without also depositing any significant amount of said material in said grooves, and
removing a portion of said body under said grooves in order to form said grating.

4,241,110

METHOD OF MANUFACTURING ROTOR BLADE

Masato Ueda, Nagasaki, and Takeshi Andoh, Isahaya, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,413
Claims priority, application Japan, Jul. 20, 1978, 53-87738
Int. Cl.³ B05D *1/06, 1/02*
U.S. Cl. 427—203 **5 Claims**



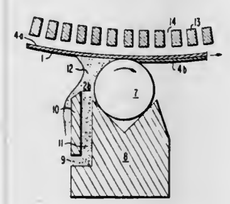
1. A method of manufacturing a rotor blade having a leading edge and a trailing edge and said edges are connected by a curved body having a convex back side and a concave front side which comprises:
making a soft iron-base alloy with good machinability and castability into said blade body with said curved configuration;
joining a hard alloy to the leading edge of said blade body;
providing a coating only on the leading edge and trailing edge surfaces of the convex back side of said blade body; and
thereafter coating the entire surface of the concave front side of said blade body;
said coatings being provided by first spraying a coating consisting essentially of a Ni-Cr-B-Si alloy onto said surfaces and then spraying a coating consisting essentially of tungsten carbide onto the deposit formed when said Ni-Cr-B-Si is sprayed onto said surfaces and then fusing said coatings onto said surfaces.

4,241,111

PROCESS FOR CONSECUTIVELY COATING BOTH SIDES OF WEB

Ken Hamamura; Masuo Kabutomori; Eiichi Ohta, all of Fujinomiya, and Hiroki Saito, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 11, 1978, Ser. No. 932,969
Claims priority, application Japan, Aug. 11, 1977, 52-96353
Int. Cl.³ B05D *1/00, 5/00*
U.S. Cl. 427—211 **5 Claims**



1. A process for consecutively coating both sides of a continuously traveilling web, said process comprising:
coating a first coating solution onto a first side of a continuously travelling web, to form a first coated layer thereon,
supporting said first coated side of said web by a pressurized gas, and
supplying a second coating solution to the second side of said web while said first coated side of said travelling web is supported with said pressurized gas, and while said web is still in a non-dry state,
the improvement wherein:
said step of supplying a second coating solution comprises:
supporting a rotatable bar for rotation about its axis at right angles to the direction of web movement and being peripherally grooved in the direction of bar rotation, for rotating contact with said web on said second side,
forming a liquid pool of said second coating solution upstream of said moving web and between said rotating bar and a portion of said web supported by said pressurized gas, and
rotating said peripherally grooved rotatable bar at a peripheral speed in excess of the velocity of web movement in the same direction as the travelling direction of said web, to pick up a sufficient amount of said coating liquid to cause said second coating solution to flow onto said second side of said travelling web, over the grooved periphery of said rotating bar to insure evenness and the absence of longitudinal streaks of said second coating on said second side of said travelling web.

4,241,112

METHOD FOR APPLYING POLYMER COATING COMPOSITION

Leonid A. Kostandov, Vorobievskoe shosse, 6, kv. 4; Nikolai S. Enikolopov, Kutuzovsky prospekt 26, kv. 245; Fridrikh S. Dyachkovsky, Vorobievskoe shosse, 2-b, kv. 9; Ljudmila A. Novokshonova, ulitsa 26 Bakinskikh Komissarov, 7, korpus 4, kv. 38; Jury A. Gavrilov, Chistoprudny bulvar, 14, kv. 57, all of Moscow; Olga I. Kudinova, poselok Kratovo, ulitsa Malakhovskaya, 15, Moskovskaya oblast; Tatyana A. Maklakova, Leningradskoe shosse, 8/2, kv. 200, Moscow; Leonid A. Akopian, Mytischi, ulitsa Tereshkovoi, 11, kv. 21, and Khaim-Mordkhe A. Brikenshtein, Noginsky raion, Chernogolovka, ulitsa Vtoraya, 5, kv. 2, both of Moskovskaya oblast, all of U.S.S.R.

Filed Aug. 8, 1978, Ser. No. 931,921
Int. Cl.² B05D *7/24*
U.S. Cl. 427—213 **10 Claims**

1. A method for applying a polymer coating onto the surface of a solid filler comprising the steps of depositing a complex organometallic catalyst on the surface of the filler in two separate stages, the first stage comprising the step of depositing, in the gas phase, a compound of a transition metal on the surface of the filler whereby the transition metal compound becomes fixed to the surface of the filler and the second stage comprising the step of depositing, in the gas phase, an organic compound of a metal selected from the second or third groups of the periodic system on the resulting surface of the filler; and polymerizing an olefin in the gas phase at a temperature of from about 50° to 170° C. and a pressure of from about 1 to 60 atm on the catalyst deposited on the surface of the filler.

5. A method for applying a polymer coating onto the surface of a solid filler comprising the steps of depositing a complex organometallic catalyst on the surface of the filler in two separate stages, the first stage comprising the step of depositing, in the gas phase, a compound of a transition metal on the surface of the filler, whereby the transition metal compound becomes fixed to the surface of the filler and the second stage comprising the step of depositing, in the liquid phase, an organic compound of a metal selected from the second or third groups of the periodic system on the resulting surface of the filler; and polymerizing an olefin, in the liquid phase, at a temperature of from about 50° to 100° C. and a pressure of from about 1 to 60 atm on the catalyst deposited on the surface of the filler.

4,241,113

PROCESS FOR PRODUCING PROTECTIVE COATINGS ON METALS AND METAL ALLOYS FOR USE AT HIGH TEMPERATURES

Pier C. Martinengo, Turin, and Carlo Carughi, Cantalupa, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Continuation of Ser. No. 924,582, Jul. 14, 1978, abandoned. This application Sep. 6, 1979, Ser. No. 73,036

Claims priority, application Italy, Jul. 14, 1977, 68635 A/77

Int. Cl.³ C23C *9/00*

U.S. Cl. 427—229 **4 Claims**

1. A process for forming a protective metal diffusion coating on a metal or metal alloy workpiece, including the steps of:

preparing a first coating composition comprising a slurry of said protective matal in a carrier liquid, wherein said protective metal comprises aluminum and chromium in combination with yttrium, said chromium and said yttrium being present in an amount effective to improve the high temperature properties of said diffusion coating, said first coating composition comprising 77 wt % chromium, 4 wt % aluminum, 4 wt % yttrium hydride and 15 wt % of a cellulose acetate/acetone solution,

preparing a second coating composition comprising 80 wt % aluminum, 5 wt % ammonium chloride and 15 wt % of a cellulose acetate/acetone solution,

coating said workpiece with said first coating composition and then with said second coating composition, and

heating the coated workpiece in a non-oxidizing environment at 900° to 1100° C. for 1 to 5 hours to effect diffusion of said protective metal into the surface of said workpiece.

4,241,114

POLYIMIDES

John Gagliani, San Diego, Calif., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 935,378, Aug. 21, 1978, which is a continuation of Ser. No. 877,516, Feb. 13, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,794

Int. Cl.³ C08J *9/02*

U.S. Cl. 427—370 **8 Claims**

1. A process of making an artifact composed in part of a rigid, intumescent, polyimide foam which comprises the steps of: preparing a resinous precursor by forming a composition which is essentially a stoichiometric mixture of aromatic diamine and tetracarboxylic acid ester constituents and dispersing a filler composed of particulate solids in said composition; applying said precursor to a substrate; then heating said precursor to a temperature in the range of 210°–315° C. to produce a polyimide foam; and then heating said foam under a pressure in the range of 3–20 psig and at a temperature in the range of 230°–315° C. for a time sufficient to produce a permanent set in said foam.

4,241,115

RESIN COATED WOODEN ARTICLES PRODUCED BY CONTACTING A WOODEN ARTICLE WITH A RATHER QUICK CURING PHENOXY OR POLYAMIDE RESIN SYSTEM

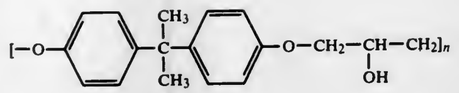
Samuel C. Temin, Needham, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 5, 1978, Ser. No. 922,099

Int. Cl.³ A63B *53/04, 59/06, 59/12;* B32B *21/08*

U.S. Cl. 427—384 **17 Claims**

1. A method of applying a protective phenoxy or polyamide resin coating to a wooden article consisting essentially of contacting said article for about 1 to 90 seconds with a coating solution consisting essentially of a prepolymerized phenoxy resin of the formula



wherein n = 150 to 700

and having a molecular weight between 45,000 to 200,000 or prepolymerized polyamide resin having a molecular weight of 5,000 to 10,000 or mixtures thereof dissolved in a readily vaporizable solvent, coating the article with the resin solvent solution, withdrawing the article from the resin solvent solution, drying said coated article in about 5 to 30 minutes by vaporizing the solvent from the resin coating on said article to obtain a 0.1 to 0.5 mm thick resin coating that is nonsticky to the touch.

11. A wooden article having an impact area protected with a 0.1 to 0.5 mm thick coating produced by the method of claim 1.

4,241,116

METHOD OF TREATING THE SURFACES OF SHAPED ARTICLES OF POLYCARBONATE RESINS

Susumu Taniyama, Toyonaka; Goro Shimaoka, Sakai, and Shoichi Inoue, Itami, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 76,802

Claims priority, application Japan, Sep. 19, 1978, 53/114857

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—386 **3 Claims**

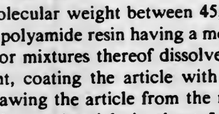
1. A method of treating the surface of a shaped article of a polycarbonate resin, which comprises

coating the shaped article of the polycarbonate resin with (I) a pre-treating solution containing a bisphenol type epoxy resin in a concentration of 5 to 50 wt% in a mixed solvent of a lower alcohol and an alkyl ether of ethylene glycol,

air-drying the coated article,

then coating the article with (II) a coating composition comprising

(A) a reaction mixture of the reaction of an aminoalkylalkoxy silane of the general formula

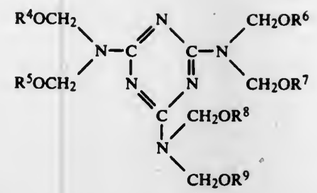


wherein R^1 represents a divalent hydrocarbon group containing 1 to 4 carbon atoms, R^2 and R^3 represent a monovalent hydrocarbon group containing 1 to 4 carbon atoms, Z represents a hydrogen atom or an aminoalkyl group, and n is 0 or 1,

with an epoxyalkylalkoxy silane of the general formula

wherein R^1, R^2 and R^3 are as defined above, Q represents a glycidoxy group or an epoxycyclohexyl group, and m is 0 or 1,

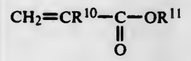
(B) a mixture of 10 to 0 wt% of an alkyl-modified methylol melamine of the general formula



wherein R^4, R^5, R^6, R^7, R^8 and R^9 represent a hydrogen atom or a monovalent hydrocarbon group with 1 to 4 carbon atoms,

and 90 to 100 wt% of an alkyd resin 4, and

(C) an acrylic acid derivative of the general formula



wherein R^{10} represents a hydrogen atom or a methyl group, and R^{11} represents a hydrogen atom, a hydrocarbon group containing 1 to 4 carbon atoms, a hydroxyalkyl group or a glycidyl group,

or its polymer of a low degree of polymerization, the content of the component (A) being 45 to 100 wt% and the content of the component (B) being 55 to 0 wt% in the mixture of the components (A) and (B), and the content of the component (C) in the composition of the components (A), (B) and (C) being 5 to 30 wt%,

and heat-curing the coated article.

4,241,117

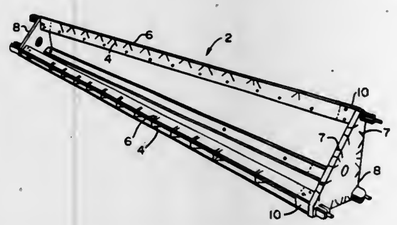
STRUCTURAL CORES AND THEIR FABRICATION

Irving E. Figge, Newport News, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 14, 1979, Ser. No. 48,402

Int. Cl.³ E04C *3/30;* B65H *81/00*

U.S. Cl. 428—35 **15 Claims**



1. A jig for producing polyhedral structural cores from fiber filaments by winding the filaments thereon comprising three or more channel members, each with two flanges, end truss members securing one channel member to another with flanges of the channel members directed outwardly forming an open structure which if closed would be a polyhedron having the outwardly directed channel members as polyhedral edges, with the number of channel members defining the number of sides of the polyhedron, a plurality of alternately sloping slots through one flange of each channel member, a plurality of slots through the other flange of each channel member, and a plurality of slots through the end truss members.

8. An article of manufacture fabricated by interweaving fibrous filaments over the jig of claim 1 to form a polyhedron each side of which is a noncurving unitary structural core of interwoven fibrous filaments, plastic coated to form a series of symmetrical tetrahedrons arranged in longitudinal rows, each row of tetrahedrons being in offset sequential relation relative to the tetrahedrons in an adjacent row, whereby two sides of all tetrahedrons are disposed in oppositely inclining, parallel planes and the remaining sides are disposed in parallel longitudinal planes, all planes intersecting along a line extending from an apex of the base of each tetrahedron to its apex.

13. A method of making a polyhedron whose sides are structural core members in the form of longitudinal rows of tetrahedrons which comprises interweaving fibrous filaments in a helical pattern from slot to slot over the jig of claim 1 whereby the filament rows mounted on top of each other are each offset from the preceding row to form planes that intersect to define the tetrahedrons, and coating said interwoven filament planes with a plastic to form the polyhedron.

4,241,118

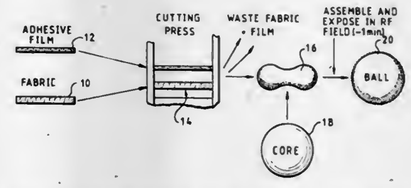
TENNIS BALLS AND METHOD OF MANUFACTURE

John Skelton, Sharon; Meredith M. Schoppee, Norfolk; Daniel K. Schiffer, Framingham, all of Mass., and Roy B. Parker, Monmouth, Me., assignors to Albany International Corp., Albany, N.Y.

Continuation-in-part of Ser. No. 914,256, Jun. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 819,254, Jul. 27, 1977, abandoned. This application Jan. 9, 1979, Ser. No. 2,207

Int. Cl.³ A63B *37/12, 29/08*

U.S. Cl. 428—35 **13 Claims**



1. A method of adhering a textile tennis ball cover to a tennis ball core, which comprises;

providing a tennis ball core;

providing a textile tennis ball cover of a cut, dimension and configuration to cover said core;

providing a hot melt adhesive in a solid form;

assembling said cover on said core with said adhesive in association with said cover and in contact with the core;

applying radiation selected from radio-frequency and microwave radiations to the assembled core, cover and adhesive for a period of time to cause said adhesive to melt and form a bond between said core and said cover without substantial modification to the mechanical properties of the core and cover material; and

allowing said melt to solidify, whereby said cover is adhered to said core.

4,241,119

DIMENSIONALLY HEAT-UNSTABLE PRODUCTS

Normaan E. Smart, Welwyn Garden City, England, assignor to The Post Office, London, England

Filed Jan. 17, 1977, Ser. No. 759,753

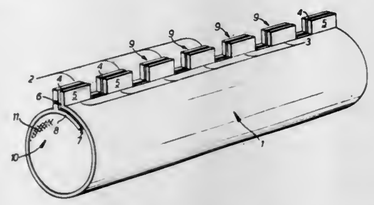
Claims priority, application United Kingdom, Jan. 22, 1976, 2573/76

Int. Cl.² B32B *1/08, 3/10*

U.S. Cl. 428—36 **6 Claims**

1. A cover formed from dimensionally heat unstable sheet material having first and second opposite edges with first and second edge portions adjacent said first and second edges respectively, said first edge portion carrying adjacent said first edge a first series of mutually spaced posts upstanding from the plane of the sheet at a first side thereof, said second edge portion carrying in spaced relation to said second edge a second series of mutually spaced posts upstanding from the plane of the sheet at said first side thereof thereby providing a sealing

flap engageable in underlapping relationship with said first edge portion when said first and second series of posts are juxtaposed to each other, said first and second series of posts being arranged to abut in face-to-face relation in non-interlocking relation to form mutually spaced pillars each made up of a



pair of posts respectively from said first and second series, and a separate ladder-form fixing means defining apertures to embrace said pillars to retain said means against longitudinal displacement relative to said pillars and to retain said first and second pairs of posts against longitudinal and transverse displacement relative to each other.

4,241,120

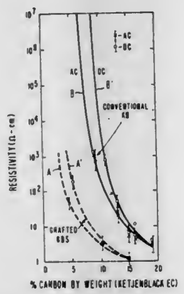
VIDEO DISCS AND MOLDING COMPOSITIONS THEREFOR

Pabitra Datta, Cranbury, and Ronald N. Friel, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,846

Int. Cl.[2] H04N *1/30*; B32B *3/02*

U.S. Cl. 428—65 **5 Claims**



1. In a video information recording medium, adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of molded plastic material containing a sufficient amount of finely divided conductive particles so that the material has a bulk resistivity below about 500 ohm-cm at 900 MHz and having a layer of dielectric material at the disc surface and having an information track constituted by a surface relief pattern in said track whereby said signals are recovered upon establishment of said motion at said rate, the improvement which comprises employing as said conductive particles polymer grafted carbon particles wherein said graft polymer is a thermally polymerized polymer of a monomer having vinyl unsaturation.

4,241,121

COMBINED SHIELD AND CORE WRAP FOR TELECOMMUNICATION CABLES AND THE LIKE

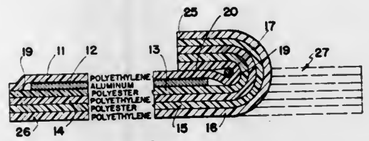
Lawrence O'Connor, Winnipeg, Canada, assignor to Kable Tapes Ltd., Winnipeg, Canada

Filed Mar. 12, 1979, Ser. No. 19,468

Claims priority, application United Kingdom, Mar. 16, 1978, 10466/78

Int. Cl.[3] H01B *3/00*; B32B *15/08*

U.S. Cl. 428—77 **24 Claims**



1. A combination core wrap and shield for use in the manufacture of telecommunication cables and the like which cables include a core and an outer extruded plastic cable jacket; comprising in combination a flexible elongated shield of metallic foil having a pair of longitudinal edges, at least one outer flexible plastic film bonded to one side of said shield and also having longitudinal edges, the longitudinal edges of said outer plastic film extending beyond the longitudinal edges of said shield, at least one inner flexible plastic film bonded to the other side of said shield and also having longitudinally extending edges, the longitudinal extending edges of said inner plastic film also extending beyond the longitudinal extending edges of said shield, the portions of said inner and outer plastic films extending beyond the longitudinally extending edges of said shield, being bonded together to envelope said shield thus forming a corrosion and moisture-proof enclosure for said shield.

4,241,122

ARTIFICIAL LEATHER HAVING CHINCHILLA-LIKE APPEARANCE AND NATURAL SUEDE-LIKE FEELING AND A METHOD FOR PRODUCING THE SAME

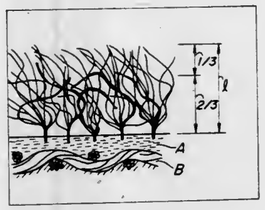
Koin Asano, Takatsuki, Japan, assignor to Kanebo, Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,996

Claims priority, application Japan, Oct. 31, 1978, 53-135075

Int. Cl.[3] B32B *33/00*; B05D *1/14, 1/16*

U.S. Cl. 428—90 **33 Claims**



1. An artificial leather having a suede-like texture and chinchilla-like appearance consisting of a substrate fabric and curved and entangled fibrillated piles stuck on the substrate fabric with an adhesive, said fibrillated piles consisting of polyamide and polyester having been obtained by fibrillating the piles composed of composite fibers which in transverse cross-section consist of at least three integral segments (A) of one polymer of the above described two polymers wherein said segments diverge from each other substantially radially in the outward direction and extend to the perimeter of the fiber and wedge-shaped segments (B) of another polymer which fill the spaces between the segments (A) or consist of the above

described segments (A), V-shaped segments (B') of the latter polymer and wedge-shaped segments (C) of the former polymer which fill the concavities of the V-shaped segments (B'), said V-shaped segments (B') and said wedge-shaped segments (C) filling the spaces between the segments (A), wherein all of the polymers extend to the perimeter of the fiber, so that the polymers are separated from each other to form very fine curved fibrils of (A) and (B) or (A), (B') and (C), which form fibrillated pile layer in which a content ratio by weight of polyamide fibrils in said pile layer increases from the surface of the pile layer toward the substrate fabric surface and the content ratio by weight of polyamide fibrils in total fibrils in an upper layer of ⅓ of the total thickness of said pile layer from the surface of said layer is not more than 80% of a content ratio by weight of polyamide fibrils in the total fibrils in a lower layer of ⅓ of the total thickness of said pile layer from the root portion of the fibrillated piles.

4,241,123

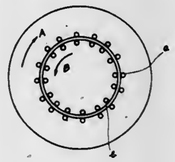
NON-WOVEN NETTING

Seng C. Shih, 60, Lane 63, Chung Cheng Rd., Luchow Hsiang, Taipei Hsien, Taiwan

Filed Nov. 14, 1978, Ser. No. 960,720

Int. Cl.[3] B32B *5/12*

U.S. Cl. 428—105 **6 Claims**



1. A method for making non-woven plastic netting comprising the steps of:

(1) extruding in a first direction in a first plane a first plurality of endless linear parallel spaced melted monofilaments;

(2) feeding a second plurality of spaced endless strands across said first plurality of monofilaments in said first direction in said first plane;

(3) during said feeding, reciprocally moving at least one of said first plurality of monofilaments and said second plurality of strands in a second direction nonparallel to said first direction in said first plane such that each of said plurality of strands overlaps at least two adjacent monofilaments of said first plurality of monofilaments; and

(4) following steps 2 and 3, directing said first plurality of monofilaments and said second plurality of strands together between a pair of pressure rollers so as to weld said strands and monofilaments together to form said netting.

4,241,124

INNER SHOE MATERIAL SUCH AS INSOLES AND MIDDLE SOLE MATERIAL IN THE FORM OF BREADTHS OR BLANKS THEREFROM

Paul Kremer, Grosskrotzenburg; Bernhard Gora, and Ludwig Klinger, both of Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roesseler, Hanau, Fed. Rep. of Germany

Filed Jun. 21, 1978, Ser. No. 917,727

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728774

Int. Cl.[3] B32B *3/30, 25/16*

U.S. Cl. 428—156 **14 Claims**

1. An inner sole or midsole inner shoe material in the form of breadths or blanks comprising a textile fiber structure which is impregnated with 50 to 400 parts by weight based on 100 parts by weight of the textile fibre structure of a mixture of synthetic materials comprising at least one styrene-butadiene copolymer and at least one polyvinyl alcohol obtained by substantial or complete hydrolysis of a polyvinyl ester in an amount of 8 to 100 parts by weight based on 100 parts by weight of the styrene-butadiene copolymer, said inner shoe material having high ability to absorb water and high ability to release the absorbed water.

4,241,125

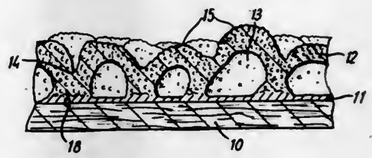
FOAM PLASTICS SHEET MATERIALS

Rodger G. Canning, Chorley, and John P. Tomlinson, Darwen, both of England, assignors to Reed International Limited, England

Filed Jul. 10, 1979, Ser. No. 56,341

Int. Cl.[3] B32B *3/00, 3/26*

U.S. Cl. 428—158 **8 Claims**



1. A foam plastics sheet material having a decorative relief finish, comprising a substrate web with a coating containing foam-defining voids characterized in that some at least of said coating is blistered with irregular macroscopic voids greater in size than the foam-defining voids between the coating and substrate and a sacrificed foam unites the coating and substrate web.

4,241,126

PROCESS FOR PRODUCING A COMPOSITE ELEMENT COMPRISING SHEET MEMBERS SECURED TO A SUPPORT AND SUCH COMPOSITE ELEMENTS

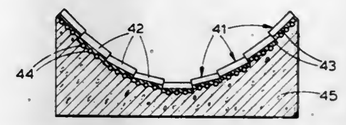
Maurice Nicolas, Maurepas, and Eugene Bacconnet, Marcoussis, both of France, assignors to Commissariat a l'Energie Atomique and BFG Glassgroup, both of Paris, France

Filed Oct. 31, 1978, Ser. No. 956,043

Claims priority, application Luxembourg, Nov. 17, 1977, 78535

Int. Cl.[2] B32B *3/30, 5/16*; B29C *5/00*

U.S. Cl. 428—174 **16 Claims**

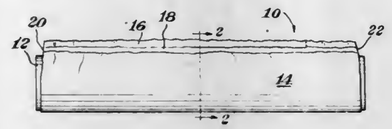


1. In a process for producing a composite element comprising a plurality of sheet members rigidly secured to a support with their rear main faces in contact therewith, wherein the sheet members, which have mirror-like reflectance, are placed on a jig and one or more fluid, settable substances are applied to the rear main faces of the thus arranged sheet members and are caused or allowed to set at least partially while the sheet members remain on the jig to form at least part of a substantially rigid support structure for the sheet members, the improvement comprising providing on the rear main faces of the sheet members one or more key members secured to the sheet members by an adhesive, said key members providing a key for the settable fluid.

4,241,127
STARTING TAIL FOR FILM ROLLS

Lloyd E. Lefevre, Bay City, and Mark A. Wegenka, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 849,137, Nov. 7, 1977, Pat. No. 4,169,122. This application Dec. 11, 1978, Ser. No. 968,140
Int. Cl.[2] B32B 3/02, 3/28
U.S. Cl. 428—177 2 Claims

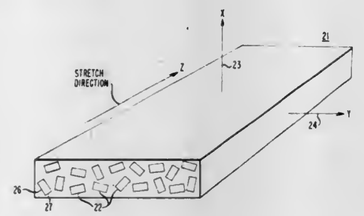


1. A substantially oriented film wrapped upon a roll core, said film having a relatively unoriented tail end presented at the surface of the film roll to serve as a starting handle, said tail end being of a width less than that of the rest of the film structure and being puckered with undulations indentifiable by touch and/or sight, said tail end not readily adhering to the rest of the film on the core.

4,241,128
PRODUCTION OF PIEZOELECTRIC PVDF FILMS

Tsuey T. Wang, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 20, 1979, Ser. No. 22,187
Int. Cl.[3] B29C 25/00; H01L 41/22
U.S. Cl. 428—212 9 Claims



1. A method of making a polyvinylidene fluoride film by steps comprising uniaxially stretching a polyvinylidene fluoride film having a predominantly α-type crystal structure to form a polyvinylidene fluoride film having a predominantly β-type crystal structure, and poling the film in an electric field, the invention characterized by the further steps comprising passing the stretched film one or more times along the stretch direction through rolling means so as to reduce the thickness of the film prior to said poling.

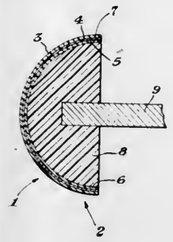
9. A polyvinylidene fluoride film produced according to the method of claim 1.

4,241,129
DELAMINATION RESISTANT MULTILAYER METAL/POLYMER COMPOSITES

Henry J. Marton, and Virgil B. Kurfman, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 15, 1978, Ser. No. 970,098
Int. Cl.[3] B32B 15/06, 15/08, 27/40, 27/28
U.S. Cl. 428—216 11 Claims

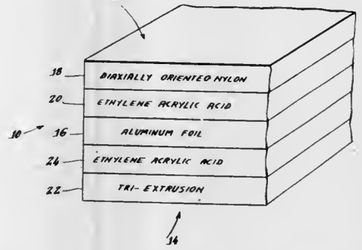
1. A metal/organic polymer composite comprising (1) a normally solid thermoplastic, substrate polymer layer; (2) a normally solid, metal layer having two major surfaces wherein the first of said surfaces is adhered to one surface of the substrate polymer layer, said metal layer having a thickness sufficient to form a substantially continuous layer and less than that which inherently delaminates from the substrate polymer layer; and (3) a layer of a soft adhesive polymer adhered to the second surface of the metal layer, said soft adhesive polymer having toughness and modulus such that upon adhering the composite to a rigid substrate the tendency of the metal layer to separate from the substrate polymer layer is measurably reduced.



4,241,130
ABRASION AND CRACK RESISTANT PACKAGE LAMINATE

Donald E. Barnes, Minnetonka, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed May 1, 1978, Ser. No. 901,438
Int. Cl.[3] B32B 15/08, 27/08, 27/32, 27/34
U.S. Cl. 428—216 10 Claims



1. A package laminate consisting essentially of
a metallic foil;
an intermediate bonding layer bonded to each opposite side of the metal foil;
a flexure crack resistant biaxially oriented nylon film having a predetermined directional tear characteristic bonded to the metallic foil through one of said intermediate bonding layers; and
a smooth surfaced abrasion resistant, moisture impermeable triextrusion product bonded to the metallic foil through the other of said intermediate bonding layer wherein said triextrusion product comprises three copolymer polypropylene layers.

5. A package laminate consisting essentially of a metallic foil;
an ethylene acrylic acid bonding layer bonded to each opposite side of the metal foil;
a flexure crack resistant biaxially oriented nylon film having a predetermined directional tear characteristic bonded to the metallic foil through one of said ethylene acrylic acid bonding layers; and,
a smooth surfaced, abrasion resistant, moisture impermeable triextrusion product bonded to the metallic foil through the other of said ethylene acrylic acid bonding layer wherein said triextrusion product comprises three copolymer polypropylene layers.

4,241,131
MOLDABLE POLYURETHANE FOAM-BACKED FABRICS

Robert J. Bailey, Coraopolis, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 24, 1978, Ser. No. 909,156
Int. Cl.[3] B29D 27/04
U.S. Cl. 428—262 13 Claims

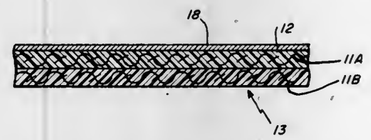
1. A process for preparing a molded, polyurethane foam-backed fabric comprising the steps of:
(A) applying a foamable mixture or froth of polyurethane reaction components to the back of a fabric, said reaction components consisting essentially of:
(1) a polyisocyanate;
(2) an organic compound containing at least two hydrogen atoms capable of reacting with isocyanate groups, having a molecular weight of between 400 and 16,000 and containing essentially no ethylenically unsaturated groups;
(3) hydroxyl containing esters of acrylic and alkyl acrylic acids;
(4) a free radical initiator;
(5) a heat activated catalyst for the reaction between components (1) and (2);
(6) a blowing agent, or inert gas for frothing;
(7) a surface active agent for foam stability;
(B) heating the coated fabric for from 15 seconds to 10 minutes at a temperature of from about 80° to about 250° F. to allow the polyurethane reaction to proceed to produce a fully foamed, gelled, tack-free polyurethane foam; and
(C) thereafter molding the resultant foam-backed fabric by a hot-molding process to produce a complex shape.

12. The product of the process of claim 1.

4,241,132
INSULATING BOARDS

Ralph C. Pratt, Maynard; Robert Davis, Concord, and Charles P. Howland, E. Pembroke, all of Mass., assignors to Castall Incorporated, East Weymouth, Mass.

Filed Aug. 17, 1978, Ser. No. 934,691
Int. Cl.[3] B32B 15/00
U.S. Cl. 428—285 14 Claims

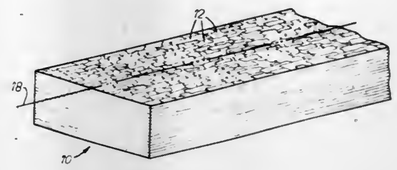


1. An insulating board, said board having a reinforcement polymeric layer of fibrous material with a predetermined dielectric constant and loss tangent suitable for use as a printed circuit base board with said dielectric constant being within the range of from 2.2 to 20,
a polybutadiene thermoset polymer impregnated into said reinforcement layer and having a dielectric constant which is closely matched to the dielectric constant of said layer,
said insulating board having a dielectric constant which is isotropic and a loss tangent which is isotropic,
said polymeric fibrous material being a polyolefin material,
said dielectric constant of said polybutadiene polymer and said reinforcement layer each being below 3 at 60 cycles and 23° C.

4,241,133
STRUCTURAL MEMBERS OF COMPOSITE WOOD MATERIAL AND PROCESS FOR MAKING SAME

Anders E. Lund, Houghton; Gordon P. Krueger, Hancock; Darrell D. Nicholas, and Roy D. Adams, both of Houghton, all of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Apr. 2, 1979, Ser. No. 26,095
Int. Cl.[3] B32B 9/04
U.S. Cl. 428—326 17 Claims



16. An elongated structural member of a composite wood material including at least two elongated structural components bonded together in angular relationship, each of said structural components being comprised of:
elongated wood flakes bonded together with a binder, said wood flakes having a grain direction extending generally parallel to the longitudinal axis thereof, an average length of about 0.5 inch to about 3.5 inches, and average length to average width ratio of about 4:1 to about 10:1 and an average thickness of about 0.01 to about 0.05 inch and at least a majority being oriented such that the longitudinal axis is generally parallel to the longitudinal axis of said structural component.

4,241,134
ELECTROSTATICALLY IMAGEABLE DRAFTING FILM

Herman Burwasser, Boonton, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 902,913, May 5, 1978, abandoned. This application May 24, 1979, Ser. No. 42,146
Int. Cl.[3] B32B 5/16, 19/02
U.S. Cl. 428—331 2 Claims

1. An actinically transparent electrostatically imageable drafting film consisting essentially of a nonconductive plastic film support, an electrically conductive layer coated on one side of said support and, coated on said conductive layer, a markable dielectric layer comprising a dielectric binder resin and a particulate silica toothing material uniformly dispersed therein, said dielectric binder resin being selected from the group consisting of styrenated acrylics and cellulosic film formers, said toothing material having an average particle size from 2–6 microns and being dispersed in the binder in a weight ratio of about 1:1 , said dielectric layer being from 1.4 to 10 microns thick.

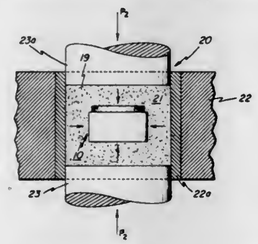
4,241,135
POLYCRYSTALLINE DIAMOND BODY/SILICON CARBIDE SUBSTRATE COMPOSITE

Minyoung Lee, Schenectady; Lawrence E. Szala, Scotia, and Robert C. DeVries, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 844,447, Oct. 21, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 10,748
Int. Cl.[3] B32B 3/26, 5/16
U.S. Cl. 428—332 10 Claims

1. A composite consisting essentially of a polycrystalline diamond body integrally bonded to a substrate of polycrystalline silicon carbide, said polycrystalline diamond body consisting essentially of a mass of diamond crystals adherently bonded together by a bonding medium consisting essentially of silicon

carbide and a carbide and/or silicide of a metal component which forms a silicide with silicon and which forms a eutectiferous alloy with silicon, said metal component of said metal silicide being selected from the group consisting of cobalt, chromium, iron, hafnium, manganese, molybdenum, nickel, palladium, platinum, rhenium, rhodium, ruthenium, tantalum, thorium, titanium, uranium, vanadium, tungsten, yttrium, zirconium, and alloys thereof, said metal component of said metal carbide being selected from the group consisting of chromium, hafnium, titanium, zirconium, tantalum, vanadium, tungsten, molybdenum, and alloys thereof, said diamond crystals ranging in size from about 1 micron to about 1000 microns, the volume of said diamond crystals ranging from at least about 70% by volume up to about but less than 90% by volume of said body, said bonding medium being present in an amount ranging up to about 30% by volume of said body, said bonding medium being distributed at least substantially uniformly



throughout said body, the portion of said bonding medium in contact with the surfaces of said diamond crystals being at least in a major amount silicon carbide, said diamond body being at least substantially porefree, said substrate consisting essentially of a hot-pressed or sintered polycrystalline silicon carbide body wherein the silicon carbide grains are bonded directly to each other ranging in density from about 85% to about 100% of the theoretical density of silicon carbide and containing silicon carbide in an amount of at least 90% by weight of said substrate and being free of constituents which have a significant deleteriouseffect on the mechanical properties of said composite, said polycrystalline diamond body forming an interface with said silicon carbide substrate wherein said bonding medium extends from said polycrystalline diamond body into contact with said silicon carbide substrate at least substantially filling any pores throughout said interface so that said interface is at least substantially pore-free.

4,241,136

GLASS FIBER SIZE COMPOSITION AND PROCESS

Ernst Dereser, Goe, Belgium, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 5, 1979, Ser. No. 16,270

Int. Cl.³ C03C *25/02*; B05D *1/36*

U.S. Cl. 428—378 **22 Claims**

10. A process for treating glass fibers for use as reinforcement for cementitious materials comprising the steps of coating glass fibers with a cationic size composition containing a cationic film-forming organic polymer and then coating the resulting glass fibers with an anionic size composition containing an anionic film-forming organic polymer whereby the cationic and anionic polymer react each with the other to form a thin film on the glass fiber surfaces.

4,241,137

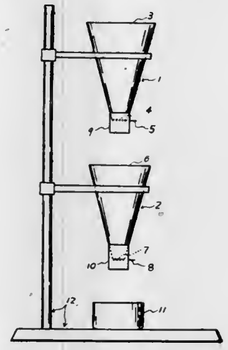
PROCESS FOR PREPARING POLYTETRAFLUOROETHYLENE GRANULAR POWDER

Masanori Izumo, Neyagawa; Syunichi Nomura, Kyoto, and Singo Tanigawa, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 568,824, Apr. 17, 1975, abandoned, which is a continuation of Ser. No. 382,218, Jul. 24, 1973, abandoned. This application Nov. 22, 1977, Ser. No. 854,003

Int. Cl.³ B32B *5/16*; C08F *6/00*; C09C *1/56*

U.S. Cl. 428—402 **11 Claims**



1. A process for preparing a polytetrafluoroethylene granular powder which comprises agitating a finely divided polytetrafluoroethylene powder composed of primary particles having an average particle size of 1 to 200μ in an aqueous medium consisting of water and an organic liquid having a surface tension of at most 35 dynes/cm. at 25° C., said organic liquid being incompatible with water in an apparatus to form agglomerates, by passing said agglomerates through a crushing mechanism and continuously recycling said crushed agglomerates through said apparatus and mechanism for further agitation and crushing, said crushing mechanism being capable of lowering an average particle size of the agglomerates composed of said primary particles having an average particle size of 1 to 200μ by partially crushing large agglomerated particles, said organic liquid being employed in an amount of 20 to 300% by weight and water being employed in an amount of at least 130% by weight and said aqueous medium being employed in an amount of 150 to 5000% by weight, respectively, relative to said finely divided polytetrafluoroethylene, to give said polytetrafluoroethylene granular powder consisting essentially of agglomerates composed of said primary particles and being substantially spherical, in which at least 90% by weight of the entire agglomerated powder has a particle size of at most 1000μ and the average particle size of said agglomerate falls in the range of 100 to 500μ and at least 60% by weight of the agglomerated powder has a particle size of 0.7 to 1.3 times said average particle size of said agglomerated powder, the powder flowability of said powder being at least 3 and the bulk density being at least 700 g./liter, and said agglomerated powder giving a molded article having a surface roughness of at most 2.0.

11. Polytetrafluoroethylene granular powder made by the process which comprises agitating a finely divided polytetrafluoroethylene powder composed of primary particles having an average particle size of 1 to 200μ to agitation in an aqueous medium consisting of water and an organic liquid having a surface tension of at most 35 dynes/cm. at 25° C., said organic liquid being incompatible with water in an apparatus to form agglomerates, by passing said agglomerates through a crushing mechanism and continuously recycling said crushed agglomerates through said apparatus and mechanism for further agitation and crushing, said crushing mechanism being capable of lowering an average particle size of the agglomerates composed of said primary particles having an average particle size of 1 to 200μ by partially crushing large agglomerated particles having an improperly large particle size or abnormally large aggregates, said organic liquid being employed in an amount of 20 to 300% by weight and water being employed in an amount of at least 130% by weight and said aqueous medium being employed in an amount of 150 to 5000% by weight, respectively, relative to said finely divided polytetrafluoroethylene, to give said polytetrafluoroethylene granular powder consisting essentially of agglomerates composed of said primary particles and being substantially spherical, in which at least 90% by weight of the entire agglomerated powder has a particle size of at most 1000μ and at an average particle size of said agglomerate powder falls in the range of 100 to 500μ and at least 60% by weight of the agglomerated powder has a particle size of 0.7 to 1.3 times said average particle size of said agglomerated powder, the powder flowability of said powder being at least 3 and the bulk density being at least 700 g./liter, and said granular powder giving a molded article having a surface roughness of at most 2.0.

4,241,138

POROUS HEAT-INSULATION MATERIAL

Minas G. Chentemirov, ulitsa Vorovskogo, 29/31, kv. 14; Ekaterina P. Lukienko, ulitsa Molodogvardeiskaya, 6, kv. 95; Levon O. Parsamian, Volgogradsky prospekt, 127, korpus 2, kv. 29; Anatoly F. Poluyanov, ulitsa Vavilova, 86, kv. 117; Jury G. Gorbachev, ulitsa Oktyabrskaya, 4, kv. 4; Nikolai S. Enikolopov, Kutuzovsky prospekt, 26, kv. 245; Fridrikh S. Dyachkovsky, Vorobievskoe shosse, 2-b, kv. 9; Ljudmila A. Novokshonova, ulitsa 26 Bakinskikh komissarov, 7, korpus 4, kv. 38; Jury A. Gavrilov, Chistoprudny bulvar, 14, kv. 57, all of Moscow; Olga I. Kudinova, ulitsa Malakhovskaya, 15, poselok Kratovo Moskovskoi oblasti, and Tatyana A. Maklakova, Leningradskoe shosse, 8/2, kv. 200, Moscow, all of U.S.S.R.

Filed Oct. 30, 1978, Ser. No. 955,571

Int. Cl.² B32B *19/04, 27/06, 27/14*; C04B *43/00*

U.S. Cl. 428—403 **3 Claims**

1. A porous heat-insulation material comprising blocks molded from granules of a porous mineral filler with a polyolefin coating, the coating having a thickness of from about 1/1000 to 1/25 of an average granule diameter; said granules being spaced apart from each other a distance of from about 0.5 to 2.0 times the coating thickness; and the mass ratio of said porous mineral filler to said polyolefin being from about 80–98:20–2, respectively.

4,241,139

MAGNETIC RECORDING MEDIUM

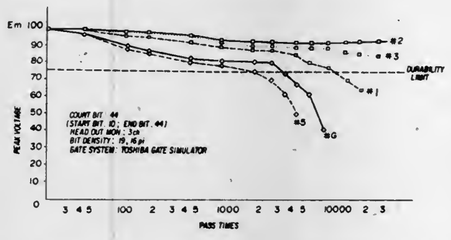
Yuichi Kubota; Tsunayoshi Saito, and Yoshiaki Makino, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd. and Tokyo Magnetic Printing Co., Ltd., both of Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,304

Claims priority, application Japan, Apr. 19, 1978, 53/46053

Int. Cl.² H01F *10/02*

U.S. Cl. 428—413 **5 Claims**



1. A magnetic recording medium which comprises a protective layer coated on a magnetic recording layer which is coated on a substrate and said protective layer comprises polyurethane and nitrocellulose in which isopropyl alcohol originally present in the nitrocellulose has been replaced by a resin selected from the group consisting of polyurethane resins, polybutadiene resins, butadiene-acrylonitrile copolymers, vinyl chloride-vinyl acetate-vinyl alcohol copolymers, vinyl chloride-vinyl acetate copolymers, vinyl chloride-vinylidene chloride copolymers, vinylidene chloride-acrylonitrile copolymers, vinyl acetate resins, epoxy resins, phenoxy resins, polyvinylbutyral resins, polyvinyl formal resins and polyester resins.

4,241,140

LAMINATED SAFETY GLASS WITH POLYURETHANE FILM

Vernon G. Ammons, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 12, 1978, Ser. No. 895,693

Int. Cl.³ B30B *17/10*; B32B *27/40*; C03C *27/00*

U.S. Cl. 428—339 **7 Claims**

1. A method for making a laminated glass article comprising the steps of:

a. casting into a sheet mold a single curable polyurethane reaction mixture which comprises:

(1) a polytetramethylene ether glycol having a molecular weight from about 400 to about 2000,

(2) a polycaprolactone triol having a molecular weight from about 300 to 1000;

(3) a monomeric aliphatic diol having from 4 to 6 carbon atoms; and

(4) an isomeric mixture of 2,4-toluene diisocyanate and 2,6-toluene diisocyanate;

b. polymerizing the reaction mixture to form a self-supporting polyurethane sheet;

c. removing the self-supporting polyurethane sheet from said mold;

d. laminating said polyurethane sheet to a sheet of glass; and

e. curing the polyurethane.

3. The method according to claim 1, wherein the step of laminating the self-supporting polyurethane sheet to a sheet of glass is performed prior to curing the polyurethane.

4,241,141

REMOVABLE COATINGS WHICH PREVENT PENETRATION FROM FELT TIP MARKING INKS

Douglas W. Dill, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Mar. 19, 1979, Ser. No. 21,748

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—500 **11 Claims**

1. A method of protecting surfaces from being permanently marked by graffiti comprising:

(a) Coating the surface to be protected with a removable barrier composition consisting essentially of;

(i) from 10 to 35% by weight of a polymer having a monomer content of from 25 to 70% by weight hard monomer, from 15 to 50% by weight of a soft monomer and from 15 to 30% by weight of an acid monomer, the polymer having been solublized with sodium hydroxide, potassium hydroxide or mixtures thereof;

(ii) from 0 to 15% of a plasticizer selected from the group consisting of the sodium salt of a maleic anlydride adduct with a mixed alpha olefin having chain lengths of more than 30 carbon atoms, the potassium salt of a maleic anlydride adduct with a mixed alpha olefin having chain lengths of more than 30 carbon atoms and mixtures thereof;

(iii) from 0 to 2% of a coalescing solvent selected from the group consisting of diethylene glycol monoethyl ether,

diethylene glycol monobutyl ether and mixtures thereof;

(iv) from 0 to 3% of defoamers, leveling agents and mixtures thereof; and

(v) from 90 to 45% by weight water, the composition having an MFT of less than 30° C. and a pH of from 7.0 to 10.0; and

(b) Allowing the coating to dry on the surface to be protected.

4,241,142

CLAY PIGMENT FOR COATING PAPER

Adam F. Kaliski, Hightstown; Richard R. Berube, Cliffwood, and John C. Nease, Califon, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation of Ser. No. 931,544, Aug. 7, 1978, which is a continuation of Ser. No. 832,727, Sep. 12, 1977, abandoned, which is a division of Ser. No. 587,606, Jun. 17, 1975, abandoned. This application Dec. 20, 1978, Ser. No. 971,365

Int. Cl.³ B05D *3/02, 3/12;* **B32B** *23/08, 27/10*

U.S. Cl. 428—511 **15 Claims**

3. A low gloss coated printing paper having improved optical and printing properties, said printing paper comprising paper and a smooth coating thereon of adhesive-bound clay particles, said clay particles comprising (a) from 5 to 30 parts by weight of mechanically delaminated particles of kaolin clay, the particles of which range in size from 2 μm to 10 μm and are predominantly in the size range of 2 μm to 5 μm and (b) from 95 to 70 parts by weight of a coarse particle-size fraction of kaolin clay which has not undergone mechanical delamination, said course-size fraction being essentially free from particles coarser than 10 μm and containing from about 88% to 94% by weight of particles finer than 5 μm and from about 40% to 60% finer than 2 μm.

13. The printing paper of claim 3 wherein said aqueous paper coating adhesive is selected from known adhesives which minimize ink set-off in the coated printing paper.

14. The printing paper of claim 13 wherein said adhesive is selected from the group consisting of polyvinyl acetate latexes, styrene-butadiene latexes and mixtures thereof with starch or protein.

4,241,143

PROCESS FOR PRODUCING HIGHLY GLOSSY COATED PAPER

Yutaka Ashie, and Yasuhiro Nakamura, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,953

Claims priority, application Japan, Mar. 17, 1978, 53-30830

Int. Cl.³ B05D *3/02, 3/12;* **B32B** *23/08, 27/10*

U.S. Cl. 428—512 **14 Claims**

1. A process for producing a high gloss coated paper comprising applying to paper an aqueous coating color containing 5 to 40 parts by weight of satin white per 100 parts by weight of total pigments and 5 to 40 parts by weight of a polymer latex having a Tg more than 45° C. per 100 parts by weight of total pigments, drying and subjecting the dried, coated substrate to specular finishing at a temperature higher than Tg of the polymer latex.

9. A high gloss coated paper produced by the process according to claim 1.

4,241,144

ANTISTATIC POLYOLEFIN FILMS

Brian N. Hendy, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, England

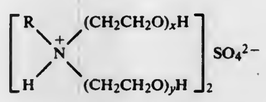
Continuation of Ser. No. 762,166, Jan. 24, 1977, now Defensive Publication No. T961,009. This application Mar. 30, 1979, Ser. No. 25,600

Claims priority, application United Kingdom, Feb. 6, 1976, 4769/76; Apr. 9, 1976, 14547/76

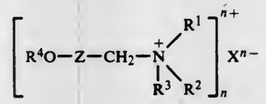
Int. Cl.³ B32B *27/32, 27/08*

U.S. Cl. 428—516 **3 Claims**

1. An antistatic polyolefin film having on at least one surface thereof (1) an amine sulphate of the formula



wherein x is a positive integer, y is a positive integer, the sum of x and y is from 2 to 5, and R is a univalent aliphatic radical containing from 8 to 22 carbon atoms and in addition thereto (2) a compound of the formula



wherein each of R^1, R^2, and R^3 which be the same or different, is a hydrogen atom or a lower alkyl radical containing from 1 to 6 carbon atoms, or R^1 and R^2 are each methylene groupings within a common five- or six-membered saturated heterocyclic ring, Z is a methylene group when R^4 is a hydrogen atom or an acyl radical containing up to 15 carbon atoms, or Z is a carbonyl group when R^4 is a hydrogen atom, and X is an anion of valency n.

4,241,145

NOVEL INTUMESCENT COMPOSITION

Jayendra R. Shukla, Ann Arbor, Mich., assignor to Velsicol Chemical Corporation, Chicago, Ill.

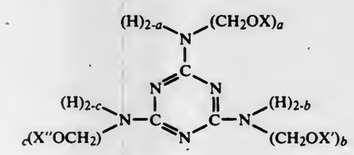
Filed Sep. 17, 1979, Ser. No. 76,060

Int. Cl.³ C08L *85/02*

U.S. Cl. 428—537 **25 Claims**

1. An intumescent composition containing a cyclic nitrogen compound, a copolycondensed vinylphosphonate, an acid, and water wherein:

(a) said cyclic nitrogen compound is

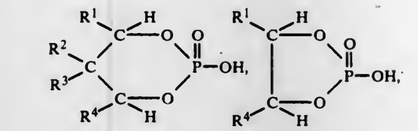


wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and $-CH_3$;

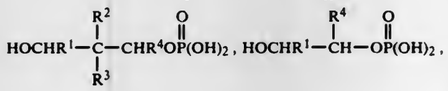
(b) said copolycondensed vinylphosphonate consists essentially of the product resulting from the reaction, in stoichiometric ratio of from about 1:10 to 10:1, between a bis(2-haloalkyl) vinylphosphonate and at least one pentavalent phosphorus ester of the structure ROP(=O)XY where R is selected from the class consisting of c_1-C_{20} alkyl and C_1-C_{20} chloro- or bromoalkyl groups and X and Y are groups selected from the class consisting of RO—,

C_1-C_{20} alkyl, C_2-C_{20} alkenyl, phenyl, phenoxy, amino, C_1C_{20} alkyl substituted amino, phenyl substituted amino, C_2-C_{20} alkylene bonded to the same or to another ROP(=O) moiety and C_2-C_{20} alkyleneoxy and C_2-C_{20} alkylenedioxy bonded to the same or to another ROP(=O) moiety, wherein said rection is carried out at an elevated temperature for a period of time which is sufficient to evolve R-halide as a by-product and to form a P(O)-O-alkylene-O-P(O) linkage, with the proviso that said product is not the homopolycondensed product of said bis(2-haloalkyl) vinylphosphonate; and

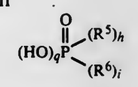
(c) said acid is selected from the group consisting of phosphorous acid, phosphoric acid,



I II

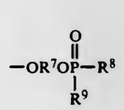


III IV



V

and mixtures thereof, wherein R^1, R^2, R^3, and R^4 are independently selected from the group consisting of hydrogen, alkyl of from about 1 to about 3 carbon atoms, haloalkyl of from about 1 to about 3 carbon atoms, and hydroxyalkyl of from 1 to about 3 carbon atoms, provided that the total number of carbon atoms in the R^1, R^2, R^3, and R^4 groups does not exceed about 5; wherein q is an integer of from 1 to 2, h and i are integers independently selected from the group consisting of 0, 1, and 2, and q plus h plus i equals 3; and wherein R^5 and R^6 are independently selected from the group consisting of alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing 2 to 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, haloalkoxy of from about 2 to about 6 carbon atoms and from about 1 to about 3 halogen atoms,



wherein R^7 is selected from the group consisting of alkylene of from about 2 to about 6 carbon atoms, haloalkylene of from about 3 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, polyalkyleneoxy containing 2 to 6 carbon atoms and 1 to 5 oxygen atoms, and hydroxyalkylene of from 3 to about 6 carbon atoms and 1 to 4 hydroxyls, and R^8 and R^9 are independently selected from the group consisting of hydrogen, hydroxyl, alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing about 2 to about 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, and haloalkoxy of from about 2 to about 6 carbon atoms and 1 to about 3 halogen atoms, provided that the total number of carbon atoms in the R^5 and R^6 groups does not exceed about 8.

4,241,146

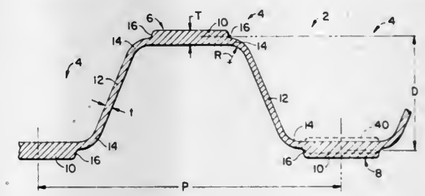
CORRUGATED PLATE HAVING VARIABLE MATERIAL THICKNESS AND METHOD FOR MAKING SAME

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001, and Firoze H. Broacha, Lakewood, Colo., assignors to Eugene W. Sivachenko, Redding, Calif.

Filed Nov. 20, 1978, Ser. No. 962,365

Int. Cl.³ B32B *3/28, 15/00*

U.S. Cl. 428—600 **21 Claims**



16. A corrugated metal plate made from sheet material comprising: a plurality of side by side parallel corrugations having a generally trapezoidal cross-section and defining longitudinally extending, parallel, alternating corrugation peaks and corrugation troughs interconnected by sloping corrugation sides, the peaks and the troughs each including a substantially flat crown section extending over the full length of the plate and, in a direction transversely thereto, between adjoining corrugation sides, the corrugated plate further including curved corrugation segments extending between lateral edges of the crown sections and the flat corrugation sides, the crown sections having a material thickness substantially greater than a material thickness of the corrugation sides, the crown sections, the corrugation sides, and the corrugation segments being integrally formed from the same sheet.

4,241,147

DIFFUSION ALUMINIZED AGE-HARDENABLE STAINLESS STEEL

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 851,504, Nov. 14, 1977, and Ser. No. 809,189, Jun. 23, 1977, and Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,453, and Ser. No. 614,834, Sep. 19, 1975, Pat. No. 4,141,760, said Ser. No. 851,504, said Ser. No. 809,189, said Ser. No. 752,855, each is a continuation-in-part of Ser. No. 694,951, Jun. 11, 1976, abandoned, said Ser. No. 614,834, is a continuation-in-part of Ser. No. 446,473, Feb. 27, 1974, Pat. No. 3,958,046. This application Oct. 23, 1978, Ser. No. 953,762

Int. Cl.² B32B *15/00*

U.S. Cl. 428—652 **5 Claims**

1. A gas turbine airfoil having an aluminized case diffused into a nickel- or cobalt-plated surface of an age-hardenable stainless steel substrate, in which the plating is not over about 0.1 mil thick and the aluminized case is at least about 0.2 mil thick, the surface of the case having a roughness than 38 microinches.

4,241,148

COMPOSITE ALUMINUM-CONTAINING WORKPIECES

Heinz Schoer, Alfter, and Werner Schultze, Bonn, both of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Division of Ser. No. 729,039, Oct. 4, 1976, Pat. No. 4,121,750, which is a continuation of Ser. No. 368,627, Jun. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 98,173, Dec. 14, 1970, abandoned. This application Nov. 21, 1977, Ser. No. 853,768

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1969, 1962760; Jun. 11, 1970, 2028683

Int. Cl.³ B32B *15/20*

U.S. Cl. 428—654 **8 Claims**

1. A bonded article comprising a pair of spaced apart workpieces consisting of aluminum and bearing an aluminum oxide surface layer,

an aluminum silicon filler metal interposed between said oxide surface layers to form a joint between said workpieces, said filler metal consisting essentially of aluminum containing from 6 to 20% by weight of silicon and from 0.01 to 10.0% by weight of said filler metal of at least one substance selected from the group consisting of bismuth, antimony, strontium and barium remainder aluminum and impurities, said filler metal having a melting temperature substantially below that of aluminum and said joint being free of any fluoride or chloride flux residue.

4,241,149

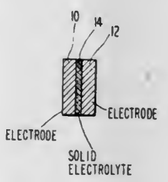
CANAL CLATHRATE COMPLEX SOLID ELECTROLYTE CELL

Mortimer M. Labes, Philadelphia, Pa.; Marvin E. Jones, Roseville, Minn., and Huey-Chuen I. Kao, Philadelphia, Pa., assignors to Temple University, Philadelphia, Pa.

Filed Jul. 20, 1979, Ser. No. 59,283

Int. Cl.³ H01M *6/18, 4/60*

U.S. Cl. 429—50 **11 Claims**



1. In an electrolytic cell having three elements, namely two electrodes and an electrolyte therebetween, the improvment wherein one of said elements is comprised of a canal clathrate complex of benzophenone or substituted benzophenone and a polyhalide salt of a cation from the group consisting of K^+, Na^+, Cs^+, Li^+, NH_4^+, Rb^+, and R_4N^+, where R is an alkyl group of less than five carbons.

4,241,150

METHOD FOR CONTROL OF EDGE EFFECTS OF OXIDANT ELECTRODE

Peter Carr, Utica, and Chen H. Chi, Sterling Heights, both of Mich., assignors to Energy Development Associates, Inc., Madison Heights, Mich.

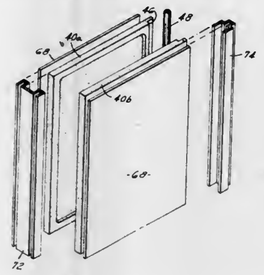
Filed Jul. 30, 1979, Ser. No. 62,109

Int. Cl.³ H01M *2/38*

U.S. Cl. 429—51 **9 Claims**

1. A method of discharging an electrical energy storage device comprising the steps;

1. providing a first electrode comprised on an electrochemically reducible substance;
2. providing a porous electrode having a first and second exterior face with a cavity formed in the interior between said exterior faces, thereby having first and second interior faces positioned opposite the first and second exterior faces;
3. providing a current carrying electrolyte between said electrodes;
4. passing an oxidant through said porous electrode;
5. screening the porous electrode thereby decreasing its electrochemical activity by blocking the interior face a



greater amount than the respective exterior face of the porous electrode, thereby maintaining a differential of electrode surface area between the interior face and the exterior face; and

6. closing the circuit between the first electrode and the porous electrode, thereby oxidizing the substance at the first electrode and reducing the oxidant at the porous electrode.

4,241,151

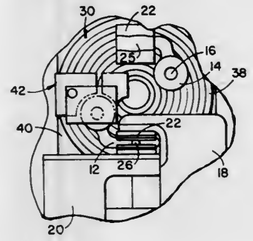
BATTERY STRAP WELDED CONNECTION

Toshio Uba, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed May 29, 1979, Ser. No. 43,203

Int. Cl.³ H01M *2/26*

U.S. Cl. 429—94 **12 Claims**



1. In an electrochemical cell comprising a cell pack consisting of opposite polarity electrode plates and separator material interleaved between the plates, a plurality of spaced collector tabs emanating from the plates and upstanding from an edge of the cell pack, and a strap having at least one projecting leg interposed between and welded to adjacent collector tabs associated with a given polarity plate, the improvement comprising:

said leg having an elongate body portion provided with at least one boss protruding from said cell pack edge and spaced from each end of the leg, at least a portion of the boss being fused together with said adjacent collector tabs to form, with the leg, a unitary welded connection of low silhouette and minimum mass.

4,241,152

DISCONNECTABLE GAS-TIGHT AND PRESSURE-RESISTANT ELECTRICAL LEAD-OUT

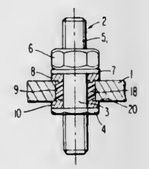
Rainer Klink, Kernen, Fed. Rep. of Germany, assignor to Deutsch Automobilgesellschaft mbH, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,328

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849326

Int. Cl.³ H01M *2/02*

U.S. Cl. 429—181 **19 Claims**



1. A disassemblable gas-tight and pressure-resistant electrical lead-out for battery cells, comprising a substantially rigid metallic external sleeve means, a metallic bolt means effecting current conduction and insulating means disposed between the sleeve means and the bolt means and including three sleeve-shaped insulating members disposed axially one behind the other and substantially filling out the space between the bolt and sleeve means, the center insulating member being made of a practically gas-tight deformable material while the two outer insulating members are made from a substantially form-stable material, and at least one of the two outer insulating members being adapted to be axially tightened with respect to the center insulating member, characterized in that the two outer insulating members are provided on their sides facing the center member with a ring-shaped raised portion which during axial tightening penetrates in the center insulating member.

4,241,153

PROCESS FOR MAKING COLOR SEPARATION NEGATIVES AND POSITIVES FOR USE IN MULTI-COLOR PRINTING

Vjatsjeslev Rovnjev, Oslo, Norway, assignor to AB Bates a/s, Oslo, Norway

Filed Oct. 27, 1978, Ser. No. 955,726

Claims priority, application Norway, Oct. 28, 1977, 773692; Oct. 3, 1978, 783339

Int. Cl.² G03C *5/00*; G03F *5/00*

U.S. Cl. 430—4 **27 Claims**

1. A method of manufacturing intermediate and final color-separation negatives and positives from a color original suitable for use in screenless printing, comprising the steps of:

exposing a continuous-tone panchromatic (pan) film including a silver halide emulsion through a selected filter to light from said color original and developing said film to a density not exceeding 1.0, said developed pan film being termed an intermediate color-separation negative, said development of said pan film being effected under conditions such as to produce silver crystals larger in size than produced in normal development, said conditions including at least one of the steps, (A) raising the temperature of the developer from its normal temperature by up to about 10° C., (B) increasing the time of rinsing by a factor of up to about 6, and (C) increasing the drying temperature up to a maximum of about 40° C. with the objective of increasing the size of the silver crystals formed in said development of said film;

placing said intermediate color-separation negative in contact with an orthochromatic continuous-tone film and exposing and developing said orthochromatic film to prepare a first grey mask having a density range of 40–80% of the density range of said intermediate negative;

exposing, and subsequently developing, a first lithographic (lith) orthochromatic film in a stack arranged as follows, the components in said stack being listed in order from the light source:

(a) a first diffusion film having one matte surface and said matte surface facing toward said light source;

(b) said first grey mask with the emulsion layer thereof facing toward said light source;

(c) said intermediate color-separation negative with the emulsion layer thereof facing away from said light source; and

(d) said first lith film with the emulsion side thereof facing toward said light source, said exposed and developed first lith film being an intermediate positive;

preparing a second grey mask by exposing an orthochromatic continuous-tone film through said intermediate positive and developing same to a density range of 30–40% of that of said intermediate positive;

preparing a second stack, the components of said stack being listed in order from a light source;

(e) said second grey mask with the emulsion side thereof facing toward said light source;

(f) said intermediate positive with the emulsion side thereof facing away from said light source; and

(g) a second lith orthochromatic film with the emulsion side thereof facing toward said light source;

exposing said stack for 85–90% of the necessary time;

removing said second grey mask from said second stack;

exposing said stack for the remaining 10–15% of the necessary time; and

completing the developing of said second lith film to produce a final negative, the term "developing" being taken to include actual developing, fixing, rinsing and drying.

4,241,154

METHOD OF STABILIZING ORGANIC SUBSTRATES AGAINST THE ACTION OF LIGHT

Hiroshi Hara, Asaka, and Yoshiaki Suzuki, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

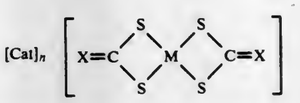
Filed Oct. 30, 1978, Ser. No. 956,303

Claims priority, application Japan, Oct. 28, 1977, 52-129349

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—17 **12 Claims**

8. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or an adjacent layer contains a compound of the formula (I) in an amount sufficient to stabilize said photographic material against the action of light



where M represents a metal atom selected from the group consisting of Cu, Co, Ni, Pd and Pt atoms, Cat represents a divalent organic or inorganic cation, or two monovalent organic or inorganic cations, X represents a



group or a sulfur atom, R^1 and R^2 represent CN, COR^3, $COOR^4$, $CONR^5R^6$ or SO_2R^7; or R^1 and R^2 combine to form a non-metallic 5- or 6-membered ring, wherein R^3, R^4 and R^7 represent a substituted or unsubstituted alkyl group having from 1 to 20 carbon atoms, or a substituted or unsubstituted aryl group having from 6 to 10 carbon atoms, R^5 and R^6 repre-

sents a hydrogen atom, a substituted or unsubstituted alkyl group having from 1 to 20 carbon atoms, or a substituted or unsubstituted aryl group having from 6 to 10 carbon atoms and n is 1 when Cat is a divalent cation and 2 when Cat is a monovalent cation.

4,241,155

METHOD FOR STABILIZING ORGANIC SUBSTRATES INCLUDING PHOTOGRAPHIC DYE IMAGES AGAINST LIGHT

Hiroshi Hara, Asaka; Kotaro Nakamura, Minami-ashigara; Yoshiaki Suzuki, Minami-ashigara, and Shigeru Oono, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

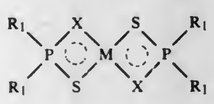
Filed Nov. 14, 1978, Ser. No. 960,545

Claims priority, application Japan, Nov. 15, 1977, 52-137027

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—17 **23 Claims**

12. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or an adjacent layer contains a compound of the formula (I) in an amount sufficient to stabilize said color photographic dye image to light



(I)

wherein M represents an atom selected from the group consisting of Cu, Co, Ni, Pd and Pt, X represents O or S, R_1 represents an alkyl group, an aryl group, an alkoxy group, an aryloxy group or, when taken together, the R_1's bound to the same phosphorus atom represents the non-metallic atoms necessary to complete a 6-membered ring together with the phosphorus atom.

4,241,156

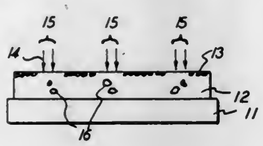
IMAGING SYSTEM OF DISCONTINUOUS LAYER OF MIGRATION MATERIAL

Werner E. L. Haas, Webster; James E. Adams, Bear Creek Harbor East, and Bela Mechlowitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 84,018, Oct. 26, 1970, Pat. No. 4,084,966, which is a continuation-in-part of Ser. No. 755,163, Aug. 26, 1968, abandoned. This application Oct. 26, 1977, Ser. No. 845,761

Int. Cl.² G03L *5/04*

U.S. Cl. 430—41 **6 Claims**



1. An imaging method comprising

providing an imaging member comprising a stable substrate having a microscopically discontinuous layer of agglomerable migration imaging material on one surface of said substrate, and

imagewise exposing said member to an image pattern of electromagnetic radiation from an original image, said radiation being of sufficient energy to cause the imaging material in the imagewise exposed areas of said microscopically discontinuous layer to evaporate whereby the image density in the exposed areas is decreased thereby forming an image contrast with the unexposed areas.

4,241,157

ORGANIC HETEROCYCLIC ELECTROPHOTOSENSITIVE MATERIALS FOR MIGRATION IMAGING PROCESSES

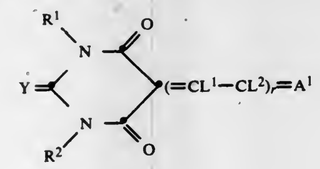
Frank G. Webster, Rochester, and Michael T. Regan, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 818,698, Jul. 25, 1977, Pat. No. 4,152,093. This application Aug. 21, 1978, Ser. No. 935,212

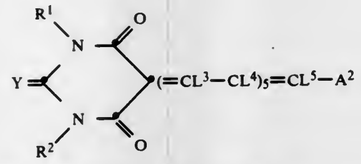
Int. Cl.³ G03G *13/00*

U.S. Cl. 430—41 **8 Claims**

1. An electrophoretic migration imaging process which comprises subjecting an electrically photosensitive colorant material positioned between at least two electrodes to an applied electric field and exposing said materials to an image pattern of radiation to which the material is photosensitive, thereby obtaining image formation of said electrically photosensitive materials on at least one of said electrodes, wherein at least a portion of said electrically photosensitive colorant material is an electrically photosensitive material having one of the following structures:



I.



II.

r and s may be zero, one two or three;

R^1 and R^2 may be the same or different and each may represent hydrogen, alkyl, aryl, alkoxyalkyl or alkoxyaryl;

Y represents O or S;

L^1, L^2, L^3, L^4 and L^5, which may be the same or different, represent hydrogen, alkyl, aryl or aralkyl and in addition either L^1 and L^2 or any two of L^3, L^4 and L^5, together with the atoms to which they are attached, may represent the elements needed to complete a carbocyclic ring;

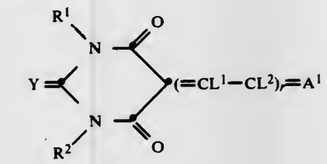
A^1 represents napthoquinolizine, acridine, quinazoline, or an N-substituted nucleus selected from the group consisting of imidazole, 3H-indole, thiazole, benzothiazole, naphthothiazole, dioxolobenzothiazole, thianaphtheno-7',6',4,5-thiazole, oxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, thiazoline, 2-quinoline, 4-quinoline, 1-isoquinoline, benzimidazole, 2-pyridine, 4-pyridine, triazolobenzothiazole, quinolizine or tetrazole;

A^2 represents a heterocyclic nucleus as defined for A^1 and in addition represents aryl or a heterocyclic nucleus selected from the group consisting of benzo[b]thiophene, naphtho[2,3-b]thiophene, furan, isobenzofuran, chromene, pyran, xanthene, pyrrole, 2H-pyrrole, pyrazole, indolizine, indoline, indole, indazole, carbazole, pyrimidine, isothiazole, isoxazole, furazan, chroman, isochroman, tetrahydroquinoline, 4H-pyrrolo[3,2,1-ij]quinoline, dihydro-4H-pyrrolo[3,2,1-ij]-quinoline; tetrahydro-4H-pyrrolo[3,2,1-ih]quinoline; 1H,5H-benzo[ij]quinolizine; dihydro 1H,5H-benzo[ij]quinolizine and tetrahydro-1H,5H-benzo[ij]quinolizine, dihydro-9H-benzo[a]-xanthen-8-yl; dihydro-5H-benzo[b]pyran-7-yl;

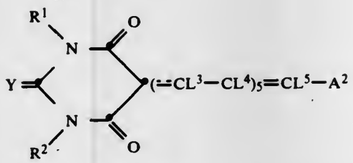
said N-substituents are selected from the group consisting of alkyl, aryl, haloaryl and dialkylamino;

and A^1 and A^2 may be further substituted by one or more substituents selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl, alkoxy, aryloxy, halogen, nitro, oxo, haloaryl, dialkylamino, diarylamino or A^1 $(CH—CH)_r$.

5. An electrophoretic migration imaging dispersion comprising an electrically insulating carrier, a charge control agent and an electrically photosensitive material having one of the following structures



I.



II.

r and s may be zero, one, two or three;

R^1 and R^2 may be the same or different and each may represent hydrogen, alkyl, aryl, alkoxyalkyl or alkoxyaryl;

Y represents O or S;

L^1, L^2, L^3, L^4 and L^5, which may be the same or different, represent hydrogen, alkyl, aryl or aralkyl and in addition either L^1 and L^2 or any two of L^3, L^4 and L^5, together with the atoms to which they are attached, may represent the elements needed to complete a carbocyclic ring;

A^1 represents napthoquinolizine, acridine, quinazoline, or an N-substituted nucleus selected from the group consisting of imidazole, 3H-indole, thiazole, benzothiazole, naphthothiazole, dioxolobenzothiazole, thianaphtheno-7',6',4,5-thiazole, oxazole, benzoxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, thiazoline, 2-quinoline, 4-quinoline, 1-isoquinoline, benzimidazole, 2-pyridine, 4-pyridine, triazolobenzothiazole, quinolizine or tetrazole;

A^2 represents a heterocyclic nucleus as defined for A^1 and in addition represents aryl or a heterocyclic nucleus selected from the group consisting of benzo[b]thiophene, naphtho[2,3-b]thiophene, furan, isobenzofuran, chromene, pyran, xanthene, pyrrole, 2H-pyrrole, pyrazole, indolizine, indoline, indole, indazole, carbazole, pyrimidine, isothiazole, isoxazole, furazan, chroman, isochroman, tetrahydroquinoline, 4H-pyrrolo[3,2,1-ij]quinoline, dihydro-4H-pyrrolo[3,2,1-ij]-quinoline; tetrahydro-4H-pyrrolo[3,2,1-ih]quinoline; 1H,5H-benzo[ij]quinolizine; dihydro 1H,5H-benzo[ij]quinolizine and tetrahydro-1H,5H-benzo[ij]quinolizine, dihydro-9H-benzo[a]-xanthen-8-yl; dihydro-5H-benzo[b]pyran-7-yl;

said N-substituents are selected from the group consisting of alkyl, aryl, haloaryl and dialkylamino;

and A^1 and A^2 may be further substituted by one or more substituents selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl, alkoxy, aryloxy, halogen, nitro, oxo, haloaryl, dialkylamino, diarylamino or A^1 $(CH—CH)_r$.

4,241,158

VACUUM DEPOSITED ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Tadaji Fukuda, Kawasaki, and Teruo Misumi, Toride, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

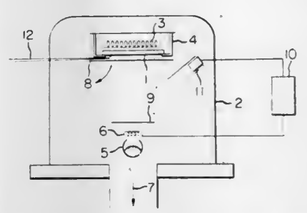
Filed Dec. 22, 1978, Ser. No. 972,280

Claims priority, application Japan, Dec. 28, 1977, 52-160622

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—86 **7 Claims**

1. In an electrophotographic photosensitive member having an inorganic amorphous vacuum deposition layer formed by deposition of a photoconductive material onto a substrate as the photoconductive layer, the improvement wherein said inorganic amorphous deposition layer is formed by gradually



raising the substrate temperature within a range above the glass transition point of the photoconductive material and below the crystallization transition point thereof during the deposition of the photoconductive material.

4,241,159

ELECTROPHOTOGRAPHIC LIQUID DEVELOPER COMPRISING ACRYLIC OR METHACRYLIC ACID ESTER OF HYDROGENATED ABIETYL ALCOHOL POLYMER

Jan J. Priem, Mortsel; Noël J. De Volder, Edegem; Yvan K. Gilliams, Berchem, and Walter F. De Winter, 's-Gravenwezel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Continuation of Ser. No. 552,804, Feb. 25, 1975, abandoned. This application Nov. 18, 1977, Ser. No. 852,977

Claims priority, application United Kingdom, Feb. 26, 1974, 8689/74

Int. Cl.² G03G *9/12*

U.S. Cl. 430—114 **11 Claims**

1. An electrostatic liquid developer for the development of electrostatic charge patterns of the type comprising an electrically insulating carrier liquid having a dielectric constant of less than 3 and a volume resistivity in excess of 10^9 Ohm.cm, and suspended within said electrically insulating carrier liquid resin-precoated toner particles, said particles comprising coloring matter dispersed within and precoated by a said polymer, wherein said precoating polymer is a polymer of a monomeric acrylic or methacrylic acid ester of hydrogenated abietyl alcohol and is obtained by in situ polymerization accompanied by mechanical mixing in the presence of said coloring matter and a polymerization initiator, said precoating polymer being generally insoluble in said carrier liquid.

4,241,160

MULTIPLE COPY ELECTROPHOTOGRAPHIC REPRODUCING METHOD

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation of Ser. No. 723,698, Sep. 14, 1976, abandoned, which is a continuation of Ser. No. 517,173, Oct. 23, 1974, abandoned. This application May 25, 1978, Ser. No. 909,433

Int. Cl.³ G03G *13/14*

U.S. Cl. 430—124 **5 Claims**

1. A method of producing electrostatically multiple copies of an object being imaged on the photoconductive coating of an electrophotographic member which comprises:

(a) providing an electrophotographic member having a substrate with a photoconductive coating comprising an r.f. sputtered thin film, microcrystalline, wholly inorganic, dense, semiconductor material wherein the crystallites forming the coating are generally orthogonally oriented relative to the substrate, the coating having a dark resistivity of at least 10^{12} ohm-centimeters and a ratio of dark and light resistivity of at least 10^4 and being electrically anisotropic, the coating at least

being capable of accepting a charge and holding said charge at or below the surface to the extent that the latent image which is capable of being achieved thereat is substantially unaffected by toner development or transfer,

(b) charging the coating only from the coating side of said member with a uniform charge at or below the surface of the coating and holding the charge thereat,

(c) exposing the charged coating immediately following the completion of charging, to a projected image of the object to achieve a latent charge image with the charge at or below the surface of the coating,

(d) toning the coating to achieve a visible toned image,

(e) transferring the toned image to a receptor to achieve a copy of the projected image,

(f) repeating steps (d) and (e) for at least another time to provide at least a second copy of the projected image, but without repeating steps (b) and (c), all of the steps of charging, exposing, toning and transferring being carried on without exposing the coating to ambient light, and the steps of at least (c) exposing and (e) transfer being effected for plural copies without further charging to establish electric fields, the toning and transferring being effected while substantially maintaining the charge relationship and magnitude thereof along the dark decay curve characteristic of said photoconductive coating whereby the step at least of transfer is effected for plural copies without heating or requiring supplementation of the fields representing the latent image.

4,241,161

PROCESS FOR TRANSFERRING A MAGNETIZABLE DEVELOPING POWDER IN ELECTROSTATIC IMAGE DEVELOPMENT

Hendrik Ensing, Velden, Netherlands, assignor to Oce-Nederland B.V., Venlo, Netherlands

Filed Oct. 1, 1979, Ser. No. 81,005

Claims priority, application Netherlands, Oct. 4, 1978, 7810011

Int. Cl.³ B05D *1/06*

U.S. Cl. 430—126 **7 Claims**

1. In a process for transferring a magnetizable developing powder in electrostatic image development, wherein the powder has a specific resistance greater than 10^{13} Ohm.cm. and has been applied imagewise, corresponding to a charge image, on an insulating substrate, including the steps of bringing the substrate with the powder image in contact with a receiving material to which the powder is to be transferred, applying a charge to the free side of the receiving material, transferring the powder and subsequently separating the receiving material from the substrate, the improvement therein comprising applying two separate charges to the free side of the receiving material during the period of contact with the substrate, the first of such charges having a polarity opposite to that of the charge image and the second of such charges having the same polarity as that of the charge image and being greater than the first.

4,241,162

LIGHT SENSITIVE PHOTORESIST MATERIALS

Yoshio Hatano; Takahiro Kohashi, both of Hachioji; Michiaki Hashimoto, Kokubunji, and Saburo Nonogaki, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

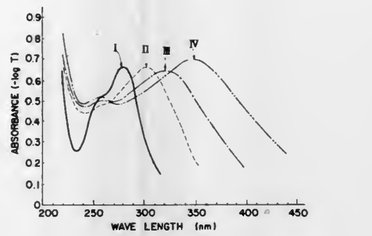
Continuation-in-part of Ser. No. 592,357, Jul. 1, 1975, abandoned. This application Dec. 2, 1976, Ser. No. 747,040

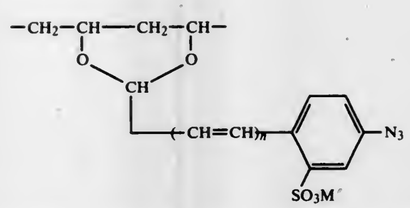
Claims priority, application Japan, Jul. 1, 1974, 49-74344

Int. Cl.² G03C *1/68, 1/52;* C12P *33/10*

U.S. Cl. 430—195 **21 Claims**

1. A water-soluble light sensitive photoresist composition consisting essentially of at least one photoresist polymer which is soluble in water but rendered insoluble by exposure to light and having at least one structural unit represented by the following general formula:





wherein n represents an integer from 1 to 6 and M represents an atom or an atomic group capable of being converted into a cation in an aqueous solution, and the ratio of the structural unit represented by said general formula to the total units in the photoresist polymer ranges between about 0.05 to 8%, the remaining structural units in said polymer being those of an alcoholic hydroxyl group-containing polymer.

4,241,163

PHOTOGRAPHIC ELEMENTS CONTAINING ENCAPSULATED POLYMERS COORDINATED WITH METAL IONS

Drewfus Y. Myers, Jr., Pittsford, and George H. Hawks, III, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,676

Int. Cl.³ G03C *1/40, 7/00, 5/54*

U.S. Cl. 430—213 **23 Claims**

1. In a photographic element comprising a support having thereon at least one layer containing a dye mordant, at least one silver halide emulsion layer and at least one layer containing a chelating dye or chelating dye-forming material, the improvement wherein the layer containing the dye mordant comprises a hydrophilic vehicle having dispersed therein a particulate polymeric material encapsulated with a member selected from the group consisting of (1) a chelating polymer wherein said element comprises either in the mordant layer or in a layer adjacent the mordant layer, a source of metal ions and (2) a metal chelated with a chelating polymer.

4,241,164

HIGHLY-SENSITIVE HIGH-CONTRAST PHOTOGRAPHIC MATERIALS

Hiroyuki Mifune; Shunji Takada; Yoshitaka Akimura, and Nobuo Sakai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 863,000, Dec. 21, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,480

Claims priority, application Japan, Dec. 30, 1976, 51-157910

Int. Cl.² G03C *5/30, 1/06*

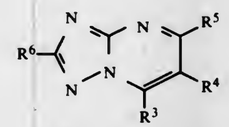
U.S. Cl. 430—264 **10 Claims**

1. A negative image forming process which comprises imagewise exposing to light a photographic light-sensitive material comprising a support having thereon at least one silver halide photographic emulsion layer containing substantially surface latent image type monodispersed silver halide grains

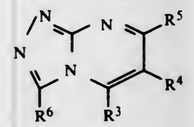
and providing a negative image, at least one hydrophilic colloid layer of said photographic material containing a compound represented by the general formula (I)

$$R^1NHNHCOR^2 \quad (I)$$

in an amount of about 10^{-4} to about 10^{-1} mole/mole-Ag, wherein R^1 represents an aryl group and R^2 represents a hydrogen atom, a phenyl group, or an unsubstituted alkyl group having 1 to 3 carbon atoms; and a compound represented by the general formula (II) or (III);



(II)



(III)

wherein R^3, R^4, R^5 and R^6, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, an amino group, a hydroxyl group, an alkoxy group, an alkylthio group, a carbamoyl group, a halogen atom, a cyano group, a carboxyl group, an alkoxycarbonyl group, or a heterocyclic ring; wherein said R^3 and R^4 or said R^4 and R^5 may combine and form a 5-membered or 6-membered ring and wherein at least one of R^3 and R^5 represents a hydroxyl group and developing said photographic light-sensitive material with a developing solution containing a developing agent selected from the group consisting of aminophenols and a hydroquinone compound and, containing about 0.1 mol/liter or more of sulfite ion and having a pH of about 11.0 to about 12.3.

4,241,165

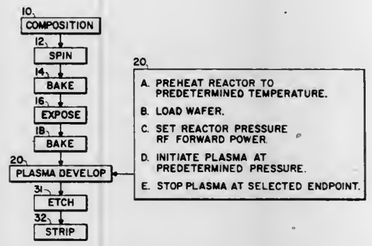
PLASMA DEVELOPMENT PROCESS FOR PHOTORESIST

Henry G. Hughes, Phoenix, and Jed V. Keller, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 811,493, Jun. 30, 1977, which is a continuation-in-part of Ser. No. 784,102, Apr. 4, 1977, which is a continuation-in-part of Ser. No. 697,303, Jun. 17, 1976. This application Sep. 5, 1978, Ser. No. 939,586

Int. Cl.³ G03C *5/24*

U.S. Cl. 430—269 **26 Claims**



1. In the art of making a resist mask from a patterned resist coating on a substrate wherein said coating has exposed and non-exposed areas corresponding to the pattern for said mask in said coating, the improvement comprising:

(a) the dry process step of subjecting said coating on said substrate to plasma action to preferentially remove the resist of one of said areas relative to the other area whereby said resist in said one area is removed faster than said resist in the other of said areas; and

(b) terminating said plasma action when said resist of said one area is removed and said resist of said other area remains and is of a thickness to provide a resist mask function on said substrate.

26. In the art of resist technology wherein a coating of resist is applied to a substrate having material below said coating, the processing of said resist for the purpose of making a resist mask on said substrate, then using said resist mask, and thereafter removing said resist mask from said substrate, the steps for accomplishing said purpose comprising:

(a) applying as a coating a substantially uniform layer of resist to material on said substrate;

(b) effecting a pattern in said layer of resist to provide a first area and a second area in said resist;

(c) subjecting said substrate with said resist layer thereon to dry plasma action in equipment for developing said resist layer whereby to remove the resist from one of said areas faster than from said other area, and stopping said plasma action after the resist in said one of said areas is completely removed and resist in said other area remains to serve as a mask on said substrate;

(d) maintaining said substrate with said patterned resist mask thereon in said equipment to be subjected to further plasma action therein and treating said material on said substrate through said one area of said resist mask to plasma action; and

(e) thereafter maintaining said substrate with said patterned resist mask thereon in said equipment and subjecting the same to still further plasma action to strip said resist mask from said substrate after it is used for said treating.

4,241,166

PHOTOPOLYMERIZABLE COMPOSITION COMPRISING A MONOAZO DYE AS CONTRAST COLORANT

Kurt Klüpfel; Heide Sprengel, both of, Wiesbaden; Walter Deucker, and Hansjörg Vollmann, both of Bad Soden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

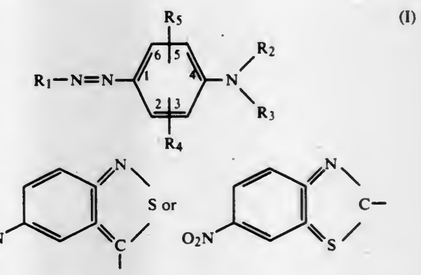
Filed Feb. 26, 1979, Ser. No. 15,248

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807933

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—281 **4 Claims**

1. A photopolymerizable mixture comprising a compound with at least two terminal ethylenically-unsaturated groups, a boiling point above 100° C. and which is capable of addition polymerization, a polymeric binder, a photoinitiator, and a monoazo dye corresponding to Formula I:



(I)

wherein

R^1 is

R_2 and R_3 are alkyl or alkenyl groups which may be substituted, and

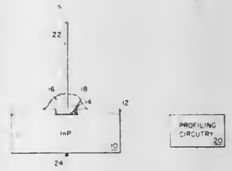
R_4 and R_5 are hydrogen or halogen atoms, or alkyl or alkoxy groups.

4,241,167

ELECTROLYTIC BLOCKING CONTACT TO INP

David A. Collins, and Derek L. Lile, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1979, Ser. No. 42,466
Int. Cl.³ H01L *21/66*
U.S. Cl. 430—314 **4 Claims**



1. A liquid barrier contact on InP comprising:
approximately 40% aqueous solution of tartaric acid;
approximately 30% aqueous peroxide;
said tartaric acid and said hydrogen peroxide being combined
in an approximate 3:1 ratio, respectively, by volume.

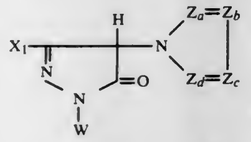
4,241,168

PHOTOGRAPHIC COUPLER

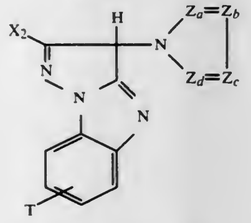
Atsuaki Arai; Keisuke Shiba; Minoru Yamada, and Nobuo Furutachi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 604,364, Aug. 13, 1975, abandoned. This application Sep. 21, 1977, Ser. No. 835,278
Claims priority, application Japan, Aug. 13, 1974, 49-92685
The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.
Int. Cl.² G03C *1/40*
U.S. Cl. 430—503 **12 Claims**

1. A color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer and at least one of said silver halide emulsion layers containing a photographic two-equivalent magenta coupler having the general formula [II] or [III]



(II)



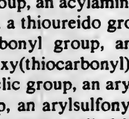
(III)

wherein W represents an aryl group having up to 40 carbon atoms, which may be substituted with one or more of an alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group, a cycloalkenyl group, a halogen atom, a nitro group, a cyano group, a thiocyano group, an aryl group, an alkoxy group, an aryloxy group, a carboxy group, an alkylcarbonyl group, an arylcarbonyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfo group, an acyloxy group, a sulfamoyl group, a carbamoyl group, an acylamino group, a diacylamino group, a ureido group, a thioureido group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkoxy(thiocarbonyl)amino group, an aryloxy(thiocarbonyl)amino group, a sulfamido group, a heterocyclic group, an arylsulfonyloxy group, an alkylsulfonyloxy group, an arylsulfonyl group, an alkylsulfonyl group, an arylthio group, an alkylthio group, an alkylsulfinyl group, an arylsulfinyl group, an alkylamino group, a dialkylamino group, an anilino group, an N-alkylanilino group, an N-arylanilino group, an N-acylamino group, a hydroxy group and a mercapto group;

X_1 has up to 40 carbon atoms and represents an acylamino group;

X_2 has up to 40 carbon atoms and represents an acylamino group, a ureido group, or an anilino group;

T represents a hydrogen atom; or has up to 40 carbon atoms and represents a straight or branched chain alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group or; a cycloalkenyl group, which may be substituted with one of more of the substituents defined above for the aryl group W; an aryl group which may be substituted with one or more the substituents defined above for the aryl group W, a 5- or 6-membered heterocyclic group containing at least one of an oxygen, sulfur or a nitrogen atom, which may be substituted with one of more of the substituents defined above for the aryl group W; a cyano group, a thiocyano group; an alkoxy group; an aryloxy group; a halogen atom; a carboxy group; an alkoxycarbonyl group; an aryloxycarbonyl group; an acyloxy group; an alkylcarbonyl group; an arylcarbonyl group; an alkylthiocarbonyl group; an arylthiocarbonyl group; a sulfo group; a sulfamoyl group; a carbonyl group; an acylamino group; a diacylamino group; a ureido group; a thioureido group; an alkoxycarbonylamino group; an aryloxycarbonylamino group; an alkoxy (thiocarbonyl)amino group; an aryloxy(thiocarbonyl)amino group; a sulfamido group; an alkylsulfonyloxy group; an arylsulfonyloxy group; an arylsulfonyl group; an alkylsulfonyl group; an arylthio group; an alkylthio group; an alkylsulfinyl group; an arylsulfinyl group; an alkylamino group; a dialkylamino group; an anilino group; an N-arylanilino group; an N-alkylanilino group; an N-acylanilino group; a hydroxy group or a mercapto group; and Z_a, Z_b, Z_c and Z_d in the



moiety may be the same or different and each represents (a) a methine group, which may be substituted with a substituent having up to 40 carbon atoms and selected from the group consisting of a straight or branched chain alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group, a cycloalkenyl group, an aryl group, a heterocyclic group, an alkoxycarbonyl group, an aryloxycarbonyl group, an aralkyloxycarbonyl group, an alkoxy group, an aryloxy group, an alkylthio group, a carboxy group, an acylamino group, a diacylamino group, an N-alkylacylamino group an N-arylacylamino group, a ureido group, a thioureido group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, an alkoxy(thiocarbonyl)amino group, an aryloxy(thiocarbonyl)amino group, an anilino group, an alkylamino group, a cycloamino group, an alkylcarbonyl group, an arylcarbonyl group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a cyano group, an acyloxy group, a sulfonyloxy group, a halogen atom, a sulfo group, and a nitro group; or (b) an —N= group, with the proviso that the nigtrogen-containing heterocyclic moiety formed by Z_a, Z_b, Z_c, Z_d and the nitrogen atom is a monocyclic 5-membered aromatic heterocyclic group.

4,241,169

GELATIN-POLYESTER-AZIRIDINE PRODUCT SUBBING LAYER FOR POLYESTER PHOTOGRAPHIC BASE

Ray A. Work, III, Hendersonville, N.C., and Richard P. Pankratz, Circleville, Ohio, assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 887,344, Mar. 20, 1978, Pat. No. 4,181,528, which is a continuation-in-part of Ser. No. 827,594, Aug. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 791,516, Apr. 27, 1977, abandoned. This application May 21, 1979, Ser. No. 40,922
Int. Cl.³ G03C *1/80*
U.S. Cl. 430—532 **11 Claims**

1. A photographic element comprising an energy-treated polyester support, a photosensitive silver halide emulsion layer on said support, and a subbing layer between, and in contact with, both the support and the emulsion layer to improve adhesion of the emulsion to the support, wherein the subbing layer is a reaction product of gelatin, a water-soluble polyester, and a polyfunctional aziridine crosslinking agent.

9. In a photographic element consisting essentially of
(1) a biaxially oriented heat-set energy-treated polyethylene terephthalate support, and
(2) a photosensitive gelatino-silver halide emulsion on said support,
the improvement wherein a single subbing layer is positioned between the support and the emulsion layer to improve adhesion of the emulsion to the support, and is the reaction product of
(1) gelatin,
(2) a polyester of diethylene glycol, ethylene glycol, terephthalic acid, isophthalic acid, azelaic acid, and the sodium sulfonate salt of isophthalic acid,
(3) a member selected from the group consisting of trimethylol propane tri-[β-(N-aziridinyl) propionate], pentaerythritol-tri-[β-(N-aziridinyl) propionate], and trimethylolpropane tri-[β-(N-{methylaziridinyl}) propionate].

4,241,170

MODIFIED POLYESTER FILMS

John H. Bayless, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 890,485, Mar. 29, 1978, which is a continuation-in-part of Ser. No. 788,780, Apr. 19, 1977, abandoned. This application Aug. 14, 1979, Ser. No. 67,353
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—533 **4 Claims**

1. A photographic element comprising a film support coated with one or more photosensitive silver halide emulsions, said support being a biaxially oriented, heat set linear polyester having a water vapor permeability of 160–1100 IPV/mil as measured by ASTM Standard Procedure No. F-372,73, said polyester being comprised of a reaction product of (1) a glycol diester of a dicarboxylic acid, (2) a high molecular weight polyethylene glycol, and (3) an alkali metal salt of a sulfonic acid-substituted dicarboxylic acid ester.

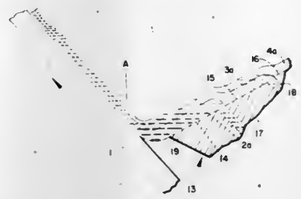
4,241,171

HARDENER IN CARRIER LAYER

Roger C. Clapp, Wellesley, and Edward J. Choinski, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 21, 1979, Ser. No. 13,160
Int. Cl.³ G03C *1/78, 1/30, 1/76;* A21D *4/00*
U.S. Cl. 430—539 **7 Claims**

1. The process of manufacturing a forehardened photographic product, comprising the steps of coating a plurality of superposed liquid layers on a moving web of material comprising a base for the product, in which a first layer adjacent the base comprises a solution of a diffusible hardener free of gelatin, a second layer adjacent said first layer is initially free of any hardener and polymeric materials cross-linkable by the hardener, and at least a third layer contains a polymer cross-linkable by the hardener, and drying said coated layers while said hardener diffuse through said layers to cross-link said polymer in said third layer.



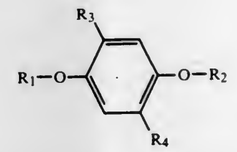
4,241,172

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kenichiro Okaniwa; Takashi Uchida; Morio Kobayashi; Hiroshi Sugita, and Takashi Sasaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 24, 1979, Ser. No. 42,084
Claims priority, application Japan, Jun. 1, 1978, 53/66199
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—548 **7 Claims**

1. A color photographic material comprising a support and light-sensitive silver halide emulsion layer thereon, characterized by containing a coupler represented by the following general formula [I];



wherein R_1, R_2, R_3 and R_4 individually represent a substituted or unsubstituted alkyl, alkenyl, aryl or cycloalkyl group, or $[A(X)_n]_mCp$ in which Cp represents a cyano coupler, magenta coupler or yellow coupler, A represents a substituted or unsubstituted divalent aliphatic group, X represents a divalent group, and m and n individually represent a value of 0 or 1, provided that at least one of R_1, R_2, R_3 and R_4 is $[A(X)_n]_mCp$.

4,241,173

PROCESS FOR THE PREPARATION OF SILVER HALIDE EMULSIONS

Wilhelm Saleck, Schildgen, and Harald von Rintelen, Leverkusen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 704,057, Jul. 9, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,377
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1975, 2531599; Oct. 3, 1975, 2544152
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—569 **2 Claims**

1. The process for producing a fine-grain without loss of sensitivity in the preparation of light sensitive silver halide emulsions of which the silver halide contains at least 40 mol% of silver bromide and from 0 to 15 mol% of silver iodide and from 0 to 60 mol% of silver chloride by reacting a soluble silver salt with at least the equivalent amount of an aqueous halide solution and precipitating the silver halide in the pH

range of between 5.0 and 9.0, wherein the improvement comprises producing at least 20% reduction in grain size of said silver halide without a loss of sensitivity and preventing a loss of sensitivity in said emulsion by carrying on the precipitation of said silver halide in the presence of an excess of at least 1 mol of a water soluble chloride based on 1 equivalent of silver ions present in the precipitation medium, said soluble chloride being selected from the group consisting of sodium chloride, potassium chloride, and ammonium chloride.

4,241,174

INTERFERON ASSAY

Philip C. Familletti, Millington; Sidney Pestka, North Caldwell, and Sara Rubinstein, Passaic, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 24, 1978, Ser. No. 963,256
Int. Cl.[3] C12Q *1/70;* C12N *5/02*
U.S. Cl. 435—5 **6 Claims**

1. An improved assay for interferon comprising the following steps in combination:
   a. contacting a serially diluted and segregated interferon containing sample in the presence of a cell support medium with a viable cell line preparation in the form of a cell suspension, said cell line known to be sensitive to the interferon type to be assayed, so as to form an interferon-cell line mixture in the form of a suspension;
   b. allowing said interferon-cell line mixture to incubate from 0 to 1 hour;
   c. adding a challenge virus preparation to each of said segregated, serially diluted interferon-cell line mixtures and allowing the resulting mixtures to incubate from about 12 to 18 hours;
   d. providing a virus control mixture comprising said viable cell line preparation and said challenge virus preparation, and a cell control comprising said viable cell line preparation;
   e. reading said assay mixtures when the said virus control mixture shows 100% cytopathic effect, whereby the titer of interferon in said sample is determined as the reciprocal of the dilution of the mixture showing a 50% reduction in cytopathic effect as compared to the virus and cell controls.

4,241,175

ASSAY FOR HEPATITIS B CORE ANTIBODY

William J. Miller, North Wales; William J. McAleer, Ambler, and Lynn T. Callahan, North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 18, 1978, Ser. No. 970,721
Int. Cl.[3] C12Q *1/66*
U.S. Cl. 435—7 **10 Claims**

1. A method for determining the presence of hepatitis B core antibody (HB_cAb) in biological fluid comprising
   (a) directly adhering hepatitis B core antigen (HB_cAg) derived from Dane particles to a solid surface wherein HB_cAg is adhered to the surface by adsorption in the presence of an amount of a nonionic surfactant having from about 15 to about 35 oxyethylene units effective to cause adherence,
   (b) contacting the surface with the biological fluid,
   (c) contacting the surface with a hepatitis B core antibody (HB_cAb)-enzyme conjugate,
   (d) contacting the surface with an enzyme substrate solution, and
   (e) measuring the optical density after development of the enzyme substrate solution.

5. A diagnostic reagent comprising a solid surface having directly adhered thereto hepatitis B core antigen (HB_cAg) derived from Dane particles wherein HB_cAg is adhered by adsorption in the presence of a nonionic surfactant having from about 15 to about 35 oxyethylene units present in an amount effective to cause adherence.

4,241,176

MAGNETIC GEL SUITABLE TO IMMUNOENZYMATIC DETERMINATIONS

Stratis Avrameas, La Celle Saint Cloud, and Jean-Luc Guesdon, Paris, both of France, assignors to Etablissement declare d'Utilite Publique diti Institut Pasteur, Paris, France

Continuation of Ser. No. 746,553, Dec. 1, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 928,944
Claims priority, application France, Dec. 2, 1975, 75 368891
Int. Cl.[3] C12Q *1/66;* C07G *7/00*
U.S. Cl. 435—7 **5 Claims**

1. A method for the immunoenzymatic assay of a biological liquid containing antibodies or antigens which comprises incubating said liquid in contact with a magnetic gel comprising particles of about 50 to 500 μm of a gel selected from the group consisting of polyacrylamide, agarose and mixtures thereof, magnetic particles embedded within the gel, protein molecules, and a coupling agent chemically linking the gel with embedded magnetic particles to the protein molecules, washing the gel so incubated, magnetically separating the gel from the washing medium, incubating the gel with enzyme-labelled antibodies or antigens, magnetically separating the gel, and measuring the enzyme activity of the gel, which indicates the content of antibodies or antigens contained in the liquid being assayed.

3. A magnetic gel for immunoassays comprising particles of about 50 to 500 μm of a polyacrylamideagarose gel, magnetic particles embedded within the gel, said particles being selected from the group consisting of magnetite, ferrite and iron powder particles, protein molecules, and a coupling agent chemically linking the gel with embedded magnetic particles to the protein molecules.

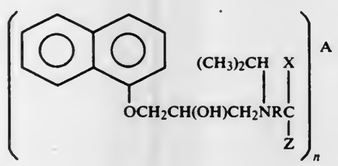
4,241,177

PROPANOLOL ANTIGEN CONJUGATES AND ANTIBODIES

Prithipal Singh, Santa Clara, and Marcel R. Pirio, Sunnyvale, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Aug. 28, 1978, Ser. No. 937,248
Int. Cl.[3] C12Q *1/66;* C12N *9/96;* A61K *39/00;* C07G *7/00*
U.S. Cl. 435—7 **11 Claims**

1. A compound of the formula:



wherein:
R is an aliphatic linking group of from 1 to 4 carbon atoms;
X and Z are taken together to form oxo or can each be hydrogen;
A is an antigenic poly(amino acid) or an enzyme;
n is on the average from 1 to the molecular weight of A divided by 1000.

10. An antibody prepared by administering to a host animal an antigen conjugate of a propranolol derivative having the formula of claim 1, and which has sites capable of specifically binding to propranolol.

11. A method for determining the presence of a drug which is propranolol in a medium suspected of containing said drug which comprises:
forming, at a pH in the range of about 5–10 and at a temperature of from about 10°–50° C., an aqueous solution of said medium, an enzyme conjugate of said drug according to claim 1, and antibody having sites capable of binding to said drug and said enzyme conjugate, said antibody being at a sufficient concentration to substantially reduce the enzymatic activity of said enzyme conjugate in the absence of said drug; and
analyzing said solution for the enzymatic activity of said enzyme conjugate in said solution.

4,241,178

PROCESS AND COMPOSITION FOR THE QUANTIFICATION OF GLYCEROL ATP AND TRIGLYCERIDES

Theodore W. Esders, Webster, and Charles T. Goodhue, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 715,797, Aug. 19, 1976, abandoned. This application Jan. 6, 1978, Ser. No. 867,641
Int. Cl.[3] C12Q *1/28, 1/44, 1/48*
U.S. Cl. 435—15 **67 Claims**

1. A method for quantifying triglycerides in an aqueous liquid comprising the steps of:
   (a) contacting
      (I) a sample of the aqueous liquid and
      (II) enzymes and reagents which effect in the presence of triglyceride-positive liquid an ordered sequence of reactions wherein
         (A) triglycerides are hydrolyzed to glycerol;
         (B) glycerol is converted to L-α-glycerophosphate;
         (C) L-α-glycerophosphate is oxidized by α-glycerophosphate oxidase to produce hydrogen peroxide; and
         (D) the hydrogen peroxide produced in (C) reacts with a substance having peroxidative activity to produce a detectable change; and
   (b) quantitatively detecting the occurrence of said change.

4,241,179

METHOD FOR DETERMINING A TRANSAMINASE IN A BIOLOGICAL FLUID AND REAGENT COMBINATION FOR USE IN THE METHOD

Mathew M. Madappally, Cooper City, Fla., and Giovanni Bucolo, Cupertino, Calif., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 14, 1978, Ser. No. 933,183
Int. Cl.[3] C12Q *1/52, 1/32*
U.S. Cl. 435—16 **22 Claims**

1. In a method for determining glutamate oxalacetate transaminase or glutamate pyruvate transaminase present in a biological fluid, wherein L-glutamate is produced from alphaketoglutarate and an amino acid by transamination in the presence of the transaminase in the fluid, said amino acid being L-aspartate in the determination of glutamate oxalacetate transaminase and L-alanine in the determination of glutamate pyruvate transaminase, and the L-glutamate is oxidatively deaminated in a oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide in the presence of glutamate dehydrogenase to produce reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the content of the transaminase in the fluid, said fluid also containing an endogenous substance which reacts in an oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide in the presence of glutamate dehydrogenase to produce reduced beta-nicotinamide adenine dinucleotide, thereby interfering with the determination, the improvement for obviating the interference caused by the endogenous substance which comprises:
   reacting said endogenous substance present in said fluid in an oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide in the presence of glutamate hydrogenase to consume the endogenous substance by conversion thereof to an oxidation product of the reaction with the production of reduced beta-nicotinamide adenine dinucleotide,
   reacting the resulting reduced betanicotinamide adenine dinucleotide in said fluid with pyruvate in the presence of lactate dehydrogenase to return the reduced beta-nicotinamide adenine dinucleotide to its oxidized form with the reduction of pyruvate to lactate,
   thereafter inhibiting the lactate dehydrogenase activity in said fluid,
   and thereafter producing in said fluid a quantity of L-glutamate from alpha-ketoglutarate and said amino acid by said transamination for said oxidative deamination thereof and production of reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the content of said transaminase in the fluid.

4,241,180

ENZYMATIC METHOD FOR DETERMINING SURFACTANTS ON SURFACES

Melvin H. Keyes, Sylvania, and Garry L. Moore, Swanton, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 27, 1978, Ser. No. 881,224
Int. Cl.[3] C12Q *1/46*
U.S. Cl. 435—20 **13 Claims**

1. A method for determining the presence of either a non-ionic or ionic surfactant on a surface area without knowledge of whether the surfactant is either non-ionic or ionic, said method comprising:
   (a) applying to said area an enzyme adapted to bind with any surfactant present, said enzyme being bound without deactivation by a non-ionic surfactant and said enzyme being both bound and deactivated by an ionic surfactant, and an indicator responsive to a reaction product of said enzyme and a reactive substrate to exhibit a detectable response,
   (b) binding any surfactant present on said area by said enzyme,
   (c) adding an ionic surfactant to said area to bind and deactivate any unbound enzyme left by said first mentioned surfactant,
   (d) contacting said enzyme on said surface with a substrate reactive therewith, and
   (e) noting the presence or absence of a response by said indicator, the presence of a response indicating that said first mentioned surfactant was non-ionic, and the absence of a response indicating that said first mentioned surfactant was ionic.

4,241,181

BROTH MEDIUM FOR DETECTION OF DNASE-POSITIVE MICROORGANISMS

Marlys E. Lund, Eden Prairie, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 2, 1979, Ser. No. 35,290
Int. Cl.[3] C12Q *1/04*
U.S. Cl. 435—34 **11 Claims**

1. A broth medium for the detection of DNAse-positive microorganisms comprising:
   (a) a source of conventional nutrients to support growth of said microorganisms;
   (b) a source of essential divalent cations in sufficient concentration to insure activity of said DNAse; and
   (c) a biological indicator comprising DNA, toluidine blue and lambda carrageenan in sufficient quantity so that said medium turns to a visually distinguishable reddish-pink or reddish-violet color in the presence of DNAse-positive microorganisms.

4,241,182

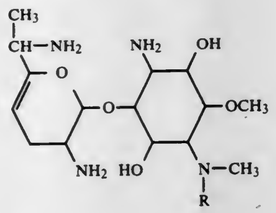
FORTIMICIN FACTORS KG_1, KG_2 AND KG_3 AND PROCESSES FOR PRODUCTION THEREOF

Seigo Takasawa, Hadano; Kunikatsu Shirahata, Machida; Seiji Sato, Machida, and Keiichi Takahashi, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Japan

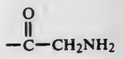
Filed Mar. 5, 1979, Ser. No. 17,276
Claims priority, application Japan, Mar. 3, 1978, 53-23552
Int. Cl.³ C12P *19/48;* C12R *1/325*
U.S. Cl. 435—80 **5 Claims**

1. A process for producing at least one of three Fortimicin factors of the general formula:

I



wherein R is



or H, when R is H, one of said factors having the following physicochemical properties:

(1) Melting point: 95°–98° C.;

(2) Specific rotation: $[\alpha]_D^{22} = +58.3°$ (c=0.66, H_2O);

(3) Infrared absorption spectrum (KBr): 3360, 2930, 1675, 1590, 1370, 1110, 1055 and 1000 cm^{-1}; and

(4) The CMR spectrum [deuterium oxide solution (pD=10.7)]:

δ (ppm): 153.1, 101.2, 95.2, 83.4, 83.2, 75.2, 73.4, 62.2, 60.1, 54.8, 48.9, 47.4, 33.6, 25.7, 20.5;

and another of said factors having the following physicochemical properties:

(1) Melting point: 83°–85° C.;

(2) Specific rotation: $[\alpha]_D^{22} = +30°$ (c=0.76, H_2O);

(3) Infrared absorption spectrum (KBr): 3350, 2920, 1675, 1590, 1370, 1090, 1030 and 990 cm^{-1}; and

(4) The CMR spectrum [deuterium oxide solution (pD=10.6)]:

δ (ppm): 153.1, 101.3, 95.3, 82.2, 80.0, 71.3, 71.1, 61.1, 59.3, 53.8, 48.9, 47.3, 35.4, 25.6, 20.5;

and when R is

the remaining factor having the following physiocochemical properties:

(1) Melting point: 135°–138° C.;

(2) Specific rotation:
$[\alpha]_D^{22} = +185°$ (c=0.265, H_2O);

(3) Infrared absorption spectrum (KBr): 3370, 2940, 1640, 1580, 1462, 1110 cm^{-1}; and

(4) The CMR spectrum [deuterium oxide solution (pD=1.2)]:

δ (ppm): 168.8, 146.7, 99.5, 95.9, 76.1, 73.9, 71.4, 66.5, 57.3, 54.2, 52.9, 49.6, 47.2, 41.4, 32.8, 22.2, 16.9;

which comprises culturing a microorganism belonging to the species *Micromonospora olivoasterospora* and capable of producing at least one of said factors in a nutrient medium until substantial antibacterial activity is detected in the culture liquor and thereafter isolating at least one of said factors therefrom.

4,241,183

STARCH LIQUEFACTION PROCESS

Paul R. Witt, and Richard D. Harvey, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Apr. 30, 1979, Ser. No. 34,333
Int. Cl.³ C12P *19/22*
U.S. Cl. 435—95 **3 Claims**

1. A process for liquefying starch which comprises adding to starch paste at a temperature above 75° C. an infusion of a malted cereal grain and holding the mixture of starch paste and infusion of malted cereal grain at a temperature above about 75° C. for a time sufficient to liquefy the starch paste to a viscosity of not substantially above about 1500 centipoise.

4,241,184

SECONDARY ALCOHOL DEHYDROGENASE ENZYME AND USE THEREOF

Ching-Tsang Hou; Ramesh N. Patel, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 896,475, Apr. 14, 1978, abandoned, and Ser. No. 896,476, Apr. 14, 1978, abandoned. This application Mar. 27, 1979, Ser. No. 24,302
Int. Cl.³ C12P *7/26, 7/04;* C12N *1/30, 1/20*
U.S. Cl. 435—148 **11 Claims**

1. A process for converting a C_3–C_6 secondary alcohol to the corresponding methyl ketone comprising oxidizing said alcohol by contacting said alcohol in a medium, under aerobic conditions, with microbial cells derived from a methylotrophic microorganism or an enzyme preparation derived from said cells, wherein said microorganism has been previously grown under aerobic conditions in a nutrient medium containing a carbon-containing compound which provides the carbon and energy source for growth of the cells and induces C_3–C_6 secondary alcohol dehydrogenase enzyme activity in said cells, and wherein said microorganism is selected from the group consisting of:

Methylosinus trichosporium	(CRL 15 PM1)	NRRL B-11,202;
Methylosinus sporium	(CRL 16 PM2)	NRRL B-11,203;
Methylocystis parvus	(CRL 18 PM4)	NRRL B-11,204;
Methylomonas methanica	(CRL M4P)	NRRL B-11,205;
Methylomonas methanica	(CRL 21 PM7)	NRRL B-11,206;
Methylomonas albus	(CRL M8Y)	NRRL B-11,207;
Methylomonas streptobacterium	(CRL 17 PM3)	NRRL B-11,208;
Methylomonas agile	(CRL 22 PM9)	NRRL B-11,209;
Methylomonas rubrum	(CRL M6P)	NRRL B-11,210;
Methylomonas rubrum	(CRL 20 PM6)	NRRL B-11,211;
Methylomonas rosaceus	(CRL M10P)	NRRL B-11,212;
Methylomonas rosaceus	(CRL M7P)	NRRL B-11,213;
Methylobacter chroococcum	(CRL M6)	NRRL B-11,214;
Methylobacter chroococcum	(CRL 23 PM8)	NRRL B-11,215;
Methylobacter bovis	(CRL M1Y)	NRRL B-11,216;
Methylobacter bovis	(CRL 19 PM5)	NRRL B-11,217;
Methylobacter vinelandii	(CRL M5Y)	NRRL B-11,218;
Methylococcus capsulatus	(CRL M1)	NRRL B-11,219;
Methylococcus minimus	(CRL 24 PM12)	NRRL B-11,220;
Methylococcus capsulatus	(CRL 25 PM13)	NRRL B-11,221;
Methylobacterium organophilum	(CRL 26 R6)	NRRL B-11,222;
Pichia sp.	(CRL-72)	NRRL-Y-11,328;
Torulopsis sp.	(A_1)	NRRL-Y-11,419;
Kloeckera sp.	(A_2)	NRRL-Y-11,420;

and mutants thereof wherein said methyl ketone is produced in isolable amounts.

4,241,185

METHOD OF STABILIZING α-GALACTOSIDASE

Brooks M. Stein, Berthoud, and James C. Linden, Loveland, both of Colo., assignors to The Great Western Sugar Company, Denver, Colo.

Filed Feb. 23, 1979, Ser. No. 14,579
Int. Cl.³ C12N *9/96, 9/40*
U.S. Cl. 435—188 **5 Claims**

1. A method of stabilizing mycelial bound α-galactosidase activity comprising:

(a) suspending mycelia of *Mortierella vinacea* var. raffinose-utilizer (ATCC No. 20034) containing α-galactosidase activity in an aqueous medium;

(b) adding about 5 to about 25 percent by weight glutaraldehyde based upon the dry weight of the mycelia to the aqueous medium;

(c) maintaining the pH of the aqueous medium at about 6.5 to about 8.5; and

(d) mixing the aqueous medium in a manner so as to minimize oxygen inclusion for a period of about 0.25 to about 2.0 hours.

4,241,186

PECTIN CULTURE MEDIA AND METHOD

Jonathan N. Roth, Goshen, Ind., assignor to Conviron, Inc., Goshen, Ind.

Filed Dec. 18, 1978, Ser. No. 970,347
Int. Cl.³ C12N *1/00*
U.S. Cl. 435—243 **7 Claims**

1. A method for preparing a gelled biological growth medium having a pH from about 4 to about 9 in a culture growth container which comprises the steps of:

a. providing a culture growth container,

b. preparing a liquid growth medium including between about ten and about thirty grams per liter of growth medium of a low methoxyl pectin material having less than about seven percent methoxyl content to gel the growth medium as the sole gelling agent;

c. introducing a predetermined amount of calcium ions into an absorbent support material and placing the absorbent support material into the culture growth container; and

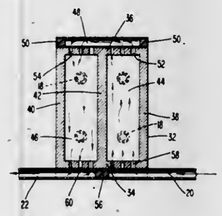
d. combining the growth medium and the calcium ions in said culture growth container to produce gelling of the growth medium.

4,241,187

METHOD AND APPARATUS FOR CELL AND TISSUE CULTURE

David C. White, Maple Grove, Minn., assignor to United States of America, Washington, D.C.

Filed Mar. 27, 1979, Ser. No. 24,247
Int. Cl.³ C12M *3/00*
U.S. Cl. 435—284 **2 Claims**



1. An apparatus for culturing biological cells and tissues employing perfused blood as the nutrient source, comprising:

(a) a housing means provided with a blood inlet means and a blood outlet means;

(b) a pair of culture chambers arranged within said housing means in spaced parallel relation to each other between two opposite walls of said housing means, each culture chamber being defined by a wall of said housing means and a thin flexible blood-compatible microporous membrane superimposed upon said wall and bonded thereto around its periphery, the spacing between said wall and said microporous membrane being such as to maintain said microporous membrane in close contact with cells or tissues introduced into said culture chamber, said microporous membrane being permeable to plasma solutes and to cell products and impermeable to blood cellular components;

(c) a blood flow passageway disposed within said housing means exterior of said culture chambers and extending continuously from said blood inlet means to said blood outlet means, said blood flow passageway including a plurality of sections, each of which extends across a separate parallel area of the surface of said microporous membrane so as to provide contact of said surface with blood perfused through said passageway, said culture chambers being arranged on opposite sides of said blood flow passageway, whereby blood perfused through said passageway simultaneously contacts the surfaces of the microporous membranes of each of said culture chambers;

(d) means in said walls of said housing means communicating with said culture chambers for introduction and retrieval of the cells and tissues; and

(e) connector means for connecting adjacent sections of said blood flow passageway in series, said connector means comprising a conduit closed at each end and extending longitudinally across the ends of the two adjacent sections to be connected perpendicularly to the direction of blood flow through the sections, each of said two adjacent sections being provided with a series of flow ports communicating with said conduit along the length of the conduit, the flow ports in each of said series having a size gradient decreasing in the direction of blood flow through said conduit in order to equalize the blood flow through said flow ports;

said blood inlet means comprising an inlet conduit closed at its downstream end and extending longitudinally across the inlet end of said blood flow passageway, and said blood outlet means comprising an outlet conduit closed at its upstream end and extending longitudinally across the outlet end of said blood flow passageway, said inlet end and said outlet end of said blood flow passageway each being provided with a series of flow ports communicating respectively with said inlet conduit and said outlet conduit along the length of the respective conduit, the flow ports in each of said series having a size gradient decreasing in the direction of blood flow through the respective conduit in order to equalize the blood flow through said flow ports.

4,241,188

CULTURE BOTTLE HAVING STOPPER LOCK

Peter Materia, Wood-Ridge, and Jayraj S. Desai, Closter, both of N.J., assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Oct. 9, 1979, Ser. No. 82,616
Int. Cl.³ C12M *1/24*
U.S. Cl. 435—296 **8 Claims**

1. An assembly for the culturing of microorganisms, comprising:

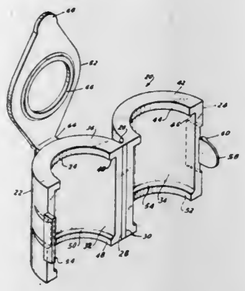
a culture bottle having a neck portion defining an opening therein;

an annular protruding portion extending radially from said neck;

a stopper positioned within said opening; and

a stopper lock movably mounted on said bottle neck, said stopper lock including an inwardly extending upper flange, an inwardly extending lower flange, and side walls interconnecting said flanges, the upper flange capable of engaging the upper surface of said stopper, the lower flange capable of engaging the lower surface of said annular protruding portion, there being a sufficient distance

between said upper and lower flanges to allow said stopper to rise to a height from said opening to allow the venting of the interior of the bottle, the stopper lock being



movable along said neck between position of engagement with the upper surface of the stopper and the lower surface of the protruding portion.

4,241,189

WEAR-RESISTANT FLEXIBLE SHEET MATERIAL AND A METHOD FOR ITS MANUFACTURE

Neville M. Sheldon, Whitley Bay, and Alfred Stern, Newcastle upon Tyne, both of England, assignors to General Foam Products Limited, North Shields, England

Filed Feb. 2, 1978, Ser. No. 874,390

Claims priority, application United Kingdom, Feb. 2, 1977, 04282/77

Int. Cl.³ C08J *9/36;* **B27C** *15/00;* **B29D** *27/00*

U.S. Cl. 521—50 **14 Claims**

1. A process for making wear-resistant flexible sheet material comprising the steps of:

providing a sheet of dense flexible reconstituted polyurethane foam material having a density exceeding about 15 lb/ft^3;

and subjecting said sheet to a pressure of about 5 to 30 tons/ft^2 at a temperature above about 150° C. in the substantial absence of air whereby said sheet is densified and its wear resistance enhanced.

7. Wear-resistant flexible sheet material made by the process of claim 1.

4,241,190

COMPOSITE FOAMED MATERIAL

Seymour Lichter, 8336 Huntington Rd., Huntington Woods, Mich. 48070, and Frank P. Nold, Rte. 2, Box 60, New Castle, Ind. 47362

Continuation-in-part of Ser. No. 878,720, Jan. 17, 1978, abandoned. This application Apr. 5, 1979, Ser. No. 27,241

Int. Cl.³ B29D *27/00*

U.S. Cl. 521—54 **9 Claims**

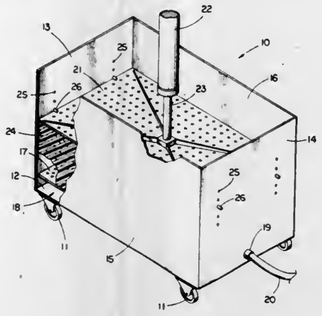
1. A composite foamed material comprising:

a. fragments of resilient, open-celled material;

b. expanded polystyrene beads dispersed among said fragments of open-celled material, said beads being expanded in situ while said open-celled material and said beads dispersed therein are held under compression; and

c. a binder securing together said fragments of open-celled material and said beads,

said open-celled material, beads and binder being present in amounts of about 60% to about 90% of the open-celled material, about 4% to about 15% of the beads, and about 6% to about 25% of the binder, said composite foamed



material having a density of from about 5 to about 30 lbs/ft^3.

4,241,191

MANUFACTURE OF STYRENE SUSPENSION POLYMERS

Hans G. Keppler, Weinheim; Erhard Stahnecker, Heidelberg, and Rolf Moeller, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 765,158, Feb. 3, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,327

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1976, 2609104

Int. Cl.³ C08J *9/18, 9/20*

U.S. Cl. 521—56 **13 Claims**

1. A process for the manufacture of expandable beads of styrene polymer, consisting essentially of polymerizing styrene in aqueous suspension in the presence of a suspension stabilizer, wherein said suspension stabilizer is used in the amount of from 0.05 to 1% by weight, based on the suspension, said stabilizer being made up of:

(A) from 99 to 50% by weight of particles having a particle size of from 0.01 to 100 μm of a sparingly water-soluble phosphate of a divalent or trivalent metal and

(B) from 1 to 50% by weight of a finely-divided preformed water-insoluble polymer of

(i) from 100 to 90 parts by weight of one or more of the monomers which form water-insoluble homopolymers selected from the group consisting of styrene, butadiene, vinyl chloride, vinylidene chloride, a vinyl ester or an acrylic or methacrylic ester and

(ii) from 0 to 10 parts by weight of one or more monomers which form water-soluble homopolymers, said preformed polymer being employed in the form of an aqueous dispersion having particle sizes up to 10 μm;

said process further including the addition of a blowing agent to the suspension before, during or after the polymerization of the styrene.

4,241,192

PROCESS FOR MAKING CELLULAR POLYVINYL CHLORIDE PRODUCTS AND PRODUCTS THEREOF

Jagadish C. Goswami, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 785,983, Apr. 8, 1977, abandoned, which is a continuation of Ser. No. 598,522, Jul. 25, 1975, abandoned. This application Mar. 8, 1978, Ser. No. 884,781

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—73 **22 Claims**

1. In a process for making a cellular vinyl chloride polymer product by heating a foamable vinyl chloride polymer-containing plastisol, wherein the improvement comprises incorporating in the plastisol, which has a fusion and expansion temperature of about 200° F. to 300° F., vinyl chloride copolymer of

vinyl chloride, vinyl acetate, and a bis(hydrocarbyl)vinylphosphonate, an effective amount for foaming of a blowing agent selected from the group consisting of a mixture of benzene sulfonyl hydrazide and 4,4'-oxybis (benzene sulfonyl hydrazide), a mixture of toluene sulfonyl hydrazide and 4,4'-oxybis (benzene sulfonyl hydrazide), and 4,4'-oxybis (benzene sulfonyl hydrazide) alone, and an effective amount of non-volatile organic base or oxidizing agent activator for said blowing agent, said activator being selected from the group consisting of urea, the C_2–C_{14} alkyl substituted ureas, the C_2–C_{14} monoalkyl, dialkyl and trialkyl monoamines, the C_2–C_{12} dialkyl or trialkyl diamines, the C_2–C_{14} dialkyl triamines, and the diaryl and C_1–C_{12} dialkyl peroxides.

4,241,193

POLYIMIDES

John Gagliani, San Diego, Calif., assignor to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 877,516, Feb. 13, 1978, abandoned. This application Aug. 21, 1978, Ser. No. 935,378

Int. Cl.² C08J *9/02*

U.S. Cl. 521—77 **8 Claims**

1. A process of making a rigid, intumescent, polyimide foam which comprises the steps of: preparing a resinous precursor by forming a composition which is essentially a stoichiometric mixture of aromatic diamine and tetracarboxylic acid ester constituents and dispersing a filler composed of particulate solids in said composition; heating said resinous precursor to a temperature in the range of 210°–315° C. to produce a polyimide foam artifact of selected configuration; and then heating said artifact under a pressure in the range of 3–20 psig and at a temperature in the range of 230°–315° C. for a time sufficient to produce a permanent set in said foam and thereby increase the rigidity and structural strength of the artifact.

4,241,194

PROCESS FOR THE PRODUCTION OF ALKALI-METAL-CELLULOSE-SILICATE FOAMS AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 29,202, Apr. 12, 1979. This application Jan. 7, 1980, Ser. No. 110,081

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—82 **6 Claims**

1. The process for the production a cellular solid aminoplast-cellulose product by the following steps:

(a) mixing 3 parts by weight of a cellulose-containing plant with 1 to 2 parts by weight of an oxidated silicon compound and 2 to 5 parts by weight of an alkali metal hydroxide;

(b) heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes, thereby

(c) producing a water-soluable alkali metal-cellulose-silicate condensation product,

(d) admixing 1 to 5 parts by weight of an amino compound, selected from the group consisting of urea, thiourea, alkyl ureas, alkyl thioureas, melamine, polyamines, aniline and mixtures thereof, and 0.5 to 5 mols of an aldehyde per mol of the amino and selected from the group consisting of an aqueous solution of formaldehyde, acetaldehyde, propionaldehyde, furfural, crotonaldehyde, acrolein, butyl aldehyde, pentanals, hexanals, heptanals, octanals, paraformaldehyde and mixtures thereof, are mixed with 2 parts by weight of the alkali metal-cellulose-silicate condensation product, as produced in step (c), then agitated at a temperature between ambient temperature and 100° C. for 10 minutes to 12 hours, thereby producing an aminoplast-alkali metal-cellulose-silicate resin; then an acid compound, selected from the group consisting of a mineral acid, an organic acid, an inorganic hydrogen-containing salt and mixtures thereof, is added to said resin until the ph is 5 to 7 while agitating until said resin begins to expand, thereby producing a cellular solid aminoplast-cellulose product.

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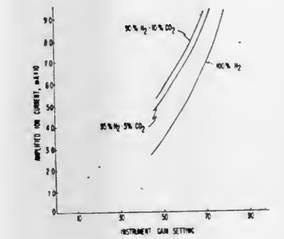
PROTECTING ELECTRICAL APPARATUS WITH GAS GENERATING COMPOUNDS

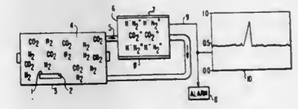
David C. Phillips, Penn Hills, and James D. B. Smith, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 751,403, Dec. 16, 1976, Pat. No. 4,149,161. This application Nov. 17, 1978, Ser. No. 961,586

Int. Cl.³ C08K *5/16, 5/41;* **B32B** *27/04;* **C08G** *65/48*

U.S. Cl. 525—3 **11 Claims**





1. A composition comprising a compound selected from the group consisting of formamidine sulfinic acid, methenamine mandelate, and mixtures thereof, and a solution of a resinous carrier curable at 60° C. stable when cured, and unreactive with said compound.

4,241,196

COATING COMPOSITION CATALYZED WITH PHOSPHONIC ACID DERIVATIVE - #1

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 13, 1979, Ser. No. 93,365

Int. Cl.³ C08L *37/00*

U.S. Cl. 525—161 **15 Claims**

1. A thermosetting coating composition adapted for low temperature bake applications which, exclusive of pigments, solvents and other nonreactive components, consists essentially of:

(A) a copolymer bearing pendent epoxy functionality and being free of pendent hydroxy functionality, and having a number of average molecular weight ($\overline{M}_n$) of between about 1500 and about 10,000 and a glass transition temperature (Tg) of between about −25° C. and about 70° C., said copolymer consisting of between about 10 and about 30 weight percent of monoethylenically unsaturated monomers bearing glycidyl functionality and between about 90 and about 70 weight percent of other monoethylenically unsaturated monomers;

(B) a reactive catalyst comprising at least one phosphonic acid derivative having the formula:

$$R-[P(OH)_2]_n$$

wherein n=1 to 2 and R is selected from the group consisting of alkyl, cycloalkyl and aryl radicals;

(C) an amine-aldehyde resin crosslinking agent; and

(D) up to 45 weight percent based on the total weight of (A), (B), (C), and (D) of a hydroxy functional additive having a number average molecular weight ($\overline{M}_n$) of between 150 and about 6000,

said phosphonic acid derivative being included in said composition in an amount sufficient to provide between about 0.8 and about 1.4 equivalents of acid functionality for each equivalent of pendent epoxy functionality on said copolymer, and said amine-aldehyde resin crosslinking agent being included in said composition in an amount sufficient to provide at least about 0.4 equivalents of nitrogen crosslinking functionality for each equivalent of hydroxy functionality included in said composition as a group on an initial component thereof or generated in situ as a result of esterification of said pendent epoxy functionality of said copolymer during cure of said coating composition.

4,241,197

GRAFT COPOLYMERS CONTAINING (METH)ACRYLIC ACID OR (METH)ACRYLIC ACID ESTERS

Ulrich Steffen, Leverkusen; Heinrich Alberts, Cologne, and Richard Prinz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,363

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811549

Int. Cl.³ C08L *23/00*

U.S. Cl. 525—309 **4 Claims**

1. A graft copolymer consisting of (A) 15 to 25% by weight of a graft base having (B) 85 to 75% by weight of a monomer mixture grafted thereon, said graft base being a copolymer consisting of copolymerized ethylene and vinyl ester, said copolymer having a Mooney viscosity (ML4/100° C.) of from 15 to 80 and an intrinsic viscosity of from 0.5 to 1.5 dl/g. and containing from 1 to 75% by weight of vinyl ester, said vinyl ester being a vinyl ester of an alkanoic acid having from 1 to 10 carbon atoms in the alkyl moiety thereof and said monomer mixture consisting of (I) from 5 to 50% by weight of (meth)acrylonitrile, (II) 94.9 to 35% by weight of at least one aromatic monovinyl compound and (III) from 0.1 to 15% by weight of (meth)acrylic acid or a (meth)acrylic acid C_1-C_{12} alkyl ester.

4,241,198

RELEASING AGENT

Naotake Kobayashi, Utsunomiya, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 973,419

Claims priority, application Japan, Dec. 29, 1977, 52-158184

Int. Cl.³ C08F *26/12, 220/18;* C08C *19/42*

U.S. Cl. 525—360 **14 Claims**



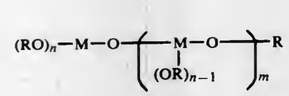
1. A composition suitable for treating a base member to impart a releasing property thereto consisting of:

(A) a copolymer which is produced by copolymerization of:

(a) a monomer mixture comprising 70 to 40 percent by weight stearyl acrylate and/or stearyl methacrylate and 30 to 60 percent by weight acrylonitrile; and

(b) an ethylenically unsaturated compound being copolymerizable with said monomer mixture and having functional groups reactive with metal alcoholate, said ethylenically unsaturated compound being used in an amount of 0.5 to 30 part by weight per 100 part by weight of said monomer mixture; and

(B) a metal alcoholate being represented by the following general formula:



wherein R is a hydrocarbon group having 1 to 20 carbon atoms or this hydrocarbon group further having oxygen atom, nitrogen atom, sulfur atom or halogen atom, including the case R being identical or not identical with each other in the general formula and R being combined with each other, n is an integer from 1 to 4, m is an integer from zero to 10, and M is a metal element belonging to III, IV and V groups of the periodic table.

4,241,199

NOVEL POLYESTER DIOLS

Raymond A. Dunleavy, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 18, 1979, Ser. No. 76,625

Int. Cl.³ C08L *67/06;* C08G *63/76*

U.S. Cl. 525—445 **9 Claims**

1. A polyester diol comprising:

(a) aliphatically saturated divalent diacyl moieties of the formula



wherein R is a single bond connecting the two carbonyl groups or a divalent organic group free of aliphatic unsaturation, and olefinically unsaturated divalent diacyl moieties of the formula



wherein R′ is a divalent olefinically unsaturated organic group, said diacyl moieties being present in a mole ratio of 0.25 to 3 moles of said diacyl moieties essentially free of aliphatic unsaturation per mole of said olefinically unsaturated diacyl moieties; and

(b) divalent dioxy moieties having the formula: —OR″O— wherein R″ is a divalent organic group interconnecting the oxy groups shown in said formula and each oxy group shown by said formula is bonded to a noncarboxyl atom of said R″ group;

said diacyl moieties being bonded through ester linkages to said dioxy moieties in a mole ratio of at least 1.75 moles of all said dioxy moieties per mole of all said diacyl moieties; and said polyester diol

(i) being end-blocked essentially only by noncarboxylic hydroxyl groups bonded to dioxy moieties as defined in (b) hereinabove; and

(ii) having an acid number of less than 3.

4,241,200

POLYURETHANE ELECTROCOATING COMPOSITION

James T. K. Woo, Medina, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 98,909

Int. Cl.³ C08G *18/30*

U.S. Cl. 525—455 **4 Claims**

1. In a process for electrodeposition of heat-curable electrocoating composition containing a matrix polymer and aminoplast cross-linking compound dispersed into an aqueous electrocoating bath solution, said matrix polymer containing carboxyl or hydroxyl groups for cross-linking with said aminoplast resin upon subsequent heat curing the electrocoating composition, the improvement comprising:

providing as said matrix polymer a polyurethane-acrylic copolymer containing on a weight basis between about 10% and 90% polyurethane, between about 10% and 70% copolymerized acrylic monomers, and 0% to 50% copolymerized ethylenically unsaturated monomers other than said acrylic monomers.

4,241,201

PHENOLIC RESINS WITH IMPROVED LOW TEMPERATURE PROCESSING STABILITY

Myron C. Annis, North Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 915,335, Jun. 13, 1978. This application Apr. 13, 1979, Ser. No. 30,038

Int. Cl.³ C08G *8/20, 8/24, 8/28*

U.S. Cl. 525—503 **15 Claims**

1. A phenolic novolak molding composition having improved low temperature processing stability comprising a phenol-aldehyde resin wherein (a) from about 55% to about 90% of the available theoretical para-phenyl linkages in the chain are bridged to a phenyl group, (b) the carbon chains linked between adjacent hydroxyl-substituted phenyl nuclei have 1 to 5 carbon atoms, and (c) the hydroxyl-substituted phenyl nuclei are capable of chain growth at unsubstituted ortho and para-positions of said nuclei.

4,241,202

ALLYL-ACRYLIC MONOMERS, THEIR PREPARATION AND POLYMERS DERIVED THEREFROM

Jean-Pierre G. Senet, Melun, and Patrice M. Le Roy, Ballancourt sur Essonne, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris Cedex, France

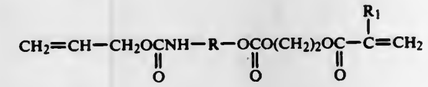
Division of Ser. No. 829,474, Aug. 31, 1977, Pat. No. 4,199,526. This application Dec. 28, 1978, Ser. No. 974,028

Claims priority, application France, Sep. 7, 1976, 76 26913

Int. Cl.³ C08F *120/26, 120/36*

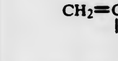
U.S. Cl. 526—73 **5 Claims**

1. A polymer obtained by polymerising an allyl-acrylic monomer of the formula:



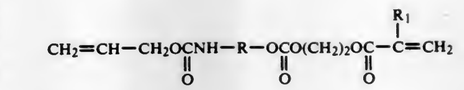
wherein R is an alkylene group having 1 to 4 carbon atoms and R_1 is selected from the group consisting of a hydrogen atom and a methyl group, wherein both the allyl CH_2=CH-CH_2 group and the acrylyl or methacrylyl group

in said monomer have been polymerized and wherein polymerization occurs in a first stage at said acrylic or methacrylic group



to form a linear polymer and polymerization at the allylic group occurs in a second stage to form a three dimensional polymer.

5. A polymer obtained by polymerising an allyl-acrylic monomer of the formula:



wherein R is an alkylene group having 1 to 4 carbon atoms and R_1 is selected from the group consisting of a hydrogen atom and a methyl group wherein both the allyl CH_2=CH-CH_2 group and the acrylyl or methacrylyl group

in said monomer have been polymerized, polymerization occurs at said acrylic or methacrylic group

to form a linear polymer and polymerization at the allylic group occurs to form a three dimensional polymer, and wherein polymerization both at the allylic and the acrylic or methacrylic group occurs in the same stage.

4,241,203

ACRYLONITRILE COPOLYMERS HAVING LOW RESIDUAL MONOMER CONTENT AND METHODS FOR THEIR PREPARATION

Franz Wenzel, Darmstadt; Heinz-Dieter Bruemmer, Seeheim, Jugenheim, Fed. Rep. of Germany, and Manfred Krieg, Darmstadt-Neu-Kranichstein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,210

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804533

Int. Cl.³ C08F *220/14, 220/44*

U.S. Cl. 526—218 **3 Claims**

1. The method of making a copolymer of acrylonitrile having a residual monomer content of less than 50 ppm, which comprises free-radically bulk polymerizing a monomer mixture of 60 to 80 percent by weight of acrylonitrile and 40 to 20 percent by weight of methyl methacrylate to effect a conversion of at least 75 percent by weight thereof and then further heating the resulting polymer-monomer mixture to a residual monomer content of less than 50 ppm by post-heating for 4 to 12 hours at 140° C. to 170° C.

4,241,204

CATIONICALLY CURABLE ORGANIC RESIN COMPOSITIONS CONTAINING SULFONIUM SALTS AND AN ORGANIC OXIDANT

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,101

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ G03C *1/68*

U.S. Cl. 526—333 **10 Claims**

1. Heat curable compositions comprising

(A) cationically polymerizable organic material, and

(B) an effective amount of a curing agent consisting essentially of 0.1 to 10% by weight of (A) of a dialkylhydroxyarylsulfonium salt of the formula,

$$[R(R^1)_aS]^+[Y]^-,$$

and 0.1 to 10% by weight of the heat curable composition of an organic oxidant selected from iodosoaromatic or-

ganic compounds, and organic peroxides having 0.1 to 50% by weight of organic peroxide of a decomposition accelerator selected from organic amines and transition metals,

where R is a $C_{(6-20)}$ aromatic radical having from 1 to 3 nuclearly bonded hydroxy radicals, R^1 can be the same or different $C_{(1-8)}$ alkyl radical or an alkylene radical capable of forming a cycloaliphatic or heteroecyclic ring, Y is a nonnucleophilic anion, a is an integer equal to 0 or 2, and when R^1 is alkyl, a is 2, and when R^1 is alkylene, a is 1.

4,241,205

9-DEOXY-5,9α-EPOXY-4,5-CIS-17,18-TETRADEHYDRO-PGF$_1$, AMIDES

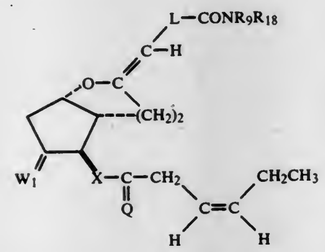
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,982, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,459

Int. Cl.^{3} **C07D** *311/02*

U.S. Cl. 542—420 **16 Claims**

1. A compound of the formula



wherein W_1 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, α—CH_2OH:β—H;

wherein L is

(1) —$(CH_2)_d$—$C(R_2)_2$, or

(2) —CH=CH—,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,

wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive;

wherein Q is oxo, α—H:β—H, α—OH:β—R_8 or α—R_8-:β—OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,241,206

KETONE SYNTHESIS BY HYDROACYLATION

John W. Suggs, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1978, Ser. No. 955,309

Int. Cl.^{3} **C07C** *45/61;* **C09B** *23/00;*

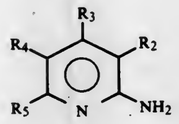
U.S. Cl. 542—424 **9 Claims**

1. A method for the production of a ketone comprising the steps of:

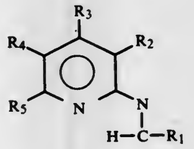
a. reacting an aldehyde of the formula:

R_1CHO,

where R_1 is alkyl or aryl, with a heterocyclic compound of the formula:



where R_2, R_3, R_4, and R_5 are selected from hydrogen, alkyl, nitro, amino and halogen when R_1 is alkyl, and R_2 is selected from alkyl, nitro, amino and halogen, and R_3, R_4, and R_5 are selected from hydrogen, alkyl, nitro, amino and halogen when R_1 is aryl, thus forming a reaction product of the formula:



b. combining this reaction product with an olefin of the formula:

R_6CHCH_2

where R_6 is alkyl or aryl, in the presence of a rhodium catalyst selected from the group consisting of rhodium oxide, rhodium halide, rhodium nitrate, rhodium carbonyl, polymers containing rhodium and

$RhX(PR_3)_3$

where X is anionic and selected from the group consisting of halide, cyanide, alkoxide, and thiolate, and R is selected from the group consisting of alkyl, aryl, alkoxy and aryloxy, and

c. hydrolyzing to form a ketone having the formula:

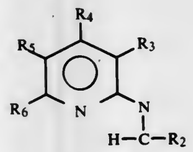
$R_6CH_2CH_2COR_1$.

2. A method for producing a 2-aminopyridylketamine comprising:

reacting an olefin of the formula:

R_1CHCH2

where R_1 is alkyl or aryl, with an imine compound of the formula:

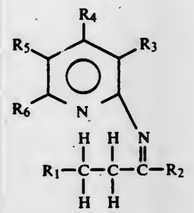


where R_2 is alkyl or aryl and R_3, R_4, R_5, and R_6 are hydrogen, alkyl, nitro, amino or halogen,

and a catalyst selected from the group consisting of rhodium oxide, rhodium halide, rhodium nitrate, rhodium carbonyl, polymers containing rhodium and

$RhX(PR_3)_3$

where X is anionic and selected from the group consisting of halide, cyanide, alkoxide, and thiolate, and R is selected from the group consisting of alkyl, aryl, alkoxy and aryloxy, to form a product with the formula:



4,241,207

ORGANONITROGEN DERIVATIVES OF 2-BENZOPYRANONE

Karl-Heinz Boltze, Bensberg-Kippekausen; Peter-Rudolf Seidel, Porz-Wahnheide; Haireddin Jacobi, Leichlingen, and Helmut Schwarz, Bensberg-Frankenforst, all of Fed. Rep. of Germany, assignors to Troponwerke Dinklage & Co., Cologne, Fed. Rep. of Germany

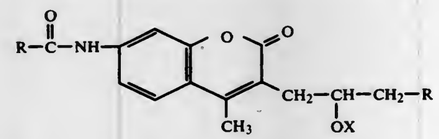
Division of Ser. No. 703,340, Jul. 8, 1976, Pat. No. 4,144,336. This application Nov. 24, 1978, Ser. No. 963,652

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1975, 2530405; Oct. 2, 1975, 2543945

Int. Cl.^{3} **C07D** *311/08, 407/14*

U.S. Cl. 542—427 **39 Claims**

1. A 2-benzopyranone compound of the formula



wherein

X is a 3,4,5-trimethoxybenzoyl group or a 3,4,5-trimethoxycinnamoyl group; and each

R individually is selected from the group consisting of C_1–C_6 alkylamino and C_1–C_6 dialkylamino in which one hydrogen atom may be replaced by a hydroxyl group which may in turn be esterifed with a 3,4,5-trimethoxybenzoyl or 3,4,5-trimethoxycinnamoyl group;

amino substituted once or twice by C_2–C_4 alkenyl, aralkyl of up to 10 carbon atoms, or C_4–C_7 cycloalkyl; or an N-containing heterocyclic ring which is a member of the group consisting of pyrrolidino, piperidino and hexahydroazepino and which are linked through a nitrogen atom and which heterocyclic ring may be substituted by phenyl, alkyl or hydroxyalkyl wherein the hydroxy group may be esterified by a 3,4,5-trimethoxy benzoyl or 3,4,5-trimethoxy cinnamoyl group;

or a salt of each compound with a physiologically acceptable acid.

4,241,208

PIPERIDINE DERIVATIVES

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Toshimasa Toda; Eiko Mori; Hideo Horiuchi; Susumu Higashida; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayou Ohsawa, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

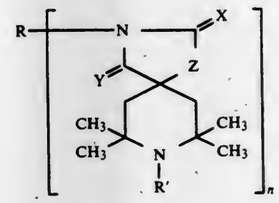
Division of Ser. No. 792,013, Apr. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 636,659, Dec. 1, 1975, abandoned, which is a continuation of Ser. No. 414,525, Nov. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 258,392, May 31, 1972, abandoned. This application Dec. 12, 1978, Ser. No. 968,677

Claims priority, application Japan, Jun. 5, 1971, 46-39630

Int. Cl.^{3} **C07D** *471/10, 498/10*

U.S. Cl. 546—20 **30 Claims**

1. A compound having the formula



wherein

n is 1;

X represents an oxygen atom or a sulfur atom;

Y represents an oxygen atom, a sulfur atom or a group of the formula

in which R'' is hydrogen, methyl, allyl, 2-propynyl, 2-hydroxyethyl, 2-methoxyethyl or benzyl;

Z represents an oxygen atom or a group of the formula



in which

R''' is hydrogen, an alkyl group having from 1 to 4 carbon atoms, allyl, 2-propynyl, 2-hydroxyethyl, ethoxymethyl, 2-vinyloxyethyl, 2-phenoxyethyl, 2-acetoxyethyl, 2-benzoyloxyethyl or benzyl;

R represents an alkyl group having from 1 to 20 carbon atoms, a hydroxyalkyl group having from 2 to 3 carbon atoms, an alkenyl group having from 3 to 4 carbon atoms, the 2-propynyl group, a cyanoalkyl group having from 2 to 3 carbon atoms, an alkoxyalkyl group having from 2 to 5 carbon atoms, the 2-hydroxy-2-phenylethyl group, a 2-acyloxy-2-phenylethyl group having from 10 to 20 carbon atoms, the vinyloxyethyl group, the phenoxyethyl group, the methylthioethyl group, the 2,3-epoxypropyl group, an acyloxyalkyl group having from 4 to 14 carbon atoms, an alkoxycarbonylalkyl group having from 3 to 15 carbon atoms, an aryloxycarbonylalkyl group having from 8 to 12 carbon atoms, an aralkyl group having from 7 to 8 carbon atoms, a 2,3-epoxypropyloxycarbonylalkyl group having from 5 to 6 carbon atoms, an aryl group having 6 to 10 carbon atoms, the cyclohexyl group, an alkoxycarbonyl group having from 2 to 9 carbon atoms, an aralkoxycarbonyl group having from 8 to 9 carbon atoms, a dialkoxyphosphine group having from 2 to 16

carbon atoms, the diphenoxyphosphine group, a group of the formula



in which R'''' is an alkyl group having from 1 to 8 carbon atoms or a phenyl group; and

R' represents an alkyl group having from 1 to 20 carbon atoms, a hydroxyalkyl group having from 2 to 3 carbon atoms, an alkenyl group having from 3 to 4 carbon atoms, the 2-propynyl group, a cyanoalkyl group having from 2 to 3 carbon atoms, an alkoxyalkyl group having from 2 to 5 carbon atoms, vinyloxyethyl, phenoxyethyl, methylthioethyl, the 2,3-epoxypropyl group, an acyloxyalkyl group having from 3 to 14 carbon atoms, an alkoxycarbonylalkyl group having from 3 to 15 carbon atoms, an aralkyl group having from 7 to 8 carbon atoms, the 2-hydroxy-2-phenylethyl group, a 2-acyloxy-2-phenylethyl group having from 10 to 20 carbon atoms, the acetyl group, an α,β-unsaturated aliphatic acyl group having from 3 to 9 carbon atoms, an alkoxycarbonyl group having from 2 to 9 carbon atoms, an aralkoxycarbonyl group having from 8 to 9 carbon atoms, the amino group, an acyl amino group having from 2 to 12 carbon atoms, an alkylamino group having from 1 to 2 carbon atoms, or the nitroso group, wherein all acyl groups are carboxyl derived acyl groups.

5. The compound of claim 1 wherein

X is oxygen;

Y is >N—R'' wherein R'' is methyl, 2-hydroxyethyl, 2-methoxyethyl, benzyl, allyl or 2-propynyl, and

Z is >N—R''' wherein R''' is 2-propynyl, 2-hydroxyethyl, ethoxymethyl, 2-vinyloxyethyl, 2-phenoxyethyl, 2-acetoxyethyl, 2-benzoyloxyethyl or benzyl.

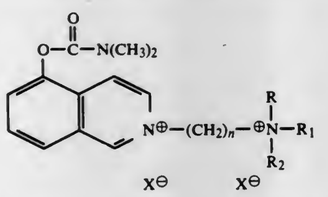
4,241,209

CHEMICAL AGENTS

Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1967, Ser. No. 682,721
Int. Cl.³ C07D *217/00*
U.S. Cl. 546—147 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from monovalent and polyvalent anion, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, nitrate, tetraphenylboronate, and hydrogen sulfate, wherein n is selected from 5–16, and wherein R, R_1, R_2 are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, and butyl.

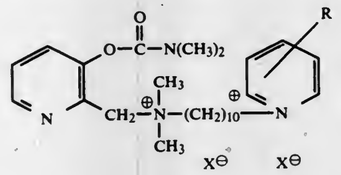
4,241,210

CHEMICAL AGENTS

Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 9, 1967, Ser. No. 674,385
Int. Cl.³ C07D *213/62*
U.S. Cl. 546—261 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from monovalent and polyvalent anions and wherein R is a meta, ortho, or para substituent selected from the group consisting of hydrogen, hydroxyl, methyl, and aldoximino, said monovalent and polyvalent anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylboronate.

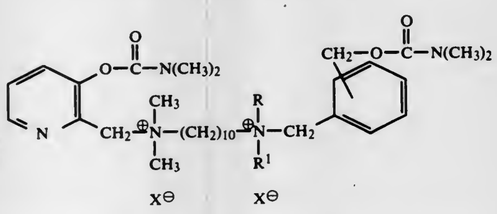
4,241,211

CHEMICAL AGENTS

Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1967, Ser. No. 682,722
Int. Cl.³ C07D *213/62*
U.S. Cl. 546—261 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylboronate; R and R' are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, and butyl; and the dimethylcarbamoxymethyl group is in the position selected from ortho, meta, and para of the phenyl ring.

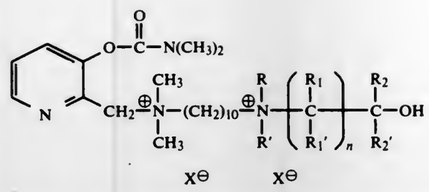
4,241,212

CHEMICAL AGENTS

Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1967, Ser. No. 673,248
Int. Cl.³ C07D *213/63*
U.S. Cl. 546—291 **2 Claims**

1. New chemical compounds having the generic formula:



wherein R and R' are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, and hydroxyethyl; R_1 and R_1' are selected from the group consisting of hydrogen, methyl, and ethyl; n is selected from 1–8; R_2 and R_2' are selected from the groups consisting of hydroxyl, hydrogen, methyl, and propyl; and X is one equivalent of an anion selected monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylboronate.

4,241,213

PROCESS FOR PRODUCING 2-CHLORO-5-TRICHLOROMETHYL PYRIDINE

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Kusatsu; Isao Yokomichi, Moriyama; Rikuo Nasu; Takao Awazu, both of Kyoto, and Junichi Kawashima, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Limited, Osaka, Japan

Filed Sep. 13, 1979, Ser. No. 75,022
Claims priority, application Japan, Sep. 22, 1978, 53/115820
Int. Cl.³ C07D *213/26*
U.S. Cl. 546—345 **6 Claims**

1. In a process for producing 2-chloro-5-trichloromethyl pyridine by reacting β-picoline with chlorine, an improvement characterized by reacting β-picoline with chlorine in a gaseous phase at 300° to 500° C. in the presence of an inert diluent selected from the group consisting of nitrogen, halogenated methanes, halogenated ethanes, halogenated ethylenes and mixtures thereof.

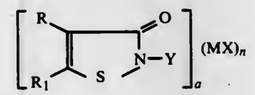
4,241,214

METAL SALT COMPLEXES OF 3-ISOTHIAZOLONES

George A. Miller, Glenside, and Ernest D. Weiler, Fort Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 142,775, May 12, 1971, Pat. No. 4,150,026.
This application Jul. 12, 1978, Ser. No. 923,845
Int. Cl.³ C07F *1/08, 3/00, 15/00*
U.S. Cl. 548—101 **10 Claims**

1. A metal salt complex of the formula



wherein

Y is a substituted alkyl group of 1–18 carbon atoms selected from hydroxyalkyl, haloalkyl, cyanoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylaminoalkyl, carboxyalkyl, carbalkoxyalkyl, alkoxyalkyl, aryloxyalkyl, alkylthioalkyl, arylthioalkyl, haloalkoxyalkyl, carbamoxyalkyl, isothiazolonyalkyl and cycloalkylaminoalkyl, an unsubstituted or substituted aryl group of up to 10 carbon atoms wherein the substituent is selected from halogen, cyano, nitro, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, (C_1–C_4) alkylacylamino, (C_1–C_4) carbalkoxy, and sulfamyl, an unsubstituted or halo-substituted alkenyl, alkynyl group having 2–18 carbon atoms, unsubstituted or substituted cycloalkyl having 3–12 carbon atoms and in which the substituent is selected from halogen and methyl, an unsubstituted or substituted aralkyl having up to 10 carbon atoms, in which the substituent is selected from halogen, nitro, (C_1–C_4) alkyl, and (C_1–C_4) alkoxy;

R is hydrogen, halogen or a (C_1–C_4) alkyl group;

R^1 is hydrogen, halogen, or a (C_1–C_4) alkyl group; or R and R' can be taken together to complete a benzene ring, optionally substituted with one or more halogen atoms, nitro groups, (C_1–C_4) alkyl groups, cyano groups, or (C_1–C_4) alkoxy groups;

M is a cation of barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury, nickel, silver, sodium, strontium, tin, or zinc;

X is a chloride, bromide, iodide, sulfate, nitrate, acetate, perchlorate, bisulfate, bicarbonate, oxalate, maleate, p-toluenesulfonate, carbonate, or phosphate anion;

a is the integer 1 or 2; and

n is the integer for which the anion X satisfies the valence of the cation M.

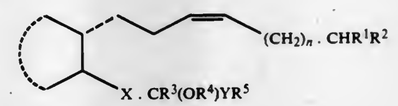
4,241,215

PROSTANE DERIVATIVES

Jean Bowler, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

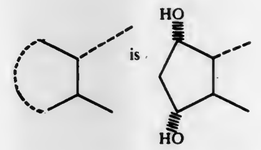
Filed Aug. 11, 1976, Ser. No. 713,505
Claims priority, application United Kingdom, Aug. 22, 1975, 34969/75
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—55 **9 Claims**

1. A prostane derivative of the formula:



I

wherein



R^1 is carboxy or C_{2-12} alkoxycarbonyl, R^2, R^3 and R^4, which may be the same or different, are each hydrogen or C_{1-5} alkyl, X is ethylene or transvinylene, Y is C_{1-5} alkyleneoxy, wherein the oxygen is bonded to R^5, or a direct bond, R^5 is phenyl or naphthyl which is unsubstituted or is substituted by one or more substituents selected from halogen, nitro, and C_{1-5}-alkyl, alkoxy and halogenalkyl, and n is 1 to 4, and for those compounds wherein R^1 is carboxy, the pharmaceutically or veterinarily acceptable salts thereof.

4,241,216

PHTHALIC ACID DIESTER PREPARATION WITH WASTE STREAM PURIFICATION AND RECYCLE

Lee H. Bergman, Baton Rouge, La.; John J. Evangelista, New Boston, Mich., and William M. Herring, Hackettstown, N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 6
Int. Cl.³ C07C *67/08*
U.S. Cl. 560—99 **16 Claims**

1. In a continuous process for the esterification of phthalic acid or anhydride with at least one saturated aliphatic alcohol containing about 4 to about 10 carbon atoms, esterification

being carried out with recycling of said alcohol used in a stoichiometric excess in the presence or absence of esterification catalysts wherein said esterification results from continuously feeding said phthalic acid or anhydride, said saturated alcohol, and an organic by-product of said process derived from the extraction of the waste water product of said process with an alcohol wherein said alcohol used for the extraction is the same as that used to form said phthalic ester and said esterification is conducted in a reactor stage by reacting said acid or anhydride with said aliphatic alcohol until a level of acid to ester conversion of at least 90 percent is reached, and wherein the water of esterification is removing from the reaction and condensed in a heat exchanger together with a portion of the alcohol used to esterify and the alcohol returned to the process for use in extraction of waste water produced in the process, and wherein neutralization is effected in a neutralizing stage of the resulting diester product also containing, as organic impurities, monoester, unreacted phthalic acid and said aliphatic alcohol, and other impurities with an aqueous alkali solution at a temperature of about 80° C. to 100° C., and thereafter forming a first organic phase and a first waste aqueous phase, and wherein said organic phase is separated by decanting and thereafter purified by steam stripping and carbon treatment to produce the desired diester product, the improvement wherein process waste water and said organic by-product of said process is purified and said by-product is recycled to said reactor stage without imparting color to said diester product by the following steps wherein

(a) said first waste aqueous phase is filtered to remove solids and passed through activated carbon to remove color bodies, and thereafter

(b) said first waste aqueous phase is mixed with an amount of said aliphatic alcohol to extract said organic impurities from the acidified first waste aqueous phase water while maintaining a temperature of about 35° C. to about 65° C., and

(c) a second organic phase is separated from a second waste aqueous phase by decantation,

(d) said second organic phase is washed and

(e) a third waste aqueous phase is separated from a third organic phase, and

(f) said third organic phase is recycled to said reactor stage.

4,241,217

ANTIOXIDANT COMBINATION OF ESTERS AND AMINES

Joseph A. Kuczkowski, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 668,567, Mar. 19, 1976, Pat. No. 4,125,515. This application May 26, 1978, Ser. No. 909,746

Int. Cl.³ C07C *149/20*

U.S. Cl. 560—152 **1 Claim**

1. 3,6,9-trioxaundecane-1,11-bis(3-n-dodecylthiopropionate).

4,241,218

CHEMICAL AGENTS

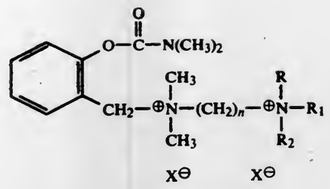
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 1, 1967, Ser. No. 687,394

Int. Cl.³ C07C *125/06*

U.S. Cl. 560—163 **2 Claims**

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from the groups of anions consisting of monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, nitrate, hydrogen sulfate, and tetraphenylboronate, wherein n is selected from 5–16, and wherein R, R_1, R_2 are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl and butyl.

4,241,219

TREATMENT OF CARBONYLATION EFFLUENT

Chee-Gen Wan, North Brunswick, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,712

Int. Cl.³ C07C *51/12*

U.S. Cl. 560—232 **5 Claims**

1. A process for the recovery of halogen values from an effluent gas stream obtained in the carbonylation of methyl acetate and/or methyl ether in the presence of a Group VIII metal and a halogen moiety which comprises bringing said gas stream into counter-current contact in a scrubbing zone with at least one of the products of the carbonylation reaction having a boiling point above 100° C.

4,241,220

PROCESS FOR PRODUCING TEREPHTHALIC ACID

Shikiho Itaya, Ohtake; Takenori Nagaoka; Teruo Itoh, both of Iwakuni; Yukimasa Shigemura, Ohtake, and Shigemi Shiraki, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 973,944

Claims priority, application Japan, Dec. 28, 1977, 52-157225; Dec. 28, 1977, 52-157226; Dec. 28, 1977, 52-157227

Int. Cl.³ C07C *51/16*

U.S. Cl. 562—414 **14 Claims**

1. A process for producing terephthalic acid by oxidizing p-xylene with a molecular oxygen-containing gas in an acetic acid solvent in the presence of a catalyst containing a cobalt compound, a manganese compound and a bromine compound at a temperature of at least about 160° C. and a pressure of at least about 5 kg/cm².G in an oxidation zone, recycling a part of the mother liquor in the resulting oxidation reaction mixture to the oxidation zone, leaching the remainder of the oxidation reaction mixture with acetic acid, and recovering terephthalic acid from the treated mixture; which comprises

(A) performing said liquid-phase catalytic oxidation at a temperature (T) within the range of about 170° C. to about 230° C. to form an oxidation mixture containing crude terephthalic acid having a 4-carboxybenzaldehyde content of 500 to 3,000 ppm and an optical density, measured at 340 mμ, of not more than 0.3,

(B) separating about 60 to about 98% by weight of the total mother liquor from the resulting oxidation reaction mixture at a temperature of from (T−30)° C. to (T+10)° C., and recycling the separated mother liquor to the oxidation zone,

(C) adding hot acetic acid to the remainder of the oxidation reaction mixture so that the weight ratio of acetic acid to crude terephthalic acid in the mixture is 2:1 to 10:1 to form a suspension of the crude terephthalic acid in acetic acid kept at a temperature ranging from the reaction temperature (T) to about 240° C.,

(D) stirring the suspension at a temperature of from T° C. to about 240° C. to perform a primary leaching treatment,

(E) stirring the treated suspension at a temperature of 150° C. to about 220° C., said temperature being at least 10° C. lower than the temperature of the primary leaching treatment, thereby to perform a secondary leaching treatment, and

(F) recovering terephthalic acid from the suspension subjected to the secondary leaching treatment.

4,241,221

NOVEL 11-DEOXY-SUBSTITUTED PROSTAGLANDINS OF THE E AND F SERIES

Charles V. Grudzinskas, Garnerville, N.Y., and Martin J. Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

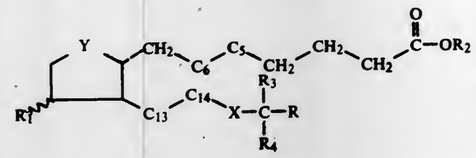
Continuation of Ser. No. 552,403, Feb. 24, 1977, Pat. No. 4,057,571, which is a continuation-in-part of Ser. No. 274,559, Jul. 24, 1972, Pat. No. 4,141,914. This application Mar. 10, 1977, Ser. No. 776,444

The portion of the term of this patent subsequent to Nov. 8, 1994, has been disclaimed.

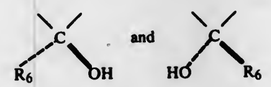
Int. Cl.³ C07C *177/00*

U.S. Cl. 562—470 **13 Claims**

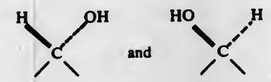
1. A compound selected from the group consisting of an optically active compound of the formula



and a racemic compound of that formula and the mirror image thereof wherein R is phenyl, phenoxy or phenoxy substituted with one or more groups selected from the group consisting of lower alkyl, lower alkoxy, nitro, halo and trifluoromethyl; R_1 is selected from the group consisting of lower alkyl and lower 1-alkenyl; R_2 is selected from the group consisting of hydrogen and an alkyl group having from 1 to 12 carbon atoms; R_3 and R_4 are hydrogen; X is a divalent moiety selected from the group consisting of those of the formula



wherein R_6 is selected from the group consisting of hydrogen and lower alkyl; Y is a divalent moiety selected from the group consisting of those of the formula



the moiety -C_5-C_6- is ethylene or cis vinylene and the moiety -C_{13}-C_{14}- is ethylene or trans vinylene with the proviso that when -C_5-C_6- is cis-vinylene then -C_{13}-C_{14}- must be trans-vinylene; and the non-toxic, cationic salts thereof when R_2 is hydrogen.

4,241,222

PROCESS FOR THE PREPARATION OF CUMYL PEROXIDES

Ronald E. MacLeay, Williamsville, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 13, 1979, Ser. No. 75,355

Int. Cl.³ C07C *179/06*

U.S. Cl. 568—561 **6 Claims**

1. A process for preparing cumyl peroxides comprising reacting in a temperature range of 10°–50° C. an aliphatic or cycloaliphatic hydroperoxide or aliphatic dihydroperoxide selected from the group consisting of t-butyl hydroperoxide, t-amyl hydroperoxide, t-hexyl hydroperoxide, 1,1,3,3-tetramethylbutyl hydroperoxide, cumene hydroperoxide, cymene hydroperoxide, p-menthane hydroperoxide, 1-methylcyclohexyl hydroperoxide, 1-methylcyclopentyl hydroperoxide, 3-hydroperoxy-3-methylbutyne-1, 2-hydroperoxy-2-methyl-4-hydroxypentane, 1-hydroperoxycyclohexylacetylene, 2,5-dimethyl-2,5-dihydroperoxyhexane, 2,7-dimethyl-2, 7-dihydroperoxyoctane, 2,5-dimethyl-2,5-dihydroperoxyhexyne-3 and diisopropylbenzene dihydroperoxide with an olefin selected from alpha-methylstyrene or a substituted alpha-methylstyrene wherein the substituent is selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, butyl, t-butyl, amyl, t-amyl, hexyl, chloro, bromo, fluoro, methoxy, ethoxy, propoxy, isopropoxy, phenoxy, phenyl and naphthyl, and a t-cumyl halide corresponding to the hydrohalogenated olefin in the presence of a catalyst selected from the group consisting of phenol, ortho, meta, and paracresols, chlorophenols, bromophenols, methoxyphenols, ethylphenols, isopropylphenols, para-t-butylphenol, paraphenylphenol, 3,4-dichlorophenol, 3,4-dimethylphenol, alpha-naphthol and beta-naphthol under substantially anhydrous conditions.

4,241,223

F-PHENYLALKYLENE OXIDE DIACETYLENES

Keith B. Baucom, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1979, Ser. No. 70,473

Int. Cl.³ C07C *43/166*

U.S. Cl. 568—611 **3 Claims**

1. A F-phenylalkylene oxide diacetylene having the following formula:

$$C_6F_5C{\equiv}C(CF_2OCF_2)_nC{\equiv}CC_6F_5''$$

wherein n is an integer ranging from 3 to 8, inclusive.

3. A process for preparing a F-phenylalkylene oxide diacetylene which comprises the following steps:

(a) reacting an equimolar mixture of butyllithium and a F-phenyl phosphonium salt having the formula $C_6F_5CH_2P(C_6H_5)Br$ within an inert atmosphere at about room temperature for a period of about 0.5 to 3 hours to obtain a product having the formula $C_6F_5CH{=}P(C_6H_5)_3$;

(b) reacting the product obtained in step (a) with acid chloride $ClCO(CF_2OCF_2)_nCOCl$ (in which n is an integer ranging from 3 to 8 inclusive) in a 4 to 1 mole ratio within an inert atmosphere at about room temperature for about 0.5 to 2 hours to obtain a keto-ylid having the formula:

$$C_6F_5CCO(CF_2OCF_2)_nCOCC_6F_5$$
$$\quad\quad\quad

4,241,224

FIBER LUBRICANTS DERIVED FROM THE OXYALKYLATION OF A GLYCEROL-1,3-DIALKYLETHER

David D. Newkirk, and Robert B. Login, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 956,052, Oct. 30, 1978. This application Oct. 9, 1979, Ser. No. 82,792
Int. Cl.[3] C07C *43/11*
U.S. Cl. 568—619 2 Claims

1. The process of preparing a fiber lubricating compound having the structural formula:



wherein R is an alkyl radical having about 3 to about 22 carbon atoms; A is a mixture of the residues of ethylene oxide and another lower alkylene oxide; n has a value to produce a molecular weight of about 300 to about 3000; and said compound is the oxyalkylation product of a glycerol-1,3-dialkylether comprising

a. reacting a fatty alcohol having 3 to about 22 carbon atoms with epihalohydrin catalyzed with a Lewis acid catalyst followed by treatment with a base to form an alkoxyglycidyl ether,

b. reacting said alkoxyglycidyl ether with an excess of a fatty alcohol having 3 to about 22 carbon atoms, wherein said alcohol can be the same or different than said alcohol in part (a), in the presence of a Lewis acid catalyst,

c. recovering the gycerol-1,3-dialkylether intermediate produced, and

d. alkoxylating said intermediate with ethylene oxide and another alkylene oxide under alkaline catalysis at a temperature of about 110° to 135° C.

4,241,225

PREPARATION AND DEHYDROGENATION OF CYCLOALKANOL DERIVATIVES

Keith Gladwin, Chesterfield, England, assignor to Coalite and Chemical Products Limited, North Chesterfield, England

Filed Jun. 6, 1978, Ser. No. 913,127
Claims priority, application United Kingdom, Jun. 8, 1977, 23926/77
Int. Cl.[3] C07C *179/02*
U.S. Cl. 568—652 5 Claims

1. A method of preparing 2-isopropoxy cyclohexanol, comprising: reacting a stoichiometric excess of isopropyl alcohol with cyclohexene oxide, in the presence of a catalytically effective amount of acidified Fuller's earth until 2-isopropoxy cyclohexanol is formed; and then recovering the 2-isopropoxy cyclohexanol from the reaction mixture.

4,241,226

PREPARATION OF 2-NITRO-2-METHYL-1-PROPANOL

Guy Adrian, Lille; Marcel-Xavier Sion, Lewarde, and Andre Benattar, Lille, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Paris, France

Filed Feb. 15, 1979, Ser. No. 12,440
Claims priority, application France, Feb. 15, 1978, 78 04210
Int. Cl.[3] C07C *79/18*
U.S. Cl. 568—704 4 Claims

1. A process for the direct preparation of crystalline 2-nitro-2-methyl-1-propanol with a purity of at least 95%, by condensing 2-nitropropane with formaldehyde in a molar ratio of 0.9–1.1:1, consisting essentially of the steps of:

adding less than half of the formaldehyde, in liquid form, to the 2-nitropropane and then adding 1 to 10 milliequivalents per mole of 2-nitropropane of an inorganic basic catalyst, water being present as the sole solvent in the amount of 1.5 to 10% of the totality of the reaction mass, after said additions;

after said adding steps, progessively further adding with agitation the remainder of the formaldehyde in solid form of polyoxymethylene, maintaining the temperature between 40° and 58° C. and the pH between 7 and 11;

neutralizing the formed reaction product at a temperature of about 55° C. with stearic acid up to a pH between 4 and 5; and

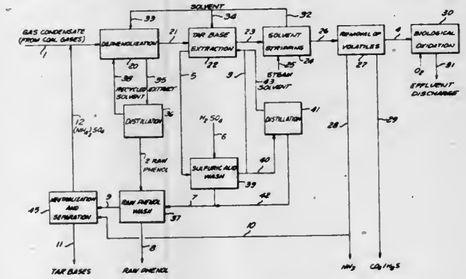
cooling or agitating with entrainment, with a current of inert gas, of water and volatile impurities of the raw reaction medium.

4,241,227

PROCESS FOR REDUCING BIOLOGICAL OXYGEN DEMAND OF GAS CONDENSATE

Paul Wiesner, Oberursel; Fritz Wöhler, Frankfurt am Main, and Hans-Martin Stönner, Schwalbach, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 14, 1976, Ser. No. 705,111
Claims priority, application Fed. Rep. of Germany, May 5, 1976, 2619805
Int. Cl.[3] C07C *37/70*
U.S. Cl. 568—761 8 Claims



1. A process for treating a gas condensate from the destructive distillation of coal containing tar bases, extractable phenol and volatile compounds including ammonia and acid gases selected from the group which consists of CO_2, H_2S and HCN, which comprises the steps of

(a) extracting said gas condensate with an organic solvent selected from the group of diisopropyl ether and methylisobutylketone to form a phenol-containing extract and a dephenolated gas condensate;

(b) separating the phenol-containing extract from step (a) into a solvent phase and a phenol phase by distillation and the solvent phase is recycled to step (a);

(c) extracting the dephenolated condensate of step (a) with the same solvent used in step (a) but in a greater quantity to remove tar bases from the dephenolated gas condensate and form a tar base extract and a gas condensate free from tar base;

(d) chemically treating the tar base extract from step (c) and separating it into another solvent phase and a tar phase by contacting the tar base extract with sodium hydroxide and/or sulfuric acid, said other solvent phase being recycled to step (c); and

(e) driving off by distillation said volatile compounds including traces of organic solvent, ammonia and acid gases of the group of CO_2, H_2S, HCN, whereby said organic solvent, ammonia and said acid gases are recovered separately from said gas condensate free from tar base from step (c) to produce a decontaminated gas condensate of low biological oxygen demand suitable for biological oxidation treatment.

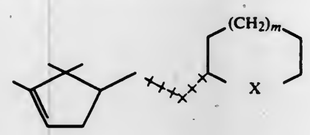
4,241,228

2,2,3-TRIMETHYL-3-CYCLOPENTEN-1-YLALKENYL AND ALKYLIDENE SECONDARY ALKANOLS, ALKANONES, CYCLOALKANOLS AND CYCLOALKANONES, ORGANOLEPTIC USES THEREOF IN PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES AND PROCESS FOR PRODUCING SAME

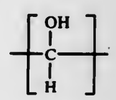
Takao Yoshida, West Long Branch; Braja D. Mookherjee, Holmdel; Venkatesh Kamath, Red Bank; John B. Hall, Rumson; William I. Taylor, Summit, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 932,677, Aug. 10, 1978, Pat. No. 4,173,585. This application Mar. 22, 1979, Ser. No. 23,322
Int. Cl.[3] C07C *35/21*
U.S. Cl. 568—816 3 Claims

1. A compound having the structure:



wherein m is 0 or 1; wherein one of the lines ++++ is a carbon-carbon single bond and the other of the lines ++++ is a carbon-carbon double bond and wherein X is carbinol having the structure:



4,241,229

RECOVERY OF NITRATED AROMATIC COMPOUNDS FROM NITRATION WASH LIQUORS

Verner Alexanderson, Sharon, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 8, 1979, Ser. No. 64,674
Int. Cl.[3] C07C *79/10*
U.S. Cl. 568—939 10 Claims

1. In a process for the mononitration of an aromatic hdyrocarbon with a mixed acid comprising nitric and sulfuric acid, wherein the resulting aqueous, spent-acid phase is separated from the nitroaromatic compound phase produced thereby, and wherein the nitroaromatic compound phase is washed with an aqueous solution of ammonia or an alkali to produce thereby an alkaline wash layer containing by-products as water-soluble ammonium, or alkali metal salts and nitroaromatic compound, the improvement which comprises: contacting said alkaline wash layer which contains said by-products, with from 0.05 to 0.5 part by volume of said aromatic compound being nitrated per part by volume of wash layer to extract said nitroaromatic compound therefrom, and recycling the resulting aromatic solution of nitroaromatic compound to a nitration reaction.

4,241,230

CONTROL SYSTEM FOR THE SELECTIVE HYDROGENATION OF ACETYLENE PRESENT IN ETHYLENE PRODUCT STREAMS

B. M. Drinkard, Beaumont, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,825
Int. Cl.[3] C07C *5/03, 5/08*
U.S. Cl. 585—259 18 Claims

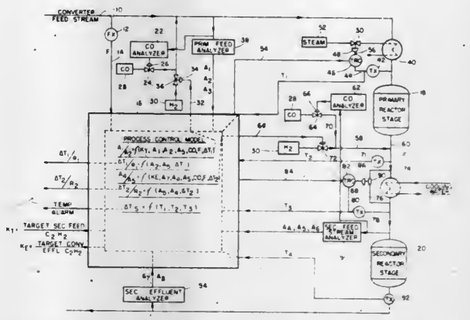
1. A method of operating an acetylene converter for an ethylene plant by hydrogenating the acetylene in a two-stage reactor, having primary and secondary stages, each having therein a hydrogenation catalyst, comprising:

(a) substantially optimizing the operation of the secondary stage of the reactor to produce a relatively low concentration of acetylene in its output effluent by maintaining the concentration of acetylene in the feed stream to the secondary stage substantially constant; and

(b) operating the primary stage of the reactor to provide an output effluent having a substantially constant acetylene content, which is then directed as an input to the secondary stage of the reactor.

13. A system for operating an acetylene converter for an ethylene plant in which excessive acetylene in the ethylene plant output is hydrogenated to ethylene, comprising:

(a) a primary reactor stage, having therein a hydrogenation catalyst, for partially hydrogenating acetylene in the ethylene plant output to ethylene;



(b) a secondary reactor stage, coupled to receive the effluent from the primary reactor stage, for substantially completing the hydrogenation of acetylene to bring the acetylene concentration in the stream to within process specifications;

(c) a control means for the primary reactor stage for operating the primary reactor stage in a manner to maintain the concentration of acetylene in its effluent stream relatively constant; and

(d) a control means for the secondary reactor stage for substantially optimizing the operation of the secondary reactor stage on its feed stream having said relatively constant concentration of acetylene to produce a relatively low concentration of acetylene in the output effluent of the secondary reactor stage.

4,241,231

ISOMERIZATION PROCESS FOR UPGRADING LOW-OCTANE LIGHT PARAFFINIC FEEDS USING A CHLORIDED PLATINUM-ALUMINA-RHENIUM CATALYST

Kirk R. Gibson, El Cerrito; Robert L. Jacobson, Hercules, and Manfred J. Michlmayr, Orinda, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 2, 1978, Ser. No. 947,792
Int. Cl.[2] C07C *5/28*
U.S. Cl. 585—748 10 Claims

1. A process for increasing the octane number of an isomerizable light paraffinic hydrocarbon feed containing, calculated as sulfur, less than about 5 ppmw of sulfur-containing impurities, which comprises:

(I) contacting in a reaction zone a porous alumina-based catalytic composite with a mixture of said feed, hydrogen gas and at least one chloride source selected from the group consisting of hydrogen chloride, chlorine gas, phosgene and chlorinated hydrocarbons which liberate hydrogen chloride at said contacting, said contacting being under isomerizing conditions, including (1) a temperature

in the range of from about 350° to 420° C., (2) a hydrogen partial pressure in the range of from about 25 to 500 psia, (3) a liquid hourly space velocity, V/V/Hr, in the range of from about 0.5 to 5, (4) a hydrogen-to-feed mol ratio in the range of from about 2 to 10, and (5) a feed-to-chloride mol ratio in the range of from about 1.0×10^3 to 1.0×10^5; said composite, based by weight upon alumina and calculated as the element, containing an amount of chloride in the range of from about 1 to 3.0 weight percent, and an amount each of platinum and rhenium in the range of from about 0.1 to 1 weight percent;

(II) separating the mixture resulting from step (1) in a liquid-gas separation zone into (1) a gaseous fraction comprising mainly hydrogen gas, hydrogen chloride and a minor amount of normally gaseous hydrocarbons, and (2) a first liquid hydrocarbon fraction;

(III) withdrawing said gaseous fraction from said separation zone and passing at least a portion thereof in recycle to said reaction zone;

(IV) fractionally distilling said separated first liquid fraction into a second liquid fraction and a normally gaseous hydrocarbon fraction, said second liquid fraction, relative to said feed, having an improved octane number.

4,241,232

WELDED INTEGRAL TUBE WALL FOR ELECTRIC STEEL-SMELTING FURNACE

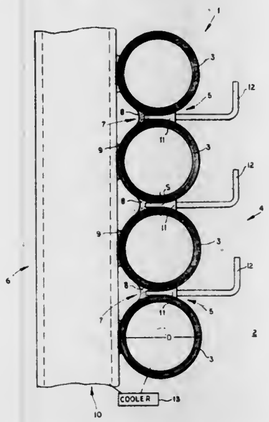
Winfried Gelsing, Essen, Fed. Rep. of Germany, assignor to Oschatz GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,338

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808686

Int. Cl.³ F27D *1/12*

U.S. Cl. 13—32 **10 Claims**



1. A wall for forming the heating chamber of a furnace, said wall comprising:

a plurality of generally parallel tubes each closely but spacedly juxtaposed with at least one adjacent tube of said plurality and forming therewith an outer groove open away from said chamber and an inner groove open toward said chamber;

lining anchors each having an inner end spaced toward said chamber from said tubes and an outer end wedged between two respective tubes and extending outwardly into the respective outer groove;

respective deposit welds extending the full length of and substantially filling at least the bases of said outer grooves and each forming a gastight connection between the respective tubes, said outer ends being embedded in said welds; and

means for circulating a coolant through said tubes.

4,241,233

METHOD OF FORMING DIELECTRIC MATERIAL FOR ELECTRICAL CABLE AND RESULTING STRUCTURE

George Bahder, Edison, N.J., and Mario Rabinowitz, Menlo Park, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

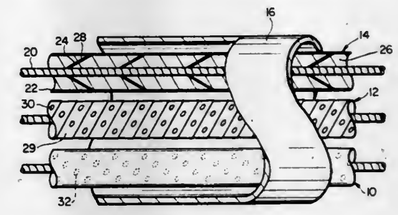
Filed Jul. 26, 1978, Ser. No. 928,269

Int. Cl.³ H01B *3/16, 9/04, 12/00*

U.S. Cl. 174—15 C **11 Claims**

1. The method of forming a solid dielectric material between conductors of a coaxial cable, comprising the steps of:

filling the space between conductors with a dielectric material in fluid form, and lowering the temperature of said dielectric material below the solidification point of said material with a temperature gradient whereby said fluid solidifies outwardly.



4,241,234

CABLE FITTING OF SHRINKABLE MATERIAL WITH A PERMANENT PLASTIC SEALING INSERT

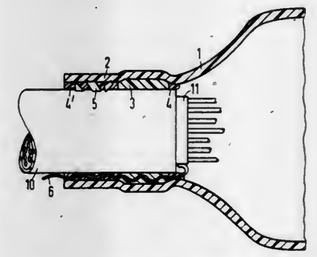
Wolfgang Haeder, Eichenau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 57,122

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1978, 2832485

Int. Cl.³ H02G *15/18*

U.S. Cl. 174—92 **10 Claims**



1. In a cable fitting consisting of a material which is shrinkable under the influence of heat, said cable fitting having at least one sealing area provided with sealing means comprising an adhesive agent influenced by heat the improvement comprising said sealing means being a permanent plastic sealing member being disposed between two adhesive layers.

4,241,235

VOICE MODIFICATION SYSTEM

Neil R. McCanney, Norwalk, Conn., assignor to Reflectone, Inc., Stamford, Conn.

Filed Apr. 4, 1979, Ser. No. 26,593

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SH **9 Claims**

1. Apparatus for modifying an applied voice signal to produce any one of a plurality of modified voice sounds, each of which has a unique understandable voice sound different from that which would result from the applied voice signal, comprising:

a plurality of band pass filters having mutually exclusive, collectively exhaustive, octavely related pass bands, each band pass filter being responsive to the applied voice signal for producing a respective one of a plurality of voice signal components having mutually exclusive, collectively exhaustive, octavely related frequency bands;

a frequency generator for producing a plurality of output signals having geometrically related frequencies all of which are higher than the highest frequency passed by the

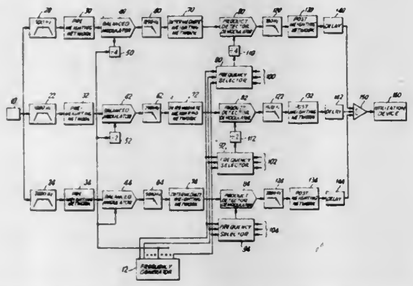
band pass filters, one of which is a basic reference frequency;

means responsive to the basic reference frequency output signal for producing a plurality of reference signals, each having frequency which is octavely related to the basic reference frequency;

a modulator associated with each of the band pass filters for modulating an applied respective one of the reference signals with the voice signal component produced by the associated band pass filter, the applied reference signal having frequency substantially higher than the associated frequency band, the voice signal component and the reference signal applied to each modulator having the same proportional frequency relationship;

a low pass filter associated with each of the modulators for substantially attenuating the upper sideband of the voice modulated signal component produced by that modulator;

a demodulator associated with each of the low pass filters for demodulating the filtered voice modulated signal component produced by the associated filter with an applied demodulating signal having frequency which is shifted



relative to the associated reference signal frequency to produce a corresponding shift in the frequency of the associated voice signal component;

switching means associated with each of the demodulators for selecting any one of a plurality of the frequency generator output signals;

means responsive to the frequency generator output signal selected by each of the switching means for producing an output signal having the same octave frequency relationship to the associated switching means output signal as the associated reference frequency has to the basic reference frequency and for applying that output signal to the associated demodulator as the applied demodulating signal;

a low pass filter associated with each of the demodulators for substantially attenuating the components of the demodulator output signal having frequency higher than the base band component of the demodulator output signal;

a signal combining network for combining the demodulated voice signal components to produce a modified voice signal; and

an audio transducer for rendering the modified voice signal audible.

4,241,236

NOISE RANGE INDICATING SYSTEM

Donald H. Nash, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1978, Ser. No. 957,297

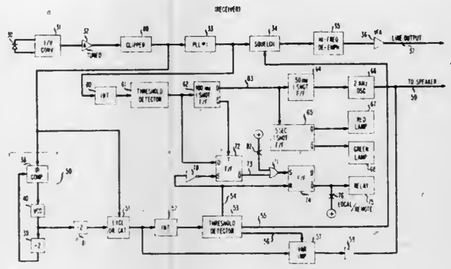
Int. Cl.³ H04B *9/00*

U.S. Cl. 179—2 EA **10 Claims**

1. A wireless audio transmission system for use within an enclosed space and including a portable wireless transmitter, a stationary receiver, and a loudspeaker, characterized by:

a noise detector in said receiver for detecting the noise level in signals transmitted from said transmitter to said receiver, and

a noise enhancement circuit for applying at least a portion of said noise to said loudspeaker wherein said noise is supplied from said noise detector to said noise enhancement circuit.



4,241,237

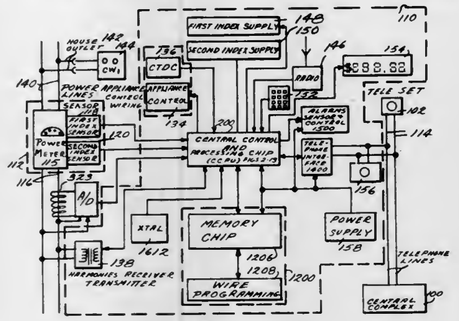
APPARATUS AND METHOD FOR REMOTE SENSOR MONITORING, METERING AND CONTROL

Theodoros G. Paraskevakos, Palm Bay, and W. Thomas Bushman, Melbourne, both of Fla., assignors to Metretek Incorporated, Melbourne, Fla.

Filed Jan. 26, 1979, Ser. No. 6,871

Int. Cl.³ H04M *11/04*

U.S. Cl. 179—2 AM **43 Claims**



1. A method for remote monitoring of sensors adapted for automatic communication with a central complex through a telephone line, said central complex having a telephone number assigned thereto, comprising the steps of:

selectively seizing said telephone line at a predetermined real time;

generating signals onto said telephone line representative of said central compiex telephone number to address said central complex;

generating, responsive to acknowledgement signals from said central complex, coded signals indicative of the identity of said sensors, and data indicative of the states of said sensors; and

receiving and storing subsequent signals from said central complex indicative of the time of the next scheduled seizure of said telephone line.

4,241,238

TELEPHONE NUMBER MEMORY AND INDICATOR SYSTEM

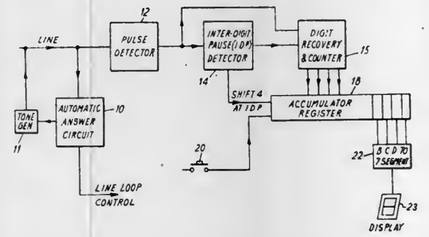
Thomas J. Strand, Crowborough, England, assignor to Feedback Limited, Sussex, England

Filed Apr. 4, 1979, Ser. No. 26,966

Claims priority, application United Kingdom, Apr. 20, 1978, 15686/78

Int. Cl.³ H04M *15/06*

U.S. Cl. 179—5.5 **23 Claims**



1. A telephone number memory and indicator system suitable for installation on conventional telephone networks comprising:

answering means adapted to measure the duration of each input signal for detecting a ringing signal having a duration falling within a predetermined period as received from the exchange in response to a calling party and for intercepting a call after a predetermined number of ringing signals have been detected to allow the exchange to determine that the call has been intercepted;

generator means for generating a proceed signal in response to the output of said answering means for transmitting to the calling party's line that the system is ready to receive incoming data;

detector means for detecting incoming telephone number data received from the calling party's telephone line after the call has been intercepted;

electronic storage means for storing the detected data from said detector means; and

indicator means capable of providing a display indicative of at least a portion of the data present in said storage means.

4,241,239

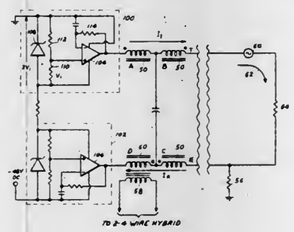
FLUXBUCKING LINE TRANSFORMER WITH ELECTRONIC EQUIVALENT LINE TERMINATING IMPEDANCE

Joseph Pernyeszi, Fairfield, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 881,085

Int. Cl.³ H01F *19/02, 27/38;* H04Q *1/28;* H04M *1/74*

U.S. Cl. 179—70 **4 Claims**



4. In a telephone line circuit having a tip line, a ring line, a source of DC voltage and a line transformer for coupling speech signals modulated on said DC voltage from the primary to the secondary of said line transformer, the improvement comprising:

a first primary winding coupled to the tip line and a second primary winding coupled to the ring line of said line transformer such that a first DC current flows in said first primary winding and a second DC current flows in said second primary winding;

first and second fluxbucking windings coupled respectively to said first and second primary windings for substantially cancelling the DC flux produced in the core of said transformer by said first and second DC currents;

secondary winding means for coupling said signal modulated on said direct current from the primary windings to the secondary of said line transformer;

first and second impedances, said first impedance being coupled between said first primary winding and said DC source and said second impedance being coupled between said second primary winding and said DC source such that said first and second impedances are line terminating impedances, comprised of electronic equivalent impedances having a reduced power dissipation; and

wherein said first fluxbucking winding comprises a fluxbucking primary winding having a number of turns substantially the same as the number of turns of said first primary winding and being connected with a polarity opposite to the polarity of said first primary winding and wherein said second fluxbucking winding comprises another fluxbucking primary winding having a number of turns substantially the same as the number of turns of said second primary winding and being connected with a polarity opposite to the polarity of said second primary winding.

4,241,240

OPTICAL INFORMATION RECORDING APPARATUS

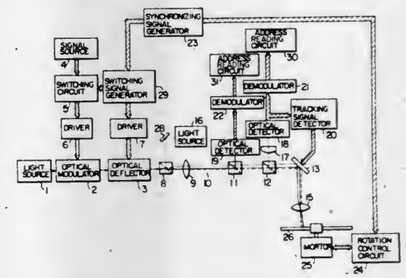
Kazuo Shigematsu, Kawasaki; Keizo Kato; Toshimitsu Miyauchi, both of Hachioji; Seiji Yonezawa, Hachioji; Fumiyuki Inose, Kokubunji; Kimio Tatsuno, Kokubunji, and Takeshi Maeda, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 26, 1978, Ser. No. 954,869

Claims priority, application Japan, Nov. 4, 1977, 52-131564

Int. Cl.³ H04N *5/76;* G11B *7/12*

U.S. Cl. 179—100.1 G **1 Claim**



1. An optical information recording apparatus comprising:

a first light source for emitting a recording beam;

a second light source for emitting a reproducing beam;

a recording medium having predetermined information recorded thereon;

an optical system for directing said beams from said first and second light sources to said recording medium, said optical system being disposed between said first and second light sources and said recording medium;

first reproducing means for reproducing information on said recording medium by said reproducing beam emitted from said second light source;

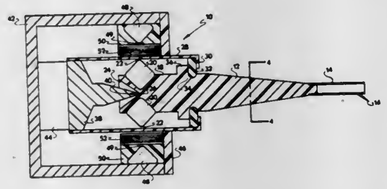
means for zero-modulating said recording means emitted from said first light source;

second reproducing means for reproducing information on said recording medium by said zero-modulation beam;
first detecting means for detecting an address of said information reproduced by said first reproducing means;
second detecting means for detecting an address of said information reproduced by said second reproducing means;
means for making the addresses detected by said first and second detecting means to coincide with each other; and
means for displacing said zero-modulation beam by a predetermined distance from the location of said reproduced information on said recording medium;
whereby information carried on the beam emitted from said first light source is recorded on an adjacent track as the beam emitted from said second light source tracks the recorded information.

4,241,241
ELECTROMECHANICAL RECORD DISK DYNAMIC RANGE EXPANDER

Roger V. Scarpitti, Akron, Ohio, assignor to Janice K. Scarpitti, Akron, Ohio

Filed Nov. 20, 1978, Ser. No. 961,867
Int. Cl.³ H04R *11/12*
U.S. Cl. 179—100.41 Z **19 Claims**



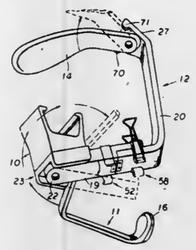
1. A stereo cartridge comprising;
a shank having a stylus depending from a first end thereof;
flux conducting element retaining means at a second end thereof which means provides a recess point about which point said flux conducting retaining means radially oscillates;
a magnet;
pivot means formed by said recess point contacting a fulcrum point, said point being the extended tip of a broad circular base which base contacts said magnet;
first flux conducting elements maintained by said retaining means, central axis of which elements are normal to said recess point and said fulcrum point;
second magnet flux conducting elements operatively connected to said magnet, said second and said first flux conducting elements axially aligned in pairs, said pairs defining at least two movable magnetic flux fields and;
at least one stationary coil interposed in each of said movable magnetic flux fields.

4,241,242
TELEPHONE HANDSET HOLDER

Hsu-Chieh Yeh, and Quey-Mei Yeh, both of 1174 Bucknell Dr., Monroeville, Pa. 15146

Filed Jan. 15, 1979, Ser. No. 3,622
Int. Cl.³ H04M *1/05*
U.S. Cl. 179—157 **10 Claims**

1. A telephone handset holder comprising:
a curved member adapted for engagement over the back of a user's neck,
a handset clamp adapted for holding a telephone handset,
means of attaching said handset clamp to the front end of said curved member,
a leg member including a foot element adapted for resting on a person's upper chest and supporting said handset clamp, being pivotally secured to said handset clamp,
means of folding said curved member to enable a telephone handset be placed on the cradle of a telephone when the handset holder is installed on the telephone handset, and means of maintaining said curved member in an unfolded operation configuration.



4,241,243
POWER REGULATOR FOR USE WITH LINE SIGNAL REPEATERS WHICH ARE REMOTELY POWERED

Edward T. Ball, Coquitlam, Canada, assignor to GTE Lenkurt Electric (Canada) Ltd., Burnaby, Canada

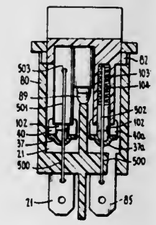
Filed Dec. 4, 1978, Ser. No. 965,974
Int. Cl.³ H02H *9/02, 1/04;* H04B *3/44*
U.S. Cl. 179—170 J **5 Claims**

1. In a transmission system in which operating power is fed over the transmission cable pair to line signal repeaters, a power regulator used in conjunction with a line signal repeater, which comprises:
an input circuit including first and second terminals connected to receive line current including a DC power feed current component and an induced longitudinal current component;
an output circuit including third and fourth terminals, said output circuit when coupled to said repeater supplying load current thereto, said fourth terminal being common with said second terminal;
impedance means, having an input terminal connected to said first terminal and an output terminal connected to said third terminal, for receiving said line current from said first terminal and for delivering said load current to said third terminal;
a fifth terminal;
energy storage means connected across said fourth and fifth terminals;
rectifying means connected across said first and fifth terminals, said rectifying means being conductive when the line current exceeds the load requirements of the line signal repeater and being non-conductive otherwise, said rectifying means thereby providing excess line current to charge said energy storage device;
shunt voltage regulating means connected between said fourth terminal and said third terminal, said shunt voltage regulating means being responsive to said line current for producing a constant voltage across said third and fourth terminals so long as said line current exceeds a predetermined minimum, and causing said constant voltage to decrease when said line current falls below said minimum, said shunt voltage regulating means also providing a reference voltage at a reference voltage terminal;
biasing means connected between said third and fourth terminals for providing first and second voltages at first and second bias voltage terminals, respectively, said bias voltages varying in response to variations in amplitude of the line current;
control means responsive to said reference voltage and said first bias voltage, for controlling the period of and rate of energy discharge from said energy storage means to said output circuit, whereby the energy in said energy storage means supplements a power feed current when the line current falls below said predetermined minimum; and
shunt current regulating means responsive to said reference voltage and to said second bias voltage, for controlling the amplitude of the current passed through said output terminals.

4,241,244
ELECTRIC SWITCHES

David A. Swann, Cnr. Forster & Hardner Rds., Mount Waverley, Victoria, Australia (3149)

Filed Dec. 22, 1977, Ser. No. 863,176
The portion of the term of this patent subsequent to Mar. 30, 1996, has been disclaimed.
Int. Cl.³ H01H *21/00*
U.S. Cl. 200—6 R **18 Claims**

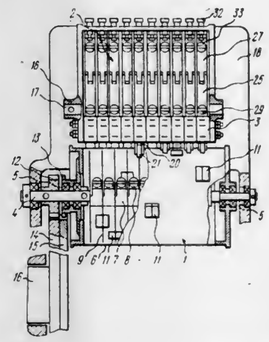


1. An electric switch having a mechanism comprising an actuator (81, 89, 102–104): a contact bridging member (40) capable of being moved along a path by said actuator: at least two spaced apart electric contacts (21, 22) arranged along the path wherein one of the contacts (22) functions, in use, as a fulcrum; said actuator applying force to said member at an area (37) intermediate its ends and on one side thereof; said member having an opposite side which, in use, engages said contacts, said opposite side being comprised of first and second surface portions which are at an angle to one another diverging from said path; said surface portions, in a first position of said member, engaging respective ones of said contacts and at least one such surface portion being inclined to a straight line extending between the surfaces of said contacts which are engaged by said member when in said first position and said area (37) of said contact bridging member being located to the side of said fulcrum adjacent the other of the contacts, whereby a part of said member nests closely with and between said contacts; said force being applied by said actuator to said member in a direction urging said part of said member into such nesting relation; said member (40) being movable, from said first position, slideably with respect to said contacts and in so doing the trailing one of said surface portions moves with a component of motion in the direction of said force such that said member initially rotates in one direction, said part moving to become relatively less nested and does so against the action of said force tending to restore it to the nested condition, said area approaching said fulcrum and thereafter, after said area has passed said fulcrum, said member pivoting about said fulcrum in the opposite direction whereby it disengages from the other of the contacts; and said electric switch further including circuit means (501) forming a circuit between an electrical contact and said contact bridging member.

4,241,245
PROGRAMMED SWITCHING DEVICE

Stepan S. Semenov, 3 Sreletsky pereulok, 2a, kv. 64, and Volf S. Pevzner, prospekt Vernadskogo, 125, kv. 268, both of Moscow, U.S.S.R.

Filed Sep. 11, 1978, Ser. No. 941,072
Int. Cl.³ H01H *43/00*
U.S. Cl. 200—38 R **18 Claims**

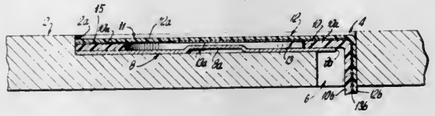


1. A programmed switching device for setting an angular position of a shaft of a mechanism, comprising:
a casing;
a shaft of the device installed inside said casing;
a kinematic linkage between said shaft of the device and the shaft of the mechanism the angular position of which is to be set;
switching elements;
a cam-and-lever mechanism comprising an axle and cams with rollers and interacting with said switching elements to ensure operation of the switching elements corresponding to the set angular position of the shaft of the mechanism;
a setting mechanism interconnected with said shaft of the device and comprising:
discs, each provided with a slot and secured on said shaft of the device, and each having a rotation plane;
a dividing element movably installed relative to said shaft of the device and accommodating all said discs;
a kinematic linkage of said dividing element with the shaft of the mechanism;
cutouts located in the side surface of said dividing element, one cutout being provided for each rotation plane of said discs;
said cams of the cam-and-lever mechanism being installed on said axle with provision for rotation of each cam in the rotation plane of the corresponding disc;
said switching elements, each arranged in the rotation plane of the corresponding said disc;
the dimensions of said cutouts of said dividing element and the dimensions of the disc slots corresponding to said cutouts selected to match the size of said rollers of the cam-and-lever mechanism to enable said discs to interact with said corresponding switching elements.

4,241,246
THIN TOUCH TYPE SWITCH OF SEALED CONSTRUCTION

Thomas J. Lugaresi, Campbell, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Sep. 29, 1978, Ser. No. 947,122
Int. Cl.³ H01H 3/12
U.S. Cl. 200—52 R 13 Claims



12. A subassembly for a touch type switch which includes stationary contact means, the subassembly comprising:

(a) an insulating and spacing member comprising an annular portion adapted to be disposed on the stationary contact means and a stem portion extending laterally from said annular portion;

(b) a flexible contact membrane comprising an inner conductive layer and outer resilient nonconductive layer bonded together, said membrane having a depressible contact portion bonded and supported on the annular portion of said insulating and spacing member so that the conductive layer will face said stationary contact means when the subassembly is placed thereon and having a stem portion extending laterally from said depressible contact portion overlying and bonded to the stem portion of said insulating and spacing member so that the conductive layer is sandwiched between the stem portions, said stem portions providing lead means by which the flexible contact can be connected to electrical circuit means and being adapted to be bent in a preselected location to facilitate connection of the lead means to said circuit means.

4,241,247
CONTROLLER FOR ROTARY COLLATOR

Leroy H. Byrne, Waterbury, and Arnold Fassman, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed May 23, 1978, Ser. No. 908,747
Int. Cl.³ H01H 3/16
U.S. Cl. 200—61.41 3 Claims

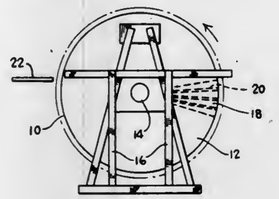
1. In a rotary collator having a high speed rotating drum with a plurality of bins therein from which sheets are ejected and a synchronously rotating programming disc for controlling the actuation of an electrical actuating means for a clamping means in each of said bins, which normally opens and closes during an ejection cycle, apparatus for preventing inadvertent actuation of said electrical actuating means operated by said rotating programming disc, said apparatus comprising:

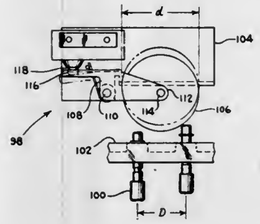
A. a plurality of selector pins mounted on said disc so as to be movable between two oppositely disposed spaced apart positions relative to said disc, said spaced apart positions corresponding to a closed or open position of said clamping means, said pins being equi-spaced with respect to one another;

B. a circular follower adapted to be moved by contact with said pins between two operating positions depending upon the positions of said pins with respect to said spaced apart positions thereof;

C. means for pivotably mounting said follower in position to be contacted by said pins as said disc is caused to rotate; and

D. means responsive to a pivoted movement of said follower for operating said electrical actuating means for causing said clamping means to remain closed during the ejection cycle when the clamping means would normally be opened, said follower having a diameter sufficiently greater than the spacing between two adjacent pins so that said follower can move from one of said operating positions to the other only when said follower is contacted successively by two adjacent pins which are in said oppositely disposed spaced apart positions, whereby, as said



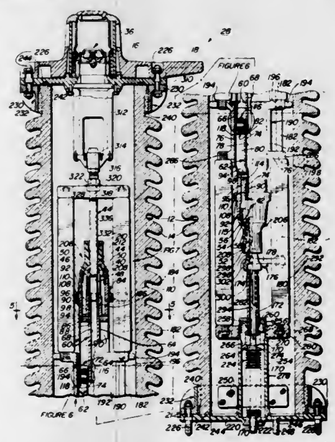


disc rotates at a high rate of speed to cause said pins to move past said follower, said electrical actuating means cannot be inadvertently actuated to allow the clamping means to open during the ejection cycle when it should remain closed.

4,241,248
CIRCUIT INTERRUPTING DEVICE

Joseph Bernatt, Casa Grande, Ariz., assignor to S & C Electric Company, Chicago, Ill.

Filed Oct. 16, 1978, Ser. No. 951,687
Int. Cl.³ H01H 33/14
U.S. Cl. 200—145 5 Claims



1. An improved high-voltage circuit interrupter of the type having a housing containing pressurized, arc-extinguishing dielectric gas; opposed terminals on the housing for respective connection to opposite sides of a circuit; and two pairs of normally engaged, mutually relatively movable contacts

which upon disengagement create a pair of gaps in series, arcs in the gaps being interrupted; wherein the improvement comprises:

a first stationary contact continuously electrically connected to one of the terminals;

a first movable contact continuously electrically connected to the other terminal;

first conductive tube means mounted for axial movement and having first and second opposed ends;

a second movable contact carried by the first end of the first tube means, the second movable contact being selectively engageable with and disengageable from the first stationary contact upon axial movement of the first tube means;

second stationary conductive tube means having first and second opposed ends, the first movable contact being movable toward and away from the first end of the second tube means along the axis thereof, the first and second tube means being telescoped for relative axial movement at their second ends;

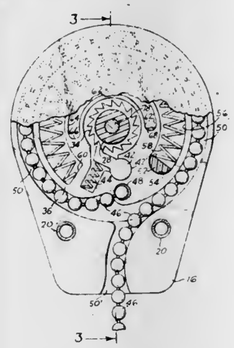
a second stationary contact carried by the first end of the second tube means for engagement with and disengagement from the first movable contact upon movement thereof; and

means for electrically interconnecting the first and second tube means in all relative positions thereof.

4,241,249
PULL CHAIN ATTACHMENT FOR ROTARY LIGHT SWITCH

Louis W. Chundelak, Jr., 13725 NE. Fremont Ct., Portland, Oreg. 97230

Filed Sep. 14, 1978, Ser. No. 942,321
Int. Cl.³ H01H 17/06
U.S. Cl. 200—161 11 Claims



1. A pull chain attachment for an electric lamp socket switch having a thumb wheel rotary shaft, comprising:

(a) a hollow housing having a chamber therein,

(b) first and second rotary clutch members in the chamber, operable in one direction of rotation of the second clutch member to be coupled together for simultaneous rotation,

(c) connecting hub means on the first rotary clutch member extending axially therefrom through the housing for detachable connection to the thumb wheel rotary shaft of an electric lamp socket switch, and for mounting the housing for pivotal movement freely relative to the first rotary clutch member and thumb wheel rotary shaft and lamp socket,

(d) the second rotary clutch member being disposed in the housing chamber to form between them an arcuate pull chain guide passageway,

(e) the housing having a pull chain outlet passageway communicating with the guide passageway,

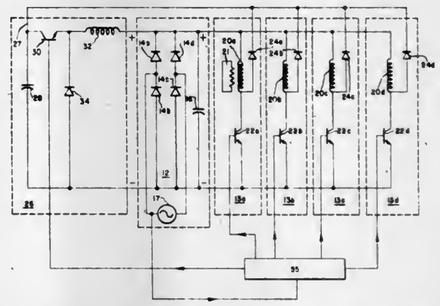
(f) an elongated pull chain secured at its inner end to the second rotary clutch member and extending therefrom through the guide and outlet passageways, for rotating the second rotary clutch member from a pull chain retracted position to a pull chain extended position, and

(g) retractor means engaging the second rotary clutch member for rotating it to said pull chain retracted position.

4,241,250
INDUCTION COOKING SYSTEM

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,719
Int. Cl.³ H05B 6/08; H02M 7/537
U.S. Cl. 219—10.49 R 6 Claims



1. An induction cooking system for inductively heating metallic cooking utensils comprising:

(a) a source of rectified AC;

(b) at least one induction surface unit including:

an induction coil adapted to generate a magnetic field to cause eddy currents to be circulated within the surface of a metallic cooking utensil positioned adjacent thereto so as to heat said utensil;

switching means coupled in series with said source of rectified AC and said coil, said switching means being rendered conductive at a prescribed rate to energize said coil; and

unidirectional conduction means coupled to said coil for conducting reactive current present in said coil during intervals when said switching means is rendered substantially nonconductive; and

(c) reactive power converter means coupled to the unidirectional conduction means and the source of rectified AC of each said induction surface unit for storing the reactive energy present in the induction coil of each said induction surface unit during intervals when said switching means is rendered substantially nonconductive, said reactive power converter means discharging the stored reactive energy across said source of rectified AC at predetermined intervals, thereby permitting each of said induction coils to be energized during the entire 360° cycle of voltage supplied by said source of rectified AC.

4,241,251
PHOTOELECTRIC SWITCHING MEANS FOR MICROSCOPE ILLUMINATION SYSTEM

Ken Yonekubo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

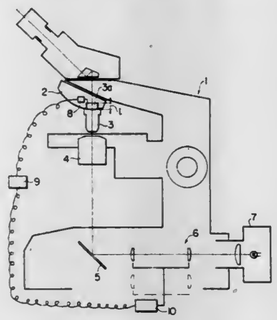
Filed Oct. 25, 1978, Ser. No. 954,591
Claims priority, application Japan, Oct. 29, 1977, 52-130070
Int. Cl.³ G02B 21/08
U.S. Cl. 250—205 6 Claims

1. For a microscope which has a microscope body including a revolver having a plurality of objective lenses mounted thereon for alternative use, by having an objective screw means of each such objective lens received in a respective socket means in the revolver, and by providing for movement

of said revolver so as to make it possible to move each objective lens alternatively to the same site, which microscope has a specimen-illuminating system, including means for changing illumination conditions to at least two levels;

an automatic switching means, comprising:

each of said objective screw means having a signal means provided thereon, at least one of said signal means providing a signal which is detectably different from that provided by at least another of said signal means, which signals all correspond with the magnification power obtainable through use of the respective objective lenses;



detecting means having signal receiving means arranged within said microscope body for detecting the said signal being emitted by the particular one of said objective lenses which happens to be at the said site;

a driving means for changing said illuminating conditions to said at least two levels;

and a control means operably interposed between said detecting means and said driving means, for controlling said driving means to change said illuminating conditions on the basis of detection of which signal is being emitted at said site by the respective said signal means.

4,241,252

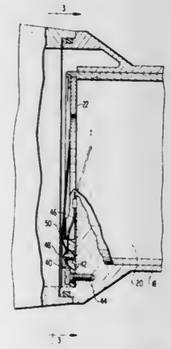
FLEXIBLE LEAF CONTACT SYSTEM FOR NIGHT VISION OPTICAL INSTRUMENTS

Alan Litman, Pittsburgh, Pa., assignor to Smith & Wesson Chemical Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 887,690, Mar. 17, 1978, abandoned. This application May 17, 1979, Ser. No. 39,934

Int. Cl.³ H01J *31/50*

U.S. Cl. 250—213 VT **1 Claim**



1. An optical instrument comprising:

a generally elongated and cylindrical housing having a generally annular face,

a terminal block mounted on said face,

an electrically actuated light intensifier tube carried by said housing, said intensifier tube having an end face, an annular ring carried by said intensifier tube about its end face,

an objective lens carried by said housing forwardly of said intensifier tube,

said intensifier tube being disposed concentrically within said housing for movement of said housing and intensifier tube relative to one another in the direction of the longitudinal axis of said cylindrical housing,

a pair of flexible, elongated electrical leaf contacts each connected at one end to the instrument housing, one of said leaf contacts being secured at one end to said terminal block and extending inwardly therefrom for contact with the terminal on the end face of said intensifier,

a pair of electrical terminals disposed on the end face of said electrically actuated intensifier tube, said terminals being carried by said annular ring,

means for maintaining the opposite ends of said contacts in electrical contact with said terminals upon relative movement of said housing and said intensifier tube, said contacts being disposed to one side of said housing with at least one contact extending into the path of movement of said imaging device,

a battery carried by said housing, means for transmitting power from said power source to said terminal block and said one contact including a switch carried by said housing, and each of said leaf contacts having a plastic coating substantially the entirety of its length to reduce contact leaf vibration.

4,241,253

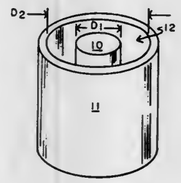
EPITHERMAL NEUTRON DETECTOR

Linus S. Allen; Wyatt W. Givens, both of Dallas, and William R. Mills, Jr., Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,532

Int. Cl.³ G01T *3/00*; H01J *47/12*

U.S. Cl. 250—390 **4 Claims**



1. An epithermal neutron detector comprising:

(a) a thermal neutron counter,

(b) a thermal neutron shield surrounding said counter, and

(c) an epithermal neutron moderating material located between said counter and said shield for slowing down epithermal neutrons which penetrate said shield to enable those neutrons to be more readily absorbed by said counter, the thickness of said moderating material and the ratio of the diameter of said counter to the outer diameter of said moderating material being such that said counter yields a maximized neutron counting rate greater than the highest possible counting rate obtainable when said counter completely fills the inside diameter of said thermal neutron shield.

4,241,254

X-RAY SOURCE MOVING MECHANISM SUITABLE FOR PANORAMIC RADIOGRAPHY

Veikko F. Väliliä, Vantaa, Finland, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

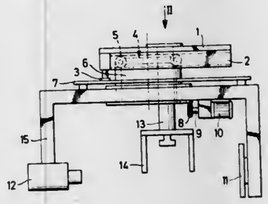
Continuation of Ser. No. 858,431, Dec. 7, 1977, Pat. No. 4,145,611. This application Nov. 24, 1978, Ser. No. 963,463

Claims priority, application Finland, Dec. 10, 1976, 763569

The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—439 P **12 Claims**



1. A mechanism for moving an X-ray source and an X-ray sensitive film holder around a patient's head so that the image of an object, having at least partially the shape of a dental arch, can be obtained on the film; said mechanism comprising:

a stationary frame,

a rotatable support arm having a center of rotation,

an X-ray source attached to one end of the support arm,

a film holder attached to the opposite end of the support arm,

means for positioning the patient's head between the X-ray source and the film holder, and

means for moving the center of rotation of the rotatable support arm, during the radiographic procedure, along a rectilinear path perpendicular to the axis of symmetry of the dental arch, in such manner that the position of the center of rotation along the rectilinear path is dependent at any given moment on the angular position of the support arm so that the X-ray beam from the X-ray source at any given moment during the radiographic procedure is directed substantially perpendicular to that part of the object having the shape of the dental arch.

4,241,255

ULTRAVIOLET RAY PROJECTOR

Mitsuru Sugiyama, Noda; Yoshitake Fukui, Koshigaya; Yoshio Yazaki, Chofu; Haruaki Ono, and Shusaku Nakanishi, both of Nihonbashi, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; Lonseal Corporation and Orc Manufacturing Co., Ltd., all of Tokyo, Japan

Filed Jan. 11, 1979, Ser. No. 2,601

Claims priority, application Japan, Feb. 2, 1978, 53/11245; Feb. 2, 1978, 53/11246

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—504 R **5 Claims**

1. An ultraviolet ray projector device for use in curing paint which comprises:

an elongated reflector;

a tubular ultraviolet lamp disposed in said reflector;

an elongated casing having an opening port in one side, said reflector and said ultraviolet lamp being disposed in said casing;

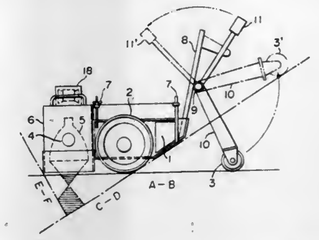
a truck frame, said casing being attached to said truck frame;

a pair of main wheels rotatably attached to said truck frame, said pair of main wheels having a first common axis of rotation;

at least one elongated support member having a first end and a second end, said first end being pivotably attached to said truck frame, said elongated support member pivoting about a second axis which is parallel to said first axis; and

at least one sub-wheel rotatably attached to said second end of said elongated support member;

whereby the elevation angle of the ultraviolet rays produced



by said tubular lamp relative to a work surface and the distance from said tubular lamp to said work surface is controlled by pivoting said elongated support member about said second axis of rotation.

4,241,256

APPARATUS FOR DETECTING FOREIGN MATTERS IN LIQUIDS

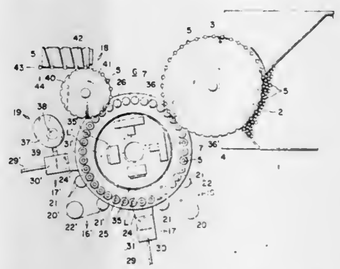
Ryosaku Tagaya, Isesaki, and Tsugutoshi Sugiyama, Akishima, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,622

Claims priority, application Japan, Jul. 29, 1977, 52/91193

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—223 B **11 Claims**



1. An apparatus for detecting foreign matter in liquid in containers, comprising:

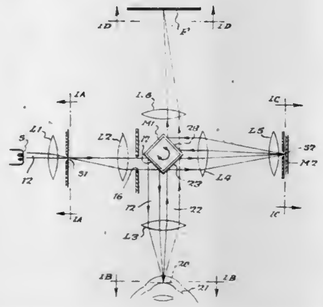
a transferring board on which a plurality of containers to be inspected are held at certain intervals, a means for rotating the containers abruptly in succession, said transferring board being mounted for movement continuously at a constant rate, a detecting means comprising a light source and lens and detector located along a common axis and all mounted for reciprocation together along said transferring board with said common axis having a direction of movement transverse to itself, and a reciprocating means for advancing said detecting means over a prescribed distance in synchronism with said transferring board, while detecting light from the container inspected, and subsequently retracting said detecting means more rapidly than said advancing, to the position where a succeeding container is detected.

4,241,257

SCANNING MICROSCOPIC APPARATUS

Charles J. Koester, 4940 Pine Ledge West, Clarence, N.Y. 14031

Division of Ser. No. 902,277, May 3, 1978, Pat. No. 4,150,264.
This application May 24, 1979, Ser. No. 42,085
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—235 **40 Claims**



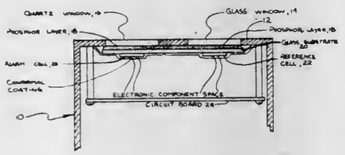
1. A scanning optical system for producing an image of an object including a light source, means for directing slit shaped illumination light from said source to said object including a rotatable first mirror surface, a second mirror surface which is rotatable synchronously with said first mirror surface and which reflects light emanating from the object, means to image said light from said object onto an array of detectors and electrical circuitry for processing the signals from said array of detectors.

4,241,258

ULTRAVIOLET FIRE DETECTOR

John M. Cholin, Hackensack, N.J., assignor to Firetek Corporation, Hawthorne, N.J.

Filed Dec. 11, 1978, Ser. No. 968,132
Int. Cl.³ G01J *1/42*
U.S. Cl. 250—372 **16 Claims**



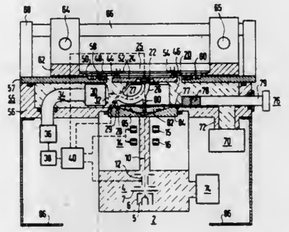
1. An ultraviolet fire detection device for the detection of ultraviolet emissions from a fire in the environment comprising:
- a housing having a plurality of windows therein, said windows positioned for exposure to the fire hazard area;
- at least one of said windows being a translucent panel which is opaque to ultraviolet emissions;
- at least one of said windows being a translucent substance which is transparent to ultraviolet emissions;
- at least one phosphor coated surface disposed within said housing and inwardly of the side of said windows facing the fire hazard area, said phosphor coated surface fluorescing when ultraviolet emissions impinge thereon;
- solid state photosensitive detection cells positioned behind said phosphor coated surface and aligned behind each of said windows;
- said photosensitive cells responsive to the light emanating from the fluorescing phosphor coated surface;
- electrical means for comparing the output of a cell disposed behind a window opaque to the ultraviolet emissions and a cell disposed behind a window which is transparent to ultraviolet emissions, said electrical means sounding an alarm when ultraviolet emissions are present.

4,241,259

SCANNING ELECTRON MICROSCOPE

Hans P. Feuerbaum, and Johann Otto, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,378
Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819165
Int. Cl.³ H01J *9/38*
U.S. Cl. 250—457 **2 Claims**



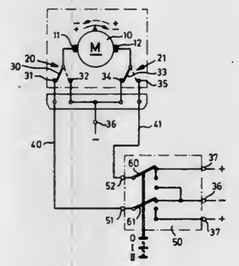
1. In a scanning electron microscope with electron-optical column for the contactless testing of a sample disposed in a sample chamber in a vacuum on a sample holder, said sample holder being one which forms, directly or indirectly, a vacuum tight closure for the sample chamber, the improvement comprising a thrust ball bearing disposed between the closure and the housing of the sample chamber.

4,241,260

MOTORIZED HEADLAMP POSITION ADJUSTING CIRCUIT

Jakob Botz, Ingersheim; Erich Mutschler, and Adam Weber, both of Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,659
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806131
Int. Cl.³ B60Q *1/06*
U.S. Cl. 307—10 LS **6 Claims**



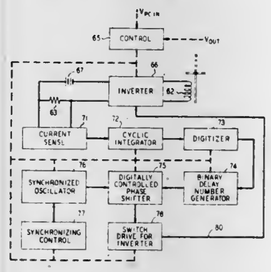
1. A control circuit for a motorized headlamp position adjusting arrangement, comprising:
- a motor having first and second terminals;
- a voltage source having first and second polarities;
- a first position switch having a hysteresis switching characteristic and comprising a movable contact connected to said first terminal and a first plurality of stationary contacts;
- a second position switch having a hysteresis switching characteristic and comprising a movable contact connected to said second terminal and a second plurality of stationary contacts;
- a multiposition operating switching having at least three switching positions and comprising a first plurality of input terminals, a second plurality of input terminals, first and second output terminals, and first and second bridging contacts, said first and second bridging contacts being respectively coupled to said first and second output terminals, said first and second bridging contacts being jointly movable to each of said switching positions such that in each switching position said first bridging contact contacts one of said first plurality of input terminals and said second bridging contact contacts one of said second plurality of input terminals;
- means connecting predetermined input terminals of said first and second pluralities of input terminals to said first polarity of said voltage source;
- means connecting the remaining input terminals of said first and second pluralities of input terminals to said second polarity of said voltage source;
- said first plurality of input terminals being arranged such that when said first bridging contact is in a first one of said switching positions one of said predetermined input terminals of said first plurality input terminals is contacted, and when in a second adjacent one of said switching positions one of said remaining input terminals of said first plurality of input terminals is contacted;
- a first conductor connecting said first output terminal to one of said first plurality of stationary contacts, and a second conductor connecting said second output terminal to one of said second plurality of stationary contacts; and
- means connecting other ones of said first and second plurality of stationary contacts to said voltage source.

4,241,261

CIRCUIT CONTROL TO LIMIT POWER DRAIN OF AUXILIARY POWER SUPPLY IN UPS SYSTEM

Harry K. Ebert, Jr., Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1978, Ser. No. 953,881
Int. Cl.³ H02J *9/06*
U.S. Cl. 307—45 **6 Claims**



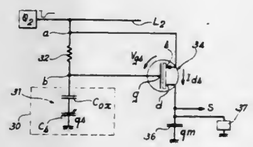
1. A control system to control power flow in an uninterruptible power supply having a transformer, with a first and second input to accept a primary power source and a reserve power source, respectively, and an output to accept a load to be energized;
- said reserve power source including an inverter circuit to generate a periodic voltage signal, said inverter circuit having an inverter input to accept a DC voltage source and an inverter output coupled to the second input of said transformer, said inverter circuit having operative characteristics, which introduce harmonics into DC current supplied by the DC voltage source to the inverter;
- the control system including, a cyclic integrator connected at the inverter input to monitor the DC current supplied by the DC voltage source to the inverter circuit and including an energy storage device to integrate the DC current monitored for one cycle of a harmonic, quantizing means for generating a digit responsive to a change in an energy level on said energy storage device; and
- phase control means responsive to said quantizing means and coupled for controlling a signal phase of a signal generated by the inverter circuit with respect to a signal phase of the primary signal source, said phase control means including an up/down counter responsive to said quantizing means to alter a count therein to reflect the said change in energy level, signal generating means to generate a drive signal and delay means to delay the drive signal in response to a count stored in said up/down counter and coupled to apply the drive signal as delayed to power switching devices of the inverter circuit, whereby an inverter circuit output signal is generated at a phase relative to the phase of the primary power signal so that the inverter circuit draws no net power from the DC voltage source.

4,241,262

CIRCUIT FOR MEASURING THE CHARGE STORED IN A CHARGE-COUPLED DEVICE

Luc Audaire, La Tronche; Gerard Merckel, Sassenage, and Guy Rigaux, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 26, 1978, Ser. No. 909,985
Claims priority, application France, May 27, 1977, 77 16272
Int. Cl.³ H03K *21/34, 5/14;* H03H *15/02;* G11C *19/28*
U.S. Cl. 307—221 D **9 Claims**



1. A charge transfer device (CTD) with a charge measuring circuit, said CTD comprising at least one transfer electrode connected to a transfer line for transmitting a transfer signal which is variable in time, wherein said charge measuring circuit comprises:
- a resistor inserted in said transfer line,
- a MOS-type transistor having a source, a gate and a drain, said resistor being connected between said gate and source,
- a capacitor connected to said drain,
- and an output connected to said drain.

4,241,263

CHARGE TRANSFER DUAL FREQUENCY DELAY LINE WITH PHASE INDEPENDENT COUPLING

William E. Engeler, and Richard D. Baertsch, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,258
Int. Cl.³ G11C *19/28;* H01L *29/78*
U.S. Cl. 307—221 D **1 Claim**

1. In combination
- a substrate of semiconductor material of one conductivity type having a major surface,
- a first storage electrode insulatingly overlying said major surface,

a first transfer electrode adjacent said first electrode and insulatingly overlying said major surface,

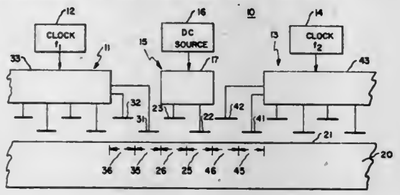
means for applying fixed voltages to said first storage and said first transfer electrode to form in said substrate a first storage region and a first transfer region respectively, the surface potential of said first storage region having a first storage level and the surface potential of said first transfer region having a first transfer level in the absence of minority carriers therein, said first storage level being energetically lower than said first transfer level for minority carriers in said substrate,

a second storage electrode adjacent said first transfer electrode and insulatingly overlying said major surface,

a second transfer electrode adjacent said second storage electrode and insulatingly overlying said major surface,

means for applying first pulsating voltages of a first frequency to said second storage and said second transfer electrodes to form in said substrate a second storage region and a second transfer region respectively, the surface potential of said second storage region in the absence of charge carriers therein varying between a second low storage level and a second high storage level, the surface potential of said second transfer region in the absence of charge therein varying between a second low transfer level and a second high transfer level, said second low transfer level being higher than said second low storage level and said second high transfer level being higher than said second high storage level, said second high storage level being higher than said first transfer level,

a third transfer electrode adjacent said first storage electrode and insulatingly overlying said major surface,



a third storage electrode adjacent said third transfer electrode and insulatingly overlying said major surface,

means for applying second pulsating voltages of a second frequency to said third storage electrode and said third transfer electrode to form in said substrate a third storage region and a third transfer region respectively, the surface potential of said third storage region in the absence of charge carriers therein varying between a third low storage level and a third high storage level, the surface potential of said third transfer region in the absence of charge therein varying between a third low transfer level and third high transfer level, said third low transfer level being higher than said third low storage level and said third high transfer level being higher than said third high storage level, said third low transfer level being lower than said first storage level and said third high transfer level being higher than said first storage level and said first transfer level,

first means for transferring charge periodically at said first frequency into said second storage region during the occurrence of said second low storage level, whereby during the occurrence of said second high storage level charge is transferred from said second storage region into said first storage region and during the occurrence of said third low storage level charge is transferred from said first storage region into said third storage region,

said first means for transferring charge comprising a first charge transfer shift register including a plurality of stages, the last stage of which includes said second storage electrode,

second means for transferring charge periodically at said second frequency from said third storage region during the occurrence of said third high storage level,

said second means for transferring charge comprising a second charge transfer shift register including a plurality of stages,

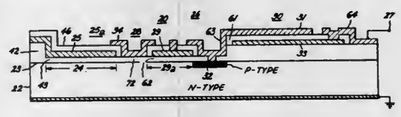
the dimension of said first storage electrode in the direction of charge transfer thereunder being greater than the dimension of the storage electrodes of said second shift register in the direction of transfer of charge thereunder.

4,241,264

SAMPLED DATA FILTERING AND MULTIPLEXING APPARATUS

Marshall K. Quick, Whitesboro, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 21, 1979, Ser. No. 40,948
Int. Cl.³ G11C *19/28;* H01L *29/78, 29/34*
U.S. Cl. 307—221 D **5 Claims**



1. In combination

a substrate of semiconductor material of one conductivity type having a major surface,

a charge transfer shift register including a plurality of n stages including a charge input stage and a charge output stage, each of said stages having a respective storage electrode insulatingly overlying said major surface to provide a respective first charge storage region adjacent said major surface,

clocking means for transferring charge from stage to stage of said shift register,

a charge input circuit for generating and transferring charge into said input stage and a charge output circuit for sensing charge transferred out of said output stage,

a plurality of n capacitors, each capacitor including a first electrode and a second electrode,

a plurality of n regions of opposite conductivity type adjacent said major surface, each situated adjacent a respective first storage region, the first electrode of each capacitor connected to a respective region of opposite conductivity type,

a plurality of n signal input terminals, each connected to the second electrode of a respective one of said capacitors,

gating means for establishing a charge transfer channel between each of said first storage regions and a respective region of opposite conductivity type,

means for providing a plurality of n analog signals, each to a respective one of said input terminals,

means controlling said input circuit for developing in succession sequences of fixed quantities of charge each sequence having the same number n of fixed quantities of charge, the fixed quantities of charge of each sequence being serially transferred in succession into the n stages of said shift register,

means for actuating said gating means after the n fixed quantities of charge of each sequence are stored in the n first storage regions of said shift register for an interval less than the interval of storage of charge therein whereby a plurality of second sequences of charges are produced, each of the charges of a second sequence being formed by alteration of a fixed quantity of charge in a respective first storage region in response to a respective analog signal being applied thereto through a respective capacitor,

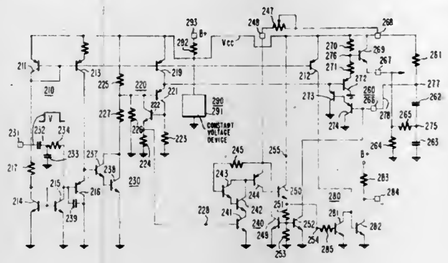
said charge output circuit sensing in succession the charges of each of said second sequence of charges.

4,241,265

TELEVISION VERTICAL RAMP GENERATOR

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,534
Int. Cl.³ H03K *4/08*
U.S. Cl. 307—228 **1 Claim**



1. A ramp generator for use with a ramp voltage utilization means, said ramp generator incorporating an integrated circuit having interface terminals for coupling circuitry disposed on said integrated circuit with circuitry external to said integrated circuit, said ramp generator comprising:

a first capacitance means disposed external to said integrated circuit having a first electrode coupled to a point of reference potential;

second capacitance means disposed external to said integrated circuit having a first electrode coupled to a second electrode of said first capacitance means at a juncture, and having a second electrode;

a source of potential defined between a point of supply potential and said point of reference potential;

first resistance means disposed external to said integrated circuit and coupled to said point of supply potential and to said second electrode of said second capacitance means for forming a ramp voltage across said capacitance means;

first emitter follower means formed on said integrated circuit and having an input coupled to said second electrode of said second capacitance means via one of said interface terminals and having an output electrode;

ramp voltage reponsive means, disposed on said integrated circuit, and having an input coupled to said output electrode of said first emitter follower means and an output coupled to said one interface terminal, for controlling the termination of said ramp voltage formation;

voltage division means formed on said integrated circuit and coupled to said output electrode of said first emitter follower means and to said point of supply potential and having a tap at which appears an attenuated version of said ramp voltage;

second emitter follower means formed on said integrated circuit and having an input electrode coupled to said tap and having an output electrode coupled to said ramp voltage utilization means via another of said interface terminals for supplying a ramp voltage to said ramp voltage utilization means; and

second resistance means disposed external to said integrated circuit and coupled between said other interface terminal and said juncture for controlling said ramp voltage.

4,241,266

PEAK-LIMITING APPARATUS FOR AUDIO SIGNAL

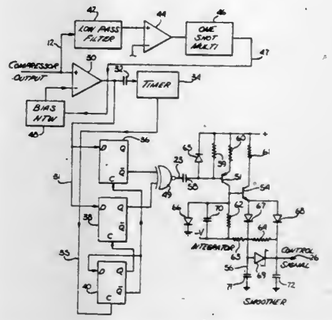
Robert A. Orban, 2413 Lincoln Ave., Belmont, Calif. 94002

Continuation of Ser. No. 858,720, Dec. 8, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,758
Int. Cl.³ H03K *5/08;* H03L *5/00*
U.S. Cl. 307—237 **10 Claims**

1. An apparatus for peak-limiting an audio signal comprising:

evaluation means for evaluating said audio signal to determine the degree to which future values of said audio signal are predictable based on past values of said audio signal;

control signal generation means for generating a control signal to affect the amount of clipping of said audio signal,



said generation means coupled to said evaluation means, said control signal permitting increased clipping when said audio signal is less predictable;

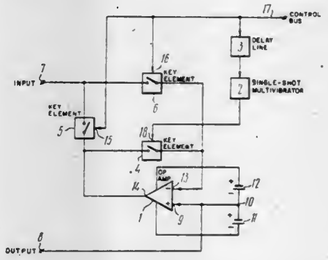
whereby more unnoticeable clipping is permitted.

4,241,267

SWITCHING DEVICE

Anatoly V. Furman, ulitsa Chkalova, 21, kv. 6, Moskovskaya oblast, Zhukovsky, U.S.S.R.

Filed Jun. 9, 1978, Ser. No. 914,215
Int. Cl.³ H03K *17/00, 17/08*
U.S. Cl. 307—239 **1 Claim**



1. A switching device on the basis of an active switching element, comprising:

(a) an operational amplifier having an inverting input, a non-inverting input, and an output;

(b) a first key element and a second key element connected in series between the output and the inverting input of said operational amplifier so as to comprise a first negative feedback circuit of said operational amplifier, said first and second key elements having control inputs;

(c) a third key element connected between said output and said inverting input of said operational amplifier so as to comprise a second negative feedback circuit, said third key element having a control input;

(d) a single-shot multivibrator;

(e) a delay line connected in series with said single-shot multivibrator;

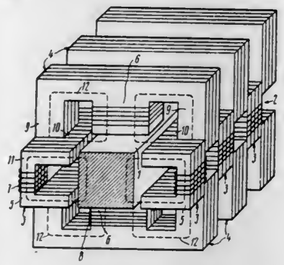
(f) a control bus, said control inputs of said first key element and said key element being connected to said control bus, said control input of said third key element being connected to said control bus via said single-shot multivibrator and said delay line which are connected in series therebetween.

4,241,268

LINEAR INDUCTION MOTOR

Alexandr D. Popov, prospekt Koroleva, 12, kv. 154, and Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, U.S.S.R.

Filed Sep. 20, 1979, Ser. No. 77,312
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—13 **1 Claim**



1. A linear induction motor comprising:
an electrically conductive secondary element of a rectangular cross-section having two pairs of opposite faces;
an inductor magnetically coupled with said electrically conductive secondary element;
laminated U-shaped cores of said inductor, making up two rows and arranged in each row one after another in the direction of a magnetic field, having bases which face the first one of said pairs of the opposite faces of said electrically conductive secondary element;
laminated E-shaped cores making up two rows, disposed in each said row one after another and each having a central leg incorporating a base, and also having two outermost legs each mounting a pole piece having a base, said central bars in each of said rows having their bases facing respectively the second of the opposite faces of said secondary element, ehereas said outermost legs being disposed between two adjacent ones of said laminated U-shaped cores of each said row without a gap so that said bases of said pole pieces and said bases of said laminated U-shaped cores of respective rows define non-serrated active areas;
polyphase windings positioned on each of said laminated U-shaped cores and laminated E-shaped cores.

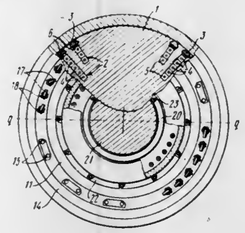
4,241,269

DIRECTLY LIQUID COOLED ROTOR FOR ELECTRICAL MACHINE

Jury F. Antonov, ulitsa Novostroek, 10, kv. 42; Ibragim A. Kadi-Ogly, prospekt Marshala Zhukova, 64, korpus 1; Boris K. Perchanok, ulitsa Saltykova-Schedrina, 17, kv. 54, and Pavel I. Chashnik, Dunaisky prospekt, 42/79, kv. 167, all of Leningrad, U.S.S.R.

Filed Jun. 28, 1978, Ser. No. 919,786
Int. Cl.³ H02K *1/32*
U.S. Cl. 310—61 **1 Claim**

1. A directly liquid cooled rotor for an electrical machine comprising
a body having an axis;
a plurality of poles which are circumferentially spaced from each other;
a winding including a plurality of electrically connected coils which are circumferentially spaced from each other and operatively cooperate with said poles, each of said coils having a plurality of passages arranged for passing a cooling liquid therethrough, said passages communicating with each other so as to form a plurality of hydraulic loops each of which includes a passage for supplying the cooling liquid located at a radially smaller distance and a passage for discharging the cooling liquid located at a radially greater distance from said axis, each of said passages for discharging the cooling liquid having axis; and
a plurality of bent pipes, each of which is fitted in a respective one of said discharging passages and having an open end forming the outlet of said respective discharging



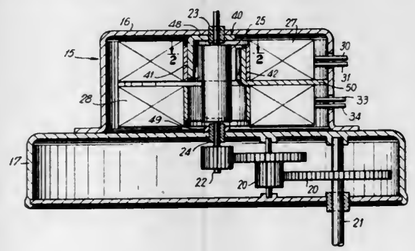
passage in which it is fitted, each of said bent pipes being rotatable relative to the axis of said respective discharging passage so that said open end of each of said pipes which forms the outlet of the respective passage can be radially displaced relative to said axis of said body.

4,241,270

SYNCHRONOUS ELECTRIC MOTOR

Arthur W. Haydon, Middlebury, and John J. Dean, Oxford, both of Conn., assignors to Tri-Tech, Inc., Waterbury, Conn.

Filed Dec. 27, 1977, Ser. No. 864,395
Int. Cl.² H02K *19/00*
U.S. Cl. 310—164 **11 Claims**



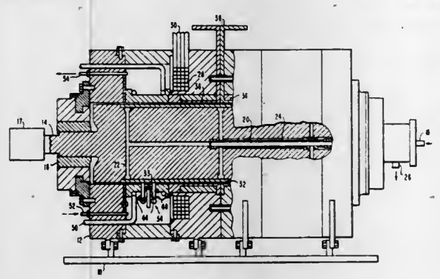
1. An electric rotating machine comprising, in combination:
a thin cylindrical nonsalient pole rotor having a pair of rotor poles;
first and second field coils in coaxial relationship with each other and with the rotor;
a housing of magnetic material at least substantially enclosing the first and second field coils;
a stator pole piece assembly within the housing and externally disposed with respect to said rotor, the pole piece assembly having first and second sets of salient stator poles respectively cooperating with the first and second field coils, there being not more than two salient stator poles in each of said sets and the stator poles in the respective sets being angularly spaced apart by approximately ninety electrical degrees, each of said stator poles being in magnetic flux relationship with said pair of rotor poles, at least two of the stator poles being of L-shaped configuration with one of the arms of the "L" forming a radial extension in flux transmitting relationship with the housing, the radial extensions of said two L-shaped stator poles being rectangular and extending outwardly from adjacent the rotor to said housing with their outer ends abutting the inner wall of said housing; and
means for applying current to the first and second field coils to produce an alternating magnetic flux field in each of said sets of stator poles.

4,241,271

SOLID BRUSH CURRENT COLLECTION SYSTEM

John L. Johnson, Plum Borough, and Lawrence E. Moberly, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 838,181, Sep. 30, 1977, abandoned. This application Jul. 26, 1978, Ser. No. 928,116
Int. Cl.³ H02K *9/28*; H01R *39/00*
U.S. Cl. 310—219 **10 Claims**



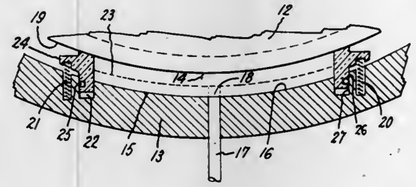
1. A solid brush current collecting system comprising:
a dynamoelectric machine having a stator and a rotor supported therein and arranged for electrodynamic cooperation therewith;
at least one current collector on said rotor which collects current during machine operation;
solid current collecting brushes mounted in brush holders on said machine, said brush holders being positioned to permit brush contact with said current collector;
means enclosing said current collector and brushes in a fluid-tight cavity closed to the atmosphere;
means for circulating a pressurized non-oxidizing gas through said cavity;
said gas having an additive mixed therewith, said additive comprising a vaporous organic substance selected from the group consisting of paraffinic hydrocarbons having from 7 to 16 carbons, alcohols having from 7 to 16 carbons, ketones having from 7 to 16 carbons, aldehydes having from 7 to 16 carbons, decalin, and mixtures thereof.

4,241,272

NOVEL LIQUID METAL CURRENT COLLECTOR CONFIGURATION

Robert A. Marshall, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 16, 1978, Ser. No. 934,100
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—219 **12 Claims**



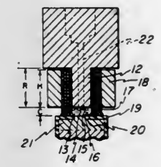
1. In an electrodynamic machine wherein a liquid metal current collector provides electrical connection between a fixed stator and a rotatable rotor, said liquid metal current collector being disposed in a gap between said stator and said rotor to provide electrical connection between a rotor collector ring and a stator collector, the improvement comprising: a nonconductive enclosure movably supported on said stator collector extending into said gap for containing a volume of liquid metal therein; means for resiliently biasing said enclosure against a surface of said rotor collector ring adjacent said enclosure, such that one surface of said enclosure is in contact with said surface of said rotor collector ring over substantially the entire area of said one enclosure surface; a source of supply of liquid metal in flow communication with the interior of said enclosure; and means for supplying a flow of liquid metal from said source under pressure to the interior of said enclosure to maintain said enclosure filled with liquid metal.

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COMPLIANT CAGE FOR RACEWAY-TYPE LIQUID METAL CURRENT COLLECTOR FOR HIGH-SPEED ACYCLIC MACHINES

Burton D. Hatch, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,809
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—219 **12 Claims**



1. In an electrical current collector for an acyclic machine, comprising:
a rotor collector ring;
a stator collector ring encircling said rotor collector ring and including a plurality of circumferentially-extending stator fins protruding radially-inward from said stator collector ring and terminating at a location closely adjacent and spaced from the radially-outer surface of said rotor collector ring;
the improvement comprising:
a plurality of compliant cage means, one of said cage means surrounding each stator fin, respectively, and forming a compliant raceway surrounding a space defined axially by said cage means and defined circumferentially by the radially-innermost surface of said fin together with the radially-outermost surface of said rotor collector ring;
said cage means having walls of resilient nonconductive filamentary material extending toward the radially-outermost surface of said rotor collector ring; said walls being deformed by contact with said radially-outermost surface of said rotor collector ring; and
a volume of liquid metal situated in each said space, said volume of liquid metal being sufficient to make physical contact with the radially-innermost surface of each of said stator fins, respectively, and the radially-outermost surface of said rotor collector ring.

4,241,274

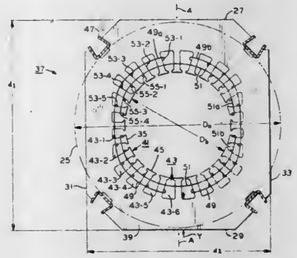
DYNAMOELECTRIC MACHINE AND STATIONARY ASSEMBLY THEREFOR

Allen A. Brammerlo, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 10, 1978, Ser. No. 904,607
Int. Cl.³ H02K *1/12*
U.S. Cl. 310—259 **27 Claims**

1. For use in a two pole single phase alternating current dynamoelectric machine; a stationary assembly comprising a

plurality of stacked laminations including a preselected magnetic reference circumference of a first diameter (Do), a first pair of oppositely disposed sides spaced apart a first linear dimension (D1), a second pair of oppositely disposed sides spaced apart a second linear dimension (d2) at an angular location with respect to said first side pair, one of said first linear dimension (d1) and said second linear dimension (d2) being generally about the same as said first diameter (Do) and greater than the other of said first linear dimension (d1) and said second linear dimension (d2), a bore generally concentric with said preselected magnetic reference circumference, said bore having a second diameter (Db) wherein a first dimensionless ratio between said second linear dimension (d2) and said second diameter (Db) is greater than about 1.60, a second dimensionless ratio between said first linear dimension (d1) and said second diameter (Db) is greater than about 1.80 and a third dimensionless ratio between said second linear dimension (d2) and the difference of said first diameter (Do) and said second diameter (Db) which is less than about 1.99, a plurality of spaced apart teeth (t) respectively having inner end portions



defining said bore and having an average tooth width (w) wherein a fourth dimentionless ratio between the product of said teeth plurality (t) and said average tooth width (w) and the difference of said first diameter (Do) and said second diameter (Db) is in a range of between about 1.45 and about 1.75 and wherein a fifth dimensionless ratio between said second diameter (Db) and said product of said teeth plurality (t) and said average tooth width (w) is also in a range of about 1.45 and about 1.70, a plurality of winding slots disposed between adjacent teeth of said teeth plurality (t), some of said winding slots of said plurality thereof being predeterminately larger than others of said winding slots, a yoke portion extending generally between said winding slots and said first and second side pairs and having a pair of maximum sections located generally between said some larger slots and said first side pair, and at least one distributed winding including a plurality of coils arranged in coil groups in at least some of said some larger winding slots to form a pair of running poles upon the excitation of said winding with each of said running poles spanning a preselected number of said teeth.

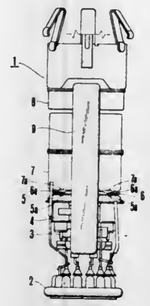
4,241,275

IN-LINE TYPE ELECTRON GUN STRUCTURE FOR COLOR PICTURE TUBES

Masaaki Yamauchi, Tougane, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 24,992
Claims priority, application Japan, Apr. 7, 1978, 53-40303
Int. Cl.³ H01J *29/50, 29/56, 29/76*
U.S. Cl. 313—413 **6 Claims**

1. In an in line type electron gun structure for a color picture tube wherein electron guns respectively comprise a cathode, a pre-focus lens member including first, second, and third electrodes arranged successively in alignment with and opposite to the cathode and forming a pre-focus lens when a predetermined voltage is applied to these electrodes, and a main lens member forming a main lens when a predetermined voltage is applied to the third electrode and additional electrodes, the first to third electrodes of respective electron guns having apertures arranged on the same plane for passing the electron beam, the improvement wherein at least one set of corresponding electrodes of the respective electron guns of the first to



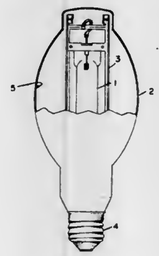
third electrodes forming the pre-focus lens have each a rectangular aperture having corners in the directions of the horizontal and vertical deflection magnetic fields.

4,241,276

WARM COLOR ARC DISCHARGE LAMP HAVING IMPROVED EFFICIENCY

Elliot F. Wyner, Peabody, Mass., and Alan J. Daignault, Londonderry, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 20, 1979, Ser. No. 50,353
Int. Cl.³ H01J *61/44*
U.S. Cl. 313—487 **2 Claims**



1. A high pressure arc discharge lamp comprising a mercury-containing arc tube disposed within an outer jacket, the outer jacket having a phosphor coating on the inner wall thereof, the phosphor coating comprising about 35 to 40% of cerium activated yttrium aluminate and 60 to 65% of europium activated yttrium vanadate.

4,241,277

LED DISPLAY PANEL HAVING BUS CONDUCTORS ON FLEXIBLE SUPPORT

William Hintze, Camp Hill, and Albert Shirk, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

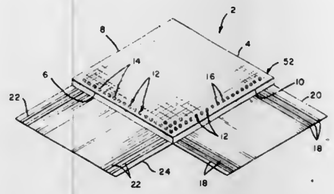
Filed Mar. 1, 1979, Ser. No. 16,576
Int. Cl.³ H01L *23/30, 23/48, 33/00*
U.S. Cl. 313—500 **11 Claims**

1. A flat panel display device of the type comprising a multiplicity of LED's and first and second bus conductors, said LED's being arranged in parallel side-by-side rows and parallel side-by-side columns, said columns extending normally of said rows, said columns and said rows defining a grid pattern, said first bus conductors extending parallel to said rows with one first bus conductor adjacent to each row, said second bus

conductors extending parallel to said columns with one second bus conductor adjacent to each of said columns, each of said LED's being electrically connected to one of said first bus conductors and to one of said second bus conductors at a crossing point of said bus conductors, said display device being characterized in that:

said first and second bus conductors are on the oppositely facing first and second surfaces of a flexible insulating film, said film having openings therein which are located on said grid pattern, said openings being between adjacent first bus conductors and between adjacent second bus conductors,

each of said LED's being inserted into one of said openings,



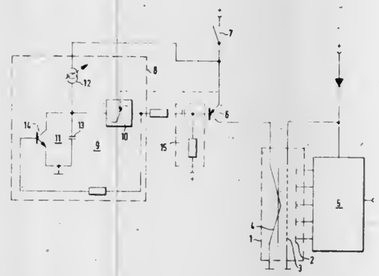
each of said LED's being connected to one of said first bus conductors and one of said second bus conductors by first and second tap conductors, each of said first and second tap conductors extending laterally from said one first and said one second bus conductor respectively at a location adjacent to said crossing point of said one first and said one second bus conductor, each of said second tap conductors having a via conductor extending through said film from said second surface to said first surface, each of said tap conductors having a terminal portion on said first surface, said terminal portions being immediately adjacent to said openings.

4,241,278

INDICATOR DEVICE WITH VACUUM FLUORESCENCE ELEMENTS

Henry Walther, Wiesbaden-Nordenstadt, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,618
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2804924
Int. Cl.³ H05B *41/38*
U.S. Cl. 315—106 **10 Claims**



1. In an indicator device with vacuum fluorescence elements controlled by a driving circuit, the heaters of the elements lying in a heating circuit and adapted to be applied with a dc operating voltage, the improvement wherein

the heating circuit contains a switch,

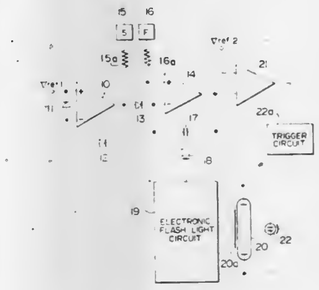
a clock generator means for triggering said switch so as to provide a pulsed heating current in the heating circuit and for selecting the clock pulse frequency and the pulse duty factor of control signal pulses thereof such that the effective value of the pulsed heating current is at least approximately equal to the dc heating current in compliance with the elements.

4,241,279

CONTROL CIRCUIT FOR AN AUTOMATIC ELECTRONIC FLASH LIGHT DEVICE

Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 9, 1979, Ser. No. 10,691
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—151 **1 Claim**



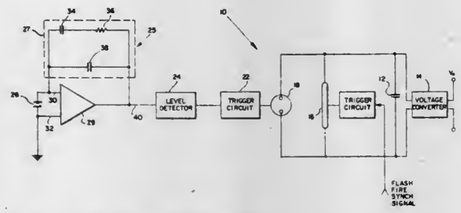
1. A control circuit for an automatic electronic flashlight device for a photographic camera in which an electric discharge of a flashlight tube is terminated when the amount of light received by a photosensor in the camera from an object to be photographed and illuminated by the light emitted by the flashlight tube reaches a predetermined level, said control circuit comprising; a light measuring circuit for measuring the amount of light received by said photosensor, said light measuring circuit including a first operational amplifier having an output and a first feedback circuit, a first diode in said first feedback circuit for long-compressing the output of said light measuring circuit, an operational circuit having a log-expanding circuit including a second diode and an operational amplifier with one input operatively connected to the output of said operational amplifier log-compressed by said first diode in said feedback circuit, film speed information input means having an output connected to the other input of said second operational amplifier, aperture size information means having an output also connected to said other input of said second operational amplifier, said second operational amplifier having a second feedback circuit, a capacitor provided in said second feedback circuit, a switching element in parallel with said capacitor and operatively connected to said flashlight device, and a comparing circuit for comparing the output of said second operational amplifier and second feedback circuit with a reference voltage and for giving an output for terminating the electric discharge of said flashlight tube when the level of the last-mentioned output equals that of said reference voltage.

4,241,280

LIGHT INTEGRATOR CIRCUIT WITH BUILT-IN ANTICIPATION

Joseph J. Abbadessa, Westwood, and Bruce K. Johnson, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 25, 1979, Ser. No. 51,681
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—151 **16 Claims**



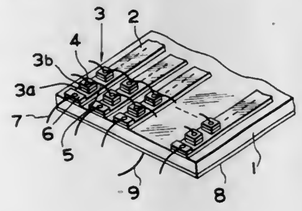
13. A quench strobe comprising:
a flash tube;
circuit means responsive to an applied trigger signal for effecting a discharge of current through said flash tube to produce an illuminating flash of light;
quench means responsive to another subsequently applied trigger signal for extinguishing said flash of light, said quench means having a predetermined reaction time from receipt of said other trigger signal to full extinguishment of said illuminating flash of light;
a photoresponsive element;
an operational amplifier having two input terminals connected across said photoresponsive element to operate in a current mode, said amplifier further comprising an output terminal;
feedback means interconnecting the output terminal of said amplifier to one of said input terminals to provide an output signal at said output terminal representative of the integral of the light intensity incident to said photoresponsive element as anticipated by a predetermined time corresponding to said reaction time of said quench means; and
level detecting means responsive to said output terminal reaching a select level for providing said other trigger signal.

4,241,281

LIGHT EMITTING DIODE DISPLAY DEVICE

Kiyoshi Morimoto, and Hiroshi Watanabe, both of Mobara, Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Chiba, Japan

Filed Jan. 18, 1979, Ser. No. 4,536
Claims priority, application Japan, Jan. 31, 1978, 53-8807
Int. Cl.³ H01L *33/00*
U.S. Cl. 315—161 **5 Claims**



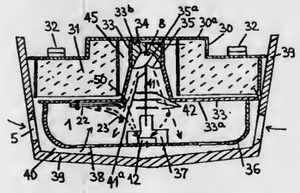
1. A light emitting diode display device which comprises a substrate having a predetermined conductivity type, first electrodes each consisting of a semiconductor region formed in a predetermined region on a surface of said substrate and having a conductivity type opposite to that of said substrate, first semiconductor films formed on said first electrodes and having the same conductivity type as said first electrodes, second semiconductor films formed on said first semiconductor films and forming P-N junctions with said first semiconductor films respectively so as to form a plurality of light emitting diode elements isolated from one another, and second electrodes formed on said second semiconductor films respectively.

4,241,282

SMOKE DETECTOR WITH BIMETALLIC ELEMENT FOR TEMPERATURE COMPENSATION

Erwin Tresch, and Jürg Muggli, both of Männedorf, Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Oct. 16, 1978, Ser. No. 951,784
Claims priority, application Switzerland, Nov. 21, 1977, 14117/77
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—574 **10 Claims**



1. A smoke detector comprising:
a radiation source for transmitting radiation to a predetermined radiation region having an extended solid angle region;
at least one radiation receiver arranged externally of a direct radiation region of the radiation source for receiving radiation scattered by smoke particies in the predetermined radiation region;
a bimetallic element structured and arranged so that in the presence of a temperature increase it gradually moves into a fraction of the radiation region and gradually increases the irradiation of the radiation receiver as a function of the temperature owing to at least any one of reflection or scattering of radiation at the surface of the bimetallic element which extends into the fraction of the radiation region, to thereby at least compensate over a predetermined temperature range lying between normal room temperature and a predetermined critical temperature the sensitivity decrease of the smoke detector with increasing temperature.

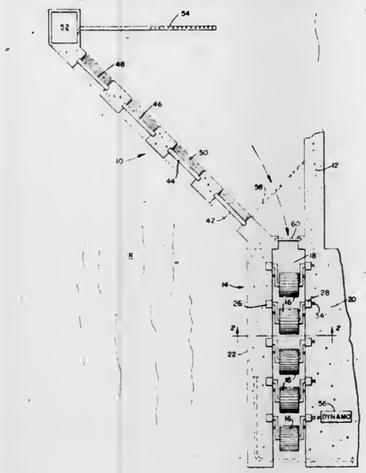
4,241,283

HYDRO-ELECTRIC POWER PLANT

Richard R. Storer, Sr., Egypt Rd., Damariscotta, Me. 04543

Filed Sep. 5, 1978, Ser. No. 939,698
Int. Cl.³ E02B *9/04*
U.S. Cl. 290—54 **8 Claims**

1. A hydro-electric power system for use in a flowing stream of water comprising
a dam structure projecting part way into said flowing stream having an open end and a closed end, said dam structure being disposed at an acute angle relative to a shore line of said stream forming a progressively narrower opening between said dam and said shore line from said open end to said closed end whereby said open end projects into said flowing stream to receive and collect water causing it to flow between said dam and said shore line directed from said open end of said dam to said closed end; and
means for generating power including a spillway connected to the closed end of said diversion dam in fluid communication with said water collected by said dam whereby water flows in said spillway, at least one water driven wheel positioned in said spillway adapted to be turned by



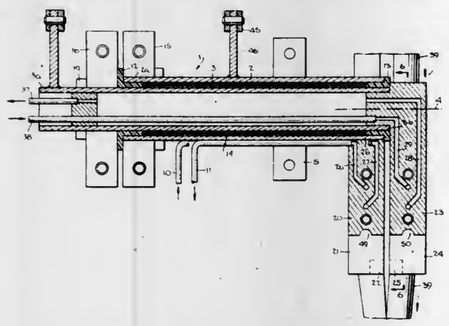
said water flow in said spillway, turbine-generator means for producing power and driving means connected between said water wheel and said turbine generator means to drive the same.

4,241,284

ELECTRICAL CONTACT APPARATUS FOR HIGH FREQUENCY WELDING

Wallace C. Rudd, New Canaan, and Humfrey N. Udall, Darien, both of Conn., assignors to Thermatool Corporation, Stamford, Conn.

Filed Dec. 11, 1978, Ser. No. 968,286
Int. Cl.³ B23K *11/00, 31/06*
U.S. Cl. 219—61.2 **18 Claims**



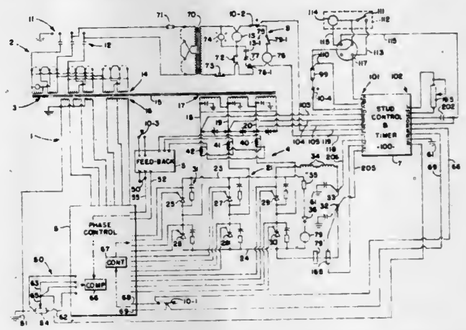
1. High frequency electrical contact apparatus for contacting a moving work piece or pieces and supplying electric current thereto, said apparatus comprising:
a co-axial transmission line having an outer conductor and an inner conductor co-axial with and insulated from said outer conductor;
mounting means mounting said outer conductor and said inner conductor for movement of each independently of the other without a change of their coaxial relation;
first conductive contact means conductively secured to said outer conductor at an end thereof and movable therewith;
second conductive contact means conductively secured to said inner conductor at an end thereof adjacent said end of said outer conductor, said second contact means being movable with said inner conductor;
first and second biassing means connected respectively to said outer conductor and said inner conductor and urging each of them in a direction which will move said first and said second contact means toward a work piece or pieces; and
current supplying means at portions of said inner and outer conductor spaced from said end of said outer conductor and said end of said inner conductor in a direction axially of said outer conductor for supplying current to said inner and outer conductors.

4,241,285

POWER SUPPLY FOR SMAW WELDING AND STUD WELDING

Kenneth A. Golonka, Sr., Richmond Heights, and Gary Spiegelberg, Lagrange, both of Ohio, assignors to Erico Products, Inc., Cleveland, Ohio

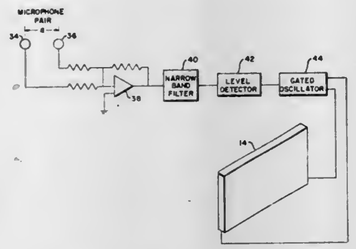
Filed Jun. 29, 1978, Ser. No. 920,397
Int. Cl.³ B23K *9/09*
U.S. Cl. 219—130.32 **39 Claims**



1. A combination power supply for use in continuous type welding and in stud welding a wide range of stud sizes, comprising
means for producing output electrical power for substantially continuous type welding and for stud welding, including
phase controlled energy conversion means for converting AC input power to a DC welding signal, said energy conversion means having a normal power output capability rating for such continuous type welding and for stud welding studs of relatively small size,
feed-back means for producing a feed-back signal proportionally representative of such welding signal,
reference means for producing a reference signal, comparison means for making a comparison of such feedback and reference signals to provide a control for said energy conversion means,
selectively operable control means for increasing the power output capability of said energy conversion means beyond such normal rating to one suitable for stud welding studs of a wide range of stud sizes including relatively large size studs ordinarily not able to be stud welded at such normal rating, including
selectively operable sequencing means for controlling a timed sequence of operation of said means for producing output electrical power to produce the same at such increased capability for a relatively short term timed duration suitable for stud welding, and
selectively operable mode changing means for changing the mode of operation of the power supply from substantially continuous type operation to increase output power capability timed operation with said control means and sequencing means for stud welding, said mode changing

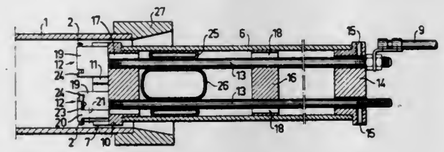
means comprising means for altering the comparison ratio of such feed-back signal and such reference signal, to permit increased conduction angles in said energy conversion means beyond those normally employed during such substantially continuous type operation.

4,241,286
WELDING HELMET LENS ASSEMBLY
Mack Gordon, 2905 Solon Rd., Cleveland, Ohio 44139
Filed Jan. 4, 1979, Ser. No. 867
Int. Cl.³ B23K *9/32;* **A61F** *9/06;* **G02F** *1/13*
U.S. Cl. 219—147 **6 Claims**



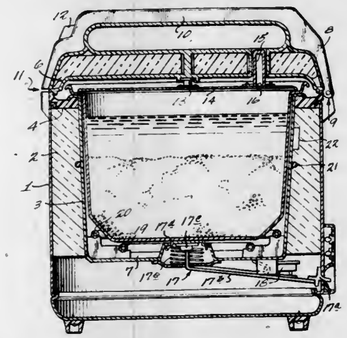
1. In a welding helmet, the combination of a lens assembly the light-transmitting characteristics of which can be changed in response to an electrical signal, electrical circuitry for controlling the light-transmitting characteristics of said lens assembly, a pair of spaced microphones in said electrical circuitry carried within said helmet and positioned so as to be in front of the mouth of the user of the helmet when the helmet is covering the face of the user, means for summing the outputs of the microphones, and means in the electrical circuitry for controlling the light-transmitting characteristics of the lens assembly in response to the summed outputs.

4,241,287
APPARATUS FOR WELDING PINS TO A TUBE INTERIOR
Bertil H. Sjöholm, Ronneby, Sweden, assignor to Gotaverken Anteknik AB, Gothenburg, Sweden
Filed Oct. 4, 1978, Ser. No. 948,482
Claims priority, application Sweden, Oct. 27, 1977, 7712118
Int. Cl.³ B23K *9/20, 9/32*
U.S. Cl. 219—161 **18 Claims**



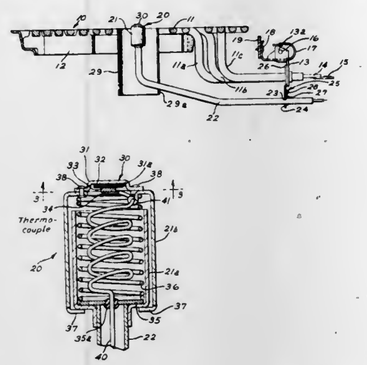
1. Apparatus for manufacturing tubes with pins welded on the inside thereof comprising:
at least one holder for detachably holding a pin to be welded;
elongated holder support means for supporting said holder;
tube support means for supporting the tube in axial alignment with said holder and said holder support means;
drive means for moving said tube support means and said holder support means relative to one another so that said holder can be inserted in or retracted from the tube;
pressing means located along said holder support means for pressing the pin held by said holder radially outwards against the tube wall; and
welding means for welding the pin to the tube wall.

4,241,288
ELECTRIC RICE COOKER WITH TWO HEATERS
Terutaka Aoshima, Toyohashi, and Tokihiko Ikemizu, Kasugai, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Nov. 16, 1979, Ser. No. 94,936
Claims priority, application Japan, Dec. 28, 1978, 53-182217
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—441 **14 Claims**



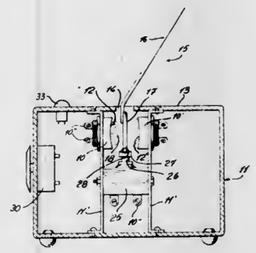
1. A rice cooker comprising:
a cooking kettle for containing water and rice to be cooked,
a removable lid covering the top of said kettle,
a case surrounding and supporting said kettle,
a first heater mounted within said case and adjacent the outside surface of said kettle for heating said kettle and the contents thereof,
a second heater separated from said first heater and mounted within said case and adjacent the outside surface of said kettle for heating said kettle and the contents thereof,
first switch means adapted for electrically connecting at least one of said heaters to a source of electrical energy and for changing from a first to a second condition when the temperature at said first switch means exceeds a first predetermined value,
second switch means adapted for electrically connecting at least one of said heaters to a source of electrical energy and for changing from a first to a second condition when the temperature at said second switch means exceeds a second predetermined value, and
means for connecting said first and second switch means to said first and second heaters so that, until said first switch means changes from said first to said second condition, the total heat produced by said first and second heaters is at a first rate and thereafter the total heat produced is at a greater rate and, when said second switch means changes from said first to said second condition, the total heat produced by said first and second heaters is at a rate less than said greater rate.

4,241,289
HEAT SENSING APPARATUS FOR AN ELECTRIC RANGE AUTOMATIC SURFACE UNIT CONTROL
Teamus Bowling, Fern Creek, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Mar. 2, 1979, Ser. No. 16,996
Int. Cl.³ H01H *37/04;* **H05B** *3/68*
U.S. Cl. 219—450 **9 Claims**



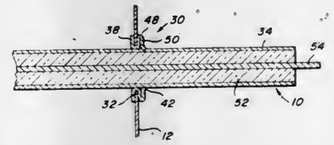
1. Heat sensing apparatus for an automatic surface unit control of an electric range comprising:
a housing having an upper end portion adapted for contact with the bottom of a cooking utensil when placed on a surface unit;
housing support means for holding the housing within the surface unit and for biasing it upwardly to assure contact of said upper end portion with the utensil bottom;
said housing upper end portion comprising a first utensil contact layer of low thermal mass, heat conductive material, a second layer of electrically insulative, heat conductive material secured to the underside of the first contact layer, and a third layer of electrically conductive, heat conductive material secured to the underside of the second insulative layer;
and heat responsive means attached to said third layer for sensing utensil heat as transmitted through said upper end portion and for providing an electrical signal representative thereof to an automatic surface unit control.

4,241,290
CLINICAL MIRROR HEATING DEVICE
Roy E. Folland, R.R. 1 S. Beech Ridge Rd., Clarenceville, Quebec, Canada
Filed Oct. 6, 1978, Ser. No. 949,258
Int. Cl.³ H05B *1/02;* **H01H** *3/16;* **F26B** *19/00*
U.S. Cl. 219—518 **2 Claims**



1. An electrical heater device for heating a clinical mirror, said device comprising a housing having top, bottom and side walls to define a hollow enclosure; two spiral coiled electric heating elements secured in said housing with their heat radiating surface spaced apart and facing each other in juxtaposition to provide concentrated heat in a mirror locating space therebetween, an opening in said top wall in alignment with said mirror locating space through which said mirror can be inserted into said mirror locating space, a switch positioned in alignment with said mirror locating space below said heating elements, said switch having an activating contact on an upper face thereof located in alignment with said opening in said top wall and said mirror locating space for activation by a clinical mirror when the mirror element of such is inserted into said mirror locating space, said activating contact having a centering element shaped to position and maintain the mirror element of the clinical mirror in centered alignment between and with the heat radiating surfaces of said electric heating elements in said mirror locating space, and electrical connections for connecting said heating elements and switch to a current source for energization of said heating elements when said switch is activated by engagement of the activating contact by the mirror element of the clinical mirror inserted through the opening in said top wall.

4,241,291
MOUNTING MEANS FOR SHEATHED HEATING ELEMENTS AND METHOD
Donald W. Carnes, Cockeysville, Md., assignor to Electro-Therm, Inc., Laurel, Md.
Filed Mar. 9, 1979, Ser. No. 19,120
Int. Cl.³ H05B *3/06*
U.S. Cl. 219—536 **8 Claims**



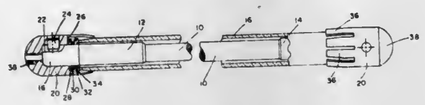
1. A mounting assembly for securing a sheathed metallic heating element to a metallic bracket having an aperture therein comprising in combination:
a sheathed metallic heating element including a linear portion disposed within the aperture of said bracket,
a tubular metallic insert of relatively thin material disposed within the aperture of said bracket and in surrounding relation to said heating element linear portion,
said insert including integrally therewith:
an annular radial flange at one extremity thereof disposed in snug axial relation and in direct contact with one side of said bracket adjacent said aperture;
an axially extending tubular portion in surrounding concentric relation to said heating element,
a radially outwardly extending flange-like portion disposed in snug axial relation and in direct contact with the other side of said bracket adjacent said aperture thereby to axially grip the bracket therebetween,
said flange-like portion merging into an axially adjacent reversely extending radially inwardly directed terminal flange in snug axial relation and in direct contact with said flange-like portion,
said terminal flange at its radially inner extremity defining an opening of lesser effective diameter than said insert tubular portion thereby to mechanically engage the periphery of said sheathed heating element and secure the bracket thereto.

4,241,292

RESISTIVE HEATER

John R. Kreick, and Glenn A. Anderson, Sr., both of Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 20, 1978, Ser. No. 953,244
Int. Cl.³ H05B *3/08*
U.S. Cl. 219—541 **3 Claims**



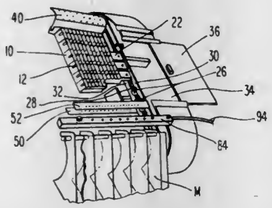
1. A resistive heater, comprising:
an emitter for radiating infrared energy;
a protective tube surrounding said emitter which will pass such infrared energy; and
electrical contact means accommodating said emitter and said protective tube, including means for compensating for the difference in expansion and contraction of said emitter and said protective tube during heating and cooling, said electrical contact means including an electrical contact having an internal shoulder, means for rigidly attaching said emitter to said electrical contact, and means for flexibly coupling said protective tube to said electrical contact with no fixed connection between said protective tube and said electrical contact, said flexible coupling means including at least one deflectable member arranged intermediate said internal shoulder and said protective tube.

4,241,293

SCANNER FOR DETECTING AND INDICATING MISSING AND WEDGED ARTICLES IN SLAT-TYPE COUNTING MACHINE

Charles F. Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 15, 1979, Ser. No. 66,604
Int. Cl.³ G06M *7/00*
U.S. Cl. 235—92 PK **8 Claims**



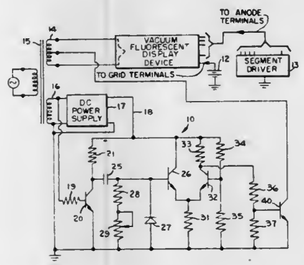
1. In an article counting machine having a series of elongated slats, means supporting said slats for movement in a closed path in a direction transverse to direction of slat elongation, each of said slats having a depth and an outer surface, said outer surface including at least a row of spaced aligned cavities along its length, said path including cavity charging and article discharging stations and a slat return station after said discharging station, means at said charging station for depositing an article in each of said cavities, means to gradually invert the slats for discharging said deposited articles for counting at said discharging station, the improvement to said machine and to a scanner in combination therewith for sensing, detecting and indicating
(a) empty cavities prior to discharging of said deposited articles and
(b) wedged articles in said cavities subsequent to discharging of said deposited articles and prior to said charging station, said improvement comprising
a hole provided through each of said cavities penetrating said slat depth, said holes being aligned with direction of travel of said slat movement,
an array board of light sources mounted to said machine, each of said light sources so positioned to project a beam of light simultaneously through a respective hole provided in said cavities comprising one of said rows,
an array board of photoelectric detectors mounted to said machine, each of said detectors so positioned to be in receiving relationship for each of said beams of projected light,
said deposited articles being stationary with respect to said slats in which said deposited articles are carried and transported whereby said slats containing said empty cavities passing between said array boards of light sources and photoelectric detectors fail to interrupt said projected beams and said cavities of said slats with wedged articles therein interrupt said projected beams for generation of appropriate output signals.

4,241,294

BRIGHTNESS CONTROL CIRCUIT FOR A VACUUM FLUORESCENT DISPLAY

Charles F. Fisler, New Hartford, N.Y., assignor to General Electric Company, New York, N.Y.

Filed May 23, 1979, Ser. No. 41,544
Int. Cl.³ H05B *37/02, 41/39*; G05F *1/00*
U.S. Cl. 315—291 **10 Claims**



1. A circuit for controlling the brightness of a vacuum fluorescent display having filament terminals and connected to anode biasing means, comprising:
(a) a source of power electrically connected to the filament terminals of the display;
(b) an electronic switch connected between the source and the anode biasing means; and
(c) means for periodically opening and closing the switch, the ratio of time during which the switch is closed to the time during which the switch is open being variable to control the brightness of the display.

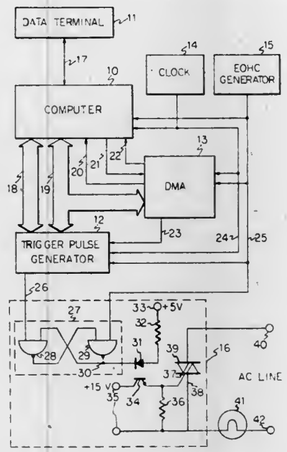
4,241,295

DIGITAL LIGHTING CONTROL SYSTEM

Walter E. Williams, Jr., 21 Woodland St., New Haven, Conn. 06511

Filed Feb. 21, 1979, Ser. No. 13,080
Int. Cl.³ H05B *39/08*
U.S. Cl. 315—294 **10 Claims**

1. A circuit system for controlling the intensity of a plurality of lights comprising, in combination:
a means for producing a binary coded intensity indicating signal for each channel indicating the desired intensity for said channel,
a means for communicating said binary coded intensity indicating signal from said production means to a trigger pulse generator means,
one or more trigger pulse generator means disposed to receive said binary coded intensity indicating signal and produce during each half-cycle of the AC line voltage a trigger pulse signal for each channel the phase relation of which pulse signal to the AC line is a function of the said binary coded intensity indicating signal,
one or more means for producing a nonlinear binary timebase signal controlling the transfer characteristics of said trigger pulse generating means comprising a timebase clock, a memory means, an address counter and a timing counter connected such that the address counter sequentially addresses the memory means and is incremented by a timing counter overflow and such that the timing counter reads data from the memory and counts the difference between the value of said data and a fixed value at a rate determined by a timebase clock and where the operation of said means is repeated for each half-cycle of the AC line,
one or more thyristors connected so as to vary the power available to a lamp connected in series with said thyristor and the AC line in response to the varying of the phase relation to the AC line voltage of the trigger pulse signal applied to said thyristor.

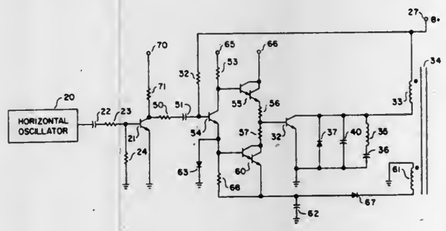


4,241,296

HORIZONTAL DEFLECTION CIRCUIT INCLUDING PROTECTION FOR OUTPUT TRANSISTOR

Archie M. Barter, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 29, 1979, Ser. No. 43,280
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—397 **10 Claims**



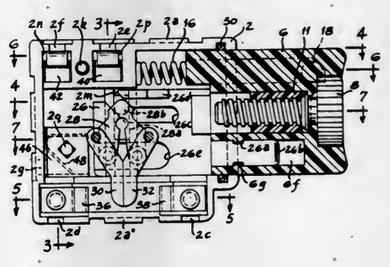
1. A circuit for controllably turning a transistor on and off according to the presence or absence of a base drive signal, the circuit comprising:
a monostable multivibrator coupled to receive the base drive signal for producing an output pulse when the base drive signal is not received;
a first switchable current source coupled to an output of said monostable multivibrator for supplying current to turn on the transistor, said first switchable current source having its output connected to the base electrode of the transistor;
a second switchable current source coupled to an output of said monostable multivibrator for supplying current to turn off the transistor, said second switchable current source having its output connected to the base electrode of the transistor; and
means for accurately and separately establishing said current to turn off the transistor and said current to turn on the transistor.

4,241,297

DOUBLE-POLE TRIGGER SPEED CONTROL SWITCH

Earl T. Piber, Oconomowoc, and Robert Pearson, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 20, 1978, Ser. No. 962,201
Int. Cl.³ H02P *5/16, 7/28*
U.S. Cl. 318—17 **12 Claims**



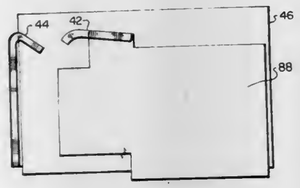
1. A double-pole variable control switch comprising:
an insulating housing;
a printed circuit board mounted in said housing;
a variable power control circuit connected to said printed circuit board;
a pair of screw-clamp power line terminals mounted in said housing and having stationary contacts connected respectively thereto;
a pair of movable contacts pivotally mounted at first portions thereof on said printed circuit board for outwardly swinging movement in opposite directions into engagement with the respective stationary contacts;
a cam follower member having a shuttle portion and a follower portion and actuator portions to which second portions of said movable contacts are pivotally connected;
a race in said housing for guiding said shuttle portion for reciprocal movement of said cam follower;
a spring-biased switch operator mounted in and extending from said housing for variable switch control movement;
said switch operator comprising a cam responsive to said control movement for acting on said follower portion to cause said shuttle portion to traverse said race and to cause said actuator portions to swing said movable contacts so that third portions of the latter engage the respective stationary contacts, and being responsive to return movement of said switch operator for reopening said movable contacts to relatively large contact gaps;
and load terminals accessible through holes in said housing for connecting a load to said variable power control circuit.

4,241,298

SPEED CONTROL SWITCH

Harold L. Trammell, Jr., Hurst, and Jerry W. Swafford, Dallas, both of Tex., assignors to Teccor Electronics, Inc., Irving, Tex.

Filed Jan. 22, 1979, Ser. No. 5,329
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—17 **11 Claims**



1. In a compact electronic speed control for controlling the speed of a portable tool, of the type having a housing into which an actuator in reciprocally movable for selecting tool speed, said housing carrier electronic speed control circuitry of the half wave type operatively coupled to said actuator, and further carries mechanical switching means operatively coupled to said actuator for connecting power to said circuitry at a first actuator position and connecting power directly to said tool at a second actuator position, an improved mechanical switch comprising:

first, second and third stationary contacts and a first bridge contact operatively coupled to said acutator to move therewith, said first contact adapted for connection to a terminal of said tool and having a substantially flat surface on which a first end of said first bridge contact rides, said second contact connected to an output of said circuitry and said third contact connected to a power line lead, said second and third contacts having spaced apart contact surfaces sloped with respect to the direction of movement of said actuator, the intersection of the planes of said sloped contact surfaces forming an angle near 90°, and said first bridge contact having a second end for contacting said second and third stationary contacts, said second end having at least first and second contact surfaces for tangentially contacting the sloped surfaces of said second and third contacts at an intermediate actuator position and thereby adapted for making and breaking contact with said third contact in a direction approximately normal to said sloped surface of said third contact, said third contact further having a length sufficient that said bridge contact breaks contact with said third contact at a point spaced from the edges of said sloped surface.

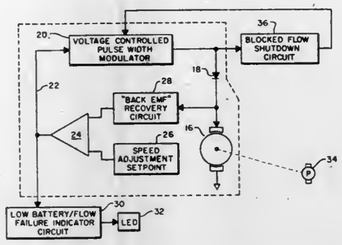
4,241,299

CONTROL SYSTEM FOR BATTERY-OPERATED PUMP

Gregory A. Bertone, Monroeville, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Apr. 6, 1979, Ser. No. 27,569
Int. Cl.³ H02P *3/08*
U.S. Cl. 318—474 **5 Claims**

1. In a control system for a battery-operated motor, the combination of pulse width modulating means for supplying a pulsed voltage to said motor, means for generating a voltage proportional in magnitude to the speed of said motor, means for comparing said voltage with a reference speed signal to develop an error signal for controlling the width of the output voltage pulses from said pulse width modulator, and means for periodically removing power from said motor for a fixed period when current through the motor exceeds a predetermined limit, the power being periodically removed from the motor



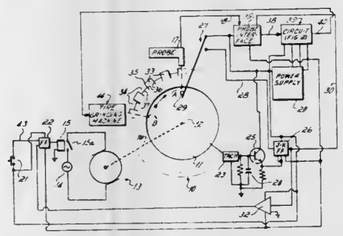
for successive fixed periods until the motor current falls below said predetermined limit.

4,241,300

CIRCUIT RESPONSIVE TO RATE CHANGE IN AMPLITUDE OF ANALOG ELECTRICAL SIGNAL FOR USE IN TIRE PROCESSING APPARATUS

Richard H. Hayes, Tallmadge, and Robert W. Herrmann, Alliance, both of Ohio, assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Mar. 24, 1977, Ser. No. 780,610
Int. Cl.³ G05B *11/18*
U.S. Cl. 318—590 **18 Claims**



1. An electronic circuit for detecting an analog electrical signal having a rate of change in amplitude equal to or greater than a predetermined rate, comprising:

first connection means for connecting an analog electrical signal from an external source to a) circuit means having a time constant and to b) a first input of a comparator;

said circuit means being responsive in a first state to said analog electrical signal for inverting said analog electrical signal;

second connection means for connecting said inverted analog electrical signal from said circuit means to said first input of said comparator;

said time constant being effective to produce a difference signal at said first input of said comparator whenever the rate of change in amplitude of said analog electrical signal is not less than a predetermined rate, said difference signal causing said comparator to produce an indication signal whenever said rate of change is at least equal to said predetermined rate;

a switch alternatively operative in a first mode and a second mode;

switch control means connected to said switch for controlling said switch; and

third connection means for connecting said comparator to said switch control means;

said switch control means being responsive to place said switch in said first mode in the absence of said indication signal and being responsive to place said switch in said second mode in the presence of said indication signal;

said switch being operative in said first mode to cause said circuit means to assume said first state for inverting said analog electrical signal;

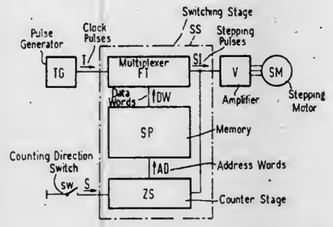
said switch being operative in said second mode to cause said circuit means to assume a second state for storing the amplitude of said analog electrical signal at the time said indication signal is produced.

4,241,301

CIRCUIT ARRANGEMENT FOR THE GENERATION OF STEPPING PULSES FOR THE ACCELERATION OF A STEPPER MOTOR

Dietmar Pohlig, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,115
Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721240
Int. Cl.³ H02K *37/00*
U.S. Cl. 318—696 **8 Claims**



1. A circuit arrangement for the generation of stepping pulses for the acceleration of a stepper motor having a shaft, comprising: a pulse generator means for generating clock pulses; an amplifier means having an input connected to the stepping pulses and an output connected to the stepper motor and which outputs voltages in accordance with the stepping pulses; a switching stage means which receives said clock pulses and provides said stepping pulses, said switching stage means initiating at the start of the acceleration as stepping pulses starter pulses which bring the stepping motor to a substantially optimum torque prior to any significant rotation of the stepper motor shaft relative to a rotation for a single step of the stepper motor, a plurality of acceleration control pulses of increasing repetition rate following the starter pulses, a repetition rate of the starter pulses being substantially greater than a repetition rate of directly following acceleration control pulses, and a plurality of constant repetition rate control pulses being provided after the completion of acceleration of the stepper motor.

4,241,302

CAPACITIVE BRAKING SWITCHING SYSTEM FOR HOME APPLIANCES WITH INDUCTION MOTOR DRIVE

Daniel R. Benjamin, North Tarrytown, N.Y., assignor to Cuisinarts, Inc., Greenwich, Conn.

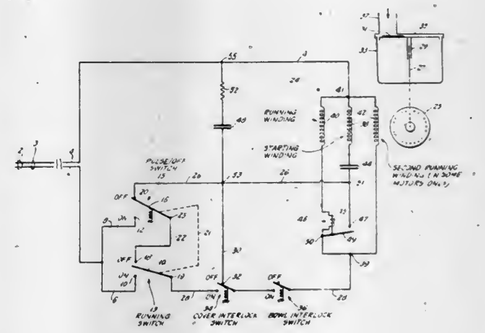
Filed Mar. 19, 1979, Ser. No. 22,040
Int. Cl.³ H02P *3/18*
U.S. Cl. 318—758 **8 Claims**

1. In a home appliance such as a food processor having an electrical plug for connection to electrical power lines with a power cord extending from the plug to the appliance providing an energizing circuit, said appliance including a motor-driven tool operating in a region protected by a removable cover with an induction motor for driving said tool, said motor including first and second motor terminals, and at least one running winding connected in circuit between said terminals, a starting winding in series with a starting capacitor and starting means for temporarily connecting said starting capacitor and starting winding in series between said motor terminals for starting rotation of the motor rotor and for aiding in accelerating the rotor nearly to normal operating speed, said energizing circuit including a first power line connection extending between said plug and the first motor terminal and a second power line connection between said plug and the second motor terminal, said second power line connection including a cover interlock switch having a switch arm movable to an OFF position for interrupting said energizing circuit whenever the cover is removed from its normal position, the invention comprising:

a capacitive braking switching system for quickly braking the rotor whenever said energizing circuit is interrupted including:

a cover OFF terminal in said OFF-position of said cover interlock switch for engagement by said switch arm when said arm is in said OFF-position for placing said cover OFF terminal in conductive connection through said switch arm and through said second power connection with said second motor terminal,

a second capacitor connected in circuit between said cover OFF terminal and a connection point located intermediate said first power connection and one of the windings of said motor,



a first motor control switch including a first common terminal and first ON and first OFF terminals with a switch arm for selectively connecting one of the latter terminals with said first common terminal,

a second motor control switch including a second common terminal and second ON and second OFF terminals with a switch arm for selectively connecting one of the latter terminals with said second common terminal,

said first ON terminal and said second ON terminal each being connected through said second power connection with said plug,

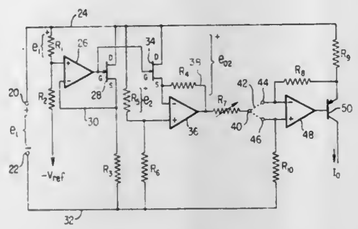
said second OFF terminal being connected to said cover OFF terminal,

said first OFF terminal being connected to said second common terminal, and

said first common terminal being connected through said second power line connection including said cover interlock switch with said second motor terminal,

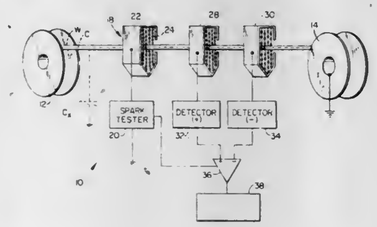
whereby neither said second capacitor nor said starting winding and starting capacitor can inadvertently be placed in circuit across the electrical power lines regardless of how said switches are operated, and whereby powerful, quick-acting braking action is provided whenever the induction motor is turned OFF either by removing the cover or by turning OFF both of said switches.

4,241,303
LINEARIZATION CIRCUIT
William L. Thompson, Chardon, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Jan. 17, 1979, Ser. No. 4,012
Int. Cl.³ G01K *7/10*; G01R *15/10*
U.S. Cl. 323—19 **9 Claims**



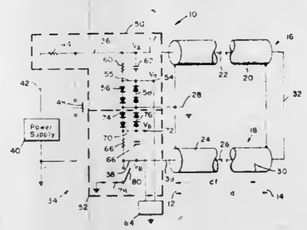
1. A voltage linearization circuit comprising a non-linear input voltage, first voltage dividing means across said input voltage, second voltage dividing means connected to said input voltage and coupled to said first voltage dividing means, said second voltage dividing means having an output voltage proportional to the square of said input voltage, and means for combining said input voltage and output voltage proportional to the square of said input voltage resulting in an output signal that is approximately linear, said first voltage dividing means being comprised of first amplifying means and first switching means connected to the output of said first amplifying means, said first switching means also being connected to an input of said first amplifying means allowing said first amplifying means to adjust to a condition wherein the voltage applied to its inputs are equal.

4,241,304
CONTINUOUS CONTINUITY MONITOR FOR MONITORING THE CONTINUITY OF AN INSULATED WIRE CONDUCTOR
Henry H. Clinton, 10 Shore Rd., Clinton, Conn. 06413
Filed May 9, 1979, Ser. No. 37,444
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **17 Claims**



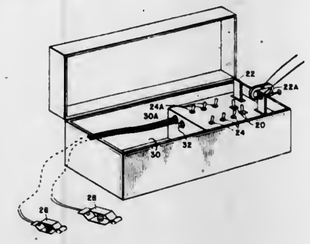
1. Apparatus for monitoring the continuity of an electrically insulated wire having an electrical conductor comprising:
- means for moving the insulated wire axially of itself along a path past a monitoring station;
- first and second monitoring electrodes positioned adjacent the path and the wire at the monitoring staton, and located serially along the path, each electrode being reactively coupled respectively with the portion of the electrical conductor adjacent the electrodes;
- excitation means positioned along said path for inducing an electrical excitation voltage at an excitation frequency in the electrical conductor of the monitored wire, the excitation means having a reactive coupling with the conductor at one side of the monitoring station whereby the excitation means and the first and second electrodes communicate with the conductor at serial positions along the monitored wire;
- circuit completing means electrically connecting the excitation means with the conductor at the opposite side of the monitoring station from said reactive coupling independently of the coupling and the portion of the conductor at the monitoring station for establishing a complete electrical circuit from the excitation means through the portion of the conductor adjacent the two monitoring electrodes and producing a detectable voltage at the excitation frequency on the conductor portion at the monitoring station when continuity exists; and
- detector means connected with the two monitoring electrodes for detecting different electrical voltages at the excitation frequency in the electrical conductor portions adjacent the respective first and second electrodes in the presence of a continuity break in the portion of the conductor between the first and second electrodes.

4,241,305
METHOD AND APPARATUS FOR LOCATING FAULTS IN ELECTRIC CABLES
Arthur F. Dickerson, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 20, 1978, Ser. No. 953,289
Int. Cl.³ G01R *31/08*
U.S. Cl. 324—52 **20 Claims**



1. An apparatus for locating a fault in a subsurface electrical cable having a conductor having first and second terminals, said apparatus comprising:
- means for providing a loop in the cable so that said first and second terminals are adjacent each other and the cable is electrically continuous between said first and second terminals;
- a spark gap for connection to said second terminal;
- power supply means for connection to said first terminal; and
- time measuring means positioned at said adjacent first and second terminals and connected to both said first and second terminals for measuring the time interval between forward moving wavefronts arriving at said adjacent first and second terminals so that as said power supply means charges up said conductor and said spark gap breaks down to send a forward wave through the conductor, the time of arrival of said forward wave is detected and measured at said adjacent second and first terminals and when the power supply charges the conductor so that the fault breaks down to generate a forward wave in both directions through the conductor, said time measuring means measures the time interval between arrival of the forward wave at said adjacent first and second terminals so that the position of the fault along the first and second terminals so that the fractional position of the fault along the conductor can be calculated without knowing propagation velocity.

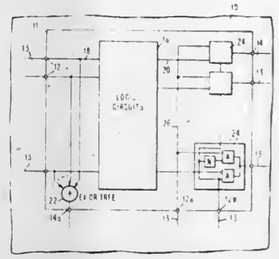
4,241,306
TEST FIXTURE HAVING SWITCHING MEANS FOR FACILITATING TRANSFORMER TURNS RATIO TESTING
Russell E. Bump, 3946 E. Meadowbrook, Phoenix, Ariz. 85018
Filed Aug. 29, 1978, Ser. No. 937,783
Int. Cl.³ G01R *29/20*
U.S. Cl. 324—55 **4 Claims**



1. In a system comprising a transformer turns ratio test unit and a transformer having both primary and secondary windings to be ratio tested which system utilizes said transformer turns ratio test unit to perform turns ratio tests on said transformer to be tested, a test fixture comprising: input coupling means for connection to a transformer to be tested, output coupling means for connection to a turns ratio test unit,
- switching means connected between said input and output coupling means, said input means comprising seven test leads comprising three wire primary transformer connection leads, and four double wire secondary transformer connection leads, each of said four double wire secondary transformer connection leads having a current wire and a potential wire,
- said output coupling means comprising a pair of secondary output terminals for connection to the secondary test leads of said turns ratio test unit, said output coupling means further comprising a pair of primary output terminals for connection to the primary test leads of said turns ratio test unit.
- said switching means further comprising three primary switching element means and three secondary switching element means,
- said primary switching elment means effecting the selective electrical coupling of any two of three primary transformer connection leads to said primary output terminals.
- said secondary switching element means effecting the selective electrical coupling of a common one of four of said secondary transformer connection leads and one of the other three secondary transformer connection leads to said pair of secondary output terminals.

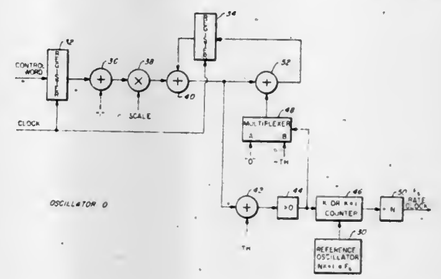
4,241,307
MODULE INTERCONNECTION TESTING SCHEME
Se June Hong, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 18, 1978, Ser. No. 934,936
Int. Cl.³ G01R *31/02, 31/28*
U.S. Cl. 324—73 R **6 Claims**

1. In an electronic circuit package in which a plurality of subassembly circuit packages with logic circuitry thereon are mounted on a insulative base with an interconnecting network for interconnecting the input and output terminals of the subassembly circuit packages with each other and with terminals of the electronic circuit package the improvement comprising:
- a separate Exclusive-OR circuit tree means included in each of the subassembly circuit packages, which is connected to the input terminals of that subassembly circuit package in which it is included to test connections to output terminals of the subassembly packages;
- half select input circuit means on each of subassembly packages for coupling the output terminals of the subassembly packages to a test input terminal of the subassembly package for application of test signals to the output terminals of the subassembly packages while the output of said logic circuits are ungated from said output terminals and;



- circuit means on said base for activating said masking circuits and supplying said test signals to the test input terminals of said subassembly packages whereby the network of the electronic circuit package can be tested with simple binary signal combinations.

4,241,308
DIGITAL NUMERICALLY CONTROLLED OSCILLATOR
Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Alfred Cellier, Rancho Palos Verdes, Calif.; Douglas C. Huey, Westminster, Calif., and Lit N. Ma, Palos Verdes Estates, Calif.
Filed Dec. 29, 1978, Ser. No. 974,475
Int. Cl.³ H03K *5/26*
U.S. Cl. 328—55 **16 Claims**



1. A digital numerically controlled oscillator for controlling the frequency and phase of an output signal in response to an input control word, comprising:
- (a) means for translating the input control word to a single algebraic sign;
- (b) means for accumulating the translated input control word;
- (c) means for sensing when a threshold amount is achieved in said means for accumulating;
- (d) means for forming a reference clock signal having a frequency at an integer multiple of the desired frequency of the output signal, and
- (e) means responsive to said means of or sensing for adjusting the frequency and phase of the output signal in a single direction in response to the translated control word, said means including:
  - (1) means for dividing the frequency of the reference clock signal by a first integer; and
  - (2) means for dividing the frequency of the reference

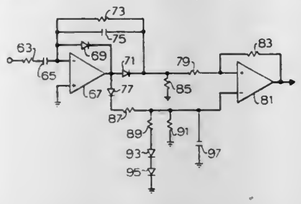
clock signal by an integer different from said first integer in response to said means for sensing.

4,241,309

SYNCHRONIZING METHOD AND APPARATUS

William L. Elder, Richmond, Calif., assignor to Andros Incorporated, Berkeley, Calif.

Filed Oct. 5, 1978, Ser. No. 948,875
Int. Cl.³ H03K *5/153*
U.S. Cl. 328—115 **8 Claims**



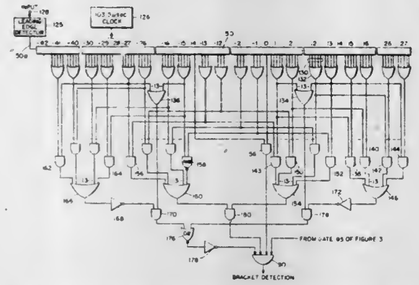
1. A method of developing a series of synchronizing pulses related to a series of input pulses of variable amplitude, comprising, developing a first signal having an amplitude which is proportional to the derivative of the rising or falling portion of each of of the input pulses, developing a second signal related to said first signal and having a minimum amplitude which is greater than the minimum amplitude of the first signal and having a decay characteristic slower than that of the first signal such that the amplitude of said second signal becomes equal to the amplitude of said first signal at a threshold point which is proportional to the amplitude of said first signal, and developing a series of synchronizing pulses each related to a respective threshold point, whereby the phase of the synchronizing pulses is independent of the amplitude of the input pulses.

4,241,310

DELAY LINE DIGITAL CODE DETECTOR

Leo A. Kerr, Baltimore County, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 23, 1978, Ser. No. 889,164
Int. Cl.³ H03K *5/26*
U.S. Cl. 328—119 **7 Claims**



1. In a beacon target detector comprising a digital delay line having an input port for receiving a signal comprised of a series of pulses to be detected, the format of said received signal being first and second framing pulses separated by a known time and a predetermined plurality of informational pulse positions spaced at known intervals between said framing pulses, the presence or absence of informational pulses at said informational pulse positions being indicative of the informational content of said received signal, said digital delay line having a plurality of output tap means for determining the presence or absence of pulses at predetermined positions generally equally spaced along the length of said delay line, and a source of clock pulses, said clock pulses being applied to said digital delay line to cause pulses received at said input port to be traversed through said digital delay line, the pulse repetition frequency of said clock pulses having a relationship to the spacing of said framing pulses, said informational pulse positions and said plurality of output means whereby said informational pulses and framing pulses periodically are aligned with said output means, an improvement

wherein said digital delay line has a length equivalent to approximately five times the length of the spacing between framing pulses of a received signal and is divided into five generally equilength sections, said sections being arbitrarily designated from the input end of said delay line to the output end of said delay line respectively as first, second, third, fourth and fifth sections, said third section having first and second framing pulse tap means and information pulse position tap means to accommodate simultaneously and respectively said framing pulses and said informational pulses, said first framing pulse tap means being separated from said second framing pulse tap means by the length of spacing between framing pulses of a received signal, and including:

first gate means responsive to the occurrence of a pulse at any one of the output tap means of said second section for generating a first signal;

second gate means responsive to the simultaneous occurrence to pulses at tap means of said first and second sections separated by an amount equivalent to the time between said framing pulses for generating a second signal;

a bracket detection means responsive to the simultaneous occurrence of pulses at said first and second framing pulse tap means for sampling the informational pulse position tap means; and

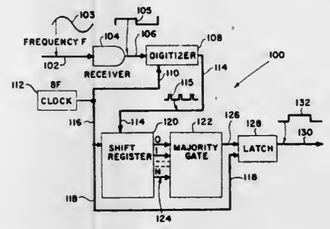
first inhibit means responsive to the occurrence of said first signal and the simultaneous non-occurrence of said second signal to generate a first inhibit signal, said bracket detection means being responsive to said first inibit signal to inhibit sampling of said information pulse position tap means.

4,241,311

DIGITAL MAJORITY NOISE FILTER FOR BI-LEVEL DATA RECEPTION

Raymond P. Massey, Raleigh, N.C., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Feb. 1, 1979, Ser. No. 8,750
Int. Cl.³ H03K *5/05, 13/32*
U.S. Cl. 328—167 **12 Claims**



1. The method of filtering high frequency noise pulses from alternating analog data, of a selected frequency F, comprising the steps of:

(a) forming a bi-level or square wave signal from said analog data;

(b) providing a clock signal of a frequency of at least 8F;

(c) sampling said bi-level data at the frequency of said clock signal, and reading said sampled data at clock frequency into a digital shift register;

(d) reading out in parallel from said shift register a selected number of sampled bits, and into a majority gate in selected polarity;

(e) applying the majority signal from said majority gate to a latch in synchronism with said clock signal,

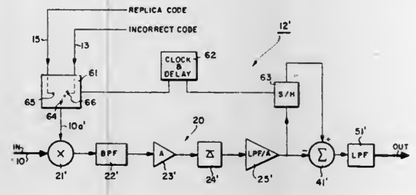
whereby the output of said latch will be the digital majority noise filtered version of the input analog signal.

4,241,312

SELF-CALIBRATING THRESHOLD DETECTOR

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; James R. Barnes, Dominguez Hills, and Marshall Y. Huang, Rancho Palos Verdes, both of Calif.

Filed Jul. 27, 1979, Ser. No. 61,556
Int. Cl.³ H03K *13/01;* H04B *1/12*
U.S. Cl. 329—50 **6 Claims**



1. In a system for receiving an incoming signal modulated by a prescribed code, the combination comprising:

a. a correlator receiving said incoming code and successively cross-correlating same with a local replica of said incoming code and with an incorrect code, said correlator producing during one time interval a reference signal corresponding to the correlation with said incorrect code, and further producing during a successive time interval an output signal corresponding to the correlation with said replica code;

b. hold means holding a sample of said reference signal; and

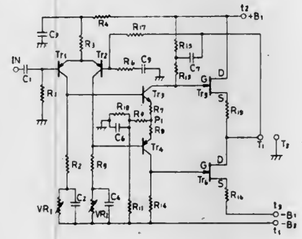
c. comparator means comparing said sample reference signal with said output signal to provide a resultant difference signal indicative of said correlation with said replica code.

4,241,313

AUDIO POWER AMPLIFIER

Takao Takehara, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation-in-part of Ser. No. 409,586, Oct. 25, 1973, abandoned. This application Aug. 21, 1975, Ser. No. 606,425
Claims priority, application Japan, Oct. 27, 1972, 47-108345; Oct. 27, 1972, 47-124793[U]; Oct. 27, 1972, 47-124794[U]; Oct. 27, 1972, 47-124795[U]; Oct. 27, 1972, 47-124796[U]; Oct. 27, 1972, 47-124797[U]
Int. Cl.² H03F *3/16*
U.S. Cl. 330—253 **6 Claims**



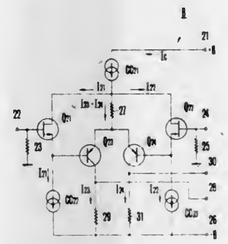
1. An audio power amplifier comprising a first-stage voltage amplifier circuit of differential amplifier type including a pair of field-effect transistors for voltage amplifying an audio frequency signal, a second-stage voltage amplifier circuit including a field effect transistor for voltage amplifying the output signal from said first-stage voltage amplifier circuit, said second-stage voltage amplifier circuit also serving as a drive stage, and a last-stage power amplifier circuit including a pair of field-effect transistors having drain voltage versus drain current characteristics similar to static plate voltage versus plate current characteristics of a triode vacuum tube for power amplifying the output signals of said second-stage voltage amplifier circuit.

4,241,314

TRANSISTOR AMPLIFIER CIRCUITS

Masayuki Iwamatsu, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 15, 1978, Ser. No. 960,908
Claims priority, application Japan, Nov. 24, 1977, 52-157546[U]
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—253 **2 Claims**



1. In a transistor amplifier circuit comprising a pair of field effect transistors in an input stage having gate electrodes respectively connected to input terminals, and a differential amplifier in a succeeding stage including a pair of bipolar transistors each having a base electrode respectively connected to a first current electrode of an associated one of the field effect transistors and a collector electrode respectively connected to an associated output terminal, the improvement which comprises a first constant current source having one terminal connected to second current electrodes of said field effect transistors, and the other terminal connected to a first power source; second and third constant current sources each having a first terminal connected to said first current electrode of an associated one of said field effect transistors, and a second terminal connected to a second power source; first and second resistors each having a first terminal connected to the collector electrode of an associated one of said bipolar transistors and a second terminal connected to said second source; a third resistor having a first terminal commonly connected to the emitter electrodes of said bipolar transistors and a second terminal connected to the junction between the second current electrodes of said field effect transistors and said first constant current source.

4,241,315

ADJUSTABLE CURRENT SOURCE

Raymond B. Patterson, III, and Grady M. Wood, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 23, 1979, Ser. No. 14,523
Int. Cl.³ H01L *27/24;* H03F *3/45*
U.S. Cl. 330—261 **17 Claims**

1. An adjustable current source comprising:

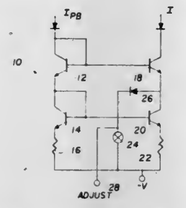
a first current path connected to a voltage supply terminal;

a second current path connected to said supply terminal substantially in parallel with said first current path;

a control electrode of a first and second transistor in said first and second current paths respectively being intercon-

nected to one of said current paths to form a current mirror; and

an amorphous material device in a part-on high impedance, substantially amorphous state electrically alterable to



lower part-on high impedance, substantially amorphous states connected to said supply terminal and forming a part of said second current path to adjust the impedance of said second current path and consequently the current through said second current path.

4,241,316

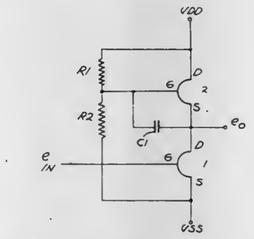
FIELD EFFECT TRANSCONDUCTANCE AMPLIFIERS

Richard P. Knapp, Hermosa Beach, Calif., assignor to Lawrence Kavanau, Long Beach, Calif., a part interest

Filed Jan. 18, 1979, Ser. No. 4,572

Int. Cl.³ H03F *3/16*

U.S. Cl. 330—277 **39 Claims**



1. A field effect device amplifier comprising first and second field effect devices each having source, drain and gate connections, said gate of said first field effect device being coupled to the amplifier input, said drain of said first field effect device being coupled to said source of said second field effect device and to the amplifier output, said amplifier also having means for substantially shorting said gate of said second field effect device to its said source for the intended operating frequency range of said amplifier, said field effect devices being biased to operate in a partial carrier velocity limited region, selected to provide a dependence of the output conductance of said field effect devices on drain current which approximates that of the transconductance of said field effect devices.

4,241,317

FREQUENCY GENERATOR SUITABLE FOR USE AS POSITION-FREQUENCY TRANSDUCER

Wolfram Breitling, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 16, 1979, Ser. No. 12,801

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810347

Int. Cl.³ H03K *3/023*

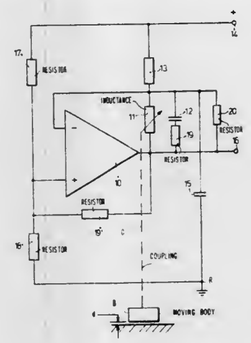
U.S. Cl. 331—65 **9 Claims**

1. A frequency generator having electrical power supply terminals (14, R), one of which (R) forms a reference terminal;

comparator means having a first (+) and a second (−) input and an output (16), said frequency generator further having means (17, 18) for applying a reference voltage to said first input of said comparator means, whereby said first input will form a reference input and said second input a comparison input;

the improvement comprising

a parallel tank circuit including an inductance (11) and a first capacitor (12) connected to said second input (−)



and said output (16) of said comparator means in an output-to-comparison input feedback circuit;

in combination with

a second capacitor (15) connected between the second input and hence said parallel circuit and the reference terminal (R).

4,241,318

FAST-SWITCHING MULTI-WAVELENGTH LASER

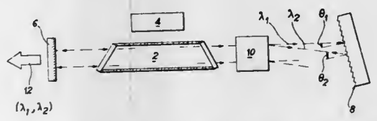
Jean Comera, Gieres, and Claude Jaussaud, Saint Martin d'Heres, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 4, 1978, Ser. No. 948,564

Claims priority, application France, Oct. 4, 1977, 77 29774; Aug. 8, 1978, 78 23373

Int. Cl.³ H01S *3/10*

U.S. Cl. 331—94.5 C **8 Claims**



1. A fast-switching multi-wavelength laser of the type comprising an amplifying medium associated with exciting means and disposed between a first reflector and a second dispersive reflector of the type which reflects backwards a light beam having a certain incidence only in respect of a predetermined wavelength which is dependent on said incidence, and energy abstracting means associated with said laser, wherein said laser further comprises a rotatable wheel carrying a plurality of optical deflector elements interposed between said amplifying medium and said second dispersive reflector, and means for rotating said wheel to thereby place said elements periodically in the path of the light beam, said beam being thus deflected periodically, the incidence of the light beam on the dispersive reflector being then modified in a number of different values corresponding to the desired number of wavelengths.

4,241,319

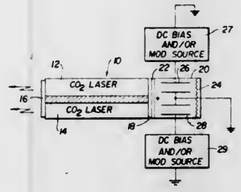
DUAL CHANNEL WAVEGUIDE GAS LASER

Aristotle Papayoanou, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1979, Ser. No. 12,675

Int. Cl.³ H01S *3/10*

U.S. Cl. 331—94.5 G **10 Claims**



1. In a tunable high pressure gaseous molecular laser, the combination of:

a laser cavity structure having a pair of elongated dielectric waveguide laser cavities of relatively small cross sectional area relative to their length, formed in said structure so as to have respective end terminations adjacent one another at the same opposite ends of said structure;

first and second partially reflecting end mirrors respectively attached to said opposite ends forming common end mirrors for both said laser cavities;

a laser medium comprising a gaseous mixture in both said laser cavities and including means for exciting said medium to generate respective laser beams;

an external Stark cell positioned at one end of said cavity structure to receive simultaneously both said laser beams, said Stark cell being filled with gas and having a grating adapted to intercept said beams for permitting preselection of a predetermined laser line, said Stark cell being positioned between said one end and said grating and having two pairs of electrodes therein, said electrodes being positioned so that one electrode pair is adapted to effect the laser operation of one laser beam and the other electrode pair is adapted to effect laser operation of the other laser beam; and

means coupled to said pairs of electrodes for applying electrical control voltages independently thereto for applying respective DC bias thereto and when desirable, a modulation voltage.

4,241,320

CIRCUIT ARRANGEMENT FOR ESTABLISHING WEIGHTING COEFFICIENTS IN AN ANALOG-TYPE ADAPTIVE EQUALIZER

Alfredo Fausone, and Renato Rivelli, both of Turin, Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Aug. 23, 1979, Ser. No. 69,130

Claims priority, application Italy, Aug. 25, 1978, 68977 A/78

Int. Cl.³ H04B *3/14*

U.S. Cl. 333—18 **6 Claims**

1. A weighting network for an adaptive equalizer inserted between a transmission channel and a load for processing incoming high-frequency signals by multiplying their amplitudes by selected analog coefficients, comprising:

input means for receiving the high-frequency signals to be processed;

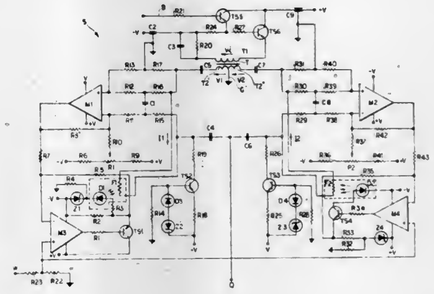
output means for emitting the processed high-frequency signals;

a control terminal for receiving a corrective voltage determining a selected analog coefficient;

a bridge circuit inserted between said input and output means, said bridge circuit including two impedance elements having an electrical resistance indirectly variable by an external energy field;

a source of constant reference current connected to each of said impedance elements for generating a voltage drop, proportional to said resistance, thereacross;

a pair of energy emitters respectively juxtaposed with said impedance elements;



amplifier means connected to said terminal and across said energy emitters for differentially exciting same to unbalance said bridge circuit in response to said corrective voltage; and

feedback means connected between said impedance elements and said amplifier means for stabilizing the excitation of said energy emitters in response to the voltage drop across the respective impedance elements.

4,241,321

ELECTROMECHANICAL FILTER

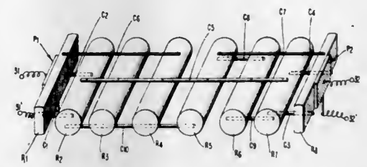
Yoshihiko Kasai, Yokahama; Takashi Gounji, Kawasaki, and Yoshio Katsube, Yokohama, all of Japan, assignors to Fujitsu Limited, Japan

Filed Feb. 15, 1979, Ser. No. 12,390

Claims priority, application Japan, Feb. 15, 1978, 53/016259

Int. Cl.³ H03H *9/24, 9/50*

U.S. Cl. 333—198 **11 Claims**



1. An electromechanical filter comprising:

(a) first and second transducers for transforming respectively an input electrical signal into a mechanical vibration and a mechanical vibration into an output electrical signal;

(b) a plurality of mechanical resonators arranged substantially parallel to each other in one plane;

(c) first and second mechanical couplers for coupling respectively said first transducer with one of said plurality of resonators and said second transducer with another of said plurality of resonators; and,

(d) a third mechanical coupler having a longitudinal resonance characteristic disposed substantially transverse to said plurality of resonators for coupling together in series at least three of said mechanical resonators, wherein a first portion of the third coupler's length formed between a first pair of connected resonators is between first and second oscillation modes of a bending mode resonance characteristic of the third coupler and a second portion of the third coupler's length formed between a second pair of

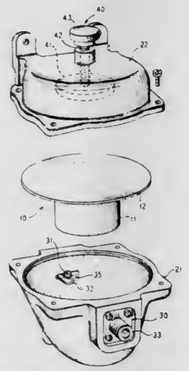
connected resonators is between second and third oscillation modes of the bending mode resonance characteristic.

4,241,322

COMPACT MICROWAVE FILTER WITH DIELECTRIC RESONATOR

Arlen K. Johnson, New Providence; Thomas P. Tignor, Mendham, and Theodore K. Wingard, Succasunna, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1979, Ser. No. 77,925
Int. Cl.³ H01P *7/10, 1/20*
U.S. Cl. 333—202 **11 Claims**



1. Apparatus adaptable for use as a microwave filter comprising a housing **(21, 22)** having an electrically conductive interior surface forming an enclosed cavity, the cavity extending from a substantially flat first surface **(23)** to a substantially flat second surface **(24)**, a dielectric resonator **(11)** having planar surfaces parallel to the first **(23)** and second **(24)** surfaces of the cavity and positioned in predetermined spatial relationship in the cavity adapted to support a transverse electric mode of its resonance frequencies, and input **(35** or **30)** and output **(30** or **35)** terminal members extending from outside the housing **(21, 22)** into the cavity and being electrically insulated from the housing for transferring electromagnetic energy to and from the dielectric resonator **(11)**, characterized by,

the interior surface of the housing **(21, 22)** forming an enclosed cavity having a plurality of planar cross sections (FIG. **3)** at and between the first **(23)** and second **(24)** surfaces and parallel to the first surface **(23)**, each being substantially an ellipse having a first and second axis, and at least one of the axes of each successive ellipse monotonically increasing in length with perpendicular distance from the first surface **(23)**, the apparatus having substantially optimum electrical characteristics.

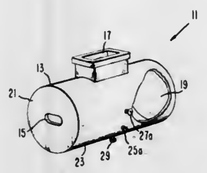
4,241,323

REFLECTIVE DUAL MODE FILTER

Edward L. Griffin, and Frederick A. Young, both of Huntington Beach, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 5, 1979, Ser. No. 55,109
Int. Cl.³ H01P *1/208, 7/06, 1/16*
U.S. Cl. 333—209 **11 Claims**

1. A reflective dual mode filter including at least one waveguide cavity resonating at its resonant frequency in a first and a second independent orthogonal mode, first coupling means in said cavity for intra cavity coupling of said first mode to said second mode, a reflective plate provided in said cavity, and a shunt port in a side wall and a coupling slot port in the other end wall of said cavity, the improvement wherein said first coupling means includes a pair of balanced coupling screws oriented about the axis of said cavity 90 degrees with respect to one another and 45 degrees with respect to a plane through the



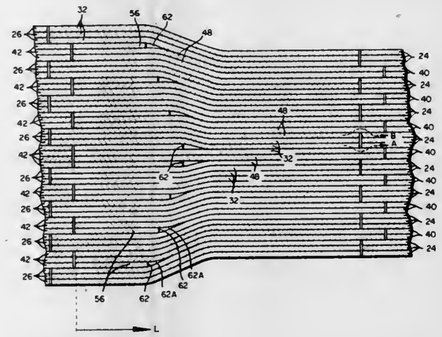
longitudinal axis of said waveguide cavity and through said shunt port.

4,241,324

MAGNETIC CORE FOR ELECTRICAL TRANSFORMERS

James D. Douglass, Pittsburgh, and Albert T. Chase, Bethel Park, both of Pa., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 28, 1979, Ser. No. 79,695
Int. Cl.³ H01F *27/24*
U.S. Cl. 336—217 **7 Claims**



1. A transformer comprisng:

a magnetic core formed of a stacked array of laminations defining a magnetic flux path including first and second leg portions and first and second yoke portions;

a plurality of conductive coils encircling at least a part of said first leg portion;

a plurality of additional leg laminations, interleaved between selected ones of said stacked array laminations in at least a part of said second leg portion; and

a plurality of yoke spacer laminations interleaved between selected ones of said stacked array of laminations in direct correspondence to said interleaving of said additional leg laminations, to minimize voids created between said core laminations by said interleaving of said additional leg laminations, said yoke spacer laminations having a dimension orthogonal to said second leg portion which varies between a maximum at the approximate center of said stacked array and minima at the extremes of said stack.

4,241,325

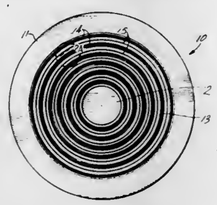
DISPLACEMENT SENSING TRANSDUCER

Mario Di Giovanni, Pacific Palisades, Calif., assignor to Micro Gage, Inc., El Monte, Calif.

Filed Mar. 21, 1979, Ser. No. 22,502
Int. Cl.³ G01L *1/22*
U.S. Cl. 338—4 **15 Claims**

1. A displacement transducer comprising a rigid support, a flexible diaphragm having a uniform thickness, a periphery

attached to the support, and an interior free to deflect, and means for sensing strain on the diaphragm to measure its de-



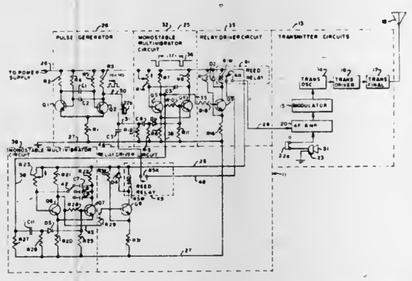
flection, characterized in that the interior of the diaphragm has at least one annular corrugation and the sensing means is oriented to sense the strain of the corrugation.

4,241,326

ELECTRONIC TRAFFIC CONTROL AND WARNING SYSTEM

William Odom, DuQuoin, Ill., assignor to Martin A. Odom, Murphysboro; Pauline B. Presley, Carbondale; Clark Vineyard, Carbondale and James D. Hagler, Murphysboro, all of, Ill., part interest to each

Filed Jan. 8, 1979, Ser. No. 1,728
Int. Cl.³ H04B *7/00*
U.S. Cl. 340—33 **33 Claims**



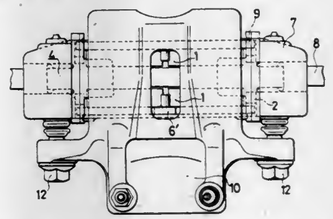
1. An electronic system for traffic control and warning purposes comprising transmitting means within an authorized mobile unit including a frequency modulation transmitter for transmitting a frequency modulation carrier signal at a preselected frequency within a preselected police communications frequency band, said carrier signal being adapted to be selectively either voice or pulse modulated, a transmitting antenna for radiating said modulated carrier signal, voice modulation means for modulating said carrier signal with a voice message, pulse modulation means for selectively modulating said transmitted carrier signal with preselected pulse messages of preselected pulse patterns and receiving means within each of a plurality of civilian vehicles separate from said mobile unit, including a receiving antenna for picking up the modulated carrier signal when the respective civilian vehicle is within at least the general vicinity of said mobile unit, radio frequency scanning means for automatic scanning of said police communications band for providing selective response to said modulated carrier signal regardless of the frequency thereof within said police frequency band, demodulator means for providing a demodulated message signal, means for deriving a pulse message from the demodulated message signal including means for separating pulse information from non-pulse audio signals, signal detection means for causing said scanning to terminate in response to a preselected pulse message being derived from the demodulated message signal, signalling means responsive to a pulse message of a predetermined first type for providing at least a first form of signal to an operator of such civilian vehicle receiving said modulated carrier signal, transducer means within such receiving vehicle for reproducing voice messages, and first switching means responsive to a pulse message of a predetermined second type for causing a voice message of the demodulated message signals to be supplied to said transducer means.

4,241,327

DISC BRAKE PAD WEAR WARNING DEVICE

Masachika Yamamoto, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 25, 1978, Ser. No. 928,022
Claims priority, application Japan, Jul. 25, 1977, 52-89465
Int. Cl.³ B60T *17/22*
U.S. Cl. 340—52 A **7 Claims**



1. In a pad wear warning device in a disc brake of the type in which a backing plate integral with a disc brake pad is supported on a guide surface so as to be slidable in the axial direction of the disc, and in which a a wear warning means is activated when excessive pad wear has occurred, the improvement comprising:

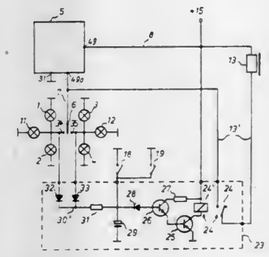
said guide surface having a step formed therein to divide said guide surface into first and second surfaces, the first surface being farther from said disc in the axial direction thereof and the second surface being disposed inwardly of said first surface in the radial direction of said disc, the width of said first surface in the disc axial direction being so selected that when the pad thickness reaches a predetermined value, the backing plate is caused to drop onto said second surface to cause said wear warning means to be activated.

4,241,328

CIRCUIT ARRANGEMENT FOR TURN-INDICATOR BLINKER LIGHTS

Hartwig Lobe, Unterschleissheim, and Wolfgang Dietz, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1977, Ser. No. 864,254
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750558
Int. Cl.² B60Q *1/00, 1/34*
U.S. Cl. 340—75 **11 Claims**



1. A circuit arrangement for the turn-indicator blinker lights of a motor vehicle, comprising an acoustic control device coordinated to the operation of the blinker lights, characterized in that the control device is rendered inoperable by an

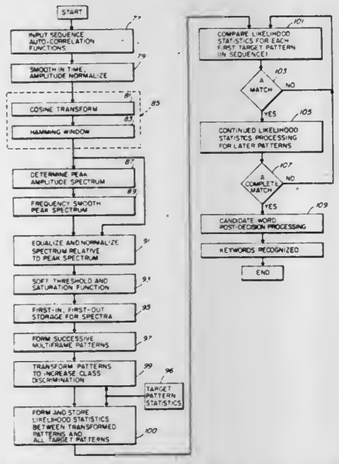
interruption in the force-transmission of the motor vehicle, and in that a time-control switch means is operable to engage the control device with a predetermined delay after the beginning of the operation of the blinker lights with a closed force-transmission and/or after the closing of the force-transmission during the operation of the blinker lights.

4,241,329

CONTINUOUS SPEECH RECOGNITION METHOD FOR IMPROVING FALSE ALARM RATES

Lawrence G. Bahler, Somerville, and Stephen L. Moshier, Cambridge, both of Mass., assignors to Dialog Systems, Inc., Belmont, Mass.

Filed Apr. 27, 1978, Ser. No. 901,005
Int. Cl.[2] G10L *1/00*
U.S. Cl. 340—146.3 R **14 Claims**



1. In a speech analysis system for recognizing at least one predetermined keyword in an audio signal, each said keyword being characterized by a template having at least one target pattern and each target pattern representing at least one short-term power spectrum, an analysis method comprising the steps of

forming a sequence of electrical signals repesenting a sequence of selected patterns,

identifying electrical signals representing a candidate keyword when said sequence of selected patterns corresponds respectively to the sequence of target patterns of said keyword template,

normalizing electrical signals representing the time duration spacings between selected patterns corresponding to said candidate word, and

applying a prosodic test to said normalized time duration spacings,

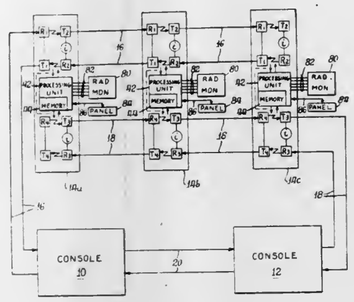
wherein said normalized time duration spacings for a candidate word must meet the timing criteria imposed by said prosodic test before said candidate word is accepted as a recognized keyboard.

4,241,330

MULTIPLE-PROCESSOR DIGITAL COMMUNICATION SYSTEM

Thomas A. Hery, San Diego, and John G. Getchen, El Toro, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Sep. 28, 1978, Ser. No. 946,565
Int. Cl.[2] H04Q *9/00*; G06F *15/16*
U.S. Cl. 340—147 R **22 Claims**



1. A system for communicating among two central consoles and a plurality of local controllers, comprising:

first and second central consoles for controlling the communication of said system, said consoles selectively issuing, command messages to said controllers and for receiving response messages therefrom;

a first two line communication path for selectively transmitting messages in both directions, said first path extending from one central console serially to all of said plurality of controllers;

a second two line communication path for selectively transmitting messages in both directions, said second path extending from the other console serially to all of said plurality of controllers, the controllers being connected nearer to said first console via said first path also being connected relatively farther from said second controller via said second path;

said central consoles being introduced so that each console is capable of communicating with each controller via each path;

each of said communication paths comprises a number of 2-conductor loops which extend between adjacently connected controllers, and between a console and the nearest controller connected thereto, each loop having a current source for the loop, said messages being transmitted in either direction by switching the current flow in the loop and another detecting the switched current flow in the loop;

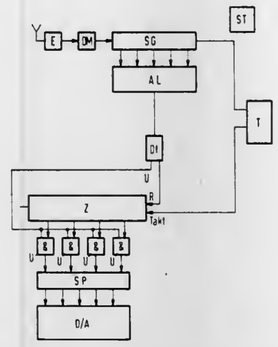
each local controller having means operably connected in each loop that extends to adjacently connected controllers or to a console for switching the current flow in each of the loops and for detecting the switched current flow in each of the loops, each of said switching means and said detecting means comprising opto-isolators having a light emitting diode optically coupled to a photo-transistor.

4,241,331

REMOTE CONTROL SYSTEM WITH PROPORTIONAL VALUE TRANSMISSION

Reinhard Taeuber, Germering, and Hans Neumayr, Hilgertshausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,389
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848061
Int. Cl.[3] H04Q *9/00*
U.S. Cl. 340—167 R **9 Claims**



1. A remote control system for controlling a plurality of controlled devices, comprising:

a transmitting system for transmitting digital command code words identifying the controlled devices to be activated and analog information defining the degree of activation, said transmitter system including

a code word generator operable to produce a digital code word followed by a digital signal,

selection and activation means connected to said code word generator and operable to select the code words, the time interval between the code word and the digital signal and to activate said code word generator, and

transmitting means connected to said code word generator for receiving and transmitting the digital and analog signals; and

a receiving system for providing corresponding execution signals in response to the digital and analog signals, said receiving system including

receiving means for receiving the digital and analog signals,

decoding means connected to said receiving means for decoding the code words and providing a corresponding execution command, and

analog sensing means connected to said receiving means and operable to produce a signal to terminate execution of the command.

4,241,332

PERSONAL SECURITY ALARM

Anthony Farque, Fayetteville, Ark., assignor to Body Guard, Inc., Springdale, Ark.

Filed Feb. 5, 1979, Ser. No. 9,657
Int. Cl.[3] G08B *7/00, 5/00*
U.S. Cl. 340—326 **12 Claims**

7. Visible and audible alarm apparatus comprising

a loud speaker,

a battery, a flash lamp,

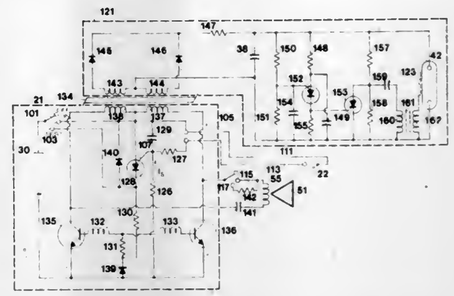
an audio frequency inverter circuit powered from said battery,

said inverter being connected to supply power to said loud speaker,

a high voltage transformer,

said inverter also being connected to the primary of said high voltage transformer,

a rectifier connected to rectify the output from the secondary of said high voltage transformer,



a capacitor connected to receive a charge from said rectifier thereby storing energy, and

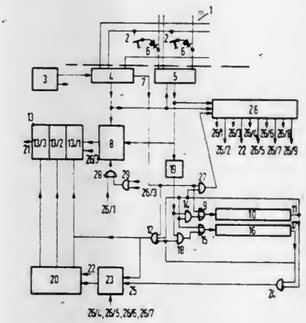
a pulse trigger circuit connected to trigger said flash lamp, said flash lamp being connected to receive the energy stored in said capacitor to produce a light pulse upon each operation of said trigger circuit.

4,241,333

KEY-OPERATED ARRANGEMENT FOR PRODUCING CODE CHARACTERS

Fritz Giebler, and Edmund Gensthaler, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 695,822, Jun. 14, 1976, abandoned. This application Sep. 16, 1977, Ser. No. 833,916
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1975, 2336403
Int. Cl.[2] G06F *3/02*
U.S. Cl. 340—365 S **2 Claims**



1. A key-operated arrangement in particular for teleprinters, comprising:

(a) a keyboard to encode characters and data arranged in matrix fashion in rows and columns, each character being electrically accessed by row and column selector lines;

(b) an addressable fixed-value store comprising an integrated module;

(c) a row and column scanning device means for creating sampling signals for periodically scanning the keyboard via the selector lines and also scanning the fixed-value store and producing a coded character from said store when a signal is present produced by the operation of a keyboard contact on said keyboard, the device means also

producing a dynamic short time-period trigger signal corresponding to depression of a key in the keyboard;

(d) at least one additional special function key matrix column on said keyboard having keyboard contacts in said keyboard, the additional column also being scanned by the scanning device means;

(e) a mode register connected to receive the trigger signals and also the sampling signals from all the rows and the additional matrix column, said mode register comprising means for selecting and providing a static special function state-determined control signal corresponding to a depressed special function key and in response to the dynamic trigger signal outputting the static control signal having a relatively long time period in parallel at outputs of the mode register; and

(f) special function circuitry connected to the special function control signals,

whereby the additional column of special function keys is provided without expanding the fixed-value store to provide static control signals for the special functions.

4,241,334

ELECTRIC HORN WITH TWIN DRIVING ELECTROMAGNETS

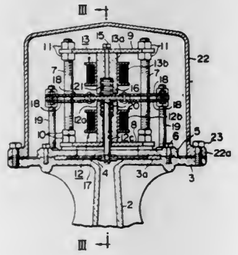
Yoshishige Shintaku, Osaka, Japan, assignor to Ibuki Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 26, 1979, Ser. No. 33,386

Claims priority, application Japan, Jan. 29, 1979, 54/8141; Feb. 8, 1979, 54/13716

Int. Cl.[2] G08B *3/10*

U.S. Cl. 340—388 **3 Claims**



1. An electric horn, comprising:

a horn trumpet;

a diaphragm which is located at the base of the horn trumpet so that sound produced by said diaphragm enters the horn trumpet;

two electromagnets;

an oscillatory core plate which is arranged between the electromagnets and is coupled to the diaphragm by a coupling rod; and

a controller adapted to energized the electromagnets alternately and repeatedly.

4,241,335

AUTOMATICALLY SUPERVISED ALARM SYSTEM

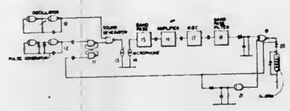
Brian S. Barnes, Birmingham, England, assignor to Modern Automatic Alarms Limited, London, England

Filed Jun. 26, 1978, Ser. No. 919,032

Int. Cl.[3] G08B *13/22*

U.S. Cl. 340—507 **9 Claims**

1. An alarm system comprising two spaced sensors for detecting a signal which is characteristic of a predetermfined emergency condition; a signal generator; and means for instituting an alarm when the sensor detects a signal which is characteristic of an emergency and when the sensor fails to detect a signal characteristic of the generator; said means for instituting an alarm being controlled by a comparator for comparing the outputs of said two sensors, so that only signals



derived from a particular region or regions are operative to actuate the alarm.

4,241,336

METHOD AND APPARATUS FOR MONITORING POLY-PHASE CURRENTS IN POLY-PHASE EQUIPMENT

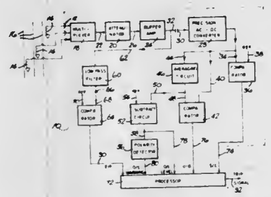
Tobias D. Schonken, Agincourt, Canada, assignor to Multilin Inc., Agincourt, Canada

Filed Nov. 13, 1978, Ser. No. 960,434

Claims priority, application United Kingdom, Nov. 14, 1977, 47366/77

Int. Cl.[3] G08B *23/00*

U.S. Cl. 340—518 **31 Claims**



1. A method of protecting poly-phase alternating current equipment against undesired conditions of current flow in the equipment, which method comprises obtaining, in respect of each phase of the equipment, a phase signal representative of the current in that phase, multiplexing the phase signals on a time division basis at a rate of at least several times the line frequency of the alternating currents in the equipment so as to obtain a single multiplexed signal, processing the multiplexed signal without de-multiplexing it to extract therefrom an output signal representative of a predetermined undesired condition of current flow in the equipment, and, in response to generation of said output signal, tripping the equipment.

4,241,337

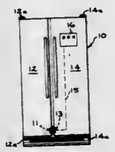
APPLIANCE DOOR POSITION SENSOR ARRANGEMENT

Luis E. Prada, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 29, 1979, Ser. No. 25,214

Int. Cl.[3] G08B *13/08*

U.S. Cl. 340—547 **7 Claims**



1. A door position sensor arrangement for an appliance having at least one access opening defined by a frame and a door therefor which is hinged at one side thereof, the arrangement comprising:

means for producing a magnetic field;

switch means operatively responsive to said magnetic field; a first one of said means being mounted on the edge of said door, the second of said means being mounted at a position spaced forward of said frame and directly opposite said first means, said first and second means being aligned generally in a plane that passes through the door edge and is parallel to the plane of said access opening, such that said switch means is influenced by said magnetic field to be in a first switch condition when the door is properly closed and in a second switch condition when the door is spaced away from said properly closed position by at least a predetermined amount;

and means responsive to said second condition of the switch means for providing an indication that the door is not properly closed.

4,241,338

AMBIENT NOISE INTRUDER ALARM

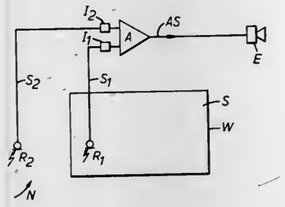
Ernst Spirig, P.O. Box 160, Speerstrasse 14, CH-8640 Rapperswil, Switzerland

Filed May 7, 1979, Ser. No. 36,454

Claims priority, application United Kingdom, May 15, 1978, 19603/78

Int. Cl.[3] G08B *13/16*

U.S. Cl. 340—566 **7 Claims**



1. An intruder alarm apparatus for producing an alarm when an intruder enters a closed space being supervised, comprising

first and second receivers (R1, R2) each having an output terminal, said receivers being responsive to ambient noise transmitted through the air;

normally de-activated alarm means (E); and

comparator means (A) having a pair of input terminals connected with the output terminals of said receivers, respectively, and an output terminal connected with said alarm means, said comparator means being operated to activated said alarm means when the difference between the output signals of said receivers deviates from a given threshold value.

4,241,339

MULTI-COLORED DISPLAY DEVICE

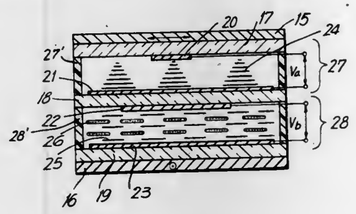
Yoshito Ushiyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 16, 1978, Ser. No. 878,548

Claims priority, application Japan, Feb. 16, 1977, 52/15906

Int. Cl.[3] G09F *9/35*

U.S. Cl. 340—702 **9 Claims**



1. A multi-colored display device comprising an array of N liquid crystal display cells arranged sequentially along a line of sight from an observer, said display cells having transparent electrodes deposited on the interior surfaces of opposed transparent plates, the first of said display cells towards the observer including a twisted nematic liquid crystal having an optical activity of 90° and a first polarizing plate disposed on the surface of said first display cell, each of the N-1 remaining display cells including a guest-host liquid crystal and a dye, each said guest-host liquid crystal oriented in parallel with the axis of polarization of said first polarizing plate and a colored polarizing plate having an axis of polarization perpendicular to the axis of polarization of said first polarizing plate disposed on the exposed surface of the last display cell of said array.

4,241,340

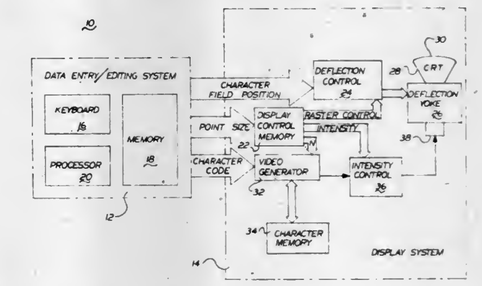
APPARATUS FOR GENERATING DISPLAYS OF VARIABLE SIZE CHARACTERS

Meredith T. Raney, Jr., Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed May 26, 1978, Ser. No. 909,797

Int. Cl.[3] G06F *3/14*

U.S. Cl. 340—731 **8 Claims**



1. Apparatus for controlling an energy beam to paint a plurality of variable size characters on an energy responsive surface one at a time, comprising:

raster scanning means for causing the energy beam to separately raster scan each of the portions of the energy responsive display surface upon which the individual characters are to be displayed by scanning a plurality of adjacent display strokes in each portion, with the raster scan of each portion being completed before scanning of the next portion has begun;

raster control means responsive to raster control signals to vary the length of and separation between said display strokes;

means responsive to a video signal for controlling the intensity of said energy beam as said beam raster scans each of said portions of said display surface so as to thereby display said characters on the respective said portions of said surface;

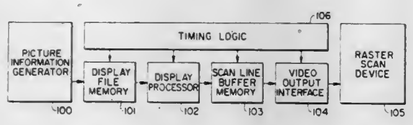
means for providing information representing the individual strokes to be displayed to generate selected characters;

video signal generating means for generating a video signal from said individual stroke information in synchronism with the raster scanning, and including means for repeating the information of each of said individual strokes a selected number of times N in said video signal so that said information for each of said individual strokes is displayed in a selected number N of adjacent display strokes on said portion of said display surface;

means for providing an indication of the size of said image to be displayed; and

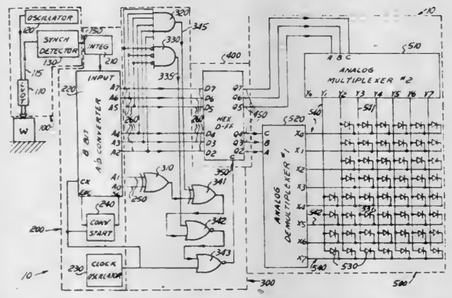
means responsive to said indication for providing said raster control signals and said selected number N in accordance therewith.

4,241,341
APPARATUS FOR SCAN CONVERSION
Mark R. Thorson, 12991 Pierce Rd., Saratoga, Calif. 95070
Filed Mar. 5, 1979, Ser. No. 17,396
Int. Cl.³ G06F *3/153*
U.S. Cl. 340—744 **8 Claims**



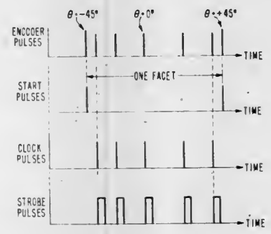
1. A system for converting pieces of information, each corresponding to one of a plurality of line segments that together form a picture, into a form suitable for display on a raster scan device, comprising:
a memory capable of storing a plurality of said pieces of information,
means receiving said pieces of information from said memory for calculating any points of intersection of the corresponding line segments with a particular display scan line of intersect, said calculating means operating to determine the points of intersection of the line segments described by said pieces of information with a particular scan line independently of calculations for any other scan line, and
means receiving the points of intersection from said calculating means for ordering their occurrence along said scan line of interest, whereby the information is presented in a form suitable for application to a raster scan device, wherein said ordering means comprises:
a random access memory,
means for sequentially reading information out of said memory and presenting the information in a form suitable for application to a raster scan device, and
means receiving the points of intersection as determined by said calculating means for addressing locations of said random access memory that correspond to the points of intersection.

4,241,342
MEASUREMENT INDICATING APPARATUS AND METHOD
Kenneth A. Merriweather, Madison Township, Dayton County, Ohio, assignor to The Bendix Corporation, Southfield, Mich.
Filed Mar. 1, 1979, Ser. No. 16,706
Int. Cl.³ G06F *3/147*
U.S. Cl. 340—753 **9 Claims**



1. A method of periodically generating a display of a measurement comprising the steps of:
periodically generating an analog signal indicative of the measurement;
converting the analog signal into a digital representation, said representation including a portion of greater significance and a portion of lesser significance;
displaying on a display the greater significance portion of the digital representation; and
inhibiting a change in the display in response to predetermined values of the lesser significance portion of the digital representation.

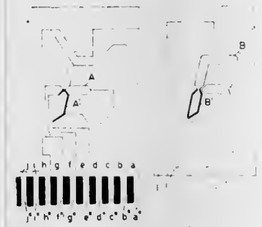
4,241,343
DISPLAY APPARATUS
George J. Fan, Ossining; Richard L. Garwin, Scarsdale; James L. Levine, Yorktown Heights, and Janusz S. Wilczynski, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 755,886, Dec. 30, 1976, abandoned. This application Aug. 18, 1978, Ser. No. 934,779
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—755 **3 Claims**



1. In visual apparatus of the type wherein a two-dimensional display is produced through giving the appearance of cyclical motion to the virtual image of the light from each member of a row of lights by passing the light through a rotating prism and selectively turning each light "on" and "off" during portions of said motion in accordance with a pattern to be displayed;
the distortion compensating improvement comprising:
means for precorrecting light signal "on" and "off" timing apparatus synchronized with rotation of said prism said precorrecting apparatus including sensible means angularly spaced with respect to said virtual image travel during passage of a facet of said prism to accommodate for the apparent change inmovement rate of said virtual image to the eye of the observer as said image traverses portions of said cyclical motion.

4,241,344
ELECTRO-OPTICAL DEVICE FOR THE DISPLAY OF DARK SYMBOLS COMPOSED OF SEPARATELY SELECTABLE DISPLAY SEGMENTS AGAINST A BRIGHT BACKGROUND AND A MEANS FOR ADDRESSING THIS DEVICE
Allan R. Kmetz, Nussbaumen; Klaus Müller, Baden, and Terry J. Scheffer, Forch, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Division of Ser. No. 925,539, Jul. 17, 1978. This application Apr. 5, 1979, Ser. No. 27,382
Claims priority, application Switzerland, Jul. 29, 1977, 9397/77
Int. Cl.³ G09F *9/35*
U.S. Cl. 340—765 **7 Claims**

1. In an electro-optical display device for the display of dark symbols against a bright background, wherein a plurality of separately selectable display segments are formed by a transparent front electrode applied to the surface of a transparent front cell plate and a rear electrode applied to the surface of a rear cell plate between which is located an electro-optical medium formed by a guest-host liquid crystal mixture, in particular a cholesteric liquid crystal with at least one added pleochroic dye, said cholesteric liquid crystal exhibiting a transition voltage where the cholesteric liquid crystal phase transforms to a nematic phase, said front electrode composed of a plurality of electrode elements that are electrically insulated from each other, said rear electrode composed of at least two electrode elements that cover nearly the entire area of the rear cell plate except for fine separation lines which serve to insulate them from each other, said front and said rear electrode elements having conduction paths leading to them, said front electrode having narrow separation lines which serve to electrically insulate the electrode elements thereof from each other and whose dimensions are small compared to the dimensions of the displayed symbols, said front electrode, except for said narrow separation lines, covering nearly the entire area of the front cell plate, and wherein at least one section of the separation line on the front electrode coincides with at least one third of the circumference of at least one display segment of a display symbol and at least one section of the separation

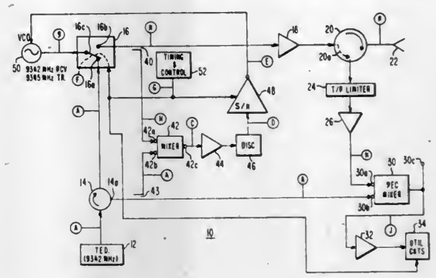


line on the rear electrode coincides with at least one third of the circumference of the same display segment, improved means for driving the front and rear electrodes corresponding to an optically selected display element, comprising:
means for addressing the display device whereby selected electrode segments are displayed against said bright background, said addressing means comprising,
first means for applying first unipolar addressing signals to the selected front and rear electrodes corresponding to the selected display segments of a desired symbol, said first addressing signal having the same amplitude, frequency, phase and waveform, and
second means for applying second addressing signals to the front and rear electrodes corresponding to unselected display segments, said second signals producing a potential difference in every region of the display background larger than the transition voltage of the electro-optical medium.

4,241,345
PULSE RADAR TRANSMITTING OSCILLATOR
Henry C. Johnson, Neshanic, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 31, 1979, Ser. No. 44,177
Int. Cl.³ G01S *7/02*
U.S. Cl. 343—5 SW **10 Claims**

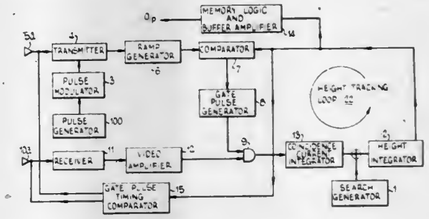
1. A pulsed radar oscillator comprising in combination:
a first means producing a signal of a given radio frequency f_1;
a second means normally adapted to produce a signal of a second different radio frequency f_2 but responsive to the application of said signal of frequency f_1 thereto for producing frequency f_1;
means responsive to said second means for transmitting said frequency f_2 when produced thereby;
means producing a succession of time spaced pulses of one value alternating with a succession of time spaced pulses of another value; and

means responsive to said pulses of one value for applying said frequency f_1 to said second means and responsive to



said pulses of another value for removing said frequency f_1 from said second means.

4,241,346
PULSE RADAR ALTIMETERS
George C. Watson, Salisbury, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Jul. 11, 1979, Ser. No. 56,678
Int. Cl.³ G01S *13/12*
U.S. Cl. 343—7 A **6 Claims**



4. An aircraft radar altimeter comprising,
a transmitter for transmitting radar pulses,
a variable beam width transmitter antenna for radiating the output of the transmitter towards the ground,
a variable beam width receiver antenna for receiving radar ground echoes,
a receiver connected to receive signals from said receiver antenna,
a timer connected to receive inputs from said transmitter and receiver for measuring time intervals between the transmission of each said pulse and the reception of a corresponding ground echo signal, the intervals being proportional to search altitude of said aircraft,
and control means responsive to output of said timer and arranged to simultaneously vary the beam widths of the antennas in accordance with the values of the measured time intervals.

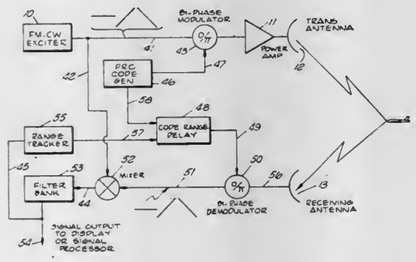
4,241,347
PRC/FM CW RADAR SYSTEM
Damian F. Albanese, and Albert M. Klein, both of Chatsworth, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jun. 28, 1978, Ser. No. 919,910
Int. Cl.² G01S *9/233, 9/24*
U.S. Cl. 343—9 R **14 Claims**

4. A CW radar system comprising:

transmitting and receiving antennas having patterns covering substantially the same spatial sector;

first means for generating a radio frequency signal according to a timed program to produce a repetitive pattern of transmission signal frames, each including a first period during which a monochromatic radio frequency transmission signal is generated, a second period during which the frequency of said transmission signal is varied substantially linearly in a first sense, and a third period during which the frequency of said transmission signal is varied substantially linearly in a second sense, thereby producing frequency modulation during said second and third periods;

second means responsive to the output of said first means for biphase coding the output of said first means according to a repetitive pseudo-random coded sequence having a



predetermined word duration and for applying said coded first means output to said transmitting antenna;

third means responsive to said receiving antenna for correlating received echo signals resulting from illumination of targets within said spatial sector by said transmitting antenna against a replica of said biphase coding applied in said second means to produce an output including a range-representing signal during the time of each of said sequence word durations, said range-representing signal retaining the modulation applied during said second and third periods;

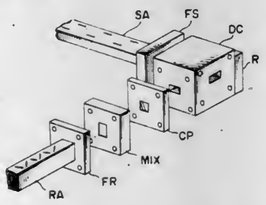
and fourth means responsive to said third means output for demodulating received signals containing said frequency modulation to select a range-representing pulse from the output of said third means, said selected pulse unambiguously representing the range of a corresponding target.

4,241,348

RADAR EQUIPMENT FOR VEHICLES

Hiroyuki Yatsuka, Kawasaki, and Yasuhiro Isogai, Akashi, both of Japan, assignors to Fujitsu Limited and Fujitsu Ten Limited, both of, Japan

Filed Aug. 20, 1979, Ser. No. 68,005
Claims priority, application Japan, Aug. 21, 1978, 53-101563
Int. Cl.³ G01S *13/26, 13/34;* H01Q *13/10*
U.S. Cl. 343—17.5 **3 Claims**



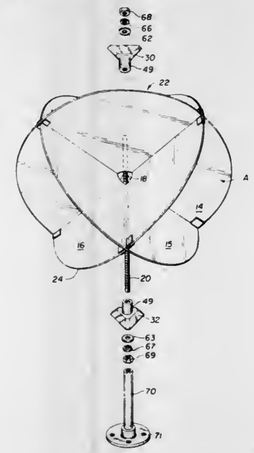
1. Radar equipment for vehicles which sends out from a transmitting antenna a continuous wave signal modulated by a frequency modulator, receives a reflected wave by a receiving antenna and mixes it with one portion of the output from the frequency modulator and in which the sending and the receiving antenna are arranged in a V-letter form, characterized by a directional coupler provided between the frequency modulator and the sending antenna for applying one portion of the output from the frequency modulator to a mixer of an in-line type supplied with the received signal from the receiving antenna, a coupling element provided so that a waveguide of the in-line type mixer and a waveguide of the directional coupler perpendicularly intersect each other in their lengthwise direction to achieve predetermined coupling between the waveguides, and an impedance-adjustable dummy load connected to a dummy terminal of the directional coupler.

4,241,349

APPARATUS FOR DISPOSING CORNER CUBE REFLECTOR FOR DETECTION

John L. Connell, San Francisco, Calif., assignor to Davis Instruments Corporation, San Leandro, Calif.

Filed Mar. 9, 1979, Ser. No. 19,191
Int. Cl.³ H01Q *15/18*
U.S. Cl. 343—18 C **13 Claims**



1. Apparatus for holding an octahedral radar reflector cluster having eight corner cubes comprising in combination first and second tapered members, each said tapered member confronted across opposing corner cubes to each of the three mutually orthogonal surfaces of a corner cube, said respective tapered members being disposed with their respective constricted ends towards one another; means for urging said respective tapered members towards one another across the apexes of said opposed corner cubes whereby said tapered members are wedged into opposing apexes of said opposed corner cubes; and a vertical support fastened to one of said members.

4,241,350

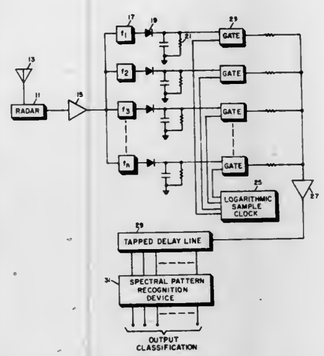
RADAR TARGET PATTERN RECOGNITION SYSTEM USING LOGARITHMIC ANALYSIS

Malcolm R. Uffelman, Vienna, Va., assignor to Scope, Inc., Reston, Va.

Continuation of Ser. No. 479,083, Aug. 12, 1965, abandoned.
This application Dec. 10, 1971, Ser. No. 206,957
Int. Cl.³ G01S *7/44*
U.S. Cl. 343—5 SA **11 Claims**

1. A target pattern recognition system comprising,
radar means for detecting a target,
a parallel bank spectrum analyzer,
coupling means for delivering the radar output to the input of said analyzer,

means coupling the output of said analyzer to said last named means for sampling the output of said analyzer relative to a logarithmic frequency base,



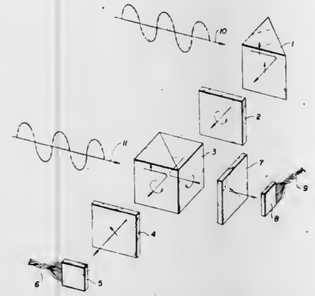
a pattern recognition device, and
means coupling the sampled output of said analyzer to said pattern recognition device.

4,241,351

ARRAY ANTENNA CONTROLLER

James S. Shreve, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 11, 1979, Ser. No. 29,421
Int. Cl.³ H04B *7/00*
U.S. Cl. 343—100 SA **7 Claims**



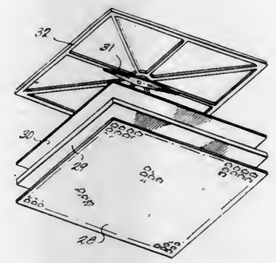
1. An apparatus for causing an array antenna to transmit a selected antenna pattern, said array antenna having a plurality of array elements comprising,
a first transparency which varies in transmittance in accordance with a parameter of said selected antenna pattern,
optical processor means including both means for directing a coherent light beam through said transparency so that said beam is spatially modulated by said variation in transmittance and means for taking the Fourier transform of said modulated beam, thus forming a resultant beam,
means for providing electrical signals corresponding to the amplitude and/or phase of a plurality of spatially displaced samples of said resultant beam, said samples corresponding in relative spacing to the elements of said array antenna, and
means for exciting the elements of said array antenna with said electrical signals.

4,241,352

FEED NETWORK SCANNING ANTENNA EMPLOYING ROTATING DIRECTIONAL COUPLER

Mark H. Alspaugh, Boulder, and Lawrence R. Murphy, Longmont, both of Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

Filed Sep. 15, 1976, Ser. No. 723,643
Int. Cl.² H01Q *3/26;* H01P *5/18*
U.S. Cl. 343—700 MS **8 Claims**



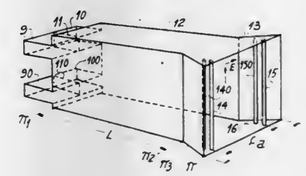
1. A microwave beam scanning antenna system having an antenna array comprising a plurality of antenna elements, a single point signal feed network, and a scan network coupling the single point signal feed network to said antenna array, said scan network comprising a plurality of coupling paths extending between said single point feed network and said antenna elements and including a planar portion and further including a cyclically mechanically displaced coupler spaced from but coplanar to said planar portion for electrically coupling said single point feed network to varying locations along said plurality of coupling paths, whereby the respective lengths of said plurality of coupling paths and hence phasing of the signals thereon vary in a cyclic fashion to achieve beam scanning of said antenna array.

4,241,353

MULTIMODE MONOPULSE FEED AND ANTENNA INCORPORATING SAME

Francois Salvat; Jean Bouko, and Claude Coquio, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 21, 1979, Ser. No. 13,272
Claims priority, application France, Feb. 24, 1978, 78 05337
Int. Cl.³ H01Q *13/02*
U.S. Cl. 343—786 **9 Claims**



1. A multimode monopulse feed comprising an E-plane multimode structure producing the E function, an H-plane multimode structure producing the H function, the aperture of the H-plane structure forming the aperture of the multimode microwave feed, a group of waveguides connected to the input of said E-plane structure, which waveguides are excited in the fundamental mode, said E-plane multimode structure terminating in a flared horn presenting an aperture, at least two obsta-

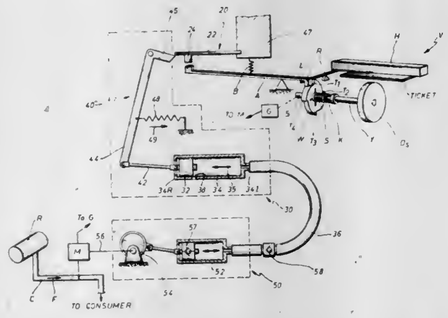
cles being placed in said aperture in such a way that said obstacles have a longitudinal dimension parallel to the electric field in said aperture, said obstacles generating an odd propagative upper mode of the H_{30} type, the said multimode structure forming a mixed E-plane and H-plane structure of reduced length in whose aperture the E-plane and H-plane illumination characteristics are controllable independently but simultaneously.

4,241,354

APPARATUS FOR INDICATING UNAUTHORIZED DELIVERY OF A FLUID PRODUCT

Christopher B. Laird, Erie, Pa., assignor to Geosource Inc., Houston, Tex.

Filed Mar. 2, 1979, Ser. No. 16,796
Int. Cl.³ G01D *5/02*
U.S. Cl. 346—43 **12 Claims**



1. Apparatus for monitoring the flow of a fluid from a reservoir by generating a predetermined indicia on a ticket, the apparatus comprising:

means for generating on the ticket an indicia representative of the occurrence of both an interruption of a predetermined duration in the flow of fluid from the reservoir followed by a resumption of fluid flow before the ticket is removed; and

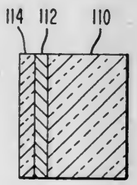
a timer arrangement operatively associated with the indicia generating means and responsive to the flow of fluid for timing the duration of an interruption thereof and for priming the indicia generating means if the duration of the interruption exceeds the predetermined time interval.

4,241,355

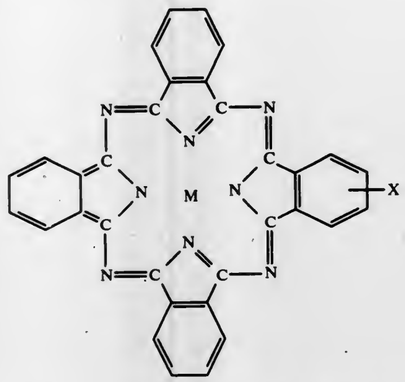
ABLATIVE OPTICAL RECORDING MEDIUM

Allen Bloom, East Windsor, and William J. Burke, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,853
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **9 Claims**



1. An ablative optical recording medium comprising a light reflecting material coated with a layer of a light absorbing dye having the formula



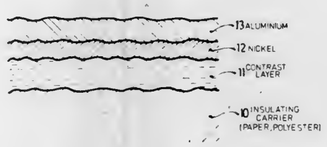
wherein X is hydrogen or chlorine and M is selected from the group consisting of lead, aluminum, vanadyl or tin (+4).

4,241,356

RECORDING MEDIUM FOR THERMOGRAPHIC RECORDING OF DATA ITEMS

Klaus Brill, Korntal, and Wolfgang Grothe, Tiefenbronn, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 839,378, Oct. 4, 1977. This application Apr. 30, 1979, Ser. No. 34,258
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2645485
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **14 Claims**



1. Recording medium for electrosensitive recording of data items having a substrate (**10**) and a metallic layer (**12, 13**) thereover, in which the metallic layer on the substrate (**10**) is adapted to be removed by an electrical discharge by burning off the metallic layer beneath the electrode in contact with the medium to leave a visible mark representative of a data item to be recorded,

wherein, in accordance with the invention,

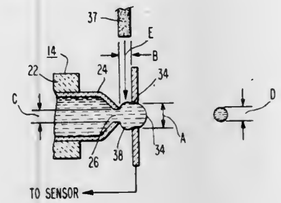
the metallic layer comprises a two-metal, two-layer system comprising a top layer of aluminum (**13**) and a layer of metallic nickel (**12**) applied therebeneath, the aluminum and nickel being present in respective quantities relative to each other to chemically react with each other in an exothermal reaction upon application of an electrical discharge of sufficient energy to initiate a chemical reaction of the nickel with the aluminum.

4,241,357

METHOD AND APPARATUS FOR OPERATING AN INK JET

Themos C. Anestos, Utica, Mich., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 24, 1979, Ser. No. 78,131
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **12 Claims**



1. Ink jet apparatus comprising:

an ink reservoir;

an ink jet including an orifice issuing ink droplets therefrom;

means for supplying ink from said reservoir to said ink jet; and

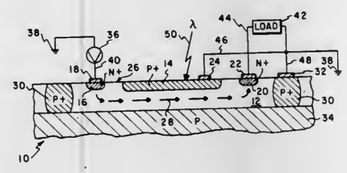
impedance sensing means associated with said orifice for sensing changes in impedance resulting from the presence or absence of ink droplets accumulating at said orifice.

4,241,358

RADIATION SENSITIVE DEVICE WITH LATERAL CURRENT

Edward C. Wade, Carrollton, Tex., assignor to TRW Inc., Los Angeles, Calif.

Filed Mar. 26, 1979, Ser. No. 23,685
Int. Cl.³ H01B *27/14*
U.S. Cl. 357—30 **12 Claims**



1. A radiation sensitive solid state device comprising in combination:

a semiconductor layer of one conductivity type;

a radiation sensitive element present in the semiconductor layer comprising an electrode situated at or adjacent a first surface and forming a rectifying junction with the semiconductor layer material of the one conductivity type;

a first connection of the semiconductor layer;

a second connection of the semiconductor layer spaced apart laterally from the first connection on the opposite side of the radiation sensitive element wherein the semiconductor layer portion situated intermediate said connections forms a low resistance path having a thickness measured from the radiation sensitive element to the edge opposite the radiation sensitive element between roughly about six microns and roughly about seven microns whereby a substantially lateral flow of charge carriers characteristic of the one conductivity type can occur; and

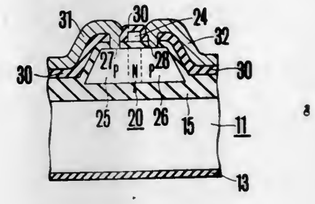
a connection of the radiation sensitive element.

4,241,359

SEMICONDUCTOR DEVICE HAVING BURIED INSULATING LAYER

Katsutoshi Izumi, Seki; Masanobu Doken, and Hisashi Ariyoshi, both of Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,738
Claims priority, application Japan, Nov. 28, 1977, 52-141599
Int. Cl.³ H01L *27/12, 29/78, 29/06*
U.S. Cl. 357—49 **8 Claims**



1. A semiconductor device for use in fabricating an integrated circuit, comprising:

a semiconductor substrate having a pair of opposed surfaces;

a buried insulating compound layer disposed within said substrate and at a predetermined depth from one surface thereof, said buried insulating compound layer being formed by implanting ions through said one surface;

semiconductor circuit elements formed in an upper layer of said substrate lying between said buried insulating compound layer and said one surface, said circuit elements being incorporated into an island formed by selectively etching said upper layer; and

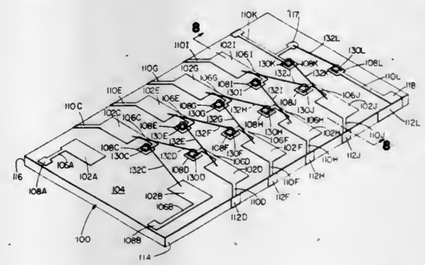
an insulating film formed on the other surface of said substrate and having a thickness sufficient to compensate for the strain induced in said substrate during the formation of said buried insulating compound layer.

4,241,360

SERIES CAPACITOR VOLTAGE MULTIPLIER CIRCUIT WITH TOP CONNECTED RECTIFIERS

John G. Hambor, Colt's Neck, and James G. Bickel, Wayside, both of N.J., assignors to Galileo Electro-Optics Corp., Sturbridge, Mass.

Continuation-in-part of Ser. No. 728,615, Oct. 1, 1976, abandoned. This application Aug. 10, 1978, Ser. No. 932,610
Int. Cl.³ H01L *29/06*
U.S. Cl. 357—56 **12 Claims**



1. A voltage multiplier device of the type having capacitors connected in a first and a second series, and having diodes bridging between said series, said device comprising

at least one dielectric substrate with upper, lower, and side surfaces,

a plurality of discrete metallized upper plates on said upper surface,

a plurality of discrete metallized lower plates on said lower surface,

said upper plates being aligned with said lower plates to form pairs of upper and lower aligned plates, each pair of aligned plates acting with the intervening substrate to form a capacitor,

a plurality of metallized paths

each said path connecting the upper plate of one said pair to the lower plate of an adjacent said pair so as to connect said capacitors in one of said first and second series,

each said path extending from said upper to said lower surface across said side of said substrate, thereby forming a plurality of discrete metallized paths extending across said side, and

a plurality of diodes connected between said first and second series, said diode connections being made directly to and only to said upper metallized plates so that diode connections are made to only one surface of said substrate.

4,241,361

TUNING VOLTAGE DISPLAY DEVICE FOR A COLOR TELEVISION RECEIVER WITH AN ELECTRONIC TUNER

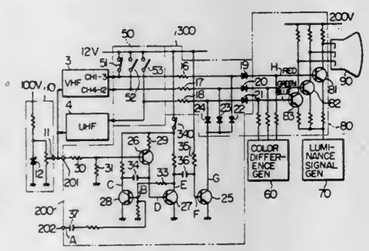
Masanori Kamiya, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 16, 1979, Ser. No. 21,200

Claims priority, application Japan, Mar. 20, 1978, 53/32124

Int. Cl.³ H04N *5/50, 9/62*

U.S. Cl. 358—10 **7 Claims**



4. In a color television receiver having:

(1) a tuner having (a) band selection means for selecting any one of a plurality of frequency bands each of which includes a plurality of channels and (b) channel selection means for selecting one of said plurality of channels in said one frequency band selected by said band selection means;

(2) color signal generating means for generating a color picture signal representative of a color television signal in said one channel selected by said channel selection means in said selected one frequency band; and

(3) reproducing means for reproducing a color picture representative of said color picture signal on a color screen, the improvement comprising:

(i) color pattern signal generating means supplied with outputs of said band selection means and said channel selection means for producing a color pattern signal which is supplied to said color signal generating means and mixed with said color picture signal, so that the thus mixed signal output of said color signal generating means causes said reproducing means to reproduce on said color screen a reproduced color picture as well as a color pattern whose color and pattern are representative of said selected one frequency band and said selected one channel, respectively.

4,241,362

CIRCUIT FOR INCREASING A SIGNAL SLOPE OF A PERIODICALLY OCCURRING SIGNAL MAINLY NEAR A REFERENCE LEVEL

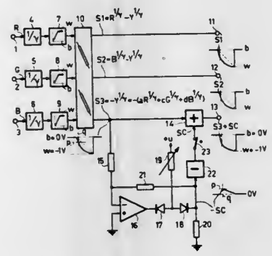
Nicolaas J. L. Van der Valk, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1978, Ser. No. 960,527

Claims priority, application Netherlands, Dec. 27, 1977, 7714398

Int. Cl.³ H04N *9/53*

U.S. Cl. 358—32 **5 Claims**



1. A circuit for increasing, mainly near a reference level, a signal slope of a periodically occurring signal, wherein the circuit comprises a differential amplifier provided with a first and a second input to which the supply of the signal to be processed and a reference potential, respectively, and supplied, and an output; a first signal limiting circuit connected to said amplifier output; a first and a second resistor arranged serially and connected at the junction thereof to said first signal limiting circuit, said first and second resistors being connected respectively to the first amplifier input and the reference potential; and a superposition stage having a first input connected to said junction and a second input for receiving the signal to be processed, and an output for supplying the signal with the increased signal slope.

5. A circuit as claimed in claim 1 suitable for use in a color television camera, wherein the circuit is present in a luminance channel subsequent to a matrix circuit, inputs of the matrix circuit being connected to outputs of series arrangements, each consisting of a gamma correction circuit and a signal limiting circuit.

4,241,363

COMB FILTER CIRCUIT

Teruaki Maeyama, and Hideo Nakata, both of Suita, Japan, assignors to U.S. Philips Corporation, New York, N.Y.

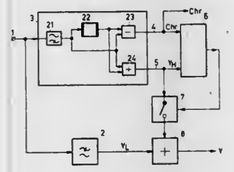
Filed Apr. 9, 1979, Ser. No. 27,957

Claims priority, application Netherlands, Apr. 13, 1978, 7803910

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—36 **4 Claims**

1. A comb filter circuit comprising an input for receiving a composite color television signal, a comb filter coupled to said input and having a first and a second output for providing respectively a combed high-frequency luminance signal component from a composite color television signal and a combed chrominance signal component, a low-pass filter also coupled to said input for providing a low-frequency luminance signal component, an adding circuit having a first input coupled to the first output of the comb filter and a second input coupled to the low-pass filter, a detector coupled to the first and second outputs of said comb filter for detecting an unsuppressed chrominance signal component in the high-frequency luminance signal component, and an attenuation circuit having a control input coupled to said detector for attenuating at least a portion of the high-frequency luminance signal component at the first input of said adding circuit when an unsuppressed chrominance signal occurs in said high-frequency luminance signal component, wherein the detector comprises a multiplier having a first input coupled to the first output of the comb filter, a



second input coupled to the second output of the comb filter, and an output coupled to the control input of the attenuation circuit.

4,241,364

PROGRAM-SELECTING DEVICE IN A REPRODUCING APPARATUS

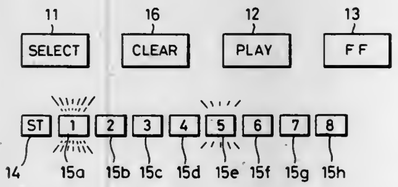
Takashi Shiga, Tokyo, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan

Filed May 29, 1979, Ser. No. 42,908

Claims priority, application Japan, May 29, 1978, 53/63363

Int. Cl.³ G11B *15/18*

U.S. Cl. 360—72.1 **6 Claims**



1. A program-selecting device in a reproducing apparatus having a fast-forward search speed and a normal playback speed for reproducing a selected program from a recording medium having a plurality of spaced programs recorded thereon, said program-selecting device comprising: a switch program selection which is manipulatively operated a number of times corresponding to

the number of programs to be skipped over to reach the selected program;

a memory circuit means for storing the number of times the switch is thus operated;

a counting circuit means for detecting the parts between adjacent programs from the signal reproduced at the fast-forward search speed from the recording medium thereby to count the number of programs skipped over at the fast-forward speed;

a comparison circuit producing a coincidence signal when the output of the memory circuit and the output of the counting circuit coincide;

means operating in response to said coincidence signal to change the apparatus from the fast-forward search speed over to the normal playback speed to thereby play the selected program;

display means comprising a set of display elements provided in a plural number corresponding respectively to the number of program numbers which can be selected, said display means activating the display element corresponding to the program number of the selected program to lite such; and

lighting means activating the display elements corresponding to the counted skipped over programs as they are detected by the counting means to lite such in a mode different from the mode in which the display element corresponding to said selected program number is lit.

4,241,365

MAGNETIC VIDEO RECORDING AND REPRODUCING DEVICE

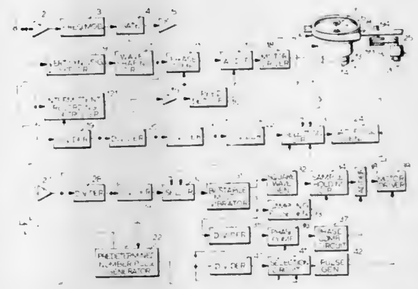
Minoru Koda, Hirakata, and Tsuneo Muya, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 734,809, Oct. 22, 1976, abandoned. This application Aug. 22, 1978, Ser. No. 936,189

Claims priority, application Japan, Oct. 31, 1975, 50-131587

Int. Cl.² G11B *15/28*

U.S. Cl. 360—73 **5 Claims**



1. A magnetic recording and reproducing device in which a video signal is recorded intermittently on an oblique magnetic track formed on a magnetic tape by a rotary magnetic head, and reproduced therefrom, said device comprising: a tape driving capstan rotatable for moving the magnetic tape a predetermined constant distance for each rotation thereof; a pulse motor for rotating said capstan; driving means coupled to said motor for rotating said motor; pulse supplying means coupled to said driving means having input pulses applied thereto for supplying to said driving means output pulses corresponding to the number of said input pulses applied to said pulse supplying means for driving said driving means for rotating said motor an amount corresponding to the number of said input pulses, wherein the number of said input pulses corresponding to the number of said output pulses for driving said driving means to rotate said motor by an amount corresponding to one track of said video signal is a predetermined constant α, and the number of said input pulses for rotation of said motor by an amount corresponding to $1/\beta$ of one track of said video signal is a predetermined constant α/β, where α is a positive integer other than a prime number and β is a positive integer other than 1; a first pulse generating means for generating input pulses to be applied to said pulse supplying means; a first gating means connected between said first pulse generating means and said pulse supplying means for gating said input pulses to said pulse supplying means; pulse counting means coupled to said first pulse generating means and said first gating means and including a first pulse counter for counting said input pulses for producing one pulse every time said first pulse counter counts α/β pulses, and a second pulse counter coupled to said first pulse counter for receiving pulses produced from said first pulse counter and for counting the received pulses to produce

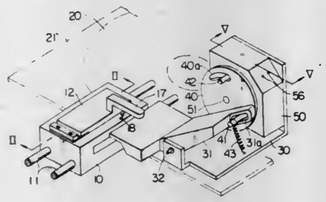
one pulse after said second pulse counter counts β pulses, and selecting means coupled to said pulse counting means and to said first gating means for manually selecting the operation of said pulse counting means for opening said first gating means only during a time α/β number of said input pulses are counted by said first pulse counter so as to apply only α/β number of said input pulses to said pulse supplying means, or opening said first gating means only during a time β number of the pulses from said first pulse counter are counted by said pulse counter so as to apply only α number of said input pulses to said pulse supplying means.

4,241,366

MAGNETIC HEAD LOADING APPARATUS

Hiroshi Nishida, Kanagawa; Kazuo Nakagoshi, Odawara; Jun Naruse, Odawara, and Kunihiro Motoyoshi, Odawara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 5, 1979, Ser. No. 9,688
Claims priority, application Japan, Feb. 16, 1978, 53/15957
Int. Cl.³ G11B *5/54*
U.S. Cl. 360—105 **7 Claims**



1. A magnetic head loading apparatus for loading a magnetic head on the surface of a disc-shaped recording medium rotating continuously, said magnetic head loading apparatus comprising

supporting means for supporting said magnetic head and being moveable between a load position, where said magnetic head performs recording on said recording medium or reproduction from said medium, and an unload position, where said head is retracted from said recording medium; and

a means for shifting said supporting means from said unload position to said load position in such a manner that the speed of said magnetic head is lowered as said magnetic head moves closer to said surface of said recording medium.

4,241,367

THIN FILM MAGNETIC HEAD

Noboru Nomura, Kyoto; Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi, and Norimoto Nouchi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 5, 1979, Ser. No. 17,536
Claims priority, application Japan, Mar. 3, 1978, 53/24887; Dec. 28, 1978, 53/165644
Int. Cl.³ G11B *5/14, 5/20*
U.S. Cl. 360—127 **5 Claims**

1. A thin film magnetic head comprising:

a magnetic material substrate having a contact portion adapted to face a magnetic medium and a surface extending substantially perpendicularly of said contact portion;

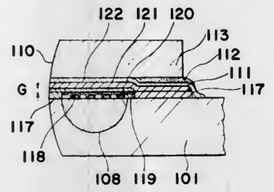
said substrate having formed in said surface thereof a groove;

a non-magnetic insulating material filling said groove;

at least one conductive body layer formed on said non-magnetic insulating material and extending substantially parallel to said groove;

a magnetic gap made of a non-magnetic insulating body layer formed over said magnetic material substrate and extending from said contact portion at least to said groove;

an upper portion magnetic material layer covering said magnetic gap and said magnetic material substrate; and



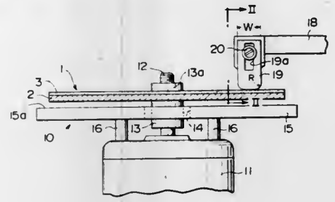
a magnetic circuit formed around said groove by said magnetic material substrate, said magnetic gap, said upper portion magnetic material layer and said conductive body layer.

4,241,368

MAGNETIC SHEET RECORDER WITH A MAGNETIC SHEET SURFACE TREATING MEANS

Eiichi Tadokoro, and Tatsuji Kitamoto, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 835,791, Sep. 22, 1977, abandoned. This application Mar. 27, 1979, Ser. No. 24,209
Claims priority, application Japan, Nov. 9, 1976, 51-134535
Int. Cl.³ G11B *3/58, 25/04*
U.S. Cl. 360—128 **13 Claims**



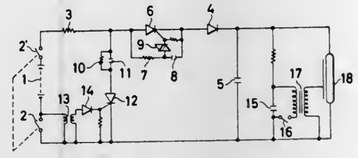
1. A magnetic sheet recorder provided with means for rotating a magnetic sheet having a magnetic layer, a back plate supporting the magnetic sheet, head support means, and a magnetic head supported on said head support means and which is put into contact with the magnetic layer of the magnetic sheet and moved substantially in the radial direction for recording or reproduction, wherein the improvement comprises a surface treating means provided in said recorder to be put into contact with the magnetic layer of the magnetic sheet simultaneously with said magnetic head for removing from the surface of the magnetic layer dust particles, scratches and the like thereon and said surface treating means being movable substantially in the radial direction of the magnetic sheet as the magnetic sheet is rotated, said surface treating means being mounted on said head support means on the leading side of said magnetic head and positioned to contact the area of the recording track of said magnetic sheet simultaneously with and in advance of such contact by said magnetic head.

4,241,369

ELECTRICAL POWER SOURCE FOR AN ELECTRONIC FLASH UNIT

Kazuo Ikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1979, Ser. No. 47,899
Claims priority, application Japan, Jun. 26, 1978, 53-77153
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—8 **7 Claims**



1. An electrical power supply apparatus for an electronic flash unit having electrical energy storage means and a charging circuit for the storage means, comprising:

an electrical power source switch having mechanical contacts and connected in the charging circuit for said storage means;

detecting means connected to said electrical power source switch to detect an aerial discharge produced across the contacts of said switch upon opening of said electrical power source switch and, upon occurrence of said discharge, to produce a signal; and

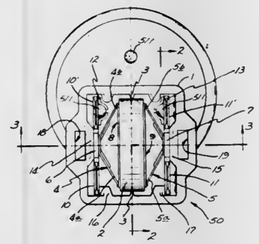
a semi-conductor switch connected in the charging circuit for said storage means and arranged to be opened in response to said signal.

4,241,370

THERMAL RELAYS PARTICULARLY FOR STARTING SINGLE-PHASE ASYNCHRONOUS MOTORS

Pietro De Filippis; Amedeo Salvatore; Luigi Trama, all of Naples, and Giuseppe Notaro, Pomigliano D'Arco, all of Italy, assignors to Texas Instruments Incorporated, Attleboro, Mass.

Filed Nov. 14, 1978, Ser. No. 960,671
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—24 **11 Claims**



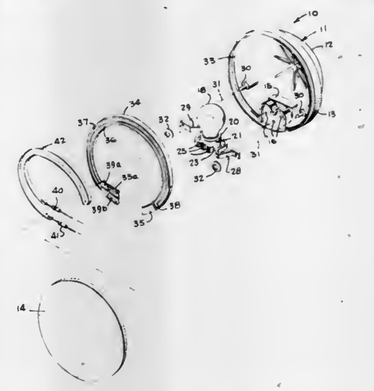
1. A thermal relay particularly for starting single phase asynchronous motors comprising a housing, a resistor of a material of positive temperature coefficient of resistivity within the housing, and resilient electrically conducting metal contact means disposed between the housing and respective opposite sides of the resistor for connecting the resistor in an electrical circuit, the contact means having portions of a metal material of relatively high thermal resistance retarding heat transfer from the resistor to the housing through the contact means, said contact means including relatively thin spring portions formed of said metal material having said high thermal resistance to provide a thermal barrier between the resistor and housing, the thin spring portions being formed of stainless steel to be disposed in firm electrical engagement with the opposite sides of the resistor while forming said thermal barrier.

4,241,371

SINGLE FILAMENT, DUAL FUNCTION, VEHICLE SIGNAL LAMP

Howard A. Sage, Laguna Hills, Calif., assignor to Truck-Lite Company, Inc., Falconer, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,803
Int. Cl.³ B60Q *1/04*
U.S. Cl. 362—61 **15 Claims**



1. A single filament dual function vehicle signal lamp assembly adapted to be connected to vehicle safety light signalling or illuminating circuits to serve functions previously served by dual filament vehicle lamps including tail and stop/turn lamp functions and the like, comprising a rear backing housing member serving as a reflector and lamp housing having a forwardly facing cavity bounded by a concavely curved reflector surface, a lens cover member joined about its perimeter to the housing member to cover said cavity, a single filament lamp bulb in said cavity, a generally flat annular electronic circuit board mounted in said housing in the form of an interrupted ring shaped to encircle said cavity and reflector surface inwardly adjacent the lens cover, at the perimeter of the cavity, said circuit board having a pair of unidirectionally conductive diodes and an elongated resistor element rigidly mounted on said board and connected to said lamp bulb and to external connectors to be interconnected with tail and turn/stop control circuits of the associated vehicle, said diodes and resistor element being interconnected to apply a higher voltage to the lamp bulb filament through one diode for turn or stop signal functions at a relatively brighter light intensity and applying a lower voltage to the filament through the other diode and resistor element for tail lamp signal functions at a relatively dim light intensity.

4,241,372

POWER SUPPLY PROTECTIVE CIRCUIT

Kay G. Sears, Keyport, N.J., assignor tc Entron, Inc., Morganville, N.J.

Filed Mar. 1, 1979, Ser. No. 16,411
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—72 **7 Claims**

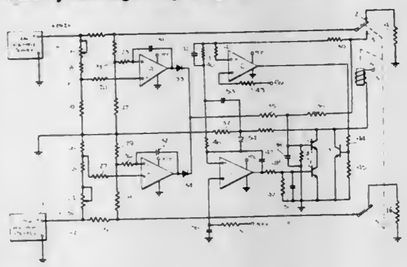
1. A protective system for a D-C power supply delivering current to an external load, the system distinguishing between a transitory overcurrent condition, in which case it functions to momentarily interrupt and then restore current flow, and a genuine overcurrent condition, in which case it functions to

interrupt current flow and continuously maintain this interruption, said system comprising:

A. a current-sensing resistor in series with said supply and said load, whereby the voltage drop developed across said resistor is proportional to the intensity of current drawn by the load;

B. a voltage comparator responsive to said voltage drop to produce a low output signal when the drop reflects a current intensity below a predetermined threshold level and a high output signal when the drop reflects a current intensity at least equal to said level;

C. a relay having normally closed contacts interposed between said resistor and said load, said contacts being opened when said relay is activated to interrupt current flow to the load, said relay being responsive to an activated by said high output signal;



D. a sampling circuit rendered operative when said relay is activated and functioning after a brief sampling interval to de-activate the relay and thereby reconnect the supply to the load, at which point the comparator again determines whether the existing current drain is still excessive, in which event a high output signal is produced and the relay again activated to cut off the supply and to repeat the sampling cycle; and

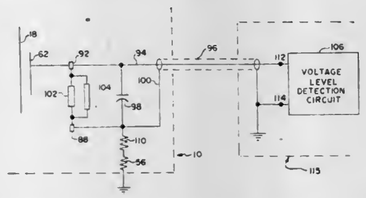
E. a timing-out circuit operating in conjunction with the sampling circuit and permitting sampling cycles to repeat as long as an overcurrent condition is sensed for a timing-out period which is a multiple of the sampling interval, the timing circuit at the conclusion of this period acting to reactivate the relay and cut off the delivery of current and to thereafter hold the relay in its activated state.

4,241,373

SWITCHGEAR VOLTAGE SENSOR

Eugene G. Mara, Oak Creek; John A. Schreiber, Hartland, and William N. LeCourt, Milwaukee, all of Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 30, 1979, Ser. No. 25,500
Int. Cl.³ G01R *15/04, 5/00*
U.S. Cl. 361—92 **26 Claims**



19. Switchgear apparatus for a high voltage alternating electric system which includes a grounded support structure and at least one encapsulated, single phase, circuit interrupter assembly which is affixed to the grounded support structure, and which comprises:

a vacuum interrupter having a fixed contact rod extending through one end of a vacuum enclosure and a movable contact rod extending through an opposite end of the vacuum enclosure, the movable contact rod being movable along its axis between an open position and a closed position, adjacent ends of the fixed contact rod and the movable contact rod carrying respective contacts which abut against each other when the movable contact rod is disposed in its closed position, and which are separated by a suitable distance when the movable contact rod is disposed in its open position;

a first connector stud, having one end attached to the fixed contact rod and an opposite end;

a second connector stud, having one end which carries a current exchange assembly in sliding contact with the movable contact rod, and an opposite end;

an interrupter housing of cast, electrically insulating material which includes

a central portion cast about the vacuum interrupter and defining an opening through which the movable contact rod extends,

a first end portion extending from the central portion and cast about the first connector stud, having a free end through which the opposite end of the first connector stud extends, the free end of the first end portion defining a first receiving bushing member, and

a second end portion extending from the central portion and cast about the second connector stud, having a free end through which the opposite end of the second connector stud extends, the free end of the second end portion defining a second receiving bushing member;

a first conductive coating, which is applied to the outer surface of the interrupter housing intermediate the first and second receiving bushing members, and which defines an uncoated window area, or opening in the first conductive coating, on the outer surface of one of the two end portions of the interrupter housing;

a mounting means for affixing the interrupter housing to the grounded support structure and electrically connecting the first conductive coating to the grounded support structure;

an annular-shaped second housing of cast electrically insulating material, having an inner peripheral surface extending about the one end portion of the interrupter housing over the uncoated window area thereof, and external side and outer peripheral surfaces, the second housing being affixed to the interrupter housing by electrically insulating material which is cast between the inner peripheral surface of the second housing and the outer surface of the interrupter housing to completely fill the space therebetween and form a single switchgear housing;

a current transformer embedded within the second housing, having an annular-shaped core of magnetic material which encircles the connector stud embedded within the one end portion of the interrupter housing, a secondary winding which is wound about the magnetic core, and two insulated conductor leads having first ends connected to respective ends of the secondary winding and second ends which extend outside of the second housing;

a voltage sensing plate, positioned adjacent the uncoated window area of the one end portion of interrupter housing, which defines, with the connector stud embedded within the one end portion of the interrupter housing, a first capacitor wherein the cast electrically insulating material between the voltage sensing plate and the connector stud embedded in the one end portion of the interrupter housing is a dielectric of the first capacitor;

a conductive member, having a first end which is embedded in the second housing and a second end which extends through an external surface of the second housing;

a second capacitor, embedded within the second housing, having a first side connected to the voltage sensing plate and an opposite second side connected to the conductive member, the second capacitor having a low impedance relative to the impedance of the first capacitor;

a coaxial lead, which includes a center conductor and an outer conductive shield, each having corresponding first ends and opposite second ends, the first end of the center conductor being connected to the first side of the second capacitor, and the first end of the outer shield being connected to second side of the second capacitor, the coaxial lead extending outside of the second housing through an external surface of the second housing;

a second conductive coating, applied to the external surfaces of the second housing and to the adjacent coated surfaces of the one end portion of the interrupter housing, and to the externally extending second end of the conductive member, wherein the first and second conductive coating define a resistive current path between the conductive member and ground which has a low impedance relative to the impedance of the first capacitor, and the first capacitor, the second capacitor, and the resistive current path are connected in series between one phase of the alternating electric system and ground;

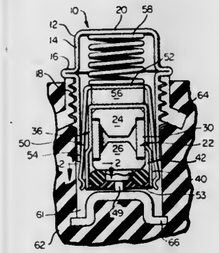
whereby, because of the low impedance of the second capacitor and the resistive current path, both sides of the second capacitor are maintained at a low voltage, and the voltage across the second capacitor is proportional to the one phase-to-ground voltage of the alternating electric system.

4,241,374

SURGE VOLTAGE ARRESTER WITH VENTSAFE FEATURE

Alexander G. Gilberts, Algonquin, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Jan. 29, 1979, Ser. No. 7,363
Int. Cl.³ H02H *3/22, 9/06*
U.S. Cl. 361—124 **5 Claims**



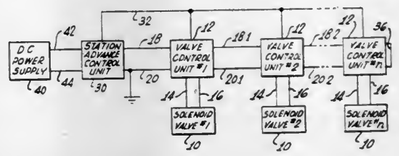
1. A surge voltage arrester assembly comprising a first electrode, second and third electrodes at opposite ends respectively of said first electrode, said electrodes being sealed together and insulated from each other to form a sealed gas tube in which there is a primary arc gap in the tube between each of said second and third electrodes and said first electrode, and means forming secondary arc gaps external of the gas tube and between said first electrode and each of said second and third electrodes, each said secondary arc gap being of the air gap type and having a breakdown voltage greater than the breakdown voltage of either primary arc gap but having a breakdown voltage less than that of each primary arc gap should the gas tube become vented to atmosphere, each secondary arc gap being defined by a rim portion of said first electrode and a surrounding cylindrical element that is in electrical contact with one of said second and third electrodes, and means forming a seal for each secondary arc gap to prevent contaminants from entering each said secondary arc gap, said means forming the seal for each secondary arc gap spanning the space between said cylindrical element and said first electrode.

4,241,375

SEQUENTIAL IRRIGATION CONTROL SYSTEM

Richard L. Ruggles, Mount Baldy, Calif., assignor to Clemar Manufacturing Corp., Azusa, Calif.

Filed Jan. 31, 1979, Ser. No. 7,889
Int. Cl.³ H01H *47/14*
U.S. Cl. 361—166 **10 Claims**



1. A sequential irrigation control system comprising:

a plurality of valve control units connectable to corresponding valves, each of said control units having power input terminals, power output terminals, and a station advance terminal, said valve control units being connected in a series string;

central control means for supplying power to the first of said valve control units, and for transmitting station advance control signals to said valve control units; and

switching means included in each of said valve control units, said switching means being responsive to the initial presence of power at said input power terminals, to actuate a valve and to block connection of power to said output terminals, and responsive to a station advance control signal to deactuate the valve and connect power to said output terminals, whereby power is switched from valve control unit to valve control unit along the series string of said units, in response to a sequence of station advance control signals;

and wherein said switching means in each of said valve control units includes

first switching means closeable in response to the initial presence of power at said input terminals to connect power to a valve, and

second switching means coupled with said first switching means, to block transmission of power to said output terminals by remaining open as long as said first switching means is closed,

and wherein said first switching means is opened and remains open in response to a momentary station advance control signal, thereby disconnecting power from the valve and connecting it to said output terminals.

4,241,376

SYSTEM FOR AUTOMATICALLY SELECTING OPERATIONS IN A RANDOM SEQUENTIAL MANNER

Richard J. Ardrey, Nashville, Tenn., assignor to PhotoScan South, Inc., Nashville, Tenn.

Filed May 21, 1979, Ser. No. 40,684
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—166 **10 Claims**

1. A system for automatically selecting operations in a random sequential manner comprising:

(a) at least three electrical channel circuits,

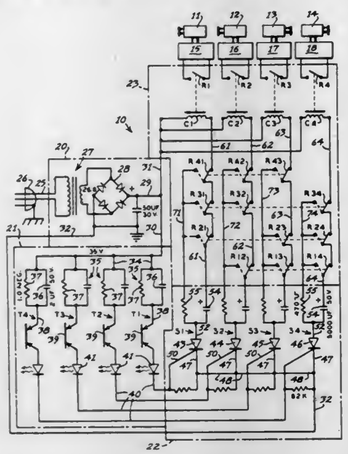
(b) each channel circuit comprising an input circuit, a trigger circuit and an output circuit,

(c) said trigger circuit comprising a timer element and an electrical conductor component exhibiting a negative resistance characteristic connected in series with each other and said input circuit,

(d) the time constants of said timer elements in different channel circuits having different values,

(e) each of said electrical conductor components being adapted to conduct electricity for a period corresponding to the time constant of the corresponding timer element in

the same channel circuit, to produce a corresponding trigger signal during said period, and



(f) switch means operatively connected to each of said output circuits and actuable by said trigger signals to produce a resultant output signal in only one output circuit at a time in a random sequential manner.

4,241,377

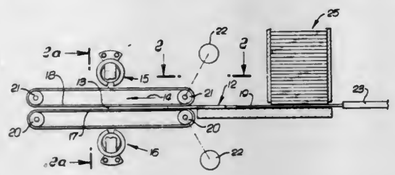
FILM TREATMENT APPARATUS

James M. Cumming, 4571 Comber Ave., Encino, Calif. 91316

Filed Mar. 5, 1979, Ser. No. 17,469

Int. Cl.[3] B08B *7/04*

U.S. Cl. 361—213 21 Claims



1. In apparatus for treating a film, the combination comprising

(a) means defining a film treatment zone and including feed means to feed the film endwise into that zone for passage therethrough, and

(b) means including orifices for supplying streams of gas to said zone and closely adjacent opposite surfaces of the film passing laterally through said treatment zone, to disperse dust from said surfaces away from that zone,

(c) means including tips to which voltage is supplied for effecting delivery of ions to come in contact with said film surfaces passing laterally through said zone, said tips associated with said orifices so that said ions are delivered into said gas streams,

(d) said feed means including an endless conveyor on which film is conveyed within said zone, the conveyor defining an opening through which opposite sides of the film are exposed to said ions and gas streams, the conveyor having spaced support shoulders flatly supporting and positioning edge portions of the film being fed.

4,241,378

BASE METAL ELECTRODE CAPACITOR AND METHOD OF MAKING THE SAME

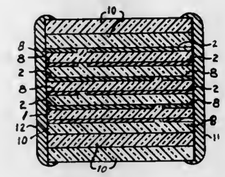
John F. Dorrian, Erie, Pa., assignor to Erie Technological Products, Inc., Erie, Pa.

Continuation-in-part of Ser. No. 620,244, Oct. 6, 1975, Pat. No. 4,097,911. This application Jun. 12, 1978, Ser. No. 914,553

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

Int. Cl.[3] H01G *1/01, 4/12*

U.S. Cl. 361—305 24 Claims



1. A method of making a monolithic capacitor having a sintered unitary body of titanate ceramic and electrodes embedded in the body which comprises preparing a green ceramic body with embedded electrodes of metal M, where M is selected from the group consisting of transition metals and/or transition metal alloys, firing the green ceramic body at a temperature to mature the ceramic and in an atmosphere of oxygen partial pressure low enough so that the skins of the electrodes oxidize and react with a major part of the ceramic and prevent reduction of said major part of the ceramic to the semi conductive state and the cores of the electrodes remain in the metallic state and heating the matured ceramic in an oxidizing atmosphere to reoxidize any part of the matured ceramic which is in the reduced semiconductive state without significantly oxidizing the electrodes.

10. A monolithic capacitor having a sintered unitary body of sintered ceramic and electrodes embedded in the green ceramic prior to sintering, the electrodes being of metal M, where M is selected from the group consisting of transition metals and/or transition metal alloys, the body having been matured in an atmosphere of oxygen partial pressure low enough so that the skins of the electrodes oxidize and react with a major part of the ceramic and prevents conversion of said major part into the semi conducting state and the cores of the electrodes remain in the metallic state and the matured ceramic having been heated in an oxidizing atmosphere to reoxidize any part of the matured ceramic which is in the reduced semi conductive state without significantly oxidizing the electrodes.

4,241,379

GAS PRESSURIZED HIGH VOLTAGE SWITCHING INSTALLATION

Willi Olsen, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 962,927

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754691

Int. Cl.[3] H02B *1/04*

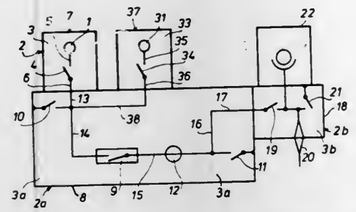
U.S. Cl. 361—335 6 Claims

1. In a metal encapsulated, pressurized gas insulated installation for switching at least one high voltage phase and having at least one switchgear section comprising plural adjacent, gas-tight partitioned, pressure tanks accommodating the high-voltage switchgear and other current carrying parts, a current-carrying part of each pressure tank being electrically connected to at least one current-carrying part of an adjacent pressure tank, the improvement comprising:

a first pressure tank containing a switch for a bus bar of the section, at least one bus bar, and conductors connecting

the switch to the bus bar and for connection to a current-carrying part of an adjacent tank;

a second pressure tank containing at least one power circuit breaker, at least one current transformer, at least one grounding switch, and conductors connecting the circuit breaker, the current transformer, and the grounding switch to each other and to a current-carrying part of at least one other pressure tank of the same section, the second pressure tank being elongate and horizontally disposed under the first pressure tank and the power circuit breaker being horizontally disposed therein, with the current transformer and the ground switch positioned on the extended line of the horizontal axis of the power circuit breaker; and



a third pressure tank containing at least one component for the terminal side of the section, the component comprising at least one of a disconnect switch, a cable switch, an overhead line terminating element, and a grounding switch, as well as at least one conductor connecting such component to a current-carrying part of the second tank.

4,241,380

HOUSING FOR AN ELECTRIC CIRCUIT ARRANGEMENT

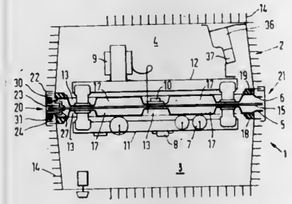
Kjeld Lehmann, Sonderborg, and Arne V. R. Rasmussen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 884,997, Mar. 9, 1978, abandoned. This application Mar. 7, 1979, Ser. No. 18,247

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710432

Int. Cl.[3] H05K *7/20*

U.S. Cl. 361—383 4 Claims



1. A housing assembly for electrical equipment comprising, external wall means laterally defining an enclosed space, intermediate wall means of a thermally conductive material attached to said external wall means and dividing said enclosed space into at least two laterally enclosed compartments with substantially no lateral fluid communication between any of said compartments, said intermediate wall means forming flue means between at least two of said compartments to provide a chimney effect to direct air upwardly which is warmer than atmospheric air, said flue means having the top and bottom thereof open to the atmosphere externally of said compartments, and said intermediate wall means having electrical components mounted on both sides thereof.

4,241,381

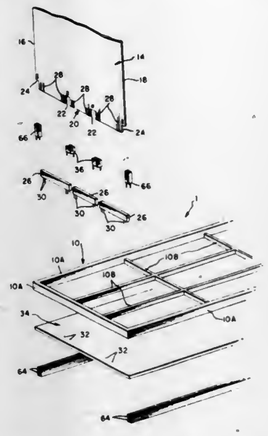
BUS BAR ASSEMBLY FOR CIRCUIT CARDS

Robert F. Cobaugh, Elizabeth, and Attalee S. Taylor, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 4, 1979, Ser. No. 27,130

Int. Cl.[3] H05K *1/18*

U.S. Cl. 361—413 17 Claims



1. In a power distribution system for multiple circuit cards inserted removably into card receiving openings of card edge connectors, which are mounted on a surface of a circuit board, and which contain signal carrying electrical terminals constructed for electrical engagement with the circuit cards, the improvement comprising:

one or more conductive power bus bars and conductive ground return bus bars extending along said circuit board, and

relatively massive contact terminals directly connecting said circuit cards and said bus bars, said contact terminals being externally of and aligned with respective said card edge connectors to contact respective said circuit cards inserted into said card receiving openings, said contact terminals being connected to respective said bus bars by post portions of said contact terminals force fitted into openings of respective said bus bars.

4,241,382

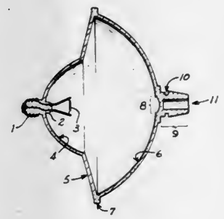
FIBER OPTICS ILLUMINATOR

Maurice Daniel, 550 Jaycox Rd., Avon Lake, Ohio 44012

Filed Mar. 23, 1979, Ser. No. 23,034

Int. Cl.[2] F21V *7/04, 7/09*

U.S. Cl. 362—32 26 Claims



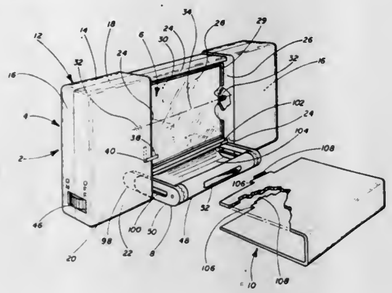
1. A fiber optics illuminator including:

(a) a source of illumination; and

(b) an envelope means enclosing said source of illumination, said envelope means having an optical window means

integrally formed therein for passing illumination from said source of illumination through said envelope means, said envelope means also having inner reflective surface means geometrically shaped to focus substantially all of the illumination from said source of illumination onto said optical window means.

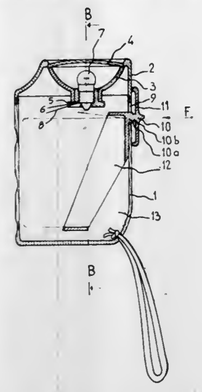
4,241,383
TRAVEL MIRROR
John W. Shea, 33 Park Dr., Middletown, N.J. 07748
Filed Feb. 28, 1978, Ser. No. 882,034
Int. Cl.[2] F21V *33/00*
U.S. Cl. 362—135 **15 Claims**



10. A cosmetic mirror comprising:
(a) a planar rectangular mirror housing having a centrally-located aperture therein and lighting means mounted within said housing, laterally adjacent said adjacent said aperture;
(b) a mirror assembly pivotally mounted within said aperture, said mirror assembly comprising two broad surfaces, said broad surfaces defined by two back-to-back mirrors, one back-to-back mirror having a magnified reflection suface and the other mirror having a normal reflection surface;
(c) a rotatable support stand attachment secured to said housing, said support stand attachment disposed with its axis of rotation parallel to the plane containing said housing, and adjacent to said mirror assembly; and
(d) a cover means for the broad surfaces of said mirror assembly, said cover means detachable attachable to said mirror housing, said cover means adapted to straddle said mirror housing and provide nesting reception for said housing and said mirror assembly when said cosmetic mirror is not being utilized,
Wherein said cover means, when detached from said mirror assembly, is detachable attachable to said support stand attachment and cooperates with said support stand attachment to define an angularly adjustable support stand for independently supporting said cosmetic mirror in a plurality of angular positions relative to the vertical plane.

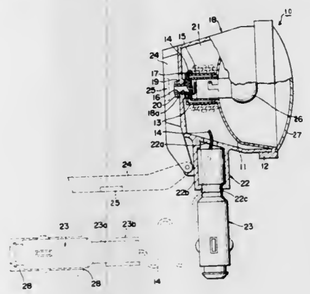
4,241,384
NOVEL CASE FOR AN ELECTRIC POCKET FLASHLIGHT
Bernard Diziere, Cholet, France, assignor to Societe d'Exploitation des Etablissements Bregeon-Cochard, Maulevrier, France
Filed Mar. 21, 1979, Ser. No. 22,457
Claims priority, application France, Mar. 29, 1978, 78 10686
Int. Cl.[3] F21L *7/00*
U.S. Cl. 362—203 **14 Claims**

1. An electric pocket flashlight case comprising means for supporting a flashlight bulb in a position at which at least one contact thereof can be closed by movement of an associated flashlight battery wall means for defining a chamber and for housing therein an associated battery, means for supporting a flashlight battery within said chamber for movement between a first position spaced from the flashlight bulb contact and a second position contiguous thereto, and means for sliding said flashlight battery supporting means between said first and



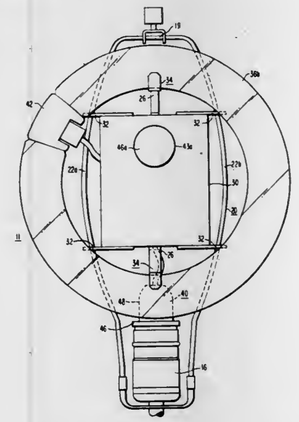
second positions thereby closing an associated circuit and lighting an associated flashlight bulb upon the movement of a flashlight battery to said second position.

4,241,385
CAR LIGHT WITH DETACHABLE PLUG
Takehiro Asano, Tokyo, Japan, assignor to Daiichi Shoji Co., Ltd., Tokyo, Japan
Filed May 9, 1978, Ser. No. 904,227
Claims priority, application Japan, May 17, 1977, 52-63427[U]
Int. Cl.[3] F21V *27/00*
U.S. Cl. 362—258 **5 Claims**



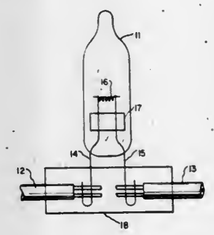
1. A car light with a detachable plug, comprising:
a reflecting mirror including a bulb socket having terminals;
a rewindable cord having one end electrically connected to said terminals of said bulb socket;
an outer casing including a hollow plug receptacle formed in an outer wall thereof acting as a guide for said cord and including an open portion adapted to operatively receive a rear portion of said reflecting mirror in a manner whereby said outer casing may rotate relative to said reflecting mirror and said reflecting mirror forming a closure for said open portion of said outer casing;
a reel operatively mounted to said reflecting mirror immediately adjacent said bulb socket in a manner to cover said bulb socket and including a cord hole;
a cord chamber being formed between said reel mounted on said reflecting mirror and said outer casing to form a substantial area in which said rewindable cord may be encased within said outer casing; and
means for free-standingly mounting said light comprising a plug electrically connected to the other end of said cord and adapted to be operatively received in a cigarette lighter socket of a car, said plug being shaped and sized to be retained in said hollow plug receptacle when said cord is rewound on said reel by turning either said reflecting mirror or said outer casing relative to the other, said plug having a reduced neck portion and a flattened head portion, and said hollow plug receptacle including a cylindrical wall with a leading end formed with a narrowed opening sized and shaped to fittedly, frictionally receive the flattened head portion of said plug so that said plug can be retained in said hollow plug receptacle when the former is turned after having said flattened head portion inserted into the latter, and in the retained position, said plug and said hollow plug receptacle forming an elongated member projecting outwardly from said outer casing wherein said plug may be operatively received in said cigarette lighter socket of a car even in said retained position.

4,241,386
FLUORESCENT LAMP ADAPTER FOR RESIDENTIAL INCANDESCENT-TYPE LAMP FIXTURE
Thomas E. Dooley, Clifton, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 24, 1979, Ser. No. 32,798
Int. Cl.[3] F21V *23/00, 23/02*
U.S. Cl. 362—216 **4 Claims**



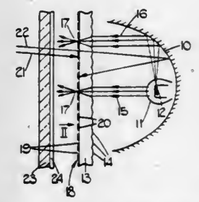
1. A fluorescent lamp adapter for use in combination with a residential incandescent-type lamp fixture, said fixture comprising an elongated fixture body supported in generally vertical disposition and having electrical conductors associated therewith, an incandescent-lamp-type socket means vertically projecting from the upper portion of said fixture body and operatively receiving said electrical conductors, a lampshade-supporting harp means comprising two elongated members affixed to and supported by said fixture body proximate the upper portion thereof and projecting upwardly in a vertical plane and on opposite sides of said socket means, first to separate and then to return and meet at a location generally directly above said socket means, and a lampshade of predetermined dimensions adapted to be supported by said harp means from the upper portion thereof, said fluorescent lamp adapter comprising:
housing means conformed and adapted to fit into the space defined by said harp means and above said socket means, supporting means adapted for affixing said housing means to said harp means, lamp mounting means affixed to said housing means for engaging and supporting two annular-shaped tubular fluorescent lamps within said lampshade and on opposite sides of the vertical plane defined by said harp means, the axes of said lamps as mounted being substantially horizontal and substantially colinear, electrical ballast means for said lamps retained in said housing means, electrical adapter means connecting said ballast means and adapted to connect to said incandescent-lamp-type socket means, and fluorescent lamp socket means associated with said annular fluorescent lamps and connecting to said ballast means for energizing said lamps.

4,241,387
LAMP LEAD TO WIRE ATTACHMENT FOR INTEGRAL STRING SETS
Harry J. Bowers, Mayfield Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 9, 1977, Ser. No. 859,055
Int. Cl.[3] F21P *1/00*
U.S. Cl. 362—252 **19 Claims**



1. In a decorative string set having incandescent lamps permanently connected to segments of insulated wire to form a series circuit, the improvement comprising:
each lamp having lead wires in contact with and transverse to the ends of respective segments of said insulated wire;
thermoplastic sheets disposed in an approximately parallel relationship, one on each side of said lead wires and said ends;
and wherein said sheets are thermoplastically bonded to each other and to the insulation on said ends of said insulated wire, said lead wires and segments of said insulated wires are embedded between, partially enclosed and held in electrical contact by said bonded sheets, and said bonded sheets maintain said lead wires and said segments in said electrical contact with a continuous pressure.

4,241,388
HIGH CONTRAST LAMP ASSEMBLY
Stanley Green, Smethwick, England, assignor to Lucas Industries Limited, Birmingham, England
Filed May 16, 1979, Ser. No. 39,548
Claims priority, application United Kingdom, May 30, 1978, 24567/78
Int. Cl.[3] F21V *9/00*
U.S. Cl. 362—268 **22 Claims**



1. A lamp assembly comprising a reflector adapted to re-

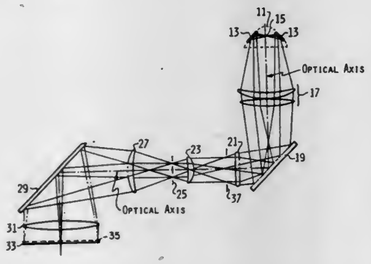
ceive a light bulb therein, a first lens element overlying said reflector and having a first surface facing said light bulb and a second surface remote from said light bulb, a multiplicity of individual lenses provided on said first surface of said first lens elements and each having a respective optical axis, a baffle which is made of plate or sheet material and is secured to said second surface of said first lens element, said baffle including a multiplicity of light-transmitting portions, each said light transmitting portion being disposed on said optical axis of a respective one of said individual lenses and being limited in its extent to that necessary to transmit substantially the whole of a pencil of light rays which is focussed by the said respective one of said individual lenses, the remainder of said baffle being at least partially light-obstructing, and a cover positioned on the opposite side of said baffle to said first lens element, said cover having a surface which forms an external surface of said lamp assembly.

4,241,389

MULTIPLE APPARENT SOURCE OPTICAL IMAGING SYSTEM

Richard J. Heimer, Encino, Calif., assignor to Kasper Instruments, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 798,113, May 18, 1977, abandoned. This application Apr. 25, 1979, Ser. No. 33,193
Int. Cl.³ F21V *7/09*
U.S. Cl. 362—297 **2 Claims**



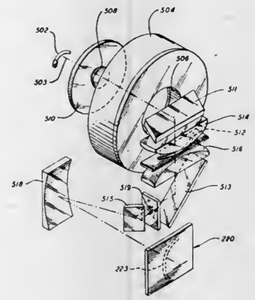
1. An optical imaging system for uniformly distributing light energy onto a selected plane, the system comprising:
an energy source coaxially disposed along an optical axis of the system;
a paraboloidal assembly of reflectors having an axis of symmetry coincident with the optical axis of the system and being distributed along a plane orthogonally intersecting the optical axis of the system, the reflectors being distributed with respect to each other in a ring about the energy source for receiving light energy from the energy source and uniformly distributing it as if it originated from multiple apparent energy sources in a common apparent source plane;
variable focusing lens means disposed along the optical axis of the system for adjusting the divergence angle of the light energy at the selected plane; and
means disposed along the optical axis of the system for directing light energy from the paraboloidal assembly of reflectors to the variable focusing lens means and from the variable focusing lens means to the selected plane to provide a uniform light energy distribution of multiple apparent energy sources at the selected plane.

4,241,390

SYSTEM FOR ILLUMINATING AN ANNULAR FIELD

David A. Markle, Norwalk, and Abe Offner, Darien, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 725,351, Sep. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 671,405, Mar. 29, 1976, abandoned, which is a continuation of Ser. No. 509,599, Sep. 26, 1974, abandoned. This application Feb. 6, 1978, Ser. No. 875,453
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—299 **34 Claims**



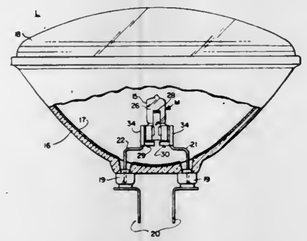
1. A system for illuminating an annular field disposed about an axis, comprising, in combination:
an arcuate source of radiation disposed concentrically about said axis; and
an annular field imaging system including a reflective field element having an axis of symmetry coincident with said axis for forming an image of said arcuate source on said annular field.

4,241,391

INNER LAMP-MOUNT ASSEMBLY FOR SEALED-BEAM HEADLAMP AND SIMILAR LIGHTING APPARATUS

Elam Pitkjaan, Cedar Grove, and James F. Endler, East Hanover, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1978, Ser. No. 881,473
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **23 Claims**



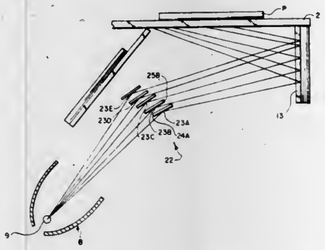
1. In an electric lamp unit having a housing and substantially rigid main conductors that extend into said housing, the combination of;
a baseless incandescent lamp having an envelope that contains a filament which is connected to substantially rigid lead-in conductors that are anchored in and extend from an hermetic seal that terminates one end of said envelope and has two longitudinal side edges, and
means mechanically and electrically coupling said incandescent lamp to said main conductors and suspending the lamp within said housing including a holder of sheet metal having (a) a first segment that defines a pocket of generally U-shaped cross-section and is in snug slip-fitted relationship with a side edge portion of the envelope seal, (b) a second segment of hollow tubular configuration that is fastened to one of said main conductors in overlying telescoped relationship therewith, and (c) a third segment that is fastened to one of the lamp lead-in conductors so that the associated main and lead-in conductors are electrically connected to one another by the sheet-metal holder,
the said third segment of the sheet-metal holder extending laterally along the outer end of the envelope seal and constituting stop means for orienting the incandescent lamp in predetermined interfitted relationship with the holder.

4,241,392

LIGHT DEFLECTOR FOR USE IN ILLUMINATION APPARATUS

Arthur M. Boone, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,284
Int. Cl.³ F21V *7/00*; G03B *27/54*
U.S. Cl. 362—342 **2 Claims**



1. An illumination apparatus for illuminating a planar object positioned in a predetermined plane, said apparatus comprising:
an elongated light source positioned in spaced relationship with the object for emitting radiation some of which verges in a direction toward the object and some of which verges in other directions away from the object;
an elongated parabolic reflecting surface positioned substantially parallel to and adjacent said light source to collimate and reflect some of the light rays verging away from the object in a first predetermined path;
a louvered light deflector positioned between said source and the object to pass and deflect some of the light rays verging toward the object in a second predetermined path intersecting with said first predetermined path; and
a planar reflecting surface positioned in the intersection of said first and second paths to reflect upon the object the collimated light rays reflected from said parabolic reflecting surface and the direct light rays deflected by said light deflector.

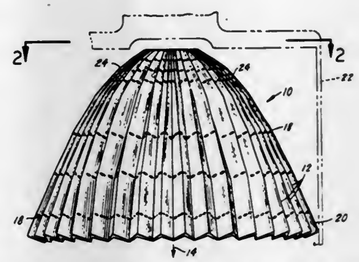
4,241,393

AUXILIARY REFLECTOR

Goodwin W. Olson, 1066 El Dorado Dr., Fullerton, Calif. 92635

Filed Jun. 14, 1979, Ser. No. 48,502
Int. Cl.³ F21V *7/20*
U.S. Cl. 362—348 **6 Claims**

1. An auxiliary reflector for correcting the design deficiencies of pre-existing light fixtures having a light source by intensifying the light generated thereby including a reflector member having:
an outer edge thereabout;
an inner edge which defines an opening therethrough through which the light source can extend;
a layer of reflective material that extends substantially from said inner edge to said outer edge, said layer of reflective material having front and back sides;
a first layer of electrically insulative material which is transparent to light covering said front side of said reflective layer;
a second layer of electrically insulative material covering said back side of said reflective layer, said first and second layers of electrically insulative material extending from said inner edge to said outer edge of said member;
a plurality of perforations formed in at least one circle about said inner edge whereby said reflector member can be modified to have an inner edge of larger diameter by tearing said reflector member along said circle of perforations; and



a plurality of perforations formed in at least one circle adjacent said outer edge whereby said reflector member can be modified to have an outer edge of smaller diameter by tearing said reflector member along said circle of perforations adjacent said outer edge, said perforations extending through said first and second layers of electrically insulative material, said layer of reflective material being electrically conducting and having generally circular cutouts along said circles of perforations whereby tearing of said reflector member along a circle of perforations does not expose said layer of reflective material to electrical contact.

4,241,394

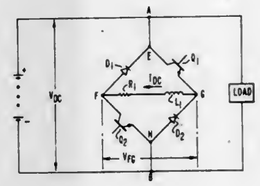
Patent Not Issued For This Number

4,241,395

NON-DISSIPATIVE DC ACTIVE FILTER AND TRANSFORMER

Eric. J. Stacey, Penn Hills, and Andress Kernick, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1978, Ser. No. 959,043
Int. Cl.³ H02J *1/02*
U.S. Cl. 363—39 **9 Claims**



1. A direct current transformer for converting a first DC voltage source V_{DC} into a second DC voltage source V_o comprising:

inductive transformer means having a primary N_1 and a secondary N_2 winding;

means Q_1, D_1 for sequentially and alternatively connecting said primary winding across the terminals of said first DC voltage source in opposite directions relative to the polarities of said first source terminals and in phase opposition to a ripple from said first DC voltage source, thereby to maintain a predetermined voltage ratio due to energy passing through said primary winding; and

rectifier means connected across said secondary winding for providing said second DC voltage source at two terminals thereof.

4,241,396

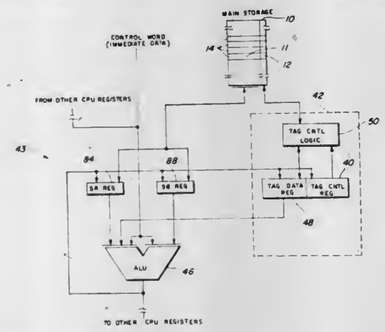
TAGGED POINTER HANDLING APPARATUS

Glen R. Mitchell, Pine Island; William G. Kempke, Rochester; Eugene R. Jones, Rochester; Merle E. Houdek, Rochester, and James G. Ranweiler, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,666

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **16 Claims**



3. Tagged pointer handling apparatus for loading and verifying the validity of the tags in a data processing system comprising:

addressable main storage means divided into addressable areas where each addressable area has a tag bit position;

first register means connected to said main storage means for storing data read from and to be written into said addressable areas including said tag bit position;

second register means for accumulating a number of tag bits as data from a number of said addressable areas are read into said first register means; and

signal means for generating an error signal when any of said number of tag bits accumulated in said second register means is not in a predetermined state, whereby an error signal is provided to indicate when a pointer is invalid.

4,241,397

CENTRAL PROCESSOR UNIT FOR EXECUTING INSTRUCTIONS WITH A SPECIAL OPERAND SPECIFIER OF INDETERMINATE LENGTH

William D. Strecker, Harvard; Thomas N. Hastings, Lexington, both of Mass.; Richard F. Lary, Colorado Springs, Colo.; David P. Rodgers, Acton, and Steven H. Rothman, Bolton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 845,051, Oct. 25, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,454

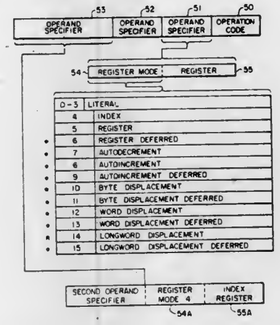
Int. Cl.³ G06F *9/36*

U.S. Cl. 364—200 **9 Claims**

1. A central processing means for processing operands in response to the instructions in a data processing system that additionally includes a memory means for storing the operands and instructions, at least one instruction comprising an operation code for specifying an operation to be performed and an operand specifier for identifying a location in the data processing system for an operand, an operand specifier including at least one information byte and including, in a first information byte thereof, a register mode portion and, for certain register modes, a register selection portion, the register mode portion establishing one of a plurality of addressing operations including an indexed addressing operation, said central processing means including:

A. general purpose register means including a plurality of general purpose registers, one of said general purpose registers being selected in response to the register selection portion of an operand specifier;

B. instruction decoder means connected to said general purpose register means and responsive to an operand specifier for establishing an indexed addressing operation when the register mode portion has a predetermined value, said operand specifier including a designation for identifying a general purpose register;



C. index value generating means connected to said general purpose register means and said instruction decoder for generating an index value in response to the contents of said designated general purpose register during an indexed addressing operation;

D. base address value generating means connected to said general purpose register means and said instruction decoder for generating a base address value in response to information in successive byte locations in the operand specifier during an indexed addressing operation, and

E. means connected to the index value and base address value generating means for generating an indexed address for an operand in response to the index value and base address value during an indexed addressing operation.

4,241,398

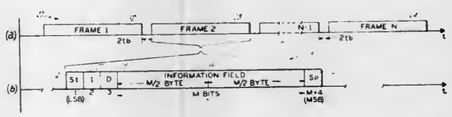
COMPUTER NETWORK, LINE PROTOCOL SYSTEM

Richard T. Carll, Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 29, 1978, Ser. No. 947,298

Int. Cl.³ H04L *7/02*

U.S. Cl. 364—200 **3 Claims**



1. A method of exchanging digital signal information asynchronously between a central processing unit (CPU) and one or remote processing units (RPU), each alternating as a sending unit and a receiving unit, comprising the steps:

formatting the digital signal information at the sending unit into one or more message units, each having one or more successive serial bit cell data frames and a cyclic redundancy checking (CRC) frame, all of equal bit length, each frame including, from the least significant bit (LSB) to the most significant bit (MSB), a header field, an information field, and a trailer field, the header including a single bit (LSB) start flag and a two bit identification flag, the information field including multi-bit first and second bytes for receiving the signal information and CRC information in related frames, and the trailer field including a single bit (MSB) stop flag;

encoding each message unit into a serial bi-phase signal with a signal level transistion in each bit cell of each frame, the direction of signal level transition being dependent on the binary state of the signal bit in the cell, thereby providing a manifestation of the digital signal information and time base provided by the sending unit;

transmitting the bi-phase signal to the receiving unit through a transformer coupled communication line; and

decoding the bi-phase signal at the receiving unit to restore the binary state of each signal bit and the time base of the sending unit.

4,241,399

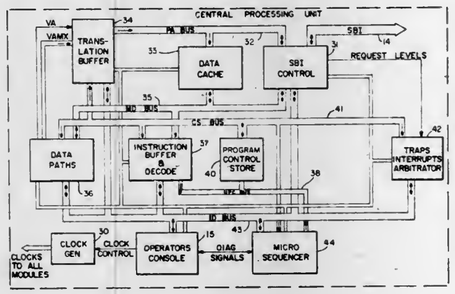
CALLING INSTRUCTIONS FOR A DATA PROCESSING SYSTEM

William D. Strecker, Harvard; Thomas N. Hastings, Lexington, both of Mass.; Richard F. Lary, Colorado Springs, Colo.; David P. Rodgers, Acton, and Steven H. Rothman, Bolton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 845,416, Oct. 25, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,602

Int. Cl.³ G06F *9/42*

U.S. Cl. 364—200 **20 Claims**



1. A central processor for a data processing system which system further includes a memory for storing instructions that are grouped in routines, at least one routine constituting a subroutine for processing information in an argument list, the first memory location of the subroutine storing a subroutine mask, and at least one other routine in the memory being a calling routine that utilizes the subroutine and that contains a subroutine calling instruction that includes an operation code, a first operand specifier for identifying a representation of the argument list to be passed from the calling routine to the subroutine and a second operand specifier for identifying the location of the subroutine mask in the memory, said central processor comprising:

A. general purpose register means including:

i. a plurality of general registers, the subroutine mask in the subroutine designating those of said general registers to be used by the subroutine,

ii. a program counter register for addressing instructions in the memory, and

iii. a stack pointer register for addressing locations in a memory stack including a block of consecutive memory locations,

B. instruction decoding means for decoding the instruction operation codes,

C. operand retrieval means connected to said instruction decoding means for decoding the first operand specifier from the subroutine when said instruction decoding means decodes an operation code as a subroutine calling instruction,

D. control means connected to said general purpose register means, said instruction decoding means and said operand retrieval means for controlling the response of said central processor to the subroutine calling instruction and to the subroutine mask, said control means including means connected to said instruction decoding means and said general purpose register means for storing the contents of said program counter register and those general registers designated by the subroutine mask in the memory stack at locations specified by said stack pointer register prior to the execution of the subroutine thereby automatically to save processor state information for the calling routine.

4,241,400

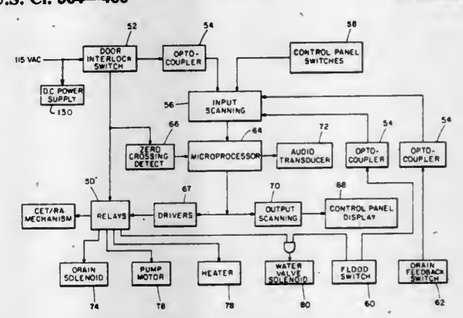
MICROPROCESSOR BASED CONTROL CIRCUIT FOR WASHING APPLIANCES

George E. Kiefer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 18, 1978, Ser. No. 970,697

Int. Cl.³ G05B *19/04*

U.S. Cl. 364—400 **15 Claims**



9. In a washing appliance having electro-mechanical means for filling, circulating, and draining water in said appliance, the electro-mechanical means for draining having a first position in which draining is prevented and a second position in which draining is enabled, a control circuit comprising:

(a) control means for controlling the electro-mechanical means;

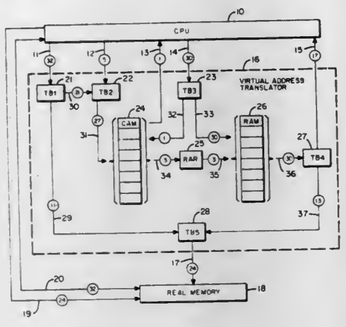
(b) input means permitting user selection of desired operating cycles and including means for communicating with said control means to permit said control means to determine the cycles selected by the user and to control the electro-mechanical means in accordance therewith, and

(c) drain feedback means constructed and arranged to monitor said electro-mechanical drain means and operative to produce an electrical signal indicative of the position of said drain means, said control means including means responsive to said electrical signal for detecting and identifying a plurality of drain means malfunctions and effecting a change in the selected operating cycle if necessary to prevent water overflow and damage to the appliance.

4,241,401
VIRTUAL ADDRESS TRANSLATOR UTILIZING INTERRUPT LEVEL CODE

Robert C. De Ward, Burnsville; David G. Kaminski, Eagan, and Mickiel P. Fedde, Apple Valley, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 861,798
Int. Cl.[3] G06F *9/32, 13/00;* G11C *9/06*
U.S. Cl. 364—200 3 Claims

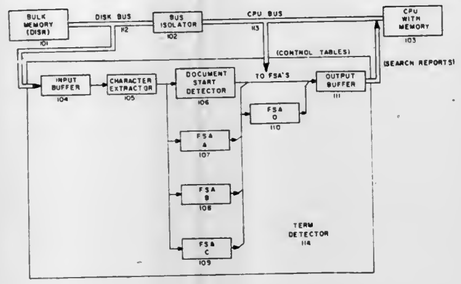


1. In a data processing system
which includes a central processing unit capable of operation in one of a plurality of interrupt level states and having an addressing means providing virtual addresses, and which also includes a memory unit with a plurality of locations each addressable by a real address, the improvement comprising:
means responsively coupled to said central processing unit and said memory unit for translating virtual addresses to real addresses for addressing said memory unit having a plurality of internal conversion tables which are loaded by said central processing unit to enable said translating means to translate virtual addresses to real addresses wherein said translating means makes such translation in response to a request from said central processing unit to access said memory unit at a real address corresponding to a virtual address generated by said addressing means;
means responsively coupled to said central processing unit and said plurality of internal conversion tables for transferring a binary code representing said permitted interrupt level state to said plurality of internal conversion tables;
means responsively coupled to said transferring means and said plurality of internal conversion tables for storing said binary code representing said permitted interrupt level state wherein said storing means stores said binary code whenever said plurality of internal conversion tables are loaded by said central processing unit;
means responsively coupled to said storing means for accessing said binary code representing said permitted interrupt level state;
means responsively coupled to said accessing means and said central processing unit for determining whether said binary code representing said permitted interrupt level state corresponds with said one of said plurality of interrupt level states of said central processing unit wherein said determining means makes such determination concurrently with the translation by said translating means of said virtual address to said real address; and
means responsively coupled to said determining means and said translating means for inhibiting the translation of said virtual address to real address within said means for translating virtual addresses to real addresses if said determining means determines that said binary code representing said permitted interrupt level state does not correspond with said interrupt level state of said central processing unit.

4,241,402
FINITE STATE AUTOMATON WITH MULTIPLE STATE TYPES

Victor Mayper, Jr., North Hollywood; Alex L. Nagy, Agourra; Richard M. Bird, Woodland Hills; Ju Ching Tu, Canoga Park, and Lowell S. Michels, Los Angeles, all of Calif., assignors to Operating Systems, Inc., Woodland Hills, Calif.

Filed Oct. 12, 1978, Ser. No. 950,715
Int. Cl.[3] G06F *7/22*
U.S. Cl. 364—200 40 Claims

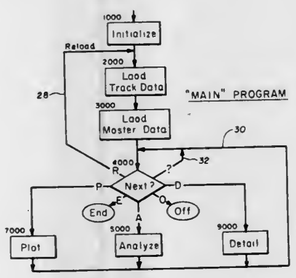


1. In a finite state automaton (FSA) responsive to a stream of input digital code elements and capable of existing in any one of a plurality of alternative states which include a plurality of decision states, the FSA stepping automatically from each decision state to a next success state or to a next default state in response to a comparison of an input code element and a code value for the existing state; the combination of
state word memory means associated with each decision state and containing an identification of a next success state to follow a comparison success,
and means external to said memory means and common to a plurality of decision states for identifying a next default state to follow a comparison default.

4,241,403
METHOD FOR AUTOMATED ANALYSIS OF VEHICLE PERFORMANCE

John P. Schultz, Deerfield, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Jun. 23, 1976, Ser. No. 699,075
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—300 27 Claims



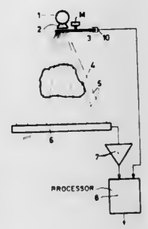
1. A method of analyzing performance data recorded on board a vehicle, the method comprising the steps;
communicating the recorded performance data to a storage medium remote from the vehicle;
converting the data in the storage medium to a preselected format;
loading the formatted data into a computer;
loading master data, representing a known performance profile, into the computer; and

comparing the performance data with master data in the computer, under the control of a program for deriving analytical results regarding performance.

4,241,404
DEVICE FOR COMPUTED TOMOGRAPHY

Peter Lux, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,596
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756659
Int. Cl.[3] G01N *21/00*
U.S. Cl. 364—414 19 Claims



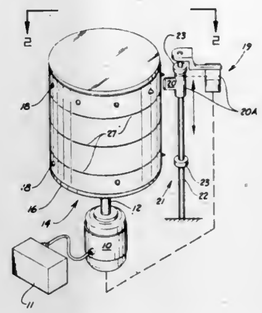
1. In a device for determining the absorption distribution in a body; of the type comprising substantially point-shaped source means which generate radiation in separate beams which penetrate the body, detector means which measure the radiation from the source means which penetrates the body and generate detector signals therefrom, and processing means which derive electrical signals which are representative of the absorption of the body along the radiation beams from the detector signals, the improvement wherein:
the detector means comprise one or more detector elements each of which measures radiation in a group of adjacently situated radiation beams;
the device further comprises modulation means which modulate the intensity of radiation in the beams with time varying functions, each of the beams measured by an individual detector element being modulated by a separate function which is linearly independent of the functions which modulate other beams measured by that detector element; and
the processing means derives individual signals which correspond to the intensity in each of the radiation beams in a group from the output of the associated detector element by multiplying discrete signal values received from the detector element by a matrix of values which is the inverse of the functions used to modulate the beams in the group.

4,241,405
DATABASE UPDATING APPARATUS

Michael A. Allocca, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 7, 1978, Ser. No. 931,500
Int. Cl.[3] G01G *23/22*
U.S. Cl. 364—466 9 Claims

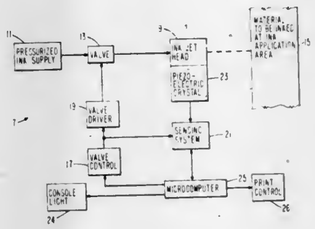
1. In combination with a postal scale, and means for receiving signals, wherein said signal receiving means includes means for semi-permanently storing data in a postal rate database, and said signal receiving means is adapted for receiving signals corresponding to a weight on the scale, apparatus for updating said database comprising:
a. means for reading magnetically recorded data;
b. means for interrupting said signals which correspond to a weight on the scale;
c. said storing means coupled to said reading means for storing data received therefrom in said database;
d. a rotatable drum having an exterior circumferentially-extending surface; said drum including a plurality of protrusions extending beyond said exterior surface;
e. a flexible card including postal rate data magnetically recorded on a major surface thereof, said card having a plurality of apertures formed therein, said apertures located to permit registration of apertures with said protrusions for properly mounting said card on said drum for rotation therewith; and
f. said reading means including a read head disposed in reading relationship with respect to said card's major surface while said card is mounted on said drum.



4,241,406
SYSTEM AND METHOD FOR ANALYZING OPERATION OF AN INK JET HEAD

Eugene T. Kennedy, Longmont, and Donald L. Janeway, Broomfield, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,967
Int. Cl.[3] G01D *15/18*
U.S. Cl. 364—518 80 Claims

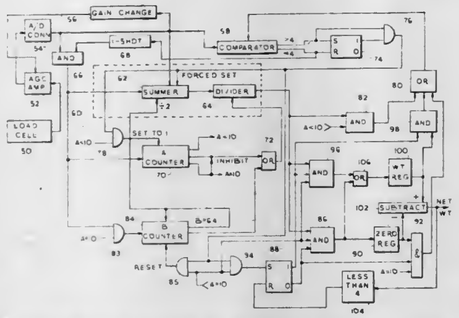


1. A system for analyzing operation of an ink jet head from which ink is ejected due to pressure within said head, said system comprising:
sensing means for sensing the pressure characteristic in the ink jet head during a predetermined pressure change period; and
determining means connected with said sensing means for determining pressure build-up within said ink jet head to thereby detect faults in performance of said ink jet head based upon said pressure characteristics sensed by said sensing means.

4,241,407
ELECTRONIC SCALE

Dennis M. Sookikian, Oak Park, Ill., and Dumitru Gudea, Whittier, Calif., assignors to Triner Scale and Manufacturing Co., Chicago, Ill.

Filed Jun. 14, 1979, Ser. No. 48,388
Int. Cl.³ G06F *11/02*; G01G *19/413*
U.S. Cl. 364—567 **23 Claims**



1. Apparatus for providing an indication of weight, comprising:

a load cell for producing an output signal as a function of the weight of an object;

means for providing successive digital weight signals corresponding to time-samples of said output signal;

combining means for combining the digital weight signals to produce a weight-representing signal representing the statistical approximation of the actual weight;

comparator means for comparing the latest digital weight signal to said weight-representing signal to determine if the difference therebetween is within a predetermined range and for adding said latest digital weight signal to said statistical approximation if said latest digital weight signal is within said predetermined range;

counting means for counting the number of digital weight signals which are provided and which are within said predetermined range;

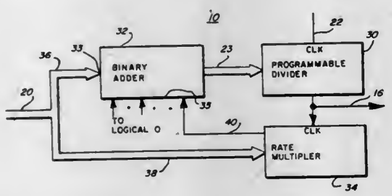
means for resetting said counting means to a predetermined count and for clearing said combining means to produce a new weight-representing signal when a preselected number of digital weight signals are outside said predetermined range; and

means for using said weight-representing signal as an indication of weight when said counting means reaches a preestablished count.

4,241,408
HIGH RESOLUTION FRACTIONAL DIVIDER

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Apr. 4, 1979, Ser. No. 26,953
Int. Cl.³ G06F *7/68*; H03K *21/36*
U.S. Cl. 364—703 **5 Claims**



1. A high resolution fractional divider comprising:

means for generating a clock signal;

means for selectively developing a multibit control word comprising a group of most significant bits and a group of least significant bits;

programmable divider means having a clock input, a divisor control input and an output developing an output signal;

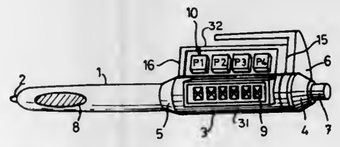
means coupling said most significant bits to said divisor control input and said clock signal to said clock input; and

means developing a product signal chopped by said output signal and representing the expression F_o(LSB/N), where F_o represents the frequency of said output signal, N is a predetermined interger and LSB is an integer representing the value of said group of least significant bits, said product signal operating said coupling means for modifying one of the signals coupled to said two inputs of said programmable divider means for causing said output signal to be characterized by an average frequency comprising an integral part determined according to said most significant bits and a fractional part determined according to said least significant bits.

4,241,409
HAND HELD PEN-SIZE CALCULATOR

Jean-Marie Nolf, Chaussee de Namur, 6, Hamme-Mille, Belgium

Filed Dec. 27, 1978, Ser. No. 973,616
Claims priority, application Belgium, Dec. 30, 1977, 184007
Int. Cl.³ G06F *3/033*
U.S. Cl. 364—705 **5 Claims**



1. A hand held calculator comprising:

an elongated hollow body;

an elongated support extending lengthwise and resiliently mounted in the body, said support having a writing head mounted at one end thereof and an indicating means at its other end;

an elongated barrel slidably mounted about said support, said barrel being pivotably fixed to said body at two opposite points for defining a pivot axis such that the barrel is capable of pivotal movement about said pivot axis;

a character transducer located in the body for detecting the sense of movement of the writing head across the writing surface as a character is being written on said writing surface and for generating a sequence of signals representing said character, said transducer comprising first detecting means mounted on the body in axial alignment with the support so as to cooperate with said indicating means on the support for generating a first signal in response to the support being moved axially with respect to the body,

second and third detecting means mounted on the body along a transverse axis perpendicular to said pivot axis for detecting the pivotal movement of said barrel about the pivot axis, said second detecting means being operative to generate a second signal indicating the pivotal movement in a first sense, and said third detecting means being operative to generate a third signal indicating the pivotal movement in the opposite sense;

logic means responsive to said first, second and third signals to generate a fourth signal representing the combination of distinct states of said first, second and third signals,

buffer store means for temporarily storing said fourth signal,

reference store means for storing signals each representing a distinct written character,

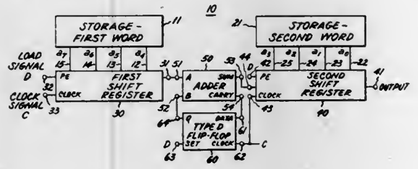
comparator means connected to accept the content of said buffer means, compare it to each signal from the reference store means and generate a distinct identification signal when the signal from the buffer means is identical to a signal from the reference store means; and

a calculating unit mounted on the body, said calculating unit having a display area.

4,241,410
BINARY NUMBER GENERATION

Robert P. DePuy, Cherry Hill, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 19, 1979, Ser. No. 22,041
Int. Cl.³ G06F *7/48*
U.S. Cl. 364—715 **7 Claims**



1. Apparatus for providing an N bit word representing a series of binary numbers, said series consisting of a major sequence of numbers in which successive numbers are separated by a first fixed increment starting from a minimum value other than zero and a plurality of minor sequences of numbers, each of said minor sequences representing binary numbers of said series lying between respective successive numbers of said major sequence, each number of a minor sequence except for the first number being spaced from a preceding number thereof by a second fixed increment, the first number of a minor sequence being separated from the corresponding preceding number in said major sequence by said second fixed increment and the last number of a minor sequence spaced from the corresponding succeeding number in said major sequence by said second fixed increment,

first means for providing a first binary word of k bits, each of the binary values thereof corresponding to a respective number of said major sequence,

second means for providing a second binary word of N−(k+1) bits, each of the binary values thereof corresponding to a respective number in each of said minor sequences,

adding means for adding a one to said first binary word of k bits to obtain a third binary word of k+1 bits,

constituting means for constituting the bits of said third word as the most significant bits of said N bit word and for constituting the bits of said second word as the least significant bits of said N bit word.

4,241,411
FFT PARALLEL PROCESSOR HAVING MUTUALLY CONNECTED, MULTIPLE IDENTICAL CARDS

Norman F. Krasner, Belmont, and Barry M. Leiner, Sunnyvale, both of Calif., assignors to Probe Systems, Incorporated, Sunnyvale, Calif.

Filed Nov. 16, 1978, Ser. No. 961,116
Int. Cl.³ G06F *15/332*
U.S. Cl. 364—726 **19 Claims**

1. In a fast Fourier transform processor of the radix 2 type, utilizing memory units and butterfly units, the construction comprising,

(i) a plurality of identical circuit cards, each card having electrical apparatus for performing operations required by the fast Fourier transform including,

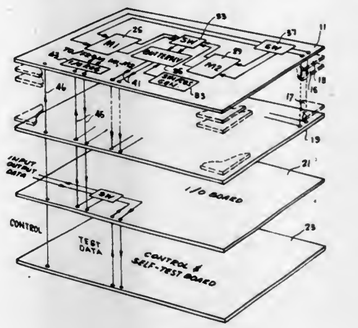
(a) two input ports, a first switching means and first and second memory units connected together for feeding two complex input words one derived from each of two connected circuit cards into said input ports and thence to said switching means and to one of said first and second memory units mounted on each card,

(b) a second switching means and a butterfly unit having inputs and outputs, the inputs connected to the second switching means which is in turn connected to the first and second memory units,

said first switching means for connecting said input ports first to one of said first and second memory units then the other, from one iteration of the fast Fourier transform to the next, said second switching means connecting the one of said first and second memory units, which is not connected to the input ports, to the butterfly unit,

(c) two output ports, each connecting the outputs of said butterfly to one of two cards for feeding one of two complex output words from said butterfly through a first switching means, to a memory unit mounted on each of said one of two cards, and

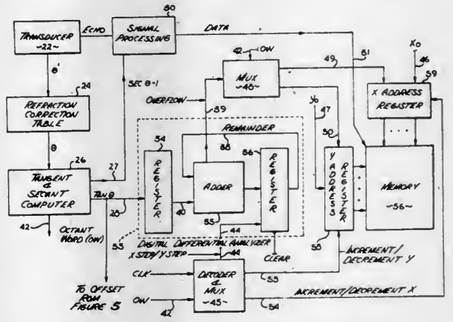
(ii) a control card having control circuit means connected to said butterfly and memory units of all of said identical circuit cards for controlling fast Fourier transform iterations by said circuit cards.



4,241,412
POLAR TO CARTESIAN MAPPING APPARATUS AND METHOD

Allan L. Swain, Whitmore, Calif., assignor to Diasonics, Inc., Sunnyvale, Calif.

Filed Mar. 16, 1979, Ser. No. 21,230
Int. Cl.³ G06F *5/00*; G01S *7/44*
U.S. Cl. 364—731 **19 Claims**



1. An apparatus for mapping data associated with a plurality of angles into a Cartesian coordinate system having a first and a second axis comprising:

segment indicator means for providing segment signals rep-

resentative of the segment in which each of said plurality of angles is located;

trigonometric function means for providing tangent signals representative of the tangent of each of said plurality of angles and secant signals representative of the secant of each of said plurality of angles;

first differential means for providing locations on said first axis as a function of locations on said second axis, said tangent signals and said segment signals, and also for providing locations on said second axis as a function of locations on said first axis, said tangent signals and said segment signals, said first differential means coupled to sid trigonometric means and said segment indicator means;

second differential means for controlling selection of said data for each of said locations on said first and second axes as a function of said secant signals, said second differential means coupled to said trigonometric means and coupled to control said selection of said data;

whereby said data is mapped into a Cartesian coordinate system.

4,241,413

BINARY ADDER WITH SHIFTING FUNCTION

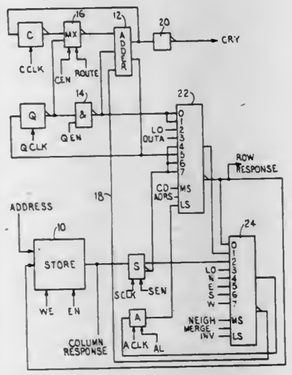
David J. Hunt, Hitchin, England, assignor to International Computers Limited, London, England

Filed Mar. 15, 1979, Ser. No. 20,913

Claims priority, application United Kingdom, Apr. 25, 1978, 16182/78

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—784 **2 Claims**



1. An information processing arrangement comprising a sequence of processing cells, each cell containing first and second single-bit registers, a switching device having two inputs respectively connected to the two registers, a binary adder having three inputs and sum and carry outputs, means for connecting the first input to the output of the switching device, means for connecting the second input to the first register, means for connecting the third input to the carry output of the adder in the preceding cell in the sequence (if any), and means for connecting the sum output to the input of the first register, such that when the switching device in each cell selects the output from the second register, the arrangement is above to perform a parallel addition between first and second multi-bit operands contained in the first and second registers respectively, with ripple carry between adjacent cells, and when the switching device in each cell selects the output from the first register the contents of the first register in each cell can be shifted, via the carry output of the adder in that cell, into the third input of the adder in the next cell of the sequence (if any), and then via the sum output of the adder in that next cell into the first register in that next cell.

4,241,414

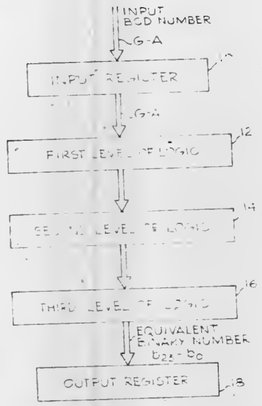
BINARY ADDER EMPLOYING A PLURALITY OF LEVELS OF INDIVIDUALLY PROGRAMMED PROMS

Laurence P. Flora, Covina, and Daniel P. Wiener, Glendale, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 3, 1979, Ser. No. 729

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—786 **12 Claims**



1. In a binary adder for adding a plurality of columns of input binary signals, the combination comprising:

a first level of logic circuitry including a plurality of individually programmed PROMs;

each PROM of said first level being programmed to provide PROM output binary signals representing the addition of a predetermined plurality of said binary input signals taking into account their column locations;

each PROM of said first level being of a size such that no carry is generated therefrom in response to the addition performed on the binary signals applied thereto; and

a second level of logic circuitry to which output binary signals from said first level are applied, said second level including a plurality of individually programmed PROMs;

each PROM of said second level being programmed to provide PROM output binary signals in response to a predetermined plurality of binary signals applied thereto chosen from the PROM output binary signals provided by said first level and any not yet added input binary signals;

each PROM of said second level being of a size such that no carry is generated therefrom in response to the addition performed on the binary signals applied thereto.

4,241,415

MASKING DEVICE FOR SELECTIVELY PREVENTING VISUALIZATION OF DATA FROM A DATA OUTPUT SYSTEM

Katsumi Masaki, Kodaira, and Takashi Kitamura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1977, Ser. No. 771,467

Claims priority, application Japan, Feb. 26, 1976, 51-20491

Int. Cl.³ G06F *7/22*

U.S. Cl. 364—900 **29 Claims**

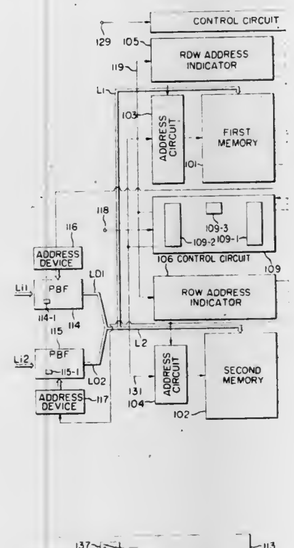
1. A data masking device for use in a system for visualizing output data, comprising:

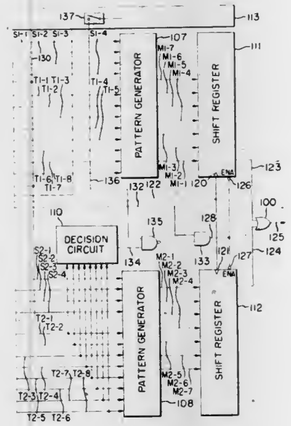
first memory means having a predetermined unit memory capacity for storing information code signals which are convertible into visible information;

second memory means having at least said predetermined unit memory capacity for storing specific code signals corresponding to information code signals stored in said first memory means which are not to be converted into visible information;

read-out means connected to said first and second memory means for simultaneously reading out the code signals from said first and second memory means;

output means responsive to the information code signals read out by said read-out means for establishing information code patterns corresponding to the read out information code signals and for converting the information code patterns into visible information;





detection means connected to said read-out means for detecting the presence of a specific code signal in the code signals read out by said read-out means; and

control means, responsive to the detection by said detection means of the presence of a specific code signal, for controlling said output means to prevent conversion into visible information of the information code patterns corresponding to the information code signal which has been read out simultaneously with the detected specific code signal.

4,241,416

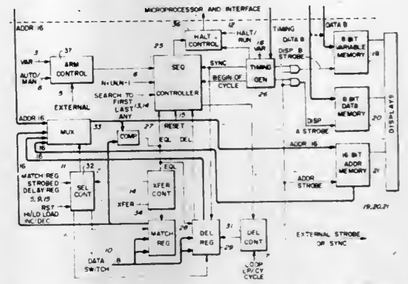
MONITORING APPARATUS FOR PROCESSOR CONTROLLED EQUIPMENT

Zoltan Tarczy-Hornoch, Berkeley, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Jul. 1, 1977, Ser. No. 812,385

Int. Cl.³ G06F *11/30*

U.S. Cl. 364—900 **23 Claims**



1. Apparatus for monitoring processor controlled digital equipment which is characterized by having timing cycles and generating predominantly sequential parallel multiline address signals on a bus, said apparatus comprising: incrementable register means for storing a register bit pattern representing an address; comparing means connected to said register means and to said bus for providing repetitive comparisons, in response to said timing cycles, between said register bit pattern and said multiline address signals of said digital equipment; means connecting said comparing means to the input of said register means for incrementing by a constant said address represented in said register means in response to each unequal comparison; and memory means connected to said bus to receive signals therefrom, said memory means serving to store in response to the first equal comparison an additional bit pattern which represents a state of said address signal on said bus, whereby the apparatus obtains information about the operation of said digital equipment.

4,241,417

CIRCUITRY FOR OPERATING READ-ONLY MEMORIES INTERROGATED WITH STATIC BINARY ADDRESSES WITHIN A TWO-CHANNEL SAFETY SWITCH MECHANISM HAVING ANTI-VALENCY SIGNAL PROCESSING

Alexander Pauly, Koenigslutter, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 681,513, Apr. 29, 1976, abandoned. This application Sep. 23, 1977, Ser. No. 836,098

Claims priority, application Fed. Rep. of Germany, May 13, 1975, 2521245

Int. Cl.³ G06F *11/08, 11/18;* **G11C** *17/00*

U.S. Cl. 364—900 **6 Claims**

1. In an improved apparatus for continuously checking the bit patterns read out from memory units, wherein the apparatus has a first means for transmitting digital information, forming a digital processing channel, and a second means for transmitting digital information, forming a synchronously operated, complementary, digital processing channel wherein all data and addresses transmitted therein are complements of corresponding data and addresses transmitted in the first means for transmitting, at least first and second digital switching means connected respectively to the first and second means for transmitting, the first and second switching means being dynamically operated alternately in positive and negative logic in successive processing steps, by utilizing rectangular signal voltages of a given frequency and with a 180 degree phase shift for the two logic values 0 and 1 to define switching variables, and means for monitoring connected to the first and second digital switch-

ing means, the means for monitoring continuously senses the valency or anti-valency of output signals generated by the first and second digital switching means based on data values transmitted from the first and second means for transmitting to the first and second digital switching means, and the means for monitoring generates a predetermined alarm signal upon sensing a valency condition, the improvement comprising:

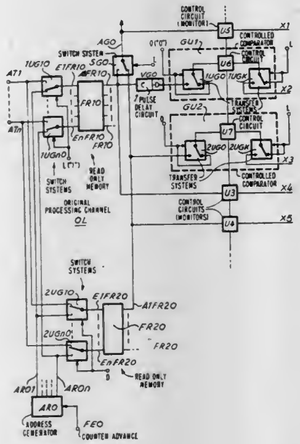
first, second, third and fourth read-only memory means, wherein

said first and second read-only memory means are connected to the first means for transmitting,

said third and fourth read-only memory means are connected to the second means for transmitting,

said second read-only memory means contains selected data stored at selected addresses,

said first read-only memory means contains data corresponding to the complements of said selected data stored in said second read-only memory means, stored at addresses corresponding to the complements of said addresses in said second read-only memory means,



said third read-only memory means contains selected data stored at selected addresses, and

said fourth read-only memory means contains data, corresponding to the complements of said selected data stored in said third read-only memory means, stored at addresses corresponding to the complements of said addresses in said third read-only memory means; and

means for alternately connecting said first and said second read-only memory means to said first means for transmitting and for alternately connecting said third and said fourth read-only memory means to said second means for transmitting, said means for alternately connecting operates alternately in positive and negative logic in successive processing steps, whereby data from corresponding addresses of said first and third read-only memory means are read out and sensed for anti-valency by the means for monitoring during a first processing step and data from corresponding addresses of said second and fourth read-only memory means are read out and sensed for anti-valency by the means for monitoring during a second processing step.

4,241,418

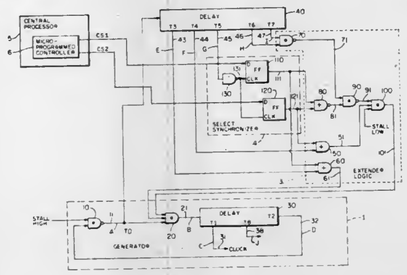
CLOCK SYSTEM HAVING A DYNAMICALLY SELECTABLE CLOCK PERIOD

Philip E. Stanley, Westboro, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 23, 1977, Ser. No. 854,301

Int. Cl.³ H03K *5/04, 5/159*

U.S. Cl. 364—900 **17 Claims**



1. A clock system comprising:

(a) first means having a first control input, a first control output, and a clock output, for generating at said clock output a clock cycle, said clock cycle having a first portion having a first state and a second portion having a second state, said first portion having a duration substantially equal to a first time period and said second portion having a duration substantially equal to a second time period;

(b) second means, included in said first means for generating a first output signal at said first control output of said first means, said first output signal having a first state and a second state;

(c) third means coupled to said first means for delaying said first output signal by a plurality of predetermined time periods to generate a plurality of delayed output signals, each of said delayed output signals having a first state, a second state, and an associated predetermined time delay period whereby a change in state of said first output signal appears in each of said more delayed first output signals after substantially said associated predetermined delay time period;

(d) logic means coupled with said first means and said third means and including gating means and means coupled thereto for generating a first selection signal to enable said gating means to select one of said delayed first output signals, said logic means further including means responsive to said first selection signal and said selected one of said delayed first output signals for generating a first control signal, said gating means operating such that said first control signal transitions to its first state before said first output signal transitions to its second state and said first control signal remains in said first state until after said first output signal transitions to its second state for substantially the associated predetermined delay time period of said selected delayed first output signal;

(e) means included in said first means for generating said clock cycle such that said first time period is substantially equal to said second time period plus the associated predetermined delay time period of said selected delayed first output signal; and

(f) fourth means included in said first means for receiving said first control signal at said first control input of said first means, said first control signal having a first state and a second state, said first state operative to disable said first means from generating said second portion of said clock cycle and said second state operative to enable said first means to generate said second portion of said clock cycle, whereby a change in said first control signal from said first state to said second state enables the generation of said second portion of said clock cycle.

4,241,419

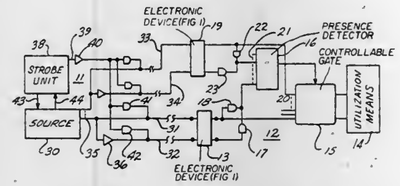
ASYNCHRONOUS DIGITAL DATA TRANSMISSION SYSTEM

Reinhard K. Kronies, Fountain Valley, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 742,745, Nov. 18, 1976, abandoned, which is a continuation of Ser. No. 519,831, Nov. 1, 1974, abandoned, which is a division of Ser. No. 123,959, Mar. 15, 1971, Pat. No. 3,742,253. This application May 1, 1978, Ser. No. 901,870

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—900 **4 Claims**



1. A transmission system for transmitting binary signals representative of a plurality of asynchronous binary data source signals arbitrarily designatable as "1" and "0" to a utilizing means, said system comprising:

(a) a plurality of pairs of transmission lines having transmitting ends and receiving ends, one pair of transmission lines being provided for each binary data source signal, each pair of transmission lines comprising first and second lines;

(b) a strobe source providing a binary strobe source signal concurrently with the provision of said binary data source signals, the binary value of said binary strobe source signal indicating whether or not transmission to said utilization means of binary signals representative of said binary data source signals is to be permitted;

(c) coupling means coupling binary signals representative of said binary strobe source signal to the transmitting ends of all of said transmission lines and coupling binary signals representative of each of said binary data source signals to the transmitting ends of a respective pair of transmission lines in a manner such that:

(1) the presence of one binary value of the binary strobe signal causes "1" binary signals to be applied to the transmission ends of both of the first and second lines of each pair of transmission lines regardless of the binary value of each lines respective binary data source signal,

(2) the presence of the other value of the binary strobe source signal causes "1", "0" binary signals to be applied to the transmission ends of the first and second lines, respectively, of each pair of transmission lines if each lines respective binary data source signal is a "1" or causes "0", "1" binary signals to be applied to the transmission ends of the first and second lines, respectively, of each pair of transmission lines if each lines respective binary data source signal is a "0";

(d) a plurality of electronic devices, one for each pair of transmission lines, each electronic device having first and second input terminals and first and second output terminals said first and second output terminals being designated as the "off" and "on" terminals, respectively, said first and second input terminals being coupled to the receiving ends of the first and second lines, respectively, of a respective pair of transmission lines, each electronic device being constructed and arranged to operate in a manner such that: (1) "1", "1" binary signals applied to its first and second input terminals produce "0", "0" binary signals at its first and second output terminals, (2) "1", "0" binary signals applied to its first and second input terminals, respectively, produce "1", "0" binary signals at its first and second output terminals, respectively, (3) "0", "1" binary signals applied to its first and second inputs, respectively, produce "0", "1" binary signals at its first and second output terminals, respectively, and (4) "0", "0" binary signals applied to its first and second inputs following either "1", "0" or "0", "1" binary signals cause no change in the binary signals at its first and second output terminals produced by the previously applied "1", "0" or "0", "1" binary signals;

(e) presence detection means coupled to the output terminals of said electronic devices and responsive to the detection of a "1" binary signal on at least one output terminal of each of said plurality of electronic devices for providing a data presence output signal; and

(f) means coupled to the output terminals of said electronic devices and responsive to said data presence output signal for causing the binary signals on the output terminals of said electronic devices to be passed to said utilization means.

4,241,420

DISK DATA CONTROL

Leonard A. Fish, and Charles E. Fiterman, both of Chicago, Ill., assignors to Bank Computer Network Corporation, Schiller Park, Ill.

Continuation of Ser. No. 746,057, Nov. 29, 1976, abandoned. This application Nov. 1, 1978, Ser. No. 956,723

Int. Cl.³ G06F *13/04*

U.S. Cl. 364—900 **20 Claims**

1. A disk data control device for controlling data transmission between a disk storage device and an external processing unit, said disk data control device having an input terminal connected to said disk storage device, said disk storage device being adapted to manifest stored data and information at said input terminal in sequential blocks of serial bits, said blocks being separated by time gap intervals during which no data or information is so manifested, said disk data control device having data storage means for storing a plurality of bits of data, stored program means for storing digital representations of a program of logical operations to be carried out on said data while said data is resident in said storage means, means for initiating said logical operation only at the beginning of said time gap intervals after said data has arrived in said storage means, and before any transmission of said data to said external processing unit, writing means, connected between said storage means and said input terminal for writing data from said input terminal into said storage means as said data is presented to said input terminal, and operating means connected to said data storage means and to said stored program means and

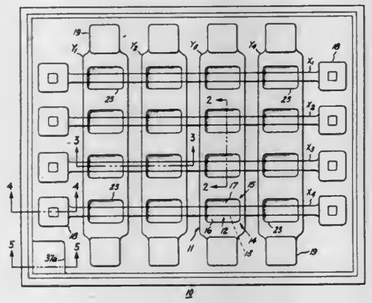
operated by said stored program means for carrying out said program of logical operations on said data while said data is resident in said storage means and before any transfer of said data from said storage means to said external processing unit.

4,241,421

SOLID STATE IMAGING APPARATUS

Hubert K. Burke, Scotia, and Gerald J. Michon, Waterford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 26, 1979, Ser. No. 60,850
Int. Cl.³ G11C *11/40*; G11B *11/08*
U.S. Cl. 365—183 **4 Claims**



3. In combination,

a substrate of semiconductor material having a major surface,

a plurality of first conductive plates, each overlying and in insulated relationship to said major surface and forming a first conductor-insulator-semiconductor capacitor with said substrate,

a plurality of second conductive plates, each adjacent a respective first conductive plate to form a plurality of pairs of plates, said pairs of plates being arranged in a matrix of rows and columns, each of said second conductive plates overlying and in insulated relationship to said major surface and forming a second conductor-insulator-semiconductor capacitor with said substrate, each coupled to a respective first conductor-insulator-semiconductor capacitor,

a plurality of row conductor lines, the first conductive plates in each of said rows connected to a respective row conductor line,

a plurality of column conductor lines, the second conductive plates in each of said columns connected to a respective column conductor line,

a first voltage means for providing a first voltage between said row conductor lines and said substrate to deplete the first portions of said substrate lying under said first conductive plates of majority charge carriers and provide an absolute potential of a first value therein,

a second voltage means for providing a second voltage between said column conductor lines and said substrate to deplete the second portions of said substrate lying under said second conductive plates of majority carriers and providing an absolute potential of a second value therein, said second value being greater than said first value,

means for storing charge in said first portions of said substrate,

means for addressing each of said rows of devices in sequence during a respective first period of time,

means for decreasing said second voltage on said column lines to said zero reference level at the end of each of said first periods,

means for increasing said second voltage on each of said column conductor lines in sequence during each of said first periods of time to deplete respective second periods of said substrate lying thereunder of majority charge carriers to provide an absolute potential in said second portions of said second value therein whereby charge stored in each of said first portions of an addressed row of devices transfers into a respective second portion thereof,

means for decreasing said first voltage on the row lines of said addressed row to zero reference level for an interval at the end of the first period thereof after all of said column lines have been reduced to zero reference level to cause charge in said first portions of the substrate associated with said addressed row to be injected into said substrate,

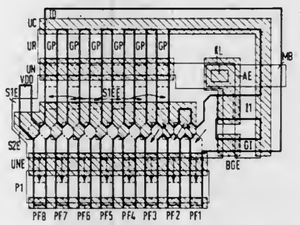
means for sensing in sequence the currents induced on the row line of each addressed row during the transfer of charge from the second portions to the first portions of said substrate associated therewith.

4,241,422

SERIES-PARALLEL-SERIES CHARGE TRANSFER MEMORY HAVING COMPLETE BIAS CHARGE OPERATION

Otto Grüter, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,271
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842856
Int. Cl.³ G11C *11/34*
U.S. Cl. 365—183 **5 Claims**



1. In a series-parallel-series charge transfer memory of the type having a read-in chain of a plurality of first and second alternately arranged charge transfer elements, a plurality of parallel charge transfer devices coupled to receive information charges from the charge transfer elements of the read-in chain, and a read-out chain of a plurality of third and fourth alternately arranged charge transfer elements coupled to receive information charges from the parallel charge transfer devices, the improvement comprising:

a first circuit arrangement assigned to the read-in chain and operable to store bias charges and deliver the bias charges to the read-in chain after information charge transfer to the parallel charge transfer devices; and

a second circuit arrangement assigned to the read-out chain and operable to remove bias charges from the read-out chain prior to receipt of information charges from the parallel charge transfer devices.

4,241,423

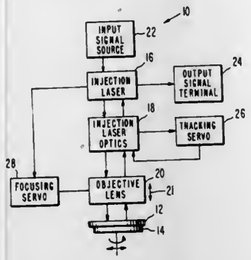
OPTICAL MEMORY WITH INJECTION LASER AS LIGHT SOURCE AND DETECTOR

William J. Burke, Princeton Junction; Henry Kressel, Elizabeth, and Michael Ettenberg, Freehold, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,405
Int. Cl.³ G11C *13/08*
U.S. Cl. 365—215 **7 Claims**

1. An optical memory device which includes an injection laser as a source of radiation and the detector of the reflected

modulated radiation, a memory element adapted to receive the radiation from the injection laser and to reflect back at least some of the radiation modulated by information contained in the memory element, and means for focusing a spot of the radiation from the injection laser onto the memory element, the improvement comprising:



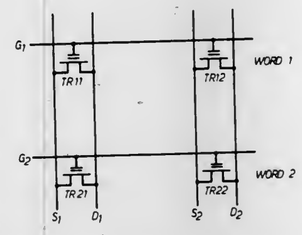
means for modulating the focus of the spot of light, means for detecting variations in a characteristic of the injection laser resulting from the modulation of the focus and means for adjusting the focusing means to a position in which the variation resulting from the modulation of the focus is at a minimum so as to bring the radiation into focus on the memory element.

4,241,424

SEMICONDUCTOR DEVICES

John F. Dickson, Long Buckby, and Raymond E. Oakley, Westbury, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Sep. 27, 1978, Ser. No. 946,406
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—218 **4 Claims**



1. A method of operating a matrix array of field effect memory transistors, each transistor being formed on a substrate and including a source electrode, a drain electrode and a gate electrode, the method including the steps of:

writing each transistor into a first state;

punch through erasing selected transistors into a second state by establishing the source and drain electrodes of the selected transistors on the one hand at a predetermined potential with respect to the potential level of the gate electrode and substrate on the other; and

simultaneously inhibiting said punch through erasing of at least one of the remaining transistors by maintaining the gate electrode of each said at least one of the remaining transistors at a predetermined inhibiting potential;

whereby to provide a required data pattern.

4,241,425

ORGANIZATION FOR DYNAMIC RANDOM ACCESS MEMORY

Ronald P. Cenker, Coplay; Donald G. Clemons, Walnutport; William R. Huber, III, and Frank J. Procyk, both of Center Valley, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,839
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 **5 Claims**



1. A semiconductor memory device comprising a multiplicity of memory cells arranged in an ordered array of rows and columns, each row having an associated row conductor coupled to all cells in the row, each column having an associated column conductor coupled to all cells in the column, the array being divided into a plurality of sub-arrays; each sub-array having associated row decoder means and column decoder means; means for receiving an address; means for applying during an operating cycle a first part of the address to the row decoder means associated with each sub-array for selecting a corresponding row in each sub-array; a plurality of sense/refresh amplifier means, a different one coupled to each column conductor in each sub-array for sensing and for refreshing the contents of each cell situated along a selected row in each sub-array;

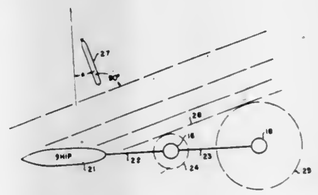
characterized in that there are included means responsive to a second part of the address for selecting during the operating cycle a sub-array for cell selection therein and for activating only the column decoder means associated with the selected sub-array.

4,241,426

FALSE PHASE FRONT ACOUSTIC DECOY

William E. Wells, Sr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 12, 1964, Ser. No. 344,508
Int. Cl.³ H04K *3/00*
U.S. Cl. 367—1 **3 Claims**



1. An acoustical decoy system for protecting a marine carrier vessel from an attacking torpedo, comprising in combination:

a marine carrier vessel to be protected, having a longitudinal axis substantially paralleling the direction of travel thereof;

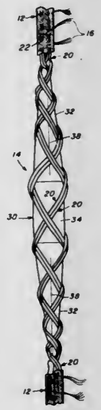
an electrical signal generator disposed in said marine carrier vessel;
a phase shifter disposed in said marine carrier vessel and electrically connected to the output of said electrical signal generator;
a first electroacoustical transducer disposed remotely from said marine carrier vessel on substantially an extension of the longitudinal axis thereof;
a first cable containing electrical conductors effectively interconnecting the output of said phase shifter and the input of said first electroacoustical transducer;
a second electroacoustical transducer disposed more remotely from said marine carrier vessel than the aforesaid first electroacoustical transducer and likewise on substantially an extension of the longitudinal axis of said marine carrier vessel; and
a second cable containing electrical conductors effectively interconnecting the output of said electrical signal generator and the input of the aforesaid second electroacoustical transducer.

4,241,427

CONDITION RESPONSIVE CABLE WITH BENDABLE COAXIAL SENSOR MOUNT

Richard C. Swenson, Carriere, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1978, Ser. No. 955,542
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—20 **11 Claims**



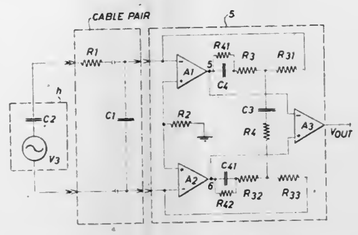
1. A flexible, condition responsive cable device comprising in combination:
a plurality of strands braided together to form a hollow cable having a tendency to expand under axial compression and to constrict when under tension;
said strands being formed of synthetic fibers characterized by high resistance to stretch;
at lease one of said strands comprising a hollow braid;
conductor means for carrying electrical signals, said conductor means being disposed within said one of said strands;
an elongate transducer mount disposed within an expanded portion of said cable and comprising a rigid, hollow transducer housing and a pair of resiliently flexible, tapered fairings extending from opposite ends of said housing;
said housing having a central bore and said tapered fairings each having a central passage communicating with said bore;
transducer means, disposed in said bore and comprising terminal means;
said conductor means leading from within said one strand through said fairing and connected to said terminal means.

4,241,428

LINE COMPENSATED SEISMIC AMPLIFIER

Albert J. Berni, Houston, Tex., and John F. Parrish, New Orleans, La., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 19, 1979, Ser. No. 4,638
Int. Cl.³ G01V *1/28;* **H04B** *3/28;* **G01V** *1/38*
U.S. Cl. 367—21 **23 Claims**



2. A marine seismic surveying system, wherein a transducer responsive to varying acoustic pressure produces a corresponding varying electrical output which is electrically coupled to a cable pair to conduct electric signals to a processing station, comprising a seismic amplifier coupled to said cable pair, which comprises:
a feedback compensation amplifier stage having at least a positive input pair and a negative input pair and at least two outputs;
a feedback circuit connecting said outputs to said negative input pair of said feedback compensation amplifier stage, said feedback circuit having an impedance combination which is an electrical equivalent of the combined impedance of said cable pair and said transducer;
means connecting said cable pair to said negative input pair;
means connected to said positive input pair for maintaining said positive input pair at the same potential;
a differential voltage amplifier stage having positive and negative polarity inputs and a final output; and
means electrically connecting at least two outputs from said feedback compensation amplifier stage to said positive and negative polarity inputs of said differential voltage amplifier stage.

4,241,429

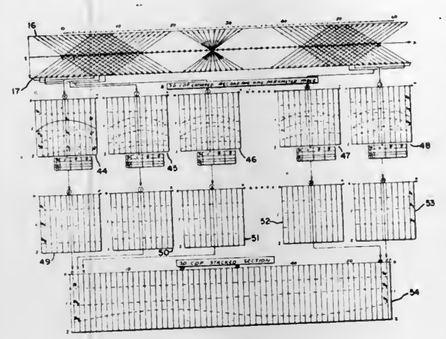
VELOCITY DETERMINATION AND STACKING PROCESS FROM SEISMIC EXPLORATION OF THREE DIMENSIONAL REFLECTION GEOMETRY

Marvin G. Bloomquist, Arlington, and Yung-liang Wang, Irving, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 3, 1978, Ser. No. 883,087
Int. Cl.³ G01V *1/36*
U.S. Cl. 367—52 **8 Claims**

1. The method of producing a stacked seismic section in seismic exploration comprising:
generating linear, multiple fold, common depth point sets of seismograms with three dimensional reflection geometry, the reflections of seismic energy appearing across each set with time differences which are substantially on a hyperbola,
normal move-out correcting said sets with trace spacings determined by the source receiver-coordinate distance along the lines of exploration and with given values of searching velocity and travel time,
detecting the power of the seismic signal in the normal move-out corrected sets,
determining from the maximum detected signal the hyperbola velocity and the offset of the apex of said hyperbola from the point of minimum source-receiver separation,
from said hyperbola velocity and apex offset, determining the dip and strike of the subsurface interface producing

reflections in said seismograms and the average velocity of the path of said seismic energy to said subsurface interface, and



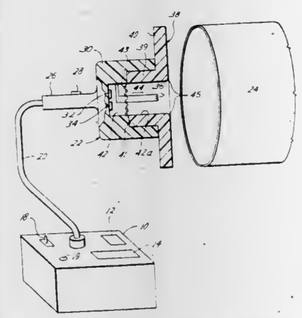
correcting said seismograms to zero source receiver time with time corrections determined from said average velocity, dip and strike, and
stacking the corrected seismograms to produce a three-dimensional common depth point stacked seismic section.

4,241,430

METHOD AND APPARATUS FOR DETERMINING THE LENGTH OF TUBULAR MEMBERS

Douglas J. Kayem, 711 Crossroads, Houston, Tex. 77079, and Harold L. Reed, Richmond, Tex., assignors to Douglas J. Kayem, Houston, Tex.

Filed Jan. 8, 1979, Ser. No. 1,828
Int. Cl.³ G01S *15/10*
U.S. Cl. 367—115 **13 Claims**



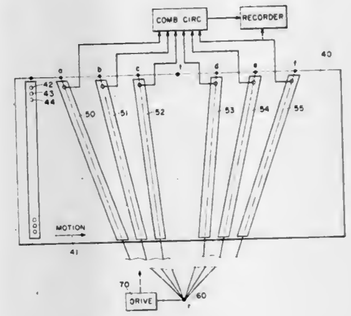
1. An improved method of determining the length of an elongated tubular member from a selected end of such tubular member, including the steps of:
providing in fluid communication with the air inside the tubular member sound producing means, sound detecting means, and means for sensing the ambient temperature of the air;
sensing the ambient temperature of the air with the temperature sensing means;
causing the sound producing means to generate a sound pulse at a selected instant of time;
detecting with the sound detection means the portion of the sound pulse that traverses the length of the tubular member and is reflected by the impedance differential surface set up by the opposite end of the tubular member and returns; and
determining the length of the tubular member responsive to the time of travel of the sound pulse, responsive to the difference, if any, in the time of travel of the sound pulse caused by the impedance differential surface being spaced from the opposite end of the tubular member, and responsive to the ambient temperature of the air through which the sound pulse travels.

4,241,431

SONAR RANGING SYSTEM

Charles H. Jones, Murrysville, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1967, Ser. No. 678,488
Int. Cl.³ G01S *3/80*
U.S. Cl. 367—123 **9 Claims**



1. In a sonar scanning system wherein a vertical array of equally spaced transducers is employed as the detecting means, the combination of
means for processing the acoustic signals detected by said array to impart to said array a receiving pattern which contains a plurality of directional receiving beams orientated at different angles with respect to the horizontal,
the number of these beams and their angular orientation changing with time so that there is a beam available for detecting each of the major wave fronts arriving at said array from sound producing objects at progressively greater distances from said array; and
means for combining the signals developed by these beams to produce a range signal whose amplitude at any one time is indicative of the probability of a sound producing object being at a specific distance from said array.

4,241,432

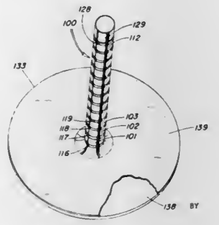
TRANSDUCER-REFLECTOR SYSTEM

Lewie M. Barber; Bernie R. Criswell; Ruell F. Solberg, Jr., and Benjamin F. L. Weiss, all of Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 21, 1967, Ser. No. 635,950
Int. Cl.³ H04R *17/00, 1/34*
U.S. Cl. 367—151 **3 Claims**

1. A line array acoustical transducer reflector system having a conical shell radiation pattern comprising,
a plurality of transducer elements vertically stacked and electrical-mechanically insulated from each other,
a disc-shaped metal reflector plate covered with a layer of pressure release material, said elements joined at one end to the center of said plate, and
a plurality of transformers for shading said elements individually contained in ferrite cup cores and having a primary winding and a plurality of output windings, each of said

transformers connecting several transducer elements to an electrical source and said output windings connecting



each element with opposite polarity to its adjacent element.

4,241,433

ELECTRONIC WATCH

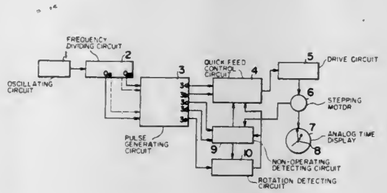
Makoto Ueda; Masaharu Shida; Masataka Ikenishi; Joichi Miyazaki; Shozo Kushida, and Hiromasa Nakanishi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jul. 24, 1978, Ser. No. 927,362

Claims priority, application Japan, Aug. 4, 1977, 52-93669

Int. Cl.³ G04B *19/00;* **G04C** *19/00, 3/00*

U.S. Cl. 368—76 **6 Claims**



1. In an electronic watch having an oscillation circuit for producing a time base signal with a predetermined frequency, a frequency dividing circuit having a plurality of frequency dividing stages for dividing down the time base signal, a pulse generating circuit receptive of the outputs of the dividing stages of said frequency dividing circuit for producing standard pulses and quick feed pulses having a period shorter than that of said standard pulses, a stepping motor for moving a time hand to display time, and a drive circuit receptive of the standard pulses for driving said stepping motor, the improvement comprising: a non-operation detecting circuit for detecting a non-operative condition of said stepping motor and for producing a non-operation signal each time the stepping motor fails to operate in response to one standard pulse; counting means for counting the number of said non-operation signals; a rotation detecting circuit for detecting the resumption of operation of said stepping motor from the non-operative condition in response to a standard pulse; and a quick feed control circuit for quickly advancing said stepping motor in response to an output from the rotation detecting circuit by thereafter supplying to said drive circuit, in place of a standard pulse, a set of quick feed pulses equal in number to the number of non-operation signals counted in said counting means.

4,241,434

STEPPING MOTOR MECHANISM FOR AN ELECTRONIC WATCH

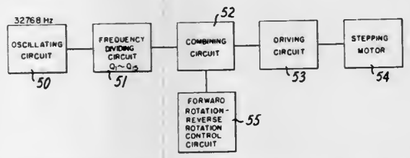
Masaharu Shida; Akira Torisawa, and Makoto Ueda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,179

Claims priority, application Japan, Jun. 17, 1977, 52-72572

Int. Cl.³ G04C *19/00, 3/00;* **H02K** *29/00*

U.S. Cl. 368—85 **8 Claims**



1. A stepping motor apparatus for an electronic watch of the type having a rotor rotated in the forward direction by alternating pulses, said stepping motor apparatus comprising: a generating circuit for generating at least three alternating pulses including a first pulse having a pulse width of 1.5 to 2.5 msec, a second pulse having a pulse width about twice as long as said first pulse width and a third pulse having a pulse width more than three times as long as said first pulse width; and means including a forward rotation-reverse rotation control circuit for controlling the application of the at least three alternating pulses to effect rotation of said rotor in the reverse direction such that said first pulse rotates said rotor in the forward direction, and said second and third pulses are applied at the time of angular movement of said rotor to cause said rotor to rotate in the reverse direction.

4,241,435

ELECTRONIC TIMEPIECE OSCILLATOR CIRCUIT

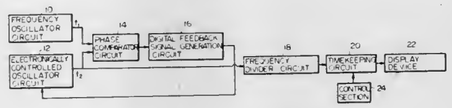
Hiro Fujita, and Akira Tsuzuki, both of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,588

Claims priority, application Japan, Oct. 6, 1978, 53-123233

Int. Cl.³ G04C *19/00;* **G04B** *17/12;* **H03B** *27/00*

U.S. Cl. 368—85 **9 Claims**



1. In an electronic timepiece having a timebase signal source for producing a standard timebase signal, a frequency divider responsive to said timebase signal for producing a unit time signal, timekeeping circuit means responsive to said unit time signal for producing time information and display means for displaying said time information, the improvement whereby said timebase signal source comprises:

a high frequency oscillator circuit for producing a relatively high frequency signal, the frequency of said relatively high frequency signal being stable to a substantially high degree;

an electronically controlled oscillator circuit for producing a relatively low frequency signal serving as said timebase signal;

a phase comparator circuit for comparing the phase of said relatively high frequency signal with that of said relatively low frequency signal and for producing a phase comparison signal indicative of a phase relationship between said relatively high and low frequency signals;

a feedback signal generation circuit responsive to said phase comparison signal for producing a digital feedback signal, said digital feedback signal being at a first logic level potential while the phase of said relatively low frequency signal is leading the phase of said relatively high frequency signal and being at a second logic level potential while the phase of said relatively low frequency signal is lagging that of said relatively high frequency signal;

said digital feedback signal being applied as a frequency control signal to said electronically controlled oscillator circuit which is responsive to said second logic level potential state of said digital feedback signal for determining the frequency of said relatively low frequency signal to have a value which is equal to that of said relatively high frequency signal multiplied by a factor comprising the sum of a predetermined integer and a first positive real number with value less than one, said electronically controlled oscillator circuit being further responsive to said first logic level potential state of said digital feedback signal for determining the frequency of said relatively low frequency signal to have a value which is equal to that of said relatively high frequency signal multiplied by a factor comprising the difference between said predetermined integer and a second positive real number with value less than one.

4,241,436

METHOD OF MANUFACTURING OF ELECTRONIC MODULES FOR TIMEPIECES AND ELECTRONIC MODULE OBTAINED BY CARRYING OUT THIS METHOD

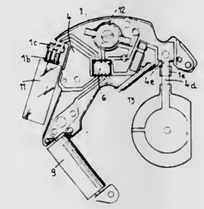
Jean Bolzt, Neuchâtel; Philippe Clot; Philippe Golay, both of Fontainemelon, and Daniel Paratte, Neuchâtel, all of Switzerland, assignors to Fabrique d'Horlogerie de Fontainemelon S.A., Neuchâtel, Switzerland

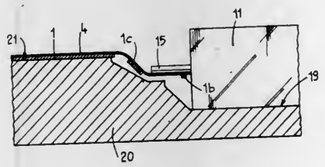
Filed Dec. 13, 1978, Ser. No. 969,059

Claims priority, application Switzerland, Dec. 14, 1977, 15376/77

Int. Cl.³ G04C *23/02;* **H05K** *3/32*

U.S. Cl. 368—88 **10 Claims**





1. A method of manufacturing a module for an electronic timepiece, comprising:

providing a substrate in the form of an electrically insulating flexible film having a pattern of connection foil leads thereon and a pattern of openings therethrough, with said lead pattern being designed to electrically interconnect components of a module and said opening pattern comprising a first set of component openings conveniently located, sized and shaped for receiving said components and a second set of bonding openings facing locations where said foil leads are to be connected with terminal leads of said components;

locating said components within said component openings so that said foil leads are registered with appropriate component terminal leads; and

bonding said foil leads with said terminal leads by bringing a bonding tool into engagement with said foil leads through said bonding openings.

8. An electronic watch module comprising:

an electrically insulating flexible film having a metallic foil secured thereto;

a plurality of components located in a set of component openings in said film located, sized and shaped for receiving said module components;

a set of bonding openings in said film facing locations where terminal leads of said components are bonded with interconnection leads;

portions of said foil removed to form a pattern of connection foil leads constituting said interconnection leads with at least a portion left over each bonding opening; and

said components located within said component openings so that said foil leads are registered with the appropriate component terminal leads and bonded thereto.

4,241,437

SIMULATED PENDULUM CLOCK

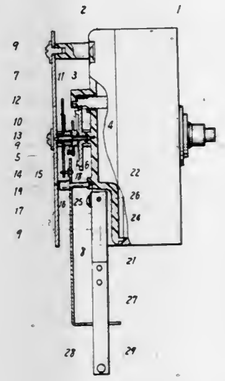
Itaru Ashida, Tokyo, Japan, assignor to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,632

Claims priority, application Japan, Jul. 26, 1977, 52/89580

Int. Cl.³ G04B *15/00;* **G04F** *5/00*

U.S. Cl. 368—134 **3 Claims**



1. In a simulated pendulum clock of the type having a timepiece movement for driving the hands of the clock: a transmission wheel rotationally driven during use of the clock; a rotating member mounted for rotation; means for transmitting rotational movement of said transmission wheel to said rotating member whenever the load on said rotating member is less than a predetermined value and otherwise enabling movement of said transmission wheel relative to said rotating member; an escape wheel having a set of teeth about its periphery and mounted coaxially with and adjacent to said rotating member to undergo rotational movement; spring means coacting with said rotating member for applying a rotating torque to said escape wheel tending to rotate said escape wheel, said spring means comprising a coil spring having one end connected to said rotating member and the other end connected to said escape wheel; a rockable pallet mounted for rocking movement and having a pair of pallet pins alternately engageable and disengageable with the teeth of said escape wheel during

rotation thereof to effect rocking movement of said pallet; and a pendulum fixedly secured at its upper end and hanging downwardly therefrom in juxtaposition with said pallet and connected to the lower end of said pallet to transmit the rocking movement of the pallet into a rocking to-and-fro movement of said pendulum.

4,241,438

DEVICE FOR ADJUSTMENT OF ELECTRICAL CLOCKS

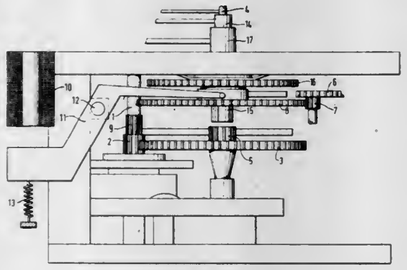
Eckhard Kern, Hofheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,309

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2827918

Int. Cl.³ G04B *27/08*

U.S. Cl. 368—185 **7 Claims**



1. In a device for adjustment of an electrical clock with a clockwork train, the latter having an hour pointer driven via an hour gearwheel, a minutes pointer which is driven by means of a minutes gearwheel and a minutes intermediate wheel, as well as having additional gearwheels with a first transmission ratio, the minutes intermediate wheel being coupled with a motor via the additional gearwheels, the improvement comprising

means for decoupling the minutes gearwheel from the minutes intermediate wheel for a coarse adjustment of the minutes pointer,

at least one gearwheel means having a second transmission ratio which is more direct than the first transmission ratio for coupling the minutes gearwheel with the motor when said minutes gearwheel is decoupled from said minutes intermediate wheel,

said coupling means includes electromagnet means for decoupling the minutes gearwheel from the minutes intermediate wheel.

4,241,439

SUBSTRATE BOARD/CARRIER FRAME ASSEMBLY

Jean P. Skwarek, Besancon, France, assignor to Timex Corporation, Waterbury, Conn.

Filed Jan. 4, 1980, Ser. No. 109,735

Int. Cl.³ G04B *1/00*; G04C *3/00*; G04B *37/00*

U.S. Cl. 368—204 **13 Claims**

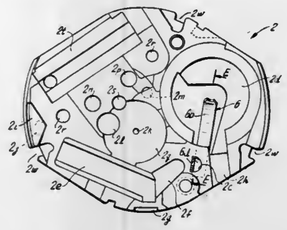
1. An assembly for an electronic timepiece powered by a battery comprising:

(a) a carrier frame having a first passage extending therethrough,

(b) a substrate board having one side juxtaposed against the carrier frame and one free side, said board having a second passage extending therethrough from one side to the other aligned with said first passage through the carrier frame and also having a circuit component on the free side thereof,

(c) an elongated battery spring contact affixed to the carrier frame and adapted to contact the battery at one end and extend through the aligned first and second passages through said frame and board, terminating beyond the free side of said board in a contact post, and

(d) a bead of conductive material deposited around the contact post, connecting said post to said circuit component on the free side of the substrate board,



whereby said conductive bead not only completes the electrical circuitry between the spring contact and circuit component but also functions as a retaining head to hold the substrate board against the carrier frame.

4,241,440

BATTERY-CONTAINING CROWN FOR WRISTWATCHES

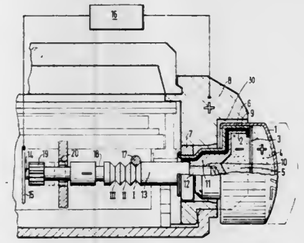
Josef King, Schramberg, Fed. Rep. of Germany, assignor to Gebrüder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,211

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808217

Int. Cl.³ G04B *1/00*

U.S. Cl. 368—204 **11 Claims**



1. In an electrical timekeeping watch of the type including a casing, a control stem mounted in the casing, a manually manipulatable regulating crown connected to the stem for actuating the latter, an electronic circuit and a voltage source for the circuit, which is disposed outside of said casing, the improvement wherein said voltage source is contained within said crown, said crown including electrical conductor means in sliding electrical contact with a component of said circuit when said crown is manipulated, said crown is threadedly connected to said stem, means on said casing for engaging said stem in a selected axial position of the latter to constrain said shaft against rotation, allowing said crown to be unthreaded from said stem while said stem remains in said casing.

4,241,441

ELECTRONIC TIMEPIECE

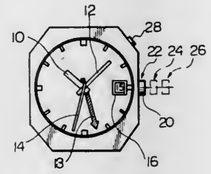
Mitsuhiro Murata, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

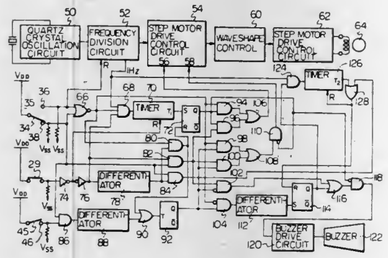
Filed Mar. 20, 1979, Ser. No. 22,253

Claims priority, application Japan, Mar. 23, 1978, 53-033470

Int. Cl.³ G04B *23/08*; G04C *21/16*; G04B *21/00*; G04C *23/18*

U.S. Cl. 368—247 **9 Claims**





1. An electronic timepiece, comprising:

a source of a standard time signal;

motor drive circuit means responsive to said standard time signal for producing a drive signal;

a motor coupled to receive said drive signal;

a time indicating mechanism driven by said motor to display current time within a range of twelve hours;

alarm time indicating means for indicating a preset alarm time within said range of twelve hours;

alarm time setting means coupled to said alarm time indicating means for setting a desired alarm time;

alarm detection switch means coupled to said alarm time indicating means and to said time indicating mechanism for detecting coincidence between said alarm time and said current time, and responsive to said detection for producing an alarm detection signal;

alarm circuit means coupled to receive said alarm detection signal;

alarm control means coupled to said alarm circuit means for selectively establishing a first alarm condition in which said alarm circuit means is responsive to the first and subsequent odd-numbered occurrences of said alarm detection signal after said first alarm condition has been established, for generating an alarm actuation signal, and a second alarm condition in which said alarm circuit means is responsive to the second and subsequent even-numbered occurrences of said alarm detection signal after said second alarm condition has been established, for generating said alarm actuation signal;

an alarm device responsive to said alarm actuation signal for generating an audible alarm warning signal; and

discrimination means for enabling said first alarm condition and said second alarm condition to be distinguished by the user.

4,241,442

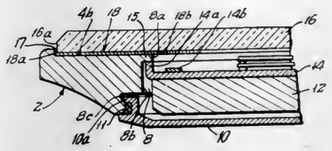
TIMEPIECE WITH SHAPED COMPONENTS

Raymond J. Grohoski, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 2, 1979, Ser. No. 63,274

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—294 **11 Claims**



1. In a timepiece with a minute hand and an hour hand, the combination of:

(a) a case having a non-circular recess in one side intersecting with a cylindrical bore extending into said case, said bore including a first bore section adjacent to and intersecting said non-circular recess to form a first annular shoulder in said case at the bottom of the recess with said first shoulder having a non-circular outer periphery and a circular inner periphery defining a circular opening in the bottom of the recess and further including a second bore section of larger diameter below and intersecting said first bore section to form a second annular shoulder of circular outer and inner periphery recessed in said case below and hidden from view by said first shoulder;

(b) a transparent crystal with a non-circular outer periphery adapted to fit in said non-circular recess to close off said recess, said crystal having a bottom surface facing the bottom of said recess;

(c) a decorative annular mask attached to the bottom surface of said crystal and overlying the first annular shoulder to hide it from view, said mask having a non-circular outer periphery corresponding to that of said recess and having a circular inner periphery of such size to provide a circular window for viewing into the circular opening in the bottom of said recess and into said bore; and

(d) a circular dial plate supported in the second bore section, said dial plate including a central, circular surface visible through the circular window in the mask for indicating time in cooperation with said hands and an up-turned, circumferential lip which abuts against the second annular shoulder in said case to position and space the central dial surface a preselected distance below the masked crystal.

4,241,443

APPARATUS FOR REDUCING A SAMPLING FREQUENCY

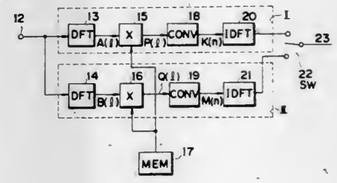
Hiroshi Sakaki, and Sotokichi Shintani, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,824

Claims priority, application Japan, Apr. 12, 1978, 53-42192

Int. Cl.³ H04J *1/05*

U.S. Cl. 370—70 **2 Claims**



1. An apparatus for reducing a sampling frequency which derives information with a bandwidth up to f_B/N having the

sampling frequency $2f_{B/N}$, *(N is an integer), from an input signal with a bandwidth up to* f_B having the sampling frequency $2f_B$, comprising; a pair of partial frequency reduction systems and a switch for alternately selecting the outputs of said partial frequency reduction systems to provide the output signal, each of said partial frequency reduction systems having DFT means for performing on G points the discrete Fourier transform (G is a multiple of N) of said input signal, a multiplication means for multiplying the predetermined frequency characteristics with the output of said DFT means, linear conversion means for linear conversion of the output of said multiplication means and for providing G/N number of data, and means for performing the inverse discrete Fourier transform to the output of said linear conversion means.

4,241,444

ARRANGEMENT FOR TIME-DIVISION MULTIPLEX PWM DATA TRANSMISSION

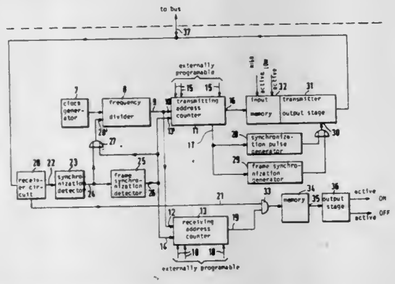
Horst Kister, Wehrheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,443

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750818

Int. Cl.³ H04J *3/06*

U.S. Cl. 370—85 **14 Claims**



1. In an arrangement for time-division multiplex data transmission having a data bus system which comprises a data bus circuit, several subscribers which are connected to the data bus circuit and have a transmitter part and a receiver part and communicate with one another by data transmission in a predetermined sequence in a given combination, and at least one clock generator, in which the sequence of all the given combinations of the subscribers runs through during a time frame and a time slot within the time frame is available for connecting each combination, the improvement wherein

each subscriber includes at least one programmable counter means for emitting a control signal when a programmed number has been reached and for resetting itself to zero when a given counting capacity which is the same for all said counter means has been reached, said at least one programmable counter means has a counter input connected to the clock generator and has a first control output,

switching means, connected to said first control output, for forming a data-transmitting connection between the data bus circuit and a data source or data sink respectively of said each subscriber,

each subscriber has the at least one clock generator, and

means for enabling said at least one programmable counter means of said each subscriber to be reset synchronously with said at least one programmable counter means of the other of said subscribers and not to be subjected at said output input to clock pulses generated by the at least one clock generator until the at least one programmable counter means of a slowest of said subscribers has been reset, which determines the end of the time frame, whereby said at least one programmable counter means of all said subscribers are synchronized with one another.

4,241,445

METHOD AND APPARATUS FOR COUNTING TRANSMISSION ERRORS IN A DIGITAL MICROWAVE LINK

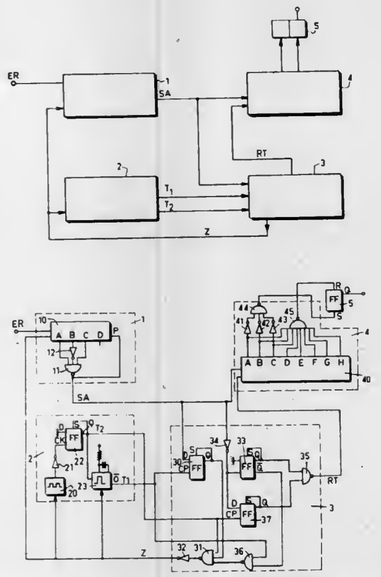
Georges A. Payen, Montrouge, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Dec. 4, 1978, Ser. No. 965,866

Claims priority, application France, Dec. 5, 1977, 77 36604

Int. Cl.³ H04B *17/00;* **G06F** *11/00*

U.S. Cl. 371—5 **3 Claims**



1. A method of counting transmission errors in a digital microwave link for producing a demand of commutation onto an emergency channel when the quality of the link becomes deficient, wherein the errors are counted during a period t which is always at least equal to a value t_1 and at most equal to a value t_2, and which period terminates when a fixed number N of errors has been detected, a pulse is stored upon each detection of N errors within a period t, and a demand of commutation is produced when n_1 pulses have been stored consecutively.

4,241,446

APPARATUS FOR PERFORMING SINGLE ERROR CORRECTION AND DOUBLE ERROR DETECTION

Leonard G. Trubisky, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 16, 1978, Ser. No. 952,025

Int. Cl.² G06F *11/12;* **G11C** *29/00*

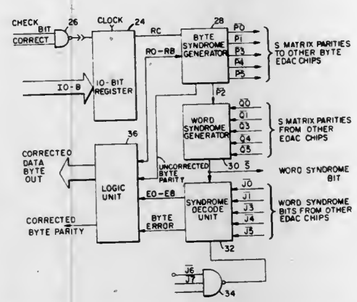
U.S. Cl. 371—37 **5 Claims**

1. An apparatus for performing error correction and detection of binary words, said apparatus having a plurality of sections, each section processing one byte of data and comprising:

first means for receiving raw data;

second means coupled to said first means for producing a first plurality of intermediate sector matrix parity outputs;

third means coupled to said second means for receiving one of said first plurality of outputs and a second plurality of intermediate matrix parity outputs from other sections and generating therefrom a syndrome signal; and



fourth means coupled to said first and third means for receiving said syndrome signal and a plurality of syndrome signals from other sections and generating therefrom the corrected data bits.

4,241,447

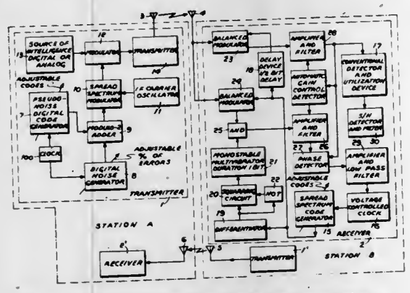
SECURE SPREAD SPECTRUM COMMUNICATION SYSTEM

Marvin A. Epstein, Monsey, N.Y., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 22, 1969, Ser. No. 843,689

Int. Cl.³ H04K *1/00, 3/00*

U.S. Cl. 375—1 **10 Claims**



1. Secure communication apparatus comprising:

a first source of a given pseudo-noise digital code;

first means coupled to said source to corrupt said given digital code by a predetermined percent of and distribution of errors;

second means coupled to said first means to generate a spread spectrum signal in response to said corrupted given digital code;

a second source of intelligence; and

third means coupled to said second source and said second means to transmit said spread spectrum signal modulated by said intelligence.

4,241,448

HIGH SENSITIVITY DUAL FUNCTION METER CIRCUIT

Peter A. Kwitkowski, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 28, 1979, Ser. No. 107,985

Int. Cl.³ H04B *17/00*

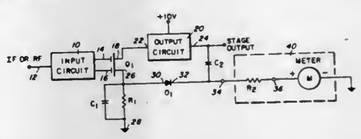
U.S. Cl. 455—115 **5 Claims**

1. A dual function high sensitivity meter circuit simultaneously responsive to both an AC signal component of an AC signal being processed by a preselected stage of an associated electronic circuit, and a component of a DC bias voltage from the bias network of the preselected stage, comprising:

(a) means for rectifying an AC signal, having a first electrode and a second electrode;

(b) means for coupling a DC bias voltage component from the bias network of the preselected stage to the first electrode of the means for rectifying;

(c) means for AC grounding the first electrode of the rectifying means;



(d) means for AC coupling a component of an AC signal being processed by the preselected stage to the second electrode of the rectifying means;

whereby the DC bias voltage component is coupled through the rectifying means to the second electrode, and the AC signal component is rectified and superimposed on the DC bias voltage component to comprise a meter driving signal.

4,241,449

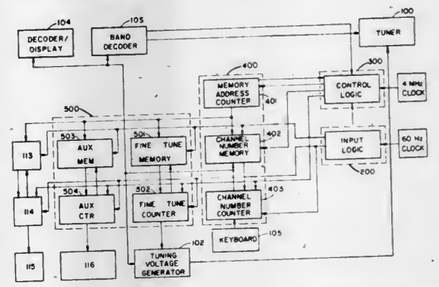
MEMORY SAVING ALL-CHANNEL DIGITAL TELEVISION RECEIVER

Akio Tanaka, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 7, 1977, Ser. No. 840,341

Int. Cl.³ H04N *1/26*

U.S. Cl. 455—186 **13 Claims**



9. The method of operating a television receiver tuneable to any channel by its channel number and including a limited-location memory for storing channel numbers, channel tuning voltages and channel number-related additional receiver adjustment information comprising:

tuning said receiver to a selected channel;

scanning said limited-location memory to determine the presence of the selected channel number, channel tuning voltage and additional receiver adjustment information corresponding to the selected channel;

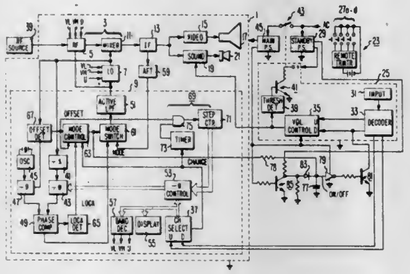
reading out said channel tuning voltage and said additional receiver adjustment information, if present; and

producing appropriate signals for said receiver based upon said channel tuning voltage and said additional receiver adjustment information.

4,241,450
AUTOMATIC TURN-OFF APPARATUS FOR A RADIO OR TELEVISION RECEIVER

Harold Blatter, and Juri Tults, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,021
Int. Cl.[3] H04B 1/16
U.S. Cl. 455—182 10 Claims

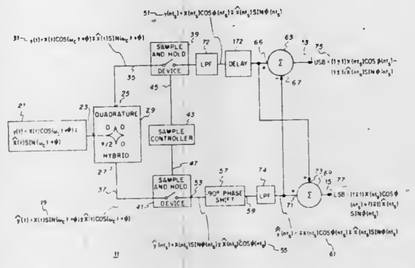


1. In a receiver, apparatus comprising:
local oscillator means for generating a local oscillator signal having a frequency capable of being controlled;
mixer means for combining an RF carrier and said local oscillator signal to derive an IF signal having at least one carrier with a nominal frequency value;
phase locked loop (PLL) means for controlling said local oscillator means when enabled to operate to cause said local oscillator signal to have a programmed frequency substantially equal to the product of a programmable factor and the frequency of a frequency reference signal;
channel selection means for determining said programmable factor in accordance with selected channel and for generating a CHANGE signal when a new channel is selected;
lock means for generating a LOCK signal when said local oscillator signal has said programmed frequency;
automatic fine tuning (AFT) means for selectively controlling said local oscillator means when enabled to operate to reduce a deviation between the actual frequency of said IF carrier and said nominal frequency value;
mode means for selectively enabling the operations of said PLL and AFT means, said mode means enabling the operation of said PLL means in response to said CHANGE signal, said mode means enabling the operation of said AFT means in response to said LOCK signal;
offset detector means for generating an OFFSET signal when the frequency of said local oscillator signal is caused to be offset from said programmed frequency by a predetermined amount during the operation of said AFT means;
said mode means enabling the operation of said PLL in response to said OFFSET signal;
main power supply means for generating supply voltages for said receiver;
main power supply control means for selectively enabling said power supply means to generate said supply voltages and thereby selectively causing said receiver to be in an on or off condition; and
mode responsive means coupled to said power supply control means for causing said receiver to be in said off operating condition when said mode means causes the operations of said PLL and AFT means to be alternately enabled a predetermined number of times after the generation of said CHANGE signal.

4,241,451
SINGLE SIDEBAND SIGNAL DEMODULATOR

Richard C. Maixner, Dallas; Robert K. Marston, Plano, and Khalil E. Massad, Garland, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 26, 1978, Ser. No. 919,021
Int. Cl.[3] H04B 1/26
U.S. Cl. 455—202 13 Claims

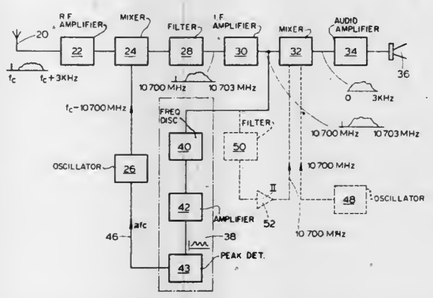


1. A demodulator for demodulating a received signal that can be represented by the equation $Y(t)=\hat{X}(t)\cos(\omega_c t+\phi)\pm X(t)\sin(\omega_c t+\phi)$ where ω_c is the carrier frequency and ϕ is a constant phase shift, comprising:
means for converting the received signal y(t) into a first baseband signal $Y(nt_s)$ where n is an integer variable and t_s is a sampling period;
means for converting the received signal Y(t) into a second baseband signal $\hat{Y}(nt_s)$; where n is an integer variable and t_s is a sampling period;
means for performing a Hilbert's transform on the second baseband signal $\hat{Y}(nt_s)$ to obtain a quadrature second baseband signal $\hat{\hat{Y}}(nt_s)$;
means for adding the first baseband signal $Y(nt_s)$ to the quadrature second baseband signal $\hat{\hat{Y}}(nt_s)$ to obtain a lower sideband signal; and
means for subtracting the quadrature second baseband signal $\hat{\hat{Y}}(nt_s)$ from the first baseband signal $Y(nt_s)$ to obtain an upper sideband signal.

4,241,452
AUTOMATIC FREQUENCY CONTROL SYSTEM

Rodney W. Gibson, Burgess Hill, and Raymond Wells, Redhill, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1978, Ser. No. 960,531
Claims priority, application United Kingdom, Nov. 23, 1977, 48753/77
Int. Cl.[3] H04B 1/26
U.S. Cl. 455—203 10 Claims

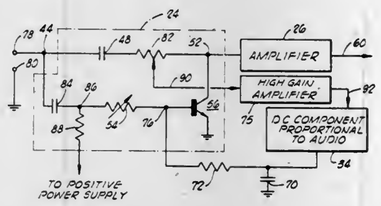


1. An automatic frequency control (afc) system comprising a signal frequency translation means, having a first input for an input signal including a pilot signal and a modulated signal, a second input for a control signal and an output providing a frequency translated input signal, and an afc circuit having first means for providing a waveform whose amplitude depends on the frequency of said translated output signal and second means for determining the minimum (or maximum) value of said waveform for providing an afc signal in response to the determined minimum (or maximum) value, said value determining means being coupled to the second input of the frequency translating means so as to control appropriately the amount of frequency translation.

4,241,453
CITIZENS BAND RADIO RECEIVER WITH SQUELCH CONTROL

Harlan Drake, 900 N. Western, Oklahoma City, Okla. 73106

Filed Oct. 19, 1978, Ser. No. 952,632
Int. Cl.[3] H04B 1/18
U.S. Cl. 455—219 6 Claims



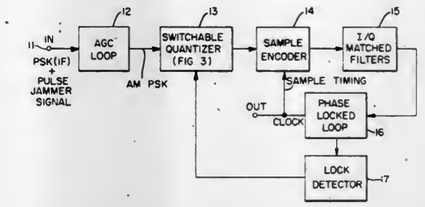
1. In combination with a radio receiver of the type adaptive for operation in an eight-track record tape deck and consisting of a receiver section providing audio frequency signal output, an audio frequency amplifier and an audio output, an automatic squelch control circuit comprising:
means receiving said audio frequency signal output to provide first input to said audio frequency amplifier;
amplifier means receiving said audio frequency signal output and generating second input to said audio frequency amplifer that is additive with said first input and in phase opposition thereto;
rectifier means receiving the output of said audio frequency amplifier to develop a D-C control signal proportional to said output; and
means applying said D-C control signal as input to said amplifier means, whereby excessive input signals to said audio frequency amplifier will proportionately reduce the amplifier means second input to said audio frequency amplifier to provide relatively greater amplitude for input thereto.

4,241,454
HARD LIMITING ACQUISITION TECHNIQUE FOR PSK CARRIER DETECTOR

James L. Snell, Palm Bay, and Raymond F. Cobb, Melbourne Beach, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Feb. 28, 1978, Ser. No. 882,068
Int. Cl.[3] H04B 1/16; H03D 3/18
U.S. Cl. 455—260 16 Claims

1. In a frequency recovery system wherein an incoming signal, which contains a prescribed frequency to be recovered and may be subjected to a modulation so as to contain a sideband, the center frequency of which is separated from said prescribed frequency, is processed to obtain said prescribed frequency, said frequency recovery system including a synchronous detector for deriving said prescribed frequency, the improvement wherein said frequency recovery system includes means for preventing said system from acquiring said sideband center frequency as said prescribed frequency, said preventing means including means for controlling the amplitude of said incoming signal prior to being processed, to thereby prevent said synchronous detector from detecting said sideband center frequency, said amplitude controlling means

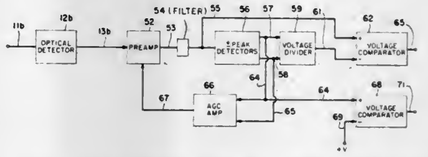


including means for controlling the amplitude of said incoming signal until said synchronous detector has recovered said prescribed frequency and thereafter removing the control of the amplitude of said incoming signal.

4,241,455
DATA RECEIVING AND PROCESSING CIRCUIT

Jules A. Eibner, Maple Glen, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,475
Int. Cl.[3] H04N 9/00
U.S. Cl. 455—600 5 Claims

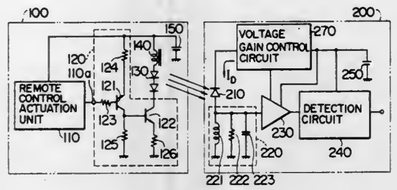


1. A circuit for processing weak light signals representative of digital data of the type having variable duty cycles comprising:
an optical light detector for detecting said digital data light signal, said light signals having an A.C. signal component and a D.C. signal component resulting from a duty cycle other than a fifty percent duty cycle,
a high-gain preamplifier coupled to said optical light detector for amplifying said A.C. and said D.C. signal components,
said high-grain preamplifier further providing a second amplified D.C. component signal introduced by said preamplifier,
a filter connected to the output of said preamplifier for removing both of said D.C. voltage component signals and for producing a floating A.C. voltage signal output,
a linear amplifier coupled to said preamplifier for amplifying said floating A.C. voltage signal,
a positive peak detector coupled to said amplified floating A.C. voltage signal for producing a substantially positive floating D.C. voltage representation of the positive peaks of said floating A.C. voltage signal,
a negative peak detector coupled to said amplified floating A.C. voltage signal for producing a substantially negative floating D.C. voltage representation of the negative peaks of said floating A.C. voltage signal,
a voltage divider having its two end terminals connected across the positive and the negative floating D.C. voltages which are representative of the peak outputs from said peak detectors,
said voltage divider having an intermediate voltage tap representative of a predetermined voltage on said voltage divider, and
a comparator having a first input connected to said interme-

diate voltage tap of said voltage divider and the other input connected to said floating amplified A.C. voltage signals for producing a voltage output signal representative of said original digital data.

4,241,456
REMOTE-CONTROLLED RECEIVER
Harushige Nakagaki, and Shigeki Inoue, both of Toyokawa, Japan, assignors to Hitachi, Ltd., Japan
Filed Aug. 22, 1979, Ser. No. 68,564
Claims priority, application Japan, Aug. 30, 1978, 53/104928
Int. Cl.[3] H04B *9/00*
U.S. Cl. 455—603 **10 Claims**

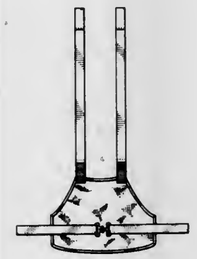
1. In an infrared remote-controlled receiver including light detecting means for receiving a remote control signal transmitted by an infrared radiation to generate a light signal corresponding to the intensity of said received signal, and an amplifier for amplifying the output light signal of said light detecting means, the improvement comprising circuit means connected to said amplifier to detect an ambient luminance of said receiver and control the gain of said amplifier in response to said detected ambient luminance of said receiver.



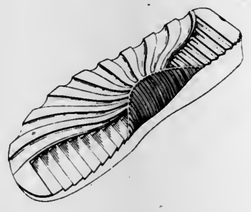
DESIGNS

DECEMBER 23, 1980

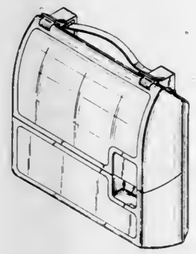
257,646
GERIATRIC RESTRAINT
Edwin H. Riedell, 621 Buckboard Ct., Brea, Calif. 92621
Filed May 22, 1978, Ser. No. 908,409
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27



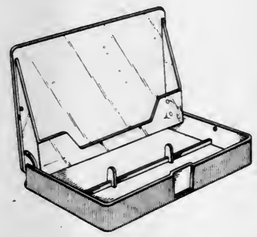
257,647
SOLE
Luc Combaret, Bellefeuille, Canada, assignor to Baron Rubber Limited, St.-Jerome, Canada
Filed May 30, 1978, Ser. No. 911,060
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



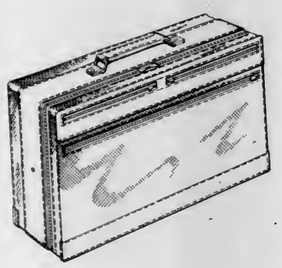
257,648
COMBINATION BOOK ENCLOSURE AND READING LAMP
Joel M. Tarrida, 1616 Pemberton Ave., North Vancouver, British Columbia, Canada (V7P 2S6)
Filed Nov. 9, 1978, Ser. No. 959,124
Term of patent 7 years
Int. Cl. D3—*02*
U.S. Cl. D3—33



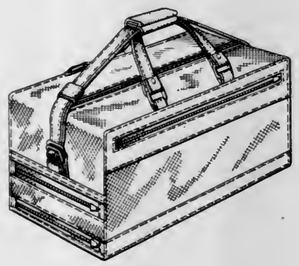
257,649
AUDIO CASSETTE ALBUM
Stepen G. Belgin, Campbell, Calif., assignor to Memorex Corporation, Santa Clara, Calif.
Filed Jul. 27, 1978, Ser. No. 928,847
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



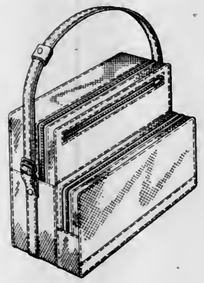
257,650
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Mar. 23, 1979, Ser. No. 23,366
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



257,651
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Mar. 28, 1979, Ser. No. 24,626
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



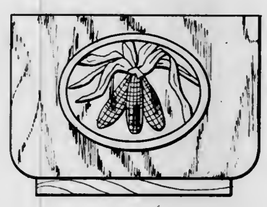
257,652
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Mar. 28, 1979, Ser. No. 24,627
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

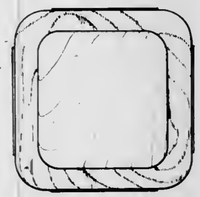


257,653
DINING TABLE
France Berlic, 37-31 73rd St., Jackson Heights, N.Y. 11372
Filed Jun. 13, 1978, Ser. No. 915,207
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



257,654
BOWL
Alfred Campana, Birmingham, Mich., and Martin J. Waterfield, Ball Harbor, Fla., assignors to Florists' Transworld Delivery Association, Southfield, Mich.
Filed Mar. 29, 1979, Ser. No. 25,264
Term of patent 14 years
Int. Cl. D07—*01;* D11—*02*
U.S. Cl. D7—1

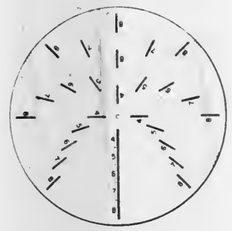




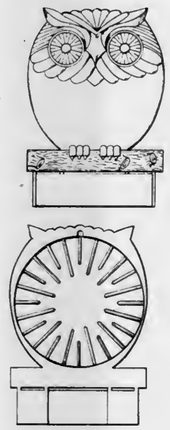
257,655
PLATE OR THE LIKE
Ottorino N. Mercadante, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Nov. 15, 1978, Ser. No. 961,010
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—36



257,656
PIE AND PIZZA SERVING PORTION INDICATOR
Alice R. Walker, Rte. 1, Box 279B, Ocean City, Md. 21842
Filed Nov. 21, 1978, Ser. No. 962,809
Term of patent 14 years
Int. Cl. D19—*08;* D07—*04*
U.S. Cl. D7—43



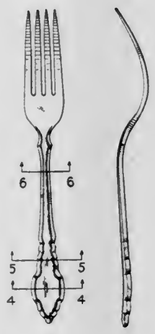
257,657
COMBINED COASTER AND CALENDAR
Roger L. Stoll, Pella, Iowa, assignor to Enduro Corporation, Pella, Iowa
Filed Jan. 5, 1979, Ser. No. 1,376
Term of patent 14 years
Int. Cl. D07—*06;* D19—*03*
U.S. Cl. D7—45



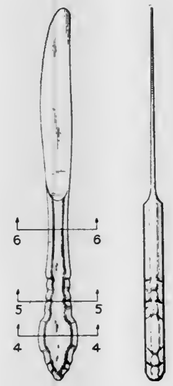
257,658
ARTICLE OF FLATWARE
William J. Knope, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed May 23, 1979, Ser. No. 41,724
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



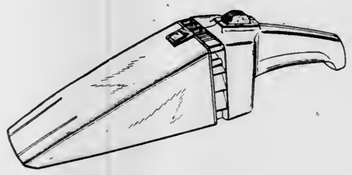
257,659
ARTICLE OF FLATWARE
Ronald A. Guodace, Yalesville, Conn., assignor to International Silver Company
Filed May 23, 1979, Ser. No. 41,729
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



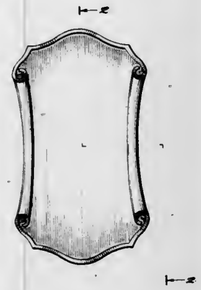
257,660
KNIFE
Ronald A. Guodace, Yalesville, Conn., assignor to International Silver Company, Meriden, Conn.
Filed May 24, 1979, Ser. No. 42,318
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



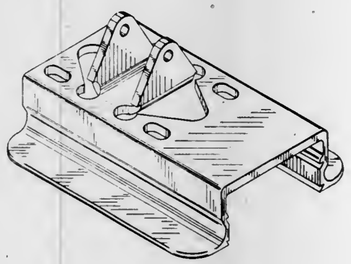
257,661
PORTABLE VACUUM CLEANER
Carroll M. Gantz, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Dec. 7, 1978, Ser. No. 967,361
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—164



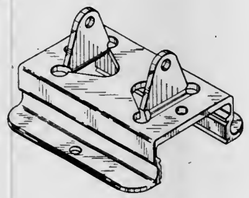
257,662
ESCUTCHEON
Jacqueline Brezney, Flemington, N.J., assignor to Unican Security Systems, Ltd., Montreal, Canada
Filed Aug. 17, 1978, Ser. No. 934,636
Term of patent 14 years
Int. Cl. D8—*09*; D11—*02*
U.S. Cl. D8—350



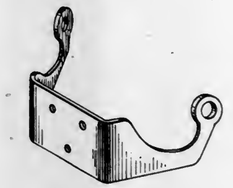
257,663
BRACKET DESIGN FOR RETRACTABLE AWNINGS
Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Feb. 1, 1979, Ser. No. 8,323
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



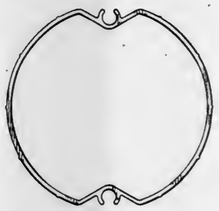
257,664
BRACKET FOR RETRACTABLE AWNINGS
Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Feb. 1, 1979, Ser. No. 8,324
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



257,665
GAME HOLDER OR SIMILAR ARTICLE
Leroy Young, 969 Washington St., Franklinton, La. 70438
Filed May 30, 1978, Ser. No. 910,584
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367



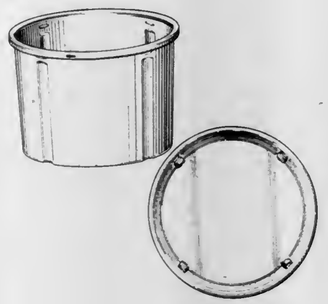
257,666
DOUBLE CHANNEL ROLL BAR FOR RETRACTABLE AWNINGS
Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Feb. 1, 1979, Ser. No. 8,322
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—376



257,667
BOTTLE
Nobuyoshi Ito, Yamata, Japan, assignor to Suntory Limited, Osaka, Japan
Filed Jul. 5, 1978, Ser. No. 922,579
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—401



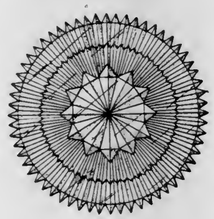
257,668
PAINT POT LINER
Paul B. Ahern, 32 Stevens Rd., Melrose, Mass. 02176
Filed Oct. 10, 1978, Ser. No. 949,613
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—429



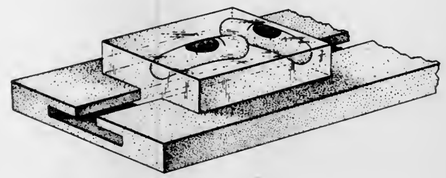
257,669
CAP FOR A SMOKE INHALATION DEVICE
Alexander B. Robertson, Austin, Tex., assignor to Oat Willie's Dept. Store, Inc., Austin, Tex.
Filed Aug. 25, 1977, Ser. No. 827,831
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—436



257,670
CLOCK
Ronald T. Lewis, 27725 166th Ave. SE., Kent, Wash. 98031
Filed Nov. 25, 1977, Ser. No. 854,986
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

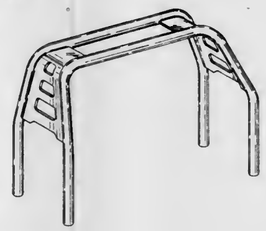


257,671
ADJUSTABLE LEVEL
Clayton A. Elliott, 1931 Arbor La., Union, N.J. 07083
Filed Mar. 12, 1979, Ser. No. 19,707
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69

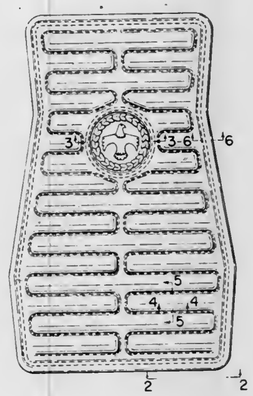


257,672
SNOW DISC
Nevitt S. Beck, 260 Bonnett St. SW., North Canton, Ohio 44720
Filed Aug. 11, 1978, Ser. No. 933,126
Term of patent 7 years
Int. Cl. D12—*14*
U.S. Cl. D12—11

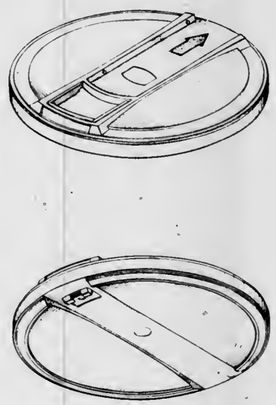
257,673
ROLL BAR
John L. Milton, 554 55th St., Delta, British Columbia, Canada (V4M 3J7)
Filed Oct. 2, 1978, Ser. No. 947,877
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



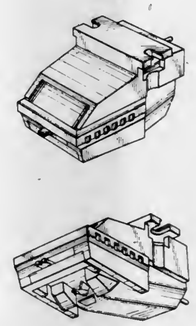
257,674
FRONT AUTO MAT
Dwight N. Wooters, LaGrange, Ga., assignor to Rubbermaid Specialty Products Inc., LaGrange, Ga.
Filed Nov. 15, 1978, Ser. No. 961,142
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203



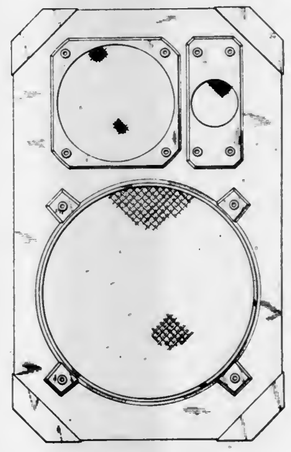
257,675
DISK MEMORY MODULE
Paul N. Green, and James A. Duff, both of Omaha, Nebr., assignors to Magnetic Peripherals Inc.
Filed May 15, 1978, Ser. No. 905,817
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—11



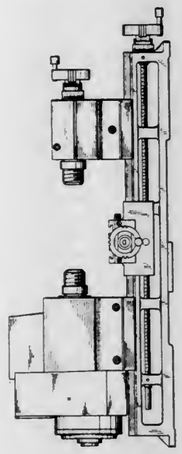
257,676
PHONOGRAPH CARTRIDGE
Joseph D. Kehl, Chicago, and Robert L. Deschamps, Wheaton, both of Ill., assignors to Shure Brothers, Inc.
Filed Jul. 31, 1978, Ser. No. 929,553
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D14—28

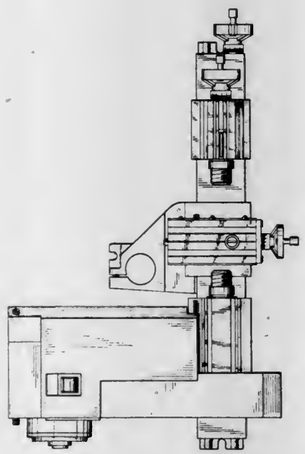


257,677
MOUNTING PLATE FOR AUTOMOBILE HI-FIDELITY SYSTEM SPEAKERS
Makoto Fujiwara, Los Angeles, Calif., assignor to Clarion Corporation of America, Lawndale, Calif.
Filed Mar. 27, 1978, Ser. No. 890,853
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—37

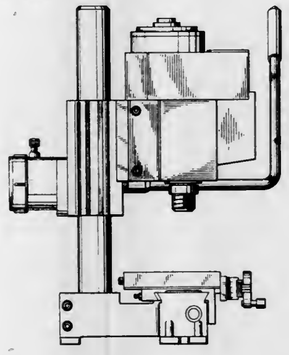


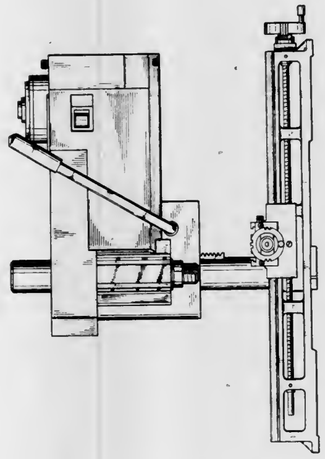
257,678
LATHE
John P. Cleary, Valley Cottage, N.Y., and Ralph A. Heineman, 1641 Third Ave., New York, N.Y. 10028, assignors to Ralph A. Heineman, New York, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,613
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—130





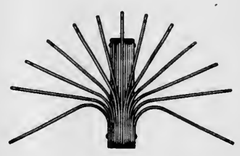
257,679
DRILL PRESS AND MOUNT THEREFOR
John P. Cleary, Valley Cottage, N.Y., and Ralph A. Heineman, 1641 Third Ave., New York, N.Y. 10028, assignors to Ralph A. Heineman, New York, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,612
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—132





257,680
CONVERTIBLE DESK FILE AND RACK FOR PENDANT ARTICLES
John H. Bell, 500 N. Michigan Ave., Chicago, Ill. 60611
Filed Sep. 21, 1978, Ser. No. 944,342
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90





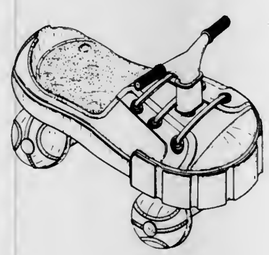
257,681
BACKGAMMON BOARD
Gwendolyn F. Grayson, 1440 Sierra Dr., Petaluma, Calif. 94952
Filed Jul. 17, 1978, Ser. No. 925,391
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—32



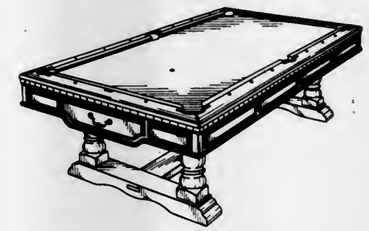
257,682
HOBO DOLL
Sue A. Beasley, R.R. 3, Princeton, Ind. 47670
Filed Oct. 10, 1978, Ser. No. 949,892
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—171



257,683
SIMULATIVE TOY VEHICLE
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039; George Kress, Scotch Plains, and Paul Means, Basking Ridge, both of N.J., assignors to Mel Appel, Livingston, N.J.
Filed Oct. 4, 1978, Ser. No. 948,638
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—76



257,684
POOL TABLE
William D. Moore, High Point, N.C., assignor to Brunswick Corporation, Skokie, Ill.
Filed Dec. 6, 1978, Ser. No. 966,959
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—232



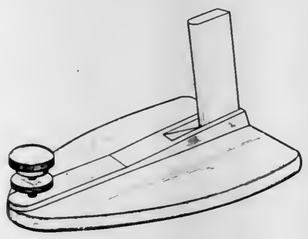
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SEE-SAW
David A. Poulin, 789 Centre Ave., Lindenhurst, N.Y. 11757
Filed Aug. 21, 1978, Ser. No. 935,727
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—251



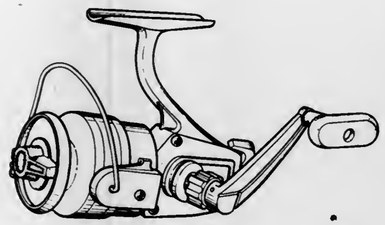
257,686
KNIFE HANDLE
Manuel C. Silva, Lemon Grove, Calif., assignor to Farreld Franklin Guiler, Ramona, Calif.
Filed May 14, 1979, Ser. No. 963,519
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—1



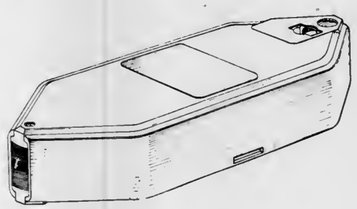
257,687
STAND FOR A MAGAZINE-FED PISTOL
Daniel L. Bechtel, 4701 Inwood Rd., Fort Worth, Tex. 76109
Filed Mar. 5, 1979, Ser. No. 17,498
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



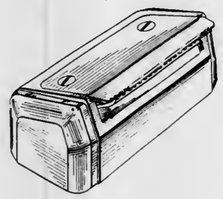
257,688
FISHING SPINNING REEL
Tetsuyuki Doi, and Takeshi Shohoji, both of Fukuyama, Japan, assignors to Ryobi Limited, Japan
Filed Jun. 23, 1978, Ser. No. 918,619
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



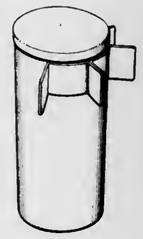
257,689
DIALYZER CARTRIDGE
Gerhard Riede, Vellinge, Sweden, assignor to Gambro, AG, Switzerland
Filed Aug. 28, 1978, Ser. No. 937,081
Claims priority, application Sweden, Mar. 22, 1978, 78799
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21



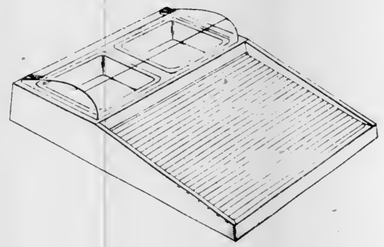
257,690
HAIR GROOMING ATTACHMENT
Jacob A. Krapowicz, Ridgefield, Conn., assignor to Remington Products, Inc., Bridgeport, Conn.
Filed Feb. 1, 1979, Ser. No. 8,369
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—54



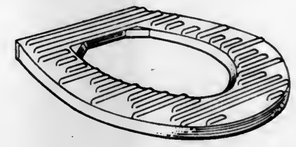
257,691
ANIMAL WATERER
Jerry D. Peterson, Conrad, and Gerald L. Knief, Grundy Center, both of Iowa, assignors to Ritchie Industries, Inc., Conrad, Iowa
Filed Jan. 15, 1979, Ser. No. 3,428
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



257,692
PET FEEDER
Charles E. Thayer, 915 Pacific Ave., Suite 611, Tacoma, Wash. 98402
Filed Mar. 27, 1979, Ser. No. 24,266
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



257,693
HORSESHOE
William T. Poust, Sr.; William T. Poust, Jr., both of Hilltown Pike & Cremary Rd., P.O. Box 147, Hilltown, Pa. 18927, and Michael M. Poust, 825 Richhill Rd., Quakertown, Pa. 18951
Filed Jun. 13, 1978, Ser. No. 915,169
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—35



257,694
EXPANDABLE FURNITURE BARRICADE FOR ANIMALS OR THE LIKE
Kenneth D. Olsen, 43 Ridgedale Ave., Madison, N.J. 07940
Filed Jul. 20, 1978, Ser. No. 926,377
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



257,695
TEXTILE FABRIC
Brian Kitson, 1, Fairholt St., London SW7, England
Filed Jun. 11, 1979, Ser. No. 46,365
Claims priority, application United Kingdom, Dec. 12, 1978, 513565/78
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 AA



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Bates a/s: *See—*
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AB Karlstads Mekaniska Werkstad: *See—*
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Abe, Masao: *See—*
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Abe, Zenuemon; Tanaka, Kunio; and Sano, Fumio, to Hokkaido University. Method of obtaining information of a specified or target area of a living body near its skin surface by the application of a nuclear magnetic resonance phenomenon. 4,240,439, Cl. 128-653.000.

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Abex Pagid Reibbelag GmbH: *See—*
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Carlson, Edwin S., 4,240,607, Cl. 251-144.000.
Partridge, Charles C., 4,240,608, Cl. 251-167.000.

Acosta, Robert G., to International Business Machines Corporation. Method and apparatus for establishing tab settings and indexing parameters, and printouts representing same, for a word processing system. 4,240,758, Cl. 400-279.000.

Adams, Frederick J.; and Lehman, Ralph M., to Cam Gears Limited. Rack and pinion assemblies. 4,240,306, Cl. 74-498.000.

Adams, Harold R. Leaking weld repair clamp. 4,240,650, Cl. 285-10.000.

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Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,241,156, Cl. 430-41.000.

Adams, Kenneth D., to Singer Company, The. Motorized drive for a sewing machine including belt tensioning means. 4,240,368, Cl. 112-220.000.

Adams, Roy D.: *See—*
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Adler, Edward. Drum for electrodeposited copper foil production. 4,240,894, Cl. 204-281.000.

Adolphi, Heinrich: *See—*
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Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Preparation of 2-nitro-2-methyl-1-propanol. 4,241,226, Cl. 568-704.000.

Aeration Industries, Inc.: *See—*
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Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer: *See—*
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AGA Aktiebolag: *See—*
Holmqvist, Goran; Kallen, Staffan; and Jansson, Bertil, 4,240,691, Cl. 350-63.000.
Wendelin, Rurik; and Sipek, Ladislav, 4,240,798, Cl. 23-230.00A.

Agee, John H.; and Norris, Richard W., Jr. Apparatus for removing foreign matter from cotton. 4,240,902, Cl. 209-241.000.

AGFA-Gevaert, A.G.: *See—*
Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, 4,240,727, Cl. 354-25.000.
Rapp, Heinz; Biedermann, Ernst; and Wittenbrink, Dieter, 4,240,744, Cl. 355-74.000.
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Wilke, Werner; Gref, Hans; and Frenken, Hans, 4,241,023, Cl. 422-187.000.

AGFA-GEVAERT N.V.: *See—*
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Ahl, Thomas J.: *See—*
Hagstrom, Jon; Ahl, Thomas J.; and Vasilion, James S., 4,240,561, Cl. 220-3.000.

Ahmed, Adel A. A., to RCA Corporation. Television vertical ramp generator. 4,241,265, Cl. 307-228.000.

Aigner, Rudolf: *See—*
Muller-Schiedmayer, Gunther; and Aigner, Rudolf, 4,240,980, Cl. 564-153.000.

Aihara, Kenji; and Takahashi, Masashi, to Sumitomo Metal Industries Ltd. Nonmagnetic alloy steel having improved machinability. 4,240,827, Cl. 75-123.0AA.

Aisin Seiki Kabushiki Kaisha: *See—*
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Akhavi, David S., to American Hospital Supply Corporation. Syringe locking sleeve. 4,240,424, Cl. 128-218.00R.

Akhavi, David S., to American Hospital Supply Corporation. Syringe with plug type needle hub lock. 4,240,425, Cl. 128-218.00N.

Akhavi, David S., to American Hospital Supply Corporation. Syringe coupling system. 4,240,426, Cl. 128-218.00N.

Akhavi, David S., to American Hospital Supply Corporation. Needle with protector. 4,240,427, Cl. 128-218.00N.

Akhavi, David S., to American Hospital Supply Corporation. Segmented syringe locking sleeve. 4,240,428, Cl. 128-218.00R.

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Akinc, Mufit: *See—*
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Akzona Incorporated: *See—*
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McNeely, Gerald W., 4,240,926, Cl. 252-408.000.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Exchanged mordenite catalysts and processes for producing the same. 4,240,932, Cl. 252-455.00Z.

Alaniz, Ruben G., to ACF Industries, Incorporated. Means for limiting floating movement of gate valve seats. 4,240,460, Cl. 137-327.000.

Albanese, Damian F.; and Klein, Albert M., to International Telephone and Telegraph Corporation. PRC/FM CW Radar system. 4,241,347, Cl. 343-9.00R.

Albany International Corp.: *See—*
Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., 4,241,118, Cl. 428-35.000.

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Albright, James A., to Velsicol Chemical Corporation. Haloalkyl phosphates. 4,240,953, Cl. 260-45.70P.

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Alduk, Frank P.; and Alduk, Dennis F. Container lifting, transporting and releasing apparatus. 4,240,237, Cl. 53-247.000.

Alexanderson, Verner, to American Cyanamid Company. Recovery of nitrated aromatic compounds from nitration wash liquors. 4,241,229, Cl. 568-939.000.

Alexandrov, Nikolai N.: *See—*
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Allen, Linus S.; Givens, Wyatt W.; and Mills, William R., Jr., to Mobil Oil Corporation. Epithermal neutron detector. 4,241,253, Cl. 250-390.000.

Allen, Thomas C., to Akzona Incorporated. Alloy fibers of rayon and an alkali metal or ammonium salt of an azeotropic copolymer of polyacrylic acid and methacrylic acid having improved absorbency. 4,240,937, Cl. 260-17.4CL.

Allied Chemical Corporation: *See—*
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,240,857, Cl. 156-209.000.
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Allocca, Michael A., to Pitney Bowes Inc. Database updating apparatus. 4,241,405, Cl. 364-466.000.

Alloy Surfaces Company, Inc.: *See—*
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Altex Scientific, Inc.: *See—*
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Altringer, Paulette B.: *See—*
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American Hospital Supply Corporation: *See—*
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Akhavi, David S., 4,240,424, Cl. 128-218.00R.
Akhavi, David S., 4,240,425, Cl. 128-218.00N.
Akhavi, David S., 4,240,426, Cl. 128-218.00N.
Akhavi, David S., 4,240,427, Cl. 128-218.00N.
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Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., to Lindsay Manufacturing Company. Center pivot irrigation system with corner watering arrangement. 4,240,582, Cl. 239-11.000.

Anderson, Lawrence: *See—*
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Andress, Harry J., Jr., to Mobil Oil Corporation. Fuel containing novel detergent. 4,240,803, Cl. 44-63.000.

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Izumi, Katsutoshi; Doken, Masanobu; and Ariyoshi, Hisashi, 4,241,359, Cl. 357-49.000.

Arkwin Industries, Inc.: *See—*
Deutsch, Edward J., 4,240,332, Cl. 92-5.00L.

Armbruster, John W. Method and means for controlling explosive dust with computer programmed stratified fuel injected combustion. 4,240,379, Cl. 123-23.000.

Armington, Robert M.: *See—*
Andresen, Richard P.; Armington, Robert M.; Cannon, Robert L., III; and Griffin, Andrew J., 4,240,442, Cl. 128-708.000.

Armstrong Cork Company: *See—*
Shaub, Melvin H., 4,240,991, Cl. 261-92.000.

Arntz, Hans-Joachim, to Kabel- und Metallwerke, Gutehoffnungshutte AG. Making thermally-insulated tubing. 4,240,850, Cl. 156-78.000.

Arvin Industries, Inc.: *See—*
Chesnut, Amos E.; and Parrigin, Albert J., 4,240,401, Cl. 126-121.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,240,376, Cl. 119-2.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nomura, Katsuhiko; and Haraguchi, Keisuke, 4,240,734, Cl. 354-173.000.

Ogawa, Ryota; Okudaira, Sadao; and Tachihara, Satoru, 4,240,700, Cl. 350-184.000.

Asano, Koin, to Kanebo, Ltd. Artificial leather having chinchilla-like appearance and natural suede-like feeling and a method for producing the same. 4,241,122, Cl. 428-90.000.

Asano, Takehiro, to Daiichi Shoji Co., Ltd. Car light with detachable plug. 4,241,385, Cl. 362-258.000.

Ashida, Itaru, to Kabushiki Kaisha Seikosha. Simulated pendulum clock. 4,241,437, Cl. 368-134.000.

Ashie, Yutaka; and Nakamura, Yasuhiro, to Mitsubishi Paper Mills, Ltd. Process for producing highly glossy coated paper. 4,241,143, Cl. 428-512.000.

Audaire, Luc; Merckel, Gerard; and Rigaux, Guy, to Commissariat a l'Energie Atomique. Circuit for measuring the charge stored in a charge-coupled device. 4,241,262, Cl. 307-221.00D.

Audeh, Costandi A.; and Yan, Tsoung-yuan, to Mobil Oil Corporation. Process for refining hydrocarbon oils. 4,240,901, Cl. 208-324.000.

Audi NSU Auto Union AG: *See—*
Hasler, Franz; Watzold, Peter; and Freudenberg, Steffen, 4,240,227, Cl. 49-348.000.

Auten, Charles R.: *See—*
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.

Automatisation-Sogemo: *See—*
Mariaulle, Claude, 4,240,651, Cl. 285-39.000.

Avery International Corporation: *See—*
Massey, Jack W.; Belden, William P.; and Mabry, Ronald A., 4,240,854, Cl. 156-157.000.

Avrameas, Stratis; and Guesdon, Jean-Luc, to Etablissement declare d'Utilite Publique diti Institut Pasteur. Magnetic gel suitable to immunoenzymatic determinations. 4,241,176, Cl. 435-7.000.

Awazu, Takao: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.

B. F. Goodrich Company, The: *See—*
Kroenke, William J., 4,240,955, Cl. 260-45.75R.
Lai, John T., 4,240,961, Cl. 260-239.30R.

B. R. MacKay & Sons. Inc.: *See—*
MacKay, Michael T., 4,240,617, Cl. 266-170.000.

Baba, Yoshihiko; and Horikoshi, Hiroyoshi, to Sankyo Company Limited. Agents for promoting reproductive ability of domestic animals. 4,241,082, Cl. 424-309.000.

Babcock & Wilcox Company, The: *See—*
McDonald, Dennis K., 4,240,602, Cl. 248-58.000.
Thompson, William L., 4,241,303, Cl. 323-19.000.

Bacconnet, Eugene: *See—*
Nicolas, Maurice; and Bacconnet, Eugene, 4,241,126, Cl. 428-174.000.

Bader, Bill B. Fireplace stove. 4,240,403, Cl. 126-193.000.

Baer, Ralph H.: *See—*
Morrison, Howard J.; Baer, Ralph H.; and Breslow, Jeffrey D., 4,240,638, Cl. 273-237.000.

Baertsch, Richard D.: *See—*
Engeler, William E.; and Baertsch, Richard D., 4,241,263, Cl. 307-221.00D.

Bahder, George; and Rabinowitz, Mario, to Electric Power Research Institute, Inc. Method of forming dielectric material for electrical cable and resulting structure. 4,241,233, Cl. 174-15.00C.

Bahler, Lawrence G.; and Moshier, Stephen L., to Dialog Systems, Inc. Continuous speech recognition method for improving false alarm rates. 4,241,329, Cl. 340-146.30R.

Bailey, Robert J., to Mobay Chemical Corporation. Moldable polyurethane foam-backed fabrics. 4,241,131, Cl. 428-262.000.

Bain-Smith, Timothy: *See—*
Spence-Bate, Harry A. H.; and Bain-Smith, Timothy, 4,240,725, Cl. 354-3.000.

Bakal, Abraham I.: *See—*
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,090, Cl. 426-4.000.
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,091, Cl. 426-4.000.

Baker, Gerald S.: *See—*
Hahn, Guerry L.; and Baker, Gerald S., 4,240,609, Cl. 251-282.000.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Diffusion aluminized age-hardenable stainless steel. 4,241,147, Cl. 428-652.000.

Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, to Kendall Company, The. Device for measuring a urine discharge. 4,241,017, Cl. 422-58.000.

Ball Brothers Research Corporation: *See—*
Alspaugh, Mark H.; and Murphy, Lawrence R., 4,241,352, Cl. 343-700.0MS.

Ball, Edward T., to GTE Lenkurt Electric (Canada) Ltd. Power regulator for use with line signal repeaters which are remotely powered. 4,241,243, Cl. 179-170.00J.

Bank Computer Network Corporation: *See—*
Fish, Leonard A.; and Fiterman, Charles E., 4,241,420, Cl. 364-900.000.

Bankstahl, Norbert, to Friedrich Grohe Armaturenfabrik GmbH & Co. Recessed valve. 4,240,462, Cl. 137-377.000.

Bannister, Michael J., to Commonwealth Scientific and Industrial Research Organization. Oxygen sensors. 4,240,891, Cl. 204-195.00S.

Baran, Walter J., to American Sterilizer Company. Pressure responsive conditioning control gas sterilization. 4,241,010, Cl. 422-2.000.

Barber, Donald T., to Datafile Limited. System for alphabetically labelling articles. 4,240,848, Cl. 156-64.000.

Barber, Lewie M.; Criswell, Bernie R.; Solberg, Ruell F., Jr.; and Weiss, Benjamin F. L., to United States of America, Navy. Transducer-reflector system. 4,241,432, Cl. 367-151.000.

Baresh, Joseph M.; and Nash, Robert E., to Boeing Company, The. Ovality measuring device and method. 4,240,206, Cl. 33-174.00Q.

Barnes, Brian S., to Modern Automatic Alarms Limited. Automatically supervised alarm system. 4,241,335, Cl. 340-507.000.

Barnes, Donald E., to Champion International Corporation. Abrasion and crack resistant package laminate. 4,241,130, Cl. 428-216.000.

Barnes, James R.: *See—*
United States of America, National Aeronautics and Space Administration; Barnes, James R.; and Huang, Marshall Y., 4,241,312, Cl. 329-50.000.

Barnett, Clarence E.: *See—*
Barnett, Forest H.; and Barnett, Clarence E., 4,240,485, Cl. 152-219.000.

Barnett, Forest H.; and Barnett, Clarence E., to Barnett, Forest H. Nonskid tire chain connector means. 4,240,485, Cl. 152-219.000.

Barney, Howard H., to Dunn Instruments, Inc. Multiple image camera. 4,240,729, Cl. 354-76.000.

Barnhart, Kenneth O.; Morita, Lawrence H.; and Rubell, Rube I. Coin holder. 4,240,544, Cl. 206-0.820.

Barter, Archie M., to Tektronix, Inc. Horizontal deflection circuit including protection for output transistor. 4,241,296, Cl. 315-397.000.

Barth, C. Richard. Roller conveyor carriage and lading supporting rack. 4,240,353, Cl. 104-93.000.

Barth, Rudolf: *See—*
Guilino, Gunter; and Barth, Rudolf, 4,240,719, Cl. 351-169.000.

Barth, Wayne E., to Pfizer Inc. Penam 1,1-dioxides as beta-lactamase inhibitors. 4,241,050, Cl. 424-114.000.

Bartko, John: *See—*
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., 4,240,844, Cl. 148-1.500.

Bartlett, Ronald D. Belt tightening apparatus. 4,240,611, Cl. 254-237.000.

BASF Aktiengesellschaft: *See—*
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,240,979, Cl. 564-44.000.
Baumgarte, Ulrich; Heimann, Sigismund; Vescia, Michele; and Winkler, Johannes, 4,240,792, Cl. 8-607.000.
Graser, Fritz, 4,240,793, Cl. 8-594.000.
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,241,191, Cl. 521-56.000.
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.
Linhart, Friedrich; Girgensohn, Bjoern; and Zeeh, Bernd, 4,240,973, Cl. 260-453.0RW.

BASF Wyandotte Corporation: *See—*
Bergman, Lee H.; Evangelista, John J.; and Herring, William M., 4,241,216, Cl. 560-99.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,011, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,012, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,013, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,014, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,015, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,016, Cl. 422-17.000.
Newkirk, David D.; and Login, Robert B., 4,241,224, Cl. 568-619.000.

Bates, Richard L.: *See—*
D'Antonio, Nicholas F.; Bates, Richard L.; and French, Richard W., 4,240,288, Cl. 73-141.00A.

Battelle Memorial Institute: *See—*
Harmer, Alan L., 4,240,747, Cl. 356-133.000.
Regnault, Alain; and Sachetto, Jean-Pierre, 4,241,089, Cl. 426-2.000.

Baucom, Keith B., to United States of America, Air Force. F-Phenylalkylene oxide diacetylenes. 4,241,223, Cl. 568-611.000.

Bauer, Werner R., to Robertshaw Controls Company. Reversing valve construction and parts therefor and methods of making the same. 4,240,469, Cl. 137-625.660.

Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, to BASF Aktiengesellschaft. Aroylureas. 4,240,979, Cl. 564-44.000.

Baumgarte, Ulrich; Heimann, Sigismund; Vescia, Michele; and Winkler, Johannes, to BASF Aktiengesellschaft. After-treatment of dyed or printed synthetic fibers. 4,240,792, Cl. 8-607.000.

Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, to Siemens Aktiengesellschaft. Display device comprising a liquid crystal cell with light valves. 4,240,711, Cl. 350-345.000.

Bauschke, Guenter: *See—*
Wirges, Winfried; and Bauschke, Guenter, 4,240,619, Cl. 267-65.00R.

Baxter Travenol Laboratories, Inc.: *See—*
Bayham, Edward L., 4,240,481, Cl. 150-8.000.

Bayer Aktiengesellschaft: *See—*
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,240,977, Cl. 260-465.50R.
Dickore, Karlfried; and Lurssen, Klaus, 4,240,820, Cl. 71-76.000.
Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, 4,240,187, Cl. 28-255.000.
Hetzel, Hartmut, 4,241,043, Cl. 423-659.000.
Meckel, Walter; Muller-Albrecht, Horst; Dollhausen, Manfred; and Velker, Eugen, 4,240,861, Cl. 156-331.000.
Schubart, Rudiger, 4,240,983, Cl. 568-316.000.
Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, 4,241,197, Cl. 525-309.000.
von Bonin, Wulf; Vehlewald, Peter; and Illger, Hans-Walter, 4,240,950, Cl. 260-37.00N.
Wenzel, Wolfgang; Meckel, Walter; and Pedain, Josef, 4,240,942, Cl. 260-29.2TN.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Lobe, Hartwig; and Dietz, Wolfgang, 4,241,328, Cl. 340-75.000.

Bayham, Edward L., to Baxter Travenol Laboratories, Inc. Seal for flexible container having flexible, generally conical portions. 4,240,481, Cl. 150-8.000.

Bayless, John H., to Du Pont de Nemours, E. I., and Company. Modified polyester films. 4,241,170, Cl. 430-533.000.

BBC Brown, Boveri & Company, Limited: *See—*
Kmetz, Allan R.; Muller, Klaus; and Scheffer, Terry J., 4,241,344, Cl. 340-765.000.

Beaver, David L.: *See—*
Benjamin, Milton L.; and Beaver, David L., 4,240,207, Cl. 33-185.00R.

Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, to Bayer Aktiengesellschaft. 2-Cyanoethyl isocyanide dichloride. 4,240,977, Cl. 260-465.50R.

Beckenstein, Leonard. Method of knitting and knitting machine arrangement therefor. 4,240,273, Cl. 66-42.00R.

Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, to Carl Freudenberg. Annular seal. 4,240,643, Cl. 277-164.000.

Becker, Hans: *See—*
Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, 4,240,877, Cl. 201-41.000.

Becton, Dickinson and Company: *See—*
Materia, Peter; and Desai, Jayraj S., 4,241,188, Cl. 435-296.000.

Beecham Group Limited: *See—*
Cassidy, Frederick; and Goudie, Alexander C., 4,241,074, Cl. 424-273.00R.

Beisang, Arthur A.: *See—*
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A., 4,240,794, Cl. 8-94.110.

Belden, William P.: *See—*
Massey, Jack W.; Belden, William P.; and Mabry, Ronald A., 4,240,854, Cl. 156-157.000.

Bell, Harris N.; and Morton, Alexander R., to Jiffy Manufacturing Company, Inc. Reel having honeycomb core. 4,240,593, Cl. 242-71.800.

Bell Telephone Laboratories, Incorporated: *See—*
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,716, Cl. 350-363.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,717, Cl. 350-363.000.
Celler, George K.; and Miller, Gabriel L., 4,240,843, Cl. 148-1.500.
Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., 4,241,425, Cl. 365-222.000.
Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., 4,240,195, Cl. 29-571.000.
Ebert, Harry K., Jr., 4,241,261, Cl. 307-45.000.
Jacobs, Richard M.; and Sinha, Ashok K., 4,240,196, Cl. 29-578.000.
Johnson, Arlen K.; Tignor, Thomas P.; and Wingard, Theodore K., 4,241,322, Cl. 333-202.000.
Johnson, Bruce K., 4,240,724, Cl. 354-197.000.
Johnson, Leo F.; Singh, Shobha; and Van Uitert, LeGrand G., 4,240,693, Cl. 350-96.140.
Johnson, Leo F., 4,241,109, Cl. 427-162.000.
Nash, Donald H., 4,241,236, Cl. 179-2.0EA.
Suggs, John W., 4,241,206, Cl. 542-424.000.
Wang, Tsuey T., 4,241,128, Cl. 428-212.000.

Bell, William A. Microscope remote control focus attachment. 4,240,708, Cl. 350-321.000.

Bellasalma, Gerald J.: *See—*
Altman, Murray; and Bellasalma, Gerald J., 4,240,166, Cl. 4-542.000.

Bellman, Donald R.: *See—*
Montoya, Lawrence C.; and Bellman, Donald R., 4,240,290, Cl. 73-178.00R.

Beloit Corporation: *See—*
Sokolow, Nickolas N., 4,241,009, Cl. 264-532.000.

Benattar, Andre: *See—*
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,241,226, Cl. 568-704.000.

Bendix Corporation, The: *See—*
Kerr, Leo A., 4,241,310, Cl. 328-119.000.
Merriweather, Kenneth A., 4,241,342, Cl. 340-753.000.
Reddy, Junuthula N., 4,240,382, Cl. 123-485.000.
Tuss, John J., 4,240,205, Cl. 33-1.00M.

Benilan, Jacques, to Les Applications Hydrauliques R. Sarrazin S.A. Integrated control device for a fluid circuit and applications thereof. 4,240,255, Cl. 60-453.000.

Benjamin, Daniel R., to Cuisinarts, Inc. Capacitive braking switching system for home appliances with induction motor drive. 4,241,302, Cl. 318-758.000.

Benjamin, Milton L.; and Beaver, David L., to Erickson Tool Company. Tool presetting device. 4,240,207, Cl. 33-185.00R.

Benson, Carl F., to Torrington Company, The. Bearing race. 4,240,682, Cl. 308-216.000.

Bentley, Donald J., to Bentley Laboratories, Inc. Dialyzer and method of dialysis. 4,240,907, Cl. 210-646.000.

Bentley Laboratories, Inc.: *See—*
Bentley, Donald J., 4,240,907, Cl. 210-646.000.

Bentz, Allan J., to Simmonds Precision Products, Inc. Viscosimeter. 4,240,286, Cl. 73-59.000.

Benzie, Robert J.; and Waddan, Dhafir Y., to Imperial Chemical Industries Limited. Manufacture of 3-pentene nitrile. 4,240,976, Cl. 260-465.300.

Berg, Roy C., to UOP Inc. Process for sulfonation of gas oils. 4,240,978, Cl. 260-505.00P.

Berggren, Gosta E. Combined pedal mechanism for combined accelerator and brake pedal for motor-cars. 4,240,308, Cl. 74-512.000.

Bergman, Carl P., to Whirlco, Inc. Captive mixing cap arrangement for multiple chamber container. 4,240,566, Cl. 222-135.000.

Bergman, Lee H.; Evangelista, John J.; and Herring, William M., to BASF Wyandotte Corporation. Phthalic acid diester preparation with waste stream purification and recycle. 4,241,216, Cl. 560-99.000.

Bergwerksverband GmbH: *See—*
Karweil, Joachim; Degel, Josef; and Rolke, Dietrich, 4,240,927, Cl. 252-411.00R.

Bernatt, Joseph, to S & C Electric Company. Circuit interrupting device. 4,241,248, Cl. 200-145.000.

Berni, Albert J.; and Parrish, John F., to Shell Oil Company. Line compensated seismic amplifier. 4,241,428, Cl. 367-21.000.

Berni, Alberto. Implementation for applying a lining to the inner wall of a tubular article. 4,240,775, Cl. 425-110.000.

Berstein, Garrj, to W. Hegenscheidt Gesellschaft mbH. Boring tool with a floating knife. 4,240,770, Cl. 408-83.000.

Bertone, Gregory A., to Mine Safety Appliances Company. Control system for battery-operated pump. 4,241,299, Cl. 318-474.000.

Bertsch, Richard: *See—*
Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, 4,240,383, Cl. 123-492.000.

Berube, Richard R.: *See—*
Kaliski, Adam F.; Berube, Richard R.; and Nease, John C., 4,241,142, Cl. 428-511.000.

Bessinger, Walter L., to Clarke-Gravely Corporation. Carpet cleaning powder dispenser. 4,240,569, Cl. 222-220.000.

BFG Glassgroup: *See—*
Nicolas, Maurice; and Bacconnet, Eugene, 4,241,126, Cl. 428-174.000.

BICC Limited: *See—*
Delhees, Peter; and Conlan, John P., 4,240,184, Cl. 24-279.000.
Milne, James, 4,240,995, Cl. 264-36.000.

Bickel, James G.: *See—*
Hambor, John G.; and Bickel, James G., 4,241,360, Cl. 357-56.000.

Biedermann, Ernst: *See—*
Rapp, Heinz; Biedermann, Ernst; and Wittenbrink, Dieter, 4,240,744, Cl. 355-74.000.

Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., to Kendall Company, The. Syringe assembly. 4,240,430, Cl. 128-218.00P.

Bingham, Alpheus, Jr., to Eli Lilly and Company. Method of stabilization of kinetically controlled triaryl phosphite-halogen compounds. 4,240,988, Cl. 260-989.000.

Bingham, Richard C., to Du Pont de Nemours, E. I., and Company. Organic pigments derived from coumarin. 4,240,967, Cl. 260-343.450.

Bio-Lab, Inc.: *See—*
Grayson, Joel, IV; and Kahle, Donald P., 4,241,025, Cl. 422-263.000.

Bird, Richard M.: *See—*
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.

Bish, Ralph E.; and Suzuki, Arata, to Capintec Inc. Thin-film window for nuclear instruments and method of making same. 4,240,491, Cl. 160-380.000.

Black, Alister, to Universal Development Company Ltd. Process and apparatus for continuously prestressing concrete products. 4,240,776, Cl. 425-111.000.

Black & Decker Inc.: *See—*
Walton, Richard E., II; and Sauerwein, William D., 4,240,204, Cl. 30-393.000.

Blanc, Serge L.; and Smith, William R., to Caere Corporation. Hand-held optical character recognition wand with visual aligner. 4,240,748, Cl. 356-138.000.

Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., to PPG Industries, Inc. Pigmentary hardener-containing curable silicate compositions. 4,240,838, Cl. 106-84.000.

Blatt, L. Douglas: *See—*
Blatt, Leland F.; and Blatt, L. Douglas, 4,240,467, Cl. 137-625.660.

Blatt, Leland F.; and Blatt, L. Douglas. Valve assembly. 4,240,467, Cl. 137-625.660.

Blatter, Harold; and Tults, Juri, to RCA Corporation. Automatic turn-off apparatus for a radio or television receiver. 4,241,450, Cl. 455-182.000.

Blazewicz, Andrzej: *See—*
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.

Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.

BLM Automatic Clutch Limited: *See—*
Pierce, Robert B.; and Wilson, Robert B., 4,240,535, Cl. 192-17.00C.

Block, Jacob, to W. R. Grace & Co. Drilling mud viscosifier. 4,240,915, Cl. 252-8.50B.

Block, Jacob, to W. R. Grace & Co. Compositions capable of forming aqueous systems having pseudoplastic properties. 4,240,924, Cl. 252-317.000.

Blomquist, Alfred P., to Chrysler Corporation. Torsional isolator for torque converter lock-up mechanism. 4,240,532, Cl. 192-3.280.

Bloom, Allen; and Burke, William J., to RCA Corporation. Ablative optical recording medium. 4,241,355, Cl. 346-135.100.

Bloomquist, Marvin G.; and Wang, Yung-liang, to Mobil Oil Corporation. Velocity determination and stacking process for seismic exploration of three dimensional reflection geometry. 4,241,429, Cl. 367-52.000.

Blount, David H. Process for the production of alkali-metal-cellulose-silicate foams and their reaction products. 4,241,194, Cl. 521-82.000.

Boberski, William G.: *See—*
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,240,838, Cl. 106-84.000.

Boch, Jean C.: *See—*
Clapot, Claude; Vial, Jean; Mourier, Jacqueline; and Boch, Jean C., 4,240,823, Cl. 71-98.000.

Bock, Erik, to Superfos Emballage A/S. Nestable container. 4,240,554, Cl. 206-519.000.

Bocsanczy, Janos: *See—*
Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, 4,240,877, Cl. 201-41.000.

Body Guard, Inc.: *See—*
Farque, Anthony, 4,241,332, Cl. 340-326.000.

Boehringer Ingelheim GmbH: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.

Boehringer Mannheim GmbH: *See—*
Stumpf, Albert; and Strejcek, Jan, 4,240,912, Cl. 210-321.200.

Boeing Company, The: *See—*
Baresh, Joseph M.; and Nash, Robert E., 4,240,206, Cl. 33-174.00Q.
Dunstan, Phillip E., 4,240,537, Cl. 198-334.000.
Harris, Alfred W., 4,240,250, Cl. 60-39.09D.

Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, to Ciba-Geigy Corporation. Acaricidal 1-alkylthio-substituted and 1-phenylthio substituted 2-(phenoxyalkyl)-2-imidazolines. 4,241,075, Cl. 424-273.00R.

Bofinger, Gerhard: *See—*
Mormann, Werner; Bofinger, Gerhard; and Wolfle, Wilfried, 4,240,432, Cl. 128-305.500.

Boich, Heinz-Horst, to J. H. Benecke GmbH. Absorbent structure. 4,240,416, Cl. 128-156.000.

Boiten, Ebbe; Tietjens, Eduard W.; and De Vries, Jochem J., to U.S. Philips Corporation. Shaving apparatus. 4,240,199, Cl. 30-43.600.

Bolhofer, William A., to Merck & Co., Inc. Substituted ureas and processes for their preparation. 4,241,072, Cl. 424-270.000.

Bolt Associates, Inc.: *See—*
Chelminski, Stephen V., 4,240,518, Cl. 181-107.000.

Bolton, Douglas R.; and Werling, John M., to Cadaco, Inc. Toss ball construction. 4,240,639, Cl. 273-346.000.

Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, to Troponwerke Dinklage & Co. Organonitrogen derivatives of 2-benzopyranone. 4,241,207, Cl. 542-427.000.

Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, to Fabrique d'Horlogerie de Fontainemelon S.A. Method of manufacturing of electronic modules for timepieces and electronic module obtained by carrying out this method. 4,241,436, Cl. 368-88.000.

Boone, Arthur M., to Eastman Kodak Company. Light deflector for use in illumination apparatus. 4,241,392, Cl. 362-342.000.

Bordow, Richard A. Fluid aspiration device and technique for reducing the risk of complications. 4,240,433, Cl. 128-347.000.

Borg-Warner Corporation: *See—*
Falk, John C., 4,240,947, Cl. 260-29.20E.

Borrelli, Nicholas F.; and Wedding, Brent M., to Corning Glass Works. Colored photochromic glasses and method. 4,240,836, Cl. 106-47.00Q.

Borrowman, S. Ralph; and Altringer, Paulette B., to United States of America, Interior. Sorption of tungsten from alkaline solutions. 4,241,028, Cl. 423-54.000.

Boston University, The Trustees of: *See—*
Rothschild, Kenneth J.; and Clark, Noel A., 4,241,005, Cl. 264-311.000.

Boswell, George A., Jr.; and Henderson, Rosetta M., to Du Pont de Nemours, E. I., and Company. Fluoro analogs of hydrocodone and oxycodone useful as analgesics, narcotic antagonists or both. 4,241,065, Cl. 424-260.000.

Botz, Jakob; Mutschler, Erich; and Weber, Adam, to ITT Industries, Inc. Motorized headlamp position adjusting circuit. 4,241,260, Cl. 307-10.0LS.

Bouko, Jean: *See—*
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,241,353, Cl. 343-786.000.

Bowerman, Paul D.; and Lucid, Michael F., to Kerr-McGee Corporation. Reductive stripping process for the recovery of either or both uranium and vanadium. 4,241,027, Cl. 423-10.000.

Bowers, Harry J., to General Electric Company. Lamp lead to wire attachment for integral string sets. 4,241,387, Cl. 362-252.000.

Bowler, Jean, to Imperial Chemical Industries Limited. Prostane derivatives. 4,241,215, Cl. 560-55.000.

Bowling, Teamus, to General Electric Company. Heat sensing apparatus for an electric range automatic surface unit control. 4,241,289, Cl. 219-450.000.

Brach, Ulrich K. G., to Zeller-Plastik Koehn, Grabner & Co. Clamping device and its use. 4,240,604, Cl. 248-316.00D.

Braid, Milton, to Mobil Oil Corporation. Process of preparing sulfurized olefins. 4,240,958, Cl. 260-139.000.

Braithwaite, John C., to Vickers Shipbuilding Group Ltd. Winch mechanism. 4,240,613, Cl. 254-315.000.

Brammerlo, Allen A., to General Electric Company. Dynamoelectric machine and stationary assembly therefor. 4,241,274, Cl. 310-259.000.

Brand, Peter; and Helms, Adolf, to Hauni-Werke Korber & Co. KG. Solenoid operated valve. 4,240,468, Cl. 137-625.330.

Brandenstein, Manfred: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,240,673, Cl. 308-6.00C.

Bray, Ross N. Specialty hand tool. 4,240,190, Cl. 29-268.000.

Brecht, Frederick R. Information data microfilm projector for vehicles. 4,240,722, Cl. 353-12.000.

Breitling, Wolfram, to Robert Bosch GmbH. Frequency generator suitable for use as position-frequency transducer. 4,241,317, Cl. 331-65.000.

Brelen, Hans; Dahlberg, Stellan; and Aberg, Ulf, to Rockwool Aktiebolaget. Method for determining the surface weight of a mineral wool mat. 4,240,815, Cl. 65-2.000.

Brendel, Thomas E., to Carrier Corporation. Refrigeration system - method and apparatus. 4,240,263, Cl. 62-115.000.

Brentham, Jerry D. Multi-purpose exercising device. 4,240,627, Cl. 272-130.000.

Breslow, David S., to Hercules Incorporated. Epoxy-sulfonylazide compounds. 4,240,971, Cl. 260-348.430.

Breslow, Jeffrey D.: *See—*
Morrison, Howard J.; Baer, Ralph H.; and Breslow, Jeffrey D., 4,240,638, Cl. 273-237.000.

Bret, Alain: *See—*
Fabiani, Henri; and Bret, Alain, 4,240,742, Cl. 355-46.000.

Breville Holdings Pty. Limited: *See—*
McClean, John W., 4,240,338, Cl. 99-501.000.

Brewster Laboratories, Inc.: *See—*
Levine, Stella R., 4,240,760, Cl. 401-201.000.

Bricker, James C.: *See—*
Elsbernd, Carl A.; and Bricker, James C., 4,240,809, Cl. 55-118.000.

Bridgestone Tire Co., Ltd.: *See—*
Kojima, Hiroshi; Sakamoto, Takao; and Shimada, Tatsuro, 4,240,484, Cl. 152-209.00R.

Brikenshtein, Khaim-Mordkhe A.: *See—*
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Brill, Klaus; and Grothe, Wolfgang, to Robert Bosch GmbH. Recording medium for thermographic recording of data items. 4,241,356, Cl. 346-135.100.

Bristol-Myers Company: *See—*
Durbak, Taras; and Nersesian, Ara, 4,241,048, Cl. 424-45.000.
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,240,960, Cl. 260-239.100.

Britson, Stanley. Truss lifting hook and method for using same. 4,240,658, Cl. 294-19.00R.

Broacha, Firoze H.: *See—*
Sivachenko, Eugene W.; and Broacha, Firoze H., 4,241,146, Cl. 428-600.000.

Bross, Charles F., to Pennwalt Corporation. Scanner for detecting and indicating missing and wedged articles in slat-type counting machine. 4,241,293, Cl. 235-92.0PK.

Broussard, Mayo. Shoe spike. 4,240,215, Cl. 36-67.00D.

Brown, Edward M.; and Towns, Edward J. Dispensing device with interchangeable valves providing free pour and measured pour. 4,240,570, Cl. 222-442.000.

Brown, Harry. Slot machine device. 4,240,635, Cl. 273-138.00A.

Brown, James W., to C. R. Laurence Co., Inc. Display package. 4,240,552, Cl. 206-459.000.

Brown & Root, Inc.: *See—*
Gracia, Bert E., 4,240,767, Cl. 405-227.000.

Brownfield, Charles H. Manipulative skill game. 4,240,628, Cl. 273-1.00R.

Brownlow, Susan E. Refrigerated cigarette pack facsimile. 4,240,271, Cl. 62-457.000.

Bruck, Gernot K., to Lommel, Hermann; and Diamant Test Gesellschaft fur Edelsteinprufungen mbH. Method for the quantitative determination of turbidities, especially of immune reactions. 4,240,753, Cl. 356-442.000.

Bruemmer, Heinz-Dieter: *See—*
Wenzel, Franz; Bruemmer, Heinz-Dieter; and Krieg, Manfred, 4,241,203, Cl. 526-218.000.

Bryers, Richard W.; and Taylor, Thomas E., to Foster Wheeler Energy Corporation. Fluidized bed start-up apparatus and method. 4,240,364, Cl. 110-347.000.

Buchegger, Joachim: *See—*
Heitmann, Uwe; and Buchegger, Joachim, 4,240,448, Cl. 131-21.00R.

Buckler, Robert T.; Ward, Frederick E.; and Garling, David L., to Miles Laboratories, Inc. 3-Methylene flavanones and 3-methylene chromanones. 4,241,069, Cl. 424-263.000.

Bucolo, Giovanni: *See—*
Madappally, Mathew M.; and Bucolo, Giovanni, 4,241,179, Cl. 435-16.000.

Bukoschek, Romuald L., to U.S. Philips Corporation. Dryshaving apparatus. 4,240,200, Cl. 30-43.920.

Bullington, Eddy W.: *See—*
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.

Bump, Russell E. Test fixture having switching means for facilitating transformer turns ratio testing. 4,241,306, Cl. 324-55.000.

Bunnell, Edward D.; and Sotolongo, Thomas J., to AMP Incorporated. Transition block for terminating flat conductors. 4,240,687, Cl. 339-99.00R.

Bunzl & Biach Aktiengesellschaft: *See—*
Hemersam, Rudolf, 4,240,946, Cl. 260-28.5AS.

Burk, George A., to Dow Chemical Company, The. Stabilized aqueous antimicrobial composition. 4,241,080, Cl. 424-304.000.

Burke, Anthony B., to Thomas Broadbent & Sons Limited. Washer and hydro-extractors. 4,240,913, Cl. 210-373.000.

Burke, Hubert K.; and Michon, Gerald J., to General Electric Company. Solid state imaging apparatus. 4,241,421, Cl. 365-183.000.

Burke, William J.; Kressel, Henry; and Ettenberg, Michael, to RCA Corporation. Optical memory with injection laser as light source and detector. 4,241,423, Cl. 365-215.000.

Burke, William J.: *See—*
Bloom, Allen; and Burke, William J., 4,241,355, Cl. 346-135.100.

Burkhart, James H., to Diamond International Corporation. Paper forming roll construction. 4,240,871, Cl. 162-274.000.

Burlington Industries Inc.: *See—*
Imboden, Walter H.; and Lieberman, David M. (said Walter H. Imboden assors. to), 4,240,160, Cl. 2-239.000.

Burroughs Corporation: *See—*
Flora, Laurence P.; and Wiener, Daniel P., 4,241,414, Cl. 364-786.000.
Kronies, Reinhard K., 4,241,419, Cl. 364-900.000.

Burwasser, Herman, to GAF Corporation. Electrostatically imageable drafting film. 4,241,134, Cl. 428-331.000.

Bushman, W. Thomas: *See—*
Paraskevakos, Theodoros G.; and Bushman, W. Thomas, 4,241,237, Cl. 179-2.0AM.

Bussjager, Rudy C., to Carrier Corporation. Heat pump system. 4,240,269, Cl. 62-324.00A.

Busto, Jerry T., to Gemini Seals, Inc. Piston seal. 4,240,644, Cl. 277-194.000.

Byrne, Leroy H.; and Fassman, Arnold, to Pitney Bowes Inc. Controller for rotary collator. 4,241,247, Cl. 200-61.410.

C. R. Laurence Co., Inc.: *See—*
Brown, James W., 4,240,552, Cl. 206-459.000.

Cadaco, Inc.: *See—*
Bolton, Douglas R.; and Werling, John M., 4,240,639, Cl. 273-346.000.

Caere Corporation: *See—*
Blanc, Serge L.; and Smith, William R., 4,240,748, Cl. 356-138.000.

Callahan, Lynn T.: *See—*
Miller, William J.; McAleer, William J.; and Callahan, Lynn T., 4,241,175, Cl. 435-7.000.

Cam Gears Limited: *See—*
Adams, Frederick J.; and Lehman, Ralph M., 4,240,306, Cl. 74-498.000.

Cameron Iron Works, Inc.: *See—*
Hahn, Guerry L.; and Baker, Gerald S., 4,240,609, Cl. 251-282.000.

Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., to Bell Telephone Laboratories, Incorporated. Electrodeposition display device. 4,240,716, Cl. 350-363.000.

Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., to Bell Telephone Laboratories, Incorporated. Electrodeposition display device. 4,240,717, Cl. 350-363.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense: *See—*
Courtenay, Terence H.; and Cruickshank, James M., 4,240,746, Cl. 356-5.000.

Canada Packers Limited: *See—*
Mag, Theodore K.; and Reid, Margaret P., 4,240,972, Cl. 260-424.000.

Canning, Rodger G.; and Tomlinson, John P., to Reed International Limited. Foam plastics sheet materials. 4,241,125, Cl. 428-158.000.

Cannon, Robert L., III: *See—*
Andresen, Richard P.; Armington, Robert M.; Cannon, Robert L., III; and Griffin, Andrew J., 4,240,442, Cl. 128-708.000.

Canon Denshi Kabushiki Kaisha: *See—*
Kyogoku, Hiroshi, 4,240,345, Cl. 101-103.000.

Canon Kabushiki Kaisha: *See—*
Fujibayashi, Kazuo, 4,240,705, Cl. 350-220.000.
Fukuda, Tadaji; and Misumi, Teruo, 4,241,158, Cl. 430-86.000.
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,240,720, Cl. 352-170.000.
Ikawa, Kazuo, 4,241,369, Cl. 361-8.000.
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.
Kyogoku, Hiroshi, 4,240,345, Cl. 101-103.000.
Masaki, Katsumi; and Kitamura, Takashi, 4,241,415, Cl. 364-900.000.
Momiyama, Kikuo, 4,240,703, Cl. 350-214.000.
Sato, Yasuhisa; Tsuji, Sadahiko; and Tanaka, Katsumi, 4,240,699, Cl. 350-184.000.
Takano, Eiichi, 4,240,697, Cl. 350-183.000.
Tsuji, Sadahiko; and Sato, Yasuhisa, 4,240,698, Cl. 350-184.000.

Capintec Inc.: *See—*
Bish, Ralph E.; and Suzuki, Arata, 4,240,491, Cl. 160-380.000.

Caplin, Peter B. Combustion apparatus. 4,240,378, Cl. 122-4.00D.

Caravello, John C. Cigarette and cigar extinguisher. 4,240,449, Cl. 131-235.0ST.

Carborundum Company, The: *See—*
Ferrantini, Salvatore. 4,240,230, Cl. 51-168.000.
Myles, Thomas A., 4,240,833, Cl. 106-39.600.

Carcey, Jacques P., to Commissariat a l'Energie Atomique. Equipment for sintering under pressure. 4,240,780, Cl. 425-407.000.

Carl Freudenberg: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,240,643, Cl. 277-164.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, 4,240,877, Cl. 201-41.000.
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.

Carl Zeiss-Stiftung: *See—*
Tausch, Walter; and Gausmann, Hans, 4,240,752, Cl. 356-436.000.

Carlberg, John R.: *See—*
Meyer, Gustavo A.; Carlberg, John R.; and Nikolic, Cvetko, 4,241,031, Cl. 423-150.000.

Carle, Udo, to Koehring GmbH - Bomag Division. Hydraulic vibration exciter and method of cooling thereof. 4,240,326, Cl. 91-39.000.

Carll, Richard T., to United Technologies Corporation. Computer network, line protocol system. 4,241,398, Cl. 364-200.000.

Carlson, Edwin S., to ACF Industries, Incorporated. Top operated tank car lading valve also operable from the bottom. 4,240,607, Cl. 251-144.000.

Carluccio, John F. Cosmetic jar. 4,240,560, Cl. 215-12.00R.

Carnaud Total Interplastic: *See—*
Flamand, Guy; and Gregoire, Jean-Francois, 4,241,008, Cl. 264-529.000.

Carnes, Donald W., to Electro-Therm, Inc. Mounting means for sheathed heating elements and method. 4,241,291, Cl. 219-536.000.

Carr, James R. Syringe shield for radioactive materials. 4,240,421, Cl. 128-215.000.

Carr, Peter; and Chi, Chen H., to Energy Development Associates, Inc. Method for control of edge effects of oxidant electrode. 4,241,150, Cl. 429-51.000.

Carrier Corporation: *See—*
Brendel, Thomas E., 4,240,263, Cl. 62-115.000.
Bussjager, Rudy C., 4,240,269, Cl. 62-324.00A.

Carstens, Marion R., to Georgia Tech Research Institute. Transport system with blocking valve control. 4,240,768, Cl. 406-19.000.

Carter, William D. M.: *See—*
Scrine, Gerald R.; and Carter, William D. M., 4,240,266, Cl. 62-196.00B.

Carter, William W., to Sybron Corporation. Method of forming a platinum layer on tantalum. 4,240,878, Cl. 204-1.00T.

Carughi, Carlo: *See—*
Martinengo, Pier C.; and Carughi, Carlo, 4,241,113, Cl. 427-229.000.

Casas, Raul E., to Perkin-Elmer Corporation, The. Field corrector for two mirror objective systems. 4,240,702, Cl. 350-200.000.

Cassidy, Frederick; and Goudie, Alexander C., to Beecham Group Limited. Prostaglandin analogues. 4,241,074, Cl. 424-273.00R.

Castall Incorporated: *See—*
Pratt, Ralph C.; Davis, Robert; and Howland, Charles P., 4,241,132, Cl. 428-285.000.

Castel, Yvon; and Cholet, Henri, to Institut Francais du Petrole. Drill bit with suction jet means. 4,240,513, Cl. 175-340.000.

Casutt, Toni. Process and device for the erection of cardboard trays. 4,240,337, Cl. 493-137.000.

Caterpillar Tractor Co.: *See—*
Comer, Glen S., Jr., 4,240,614, Cl. 254-393.000.
Hedgcock, Richard L.; and Whitehurst, Gerald E., 4,240,534, Cl. 192-13.00R.
Riediger, Craig W., 4,240,457, Cl. 137-101.000.
Roussin, Michael A., 4,240,642, Cl. 277-84.000.
Starr, Darrel N., 4,240,648, Cl. 280-760.000.
Vinton, David S., 4,240,863, Cl. 156-361.000.

Cauwet, Daniele: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.

Celanese Corporation: *See—*
Lin, Victor J., 4,240,864, Cl. 156-441.000.

Celler, George K.; and Miller, Gabriel L., to Western Electric Company, Inc.; and Bell Telephone Laboratories, Incorporated. Forming self-guarded p-n junctions by epitaxial regrowth of amorphous regions using selective radiation annealing. 4,240,843, Cl. 148-1.500.

Cellier, Alfred: *See—*
United States of America, National Aeronautics and Space Administration; Cellier, Alfred; Huey, Douglas C.; and Ma, Lit N., 4,241,308, Cl. 328-55.000.

Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., to Bell Telephone Laboratories, Incorporated. Organization for dynamic random access memory. 4,241,425, Cl. 365-222.000.

Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag": *See—*
Podgorski, Wojciech; and Stas, Justyn, 4,240,666, Cl. 299-31.000.
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.

Centralny Osrodek Projektowokonstrukcyjyn Maszyn Gorniczych "Komag": *See—*
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.

Centro Ricerche Fiat S.p.A.: *See—*
Urbinati, Mario; and Nannini, Alessandro, 4,240,384, Cl. 123-470.000.

Centronics Data Computer Corp.: *See—*
Hanna, Samuel Y., 4,240,757, Cl. 400-196.100.

Century Products, Inc.: *See—*
Meeker, Paul K., 4,240,625, Cl. 272-86.000.

Cerberus AG: *See—*
Tresch, Erwin; and Muggli, Jurg, 4,241,282, Cl. 250-574.000.

Certek, Inc.: *See—*
Grantham, James I., 4,241,020, Cl. 422-109.000.

Champenois, Michel M. L., to Produits Chimiques Ugine Kuhlmann. 1,2-Dialkyl-3-phenyl-5-[4-(N-alkyl or N,N-dialkyl)amino-2-benzoylamino-phenylazo]pyrazolium dyestuffs. 4,240,959, Cl. 260-147.000.

Champion International Corporation: *See—*
Barnes, Donald E., 4,241,130, Cl. 428-216.000.

Chan, David C. K., to Chevron Research Company. Fungicidal 3-(N-acyl-N-arylamino)-gamma-butyrolactones and gamma-butyrothiolactones. 4,241,078, Cl. 424-275.000.

Chapman, Francis E., to S. C. Johnson & Son, Inc. Thixotropic abrasive liquid scouring composition. 4,240,919, Cl. 252-95.000.

Chase, Albert T.: *See—*
Douglass, James D.; and Chase, Albert T., 4,241,324, Cl. 336-217.000.

Chashnik, Pavel I.: *See—*
Antonov, Jury F.; Kadi-Ogly, Ibragim A.; Perchanok, Boris K.; and Chashnik, Pavel I., 4,241,269, Cl. 310-61.000.

Chattha, Mohinder S., to Ford Motor Company. Coating composition catalyzed with phosphonic acid derivative - I. 4,241,196, Cl. 525-161.000.

Chelminski, Stephen V., to Bolt Associates, Inc. Method and apparatus for monitoring and controlling a multiplicity of air guns for seismic surveying. 4,240,518, Cl. 181-107.000.

Chemical Applicator, Inc.: *See—*
Hughes, Gary W., 4,240,583, Cl. 239-157.000.

Chemplate Corporation: *See—*
Zorn, Edward; Sherwood, Bert J.; and Liffick, Fenton A., 4,240,670, Cl. 301-9.0DN.

Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A. Porous heat-insulation material. 4,241,138, Cl. 428-403.000.

Chernenko, Nikolai P.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Chesnut, Amos E.; and Parrigin, Albert J., to Arvin Industries, Inc. Fireplace heat exchanger. 4,240,401, Cl. 126-121.000.

Chevron Research Company: *See—*
Chan, David C. K., 4,241,078, Cl. 424-275.000.
Gibson, Kirk R.; Jacobson, Robert L.; and Michlmayr, Manfred J., 4,241,231, Cl. 585-748.000.

Chi, Chen H.: *See—*
Carr, Peter; and Chi, Chen H., 4,241,150, Cl. 429-51.000.

Chiariello, Ned A., to Keystone Ferrule & Nut Corporation. Support assembly. 4,240,603, Cl. 248-125.000.

Chibnik, Sheldon, to Mobil Oil Corporation. Reaction products of hydroxy aromatic or alkylphenylether compounds and alkenylsuccinic acid, anhydride, or ester. 4,240,970, Cl. 260-346.740.

Chicago Bridge & Iron Company: *See—*
Hagstrom, Jon; Ahl, Thomas J.; and Vasilion, James S., 4,240,561, Cl. 220-3.000.

Choate, James R. Log-burning stove. 4,240,399, Cl. 126-58.000.

Choinski, Edward J.: *See—*
Clapp, Roger C.; and Choinski, Edward J., 4,241,171, Cl. 430-539.000.

Cholet, Henri: *See—*
Castel, Yvon; and Cholet, Henri, 4,240,513, Cl. 175-340.000.

Cholin, John M., to Firetek Corporation. Ultraviolet fire detector. 4,241,258, Cl. 250-372.000.

Chrisman, Max G., to Owens-Corning Fiberglas Corporation. Production of platinum group metal layer on a refractory. 4,240,847, Cl. 156-62.200.

Christie, Robert B.; Parsons, John A.; and Rudman, Christopher G. Calcitonin. 4,241,051, Cl. 424-177.000.

Chrysler Corporation: *See—*
Blomquist, Alfred P., 4,240,532, Cl. 192-3.280.

Chu, Chang K.: *See—*
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., 4,240,844, Cl. 148-1.500.

Chundelak, Louis W., Jr. Pull chain attachment for rotary light switch. 4,241,249, Cl. 200-161.000.

Church, Charles J. Electric massage apparatus and method. 4,240,437, Cl. 128-420.00R.

Chwae, John C., to Giddings & Lewis, Inc. Coated abrasive superfinishing stone and method of making same. 4,240,232, Cl. 51-356.000.

CH_2O, Inc.: *See—*
Courtright, Burr, 4,240,584, Cl. 239-189.000.

Ciarico, Anthony J.: *See—*
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,240,430, Cl. 128-218.00P.

Ciba-Geigy Corporation: *See—*
Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, 4,241,075, Cl. 424-273.00R.
Rasheed, Khalid; and Warkentin, James D., 4,240,821, Cl. 71-90.000.

Citizen Watch Co., Ltd.: *See—*
Fujita, Hiro; and Tsuzuki, Akira, 4,241,435, Cl. 368-85.000.
Murata, Mitsuhiro, 4,241,441, Cl. 368-247.000.

Clapot, Claude; Vial, Jean; Mourier, Jacqueline; and Boch, Jean C., to Philagro S.A. New plant growth regulating compositions which contain derivatives of N-acyl methionine. 4,240,823, Cl. 71-98.000.

Clapp, Roger C.; and Choinski, Edward J., to Polaroid Corporation. Hardener in carrier layer. 4,241,171, Cl. 430-539.000.

Clark, Noel A.: *See—*
Rothschild, Kenneth J.; and Clark, Noel A., 4,241,005, Cl. 264-311.000.

Clark, Roy: *See—*
Pole, Ernest G.; and Clark, Roy, 4,240,860, Cl. 156-327.000.

Clarke-Gravely Corporation: *See—*
Bessinger, Walter L., 4,240,569, Cl. 222-220.000.

Clarke, Thomas P. Oil sands hot water extraction process. 4,240,897, Cl. 208-11.0LE.

Clemar Manufacturing Corp.: *See—*
Ruggles, Richard L., 4,241,375, Cl. 361-166.000.

Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., to Bell Telephone Laboratories, Incorporated. Dynamic random access memory. 4,240,195, Cl. 29-571.000.

Clemons, Donald G.: *See—*
Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., 4,241,425, Cl. 365-222.000.

Clinton, Henry H. Continuous continuity monitor for monitoring the continuity of an insulated wire conductor. 4,241,304, Cl. 324-51.000.

Clot, Philippe: *See—*
Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, 4,241,436, Cl. 368-88.000.

Clow Corporation: *See—*
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,240,470, Cl. 138-109.000.

Coachmen Industries, Inc.: *See—*
Krein, Reuben J., 4,240,193, Cl. 29-451.000.

Coalite and Chemical Products Limited: *See—*
Gladwin, Keith, 4,241,225, Cl. 568-652.000.

Cobaugh, Robert F.; and Taylor, Attalee S., to AMP Incorporated. Bus bar assembly for circuit cards. 4,241,381, Cl. 361-413.000.

Cobb, Raymond F.: *See—*
Snell, James L.; and Cobb, Raymond F., 4,241,454, Cl. 455-260.000.

Coburn, James D.: *See—*
Peters, Russell E., 4,240,157, Cl. 2-161.00R.

Coca-Cola Company, The: *See—*
Shaw, Harold L., 4,240,267, Cl. 62-238.00E.

Cocron, Istvan: *See—*
Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, 4,240,727, Cl. 354-25.000.

Cohen, Joel B., to Shell Container Systems. Method of making a package having foam inserts. 4,240,240, Cl. 53-410.000.

Cohen, Joseph; Adjemian, Alain; and Ferran, Michel, to Aluminum Pechiney. Continuous process for obtaining pure alumina from an acidic liquor originating from the chlorosulphuric attack of an aluminous ore and for the purification of the liquor which has been freed from alumina. 4,241,030, Cl. 423-126.000.

Colgate Palmolive Company: *See—*
Colodney, Daniel; and Norfleet, James, 4,241,049, Cl. 424-54.000.

Collin, Herbert S. Washing machine agitator brace. 4,240,550, Cl. 206-320.000.

Collins, David A.; and Lile, Derek L., to United States of America, Navy. Electrolytic blocking contact to InP. 4,241,167, Cl. 430-314.000.

Colodney, Daniel; and Norfleet, James, to Colgate Palmolive Company. Stable dentifrice. 4,241,049, Cl. 424-54.000.

Colton, Russell F.: *See—*
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., 4,240,299, Cl. 73-861.230.

Combustion Engineering, Inc.: *See—*
McGee, John K., 4,240,455, Cl. 137-77.000.

Comer, Glen S., Jr., to Caterpillar Tractor Co. Sheave block and seal assembly therefor. 4,240,614, Cl. 254-393.000.

Comera, Jean; and Jaussaud, Claude, to Commissariat a l'Energie Atomique. Fast-switching multi-wavelength laser. 4,241,318, Cl. 331-94.50C.

Commissariat a l'Energie Atomique: *See—*
Audaire, Luc; Merckel, Gerard; and Rigaux, Guy, 4,241,262, Cl. 307-221.00D.
Carcey, Jacques P., 4,240,780, Cl. 425-407.000.
Comera, Jean; and Jaussaud, Claude, 4,241,318, Cl. 331-94.50C.
Delafosse, Jacques, 4,240,876, Cl. 176-78.000.
Nicolas, Maurice; and Bacconnet, Eugene, 4,241,126, Cl. 428-174.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Bannister, Michael J., 4,240,891, Cl. 204-195.00S.

Compur-Electronic Gesellschaft mit beschrankter Haftung: *See—*
Retzer, Erich, 4,240,749, Cl. 356-246.000.

Conlan, John P.: *See—*
Delhees, Peter; and Conlan, John P., 4,240,184, Cl. 24-279.000.

Conley, Norman E.: *See—*
Ellis, Roger R.; Gertsen, W. Marvin; and Conley, Norman E., 4,240,597, Cl. 244-35.00R.

Connell, John L., to Davis Instruments Corporation. Apparatus for disposing corner cube reflector for detection. 4,241,349, Cl. 343-18.00C.

Conoco, Inc.: *See—*
Dareing, Donald W., 4,240,506, Cl. 166-367.000.

Conviron, Inc.: *See—*
Roth, Jonathan N., 4,241,186, Cl. 435-243.000.

Cooke, Anson R.: *See—*
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,240,819, Cl. 71-76.000.

Copelin, Harry B., to Du Pont de Nemours, E. I., and Company. Pd/SiO_2 Hydrogenation catalyst suitable for H_2O_2 manufacture. 4,240,933, Cl. 252-455.00R.

Coquio, Claude: *See—*
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,241,353, Cl. 343-786.000.

Corbin, Normand D.: *See—*
McCauley, James W.; and Corbin, Normand D., 4,241,000, Cl. 264-65.000.

Cornelisse, Roelof: *See—*
Werner, Erik S. E.; Ouwerkerk, Cornelis; and Cornelisse, Roelof, 4,241,032, Cl. 423-226.000.

Corning Glass Works: *See—*
Borrelli, Nicholas F.; and Wedding, Brent M., 4,240,836, Cl. 106-47.00Q.

Cotuplas S.A., Zone industrielle: *See—*
Girardier, Raymond, 4,240,238, Cl. 53-373.000.

Coulter Electronics, Inc.: *See—*
Madappally, Mathew M.; and Bucolo, Giovanni, 4,241,179, Cl. 435-16.000.

Coulter Systems Corporation: *See—*
Kuehnle, Manfred R., 4,241,160, Cl. 430-124.000.

Counsell, Raymond E.; and Lucchesi, Benedict R., to University of Michigan, The Regents of the. 1-(Trialkylamino)-3-(phenylphenoxy)-2-propanol quarternary salts. 4,241,088, Cl. 424-329.000.

Courtenay, Terence H.; and Cruickshank, James M., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense. System for transmitter frequency control in coherent ladar. 4,240,746, Cl. 356-5.000.

Courtright, Burr, to CH_2O, Inc. Agricultural vehicle. 4,240,584, Cl. 239-189.000.

Covington, Dorris L. Tackle box. 4,240,222, Cl. 43-57.50R.

CPC International Inc.: *See—*
DiDominicis, Alphonse J., 4,240,841, Cl. 106-211.000.

Craemer, Robert H.; and Evans, Donald J., to Molins Machine Company, Inc. Continuous running corrugator. 4,240,856, Cl. 156-205.000.

Crase, Gary M., to Smith International, Inc. Adjustable bearing assembly. 4,240,683, Cl. 308-227.000.

Crawford, John H., to Leading Plywood Corporation. Wood burner. 4,240,785, Cl. 431-352.000.

Crepeau, Charles E.; and Mulvey, Robert F., to General Electric Company. Thermal insulation material. 4,240,839, Cl. 106-88.000.

Crichlow, Charles A.: *See—*
Martin, Lawrence L.; Ong, Helen H.; Anderson, Vernon B.; and Crichlow, Charles A., 4,241,071, Cl. 424-267.000.

Crist, Oliver. Variable stroke engine or compressor. 4,240,386, Cl. 123-48.00B.

Criswell, Bernie R.: *See—*
Barber, Lewie M.; Criswell, Bernie R.; Solberg, Ruell F., Jr.; and Weiss, Benjamin F. L., 4,241,432, Cl. 367-151.000.

Crivello, James V., to General Electric Company. Cationically curable organic resin compositions containing sulfonium salts and an organic oxidant. 4,241,204, Cl. 526-333.000.

Croley, Thomas E., to Willamette Industries, Inc. Drum-like fiberboard container for bulk material with funnel-like dispensing bottom. 4,240,565, Cl. 222-105.000.

Cross, Alvan: *See—*
Cross, Robert; Cross, Terrence R.; and Cross, Alvan, 4,240,637, Cl. 273-176.00H.

Cross, Robert; Cross, Terrence R.; and Cross, Alvan. Putting practice apparatus. 4,240,637, Cl. 273-176.00H.

Cross, Terrence R.: *See—*
Cross, Robert; Cross, Terrence R.; and Cross, Alvan, 4,240,637, Cl. 273-176.00H.

Crosser, Jeffrey A., to United Hydraulics Corporation. Mechanically lockable hydraulic cylinder jack. 4,240,334, Cl. 92-23.000.

Cruickshank, James M.: *See—*
Courtenay, Terence H.; and Cruickshank, James M., 4,240,746, Cl. 356-5.000.

Crum, James N.: *See—*
Landis, Earl M.; Roberts, Webster C.; and Crum, James N., 4,240,346, Cl. 101-139.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Fausone, Alfredo; and Rivelli, Renato, 4,241,320, Cl. 333-18.000.

Cuisinarts, Inc.: *See—*
Benjamin, Daniel R., 4,241,302, Cl. 318-758.000.

Cumming, James M. Film treatment apparatus. 4,241,377, Cl. 361-213.000.

Custom Concepts, Incorporated: *See—*
Kubiatowicz, James F., 4,240,525, Cl. 185-38.000.

Cuthbert, John D.: *See—*
Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., 4,240,195, Cl. 29-571.000.

Cuthbertson, Bobbie G.: *See—*
Cuthbertson, Earl A.; and Cuthbertson, Bobbie G., 4,240,209, Cl. 34-10.000.

Cuthbertson, Charles R.: *See—*
Lamond, Trevor G.; and Cuthbertson, Charles R., 4,241,001, Cl. 264-117.000.

Cuthbertson, Earl A.; and Cuthbertson, Bobbie G. Method of and apparatus for drying grain and the like. 4,240,209, Cl. 34-10.000.

Daddato, Dominic. Multidirectional vise square device. 4,240,621, Cl. 269-264.000.

Dahlberg, Stellan: *See—*
Brelen, Hans; Dahlberg, Stellan; and Aberg, Ulf, 4,240,815, Cl. 65-2.000.

Daignault, Alan J.: *See—*
Wyner, Elliot F.; and Daignault, Alan J., 4,241,276, Cl. 313-487.000.

Daiichi Shoji Co., Ltd.: *See—*
Asano, Takehiro, 4,241,385, Cl. 362-258.000.

Daikin Kogyo Co., Ltd.: *See—*
Izumo, Masanori; Nomura, Syunichi; and Tanigawa, Singo, 4,241,137, Cl. 428-402.000.

Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.

Daly, Benedict D. T.: *See—*
Robinson, William J.; Poirier, Victor L.; and Daly, Benedict D. T., 4,240,409, Cl. 128-1.00D.

Danfoss A/S: *See—*
Lehmann, Kjeld; and Rasmussen, Arne V. R., 4,241,380, Cl. 361-383.000.

Daniel, Maurice. Fiber optics illuminator. 4,241,382, Cl. 362-32.000.

Dankert, Gerhard: *See—*
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,240,977, Cl. 260-465.50R.

D'Antonio, Nicholas F.; Bates, Richard L.; and French, Richard W. Force transducer. 4,240,288, Cl. 73-141.00A.

Dareing, Donald W., to Conoco, Inc. Downhole riser assembly. 4,240,506, Cl. 166-367.000.

Dassen, Bernardus H. N., to Stamicarbon, B.V. Process for biological purification of waste water. 4,240,904, Cl. 210-609.000.

Datafile Limited: *See—*
Barber, Donald T., 4,240,848, Cl. 156-64.000.

Datta, Pabitra; and Friel, Ronald N., to RCA Corporation. Video discs and molding compositions therefor. 4,241,120, Cl. 428-65.000.

Dauvergne, Hector A. Three-stage liquid fuel burner. 4,240,784, Cl. 431-351.000.

David, John M., Jr., to RCA Corporation. Creel. 4,240,594, Cl. 242-131.000.

Davidson, John C.: *See—*
Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., 4,240,582, Cl. 239-11.000.

Davis, Allen V. C. Pressure responsive annunciator. 4,240,372, Cl. 116-271.000.

Davis Instruments Corporation: *See—*
Connell, John L., 4,241,349, Cl. 343-18.00C.

Davis, Richard F., to Dayco Corporation. Tool for and method of removing a die-cutting mat from a rotary anvil. 4,240,192, Cl. 29-426.600.

Davis, Robert: *See—*
Pratt, Ralph C.; Davis, Robert; and Howland, Charles P., 4,241,132, Cl. 428-285.000.

Dawson, David G.: *See—*
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.

Day, Lawrence. Rectilinear work finishing apparatus. 4,240,231, Cl. 51-138.000.

Dayco Corporation: *See—*
Davis, Richard F., 4,240,192, Cl. 29-426.600.

Deal, Troy M. Intake balancing and satellite collector system. 4,240,243, Cl. 56-8.000.

Dean, John J.: *See—*
Haydon, Arthur W.; and Dean, John J., 4,241,270, Cl. 310-164.000.

Decker, Joseph A., Jr., to Igloo Corporation. Method for introducing multi-component foam reactants into mold form involving the use of a foaming spacer. 4,240,999, Cl. 264-46.500.

De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, to Texas Instruments Incorporated. Thermal relays particularly for starting single-phase asynchronous motors. 4,241,370, Cl. 361-24.000.

Degel, Josef: *See—*
Karweil, Joachim; Degel, Josef; and Rolke, Dietrich, 4,240,927, Cl. 252-411.00R.

Delafosse, Jacques, to Commissariat a l'Energie Atomique. Nuclear fuel assembly. 4,240,876, Cl. 176-78.000.

Delhees, Peter; and Conlan, John P., to BICC Limited. Pipe and cable clamps. 4,240,184, Cl. 24-279.000.

DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., to Allied Chemical Corporation. Fiber reinforced multi-ply stampable thermoplastic sheet. 4,240,857, Cl. 156-209.000.

Dellinger, Paul L., Jr.: *See—*
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.

Delmer, Philip T., to Rexnord Inc. Frame structure for a press assembly. 4,240,342, Cl. 100-53.000.

de Luque, Manuel J., to Procter & Gamble Company, The. Detergent bleach composition and process. 4,240,920, Cl. 252-99.000.

Demeter, Akos: *See—*
Demeter, Laszlo; and Demeter, Akos, 4,240,911, Cl. 210-794.000.

Demeter, Laszlo; and Demeter, Akos, to Nikex Nehezipari Kulkereskedelmi Vallalat. Tower filters with reversed water-jet filter regeneration. 4,240,911, Cl. 210-794.000.

Demmin, Timothy R.: *See—*
Rogic', Milorad M.; Swerdloff, Michael D.; and Demmin, Timothy R., 4,240,966, Cl. 260-340.50R.

Denaldi, Ermanno; and Rolfo, Gian P., to Fiat Veicoli Industriali S.p.A. Retaining clamp for an adjustable steering column. 4,240,305, Cl. 74-493.000.

Denker, Stanley D.: *See—*
Grevich, John J.; and Denker, Stanley D., 4,240,336, Cl. 493-196.000.

de Polo, Harry R. Pants-type garment and method of making the same. 4,240,158, Cl. 2-227.000.

DePuy, Robert P., to General Electric Company. Binary number generation. 4,241,410, Cl. 364-715.000.

Derbyshire, George C., to Jabobs Manufacturing Company, Ltd., The. Breast drills. 4,240,771, Cl. 408-124.000.

Dereser, Ernst, to Owens-Corning Fiberglas Corporation. Glass fiber size composition and process. 4,241,136, Cl. 428-378.000.

deRosset, Armand J.: *See—*
Ginger, Edward A.; and deRosset, Armand J., 4,241,033, Cl. 423-244.000.

Desai, Jayraj S.: *See—*
Materia, Peter; and Desai, Jayraj S., 4,241,188, Cl. 435-296.000.

Desmond, Edwin A., Jr., to Ethyl Corporation. Diesel fuel composition. 4,240,801, Cl. 44-57.000.

Deucker, Walter: *See—*
Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, 4,241,166, Cl. 430-281.000.

Deutsch Automobilgesellschaft mbH: *See—*
Klink, Rainer, 4,241,152, Cl. 429-181.000.

Deutsch, Edward J., to Arkwin Industries, Inc. Fluid operated locking actuator. 4,240,332, Cl. 92-5.00L.

Deutsche Babcock Aktiengesellschaft: *See—*
Lautenschlager, Friedrich W.; and Hennecke, Hermann, 4,240,590, Cl. 241-56.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roesseler: *See—*
Kremer, Paul; Gora, Bernhard; and Klinger, Ludwig, 4,241,124, Cl. 428-156.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Fahnenstich, Rudolf; Heese, Joachim; and Lewis, Dyfed, 4,241,085, Cl. 424-319.000.

Devas, Michael B., to National Research Development Corporation. Endoprosthetic patellar device. 4,240,162, Cl. 3-1.910.

De Veau, John E.: *See—*
Inhofer, Harold G.; and De Veau, John E., 4,240,990, Cl. 261-87.000.

De Volder, Noel J.: *See—*
Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., 4,241,159, Cl. 430-114.000.

De Vries, Jochem J.: *See—*
Boiten, Ebbe; Tietjens, Eduard W.; and De Vries, Jochem J., 4,240,199, Cl. 30-43.600.

DeVries, Robert C.: *See—*
Lee, Minyoung; Szala, Lawrence E.; and DeVries, Robert C., 4,241,135, Cl. 428-332.000.

De Ward, Robert C.; Kaminski, David G.; and Fedde, Mickiel P., to Sperry Corporation. Virtual address translator utilizing interrupt level code. 4,241,401, Cl. 364-200.000.

De Winter, Walter F.: *See—*
Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., 4,241,159, Cl. 430-114.000.

deWitt, Paolo; and Tinti, Maria O., to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Process for producing aromatic aldehydes. 4,240,984, Cl. 568-435.000.

Dialog Systems, Inc.: *See—*
Bahler, Lawrence G.; and Moshier, Stephen L., 4,241,329, Cl. 340-146.30R.

Diamant Test Gesselschaft fur Edelsteinprufungen mbH: *See—*
Bruck, Gernot K., 4,240,753, Cl. 356-442.000.

Diamond International Corporation: *See—*
Burkhart, James H., 4,240,871, Cl. 162-274.000.

Diasonics, Inc.: *See—*
Swain, Allan L., 4,241,412, Cl. 364-731.000.

Diaz, Octavio. Solid waste disposing system. 4,240,769, Cl. 406-108.000.

Dickens, Luther I., to Mead Corporation, The. Polystyrene foam structure. 4,240,557, Cl. 211-153.000.

Dickerson, Arthur F., to Hughes Aircraft Company. Method and apparatus for locating faults in electric cables. 4,241,305, Cl. 324-52.000.

Dickey-john Corporation: *See—*
Amburn, Raymond D., 4,240,365, Cl. 111-1.000.

Dickore, Karlfried; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Method of regulating the growth of plants. 4,240,820, Cl. 71-76.000.

Dickson, John F.; and Oakley, Raymond E., to Plessey Handel und Investments AG. Semiconductor devices. 4,241,424, Cl. 365-218.000.

DiDominicis, Alphonse J., to CPC International Inc. No-carrier corrugating adhesive. 4,240,841, Cl. 106-211.000.

Diegel, Herbert F. Apparatus for dispensing adhesive-backed foil. 4,240,867, Cl. 156-543.000.

Diehl, Robert E.; and Kendall, Roger V., to American Cyanamid Company. Method for controlling undesirable plants using 1H-benzotriazole and 2H-benzotriazole compounds. 4,240,822, Cl. 71-92.000.

Diepers, Heinrich, to Siemens Aktiengesellschaft. Method for manufacturing a photo cathode for electroradiographic and electrofluoroscopic apparatus. 4,240,869, Cl. 156-643.000.

Dietz, Richard E.; and Nowlin, Oscar D., to Phillips Petroleum Company. Polymerization of olefins. 4,240,929, Cl. 252-429.00B.

Dietz, Wolfgang: *See—*
Lobe, Hartwig; and Dietz, Wolfgang, 4,241,328, Cl. 340-75.000.

Di Giovanni, Mario, to Micro Gage, Inc. Displacement sensing transducer. 4,241,325, Cl. 338-4.000.

Digital Equipment Corporation: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.

Dill, Douglas W., to S. C. Johnson & Son, Inc. Removable coatings which prevent penetration from felt tip marking inks. 4,241,141, Cl. 428-500.000.

Din, Zia U.: *See—*
Ho, T. L.; Din, Zia U.; and Traynor, Sean G., 4,240,969, Cl. 260-346.220.

Diziere, Bernard, to Societe d'Exploitation des Etablissements Bregeon-Cochard. Novel case for an electric pocket flashlight. 4,241,384, Cl. 362-203.000.

Djendova, Shtilyana D.: *See—*
Stoev, Stoycho M.; Djendova, Shtilyana D.; Metodiev, Metodi S.; and Kresteva, Kalinka I., 4,240,903, Cl. 209-437.000.

Dobson, John V., to National Research Development Corporation. Methods of measuring the concentrations of ions. 4,240,879, Cl. 204-1.00T.

Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG: *See—*
Schael, Wilfried, 4,240,408, Cl. 128-1.00R.

Dodge, Dennis, to Itek Corporation. Unique gear drive mechanism for camera-processor. 4,240,730, Cl. 354-90.000.

Doken, Masanobu: *See—*
Izumi, Katsutoshi; Doken, Masanobu; and Ariyoshi, Hisashi, 4,241,359, Cl. 357-49.000.

Dollhausen, Manfred: *See—*
Meckel, Walter; Muller-Albrecht, Horst; Dollhausen, Manfred; and Velker, Eugen, 4,240,861, Cl. 156-331.000.

Dooley, Thomas E., to Westinghouse Electric Corp. Fluorescent lamp adapter for residential incandescent-type lamp fixture. 4,241,386, Cl. 362-216.000.

Doring, Fritz: *See—*
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,240,977, Cl. 260-465.50R.

Dorrian, John F., to Erie Technological Products, Inc. Base metal electrode capacitor and method of making the same. 4,241,378, Cl. 361-305.000.

Douglas, Joseph, to Rolls-Royce Limited. Optical probe. 4,240,706, Cl. 350-286.000.

Douglass, James D.; and Chase, Albert T., to McGraw-Edison Company. Magnetic core for electrical transformers. 4,241,324, Cl. 336-217.000.

Dow Chemical Company, The: *See—*
Burk, George A., 4,241,080, Cl. 424-304.000.
Harris, Robert F.; and Wagener, Earl H., 4,240,982, Cl. 564-285.000.
Lefevre, Lloyd E.; and Wegenka, Mark A., 4,241,127, Cl. 428-177.000.
Marton, Henry J.; and Kurfman, Virgil B., 4,241,129, Cl. 428-216.000.

Dowa Mining Co. Ltd.: *See—*
Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, 4,241,039, Cl. 423-531.000.

Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., to Imperial Chemical Industries Limited. Cementitious compositions. 4,240,840, Cl. 106-93.000.

Doyle, Brent R., to Harris Corporation. Method of fabricating up diffused substrate FED logic utilizing a two-step epitaxial deposition. 4,240,846, Cl. 148-175.000.

Drabek, Jozef: *See—*
Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, 4,241,075, Cl. 424-273.00R.

Drake, Harlan. Citizens band radio receiver with squelch control. 4,241,453, Cl. 455-219.000.
Dresser Europe S.A.: *See—*
Schulz, Manfred, 4,240,475, Cl. 141-392.000.
Dresser Industries, Inc.: *See—*
Wetterhorn, Richard H., 4,240,298, Cl. 73-732.000.
Drews, Ulrich: *See—*
Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, 4,240,383, Cl. 123-492.000.
Drinkard, B. M., to Mobil Oil Corporation. Control system for the selective hydrogenation of acetylene present in ethylene product streams. 4,241,230, Cl. 585-259.000.
Drop, Paul A., Sr. Cooking with recipes through improved viewing machine or wall screen projection. 4,240,721, Cl. 353-74.000.
Drozdov, Nikolai I.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Dubief, Claude: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.
Duff, John: *See—*
Mahyera, Anil; and Duff, John, 4,240,664, Cl. 299-17.000.
Duke, James I. Combination commode construction. 4,240,168, Cl. 4-326.000.
Dumas, David H., to Hercules Incorporated. Ketene dimer paper sizing compositions. 4,240,935, Cl. 260-9.000.
Dunaev, Jury D.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.
Duni Bila AB: *See—*
Andersson, Karl G. B; Forsberg, Ulla I.; and Larka, Knut I., 4,240,482, Cl. 150-8.000.
Persson, Karl R., 4,240,576, Cl. 229-36.000.
Dunleavy, Raymond A., to Union Carbide Corporation. Novel polyester diols. 4,241,199, Cl. 525-445.000.
Dunlop Limited: *See—*
Moore, Alan F., 4,240,763, Cl. 403-203.000.
Wilcox, Brian L., 4,240,488, Cl. 152-361.0FP.
Dunn Instruments, Inc.: *See—*
Barney, Howard H., 4,240,729, Cl. 354-76.000.
Dunstan, Phillip E., to Boeing Company, The. Accelerating and decelerating handrail. 4,240,537, Cl. 198-334.000.
Du Pont de Nemours, E. I., and Company: *See—*
Bayless, John H., 4,241,170, Cl. 430-533.000.
Bingham, Richard C., 4,240,967, Cl. 260-343.450.
Boswell, George A., Jr.; and Henderson, Rosetta M., 4,241,065, Cl. 424-260.000.
Copelin, Harry B., 4,240,933, Cl. 252-455.00R.
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,240,374, Cl. 118-657.000.
Evans, Robert F., 4,240,695, Cl. 350-96.210.
Work, Ray A., III; and Pankratz, Richard P., 4,241,169, Cl. 430-532.000.
Dura-Bilt Products, Inc.: *See—*
Sickler, Raymond W., 4,240,615, Cl. 256-60.000.
Durbak, Taras; and Nersesian, Ara, to Bristol-Myers Company. Suspension composition of benzocaine. 4,241,048, Cl. 424-45.000.
Durney, Carl H.: *See—*
Iskander, Magdy F.; and Durney, Carl H., 4,240,445, Cl. 128-804.000.
Dyachkovsky, Fridrikh S.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.
E. R. Squibb & Sons, Inc.: *See—*
Hauck, Frederic P.; and Jacobs, Glenn A., 4,241,059, Cl. 424-248.580.
Ondetti, Miguel A.; and Sprague, Peter W., 4,241,076, Cl. 424-274.000.
Eagle-Picher Industries, Inc.: *See—*
Hayes, Richard H.; and Herrmann, Robert W., 4,241,300, Cl. 318-590.000.
Jurasek, Stanley J., 4,240,555, Cl. 206-511.000.
Eastman Kodak Company: *See—*
Boone, Arthur M., 4,241,392, Cl. 362-342.000.
Esders, Theodore W.; and Goodhue, Charles T., 4,241,178, Cl. 435-15.000.
Myers, Drewfus Y., Jr.; and Hawks, George H., III, 4,241,163, Cl. 430-213.000.
Webster, Frank G.; and Regan, Michael T., 4,241,157, Cl. 430-41.000.
Eaton Corporation: *See—*
Piber, Earl T.; and Pearson, Robert, 4,241,297, Cl. 318-17.000.
Ebert, Harry K., Jr., to Bell Telephone Laboratories, Incorporated. Circuit control to limit power drain of auxiliary power supply in UPS system. 4,241,261, Cl. 307-45.000.
Ecker, Alfred, to OMV Aktiengesellschaft. Polymeric compositions and process for their production. 4,240,949, Cl. 260-30.80R.
Edagawa, Setsuji: *See—*
Shibazaki, Hiroji; Edagawa, Setsuji; and Hasegawa, Hisashi, 4,240,870, Cl. 162-181.00A.
Edmondson, Ellena L. Liquid media clarifier. 4,240,906, Cl. 210-617.000.
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., to Du Pont de Nemours, E. I., and Company. Magnetic image decorator having rotating cylinders and knife blades associated therewith. 4,240,374, Cl. 118-657.000.
Edwards, Paul A. Circle swing. 4,240,623, Cl. 272-33.00R.
Edwards, Robert B.; and Jayne, Theodore D., to Nibco, Inc. Process of forming multi piece vaporizable pattern for foundry castings. 4,240,492, Cl. 164-34.000.
Efco, Inc.: *See—*
Korytko, Myron I., 4,240,778, Cl. 425-149.000.
EG & G Sealol, Inc.: *See—*
Trimble, Edward F., 4,240,610, Cl. 251-335.00B.
Eibner, Jules A., to Sperry Corporation. Data receiving and processing circuit. 4,241,455, Cl. 455-600.000.
Eich, Clarence C.: *See—*
Eisinger, Frantisek L.; Pratt, Harry H.; and Eich, Clarence C., 4,240,234, Cl. 52-26!.000.
Eiffinger, Karlheinz. Apparatus for retrieval and disposal of animal excrements. 4,240,656, Cl. 294-1.0BA.
Eisai Co., Ltd.: *See—*
Tagaya, Ryosaku; and Sugiyama, Tsugutoshi, 4,241,256, Cl. 250-223.00B.
Eisinger, Frantisek L.; Pratt, Harry H.; and Eich, Clarence C., to Foster Wheeler Energy Corporation. Adjustable buckstay system for vapor generators or the like. 4,240,234, Cl. 52-261.000.
Elder, William L., to Andros Incorporated. Synchronizing method and apparatus. 4,241,309, Cl. 328-115.000.
Electric Power Research Institute, Inc.: *See—*
Bahder, George; and Rabinowitz, Mario, 4,241,233, Cl. 174-15.00C.
Electro-Therm, Inc.: *See—*
Carnes, Donald W., 4,241,291, Cl. 219-536.000.
ELEX-AAF AG: *See—*
Frauenfelder, Alfred, 4,240,810, Cl. 55-143.000.
Elfi Elektrofilter AB: *See—*
Jacobsson, Bertil, 4,240,811, Cl. 55-143.000.
Elfotec A.G.: *See—*
Forgo, Gabor, 4,240,723, Cl. 355-3.0DD.
El Gammal, Tarek, to Foseco Trading A.G. Heat-insulating articles. 4,240,496, Cl. 164-138.000.
Eli Lilly and Company: *See—*
Bingham, Alpheus, Jr., 4,240,988, Cl. 260-989.000.
Ellis, Roger R.; Gertsen, W. Marvin; and Conley, Norman E., to Gates Learjet Corporation. Wing with improved leading edge for aircraft. 4,240,597, Cl. 244-35.00R.
Elsbernd, Carl A.; and Bricker, James C., to United Air Specialists, Inc. Electrostatic precipitator having traversing collector washing mechanism. 4,240,809, Cl. 55-118.000.
Endler, James F.: *See—*
Pitkjaan, Elam; and Endler, James F., 4,241,391, Cl. 362-267.000.
Endoh, Takao: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.
Energy Development Associates, Inc.: *See—*
Carr, Peter; and Chi, Chen H., 4,241,150, Cl. 429-51.000.
Energy for Independence, Inc.: *See—*
Ryerson, John D., 4,240,799, Cl. 23-232.00E.
Engel, Norbert: *See—*
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.
Engeler, William E.; and Baertsch, Richard D., to General Electric Company. Charge transfer dual frequency delay line with phase independent coupling. 4,241,263, Cl. 307-221.00D.
Engelhard Minerals & Chemicals Corporation: *See—*
Kaliski, Adam F.; Berube, Richard R.; and Nease, John C., 4,241,142, Cl. 428-511.000.
Enikolopov, Nikolai S.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.
Enomoto, Hiroshi: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.
Ensing, Hendrik, to Oce-Nederland B.V. Process for transferring a magnetizable developing powder in electrostatic image development. 4,241,161, Cl. 430-126.000.
Entron, Inc.: *See—*
Sears, Kay G., 4,241,372, Cl. 361-72.000.

Envirosol Systems International, Ltd.: *See—*
Vasishth, Ramesh C.; and Wang, Robert S., 4,240,940, Cl. 260-22.00R.
Epstein, Marvin A., to International Telephone and Telegraph Corporation. Secure spread spectrum communication system. 4,241,447, Cl. 375-1.000.
Equipment Technology Incorporated: *See—*
Smith, Ruslon J., 4,240,344, Cl. 101-44.000.
Erickson, Erick E.: *See—*
Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., 4,240,224, Cl. 46-88.000.
Erickson Tool Company: *See—*
Benjamin, Milton L.; and Beaver, David L., 4,240,207, Cl. 33-185.00R.
Erico Products, Inc.: *See—*
Golonka, Kenneth A., Sr.; and Spiegelberg, Gary, 4,241,285, Cl. 219-130.320.
Erie Technological Products, Inc.: *See—*
Dorrian, John F., 4,241,378, Cl. 361-305.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Longitudinally movable antifriction bearing with flexural tongue. 4,240,673, Cl. 308-6.00C.
Ernst, M. Eric, to Pivot Manufacturing Company. Car top carrier. 4,240,571, Cl. 224-310.000.
Ersek, Robert A.: *See—*
Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A., 4,240,794, Cl. 8-94.110.
ESAB Aktiebolag: *See—*
Hornell, Ake, 4,240,709, Cl. 350-335.000.
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., to International Business Machines Corporation. Method of fabricating random access memory device. 4,240,845, Cl. 148-1.500.
Esders, Theodore W.; and Goodhue, Charles T., to Eastman Kodak Company. Process and composition for the quantification of glycerol ATP and triglycerides. 4,241,178, Cl. 435-15.000.
Esquire, Inc.: *See—*
Pustka, Marvin J., 4,240,853, Cl. 156-108.000.
Etablissement declare d'Utilite Publique diti Institut Pasteur: *See—*
Avrameas, Stratis; and Guesdon, Jean-Luc, 4,241,176, Cl. 435-7.000.
Ethyl Corporation: *See—*
Desmond, Edwin A., Jr., 4,240,801, Cl. 44-57.000.
Kolich, Charles H., 4,241,034, Cl. 423-300.000.
Shepherd, Lawrence H., Jr., 4,240,985, Cl. 568-483.000.
Ettenberg, Michael: *See—*
Burke, William J.; Kressel, Henry; and Ettenberg, Michael, 4,241,423, Cl. 365-215.000.
Evangelista, John J.: *See—*
Bergman, Lee H.; Evangelista, John J.; and Herring, William M., 4,241,216, Cl. 560-99.000.
Evans, Donald J.: *See—*
Craemer, Robert H.; and Evans, Donald J., 4,240,856, Cl. 156-205.000.
Evans, Robert F. Method and apparatus for crushing and classifying particulate material. 4,240,586, Cl. 241-19.000.
Evans, Robert F. Positive lubricating and indexing bearing assembly. 4,240,674, Cl. 308-8.200.
Evans, Robert F., to Du Pont de Nemours, E. I., and Company. Optical fibers connector. 4,240,695, Cl. 350-96.210.
Evans, Wilbur F.: *See—*
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,240,819, Cl. 71-76.000.
Expert N.V.: *See—*
Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,240,245, Cl. 56-341.000.
Exxon Production Research Company: *See—*
Reed, Ronald L., 4,240,504, Cl. 166-273.000.
Exxon Research & Engineering Co.: *See—*
Anestos, Themos C., 4,241,357, Cl. 346-140.00R.
Gilbert, John B.; and Henry, H. Clarke, 4,240,900, Cl. 208-143.000.
Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,240,899, Cl. 208-120.000.
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,241,184, Cl. 435-148.000.
Rossi, Albert, 4,240,916, Cl. 252-56.00D.
Sartori, Guido; and Savage, David W., 4,240,922, Cl. 252-189.000.
Sartori, Guido; and Leder, Frederic, 4,240,923, Cl. 252-189.000.
Fabiani, Henri; and Bret, Alain. Continuous photosensitive support presenting a spatial lap dissolve, its application, a process for obtaining it and a device for implementing the process. 4,240,742, Cl. 355-46.000.
Fabrique d'Horlogerie de Fontainemelon S.A.: *See—*
Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, 4,241,436, Cl. 368-88.000.
Fahnenstich, Rudolf; Heese, Joachim; and Lewis, Dyfed, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Fodder for ruminants. 4,241,085, Cl. 424-319.000.
Faiveley S.A.: *See—*
Georgelin, Alexandre, 4,240,226, Cl. 49-223.000.
Falk, John C., to Borg-Warner Corporation. Cross-linked elastomeric polyester laticies. 4,240,947, Cl. 260-29.20E.
Familletti, Philip C.; Pestka, Sidney; and Rubinstein, Sara, to Hoffmann-La Roche Inc. Interferon assay. 4,241,174, Cl. 435-5.000.
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., to International Business Machines Corporation. Display apparatus. 4,241,343, Cl. 340-755.000.
Fan, Liang-Tseng: *See—*
Hulbert, Clarence E., Jr.; Fan, Liang-Tseng; and Akinc, Mufit, 4,240,952, Cl. 260-42.130.
Farag, Souly A.; Hayes, John E.; and Norman, Lloyd W., to U and I, Incorporated. Food supplement from vegetable pulp and method of preparing same. 4,241,093, Cl. 426-258.000.
Farin, William G., to MEI Systems Inc. Methods for the recovery of sulfur components from flue gas and recycle sodium sulfite by reduction-smelting and carbonating to strip hydrogen sulfide. 4,241,041, Cl. 423-563.000.
Farmer, Michael J., to Hydra Sponge Co., Inc. Windshield cleaning tool holder. 4,240,176, Cl. 15-121.000.
Farmer, Victor C., to National Research Development Corporation. Synthetic imogolite. 4,241,035, Cl. 423-327.000.
Farque, Anthony, to Body Guard, Inc. Personal security alarm. 4,241,332, Cl. 340-326.000.
Farr, Glyn P. R., to Girling Limited. Servo booster assemblies. 4,240,330, Cl. 91-369.00R.
Fassman, Arnold: *See—*
Byrne, Leroy H.; and Fassman, Arnold, 4,241,247, Cl. 200-61.410.
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of electrochemically processing metallic surfaces of workpieces. 4,240,888, Cl. 204-129.750.
Fausone, Alfredo; and Rivelli, Renato, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Circuit arrangement for establishing weighting coefficients in an analog-type adaptive equalizer. 4,241,320, Cl. 333-18.000.
Fauth, Gunter: *See—*
Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, 4,240,727, Cl. 354-25.000.
Faxon, Robert L. Mist spray apparatus for air conditioner condenser. 4,240,265, Cl. 62-171.000.
Fedde, Mickiel P.: *See—*
De Ward, Robert C.; Kaminski, David G.; and Fedde, Mickiel P., 4,241,401, Cl. 364-200.000.
Feedback Limited: *See—*
Strand, Thomas J., 4,241,238, Cl. 179-5.500.
Fehr, Werner, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Temperature dependent electronic control switch. 4,240,580, Cl. 236-49.000.
Feighery, James M. Log lifter. 4,240,657, Cl. 294-11.000.
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., to Westinghouse Electric Corp. Reducing the switching time of semiconductor devices by neutron irradiation. 4,240,844, Cl. 148-1.500.
Felice, Patrick E.: *See—*
Petrie, Edward M.; Seidel, John G.; and Felice, Patrick E., 4,240,992, Cl. 264-21.000.
Ferran, Michel: *See—*
Cohen, Joseph; Adjemian, Alain; and Ferran, Michel, 4,241,030, Cl. 423-126.000.
Ferrantini, Salvatore, to Carborundum Company, The. Throw-away adaptors for grinding wheels. 4,240,230, Cl. 51-168.000.
Ferro Corporation: *See—*
Votava, Werner F.; and Wonnacott, Thomas W., 4,240,837, Cl. 106-48.000.
Fesco, John E., to Studley Paper Company, Inc. Reinforced vacuum cleaner filter bag. 4,240,813, Cl. 55-381.000.
Feuerbaum, Hans P.; and Otto, Johann, to Siemens Aktiengesellschaft. Scanning electron microscope. 4,241,259, Cl. 250-457.000.
Fiat Societa per Azioni: *See—*
Martinengo, Pier C.; and Carughi, Carlo, 4,241,113, Cl. 427-229.000.
Fiat Veicoli Industriali S.p.A.: *See—*
Denaldi, Ermanno; and Rolfo, Gian P., 4,240,305, Cl. 74-493.000.
Fiedler, Hans, to Karl Mayer Textilmaschinenfabrik GmbH. Eyelet bar arrangement for jacquard equipped warp knitting machines. 4,240,275, Cl. 66-203.000.
Field, Andrew S. Inflatable package and method of manufacture. 4,240,556, Cl. 206-522.000.
Figge, Irving E., to United States of America, Army. Structural cores and their fabrication. 4,241,117, Cl. 428-35.000.
Filippov, Dmitry A.: *See—*
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.
Filtrol Corporation: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,240,932, Cl. 252-455.00Z.
Fiquet, Claire: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.
Firetek Corporation: *See—*
Cholin, John M., 4,241,258, Cl. 250-372.000.
Fischer, Karl O. P. Process for treatment of bagasse for the production of oil binders. 4,240,800, Cl. 44-51.000.
Fish, Leonard A.; and Fiterman, Charles E., to Bank Computer Network Corporation. Disk data control. 4,241,420, Cl. 364-900.000.
Fisher, Yale: *See—*
Pickering, Norman C.; and Fisher, Yale, 4,240,410, Cl. 128-1.500.
Fisler, Charles F., to General Electric Company. Brightness control circuit for a vacuum fluorescent display. 4,241,294, Cl. 315-291.000.

Fiterman, Charles E.: *See—*
Fish, Leonard A.; and Fiterman, Charles E., 4,241,420, Cl. 364-900.000.

Flamand, Guy; and Gregoire, Jean-Francois, to Carnaud Total Interplastic. Process for manufacture of hollow bodies. 4,241,008, Cl. 264-529.000.

Flanigen, Edith; and Kellberg, Elsa R., to Union Carbide Corporation. Synthetic crystalline zeolite and process for preparing same. 4,241,036, Cl. 423-328.000.

Flickinger, William T.; and Staiger, Donald W., to HPM Corporation. Injection molding machine having dual tonnage traversing cylinder. 4,240,781, Cl. 425-450.100.

Flora, Laurence P.; and Wiener, Daniel P., to Burroughs Corporation. Binary adder employing a plurality of levels of individually programmed PROMS. 4,241,414, Cl. 364-786.000.

Fluorocarbon Company, The: *See—*
Torbet, Christopher J., 4,241,104, Cl. 427-113.000.

Folland, Roy E. Clinical mirror heating device. 4,241,290, Cl. 219-518.000.

Folsom, Robert M.: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.

Forch, Hans: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,240,643, Cl. 277-164.000.

Ford, Alan A., to Kirsch Company. Shade for recreational vehicle. 4,240,490, Cl. 160-133.000.

Ford Motor Company: *See—*
Chattha, Mohinder S., 4,241,196, Cl. 525-161.000.
Schmatz, Duane J.; and Winterbottom, Walter L., 4,240,574, Cl. 228-217.000.
Simko, Aladar O.; and Schechter, Michale M., 4,240,395, Cl. 123-445.000.

Forgo, Gabor, to Elfotec A.G. Process for electrographic image production and an apparatus for carrying out this process. 4,240,723, Cl. 355-3.0DD.

Forsberg, Ulla I.: *See—*
Andersson, Karl G. B; Forsberg, Ulla I.; and Larka, Knut I., 4,240,482, Cl. 150-8.000.

Foseco Trading A.G.: *See—*
El Gammal, Tarek, 4,240,496, Cl. 164-138.000.

Foslien, Floyd L., to Minnesota Mining and Manufacturing Company. Hand crimping tool. 4,240,280, Cl. 72-410.000.

Foster Wheeler Energy Corporation: *See—*
Bryers, Richard W.; and Taylor, Thomas E., 4,240,364, Cl. 110-347.000.
Eisinger, Frantisek L.; Pratt, Harry H.; and Eich, Clarence C., 4,240,234, Cl. 52-261.000.

Fourcadier, Chantal: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.

Fowler, Joe W. Heating system and method utilizing recoverable engine heat. 4,240,581, Cl. 237-12.100.

Framatome: *See—*
Millot, Jean-Paul, 4,240,874, Cl. 176-22.000.

Franchina, Antonino. Heat pump having a timer activated furnace. 4,240,404, Cl. 126-427.000.

Franke, Albrecht: *See—*
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.

Frankland, James D., Jr., to New Castle Industries, Inc. Injection molding screw for processing heat sensitive polymeric materials. 4,240,755, Cl. 366-88.000.

Frantzen, John J., to Minnesota Micro Metal, Inc. Abrading material. 4,240,806, Cl. 51-295.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,240,352, Cl. 104-12.000.

Frauenfelder, Alfred, to ELEX-AAF AG. Collecting electrode plate assembly. 4,240,810, Cl. 55-143.000.

French, Richard W.: *See—*
D'Antonio, Nicholas F.; Bates, Richard L.; and French, Richard W., 4,240,288, Cl. 73-141.00A.

French, Roger F. Solar water heater. 4,240,405, Cl. 126-433.000.

Frenette, Remi. Die casting machine for forming internally-threaded articles. 4,240,498, Cl. 164-303.000.

Frenken, Hans: *See—*
Wilke, Werner; Gref, Hans; and Frenken, Hans, 4,241,023, Cl. 422-187.000.

Freudenberg, Steffen: *See—*
Hasler, Franz; Watzold, Peter; and Freudenberg, Steffen, 4,240,227, Cl. 49-348.000.

Frickel, Fritz-Frieder: *See—*
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Bankstahl, Norbert, 4,240,462, Cl. 137-377.000.

Friel, Ronald N.: *See—*
Datta, Pabitra; and Friel, Ronald N., 4,241,120, Cl. 428-65.000.

Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., to Union Carbide Agricultural Products, Inc. Method for the inhibition of plant growth. 4,240,819, Cl. 71-76.000.

Fugner, Armin: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, 4,241,168, Cl. 430-503.000.
Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, 4,241,111, Cl. 427-211.000.
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,241,154, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, 4,241,155, Cl. 430-17.000.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, 4,241,164, Cl. 430-264.000.
Tadokoro, Eiichi; and Kitamoto, Tatsuji, 4,241,368, Cl. 360-128.000.

Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo, 4,241,279, Cl. 315-151.000.

Fujibayashi, Kazuo, to Canon Kabushiki Kaisha. Five element photographic objective. 4,240,705, Cl. 350-220.000.

Fujii, Motoharu: *See—*
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.

Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.

Fujisawa, Hideya: *See—*
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.

Fujisawa, Hiroshi: *See—*
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,241,057, Cl. 424-246.000.

Fujita, Hiro; and Tsuzuki, Akira, to Citizen Watch Co., Ltd. Electronic timepiece oscillator circuit. 4,241,435, Cl. 368-85.000.

Fujita, Kanji: *See—*
Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, 4,240,653, Cl. 285-235.000.

Fujitsu Limited: *See—*
Kasai, Yoshihiko; Gounji, Takashi; and Katsube, Yoshio, 4,241,321, Cl. 333-198.000.
Yatsuka, Hiroyuki; and Isogai, Yasuhiro, 4,241,348, Cl. 343-17.500.

Fujitsu Ten Limited: *See—*
Yatsuka, Hiroyuki; and Isogai, Yasuhiro, 4,241,348, Cl. 343-17.500.

Fukuda, Tadaji; and Misumi, Teruo, to Canon Kabushiki Kaisha. Vacuum deposited electrophotographic photosensitive member. 4,241,158, Cl. 430-86.000.

Fukui, Seiji, to Shimano Industrial Company, Limited. Coaster brake hub with a gear-transmission. 4,240,533, Cl. 192-6.00A.

Fukui, Yoshitake: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.

Fukumi, Hirokazu: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,240,376, Cl. 119-2.000.

Fulghum Industries, Inc.: *See—*
Fulghum, Oscar T., Jr., 4,240,588, Cl. 241-80.000.

Fulghum, Oscar T., Jr., to Fulghum Industries, Inc. Wood chipping installation. 4,240,588, Cl. 241-80.000.

Fuller, Ronald G. Cavitation compensating propeller nozzle or duct. 4,240,251, Cl. 60-221.000.

Funada, Fumiaki: *See—*
Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, 4,240,710, Cl. 350-339.00R.

Furlong, Owen D.; and Thring, Robin H., to Normalair-Garrett (Holdings) Limited. Breathable gas delivery regulators. 4,240,419, Cl. 128-204.230.

Furman, Anatoly V. Switching device. 4,241,267, Cl. 307-239.000.

Furst, Leander: *See—*
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,240,888, Cl. 204-129.750.

Furutachi, Nobuo: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, 4,241,168, Cl. 430-503.000.

Futaba Denshi Kogyo Kabushiki Kaisha: *See—*
Morimoto, Kiyoshi; and Watanabe, Hiroshi, 4,241,281, Cl. 315-161.000.

G. P. Worsley & Company Limited: *See—*
Worsley, Gilbert P., 4,240,541, Cl. 198-518.000.

Gaafar, Hassan A., to Research Corporation. Purified antigen to test for *Neisseria gonorrheae* antibodies. 4,241,045, Cl. 424-1.000.

Gabb, Philip J.; Monk, Hayden; and Lumsden, John, to Mineral Process Licensing Corporation BV. Reduction of ferric chloride. 4,241,038, Cl. 423-493.000.

Gabrick, Albert. Solder mask composition. 4,240,945, Cl. 260-21.000.

GAF Corporation: *See—*
Burwasser, Herman, 4,241,134, Cl. 428-331.000.

Gagliani, John, to International Harvester Company. Polyimides. 4,241,114, Cl. 427-370.000.

Gagliani, John, to International Harvester Company. Polyimides. 4,241,193, Cl. 521-77.000.

Galileo Electro-Optics Corp.: *See—*
Hambor, John G.; and Bickel, James G., 4,241,360, Cl. 357-56.000.

Galin, Miles A. Medicament coated intraocular lens. 4,240,163, Cl. 3-13.000.

Galowin, Lawrence S.: *See—*
Rakowsky, Edward L.; and Galowin, Lawrence S., 4,240,257, Cl. 60-531.000.

Gambro AB: *See—*
Andersson, Roland J. E.; Olsson, Lars-Goran; and Paulsson, Bengt G., 4,240,291, Cl. 73-861.050.

Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, to Metallgesellschaft Aktiengesellschaft. Processing aqueous effluent liquors from degasification or gasification of coal. 4,240,808, Cl. 55-48.000.

Garden, Lorne J.: *See—*
Horn, James N.; and Garden, Lorne J., 4,240,477, Cl. 144-245.00R.

Gardner, James J., to Nordson Corporation. Pump. 4,240,567, Cl. 222-146.0HE.

Garling, David L.: *See—*
Buckler, Robert T.; Ward, Frederick E.; and Garling, David L., 4,241,069, Cl. 424-263.000.

Garner, Derek H., to USM Corporation. Shoe upper conforming machine. 4,240,172, Cl. 12-14.500.

Garwin, Richard L.: *See—*
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., 4,241,343, Cl. 340-755.000.

Gasser, Francois W.: *See—*
Hanus, Judith, 4,240,413, Cl. 128-79.000.

Gates Learjet Corporation: *See—*
Ellis, Roger R.; Gertsen, W. Marvin; and Conley, Norman E., 4,240,597, Cl. 244-35.00R.

Gates Rubber Company, The: *See—*
McPhee, Donald J.; and Gray, Herbert W., 4,240,782, Cl. 425-467.000.
Uba, Toshio, 4,241,151, Cl. 429-94.000.

Gausmann, Hans: *See—*
Tausch, Walter; and Gausmann, Hans, 4,240,752, Cl. 356-436.000.

Gavrilov, Jury A.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Gebruder Junghans GmbH: *See—*
King, Josef, 4,241,440, Cl. 368-204.000.

Gebruder Welger: *See—*
Simonis, Jurgen, 4,240,339, Cl. 100-5.000.

Gehl Company: *See—*
Martin, Virgil B., 4,240,244, Cl. 56-16.400.

Gelsing, Winfried, to Oschatz GmbH. Welded integral tube wall for electric steel-smelting furnace. 4,241,232, Cl. 13-32.000.

Gemini Seals, Inc.: *See—*
Busto, Jerry T., 4,240,644, Cl. 277-194.000.

General Atomic Company: *See—*
Hery, Thomas A.; and Getchen, John G., 4,241,330, Cl. 340-147.00R.

General Binding Corporation: *See—*
Staats, Henry N., 4,241,006, Cl. 264-322.000.

General Dynamics Corporation, Pomona Division: *See—*
Winderman, Jay B.; and Schmid, Hans-Peter, 4,240,596, Cl. 244-3.160.

General Electric Company: *See—*
Bowers, Harry J., 4,241,387, Cl. 362-252.000.
Bowling, Teamus, 4,241,289, Cl. 219-450.000.
Brammerlo, Allen A., 4,241,274, Cl. 310-259.000.
Burke, Hubert K.; and Michon, Gerald J., 4,241,421, Cl. 365-183.000.
Crepeau, Charles E.; and Mulvey, Robert F., 4,240,839, Cl. 106-88.000.
Crivello, James V., 4,241,204, Cl. 526-333.000.
DePuy, Robert P., 4,241,410, Cl. 364-715.000.
Engeler, William E.; and Baertsch, Richard D., 4,241,263, Cl. 307-221.00D.
Fisler, Charles F., 4,241,294, Cl. 315-291.000.
Hatch, Burton D., 4,241,273, Cl. 310-219.000.
Huseby, Irvin C., 4,240,828, Cl. 75-135.000.
Jablonski, Richard J.; and Pauze, Denis R., 4,240,941, Cl. 260-29.2TN.
Kiefer, George E., 4,241,400, Cl. 364-400.000.
Ladusaw, William T., 4,240,774, Cl. 418-248.000.
Laskow, William; and Morelock, Charles R., 4,240,835, Cl. 106-44.000.
Lee, Minyoung; Szala, Lawrence E.; and DeVries, Robert C., 4,241,135, Cl. 428-332.000.
Marshall, Robert A., 4,241,272, Cl. 310-219.000.
Prada, Luis E., 4,241,337, Cl. 340-547.000.
Quick, Marshall K., 4,241,264, Cl. 307-221.00D.
Quinn, Clayton B.; Reinitz, Clayton W.; and Hilakos, William, 4,240,968, Cl. 260-345.200.
Sargisson, Donald F.; and Harris, Vivian G., 4,240,252, Cl. 60-262.000.
Steigerwald, Robert L., 4,241,250, Cl. 219-10.49R.

General Foam Products Limited: *See—*
Sheldon, Neville M.; and Stern, Alfred, 4,241,189, Cl. 521-50.000.

General Foods Corporation: *See—*
Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., 4,241,092, Cl. 426-96.000.

General Motors Corporation: *See—*
Harlow, John H., Jr.; and Maywood, Joseph, 4,240,517, Cl. 180-295.000.
Smith, Stanley E., 4,240,366, Cl. 112-121.240.
Vonnegut, George L., 4,240,495, Cl. 164-125.000.

General Signal Corporation: *See—*
Kurbikoff, Peter A., 4,240,686, Cl. 339-14.00R.

Gensthaler, Edmund: *See—*
Giebler, Fritz; and Gensthaler, Edmund, 4,241,333, Cl. 340-365.00S.

Georgelin, Alexandre, to Faiveley S.A. Guiding and actuating device for a sliding door. 4,240,226, Cl. 49-223.000.

Georgia Tech Research Institute: *See—*
Carstens, Marion R., 4,240,768, Cl. 406-19.000.

Geosource Inc.: *See—*
Laird, Christopher B., 4,241,354, Cl. 346-43.000.

Gerlivanov, Evgeny V.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Gertsen, W. Marvin: *See—*
Ellis, Roger R.; Gertsen, W. Marvin; and Conley, Norman E., 4,240,597, Cl. 244-35.00R.

Getchen, John G.: *See—*
Hery, Thomas A.; and Getchen, John G., 4,241,330, Cl. 340-147.00R.

GF Business Equipment, Inc.: *See—*
Terlecki, Leo, 4,240,685, Cl. 312-217.000.

Gibson, Kirk R.; Jacobson, Robert L.; and Michlmayr, Manfred J., to Chevron Research Company. Isomerization process for upgrading low-octane light paraffinic feeds using a chlorided platinum-alumina-rhenium catalyst. 4,241,231, Cl. 585-748.000.

Gibson, Rodney W.; and Wells, Raymond, to U.S. Philips Corporation. Automatic frequency control system. 4,241,452, Cl. 455-203.000.

Giddings & Lewis, Inc.: *See—*
Chwae, John C., 4,240,232, Cl. 51-356.000.

Giebler, Fritz; and Gensthaler, Edmund, to Siemens Aktiengesellschaft. Key-operated arrangement for producing code characters. 4,241,333, Cl. 340-365.00S.

Gilbert, John B.; and Henry, H. Clarke, to Exxon Research & Engineering Co. Process for the hydrogenation of olefins and aromatic compounds. 4,240,900, Cl. 208-143.000.

Gilbert, Richard, to Stanley Tools Limited. Replaceable blade knife. 4,240,202, Cl. 30-162.000.

Gilberts, Alexander G., to Reliable Electric Company. Surge voltage arrester with ventsafe feature. 4,241,374, Cl. 361-124.000.

Gillespie, Andrew J., to Philip Morris Incorporated. Rotary cutting knife mounting. 4,240,313, Cl. 83-343.000.

Gilliams, Yvan K.: *See—*
Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., 4,241,159, Cl. 430-114.000.

Gilliland, Elbert G. Flush valve control apparatus. 4,240,167, Cl. 4-324.000.

Ginger, Edward A.; and deRosset, Armand J., to UOP Inc. Process for the separation of sulfur oxides from a gaseous mixture containing sulfur oxides and oxygen. 4,241,033, Cl. 423-244.000.

Girardier, Raymond, to Cotuplas S.A., Zone industrielle. Gripping means for machine for filling and closing flexible tubes. 4,240,238, Cl. 53-373.000.

Girgensohn, Bjoern: *See—*
Linhart, Friedrich; Girgensohn, Bjoern; and Zeeh, Bernd, 4,240,973, Cl. 260-453.0RW.

Girling Limited: *See—*
Farr, Glyn P. R., 4,240,330, Cl. 91-369.00R.

Giroflex Entwicklungs AG: *See—*
Locher, Hermann, 4,240,663, Cl. 297-239.000.

Givens, Wyatt W.: *See—*
Allen, Linus S.; Givens, Wyatt W.; and Mills, William R., Jr., 4,241,253, Cl. 250-390.000.

Gladieux, Dennis M., to International Harvester Company. Hose end coupling unit. 4,240,654, Cl. 285-276.000.

Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., to Exxon Research & Engineering Co. Sulfur transfer process in catalytic cracking. 4,240,899, Cl. 208-120.000.

Gladwin, Keith, to Coalite and Chemical Products Limited. Preparation and dehydrogenation of cycloalkanol derivatives. 4,241,225, Cl. 568-652.000.

Glatz, Alfred C.: *See—*
Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., 4,241,092, Cl. 426-96.000.

Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A. Vacuum metal die-casting apparatus. 4,240,497, Cl. 164-158.000.

Godde, Franz: *See—*
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.

Goeth, Hanns: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.

Golay, Philippe: *See—*
Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, 4,241,436, Cl. 368-88.000.

Goldenberg, J. Melvyn, to Proll Molding Company. Keyboard assembly for toy musical instruments. 4,240,321, Cl. 84-433.000.

Golonka, Kenneth A., Sr.; and Spiegelberg, Gary, to Erico Products, Inc. Power supply for SMAW welding and stud welding. 4,241,285, Cl. 219-130.320.

Gomberg, Edward N.; and Somesla, Dana W., to Synair Corporation. Method of bonding urethane formulations to rubber. 4,240,852, Cl. 156-96.000.

Gomi, Shimpei, to Union Carbide Corporation. Process for producing high quality pitch. 4,240,898, Cl. 208-40.000.

Goodhue, Charles T.: *See—*
Esders, Theodore W.; and Goodhue, Charles T., 4,241,178, Cl. 435-15.000.

Goodyear Tire & Rubber Company, The: *See—*
Kuczkowski, Joseph A., 4,241,217, Cl. 560-152.000.
Lal, Joginder; and Sandstrom, Paul H., 4,240,487, Cl. 152-355.000.
Schmit, Georges J. E.; and Welter, Thomas N. H., 4,240,486, Cl. 152-330.00R.

Gora, Bernhard: *See—*
Kremer, Paul; Gora, Bernhard; and Klinger, Ludwig, 4,241,124, Cl. 428-156.000.

Gorbachev, Jury G.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.

Gordon, Mack. Welding helmet lens assembly. 4,241,286, Cl. 219-147.000.

Goswami, Jagadish C., to Stauffer Chemical Company. Process for making cellular polyvinyl chloride products and products thereof. 4,241,192, Cl. 521-73.000.

Gotaverken Anteknik AB: *See—*
Sjoholm, Bertil H., 4,241,287, Cl. 219-161.000.

Goto, Atsuo, to Olympus Optical Co., Ltd. Objective for video disks. 4,240,704, Cl. 350-220.000.

Goudie, Alexander C.: *See—*
Cassidy, Frederick; and Goudie, Alexander C., 4,241,074, Cl. 424-273.00R.

Gounji, Takashi: *See—*
Kasai, Yoshihiko; Gounji, Takashi; and Katsube, Yoshio, 4,241,321, Cl. 333-198.000.

Gracia, Bert E., to Brown & Root, Inc. Valving methods and apparatus for flooding and grouting offshore jacket sleeves. 4,240,767, Cl. 405-227.000.

Grain Processing Corporation: *See—*
Witt, Paul R.; and Harvey, Richard D., 4,241,183, Cl. 435-95.000.

Granda, Edward J.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.

Grande, Per-Olof. Flow meter. 4,240,294, Cl. 73-861.47R.

Grantham, James I., to Certek, Inc. Apparatus for biological decontamination and subsequent neutralization of a space. 4,241,020, Cl. 422-109.000.

Granum, Gregory M.: *See—*
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., 4,241,094, Cl. 426-324.000.

Graser, Fritz, to BASF Aktiengesellschaft. Preparation of a high-hiding and deeply colored pigmentary form of perylene-3,4,9,10-tetracarboxylic acid bis-(4'-ethoxyphenyl)-imide. 4,240,793, Cl. 8-594.000.

Gray, Adrian L., to Tempra Therm Limited. Thermocouples. 4,241,003, Cl. 264-254.000.

Gray, Herbert W.: *See—*
McPhee, Donald J.; and Gray, Herbert W., 4,240,782, Cl. 425-467.000.

Gray, Thomas J., to Olin Corporation. Raney alloy coated cathode for chlor-alkali cells. 4,240,895, Cl. 204-290.00R.

Grayson, Joel, IV; and Kahle, Donald P., to Bio-Lab, Inc. Chlorinator. 4,241,025, Cl. 422-263.000.

Great Western Sugar Company, The: *See—*
Stein, Brooks M.; and Linden, James C., 4,241,185, Cl. 435-188.000.

Green, Leland D., to United States of America, Air Force. Imagery with constant range lines. 4,240,745, Cl. 356-5.000.

Green, Stanley, to Lucas Industries Limited. High contrast lamp assembly. 4,241,388, Cl. 362-268.000.

Gref, Hans: *See—*
Wilke, Werner; Gref, Hans; and Frenken, Hans, 4,241,023, Cl. 422-187.000.

Gregoire, Jean-Francois: *See—*
Flamand, Guy; and Gregoire, Jean-Francois, 4,241,008, Cl. 264-529.000.

Gregoric, Bran F. Spoked wheel. 4,240,483, Cl. 152-75.000.

Greubel, Waldemar: *See—*
Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, 4,240,711, Cl. 350-345.000.

Grevich, John J.; and Denker, Stanley D., to Nordson Corporation. Bag making machine. 4,240,336, Cl. 493-196.000.

Grey, Charles M.: *See—*
Sullivan, James J.; and Grey, Charles M., 4,240,242, Cl. 53-471.000.

Griffin, Andrew J.: *See—*
Andresen, Richard P.; Armington, Robert M.; Cannon, Robert L., III; and Griffin, Andrew J., 4,240,442, Cl. 128-708.000.

Griffin, Edward L.; and Young, Frederick A., to Hughes Aircraft Company. Reflective dual mode filter. 4,241,323, Cl. 333-209.000.

Griffiths, Edward E. Valve operating system. 4,240,304, Cl. 74-471.00R.

Groch, Mark W.; and Lewis, George K., to Siemens Gammasonics, Inc. Method and apparatus for nuclear kymography providing a motion versus time display of the outer transverse dimensions of an organ. 4,240,440, Cl. 128-654.000.

Grohoski, Raymond J., to Timex Corporation. Timepiece with shaped components. 4,241,442, Cl. 368-294.000.

Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, to L'Oreal. Composition and process for the treatment of keratin materials with polymers. 4,240,450, Cl. 132-7.000.

Gross-Given Manufacturing Company: *See—*
Lennartson, Douglas G., 4,240,563, Cl. 221-75.000.

Gross, Glenn M., to Norlin Industries, Inc. Portamento and glide tone generator having multimode clock circuit. 4,240,318, Cl. 84-1.010.

Gross, Glenn M., to Norlin Industries, Inc. High resolution fractional divider. 4,241,408, Cl. 364-703.000.

Grothe, Wolfgang: *See—*
Brill, Klaus; and Grothe, Wolfgang, 4,241,356, Cl. 346-135.100.

Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I. Wire stranding machine. 4,240,246, Cl. 57-58.300.

Grudzinskas, Charles V.; and Weiss, Martin J., to American Cyanamid Company. Novel 11-deoxy-substituted prostaglandins of the E and F series. 4,241,221, Cl. 562-470.000.

Gruter, Otto, to Siemens Aktiengesellschaft. Series-parallel-series charge transfer memory having complete bias charge operation. 4,241,422, Cl. 365-183.000.

GTE Lenkurt Electric (Canada) Ltd.: *See—*
Ball, Edward T., 4,241,243, Cl. 179-170.00J.

GTE Products Corporation: *See—*
Wyner, Elliot F.; and Daignault, Alan J., 4,241,276, Cl. 313-487.000.

Gudea, Dumitru: *See—*
Sookikian, Dennis M.; and Gudea, Dumitru, 4,241,407, Cl. 364-567.000.

Guesdon, Jean-Luc: *See—*
Avrameas, Stratis; and Guesdon, Jean-Luc, 4,241,176, Cl. 435-7.000.

Guest, Ian G.: *See—*
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,066, Cl. 424-260.000.
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,067, Cl. 424-260.000.

Guilino, Gunter; and Barth, Rudolf, to Optisch Werke G. Rodenstock. Progressive ophthalmic lens. 4,240,719, Cl. 351-169.000.

Gunzel, Peter: *See—*
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, 4,240,418, Cl. 128-203.150.

Gustafson, Karl A., to SCA Development Aktiebolag. Steam treating method and system. 4,240,260, Cl. 60-670.000.

Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, to Xerox Corporation. Imaging system of discontinuous layer of migration material. 4,241,156, Cl. 430-41.000.

Habara, Hideaki: *See—*
Tanaka, Yoshihiko; Sugimori, Teruhiko; and Habara, Hideaki, 4,241,007, Cl. 264-324.000.

Haeder, Wolfgang, to Siemens Aktiengesellschaft. Cable fitting of shrinkable material with a permanent plastic sealing insert. 4,241,234, Cl. 174-92.000.

Hagler, James D.: *See—*
Odom, William, 4,241,326, Cl. 340-33.000.

Haglund, Mats T. Arrangement for guiding a bore-crown or bit along a given path. 4,240,512, Cl. 175-75.000.

Hagmann, Peter; and Markun, Lovro, to Oehler-Whylen-Lagertechnik AG. Vertical conveying apparatus. 4,240,529, Cl. 187-90.000.

Hagstrom, Jon; Ahl, Thomas J.; and Vasilion, James S., to Chicago Bridge & Iron Company. Flanged connection for pressure vessel. 4,240,561, Cl. 220-3.000.

Hahn, Guerry L.; and Baker, Gerald S., to Cameron Iron Works, Inc. Flow control apparatus. 4,240,609, Cl. 251-282.000.

Hahn, Walter: *See—*
Stolz, Robert; and Hahn, Walter, 4,240,681, Cl. 308-189.00R.

Halcon Research and Development Corp.: *See—*
Khoobiar, Sargis, 4,240,930, Cl. 252-435.000.
Wan, Chee-Gen, 4,241,219, Cl. 560-232.000.

Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., to General Foods Corporation. Gasified candy dispersed in a matrix of sorbitol. 4,241,092, Cl. 426-96.000.

Hall, Dale E., to International Nickel Co., Inc., The. Process of water electrolyis. 4,240,887, Cl. 204-129.000.

Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Use for preparing smoking tobacco compositions of spiropyran derivatives. 4,240,447, Cl. 131-9.000.

Hall, John B.: *See—*
Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., 4,241,097, Cl. 426-536.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.

Hallerback, Stig L.; and Lachonius, Leif, to Aktiebolaget SKF. Feeding and mixing nozzle and method for mixing liquid resin mixtures and feeding it into molds by centrifugal force. 4,240,777, Cl. 425-130.000.

Halsey, Dave R.: *See—*
Smith, William P.; and Halsey, Dave R., 4,240,766, Cl. 404-10.000.

Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, to Fuji Photo Film Co., Ltd. Process for consecutively coating both sides of web. 4,241,111, Cl. 427-211.000.

Hamano, Yoshiteru, to Kyoto Ceramic Kabushiki Kaisha. Detection element for determining oxygen content and detector for determining oxygen content using the same. 4,240,893, Cl. 204-195.00S.

Hambor, John G.; and Bickel, James G., to Galileo Electro-Optics Corp. Series capacitor voltage multiplier circuit with top connected rectifiers. 4,241,360, Cl. 357-56.000.

Hammond, Joseph, to United States of America, Navy. Vehicle launching device. 4,240,599, Cl. 244-63.000.

Hamsag, Ernest E., to Saft-Societe des Accumulateurs Fixes et de Traction. Method for sealing a primary cell. 4,240,197, Cl. 29-623.200.

Hanaoka, Yutaka: *See—*
Wakana, Teruo; Okubo, Kunio; and Hanaoka, Yutaka, 4,241,100, Cl. 426-598.000.

Hanifin, John W.; and Ridge, David N., to American Cyanamid Company. β-Oxo-3-thiophenepropionitrile and β-amino-2-(3)-thiophenea-crylonitriles. 4,241,077, Cl. 424-275.000.

Hanna, Samuel Y., to Centronics Data Computer Corp. Fanfold replacement ribbon package. 4,240,757, Cl. 400-196.100.

Hannah, John, to Merck & Co., Inc. Antibacterial penicillins. 4,241,062, Cl. 424-251.000.

Hannemann, Horst: *See—*
Regehr, Ulrich; Hannemann, Horst; and Speitkamp, Ludwig, 4,240,814, Cl. 55-423.000.

Hansen, Elmer K. Tool mounting assembly for soil tilling implement. 4,240,509, Cl. 172-269.000.

Hanus, Judith, to Gasser, Francois W. Erection holder. 4,240,413, Cl. 128-79.000.

Hara, Hiroshi; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method of stabilizing organic substrates against the action of light. 4,241,154, Cl. 430-17.000.

Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, to Fuji Photo Film Co., Ltd. Method for stabilizing organic substrates including photographic dye images against light. 4,241,155, Cl. 430-17.000.

Harada, Shuichi: *See—*
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, 4,241,070, Cl. 424-267.000.

Haraguchi, Keisuke: *See—*
Nomura, Katsuhiko; and Haraguchi, Keisuke, 4,240,734, Cl. 354-173.000.

Harbison, William H.; and Mohnach, Michael G., to Anderson Company of Indiana, The. Connector for windshield wiper blade. 4,240,177, Cl. 15-250.320.

Harlow, John H., Jr.; and Maywood, Joseph, to General Motors Corporation. Powertrain and independent suspension mounting arrangement for front-wheel-drive vehicle. 4,240,517, Cl. 180-295.000.

Harmer, Alan L., to Battelle Memorial Institute. Refractive-index responsive light-signal system. 4,240,747, Cl. 356-133.000.

Harper-Wyman Company: *See—*
Huff, Norman M., 4,240,458, Cl. 137-315.000.

Harrigan, Richard V., to Niagara Envelope Co. Inc. Locking envelope. 4,240,577, Cl. 229-76.000.

Harris, Alfred W., to Boeing Company, The. Noise reducing air inlet for gas turbine engines. 4,240,250, Cl. 60-39.09D.

Harris Communications: *See—*
Pan, Jing-Jong, 4,240,694, Cl. 350-96.160.

Harris Corporation: *See—*
Doyle, Brent R., 4,240,846, Cl. 148-175.000.
Hawkes, Richard B.; Hobbs, John N.; and Schuerman, Terry J., 4,240,538, Cl. 198-358.000.
Held, Richard E., 4,240,327, Cl. 91-176.000.
Hobbs, John N.; and Hawkes, Richard B., 4,240,540, Cl. 198-492.000.
Landis, Earl M.; Roberts, Webster C.; and Crum, James N., 4,240,346, Cl. 101-139.000.
Patterson, Raymond B., III; and Wood, Grady M., 4,241,315, Cl. 330-261.000.
Raney, Meredith T., Jr., 4,241,340, Cl. 340-731.000.
Snell, James L.; and Cobb, Raymond F., 4,241,454, Cl. 455-260.000.

Harris, Robert F.; and Wagener, Earl H., to Dow Chemical Company, The. Novel onium surfactants. 4,240,982, Cl. 564-285.000.

Harris, Vivian G.: *See—*
Sargisson, Donald F.; and Harris, Vivian G., 4,240,252, Cl. 60-262.000.

Harry Major Machine & Tool Co.: *See—*
Wiknich, Douglas D., 4,240,542, Cl. 198-751.000.

Harvey, Richard D.: *See—*
Witt, Paul R.; and Harvey, Richard D., 4,241,183, Cl. 435-95.000.

Harvey, Vernon B. W., to Wright Rain Limited. Pipe-following irrigation machine. 4,240,461, Cl. 137-344.000.

Hasegawa, Hisashi: *See—*
Shibazaki, Hiroji; Edagawa, Setsuji; and Hasegawa, Hisashi, 4,240,870, Cl. 162-181.00A.

Hashimoto, Michiaki: *See—*
Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, 4,241,162, Cl. 430-195.000.

Hashimoto, Yasuhiro: *See—*
Takano, Hiroshi; Hashimoto, Yasuhiro; and Takesako, Mutsuo, 4,240,283, Cl. 73-7.000.

Hasler, Franz; Watzold, Peter; and Freudenberg, Steffen, to Audi NSU Auto Union AG. Window assembly for vehicles. 4,240,227, Cl. 49-348.000.

Hastings, Thomas N.: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.

Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, to Hitachi, Ltd. Light sensitive photoresist materials. 4,241,162, Cl. 430-195.000.

Hatch, Burton D., to General Electric Company. Compliant cage for raceway-type liquid metal current collector for high-speed acyclic machines. 4,241,273, Cl. 310-219.000.

Hattori, Tadashi: *See—*
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, 4,240,254, Cl. 60-293.000.

Hauck, Frederic P.; and Jacobs, Glenn A., to E. R. Squibb & Sons, Inc. 6-[(Aryloxy)methyl]-2-morpholinemethanol derivatives and use thereof. 4,241,059, Cl. 424-248.580.

Hauni-Werke Korber & Co. KG: *See—*
Brand, Peter; and Helms, Adolf, 4,240,468, Cl. 137-625.330.
Heitmann, Uwe; and Buchegger, Joachim, 4,240,448, Cl. 131-21.00R.

Hausmann, Laurenz: *See—*
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, 4,240,660, Cl. 294-81.00R.

Hawkes, Richard B.; Hobbs, John N.; and Schuerman, Terry J., to Harris Corporation. Method and apparatus for accumulating and gating articles. 4,240,538, Cl. 198-358.000.

Hawkes, Richard B.: *See—*
Hobbs, John N.; and Hawkes, Richard B., 4,240,540, Cl. 198-492.000.

Hawks, George H., III: *See—*
Myers, Drewfus Y., Jr.; and Hawks, George H., III, 4,241,163, Cl. 430-213.000.

Haydon, Arthur W.; and Dean, John J., to Tri-Tech, Inc. Synchronous electric motor. 4,241,270, Cl. 310-164.000.

Hayes, John E.: *See—*
Farag, Souly A.; Hayes, John E.; and Norman, Lloyd W., 4,241,093, Cl. 426-258.000.

Hayes, Richard H.; and Herrmann, Robert W., to Eagle-Picher Industries, Inc. Circuit responsive to rate change in amplitude of analog electrical signal for use in tire processing apparatus. 4,241,300, Cl. 318-590.000.

Hazelton, Robert H.; and Kimball, John J., to American Bank Note Company. Banknote intaglio printing press. 4,240,347, Cl. 101-153.000.

Hazen, Thomas A., to American Hospital Supply Corporation. Syringe with needle and method of attaching same. 4,240,422, Cl. 128-218.00N.

Heathcote, Terence R.; and Jefferies, Ralph G., to Stothert & Pitt Limited. Hydrostatically driven road rollers. 4,240,333, Cl. 92-12.200.

Heberlein Maschinenfabrik AG: *See—*
Raschle, Josef, 4,240,248, Cl. 57-338.000.

Hedgcock, Richard L.; and Whitehurst, Gerald E., to Caterpillar Tractor Co. Geared steering means. 4,240,534, Cl. 192-13.00R.

Heese, Joachim: *See—*
Fahnenstich, Rudolf; Heese, Joachim; and Lewis, Dyfed, 4,241,085, Cl. 424-319.000.

Heimann, Sigismund: *See—*
Baumgarte, Ulrich; Heimann, Sigismund; Vescia, Michele; and Winkler, Johannes, 4,240,792, Cl. 8-607.000.

Heimer, Richard J., to Kasper Instruments, Inc. Multiple apparent source optical imaging system. 4,241,389, Cl. 362-297.000.

Heitmann, Uwe; and Buchegger, Joachim, to Hauni-Werke Korber & Co. KG. Apparatus for increasing the permeability of wrapping material for rod-shaped smokers' products. 4,240,448, Cl. 131-21.00R.

Held, Richard E., to Harris Corporation. Fluid operated linear actuator control system. 4,240,327, Cl. 91-176.000.

Helen of Troy Corporation: *See—*
Thompson, Russell L., 4,240,451, Cl. 132-42.00A.

Helfrich, Adam: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,240,643, Cl. 277-164.000.

Helgorsky, Jacques; and Leveque, Alain, to Rhone-Poulenc Industries. Liquid/liquid extraction of gallium values from basic aqueous solutions thereof. 4,241,029, Cl. 423-112.000.

Helms, Adolf: *See—*
Brand, Peter; and Helms, Adolf, 4,240,468, Cl. 137-625.330.

Hemersam, Rudolf, to Bunzl & Biach Aktiengesellschaft. Method of preparing a bituminuous binder and a construction material containing the same. 4,240,946, Cl. 260-28.5AS.

Henderson, James R.; and Lewis, Larry E., to Keycon Corporation. Vehicle securing and lockout prevention system. 4,240,516, Cl. 180-289.000.

Henderson, Rosetta M.: *See—*
Boswell, George A., Jr.; and Henderson, Rosetta M., 4,241,065, Cl. 424-260.000.

Hendrix, William T., to Sun Chemical Corporation. Treatment of textiles with modified alpha-olefins. 4,240,795, Cl. 8-115.600.

Hendy, Brian N., to Imperial Chemical Industries Limited. Antistatic polyolefin films. 4,241,144, Cl. 428-516.000.

Hennecke, Hermann: *See—*
Lautenschlager, Friedrich W.; and Hennecke, Hermann, 4,240,590, Cl. 241-56.000.

Henning, Jack H. Tool box including a plurality of rotating nested pyramidal tool racks. 4,240,684, Cl. 312-.33..

Henning, William J. Aqueous insulative coating compositions containing kaolin and staple fibers. 4,240,936, Cl. 260-17.00R.

Henry, H. Clarke: *See—*
Gilbert, John B.; and Henry, H. Clarke, 4,240,900, Cl. 208-143.000.

Henzl, Jindrich: *See—*
Rotrekl, Otto; Vasicek, Vladimir; and Henzl, Jindrich, 4,240,471, Cl. 139-114.000.

Hercules Incorporated: *See—*
Breslow, David S., 4,240,971, Cl. 260-348.430.
Dumas, David H., 4,240,935, Cl. 260-9.000.

Heritage Quilts, Inc.: *See—*
Wrightson, John C., 4,240,159, Cl. 2-243.00R.

Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, to Bayer Aktiengesellschaft. Method and apparatus for placing thread in a texturing apparatus at supersonic speeds. 4,240,187, Cl. 28-255.000.

Herold, Richard: *See—*
Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, 4,240,187, Cl. 28-255.000.

Herring, William M.: *See—*
Bergman, Lee H.; Evangelista, John J.; and Herring, William M., 4,241,216, Cl. 560-99.000.

Herrmann, Robert W.: *See—*
Hayes, Richard H.; and Herrmann, Robert W., 4,241,300, Cl. 318-590.000.

Hervig, Harold C. High voltage splice. 4,241,004, Cl. 264-262.000.

Hery, Thomas A.; and Getchen, John G., to General Atomic Company. Multiple-processor digital communication system. 4,241,330, Cl. 340-147.00R.

Herzan, Eugene H.; and Meisinger, Stanlee W., to Parker-Hannifin Corporation. Push-pull coupling. 4,240,466, Cl. 137-614.040.

Hetzel, Hartmut, to Bayer Aktiengesellschaft. Method for evaporating solvents and reacting components in compound mixtures. 4,241,043, Cl. 423-659.000.

Heytmeijer, Herman R., to Westinghouse Electric Corp. Switching devices for a flash lamp array and method. 4,240,786, Cl. 431-359.000.

Hideyuki Kimura: *See—*
Kimura, Hideyuki, 4,240,690, Cl. 350-36.000.

Higashida, Susumu: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Hilakos, William: *See—*
Quinn, Clayton B.; Reinitz, Clayton W.; and Hilakos, William, 4,240,968, Cl. 260-345.200.

Hintze, William; and Shirk, Albert, to AMP Incorporated. LED Display panel having bus conductors on flexible support. 4,241,277, Cl. 313-500.000.

Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, to Shionogi & Co., Ltd. Dipeptide derivatives and their production. 4,240,957, Cl. 260-112.50R.

Hirata, Ken-ichi: *See—*
Takahashi, Nobuhiro; and Hirata, Ken-ichi, 4,240,616, Cl. 266-119.000.

Hirata, Noritsugu; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Motion picture camera. 4,240,720, Cl. 352-170.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Antifreeze containing carboxysiloxane metal salts and hydroxybenzoic acid as pH buffer and corrosion inhibitor. 4,241,011, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Antifreeze containing amino silanes, amino siloxanes and a hydroxybenzoic acid. 4,241,012, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for antifreeze containing aminosilicone-silicate polymers. 4,241,013, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for alkali metal silicate-containing antifreeze compositions. 4,241,014, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for antifreeze containing organosilicone-silicate polymers. 4,241,015, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for antifreeze containing organosiloxane-silicate copolymers. 4,241,016, Cl. 422-17.000.

Hitachi, Ltd.: *See—*
Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, 4,241,162, Cl. 430-195.000.
Kamiya, Masanori, 4,241,361, Cl. 358-10.000.
Nakagaki, Harushige; and Inoue, Shigeki, 4,241,456, Cl. 455-603.000.
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, 4,241,366, Cl. 360-105.000.
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
Terashima, Isamu, 4,240,375, Cl. 118-689.000.
Yamauchi, Masaaki, 4,241,275, Cl. 313-413.000.

Hliboki, Joseph G.; and Staudenmaier, Paul, to Teaneck Graphics Corp. Vacuum frame. 4,240,743, Cl. 355-73.000.

Ho, T. L.; Din, Zia U.; and Traynor, Sean G., to SCM Corporation. Synthesis of menthofuran. 4,240,969, Cl. 260-346.220.

Hobbs, John N.; and Hawkes, Richard B., to Harris Corporation. Gating method and apparatus. 4,240,540, Cl. 198-492.000.

Hobbs, John N.: *See—*
Hawkes, Richard B.; Hobbs, John N.; and Schuerman, Terry J., 4,240,538, Cl. 198-358.000.

Hodges, Donald R.; Sherwood, William G.; and Nikolic, Cvetko, to Amax Inc. Electrowinning using fluidized bed apparatus. 4,240,886, Cl. 204-112.000.

Hoechst Aktiengesellschaft: *See—*
Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, 4,241,166, Cl. 430-281.000.
Kraft, Kurt; Walz, Gerd; Wirth, Thaddaus; and Theiling, Ernst-August, 4,240,938, Cl. 260-18.0EP.
Muller-Schiedmayer, Gunther; and Aigner, Rudolf, 4,240,980, Cl. 564-153.000.
Schroter, Herbert, 4,240,736, Cl. 354-299.000.

Hoffman, Allan C. Game ball check valve. 4,240,630, Cl. 273-61.00R.

Hoffmann-La Roche Inc.: *See—*
Familletti, Philip C.; Pestka, Sidney; and Rubinstein, Sara, 4,241,174, Cl. 435-5.000.
Imboden, Walter H.; and Lieberman, David M., 4,240,160, Cl. 2-239.000.
Pfiffner, Albert, 4,241,058, Cl. 424-248.400.
Smithen, Carey E., 4,241,060, Cl. 424-248.570.
Walser, Armin, 4,240,962, Cl. 260-245.600.

Hogg, James W., to Anchor Wire Corporation. Display container for coiled wire. 4,240,549, Cl. 206-303.000.

Hohulin, Samuel E.: *See—*
Schaefer, Harold W.; Thomas, Joyce K.; and Hohulin, Samuel E., 4,240,812, Cl. 55-369.000.

Hokkaido University: *See—*
Abe, Zenuemon; Tanaka, Kunio; and Sano, Fumio, 4,240,439, Cl. 128-653.000.

Hokkanen, Eero. Fire extinguishing system having a dosaging cylinder for an additive. 4,240,507, Cl. 169-53.000.

Holever, Bernard K. Tracheal tube adapter for ventilating apparatus. 4,240,417, Cl. 128-203.120.

Holland, Gary M.: *See—*
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.

Holman, Daniel G.; Ersek, Robert A.; and Beisang, Arthur A. Method of preforming vascular grafts of human and other animal origin. 4,240,794, Cl. 8-94.110.

Holmqvist, Goran; Kallen, Staffan; and Jansson, Bertil, to AGA Aktiebolag. Protective device for optical elements. 4,240,691, Cl. 350-63.000.

Holschlag, Richard C. Grain storage bin wall panel. 4,240,562, Cl. 220-5.00R.

Holt, James H., Jr.; and Newman, Morris, to Hydril Company. Blowout preventer shearing and sealing rams. 4,240,503, Cl. 166-55.000.

Holt Rogers & Co., Ltd.: *See—*
Jenkins, Brian, 4,240,400, Cl. 126-91.00R.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, 4,240,391, Cl. 123-454.000.
Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, 4,240,331, Cl. 91-434.000.

Honeywell Inc.: *See—*
Stucka, Edward P.; and Trautmann, Harald G., 4,240,335, Cl. 92-96.000.

Honeywell Information Systems Inc.: *See—*
Stanley, Philip E., 4,241,418, Cl. 364-900.000.
Trubisky, Leonard G., 4,241,446, Cl. 371-37.000.

Hong, Se June, to International Business Machines Corporation. Module interconnection testing scheme. 4,241,307, Cl. 324-73.00R.

Hooker Chemicals & Plastics Corp.: *See—*
Annis, Myron C., 4,241,201, Cl. 525-503.000.

Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, to Robert Bosch GmbH. Fuel metering device for an internal combustion engine. 4,240,383, Cl. 123-492.000.

Horikoshi, Hiroyoshi: *See—*
Baba, Yoshihiko; and Horikoshi, Hiroyoshi, 4,241,082, Cl. 424-309.000.

Horiuchi, Hideo: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Horn, James N.; and Garden, Lorne J., to Saab-Scania Aktiebolag. Movable support assembly for a board infeed system. 4,240,477, Cl. 144-245.00R.

Hornell, Ake, to ESAB Aktiebolag. Multiple layer protective glass, particularly a protective glass for a welding shield. 4,240,709, Cl. 350-335.000.

Hosono, Saburo, to Olympus Optical Co., Ltd. Device for sealing an endoscope channel. 4,240,411, Cl. 128-4.000.

Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., to Exxon Research & Engineering Co. Secondary alcohol dehydrogenase enzyme and use thereof. 4,241,184, Cl. 435-148.000.

Houdek, Merle E.: *See—*
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.

Howe, Dorothy Elizabeth: *See—*
Howe, Peter, 4,240,359, Cl. 108-53.100.

Howe, Peter, to Howe, Dorothy Elizabeth. Freight carrier. 4,240,359, Cl. 108-53.100.

Howland, Charles P.: *See—*
Pratt, Ralph C.; Davis, Robert; and Howland, Charles P., 4,241,132, Cl. 428-285.000.

HPM Corporation: *See—*
Flickinger, William T.; and Staiger, Donald W., 4,240,781, Cl. 425-450.100.

Hruza, Denis E., Sr.: *See—*
Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,240,447, Cl. 131-9.000.

Hsia, Jen C., to University of Toronto, The Governing Council of the. Assay for reserve bilirubin binding capacity. 4,240,797, Cl. 23-230.00B.

Huang, Barney K. Method and apparatus for utilizing solar energy in a water and waste management system. 4,240,210, Cl. 34-39.000.

Huang, Marshall Y.: *See—*
United States of America, National Aeronautics and Space Administration; Barnes, James R.; and Huang, Marshall Y., 4,241,312, Cl. 329-50.000.

Hubbard, Terence; and Jackson, Eric A., to Perard Engineering Limited. Conveyor mounted vehicle. 4,240,665, Cl. 299-31.000.

Huber, William R., III: *See—*
Cenker, Ronald P.; Clemons, Donald G.; Huber, William R., III; and Procyk, Frank J., 4,241,425, Cl. 365-222.000.

Huck, Rodney M., to Monsanto Company. Accelerated resole binder. 4,240,948, Cl. 260-29.300.

Hudson Products Corporation: *See—*
Larinoff, Michael W., 4,240,502, Cl. 165-112.000.

Hudson, Sharon J., Jr., to Sharon Manufacturing Company. Method of brazing a pressure vessel with thermal release plug. 4,240,573, Cl. 228-184.000.

Huey, Douglas C.: *See—*
United States of America, National Aeronautics and Space Administration; Cellier, Alfred; Huey, Douglas C.; and Ma, Lit N., 4,241,308, Cl. 328-55.000.

Huff, Norman M., to Harper-Wyman Company. Excess pressure shut-off valve. 4,240,458, Cl. 137-315.000.

Huffstutler, Miles C., Jr.; Kriesel, Marshall S.; and Anderson, Lawrence, to Medical, Incorporated. Arcuate disc heart valve. 4,240,161, Cl. 3-1.500.

Hughes Aircraft Company: *See—*
Dickerson, Arthur F., 4,241,305, Cl. 324-52.000.
Griffin, Edward L.; and Young, Frederick A., 4,241,323, Cl. 333-209.000.

Hughes, Gary W., to Chemical Applicator, Inc. Low cost, highly versatile self-pumping vehicle type liquid sprayer. 4,240,583, Cl. 239-157.000.

Hughes, Henry G.; and Keller, Jed V., to Motorola, Inc. Plasma development process for photoresist. 4,241,165, Cl. 430-269.000.

Hughes, Nathaniel, to Hughes Sciences Group, Inc. Vortex generating device. 4,240,293, Cl. 73-861.220.

Hughes Sciences Group, Inc.: *See—*
Hughes, Nathaniel, 4,240,293, Cl. 73-861.220.

Hulbert, Clarence E., Jr.; Fan, Liang-Tseng; and Akinc, Mufit, to Hulbert, Clarence E., Jr. Method of making concrete from fly ash. 4,240,952, Cl. 260-42.130.

Hunkar, Denes B., to Hunkar Laboratories, Inc. Process for controlling part density in fast injection molding machines. 4,240,996, Cl. 264-40.100.

Hunkar Laboratories, Inc.: *See—*
Hunkar, Denes B., 4,240,996, Cl. 264-40.100.

Hunt, David J., to International Computers Limited. Binary adder with shifting function. 4,241,413, Cl. 364-784.000.

Hunt, Harold R.: *See—*
Kraus, Gerard; and Hunt, Harold R., 4,241,022, Cl. 422-156.000.

Hurd, William A.: *See—*
Kurtz, Robert L.; and Hurd, William A., 4,240,750, Cl. 356-394.000.

Hurlemann, Ernst, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Breechblock for an automatic firing weapon. 4,240,325, Cl. 89-190.000.

Huseby, Irvin C., to General Electric Company. Method for minimizing the formation of a metal-ceramic layer during casting of superalloy materials. 4,240,828, Cl. 75-135.000.

Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., to University of Kentucky Research Foundation, The. Derivatives of aspirin. 4,241,055, Cl. 424-180.000.

Hutchison, Joseph A., to Solar Kinetics, Inc. Solar reflector structure. 4,240,406, Cl. 126-438.000.

Hydra Sponge Co., Inc.: *See—*
Farmer, Michael J., 4,240,176, Cl. 15-121.000.

Hydril Company: *See—*
Holt, James H., Jr.; and Newman, Morris, 4,240,503, Cl. 166-55.000.

I & I Sling Company, Inc.: *See—*
St. Germain, Dennis, 4,240,659, Cl. 294-74.000.

Ibuki Kogyo Co., Ltd.: *See—*
Shintaku, Yoshishige, 4,241,334, Cl. 340-388.000.

Igloo Corporation: *See—*
Decker, Joseph A., Jr., 4,240,999, Cl. 264-46.500.

Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method for electrolysis of an aqueous alkali metal chloride solution. 4,240,883, Cl. 204-98.000.

Ikawa, Kazuo, to Canon Kabushiki Kaisha. Electrical power source for an electronic flash unit. 4,241,369, Cl. 361-8.000.

Ikemizu, Tokihiko: *See—*
Aoshima, Terutaka; and Ikemizu, Tokihiko, 4,241,288, Cl. 219-441.000.

Ikenishi, Masataka: *See—*
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.

Illger, Hans-Walter: *See—*
von Bonin, Wulf; Vehlewald, Peter; and Illger, Hans-Walter, 4,240,950, Cl. 260-37.00N.

Illinois Tool Works Inc.: *See—*
Nelson, John F., 4,240,282, Cl. 73-447.000.

Imboden, Walter H.; and Lieberman, David M., to Burlington Industries Inc., by said Walter H. Imboden; and Hoffmann-La Roche Inc. Cut and sewn surgical stockings. 4,240,160, Cl. 2-239.000.

Imperial Chemical Industries Limited: *See—*
Benzie, Robert J.; and Waddan, Dhafir Y., 4,240,976, Cl. 260-465.300.
Bowler, Jean, 4,241,215, Cl. 560-55.000.
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.
Hendy, Brian N., 4,241,144, Cl. 428-516.000.

Inaba, Naomi: *See—*
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Koh; and Wada, Shozo, 4,240,928, Cl. 252-429.00B.

Inami, Sumiaki; Koike, Haruhiko; and Yoshida, Motohiko. Automatic tooling machine. 4,240,194, Cl. 29-568.000.

Inglis, Leslie R., to Vortec Corporation. Temperature-adjustable vortex tube assembly. 4,240,261, Cl. 62-5.000.

Inhofer, Harold G.; and Kriz, James J., Jr., to Proteus Corporation. Fluid pressure servo detent mechanism. 4,240,329, Cl. 91-342.000.

Inhofer, Harold G.; and De Veau, John E., to Aeration Industries, Inc. Aeration propeller and apparatus. 4,240,990, Cl. 261-87.000.

Inose, Fumiyuki: *See—*
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.

Inoue, Minoru: *See—*
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.

Inoue, Shigeki: *See—*
Nakagaki, Harushige; and Inoue, Shigeki, 4,241,456, Cl. 455-603.000.

Inoue, Shoichi: *See—*
Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, 4,241,116, Cl. 427-386.000.

Institut Francais du Petrole: *See—*
Castel, Yvon; and Cholet, Henri, 4,240,513, Cl. 175-340.000.

Institute of Gas Technology: *See—*
Ang, Peter G. P.; and Sammells, Anthony F., 4,240,882, Cl. 204-75.000.

Institutul de Stiinte Biologice—Bucharest: *See—*
Ionescu, Vicentiu L., 4,240,443, Cl. 128-734.000.

Interfarm Corporation: *See—*
Rader, Helmut, 4,240,465, Cl. 137-564.500.

Interlake, Inc.: *See—*
Kyts, Robert B., 4,240,865, Cl. 156-494.000.

International Business Machines Corporation: *See—*
Acosta, Robert G., 4,240,758, Cl. 400-279.000.
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., 4,241,343, Cl. 340-755.000.
Hong, Se June, 4,241,307, Cl. 324-73.00R.
Kennedy, Eugene T.; and Janeway, Donald L., 4,241,406, Cl. 364-518.000.
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.
Wilbur, Clayton V., 4,240,714, Cl. 350-357.000.

International Computers Limited: *See—*
Hunt, David J., 4,241,413, Cl. 364-784.000.

International Flavors & Fragrances Inc.: *See—*
Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,240,447, Cl. 131-9.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.
Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., 4,241,097, Cl. 426-536.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.

International Harvester Company: *See—*
Gagliani, John, 4,241,114, Cl. 427-370.000.
Gagliani, John, 4,241,193, Cl. 521-77.000.
Gladieux, Dennis M., 4,240,654, Cl. 285-276.000.

International Minerals & Chemical Corp.: *See—*
Ivy, Richard E.; Young, Vernon V.; and Williams, Robert D., 4,241,061, Cl. 424-250.000.

International Nickel Co., Inc., The: *See—*
Hall, Dale E., 4,240,887, Cl. 204-129.000.

International Standard Electric Corporation: *See—*
Viohl, Uwe; and Zondler, Rolf, 4,240,896, Cl. 204-299.00R.

International Telephone and Telegraph Corporation: *See—*
Albanese, Damian F.; and Klein, Albert M., 4,241,347, Cl. 343-9.00R.
Alonso, Oscar, 4,240,198, Cl. 29-876.000.
Epstein, Marvin A., 4,241,447, Cl. 375-1.000.
Pernyeszi, Joseph, 4,241,239, Cl. 179-70.000.

Ionescu, Vicentiu L., to Institutul de Stiinte Biologice—Bucharest. Selective preamplifier of cell potentials. 4,240,443, Cl. 128-734.000.

Ishiba, Teruyuki: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, 4,240,957, Cl. 260-112.50R.

Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,240,276, Cl. 68-5.00E.

Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, to Toyo Rubber Industry Co., Ltd., The. Flexible expansion joint. 4,240,653, Cl. 285-235.000.

Ishiguro, Toshio; and Kyotani, Minoru, to Kubota Ltd. Power-driven rotary ground working implement. 4,240,508, Cl. 172-72.000.

Ishihara Sangyo Kaisha Limited: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.

Ishiyama, Kiyoshige, to Shinko Electric Co., Ltd. Printing system for boarding pass and/or baggage tag. 4,240,862, Cl. 156-350.000.

Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, to Takeda Chemical Industries, Ltd. Antibiotic compositions. 4,241,057, Cl. 424-246.000.

Iskander, Magdy F.; and Durney, Carl H., to University of Utah. Electromagnetic energy coupler/receiver apparatus and method. 4,240,445, Cl. 128-804.000.

Iso, Tadashi: *See—*
Iwao, Jun-ichi; and Iso, Tadashi, 4,241,086, Cl. 424-319.000.

Isogai, Yasuhiro: *See—*
Yatsuka, Hiroyuki; and Isogai, Yasuhiro, 4,241,348, Cl. 343-17.500.

Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, to Mitsui Petrochemical Industries, Ltd. Process for producing terephthalic acid. 4,241,220, Cl. 562-414.000.

Itek Corporation: *See—*
Dodge, Dennis, 4,240,730, Cl. 354-90.000.
Wetherell, William B.; and Womble, David A., 4,240,707, Cl. 350-294.000.

Itoh, Teruo: *See—*
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.

ITT Industries, Inc.: *See—*
Botz, Jakob; Mutschler, Erich; and Weber, Adam, 4,241,260, Cl. 307-10.0LS.
Postema, Pieter M., 4,240,531, Cl. 188-315.000.

Ivy, Richard E.; Young, Vernon V.; and Williams, Robert D., to International Minerals & Chemical Corp. Oxazolidinyl-quinoxalines and use as growth promoters. 4,241,061, Cl. 424-250.000.

Iwama, Akio; Kihara, Yasuo; and Abe, Masao, to Nitto Electric Industrial Co., Ltd. Selective permeable membrane and process for preparing the same. 4,240,914, Cl. 210-500.200.

Iwamatsu, Masayuki, to Nippon Gakki Seizo Kabushiki Kaisha. Transistor amplifier circuits. 4,241,314, Cl. 330-253.000.

Iwao, Jun-ichi; and Iso, Tadashi, to Santen Pharmaceutical Co., Ltd. Method for treating rheumatism. 4,241,086, Cl. 424-319.000.

Izumi, Katsutoshi; Doken, Masanobu; and Ariyoshi, Hisashi, to Nippon Telegraph and Telephone Public Corporation. Semiconductor device having buried insulating layer. 4,241,359, Cl. 357-49.000.

Izumo, Masanori; Nomura, Syunichi; and Tanigawa, Singo, to Daikin Kogyo Co., Ltd. Process for preparing polytetrafluoroethylene granular powder. 4,241,137, Cl. 428-402.000.

J. H. Benecke GmbH: *See—*
Boich, Heinz-Horst, 4,240,416, Cl. 128-156.000.

J. M. Huber Corporation: *See—*
Lamond, Trevor G.; and Cuthbertson, Charles R., 4,241,001, Cl. 264-117.000.

J-Tec Associates, Inc.: *See—*
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., 4,240,299, Cl. 73-861.230.

Jablonski, Richard J.; and Pauze, Denis R., to General Electric Company. Coating compositions. 4,240,941, Cl. 260-29.2TN.

Jabobs Manufacturing Company, Ltd., The: *See—*
Derbyshire, George C., 4,240,771, Cl. 408-124.000.

Jackson, Eric A.: *See—*
Hubbard, Terence; and Jackson, Eric A., 4,240,665, Cl. 299-31.000.

Jackson, Joseph F. Solid bowl decanter centrifuges of the scroll discharge type. 4,240,578, Cl. 233-7.000.

Jacobi, Haireddin: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, 4,241,207, Cl. 542-427.000.

Jacobi, Volker: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.

Jacobs, Glenn A.: *See—*
Hauck, Frederic P.; and Jacobs, Glenn A., 4,241,059, Cl. 424-248.580.

Jacobs, Richard M.; and Sinha, Ashok K., to Bell Telephone Laboratories, Incorporated. Fabrication of two-level polysilicon devices. 4,240,196, Cl. 29-578.000.

Jacobson, Robert L.: *See—*
Gibson, Kirk R.; Jacobson, Robert L.; and Michlmayr, Manfred J., 4,241,231, Cl. 585-748.000.

Jacobson, Samuel O. Looseleaf binder-display stand. 4,240,761, Cl. 402-76.000.

Jacobsson, Bertil, to Elfi Elektrofilter AB. Fixing and connecting device for wires and plates in electrostatic filters. 4,240,811, Cl. 55-143.000.

Jagen-Werke AG: *See—*
Klapp, Hartmut, 4,240,539, Cl. 198-461.000.

Jamaluddin, Aziz A. Drying oven with heat reclamation and air pollution control system. 4,240,787, Cl. 432-21.000.

James, Eugene. Medical device. 4,240,412, Cl. 128-67.000.

Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., to Lilly Industries Limited. Treatment of immediate hypersensitivity diseases with aryl hydantoins. 4,241,073, Cl. 424-273.00R.

Jandacek, Ronald J.: *See—*
Volpenhein, Robert A.; and Jandacek, Ronald J., 4,241,054, Cl. 424-180.000.

Jandourek, Emil, to Sybron Corporation. Dental pulp capping and cavity lining composition and preparative method. 4,240,832, Cl. 106-35.000.

Janeway, Donald L.: *See—*
Kennedy, Eugene T.; and Janeway, Donald L., 4,241,406, Cl. 364-518.000.

Jansson, Bertil: *See—*
Holmqvist, Goran; Kallen, Staffan; and Jansson, Bertil, 4,240,691, Cl. 350-63.000.

Japan Bano'k Co., Ltd.: *See—*
Sumimoto, Yasukichi; and Kato, Masami, 4,240,183, Cl. 24-16.0PB.

Jaussaud, Claude: *See—*
Comera, Jean; and Jaussaud, Claude, 4,241,318, Cl. 331-94.50C.

Jayne, Theodore D.: *See—*
Edwards, Robert B.; and Jayne, Theodore D., 4,240,492, Cl. 164-34.000.

Jean, San-Bau. Elastic base toothbrush. 4,240,452, Cl. 132-84.00R.

Jefferies, Ralph G.: *See—*
Heathcote, Terence R.; and Jefferies, Ralph G., 4,240,333, Cl. 92-12.200.

Jenkins, Brian, to Holt Rogers & Co., Ltd. Space heater. 4,240,400, Cl. 126-91.00R.

Jex, Edward R. Extrusion technique with ram speed control. 4,240,997, Cl. 264-40.500.

JH Industries, Inc.: *See—*
Johnson, Dwight N., 4,240,606, Cl. 251-127.000.

Jiffy Manufacturing Company, Inc.: *See—*
Bell, Harris N.; and Morton, Alexander R., 4,240,593, Cl. 242-71.800.

Joanell Laboratories, Inc.: *See—*
LaMura, Joseph L., 4,240,640, Cl. 273-373.000.

Johnson, Arlen K.; Tignor, Thomas P.; and Wingard, Theodore K., to Bell Telephone Laboratories, Incorporated. Compact microwave filter with dielectric resonator. 4,241,322, Cl. 333-202.000.

Johnson, Bruce K., to Bell Telephone Laboratories, Incorporated. Zone focusing optical system. 4,240,724, Cl. 354-197.000.

Johnson, Bruce K.: *See—*
Abbadessa, Joseph J.; and Johnson, Bruce K., 4,241,280, Cl. 315-151.000.

Johnson, David A.: *See—*
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,240,960, Cl. 260-239.100.

Johnson, Dwight N., to JH Industries, Inc. Fill valve. 4,240,606, Cl. 251-127.000.

Johnson, Henry C., to RCA Corporation. Pulse radar transmitting oscillator. 4,241,345, Cl. 343-5.0SW.

Johnson, John L.; and Moberly, Lawrence E., to Westinghouse Electric Corp. Solid brush current collection system. 4,241,271, Cl. 310-219.000.

Johnson & Johnson Baby Products Company: *See—*
Rega, John F., 4,240,866, Cl. 156-496.000.

Johnson, Leo F.; Singh, Shobha; and Van Uitert, LeGrand G., to Bell Telephone Laboratories, Incorporated. Electro-optical device based on electroplating action. 4,240,693, Cl. 350-96.140.

Johnson, Leo F., to Bell Telephone Laboratories, Incorporated. Technique for altering the profile of grating relief patterns. 4,241,109, Cl. 427-162.000.

Johnson, Robert M. Flexible saw. 4,240,203, Cl. 30-166.00R.

Johnson, Roy A., to Upjohn Company, The. 9-Deoxy-5,9α-epoxy-4,5-cis-17,18-tetradehydro-PGF$_1$, amides. 4,241,205, Cl. 542-420.000.

Johnson, William B. Fluidized-bed compact boiler and method of operation. 4,240,377, Cl. 122-4.00D.

Johnston Pump Company: *See—*
Lobanoff, Valenteen S., 4,240,762, Cl. 403-24.000.

Jones, Charles H., to United States of America, Navy. Sonar ranging system. 4,241,431, Cl. 367-123.000.

Jones, Eugene R.: *See—*
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.

Jones, Marvin E.: *See—*
Labes, Mortimer M.; Jones, Marvin E.; and Kao, Huey-Chuen I., 4,241,149, Cl. 429-50.000.

Jordan, Alfons: *See—*
Krude, Werner; Muller, Karl-Heinz; and Jordan, Alfons, 4,240,680, Cl. 308-187.100.

Josef Martin Feuerungsbau GmbH.: *See—*
Martin, Johannes J.; and Martin, Walter J., 4,240,402, Cl. 126-152.00B.

Joy Manufacturing Company: *See—*
Kolodziej, Robert M., 4,240,296, Cl. 73-650.000.
Mahyera, Anil; and Duff, John, 4,240,664, Cl. 299-17.000.
Rollins, Lester G., 4,240,669, Cl. 299-86.000.

Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., to J-Tec Associates, Inc. Method and apparatus for determining fluid density and mass flow. 4,240,299, Cl. 73-861.230.

Judin, Valentin D.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Jung, Alfred K.: *See—*
Weil, Edward D.; Jung, Alfred K.; and Silberberg, Joseph, 4,240,956, Cl. 260-45.75B.

Jung, Gottfried: *See—*
Becker, Bernd; Forch, Hans; Helfrich, Adam; and Jung, Gottfried, 4,240,643, Cl. 277-164.000.

Jurasek, Stanley J., to Eagle-Picher Industries, Inc. Collapsible material handling container. 4,240,555, Cl. 206-511.000.

Kabel- und Metallwerke Gutehoffnungshuette AG: *See—*
Rohner, Peter, 4,240,500, Cl. 165-105.000.

Kabel- und Metallwerke, Gutehoffnungshutte AG: *See—*
Arntz, Hans-Joachim, 4,240,850, Cl. 156-78.000.

Kable Tapes Ltd.: *See—*
O'Connor, Lawrence, 4,241,121, Cl. 428-77.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Shida, Masaharu; Torisawa, Akira; and Ueda, Makoto, 4,241,434, Cl. 368-85.000.
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, 4,240,316, Cl. 84-1.010.

Kabushiki Kaisha Naka Gijutsu Kenkyusho: *See—*
Naka, Hiromitsu, 4,240,521, Cl. 182-84.000.

Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,240,348, Cl. 101-295.000.

Kabushiki Kaisha Seikosha: *See—*
Ashida, Itaru, 4,241,437, Cl. 368-134.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Ushiyama, Yoshito, 4,241,339, Cl. 340-702.000.

Kabutomori, Masuo: *See—*
Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, 4,241,111, Cl. 427-211.000.

Kadi-Ogly, Ibragim A.: *See—*
Antonov, Jury F.; Kadi-Ogly, Ibragim A.; Perchanok, Boris K.; and Chashnik, Pavel I., 4,241,269, Cl. 310-61.000.

Kahle, Donald P.: *See—*
Grayson, Joel, IV; and Kahle, Donald P., 4,241,025, Cl. 422-263.000.

Kajiwara, Yuji: *See—*
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, 4,241,103, Cl. 427-103.000.

Kaliski, Adam F.; Berube, Richard R.; and Nease, John C., to Engelhard Minerals & Chemicals Corporation. Clay pigment for coating paper. 4,241,142, Cl. 428-511.000.

Kallen, Staffan: *See—*
Holmqvist, Goran; Kallen, Staffan; and Jansson, Bertil, 4,240,691, Cl. 350-63.000.

Kalosha, Georgy A.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Kals, Walter, to Niagara Blower Company. Balanced waste heat recovery and dissipation system. 4,240,499, Cl. 165-1.000.

Kamath, Venkatesh: *See—*
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.

Kaminaka, Nobuyuki: *See—*
Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, 4,241,367, Cl. 360-127.000.

Kaminski, David G.: *See—*
De Ward, Robert C.; Kaminski, David G.; and Fedde, Mickiel P., 4,241,401, Cl. 364-200.000.

Kamiya, Masanori, to Hitachi, Ltd. Tuning voltage display device for a color television receiver with an electronic tuner. 4,241,361, Cl. 358-10.000.

Kamiyama, Kazuaki: *See—*
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.

Kanai, Kenji: *See—*
Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, 4,241,367, Cl. 360-127.000.

Kanaya, Yasuhiro: *See—*
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,240,791, Cl. 8-465.000.

Kanebo, Ltd.: *See—*
Asano, Koin, 4,241,122, Cl. 428-90.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.

Kangas, Kayo; Mouland, John; and Timler, Stan, to Texasgulf Inc. Process for the recovery of arsenic as a zinc arsenate and its utilization in the purification of zinc plant electrolytes. 4,240,826, Cl. 75-109.000.

Kaniecki, Thaddeus J., to Stauffer Chemical Company. Liquid cleaning concentrate. 4,240,921, Cl. 252-156.000.

Kano, Toshiji: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.

Kao, Huey-Chuen I.: *See—*
Labes, Mortimer M.; Jones, Marvin E.; and Kao, Huey-Chuen I., 4,241,149, Cl. 429-50.000.

Karayannis, Panayotis: *See—*
Munzel, Klaus; Karayannis, Panayotis; and Naef, Hansjorg, 4,240,350, Cl. 102-215.000.

Karl Lautenschlager KG, Mobelbeschlagfabrik: *See—*
Lautenschlager, Karl, Jr., 4,240,179, Cl. 16-139.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Fiedler, Hans, 4,240,275, Cl. 66-203.000.

Karnick, Hartmut, to Anschutz & Co., G.m.b.H. Gyroscopic instrument. 4,240,302, Cl. 74-5.460.

Karweil, Joachim; Degel, Josef; and Rolke, Dietrich, to Bergwerksverband GmbH. Reactor for the continuous thermal treatment of solids, particularly carbonaceous adsorbents and process of operating the same. 4,240,927, Cl. 252-411.00R.

Kasai, Yoshihiko; Gounji, Takashi; and Katsube, Yoshio, to Fujitsu Limited. Electromechanical filter. 4,241,321, Cl. 333-198.000.

Kasper Instruments, Inc.: *See—*
Heimer, Richard J., 4,241,389, Cl. 362-297.000.

Kastening, Bertel: *See—*
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,240,888, Cl. 204-129.750.

Katagiri, Masayoshi: *See—*
Ohori, Harumi; Katagiri, Masayoshi; and Nogami, Tomoyuki, 4,240,671, Cl. 303-6.00C.

Katayama, Nobuaki; and Koga, Hideaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oil flow control device for power transmissions. 4,240,524, Cl. 184-6.120.

Katayama, Yuzo: *See—*
Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, 4,240,849, Cl. 156-73.200.

Kate Models Pty., Limited: *See—*
Pfuhl, Jakob, 4,240,367, Cl. 112-148.000.

Kato, Hiroshi: *See—*
Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, 4,240,316, Cl. 84-1.010.

Kato, Keizo: *See—*
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.

Kato, Masami: *See—*
Sumimoto, Yasukichi; and Kato, Masami, 4,240,183, Cl. 24-16.0PB.

Kato, Shogo: *See—*
Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,240,732, Cl. 354-138.000.

Katoh, Hidehiko: *See—*
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, 4,241,103, Cl. 427-103.000.

Katscher, Werner, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Nuclear energy plant with collecting container for melting core masses. 4,240,875, Cl. 176-38.000.

Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Analgesic benzomorphan derivatives. 4,241,070, Cl. 424-267.000.

Katsube, Yoshio: *See—*
Kasai, Yoshihiko; Gounji, Takashi; and Katsube, Yoshio, 4,241,321, Cl. 333-198.000.

Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., to Marvin Glass & Associates. Toy vehicle. 4,240,224, Cl. 46-88.000.

Kavanau, Lawrence: *See—*
Knapp, Richard P., 4,241,316, Cl. 330-277.000.

Kawabe, Yasumasa: *See—*
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,240,791, Cl. 8-465.000.

Kawai, Hisasi: *See—*
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.

Kawashima, Junichi: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.

Kawashima, Yutaka: *See—*
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.

Kayem, Douglas J.; and Reed, Harold L., to Kayem, Douglas J. Method and apparatus for determining the length of tubular members. 4,241,430, Cl. 367-115.000.

Keever, Charles W., Jr., to Mace, Robert; and Mace, Mike, part interest to each. Dish drying apparatus. 4,240,211, Cl. 34-90.000.

Kellberg, Elsa R.: *See—*
Flanigen, Edith; and Kellberg, Elsa R., 4,241,036, Cl. 423-328.000.

Keller, Jed V.: *See—*
Hughes, Henry G.; and Keller, Jed V., 4,241,165, Cl. 430-269.000.

Kempke, William G.: *See—*
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.

Kendall Company, The: *See—*
Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, 4,241,017, Cl. 422-58.000.
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,240,430, Cl. 128-218.00P.
Temin, Samuel C., 4,241,115, Cl. 427-384.000.

Kendall, Roger V.: *See—*
Diehl, Robert E.; and Kendall, Roger V., 4,240,822, Cl. 71-92.000.

Kennedy, Eugene T.; and Janeway, Donald L., to International Business Machines Corporation. System and method for analyzing operation of an ink jet head. 4,241,406, Cl. 364-518.000.

Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, to BASF Aktiengesellschaft. Manufacture of styrene suspension polymers. 4,241,191, Cl. 521-56.000.

Kern, Eckhard, to VDO Adolf Schindling AG. Device for adjustment of electrical clocks. 4,241,438, Cl. 368-185.000.

Kern, Werner: *See—*
Tracy, Chester E.; Kern, Werner; and Vibronek, Robert D., 4,241,108, Cl. 427-162.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,240,888, Cl. 204-129.750.
Katscher, Werner, 4,240,875, Cl. 176-38.000.

Kernick, Andress: *See—*
Stacey, Eric. J.; and Kernick, Andress, 4,241,395, Cl. 363-39.000.

Kerr, Leo A., to Bendix Corporation, The. Delay line digital code detector. 4,241,310, Cl. 328-119.000.

Kerr-McGee Corporation: *See—*
Bowerman, Paul D.; and Lucid, Michael F., 4,241,027, Cl. 423-10.000.

Keuffel & Esser Company: *See—*
Kooi, J. Peter E., 4,240,689, Cl. 350-10.000.

Keycon Corporation: *See—*
Henderson, James R.; and Lewis, Larry E., 4,240,516, Cl. 180-289.000.

Keyes, Melvin H.; and Moore, Garry L., to Owens-Illinois, Inc. Enzymatic method for determining surfactants on surfaces. 4,241,180, Cl. 435-20.000.

Keystone Ferrule & Nut Corporation: *See—*
Chiariello, Ned A., 4,240,603, Cl. 248-125.000.

Khalil, Hassan H., to United States of America, Navy. Carotid thermodilution catheter. 4,240,441, Cl. 128-692.000.

Khoobiar, Sargis, to Halcon Research and Development Corp. Catalyst and process for producing methacrylic acid. 4,240,930, Cl. 252-435.000.

Khromov, Alexei M.: *See—*
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.

Kibayashi, Tamotsu: *See—*
Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, 4,241,039, Cl. 423-531.000.

Kibun Co., Ltd.: *See—*
Wakana, Teruo; Okubo, Kunio; and Hanaoka, Yutaka, 4,241,100, Cl. 426-598.000.

Kiefer, George E., to General Electric Company. Microprocessor based control circuit for washing appliances. 4,241,400, Cl. 364-400.000.

Kiehs, Karl: *See—*
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,240,979, Cl. 564-44.000.

Kihara, Yasuo: *See—*
Iwama, Akio; Kihara, Yasuo; and Abe, Masao, 4,240,914, Cl. 210-500.200.

Kilbourn, Edward E.; and Weir, W. David, to Rohm and Haas Company. 2-Imino substituted isothioureidobenzene. 4,241,079, Cl. 424-285.000.

Kim, Yung D., to Abbott Laboratories. Method of diagnosing cancer by detecting elevated anti-T antibody activity. 4,241,044, Cl. 424-1.000.

Kimball, John J.: *See—*
Hazelton, Robert H.; and Kimball, John J., 4,240,347, Cl. 101-153.000.

Kimberly-Clark Corporation: *See—*
Kronzer, Frank J., 4,240,807, Cl. 51-295.000.

Kimura, Hideyuki, to Hideyuki Kimura; and Tokyo Bussan Kabushiki Kaisha. Sliding finger plate focus adjusting device for a binocular. 4,240,690, Cl. 350-36.000.

Kimura, Shuichi, to Sony Corporation. Record player. 4,240,641, Cl 274-23.00R.

Kinard, Richard D.: *See—*
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,240,374, Cl. 118-657.000.

King, Josef, to Gebruder Junghans GmbH. Battery-containing crown for wristwatches. 4,241,440, Cl. 368-204.000.

King, Michael J., to Oliver Tire and Rubber Company. Method for recapping solid tires with precured, premolded tread. 4,240,851, Cl. 156-96.000.

Kiploks, Elmars M.: *See—*
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., 4,241,094, Cl. 426-324.000.

Kirby, Gordon W.: *See—*
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,066, Cl. 424-260.000.
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,067, Cl. 424-260.000.

Kirkwood, Robert W. Vehicle hydraulic drive system. 4,240,515, Cl. 180-165.000.

Kirsch Company: *See—*
Ford, Alan A., 4,240,490, Cl. 160-133.000.

Kishimoto, Kazuo: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.

Kister, Horst, to VDO Adolf Schindling AG. Arrangement for time-division multiplex PWM data transmission. 4,241,444, Cl. 370-85.000.

Kitamoto, Tatsuji: *See—*
Tadokoro, Eiichi; and Kitamoto, Tatsuji, 4,241,368, Cl. 360-128.000.

Kitamura, Takashi: *See—*
Masaki, Katsumi; and Kitamura, Takashi, 4,241,415, Cl. 364-900.000.

Kiwala, Jacob: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.

Klapp, Hartmut, to Jagen-Werke AG. Backup station for a carton filling machine. 4,240,539, Cl. 198-461.000.

Klar, Erhard: *See—*
Moskowitz, Larry N.; and Klar, Erhard, 4,240,824, Cl. 75-0.50C.
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,240,831, Cl. 75-228.000.

Klee, Rudolf: *See—*
Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, 4,240,187, Cl. 28-255.000.

Klein, Albert M.: *See—*
Albanese, Damian F.; and Klein, Albert M., 4,241,347, Cl. 343-9.00R.

Klimov, Nikolai E.: *See—*
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.

Klinger, Ludwig: *See—*
Kremer, Paul; Gora, Bernhard; and Klinger, Ludwig, 4,241,124, Cl. 428-156.000.

Klink, Rainer, to Deutsch Automobilgesellschaft mbH. Disconnectable gas-tight and pressure-resistant electrical lead-out. 4,241,152, Cl. 429-181.000.

Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, to Hoechst Aktiengesellschaft. Photopolymerizable composition comprising a monoazo dye as contrast colorant. 4,241,166, Cl. 430-281.000.

Kmetz, Allan R.; Muller, Klaus; and Scheffer, Terry J., to BBC Brown, Boveri & Company, Limited. Electro-optical device for the display of dark symbols composed of separately selectable display segments against a bright background and a means for addressing this device. 4,241,344, Cl. 340-765.000.

Kmetz, Gerald L., to National Semiconductor Corporation. Electronic musical instrument. 4,240,317, Cl. 84-1.010.

Knapp, Richard P., to Kavanau, Lawrence, a part interest. Field effect transconductance amplifiers. 4,241,316, Cl. 330-277.000.

Knox, Jack R., to Standard Oil Company (Indiana). Process for producing homogeneous curly synthetic polymer fibers. 4,241,002, Cl. 264-168.000.

Kobayashi, Morio: *See—*
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Kobayashi, Naotake, to Sony Corporation. Releasing agent. 4,241,198, Cl. 525-360.000.

Kobayashi, Takashi: *See—*
Tsuchibuchi, Akira; and Kobayashi, Takashi, 4,240,880, Cl. 204-15.000.

Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., to Reckitt & Colman Products Limited. 14-Amino derivatives of morphine, methods of making them and analgesic compositions containing them. 4,241,066, Cl. 424-260.000.

Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., to Reckitt & Colman Products Limited. 14-Amino derivatives of morphine, methods of making them and analgesic compositions containing them. 4,241,067, Cl. 424-260.000.

Koda, Minoru; and Muya, Tsuneo, to Matsushita Electric Industrial Co., Ltd. Magnetic video recording and reproducing device. 4,241,365, Cl. 360-73.000.

Koehring GmbH - Bomag Division: *See—*
Carle, Udo, 4,240,326, Cl. 91-39.000.

Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, to BASF Aktiengesellschaft. 2-(O-Hydroxyphenyl)-pyrrole and process for its preparation. 4,240,964, Cl. 260-326.50M.

Koenig, Karl-Heinz: *See—*
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,240,979, Cl. 564-44.000.

Koester, Charles J. Scanning microscopic apparatus. 4,241,257, Cl. 250-235.000.

Koga, Hideaki: *See—*
Katayama, Nobuaki; and Koga, Hideaki, 4,240,524, Cl. 184-6.120.

Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, to Dowa Mining Co. Ltd. Method of removal of arsenic from a sulfuric acid solution. 4,241,039, Cl. 423-531.000.

Kohashi, Takahiro: *See—*
Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, 4,241,162, Cl. 430-195.000.

Koike, Haruhiko: *See—*
Inami, Sumiaki; Koike, Haruhiko; and Yoshida, Motohiko, 4,240,194, Cl. 29-568.000.

Kojima, Hiroshi; Sakamoto, Takao; and Shimada, Tatsuro, to Bridgestone Tire Co., Ltd. Pneumatic tire for large size and high speed motor cycles two-wheeled vehicles. 4,240,484, Cl. 152-209.00R.

Kojima, Masaharu, to Nifco Inc. Plastic screw socket. 4,240,323, Cl. 85-80.000.

Kok, Riekert, to Shell Oil Company. Process for the preparation of 1,2-dioximes. 4,240,981, Cl. 564-259.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Sakiki, Hiroshi; and Shintani, Sotokichi, 4,241,443, Cl. 370-70.000.

Kolberg, Reiner: *See—*
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, 4,240,418, Cl. 128-203.150.

Kolich, Charles H., to Ethyl Corporation. Process for purifying cyclic phosphonitrilic chlorides. 4,241,034, Cl. 423-300.000.

Kolodziej, Robert M., to Joy Manufacturing Company. Measurement of torsional acceleration of a rotating body. 4,240,296, Cl. 73-650.000.

Komabashiri, Takamichi: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.

Komarnicki, Gene. Strike light fishing rod holder. 4,240,221, Cl. 43-17.000.

Komarov, Mark M.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Komatsu, Toshiyuki: *See—*
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.

Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for keeping aquatic animals alive over long periods of time. 4,240,376, Cl. 119-2.000.

Komiya, Osamu, to Olympus Optical Co., Ltd. Laser knife. 4,240,431, Cl. 128-303.100.

Kondo, Kenji: *See—*
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, 4,240,254, Cl. 60-293.000.

Kondo, Shigeki, to Tokyo Juki Kogyo Kabushiki Kaisha. Method for fulling fabric. 4,240,185, Cl. 26-19.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Kono, Tatsuhiko: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.

Kooi, J. Peter E., to Keuffel & Esser Company. Telescope reticle adjusting means. 4,240,689, Cl. 350-10.000.

Korovainy, Sergei F.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Korytko, Myron I., to Efco, Inc. System for providing for parallelism in fluid powered press or the like. 4,240,778, Cl. 425-149.000.

Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A. Method for applying polymer coating composition. 4,241,112, Cl. 427-213.000.

Kostenbauder, Harry B.: *See—*
Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., 4,241,055, Cl. 424-180.000.

Kostic, Sam. Wood finishing composition. 4,240,939, Cl. 260-22.0TN.

Kotyk, Jeffrey M.: *See—*
Wegmann, Jerome B.; and Kotyk, Jeffrey M., 4,240,328, Cl. 91-287.000.

Kotzin, Garvin S. Audio-visual display device. 4,240,218, Cl. 40-407.000.

Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, to Canon Kabushiki Kaisha. Electrostatic copying apparatus. 4,240,739, Cl. 355-3.00R.

Kovacs, Andre L. Heat exchanger with juxtaposed elements. 4,240,501, Cl. 165-165.000.

Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, to Sharp Kabushiki Kaisha. Holding plate for a twisted nematic alignment field effect mode (TNFEM) liquid crystal display. 4,240,710, Cl. 350-339.00R.

Kozhirova, Svetlana E.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.

Kozin, Leonid F.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.

Kraayeveld, Jan W.: *See—*
Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink, Gerrit J., 4,240,287, Cl. 73-61.00R.

Kraft, Kurt; Walz, Gerd; Wirth, Thaddaus; and Theiling, Ernst-August, to Hoechst Aktiengesellschaft. Water-soluble reactive polymer mixture. 4,240,938, Cl. 260-18.0EP.

Krapukhin, Viktor M.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Krasner, Norman F.; and Leiner, Barry M., to Probe Systems, Incorporated. FFT Parallel processor having mutually connected, multiple identical cards. 4,241,411, Cl. 364-726.000.

Kraus, Gerard; and Hunt, Harold R., to Phillips Petroleum Company. Carbon black for low-hysteresis rubber compositions. 4,241,022, Cl. 422-156.000.

Kraus, Hans, to Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft. Field sensor. 4,240,528, Cl. 187-52.00R.

Krebs, Jacqueline B.: *See—*
Mir, Ghulam N.; Krebs, Jacqueline B.; and Studt, William L., 4,241,087, Cl. 424-324.000.

Kreick, John R.; and Anderson, Glenn A., Sr., to Sanders Associates, Inc. Resistive heater. 4,241,292, Cl. 219-541.000.

Krein, Reuben J., to Coachmen Industries, Inc. Method of stuffing compressible products into flexible covers. 4,240,193, Cl. 29-451.000.

Kremer, Paul; Gora, Bernhard; and Klinger, Ludwig, to Deutsche Gold- und Silber-Scheideanstalt vormals Roesseler. Inner shoe material such as insoles and middle sole material in the form of breadths or blanks therefrom. 4,241,124, Cl. 428-156.000.

Kressel, Henry: *See—*
Burke, William J.; Kressel, Henry; and Ettenberg, Michael, 4,241,423, Cl. 365-215.000.

Kresteva, Kalinka I.: *See—*
Stoev, Stoycho M.; Djendova, Shtilyana D.; Metodiev, Metodi S.; and Kresteva, Kalinka I., 4,240,903, Cl. 209-437.000.

Krieg, Manfred: *See—*
Wenzel, Franz; Bruemmer, Heinz-Dieter; and Krieg, Manfred, 4,241,203, Cl. 526-218.000.

Kriesel, Marshall S.: *See—*
Huffstutler, Miles C., Jr.; Kriesel, Marshall S.; and Anderson, Lawrence, 4,240,161, Cl. 3-1.500.

Kriz, James J., Jr.: *See—*
Inhofer, Harold G.; and Kriz, James J., Jr., 4,240,329, Cl. 91-342.000.

Krjuchkov, Igor B.: *See—*
Glazunov, Sergei G.; Khromov, Alexei M.; Merkulov, Vasily V.; Krjuchkov, Igor B.; Klimov, Nikolai E.; and Filippov, Dmitry A., 4,240,497, Cl. 164-158.000.

Kroenke, William J., to B. F. Goodrich Company, The. Octadecylammonium alpha-octamolybdate and composition containing same. 4,240,955, Cl. 260-45.75R.

Kronies, Reinhard K., to Burroughs Corporation. Asynchronous digital data transmission system. 4,241,419, Cl. 364-900.000.

Kronzer, Frank J., to Kimberly-Clark Corporation. Substrate having a thermoplastic binder coating for use in fabricating abrasive sheets and abrasive sheets manufactured therewith. 4,240,807, Cl. 51-295.000.

Krude, Werner; Muller, Karl-Heinz; and Jordan, Alfons, to Uni-Cardan AG. Bearing assembly for a motor vehicle wheel. 4,240,680, Cl. 308-187.100.

Krueger, Gordon P.: *See—*
Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., 4,241,133, Cl. 428-326.000.

Kruger, Hans: *See—*
Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, 4,240,711, Cl. 350-345.000.

Kruglov, Gennady A.: *See—*
Malkin, Daniel D.; Kruglov, Gennady A.; Peredkov, Boris A.; and Kulikov, Evgeny V., 4,240,249, Cl. 368-28.000.

Krutki, Marian: *See—*
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.

Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M. Method for centrifugal casting of tubular metal blanks. 4,240,494, Cl. 164-66.000.

Ku, Joseph P.; and Trezise, Richard D. Optimized wire matrix impact print head. 4,240,756, Cl. 400-124.000.

Kubiatowicz, James F., to Custom Concepts, Incorporated. Toy timing device with a slip-stick escapement-like mechanism. 4,240,525, Cl. 185-38.000.

Kubota Ltd.: *See—*
Ishiguro, Toshio; and Kyotani, Minoru, 4,240,508, Cl. 172-72.000.

Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, to TDK Electronics Co., Ltd.; and Tokyo Magnetic Printing Co., Ltd. Magnetic recording medium. 4,241,139, Cl. 428-413.000.

Kuczkowski, Joseph A., to Goodyear Tire & Rubber Company, The. Antioxidant combination of esters and amines. 4,241,217, Cl. 560-152.000.

Kudinova, Olga I.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.

Kudo, Tomomichi: *See—*
Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, 4,241,039, Cl. 423-531.000.

Kuehnle, Manfred R., to Coulter Systems Corporation. Multiple copy electrophotographic reproducing method. 4,241,160, Cl. 430-124.000.

Kulikov, Evgeny V.: *See—*
Malkin, Daniel D.; Kruglov, Gennady A.; Peredkov, Boris A.; and Kulikov, Evgeny V., 4,240,249, Cl. 368-28.000.

Kulke, Gunter, to Robert Bosch GmbH. Injection valve for internal combustion engines. 4,240,385, Cl. 123-470.000.

Kurbikoff, Peter A., to General Signal Corporation. Triplex receptacle. 4,240,686, Cl. 339-14.00R.

Kurfman, Virgil B.: *See—*
Marton, Henry J.; and Kurfman, Virgil B., 4,241,129, Cl. 428-216.000.

Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, to Nippon Telegraph and Telephone Public Corporation. Polymer optical circuit with optical lead-fibers and method of fabricating the same. 4,240,849, Cl. 156-73.200.

Kuroki, Tomio: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.

Kurtz, Robert L.; and Hurd, William A. Automatic circuit board tester. 4,240,750, Cl. 356-394.000.

Kurumada, Tomoyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Kushibe, Kazuyoshi: *See—*
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,240,791, Cl. 8-465.000.

Kushida, Shozo: *See—*
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.

Kwitkowski, Peter A., to Motorola, Inc. High sensitivity dual function meter circuit. 4,241,448, Cl. 455-115.000.

Kyogoku, Hiroshi, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Selective drum printer with axially divided multicolor ink roller. 4,240,345, Cl. 101-103.000.

Kyotani, Minoru: *See—*
Ishiguro, Toshio; and Kyotani, Minoru, 4,240,508, Cl. 172-72.000.

Kyoto Ceramic Co., Ltd.: *See—*
Machida, Hisashi; and Yoshihara, Yoichiro, 4,240,834, Cl. 106-42.000.

Kyoto Ceramic Kabushiki Kaisha: *See—*
Hamano, Yoshiteru, 4,240,893, Cl. 204-195.00S.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,241,182, Cl. 435-80.000.

Kyrias, George. Spa installation. 4,240,165, Cl. 4-493.000.

Kyts, Robert B., to Interlake, Inc. Apparatus and method for applying plastic strap. 4,240,865, Cl. 156-494.000.

Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, to BASF Aktiengesellschaft. Preparation of indolenines. 4,240,963, Cl. 260-319.100.

Labes, Mortimer M.; Jones, Marvin E.; and Kao, Huey-Chuen I., to Temple University. Canal clathrate complex solid electrolyte cell. 4,241,149, Cl. 429-50.000.

Lachonius, Leif: *See—*
Hallerback, Stig L.; and Lachonius, Leif, 4,240,777, Cl. 425-130.000.

Ladusaw, William T., to General Electric Company. Hermetically sealed compressor suction tube and method of assembly. 4,240,774, Cl. 418-248.000.

Lagasse, Alain; and Papillon, Bernard, to Rhone-Poulenc Industries. Anti-soiling and anti-redeposition adjuvants and detergent compositions comprised thereof. 4,240,918, Cl. 252-95.000.

LaGrone, Janet L.; and Spector, George. Hi rise escape tunnels and slide. 4,240,520, Cl. 182-48.000.

Lai, John T., to B. F. Goodrich Company, The. Synthesis of 2-piperazinones and 1,4-diaza-2-keto-cycloheptanes. 4,240,961, Cl. 260-239.30R.

Laird, Christopher B., to Geosource Inc. Apparatus for indicating unauthorized delivery of a fluid product. 4,241,354, Cl. 346-43.000.

Lal, Joginder; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Pneumatic rubber tire having improved sidewalls. 4,240,487, Cl. 152-355.000.

Lambert, Lloyd J., Jr. Abdominal waist machine. 4,240,626, Cl. 272-118.000.

Lamlee, Stewart. Method of making a hexaflexagon. 4,240,858, Cl. 156-211.000.

Lamond, Trevor G.; and Cuthbertson, Charles R., to J. M. Huber Corporation. Process for producing pelletized pigmentary materials. 4,241,001, Cl. 264-117.000.

LaMura, Joseph L., to Joanell Laboratories, Inc. Projectile penetration responsive electrically shorting target. 4,240,640, Cl. 273-373.000.

Landis, Earl M.; Roberts, Webster C.; and Crum, James N., to Harris Corporation. Web printing press. 4,240,346, Cl. 101-139.000.

Lang, Karl, to Mettler Instrumente AG. Apparatus with exchangeable burettes. 4,241,018, Cl. 422-75.000.

Langdon, Roger M., to Marconi Company Limited, The. Measurement of the density of liquids. 4,240,285, Cl. 73-32.00A.

Langmann, Horst: *See—*
Sanders, Heinz; and Langmann, Horst, 4,240,360, Cl. 108-53.300.

Larinoff, Michael W., to Hudson Products Corporation. Condensing heat exchanger. 4,240,502, Cl. 165-112.000.

Larka, Knut I.: *See—*
Andersson, Karl G. B; Forsberg, Ulla I.; and Larka, Knut I., 4,240,482, Cl. 150-8.000.

Larson, Lynn D. Method of making a water bed mattress. 4,240,859, Cl. 156-245.000.

Lary, Richard F.: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.

Lash, Charles C. Foldable linear explosive charge. 4,240,349, Cl. 102-24.00R.

Laskin, Allen I.: *See—*
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,241,184, Cl. 435-148.000.

Laskow, William; and Morelock, Charles R., to General Electric Company. Method of making a shaped silicon carbide-silicon matrix composite and articles made thereby. 4,240,835, Cl. 106-44.000.

Lather, Dieter; and Ries, Karl, to Mannesmann Aktiengesellschaft. Automatic self-checking of test equipment. 4,240,281, Cl. 73-1.0DV.

Lau, Peter: *See—*
Stelzner, Herbert A.; and Lau, Peter, 4,240,239, Cl. 53-398.000.

Lautenschlager, Friedrich W.; and Hennecke, Hermann, to Deutsche Babcock Aktiengesellschaft. Blower beater mill. 4,240,590, Cl. 241-56.000.

Lautenschlager, Karl, Jr., to Karl Lautenschlager KG, Mobelbeschlagfabrik. Hinge for cabinet doors. 4,240,179, Cl. 16-139.000.

Lawrence, James E., Jr.: *See—*
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,240,470, Cl. 138-109.000.

Lawson, Leslie E., to Vickers Limited. Processing of radiation sensitive devices. 4,240,737, Cl. 354-299.000.

Lay, Joachim E. Rotary engine. 4,240,394, Cl. 123-214.000.

Layton, Terry N.: *See—*
Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, 4,241,017, Cl. 422-58.000.

Lazareff, Michel: *See—*
Vinas Espin, Genevieve M. G.; Marchoisne, Yves F. P.; and Lazareff, Michel, 4,240,598, Cl. 244-35.00R.

Leading Plywood Corporation: *See—*
Crawford, John H., 4,240,785, Cl. 431-352.000.

Lechevin, Jean-Claude; and Treilles, Jean-Noel, to Lipha, Lyonnaise Industrielle Pharmaceutique. Novel medicinal composition for the treatment of biliary lithiasis. 4,241,047, Cl. 424-33.000.

Lechner, Uwe: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.

LeCourt, William N.: *See—*
Mara, Eugene G.; Schreiber, John A.; and LeCourt, William N., 4,241,373, Cl. 361-92.000.

Leder, Frederic: *See—*
Sartori, Guido; and Leder, Frederic, 4,240,923, Cl. 252-189.000.

Lee, Minyoung; Szala, Lawrence E.; and DeVries, Robert C., to General Electric Company. Polycrystalline diamond body/silicon carbide substrate composite. 4,241,135, Cl. 428-332.000.

Lee, Pang K., to Westinghouse Electric Corp. Method for making sintered metal-coated graphite for high-current collector brushes. 4,240,830, Cl. 75-212.000.

Lefevre, Lloyd E.; and Wegenka, Mark A., to Dow Chemical Company, The. Starting tail for film rolls. 4,241,127, Cl. 428-177.000.

Lehman-H Feeder & Plow, Inc.: *See—*
Martel, Virgil L., 4,240,216, Cl. 37-98.000.

Lehman, Ralph M.: *See—*
Adams, Frederick J.; and Lehman, Ralph M., 4,240,306, Cl. 74-498.000.

Lehmann, Kjeld; and Rasmussen, Arne V. R., to Danfoss A/S. Housing for an electric circuit arrangement. 4,241,380, Cl. 361-383.000.

Leibowitz, Marshall, to Timex Corporation. Electrode barrier layer for hydrogen-colored electrochromic displays. 4,240,713, Cl. 350-357.000.

Leifeld, Ferdinand; and Marx, Jurgen, to Trutzschler GmbH & Co. KG. Arrangement for opening textile fiber bales. 4,240,182, Cl. 19-81.000.

Leiner, Barry M.: *See—*
Krasner, Norman F.; and Leiner, Barry M., 4,241,411, Cl. 364-726.000.

Lennartson, Douglas G., to Gross-Given Manufacturing Company. Auxiliary dispensing unit for spiral vendor. 4,240,563, Cl. 221-75.000.

Leonard, Henri, to Micro-Mega S.A. Insert for injecting a liquid product into a bore. 4,240,473, Cl. 141-91.000.

Leopold, Leo. Folding liner for shirts and similar packaged garments. 4,240,553, Cl. 206-492.000.

Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, to AGFA-Gevaert, A.G. Focussing system. 4,240,727, Cl. 354-25.000.

Le Roy, Patrice M.: *See—*
Senet, Jean-Pierre G.; and Le Roy, Patrice M., 4,241,202, Cl. 526-73.000.

Les Applications Hydrauliques R. Sarrazin S.A.: *See—*
Benilan, Jacques, 4,240,255, Cl. 60-453.000.

Letsch, Walter. Method for recycling tires and similarly compounded materials to recover usable constituents. 4,240,587, Cl. 241-23.000.

Leveque, Alain: *See—*
Helgorsky, Jacques; and Leveque, Alain, 4,241,029, Cl. 423-112.000.

Levine, James L.: *See—*
Fan, George J.; Garwin, Richard L.; Levine, James L.; and Wilczynski, Janusz S., 4,241,343, Cl. 340-755.000.

Levine, Stella R., to Brewster Laboratories, Inc. Foam scrubbing device incorporating a cleanser. 4,240,760, Cl. 401-201.000.

Lewis, Dyfed: *See—*
Fahnenstich, Rudolf; Heese, Joachim; and Lewis, Dyfed, 4,241,085, Cl. 424-319.000.

Lewis, George K.: *See—*
Groch, Mark W.; and Lewis, George K., 4,240,440, Cl. 128-654.000.

Lewis, John W.: *See—*
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,066, Cl. 424-260.000.
Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,067, Cl. 424-260.000.

Lewis, Larry E.: *See—*
Henderson, James R.; and Lewis, Larry E., 4,240,516, Cl. 180-289.000.

Lewis, Milburn. Pressure-operated friction locking apparatus for slidably adjustable truck trailer coupling. 4,240,647, Cl. 280-482.000.

Lichter, Seymour; and Nold, Frank P. Process for the production of composite foamed material. 4,240,998, Cl. 264-45.400.

Lichter, Seymour; and Nold, Frank P. Composite foamed material. 4,241,190, Cl. 521-54.000.

Lieberman, David M.: *See—*
Imboden, Walter H.; and Lieberman, David M., 4,240,160, Cl. 2-239.000.

Life Savers, Inc.: *See—*
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,090, Cl. 426-4.000.
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,091, Cl. 426-4.000.

Liffick, Fenton A.: *See—*
Zorn, Edward; Sherwood, Bert J.; and Liffick, Fenton A., 4,240,670, Cl. 301-9.0DN.

Ligon, Samuel B.: *See—*
Song, Jae M.; and Ligon, Samuel B., 4,240,629, Cl. 273-58.00C.

Lile, Derek L.: *See—*
Collins, David A.; and Lile, Derek L., 4,241,167, Cl. 430-314.000.

Lilly Industries Limited: *See—*
Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,241,073, Cl. 424-273.00R.

Lin, Victor J., to Celanese Corporation. Spray spinning collection unit. 4,240,864, Cl. 156-441.000.

Lind, John H., to Polypur Forsaljnings AB. Device in a toilet for biological degradation of excrement. 4,240,164, Cl. 4-449.000.

Linden, James C.: *See—*
Stein, Brooks M.; and Linden, James C., 4,241,185, Cl. 435-188.000.

Linder, Peter J. Gate locking device. 4,240,278, Cl. 70-101.000.

Lindmayer, Joseph, to Solarex Corporation. Solar cell having contacts and antireflective coating. 4,240,842, Cl. 136-256.000.

Lindop, Arthur H. Cleaning device for cooker grills. 4,240,398, Cl. 126-25.00R.

Lindsay Manufacturing Company: *See—*
Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., 4,240,582, Cl. 239-11.000.

Linhart, Friedrich; Girgensohn, Bjoern; and Zeeh, Bernd, to BASF Aktiengesellschaft. N-Cyclohexyl-N-methoxyacetoacetamide. 4,240,973, Cl. 260-453.0RW.

Linlor, William I. Solenoidal fusion system. 4,240,873, Cl. 176-3.000.

Linnecke, Carl B.; and Wong, Daniel, to Akzona Incorporated. Method and apparatus for specific binding substances. 4,240,751, Cl. 356-409.000.

Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Lechevin, Jean-Claude; and Treilles, Jean-Noel, 4,241,047, Cl. 424-33.000.

Litman, Alan, to Smith & Wesson Chemical Company, Inc. Flexible leaf contact system for night vision optical instruments. 4,241,252, Cl. 250-213.0VT.

Little, Julian R.; Nudenberg, Walter; and Rim, Yong S. Fire retardant sulfonate compound. 4,240,974, Cl. 260-456.00P.

Liu, Cheng-Yih: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.

Lobanoff, Valenteen S., to Johnston Pump Company. Seal-aligning rigid coupling assembly. 4,240,762, Cl. 403-24.000.

Lobe, Hartwig; and Dietz, Wolfgang, to Bayerische Motoren Werke Aktiengesellschaft. Circuit arrangement for turn-indicator blinker lights. 4,241,328, Cl. 340-75.000.

Locher, Hermann, to Giroflex Entwicklungs AG. Adjustable stacking chair. 4,240,663, Cl. 297-239.000.

Login, Robert B.: *See—*
Newkirk, David D.; and Login, Robert B., 4,241,224, Cl. 568-619.000.

LOGISAC Groupement d'Interet Economique Regi par l'Ordonnance: *See—*
Roy, Michel, 4,240,340, Cl. 100-7.000.

Lommel, Hermann: *See—*
Bruck, Gernot K., 4,240,753, Cl. 356-442.000.

Lonseal Corporation: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.

L'Oreal: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,240,450, Cl. 132-7.000.

Louden, Samuel, to National Tube & Reel Corporation. End cap for cloth reel. 4,240,595, Cl. 242-222.000.

Louviot, Jean F., to Regie Nationale des Usines Renault. Modular element for a hydraulic flow divider unit. 4,240,456, Cl. 137-100.000.

Lowther, Frank E., to Purification Sciences Inc. Internal combustion engine system. 4,240,381, Cl. 123-26.000.

Lubin, Louis. Propulsion system for hydrofoil, planing and semi-planing sea-going vessels. 4,240,370, Cl. 440-40.000.

Lucas Industries Limited: *See—*
Green, Stanley, 4,241,388, Cl. 362-268.000.

Lucchesi, Benedict R.: *See—*
Counsell, Raymond E.; and Lucchesi, Benedict R., 4,241,088, Cl. 424-329.000.

Lucid, Michael F.: *See—*
Bowerman, Paul D.; and Lucid, Michael F., 4,241,027, Cl. 423-10.000.

Lugaresi, Thomas J., to Timex Corporation. Thin touch type switch of sealed construction. 4,241,246, Cl. 200-52.00R.

Lukienko, Ekaterina P.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.

Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F. Aluminum-base alloy used as material for galvanic protector. 4,240,829, Cl. 75-147.000.

Lummus Company, The: *See—*
Suciu, George D.; and Paustian, John E., 4,240,885, Cl. 204-98.000.

Lumsden, John: *See—*
Gabb, Philip J.; Monk, Hayden; and Lumsden, John, 4,241,038, Cl. 423-493.000.

Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., to Michigan Technological University, Board of Control of. Structural members of composite wood material and process for making same. 4,241,133, Cl. 428-326.000.

Lund, Marlys E., to Minnesota Mining and Manufacturing Company. Broth medium for detection of DNAse-positive microorganisms. 4,241,181, Cl. 435-34.000.

Lurssen, Klaus: *See—*
Dickore, Karlfried; and Lurssen, Klaus, 4,240,820, Cl. 71-76.000.

Lutin, Matthew R. Educational amusement device for matching words with non-verbal symbols. 4,240,213, Cl. 434-194.000.

Lux, Peter, to U.S. Philips Corporation. Device for computed tomography. 4,241,404, Cl. 364-414.000.

Lvov, Vladimir M.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Lytle, John D., to M.U. Engineering & Manufacturing, Inc. All plastic projection lens assembly with aspheric surface. 4,240,701, Cl. 350-189.000.

M.U. Engineering & Manufacturing, Inc.: *See—*
Lytle, John D., 4,240,701, Cl. 350-189.000.

Ma, Lit N.: *See—*
United States of America, National Aeronautics and Space Administration; Cellier, Alfred; Huey, Douglas C.; and Ma, Lit N., 4,241,308, Cl. 328-55.000.

Mabry, Ronald A.: *See—*
Massey, Jack W.; Belden, William P.; and Mabry, Ronald A., 4,240,854, Cl. 156-157.000.

MacDougall, Ian C. Shaft assemblies for golf clubs. 4,240,631, Cl. 273-77.00A.
Mace, Mike: *See—*
Keever, Charles W., Jr., 4,240,211, Cl. 34-90.000.
Mace, Robert: *See—*
Keever, Charles W., Jr., 4,240,211, Cl. 34-90.000.
Machida, Hisashi; and Yoshihara, Yoichiro, to Kyoto Ceramic Co., Ltd. Synthetic single crystal for alexandrite gem. 4,240,834, Cl. 106-42.000.
Mackay, Donald A. M.: *See—*
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,090, Cl. 426-4.000.
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,241,091, Cl. 426-4.000.
MacKay, Michael T., to B. R. MacKay & Sons. Inc. Ultra low volume processing of and cartridge for photographic fixer solution to recover silver therefrom. 4,240,617, Cl. 266-170.000.
Mackey, Joseph E.: *See—*
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,240,857, Cl. 156-209.000.
MacLeay, Ronald E., to Pennwalt Corporation. Process for the preparation of cumyl peroxides. 4,241,222, Cl. 568-561.000.
Madappally, Mathew M.; and Bucolo, Giovanni, to Coulter Electronics, Inc. Method for determining a transaminase in a biological fluid and reagent combination for use in the method. 4,241,179, Cl. 435-16.000.
Madsen, Harold L. Drapery hanger and manipulator. 4,240,489, Cl. 160-126.000.
Maeda, Takeshi: *See—*
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
Maeshima, Michihiro: *See—*
Koh, Shiro; Kudo, Tomomichi; Maeshima, Michihiro; and Kibayashi, Tamotsu, 4,241,039, Cl. 423-531.000.
Maeyama, Teruaki; and Nakata, Hideo, to U.S. Philips Corporation. Comb filter circuit. 4,241,363, Cl. 358-36.000.
Mag, Theodore K.; and Reid, Margaret P., to Canada Packers Limited. Continuous process for contacting of triglyceride oils with an acid. 4,240,972, Cl. 260-424.000.
Mahany, Richard J.: *See—*
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., 4,240,299, Cl. 73-861.230.
Mahyera, Anil; and Duff, John, to Joy Manufacturing Company. Hydraulic jet cutting tool and method. 4,240,664, Cl. 299-17.000.
Maier, Roland: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.
Maitani, Yoshihisa; and Yamada, Toyotaka, to Olympus Optical Co., Ltd. Protective cover for taking lens of camera. 4,240,735, Cl. 354-288.000.
Maixner, Richard C.; Marston, Robert K.; and Massad, Khalil E., to Rockwell International Corporation. Single sideband signal demodulator. 4,241,451, Cl. 455-202.000.
Makino, Yoshiaki: *See—*
Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, 4,241,139, Cl. 428-413.000.
Makishima, Tukuo: *See—*
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Koh; and Wada, Shozo, 4,240,928, Cl. 252-429.00B.
Maklakova, Tatyana A.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.
Malkin, Daniel D.; Kruglov, Gennady A.; Peredkov, Boris A.; and Kulikov, Evgeny V. Instantaneous calendar device for timepieces. 4,240,249, Cl. 368-28.000.
Mandat, Kazimierz: *See—*
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.
Mandish, Doneath M.: *See—*
Mandish, Theodore O.; and Mandish, Doneath M., 4,241,107, Cl. 427-140.000.
Mandish, Theodore O.; and Mandish, Doneath M. Roof coating process. 4,241,107, Cl. 427-140.000.
Mannesmann Aktiengesellschaft: *See—*
Lather, Dieter; and Ries, Karl, 4,240,281, Cl. 73-1.0DV.
Manthei, Philip J., to Raytheon Company. Two-piece liquid rinse agent dispenser for clothes washing machine. 4,240,277, Cl. 68-17.00A.
Manziek, Larry, to Rohm and Haas Company. Borane reducing resins for removal of metal ions. 4,240,909, Cl. 210-688.000.
Mapco, Inc.: *See—*
Swain, Robert J.; and Rutz, William D., 4,240,908, Cl. 252-325.000.
Mara, Eugene G.; Schreiber, John A.; and LeCourt, William N., to McGraw-Edison Company. Switchgear voltage sensor. 4,241,373, Cl. 361-92.000.
Marchoisne, Yves F. P.: *See—*
Vinas Espin, Genevieve M. G.; Marchoisne, Yves F. P.; and Lazareff, Michel, 4,240,598, Cl. 244-35.00R.
Marconi Company Limited, The: *See—*
Langdon, Roger M., 4,240,285, Cl. 73-32.00A.
Mariaulle, Claude, to Automatisation-Sogemo. Coupling systems for conduits, particularly for semi-rigid plastic tubes. 4,240,651, Cl. 285-39.000.
Markle, David A.; and Offner, Abe, to Perkin-Elmer Corporation, The. System for illuminating an annular field. 4,241,390, Cl. 362-299.000.
Markun, Lovro: *See—*
Hagmann, Peter; and Markun, Lovro, 4,240,529, Cl. 187-90.000.
Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., to United States of America, Navy. Thermal signature targets. 4,240,212, Cl. 434-11.000.
Marshall, Robert A., to General Electric Company. Novel liquid metal current collector configuration. 4,241,272, Cl. 310-219.000.
Marston, Robert K.: *See—*
Maixner, Richard C.; Marston, Robert K.; and Massad, Khalil E., 4,241,451, Cl. 455-202.000.
Martel, Virgil L., to Lehman-H Feeder & Plow, Inc. Land forming and/or farming apparatus. 4,240,216, Cl. 37-98.000.
Martin, Alton R.; and Tranquilli, Henry R., to Westvaco Corporation. Rotary bark screen. 4,240,589, Cl. 241-81.000.
Martin, Johannes J.; and Martin, Walter J., to Josef Martin Feuerungsbau GmbH. Grate for industrial furnaces. 4,240,402, Cl. 126-152.00B.
Martin, Lawrence L.; Ong, Helen H.; Anderson, Vernon B.; and Crichlow, Charles A., to American Hoechst Corporation. Antidepressant (α-phenyl-2-tolyl)azacycloalkanes. 4,241,071, Cl. 424-267.000.
Martin, Trevor I.; Szabo, Paul; and Turner, Sam R., to Xerox Corporation. Chemical process. 4,240,987, Cl. 570-206.000.
Martin, Virgil B., to Gehl Company. Forage harvester having water injection means to prevent gumming. 4,240,244, Cl. 56-16.400.
Martin, Walter J.: *See—*
Martin, Johannes J.; and Martin, Walter J., 4,240,402, Cl. 126-152.00B.
Martinengo, Pier C.; and Carughi, Carlo, to Fiat Societa per Azioni. Process for producing protective coatings on metals and metal alloys for use at high temperatures. 4,241,113, Cl. 427-229.000.
Marton, Henry J.; and Kurfman, Virgil B., to Dow Chemical Company, The. Delamination resistant multilayer metal/polymer composites. 4,241,129, Cl. 428-216.000.
Marvin Glass & Associates: *See—*
Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., 4,240,224, Cl. 46-88.000.
Morrison, Howard J.; Baer, Ralph H.; and Breslow, Jeffrey D., 4,240,638, Cl. 273-237.000.
Marx, Jurgen: *See—*
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Masai, Hiroshi: *See—*
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, 4,241,095, Cl. 426-335.000.
Masaki, Katsumi; and Kitamura, Takashi, to Canon Kabushiki Kaisha. Masking device for selectively preventing visualization of data from a data output system. 4,241,415, Cl. 364-900.000.
Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft: *See—*
Kraus, Hans, 4,240,528, Cl. 187-52.00R.
Mashimo, Toru, to Toyo Kogyo Co., Ltd. Drilling machine centering arrangement. 4,240,511, Cl. 173-1.000.
Mason, George D., to United States of America, Navy. Free gyro motor drive circuit. 4,240,301, Cl. 74-5.700.
Massad, Khalil E.: *See—*
Maixner, Richard C.; Marston, Robert K.; and Massad, Khalil E., 4,241,451, Cl. 455-202.000.
Massey, Jack W.; Belden, William P.; and Mabry, Ronald A., to Avery International Corporation. Fan-folded labeling technique. 4,240,854, Cl. 156-157.000.
Massey, Raymond P., to Telex Computer Products, Inc. Digital majority noise filter for bi-level data reception. 4,241,311, Cl. 328-167.000.
Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink, Gerrit J., to Shell Oil Company. Sand detection. 4,240,287, Cl. 73-61.00R.
Matayoshi, Yutaka; Tamura, Masayuki; and Anegawa, Yoshiro, to Nissan Motor Company, Limited. Retractable glow plug for diesel engine. 4,240,392, Cl. 123-145.00A.
Materia, Peter; and Desai, Jayraj S., to Becton, Dickinson and Company. Culture bottle having stopper lock. 4,241,188, Cl. 435-296.000.
Matijevic, Egon; and Visca, Mario, to Montedison S.p.A. Spherical titanium dioxide particles and process of manufacture. 4,241,042, Cl. 423-610.000.
Matsuda, Masato: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.
Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Spliced joint of spun yarn and method for producing same. 4,240,247, Cl. 57-202.000.
Matsui, Katsuaki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Matsui, Takeshi: *See—*
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Matsumoto, Kenji; and Sakaoka, Gouji, to Pentel Kabushiki Kaisha. Mechanical pencil having guides to match guides on a refill cartridge. 4,240,759, Cl. 401-85.000.
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, to Nippon Shinyaku Co. Ltd. 9H-Pyrido[3,4-b]indole derivatives. 4,241,064, Cl. 424-256.000.
Matsuoka, Michio: *See—*
Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, 4,241,019, Cl. 422-94.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
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Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, 4,241,367, Cl. 360-127.000.
Mattern, Gunter: *See—*
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Maxson Corporation, The: *See—*
Puariea, Douglas A., 4,240,355, Cl. 105-273.000.
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., to Operating Systems, Inc. Finite state automaton with multiple state types. 4,241,402, Cl. 364-200.000.
Mayweather, William T., to Western Electric Company, Inc. Method of plating the surface of a substrate. 4,241,105, Cl. 427-125.000.
Maywood, Joseph: *See—*
Harlow, John H., Jr.; and Maywood, Joseph, 4,240,517, Cl. 180-295.000.
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Miller, William J.; McAleer, William J.; and Callahan, Lynn T., 4,241,175, Cl. 435-7.000.
McCanney, Neil R., to Reflectone, Inc. Voice modification system. 4,241,235, Cl. 179-1.0SH.
McCauley, James W.; and Corbin, Normand D., to United States of America, Army. Process for producing polycrystalline cubic aluminum oxynitride. 4,241,000, Cl. 264-65.000.
McClean, John W., to Breville Holdings Pty. Limited. Citrus juicer attachment for food processor. 4,240,338, Cl. 99-501.000.
McDonald, Dennis K., to Babcock & Wilcox Company, The. Support device for a pressure vessel. 4,240,602, Cl. 248-58.000.
McDougal, Allan R.: *See—*
United States of America, National Aeronautics and Space Administration; and McDougal, Allan R., 4,240,256, Cl. 60-518.000.
McGee, John K., to Combustion Engineering, Inc. Heat responsive back seat arrangement for valve operator with manual override. 4,240,455, Cl. 137-77.000.
McGraw-Edison Company: *See—*
Douglass, James D.; and Chase, Albert T., 4,241,324, Cl. 336-217.000.
Mara, Eugene G.; Schreiber, John A.; and LeCourt, William N., 4,241,373, Cl. 361-92.000.
McKee, Phyllis L. Document display piece. 4,240,543, Cl. 206-39.000.
McKinley, John R.; and Roeschlaub, John G., to Occidental Research Corporation. Apparatus and method for the selective wetting of particles. 4,241,102, Cl. 209-3.100.
McLaughlin, Thomas P., to Stouffer Corporation, The. Adjustable spacers for flat plate conveyors. 4,240,270, Cl. 62-341.000.
McMaster, Harold A.; and Nitschke, Norman C. Method and apparatus for forming tempered sheet glass with a pyrolytic film in a continuous process. 4,240,816, Cl. 65-60.00R.
McNaney, Joseph T. Graphic symbol line position control means for high speed printing. 4,240,715, Cl. 350-358.000.
McNeely, Gerald W., to Akzona Incorporated. Sterilization indicator. 4,240,926, Cl. 252-408.000.
McNeil Corporation: *See—*
Wegmann, Jerome B.; and Kotyk, Jeffrey M., 4,240,328, Cl. 91-287.000.
McPhee, Donald J.; and Gray, Herbert W., to Gates Rubber Company, The. Extruder head for making elastomer-fiber composite hose. 4,240,782, Cl. 425-467.000.
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., to Clow Corporation. Composite pipe having an integral bell end. 4,240,470, Cl. 138-109.000.
Mead Corporation, The: *See—*
Dickens, Luther I., 4,240,557, Cl. 211-153.000.
Stout, James T., 4,240,545, Cl. 206-188.000.
Mechlowitz, Bela: *See—*
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Meckel, Walter; Muller-Albrecht, Horst; Dollhausen, Manfred; and Velker, Eugen, to Bayer Aktiengesellschaft. Process for the preparation of dihydroxypolyurethanes and the use thereof as adhesives or as raw materials for adhesives. 4,240,861, Cl. 156-331.000.
Meckel, Walter: *See—*
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Medical, Incorporated: *See—*
Huffstutler, Miles C., Jr.; Kriesel, Marshall S.; and Anderson, Lawrence, 4,240,161, Cl. 3-1.500.
Medvetz, Edward J.; and Yandrick, Rudolph M. Animal trap. 4,240,223, Cl. 43-58.000.
Meeker, Paul K., to Century Products, Inc. Reclining chair. 4,240,625, Cl. 272-86.000.
Mehnert, Walter, to Naviga-Etablissement, Firma. Winch for the slip-free hauling of a rope. 4,240,612, Cl. 254-344.000.
MEI Systems Inc.: *See—*
Farin, William G., 4,241,041, Cl. 423-563.000.
Meis, Charles H.: *See—*
Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., 4,240,582, Cl. 239-11.000.
Meisinger, Stanlee W.: *See—*
Herzan, Eugene H.; and Meisinger, Stanlee W., 4,240,466, Cl. 137-614.040.
Mendenhall, Robert L. Asphaltic concrete patch mixing and heating apparatus and method. 4,240,754, Cl. 366-4.000.
Mentrup, Anton: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.
Merck & Co., Inc.: *See—*
Bolhofer, William A., 4,241,072, Cl. 424-270.000.
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Miller, William J.; McAleer, William J.; and Callahan, Lynn T., 4,241,175, Cl. 435-7.000.
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Merkulov, Vasily V.: *See—*
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Merriweather, Kenneth A., to Bendix Corporation, The. Measurement indicating apparatus and method. 4,241,342, Cl. 340-753.000.
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Wiesner, Paul; Wohler, Fritz; and Stonner, Hans-Martin, 4,241,227, Cl. 568-761.000.
Metodiev, Metodi S.: *See—*
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Metretek Incorporated: *See—*
Paraskevakos, Theodoros G.; and Bushman, W. Thomas, 4,241,237, Cl. 179-2.0AM.
Mettler Instrumente AG: *See—*
Lang, Karl, 4,241,018, Cl. 422-75.000.
Meyer, Burton C.: *See—*
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Meyer, Gustavo A.; Carlberg, John R.; and Nikolic, Cvetko, to Amax Inc. Dissolution of nickeliferous sulfide material in HCl. 4,241,031, Cl. 423-150.000.
Michels, Lowell S.: *See—*
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.
Michigan Technological University, Board of Control of: *See—*
Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., 4,241,133, Cl. 428-326.000.
Michlmayr, Manfred J.: *See—*
Gibson, Kirk R.; Jacobson, Robert L.; and Michlmayr, Manfred J., 4,241,231, Cl. 585-748.000.
Michon, Gerald J.: *See—*
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Micro Gage, Inc.: *See—*
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Micro-Mega S.A.: *See—*
Leonard, Henri, 4,240,473, Cl. 141-91.000.
Mieville, Rodney L., to Standard Oil Company (Indiana). Reforming catalyst comprising iridium, zirconia, and alumina. 4,240,934, Cl. 252-466.0PT.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, to Fuji Photo Film Co., Ltd. Highly-sensitive high-contrast photographic materials. 4,241,164, Cl. 430-264.000.
Miki, Kiyotsune, to SM Industrial Company, Limited. Curtain runner. 4,240,178, Cl. 16-93.00D.
Milberger, Ernest C.; and Wong, Eunice K. T., to Standard Oil Company. Oxidation catalysts. 4,240,931, Cl. 252-438.000.
Miles Laboratories, Inc.: *See—*
Buckler, Robert T.; Ward, Frederick E.; and Garling, David L., 4,241,069, Cl. 424-263.000.
Miller, Gabriel L.: *See—*
Celler, George K.; and Miller, Gabriel L., 4,240,843, Cl. 148-1.500.
Miller, George A.; and Weiler, Ernest D., to Rohm and Haas Company. Metal salt complexes of 3-isothiazolones. 4,241,214, Cl. 548-101.000.
Miller, William J.; McAleer, William J.; and Callahan, Lynn T., to Merck & Co., Inc. Assay for hepatitis B core antibody. 4,241,175, Cl. 435-7.000.
Millot, Jean-Paul, to Framatome. Process for controlling the reactivity effects due to the power variations in PWR nuclear reactors. 4,240,874, Cl. 176-22.000.
Mills, William R., Jr.: *See—*
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Milne, James, to BICC Limited. Methods for preparing natural and artificial structures. 4,240,995, Cl. 264-36.000.
Milwaukee Cylinder Corporation: *See—*
Schink, Richard R., 4,240,464, Cl. 137-505.420.
Mima, Hiroshi: *See—*
Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, 4,240,247, Cl. 57-202.000.

Mine Safety Appliances Company: *See—*
Bertone, Gregory A., 4,241,299, Cl. 318-474.000.
Mineral Process Licensing Corporation BV: *See—*
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Minnesota Micro Metal, Inc.: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
Foslien, Floyd L., 4,240,280, Cl. 72-410.000.
Lund, Marlys E., 4,241,181, Cl. 435-34.000.
Minolta Camera Kabushiki Kaisha: *See—*
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,240,733, Cl. 354-173.000.
Minuto, Maurice M. Antibacterial and antifungal compositions. 4,241,084, Cl. 424-313.000.
Mir, Ghulam N.; Krebs, Jacqueline B.; and Studt, William L., to William H. Rorer, Inc. Dysmenorrhea treatment. 4,241,087, Cl. 424-324.000.
Mirzoian, Genrikh S.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandrov, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.
Misumi, Teruo: *See—*
Fukuda, Tadaji; and Misumi, Teruo, 4,241,158, Cl. 430-86.000.
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., to International Business Machines Corporation. Tagged pointer handling apparatus. 4,241,396, Cl. 364-200.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Tanaka, Katsufusa, 4,240,300, Cl. 74-2.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, 4,241,116, Cl. 427-386.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Ueda, Masato; and Andoh, Takeshi, 4,241,110, Cl. 427-203.000.
Mitsubishi Paper Mills, Ltd.: *See—*
Ashie, Yutaka; and Nakamura, Yasuhiro, 4,241,143, Cl. 428-512.000.
Mitsubishi Rayon Co., Ltd.: *See—*
Tanaka, Yoshihiko; Sugimori, Teruhiko; and Habara, Hideaki, 4,241,007, Cl. 264-324.000.
Mitsuboshi Belting Ltd.: *See—*
Takano, Hiroshi; Hashimoto, Yasuhiro; and Takesako, Mutsuo, 4,240,283, Cl. 73-7.000.
Mitsuhashi, Yoshio. Combined punching and stapling device. 4,240,572, Cl. 227-76.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.
Miyagishi, Shigeki: *See—*
Yamazaki, Takeo; and Miyagishi, Shigeki, 4,240,307, Cl. 74-503.000.
Miyaki, Kiyoshi: *See—*
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, 4,240,391, Cl. 123-454.000.
Miyamoto, Takayoshi: *See—*
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,240,733, Cl. 354-173.000.
Miyauchi, Toshimitsu: *See—*
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
Miyazaki, Joichi: *See—*
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.
Mizote, Hiroyuki: *See—*
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, 4,241,070, Cl. 424-267.000.
Mobay Chemical Corporation: *See—*
Bailey, Robert J., 4,241,131, Cl. 428-262.000.
Moberly, Lawrence E.: *See—*
Johnson, John L.; and Moberly, Lawrence E., 4,241,271, Cl. 310-219.000.
Mobil Oil Corporation: *See—*
Allen, Linus S.; Givens, Wyatt W.; and Mills, William R., Jr., 4,241,253, Cl. 250-390.000.
Andress, Harry J., Jr., 4,240,803, Cl. 44-63.000.
Audeh, Costandi A.; and Yan, Tsoung-yuan, 4,240,901, Cl. 208-324.000.
Bloomquist, Marvin G.; and Wang, Yung-liang, 4,241,429, Cl. 367-52.000.
Braid, Milton, 4,240,958, Cl. 260-139.000.
Chibnik, Sheldon, 4,240,970, Cl. 260-346.740.
Drinkard, B. M., 4,241,230, Cl. 585-259.000.
Tange, Charles H., 4,240,575, Cl. 229-29.00M.
Yan, Tsoung-yuan, 4,241,026, Cl. 423-7.000.
Modern Automatic Alarms Limited: *See—*
Barnes, Brian S., 4,241,335, Cl. 340-507.000.
Moeller, Rolf: *See—*
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,241,191, Cl. 521-56.000.
Mohnach, Michael G.: *See—*
Harbison, William H.; and Mohnach, Michael G., 4,240,177, Cl. 15-250.320.
Molenaar, Adrianus, to Molenaar's Betonindustrie B.V. Process for setting up the shuttering for a building wall, and setting block to be used in this process. 4,240,236, Cl. 52-741.000.
Molenaar's Betonindustrie B.V.: *See—*
Molenaar, Adrianus, 4,240,236, Cl. 52-741.000.
Molins Machine Company, Inc.: *See—*
Craemer, Robert H.; and Evans, Donald J., 4,240,856, Cl. 156-205.000.
Moll, William F., Jr.; and Thompson, Thomas D., III, to Yara Engineering Corporation. Rheological control of polyester-styrene resin compositions. 4,240,951, Cl. 260-40.00R.
Molz, Harold A. Mainsail and/or mizzensail furling device. 4,240,369, Cl. 114-106.000.
Momiyama, Kikuo, to Canon Kabushiki Kaisha. Telephoto lens. 4,240,703, Cl. 350-214.000.
Momose, Yutaka: *See—*
Nakamura, Kazuaki; and Momose, Yutaka, 4,240,262, Cl. 62-55.500.
Monk, Hayden: *See—*
Gabb, Philip J.; Monk, Hayden; and Lumsden, John, 4,241,038, Cl. 423-493.000.
Monsanto Company: *See—*
Huck, Rodney M., 4,240,948, Cl. 260-29.300.
Montedison S.p.A.: *See—*
Matijevic, Egon; and Visca, Mario, 4,241,042, Cl. 423-610.000.
Pelosini, Luigi; Parisi, Alessandro; and Pizzini, Sergio, 4,241,037, Cl. 423-348.000.
Montoya, Lawrence C.; and Bellman, Donald R., to United States of America, National Aeronautics and Space Administration. Skin friction measuring device for aircraft. 4,240,290, Cl. 73-178.00R.
Monvoisin, Jacques, to Tecal S.A.R.L. Automatic machine for serigraphic printing. 4,240,343, Cl. 101-38.00R.
Mookherjee, Braja D.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.
Moore, Alan F., to Dunlop Limited. Resilient couplings. 4,240,763, Cl. 403-203.000.
Moore, Allen D., to Otis Engineering Corporation. Safety valve actuator and pilot system. 4,240,463, Cl. 137-492.500.
Moore, Garry L.: *See—*
Keyes, Melvin H.; and Moore, Garry L., 4,241,180, Cl. 435-20.000.
Morelock, Charles R.: *See—*
Laskow, William; and Morelock, Charles R., 4,240,835, Cl. 106-44.000.
Mori, Eiko: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Morikawa, Yukiteru; and Nishikawa, Hideo, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Germicidal composition for agriculture and horticulture. 4,241,083, Cl. 424-309.000.
Morimoto, Kiyoshi; and Watanabe, Hiroshi, to Futaba Denshi Kogyo Kabushiki Kaisha. Light emitting diode display device. 4,241,281, Cl. 315-161.000.
Morimura, Syoji: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Morin, Armand. Combined scarifier and branch slashing and crushing implement. 4,240,510, Cl. 172-547.000.
Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Flash system changeover device for the shutter of camera. 4,240,732, Cl. 354-138.000.
Morita, Lawrence H.: *See—*
Barnhart, Kenneth O.; Morita, Lawrence H.; and Rubell, Rube I., 4,240,544, Cl. 206-0.820.
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, to Nissan Motor Company, Limited. Carburetor with multiconduit nozzle. 4,240,989, Cl. 261-78.00R.
Mormann, Werner; Bofinger, Gerhard; and Wolfle, Wilfried, to Aesculap-Werke Aktiengesellschaft, vormals Jetter & Scheerer. Mucous membrane cutter for mucogingival membrane surgery. 4,240,432, Cl. 128-305.500.
Morrison, Howard J.; Baer, Ralph H.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Microprocessor controlled game apparatus. 4,240,638, Cl. 273-237.000.
Morton, Alexander R.: *See—*
Bell, Harris N.; and Morton, Alexander R., 4,240,593, Cl. 242-71.800.
Moshier, Stephen L.: *See—*
Bahler, Lawrence G.; and Moshier, Stephen L., 4,241,329, Cl. 340-146.30R.
Moskowitz, Larry N.; and Klar, Erhard, to SCM Corporation. Process of making nickel or cobalt powder with precipitates. 4,240,824, Cl. 75-0.50C.
Mosley, Earnest D. Chain sprocket with opposite frangible side guide plates. 4,240,303, Cl. 474-144.000.
Motorola, Inc.: *See—*
Hughes, Henry G.; and Keller, Jed V., 4,241,165, Cl. 430-269.000.
Kwitkowski, Peter A., 4,241,448, Cl. 455-115.000.
Shinn, William T., 4,240,311, Cl. 82-12.000.

Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of a multi-cylinder internal combustion engine. 4,240,387, Cl. 123-52.00M.
Motoyoshi, Kunihiro: *See—*
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, 4,241,366, Cl. 360-105.000.
Mouland, John: *See—*
Kangas, Kayo; Mouland, John; and Timler, Stan, 4,240,826, Cl. 75-109.000.
Mourier, Jacqueline: *See—*
Clapot, Claude; Vial, Jean; Mourier, Jacqueline; and Boch, Jean C., 4,240,823, Cl. 71-98.000.
Mrongowius, Klaus: *See—*
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.
Mueller, Hans-Richard: *See—*
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.
Muggli, Jurg: *See—*
Tresch, Erwin; and Muggli, Jurg, 4,241,282, Cl. 250-574.000.
Muller-Albrecht, Horst: *See—*
Meckel, Walter; Muller-Albrecht, Horst; Dollhausen, Manfred; and Velker, Eugen, 4,240,861, Cl. 156-331.000.
Muller, Karl-Heinz: *See—*
Krude, Werner; Muller, Karl-Heinz; and Jordan, Alfons, 4,240,680, Cl. 308-187.100.
Muller, Klaus: *See—*
Kmetz, Allan R.; Muller, Klaus; and Scheffer, Terry J., 4,241,344, Cl. 340-765.000.
Muller-Schiedmayer, Gunther; and Aigner, Rudolf, to Hoechst Aktiengesellschaft. Process for the manufacture of N,N,N',N'-tetraacetylethylenediamine. 4,240,980, Cl. 564-153.000.
Mullin, Steven W.: *See—*
Sawby, Scott; and Mullin, Steven W., 4,240,201, Cl. 30-161.000.
Multilin Inc.: *See—*
Schonken, Tobias D., 4,241,336, Cl. 340-518.000.
Mulvey, Robert F.: *See—*
Crepeau, Charles E.; and Mulvey, Robert F., 4,240,839, Cl. 106-88.000.
Munroe, Thomas. Wood pallet. 4,240,358, Cl. 108-51.100.
Munzel, Klaus; Karayannis, Panayotis; and Naef, Hansjorg, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Electronic fuze. 4,240,350, Cl. 102-215.000.
Murano, Mitsuo: *See—*
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.
Murata Kikai Kabushiki Kaisha: *See—*
Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, 4,240,247, Cl. 57-202.000.
Murata, Mitsuhiro, to Citizen Watch Co., Ltd. Electronic timepiece. 4,241,441, Cl. 368-247.000.
Muraviev, Alexandr V.: *See—*
Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; and Andreeva, Nina K., 4,240,818, Cl. 71-59.000.
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, to Sankyo Company Limited. Piperidine derivatives. 4,241,208, Cl. 546-20.000.
Murphy, Lawrence R.: *See—*
Alspaugh, Mark H.; and Murphy, Lawrence R., 4,241,352, Cl. 343-700.0MS.
Muschelknautz, Edgar: *See—*
Herold, Heiko; Herold, Richard; Klee, Rudolf; and Muschelknautz, Edgar, 4,240,187, Cl. 28-255.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Flavoring with a mixture of cis-3-hexenal, trans-2-hexenal, cis-3-hexenyl formate, cis-3-hexenol and cis-3-hexenyl-cis-3-hexenoate. 4,241,098, Cl. 426-534.000.
Mustonen, Eelis J. Self-propelled crane with a telescopic boom and additional boom means. 4,240,558, Cl. 212-175.000.
Mutschler, Erich: *See—*
Botz, Jakob; Mutschler, Erich; and Weber, Adam, 4,241,260, Cl. 307-10.0LS.
Muya, Tsuneo: *See—*
Koda, Minoru; and Muya, Tsuneo, 4,241,365, Cl. 360-73.000.
Myers, Drewfus Y., Jr.; and Hawks, George H., III, to Eastman Kodak Company. Photographic elements containing encapsulated polymers coordinated with metal ions. 4,241,163, Cl. 430-213.000.
Myles, Thomas A., to Carborundum Company, The. Shrink-resistant refractory fiber and process for making same. 4,240,833, Cl. 106-39.600.
Naef, Hansjorg: *See—*
Munzel, Klaus; Karayannis, Panayotis; and Naef, Hansjorg, 4,240,350, Cl. 102-215.000.
Nagano, Yasuaki, to Shibuya Kogyo Co., Ltd. Label feeding apparatus. 4,240,868, Cl. 156-572.000.
Nagaoka, Takenori: *See—*
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control device for fuel injected internal combustion engine. 4,240,391, Cl. 123-454.000.
Nagy, Alex L.: *See—*
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.
Nagy, Ernest J., to Pullman Incorporated. Modular storage arrangement for a passenger vehicle. 4,240,356, Cl. 105-323.000.
Naito, Junichiro: *See—*
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, 4,240,254, Cl. 60-293.000.
Naito, Kiyoshi; and Syukuya, Akio, to Shinagawa Refractories Co., Ltd. Intermittent top firing tunnel kiln equipped with a burner having a ceramic air nozzle. 4,240,788, Cl. 432-136.000.
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, to Bristol-Myers Company. Purine derivatives and their use as bronchodilators. 4,241,063, Cl. 424-253.000.
Naka, Hiromitsu, to Kabushiki Kaisha Naka Gijutsu Kenkyusho. Drawer type emergency escape. 4,240,521, Cl. 182-84.000.
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Interior unit of a split type air-conditioning apparatus. 4,240,264, Cl. 62-125.000.
Nakagaki, Harushige; and Inoue, Shigeki, to Hitachi, Ltd. Remote-controlled receiver. 4,241,456, Cl. 455-603.000.
Nakagawa, Katsumi: *See—*
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.
Nakagawa, Susumu: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Nakagoshi, Kazuo: *See—*
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, 4,241,366, Cl. 360-105.000.
Nakajima, Yasuo: *See—*
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, 4,240,253, Cl. 60-278.000.
Nakamura, Kazuaki; and Momose, Yutaka, to Aisin Seiki Kabushiki Kaisha. Cryopump device. 4,240,262, Cl. 62-55.500.
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, to Nissan Motor Company, Limited. Engine system for motor vehicle. 4,240,253, Cl. 60-278.000.
Nakamura, Kotaro: *See—*
Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, 4,241,155, Cl. 430-17.000.
Nakamura, Yasuhiro: *See—*
Ashie, Yutaka; and Nakamura, Yasuhiro, 4,241,143, Cl. 428-512.000.
Nakanishi, Hikaru, to Senko Medical Instruments Mfg. Co., Ltd. Method of treating capillary fibers. 4,240,796, Cl. 8-137.500.
Nakanishi, Hiromasa: *See—*
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.
Nakanishi, Shusaku: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.
Nakano Vinegar Co., Ltd.: *See—*
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, 4,241,095, Cl. 426-335.000.
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, to Nippon Soken, Inc. Exhaust gas purifying apparatus for multicylinder internal combustion engines. 4,240,254, Cl. 60-293.000.
Nakata, Hideo: *See—*
Maeyama, Teruaki; and Nakata, Hideo, 4,241,363, Cl. 358-36.000.
Nakatani, Seiichi: *See—*
Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, 4,241,019, Cl. 422-94.000.
Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, to Matsushita Electric Industrial Co., Ltd. Combustible gas detecting element. 4,241,019, Cl. 422-94.000.
Nakayama, Yoshiro: *See—*
Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, 4,240,316, Cl. 84-1.010.
Namiki, Ryoichi, to Ricoh Company, Ltd. Method of producing heat pipe roller. 4,240,189, Cl. 29-157.30R.
Nannini, Alessandro: *See—*
Urbinati, Mario; and Nannini, Alessandro, 4,240,384, Cl. 123-470.000.
Naruse, Jun: *See—*
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, 4,241,366, Cl. 360-105.000.
Nash, Donald H., to Bell Telephone Laboratories, Incorporated. Noise range indicating system. 4,241,236, Cl. 179-2.0EA.
Nash, Robert E.: *See—*
Baresh, Joseph M.; and Nash, Robert E., 4,240,206, Cl. 33-174.00Q.
Nasu, Rikuo: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.
National Research Development Corporation: *See—*
Devas, Michael B., 4,240,162, Cl. 3-1.910.
Dobson, John V., 4,240,879, Cl. 204-1.00T.
Farmer, Victor C., 4,241,035, Cl. 423-327.000.

National Semiconductor Corporation: *See—*
Kmetz, Gerald L., 4,240,317, Cl. 84-1.010.
National Tube & Reel Corporation: *See—*
Louden, Samuel, 4,240,595, Cl. 242-222.000.
National Union Electric Corporation: *See—*
Schaefer, Harold W.; Thomas, Joyce K.; and Hohulin, Samuel E., 4,240,812, Cl. 55-369.000.
Naviga-Etablissement, Firma: *See—*
Mehnert, Walter, 4,240,612, Cl. 254-344.000.
Nawa, Kooichiro, to Yoshida Kogyo K.K. Glazed closure assembly. 4,240,235, Cl. 52-397.000.
Nease, John C.: *See—*
Kaliski, Adam F.; Berube, Richard R.; and Nease, John C., 4,241,142, Cl. 428-511.000.
Nedovizy, Ivan N.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.
Neild, A. Bayne: *See—*
Anderson, Hugh G.; Quandt, Earl R.; and Neild, A. Bayne, 4,240,676, Cl. 308-9.000.
Nelson, John F., to Illinois Tool Works Inc. Combined level indicator and hydrometer. 4,240,282, Cl. 73-447.000.
Nersesian, Ara: *See—*
Durbak, Taras; and Nersesian, Ara, 4,241,048, Cl. 424-45.000.
Nestor, Jack; and Zager, Raymond. Motorized crankcase oil changing system. 4,240,523, Cl. 184-1.500.
Neumayr, Hans: *See—*
Taeuber, Reinhard; and Neumayr, Hans, 4,241,331, Cl. 340-167.00R.
Nevin, William; and Spector, George. Combined display container, cigarette lighter, candle holder. 4,240,783, Cl. 431-253.000.
New Castle Industries, Inc.: *See—*
Frankland, James D., Jr., 4,240,755, Cl. 366-88.000.
Newkirk, David D.; and Login, Robert B., to BASF Wyandotte Corporation. Fiber lubricants derived from the oxyalkylation of a glycerol-1,3-dialkylether. 4,241,224, Cl. 568-619.000.
Newkirk, John B. Peritoneo-venous shunt. 4,240,434, Cl. 128-350.00V.
Newman, Morris: *See—*
Holt, James H., Jr.; and Newman, Morris, 4,240,503, Cl. 166-55.000.
Newman, Timothy L. Truck mounted railroad crane rail gear assembly. 4,240,354, Cl. 105-215.00C.
NGK Insulators, Ltd.: *See—*
Watanabe, Tetsuo; Wada, Shigetaka; and Soejima, Shigeo, 4,240,890, Cl. 204-195.00S.
Nguyen, Van L., to Sereg. Method and apparatus for determining the temperature of the condensation point of a substance. 4,240,284, Cl. 73-17.00A.
Niagara Blower Company: *See—*
Kals, Walter, 4,240,499, Cl. 165-1.000.
Niagara Envelope Co. Inc.: *See—*
Harrigan, Richard V., 4,240,577, Cl. 229-76.000.
Nibco, Inc.: *See—*
Edwards, Robert B.; and Jayne, Theodore D., 4,240,492, Cl. 164-34.000.
Nicholas, Darrell D.: *See—*
Lund, Anders E.; Krueger, Gordon P.; Nicholas, Darrell D.; and Adams, Roy D., 4,241,133, Cl. 428-326.000.
Nichols, Wallace H., Jr. Internal combustion engine fuel composition containing toxic agent for dispersion in the exhaust fumes of the engine. 4,240,802, Cl. 44-58.000.
Nicholson, Harry W. Protective device for car coupler. 4,240,559, Cl. 213-1.00R.
Nicolas, Maurice; and Bacconnet, Eugene, to Commissariat a l'Energie Atomique; and BFG Glassgroup. Process for producing a composite element comprising sheet members secured to a support and such composite elements. 4,241,126, Cl. 428-174.000.
Nifco Inc.: *See—*
Kojima, Masaharu, 4,240,323, Cl. 85-80.000.
Nikex Nehezipari Kulkereskedelmi Vallalat: *See—*
Demeter, Laszlo; and Demeter, Akos, 4,240,911, Cl. 210-794.000.
Nikolic, Cvetko: *See—*
Hodges, Donald R.; Sherwood, William G.; and Nikolic, Cvetko, 4,240,886, Cl. 204-112.000.
Meyer, Gustavo A.; Carlberg, John R.; and Nikolic, Cvetko, 4,241,031, Cl. 423-150.000.
Nippon Electric Co., Ltd.: *See—*
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, 4,241,103, Cl. 427-103.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Iwamatsu, Masayuki, 4,241,314, Cl. 330-253.000.
Takehara, Takao, 4,241,313, Cl. 330-253.000.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
Morikawa, Yukiteru; and Nishikawa, Hideo, 4,241,083, Cl. 424-309.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Takahashi, Nobuhiro; and Hirata, Ken-ichi, 4,240,616, Cl. 266-119.000.
Nippon Shinyaku Co. Ltd.: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.
Nippon Soken, Inc.: *See—*
Nakase, Takamichi; Hattori, Tadashi; Naito, Junichiro; and Kondo, Kenji, 4,240,254, Cl. 60-293.000.
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Izumi, Katsutoshi; Doken, Masanobu; and Ariyoshi, Hisashi, 4,241,359, Cl. 357-49.000.
Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, 4,240,849, Cl. 156-73.200.
Nippondenso Co., Ltd.: *See—*
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, 4,240,388, Cl. 123-425.000.
Nishida, Hiroshi; Nakagoshi, Kazuo; Naruse, Jun; and Motoyoshi, Kunihiro, to Hitachi, Ltd. Magnetic head loading apparatus. 4,241,366, Cl. 360-105.000.
Nishii, Masaru: *See—*
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,240,791, Cl. 8-465.000.
Nishikawa, Hideo: *See—*
Morikawa, Yukiteru; and Nishikawa, Hideo, 4,241,083, Cl. 424-309.000.
Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Power steering apparatus for vehicle. 4,240,331, Cl. 91-434.000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, to Ishihara Sangyo Kaisha Limited. Process for producing 2-chloro-5-trichloromethyl pyridine. 4,241,213, Cl. 546-345.000.
Nishizawa, Rinzo: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.
Nissan Chemical Industries, Ltd.: *See—*
Takizawa, Iwao; Otsubo, Iwao; and Shimizu, Toru, 4,240,817, Cl. 71-29.000.
Nissan Motor Company, Limited: *See—*
Matayoshi, Yutaka; Tamura, Masayuki; and Anegawa, Yoshiro, 4,240,392, Cl. 123-145.00A.
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, 4,240,989, Cl. 261-78.00R.
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, 4,240,253, Cl. 60-278.000.
Tokunaga, Masayuki; and Otsuka, Yoshio, 4,240,672, Cl. 303-92.000.
Nissen, Axel: *See—*
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.
Nitschke, Norman C.: *See—*
McMaster, Harold A.; and Nitschke, Norman C., 4,240,816, Cl. 65-60.00R.
Nitto Electric Industrial Co., Ltd.: *See—*
Iwama, Akio; Kihara, Yasuo; and Abe, Masao, 4,240,914, Cl. 210-500.200.
Niwa, Masatake: *See—*
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,240,733, Cl. 354-173.000.
Noda, Etsunosuke: *See—*
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,241,057, Cl. 424-246.000.
Noell, Robert E., Jr. Amusement device. 4,240,536, Cl. 194-1.00K.
Nogami, Tomoyuki: *See—*
Ohori, Harumi; Katagiri, Masayoshi; and Nogami, Tomoyuki, 4,240,671, Cl. 303-6.00C.
Nold, Frank P.: *See—*
Lichter, Seymour; and Nold, Frank P., 4,240,998, Cl. 264-45.400.
Lichter, Seymour; and Nold, Frank P., 4,241,190, Cl. 521-54.000.
Nolf, Jean-Marie. Hand held pen-size calculator. 4,241,409, Cl. 364-705.000.
Nomiyama, Yoshitsugu: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.
Nomura, Junji: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,240,376, Cl. 119-2.000.
Nomura, Katsuhiko; and Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Motor-drive camera using a cartridge film. 4,240,734, Cl. 354-173.000.
Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, to Matsushita Electric Industrial Co., Ltd. Thin film magnetic head. 4,241,367, Cl. 360-127.000.
Nomura, Shin-ichiro: *See—*
Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, 4,240,653, Cl. 285-235.000.
Nomura, Syunichi: *See—*
Izumo, Masanori; Nomura, Syunichi; and Tanigawa, Singo, 4,241,137, Cl. 428-402.000.
Nonogaki, Saburo: *See—*
Hatano, Yoshio; Kohashi, Takahiro; Hashimoto, Michiaki; and Nonogaki, Saburo, 4,241,162, Cl. 430-195.000.
Nordson Corporation: *See—*
Gardner, James J., 4,240,567, Cl. 222-146.0HE.
Grevich, John J.; and Denker, Stanley D., 4,240,336, Cl. 493-196.000.

Norfleet, James: *See—*
Colodney, Daniel; and Norfleet, James, 4,241,049, Cl. 424-54.000.
Norlin Industries, Inc.: *See—*
Gross, Glenn M., 4,240,318, Cl. 84-1.010.
Gross, Glenn M., 4,241,408, Cl. 364-703.000.
Normalair-Garrett (Holdings) Limited: *See—*
Furlong, Owen D.; and Thring, Robin H., 4,240,419, Cl. 128-204.230.
Norman, Lloyd W.: *See—*
Farag, Souly A.; Hayes, John E.; and Norman, Lloyd W., 4,241,093, Cl. 426-258.000.
Norris, Richard W., Jr.: *See—*
Agee, John H.; and Norris, Richard W., Jr., 4,240,902, Cl. 209-241.000.
Notaro, Giuseppe: *See—*
De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, 4,241,370, Cl. 361-24.000.
Nouchi, Norimoto: *See—*
Nomura, Noboru; Kanai, Kenji; Kaminaka, Nobuyuki; and Nouchi, Norimoto, 4,241,367, Cl. 360-127.000.
Novokshonova, Ljudmila A.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Kostandov, Leonid A.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; Maklakova, Tatyana A.; Akopian, Leonid A.; and Brikenshtein, Khaim-Mordkhe A., 4,241,112, Cl. 427-213.000.
Nowlin, Oscar D.: *See—*
Dietz, Richard E.; and Nowlin, Oscar D., 4,240,929, Cl. 252-429.00B.
Nudenberg, Walter: *See—*
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., 4,240,974, Cl. 260-456.00P.
Numata, Saburo, to Fuji Photo Optical Co., Ltd. Control circuit for an automatic electronic flash light device. 4,241,279, Cl. 315-151.000.
Oakley, Raymond E.: *See—*
Dickson, John F.; and Oakley, Raymond E., 4,241,424, Cl. 365-218.000.
O'Brien, Edward F.: *See—*
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,011, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,012, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,013, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,014, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,015, Cl. 422-13.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,016, Cl. 422-17.000.
Occidental Research Corporation: *See—*
McKinley, John R.; and Roeschlaub, John G., 4,241,102, Cl. 209-3.100.
Oce-Nederland B.V.: *See—*
Ensing, Hendrik, 4,241,161, Cl. 430-126.000.
O'Connor, Lawrence, to Kable Tapes Ltd. Combined shield and core wrap for telecommunication cables and the like. 4,241,121, Cl. 428-77.000.
Odom, Martin A.: *See—*
Odom, William, 4,241,326, Cl. 340-33.000.
Odom, William, to Odom, Martin A.; Presley, Pauline B.; Vineyard, Clark; and Hagler, James D., part interest to each. Electronic traffic control and warning system. 4,241,326, Cl. 340-33.000.
Oehler-Whylen-Lagertechnik AG: *See—*
Hagmann, Peter; and Markun, Lovro, 4,240,529, Cl. 187-90.000.
Offner, Abe: *See—*
Markle, David A.; and Offner, Abe, 4,241,390, Cl. 362-299.000.
Offterdinger, Hermann F. Corner construction. 4,240,765, Cl. 403-402.000.
Ogawa, Ryota; Okudaira, Sadao; and Tachihara, Satoru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide angle zoom lens having a high variation ratio. 4,240,700, Cl. 350-184.000.
Ogren, Hans, to Aktiebolaget Ogrens Svets-och Mek. Verkstad. Yoke. 4,240,661, Cl. 294-82.0AH.
Ohashi, Yasuo: *See—*
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, 4,240,391, Cl. 123-454.000.
Ohira, Tadayoshi: *See—*
Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, 4,240,653, Cl. 285-235.000.
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, to Nippon Electric Co., Ltd. Method of manufacturing an integrated thermal printing head. 4,241,103, Cl. 427-103.000.
Ohno, Ietatsu. Immersion type grinding apparatus. 4,240,229, Cl. 51-7.000.
Ohori, Harumi; Katagiri, Masayoshi; and Nogami, Tomoyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Braking hydraulic pressure control unit for motor vehicle. 4,240,671, Cl. 303-6.00C.
Ohsawa, Hisayou: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Ohta, Eiichi: *See—*
Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, 4,241,111, Cl. 427-211.000.
Ohta, Noriyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Oikawa, Shigeru: *See—*
Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, 4,240,849, Cl. 156-73.200.
Okamura, Yasuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Sealing apparatus for refrigerators and method of manufacture thereof. 4,240,228, Cl. 49-478.000.
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material. 4,241,172, Cl. 430-548.000.
Okita, Taka-aki: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Okubo, Kunio: *See—*
Wakana, Teruo; Okubo, Kunio; and Hanaoka, Yutaka, 4,241,100, Cl. 426-598.000.
Okudaira, Sadao: *See—*
Ogawa, Ryota; Okudaira, Sadao; and Tachihara, Satoru, 4,240,700, Cl. 350-184.000.
Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Keyboard type electronic musical instrument. 4,240,316, Cl. 84-1.010.
Olin Corporation: *See—*
Gray, Thomas J., 4,240,895, Cl. 204-290.00R.
Oliver Tire and Rubber Company: *See—*
King, Michael J., 4,240,851, Cl. 156-96.000.
Olschewski, Armin: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,240,673, Cl. 308-6.00C.
Olsen, Willi, to Siemens Aktiengesellschaft. Gas pressurized high voltage switching installation. 4,241,379, Cl. 361-335.000.
Olson, Goodwin W. Auxiliary reflector. 4,241,393, Cl. 362-348.000.
Olsson, Lars-Goran: *See—*
Andersson, Roland J. E.; Olsson, Lars-Goran; and Paulsson, Bengt G., 4,240,291, Cl. 73-861.050.
Olympus Optical Co., Ltd.: *See—*
Goto, Atsuo, 4,240,704, Cl. 350-220.000.
Hosono, Saburo, 4,240,411, Cl. 128-4.000.
Komiya, Osamu, 4,240,431, Cl. 128-303.100.
Maitani, Yoshihisa; and Yamada, Toyotaka, 4,240,735, Cl. 354-288.000.
Osanai, Akira, 4,240,551, Cl. 206-387.000.
Yonekubo, Ken, 4,241,251, Cl. 250-205.000.
Omori, Norio; Kawashima, Yutaka; Fujisawa, Hideya; Kawai, Hisasi; and Matsui, Takeshi, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Method for controlling timing of spark ignition for an internal combustion engine. 4,240,388, Cl. 123-425.000.
OMV Aktiengesellschaft: *See—*
Ecker, Alfred, 4,240,949, Cl. 260-30.80R.
Ondetti, Miguel A.; and Sprague, Peter W., to E. R. Squibb & Sons, Inc. Halogenated substituted mercaptoacylamino acids. 4,241,076, Cl. 424-274.000.
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., to Pillsbury Company, The. Potato dehydration. 4,241,094, Cl. 426-324.000.
Ong, Helen H.: *See—*
Martin, Lawrence L.; Ong, Helen H.; Anderson, Vernon B.; and Crichlow, Charles A., 4,241,071, Cl. 424-267.000.
Ono, Haruaki: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.
Oono, Shigeru: *See—*
Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, 4,241,155, Cl. 430-17.000.
Oosterling, Pieter A.; and Van Zweeden, Adriaan, to Expert N.V. Device for baling cut crops. 4,240,245, Cl. 56-341.000.
Operating Systems, Inc.: *See—*
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.
Opgenorth, Hans-Joachim: *See—*
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.
Optisch Werke G. Rodenstock: *See—*
Guilino, Gunter; and Barth, Rudolf, 4,240,719, Cl. 351-169.000.
Orban, Robert A. Peak-limiting apparatus for audio signal. 4,241,266, Cl. 307-237.000.
Orc Manufacturing Co., Ltd.: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.
Oronzio de Nora Implanti Elettrochimici S.p.A.: *See—*
Pellegri, Alberto, 4,240,884, Cl. 204-95.000.
Osakeyhtio, A. Ahlstrom: *See—*
Tuomaala, Jorma, 4,240,315, Cl. 83-848.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Magnetic tape cassette holder. 4,240,551, Cl. 206-387.000.

Oschatz GmbH: *See—*
Gelsing, Winfried, 4,241,232, Cl. 13-32.000.
Osmond, Desmond W. J.: *See—*
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.
Ospanov, Ergali: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.
Ostberg, Jan-Erik. Stirrer for metallurgical melts. 4,240,618, Cl. 266-235.000.
Otis Engineering Corporation: *See—*
Moore, Allen D., 4,240,463, Cl. 137-492.500.
Otsubo, Iwao: *See—*
Takizawa, Iwao; Otsubo, Iwao; and Shimizu, Toru, 4,240,817, Cl. 71-29.000.
Otsuka, Yoshio: *See—*
Tokunaga, Masayuki; and Otsuka, Yoshio, 4,240,672, Cl. 303-92.000.
Ottenholm, Tor A. I. Method for manufacturing a building element. 4,240,994, Cl. 264-26.000.
Otto, Johann: *See—*
Feuerbaum, Hans P.; and Otto, Johann, 4,241,259, Cl. 250-457.000.
Ouwerkerk, Cornelis: *See—*
Werner, Erik S. E.; Ouwerkerk, Cornelis; and Cornelisse, Roelof, 4,241,032, Cl. 423-226.000.
Owen, Bruce R.: *See—*
Sarle, Charles R.; and Owen, Bruce R., 4,240,678, Cl. 308-121.000.
Owens-Corning Fiberglas Corporation: *See—*
Chrisman, Max G., 4,240,847, Cl. 156-62.200.
Dereser, Ernst, 4,241,136, Cl. 428-378.000.
Owens-Illinois, Inc.: *See—*
Keyes, Melvin H.; and Moore, Garry L., 4,241,180, Cl. 435-20.000.
Ozeki, Masakatsu: *See—*
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,052, Cl. 424-180.000.
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,053, Cl. 424-180.000.
Pack Image, Inc.: *See—*
Stone, Orison W., 4,240,546, Cl. 206-193.000.
Pagel, Werner: *See—*
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, 4,240,660, Cl. 294-81.00R.
Pako Corporation: *See—*
Anderson, Richard D.; and Wedel, John A., 4,240,741, Cl. 355-40.000.
Palmer, Stephen G.: *See—*
Angert, Richard W.; and Palmer, Stephen G., 4,240,258, Cl. 60-589.000.
Pan, Jing-Jong, to Harris Communications. Single optical fiber directional coupler. 4,240,694, Cl. 350-96.160.
Pankratz, Richard P.: *See—*
Work, Ray A., III; and Pankratz, Richard P., 4,241,169, Cl. 430-532.000.
Papahadjopoulos, Demetrios P.; and Szoka, Francis C., Jr. Method of encapsulating biologically active materials in lipid vesicles. 4,241,046, Cl. 424-19.000.
Papayoanou, Aristotle, to United States of America, Army. Dual channel waveguide gas laser. 4,241,319, Cl. 331-94.50G.
Papillon, Bernard: *See—*
Lagasse, Alain; and Papillon, Bernard, 4,240,918, Cl. 252-95.000.
Paraskevakos, Theodoros G.; and Bushman, W. Thomas, to Metretek Incorporated. Apparatus and method for remote sensor monitoring, metering and control. 4,241,237, Cl. 179-2.0AM.
Paratte, Daniel: *See—*
Bolzt, Jean; Clot, Philippe; Golay, Philippe; and Paratte, Daniel, 4,241,436, Cl. 368-88.000.
Parisi, Alessandro: *See—*
Pelosini, Luigi; Parisi, Alessandro; and Pizzini, Sergio, 4,241,037, Cl. 423-348.000.
Parker-Hannifin Corporation: *See—*
Herzan, Eugene H.; and Meisinger, Stanlee W., 4,240,466, Cl. 137-614.040.
Parker, Roy B.: *See—*
Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., 4,241,118, Cl. 428-35.000.
Parrigin, Albert J.: *See—*
Chesnut, Amos E.; and Parrigin, Albert J., 4,240,401, Cl. 126-121.000.
Parrish, John F.: *See—*
Berni, Albert J.; and Parrish, John F., 4,241,428, Cl. 367-21.000.
Parsamian, Levon O.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
Parsons, John A.: *See—*
Christie, Robert B.; Parsons, John A.; and Rudman, Christopher G., 4,241,051, Cl. 424-177.000.
Parsons, William N. Swimmer's aid. 4,240,171, Cl. 9-307.000.
Partridge, Charles C., to ACF Industries, Incorporated. Controlled float seat arrangement for expanding gate valves. 4,240,608, Cl. 251-167.000.
Patel, Bhupendra C.: *See—*
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,240,430, Cl. 128-218.00P.
Patel, Ramesh N.: *See—*
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,241,184, Cl. 435-148.000.
Patterson, Raymond B., III; and Wood, Grady M., to Harris Corporation. Adjustable current source. 4,241,315, Cl. 330-261.000.
Paulsson, Bengt G.: *See—*
Andersson, Roland J. E.; Olsson, Lars-Goran; and Paulsson, Bengt G., 4,240,291, Cl. 73-861.050.
Pauly, Alexander, to Siemens Aktiengesellschaft. Circuitry for operating read-only memories interrogated with static binary addresses within a two-channel safety switch mechanism having anti-valency signal processing. 4,241,417, Cl. 364-900.000.
Paustian, John E.: *See—*
Suciu, George D.; and Paustian, John E., 4,240,885, Cl. 204-98.000.
Pauze, Denis R.: *See—*
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Payen, Georges A., to Societe Anonyme de Telecommunications. Method and apparatus for counting transmission errors in a digital microwave link. 4,241,445, Cl. 371-5.000.
Payne, Douglas L.; and Walter, Peter A. Bearing mounting device and bearing. 4,240,677, Cl. 308-15.000.
Pearce, Henry A., Jr.; and Walsh, Edward J., to Westinghouse Electric Corp. Transformer using catalytically hydrogenated bright stock fluid. 4,240,917, Cl. 336-94.000.
Pearson, Robert: *See—*
Piber, Earl T.; and Pearson, Robert, 4,241,297, Cl. 318-17.000.
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Pehrson, John V.: *See—*
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Pehrson, Marie S., to Pehrson, John V. Hand-held laser surveying rod. 4,240,208, Cl. 33-293.000.
Pellegri, Alberto, to Oronzio de Nora Implanti Elettrochimici S.p.A. Electrolytic production of alkali metal hypohalite. 4,240,884, Cl. 204-95.000.
Pellerite, James J. Headjoint stopper. 4,240,320, Cl. 84-384.000.
Pelosini, Luigi; Parisi, Alessandro; and Pizzini, Sergio, to Montedison S.p.A. Process for purifying silicon. 4,241,037, Cl. 423-348.000.
Pennington, William. Method of welding plastic sheets edge-to-edge. 4,240,855, Cl. 156-159.000.
Pennwalt Corporation: *See—*
Bross, Charles F., 4,241,293, Cl. 235-92.0PK.
MacLeay, Ronald E., 4,241,222, Cl. 568-561.000.
Waltke, Robert W., 4,240,605, Cl. 249-54.000.
Pentel Kabushiki Kaisha: *See—*
Matsumoto, Kenji; and Sakaoka, Gouji, 4,240,759, Cl. 401-85.000.
Perard Engineering Limited: *See—*
Hubbard, Terence; and Jackson, Eric A., 4,240,665, Cl. 299-31.000.
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Perkin-Elmer Corporation, The: *See—*
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Markle, David A.; and Offner, Abe, 4,241,390, Cl. 362-299.000.
Perkins, Harold W. Bag holder and collector construction. 4,240,474, Cl. 141-231.000.
Pernyeszi, Joseph, to International Telephone and Telegraph Corporation. Fluxbucking line transformer with electronic equivalent line terminating impedance. 4,241,239, Cl. 179-70.000.
Perry, Theodore M. Signal bladder. 4,240,371, Cl. 116-210.000.
Persson, Karl R., to Duni Bila AB. Distribution package. 4,240,576, Cl. 229-36.000.
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Familletti, Philip C.; Pestka, Sidney; and Rubinstein, Sara, 4,241,174, Cl. 435-5.000.
Peters, Russell E., to Coburn, James D. Self-service gasoline glove. 4,240,157, Cl. 2-161.00R.
Petrie, Edward M.; Seidel, John G.; and Felice, Patrick E., to Westinghouse Electric Corp. Technique for fabricating radiation sensitive dosimeters. 4,240,992, Cl. 264-21.000.
Petrolite Corporation: *See—*
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Pevzner, Volf S.: *See—*
Semenov, Stepan S.; and Pevzner, Volf S., 4,241,245, Cl. 200-38.00R.
Pfiffner, Albert, to Hoffmann-La Roche Inc. Heterocyclics useful as fungicides and fungicidal compositions thereof. 4,241,058, Cl. 424-248.400.
Pfizer Inc.: *See—*
Barth, Wayne E., 4,241,050, Cl. 424-114.000.
Pfuhl, Ingrid: *See—*
Pfuhl, Jakob, 4,240,367, Cl. 112-148.000.
Pfuhl, Jakob, to Pfuhl, Katharina; Pfuhl, Ingrid; and Kate Models Pty., Limited. Sewing aid device. 4,240,367, Cl. 112-148.000.
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Clapot, Claude; Vial, Jean; Mourier, Jacqueline; and Boch, Jean C., 4,240,823, Cl. 71-98.000.
Philip Morris Incorporated: *See—*
Gillespie, Andrew J., 4,240,313, Cl. 83-343.000.
Phillips, David C.; and Smith, James D. B., to Westinghouse Electric Corp. Protecting electrical apparatus with gas generating compounds. 4,241,195, Cl. 525-3.000.
Phillips Petroleum Company: *See—*
Dietz, Richard E.; and Nowlin, Oscar D., 4,240,929, Cl. 252-429.00B.
Kraus, Gerard; and Hunt, Harold R., 4,241,022, Cl. 422-156.000.
Swanson, Billy L., 4,240,505, Cl. 166-302.000.
Van Pool, Joe, 4,241,040, Cl. 423-542.000.
Phillips, Thomas E., to Youngstown Steel Door Company, The. Folding rail car doors. 4,240,357, Cl. 105-378.000.
PhotoScan South, Inc.: *See—*
Ardrey, Richard J., 4,241,376, Cl. 361-166.000.
Piber, Earl T.; and Pearson, Robert, to Eaton Corporation. Double-pole trigger speed control switch. 4,241,297, Cl. 318-17.000.
Pickering, Norman C.; and Fisher, Yale, to Storz Instrument Company. Ophthalmic electromagnet. 4,240,410, Cl. 128-1.500.
Pierce, Robert B.; and Wilson, Robert B., to BLM Automatic Clutch Limited. Clutch and brake assembly. 4,240,535, Cl. 192-17.00C.
Pierzchala, Richard P.: *See—*
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Pillsbury Company, The: *See—*
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., 4,241,094, Cl. 426-324.000.
Pirio, Marcel R.: *See—*
Singh, Prithipal; and Pirio, Marcel R., 4,241,177, Cl. 435-7.000.
Pitkjaan, Elam; and Endler, James F., to Westinghouse Electric Corp. Inner lamp-mount assembly for sealed-beam headlamp and similar lighting apparatus. 4,241,391, Cl. 362-267.000.
Pitney Bowes Inc.: *See—*
Allocca, Michael A., 4,241,405, Cl. 364-466.000.
Byrne, Leroy H.; and Fassman, Arnold, 4,241,247, Cl. 200-61.410.
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Ernst, M. Eric, 4,240,571, Cl. 224-310.000.
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Stelzner, Herbert A.; and Lau, Peter, 4,240,239, Cl. 53-398.000.
Plessey Handel und Investments AG: *See—*
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Podgorski, Wojciech; and Stas, Justyn, to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag". Device for mining of thick strata of useful minerals. 4,240,666, Cl. 299-31.000.
Pohlig, Dietmar, to Siemens Aktiengesellschaft. Circuit arrangement for the generation of stepping pulses for the acceleration of a stepper motor. 4,241,301, Cl. 318-696.000.
Poirier, Victor L.: *See—*
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Polaroid Corporation: *See—*
Abbadessa, Joseph J.; and Johnson, Bruce K., 4,241,280, Cl. 315-151.000.
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Pole, Ernest G.; and Clark, Roy, to Polysar Limited. Latex-based adhesives. 4,240,860, Cl. 156-327.000.
Poluyanov, Anatoly F.: *See—*
Chentemirov, Minas G.; Lukienko, Ekaterina P.; Parsamian, Levon O.; Poluyanov, Anatoly F.; Gorbachev, Jury G.; Enikolopov, Nikolai S.; Dyachkovsky, Fridrikh S.; Novokshonova, Ljudmila A.; Gavrilov, Jury A.; Kudinova, Olga I.; and Maklakova, Tatyana A., 4,241,138, Cl. 428-403.000.
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Polysar Limited: *See—*
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Pool, Danny L., to Pool, Robert R. Attachment for liquid carrying container. 4,240,568, Cl. 222-189.000.
Pool, Robert R.: *See—*
Pool, Danny L., 4,240,568, Cl. 222-189.000.
Popov, Alexandr D.; and Solomin, Vladimir A. Linear induction motor. 4,241,268, Cl. 310-13.000.
Porep, Hans-Jurgen: *See—*
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, 4,240,418, Cl. 128-203.150.
Post, Arnold R. Thermostatically controlled heating system. 4,240,579, Cl. 236-10.000.
Post Office, The: *See—*
Smart, Normaan E., 4,241,119, Cl. 428-36.000.
Postema, Pieter M., to ITT Industries, Inc. Low-wear shock absorber. 4,240,531, Cl. 188-315.000.
PPG Industries, Inc.: *See—*
Ammons, Vernon G., 4,241,140, Cl. 428-339.000.
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,240,838, Cl. 106-84.000.
Sickles, James E., 4,240,585, Cl. 239-705.000.
Temple, Chester S., 4,240,944, Cl. 260-29.6NR.
Praamsma, Michael F., to Vivitar Corporation. Light mixing system for a photographic enlarger. 4,240,738, Cl. 355-1.000.
Prada, Luis E., to General Electric Company. Appliance door position sensor arrangement. 4,241,337, Cl. 340-547.000.
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Eisinger, Frantisek L.; Pratt, Harry H.; and Eich, Clarence C., 4,240,234, Cl. 52-261.000.
Pratt, Ralph C.; Davis, Robert; and Howland, Charles P., to Castall Incorporated. Insulating boards. 4,241,132, Cl. 428-285.000.
Presley, Pauline B.: *See—*
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Priegnitz, James W., to UOP Inc. Process for the separation of orthochloronitrobenzene. 4,240,986, Cl. 568-937.000.
Priem, Jan J.; De Volder, Noel J.; Gilliams, Yvan K.; and De Winter, Walter F., to AGFA-GEVAERT N.V. Electrophotographic liquid developer comprising acrylic or methacrylic acid ester of hydrogenated abietyl alcohol polymer. 4,241,159, Cl. 430-114.000.
Prinz, Richard: *See—*
Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, 4,241,197, Cl. 525-309.000.
Pritchard, William F. Soap leaf dispenser. 4,240,564, Cl. 221-213.000.
Probe Systems, Incorporated: *See—*
Krasner, Norman F.; and Leiner, Barry M., 4,241,411, Cl. 364-726.000.
Procter & Gamble Company, The: *See—*
de Luque, Manuel J., 4,240,920, Cl. 252-99.000.
Volpenhein, Robert A.; and Jandacek, Ronald J., 4,241,054, Cl. 424-180.000.
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Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., 4,240,195, Cl. 29-571.000.
Produits Chimiques Ugine Kuhlmann: *See—*
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Proll Molding Company: *See—*
Goldenberg, J. Melvyn, 4,240,321, Cl. 84-433.000.
Prontor-Werk Alfred Gauthier GmbH: *See—*
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Inhofer, Harold G.; and Kriz, James J., Jr., 4,240,329, Cl. 91-342.000.
Puariea, Douglas A., to Maxson Corporation, The. Side dumping railroad car. 4,240,355, Cl. 105-273.000.
Pullman Incorporated: *See—*
Nagy, Ernest J., 4,240,356, Cl. 105-323.000.
Purification Sciences Inc.: *See—*
Lowther, Frank E., 4,240,381, Cl. 123-26.000.
Pustka, Marvin J., to Esquire, Inc. Lens closure for light fixture and method for attachment. 4,240,853, Cl. 156-108.000.
Quaker Oats Company, The: *See—*
Turk, Bartel G., 4,240,779, Cl. 425-313.000.
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Anderson, Hugh G.; Quandt, Earl R.; and Neild, A. Bayne, 4,240,676, Cl. 308-9.000.
Quick, Marshall K., to General Electric Company. Sampled data filtering and multiplexing apparatus. 4,241,264, Cl. 307-221.00D.
Quinn, Clayton B.; Reinitz, Clayton W.; and Hilakos, William, to General Electric Company. Process for isolating and purifying diphenol by-products. 4,240,968, Cl. 260-345.200.
R. D. Werner Co., Inc.: *See—*
Spear, Kenneth J.; and Shawkey, Donald L., 4,240,522, Cl. 182-105.000.
Rabinowitz, Mario: *See—*
Bahder, George; and Rabinowitz, Mario, 4,241,233, Cl. 174-15.00C.
Rader, Helmut, to Interfarm Corporation. Medicator construction. 4,240,465, Cl. 137-564.500.
Rakowsky, Edward L.; and Galowin, Lawrence S., to Singer Company, The. Heat pipe turbo generator. 4,240,257, Cl. 60-531.000.
Rando Machine Corporation: *See—*
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., 4,240,180, Cl. 19-105.000.
Randoll, William M. Game-balloon launcher. 4,240,396, Cl. 124-17.000.
Raney, Meredith T., Jr., to Harris Corporation. Apparatus for generating displays of variable size characters. 4,241,340, Cl. 340-731.000.
Ranweiler, James G.: *See—*
Mitchell, Glen R.; Kempke, William G.; Jones, Eugene R.; Houdek, Merle E.; and Ranweiler, James G., 4,241,396, Cl. 364-200.000.
Rapp, Heinz; Biedermann, Ernst; and Wittenbrink, Dieter, to AGFA-Gevaert, A.G. Photographic copying machine with interchangeable format masks. 4,240,744, Cl. 355-74.000.
Rascher, Andreas; and Zbinden, Jurg. Pipe coupling. 4,240,655, Cl. 285-323.000.
Raschle, Josef, to Heberlein Maschinenfabrik AG. Devices for texturing yarns by imparting false twist by friction. 4,240,248, Cl. 57-338.000.
Rasheed, Khalid; and Warkentin, James D., to Ciba-Geigy Corporation. Biocidally-active 1,3-benzodithiole-2-thione compounds. 4,240,821, Cl. 71-90.000.
Rasmussen, Arne V. R.: *See—*
Lehmann, Kjeld; and Rasmussen, Arne V. R., 4,241,380, Cl. 361-383.000.
Rattray, Clarence G. Hydraulic log splitting attachment for a tractor. 4,240,476, Cl. 144-193.00A.

Ravallo, Robert J.: *See—*
Halik, Joseph J.; Ravallo, Robert J.; Wasserman, Gerald S.; and Glatz, Alfred C., 4,241,092, Cl. 426-96.000.
Raymond, Robert J. Vine crop harvester. 4,240,446, Cl. 130-30.00R.
Raytheon Company: *See—*
Manthei, Philip J., 4,240,277, Cl. 68-17.00A.
Seidel, Harry W., 4,240,397, Cl. 126-21.00R.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,241,265, Cl. 307-228.000.
Blatter, Harold; and Tults, Juri, 4,241,450, Cl. 455-182.000.
Bloom, Allen; and Burke, William J., 4,241,355, Cl. 346-135.100.
Burke, William J.; Kressel, Henry; and Ettenberg, Michael, 4,241,423, Cl. 365-215.000.
Datta, Pabitra; and Friel, Ronald N., 4,241,120, Cl. 428-65.000.
David, John M., Jr., 4,240,594, Cl. 242-131.000.
Johnson, Henry C., 4,241,345, Cl. 343-5.0SW.
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Reckitt & Colman Products Limited: *See—*
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Kobylecki, Ryszard J.; Guest, Ian G.; Lewis, John W.; and Kirby, Gordon W., 4,241,067, Cl. 424-260.000.
Rector, Charles W. Frenum lock. 4,240,186, Cl. 27-21.000.
Reddy, Junuthula N., to Bendix Corporation, The. Speed sensitive electronic fuel control system for an internal combustion engine. 4,240,382, Cl. 123-485.000.
Reed, Harold L.: *See—*
Kayem, Douglas J.; and Reed, Harold L., 4,241,430, Cl. 367-115.000.
Reed International Limited: *See—*
Canning, Rodger G.; and Tomlinson, John P., 4,241,125, Cl. 428-158.000.
Reed, Robert D., to United States of America, National Aeronautics and Space Administration. Method for observing the features characterizing the surface of a land mass. 4,240,601, Cl. 244-160.000.
Reed, Ronald L., to Exxon Production Research Company. Simultaneous microemulsion-aqueous phase flooding process. 4,240,504, Cl. 166-273.000.
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McCanney, Neil R., 4,241,235, Cl. 179-1.0SH.
Rega, John F., to Johnson & Johnson Baby Products Company. Apparatus for manufacturing a product having elastic means disposed in the transverse direction. 4,240,866, Cl. 156-496.000.
Regan, Michael T.: *See—*
Webster, Frank G.; and Regan, Michael T., 4,241,157, Cl. 430-41.000.
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Louviot, Jean F., 4,240,456, Cl. 137-100.000.
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Reid, Margaret P.: *See—*
Mag, Theodore K.; and Reid, Margaret P., 4,240,972, Cl. 260-424.000.
Reid, Terry A.: *See—*
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Reinitz, Clayton W.: *See—*
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Reliable Electric Company: *See—*
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Renth, Ernst-Otto: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, 4,241,068, Cl. 424-263.000.
Republic Steel Corporation: *See—*
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Research Corporation: *See—*
Gaafar, Hassan A., 4,241,045, Cl. 424-1.000.
Retzer, Erich, to Compur-Electronic Gesellschaft mit beschrankter Haftung. Test vessel. 4,240,749, Cl. 356-246.000.
Reuter, Wolfgang: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.
Rexnord Inc.: *See—*
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Reynolds Metals Company: *See—*
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Rhoades, James J., to Tapco Products Company, Inc. Sheet metal br 4,240,279, Cl. 72-319.000.
Rhone-Poulenc Industries: *See—*
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Lagasse, Alain; and Papillon, Bernard, 4,240,918, Cl. 252-95.000.
Riaboy, Florence. Nose and mouth filter combination. 4,240,420, Cl. 128-206.140.
Richard A. Shaw, Inc.: *See—*
Shaw, Richard A., 4,241,096, Cl. 426-484.000.
Ricoh Company, Ltd.: *See—*
Namiki, Ryoichi, 4,240,189, Cl. 29-157.30R.
Rideout, Vincent L.: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.
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Hanifin, John W.; and Ridge, David N., 4,241,077, Cl. 424-275.000.
Riediger, Craig W., to Caterpillar Tractor Co. Variable flow control valve for steering systems of articulated vehicles. 4,240,457, Cl. 137-101.000.
Ries, Karl: *See—*
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Rigaux, Guy: *See—*
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Riggs, Olen L., Jr., to Transworld Drilling Company. Apparatus for measuring internal metal stress. 4,240,892, Cl. 204-195.00F.
Rim, Yong S.: *See—*
Little, Julian R.; Nudenberg, Walter; and Rim, Yong S., 4,240,974, Cl. 260-456.00P.
Rivelli, Renato: *See—*
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Ro, David H.; Klar, Erhard; and Whitman, Charles I., to SCM Corporation. Corrosion-resistant powder-metallurgy stainless steel powders and compacts therefrom. 4,240,831, Cl. 75-228.000.
Robert Bosch GmbH: *See—*
Breitling, Wolfram, 4,241,317, Cl. 331-65.000.
Brill, Klaus; and Grothe, Wolfgang, 4,241,356, Cl. 346-135.100.
Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, 4,240,383, Cl. 123-492.000.
Kulke, Gunter, 4,240,385, Cl. 123-470.000.
Roberts Harvester, Inc.: *See—*
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Roberts, Webster C.: *See—*
Landis, Earl M.; Roberts, Webster C.; and Crum, James N., 4,240,346, Cl. 101-139.000.
Robertshaw Controls Company: *See—*
Bauer, Werner R., 4,240,469, Cl. 137-625.660.
Robinson, William J.; Poirier, Victor L.; and Daly, Benedict D. T., to Thermo Electron Corporation. Apparatus for assisting circulation of blood. 4,240,409, Cl. 128-1.00D.
Rockwell International Corporation: *See—*
Maixner, Richard C.; Marston, Robert K.; and Massad, Khalil E., 4,241,451, Cl. 455-202.000.
Tracy, John M.; and Yeh, Pochi A., 4,240,696, Cl. 350-163.000.
Rockwool Aktiebolaget: *See—*
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Rodgers, David P.: *See—*
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Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.
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McKinley, John R.; and Roeschlaub, John G., 4,241,102, Cl. 209-3.100.
Rogers, William A., to Roberts Harvester, Inc. Apparatus for washing the interior of a freight container. 4,240,175, Cl. 15-21.00E.
Rogic', Milorad M.; Swerdloff, Michael D.; and Demmin, Timothy R., to Allied Chemical Corporation. Cyclic ketals of α-oximino-cycloalkanones. 4,240,966, Cl. 260-340.50R.
Rohm GmbH: *See—*
Wenzel, Franz; Bruemmer, Heinz-Dieter; and Krieg, Manfred, 4,241,203, Cl. 526-218.000.
Rohm, Gunter H. Force-compensated split-jaw lathe chuck. 4,240,645, Cl. 279-1.00C.
Rohm and Haas Company: *See—*
Kilbourn, Edward E.; and Weir, W. David, 4,241,079, Cl. 424-285.000.
Manziek, Larry, 4,240,909, Cl. 210-688.000.
Miller, George A.; and Weiler, Ernest D., 4,241,214, Cl. 548-101.000.
Rohner, Peter, to Kabel- und Metallwerke Gutehoffnungshuette AG. Heat exchange apparatus. 4,240,500, Cl. 165-105.000.
Rolfo, Gian P.: *See—*
Denaldi, Ermanno; and Rolfo, Gian P., 4,240,305, Cl. 74-493.000.
Rolke, Dietrich: *See—*
Karweil, Joachim; Degel, Josef; and Rolke, Dietrich, 4,240,927, Cl. 252-411.00R.
Rollins, Lester G., to Joy Manufacturing Company. Mining cutter bit holder and mounting assemblies. 4,240,669, Cl. 299-86.000.
Rolls-Royce Limited: *See—*
Douglas, Joseph, 4,240,706, Cl. 350-286.000.
Roman, Steven A., to Shell Oil Company. Cyclopropanecarboxylate pesticides. 4,241,081, Cl. 424-304.000.
Roos, Kjell E. H. Patient transferring apparatus. 4,240,169, Cl. 5-60.000.
Rosan, Inc.: *See—*
Rosan, Jose, Jr., 4,240,393, Cl. 123-188.0GC.
Rosan, Jose, Jr., to Rosan, Inc. Self locking valve guide. 4,240,393, Cl. 123-188.0GC.
Rosenthaler, Harold B. Dental appliance. 4,240,789, Cl. 433-136.000.
Ross, William J.: *See—*
Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,241,073, Cl. 424-273.00R.

Rossi, Albert, to Exxon Research & Engineering Co. Pour point depressant additive for fuels and lubricants. 4,240,916, Cl. 252-56.00D.
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, to Schering Aktiengesellschaft. Apparatus for the inhalation of medicinal agents. 4,240,418, Cl. 128-203.150.
Roth, Edmund H. Socket wrench. 4,240,310, Cl. 81-57.290.
Roth, Jonathan N., to Conviron, Inc. Pectin culture media and method. 4,241,186, Cl. 435-243.000.
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, to Saint-Gobain Industries. Apparatus for transporting sheets of glass in a vertical position. 4,240,660, Cl. 294-81.00R.
Rothman, Steven H.: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,397, Cl. 364-200.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,241,399, Cl. 364-200.000.
Rothschild, Kenneth J.; and Clark, Noel A., to Boston University, The Trustees of. Process for producing a molecularly oriented film. 4,241,005, Cl. 264-311.000.
Rotrekl, Otto; Vasicek, Vladimir; and Henzl, Jindrich, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Loom back rest mechanism. 4,240,471, Cl. 139-114.000.
Roussin, Michael A., to Caterpillar Tractor Co. Belleville spring-loaded crescent seal. 4,240,642, Cl. 277-84.000.
Rovnjev, Vjatsjeslev, to AB Bates a/s. Process for making color separation negatives and positives for use in multi-color printing. 4,241,153, Cl. 430-4.000.
Roy, Michel, to LOGISAC Groupement d'Interet Economique Regi par l'Ordonnance. Apparatus for forming and strapping a pack. 4,240,340, Cl. 100-7.000.
Rubell, Rube I.: *See—*
Barnhart, Kenneth O.; Morita, Lawrence H.; and Rubell, Rube I., 4,240,544, Cl. 206-0.820.
Rubinstein, Sara: *See—*
Familletti, Philip C.; Pestka, Sidney; and Rubinstein, Sara, 4,241,174, Cl. 435-5.000.
Rudd, Wallace C.; and Udall, Humfrey N., to Thermatool Corporation. Electrical contact apparatus for high frequency welding. 4,241,284, Cl. 219-61.200.
Rudman, Christopher G.: *See—*
Christie, Robert B.; Parsons, John A.; and Rudman, Christopher G., 4,241,051, Cl. 424-177.000.
Ruggles, Richard L., to Clemar Manufacturing Corp. Sequential irrigation control system. 4,241,375, Cl. 361-166.000.
Russo, Andrew N. Retrieving apparatus for tethered sports missile. 4,240,592, Cl. 242-54.00R.
Rutishauser, Albert. Mechanism for transporting sheetlike recording carriers. 4,240,622, Cl. 271-126.000.
Rutkowski, Gerhard: *See—*
Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, 4,240,877, Cl. 201-41.000.
Rutz, William D.: *See—*
Swain, Robert J.; and Rutz, William D., 4,240,908, Cl. 252-325.000.
Ryerson, John D., to Energy for Independence, Inc. Sensing the presence of ozone. 4,240,799, Cl. 23-232.00E.
Rylander, Nicholas M. Stuffing gland. 4,240,675, Cl. 308-9.000.
S & C Electric Company: *See—*
Bernatt, Joseph, 4,241,248, Cl. 200-145.000.
S. C. Johnson & Son, Inc.: *See—*
Chapman, Francis E., 4,240,919, Cl. 252-95.000.
Dill, Douglas W., 4,241,141, Cl. 428-500.000.
Saab-Scania Aktiebolag: *See—*
Horn, James N.; and Garden, Lorne J., 4,240,477, Cl. 144-245.00R.
Sachetto, Jean-Pierre: *See—*
Regnault, Alain; and Sachetto, Jean-Pierre, 4,241,089, Cl. 426-2.000.
Safrygin, Jury S.: *See—*
Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; and Andreeva, Nina K., 4,240,818, Cl. 71-59.000.
Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Hamsag, Ernest E., 4,240,197, Cl. 29-623.200.
Sage, Howard A., to Truck-Lite Company, Inc. Single filament, dual function, vehicle signal lamp. 4,241,371, Cl. 362-61.000.
Saino, Tetsushi: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.
St. Germain, Dennis, to I & I Sling Company, Inc. Heavy duty sling construction. 4,240,659, Cl. 294-74.000.
Saint-Gobain Industries: *See—*
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, 4,240,660, Cl. 294-81.00R.
Saito, Hiroki: *See—*
Hamamura, Ken; Kabutomori, Masuo; Ohta, Eiichi; and Saito, Hiroki, 4,241,111, Cl. 427-211.000.
Saito, Masaaki: *See—*
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, 4,240,989, Cl. 261-78.00R.
Saito, Tsunayoshi: *See—*
Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, 4,241,139, Cl. 428-413.000.
Sakai, Masayuki: *See—*
Nakatani, Yoshihiko; Nakatani, Seiichi; Sakai, Masayuki; and Matsuoka, Michio, 4,241,019, Cl. 422-94.000.
Sakai, Nobuo: *See—*
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, 4,241,164, Cl. 430-264.000.
Sakaki, Hiroshi; and Shintani, Sotokichi, to Kokusai Denshin Denwa Co., Ltd. Apparatus for reducing a sampling frequency. 4,241,443, Cl. 370-70.000.
Sakamoto, Takao: *See—*
Kojima, Hiroshi; Sakamoto, Takao; and Shimada, Tatsuro, 4,240,484, Cl. 152-209.00R.
Sakaoka, Gouji: *See—*
Matsumoto, Kenji; and Sakaoka, Gouji, 4,240,759, Cl. 401-85.000.
Saleck, Wilhelm; and von Rintelen, Harald, to AGFA-Gevaert, A.G. Process for the preparation of silver halide emulsions. 4,241,173, Cl. 430-569.000.
Salvat, Francois; Bouko, Jean; and Coquio, Claude, to Thomson-CSF. Multimode monopulse feed and antenna incorporating same. 4,241,353, Cl. 343-786.000.
Salvatore, Amedeo: *See—*
De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, 4,241,370, Cl. 361-24.000.
Samejima, Yasushi: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,240,883, Cl. 204-98.000.
Sammells, Anthony F.: *See—*
Ang, Peter G. P.; and Sammells, Anthony F., 4,240,882, Cl. 204-75.000.
Sanborn, Philip A., Jr., to W. R. Grace & Co. Method and apparatus for making a reclosable package. 4,240,241, Cl. 53-412.000.
Sanders Associates, Inc.: *See—*
Kreick, John R.; and Anderson, Glenn A., Sr., 4,241,292, Cl. 219-541.000.
Sanders, Gloria L. Safety device for forklifts and the like. 4,240,526, Cl. 187-9.00R.
Sanders, Heinz; and Langmann, Horst. Stackable flat pallet. 4,240,360, Cl. 108-53.300.
Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,240,276, Cl. 68-5.00E.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Seal device. 4,240,276, Cl. 68-5.00E.
Sandstrom, Paul H.: *See—*
Lal, Joginder; and Sandstrom, Paul H., 4,240,487, Cl. 152-355.000.
Saner, Kaspar, to Wirth Gallo & Co. Mass and force meter. 4,240,289, Cl. 73-141.00R.
Sankyo Company Limited: *See—*
Baba, Yoshihiko; and Horikoshi, Hiroyoshi, 4,241,082, Cl. 424-309.000.
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
San Miguel, Anthony, to United States of America, Navy. Safe-arm device for directed warhead. 4,240,351, Cl. 102-262.000.
Sano, Fumio: *See—*
Abe, Zenuemon; Tanaka, Kunio; and Sano, Fumio, 4,240,439, Cl. 128-653.000.
Santen Pharmaceutical Co., Ltd.: *See—*
Iwao, Jun-ichi; and Iso, Tadashi, 4,241,086, Cl. 424-319.000.
Sapino, Chester: *See—*
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,240,960, Cl. 260-239.100.
Sargisson, Donald F.; and Harris, Vivian G., to General Electric Company. Acoustically-treated mixer for a mixed flow gas turbine engine. 4,240,252, Cl. 60-262.000.
Sarle, Charles R.; and Owen, Bruce R., to Wallace Murray Corporation. Non-rotating fluid damped combination thrust and journal bearing. 4,240,678, Cl. 308-121.000.
Sarmurzina, Raushan G.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.
Sartain, Don M. Corner guard. 4,240,225, Cl. 49-462.000.
Sartori, Guido; and Savage, David W., to Exxon Research & Engineering Co. Process and amine-solvent absorbent for removing acidic gases from gaseous mixtures. 4,240,922, Cl. 252-189.000.
Sartori, Guido; and Leder, Frederic, to Exxon Research & Engineering Co. Process and amine-solvent absorbent for removing acidic gases from gaseous mixtures. 4,240,923, Cl. 252-189.000.
Sasaki, Takashi: *See—*
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.
Sasakura, Kazuyuki: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, 4,240,957, Cl. 260-112.50R.
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, to Tokai Denka Kogyo Kabushiki Kaisha. Dyeing method for fibrous products. 4,240,791, Cl. 8-465.000.
Sato, Seiji: *See—*
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,241,182, Cl. 435-80.000.
Sato, Yasuhisa; Tsuji, Sadahiko; and Tanaka, Katsumi, to Canon Kabushiki Kaisha. Zoom lens having extended focusing range. 4,240,699, Cl. 350-184.000.
Sato, Yasuhisa: *See—*
Tsuji, Sadahiko; and Sato, Yasuhisa, 4,240,698, Cl. 350-184.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Ink supply devices for portable labeling machine. 4,240,348, Cl. 101-295.000.

Sauerwein, William D.: *See—*
Walton, Richard E., II; and Sauerwein, William D., 4,240,204, Cl. 30-393.000.

Saunders, Howard E.; and Smith, James D. B., to Westinghouse Electric Corp. Low dissipation factor epoxy coating powder. 4,241,101, Cl. 427-32.000.

Sauvan, Gerard: *See—*
Vial, Jean; and Sauvan, Gerard, 4,240,453, Cl. 134-107.000.

Savage, David W.: *See—*
Sartori, Guido; and Savage, David W., 4,240,922, Cl. 252-189.000.

Sawby, Scott; and Mullin, Steven W. Folding knife. 4,240,201, Cl. 30-161.000.

SCA Development Aktiebolag: *See—*
Gustafson, Karl A., 4,240,260, Cl. 60-670.000.

Scaccia, Carl, to Union Carbide Corporation. High solids mixture aeration method. 4,240,905, Cl. 210-629.000.

Scarpitti, Janice K.: *See—*
Scarpitti, Roger V., 4,241,241, Cl. 179-100.41Z.

Scarpitti, Roger V., to Scarpitti, Janice K. Electromechanical record disk dynamic range expander. 4,241,241, Cl. 179-100.41Z.

Schaaf, Henry W.: *See—*
Anderson, John L.; Davidson, John C.; Schaaf, Henry W.; and Meis, Charles H., 4,240,582, Cl. 239-11.000.

Schaefer, Harold W.; Thomas, Joyce K.; and Hohulin, Samuel E., to National Union Electric Corporation. Vacuum cleaner bag assembly. 4,240,812, Cl. 55-369.000.

Schael, Wilfried, to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG. Peritoneal dialysis apparatus. 4,240,408, Cl. 128-1.00R.

Schauer, Alois: *See—*
Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, 4,240,711, Cl. 350-345.000.

Schechter, Michale M.: *See—*
Simko, Aladar O.; and Schechter, Michale M., 4,240,395, Cl. 123-445.000.

Scheffer, Terry J.: *See—*
Kmetz, Allan R.; Muller, Klaus; and Scheffer, Terry J., 4,241,344, Cl. 340-765.000.

Schering Aktiengesellschaft: *See—*
Rosskamp, Gunter; Kolberg, Reiner; Gunzel, Peter; and Porep, Hans-Jurgen, 4,240,418, Cl. 128-203.150.

Scheuermann, Horst: *See—*
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.

Schiffer, Daniel K.: *See—*
Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., 4,241,118, Cl. 428-35.000.

Schimko, Reinhold, to Universal Maschinenfabrik Dr. Rudolf Scheiber GmbH & Co. KG. Reciprocating sled drive for a flat bed knitting machine. 4,240,274, Cl. 66-64.000.

Schink, Richard R., to Milwaukee Cylinder Corporation. Combined pressure control and shut-off valve. 4,240,464, Cl. 137-505.420.

Schleffendorf, Frank. Tool handle. 4,240,479, Cl. 145-61.00D.

Schmatz, Duane J.; and Winterbottom, Walter L., to Ford Motor Company. Fluxless brazing of aluminum in inert gas. 4,240,574, Cl. 228-217.000.

Schmid, Hans-Peter: *See—*
Winderman, Jay B.; and Schmid, Hans-Peter, 4,240,596, Cl. 244-3.160.

Schmidt, Alfred: *See—*
Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, 4,240,808, Cl. 55-48.000.

Schmidt, Gunther: *See—*
Roth, Mario; Pagel, Werner; Schmidt, Gunther; and Hausmann, Laurenz, 4,240,660, Cl. 294-81.00R.

Schmit, Georges J. E.; and Welter, Thomas N. H., to Goodyear Tire & Rubber Company, The. Stretchable radial spare tire. 4,240,486, Cl. 152-330.00R.

Schmitt, Frederick L.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.
Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., 4,241,097, Cl. 426-536.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.

Schnell, Karl. Mincer with at least one rotary mincing tool. 4,240,591, Cl. 241-82.400.

Schnoll, Howard S., to Singer Company, The. Free oil control in a gyro bearing design. 4,240,679, Cl. 308-187.000.

Schnurle, Hans: *See—*
Horbelt, Michael; Schnurle, Hans; Drews, Ulrich; and Bertsch, Richard, 4,240,383, Cl. 123-492.000.

Schoenfield, Palmer J.: *See—*
Katzman, Allison W.; Meyer, Burton C.; Erickson, Erick E.; and Schoenfield, Palmer J., 4,240,224, Cl. 46-88.000.

Schoer, Heinz; and Schultze, Werner, to Vereinigte Aluminium-Werke Aktiengesellschaft. Composite aluminum-containing workpieces. 4,241,148, Cl. 428-654.000.

Schonken, Tobias D., to Multilin Inc. Method and apparatus for monitoring poly-phase currents in poly-phase equipment. 4,241,336, Cl. 340-518.000.

Schoppee, Meredith M.: *See—*
Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., 4,241,118, Cl. 428-35.000.

Schrank, Wolfgang: *See—*
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.

Schreiber, John A.: *See—*
Mara, Eugene G.; Schreiber, John A.; and LeCourt, William N., 4,241,373, Cl. 361-92.000.

Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; Fugner, Armin; and Jacobi, Volker, to Boehringer Ingelheim GmbH. 2-(Pyridylamino)-benzoic acids and salts thereof. 4,241,068, Cl. 424-263.000.

Schroter, Herbert, to Hoechst Aktiengesellschaft. Developing apparatus for diazotype material, especially for use in a photoprinting machine. 4,240,736, Cl. 354-299.000.

Schroyer, Robert F. Method and device for removing disc brake piston. 4,240,191, Cl. 29-426.500.

Schubart, Rudiger, to Bayer Aktiengesellschaft. Monohalogenated ketones. 4,240,983, Cl. 568-316.000.

Schuerman, Terry J.: *See—*
Hawkes, Richard B.; Hobbs, John N.; and Schuerman, Terry J., 4,240,538, Cl. 198-358.000.

Schuette, William L.: *See—*
Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,240,899, Cl. 208-120.000.

Schulte, Wolfgang: *See—*
Laas, Harald; Nissen, Axel; Opgenorth, Hans-Joachim; Scheuermann, Horst; Mueller, Hans-Richard; and Schulte, Wolfgang, 4,240,963, Cl. 260-319.100.

Schultz, John P., to Vapor Corporation. Method for automated analysis of vehicle performance. 4,241,403, Cl. 364-300.000.

Schultze, W. Martin: *See—*
Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, 4,241,017, Cl. 422-58.000.

Schultze, Werner: *See—*
Schoer, Heinz; and Schultze, Werner, 4,241,148, Cl. 428-654.000.

Schulz, Manfred, to Dresser Europe S.A. Safety mounting device for the nozzle of a liquid-fuel dispensing pump. 4,240,475, Cl. 141-392.000.

Schwarz, Helmut: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, 4,241,207, Cl. 542-427.000.

Schwob, Pierre, to SEB S.A. Electric steam iron. 4,240,217, Cl. 38-77.830.

SCM Corporation: *See—*
Ho, T. L.; Din, Zia U.; and Traynor, Sean G., 4,240,969, Cl. 260-346.220.
Moskowitz, Larry N.; and Klar, Erhard, 4,240,824, Cl. 75-0.50C.
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,240,831, Cl. 75-228.000.
Woo, James T. K., 4,241,200, Cl. 525-455.000.

Scope, Inc.: *See—*
Uffelman, Malcolm R., 4,241,350, Cl. 343-5.0SA.

Scott, Donald C. Combined drum-set carrier and performance platform. 4,240,646, Cl. 280-30.000.

Scott, Jeffrey L.: *See—*
Thiem, James F.; and Scott, Jeffrey L., 4,240,174, Cl. 15-1.700.

Scrine, Gerald R.; and Carter, William D. M., to Shipowners Refrigerated Cargo Research Association. Apportioning means for refrigeration system. 4,240,266, Cl. 62-196.00B.

Sears, Kay G., to Entron, Inc. Power supply protective circuit. 4,241,372, Cl. 361-72.000.

SEB S.A.: *See—*
Schwob, Pierre, 4,240,217, Cl. 38-77.830.

Sederquist, Richard A., to United Technologies Corporation. Process for producing hydrogen containing gas. 4,240,805, Cl. 48-214.00R.

Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, to Centralny Osrodek Projektowokonstrukcyjyn Maszyn Gorniczych "Komag". Driving gear rack cleaner for a mining machine. 4,240,667, Cl. 299-43.000.

Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag". Driving device for mining machine. 4,240,668, Cl. 299-43.000.

Seidel, Harry W., to Raytheon Company. Fuel saver oven. 4,240,397, Cl. 126-21.00R.

Seidel, John G.: *See—*
Petrie, Edward M.; Seidel, John G.; and Felice, Patrick E., 4,240,992, Cl. 264-21.000.

Seidel, Peter-Rudolf: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, 4,241,207, Cl. 542-427.000.

Seiko Koki Kabushiki Kaisha: *See—*
Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,240,732, Cl. 354-138.000.

Seiner, Jerome A.: *See—*
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,240,838, Cl. 106-84.000.

Semenov, Stepan S.; and Pevzner, Volf S. Programmed switching device. 4,241,245, Cl. 200-38.00R.

Senet, Jean-Pierre G.; and Le Roy, Patrice M., to Societe Nationale des Poudres et Explosifs. Allyl-acrylic monomers, their preparation and polymers derived therefrom. 4,241,202, Cl. 526-73.000.

Senko Medical Instruments Mfg. Co., Ltd.: *See—*
Nakanishi, Hikaru, 4,240,796, Cl. 8-137.500.

Sereg: *See—*
Nguyen, Van L., 4,240,284, Cl. 73-17.00A.

Shackelford, Carl L., to Altex Scientific, Inc. Needle injection device for delivering fluid. 4,240,429, Cl. 128-218.0NV.

Shakhpazov, Khristofor S.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Sharapov, Jury N.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Sharon Manufacturing Company: *See—*
Hudson, Sharon J., Jr., 4,240,573, Cl. 228-184.000.

Sharp Kabushiki Kaisha: *See—*
Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, 4,240,710, Cl. 350-339.00R.

Shaub, Melvin H., to Armstrong Cork Company. Humidifier. 4,240,991, Cl. 261-92.000.

Shaw, Bon F.: *See—*
Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., 4,240,212, Cl. 434-11.000.

Shaw, Harold L., to Coca-Cola Company, The. System for vaporizing carbon dioxide utilizing the heat by-product of the refrigeration system as a heat source. 4,240,267, Cl. 62-238.00E.

Shaw, Richard A., to Richard A. Shaw, Inc. Method for coring cauliflower heads. 4,241,096, Cl. 426-484.000.

Shawkey, Donald L.: *See—*
Spear, Kenneth J.; and Shawkey, Donald L., 4,240,522, Cl. 182-105.000.

Shea, John W. Travel mirror. 4,241,383, Cl. 362-135.000.

Sheldon, Neville M.; and Stern, Alfred, to General Foam Products Limited. Wear-resistant flexible sheet material and a method for its manufacture. 4,241,189, Cl. 521-50.000.

Shell Container Systems: *See—*
Cohen, Joel B., 4,240,240, Cl. 53-410.000.

Shell Oil Company: *See—*
Berni, Albert J.; and Parrish, John F., 4,241,428, Cl. 367-21.000.
Kok, Riekert, 4,240,981, Cl. 564-259.000.
Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink, Gerrit J., 4,240,287, Cl. 73-61.00R.
Roman, Steven A., 4,241,081, Cl. 424-304.000.
Werner, Erik S. E.; Ouwerkerk, Cornelis; and Cornelisse, Roelof, 4,241,032, Cl. 423-226.000.

Shepherd, Lawrence H., Jr., to Ethyl Corporation. Aldehyde synthesis. 4,240,985, Cl. 568-483.000.

Sherex Chemical Company, Inc.: *See—*
Shields, Theodore C., 4,240,804, Cl. 44-71.000.

Sherrill, John C. Pool vacuum. 4,240,173, Cl. 15-1.700.

Sherwood, Bert J.: *See—*
Zorn, Edward; Sherwood, Bert J.; and Liffick, Fenton A., 4,240,670, Cl. 301-9.0DN.

Sherwood, William G.: *See—*
Hodges, Donald R.; Sherwood, William G.; and Nikolic, Cvetko, 4,240,886, Cl. 204-112.000.

Shiba, Keisuke: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, 4,241,168, Cl. 430-503.000.

Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, to Nakano Vinegar Co., Ltd. Method for preventing soy sauce from putrefaction. 4,241,095, Cl. 426-335.000.

Shibazaki, Hiroji; Edagawa, Setsuji; and Hasegawa, Hisashi, to Shiraishi Kogyo Kaisha, Ltd. Filled paper. 4,240,870, Cl. 162-181.00A.

Shibuya Kogyo Co., Ltd.: *See—*
Nagano, Yasuaki, 4,240,868, Cl. 156-572.000.

Shida, Masaharu; Torisawa, Akira; and Ueda, Makoto, to Kabushiki Kaisha Daini Seikosha. Stepping motor mechanism for an electronic watch. 4,241,434, Cl. 368-85.000.

Shida, Masaharu: *See—*
Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, 4,241,433, Cl. 368-76.000.

Shields, Theodore C., to Sherex Chemical Company, Inc. Alkyl acrylate adducts of polyamines, ether amines and ether polyamines. 4,240,804, Cl. 44-71.000.

Shiga, Takashi, to Victor Company of Japan Limited. Program-selecting device in a reproducing apparatus. 4,241,364, Cl. 360-72.100.

Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, to Hitachi, Ltd. Optical information recording apparatus. 4,241,240, Cl. 179-100.10G.

Shigemura, Yukimasa: *See—*
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.

Shih, Seng C. Non-woven netting. 4,241,123, Cl. 428-105.000.

Shimada, Tatsuro: *See—*
Kojima, Hiroshi; Sakamoto, Takao; and Shimada, Tatsuro, 4,240,484, Cl. 152-209.00R.

Shimano Industrial Company, Limited: *See—*
Fukui, Seiji, 4,240,533, Cl. 192-6.00A.

Shimaoka, Goro: *See—*
Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, 4,241,116, Cl. 427-386.000.

Shimazaki, Ruji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio control device for an internal combustion engine. 4,240,389, Cl. 123-492.000.

Shimizu, Toru: *See—*
Takizawa, Iwao; Otsubo, Iwao; and Shimizu, Toru, 4,240,817, Cl. 71-29.000.

Shinagawa Refractories Co., Ltd.: *See—*
Naito, Kiyoshi; and Syukuya, Akio, 4,240,788, Cl. 432-136.000.

Shinko Electric Co., Ltd.: *See—*
Ishiyama, Kiyoshige, 4,240,862, Cl. 156-350.000.

Shinma, Yasuhiro: *See—*
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.

Shinn, William T., to Motorola, Inc. Quartz crystal resonator. 4,240,311, Cl. 82-12.000.

Shintaku, Yoshishige, to Ibuki Kogyo Co., Ltd. Electric horn with twin driving electromagnets. 4,241,334, Cl. 340-388.000.

Shintani, Sotokichi: *See—*
Sakaki, Hiroshi; and Shintani, Sotokichi, 4,241,443, Cl. 370-70.000.

Shionogi & Co., Ltd.: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, 4,240,957, Cl. 260-112.50R.

Shioume, Satoshi: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.

Shipowners Refrigerated Cargo Research Association: *See—*
Scrine, Gerald R.; and Carter, William D. M., 4,240,266, Cl. 62-196.00B.

Shirahata, Kunikatsu: *See—*
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,241,182, Cl. 435-80.000.

Shiraishi Kogyo Kaisha, Ltd.: *See—*
Shibazaki, Hiroji; Edagawa, Setsuji; and Hasegawa, Hisashi, 4,240,870, Cl. 162-181.00A.

Shiraki, Shigemi: *See—*
Itaya, Shikiho; Nagaoka, Takenori; Itoh, Teruo; Shigemura, Yukimasa; and Shiraki, Shigemi, 4,241,220, Cl. 562-414.000.

Shirakura, Hiroshi: *See—*
Nagase, Hidenobu; Miyaki, Kiyoshi; Shirakura, Hiroshi; and Ohashi, Yasuo, 4,240,391, Cl. 123-454.000.

Shirk, Albert: *See—*
Hintze, William; and Shirk, Albert, 4,241,277, Cl. 313-500.000.

Shoshiashvili, David S.: *See—*
Kryanin, Ivan R.; Mirzoian, Genrikh S.; Alexandroy, Nikolai N.; Shoshiashvili, David S.; Krapukhin, Viktor M.; Akubov, Gleb S.; Gerlivanov, Evgeny V.; Lvov, Vladimir M.; and Komarov, Mark M., 4,240,494, Cl. 164-66.000.

Shreve, James S., to United States of America, Army. Array antenna controller. 4,241,351, Cl. 343-100.0SA.

Shtykh, Nikolai P.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Shukla, Jayendra R., to Velsicol Chemical Corporation. Novel intumescent composition. 4,241,145, Cl. 428-537.000.

Shults, Mark C.: *See—*
Updike, Stuart J.; and Shults, Mark C., 4,240,438, Cl. 128-635.000.

Shuster, Edward J.: *See—*
Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,240,447, Cl. 131-9.000.

Sickler, Raymond W., to Dura-Bilt Products, Inc. Fence post with invertible sections. 4,240,615, Cl. 256-60.000.

Sickles, James E., to PPG Industries, Inc. Electrostatic spraying apparatus with repelling electrode means and gas shroud. 4,240,585, Cl. 239-705.000.

Siemens Aktiengesellschaft: *See—*
Baur, Gunter; Greubel, Waldemar; Kruger, Hans; and Schauer, Alois, 4,240,711, Cl. 350-345.000.
Diepers, Heinrich, 4,240,869, Cl. 156-643.000.
Feuerbaum, Hans P.; and Otto, Johann, 4,241,259, Cl. 250-457.000.
Giebler, Fritz; and Gensthaler, Edmund, 4,241,333, Cl. 340-365.00S.
Gruter, Otto, 4,241,422, Cl. 365-183.000.
Haeder, Wolfgang, 4,241,234, Cl. 174-92.000.
Olsen, Willi, 4,241,379, Cl. 361-335.000.
Pauly, Alexander, 4,241,417, Cl. 364-900.000.
Pohlig, Dietmar, 4,241,301, Cl. 318-696.000.
Taeuber, Reinhard; and Neumayr, Hans, 4,241,331, Cl. 340-167.00R.

Siemens Gammasonics, Inc.: *See—*
Groch, Mark W.; and Lewis, George K., 4,240,440, Cl. 128-654.000.

Sigle, Jakob: *See—*
Sigle, Rolf; and Sigle, Jakob, 4,240,214, Cl. 36-30.00R.

Sigle, Rolf; and Sigle, Jakob. Foot-supporting sole. 4,240,214, Cl. 36-30.00R.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See—*
deWitt, Paolo; and Tinti, Maria O., 4,240,984, Cl. 568-435.000.

Silberberg, Joseph: *See—*
Weil, Edward D.; Jung, Alfred K.; and Silberberg, Joseph, 4,240,956, Cl. 260-45.75B.

Silukova, Irina F.: *See—*
Lukin, Evgeny G.; Dunaev, Jury D.; Kozin, Leonid F.; Sarmurzina, Raushan G.; Kozhirova, Svetlana E.; Ospanov, Ergali; and Silukova, Irina F., 4,240,829, Cl. 75-147.000.

Silvestri, Herbert H.: *See—*
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,240,960, Cl. 260-239.100.

Simko, Aladar O.; and Schechter, Michale M., to Ford Motor Company. Air/fuel ratio controller. 4,240,395, Cl. 123-445.000.

Simmonds Precision Products, Inc.: *See—*
Bentz, Allan J., 4,240,286, Cl. 73-59.000.

Simmonds, Robin G.: *See—*
Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,241,073, Cl. 424-273.00R.

Simonis, Jurgen, to Gebruder Welger. Bale pressing arrangement for cardboard wastes. 4,240,339, Cl. 100-5.000.

Singer Company, The: *See—*
Adams, Kenneth D., 4,240,368, Cl. 112-220.000.
Rakowsky, Edward L.; and Galowin, Lawrence S., 4,240,257, Cl. 60-531.000.
Schnoll, Howard S., 4,240,679, Cl. 308-187.000.

Singh, Prithipal; and Pirio, Marcel R., to Syva Company. Propanolol antigen conjugates and antibodies. 4,241,177, Cl. 435-7.000.

Singh, Shobha: *See—*
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,716, Cl. 350-363.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,717, Cl. 350-363.000.
Johnson, Leo F.; Singh, Shobha; and Van Uitert, LeGrand G., 4,240,693, Cl. 350-96.140.

Singleton, Rosa R. Therapeutic cold pack. 4,240,436, Cl. 128-403.000.

Sinha, Ashok K.: *See—*
Jacobs, Richard M.; and Sinha, Ashok K., 4,240,196, Cl. 29-578.000.

Sion, Marcel-Xavier: *See—*
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,241,226, Cl. 568-704.000.

Sipek, Ladislav: *See—*
Wendelin, Rurik; and Sipek, Ladislav, 4,240,798, Cl. 23-230.00A.

Siragusa, George A.: *See—*
Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., 4,240,212, Cl. 434-11.000.

Sivachenko, Eugene W.; and Broacha, Firoze H., to Sivachenko, Eugene W. Corrugated plate having variable material thickness and method for making same. 4,241,146, Cl. 428-600.000.

Sjoholm, Bertil H., to Gotaverken Anteknik AB. Apparatus for welding pins to a tube interior. 4,241,287, Cl. 219-161.000.

Skelton, John; Schoppee, Meredith M.; Schiffer, Daniel K.; and Parker, Roy B., to Albany International Corp. Tennis balls and method of manufacture. 4,241,118, Cl. 428-35.000.

SKF Industries, Inc.: *See—*
Stolz, Robert; and Hahn, Walter, 4,240,681, Cl. 308-189.00R.

SKF Kugellagerfabriken GmbH: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,240,673, Cl. 308-6.00C.

Skinner, Maurice W.: *See—*
Downing, Stephen B.; Osmond, Desmond W. J.; Skinner, Maurice W.; West, Edmund J.; and Dawson, David G., 4,240,840, Cl. 106-93.000.

Skrzec, Adam E., to Stauffer Chemical Company. Fluidized bed reactor system. 4,241,021, Cl. 422-143.000.

Skwarek, Jean P., to Timex Corporation. Substrate board/carrier frame assembly. 4,241,439, Cl. 368-204.000.

Slagle, Bernie L. Water injection system. 4,240,380, Cl. 123-25.00L.

SM Industrial Company, Limited: *See—*
Miki, Kiyotsune, 4,240,178, Cl. 16-93.00D.

Smart, Normaan E., to Post Office, The. Dimensionally heat-unstable products. 4,241,119, Cl. 428-36.000.

Smith, Barry. Reflector with illuminated indicia. 4,240,220, Cl. 40-564.000.

Smith International, Inc.: *See—*
Crase, Gary M., 4,240,683, Cl. 308-227.000.

Smith, James D. B.: *See—*
Phillips, David C.; and Smith, James D. B., 4,241,195, Cl. 525-3.000.
Saunders, Howard E.; and Smith, James D. B., 4,241,101, Cl. 427-32.000.

Smith, Ruslon J., to Equipment Technology Incorporated. High speed unit printer and inker therefor. 4,240,344, Cl. 101-44.000.

Smith, Stanley E., to General Motors Corporation. Automatic sewing apparatus for air cushions. 4,240,366, Cl. 112-121.240.

Smith & Wesson Chemical Company, Inc.: *See—*
Litman, Alan, 4,241,252, Cl. 250-213.0VT.

Smith, William G.; and Yuhash, Ladd, to United States of America, Army. Automatic gun. 4,240,324, Cl. 89-156.000.

Smith, William P.; and Halsey, Dave R. Traffic delineator. 4,240,766, Cl. 404-10.000.

Smith, William R.: *See—*
Blanc, Serge L.; and Smith, William R., 4,240,748, Cl. 356-138.000.

Smithen, Carey E., to Hoffmann-La Roche Inc. Nitroimidazoles and compositions thereof. 4,241,060, Cl. 424-248.570.

Smyshlyaev, Vladimir V.: *See—*
Zalessky, Eduard A.; and Smyshlyaev, Vladimir V., 4,240,292, Cl. 73-861.270.

Snell, James L.; and Cobb, Raymond F., to Harris Corporation. Hard limiting acquisition technique for PSK carrier detector. 4,241,454, Cl. 455-260.000.

SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Zoina, Giuseppe, 4,240,188, Cl. 28-274.000.

Snyder, Peter E.: *See—*
Virgulto, James A.; and Snyder, Peter E., 4,240,444, Cl. 128-782.000.

Societe Anonyme de Telecommunications: *See—*
Payen, Georges A., 4,241,445, Cl. 371-5.000.

Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
Adrian, Guy; Sion, Marcel-Xavier; and Benattar, Andre, 4,241,226, Cl. 568-704.000.

Societe d'Applications Generales d'Electricite et de Mecanique SAGEM: *See—*
Vial, Jean; and Sauvan, Gerard, 4,240,453, Cl. 134-107.000.

Societe d'Exploitation des Etablissements Bregeon-Cochard: *See—*
Diziere, Bernard, 4,241,384, Cl. 362-203.000.

Societe Nationale des Poudres et Explosifs: *See—*
Senet, Jean-Pierre G.; and Le Roy, Patrice M., 4,241,202, Cl. 526-73.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Vinas Espin, Genevieve M. G.; Marchoisne, Yves F. P.; and Lazareff, Michel, 4,240,598, Cl. 244-35.00R.

Soderman, Donald A.: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, George T., 4,240,845, Cl. 148-1.500.

Soejima, Shigeo: *See—*
Watanabe, Tetsuo; Wada, Shigetaka; and Soejima, Shigeo, 4,240,890, Cl. 204-195.00S.

Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; and Andreeva, Nina K. Procedure for preparing nitrogen-potassium fertilizer. 4,240,818, Cl. 71-59.000.

Sokolow, Nickolas N., to Beloit Corporation. Parison pickers with variable spacing. 4,241,009, Cl. 264-532.000.

Solar Kinetics, Inc.: *See—*
Hutchison, Joseph A., 4,240,406, Cl. 126-438.000.

Solarex Corporation: *See—*
Lindmayer, Joseph, 4,240,842, Cl. 136-256.000.

Solberg, Ruell F., Jr.: *See—*
Barber, Lewie M.; Criswell, Bernie R.; Solberg, Ruell F., Jr.; and Weiss, Benjamin F. L., 4,241,432, Cl. 367-151.000.

Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; and Solomin, Vladimir A., 4,241,268, Cl. 310-13.000.

Somesla, Dana W.: *See—*
Gomberg, Edward N.; and Somesla, Dana W., 4,240,852, Cl. 156-96.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Unsymmetrical pyrrolino benzyl quaternary compounds. 4,240,965, Cl. 260-326.410.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,209, Cl. 546-147.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,210, Cl. 546-261.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,211, Cl. 546-261.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,212, Cl. 546-291.000.

Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Chemical agents. 4,241,218, Cl. 560-163.000.

Song, Jae M.; and Ligon, Samuel B. Tetherable game ball. 4,240,629, Cl. 273-58.00C.

Sony Corporation: *See—*
Kimura, Shuichi, 4,240,641, Cl. 274-23.00R.
Kobayashi, Naotake, 4,241,198, Cl. 525-360.000.

Sookikian, Dennis M.; and Gudea, Dumitru, to Triner Scale and Manufacturing Co. Electronic scale. 4,241,407, Cl. 364-567.000.

Sotolongo, Thomas J., to AMP Incorporated. Floor fixture. 4,240,688, Cl. 339-122.00F.

Sotolongo, Thomas J.: *See—*
Bunnell, Edward D.; and Sotolongo, Thomas J., 4,240,687, Cl. 339-99.00R.

Soupios, Charles C. Electric guitars. 4,240,319, Cl. 84-263.000.

Spear, Kenneth J.; and Shawkey, Donald L., to R. D. Werner Co., Inc. Extension trestle ladder. 4,240,522, Cl. 182-105.000.

Spector, George: *See—*
LaGrone, Janet L.; and Spector, George, 4,240,520, Cl. 182-48.000.
Nevin, William; and Spector, George, 4,240,783, Cl. 431-253.000.

Speidel, Blasius. Pressure gauge for sphygmomanometers. 4,240,297, Cl. 73-711.000.

Speitkamp, Ludwig: *See—*
Regehr, Ulrich; Hannemann, Horst; and Speitkamp, Ludwig, 4,240,814, Cl. 55-423.000.

Spence-Bate, Harry A. H.; and Bain-Smith, Timothy, to Spence-Bate, Harry Arthur Hele. Electrostatic camera. 4,240,725, Cl. 354-3.000.

Spence-Bate, Harry Arthur Hele: *See—*
Spence-Bate, Harry A. H.; and Bain-Smith, Timothy, 4,240,725, Cl. 354-3.000.

Spencer, Donald L., to University of Iowa Research Foundation. Solar absorber panel, collector assembly and installation method. 4,240,407, Cl. 126-444.000.

Sperry Corporation: *See—*
De Ward, Robert C.; Kaminski, David G.; and Fedde, Mickiel P., 4,241,401, Cl. 364-200.000.
Eibner, Jules A., 4,241,455, Cl. 455-600.000.

Spiegelberg, Gary: *See—*
Golonka, Kenneth A., Sr.; and Spiegelberg, Gary, 4,241,285, Cl. 219-130.320.

Spirig, Ernst. Ambient noise intruder alarm. 4,241,338, Cl. 340-566.000.

Sprague, Peter W.: *See—*
Ondetti, Miguel A.; and Sprague, Peter W., 4,241,076, Cl. 424-274.000.

Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Use of benzodionones in augmenting or enhancing the aroma and taste of a foodstuff. 4,241,097, Cl. 426-536.000.

Sprengel, Heide: *See—*
Klupfel, Kurt; Sprengel, Heide; Deucker, Walter; and Vollmann, Hansjorg, 4,241,166, Cl. 430-281.000.

Sprimag Spritzmaschinenbau GmbH: *See—*
Anger, Rudolf, 4,240,373, Cl. 118-301.000.

Srinivas, Srivas R. Apparatus for cleaning and coating capillary tubes useful in gas chromatography. 4,240,472, Cl. 141-59.000.

Staats, Henry N., to General Binding Corporation. Method for producing a transversely curved finger binding. 4,241,006, Cl. 264-322.000.

Stabilus GmbH: *See—*
Wirges, Winfried; and Bauschke, Guenter, 4,240,619, Cl. 267-65.00R.

Stacey, Eric. J.; and Kernick, Andress, to Westinghouse Electric Corp. Non-dissipative DC active filter and transformer. 4,241,395, Cl. 363-39.000.

Stacklies, Horst: *See—*
Wiedmann, Erwin; and Stacklies, Horst, 4,240,728, Cl. 354-38.000.

Staffieri, Giovanni M. Stereoscopic camera. 4,240,731, Cl. 354-114.000.

Stahlherm, Dieter; Rutkowski, Gerhard; Bocsanczy, Janos; and Becker, Hans, to Carl Still GmbH & Co. KG, Firma. Method for preheating coal for coking. 4,240,877, Cl. 201-41.000.

Stahnecker, Erhard: *See—*
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,241,191, Cl. 521-56.000.

Staiger, Donald W.: *See—*
Flickinger, William T.; and Staiger, Donald W., 4,240,781, Cl. 425-450.100.

Stamicarbon, B.V.: *See—*
Dassen, Bernardus H. N., 4,240,904, Cl. 210-609.000.

Stamires, Dennis: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,240,932, Cl. 252-455.00Z.

Standard Brands Incorporated: *See—*
Tims, Orinda L., 4,241,106, Cl. 426-138.000.

Standard Oil Company: *See—*
Milberger, Ernest C.; and Wong, Eunice K. T., 4,240,931, Cl. 252-438.000.

Standard Oil Company (Indiana): *See—*
Knox, Jack R., 4,241,002, Cl. 264-168.000.
Mieville, Rodney L., 4,240,934, Cl. 252-466.0PT.

Standing, Charles N.: *See—*
O'Neil, James D.; Granum, Gregory M.; Kiploks, Elmars M.; and Standing, Charles N., 4,241,094, Cl. 426-324.000.

Stanley, Philip E., to Honeywell Information Systems Inc. Clock system having a dynamically selectable clock period. 4,241,418, Cl. 364-900.000.

Stanley Tools Limited: *See—*
Gilbert, Richard, 4,240,202, Cl. 30-162.000.

Stanya, Andrew, to Republic Steel Corporation. Electroplating current control. 4,240,881, Cl. 204-28.000.

Starchenko, Vitaly S.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Starr, Darrel N., to Caterpillar Tractor Co. Safety guard for work platforms. 4,240,648, Cl. 280-760.000.

Stas, Justyn: *See—*
Podgorski, Wojciech; and Stas, Justyn, 4,240,666, Cl. 299-31.000.

Staudenmaier, Paul: *See—*
Hliboki, Joseph G.; and Staudenmaier, Paul, 4,240,743, Cl. 355-73.000.

Stauffer Chemical Company: *See—*
Goswami, Jagadish C., 4,241,192, Cl. 521-73.000.
Kaniecki, Thaddeus J., 4,240,921, Cl. 252-156.000.
Skrzec, Adam E., 4,241,021, Cl. 422-143.000.
Weil, Edward D.; Jung, Alfred K.; and Silberberg, Joseph, 4,240,956, Cl. 260-45.75B.

Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, to Bayer Aktiengesellschaft. Graft copolymers containing (meth)acrylic acid or (meth)acrylic acid esters. 4,241,197, Cl. 525-309.000.

Steglich, Wolfgang: *See—*
Koenig, Horst; Franke, Albrecht; Frickel, Fritz-Frieder; Steglich, Wolfgang; and Engel, Norbert, 4,240,964, Cl. 260-326.50M.

Steigerwald, Carl J.: *See—*
Balistreri, Thomas W.; Steigerwald, Carl J.; Layton, Terry N.; Villari, Frank K.; and Schultze, W. Martin, 4,241,017, Cl. 422-58.000.

Steigerwald, Robert L., to General Electric Company. Induction cooking system. 4,241,250, Cl. 219-10.49R.

Stein, Brooks M.; and Linden, James C., to Great Western Sugar Company, The. Method of stabilizing α-galactosidase. 4,241,185, Cl. 435-188.000.

Steinberg, Albert H.: *See—*
DellaVecchia, Michael P.; Mackey, Joseph E.; and Steinberg, Albert H., 4,240,857, Cl. 156-209.000.

Stelzner, Herbert A.; and Lau, Peter, to Plastik-und Metallverpackung GmbH. Method and device for the insertion of cans into carriers. 4,240,239, Cl. 53-398.000.

Stern, Alfred: *See—*
Sheldon, Neville M.; and Stern, Alfred, 4,241,189, Cl. 521-50.000.

Stio, Joseph B. Push pack. 4,240,548, Cl. 206-250.000.

Stoev, Stoycho M.; Djendova, Shtilyana D.; Metodiev, Metodi S.; and Kresteva, Kalinka I., to Vish Minno Geoloshki Institute. Method of reverse stratification. 4,240,903, Cl. 209-437.000.

Stolz, Robert; and Hahn, Walter, to SKF Industries, Inc. Two row rolling bearing assembly having single piece inner ring and two piece outer ring. 4,240,681, Cl. 308-189.00R.

Stone, Orison W., to Pack Image, Inc. Basket-type carrier for bottles and method of forming the same. 4,240,546, Cl. 206-193.000.

Stonner, Hans M.: *See—*
Garber, Alfred; Wiesner, Paul; Stonner, Hans M.; Wohler, Fritz; and Schmidt, Alfred, 4,240,808, Cl. 55-48.000.

Stonner, Hans-Martin: *See—*
Wiesner, Paul; Wohler, Fritz; and Stonner, Hans-Martin, 4,241,227, Cl. 568-761.000.

Storer, Richard R., Sr. Hydro-electric power plant. 4,241,283, Cl. 290-54.000.

Storz Instrument Company: *See—*
Pickering, Norman C.; and Fisher, Yale, 4,240,410, Cl. 128-1.500.

Stothert & Pitt Limited: *See—*
Heathcote, Terence R.; and Jefferies, Ralph G., 4,240,333, Cl. 92-12.200.

Stouffer Corporation, The: *See—*
McLaughlin, Thomas P., 4,240,270, Cl. 62-341.000.

Stout, James T., to Mead Corporation, The. Article carrier. 4,240,545, Cl. 206-188.000.

Strand, Thomas J., to Feedback Limited. Telephone number memory and indicator system. 4,241,238, Cl. 179-5.500.

Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, to Carl Still GmbH & Co. KG, Firma. Method and apparatus for clarifying coke quenching water. 4,240,910, Cl. 210-769.000.

Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., to Digital Equipment Corporation. Central processor unit for executing instructions with a special operand specifier of indeterminate length. 4,241,397, Cl. 364-200.000.

Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., to Digital Equipment Corporation. Calling instructions for a data processing system. 4,241,399, Cl. 364-200.000.

Strejcek, Jan: *See—*
Stumpf, Albert; and Strejcek, Jan, 4,240,912, Cl. 210-321.200.

Stretanski, Joseph A., to American Cyanamid Company. Polymers stabilized against degradation by ultraviolet radiation. 4,240,954, Cl. 260-45.75F.

Strobel, Lucille C. Multiple use bag with dual purpose straps. 4,240,480, Cl. 150-3.000.

Strobel, Manfred: *See—*
Stratmann, Josef; Strobel, Manfred; Mrongowius, Klaus; Godde, Franz; and Schrank, Wolfgang, 4,240,910, Cl. 210-769.000.

Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., to Life Savers, Inc. Non-adhesive chewing gums and method. 4,241,090, Cl. 426-4.000.

Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., to Life Savers, Inc. Calorie-free non-adhesive chewing gums and method. 4,241,091, Cl. 426-4.000.

Stucka, Edward P.; and Trautmann, Harald G., to Honeywell Inc. Floating seal for fluidic devices. 4,240,335, Cl. 92-96.000.

Studley Paper Company, Inc.: *See—*
Fesco, John E., 4,240,813, Cl. 55-381.000.

Studt, William L.: *See—*
Mir, Ghulam N.; Krebs, Jacqueline B.; and Studt, William L., 4,241,087, Cl. 424-324.000.

Stumpf, Albert; and Strejcek, Jan, to Boehringer Mannheim GmbH. Immersion dialyzer. 4,240,912, Cl. 210-321.200.

Suciu, George D.; and Paustian, John E., to Lummus Company, The. Oxidation of organics in aqueous salt solutions. 4,240,885, Cl. 204-98.000.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Fehr, Werner, 4,240,580, Cl. 236-49.000.

Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; and Toyo Boseki Kabushiki Kaisha. Textile finishing composition. 4,240,943, Cl. 260-29.40R.

Suggs, John W., to Bell Telephone Laboratories, Incorporated. Ketone synthesis by hydroacylation. 4,241,206, Cl. 542-424.000.

Sugihara, Kunihiko: *See—*
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, 4,240,253, Cl. 60-278.000.

Sugimori, Teruhiko: *See—*
Tanaka, Yoshihiko; Sugimori, Teruhiko; and Habara, Hideaki, 4,241,007, Cl. 264-324.000.

Sugimoto, Hirohiko: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Sasakura, Kazuyuki; and Sugimoto, Hirohiko, 4,240,957, Cl. 260-112.50R.

Sugita, Hiroshi: *See—*
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; Lonseal Corporation; and Orc Manufacturing Co., Ltd. Ultraviolet ray projector. 4,241,255, Cl. 250-504.00R.

Sugiyama, Tsugutoshi: *See—*
Tagaya, Ryosaku; and Sugiyama, Tsugutoshi, 4,241,256, Cl. 250-223.00B.

Sullivan, James J.; and Grey, Charles M. Sterile capping method for a plurality of I.V. bottles. 4,240,242, Cl. 53-471.000.

Sumimoto, Yasukichi; and Kato, Masami, to Toska Co., Ltd.; and Japan Bano'k Co., Ltd. Fastener. 4,240,183, Cl. 24-16.0PB.

Sumitomo Chemical Company, Limited: *See—*
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, 4,241,070, Cl. 424-267.000.

Sumitomo Electric Industries, Ltd.: *See—*
Yamamoto, Masachika, 4,241,327, Cl. 340-52.00A.

Sumitomo Metal Industries Ltd.: *See—*
Aihara, Kenji; and Takahashi, Masashi, 4,240,827, Cl. 75-123.0AA.

Sumitomo Metal Mining Co., Ltd.: *See—*
Tsuchibuchi, Akira; and Kobayashi, Takashi, 4,240,880, Cl. 204-15.000.

Sun Chemical Corporation: *See—*
Hendrix, William T., 4,240,795, Cl. 8-115.600.

Sun, Joseph Z., to W. R. Grace & Co. Multi-layer film containing a layer of crosslinked ethylene/vinyl alcohol copolymer. 4,240,993, Cl. 264-22.000.

Superfos Emballage A/S: *See—*
Bock, Erik, 4,240,554, Cl. 206-519.000.

Suzuki, Arata: *See—*
Bish, Ralph E.; and Suzuki, Arata, 4,240,491, Cl. 160-380.000.

Suzuki, Yoshiaki: *See—*
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,241,154, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; Suzuki, Yoshiaki; and Oono, Shigeru, 4,241,155, Cl. 430-17.000.

Swafford, Jerry W.: *See—*
Trammell, Harold L., Jr.; and Swafford, Jerry W., 4,241,298, Cl. 318-17.000.

Swain, Allan L., to Diasonics, Inc. Polar to cartesian mapping apparatus and method. 4,241,412, Cl. 364-731.000.

Swain, Robert J.; and Rutz, William D., to Mapco, Inc. Coated metal fiber coalescing cell. 4,240,908, Cl. 252-325.000.

Swann, David A. Electric switches. 4,241,244, Cl. 200-6.00R.

Swanson, Billy L., to Phillips Petroleum Company. Well acidizing compositions and methods. 4,240,505, Cl. 166-302.000.

Swenson, Richard C., to United States of America, Navy. Condition responsive cable with bendable coaxial sensor mount. 4,241,427, Cl. 367-20.000.

Swenson, Ronald F. Golf putter. 4,240,636, Cl. 273-169.000.

Swerdloff, Michael D.: *See—*
Rogic', Milorad M.; Swerdloff, Michael D.; and Demmin, Timothy R., 4,240,966, Cl. 260-340.50R.

Sybron Corporation: *See—*
Carter, William W., 4,240,878, Cl. 204-1.00T.
Jandourek, Emil, 4,240,832, Cl. 106-35.000.

Synair Corporation: *See—*
Gomberg, Edward N.; and Somesla, Dana W., 4,240,852, Cl. 156-96.000.

Syntex (U.S.A.) Inc.: *See—*
Valila, Veikko F., 4,241,254, Cl. 250-439.00P.

Systron-Donner Corporation: *See—*
Tarczy-Hornoch, Zoltan, 4,241,416, Cl. 364-900.000.

Syukuya, Akio: *See—*
Naito, Kiyoshi; and Syukuya, Akio, 4,240,788, Cl. 432-136.000.

Syva Company: *See—*
Singh, Prithipal; and Pirio, Marcel R., 4,241,177, Cl. 435-7.000.

Szabo, Paul: *See—*
Martin, Trevor I.; Szabo, Paul; and Turner, Sam R., 4,240,987, Cl. 570-206.000.

Szala, Lawrence E.: *See—*
Lee, Minyoung; Szala, Lawrence E.; and DeVries, Robert C., 4,241,135, Cl. 428-332.000.

Szoka, Francis C., Jr.: *See—*
Papahadjopoulos, Demetrios P.; and Szoka, Francis C., Jr., 4,241,046, Cl. 424-19.000.

Tachihara, Satoru: *See—*
Ogawa, Ryota; Okudaira, Sadao; and Tachihara, Satoru, 4,240,700, Cl. 350-184.000.

Tadokoro, Eiichi; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Magnetic sheet recorder with a magnetic sheet surface treating means. 4,241,368, Cl. 360-128.000.

Taeuber, Reinhard; and Neumayr, Hans, to Siemens Aktiengesellschaft. Remote control system with proportional value transmission. 4,241,331, Cl. 340-167.00R.

Tagaya, Ryosaku; and Sugiyama, Tsugutoshi, to Eisai Co., Ltd. Apparatus for detecting foreign matters in liquids. 4,241,256, Cl. 250-223.00B.

Tait, William S., to Petrolite Corporation. Inhibition of pitting corrosion. 4,240,925, Cl. 252-389.00A.

Takada, Shunji: *See—*
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Sakai, Nobuo, 4,241,164, Cl. 430-264.000.

Takahashi, Hiroshi: *See—*
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, 4,240,387, Cl. 123-52.00M.

Takahashi, Keiichi: *See—*
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,241,182, Cl. 435-80.000.

Takahashi, Masashi: *See—*
Aihara, Kenji; and Takahashi, Masashi, 4,240,827, Cl. 75-123.0AA.

Takahashi, Nobuhiro; and Hirata, Ken-ichi, to Nippon Kokan Kabushiki Kaisha. Apparatus for heat-treating metallic material. 4,240,616, Cl. 266-119.000.

Takami, Masanori: *See—*
Nakamura, Ken; Nakajima, Yasuo; Sugihara, Kunihiko; and Takami, Masanori, 4,240,253, Cl. 60-278.000.

Takano, Eiichi, to Canon Kabushiki Kaisha. Lens system having selectively shiftable focal length. 4,240,697, Cl. 350-183.000.

Takano, Hiroshi; Hashimoto, Yasuhiro; and Takesako, Mutsuo, to Mitsuboshi Belting Ltd. Apparatus for testing power transmission belt. 4,240,283, Cl. 73-7.000.

Takasaki, Shigeru: *See—*
Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, 4,240,247, Cl. 57-202.000.

Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, to Kyowa Hakko Kogyo Co., Ltd. Fortimicin factors KG_1, KG_2 and KG_3 and processes for production thereof. 4,241,182, Cl. 435-80.000.

Takato, Norio: *See—*
Kurokawa, Takashi; Takato, Norio; Oikawa, Shigeru; and Katayama, Yuzo, 4,240,849, Cl. 156-73.200.

Takeda Chemical Industries, Ltd.: *See—*
Ishizuka, Kenzo; Fujisawa, Hiroshi; and Noda, Etsunosuke, 4,241,057, Cl. 424-246.000.

Takeda, Keiso, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio control system in internal combustion engine. 4,240,390, Cl. 123-480.000.

Takeda, Kimio: *See—*
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, 4,241,095, Cl. 426-335.000.

Takehara, Takao, to Nippon Gakki Seizo Kabushiki Kaisha. Audio power amplifier. 4,241,313, Cl. 330-253.000.

Takekawa, Nobuhiro: *See—*
Koumura, Noboru; Komatsu, Toshiyuki; Nakagawa, Katsumi; Takekawa, Nobuhiro; and Fujii, Motoharu, 4,240,739, Cl. 355-3.00R.

Takesako, Mutsuo: *See—*
Takano, Hiroshi; Hashimoto, Yasuhiro; and Takesako, Mutsuo, 4,240,283, Cl. 73-7.000.

Takimoto, Hiroyuki: *See—*
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,240,720, Cl. 352-170.000.

Takita, Tomohisa: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.

Takizawa, Iwao; Otsubo, Iwao; and Shimizu, Toru, to Nissan Chemical Industries, Ltd. Urea resin foam mat. 4,240,817, Cl. 71-29.000.

Tamas, Istvan, to Vasipari Kutato Intezet. Metallothermal process for the simultaneous production of magnesium and cement or calcium and cement. 4,240,825, Cl. 75-67.00R.

Tamura, Masayuki: *See—*
Matayoshi, Yutaka; Tamura, Masayuki; and Anegawa, Yoshiro, 4,240,392, Cl. 123-145.00A.

Tanabe Seiyaku Co., Ltd.: *See—*
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,052, Cl. 424-180.000.
Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, 4,241,053, Cl. 424-180.000.

Tanahashi, Toshio: *See—*
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, 4,240,387, Cl. 123-52.00M.

Tanaka, Akio, to Zenith Radio Corporation. Memory saving all-channel digital television receiver. 4,241,449, Cl. 455-186.000.

Tanaka, Haruo: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Nomiyama, Yoshitsugu; Kono, Tatsuhiko; Matsuda, Masato; and Tanaka, Haruo, 4,241,064, Cl. 424-256.000.

Tanaka, Katsufusa, to Mitsubishi Denki Kabushiki Kaisha. Operation mechanism. 4,240,300, Cl. 74-2.000.

Tanaka, Katsumi: *See—*
Sato, Yasuhisa; Tsuji, Sadahiko; and Tanaka, Katsumi, 4,240,699, Cl. 350-184.000.

Tanaka, Koji: *See—*
Okuyama, Yasuhiko; Tanaka, Koji; Nakayama, Yoshiro; and Kato, Hiroshi, 4,240,316, Cl. 84-1.010.

Tanaka, Kunio: *See—*
Abe, Zenuemon; Tanaka, Kunio; and Sano, Fumio, 4,240,439, Cl. 128-653.000.

Tanaka, Yoshihiko; Sugimori, Teruhiko; and Habara, Hideaki, to Mitsubishi Rayon Co., Ltd. Method of producing water-absorbent solid cloth-like articles. 4,241,007, Cl. 264-324.000.

Tange, Charles H., to Mobil Oil Corporation. Egg carton with crush resistant top. 4,240,575, Cl. 229-29.00M.

Tanigawa, Singo: *See—*
Izumo, Masanori; Nomura, Syunichi; and Tanigawa, Singo, 4,241,137, Cl. 428-402.000.

Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, to Mitsubishi Gas Chemical Company, Inc. Method of treating the surfaces of shaped articles of polycarbonate resins. 4,241,116, Cl. 427-386.000.

Tapco Products Company, Inc.: *See—*
Rhoades, James J., 4,240,279, Cl. 72-319.000.

Tarczy-Hornoch, Zoltan, to Systron-Donner Corporation. Monitoring apparatus for processor controlled equipment. 4,241,416, Cl. 364-900.000.

Tarneja, Krishan S.: *See—*
Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., 4,240,844, Cl. 148-1.500.

Tatsuno, Kimio: *See—*
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.

Tausch, Walter; and Gausmann, Hans, to Carl Zeiss-Stiftung. Process and apparatus for recognizing cloud disturbances in a sample solution which is being subjected to absorption photometry. 4,240,752, Cl. 356-436.000.

Taylor, Attalee S.: *See—*
Cobaugh, Robert F.; and Taylor, Attalee S., 4,241,381, Cl. 361-413.000.

Taylor, Billy W. Specimen mailer. 4,240,547, Cl. 206-204.000.

Taylor, Thomas E.: *See—*
Bryers, Richard W.; and Taylor, Thomas E., 4,240,364, Cl. 110-347.000.

Taylor, William I.: *See—*
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,241,228, Cl. 568-816.000.

TDK Electronics Co., Ltd.: *See—*
Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, 4,241,139, Cl. 428-413.000.

Teaneck Graphics Corp.: *See—*
Hliboki, Joseph G.; and Staudenmaier, Paul, 4,240,743, Cl. 355-73.000.

Tecal S.A.R.L.: *See—*
Monvoisin, Jacques, 4,240,343, Cl. 101-38.00R.

Teccor Electronics, Inc.: *See—*
Trammell, Harold L., Jr.; and Swafford, Jerry W., 4,241,298, Cl. 318-17.000.

Teeslink, John W., to TLC Engineering, Inc. Centering and wear compensating means for punch presses and the like. 4,240,314, Cl. 83-635.000.

Teichmann, Paul G., to Trutzschler GmbH & Co. KG. Web guiding device. 4,240,181, Cl. 19-0.250.

Tektronix, Inc.: *See—*
Barter, Archie M., 4,241,296, Cl. 315-397.000.

Telex Computer Products, Inc.: *See—*
Massey, Raymond P., 4,241,311, Cl. 328-167.000.

Temin, Samuel C., to Kendall Company, The. Resin coated wooden articles produced by contacting a wooden article with a rather quick curing phenoxy or polyamide resin system. 4,241,115, Cl. 427-384.000.

Temple, Chester S., to PPG Industries, Inc. Emulsion composition and method for use in treating glass fibers. 4,240,944, Cl. 260-29.6NR.

Temple University: *See—*
Labes, Mortimer M.; Jones, Marvin E.; and Kao, Huey-Chuen I., 4,241,149, Cl. 429-50.000.

Tempra Therm Limited: *See—*
Gray, Adrian L., 4,241,003, Cl. 264-254.000.

Teramae, Kazuhiro: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.

Terashima, Isamu, to Hitachi, Ltd. Apparatus for detecting concentration of toner in developing powder. 4,240,375, Cl. 118-689.000.

Terlecki, Leo, to GF Business Equipment, Inc. File lock and interlock. 4,240,685, Cl. 312-217.000.

Terry, Melvin D. Roll handling apparatus. 4,240,773, Cl. 414-664.000.

Teske, Lothar. Wedge-pin fastener. 4,240,322, Cl. 85-7.000.

Texas Instruments Incorporated: *See—*
De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, 4,241,370, Cl. 361-24.000.

Texasgulf Inc.: *See—*
Kangas, Kayo; Mouland, John; and Timler, Stan, 4,240,826, Cl. 75-109.000.

Theiling, Ernst-August: *See—*
Kraft, Kurt; Walz, Gerd; Wirth, Thaddaus; and Theiling, Ernst-August, 4,240,938, Cl. 260-18.0EP.

Theisler, Charles W. Knee brace. 4,240,414, Cl. 128-80.00C.

Thermasol, Ltd.: *See—*
Altman, Murray; and Bellasalma, Gerald J., 4,240,166, Cl. 4-542.000.

Thermatool Corporation: *See—*
Rudd, Wallace C.; and Udall, Humfrey N., 4,241,284, Cl. 219-61.200.

Thermo Electron Corporation: *See—*
Robinson, William J.; Poirier, Victor L.; and Daly, Benedict D. T., 4,240,409, Cl. 128-1.00D.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track tamper. 4,240,352, Cl. 104-12.000.

Thiem, James F.; and Scott, Jeffrey L. Self-contained mobile pool cleaning apparatus. 4,240,174, Cl. 15-1.700.

Thirant, Lydie, to Thomson-CSF. Thermo-optique smectic liquid-crystal storage display. 4,240,712, Cl. 350-351.000.

Thomas Broadbent & Sons Limited: *See—*
Burke, Anthony B., 4,240,913, Cl. 210-373.000.

Thomas, Joyce K.: *See—*
Schaefer, Harold W.; Thomas, Joyce K.; and Hohulin, Samuel E., 4,240,812, Cl. 55-369.000.

Thompson, Russell L., to Helen of Troy Corporation. Differential hair engagement retainer. 4,240,451, Cl. 132-42.00A.

Thompson, Thomas D., III: *See—*
Moll, William F., Jr.; and Thompson, Thomas D., III, 4,240,951, Cl. 260-40.00R.

Thompson, William L., to Babcock & Wilcox Company, The. Linearization circuit. 4,241,303, Cl. 323-19.000.

Thomson-CSF: *See—*
Salvat, Francois; Bouko, Jean; and Coquio, Claude, 4,241,353, Cl. 343-786.000.
Thirant, Lydie, 4,240,712, Cl. 350-351.000.

Thorne, Glenn A.: *See—*
Joy, Robert D.; Mahany, Richard J.; Thorne, Glenn A.; and Colton, Russell F., 4,240,299, Cl. 73-861.230.

Thorson, Mark R. Apparatus for scan conversion. 4,241,341, Cl. 340-744.000.

Thring, Robin H.: *See—*
Furlong, Owen D.; and Thring, Robin H., 4,240,419, Cl. 128-204.230.

Thumberger, Harold C.: *See—*
Thumberger, Ollibelle; and Thumberger, Harold C., 4,240,170, Cl. 5-508.000.

Thumberger, Ollibelle; and Thumberger, Harold C. Adjustable foot brace. 4,240,170, Cl. 5-508.000.

Tiede, Herbert R.; and Pierzchala, Richard P., to United States of America, Navy. Arctic canteen. 4,240,272, Cl. 62-457.000.

Tiemstra, Peter J. Pectin formulations, products and methods having delayed-action acidulants. 4,241,099, Cl. 426-577.000.

Tietjens, Eduard W.: *See—*
Boiten, Ebbe; Tietjens, Eduard W.; and De Vries, Jochem J., 4,240,199, Cl. 30-43.600.

Tignor, Thomas P.: *See—*
Johnson, Arlen K.; Tignor, Thomas P.; and Wingard, Theodore K., 4,241,322, Cl. 333-202.000.

Tillenburg, Johannes, to Abex Pagid Reibbelag GmbH. Brake pad for disc brakes. 4,240,530, Cl. 188-250.00E.

Timex Corporation: *See—*
Grohoski, Raymond J., 4,241,442, Cl. 368-294.000.
Leibowitz, Marshall, 4,240,713, Cl. 350-357.000.
Lugaresi, Thomas J., 4,241,246, Cl. 200-52.00R.
Skwarek, Jean P., 4,241,439, Cl. 368-204.000.

Timler, Stan: *See—*
Kangas, Kayo; Mouland, John; and Timler, Stan, 4,240,826, Cl. 75-109.000.

Tims, Orinda L., to Standard Brands Incorporated. Flour tortillas. 4,241,106, Cl. 426-138.000.

Tinti, Maria O.: *See—*
deWitt, Paolo; and Tinti, Maria O., 4,240,984, Cl. 568-435.000.

TLC Engineering, Inc.: *See—*
Teeslink, John W., 4,240,314, Cl. 83-635.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Koh; and Wada, Shozo, 4,240,928, Cl. 252-429.00B.

Toda, Kiyoshi: *See—*
Kozaki, Syuichi; Toda, Kiyoshi; Funada, Fumiaki; and Wada, Tomio, 4,240,710, Cl. 350-339.00R.

Toda, Toshimasa: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.

Tokai Denka Kogyo Kabushiki Kaisha: *See—*
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,240,791, Cl. 8-465.000.

Tokunaga, Masayuki; and Otsuka, Yoshio, to Nissan Motor Company, Limited. Skid control system. 4,240,672, Cl. 303-92.000.

Tokyo Bussan Kabushiki Kaisha: *See—*
Kimura, Hideyuki, 4,240,690, Cl. 350-36.000.

Tokyo Juki Kogyo Kabushiki Kaisha: *See—*
Kondo, Shigeki, 4,240,185, Cl. 26-19.000.

Tokyo Magnetic Printing Co., Ltd.: *See—*
Kubota, Yuichi; Saito, Tsunayoshi; and Makino, Yoshiaki, 4,241,139, Cl. 428-413.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Aoshima, Terutaka; and Ikemizu, Tokihiko, 4,241,288, Cl. 219-441.000.
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.
Okamura, Yasuhiro, 4,240,228, Cl. 49-478.000.
Uranishi, Michiyoshi, 4,240,295, Cl. 73-607.000.

Tomlinson, John P.: *See—*
Canning, Rodger G.; and Tomlinson, John P., 4,241,125, Cl. 428-158.000.

Tomy Kogyo Co., Inc.: *See—*
Watanabe, Hiroyuki, 4,240,632, Cl. 273-88.000.
Watanabe, Hiroyuki, 4,240,633; Cl. 273-88.000.

Torbet, Christopher J., to Fluorocarbon Company, The. Process for bonding carbon substrates using particles of a thermally stable solid. 4,241,104, Cl. 427-113.000.

Torisawa, Akira: *See—*
Shida, Masaharu; Torisawa, Akira; and Ueda, Makoto, 4,241,434, Cl. 368-85.000.

Tornqvist, Peter J. T. System for displaying a number of pictures, notices or similar announcements. 4,240,219, Cl. 40-476.000.

Torrington Company, The: *See—*
Benson, Carl F., 4,240,682, Cl. 308-216.000.

Toshimitsu, Yoshihiko: *See—*
Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, 4,240,331, Cl. 91-434.000.

Toska Co., Ltd.: *See—*
Sumimoto, Yasukichi; and Kato, Masami, 4,240,183, Cl. 24-16.0PB.

Towle, Herbert C.: *See—*
Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., 4,240,212, Cl. 434-11.000.

Towns, Edward J.: *See—*
Brown, Edward M.; and Towns, Edward J., 4,240,570, Cl. 222-442.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Sugawara, Eiichi; Endoh, Takao; Shioume, Satoshi; Kuroki, Tomio; and Teramae, Kazuhiro, 4,240,943, Cl. 260-29.40R.
Yoda, Kentaro; Urakabe, Rintaro; and Tsuchida, Toshio, 4,240,889, Cl. 204-195.00B.

Toyo Kogyo Co., Ltd.: *See—*
Mashimo, Toru, 4,240,511, Cl. 173-1.000.

Toyo Rubber Industry Co., Ltd., The: *See—*
Ishigaki, Masahiro; Ohira, Tadayoshi; Fujita, Kanji; and Nomura, Shin-ichiro, 4,240,653, Cl. 285-235.000.

Toyoda, Shuhei: *See—*
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, 4,240,387, Cl. 123-52.00M.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Katayama, Nobuaki; and Koga, Hideaki, 4,240,524, Cl. 184-6.120.
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Tanahashi, Toshio, 4,240,387, Cl. 123-52.00M.
Ohori, Harumi; Katagiri, Masayoshi; and Nogami, Tomoyuki, 4,240,671, Cl. 303-6.00C.
Shimazaki, Ruji, 4,240,389, Cl. 123-492.000.
Takeda, Keiso, 4,240,390, Cl. 123-480.000.

Traber, Walter: *See—*
Boer, Manfred; Drabek, Jozef; Mattern, Gunter; and Traber, Walter, 4,241,075, Cl. 424-273.00R.

Tracy, Chester E.; Kern, Werner; and Vibronek, Robert D., to RCA Corporation. Sprayable titanium composition. 4,241,108, Cl. 427-162.000.

Tracy, John M.; and Yeh, Pochi A., to Rockwell International Corporation. Multilayer electro-optically tunable filter. 4,240,696, Cl. 350-163.000.

Trama, Luigi: *See—*
De Filippis, Pietro; Salvatore, Amedeo; Trama, Luigi; and Notaro, Giuseppe, 4,241,370, Cl. 361-24.000.

Trammell, Harold L., Jr.; and Swafford, Jerry W., to Teccor Electronics, Inc. Speed control switch. 4,241,298, Cl. 318-17.000.

Tranquilli, Henry R.: *See—*
Martin, Alton R.; and Tranquilli, Henry R., 4,240,589, Cl. 241-81.000.

Transworld Drilling Company: *See—*
Riggs, Olen L., Jr., 4,240,892, Cl. 204-195.00F.

Trautmann, Harald G.: *See—*
Stucka, Edward P.; and Trautmann, Harald G., 4,240,335, Cl. 92-96.000.

Trautwein, Hansjorg. Valve assembly. 4,240,459, Cl. 137-318.000.

Traynor, Sean G.: *See—*
Ho, T. L.; Din, Zia U.; and Traynor, Sean G., 4,240,969, Cl. 260-346.220.

Treilles, Jean-Noel: *See—*
Lechevin, Jean-Claude; and Treilles, Jean-Noel, 4,241,047, Cl. 424-33.000.

Tresch, Erwin; and Muggli, Jurg, to Cerberus AG. Smoke detector with bimetallic element for temperature compensation. 4,241,282, Cl. 250-574.000.

Trezise, Richard D.: *See—*
Ku, Joseph P.; and Trezise, Richard D., 4,240,756, Cl. 400-124.000.

Tri-Tech, Inc.: *See—*
Haydon, Arthur W.; and Dean, John J., 4,241,270, Cl. 310-164.000.

Triestram, Douglas E.: *See—*
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,240,470, Cl. 138-109.000.

Trimble, Edward F., to EG & G Sealol, Inc. High pressure bellows assembly. 4,240,610, Cl. 251-335.00B.

Triner Scale and Manufacturing Co.: *See—*
Sookikian, Dennis M.; and Gudea, Dumitru, 4,241,407, Cl. 364-567.000.

Troponwerke Dinklage & Co.: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; and Schwarz, Helmut, 4,241,207, Cl. 542-427.000.

Trout, George M.: *See—*
Clemens, James T.; Cuthbert, John D.; Procyk, Frank J.; and Trout, George M., 4,240,195, Cl. 29-571.000.

Troy, Stephen R. Incinerator bag. 4,240,363, Cl. 110-241.000.

Trubisky, Leonard G., to Honeywell Information Systems Inc. Apparatus for performing single error correction and double error detection. 4,241,446, Cl. 371-37.000.

Truck-Lite Company, Inc.: *See—*
Sage, Howard A., 4,241,371, Cl. 362-61.000.

Truelove, James E.: *See—*
Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., 4,241,055, Cl. 424-180.000.

Trutzschler GmbH & Co. KG: *See—*
Leifeld, Ferdinand; and Marx, Jurgen, 4,240,182, Cl. 19-81.000.
Teichmann, Paul G., 4,240,181, Cl. 19-0.250.

TRW Inc.: *See—*
Wade, Edward C., 4,241,358, Cl. 357-30.000.

Tsai, Kuo L. Automatic umbrella. 4,240,454, Cl. 135-24.000.

Tsuchibuchi, Akira; and Kobayashi, Takashi, to Sumitomo Metal Mining Co., Ltd. Method and apparatus for selectively plating a material. 4,240,880, Cl. 204-15.000.

Tsuchida, Toshio: *See—*
Yoda, Kentaro; Urakabe, Rintaro; and Tsuchida, Toshio, 4,240,889, Cl. 204-195.00B.

Tsuji, Sadahiko; and Sato, Yasuhisa, to Canon Kabushiki Kaisha. Large aperture zoom lens. 4,240,698, Cl. 350-184.000.

Tsuji, Sadahiko: *See—*
Sato, Yasuhisa; Tsuji, Sadahiko; and Tanaka, Katsumi, 4,240,699, Cl. 350-184.000.

Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, to Tanabe Seiyaku Co., Ltd. Novel nitrosourea compounds and process for preparing the same. 4,241,052, Cl. 424-180.000.

Tsujihara, Kenji; Ozeki, Masakatsu; and Arai, Yoshihisa, to Tanabe Seiyaku Co., Ltd. Novel nitrosourea compounds and process for preparing the same. 4,241,053, Cl. 424-180.000.

Tsuzuki, Akira: *See—*
Fujita, Hiro; and Tsuzuki, Akira, 4,241,435, Cl. 368-85.000.

Tsybulina, Aza A.: *See—*
Groza, Viktor F.; Sharapov, Jury N.; Shtykh, Nikolai P.; Shakhpazov, Khristofor S.; Nedovizy, Ivan N.; Korovainy, Sergei F.; Judin, Valentin D.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Kalosha, Georgy A.; Tsybulina, Aza A.; and Drozdov, Nikolai I., 4,240,246, Cl. 57-58.300.

Tu, Ju Ching: *See—*
Mayper, Victor, Jr.; Nagy, Alex L.; Bird, Richard M.; Tu, Ju Ching; and Michels, Lowell S., 4,241,402, Cl. 364-200.000.

Tuenkers GmbH: *See—*
Tunkers, Josef-Gerhard, 4,240,620, Cl. 269-24.000.

Tults, Juri: *See—*
Blatter, Harold; and Tults, Juri, 4,241,450, Cl. 455-182.000.

Tunkers, Josef-Gerhard, to Tuenkers GmbH. Gripping arrangement. 4,240,620, Cl. 269-24.000.

Tuomaala, Jorma, to Osakeyhtio, A. Ahlstrom. Circular saw blade. 4,240,315, Cl. 83-848.000.

Turk, Bartel G., to Quaker Oats Company, The. Apparatus for cutting an extruded product. 4,240,779, Cl. 425-313.000.

Turner, Sam R.: *See—*
Martin, Trevor I.; Szabo, Paul; and Turner, Sam R., 4,240,987, Cl. 570-206.000.

Tuss, John J., to Bendix Corporation, The. Coordinate measuring machine. 4,240,205, Cl. 33-1.00M.

Tyler, David. Ratchet devices. 4,240,309, Cl. 254-369.000.

U and I, Incorporated: *See—*
Farag, Souly A.; Hayes, John E.; and Norman, Lloyd W., 4,241,093, Cl. 426-258.000.

Uba, Toshio, to Gates Rubber Company, The. Battery strap welded connection. 4,241,151, Cl. 429-94.000.

Uchida, Takashi: *See—*
Okaniwa, Kenichiro; Uchida, Takashi; Kobayashi, Morio; Sugita, Hiroshi; and Sasaki, Takashi, 4,241,172, Cl. 430-548.000.

Udagawa, Yoshihiro: *See—*
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.

Udall, Humfrey N.: *See—*
Rudd, Wallace C.; and Udall, Humfrey N., 4,241,284, Cl. 219-61.200.

Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, to Minolta Camera Kabushiki Kaisha. Motor driven camera having a detachable drive unit. 4,240,733, Cl. 354-173.000.

Ueda, Makoto; Shida, Masaharu; Ikenishi, Masataka; Miyazaki, Joichi; Kushida, Shozo; and Nakanishi, Hiromasa, to Kabushiki Kaisha Daini Seikosha. Electronic watch. 4,241,433, Cl. 368-76.000.

Ueda, Makoto: *See—*
Shida, Masaharu; Torisawa, Akira; and Ueda, Makoto, 4,241,434, Cl. 368-85.000.

Ueda, Masato; and Andoh, Takeshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of manufacturing rotor blade. 4,241,110, Cl. 427-203.000.

Ueno, Hiroshi; Inaba, Naomi; Makishima, Tukuo; Watanabe, Koh; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Titanium trichloride catalyst and process for the production thereof. 4,240,928, Cl. 252-429.00B.

Uffelman, Malcolm R., to Scope, Inc. Radar target pattern recognition system using logarithmic analysis. 4,241,350, Cl. 343-5.0SA.

Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Bestatin. 4,240,975, Cl. 260-463.000.

Umezu, Kenji: *See—*
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.

Uni-Cardan AG: *See—*
Krude, Werner; Muller, Karl-Heinz; and Jordan, Alfons, 4,240,680, Cl. 308-187.100.

Union Carbide Agricultural Products, Inc.: *See—*
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,240,819, Cl. 71-76.000.

Union Carbide Corporation: *See—*
Dunleavy, Raymond A., 4,241,199, Cl. 525-445.000.
Flanigen, Edith; and Kellberg, Elsa R., 4,241,036, Cl. 423-328.000.
Gomi, Shimpei, 4,240,898, Cl. 208-40.000.
Scaccia, Carl, 4,240,905, Cl. 210-629.000.

United Air Specialists, Inc.: *See—*
Elsbernd, Carl A.; and Bricker, James C., 4,240,809, Cl. 55-118.000.

United Hydraulics Corporation: *See—*
Crosser, Jeffrey A., 4,240,334, Cl. 92-23.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Watson, George C., 4,241,346, Cl. 343-7.00A.

United States of America
Air Force: *See—*
Baucom, Keith B., 4,241,223, Cl. 568-611.000.
Green, Leland D., 4,240,745, Cl. 356-5.000.
America: *See—*
White, David C., 4,241,187, Cl. 435-284.000.
Army: *See—*
Figge, Irving E., 4,241,117, Cl. 428-35.000.
McCauley, James W.; and Corbin, Normand D., 4,241,000, Cl. 264-65.000.
Papayoanou, Aristotle, 4,241,319, Cl. 331-94.50G.
Shreve, James S., 4,241,351, Cl. 343-100.0SA.
Smith, William G.; and Yuhash, Ladd, 4,240,324, Cl. 89-156.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,240,965, Cl. 260-326.410.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,209, Cl. 546-147.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,210, Cl. 546-261.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,211, Cl. 546-261.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,212, Cl. 546-291.000.
Sommer, Harold Z.; and Wicks, George E., Jr., 4,241,218, Cl. 560-163.000.
Interior: *See—*
Borrowman, S. Ralph; and Altringer, Paulette B., 4,241,028, Cl. 423-54.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Barnes, James R.; and Huang, Marshall Y. Self-calibrating threshold detector. 4,241,312, Cl. 329-50.000.
Cellier, Alfred; Huey, Douglas C.; and Ma, Lit N. Digital numerically controlled oscillator. 4,241,308, Cl. 328-55.000.
McDougal, Allan R. Phase-angle controller for stirling engines. 4,240,256, Cl. 60-518.000.
National Aeronautics and Space Administration: *See—*
Montoya, Lawrence C.; and Bellman, Donald R., 4,240,290, Cl. 73-178.00R.
Reed, Robert D., 4,240,601, Cl. 244-160.000.
Navy: *See—*
Anderson, Hugh G.; Quandt, Earl R.; and Neild, A. Bayne, 4,240,676, Cl. 308-9.000.
Barber, Lewie M.; Criswell, Bernie R.; Solberg, Ruell F., Jr.; and Weiss, Benjamin F. L., 4,241,432, Cl. 367-151.000.
Collins, David A.; and Lile, Derek L., 4,241,167, Cl. 430-314.000.
Hammond, Joseph, 4,240,599, Cl. 244-63.000.
Jones, Charles H., 4,241,431, Cl. 367-123.000.
Khalil, Hassan H., 4,240,441, Cl. 128-692.000.
Marshall, Albert H.; Shaw, Bon F.; Siragusa, George A.; and Towle, Herbert C., 4,240,212, Cl. 434-11.000.
Mason, George D., 4,240,301, Cl. 74-5.700.
San Miguel, Anthony, 4,240,351, Cl. 102-262.000.
Swenson, Richard C., 4,241,427, Cl. 367-20.000.
Tiede, Herbert R.; and Pierzchala, Richard P., 4,240,272, Cl. 62-457.000.
Wells, William E., Sr., 4,241,426, Cl. 367-1.000.

U.S. Philips Corporation: *See—*
Boiten, Ebbe; Tietjens, Eduard W.; and De Vries, Jochem J., 4,240,199, Cl. 30-43.600.
Bukoschek, Romuald L., 4,240,200, Cl. 30-43.920.
Gibson, Rodney W.; and Wells, Raymond, 4,241,452, Cl. 455-203.000.
Lux, Peter, 4,241,404, Cl. 364-414.000.
Maeyama, Teruaki; and Nakata, Hideo, 4,241,363, Cl. 358-36.000.
Van der Valk, Nicolaas J. L., 4,241,362, Cl. 358-32.000.

United Technologies Corporation: *See—*
Carll, Richard T., 4,241,398, Cl. 364-200.000.
Sederquist, Richard A., 4,240,805, Cl. 48-214.00R.
Wynosky, Thomas A., 4,240,519, Cl. 181-213.000.

Universal Development Company Ltd.: *See—*
Black, Alister, 4,240,776, Cl. 425-111.000.

Universal Maschinenfabrik Dr. Rudolf Scheiber GmbH & Co. KG: *See—*
Schimko, Reinhold, 4,240,274, Cl. 66-64.000.

University of Chicago, The: *See—*
Winston, Roland, 4,240,692, Cl. 350-96.100.

University of Iowa Research Foundation: *See—*
Spencer, Donald L., 4,240,407, Cl. 126-444.000.

University of Kentucky Research Foundation, The: *See—*
Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., 4,241,055, Cl. 424-180.000.

University of Michigan, The Regents of the: *See—*
Counsell, Raymond E.; and Lucchesi, Benedict R., 4,241,088, Cl. 424-329.000.

University of Toronto, The Governing Council of the: *See—*
Hsia, Jen C., 4,240,797, Cl. 23-230.00B.

University of Utah: *See—*
Iskander, Magdy F.; and Durney, Carl H., 4,240,445, Cl. 128-804.000.

UOP Inc.: *See—*
Berg, Roy C., 4,240,978, Cl. 260-505.00P.
Ginger, Edward A.; and deRosset, Armand J., 4,241,033, Cl. 423-244.000.
Priegnitz, James W., 4,240,986, Cl. 568-937.000.

Updike, Stuart J.; and Shults, Mark C., to Wisconsin Alumni Research Foundation. Method for monitoring blood glucose levels and elements. 4,240,438, Cl. 128-635.000.

Upjohn Company, The: *See—*
Johnson, Roy A., 4,241,205, Cl. 542-420.000.

Urakabe, Rintaro: *See—*
Yoda, Kentaro; Urakabe, Rintaro; and Tsuchida, Toshio, 4,240,889, Cl. 204-195.00B.

Uranishi, Michiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnosing apparatus. 4,240,295, Cl. 73-607.000.

Urasaki, Tatsuo. Kite-flying toy. 4,240,600, Cl. 244-155.00R.

Urbinati, Mario; and Nannini, Alessandro, to Centro Ricerche Fiat S.p.A. Induction units for internal combustion engines with petrol injection. 4,240,384, Cl. 123-470.000.

Ushiyama, Yoshito, to Kabushiki Kaisha Suwa Seikosha. Multi-colored display device. 4,241,339, Cl. 340-702.000.

USM Corporation: *See—*
Garner, Derek H., 4,240,172, Cl. 12-14.500.

Valila, Veikko F., to Syntex (U.S.A.) Inc. X-Ray source moving mechanism suitable for panoramic radiography. 4,241,254, Cl. 250-439.00P.

van der Lely, Cornelis. Overload couplings. 4,240,514, Cl. 180-53.00D.

Van der Valk, Nicolaas J. L., to U.S. Philips Corporation. Circuit for increasing a signal slope of a periodically occurring signal mainly near a reference level. 4,241,362, Cl. 358-32.000.

Van Pool, Joe, to Phillips Petroleum Company. Incineration of sulfur plant tail gas. 4,241,040, Cl. 423-542.000.

Van Uitert, LeGrand G.: *See—*
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,716, Cl. 350-363.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,717, Cl. 350-363.000.
Johnson, Leo F.; Singh, Shobha; and Van Uitert, LeGrand G., 4,240,693, Cl. 350-96.140.

Van Zweeden, Adriaan: *See—*
Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,240,245, Cl. 56-341.000.

Vapor Corporation: *See—*
Schultz, John P., 4,241,403, Cl. 364-300.000.

Vasicek, Vladimir: *See—*
Rotrekl, Otto; Vasicek, Vladimir; and Henzl, Jindrich, 4,240,471, Cl. 139-114.000.

Vasilion, James S.: *See—*
Hagstrom, Jon; Ahl, Thomas J.; and Vasilion, James S., 4,240,561, Cl. 220-3.000.

Vasipari Kutato Intezet: *See—*
Tamas, Istvan, 4,240,825, Cl. 75-67.00R.

Vasishth, Ramesh C.; and Wang, Robert S., to Envirosol Systems International, Ltd. Water clean up aerosol paint. 4,240,940, Cl. 260-22.00R.

VDO Adolf Schindling AG: *See—*
Kern, Eckhard, 4,241,438, Cl. 368-185.000.
Kister, Horst, 4,241,444, Cl. 370-85.000.
Walther, Henry, 4,241,278, Cl. 315-106.000.

Vehlewald, Peter: *See—*
von Bonin, Wulf; Vehlewald, Peter; and Illger, Hans-Walter, 4,240,950, Cl. 260-37.00N.

Velker, Eugen: *See—*
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Velsicol Chemical Corporation: *See—*
Albright, James A., 4,240,953, Cl. 260-45.70P.
Shukla, Jayendra R., 4,241,145, Cl. 428-537.000.

Vercelletto, Michel. Prefabricated wall designed in particular for the construction of dwelling houses. 4,240,233, Cl. 52-127.000.

Vereinigte Aluminium-Werke Aktiengesellschaft: *See—*
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Verge, John P.: *See—*
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Vial, Jean; and Sauvan, Gerard, to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM. Apparatus for the treatment of surfaces involving the use of at least a solvent. 4,240,453, Cl. 134-107.000.

Vial, Jean: *See—*
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Vibronek, Robert D.: *See—*
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Vickers Shipbuilding Group Ltd.: *See—*
Braithwaite, John C., 4,240,613, Cl. 254-315.000.
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Shiga, Takashi, 4,241,364, Cl. 360-72.100.
Villari, Frank K.: *See—*
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Vinas Espin, Genevieve M. G.; Marchoisne, Yves F. P.; and Lazareff, Michel, to Societe Nationale Industrielle Aerospatiale. High performance aerodynamic airfoil for aircraft wing. 4,240,598, Cl. 244-35.00R.
Vincent, Ogden W. Boiler steam engine with steam recovery and recompression. 4,240,259, Cl. 60-670.000.
Vine, James, to Westinghouse Electric Corp. Elevator system. 4,240,527, Cl. 187-29.00R.
Vineyard, Clark: *See—*
Odom, William, 4,241,326, Cl. 340-33.000.
Vinton, David S., to Caterpillar Tractor Co. Control system for an elastomer extrusion and applicator apparatus. 4,240,863, Cl. 156-361.000.
Viohl, Uwe; and Zondler, Rolf, to International Standard Electric Corporation. Color-television screen-coating room. 4,240,896, Cl. 204-299.00R.
Virgulto, James A.; and Snyder, Peter E. Apparatus for sensing coughs. 4,240,444, Cl. 128-782.000.
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Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,241,098, Cl. 426-534.000.
Vollmann, Hansjorg: *See—*
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Volpenhein, Robert A.; and Jandacek, Ronald J., to Procter & Gamble Company, The. Detoxifying lipophilic toxins. 4,241,054, Cl. 424-180.000.
von Bonin, Wulf; Vehlewald, Peter; and Illger, Hans-Walter, to Bayer Aktiengesellschaft. Stabilized filler suspensions in polyols. 4,240,950, Cl. 260-37.00N.
von der Eltz, Hans-Ulrich, to von der Eltz, Hans-Ulrich. Process for dyeing and printing flat textile material containing synthetic fibers. 4,240,790, Cl. 8-529.000.
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Block, Jacob, 4,240,924, Cl. 252-317.000.
Sanborn, Philip A., Jr., 4,240,241, Cl. 53-412.000.
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Wahren, Douglas, to AB Karlstads Mekaniska Werkstad. Suspension device for a headbox for paper and pulp machines. 4,240,872, Cl. 162-344.000.
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Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., to Bristol-Myers Company. Trimethylsilyl substituted penicillins. 4,240,960, Cl. 260-239.100.
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Walther, Henry, to VDO Adolf Schindling AG. Indicator device with vacuum fluorescence elements. 4,241,278, Cl. 315-106.000.
Waltke, Robert W., to Pennwalt Corporation. Jig assembly for preparing dental impressions for casting. 4,240,605, Cl. 249-54.000.
Walton, Richard E., II; and Sauerwein, William D., to Black & Decker Inc. Jig saw. 4,240,204, Cl. 30-393.000.
Walz, Gerd: *See—*
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Wang, Robert S.: *See—*
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Ward Machinery Company, The: *See—*
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Ward, William F., Sr., to Ward Machinery Company, The. Apparatus for improving wear life of rotary die cutter anvil covers. 4,240,312, Cl. 83-311.000.
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Watanabe, Hiroyuki, to Tomy Kogyo Co., Inc. Game having movable object and object striking member. 4,240,633, Cl. 273-88.000.
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Watanabe, Tetsuo; Wada, Shigetaka; and Soejima, Shigeo, to NGK Insulators, Ltd. Oxygen partial pressure measuring device suitably adapted for internal combustion engine exhaust gases. 4,240,890, Cl. 204-195.00S.
Watson, George C., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Pulse radar altimeters. 4,241,346, Cl. 343-7.00A.
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Wendelin, Rurik; and Sipek, Ladislav, to AGA Aktiebolag. Method and apparatus for reducing ozone. 4,240,798, Cl. 23-230.00A.
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Wenzel, Franz; Bruemmer, Heinz-Dieter; and Krieg, Manfred, to Rohm GmbH. Acrylonitrile copolymers having low residual monomer content and methods for their preparation. 4,241,203, Cl. 526-218.000.
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Felice, Patrick E.; Bartko, John; Tarneja, Krishan S.; and Chu, Chang K., 4,240,844, Cl. 148-1.500.
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Wiknich, Douglas D., to Harry Major Machine & Tool Co. Walking beam accumulating conveyor. 4,240,542, Cl. 198-751.000.
Wilbur, Clayton V., to International Business Machines Corporation. Extended life electrochromic display cell. 4,240,714, Cl. 350-357.000.
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Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,014, Cl. 422-13.000.

Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,241,015, Cl. 422-13.000.
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Woitun, Eberhard: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, 4,241,056, Cl. 424-226.000.
Wolfle, Wilfried: *See—*
Mormann, Werner; Bofinger, Gerhard; and Wolfle, Wilfried, 4,240,432, Cl. 128-305.500.
Womble, David A.: *See—*
Wetherell, William B.; and Womble, David A., 4,240,707, Cl. 350-294.000.
Wong, Daniel: *See—*
Linnecke, Carl B.; and Wong, Daniel, 4,240,751, Cl. 356-409.000.
Wong, Eunice K. T.: *See—*
Milberger, Ernest C.; and Wong, Eunice K. T., 4,240,931, Cl. 252-438.000.
Wong, Lip F.; and Whiteman, Benton A., to Reynolds Metals Company. Lightweight drill rod. 4,240,652, Cl. 285-91.000.
Wonnacott, Thomas W.: *See—*
Votava, Werner F.; and Wonnacott, Thomas W., 4,240,837, Cl. 106-48.000.
Woo, James T. K., to SCM Corporation. Polyurethane electrocoating composition. 4,241,200, Cl. 525-455.000.
Wood, Dennis E.; Auten, Charles R.; Dellinger, Paul L., Jr.; Holland, Gary M.; and Bullington, Eddy W., to Rando Machine Corporation. Fiber feeding apparatus for carding machines and the like. 4,240,180, Cl. 19-105.000.
Wood, Grady M.: *See—*
Patterson, Raymond B., III; and Wood, Grady M., 4,241,315, Cl. 330-261.000.
Work, Ray A., III; and Pankratz, Richard P., to Du Pont de Nemours, E. I., and Company. Gelatin-polyester-aziridine product subbing layer for polyester photographic base. 4,241,169, Cl. 430-532.000.
Worsley, Gilbert P., to G. P. Worsley & Company Limited. Apparatus for moving materials. 4,240,541, Cl. 198-518.000.
Wozniak, Tadeusz: *See—*
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,667, Cl. 299-43.000.
Sedlaczek, Janusz; Blazewicz, Andrzej; Krutki, Marian; Mandat, Kazimierz; and Wozniak, Tadeusz, 4,240,668, Cl. 299-43.000.
Wright Rain Limited: *See—*
Harvey, Vernon B. W., 4,240,461, Cl. 137-344.000.
Wrightson, John C., to Heritage Quilts, Inc. Filled body robe. 4,240,159, Cl. 2-243.00R.
Wunnink, Gerrit J.: *See—*
Mast, Harm; Kraayeveld, Jan W.; Vriezen, Peter B.; and Wunnink, Gerrit J., 4,240,287, Cl. 73-61.00R.
Wyatt, John E. Apparatus and method for conveying grain. 4,240,772, Cl. 414-299.000.
Wyner, Elliot F.; and Daignault, Alan J., to GTE Products Corporation. Warm color arc discharge lamp having improved efficiency. 4,241,276, Cl. 313-487.000.
Wynosky, Thomas A., to United Technologies Corporation. Acoustical turbine engine tail pipe plug. 4,240,519, Cl. 181-213.000.
Xerox Corporation: *See—*
Haas, Werner E. L.; Adams, James E.; and Mechlowitz, Bela, 4,241,156, Cl. 430-41.000.
Martin, Trevor I.; Szabo, Paul; and Turner, Sam R., 4,240,987, Cl. 570-206.000.
Young, Eugene F., 4,240,740, Cl. 355-3.0DD.
Yamada, Minoru: *See—*
Arai, Atsuaki; Shiba, Keisuke; Yamada, Minoru; and Furutachi, Nobuo, 4,241,168, Cl. 430-503.000.
Yamada, Toyotaka: *See—*
Maitani, Yoshihisa; and Yamada, Toyotaka, 4,240,735, Cl. 354-288.000.
Yamaguchi, Genji: *See—*
Shibata, Kunihiko; Yamaguchi, Genji; Takeda, Kimio; and Masai, Hiroshi, 4,241,095, Cl. 426-335.000.
Yamamoto, Hisao: *See—*
Katsube, Junki; Mizote, Hiroyuki; Harada, Shuichi; and Yamamoto, Hisao, 4,241,070, Cl. 424-267.000.
Yamamoto, Masachika, to Sumitomo Electric Industries, Ltd. Disc brake pad wear warning device. 4,241,327, Cl. 340-52.00A.
Yamasaki, Tetsuro: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Yamashita, Haruhiro: *See—*
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,241,063, Cl. 424-253.000.
Yamauchi, Masaaki, to Hitachi, Ltd. In-line type electron gun structure for color picture tubes. 4,241,275, Cl. 313-413.000.
Yamawaki, Naokuni: *See—*
Kominami, Naoya; Fukumi, Hirokazu; Yamawaki, Naokuni; and Nomura, Junji, 4,240,376, Cl. 119-2.000.
Yamazaki, Masaya: *See—*
Nakada, Minoru; Umezu, Kenji; Shinma, Yasuhiro; Kamiyama, Kazuaki; Udagawa, Yoshihiro; Yamazaki, Masaya; Murano, Mitsuo; and Inoue, Minoru, 4,240,264, Cl. 62-125.000.
Yamazaki, Takeo; and Miyagishi, Shigeki, to Aisin Seiki Kabushiki Kaisha. Parking brakes. 4,240,307, Cl. 74-503.000.
Yan, Tsoung-yuan, to Mobil Oil Corporation. Ion exchange process for the recovery of uranium. 4,241,026, Cl. 423-7.000.
Yan, Tsoung-yuan: *See—*
Audeh, Costandi A.; and Yan, Tsoung-yuan, 4,240,901, Cl. 208-324.000.
Yandrick, Rudolph M.: *See—*
Medvetz, Edward J.; and Yandrick, Rudolph M., 4,240,223, Cl. 43-58.000.
Yara Engineering Corporation: *See—*
Moll, William F., Jr.; and Thompson, Thomas D., III, 4,240,951, Cl. 260-40.00R.
Yatsuka, Hiroyuki; and Isogai, Yasuhiro, to Fujitsu Limited; and Fujitsu Ten Limited. Radar equipment for vehicles. 4,241,348, Cl. 343-17.500.
Yazaki, Yoshio: *See—*
Sugiyama, Mitsuru; Fukui, Yoshitake; Yazaki, Yoshio; Ono, Haruaki; and Nakanishi, Shusaku, 4,241,255, Cl. 250-504.00R.
Yazawa, Fumi: *See—*
Yazawa, Toshio; and Yazawa, Fumi, 4,240,435, Cl. 128-354.000.
Yazawa, Toshio; and Yazawa, Fumi. Hair tweezers. 4,240,435, Cl. 128-354.000.
Yeh, Pochi A.: *See—*
Tracy, John M.; and Yeh, Pochi A., 4,240,696, Cl. 350-163.000.
Yeh, Quey-Mei: *See—*
Yeh, su-Chieh; and Yeh, Quey-Mei, 4,241,242, Cl. 179-157.000.
Yeh, su-Chieh; and Yeh, Quey-Mei. Telephone handset holder. 4,241,242, Cl. 179-157.000.
Yoda, Kentaro; Urakabe, Rintaro; and Tsuchida, Toshio, to Toyo Boseki Kabushiki Kaisha. Enzyme electrode provided with immobilized enzyme membrane. 4,240,889, Cl. 204-195.00B.
Yokomichi, Isao: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Nasu, Rikuo; Awazu, Takao; and Kawashima, Junichi, 4,241,213, Cl. 546-345.000.
Yonekubo, Ken, to Olympus Optical Co., Ltd. Photoelectric switching means for microscope illumination system. 4,241,251, Cl. 250-205.000.
Yonezawa, Seiji: *See—*
Shigematsu, Kazuo; Kato, Keizo; Miyauchi, Toshimitsu; Yonezawa, Seiji; Inose, Fumiyuki; Tatsuno, Kimio; and Maeda, Takeshi, 4,241,240, Cl. 179-100.10G.
Yoshida Kogyo K.K.: *See—*
Nawa, Kooichiro, 4,240,235, Cl. 52-397.000.
Yoshida, Motohiko: *See—*
Inami, Sumiaki; Koike, Haruhiko; and Yoshida, Motohiko, 4,240,194, Cl. 29-568.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 2,2,3-Trimethyl-3-cyclopenten-1-ylalkenyl and alkylidene secondary alkanols, alkanones, cycloalkanols and cycloalkanones, organoleptic uses thereof in perfume compositions, colognes and perfumed articles and process for producing same. 4,241,228, Cl. 568-816.000.
Yoshihara, Yoichiro: *See—*
Machida, Hisashi; and Yoshihara, Yoichiro, 4,240,834, Cl. 106-42.000.

Yoshikawa, Katsushi: *See—*
Moriyama, Akinobu; Arai, Motomi; Yoshikawa, Katsushi; and Saito, Masaaki, 4,240,989, Cl. 261-78.00R.
Yoshioka, Takao: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 4,241,208, Cl. 546-20.000.
Young, Eugene F., to Xerox Corporation. Development system. 4,240,740, Cl. 355-3.0DD.
Young, Frederick A.: *See—*
Griffin, Edward L.; and Young, Frederick A., 4,241,323, Cl. 333-209.000.
Young, Vernon V.: *See—*
Ivy, Richard E.; Young, Vernon V.; and Williams, Robert D., 4,241,061, Cl. 424-250.000.
Youngstown Steel Door Company, The: *See—*
Phillips, Thomas E., 4,240,357, Cl. 105-378.000.
Yuan, Shao W. Ground cold storage and utilization. 4,240,268, Cl. 62-260.000.
Yuhash, Ladd: *See—*
Smith, William G.; and Yuhash, Ladd, 4,240,324, Cl. 89-156.000.
Zager, Raymond: *See—*
Nestor, Jack; and Zager, Raymond, 4,240,523, Cl. 184-1.500.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takita, Tomohisa; Nishizawa, Rinzo; and Saino, Tetsushi, 4,240,975, Cl. 260-463.000.
Zalessky, Eduard A.; and Smyshlyaev, Vladimir V. Method for triggering ultrasonic flow meter and ultrasonic flow meter adapted for same. 4,240,292, Cl. 73-861.270.
Zbinden, Jurg: *See—*
Rascher, Andreas; and Zbinden, Jurg, 4,240,655, Cl. 285-323.000.
Zeeh, Bernd: *See—*
Linhart, Friedrich; Girgensohn, Bjoern; and Zeeh, Bernd, 4,240,973, Cl. 260-453.0RW.
Zeller-Plastik Koehn, Grabner & Co.: *See—*
Brach, Ulrich K. G., 4,240,604, Cl. 248-316.00D.
Zenith Radio Corporation: *See—*
Tanaka, Akio, 4,241,449, Cl. 455-186.000.
Zoina, Giuseppe, to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A. Process and device for interlacing multifilament yarns. 4,240,188, Cl. 28-274.000.
Zondler, Rolf: *See—*
Viohl, Uwe; and Zondler, Rolf, 4,240,896, Cl. 204-299.00R.
Zorn, Edward; Sherwood, Bert J.; and Liffick, Fenton A., to Chemplate Corporation. Vehicle wheel covers. 4,240,670, Cl. 301-9.0DN.
Zydzik, George J.: *See—*
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,716, Cl. 350-363.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,240,717, Cl. 350-363.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Birdsall, John D. Flexible track for electrically energized miniature vehicles. Re. 30,454, Cl. 238-10.00F.

Consonni, Pietro: *See—*
Omodei-Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, Re. 30,456, Cl. 424-258.000.

Durant, Graham J.; Ganellin, Charon R.; and Ife, Robert J., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. Re. 30,457, Cl. 424-322.000.

Ganellin, Charon R.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Ife, Robert J., Re. 30,457, Cl. 424-322.000.

Gruppo Lepetit S.p.A.: *See—*
Omodei-Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, Re. 30,456, Cl. 424-258.000.

Henderson, Eulas W., to Phillips Petroleum Company. Apparatus for making carbon black. Re. 30,455, Cl. 422-156.000.

Hitachi Maxell, Ltd.: *See—*
Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, Re. 30,458, Cl. 429-201.000.

Ife, Robert J.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Ife, Robert J., Re. 30,457, Cl. 424-322.000.

Ikebata, Rokurou: *See—*
Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, Re. 30,458, Cl. 429-201.000.

Iwamaru, Tugiyasu: *See—*
Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, Re. 30,458, Cl. 429-201.000.

Lerner, Leonard: *See—*
Omodei-Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, Re. 30,456, Cl. 424-258.000.

Medical Laboratory Automation, Inc.: *See—*
Scordato, Emil A.; and Strobel, William C., Re. 30,453, Cl. 73-425.600.

Moczygemba, George A., to Phillips Petroleum Company. Coupling of alkali metal-terminated polymers. Re. 30,460, Cl. 525-334.000.

Omodei-Sale, Amedeo; Consonni, Pietro; and Lerner, Leonard, to Gruppo Lepetit S.p.A. 2-Substituted phenyl-s-triazolo[5,1-a] isoquinoline compounds. Re. 30,456, Cl. 424-258.000.

Phillips Petroleum Company: *See—*
Henderson, Eulas W., Re. 30,455, Cl. 422-156.000.
Moczygemba, George A., Re. 30,460, Cl. 525-334.000.

Schweiger, Richard G. Nitrite esters of polyhydroxy polymers. Re. 30,459, Cl. 525-61.000.

Scordato, Emil A.; and Strobel, William C., to Medical Laboratory Automation, Inc. Pipettes. Re. 30,453, Cl. 73-425.600.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Ife, Robert J., Re. 30,457, Cl. 424-322.000.

Strobel, William C.: *See—*
Scordato, Emil A.; and Strobel, William C., Re. 30,453, Cl. 73-425.600.

Togo, Takayuki: *See—*
Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, Re. 30,458, Cl. 429-201.000.

Uetani, Yoshio; Ikebata, Rokurou; Togo, Takayuki; and Iwamaru, Tugiyasu, to Hitachi Maxell, Ltd. Dry cells. Re. 30,458, Cl. 429-201.000.

LIST OF DESIGN PATENTEES

Ahern, Paul B. Paint pot liner. 257,668, 12-23-80, Cl. D9-429.000.

Appel, Mel; Kress, George; and Means, Paul, to Appel, Mel. Simulative toy vehicle. 257,683, 12-23-80, Cl. D21-76.000.

Baron Rubber Limited: *See—*
Combaret, Luc, 257,647, Cl. D2-320.000.

Beasley, Sue A. Hobo doll. 257,682, 12-23-80, Cl. D21-171.000.

Bechtel, Daniel L. Stand for a magazine-fed pistol. 257,687, 12-23-80, Cl. D22-7.000.

Beck, Nevitt S. Snow disc. 257,672, 12-23-80, Cl. D12-11.000.

Belgin, Stepen G., to Memorex Corporation. Audio cassette album. 257,649, 12-23-80, Cl. D3-35.000.

Bell, John H. Convertible desk file and rack for pendant articles. 257,680, 12-23-80, Cl. D19-90.000.

Berlic, France. Dining table. 257,653, 12-23-80, Cl. D6-177.000.

Black & Decker Inc.: *See—*
Gantz, Carroll M., 257,661, Cl. D7-164.000.

Brezney, Jacqueline, to Unican Security Systems, Ltd. Escutcheon. 257,662, 12-23-80, Cl. D8-350.000.

Brunswick Corporation: *See—*
Moore, William D., 257,684, Cl. D21-232.000.

Campana, Alfred; and Waterfield, Martin J., to Florists' Transworld Delivery Association. Bowl. 257,654, 12-23-80, Cl. D7-1.000.

Clarion Corporation of America: *See—*
Fujiwara, Makoto, 257,677, Cl. D14-37.000.

Cleary, John P.; and Heineman, Ralph A., to Heineman, Ralph A. Lathe. 257,678, 12-23-80, Cl. D15-130.000.

Cleary, John P.; and Heineman, Ralph A., to Heineman, Ralph A. Drill press and mount therefor. 257,679, 12-23-80, Cl. D15-132.000.

Combaret, Luc, to Baron Rubber Limited. Sole. 257,647, 12-23-80, Cl. D2-320.000.

Corning Glass Works: *See—*
Mercadante, Ottorino N., 257,655, Cl. D7-36.000.

Davis, Robert P.: *See—*
Katz, Ira R.; and Davis, Robert P., 257,650, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 257,651, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 257,652, Cl. D3-71.000.

Deschamps, Robert L.: *See—*
Kehl, Joseph D.; and Deschamps, Robert L., 257,676, Cl. D14-28.000.

Doi, Tetsuyuki; and Shohoji, Takeshi, to Ryobi Limited. Fishing spinning reel. 257,688, 12-23-80, Cl. D22-25.000.

Duff, James A.: *See—*
Green, Paul N.; and Duff, James A., 257,675, Cl. D14-11.000.

Elliott, Clayton A. Adjustable level. 257,671, 12-23-80, Cl. D10-69.000.

Enduro Corporation: *See—*
Stoll, Roger L., 257,657, Cl. D7-45.000.

Florists' Transworld Delivery Association: *See—*
Campana, Alfred; and Waterfield, Martin J., 257,654, Cl. D7-1.000.

Fujiwara, Makoto, to Clarion Corporation of America. Mounting plate for automobile hi-fidelity system speakers. 257,677, 12-23-80, Cl. D14-37.000.

Gambro, AG: *See—*
Riede, Gerhard, 257,689, Cl. D24-21.000.

Gantz, Carroll M., to Black & Decker Inc. Portable vacuum cleaner. 257,661, 12-23-80, Cl. D7-164.000.

Grayson, Gwendolyn F. Backgammon board. 257,681, 12-23-80, Cl. D21-32.000.

Green, Paul N.; and Duff, James A., to Magnetic Peripherals Inc. Disk memory module. 257,675, 12-23-80, Cl. D14-11.000.

Guiler, Farreld Franklin: *See—*
Silva, Manuel C., 257,686, Cl. D22-1.000.

Guodace, Ronald A., to International Silver Company. Article of flatware. 257,659, 12-23-80, Cl. D7-137.000.

Guodace, Ronald A., to International Silver Company. Knife. 257,660, 12-23-80, Cl. D7-137.000.

Hartmann Luggage Company: *See—*
Katz, Ira R.; and Davis, Robert P., 257,650, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 257,651, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 257,652, Cl. D3-71.000.

Heineman, Ralph A.: *See—*
Cleary, John P.; and Heineman, Ralph A., 257,678, Cl. D15-130.000.
Cleary, John P.; and Heineman, Ralph A., 257,679, Cl. D15-132.000.

International Silver Company: *See—*
Guodace, Ronald A., 257,659, Cl. D7-137.000.
Guodace, Ronald A., 257,660, Cl. D7-137.000.
Knope, William J., 257,658, Cl. D7-137.000.

Ito, Nobuyoshi, to Suntory Limited. Bottle. 257,667, 12-23-80, Cl. D9-401.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 257,650, 12-23-80, Cl. D3-71.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 257,651, 12-23-80, Cl. D3-71.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 257,652, 12-23-80, Cl. D3-71.000.

Kehl, Joseph D.; and Deschamps, Robert L., to Shure Brothers, Inc. Phonograph cartridge. 257,676, 12-23-80, Cl. D14-28.000.

Kitson, Brian. Textile fabric. 257,695, 12-23-80, Cl. D92-1.0AA.

Knief, Gerald L.: *See—*
Peterson, Jerry D.; and Knief, Gerald L., 257,691, Cl. D30-13.000.

Knope, William J., to International Silver Company. Article of flatware. 257,658, 12-23-80, Cl. D7-137.000.

Krapowicz, Jacob A., to Remington Products, Inc. Hair grooming attachment. 257,690, 12-23-80, Cl. D28-54.000.

Kress, George: *See—*
Appel, Mel; Kress, George; and Means, Paul, 257,683, Cl. D21-76.000.

Lewis, Ronald T. Clock. 257,670, 12-23-80, Cl. D10-15.000.

Magnetic Peripherals Inc.: *See—*
Green, Paul N.; and Duff, James A., 257,675, Cl. D14-11.000.

McKee, Donald S., to Scott & Fetzer Company, The. Bracket design for retractable awnings. 257,663, 12-23-80, Cl. D8-354.000.

McKee, Donald S., to Scott & Fetzer Company, The. Bracket for retractable awnings. 257,664, 12-23-80, Cl. D8-354.000.

McKee, Donald S., to Scott & Fetzer Company, The. Double channel roll bar for retractable awnings. 257,666, 12-23-80, Cl. D8-376.000.

Means, Paul: *See—*
Appel, Mel; Kress, George; and Means, Paul, 257,683, Cl. D21-76.000.

Memorex Corporation: *See—*
Belgin, Stepen G., 257,649, Cl. D3-35.000.

Mercadante, Ottorino N., to Corning Glass Works. Plate or the like. 257,655, 12-23-80, Cl. D7-36.000.

Milton, John L. Roll bar. 257,673, 12-23-80, Cl. D12-156.000.

Moore, William D., to Brunswick Corporation. Pool table. 257,684, 12-23-80, Cl. D21-232.000.

Oat Willie's Dept. Store, Inc.: *See—*
Robertson, Alexander B., 257,669, Cl. D9-436.000.

Olsen, Kenneth D. Expandable furniture barricade for animals or the like. 257,694, 12-23-80, Cl. D30-99.000.

Peterson, Jerry D.; and Knief, Gerald L., to Ritchie Industries, Inc. Animal waterer. 257,691, 12-23-80, Cl. D30-13.000.

Poulin, David A. See-saw. 257,685, 12-23-80, Cl. D21-251.000.

Poust, Michael M.: *See—*
Poust, William T., Sr.; Poust, William T., Jr.; and Poust, Michael M., 257,693, Cl. D30-35.000.

Poust, William T., Jr.: *See—*
Poust, William T., Sr.; Poust, William T., Jr.; and Poust, Michael M., 257,693, Cl. D30-35.000.

Poust, William T., Sr.; Poust, William T., Jr.; and Poust, Michael M. Horseshoe. 257,693, 12-23-80, Cl. D30-35.000.

Remington Products, Inc.: *See—*
Krapowicz, Jacob A., 257,690, Cl. D28-54.000.

Riede, Gerhard, to Gambro, AG. Dialyzer cartridge. 257,689, 12-23-80, Cl. D24-21.000.

Riedell, Edwin H. Geriatric restraint. 257,646, 12-23-80, Cl. D2-27.000.

Ritchie Industries, Inc.: *See—*
Peterson, Jerry D.; and Knief, Gerald L., 257,691, Cl. D30-13.000.

Robertson, Alexander B., to Oat Willie's Dept. Store, Inc. Cap for a smoke inhalation device. 257,669, 12-23-80, Cl. D9-436.000.

Rubbermaid Specialty Products Inc.: *See—*
Wooters, Dwight N., 257,674, Cl. D12-203.000.

Ryobi Limited: *See—*
Doi, Tetsuyuki; and Shohoji, Takeshi, 257,688, Cl. D22-25.000.

Scott & Fetzer Company, The: *See—*
McKee, Donald S., 257,663, Cl. D8-354.000.
McKee, Donald S., 257,664, Cl. D8-354.000.
McKee, Donald S., 257,666, Cl. D8-376.000.

Shohoji, Takeshi: *See—*
Doi, Tetsuyuki; and Shohoji, Takeshi, 257,688, Cl. D22-25.000.

Shure Brothers, Inc.: *See—*
Kehl, Joseph D.; and Deschamps, Robert L., 257,676, Cl. D14-28.000.

Silva, Manuel C., to Guiler, Farreld Franklin. Knife handle. 257,686, 12-23-80, Cl. D22-1.000.

Stoll, Roger L., to Enduro Corporation. Combined coaster and calendar. 257,657, 12-23-80, Cl. D7-45.000.

Suntory Limited: *See—*
Ito, Nobuyoshi, 257,667, Cl. D9-401.000.

Tarrida, Joel M. Combination book enclosure and reading lamp. 257,648, 12-23-80, Cl. D3-33.000.

Thayer, Charles E. Pet feeder. 257,692, 12-23-80, Cl. D30-13.000.

Unican Security Systems, Ltd.: *See—*
Brezney, Jacqueline, 257,662, Cl. D8-350.000.

Walker, Alice R. Pie and pizza serving portion indicator. 257,656, 12-23-80, Cl. D7-43.000.

Waterfield, Martin J.: *See—*
Campana, Alfred; and Waterfield, Martin J., 257,654, Cl. D7-1.000.

Wooters, Dwight N., to Rubbermaid Specialty Products Inc. Front auto mat. 257,674, 12-23-80, Cl. D12-203.000.

Young, Leroy. Game holder or similar article. 257,665, 12-23-80, Cl. D8-367.000.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 23, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

161 R	4,240,157
227	4,240,158
239	4,240,160
243 R	4,240,159

CLASS 3

1.5	4,240,161
1.91	4,240,162
13	4,240,163

CLASS 4

324	4,240,167
326	4,240,168
449	4,240,164
493	4,240,165
542	4,240,166

CLASS 5

60	4,240,169
508	4,240,170

CLASS 8

94.11	4,240,794
115.6	4,240,795
137.5	4,240,796
465	4,240,791
529	4,240,790
594	4,240,793
607	4,240,792

CLASS 9

307	4,240,171

CLASS 12

14.5	4,240,172

CLASS 13

32	4,241,232

CLASS 15

1.7	4,240,173
	4,240,174
21 E	4,240,175
121	4,240,176
250.32	4,240,177

CLASS 16

93 D	4,240,178
139	4,240,179

CLASS 19

0.25	4,240,181
81	4,240,182
105	4,240,180

CLASS 23

230 A	4,240,798
230 B	4,240,797
232 E	4,240,799

CLASS 24

16 PB	4,240,183
279	4,240,184

CLASS 26

19	4,240,185

CLASS 27

21	4,240,186

CLASS 28

255	4,240,187
274	4,240,188

CLASS 29

157.3 R	4,240,189
268	4,240,190
426.5	4,240,191
426.6	4,240,192
451	4,240,193
568	4,240,194
571	4,240,195
578	4,240,196
623.2	4,240,197
876	4,240,198

CLASS 30

43.6	4,240,199
43.92	4,240,200
161	4,240,201
162	4,240,202
166 R	4,240,203
393	4,240,204

CLASS 33

1 M	4,240,205
174 Q	4,240,206
185 R	4,240,207
293	4,240,208

CLASS 34

10	4,240,209
39	4,240,210
90	4,240,211

CLASS 36

30 R	4,240,214
67 D	4,240,215

CLASS 37

98	4,240,216

CLASS 38

77.83	4,240,217

CLASS 40

407	4,240,218
476	4,240,219
564	4,240,220

CLASS 43

17	4,240,221
57.5 R	4,240,222
58	4,240,223

CLASS 44

51	4,240,800
57	4,240,801
58	4,240,802
63	4,240,803
71	4,240,804

CLASS 46

88	4,240,224

CLASS 48

214 R	4,240,805

CLASS 49

223	4,240,226
348	4,240,227
462	4,240,225
478	4,240,228

CLASS 51

7	4,240,229
138	4,240,231
168	4,240,230
295	4,240,806
	4,240,807
356	4,240,232

CLASS 52

127	4,240,233
261	4,240,234
397	4,240,235
741	4,240,236

CLASS 53

247	4,240,237
373	4,240,238
398	4,240,239
410	4,240,240
412	4,240,241
471	4,240,242

CLASS 55

48	4,240,808
118	4,240,809
143	4,240,810
	4,240,811
369	4,240,812
381	4,240,813
423	4,240,814

CLASS 56

8	4,240,243
16.4	4,240,244
341	4,240,245

CLASS 57

58.3	4,240,246
202	4,240,247
338	4,240,248

CLASS 60

39.09 D	4,240,250
221	4,240,251
262	4,240,252
278	4,240,253
293	4,240,254
453	4,240,255
518	4,240,256
531	4,240,257
589	4,240,258
670	4,240,259
	4,240,260

CLASS 62

5	4,240,261
55.5	4,240,262
115	4,240,263
125	4,240,264
171	4,240,265
196 B	4,240,266
238 E	4,240,267
260	4,240,268
324 A	4,240,269
341	4,240,270
457	4,240,271
	4,240,272

CLASS 65

2	4,240,815
60 R	4,240,816

CLASS 66

42 R	4,240,273
64	4,240,274
203	4,240,275

CLASS 68

5 E	4,240,276
17 A	4,240,277

CLASS 70

101	4,240,278

CLASS 71

29	4,240,817
59	4,240,818
76	4,240,819
	4,240,820
90	4,240,821
92	4,240,822
98	4,240,823

CLASS 72

319	4,240,279
410	4,240,280

CLASS 73

1 DV	4,240,281
7	4,240,283
17 A	4,240,284
32 A	4,240,285
59	4,240,286
61 R	4,240,287
141 A	4,240,288
141 R	4,240,289
178 R	4,240,290
425.6	Re.30,453
447	4,240,282
607	4,240,295
650	4,240,296
711	4,240,297
732	4,240,298
861.05	4,240,291
861.22	4,240,293
861.23	4,240,299
861.27	4,240,292
861.47 R	4,240,294

CLASS 74

2	4,240,300
5.46	4,240,302
5.7	4,240,301
471 R	4,240,304
493	4,240,305
498	4,240,306
503	4,240,307
512	4,240,308

CLASS 75

0.5 C	4,240,824
67 R	4,240,825
109	4,240,826
123 AA	4,240,827
135	4,240,828
147	4,240,829
212	4,240,830
228	4,240,831

CLASS 81

57.29	4,240,310

CLASS 82

12	4,240,311

CLASS 83

311	4,240,312
343	4,240,313
635	4,240,314
848	4,240,315

CLASS 84

1.01	4,240,316
	4,240,317
	4,240,318
263	4,240,319
384	4,240,320
433	4,240,321

CLASS 85

7	4,240,322
80	4,240,323

CLASS 89

156	4,240,324
190	4,240,325

CLASS 91

39	4,240,326
176	4,240,327
287	4,240,328
342	4,240,329
369 R	4,240,330
434	4,240,331

CLASS 92

5 L	4,240,332
12.2	4,240,333
23	4,240,334
96	4,240,335

CLASS 99

501	4,240,338

CLASS 100

5	4,240,339
7	4,240,340
49	4,240,341
53	4,240,342

CLASS 101

38 R	4,240,343
44	4,240,344
103	4,240,345
139	4,240,346
153	4,240,347
295	4,240,348

CLASS 102

24 R	4,240,349
215	4,240,350
262	4,240,351

CLASS 104

12	4,240,352
93	4,240,353

CLASS 105

215 C	4,240,354
273	4,240,355
323	4,240,356
378	4,240,357

CLASS 106

35	4,240,832
39.6	4,240,833
42	4,240,834
44	4,240,835
47 Q	4,240,836
48	4,240,837
84	4,240,838
88	4,240,839
93	4,240,840
211	4,240,841

CLASS 108

51.1	4,240,358
53.1	4,240,359
53.3	4,240,360

CLASS 110

119	4,240,361
234	4,240,362
241	4,240,363
347	4,240,364

CLASS 111

1	4,240,365

CLASS 112

121.24	4,240,366
148	4,240,367
220	4,240,368

CLASS 114

106	4,240,369

CLASS 116

210	4,240,371
271	4,240,372

CLASS 118

301	4,240,373
657	4,240,374
689	4,240,375

CLASS 119

2	4,240,376

CLASS 122

4 D	4,240,377
	4,240,378

CLASS 123

23	4,240,379
25 L	4,240,380
26	4,240,381
48 B	4,240,386
52 M	4,240,387
145 A	4,240,392
188 GC	4,240,393
214	4,240,394
425	4,240,388
445	4,240,395
454	4,240,391
470	4,240,384
	4,240,385
480	4,240,390
485	4,240,382
492	4,240,383
	4,240,389

CLASS 124

17	4,240,396

CLASS 126

21 R	4,240,397
25 R	4,240,398
58	4,240,399
91 R	4,240,400
121	4,240,401
152 B	4,240,402
193	4,240,403
427	4,240,404
433	4,240,405
438	4,240,406
444	4,240,407

CLASS 128

1 D	4,240,409
1 R	4,240,408
1.5	4,240,410
4	4,240,411
67	4,240,412
79	4,240,413
80 C	4,240,414
90	4,240,415
156	4,240,416
203.12	4,240,417
203.15	4,240,418
204.23	4,240,419
206.14	4,240,420
215	4,240,421
218 N	4,240,422
	4,240,423
	4,240,425
	4,240,426
	4,240,427
218 NV	4,240,429
218 P	4,240,430
218 R	4,240,424
	4,240,428
303.1	4,240,431
305.5	4,240,432
347	4,240,433
350 V	4,240,434
354	4,240,435
403	4,240,436
420 R	4,240,437
635	4,240,438
653	4,240,439
654	4,240,440
692	4,240,441
708	4,240,442
734	4,240,443
782	4,240,444
804	4,240,445

CLASS 130

30 R	4,240,446

CLASS 131

9	4,240,447
21 R	4,240,448
235 ST	4,240,449

CLASS 132

7	4,240,450
42 A	4,240,451
84 R	4,240,452

CLASS 134

107	4,240,453

CLASS 135

24	4,240,454

CLASS 136

256	4,240,842

CLASS 137

77	4,240,455
100	4,240,456
101	4,240,457
315	4,240,458
318	4,240,459
327	4,240,460
344	4,240,461
377	4,240,462
492.5	4,240,463
505.42	4,240,464
564.5	4,240,465
614.04	4,240,466
625.33	4,240,468
625.66	4,240,467
	4,240,469

CLASS 138

109	4,240,470

CLASS 139

114	4,240,471

CLASS 141

59	4,240,472
91	4,240,473
231	4,240,474
392	4,240,475

CLASS 144

193 A	4,240,476
245 R	4,240,477

CLASS 145

29 R	4,240,478
61 D	4,240,479

CLASS 148

1.5	4,240,843
	4,240,844
	4,240,845
175	4,240,846

CLASS 150

3	4,240,480
8	4,240,481
	4,240,482

CLASS 152

75	4,240,483
209 R	4,240,484
219	4,240,485
330 R	4,240,486
355	4,240,487
361 FP	4,240,488

CLASS 156

62.2	4,240,847
64	4,240,848
73.2	4,240,849
78	4,240,850
96	4,240,851
	4,240,852

108 4,240,853
157 4,240,854
159 4,240,855
205 4,240,856
209 4,240,857
211 4,240,858
245 4,240,859
327 4,240,860
331 4,240,861
350 4,240,862
361 4,240,863
441 4,240,864
494 4,240,865
496 4,240,866
543 4,240,867
572 4,240,868
643 4,240,869

CLASS 160

126 4,240,489
133 4,240,490
380 4,240,491

CLASS 162

181 A 4,240,870
274 4,240,871
344 4,240,872

CLASS 164

34 4,240,492
35 4,240,493
66 4,240,494
125 4,240,495
138 4,240,496
158 4,240,497
303 4,240,498

CLASS 165

1 4,240,499
105 4,240,500
112 4,240,502
165 4,240,501

CLASS 166

55 4,240,503
273 4,240,504
302 4,240,505
367 4,240,506

CLASS 169

53 4,240,507

CLASS 172

72 4,240,508
269 4,240,509
547 4,240,510

CLASS 173

1 4,240,511

CLASS 174

15 C 4,241,233
92 4,241,234

CLASS 175

75 4,240,512
340 4,240,513

CLASS 176

3 4,240,873
22 4,240,874
38 4,240,875
78 4,240,876

CLASS 179

1 SH 4,241,235
2 AM 4,241,237
2 EA 4,241,236
5.5 4,241,238
70 4,241,239
100.1 G 4,241,240
100.41 Z 4,241,241
157 4,241,242
170 J 4,241,243

CLASS 180

53 D 4,240,514
165 4,240,515
289 4,240,516
295 4,240,517

CLASS 181

107 4,240,518
213 4,240,519

CLASS 182

48 4,240,520
84 4,240,521
105 4,240,522

CLASS 184

1.5 4,240,523
6.12 4,240,524

CLASS 185

38 4,240,525

CLASS 187

9 R 4,240,526
29 R 4,240,527
52 R 4,240,528
90 4,240,529

CLASS 188

250 E 4,240,530
315 4,240,531

CLASS 192

3.28 4,240,532
6 A 4,240,533
13 R 4,240,534
17 C 4,240,535

CLASS 194

1 K 4,240,536

CLASS 198

334 4,240,537
358 4,240,538
461 4,240,539
492 4,240,540
518 4,240,541
751 4,240,542

CLASS 200

6 R 4,241,244
38 R 4,241,245
52 R 4,241,246
61.41 4,241,247
145 4,241,248
161 4,241,249

CLASS 201

41 4,240,877

CLASS 204

1 T 4,240,878
4,240,879
15 4,240,880
28 4,240,881
75 4,240,882
95 4,240,884
98 4,240,883
4,240,885
112 4,240,886
129 4,240,887
129.75 4,240,888
195 B 4,240,889
195 F 4,240,892
195 S 4,240,890
4,240,891
4,240,893
281 4,240,894
290 R 4,240,895
299 R 4,240,896

CLASS 206

0.82 4,240,544
39 4,240,543
188 4,240,545
193 4,240,546
204 4,240,547
250 4,240,548
303 4,240,549
320 4,240,550
387 4,240,551
459 4,240,552
492 4,240,553
511 4,240,555
519 4,240,554
522 4,240,556

CLASS 208

11 LE 4,240,897
40 4,240,898
120 4,240,899
143 4,240,900
324 4,240,901

CLASS 209

3.1 4,241,102
241 4,240,902
437 4,240,903

CLASS 210

321.2 4,240,912
373 4,240,913
500.2 4,240,914
609 4,240,904
617 4,240,906
629 4,240,905
646 4,240,907
688 4,240,909
769 4,240,910
794 4,240,911

CLASS 211

153 4,240,557

CLASS 212

175 4,240,558

CLASS 213

1 R 4,240,559

CLASS 215

12 R 4,240,560

CLASS 219

10.49 R 4,241,250
61.2 4,241,284
130.32 4,241,285
147 4,241,286
161 4,241,287
441 4,241,288
450 4,241,289
518 4,241,290
536 4,241,291
541 4,241,292

CLASS 220

3 4,240,561
5 R 4,240,562

CLASS 221

75 4,240,563
213 4,240,564

CLASS 222

105 4,240,565
135 4,240,566
146 HE 4,240,567
189 4,240,568
220 4,240,569
442 4,240,570

CLASS 224

310 4,240,571

CLASS 227

76 4,240,572

CLASS 228

184 4,240,573
217 4,240,574

CLASS 229

29 M 4,240,575
36 4,240,576
76 4,240,577

CLASS 233

7 4,240,578

CLASS 235

92 PK 4,241,293

CLASS 236

10 4,240,579
49 4,240,580

CLASS 237

12.1 4,240,581

CLASS 238

10 F Re.30,454

CLASS 239

11 4,240,582
157 4,240,583
189 4,240,584
705 4,240,585

CLASS 241

19 4,240,586
23 4,240,587
56 4,240,590
80 4,240,588
81 4,240,589
82.4 4,240,591

CLASS 242

54 R 4,240,592
71.8 4,240,593
131 4,240,594
222 4,240,595

CLASS 244

3.16 4,240,596
35 R 4,240,597
4,240,598
63 4,240,599
155 R 4,240,600
160 4,240,601

CLASS 248

58 4,240,602
125 4,240,603
316 D 4,240,604

CLASS 249

54 4,240,605

CLASS 250

205 4,241,251
213 VT 4,241,252
223 B 4,241,256
235 4,241,257
372 4,241,258
390 4,241,253
439 P 4,241,254
457 4,241,259
504 R 4,241,255
574 4,241,282

CLASS 251

127 4,240,606
144 4,240,607
167 4,240,608
282 4,240,609
335 B 4,240,610

CLASS 252

8.5 B 4,240,915
56 D 4,240,916
95 4,240,918
4,240,919
99 4,240,920
156 4,240,921
189 4,240,922
4,240,923
317 4,240,924
325 4,240,908
389 A 4,240,925
408 4,240,926
411 R 4,240,927
429 B 4,240,928
4,240,929
435 4,240,930
438 4,240,931
455 R 4,240,933
455 Z 4,240,932
466 PT 4,240,934

CLASS 254

237 4,240,611
315 4,240,613
344 4,240,612
369 4,240,309
393 4,240,614

CLASS 256

60 4,240,615

CLASS 260

9 4,240,935
17 R 4,240,936
17.4 CL 4,240,937
18 EP 4,240,938
21 4,240,945
22 R 4,240,940
22 TN 4,240,939
28.5 AS 4,240,946
29.2 E 4,240,947
29.2 TN 4,240,941
4,240,942
29.3 4,240,948
29.4 R 4,240,943
29.6 NR 4,240,944
30.8 R 4,240,949
37 N 4,240,950
40 R 4,240,951
42.13 4,240,952
45.7 P 4,240,953
45.75 B 4,240,956
45.75 F 4,240,954
45.75 R 4,240,955
112.5 R 4,240,957
139 4,240,958
147 4,240,959
239.1 4,240,960
239.3 R 4,240,961
245.6 4,240,962
319.1 4,240,963
326.41 4,240,965
326.5 M 4,240,964
340.5 R 4,240,966
343.45 4,240,967
345.2 4,240,968
346.22 4,240,969
346.74 4,240,970
348.43 4,240,971
424 4,240,972
453 RW 4,240,973
456 P 4,240,974
463 4,240,975
465.3 4,240,976
465.5 R 4,240,977
505 P 4,240,978
989 4,240,988

CLASS 261

78 R 4,240,989
87 4,240,990
92 4,240,991

CLASS 264

21 4,240,992
22 4,240,993
26 4,240,994
36 4,240,995
40.1 4,240,996
40.5 4,240,997
45.4 4,240,998
46.5 4,240,999
65 4,241,000
117 4,241,001
168 4,241,002
254 4,241,003
262 4,241,004
311 4,241,005
322 4,241,006
324 4,241,007
529 4,241,008
532 4,241,009

CLASS 266

119 4,240,616
170 4,240,617
235 4,240,618

CLASS 267

65 R 4,240,619

CLASS 269

24 4,240,620
264 4,240,621

CLASS 271

126 4,240,622

CLASS 272

33 R 4,240,623
68 4,240,624
86 4,240,625
118 4,240,626
130 4,240,627

CLASS 273

1 R 4,240,628
58 C 4,240,629
61 R 4,240,630
77 A 4,240,631
88 4,240,632
4,240,633
127 R 4,240,634
138 A 4,240,635
169 4,240,636
176 H 4,240,637
237 4,240,638
346 4,240,639
373 4,240,640

CLASS 274

23 R 4,240,641

CLASS 277

84 4,240,642
164 4,240,643
194 4,240,644

CLASS 279

1 C 4,240,645

CLASS 280

30 4,240,646
482 4,240,647
760 4,240,648

CLASS 283

13 4,240,649

CLASS 285

10 4,240,650
39 4,240,651
91 4,240,652
235 4,240,653
276 4,240,654
323 4,240,655

CLASS 290

54 4,241,283

CLASS 294

1 BA 4,240,656
11 4,240,657
19 R 4,240,658
74 4,240,659
81 R 4,240,660
82 AH 4,240,661

CLASS 297

17 4,240,662
239 4,240,663

CLASS 299

17 4,240,664
31 4,240,665
4,240,666
43 4,240,667
4,240,668
86 4,240,669

CLASS 301

9 DN 4,240,670

CLASS 303

6 C 4,240,671
92 4,240,672

CLASS 307

10 LS 4,241,260
45 4,241,261
221 D 4,241,262
4,241,263
4,241,264
4,241,265
4,241,266
4,241,267

CLASS 308

6 C 4,240,673
8.2 4,240,674
9 4,240,675
4,240,676
15 4,240,677
121 4,240,678
187 4,240,679
187.1 4,240,680
189 R 4,240,681
216 4,240,682
227 4,240,683

CLASS 310

13 4,241,268
61 4,241,269
164 4,241,270
219 4,241,271
4,241,272
4,241,273
259 4,241,274

CLASS 312

DIG. 33 4,240,684
217 4,240,685

CLASS 313

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36 : Re.30,453

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4,241,021
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37 : 4,240,160
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4,241,157
4,241,163
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41 : 4,240,175
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4,240,502
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4,241,230
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49 : 4,240,314
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4,240,336
4,240,342
4,240,362
4,240,438
4,240,464
4,240,520
4,240,603
4,240,764
4,240,919
4,241,041
4,241,141
4,241,297
4,241,373

DESIGN PATENTS

6 : 257,646
257,649
8 : 257,663
257,664
9 : 257,658
257,659
257,660
06 : 257,670

257,677
257,681
257,686
08 : 257,666
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13 : 257,674
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18 : 257,682
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36 : 257,653
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47 : 257,650
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For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

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Search fee	300.00
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Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 17, 1980.

Closing of Patent and Trademark Office on Friday, December 26, 1980

In view of the provisions of Executive Order 12255, issued December 5, 1980, which closes all executive departments and agencies and excuses their employees from duty on Friday, December 26, 1980, that day constitutes "a holiday within the District of Columbia" under the provisions of 35 U.S.C. 21. Any action or fee due in the Patent and Trademark Office on December 26, 1980, is to be considered timely if taken or paid on December 29, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dated: Dec. 8, 1980.

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

2,588,234, Devex Corporation, METHOD OF DRAWING METAL; Re. 24,017, same, METHOD OF COATING AND DRAWING METAL AND COMPOSITION THEREFOR, **filed** July 21, 1965, D.C. Del. (Wilmington), Doc. 3058, *Devex Corp. v. General Motors Corp.* Stipulation and final judgment filed Oct. 6, 1980.

3,150,840, Minnesota Mining and Manufacturing Co., TAPE CARTRIDGE, **filed** Feb. 27, 1978, D.C. S.D.N.Y., Doc. 78-C-881, *Minnesota Mining and Manufacturing Co. v. Microfilm Products, Inc.* Consent judgment filed Sept. 29, 1980.

3,236,709, Bandag, Inc., TIRE RECAPPING PROCESS; Reg. No. 693,857 (BANDAG AND DESIGN), Bandag Inc.; Reg. No. 802,251 (BANDAG), Bandag Inc.; Reg. No. 806,121 (BANDAG AND DESIGN), Bandag Inc.; Reg. No. 812,106 (BANDAG), Bandag Inc., **filed** Sept. 30, 1980, D.C. Colo. (Denver), Doc. 80-M-1313, *Bandag, Inc. v. Centennial State Retread, Inc.*

3,246,082, Telephone Hold Systems Corp., TELEPHONE HOLD PROGRAM SYSTEM, **filed** Oct. 17, 1980, D.C., N.D.N.Y. (Utica), Doc. 80-CV-842, *Telephone Hold Systems Corp. v. DND Teletronics, Inc.*

3,359,661, Toro Manufacturing Corporation, POWERED IMPLEMENT, **filed** Feb. 8, 1978, D.C. Del. (Wilmington), Doc. 78-50, *The Toro Company v. Jacobsen Manufacturing Company.* Final judgment and order filed Oct. 16, 1980.

3,455,127, Harry Simon, LOCK CONTROL SYSTEM, **filed** June 2, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c2775, *Harry Simon v. Folger Adam Company.* Cause dismissed by agreement of parties with stipulation to dismiss to follow filed on Oct. 10, 1980.

3,480,991, John C. Edwards, Sr., GIZZARD SKINNER, **filed** Oct. 15, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c5533, *John C. Edwards, Sr. v. Julius Drillis, doing business as G.P.R. Julius Co.*

3,559,226, University of Alabama Medical Center Foundation, TOOTH BRUSH FOR INTERPROXIMAL AREAS, **filed** Oct. 10, 1980, D.C., N.D. Calif. (San Francisco), Doc. C-80-3887 MHP, *The University of Alabama in Birmingham Medical and Educational Foundation v. Amera Corporation.*

3,563,399, Charles C. Shivvers, METHOD FOR CIRCULATING GRAIN STORED IN A CIRCULAR BIN; **3,765,548,** same, SWEEP AUGER STRUCTURE, **filed** Sept. 8, 1980, D.C., N.D. Iowa (Cedar Rapids), Doc. 1C-80-3045, *Charles C. Shivvers v. Sukup Manufacturing Company.*

3,630,505, Byron R. MacKay, SILVER RECOVERY; **3,692,291,** Michael T. MacKay, same; **3,744,995,** Byron R. MacKay, same, **filed** Dec. 21, 1979, D.C., N.D. Iowa (Sioux City), Doc. 2C-79-4100, *Byron R. MacKay et al. v. Robert Hoff et al.* Stipulation and consent decree filed Sept. 24, 1980.

3,637,153, King Instrument Corp., MACHINE FOR SPLICING AND WINDING TAPE INTO A CASSETTE; **3,737,358,** same, SPLICER HEAD ASSEMBLY FOR USE IN SPLICING TAPE TO LEADERS, **filed** Sept. 11, 1980, D.C., N.D. Calif. (San Francisco), Doc. C-80-3605 WAI, *King Instrument Corp. v. Otari Corp.*

3,671,726, Morvue, Inc., ELECTRO-OPTICAL APPARATUS FOR PRECISE ON-LINE MEASUREMENT OF THE THICKNESS OF MOVING STRIP MATERIAL, **filed** Sept. 26, 1980, D.C. Colo. (Denver), Doc. 80-A-1290, *Trienco, Inc. v. Morvue, Inc.*

3,692,291. (See 3,630,505.)

3,737,358. (See 3,637,153.)

3,744,995. (See 3,630,505.)

3,765,548. (See 3,563,399.)

3,792,522, Mercury Aircraft, Inc., FRAME-MAKING METHOD, **filed** Sept. 16, 1980, D.C., S.D. Ohio (Dayton), Doc. C-3-80-378, *Mercury Aircraft, Inc. v. International Tool Company, Inc.*

3,806,429, Oxy Metal Finishing Corporation, ELECTRODEPOSITION OF BRIGHT NICKEL-IRON DEPOSITS, ELECTROLYTES THEREFOR AND COATING AN ARTICLE WITH A COMPOSITE NICKEL-IRON CHROMIUM COATING; **3,974,044,** same, BATH AND METHOD FOR THE ELECTRODEPOSITION OF BRIGHT NICKEL-IRON DEPOSITS; **4,179,343,** same, ELECTROPLATING BATH AND PROCESS FOR PRODUCING BRIGHT, HIGH-LEVELING NICKEL IRON ELECTRODEPOSITS, **filed** Sept. 29, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-73678, *Oxy Metal Industries Corporation v. Quin-Tec, Inc.*

3,811,414, Thunderbird Industries, Inc., HEAT EXCHANGER APPARATUS FOR PRODUCING STEAM OR THE LIKE, **filed** Oct. 8, 1980, D.C., M.D.N.C. (Greensboro), Doc. C-80-535-WS, *Thunderbird Industries, Inc. v. Spartan Manufacturing Corporation et al.*

3,816,092, Rohm and Haas Company, HERBICIDAL 3,4-DICHLOROANILIDES, **filed** Sept. 18, 1980, D.C. Del. (Wilmington), Doc. 80-450, *Rohm and Haas Company v. Vertac Chemical Corporation.*

3,829,589, Akihiro Matsunaga, METHOD OF MAKING PEANUT FLOUR; **3,901,983,** same, PROCESS FOR MAKING DEFATTED PEANUT FLOUR, **filed** Dec. 12, 1979, D.C., N.D. Ohio (Cleveland), Doc. C-79-2333, *Penna Protein International, Inc. v. Akihiro Matsunaga.* Defendant is divested of all right, title and interest in 3,829,589 and 3,901,983. Filed Sept. 18, 1980.

3,835,117, Walaschek & Associates, Inc., RUBBERIZED COAL TAR PITCH EMULSION; **3,897,380,** same, **filed** Oct. 3, 1980, D.C., S.D. Ind. (Evansville), Doc. EV-80-182-C, *Walaschek & Associates, Inc. v. James Donald Crow et al.*

3,853,217, Medical Laboratory Automation, Inc., PIPETTE TIP PACKAGE, **filed** June 3, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c1999, *Medical Laboratory Automation, Inc. v. Labcon, Inc.* Patent No. 3,853,217 is invalid for obviousness. Therefore, summary judgment is granted in favor of defendant with each party bearing its own costs. Sept. 11, 1980.

3,858,873, Arthur Jones, WEIGHT LIFTING EXERCISING DEVICES; **3,998,454,** same, FORCE RECEIVING EXERCISING MEMBER; Reg. No. 991,897 (NAUTILUS), Arthur Jones; Reg. No. 1,061,003 (NAUTILUS), Arthur Jones, **filed** Oct. 16, 1980, D.C., M.D. Fla. (Orlando), Doc. 80-547-Orl-Civ-Y, *Arthur Jones, doing business as Nautilus Sports/Medical Industries v. The World of Fitness Center, Inc. et al.*

3,872,551, Firma Schaeffer-Homberg GmbH, CLOSURE FOR ARTICLES OF CLOTHING, VALISES, POCKETS OR THE LIKE WITH OVERLAPPING CLOSURE PARTS, **filed** June 18, 1976, D.C.N.J. (Newark), Doc. 76-1153, *Berkeley Park Clothes, Inc. v. Firma Schaeffer-Homberg GmbH.* Order terminating action administratively filed Sept. 26, 1980.

3,890,655, Cleo D. Mathis, WHIRLPOOL JET FOR BATHTUBS; **3,890,656,** same; **3,946,449,** same; **D. 244,462,** same, WHIRLPOOL JET NOZZLE FOR BATHTUBS AND THE LIKE, **filed** Oct. 8, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80-04481, *Cleo D. Mathis et al. v. Bill Spears, doing business as Waterway Plastics and Waterway Plastics, Inc.*

3,890,656. (See 3,890,655.)

3,897,380. (See 3,835,117.)

3,901,983. (See 3,829,589.)

3,917,534, Plastic Techniques, Inc., FILTER SECTOR, **filed** Feb. 19, 1980, D.C. Minn. (Duluth), Doc. 5-80-44, *Plastic Techniques, Inc. v. Envirotech Corporation.* Stipulation and order of dismissal filed May 30, 1980.

3,919,953, Card and Hill, APPARATUS FOR TUFTING SPACED ROWS OF LOOP PILE AND CUT PILE, **filed** June 27, 1980, D.C., E.D. Tenn. (Chattanooga), Doc. 1-80-0174, *Tuftco Corp. v. Spencer Wright Industries, Inc.*

3,927,504, John J. Forrister, APPARATUS AND METHOD FOR PRODUCING A COMPRESSED, ROLLED PACKAGE OF RESILIENT MATERIAL, **filed** Oct. 10, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80-04524, *John J. Forrister v. Medidyne, Inc., doing business as Bio Clinic Co.*

3,945,315, Lindemann Maschinenfabrik GmbH, HYDRAULIC SCRAP SHEARING MACHINE, **filed** Oct. 15, 1980, D.C., S.D. Tex. (Houston), Doc. H-80-2333, *Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick Co.*

3,946,449. (See 3,890,655.)

3,953,062, John F. Maston, PADLOCK CLASP, **filed** Sept. 30, 1980, D.C., S.D. Calif. (San Diego), Doc. 80-1641G(M), *John F. Maston v. Holmes-Hally Industries et al.*

3,962,125, Coulter Electronics, Inc., MULTI-PURPOSE DILUENT FOR USE IN BLOOD ANALYSIS BY ELECTRONIC INSTRUMENTATION OF THE COULTER TYPE, **filed** June 1, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c1941, *Coulter Electronics, Inc. v. J. T. Baker Chemical Corporation.* Defendant shall not infringe Pat. No. 3,962,125. Oct. 10, 1980.

3,974,044. (See 3,806,429.)

3,995,443, Rudolf Iversen, AIR CONDITIONING SYSTEM, **filed** June 24, 1980, D.C., W.D. Mo. (Kansas City), Doc. 80-0589-CV-W-3, *Natkin Service Company v. Rudolf Iversen et al.* **Same, filed** Aug. 15, 1980, D.C.N.J. (Newark), Doc. 80-2652, *Rudolf Iversen v. Prudential Insurance Company of America.*

3,998,454. (See 3,858,873.)

4,046,324, Joseph W. Chambers, SOLID WASTE COMMINUTOR, **filed** Sept. 26, 1980, D.C., M.D. Fla. (Tampa), Doc. 80-1085-C-T-WC, *Disposable Waste Systems, Inc. and Joseph W. Chambers v. Gregory J. Flament et al.*

4,053,740, Pierce and Stroud, Jr., VIDEO GAME SYSTEM, **filed** Feb. 1, 1980, D.C., S.D. Calif. (San Diego), Doc. 80-0184-T, *Cinematronics, Inc. et al. v. Atari, Inc. et al.* **Same, filed** Apr. 17, 1980, D.C., N.D. Calif. (San Francisco), Doc. C-80-1471 WHO, *Atari, Inc. v. Cinematronics, Inc.*

4,060,296, AMP Incorporated, LOW PROFILE DIP RECEPTACLE, **filed** Apr. 14, 1980, D.C., N.D. Ind. (South Bend), Doc. S-80-0103, *AMP Incorporated v. Wells Electronics, Inc.* Defendant is permanently enjoined from infringing plaintiff's patent. Sept. 2, 1980.

4,077,400, Roy M. Harrigan, EXTERNAL CARDIAC RESUSCITATION AID; **4,095,590,** same; **4,160,458,** same, **filed** Sept. 17, 1979, D.C. Vt. (Burlington), Doc. 80-154, *Pepin Distributing Inc. v. Harrigan Medical Products, Inc.* (Transferred from D.C. Del. (Wilmington), C-79-446). Order granting dismissal without prejudice with respect to all claims and counterclaims filed Sept. 12, 1980.

4,077,400, Roy M. Harrigan, EXTERNAL CARDIAC RESUSCITATION AID, **filed** Sept. 21, 1979, D.C. Vt. (Burlington), Doc. 79-219, *Roy M. Harrigan v. Pepin Distributing, Inc.* Stipulation for entry of discontinuance with respect to all claims and counterclaims dismissed with prejudice on Sept. 12, 1980.

4,086,939, Snap-Tite, Inc., COUPLING ASSEMBLY, **filed** Oct. 3, 1980, D.C., N.D. Ohio (Cleveland), Doc. 1843, *Snap-Tite, Inc. v. Gould, Inc. et al.*

4,090,372, J & C Lamb Corporation, FUEL CONSERVATION CONTROLLER FOR CAPACITY CONTROLLED REFRIGERATION APPARATUS; **4,202,181,** same, FUEL CONSERVATION CONTROLLER FOR HEATING AND REFRIGERATION APPARATUS, **filed** May 27, 1980, D.C.N.J. (Newark), Doc. 80-1530, *J & C Lamb Corporation v. Thermo Engineering, Inc.*

4,095,590. (See 4,077,400.)

4,097,952, Robert J. Lindstrom, MOPS OF CELLULOSE SPONGE CLOTH MATERIAL, **filed** July 18, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80-2829, *Zephyr Manufacturing Company of Sedalia, Mo. v. Norman Liebowitz, doing business as Norshal Industries.*

4,106,628, Warkentin and Mills, SORTER FOR FRUIT AND THE LIKE, **filed** Sept. 26, 1980, D.C., N.D. Ga. (Atlanta), Doc. C-80-1686A, *Pennwalt Corp. v. Durand Wayland, Inc.*

4,121,891, Guy W. Barron, TAPE PLAYER CLEANING DEVICE, **filed** May 22, 1980, D.C., S.D. Miss. (Jackson), Doc. J-80-0234(N), *Guy W. Barron v. Radio Shack.* Cause dismissed with prejudice. Oct. 2, 1980.

4,133,685, Richardson Graphics Company, LITHOGRAPHIC PLATE AND PHOTORESIST HAVING PHOTOSENSITIVE LAYERS OF DIAZO AND CINNAMOYLATED POLYVINYL ALCOHOL MATERIALS, **filed** July 9, 1980, D.C., W.D. Tenn. (Jackson), Doc. 80-1089, *Richardson Graphics Company v. Citiplate, Inc. et al.* Final judgment filed Oct. 1, 1980.

4,136,669, H. B. Fuller Company, ABSORBENT ARTICLE WITH ADHESIVE STRIP, **filed** Sept. 22, 1980, D.C. Del. (Wilmington), Doc. 80-454, *H. B. Fuller Company v. National Starch & Chemical Corp.*

4,137,299, Joseph P. DiMaggio, Jr., BIOLOGICAL STAINING COMPOSITION AND STAINING METHOD, **filed** May 28, 1980, D.C., M.D. Fla. (Orlando), Doc. 80-258-Orl-Civ., *AJP Scientific, Inc. v. Bioscientific Co. et al.* **Same, filed** Feb. 8, 1980, D.C.N.J. (Newark), Doc. 80-361, *AJP Scientific, Inc. v. Fisher Scientific Co., Inc. et al.* Order transferring action to D.C., M.D. Fla. filed Oct. 24, 1980.

4,146,602, Becton, Dickinson & Company, SIMULTANEOUS RADIOASSAY OF FOLATE AND VITAMIN B_{12}, **filed** Apr. 27, 1979, D.C., N.D. Calif. (San Francisco), Doc. C-79-1016 CFP, *Becton, Dickinson & Company v. Bio-Rad Laboratories, Inc.* Order of dismissal with prejudice filed Oct. 10, 1980.

4,140,151, Lever Brothers Company, MOUTHWASH, **filed** June 30, 1980, D.C., S.D.N.Y., Doc. 80-C-3724, *Lever Bros. v. Warner-Lambert.*

4,152,986, Dadowski, Mahr and Drachman, METHOD AND APPARATUS FOR PRINTING RAISED INK IMAGES, **filed** Sept. 28, 1979, D.C., S.D. Ohio (Dayton), Doc. C-3-79-

357, *Spirit Gravure Company* v. *The Mazer Corp.* Case transferred to W.D. Pa. (Pittsburgh) on April 9, 1980.

4,154,384, Juanita Carver, LATCH HOOKING YARN DISPENSER, **filed** Sept. 26, 1980, D.C. Ariz. (Phoenix), Doc. 80–782 VAC, *Carver Corp. and Juanita Carver* v. *Crown Crafts Int. et al.*

4,162,338, Schwarzkopf Development Corporation, COATED CEMENTED CARBIDE ELEMENTS AND THEIR MANUFACTURE, **filed** July 25, 1979, D.C., W.D. Pa. (Pittsburgh), Doc. 79–1021, *Schwarzkopf Development Corporation* v. *Kennametal Inc.* Action dismissed with prejudice and without costs to either party on June 1, 1980.

4,162,792, Mattel, Inc., OBSTACLE GAME, **filed** Sept. 14, 1979, D.C., S.D.N.Y., Doc. 79–C–4909 (LPG). *Coleco Industries, Inc.* v. *Mattel, Inc.* **Same, filed** Nov. 29, 1979, D.C., S.D.N.Y., Doc 79–C–6425 (LPG), *Mattel, Inc.* v. *R. H. Macy's & Co. Inc. et al.* **Same, filed** Nov. 29, 1979, D.C., S.D.N.Y. Doc. 79–C–6426 (LPG), *Mattel, Inc.* v. *Barkers and Cardinal Industries, Inc.* **Same, filed** Nov. 29, 1979, D.C., S.D.N.Y., Doc. 79–C–6427 (LPG), *Mattel, Inc.* v. *F. J. Strauss Co., Inc.* **Same, filed** Nov. 29, 1979, D.C., S.D.N.Y., Doc. 79–C–6428 (LPG), *Mattel, Inc.* v. *Miller-Spence, Inc.* **Same, filed** Dec. 10, 1979, D.C., S.D.N.Y., Doc. 79–C–6699 (LPG), *Mattel, Inc.* v. *Miller-Sperber, Inc.*

4,166,458 (See 4,077,400.)

4,166,469, Philip O. Littleford, APPARATUS AND METHOD FOR INSERTING AN ELECTRODE, **filed** May 19, 1980. D.C., M.D. Fla. (Orlando), Doc. 80–238–Orl–Civ–Y, *Philip O. Littleford, M.D. et al.* v. *Larry Junker et al.*

4,170,929, James E. McDowell, APPARATUS FOR SETTING UP FOLDED CARTONS, **filed** Oct. 1, 1980, D.C., E.D. Calif. (Fresno), Doc. CV–F–80–224–MDC, *Maxco Supply, Inc.* v. *McDowell International Packaging Systems, Inc.*

4,179,152, James K. Kent, Jr., METHOD AND APPARATUS FOR SECURING FABRIC TOPS TO A VEHICLE, **filed** Sept. 26, 1980, D.C. Colo. (Denver), Doc. 80–K–1289, *James K. Kent, Jr.* v. *Bestop Manufacturing, Inc.*

4,179,343. (See 3,806,429.)

4,187,390, W. L. Gore & Associates, Inc., POROUS PRODUCTS AND PROCESS THEREFOR, **filed** Feb. 7, 1980, D.C., N.D. Ohio (Cleveland), Doc. C–80–174, *W. L. Gore & Associates, Inc.* v. *Garlock, Inc.*

4,188,876, Donald J. Graves, JUNK METAL COMPRESSOR, **filed** Oct. 1, 1980, D.C., N.D. Ind. (Fort Wayne), Doc. F–80–0190, *Donald J. Graves et al.* v. *The Kemsco Group, Inc. et al.*

4,191,376, System Operations, Inc., HIGHLY SECURE PLAYING CARDS FOR INSTANT LOTTERY AND GAMES, **filed** June 4, 1980, D.C., E.D. Mich. (Detroit), Doc. 80–72068, *System Operations, Inc.* v. *Scientific Games Development Corp. et al.* Action dismissed without prejudice and without costs to either party. Sept. 16, 1980.

4,192,725, Diamond Shamrock Corporation, ELECTROLYTIC PRODUCTION OF HIGH PURITY ALKALI METAL HYDROXIDE, **filed** Mar. 11, 1980, D.C., E.D. Okla. (Muskogee), Doc. 80–89–C, *Diamond Shamrock Corporation* v. *Fort Howard Paper Company et al.* **Same, filed** Mar. 27, 1980, D.C. Del. (Wilmington), Doc. 80–137, *E. I. du Pont de Nemours and Company, Inc.* v. *Diamond Shamrock Corporation.*

4,196,553, Clifton R. Veach, END JOINING PIECE ADAPTABLE TO EITHER HOLLOW OR INSULATED BACKING SIDING, **filed** Sept. 24, 1980, D.C., S.D. Ohio (Columbus), Doc. C–2–80–814, *Clifton R. Veach, doing business as Creative Products Co.* v. *Vipco Inc.* **Same, filed** Sept. 24, 1980, D.C., S.D. Ohio (Columbus), Doc. C–2–80–815, *Clifton R. Veach, doing business as Creative Products Company* v. *Certainteed Corporation.*

4,196,570, Henry Rodriguez, MECHANIZED HARVESTING MACHINE, **filed** Aug. 15, 1980, D.C. N. Mex. (Albuquerque), Doc. 80–668–HB, *Henry Rodriguez* v. *Don House, doing business as House & Sons Welding.*

4,190,062, Jack R. Paden, SMOKING DEVICE, **filed** June 9, 1980, D.C. Nebr. (Omaha), Doc. 80–0–375, *Jack R. Paden* v. *Elmer A. Wessel et al.*

4,201,395, Vanguard Manufacturing, Inc., ROLLER SKATE SHOE TOE GUARD, **filed** Aug. 18, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80–03635, *Vanguard Manufacturing, Inc.* v. *Ornate Designs, Inc.*

4,202,032, Troller Corporation, POWER CONTROL CIRCUIT, **filed** Aug. 1, 1980, D.C.N.J. (Trenton), Doc. 80–2471, *Model Rectifier Corporation* v. *Troller Corporation.*

4,202,181. (See 4,090,372.)

4,217,986, Donald M. Brown, INVENTORY RESTRAINING DEVICE FOR MERCHANDISE DISPLAY HOOK, **filed** Sept. 9, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80–03914 AWT, *Donald M. Brown* v. *Trion Industries, Inc.*

Re. 24,017. (See 2,588,234.)

Re. 25,820, John Macchione, METHOD OF AND APPARATUS FOR PRODUCING TUBES OF POLYGONAL CROSS SECTION, **filed** Oct. 2, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c5299, *John Macchione* v. *Precision Paper Tube Co.*

Re. 28,066, Walter Marcyan, SINGLE-STATION MULTIPURPOSE BODY-EXERCISING MACHINE, **filed** Oct. 9, 1980, D.C., N.D. Ind. (South Bend), Doc. S–80–0322, *Walter Marcyan et al.* v. *Nissen Corporation et al.*

D. 250,662, Concept, Inc., DENTAL STAIN REMOVER, **filed** Sept. 14, 1979, D.C., S.D. Fla. (Miami), Doc. 79–4231–C–CA, *Concept, Inc.* v. *Save-Way Industries et al.*

D. 244,462. (See 3,890,655.)

Department of Commerce

PATENT AND TRADEMARK OFFICE

37 CFR Part 1

PATENT INTERFERENCE PROCEEDINGS

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rulemaking.

SUMMARY: The Patent and Trademark Office is proposing to amend five sections and to add one additional section to its rules of practice in patent cases. Each of these sections concerns patent interference proceedings. The purpose of this action is: (1) to clarify and more specifically define the matters which may be raised before the Board of Patent Interferences at final hearing; (2) to broaden the present requirements relating to printed briefs at final hearing; and (3) to specify the manner in which discovery may be used.

DATES: Written comments must be received on or before February 4, 1981.

ADDRESSES: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. All comments received will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Ian A. Calvert, Chairman, Board of Patent Interferences, by telephone at (703) 557–3625, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The reasons for the proposed changes are set out in the following discussion, under three headings which correspond to the purposes stated in the "SUMMARY."

(1) *Matters raised at final hearing.*—The second sentence of present § 1.258(a) contains a lengthy statement concerning consideration of the patentability of a claim. This statement appears to be superfluous and has proven to be extremely confusing even to persons well versed in interference practice. Proposed § 1.258 eliminates this problem by concisely stating that at final hearing the Board of Patent Interferences will consider only priority of invention and matters ancillary thereto.

The other proposed changes in § 1.258 arose as a result of the decision on petition for rehearing in *Peska* v. *Satomura*, 602 F.2d 969, 202 USPQ 726 (CCPA 1979), in which the court noted that § 1.258(b) did not specify certain steps which the Patent and Trademark Office requires to have occurred in order for a motion under § 1.231(a)(4) to be considered at final hearing. In order to correct this deficiency, § 1.258(a) is proposed to be rewritten to specify how matters which are ancillary to priority must have been raised in order to entitle a party to raise them at final hearing. Under the proposed provisions, matters raised in § 1.231 motions which were dismissed as procedurally defective, for example, because they were filed belately, or did not comply with the first sentence of § 1.231(b), may not be raised before the Board of Patent Interferences. However, a matter raised in a motion which was dismissed solely because it was based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications (as provided in § 1.231(a)(1)), or because it would require the taking of testimony (*Cory* v. *Blakey*, 1905 C.D. 116 (Comr. Pats.)), may be raised at final hearing under proposed § 1.258(a)(1)(iii).

The language of proposed § 1.258(a)(2) is taken from present § 1.225(a).

Present paragraph (b) of § 1.258 has been eliminated as redundant, since the question of benefit of a prior application is ancillary to priority, and is therefore covered under paragraph (a). Paragraph (c) of § 1.258 remains unchanged.

In view of the proposed revision of § 1.258, § 1.225(a) is proposed to be considerably simplified by merely referring to § 1.258. The provision for requesting final hearing within 30 days of the decision denying the motion has been dropped as superfluous, since the time for requesting final hearing, if appropriate, is always set by the patent interference examiner. A final sentence requiring a motion to take testimony is proposed to be added, in order to ensure that if a matter (ancillary to priority) raised in a § 1.231 motion is one which must be supported by evidence, the testimony or other evidence (e.g., under 37 CFR 1.282) necessary for consideration of the matter by the Board of Patent Interferences will be taken inter partes, in accordance with 37 CFR 1.271 et seq.

Minor changes are proposed in § 1.231(d) for the purpose of consistency with proposed § 1.258.

None of the proposed changes in §§ 1.225(a), 1.231(d) or 1.258 is intended to alter the existing practice, except for the last sentence of proposed § 1.225(a), which makes mandatory a step which good practice dictates should be taken under present procedure but often is not.

(2) *Printed briefs.*—Under present §§ 1.253 and 1.254, testimony and briefs for final hearing filed in interferences must, if printed, comply with the requirements of § 1.253(e), which have consistently been interpreted as requiring standard typographic printing. Since the Court of Customs and Patent Appeals accepts as "printed" briefs produced by other processes, it is considered that the Patent and Trademark Office should follow suit, in order to spare interference parties the present onerous cost of typographic printing. § 1.253(e) is therefore proposed to be amended to conform it more closely to Rule 5.8(a) of the Court of Customs and Patent Appeals. A sentence, based on Court of Customs and Patent Appeals Rule 5.8(e), is proposed to be added to § 1.254 in order to permit the Board of Patent Interferences to accept, in its discretion, a brief which may not literally comply with the rules, but is otherwise considered satisfactory.

(3) *Use of discovery.*—When § 1.287 was adopted in 1971, no particular provision was made in the rules for the introduction and use as evidence of items obtained through discovery. This has led to some disagreement and confusion on the subject. Compare, for example, the majority and concurring opinions in *Inoue* v. *Lobur*, 195 USPQ 256 (Bd. Pat. Int. 1976).

Proposed new § 1.288 is intended to remedy this situation. Paragraph (a) of the rule is analogous to § 1.282, and permits a party to an interference who has obtained, through discovery related to the interference, admissions in writing in response to written requests for admissions, or written answers to written interrogatories, to introduce the admissions or answers into evidence without taking testimony. The term "discovery" is intended to include discovery conducted voluntarily between the parties or in a court, as well as discovery under § 1.287.

Paragraph (b) of the proposed section specifies that other matter obtained by discovery must be introduced in the same manner as other evidence; for example, documents obtained by discovery must be introduced as indicated in *Clark* v. *Wilke*, 203 USPQ 1101 (Bd. Pat. Int. 1978), and testimony taken in an ancillary proceeding under the control of a U.S. District Court must be introduced in accordance with § 1.283 (Commissioner's Notice of May 2, 1972, 898 O.G. 1500).

Pursuant to 35 USC 6(a), as amended, the Commissioner of Patents and Trademarks proposed to amend Title 37 of the Code of Federal Regulations by amending the §§ 1.225, 1.231, 1.253, 1.254 and 1.258, and by adding a new § 1.288, as shown below. The Patent and Trademark Office has determined that these rule changes have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044.

It is proposed to amend 37 CFR, Chapter I, Subchapter A, Part 1, as follows:

1. By revising paragraph (a) of § 1.225 to read as follows:

§ 1.225 *Failure of junior party to file statements or to overcome filing date of senior party.*

(a) If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of another party, judgment on the record will be entered against that junior party unless:

(1) Under the provisions of § 1.258(a), he would be entitled to raise before the Board of Patent Interferences a matter which is ancillary to priority and which, if decided in his favor, would remove the basis for judgment on the record against him, and

(2) Within a time set by the patent interference examiner, not less than 30 days, he requests that final hearing be set to review such matter. If the matter was raised in a motion which was dismissed for one of the reasons specified in § 1.258(a)(1)(iii), the request for final hearing must be accompanied by a motion to take testimony under paragraph (b) of this section.

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2. By amending paragraph (d) of § 1.231 as follows (additions are indicated by arrows, deletions by brackets):

§ 1.231 *Motions before the primary examiner.*

• • • • • •

(d) All proper motions as specified in paragraph (a) of this section, or of a similar character, will be transmitted to and considered by the primary examiner without oral argument, except that consideration of a motion to dissolve ►on a ground other than no interference in fact◄ will be deferred to final hearing before a Board of Patent Interferences where the motion [urges unpatentability of a count to one or more parties] ►raises a matter◄ which would be reviewable at final hearing under § 1.258(a) and such [unpatentability is urged] ►matter is raised◄ against a patentee or has been ruled upon by the Board of Appeals or by a court in ex parte proceedings. Also consideration of a motion to add or remove the names of one or more inventors may be deferred to final hearing if such motion is filed after the times for taking testimony have been set. Request for reconsideration will not be entertained.

3. By revising paragraph (e) of § 1.253 to read as follows:

§ 1.253 *Copies of the testimony.*

• • • • • •

(e) When the copies of the testimony are submitted in printed form, they may be produced by standard typographic printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be either 7⅝ by 10¼ inches (19.4 by 26 cm.) with type matter 4⅛ by 7⅛ inches (10.6 by 18.2 cm.), or 8½ by 11 inches (21.6 by 27.9 cm.) with type matter 6½ by 9½ inches (16.5 by 24.1 cm.). The testimony shall be bound to lie flat when open. Plastic and metal ring-type bindings are not acceptable. Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no appeal be taken, the twenty-five copies will be returned to the party filing the testimony.

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4. By adding the following sentence to § 1.254:

§ 1.254 *Briefs at final hearing.*

• • • The board may refuse to accept any brief which has been printed, typewritten, or bound otherwise than in substantial conformity with this section.

5. By revising § 1.258 to read as follows:

§ 1.258 *Matters considered in determining priority.*

(a) In determining priority of invention, the Board of Patent Interferences will consider only priority of invention on the evidence submitted, and matters ancillary thereto. A party shall be entitled to raise a matter which is ancillary to priority only if:

(1) The matter was raised by the party in a motion under § 1.231(a), and:

(i) The motion was transmitted to and decided by the primary examiner; or

(ii) Consideration of the motion was deferred to final hearing; or

(iii) The motion was dismissed as being based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications, or as being based on a ground which would require the taking of testimony; or

(2) The matter was raised by the party in opposition to a motion under § 1.231(a)(2), (3), (4) or (5) which was granted over his opposition; or

(3) The party shows good reason why the matter was not raised as specified in paragraphs (a)(1) or (2) of this section.

(b) To prevent manifest injustice the Board of Patent Interferences may in its discretion consider a matter which is ancillary to priority even though it would not otherwise be entitled to consideration under paragraph (a) of this section.

(c) At final hearing between an application and a patent the prior art of record in the patent file may be referred to for the purpose of construing the issue.

6. By adding the following new section:

§ 1.288 *Use of discovery.*

(a) If a party intends to rely upon an admission or upon an answer to an interrogatory, obtained by discovery, the admission or answer may be introduced into evidence by filing, before the closing of the time for taking the testimony of the party (before the time for taking the testimony in chief if such admission or answer is not in rebuttal), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer, together with a notice of reliance thereon.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence pursuant to §§ 1.271 to 1.286.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks

Dated: Oct. 15, 1980

Approved:

JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation

Dated: Oct. 31, 1980

[FR Doc. 80-36675 Filed 11-24-80; 8:45 am]

Board of Appeals Decisions Rendered in the Month of November 1980

Affirmed	120
Affirmed in Part	17
Reversed	46
Total	183

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,776,781, Re. S.N. 188,556, Filed Sep. 18, 1980, Cl. 136/239, THERMOCOUPLE WITH NICKEL-SILICON-MAGNESIUM ALLOY NEGATIVE ELEMENT, Carrol Dean Starr, et al., Owner of Record: *Amax Inc., Greenwich, Conn.,* Attorney or Agent: Eugene J. Kalil, Ex. Gp.: 223

3,820,983, Re. S.N. 188,555, Filed Sep. 18, 1980, Cl. 75/170, NICKEL-SILICON-MAGNESIUM ALLOY, Carrol Dean Starr, et al., Owner of Record: *Amax Inc., Greenwich, Conn.,* Attorney or Agent: Eugene J. Kalil, Ex. Gp.: 111

3,887,557, Re. S.N. 190,053, Filed Sep. 23, 1980, Cl. 424/251, ANTIBACTERIAL PHARMACEUTICAL COMPOSITIONS AND PROCESSES FOR PREPARATION THEREOF, Shinsaku Minami, et al., Owner of Record: *Dainippon Pharmaceutical Co., Ltd., Osaka, Japan,* Attorney or Agent: Leonard W. Sherman, et al., Ex. Gp.: 125

4,036,632, Re. S.N. 166,921, Filed Jul. 7, 1980, Cl. 71/93, HERBICIDAL AGENTS, Kurt Westphal, et al., Owner of Record: *Farbenfabriken Bayer AG, Leverkusen, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 122

4,079,584, Re. S.N. 192,059, Filed Sep. 29, 1980, Cl. 59/35 R, HEAVY DUTY SHACKLE, James B. Shahan, Owner of Record: *American Hoist & Derrick Company, Tulsa, Okla.,* Attorney or Agent: James R. Head, et al., Ex. Gp.: 321

4,111,724, Re. S.N. 183,100, Filed Sep. 2, 1980, Cl. 148/175, METHOD OF MANUFACTURING OXIDE ISOLATED SEMICONDUCTOR DEVICE UTILIZING SELECTIVE ETCHING TECHNIQUE, Katumi Ogiue, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 111

4,114,505, Re. S.N. 188,706, Filed Sep. 19, 1980, Cl. 85/1 C, COATINGS AND METHODS OF APPLICATION, William J. Loeser, et al., Owner of Record: *Industrial Metal Finishing Co., Houston, Tex.,* Attorney or Agent: Edmund F. Bard, et al., Ex. Gp.: 355

4,117,899, Re. S.N. 189,508, Filed Sep. 22, 1980, Cl. 180/6.48, HYDRAULIC SYSTEM FOR A SKID-STEER LOADER, Thomas M. Sagaser, et al., Owner of Record: *Clark Equipment Company, Buchanan, Mich.,* Attorney or Agent: Harry G. Thibault, Ex. Gp.: 316

4,127,361, Re. S.N. 190,392, Filed Sep. 24, 1980, Cl. 417/480, AIR-BAKEABLE WATER-PROOF GETTER DEVICE AND METHOD OF MANUFACTURING SAME, Stephen J. Hellier, et al., Owner of Record: *S.A.E.S. Getters S.P.A., Milan, Italy,* Attorney or Agent: David R. Murphy, Ex. Gp.: 343

4,130,816, Re. S.N. 191,797, Filed Sep. 29, 1980, Cl. 367/35, CIRCUMFERENTIAL ACOUSTICAL DETECTOR, Charles B. Vogel, et al., Owner of Record: *Shell Oil Company, Houston, Tex.,* Attorney or Agent: Harold L. Denkler, et al., Ex. Gp.: 222

4,146,706, Re. S.N. 184,018, Filed Sep. 4, 1980, Cl. 536/1, POLYSACCHARIDE AND PROCESS FOR THE PRODUCTION THEREOF, Kenichi Hisatsuka, et al., Owner of Record: *Idemitsu Kosan Company Limited, Tokyo, Japan,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 125

4,153,508, Re. S.N. 184,017, Filed Sep. 4, 1980, Cl. 435/31 P, PROCESS FOR THE PRODUCTION OF NOVEL POLYSACCHARIDE, Kenichi Hisatsuka, et al., Owner of Record: *Idemitsu Kosan Company Limited, Tokyo, Japan,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 172

4,169,156, Re. S.N. 190,181, Filed Sep. 24, 1980, Cl. 424/324, N-(2-AMINOCYCLOHEPTYL)ALKANOYLANILIDES, Jacob Szmuszkovicz, Owner of Record: *The Upjohn Company, Kalamazoo, Mich.,* Attorney or Agent: John Kekich, et al., Ex. Gp.: 125

4,181,602, Re. S.N. 191,539, Filed Sep. 29, 1980, Cl. 208/216 PP, PROCESS FOR THE HYDROTREATING OF HEAVY HYDROCARBON STREAMS, Leonard M. Quick, et al., Owner of Record: *Standard Oil Company (Indiana), Chicago, Ill.,* Attorney or Agent: William T. McClain, et al., Ex. Gp.: 116

4,183,564, Re. S.N. 194,145, Filed Oct. 6, 1980, Cl. 292/113, EXTERNALLY ACCESSIBLE ADJUSTER FOR FLUSH LATCHES, L. Richard Poe, Owner of Record: *Inventor,* Attorney or Agent: John B. Young, et al., Ex. Gp.: 355

PATENT NOTICES

Certificates of Correction for the Week of Dec. 30, 1980

Re. 30 338	4,193,354	4,210,134	4,218,945
D. 256,400	4,193,672	4,210,442	4,219,468
D. 256,859	4,193,774	4,210,888	4,219,725
3,957,431	4,193,800	4,210,958	4,219,850
3,962,098	4,194,780	4,211,054	4,220,433
4,020,465	4,194,828	4,211,497	4,220,821
4,122,831	4,196,116	4,212,801	4,221,434
4,131,422	4,199,952	4,213,056	4,221,548
4,134,753	4,200,740	4,214,882	4,221,898
4,137,335	4,202,942	4,215,029	4,222,131
4,138,298	4,202,954	4,215,791	4,222,421
4,156,683	4,203,981	4,216,027	4,222,589
4,167,099	4,204,932	4,216,188	4,223,847
4,167,542	4,206,951	4,216,803	4,224,230
4,169,009	4,207,200	4,217,144	4,224,350
4,171,423	4,207,272	4,217,368	4,225,183
4,171,772	4,207,983	4,217,772	4,226,439
4,180,292	4,208,089	4,217,949	4,226,568
4,183,826	4,208,263	4,218,003	4,229,070
4,187,271	4,208,814	4,218,253	4,229,357
4,187,672	4,209,629	4,218,610	4,229,358
4,188,477	4,209,651	4,218,664	4,229,479

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

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Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent 4,207,388. Copper (II) Chloride-Tetrachloraluminate Battery. Filed Nov. 29, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,407. Aromatic Heterocyclic Polymer Alloys and Products Produced Therefrom. Filed May 3, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,460. Low Power Frequency Modulated Hybrid Fiber Optic Data Acquisition System. Filed Oct. 12, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,560. R F Area Intruder Detection and Tracking System. Filed Aug. 23, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,594. Electronic Indirect Measuring System. Filed July 21, 1977. Patented June 10, 1980. Not available NTIS.

Patent 4,207,764. Precision-Fin Indexing Device for Wind Tunnel Models. Filed Mar. 5, 1979. Patented June 17, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 6-025,639. Energy Recovery System. Filed Mar. 30, 1979.

Patent application 6-028,780. Communications System Using a Mirror Kept in Outer Space by Electromagnetic Radiation Pressure. Filed Apr. 10, 1979.

Patent application 6-033,076. Process for Changing Caking Coals to Noncaking Coals. Filed Apr. 25, 1979.

Patent application 6-061,167. Improved Method for Producing Small Hollow Spheres. Filed July 26, 1979.

Patent application 6-076,528. Method of Fabricating Thin-Walled Articles of Tungsten-Nickel-Iron Alloy. Filed Sept. 18, 1979.

Patent 4,159,757. Bulk Material Handling System. Filed May 4, 1977. Patented July 3, 1979. Not available NTIS.

Patent 4,161,687. Method for Locating Underground Anomalies by Diffraction of Electromagnetic Waves Passing between Spaced Boreholes. Filed Sept. 12, 1977. Patented July 17, 1979. Not available NTIS.

Patent 4,169,283. Step-Control of Electromechanical Systems. Filed Apr. 4, 1977. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,171,644. Means for Ultrasonic Testing When Material Properties Vary. Filed Feb. 28, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,172,398. Preset Pivotal Tool Holder. Filed Feb. 28, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,174,145. High Pressure Electrical Insulated Feed Thru Connector. Filed Dec. 29, 1976. Patented Nov. 13, 1979. Not available NTIS.

Patent 4,174,510. Rf Transformer. Filed Dec. 28, 1977. Patented Nov. 13, 1979. Not available NTIS.

Patent 4,175,048. Gaseous Insulators for High Voltage Electrical Equipment. Filed Sept. 6, 1977. Patented Nov. 20, 1979. Not available NTIS.

Patent 4,183,744. Method of Foaming a Liquid Metal. Filed July 28, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,189,647. Open Cycle Ocean Thermal Energy Conversion System. Filed Aug. 17, 1978. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,189,660. Electron Beam Collector for a Microwave Power Tube. Filed Nov. 16, 1978. Patented Feb. 19, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief Patent Branch,
Westwood Bldg., Bethesda, Md. 20205

Patent 4,209,860. System and Method for Multifunctional Control of Upper Limb Prosthesis via EMG Signal Identification. Filed Feb. 13, 1978. Patented July 1, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent application 6-122,335. Fiber Optic System for Transmission of Video Signals by Pulse-Frequency-Modulation. Filed Feb. 19, 1980.

Patent application 6-139,077. Soil Stabilization Materials and Methods. Filed Apr. 10, 1980.

Patent application 6-140,398. Two Color Narrow Bandwidth Detector. Filed Apr. 14, 1980.

Patent application 6-143,399. Pulse Compression System. Filed Apr. 24, 1980.

Patent application 6-144,462. A Method and Apparatus for Boresighting an Aircraft. Filed Apr. 28, 1980.

Patent application 6-147,412. Thermochemical Energy Transport Process. Filed May 6, 1980.

Patent application 6-150,381. Closed Torque Test Machine. Filed May 16, 1980.

Patent application 6-153,114. Developer for Dry Silver Paper. Filed May 27, 1980.

Patent application 6–153,473. Precision Laser Pulse Radiometer. Filed May 27, 1980.

Patent application 6–155,719. Fuseless Explosive Propellant Cartridge. Filed June 2, 1980.

Patent application 6–157,723. Electromagnetic Arming Rate Regulator. Filed June 9, 1980.

Patent application 6–157,925. Micro-Power Magnetometer. Filed June 6, 1980.

Patent 4,144,540. Tunable Infrared Detector with Narrow Bandwidth. Filed Feb. 6, 1978. Patented Mar. 13, 1979. Not available NTIS.

Patent 4,174,177. False Target Warning System. Filed Aug. 14, 1978. Patented Nov. 13, 1979. Not available NTIS.

Patent 4,178,855. Explosive Actuated Arming Switch Device. Filed Mar. 20, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,185,497. Adiabatic Laser Calorimeter. Filed Oct. 2, 1978. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,185,557. Stress Reducing Liner and Method of Fabrication. Filed Apr. 28, 1972. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,196,055. Method of Determining the Presence of Stray Electrical Currents in a Solution. Filed Aug. 25, 1975. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,775. Shock-Mounted, Liquid Cooled Cold Plate Assembly. Filed Sept. 19, 1977. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,199,809. Programmable Data Terminal Set. Filed Apr. 5, 1976. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,200,669. Laser Spraying. Filed Nov. 22, 1978. Patented Apr. 29, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters,
NASA Code GP–2, Washington, D.C. 20546

Patent application 6–116,310. Autocatalytic Coal Liquefaction Process. Filed Jan. 28, 1980.

Patent application 6–161,253. Low Temperature Cross Linking Polyimides. Filed June 20, 1980.

Patent application 6–161,254. A Silicon-Slurry/Aluminide Coating. Filed June 20, 1980.

Patent application 6–161,255. Cell and Method for Electrolysis of Water and Anode Therefor. Filed June 20, 1980.

Patent application 6–161,257. Improved Method for Driving Two-Phase Turbines with Enhanced Efficiency. Filed June 20, 1980.

Patent application 6–163,838. Preparation of Perfluorinated 1,2,4 Oxadiazoles. Filed June 27, 1980.

Patent application 6–163,839. Preparation of Perfluorinated Imidoylamidoximes. Filed June 27, 1980.

Patent 4,203,723. Vitra-Violet Process for Producing Flame Resistant Polyamides and Products Produced Thereby. Filed Dec. 6, 1976. Patented May 20, 1980. Not available NTIS.

Patent 4,204,154. Portable Device for Use in Starting Air-Starts-Units for Aircrafts and Having Catle Lead Testing Capability. Filed Mar. 9, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,204,899. Cork-Resin Ablative Insulation for Complex Surfaces and Method for Applying the Same. Filed Sept. 12, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,206,970. Chromatically Corrected Virtual Image Visual Display. Filed Oct. 23, 1978. Patented June 10, 1980. Not available NTIS.

Patents Available for Licensing or Sale

4,185,407. DISPLAY DEVICE. Jack W. Lamb, 13561 Sherman Way #208, Van Nuys, Calif. 91405. Telephone Number 213–997–7625.

4,147,352. AMUSEMENT OR EDUCATIONAL APPARATUS BASED ON THE LAWS OF PROBABILITY. Jamie P. Rosero, 269 S. Lafayette Park Place, Los Angeles, Calif. 90057.

4,184,779. STIRRING DEVICE. Charles Detmer, Route 2, Box 244, Troy, Mo. 63379.

4,195,410. DEVICE FOR MEASURING THE LENGTH OF A WEB. Willi Strohmeyer, Grimsehlstrasse, 37 D–3352 Einbeck, Federal Republic of Germany. Correspondence to: Michael J. Striker, 360 Lexington Ave., New York, N.Y. 10017.

3,325,132. SUPPORT ARM. Carl C. Olson, 215 McDaniel, Dayton, Ohio 45405.

The following patent is offered for license or sale by Chapin, Neal & Dempsey, Third National Bank Bldg., Springfield, Mass. 01103.

4,221,532. ARTICLE TRANSFERRING APPARATUS.

The following two patents are offered by Peter J. Murphy, Garland and Murphy, 214 Southland Center, Dallas, Tex. 75201.

4,121,369. HOLLOW FISHING ROD WITH ELASTIC LINE.

4,151,672. FISHING ROD.

4,032,770. PORTABLE TABLE AND LAMP FIXTURE. Gloria Astrid Millette, 1416 Inwood Circle, Bloomfield Hills, Mich. 48013.

4,160,283. MAGNETIZING AND DEMAGNETIZING TOOL. Ralph W. Adams, 314 First Ave. West, Plentywood, Mont. 59254.

4,182,255. BELOW WATERLINE DEPLOYABLE HULL STABILIZING MEMBERS. Bruce D. Reid, 124 Pine St., Toms River, N.J. 08753.

4,211,541. POLLUTION CONTROL CLOSED SYSTEM. Dr. Alberto C. Fernandez, 203 Goodwin Ave., Salem, Va. 24153.

4,224,894. DEVICE FOR INDICATING A SYMBOL REPRESENTING THE LOCATION OF A PARKING PLACE. Hugo Haldemann, Basel, Switzerland, % Herbert Cohen. WIGMAN & COHEN, Suite 200, Crystal Square 3, 1735 Jefferson Davis Hwy., Arlington, Va. 22202.

4,226,416. BASKETBALL PRACTICE ASSEMBLY. Robert F. Callanan, 2359 Chestnut Ave., Long Beach, Calif. 90806.

4,226,456. CONTAINER AND CONTAINER LID. John C. Barnett, RD 5, Box 5309, Lake Ariel, Pa. 18436.

4,231,037. RADAR CLUTTER SUPPESSOR. Maurice W. Long, Correspondence to: 4620 North Park Ave., Apt. PH3W, Chevy Chase, Md. 20015. Telephone (301) 652–6356.

4,186,669. COAL BURNING PROCESS. Cowan et al. U.S. Frederick C. Cowan, Frederick Cowan & Co., Inc., 120 Terminal Drive, Plainview, N.Y. 11803.

4,214,774. DISASSEMBLABLE BOAT CARRIER AND LAUNCHER. Ronald P. Kluge and Herman F. Spirk. Correspondence to: Ronald P. Kluge, Herman F. Spirk. 5902 Bustleton Ave., Philadelphia, Pa. 19149.

General Electric Company is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Patent Counsel, Aircraft Engine Business Group, General Electric Company, 1000 Western Ave., Lynn, Mass. 01910.

3,677,012. COMPOSITE CYCLE TURBOMACHINERY.

3,825,984. METHOD FOR FABRICATING A HOLLOW BLADE.

3,844,343. IMPINGEMENT-CONVECTIVE COOLING SYSTEM.

3,890,060. ACOUSTIC DUCT WITH ASYMMETRIC ACOUSTICAL TREATMENT.

3,937,590. ACOUSTIC DUCT WITH PERIPHERALLY SEGMENTED ACOUSTIC TREATMENT.

3,946,554. VARIABLE PITCH TURBOFAN ENGINE AND A METHOD FOR OPERATING SAME.

3,983,082. INTUMESCENT FIRE RETARDANT MATERIAL AND ARTICLE.

3,996,019. FABRICATION METHOD AND FABRICATED ARTICLE.

4,019,375. MEANS FOR INDUCING VIBRATION IN AN AIRFOIL.

4,051,289. COMPOSITE AIRFOIL CONSTRUCTION.

4,052,526. INSTUMESCENT FIRE RETARDANT MATERIAL AND ARTICLE

4,065,394. INTUMESCENT FIRE RETARDANT MATERIAL.

4,070,827. METHOD AND APPARATUS FOR LIMITING INGESTION OF DEBRIS INTO THE INLET OF A GAS TURBINE ENGINE.

4,071,183. FABRICATION METHOD AND FABRICATED ARTICLE.

4,074,104. OPTO-ELECTRONIC POSITION SENSING METHOD.

4,082,378. DEFORMABLE BEARING SEAT.

4,087,199. CERAMIC TURBINE SHROUD ASSEMBLY.

4,096,616. METHOD OF MANUFACTURING A CONCENTRIC TUBE HEAT EXCHANGER.

4,107,600. ADAPTIVE FREQUENCY TO DIGITAL CONVERTER SYSTEM.

4,115,112. COBALT-BASE ALLOY AND ARTICLE.

4,118,147. COMPOSITE REINFORCEMENT OF METALLIC AIRFOILS.

4,130,175. FLUID-IMPERVIOUS ACOUSTIC SUPPRESSION PANEL.

4,131,387. CURVED BLADE TURBOMACHINERY NOISE REDUCTION.

4,132,240. VARIABLE DOUBLE LIP QUIET INLET.

Applications for license may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,828,568. ICE MAKER.

3,959,985. AIR CONDITIONING SYSTEM FOR A MOBILE HOME INCLUDING AN INTERLOCK.

3,962,885. AIR CONDITIONING SYSTEM FOR A MOBILE HOME.

3,964,271. AIR CONDITIONING SYSTEM MOUNTING ARRANGEMENT FOR A MOBILE HOME.

3,964,286. APPARATUS FOR POSITIONING PIN FINS OF A FINNED-TUBE HEAT EXCHANGER.

3,974,667. WASHING MACHINE WITH IMPROVED ADDITIVE DISPENSING MEANS.

3,977,219. LINT FILTER FOR AUTOMATIC WASHER.

4,089,187. CONDENSER-AIR FLOW SYSTEM OF A HOUSEHOLD REFRIGERATOR.

4,210,285. DISHWASHER HAVING IMPROVED SPRAY ARM.

4,213,313. RELAY CONTROL CIRCUIT FOR WASHING APPLIANCE.

4,213,338. LIQUID LEVEL INDICATOR.

4,217,010. ADJUSTABLE VOLUME-SPLIT REFRIGERATOR.

4,219,221. COUPLING FOR REJOINING SEALED TUBING.

4,219,857. PROTECTIVE METHOD AND CIRCUITS FOR SHEATHED ELECTRICAL RESISTANCE HEATING UNITS.

4,221,129. HUMIDITY SENSOR.

4,223,194. MICROWAVE OVEN WITH MEANS FOR MODIFYING ENERGY DISTRIBUTION THEREIN.

4,223,379. ELECTRONIC APPLIANCE CONTROLLER WITH FLEXIBLE PROGRAM AND STEP DURATION CAPABILITY.

Application for license may be addressed to: Division Patent Counsel, Transportation Systems Business Division, General Electric Company, 2901 East Lake Road, Erie, Pa. 16531.

4,207,778. REINFORCED CROSS-PLY COMPOSITE FLYWHEEL AND METHOD FOR MAKING SAME.

Application for license may be addressed to Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

4,215,237. BUS CONDUCTOR SUPPORT SYSTEM.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA Corporation, Sr. Vice President, Licensing, 30 Rockefeller Plaza, New York, N.Y. 10020.

4,226,219. ENGINE TIMING CIRCUIT WITH NOISE IMMUNITY.

4,226,643. METHOD OF ENHANCING THE ELECTRONIC PROPERTIES OF AN UNDOPED AND/OR N-TYPE HYDROGENATED AMORPHOUS SILICON FILM.

4,227,123. SWITCHING AMPLIFIER FOR DRIVING A LOAD THROUGH AN ALTERNATING-CURRENT PATH WITH A CONSTANT-AMPLITUDE, VARYING DUTY CYCLE SIGNAL.

4,227,125. REGULATED DEFLECTION SYSTEM.

4,227,186. SELF-STABILIZING ANALOG TO DIGITAL CONVERTER USEFUL IN PHASE LOCKED LOOP TUNING SYSTEMS.

4,227,215. TELEVISION PICTURE POSITIONING APPARATUS.

4,227,217. MULTIPLEXING ARRANGEMENT FOR A TELEVISION SIGNAL PROCESSING SYSTEM.

4,227,348. METHOD OF SLICING A WAFER.

4,227,411. RELATIVE HUMIDITY MEASUREMENT.

4,227,699. MANUAL SCANNING MECHANISM FOR VIDEO DISC PLAYER.

4,227,769. PLANAR OPTICAL WAVEGUIDE COMPRISING THIN METAL OXIDE FILM INCORPORATING A RELIEF PHASE GRATING.

4,228,050. CONDUCTIVE MOLDING COMPOSITION.

4,228,315. SOLAR CELL GRID PATTERNS.

4,228,349. III-V DIRECT-BANDGAP SEMICONDUCTOR OPTICAL FILTER.

4,228,371. LOGIC CIRCUIT.

4,228,413. SADDLE-TOROID DEFLECTION WINDING FOR LOW LOSS AND/OR REDUCED CONDUCTOR LENGTH.

4,228,446. REDUCED BLOOMING DEVICE HAVING ENHANCED QUANTUM EFFICIENCY.

4,228,454. HIGH TEMPERATURE CADMIUM BORACITE SEMICONDUCTOR DEVICE.

4,228,463. SWITCHED AFPC LOOP FILTER WITH OFFSET VOLTAGE CANCELLATION.

4,228,782. SYSTEM FOR REGULATING THE APPLIED BLADE-TO-BOULE FORCE DURING THE SLICING OF WAFERS

4,228,805. METHOD OF MEASURING BLOOD PERFUSION.

4,228,809. TEMPERATURE CONTROLLER FOR A MICROWAVE HEATING SYSTEM.

4,228,937. CLEAVING APPARATUS.

4,229,502. LOW-RESISTIVITY POLYCRYSTALLINE SILICON FILM.

4,229,714. RF CONNECTOR ASSEMBLY WITH PROVISION FOR LOW FREQUENCY ISOLATION AND RFI REDUCTION.

4,229,722. WIRE COIL ASSEMBLY FOR AN ELECTRICAL CIRCUIT.

4,229,759. SIGNAL DETECTOR INCLUDING SAMPLE AND HOLD CIRCUIT WITH REDUCED OFFSET ERROR.

4,229,760. VIDEO GAMES COLOR SYNTHESIS.

4,229,787. FLYBACK TRANSFORMER.

4,230,294. CLOSED LOOP ROLL CONTROL FOR MOMENTUM BIASED SATELLITES.

4,230,505. METHOD OF MAKING AN IMPATT DIODE UTILIZING A COMBINATION OF EPITAXIAL DEPOSITION, ION IMPLANATION AND SUBSTRATE REMOVAL

4,230,781. METHOD FOR MAKING ETCH-RESISTANT STENCIL WITH DICHROMATE-SENSITIZED ALKALI-CASEINATE COATING

4,230,794. IMPROVING ETCH RESISTANCE OF A CASEIN-BASED PHOTORESIST.

4,230,998. TELEVISION VERTICAL RAMP GENERATOR.

4,230,999. OSCILLATOR INCORPORATING NEGATIVE IMPEDANCE NETWORK HAVING CURRENT MIRROR AMPLIFIER.

4,231,009. DEFLECTION YOKE WITH A MAGNET FOR REDUCING SENSITIVITY OF CONVERGENCE TO YOKE POSITION.

4,231,062. CHARGE-COUPLED DEVICE IMAGER SYSTEM.

4,220,338. VIDEO DISC PLAYER HAVING MODULAR CONSTRUCTION.

4,220,339. CADDY-ACTUATED DECLUTCHING MECHANISM FOR VIDEO DISC PLAYER.

4,220,340. CONSTANT DRAG CARRIAGE TRANSLATING MECHANISM FOR VIDEO DISC PLAYER.

4,220,706. ETCHANT SOLUTION CONTAINING HF–HN03–H2S04–H202 FOR ETCHING AL-TI-CU OR NI CONTACT METALLURGY ON SILICON SUBSTRATES

4,220,873. TEMPERATURE COMPENSATED SWITCHING CIRCUIT.

4,220,877. TEMPERATURE COMPENSATED SWITCHING CIRCUIT.

4,220,892. PHOSPHOR SCREEN FOR MODULAR FLAT PANEL DISPLAY DEVICE.

4,220,898. RASTER DISTORTION CORRECTION CIRCUIT.

4,220,915. RESISTIVITY MEASUREMENT SYSTEM.

4,220,919. CATHODE RAY TUBE DISPLAY ERROR MEASUREMENT APPARATUS AND METHOD.

4,220,925. ENCODING ANALOG SIGNALS INTO DIGITAL SIGNALS USING A TRIANGULAR REFERENCE.

4,220,930. QUASI-LINEAR AMPLIFIER WITH FEEDBACK-CONTROLLED IDLING CURRENTS.

4,220,974. AFT CIRCUIT.

4,221,465. PATCHING TAPE FOR DIFFRACTIVE SUBTRACTIVE FILTER VIEWGRAPHS.

4,221,930. FM DEFECT COMPENSATION APPARATUS.

4,221,934. COMPANDOR FOR GROUP OF FDM SIGNALS.

4,221,979. NON-INVERTING BUFFER CIRCUITS.

4,222,008. APPARATUS FOR DIVIDING AN ARBITRARY WAVEFORM INTO EQUAL-AMPLITUDE STEPS

4,222,017. ROTATABLE POLARIZATION DUPLEXER.

4,222,071. SENSITIVITY INFORMATION RECORD.

4,222,074. HORIZONTAL SYNCHRONIZING SYSTEM.

4,222,120. TUNING POSITION DISPLAY SYSTEM.

4,222,502. METER AND DISPENSING SYSTEM FOR ABRASIVE MATERIALS.

4,223,234. REDUCTION OF SPARKLE NOISE AND MOTTLING IN CCD IMAGERS.

4,223,251. DEFLECTION CIRCUIT WITH RETRACE CONTROL.

4,223,253. FOCUSING SYSTEM FOR COLOR TV CAMERA.

4,223,280. RELAXATION OSCILLATOR INCLUDING AN SCR AND HAVING SWITCH MEANS FOR INTERRUPTING CURRENT FLOW THERETHROUGH.

4,223,281. SCR RELAXATION OSCILLATOR WITH CURRENT AMPLIFIER IN ITS GATE CIRCUIT.

4,223,283. TWO INTO THREE PORT PHASE SHIFTING POWER DIVIDER.

4,223,339. VIDEO IMAGE VERTICAL DETAIL RESTORATION AND ENHANCEMENT.

4,223,340. IMAGE DETAIL IMPROVEMENT IN A VERTICAL DETAIL ENHANCEMENT SYSTEM.

4,224,084. METHOD AND STRUCTURE FOR PASSIVATING A SEMICONDUCTOR DEVICE.

4,224,536. STABILIZATION OF MONOLITHIC INTEGRATED CIRCUIT OUTPUT LEVELS.

4,224,638. FREQUENCY MULTIPLIER FOR USE WITH CCD COMB FILTER.

4,224,679. SIGNAL CORRELATION MEANS.

4,225,141. MECHANISM FOR AIDING CARRIAGE RETURN IN VIDEO DISC PLAYER.

4,225,236. FABRY-PEROT INTERFEROMETER.

4,225,816. PRECISION CURRENT SOURCE.

4,225,874. SEMICONDUCTOR DEVICE HAVING INTEGRATED DIODE.

4,225,875. SHORT CHANNEL MOS DEVICES AND THE METHOD OF MANUFACTURING SAME.

4,225,897. OVERCURRENT PROTECTION CIRCUIT FOR POWER TRANSISTOR.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738–5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372–6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 29, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus: Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-23-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-10-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-11-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-12-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-5-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-8-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGNS, GROUP 290—Vacant. Industrial Arts; Household, Personal and Fine Arts.	1-8-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-18-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-20-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-1-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents ..... Numbers 2,295 to 2,323, inclusive

REISSUES

DECEMBER 30, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,461

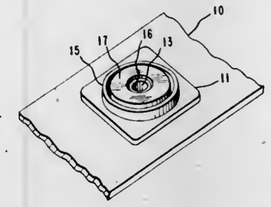
RESILIENT CENTER BEARING ASSEMBLY

William H. Bogar, deceased, late of Newark, Del. (by Jean Armstrong Bogar, executrix), and Howard D. Irwin, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,986,752, dated Oct. 19, 1976, Ser. No. 576,227, May 9, 1975. Continuation-in-part of Ser. No. 460,189, Apr. 11, 1974, abandoned. Application for reissue Aug. 2, 1977, Ser. No. 821,317

Int. Cl.² B61F *5/16;* F16C *17/04, 27/08;* F16F *1/44*

U.S. Cl. 308—137 **8 Claims**



1. A railway car center plate assembly comprising a truck bolster and a body bolster, the truck bolster being rotatable with respect to the body bolster and having secured to its top side a bowl-shaped truck center plate provided with a bore, said *truck* center plate having an upwardly projecting flange around its periphery and a portion of the center plate between the flange and the bore defining a flat-bearing surface; said body bolster having secured to its underside a body center plate having a flat surface from which extend downwardly two substantially perpendicular, concentric, cylindrical flanges encircling a bore, the diameter of the outermost flange being such that its outer vertical surface is encompassed by the inner vertical surface of the flange on the truck center plate, *and the outermost flange substantially vertically overlapping the flange on the truck center plate;* said bores are centrally located within the center plate and concentric with the flanges and are adapted to receive a center pin, and positioned between the body center plate and truck center plate an annular, *homogeneous, solid* synthetic elastomeric bearing pad which is located within and substantially fills the annular space between the flanges of the body center plate, *said elastomeric pad having a top, horizontal bearing surface and a bottom, horizontal bearing surface, said bottom, horizontal bearing surface being adapted, under load, to be lower than the bottom edge of the flanges on the body center plate;* and under load said pad contacts the vertical surfaces of the flanges of the body center plate, said elastomeric pad alone transmits the weight of the car from the body center plate to the truck center plate *and spreads the load over the total bearing surface.*

5. A railway car body center plate assembly which comprises:

(a) a metal base plate having a flat surface on its underside from which extend downwardly two substantially perpendicular, concentric, cylindrical flanges encircling a bore, the diameter of the outermost flange being adapted such that its outer vertical surface may be encompassed by the inner vertical surface of the flange on a truck center plate, and the outermost flange is adapted to substantially vertically overlap the flange on the truck center plate, said bore being centrally located within the center plate and concentric with the flanges and being adapted to receive a center pin, and

(b) positioned beneath the base plate, an annular, homogeneous, solid synthetic elastomeric bearing pad which is located within and substantially fills the annular space between the flanges of the body center plate, and, under load, contacts the vertical surfaces of the flanges of the body center plate, said elastomeric pad having a top, horizontal bearing surface and a bottom, horizontal bearing surface, said bottom, horizontal bearing surface being adapted under load to be lower than the bottom edge of the flanges on the body center plate, and said elastomeric pad being adapted to alone transmit the weight of the car from the body center plate to a truck center plate and spread the load over the total bearing surface.

Re. 30,462

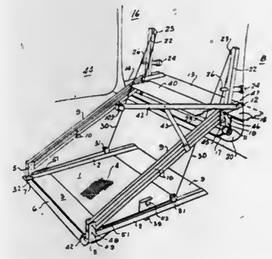
LIFT ASSEMBLY FOR VAN OR THE LIKE

Leo Pohl, #7, 4826 - 11th St., NE., Calgary, Alberta, Canada (T2E 2W7)

Original No. 3,984,014, dated Oct. 5, 1976, Ser. No. 482,550, Jun. 24, 1974. Application for reissue Sep. 28, 1978, Ser. No. 946,617

Int. Cl.² B60P *1/44*

U.S. Cl. 414—545 **7 Claims**



7. A lift assembly, for use in association with a vehicle having a floor surface and a doorway at which the lift assembly is located, comprising:

a platform having an upper surface and outer and inner edges, rotatable between an upstanding stored position interior of the vehicle and an intermediate position outside the vehicle and substantially level with the immediate adjacent floor surface of the vehicle, and which can be raised or lowered disposed in a plane substantially parallel to the vehicle's floor surface between the intermediate position and a ground position, said platform inner edge being closer to the vehicle, when in the intermediate position, than the outer edge;

a pair of parallelogrammatic linkages connecting the vehicle and the platform, each linkage comprising pivotally connected parallel links disposed in a common substantially vertical plane and extending along a respective side of said platform and inwardly beyond said inner edge, each of said linkages having an inner link pivotally connected at its upper end only to the vehicle adjacent said vehicle floor surface and an outer link rigidly connected to said platform at its upper surface and near said outer edge thereof;

each inner link being adapted to rotate about its pivot connection with the vehicle when the lift assembly is moving between the stored and intermediate positions, but being adapted to abut the vehicle, when the lift assembly is moving between the intermediate and ground positions, to prevent further rotation of the platform;

means for associating the platform and linkages together when rotating between the stored and intermediate positions so that they move in unison and form a compact assembly;

a pair of upstanding spaced standards attached to the vehicle

just inwardly of the doorway, one of said linkages being positioned adjacent the base of each standard;

take-up means carried by the vehicle; and

a pair of cable-like members, each having one end attached to the take-up means for being wound and unwound thereon, the other ends of said cable-like members running over a position upwardly on a respective one of said standards and downwardly to a respective side of said platform for connection therewith intermediate said inner and outer edges and nearer the inner edge thereof, said cable-like members being operative to apply lifting forces to said platform only at said side connections to raise, lower and rotate the platform between positions.

Re. 30,463

TRAFFIC PAINT METHOD AND COMPOSITION

David R. Miller, Newnan, Ga., and Jack E. Wolfe, deceased, late of Hughesville, Pa. (by Edith B. Wolfe, executrix), assignors to Prismo Universal Corporation, Rockville, Md.

Original No. 4,025,476, dated May 24, 1977, Ser. No. 619,355, Oct. 3, 1975. Application for reissue Mar. 30, 1979, Ser. No. 25,598

Int. Cl.³ C09D *3/66*

U.S. Cl. 260—22 CQ **16 Claims**

1. A method of applying a rapid drying marking composition comprising applying at ambient temperature a traffic paint composition onto a roadway surface, the traffic paint composition, expressed in weight percentage containing:

resin binder	16–22
pigments(s)	47–48
pigment volume concentration (PVC)	46–59
solvent system:	
boiling point 190–141° F.	5–11
boiling point 140–106° F.	12–17
boiling point 105–90° F.	2–[28]*28.99*
boiling point greater than 225° F.	0–12
solids content	67.5–75.5

and allowing the thus applied paint composition to dry to a track-free state at ambient temperature in a period of 60 seconds or less.

Re. 30,464

AMMOXIDATION PROCESS

Howard P. Angstadt, Media, Pa.; Jack D. Tinkler, Corona del Mar, Calif.; Richard V. Norton, Dublin, Ohio, and Ronald D. Bushick, Glen Mills, Pa., assignors to Sun Ventures, Inc., Radnor, Pa.

Original No. 4,070,393, dated Jan. 24, 1978, Ser. No. 691,757, Jun. 1, 1976. Continuation-in-part of Ser. No. 559,617, Mar. 18, 1975, abandoned. Application for reissue Sep. 25, 1978, Ser. No. 945,358

Int. Cl.² C07C *120/14*

U.S. Cl. 260—465 C **9 Claims**

6. A process for the preparation of an aromatic dinitrile of the benzene and naphthalene series which comprises reacting a [lower] *dilower* alkyl-substituted hydrocarbon of the benzene or naphthalene series with ammonia and oxygen at a temperature of between about 350° and about 525° C. in the presence of a supported vanadium catalyst in a fixed bed, the mole ratio of ammonia to hydrocarbon being from about 2:1 to about 3:1, the mole ratio of oxygen to hydrocarbon being from about 2:1 to about 3:1, and distributing the oxygen through spaced apart inlets along the length of the bed.

Re. 30,465

ALUMINUM ALLOY WIRE

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Original No. 3,512,221, dated May 19, 1970, Ser. No. 814,183, Apr. 7, 1969. Continuation-in-part of Ser. No. 779,376, Nov. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 730,933, May 21, 1968, abandoned. Application for reissue Sep. 23, 1974, Ser. No. 508,223

Int. Cl.³ B21C *1/00*; C22F *1/04*

U.S. Cl. 428—606 **4 Claims**

8. Aluminum alloy [rod or] wire having a minimum conductivity of sixty-one percent IACS and a diameter or greatest perpendicular distance between parallel faces of between [3.00] *0.374* inches and 0.0031 inches and containing substantially evenly distributed iron aluminate inclusions in a concentration produced by the presence of about 0.45 to about 0.95 weight percent iron in an alloy mass consisting essentially of about 98.95 to less than 99.45 weight percent aluminum; no more than about 0.15 weight percent silicon; and less than 0.05 weight percent each of trace elements selected from the group consisting of vanadium, copper, maganese, magnesium, zinc, boron, and titanium, said iron aluminate inclusions having a particle size of less than 2,000 angstrom units.

Re. 30,466

METHOD AND DEVICE FOR GENERATING A MAGNETIC FIELD OF A POTENTIAL WITH ELECTRIC CURRENT COMPONENTS DISTRIBUTED ACCORDING TO A DERIVATIVE OF THE POTENTIAL

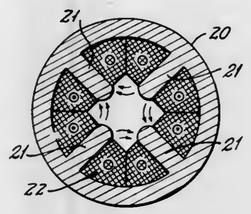
Hidetsugu Ikegami, 9-16, Tsurukawa 3-chome, Machida-shi, Tokyo, Japan

Original No. 4,153,889, dated May 8, 1979, Ser. No. 773,312, Mar. 1, 1977. Application for reissue Jun. 13, 1979, Ser. No. 48,153

Claims priority, application Japan, Mar. 19, 1976, 51-29266

Int. Cl.³ H01F *5/00*

U.S. Cl. 335—213 **28 Claims**



1. A method of generating a 2N-pole magnetic field in a hollow space, N being representative of an integer, said magnetic field being derived from a static magnetic potential ϕ defined in said space, said method comprising the steps of providing a yoke member having an inside surface which defines said space and provides a plane curve when cut by a plane, providing a coil member having current paths transversely along said yoke member's inside surface of said plane, and causing electric currents to flow through the respective current paths with a distribution of components perpendicular to said plane of said electric currents given by $-d\phi/ds$ where ds represents a differential line element tangential to said plane curve, said yoke member not having a parallel inside surface along which said current paths are arranged for generation of the magnetic field for N=1.

Re. 30,467

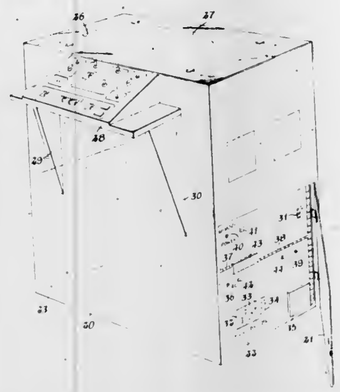
BOWLING SCORER UTILIZING SEMICONDUCTOR ELEMENTS

Robert W. House; Rolland D. King; Robert F. Roller, all of Columbus, Ohio, and David A. Williams, Largo, Fla., assignors to Brunswick Corporation, Muskegon, Mich.

Original No. 3,375,352, dated Mar. 26, 1968, Ser. No. 271,644, Apr. 9, 1963. Application for reissue Dec. 29, 1978, Ser. No. 974,624

Int. Cl.² A63D *5/04*; G06F *15/44*

U.S. Cl. 364—411 **46 Claims**



1. An apparatus for scoring a bowling game for a multiplicity of players comprising: means for receiving pinfall information for a multiplicity of players, a single computation means for computing bowling scores for said multiplicity of players connectable to said receiving means a multi-player storage means for storing scores earned by said multiplicity of players connectable to said single computation means, means for providing said single computation means with any one of the stored scores in said multi-player storage means, and a single control means connected to said single computation means for directing the computation of bowling scores for each of said multiplicity of players.

Re. 30,468

SIGNAL COMPRESSORS AND EXPANDERS

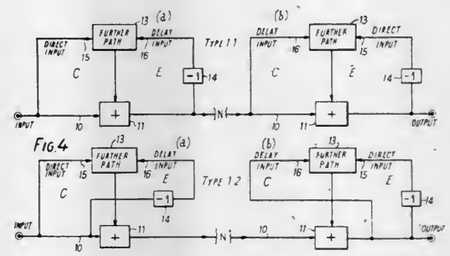
Ray M. Dolby, San Francisco, Calif., and Paul A. Spencer, Bromley, England, assignors to Dolby Laboratories, Inc., San Francisco, Calif.

Original No. 3,978,409, dated Aug. 31, 1976, Ser. No. 477,205, Jun. 7, 1974. Continuation-in-part of Ser. No. 346,689, Mar. 30, 1973, abandoned. Application for reissue Aug. 28, 1978, Ser. No. 937,625

Claims priority, application United Kingdom, Apr. 4, 1972, 15484/72

Int. Cl.³ H04B *1/64*

U.S. Cl. 455—72 **78 Claims**



77. *A method of modifying the dynamic range of an input signal, comprising the steps of providing a main signal component derived from the input signal, forming a difference signal between a second signal component derived from the input signal and a delayed version of a third signal component derived from the input signal, the delay of the delayed third signal component delaying the third signal component relative to the second signal component, combining the said difference signal with the main component to modify the main component when said difference signal exists, and restricting the said difference signal to an amplitude which is not greater than about one-tenth the amplitude of the main component.*

PATENTS

GRANTED DEC. 30, 1980

ERRATA

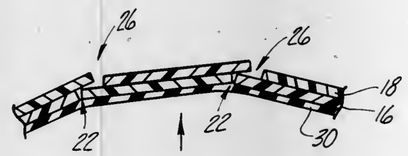
For CLASS	See PATENT NO.
239–251	4,241,464
434–043	4,241,519
434–102	4,241,520
434–112	4,241,521
434–405	4,241,522
052–742	4,241,543
474–082	4,241,617
440–059	4,241,686
440–063	4,241,687
440–026	4,241,688
269–289 R	4,241,772
296–037.7	4,241,870
292–165	4,241,888
312–012	4,241,955
406–109	4,242,007
423–321 R	4,242,198
106–073.3	4,242,213
556–489	4,242,272
564–159	4,242,276
568–341	4,242,278
568–303	4,242,279
568–458	4,242,281
568–471	4,242,282
568–451	4,242,283
568–454	4,242,284
570–145	4,242,286
428–423.1	4,242,488
200–153 G	4,242,577
455–611	4,242,578

PATENTS

GRANTED DECEMBER 30, 1980

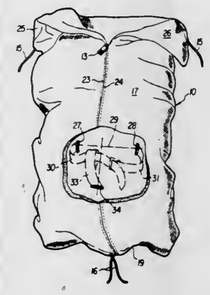
GENERAL AND MECHANICAL

4,241,457
ENERGY IMPACT DISSOLUTION AND TRAUMA REDUCTION DEVICE
John M. Klein, 1754 Grant, Birmingham, Mich. 48009, and Robert B. Wilson, 4912 Mansfield, Royal Oak, Mich. 48067
Filed Apr. 26, 1978, Ser. No. 900,196
Int. Cl.³ F41H *1/02*
U.S. Cl. 2—2.5 **8 Claims**



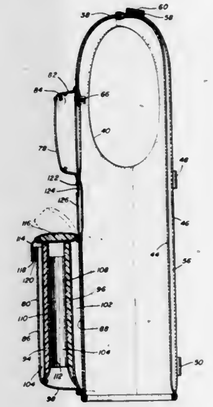
5. A protective garment, comprising:
(a) a first panel comprising a plurality of segments, each segment being in abutting relationship with adjacent segments, each abutment defining a seam,
(b) means interconnecting the segments of the panel along the seams, which means cooperate with said seams to permit the segments to limitedly rotate about the seams,
(c) a second panel overlying the first panel, the second panel comprising a plurality of segments, each one segment of the second panel being associated with one segment of the first panel such that a substantial portion of the second panel segment overlies a substantial portion of the first panel segment associated therewith to define an interface therebetween, the peripheral portion of the second panel segment overlying the panel segments adjacent the one first segments, and
(d) means for adhering the associated panel segments at the interface thereof.

4,241,458
BUNTING FOR ATTACHMENT TO A SEAT
Mary Lesesne, 1010 Sherman Ave., Bronx, N.Y. 10456
Filed Jun. 1, 1979, Ser. No. 44,718
Int. Cl.³ A41B *13/06*
U.S. Cl. 2—69.5 **11 Claims**



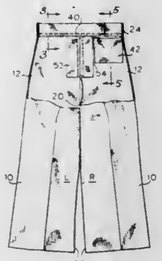
1. A bunting for protecting a small child against inclement weather, comprising:
blanket means for wrapping about the child;
a pair of first slots through the blanket means for passage of waist straps of a seat;
a second slot positioned between the first slots and spaced from the line including the first slots for receiving a crotch strap therethrough wherein the crotch strap cooperates with the waist straps to secure the child both within the seat and against the blanket means before the blanket means is wrapped about the child.

4,241,459
VEST FOR PHOTOGRAPHERS
Stephen R. Quayle, P.O. Box 99, Bozeman, Mont. 59715
Filed Jan. 26, 1979, Ser. No. 7,932
Int. Cl.² A41D *1/04*
U.S. Cl. 2—102 **9 Claims**



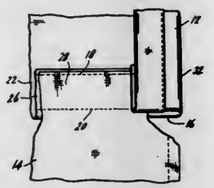
1. A garment for use by photographers to contain and protectively support photographic equipment including cameras, lenses, film and film packs, filters and meters, etc., said garment including a front opening body having a back panel defining upper, lower and opposite right and left side marginal portions and a pair of right and left side front panels defining upper, lower and adjacent inner and remote outer side marginal portions, the upper marginal portions of said front panels and the right and left hand portions of the upper marginal portions of said back panel being joined together to define right and left shoulder covering portions of said garment, the lower end portions of said remote outer side marginal portions being joined to the lower end portions of the said right and left side marginal portions of said back panel, said front panels including fabric pocket defining means secured thereto defining upwardly opening upper chest and lower waist pockets on the exterior of each of said front panels, the upper remote outer side marginal portions of said front panels and the upper portions of the corresponding side marginal portions of said back panel being spaced apart and defining upper arm openings therebetween below said shoulder covering portions, each lower pocket fabric pocket defining means defining inner, outer, bottom and opposite side walls disposed forwardly of the corresponding front panel, each lower pocket fabric defining means also defining an upstanding partition generally paralleling the corresponding side walls, extending between the corresponding inner and outer walls intermediate the side walls, permanently anchored relative to one of the corresponding inner and outer walls and releasably secured to the other of said corresponding inner and outer walls.

4,241,460
PULL-ON ACTION SLACKS
Love J. Tolbert, 1212 S. 43rd St., San Diego, Calif. 92113
Filed Jun. 8, 1979, Ser. No. 46,839
Int. Cl.[3] A41D *1/06*
U.S. Cl. 2—234 1 Claim



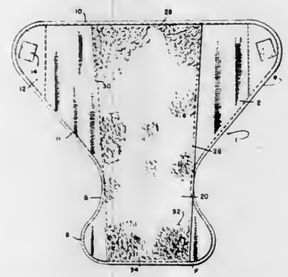
1. Pull-on slacks, comprising:
(a) an endless, stretchable waistband;
(b) a pair of tubular leg portions;
(c) rise portions, each being of one-piece construction with one of said leg portions, connected together by a back seam and a crotch seam, said rise portions being connected, at the top edges thereof, with said waist; and
(d) a front fly extending from said crotch seam to said endless waistband only, with the latter remaining intact;
(e) said rise portions having inwardly return folded reinforcing facings on each side of said fly of considerable width and of pre-cut one-piece construction with said rise portions to improve the form-fitting characteristics of the front of the slacks, and said front fly being incorporated with and disposed between said reinforcing facings.

4,241,461
EXTENSIBLE LENGTH SLEEVE
William R. Jolly, and James G. Kohn, both of Greenville, S.C., assignors to Piedmont Industries, Inc., New York, N.Y.
Filed Nov. 13, 1978, Ser. No. 959,999
Int. Cl.[3] A41D *27/10*
U.S. Cl. 2—269 2 Claims



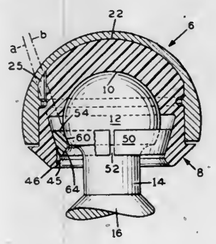
1. An extensible length sleeve comprising a sleeve having a lower section having sleeve slit edges and terminating in a pleat having a transverse pleat fold line and an underlying pleat section lying against the inside surface of said sleeve, and a cuff having an upper end and of a width less than the width of said sleeve, the upper end of said cuff connected to said underlying pleat section, the additional width of said sleeve being disposed about the sides of said cuff to provide a finished edge for said sleeve slit edges, said cuff and said underlying pleat section connected by a first line of stitching adjacent the end of said pleat and connecting said underlying pleat section and said upper end of said cuff and a second line of stitching adjacent said pleat fold line connecting said underlying pleat section and said upper end of said cuff, said first and second stitch lines being hidden from view by the portion of said sleeve overlying said underlying pleat section, said second line of stitching being selectively removable to allow said pleat to be opened to provide additional length to said extensible length sleeve.

4,241,462
DIAPER COVER TYPE GARMENT
Hiroshi Tagawa, and Kenichiro Kurisu, both of Fukuoka, Japan, assignors to Nishiki Co., Ltd., Fukika, Japan
Filed Oct. 11, 1974, Ser. No. 514,027
Int. Cl.[3] A41B *9/00*
U.S. Cl. 2—406 9 Claims



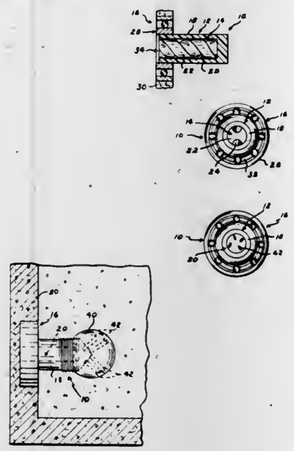
1. A garment comprising a first panel having a rearward edge and a forward edge and having lateral edges interconnecting the rearward and forward edges and further comprising a second panel having rearward and forward edges and having lateral edges interconnecting the rearward and forward edges of the second panel, the second panel being permanently attached to the first panel at rearward and forward edges with at least portions of the lateral edges of the second panel being spaced from the first panel, the second panel comprising a waterproof layer facing the first panel and a fabric layer facing away from the first panel, and means joining the first panel at positions near rearward and forward edges with an outer side of the first panel remote from the second panel whereby the first panel is formed and held as a garment with the second panel facing a body of the wearer, wherein the lateral edges of the first panel are sloped inward toward a medial portion of the first panel, thereby forming a medial narrow portion of the first panel, lateral edges of the second panel are substantially straight and the lateral edges of the second panel are positioned near medial inward portions of lateral edges of the first panel, and the second panel uniformly tapers inward from a major dimension on the rear edges to a lesser dimension on the front edges.

4,241,463
PROSTHETIC IMPLANT DEVICE
Modest Khovaylo, Old Bridge, N.J., assignor to Precision Cast Specialties, Inc., Emerson, N.J.
Filed Oct. 16, 1978, Ser. No. 951,883
Int. Cl.[3] A61F *1/03*
U.S. Cl. 3—1.913 15 Claims



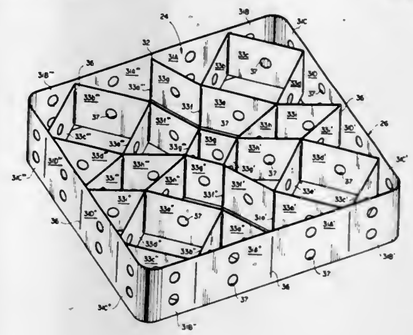
1. An implantable prosthetic joint for use in replacement of the ball end of a biological joint, said prosthetic joint having a metal spherical head for insertion into and seating in the natural socket of the joint, a bearing insert in said spherical head, said bearing insert having an outer spherical dome for engagement with the inner surface of said metal spherical head, an inner spherical dome and an outwardly extending recess at the entrance end of said inner spherical dome extending circumferentially around said entrance end and having an outwardly extending end wall and an outer wall extending downwardly from said end wall and sloping downwardly and inwardly toward said entrance, a ball shaped member seated in said inner spherical dome of said bearing insert and a ring intermediate said bearing insert and said ball shaped member, said ring having an end wall and an outer wall sloping downwardly and inwardly and in contact with said outer wall of said insert recess and an arcuate wall in contact with said ball shaped member, the length of said outer sloping wall of said ring being substantially shorter than the outer sloping wall of said recess in said bearing insert and permitting said ring to slide upwardly and expand in said recess in said bearing insert until said ball passes through said ring as said ball shaped member is inserted through the entrance end into said insert and to permit said ring to slide downwardly in said recess away from said recess end wall and wedge between said outer sloping wall of said recess and said ball shaped member when force is applied to said ball shaped member to withdraw said ball shaped member from said insert to lock said ball shaped member in said bearing insert and to permit said ring to be pushed by an unlocking tool upwardly in said recess in said bearing insert toward said outwardly extending end wall of said recess to permit said ring to be expanded outwardly sufficiently for said ball shaped member to be withdrawn through said ring and from said insert.

4,241,464
FLUID JET DEVICE
Nevin Buckwalter, 11313 N. Rome Ave., Tampa, Fla. 33612
Filed Jun. 29, 1979, Ser. No. 53,350
Int. Cl.[3] E04H *3/16, 3/18*
U.S. Cl. 239—251 3 Claims



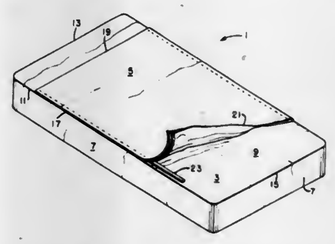
1. A fluid jet device comprising an outer housing having a centrally disposed housing channel formed therein and an elongated rotatable member operatively disposed within said housing channel in combination with a coupling means to rotatably support said elongated rotatable member, said coupling means comprises a rotating means including a first and second member, said first member being attached to a stationary element and said second member being fixedly attached to said elongated rotatable member, said rotatable member comprises an elongated substantially cylindrical member having at least one convoluted spiral formed the entire length thereof to cooperatively form a fluid channel with the periphery of said housing channel, whereby fluid forced through said convoluted spiral continuously rotates said elongated rotatable member.

4,241,465
WAVELESS WATERBED MATTRESS
Chris M. Yarimie, and Jerry E. Moore, both of Cloverdale, Calif., assignors to New World Manufacturing, Inc., Cloverdale, Calif.
Filed Jan. 3, 1979, Ser. No. 713
Int. Cl.[3] A47C *27/08*
U.S. Cl. 5—452 5 Claims



1. In a waterbed mattress: a flexible enclosure including a top wall, a bottom wall and a side wall defining a chamber for holding a body of water, and a honeycomb baffle structure having a plurality of wall sections bonded together dividing the chamber into a plurality of compartments, said honeycomb structure being affixed to the enclosure in the vicinity of the sidewall, with no connection between the honeycomb structure and the central portion of either the top wall or the bottom wall.

4,241,466
SAFETY BED SHEET
Kay S. Mendyk, 1022 Forest Rd., Schenectady, N.Y. 12303
Filed Jun. 12, 1979, Ser. No. 47,812
Int. Cl.[3] A47G *9/00*
U.S. Cl. 5—497 1 Claim



1. A safety bed sheet comprising a fitted bottom sheet and a superposed top sheet; said bottom sheet, when disposed in secured relationship with a mattress, defining side walls and an upper surface having length and width, longitudinal marginal edges, and foot-end and head-end marginal edges, said top sheet having a length less than the length of said bottom sheet's upper surface, said top sheet having longitudinal marginal edges, and foot-end and head-end marginal edges, the distance between the head-end marginal edge of said bottom sheet and

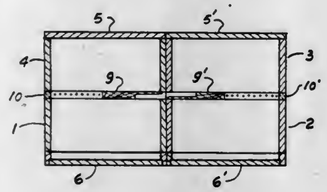
the head-end marginal edge of said top sheet being greater than the distance between the foot-end marginal edge of said bottom sheet and the foot-end marginal edge of said top sheet, said bottom sheet and top sheet being stitched together along the entire distance of one of their common, longitudinal marginal edges, said bottom sheet and top sheet being stitched together a substantial distance along the other of their common, longitudinal marginal edges and having a remaining portion of said common, longitudinal marginal edges having a separable fastening device such as of the velcro-type, said superposed top sheet having enough material allowed in its width to afford a person freedom of movement and permit such person to move freely from side to side.

4,241,467

METHOD AND SYSTEM FOR TWO-QUEEN OPERATION AND REQUEENING OF HONEY BEE COLONIES

Otis R. Pannell, 9023 McNair Dr., Alexandria, Va. 22309

Filed Jun. 29, 1979, Ser. No. 53,265
Int. Cl.³ A01K *47/00*
U.S. Cl. 6—1 **5 Claims**



4. A beeway-isolator, comprising:

a. a first rectangularly shaped member in plan view with the longer dimension equal to the outside front-to-rear dimension of a hive chamber and the shorter dimension less than the inside width of a hive chamber, said member having at least one recessed space on top and on bottom, said recessed spaces being positioned symetrically about the transverse center line of said member and extending transversely from a common side edge part way towards the opposite side edge; and

b. a second member, identical to said first rectangularly shaped member, contiguous to said first member in a horizontal plane with said recessed spaces aligned in a manner which provides bee passages between the bottom side of said first member and the top side of said second member, and between the top side of said first member and the bottom side of said second member.

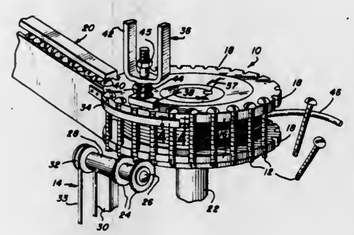
4,241,468

ADJUSTABLE SHANK SLOT DIAL

Stanley C. Burchell, Barrington, Ill., assignor to Allstar Fasteners, Inc., Elk Grove Village, Ill.

Filed Dec. 26, 1978, Ser. No. 972,697
Int. Cl.³ B23G *9/00, 11/00*
U.S. Cl. 10—169 **7 Claims**

1. An adjustable shank slot dial for fixturing elongate shanks, said dial being manually adjustable to accommodate shanks of different lengths and comprising the combination of first and second shank support members, said members having equidiameter cylindrical faces each having formed therein a plurality of circumferentially spaced axial notches sized to receive said shanks snugly across the diameters thereof, means for supporting said first shank support member for rotation about the longitudinal center axis of its cylindrical face, and means for adjustably mounting and rigidly securing said second support member onto said first support member with said circumferential faces coaxially disposed and at adjustable axial spacings with corresponding notches in the respective cylindrical faces axially aligned with one another whereby opposite end sections of the shanks are adapted to be abutted against and supported by the dial circumferential faces and the intermediate sections of the shanks are adapted to bridge the axial spacing between said circumferential faces, said mounting and securing means including complementary sets of helical



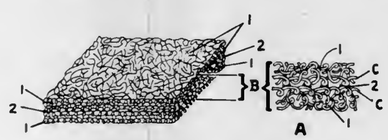
threads formed on said first and second shank support members located coaxially around the longitudinal center axis so that rotation of the second member relative to the first member effects axial movement of the second member relative to the first member to adjust the distance between said cylindrical faces to receive and support shanks of different lengths.

4,241,469

SHEET OF POLISHING FIBERS COMPRISING FIBROUS LAYERS BONDED WITH PARTICLES OF THERMOPLASTIC MATERIAL

Luis R. C. Perazzo, Entre Rios 412, 2154 Capitan Bermudez, Argentina

Continuation-in-part of Ser. No. 570,567, Apr. 23, 1975, abandoned. This application Oct. 10, 1978, Ser. No. 950,157
Int. Cl.² A47L *13/04, 13/16;* **B32B** *7/14, 31/20*
U.S. Cl. 15—209 C **2 Claims**



1. A sheet of polishing fibers which consist of two superposed thin layers of polishing fibers with opposed interior surfaces of the layers adhered to one another by means of particles of thermoplastic material which bond fibers from the interior surface of one layer to fibers from the interior surface of the other layer only at points of fiber contact, the particles of thermoplastic material functioning to keep the fibers in their proper place by forming a bidimensional net with the bonded fibers.

2. A method of manufacturing the sheet of polishing fibers of claim 1 which comprises interposing a film layer of thermoplastic material, of such thickness that it forms the thermoplastic particles of the sheet of claim 1 under heating conditions between the superposed thin layers of polishing fibers and thereafter subjecting the superposed layers to heat and pressure.

4,241,470

MORTAR TROUGH

John Herzig, R.R. #2, Box 1412, Paulding, Ohio 45879

Filed May 3, 1979, Ser. No. 35,549
Int. Cl.³ E04G *21/20*
U.S. Cl. 15—235.4 **7 Claims**

1. A hand construction tool for applying a bead of mortar to the upper surface of a course of bricks or blocks having a well defined and substantially constant width, in a quantity sufficient and not excessive to form in combination with additional of said bricks or blocks the next higher course of bricks or blocks in building, the tool comprising an elongated semicylindrical wall and a panel closing and defining one end of the wall, a solid plug fittingly insertable and attachable in the end of the construction tool closed by said panel, the plug presenting a sealed flat surface to said panel and a sealed surface to



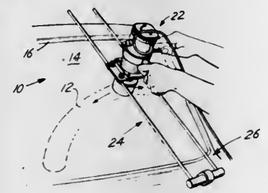
said wall and presenting a rounded surface to the interior portion of the construction tool in which said mortar is containable, the elongated wall having a diameter bearing a relationship to said constant width such that the quantity of mortar deliverable by the tool constitutes that quantity of mortar sufficient and not excessive to form said next higher course, whereby wastage of mortar and spillage of mortar on the face of said bricks or blocks is substantially eliminated.

4,241,471

POLISHING APPARATUS

Alfonso G. Elias, P.O. Box 5743, Tucson, Ariz. 85703

Filed Feb. 14, 1979, Ser. No. 12,129
Int. Cl.³ B60S *1/02*
U.S. Cl. 15—250 R **15 Claims**



1. An apparatus for removing a blemish from a windshield mounted on a vehicle, said blemish being displaced from a point on said vehicle, comprising, in combination:

polisher means for polishing said blemish;

guide means for maintaining said polisher means at a predetermined distance from said point, said polisher means being movable upon said guide means and being securable to said guide means at an operative position; and

attachment means for securing said apparatus to said point on said vehicle, said guide means and said attachment means cooperatively defining rotation means for directing movement of said polisher means over a substantially arcuate path.

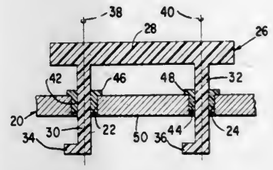
4,241,472

CARRYING HANDLE FOR A SEWING MACHINE

Ronald C. Iannarone, Hillside, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 16, 1979, Ser. No. 66,970
Int. Cl.³ B25G *3/00*
U.S. Cl. 16—115 **5 Claims**

1. In combination, a handle with depending legs which terminate in eccentric pads, a sewing machine casing with top openings having the depending legs and pads extending therethrough, a split bushing about each depending leg tightly fitted in the holes in the casing and permitting the handle to be moved between a raised position for lifting the machine and a lowered out of the way position on the machine, said bushings disposing the legs laterally in said top openings in positions



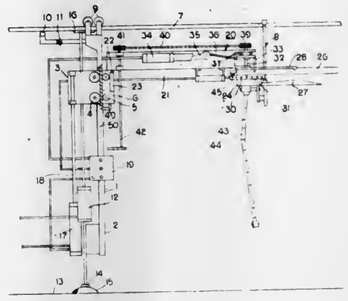
causing the pads to engage the casing in surface to surface contact and support the machine when the handle is lifted.

4,241,473

OFF CONVEYOR-LINE MEAT-HANDLING APPARATUS

Kaarlo Korhonen, Saterwag 18, Stockholm, Sweden

Filed Feb. 2, 1978, Ser. No. 874,410
Claims priority, application Sweden, Feb. 23, 1977, 7702030
Int. Cl.³ A22B *5/00*
U.S. Cl. 17—24 **24 Claims**



1. Meat-cutting apparatus for use in a slaughterhouse, said apparatus being of the type for use with equipment where carcasses are transported suspended on hooks along a conveyor track using rollers, and where meat is cut at a wayside meat-cutting station from a carcass which is taken off the conveyor track which has thereon other carcasses, said apparatus comprising:

A. a stand member which can be immovably mounted at a wayside station where meat is to be cut from a carcass;

B. an elongated receiving device which cantilevers substantially horizontally from said stand member, to receive and guide a carcass suspended from a hook which is adapted to be transported along the conveyor track, said receiving device having guide means to guide a received hook into a convergent locking position, and a resiliently biased locking member which automatically locks and clamps said hook in said convergent locking position, whereby said guide means conjointly with the locking member act to retain a hook which has a suspended carcass in such a manner as to prevent dislodging of the hook from said locking position in any horizontal direction and in a vertically downward direction; and

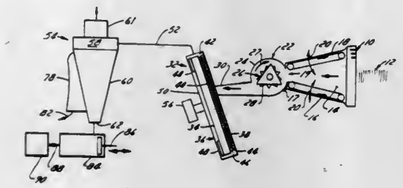
C. pivot means to allow an arcuate movement of said receiving device about a vertical axis at the cantilevered end of the elongated receiving device, whereby the receiving device with the locked hook having the carcass suspended therefrom can be swung away from the conveyor track for cutting meat so that other carcasses on hooks can travel on the conveyor track to other wayside stations unobstructed.

4,241,474

MOBILE FLAX DECORTICATOR

Joseph A. M. Doutre, Beauharnois, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Jan. 29, 1979, Ser. No. 7,492
Int. Cl.³ D01B *1/24*
U.S. Cl. 19—26 **8 Claims**



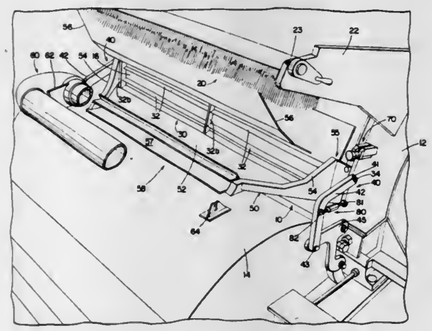
1. A mobile flax processing machine comprising, a mobile frame mounting said machine, means to collect flax straw, a shredder, means for directing collected flax to said shredder, means to rotate said shredder, a first conduit means directing flax from said shredder to a disc type flax decorticator having a rotating disc enclosed within a housing, means to rotate said disc, said flax decorticator having a working space formed between a working face on said disc and a working face in said housing, working elements projecting into said working space from said working faces said elements comprising pins sloped radially outward and tangentially so as to facilitate travel of flax straw through said working space while decorticating said flax straw into bast fibre and dross, impellers on said disc, a separator, a second conduit means, said impellers drawing air through said first conduit means and aiding transport of flax straw to said decorticator and from said decorticator through said second conduit means to said separator, said separator being a cyclone separator having a pair of axial outlets and and at least one opening through an outer surface thereof means to retain said bast fibre by inhibiting said bast fibre passing through said opening while permitting dross to pass therethrough, said separator rejecting a bast rich fraction through one of said axial outlets, and means for packaging said bast rich faction for transport.

4,241,475

WASTE REMOVER FOR CARDING MACHINE

Robert G. Miller, Charlotte, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Feb. 12, 1979, Ser. No. 11,310
Int. Cl.³ D01G *15/32*
U.S. Cl. 19—98 **3 Claims**



1. In a cotton carding machine having a housing generally enclosing a rotatably mounted card cylinder and a rotatably mounted doffer cylinder, the cylinders having axes of rotation parallel to each other and having opposed surfaces of revolution, the cylinders being juxtaposed to define an interface area, a waste remover mechanism comprising:

an adjustably movable array of triangular cross section parallel bars immediately adjacent the surface of revolution of the rotating card cylinder, the bars each being parallel to and equidistantly spaced from the card cylinder axis of rotation, each bar extending along generally the entire length of the card cylinder, a longitudinal edge of each triangular cross section bar being positioned to strip non-cotton fiber waste material from the outer surface of the cotton fiber web wrapped around the card cylinder;

bracket means for supporting and positioning the array relative to the card cylinder, the bracket means including a first end pivotally mounted to the carding machine and a second end providing a pair of trunnions lying along a common axis of rotation parallel to the card cylinder axis of rotation, the array being rotatably mounted to and between the trunnions, the trunnions revolvable in an arcuate path about the pivot point of the pivotally mounted first end, the array being movable along the arcuate path between an engagement position with the card cylinder and an operator-accessible cleaning position spaced away from the card cylinder; and

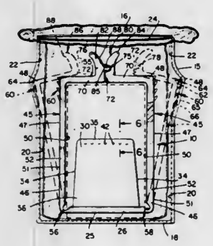
vacuum hood means enclosing the array when in its engagement position, the vacuum hood means communicating with the interior of the main housing, the vacuum hood means operable to convey the stripped non-cotton fiber waste material from the array area to a waste station when the array is at its engagement position.

4,241,476

WALLET THEFT GUARD

Thomas Christenson, 7 Maple Dr., and Francis J. Johansson, 135 Rhodes Dr., both of New Hyde Park, N.Y. 11040

Filed Jun. 22, 1979, Ser. No. 51,106
Int. Cl.³ A45C *13/18*; A45F *5/02*
U.S. Cl. 24—3 R **19 Claims**



1. A wallet guard for use with a wallet and adapted to be used when placed in a pocket having a lower seam and a pair of side seams defining the width thereof to prevent removal therefrom, the wallet guard comprising:

A. a base at one end of the guard having a front edge and a rear edge,

B. a support member integrally formed with said base and extending upwardly therefrom and adapted to be slipped into the wallet,

C. a pair of arms extending upwardly from said base, each said arm including a lower section integrally coupled to said base and an upper section terminating in a free end, said arms movable between an open position and a closed position, whereby in the open position the distance between said free ends is normally greater than the width of the pocket such that said arms will be biased inwardly by the side seams when inserted into the pocket with the base adjacent the lower seam to provide the upper portion of the pocket in tension,

D. said arms each having an inner surface and an outer surface, and oppositely disposed front and rear edge intermediate said surfaces,

E. a gripping jaw formed at said free end of said upper section of each of said arms, each said gripping jaw including a gripping element having a distal end extending outwardly from said arm, such that said jaws engage the side seams of the pocket in the open position of the wallet guard to prevent removal therefrom, and said arms are narrower than the width of the pocket in the closed position thereof, and

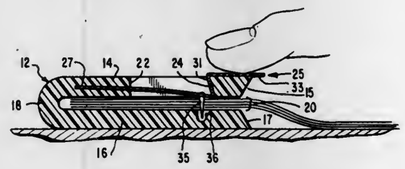
F. retaining means associated with said arms for removably securing said arms at said upper sections thereof in releasably fixed relationship to each other to maintain the closed position when insertion or removal of the wallet guard and wallet with respect to a pocket is desired, such that in the closed position of the wallet guard it may be inserted within the pocket of the user and in the open position removal thereof is prevented.

4,241,477

PAPER CLIP

John Freedom, and Thomas Freedom, both of 17100 Harlem Ave., Tinley Park, Ill. 60477

Filed Aug. 16, 1979, Ser. No. 67,200
Int. Cl.³ B42F *3/00*
U.S. Cl. 24—67 R **9 Claims**



1. An improved paper clip for retaining at least two individual pieces of paper, together, comprising in combination

a continuous U-shaped body having an upper wall and a lower wall spaced apart a distance and joined at one end by a junction portion,

said upper wall having a cut-out portion formed therein, said cut-out portion having one surface thereof having an inclined surface formed therein,

spring means mounted on said upper wall and recessed within said cut-out portion,

said spring means further including an inclined section formed integrally therewith and positioned in cooperating relation with said inclined surface of said cut-out portion such that said inclined section frictionally engages said inclined surface,

said spring means including paper piercing means formed thereon and extending downwardly therefrom in the direction of said lower wall,

said spring means constructed to have an open position when retracted with said paper piercing means raised upwardly into said cut out portion, and a closed position when said spring means with said paper piercing means depressed downwardly such that said paper piercing means extends across the open space between said upper and lower walls respectively,

said lower wall having a receiving slot formed therein and positioned in linear alignment with said paper piercing means when in the depressed and closed position,

said receiving slot being dimensionally sized to frictionally receive said paper piercing means when inserted therein,

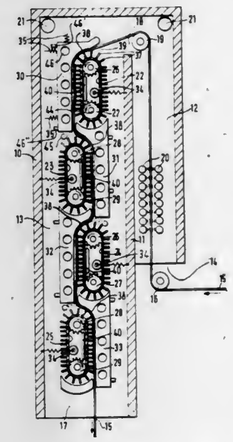
whereby said paper clip may be operated to retain two or more pieces of paper together by simply inserting said pieces of paper into the open space between said upper wall and lower wall, and depressing said spring means such that said paper piercing means extends across said open space between said upper and lower wall, through the pieces of paper positioned therein, until said paper piercing means is received in said receiving slot and frictionally engaged therein, and the paper clip being designed to be removable by simply retracting said spring means into an upper open position thereby to remove said paper piercing means from engaging relationship with the pieces of paper positioned in the open space between said upper wall and lower wall respectively.

4,241,478

APPARATUS FOR SHRINKING OF TEXTILE WEBS

Siegfried Nürk, Albstadt, Fed. Rep. of Germany, assignor to SIPRA Patententwicklungs- und Beteiligungsgesellschaft mbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,309
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803079
Int. Cl.³ D06C *29/00*
U.S. Cl. 26—18.5 **14 Claims**



1. Apparatus for mechanically crimping and shrinking of a textile web, comprising means forming an elongated chamber through which the web to be crimped is passed in a predetermined direction; at least one pair of driven, endless grates extending spaced from each other in said direction and each being guided over a pair of rolls spaced in said direction from each other, each of said grates comprising plurality of crimping plates extending equally spaced from each other transverse to the direction of movement of said grates and each having an outer edge, each of said driven endless grates having one run moving in the direction of movement of the textile web and another run moving in the opposite direction; at least one pair of heating means in said chamber each having a smooth heated guide surface respectively extending closely spaced from the outer edges of the crimping plates on said one run of the respective crimping grate, the web to be crimped being guided onto the outer edges of said crimping plates in a reversing region of the runs of the respective grate to pass then through the space between the outer edges of said crimping plates and the heated guide surfaces adjacent thereto in crimped and longitudinally tensionless configuration; and means for driving the crimping grates of each pair respectively in opposite directions whereby the web is subjected to uniform heating and is form-stabilized without wrinkles in substantially tensionless condition.

4,241,479

NEEDLE FELT MACHINE WITH A GUIDING APPARATUS FOR THE NEEDLE BEAM

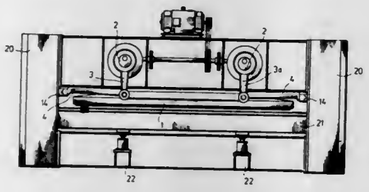
Richard Dilo, Stettinerstrasse 28, 6930 Eberbach (Neckar), Fed. Rep. of Germany

Filed Jun. 5, 1978, Ser. No. 912,556

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 7717626[U]

Int. Cl.³ D04H *18/00*

U.S. Cl. 28—107 **4 Claims**



1. A guiding assembly for the reciprocating needle beam of a needling machine comprising:
(a) at least one pair of rocker arms positioned on opposite sides of said needle beam, each rocker arm including
(b) pivoting means adjacent a first end thereof for pivotally engaging said needle beam and
(c) pivoting support bearing means adjacent the second end thereof for pivotally engaging a fixed structure, said pivoting support bearing means including
(d) a first bearing surface on said fixed structure and
(e) a second bearing surface on said second end of said rocker arm;
(f) one of said first and second bearing surfaces being mounted and adapted to roll across the surface of the other of said surfaces along a moving load point changing generally parallel to the path of reciprocation of the needle beam;
(g) one of said first and second bearing surfaces includes an involute gear recess therein and the remaining bearing surface includes a cooperating gear tooth; and
(h) one of said first and second bearing surfaces is flat and parallel to the path of reciprocation of the needle beam and in which the remaining bearing surface is arcuate, and the moving load point changes along an arcuate path.

2. A guiding assembly for the reciprocating needle beam of a needling machine comprising at least one pair of rocker arms positioned on opposite sides of said needle beam, each rocker arm including pivoting means adjacent a first end thereof for pivotally engaging said needle beam and pivoting support bearing means adjacent the second end thereof for pivotally engaging a fixed structure, said pivoting support bearing means including
(a) a first bearing surface on said fixed structure;
(b) a second bearing surface on said second end of said rocker arm;
(c) at least one of said first and second bearing surfaces being curved;
(d) one of said first and second bearing surfaces being mounted and adapted to roll across the surface of the other of said surfaces along a moving load point causing the moving load point to change generally parallel to the path of reciprocation of the needle beam;
(e) restraining means between the first and second bearing surfaces.

4,241,480

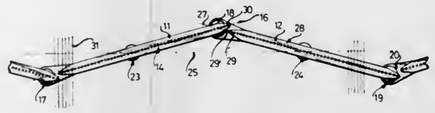
COMB SECTION PAIR OF AN EXPANSION COMB

Helmut Wiedenfeld, both of Mönchan-Gladbach, and Peter Reinardy, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,585

Int. Cl.³ D02H *13/18*

U.S. Cl. 28—213 **1 Claim**



1. Comb section pair of an articulating expansion comb for processing textile threads or filamentary wires, comprising a first and second comb section pivotally joined together at an axis of rotation in the vicinity of an end of each comb section, a group of comb needles disposed on each comb section in a respective alignment plane, each of said comb needles being mutually spaced apart by a given comb needle division, said alignment planes intersecting at said axis of rotation, said axis of rotation extending exclusively through said comb needle group of said first comb section, a last comb needle of said comb needle group on said first comb section being disposed at least one comb needle division beyond said axis of rotation toward said end of said first comb section, a first comb needle disposed closest to said end of said second comb section being at most one comb needle division farther from said axis of rotation than said last comb needle of said first comb section.

4,241,481

METHOD AND APPARATUS FOR CONNECTING THE HARNESS CORDS AND THE HEDDLES OF A HARNESS

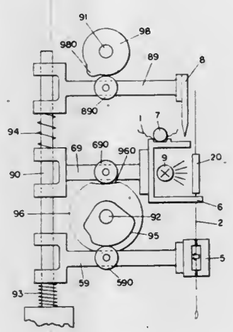
Otto Müeller, Uetikon am See, Switzerland, assignor to Staeubli Ltd., Horgen-Zuerich, Switzerland

Filed Sep. 21, 1978, Ser. No. 944,649

Claims priority, application Switzerland, Sep. 22, 1977, 11587/77

Int. Cl.² D03J *1/00*

U.S. Cl. 28—299 **12 Claims**



1. In a method for connecting the upper harness cords of the harness and assemblages for a Jacquard machine to the weaving heddles, by maintaining equal tensions in the harness cords and a predescribed elevational position of the thread guides of the heddles, which connection occurs by means of a harness cord which is threaded through the upper eyelet of the heddle and is turned back on itself and the connection is secured by means of a shrink hose which is arranged above the connection, wherein the improvement comprises a plurality of harness assemblages which are simultaneously connected to an apparatus and wherein each end of the harness cord which is threaded through the upper eyelet of the associated heddle is under equal pretension and each heddle is moved with its thread guide to a predescribed height, while the shrink hose is moved on and shrunk.

4,241,482

DEFLECTION COMPENSATING ROLL

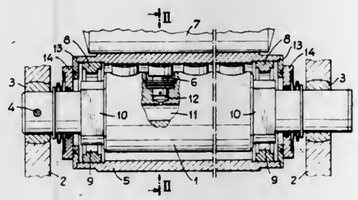
Mario Biondetti, Schio, Italy, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Feb. 23, 1978, Ser. No. 880,609

Claims priority, application Switzerland, Feb. 23, 1977, 2234/77

Int. Cl.³ B21B *13/02*

U.S. Cl. 29—116 AD **21 Claims**



1. A deflection compensating press roll which comprises:
(a) a stationary axial support beam having a central bore extending therethrough and having a plurality of generally radially extending cylinder bores in communicating relation with said central bore;
(b) a roll shell rotatably disposed about said support beam for rotation thereabout; and
(c) a plurality of hydrostatic support elements positioned in engaged relation between said beam and said shell to exert forces therebetween, at least one of said support elements including piston means which includes:
i. a generally tubular member positioned within at least one of said radially extending cylinder bores for permitting the passage of pressure fluid to support said shell;
ii. a support shoe positioned at least partially within said tubular member, said support shoe having at least one bearing surface portion adjacent the end portion of said tubular member closer to said roll shell, said bearing surface portion being fluidically connected with interior portions of said tubular member for the passage of pressure fluid thereto, and facing inner surface portions of said shell for support thereof; and
iii. means for connecting said support shoe to said generally tubular member to provide pivotal motion for said support shoe while avoiding substantial blockage of the inner opening of said generally tubular member at the end portion thereof remote from said roll shell so as to permit pressure fluid to enter said generally tubular member.

4,241,483

METHOD OF MAKING DRILL, BUSHINGS, PUMP SEALS AND SIMILAR ARTICLES

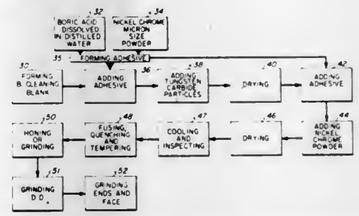
Edward J. Voitas, Mahwah, N.J., assignor to Eastern Fusecoat Incorporated, Hawthorne, N.J.

Division of Ser. No. 871,844, Jan. 24, 1978, Pat. No. 4,169,637, which is a continuation-in-part of Ser. No. 603,242, Aug. 8, 1975, Pat. No. 4,087,137. This application May 7, 1979, Ser. No. 36,504

Int. Cl.³ B21D *53/10*

U.S. Cl. 29—149.5 PM **17 Claims**

1. The method of forming a hollow bushing or similar article which comprises:
forming a blank having the desired outer and inner configurations and a central longitudinal axis;
cleaning the blank so that it is free of contaminants;
forming an adhesive of boric acid dissolved in distilled water and nickel chrome powder;
applying the wet adhesive to the inner surface of the blank;
adding tungsten carbide particles to the wet adhesive so that the wetted surface captures the tungsten carbide particles;
drying the blank at a temperature of the order of 350° to 400° F. for a time sufficient to remove the water and moisture from the blank;
adding further wet adhesive to the coated inner surface of the blank;



adding nickel chrome powder to the wet adhesive to the coated inner surface so that the wetted surface captures the nickel chrome powder;
drying the blank at a temperature of the order of 350° to 400° F. for a time sufficient to remove the water and moisture from the blank;
raising the temperature of the blank to a temperature of the order of 1925° to 2025° F.;
tempering the blank for a time and at a temperature appropriate for treating the body of the blank; and
finishing the blank to the desired size and smoothness.

4,241,484

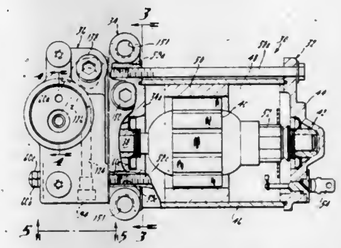
METHOD FOR ASSEMBLING A FUEL PUMP AND MOTOR

Kenneth A. Graham, Birmingham, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 822,585, Aug. 8, 1977, Pat. No. 4,195,971. This application Nov. 7, 1978, Ser. No. 958,572

Int. Cl.³ B23P *15/00;* **F04B** *35/04*

U.S. Cl. 29—156.4 R **1 Claim**



1. In the method of making a compact pump and motor assembly adapted for use as a fuel controller for an internal combustion engine fuel metering system wherein the assembly comprises a pumping chamber jointly defined by a pair of separate members and having axially spaced end walls perpendicular to a longitudinal axis of the assembly, one end wall being in one of said members and the other end wall being in the other of said members, and a peripheral wall, defined, when viewed axially, by a pair of intersecting circles, said peripheral wall being in said other member, and wherein the assembly further comprises a pair of meshed gears within said pumping chamber, one of which is disposed on an end of the motor armature shaft extending into the pumping chamber and

has a close peripheral running fit with that portion of said peripheral wall defined by one of said circles and the other of which is journaled solely on said other member for rotation with close peripheral running fit within that portion of said peripheral wall defined by the other of said circles, said two gears having close axial running fits with said two end walls, and wherein a pilot hole is provided in said other end wall concentric with that portion of said chamber peripheral wall defined by said one circle and said motor armature shaft is provided with sufficient length so that the end thereof on which said one gear is disposed extends completely through said one gear and pilots on said pilot hole, and further wherein said two members are axially secured in assembly by a plurality of threaded fasteners, the improvement which comprises operating the motor and pump, and with the motor and pump operating, tightening the threaded fasteners until predetermined motor current draw occurs.

4,241,485

METHOD OF MANUFACTURING A CHEMICAL OXYGEN GENERATOR AND A CHEMICAL OXYGEN GENERATOR CONSTRUCTION

William S. McBride, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

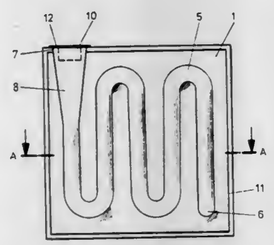
Filed Dec. 14, 1978, Ser. No. 969,455

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756543

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ B01J *7/00*; B21D *53/00, 39/03*

U.S. Cl. 29—157 R **9 Claims**



1. A method of manufacturing a chemical oxygen generator of the type having a chemical which produces oxygen through a thermal reaction and an ignition device for initiating the reaction comprising the steps of providing a plurality of flat plates each having a continuous depression in a planar surface thereof and extending to the periphery thereof, superposing said plates so that said surfaces abut with said depressions of adjacent plates being oppositely disposed to define a channel having an opening at one end abutting said periphery for housing the chemical, hermetically sealing the periphery of said superposed plates, axially introducing the chemical into said channel to substantially fill said channel, deforming said superposed plates by pressing to seal said depressions along said planar surfaces and to compress and to reshape the chemical in said channel, and arranging the ignition device in said opening.

4,241,486

METHODS OF MAKING A REVERSING VALVE CONSTRUCTION AND A VALVE MEMBER THEREFOR

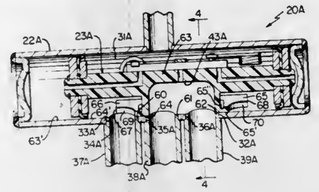
Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

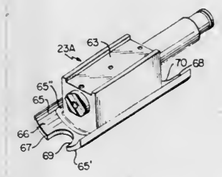
Division of Ser. No. 825,958, Aug. 19, 1977, Pat. No. 4,188,975. This application Apr. 30, 1979, Ser. No. 34,264

Int. Cl.³ B23P *15/00*

U.S. Cl. 29—157.1 R **30 Claims**

1. In a method of making a reversing valve construction having a housing means provided with a chamber carrying a movable piston-like valve member therein that controls port means of a valve seat means of said housing means through the relative position of passage means of said valve member relative to said port means, the improvement comprising the steps of forming a one-piece flexible sealing skirt to be carried by said valve member and extend outwardly therefrom in a cantilevered manner adjacent said valve seat means and providing





said flexible sealing skirt with exposed surfaces so as to be exposed to fluid pressure in said chamber that will act directly thereon and cause said flexible skirt to flex and engage said valve seat means in a manner to tend to sealingly conform to the contour of said valve seat means and thereby seal said passage means to said valve seat means while permitting sliding movement therebetween.

4,241,487

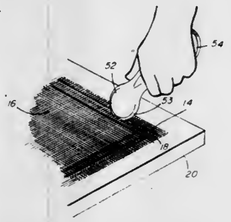
DISPOSABLE UNITARY SPLINE INSTALLATION TOOL

Richard A. Kraver, 8111 NW. 54th St., Miami, Fla. 33166

Filed Jan. 29, 1979, Ser. No. 7,504

Int. Cl.³ B25B *27/14*

U.S. Cl. 29—278 **4 Claims**



1. In the art of installing screen material in a frame which bounds an opening to be screened against insects and the like, said frame having a groove peripherally bounding the opening for receiving and retaining the peripheral part of a piece of screen material that spans the opening, and a spline which holds the peripheral part of the screen material fixed to the frame in the groove, a unitary disposable combination screen and spline installation tool intended to be supplied with a limited quantity of screen repair material for use to install said peripheral part of said piece of screen material in said groove and said spline into said groove on top of said screen material, said tool comprising a unitary body of substantially flat elongate form having at a first end a first disc-like operator member with an arc-shaped edge which is convex in cross-section for pressing said peripheral part of said screen material into said groove and thereby forming a mating groove in said screen material, and at a second end a second disc-like operator member with an arc-shaped edge which is concave in cross section for pressing said spline into said mating groove and thereby fixing said peripheral part of said screen material into said frame for holding said screen material in place across said opening, and between said operator members a part of said body shaped as a handle, said first and second operator members being non-rotatively affixed to said handle so as to allow only frictional or limited rotational contact with said peripheral part of said screen material and with said spline, respectively, whereby during use said tool will be subjected to wear, said tool being made of a material which can be expected to wear out under frictional contact encountered in use to install said quantity of screen repair material.

4,241,488

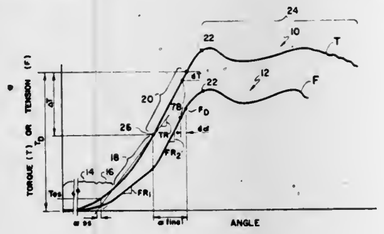
TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,351

Int. Cl.³ B23P *19/06*

U.S. Cl. 29—407 **2 Claims**



1. A method for sequentially tightening a plurality of different types of joints including at least one threaded fastener, the joints having at least one empirically determined joint characteristic variable from one type of joint to the next, comprising

applying torque and imparting rotation to the fastener of the first type of joint with a tightening tool;

determining with a data processor, while tightening, a tightening parameter based on the empirically determined joint characteristic of the first type of joint for tightening the fasteners of the first type of joint to a final desired stress value;

terminating tightening of the fastener of the first type of joint in response to the tightening parameter based on the empirically determined joint characteristic of the first type of joint;

instructing the data processor to tighten succeeding joints to a final desired stress value based on the empirically determined joint characteristic of a second type of joint;

applying torque and imparting rotation to the fastener of the second type of joint with the tightening tool;

determining with the data processor, while tightening, a tightening parameter based on the empirically determined joint characteristic of the second type of joint for tightening the fasteners of the second type of joint to a final desired stress value; and

terminating tightening of the fasteners of the second type of joint in response to the tightening parameter based on the empirically determined joint characteristic of the second type of joint.

4,241,489

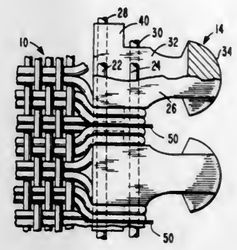
METHOD OF REMOVING FASTENING ELEMENTS FROM WOVEN TAPE

Harry F. Manning, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed May 21, 1979, Ser. No. 40,792

Int. Cl.³ B23P *19/04*; B26D *7/00*

U.S. Cl. 29—408 **5 Claims**



1. A method of removing fastening elements from a slide fastener tape wherein the fastening elements are secured to an inner edge portion of the tape by pluralities of loops of weft thread segments of the tape passing around longitudinal connecting and supporting means joined with and extending between the respective adjoining pairs of the fastening elements, the method comprising the steps of

cutting the connecting and supporting means along cutting lines substantially perpendicular to the tape and parallel to the weft thread segments on opposite sides of each of the fastening elements,

the cutting lines extending from said inner edge portion of the tape and terminating before reaching any warp thread which is not joined directly with the fastening elements, and

pulling the fastening elements and severed ends of the connecting and supporting means from between the weft thread segments.

4,241,490

METHOD OF APPLYING METAL SLEEVE TO CONCRETE REINFORCING BAR, METAL SLEEVE AND SWAGED CONNECTION

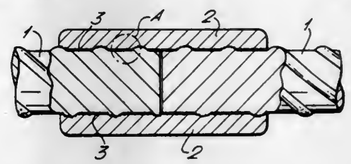
Hugh J. W. Edwards, Menston, England, assignor to CCL Systems, Limited, Surrey, England

Filed May 12, 1977, Ser. No. 796,489

Claims priority, application United Kingdom, May 14, 1976, 19956/76

Int. Cl.³ B23P *25/00*

U.S. Cl. 29—459 **2 Claims**



1. A method of applying a metal sleeve to a concrete reinforcing bar, said bar being formed of hot worked or cold worked steel, comprising providing between opposed surfaces of the sleeve and the bar, particles having a hardness greater than that of both the bar and the sleeve, and then compressing the sleeve on to the bar with sufficient force to cause the particles to bite into and grip both the bar and the sleeve, the ratio of the length of the sleeve to the diameter of the bar is in the case of a hot worked reinforcing bar about 1.6 for a 25 mm diameter bar and 2.6 for a 32 mm diameter bar, and in the case

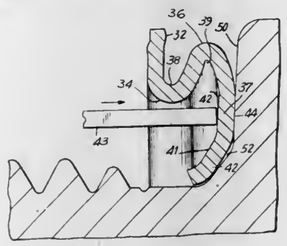
of a cold worked reinforcing bar, about 2.2 for a 16 mm diameter bar, 2.3 for a 20 mm diameter bar and 1.6 for a 25 mm diameter bar.

4,241,491

METHOD OF INSTALLING CAPTIVE TYPE SPARK PLUG GASKET WITH LOW PROFILE LOCKING TABS

Harold P. Hopp, 35 Industrial Rd., Lodi, N.J. 07644

Filed May 4, 1979, Ser. No. 36,132
Int. Cl.[3] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—511 **2 Claims**



1. The method of permanently installing in captive relation a compressible annular spark plug gasket upon a spark plug having a threaded shank thereon and an undercut portion which is free of threads at an inner end of said shank comprising the steps of:

(a) Providing an annular gasket having a principal axis of compression, said gasket including a sealing element including a cross-section an S-shaped sealing member with a radially inwardly extending portion adapted to abut the undercut portion of said shank, and extending radially inwardly of said S-shaped sealing member; said gasket having a plurality of elongated locking tabs extending inwardly from an inner edge of said radially extending portion at an angle thereto to position said locking tabs within a circular void formed by said S-shaped sealing member;

(b) Placing said gasket concentrically upon said threaded shank in the area of said undercut portion thereof, such that said radially extending portion abuts the body of said spark plug and said locking tabs overlie said undercut portion of said shank;

(c) Providing a tool having an operative surface of effective diameter corresponding substantially to the inner diameter of said radially inwardly extending portion; and

(d) Mechanically deforming said inwardly extending portion to place said locking tabs into said undercut area to captivate said gasket upon said spark plug.

4,241,492

PROCESS FOR MANUFACTURE OF VALVE SEAT

Arthur S. Hedberg, Park Ridge, Ill., assignor to Wells Manufacturing Company, Skokie, Ill.

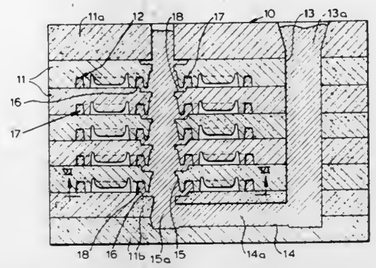
Filed Dec. 21, 1978, Ser. No. 971,697
Int. Cl.[3] B22D *11/126*
U.S. Cl. 29—527.6 **12 Claims**

1. A method of manufacture of valve seats which comprises forming a series of vertically stacked molds each having at least one mold cavity with a configuration approximating that of a ring-shaped valve insert,

stacking and connecting the formed molds by a common molten metal passageway in such a way that the passageway connects with an axially facing outer surface of each mold cavity to provide a lap gating relationship,

pouring molten metal into the lap gated passageway to form a series of valve insert blanks each having a gate formed on an axially outer face,

removing blanks from the molds,



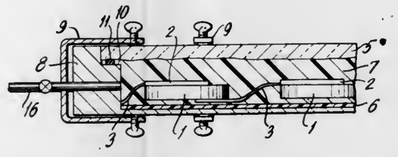
and grinding the axially outerfacing surfaces of the blanks to remove the gates.

4,241,493

METHOD OF FABRICATING SOLAR CELL MODULES

William B. Andrulitis, 8 Friend St., Manchester, Mass. 01944; Steven G. Miles, 16 Oak St., N. Billerica, Mass. 01862, and William T. Kurth, 477 Highland St., S. Hamilton, Mass. 01982

Filed Dec. 22, 1978, Ser. No. 972,246
Int. Cl.[3] B01J *17/00*
U.S. Cl. 29—572 **6 Claims**



1. A method of fabricating a solar cell module having a rigid, light transparent superstrate and a plurality of solar cells arrayed on the bottom surface of such superstrate which comprises:

preparing an array of solar cells electrically interconnected one to the other in serial and/or parallel fashion;

placing said array of solar cells in a mold, said mold having an inlet port and an outlet port and a depth substantially equal to the thickness of the module being formed;

substantially limiting the movement of said array placed in said mold;

placing and securing a rigid light transparent electrically nonconductive superstrate on top of said mold, said superstrate being spaced from the top of the array, whereby a cavity is defined between said rigid transparent member and the bottom of said mold;

pumping an encapsulant through the inlet port of said mold until all the air is expelled from the cavity defined by said superstrate and the bottom of mold; and

thereafter curing said encapsulant, thus bonding said superstrate to said array; then removing the module, including said superstrate, from the mold.

4,241,494

METHOD OF ASSEMBLING AN ELECTRICAL DEVICE

Lee O. Woods, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

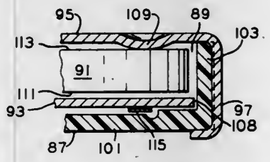
Division of Ser. No. 829,276, Aug. 31, 1977, Pat. No. 4,164,000.
This application Nov. 13, 1978, Ser. No. 959,914
Int. Cl.[3] H01C *17/02*
U.S. Cl. 29—619 **8 Claims**

1. A method of assembling an electrical device including a current relay having a housing with at least one female terminal therein and at least one switch means terminal extending exteriorly of the housing and with the electrical device also including a casing separate from the housing and having a sidewall formed between a pair of generally opposite end walls, recess means in the casing for receiving a PTCR and having a generally open-ended portion intersecting with one of the opposite end walls, and a passage in the casing extending through at least the sidewall thereof and communicating with the recess means, the method comprising the steps of:

(a) positioning in the recess means at least closely adjacent the other of the opposite end walls a contact plate with a terminal thereof extending through the passage exteriorly of the casing;

(b) inserting the PTCR into the recess means with one of a pair of opposite contact sides of the PTCR in electrical contacting engagement with the contact plate;

(c) arranging another contact plate on the one opposite end wall so as to at least in part close the open-ended portion of the recess means with the another contact plate being adapted for electrical contacting engagement with the



other of the contact sides of the PTCR and with the another contact plate having another terminal exteriorly of the casing;

(d) deforming a plurality of fingers on the another contact plate generally over the sidewall of the casing exteriorly thereof and engaging a plurality of distal ends respectively on the fingers of the plurality thereof with the other opposite end wall of the casing exteriorly thereof so as to releasably secure the another contact plate to the casing;

(e) disposing the casing at least adjacent the housing of the current relay with the other opposite end wall of the casing arranged generally in facing relation with the housing; and

(f) mounting one of the first named and another terminals of the first named and another contact plates in both mechanical and electrical contacting engagement directly onto the at least one switch means terminal of the current relay with the other of the first named and another terminals of the first named and another contact plates being connected in circuit relation with the at least one female terminal of the current relay.

4,241,495

METHOD AND APPARATUS FOR DISASSEMBLING WOODEN PALLETS

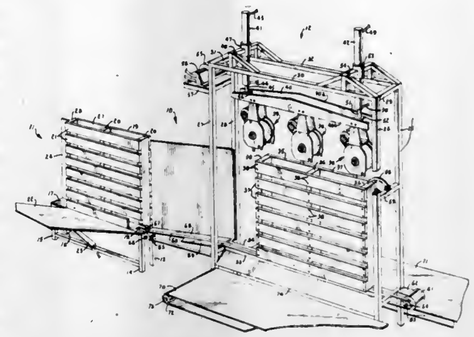
Dale Wakeem, Rte. 4, Box 73, Lamar, Mo. 64759

Filed Jan. 19, 1979, Ser. No. 4,753
Int. Cl.[3] B23P *19/00*
U.S. Cl. 29—700 **21 Claims**

1. An apparatus for disassembling wooden pallets that have a plurality of generally parallel, spaced apart ribs positioned between a plurality of outer slats that are fastened to the lateral edges of said ribs by means of nail-like fastening members, said apparatus comprising:

a working table for retaining a pallet thereon;

at least one cutting assembly having a member for forceably separating a slat from one of the lateral edges of one of the ribs to which the slat is fastened thereby to create between the slat and said edge a gap wherein a portion of each fastening member used to secure the slat to said edge is exposed, said member comprising a rigid plate having a beveled outer portion terminating in a sharp knife-like edge for engaging and shearing each fastening member used to fasten the slat to said edge thereby to detach the slat from said one edge; and



drive means for moving said cutting assembly in a direction along said rib to bring said cutting assembly into engagement with each slat fastened to said one edge.

4,241,496

BLADE STORAGE AND SELECTABLE FORCE IMPACT TERMINATION TOOL

Donald L. Gregson, Paradise, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Continuation of Ser. No. 825,671, Aug. 18, 1977, abandoned.
This application Mar. 23, 1979, Ser. No. 23,189
Int. Cl.[3] H01R *43/04*
U.S. Cl. 29—751 **3 Claims**



1. A hand held impact tool for use in terminating electrical conductors at a terminal block, comprising

an elongate handle,

a slide assembly mounted in said handle yieldably urged toward a position extending from one end thereof,

a hammer assembly mounted in said handle operating to deliver a hammer blow to said slide assembly,

a drive spring seat member mounted in said handle,

a hammer drive spring extending between said hammer assembly and said drive spring seat member urging said hammer assembly toward said slide assembly,

a cam follower surface on said seat member,

a cam bearing against said cam follower surface and mounted in said handle being movable relative thereto,

movement of said cam operating to alter the compressed length of said hammer drive spring, whereby said hammer blow is greater when the compressed length is lesser,

a pouch assembly in the other end of said handle,

said slide and pouch assemblies being configured to accept termination tool blades including means for engaging the electrical conductors, each of said slide and pouch being independent of the other whereby to store one termination blade in said pouch assembly while, at the same time, another termination blade is mounted in said slide assembly for use in terminating the electrical conductors,

and means in said pouch assembly for releasably retaining either of said termination blades therein,

said pouch assembly comprising a storage cylinder movable rotationally relative to said handle and having a bore therethrough accepting the termination tool blade, said

means for releasably retaining a termination blade comprising a coil spring mounted in said bore having one end thereof movable with said storage cylinder and having a diameter smaller than said storage cylinder bore and operating to engage the termination tool blade, whereby torquing of said storage cylinder in a sense contra to the spring coil direction expands said inside diameter and releases the termination tool blade from said bore.

4,241,497

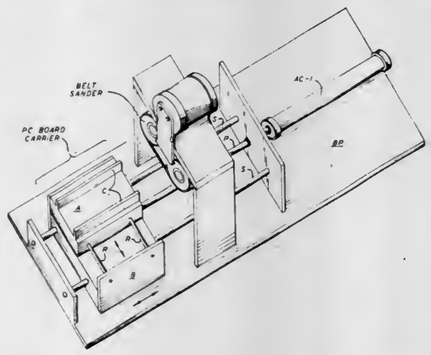
P.C. BOARD LEAD TRIMMING METHOD

Edward F. Du Bois, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Continuation-in-part of Ser. No. 864,163, Dec. 27, 1977, abandoned, which is a continuation of Ser. No. 649,309, Jan. 15, 1976, abandoned, which is a division of Ser. No. 580,816, May 27, 1975, abandoned. This application Jan. 11, 1979, Ser. No. 2,507

Int. Cl.³ H05K *3/22*

U.S. Cl. 29—839 **5 Claims**



1. In a printed circuit manufacture process wherein leads of electronic components are inserted into appropriate holes in a printed circuit board and soldered to the foil on the underside of the board, a method of trimming the soldered component leads to a desired uniform length, comprising:

(a) cutting the component leads to a predetermined length prior to soldering, such that when fully inserted into the appropriate holes of the board the leads protrude from the foil side of the board a distance which is longer than the desired uniform length, but is shorter than a length which would result in the leads being deflected back by an oncoming driven abrasive surface;

(b) providing an abrasive means having a driveable abrasive surface;

(c) producing relative motion between the soldered printed circuit board and said abrading means to bring the leads into contact with said abrasive surface while maintaining a predetermined minimum separation between the board and said surface equal to the desired uniform length; and

(d) driving said abrasive surface to abrasively trim said leads, whereby the leads are quickly and accurately trimmed to the desired uniform length.

4,241,498

DEVICE AND METHOD FOR TERMINATING A FLAT CABLE

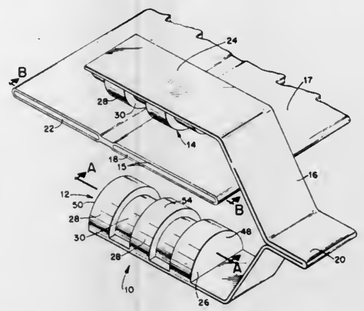
Edward P. Brandeau, Willimantic, Conn., assignor to Akzona Incorporated, Asheville, N.C.

Filed Feb. 5, 1979, Ser. No. 9,562

Int. Cl.³ H01R *43/04, 11/20*

U.S. Cl. 29—861 **17 Claims**

1. A device for terminating flat cable having at least one substantially rectangular insulated elongated conductor, said device comprising: a first member having at least one land projecting therefrom; a second member having at least one groove therein for receiving said land, said groove having a pair of side walls; said land and said groove each having at least one sharp edge; the conductor adapted to be placed between said land and said groove whereby upon the application of a



force moving said members toward one another and said land into said groove, said sharp edges of said land and said groove completely shearing through portions of the conductor and forming inner conductor edges for providing electrical contact between at least one of the formed inner edges of the conductor and at least one wall of said groove.

4,241,499

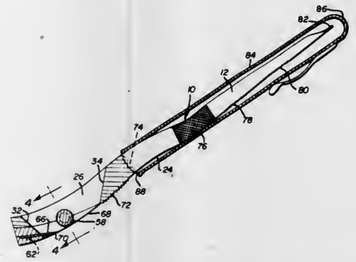
FOOT CARE INSTRUMENT

Michael A. Perrone, 4103 Hillsboro Cir., Nashville, Tenn. 37215

Filed Jun. 19, 1979, Ser. No. 49,932

Int. Cl.³ A45D *29/18*

U.S. Cl. 30—27 **11 Claims**



1. A multipurpose foot car instrument including an elongated handle defining front and rear ends and having top and bottom surfaces and opposite side surfaces as well as a transversely enlarged head on said front end of said handle, said head including a longitudinally convexly bowed and generally transversely straight bottom surface portion and defining a central upstanding opening extending therethrough opening upwardly through said top surface and downwardly through said bottom surface portion rearward of said front end, skin depressing and guide structure journaled in said opening between the front and rear limits of said opening, and a cutting blade supported from said head and defining a rearwardly and downwardly facing straight transverse cutting edge generally flush with said undersurface portion spaced intermediate said skin depressing and guide structure and the forward extremity of said opening and at least substantially entirely spanning the latter.

4,241,500

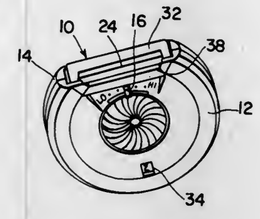
RAZOR WITH ADJUSTABLE BLADE POSITIONING

Clemens A. Iten, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.

Filed Jul. 10, 1979, Ser. No. 56,370

Int. Cl.³ B26B *21/24*

U.S. Cl. 30—40 **21 Claims**



1. In a razor accommodating a blade carrier, said blade carrier having a first substantially circular component and fixedly retaining a blade having a sharpened edge;

said razor having: a support structure for said blade carrier; a second substantially circular component engaging said first substantially circular component; and skin guard means;

said skin guard means disposed in spaced relation with said blade for defining a particular shaving geometry, the improvement comprising:

adjusting means for moving said blade carrier relative to said skin guard means thereby effecting an adjustment in said shaving geometry.

4,241,501

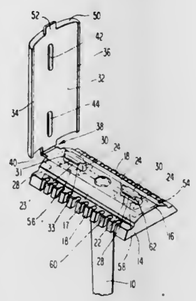
ONE-PIECE PLASTIC SAFETY RAZOR

Edward B. Westlake, Jr., 307 Lincoln Ave., Havertown, Pa. 19083

Filed Jan. 26, 1979, Ser. No. 6,593

Int. Cl.³ B26B *21/32*

U.S. Cl. 30—59 **6 Claims**



1. A plastic safety razor comprising a handle, a guard plate mounted thereon including at least one upstanding elongated locating pin adapted to extend through an opening in a razor blade, said pin including longitudinal beads extending laterally from said pin, a cover substantially coextensive with said guard plate and hinged at the rear end to said guard plate, at least one slot in said cover adapted to receive said locating pin and frictionally engage said locating pin beads when the cover is closed on the guard plate with a razor blade wedged between said cover and guard plate to lock the blade in place, and means on said locating pin to ease the lifting of said cover from the closed to the open position of the razor for replacement of the blade wherein each bead on said locating pin includes a front end wall remote from the hinged rear end of the razor, said front end walls of said beads extending substantially perpendicular to the main plane of said locating pin, said front end walls of said beads being cut off at a downwardly and rearwardly extending taper and constituting the means to ease the lifting of said cover from the closed to the open position of the razor.

4,241,502

CUTTER DEVICE

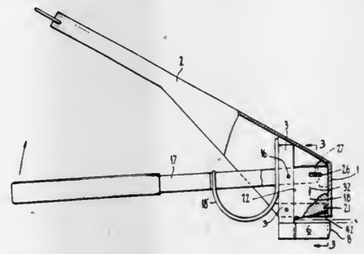
Harold L. Edmondson, 348 Bayview Rd., Rosebud, 3939 Victoria, Australia

Filed Feb. 13, 1979, Ser. No. 11,851

Claims priority, application Australia, Feb. 15, 1978, PD3380

Int. Cl.³ B23D *27/02*

U.S. Cl. 30—241 **7 Claims**



1. A cutter device for cutting sheet material comprising:

a frame;

a flat blade member linearly reciprocally movable in a first direction for cutting the sheet material and in a reverse direction for retraction, said blade member having a flat cutting edge inclined to the direction of movement of said blade to form a leading end initially contacting the sheet material and a trailing end, said cutting edge having a groove therein extending from said trailing end towards and stopping short of said leading end;

a lever arm pivoted on the frame and operatively connected to the blade member for effecting the reciprocal movement thereof;

a pair of parallel, spaced blades fixed to the frame and between which the movable blade member extends for cutting cooperation therewith; and

a further blade extending transversely between the ends of said pair of blades and adjacent the trailing end of said movable blade member for cutting cooperation between the grooved portion of said cutting edge and said further blade.

4,241,503

PAIR OF SCISSORS

Makoto Sugiyama, Seki, Japan, assignor to Kaijirushi Hamono Center, Gifu, Japan

Filed Apr. 18, 1979, Ser. No. 31,169

Claims priority, application Japan, Apr. 18, 1978, 53-44790

Int. Cl.³ B26B *13/00*

U.S. Cl. 30—268 **1 Claim**

1. A scissor comprising:

a first blade member having a round hole therethrough;

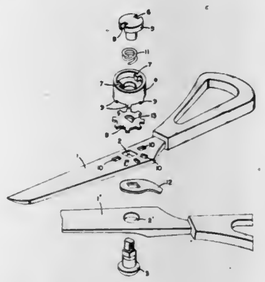
a second blade member having a square hole therethrough;

a bolt extending through said holes in said first and second blade members, said bolt including a first portion having a round cross-section which engages with said round hole in said first blade member and a second portion having a square cross-section which engages with said square hole in said second blade member whereby said first portion may rotate relative to said bolt and said second portion is unrotatable relative to said bolt, said bolt further including a third portion having a cross-section substantially equal

to a circle with at least one flat side and with threads projecting out of said second blade member;

a spring plate provided between said first and second blade members and having a square hole therethrough which said square portion of said bolt extends;

a ring shaped stopper plate having radially extending teeth and a hole having substantially the same cross-section as said third portion of said bolt therethrough provided on said bolt and engaging against a side of said second blade member, said hole engaging with said third portion of said bolt whereby said stopper plate is unrotatably relative to said bolt;



a cylindrical fastener having downwardly extending teeth and a round hole therethrough, said downwardly extending teeth engaging with spaces between said teeth of said stopper plate, said round hole further engaging with said third portion of said bolt;

a pair of opposing inwardly projecting projections provided on an inner cylindrical surface of said cylindrical fastener;

a nut having a pair of opposing notches provided in an exterior surface of said nut, said nut being screwed onto said third portion of said bolt with said notches engaging with said projections whereby said nut is unrotatable relative to said fasteners; and

a coil spring provided about said third portion of said bolt between said nut and said fastener.

4,241,504

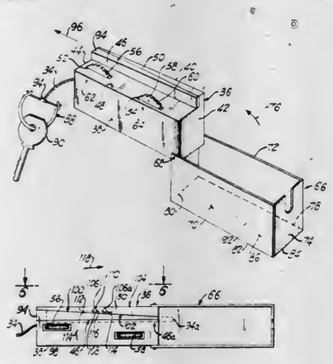
RECORD ALBUM OPENER

Jose D. Ceron, 150 W. 72nd St., New York, N.Y. 10023

Continuation-in-part of Ser. No. 833,463, Sep. 15, 1977, abandoned. This application Mar. 2, 1979, Ser. No. 17,011

Int. Cl.³ B26B *29/00*

U.S. Cl. 30—292 **6 Claims**



1. A device for cutting the protective covering over the side walls of an object, comprising a rectangularly shaped body serving as a handle and including a pair of opposed side walls and end walls, a pair of cavities disposed between said opposed side walls, a pair of open mouth portions communicating with said pair of cavities, said pair of open mouth portions located in an upper surface of said body, said upper surface carrying an elongated protrusion thereon, said protrusion extending parallel to one of said side walls and communicating with said opposed end walls, said protrusion having a guiding surface normal to said upper surface, said guiding surface extending substantially upwardly from said upper surface, a pair of parallel spaced apart axles, said pair of axles extending normal to said opposed side walls and passing through said pair of cavities, a pair of circular cutting blades, said pair of cutting blades carried by said pair of axles, a portion of said pair of circular cutting blades extending outwardly from said upper surface and through said open mouth portions, each of said cutting blades spaced apart from said guiding surface, each of said cutting blades spaced apart a fixed distance from one another, a cover, another axle, said another axle spaced apart and parallel to said pair of axles, said another axle extending outwardly from said side walls, said cover pivotably secured to said another axle adjacent the ends thereof, said cover having a pair of opposed side surfaces disposed parallel to said opposed side walls, said cover having another surface thereof extending transverse to both said pair of surfaces, whereby said another surface covers said protrusion and said upper surface and said portion of said pair of circular cutting blades when said cover is pivoted about said another axle, said another axle being located adjacent one of said end walls and adjacent a bottom wall of said body disposed opposing said upper surface, means for selectively positioning said guiding surface at different distances from one of said each of said cutting blades while at all times maintaining the guiding surface parallel to the plane of said blades, said means for selectively positioning including a bar, said bar fixedly secured to said rectangularly shaped body, said protrusion including a rod, said rod slidably affixed to said bar, said rod carrying said guiding surface thereon, said bar and said rod having mating surfaces, said mating surfaces residing in a plane extending at an acute angle to a plane defining said guiding surface.

4,241,505

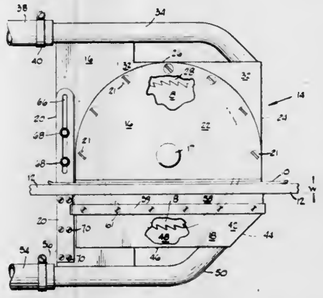
DUST SHROUD FOR PORTABLE CIRCULAR SAW

Frederick M. Bodycomb, Jr., and Glenn R. Bauman, both of Arapahoe, Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed May 21, 1979, Ser. No. 40,615

Int. Cl.³ B27B *9/00, 19/04*

U.S. Cl. 30—390 **15 Claims**



1. A dust shroud for a portable circular saw, the saw having a circular blade mounted on a portable shaft, a motor to rotate the shaft, and a motor housing surrounding said motor and through one side of which said shaft projects, with said blade being mounted on said shaft at a position outside said motor housing; said shroud comprising:

(a) an upper blade housing having sides and a top enclosing an open upper interior chamber adapted to surround the greater portion of said blade while permitting free rotation of said blade within said upper chamber, and a bottom which has a work engaging surface and an opening in said surface through which the lesser portion of said blade can project, with said upper blade housing being attached to said motor housing of said saw;

(b) a lower blade housing having sides and a bottom enclosing an open lower interior chamber adapted to surround at least a part of the lesser portion of said blade while permitting free rotation of said blade within said lower chamber, said lower blade housing having a top which has a work engaging surface and which has an opening in said surface through which said lesser portion of said blade can project, said lower blade housing being attached only to said upper blade housing and spaced therefrom by means of an external attachment link, the amount of spacing being generally equal to the width of the workpiece engaged by said saw;

(c) each of said upper and lower blade housings having incorporated therein a dust removal conduit having one end communicating with said interior chamber of said housing and the other end adapted to be removably connected to a source of vacuum and a dust collection chamber such that dust generated within said interior chamber can be removed therefrom and conveyed to said collection chamber;

(d) said attachment link joining the exteriors of said upper blade housing and said lower blade housing, with said link being aligned in the plane of said blade but spaced therefrom and disposed behind said blade with respect to said blade's direction of travel, said link having a thickness not greater than the thickness of said blade such that as the blade passes through the workpiece said link will follow said blade in the kerf created by said blade, and said link having a length sufficient to allow said housings to be spaced apart by a distance at least equal to the width of said workpiece; and

(e) flexible sealing means attached to the top portion of said lower blade housing and adapted to be in contact with said workpiece on either side of said opening in the top of said lower blade housing, such that said flexible sealing means will generally conform to the surface shape of said workpiece.

4,241,506

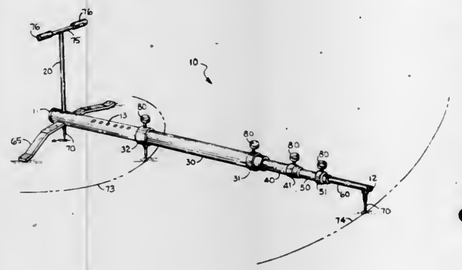
SKATER'S DEVICE

Edgar J. LeBlanc, 73 Pond St., rear; Lawrence Venezia, 54 Union St., and Timothy Kinchla, 19 Grant St., all of Natick, Mass. 01760

Filed Sep. 28, 1978, Ser. No. 946,807

Int. Cl.³ B43L *9/04*

U.S. Cl. 33—27 C **3 Claims**



1. A skater's device for scribing practice circles comprising:

(a) a telescoping tubular member extensible over a range of positions from a first innermost position to a second outermost position thereon;

(b) scribing means fixedly mounted at one end of said telescoping tubular member;

(c) releasable locking means connected to said telescoping tubular member to retain said telescoping member at the desired position;

(d) center pin means fixedly positioned at the outer end of said telescoping tubular member to fix the center point of a circle;

(e) toe-loop scribing means longitudinally adjustable and mounted to said telescoping tubular member;

(f) handle means secured to and extending upwardly and substantially perpendicular from said telescoping tubular member, adjacent and above said center pin means;

(g) support legs secured to and extending substantially downwardly and outwardly from said telescoping tubular member adjacent said center pin means.

4,241,507

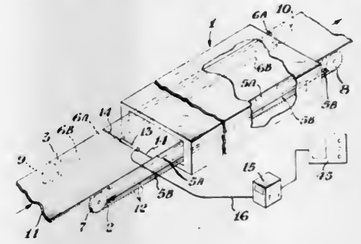
APPARATUS AND METHOD FOR THE DETERMINATION OF TENTER WIDTH VARIANCE IN A CARPET OR TEXTILE DRYING OVEN

Donald H. Clarey, Dalton, Ga., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 26, 1979, Ser. No. 15,516

Int. Cl.³ G01B *5/04*

U.S. Cl. 33—125 R **2 Claims**



1. An apparatus for detecting variation in the distance between the tenter chains or cables in a carpet or textile drying oven which comprises:

(A) an electrical position sensing transducer (1) which is capable of being disposed within and transported through said carpet or textile drying oven; (2) which is equipped with a means for transmitting to the transducer differences in the distance between the tenter chains or cables as such chains or cables and said transducer traverse the length of said oven; and (3) which generates an electrical signal proportionate to the difference in the distance between said tenter chains or cables;

(B) a signal receiver to receive and display and/or record the signal from said transducer;

(C) an electrical cable for transmitting the signal from said transducer to said receiver; and

(D) means for determining the position of said transducer in said oven at the point in time when a given transducer signal is generated.

4,241,508

CLEARANCE INDICATOR - BLIND MEASUREMENT

Obrey Cordner, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

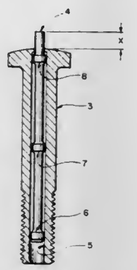
Filed Dec. 19, 1978, Ser. No. 970,903

Int. Cl.² G01B *3/28*

U.S. Cl. 33—169 B **3 Claims**

1. An assembly of two relatively movable parts, the first of which includes an abutment portion and the second of which includes an abutting element comprising a bolt having a head which under normal operating conditions approaches but does not contact said abutment portion, but which may under abnormal conditions may strike said abutment portion, said bolt having an axial bore extending through said head, and a pin

slidable within said bore and frictionally engaging the walls thereof, whereby the protrusion of said pin beyond said head is



an indicator of the clearance between said bolt head and said abutment portion under normal operating conditions.

4,241,509

MODULAR ELECTRONIC APPARATUS FOR PROCESSING A PLURALITY OF MEASUREMENT SIGNALS

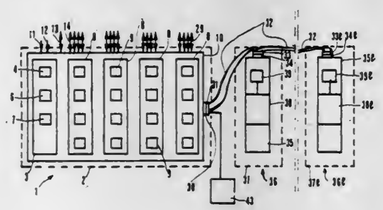
Mario Possati, Bologna, Italy, assignor to Finike Italiana Marposs, S.p.A., Bentivoglio-S.Marino, Italy

Filed May 29, 1979, Ser. No. 43,124

Claims priority, application Italy, May 29, 1978, 3453 A/78

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—174 PA **19 Claims**



1. Modular electronic apparatus for multiple simultaneous checkings carried out by processing a plurality of measurement signals, with a service module, operation modules, and electric connection means for connecting the service module and the operation modules, wherein said service module includes input circuits adapted to receive said plurality of measurement signals, power supply circuits, service circuits and amplification circuits for amplifying the measurement signals, the amplification circuits being adapted to provide amplified signals suitable for directly allowing processings by the operation modules, the electric connection means are adapted to transmit power supply signals, service signals and the amplified signals to all the operation modules, and the operation modules include programming means for allowing the reception of preselected amplified signals by means of the electric connection means.

4,241,510

AID FOR HANGING PICTURES

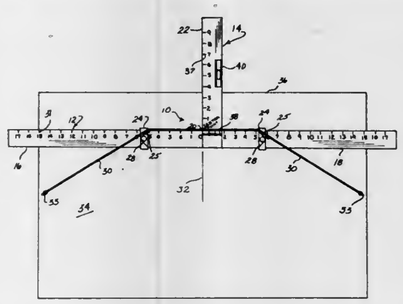
Ronald P. Radecki, 719 E. Jefferson Blvd., South Bend, Ind. 46625

Filed Oct. 1, 1979, Ser. No. 80,453

Int. Cl.³ G01B *3/02*

U.S. Cl. 33—180 R **3 Claims**

1. A device for determining the location of two hangers for a picture or similar type wall supported member, said device comprising a base part and a perpendicular neck part, said base part being defined by oppositely located first and second arms, said base part having indicia thereon, said indicia extending from a center point outwardly along said first and second arms, said neck part having a lateral edge, said neck part having indicia along said lateral edge thereof, said neck part lateral edge being aligned with said base at said center point, a pair of slide members, one of said slide members carried by each arm and being shiftable along its supporting arm toward and away from said center point, each slide member including securing means for positioning the slide member at a predetermined location along its supporting arm, said base part indicia for determining the distance of each slide member from said center point, said slide members including guide means located in



alignment with said center point for engaging the hanging wire of said wall supported member when equally spaced from said center point along said arms whereby said wire when drawn taut between said slide members will pass through said center point with said neck part extending at least to the top of said wall supported member, said neck part indicia constituting locating means for indicating the location of said wall supported member top and said guide means constituting location points for said hangers when said base and neck parts are positioned against a wall.

4,241,511

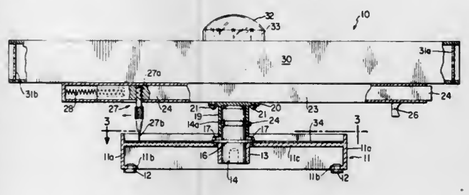
METHOD AND APPARATUS FOR DETERMINING AND RECORDING BOAT COMPASS DEVIATION

Michael J. Frigano, 66-23 Fresh Pond Rd., Ridgewood, N.Y. 11227

Filed Mar. 8, 1979, Ser. No. 18,608

Int. Cl.³ G01C *21/22, 17/10*

U.S. Cl. 33—272 **3 Claims**



1. A compass deviation recording device comprising a base adapted to receive a compass rose card having degree indicia thereon equidistantly arranged from a central perpendicular axis therethrough, a recorder gun housing mounted for rotary movement about said axis above said card and in parallel relationship to said card, said recorder gun housing including a plunger reciprocally movable therein, a stylus carried by said plunger and depending from said recorder gun housing such that the tip of said stylus rests upon the card approximately in the vicinity of said indicia, means for resiliently urging said stylus toward and into contact with said card, means connected to said plunger at the end thereof opposite to said stylus to permit rapid reciprocal movement of said plunger and said stylus, a spring within said recorder gun housing for urging said plunger in one direction to return said plunger to its initial

position after having been moved reciprocally in the opposite direction and means carried by the recorder gun housing for orienting said housing with respect to a predetermined heading.

4,241,512

DRAWING APPARATUS

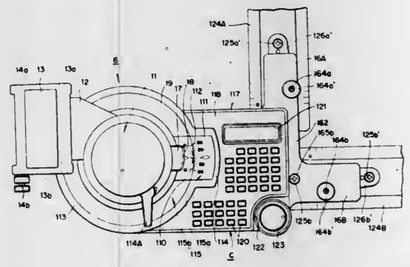
Kimijima Chikanobu; Kosakai Asao; Shioya Tutomu, and Tatsumi Tomotaka, all of Takasaki, Japan, assignors to Max Co. Ltd., Tokyo, Japan

Filed Apr. 12, 1979, Ser. No. 29,441

Claims priority, application Japan, Apr. 17, 1978, 53-49421[U]; Jan. 5, 1979, 54-818

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—438 **3 Claims**



1. A drawing head of a drawing machine having a rotatable spindle for extending perpendicularly to a drawing board, a protractor and a protractor housing for receiving rotatably said protractor being disposed around said rotatable spindle, a bed plate, the lower end of said rotatable spindle being fixed to said bed plate, said bed plate comprising a fixed portion having an unchangeable azimuth angle with reference to said rotatable spindle, and a movable portion which is divided from said fixed portion by a slot and having a variable width for changing its azimuth angle with reference to said rotatable spindle, said movable portion being formed with a scale mounting portion to which straight scales are removably fixed, said drawing head comprising a casing for an electronic calculator, said casing being located between the protractor housing and the scale mounting portion on the surface of said bed plate of the drawing head and fixed to the fixed portion to cover the whole slot, said fixed portion, and a part of the movable portion and to permit the azimuth angle of the movable portion with reference to the rotatable spindle to be changed, and a bottom plate which covers a part of said movable portion, protractor, protractor housing, said fixed portion and said slot and which is fixed to said fixed portion on the lower surface side of said bed plate of the drawing head.

4,241,513

PROCESS AND APPARATUS FOR DRYING AND PREHEATING OF COKING COAL IN A SINGLE FLIGHT STREAM TUBE

Wolfgang Rohde, Essen, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

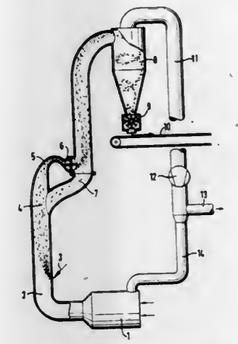
Filed Aug. 30, 1979, Ser. No. 70,993

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841088

Int. Cl.³ F27B *3/08, 17/00*

U.S. Cl. 34—10 **8 Claims**

1. In a process for drying and preheating particulate coking coal in a single flight stream tube having a lower end portion and an upper end portion, the steps of admitting a hot gas stream into said tube at said lower end portion for travel towards said upper end portion; entraining in said gas stream moist particulate coal which is admitted at said lower end portion in form of a mix of larger and smaller particle fractions; splitting said gas stream into a primary flow containing said smaller fraction and a secondary flow containing said larger fraction; decelerating the particles of said larger fraction; readmitting the decelerated particles of said larger fraction into said primary flow downstream of the location where the gas stream



was split, so that the decelerated particles of the larger fraction entering the primary flow carrying the higher-velocity smaller fraction undergo acceleration with concomitant agitation and resulting heat exchange; and separating the dried and preheated larger and smaller fractions of coal particles from said primary flow at said upper end portion.

4,241,514

PROCESS AND APPARATUS FOR DRYING CHLORINATED POLYMERS

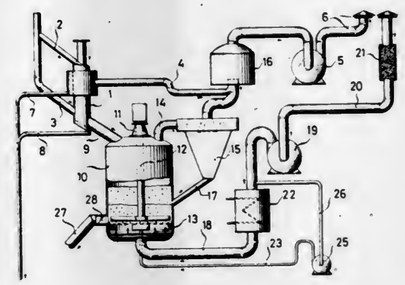
Manfred Scholz, Hürth, and Karl Kaiser, Brühl, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,455

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1978, 2800952

Int. Cl.³ F26B *7/00, 5/08*

U.S. Cl. 34—17 **5 Claims**



1. A process for drying moist chlorinated polymers separated from an acid aqueous suspension, which comprises: continuously introducing from above the moist chlorinated polymers into a vertically arranged centrifugal zone subdivided, in the direction of flow, into an upper portion , middle portion and lower portion, the middle portion having a wall permeable to liquid matter; injecting air into the upper portion of said centrifugal zone, tangentially with respect thereto, the air being injected under a pressure of 2 to 16 bars at 20° to 200° C. and causing said moist chlorinated polymers to flow through said centrifugal zone along helical lines at a velocity 10 to 150 m/s; the moist chlorinated polymers being predried while passing through said middle portion inside which they become partially deprived of liquid matter in contact with said middle

portion's permeable wall; removing the predried chlorinated polymers by injecting air having a pressure of 1.5 to 5 bars into the lower portion of said centrifugal zone and introducing them from above into a fluidization zone having a bed of fluidized chlorinated polymers therein, said bed being generated by continuously forcing a drying gas having a pressure of 1.01 to 1.30 bars and a temperature between 50° and 150° C. to pass from below through dried chlorinated polymers; mixing said predried chlorinated polymers and said dried chlorinated polymers in the fluidization zone by means of said drying gas and thereby completely drying said predried chlorinated polymers; and withdrawing dried chlorinated polymers from the fluidization zone in a quantity corresponding to the quantity of predried chlorinated polymers introduced from the centrifugal zone into the fluidization zone.

4,241,515

METHOD AND APPARATUS FOR CONDITIONING TOBACCO

Waldemar Wochnowski, Hamburg, and Reinhard Hohm, Hamburg Bahrenfeld, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

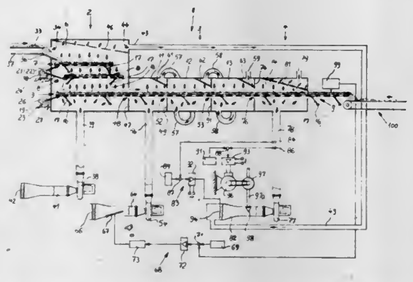
Continuation of Ser. No. 448,949, Mar. 7, 1974, Pat. No. 4,143,471, which is a continuation-in-part of Ser. No. 220,599, Jan. 25, 1972, Pat. No. 3,799,176. This application Jul. 6, 1978, Ser. No. 922,575

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1971, 2103671; Jun. 29, 1971, 2132226; Jul. 14, 1973, 2335970

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ F26B *3/08*

U.S. Cl. 34—28 **6 Claims**



1. A method of drying tobacco with a gaseous fluid, comprising the steps of transporting moist tobacco particles along a predetermined path; subjecting the particles to the action of a first current of flowing moisture containing medium which is conveyed substantially transversely across a first portion of said path; thereupon subjecting the particles to the action of a hot second gas current which is conveyed substantially transversely across a second portion of said path; monitoring the moisture content of tobacco downstream of said second portion of said path; and respectively intensifying and reducing the heating action of said second gas current when the monitored moisture content is respectively higher than and below a predetermined value.

4,241,516

APPARATUS AND PROCESS FOR TREATING PULVERIZED GRANULAR MATERIAL WITH A FLUID STREAM

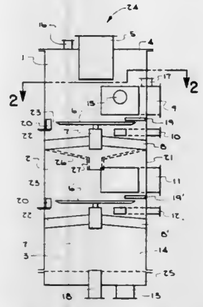
Hans Koller, Brunnmattstr. 12, CH 6048 Horw, Switzerland

Filed Apr. 11, 1979, Ser. No. 29,254

Int. Cl.³ F26B *17/00*; F27B *15/00*

U.S. Cl. 34—57 E **9 Claims**

1. The apparatus for the treatment of dusty, pulverized, granular goods with a gas consisting of a vortex chamber **1** with a tangential entrance opening for the gas and goods and a discharge opening **5** for the gas, said apparatus comprising a vortex chamber casing (**4, 6, 21**) with an annulus means **23** concentric to the axis of the chamber casing **21** at its periphery



and opposite to the discharge opening **5**, a rotary plate forming a portion of the vortex chamber and defining the inner diameter of the annulus means rotating about the vortex chamber axis, the annulus means being provided for the entrance of a further treatment gas and for the discharge of the goods.

4,241,517

ANTI-POLLUTION ROTARY-SWEEP GRAIN DRIER

Rodney W. Carpenter, Louisville, Ky., assignor to Clayton & Lambert Manufacturing Company, Buckner, Ky.

Filed Apr. 6, 1978, Ser. No. 894,181

Int. Cl.³ F26B *19/00*

U.S. Cl. 34—79 **5 Claims**

1. An anti-pollution grain drying apparatus comprising:

A. a grain drying bin having a perforated floor through which hot air is blown upwardly for drying purposes;

B. a rotary sweep mounted in the bin for sweep movement over the floor, said sweep having

1. distributing means on its lag side for distributing wet grain over the floor,
2. radially-extending retrieving means on its lead side for removing dried grain from the floor, and
3. a partition separating the lead and lag sides of the sweep;

C. means for feeding wet grain to said distributing means;

D. means for receiving dried grain from said retrieving means and conveying said grain outside of the bin; and

E. an anti-pollution suction system for removing and capturing airborne dust coming from the grain within the confines of said sweep, said system including

1. canopy means extending over said lag side of the sweep substantially above the level of the grain on said floor,
2. wall means extending downwardly from said canopy means and cooperating therewith and with said partition to form suction chamber means for receiving dust-polluted air from wet grain in the vicinity of the lag side of said partition, and
3. anti-pollution means for suctioning dust-polluted air from said suction chamber means and conducting it out of said bin to outside dust separating means.

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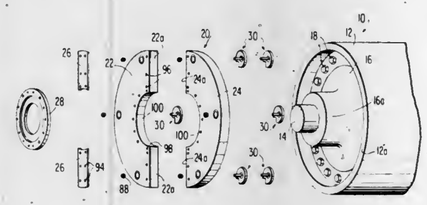
THERMAL INSULATION END PANEL ASSEMBLY FOR A PAPER MACHINE DRYER CYLINDER AND STUD CLAMP THEREFOR

Fred H. Alexy, Glens Falls, N.Y., assignor to AMG Industries, Inc., Glen Falls, N.Y.

Filed Oct. 2, 1979, Ser. No. 81,239

Int. Cl.³ F26B *13/08*

U.S. Cl. 34—110 **6 Claims**



1. In combination, a thermal insulation material end panel assembly for mounting on an axial end face of a heatable dryer cylinder, said dryer cylinder being capable of drying a web passing over the peripheral surface thereof, said dryer cylinder bearing a plurality of bolts having bolt heads projecting axially from an end face thereof at spaced circumferential positions, and a plurality of stud clamps fixed to the side of said thermal insulation material end panel at circumferential positions corresponding to said bolt heads and projecting therefrom, and said stud clamps being mechanically clamped to the ends of said bolt heads for removably locking said panel to the end of said dryer cylinder.

4,241,519

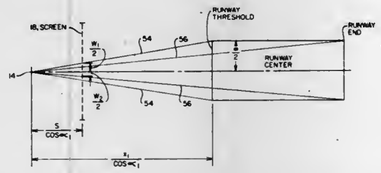
FLIGHT SIMULATOR WITH SPACED VISUALS

Richard D. Gilson; Marlin O. Thurston, both of Columbus; Karl W. Olson, Worthington, and Ronald W. Ventola, Columbus, all of Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Jan. 25, 1979, Ser. No. 6,333

Int. Cl.² G09B *9/08*; H04N *7/18*

U.S. Cl. 434—43 **41 Claims**



1. Visual display apparatus for use with a flight simulator system of a variety including a base supported aircraft trainer having a cockpit and front window-like opening for providing lines of sight from an eye location within said cockpit and having flight controls manipulative to cause said cockpit to move upon said base in roll, pitch and yaw attitudes about respective longitudinal, transverse and vertical axes, said system including a stationary display surface viewable from said eye location along said lines of sight, said surface being spaced from said eye location a predetermined distance, S, for displaying the video image of a fixed horizontal horizon below which extends the image of a runway of designated length, L, between the threshold and end thereof and half-width, w/2, defined between each lengthwise edge thereof, and a reference line, said system including means for generating altitude signals, y, substantially representative of the simulated height of said eye location above said imaged runway and means for generating velocity signals representative of the instantaneous simulated velocity and said trainer with respect to ground at the level of said runway, said apparatus comprising;

first circuit means for developing slope signals corresponding with the slopes of the images of said runway lengthwise edges as a quotient of a constant of value representing the distance of a said edge from said reference line divided by a value, y, representative of said instantaneous altitude;

timing circuit means for generating video raster controls including horizontal scan information and control signals developed through a predetermined digital sequence and vertical information and control signals developed through a predetermined digital sequence;

second circuit means for generating signals representing the predetermined vertical location of a vanishing point upon said raster;

line generator circuit means responsive to said second circuit means signal, said timing circuit means horizontal scan information signals and said first circuit means slope signals for generating output signals representing the locations of said runway image lengthwise edges;

third circuit means for developing signals representing imaging data at said runway threshold and end; and

video processing means responsive to said line generator circuit means output signals, said third circuit means signals and said timing circuit means horizontal and vertical control signals for deriving video outputs.

4,241,520

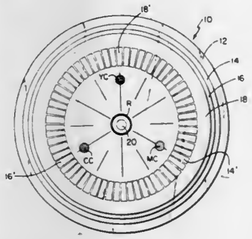
COLOR CALCULATOR

Thomas K. Norton, c/o Tom Norton Designs, P.O. Box 29, Cambridge, Mass. 02139

Filed Mar. 5, 1979, Ser. No. 17,403

Int. Cl.³ B44D *2/00*

U.S. Cl. 434—102 **12 Claims**



1. Color calculator comprising

means defining at least three endless continuous loops of transparent material relatively movable through 360° cycles in overlapping fashion,

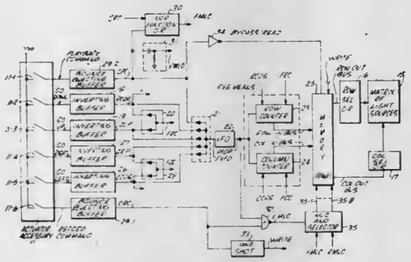
each such loop comprising in a minor area thereof, an array of color gradations in a primary color of the system as follows:

0 to 100% over 60°, then 100% over 120°, then 100% to 0 over 60°, balance blank, the 0 to 100% and 100% to 0 gradations being at substantially linear rate—i.e., equal (or other defined linear relation) increase (or decrease) in intensity per circumferential distance increment,

means for indicating the center of each such primary color array on its respective loop,

whereby (a) aligning the three centers 120° apart and in correct order produces secondary colors between the primaries, made of overlapping colors of the primary graded colors and incremental combinations therebetween, (b) overlapping the three centers produces a 240° arc of the combination of the three primaries (black in subtractive color primary system) of 100% intensity over a 120° central portion and 60° 0–100% to 0 at sides of the arc and 120° blank, and (c) other overlap combinations produce thousands of mixed colors which in all such arrangements show perfect complements, and perfect analogous step gradations around the loops, all the gradations of synthesized colors having natural gradation relationship.

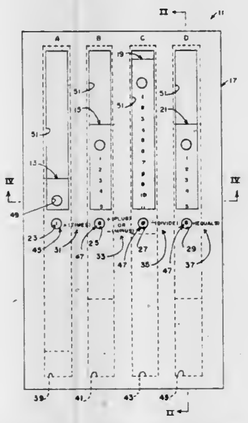
4,241,521
MULTI-SYMBOL MESSAGE COMMUNICATOR FOR A SPEECHLESS, HANDICAPPED PERSON
Armand F. Dufresne, 901 Iva Ct., Cambria, Calif. 93428
Filed Sep. 13, 1976, Ser. No. 722,676
Int. Cl.³ G09B *21/00*
U.S. Cl. 434—112 **7 Claims**



1. In a matrix communicator for a speechless, handicapped person, the matrix communicator having display means which defines a symbol repertory and which responds to a matrix address by indicating a symbol selected from the symbol repertory, and having register means which stores the matrix address and which responds to command-defining signals to update the matrix address as the handicapped person composes a multi-symbol message, an improvement comprising:
- means for receiving command-defining signals for defining a plurality of types of commands including a record command and a playback command;
- first-in, first-out memory means;
- the first-in, first-out memory means including means responsive to sequentially received record commands for compiling a list of matrix addresses, each matrix address in the list being the matrix address stored in the register means at the time of receipt of a respective one of the sequence of record commands;
- the first-in, first-out memory means further including timing means responsive to a received playback command for causing the list of matrix addresses to be provided to the display means one-by-one in the same order in which they were compiled so that each of a plurality of symbols forming a message are thereby indicated.

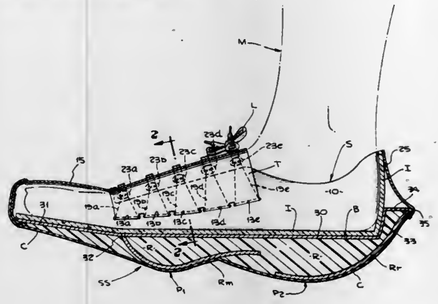
4,241,522
TEACHING AID
Raymond C. Jablonski, 1879 Coventry Dr., Memphis, Tenn. 38127
Filed Apr. 6, 1979, Ser. No. 27,778
Int. Cl.³ G09B *1/28*
U.S. Cl. 434—405 **2 Claims**

1. A teaching aid for developing learner participation in mental computation of number combinations using a standard formula involving a combination of the functions of basic arithmetic, said teaching aid comprising: an elongated first slide means, an elongated second slide means, an elongated third slide means, an elongated fourth slide means, and a frame means; said frame means having an elongated first internal cavity for slidably receiving said first slide means, having an elongated second internal cavity for slidably receiving said second slide means, having an elongated third internal cavity for receiving said third slide means, and having an elongated fourth internal cavity for receiving said fourth slide means; each of said slide means including a plurality of numerical figure indicia; said frame means having a first window aperture for allowing one of said numerical figure indicia of said first slide means to be viewed therethrough, having a second window aperture for allowing one of said numerical figure indicia of said second slide means to be viewed therethrough, having a third window aperture for allowing one of said numerical figure indicia of said third slide means to be viewed therethrough, and having a fourth window aperture for allowing one of said numerical figure indicia of said fourth slide means to be viewed therethrough; said frame means include first arithmetic function indicia located between said first and second window apertures, including second arithmetic function indicia located between said second and third window apertures, and including third arithmetic function indicia located between said third and fourth window apertures; said first, second and third arithmetic function indicia coacting to create a standard formula involving a combination of the functions of basic arithmetic, said first slide means being movable within said first internal cavity for allowing various ones of said numerical figure indicia of said first slide means to be aligned with said first window aperture, said second slide means being movable within said first internal cavity for allowing various ones of said numerical figure indicia of said second slide means to be aligned with said second window aperture; said third slide means being movable within said third internal cavity for allowing various ones of said numerical figure indicia of said third slide means to be aligned with said third window apertures; said fourth slide means being movable within said fourth internal cavity for allowing various ones of said numerical figure indicia of said fourth slide means to be aligned with said fourth window aperture.



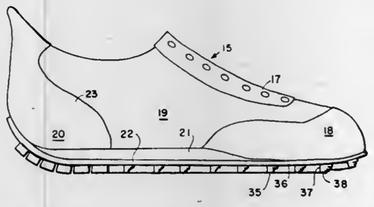
4,241,523
SHOE SOLE STRUCTURE
Alexander C. Daswick, South Pasadena, Calif.
Filed Sep. 25, 1978, Ser. No. 945,443
Int. Cl.³ A43B *13/12, 5/00*
U.S. Cl. 36—30 R **1 Claim**

1. In the supporting structure of a shoe, the combination comprising:
- a relatively flat rigid sheet-like member normally horizontally disposed to provide a supporting base for the wearer's foot;
- a relatively rigid rocker member of a generally sheet-like configuration disposed beneath said base in a rear-parallel relationship thereto, one end of said rocker member being pivotally secured to said base and the other end being spaced below said base;



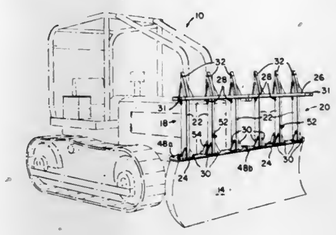
- said rocker member being longitudinally curved in a downwardly convex direction to form a load-bearing pedestal; and
- a body of resilient material occupying the space between said rocker member and said base.

4,241,524
ATHLETIC SHOE WITH FLEXIBLE SOLE
Jeffrey A. Sink, 123 Belmont Ave., Redwood City, Calif. 94061
Filed May 7, 1979, Ser. No. 36,872
Int. Cl.³ A43B *1/10, 13/04, 23/28, 5/00*
U.S. Cl. 36—102 **5 Claims**



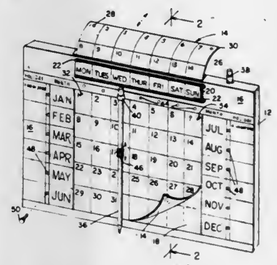
1. An athletic shoe for the foot wherein the foot has normal bend lines extending thereacross at an angle of approximately 15° to a line normal to the longitudinal axis of the foot, said shoe comprising, in combination:
- a shoe upper portion having heel, shank and toe areas in that order for enclosing the wearer's foot;
- a sole attached to said shoe upper portion for supporting the wearer's foot on a running surface, comprising:
- a cushioning pad of pliable material and having upper and bottom surfaces with the upper surface fixed to the shoe upper portion and having a longitudinal axis and longitudinal edges extending along the length of the shoe upper portion; and
- a plurality of bar treads fixed to the bottom surface of the cushioning pad adjacent the toe and shank areas and positioned to extend substantially from one longitudinal edge thereof to the other and in a direction parallel to the normal bend lines of the foot.

4,241,525
SWING-AWAY BULLDOZER TEETH ASSEMBLY
Donald B. Mann, 8811 131st Ave., NE., Lake Stevens, Wash. 98258
Filed Aug. 11, 1978, Ser. No. 933,075
Int. Cl.² E02F *3/76*
U.S. Cl. 37—117.5 **4 Claims**



1. A set of bulldozer teeth adapted to be secured to a bulldozer blade in either a deployed or undeployed position, comprising:
- a rigid, rectangular frame;
- fastening means for pivotally securing a first edge of said frame adjacent the upper edge of said bulldozer blade, said fastening means including a tubular mounting sleeve secured to the first edge of said frame and a pair of forwardly projecting hangers fastened to the upper edge of said blade at opposite sides thereof, each of said hangers receiving a pin projecting from opposite ends of said mounting sleeve such that said frame may be pivoted between said deployed position in which said frame lies along the front face of said blade and said undeployed position in which said frame projects upwardly above the upper edge of said blade;
- a plurality of teeth extending from a second edge of said frame opposite said first edge, said teeth projecting away from said frame beyond the lower edge of said bulldozer blade when said frame is in its deployed position; and
- locking means for releasably securing said frame in its undeployed position.

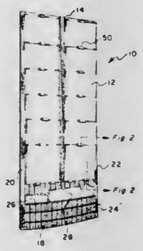
4,241,526
PERPETUAL CALENDAR
Nathan Poritz, 90 Greenwich Ave., New York, N.Y. 10001
Filed Nov. 19, 1979, Ser. No. 95,617
Int. Cl.³ G09D *3/00*
U.S. Cl. 40—110 **10 Claims**



1. A perpetual calendar including a display board, grid means on the display board for indicating divisions within a monthly time frame, tab means having indicia representative of respective days in a week, said tab means being slidably mounted on the display board in sequential arrangement for alignment with selected related grid divisions corresponding to a day of the week, indicator means for cooperative interaction

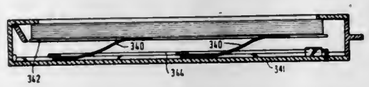
with the display board for denoting a particular month of the year, writing means including an elongated writing instrument, said writing instrument being removably attachable to the display board for recording information on the grid means, said writing instrument further including indexing means for referencing a particular day in the month, said indexing means being adjustably positionable relative to the writing instrument.

4,241,527
DISPLAY CURTAIN
James L. Becker, 3005 Waterford Dr., Cinnaminson, N.J. 08077
Filed Feb. 16, 1978, Ser. No. 878,241
Int. Cl.³ G09F *1/10*
U.S. Cl. 40—124.2 **5 Claims**



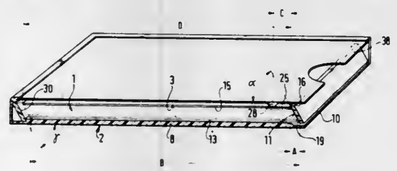
1. A display device comprising:
a curtain, said curtain being comprised of a plurality of rod shaped elements connected together side by side such that said elements are adapted to lie substantially in the same plane and such that a small space remains between each adjacent pair of elements;
a plurality of clips adapted to be affixed to said curtain, each of said clips including a substantially straight tang having a thickness sufficiently small so that it can pass through one of said spaces, each of said clips further including a ledge adapted to rest on the rod shaped element immediately below said space and a flange portion, said flange portion carrying a holding means adapted to hold the item desired to be displayed by the display device, and
a plurality of additional clip means, said additional clip means including first and second hook shaped members and an elongated elastic member connecting such first and second hook shaped members, each of said first hook shaped members being adapted to engage one of said rod elements.

4,241,528
PICTURE VIEWER
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed Sep. 18, 1978, Ser. No. 943,369
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742350
Int. Cl.³ G09F *11/30*
U.S. Cl. 40—513 **21 Claims**



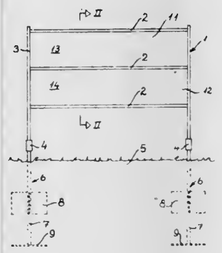
1. A picture viewer for a pile of pictures, comprising
enclosure means including a frame defining a viewing window and a slider reciprocably mounted on the frame, the frame and slider having relative obverse and reverse sliding movements in opposite directions along the window, the enclosure means also defining a picture compartment having one end adjacent the window to contain a pile of pictures with a picture at one end disposed at said one end of the compartment and adjacent the window,
a pressure means on the enclosure means and confronting the window at the compartment to press the pile of pictures against the viewing window,
a picture changing mechanism adjacent the picture compartment for removing an individual picture from one end of the pile and returning the individual picture to the other end of the pile in response to such relative obverse and reverse movement of the frame and slider to present a new picture at the window for display,
said picture changing mechanism including a pile transporter and an individual picture transporter, one of the transporters being connected with the frame and movable therewith and the other of the transporters being connected with the slider and movable therewith, the pile transporter being disposed at one side of the compartment to engage one side of the pile of pictures, the picture transporter being disposed at one end of the compartment to engage such an individual picture at the corresponding end of the pile of pictures, the transporters producing relative movement of the pile of pictures and of the individual picture during changing of the picture at the window, and
a disabling device having functional connection with the pressure means and acting to alternately effect relief and application of pressure on the pile of pictures during operation of the picture changing mechanism to facilitate the change of pictures.

4,241,529
PICTURE VIEWER
Max Baur, Kollbrunn, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed Sep. 18, 1978, Ser. No. 943,471
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745214
Int. Cl.³ G09F *11/30*
U.S. Cl. 40—513 **100 Claims**



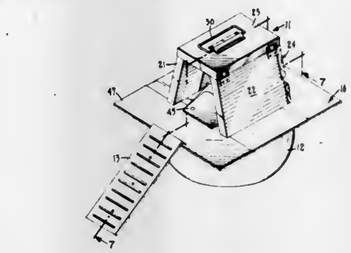
1. A picture viewer for the alternate exposure of individual rectangular sheets from a pile of sheets, comprising an enclosure having a viewing window and a compartment with sufficient depth to accommodate such a pile, one end of the compartment being disposed at the window to display a sheet through the window, another side of the compartment having an access opening, means permitting separation of one sheet from one end of said pile and adding it to said pile at the other end thereof, said means including: pile support means opposite said viewing window and pile suppression means adjacent said window, a separator bar extending parallel to congruent edges of said sheets in said pile and having a first edge opposite said window and a second edge adjacent thereto, said separator edges being spaced from each other such that removal and insertion slots are defined between respective separator edges and compartment walls confining said access opening, said pile support means and said pile suppression means being spaced from each other by a distance exceeding the distance by which said separator edges are spaced from each other, the separator bar further having a first oblique face confronting said congruent sheet edges and a second oblique face opposite said first face, both said separator faces extending between said first and said second separator edge, whereby a sheet to be separated from said pile and thrust edgewise against said separator is deflected away from said pile permitting it to be fed through one of said slots and whereby a sheet when added to said pile after being fed through one of said slots will be retained by said separator bar at its edge adjacent the latter.

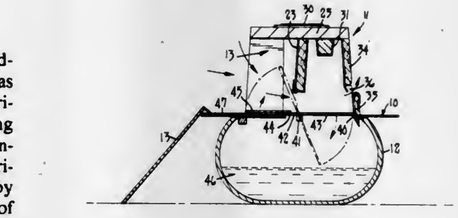
4,241,530
SIGN POST
Ole K. Hartvig, Motelvej 57, DK-400 Roskilde, Denmark
Filed Feb. 15, 1979, Ser. No. 12,365
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—607 **3 Claims**



1. A sign post comprising vertically and horizontally extending hollow frame elements which are mutually connected so as to form one or more compartments for signboards, each horizontal frame element at each end thereof including a securing member, each of said securing members including a foot inserted into and secured in the end of the corresponding horizontal frame element and a crosspiece connected thereto by means of a body part having a width smaller than the width of said crosspiece so as to form recesses between said foot and the ends of said crosspiece extending laterally with respect to said body part; each vertical frame element having a number of openings in a side wall thereof and corresponding to the number of horizontal frame elements of said sign post, each of said openings having generally the same shape as the cross section of each of the crosspieces of said securing members so as to receive one of said crosspieces in each of said openings; a locking rail being movably arranged in each of said vertical frame elements, each of said locking rails being provided in one side thereof with a number of openings corresponding to the number of openings in the corresponding vertical frame element, each of said openings in said locking rail consisting of a first part having generally the same shape as the openings in the side wall of said vertical frame element, and a second opening part extending vertically from the top of said first opening part and having a width generally corresponding to the width of the body parts of said securing members and a height at least corresponding to the height of said body part, each of said locking rails, moreover, comprising wedge-shaped cam means, one provided along each side of each of said vertically extending second opening parts and with the smaller ends of said cam means pointing towards the laterally extending upper edges of said first opening parts, each of said wedge-shaped cam means having a thickness at the blunt end of each cam means which exceeds the width of said recesses in said securing members, each of said locking rails being movable in the longitudinal direction of the corresponding vertical frame element with said side of said rail, wherein said openings of said rail are provided in sliding contact with the inner surface of said wall of the corresponding vertical frame element wherein said openings of said vertical frame element are provided, each of said locking rails, moreover, being movable from a position in which said first opening parts of said openings in said locking rail register with said wall openings and to a position wherein said cam means of said locking rail engage said recesses in said securing members.

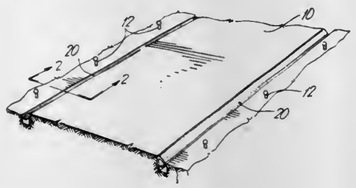
4,241,531
MOUSE TRAP
Alfred O. Nelson, and Betty Jo Nelson, both of Rte. #1 Reed Point, Mont. 59069
Filed Feb. 28, 1979, Ser. No. 16,317
Int. Cl.³ A01M *23/04*
U.S. Cl. 43—69 **1 Claim**





1. An animal trap comprising, in combination:
a container of liquid;
a platform over said container having a central opening;
an upwardly converging bait chamber around said opening including first and second opposite inperforate walls, a closed top, a third wall open for a predetermined distance above said platform as a low entrance to said chamber, and a fourth wall opposite said third wall and having a slot to enable circulation of air from said entrance through said chamber, said first and second walls and said top extending beyond said third wall to comprise an open-ended approach to said entrance, and said entrance not being narrow enough to prevent a rodent from turning therein;
a shutter;
means movably mounting said shutter at said opening for pivotal movement about a horizontal axis from a first position, in which a first portion of said shutter closes said opening and a second portion of said shutter overlies said platform to comprise an entrance floor for said chamber, and a second position, in which said first portion of said shutter slopes downwardly to unclose said opening and said second portion slopes upwardly to contact the lower edge of said third wall and close said entrance, at least the inner surface of the said walls and said shutter being of material on which animal claws can find no purchase;
means normally maintaining said shutter in said first position in the absence of additional weight on the surface of said first portion thereof;
means for securing bait within said chamber above said opening and said first portion of said shutter; and
bumper means for muffling the sound of operation of said shutter into said second position.

4,241,532
WORM TRAP
Vincent S. Fancy, 372 Bay St., Ottawa, Ontario, Canada
Filed Feb. 26, 1979, Ser. No. 14,816
Int. Cl.³ A01M *1/22*
U.S. Cl. 43—112 **2 Claims**



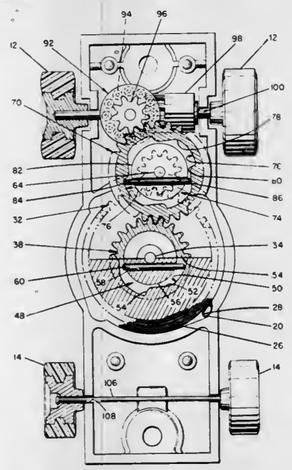
1. An arrangement intended to reduce the number of birds normally present in the vicinity of an airport and thereby improve flight safety in that region and wherein the airport has at least one aircraft landing strip comprising: longitudinally extending trenches in the earth along each of opposed marginal edges of the landing strip and worm traps located in said trenches, said worm traps extending longitudinally along said trenches at a position spaced upwardly from a bottom wall of the trench, said worm traps having a vertical wall abutting a marginal edge of the landing strip, an entry adjacent said vertical wall to a chamber in the worm trap, said entry being located in the trench and extending longitudinally therealong at an elevation lower than the surface of the landing strip, and a longitudinal edge opposite and parallel to said vertical wall, said latter longitudinal edge being spaced from a vertical wall of the trench remote from the marginal edge of the landing strip providing an open unrestricted path for worms to crawl into the trench.

4,241,533
AERIAL TOY GLIDER
Reginald W. Newsome, 216 Philray Rd., Richmond, Va. 23229
Filed Mar. 16, 1979, Ser. No. 21,117
Int. Cl.³ A63H *33/18*
U.S. Cl. 46—74 D **7 Claims**



1. An aerial toy glider adapted to be thrown through the air and having an aerodynamic lifting surface comprising:
- a peripherally arcuate rod-like rim member of resilient foam material with elastic memory characteristics;
- a peripherally arcuate, substantially tubular rim retaining member of flexible material for receiving said rim member;
- said rod-like rim member lying within said rim retaining member;
- means for securing said rim member within said rim retaining member;
- a peripherally arcuate disc-like body member of flexible, non-resilient material;
- means for securing said rim retaining member and said rim member to said body member along a line of common periphery of said rim retaining member; said rim member being made of material of sufficient rigidity so that said glider may be folded for storage in a restricted space and then return to its original shape upon being unfolded, based on the said memory characteristics of said rim member;
- said disc-like body member being made of a diameter larger than the inner diameter of said rod-like rim member;
- said larger diameter of said disc-like body member being made of a preselected magnitude so that on being deflected by air resistance during flight, said disc-like body member becomes dished in a vertical direction along an axis normal to the horizontal plane of said disc so that an annular recess is formed adjacent said rim near the junction of said body member and said rim retaining member forming an angle at said junction for providing an area of lowered pressure behind and adjacent the rim member as said disc is thrown through the air.

4,241,534
TOY VEHICLE WITH SPRING DRIVE MECHANISM
Ake L. Larsson, Palos Verdes Estates; Gunther E. Gronwold, Manhattan Beach, and Derek A. Corris, Venice, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 14, 1979, Ser. No. 12,085
Int. Cl.³ A63H *29/20*; F03G *1/10*
U.S. Cl. 46—206 **11 Claims**

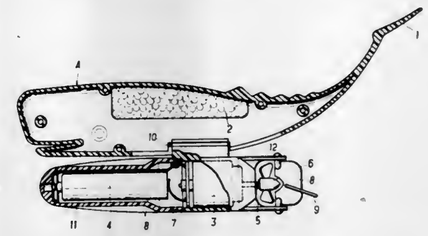


1. In a toy vehicle, the combination comprising:
- a chassis;
- at least one drive wheel coupled for rotation relative to said chassis, said at least one drive wheel being configured for engaging a surface;
- spring means within the chassis;
- a first gear pair having first and second gear members mounted for rotation about a first axis, one of said first and second gear members being operatively coupled to said spring means for storing energy in said spring means when rotated in a first direction and for releasing energy from said spring means during rotation in a second direction;
- a second gear pair having third and fourth gear members mounted for rotation about a second axis generally parallel to said first axis, said first and third gear members being in meshing relation, and said second and fourth gear members being in meshing relation;
- coacting means integrally formed in adjacent surfaces of said first and second gear members for providing a first unidirectional clutch means for concurrent rotation between said first and second gear members only in a first direction;
- coacting means integrally formed in adjacent surfaces of said third and fourth gear members for providing a second unidirectional clutch means for concurrent rotation between said third and fourth gear members only in a direction opposite to said first direction; and
- means interconnecting said at least one drive wheel with one of said third and fourth gear members, said third and fourth gear members being so dimensioned for providing a first gear ratio for driving said one of said first and second gear members in said first direction with said at least one drive wheel rollingly engaging a surface in the reverse direction of travel of said vehicle and for providing a second gear ratio for propelling said vehicle on a surface with said one of said first and second gear members rotating in said second direction under force of said spring means

10. In a mechanism, the combination comprising:
- a first gear member mounted for rotation about an axle;
- a second gear member mounted for rotation about the same axle in proximity to said first member;
- a first surface of said first member having a recess formed therein with the periphery thereof contoured for providing a plurality of generally identical curved surfaces with each surface having a gradually contoured portion and an abruptly contoured portion;
- an adjacent surface of said second member having a part thereof extending within said recess, said part having a slot therein offset relative to the axis of rotation of said axle;
- a pin member slidably positioned within said slot, said pin member and the periphery of said recess being configured for enabling one end of said pin member to engage said abruptly contoured portions of one of said surfaces for driving said first and second members concurrently in a first direction of rotation and for enabling said pin member to generally slide over said gradually contoured portions upon rotation of one of said members in the opposite direction whereby to provide a unidirectional clutch mechanism;
- a second axle generally parallel to the first axle;
- third and fourth gear members mounted for rotation about said second axle, said first and third gear members being in meshing relation, and said second and fourth gear members being in meshing relation, adjacent surfaces of said third and fourth gear members being generally identically configured to the adjacent surfaces of said first and second gear members but in inverted relation relative thereto for providing a second unidirectional clutch mechanism for concurrently driving said third and fourth gear members in a direction opposite to the direction of concurrent rotation of said first and second gear members;
- a rotatable member; and
- means interconnecting said rotatable member to one of said third and fourth gear members, said first, second, third and fourth gear members being so dimensioned for providing a first gear ratio in one direction of rotation of said rotatable member and a second gear ratio in the opposite direction of rotation thereof.

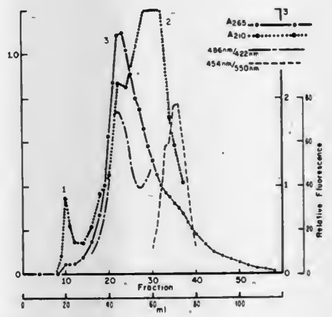
4,241,535
SUBMERSIBLE TOY
Mitsuo Tsukuda, Tokyo, Japan, assignor to Kabushiki Kaisha Tsukuda Hobby, Tokyo, Japan
Filed Sep. 21, 1979, Ser. No. 77,745
Claims priority, application Japan, Feb. 1, 1979, 54-10791
Int. Cl.³ A63H *23/04*
U.S. Cl. 46—250 **4 Claims**

1. A submersible toy comprising:
- an upper body portion;
- a liquid-tight lower body portion;
- said upper body portion being coupled to said lower body portion through connecting means;
- a first horizontal rudder provided on said upper body portion;
- a second horizontal rudder provided on said lower body portion;
- said first horizontal rudder on the upper body portion being disposed at a position substantially vertically above said second horizontal rudder on the lower body portion;
- a float provided inside said upper body portion;
- a motor and a cell provided inside said liquid-tight lower body portion;
- said motor having a rotary shaft which has an extension



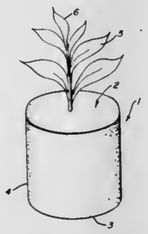
projected outwardly from a rear portion of said lower body portion;
- a propeller provided on the extension of the rotary shaft; and
- a vertical rudder provided on said lower body portion at the rear of said propeller;
- said second horizontal rudder on the lower body portion being disposed at the rear of said propeller.

4,241,536
EMBRYOGENESIS IN VITRO, INDUCTION OF QUALITATIVE AND QUANTITATIVE CHANGES IN METABOLITES PRODUCED BY PLANTS AND PRODUCTS THEREOF
Annette R. Saint-Firmin, 2407 #L. Wesvill Ct., Raleigh, N.C. 27607
Continuation-in-part of Ser. No. 849,952, Nov. 9, 1977, abandoned, and a continuation-in-part of Ser. No. 849,953, Nov. 9, 1977, abandoned. This application Jul. 7, 1978, Ser. No. 922,681
Claims priority, application United Kingdom, Nov. 10, 1976, 46866/76; Nov. 19, 1976, 48403/76
Int. Cl.³ A01G *31/00*; C12K *9/00*
U.S. Cl. 47—58 **20 Claims**



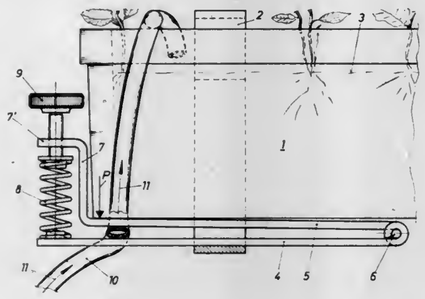
2. The process of embryogenesis in vitro comprising inducing tumor formation in a plant to produce mitotic cells, rejuvenating the mitotic cells in vitro to produce embryonic cells by means of a controlled environment, wherein the temperature range is from about 12° to 27°C., the light energy level is from about 2,000 to 400,000 ergs per sq. cm. per second, the spectral range is up to about 730 nm., for a selected photoperiod, and in a suitable nutrient medium, differentiating the embryonic cells to obtain therefrom embryos.

4,241,537
PLANT GROWTH MEDIA UTILIZING POLYURETHANE HYDROGEL
Louis L. Wood, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.
Filed May 10, 1979, Ser. No. 37,928
Int. Cl.[3] A01G *9/10*
U.S. Cl. 47—77 23 Claims



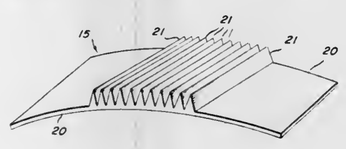
1. A soil plug comprising a plant growth in an aqueous gel of a monolithic, crosslinked, hydrophilic polyurethane.

4,241,538
DEVICE FOR AUTOMATICALLY WATERING PLANT CONTAINERS
Helmut Lahr, Gansmarkt 12, 65 Mainz-Bretzenheim, Fed. Rep. of Germany
Continuation of Ser. No. 814,318, Jul. 11, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,604
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632347
Int. Cl.[3] A01G *27/00*
U.S. Cl. 47—79 1 Claim



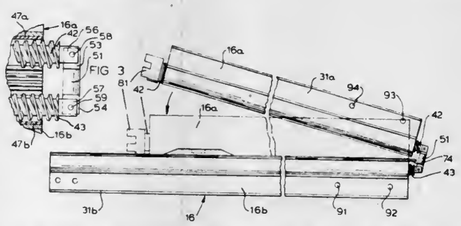
1. A watering device for a plant container consisting of upper and lower lever arms in substantially parallel relationship joined at an end by a hinge, said lower arm being fixed;
a plant container positioned on a major portion of the upper lever arm;
an adjustable compression spring arranged between the lever arms near their ends opposite their hinged ends, the spring engaging said lower arm and the lower portion of an adjusting screw urging the lever arms in opposite angular directions;
said adjusting screw located beside the container and having an upper control portion which extends above said upper lever arm, and a connecting portion which passes through and threadably engages the upper lever arm and connects with said lower portion to increase or decrease the compression on the spring;
a flexible hose extending transversely between the lever arms and having an end communicating with the plant container such that a fluid flowing through the hose will be deposited in the container;
whereby fluid flows through the hose to fill the container to a predetermined weight at which time the combined weight of the fluid, container, and upper lever arm compress the spring and drives the two lever arms together to pinch the hose thereby stopping or reducing the flow of fluid therethrough and whereby adjustment of the screw permits the adaption of the watering device to plant containers of different weights.

4,241,539
SEAL FOR SIDES OF PIVOTED BLADE STRUCTURES
Louis Josephson, Yonkers, N.Y., assignor to American Hardware & Paint Co., Inc., Elizabeth, N.J.
Filed Jan. 18, 1979, Ser. No. 4,488
Int. Cl.[2] E06B *7/23, 7/098*
U.S. Cl. 49—91 7 Claims



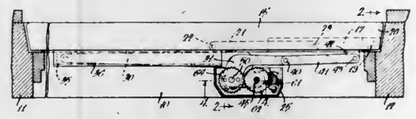
1. A laterally curved relatively rigid side seal strip having centrally positioned on the portruding portion of the curve a series of laterally spaced soft and flexible longitudinally extending teeth, said strip being a longitudinally straight slat-like extrusion in which the curved body portion of the strip is formed from hard plastic, and the teeth are formed of soft plastic, the lateral curvature of said strip having a radius of the width of the strip up to about 3 times the width of the strip and the upper reach of the teeth being approximately level.

4,241,540
FOLDING SCREW AND RAIL ASSEMBLY FOR A GARAGE DOOR OPENER
Warren B. Depperman, Waterloo, Iowa, assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.
Filed Jul. 18, 1979, Ser. No. 58,678
Int. Cl.[3] E05F *11/00*
U.S. Cl. 49—199 10 Claims



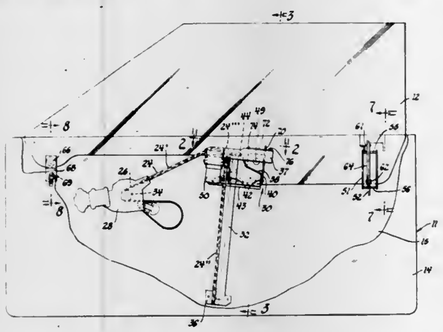
1. A garage door opener comprising, a movable trolley with a worm engaging portion coupled to said door to move it up and down, a pair of worm shafts mounted end to end and said worm engaging portion of said trolley engageable therewith, and means pivotally connecting the adjacent ends of said worm shaft together so that in the unassembled position said worm shaft can be folded along side each other.

4,241,541
DUAL ARM OPERATOR FOR A CASEMENT-TYPE WINDOW
Marlo G. Van Klompenburg, Sioux Center, Iowa; Jeffery A. Peterson, Canby, and Eric W. Nelson, Minneapolis, both of Minn., assignors to Truth Incorporated, Owatonna, Minn.
Filed Jun. 8, 1979, Ser. No. 46,800
Int. Cl.[3] E05F *11/24*
U.S. Cl. 49—249 9 Claims



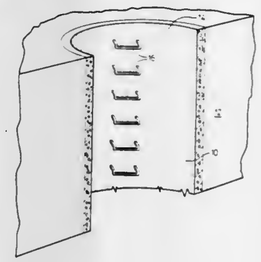
1. An operator for a casement-type window having an openable sash mounted adjacent one edge thereof for combined pivoting and linear movement of said sash edge relative to a window frame comprising, a first operator arm rotatable about a fixed axis and having an end adapted for movable engagement with the sash at a distance from said one edge to impart a rotational force to said sash, a second operator arm, a connecting link pivotally connected to said second operator arm and pivotally connectable to said sash adjacent said edge, and means responsive to rotation of the first operator arm for rotating and bodily moving said second operator arm to exert a force on the connecting link acting in a direction generally parallel to the path of linear movement of said sash edge.

4,241,542
VEHICLE DOOR WINDOW ASSEMBLY
Edward G. Podolan, and Francis C. Przybysz, both of Utica, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 12, 1978, Ser. No. 950,629
Int. Cl.[3] E05F *11/48*
U.S. Cl. 49—352 4 Claims



1. In a door having a window arranged between inner and outer panels thereof for opening and closing a window opening cooperatively defined by the door and a vehicle body with an outwardly facing seal, tape drive regulator means connected in said door between said inner panel and said window for moving said window between open and closed positions with respect to said opening comprising a straight slide pole fixed to said inner panel and extending parallel to the direction of movement required of said window in moving across said opening between its open and closed position, actuator means fixed to said inner panel, a track fixed to said inner panel and extending from said actuator means and along said slide pole, a tape slidably mounted in said track and drivingly connected to said actuator means, first yoke means slidably mounted on and guided by said slide pole and drivingly connected to said tape, second yoke means fixed to said window, and pivot means pivotally connecting said second yoke means to said first yoke means so that said window can pivot about an axis transverse to said slide pole to bear against said seal, and combination window guide and lateral stabilizing means on said inner panel and said window operably engageable only during movement of said window adjacent its closed position for guiding said window by camming action to pivotally bear against and then be laterally restrained with respect to said seal as said window is moved to its closed position.

4,241,543
METHOD OF INSTALLING MANHOLE SAFETY STEPS AND PLUGS THEREFOR
Anthony Foscarini; John Foscarini, and Corrado Comello, all of 17 Malley Rd., Scarborough, Ontario, M1L 2E4, Canada
Filed Jan. 30, 1979, Ser. No. 7,672
Claims priority, application Canada, Dec. 20, 1978, 318,298
Int. Cl.[3] E02D *29/12*
U.S. Cl. 50—742 12 Claims

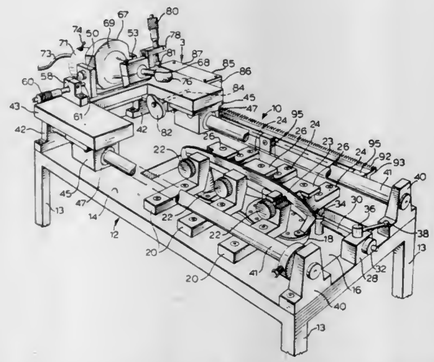


1. A method of manufacturing a concrete manhole casing comprising:
(a) fabricating a form of a predetermined shape;
(b) securing a plurality of retractable arbors on the inside surface of said form, each arbor located on the surface of said form at a predetermined location;
(c) extending each arbor through said form;
(d) placing a plug on the end of each arbor;
(e) pouring concrete into said form;
(f) vibrating and compacting said poured concrete;
(g) retracting said arbors leaving said plugs in said compacted concrete; and
(h) removing said form and arbors.

4,241,544
SKATE BLADE SHARPENER
Joseph Hampton, R.R. 1, King, Ontario, Canada
Filed Oct. 30, 1978, Ser. No. 955,635
Int. Cl.[3] B24B *9/04*
U.S. Cl. 51—33 R 7 Claims

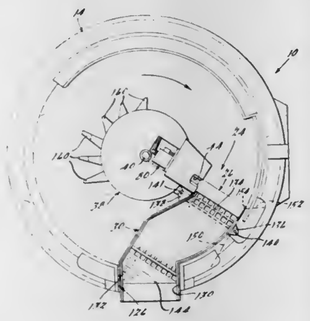
1. A skate sharpening apparatus, comprising:
first means for firmly supporting a skate blade,
a grinding member having the shape of a surface of revolution,
power means for rotating the grinding member about its axis of symmetry,
second means supporting the power means for pivoting movement about a pivotal axis transverse to said axis of symmetry, the pivotal axis being spaced from the grinding member,
guide means for allowing relative translational movement between the first means and the second means,
and cam means controlling the pivotal position of the power means as a function of the translational position of the first means relative to the second means, the cam means being such as to cause the grinding member to follow a locus corresponding to a pre-determined skate blade profile, said cam means including a gear rack fixed with respect to

said first means, a pinion meshing with and rolling on said rack, the pinion axis being transverse to the direction of translational movement and being fixed with respect to said second means; and means including a reduction gear mechanism for applying the rotation of said pinion to a cam shaft whose axis is fixed with respect to the second



means whereby the cam shaft rotates more slowly than the pinion, a cam on said cam shaft, a follower mounted on the power means and bearing against the cam, the cam being contoured such that the follower causes the grinding member to follow the profile of a skate blade supported in said first means.

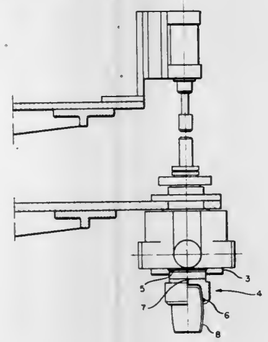
4,241,545
SEPARATING AND UNLOADING DEVICE FOR VIBRATORY FINISHING MACHINES
Gordon H. Anderson, Albert Lea, and Steven R. Johnson, Hayward, both of Minn., assignors to King-Seeley Thermos Co., Prospect Heights, Ill.
Filed Dec. 4, 1978, Ser. No. 965,922
Int. Cl.[3] B24B *31/06*
U.S. Cl. 51—163.2 **33 Claims**



1. In combination with a vibratory finishing machine comprising a generally circular finishing chamber adapted to be subjected to vibratory movement whereby workpieces and finishing media move about a generally circular path during a finishing operation,

a workpiece separating and unloading device including a weir element arranged generally transversely of said path of movement of the workpiece-media mixture within the chamber, means supporting said element for upward and downward pivotal movement about a generally horizontal pivotal axis, whereby said weir may be moved into and out of said path of workpiece and media movement, said last mentioned means comprising a pivot arm secured to said weir and extending generally radially of said finishing chamber, and means disposed generally centrally of said finishing chamber for supporting said shaft for pivotal movement about said horizontal pivotal axis for rotational movement about the axis of said shaft.

4,241,546
HOLDING DEVICE FOR CUP-SHAPED GLASSWARE ARTICLES IN A GLASS PROCESSING MACHINE
Emil Ilk, Ahornweg 4, 8372 Zwiesel, Fed. Rep. of Germany
Filed Apr. 16, 1979, Ser. No. 30,132
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823088; May 26, 1978, 7815846[U]
Int. Cl.[3] B24B *9/12*
U.S. Cl. 51—227 R **3 Claims**



1. In a glass processing machine, the combination comprising:

a rotatable over head turret for carrying cups between a plurality of stations,

a plurality of cup holding devices on said turret for holding cups in an inverted position with the rim of the cup mouth being lowermost,

said cup holding devices comprising:

a cup shaped holding element having a wall encircling the sidewall of the cup and having a bottom opening and upwardly extending cavity into which is projected the base and sidewall of the inverted cup,

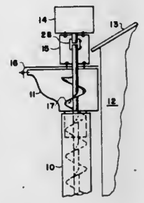
said cup shaped element having an upper wall for being positioned adjacent to the inverted bottom wall of the cup,

an upper base portion on said holding element for securing to a rotating holder portion of the glass processing machine,

and a circumferential sealing ring on the encircling wall of said holding element for contacting the exterior surface of the sidewall of the cup,

said circumferential sealing ring having sealing engagement with the cup's sidewall to define a chamber thereabove and across the top of the inverted cup bottom wall to provide a vacuum chamber across the entire upper portion of the inverted cup, and means for establishing a vacuum in said chamber in the space between said inverted cup bottom wall and the cup side wall extending down to said sealing ring.

4,241,547
RAINWATER DUCTING SYSTEM
Louis J. Bove', 10131 Epsilon Rd., Richmond, Va. 23235
Filed Apr. 9, 1979, Ser. No. 28,475
Int. Cl.[3] E04D *13/00*
U.S. Cl. 52—11 **7 Claims**



1. A rainwater ducting system for use adjacent the eaves of a building comprising:

(a) a horizontally disposed open gutter trough located beneath the terminal edge of a roof of said building in a manner to receive rainwater therefrom, horizontally directed auger means positioned within said trough adapted for rotative movement therein without contact with the inside walls of said trough, a first electric motor supported by said trough and operatively coupled to said auger means, and

(b) a vertically disposed tubular downspout communicating with said trough adjacent at least one end thereof, vertically directed auger means positioned within said downspout depending from attachment with a second electric motor mounted atop said trough and positioned directly above said downspout,

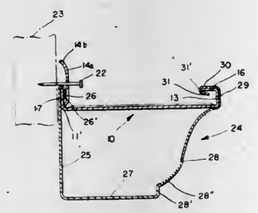
(c) said horizontally directed and vertically directed auger means each occupying less than 50% of the cross-sectional areas of said trough and downspout respectively,

(d) said first and second motors being of waterproof design and capable of variable forward and reverse speeds, and

(e) electrical control means for said motors located within said building remote from said trough and downspout,

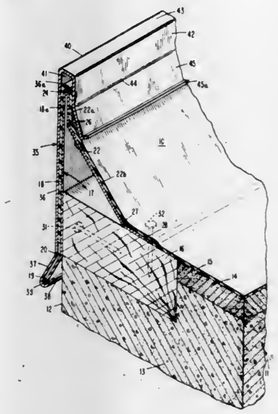
(f) whereby activation of said motors causes the associated auger means to advance solid debris along said gutter to said downspout and thence downwardly through said downspout.

4,241,548
GUTTER HANGER
Lacy A. Rowe, 1851 Skycoe Dr., Salem, Va. 24153
Filed Nov. 27, 1979, Ser. No. 97,676
Int. Cl.[3] E04D *13/00*
U.S. Cl. 52—11 **9 Claims**



1. A one-piece gutter hanger for supporting an open top, trough-shaped rain gutter adjacent to the eaves of a building, the gutter being of a type comprising a flat rear wall having an inwardly and downwardly reversely bent upper edge portion forming a downwardly open rear gutter hook, a bottom wall extending forwardly of the rear wall, a front wall extending upwardly from the bottom wall opposite the rear wall and having an upper wall portion, a horizontal flange extending inwardly from the top of the upper wall portion terminating in a downwardly and forwardly reversely bent edge portion to form a downwardly and forwardly open front gutter hook, said gutter hanger comprising an elongated body portion of a length to span the open top of the gutter, hook means at one end of the body portion for inter-engaging the front gutter hook, and an upstanding support portion formed integrally with the other end of the elongated body portion, said upstanding support portion including an inwardly offset main portion and at least one upstanding tongue struck therefrom and bent upright from said elongated body portion, said tongue being spaced outwardly from the inwardly offset main portion of said upstanding portion and adapted to seat in the rear gutter hook, said main portion of said upstanding portion being longer than said tongue so as to extend above the top edge of a gutter when the tongue is seated in the rear gutter hook, and a hole through the main portion of said upstanding portion above said tongue for receiving a nail, said hole being spaced relative to said tongue so that when the tongue engages the rear gutter hook and the front hanger hook engages the front gutter hook, a nail driven through said hole into a vertical building surface beneath the eaves will draw the gutter and hanger tight against the vertical wall and lock the hanger relative to the gutter to prevent separation of the hanger from the gutter without piercing the gutter.

4,241,549
CONJOINT FACIA, FLASHING AND WATER DAM
James H. Hall, III, and Julian J. Attaway, both of Tucker, Ga., assignors to MM Systems Corporation, Tucker, Ga.
Continuation of Ser. No. 831,976, Sep. 9, 1977, abandoned. This application Sep. 7, 1978, Ser. No. 940,339
Int. Cl.[2] E04D *13/15*
U.S. Cl. 52—60 **12 Claims**



1. In a conjoint facia, flashing and water dam for being installed on a building adjacent to a wall and roof deck of said building, the combination which includes; facia and flashing means comprising, facia means, flashing means and longitudinal ridge structure interconnecting said facia means and said flashing means to have said facia means laterally extend generally vertically adjacent to said building wall, said facia and flashing means, as installed, being externally laterally re-entrant along the rear of said ridge structure thereof and over said flashing means to have said flashing means extend rearwardly and downwardly from said ridge structure of said facia and flashing means toward said roof deck, and said facia means having engageable means for being detained; and dam and detent means comprising, dam means adapted to extend behind said facia means and including longitudinal ridge structure supported to stay in a substantially fixed position above said roof deck after said dam means has been installed, and said dam means, as installed, being laterally externally re-entrant along

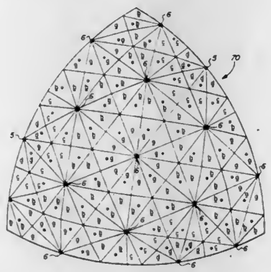
the rear of said ridge structure of said dam means and over a surface of said dam means leading rearwardly and downwardly from said ridge structure of said dam means toward said roof deck, said surface of said dam means to support sheet roofing having the latter lead upward from said roof deck and beneath said flashing means for said flashing means pressing upon said sheet roofing to have upward reactive thrust for lifting said ridge structure of said facia and flashing means, and detent means adapted to be connected with said building so as to be in a position below said ridge structure of said dam means, and said ridge structures of said facia and flashing means and said dam means together forming upper tongue and grooved means comprising upper tongue means and upper grooved means and said engageable means and said detent means together including lower tongue and grooved means comprising lower tongue means and lower grooved means, for said facia and flashing means to be moved laterally downwardly onto said dam means having said upper tongue means and said upper grooved means relatively moving stably engaged laterally with one another in each of opposite horizontal directions and thus stabilizing said ridge structure of said facia and flashing means laterally in each of opposite horizontal directions, and thereby causing said flashing means with continued downward movement of said facia and flashing means to press said sheet roofing against said surface of said dam means and store upward reactive thrust and disposing said lower tongue means and said lower grooved means to be upwardly relatively moved, and thereby become engaged, through having said facia and flashing means move upwardly in response to said upward reactive thrust stored in said flashing means, and thus have said upper tongue means and said upper grooved means engaged and relatively moving simultaneously with said lower tongue means and said lower grooved means being engaged and relatively moving and said upward movement of said facia and flashing means eventually stopped by said detent means against said engageable means, with said flashing means thereafter still pressing said sheet roofing against said surface of said dam means, said laterally stably engaged upper tongue means and upper grooved means still stabilizing said ridge structure of said facia and flashing means laterally in each of opposite horizontal directions and said lower tongue means and said lower grooved means remaining engaged.

4,241,550

DOMICAL STRUCTURE COMPOSED OF SYMMETRIC, CURVED TRIANGULAR FACES

John S. Sumner, 728 N. Sawtelle, Tucson, Ariz. 85716

Filed Jun. 23, 1978, Ser. No. 918,448
Int. Cl.[2] E04B *7/10*
U.S. Cl. 52—81 **3 Claims**



1. A method for subdividing a symmetric right spherical triangle comprised of an arcuate hypotenuse and two arcuate sides to obtain surface elements for a domical structure comprising the steps of:

bisecting the 60 degree angle of an approximately 90°–60°–36° spherical triangle with a first arc that intersects the opposite side of the spherical triangle,

drawing a first arcuate line from this intersection to the hypotenuse of the triangle,

said arcuate line meeting said hypotenuse of the spherical triangle at approximately a 90 degree angle,

said first arc and said first arcuate line dividing the spherical triangle into a first pair of left and right handed smaller spherical triangles and a third triangle having an apex angle the same as the apex angle of said spherical triangle,

bisecting the approximately 60 degree angle of each of said first pair of triangles and said third triangle with a second arc that intersects the opposite side of each first pair of triangles and said third triangle, and

drawing second arcuate lines from these intersections to the hypotenuse of each of a second pair of triangles and said third triangle,

said second arc meeting the hypotenuse of each of said second pair of triangles and said third triangle at approximately a 90 degree angle,

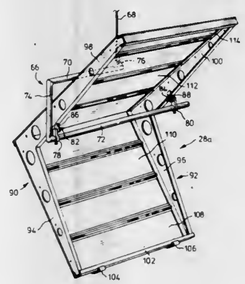
thereby dividing each of said second pair of triangles and said third triangle into two similar triangles and further third triangles with said third triangles each having an apex angle the same as the triangle from which it is formed.

4,241,551

BUILDING STRUCTURE

Marcel Lajoie, R.R. #1, and Bernard Lajoie, R.R. #2, both of Sombra, Canada (N0P 2H0)

Filed Mar. 5, 1979, Ser. No. 17,212
Int. Cl.[3] E04B *1/343*
U.S. Cl. 52—90 **7 Claims**



1. A building structure comprising:

a base frame adapted to defining a rectangle in plan view after assembly, the base frame including coplanar inner and outer top flanges which on assembly define a horizontal top surface, one of the flanges defining notches;

end wall panels adapted to stand on parts of the top surface defined by two of the sides of the rectangular base frame;

side wall parts adapted to stand on parts of the top surface defined by the other sides of the rectangular base frame;

roof parts adapted to be supported by the side wall parts on assembly;

means adapted to couple the end wall panels, side wall parts and roof parts to one another to rigidify the structure on assembly;

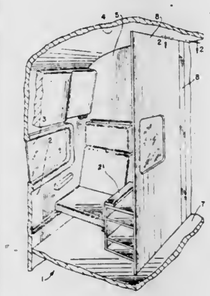
and coupling elements attached in pairs to at least some of the end wall panels and the side wall parts, each pair of elements extending downwardly and attached one to the inside and one to the outside of the associated one of said panels or side wall parts, the elements being generally C-shaped and curving downwardly and towards one another for respective engagement under said inner and outer top flanges of the base frame, the notches in the base frame and the coupling elements being proportioned and positioned to permit assembly by passing one of the C-shaped elements through the notch in said one of the flanges with the other element hooked under the other of the flanges and then sliding the associated one of the end wall panels and side wall parts along the base frame into final assembled positions.

4,241,552

PARTITION WALL JOINT

Walter J. Marulic, Gary, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Mar. 27, 1978, Ser. No. 890,444
Int. Cl.[2] E04B *1/00*
U.S. Cl. 52—282 **4 Claims**



1. In a passenger vehicle having compartment partition walls converging to form a wall joint, the improvement comprising a partition-wall joint adapted to secure generally adjacent vertical edge portions of first and second longitudinal partition walls and a third partition wall having a vertical edge portion generally interposed between said edge portions of said first and second walls and extending generally transversely therefrom, comprising:

a vertical anchor post generally hat-shaped in horizontal cross-section and including a channel having inner and outer portions, said inner channel portion adapted to receive the vertical edge portion of said third wall, and said post having brim flange portions extending longitudinally from said channel in spaced parallel relation to said outer channel portion and adapted to engage first sides of said first and second walls, said outer channel portion being in general alignment with second sides of said first and second walls,

an anchor plate generally co-extensive and cooperative with the post and positioned adjacent to said outer channel portion to define oppositely longitudinally opening slots formed by each brim flange portion and the anchor plate, said anchor plate adapted to engage second sides of said first and second walls and to sandwich respective vertical edge portions of the first and second walls between said flange portions and said anchor plate in generally flush relation with said outer channel portion, and

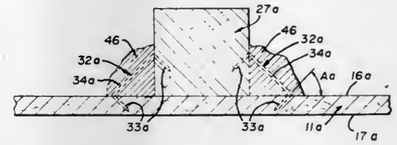
first fastening means extending from said outer channel portion into said third wall adapted to couple said post and third wall, second fastening means adapted to couple said plate and post, and third fastening means extending through said plate and into said first and second walls adapted to secure said first and second walls to the plate, said first, second and third fastening means all being accessible from the same side of the wall joint.

4,241,553

MOBILE HOME CEILING CONSTRUCTION AND METHOD FOR MAKING

James E. Reicherts, Oakwood Hills, and William C. Veschuroff, Palatine, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Feb. 5, 1979, Ser. No. 8,919
Int. Cl.[3] E04B *5/52*
U.S. Cl. 52—309.5 **32 Claims**



1. A mobile home ceiling unit comprising:

a plurality of generally rectangular panels abutting along longer sides at joints in adjacent edge-to-edge relationship, having a thickness of from about 5/16 inches to about ½ inch, having planar back and front face surfaces, and said panels abutting to form an overall generally rectangular panel arrangement;

a roof frame having an outer truss member at opposite ends and a multiplicity of intermediate truss members therebetween, said truss members being spaced apart at intervals and contacting the back face surface of the panels along bottom chords, said roof frame having side edge rails fastened to opposite terminal end portions of the truss members and contacting back face surfaces of the panels;

a group of back fasteners being spaced apart at intervals and driven along at least one side of the bottom chords of the intermediate truss members wherein the fasteners incline downwardly to the plane of the back face surfaces of the panels having a first leg means penetrating a bottom chords and a second leg means penetrating the back face surface of a panel but stopping short of emerging through the front face surface thereof;

a group of front face fasteners being spaced apart at intervals along substantially the full perimeter of the rectangular panel arrangement and driven upwardly at the front face surface of said panels, said fasteners having leg means of sufficient length to extend through the panels and penetrate the side edge rails and bottom chords of the outer truss members;

at least one bead of adhesive material disposed along the bottom chords of the intermediate truss members across the back face surfaces of the panels;

wherein the panels are rigidly attached to the roof frame by said adhesive and fasteners to provide a unitized ceiling structure;

wherein the front face surface of the ceiling unit is adapted to supportively coact along the perimeter thereof atop support wall means to thereby conceal the front face fasteners and support the ceiling unit; and,

whereby the ceiling unit provides a concealed back fastened ceiling structure having unitized construction for use in mobile home construction.

4,241,554

DECORATIVE SKIRTING PANEL SYSTEM

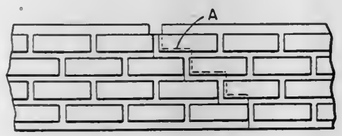
Dick S. Infantino, Cupertino, Calif., assignor to Kool Foam Products, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 824,675, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 656,487, Feb. 9, 1976, abandoned. This application Sep. 6, 1978, Ser. No. 940,059
Int. Cl.[2] E04C *2/20*
U.S. Cl. 52—314 **5 Claims**

1. In a decorative skirting system for installation along a side of a mobile home which is supported above the ground, the

skirting system adapted to overlie and be held to the exterior surface of the lower portion of the mobile home sidewall and extend downwardly therefrom to the ground, the system comprising a generally coplanar plurality of panels of expanded polystyrene foam, each panel being formed with an array of rectangular projections stimulating masonry material, the improvement wherein:

each panel has uninterrupted first and second vertical side edges extending to the ground, with a V-shaped tongue extending the entire length of the first side edge, and a correspondingly configured V-shaped groove extending the entire length of the second side edge, the tongue of one panel engaging the groove of an adjacent panel to maintain the panels in a coplanar relationship, the V-shaped tongue and groove having a common specified width and depth necessary to maintain the coplanar relationship,



the uninterrupted vertical side edges permitting an individual panel to be slidably disengaged from adjacent panels without disturbing the adjacent panels by detaching the top of the panel from the mobile home sidewall and sliding the panel vertically upward a distance at least that of the height of the panel,

the V-shaped configuration of the tongue and groove providing a minimum surface area between an engaged tongue and groove for the specified width and depth and preventing binding arising from dimensional inhomogeneities, thereby facilitating the slidable disengagement; and

the rectangular projections are aligned in vertical columns with simulated mortar lines therebetween, such that the boundary between adjacent panels falls within a simulated mortar line and is thereby disguised.

4,241,555

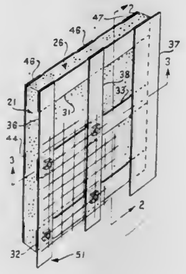
COMPOSITE PANEL STRUCTURE AND METHOD OF MANUFACTURE

Luther I. Dickens, Radford, Va., and William C. Nanny, San Francisco, Calif., assignors to Radva Plastics Corporation, Radford, Va.

Continuation of Ser. No. 659,758, Feb. 20, 1976, abandoned. This application May 30, 1978, Ser. No. 910,762

Int. Cl.[2] E04C *2/18, 2/26*

U.S. Cl. 52—454 **5 Claims**



1. A composite building panel comprising a core element consisting of rigid expanded plastic material having a front and back surface, and a plurality of thin reinforcing strips bonded during expansion of said plastic material to each of said front and back surfaces of said core with a strip extending at least along each of the edges of said surfaces and extending laterally from only first and second adjacent edges of said core only on the front face thereof.

4,241,556

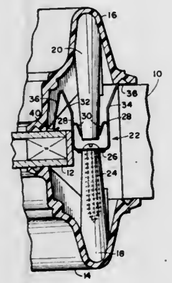
DOOR LIGHT ASSEMBLY

William M. Bursk, Middletown, Ohio, assignor to Pease Company, Fairfield, Ohio

Filed Nov. 9, 1978, Ser. No. 958,981

Int. Cl.[3] E06B *3/70*

U.S. Cl. 52—455 **9 Claims**



1. In combination with a door light assembly including a door having an opening therethrough, a panel positioned in said opening in substantially coplaner relationship to said door, interior and exterior molding engaging adjacent edges of said panel and said door around said opening therethrough, and inwardly projecting portions on said molding sections positioned intermediate said edges of said panel and said door, the improvement comprising:

a security clip having a substantially flat base section with an opening therethrough,

fastening means projecting outwardly from said base section through said opening, penetrating said inwardly projecting portion of said exterior molding, and securing said base section to said exterior molding, and

resilient gripping means projecting from said base section in a direction opposite to said fastening means and gripping said inwardly projecting portion of said interior molding.

4,241,557

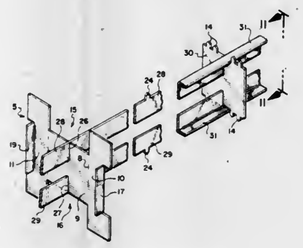
CONSTRUCTION MEMBER AND PLATE THEREFOR

Keith A. Jensen, Sandy, Utah, assignor to Jensen Building Products, Inc., Pleasant Grove, Utah

Filed May 15, 1978, Ser. No. 906,067

Int. Cl.[2] E04C *3/02*

U.S. Cl. 52—696 **15 Claims**



1. A construction member comprising

an upper chord;

a lower chord;

a flat spacer lock plate or plurality of plates rigidly joining the upper and lower chords, each spacer lock plate positioned in a direction perpendicular to the axis of the chords and having opposing upper and lower rectangular indentations of its upper and lower edges, respectively, into which indentations the upper and lower chords rest, a stem portion between the indentations which includes teeth on the upper and lower edges thereof, and flanges at each side of the indentations and stem portion and folded flush against the sides of the chords in a direction parallel to the axis of the chords; and

protrustions extending from or through the flanges and driven into the chords.

4,241,558

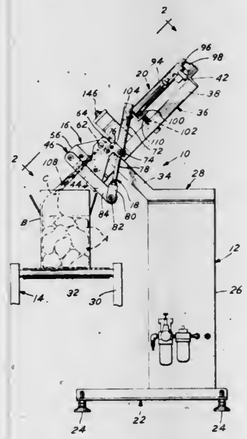
PACKAGING MACHINE

Kenneth L. Gidewall, Naperville, and James R. Proce, Palatine, both of Ill., assignors to C.V.P. Systems, Inc., Lombard, Ill.

Filed Jan. 24, 1979, Ser. No. 5,967

Int. Cl.[3] B65B *31/06*

U.S. Cl. 53—79 **9 Claims**



1. Apparatus for packaging articles in a controlled atmosphere within a flexible container having an open end, said apparatus comprising, in combination, a frame, means on said frame for supporting said flexible container with said articles therein in a substantially fixed position relative to said frame, a fixed elongated member mounted on said frame and having an upwardly angled sealing surface, a movable elongated member operatively mounted on said frame and having a sealing face movable into cooperative relationship with said sealing surface of said fixed elongated member, said movable elongated member being movable between a first position which is spaced from said fixed elongated member and a second position which is adjacent said fixed elongated member, means operatively carried by said fixed elongated member for holding said flexible container in place when said movable elongated member is in said first position, means mounted on said frame for moving said movable elongated member between said first and second positions, said moving means including over-the-center linkage means for holding said movable elongated member in said second position, passage means on said frame for passage through said open end of said flexible container into said flexible container for creating said controlled atmosphere, means for moving said passage means from a first position which is positioned slightly in said open end of said container and a second position which is inserted substantially into said container, said passage means being sealably positioned between and aligned with said sealing surface and said sealing face when said movable elongated member is in said second position and said passage means is in said second position in said flexible container.

4,241,559

LOWERING AND PIVOTING RAIL MECHANISM FOR A CARTON FILLING MACHINE

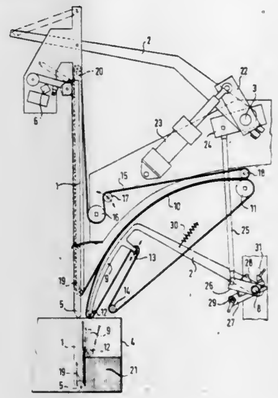
Hartmut Klapp, Kaarst, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,138

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825648

Int. Cl.[3] B65B *5/10;* **B65H** *29/14*

U.S. Cl. 53—244 **5 Claims**



1. A lowering and pivoting rail mechanism for a carton filling machine including a lower belt supported by roller means fixed to a pivoting rail and an upper belt supported by roller means fixed to a lowering rail, blanks being guided between said upper and lower belts and loaded into transport containers in an upright position, in which said lowering rail can be lowered from a position above the container in a generally vertical direction to a point near one of the floor of the transport container and a point near a previously loaded layer of blanks, and the pivoting rail can be pivoted around a point of rotation from a retracted position to a position just above that of a loaded layer of blanks, comprising:

single drive means (**23**) for imparting motion to said lowering rail (**1**) and said pivoting rail (**9**);

a first arm (**2**) coupled to said lowering rail for raising and lowering it;

a second arm (**7**) coupled to said pivoting rail for pivoting it;

an adjustable lost motion mechanism (**26-31**) coupled to said second arm for providing a range of lost motion; and

a connecting rod (**25**) coupling said first arm to said lost motion mechanism, whereby the amount of lost motion between said connecting rod and said second arm may be varied.

4,241,560

APPARATUS FOR FOLDING AND CLOSING THE TOPS OF FOLDING CARTONS

Gerhard Deimel, Opladen, and Paul Schmidt, Dusseldorf, both of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 22,006

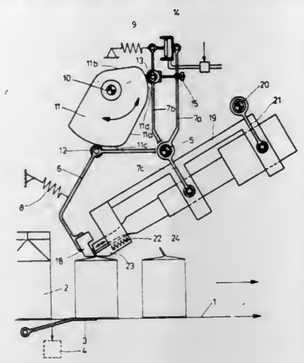
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812138

Int. Cl.[3] B65B *7/04, 7/06, 51/22*

U.S. Cl. 53—373 **9 Claims**

1. An apparatus for folding and closing the top of folding cartons prefabricated from cut boxboard stock having an inner thermoplastic-resin liner, comprising means for stepwise conveying the folding cartons in a row, upright, with the fillet seam of the carton perpendicular to the direction of travel, and a single folding, pressing and welding station having ultrasonic

welding means including a vibratable tip and a pressing and welding tool comprising a pair of jaws and the tip, means mounting the jaws for movement toward each other in the manner of tongs wherein one of said jaws includes a folding



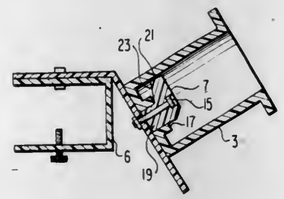
wedge and an anvil above said folding wedge, the other jaw being configured as a folding and clamping wedge, and means mounting the jaws and the ultrasonic vibrating means in a common holder for movement into and out of engagement with the fillet seam of each carton on the conveying means.

4,241,561

BAG SUPPORT AND DISPENSING APPARATUS

Heikki S. Suominen, 33730 Tampere 73, Finland

Filed Apr. 5, 1979, Ser. No. 27,534
Claims priority, application Finland, Apr. 18, 1978, 781164
Int. Cl.³ B65B *67/04*
U.S. Cl. 53—390 **2 Claims**



1. Apparatus for supporting a stack of bags and maintaining a forwardmost bag in said stack in a loading position, each bag in said stack having an enlarged aperture in the top portion of its forwardmost wall and an aligned smaller aperture in the top portion of its corresponding rear wall, the apparatus comprising:

sleeve means passing through the aligned apertures in said stack of bags to support said bags, said sleeve means including

flange means positioned at the forward end of said sleeve, said flange means dimensioned to readily pass through the enlarged aperture of the front wall and to resist passing through the smaller aperture to retain the rear wall when the front wall is pulled forward to define said loading position, and

collar means positioned at the back end of said sleeve for defining a sleeve support surface extending axially and inwardly within said sleeve; and

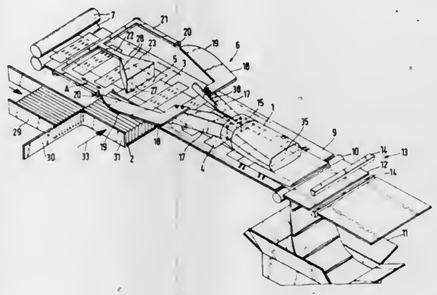
support means mounted for detachably engaging at least a portion of said sleeve support surface of said collar means to support said sleeve in a bag dispensing position, said support means including an axially extending shaft portion for contacting said support surface and a radially outwardly extending edge portion for contacting an inner wall of said sleeve to support said sleeve in the bag dispensing position when the sleeve is pressed into engagement with said support means.

4,241,562

METHOD AND APPARATUS FOR AUTOMATIC FILLING OF BAGS

Alfons Meyer, Donauschwabenstrasse 40, D-7050 Waiblingen, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,260
Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819888; Apr. 3, 1979, 2913224
Int. Cl.³ B65B *63/02, 43/22, 43/36*
U.S. Cl. 53—438 **35 Claims**



1. A method for automatic filling of container bags, said method including supplying empty bags on a carrier web at a scheduled cyclic rate, opening the first bag by means of an opening funnel, placing the goods in the bag and removing the bag from the carrier web and wherein, according to the invention, the method comprises the steps of:

supplying said bags with extending flaps which are permanently attached to the carrier web;

opening the first bag while the bag is attached to the carrier web;

moving the opened bag into a predetermined position with its mouth over the end of the opening funnel so that the opening funnel extends into the bag to spread the mouth thereof and to provide guide surfaces for the fill goods;

holding the bag open;

placing the goods in the bag by means of a moving filling piston; and

causing the separation of said bag from the extending flap along a tear line by pressing the goods against the bottom of the bag, while leaving the flap permanently attached to the carrier web.

4,241,563

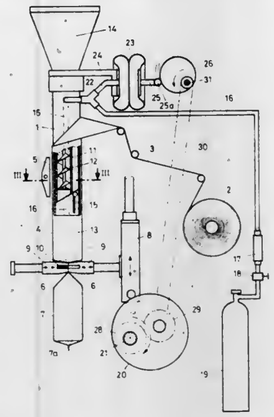
APPARATUS FOR PRODUCING AND FILLING TUBULAR BAGS

Werner Müller, Neuhausen am Rheinfall, and Hans Heinzer, Beringen, both of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Aug. 30, 1979, Ser. No. 70,921
Claims priority, application Switzerland, Sep. 29, 1978, 10152/78
Int. Cl.³ B65B *31/04, 9/08*
U.S. Cl. 53—511 **5 Claims**

1. In an apparatus for producing and filling tubular bags formed of a heat-sealable foil including a shaping pipe about which the foil is wrapped to form a tube, longitudinal heating means adjacent said shaping pipe for producing a longitudinal seam in the tube, removal means, including transverse heating jaws for periodically producing transverse seams in the tube,

for periodically removing a portion of the tube from one end of said shaping pipe to form a bag; filling means, disposed within said shaping pipe, for dispensing the material with which the bags are to be filled into the removed portion of said tube; and means for influencing the pressure in the interior of the portion of said tube being filled, said means for influencing being con-



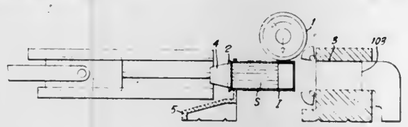
nected via a conduit with the area of said one end of said shaping pipe; the improvement wherein: said means for influencing the pressure comprises a chamber whose volume is variable, and drive means for periodically varying the volume of said chamber in the operating rhythm of said removal means.

4,241,564

CIGARETTE PACKING MACHINES

Rodolfo Quarenghi, Bologna, Italy, assignor to Cir - S.p.A. - Divisione Sasib, Bologna, Italy

Filed Nov. 15, 1978, Ser. No. 960,784
Claims priority, application Italy, Nov. 30, 1977, 12854 A/77
Int. Cl.³ B65B *19/24*
U.S. Cl. 53—575 **6 Claims**



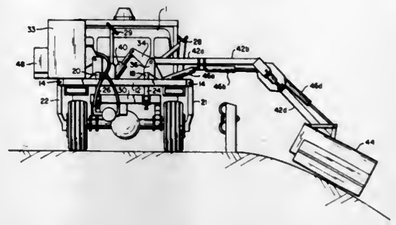
1. A cigarette packing machine of the type where a hollow packet or wrapper presenting an open head side and a closed bottom side is formed around a tubular mandrel or arbor, the packing machine including plunger means for ejecting a group of cigarettes previously inserted at the interior of said arbor in the direction of the closed bottom side of the wrapper, and drive means to reciprocate said plunger means through said arbor, wherein the improvement comprises a slip-off device for slipping the said hollow packet or wrapper off the said arbor concurrently with the displacement of the cigarette group promoted by the said plunger means, and drive means connected for operating said slip-off device synchronously with said plunger drive means so that the cigarette group is maintained out of contact with said closed bottom side of said wrapper during at least a substantial portion of the slipping movement of said wrapper off of said arbor.

4,241,565

BOOM MOWER MOUNTING FRAME FOR OVER CENTER TRANSPORT

Ralph L. Parsons, Jr., 1795 Olmstead Rd., West Jefferson, Ohio 43162

Filed Jun. 4, 1979, Ser. No. 45,241
Int. Cl.³ A01D *35/28*
U.S. Cl. 56—10.7 **9 Claims**



1. In combination, a frame, a mount, and a boom;

said boom having at least one section attached to said mount at one end and capable of retaining a mowing unit about its free end, means pivotally attached to said section and said mount for adjustably rotating said section about its point of attachment to said mount, the axis of said rotation being horizontal,

said mount being pivotally attached to said frame about a first pivot point and having means associated therewith for adjustably pivoting said mount about its pivotal attachment to said frame, the associated means being attached to said mount at a second pivot point, the axis of rotation of said second pivot point being horizontal,

said mount pivoting means being cooperatively operable for adjustably positioning said boom section about said first pivot point to (1) a generally horizontal position extending away from said frame for operation of said mowing unit and (2) over the frame at an angle of greater than 90° from said horizontal position, said mowing unit and said boom being positioned over said frame thereby, and

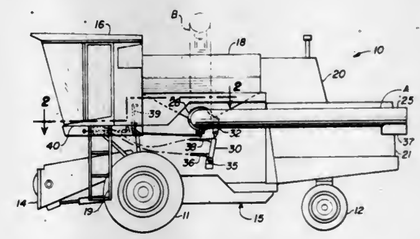
the frame being mounted on a vehicle having at least two axles and said frame being directly connected to one of said axles.

4,241,566

COMBINE UNLOADING AUGER SAFETY SWITCH

E. Graham Webster, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 10, 1979, Ser. No. 73,598
Int. Cl.³ A01D *75/18, 57/00*
U.S. Cl. 56—14.6 **21 Claims**



1. In a harvesting and threshing machine for harvesting crop materials from a field by means of a header attached to a mobile frame cooperably associated with a feeder housing and crop processing means, the crop processing means being in material flow communication via transport means with a grain storage tank, the grain storage tank having an unloading means

pivotally movable between at least a first predetermined position and a second predetermined position, the combination comprising:

(a) an internal combustion engine mounted to the frame to drive the machine across a field;

(b) an electrical power source mounted to the frame;

(c) a starter motor connected to the engine to selectively start the engine;

(d) an electrical circuit connected to the starter motor, the power source and the engine;

(e) an ignition switch connected to the electrical starter circuit effective to allow the electricity to flow from the power source to the starter motor when the switch is engaged and the circuit is closed;

(f) an unloading means control mechanism operatively connected to the grain storage tank unloading means and movable between at least a first non-operating position and a second activation position effective upon movement to the activation position to automatically pivot the unloading means between at least the first predetermined position and the second predetermined position;

(g) a safety ball switch connected to the electrical circuit and cooperative with the unloading means control mechanism such that when the control mechanism is in the activation position and the engine is not running, the starter circuit is broken preventing the engine from being started when the ignition switch is engaged until the control mechanism is returned to the non-operating position.

4,241,567

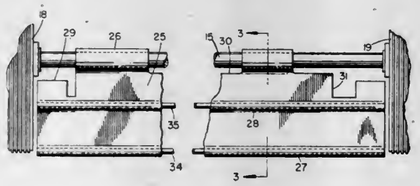
LAWN MOWER SAFETY SHIELD

Donald L. Carolan, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Feb. 21, 1979, Ser. No. 12,966

Int. Cl.³ A01D *53/00*

U.S. Cl. 56—17.4 **7 Claims**



1. A safety shield for a lawn mower having a transverse axle structure with ground wheels at opposite ends and elements on the mower adjacent the axle structure, said shield being composed of a polymeric sheet-like member having upper and lower horizontal tubular edges, said upper tubular edge receiving the axle structure so as to permit the sheet-like member to swing fore-and-aft, said member further having notches extending downwardly from said upper edge in fore-and-aft alignment with the aforesaid mower elements, said sheet-like member further having an integral and horizontal tubular section intermediate the upper and lower edges and beneath the lower extremities of the notches; and transverse rod elements extending through the tubular section and tubular lower edge for affording transverse stiffness to the safety shield.

4,241,568

FLAIL BLADE MOUNT FOR MOWERS

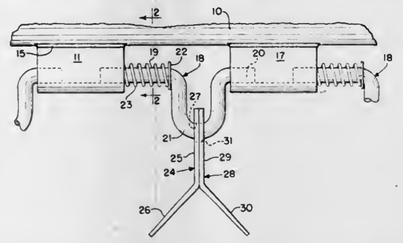
Bernard C. Mathews, 8606 Rte. 176, Crystal Lake, Ill. 60014

Filed Jul. 5, 1979, Ser. No. 54,835

Int. Cl.³ A01D *55/22*

U.S. Cl. 56—294 **2 Claims**

1. A releasable blade holder for a flail mower having a rotor drum comprising a first U-shaped sleeve lug welded to the surface of the rotor drum, a second U-shaped sleeve lug welded to the surface of the rotor drum in axial alignment with the first of said U-shaped sleeve lugs and with a certain spacing therebetween, a blade mounting link of rod material having a first long shank and a second short shank, said shanks in axial alignment and the overall length of the spaced apart shanks being greater than the certain space between the U-shaped sleeve lugs, said blade mounting link having a depending loop of U-shape between the spaced apart shanks, a blade having a portion with a hole therethrough, said blade hole being greater in size than the diameter of the link rod, said blade loosely received on said depending loop of the blade mounting link by passing the link rod through said blade hole, said long shank slidably received in one end of the first of said sleeve lugs, said short shank slidably received in the second of said sleeve lugs in the end thereof opposite the first sleeve lug, a collar fixed on said long shank at its inner end adjacent said depending loop, means restraining the removal of said blade mounting link from



its engagement with the spaced apart U-shaped sleeve lugs, said means restraining including a coil spring mounted on said long shank having its one end abutting the fixed collar and its other end abutting the first of said sleeve lugs to normally urge said blade mounting link toward the second of said sleeve lugs, and upon compression of the coil spring by manually moving the blade mounting link toward greater engagement of the first of said sleeve lugs by the longer shank the shorter shank becomes disengaged from the second of said sleeve lugs permitting the blade mounting link to be rocked downwardly at that end causing the longer shank to swing up within the first of said U-shaped sleeve lugs for removal of the blade from the depending loop of the blade mounting link or full removal of the blade mounting link from the drum rotor by pulling the link out of the first U-shaped sleeve lug while it is in its rocked down position.

4,241,569

GRAPE GATHERING MACHINE

Charles E. Bobard, Beaune; Just M. Delaunay, Gevrey-Chambertin, and Raymond M. Darcy, Beaune, all of France, assignors to Etablissements Bobard Jeune, Beaune, France

Filed Dec. 27, 1976, Ser. No. 754,747

Claims priority, application France, Dec. 29, 1975, 75 39936

Int. Cl.³ A01G *19/00*

U.S. Cl. 56—330 **39 Claims**

1. A machine adapted for moving along a row of vines and for gathering from vegetation grapes or other types of berries, comprising:

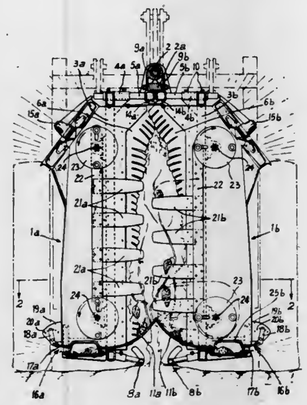
at least one support housing formed with a front and rear generally vertical opening and a bottom opening through which the vegetation is to pass as the machine is moved along the row of vines;

a flexible flap means attached to said support housing to at least partially cover each of said openings to define with said support housing at least a partial enclosure into which the vegetation passes through said flap means;

ventilator means on said support housing for producing an air flow within said enclosure;

at least one comb means carried by a said support housing, said comb means including at least one elongated blade of flexible material which extends in a direction toward the vegetation and which is substantially flexible in the horizontal direction and substantially rigid in a vertical direction,

drive means carried by said support housing for moving the comb means and the blades of each said comb means in a closed-curve path in a generally vertical plane substantially perpendicular to the row of vines and the direction of movement of the machine, into the vegetation, through



the vegetation in a generally vertical direction to sever the vegetation and withdrawing from the vegetation, said blades flexing in the horizontal direction as they engage various parts of the vegetation while the machine is moved along a row of vines, and

collector means carried by said support housing for collecting the severed vegetation.

4,241,570

METHOD AND APPARATUS FOR SEPARATING TWISTED WIRES

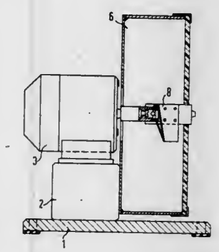
Egon Edinger, Graefelfing, and Zdzislaw Przybylski, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 45,947

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833563

Int. Cl.³ D07B *7/18*

U.S. Cl. 57—1 UN **6 Claims**



1. An apparatus for the automatic untwisting of twisted wires having two free ends comprising:

a stationary cylindrical housing;

a drive means having a drive shaft extending axially into said housing;

a wire holder for receiving wires to be untwisted attached to said drive shaft in said housing and co-rotatable therewith;

at least one paddle supported by and extending inwardly from said housing;

a paddle positioner for each paddle having an adjustable portion outside said housing operable to move a paddle from a rest position to an operating position which is in a plane of rotation of said wires in said wire holder; and

a means for adjusting an angle of incidence of said paddle with respect to said plane of rotation,

whereby upon rotation of said wires in said wire holder said free ends momentarily engage at least one paddle during a revolution, thereby inducing oscillations in the wires to untwist the wires.

4,241,571

APPARATUS FOR OPEN-END OR ROUND-ABOUT SPINNING OF A THREAD

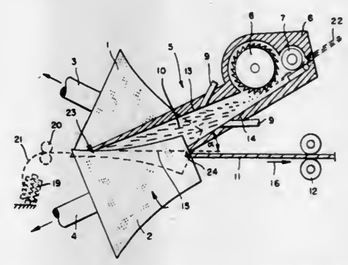
Herbert Turk, Remscheid, and Herbert Schlminski, Hückeswagen, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,035

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810843

Int. Cl.³ D01H *1/12*

U.S. Cl. 57—58.89 **18 Claims**



1. In an apparatus for the open-end or round-about spinning of a twisted thread from individual discrete fibers, said apparatus including

two elongated drums, at least one of which is perforated, said drums being arranged to rotate in the same direction and to provide a wedge-shaped nip ending at the common normal plane of said drums to define the narrowest gap which is formed by the respective generatrix lines of the two drums,

air suction means with an opening face located within each perforated drum to produce an air stream entering into each perforated drum and cooperating with said drums to produce a line of thread formation extending longitudinally within said wedge-shaped nip,

a feed channel to supply the individual fibers by means of an air stream directed into said wedge-shaped nip along said line of thread formation, and

means to take off the twisted thread emerging from said thread formation line at one end of said nip, the improvement which comprises:

an arrangement of said two drums and said air suction means with respect to said thread take off means such that the width of the wedge-shaped nip increases on the plane of said thread formation line in the thread take-off direction.

4,241,572

ROTORS OF FREED-FIBER SPINNING DEVICES

Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne de Constructions Mechaniques de Mulhouse, Mulhouse, France

Filed Mar. 28, 1979, Ser. No. 24,725

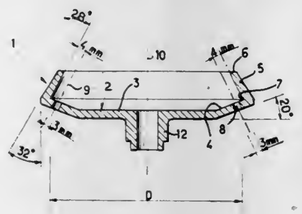
Claims priority, application France, May 9, 1978, 78 13620

Int. Cl.³ D01H *7/888, 7/885*

U.S. Cl. 57—58.89 **3 Claims**

1. A cup-shaped rotor for a freed-fiber spinning device in

which the bottom wall of the cup has a flat central portion surrounded by an inclined annular portion which is raised towards the exterior whilst the lateral wall of said cup has the shape of a cone frustum whose small diameter is located on the edge of the cup opening and the maximum internal diameter of the cup is consequently located between the bottom wall and



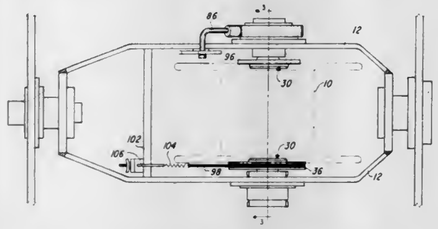
the edge of said cup, wherein waste removal holes are formed in the aforesaid annular portion of the bottom wall in the immediate vicinity of the lateral wall of said cup, the axes of said holes having the same angle of slope with respect to the axis of the rotor as the angle of slope of the generator-lines of the lateral wall of the cup.

4,241,573

REEL CLAMP FOR A CRADLE ASSEMBLY

Joseph Halasz, and Rokuzo Ito, both of Toronto, Canada, assignors to Canada Wire and Cable Limited, Toronto, Canada

Filed Feb. 16, 1979, Ser. No. 12,705
Int. Cl.³ D07B *7/06, 3/02*
U.S. Cl. 57—127.7 **6 Claims**



1. A reel clamp for a cradle assembly having a pair of side frame members comprising:

(a) a first pintle assembly including a first bearing housing, a first reel supporting member rotatably mounted on two axially spaced bearings located within said bearing housing and means for securing said first bearing housing to one of said frame members;

(b) a second pintle assembly mounted in axial alignment with said first pintle assembly and including a second bearing housing, a second reel supporting member rotatably mounted on two axially spaced bearings located within said bearing housing and means for mounting said second bearing housing on the other side frame member; and

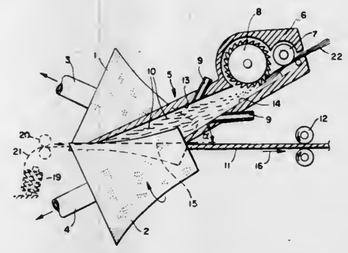
(c) cam means associated with said second pintle assembly for moving said second bearing housing back and forth along the axis of said reel for clamping and unclamping said reel between the first and second reel supporting members, said cam means comprising a profiled groove cut in the circumference of the bearing housing of the second pintle assembly over a predetermined length thereof, a cam actuator including a cam roller engaging said groove, and means for rotating said cam actuator around the axis of said second pintle assembly to cause said cam roller to move said second bearing housing axially with respect to the first bearing housing.

4,241,574

SPINNING PROCESS AND APPARATUS

Herbert Turk, Remscheid, and Herbert Schiminski, Hückswagen, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabric AG, Remscheid-Lennep, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,944
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803904
Int. Cl.³ D01H *1/12*
U.S. Cl. 57—200 **16 Claims**



1. In a process for spinning individual fibers unto a thread or yarn wherein discrete fibers are fed in an air stream to the narrowest gap which is formed by two air-permeable rollers or drums rotating in the same direction, said discrete fibers are pressed against the roller surfaces by means of air suction devices disposed within the rollers and are twisted together into a thread along a line of rotating thread formation in the region of said narrowest gap by the oppositely moving contact of the roller surface, and the thread is drawn off at one end of the roller surfaces, the improvement which comprises:

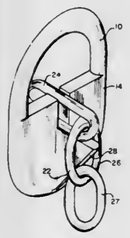
directing the air stream feeding the discrete fibers so as to impinge upon the thread formation line at an impingement angle of less than 45° with a vector of movement of said air stream being counter to the thread draw-off direction.

4,241,575

CHAIN SADDLE ASSEMBLY

Dennis St. Germain, Wilmington, Del., assignor to I & I Sling Company, Inc., Aston, Pa.

Filed Sep. 5, 1978, Ser. No. 939,349
Int. Cl.³ B66C *1/12*
U.S. Cl. 59—93 **2 Claims**



1. A chain saddle assembly for adjusting chain lengths and attaching chains used in chain slings comprising:

a ring link used to attach the assembly to a crane hook;

a saddle block, said block being integral with the bottom of said ring link so that a chain may easily be passed therethrough, said block further having a groove therein, said groove having a sufficient width and depth to receive a sideways vertically standing link of the chain and further having a rounded bottom adapted to support the link so that excessive bending moments or tensile stresses are not introduced into the link when it is loaded, while preventing the chain from slipping.

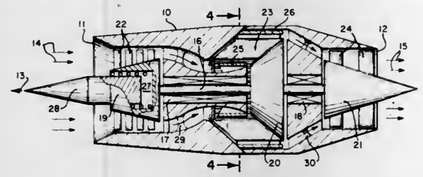
a pair of lateral, right triangular ledges, attached respectively to the opposite sides of said saddle block, the upper surfaces of which are concave indented and adapted to act as extensions of the bottom of said groove to provide additional support for the ends of the supported link said ledges being shaped to receive, and when the chain is loaded, to clamp, a pair of links lying in adjoining sucession adjacent to the supported link in a vertical orientation against an end portion of one of said ledges whereby bending moments in the supported link are prevented and the front and rear ends of the chain are locked in place.

4,241,576

GAS TURBINE ENGINE

David C. Gertz, 5810 Yolanda, Apt. 22, Tarzana, Calif. 91356

Filed Jan. 15, 1979, Ser. No. 3,480
Int. Cl.³ F02C *5/02*
U.S. Cl. 60—39.34 **8 Claims**



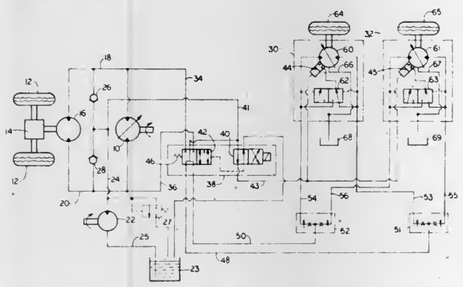
1. A gas turbine engine including a centrifugal fan having radial blades and receiving inlet air through the inner entrance openings to spaces between adjacent blades, said air passing through outer exit openings from said spaces; inner and outer circumferential segments defining closure members for successively eclipsing said inner entrance and outer exit openings when relative rotation between said fan and segments positions said spaces between said closure members to thereby define closed combustion chambers; and means for injecting and igniting fuel into said closed combustion chambers so that constant volume continuous combustion takes place to provide increased efficiency over a Brayton cycle constant pressure type turbine engine.

4,241,577

AUXILIARY DRIVE SYSTEM WITH NEUTRAL

Dale Baldauf, Coldwater, Ohio, assignor to Paul Revere Corporation, Greenwich, Conn.

Filed Aug. 23, 1979, Ser. No. 68,756
Int. Cl.³ B60K *17/34;* **F15B** *11/06, 13/06*
U.S. Cl. 60—420 **6 Claims**



1. An auxiliary drive system for a vehicle having a variable displacement main pump, a sump for providing a reservoir of hydrostatic fluid, a charging pump for drawing fluids from the sump via a hydrostatic line and delivering said fluids via interconnecting fluid lines to maintain all system components in a fully charged condition, the auxiliary drive system comprising:

a pair of variable displacement type reversible hydraulic auxiliary motors, each of said motors being operably and individually connected to a wheel assembly;

a pair of control pistons for varying the displacement status of said auxiliary motors, each one of said pistons having its rod end mounted for receiving fluid pressure to vary the displacement of each of said auxiliary motors;

first fluid line means connecting the two sides of each of the auxiliary motors with the variable displacement main pump, said fluid lines being arranged so that the auxiliary motors are connected in parallel with each other;

selector valve means having alternate on and off positions for controlling the flow of hydrostatic fluid in said first fluid lines, thereby allowing the auxiliary drive system to be activated or deactivated at will;

a pair of shuttle valves, one in close proximity to each of said variable displacement type reversible motors, each of said shuttle valves being encirculated to maintain said motor in its maximum displacement condition during both forward and reverse actuated states;

pressure compensated flow dividers interposed in said first fluid line means for limiting the maximum flow of hydrostatic fluid to any one auxiliary motor;

second fluid line means having one end in communication with the output of said charging pump, the second end of said second fluid line being connected to supply charging pressure to said auxiliary motors; and

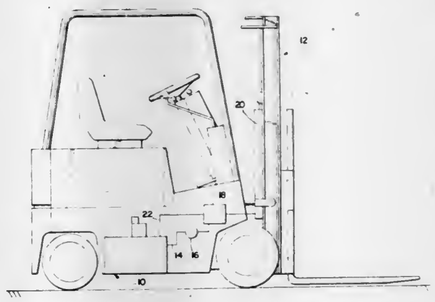
said selector valve means including valve means for controlling fluid flow to said control pistons enabling said pistons to be actuated to either of two states, one state being such that the auxiliary motors are maintained in their maximum displacement condition when said motors are being driven by output of said variable displacement pump, the second state being such that the auxiliary motors are maintained in their minimum displacement condition when said auxiliary motors are in the deactivated condition.

4,241,578

FLUID STORAGE TANK FOR AN INDUSTRIAL VEHICLE

Derek K. Keene, deceased, late of Philadelphia, Pa. (by Judith H. Keene, executrix), assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 18, 1979, Ser. No. 49,520
Int. Cl.³ F15B *1/06, 21/04*
U.S. Cl. 60—478 **3 Claims**



1. In a hydraulic system for an industrial vehicle comprising a fluid storage tank, a pump, a suction line extending into said storage tank and operatively connected to the inlet of said pump, a control valve operatively connected to the outlet of said pump, one or more hydraulically actuated components operatively connected to said control valve, and a return line extending into said storage tank and operatively connected to

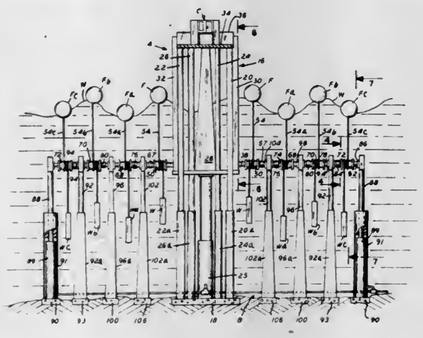
said one or more hydraulically actuated components; the improvement wherein said storage tank includes means defining an upper wall thereof, a surge tank in communication with said storage tank, said surge tank comprising a tubular member having a plate attached to one end to define an upper wall thereof and having the other end attached to said storage tank such that said upper wall defines a lower wall of said surge tank, a first vent tube having one end opening into said surge tank adjacent said upper plate and the other end opening into said storage tank, a second vent tube having one end opening into said surge tank adjacent said upper plate and the other end opening into said storage tank at a point spaced from the point where the first vent tube opens into said storage tank, drain means connected between said surge tank and said storage tank, and means venting said surge tank to atmosphere.

4,241,579

APPARATUS FOR PRODUCING ELECTRICAL ENERGY FROM MULTIDIRECTIONAL WATER WAVE ACTION

Peter M. Borgren, Duluth, Minn., assignor to Hydrodynamic Energy Systems Corporation, Duluth, Minn.

Filed Sep. 14, 1978, Ser. No. 942,339
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—504 **11 Claims**



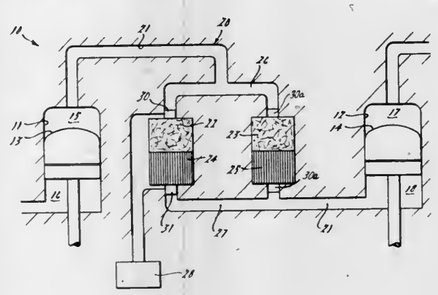
1. An apparatus for producing electrical energy from multidirectional water wave action comprising:
(a) a central support member having means at the lower end thereof for supporting the same on the bottom of a body of water with the support extending vertically above the surface of the water,
(b) means for adjusting the vertical dimension of said central support,
(c) a multiplicity of shafts,
(d) each of said shafts extending radially from said central support,
(e) vertical means supporting said shafts horizontally and spaced from the bottom of the body of water,
(f) means for adjusting the vertical dimension of said vertical supporting means,
(g) a multiplicity of floats for each of said shafts,
(h) an elongated member connected at the upper end to each of said floats and in engagement with,
(i) a weight connected to the lower end of each of said elongated members and extending below said shaft,
(j) clutch means mounted on each of said shafts and associated with each of said elongated members intermediate the ends thereof adapted to rotate each shaft in one direction when said float raises on a wave and not affect said shafts when said floats lower in a trough between waves,
(k) means connecting each of said shafts with,
(l) electrical generating means to actuate the same.

4,241,580

STIRLING ENGINE

Ernest W. Kitzner, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 30, 1978, Ser. No. 964,865
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—522 **3 Claims**



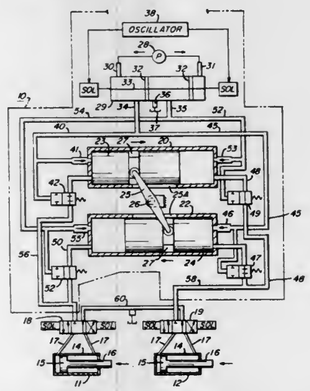
1. A closed fluid working circuit for a regenerative type Stirling engine having a plurality of chambers subdivided by double-acting pistons operating therein, the subdivided chambers being respectively hot and cold and connected in series whereby a hot chamber is always in communication with a cold chamber of the next most adjacent cylinder, the improvement comprising:
(a) means defining a plurality of parallel arranged gas flow paths between the respective hot chamber and cold chamber of adjacent cylinders;
(b) regenerator-cooler means disposed in each of said parallel arranged gas flow paths, and
(c) control means for selectively permitting gas flow through one or more of said regenerator-cooling means.

4,241,581

SYNCHRONIZER FOR HYDRAULIC ACTUATORS

Richard A. Chace, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 5, 1978, Ser. No. 966,672
Int. Cl.³ F15B *7/02*
U.S. Cl. 60—538 **7 Claims**



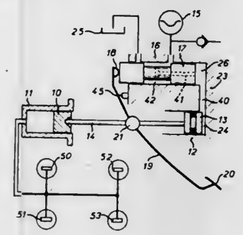
1. In combination, first and second hydraulic cylinders having pistons movable therein, first and second hydraulic actuators, means for supplying hydraulic fluid to said cylinders to drive the pistons back and forth therein, valve means for directing fluid to flow from the first cylinder to the first actuator and from the second cylinder to the second actuator upon movement of the pistons in one direction and for directing fluid to flow from the first cylinder to the second actuator and from the second cylinder to the first actuator upon movement of the pistons in the opposite direction, and mechanical means interconnecting said pistons for causing said pistons to move simultaneously through equal distances.

4,241,582

ASSISTED BRAKING DEVICE

Jean L. R. Dauvergne, Survilliers, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Oct. 24, 1978, Ser. No. 954,241
Claims priority, application France, Nov. 4, 1977, 77 33168
Int. Cl.³ B60T *13/20*
U.S. Cl. 60—550 **6 Claims**



1. In an assisted braking device comprising a master piston mounted for sliding in a master cylinder, a jack having a piston connected to the master piston by interconnecting means, a source of assisting hydraulic pressure, and a distributor adapted to supply the jack with assisting hydraulic pressure from said source and operated in response to the actuation of a pedal located at one end of a lever which is directly mounted by an articulation on said interconnecting means, the other end of the lever acting on said distributor; the improvement comprising abutment means forming a support for the pedal lever closer to said articulation of said lever on said interconnecting means than said end of said lever acting on the distributor, said abutment means being so positioned that, in the case of breakdown of the assistance system, manual intervention is achieved by abutment of the lever against said abutment means.

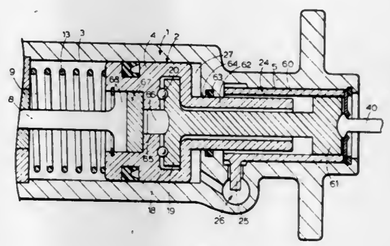
4,241,583

FLUID-PRESSURE OPERATED SERVO-MOTOR ASSEMBLIES FOR VEHICLE BRAKING SYSTEMS

Glyn P. R. Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

Continuation of Ser. No. 799,264, May 23, 1977, abandoned.
This application Jan. 23, 1979, Ser. No. 5,787
Claims priority, application United Kingdom, May 22, 1976, 21286/76
Int. Cl.³ B60T *13/20*
U.S. Cl. 60—555 **8 Claims**

1. A servo-motor assembly for a vehicle braking system comprising a housing having a bore, an output member and a pedal-operated input member working in said bore, means through which an effort from said input member is transmitted to said output member, said means comprising a movable wall working in said bore, means for applying a fluid-operating pressure to said movable wall to augment said effort, valve means located in said housing for controlling said fluid-operating pressure applying means, an operating assembly located within said housing for operating said valve means, said operating assembly comprising abutment means for transmitting a force to said output member, rotary valve actuating means located between said input member and said abutment means, said rotary valve actuating means being angularly movable to operate said valve means and being movable axially with respect to said abutment means through a limited relative distance, said abutment means and said rotary valve actuating means being in the form of pressure plates in adjacent faces of which are provided complementary inclined ramps with a ball co-operating with each pair of ramps in said plates, said ramps and said balls comprising means arranged so that axial movement of said rotary valve actuating means relative to said abutment means forces said balls relatively down said ramps to cause said angular movement of said rotary valve actuating means.

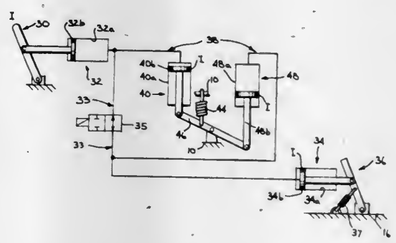


4,241,584

VARIABLE BIASED HYDRAULIC ENGINE SPEED CONTROL

Bruce K. Jaecks, Wauwau, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 25, 1979, Ser. No. 60,353
Int. Cl.³ B60T *11/24*
U.S. Cl. 60—580 **4 Claims**



1. In a hydromechanical engine speed control system for a vehicle employing a master controller and a slave hydraulic actuator joined by hydraulic conduit, said master controller being manipulated by an equipment attendant, said slave actuator being coupled to a device regulating engine speed, wherein the improvement comprises:
(a) isolation means in said hydraulic conduit for isolating said master controller from said slave actuator;
(b) a slave hydraulic controller, said slave controller being in hydraulic communication with said slave actuator;
(c) a second hydraulic actuator, said second actuator being in hydraulic communication with said master controller;
(d) linkage means interconnecting said slave hydraulic controller and said second hydraulic actuator to move as a unit; and
(e) biasing means defining a first position for said slave hydraulic controller and said second hydraulic actuator whereby said slave actuator is controlled directly by said master controller when said isolation means is open and said slave actuator is controlled through said slave hy-

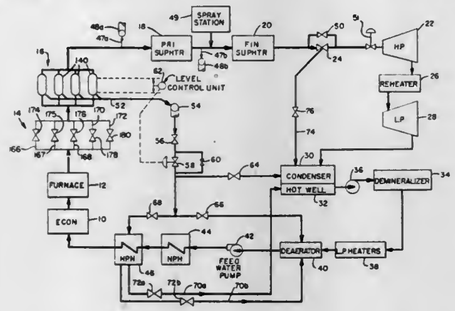
draulic controller and said second hydraulic actuator when said isolation means is closed.

4,241,585

METHOD OF OPERATING A VAPOR GENERATING SYSTEM HAVING INTEGRAL SEPARATORS AND A CONSTANT PRESSURE FURNACE CIRCUITRY

Walter P. Gorzegno, Morristown, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 14, 1978, Ser. No. 896,524
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—646 **34 Claims**



1. A method of operating a vapor generating system for use in a power plant having turbine control valve means, a steam turbine and a condenser connected in a main flow circuit in a series flow relationship; said method comprising the steps of passing fluid through a vapor generator furnace section at a predetermined percentage of full load flow rate, establishing a firing rate in said furnace section to apply heat to said fluid for converting said fluid to a vapor, separating the vapor portion from the liquid portion of said fluid in said main flow circuit, passing said liquid portion of said fluid in a bypass circuit externally of said main flow circuit, passing said vapor portion through said main flow circuit while increasing said firing rate to a predetermined percentage of full load firing rate and maintaining said predetermined percentage of full load flow rate to increase the throttle pressure of said fluid to said turbine to a value less than a predetermined maximum value, and then increasing said fluid flow rate and said firing rate while controlling said pressure of said fluid exiting from said furnace section in a manner to control the throttle pressure of said fluid to said turbine in proportion to the load demand on said turbine until said throttle pressure attains said predetermined maximum value and the load on said turbine reaches a predetermined percentage of full load.

4,241,586

COMBUSTION CHAMBER OF GAS TURBINE ENGINES

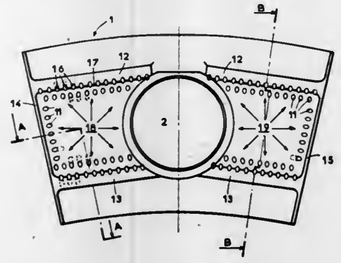
Jacques E. J. Caruel, Maincy; Guy D. Stora, Melun, and Gilles M.-J. B. Schmitt, Cesson la Foret, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d' Aviation, Paris, France

Filed Nov. 28, 1978, Ser. No. 964,427
Claims priority, application France, Nov. 29, 1977, 77 35875
Int. Cl.³ F02C *7/18, 7/22*
U.S. Cl. 60—738 **5 Claims**

1. In a gas turbine combustion chamber having longitudinal side walls, an upstream end wall, at least one transverse shield cup in said chamber adjacent to and spaced from said end wall, partition means defining a plenum chamber between said end wall and shield cups, first passage means for conducting cooling fluid through said end wall into said plenum chamber and second passage means from said plenum chamber through said shield cup, and prevaporized fuel injecting means for directing jets of fuel onto the downstream face of said shield cup, the improvement comprising:

rib means having at least one ridge on the downstream face of said shield cup;

said second passage means comprising small orifices adja-



cent said rib and arranged to direct first jets of fluid toward said ridge;

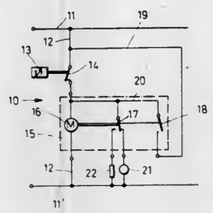
said second passage means including orifices from said plenum chamber opening in the region of said ridge and inclined to direct second jets of said fluid in a direction convergent to said first jets.

4,241,587

REFRIGERATING APPARATUS, ESPECIALLY REFRIGERATOR OR FREEZER

Wolfgang Dienemann, and Rudolf Reichert, both of Giengen, Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 965,781
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753744
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—80 **3 Claims**



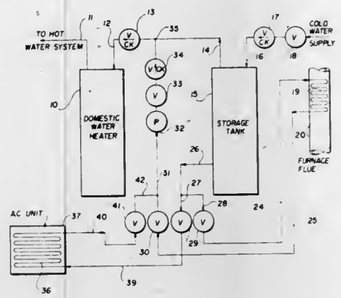
1. Refrigerating apparatus for storing material at and below a permissible upper temperature below the freezing point, such as a refrigerator, freezer and the like with at least one refrigeration chamber, having heat exchanger disposed in the refrigeration chamber, an electrically operated refrigeration unit controlled by a thermostat in the refrigeration chamber which refrigeration unit when energized provides coolant to the heat exchanger to maintain a set temperature of desired coldness in the refrigeration chamber, means for defrosting the heat exchanger, a control device, such as a timer, including switching elements to initiate and terminate defrosting of the heat exchanger, the improvement comprising means for decontrolling the thermostat to prevent it from activating the refrigeration unit prior to every initial defrosting and switch-on means for automatically activating the refrigeration unit prior to every initial defrosting to effect a drop in temperature in the refrigeration chamber sufficient to prevent the stored material from exceeding its permissible upper temperature during subsequent defrosting.

4,241,588

ENERGY CONSERVING WATER HEATING SYSTEM

Jimmy Murphy, Rte. 6, Sunnybelle Acres, Thomasville, Ga. 31792, and Ansley R. Fleetwood, 4206 Lone Oak Rd., Nashville, Tenn. 37215

Filed Apr. 10, 1979, Ser. No. 28,901
Claims priority, application Sweden, Mar. 15, 1978, 7802982
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238 E **2 Claims**



1. An energy conserving water heating system comprising a primary water heater having a cold water inlet and a hot water outlet, a water storage tank located upstream from the primary water heater and having a first outlet connected with the inlet of the primary water heater and a second outlet, a furnace flue associated heat exchanger including a water inlet having a connection with the second outlet of said water storage tank and also having an outlet, pump means connected between the last-named outlet and the primary water heater inlet and between such inlet and said first outlet of the water storage tank, another heat exchanger associated with the outlet of an air conditioning condenser and having an inlet connected with the second outlet of the water storage tank and having an outlet connected with the pump means between such means and the outlet of said flue associated heat exchanger, and valve means connected between the second outlet of the water storage tank and the respective inlets of the first and second named heat exchangers and between the outlets of such heat exchangers and the pump means.

4,241,589

HOUSEHOLD REFRIGERATOR AIR FLOW CONTROL ASSEMBLY

Bernard J. Grimm, and Richard A. Dossett, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 30, 1979, Ser. No. 71,206
Int. Cl.³ F25D *23/02, 25/02, 17/04, 11/02*
U.S. Cl. 62—265 **10 Claims**

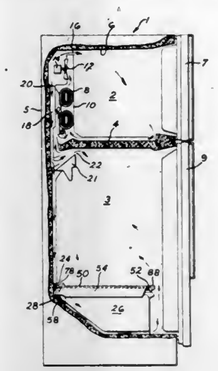
1. In a refrigerator having a freezer compartment on top and a fresh food compartment on the bottom, the two compartments being separated by a partition and interconnected by an air duct located at the rear of the compartments, said air duct having an air inlet opening in the freezer compartment and an air outlet opening in the fresh food compartment, an air flow control assembly comprising:

a movable damper for opening and closing the air duct outlet opening,

a storage pan in the fresh food compartment in air flow communication with the air duct outlet opening,

a stationary cover for the storage pan, and

control means including a movable control mechanism located at the front of the storage pan, a push rod linkage member having means at one end cooperating with the damper to open and close the air duct outlet opening upon movement of the linkage member and the other end having means responsive to movement of the control mechanism for moving the push rod linkage member.

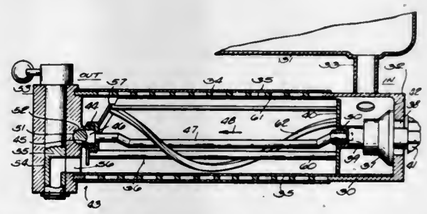


4,241,590

AUGER FLIGHT FOR COMESTIBLE FREEZER

Tom N. Martineau, Kiel, Wis., assignor to Stoelting, Inc., Kiel, Wis.

Filed Jan. 19, 1979, Ser. No. 4,639
Int. Cl.³ A23G *9/00*
U.S. Cl. 62—343 **9 Claims**



9. In a comestible freezer having a freezing barrel with an input end and an output end and a feeder therewithin having an auger ribbon flight helix, the improvement in which the ribbon of the flight helix is skewed with respect to a radial plane through the axis of the helix whereby to exert a radial component of thrust on the comestible and in which the freezer has a fixed blending bar within said helix, said flight ribbon being skewed inwardly toward said blending bar for a portion of its length adjacent the output end whereby to exert a component of thrust on said comestible toward said bar, and in which the freezer has a cold wall, a portion of the flight ribbon adjacent the input end being skewed outwardly toward said cold wall whereby to exert a component of thrust on said comestible toward said cold wall.

4,241,591

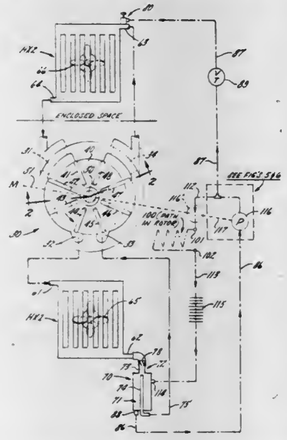
AIR CONDITIONING SYSTEM EMPLOYING DUAL CYCLE

Thomas C. Edwards, Cocoa Beach, Fla., assignor to The Rovac Corporation, Rockledge, Fla.

Filed Jul. 25, 1979, Ser. No. 60,635
Int. Cl.³ F25D *9/00*
U.S. Cl. 62—402 **25 Claims**

1. In an air conditioning system, an air conditioning unit comprising a compressor and an expander, the compressor and expander including a housing having an inner wall defining chamber means with rotor means rotatable therein, the rotor means having vanes for compression and expansion connected

to a common shaft, the compressor and expander each having an inlet port and an outlet port, a primary heat exchanger connected between the compressor outlet port and the expander inlet port, a secondary heat exchanger between the expander outlet port and the compressor inlet port to form a closed loop, the heat exchangers being isolated from one another, the loop being charged with a main refrigerant in the form of a gas which is non-condensing at temperatures and pressures encountered in the unit so that upon driving of the rotor means the gas (1) is compressed and heated in the compressor, (2) releases heat in the primary heat exchanger, (3) is expanded and cooled in the expander, and (4) absorbs heat in the secondary heat exchanger, an auxiliary refrigerant in the loop, the auxiliary refrigerant being one (a) having an appreciable heat



of vaporization and (b) capable of existing substantially in the liquid state at the pressure and temperature in the primary exchanger and in the vapor state in the secondary heat exchanger, the primary heat exchanger having an associated sump for collection of liquid auxiliary refrigerant while permitting the non-condensing gas to pass freely into the expander, a spray nozzle at the inlet of the secondary heat exchanger, a conduit connected to the sump and terminating at the spray nozzle so that liquid auxiliary refrigerant collected in the sump is sprayed into the gas discharged from the expander for vaporization at the secondary heat exchanger for absorption of additional heat therein, the auxiliary refrigerant being present in such excess amount as to collect in the sump to a reliably high level under normal running conditions to insure that auxiliary refrigerant entering the conduit is in liquid form.

4,241,592

CRYOSTAT FOR BOREHOLE SONDE EMPLOYING SEMICONDUCTOR DETECTOR

Ralph M. Tapphorn, Boulder, Colo., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,886

Int. Cl.[2] F25B *19/00*

U.S. Cl. 62—514 R **27 Claims**

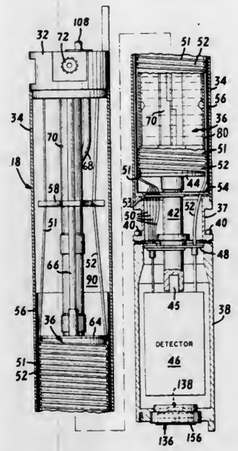
1. A borehole logging tool, comprising:

an elongated logging tool housing sized for passage through a borehole;

a cryostat located within the housing, said cryostat including means defining first and second chambers, said first chamber comprising a generally cylindrical cryogen chamber and forming a reservoir for a cryogenic material and said second chamber surrounding said first chamber and comprising a vacuum thermal insulation chamber;

a semiconductor radiation detector located within said second chamber in thermal contact with said first chamber; and

an active vacuum pump means mounted within said housing and coupled to said second chamber for continuously



maintaining a vacuum therein over the holding time of said cryostat.

4,241,593

ELASTIC SHAFT COUPLING

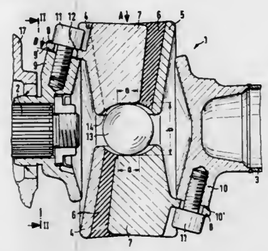
Franz Matyl; Johann Klecker, and Guillermo Sanguino-Alvarez, all of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1978, Ser. No. 876,106

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705295

Int. Cl.[3] F16D *3/64*

U.S. Cl. 64—14 **14 Claims**



1. An elastic shaft coupling, comprising two coupling means each adapted to be connected with a shaft end under cooperation of respective centering surface means, said two coupling means being non-rotatably connected with each other by interposition of a rubber-elastic layer means, characterized in that the centering surface means of at least one coupling means includes approximately axially directed fastening tongue means substantially uniformly distributed over the circumference, said fastening tongue means being adapted to cooperate with and be threadably connected with a correspondingly directed centering surface means, said correspondingly directed centering surface means being non-rotatable with the respective shaft end, and wherein the fastening tongue means are inclined outwardly with respect to the center longitudinal axis of the shaft coupling by about 15°, and wherein said correspondingly directed centering surface means cooperating with the fastening tongue means is more strongly inclined with respect to the longitudinal center axis than the fastening tongue means.

4,241,594

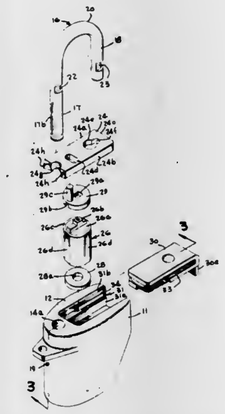
SLIDE COVER TYPE CHANGEABLE KEY PLUG PADLOCK

Harry C. Miller, Nicholasville, and Walter R. Evans, Lancaster, both of Ky., assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Sep. 4, 1979, Ser. No. 72,041

Int. Cl.[3] E05B *67/22*

U.S. Cl. 70—38 A **18 Claims**



1. A changeable plug exposed shackle padlock comprising a padlock casing having laterally spaced sockets opening through the upper portion thereof adjacent opposite ends of the casing for receiving legs of a shackle and accommodating axial reciprocative movement of the shackle between a lower locking position and an upper release position, a U-shaped shackle including a curved intermediate portion and longer and shorter shackle legs each having locking notches therein, said casing having a central substantially cylindrical plug cavity therein located between said sockets shaped to receive and removably house a key lock plug, a key lock plug removably received in said plug cavity having a lower end including a key passage adjacent a bottom wall portion of the casing for insertion of a key into said key lock plug through a key opening in said bottom wall portion, said casing having an elongated slideway cavity extending along an axis paralleling a center plane through the center axes of said sockets from the space overlying said central plug cavity through one end of the padlock casing outwardly adjacent the socket for the shorter leg, said slideway cavity having a lower slideway portion and having an upper slideway portion bounded laterally by alternating tongue and groove formations, a reciprocatively slidable cover member shaped to complement the upper slideway portion and extend in covering relation over the central plug cavity through the region of the shorter shackle leg and its socket to the adjacent end of the casing, said slidable cover member having alternating tongue and groove formations positioned to interfit with the tongue and groove formation laterally bounding said upper slideway portion and having a cylindrical opening therethrough registering with the socket for the shorter shackle leg when said slide member is fully seated in said slideway cavity in covering relation to said bore, and a slidable bolt plate member guided for longitudinal sliding movement between locking and release positions in said lower slideway portion having parallel sides in sliding abutment with opposite sides of the lower slideway portion and having locking shoulder portions engageable in said locking notches to lock the shackle in said lower locking portion, and bolt driving means for moving the bolt plate member between its locking and release positions upon key operation of the key lock plug.

4,241,595

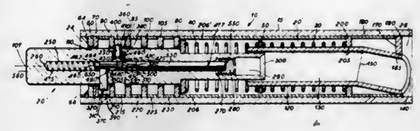
ROTO LOCK

James Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.

Filed May 3, 1979, Ser. No. 35,693

Int. Cl.[3] E05B *35/06*

U.S. Cl. 70—347 **9 Claims**



1. In a lock having a housing, a plurality of locking plates mounted in said housing each having a hole of selected diameter located on a common center line, a plurality of radial slots formed in said locking plates and arranged so as to be misaligned with each other, the improvement comprising a bolt member having:

a fixed transverse pin mounted on said bolt member;

a spring biased movable transverse pin mounted on said bolt member;

means for retraction such that said movable pin may be retracted in order that said bolt member can be angularly displaced to allow said fixed transverse pin to pass through said plurality of radial slots.

4,241,596

APPARATUS FOR ROLL-FORMING SEAMLESS ANNULAR PRODUCTS

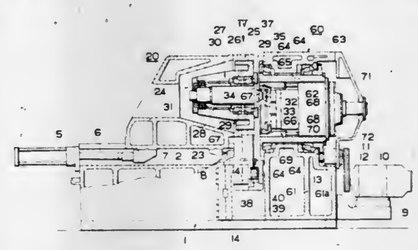
Nobuyoshi Nagatsuma, Kawagoe; Shigeo Kaiho, Omiya; Takashi Nagamine, Saitama; Sousuke Sese, Sayama, and Kunio Kishino, Ashikaga, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1978, Ser. No. 957,111

Claims priority, application Japan, Nov. 4, 1977, 52/132207; Nov. 10, 1977, 52/135048; Nov. 10, 1977, 52/135050; Nov. 17, 1977, 52/138105

Int. Cl.[3] B21B *5/00*

U.S. Cl. 72—91 **13 Claims**



1. An apparatus for roll-forming a blank ring into an annular product, comprising:

a substantially elongated base;

a die head having an annular die rotatably supported therein;

said die head being fixedly mounted on said base;

said annular die being directly driven to rotate by driving means;

a roll head having a pressure roll rotatably supported therein and movable toward and away from said annular die;

said roll head being mounted on said base;

said pressure roll being movable from a position away from said annular die, at which a blank ring may be positioned around said pressure roll, to a position within said annular die;

said annular die including an inner surface which corre-

sponds substantially to an outer peripheral surface of an annular product to be roll-formed;

said pressure roll including an outer surface which corresponds substantially to an inner peripheral surface of said product to be roll-formed;

means for moving said pressure roll radially of said annular die when said pressure roll is positioned in said annular die, whereby said blank ring can be interposed between said pressure roll and said annular die, with said blank ring positioned around said pressure roll so as to be engaged with said inner surface of said annular die at a predetermined position with respect to said annular die; and

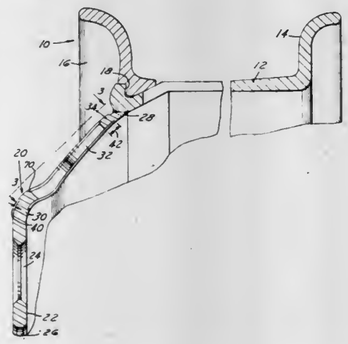
said means being disposed on said base in a position substantially between said die head and said roll head, separately from said roll head.

4,241,597

WHEEL DISC MANUFACTURING

John H. Golata, Lansing, and John R. Kinstler, Mason, both of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Filed May 17, 1978, Ser. No. 906,485
Int. Cl.[2] B21D *31/02*
U.S. Cl. 72—327 **6 Claims**



1. In the method of forming a tapered wheel disc which includes steps of spin-forming an outwardly-tapering concave disc from a section of blanked stock having surfaces internal and external to disc concavity in residual compressive stress and piercing hand holes in said spun-tapered disc such that a disc surface area surrounding the hand holes is placed in residual tension stress, the improvement comprising the step of subsequently cold working said surface area around each said hand hole by embossing said disc from a direction internally of disc concavity to form a marginal region entirely surrounding each said hand hole which is offset outwardly of disc concavity with respect to surface portions of said disc surrounding said marginal region to an extent sufficient to impart a residual compressive stress in said region.

4,241,598

METHOD FOR PRODUCING A CROSS-SLOTTED HEADING DIE

Kurt H. L. Cremer, Ratingen, Fed. Rep. of Germany, assignor to Sack & Kiesselbach Maschinenfabrik GmbH, Duesseldorf

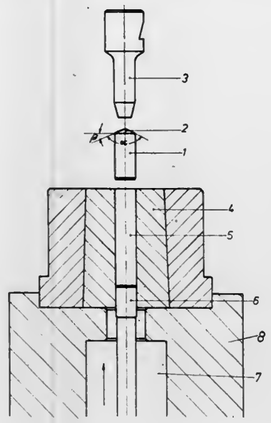
Filed Oct. 16, 1978, Ser. No. 951,633
Int. Cl.[3] B21D *22/00*
U.S. Cl. 72—354 **2 Claims**

1. A method of producing a cross-slotted heading die for forming cross-slotted screw heads, including the steps of:

preparing a cylindrical blank having a relatively flat cone on one end thereof, said cone presenting an uninterrupted surface and having a cone angle of between 124° and 140°

placing said prepared cylindrical blank within a cylindrical bore having substantially the same diameter as the external diameter of said blank, the lower end of said bore receiving mandrel means, and said blank being placed so that the end thereof opposite to said one end is resting on said mandrel means, and so that the blank is confined over its full height by the sidewall of said cylindrical bore;

inserting a punch into the upper end of said cylindrical bore, said punch having a cross-slotted matrix on the lower end thereof;



pressing said punch downwardly against said cone in a single stage cold forming operation, to deform said cone and fill said cross-slotted matrix whereby to form a desired cross-shaped configuration on said one end of said cylindrical blank;

removing said punch from said bore; and

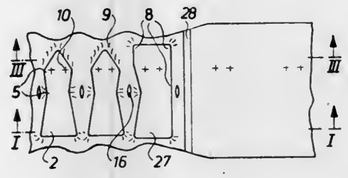
moving said mandrel means upwardly within said bore, to eject said cylindrical blank therefrom.

4,241,599

METHOD AND APPARATUS FOR THE FORMING OF A SERIES OF TROUGHS INTO A METAL FOIL STRIP

Guenther Kaupert, Thueringer Str. 1, Erndtebrueck, Fed. Rep. of Germany (5927)

Filed Dec. 12, 1977, Ser. No. 859,457
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656758
Int. Cl.[2] B21D *22/00*
U.S. Cl. 72—356 **4 Claims**



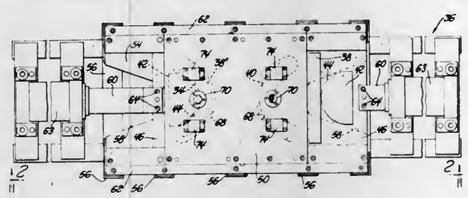
1. In a method for forming in several stages a series of elongated troughs with cross-sections that vary along the longitudinal extension of the trough into a thin metal strip by means of upper and lower dies which step by step one after the other engage a portion of the metal strip as the metal strip is moved through said stages, said stages consisting of a pre-forming stage in which a trough of larger than final size is formed into the metal strip by pre-forming dies and final forming stages in which portions of the foil material are pleated so as to reduce the size of the trough and bring it into its final form, the improvement comprising first forming a pleat into the metal strip which extends across the strip, i.e. normal to the feed direction of the strip through the stages and which has a depth about equal the greatest depth of the final trough from which pleat a preliminary trough having auxiliary extensions is formed in the pre-forming stage such that the preliminary trough has a larger circumference than the final trough and wherein in at least one final forming stage the foil material defining the extensions is impressed onto the final dies which correspond in form to the final trough.

4,241,600

BRAKE SHOE ASSEMBLY, APPARATUS AND METHOD FOR MAKING SAME

William L. Pringle, Grosse Pointe Shores, Mich., assignor to Leonard Friedman, Beverly Hills, Calif.

Filed Dec. 18, 1978, Ser. No. 970,326
Int. Cl.[3] B21D *45/00*
U.S. Cl. 72—411 **6 Claims**



1. An apparatus for making a brake shoe assembly comprising; a bending station for bending a straight length of rectangular bar stock having opposite faces into an arcuate shaped member while maintaining the bar stock substantially flat with the opposite faces extending transversely to the axis of bending, said bending station including a female anvil having a concave arcuate surface and a male anvil having a convex arcuate surface, said anvils being movable relative to one another between an open position for receiving the bar stock and a closed position for bending the bar stock into the arcuate member while moving to said closed position, said bending station including a slide platform and a slide cavity, said slide platform being slidably supported in said slide cavity, said slide cavity having a downwardly facing surface with a recess therein defining said concave surface of said female anvil, said slide platform having an upwardly facing surface for sliding engagement with said downwardly facing surface and a raised portion defining said convex surface of said male anvil, said male and female anvils being horizontally aligned, said slide cavity including a floor portion disposed under said slide platform, said floor portion having an arcuate opening therethrough and disposed beneath the female anvil for allowing the arcuate member to drop therethrough when said slide platform is moved to move said anvils to said open position.

4,241,601

PRE-SET AUTOMATICALLY OPERABLE MEANS FOR MEASURING THE PLASTICITY OF TEST SPECIMENS INCLUDING APPARATUS FOR INDICATING AND RECORDING THE RESULTS THEREOF

Fred A. Pennington, Sr., Naples, Fla.; Fred A. Pennington, Jr., Shiremanstown, and John W. Porr, Jr., New Cumberland, both of Pa., assignors to Andrew S. McCreath & Son, Inc., Harrisburg, Pa.

Filed Feb. 23, 1979, Ser. No. 14,571
Int. Cl.[3] G01N *25/04*
U.S. Cl. 73—17 R **10 Claims**

1. A pre-set apparatus for automatically heating and measuring the plasticity of heated specimens of coal and other material and automatically indicating and/or recording the plasticity thereof, said apparatus comprising, in combination,

(a) a plurality of adjacently disposed containers for holding the specimens to be tested;

(b) means for heating the specimens in said containers to heating temperature;

(c) said adjacently disposed heated containers being adapted for successive movement into specimen-testing position;

(d) a vertically extending support including a lateral extension;

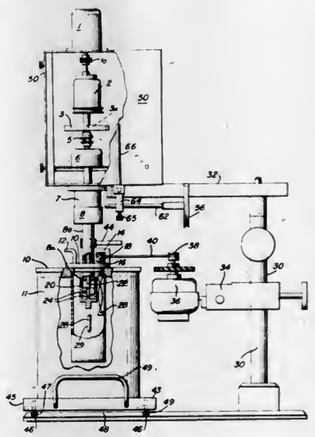
(e) a substantially vertically disposed rotatable stirring rod carried by said support and adapted to extend downwardly into a heated specimen which is in specimen-testing position;

(f) a drive motor carried by said support and adapted to rotate said stirring rod;

(g) a brake connected between said drive motor and said rotatable stirring rod for controlling the amount of torque applied by said drive motor to said stirring rod;

(h) means for measuring movement of the rotatable stirring rod as the test specimen plasticizes;

(i) said last-named means including a rotary optical encoder operatively engaged for rotation with said rotatable stirring rod;



(j) said rotary optical encoder including a rotary member possessing calibrated light-penetrable portions;

(k) a light source for applying light to one side of the calibrated light-penetrable portions of the rotary member of said optical encoder;

(l) said rotary optical encoder including optical sensing means positioned to receive light rays passing through the aforementioned light-penetrable portions of the aforementioned rotary member;

(m) a counter connected to the optical sensing means for recording movement of said stirring rod within a given time reference;

(n) a crucible in each of said adjacently disposed containers for holding the specimens to be tested;

(o) a test specimen within each of said crucibles

(p) means surrounding each of said crucibles for heating the test specimen therewithin;

and

(q) translatory movable means for successively moving each of said containers into position below said stirring rod.

4,241,602

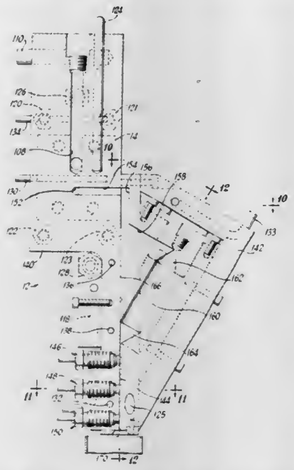
RHEOMETER

Chang D. Han, Nutley, N.J., and Vance Morrow, Tulsa, Okla., assignors to Seismograph Service Corporation, Tulsa, Okla.

Filed Apr. 20, 1979, Ser. No. 31,900
Int. Cl.[3] G01N *11/04*
U.S. Cl. 73—56 **20 Claims**

1. Apparatus for measuring the viscosity and elasticity of a fluid comprising, an elongated entrance chamber having a

uniform cross sectional area, an elongated restriction having a constant cross sectional area substantially smaller than the cross sectional area of said entrance chamber, and a transition section coupling said entrance chamber and said restriction, said entrance chamber being disposed with respect to said



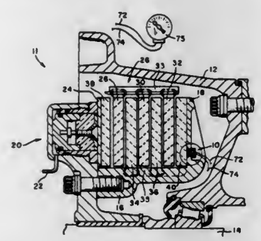
restriction such that the longitudinal axis of said entrance chamber is skewed with respect to the longitudinal axis of said restriction, and means including a plurality of pressure transducers disposed along said restriction for measuring the pressure gradient along the length of said restriction.

4,241,603

AIRCRAFT BRAKE THERMAL SENSOR

Benjamin C. P. Han, South Bend, and Floyd P. Weldy, Bourbon, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 2, 1979, Ser. No. 8,907
Int. Cl.³ G01L *5/28*
U.S. Cl. 73—129 **5 Claims**



1. In a brake, a member to be braked, a backing plate disposed adjacent the member to be braked, a friction pad carried by the backing plate for engagement with the member to be braked, probe means carried by said backing plate for generating a probe signal representing the temperature of the friction pad, the probe means including temperature responsive means for generating the probe signal and heat conducting means for conducting heat from the friction pad to the temperature responsive means;

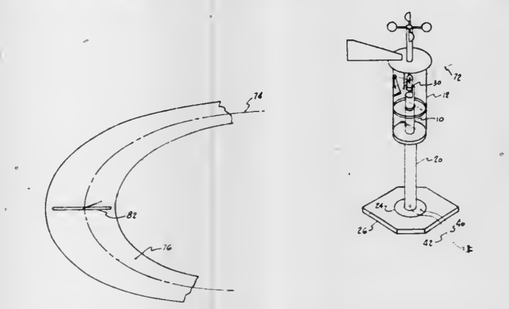
the improvement wherein said probe means includes a housing carried by the backing plate, said housing defining a bore therewithin, said heat conducting means being disposed within said bore, said heat conducting means engaging the friction pad at an open end of said housing, said probe means also including heat insulating means for insulating said heat conducting means from said housing to limit the heat loss from said heat conducting means.

4,241,604

NIGHTTIME WIND DIRECTION AND SPEED INDICATOR

Rudolf C. Hergenrother, Rte. 2, 45 Hidden River La., Sarasota, Fla. 33582

Filed Nov. 13, 1979, Ser. No. 93,883
Int. Cl.³ G01W *1/04*
U.S. Cl. 73—189 **8 Claims**



1. A device for measuring and visually indicating both wind direction and wind speed, comprising:

(a) a lamp positioned in a lamp housing having transparent sides;

(b) a lens for projecting light emitted from said lamp on the surface of a light scattering target external to the device to create a lamp image on said light scattering target;

(c) means for moving said lens in response to changes in wind direction such that said lamp image visually indicates wind direction; and

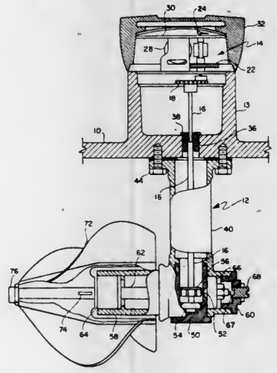
(d) means for flashing said lamp housing and said lamp image at a rate which is responsive to wind speed thereby visually indicating wind speed.

4,241,605

FLOWMETER WITH MAGNETIC COUPLING

Henry L. Hendriks, La Puente, and Avery Hinds, Pomona, both of Calif., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Jun. 14, 1979, Ser. No. 48,428
Int. Cl.³ G01F *1/115*
U.S. Cl. 73—861.94 **7 Claims**



1. A fluid flowmeter having a propeller which is rotated by flowing fluid and a counter which indicates the quantity of

fluid which has rotated the propeller, the flowmeter comprising:

a. first magnet assembly means coupled to rotate to drive the counter, said first magnet assembly means including a plurality of magnets located with the locus of their north poles forming a circle and a plurality of magnets with the locus of their south poles located substantially in the same circle;

b. second magnet assembly means coupled to rotate with the propeller, said second magnet assembly means including a plurality of magnets have the locus of their north poles arranged to form a helix and the locus of their south poles arranged to form a second helix spaced apart from the helix formed by the locus of north poles, the second magnet means located so that it magnetically influences the first magnet means and rotation of the second magnet means induces the first magnet means to rotate; and,

c. means disposed between said first and second magnet assemblies to form a liquid-impervious seal therebetween;

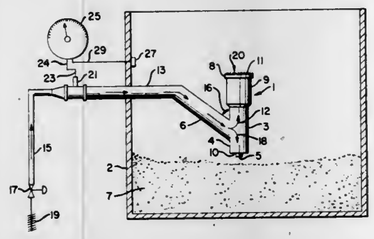
whereby said first magnet assembly means can be removed from the flowmeter without removing said second magnet assembly means.

4,241,606

PARTICULATE LEVEL MEASURING METHOD AND APPARATUS

Jean-Paul Vandenhoeck, 3 Shell Beach Rd., Guilford, Conn. 06437

Filed May 14, 1979, Ser. No. 38,539
Int. Cl.³ G01F *23/14*
U.S. Cl. 73—290 R **16 Claims**



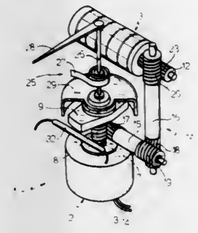
1. Apparatus for continuously measuring the level of particulate material in a container comprising level indication means vertically disposed in said container, said level indication means comprising a conduit having a first end and a second end, said first and second ends including apertures, said first end being vertically disposed above said second end therein such that changes in said level of said particulate material between said first and second ends of said conduit in said container results in corresponding changes in the level of said particulate material in said conduit, means for flowing a gaseous stream through said conduit, and pressure measurement means for measuring the pressure drop in said gaseous stream flowing through said conduit whereby changes in said level of said particulate material between said first and second ends of said conduit causes corresponding changes in said pressure drop, whereby said level of said particulate material between said first and second ends of said conduit can be continuously monitored.

4,241,607

TACHOMETER DEVICE CONTROLLED BY AN ELECTRIC MOTOR

Giorgio Maggia, Arese, Italy, assignor to Fratelli Borletti S.p.A., Milan, Italy

Filed Apr. 16, 1979, Ser. No. 30,271
Claims priority, application Italy, Apr. 21, 1978, 67912 A/78
Int. Cl.³ G01P *3/495, 3/56*
U.S. Cl. 73—490 **12 Claims**



1. A device for transmitting rotary motion from a first shaft and to a second shaft and for measuring the angular speed of said rotary motion, said device comprising:

a first and second pulse generator respectively associated with said first and second shaft,

a direct current electric motor having a rotary output operatively coupled to said second shaft,

processing circuit means responsive to said pulse generators for controlling the activation of said electric motor, and

speed indicator means comprising a permanent magnet secured to said second shaft and means responsive to rotation of said permanent magnet for indicating the speed of rotation of said permanent magnet,

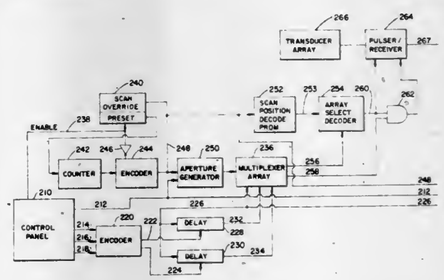
wherein said second pulse generator comprises a magneto-electrical transducer which is actuated by and at predetermined rotational positions of said magnet.

4,241,608

ULTRASONIC SCANNER

Raymond K. Dees, Westminster; Peter J. Van Laanen, and Gregory L. Ream, both of Boulder, all of Colo., assignors to Unirad Corporation, Denver, Colo.

Filed Jan. 24, 1978, Ser. No. 871,785
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—606 **27 Claims**



1. An ultrasonic receiving system comprising:

an array of transducer elements operable in a plurality of groups for receiving echoes from ultrasonic waves, each group producing electrical signals corresponding to the echoes from each of the ultrasonic waves which impinge thereon, wherein the signals from the echoes from each of the ultrasonic waves form one of a plurality of data lines, and each of the groups have a characteristic center posi-

tion relative to an end of the array, whereby each data line corresponds to one of the center positions;

ordering means operably connected with the transducer array for arranging the data lines into a set of data lines in order of increasing distance from said end to the array of the corresponding center position;

interpolator means for averaging adjacent data lines in the set to produce at least one interpolated data line corresponding to a center position between the center positions corresponding to the adjacent data lines; said interpolator means comprising a first latch means for receiving a first data line, second latch means for receiving a second data line, averaging means connected to said first latch means and said second latch means for averaging the data line received in the first latch means with the data line received in the second latch means and producing at least one interpolated data line;

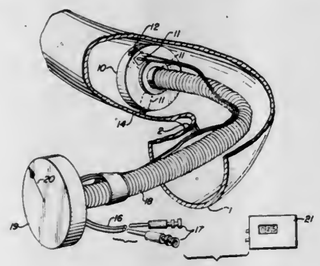
third latch means for receiving the interpolated data line, first multiplexor means connected to said averaging means and said third latch means for arranging each interpolated data line within the set in order between the data lines which were averaged to produce each interpolated data line.

4,241,609

TUBE INTERNAL MEASURING INSTRUMENT

Jack N. Bergman, Munster, Ind., and Bernard Ostrofsky, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 9, 1979, Ser. No. 28,504
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—623 **10 Claims**



1. An internal measuring instrument for directly measuring the wall thickness and for detecting flaws within the walls of tubing comprising:

(a) a rotatable disc support adapted to be moved through a length of tubing, said disc having at least three holes spaced equal distance apart on the circumference of said disc;

(b) at least one laterally movable search unit compressively positioned in at least one of said holes;

(c) laterally movable contact shoes compressively positioned in said remaining holes;

(d) a rotatable handle having a visible indication mark corresponding to the position of said search unit;

(e) a conduit connecting said disc to said handle; and

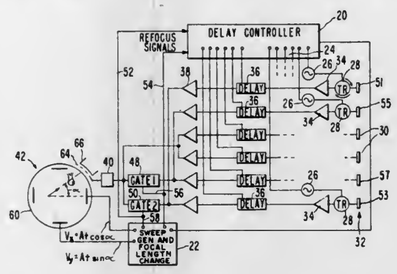
(f) an indicating device electrically connected to said search unit for monitoring measurements.

4,241,610

ULTRASONIC IMAGING SYSTEM UTILIZING DYNAMIC AND PSEUDO-DYNAMIC FOCUSING

Weston A. Anderson, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 5, 1979, Ser. No. 9,721
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—626 **16 Claims**



1. In a phased array ultrasonic imaging system of the type comprising:

a linear array of side-by-side transducers adapted for propagating ultrasonic energy into a body to be ultrasonically examined and for receiving reradiated sonic energy from points within said body;

a signal channel connected to each of said transducers, for activating said transducers to propagate said sonic energy, and for receiving electrical signals from said transducers corresponding to said reradiated energy;

delay means in each of said channels for introducing time delays in the electrical signals proceeding in said channels during said transmission and reception;

means controlling said delay means in each of said channels thereby to steer the acoustic beam from said transducer array over a desired azimuthal range to enable scanning of said body;

means for processing the received signals proceeding through said channels, and for combining said signals and effecting a visual display of the bodily portion being examined; and

means synchronized with the activation of said transmitters for periodically reducing the gain of one or more symmetrically disposed outer pairs of elements of said array, to thereby reduce the effective aperture of said array for improved response to reflected acoustic information near said array and for restoring the gain of said transducer pairs, thereby increasing the said effective aperture of said array for improved response to reflected acoustic information reaching said array from the far field of the object being examined;

the improvement comprising:

means for adjusting the focal length of said array coincidental with the said changes of gain of said pair of elements of said array whereby to maintain a desired resolution within a desired focal range.

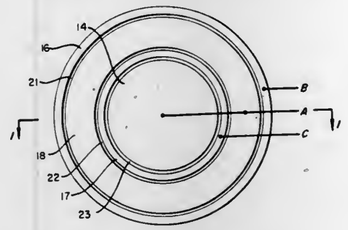
4,241,611

ULTRASONIC DIAGNOSTIC TRANSDUCER ASSEMBLY AND SYSTEM

Donald F. Specht, Los Altos, and Julian Dow, Mountain View, both of Calif., assignors to Smith Kline Instruments, Inc., Sunnyvale, Calif.

Filed Mar. 2, 1979, Ser. No. 16,782
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 **4 Claims**

1. An ultrasonic transducer assembly and system including means for transmitting ultrasonic energy into a body to be diagnosed, a disc-shaped transducer element, a first narrow ring-shaped transducer element closely spaced from and surrounding said disc, a second wider ring-shaped transducer element closely spaced from and surrounding said first ring-shaped transducer element, a third ring-shaped transducer element of intermediate width closely spaced from and surrounding said second transducer element, means for focusing said transducer elements, said focused transducer elements serving to receive transmitted ultrasonic energy reflected from



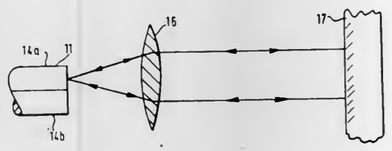
interfaces in said body to be diagnosed and each providing an output electrical signal, means for sequentially receiving the electrical signals from said elements firstly from the first transducer element, secondly from said third transducer element and finally from all transducer elements to thereby provide a dynamically focused system which sequentially receives energy reflected at close range, intermediate range and distant range.

4,241,612

FLOWMETER

Roger J. Williamson, Harlow, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 17, 1979, Ser. No. 67,548
Claims priority, application United Kingdom, Nov. 23, 1978, 45756/78
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 **3 Claims**



1. A flowmeter comprising: a housing; a bluff body mounted in said housing to cause vortex shedding; a converging lens mounted in said housing; a planar mirror mounted in said housing, said mirror being mounted perpendicularly to the optical axis of said lens; means for transmitting light beam from the lens focus such that said light beam, in the absence of fluid vortices, being reflected back to said focus; light detecting means disposed adjacent the lens focus; and a frequency meter coupled to said light detecting means, passage of a fluid vortex between said lens and said mirror defocusing said lens sufficiently to direct light reflected from said mirror to said light detector means.

4,241,613

MASS RATE FLOW METER

Allen C. Bradham, III, Milwaukee, Wis., assignor to Badger Meter, Inc., Milwaukee, Wis.

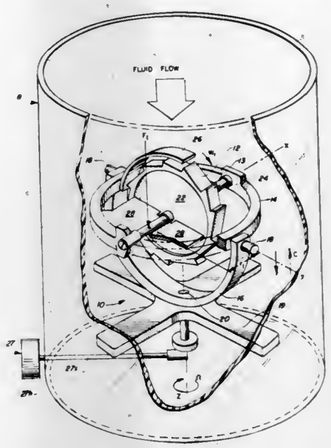
Filed Jun. 29, 1979, Ser. No. 53,429
Int. Cl.³ G01F *1/78*
U.S. Cl. 73—861.71 **17 Claims**

1. Apparatus for measuring the mass flow of a fluid in a flow stream comprising:

a gyroscope having an impeller rotor;

means for directing a portion of said flow stream against said impeller to spin said impeller at an angular velocity proportional to the velocity of said flow stream;

means for deriving a force proportional to the momentum of



fluid in said flow stream and applying such force as a precessional force on said gyroscope; and

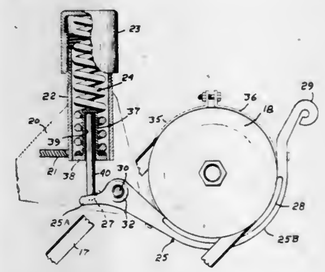
means for sensing the resulting precessional movement of said gyroscope.

4,241,614

POWER TAKE-OFF

Wayne P. Gould, 1106 Hooksett Rd., Hooksett, N.H. 03106, and Raymond J. Chouinard, 41 Granite St., Suncook, N.H. 03275

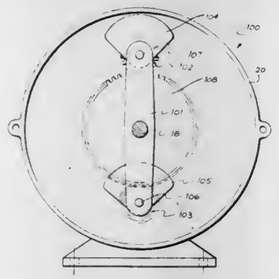
Continuation-in-part of Ser. No. 848,510, Nov. 4, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,338
Int. Cl.³ F16H *7/12*
U.S. Cl. 74—15.63 **6 Claims**



1. A power take-off unit attachable to an engine to support a pulley equipped pump of a hydraulic system in a position to be connected by a belt to a pulley on the crankshaft of a vehicle engine, said unit including a bracket attachable to said engine above and at one side of said shaft pulley, an arm, a pivotal connection between said arm and said bracket enabling said arm to swing in a vertical plane normal to the axis of the shaft and establishing a short inner end arm portion including a seat and a substantially longer outer arm portion including a manually engageable end and an intermediate concave seat, means operable to secure said pump to said concave seat with the pump pulley in transverse alignment with the shaft pulley, adjustable resilient means supported by said bracket and including an upwardly extending, adjustably backed coil spring the lower end of which is close to but above the seat in the shorter arm portion and said pivotal connection, a rod entrant of the seat in the shorter arm portion, and a connection be-

tween said rod and the lower end of said spring transmitting the pressure of said spring to the arm through the rod, said resilient means yieldably opposing movement of said pump towards said shaft pulley from a first position into a second position in which a belt may be placed in trained engagement with both pulleys or removed therefrom and in said first position, providing wanted tension on the belt, the distance between said pivotal connection and said manually engageable end portion of said arm being enough greater than the distance between said connection and the seat of the inner end of the arm such that mechanical advantage is afforded the user that the resistance of said resilient means encountered moving and holding the pump in said second position can be overcome with one hand while removing or replacing the belt with the other hand.

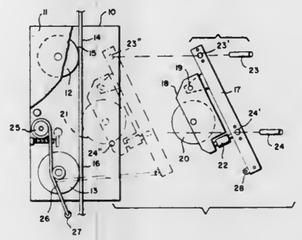
4,241,615
VIBRATING DEVICE
John W. Ryan, Yowie Bay, Australia, assignor to Agrow Plow Pty. Limited, Sydney, Australia
Filed Aug. 8, 1978, Ser. No. 932,021
Claims priority, application Australia, Aug. 19, 1977, PD1307
Int. Cl.[2] F16H *33/00*
U.S. Cl. 74—61 **7 Claims**



1. A vibrating apparatus comprising: a housing; a rotatable first shaft supported by and located in said housing; a first and a second mass, said respective masses being rotatable in phase within said housing to cause said device to vibrate, first means mounting each of the masses on said first shaft and being disposed radially from the axis of said first shaft, said first means being defined by an arm fixed to said first shaft, said arm having radially opposite first and second sections, said sections extending radially from said first shaft in opposite directions; a second shaft, said second shaft rotatably attached to said first mass and to a radially outer portion of said second section, whereby, the center of gravity of said first mass is radially spaced from the axis of said second shaft; a third shaft, said third shaft being adapted to rotatably attach said second mass to a radially outer portion of the first section to said second section for permitting the center of gravity of said second mass to be radially spaced from the axis of said third shaft; and second means to rotate said second mass about the axis of said third shaft in phase with said first mass, when said arm is rotated relative to said housing.

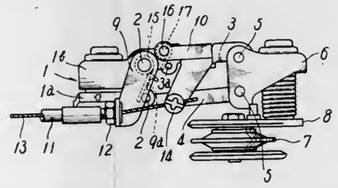
4,241,616
TENSIOMETER CAPABLE OF BEING ATTACHED TO A CABLE UNDER TENSION
Max V. Mastrigt, Tarzana, Calif., assignor to W. C. Dillon & Co., Inc., Van Nuys, Calif.
Filed Sep. 11, 1979, Ser. No. 74,341
Int. Cl.[3] G01L *5/04*
U.S. Cl. 73—144 **6 Claims**

1. A tensiometer capable of being attached to a cable under tension, including, in combination:
(a) frame means;
(b) first and second tandem cable guides mounted on said frame means for engaging spaced points on one side of said cable;
(c) a central cable guide means;
(d) removable pivot means for pivoting one end portion of said central cable guide means to said frame;
(e) winch means on said frame connected to said central cable guide means for swinging the guide means about its pivoted end portion to bring the central guide means into



engagement with an opposite side of said cable intermediate said spaced points to thereby deflect the cable while under tension; and
(f) force measuring means carried on said frame means and responsive to the reaction force exerted by said cable on said central guide means when said central guide means has been pivoted to a given position in said frame means so that said force measuring means provides an indication of the tension in said cable.

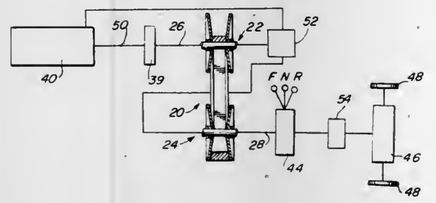
4,241,617
DERAILLEUR FOR A BICYCLE
Masashi Nagano, and Hideaki Fujimoto, both of Sakai, Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan
Filed Oct. 4, 1976, Ser. No. 729,015
Claims priority, application Japan, Oct. 13, 1975, 50-123478
Int. Cl.[3] F16H *11/00*
U.S. Cl. 474—82 **7 Claims**



1. A derailleur for a bicycle, which is adapted to change the speed of the bicycle by shifting without spring bias a driving chain to one of two or more sprockets by pushing a push-pull control wire from a large diameter sprocket to a smaller diameter sprocket, said derailleur comprising:
four members including a fitting member, a pair of linkage members, and a movable member;
said linkage members being freely oscillatably supported by said fitting member, said movable member being freely oscillatably supported by said linkage members and having a chain guide means for guiding the driving chain onto one of the sprockets to thereby be shiftable axially of the sprockets with respect to said fitting member;
a first arm pivoted to one of said four members;
a first retainer on one end of said arm for retaining an end portion of one of a control wire or an outer cable therefor so that when the control wire is pushed said arm may pivotally move independently of any shifting of the movable member;

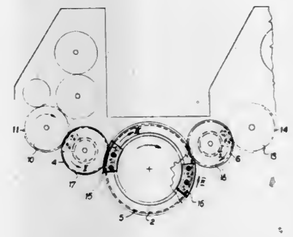
at least one spring for biasssing said first arm toward one of said four members, said spring having a biassing force which is greater than a resistive force imparted to said movable member against shifting for changing the speed of the bicycle and less than the force required to buckle the control wire when pushed for changing the speed of the bicycle from a large diameter sprocket to a smaller diameter sprocket and to produce a force greater than the resistive force imparted to said movable member against shifting;
a second arm pivoted to one other of said four members;
a spring for biassing said second arm toward said one other of said members; and
a second retainer on said second arm for retaining an end portion of the other one of the control wire or the outer cable therefor, said second arm being mounted to one of said four members which is movable relative to said one member toward which said first arm is biassed.

4,241,618
VARIABLE PULLEY TRANSMISSION
Richard L. Smirl, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 2, 1979, Ser. No. 16,862
Int. Cl.[3] F16H *55/52*
U.S. Cl. 74—863 **12 Claims**



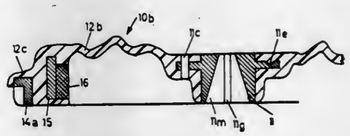
1. In a power transmission apparatus adapted to transmit rotary motion between an engine with an engine shaft and a driven means such as the driving wheels of a vehicle and the like and having a variable rotary pulley drive unit with a driver pulley and a driven pulley connected by a belt means, each pulley having a pair of flanges, at least one flange of which is axially movable with respect to the other flange to change the spacing between the flanges and thus the speed ratio between the pulleys, and means responsive at least to the speed of the engine shaft to change the spacing of the pulley flanges and thus the speed ratio, the improvement which comprises:
means connecting said driver pulley directly to the engine shaft so that the pulleys are continuously rotated only in one direction when the motor is operating and its shaft is rotating, the continuous rotation of said pulleys when said engine is operating enchancing the shifting of the belt means on said pulley flanges when the speed ratio between the pulleys is changed;
means comprising a speed-responsive friction starting device drivingly connecting said driven pulley and said driven means; and
means to select the direction of rotation of said driven means.

4,241,619
DEVICE FOR TAKING UP THE CLEARANCE OF GEAR TRANSMISSIONS
Arnost Cerny, Blansko, and Jaroslav Janecek, Brno, both of Czechoslovakia, assignors to Adamovske Strojirny, Narodni Podnik, Adamov, Czechoslovakia
Filed Apr. 25, 1978, Ser. No. 896,227
Claims priority, application Czechoslovakia, Apr. 13, 1977, 2401-77
Int. Cl.[3] F16H *55/18*
U.S. Cl. 74—440 **2 Claims**



1. A device for taking up backlash between teeth of intermeshing gears comprising at least one arcuate toothed segment, the teeth of which are dimensioned close to those of said gears, said segment teeth having different widths with a reduction of the width of the individual teeth of the segment in the direction from the center part of the segment to the outer portions thereof on both sides, the reduction of the segment tooth width between adjacent teeth having a value in the range of 0.005 to 0.06 mm., and means for securing said segment adjacent one gear so that at least one of the segment teeth aligns with a tooth of said one gear and intermeshes with another of said gears.

4,241,620
BALANCE WHEEL
Heinz Pichl, Uppsala, Sweden, and Günther Kossek, Gechingen, Fed. Rep. of Germany, assignors to AB Volvo Penta, Gothenburg, Sweden
Filed Sep. 20, 1977, Ser. No. 835,037
Claims priority, application Sweden, Sep. 22, 1976, 7610483
Int. Cl.[3] G05G *1/00*; H02H *21/12*
U.S. Cl. 74—573 R **17 Claims**



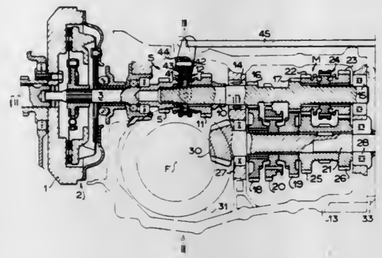
1. A flywheel for an internal combustion engine, comprising a thick peripheral rim portion, a thick central portion and a thin disc portion extending outwardly from said central portion to said rim portion, all said portions being integrally molded of plastic material; a metal hub molded into said central portion; a closed metal ring rigidly molded into said rim portion and extending along the entire periphery thereof; at least one permanent magnet adjacent said ring and extending only along a part of the periphery of the said rim portion, said one magnet being fixed into said rim portion by being embedded therein by shape engagement.

4,241,621

TRANSMISSION APPARATUS FOR MOTOR VEHICLE

Masayuki Kodama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1978, Ser. No. 918,464
Int. Cl.[3] F16H *37/8*
U.S. Cl. 74—700 2 Claims



1. A transmission apparatus for a motor vehicle in which an engine having a crankshaft is longitudinally disposed in front of the front axle of the vehicle comprising

a transmission case,

a clutch device coaxially coupled to the crankshaft of the engine,

a first main drive shaft coaxially connected to said clutch device at a right angle to the front axle, an output end of said first main drive shaft being inserted into said transmission case,

a second main drive shaft disposed in said transmission case coaxially to said first main drive shaft,

a sub-transmission means disposed substantially directly above said front axle and for transmitting the output of said first main drive shaft to said second main drive shaft,

said sub-transmission means is disposed in said transmission case substantially directly above said front axle and for transmitting the output of said first main drive shaft to said second main drive shaft,

said sub-transmission means having a 2-speed gear ratio including means having counter gears for reducing the rotational speed of said second main drive shaft relative to said first main drive shaft, and a sub-transmission synchromesh means for selectively coupling the output end of said first main drive shaft and an output end of said sub-transmission means to said second main drive shaft,

a third main drive shaft disposed in said transmission case in parallel with said second main drive shaft,

a main transmission disposed on both of said second and third main drive shafts, said sub-transmission means thereby being operatively disposed in the input side of said main transmission, said main transmission comprising main transmission means including a plurality of reduction gear trains having at least a 3-speed reduction gear ratio in a whole reduction range necessary to drive the vehicle and main transmission synchromesh means for selective operative engagement of said main transmission synchromesh means with said reduction gears so as to transmit an output of said second main drive shaft to said third main drive shaft into several selective rotational speeds, respectively,

a hypoid pinion mounted on an end of said third main drive shaft,

a final reduction gear operatively connected to said front axle and meshed with said hypoid pinion, said final reduction gear being positioned in said transmission case substantially directly beneath said sub-transmission means,

clutch means for providing four wheel for selectively transmitting the output of said third main drive shaft to the rear axle of the motor vehicle,

means for manipulating said clutch means, and

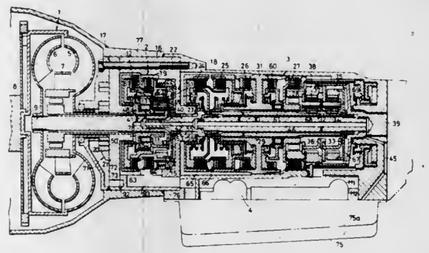
means for manipulating said sub-transmission means, whereby the vehicle may be driven selectively in a lower speed range and in a higher speed range, respectively.

4,241,622

AUTOMATIC TRANSMISSION WITH OVERDRIVE

Seitoku Kubo, Sakae; Kojiro Kuramochi, Aichi, and Hiroshi Ito, Ima, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 2, 1977, Ser. No. 847,806
Claims priority, application Japan, Apr. 27, 1977, 52-47874
Int. Cl.[3] F16H *37/00, 57/02*
U.S. Cl. 74—740 4 Claims



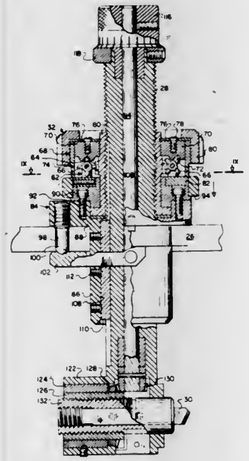
1. An automatic transmission with overdrive comprising a hydrokinetic torque converter including a housing having said torque converter operatively accommodated therein; an overdrive gear mechanism having an input side and an output side positioned adjacent said torque converter in coaxial relationship therewith, said input side being coupled with said torque converter, said overdrive mechanism including gear means operating to transmit torque from said input side to said output side at a gear reduction ratio not greater than 1; oil pump means including an oil pump and an oil pump cover member located adjacent said torque converter between said torque converter and said overdrive gear mechanism; an overdrive casing housing said overdrive gear mechanism therein, said overdrive casing and said oil pump means being relatively positioned such that said oil pump cover serves to house said oil pump and also to simultaneously cooperate with said overdrive casing to form part of the housing for said overdrive gear mechanism; an underdrive gear mechanism positioned adjacent said overdrive gear mechanism on the side thereof opposite said torque converter and arranged in coaxial relationship with said torque converter, said underdrive gear mechanism having an input side and an output side with said input side coupled with said output side of said overdrive gear mechanism, said underdrive gear mechanism including gear means operating to transmit torque from said input side to said output side at a plurality of gear reduction ratios not less than 1; a transmission casing housing said underdrive gear mechanism therein; oil pan means located beneath said underdrive gear mechanism for supplying lubricating oil; oil passage means for transmitting lubricating oil to and from said oil pan means, said oil passage means including an oil exhaust passage defined to extend through a lower portion of said overdrive casing and being in direct flow communication with said oil pan means for returning lubricating oil thereto; an outer peripheral face defined on the exterior of said overdrive casing; and inner peripheral faces defined on each of said transmission casing and said torque converter housing; said transmission being arranged with said overdrive casing mounted partially within both of said torque converter housing and said transmission casing, with said inner peripheral faces of said transmission casing and said torque converter housing each having fitted therein respective portions of said outer face of said overdrive casing.

4,241,623

VERTICAL DRIVE MECHANISM FOR A CUTTING APPARATUS

John F. Wilger, Honolulu; Gregory S. Nakano, Pearl City; Tadao Uyetake, Honolulu; Stephen Orillo, Jr., Wahiawa, and Teikichi Higa, Pearl City, all of Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 861,911, Dec. 19, 1977, Pat. No. 4,175,471.
This application Jun. 6, 1979, Ser. No. 45,883
Int. Cl.[3] B23B *41/2;* B23C *1/20;* F16H *1/34*
U.S. Cl. 74—765 8 Claims



1. A vertical drive mechanism for a cutting apparatus wherein the cutting apparatus has a threaded feed shaft which is adapted to be supported for rotation about an axis which is laterally spaced from the longitudinal axis of the feed shaft, said vertical drive mechanism comprising:

nut means threadingly supported on the feed shaft; and

gear means having: a first gear means portion which is fixedly connected to the nut means, a second gear means portion which is fixed in operative engagement with the first gear means portion, and a third gear means portion which is fixed in operative engagement with the second gear means portion; and

said third gear means portion being mounted rotatably in frictional slidable engagement about said nut means so that the frictional engagement of the third gear means portion about the nut means will cause the third gear means portion to rotate with the nut means, however, upon stopping the rotation of the third gear means portion with respect to the nut means, the nut means will frictionally slidably rotate within the third gear means portion,

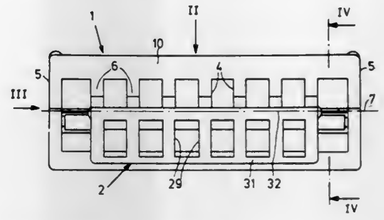
and said gear means being operative, upon rotation of the feed shaft and stopping the rotation of the third gear means, to cause the second gear means to rotate which causes the first gear means and nut means fixed thereto to rotate, and which causes the feed shaft during each revolution to feed vertically.

4,241,624

EDGE SHARPENER

Werner Strojny, Marienheide, Fed. Rep. of Germany, assignor to Firma August Rüggeberg, Marienheide, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,132
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744521
Int. Cl.[3] B21K *17/00;* B23D *71/06*
U.S. Cl. 76—83 13 Claims



1. An edge sharpener comprising:

a file blade;

a main body provided with an external guide surface for aligning said body with the surface of an object to be sharpened, and further provided with an internal recess for receiving therein said file blade, said internal recess being defined by at least one contact surface for making area contact with one side of said file blade, a second surface which is inclined with respect to said contact surface and a bottom surface of said main body; and

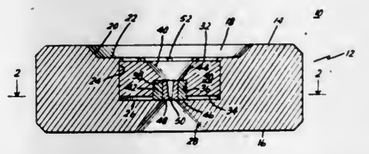
a rigid clamping wedge, configured to enter said recess via an opening in said main body at least partially for clamping said file blade therein, said clamping wedge having a pressure surface for pressing said file blade toward said contact surface of said main body and further having an inclined wedge surface for pressing against said second surface of said main body which is inclined with respect to said contact surface; and wherein there is further provided in said main body a flexible foil locally fixed to said main body within said internal recess along said bottom surface of said main body opposite said opening and being flexible toward said pressure surface of said clamping wedge, said foil being so disposed as to come to lie between the surface of said file blade remote from said contact surface and the pressure surface of said clamping wedge.

4,241,625

METHOD OF MAKING A WIRE DRAWING DIE

Lawrence W. Corbin, and Charles Carson, both of Ft. Wayne, Ind., assignors to Fort Wayne Wire Die, Inc., Fort Wayne, Ind.

Filed Mar. 8, 1979, Ser. No. 18,649
Int. Cl.[3] B21K *5/20*
U.S. Cl. 76—107 A 8 Claims



1. The method of making a wire drawing die comprising the steps of: providing a metal casing having front and back sides; forming a first cavity in said front casing side having a flat bottom wall and a cylindrical side wall extending from said front casing side to said bottom wall; providing a metal plug having flat top and bottom ends and a cylindrical outer surface

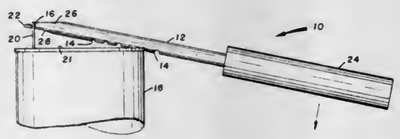
extending between said ends; forming a second cavity in one of said first cavity bottom wall and said plug bottom end, said second cavity having a cylindrical side wall extending to a flat bottom; forming countersunk openings in said top end of said plug and said back side of said casing respectively concentric with said cavities and extending to said bottom of said second cavity and the other of said first cavity bottom wall and said plug bottom end; providing a metal blank having flat opposite ends and a cylindrical outer surface extending between said ends, said blank having a concentric core formed of hard, wear-resistant material; securing said blank in said second cavity by heat-shrinking to provide an interference fit therewith and with one end of said blank engaging the bottom of said second cavity; securing said plug in said first cavity by heat-shrinking to provide an interference fit therewith and with the other end of said blank engaging the other of said first cavity bottom wall and plug bottom end; carrying out both said heat-shrinking steps employing a temperature of about 600° F. to 1,000° F. and a force of about 1,200 to about 2,400 pounds; and drilling a die opening in said core communicating between said countersunk openings and concentric therewith.

4,241,626

OPENER DEVICE FOR SEALED CANS

Frederick M. Hall, P.O. Box 494, Pasadena, Md. 21122

Filed Jan. 4, 1979, Ser. No. 1,010
Int. Cl.³ B67B *7/00*
U.S. Cl. 81—3.46 R **7 Claims**



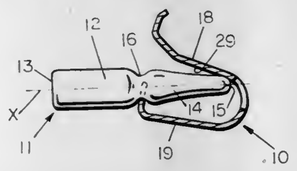
1. An opening device for pull-tab sealed containers, comprising:
   a rod-like member, said rod-like member having a plurality of spaced grooved notches thereon, the first one of said plurality of spaced grooved notches being on one side of and near the end of said rod-like member to insert into said pull tab, and the balance of said plurality of spaced grooved notches being located on said rod-like member 180° around and spaced apart from first said grooved notch, said balance of said plurality of grooved notches being spaced apart from each other along said rod-like member to individually rest upon edge of said pull-tab container; and
   a handle means, said handle means being attached to said rod-like member on the end opposite to the end having said grooved notches.

4,241,627

HAND TOOL FOR OPENING AMPULS

Thomas G. Snow, Vineland, N.J., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 22, 1979, Ser. No. 5,655
Int. Cl.³ B67B *7/00*
U.S. Cl. 81—3.46 R **8 Claims**



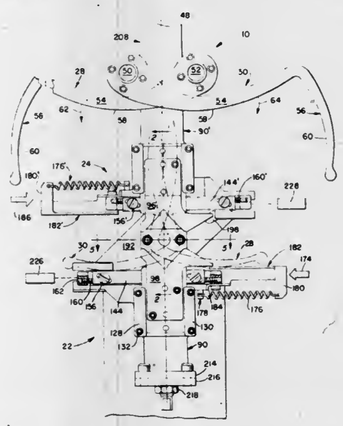
1. A hand tool for use in providing protective manual assistance in opening frangible hermetically sealed ampuls or like containers having an elongate main body portion and an axially projecting removable end integrally merging with said main body portion through a peripherally constricted neck providing a relatively weakened peripheral fracture zone for accommodating fracturable removal of said removable end in response to a manually applied bending force, said hand tool comprising an essentially rigid one-piece body structure including:
   a pair of elongate protective finger grips arranged in side-by-side relationship and having interspaced forward end portions and merging rearward end portions providing a bight section, said finger grips together with said bight section cooperating to define a generally U-shaped central recess therewithin in which to insertably accommodate the removable end of said container;
   means on the forward end portion of one of said finger grips providing a fulcrum having a relatively narrow edge surface upon which to seat the constricted neck of said container while the removable end thereof is being accommodated within said central recess;
   a bearing surface provided on the other one of said finger grips and deployed to face the removable end of said container when the constricted neck thereof is seated on said fulcrum, said bearing surface being flared outwardly relative to said central recess to provide a protective finger stop, whereby said bearing surface and said fulcrum cooperate in response to a manual bending force transmitted to said container through said finger grips to selectively exert a resultant bending momemt to the constricted neck and thereby cause the container to selectively fracture along said fracture zone.

4,241,628

WIRE STRIPPING MACHINE AND METHOD THEREFOR

William F. Sindelar, Towson, and James R. Hetmanski, Perry Hall, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 25, 1979, Ser. No. 51,644
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.51 **35 Claims**



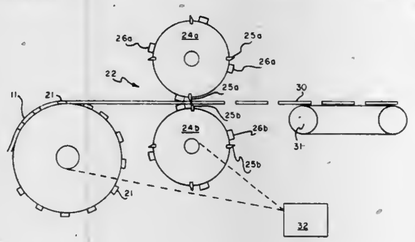
1. An apparatus for simultaneously stripping the insulation from the ends of a plurality of insulated wires comprising:
   insulation stripping means including first and second wire contact surfaces and an insulation cutting means associated with at least one of said wire contact surfaces, said wire contact surfaces adapted to contact the sides of a plurality of insulated wires and restrain the wires therebetween in a wire stripping zone and said insulation cutting means adapted to at least partially penetrate the insulation on a side of the restrained wires, said insulation cutting means being at least partially co-extensive with its respective wire contact surface;
   wire separating means including first and second wire separating elements associated, respectively, with said first and said second wire contact surfaces for separating a plurality of wires so that they lie laterally adjacent one another;
   support means for supporting said insulation stripping means and for supporting said wire separating means such that said first wire contact surface and its associated first separating element and said second wire contact surface and its associated second separating element are movable relative to each other to and from a closed, operative position in which said wire separating means is effective to separate a plurality of insulated wires so that they lie laterally adjacent one another and said wire contact surfaces are effective to contact and restrain the wires therebetween in said wire stripping zone and said insulation cutting means is effective to at least partially penetrate the insulation on at least one side of the wires, said support means also supporting at least one of said wire contact surfaces for movement relative to the other wire contact surface to cause the restrained wires to rotate thereby causing said insulation cutting means to at least partially peripherally cut the insulation of the wires;
   first drive means for moving said first wire contact surface and first wire separating element and said second wire contact surface and said second wire separating element to said closed, operative position;
   second drive means for moving at least one of said wire contact surfaces relative to the other to rotate the wires and cause said insulation cutting means to at least partially peripherally cut the insulation of the wires; and
   third drive means for separating, in a direction axially of the wires, the wires and the closed wire contact surfaces to remove the peripherally cut insulation from the wires.

4,241,629

APPARATUS FOR SHEARING AND SEPARATING BATTERY GRIDS

Jerry T. McDowell, Greeneville, Tenn., assignor to Ball Corporation, Muncie, Ind.

Filed Oct. 10, 1978, Ser. No. 949,938
Int. Cl.³ B23D *25/12*; B26D *1/56*
U.S. Cl. 83—343 **3 Claims**



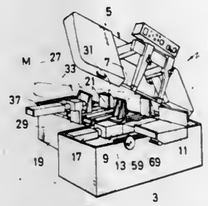
1. An apparatus for forming individual battery grid structures from a sheet material comprising first means for feeding said sheet material in a continuous manner, said sheet having a plurality of voids situated thereon, said first means being provided with engaging members in register with said voids, second means positioned on opposite sides of said sheet material and capable of contacting each other for cutting transversely of said sheet material along a shear line from the edge to a void of said sheet material, third means associated with said second means and positioned on opposite sides of said sheet material and capable of contacting each other for cutting longitudinally of said sheet material along a slit line between adjacent voids, the transversely cutting means being staggered and extending inwardly from the edge to almost the center of the drum, said longitudinally cutting means situated proximate the center of the drum and spaced from and at right angle to every other transversely cutting means, and drive means connected to said first, second and third means, said drive means so constructed to actuate said second and third means in proper relation to the voids on said sheet material such that individual grid structures are separated one from the other from said sheet material.

4,241,630

VISING AND FEEDING APPARATUS FOR CUTTING MACHINES

Kikuo Moriya, Machida, Japan, assignor to Amada Company, Limited, Isehara, Japan

Filed Apr. 5, 1979, Ser. No. 27,264
Int. Cl.³ B23D *55/04*
U.S. Cl. 83—409 **8 Claims**



1. A cutting machine for subdividing material lengths, comprising:
   a roller table for supporting the material for movement along a transport path to a cutting zone;
   a cutting head assembly having a cutting blade for cutting material located at said cutting zone;
   a front vise assembly fixed adjacent to the cutting zone, said front vise assembly having first and second jaws arranged in opposed mutually spaced relationship on opposite sides of said transport path, with first jaw operating means for adjusting the spacing of said first and second jaws between an open position permitting movement therebetween of said material and a closed position clamping said material therebetween;
   a carriage underlying said roller table, said carriage being configured for movement independently of said roller table and any material length supported thereon in opposite directions parallel to said transport path,
   a rear vise assembly mounted on said carriage for movement therewith, said rear vise assembly having third and fourth jaws arranged in opposed mutually spaced relationship on opposite sides of said transport path, with second jaw operating means carried on said carriage for adjusting the spacing of said third and fourth jaws between an open position permitting the aforesaid movement of said carriage relative to said material and a closed position clamping said material therebetween and establishing a fixed relationship between said material and said carriage; and,
   carriage operating means for moving said carriage in opposite direction along said transport path.

4,241,631

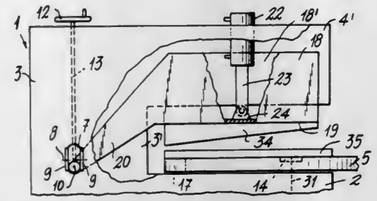
MACHINE FOR PUNCHING, NIBBLING, ROUNDING OFF AND CUTTING ANY KIND OF SHEETS OR PLATES, AND FOR SIMILAR OPERATIONS

Costanzo Salvatore, Via Meucci 9, Gaggiano (Milan), Italy

Filed Apr. 2, 1979, Ser. No. 26,000
Int. Cl.³ B26D *7/26*
U.S. Cl. 83—411 R **9 Claims**

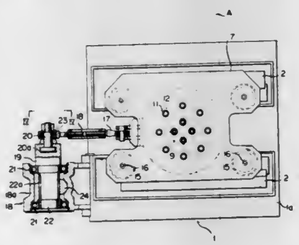
1. An apparatus for matching a workpiece with a tool, said apparatus comprising:
   (a) an operating arm;
   (b) a pair of parallel vertical supports;

(c) means for pivoting said operating arm on said supports, said pivoting means including means defining elongated slots, a pin disposed in said slots and means for differentially positioning said pin along said slots;



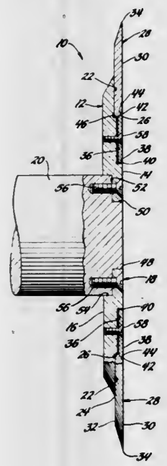
(d) a working plane member disposed in confronting relationship to said operating arm; and
(e) means associated with said arm and said member for temporarily mounting said tool.

4,241,632
BLANKING MACHINE FOR BLANKING HOLES IN SHEET OF METAL
Osamu Seo, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jul. 10, 1979, Ser. No. 56,288
Claims priority, application Japan, Jul. 10, 1978, 53-82949
Int. Cl.³ B26D *5/04*
U.S. Cl. 83—560 **4 Claims**



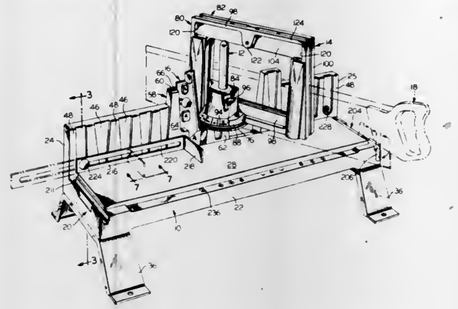
1. A blanking machine for blanking holes in a sheet of metal, comprising:
a bolster;
a pair of rails fixedly secured to said bolster; said rails extending in a direction right angles to the feeding direction of the sheet of metal to be blanked;
a lower die set slidably mounted on said rails;
a die fixedly secured to said lower die set;
an upper die set having a punch mounted thereon opposite said die;
coupling means for coupling said upper die set with said lower die set allowing said upper die set to move on said rails together with said lower die set;
hydraulic cylinder means having a plurality of pressure chambers formed therein defined by a cylinder barrel and partition walls, the length of said pressure chambers being different from one another, each pressure chamber having mounted therein a piston and a piston rod, and each partition wall and rod-end of said cylinder barrel having holes formed therein allowing the piston rods to slide therein, each piston rod except the last one being adapted to contact with the adjacent piston;
connecting rod means connected to said lower or upper die set at one end thereof; and
transmission means connected to the other end of said connecting rod means at one end thereof, the other end of which is connected to said last piston rod whereby said lower and upper die sets are moved on said rails by the actuation of said hydraulic cylinder means.

4,241,633
TRIMMER BLADE
Charles G. De Luca, 8412 E. 24th St., Tucson, Ariz. 85713
Filed Mar. 9, 1979, Ser. No. 18,990
Int. Cl.³ B23D *35/00*
U.S. Cl. 83—676 **6 Claims**



1. A rotary cutting tool assembly comprising; a circular mounting flange having front and rear faces and a central mounting portion for attaching the flange to a support shaft, said flange having a first recess in said front face thereof, said first recess extending radially inwardly from the outer circular periphery thereof to a first circular axially extending shoulder defined by a machined smooth surface, a circular cutting blade disposed in said first recess, said cutting blade having front and rear surfaces and a circular central opening extending around and engaging said shoulder, said cutting blade having a circular peripheral cutting edge disposed radially outwardly of the periphery of said mounting flange, said mounting flange including a second recess disposed radially inwardly of said first recess, a circular clamping means disposed within said second recess and removably connected to said mounting flange radially inwardly of said cutting blade for clamping said cutting blade to said mounting flange, said clamping means including a clamping ring having an inner circular opening and an outer circular periphery disposed in overlapping relationship with the inner circular periphery of said central opening in said cutting blade, said clamping ring and said cutting blade having mating conical surfaces at the overlapping portions thereof, said clamping ring having a rear surface spaced from the bottom of said second recess for clamping the rear surface of said cutting blade tightly against the bottom of said first recess, and wherein said first recess is deeper than said second recess and said second recess extends radially inwardly to a second axially extending shoulder, said second shoulder extends from the bottom of said second recess to said front face of said mounting flange, said inner circular opening of said clamping ring is at least in part spaced from said second shoulder.

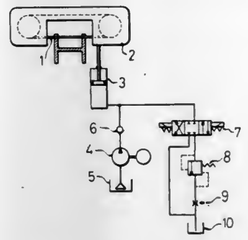
4,241,634
MITRE BOX
E. Curtis Ambler, Newington, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed May 29, 1979, Ser. No. 42,904
Int. Cl.³ B27G *5/02*
U.S. Cl. 83—763 **17 Claims**



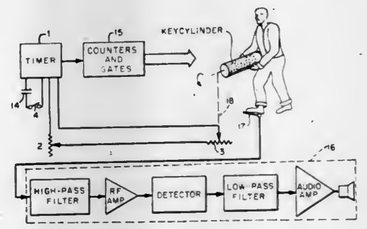
1. In a miter box, the combination comprising:
A. a base member having a horizontal bed surface;
B. a vertical post on said base member extending above said bed surface;
C. a saw guide subassembly rotatably supported on said post, said saw guide subassembly including an index guide segment of arcuate cross section with a multiplicity of indents spaced about the periphery thereof;
D. a wedge member pivoted adjacent its lower end on said base member below said guide segment and spaced horizontally from said post, said wedge member including an engagement edge portion spaced towards its free upper end from its pivot and towards said guide segment, said edge portion being engageable in said indents of said guide segment to prevent rotation of said saw guide subassembly about said post;
E. means biasing said wedge member against said guide segment to engage said edge portion in one of said indents; and
F. positioning means on said base member to orient said engagement edge portion of said wedge member in axial alignment with said post and thereby to ensure substantially accurate and stable rotated positioning of said saw guide subassembly about said post.

4,241,635
HYDRAULIC SYSTEM FOR CONTROLLING SAW-FRAME CUTTING FEED SPEED IN A SAWING MACHINE
Tadahiro Sugimoto, 6-8, 4-chome, Minami-Mukonoso, Amagasaki-shi 661, Japan
Filed Apr. 13, 1979, Ser. No. 29,739
Int. Cl.³ B23D *53/04*
U.S. Cl. 83—800 **2 Claims**

1. A hydraulic system for controlling the cutting feed speed of a saw frame of a sawing machine, said system including:
a hydraulic cylinder including a ram supporting said saw frame;
a discharge line allowing the fluid in said hydraulic cylinder to draw off therefrom, said discharge line including a control valve and a throttle valve;
said control valve comprising a spool reciprocally moving under the urge of a first hydraulic pressure and a second hydraulic pressure exerting on its first end face and second end face;
said first end face having a larger pressure receiving area than that of said second end face;
a spring means backing up said spool at its second end face so as to assist the urge of said second hydraulic pressure exerting on said second end face of spool, thereby amplifying variations in pressure in the hydraulic cylinder due to changes of cutting resistance to the saw blade to carry out a sensitive control of the cutting feed speed of the saw frame.



4,241,636
ELECTRONIC MUSICAL INSTRUMENT
Christopher Long, Rte. 6, Box 856, Tallahassee, Fla. 32301
Filed Dec. 28, 1978, Ser. No. 973,855
Int. Cl.³ G10H *1/18, 1/42*
U.S. Cl. 84—1.01 **14 Claims**

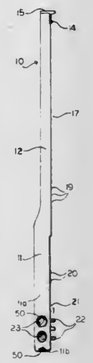


1. An electronic musical instrument which produces justly intoned pitches and is capable of changing at will during performance the basis pitch or key signature being played, comprising, means for producing a train of electrical pulses, means for selectively varying at the will of the operator the interval between said pulses, means for converting said train of pulses to a number of pulse trains which are related in frequency by ratios of small integers to produce justly intoned intervals and which ratios are maintained unchanged regardless of the frequencies of said pulse trains, a speaker, a systems of circuits for energizing said speaker which includes a multiplicity of conductive contacts each of which is connected respectively to the corresponding one of the pulse trains of said number of pulse trains, the circuits including each respectively of said multiplicity of conductive contacts being adapted to be selectively closed by the operator whereby the operator by closing selected ones of said conductive contacts and selectively varying the interval between the pulses of said train of pulses may control the resulting sound produced by the speaker.

4,241,637
STRINGED MUSICAL INSTRUMENTS OF GUITAR TYPE
Rachael E. Brent, P.O. Box 884, San Bruno, Calif. 94066
Filed Jul. 3, 1979, Ser. No. 54,472
Int. Cl.³ G10D *1/08, 3/14*; G10H *3/18*
U.S. Cl. 84—1.16 **7 Claims**

1. In a guitar: a body having a pair of opposed extremities and a bridge thereon between said extremities; an elongated neck extending outwardly from one extremity of the body, the outer end of the neck having means for anchoring first ends of a plurality of strings in fixed positions thereon, the strings

adapted to extend from said outer end of the neck along the neck past said one extremity and the bridge to respective locations adjacent to the opposite extremity of the body; means carried by the body adjacent to said opposite extremity thereof and coupled with the opposite ends of the strings for applying tension to the strings as the strings engage the bridge, the



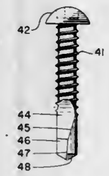
tension applying means including a shaft for each string, respectively, each shaft having a knob on the outer end thereof, the body having a recess for each knob, respectively, the recesses extending into the body and having outer, open ends, the knobs being within respective recesses and being accessible through the open ends of the recesses to permit rotation of the shafts.

4,241,638
SELF-EXTRUDING FASTENER
Mituo Shimizu, and Hidenori Miyake, both of Kyoto, Japan, assignors to Kabushiki Kaisha Yamashina Seikosho, Japan
Continuation of Ser. No. 806,450, Jun. 14, 1977, abandoned.
This application Feb. 26, 1979, Ser. No. 14,919
Claims priority, application Japan, Feb. 23, 1977, 52-18048
Int. Cl.[3] F16B *25/00*
U.S. Cl. 85—46 **3 Claims**



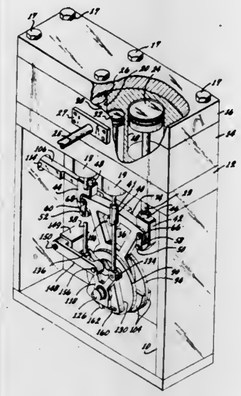
1. An integral self-extruding screw, comprising,
a cylindrical shank having at one end means for engaging a rotary driving tool and the other merging into a substantially straight tapering tip ending in a point,
the shank having formed on its outer surface a pair of spaced-apart tapping screw threads of the same outside diameter, root diameter and tapping pitch and defining a two thread zone,
each tapping screw thread continuing from the shank for a minor part of the length of the tip with its height gradually reducing just beyond the zone of merger of the shank and tip until both screw threads disappear at substantially opposed places on said tip,
a single opening forming and enlarging thread being generated in a position midway between said tapping threads substantially within said merger zone of the shank and tip to form a three thread zone and continuing on said tip to the point to form a single thread zone,
said opening forming and enlarging thread first having a tapping pitch the same as that of said tapping threads while it intervenes said tapping threads for a minor part of the length of the tip and gradually increasing in height and then as it extends beyond said tapping threads having its height and its root diameter reduced and its lead angle greatly increased as it nears the point whereby it has an opening forming and enlarging pitch for a major part of the length of the tip,
said single thread zone together with said tip point defining means for forming a guide opening in sheet metal, said three thread zone forming means for extruding sheet metal to form an extruded cylindrical bore, and said two thread zone forming means for internally threading a just previously formed extruded cylindrical bore.

4,241,639
METHOD AND APPARATUS FOR PRODUCING DRILL SCREWS
Martin A. Baer, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Division of Ser. No. 851,238, Nov. 14, 1977, Pat. No. 4,138,754.
This application Oct. 13, 1978, Ser. No. 950,950
Int. Cl.[3] F16B *25/00*
U.S. Cl. 85—47 **2 Claims**



1. A self-drilling screw comprising an elongated shank, an enlarged head at one end with means cooperable with a tool for turning the screw, the elongated shank including a threaded portion intermediate the enlarged head and the entering end portion of the shank, a drill tip formed on said entering end portion including a pair of oppositely disposed, generally longitudinally directed flute means extending upwardly from and intersecting a pair of flat bevel surfaces formed on either side of a terminal ridge edge which intersects and is substantially perpendicular to the longitudinal axis of the shank, each of said flute means comprising first and second intersecting, substantially longitudinally extending surfaces, said surfaces intersecting both of the bevel surfaces with the major lateral extent of said first surface extending at an angle not greater than 45° to the terminal ridge edge and thereby forming laterally extending cutting edges, said first surfaces comprising a pair of intersecting flat surfaces linear in both longitudinal and lateral directions, both of the pair of intersecting flat surfaces being inclined to the longitudinal axis of the fastener with the lowermost of said surfaces being inclined to a lesser amount than the uppermost of said surfaces, said second surfaces comprising a pair of intersecting surfaces, arcuate in the longitudinal direction, the intersection of the arcuate surfaces forming an upstanding ridge spaced axially from the cutting edges and extending generally laterally to the longitudinal axis, said first and second surfaces disposed at from 92° to 97° to one another to insure proper relief behind the laterally extending cutting edges.

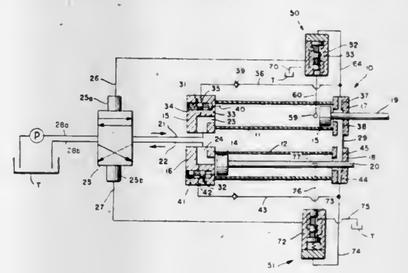
4,241,640
RECIPROCATING ENGINE WITH IMPROVED MAIN BEARING
John H. Hedger, 11470 Oak Creek Dr., Lakeside, Calif. 92040
Filed Dec. 18, 1978, Ser. No. 970,861
Int. Cl.[3] F01B *1/00*
U.S. Cl. 91—186 **4 Claims**



1. In a fluid driven reciprocating engine which comprises an engine block containing at least two parallel cylinders, a piston located in each of said cylinders for parallel reciprocating movement therein, a piston rod rigidly connected at one end to each of said pistons and extending out of said cylinders along the cylinder centerlines into a housing containing connecting means operatively connecting the other end of each of said piston rods to a single crank pin on a rotary output shaft and valve means within said block for selectively supplying fluid to and exhausting fluid from said cylinders above and below said pistons, said output shaft is supported by bearing means which permits free rotation of said output shaft while restraining longitudinal and angular movement of said shaft, the improvement wherein said bearing means comprises a bearing assembly made up of two spaced apart subassemblies, each of which includes a central ball bearing having an inner race secured to said output shaft and an outer race secured to an inner ring having a curvilinear outer surface which is located within an outer ring having a mating curvilinear surface said outer rings rigidly secured together in a spaced relationship by spacing means and to a wall of said housing where said output shaft passes through said housing.

4,241,641
PILOT ASSEMBLY FOR HYDRAULIC PUMPS
Gerald H. Reinert, 6 Brightwood Rd., Cold Spring, Ky. 41076
Filed Aug. 14, 1978, Ser. No. 933,443
Int. Cl.[3] F01L *21/02, 25/06*
U.S. Cl. 91—189 A **1 Claim**

1. In a hydraulic pumping apparatus having
first and second main hydraulic cylinders, each of the main cylinders having an elongated bore and front and rear ends,
a main piston reciprocable within the bore of each cylinder,
hydraulic fluid supply means for supplying hydraulic fluid under pressure to the cylinders,
main valve means connecting the hydraulic fluid supply means to the cylinders for alternately supplying pressurized hydraulic fluid to the first and second cylinders, the main valve means having a pair of hydraulic fluid inlets and being alternately movable between first and second positions by hydraulic fluid alternately forced into said inlets, the main valve means being movable between a first position in which pressurized hydraulic fluid passes through the main valve means to the first cylinder and a second position in which pressurized hydraulic fluid passes through the main valve means to the second cylinder,
hydraulic fluid connecting means connected to the front end of each of the cylinders for permitting hydraulic fluid to flow from one cylinder as the piston therein is extended to the other cylinder for retracting the piston in the other cylinder; an improved pilot assembly for each of the first and second main cylinders for moving the main valve means between its first and second positions, each of the pilot assemblies comprising
a pilot cylinder,
a pilot spool in the pilot cylinder reciprocable between first and second positions,
a first fluid conduit connecting one end of the pilot cylinder to the front end of the associated main cylinder,
a second fluid conduit connecting the other end of the pilot cylinder to the associated main cylinder at a position spaced rearwardly from the front end of the main cylinder, the spacing between the second conduit and the front end of the main cylinder being sufficient to permit the



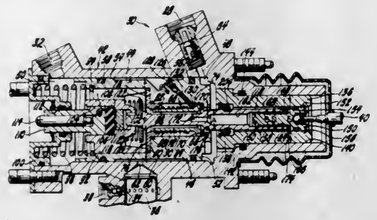
main piston in the main cylinder to pass the second conduit when the main piston is in its forwardmost position whereby pressurized hydraulic fluid flowing into the main cylinder from the hydraulic fluid supply means can flow through the second conduit into the pilot cylinder to move the pilot spool from its first position to its second position when the piston moves forwardly past the second conduit,
a third fluid conduit connecting the pilot cylinder to one of the hydraulic fluid inlets of the main valve means, and
connecting means in the pilot cylinder for providing a fluid path between the second fluid conduit and the third fluid conduit, the spool closing said fluid path when the spool is in its first position and opening said fluid path when the spool is in its second position whereby pressurized hydraulic fluid can flow from the second conduit to the third conduit and through the hydraulic fluid inlet of the main valve for moving the main valve from one of its positions to its other position when the spool is moved to its second position.

4,241,642
HYDRAULIC RATIO CHANGING BOOSTER WITH SELF-VENTING CHAMBER
Denny L. Peeples, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 22, 1979, Ser. No. 13,826
Int. Cl.[3] F15B *13/10, 17/02*
U.S. Cl. 91—391 R **3 Claims**

1. In a hydraulic power booster having means defining a power pressure chamber and a hydraulic ratio changing chamber defined by an input piston, an output piston and a ratio piston having a bore receiving said input and output pistons and forming therewith the hydraulic ratio changing chamber in which hydraulic fluid is trapped during hydraulic power actuation of said booster and caused by movement of said input

piston to act on said output piston across an effective area less than the effective area of said input piston exposed to the trapped fluid and change the booster ratio, said output piston being arranged to move a booster control valve element for controlling hydraulic power actuation of the power booster, the improvement comprising:

normally open valve means between said power pressure



chamber and said hydraulic ratio changing chamber, said valve means establishing a vent path providing self-venting of said hydraulic ratio changing chamber to said power pressure chamber while the booster is in the unactuated condition and closing said hydraulic ratio changing chamber upon the initiation of booster actuation by actuating movement of said input piston to trap hydraulic fluid therein.

4,241,643

POWER ASSISTED ACTUATING ARRANGEMENTS

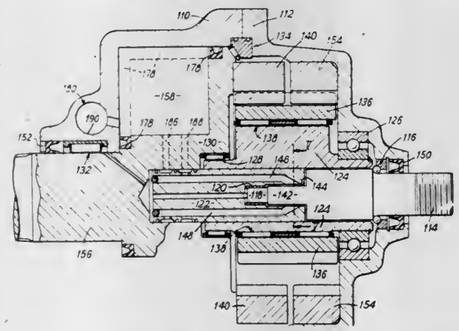
Alistair G. Taig, South Bend, Ind., assignor to Bendix Westinghouse Limited, Britol, England

Filed Mar. 6, 1978, Ser. No. 883,548

Claims priority, application United Kingdom, Mar. 5, 1977, 09405/77

Int. Cl.³ F15B *13/042, 13/10*

U.S. Cl. 91—446 **9 Claims**



1. A power assisted actuating arrangement comprising a body member, an input shaft rotatable relative to said body member, an eccentric drivingly connected to said input shaft and rotatable therewith, a gear-wheel rotatably mounted on said eccentric, said gear-wheel meshing with an internally-toothed ring rotatably mounted in said body member and having a number of gear teeth which is greater than the number of gear teeth on said gear-wheel, an output shaft of said arrangement rotatably mounted in said body member, said ring being connected to said output shaft for rotation in unison therewith, means for constraining rotation of said gear-wheel upon gyration thereof due to rotation of said eccentric whereby rotation of the eccentric is accompanied by rotation of said ring, torque sensing means operable to produce in use a fluid pressure dependent on the torque applied to said input shaft, a fluid pressure motor means responsive to said fluid pressure, said motor means being drivingly connected to said output shaft whereby said motor means drives the output shaft to increase the torque derivable from said output shaft in response to rotation of the input shaft.

4,241,644

PNEUMATIC ACTUATOR

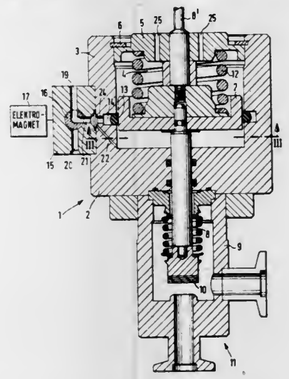
Siegfried Schertler, Haag, Switzerland, assignor to Vat Aktiengesellschaft fuer Vakuum-Apparate Technik, Haag, Switzerland

Filed Nov. 27, 1978, Ser. No. 963,809

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755239

Int. Cl.³ F01B *31/00*; F15B *13/042*

U.S. Cl. 91—447 **8 Claims**



1. A pneumatic actuator comprising:

(a) a cylinder having an axis and a face extending in the direction of and circumferentially about said axis, said face bounding a cavity within said cylinder;

(b) a piston located within and being axially movable in said cavity, said piston extending transversely of the axis of said cylinder and dividing said cavity therein into a first portion and a second portion, said face and said piston defining a gap therebetween extending in the axial direction of said cylinder and, connecting said first and second portions of said cavity for affording a flow of gas therebetween.

(l) said face being formed with a recess extending transversely of the axial direction of said cylinder and communicating with said gap;

(c) a sealing member positioned in said recess and movable in said recess between a first position in sealing engagement with said cylinder within said recess and in spaced relation from said piston and a second position in sealing engagement within said recess with said cylinder and in which said second position said sealing member bridges said gap and is in sealing engagement with said piston, thereby sealing said first and second portions from the flow of gas therebetween;

(d) control means selectively positionable for admitting a gas under pressure to said first portion and to a part of said recess sealed from said gap by said sealing member wherein the gas under pressure moves said sealing member from the first position into said second position, and for closing off the flow of gas under pressure and venting the gas under pressure from said first portion and from said part;

(e) and said second portion having at least one opening therefrom for venting the gas under pressure flowing through said gap from said first portion into said second portion when said sealing member is moved into the first position; and

(f) motion transmitting means for transmitting the motion of said piston to an object outside said cavity.

4,241,645

VENTILATOR

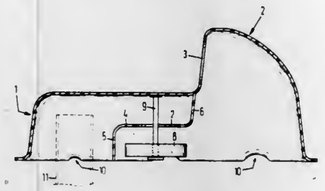
Adolf le Comte, Stuartweg 4, 4131 NJ Vianen, Netherlands

Filed Aug. 1, 1979, Ser. No. 62,756

Claims priority, application Netherlands, Aug. 10, 1978, 7808368

Int. Cl.³ B63J *2/00*

U.S. Cl. 98—37 **4 Claims**



1. A ventilator for use with an air shaft on board a vessel, said ventilator comprising:

a housing comprised of a box-shaped part and an adjacently disposed hood-shaped part which is outwardly open on one side;

a plurality of transverse partitions extending in substantially opposite directions within said housing, at least one said transverse partition being internally attached to and continuous with said housing;

at least one longitudinal partition having an air inlet opening within said housing, said longitudinal partition being joined to and continuous with said transverse partition internally attached to said housing and to at least one other transverse partition, said transverse and longitudinal partitions internally dividing said housing into two adjacent compartments; and

floating means to close the air inlet opening in said longitudinal partition.

4,241,646

PAINTING BOOTH ON CONVEYOR LINE

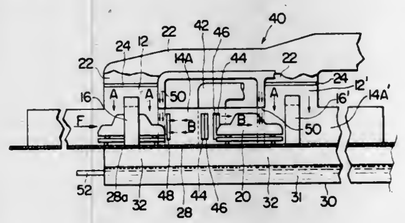
Mitsuo Tsuruta, Tokyo, and Hachiro Haga, Zushi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 2, 1978, Ser. No. 947,639

Claims priority, application Japan, Nov. 10, 1977, 52/134091

Int. Cl.³ B05C *15/00*

U.S. Cl. 98—115 SB **8 Claims**



1. A painting booth through which a conveyor passes substantially horizontally to transfer articles to be painted, the booth comprising:

two spraying spaces located with a distance therebetween in the direction of the conveyor, each having a paint spraying machine disposed therein;

a buffer space which is interposed between said two spraying spaces so as to occupy an entire length of said distance and adjoin both of said two spraying spaces and is smaller in cross-sectional area than either of said two spraying spaces,

at least one first duct for blowing air into each of said two spraying spaces through air inlets, each said spraying space having an at least partly grated floor, said air inlets provided for said at least one first duct being located on the ceiling of the spraying space such that a flow of air is established in a direction generally vertically downwards substantially in every region of each of said two spraying spaces, and

a second duct for blowing air into said buffer space through two sets of air inlets, said sets of air inlets being located in said buffer space, having one set of inlets directed toward one adjacent spraying space and the other set of inlets directed toward the other adjacent spraying space such that air flows in said buffer space generally horizontally and towards said two spraying spaces at velocities lower than the velocity of said flow of air in each of said two spraying spaces.

4,241,647

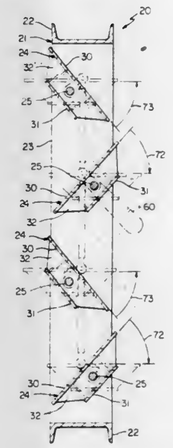
AIR DAMPER VALVE

Leroy E. Herr, Buffalo Grove, Ill., assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 20, 1979, Ser. No. 67,853

Int. Cl.³ F24F *13/14*

U.S. Cl. 98—121 A **19 Claims**



1. In an air damper comprising; a housing structure; a plurality of opposed blades each having rotatable shaft means and flow control plates; said blades having means supporting said shaft means on said housing structure enabling said control plates to be disposed in aligned relation to define a substantially planar shut-off structure for said damper and to regulate air flow therethrough; the improvement wherein said means supporting said shaft means comprises bearing means supporting said shaft means of one blade on one side of said planar structure and the shaft means of an immediately adjacent blade on the opposite side of said planar structure; a linkage system for operating said shaft means; and operating means for operating said shaft means and said linkage system; said bearing means, blades, and linkage system being constructed and arranged so that upon operation of said operating means the rotational displacement of each blade from any reference position is approximately the same and the air flow distribution throughout the flow area of said damper is substantially uniform; said linkage system comprising, an arm fixed to each shaft means at the same side of each blade, said arms being of equal length and with said blades disposed in said aligned relation and defining said planar shut-off structure the arm of one blade extends from

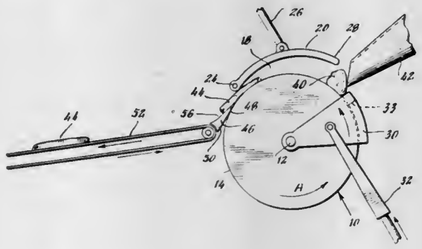
its shaft means generally in one direction toward said planar shut-off structure and the arm of an immediately adjacent blade extends from its shaft means in a direction roughly opposite from said one direction toward said planar shut-off structure, and a plurality of links connected between said arms, each of said links extending between the terminal outer ends of each pair of immediately adjacent arms.

4,241,648

APPARATUS FOR SHAPING AND PRECOOKING OF TORTILLAS

John G. Longenecker, Ozone Park, N.Y., assignor to Roberto G. Barrera, Monterrey, Mexico

Continuation-in-part of Ser. No. 849,890, Nov. 9, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,368
Int. Cl.³ A21C *3/00*
U.S. Cl. 99—349 **10 Claims**



1. Apparatus for processing foodstuff material comprising
a drum which has a heatable arcuate outer surface and is rotatable in a desired direction about the axis of said outer surface,
an associated compression plate having a heatable arcuate surface which is configured so as to be substantially equidistant throughout to the opposing portion of said outer surface of said drum when said surfaces are juxtaposed spaced apart at a distance desired for processing foodstuff material therebetween,
said plate being moveable with respect to said drum into said juxtaposed, spaced-apart relationship, and out of said relationship with the end of said plate which the advancing drum surface first passes under when said drum rotates in a desired direction being moveable away from said drum while the other end of said plate remains pivotally fixed in substantially the same spaced-apart position with respect to said drum,
motion means for rotating said drum in said desired direction,
and means for moving said plate into said juxtaposed spaced-apart relationship and out of said relationship.

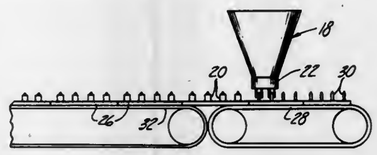
4,241,649

APPARATUS FOR MAKING FILLED FOOD PRODUCT

Richard L. Nelson, and Walter P. Nelson, both of Battle Creek, Mich., assignors to Mars Incorporated, McLean, Va.

Division of Ser. No. 930,757, Aug. 3, 1978, Pat. No. 4,162,333. This application Jan. 15, 1979, Ser. No. 3,226
Int. Cl.³ A47J *37/00*
U.S. Cl. 99—354 **9 Claims**

1. Apparatus for making a tubular food product comprising; a dough extruder, a conveying surface movable relative to said dough extruder, a die member supported on said conveying surface for movement therewith, said die member including a plurality of elongated support members positioned to extend perpendicular to said conveying surface, said extruder being operable to deposit a tubular dough piece on each of said support members, said support members engaging and supporting the interior surface of said tubular dough pieces and leaving the exterior of said dough pieces unsupported, and means to bake said dough pieces supported on said support members to form said tubular food product, means to remove said tubular elements from said support member after said tubular elements have been baked in said oven, a conveyor having a



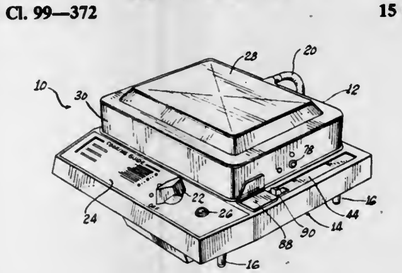
portion moving in parallel relationship to said conveying surface, cup means mounted on said conveyor, and means to move said tubular food products from said support members to said cup means.

4,241,650

APPARATUS FOR PREPARING FOOD

Raymond John, 311 Charles St., Carpentersville; Jerome G. Apfelbaum, 516 Berkley Dr., Arlington Heights, and Robert L. Moore, 919 Coronet La., LaGrange, all of Ill.

Continuation of Ser. No. 460,798, Apr. 15, 1974, abandoned, and a continuation-in-part of Ser. No. 292,479, Sep. 27, 1972, abandoned. This application Jun. 7, 1976, Ser. No. 693,548
Int. Cl.³ A47J *37/06*
U.S. Cl. 99—372 **15 Claims**



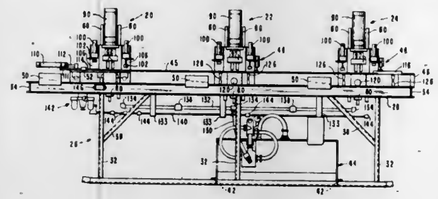
1. In a cooking apparatus for cooking food comprising upper and lower housings, said upper and lower housings defining facing inner walls receiving said food therebetween and providing cooking surfaces, heating elements, and means for mounting said heating elements in said housings including means electrically insulating the heating elements relative to said inner walls, the improvement wherein said heating elements comprise thin assemblies including a pair of thin electrical insulating sheets ranging in thickness from about 0.010 to about 0.020 inches, and a third thin electrical insulating sheet ranging in thickness from about 0.010 to about 0.020 inches, said third sheet carrying electrical resistance wires and being sandwiched between said pair of sheets, the sandwich assembly comprising said heating elements having a maximum thickness of about 0.060 inches, and wherein said housings define a substantial air space around said assemblies to provide thermal insulation against the transfer of heat from the assemblies to the housing said mounting means mounting one of said assemblies in each housing, said mounting means holding the respective assemblies in position adjacent said inner walls.

4,241,651

ASSEMBLY MACHINE AND METHOD FOR EMBEDDING CONNECTOR PLATES IN STRUCTURAL MEMBERS

Adolfo Castillo; Ben Kushner, and Andrew G. Seipos, all of Miami, Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Filed May 9, 1979, Ser. No. 37,458
Int. Cl.³ B30B *1/32, 15/00*
U.S. Cl. 100—35 **30 Claims**



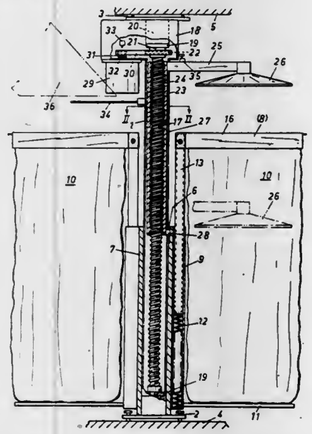
27. A method of embedding connector plates in structural members, comprising:
supporting the structural members on a work support surface;
placing a first connector plate on a lower platen normally located below said work support surface and movable upward relative to said surface;
placing a second connector plate on top of the wooden members for engagement by an upper platen movable downward toward said lower platen; and pressing said upper platen downward into engagement with the second connector plate and independently raising said lower platen upward relative to said work support surface to press the first and second connector plates into opposite sides of the structural members.

4,241,652

DEVICE FOR OBTAINING COORDINATED MOVEMENTS OF OPERATIVE MEMBERS INCORPORATED IN A MACHINE OR A PLANT

Kurt H. Smedlund, Karl XI väg 45B, Halmstad, Sweden (301 02)

Filed Feb. 1, 1978, Ser. No. 874,334
Claims priority, application Sweden, Feb. 10, 1977, 7701475
Int. Cl.² B30B *15/14*
U.S. Cl. 100—49 **8 Claims**



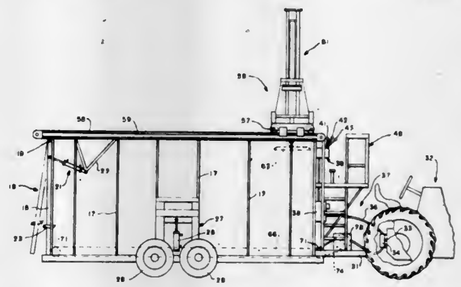
1. A device for producing complex relative movements in at least two different planes between working members of the device, comprising a rotatable sleeve secured to one working member, said rotatable sleeve having internal complex movement guide tracks arranged in a repetitive cycle according to a predetermined programmed pattern of relative movements for said working members, a coacting non-rotatable element mounted for axial displacement inside of the sleeve and being elongated and secured to a second working member of the device, a transversely projecting part on said non-rotatable element engaging within the internal guide tracks of said rotatable sleeve, and a driver for said non-rotatable element within said rotatable sleeve causing it to move axially of the sleeve in a direction to move the second working member of the device longitudinally of the sleeve toward a work performing position, and during such movement the engagement of said projecting part in one of said internal guide tracks producing rotation of the sleeve on its axis to impart rotation to said first working member relative to the second working member in a repetitive cycle of operation.

4,241,653

BANK OUT MODULE BUILDER WITH UNLOADING MECHANISM

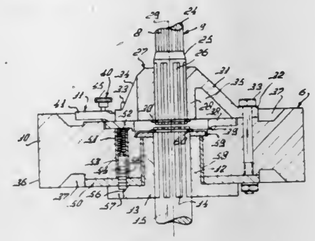
John L. Fagundes, 8576 Fargo Ave., Hanford, Calif. 93230, and Clyde L. Taylor, 1545 Chenowith Ave., Visalia, Calif. 93277

Continuation-in-part of Ser. No. 953,071, Oct. 20, 1978, abandoned. This application Feb. 12, 1979, Ser. No. 11,484
Int. Cl.³ B30B *9/30*
U.S. Cl. 100—100 **12 Claims**



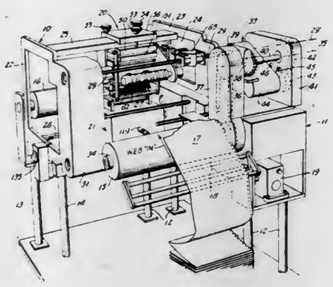
1. In a bank out module builder with an unloading mechanism adapted to be drawn by a self propelled vehicle, a generally rectangular framework having an open top side and having spaced apart sidewalls and spaced apart front and rear walls, and a bottom wall structure, the rear being formed by a door movable between open and closed position, and in the open position being raised upwardly to an out-of-the-way position, ground engaging members carried by the framework, a carriage mounted on said framework for movement longitudinally of the framework between the front and rear walls, means carried by the framework for causing movement of said carriage between the front and rear walls, a tramper mechanism carried by the carriage and having a tramper and means for moving said tramper vertically within said framework for forming a module within the framework, means carried within the framework for discharging through the rear of the framework a module formed within the framework and means adapted to form a connection between the bank out module builder and the self propelled vehicle to permit the rear of the framework to tilt downwardly under the weight of the module as the module is moved through the rear of the framework so that the module can readily be moved into close proximity to the ground to the rear of the bank out module builder as it is discharged to minimize any possible break up of the module.

4,241,654
FLY-WHEEL
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Filed May 15, 1978, Ser. No. 905,965
Claims priority, application Netherlands, May 5, 1977, 7704935
Int. Cl.³ B30B *1/00*; F16D *7/00*
U.S. Cl. 100—189 **12 Claims**



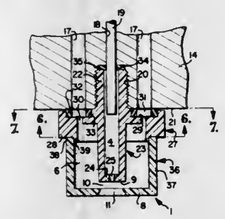
1. A baler comprising a pressing ram and a driving mechanism that drives said ram, said driving mechanism comprising a fly-wheel, said fly-wheel comprising a first member and a second member connected by shear means for rotation together about a common axis, said first member being mounted on a driving shaft and said second member being mounted on a driven shaft, the two members being relatively rotatable with respect to one another about said axis upon overload, said shear means including at least one shear pin slideably mounted in a holder and said pin normally interconnecting said members to prevent relative rotation until overload fractures said pin, advancement means operatively associated with said pin that automatically displaces the remainder of the fractured pin with respect to said axis following overload into operative position in which the two members are reconnected and relative rotation between the two members prevented.

4,241,655
PRINTER WITH INDEXED ORIENTATION OF PRINT HEAD RELATIVE TO WEB MOVEMENT
Arthur E. Dingman, Little Ferry, N.J., assignor to Autographic Business Forms, Inc., Mahwah, N.J.
Filed Feb. 23, 1979, Ser. No. 14,556
Int. Cl.³ B41J *3/56*
U.S. Cl. 101—79 **25 Claims**



1. In a printing machine comprising a frame, a printing-head unit carried by said frame and including a printing head having an elongate characterized relief to be cyclically printed in essentially a single plane at spaced locations on a moving web, web-guiding and feeding means on said frame for continuously advancing said web in said plane adjacent said printing head, and a print-hammer unit carried by said frame and having an elongate anvil in facing registration with the characterized relief of said printing head, the improvement wherein each of said units is indexibly mounted to said frame about an index axis normal to said plane, and synchronizing-connection means between said printing-hammer unit and said feeding means for synchronizing operation of said printing-hammer unit with said feeding means for each selected one of a plurality of orientations of anvil and relief elongations with respect to the direction of web advance.

4,241,656
SELF-CLEANING NOZZLE FOR LITHOGRAPHIC PRINTING DAMPENERS
Gary R. Smith, Bucyrus, Kans., assignor to Smith R. P. M. Corporation, Overland Park, Kans.
Filed Nov. 17, 1978, Ser. No. 961,532
Int. Cl.³ B41F *7/30*; B41L *25/06*
U.S. Cl. 101—148 **2 Claims**



1. A self-cleaning nozzle for use in forming a fine spray of dampening liquid in a lithographic printing system, said system including respective sources of air and of liquid, both at greater than atmospheric pressure, said nozzle comprising:

(a) means forming an elongated liquid duct, said duct including a termination and communicating with said source of liquid;

(b) means forming an air passage, said passage communicating with said source of air;

(c) a housing defining an air expansion chamber communicating with said air passage;

(d) said housing including an end wall spaced from said termination of said liquid duct and forming a mixing corridor therebetween, said mixing corridor having said air expansion chamber with said liquid duct in communication therewith;

(e) said end wall being positioned for substantially perpendicular impingement by air before entering said mixing corridor to thereby effect turbulence in said air for the breakup into droplets of a stream of said liquid issuing from said duct termination;

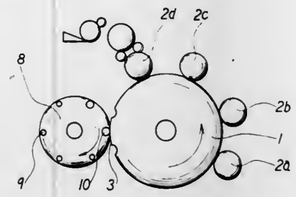
(f) an orifice formed in said end wall for the turbulent exit of said droplets and air from said nozzle for further breakup and transport of said droplets into a fine spray;

(g) said housing including a circumferential wall spaced radially from said means forming said liquid duct and defining said air expansion chamber in cooperation therewith, said chamber being bounded at one end by said end wall;

(h) a baffle extending between said means forming said liquid duct and said circumferential wall, said baffle bounding another end of said air expansion chamber; and

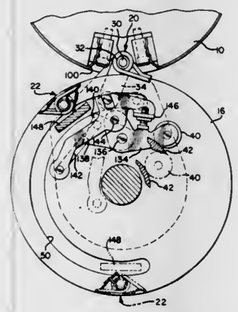
(i) a plurality of circumferential slits formed in said baffle, said slits extending in surrounding relation to said means forming said liquid duct and providing communication between said source of air and said air expansion chamber.

4,241,657
FOUR-COLOR HALFTONE PRINTING PROCESS FOR OBJECTS HAVING CURVED SURFACE
Hikoichiro Fujimori, Osaka, Japan, assignor to Takeuchi Press Industries Co., Ltd., Toyama, Japan
Filed Oct. 24, 1978, Ser. No. 954,246
Claims priority, application Japan, Jul. 15, 1978, 53-86536
Int. Cl.³ B41F *17/08*; B41M *1/14*
U.S. Cl. 101—211 **3 Claims**



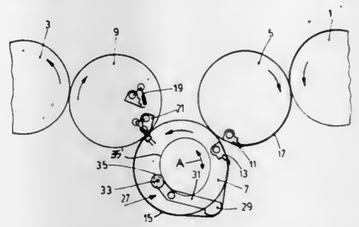
1. In a process for four-color halftone printing by a dry offset printing system onto an object having a curved surface by transferring halftone images from four halftone blocks of block cylinders arranged around a blanket cylinder onto the blanket and then transferring the images onto the object, the improvement comprising maintaining the tackiness values of four inks consisting of first, second, third and fourth inks such that the first ink has the highest tackiness value and the fourth ink has the lowest tackiness value, wherein the difference in tackiness value between each of said four inks is at least 1, transferring the four halftone images from the halftone blocks onto two transfer areas on the blanket cylinder, the two transfer areas consisting of a first transfer area and a second transfer area positioned sequentially in the circumferential direction of the blanket cylinder, such that the image of said first ink is transferred onto said first transfer area as an under layer onto which the image of said second ink having the secondarily high tackiness value is transferred, and the image of said third ink is transferred onto said second transfer area as an under layer onto which the image of said fourth ink is transferred, and transferring the images transferred onto said first transfer area and the images transferred onto said second transfer area in order onto the objects in layers.

4,241,658
DUPLICATING MACHINE WITH DUPLEXING CAPABILITY
Mario J. Ricciardi, Glenview, Ill., assignor to A. B. Dick Company, Chicago, Ill.
Filed May 30, 1978, Ser. No. 910,640
Int. Cl.³ B41F *5/02, 21/04, 21/08, 5/22*
U.S. Cl. 101—217 **27 Claims**



1. In a duplicating system including transfer means defining a surface carrying images transferrable to copy sheets, a carrier mounted adjacent said transfer means, first and second grippers associated with the carrier, and means for feeding copy sheets to said first gripper whereby the first gripper holds the sheets on the carrier during transfer of images from said surface to said sheets, the improvement comprising mounting means for one of said grippers, means for moving said mounting means relative to the other gripper to vary the distance between the grippers, and means for locking said mounting means and associated gripper in place relative to the carrier to maintain the relative positions of said grippers during a duplicating operation, said mounting means including portions extending outwardly beyond the periphery of the carrier, the gripper associated with the mounting means being attached to said outwardly extending portions and extending along the length of the carrier between said portions, and wherein the gripper associated with the mounting means includes opposed sets of gripping jaws, coaxial shaft means comprising one shaft portion supporting one set of said jaws, and another shaft portion supporting the other set of jaws, and means for driving one portion of the coaxial shaft means relative to the other portion for opening and closing said jaws.

4,241,659
SHEET TRANSFER APPARATUS FOR ROTARY PRINTING MACHINES HAVING SERIALLY ARRANGED PRINTING STATIONS
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany
Filed May 25, 1978, Ser. No. 909,435
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724621
Int. Cl.³ B41F *21/04, 7/04*
U.S. Cl. 101—231 **10 Claims**



1. In a rotary printing maching having serially arranged printing stations (**1, 3**) including printing cylinders having a circumference accepting a single sheet thereon,

a sheet transfer apparatus including sheet reversal means located between two printing stations comprising the combination of

a continuously rotating sheet storage and transfer drum (**7**) of approximately the same diameter as said cylinders including storage drum gripper means (**13**) engageable with the front edge of a sheet transferred thereto; and

a sheet transport drive reversal cylinder (**9**) located downstream of the storage drum (**7**) including reversal gripper means (**19, 21**) selectively engageable with the front edge or the rear edge of a sheet located on the storage and transfer drum (**7**) for transfer to the sheet transport and reversal drum (**9**), selectively, either in the same orientation or turned over; with

sheet displacement means (**27**) located on the sheet storage and transfer drum (**7**) rearwardly—with respect to the direction of rotation thereof—of the storage gripper means (**13**) and movable between a position corresponding to the circumference of the storage and transfer drum and a position lifted off the circumference of the storage and transfer drum and thereby lift at least a portion of the sheet (**15**) on the storage drum off at least a portion of the circumference thereof;

and means (**35, 35'**) controlling movement of said sheet

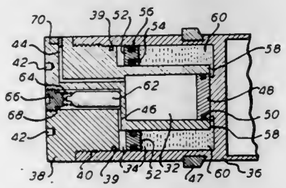
displacement means during rotation of the storage and transfer drum (7) to selectively locate the position of the rear edge of the sheet (15) remote from the gripped edge to be closer to the front edge gripped by the storage and transfer drum gripper means (13) at selected angular positions of the storage drum than when the sheet is in engagement with the entire curcumference of the storage drum.

4,241,660

PROJECTILE

William F. Donovan, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1978, Ser. No. 948,127
Int. Cl.³ F42B *11/22*
U.S. Cl. 102—56 R **7 Claims**



1. A projectile having variable stability, said projectile being arranged to be spin stabilized and comprising:

a casing having a cavity wherein said cavity is shaped to provide a pair of chambers, each communicating with the other;

a fluid of a given mass contained within said cavity;

drive means for propelling said fluid between said pair of chambers, said pair of chambers includes;

an inner chamber and an outer chamber encircling said inner chamber, said drive means including a source of pressurized gun gas; and

an inner piston slidably mounted in said inner chamber;

an outer annular piston slidably mounted in said outer chamber, said fluid being contained between said inner and outer pistons; and

said cavity being shaped to provide a balanced flow of said fluid with respect to the axis of spin as said projectile is trajected, said balanced flow altering the flight stability of said projectile.

4,241,661

COMPOSITE PROPELLANT WITH SURFACE HAVING IMPROVED STRAIN CAPACITY

Donald E. Elrick, Rawlings, and Harry Gilbert, Cumberland, both of Md., assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 667,623, Sep. 6, 1967, Pat. No. 3,948,698. This application Dec. 4, 1968, Ser. No. 781,285
Int. Cl.² F42B *1/00*; C06B *45/10*
U.S. Cl. 102—103 **16 Claims**

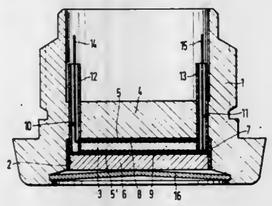
1. In a composite propellant wherein the binder component comprises a carboxy terminated rubber selected from the group consisting of elastomeric polymers of at least one conjugated diene containing 4 to 8 carbon atoms and elastomeric polymers of at least one olefin containing 2 to 4 carbon atoms, cured with an epoxide curing agent therefor, the improvement comprising a coating of a propellant antioxidant material on an initial burning surface of said propellant in an amount sufficient to impart to said burning surface an increase in strain capability and an increase in resistance to oxidative hardening and to provide at least about 0.0005 gram/square centimeter of said surface.

4,241,662

ELECTRICAL PROJECTILE DETONATOR

Werner Rüdenauer, Roth, and Ralf Siewert, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,106
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746599
Int. Cl.³ F42C *11/02*
U.S. Cl. 102—210 **8 Claims**



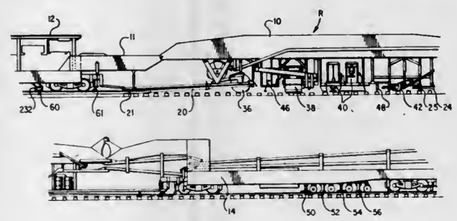
1. In an electrical projectile detonator, particularly a base detonator, including a piezoceramic cell as a current generator; and a pyrotechnic impelling charge adapted to produce a gas pressure for generating a voltage in said cell; the improvement comprising: a cup-shaped recess being formed in the tail end of the projectile base, said piezoceramic cell being arranged in said recess; an intermediate base element in said projectile base constituting an anvil contacted by said cell; a pressure plate enclosing said cell in said recess; and a closure disc in the tail end of said projectile base, said closure disc being constituted of a deformable material and inwardly curved towards said piezoceramic cell, said closure disc further being prestressed and flanged into the tail end of said projectile base, said pressure plate being pressable against said piezoceramic cell responsive to the gas pressure of the projectile impelling charge acting on said closure disc at the discharge of said projectile.

4,241,663

TIE PLATE HANDLING MEANS FOR RAIL CHANGING MACHINE

Raymond R. Lund, West Columbia, and Hung C. Ho, Columbia, both of S.C., assignors to Canron Corporation, West Columbia, S.C.

Filed Oct. 13, 1978, Ser. No. 951,130
Int. Cl.³ E01B *29/24*; B03C *1/12*
U.S. Cl. 104—16 **18 Claims**



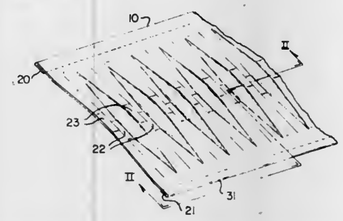
1. A rail changing machine having means for removing rails from a track, means for lifting the tie plates from the old ties, means for preparing the old ties, means for relaying tie plates or the prepared ties and means for laying new rails in the relaid tie plates, wherein the means for lifting the tie plates comprises at each rail location a first magnetic wheel rotatably mounted on a lateral axis and also mounted for generally vertical movement, means for moving the first magnetic wheel vertically downward for engagement by its periphery with a tie plate on a tie and vertically upwards for raising the subsequently adhered tie plate off the tie, means for rotating stepwise the first magnetic wheel in the raised position to index a vacant space on the wheel periphery to a downward facing location of the wheel, means for removing from the magnetic wheel tie plates adhered thereto, and means for conveying the removed tie plates to a desired location.

4,241,664

FORMABLE DRIVE RAILS

Harold E. Cable, Thornburg Borough, Pa., assignor to Weld Tooling Corporation, Pittsburgh, Pa.

Filed Mar. 13, 1979, Ser. No. 20,211
Int. Cl.³ B61B *13/02, 13/04*
U.S. Cl. 104—118 **8 Claims**



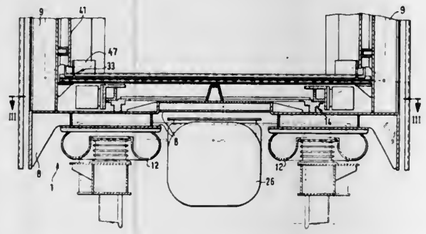
1. An elongate formable drive rail for carrying a working apparatus having a toothed driving gear drivingly engaging said rail and support means engaging a portion of the edge of the side rail for supporting said apparatus comprising an elongate narrow strip of metal of width selected to carry said working apparatus, having opposite faces and opposite side edges, a regular series of corrugations formed in said strip on both faces extending lengthwise of said strip intermediate its edges, said corrugations corresponding substantially in shape and width along the median line of the strip to the tooth configuration of the toothed driving gear of said working apparatus and sloping therefrom on each side to the plane of the strip to form a substantially smooth uncorrugated edge portion on each side of said corrugations receiving the support means for the working apparatus.

4,241,665

ARTICULATED RAILWAY CAR CONNECTING PASSAGE

Karl-Heinz Kleim, Nürnberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nürnberg, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 852,987
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1976, 2652819
Int. Cl.³ B61F *3/12, 5/16*; F16C *19/18, 33/80*
U.S. Cl. 105—4 R **12 Claims**



1. A linking system for articulated vehicles which includes two car bodies having adjoining ends supported on bogie means, said bodies having end trusses and supporting arms extending beyond said end trusses, bogie means having a frame supporting said bodies thereon, a transverse support resiliently supported on said frame, the supporting arms of the adjoining ends of said bodies being pivotally supported on said transverse support, a one-piece connecting portal interposed between and interconnecting said first and second bodies and carried on said transverse support, bellows connecting said portal to adjacent car bodies of said vehicles, said connecting portal comprising a platform resiliently movable in a universal direction, said platform being arranged on said transverse support, and a dual-row ball race structure including a rotation ball race coaxial with said platform and together with said supporting arms pivotally supporting said platform, said rotation ball race having three race rings effecting relative motion independently of each other and two rows of balls, and the supporting arms of one body being supported on one of said race rings and the supporting arms of the other body being supported on another one of said race rings, and the third race ring of said race rings being supported on said transverse support supporting said portal and said platform, and being concentric with and positioned between said other two race rings and supporting said other two race rings on bearings therebetween.

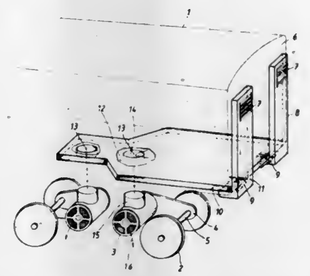
12. In an articulated rail vehicle having two car bodies with their adjoining ends pivotally supported about a vertical pivotal axis on bogie means, a bearing structure for supporting said ends comprising: three concentric bearing races coaxial with the pivotal axis for said adjoining ends, including an intermediate race supported on said bogie means, and inner and outer races supported on said intermediate race by bearings therebetween, the adjoining end of each car body extending over one of said inner and outer races, respectively, and supported thereon, so that each end is supported on one of said races for pivotal movement relative to said intermediate race and said bogie means independently of the other adjoining end.

4,241,666

RAILWAY CAR ELECTRIC TRACTION MOTOR AIR COOLING SYSTEM

Lage Marcusson, and Lars Polheimer, both of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Aug. 11, 1977, Ser. No. 823,675
Claims priority, application Sweden, Aug. 19, 1976, 7609214
Int. Cl.³ B61C *3/00, 9/38, 17/00*
U.S. Cl. 105—59 **3 Claims**



1. A motorized railway vehicle comprising an elongated vehicle body having ends, and at least one supporting truck for said vehicle body; each said truck including two driven wheelsets, and each truck including an air-cooled electric traction motor connected to drive the wheelsets, each traction motor including an air intake means extending towards said vehicle body and an air exhaust port; said vehicle body including a common hollow cooling air channel with means for supplying cooling air to each said air intake means of each traction motor, means forming two separate cooling air intakes which are mounted on the ends of said vehicle body, means forming two separate air intake channels for conveying air from each respective said air intake means to said common, hollow cooling air channel in a parallel fashion, separate fans positioned in each air intake channel for forcing air into said common, hollow cooling channel, and separate valve means positioned between each said air intake channel and said common hollow

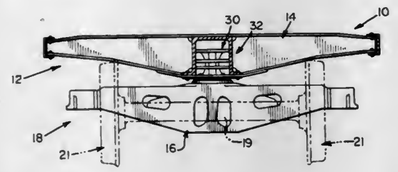
cooling air channel for preventing any return air flow from said common, hollow cooling air channel to each said air intake channel.

4,241,667

GROUNDED RAILWAY CENTER PLATE LINER

Cal W. Wulff, Elmhurst, Ill., assignor to Holland Company

Filed Jul. 27, 1979, Ser. No. 61,528
Int. Cl.³ B61F *5/16, 5/50;* F16C *17/04;* H01R *39/46*
U.S. Cl. 105—199 C **15 Claims**



1. In a liner formed from a dielectric self lubricating polymer material for application in its operative position between a body bolster center plate and a truck bolster bowl of a railroad car center plate assembly that pivotally connects the car body to the car truck, with the bolster bowl having a floor for supporting the center plate and a side wall in circumambient relation of the bowl floor, the body bolster center plate having a floor that is supported by the bolster bowl floor and a side wall in circumambient relation to the body bolster center plate floor, and the liner being of bowl configuration and defining a floor, on which the body bolster center plate floor is to rest, in the operative position of the liner, an upstanding side wall in circumambient relation about the liner floor that separates the bolster bowl side wall from the body bolster center plate side wall, and an aperture at the axial center of the liner floor for receiving the truck centerpin that pivotally connects the body bolster center plate to the bolster bowl with the liner interposed therebetween, for pivotally connecting the car body to the car truck,

an arrangement for grounding the body bolster center plate to the bolster bowl through the liner,

said arrangement comprising a grounding spring formed from a strip of electrically conductive material and comprising:

an attachment providing leaf on the underside of the liner floor and fixed adjacent one end of same to the liner flush against the bottom surface of the liner floor adjacent to but spaced from the liner central aperture,

said attachment leaf extending radially of the liner with the other end of same projecting toward the axial center of the liner and beyond the rim of the liner floor that defines the liner aperture,

said grounding spring further including a bight portion disposed in the liner aperture, and a follower contact grounding leaf extending radially of the liner over the top surface of the liner floor in overlying relation to the liner floor and said attachment leaf thereunder,

said bight portion being proportioned transversely of said leaves to engage the liner aperture defining rim at the side edges of the strip and having a radius that approximates one half the thickness of the liner floor,

said follower contact leaf being integral with said bight portion at one end thereof, and having its other end free of securement to said liner,

said follower contact leaf in its free standing relation relative to the liner floor having a flat acute angulation relative to the liner floor with said other end thereof diverging from the liner floor radially outwardly of the liner floor,

whereby when said liner is in its said operative position, said attachment leaf is in flush contact with the floor of the bolster bowl, and said contact leaf is pressed by the body bolster center plate floor flush against the liner bowl floor top surface radially outwardly of the liner aperture rim,

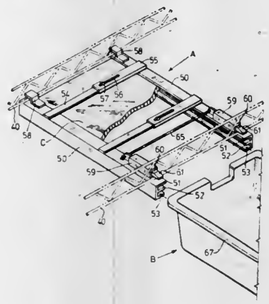
said follower contact leaf at and adjacent said liner rim being indented into the liner by the compressive forces of the body bolster center plate floor acting on said contact leaf at an acute angle relative to the liner floor top surface whereby said contact leaf is maintained in biased engagement with the body bolster center plate floor for following movement of the body bolster center plate relative to the bolster bowl on car body roll relative to the car truck.

4,241,668

SUPPLY CONTAINER MOUNTING

Wilfred J. Carroll, 511 The West Mall, Apt. 410, Etobicoke, Ontario, Canada (M9C 1G5)

Filed Dec. 4, 1978, Ser. No. 966,143
Int. Cl.³ A47B *85/00*
U.S. Cl. 108—26 **15 Claims**



1. A mounting device for mounting a container on a superstructure having substantially horizontal spaced-apart supporting members, comprising,

an open frame for suspension between the supporting members for supportably engaging the container and made up of spaced-apart beams each having a top surface,

a fixed hook member mounted on the top surface adjacent one end of each beam,

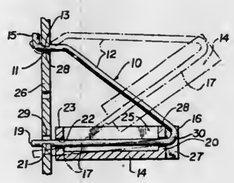
mounted adjacent the other end of each beam a housing in which there is slidably operable a plunger, spring means urging the plunger outward from the housing, and manipulating means on the other end of the plunger for retraction.

4,241,669

SHELF AND BRACKET ARRANGEMENT

Joseph Giambalvo, 1118 Willoughby Ave., Brooklyn, N.Y. 11237

Filed May 25, 1979, Ser. No. 42,422
Int. Cl.³ A47B *5/00, 10/00*
U.S. Cl. 108—152 **21 Claims**



1. In a shelf arrangement, comprising

supporting means having vertically spaced perforations therebetween;

at least two open triangle brackets, each consisting of two sides, one of said sides comprising an upper extension terminating in a hook having a depressed portion therein, and the other of said sides comprising a generally horizontally extending lower extension connected at one end to the end of said upper extension opposite said hook and terminating at the other end thereof without the axis thereof departing from said generally horizontal line, the terminal end thereof having a downwardly directed notch therein, said upper extension extending from said horizontally extending lower extension at an acute angle, said upper and lower extensions being resiliently biased to a rest position at which said hook and the end of said lower extension are farther apart than the vertically spaced perforations of said supporting means in which said brackets are engaged; and

a shelf member having two apertures through which said lower extensions of respective ones of said brackets extend to support said shelf member in a horizontal position, thereby positively connecting said brackets with said shelf member, the depressed portion of said hook and the notch in the terminal end of said lower extension of each of said brackets lockably engaging the said vertically spaced perforations in said supporting means,

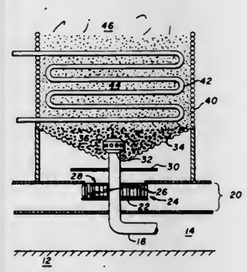
the improvement wherein said shelf member further includes, for each said bracket, a notch means for maintaining said bracket in a plane perpendicular to that of said shelf member, each said notch means comprising a single three-walled notch formed in said shelf member such that the upper extension of said bracket must pass therethrough.

4,241,670

COAL FEED SYSTEM FOR A FLUIDIZED BED BOILER

Henry J. Blaskowski, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 884,651, Mar. 8, 1978, Pat. No. 4,176,623.
This application Mar. 19, 1979, Ser. No. 21,396
Int. Cl.³ F23K *3/02*
U.S. Cl. 110—104 R **2 Claims**



1. An apparatus for feeding coal into a fluidized bed combustion cell having a bed support plate, comprising:

a. coal pipe extending vertically upward through the bed support plate;

b. vertically orientated, generally cylindrical coal distributor mounted upon said coal pipe and opening thereto for receiving coal therefrom, said coal distributor having a plurality of openings spaced around its circumference;

c. means operatively associated with said coal pipe for imparting a swirl to the coal before the coal enters said coal distributor;

d. means for supplying ignitor fuel to the fluidizer bed combustion cell comprising a first gas pipe positioned interior to and concentric with said coal pipe and extending into said coal distributor;

e. a second gas pipe having openings in both ends disposed in said coal distributor in communication with and at right angles with said first gas pipe, each of said end openings being in registration with one of said plurality of openings spaced around the circumference of said coal distributor; and

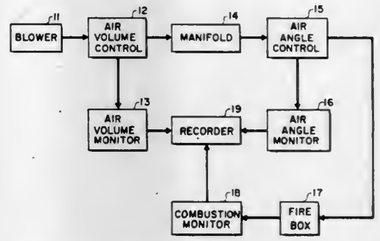
f. means operatively associated with said ignitor fuel supply means for igniting said ignitor fuel so as to create a flame for igniting the coal supplied through said coal pipe.

4,241,671

AIR-CURTAIN INCINERATOR FOR ENERGETIC MATERIALS

Taylor B. Joyner; Albert H. Lepie, both of Ridgecrest, and Charles D. Stanifer, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 17, 1979, Ser. No. 39,920
Int. Cl.³ F23N *5/18*
U.S. Cl. 110—188 **10 Claims**



1. An incinerator, comprising;

a fire box;

blower means for supplying air to said fire box connected thereto;

air volume control means connected to said blower means, for controlling the volume of air supplied to said fire box;

first monitor means for monitoring the volume of air supplied to said fire box connected to said air volume control means;

a manifold connected to said air volume control means for injecting air into said fire box, said manifold having a plurality of nozzles;

an air angle control means for controlling the angle at which air enters said fire box connected thereto;

second monitor means for monitoring the angle at which air enters said fire box connected to said air angle control means; and

third monitor means for monitoring combustion connected to said fire box.

4,241,672

METHOD OF REGULATING THE AMOUNT OF UNDERFIRE AIR FOR COMBUSTION OF WOOD FUELS IN SPREADER-STROKE BOILERS

Kenneth L. Tuttle, Federal Way, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 966,523
Int. Cl.³ F23G *5/02*
U.S. Cl. 110—346 **1 Claim**

1. A method for reducing particulate emissions from wood residue fuel combustion on a pinhole grate in a spreader-stoker furnace comprising:

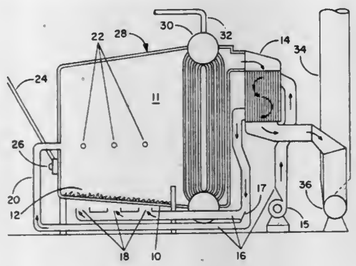
evenly distributing wood residue fuel feed over a fuel bed on said grate,

distributing an underfire portion of the combustion air equal to about one pound of air per pound of dry fuel to said fuel through said pinhole grate sufficient to convert the solid carbon in said fuel to carbon monoxide gas,

distributing an overfire remainder of the combustion air equal to from about 5½ to 12 pounds of air per pound of air

per pound of dry fuel above said fuel bed to complete combustion of said carbon monoxide gas and combustible volatile matter,

and maintaining said fuel bed at a depth equal to from about 3 to 8 inches sufficient to convert said carbon to carbon



monoxide and to entrap char particles inside said fuel bed by providing a continuous layer of fresh fuel over the surface of said fuel bed with the depth of the fuel bed indicating that the correct amount of air is being supplied underfire to minimize emissions and maximize efficiency.

4,241,673

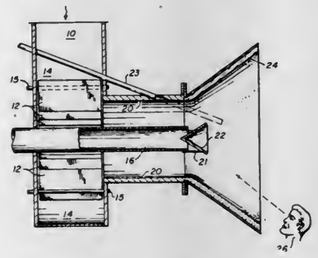
DIRECT IGNITION OF PULVERIZED COAL

Donald A. Smith, Haddam, and Martin E. Smirlock, East Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 865,747, Dec. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 769,995, Feb. 18, 1977, abandoned. This application Nov. 5, 1979, Ser. No. 91,534

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **20 Claims**



1. A method for reliably igniting pulverized coal in the absence of any other fuel and in the absence of sufficient inherent ignition energy to insure ignition comprising the steps of:

forming an ignitable mixture, the step of forming an ignitable mixture including:

providing a source of pulverized coal, the coal having a sufficiently small particle size such that the coal may undergo rapid thermal decomposition; and

withdrawing the pulverized coal from the source and entraining the thus withdrawn coal in transport air to form a dense phase fuel stream having an air-to-coal weight ratio which is less than 0.5;

delivering the fuel stream to a combustion zone, there being insufficient ignition energy present in the combustion zone to insure ignition of the pulverized coal in the fuel stream;

discharging the fuel stream into the combustion zone in the form of a diverging stream having an axial region substantially comprised of air and relatively fine coal particles, the presence of coal particles in said axial region being caused by classification of the said particles resulting from recirculation of at least some of the coal generally in the upstream direction with respect to the axis of the fuel stream;

supplying a sufficient quantity of ignition energy to the coal in the axial region of the fuel stream to decompose the said coal particles and ignite the reactants in the coal;

causing the flame resulting from ignition of coal particles in the axial region of the fuel stream to propagate, the step of causing the flame to propagate including controlling the velocity of the fuel stream as a function of coal particle size and volatiles content;

verifying the presence of flame in the combustion zone; and

stabilizing the flame by establishing a flow of secondary air in the combustion zone and generally coaxially with the fuel stream subsequent to verification of the presence of flame.

4,241,674

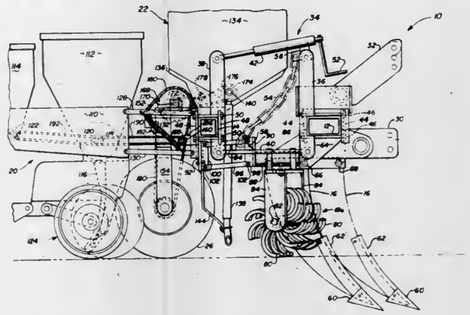
SUB-SOIL PLANTER

Paul B. Mellinger, Willow Street, Pa., assignor to Mellinger Manufacturing Co., Inc., Willow Street, Pa.

Filed Jan. 11, 1979, Ser. No. 2,652

Int. Cl.³ A01C *5/00*

U.S. Cl. 111—52 **16 Claims**



1. An improved agricultural machine for planting of row crops which combines at least three normal operations into one step; namely, sub-soiling the soil, tilling the soil that has been sub-soiled in preparing a seedbed, and planting seed in the prepared seedbed whereby soil compaction is reduced due to the combining of operations of three separate machines into one machine such that only one machine pass is required in performing the three operations and thus further resulting in savings of time and labor costs in a farming operation, said improved agricultural machine comprising:

(a) a front transverse tool bar adapted to be connected to a farm tractor for towing said machine across a field to be planted;

(b) a plurality of transversely spaced apart sub-soil blades mounted on said front tool bar and adapted to plow furrows in the subterranean soil as said machine is propelled forwardly over a field;

(c) a rear transverse tool bar spaced rearwardly of said front tool bar;

(d) first means for mounting said rear tool bar on said front tool bar such that said rear tool bar is free to float a predetermined distance upwardly and downwardly relative to said front tool bar during operation of said machine;

(e) a plurality of rotary tilling assemblies, corresponding to the number of sub-soil blades, disposed rearwardly the sub-soil blades for tilling the soil plowed by said sub-soil blades in thereby preparing a seedbed;

(f) a plurality of transversely spaced apart seed planter units, corresponding to the number of rotary tilling assemblies, disposed rearwardly of and in trailing relationship to said rotary tilling assemblies for

planting seed in said seedbed; and

(g) second means for mounting corresponding said rotary tilling assemblies and planter units of said rear tool bar such that a corresponding rotary tilling assembly and planter unit can moved in unison transversely along said rear tool bar so to facilitate transverse spacing of said planter units and said rotary tilling assemblies in desired predetermined crop row spacings.

4,241,675

MODULAR GAUGE PARTS ASSEMBLY FOR CUT/LOOP TUFTING MACHINES

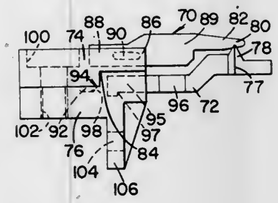
Harold B. Bardsley, Euxton, near Chorley, England, assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

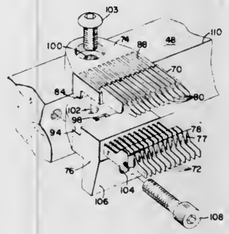
Filed Nov. 7, 1979, Ser. No. 91,977

Claims priority, application United Kingdom, Feb. 22, 1979, 6373/79

Int. Cl.³ D05C *15/36*

U.S. Cl. 112—79 A **8 Claims**





1. A modular assembly for supporting loopers and spring clips adapted for mounting in a tufting machine for producing cut and loop pile selectively, said assembly comprising, a plurality of loopers, each looper having a shank including a mounting portion at one end and a bill extending therefrom terminating in a nose, a first body member, said first body member having means for receiving and securing the mounting portion of said loopers in spaced side-by-side disposition, a plurality of spring clips, there being one clip for each looper, said clips having a shank including a mounting portion at one end and extending toward an offset flag, a second body member, said second body member having means for receiving and securing the mounting portions of said spring clips in spaced side-by-side disposition, the spacing between adjacent clips being substantially the same as the spacing between adjacent loopers, said first and second body members having means defining complementary reference surfaces disposed relative to the disposition of said loopers and said clips for co-operative engagement of said body members and for engagement of each flag resiliently with the nose of a respective looper, and means for securing said body members together as a unit in co-operative engagement.

4,241,676

TUFTING MACHINE LOOPER WITH CLIP

Ronald Parsons, Blackburn, and Ian Slattery, Great Harwood, near Blackburn, both of England, assignors to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Nov. 7, 1979, Ser. No. 91,982

Claims priority, application United Kingdom, Nov. 16, 1978, 44857/78

Int. Cl.³ D05C *15/36*

U.S. Cl. 112—79 A **6 Claims**

1. In combination, a hook and spring clip for use in a tufting machine, said hook being planar and comprising a shank having a mounting portion and a bill extending therefrom to define a throat therebetween, said bill having a top edge and a bottom edge extending from said throat to form a nose, said spring clip having one end secured to the shank and extending to a free end through an intermediate portion generally in spaced parallel relation to said bill, a flag adjacent the free end resiliently engaging said nose at one face of said hook, said flag being defined by a pair of webs converging at a crease in said clip, a first of said webs extending toward said free end, the other of said webs extending toward said intermediate portion and merging into said intermediate portion at an angle, said intermediate portion being disposed beneath said bill and spaced out of the plane of said one face of said hook engaged by said flag toward the other face of said hook.

4,241,677

TWO NEEDLE SEWING MACHINE

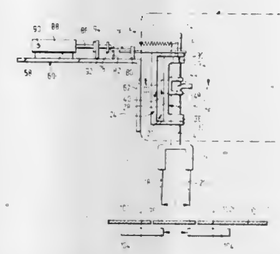
Alfons Beisler, Goldbach, Fed. Rep. of Germany, assignor to Velva AG, Locarno-Muralto, Switzerland

Continuation-in-part of Ser. No. 858,356, Dec. 12, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,460

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1976, 2655283

Int. Cl.³ D05B *1/08*

U.S. Cl. 112—167 **9 Claims**



1. A two-needle sewing machine comprising: a needle-bar drive, a needle bar coupled to the needle-bar drive and being reciprocable in the direction of its longitudinal axis and having two needles arranged spaced disposition as to each other, a holder for the needle bar for guiding the same upon its reciprocating motion, a sewing table having passage apertures for the needles, two rotary grippers arranged underneath the sewing table and being rotative about axes parallel to the longitudinal axis of the needle bar, the rotary grippers being spaced apart a distance slightly less than the spacing of the needles from each other, the needle bar (**14**) being guided in a torsionally-fast manner in the holder (**26**), the holder (**26**) being adjustable about the longitudinal axis of the needle bar between a normal position (A—A), in which a needle plane extending through both needles (**18,20**) is directed substantially perpendicular to the feed direction (E) of the goods to be sewn, and at least one oblique position (B—B, C—C) having the needle plane directed obliquely to the feed direction (E), and in that the passage apertures are formed by slotted holes (**98**) which are curved in circular-arc-shaped manner about the longitudinal

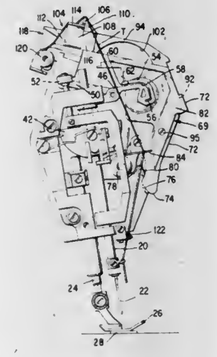
axis of the needle bar and the length of which corresponds, in the angle extent to the adjusting angles (α, β) of holder (26).

4,241,678

DEVICE FOR AUTOMATICALLY THREADING A SEWING MACHINE

Edward J. Tullman, Union, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 23, 1979, Ser. No. 69,133
Int. Cl.³ D05B *47/00*
U.S. Cl. 112—225 **9 Claims**



1. In a sewing machine having a frame; various stitch forming instrumentalities including a thread tension device, an endwise reciprocatory needle bar carried within said frame, a take-up lever pivotally mounted within said frame for oscillation in a substantially vertical path in cooperative arrangement with said needle bar, and a check spring assembly for cushioning the effects of said take-up lever; actuating mechanisms for imparting endwise reciprocation to said needle bar and oscillation in said vertical path to said take-up lever; a thread supply; and a threading device for automatically threading said stitch forming instrumentalities comprising:

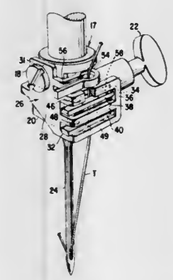
a. a first thread guide mounted to said sewing machine frame, said first thread guide being located intermediate a thread supply and said thread tension device;
b. a second thread guide mounted to said sewing machine frame, said second thread guide being located adjacent said needle bar;
c. said sewing machine frame being formed with a first thread path leading from said first thread guide through said thread tension device to said check spring assembly;
d. said sewing machine frame being formed with a second thread path leading from said first thread guide to said second thread guide, said first and said second thread paths intersecting one to the other at said check spring assembly;
e. said take-up lever having an uppermost edge and being formed with a thread carrying eyelet in one end thereof and a threading slot intersecting said thread carrying eyelet and extending to an opening in said uppermost edge;
f. guiding means for guiding thread into said threading slot in said take-up lever;
g. means for forming a loop of thread in said thread supply between said first and said second thread guides;
h. means for urging a first part of said loop of thread into said first thread path from said first thread guide, through said tension device and under said check spring assembly; and
i. means for urging a second part of said loop of thread into said second thread path from said check spring assembly through said take-up lever guiding means and to said second thread guide, whereby the thread from said thread supply will pass through said first thread guide, through said tension device, under said check spring assembly, through said eyelet in said take-up lever, and through said second thread guide.

4,241,679

INERTIAL THREAD SNUBBING DEVICE FOR A SEWING MACHINE

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 7, 1980, Ser. No. 128,206
Int. Cl.³ D05B *47/04*
U.S. Cl. 112—255 **7 Claims**



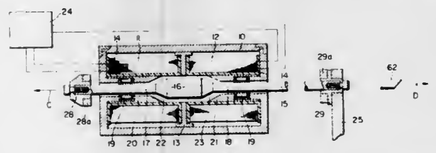
1. A thread snubbing device for a lockstitch sewing machine including a reciprocable needle bar with a needle clamp thereon, said device comprising a shoe of predetermined mass and a cage which loosely holds the shoe next to the needle clamp, the shoe and needle clamp including flat opposing surfaces, the cage having a side thread accessible opening and the shoe having a thread guiding end around which the thread may be led into a position between the opposing surfaces on the shoe and clamp, the shoe and cage being engagable along a sloping surface and the shoe being movable thereby toward the needle clamp to effect the snubbing of the thread between said opposing flat surfaces during upward acceleration or downward deceleration of the needle bar.

4,241,680

DEVICE FOR STOPPING A NEEDLE AT A PREDETERMINED POSITION

Peter G. Hinch, Rusholme; Kenneth F. Hall, and George Chambers, both of Martock, all of England, assignors to Newroyd Limited, Oldham, England

Filed Mar. 27, 1978, Ser. No. 890,384
Claims priority, application United Kingdom, Mar. 31, 1977, 13652/77
Int. Cl.³ D05B *69/22*
U.S. Cl. 112—275 **3 Claims**



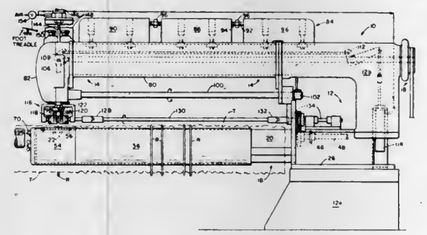
1. A machine for making a textile product comprising a needle carrier shaft, a magnetically permeable core member which is mounted for reciprocating movement and which is drivingly connected to said needle carrier shaft to effect reciprocation of the latter, yarn feeding means for feeding a yarn to a needle carried by said shaft, two electromagnetic devices which are respectively disposed on opposite sides of the core member to effect reciprocation thereof, and an electrical control device which, on receiving a stop signal from a machine instructions means, permits reciprocation of the needle carrier shaft to continue until the latter is at the said end of its reciprocation when a holding current from said electrical control device is passed to the respective electromagnetic device to hold the needle carrier shaft at the said end of its reciprocation.

4,241,681

TUBULAR WORK FEEDER FOR SEWING MACHINE

Robert E. Porter, 5 Oak St., Hamilton, Mass. 01982

Filed Jun. 21, 1979, Ser. No. 50,662
Int. Cl.³ D05B *27/10, 75/00, 65/00*
U.S. Cl. 112—322 **9 Claims**



1. In a machine for circumferentially stitching a tubular workpiece, said machine having a source of drive power, a workpiece support having a stitching station removed from said source of drive power and cooperating stitching needle means at said stitching station and feed means for feeding the portion of said workpiece to be stitched through said stitching station at a selected feed rate in a given direction of advancement, said needle means and feed means being operated synchronously by said source of drive power, the improvement comprising a tubular workpiece support of relatively great length and relatively small diameter and feeding system including:

a cylindrical drum of smaller diameter than said workpiece mounted for rotation upon said workpiece support and extending axially from a point adjacent said stitching station toward said source of drive power, the top of said drum parallel to its axis being aligned with said stitching station at right angles to said direction of advancement; and

first drive means connected to said source of drive power for synchronously rotating said drum to cause the top of said drum to move at said feed rate in said direction of advancement, whereby portions of said workpiece surrounding said drum near to and distant from said stitching station are conveyed over the workpiece support at said feed rate.

4,241,682

SOLUTIONS OF POLYETHYLENIMINE OR A HYDROPHILIC DERIVATIVE THEREOF AND A HYDROPHILIC ACRYLIC POLYMER AND WATERCRAFT COATED BELOW THE WATERLINE THEREWITH

Felix Konstandt, Jamaica, N.Y., assignor to Milton K. Rubin, Mt. Vernon, N.Y.

Continuation of Ser. No. 390,657, Aug. 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 212,732, Dec. 27, 1971, abandoned. This application Oct. 7, 1974, Ser. No. 528,197
Int. Cl.² B63B *1/34*
U.S. Cl. 114—67 R **16 Claims**

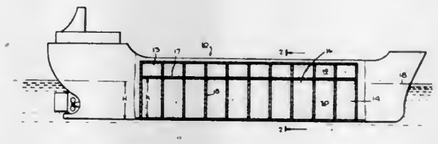
1. A watercraft having below its water line a coating comprising a mixture of a hydrophilic acrylic polymer and hydroxyethylated polyethylenimine prepared by reacting polyethylenimine of molecular weight 40,000 to 60,000 with ethylene oxide in a weight ratio of the polyethylenimine to the ethylene oxide of 1:0.1 to 1:1.

4,241,683

LIQUID CARGO TANK CONSTRUCTION

Charles S. Conway, Featherbed La., New Vernon, N.J. 07976

Continuation-in-part of Ser. No. 809,395, Jun. 23, 1977, abandoned. This application Jun. 9, 1978, Ser. No. 913,956
Int. Cl.³ B63B *25/08*
U.S. Cl. 114—74 R **10 Claims**



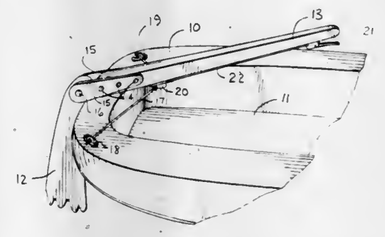
1. In a vessel disposed in water carrying a liquid having a specific gravity which is less than that of water, said vessel including a bottom, sides and a top forming at least one watertight compartment between said top and said bottom for carrying said liquid, the improvement comprising a watertight horizontal bulkhead disposed within said vessel between said top and said bottom at a distance above the waterline of said vessel which is approximately equal to $H(S_w/S_c-1)$, where H represents the vertical height of the waterline of the vessel above said bottom, S_w represents the specific gravity of water, and S_c represents the specific gravity of said liquid, said horizontal bulkhead forming separate upper and lower watertight tanks within said compartment above and below said waterline of said vessel, said upper one of said tanks having a vertical height which is less than that of said lower one of said tanks.

4,241,684

TILLER STEERING LOCK

Dan B. Davis, 5205 Belmore Ave., Montreal, Quebec, Canada (H4V 2C7)

Filed Jun. 1, 1979, Ser. No. 44,576
Int. Cl.³ B63H *25/52*
U.S. Cl. 114—144 R **5 Claims**



1. A quick release locking device to hold a tiller arm of a sailing boat in any desired position, the tiller arm connected at one end to a rudder rotating about a rudder axis, the device comprising

two rope attachment means, one at each side of the boat, positioned an equi-distance from the rudder axis,

rope locking means located on the underside of the tiller arm including two opposing cam detents, one cam detent pressing the rope against a restraining surface to grip the rope and prevent the tiller arm from moving in one direction, and the other cam detent pressing the rope against the restraining surface to grip the rope and prevent the tiller arm from moving in the other direction, spring means forcing each cam detent to press and grip the rope against the restraining surface,

flexible rope tautly strung between the two attachment means passing through the rope locking means,

quick release control lever located on the tiller arm, and

connection means between the control lever and the rope locking means and joining the spring means to the control

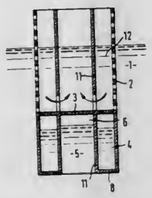
lever, the connection means adapted to retract the cam detents from pressing and gripping the rope such that depression of the control lever releases the rope from the rope locking means allowing the tiller arm to be rotated as desired, and release of the control lever grips the rope in the rope locking means preventing the tiller arm from rotating.

4,241,685

SELF-STABILIZING FLOATING TOWER

Georges L. Mougin, Paris, France, assignor to ITI Ltd., Paris, France

Filed Nov. 6, 1978, Ser. No. 957,886
Claims priority, application France, Nov. 22, 1977, 77 34980
Int. Cl.³ B63B *35/44*; B63G *35/00*
U.S. Cl. 114—264 **8 Claims**



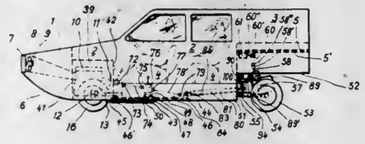
1. An offshore floating tower comprising
a vertical cylindrical external enclosure divided by a horizontal slab into two open-ended half-cylinders;
a lower half-cylinder comprising a ring of buoyancy tanks enclosing a bell-shaped chamber partially filled with air and producing partially pneumatic damping movement of the tower, and being ballasted to the required extent; and
an upper half-cylinder open to the sea with its entire surface comprising a regular pattern of perforations;
said tower including a vertical cylindrical internal enclosure coaxial with the vertical cylindrical exterior enclosure, constituted in the upper half-cylinder, an annular damper chamber and, in the lower half-cylinder, a bulkhead separating the bell-shaped chamber from the ring of buoyancy tanks which are separated from the sea by a bulkhead consisting of the external cylindrical enclosure.

4,241,686

FLOATING PASSENGER AUTOMOTIVE VEHICLE AS TOURING AND WATER-SPORTS MOBILE

Wilhelm Westphalen, No. 27, Bentwisch, 2171 Oberndorf (Oste), Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 23,053
Int. Cl.³ B60F *3/00*
U.S. Cl. 440—59 **11 Claims**



1. A floatable passenger car for land and water cruising as touring and water sporting mobile and having an automobile engine which during water cruising is able to drive a boat propeller, comprising
(a) a special-type body of three sectional portions (1,2,3), namely
a first hollow light-weight front-structure bow portion (1) with a forwardly upwardly inclined wide floor (6),
a second body central portion (2) arranged adjacent to the front-structure bow portion and defining together with the same a gliding boat body with a gliding floor (44), said central portion including a bulkhead (51) at its rear end, seats for a driver and at least three persons which are to be occupied by these persons during road driving as well as when entering water as well as when leaving water, an automobile engine (10, 10', 10'') provided in the front part of said central portion in the longitudinal center thereof, drivable car front wheels (16,16') arranged to be moved up and down at both sides of the engine for the driver selectible driving of the front wheels via special-type change-over transmissions (11,104,104') and/or an up and down positionable propeller (82) placed behind the bulkhead (51) at the rear end of said central portion, i.e. ahead of the overall end of the body, and non-driven car rear wheels (53,53') articulated positionable up and down at said bulkhead, said rear wheels for maximum speed water glide cruising of the car, pulled up, not causing any water resistance without for doing so requiring installation boxes closable by covers, and
a third rear body portion which has a floor (52) and two side seat benches (5') and is arranged elevated by one step relative to the central portion (2) and during water cruising of the car permanently is located along with its floor above water and for doing so for maximum speed water glide cruising has its two side seat benches occupied with the same persons from the body central portion, by this human weight displacement the car being given a prevailing rear load for an advantageous maximum speed water glide cruising, said non-driven car rear wheels being accommodated in the most simple way underneath two side seat benches of the third rear body portion,
(b) chute-shaped body installation boxes (39) arranged in the central portion at both sides of the engine for accommodating the front wheels also pulled up during high-speed water glide cruising, said boxes being provided at their lower edges in a corresponding cutout in the gliding floor of the central portion and, after a complete insertion of the front wheels, are closable by plate slides shiftable forwardly underneath the gliding floor for the duration of high-speed water glide cruising of the car;
(c) a car accumulator battery (125'') arranged in the special-type body, and
(d) small reversible electric motors (38,61,61',97,50) and switches (125) electrically connected to the accumulator battery, the respective upward and downward positioning of the front wheels and the rear wheels and the propeller as well as the respective shifting of the plate slides underneath the front wheel installation boxes being accomplished by the small reversible electric motors powered by the car accumulator battery, controlled by means of respectively operated switches (125) by the driver from his seat.

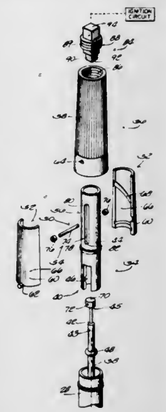
4,241,687

THROTTLE CONTROL FOR A MARINE PROPULSION DEVICE

Edmund H. DuBois, Zion, Ill.; Robert K. Erlandson, Kenosha, Wis., and Allan F. Miller, Lindenhurst, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 13, 1978, Ser. No. 959,890
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—63 **16 Claims**

1. A marine propulsion device comprising a marine propulsion unit including an engine having a throttle movable between an idle position for operating said engine at an idle speed and an advanced position for operating said engine at a speed above the idle speed, said marine propulsion unit further including a propeller rotatably mounted on said marine propulsion unit and operatively connected with said engine, a steering handle attached to said marine propulsion unit, throttle grip means attached to said steering handle for rotation relative thereto in first and second opposite rotational directions, and throttle linkage means operatively connected with said throttle grip means and said throttle and movable axially of the axis of rotation of said throttle grip means for moving said throttle between said idle position and said advanced position in response to rotation of said throttle grip means, said throttle linkage means including first stop means for preventing rotation of said throttle grip means in the first rotational direction



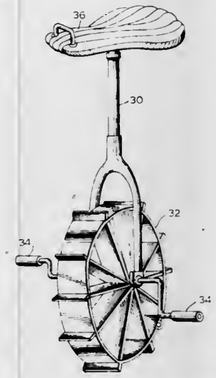
when said throttle is located in said idle position and second stop means for preventing rotation of said throttle grip means in the second rotational direction when said throttle is located in said advanced position, said throttle linkage means further including third stop means for selectively preventing rotation of said throttle grip means in the first rotational direction before said throttle reaches said idle position, notwithstanding said first stop means.

4,241,688

EXERCISING DEVICE FOR WATER USE

Ralph A. Mansolill, and Kathryn R. Mansolill, both of 1933 North Conference Dr., Boca Raton, Fla. 33452

Filed Dec. 21, 1978, Ser. No. 972,016
Int. Cl.³ B63B *35/72*
U.S. Cl. 440—26 **1 Claim**



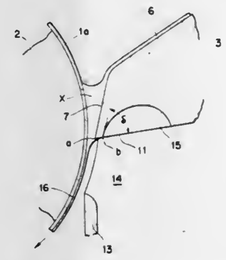
1. An aid for exercising in a body of water to allow one to exercise in a seated upright position while sustaining the upper torso and head of the user out of the water, comprising:
a one piece flexible inflatable buoyant body having a valve for inflation, said body having an enlarged (in volume) rear portion, a central, laterally recessed portion on each side for receiving the legs of a person straddling the body, and a forward portion having a reduced volume compared to the rear portion, the center of buoyancy being disposed behind the recessed areas toward the enlarged rear portion of the body, a handle connected to the forward upper surface of said body, a vertical shaft extending downward from the central portion of the bottom of the body and having an inverted Y on the bottom of said shaft, pedals on the lower extremities of the inverted Y, and a paddle wheel supported within the inverted Y and connected to the pedals.

4,241,689

COATING APPARATUS

Shigeru Kobayashi, Hino; Takemasa Namiki, Iruma, and Tsutomu Iwamoto, Hachiohji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1978, Ser. No. 887,659
Claims priority, application Japan, Mar. 26, 1977, 52-33451
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—50 **6 Claims**



1. A coating apparatus comprising
means for moving downwardly a continuous web along a predetermined path;
a coating head positioned in the proximity of a downwardly moving portion of the web, said coating head having a slide face which defines a wedge-shaped space in cooperation with said web and said coating head having a bottom face extending substantially perpendicularly to said web adjacent thereto and formed with a groove in the proximity of and substantially parallel to said slide face whereby and effective bottom face portion is defined between said slide face and said groove;
means for supplying a coating liquid composition to said space and forming a sustained liquid mass in said space whereby a coating is applied to said web, including means for applying air pressure of an atmosphere plus 50 to 500 mm. Aq. to said coating on said web below said mass.

4,241,690

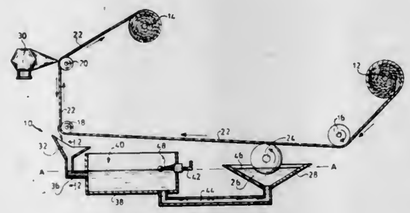
APPARATUS FOR COATING MOVING WEBS

Peter Muller, Port Washington, N.Y., assignor to Andrews Paper & Chemical Co., Inc., Port Washington, N.Y.

Filed Apr. 4, 1979, Ser. No. 27,164
Int. Cl.³ B05C *1/08, 11/06*
U.S. Cl. 118—63 **3 Claims**

1. In apparatus for coating a continuous, moving paper web with a liquid, said apparatus comprising;
means for passing the paper web from a first position to a second position;
a reservoir adapted to contain a liquid coating composition;
means associated with said reservoir, positioned between the first and second positions, for applying the liquid coating composition from the reservoir to the passing paper web;
means for doctoring excess composition applied to the paper web, positioned after the means for applying;
a collector vessel positioned beneath the means of doctoring

and adapted to collect excess composition doctored from the passing paper web;
a mixing vessel adapted to receive and mix liquid compositions;
first conduit means connecting the collector vessel with the mixing vessel and providing liquid communication between said vessels;
means for introducting make-up liquid composition into the mixing vessel; and
second conduit means between the mixing vessel and the reservoir, providing liquid communication between the mixing vessel and said reservoir;



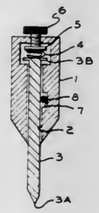
the improvement wherein;
the collector vessel is mounted at an elevation and position relative to the elevation and position of the mixing vessel, whereby doctored excess composition collected in the collector vessel will flow under the force of gravity through the first conduit means to the mixing vessel; and
said mixing vessel is mounted at an elevation and position relative to the reservoir, whereby liquid composition in the mixing vessel will flow under the force of gravity to the reservoir through the second conduit means.

4,241,691

DOCTOR BLADE HOLDER

Harold H. Hopfe, Longmeadow; Robert H. Mosher, West Springfield, both of Mass., and Lawrence R. Sedgeley, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 30, 1978, Ser. No. 938,178
Int. Cl.³ B05C *11/02*
U.S. Cl. 118—126 **6 Claims**



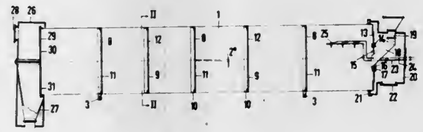
1. A doctor blade holder comprising a body member having a slot adapted to receive a doctor blade in a slidable fit within the slot with the doctoring edge of the blade projecting from the open end of the slot said holder being provided with:
A. a resilient means, disposed within the slot, adapted to bias a doctor blade retained within the slot away from the closed end of the slot;
B. a groove located in one wall of the slot running parallel to the closed end of the slot; and
C. a squirmer located within said groove so as to press resiliently against the surface of a doctor blade placed within the slot and restrict the movement of such a blade in a direction perpendicular to the sides of the slot but permit movement of such a blade in response to compression or expansion of the resilient means.

4,241,692

COATING DRUM

Willy H. P. Van Hijfte, Assenede, and Rafaël A. J. Goethals, Ertvelde, both of Belgium, assignors to Compagnie Neerlandaise de l'Azote, Brussels, Belgium

Filed Apr. 20, 1978, Ser. No. 898,330
Claims priority, application Netherlands, Apr. 28, 1977, 7704687
Int. Cl.³ B05B *13/00*
U.S. Cl. 118—303 **6 Claims**



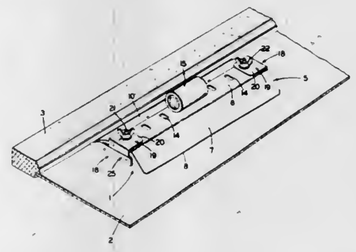
1. An apparatus for coating pellets, such as prills, granules and the like, with a liquid coating agent, which comprises a cylindrical, obliquely disposed drum arranged for rotation about its longitudinal axis, said drum comprising means at or adjacent its higher end for the supply and input of pellets to be coated and for supplying and spraying or atomizing said liquid coating agent over the pellets introduced, and means at or adjacent its lower end for the output and discharge of coated product pellets, said apparatus being characterized by partitions arranged transversely to the axis of rotation and dividing the drum into compartments, each of said partitions having a passage opening located eccentrically relative to the axis of rotation and so that the passage openings in each pair of partitions defining a compartment are peripherally offset relative to each other.

4,241,693

PAINT GUIDE

Allen M. Shotwell, 207 Simpson-Howell Rd., Elizabeth, Allegheny County, Pa. 15037

Filed Dec. 31, 1979, Ser. No. 108,809
Int. Cl.³ B05C *11/00*
U.S. Cl. 118—504 **15 Claims**



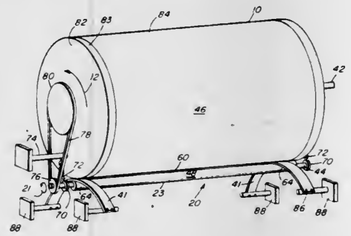
1. A paint guide construction including:
(a) frame means having a paint shield terminating in a straight edge;
(b) a pair of spaced arm means movably mounting the frame means therebetween, said arm means extending generally laterally with respect to the paint shield edge and terminating in front locating ends;
(c) spring means engageable with the frame means and arm means, biasing the paint shield toward a raised position wherein the straight edge is disengaged from a surface to be painted;
(d) link means operatively engageable with and extending between the frame means and arm means to impart straight line movement to the straight edge when said edge is moved toward or away from said surface; and
(e) pin means extending between the arm means and frame means, pivotally movably mounting the frame means on the arm means.

4,241,694

METERING ROLL WITH FIXED SLIDER STRIPS

Raymond G. Cormier, Nashua, and Leo O. Lutz, Hollis, both of N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Jul. 9, 1979, Ser. No. 56,127
Int. Cl.³ B05C *1/08*
U.S. Cl. 118—647 **6 Claims**



1. In a copying apparatus having
a rotating drum having a reusable photosensitive surface,
a developing station for contacting liquid toner to said drum surface to develop an electrostatic image, and
a transfer station for transferring said developed image to a transfer material,
apparatus for controlling the thickness of said liquid toner on said drum prior to said transfer station, comprising:
a metering roll,
means for biasing said metering roll toward said drum, and
means for controlling the minimum distance from said drum surface to said metering roll comprising:
a strip member,
means for securing said strip member between said drum surface and an end portion of said metering roll and perpendicularly to an axis of rotation of said drum, said securing means maintaining at least one end of said strip member in fixed position,
said strip member having first and second surfaces,
said drum surface being in sliding frictional contact with said first surface and said metering roll end being in sliding, frictional contact with said second surface.

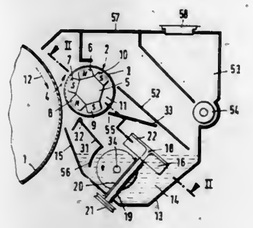
4,241,695

ELECTROSTATIC DEVELOPING APPARATUS INCLUDING POWDER PROPELLING MEANS

Werner Salger, Hamburg, Fed. Rep. of Germany, assignor to Lumoprint Zindler KG (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Jan. 17, 1978, Ser. No. 870,226
Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721424
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—658 **23 Claims**

1. Electrostatic developing apparatus comprising: latent image carrier means; means defining a reservoir containing a supply of developer powder, said reservoir being arranged to have said powder supply normally contained therein not to exceed a maximum upper level; magnet cylinder means including a longitudinal axis and mounted proximate said latent image carrier means and located above said maximum upper level of said developer powder operative to entrain said developer powder to assist in bringing said powder into operative proximity with said latent image carrier means; and scoop wheel means including at least one scoop wheel and means for rotating said at least one scoop wheel about a scoop wheel axis, said scoop wheel axis being defined to extend at an angle with respect to the horizontal and transversely relative to the axis of said magnetic cylinder means, with said scoop wheel arranged to rotate about said scoop wheel axis within a plane extending toward said magnet cylinder means and generally parallel to



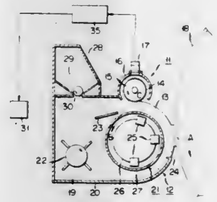
the axis thereof; said scoop wheel means being arranged relative to said maximum upper level of said developer powder in said reservoir such that at least part of said scoop wheel is maintained immersed in said supply of developer powder.

4,241,696

APPARATUS FOR DETECTING TONER CONCENTRATION

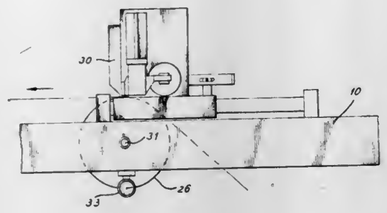
Norihito Huzii, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 12, 1979, Ser. No. 29,533
Claims priority, application Japan, Apr. 19, 1978, 53-51604[U]
Int. Cl.³ B05C *19/00*; G03G *15/09*
U.S. Cl. 118—691 **2 Claims**



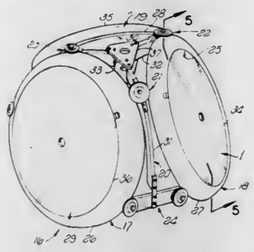
1. A toner concentration detecting apparatus comprising a rotatable probe having a toner-receiving face located in contact with a magnetic brush of a developing mechanism and adapted to separate toner particles from a developer and to receive the same; a case housing the rotatable probe; means attached to the case for detecting an amount of toner on the toner-receiving face of the rotatable probe, said means including a light-emitting element for applying light to the toner-receiving face and a light-receiving element for receiving the light reflected by the toner-receiving face and converting the light into an electric signal; and a stray toner discharging port formed in the case, extending in the direction in which acts centrifugal force generated by the rotation of the probe and located near the light-emitting and light-receiving elements and inside said case housing so that stray toner particles are discharged from said case through said port.

4,241,697
LAMINATING DEVICE
Helmut A. Friz, Stuttgart, Fed. Rep. of Germany, assignor to Paliv AG, Chur, Switzerland
Filed May 15, 1978, Ser. No. 906,124
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722593
Int. Cl.³ B05C 9/10
U.S. Cl. 118—713 **24 Claims**



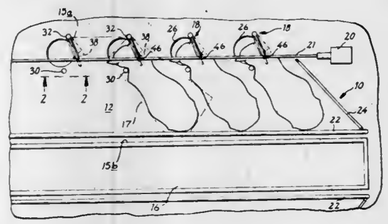
1. A laminating apparatus for applying a coating to a web of sheet material wherein the web is drawn between an elongated doctor blade and an elongated bearing surface, said doctor blade and bearing surface being carried by a supporting framework for relative vertical movement whereby to vary the thickness of the applied coating, characterized in that said bearing surface has a convex curvature and in that means are provided for mounting said bearing surface on the supporting framework for vertical adjustment.

4,241,698
VACUUM EVAPORATION SYSTEM FOR THE DEPOSITION OF A THIN EVAPORATED LAYER HAVING A HIGH DEGREE OF UNIFORMITY
George Vitale, Torrance, Calif., assignor to MCA Discovision, Inc., Universal City, Calif.
Filed Feb. 9, 1979, Ser. No. 10,578
Int. Cl.³ C23C 13/08
U.S. Cl. 118—730 **5 Claims**



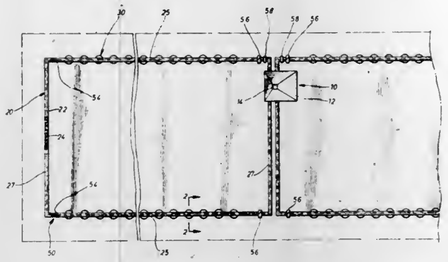
1. A vacuum evaporation system for forming a thin evaporated layer on a plurality of substrate members as said substrate members rotate about their central axis within a housing enclosing a plurality of substrates and a plurality of substrate carrier rings, said system comprising:
a carrier support track;
rolling engagement surface means for rotatively supporting a plurality of substrate members, which rolling engagement surface means employs a plurality of substantially circular members having a first surface and a second surface, said first surface providing an area of rolling contact with said carrier support track, said second surface having each of said substrate members disposed within a recess provided in said second surface and supporting said substrate members about their outer periphery;
frame means for supporting said rolling engagement surface means, which frame means employs a plurality of frame members, each of said frame members having a first end portion, said first end portion being primarily coplanar with and mechanically conjoined to each of the other said first end portion, each of said frame members extending away from said first end portions in an arc describing segments of great circles, said frame means including a plurality of roller engagement means rotatably connected thereto;
rolling engagement means for rotatively supporting said rolling engagement surface means each of said rolling engagement means having a plurality of upper rolling members, and each of said upper rolling members employing a plurality of rollers, and said rolling engagement means further employing a plurality of lower rolling members having a plurality of rollers, said rolling engagement means having a rolling contact surface with said rolling engagement surface means;
drive arm means mechanically attached to said frame means for imparting a rotational motive force to said frame means, and
drive means contacting said drive arm means for providing rotational movement between said rolling engagement surface and said rolling contact surface.

4,241,699
COW-RESTRAINING DEVICE
Paul D. Orchard, P.O. Box 74, Arago Station, Myrtle Point, Oreg. 97458
Filed Mar. 30, 1979, Ser. No. 25,491
Int. Cl.³ A01K 1/12
U.S. Cl. 119—14.03 **5 Claims**



1. A walk-through cow milking parlor comprising
an elongate milking area,
an elongate walk-through stall having one and another sides adjacent and spaced from said area, respectively, extending substantially parallel thereto,
a plurality of cow-restraining devices, one for each cow, arranged, along said stall's other side for restraining cows at longitudinally spaced positions therealong,
each of said devices including an upright fixed-position bar, and an upright locking bar including a locking portion which is shiftable, relative to the fixed-position bar, toward and away from a restraining position, wherein said bars are positioned, adjacent opposite sides of the neck of a cow, to prevent withdrawal of the cow's head from between the bars, and wherein said bars are oriented to urge the cow toward a region of the stall extending between, and inclined with respect to, said stall sides,
elongate fence means extending along and positioned adjacent said stall's side to prevent cow movement beyond said fence means, toward said milking area, and
means operatively connected to said locking bars for moving said locking portions, in unison, toward and away from their said restraining positions.

4,241,700
METHOD AND APPARATUS FOR SIMULTANEOUS DISTRIBUTION OF POULTRY FEED
Richard H. Cobb, Rte. 4, Box 330RC, Hope, Ark. 71801
Filed Jan. 19, 1979, Ser. No. 5,028
Int. Cl.³ A01K 5/00, 5/02
U.S. Cl. 119—52 AF **8 Claims**

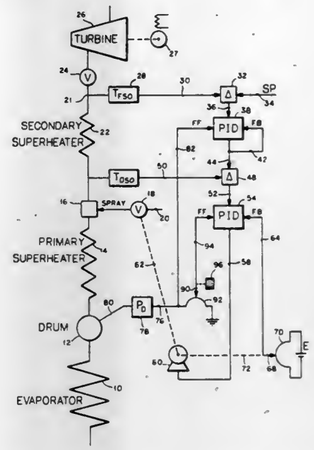


8. In a method of depositing poultry feed at a plurality of feed stations within a poultry house, the steps of:
(a) dispensing poultry feed into a trough from a feed source, the trough extending from the feed source through the poultry house in a closed loop to overlie a plurality of selectively positioned feed stations, with the trough having an opening therein at each of the feed stations;
(b) conveying the poultry feed along the feed trough from the point of dispensing past the different feed stations without dispensing feed through the trough opening at those stations by covering the trough openings with respective gates, and achieving an essentially uniform distribution of feed in the trough along the length of the closed loop;
(c) sensing the level of the poultry feed at a position adjacent the feed trough at the distant end of the closed loop trough when the poultry feed reaches a desired level;
(d) after the completion of step (b) and in response to step (c), simultaneously, axially displacing each of the gates by at least one cable interconnected to a plurality of gates, and depositing essentially identical amounts of feed from the trough to the plurality of feed stations to provide simultaneous and uniform feed distribution throughout the poultry house, by conveying feed from positions between the openings to the openings for dispensing to the feed stations.

4,241,701
METHOD AND APPARATUS FOR CONTROLLING STEAM TEMPERATURE AT A BOILER OUTLET
Richard H. Morse, Oreland, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed Feb. 16, 1979, Ser. No. 12,633
Int. Cl.³ F22G 5/00
U.S. Cl. 122—460 **5 Claims**

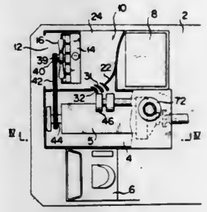
2. In a drum type boiler having a superheater and a control system for modifying the operation of said boiler to control the temperature of the steam at the outlet of said superheater wherein the control system includes a controller responsive to the difference between said outlet temperature and its set point for controlling the outlet temperature, the improvement which comprises:
means for producing a feedforward signal proportional to the drum pressure in the boiler; and
means for applying said feedforward signal to said controller in such sense as to modify the control so as to tend to minimize changes in the temperature at said outlet due solely to drum pressure changes.

5. A method for controlling the temperature of the steam at the outlet of the superheater of a drum type boiler operating in the sliding pressure mode, comprising the steps of:
automatically controlling the fluid distribution or the heat distribution in the boiler in response to the deviation of outlet temperature from its set point so as to tend to maintain said outlet temperature at its set point; and



modifying said control in response to the magnitude of a feedforward signal proportional to the pressure of the steam in said drum, said modification being in sense to tend to reduce the temperature change expected solely as a result of changes in drum pressure.

4,241,702
NOISE-PROOF AND AIR-COOLED ENCLOSURE FOR AN ENGINE
Sadatoshi Takeuchi; Akio Iida, both of Kawasaki; Kimio Miyake, Yokohama, and Mitsuhisa Sakae, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Dec. 7, 1977, Ser. No. 858,394
Claims priority, application Japan, Dec. 7, 1976, 51-163060; Dec. 7, 1976, 51-163061; Dec. 7, 1976, 51-163062; Dec. 7, 1976, 51-163064
Int. Cl.³ F01P 1/02
U.S. Cl. 123—41.7 **6 Claims**



1. A vehicle having a noise-proof and air-cooled enclosure system comprising a vehicle frame;
an engine supportably mounted on said frame having an exhaust pipe thereon;
a radiator for cooling said engine, mounted on said frame, said radiator being arranged sideways with respect to said engine;
a radiator compartment having an inlet and an outlet for cooling air, said radiator compartment enclosing said radiator;
a closed engine compartment positioned adjacent said radiator compartment and having inlet means and outlet means

for cooling air said engine compartment enclosing said engine;

a partition wall for separating said engine compartment from said radiator compartment, said partition wall having an opening means for communicating between said compartments said opening means including sound absorbing means wherein said sound absorbing means includes a plurality of sound absorbing blades positioned in said opening means, and wherein said opening means is the inlet means for said engine compartment; and

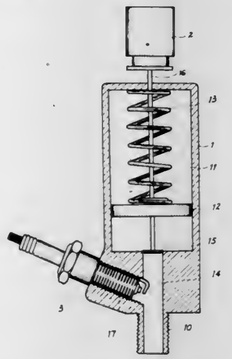
ejector means in said engine compartment said ejector means utilizing the flow of gases from said engine exhaust pipe for creating a relatively low pressure within said air outlet means from said engine compartment to draw ambient cooling air through said radiator compartment into said engine compartment around said engine and out of said air outlet means.

4,241,703

DEVICES FOR PROMOTING COMPRESSION RATIO OF FUEL MIXTURE IN ENGINES

Jiing Lin-Liaw, No. 18 Lane 136, Yung Ho St., Taichung City, Taiwan

Filed Nov. 22, 1978, Ser. No. 964,448
Int. Cl.³ F02B *75/04*
U.S. Cl. 123—48 R **9 Claims**



1. A device for fitting in a first socket communicating with a combustion space of an internal combustion engine for increasing the gas pressure in said combustion space when a fuel air mixture is combusted therein, said first socket being adapted to removably receive a combustion assisting member; said combustion space being defined between a portion of the internal surface of a combustion chamber and a power member sealingly fitted in the chamber for cyclical movement between a first position in which the volume of said combustion space is a minimum and a second position in which the volume of said combustion space is a minimum; said device comprising

a housing defining an internal storage chamber for storing high pressure combusted gas, said housing having a portal formed in the walls of said storage chamber, said housing including an appendage having an outer surface adapted to be fitted into said first socket, a passage being formed in said appendage, one end of said passage terminating at said portal, the other end of said passage communicating with said combustion space; said appendage having a second socket formed therein for receiving said combustion assisting member so that said combustion assisting member communicates with said passage; and

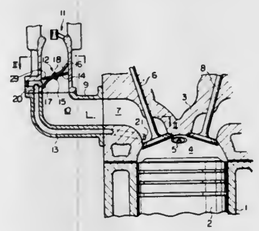
valve means for opening said portal when said power member is in said first position before combustion of said fuel air mixture to permit said high pressure combusted gas to flow into said combustion space to increase the total pressure in said combustion space during combustion of said fuel air mixture and for permitting said high pressure combusted gas to flow from said combustion space into said storage space immediately after said combustion, and for closing said portal after said combustion to trap said high pressure combusted gas in said storage chamber when said power member is moving between said first and second positions.

4,241,704

INTAKE SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Yasuhiko Ishida, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 26, 1979, Ser. No. 33,517
Claims priority, application Japan, Jun. 15, 1978, 53-71536
Int. Cl.³ F02M *23/02*; F02B *31/00*
U.S. Cl. 123—432 **11 Claims**



1. An internal combustion engine having a combustion chamber and an intake valve, said engine comprising:

a main intake passage having an inlet and connected to the combustion chamber via the intake valve;

fuel supply means arranged in the inlet of said main intake passage and having a rotatable valve shaft and a valve body which is fixed onto said valve shaft and has a front face and a rear face, said valve body having a shape which is approximately equal to that of the cross-section of said main intake passage;

a deformable valve plate comprising an inner end fixed onto the rear face of said valve body, and a peripheral outer edge normally projecting outwardly from a peripheral outer edge of said valve body and having a contour capable of establishing the sealing contact between the peripheral outer edge of said valve plate and an inner wall of said main intake passage when the opening degree of said valve body is reduced below a predetermined degree, said valve plate being arranged to be normally in contact with the rear face of said valve body and being bent to form a valve space between said valve body and said valve plate when the opening degree of said valve body is reduced below said predetermined degree; and

an auxiliary intake passage having an outlet and an inlet arranged in the vicinity of said valve body at a position wherein said inlet is normally in communication with said main intake passage located upstream of said valve body and is in communication with said valve space when the opening degree of said valve body is reduced below said predetermined degree, the outlet of said auxiliary intake passage being connected to said main intake passage located downstream of said valve body.

4,241,705

VARIABLE COMPRESSION RATIO PISTON

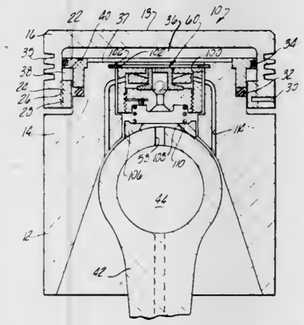
Albert M. Karaba; Brian C. Kauffman, and Glen L. Bowen, all of Muskegon, Mich., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jul. 27, 1978, Ser. No. 928,363
Int. Cl.³ F02B *75/04*
U.S. Cl. 123—78 B **11 Claims**

1. In an internal combustion engine, a piston having an inner member and an outer member telescopically received by said inner member, said members being movable in response to reciprocation of the piston with respect to a combustion chamber of the engine, said members forming a fluid chamber therebetween, said fluid chamber varying in volume in response to said relative movement and to variations in the quantity of fluid therein, and means for supplying fluid to said chamber, said means comprising a supply passage in said piston connecting with said fluid chamber, and a discharge passage connected with said fluid chamber and with the crankcase of said engine, the improvement which comprises:

a bore formed in said piston inner member open at one end to said fluid chamber and formed with a stop surface at its other end;

a valve assembly, said valve assembly having a housing wholly inserted into said bore in the piston inner member adjacent to said stop surface whereby said assembly is



removable and accessible solely from said one end of said bore by removal of said outer member;

a one way inlet valve contained in said housing and in said supply passage;

a normally closed valve contained within said housing and in said discharge passage, said normally closed valve being operable upon a predetermined pressure in said fluid chamber to open and thereby permit fluid to discharge from said fluid chamber and into the crankcase; and

means for detachably locking said valve assembly housing in said piston inner member bore, wherein said detachable locking means comprises a retainer means removably mounted in said piston inner member bore about the top thereof, said retainer means including a portion which extends over said valve assembly housing to retain said valve assembly housing within said piston inner member bore.

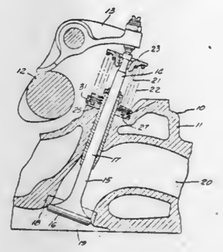
4,241,706

VALVE ROTATOR ASSEMBLY

Shinichi Shimada, Kamifukuoka, and Takenori Makino, Okegawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 847,231, Oct. 31, 1977. This application May 8, 1979, Ser. No. 37,035
Claims priority, application Japan, Nov. 11, 1976, 51-150610; Dec. 2, 1976, 51-160476
Int. Cl.² F01L *1/32*
U.S. Cl. 123—90.3 **1 Claim**

1. For use with a poppet valve assembly for a combustion chamber of an internal combustion engine, said assembly including a poppet valve having a stem, a pair of concentric coil compression springs encircling a portion of the stem and a retainer removably attached to the valve stem and contacted by the upper end of each spring, the improvement comprising, in combination: a stationary support member encircling the valve stem and having a concentric upward facing continuous groove therein, a garter spring in said groove and projecting slightly out of the groove, an annular rotator plate engaging said garter spring, and a retainer ring resting on said rotator plate and providing an upward facing shoulder for supporting the lower end of each of said coil springs at the same elevation,



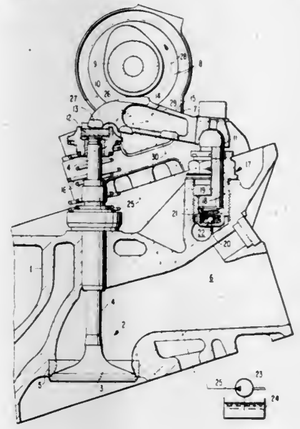
said retainer ring having integral fingers projecting therefrom contacting the lower end of the outer coil spring to hold it in concentric position, the fingers extending between the outside of the inner spring and the inside of the outer spring.

4,241,707

ACTIVATING MECHANISM FOR THE WORKING MEDIUM VALVES OF A RECIPROCATING PISTON ENGINE WITH HYDRAULIC PLAY COMPENSATING ELEMENTS

Bertold Mayr, Beutelsbach, and Siegfried Röser, Baltmannsweiler, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 4, 1975, Ser. No. 565,073
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1974, 2416910
Int. Cl.³ F01L *1/14, 1/24*
U.S. Cl. 123—90.55 **8 Claims**



1. An actuating installation for working medium valve means in a reciprocating engine, which includes an oil circulatory system, at least one cam shaft and one cam means each for each valve means and at least an indirect actuation of the valve means by the corresponding cam means, and hydraulic play-compensating means which are provided with working space means filled with lubricating oil, characterized in that the place of the hydraulic connection of the play-compensating means with the oil circulatory system is located at such a place in said circulatory system at which the oil circulatory system possesses a pressure which lies in all operating conditions below the feed pressure of the circulatory system but above the atmo-

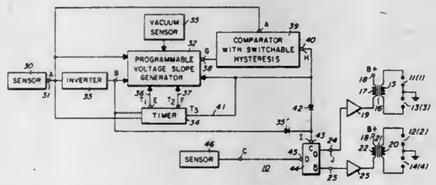
spheric air pressure of the reciprocating engine, and in that the hydraulic play-compensating means are arranged at a place where the actuating reaction forces are transmitted into an engine frame.

4,241,708

IGNITION SPARK TIMING CIRCUIT WITH SWITCHABLE HYSTERESIS

Rupin J. Javeri, Elk Grove Village, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 12, 1979, Ser. No. 29,505
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—418 **8 Claims**



1. An ignition spark timing circuit for an internal combustion engine, comprising:

sensor means for providing a periodic input sensor signal having a frequency and period proportional to the speed of an engine, the input sensor having leading and trailing edges at least one of which is related to predetermined angular positions of a crankshaft of the engine; and

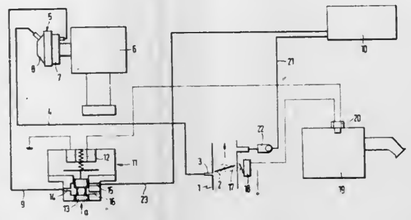
ignition timing means for receiving said input sensor signal and producing a periodic spark timing ignition signal having time occurrences controlling and directly corresponding to the time occurrences of spark ignitions, said ignition timing means including a comparison means having an output which determines the occurrence of spark ignitions by comparing at least two comparison input signals during a critical portion of each period of said input sensor signal, said ignition timing means including input circuitry for providing during each input sensor signal period a first predeterminedly varying signal as one of the inputs to said comparison means and a predetermined threshold level as another of the inputs to said comparison means, wherein the improvement comprises that said comparison means input circuitry includes switchable hysteresis means for having said threshold level being a function of the output of said comparison means, thus exhibiting hysteresis for said comparison means, during said critical portion of each period of said input sensor signal and for having said threshold level being independent of the output of said comparison means during an other portion of each period of said input sensor signal, whereby substantial noise immunity is provided for said comparison means during the critical portions of said input sensor signal period during which said comparison means determines the occurrence of spark ignitions, while during the other portion of each period of said input sensor signal said comparison means is permitted to have an output independent threshold level which insures proper operation of said comparison means even when said predeterminedly varying signal has small peak amplitudes.

4,241,709

DEVICE FOR ADJUSTING THE IGNITION TIME IN INTERNAL COMBUSTION ENGINES

Klaus Schellmann, Hemmingen, and Heinz Schulze, Stuttgart, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,501
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818469
Int. Cl.³ F02P *5/08, 5/10*
U.S. Cl. 123—407 **9 Claims**



1. Device for adjusting the ignition timing of an internal combustion engine comprising:

(a) a vacuum adjusting device having a distributor retard chamber and a distributor advance chamber for controlling ignition timing, said distributor advance chamber being in communication with intake vacuum in an air intake line;

(b) a vacuum chamber;

(c) a thermoswitch actuatable in response to the temperature of engine intake air exceeding a predetermined value;

(d) a throttle valve switch actuatable in response to a flow regulator means in said air intake line assuming a full or high load range position; and

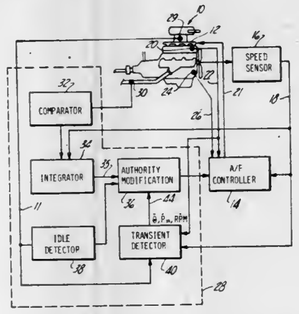
(e) control valve means for communicating said distributor retard chamber with ambient pressure in a first position thereof and for communicating said distributor retard chamber with said vacuum chamber upon conjoint actuation of both of said thermoswitch and throttle valve switch.

4,241,710

CLOSED LOOP SYSTEM

William A. Peterson, Jr., Rochester, and Roman O. Marchak, Northville, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,180
Int. Cl.³ F02M *7/00*
U.S. Cl. 123—440 **16 Claims**



1. A closed loop system for the control of the air/fuel ratio of an internal combustion engine comprising:

an air/fuel ratio controller for regulating the air/fuel ratio of the internal combustion engine according to a calculation based upon a predetermined fuel schedule and the sensing of at least one operating parameter of the engine;

integral controller means for modifying said regulation of said air/fuel ratio controller with a closed loop correction signal wherein said controller means is responsive to the bi-level output of an exhaust gas sensor, said integral controller means incrementally increasing the air/fuel ratio of the engine when the sensor detects a rich condition and outputs a first level, said integral controller means incrementally decreasing the air/fuel ratio of the engine when the sensor detects a lean condition and outputs a second level; and

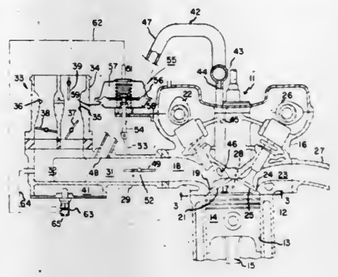
authority modification means for regulating the authority of said integral controller means between a maximum value and a minimum value dependently upon the absolute value of the magnitude of the system error.

4,241,712

INDUCTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hiromitsu Matsumoto, Hamamatsu, Japan, assignor to Yamaha Hatsukoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 13, 1978, Ser. No. 896,083
Claims priority, application Japan, Aug. 16, 1977, 52-97469
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—432 **24 Claims**



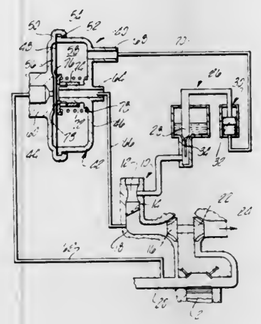
1. In an internal combustion engine having a substantially open variable volume chamber in which combustion occurs, a charge forming device for discharging fuel, a main intake passage served by said charge forming device and communicating with said chamber through a main intake port for delivering a charge therethrough, and a sub-intake passage served by said charge forming device communicating with the open portion of said chamber through a sub-intake port, said sub-intake passage having an effective cross-sectional area at substantially less than the effective cross-sectional area of said main intake passage for causing a given mass flow of charge through said sub-intake port to enter said chamber at a significantly greater velocity, said sub-intake port being disposed in close proximity to said open chamber so that the charge delivered to said open chamber through said sub-intake passage enters said chamber at substantially undiminished velocity, the improvement comprising temperature responsive means for controlling the ratio of the communication of said ports with said chamber during a given cycle operation of said engine for causing a greater portion of the flow to said chamber to pass through said sub-intake passage at low temperatures to minimize the likelihood of fuel condensation.

4,241,711

FUEL CONTROL SYSTEM

Charles A. Detweiler, Durand, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Filed Dec. 5, 1978, Ser. No. 966,616
Int. Cl.³ F02B *33/00*
U.S. Cl. 123—559 **5 Claims**



1. A fuel control system for an internal combustion engine induction system wherein combustion air and fuel is drawn from a carburetor through a compressor section of a turbo charger and into an intake manifold, the combination comprising; a pressure responsive fuel control means for delivering fuel to said carburetor, a housing including a diaphragm forming a regulating chamber at one side and a control chamber at the other side of said diaphragm, said regulating chamber being connected to a first source of pressure at a point upstream of said compressor and said control chamber being connected to a second source of pressure at a point downstream of said compressor, a passage communicating said fuel control means with said regulating chamber, valve means between said first source of pressure and said regulating chamber, said valve means including an opening communicating with said induction system upstream of said compressor, said diaphragm being movable into and out of engagement with said opening to close and open the latter, respectively, to control communication between said first source of pressure and said fuel control means in proportion to the pressure in said control chamber.

4,241,713

ROTARY INTERNAL COMBUSTION ENGINE

Melvin R. Crutchfield, 3804 N. 54th Pl., Phoenix, Ariz. 85013

Filed Jul. 10, 1978, Ser. No. 923,077
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—202 **6 Claims**

1. A rotary vane internal combustion device comprising:

(a) a housing defining a cylindrical bore;

(b) a fixed shaft extending in said bore having a first section having its axial center line concentric with the center line of the cylindrical bore and having a second section radially offset from the axial center line of said bore;

(c) collar means rotative about said first shaft section within said bore;

(d) a rotor mounted for rotation in said bore about an axis eccentric with respect to the longitudinal center line of said cylindrical bore;

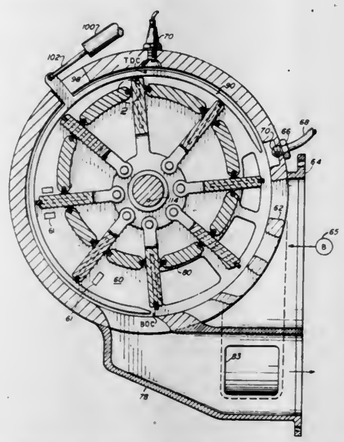
(e) power take-off means connected to said rotor concentric with said offset second shaft section;

(f) a plurality of vanes hingedly secured to said collar means rotative with said rotor about a rotational axis coaxial with the longitudinal center line of said bore;

(g) at least one vane fixedly secured to said collar means rotative with said rotor, said vanes, casing and rotor defining circumferential working chambers varying in volume

as the rotor and vanes rotate from a maximum volume at approximately BCD to a minimum volume at approximately TDC and then increasing to a maximum at approximately BDC in the rotative cycle, TDC and BDC being approximately 180° spaced apart in the cycle;

(h) intake and exhaust ports communicating with said chambers, said intake ports communicating with said working chambers substantially between BDC and TDC and said exhaust ports communicating with said working chambers substantially between TDC and BDC;



(i) control means including fuel delivery means located to directly deliver fuel intermediate the intake port and TDC to form a combustible A/F mixture in a chamber while maintaining a constant throughflow; and

(j) ignition means for igniting the combustible A/F mixture at approximately TDC whereby the theoretical thermodynamic cycle of operation is characterized by isentropic compression, constant volume combustion, isentropic expansion and constant pressure exhaust.

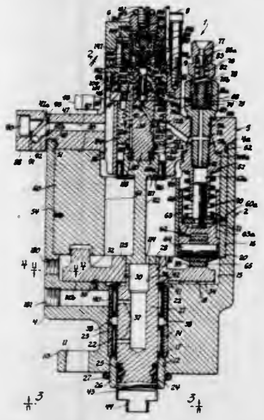
4,241,714

SOLENOID VALVE CONTROLLED FUEL INJECTION PUMP

Richard S. Knape, and Richard A. Moreau, both of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 25, 1979, Ser. No. 51,887
Int. Cl.³ F02M 37/04; F04B 49/00
U.S. Cl. 123—499 **4 Claims**

1. A fuel injection pump comprising, in combination, a housing means having a central stepped bore defining a valve sleeve closely adjacent to one end of said housing means, a solenoid assembly fixed to and closing said one end of said housing means; a control valve rotatably journaled in said valve sleeve and positioned to define an annular fuel chamber with one end of said solenoid assembly; said housing means having a passage in communication at one end with said fuel chamber and connectable at its other end to a source of fuel, a plurality of pumping means equally circumferentially spaced around said bore; each of said pumping means having a pump chamber connected to a fuel passage in communication with said bore and to a valve controlled fuel discharge outlet means; and, a drive means journaled in the opposite end of said housing and operatively connected to said pumping means to effect sequential operation thereof and to said control valve for rotating said control valve; said control valve having a fuel control means thereon to form with said valve sleeve a supply chamber in communication with said fuel chamber and adapted to be placed in communication sequentially with each of said fuel passages, said control valve further having a spill passage means therein with one end thereof radially aligned for sequential communication with each of said fuel passages during rotation of said control valve and the opposite end thereof being positioned coaxial with said bore and operatively opening into said fuel chamber, said solenoid assembly having an armature and a separate valve actuated by said armature and positioned so as to control flow from said pump chambers via



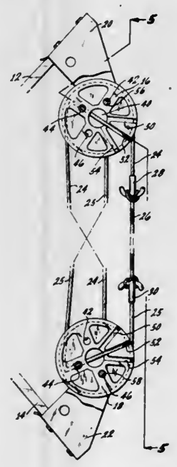
said spill passage means into said fuel chamber; said valve being journaled whereby it can rotate with said control valve, said valve being operative as controlled by said armature whereby both the amount of fuel discharged into each of such fuel discharge outlet means and the timing thereof is controlled by operation of said armature of said solenoid assembly to control spill flow out through said spill passage means.

4,241,715

COMPOUND BOW WITH ADJUSTABLE ECCENTRIC WHEEL

Thomas P. Jennings, Sun Valley, Calif., assignor to Jennings Compound Bow, Inc., Valencia, Calif.

Filed Nov. 17, 1978, Ser. No. 961,760
Int. Cl.³ F41B 5/00
U.S. Cl. 124—24 R **12 Claims**



1. In a compound bow having a center handle portion, upper and lower limbs having inner ends connected to the center portion and free outer ends, and upper and lower draw pulleys mounted for eccentric rotation respectively on the free outer ends of the upper and lower limbs and with first and second draw cables each having one end secured to opposite limbs and each having a free end passing across the bow to the opposite limb and around one of the draw pulleys and with a bow string interconnecting the free ends of the first and second draw cables, the improvement comprising

each of the draw pulleys having a peripheral portion and a central portion,

first and second spaced grooves formed in and extending around the peripheral portion,

a path leading through the central portion and connecting the first and second grooves and with the path intersecting the first and second grooves at particular points,

the first draw cable passing into contact with and lying within the first groove in the peripheral portion and then passing along the path leading through the central portion and passing into contact with the second groove,

the second draw cable passing into contact with the first groove on the other draw pulley, and then passing along the path leading through the central portion and then passing into contact with the second groove, and

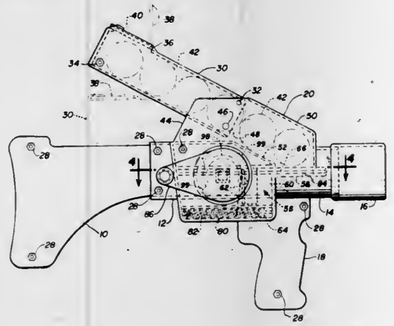
means for permitting variations of the point of intersection between the path and at least one of the first and second spaced grooves for adjusting the draw length and draw weight of the bow.

4,241,716

AUTOMATIC TOY GUN FOR PING PONG BALLS

Kwok W. Tsui, Hong Kong, Hong Kong, assignor to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Feb. 12, 1979, Ser. No. 11,220
Int. Cl.³ F41B 7/00
U.S. Cl. 124—27 **3 Claims**



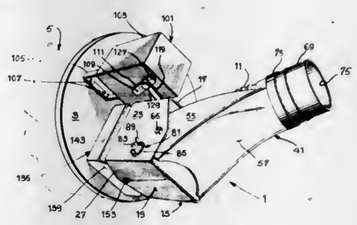
1. A toy gun simulating an automatic rifle adapted to shoot ping pong balls comprising in combination, an elongated frame comprising a pair of rigid molded complementary hollow shells which when connected along a common central plane define respectively: a shoulder stock at the rear end, a short cylindrical barrel at the forward end, a stationary supporting handle extending downward from said frame intermediately of the ends thereof, a portion of a magazine extending upward and rearward from said frame at an acute angle adjacent the rearward end of said barrel, the interior of said magazine being shaped and adapted to hold and control movement of a row of a limited number of ping pong balls, and means to secure said shells in mating relationship to define a hollow interior, the improvements comprising means pivotally connecting a supplemental magazine to said portion of a magazine in said frame adjacent the rearward end of said barrel to permit movement of said supplemental magazine between a depressed inoperative position substantially parallel to said frame and an elevated position in which it extends upward and rearward from said magazine portion and in axial alignment therewith, a firing ram supported by guide means for reciprocation within the interior of said frame and having a rod-like ball-engaging plunger on the forward end movable longitudinally in said frame between a retracted position and an extended firing position beneath said magazine portion of said frame and into said barrel and an actuating head on the rearward end of said firing ram provided with a straight slot perpendicular to the path of movement of said ram open at one side of said head, a crank rotatably supported by one side of said frame by a short cylindrical support extending from said crank and rotatable within a complementary cylindrical flange bearing wall extending laterally into the interior of said frame from one of said hollow shells thereof and integral therewith adjacent said head of said ram, a crank pin projecting laterally from an inner face of a disc on said cylindrical support and integral therewith and positioned within said slot in said head of said ram, said disc being fixed to the inner face of said short cylindrical support and overlying the rim of said bearing wall to retain said support operatively within said flange bearing, and a compression spring mounted within said frame and extending between a rearward wall in the interior of said frame and the lower portion of a forward part of said head on said ram and operable to be compressed when said ram is moved rearwardly by rotation of said crank and engagement of said crank pin with the rear wall of said slot and operable to project said ram forwardly when said crank pin is moved out of said slot incident to rotation of said crank, the upper end of said slot being below the upper zenith of rotational movement of said crank pin, whereby said slot is freed from said crank pin prior to said pin reaching said zenith of its movement.

4,241,717

OSCILLATING FLIGHT CONTROL DEVICE FOR A BALL PROJECTING MACHINE

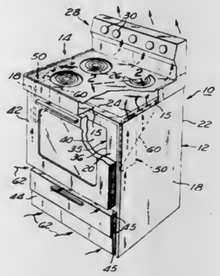
Maurice Mariani, 2285 rue St-Mathieu, app. 801, Montreal, Quebec, Canada (H3H 2S7)

Filed May 30, 1978, Ser. No. 911,038
Int. Cl.² F41D 9/00
U.S. Cl. 124—83 **9 Claims**



1. A device (as claimed in claim 1 including) for use with a ball projecting machine for controlling the flight of a ball projected from the machine through a flexible tube, said device comprising a first casing; means for pivotably mounting the first casing at one end to the machine for swinging movement about a generally upright axis; a second casing adjacent the other end of the first casing; means for pivotably mounting the second casing at its one adjacent end to the first casing for swinging movement about a generally horizontal axis; said first and second casings being adapted to carry the flexible tube of the ball projecting machine, said second casing having means at its other end for holding the outlet end of said flexible tube; and means for oscillating the first casing, and thus the second casing also, about the upright axis.

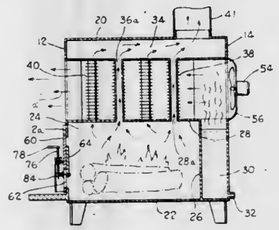
4,241,718
RANGE BODY COOLING SYSTEM
Eugene J. Barnett, Mansfield, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Apr. 3, 1978, Ser. No. 892,846
Int. Cl.³ F24C *15/32*
U.S. Cl. 126—21 R **3 Claims**



1. A free-standing convection-cooled domestic range of the pyrolytic self-cleaning type comprising:
an exterior housing having vertically extending front, rear, and opposite side walls;
a horizntal platform supported by at least said side walls, said platform having a perimetric edge adjacent the upper edges of at least said front and side walls;
a boxlike oven liner disposed within said housing walls and below said platform, said liner defining an oven cavity opening through an access aperture in said front wall, said liner being spaced from at least said side walls and said platform;
movable door means for closing access to said oven cavity;
heat sink means disposed between said side walls and said oven liner, said heat sink means being located generally adjacent said front wall and said platform, said heat sink means including a vertically extending, elongated, metallic channel member having a U-shaped horizontal plane cross section, said U-shaped cross section opening toward said rear wall and being defined in part by a pair of leg members spaced from each other,
air inlet means in said front wall, said air inlet means being disposed below said heat sink means at a downstream point, wherein air provided via said inlet means, when heated, moves upward by convection and contacts said heat sink means, said provided air moving out of contact with said heat sink means and being exhausted at a point above said heat sink means at an upstream point, and
flange means extending inwardly toward said liner, from the upper end of said side walls at least a portion of each of said flanges being disposed above said heat sink means and below said platform, said flange portion including apertures for passing at least a portion of said provided air from said heat sink means location to said outlet means, said portion of said provided air carrying heat from said heat sink means upwardly through the space between said pair of legs of said channel member and then through said apertures.

4,241,719
HEATER STOVE APPARATUS
Joseph K. Vickery, Rte. 2, Liberty, S.C. 29657
Filed Mar. 17, 1978, Ser. No. 887,500
Int. Cl.³ F24B *3/00*
U.S. Cl. 126—66 **13 Claims**

1. Heating stove apparatus comprising:
an enclosed stove housing;
a fire chamber within said housing in which a suitable fuel is burned for heating;
a draft door carried by said housing providing access to the interior of said fire chamber;
a heat collector manifold receiving the heat and combustion products from said fire chamber;
a plurality of elongated heat delivery pipes extending between said fire chamber and said heat manifold for delivery of heat and combustion products thereto, said heat pipes having open opposing ends communicating with the respective interiors of said fire chamber and heat manifold;
horizontal air flow path means extending generally vertically the height of said elongated heat pipes and extending generally horizontally along one of the dimensions of said stove housing, said air path means being defined in part by a bottom surface of said heat manifold and an upper surface of said fire chamber;

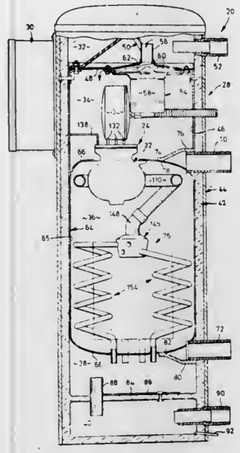


said heat pipes being arranged and aligned linearly in rows across said air path means with the heat pipes of next adjacent rows being offset in their relative lateral spacing; said heat pipes of next adjacent rows being spaced approximately mid-ways between the lateral spacing of heat pipes in said next adjacent row whereby said heat pipes contact said air flow head on and present an enlarged heat transfer surface transverse to the flow of horizontal air while affording sufficient space between said pipes to facilitate said air flow;
circulation means providing circulation of air generally horizontally through said stove housing along said air flow path means; and
a water reservoir adjacent said fire chamber carried within said stove housing being open at the top for release of water vapor into said air path means.

4,241,720
PULSE COMBUSTION APPARATUS
John A. Kitchen, R.R. #3, Hastings, Canada (K0L 1Y0)
Filed Jan. 26, 1979, Ser. No. 6,702
Int. Cl.³ F24H *3/02*
U.S. Cl. 126—110 C **12 Claims**

1. A pulse combustion heater comprising:
a housing which includes three housing sections of tubular form coupled together in a vertically stacked arrangement and comprising a top housing section defining an air cushion chamber, a center housing section defining a heat exchange chamber, and a bottom housing section defining an exhaust chamber, said top and bottom sections being in the form of concrete castings closed at their upper and lower ends respectively, and said center section forming part of a boiler sub-assembly further comprising top and bottom boiler heads closing opposite ends of said center housing section;
a combustion chamber disposed within said heat exchange chamber of the housing and having an inlet communicating with said air cushion chamber, and an outlet in said heat exchange chamber;
ignition means associated with said combustion chamber and operable to initiate combustion in said chamber; and,

at least one exhaust pipe forming a resonant system with said combustion chamber, said exhaust pipe being disposed in



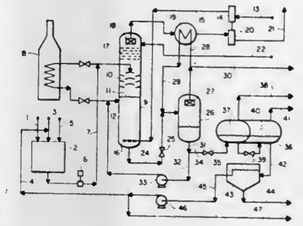
said heat exchange chamber and communicating with the exterior of said housing.

4,241,721
BODY WARMER
Gordon L. Holly, Rte. 1 Box 147, Hillman, Mich. 49746
Filed Mar. 17, 1980, Ser. No. 130,826
Int. Cl.³ A61F *7/06*
U.S. Cl. 126—204 **11 Claims**



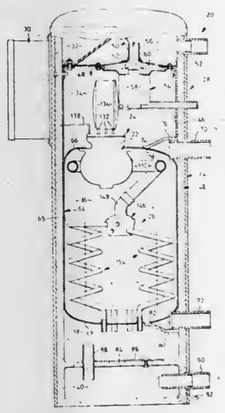
1. A body warmer to keep a person warm comprising, in combination, a platform having top and bottom surfaces and being substantially defined by a plane; a heat source secured to said platform so said person may stand on said platform top surface with each of said person's feet proximate said heat source; an envelope having an upper end and a lower end secured to said platform, said envelope being adapted to substantially surround the body of a person standing on said platform; at least one hoop secured to said envelope for preventing said envelope from contacting said heat source and for providing air circulation around a person in said envelope, said hoop being defined by a plane substantially parallel to the plane of said platform, thereby permitting said envelope to be collapsed onto said top platform surface around said heat source for storage; a shield substantially surrounding said heat source for preventing a person in said envelope from contacting said heat source; closure apparatus attached to said envelope upper end for supporting said envelope on said person in said envelope and for sealing said envelope against said person; and a cover having top and bottom surfaces and connection means for attaching said cover to said platform so said top platform surface faces said bottom cover surface whereby said heat source, said shield, and said envelope may be stored between said cover and said platform and said cover may be securely attached to said platform by said connection means.

4,241,722
POLLUTANT-FREE LOW TEMPERATURE COMBUSTION PROCESS HAVING CARBONACEOUS FUEL SUSPENDED IN ALKALINE AQUEOUS SOLUTION
Norman L. Dickinson, Box 211, Lavallette, N.J. 08735
Filed Oct. 2, 1978, Ser. No. 947,511
Int. Cl.³ F23C *7/00*
U.S. Cl. 126—263 **20 Claims**



1. A process for converting the heating value of a carbonaceous fuel to useful energy comprising the steps of:
grinding the fuel to form fuel particles;
mixing the fuel particles with an alkaline aqueous fluid to form a fuel slurry;
contacting the fuel slurry with air in a reaction zone the temperature and pressure of which are such as to cause a combustible portion of the fuel particles to burn while a portion of the aqueous fluid remains in liquid phase; and
extracting useful heat from the reaction zone.

4,241,723
PULSE COMBUSTION APPARATUS
John A. Kitchen, R.R. 3, Hastings, Canada (K0L 1YO)
Filed Nov. 15, 1978, Ser. No. 960,975
Int. Cl.³ A61M *27/00*
U.S. Cl. 126—350 R **17 Claims**



1. A pulse combustion apparatus comprising:
a combustion chamber;
at least one exhaust pipe forming a resonant system with said chamber;
means for admitting successive fuel charges to said chamber; and,
ignition means operable to initiate combustion in said chamber;
wherein the combustion chamber has an internal cavity which extends about a median plane, said cavity being of a shape which is circular in said plane and which curves

generally inwardly from both sides of said plane around its entire periphery towards first and second ends of said cavity;

and wherein the combustion chamber further includes: an inlet at one of its said ends, through which successive fuel charges can enter said combustion chamber from said fuel charge admitting means in a direction generally normal to said median plane of the combustion chamber; and an exhaust gas outlet disposed in said median plane;

and wherein said exhaust pipe is coupled to said exhaust gas outlet and extends from the combustion chamber generally tangentially with respect to said cavity;

whereby combustion gases returning to said combustion chamber under the effect of a vacuum transient in the chamber at each cycle of the apparatus are caused to flow in a double toroidal flow pattern in said cavity and a subsequent fuel charge enters said flow generally centrally from said combustion chamber inlet

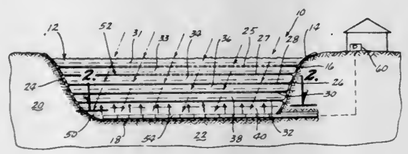
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4,241,724

METHOD AND MEANS OF PREVENTING HEAT CONVECTION IN A SOLAR POND

John R. Hull, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 23, 1978, Ser. No. 953,593
Int. Cl.³ F24J 3/02
U.S. Cl. 126—415 **16 Claims**



1. A method of preventing convection of heat in a fresh water solar pond, comprising,

providing a body of fresh water supported on a bottom support surface and having a closed periphery and an upper surface,

providing at least three closely spaced horizontal membranes in said body of water; said membranes being a transparent film material,

sealing each membrane at the periphery of said body of water to prevent migration of water upwardly past said membranes, whereby water heated by the sun underneath the lowermost membranes will not move upwardly past any membrane,

imposing a closed conduit through the water adjacent one of the lowermost membranes whereby said water will not have access to the interior of said conduit,

and moving a fluid through said conduit whereby said fluid will absorb heat from said water by conduction through said conduit,

the index of refraction of said membranes being substantially that of said water.

16. An apparatus for preventing heat convection in a solar pond, comprising,

a liner element covering the sides and floor of a solar pond, said liner element having a bottom portion corresponding to the floor of the solar pond and side portions corresponding to the sides of the solar pond,

a membrane element extending between said sides of said liner element and sealably connected to said liner, said membrane forming an upper insulating layer of pond liquid and a lower convecting layer of pond liquid, said insulating layer being fluidly sealed from said convecting layer, and

a plurality of capsules filled with a solution and dispersed within said insulating layer, said capsules and said solution being transparent and said solution being denser than the pond liquid so that said capsules are submerged within said upper insulating layer,

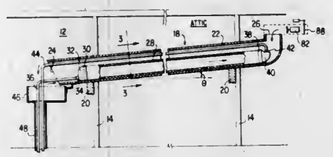
the index of refraction of said capsules and said solution is substantially that of the pond liquid.

4,241,725

SOLAR ENERGY COLLECTOR

Donald E. Emon, and Barbara D. Emon, both of 23029 Timber Creek La., Clarksburg, Md. 20734

Filed May 25, 1979, Ser. No. 42,705
Int. Cl.³ F24J 3/02
U.S. Cl. 126—428 **13 Claims**



1. In a building construction having an enclosed occupant space, a roof structure, and a solar heated air space between said occupant space and said roof structure, a solar water heating device adapted to be installed in said air space, said device comprising:

(a) a first hollow tube mounted in proximity to said roof structure and within said air space, said first tube having first and second open ends, said first open end being at a lower elevation than said second open end to facilitate the drainage of water, and the passage of solar heated air by natural convection therethrough, and

(b) at least one second hollow tube within and substantially coextensive with said first tube, said second tube having an inlet means at one end thereof for introducing water to be heated to said second tube and an outlet means at said other end for removing water from said second tube heated by said convected air.

4,241,726

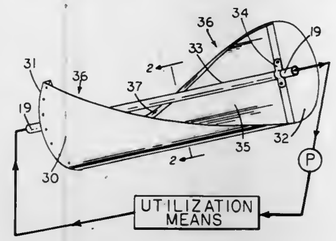
CONCAVE HELIX SOLAR CONCENTRATOR

David H. Doebel, 17745 Fruitport Rd., Spring Lake, Mich. 49456

Filed Aug. 18, 1978, Ser. No. 934,833
Int. Cl.³ F24J 3/02; G02B 5/10
U.S. Cl. 126—438 **6 Claims**

1. A cylindrical radiant solar energy concentrator system comprising an elongated reflector/collector core, said reflector having a semi-tubular concave shape formed in a helix having a reflective surface with up to 360 degrees of turns in its length, said turns producing a contiguous concave helix concentrating reflector, said concave helix reflector caped by two

half circle end pieces respectively, said reflective surface oriented to accept solar radiant energy, said radiant energy reflected from said reflective surface so as to focus on said collector core element, said collector core element containing a heat



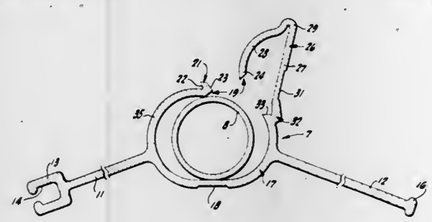
transfer medium, said collector core element being disposed within the sharp focal point of focus of said reflector to absorb said solar energy, said heat transfer medium absorbing energy directed thereto by said reflective surface and heating said transfer medium for use.

4,241,727

STRUCTURAL ASSEMBLY, METHOD OF FORMING SAME, AND ELONGATED PANEL STRUCTURE RESULTING THEREFROM

Andrew J. Toti, 311 W. River Rd., Modesto, Calif. 95351

Filed Nov. 6, 1978, Ser. No. 958,045
Int. Cl.³ F24J 3/02
U.S. Cl. 126—446 **16 Claims**



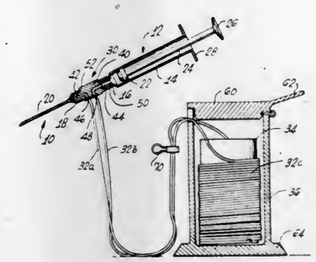
1. A structural assembly comprising an elongated preformed connecting member and an elongated tubular member to be integrally connected in surrounding and contacting relationship by said connecting member without requiring separate fastening means for effecting such connection; said connecting member and said tubular member being generally co-extensive in the direction longitudinally of said tubular member; said connecting member including an initially expanded preformed partially closed central body section to receive said tubular member therein, said body section being defined by at least one deformable section and elongated generally non-deformable plate sections extending laterally in generally opposite directions from and integrally connected with said central body section; said one deformable section including locking means defined by interengageable preformed shoulder and tooth structure including compatibly contoured edge and recess sections deformable into strut like locking engagement with each other to close and draw said body section of said connecting member around said tubular member generally in close conforming contact with said tubular member about the full periphery of said tubular member in gap-free contacting relationship with said tubular member for substantially its entire length.

4,241,728

METHOD AND APPARATUS FOR DISPENSING RADIOACTIVE MATERIALS

Stuart Mirell, 10816 Cushdon Ave., Los Angeles, Calif. 90064

Filed Nov. 27, 1978, Ser. No. 963,690
Int. Cl.² A61N 5/12
U.S. Cl. 128—1.1 **13 Claims**



1. Apparatus for use with a device for dispensing radioactive liquids in predetermined amounts, the device having dispensing means and reservoir and pump means connected thereto for drawing in, temporarily retaining, and pumping out liquid through the dispensing means, said apparatus comprising:

bypass means connectable between the dispensing means and the reservoir and pump means, to provide an extended-length liquid path therebetween, said bypass means including liquid storage means locatable remote from the dispensing means and reservoir and pump means;

shielding means surrounding only said liquid storage means of said bypass means, whereby radioactive liquids may be safely stored in said liquid storage means within said shielding means, and dispensed through the dispensing means in a conventional manner, without the need for cumbersome shielding around the dispensing means and reservoir and pump means.

4,241,729

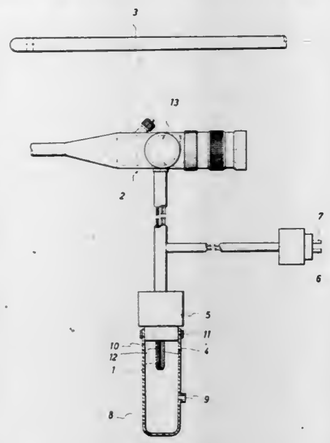
ENDOSCOPE WITH GAS-TIGHT CAP PERMITTING PRESSURIZATION

Hisatake Aoshiro, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,748
Claims priority, application Japan, Aug. 4, 1977, 52-103847[U]
Int. Cl.³ A61B 1/00
U.S. Cl. 128—4 **4 Claims**

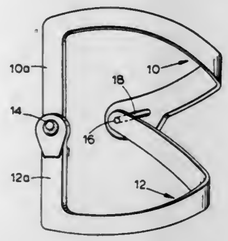
1. An endoscope comprising a grip end, an elongated sheath adapted to fit into a body orifice having a distal end and a proximal end, a fiber optic bundle extending from said proximal end to said distal end of said sheath, said grip end connected with said sheath and said sheath terminating in an examining end, said endoscope including said sheath having a closed inner cavity portion, the portions of said endoscope forming the walls of said closed cavity being non-expandable, said cavity extending along a major portion of said sheath, said sheath being flexible, a plug enabling a light source to be connected with said fiber optic bundle, a gas flow path through said plug permitting gas to flow therethrough and being in air communication with said closed inner cavity portion, a gas-tight cap having a gas inlet means in air communication with said gas flow path through said plug, and a source of pressurized gas connected to said gas inlet means to introduce pressurized gas into said closed inner cavity portion to be contained

therein, whereby said pressurized gas prevents cleansing liquid on the outside of said endoscope from permeating said sheath



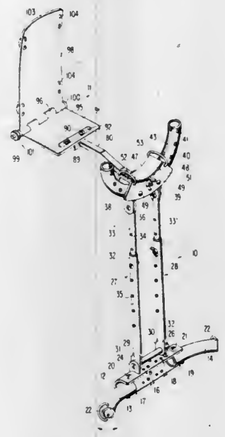
and highlights pinholes in said sheath by the production of fluid bubbles thereat.

4,241,730
KNEE SUPPORT
Arthur J. Helfet, 420 Montebello, Montrose St., 7700 Newlands, Cape Town, South Africa
Filed Sep. 7, 1977, Ser. No. 831,187
Claims priority, application United Kingdom, Sep. 20, 1976, 38813/76
Int. Cl.[3] A61F *3/00*
U.S. Cl. 128—80 C **13 Claims**



1. A knee support for opposing excessive or abnormal strain on the joint, comprising a pair of pivotally interconnected rigid braces, the one adapted to embrace snugly the front of the thigh just above the patella and the other adapted to embrace snugly the front of the shin just below the patella, the pivots being aligned approximately on the mean medial-lateral axis of flexion of the knee and at least the pivot on the lateral side having freedom of universal pivotal motion whilst that on the medial side has limited freedom of relative bodily displacement in the anterior-posterior direction, both freedoms being of sufficient magnitude to accommodate the wearer's normal degree of tibial rotation during flexion and extension, and means for locating each brace firmly on its respective component of the limb.

4,241,731
UNIVERSAL ARM SUPPORT
James H. Pauley, Rte. 1, Box 251, Ripley, W. Va. 25271
Filed May 11, 1978, Ser. No. 905,088
Int. Cl.[3] A61F *5/40*
U.S. Cl. 128—94 **7 Claims**



1. A universal arm brace adapted to support the fractured immobilized upper body limb or extremity of a person comprising,

a first arcuate means for engaging the trunk of the user for transferring substantially all load supported by said brace when the user is standing to the hip of the user and means securing said first arcuate means to the trunk of the user

a stanchion elongated means,

a second arcuate means for engaging the arm of the user approximately midway of the elbow and the armpit of the user to thereby avoid undue pressure on blood vessels and nerves in the axilla of the user,

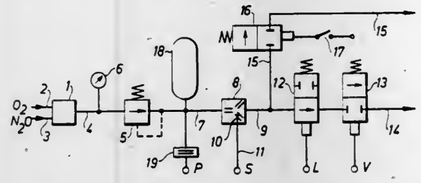
means pivotly directly engaging and securing the respective ends of said stanchion means to one each of said first and second arcuate means, respectively,

a forearm-elbow egaging means and means securing said forearm-elbow engaging means to the user's forearm-elbow,

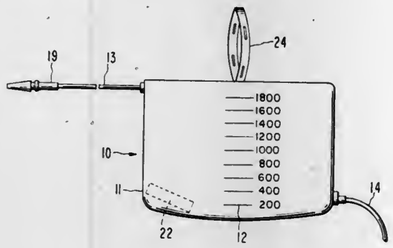
and means for rotatably and lockably supporting said forearm-elbow engaging means on said second arcuate means about a horizontal axis which is transverse to an axis through the trunk of the user to maintain the fractured upper body limb or extremity of the person in an elevated position above the heart when said person is alternately standing, sitting or lying in a supine position.

4,241,732
ARRANGEMENT IN RESPIRATORS USING A FLUIDISTOR TO DETERMINE VOLUME OF AIR PASSED TO A PATIENT AND PRESSURE SENSOR TO CORRECT VOLUME READING IN TERMS OF ACTUAL PRESSURE
Christer Berndtsson, Lidingö, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden
Filed Nov. 16, 1978, Ser. No. 961,206
Claims priority, application Sweden, Nov. 29, 1977, 7713464
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—204.24 **4 Claims**

1. An arrangement for use in a respirator for measuring the amount of gas passed to a patient through a supply line, said arrangement comprising means disposed in the supply line to the patient for dividing the gas flow into part volumes of a given magnitude and for generating an electrical pulse for each part volume passing therethrough, said means comprising a self-oscillating fluidistor having two outputs and including a control channel having a temperature-dependent resistance located therein and an amplifier and pulse-forming means connected to said resistance for generating electrical pulses whose number is related to the part volumes flowing through said control channel, said arrangement further comprising a binary counter connected to said amplifier and pulse-forming means for counting the number of electrical pulses produced by said amplifier and pulse-forming means over a predetermined time interval, a digital-to-analog converter, having first and second inputs, for generating an analog signal corresponding to the number of pulses produced per said time interval by said amplifier and pulse-forming means, said first input of said digitial-to-analog converter being connected to the output of said amplifier and pulse-forming means, and a pressure-sensing means connected in said supply line to the patient and to said second input of said digital-to-analog converter in series with a calibrating resistance for producing an electrical control voltage in response to the pressure in said supply line and for applying said electrical control voltage to said second input of said digital-to-analog converter so as to correct the output signal of said conveter in accordance with part volumes of a given predetermined pressure.

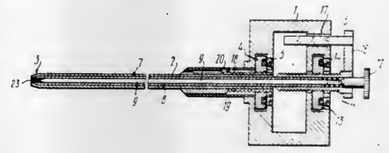


4,241,733
PATIENT-CARE APPARATUS WITH DEVICE FOR DISPENSING ANTI-PATHOGENIC AGENT
Jimmy B. Langston, San Jose; Harold Leeper, Mountain View, and Patrick S. Wong, Palo Alto, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Division of Ser. No. 804,962, Jun. 9, 1977, Pat. No. 4,193,403. This application Sep. 24, 1979, Ser. No. 78,507
Int. Cl.[3] A61F *5/44*
U.S. Cl. 128—275 **4 Claims**



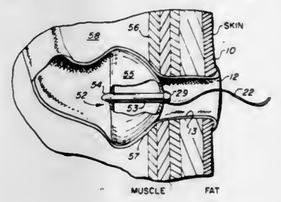
1. A patient-care apparatus, comprising in combination: a container for receiving and storing a biological fluid; an inlet port in the container for establishing fluid passage between the interior and the exterior of the container; and a device in the container for substantially controlling the presence of pathogens in the apparatus, said device consisting of a body sized and adapted for prolonged placement in the container and having a surface exposed to the container, the body formed of a polymeric material containing paraformaldehyde, which is converted to formaldehyde when the apparatus is in use and released by the surface for controlling said pathogens.

4,241,734
DEVICE FOR PUTTING CLIPS ON BLOOD VESSELS
Eduard I. Kandel, ulitsa Alexeya Tolstogo, 22/2, kv. 75, and Vyacheslav V. Peresedov, Teply stan, 3 mikroraion, korpus 37, kv. 303, both of Moscow, U.S.S.R.
Filed Nov. 27, 1978, Ser. No. 963,677
Int. Cl.[3] A61B *17/12*
U.S. Cl. 128—325 **3 Claims**



1. A device for putting clips on vessels, comprising: a shackle; a tubular housing member having a tapered end and mounted on said shackle and being movable along an axis; a removable and threaded guide rod adapted to be inserted into the cavity of said tubular housing member for guiding said tubular housing member to the vessel to be clipped; a working rod including a tubular member, and a grip having means for holding said clip, also adapted to be inserted into the cavity of said tubular housing member; said grip being positioned within said tubular member by a spring controllable by an adjusting knob; said working rod being disposed coaxial with respect to said tubular housing member and movable along said axis; each of said working rod and said tubular housing member having threaded means and associated adjusting wheels mounted in said shackle for controlling the axial movements thereof; said adjusting wheel for said working rod also used for controlling the axial movement of said guide rod; and each of said threaded guide rod and said working rod having a rule cooperatively associated with said shackle for respectively monitoring the depth of said guide rod and for setting the point at which the jaws of said clip are opened prior to clipping and releasing said clip onto said vessel.

4,241,735
ILEOSTOMY AND COLOSTOMY PLUG
Merrill S. Chernov, 4151 N. 32nd St., Phoenix, Ariz. 85018
Continuation-in-part of Ser. No. 914,582, Jun. 12, 1978, abandoned. This application Jan. 24, 1980, Ser. No. 115,024
Int. Cl.[3] A61M *29/02*; A61F *5/44*
U.S. Cl. 128—344 **6 Claims**



1. A closure appliance for an artificial human body bowel opening extending through the abdominal wall comprising:

an elongated tubular plug having a roundedly pointed end for extending into the artificial bowel opening through the abdominal wall and into the intestinal lumen; the other end of said plug being an insertion means for the appliance;

a hollow, inflatable, elastic balloon secured annularly therealong to and surrounding most of the outer periphery of said plug;

said balloon having at least one conical surface which when inserted in said artificial opening and then inflated, forms

a sealing engagement with the inner surface of said artificial opening;

a hollow tube connected to and in communication with the interior of said balloon at a location adjacent said other end of said plug, the other end of said tube being removably connectable to an inflating means for said balloon;

said tube additionally providing a withdrawal means for said appliance; whereby when said balloon is deflated, pulling the tube will remove said appliance.

4,241,736

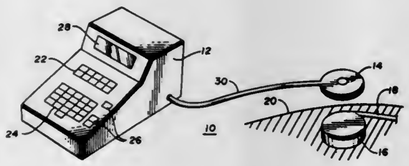
RESET MEANS FOR PROGRAMMABLE DIGITAL CARDIAC PACEMAKER

Martin A. Rossing, Anoka, and Ray S. McDonald, St. Paul, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 958,317

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **10 Claims**



1. In a programmable medical device having program acceptance means responsive to an externally applied programming signal consisting of at least a minimum number of detectable pulses, and program memory means for providing device operating conditions in accordance with said programming signal, the improvement comprising:

pulse counter means for counting said programming pulses and providing a check signal indicating that the proper number of programming pulses have been received to constitute a programming instruction;

means responsive to said check signal for enabling said program acceptance means to store the programming signal in said program memory means; and

timing means responsive to said pulse counter means having a non-initial count therein for resetting said pulse counter means to an initial count a certain time after said pulse counter means first reaches said non-initial count unless said check signal first occurs, said certain time being greater than the time required to apply said programming signal.

4,241,737

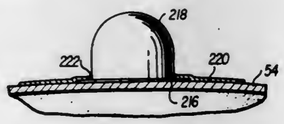
BRASSIERE HAVING SIMULATED NIPPLES AND ATTACHABLE-DETACHABLE NIPPLE SIMULATORS

Jakob E. Schmidt, 934 Monroe St., Charlestown, Ind. 47111

Division of Ser. No. 692,820, Jun. 4, 1976, Pat. No. 4,127,128, which is a division of Ser. No. 553,779, Feb. 27, 1975, Pat. No. 3,976,083. This application Sep. 21, 1978, Ser. No. 944,536

Int. Cl.³ A41C *3/00*

U.S. Cl. 128—425 **6 Claims**



1. In a brassiere having a pair of breast receiving cups serially disposed along the length of a brassiere band, said cups comprising a layer of flexible fabric material, an improved simulated nipple attached to said layer of each cup, comprising a stud element having an exterior profile simulating the profile of the nipple of a human female breast and means cooperating with said stud element and said layer for attaching said stud element to said breast receiving cup, whereby the exterior profile of said stud element is noticeable exteriorly of said brassiere to enhance the appearance of bralessness when said brassiere is worn beneath outer garments, wherein said attaching means comprises a radially extending flange on said stud element and an iron-on patch of material having an aperture sized to receive said stud element whereby said flange retains said stud element in said aperture.

4,241,738

SPECTRAL PHOTOMETER FOR MEDICAL USE IN DETERMINING SKIN COLORATION

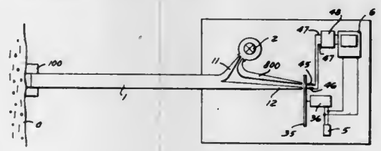
Dietrich W. Lübbers, Dortmund, and Ernst Guilino, Munich, both of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft zur Förderung der Wissenschaften, Göttingen, Fed. Rep. of Germany

Filed Apr. 10, 1978, Ser. No. 895,123

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1977, 2726606

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—666 **2 Claims**



1. A spectral photometer for use in evaluating the coloration of the human skin surface, of the type having a light source, light-conducting means and light-sensitive means for generating signals dependent upon intensity of the light received therein, in the combination comprising: the light conducting means, including flexible fiber optics members interspersed among one another, having one end and a second end: a support and spacing ring, said one end being positioned within said spacing ring to establish the correct spacing between said light-conducting means and the skin surface, said second end being divided into a first branch and into a second branch, said light source being arranged to emit light into said first branch, whereby the light is transmitted through said light-conducting means onto the skin surface, reflected from the latter, transmitted back through said light-conducting means and emitted from said second branch; monochromator means for receiving the light emitted from said second branch and spectrally projecting it onto said light-sensitive means, said monochromator means comprising means operative for projecting onto the light-sensitive means successive portions of the spectrum of the light received from the second branch in a progressive and periodic sequence; display means connected to receive signals generated by the light-sensitive means and produce a spectral display of the light reflected from the skin surface, said display means comprising an oscilloscope having an information-signal input connected to the light-sensitive means, and sychronizing means for synchronizing the sweep of the oscilloscope with the periodic operation of said monochromator means, said monochromator means comprising a rotating filter having angularly successive sections to transmit successive parts of the spectrum of the light received from said second branch onto said light-sensitive means.

4,241,739

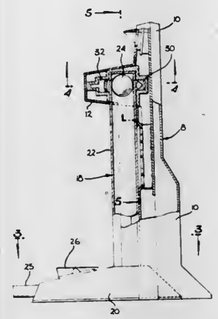
VOLUME CALCULATOR FOR INCENTIVE SPIROMETER

Edward E. Elson, Anaheim, Calif., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Nov. 13, 1978, Ser. No. 959,911

Int. Cl.³ A61B *5/08*

U.S. Cl. 128—725 **24 Claims**



1. A device for use in conjunction with a flow meter having an indicator which moves to a position corresponding to the flow rate through said flow meter, said device comprising:

a housing containing a detector means, a timing means, a processing means, a first and a second storage means and an alphanumeric display means;

said first storage means for receiving and storing information representative of the minimum flow rate required through said flow meter to move said indicator to said position;

said detector means for detecting and indicating the presence of said indicator at said position;

said timing means coupled to said detector means for measuring the time during which said detector means indicates the presence of said indicator at said position;

said second storage means for receiving and storing information representative of a desired minimum volume;

said processing means coupled to said timing means and to said first storage means for generating information representative of the cumulative volume flow through said flow meter, said processing means further performing a comparison of said generated information and the information stored in said second storage means; and

said alphanumeric display means coupled to said processing means for displaying an indication in the event said generated information is representative of a volume equal to or greater than the volume represented by the information stored in said second storage means.

15. A volume calculator and incentive display device for use with a spirometer of the type in which a movable indicator contained in a chamber moves to a certain position in said chamber only when the patient's breathing flow rate through said spirometer equals or exceeds a value set by a flow regulator control on said spirometer, said device comprising:

a case removably placeable onto said spirometer, said case including a detector housing which is situated adjacent said chamber certain position when said case is placed on said spirometer.

detection means, situated in said detector housing, for detecting the presence of said indicator at said certain position and for providing an electrical detection signal in response thereto,

presettable volume register means, situated in said case, for storing data representing the desired minimum volume of air to be breathed by the patient in a single breath,

volume determination means, situated in said case and cooperating with said detection means, for electrically ascertaining from said detection signal the actual minimum volume of air breathed by said patient in a breath,

an alphanumeric display situated on said case, and,

incentive indication means, situated in said case and cooperating with said volume register means and said volume determination means, for providing on said display an incentive indication when said ascertained actual minimum volume equals or exceeds said desired minimum volume represented by said stored data.

4,241,740

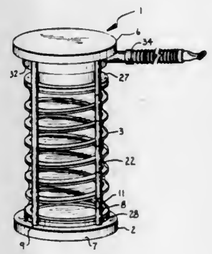
BELLOWS TYPE INCENTIVE SPIROMETER

Joseph W. Brown, P.O. Box 385, Blue Springs, Mo. 64015

Filed Mar. 5, 1979, Ser. No. 17,591

Int. Cl.³ A61B *5/08*; B23P *11/02*; F16J *3/04*

U.S. Cl. 128—728 **10 Claims**



1. A spirometer comprising:

(a) an upright, hollow frame structure having opposite end portions;

(b) an expansible and contractible bellows responsive to exhalation and inhalation and including;

(1) a hollow, resilient helical structure having opposite ends and with a plurality of coils respectively having relatively broad upper and lower surfaces and relatively thin outer edges;

(2) opposite closed end members connected to the opposite ends of said helical structure, one of said closed end members being connected to one of said end portions for affixing said bellows to said frame structure;

(3) a sheath of thin, fluid-impervious film extending the length of an expanded said helical structure and situated generally externally thereof, said sheath protruding inwardly and radially between said coils toward a longitudinal axis of said helical structure, thereby forming convolutions of said film embracing said coils only along portions of said upper and lower surfaces and outer edges with a gripping engagement tending to prevent movement of said helical structure relative to said sheath, said sheath joining said opposite closed end members and defining an impervious outer wall structure for said bellows; and

(c) a passage means connected to said one of said closed end members and communicating with an interior of said bellows for transmitting inhalation and exhalation pressures thereto.

4,241,741

SPILL PROOF BONG

Rick H. Cabados, 1735 Pentuckett Ave., and Robert E. Hansen, 762 Santa Rita Rd., both of San Diego, Calif. 92109

Filed Jun. 11, 1979, Ser. No. 47,309

Int. Cl.³ A24F *1/14, 1/30*

U.S. Cl. 131—173 **4 Claims**

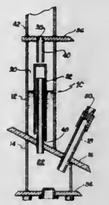
1. A bong comprising:

(a) an upright barrel;

(b) a partition extending across said barrel defining an aqueous chamber over said partition;

(c) a hollow stand pipe extending upwardly through said partition into said aqueous chamber such that liquid maintained in said aqueous chamber at a level below that of the top of said stand pipe will not drain through said stand pipe;

(d) a pipe bowl mounted on said barrel and means defining a smoke passageway between said bowl and the bottom of said stand pipe; and an elongated stand pipe cap covering



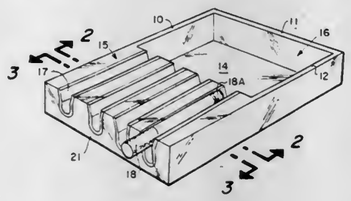
and extending down alongside said stand pipe and communicating with the top of said stand pipe to divert any smoke traveling up through said stand pipe back down into any liquid contained in said aqueous chamber, said pipe cap being restrained by said stand pipe to substantially vertical movement and otherwise is free to bobble in the liquid in said upper chamber and responds to the drawing of smoke upwardly in said stand pipe and downwardly in said stand pipe cap.

4,241,742

ASHTRAY TO CONTROL BURNING RATE OF CIGARETTE

Arthur W. Hilding, 1634 Creek Dr., San Jose, Calif. 95125

Filed May 23, 1979, Ser. No. 41,697
Int. Cl.³ A24F *13/18, 19/14*
U.S. Cl. 131—235 R **3 Claims**



1. An ashtray for controlling the rate of burning of an unattended cigarette and for reducing the condensation of tars and moisture around and on the cigarette, comprising in combination:

an ash container formed between side walls;

spaced walls in one side wall forming a first groove;

a liner formed of a good heat conducting material and supported within said first groove to form a second groove having continuous and substantially vertical side walls and a bottom wall extending substantially the length of the cigarette, said side walls being spaced apart a distance slightly less than the cross-sectional diameter of the cigarette so the cigarette can be wedged therebetween and suspended above the bottom wall to form a chamber bounded by the cigarette, a bottom portion of the side walls and the bottom wall; and

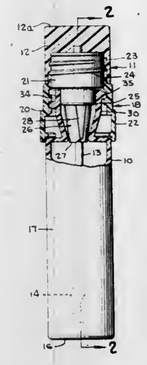
said liner being held in spaced relationship to said spaced walls of the side wall for heat insulating the from the ash container to control the loss of heat from the liner whereby the member will be heated by the burning cigarette wedged in said groove and prevent condensation on and around the cigarette and the side walls will prevent accidential touching of the heated liner.

4,241,743

ADJUSTABLE WIPER CONTAINER AND APPLICATOR ASSEMBLY FOR COSMETICS AND THE LIKE

Peter W. Schnabel, Shrewsbury, Pa.; Milton P. Chernack, West Hempstead, N.Y.; Lawrence T. Wilkes, York, Pa., and Gordon R. Perry, Brooklyn, N.Y., assignors to Noxell Corporation, Baltimore, Md.

Filed Mar. 13, 1979, Ser. No. 20,247
Int. Cl.³ A45D *40/26*
U.S. Cl. 132—88.7 **21 Claims**



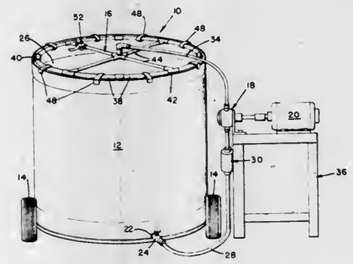
1. A cosmetic applicator and container assembly comprising a container for cosmetic material having an opening, an applicator having an elongated stem to extend through the opening and an elongated brush-like applicator head formation extending from and carried by an end of the stem adapted to be stored in the container and coated by the cosmetic material, an elastic deformable wiper mounted on the container at said opening having movable wiper edge portions defining a variable size wiper orifice through which the applicator head formation is to be withdrawn for use of the applicator in applying cosmetic material, and a manually adjustable orifice regulating member movable to various different positions on the container adjacent said opening and having means to vary the positions of said wiper edge portions for moving said wiper edge portions relative to each other to provide different wiper orifice sizes and thereby vary the wiping action of the wiper on the applicator head formation as it is withdrawn for use to control the amount of cosmetic material remaining on the head formation.

4,241,744

CLEANING SYSTEM FOR TANKS

Nathaniel Jordan, Sr., 1266 Springwood Cir., Winston-Salem, N.C. 27107

Filed Jul. 2, 1979, Ser. No. 54,036
Int. Cl.³ B08B *9/08*
U.S. Cl. 134—168 R **8 Claims**



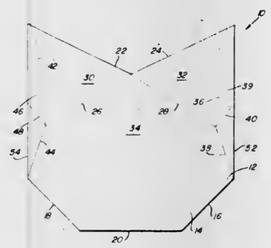
1. Apparatus for cleaning residue from the internal surfaces of a vertical side wall of a tank having an upper open end and a discharge valve at the lower end thereof by circulating a cleaning fluid substantially completely over the entire internal surfaces at a controlled minimum pressure to prevent spraying of the surfaces, comprising; a ring assembly, said ring assembly including an arcuate ring-like means defining a series of openings therein, fluid inlet means located centrally of said arcuate ring-like means, and distribution means for directing cleaning fluid radially from said inlet means to said ring-like means, means for supplying cleaning fluid to said fluid inlet means at a selected low pressure for distribution to said ring-like means for substantially equal, even discharge through each opening of said series of openings against the side wall uppermost inner surfaces for flow downwardly of the internal surfaces of the tank side wall, support means secured to said ring-like means for support by the upper open end of the tank for positioning said ring-like means parallel with and in close proximity to the internal surfaces of the tank vertical side wall and with said series of openings in close proximity to the side wall vertical surfaces and adjacent the uppermost internal surfaces of the wall for directing an even flow of cleaning fluid onto the side wall to provide a complete fluid flow downwardly over substantially the entire internal surfaces of the side wall, said ring assembly further including means for adjustably controlling the flow rate of cleaning fluid through said series of openings.

4,241,745

LIGHTWEIGHT, PORTABLE SHELTER FOR BACKPACKERS

Edward L. Knox, 501 NW. 9th St., Bentonville, Ark. 72712

Filed Aug. 30, 1979, Ser. No. 71,686
Int. Cl.³ E04B *1/343*
U.S. Cl. 135—1 R **9 Claims**



1. A collapsible, portable shelter adapted for use with a backpack, said shelter comprising:

a top portion produced from a flexible, semi-rigid, shape sustaining material and formed in a continuous covering having an upper section and a lower section with the upper section disposed above said lower section and said lower section including a ground contacting peripheral edge;

a floor connected to said ground contacting peripheral edge and having an ingress and egress means formed therein, said ingress and egress means comprising an opening in said floor.

4,241,746

COLLAPSIBLE BUILDING STRUCTURE

Bruce Rothe, 2046 Rutledge St., Madison, Wis. 53704

Filed May 2, 1979, Ser. No. 35,222
Int. Cl.³ E04B *1/347*
U.S. Cl. 135—4 R **18 Claims**

1. A structure comprising:

(a) first and second membranes disposed in spaced relation and having lines of tension defining corresponding rectilinear grid patterns in each of said membranes;

(b) a plurality of node members attached to each of the two membranes such that each node member on said first membrane is paired with a corresponding one of said node members on said second membrane, said node members on each of said membranes being arranged along each line of tension such that each node member is located at an intersection of lines of tension in said membranes and is separated by intersecting lines of tension in said membranes from adjacent node members lying along the same lines of tension;

(c) a plurality of tensile members, each said tensile members extending in tension from attachment to one of said node members on said first membrane to attachment to the node member on said second membrane that is paired with said one node member on said first membrane; and



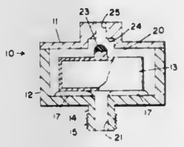
(d) a plurality of compression struts, said struts being arranged such that, at each node member on said first membrane, struts extend in compression from attachment to said node member on said first membrane to attachment to each of said node members on said second membrane which are most closely adjacent to and substantially equidistant from the node member on said second membrane which is paired with said one node member on said first membrane, whereby said struts will lie substantially along the diagonals of the rectilinear lines of tension which extend between adjacent node members.

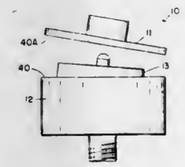
4,241,747

SAFETY VALVE HAVING A RUPTURABLE HOUSING

Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn. 55343

Filed Nov. 1, 1978, Ser. No. 956,624
Int. Cl.³ F16K *17/40*
U.S. Cl. 137—68 R **1 Claim**





1. A two fluid valve comprising:

a first member formed from a polymer plastic material, said first member having a gas port therein, said first member having a surface for forming sealing engagment with another surface;

a second member, said second member formed from a polymer plastic material, said second member having a fluid port therein, said second member having a surface for mating with said surface on said first member to thereby provide a sealing region between said surface on said first member and said surface on said second member, said sealing region having means operable for securing said first member to said second member so that said surface on said first member will separate from said surface on said second member in response to a predetermined pressure in said two fluid valve, said first member and said second member coacting to form a housing when said surface on said first member is in mating engagement with said surface on said second member, said housing defined by said first member and said second member, said housing having a float chamber therein for containing a float member, said first member including a sealing shoulder on said gas port to permit a sealing member to seal off said gas port in said first member in response to the level of a liquid in said chamber;

said fluid port in said second member operable for the ingress and egress of fluid into the float chamber in said housing;

a float of predetermined volume located in the float chamber, said float comprising a polymer plastic material, said float having a weight which is less than a weight of the volume of liquid displaced by said float but greater than weight of the volume of gas displaced by said float, a gas port sealing member located on said float for sealing said gas port in response to liquid reaching a predetermined level in the float chamber to thereby prevent discharge of fluid through said gas port, said sealing member having a sufficiently short projection so that the tilting of said two fluid valve does not produce misalignment of said sealing member with said gas outlet port;

said housing including members for supporting said float in a spaced position from said fluid port to permit ingress and egress of fluid past said float when said float is located on said supporting members whereby said two fluid valve is operable for normally permitting ingress and egress of gas through said gas port when the liquid level in the float chamber is insufficient to force said sealing member on said float into sealing contact with said shoulder on said gas port and for normally not permitting ingress and egress of fluid through said gas port when the liquid level in said float chamber is sufficient to force said sealing member on said float into sealing contact with said shoulder on said gas port;

said sealing region securing means between said first member and said second member forming a region of minimum strength so that when said sealing member on said float chamber is in sealing contact with said sealing shoulder on said gas port, said region of minimum strength is operable for rupture at a predetermined pressure level to thereby prevent damage to a system connected thereto should the pressure exceed said predetermined pressure level.

4,241,748

BUTTERFLY SMOKE/FIRE DAMPER

Francis J. McCabe, Doylestown, Pa., assignor to Prefco Products, Inc., Buckingham, Pa.

Continuation-in-part of Ser. No. 792,525, May 2, 1977, Pat. No. 4,146,048. This application Sep. 29, 1978, Ser. No. 947,104

Int. Cl.³ F16K *17/38, 31/04;* **E05F** *15/20*

U.S. Cl. 137—77 **19 Claims**

1. A smoke/fire control damper for use in a duct, said damper comprising:

a. a frame adapted for mating with an opening of said duct;

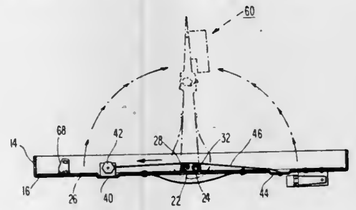
b. a cross bar extending across said frame;

c. at least two substantially planar damper blades which engage said cross bar for pivotal displacement about said cross bar between open and closed positions; and

d. operating means for pivoting said blades between the open and closed positions, said operating means comprising:

(i) a first operator cable guide means disposed in said frame;

(ii) a second operator cable guide means attached to a first one of said damper blades in a location which is offset from said first operator cable guide means;



(iii) an operator cable slidingly engaging said first and second operator cable guide means, one end of said operator cable being attached to an attachment point on a second one of said blades, said attachment point located substantially opposite said second operator cable guide means when said blades are in the open position; and

(iv) means for exerting tension on said operator cable.

4,241,749

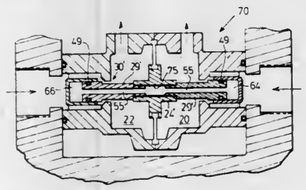
PRESSURE COMPENSATING VALVE

Sigurdur G. Petursson, 2169 Linby St., Mississauga, Canada

Filed Feb. 13, 1978, Ser. No. 877,012

Int. Cl.³ G05D *11/03*

U.S. Cl. 137—100 **2 Claims**



1. In a pressure compensating valve having a valve body, a pair of fluid inlets to receive first and second pressurized fluids therein, a pair of fluid outlets each connected in fluid receiving relation with a respective one of said inlets, to discharge said fluids, a spool member mounted in said body in axial sliding relation therein, diaphragm means connected to said spool member being positioned within said body adjacent said outlets to separate said first and second fluids and moveable thereby to regulate the passage of said fluids between said inlets and said outlets in pressure balanced relation, a pair of spaced apart chambers in said valve body receiving respective portions of said spool member in fluid sealing relation therein, the improvement comprising substantially unrestricted passage means extending through the spool and exclusively interconnecting said chambers to permit free transfer of fluid therebetween on axial displacement of the spool member responsive to movement of said diaphragm means in the valve body.

4,241,750

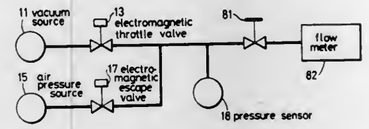
PRESSURE SETTING DEVICE

Akio Furuse, and Yoshihiro Honma, both of Hachioji, Japan, assignors to Kabushiki Kaisha Cosmo Keiki, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,876

Int. Cl.³ G05D *16/20*

U.S. Cl. 137—101.19 **9 Claims**



1. A pressure setting device comprising:

a pneumatic pressurizing source; a pneumatic depressurizing source; a controlled system; a first electromagnetic valve inserted in a pipe interconnecting the pneumatic pressurizing source and said controlled system for applying and cutting off air pressure from the pneumatic pressurizing source to said controlled system; a second electromagnetic valve inserted in a pipe interconnecting the pneumatic depressurizing source and said controlled system for reducing the pressure applied to said controlled system; a pressure sensor for detecting, as an electric signal, the pressure of the controlled system; a deviation detecting comparator for producing a deviation signal representative of a deviation between the output from said pressure sensor and a set value; a full-wave rectifier for converting the value of the deviation signal into an absolute value; a pulse converter for converting the absolute value of the deviation signal into a pulse signal having at least one of the parameters pulse width, pulse interval, and frequency corresponding to the magnitude of the absolute value; first and second drive circuits adapted to be controlled by an output pulse from the pulse converter to drive the first and second electromagnetic valves, respectively; a selecting comparator for detecting the polarity of the deviation signal to produce a selection signal; and a selection circuit responsive to said selection signal for determining which one of the first and second drive circuits is to be supplied with the output pulse from said pulse converter.

4,241,751

VACUUM TRANSMITTING VALVE

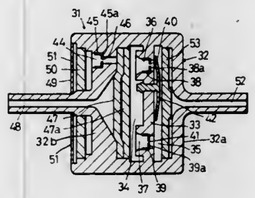
Takao Nonoyama, and Kunihiko Sato, both of Toyoda, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 740,042, Nov. 8, 1976, abandoned. This application Oct. 21, 1978, Ser. No. 953,209

Claims priority, application Japan, May 7, 1976, 51-58100

Int. Cl.³ F02P *5/06, 5/10;* **F16K** *45/00*

U.S. Cl. 137—103 **5 Claims**



1. In a vacuum transmitting valve of the type including:

a casing having a first end wall, a second end wall, and a cylindrical side wall;

a partition defining a first chamber and a second chamber in said casing, said partition having an orifice and an air vent;

an inlet port opening into said first chamber through said first end wall;

an outlet port opening into said second chamber through said second end wall; and

a closure member secured to said partition, said closure member being movable to close said air vent when the pressure of said first chamber is lower than that of said second chamber, and open said air vent when the pressure of said first chamber becomes higher than that of said second chamber;

the improvement which comprises:

an air bleed opening in fluid communication with said first chamber;

a filter member in said first chamber;

a cover plate in fluid communication with said air bleed opening, said cover plate being attached to an external wall of said casing; and

a filter member disposed between said wall of said casing and said cover plate.

4,241,752

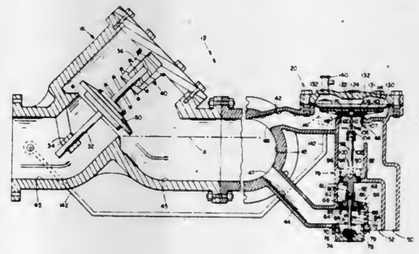
BACKFLOW PREVENTER

Rand H. Ackroyd, Methuen, Mass., assignor to Watts Regulator Company, Lawrence, Mass.

Filed May 30, 1978, Ser. No. 910,509

Int. Cl.³ F16K *24/00*

U.S. Cl. 137—107 **17 Claims**



1. A backflow preventer comprising

a body defining a passage for flow of liquid between a supply pipe and a service pipe,

a check valve in said body passage, and

a relief valve assembly connected to said body passage downstream of said check valve, said assembly comprising

a liquid drainage passage connected to a first port in said body passage downstream of said check valve,

a first valve in said drainage passage,

a gas intake passage connected to a second port above said first port in said body passage downstream of said check valve,

a second valve in said intake passage, and means for automatically opening said first and second valves in response to predetermined relative pressure conditions in said supply and service pipes.

4,241,753

CONTROL VALVE FOR USE WITH VARIABLE DISPLACEMENT PISTON PUMP

Louis R. Erwin, Livonia, Mich., and Frank Woodruff, New Hartford, N.Y., assignors to The Bendix Corporation, Utica, N.Y.

Continuation of Ser. No. 794,774, May 9, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,258

Int. Cl.³ G05D *11/00*

U.S. Cl. 137—116.3 **8 Claims**

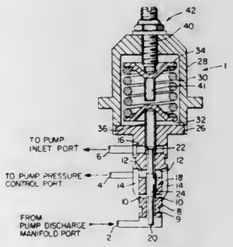
1. A pressure control valve for a pump having a relatively high discharge pressure, comprising:

a valve cylinder having a bore extending at least partially therethrough;

a pressure inlet port extending external to the valve and communicating with the valve cylinder bore and the pump whereby the relatively high pump discharge pressure is transmitted to the valve;

a spring loaded valve spool disposed within the valve cylinder bore and responsive to the relatively high pump discharge pressure transmitted to the valve for being displaced against the spring load;

first and second orifices disposed substantially apart from communicating with separate portions of the valve cylinder bore, the first orifice communicating with the portion of the valve cylinder bore communicating with the pressure inlet port and said first and second orifices disposed relative to the valve spool so that the displacement of the valve spool increases the area of one of the orifices and decreases the area of the other of the orifices;



a channel in communication with the first and second orifices, with a relatively intermediate control pressure being created in the channel and a relatively low pressure being created in the portion of the valve cylinder bore communicating with the other orifice upon the area of the one orifice increasing and the area of the other orifice decreasing;

a first pressure outlet port extending external to the valve and communicating with the channel and the pump whereby the relatively intermediate control pressure is transmitted to the pump; and

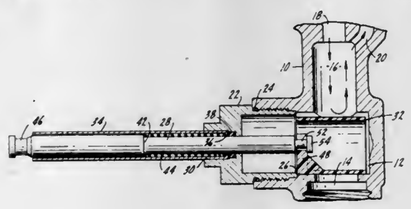
a second pressure outlet port extending external to the valve and communicating with the portion of the valve cylinder bore communicating with the other orifice and communicating with the pump, whereby the relatively low pressure is transmitted to the pump.

4,241,754

PUSHBUTTON DIVERTER

Alfred M. Moen, Grafton, Ohio, assignor to Stanadyne, Inc., Windsor, Conn.

Filed Sep. 28, 1978, Ser. No. 946,811
Int. Cl.³ F16K *31/44, 51/00*
U.S. Cl. 137—119 **7 Claims**



1. A shower-tub diverter valve including a housing having a diverter chamber, a water inlet and shower and tub outlets in communication with said chamber,

a diverter reciprocal in said chamber between a position providing communication between said inlet and tub outlet and a position in which said diverter blocks said communication,

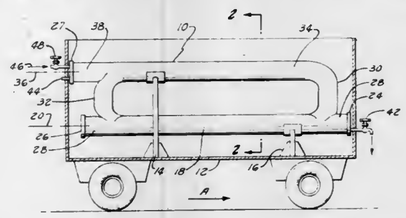
said diverter having a stem and a loosely attached cylindrical member formed of a somewhat distortable material, said cylindrical member being in substantial sealing relation with said tub outlet when in said blocking position, said cylindrical member being movable relative to said stem when moving between said positions, guide means in said chamber to assist said cylindrical member in moving between said positions, and to assist in holding said cylindrical member in said blocking position, said diverter chamber having a first portion in alignment with said inlet and tub outlet and being somewhat larger than said cylindrical member, and a second portion, smaller than said first portion and more closely sized relative to said cylindrical member, said guide means being between said first and second diverter chamber portions so that when said cylindrical member is in said position blocking said communication, said cylindrical member is moved relative to said stem by water pressure at said water inlet to thereby coact with said guide means to substantially prevent reciprocal movement of said cylindrical member.

4,241,755

ANTI-SURGE LIQUID TRANSPORTING APPARATUS

Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77094

Filed Nov. 21, 1977, Ser. No. 853,212
Int. Cl.³ B60P *3/24;* B61D *5/02;* B65D *7/00*
U.S. Cl. 137—899 **11 Claims**



6. A wheeled container for transporting fluid, comprising:

(a) a set of wheels;

(b) a support structure connected to said set of wheels and supported thereby in a given orientation during transporting; and

(c) liquid carrying structure supported by said support structure for providing a recirculating, closed passage for the liquid, said liquid carrying structure defining at least one closeable opening for introducing the liquid into the passage, said liquid carrying structure further defining said passage to be of a substantially uniform cross-sectional area, whereby surging effects of the liquid on the vehicle are minimized by the liquid circulating within said passage, wherein said liquid carrying structure defines first and second major portions of said passage to have axes substantially parallel to the direction of movement of the vehicle, and wherein said support structure supports said liquid carrying structure to maintain said axes in a non-horizontal plane when the support structure is in said given orientation during transporting.

4,241,756

EXHALATION VALVE ASSEMBLY

Clifford D. Bennett, Alta Loma, and Charles Odenthal, Upland, both of Calif., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Nov. 29, 1978, Ser. No. 964,682
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—496 **7 Claims**

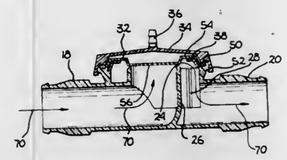
1. A valve assembly for use in a volume ventilator, comprising:

(a) a valve body in part defining a pressure chamber;

(b) a gas inlet conduit joined to and in flow communication with said pressure chamber for directing a gas into said pressure chamber, said gas inlet conduit forming a discharge port in said pressure chamber;

(c) a gas outlet conduit joined to and in flow communication with said pressure chamber for directing gas out of said pressure chamber;

(d) diaphragm means removably disposed in and extending across said valve body adjacent said discharge port for selectively closing off said discharge port, said diaphragm means defining the remainder of said pressure chamber;



(e) a removably disposed ring member extending into said pressure chamber from a position adjacent the periphery thereof;

(f) a plurality of positioning members disposed on said body for positioning said ring member in said pressure chamber such that said ring member supports a predetermined portion of said diaphragm means; and

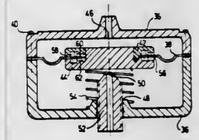
(g) a cover having a gas inlet joined to said valve body and extending across said diaphragm means on the opposite side thereof from said pressure chamber.

4,241,757

FLOW REGULATOR

Dan Bron, 36 Palmach St., Haifa, Israel

Continuation-in-part of Ser. No. 811,150, Jun. 28, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 24,173
Int. Cl.³ G05D *7/01*
U.S. Cl. 137—501 **5 Claims**



1. A fluid flow control unit adapted to be connected to a source of fluid under pressure, said unit comprising:

a housing having an input port and an output port:

a two-part body suspended in said housing by means of a diaphragm dividing said housing into an input chamber and an output chamber wherein said body is moveable in relation to said ports under the influence of the fluid pressure differential between said input chamber and said output chamber for variably restricting said output port under the displacement of said body toward said output port;

a tortuous passageway including a plurality of turns, a radially extending portion and flow restricting means formed in at least one part of said body, said passageway passing through said body between non-linearly aligned inlet and outlet openings for fluid communication between said input and output chambers via said body, the dimensions of which passageway remain unchanged during operation; and

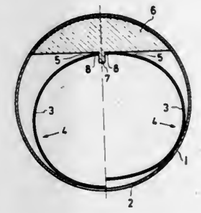
resilient means for biasing said body toward said input port; whereby the flow of fluid through said output port is controlled at a constant rate by said movable body and resilient means despite variations in the fluid pressure at, at least, one of the ports.

4,241,758

PRESSURE VALVE, ESPECIALLY FOR ROTARY PISTON COMPRESSORS

Dankwart Eiermann, Lindau, Fed. Rep. of Germany, assignor to Borsig GmbH and Wankel GmbH, both of Berlin, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,533
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757490
Int. Cl.³ F16K *15/14;* F04C *29/08*
U.S. Cl. 137—512.15 **5 Claims**



1. A pressure valve, especially for rotary piston compressors, which includes: a valve housing in the form of a cylindrical sleeve provided with through-flow opening means, closure means arranged in said sleeve opposite said opening means and comprising a pre-bent curved pre-loaded lattice-shaped metal sheet with parallel longitudinal strips forming resilient lamellae having its ends respectively interconnected by rim strips, said lamellae being operable selectively to be moved into a valve closing position in which said lamellae tightly close said throughflow opening means and also into a valve opening position in which said lamellae uncover said through-flow opening means, and vice versa, and abutment means arranged inwardly of said sleeve and located opposite said through-flow means in spaced relationship thereto, said rim strips having their ends resting against said abutment means, and said closure member in said opening position resting against two nearly diametrically oppositely located areas of the inner wall of said sleeve.

4,241,759

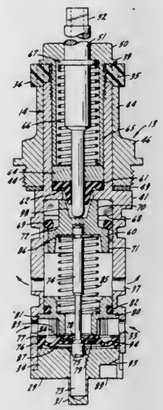
SLOW CLOSING FAUCET

Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Aug. 28, 1978, Ser. No. 937,045
Int. Cl.³ F16K *11/18, 31/12*
U.S. Cl. 137—636.4 **8 Claims**

1. In a slow closing faucet, a hollow casing with a pair of inlets and an outlet therein, a cartridge core having a plurality of inlets and outlets insertable and positioned in the casing, said casing inlets in communication with said core inlets and said core outlets in communication with said casing outlet, a bonnet on the top of the casing holding the core in position in the casing, an operating stem extending through the bonnet into the core and an operating knob attached to the top of the stem for manual manipulation, a cover on the top of the core having an opening through which the operating stem extends, means to hold the operating stem in the core, an inner ledge formed inside the core, a restoring spring positioned between the stem holding means and the inner ledge to normally bias the operating stem towards the cover, a sealing member around the operating stem and resting against the top of the inner ledge with the operating stem extending therethrough, a piston slidably mounted in the core below the inner ledge, a valve stem

in the core below the piston and having its upper end in engagement with the underside of the piston, a second spring in the core normally biasing the piston and valve stem upwardly so that the upper end of the piston will be against the bottom of the inner ledge and in engagement with the bottom end of the operating stem, a valve below the piston and operatively related to the lower end of the valve stem for controlling the flow of water between the core inlets and outlets, sealing means around the piston, and a restricted bypass between the



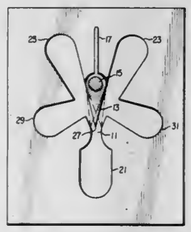
sealing means and the piston such that upon manual operation of the knob causing depression of the operating stem, the piston and the valve stem are moved downwardly thereby opening the valve, said sealing means being movable in a chamber formed between said core, said piston and said bottom of said inner ledge to allow unrestricted flow into said chamber, release of said knob allowing said piston to move upwardly, said seal means movable in said chamber to restrict flow out of said chamber only through said restricted bypass, to allow slow closing movement of said faucet.

4,241,760

FLUIDIC VALVE

George Mon, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 1, 1979, Ser. No. 8,627
Int. Cl.³ F15C *3/00*
U.S. Cl. 137—829 **6 Claims**



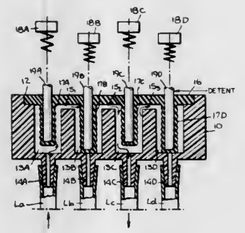
1. A fluidic flow diverter comprising:
a substantially rigid body;
a supply nozzle for discharging a fluid power stream formed in said body;
a pair of outlet channels formed in said body for receiving the power stream
a pinstably mounted tapered rigid control member disposed inside the power nozzle in a first position so that it splits the power stream evenly and fluid exists via the two outlet channels with equal pressures;
a plurality of vents for exhausting fluid overspill from the outlet channels disposed between the supply nozzle and the outlet channels, and
turning means responsive to an external input signal for causing the rigid control member to be displaced from said first position so that fluid exits via the two outlet channels with a pressure differential proportional to the displacement of said member being produced across the outlet channels.

4,241,761

MANIFOLD VALVE ASSEMBLY

William Miller, Westport, Conn., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest

Filed Jan. 9, 1979, Ser. No. 2,027
Int. Cl.³ F16K *11/20*
U.S. Cl. 137—883 **8 Claims**



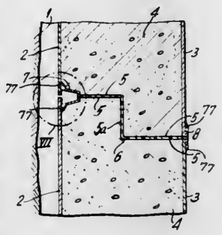
1. A manifold valve assembly for selectively interconnecting a group of lines to control the flow of fluid therethrough, said assembly comprising:
A a valve block having a row of cylinders formed therein which communicate at their lower ends with a row of ports projecting from the block and coupled to the respective lines in the group, the junction of said ports and cylinders defining valve seats, the upper ends of the cylinders being interconnected whereby fluid admitted into any cylinder in the row thereof flows into the other cylinders;
B a corresponding row of axially-expandable tubular nipples coaxially supported within the respective cylinders to define fluid chambers therein, said nipples having a normal length terminating at a first point that falls short of said valve seats, whereby each cylinder and nipple define a normally-open valve; and
C a row of push-button actuated push rods projecting into said nipples; the buttons in the row having normally raised positions; each rod, when pushed in by pressing its associated button, acting to axially expand the related nipple to a second point in sealing engagement with the valve seat of the cylinder to close the valve, the rod being detented at said second point to maintain the associated button at a depressed position whereby when the associated button is again pressed to release the detent, it returns to its raised position at which the valve is open, the buttons in the row therefore being indicative of the status of the valves.

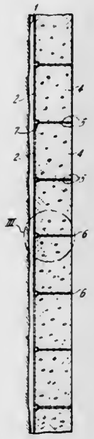
4,241,762

COMPOSITE UNDERGROUND FLUID CONDUIT OF CONCRETE AND STEEL SECTIONS

Heinz Link; Heribert Schupp, both of Oberhausen, and Heinz Lendla, Duisburg, all of Fed. Rep. of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,628
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808387
Int. Cl.³ F16L *1/00*
U.S. Cl. 138—105 **11 Claims**





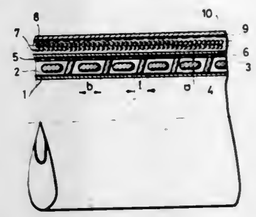
1. A composite underground shaft lining assembly particularly for use as a leakproof water conduit comprising: a plurality of individual annular concrete sections arranged in a generally aligned relationship to form a composite concrete cylinder, said composite concrete cylinder having an inner cylindrical surface and an outer cylindrical surface; joint means interposed between said annular sections joining said sections together, said joint means being composed of an intermediate layer of flexible material imparting a degree of flexibility between said individual concrete sections; a composite steel cylinder arranged about said outer cylindrical surface of said composite concrete cylinder; said composite steel cylinder comprising a plurality of individual annular steel sections and spring rings connected between adjacent steel sections in a water-tight manner joining said sections together to form said composite steel cylinder; said spring rings being located adjacent each of said joint means at said outer cylindrical surface of said composite concrete cylinder.

4,241,763

RUBBER HOSE WITH SPIRAL FIBER REINFORCING CORE

Sandor Antal; Zoltan Bartha; Peter Gorgenyi; Nandor Meitzen, and Mihaly Arvai, all of Budapest, Hungary, assignors to Taurus Gumiipari Vallalat, Budapest, Hungary

Continuation of Ser. No. 837,868, Sep. 29, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 3,769
Int. Cl.³ F16L *11/00, 9/00*
U.S. Cl. 138—127 **2 Claims**



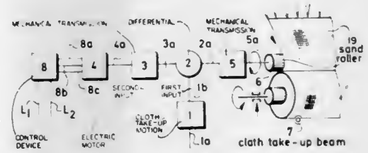
1. In a flexible rubber hose comprising an outer rubber cover, a reinforcing fabric beneath the cover, and a metal wire reinforcement beneath the fabric; the improvement comprising a cushion layer reinforced with fabric beneath the wire reinforcement, and, beneath the cushion layer, a layer of rubber having at least partly embedded therein a helical core whose turns are spaced apart in the direction of the length of the hose by portions of said layer of rubber, the helical core consisting of reinforcing fibers embedded in thermoset synthetic resin, the cross-section of material of the helical core being flattened, the cross-section of the helical core having a length in the direction of the length of the hose which is at least 1.4 times the thickness of the cross-section of the helical core in a direction radially of the hose.

4,241,764

SAND ROLLER CONTROL MECHANISM FOR LOOMS

Jan Foltyn; Jindrich Henzl; Otto Rotrekl, all of Brno, and Vladimir Kuda, Blazovice, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

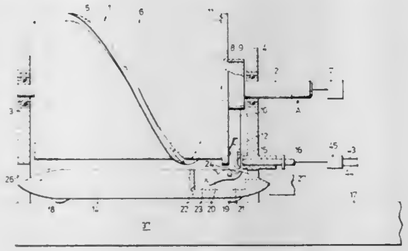
Continuation-in-part of Ser. No. 857,708, Dec. 5, 1977, abandoned. This application Sep. 19, 1978, Ser. No. 943,642
Claims priority, application Czechoslovakia, Dec. 3, 1976, 7871-76
Int. Cl.³ D03D *49/20*
U.S. Cl. 139—1 R **3 Claims**



1. In a loom provided with a drive shaft driven in synchronism therewith, the loom having a cloth take-up motion, a sand roller, and a cloth take-up beam, the improvement which comprises a control mechanism for the sand roller, said control mechanism comprising a differential gearing mechanism having first and second input shafts and an output shaft, the first input shaft of the differential gearing mechanism is drivingly connected to the cloth take-up motion, an electric motor having an output shaft, means drivingly connecting the output shaft of the motor to the second input shaft of the differential gearing mechanism, means drivingly connecting the output shaft of the differential gearing mechanism to the sand roller, a source of electric power, and a mechanism for controlling the electric motor comprising circuit means for connecting the

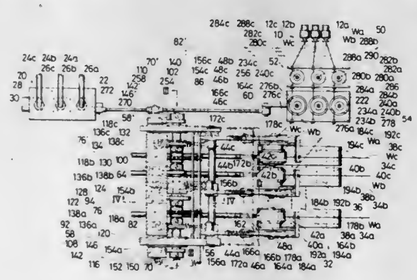
electric motor comprising circuit means for connecting the electric motor to the source of electric power when the loom is stopped, so that the sand roller is then driven only by the electric motor, and means for disconnecting the electric motor from the source of electric power during normal operation of the loom, so that the electric motor is then at rest and the sand roller is driven only by the said drive shaft of the loom.

4,241,765
SHUTTLE DRIVE ARRANGEMENT
Gert E. A. Franzen, Pionvägen 3, S-610 40 Gusum, Sweden
Filed Feb. 1, 1979, Ser. No. 8,418
Claims priority, application Sweden, Feb. 8, 1978, 7801457
Int. Cl.[2] D03D *49/28*
U.S. Cl. 139—142 **7 Claims**



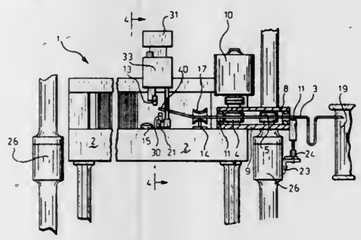
1. A shuttle-drive arrangement for a weaving loom, comprising at least one drive rotor (1) having a helical driving means (5) arranged to co-act with a shuttle-dogging device (23) for driving a shuttle (14) across the loom, characterized in that the rotor (1) is arranged to be continuously rotated by a drive source (7); that means (8,9,10; 51,52) are arranged to indicate the rotary position of the rotor and the driving means; and that when the driving means is located in a given position for driving the shuttle, a coupling mechanism (20,24; 23,53) is arranged to be activated to an operative state for coupling the dogging device (23) to the driving means (5).

4,241,766
SELECTIVE WEFT INSERTING APPARATUS IN SHUTTLELESS WEAVING LOOM
Masayuki Ushiro, and Haruo Shimazaki, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Japan
Filed Jan. 16, 1979, Ser. No. 4,058
Claims priority, application Japan, Jan. 17, 1978, 53-2649
Int. Cl.[3] D03D *47/38*
U.S. Cl. 139—435 **6 Claims**



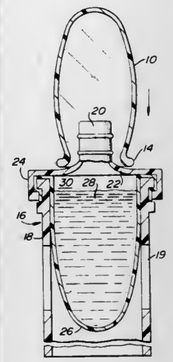
1. An apparatus for selectively inserting weft yarns each into a shed of warp yarns in accordance with a predetermined weaving schedule in a shuttleless loom, comprising weft inserting means operative to insert a selected one of the weft yarns into the shed of warp yarns when actuated, conditioning means for producing conditions in which a selected weft yarn is to be inserted into the shed, at least two cam shafts axially aligned with each other and rotatable independently of each other in both directions about the respective center axes of the shafts in accordance with said weaving schedule, cams rotatable with and arranged axially of each of said cam shafts, levers rockable about an axis of rotation substantially parallel with the center axes of said cam shafts and each engageable with at least one of the cams on said cam shafts, the levers being driven to rock about said axis of rotation selectively depending upon the respective rotational positions of the cam shafts about said center axes, and mechanical linkage means operatively intervening between said levers and said conditioning means for enabling the conditioning means to produce said conditions depending upon the angular position of at least one of said levers about said axis of rotation.

4,241,767
METHOD AND DEVICE FOR FEEDING WEFT WIRES
Hans Laddach, and Werner Oertel, both of Dusseldorf, Fed. Rep. of Germany, assignors to Hein, Lehmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 859,430, Dec. 12, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 23,579
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656188
Int. Cl.[3] D03D *47/12*
U.S. Cl. 139—443 **5 Claims**



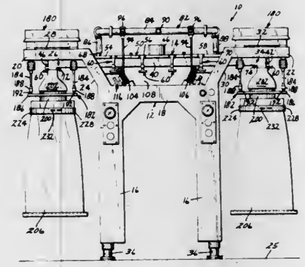
1. A fill wire feeder mountable on one end of a movable lay beam, comprising:
a weft wire feeding mechanism including at least one pair of cooperating, force-adjustable generally cylindrical rollers, the axes of which lie in one plane, said rollers being mounted so as to be in constant communication with weft wire fed therebetween and at least one of said rollers being mounted in a fixed position, said feeding mechanism also including drive means including an electric motor coupled to said at least one roller for intermittently driving the same; and
a cutting device including a weft wire tubular guiding piece for receiving weft wire from said feeding mechanism and two counter-moving and coacting knives, said knives being mounted for movement on said lay beam in a direction parallel to each other and perpendicular to said lay beam and drive means for moving said knives during the engagement of the lay beam so as to cut weft wire moved therebetween by said feeding mechanism, said counter-moving knives of said cutting device have a point of intersection which is located above the opening cross-section of said guiding piece so that simultaneously with the cutting operation one end of the weft wire is bent.

4,241,768
INFANT BOTTLE AIR REMOVAL MEANS
Charles Keller, 4625 Ella St., Philadelphia, Pa. 19120, and Paul Maria, 1402 Schwenkmill Rd., Perkasie, Pa. 18944
Filed Jul. 18, 1979, Ser. No. 58,576
Int. Cl.[3] B67C *9/00*
U.S. Cl. 141—8 **5 Claims**



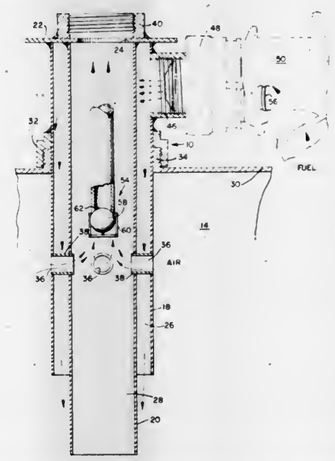
5. A method of removing air from an air pocket above a liquid in a collapsible liner in an infant bottle comprising the steps of collapsing a hollow vessel of resilient material, inserting the nipple into a hole in said vessel, holding the periphery of the hole in sealing contact with a nipple support portion, then allowing the vessel to expand, using the expansion of said vessel to suck air out of said pocket by way of a slit in the nipple, whereby air from said pocket is removed without contacting the liner, then removing said nipple from said vessel.

4,241,769
VIBRATING CONVEYOR FOR USE WITH PACKAGING APPARATUS
Dale E. Wiesner, Box 36A, Bancroft, Wis. 54921
Filed Feb. 8, 1979, Ser. No. 10,482
Int. Cl.[3] B65B *1/28, 1/32*
U.S. Cl. 141—83 **23 Claims**



1. A vibrating conveyor for conveying material comprising:
a conveying table, said table having an inlet area disposed generally in the middle of said table for receiving particulate material to be conveyed, a first outlet disposed on a first side of said table and a second outlet disposed on a second opposed side of said table;
means for supporting said table for vibratory motion;
a first pneumatic linear vibrator coupled to said table on said first side for vibrating said table and for conveying particulate material from said inlet area to said second outlet;
a second pneumatic linear vibrator coupled to said table on said second side for vibrating said table and for conveying particulate material from said inlet area to said first outlet;
each linear vibrator including a housing and a piston movably carried therein for motion in a linear direction forming the line of impact of a respective piston;
means for mounting said first linear vibrator to said table in a disposition such that the line of impact of the first vibrator's piston slants generally upward from said first side of conveying table toward said second side thereof;
means for mounting said second linear vibrator to said table in a disposition such that the line of impact of the second vibrator's piston slants generally upward from said second side of said conveying table toward said first side thereof; wherein in each vibrator the piston has a mass at least as large as the mass of the housing; and
means for controlling the application of fluid pressure to said first and second linear vibrators whereby the application of fluid pressure to one of said vibrators can be stopped and the application of fluid pressure to the other of said vibrators immediately initiated to quickly reverse the direction of conveying.

4,241,770
FUELING UNIT APPARATUS
Joseph D. Robertson, Butte, Mont., assignor to The Anaconda Company, New York, N.Y.
Filed Oct. 24, 1978, Ser. No. 954,292
Int. Cl.[3] B65B *3/18, 3/26*
U.S. Cl. 141—198 **9 Claims**



1. A fueling unit for use between a receiver, an inlet line, and a vent assembly comprising:
(a) a double-walled member formed by an inner wall member and an outer wall member insertable into an opening in the top of a receiver;
(b) means for sealingly mounting the outer wall member in said opening so that the member extends externally as to the receiver;
(c) means for connecting an inlet line to that portion of the outer wall member which is external to the receiver;
(d) a first passage within the inner wall member adapted to communicate the vent assembly and receiver;
(e) a second passage between the inner and outer wall members;
(f) means for supporting said inner and outer wall members so that said inner wall member extends externally as to the receiver and closing one end of said second passage, said second passage then communicating said inlet line and receiver;
(g) means for connecting a vent assembly to that portion of the inner wall member which is external to the receiver;
(h) at least one port which communicates the interior of the

receiver with the first passage through bores in both the inner and outer wall members;

(i) sensor means in the inlet line responsive to a level of vapor pressure for interrupting fuel flow to the receiver; and,

(j) valve means in the vent assembly which is adapted to close when the receiver is filled with fuel to a desired level to activate the sensor means to increase in vapor pressure within the receiver at a value commensurate with the level of fill which shall at least equal a value of vapor pressure to which the sensor means responds.

4,241,771

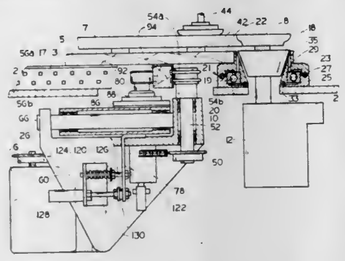
BEARING ASSEMBLY FOR AN AUTOMATIC SHAPING DEVICE

Arthur J. Rhodes, 2606 Benoch, and William J. Rhodes, 3343 Camp Ground Rd., both of, Louisville, Ky. 40216

Filed Jan. 8, 1979, Ser. No. 1,522

Int. Cl.³ B23C *1/18*; B27C *5/02*

U.S. Cl. 144—145 A **5 Claims**



1. In an automatic shaping device that includes a frame, a table mounted onto said frame, a movable template mounted onto said table, means to move said template in driving relation with said template, shaping means mounted above said table, a power-driven workpiece carrying member mounted to said table, and means to feed a workpiece to said shaping means, the improvement comprising:

bearing means coaxial with said shaping tool and supporting said template adjacent to said shaping tool, said bearing means including means to limit advance of said workpiece toward said shaping tool, said bearing means being movable in response to movement of said template.

4,241,772

SAWBUCK

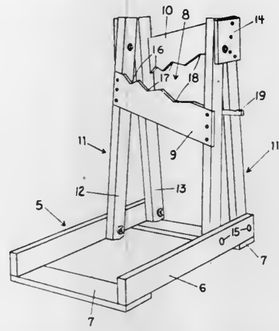
Fred F. Scherer, Frendship, Me. 04547

Filed Aug. 23, 1978, Ser. No. 936,014

Int. Cl.³ B25H *1/06*

U.S. Cl. 269—289 R **9 Claims**

1. A sawbuck including an elongated base, upper and lower jaws, means connecting said jaws to one end of said base transversely thereof with said jaws spaced a substantial distance above said base and with the vertical distance between the jaws increasing from a minimum adjacent one side of the base to a maximum adjacent the other side thereof thereby to accommodate ends of logs or split sections thereof within a substantial range of cross sectional sizes and shapes, the upper jaw spaced closer to said one end of the base than the lower jaw whereby when the end of a log or a section thereof that is to extend over the base towards the other end thereof is inserted between the jaws where the vertical dimensions of said end are approximately equal to the vertical spacing of the jaws and then released, said log or sections thereof is held as a cantilever with a substantial unobstructed space between it and said base, and at least one of said jaws including fixed means to



hold the thus entered end from moving towards said other side of the base.

4,241,773

COMBINATION HAND-TOOL

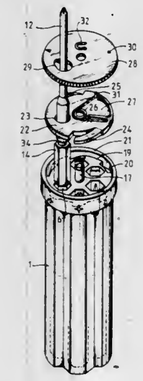
Patrice Personnat, Chateau Perigord, Monte-Carlo, Monaco

Filed Feb. 16, 1979, Ser. No. 12,768

Claims priority, application France, Feb. 21, 1978, 78 05148

Int. Cl.³ B25G *1/08*

U.S. Cl. 145—63 **4 Claims**



1. A combination hand-tool comprising

a handle forming a magazine,

tool elements contained in said handle,

said handle being of generally cylindrical shape having lower and upper ends and including

longitudinal compartments of non-circular cross-section formed around the axis of said handle and opening toward said upper end,

first and second cover-forming plates forming an upper plate and an intermediate plate respectively and mounted for rotation about the axis of said handle at said upper end of said handle,

each of said plates having an aperture therein,

said aperture of said intermediate plate located to register with any one of said compartments,

said aperture of said upper plate having a portion capable of moving into a position coaxial with any one of said compartments and an adjoining portion of smaller diameter,

means to step the rotation of said cover-forming plates to permit said aperture of said intermediate plate to register with each of said compartments,

each of said tool elements including

a shank of substantially the same shape as each of said compartments and of greater cross-section in at least some part than said aperture of said upper plate,

a groove in each of said tool elements located to receive said adjoining portion of smaller diameter of said aperture of said upper plate,

means to hold each of said tool elements extracted from its compartment in the extracted position by holding said adjoining portion of smaller diameter in said groove of said tool element,

whereby said upper plate is held relative to said intermediate plate by said means to hold said extracted tool elements.

4,241,774

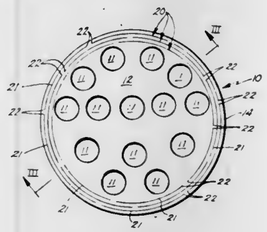
GOLF TUBE SEPARATOR INSERT

Terrell G. Pell, 2701 McIntosh, NE., Grand Rapids, Mich. 49505

Filed Aug. 16, 1979, Ser. No. 67,054

Int. Cl.³ A63B *55/00*

U.S. Cl. 150—1.5 R **19 Claims**



1. A golf tube separator insert for golf bags comprising:

a disc having top and bottom surfaces and a peripheral edge joining same, said disc being made of a material which is semi-rigid such that it will hold a disc-shape configuration and won't distort under normal use, but which is compressible such that said disc can be compressed at least somewhat to accommodate different sized and shaped openings in the top of different golf bags; a plurality of holes in said disc adapted to receive golf club separator tubes; at least one perforation line defined by a series of cuts serially spaced by small bridges of disc material between successive cuts, said cuts extending from said top to said bottom of said disc, said perforation line defining a closed loop and being spaced inwardly from said peripheral edge of said disc whereby a portion of said disc can be broken away at said perforation line and the range of sizes of golf bags into which said disc can be fitted is increased.

4,241,775

TIRES

William L. Jackson, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

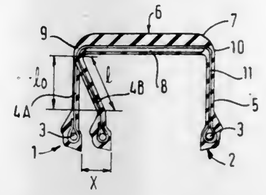
Filed Aug. 16, 1978, Ser. No. 934,277

Claims priority, application United Kingdom, Aug. 25, 1977, 35662/77

Int. Cl.³ B60C *5/02, 13/00, 17/04*

U.S. Cl. 152—330 RF **52 Claims**

1. A tire and wheel assembly comprising a wheel rim including two circumferentially-extending bead seats and a tire comprising two circumferentially-extending bead regions each retained upon a respective bead seat by a continuous bead ring which is substantially incapable of circumferential expansion or compression, a circumferentially-extending tread which is capable of resisting circumferential expansion but capable of local radial deflection, and two load-carrying sidewalls each having a radially-innermost edge and a radially-outermost edge, the radially-outermost edge being attached to a respective edge of the tread and the radially-innermost edge being attached to a respective bead region, each sidewall including tension-resisting reinforcements extending between said edges and being capable of being placed in tension, and pretensioning



means, including means to relatively move the rim bead seats and therefore the tire bead regions for placing said tension-resisting reinforcements in tension after the tire has been built and before the tire is loaded.

4,241,776

TIRE AND WHEEL ASSEMBLIES

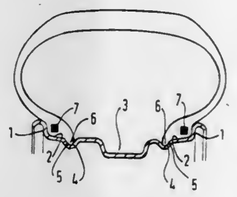
Charles G. Stewart, Warwickshire, England, assignor to Dunlop Limited, London, England

Filed Jan. 17, 1979, Ser. No. 4,261

Claims priority, application United Kingdom, Jan. 21, 1978, 2512/78; Feb. 14, 1978, 5786/78

Int. Cl.³ B60B *21/10*

U.S. Cl. 152—381.4 **14 Claims**



1. A one piece wheel rim comprising a pair of spaced-apart flanges, a tire bead seat adjacent each flange, a tire fitting well, and immediately adjacent at least one of the bead seats between the bead seat and the fitting well a circumferentially extending groove formed so as to be able to accommodate an extended bead retaining toe of a tire and means to prevent inflation of a tire which is incorrectly fitted or is not configured for said rim, said means comprising at least one discreet air pressure release passage extending from a point within the groove and positioned such that the point is covered by a correctly fitted extended bead retaining toe.

4,241,777

PORTABLE SHELL

Jerry A. Wenger, Owatonna; Herman A. Clausen, West Concord; David R. Boeddeker, Owatonna, and Harvey M. Urch, West Concord, all of Minn., assignors to Wenger Corporation, Owatonna, Minn.

Continuation of Ser. No. 825,065, Aug. 16, 1977, abandoned. This application Apr. 27, 1979, Ser. No. 34,002

Int. Cl.³ A47G *5/00*

U.S. Cl. 160—135 **16 Claims**

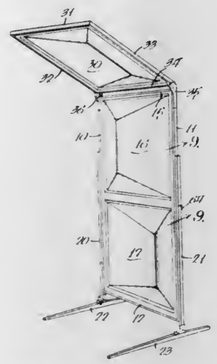
1. A lightweight portable shell comprising:

a framework with panel means supported by frame members including a pair of spaced-apart side frame members;

a supporting leg structure including a pair of legs and each having a foot at an end thereof; and

means for detachably locking said legs (a) one to each side

frame member at any one of several different operative positions along the length of the side frame member to extend from the side frame member selectively different amounts dependent on the desired height of the shell, and (b) one to each side frame member opposite the one to



which the leg is secured in the operative position to be in side-by-side substantially coextensive storage positions therewith, said locking means comprising means for preventing separation of the framework from the legs notwithstanding lifting of the assembled shell structure in any direction.

4,241,778

METHOD AND APPARATUS FOR THE REMOVAL OF SAND BALES CONTAINING CASTINGS FROM MOLDING BOXES OF POURED FOUNDRY MOLDS

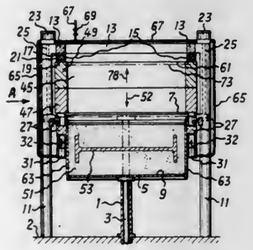
Erwin Bührer, Vögelingässchen 40, 8200 Schaffhausen, Switzerland

Filed Dec. 26, 1978, Ser. No. 973,027

Claims priority, application Switzerland, Dec. 27, 1977, 16036/77

Int. Cl.³ B22D *29/02*

U.S. Cl. 164—131 **10 Claims**



1. A method for removing sand bales containing castings from molding boxes of poured foundry molds comprising the steps of: clamping said molding boxes together in a horizontal position; supporting said sand bales from below with a predetermined supporting force independently of said molding boxes, said predetermined supporting force being provided for at least a portion of the weight of said sand bales; applying to said molding boxes in a direction generally aligned with the walls thereof accelerative forces acting in a vertical direction while maintaining said supporting force for said sand bales, said accelerative forces being applied temporarily in a direction only which is opposite to a force resulting from the weight of said sand bales and said predetermined supporting force and being of a magnitude exceeding the magnitude of static frictional forces between said sand bales and said molding boxes in order to cause said sand bales to move out of said molding boxes; and removing said sand bales from said molding boxes.

4. Apparatus for removing sand bales containing castings from molding boxes of poured foundry molds comprising: means for clamping said molding boxes together in a horizontal position so that the walls thereof are situated in generally vertical planes; means for supporting said sand bales from below independently of said molding boxes, said support means being vertically movable in a predetermined direction and operating to provide support for at least a portion of the weight of said sand bales; and means vertically aligned with the walls of said mold boxes for applying to said molding boxes in a vertical direction temporarily acting accelerative forces of a magnitude exceeding static frictional forces between said sand bales and said molding boxes while said sand bales are being supported by said supporting means to cause said sand bales to move out of said molding boxes, said means for applying said accelerative forces being operable in one direction only which is opposite to said predetermined direction of said support means.

4,241,779

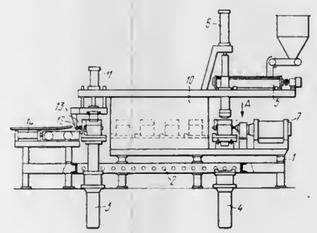
APPARATUS FOR MANUFACTURING FOUNDRY CORES

Vitaly A. Zitser, ulitsa Pervomaiskaya, 9/4, kv. 17, Dolgoprudny Moskovskoi oblasti; Alexandr V. Melnikov, ulitsa Dorozhnaya, 7, korpus 1, kv. 138, Moscow; Leonid V. Bachelis, Schelkovskoe shosse, 91, korpus 2, kv. 221, Moscow; Jury E. Morozov, Leninsky prospekt, 39/1, kv. 264, Moscow; Vladimir A. Ivanov, ulitsa Rustaveli, 3, korpus 6, kv. 34, Moscow, and Zinaida A. Abramova, Kronshtadtsky bulvar, 57, kv. 110, Moscow, all of U.S.S.R.

Filed Aug. 7, 1979, Ser. No. 64,508

Int. Cl.³ B22C *13/12*

U.S. Cl. 164—207 **2 Claims**



1. An apparatus for manufacturing foundry cores by pressing a fluid sand into heated core boxes, comprising:

a tiered supporting frame; a transportation means and transfer tables mounted on a bottom tier of said supporting frame; a sand preparation and a pressing mechanism and a pusher with a crosspiece, mounted on an upper tier of said supporting frame; a heating chamber for receiving core boxes pushed by said pusher; a set of core boxes; a device for fastening halves of the core boxes, located before said heating chamber; a device for unfastening the halves of the core boxes, mounted after said heating chamber; each of said core boxes having two horizontal rods with conical elements, located in the bottom half of the core boxes and cooperating with said devices for fastening and unfastening the halves of the said core boxes, and two vertical rods mounted on the top half of said core boxes, having at the bottom ends thereof slots and conical orifices for cooperating with the conical elements of the horizontal rods; a mechanism for disassembling core boxes mounted after said heating chamber; and a mechanism for delivering finished cores, placed on an upper tier of said supporting frame.

4,241,780

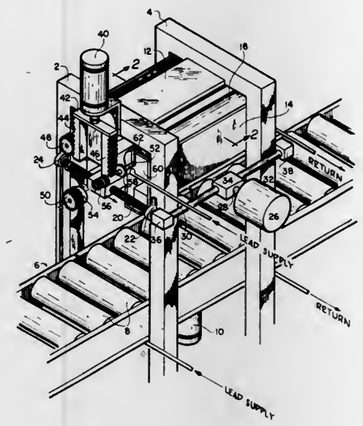
APPARATUS FOR FORMING BATTERY STRAPS AND INTERCELL CONNECTIONS

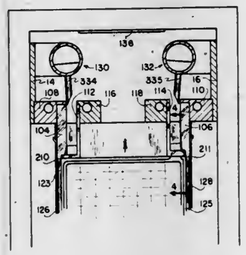
William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Dec. 20, 1976, Ser. No. 752,644

Int. Cl.³ B22D *19/04, 39/02*

U.S. Cl. 164—333 **2 Claims**





1. An apparatus for automatically casting the straps and intercell connections of a lead-acid storage battery containing a battery case and a plurality of cellular partitions, comprising:

(a) work surface having a processing position thereon for receiving open top battery cases having a plurality of stacks of positive and negative plates in the cells thereof, said plates each having protruding lugs formed thereon;

(b) mold means located at said processing position for selectively defining molding channels around rows of positive and negative lugs of said stacks within said case, said mold means comprising a plurality of dams for forming the surfaces of a mold with at lest one dam movable in relation to the remaining dams;

(c) translating means connected to said mold means for moving the movable dam portion of the mold;

(d) casting means associated with said mold means at said processing position movable between a standby position for allowing molten lead to circulate therethrough and a pouring position for simultaneously introducing molten lead into said molding channel to cast the straps and intercell connections of said battery;

(e) rotating means connected to said casting means for selectively moving said casting means between said standby position and said pouring position;

(f) at least one molten lead supply means connected to said casting means for supplying molten lead to said casting means; and

(g) at least one molten lead return means connected to said casting means for receiving and returning uncast molten lead from said casting means to at least a portion of said supply means.

4,241,781

REGENERATIVE HEATER AND PROCESS FOR THE OPERATION THEREOF

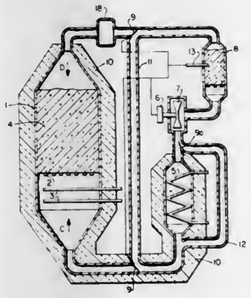
Axel Eschner, Wiesbaden, and Erich Pöhlmann, Kulmbach, both of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden and Kulmbacher Klimageräte-Werk GmbH & Co. KG, Kulmbach, both of, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,431

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731115

Int. Cl.³ F28D *17/00*

U.S. Cl. 165—1 **31 Claims**



24. A process for regeneratively heating gas, said process comprising:

providing a regenerator container having opposite ends and air-impermeable walls;

positioning within said regenerator container a fill of heat retaining material comprising solid fine granular particles having a low thermal conductivity, such that said fill of heat retaining material is permeable to the passage therethrough of air, throughout the entire length thereof taken in opposite directions between said open opposite ends of said regenerator container;

positioning a heat source adjacent a first end of said fill of heat retaining material;

circulating a charging first flow of gas in a first direction through said fill of heat retaining material, such that said charging flow of gas is heated by said heat source and then passes through the entire length of said fill of heat retaining material, from said first end thereof to a second opposite end thereof, and across substantially the entire cross-section thereof, while transferring heat to said fill of heat retaining material;

circulating a discharging second flow of gas in a second direction opposite to said first direction through said fill of heat retaining material, such that said discharging flow of gas passes through the entire length of said fill of heat retaining material, from said second end thereof to said first end thereof, and across substantially the entire cross-section thereof, while receiving heat from said fill of heat retaining material;

entirely enclosing said charging and discharging flows of gas to flow in a completely closed circulation path including the interior of said regenerator container; and

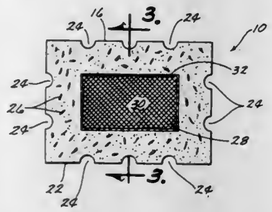
said steps of circulating said charging and discharging flows of gas comprising passing said charging and discharging flows of gas in opposite directions in said completely closed circulation path by reversibly operating a single blower positioned within said completely closed circulation path.

4,241,782

HEAT STORAGE SYSTEM ADAPTED FOR INCONGRUENTLY MELTING HEAT STORAGE MATERIALS AND CONGRUENTLY MELTING HEAT STORAGE MATERIALS

James L. Schoenfelder, 415 - 5th St., Coralville, Iowa 52241

Filed Nov. 30, 1978, Ser. No. 965,028
Int. Cl.³ F28D *17/00*
U.S. Cl. 165—10 **8 Claims**



1. A heat storage article comprised of a concrete block, the composition of which comprises conventional masonry concrete and from about 5% to about 20% by weight of the fine aggregate portion of said block of a heat transfer augmenting material mixed with said concrete,

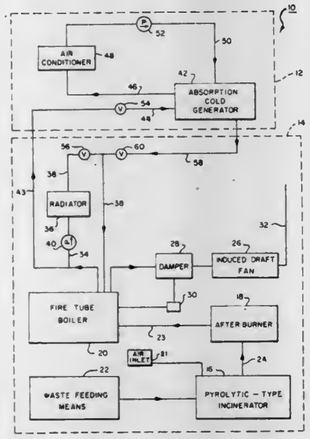
said block having an internal cavity which is substantially completely filled with a eutectic salt heat storage material, mixed with a non-biodegradable bulky material and the mixture being surrounded by a liner material.

4,241,783

HEATING AND COOLING SYSTEM

William A. Smith, Marysville, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 26, 1978, Ser. No. 919,030
Int. Cl.³ F25B *29/00*; F23B *7/00*
U.S. Cl. 165—48 R **2 Claims**



1. A heating and cooling system utilizing solid waste for selectively heating and cooling a confined area, said heating and cooling system comprising:

a pyrolytic incinerator capable of combusting said solid waste, means for supplying outside air to said pyrolytic incinerator to support combustion of said solid waste in a low oxygen atmosphere and for exhausting through an exhaust duct of said pyrolytic incinerator after said combustion of said solid waste;

an afterburner in said exhaust duct of said pyrolytic incinerator capable of combusting waste gases which have become mixed with said outside air during combustion of said solid waste to further heat said outside air and waste gas combustion products;

a heat exchanger in said exhaust duct downstream of said afterburner capable of transferring heat of said outside air and said waste gas combustion products to heating water passing through said heat exchanger;

a heating system portion including a first closed loop piping system selectively connected to said heat exchanger and capable of circulating said heated water of said heat exchanger through a radiator in said confined area to transfer the heat contained in said heated water to air passing through said radiator;

means for feeding said solid waste into said pyrolytic incinerator;

a cooling system portion including a second closed loop piping system selectively connected to said heat exchanger and capable of circulating said heated water of said heat exchanger through an absorption cold generator;

a third closed loop piping system connected to said absorption cold generator including means for circulating cooling water therethrough to supply an air conditioner in said confined area to cool air passing through said air conditioner; and

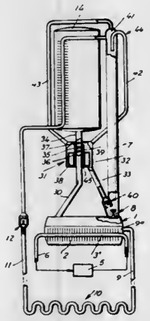
said absorption cold generator capable of employing heat from said heated water of said second closed loop piping system to cool said cooling water of said third closed loop piping system; whereby said confined area is heated when said second closed loop piping system is isolated from said heat exchanger and is cooled when said first closed loop piping system is isolated from said heat exchanger.

4,241,784

ARRANGEMENTS FOR THE TRANSFER OF HEAT FROM AN UPPER LEVEL TO A LOWER LEVEL

Victorio Tacchi, 50 Rioja St., Cordoba, Argentina

Filed Aug. 22, 1978, Ser. No. 935,848
Claims priority, application Argentina, Aug. 23, 1977, 268907; Jul. 18, 1978, 272998
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—105 **5 Claims**



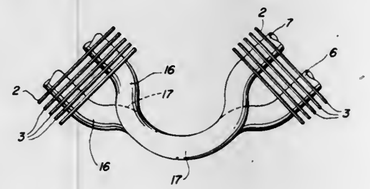
1. A closed circuit arrangement for transferring heat from a first upper level to a second lower level by heating a liquid at the first level and causing it to flow through the second level, whereat the heat is extracted therefrom, back to the first level, the arrangement comprising a first chamber for housing an easily vaporizable liquid and defining said first upper level; a second chamber above said first chamber; means defining a communication for fluid flow from said first chamber to said second chamber and having a part thereof extending through said second lower level; means for heating and vaporizing the liquid when in said first chamber to cause the liquid or its vapor to flow through said lower level into said second chamber by effect of an increase in pressure in said first chamber; means enabling said liquid to liberate heat at said second lower level; means defining a return path for liquid from said second chamber to said first chamber; and valve means interposed in said means defining the return path and adapted to intermittently permit the return of liquid from said second chamber to said first chamber wherein said valve means are first valve means adapted to intermittently permit the return of liquid from said second chamber to said first chamber each time the vapor pressure in the first chamber and which acts on said valve means is lower than the vapor and liquid pressures acting on said valve means from the second chamber, the arrangement further comprising means defining a communication for vapor flow from said first chamber to said second chamber; and a float valve in said communication for vapor adapted to open and permit flow of vapor from said first chamber to said second chamber only after accumulation of liquid in said second chamber, whereby upon opening of said float valve vapor pressure in said first chamber and said first valve means is opened by the pressure exerted thereon by the liquid accumulated in said second chamber.

4,241,785

HEAT EXCHANGERS AND METHOD OF MAKING SAME

Joseph M. O'Connor, Chicago, and Stephen F. Pasternak, Park Ridge, both of Ill., assignors to Peerless of America, Inc., Chicago, Ill.

Filed Jul. 24, 1978, Ser. No. 927,482
Int. Cl.³ F28F *1/30*
U.S. Cl. 165—172 **10 Claims**



1. A heat exchanger comprising

a. a plurality of sets of one-piece fins,

b. tubes

(1) mounted in oppositely disposed marginal edge portions of each of said sets of fins and

(2) having portions extending between adjacent pairs of said sets of fins,

c. part of said portions of said tubes being disposed in substantially uniplanar relation to each other, and

d. said tubes being bent at said part of said portions in a direction transverse to the plane defining said uniplanar relationship to thereby dispose said adjacent pairs of sets of fins at an angle relative to each other which is less than 180 degrees.

6. The method of making a heat exchanger comprising

a. forming two spaced fin assemblies, each having

(1) an opening formed in each of two oppositely disposed marginal edge portions thereof

b. forming two elongated, substantially straight tubes,

c. mounting said tubes in said fin assemblies, with

(1) one portion of each of said tubes mounted in a respective one of said openings in a respective one of said marginal edge portions of each of said fin assemblies, and

(2) another portion of each of said tubes extending between adjacent ones of said fin assemblies,

d. bending an intermediate portion of said other portion of each of said tubes inwardly toward the side of the space between said adjacent fin assemblies remote therefrom into position to dispose said intermediate portions, between said adjacent fin assemblies between which they extend, in uniplanar relation to each other in a direction transverse to the spacing between said one portions of said tubes disposed in opposite ones of said marginal edge portions, and

e. bending said tubes around said intermediate portions in a direction transverse to the plane defining said uniplanar relationship to thereby dispose said adjacent fin assemblies at an angle relative to each other which is less than 180 degrees, and

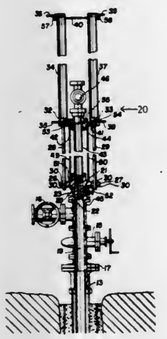
f. securing said tubes to said assemblies.

4,241,786

WELL TREE SAVER

Ronald S. Bullen, 98 Willow Park Green, SE., Calgary, Alberta, Canada

Filed May 2, 1979, Ser. No. 35,195
Claims priority, application Canada, May 2, 1978, 302475
Int. Cl.² E21B *19/00, 33/03, 43/26*
U.S. Cl. 166—77 **11 Claims**



11. Apparatus for inserting high-pressure fluid through a well tree having a vertical passage therethrough including at least one valve and into a well having well tubing aligned with said vertical passage, which apparatus comprises:

a piston rod removably mountable in a position offset from the vertical passage,

a piston fixed to the piston rod,

a cylinder movable on the piston,

a piece of high-pressure tubing mounted for movement with one of the cylinder and the piston rod and said high-pressure tubing being positioned for axial alignment with said vertical passage when said piston rod is mounted in said position,

the other of said cylinder and said piston rod being fixed relative to the well tree,

a high-pressure valve to selectively stop fluid flow through said high-pressure tubing, and,

sealing means adapted to prevent passage of fluid between the exterior of the high-pressure tubing and the interior of the vertical passage when said high-pressure tubing is inserted in said vertical passage.

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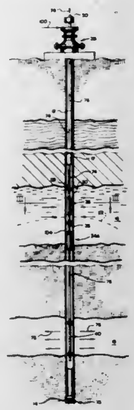
DOWNHOLE SEPARATOR FOR WELLS

Ernest H. Price, 1266 Pepper Dr., El Centro, Calif. 92243

Filed Jul. 6, 1979, Ser. No. 55,158
Int. Cl.³ E21B *43/02, 43/38*
U.S. Cl. 166—105 **7 Claims**

3. Apparatus for producing oil and water separately from production fluid containing both oil and water in a well comprising a casing in the well, production tubing arranged in the casing and extending to the surface for conducting one of the fluids from the well to the surface, a packer between the tubing and the casing above the level of production of the fluids, conducting means for conveying fluid from the well below the

packer into the casing above the packer, the conducting means including a separator assembly for selectively passing one of the fluids and first and second pumps connected for receiving



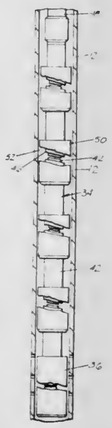
the separated fluids and for pumping one of the separated fluids into the production tubing, and the other pump connected for receiving the second separated fluid and conveying it through a separate flow path for discharge into a disposal zone.

4,241,788

MULTIPLE CUP DOWNWELL GAS SEPARATOR

John R. Brennan, Long Beach, Calif., assignor to Armco Inc., Middletown, Ohio

Filed Jan. 31, 1979, Ser. No. 8,183
Int. Cl.³ E21B *43/38*
U.S. Cl. 166—105.5 **10 Claims**



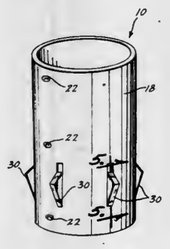
1. In a gas separator for a downwell pump for pumping well fluid;
   (a) a plurality of upward opening retention cups disposed in vertical spaced relation one above the other, the diameter of each said retention cup being substantially larger than the diameter of the rest of said gas separator, each said retention cup forming a retention chamber having a fluid retaining capacity sufficient to momentarily retain well fluid so as to permit gas to escape from said fluid so retained and returned to said well;
   (b) means defining a reservoir chamber disposed in spaced relation beneath said retention cups;
   (c) means defining a first passageway adapted to provide fluid communication between said retention cups and said reservoir chamber;
   (d) means defining a second passagway adapted to provide fluid communication from said reservoir chamber to the pump suction of said downwell pump; and
   (e) means defining a third passageway providing communication between the interior and exterior of said reservoir chamber to allow gas contained thereto to escape therefrom and return to said well;
   whereby said gas separator utilizes the difference in specific gravity between gassy well fluid and well fluid with gas removed to create circulation from said retention cup chambers to said reservoir chamber through said first passageway to provide a surplus of once separated well fluid so that the gaseous portion thereof will be discharged through said third passageway and back into said well fluid, the remainder being twice degassed fluid going to the pump suction of said downwell pump through said second passageway.

4,241,789

CONCRETE WALL CASING WITH CENTRALIZERS EMBEDDED THEREIN

Gottlieb W. Grosch, Silver Creek, Nebr. 68663

Filed May 12, 1978, Ser. No. 905,193
Int. Cl.³ E21B *17/00*
U.S. Cl. 166—241 **3 Claims**



1. A concrete well casing, comprising,
   a hollow cylindrical concrete casing member having upper and lower ends, inner and outer wall surfaces,
   a plurality of elongated casing centralizers each having one end embedded in said concrete casing member, said centralizers being spaced around the circumference of said casing member and extending outwardly from said outer wall surface for engagement with the wall surface of the well to centralize the casing as it is lowered into the well,
   said centralizers being initially substantially flush with the outer wall surface of said casing member but which may be deflected outwardly therefrom for engagement with the wall surface of the well bore hole to centralize said casing member with respect to said well bore hole,
   each of said centralizers comprising elongated flat members having upper and lower ends, the lower end of said flat member being embedded within said casing member, said centralizer extending upwardly and outwardly with respect to the outer surface of said casing member, thence inwardly towards said casing member so that the upper end of said flat member engages the exterior surface of said casing member when said flat member has been deflected outwardly from said casing member.

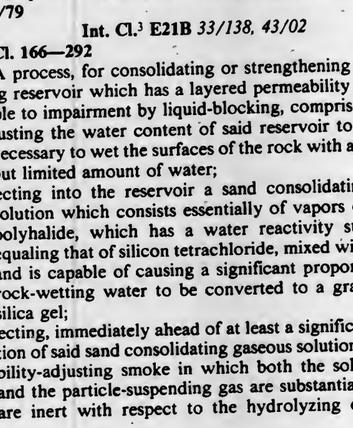
4,241,790

RECOVERY OF CRUDE OIL UTILIZING HYDROGEN

Robert L. Magnie, 945 Detroit St., Denver, Colo. 80206

Filed May 14, 1979, Ser. No. 38,488
Int. Cl.³ E21B *43/20, 43/24*
U.S. Cl. 166—260 **5 Claims**

4. In an underground petroleum reservoir that is substantially devoid of natural gas content, a method of increasing the flammability of the crude oil in place to facilitate the propagation of an underground fire flood comprising the steps of
   establishing a first communication passage from the surface of the earth into the petroleum reservoir,
   establishing a second communication passage from the surface of the earth into the petroleum reservoir, the second passage being spaced apart from the first passage,
   injecting hydrogen into the first communication passage and into the petroleum reservoir in such quantity as to substantially saturate the crude in place with hydrogen, with the



   resultant broadening of the limits of flammability of the crude oil,
   terminating injection of the said hydrogen, then
   injecting air into the second communication passage,
   igniting the crude oil and its absorbed hydrogen in the first communication passage,
   continuing injection of air with the resultant propagation of the underground fire toward the second communication passage, and
   recovering petroleum and the products of combustion through the first communication passage.

4,241,791

METHOD FOR DIVERTING A GASEOUS SAND-CONSOLIDATING FLUID

David R. Davies, Rijswijk, Netherlands, and Edwin A. Richardson, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 1, 1980, Ser. No. 117,697
Claims priority, application United Kingdom, Jun. 26, 1979, 79222/79
Int. Cl.³ E21B *33/138, 43/02*
U.S. Cl. 166—292 **6 Claims**

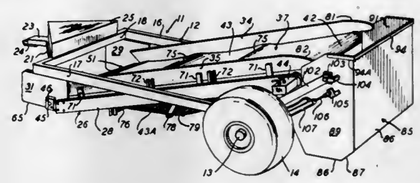
1. A process, for consolidating or strengthening a gas-containing reservoir which has a layered permeability and is susceptible to impairment by liquid-blocking, comprising:
   adjusting the water content of said reservoir to the extent necessary to wet the surfaces of the rock with a significant but limited amount of water;
   injecting into the reservoir a sand consolidating gaseous solution which consists essentially of vapors of a silicon polyhalide, which has a water reactivity substantially equaling that of silicon tetrachloride, mixed with inert gas and is capable of causing a significant proportion of the rock-wetting water to be converted to a grain-bonding silica gel;
   injecting, immediately ahead of at least a significant proportion of said sand consolidating gaseous solution, a permeability-adjusting smoke in which both the solid particles and the particle-suspending gas are substantially dry and are inert with respect to the hydrolyzing of a silicon polyhalide, at the temperature of the reservoir, with said smoke being injected so that most of the smoke particles are screened-out, in the form of permeability-impairing masses, along the faces of the more permeable layers of the reservoir; and,
   subsequently removing said permeability-impairing masses of smoke particles by producing fluid from the reservoir.

4,241,792

TRACTOR DRAWN GROUND SWEEPER

Donald K. Kratzer, P.O. Box 5, Geneseo, Kans. 67444

Filed Jan. 15, 1979, Ser. No. 3,267
Int. Cl.³ A01D *17/00*
U.S. Cl. 171—63 **9 Claims**



1. A ground sweeper to be towed behind a conventional hydraulically equipped and power take-off equipped power tractor and comprising a frame, outboard wheels journalled to the frame near the rear of the frame, a frame towbar tongue, a hydraulic fluid storage tank on the frame at the juncture of the frame and tongue; a moving screen carrier supported by the frame at an acute angle to the horizontal extent thereof and rising from tongue to wheels, transverse screen rollers at front and rear of the carrier, a moving endless screen supported from said screen carrier on said rollers, a hydraulic motor on said carrier adapted to drive said moving screen to run from rear to front of said sweeper, a hopper to receive sweepings from said moving screen, hopper mounts on said frame adapted to invert said hopper for dumping collected sweepings on the ground, frame mounted hydraulic means for actuating the inversion of said hopper; a transverse scoop removably fixed to said carrier at the front of said sweeper at a trailing vertical angle to the path of said sweeper, side plows at each side of said scoop extending in vertical plane along the path of said sweeper and supported by said frame; a hydraulic pump adapted to be carried by said towing tractor and further adapted to be connected operationally to said power take-off of the tractor, hydraulic lines from the hydraulic pump to the screen motor, hydraulic lines from the tractor hydraulic equipment to the hopper inversion means, and controls adapted to be mounted on said tractor to control flow of actuating hydraulic fluid to and from said hopper inversion means and said screen motor.

4,241,793

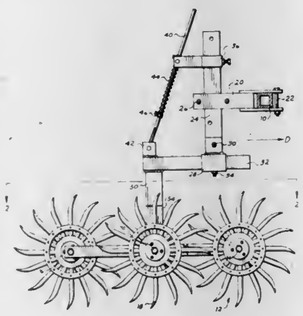
ROTARY HOE SCRATCHER

Murrell G. Watkins, Rte. 3, Box 92, Muleshoe, Tex. 79347

Filed Jan. 22, 1979, Ser. No. 5,146
Int. Cl.² A01B *21/04*
U.S. Cl. 172—551 **3 Claims**

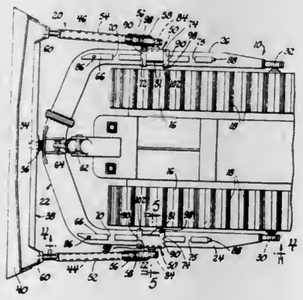
1. On an agricultural draft vehicle having
   a. a direction of draft,
   b. a horizontal tool bar normal to the direction of draft, and
   c. a plurality of rotary hoes, each including
      (i) an axle,
      (ii) a hub journalled to the axle, and
      (iii) a plurality of tines in a plane radiating from the hub forming a diameter;
   the improved structure for mounting the rotary hoes to the tool bar comprising:
   d. a central carriage,
   e. a central axle bolt having one of said axles on each end thereof extending through the carriage,

f. a pair of ears extending upward from the carriage straddling
g. a hoe shank connected to said tool bar,
h. at least one shank bolt connecting the ears to the shank,
j. a forward stub arm extending forward from the central carriage,
k. a rear stub arm extending rearwardly from the central carriage,
m. a forward arm bolted to the forward stub arm,
n. a forward axle bolt with
(i) one of said axles on one end thereof, and
(ii) the other end bolted to said forward arm,



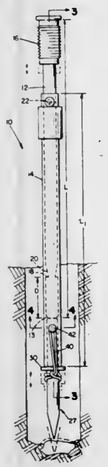
o. a rear arm bolted to the rear stub arm,
p. a rear axle bolt with
(i) one of said axles on one end thereof, and
(ii) the other end bolted to said rear arm,
q. so that
(i) the distance of the front axle bolt to the central axle bolt is the same as the distance of the rear axle bolt to the central axle bolt,
(ii) which distance is less than the diameter of the rotary hoes, and
(iii) the plane of the tines of each of the four hoes is spaced an equal amount from the plane of the next nearest hoe.

4,241,794
ANGLE DOZER ASSEMBLY
Francis J. Halterman, Jr., Hiram, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 13, 1979, Ser. No. 66,070
Int. Cl.[3] E02F *3/76*
U.S. Cl. 172—804 **2 Claims**



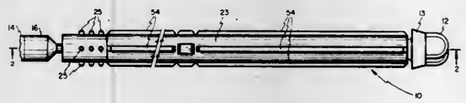
1. An angle dozer assembly for a tractor including a C-frame having a pair of laterally spaced arms located on opposite sides of the tractor, each of said arms having a pair of elongated guide tracks located along the longitudinal axis of said arm and formed on opposed surfaces thereof, a moldboard having the rear portion thereof connected to a forward central point of said C-frame for adjustable movement about a vertical axis, a thrust member extending rearwardly from each lower corner of the moldboard, a carriage mounted on each arm for connecting the rear of each thrust member to the C-frame, said carriage comprising a base member carried by the associated arm for movement along said guide tracks, each of said arms having at least three axially spaced and transversely extending slots formed on each of said opposed surfaces and serving as stations for locating the moldboard in an angled-left position, a straight-across position and an angled-right position, a manually removable U-shaped keeper member having a pair of parallel tines interconnected by a base section, said keeper member being carried by each of said arms and adapted to straddle the associated arm with the tine thereof being located in a pair of aligned slots on said opposed surfaces for maintaining the base member in one of said positions on the C-frame, and locking means for preventing the keeper member from slipping out of the accommodating slots during a dozing operation.

4,241,795
HAND POWERED HIGH IMPACT TOOL
Ernest A. Landry, Jr., 50 Bennett St., Lynn, Mass. 01905
Filed Jun. 5, 1978, Ser. No. 912,423
Int. Cl.[3] B25C *1/02*; B25D *9/04*
U.S. Cl. 173—90 **9 Claims**



1. A hand-powered tool for use with a conventional jackhammer tool bit to deliver high impact axial blows to said bit, said bit being of the type including a noncylindrical upper blow-receiving shank, a blow-transmitting working end, and an integral annular protrusion between said upper shank and said working end, said protrusion being spaced from the upper end of said bit by the axial length of said upper shank, said hand-powered tool comprising:
an impact rod,
said rod having a length of the order of two feet or greater and a diameter of the order of one inch or greater,
said rod being comprised of impact-resistant heavy material such as steel to have a weight of the order of ten pounds, and
said rod including a hand grippable upper end and a lower end shaped for impacting the upper end of said bit,
a tubular guide member, said member including
a bit guiding surface comprising a noncylindrical interior surface shaped to telescopically receive and thereby prevent rotation of said noncylindrical upper shank of said bit, said bit guiding surface extending upward from a lower end of said member by a length less than said length of said bit shank, so that when said bit is installed in the lower end of said member, with said bit protrusion resting against said lower end of said member, the shank protrudes above said bit guiding surface,
a rod guiding surface comprising a cylindrical interior surface sized to telescopically receive said rod, said rod guiding surface extending downward from an upper end of said member and merging with said bit guiding surface and said rod guiding surface being shorter axially than said rod so that said hand grippable upper end protrudes from said guide member when said rod is installed and its lower end bears upon said bit, and
restraint means for retaining said bit within said guide member, said restraint means including an element suitable for connection to the lower end of said guide member and to said bit at a location below said protrusion.

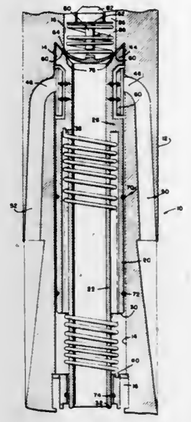
4,241,796
ACTIVE DRILL STABILIZER ASSEMBLY
Sidney J. Green, Salt Lake City; Floyd H. Shipman, Holladay, and Carl J. H. B. Van Kempen, Salt Lake City, all of Utah, assignors to Terra Tek, Inc., Salt Lake City, Utah
Filed Nov. 15, 1979, Ser. No. 94,586
Int. Cl.[3] E21B *44/00*
U.S. Cl. 175—24 **31 Claims**



1. A drill stabilizer assembly comprising,
a body for arrangement within a well bore having a drill shaft journaled therethrough that connects to a drill bit;
means for connecting said drill shaft to a drill string;
sensor means arranged with said body to pass a fluid medium therethrough and direct it against the well bore wall sensing, as a differential pressure drop, when compared with another fluid pressure, an area of unequal spacing of said body from said well bore wall;
valve means arranged with said body and operated by said differential pressure drop to control a fluid medium flow passed therethrough;
a fluid medium source connected to pass said fluid medium flows to said sensor means and said valve means; and
means operated by said fluid medium flow from said valve means for applying a bending force associated with said body to provide a change in drilling direction.

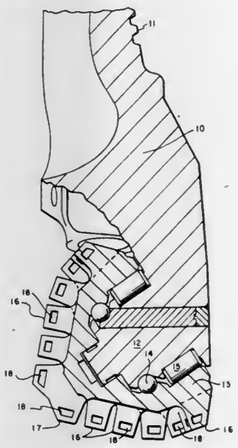
4,241,797
IMPACT TOOL FOR DISLODGING STUCK DRILL BITS
John W. Allen, Jr., Lake Charles, La., assignor to James P. Creaghan, Lake Charles, La., a part interest
Filed Sep. 13, 1979, Ser. No. 75,114
Int. Cl.[3] E21B *21/00*
U.S. Cl. 175—237 **6 Claims**

1. An improved impact tool for attachment in line in a drilling stem adjacently above a drill bit and comprising:
an impact tool casing having a cylindrically contoured hollow center for connecting a ground level end of the drill stem with a drill bit,
a steel ring means disposed at a lower section within said hollow center of said impact tool casing,
a set of concentrically disposed metal sleeves disposed within said hollow center of said impact tool casing being integrally coupled at an upper portion thereof, the outer sleeve having its lower end foreshortened respecting the lower end of the inner sleeve, the inner sleeve having an outer surface of its lower end essentially telescopically engaging with the inner surface of said steel ring means,
a helical spring disposed between said sleeves and providing sufficient tension to support said set of sleeves when said spring has its lower terminus engaging said steel ring means and its upper terminus engaging said at means where the sleeves are integrally coupled, and
an upper section of said outer sleeve closing off a jet contoured nozzle for directing mud flow downwardly peripherally of said impact tool casing.



6. The invention of claim 1 wherein said plunger means is provided with a shaft and centering means for disposing said shaft centrally with said hollow center of the drill stem.

4,241,798
DRILLING BITS FOR PLASTIC FORMATIONS
Kenneth W. Jones, Kingwood, Tex., assignor to Reed Tool Company, Houston, Tex.
Filed Jan. 29, 1979, Ser. No. 7,066
Int. Cl.[3] E21B *10/46*
U.S. Cl. 175—329 **2 Claims**



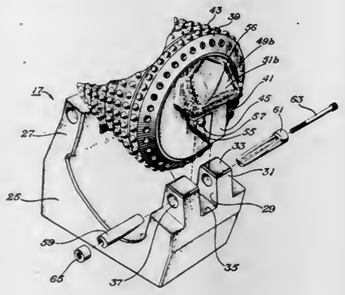
1. An oilwell drilling bit of the type having downwardly extending leg portions with inwardly extended bearing shafts and rotating rolling cutters on said bearing shafts, the improvement comprising large broad cutting teeth protruding from the surface of said rolling cutter, said cutting elements having extrusion openings formed therethrough in the direction of rotation of said cutting element on said bearing shaft.

4,241,799

PROTECTED CUTTER MOUNTING FOR DRILL BITS

Walter S. Going, III, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Oct. 17, 1979, Ser. No. 85,666
Int. Cl.³ E21B *10/10, 10/20, 10/52*
U.S. Cl. 175—361 **3 Claims**



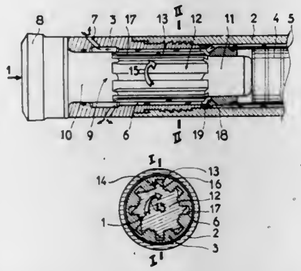
1. An improved cutter mounting apparatus for an earth boring drill bit, comprising in combination:
a cutter mount having spaced-apart inner and outer end;
a bearing carrier having inner and outer ends for mounting on the ends of the cutter mount;
a cutter shell rotatably mounted on the bearing carrier member;
a selected one of the cutter mount and bearing carrier having a slot through each of its end for receiving the end of the other in the slot;
the ends of the cutter mount and bearing carrier having transverse holes therethrough;
connection means for insertion through the holes to secure the cutter mount to the bearing carrier; and
a protector member extending from at least one end of the bearing carrier and having a surface covering an opposing surface of the ends to protect them from formation damage.

4,241,800

CUTTING TOOL FOR A PNEUMATIC HAMMER

Pierre Stenuick, Fontaine l'Eveque, Belgium, assignor to Stenuick Freres S.A., Fontaine l'Eveque, Belgium

Filed Mar. 22, 1979, Ser. No. 22,997
Claims priority, application France, Apr. 24, 1978, 78 12012
Int. Cl.³ E21B *9/02*
U.S. Cl. 175—400 **5 Claims**



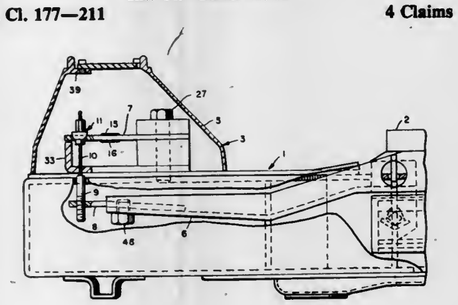
1. A cutting tool adapted to fit in the front cylinder of a pneumatic hammer operative at the bottom of a hole, comprising a head for supporting cutting bits, and a tail of reduced diameter extending from said head, said tail being provided with grooves forming alternating teeth adapted for engaging in symmetrical grooves provided in the interior of the front cylinder of the hammer, each said tooth being asymmetrical by virtue of having a working flank in contact with the front cylinder of the hammer during drilling which is of greater height than the other flank of the tooth, said asymmetrical tooth defining in a corresponding symmetrical groove in the interior of the front cylinder of the hammer an escape channel for compressed air from the hammer.

4,241,801

APPARATUS TO MEASURE ELONGATION DUE TO BENDING UNDER LOAD

Walter P. Kushmuk, Niles, Ill., assignor to Continental Scale Corporation, Bridgeview, Ill.

Filed Aug. 3, 1978, Ser. No. 930,710
Int. Cl.³ G01G *21/02*
U.S. Cl. 177—211 **4 Claims**



1. In an apparatus comprising strain gauges mounted on a cantilever load beam to measure elongation due to bending under load, the combination of, means for supporting said beam at one end, the other end being free, means adjacent the free end of said beam comprising a hole in said beam, a fitting having a semi-spherical portion mounted in said hole with its sides engaging the sides of said hole, a vertical bore in said fitting to the geometric center of curvature, a load cable in said bore connected to said fitting which exits at the geometric center of curvature of said semi-spherical portion of said fitting, and means connected to the other end of said cable for applying a load to said load beam whereby the strain is directly proportional to the effective length of the load beam.

4,241,802

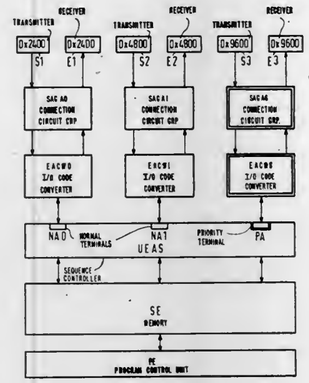
METHOD AND CIRCUIT ARRANGEMENT FOR SWITCHING SIGNALS HAVING DIFFERENT TRANSMISSION SPEEDS WITHIN A PROGRAM-CONTROLLED DATA EXCHANGE SYSTEM

Ola Bergman, Starnberg-Landstetten, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 22,701
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813961
Int. Cl.³ H04Q *9/00;* **H04L** *5/00, 11/00*
U.S. Cl. 178—3 **9 Claims**

1. A method for switching signals which fall into different transmission speed class within a program-controlled data exchange system which has inputs and outputs assigned to respective speed classes, and a switching arrangement, comprising the steps of:
receiving the signals in respective transmission speed classes at respective inputs;
generating switching requests for each transmission class upon receipt of signals in the respective transmission class;
first, switching through to a respective output those signals which cause switching requests for the highest transmission speed class as a priority over the other transmission speed classes; and

then, only after completion of transmission at the highest transmission speed, switching through the signals of the



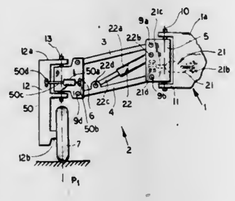
other speed classes alternately from respective inputs to respective outputs.

4,241,803

WHEEL-SUPPORT ASSEMBLY FOR ROLLING AND STEPPING VEHICLES, ESPECIALLY CRANES, EXCAVATING MACHINERY AND THE LIKE

Ernst Lauber, Thun, Switzerland, assignor to Willy Habegger, Thun, Switzerland

Filed Feb. 23, 1979, Ser. No. 14,594
Int. Cl.³ B62D *57/02;* **B66C** *23/62*
U.S. Cl. 180—8 R **6 Claims**



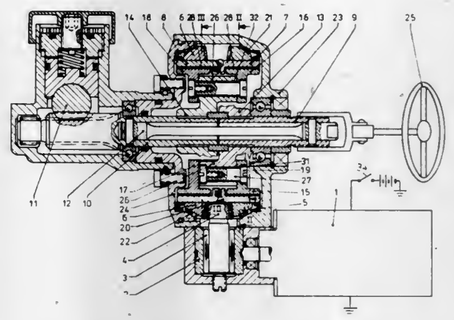
1. In a rolling and stepping vehicle having a machine support, at least one traveling leg comprising:
a crosshead pivotally mounted on said support for rotation about a vertical axis;
a first piston-and-cylinder arrangement connected between said support and said crosshead for angularly displacing said crosshead about said axis;
a pair of substantially parallel elongated link members pivotally connected to said crosshead at respective substantially horizontal axes and disposed one above the other in spaced apart relationship to define a parallelogrammatic linkage;
a pivot head pivotally connected to said link members at respective spaced apart substantially horizontal axes for swinging displacement by said parallelogrammatic linkage relative to said support;
a wheel assembly pivotally connected to said pivot head and defining therewith an axis about which a wheel of said assembly is pivotal relative to said pivot head; and
a second piston-and-cylinder arrangement lying generally diagonally with respect to said parallelogrammatic linkage and connected between one of said heads and one of said members at opposite ends of said linkage for swinging said linkage in a substantially vertical plane.

4,241,804

SERVO STEERING SYSTEM FOR MOTOR VEHICLES

Horst Deininger, and Werner Breitweg, both of Schwaebisch-Gmund, Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 19, 1978, Ser. No. 952,925
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746919
Int. Cl.³ B62D *5/04*
U.S. Cl. 180—79.1 **11 Claims**



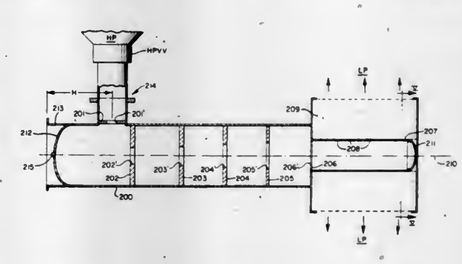
1. A servo steering system comprising a driving shaft (**9**), a hand steering wheel (**25**) connected to the driving shaft, a driven shaft (**10**), two friction clutches (**15, 16-7** and **17, 18-14**) releasably coupling the driving and driven shafts, an auxiliary driving source (**1**) and a gear unit (**2, 5, 6**) though which the friction clutches are driven by the source, said friction clutches including a pair of clutch drums (**7, 8**) driven in opposite directions through the gear unit, two pair of jaws (**15, 16-17, 18**) respectively engageable with said drums, a pair of clutch carriers (**13, 14**) connected to said driving and driven shafts, respectively, for rotation therewith, and means operatively connecting each of said jaws to both of said carriers for respectively causing engagement of one of the two friction clutches and disengagement of the other of the two friction clutches in response to rotation of said driving shaft in one direction and engagement of said other friction clutch and disengagement of said one friction clutch in response to rotation of said driving shaft in an opposite direction.

4,241,805

HIGH PRESSURE GAS VENT NOISE CONTROL APPARATUS AND METHOD

Calvin L. Chance, Jr., Dallas, Tex., assignor to Vibration and Noise Engineering Corporation, Dallas, Tex.

Filed Apr. 2, 1979, Ser. No. 26,189
Int. Cl.³ F01N *7/02, 1/24*
U.S. Cl. 181—232 **27 Claims**



1. High pressure gas vent noise control apparatus for controlling the noise emitted during venting of gas from a high pressure region to a low pressure region via a high pressure

vent valve at the high pressure region; said apparatus comprising:

a tubular member and a plurality of control orifices positioned longitudinally spaced from each other within said tubular member, said control orifices being configured and disposed such that vented gas passes therethrough with sonic velocity being attained at a respective throat of each of said orifices and the pressure downstream thereof is stepwise reduced relative to the pressure upstream thereof,

and flow control means downstream of said control orifices for controlling the discharge of said gas to said low pressure region.

4,241,806

NOISE ATTENUATION PANEL

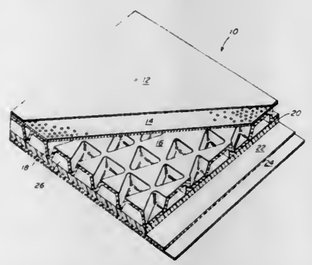
Arthur C. Metzger, 16 Forty Acres Dr., Wayland, Mass. 01778

Filed Oct. 10, 1978, Ser. No. 950,189

The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.

Int. Cl.³ E04B *1/82*

U.S. Cl. 181—284 **12 Claims**



1. A laminated noise attenuation panel comprising:

an expanded core thermoplastic panel having alternately inverted cavities approximately one-half of which open to each side of said panel; and

a panel of a noise attenuation material secured to said expanded core panel comprising randomly dispersed hollow microspheres having an interior pressure of one-third atmospheres or less in a cured low-viscosity adhesive binder material having an elastic inter-molecular structure yielding elastic wave attenuating properties.

4,241,807

STEP ATTACHMENT FOR LADDERS

Phillip McKenna, Crowley, La., and Arthur Penarowski, Aurora, Colo., assignors to MacStep Co., Inc., Aurora, Colo.

Filed Nov. 17, 1978, Ser. No. 961,483

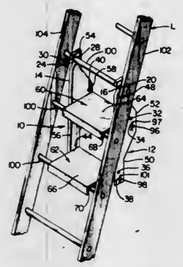
Int. Cl.³ E06C *5/32, 7/16*

U.S. Cl. 182—121 **4 Claims**

1. Step apparatus adapted for removable mounting on a ladder, comprising:

a pair of elongated, rigid frame members disposed in substantially vertical parallel, spaced-apart relation to one another, each of said frame members having hook means at its upper end adapted for suspending said frame members from a rung in the ladder; and

two horizontal step members disposed between said frame members in vertically spaced relation to each other, each of said step members being substantially the same length and width as the other, the vertical spacing between said step members being approximately equal to the distance between adjacent rungs on the ladder, and pivotal connection means for pivotally connecting the rearward ends of said step members to said vertical frame members, said pivotal connection means being vertically adjustable upwardly and downwardly with respect to said frame members, each of said steps having rung attachment means on the forward end thereof and being pivotally connected at their rearward ends to said vertical frame members with rung attachment means at the forward ends of said step members positioned in a common plane with each other and with the hook means on said frame members and the



rearward end of the upper of said step members positioned and pivotally attached to said vertical frame members a spaced distance rearwardly of a plane extending through said hook means and through the rearward end of the lower of said step members.

4,241,808

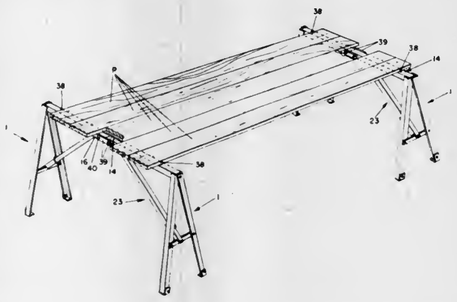
PORTABLE AND COLLAPSIBLE A-FRAME PROP TYPE SCAFFOLD

Donald E. Middleton, 4701 N. Napa, Spokane, Wash. 99207, and DeVere J. Audette, deceased, late of 1517 Nelson, Spokane, Wash. 99207 (by Marguerite Audette, executrix)

Filed Aug. 28, 1979, Ser. No. 70,358

Int. Cl.³ F16M *11/00*

U.S. Cl. 182—155 **7 Claims**



1. In a portable and collapsible A-frame scaffold including at least two A-frame leg units with horizontally disposed scaffold planks extending therebetween and being supported thereby, wherein each of said leg units is formed from L-shaped metal bars pivotally interconnected at their upper ends and diverging downwardly to form A-frame leg units, spanning bracing bars pivoted to said legs intermediate their ends and being removably interconnected, pivotally connected to the upper ends of each leg unit is a horizontally extending elongated plank supporting angle bar bracket, pivotally connected to the outer end of each of said brackets is a downwardly and angularly extending angle bar brace, a transverse angle bar formed on the lower end of each brace is engageable with said spanning leg bracing bars with the lower end of said brace projecting thereover, flat elongated strap means arranged on the underside of said brace at said lower end and being pivoted to the projected lower end of said brace so as to extend under said spanning leg bracing bars and said transverse angle bar, retaining ring means on said brace and engageable with said strap means for securing said strap means against said brace and clamping and locking said leg bracing bars and transverse angle bar together and thereby preventing collapsing of each of said A-frame leg units.

4,241,809

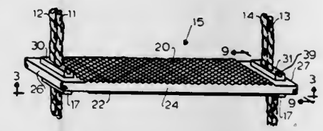
ROPE LADDER WITH MOLDED HARD ELASTOMER STEPS AND A METHOD FOR ASSEMBLY OF THE SAME

Robert M. Salvarezza, 110 Braemar Dr., Hillsborough, Calif. 94010

Filed Aug. 13, 1979, Ser. No. 66,000

Int. Cl.³ E06C *1/56*

U.S. Cl. 182—199 **12 Claims**



1. A rope ladder of the type having a series of ladder steps, each with an upper surface and a lower surface, two longitudinal edges and two end edges, and two spaced-apart pairs of ropes, the improvement wherein:

each said step is a molded one-piece hard elastomer member having two spaced-apart vertical through openings, one spaced in from each said edge, each said through opening being narrow at its upper end for closely confining said ropes and being much wider than that where it emerges from said lower surface, each through opening tapering inwardly from bottom to top, each said step having vertical bolt openings therethrough adjacent each said through opening,

a pair of separate wedge collars for each said step, one at each end of and below said step and bearing up against it, each said wedge collar having a single elongated through opening whose upper end is approximately the same width as said step's through opening where it emerges from its lower surface, said elongated through opening tapering inwardly therefrom down to a narrow portion at the lower end for closely confining the two ropes, each said wedge collar having vertical bolt passages therethrough aligned with the bolt openings through said step,

a generally diamond-shaped wedge heart in between the said ropes of each pair of ropes, a said heart lying in each through opening of each step and extending into each said elongated through opening of said wedge collar, said wedge heart having an upper vertex adjacent said upper end of said step's through opening and a lower vertex adjacent the bottom of the elongated through opening of said wedge collar, and providing two rope-engaging side grooves extending between and ending at said vertices, so that these rope-engaging grooves, when said wedge heart is fully wedged in place, lock the pair of ropes in place and prevent relative movement between them and said step, said wedge collar and said wedge heart, and

fastening means extending through the bolt passages of each wedge collar and the bolt openings of each step and tightened in place to hold said wedge collar and wedge heart in place and lock said ropes in fixed position relative to said wedge heart, said step, and said wedge collar.

4,241,810

DEVICE FOR ABSORBING MECHANICAL SHOCK

Charles E. Newlon, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1979, Ser. No. 70,546

Int. Cl.³ F16D *63/00*

U.S. Cl. 188—1 C **11 Claims**

1. A device for absorbing mechanical shock, comprising:

a wooden member comprising a basal portion and an opposed top portion, the basal portion being formed of solid cross-section, and the top portion being formed of spaced-apart segments formed between openings in the top portion whose upper faces cooperatively define a concave surface, and



an elastomeric strip superimposed on said concave surface and extrudable into the openings between said segments when forced against the segments by a pressure above a preselected value to effect deformation of said segments to a point capable of breakage thereof.

4,241,811

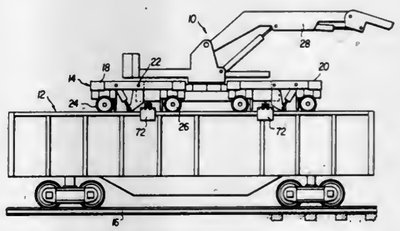
BRAKE MECHANISM FOR A GONDOLA CAR LOADER

Walter E. Buckner, Hartselle, Ala., assignor to Lucky Manufacturing Co., Inc., Huntsville, Ala.

Filed Oct. 6, 1978, Ser. No. 949,116

Int. Cl.³ B61H *7/12*

U.S. Cl. 188—43 **6 Claims**



1. A brake mechanism for a vehicle moveable along the top of adjacent gondola cars, the vehicle having a chassis moveably supportable by wheels on the upper edges of side walls of the gondola cars, comprising:

a brake shoe rack including:

a first pair of brake shoes, selectively moveable in opposition to one another to clamp a first side wall of a gondola car, said first pair of brake shoes including an inner brake shoe for engaging the inside of the first side wall and an outer brake shoe for engaging the outside of the first side wall;

a second pair of brake shoes, selectively moveable in opposition to one another to clamp a second side wall of the gondola car, including an inner brake shoe for engaging the inside of the second side wall and an outer brake shoe for engaging the outer side wall; and

a braking hydraulic ram for moving said brake shoes to clamp and unclamp the side walls of the gondola car, said hydraulic ram having a cylinder coupled to the inner brake shoe of the first pair of brake shoes and to the outer brake shoe of the second pair of brake shoes; and a piston coupled to the outer brake shoe of the first pair of brake shoes and to the inner brake of the second pair of brake shoes; and

hydraulic ram means for pivotably supporting the brake shoe rack from the vehicle chassis while permitting the brake shoe rack to move from side to side relative to the chassis, whereby the brake shoe rack is moveable from side to side relative to the chassis to enable the brake mechanism to accommodate gondola car side walls which are bowed or otherwise irregularly shaped,

said hydraulic ram means also being operative for raising

and lowering the brake shoe rack relative to the chassis, whereby the brake shoe rack is raiseable and lowerable to clear end walls of the gondola car as the vehicle is moved across gaps between adjacent gondola cars.

4,241,812

BRAKE SHOE FOR A SPOT-TYPE DISC BRAKE

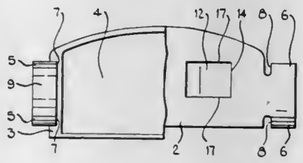
Jochen Burgdorf, Offenbach; Hans-Henning Lüpertz, Darmstadt, and Helmut Kast, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 965,957

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755325

Int. Cl.³ F16D *65/04*

U.S. Cl. 188—73.1 **10 Claims**



1. A brake shoe for a spot-type disc brake comprising:
a carrier plate;
a backing plate having a friction pad secured to one surface thereof, said other surface of said backing plate resting against one surface of said carrier plate;
a supporting member of a brake housing;
first flanges adjacent the ends of said one surface of said carrier plate engaging end surfaces of said backing plate in a vertical relation to said one surface of said carrier plate and receiving circumferential forces from said friction pad during braking;
abutting surfaces provided on the other surface of said carrier plate extending from adjacent the ends of said carrier plate inward to a point adjacent said vertical end surface of said backing plate, said abutting surfaces abutting against said supporting member; and
second flanges formed in said other surface of said carrier plate, end faces of said second flanges in a vertical relation to said other surface of said carrier plate engaging said supporting member to transmit said circumferential forces to said supporting member.

4,241,813

BAND BRAKE PARKING LEVER

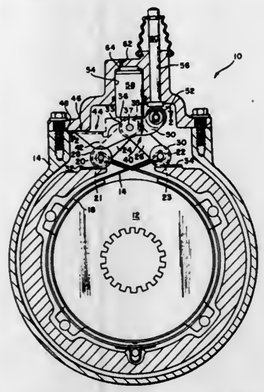
Norman C. Van De Sompele, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 29, 1979, Ser. No. 53,602

Int. Cl.³ F16D *49/08, 49/10, 49/12*

U.S. Cl. 188—77 R **3 Claims**

1. In a band brake assembly having a housing, a rotatable member carried by said housing, a band disposed within said housing and carrying a friction lining substantially surrounding said rotatable member, a pair of unitary links having a common pivotal connection therebetween, each link being connected with a respective end of said band, a hydraulic service brake actuator cooperating with said pair of links to contract said friction lining into engagement with said rotatable member to retard the rotation of said rotatable member, a parking brake actuator, and a unitary parking brake lever connected to said parking brake actuator, said parking brake lever including a first end pivotally engaging said housing and a second end remote from said first end connecting with said parking brake actuator and engaging said common pivotal connection and cooperating with said pair of links to contract said friction lining into engagement with said rotatable member upon a parking brake application, characterized by said unitary parking brake lever being engageable with said housing, the engagement of said lever with said housing defining a fulcrum about which said lever pivots in response to operation of said parking brake actuator.



4,241,814

MECHANICAL-HYDRAULIC DAMPER FOR A LOAD SUBJECT TO SHOCKS AND VIBRATIONS

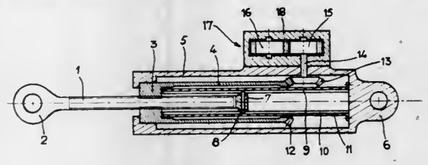
Jean Masclet, Paris, France, assignor to Messier-Hispano-Bugatti, Montrouge, France

Filed Mar. 14, 1978, Ser. No. 886,347

Claims priority, application France, Mar. 16, 1977, 77 07826; Apr. 27, 1977, 77 12850

Int. Cl.² F16D *57/06*

U.S. Cl. 188—266 **8 Claims**



1. A mechanical-hydraulic damper for a load which is subject to shocks and vibrations, comprising a co-operating pair of elements including a ball or roller screw and a nut, a first element of said pair of elements being mounted in a body for relative axial movement in relation to said body and the second element of said pair of elements being rotatably mounted in said body and so coupled to said first element that relative axial movement of said first element causes rotation of said second element, with said second element being coupled to hydraulic means which resist sudden or rapid rotation of said second element including drive means comprising a reversible pump to cause flow of hydraulic fluid around a closed hydraulic circuit mounted on said body, the rate of flow of fluid being restricted by a calibrated orifice comprising a reversible symmetrical control valve in communication with a reservoir of hydraulic fluid, the outlet of which is coupled to a fluid inlet at the middle of said symmetrical control valve, whereby the mechanical-hydraulic damper functions to damp successive shocks and vibrations in the same or reverse directions.

4,241,815

VARIABLE-THROTTLE VALVE

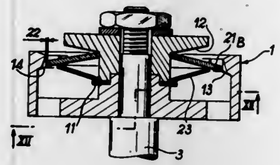
Jean Federspiel, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 974,608, Dec. 29, 1978, abandoned, which is a continuation of Ser. No. 728,120, Sep. 30, 1976, abandoned. This application Jan. 9, 1980, Ser. No. 110,598

Claims priority, application France, Oct. 9, 1975, 75 30944

Int. Cl.³ F16F *9/34*

U.S. Cl. 188—282 **4 Claims**



1. A variable-throttle valve comprising:
a valve body of revolution and a rod, the valve body being rigidly fixed to said rod, said rod extending along the revolution axis of said valve body, said body being provided with a peripheral wall surrounding said rod and defining a passageway for a fluid therebetween, said body and said fluid being movable relative to each other to generate a flow of fluid in a first direction or in a second direction through said passageway according to the direction of relative movement between said body and said fluid, said passageway being of revolution with respect to said axis of said valve body;
an annular zone providing a projection on said peripheral wall of said valve body, said projection being directed radially towards the axial rod;
a first stop and a second stop carried by said rod in said passageway; and
a conical washer which is mounted generally transversely relative to said passageway and is pierced by a central opening through which said rod extends, said washer having a central edge capable of cooperating with each of said stops and a peripheral edge defining a variable cross-sectional area opening with said annular projection;
said stops being axially spaced apart a distance greater than the axial thickness of said washer;
said washer being capable of free displacement with respect to said body under the action of said flow of fluid through said passageway along said axis of said valve body between a free-flow end position in which said central edge of the washer engages said first stop when said flow of fluid is in said first direction and a throttling end position in which said central edge of the washer engages said second stop when said flow of fluid is in said second direction;
said washer being capable of elastic deformation, the deflection and the thickness in a condition of rest of said washer being in a ratio which is higher than 1.4, whereby temporary and elastic reversal of conicity of said washer is possible, said conical washer being oriented in such a manner that said washer is always in said condition of rest when said washer is in said free-flow position, whatever the fluid pressure at said passageway in said first direction of said flow or fluid, whereas when said washer is in said throttling end position, said washer is in said condition of rest when the fluid pressure at said passageway in said second direction of said flow of fluid is below a predetermined threshold value, the conicity of said washer being reversed when said fluid pressure at said passageway in said second direction of said flow of fluid is above said predetermined threshold value;
the variable cross-sectional area opening defined between said peripheral edge of said washer and said annular projection having a first value which permits the free flow of fluid through said passageway in said first direction when said washer is at said free-flow end position, said variable cross-sectional area opening having a second value achieved solely by radial clearance between said peripheral edge and said annular projection which constricts the flow of fluid through said passageway to a greatest degree when said washer is at said throttling end position and when said fluid pressure at said passageway in said second direction of said flow of fluid is below said predetermined threshold value, whereby said washer is in said condition of rest, and said variable cross-sectional area opening having a third value which constricts the flow of fluid through said passageway to a degree smaller than said greatest degree when said washer is at said throttling end position and when said fluid pressure at said passageway in said second direction of said flow of fluid is above said predetermined threshold value, whereby the conicity of said washer is reversed.

4,241,816

SELF-LOCKING SHOCK ABSORBER WITH VOLUME COMPENSATION

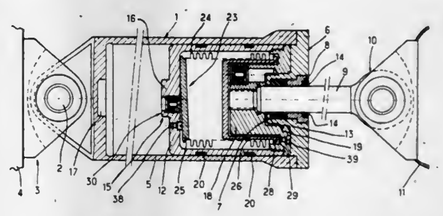
Gerard Hubrecht, Strasbourg, and Gerard Mechain, Schiltigheim, both of France, assignors to Quiri, Schiltigheim, France

Filed Nov. 1, 1978, Ser. No. 956,747

Claims priority, application France, Nov. 10, 1977, 77 34956

Int. Cl.³ F16F *9/06, 9/50*; F16L *55/04*

U.S. Cl. 188—298 **9 Claims**

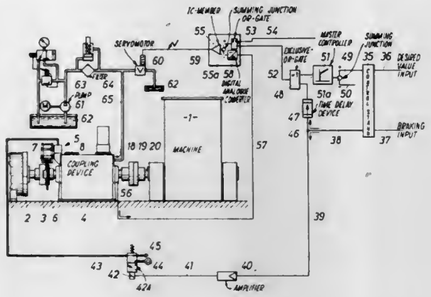


1. A self-locking shock absorber assembly for preventing damage to pipeline members and the like exposed to sudden movements by temporarily immobilizing such members relative to their rigid supports comprising a hydraulic cylinder defining a sealed hydraulic chamber, a piston-head mounted within said chamber for reciprocal movement therealong, a piston rod extending outwardly from said cylinder and operatively connected to the piston head for reciprocal movement therewith, said cylinder and said rod having means for connection to said members and said supports, said piston head being provided with an interior compensating chamber for forming a fluid communication between portions of the hydraulic chamber at opposite ends of said piston head, a deformable fluid-tight capsule positioned within said compensating chamber and together with said piston head defining the course of said fluid communication, and valve means carried by said piston head to control fluid flow between said hydraulic chamber portions and said compensating chamber, said valve means being adapted to automatically close in response to rapid fluid flow therethrough corresponding to a preselected sudden movement thereby automatically locking said piston head and rod against further movement within said piston chamber.

4,241,817
DRIVE MECHANISM FOR MACHINES, HAVING IN PARTICULAR A GREAT MOMENT OF INERTIA

Wolfgang Leiber, Oberweikertshofen, and Hans J. Ruesch, Munich, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen-und Zahnradfabrik, Munich, Fed. Rep. of Germany

Filed Jun. 30, 1978, Ser. No. 921,087
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729935
Int. Cl.³ F16D *67/02*
U.S. Cl. 192—12 C **7 Claims**



1. A drive mechanism for a machine having an input shaft, said machine having in particular a great moment of inertia, comprising:

a drive motor having an output shaft;

coupling means having an input shaft and an output shaft, said output shaft of said coupling means being connected to said input shaft of said machine;

brake means connected between said output shaft of said motor and said input shaft of said coupling means and means for activating same;

said coupling means including a friction clutch having a controllable transmittable torque characteristic connected to and between said input shaft and said output shaft therefor;

reciprocal piston means in said coupling means operatively related to said friction clutch for establishing a desired transmittable torque characteristic;

control means for controlling said transmittable torque characteristic of said friction clutch, said control means including:

an actual value indicator producing a first signal for indicating the driven speed of said output shaft of said coupling means;

a master controller producing a second signal for indicating the desired speed of said output shaft of said coupling means; and

a controller responsive to said actual value indicator and said reference element for controlling the force and direction of said force on said reciprocal piston to thereby control the speed of said output shaft of said coupling means.

4,241,818
LIGHTWEIGHT ELECTROMAGNETIC CLUTCH WITH SHOCK ABSORBER

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Oct. 30, 1978, Ser. No. 956,134
Int. Cl.² F16D *27/10*
U.S. Cl. 192—55 **8 Claims**

1. An electromagnetic clucth for establishing drive between first and second clutch members comprising:

a ferromagnetic inner body having a radial face portion drivingly connected to one of said members;

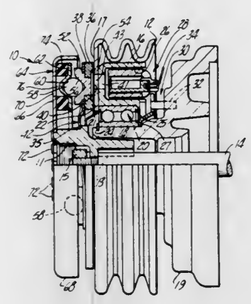
a ferromagnetic armature drivingly connected to the other of said members positioned adjacent said inner body and having a radial face opposite said inner body radial face;

means mounting said armature and inner body enabling relative axial movement to bring said radial faces into and out of driving engagement;

return spring means urging said inner body and armature out of driving engagement;

electromagnetic coil means positioned to cause said inner body and armature to be drawn into driving engagement upon energization;

torque booster means including a ball plate element disposed adjacent said armature and having a radial face opposite a radial face of said armature, and a plurality of balls disposed in corresponding conical pockets formed in each of



said radial faces of said ball plate element and said armature whereby torque is transmitted through said balls between said armature and said clutch element, and the driving engagement force between said armature and inner body radial face portion is thereby increased by the action of said balls;

a coupling plate axially spaced from said ball plate element and connected to said other member;

shock absorber means joined to said coupling plate and ball plate element and at least partially filling the axial space therebetween;

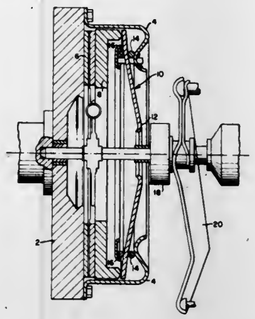
whereby said shock absorber means accommodates relative angular and axial movement between said first and second clutch elements, to reduce axial shock forces generated by said torque booster means.

4,241,819
CLUTCH PRESSURE PLATE NOISE REDUCTION

Bryce W. Babcock, Saline; Mark P. Reynolds, Birmingham, and Kulbir Saluja, Southfield, all of Mich., assignors to Federal-Mogul Corporation, Detroit, Mich.

Division of Ser. No. 710,508, Aug. 2, 1976, Pat. No. 4,126,216.
This application Oct. 5, 1978, Ser. No. 948,931
Int. Cl.³ F16D *13/50*
U.S. Cl. 192—70.27 **5 Claims**

1. A clutch assembly including a flywheel, a pressure plate normally engaged to rotate with the flywheel and axially disengageable in relation therewith, a friction disc interposed between the flywheel and the pressure plate, and a clutch spring operatively associated with the pressure plate whereby upon exertion of an actuation force to the clutch spring, the pressure plate will cause the interposing friction disc to be disengaged from the flywheel, wherein said clutch spring is of a generally frustoconical shaped disc having a centrally located bore adapted to surround a shaft upon which is fixed said friction disc, said clutch spring being of spring steel and slotted beginning at the periphery of said bore and extending radially outwardly to a point intermediate the periphery of said bore and the outer periphery of said frustoconical shaped disc so as to form therebetween a plurality of inwardly extending integral clutch spring fingers, each said clutch spring finger having a free end toward the axis of rotation of said pressure plate and a surface at said free end adapted to receive the actuation force, said assembly including means for modifying the natural frequencies of a majority of said clutch spring fingers to reduce resonant vibrations within the audible frequency range during

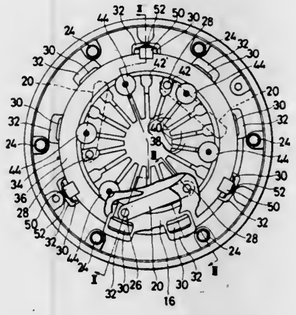


actuation of the clutch whereby audible resonant vibrations caused in said clutch spring fingers as a result of the free end of each such clutch spring finger coming into initial contact with and being in rotation with a clutch throw-out bearing, will be at least substantially eliminated.

4,241,820
CLUTCH ASSEMBLY

Hiroshi Ban, Toyota; Tadamasa Kobayashi, Okazaki, and Syozo Kuno, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 28, 1978, Ser. No. 946,918
Claims priority, application Japan, Oct. 6, 1977, 52-134559
Int. Cl.³ F16D *13/71*
U.S. Cl. 192—89 B **4 Claims**

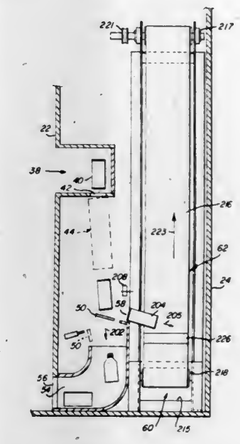


1. A clutch assembly comprising a flywheel secured to a drive shaft, a clutch cover secured to said flywheel, a diaphragm spring including an annular spring portion and a plurality of release fingers separated by slots having enlarged openings positioned at the outer ends of said slots, said diaphragm spring being pivotally mounted on the outer surface of said clutch cover by mounting means including a plurality of pivot rivets extending through said openings, an annular pressure plate disposed inside said clutch cover, a plurality of flexible drive straps interposed between said pressure plate and said clutch cover and extending chordally across said pressure plate, first securing rivet means securing one end of each drive strap to said pressure plate, second securing rivet means securing the other end of each drive strap to said clutch cover and positioned radially inwardly of the inner periphery of said pressure plate in alignment with said openings, and a driven disc interposed between said flywheel and said pressure plate and slidably splined on a driven shaft.

4,241,821
CONTAINER RETURN APPARATUS

Samuel C. Wu, Lakewood; Stephen A. Holick, and Robert A. Bottelsen, both of Littleton, all of Colo., assignors to Coors Container Company, Golden, Colo.

Filed Feb. 9, 1979, Ser. No. 10,881
Int. Cl.³ G07F *7/06*
U.S. Cl. 194—4 C **34 Claims**



1. Apparatus for receiving used metallic containers, separating used metallic containers and other articles into acceptable containers and other unacceptable articles and for dispensing a token or the like for the value of acceptable used containers received and comprising:

a free fall passage means defining a vertically downwardly extending continuous annular passage having an inlet end for receiving the containers and an outlet end for discharging the containers, said passage means enabling free fall of a vertically oriented container therethrough;

sensor means associated with said free fall passage means for determining the presence of an acceptable container in said passage means and for differentiating between an acceptable container and other unacceptable articles during free fall of the containers and articles through said passage means;

separator means responsive to control by said sensor means during free fall of containers through said passage means for separating an acceptable container from other unacceptable articles after discharge from the outlet end of said free fall passage means; and

dispensing means operative in response to the presence and separation of an acceptable container for dispensing a token or the like for the value of the acceptable container.

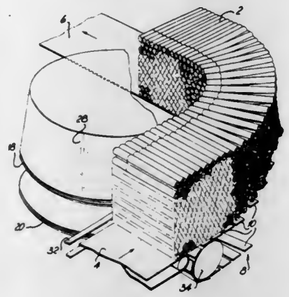
4,241,822
APPARATUS FOR CONVEYING ROD-LIKE ARTICLES

Desmond W. Molins; Peter A. Clarke, both of London, and Eric A. Luddington, Ringwood, all of England, assignors to Molins Limited, England

Filed Nov. 8, 1978, Ser. No. 958,720
Claims priority, application United Kingdom, Nov. 22, 1977, 48679/77
Int. Cl.³ B65G *15/02, 15/62, 47/24, 47/68*
U.S. Cl. 198—406 **44 Claims**

1. Apparatus for conveying rod-like articles comprising means for moving a stream consisting of a stack of rod-like articles in a direction transverse to their lengths, means for

conveying the stack around a curved path about an axis generally perpendicular to said direction, and guide means for elevating said conveying means so as to raise the stack on the outside of the curve relative to the inside of the curve.

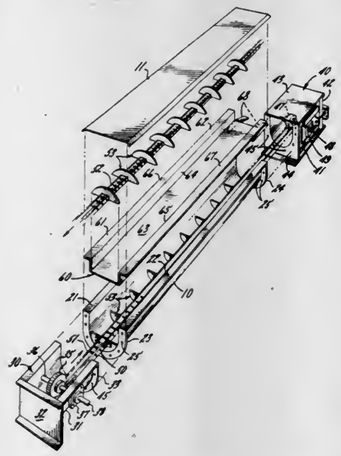


4,241,823

CHAIN DRAG KIT FOR CONVEYOR

Merle E. Clewett, Clinton, Ill., assignor to Union Iron Works, Inc., Warrensburg, Ill.

Filed Aug. 31, 1979, Ser. No. 71,678
Int. Cl.³ B65G *19/28*
U.S. Cl. 198—727 **1 Claim**



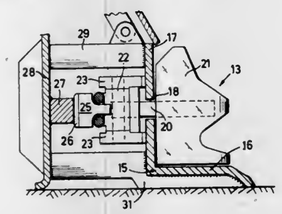
1. A drag chain conveyor kit for converting a screw conveyor to a drag chain conveyor, the screw conveyor being of the type having a main trough having a semi-circular bottom with parallel flanges extending horizontally outwardly along its upper edges and end flanges extending outwardly along its end edges together with a removable matching substantially flat cover having side edges dimensioned to rest on the parallel flanges, the combination comprising a pair of sprocket boxes dimensioned for assembly on the respective end flanges of the main trough and having mutually aligned sprockets journaled therein including a drive sprocket, an endless drag chain trained about the sprockets to form lower and upper runs of chain, conveyor flights secured to the chain at spaced intervals and extending at right angles thereto, the flights each having a semi-circular edge conforming to the semi-circular bottom of the main trough and having a straight edge, a relatively shallow auxiliary trough of rectangularly U-shaped cross section having parallel flanges extending horizontally outwardly along its respective upper edges and having a width dimension such as to provide a nested fit of the auxiliary trough into the main trough with the horizontal flanges on the auxiliary trough supported on the corresponding flanges of the main trough, the auxiliary trough having a flat bottom forming a return guide surface for the straight edges of the flights on the upper run of chain, the flanges on the auxiliary trough being of such width that when the cover is applied (1) the horizontal flanges on the auxiliary trough, (2) the corresponding flanges on the main trough, and (3) the outer edges of the cover form a sandwich construction, and a series of clamps at intervals along the flanges for clamping such flanges and cover together, the auxiliary trough being provided in relatively short sections arranged end to end, interfitted means to keep the presented end edges of the adjacent sections in alignment with one another, the straight edges of the flights being centrally notched to accommodate the chain and to provide clearance space, the interfitted means including oppositely positioned upper and lower members at the end of a section defining a socket for the adjacent section, the upper member being centered in a position registered with the clearance spaces in the successive flights to insure that the flights have smooth uninterrupted guidance from one section of the auxiliary trough to the next during their return passage.

4,241,824

CONVEYORS FOR USE IN MINERAL MINING INSTALLATIONS

Werner Georg; Gerhard Merten, both of Lunen, and Helmut Langenberg, Waltrop, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Fed. Rep. of Germany

Continuation of Ser. No. 841,767, Oct. 13, 1977, abandoned, Continuation of Ser. No. 696,658, Jun. 16, 1976, abandoned. This application Nov. 3, 1978, Ser. No. 957,501
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1975, 2527044; Dec. 27, 1975, 2558884
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—745 **8 Claims**



3. In a shuttle conveyor for use in underground mineral mining installations and comprising:

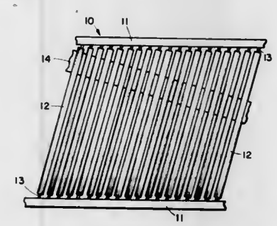
a series of pans arranged end-to-end, each pan having a floor plate along which material is conveyed and a side wall generally upstanding relative to the floor plate, the pans defining a conveying zone disposed above the floor plates with the side wall of each pan having a first side facing the conveying zone and a second side opposite therefrom, longitudinally spaced supports connected at least to said side walls and said floor plates and defining an open, rigid stable framework and forming a driving zone disposed externally of the conveying zone, whereby any fine mineral mining material entering the driving zone may fall freely onto the floor of the working to prevent jamming of a drive system within said driving zone, the second sides of the side walls of the pans facing said driving zone, slot means extending longitudinally of the conveying zone and providing direct communication between the driving and conveying zones, a plurality of material entrainment devices for conveying material along the conveying zone and over the floor plates of the pans, each of said devices having a first part located in the conveying zone and a second part located in the driving zone, each of said devices extending through said slot means, drive means including elongate traction means located in the driving zone for driving the devices in unison back and forth in reciprocal manner in first and second directions, whereby said devices convey material along the conveying zone in said first direction and return predominantly without conveying material in said second direction, pivotal mounting means mounting the second parts of the devices to the traction means to permit said devices to pivot automatically between a working position wherein the first parts of the devices extend generally laterally outwards from the first sides of the side walls of the pans and over the floor plates of the pans when the drive means moves the devices in the first direction and an inoperative position wherein the first parts of the devices are stowed adjacent the first sides of the side walls of the pans when the drive means moves the devices in the second direction; stop means on the second parts of the devices for maintaining the devices in the working position when the drive means moves the devices in the first direction; the improvement comprising the traction means composed of a plurality of elongate guide blocks spaced apart longitudinally of the conveying zone and interconnected by means of closed chain links permitting relative articulation, the pivot mounting means serving to pivotably mount each of the entrainment devices to a respective one of the guide blocks, and guide means in the driving zone for slidably engaging solely with the guide blocks to guide the traction means during its reciprocal movement.

4,241,825

PIVOTED GIMBEL BEARING FOR ROLLERS

Gerald A. Brouwer, Grandville, Mich., assignor to Lear Siegler, Inc., Rapistan Division, Grand Rapids, Mich.

Filed Apr. 30, 1979, Ser. No. 34,947
Int. Cl.³ B65G *13/12*
U.S. Cl. 198—782 **8 Claims**



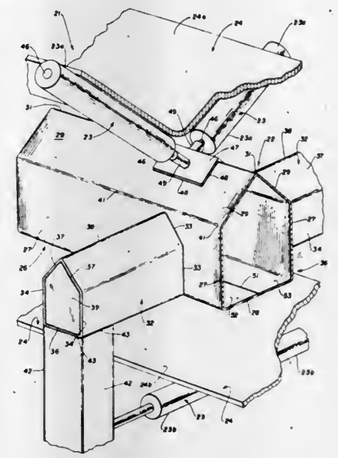
1. In a conveyor having a pair of side frame members and rollers mounted therebetween, the axes of said rollers being skewed with respect to said frame members, a support shaft projecting from each end of each of said rollers, the improvement in said conveyor comprising: a bearing member at each end of each of said rollers, each of said bearing members having parallel planar upper and lower surfaces each of said bearing members having a generally horizontal opening therein receiving one of said support shafts; a generally horizontal flange on each of said frame members; the lower surfaces of said bearing members being seated on said flanges; a cap member secured to each of said frame members, each cap member having a generally horizontal leg seated over and engaging the upper surfaces of said bearing members; pivot means substantially centered with respect to each of said bearing members securing said bearing members to both said flange and said leg for rotation about a vertical axis whereby said bearing members may be rotated in a horizontal plane to adjust to the angular relationship between said frame members and the shaft of said rollers.

4,241,826

CONVEYOR ASSEMBLY SUPPORT STRUCTURE AND HIGH STRENGTH TUBULAR BEAM THEREFOR

Charles J. Billington, P.O. Box 4204, Modesto, Calif. 95352

Filed Jul. 18, 1978, Ser. No. 925,706
Int. Cl.³ B65G *39/10*
U.S. Cl. 198—825 **7 Claims**



1. A high strength, debris free, easily cleaned conveyor assembly support structure for use in supporting a plurality of roller elements and an endless belt mounted for movement over said roller elements, said support structure formed for support of and having said roller elements mounted thereto, wherein the improvement in said conveyor assembly support structure is comprised of:

said support structure including a longitudinally extending beam positioned substantially along the length of and subjacent an upper portion of said belt;

said beam being formed as a tubular member having a pair of vertical side walls, a bottom wall means connecting said side walls, and a pair of upwardly sloped top walls extending from said side walls and meeting in a common apex;

said support structure further including a plurality of cross-beam members having sloped top walls and secured to said vertical side walls of said longitudinally extending beam in a manner to not extend above said vertical side walls, and extending from both sides thereof;

said sloped top walls of said longitudinally extending beam being formed for support of said roller elements; and

said longitudinally extending beam and said cross-beam members being free of upwardly facing horizontally oriented surfaces.

4,241,827

PACKET HAVING SPACER MEMBERS

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Continuation of Ser. No. 917,237, Jun. 20, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,705
Int. Cl.³ B65D *85/10, 5/50;* A24F *15/00*
U.S. Cl. 206—248 **5 Claims**

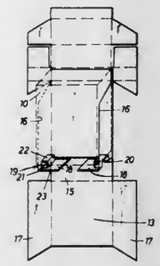
1. A packet for block-shaped articles, particularly cigarette groups or the like, said articles wrapped in an inner folded blank made of stiff paper, cardboard or other foldable material, having front, rear, bottom and side lateral walls to define a packet, the improvement comprising:

said lateral walls of said packet each comprise two lateral flaps folded on top of each other;

a folded-over corner flap connected with an inner one of

said lateral flaps and located at the inner side of said bottom wall;

said block-shaped article supported away from said bottom wall by spacer means arranged in the area of said bottom wall;



said spacer means arranged in corners formed by said bottom wall and said lateral wall; and

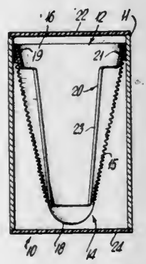
said spacer means each exclusively formed by supporting flaps folded towards the inside of said packet and formed by a double-T-shaped punching cut in said inner lateral flap.

4,241,828

COMPACT SHEATH PACKAGE FOR MEDICAL INSTRUMENTS

Peter A. Bourdelle, Plainsboro, and Norman Schiff, Kendall Park, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 30, 1976, Ser. No. 710,044
Int. Cl.³ B65D *85/38*
U.S. Cl. 206—306 **3 Claims**



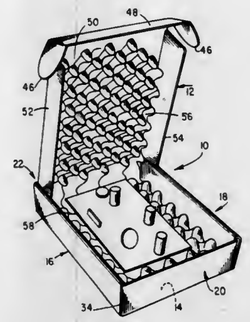
1. A sheath package comprising: an elongatable prophylactic sheath having an open end for receiving an instrument and a closed end for covering at least a portion of said instrument; an envelope including two substantially parallel members joined together at the edges thereof, said envelope having an entry end and an exit end having a length in the longitudinal direction less than the length of said sheath when elongated, said sheath being affixed to the interior surface of said envelope with said open end facing said entry end, said sheath being compacted in length to be completely accommodated within said envelope; means to seal said envelope to protect the cleanliness of the outside surface of said sheath therewithin before use, said entry end of said envelope being capable of being penetrated by an instrument for insertion into said open end of said sheath, and said exit end of said envelope being capable of being penetrated by the sheath-covered instrument; and guide means located in said open end of said sheath for assisting in directing said instrument into said sheath, said guide means including a tapered tongue element which is inserted in said open end of said sheath, a portion of said guide means being affixed to the interior surface of at least one of said parallel envelope members.

4,241,829

MEANS FOR CONTAINING ELECTROSTATIC SENSITIVE ELECTRONIC COMPONENTS

Charles T. Hardy, Alsip, Ill., assignor to Republic Packaging Company, Chicago, Ill.

Filed Jun. 4, 1979, Ser. No. 44,846
Int. Cl.³ B65D *81/00, 81/04, 75/30, 65/42*
U.S. Cl. 206—328 **2 Claims**



1. A container for use with electrostatic sensitive electronic components comprising:

a box-like structure having a bottom, a pair of opposed side walls, a pair of opposed end walls and a top movable between a first position exposing the interior of said box-like structure and a second position enclosing said box-like structure;

a continuous conductive coating formed overlying substantially all of the exterior and interior surfaces of said box-like structure; and

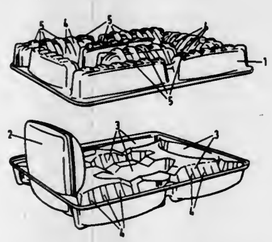
a liner of convoluted foam impregnated with a conductive material secured to the interior surfaces of said top and bottom for promoting intimate contact with an article contained within said box-like structure, said conductive material forming a continuous conductive path with said conductive coating, whereby a continuous conductive path is established between the exterior surface of said box-like structure and an article contained therein.

4,241,830

PACKING SYSTEM

Giovanni Di Gesu', Palermo, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Italy

Filed Feb. 12, 1979, Ser. No. 11,151
Claims priority, application Italy, Feb. 20, 1978, 67342 A/78
Int. Cl.³ B65D *71/00*
U.S. Cl. 206—422 **23 Claims**



1. A packing device for storing and transporting a plurality

of items, comprising a pair of unconnected substantially identical shells, each of said shells being elongated and including a plurality of preformed elongated recesses provided in one surface thereof for defining corresponding projections on an opposite surface thereof, said recesses of each of said shells being sized, shaped, and located such that each of said recesses of a first shell of said pair of shells cooperates with a corresponding one of said recesses of a second shell of said pair of shells to firmly retain an item between said first and second shells when said first and second shells are spaced apart and mutually inverted so that said recesses in said first shell open toward said recesses in said second shell, first and second recesses of said plurality of recesses of said first shell extending along a first longitudinal edge of said first shell in end-to-end fashion, third and fourth recesses of said plurality of recesses of said first shell extending along a second longitudinal edge of said first shell in end-to-end fashion, a fifth recess of said plurality of said recesses of said first shell extending along a first lateral edge of said first shell, a sixth recess of said plurality of recesses of said first shell extending along a second lateral edge of said first shell, and a seventh recess of said plurality of recesses of said first shell extending along a longitudinal axis of said first shell between said first, second, third and fourth recesses of said first shell, said seventh recess of said first shell being sized and arranged such that a first plane extending generally laterally across said first shell passes through one of said first and second recesses of said first shell, one of said third and fourth recesses of said first shell, and said seventh recess of said first shell and such that a second plane extending generally laterally across said first shell passes through the other of said first and second recesses of said first shell, the other of said third and fourth recesses of said first shell, and said seventh recess of said first shell, and first and second recesses of said plurality of recesses of said second shell extending along a first longitudinal edge of said second shell in end-to-end fashion, third and fourth recesses of said plurality of recesses of said second shell extending along a second longitudinal edge of said second shell in end-to-end fashion, a fifth recess of said plurality of recesses of said second shell extending along a first lateral edge of said second shell, a sixth recess of said plurality of recesses of said second shell extending along a second lateral edge of said second shell, and a seventh recess of said plurality of recesses of said second shell extending along a longitudinal axis of said second shell between said first, second, third, and fourth recesses of said second shell, said seventh recess of said second shell being sized and arranged such that a third plane extending generally laterally across said second shell passes through one of said first and second recesses of said second shell, one of said third and fourth recesses of said second shell, and said seventh recess of said second shell and such that a fourth plane extending generally laterally across said second shell passes through the other of said first and second recesses of said second shell, the other of said third and fourth recesses of said second shell, and said seventh recess of said second shell.

4,241,831

HANDLE PARTICULARLY FOR WIRE BASKETS

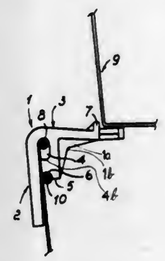
Gianbattista Locatelli, Via Trieste, 12, Lecco (Province of Como), Italy

Filed May 30, 1978, Ser. No. 910,791
Claims priority, application Italy, Jun. 3, 1977, 24360 A/77
Int. Cl.³ B65D *21/06, 25/28*
U.S. Cl. 206—506 **3 Claims**

1. A handle for a wire basket, the wire basket having a first cross-bar in a horizontal plane at the top end of a side wall of the basket and having a second continuous cross-bar spaced below and parallel to the first cross-bar, the top cross-bar including two opposing free ends formed by a discontinuity of the top cross-bar along the side wall, the second cross-bar being continuous below the discontinuity, said handle comprising:

a first leg unitarily connected to a second leg forming an L-shaped body; a corner member spanning the interior angle formed by the first and second legs; an oblong hole through said corner member having two opposing arcuate end surfaces interconnected by two opposing side surfaces, the major axis of said oblong hole extending in a generally parallel direction to said first leg, one of said arcuate end surfaces being adjacent said second leg, one of said side surfaces being adjacent said first leg, said one of said arcuate end surfaces defining a first seat, the opposing arcuate end surface defining a second seat; said corner member having an end surface adjacent the intermediate length of said first leg; said end surface having an outwardly facing arcuate surface aligned with and in the same facing direction as said first seat and defining a third seat;

said oblong hole adapted to slidably receive one of said free ends of said first cross-bar, said third seat adapted to engage said second cross-bar when said handle is mounted on said basket with said first seat engaging said first cross-bar thereby firmly maintaining said handle in a first position on said basket, said first leg being substantially parallel to and exterior of said side wall and said second leg being transversely to and extending inwardly from said side wall in said first position, said handle in said first position functioning as a braket for supporting the bottom of another basket resting on said second leg; said corner member having a flared abutment surface offset from said third seat and said oblong hole in a location closer to said second leg than said first seat, said abutment surface being arranged, when said handle is mounted on the basket, to abut said second cross-bar in a second position of said handle, said first cross-bar being in engagement with said second seat in said second position with said first leg being transversely to and extending outwardly from said wall and with said second leg extending downwardly, interiorly of the side wall, said first leg in said second position functioning as a holder for the basket to which it is adapted to be mounted, said handle rotatable from said first position to said second position and vice versa when mounted to said side wall.



4,241,832

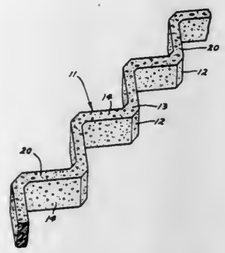
CUSHIONING FOR CONTAINER

Russell F. Bliss, 347-104th La. NE., Blaine, Minn. 55434

Filed Sep. 4, 1979, Ser. No. 72,563
Int. Cl.³ B65D *81/02, 85/30*
U.S. Cl. 206—523 **11 Claims**

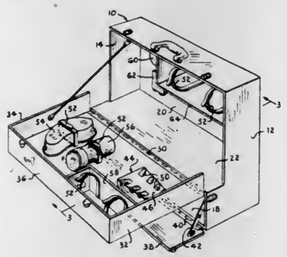
1. A semi-rigid plastic cushioning strip having a wave shape and being adapted to fit singly or with other such strips within containers to cushion loads contained therein, the strip being formed integrally and in one piece of semi-rigid resilient foamed plastic, the wave shape of the strip defining crests and troughs extending across the entire width of the strip, and the strip also having wave shaped side edges to respectively engage the load and container, the strip including a multiplicity of substantially flat panels the width of which is the same as the width of the strip, the width of the strip significantly exceeding

the thickness of the panels, and the strip having planar surfaces extending entirely across the width of the strip at all of the



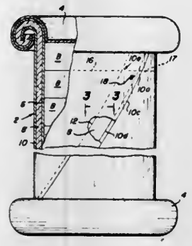
wave crests and troughs, such that the strip can be positioned on either side edge.

4,241,833
PARAMEDIC KIT
Dean E. Luebcke, 453 E. 101st Ave., Crown Point, Ind. 46307
Filed Aug. 20, 1979, Ser. No. 67,752
Int. Cl.³ B65D *6/02, 25/02, 43/16*
U.S. Cl. 206—570 **5 Claims**



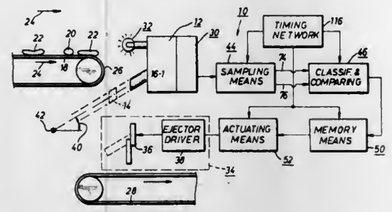
1. An airway kit, comprising:
end walls, base and top walls and a back wall;
a partition wall extending between said end walls and parallel to said base and top walls;
a front wall hinged to said partition wall pivotable to planularly extend said partition when in the open position, and to abut against said end and top walls when in the closed position;
a second front wall hinged to said base wall pivotable to planularly extend said base wall when in the open position, and to abut against said end and partition walls when in the closed position;
anchor means fixed to the interior side of said top front wall, said anchor means being a sheet member supported around the perimeter thereof and having a plurality of hole pairs;
oropharyngeal airways fitted in said hole pairs of said anchor means;
a plurality of straps fixed to the interior side of said front wall, the ends of each of said straps connecting together to form constraining means;
a block member on the interior side of said back wall; and
a mask from a bag mask resuscitator mounted on said block member.

4,241,834
COMPOSITE CONTAINER INCLUDING A PERFORATED LABEL LAYER, AND METHOD AND APPARATUS FOR FORMING THE SAME
Ronald A. Beauchamp, Creve Coeur, Mo., assignor to Boise Cascade Corporation, Boise, Id.
Filed Apr. 20, 1977, Ser. No. 789,084
Int. Cl.³ B65D *3/26, 65/28, 75/62*
U.S. Cl. 206—611 **1 Claim**



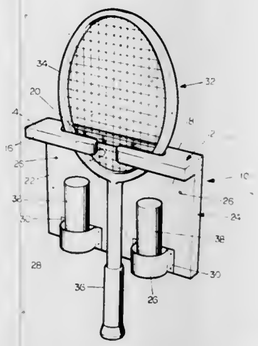
1. A composite container for a pressurized product such as dough and the like, comprising
(a) a helically-wound cylindrical body wall layer (**8**) formed of fibrous material and containing a helical butt joint (**12**) extending continuously the length thereof, the adjacent edge portions of said body wall layer defining said butt joint being contiguous and unbonded;
(b) a correspondingly helically-wound impervious liner layer (**6**) secured to and coextensive with the inner surface of said cylindrical body wall layer to bridge said butt joint, said liner layer (**6**) including a helically extending folded expansible portion (**6***a*, **6***b*) bonded to only said body wall layer on both sides of, and extending in straddling relation across, said body wall helical butt joint, one edge portion (**6***a*) of said liner layer terminating adjacent a first side of said body wall helical butt joint, the other edge portion of said liner layer having a first portion (**6***b*) which extends from the other side of said butt joint across and beyond said butt joint, and a reversely folded second portion (**6***c*) which extends between said one edge portion and said first portion back toward said butt joint, the fold line (**6***d*) between said first and second liner portions extending helically the length of said butt joint, the outer surface of said reversely folded second liner portion (**6***c*) being secured to the inner surface of said liner layer one edge portion to permit relative expansion of said first and second liner portions;
(c) a removable helically-wound edge-overlapping outer label layer (**10**) extending across the outer surface of said butt joint and secured to the outer surfaces of the abutting edge portions of said body wall layer substantially throughout the length of said butt joint, thereby to maintain together the body wall edge portions defining said unbonded butt joint, said helically wound liner, body wall and label layers defining a tubular composite wall; and
(d) a metal end closure member connected with said tubular composite wall to close one end thereof;
(e) said label layer containing a series of perforations (**16**) that defines a tear line which extends from the overlapping edge of said label layer circumferentially around the tubular composite wall adjacent and generally parallel with said metal end closure member, said series of perforations being discontinuous to define in said label layer an imperforate portion (**10***e*) which is bonded in straddling relation across said body layer butt joint, whereby upon removal of said label layer by tearing along said tear line, the butt joint is expanded by the pressurized packaged product to automatically open said liner layer.

4,241,835
SORTING APPARATUS
James F. Lockett, Houston, Tex., assignor to Geosource Inc., Houston, Tex.
Filed Jul. 12, 1976, Ser. No. 704,697
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—582 **12 Claims**



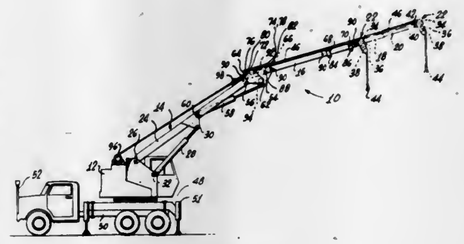
1. In apparatus for sorting articles randomly disposed across an article stream, said apparatus having means for generating a first and a second electrical signal representative of light energy reflected from articles to be sorted, means for generating a classification signal functionally related to the ratio of said first and said second electrical signal, wherein the improvement comprises:
means responsive to equality between said first and said second electrical signals for generating a predetermined substitute classification signal;
means for comparing the value of said classification signal with a predetermined range of values representative of a foreign object and for generating a reject signal responsive to the presence of a classification signal falling within said range, and,
wherein said predetermined substitute classification signal falls within said range of values.

4,241,836
UNIVERSAL RACKET RACK
Rebecca A. Cousins, 3744 Brookside Rd., Toledo, Ohio 43606
Filed Jun. 25, 1979, Ser. No. 51,401
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—14 **2 Claims**



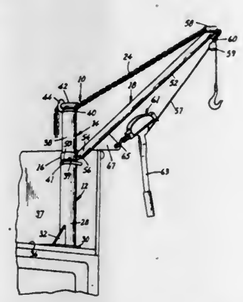
1. A universal rack for tennis rackets, squash rackets, badminton rackets, paddle ball rackets, and racketball rackets comprising an elongate horizontal member having a length exceeding its width and having two substantially parallel, planar upper and lower surfaces, an elongate slot extending longitudinally of said elongate member and extending between the upper and lower surfaces, said slot having a length less than the maximum transverse dimension across the net frame of the smallest racket to be held, said horizontal member also having an opening extending from one side of said slot to the adjacent edge of said elongate member, a vertical plate extending downwardly from the edge of said elongate member opposite the edge having the opening, and receptacles extending from said vertical plate and being symmetrically located with respect to said slot, said receptacles having substantially flat bottoms and being of sufficient size to receive cans of tennis balls held uprightly, and said receptacles being spaced substantially below said elongate member so that the cans will not interfere therewith.

4,241,837
CONVERTIBLE ARTICULATED CRANE
Don Suverkrop, 3513 Century Dr., Bakersfield, Calif. 93306
Filed Apr. 6, 1979, Ser. No. 27,793
Int. Cl.³ B66C *23/00*
U.S. Cl. 212—177 **22 Claims**



1. An articulated crane comprising:
a base;
a main boom having a lower end and an upper end, and being pivotally secured to said base by said lower end;
a secondary boom pivotally attachable to the upper end of said main boom, and having at least one extensible member; and
conversion means, for converting said crane for operation of said extensible member as an extension of said main boom, said conversion means including means for extension of said extensible member from either end of said secondary boom, and means for securing said main and secondary booms in a substantially parallel and folded relationship, with said extensible member forming an extension of said main boom, whereby said crane can be selectively operated as a straight boom crane.

4,241,838
HEIGHT-ADJUSTABLE HOIST
Calvin L. Hayes, 695 Suncrest Rd., Talent, Oreg. 97540
Filed Jun. 26, 1978, Ser. No. 919,426
Int. Cl.³ B66C *23/36, 23/62*
U.S. Cl. 212—255 **6 Claims**



1. A height-adjustable hoist comprising an upright post, a hoist arm and mounting means mounting one end of said arm adjacent the top of said post with the arm extending outwardly from said post at an angle, said mounting means

including pivot means accommodating pivoting of the arm in a substantially upright plane,

a tip member mounted on said post for extension upwardly from said post and said mounting means,

hoist means including pulley means attached to the other end of said arm opposite said one end, a line trained over said pulley means and means for paying out and taking in said line,

nonextensible means extending from said tip member to a point on said arm spaced from said one end for establishing the angle of said arm relative to said post, and the extension of said tip member relative to said post, and

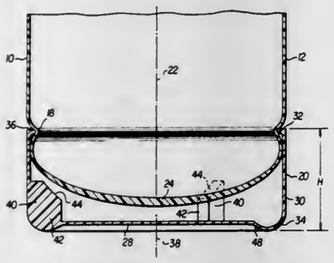
locking means for selectively varying the effective length of said nonextensible means.

4,241,839

BASE-CUP FOR ASSURING VERTICAL ALIGNMENT OF SEMI-HEMISPHERICALLY BOTTOMED BOTTLES

Alfred C. Alberghini, Dunwoody, Ga., assignor to Sewell Plastics, Inc., Atlanta, Ga.

Filed Aug. 14, 1979, Ser. No. 66,450
Int. Cl.³ B65D *23/00*
U.S. Cl. 215—100 R **10 Claims**



1. A base-cup for supporting a bottle in an upright position, the bottle having a semi-hemispherical bottom and having a radial indentation in a lower portion of its otherwise generally cylindrical body, the base-cup comprising:

(a) a sole plate,

(b) a cylindrical side wall having an open top edge and a bottom edge smoothly merging into the sole plate,

(c) an annular bead on the inside of the top edge for engaging the radial indentation of the bottle body, and

(d) limit means for preventing the over-insertion of the bottle into the base-cup, the limit means comprising at least three circumferentially equally spaced and radially extending fillet webs joined to the side wall of the base-cup.

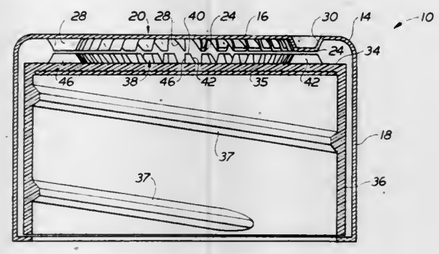
4,241,840

SAFETY CLOSURE ASSEMBLY WITH A SHEET METAL OVERCAP

Wilburn C. Willis, Hagerstown, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 1, 1979, Ser. No. 90,273
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—220 **6 Claims**

1. A safety closure for a container having a threaded neck, said closure adapted to be screwed onto said neck for sealing the container and unscrewed therefrom to provide access to the contents of the container, said closure comprising: an inner cap having a top wall with a depending skirt therearound, a plurality of teeth on the top wall, and internal threads for cooperatively engaging with the threaded neck of the container; and an overcap of thin sheet metal having a top wall with a depending skirt therearound, a plurality of louvers in the top wall, each of which comprises a flange portion projecting downwardly at an angle from said top wall and terminating in a terminal edge which is defined by a slit in the top wall and an integral supporting arch portion connecting each side of the flange portion to the top wall between the terminal edge and the junction of the flange portion and the top wall, said louvers being adapted for cooperative engagement with the teeth of the inner cap; said overcap overlying and being loosely mounted on the inner cap whereby a downwardly directed minimal force may be applied to the overcap while turning it in



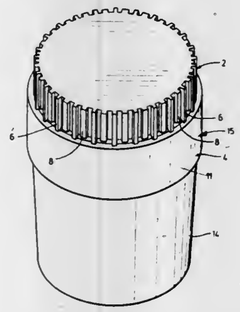
the closure-applying direction to engage the louvers of the overcap with the teeth of the inner cap and thereby screw the closure onto the container neck, and whereby a downwardly directed removing force must be applied to the overcap while turning it in the closure-removing direction to engage the louvers of the overcap with the teeth of the inner cap and thereby unscrew the closure from the container neck.

4,241,841

SEVERABLE CONNECTING MEANS

Peter K. Boller, Willowdale, Canada, assignor to Consumers Glass Company Ltd., Etobicoke, Canada

Filed May 7, 1979, Ser. No. 36,764
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—252 **10 Claims**



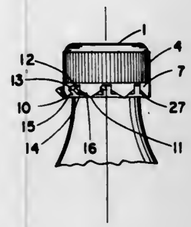
1. A twist breaking plastic guarantee seal comprising a cap portion and a depending skirt portion, said skirt portion having an inside diameter at the upper extremity thereof greater than the outside diameter of said cap portion and adapted for securement to a container neck exterior, interconnecting ribs joining and spacing said cap portion and skirt portion at spaced positions about the periphery of said cap, stop means located between the outside diameter of said cap portion and the inside diameter of said skirt portion adjacent the upper extremity thereof to predetermine the extent of axial movement of said cap portion relative to said skirt portion and the extent to which said ribs are flexed during application of said seal to a container, said ribs shearing on twisting said cap portion relative to said skirt portion to break said seal and allow said cap to be removed.

4,241,842

TAMPER INDICATING CONSTRUCTION FOR PLASTIC CLOSURES

Thurston H. Toeppen, Lois La., R.D. 3, Poughkeepsie, N.Y. 12603

Filed Aug. 6, 1979, Ser. No. 64,105
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **12 Claims**



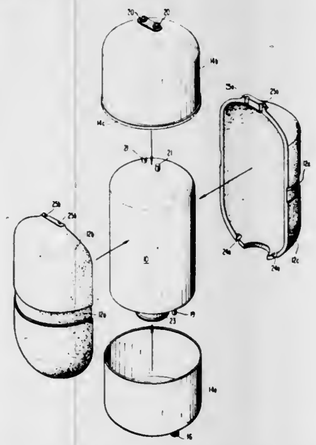
1. A tamper-indicating closure device for use with a threaded cylindrical outlet provided with a first shoulder, comprising a circular top surface and a cylindrical skirt depending therefrom, a device screw thread provided on said skirt for mating with the thread of said cylindrical outlet, at least one indicating portion on said device, an initial position of said indicating portion outside of the cylindrical surface of said skirt, a second position of said indicating portion inside of the cylindrical surface of said skirt, said indicating portion being movable radially of said skirt from said initial position to said second position, a tear zone of said device, a second shoulder on said indicating portion, whereby when said indicating portion is in the second position and when said second shoulder abuts said first shoulder, axial movement of said skirt with respect to said outlet causes said indicating portion to separate from the skirt at said tear zone.

4,241,843

LINED METAL TANK WITH HEAT SHIELD AND METHOD OF MAKING SAME

Robert Walker, Pawtucket, R.I., and Joseph A. Lane, Tauton, Mass., assignors to Amtrol Inc., West Warwick, R.I.

Filed Jun. 8, 1979, Ser. No. 46,763
Int. Cl.³ B23K *35/38*; B65D *8/06, 90/08, 90/38*
U.S. Cl. 220—5 A **14 Claims**



13. In a method of making the metallic tank wherein a plurality of metallic sections are welded together surrounding a lining of insulating material on the interior of the tank, the improvement comprising the step of inserting a heat shield between the insulating lining and the juncture at which the sections are welded together before the welding step to prevent damage to the insulating layer due to the heat generated by the welding process, said insulating lining having retaining means for securement of said heat shield adjacent said juncture.

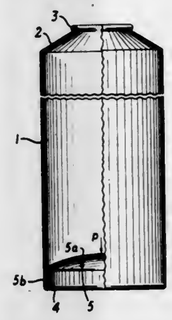
14. In a lined metal tank having a multi-section metallic tank of welded construction with an insulating lining disposed on the interior surface of the tank, the improvement comprising an insulating heat shield between the insulating lining and the juncture at which the multi-section tank is welded together to prevent damage to the insulating layer due to the heat generated by the welding process, said insulating lining having retaining means for securement of said heat shield adjacent said juncture.

4,241,844

AEROSOL DISPENSING AND SIMILAR METAL CANS, AND PROCESS FOR THE PRODUCTION THEREOF

Gilbert Dolveck, St. Barthelemy de Beaurepaire, France, assignor to Aluminium Suisse S.A., Switzerland

Division of Ser. No. 448,054, Mar. 4, 1974, Pat. No. 3,965,834.
This application Jun. 25, 1976, Ser. No. 699,793
Claims priority, application Switzerland, Mar. 8, 1973, 3380/73
Int. Cl.³ B65D *8/04, 8/08*
U.S. Cl. 220—67 **8 Claims**



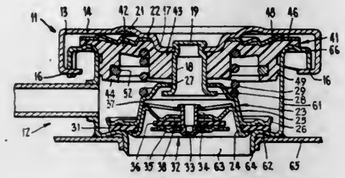
1. An aerosol dispensing or similar metal can for containing a fluid under pressure comprising, a tubular can body, a bottom having a dished central bottom portion and a peripheral skirt extending in a direction toward a bottom end of said can body, said central bottom portion being dished in a direction away from said skirt, said can body having a sidewall having a lower, circumferential marginal edge portion reversely folded inwardly to define with said sidewall a channel, said skirt having a peripheral edge seated against an inner bottom surface of said channel, said marginal portion defining said channel comprising an inner edge portion bent relative to said channel circumferentially of the channel defining an outer surface outwardly of said channel remotely from the bottom surface of said channel spaced axially from said dished central portion and disposed in a position to be engaged by said dished central portion upon deflection in a direction away from the top of the can when a given internal pressure in said can is exceeded, said outer surface upon engagement by the central portion effectively applying said edge portion in a direction toward said skirt in said channel and against said skirt, and said outer surface being disposed in position for engagement by said dished central portion upon deflection thereof for retention of said marginal edge portion in position defining said channel.

4,241,845

RADIATOR CAPS

Andrew S. Daly, Ivanhoe; Peter R. May, Springvale South, and George E. Braines, East Preston, all of Australia, assignors to A.S. Daly Nominees Pty. Ltd., Fairfield, Australia

Filed Jul. 2, 1979, Ser. No. 54,173
Claims priority, application Australia, Sep. 15, 1978, PD5972
Int. Cl.³ B65D *51/16, 53/02*
U.S. Cl. 220—203 **11 Claims**



1. A radiator cap assembly for fitting to a radiator filler neck having a tubular side wall and an internally projecting, upwardly facing, annular ledge positioned at the bottom of the side wall and surrounding a filler opening, said assembly comprising:

a cap to fit over the upper end of the filler neck;

an annular first seal element;

seal mounting means mounting said first annular seal element from the cap so as to engage the ledge of the filler neck when the cap is fitted to the filler neck and including biasing means to load the sealing member against the ledge so as to form a primary seal; and

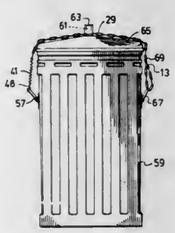
a second seal element having a cylindrical skirt portion extending away from the cap so as to project within the side wall of the filler neck, an annular flange portion projecting outwardly from the cap end of the skirt portion, a first annular seal surface on the annular flange portion to engage the rim of the filler neck at the upper end of said side wall and a second annular seal surface on said skirt portion to engage the inner peripheral surface of the side wall of the filler neck and thereby form a circumferential seal around that wall when the cap is fitted to the filler neck.

4,241,846

GARBAGE CAN COVER RETAINER

William Murphy, DaCola Shores, Conesus, N.Y. 14435

Filed Oct. 16, 1978, Ser. No. 951,643
Int. Cl.³ B65D *45/08*
U.S. Cl. 220—318 **8 Claims**



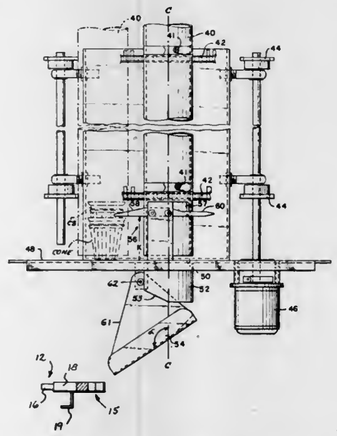
1. A covered garbage can with a cover being retained firmly in position thereon which comprises a garbage can having a pair of handles on opposite sides thereof, near the top thereof, a cover having a substantially centrally located handle on the top thereof, which cover is in position covering the garbage can, with the handle opening thereof being cut by a vertical plane passing through the middles of the can handles, and a retainer for holding the cover in position on the garbage can, which retainer includes a readily disconnectable first holding means of hook shape, a plurality of connected links connected to said first holding means and forming a chain extending from it, a spring means connected to said chain away from the first holding means, plus a disconnectable second holding means connected to the spring means and adapted for holding onto a handle of the garbage can, said retainer being passed through the cover handle, said second holding means holding onto a garbage can handle, said chain being passed through an opening between the other garbage can handle and the garbage can; and around the other garbage can handle, and the first hook shaped holding means holding to the chain to hold the cover in place with desired force, with the spring means, in normally most extended position, being below the top of the garbage can cover at the side thereof so that the spring is unbent.

4,241,847

ICE CREAM CONE AUTOMATIC VENDING MACHINE

Frederick N. Lancia; William A. Wolfe; Leonard F. Dearth; Stephen L. Benton; H. Richard Homan, and Arthur P. Bruce, all of 1050 Dearborn Dr., Columbus, Ohio 43229

Filed Mar. 29, 1978, Ser. No. 891,315
Int. Cl.² G07F *11/54, 11/10*
U.S. Cl. 221—12 **3 Claims**



1. An automatic vending machine for delivering stackable containers having edible product therein comprising a container discharge station for discharging empty containers one at a time into operative association with an arm pivotally mounted to the machine for rotation about a first, generally vertical axis; said arm having an end thereof having container-holding means for receiving and holding containers adapted to have edible product delivered thereto and to be vended and including releasable clamping means including lever means movable between a first and second position for releasing said clamping means; said clamping means being dimensioned to receive an empty container from a position above said clamping means and to hold the container in place; a container filling station for filling a container held by said container-holding means with edible product; and a delivery chamber for receipt of containers having edible product therein; and release means for acting upon said lever means for releasing said clamping means when said arm moves into said delivery chamber; said container discharge station comprising at least one stack of containers disposed in a position above said arm, and means for effecting dropping of containers one at a time from said stack to said arm including a generally horizontal plate having an opening formed therein greater than the largest diameter of a container to be passed therethrough; guide means located vertically between said at least one container stack and said arm for guiding dropping of containers into operative association with said arm clamping means so that said containers will not be misaligned or inverted during dropping and will be positively guided into operative association with said arm clamping means; said guide means including a generally tubular member disposed below said at least one container stack and having one end thereof directly vertically below said at least one container stack, and having a chute disposed vertically below the other end of said generally tubular member, said chute having a generally open top and having a primary container-guiding portion thereof extending downwardly from said tubular member and disposed at an obtuse angle with respect to the vertical; wherein the improvement comprises:

a planar, vertical bracket integral with said chute over substantially the length thereof, said chute being semi-circular in shape; and means for operatively releasable attaching said bracket to and beneath said generally horizontal plate of said container discharge station, said attaching means being horizontally displaced from, and distinct from, said tubular member of said guide means, and mounting said chute so that it is vertically displaced from said tubular member over the entire length thereof.

4,241,848

CONTAINER PROCESSING APPARATUS

Jerry W. Young, Weston, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 798,049, May 18, 1977, Pat. No. 4,143,610.
This application Dec. 27, 1978, Ser. No. 973,767
Int. Cl.³ B65G *59/10*
U.S. Cl. 221—222 **9 Claims**

1. Apparatus for dispensing tapered containers, said apparatus including:

support means;

a plurlity of pairs of jaws movably carried by said support means with each said pair of jaws forming a respective container receiving opening and one said pair of jaws being positioned above and spaced apart from another said pair of jaws, the jaws in each pair being relatively movable between an open position and a closed position and the jaws of one pair of jaws being movable independently of the jaws of another pair of jaws;

first means positioned adjacent to and above said jaws and adapted for storing a plurality of containers;

second means operably associated with said jaws and operable for effecting the movement of said jaws;

third means positioned below said lower disposed pair of jaws and having a portion thereof adapted for engagement with a side wall between a top edge and a bottom edge of one of said containers for selectively urging downward movement of said container; and

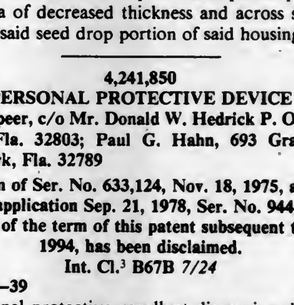
power means operably associated with said third means and operable for driving said third means to selectively urge a container engaged by said third means downwardly when the jaws of said lower disposed pair of jaws are in the the open position, and, alternately, for stopping said third means to selectively prevent the urging of a container engaged by said third means downwardly when the jaws of said lower disposed pair of jaws are in the closed position.

4,241,849

AIR CUT-OFF PAD FOR AN AIR PLANTER WITH SEED DISCHARGE FEATURE

Paul H. Harrer, La Porte, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 7, 1979, Ser. No. 36,667
Int. Cl.³ A01C *7/04*
U.S. Cl. 221—266 **3 Claims**



1. An air planter of the type having a housing with a seed cavity to which bulk seed and pressurized air are supplied and a seed drop portion at the lower part thereof and a vertical seed singulating disk rotatable about a horizontal axis having a generally flat sealing face presenting circumferentially spaced seed pockets which sequentially communicate with said seed cavity and said seed drop portion when said disk is rotated in a predetermined direction, characterized by

a resilient air cut-off pad of predetermined thickness in the direction parallel to the axis of said disk, said pad being interposed between said housing and disk with a trailing edge adjacent said seed drop portion,

a flat sealing surface on said pad in resilient sealing engagement with the flat face of said disk whereby said seed pockets are brought into confronting relation with said sealing surface of said pad as said disk is rotated in said predetermined direction, and

an area of gradually decreasing thickness in said pad beginning at said sealing surface, extending in said predetermined direction a predetermined distance and terminating at said trailing edge, said area of decreasing thickness being disposed to confront said seed pockets as said disk is rotated in said predetermined direction whereby the seeds in said pockets are substantially relieved of pressure of contact with said resilient pad as each pocket passes across said area of decreased thickness and across said trailing edge to said seed drop portion of said housing.

4,241,850

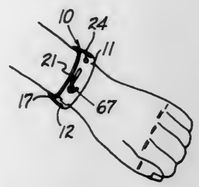
PERSONAL PROTECTIVE DEVICE

Eugene M. Speer, c/o Mr. Donald W. Hedrick P. O. Box 2631, Orlando, Fla. 32803; Paul G. Hahn, 693 Granville Dr., Winter Park, Fla. 32789

Continuation of Ser. No. 633,124, Nov. 18, 1975, abandoned.
This application Sep. 21, 1978, Ser. No. 944,636
The portion of the term of this patent subsequent to Dec. 30, 1994, has been disclaimed.
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—39 **10 Claims**

1. A personal protective repellent dispensing device comprising an exterior housing member of attractive appearance in

the form of an article which normally is conveniently carried as an accessory by a person in a readily accessible manner and which disguises the nature of the device, container means for containing a fluid substance of foul and repulsive nature within the exterior housing member, said exterior housing member having at least one outlet opening to the exterior thereof communicating with said container means, selectively controllable dispensing means coacting with said container means for releasing a fluid substance contained therein through the outlet opening under the control of a person carrying the device, and positive acting safety lock means on said housing member for



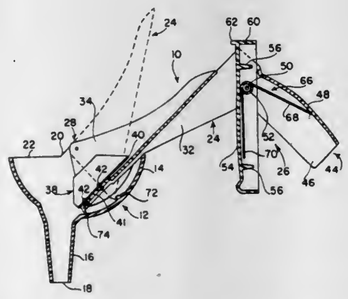
positively preventing inadvertent actuation of the selectively controllable dispensing means, said positive acting safety lock means including spring means under tension for positively locking the safety lock means in the safety lock position and requiring that the spring means be tensioned further in order to change the selectively controllable dispensing means from a safety locked position to a ready armed detent position where it can be selectively and readily operated by a person carrying the device in situations where it is desired to arm the device and condition it for operation by the selectively controllable dispensing means alone.

4,241,851

ADJUSTABLE OIL FUNNEL

Howard Ibaraki, Monterey Park, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed May 15, 1979, Ser. No. 39,395
Int. Cl.³ B67B *7/28*
U.S. Cl. 222—83.5 **4 Claims**



1. An oil dispensing device for an internal combustion engine comprising:

a cradle formed with a chute that has an upwardly directly piercing blade at a lower end and a trigger mechanism at an upper end for forcing an oil can down said chute and onto said piercing blade,

a funnel having a concave bowl with a wide mouth located above a narrow spout, and said bowl drains into said narrow spout, and said chute is provided with a tooth at its lower extremity directed toward said bowl, and

said funnel and said cradle are equipped with releasable interacting rotating means to rotatably mount said cradle to said funnel with said lower end of said chute within said funnel, and

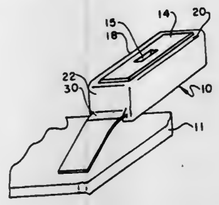
said bowl of said funnel includes an outwardly directed stop on its concave wall to limit upward rotation of said chute relative to said funnel.

4,241,852

DISPENSING CONTAINER FOR BUTTER HAVING FOLLOWER

Stanley J. Klem, 2607 Wyndham La., Orlando, Fla. 32808

Filed Mar. 1, 1978, Ser. No. 882,348
Int. Cl.² B65D *35/28*
U.S. Cl. 222—103 **5 Claims**



5. A dispensing container for dispensing softened butter or similar material from pre-packaged envelopes, the dispensing container comprising:

a frame including a base, a first and a second enlongated side wall integral therewith spaced apart by a front and a rear end wall to define chamber having an aperture;

a feed member movable relative to said base spans said frame aperture and includes an orifice for venting entrapped air within said chamber; and

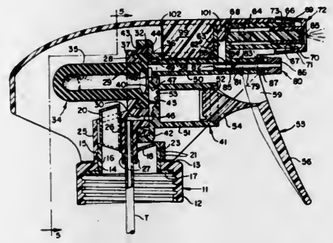
a sealable passageway disposed at one end of said frame, the upper limit of said passageway being defined by a lip projection from said front wall and the lower limit of said passageway being defined by a flexible base extension that projects beyond said front wall, said flexible extension including a sealing edge biased against said projecting lip for pinching an end portion of the pre-packaged envelope disposed therebetween.

4,241,853

DISPENSER FOR EITHER CONTINUOUS OR INTERMITTENT DISCHARGE

James D. Pauls; Roy Hammett, both of Miami, and William S. Blake, Miami Lakes, all of Fla., assignors to James D. Pauls and J. Claybrook Lewis and Associates, Limited, Miami, Fla.

Filed May 17, 1978, Ser. No. 906,747
Int. Cl.² B05B *11/02*
U.S. Cl. 222—207 **20 Claims**



1. An economical, easy to use, duration and/or continuous action dispensing device, comprising: a manifold member having fastening means thereon for securing the manifold member to a container; first expansible chamber means carried by the manifold member and including actuator means operable to alternately draw material from a container and then

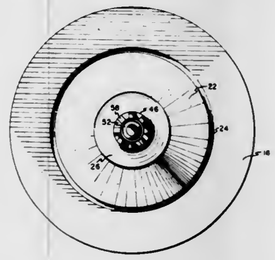
pressurize it; second expansible chamber means carried by the manifold member for receiving pressurized material from the first expansible chamber means and accumulating, under pressure, a quantity of the material for subsequent, prolonged discharge; a stationary discharge nozzel connected to receive the pressurized material from the second expansible chamber means and discharge valve means connected with the second expansible chamber means, and having a first position for precluding flow from the second expansible chamber means, and a second position enabling flow from the second expansible chamber means to the nozzle for discharge as desired, said discharge valve means including selectively operable latching means for holding the discharge valve means in its second position during operation of the actuator means to obtain a continuous discharge, said dispensing device being attachable to existing, conventional containers.

4,241,854

LIQUID DISPENSER

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06425, and Owen Van Brocklin, Bristol, Conn., assignors to Robert A. Bennett, Easton, Conn.

Filed Nov. 26, 1979, Ser. No. 97,733
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—207 **6 Claims**



1. A dispenser for use with a container of liquid having a vertical neck open at the top, said dispenser comprising:

a horizontal flexible diaphragm having a downwardly exending peripheral lip adapted for detachable sealing engagement with the periphery of the open neck whereby the diaphragm covers the neck opening, said diaphragm having a top disposed concave cup-like recess inwardly spaced from said lip centrally disposed therein with a central hole at the bottom thereof;

a vertically elongated hollow tubular element having an outwardly flared upper section disposed adjacent but spaced below the diaphragm and adapted for detachable sealing engagement with the periphery of said lip, said section having a side wall which defines an inverted truncated cone with spaced longitudinally extending slots therein, said element having a lower vertical hollow section with an upper opening coincident with the lower end of said cone and a lower opening adapted to extend into the container below the level of the liquid, the element also having a vertical bore extending therethrough, said bore having a first constriction which permits the passage of liquid therethrough disposed in the lower section adjacent but below the upper opening thereof, the bore wall containing a vertical cylindrical recess (spaced outwardly from the interior of the bore and spaced inwardly from the outer surface of the lower element) which communicates at its top end with the interior of the cone and has a closed bottom end disposed below said first constriction;

a vertically elongated hollow tube sealed to and extending through said hole has an open top end disposed above said hole in the concave recess and an open bottom end always disposed in the vertical recess, said tube being vertically slidable in said vertical recess, said tube having in its hollow interior a second constriction disposed intermediate the ends thereof, said top tube end having a plurality of horizontal spaced conduits interconnecting the interior of the tube with the interior of said concave recess; and

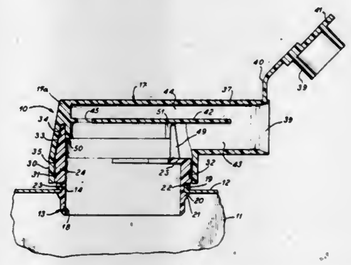
a vertical prong disposed in said bore and the tube interior, the bottom end of the prong being secured in said first constriction without obstructing liquid passage therethrough, the top end of the prong being disposed above and larger than the second constriction, the main body of said prong being slidable through said second constriction with sufficient clearance to permit liquid to flow around said body through said second constriction, said tube having a normal raised position at which the second constriction and said top end are in sealing engagement and define a closed valve through which said liquid cannot pass, said tube having a momentarily lowered position at which said top end is spaced above the second constriction to open said valve and permit passage of said liquid therethrough.

4,241,855

FLOW CONTROLLING POURING SPOUT

Yu Yoshioka, Los Angeles, Calif., assignor to Kikkoman Foods, Inc., Elkhorn, Wis.

Filed Apr. 16, 1979, Ser. No. 30,121
Int. Cl.³ B67D *3/00*; B65D *47/00*
U.S. Cl. 222—479 **10 Claims**



1. A flow-controlling pouring spout assembly adapted to be applied in flow-controlling relation to a discharge opening in a pourable contents container, said assembly comprising:

a base member having means for retaining engagement with the container in flow-controlling relation to said opening;

said base member having a flow passage therethrough initially closed by rupturable means extending across the flow passage;

a pouring spout member having a discharge port opening generally radially therefrom;

and means separably connecting said pouring spout member in snap-on, snap-off and relatively swiveling relation on said base member for receiving and directing container contents flow from said base member passage through said port and permitting said spout member to be selectively swiveled relative to said base member for orienting said port in different radial directions relative to said base member;

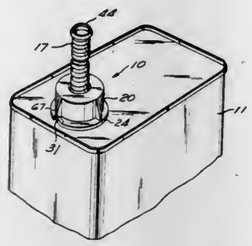
said pouring spout member being adapted to be snapped from said base member for access to and removal of said rupturable means for opening said passage, whereafter the pouring spout member is adapted to be snapped back into swiveling connection with said base member for cooperating with the base member in directing flow of container contents from the opened base member passage.

4,241,856

CHILD-RESISTANT FLUID TOP

Lewis L. Otterson, Chagrin Falls, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio

Filed Feb. 16, 1979, Ser. No. 12,835
Int. Cl.³ B65D 25/50; B67D 3/00
U.S. Cl. 222—539 **8 Claims**



1. A container closure for fluids comprising a hollow neck, a spout for dispensing fluid from the neck, a cap for closing said neck during storage of the container and its contents, an apertured retainer threadable onto the neck for alternatively retaining the spout and cap or the spout on the neck, the spout having a radial flange dimensioned to prevent its passage through the aperture of said cap, said cap being sufficiently large to close said aperture, the aforementioned elements being constructed and arranged such that in a storage condition the flange and cap are successively assembled on the neck and held thereon by the retainer and in a dispensing condition the flange is assembled on the neck without the cap and held thereon by the retainer, the neck having a central passage of a size sufficient to receive a dispensing end of the spout thereon for storage, means for releasably locking the retainer on the neck by preventing unthreading of the retainer from the neck, said retainer being arranged to be locked on the neck by said locking means in both storage and dispensing conditions of the spout, said spout including a base which provides said flange, said base having a stepped exterior profile including a plurality of axially spaced radial surfaces including surfaces of said flange, the axial spacing between said spaced radial surfaces being related to the effective axial thickness of said cap measured by said retainer whereby the absence of said cap is accounted for by an end-for-end reversal of the spout on the neck such that said retainer adequately axially tightens the elements assembled on said neck while indexing to the same angular and axial position with respect to said neck and said locking means in both storage and dispensing conditions of said spout.

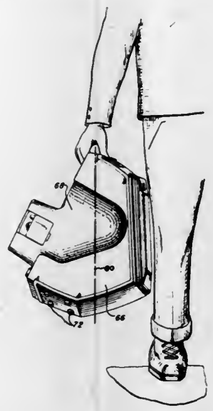
4,241,857

SADDLE BAG

Charles Perethian, Arroyo Grande, and Craig W. Vetter, Shell Beach, both of Calif., assignors to Vetter Corporation, Rantoul, Ill.

Filed May 1, 1978, Ser. No. 901,321
Int. Cl.³ B62J 7/00
U.S. Cl. 224—32 A **10 Claims**

1. A saddle bag for a motorcycle, a body having a wide bottom wall consisting of two angularly disposed parts and a narrow top wall, a pair of side walls connecting said bottom wall to said top wall, said side walls converging from said wide bottom wall to said narrow top wall, a pair of end walls closing the ends of said body, an access opening through one side wall, a door hinged to said one side wall along the lower edge of said access opening, one of said parts of the bottom wall lying substantially perpendicular and adjacent to said one side wall, means carried by the other side wall for securing the bag to a motorcycle, and a handle mounted adjacent the intersection of said other side wall and the top wall, which said handle is used for carrying said bag when said bag is detached from said motorcycle, said handle lying parallel to said other side wall and being located on a vertical axis passing through the center of gravity of said bag with said door closed over said access opening in said one side wall and with said door and said one side wall lying in a substantially vertical plane parallel to said



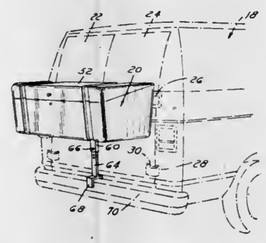
vertical axis whereby said bag can be carried with the closed door in said vertical plane without interference with the leg of a carrier.

4,241,858

CARRIER ACCESSORY FOR VANS

George Lawroski, 23208 Raven Ave., East Detroit, Mich. 48021

Filed Jun. 22, 1979, Ser. No. 51,023
Int. Cl.³ B60R 9/04
U.S. Cl. 224—42.03 A **8 Claims**



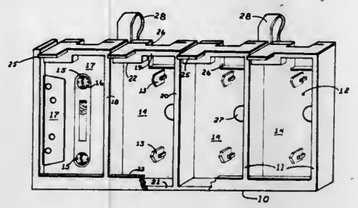
1. A carrier accessory combination for vehicles which comprises in combination:
(a) a van-type vehicle having a body and rear swing doors which open from the center and a rear bumper,
(b) hinge loops on the outside edges of said doors extending rearwardly from the surface of the van body and doors,
(c) a support bracket having a horizontal member to extend across said doors substantially to span the distance between hinges of said respective doors,
(d) first load carrying means including a depending member adjacent but spaced from each end of said horizontal member to project over and into a hinge loop of the van body,
(e) second load carrying means associated with said horizontal member comprising a vertical member to serve as a supplemental vertical load carrier and tie down means to stabilize said horizontal member vertically on said body, said vertical member being supported on said rear bumper, and
(f) carrier means supported on said bracket to serve to carry sporting gear and the like.

4,241,859

MOUNTABLE CASSETTE OR CARTRIDGE HOLDER

Thomas R. Eames, 4503 Wilburn Dr., South Euclid, Ohio 44121

Filed Nov. 30, 1977, Ser. No. 856,190
Int. Cl.³ B60R 7/00
U.S. Cl. 224—312 **2 Claims**



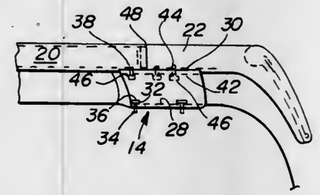
1. A tape cassette or cartridge holder for attachment to the sun visor of a motor vehicle as a mounting surface in such a way that the flat side of the cassette or cartridge (perpendicular to the axis of the tape reels) is closest to the flat side of the mounting surface, comprising a frame, or several frames joined side-by-side, of resilient material such as plastic, consisting of:
(a) A back;
(b) Peripheral upstanding wall members connected to the back;
(c) Tabs on two walls at opposed ends of the frame to overlie and retain the cassette or cartridge within the frame;
(d) One wall which is attached to the frame on only one side so that it will pivot freely around the point of attachment to control the retention of the cassette or cartridge in two perpendicular axes of motion and allow the item being held to be removed in a direction perpendicular to the back of the frame without further movement of the remaining upstanding walls when the movable wall is pushed a sufficient distance so that the retaining tab no longer extends over the cartridge or cassette, and the resilience of the material of that wall acting as a spring to return it toward its original position when pressure is removed;
and fastened to the mounting surface by a clip or other suitable mounting device so that the back of the frame is adjacent to the flat portion of the mounting surface.

4,241,860

ARTICLE CARRIER STANCHION

Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Filed Mar. 19, 1979, Ser. No. 22,060
Int. Cl.³ B62D 33/00
U.S. Cl. 224—316 **1 Claim**



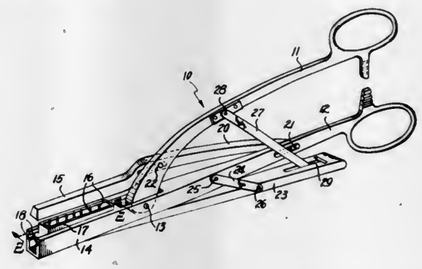
1. A vehicle article carrier device comprising:
an upright stanchion having a longitudinally disposed planar bottom wall conforming to a vehicle surface on which the carrier is mounted,
an upstanding side wall integral with the bottom wall,
a pair of end walls integral with the bottom and side walls,
an enlarged top wall integral with the side wall and the end walls,
the lengths of the bottom wall, the top wall and the side wall being generally equal,
the height of said end walls being less than the length of said top wall;
fastener means coacting with the bottom wall for attaching said stanchion to the vehicle surface;
a longitudinally extending side rail having one end supported upon the top wall of the stanchion, said one end terminating intermediate the stanchion end walls;
fastener means for attaching the side rail to the stanchion top wall;
an air deflector blade disposed transversely of said side rail;
a deflector blade support arm having
a longitudinal section aligned with and having the cross-sectional shape of said side rail, said longitudinal section including one end supported on the top wall of the stanchion, said one end terminating intermediate the stanchion end walls and in abutment with the one end of said side rail,
said support arm terminating in an integral end portion depending from the longitudinal section, the length of said end portion being substantially equal to the height of the deflector blade;
fastener means for attaching the deflector blade support arm to the stanchion top wall; and
means for pivotally connecting the deflector blade to said support arm at the junction of the longitudinal section and the depending end portion whereby said blade may pivot relative to said support arm.

4,241,861

SCISSOR-TYPE SURGICAL STAPLER

Harry N. Fleischer, 700 Park Ave., New York, N.Y. 10022

Filed Dec. 20, 1977, Ser. No. 862,387
Int. Cl.³ B25C 5/02
U.S. Cl. 227—135 **2 Claims**

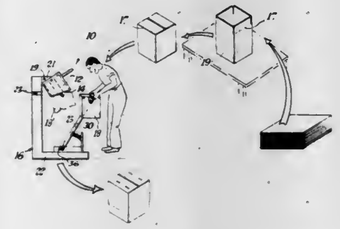


1. A surgical stapler comprising an elongated cartridge housing of channel cross-section, said cartridge housing being adapted to hold at the open upper end of said channel a staple cartridge containing a plurality of staples positioned in a line along the length of the cartridge housing, said staple cartridge having the staples thereof positioned at the upper portion of the cartridge overlying a lifter which, when lifted, will cause the ejection of all of the staples, movable lifting rods extending across the lower portion of the channel of said cartridge housing, and means movable at an angle to the movement of said rods to cause said rods to be elevated to lift said lifter.

2. A scissor-type surgical stapler comprising a pair of pivotally connected forcep handles movable from an open position to a closed position, an elongated cartridge housing of channel shape at the forward end of one of said forcep handles, said cartridge housing being adapted to hold a staple cartridge containing a plurality of staples positioned in a line along the length of the cartridge housing, actuator means associated with said cartridge housing for operating said staple cartridge to cause the ejection of staples therefrom, said actuator means being constituted by a U-shaped member embracing the exterior of said cartridge housing, an anvil positioned in parallel

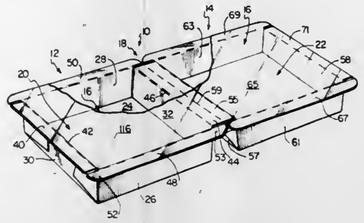
apposition to said cartridge housing in line with the staples to be ejected from said staple cartridge, said anvil and said cartridge housing being interlinked so as to be relatively movable toward and away from each other while maintaining said parallel apposition as said handles are moved between said open and closed positions, and said cartridge housing and U-shaped actuator having at least one pair of crossing slots with a rod extending through each of said pairs of crossing slots and through the lower portion of the channel of said cartridge housing to underlie the staple cartridge when it is positioned in said cartridge housing, to operate said actuator means.

4,241,862
BOX SEALING DEVICE
Harry Barnett, 2990 SW. 22nd St., Fort Lauderdale, Fla. 33312
Filed Apr. 12, 1979, Ser. No. 29,453
Int. Cl.³ B25C *7/00*
U.S. Cl. 227—155 **4 Claims**



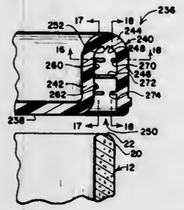
1. A box sealing machine comprising:
a frame means for supporting said box sealing machine, said frame means having a lower portion and an upper portion,
a sealing means adjustably connected to said upper portion of said frame for fastening one end of an inverted box into a closed position,
a pivotal arm having a first end movably connected to said lower portion of said frame and a distal end,
a platform means for supporting and positioning the inverted box, said platform means connected to said distal end,
said pivotal arm and said platform means having a load position and a sealing position,
said platform means is sized and shaped to receive the inverted box from an operator in said load position and fix the position of the inverted box relative to said platform means,
said pivotal arm and said platform means positioned near the operator in said load position,
said pivotal arm means including means for allowing movement to and return from said sealing position by the operator initially pushing the inverted box and said platform means toward said sealing means,
said platform means sized and positioned to stop and position the inverted box on said platform means in contact with the sealing means without aid of the operator, after the initial push,
said sealing means actuated by said inverted box and said platform means engaging said sealing means,
said sealing means positioned substantially parallel to said inverted box on said platform means when stopped and sealed by sealing means in said sealing position.

4,241,863
CONTAINER WITH MULTIPLE COMPARTMENTS
Rudolph A. Faller, Edina, Minn., assignor to Champion International Corporation, Stamford, Conn.
Filed Jun. 5, 1979, Ser. No. 45,823
Int. Cl.³ B65D *85/54, 5/48*
U.S. Cl. 229—27 **7 Claims**



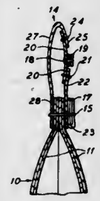
1. A container comprising:
(a) first and second symmetrical compartments formed from a single blank of paperboard material, and hingedly coupled together,
(b) each of said compartments having a bottom wall, two end walls, each coupled to an opposite end of said bottom wall, and two side walls, each coupled to an opposite side of said bottom wall,
(c) a set of four flanges on each compartment, each flange hingedly coupled to the top of one of said compartment walls,
(d) a film covering each of said compartments, said film being attached to the four flanges thereon,
(e) said first and second compartment coupling hinge connecting together a corresponding one of said flanges on each compartment whereby said compartments maybe folded about said hinge and superimposed over each other with said film in a face-to-face relationship, said folded compartments having a generally hexagonal cross-section, and
(f) a sleeve cover for said container when said first and second compartments are folded about said hinge and superimposed over each other whereby said compartments are maintained in said superimposed relationship when placed within said sleeve.

4,241,864
CONTAINER END CLOSURE SYSTEM
Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512
Continuation of Ser. No. 801,204, May 27, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,531
Int. Cl.³ B65D *5/64*
U.S. Cl. 229—43 **6 Claims**



1. A molded end closure of organic polymeric material for a tubular container formed from identable material, comprising a central section, an integrally formed peripheral rim extending about a closure axis, the rim being of generally U-shape cross-section and providing a bight and a pair of peripherally extending legs for straddling and snugly engaging a peripheral wall of a tubular container, the legs and bight cooperating to define an annular slot of narrow radial dimension for receiving end wall portions of a container tube having substantially the same said dimension, the legs and bight providing a continuous surface which is exposed inside the slot, and macroscopic surface irregularity means formed on said surface as discrete, spaced structures for projecting away from said surface toward and into firm indenting engagement with the container end wall portions when the wall portions are snugly received in the slot for enhancing the bonding action of a bonding agent introduced between the said continuous surface and the wall portions by initiating bonding in the vicinities of the discrete, spaced structures, the said legs between said discrete spaced structures defining circumferential zones forming capillary-like passages with said container end wall portions thereadjacent, whereby the bonding action spreads rapidly away from the vicinities of the discrete, spaced structures to effectively continuously bond and seal the said closure surface portions and the container end wall portions.

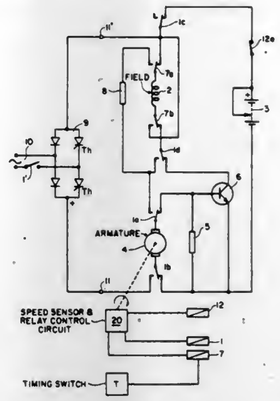
4,241,865
RECLOSABLE SHIPPING SACK AND METHOD
Robert A. Ferrell, Shelbyville, Ind., assignor to KCL Corporation, Shelbyville, Ind.
Filed Aug. 6, 1979, Ser. No. 64,044
Int. Cl.³ B65D *33/26*
U.S. Cl. 229—62 **22 Claims**



1. A reclosable sack having a mouth from which discrete pourable contents may be poured, comprising:
a primary non-reclosable stitched separable closure fastener across and closing said mouth against unintentional discharge of the contents and including means for facilitating digital opening of the primary closure fastener;
and a secondary, reclosable fastener across said mouth outwardly from said primary closure fastener and adapted for selectively opening and closing said mouth, after opening of said primary closure fastener.

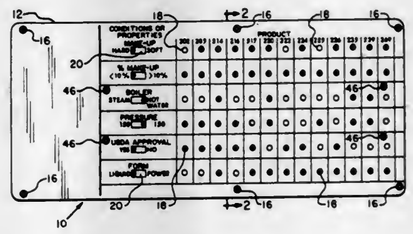
4,241,866
METHOD OF GENTLY CONTROLLING BRAKING OF A CENTRIFUGE, AND BRAKING SYSTEM
Frank Giesbert, and Roland Kuhnert, both of Osterode, Fed. Rep. of Germany, assignors to Heraeus Christ GmbH, Osterode, Fed. Rep. of Germany
Filed May 18, 1979, Ser. No. 40,120
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824045
Int. Cl.³ B04B *9/02*
U.S. Cl. 233—24 **15 Claims**

1. Method of controlled, gentle braking of a centrifuge comprising the sequential steps of
initiating and maintaining a first braking phase in which the centrifuge is braked by application of a first, higher braking torque until the rotational speed thereof has reached a first predetermined value which is substantially below the operating speed of the centrifuge;
then initiating and maintaining a second braking phase during which the centrifuge is braked by applying a second and lower braking torque until the rotational speed thereof has reached a second predetermined value which is substantially below said first speed value;



and then discontinuing application of the braking torque to the centrifuge.

4,241,867
SLIDE RULE
Robert H. Wolf, Barrington, and Madeleine L. Dugas, Palatine, both of Ill., assignors to Graphic Calculator Company, Barrington, Ill.
Filed Jun. 19, 1979, Ser. No. 49,973
Int. Cl.³ G06C *3/00*
U.S. Cl. 235—85 R **6 Claims**

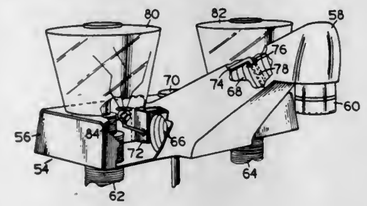


1. A slide rule comprising:
(a) a back cover;
(b) a front cover having formed therein a plurality of viewing apertures and a plurality of stylus apertures;
(c) a central filler positioned between the front and back cover and having formed therein an elongated opening;
(d) means, associated with the front and back cover and the central filler, for rigidly fastening the covers and the filler together; and
(e) a plurality of movable elongated slides positioned within the elongated opening and having formed therein stylus openings, each slide also having formed thereon predetermined zones of different indicia for viewing through the viewing apertures.

4,241,868
FLUID TEMPERATURE MIXING INDICATOR
Jean K. Perkins, P.O. Box 10-1869, Anchorage, Ak. 99511
Continuation-in-part of Ser. No. 799,148, May 23, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,689
Int. Cl.³ G05D *23/00, 11/00*
U.S. Cl. 236—12 A **14 Claims**

1. A plumbing fixture device comprising; an apparatus of fluid valves having control handles to control and combine hot

and cold fluids, an encompassing valve body to include fluid inlets and mixing chamber with an outlet for emitting fluid discharge, and an indicating signal means acting as an integral part of said fixture which determines and communicates the acknowledgment and exacting corrective control needed to achieve preset fluid temperature ranges, said indicating means comprising an electronic signal converting comparator circuit which translates sensed fluid flow and fluid temperatures into predetermined electrical indications, said comparator circuit providing a condition of signal output which is dependent upon fluid discharge temperature and the presence of a fluid flow signal, said comparator circuit being a first and second comparator, each having a separate input of opposite sensing polarity connected in common to the output of a voltage dividing temperature sensitive resistor element placed in the fluid discharge path and a separate sensing input attached to a single voltage dividing reference source which determines both center of a desired indicating temperature range and maximum threshold width from the center of the indicating temperature range, the output of said first and second comparator circuits activating separate and parallel switching transistors that in turn provide a source of current to illuminate bulb indicator elements at control handles according to input signal amplitude, a third comparator having a separate sensing input con-



nected to said first and second comparator outputs by suming resistors with a separate second sensing input attached to a preset voltage reference source which provides an output action when a condition of said circuitry is that both first and second temperature detecting comparators are in a non-conducting state indicating fluid temperature balance has been achieved, said output action from the third comparator providing a signal to both said switching transistors to illuminate indicator elements at all control handles indicating no further need for valve control handle adjustment and that proper fluid temperature has been achieved, activation and operation of all said temperature detecting comparators and described circuits being dependent upon a fluid flow switch consisting of an exposed resistance element placed in the fluid discharge path whereby another comparator translates the sensed fluid flow resistance into a switched source of current to the said temperature detecting comparators and described circuitry, said indicating signal means comprising said temperature detecting comparators and circuitry, which communicates an imbalance of the sampled fluid temperature occuring during active fluid flow and in relationship to a predetermined temperature range, said indicating signal device indicating one or more particular corrective actions to achieve a proper fluid temperature range by manual adjustment of fluid control valves as directed by indicator elements at control handles.

4,241,869

FURNACE FUEL OPTIMIZER

John R. Cratin, Jr., Galveston, Tex., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 11, 1979, Ser. No. 2,534
Int. Cl.³ F22G *5/00*
U.S. Cl. 236—15 BR **16 Claims**

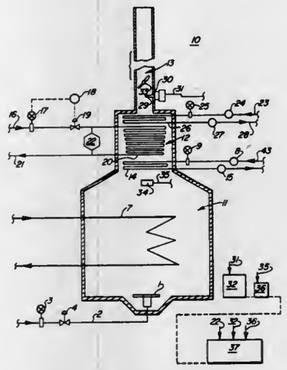
1. An improved furnace fuel optimizer for more effectively controlling fuel consumption in a furnace comprising a radiant section and a convective section containing a steam generation coil by regulating the supply of combustion air to said furnace, wherein the improvement comprises:

(a) a CO analyzer which monitors CO content in exiting flue gas;

(b) a draft pressure transmitter connected to a draft pressure controller which monitors draft below said convective section;

(c) a combustion air controller responsive to a computed optimum differential pressure value for regulating air to said furnace;

(d) a flow transmitter connected to a flow controller which



is connected to an automatic control valve, all being positioned on an inlet line to said steam generation coil;

(e) a differential pressure transmitter connected across said steam generation coil inlet and outlet lines so as to monitor variations in differential pressure across said lines;

(f) computing means for computing said optimum differential pressure value for operation of the furnace;

(g) transmission means for transmitting signals from said CO analyzer and from said differential pressure transmitter to said computing means; and

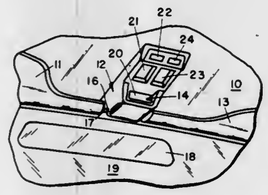
(h) means for transmitting said optimum differential pressure value to said combustion air controller.

4,241,870

REMOTE TRANSMITTER AND HOUSING

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Oct. 23, 1978, Ser. No. 953,911
Int. Cl.³ B60R *5/00*
U.S. Cl. 296—37.7 **20 Claims**



13. A housing adapted to be mounted to the headliner of a vehicle for receiving a remote control transmitter comprising:

housing means having an aperture and guide and support means positioned in said housing in relation to said aperture for permitting the vehicle user to readily insert or remove an electronic transmitter therein, said housing means including means for attaching said housing to the headliner of a vehicle between the visors, said housing

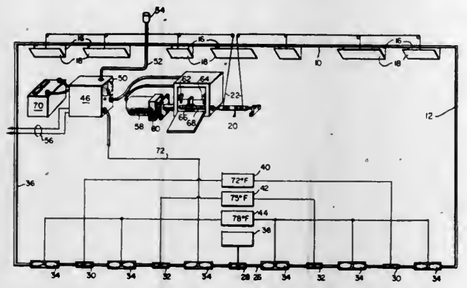
further including means for supplying electrical power to a transmitter unit.

4,241,871

APPARATUS AND METHOD FOR VENTILATION OF ANIMAL ENCLOSURES

Alfred T. Newell, III, 324 Redwood St., Birmingham, Ala. 35210, and Alfred T. Newell, Jr., 3809-12 Court St., Birmingham, Ala. 35222

Filed Nov. 27, 1978, Ser. No. 964,053
Int. Cl.³ B64D *13/00*; F24F *7/00*
U.S. Cl. 236—49 **18 Claims**



1. In an animal enclosure of the differential-pressure forced-ventilation type the walls of which are substantially closed except for a plurality of inlet apertures therein for the ingress of ventilating air and a plurality of exhaust apertures therein for the egress of ventilating air, such enclosure having an electrically driven exhaust fan at each such exhaust aperture, a plurality of electrical thermostats set to operate at respective selectable temperatures within a range of temperatures through which such enclosure is expected to operate and each controlling at least one such exhaust fan, and closure means for each such inlet aperture variably positionable with respect thereto so as to control the effective size thereof, a ventilation control system comprising:

means for comparing the barometric pressure within such enclosure with that outside such enclosure,

electromechanical drive means responsive to the output of said pressure-comparing means and mechanically connected to such closure means to move the latter in the aperture-opening direction in response to a sensed pressure differential in excess of a preselected amplitude and to move such closure means in the aperture-closing direction in response to a sensed pressure differential less than a preselected amplitude, and

means responsive to the actuation of that one of such thermostats which is set to be operated at the highest selected temperature in such operating temperature range to operate said electromechanical drive means in the aperture-opening direction irrespective to the nature of the output of said pressure-comparing means.

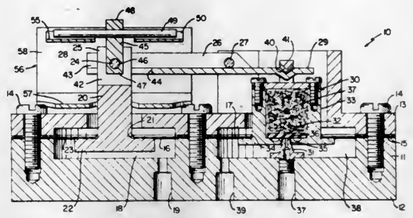
4,241,872

PNEUMATICALLY OPERATED THERMOSTAT CONSTRUCTION AND METHOD OF MAKING THE SAME

Alfred A. Frankenberg, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jul. 2, 1979, Ser. No. 54,012
Int. Cl.³ G05D *23/08*
U.S. Cl. 236—87 **22 Claims**

1. In a thermostat construction having valve means for directing a pneumatic signal to a pneumatically operated control device in relation to the force differential between the temperature sensed by a temperature sensing means thereof and the temperature setting of a temperature setting means thereof, said construction having a lever pivotally mounted thereto and being operatively interconnected to said valve means at a first portion means of said lever and to said temperature setting means and said temperature sensing means at a second portion means of said lever by a post-like member, said post-like member having a pivot means pivotally interconnected to said lever at said second portion means thereof to operatively interconnect said temperature setting means and said temperature sensing means to said second portion means of said lever, said temperature sensing means comprising a bimetal member carried by said construction, said bimetal



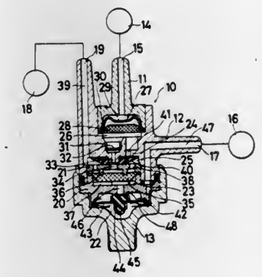
member being operatively interconnected to said post-like member by interconnection means whereby said bimetal member is operatively interconnected thereby to said second portion means of said lever, the improvement wherein said interconnection means comprises a link having a pivot means pivotally mounted to said post-like member and having a pin means, said bimetal member bearing against said pin means to pivotally interconnect said bimetal member to said link and, thus, to said post-like member.

4,241,873

TEMPERATURE RESPONSIVE VALVE DEVICE

Atsushi Satomoto, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 28, 1979, Ser. No. 70,527
Claims priority, application Japan, Sep. 13, 1978, 53-125842[U]
Int. Cl.³ G05D *23/08*
U.S. Cl. 236—87 **7 Claims**



1. A temperature responsive valve device comprising:

a body having first, second and third ports;

first passage means disposed between said first and second ports;

second passage means disposed between said second and third ports;

means defining an orifice arranged within said first passage means for delaying transmission of fluid therethrough;

a first filter member arranged between said orifice means and said first port and within said first passage means;

a second filter member arranged within said first and second passage means and between said orifice means and said second port as well as between said second and third ports;

a passage defining member having an annular portion which

contacts with said second filter member to thereby allow fluid communication between an inner portion of said annular portion with said first port and communication of an outer portion of said annular portion with said third port only through means of said second filter member; and

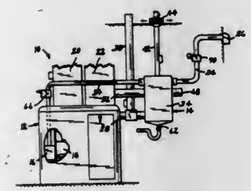
a temperature responsive valve member for interrupting communication of said third port with said second port in response to change in temperature.

4,241,874

HEAT EXCHANGER

George W. Schossow, 2316 Lilac La., White Bear Lake, Minn. 55110

Continuation-in-part of Ser. No. 798,567, May 19, 1977, Pat. No. 4,171,089. This application May 2, 1979, Ser. No. 35,325
Int. Cl.[3] F24B 7/04
U.S. Cl. 237—55 18 Claims



8. In combination with a furnace system wherein the furnace includes a burner which draws combustion air from outside the building in which the furnace is housed, a heat exchanger for cooling exhaust gases from the furnace and removing moisture therefrom before the exhaust gases are vented from the building, for warming outside combustion air before it reaches the burner, and for pre-warming cool inside air before recirculating it through the furnace, comprising:

a conduit carrying exhaust gases from the furnace;

a housing including first and second chambers and an intermediate chamber positioned between said first and second chambers, said first chamber in fluid communication with said conduit;

a first plurality of tubes having first and second ends in fluid communication with said first and second chambers respectively, said first plurality extending through said intermediate chamber;

a first outlet plenum enclosing a first portion of said conduit;

a second outlet plenum enclosing a second portion of said conduit;

an inlet plenum;

means for conducting outside air for combustion into said inlet plenum;

a second plurality of tubes extending through said intermediate chamber, said tubes having first ends in fluid communication with said inlet plenum and second ends in fluid communication with said first outlet plenum;

a third plurality of tubes extending through said intermediate chamber, said third plurality having first ends in fluid communication with ambient air inside the building in which the furnace is located and second ends in fluid communication with said second outlet plenum;

liquid medium disposed in said intermediate chamber, said medium surrounding portion of said first, second, and third pluralities of tubes extending through said intermediate chamber;

means for conveying combustion air in said first outlet plenum to the furnace burner;

means for transmitting ambient air in said second outlet plenum to the return air blower of the furnace; and

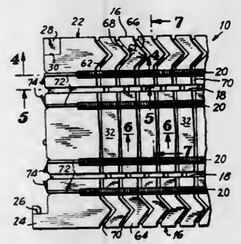
means for draining moisture of condensation from said first plurality of tubes.

4,241,875

FLEXIBLE TRACK

Anthonie Vandenbrink, Westmaas, Netherlands, assignor to Aurora Products Canada Limited, Rexdale, Canada

Filed Jan. 19, 1979, Ser. No. 4,800
Int. Cl.[3] A63H 18/12; E01B 23/00
U.S. Cl. 238—10 F 17 Claims



1. A flexible track for wheeled toy vehicles having at least one pair of laterally spaced wheels including a plurality of separate track sections extending laterally of said track and each having a top surface defining a path for said toy vehicles; and coupling means pivotably coupling adjacent track sections, said coupling means permitting at least relative pivotal displacement of adjacent track sections about an axis of pivoting extending substantially normally to the track top surface, each of said track sections being formed with portions facing the adjacent track section shaped so as to define a gap therebetween extending between said coupling means and a lateral periphery of said track when said track is aligned in a substantially straight configuration when viewed longitudinally, the top surfaces of said portions of said track sections being shaped to define an essentially tapered gap extending from the lateral periphery of said track to at least the region of said coupling means, said gap being widest at said lateral periphery, the path of a toy vehicle on said top surfaces of said track section being aligned so that at least the one wheel of said pair of laterally spaced wheels farthest from the lateral periphery of the track would normally travel in the region of the top surfaces in registration with the relatively narrower portions of said gap whereby interaction between said at least one wheel of each of said toy vehicles and said gap as might cause vibration and reduction in the speed of the vehicles is minimized.

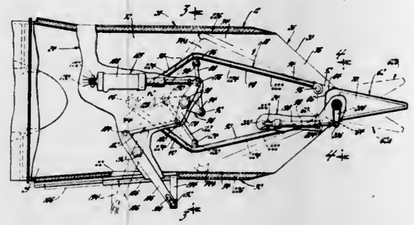
4,241,876

VARIABLE AREA EXHAUST NOZZLE

George H. Pedersen, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1979, Ser. No. 22,706
Int. Cl.[2] B64C 15/06
U.S. Cl. 239—265.27 3 Claims

1. A two dimensional gas turbine engine nozzle assembly comprising an ovate inlet and a rectangular exhaust outlet, spaced parallel side walls, an upper wall portion and a lower wall portion defining a minimum height throat region between said inlet and outlet, an expandable plug assembly located within said throat region including flow control means for varying the area of exhaust flow through the throat region for optimizing modulation of axial nozzle thrust produced by flow from said outlet, a vertical thrust door means located on one of said upper or lower walls of said exhaust nozzle upstream of said expandable plug assembly and being selectively movable between open and closed positions, actuator means coupled to said flow control means and to said vertical thrust door means



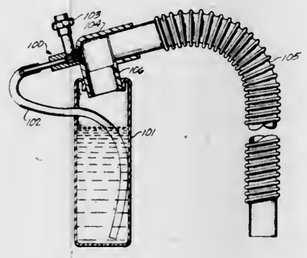
to concurrently block flow through said throat region while opening said vertical thrust door means to direct gas blocked by said plug assembly from a point upstream thereof through said vertical thrust door means thereby to produce a thrust vector on said nozzle assembly arranged generally perpendicularly to its longitudinal axis during periods where flow is blocked therethrough.

4,241,877

STABLE VORTEX GENERATING DEVICE

Nathaniel Hughes, Palm Springs, Calif., assignor to Hughes Sciences Group, Inc., Palm Springs, Calif.

Continuation-in-part of Ser. No. 886,289, Mar. 13, 1978, Pat. No. 4,189,101, which is a continuation-in-part of Ser. No. 785,838, Apr. 10, 1977, Pat. No. 4,109,862. This application Oct. 16, 1978, Ser. No. 951,621
Int. Cl.[3] B05B 17/06
U.S. Cl. 239—405 55 Claims



1. A vortex generating device comprising:

a flow passage having a cylindrical upstream section, a cylindrical downstream section, and a cylindrical intermediate section interconnected together and aligned with a flow axis, the downstream section forming an outlet restriction in the flow passage, the cross-sectional area of the intermediate section being substantially larger than that of the downstream section, and the cross section of the upstream section being larger than that of the intermediate section;

a rod aligned with the flow axis, the rod extending completely through the upstream section and through only part of the intermediate section; and

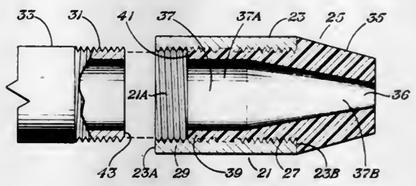
an inlet opening into the upstream section, the inlet opening being aligned with an inlet axis at an angle to the flow axis.

4,241,878

NOZZLE AND PROCESS

Gene E. Underwood, Casper, Wyo., assignor to 3U Partners, Casper, Wyo.

Filed Feb. 26, 1979, Ser. No. 15,292
Int. Cl.[3] B05B 1/06
U.S. Cl. 239—591 26 Claims



8. A nozzle for discharging a fluid, comprising:

a conduit having internal threads formed on the inside thereof at least at an upstream end,

an elastic member molded in said conduit,

said conduit having locking means formed on the inside thereof at a position downstream of said threads for locking said elastic member to said conduit,

said elastic member extending from the down stream end of said conduit to an upstream position spaced inward from said upstream end of said conduit embedding said locking means and at least a portion of said threads leaving the remaining portion of said threads exposed to allow said upstream end of said conduit to be threaded to mating external threads of a second conduit,

said elastic member having an opening formed therethrough from said upstream position to a discharge end for the discharge of fluid,

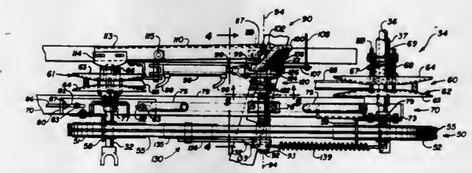
the cross-sectional area of said aperture at said discharge end being smaller than the cross-sectional area of said aperture at said upstream end.

4,241,879

DRIVE SYSTEM FOR A MANURE SPREADER

William F. Ostergren, Terre Hill, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 2, 1979, Ser. No. 8,900
Int. Cl.[3] A01C 19/00; F16H 7/08, 55/54
U.S. Cl. 239—677 24 Claims



1. In a manure spreader having a mobile frame, a spreader box mounted on the frame with a floor, opposing sides, a forward endwall and a rear discharge opening, a material discharge means mounted on the spreader box adjacent the discharge opening for the widespread discharge and distribution of the material from the box, material conveying means at least partly within the spreader box for moving material in the box toward the material discharge means, and drive means for receiving rotational power input and transferring same to the material discharge means and material conveying means, the improvement wherein said drive means comprises:

an input drive shaft rotatably supported on said frame adapted to receive rotational power from a prime mover;

first drive means operably interconnecting said input drive shaft and said material discharge means;

second drive means operably interconnecting said input drive shaft and said material conveying means; and

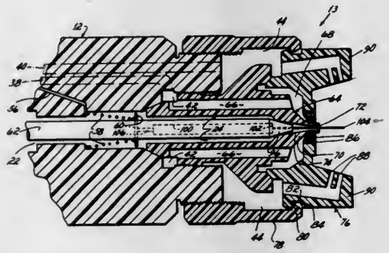
control means supported on said frame and operably connected to said first and second drive means to selectively infinitely vary the speed of operation of said material conveying means over a predetermined range of speeds from a first slow speed to a second high speed without changing the rate of speed of said material discharge means.

4,241,880

ELECTROSTATIC SPRAY GUN

Donald R. Hastings, Elyria, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Mar. 16, 1979, Ser. No. 21,197
Int. Cl.³ B05B *5/02*
U.S. Cl. 239—691 **11 Claims**



1. An electrostatic coating apparatus comprising:

a nozzle made from a substantially nonconductive material having a coating material passageway in it terminating at one end in a material discharge orifice through which coating material is ejected,

a charging electrode protruding from said nozzle orifice,

a needle and seat valve in said nozzle passageway operative to selectively open and close said nozzle orifice,

a high voltage electrical path passing through said valve adapted to connect said charging electrode to a source of high voltage electrical power, and

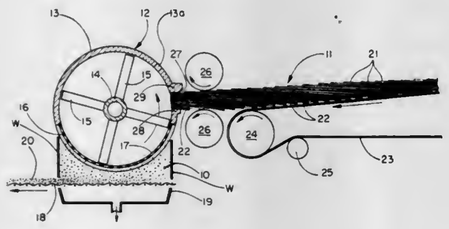
a least a first series resistor in said needle in said electrical path.

4,241,881

FIBER SEPARATION FROM PULP SHEET STACKS

Edward P. Laumer, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 12, 1979, Ser. No. 56,827
Int. Cl.³ B02C *13/286*
U.S. Cl. 241—28 **13 Claims**



1. A method for separating fibers from a stack of planar pulp sheets, each of said pulp sheets being defined by forward and rearward edges and opposed lateral side edges, and defining a longitudinal axis aligned perpendicular to said forward and rearward edges, comprising:

(a) feeding said stack of pulp sheets edgewise in shingled relation to a hammermill-type fiberizing means,

(b) aligning said pulp sheets to said fiberizing means such that said longitudinal axes of said pulp sheets are aligned generally radially to said rotating fiberizing means,

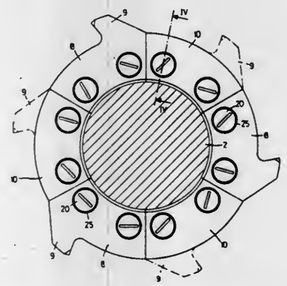
(c) fiberizing each of said shingled pulp sheets from said forward edge to said rearward edge along said longitudinal axis such that said forward and rearward edges of each of said pulp sheets are presented to said fiberizing means substantially singly.

4,241,882

COMMINUTING MACHINE

Eugene M. A. Baikoff, ch. Anciens Moulins 2A, 1009 Pully (Canton of Vaud), Switzerland

Filed Jun. 13, 1979, Ser. No. 48,239
Claims priority, application Switzerland, Jun. 20, 1978, 6701/78
Int. Cl.³ B02C *18/18*
U.S. Cl. 241—236 **8 Claims**



1. In a comminuting machine for comminuting objects which are bulky and/or resistant to destruction, especially parts of vehicle bodies and vehicle tires, of the type having two parallel rotary shafts arranged to rotate in opposite directions and comminutor rings disposed alternatingly along said shafts, the improvement comprising:

a plurality of annular shaft-collars projecting outwardly from and integral with said shafts at the respective locations of each of said comminutor rings,

a plurality of ring-forming elements fitted in closely adjacent relation to one another over associated said shaft-collars to form said comminutor rings, each of said elements having a cross-sectional profile in the shape of an open-ended inverted U comprising two sidewalls which are situated respectively one on each side of an associated shaft-collar, each of said shaft-collars extending continuously through the open ends of said inverted U cross-sectional profiles from one to the next adjacent one of the elements on said shaft-collar, at least some of said elements including cutter-noses, and

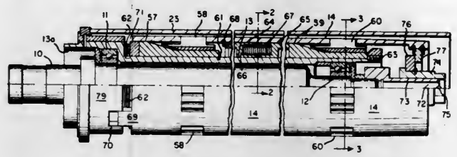
a plurality of securing members passing through said sidewalls and through said shaft-collars for securing each of said elements to said associated shaft-collars and hence to said shafts, whereby the axial pressure of said sidewalls against said shaft-collars ensures the resistance of said comminutor rings formed of said elements to axial mechanical stresses.

4,241,883

MANUALLY OPERATED BOBBIN CHUCK

Joshua Benin, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1979, Ser. No. 69,751
Int. Cl.³ B65H *54/54, 75/30*
U.S. Cl. 242—46.4 **1 Claim**



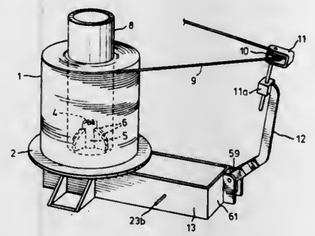
1. A bobbin chuck for mounting replaceable bobbins on the external surface thereof comprising: a shaft; a tubular member mounted for rotation on said shaft and concentric therewith; a sleeve having a plurality of openings disposed in a concentric relationship about said tubular member, said sleeve being movable axially with respect to said tubular member and rotatable therewith; a plurality of camming members carried by said tubular member and supporting said sleeve in said concentric relationship, said camming members having tapered camming surfaces; a plurality of radially and axially movable cam followers having mating surfaces engageable with the camming surfaces and extending through the openings in the sleeve for gripping bobbins on said chuck; resilient means seated against said tubular member and said sleeve for urging said sleeve axially in one direction to urge the mating surfaces of said cam followers against said tapered camming surfaces of said camming members to move said cam followers into a gripping position; and means located at the end of the chuck for moving the sleeve and the cam followers axially in a direction opposite to said one direction to a release position.

4,241,884

POWERED DEVICE FOR CONTROLLING THE ROTATION OF A REEL

George Lynch, 546 Hull Ct., Burlington, Ontario, Canada

Filed Mar. 20, 1979, Ser. No. 22,333
Int. Cl.³ B65H *49/00*
U.S. Cl. 242—54 R **9 Claims**



1. A device for controlling the rotation of a reel to control the tension on a filamentary material being unwound therefrom, comprising:

(a) a rotatable reel support means,

(b) means for sensing tension on the filamentary material,

(c) valve means responsive to said tension sensing means,

(d) a powered device including a reciprocatable element controlled by said valve means in accordance with the tension on said filamentary material to move to a first position in response to low tension, to reciprocate in response to high tension, and to move to a second position in response to an intermediate tension, and

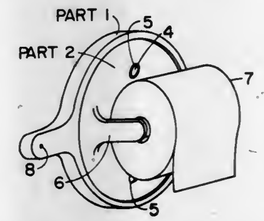
(e) a clutch operable by the reciprocatable element, the clutch being engageable with the rotatable reel support means in response to movement of the reciprocatable element to said first position, thereby to brake said reel support means, the clutch being disengageable from the reel support means in response to movement of the reciprocatable element to said second position, thereby to allow free rotation of the reel support means, and the clutch being intermittently engageable with the reel support means in response to reciprocation of the reciprocatable element thereby to apply accelerating impulses to the reel support means.

4,241,885

REVERSIBLE TOILET PAPER HOLDER

Gene P. Robinson, 4661 Larson Way, Sacramento, Calif. 95822

Filed May 2, 1979, Ser. No. 35,326
Int. Cl.³ B65H *19/02*
U.S. Cl. 242—55.2 **6 Claims**



1. A rotatable dispenser suitable for wall or other surface mounting for holding a roller and toilet paper or other rolled material comprising, a latching member adapted to be fixed to said wall or other surface mounting, a turntable, said turntable having two spaced supporting arms for receiving the roller for the rolled material for rotation about the axis of the roller, means for rotatably supporting said turntable on said latching member for free rotation about an axis perpendicular to the axis of said roller, latch means on said latching member for holding said turntable in a desired dispensing position relative to said latching member and retaining means for holding said latching member and said turntable in assembled position.

4,241,886

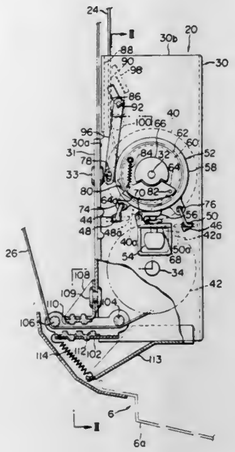
RETRACTOR DEVICE FOR SEAT BELT MECHANISM

Naozane Maekawa, Toyokawa, and Takeshi Awano, Okazaki, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 70,988
Claims priority, application Japan, Sep. 8, 1978, 53/124248[U]
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.2 **6 Claims**

1. A retractor device for a seat belt mechanism, comprising a casing, a reel shaft for reeling a seat belt being rotatably supported by said casing, a ratchet wheel fixedly mounted on said reel shaft, a pawl supported by said casing and adapted to engage with said ratchet wheel, an abutment surface provided on said casing along a passage provided for said belt, a belt stop member disposed opposite to said abutment surface with respect to said belt, guide slots formed in said casing for guiding said belt stop member toward said abutment surface to clamp said belt between them when the belt stop member is moved in

a direction corresponding to drawing out of the belt, and emergency operating means sensible to an emergency condi-



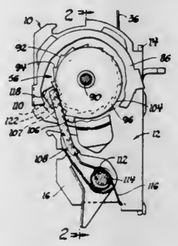
tion of a vehicle to engage said pawl with said ratchet wheel and to move said belt stop member in said direction.

4,241,887

WINDING PREVENTION MECHANISM FOR SEAT BELT RETRACTOR

Algis G. Augunas, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 21, 1979, Ser. No. 77,843
Int. Cl.³ A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107.7 **2 Claims**



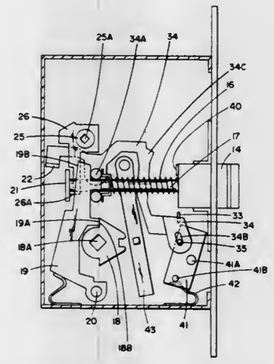
1. In combination, a belt for restraining an occupant, a housing, a reel, a spring urging reel winding to wind the belt, a ratchet carried by the reel, a pawl, means acting between the pawl and housing for mounting the pawl on the housing for radial movement between ratchet engaging and disengaging positions and for tangential shifting movement between limits in the winding and unwinding directions, said mounting means including blocking means blocking radial pawl movement to the engaging position when the pawl is at the unwinding limit, a disc clutched to the reel for rotation therewith and having an abutment adapted to engage with and effect tangential shifting movement of the pawl in the winding direction upon belt winding and in the unwinding direction upon belt unwinding, said disc having a control surface effective to control radial movement of the pawl, said control surface being adapted to permit engagement of the pawl with the ratchet upon belt unwinding subsequent to a prior winding rotation having shifted the pawl to the winding limit to unblock the pawl for movement to the engaged position so that the belt is held at a set slackened length with respect to an occupant, said disc control surface being further adapted to disengage the pawl from the ratchet upon further belt unwinding approaching engagement of the control disc abutment with the pawl to shift the pawl in the unwinding direction upon engagement by the abutment and reestablish blocking of the pawl in the disengaged position by the blocking means during subsequent belt winding and unwinding to restore the winding effort of the spring.

4,241,888

DOOR LATCHING MECHANISM

Leonard N. Bredemus, 661 E. Belmont La., St. Paul, Minn. 55117

Filed Jun. 4, 1979, Ser. No. 44,852
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—165 **11 Claims**



1. Door latching apparatus for operating a normally single swing door as a double swing door, comprising, in combination:

a. a strike plate mounted on the doorway frame having an opening coextensive with a latching recess in the doorway frame, one edge of the strike plate opening being offset from the other edge;

b. a latch bolt slidably mounted within the door normally being extendibly urged to seat in the latching recess;

c. a retractor lever arm coupled to a turn piece and engaging said latch bolt for retracting the latch bolt from the latching recess when said turn piece is turned;

d. stop means for limiting the retracting travel of the latch bolt so as not to be withdrawn beyond the other edge of the strike plate opening; and

e. means for retracting the latch bolt while avoiding said stop means for withdrawing the latch bolt beyond the other edge of the strike plate opening.

4,241,889

METHOD FOR INCREASING THE HIT PROBABILITY OF JAMMED MISSILES AND DEVICE FOR CARRYING OUT THE METHOD

Ulrich Schwellinger, Heroz-Siegmund-Weg, Zorneding, and Rüdiger Lenz, Holzkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,795
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738507
Int. Cl.³ F41G *7/00*; F42B *15/02*; G06F *15/50*
U.S. Cl. 244—3.15 **9 Claims**

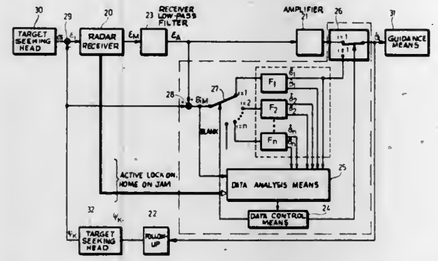
1. A method for increasing the hit probability of missiles which are subject to being jammed by double or multiple targets and which missiles are guided by means of proportional navigation and have a target-seeking head capable of following up comprising the steps of:

assigning measured values σ_{iM} of a first target recognized by the target-seeking head of the missile to a first filter, F_1,

for target track formation as well as for guidance and target-seeking head follow-up;

separating the first filter from the measured values σ_{iM} of the target-seeking head if the measured values result in a determination that there is movement of the line of sight of the missile, which measured values must have been caused by a target maneuver which is outside of predetermined limits because of the maneuverability of airborne targets;

continuing to form by extrapolation in said first filter the probable target track after said filter has been separated



and influencing the guidance of said missile and target-seeking head with said probable target track;

supplying, after separation of said first filter, measured values of target track information from a second target to a second filter F_2;

separating the second filter and again providing the first filter with measured values by the target-seeking head when the measured values are recognized to belong to the target track processed by the first filter; and

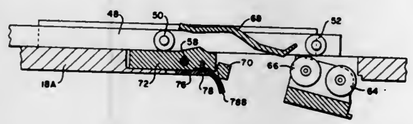
recognizing measured values belonging to no target track and not processing such measured values.

4,241,890

AERIAL DELIVERY SYSTEM

Raymond E. Pearson, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 961,359, Nov. 16, 1978, abandoned. This application Nov. 7, 1979, Ser. No. 92,146
Int. Cl.³ B64D *9/00*
U.S. Cl. 244—137 R **14 Claims**



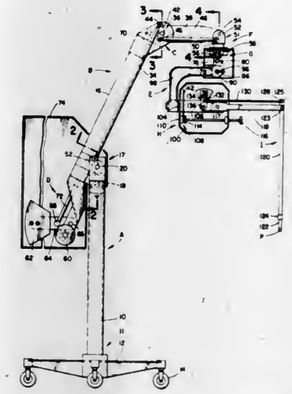
1. An aerial cargo delivery system comprising a pair of parallel guide rails for cargo-carrying pallets extending longitudinally along the floor of an aircraft which has a rear cargo receiving and delivery opening, a single one of said rails at spaced points therealong being provided with pallet locking mechanisms each of which is provided with means for releasably engaging a pallet to hold it in position along the guide rails, and cam means for each of said locking mechanisms simultaneously movable along said single rail, said cam means having a first position where said engaging means will release said pallet for movement aft of the aircraft but not forward of the aircraft, a second position where said engaging means will prevent either forward or aft movement of a pallet and a third position where the engaging means will prevent forward movement of a pallet but will permit aft movement of the pallet by movement of said engaging means into a release position against the restraining force of a deformable metallic fuse.

4,241,891

OVERHEAD ARM ASSEMBLY

Dale C. Rudolph, Parker, Colo., assignor to Unirad Corporation, Englewood, Colo.

Division of Ser. No. 907,408, May 18, 1978. This application Apr. 6, 1979, Ser. No. 27,865
Int. Cl.³ F16L *3/00*; A47G *29/00*
U.S. Cl. 248—123.1 **8 Claims**



1. An overhead arm assembly comprising in combination:

a. a base;

b. a first arm pivotally mounted adjacent one end thereof to said base by first pivot means;

c. a second arm pivotally mounted at one end thereof to the other end of said first arm by second pivot means;

d. a third arm having one end pivotally connected to said second arm adjacent the other end thereof and adapted to support depending equipment from adjacent the other end thereof;

e. a dynamic counterbalancing assembly comprising:

i. a lever pivotally connected at one end to said first arm adjacent said first arm one end by third pivot means;

ii. means for connecting said second arm to said lever for constraining them to a substantially parallel relationship with each other; and

iii. biasing means connected adjacent the other end of said lever for applying a first counterbalancing force to said first arm about said third pivot means, said counterbalancing force varying in response to the angular orientation of said second arm relative to said base, the moment of inertia of said dynamic counterbalancing assembly about said third pivot means being approximately equal to the moment of inertia of said second arm, third arm, and said depending equipment about said second pivot means; and

f. a static counterbalancing means for applying a second counterbalancing force to said first arm, said second counterbalancing force approximately balancing said first arm about said first pivot means, said static counterbalancing means being connected with said first arm adjacent said first arm one end.

4,241,892

APPLIANCE SKIDBOARD AND METHOD OF MAKING

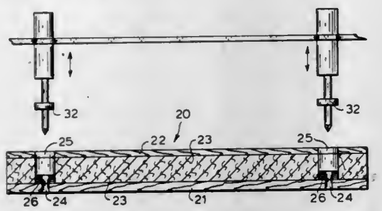
Ivan B. Morris, Louisville, Ky., assignor to Boone Box Co., Louisville, Ky.

Filed Aug. 31, 1979, Ser. No. 71,139
Int. Cl.³ B65D *19/00*
U.S. Cl. 248—346 **5 Claims**

1. A skidboard to be affixed to and support an appliance comprising:

a core of built-up glued corrugated board of uniform thick-

ness with the flutes running normal to the top and bottom of the core;
top and bottom facing sheets affixed to the top and bottom edges of the core;
first holes drilled through the said sheets and core to receive bolts to affix the skidboard to the base of the appliance;



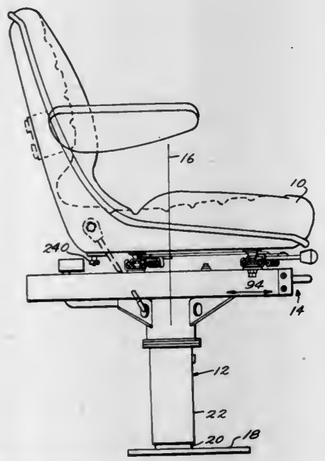
second holes larger than the first holes drilled through the bottom sheet to create areas around the first holes;
the board of the core above the said areas being matted and compressed for a portion of the depth of the core to create solid bases and stable cushions for the heads and washers of the bolts to be screwed through the skidboard into the base of the appliance.

4,241,893

ADJUSTABLE SEAT ASSEMBLY

Louis J. Koutsky, Milan, and Alexander M. Breitmeyer, Taylor Ridge, both of Ill., assignors to Sears Manufacturing Co., Davenport, Iowa

Filed May 11, 1979, Ser. No. 38,317
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—425 **19 Claims**



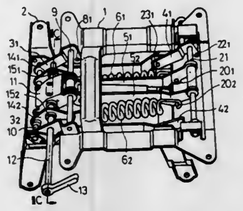
1. In an adjustable seat assembly:
a seat;
a pedestal having a vertical axis for vertically supporting the seat from below;
adjustment means cooperating with said pedestal and with said seat for slidably adjusting said seat in fore-and-aft and lateral side-to-side directions relative to the pedestal axis, said adjustment means carrying said seat and being mounted to said pedestal for rotation relative thereto in a horizontal plane;
latch means for selectively preventing and permitting rotation of said adjustment means relative to said pedestal;
latch release means, responsive to the arrival of said seat at a predetermined aft position and predetermined lateral position, for releasing said latch means; and
guide means for guiding said seat toward said predetermined lateral position as said seat moves toward said predetermined aft position.

4,241,894

SEAT SUSPENSION APPARATUS

Teiji Okuyama, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 3, 1979, Ser. No. 26,706
Claims priority, application Japan, Apr. 15, 1978, 53-44433; Apr. 15, 1978, 53-44434
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—576 **4 Claims**



1. In a seat suspension apparatus including a first parallel motion assembly, a spring urging said assembly in a given direction, and means for adjusting the resilience of said spring which causes said assembly to move in a given direction, the improvement comprising a second parallel motion assembly having a common lower frame member with said first parallel motion assembly and which is offset at an angle with respect to said first parallel motion assembly, said first parallel motion assembly comprising a pair of spaced apart opposed link arms each having three pivot points which are located on the apices of the triangle, a lower frame member adapted to be secured to a floor, means pivotably connecting first pivot points on each link arm to opposite ends of said lower frame member, an upper frame member adapted to have a seat secured thereto, means pivotably connecting second pivot points on each of said link arms to opposite ends of said upper frame member, said second parallel motion assembly comprising said link arms, said lower frame member, a connecting link extending between said link arms and means pivotably connecting the ends of said connecting link to third pivot points on said link arms, said link arms being pivoted about said first pivot points substantially equal distances on opposite sides of a horizontal line extending through said first and second pivot points on said link arms.

4,241,895

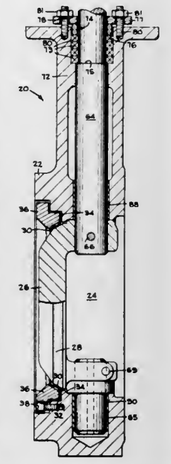
ANNULAR RESILIENT METAL VALVE SEAT

James E. Sternenberg, and William W. Broadway, both of Houston, Tex., assignors to FMC Corporation, San Jose, Calif.

Filed Apr. 26, 1978, Ser. No. 899,930
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—173 **7 Claims**

1. A valve comprising, in combination, a generally annular valve body defining a flow passage;
a fluid flow control element movably supported in the flow passage for controlling the flow of fluids through the valve;
an annular resilient metal seal having a planar portion and a curved lip portion, said lip portion having a shallow arcuate configuration and extending generally laterally from said planar portion entirely to one side of the plane defined thereby with the free edge of said lip portion defining the laterally outermost extent of said lip portion spaced from said planar portion, said seal being positioned in the flow passage where said lip portion cooperates with the flow control element to establish a fluid flow barrier through said passage;

a retainer ring having a planar portion and a frusto-conical portion, said retainer ring being positioned in the flow passage such that said planar portion of said seal is gripped in a fluid-tight relationship between said planar portion of said retainer ring and said frusto-conical portion is in normally spaced relation to said seal lip portion, whereby portions of said valve body operate said seal in a cantilever mode as said flow control element moves against said seal, said frusto-conical portion of said retainer ring supporting the free edge of said lip portion of said metal seal when said control element presses against said lip portion of said metal seal to operate said seal in a structural span mode when said passage is closed; and
means for releasably securing said retainer ring in position against said metal seal.

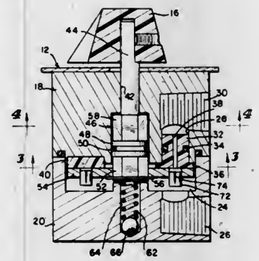


4,241,896

METHOD OF MAKING CALIBRATED GAS METERING ORIFICE AND PRODUCT THEREOF

Clayton B. Voege, Indianapolis, Ind., assignor to Ray V. Bussell, Indianapolis, Ind.

Filed Jan. 22, 1979, Ser. No. 5,518
Int. Cl.³ F16K *3/32, 51/00*
U.S. Cl. 251—206 **12 Claims**



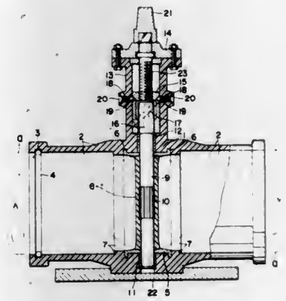
1. A calibrated gas metering valve, comprising
a valve body having a gas inlet and a gas outlet and a dividing wall formed with a hole therein defining a passage for gas flow from the inlet to the outlet,
a plug press-fitted in the hole so as to be solely positioned therein by the fitting engagement of its peripheral surface with the wall of the hole,
one of the interface surfaces between the plug and the wall of the hole having therein a groove or the like of progressively decreasing cross section so as to define therebetween an opening of a size that depends on the depth to which the plug is inserted in the hole,
the plug being positioned in the hole at a determined depth which produces an opening size giving a desired flow rate.

4,241,897

BUTTERFLY VALVE

Keiji Maezawa, Tokyo, Japan, assignor to Maezawa Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,686
Claims priority, application Japan, Dec. 17, 1977, 52-169746[U]
Int. Cl.³ F16K *31/50, 31/528*
U.S. Cl. 251—229 **2 Claims**



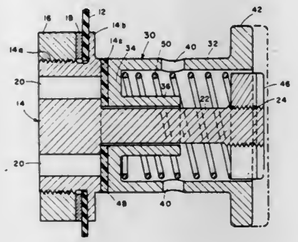
1. A butterfly valve particularly suitable for connection with synthetic resin pipes and for underground installations, said butterfly valve being characterized by:
A. a body of synthetic plastic having
(1) a main portion defining
(a) a central annular valve casing and
(b) a pair of tubular mouthpieces that are coaxial with said valve casing and project in opposite axial directions therefrom, and
(2) a cylindrical chamber portion projecting laterally from said valve casing at one side thereof, said chamber portion having its axis normal to that of said main portion;
B. a metal driven shaft extending diametrally across said valve casing coaxially with said chamber portion and having an end portion projecting into said chamber portion, said driven shaft being rotatably journaled in coaxial bearings in the wall of said valve casing;
C. a cylindrical actuating member axially slidably and rotatably confined in said chamber portion, said actuating member
(1) having a helix connection with said chamber portion whereby axial motion of said actuating member is accompanied by rotation thereof, and
(2) surrounding said end portion of the driven shaft and having a splined connection therewith whereby the actuating member is axially movable relative to said shaft but said shaft is constrained to rotate with the actuating member;
D. a drive shaft journaled in an outer portion of said chamber, said drive shaft
(1) being coaxial with the driven shaft,
(2) being confined to rotation relative to said body,
(3) having an outer end portion that is accessible at the exterior of said chamber for rotational actuation and
(4) having an inner end portion in said chamber that is surrounded by said actuating member and has a threaded connection therewith whereby rotation of the drive shaft imparts axial motion to the actuating member; and
E. a disc-like valve element secured to said driven shaft to be turned flatwise between open and closed positions by rotation of the driven shaft.

4,241,898

PURGE VALVE FOR DIVER'S MASK

Steven F. Segrest, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 8, 1979, Ser. No. 1,505
Int. Cl.³ F16K *15/18*
U.S. Cl. 251—321 **3 Claims**



1. A purge valve for use in combination with a diving mask or helmet having a wall, said purge valve comprising:

a generally cylindrical base member having an inner end portion adapted to be fixed in an opening in said wall and an outer end portion extending outwardly of said wall and presenting a plane, annular valve seat surface, said base member having a plurality of passages extending axially therethrough and opening in said valve seat surface;

a stem of predetermined length having its long axis normal to said valve seat surface and extending outwardly from said base member;

a valve member slidably mounted on said stem and having a cylindrical outer wall having an outside diameter substantially equal to the diameter of said valve seat surface and an axial length substantially equal to said predetermined length, an annular end wall normal to the central axis of said cylindrical outer wall, and a cylindrical inner wall reentrant from said end wall and in coaxial spaced relation within said cylindrical outer wall, said cylindrical inner wall being shorter than said cylindrical outer wall and surrounding said stem with said annular end wall in juxtaposition with said valve seat surface;

retainer means mounted on the outer end of said stem, said retainer means being engageable by the outer end of said cylindrical inner wall to limit movement of said valve member away from said valve seat surface;

a compression spring nested within said valve member between said inner and outer cylindrical walls and acting between said retainer means and said annular end wall to yieldably urge said valve member along said stem toward said base member, whereby said passages are normally obturated by engagement of said end wall with said valve seat, and are opened by retraction of said valve member away from said base member;

said valve member being open at the end of said cylindrical outer wall remote from said annular end wall and comprising a flange extending radially outwardly from the open end of said cylindrical outer wall for manual retraction of said valve member by a diver; and

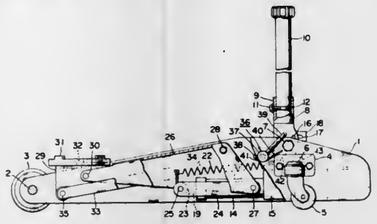
said retainer means being at least partially recessed into and in radially spaced relation with said open end of said cylindrical outer wall of said valve member and being removable from said stem to permit ready disassembly of said valve member and spring from said base member and stem.

4,241,899

LIFTING JACK WITH LOCKING DEVICE

Kazumasa Kaneko, Fuji, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Jan. 8, 1979, Ser. No. 1,528
Claims priority, application Japan, Jan. 11, 1978, 53-1820[U]
Int. Cl.³ B66F *5/04*
U.S. Cl. 254—8 B **1 Claim**



1. A hydraulic lifting jack, comprising: a frame; an elevator pivotally mounted on the frame; a hydraulic cylinder mounted on the frame for lifting the elevator; a reservoir for hydraulic fluid; a hydraulic pump system for the hydraulic cylinder; and a handle, pivoted on the frame, for operating the pump system; characterized by:

a handle locking device, comprising:

a stop member which is adapted to pivot on the frame between a first position where it does not interfere with the handle, and a second position where it contacts the handle, when the handle is positioned in the upright position, at its lower end portion, so as to lock the handle;

a lever for pivoting the stop member; and

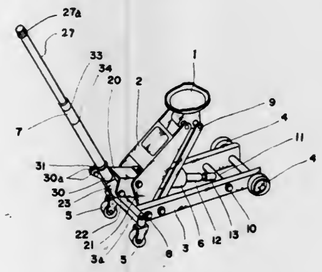
a spring means which urges the lever in the direction to urge the stop member to the second position.

4,241,900

QUICK ACTING HYDRAULIC LIFTING JACK

Genzaburo Okuda, 263-banchi Tanjo Mihara-cho, Minamikawachi-gun, Osaka-Pref., Japan

Filed Aug. 24, 1979, Ser. No. 69,507
Int. Cl.³ B66F *3/24*
U.S. Cl. 254—8 B **5 Claims**



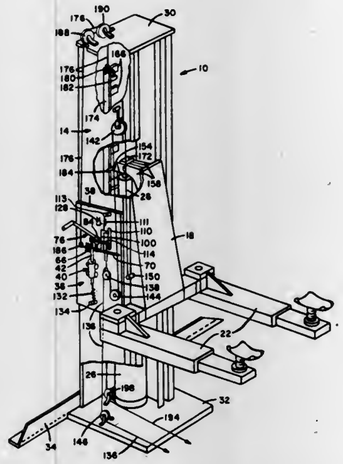
1. In a portable hydraulic jack of the type wherein a load supporting arm means is pivotally mounted on wheeled carriage means for swinging movement in a vertical plane, said carriage means including elongated vertically swingable handle means for propelling and guiding the carriage means on a floor and for incrementally raising the arm means by reciprocatory movement in a vertical plane to actuate a hydraulic pump means, the improvement which comprises force transferring means automatically actuated by swinging movement of said handle means in one direction to initially mechanically raise said arm means from a lowered position into contact with a load.

4,241,901

VEHICLE LIFT ASSEMBLY AND CONTROL SYSTEM THEREFOR

Donald F. Shircliffe, Louisville, Ky., assignor to VBM Corporation, Louisville, Ky.

Filed Nov. 7, 1977, Ser. No. 848,895
Int. Cl.² B66F *7/12*
U.S. Cl. 254—89 H **18 Claims**



15. A control system for a pair of independently movable translating means comprising

means for sensing a change in the relative displacement of said pair away from a preferred relative displacement of said pair, and

means operatively connected to said pair and responsive to said change, for automatically restoring said pair to said preferred relative displacement, said sensing means further comprising a cable strung between said pair under a preselected amount of tension when said pair is disposed in said preferred relative displacement, said cable tension being variable as a function of said change, said restoring means being responsively connected to said cable and responsive to a variation in said tension from said preselected amount.

4,241,902

SYSTEM FOR VESSEL EXCHANGE

Howard M. Fisher, New Castle, and Rashed N. Nagati, Mars, both of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Jul. 16, 1979, Ser. No. 57,759
Int. Cl.² C21B *13/00*
U.S. Cl. 266—44 **20 Claims**

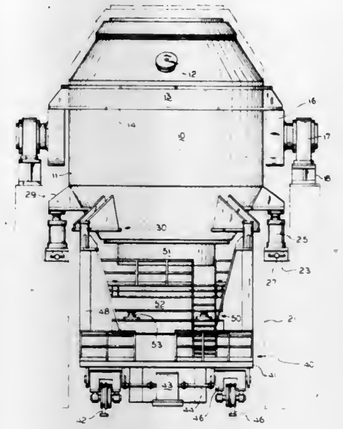
1. A metallurgical vessel handling apparatus comprising:

a metallurgical vessel;

trunnion means for partially surrounding and supporting said vessel at a first height;

lift means adjacent said vessel for engaging said vessel and vertically lifting same relative to said trunnion means to a second height;

transfer means for being movably positioned beneath said vessel when said vessel is at said second height, said transfer means including vessel support means for engaging and supporting said vessel when said vessel is at a third height intermediate said first and second heights;



power means for said lift means; and

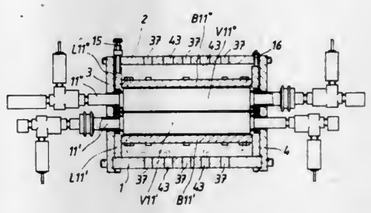
means for driving said transfer means.

4,241,903

APPARATUS FOR HEAT TREATING ELONGATED SHEETS

Erik R. Hellman, Vesterås, Sweden, assignor to AB Asea-Atom, Vesterås, Sweden

Filed Aug. 16, 1979, Ser. No. 66,975
Claims priority, application Sweden, Aug. 22, 1978, 7808831
Int. Cl.³ C21D *9/52*
U.S. Cl. 266—109 **8 Claims**



1. Apparatus for heat treatment of an elongated sheet comprising:

at least one elongated heating element;

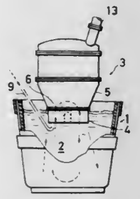
at least one pair of internally cooled rolls, positioned after said heating element in the direction of movement of an elongated sheet, for transporting a sheet past said heating element in a direction transverse to the axis of both the rolls and said heating element;

a treatment chamber having walls facing and substantially enclosing said heating element and that portion of the sheet between said heating element and said pair of rolls, said chamber having inlet and outlet gaps for the sheet as it is transported through the apparatus;

means for passing an oxidation-preventive protective gas through said treatment chamber; and

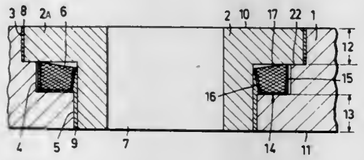
at least one pair of substantially enclosed roll pockets housing said cooled rolls, said pockets communicating with said treatment chamber, whereby the surfaces of said pockets define a further extended portion of said treatment chamber.

4,241,904
MOLTEN-METAL TREATING VESSEL
Sachio Nagashima, and Makoto Wake, both of Ohita, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Aug. 13, 1979, Ser. No. 66,284
Claims priority, application Japan, Aug. 18, 1978, 53/100036; Mar. 19, 1979, 54/32044; Jul. 17, 1979, 54/90624
Int. Cl.³ C21C *7/10*
U.S. Cl. 266—209 **9 Claims**



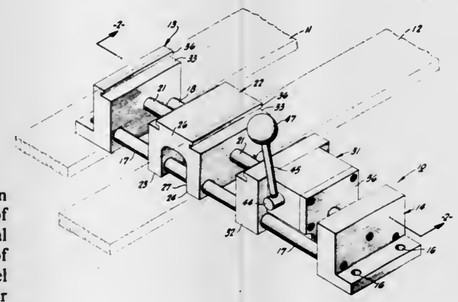
1. A molten-metal treatment vessel having an immersion drum immersible at the lower portion thereof into a bath of molten metal retained in a ladle for treating said molten metal wherein said metal is at least partly introduced into and out of said treatment vessel in a circulating flow, said treatment vessel comprising a vessel body having a lower section and an upper and lower end portion, said lower section open at said lower portion end thereof, and said immersion drum removably attached at the upper peripheral edge thereof to said lower end portion of said vessel body, said immersion drum including at least one upward flow passage and at least one downward flow passage contherein, said flow passages being spaced apart from each other, and in said immersion drum the ratio RS of the total cross sectional areas (S_1+S_2) of said upward and downward flow passages, which is the sum of the least total cross sectional area S_1 of at least one upward passages and the least total cross sectional area S_2 of at least one downward flow passage, to the cross sectional area S of said opening at the lower end of said lower section of said vessel, is not less than 0.3.

4,241,905
HEAD OR SLIDE PLATE FOR A MOLTEN-METAL SLIDE GATE
Eckehard Eisermann, Grefrath, and Dieter Beckers, Neunkirchen, both of Fed. Rep. of Germany, assignors to Martin & Pagenstecher GmbH, Cologne, Fed. Rep. of Germany
Filed Jul. 9, 1979, Ser. No. 55,512
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830199
Int. Cl.³ C21C *5/42*
U.S. Cl. 266—236 **4 Claims**



1. A molten metal slide gate comprising head and slide plates, one of said plates comprising a refractory plate having a circular opening and a refractory ring positioned in the opening, one side of the plate and ring cooperatively forming a flat slide surface, the respective peripheries of the opening and ring being shaped so as to cooperatively form an annular chamber spaced between the opposite sides of said one of the plates and the slide surface and an annular passage extending axially from the chamber to the slide surface, a tar ring positioned in the chamber and which vaporizes when the refractory ring is heated by molten metal, and porous refractory filling the annular passage and through which the vaporized tar can migrate to the slide surface.

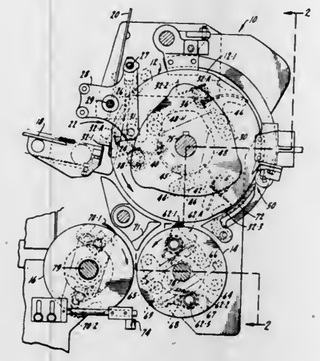
4,241,906
SKI VISE
Duane S. Cole, 1941 Walters Ct., Fairfield, Calif. 94533
Filed Nov. 13, 1979, Ser. No. 93,755
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—43 **3 Claims**



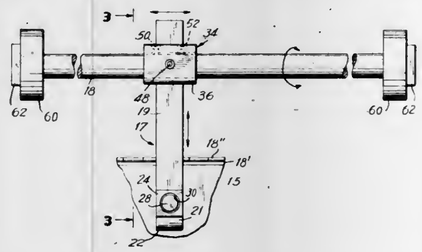
1. A vise for holding a pair of skis in either the flat or the vertical position exposing the edges comprising
spaced apart base members adapted to be fastened to a supporting surface,
laterally spaced apart guide ways extending between said base members and fixedly secured thereto,
a clamping rod extending between said base members,
floating jaw means freely slidable along said ways and said clamping rod,
clamping jaw means arranged for sliding movement along said ways and said clamping rod between one of said base members and said floating jaw means, said clamping jaw means including means gripping said clamping rod for fixing said clamping jaw means in a selected position, said gripping means serving to apply force in the direction of the other one of said base members,
an actuator means coupled to said gripping means and disposed entirely to one side of said ski vise so that no portions of said ski vise extend beyond said base members.

4,241,907
SIGNATURE MACHINE HAVING AN ADJUSTABLE TIMING CONTROL OF THE EXTRACTION MEANS
William B. McCain, Hinsdale; James F. Cosgrove; John Vente, both of Western Springs, and Thomas R. Flavin, Mokena, all of Ill., assignors to McCain Manufacturing Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 803,750, Jun. 6, 1977, Pat. No. 4,162,066. This application Apr. 9, 1979, Ser. No. 28,057
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—54 **5 Claims**

1. In a cyclically operable signature feeding machine of the type having extraction means for extracting signatures one by one from a hopper by applying negative atmospheric pressure thereto, said means then transporting each signature to a rotatable extracting cylinder where the extraction means releases it by applying atmospheric pressure, the extracting cylinder having means for further processing of signatures, the improvement comprising timing means responsive to the machine cycle speed for proportionally controlling the time for supplying both negative pressure and atmospheric pressure to the extraction means.



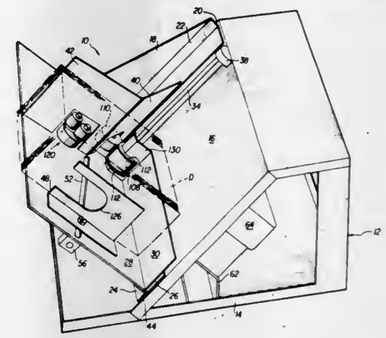
4,241,908
JACKET CLAMPING DEVICE FOR A PAPER STUFFING MACHINE
Joel A. Marcus, 68-61 Yellowstone Blvd., Forest Hills, N.Y. 11375
Filed Aug. 24, 1979, Ser. No. 69,268
Int. Cl.³ B65H *5/30*
U.S. Cl. 270—55 **10 Claims**



1. A clamping device for a stuffer having a V-shaped pocket with one inclined stationary platen, and having associated with the pocket a horizontal clamping bar which is oscillatable about its longitudinal axis between an idle position and a clamping position, said clamping device comprising an elongated resilient arm, means mounting said arm on said clamping bar to extend radially therefrom, and a resilient pad mounted on the tip of the arm in a position to face the inclined stationary platen when the clamping bar is in its operative position, said pad engaging the inner surface of a half of a folded jacket in the pocket when said clamping bar is in operative position.

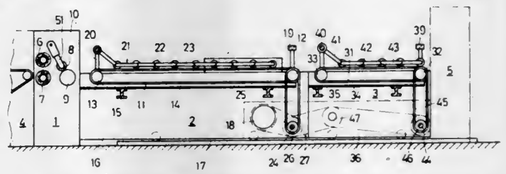
4,241,909
DOCUMENT STACKING APPARATUS
Gary J. Murphy, Potomac, and George F. Norris, Kensington, both of Md., assignors to Input Business Machines, Inc., Rockville, Md.
Filed Jul. 21, 1978, Ser. No. 926,729
Int. Cl.³ B65H *29/68*
U.S. Cl. 271—182 **5 Claims**

1. Document stacking apparatus for continuously stacking a plurality of documents in the sequential order in which they are fed into said apparatus, comprising:
bed means inclined with respect to the horizontal plane upon which documents to be stacked can be deposited;
means for feeding said documents into said apparatus;
document guide means for guiding said documents along an open-ended predetermined path from said feeding means;
deflecting means operatively cooperable with said guide means for defining said predetermined path;
a baffle movably mounted upon said bed means and operatively cooperable with said guide means for defining a stacking cavity, said baffle being biased toward a first position whereby said stacking cavity is minimized and being moveable under the influence of incoming documents to be stacked against said bias toward a second position so as to expand said stacking cavity and accommodate successive documents to be stacked, said baffle



being slidably disposed upon said bed means between said first and second positions and being of a length sufficient to accommodate variously sized documents without adjustment and being movable only along a line between said first and said second positions in order to accept said plurality of documents, said baffle otherwise remaining in a substantially stable position; and
document retarding means disposed adjacent one end of said predetermined path and rotatable in a direction counter to that which would normally feed said documents along said predetermined path for retarding the conveyance of said documents to be stacked so as to prevent the escape of said documents to be stacked from said stacking cavity and to facilitate the stacking of said documents within said stacking cavity.

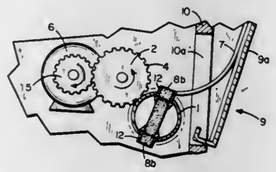
4,241,910
SHEET DELIVERING APPARATUS
Masaharu Matsuo, 17-3, Higashi-Komagata, 3-chome, Sumida-ku, Tokyo, Japan
Filed Apr. 26, 1979, Ser. No. 33,688
Claims priority, application Japan, Apr. 30, 1978, 53/051186
Int. Cl.³ B65H *29/20, 29/16, 29/66*
U.S. Cl. 271—202 **9 Claims**



1. Sheet delivering apparatus for transporting sheets from a processing maching to another device comprising:
support means:
roller means mounted on said support means for longitudinal separation of said sheets;

said roller means including top and bottom rolls, said top roll being rotatably supported at a location rearwardly eccentric relative to said bottom roll, said bottom roll being driven to rotate at a peripheral speed higher than the speed of sheet delivery of said processing machine;
first conveying means for lateral separation of said sheets, said first conveying means including paired first conveyor belts forwardly successional relative to said bottom roll, said first conveyor belts being supported by said support means to be movably laterally adjustable;
first retaining means adjustably mounted on said support means having a series of rolls and links extending forwardly along the upper surface of said first conveyor belts;
first driving means for continuously moving said first conveyor belts in synchronism with said processing machine;
second conveying means for temporary accumulation of sheets, said second conveying means including paired second conveyor belts forwardly successional to said first conveyor belts and supported by said support means to be movably laterally adjustable;
second retaining means adjustably mounted on said support means and having serial links and rolls extending forwardly along the upper surface of said second conveyor belt; and
second driving means for selectively moving said second conveyor belt in synchronism with said first conveyor belt and for stopping said second conveyor belt irrespective of said first conveyor belt.

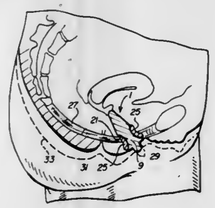
4,241,911
STRIPPING ROLLER WITH PROTECTIVE SLEEVE
Conrad E. Lee, Golden Valley, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Filed Oct. 1, 1979, Ser. No. 80,688
Int. Cl.³ B65H *29/20, 27/00*
U.S. Cl. 271—314 **4 Claims**



1. A stripping and transfer roller assembly for discharging from a processing machine into a storage bin, individual sheets of film and stacking the same in upstanding position, said assembly comprising,
a hollow roller forming a stripping and transfer roller,
said roller having a plurality of axially spaced apart openings formed therein,
soft resilient compressible stripping and transfer elements respectively inserted into said hollow roller through the openings formed therein, each of said transfer elements having an end portion thereof normally extending through its respective opening beyond the outer periphery of the roller,
means for retaining the elements in operative outwardly extending position,
a hollow protective sleeve element surrounding each outwardly extending portion of the transfer elements and slidably mounted in its respective opening,
means on each of said protective sleeve element for limiting the outward sliding movement to retain said protective elements in said openings in operative position surrounding the respective outwardly extending portions of the resilient stripping and transfer elements but permitting said protective elements to move inwardly with said outwardly extending resilient portions when the transfer elements are compressed,
said roller being oriented to drive the upper portion of the sheet upwardly therefrom in substantially upright position,
said protective elements engaging the trailing lower edge of said upright sheet to transfer the same laterally outwardly away from said roller, and
means for receiving said sheet in upstanding position when discharged from said roller,

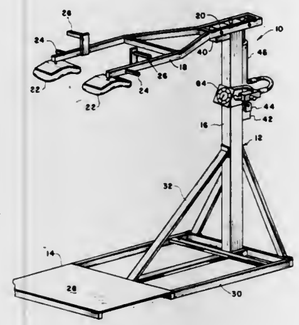
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4,241,912
ISOMETRIC VAGINAL EXERCISE DEVICE AND METHOD
Lloyd F. Mercer, and Jean H. R. Mercer, both of 2509 N. Campbell Ave., Suite 196, Tucson, Ariz. 85719
Filed Jan. 29, 1979, Ser. No. 7,045
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—125 **9 Claims**



1. An isometric vaginal exercise device comprising:
a. a shaft having first and second ends, said shaft being substantially round;
b. flange means connected to the first end of said shaft for limiting insertion of said isometric vaginal exercise device into the vagina of a user, wherein said flange means is substantially oval, said flange means having a major axis and a minor axis, said isometric vaginal exercise device being insertable into a vagina so that the major axis is approximately parallel to the vaginal slit, the length of the minor axis being such that the flange fits conveniently between the legs of the user;
c. handle means attached to the first end of said shaft for enabling a user to conveniently insert and remove said isometric vaginal exercise device into and from her vagina,
said shaft being rounded at its second end to ease insertion of said isometric vaginal exercise device,
said shaft having a longitudinal axis and a substantially concave portion adjacent said flange, a portion of said shaft immediately adjacent to said flange having a first diameter, the diameter of said shaft gradually decreasing to a second diameter at a first point on said axis, said first point being located approximately centrally of said concave portion, the diameter of said shaft gradually increasing to a third diameter at a second point on said axis, said second point being located at an end of said concave portion, a first portion of said isometric vaginal device being located between first and second planes perpendicular to said axis and passing through said first and second points, respectively, the distance between said first and second points and said second and third diameters being selected to allow sufficient gripping of said first portion to effect substantial lifting of the pelvic diaphragm of the user when she tightens her vaginal muscles on said isometric vaginal exercise device, enabling the user to achieve isometric exercising of the vaginal muscles and muscles of the pelvic diaphragm while the muscles of the pelvic diaphragm are in a shortened configuration resulting from said lifting,
said isometric vaginal exercise device being of sufficiently solid construction to substantially resist all muscular contractions of the user without substantial deforming of said isometric vaginal device.

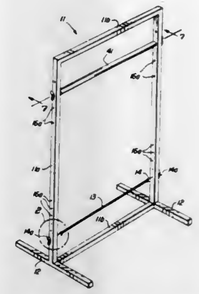
4,241,913
RAPID THRUST EXERCISE MACHINE
Don L. Zwayer, and Martin D. Sadler, both of Tulsa, Okla., assignors to Natural Energy of Oklahoma, Inc., Tulsa, Okla.
Filed Sep. 5, 1978, Ser. No. 939,393
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—130 **7 Claims**



1. An exercise machine comprising:
(a) a frame;
(b) an exercise bar pivotally carried by the frame at a fulcrum point;
(c) means for operator actuation carried by one end of the exercise bar;
(d) an elongated hydraulic cylinder having cooperating piston and piston rod pivotally connected between the frame and the opposite end of the exercise bar, the means for operator actuation and the cylinder being on opposite sides of the fulcrum point;
(e) a separate fluid reservoir carried by the frame;
(f) line means for fluid communication between the reservoir and the cylinder on one side of the piston opposite the piston rod; and
(g) a combination flow restriction and check valve provided in the fluid communication line wherein fluid flow is restricted in one direction and allowed to flow freely in the opposite direction whereby an applied force on the means for operator actuation in one direction causes a compression force on the piston rod.

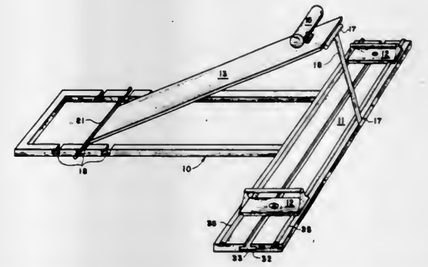
4,241,914
ELASTIC APPARATUS FOR RESISTING AND ASSISTING A PERSON PERFORMING EXERCISES
Donald D. Bushnell, 733 S. Jones, Mesa, Ariz. 85204
Filed Jun. 4, 1979, Ser. No. 45,273
Int. Cl.³ A63B *21/02*
U.S. Cl. 272—136 **1 Claim**

1. Apparatus for resisting and assisting a person performing exercises comprising
(a) a frame;
(b) elongate tensioned elastic means, attached at both ends thereof to said frame and responsive
(i) to yieldingly resist muscular exertion by said person when deflected by said exertion by said person during said exercises, and
(ii) to yieldingly assist generally upward bodily movement during said exercises when downwardly deflected by body weight of said person before said exercise is performed, said upward bodily movement occurring during said muscular exertion against at least one surface substantially fixed in position during said exercise;
(c) means to adjust the yielding resistance and assistance of said elastic means;
(d) manual means for selectively varying the position of the entire length of said elastic means in said frame; and



(e) means for maintaining said frame in a fixed position during the performance of said exercises.

4,241,915
ADJUSTABLE EXERCISE APPARATUS
David Noble, and Donald Noble, both of R.F.D. 6, Box 358, Richmond, Va. 23231
Filed Jan. 16, 1979, Ser. No. 3,830
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—144 **8 Claims**

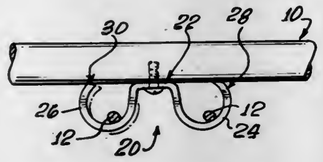


1. An adjustable, compactly foldable exercise apparatus comprising an elongated base, track means communicating with said base at right angles thereto forming a substantially coplanar foundation, a pair of handgrips engaged by said track means in adjustable spaced relationship, a flat elongated board positioned generally above said base and having foot engaging means adjacent the forward end thereof, elevating means pivotably connecting said foundation with said board in a manner to adjustably incline said board with respect to said base, and positioning means adjacent the rearward end of said base adapted to anchor the rearward end of said board so as to cause said board to assume a desired angle of inclination with respect to said base, whereby said apparatus is adapted for performing sit-ups and is adapted for performing push-ups when said board is lowered to a position substantially parallel to said base, said apparatus possessing a plane of symmetry which includes the longitudinal axes of said base and board.

4,241,916
NO-TIE SPORTS GOALS
Robert J. Palm, 1740 E. Brookdale, LaHabra, Calif. 90631
Filed Oct. 31, 1979, Ser. No. 90,006
Int. Cl.³ A63B *63/00, 63/08*
U.S. Cl. 273—1.5 R **5 Claims**

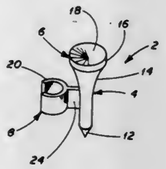
1. A sports goal assembly, comprised of a goal frame mem-

ber, supporting means, a goal net, and a plurality of "no-tie" net attaching members spaced about the extent of said goal frame member, each of said net attaching members accepting one of an equal plurality of cord loops formed on the periphery of the said goal net, each of said net attaching members being configured so as to be rigidly attached to said goal frame member at its central region, and with each said net attaching member containing a partial eye loop region, depending from



the surface of said goal frame member, unitarily formed at each end of said central region, said partial eye loop regions closing toward but not upon said central region, with the extremities of the material forming the said net attaching member assuming tension contact with said goal frame member such that said cord loop may be passed from the exterior to the interior of said eye loop regions, but such that the reverse passage of said cord loop is precluded.

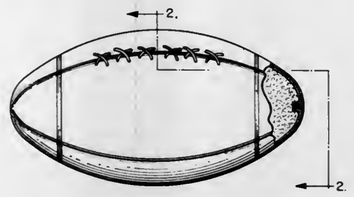
4,241,917
GOLF TEE
Murray Cohen, 4 Stoneham, Livingston, N.J. 07424
Filed Dec. 1, 1978, Ser. No. 965,694
Int. Cl.³ A63B *57/00*
U.S. Cl. 273—33 **6 Claims**



1. A golf tee, comprising:
an elongated shank member;
an enlarged, cupped head member attached to one end of said shank member for supporting a golf ball thereon;
a limiting member attached to said shank member for limiting the extent of insertion of said shank member into the ground to locate said cupped head member at a predetermined level above ground level, said limiting member being attached in parallel relation to the longitudinal dimension of said shank member and along one side thereof;
said limiting member including a golf club mounting means, said mounting means being adapted to releasably hold said golf tee on a golf club shaft with said shank member disposed in parallel relation thereto, said mounting means defining a member of substantially U-shaped configuration.

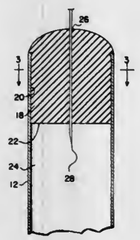
4,241,918
LIGHTER AND SOFTER RECREATIONAL BALLS
Chester F. Massino, 43 Golf Ct., Sandwich, Ill. 60548
Filed Apr. 12, 1979, Ser. No. 29,316
Int. Cl.³ A63B *41/00*
U.S. Cl. 273—65 E **3 Claims**

1. A ball comprising:
(a) an interior comprised of from about 3 to about 4 ounces of a polyester batting fill comprised of 100% polyester untreated extruded fiber having a denier of from about 4.5 to 5.0,
(b) a 4-piece wool batting interior cover,
(c) a 4-piece polyester double-knit outer cover each of which said four pieces of said polyester double-knit outer cover are substantially identical and are secured to each



other and to said corresponding interior wool batting piece by stitching and said ball further characterized by an elevated or raised cross stitching area to enable the ball to be thrown in a spiral, said ball having the general appearance, shape and characteristics of a conventional football when thrown or kicked but being softer and lighter.

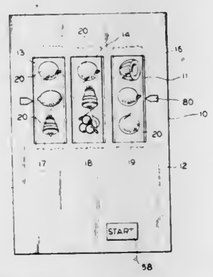
4,241,919
BASEBALL BAT WITH MODIFIED INTERNAL AIR PRESSURE
Ronald Foreman, King Manor Dr., King of Prussia, Pa. 19406
Filed Dec. 26, 1978, Ser. No. 973,039
Int. Cl.³ A63B *59/06*
U.S. Cl. 273—72 A **5 Claims**



1. A metallic bat comprising sidewalls which terminate at one end in a closed end and at the other end in an open end, the open end being closed with a resilient end plug secured to the interior surface of the sidewalls to define an interior space capable of maintaining a quantity of confined gas therewithin, the confined gas being characterized by a pressure other than atmospheric, the resilient end plug having a passage therethrough in communication with the interior space, the passage being open when a pressure introducing needle is inserted through the plug to introduce gas into the interior space and the passage being closed when the needle is withdrawn to seal the said interior space,
the said pressure being appropriate to produce a natural frequency of free vibration of such frequency and amplitude in the bat that when coupled with the excitation frequency caused by the impact of the bat striking a ball, resonance results.

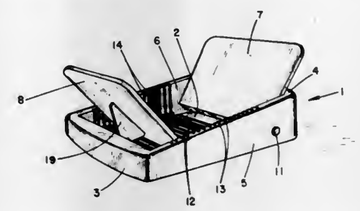
4. The method of modifying the initial pressure of a gas entrapped within the interior of a metallic baseball bat of the type having an interior space defined by the bat sidewalls and having one closed end and one open end, the open end being closed by a resilient plug, comprising the steps of
forming an opening through the resilient plug part of the bat construction in communication with the interior space by forcing a hollow conduit therethrough until its inner end reaches the interior space and its outer end extends outwardly of the plug;
determining the critical structural frequency of the bat;
introducing a gas at a pressure other than the initial pressure to the outer end of the conduit and forcing the gas through the conduit to establish the final pressure of the gas in the interior space;
pressurizing the gas to a final pressure necessary to achieve critical structural frequency in the bat; and
removing the conduit and automatically closing the opening through the resilient plug and maintaining the final pressure of the gas in the interior space.

4,241,920
AMUSEMENT APPARATUS
Donald E. Hooker, Wilmette, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.
Continuation of Ser. No. 820,410, Aug. 1, 1977, abandoned. This application Oct. 25, 1979, Ser. No. 88,173
Int. Cl.³ A63F *5/04*
U.S. Cl. 273—143 R **7 Claims**



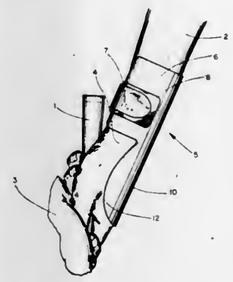
1. In an amusement apparatus having a plurality of rotating drums, each bearing a plurality of symbols, certain combinations of which have different play values and entitle a player to a reward, and including means for rotating said drums to initiate a playing cycle, means for arresting rotation of said drums before the end of a playing cycle to display a first combination of symbols, means for possibly effecting additional rotation of one of said drums during the playing cycle in which said first combination of symbols is not a winning combination so as to possibly cause to be displayed a second combination of symbols having a different play value, thereby according the player an additional opportunity to win a reward, said means for possibly effecting additional rotation being dependent upon said first combination of symbols not being a reward winning combination whereby said means for possibly effecting additional rotation of said one of said drums during the remainder of the playing cycle is dependent upon random means randomly actuating said means for effecting additional rotation during the said remainder of said playing cycle, whereby if the first combination of symbols is a reward winning combination the cycle is terminated and whereby if the first combination of symbols is not a reward winning combination and the random means is randomly actuated during the remainder of the playing cycle a second chance to win is afforded by said random means automatically actuating said one of said drums, the improvement comprising means for disabling said arresting means to permit additional rotation of one of said drums by said rotating means, first timing means operatively associated with a first switch means for closing said first switch means for at least one predetermined time interval at random times during the playing cycle, second timing means independent of said first timing means operatively associated with a second switch means for closing said second switch means for a predetermined time interval after the display of said first combination, and means for actuating said disabling means upon coincidental closing of said first and second switch means to cause to be displayed the second combination of symbols having a different play value, thereby according the player the additional opportunity to win a reward.

4,241,921
BINGO CARD HOLDER
David R. Miller, 6337 Bannock Way, Las Vegas, Nev. 89107
Filed Mar. 26, 1979, Ser. No. 23,706
Int. Cl.³ A63F *3/06*; B42F *17/14*
U.S. Cl. 273—148 A **3 Claims**



1. A holder for a plurality of bingo cards comprises a container having a floor, side walls, front and rear walls, and an open top, said side walls having a height substantially less than bingo cards to be supported in the holder, first pivotally mounted card support means for retaining a plurality of cards in a position slanted toward the front wall comprising a flat plate extending from a central portion of the container floor upwardly toward and substantially above said front wall, second pivotally mounted card support means for retaining a plurality of cards in a position slanted toward the rear wall comprising a flat plate extending from a central portion of the container floor upwardly toward and substantially above said rear wall, adjustment means for selectively varying the distance between the first and second card support means, a plurality of parallel grooves across the entire width of the holder for preventing slippage of bingo cards, and wherein the first and second card support means fold inwardly adjacent the container floor when the holder is not in use.

4,241,922
GOLF TRAINING AID
Denvier D. Elliott, Jr., 5127 Palmyra Ave., Las Vegas, Nev. 89102
Continuation-in-part of Ser. No. 893,960, Apr. 6, 1978, abandoned. This application May 10, 1979, Ser. No. 37,497
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—189 A **4 Claims**



1. A golf training aid for attachment to a golfer's lower forearm and wrist of the leading arm of a golf swing to facilitate learning proper technique for chip and pitch shots, said aid comprising
a sleeve portion adapted to substantially encircle the lower forearm and wrist of the leading arm in a golf swing,

attachment means for retaining said sleeve portion in place,

a hand restricting portion including a substantially straight wall portion fully overlying the back of the golfer's hand to preclude hand motion in the direction of the foward swing about an axis extending transversely of the wrist, said restricting hand portion including a first side wall overlying the second metacarpal bone of the hand and thereby confining the hand against motion generally parallel to said axis, and a second sidewall oppositely disposed from said first sidewall to overlie the fifth metacarpal bone of the hand and thereby confine the hand against motion in a direction opposite to the first mentioned motion, the length of said first and second sidewalls being such as to terminate short of the golfer's palm so as to avoid conflict with normal gripping of the club,

said training aid having a surface extending in a substantially straight line along the entire length of the sleeve portion and the hand restricting portion, and said training aid having an overall length such that when properly positioned on the golfer's wrist, the device extends from above the wrist over the first set of knuckles.

4,241,923

BOARD GAME

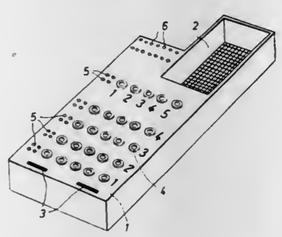
Mordecai Meirovitz, Haifa, Israel, assignor to Invicta Plastics Limited, Great Britain

Filed Jan. 10, 1979, Ser. No. 2,366

Claims priority, application United Kingdom, Jan. 14, 1978, 01559/78

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—265 **9 Claims**



1. A game comprising:

a plurality of code playing pieces of contrasted characteristics for forming a target code and comprising a first set of code playing pieces and a second set of said code playing pieces;

a plurality of boards, one for each player, each of said boards having a reserved area for receiving a pair of said code playing pieces chosen by a respective player and comprising one each of said first set of code playing pieces and said second set of code playing pieces, wherein said chosen code playing piece of said first set by each of several players together form said target code and each said chosen code playing piece of said second set determines the relative position in said target code of the code playing piece paired therewith;

a plurality of test playing pieces conforming to said first set of code playing pieces and adapted to be mounted in preselectable patterns on each of said boards in successive groups for simulating said target code;

and a plurality of marker elements each of which is mountable on any one of said boards for signalling the correctness in relation to the code playing pieces mounted on the selected one of said boards of the characteristics and relative positioning of the test playing pieces of a test group selected by a player.

4,241,924

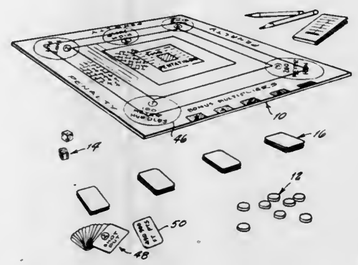
OLYMPIC EVENT BOARD GAME

Frank J. Arcara, 145-77 4th Ave., Whitestone, N.Y. 11357

Filed Jan. 29, 1979, Ser. No. 7,595

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—277 **9 Claims**



1. A board game comprising:

a playing board having a plurality of concentrically increasing scoring areas substantially covering the entire playing board, each scoring area uniquely identifiable from the others;

a series of event playing stations formed peripherally about said playing board overlying portions of said scoring areas, each playing station identified by the particular event to be played;

a set of cards associated with each of said playing stations for serving as a first chance determining means;

a playing piece for each player, all the playing pieces being simultaneously positionable within a single playing station;

a standard pair of dice for serving as a projectile to land onto particular scoring areas and simultaneously serving as a chance determining means for selecting a particular card from within each set of the first chance determining means;

scoring sheets having all of the events tabulated thereon.

4,241,925

TOY HAVING PROJECTILE MOVABLE IN BOTH COORDINATES OF A PLANE

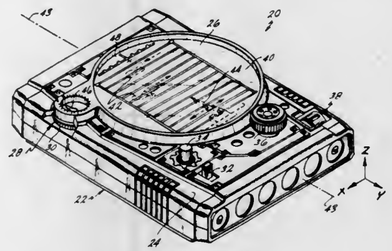
Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 971,645, Dec. 21, 1978. This application Feb. 22, 1979, Ser. No. 14,056

Claims priority, application Japan, Oct. 16, 1978, 53-127022

Int. Cl.³ A63F *9/00*

U.S. Cl. 273—316 **30 Claims**



1. A toy which comprises:

a support structure;

an object means serving as a target;

an object means positioning means located on said support structure, said object means positioned on said object means positioning means permitting said object means to move along the x coordinate of an x, y, z coordinate system;

a projectile means capable of attacking said object means;

projectile means positioning means positioning said projectile means on said support structure permitting said projectile means to move along the x and y coordinates of an x, y, z coordinate system;

said object means and said projectile means capable of assuming an interference position wherein both said object means and said projectile means have substantially the same x and y coordinate points but different z coordinate points;

detection means for detecting when said object means and said projectile means are in said interference position;

projectile drive means for moving said projectile means along the x coordinate of an x, y, z coordinate system, said projectile drive means including a rotating drive capable of rotating in a first direction and reversing and rotating in a second direction, said rotating drive rotating in said first direction when said projectile means is attacking said object means to drive said projectile from a ready position toward said object means and responsive to said projectile means and said object means not being in said interference position returning said projectile to said ready position, said rotating drive reversing direction of rotation and rotating in said second direction in response to said projectile means and said object means being in said interference position to return said projectile means to said ready position.

4,241,926

TONE ARM ASSEMBLY

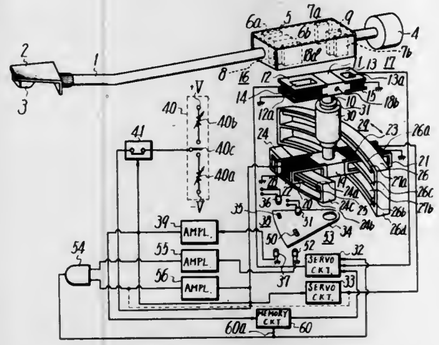
Satoshi Kusaka, Tokyo, and Kuninori Shino, Higashimurayama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 8, 1979, Ser. No. 36,992

Claims priority, application Japan, May 8, 1978, 53-54304; May 8, 1978, 53-54305

Int. Cl.³ G11B *3/10*

U.S. Cl. 274—23 R **13 Claims**



1. Apparatus for controlling a tone arm comprising:

a rotatable shaft for supporting said tone arm;

a horizontal drive motor for driving said tone arm in the horizontal direction with respect to a record disc;

horizontal motor drive means for energizing said horizontal drive motor in such a manner that said tone arm is moved between at least a rest position and a reproducing position relative to the record disc; horizontal velocity detecting means coupled to said tone arm for detecting the horizontal velocity of said tone arm, said horizontal velocity detecting means including a permanent magnet and a coil disposed in the magnetic field of said permanent magnet, one of said permanent magnet and coil being mechanically coupled to said tone arm, and said horizontal velocity detecting means and said horizontal drive motor being positioned oppositely to each other with respect to said shaft; and

means for supplying a voltage generated by said coil in response to horizontal movement of said tone arm to said horizontal motor drive means, whereby said horizontal drive motor is controlled to suppress detected horizontal vibrations of said tone arm.

4,241,927

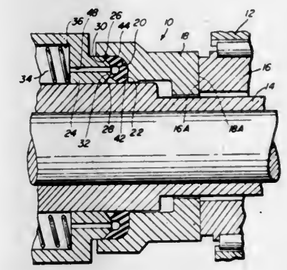
MECHANICAL SEAL

Winfred J. Wiese, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 13, 1979, Ser. No. 66,102

Int. Cl.³ F16J *15/38*

U.S. Cl. 277—87 **4 Claims**



1. In a mechanical seal assembly having non-rotatable and rotatable seal rings with opposed faces, means supporting said rings, a cavity in one of said seal rings removed from its seal face to receive a U-cup member of elastomeric material, and means urging said U-cup member into said cavity and also one of said seal rings toward the other of said seal rings, the improvement comprising:

said cavity having a defining surface which intersects a pair of surfaces of said one seal ring which are normal to one another and defines a substantially right angle with each surface of said pair of surfaces;

said U-cup having a surface in full contact with said defining surface and a cylindrical surface in contact with said supporting means, said cylindrical surface remaining substantially constant in length for all operating conditions of said seal assembly.

4,241,928

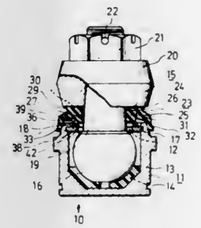
BOOT SEAL

Akira Nemoto, 22 aza-Nishihamagurizawa, Ueta-cho, and Yasunori Hamaguchi, 97 aza-Kanbezaka, Ueta-cho, Toyohashi-shi, Aichi-ken, Japan

Filed Dec. 7, 1978, Ser. No. 967,468

Int. Cl.² F16J *15/32*

U.S. Cl. 277—212 FB **5 Claims**



1. In combination:

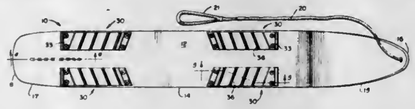
(i) a ball joint comprising:
(a) a socket housing having an open end with an inturned flange at said open end, said flange being formed with an opening at inner periphery thereof, said flange having a flat outer surface,
(b) a bearing member secured internally of said socket housing and having a part spherical internal surface,
(c) a ball stud including a spherical head portion and a shank portion integral with said head portion, said head portion being disposed and held rotatably, within said socket housing between said flange and said part-spherical internal surface, said shank portion extending through said open end of the socket housing,
(d) a joint member secured to said shank portion spaced from said head portion,
(ii) a boot seal formed wholly of resiliently deformable material, said boot seal including,
(A) an annular boss portion positioned about said shank portion, said boss portion having an inner peripheral surface in close contact with an outer peripheral surface of said shank portion, said boss portion further having an upper end surface abutting a lower surface of said joint member, said boss portion further having a lower surface spaced from the open end of the socket housing and which is moved towards and away from said open end according to tilting movement of said shank portion about the centre of said ball head portion,
(B) an annular waist portion extending outwardly from the outer periphery of said boss portion,
(C) an annular skirt portion extending from an outer peripheral edge of said waist portion towards said socket housing and abutting the upper outer periphery of said socket housing,
(D) an annular flare portion extending downwardly and outwardly from an outermost peripheral portion of the lower face of the boss portion towards an upper flat surface of the inturned flange of the socket housing, said flare portion having its free end in sliding contact with said upper flat surface so as to be movable radially of said flange in response to tilting of said shank portion, a space bounded by the opening of the inturned flange, ball head portion, the ball shank portion, the lower surface of the boss portion and the internal surface of the flare portion being filled with grease.

4,241,929

SKI BOARD WITH IMPROVED FOOT TREADS

Paul F. Curry, Raven, Va., assignor to Jem Corporation, Marion, Va.

Filed Dec. 19, 1978, Ser. No. 970,856
Int. Cl.³ B62B *15/00*
U.S. Cl. 280—12 H **14 Claims**



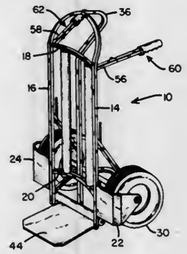
1. In a surf-type ski of the type defined by a ski member having a longitudinal axis, a somewhat narrow width, a generally planar intermediate portion, a front portion extending mildly upwardly and inwardly from the intermediate portion to the front end, said front portion and said intermediate portion having a substantially rectangular cross section transverse to said longitudinal axis, and a rear portion extending rearwardly from the intermediate portion to a rear end, and feet receiving means on the upper surface of said ski member for receiving at least one foot of the user of the ski, the improvement wherein said foot receiving means comprises at least a pair of foot skid-resistant, generally L-shaped elastomeric members, one positioned in front and the other behind the transverse center line of the ski for receiving the feet of the skier in a readily removable relationship, an upturned lip of the front L-shaped member being positioned toward the front of the ski, an upturned lip of the rear L-shaped member being positioned toward the rear of the ski, the upturned lips of each L-shaped member serving to fixedly position the feet of the skier to prevent fore and aft slippage between the feet of the skier and the ski, said pair of L-shaped members being secured to an upper surface of said ski, wherein each of said generally L-shaped members includes an elongated leg secured to said upturned leg, said elongated leg defining a plurality of spaced ribs along the length thereof and a recess between each of said spaced ribs to accommodate snow and to permit the boot of the user to be cleaned.

4,241,930

TWO-WHEELED DOLLY

Dwain C. Bell, 1400 Marshall St. NE., Minneapolis, Minn. 55413, and Lloyd E. Anderson, 6408 - 74th Ave. North, Minneapolis, Minn. 55428

Filed Oct. 25, 1978, Ser. No. 954,407
Int. Cl.³ B62B *1/04*
U.S. Cl. 280—47.29 **2 Claims**



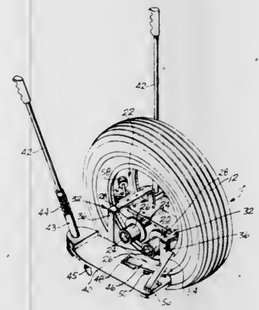
1. A multi-purpose hand truck comprising in combination:
(a) a frame member formed from tubing having a generally rectangular cross-section, said frame member comprising first and second parallel and spaced apart, longitudinally extending, side members and at least two generally arcuate cross-members extending between and affixed to said side members at spaced apart locations along the length dimension thereof;
(b) a toe-plate hingedly affixed to said frame member proximate a first end thereof and adapted to be alternately positioned in a first orientation extending outwardly and perpendicularly from said frame or in a second orientation generally flush to said frame, the length of said toe-plate being insufficient to overlay the one of said arcuate cross-members closest to said first end of said frame member when said toe-plate is in said second orientation;
(c) at least two elongated roller means journaled for rotation between said two arcuate cross-members and oriented parallel to said side members;
(d) first and second generally L-shaped fender members affixed to said first and second side members, respectively, and extending laterally outwardly therefrom proximate said first end of said frame member for a first predetermined distance and an end portion bent rearwardly for a second predetermined distance, said end portions of said first and second fender members having an aperture formed therethrough, said toe-plate being disposed between said fender members and being generally coplanar with the portion of said L-shaped fender members extending laterally outwardly from said side members when said toe-plate is in said second orientation;
(e) a cylindrical rod affixed to said frame and extending transversely thereto proximate said first end thereof, the end portions of said rod passing through said apertures formed in said end portions of said first and second fender member;
(f) a pair of wheels of a predetermined diameter journaled for rotation on said cylindrical rod at a location outboard of said members and within said first predetermined distance of the lateral extension of said fender member; and
(g) handle means affixed to said frame member proximate the second end thereof and extending rearwardly of said frame for a distance such that when the ends of said handle means abut a horizontal surface, said frame member is in a generally horizontal plane.

4,241,931

AUTOMOBILE TIRE RIDING VEHICLE

Donald H. Healy, 3315 NW. Golden Pl., Seattle, Wash. 98107

Filed Apr. 16, 1979, Ser. No. 30,350
Int. Cl.³ B62K *17/00*
U.S. Cl. 280—205 **10 Claims**



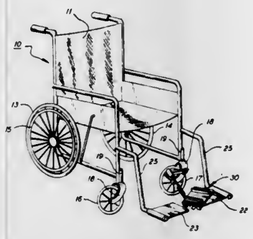
1. The combination with an automobile tire having spaced apart circular beads, adjoining side walls, and a ground-engaging tread interconnecting said side walls, a tire riding vehicle comprising: a base support extending parallel to the space between tire beads; two spaced apart axles extending at right angles to, and connected with, said base support; two spaced apart roller means rotatively mounted on each of said axles and each adapted to roll on a tire bead; two spaced apart flange means mounted on each axle, each disposed inwardly of, and adjacent one of said roller means, and each engaging the inner surface of a tire bead; and platform means, on which a rider can stand, mounted on said two parallel axles.

4,241,932

WHEELCHAIR STEERING APPARATUS

William F. Hartmann, Syracuse, N.Y., assignor to Gerald W. Rothschild, Fayetteville, N.Y.

Filed Sep. 18, 1979, Ser. No. 76,586
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—265 **8 Claims**



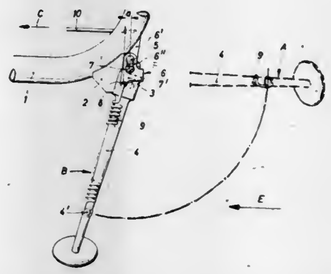
1. A wheelchair apparatus having an occupant seating means carried upon a frame and a plurality of wheels for moving the apparatus, the apparatus further including
at least one steering caster carried in a fork that is attached to the frame for rotational movement about a substantially vertical axis for determining the direction of movement of the wheelchair,
a footrest secured to said frame,
a turntable rotatably mounted upon the footrest in coplanar relationship therewith, said turntable being adapted to receive the foot of the occupant thereupon whereby the turntable can be turned by said foot,
a lever bar secured to the fork and extending outwardly therefrom,
an elongated link that is operatively connected by pivotable connector means at one end to the extended end of said lever bar and at the other end to the outer periphery of said turntable whereby movement of the turntable will produce a corresponding movement of the wheel, and
stop means secured to the turntable on either side of the link for contacting said link and thus limiting the amount of rotation afforded said turntable.

4,241,933

SIDE SUPPORT FOR MOTORCYCLE

Peter Gratza, and Heinz Estel, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,884
Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721180
Int. Cl.³ B62H *1/02*
U.S. Cl. 280—301 **8 Claims**



1. A parking support device for a two, tandem wheeled vehicle having a frame, said device comprising: a mounting means fixed to said frame; a side support mounted on said mounting means for pivotal movement about a first axis, between a ground engaging parking position and a retracted, driving position; a pivot lever means mounted on said mounting means for pivotal movement about a second axis positioned above said first axis; means for pivoting said lever means about said second axis from a first to a second position; spring means having two ends; means for connecting one of said two ends to said side support; and means for connecting the other of said two ends to said lever means at a point below said first axis whereby when said lever means is in said first position said point is beyond a dead-center position causing said spring to bias said side support to said parking position, and when said pivoting means moves said lever means to said second position said point moves into a position ahead of dead-center causing said spring to move said side support into said driving position.

4,241,934

ANTI-JACKKNIFE DEVICE FOR TRACTOR-TRAILER COMBINATION

Joseph F. Buehner, 6750 State Rd., Wadsworth, Ohio 44281

Filed Dec. 22, 1978, Ser. No. 972,255
Int. Cl.³ B62D *53/08*
U.S. Cl. 280—432 **8 Claims**

1. An anti-jackknife device for a tractor-trailer combination in which a tractor member and trailer member are connected

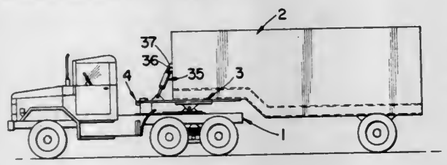
for turning relative to each other about a turning axis by a fifth wheel connection including a rockable bearing plate; mounting means supporting the rockable bearing plate on said one member for rocking about a fixed axis extending transversely of said one member, and said rockable bearing plate having a socket;

a complementary bearing plate and a connecting pin on the other member, said pin being rotatable in the socket while the bearing plates are in load bearing relation, the improvement comprising:

a first limit stop element separate from, and unconnected to, both said rockable bearing plate and said mounting means;

means for connecting the first limit stop element to said one of the members independently of, and in spaced relation, radially of said turning axis, to both said rockable bearing plate and said mounting means;

a complementary limit stop element;



support means for connecting the complementary limit stop element to the other member in a predetermined position for engagement with, and cooperation with, the first limit stop element in a manner to permit limited turning of the members in opposite directions relative to each other about said turning axis from an intermediate position in which the tractor and trailer members would be aligned for lineal travel and to arrest said turning of the members in opposite directions beyond a predetermined degree of turning out of said intermediate position, said support means further connecting said complementary limit stop element for movement, selectively, into and out of said predetermined position; and

operating means for moving said complelimit stop elements, selectively, into and out of said predetermined position.

4,241,935

COUPLING HOOK STRUCTURE FOR TRACTOR HITCH SYSTEM

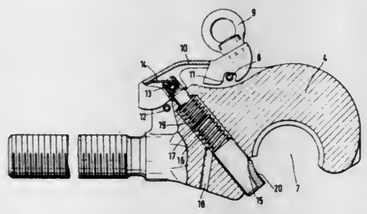
Jürgen Vollmer, Lohmar, and Norbert Müller, Ruppichteroth-Schönenberg, both of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,538

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831862

Int. Cl.³ B60D *1/12*

U.S. Cl. 280—461 A **2 Claims**



1. A coupling hook structure forming the upper link of a three-point linkage system for a trailer hitch adapted to receive in locking engagement therewith the coupling sphere of a coupling pin of an implement to be attached to said tractor by said three-point linkage system, said coupling hook structure comprising: a hook body defining a concave recess for receiving a coupling sphere in locking engagement therein; means defining through said hook body a rectilinear opening extending to said concave recess; a locking bolt received within said rectilinear opening and having one end adapted to extend into said recess for locking engagement with a coupling sphere received within said recess, said one end being formed with a curved locking surface adapted to the contour of said coupling sphere; spring means operatively engaging said locking bolt; a control lever having said locking bolt pivotally coupled thereto at an end of said locking bolt opposite said one end; stop means limiting movement of said locking bolt within said rectilinear opening; a generally U-shaped recess formed in said control lever at a point thereon spaced from said pivotal coupling of said locking bolt with said control lever and opening toward said concave recess, said U-shaped recess being defined by lateral sides which are arranged such that imaginary extensions thereof intersect the axis of said locking bolt; a bearing pin on said hook body located to be engaged within said U-shaped recess when said locking bolt extends into locking position into said concave recess; and bearing means interposed between said control lever and said hook body on the side of said pivotal coupling opposite the side thereof on which said U-shaped recess is formed.

4,241,936

TRAILER COUPLINGS

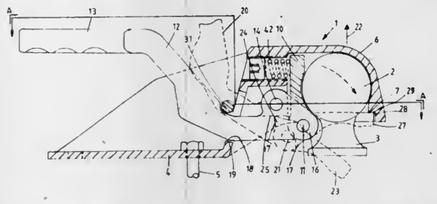
John A. Carruthers, 1/11 Pounamu Pl., Howick, Auckland, New Zealand, and Michael J. Austin, Auckland, New Zealand, assignors to John Abbott Carruthers, Auckland, New Zealand

Filed Aug. 28, 1978, Ser. No. 937,205

Claims priority, application New Zealand, Sep. 1, 1977, 185077

Int. Cl.³ B60D *1/06*

U.S. Cl. 280—507 **3 Claims**



1. A trailer coupling part comprising: a housing so shaped as to define an entry opening adapted to receive a towing ball to complete the trailer coupling when in use; a lever pivotal in said housing between open and closed positions and having a handle; a tongue pivotal on said lever, said tongue having a shaped surface complementarily contoured to said towing ball, said shaped surface in use contacting said towing ball when the latter is in position in said housing; tongue biasing means biasing said tongue so that on movement of said lever to its open position and in the absence of a ball in said entry opening, said tongue automatically pivots down through said entry opening such that movement of said lever to its closed position causes said tongue to take up a position closing said ball entry opening.

4,241,937

STEERING COLUMN SUPPORT

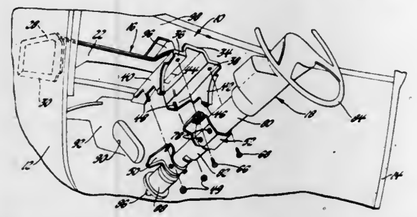
Hans C. Eggen, Pleasant Ridge; Eugene M. Halajian, Mt. Clemens; Edward L. Danner, Warren, and Darrell O. Rogers, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1979, Ser. No. 24,167

Int. Cl.³ B62D *1/18*

U.S. Cl. 280—777 **3 Claims**

1. In combination in a vehicle body having an upwardly extending hinge pillar for a vehicle door, a cantilever support beam extending transversely to the longitudinal axis of the vehicle body from said hinge pillar to a terminal end within said vehicle body, fastener means rigidly attaching one end of said support beam to said hinge pillar, a guide bracket secured to said terminal end of said support beam, bracket means secured to the underside of said guide bracket providing an opening therethrough, an elongated steering column extending along a longitudinal axis and normal to the axis of said transversely extending support beam and through said opening, and fastener means supporting said steering column within said opening in a predetermined location within said vehicle body, and brace means secured to said guide bracket for attaching the said terminal end of said support beam to said vehicle body so that said steering column is stabilized for operation by the vehicle operator.



4,241,938

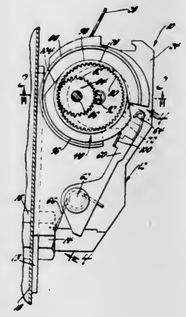
WINDING PREVENTION BELT RETRACTOR FOR PASSIVE SHOULDER BELT SYSTEM

Chimanbhai M. Patel, Troy, and Joseph J. Magyar, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 28, 1979, Ser. No. 15,948

Int. Cl.³ A62B *35/02;* **B65H** *75/48*

U.S. Cl. 280—803 **3 Claims**



1. In an automotive vehicle having a door and an occupant seat, the combination comprising: a restraint belt having one end mounted on the door and the other end mounted on the vehicle inboard the seat, a retractor provided at one of the belt ends and having a belt reel and a winding spring for winding the belt on the reel to an occupant restraining position during door closing movement and unwinding the belt during door opening movement, detent means associated with the retractor and operable to selectively lock the retractor against belt winding to hold the belt extended at a set length with respect to the occupant and unlock the retractor to permit belt winding, control means adapted to selectively operate the detent means between the locked and unlocked conditions, cam means associated with the retractor for selecitvely blocking operation of the detent means to the locked condition by the control means; and drive means for controlling the cam means in response to belt winding and unwinding, said cam means and said drive means cooperating throughout a plurality of belt unwinding reel revolutions to differentiate between an extent of belt unwinding indicative of disposition of the belt in the occupant restraining position and a greater extent of belt unwinding indicative of door opening movement and adapted to block operation of the detent means to the locked condition by the control means whenever the extent of belt unwinding is in excess of the extent indicative of disposition of the belt in the occupant restraining position.

4,241,939

SEATBELT SYSTEM

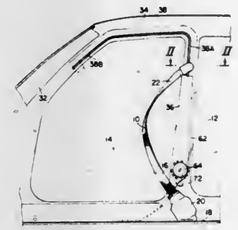
Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1979, Ser. No. 37,158

Claims priority, application Japan, Dec. 21, 1978, 53-175579[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **10 Claims**



1. A seatbelt system for automatically fastening a belt about a passenger in a motor vehicle comprising:

a runner piece coupled to a passenger restraining belt;

a guide rail which guides said runner piece along the body of said vehicle;

a drive system for moving the runner piece along the guide rail and causing the belt to approach or move away from the passenger to automatically fasten or unfasten the belt about the passenger; and

slide shoes assembled separately onto and covering said runner piece in a space between the runner piece and the guide rail whereby the slide shoes minimize frictional resistance between the guide rail and the runner piece.

4,241,940

PASSIVE SEATBELT SYSTEM

Ichiro Suzuki, Nagoya; Hisashi Ogawa, and Masanao Motonami, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 6, 1979, Ser. No. 17,933

Claims priority, application Japan, Aug. 16, 1978, 53-112184[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **6 Claims**

1. A passive seatbelt device for a vehicle comprising:

a guide rail fastened longitudinally to a roof side of the vehicle, said guide rail being substantially straight;

a truck, movable along said guide rail, to which is fastened one end of a passenger-restrictive belt;

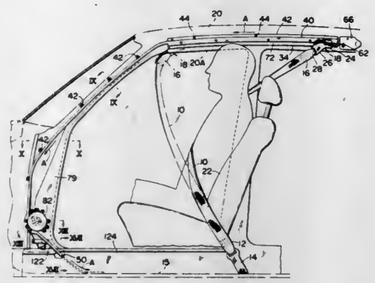
stoppers provided at a front and rear ends of said guide rail to restrict movement of said truck;

a slide rail provided separately from said guide rail, one end portion of said slide rail being fastened along said guide rail and the other end portion being fastened along a front pillar of the vehicle;

a flange extending from said guide rail;

a flange extending from said slide rail, said flange of said guide rail being fastened to said flange extending from said slide rail to thereby fasten the slide rail and guide rail in parallel together;

a flexible tape running in said slide rail, one end of said tape being fastened to said truck; and



a moving means connected to another end of said flexible tape causing the belt to approach or leave a passenger to thereby automatically fasten or unfasten the belt.

4,241,941

PASSIVE SAFETY SEAT BELT SYSTEM

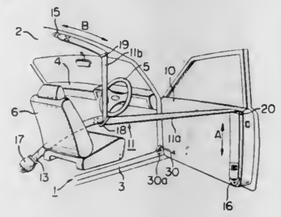
Kazuo Yamamoto, Sagamihara, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Mar. 19, 1979, Ser. No. 21,916

Claims priority, application Japan, Mar. 23, 1978, 53-36109[U]; May 12, 1978, 53-62663[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **8 Claims**



1. A passive safety seat belt system comprising:

at least one slide member being slidable in response to opening-closing of a vehicle door to change a condition of a belt engaged therewith in order to automatically restrain and liberate an occupant of a seat;

an elongated member having one end lying at a vehicle body part adjacent said door and the other end lying at a part of said door, one of said two ends being immovably attached and the other end being movable;

and link mechanism for amplifying and transmitting the motion of said movable end of said elongated member including

a first pivotally mounted lever,

a second pivotally mounted lever,

and a direction-changing arm, said first lever having a portion engaged with the movable end of said elongated member, a portion engageable with said direction-changing arm in an initial stage of the opening of said door, and a portion engageable with one end of said second lever during a stage subsequent to said initial stage of the opening of said door, and the other end of said second lever being pivotally connected to one end of said direction-changing arm, the other end of said direction-changing arm being pivotally connected to said slide member, the length between a center of pivotal rotation of said second lever and said other end of said second lever being greater than that between said center and said one end of said second lever.

4,241,942

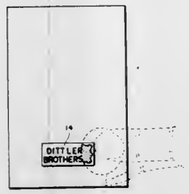
SECURE CONTEST CARD

Gilbert Bachman, Atlanta, Ga., assignor to Dittler Brothers, Inc., Atlanta, Ga.

Continuation of Ser. No. 856,748, Dec. 2, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,377

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—6 **1 Claim**



1. A contest card for temporarily and completely concealing the presence, absence, position or nature of indicia printed on said card comprising a smooth surface card stock material having an upper surface and a lower surface, a patterned irregular layer of material printed on the upper surface of said card stock material, indicia printed on said patterned irregular layer, and a sectionally removable mask overlying said indicia, said mask being opaque with respect to visual examination but being sufficiently transparent with respect to photocopy examination to permit copying of information printed below the mask.

4,241,943

PARKING CARD

Raphael Malinovitz, Granby, Conn., assignor to Parking Control Systems, Granby, Conn.

Filed Oct. 6, 1978, Ser. No. 949,234

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—13 **11 Claims**



1. A parking card comprising a base surface area having a plurality of printed sections, one of said sections having a series of numbers corresponding to the maximum number of dates in a month and a second of said sections being printed with a series of spaced time indications indicating successive expiration times;

a friable removable coating placed over each of the date indicators and a friable removable coating placed over each of the expiration time indicators;

the removable coating over each date indicator being overprinted with dates corresponding to the dates beneath;

and the removable coating over the expiration time indicators being overprinted with a series of successive starting times at a selected time interval before the underprinted expiration time;

the removable coating being readily removable by the user to indicate a desired date and an actual parking time and an actual starting time;

such removable coating, when removed, revealing the underlying date and the underlying expiration time respectively.

4,241,944

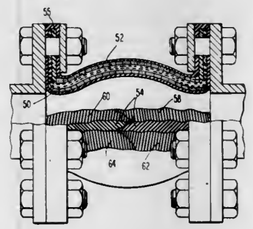
EXPANSION JOINT

Norman E. Clark, Canandaigua, N.Y., assignor to Garlock Inc., Longview, Tex.

Filed Dec. 6, 1977, Ser. No. 858,086

Int. Cl.³ F16L *51/02*

U.S. Cl. 285—229 **16 Claims**



1. A flexible expansion joint adapted to be secured between a pair of substantially rigid conduits and including first and second ends adapted to be received in sealing relationship with ones of said conduits and having an enlarged central section forming an arch, the walls of said arch extending radially at substantially less than 90° to the axis of the joint, the portion of said joint lying between said ends comprising an inner wall and an outer wall of elastomeric material, at least one support layer positioned intermediate said inner and outer walls and extending over the entire length of said joint between said first and second ends formed by a sheet of fabric oriented at a bias with respect to the axis of said joint, and at least one reinforcing layer positioned intermediate said inner and outer layers comprising a plurality of strands extending helically and continuously over substantially the entire length of the joint intermediate the ends thereof, such that no turns of any of said strands are disposed immediately adjacent other turns of the same strand.

4,241,945

MOTOR VEHICLE BUMPER

Guntram Huber, Aidlingen; Wolfgang Klie, Korntal; Wolfgang Fischer, Echterdingen; Daniel Riechers, Sindelfingen, and Hubert Hutai, Grafenau, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

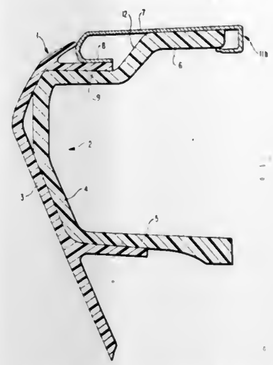
Filed Dec. 6, 1978, Ser. No. 966,865

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2754868

Int. Cl.³ B60R *19/00*

U.S. Cl. 293—120 **12 Claims**

1. A motor vehicle bumper, comprising relatively elastic base body means of approximately U-shaped cross section, apron means formed of elastic plastic material which covers a forwardly disposed web of the base body means and is drawn about up to flanges adjoining the web on both sides, and cover means constructed as decorative strip and covering at least the remaining visible part of an upwardly disposed one of said flanges, characterized in that the cover means is pivotally connected with the base body means by fastening means disposed substantially in the axial direction of two bumper support means in a manner permitting relative vertical axis pivoting movement therebetween, and in that within the area of the



bumper support means, the upper flange is surrounded at the end face by clamp means formed out of the cover means.

4,241,946

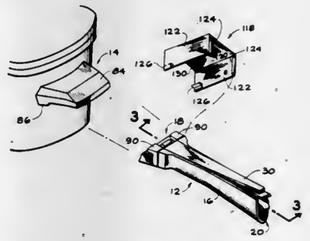
DETACHABLE HANDLE ASSEMBLY

Carl R. Spoeth, Jr., Kewaskum, Wis., assignor to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 780,936, Mar. 24, 1977, which is a continuation of Ser. No. 642,437, Dec. 19, 1975. This application Nov. 16, 1978, Ser. No. 961,309

Int. Cl.² A47J *45/07*

U.S. Cl. 294—31 R **7 Claims**



1. A detachable handle assembly for connection to a utensil side handle having a top side and an underside comprising:

a handle member having a connector end which includes two integral bifurcated upper extensions extending axially outwardly from said handle member each extension including under surfaces which match a corresponding top side surface of the utensil side handle and an integral lower extension having a terminal end which abuts against a corresponding portion of the utensil side handle underside when the handle assembly is engaged therewith, said handle member including an opposing outer end with an open channel along at least a major portion of the longitudinal axis thereof, with a rocker arm assembly pivotally connected proximate said outer end at a pivot portion thereof;

an insert positioned about within said channel and connected to said member, said insert having a pivot end and a terminal end;

a lever means affixed to said insert having first and second engagement portions, said first portion adapted to frictionally engage the utensil side handle underside and said second portion adapted to releasably engage said rocker arm assembly.

4,241,947

VEHICLE WITH TRANSFORMABLE LOADING AREA

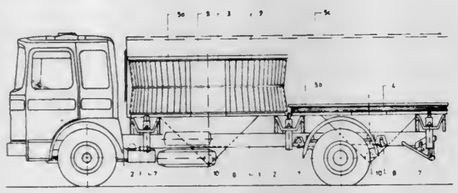
Georg Schröder, Schulstrasse 10, D-3588 Homberg, Bez. Kassel 1, Ortsteil Cassdorf, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,047

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1978, 2836754

Int. Cl.³ B60P *3/42*

U.S. Cl. 296—10 **18 Claims**



1. In a vehicle for the selective transport of a piece load or a bulk load, having a container including a bottom constituting, at least in part, a funnel having a discharge opening, a top closure arranged above the bottom and collapsible side walls attached to the bottom and the top closure; and means for raising and lowering the top closure to place, respectively, the container in an erected position for receiving a bulk load and in a collapsed position for receiving a piece load on an upper face of the top closure; the improvement wherein said side walls comprise a plurality of relatively rigid side wall elements having, in a lowered position of said top closure, a collapsed state in which they are stacked with respect to one another between said top closure and said bottom and further having, in a raised position of said top closure, an erected state in which the side wall elements together contiguously form said side walls; further comprising sealing means for sealing adjoining side wall elements with respect to one another and with respect to said top closure and said bottom in the erected state of said side walls.

4,241,948

DEVICE FOR LOCATING GUIDE RAIL FOR SLIDABLE VEHICLE ROOF PANEL

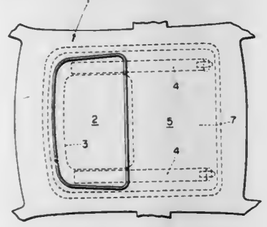
Keizi Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 27, 1978, Ser. No. 955,214

Claims priority, application Japan, Oct. 29, 1977, 52/145268

Int. Cl.³ B60J *7/04*

U.S. Cl. 296—216 **2 Claims**



1. Apparatus for positioning a guide rail adapted to support a slidable roof panel within a housing secured to a vehicle roof, comprising:

(a) a plate member secured to the guide rail and extending from one end thereof, said plate member having its free end tapered to a bayonet-point-like apex, with said apex being aligned substantially parallel to the centerline of said guide rail; and

(b) a clip member mounted through an opening in said housing and having a hole extending therethrough of substantially the same width and thickness as said plate member, said hole being adapted to receive said plate member for releasably securing said guide rail to said housing, said clip member having at least one inclined surface leading to said hole for guiding said tapered end of the plate member into said hole, and said clip member having at least one hook piece for engaging the edge of said opening.

4,241,949

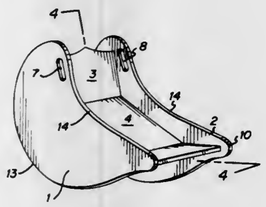
ROCKABLE FURNITURE

Michael S. Parker, Box 200, Sorrento, Me. 04677

Filed Sep. 20, 1978, Ser. No. 943,961

Int. Cl.³ A47C *3/029*

U.S. Cl. 297—3 **5 Claims**



1. A rockable device comprising vertical supports, the bottom of each support being formed of identical irregular curves made up of arcs of at least three different radii, the radius of the arc at one end being greater than the remaining arc radii, the greater radius arc of each said support bottom blending into a reverse curve section at one end thereof, means fastened to and spacing said supports, said last named means comprising a horizontal back section, a seat section angled upwardly therefrom at one end of the back section, and a slide angled from the opposite end of the back section whereby the device may be occupied and rocked through an arc of more than 120°, or alternatively turned over for use as a slide.

4,241,950

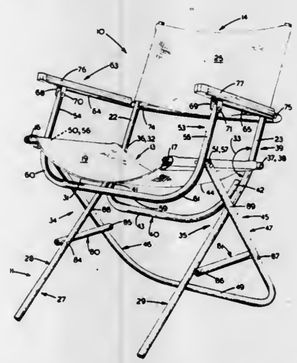
FOLDING CHAIR

Douglass E. Simpson, 2426 W. 6th Ave., Vancouver, B. C., Canada (V6K 1W3)

Filed May 4, 1979, Ser. No. 36,154

Int. Cl.² A47C *4/00*

U.S. Cl. 297—18 **11 Claims**



1. A folding chair structure having legs, a seat portion and a back portion; the structure being adapted to be unfolded from a folded position to an operative position in which the seat portion includes generally horizontal right hand and left hand lateral seat members adapted to support seat material extending therebetween, and the back portion includes upwardly extending right hand and left hand lateral back members hinged to the respective seat members and adapted to support back material extending therebetween, the chair being characterized by:

(a) a forward leg pair having right hand and left hand inclined, generally parallel forward leg members extending upwardly and rearwardly from a position generally below a forward portion of the seat portion to be hinged at aligned rear hinge points generally adjacent a rear portion of the seat portion, the forward leg members extending essentially rigidly from the respective lateral back members adjacent the rear hinge point so as to be inclined at an obtuse angle to the back members to form right hand and left hand combination members, first transverse means connecting the combination members together,

(b) a rear leg pair having right hand and left hand inclined, generally parallel rear leg members extending upwardly and forwardly from a position generally beneath the rear portion of the seat portion to be hinged at aligned forward hinge points adjacent the forward portion of the seat portion, a second transverse means connecting the rear leg members together, and when viewed laterally, the forward and rear leg members appearing to cross each other at an intersection,

(c) right hand and left hand essentially non-resilient cross links, the right hand cross link being hinged to extend between the right hand forward and right hand rear leg members, and the left hand cross link hinged to extend between the left hand forward and left hand rear leg members respectively, the cross links being positioned below the intersection of the respective leg members, and sufficiently above lower portions of the leg members to permit the lower portions of forward and rear leg members to move laterally relative to each other.

(d) a forward arm support pair having generally parallel right hand and left hand forward arm support members hinged to the seat portion generally adjacent the forward hinge points to extend upwardly therefrom,

(e) an arm member pair having generally horizontal right hand and left hand arm members hinged adjacent forward portions thereof to the respective forward arm support members and adjacent rear portions thereof to the respective lateral back members.

4,241,951

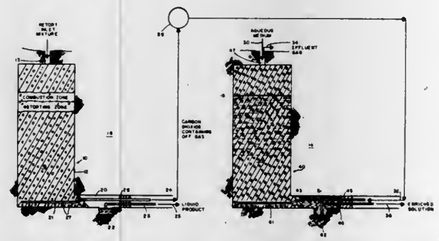
RECOVERY OF MAGNESIA FROM OIL SHALE

Robert A. Hard, Laguna Beach, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Feb. 21, 1979, Ser. No. 14,007

Int. Cl.³ E21C *41/10*; E21B *43/28*

U.S. Cl. 299—2 **42 Claims**



42. A method for leaching of magnesium values from combusted oil shale particles comprising the step of contacting combusted oil shale particles with an acidic aqueous leaching agent having a minor portion of a polyelectrolyte for forming enriched solution containing magnesium values.

4,241,952

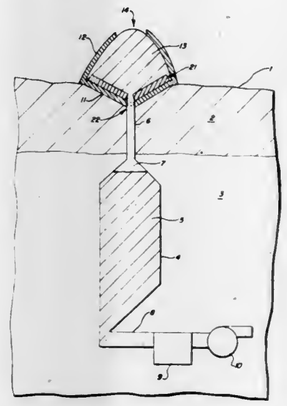
SURFACE AND SUBSURFACE HYDROCARBON RECOVERY

Irwin Ginsburgh, Morton Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 6, 1979, Ser. No. 46,014

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—2 **4 Claims**



1. An improved process for the recovery of hydrocarbon values from underground hydrocarbonaceous deposits comprising

forming an underground reaction zone containing a mass comprising rubblized hydrocarbonaceous material;

forming an essentially surface reaction zone containing a mass comprising rubblized hydrocarbonaceous material in fluid communication with the underground reaction zone;

forming an underground product collection zone for the gathering and collection of hydrocarbon values, said zone being in fluid communication with the surface and underground reaction zones;

passing suitable fluid capable of removing hydrocarbon values from the rubblized material through the surface and underground reaction zones so as to effectively remove hydrocarbon values from such material; and

passing the hydrocarbon values to the underground collection zone for recovery.

4,241,953

SULFUR MINE BLEEDWATER REUSE SYSTEM

Randol W. Bradford, Waggaman, and Michael H. Carmichael, Pearl River, both of La., assignors to Freeport Minerals Company, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,483

Int. Cl.³ E21B *43/28*

U.S. Cl. 299—4 **17 Claims**

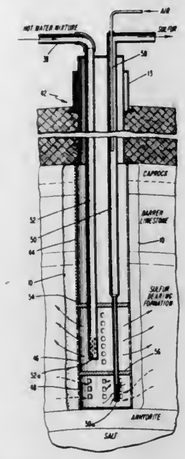
1. In a method of mining an underground sulfur ore body in a subterranean deposit wherein hot water at a sufficiently high temperature to liquefy sulfur underground is contacted with said underground sulfur which is liquefied thereby and which is thereafter moved to the surface whereby said hot water is somewhat reduced in temperature and accumulates as a body of underground water above at least a part of said sulfur ore body, that improvement utilizing the heat of said accumulated, underground hot water, comprising:

(a) removing at least a portion of said accumulated underground hot water from its subterranean location and bringing it above the ground surface;

(b) mixing said removed hot water with fresh hot water having a higher temperature than said removed water; and

(c) returning said mixed hot water to said underground sulfur ore body, so as to further liquefy said sulfur,

through a hot water downpipe physically separated from a sulfur return pipe through which the molten sulfur is withdrawn from said subterranean deposit such that the



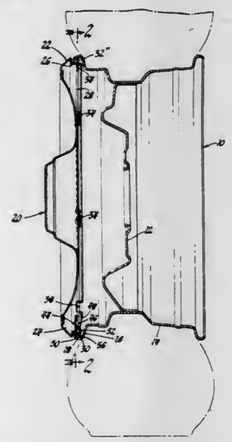
outer surface of said sulfur return pipe is not contacted by said mixed hot water along at least a substantial portion of the length of said sulfur return pipe.

4,241,954

WHEEL COVER RETENTION ARRANGEMENT

Trevor J. Brown, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1979, Ser. No. 84,512
Int. Cl.³ B60B *7/00*
U.S. Cl. 301—37 R **4 Claims**



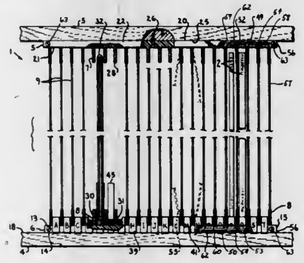
1. In combination with a vehicle wheel including an axially outwardly facing radially extending intermediate first annular flange merging into an axially extending radially inwardly facing second terminal flange, a wheel cover covering said wheel and having an outer annular peripheral portion including a radially extending axially inwardly facing first annular flange juxtaposed to the first wheel flange and merging into an axially extending radially outwardly facing second terminal flange juxtaposed to the second wheel flange, a pair of generally rigid semi-annular shoes, each including a plurality of wheel engaging projections, means mounting the shoes on the cover for movement between a first released position spaced radially of the second cover flange wherein the projections are out of engagement with the second wheel flange, and a second mounted position wherein the shoes radially engage the second cover flange and the projections engage the second wheel flange to float the cover on the wheel, means commonly biasing the shoes to the first released position, and means accessible from the outside of the cover peripheral portion for commonly moving the shoes to the second mounted position.

4,241,955

STORAGE RACK FOR RECORD ALBUMS

Hubert P. Armistead, 1204 Wilkes Blvd., Columbia, Mo. 65201

Filed Apr. 23, 1979, Ser. No. 32,356
Int. Cl.³ A47F *1/04*
U.S. Cl. 312—12 **8 Claims**



1. A storage rack for articles such as phonograph albums and the like comprising:

(a) top and bottom walls having front and rear portions;

(b) means supporting said top wall in overlying relation to said bottom wall and spaced therefrom a distance not less than a height dimension of articles for insertion into the storage rack;

(c) a plurality of elongate, parallel vanes extending at least partially from said front to rear portions on at least one of said top and bottom walls and forming guide channels having a width dimension sufficient for receipt of at least one of the top and bottom margins of said articles, said vanes extending outwardly of at least one of said top and bottom walls a distance less than the distance between said top and bottom walls; and

(d) a plurality of elastic connectors extending between said bottom and top walls in generally parallel relation and defining resiliently flexible and expansible partitions forming side-by-side compartments sized for respectively receiving the articles therein.

4,241,956

TRACK ASSEMBLY FOR CRAWLER-TYPE VEHICLES

Thomas C. Meisel, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 12, 1978, Ser. No. 914,312
Int. Cl.² B62D *55/24, 55/28*
U.S. Cl. 305—35 EB **3 Claims**

1. A track assembly for crawler-type vehicles comprising:

an elongated track frame;

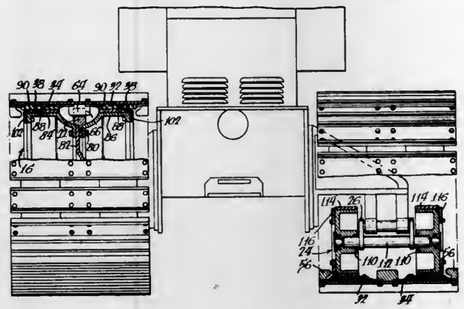
a pair of rotatable mounting assemblies, one journalled at each end of said frame, each mounting assembly comprising at least one cylinder and at least one mounting assembly further including an adjacent sprocket having radially outwardly directed teeth secured thereto, the cylinders of the two mounting assemblies being aligned;

an endless belt formed of a flexible, elastomeric material trained about said cylinders and mounting on one side a plurality of inwardly directed lugs, at least some of which are in engagement with said sprocket and on the other side inwardly directed guides, said guides extending inwardly

of the periphery of said cylinders adjacent the ends thereof remote from said sprocket;

a plurality of shoes on the outer face of said belt;

said lugs, cylinders and sprocket being constructed such that loading transmitted to said belt from said shoes will be



borne substantially entirely by said cylinders and not appreciably by said sprocket; and

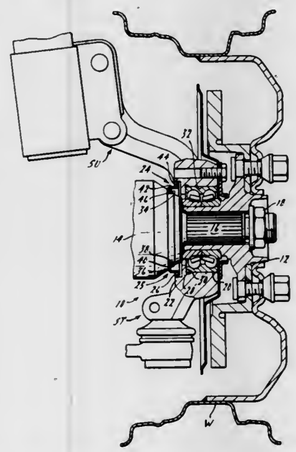
a radially extending wear plate mounted on each of said remote ends of said cylinders for potential engagement with said guides.

4,241,957

WHEEL BEARING SLINGER RING

Clifton S. Peck, Trenton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 26, 1978, Ser. No. 973,059
Int. Cl.³ F16C *33/78*
U.S. Cl. 308—36.4 **9 Claims**



1. In a wheel bearing assembly for a vehicle having an inner axle member, an outer journal member supported by the body of the vehicle, a bore formed through the journal member, a bearing carried in the through bore for rotatively supporting the axle member, and annular slinger ring means operatively carried intermediate said axle member and said journal member for preventing the ingestion of contaminating fluid from outside the assembly into the bearing, an improvement wherein said slinger means comprises:

A. means integrally formed with said journal member for defining an annular shoulder proximate the inner terminus of said through bore for preventing certain inward movement of said bearing;

B. means defining a counterbore in said journal member extending inwardly from said shoulder and substantially concentric with said through bore;

C. means defining an outer diameter surface on said axle member at an axial position proximately inboard said journal member counterbore; and

D. a generally cup-shaped annular slinger member carried for rotation with said axle member and including

1. an axially extending support portion received in interference fit relationship on said axle member diametral surface; and

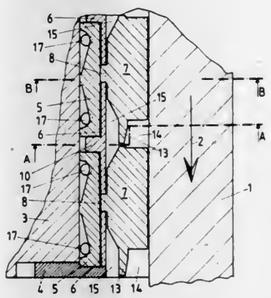
2. an annular directly radially extending tip portion received in closely fitting diametral clearance relationship within said journal member counterbore.

4,241,958

AXIAL THRUST BEARING

Wolfgang Möller, Nussbaumen, and Hans Schwarz, Umiken, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Sep. 7, 1979, Ser. No. 73,379
Claims priority, application Switzerland, Sep. 14, 1978, 9627/78
Int. Cl.³ F16C *17/06*
U.S. Cl. 308—160 **6 Claims**



1. A thrust bearing for axially supporting a rotary shaft, said thrust bearing comprising:

a plurality of bearing segments disposed circumferentially around said shaft for axially contacting a portion of said shaft, said segments including longitudinal support ribs;

a plurality of individual spring elements arranged circumferentially and disposed axially of said segments; and

a plurality of circumferentially arranged support plates disposed between said segments and said springs, said support plates including longitudinal bosses disposed circumferentially between said spring elements to locate said support plates relative to said spring elements in the circumferential direction;

said support ribs extending circumferentially between said support plates, so said support plates locate said segments in the circumferential direction;

said support ribs including tilt edges facing said spring elements and accommodating relative tilting movement therebetween so said spring elements elastically support said segments in the longitudinal direction;

said segments being spaced to form oil conducting passages therebetween, said segments including cooling ribs projecting into said passages.

4,241,959

APPARATUS FOR LONG-TERM LUBRICATION OF BEARING ELEMENTS

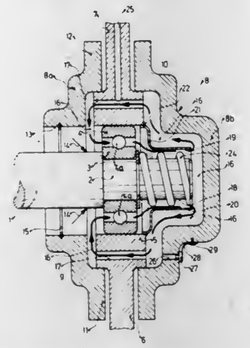
Manfred Frister, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,488

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804811

Int. Cl.³ F16C *33/66*

U.S. Cl. 308—187 **11 Claims**



1. An apparatus for providing long-term lubrication of a bearing, comprising

a bearing (**3**, **4**, **4*a***) for holding and locating a rotating shaft;

a housing formed by two concentric shells (**8*a***, **8*b***) surrounding said bearing and having at least one opening for receiving said shaft, said housing defining internal reservoir spaces (**16**, **17**) for holding lubricant;

a lubricant guide sleeve (**19**) attached to a stationary part of said bearing and coaxially surrounding a part of said shaft (**18**) with clearance, thereby defining a guide channel for said lubricant;

and a conveyor mechanism coupled to and powered by said rotating shaft, for imparting motion to said lubricant, located in the space defined between said guide sleeve (**19**) and the outer surface (**18**) of said shaft to circulate lubricant through said bearing and through said reservoir spaces.

4,241,960

SLIDE BUSHING FORMED OF FLAT SLIP STEEL BAND WITH ANTIFRICTION COATING

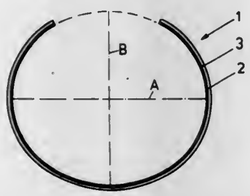
Georg Hentschel, Schweinfurt, Fed. Rep. of Germany, assignor to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

Filed Nov. 17, 1976, Ser. No. 742,572

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1975, 7537522[U]

Int. Cl.³ F16C *9/00*

U.S. Cl. 308—237 R **4 Claims**



1. In a slide bushing formed of a flat spring steel band having a coating of an antifriction material, and adapted to be sprung into a round housing bore, the improvement wherein said band has a wall thickness between 0.2 and 0.5 millimeters, said slide bushing having an elliptical shape with an axially extending slit when it is not installed in a housing bore, with the ratio between the major and minor axes thereof being substantially 1:0.9, the minor axis extending through the slit of the ellipse.

4,241,961

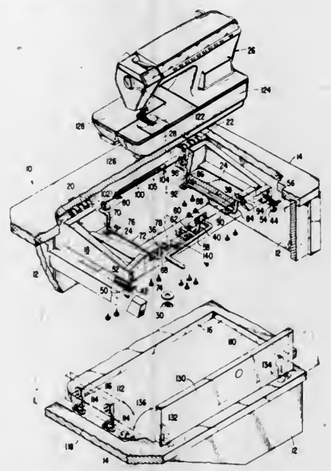
TWO LEVEL SEWING MACHINE CABINET

Wesley R. Peterson, Boundbrook, and Douglas C. Lang, Holmdel, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 16, 1979, Ser. No. 58,231

Int. Cl.³ A47B *51/00*; D05B *75/00*

U.S. Cl. 312—22 **10 Claims**



1. A sewing machine cabinet including side walls and an apertured top wall providing a top work surface for the cabinet, a cradle spaced below said top wall under the aperture thereof and hingedly attached to a wall of the cabinet for movement between a dropped position and a substantially horizontal position, latch means for normally holding the cradle in the substantially horizontal position, a mounting platform for a sewing machine, links which are pivotally connected to the platform and to the cradle and upon which the platform may be moved either downwardly in the cradle to a lowered working position wherein the platform is suspended from the cradle on the links below their pivotal axes in the cradle, or upwardly therefrom to a raised position wherein the platform is supported on the links above their pivotal axes in the cradle, stopping means for preventing movement of the platform in one direction on the links from said lowered suspended position, and manually operable means including a lever for moving the platform in the opposite direction on the links to the raised position.

4,241,962

STORAGE APPARATUS FOR RECORDS AND THE LIKE

Keith Ryan, Harrow, England, assignor to Recordex Limited, Tortola, British Virgin Isls.

Filed Sep. 13, 1978, Ser. No. 943,383

Claims priority, application United Kingdom, Sep. 16, 1977, 38737/77

Int. Cl.³ A47B *63/00*; A47F *5/12*

U.S. Cl. 312—183 **9 Claims**

1. Storage apparatus for visible index records, comprising

(a) a plurality of elongate panels of generally rectangular shape and having a front face and a rear face,

(b) a plurality of records,

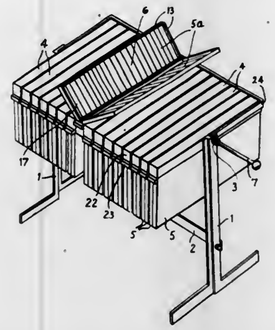
(c) each said panel including means removably assembling a plurality of said records in overlapping array on the front face of the panel,

(d) a support means,

(e) a plurality of elongate panel-carriers,

(f) a spindle supported horizontally by said support means and supporting said panel-carriers in side-by-side relationship for independent pivotal movement about the common horizontal axis of said spindle,

(g) hinge means attaching two panels to each panel-carrier, each panel being attached to the associated panel-carrier by a longer side thereof for swinging movement relative to the associated panel-carrier in a direction at right angles to the direction in which the panel-carriers pivot about said common axis,



(h) said common axis being disposed approximately midway along the length of the longer sides of the panels which are attached to the panel-carrier, and

(i) said hinge means being so positioned and arranged that a pair of panels attached to a panel-carrier can be swung to a closed-together position with the records assembled to the front faces of the respective panels facing each other, whereby the pairs of panels attached to the respective panel-carriers can be stored side-by-side and suspended vertically below the panel-carrier to which they are respectively attached, and when a panel-carrier is pivoted through 180° about said common horizontal axis to an inverted position, the pair of panels attached thereto can be swung apart in opposite directions to an open position in which their rear faces are supported on other panel-carriers.

4,241,963

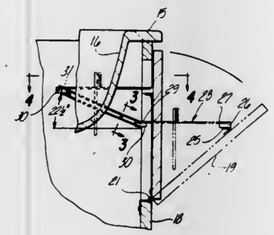
METHOD AND APPARATUS FOR UTILIZING VOID SPACES IN CABINETS AND THE LIKE

Charles Seidel, 436 Girard, Royal Oak, Mich. 48067

Filed May 7, 1979, Ser. No. 36,392

Int. Cl.³ A47B *88/00*; A47F *7/08*

U.S. Cl. 312—228 **17 Claims**



1. In combination, in a cabinet having side walls and a front wall having a normally fixed front panel, an apparatus for utilizing void spaces in cabinets and the like, including a front panel hingedly mounted to said front wall in place of said normally fixed front panel, a second hinge fixedly mounted near the top of said hingedly mounted front panel, a mounting block fixedly mounted to said second hinge, a shelf having a front portion and a rear portion with said front portion fixedly mounted to said mounting block and said rear portion having mounted thereon a pair of rear mounting blocks each having a pin extending laterally therefrom, a pair of C-shaped channels mounted in a 180° opposed relationship, one each to the inner surfaces of said side walls at an angle of approximately 22½° from the horizontal, and adapted to receive said pins to allow said shelf to move downwardly and outwardly while maintaining a usable horizontal position when said hingedly mounted front panel is opened.

4,241,964

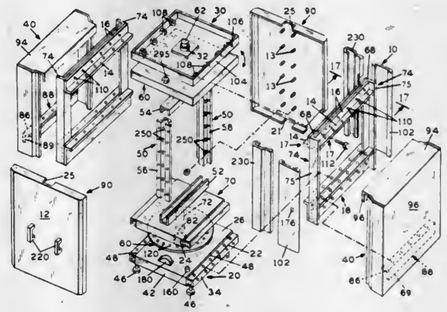
SINGLE OPEN FRAME FOR THE ROTOR OF A ROTARY STORAGE CABINET

Frederick H. Grubb, Jr., Stuarts Draft, Va., assignor to Acme Visible Records, Inc., Crozet, Va.

Filed Oct. 6, 1978, Ser. No. 949,262

Int. Cl.³ A47B *46/00*, *11/00*

U.S. Cl. 312—305 **3 Claims**



1. In a rotary storage cabinet having a stationary housing with openings in two opposite sides and a rotor mounted for rotation in said housing and wherein said rotor has four sides with two opposite sides positionable to present the contents of the cabinet to the openings in said housing and said rotor having two other opposite sides positionable to close the openings in said housing, the improvement comprising said rotor having a generally rectangular base, a generally rectangular top frame pan, and an open rectangular upright frame, said frame having a pair of spaced parallel uprights, a first cross piece extending between and secured to said uprights at their bottom ends, and a second cross piece extending between and secured to said uprights at their upper ends, said lower cross piece being releasably secured to said base, said upper cross piece being releasably secured to said upper frame pan, said rotor having only one of said open rectangular frames, and said one open rectangular frame being releasably secured by its cross pieces across the middle of said base and the middle of said top frame pan.

4,241,965

ELECTRICAL CONNECTOR FOR POWER PANEL SYSTEM

Harold R. Wilson, Holland Township, Ottawa County, and Ditmar K. Tillmann, Holland, both of Mich., assignors to Haworth Mfg., Inc., Holland, Mich.

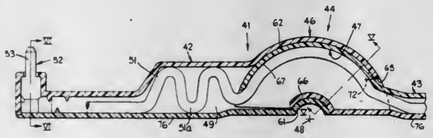
Filed Aug. 8, 1979, Ser. No. 64,956

Int. Cl.³ H01R *35/00*

U.S. Cl. 339—4 **10 Claims**

1. In a space-dividing wall structure formed from a plurality of prefabricated upright panels which are serially connected

together, said wall structure including a prewired electrical system associated therewith and extending longitudinally therealong, said electrical system including a pair of power blocks mounted on each panel adjacent the opposite vertical edges thereof and electrical cable means extending interiorly of each panel and connected between said pair of power blocks for defining an electrical circuit, said electrical system also including a hinged electrical connector releasably connected between the opposed power blocks of adjacent panels for electrically connecting the adjacent panels together so that the electrical circuit extends longitudinally throughout the plurality of serially-connected panels, said hinged electrical connector including a pair of rigid housing parts having integral hinge portions formed on the inner ends thereof and hingedly connected together for permitting relative swinging between said



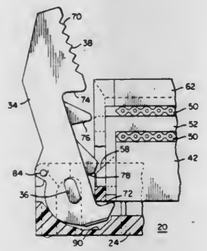
housing parts about a substantially vertically-extending hinge axis, each said housing part also having an electrical connector portion associated with the outer end thereof for releasable connection to a respective one of said power blocks, the improvement wherein the integral hinge portion as associated with each housing part comprises a tubular portion which is open at one end with said hinge portions being slidably and telescopically fitted one within the other, each said hinge portion including a pair of spaced and substantially parallel sidewalls each of which is generated on a radius about the hinge axis, with one of the sidewalls being generated on a radius substantially greater than the radius used to generate the other sidewall, whereby the hinge portions when slidably telescoped together permit relative angular displacement between the housing parts about said hinge axis.

4,241,966

CONNECTOR WITH EJECTOR-RETAINER MEANS

Jose J. Gomez, Los Angeles, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Apr. 26, 1979, Ser. No. 33,755
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—45 M **3 Claims**



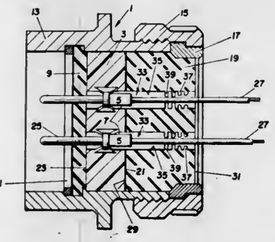
1. Header-connector apparatus for terminating a multiconductor cable, comprising:
(a) a header having a plurality of electrically conductive pin members;
(b) a connector supported by said header and having electrical contacts for engagement individually with conductors of said cable and with said pin members, said connector defining a planar surface in facing relation to said header and having openings for passage of said pin members into said connector;
(c) a cover supported on said connector for retaining said cable therewith; and
(d) actuator means supported by said header for first and second respectively opposite sense movements,
(1) said actuator means having a first surface engageable with said connector in said first sense movement for affecting engagement of said pin members and said contacts,
(2) said actuator means having a second surface fixedly spaced with respect to said first surface and movable through the plane of said connector surface in said second sense movement for affecting separation of said pin members from such engagement with said contacts, and
(3) said actuator means having a third surface movable into overlying relation to said cover in said first sense movement.

4,241,967

ELECTRICAL CONNECTOR ASSEMBLY SEALING GROMMET

Gordon T. Collins, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 31, 1979, Ser. No. 71,462
Int. Cl.³ H01R *13/48*
U.S. Cl. 339—59 M **5 Claims**



1. A sealing grommet for use in an electrical connector assembly wherein a plurality of electrical contacts are secured within axial bores formed in a dielectric insert, said grommet comprising a molded housing having an abutment face which is adapted to abut the insert, a plurality of axial passages extending through the housing to the abutment face cooperating with the axial bores of said insert, each of said axial passages having a circumferential wall and first and second pairs of resilient sealing webs integral with said housing and extending inwardly from the circumferential wall of each of said passages towards the axis thereof, said second pair of resilient sealing webs being situated between the first pair of resilient sealing webs and the abutment face of the grommet and extending inwardly from the circumferential wall towards the axis thereof a distance greater than said first pair of resilient sealing webs.

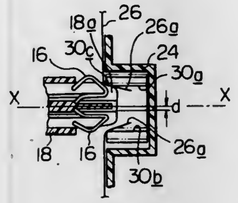
4,241,968

ELECTRICAL CONNECTOR WITH FLOATING CONNECTION ADJUSTOR

Yukio Fukunaga, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 18, 1979, Ser. No. 49,449
Claims priority, application Japan, Jun. 22, 1978, 53-85559[U]
Int. Cl.³ H05K *1/12*
U.S. Cl. 339—64 M **5 Claims**

1. An electrical connector comprising:
a plug member including an insulating housing, and a plurality of terminal elements housed in said housing, each of said terminal elements having at its one end a mating section which is exposed from a head portion of said housing;
a socket member including a body having a recess to receive said head portion of said plug member, and a printed wiring sheet attached to said body in a manner that a plurality of naked foil terminals of said sheet are enfolded into said recess; and
a separate equalizing float accommodated within said recess of said socket member with a play for floating sideway movement therewithin and having an opening with an inside dimension matching said head portion of said housing,



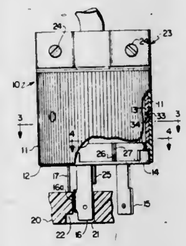
said head portion of the plug member being snugly inserted into said opening of said float, upon coupling of said plug member with said socket member, in a manner that the naked foil terminals are grippingly held between the mating sections of said plug member and the inner surface of said float.

4,241,969

LOCKING PLUG

Michael J. D'Amato, North Haven, and Frank C. Jaconette, Trumbull, both of Conn., assignors to Harvey Hubbell, Incorporated, Orange, Conn.

Filed Sep. 18, 1979, Ser. No. 76,792
Int. Cl.³ H01R *13/625*
U.S. Cl. 339—88 R **6 Claims**



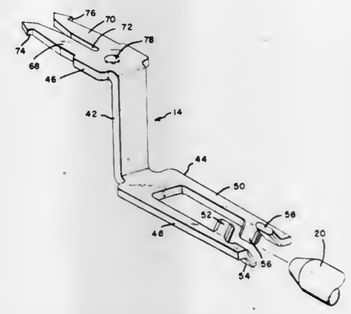
1. A male electrical connector structure comprising
a generally cylindrical insulating body;
a plurality of locking blades supported in said body and extending from a front face thereof,
said blades being shaped and dimensioned for insertion into and translation in slots formed in a mating female connector structure as said body is moved axially and angularly, respectively;
a sleeve at least partially surrounding said body;
means for mounting said sleeve for limited rotation relative to said body between first and second positions and for restraining said sleeve against axial movement relative to said body;
an elongated locking member normally protruding from said front face of said body when said sleeve is in said first position; and
means on said sleeve for engaging said locking member and axially retracting said member into said body as said sleeve is rotated from said first position to said second position.

4,241,970

ELECTRICAL CONNECTOR HAVING IMPROVED RECEPTACLE TERMINAL

Clarence N. Rider, Jr., New Cumberland, and William J. Rudy, Jr., Annville, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 9, 1979, Ser. No. 28,422
Int. Cl.³ H01R *11/12*
U.S. Cl. 339—99 R **10 Claims**



1. An electrical connector for interconnecting conductors of a multi-conductor cable to an array of terminal pins, said connector comprising:
a housing of insulative material having a mating front face and a rear face, a plurality of terminal passages extending between said faces, and latch projections extending from said rear face;
a like plurality of terminals each being formed of electrically conductive material with a body portion engaging said rear face, a mating terminal engaging first end extending into a respective passage in said housing, and a conductor engaging second end extending rearwardly from said rear face, said mating terminal engaging first end having a pair of parallel spaced arms each with at least one pair of tines directed toward the other of said arms, each tine of each pair being bent, with respect to the plane defined by said arms, in a direction opposite that of the other of said pair of tines and the opposing tine on the other of said arms, and said conductor engaging second end having a pair of tines defining a conductor engaging slot therebetween, each said tine having an insulation piercing profile on the free end thereof; and
a cover adapted to mate against said rear face, said cover having a cable slot extending therethrough in a first direction, latch slots extending through said cover in a second direction normal to said first direction and aligned to receive said latch projections therein, and terminal passages extending through said cover in said second direction and intersecting said cable slot whereby conductors of a cable positioned in said cable slot are terminated by said conductor engaging second ends of said terminals and mated with an array of pin terminals by said mating terminal engaging first ends.

4,241,971

PIGTAIL ASSEMBLY

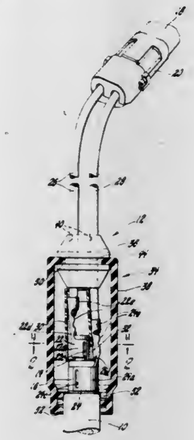
Robert D. Leonard, Jr., Poland, and Charles R. Nestor, Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1979, Ser. No. 72,089
Int. Cl.³ H01R *13/44*
U.S. Cl. 339—116 C **4 Claims**

1. In a pigtail assembly adapted for attachment to a post terminal having longitudinally spaced ring contacts which includes an end connector having a plurality of insulated lead

wires extending therefrom and a terminal attached to the end of each insulated lead wire, the improvement comprising:

each of said terminals having a clip-like contact shaped for assembly to and retention on a respective one of the ring contacts, and



one of the insulated lead wires having an insulator sleeve slidably mounted thereon between the end connector and the terminal attached to its end,

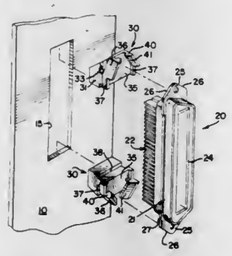
said insulator sleeve being slidable to a position over the terminal attached to the one lead wire and juxtaposed a portion of each remaining terminal for isolating the terminal attached to the one lead from each remaining terminal.

4,241,972

PANEL MOUNT FOR ELECTRICAL CONNECTOR

George E. Ayer, Naperville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 809,993, Jun. 27, 1977, abandoned.
This application Oct. 19, 1978, Ser. No. 952,762
Int. Cl.³ H01R *13/627*
U.S. Cl. 339—126 R **8 Claims**



1. An electrical connector assembly adapted to be mounted in an opening of an associated apertured panel board having inner and outer surfaces, said assembly including an electrical connector including a body portion adapted to extend partially through the aperture and a pair of outwardly extending mounting flanges at opposite ends of said body portion and a pair of connector clips for securing said electrical connector to the associated apertured support panel, each of said clips comprising:

a body member having first and second spaced surfaces disposed generally in facing relationship with each other to define a panel mounting slot;

said body member receivable in the aperture of the associated support panel with said support panel extending into said slot;

said body member having a mounting surface for receiving and holding one of said flanges on one end of said electrical connector;

a pair of spaced abutment shoulders projecting from said mounting surface and serving to limit movement of said electrical connector when a flange thereof is juxtaposed with said mounting surface and within the cavity defined by said abutment shoulders;

retaining fingers carried by said abutment shoulders for releasably securing said flange of said connector to said mounting surface, whereby, upon insertion of the pair of said clips into opposite ends of the aperture in said panel board and placing said body portion of said connector through the aperture, said body portion serves to retain said pair of clips in fixed position on the panel board while said mounting flanges of said connector are retained in position on said mounting surfaces so that said connector is fixedly secured to said clips; and

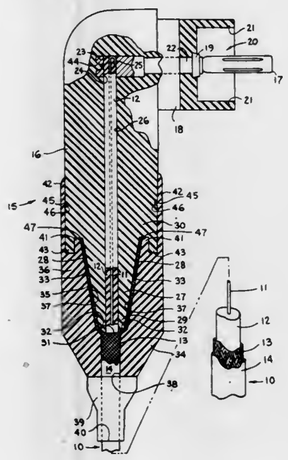
an abutment flange defining an abutment flange surface substantially parallel to said mounting surface of each said clip and adapted to extend into the aperture of the associated panel board to constrict the size of said aperture, and said connector body portion including a shoulder portion adapted to cooperate with said abutment flange to further hold said clips on the panel board and to further preclude movement of said connector relative to said panel.

4,241,973

COAXIAL CABLE TERMINAL CONNECTOR ESPECIALLY SUITABLE FOR HIGH-VOLTAGE, LOW-CURRENT ELECTROSTATIC USES AND METHOD OF MAKING SAME

Thomas A. Mayer, Allison Park, and James E. Sickles, Glenshaw, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 4, 1978, Ser. No. 931,063
Int. Cl.³ H01R *11/11*; H02G *1/14*
U.S. Cl. 339—143 R **12 Claims**



1. A method for attaching a terminal connector to a cable of a type having a first conductor, an insulating material covering the first conductor, a braided seconsd conductor surrounding the insulated first conductor, and an insulating material covering the second conductor, to provide an assembly of a cable and connector terminal useful in high DC voltage, low current electrostatic applications operable in a range of from minimal voltage to about 25,000 volts, said method comprising the steps of:

(a) providing a terminal body fabricated of dielectric material having a head portion, a frusto-conically shaped tail portion, a passageway connecting the head and tail portions, and a high voltage contact element secured within the head portion across the passageway, the tail portion having a frusto-conically shaped tip, then narrower annular-shaped end of the tip defining an orifice in communication with the passageway, the orifice having a diameter sufficient to permit an insulated first conductor of a cable to enter the passageway but insufficient to permit the braided second conductor of the cable to enter the passageway;

(b) inserting the insulated first conductor of the cable into the passageway at the orifice in the terminal body tail portion;

(c) separating the braided second conductor of the cable from the insulated first conductor at the orifice of the passageway as the insulated first conductor passes through the orifice;

(d) flaring the braided second conductor of the cable outwardly along the side wall of the frusto-conically shaped tip in a direction away from the axis of the first conductor as the insulated first conductor passes through the orifice;

(e) providing a sheath of dielectric material having a cavity within which the terminal body tail portion is nested, the cavity having a tapering wall of a configuration complementary to the tapering wall of the terminal body tail portion; and

(f) securing the sheath of dielectric material on the terminal body so that the complementary fitting tapering walls coact to secure the termini of the separated and flared braided second conductor within the interface between the dielectric materials of the terminal body and the sheath to completely enclose the termini of the braided second conductor for electrical stress relief and to provide an electrically isolated termination for the braided second conductor.

7. A cable terminal connector for attachment to the terminus of a cable of a type having a first conductor, an insulating material covering the first conductor, a second conductor surrounding the insulated first conductor, and a second insulating material covering the second conductor, the terminal connector being operable in a range of from minimal DC voltage to about 25,000 volts in low current electrostatic applications to provide a high voltage connector for the first conductor and to provide an electrically floating termination for the second conductor, the connector comprising:

(a) a terminal body of dielectric material, said terminal body having a head portion, a tail portion and a passageway having an axis, said passageway connecting said head portion and said tail portion and adapted to receive a terminal portion of an insulated first conductor of a cable, and tail portion providing a wall sloping toward said head portion and away from said axis at an acute angle with said axis;

(b) a high voltage contact element having a first end secured within said terminal body and having a second end adapted to make electrical contact to another high voltage carrying element;

(c) means adapted to receive a terminus of a first conductor of a cable and to provide electrical connection between the conductor and said first end of said high voltage contact element;

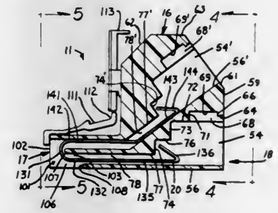
(d) a sheath of dielectric material cooperating with said tail portion of said terminal body, said sheath having a cavity with a sloping wall, said tail portion of said terminal body being nested within said cavity so that said sloping wall of said tail portion and said sloping wall of said cavity form an interface adapted to receive at least a portion of a flared terminus of a second conductor of a cable between said sloping wall of said tail portion and said sloping wall of said cavity, said interface sloping outwardly and adapted to secure a flared terminus of a second conductor a radial distance outwardly from a first conductor that is substantially greater than the radial distance between the first conductor and the second conductor of an unflared portion of a cable, said interface being adapted to enclose the second conductor terminus within the dielectric materials of said terminal body and said sheath to provide mechanical and electrical stress relief.

4,241,974

MULTI-OUTLET ADAPTER FOR MODULAR TELEPHONE CORDS

Edwin C. Hardesty, Perry Hall, Md., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 2, 1979, Ser. No. 35,174
Int. Cl.³ H01R *13/518*
U.S. Cl. 339—154 A **7 Claims**



1. An adapter for connecting electrically terminals in each of a plurality of modular plugs to external components in a jack, said adapter comprising:

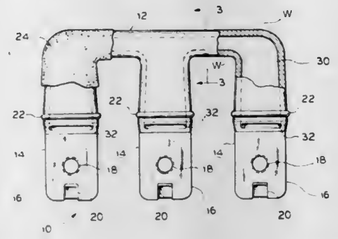
a dielectric housing having a jack portion at one end and a plug portion at an opposite end, said jack portion including a plurality of superimposed, externally communicating cavities each of which is adapted to receive a modular plug that includes a plurality of spaced parallel terminals, each of said cavities including a plurality of wire-receiving channels with each channel in one of the cavities being associated and aligned with a channel in the other cavity, said plug portion adapted to be received in a jack and including a plurality of spaced wire-receiving channels each of which has an externally communicating portion and each of which is associated with and communicates with aligned wire-receiving channels in said cavities, said housing including a plurality of dielectrically isolated, superimposed passageways which communicate said channels of said plug with associated ones of said wire-receiving channels in each said cavity of said jack portion; and

a wire-like, substantially uniplanar contact element mounted in each of said channels of said plug portion with a portion thereof being exposed in said externally communicating portion of each said channel in said plug portion to facilitate engagement with an external component in said jack when said plug portion is received in the jack, and having a retroflexed configuration with one free end portion of each contact element extending along an associated passageway of said housing into the associated channel in one of said cavities in said jack portion and the other free end extending along an aligned superimposed passageway into the associated, aligned channel in the other one of said superimposed cavities, said free end portions being exposed within said cavities and adapted to be engaged by said plug terminals when said plugs are received in said cavities, said portions of said contact element which extend along said passageways being separated and dielectrically isolated from each other.

4,241,975
CAST BUS BAR CONNECTOR HAVING HOLLOW CROSS-SECTIONAL AREA

James J. Cooper, Jr., St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,739
Int. Cl.³ H01R 11/01
U.S. Cl. 339—242 2 Claims

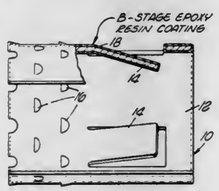


1. A bus bar connector for interconnecting the prepared cable ends of a power distribution system comprising an elongated common bus bar having a plurality of terminals extending therefrom each of said terminals including means for respectively fastening the conductor portions of said cable ends to said terminals and wherein said bus bar connector is formed as a hollow casting and wherein wall portions of said common bus bar and the adjacent portions of said terminals form a chamber extending from an opening on the external surface of at least one of said terminals and through said common bus bar.

4,241,976
CONTACT RETENTION CLIP AND METHOD OF INSERTING SAME IN AN INSULATOR

Leland W. Oliver; John R. Moore, both of Santa Ana; Peter S. Willcox, Costa Mesa; James L. von Harz, South Laguna, and Robert J. Trivison, Newport Beach, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,311
Int. Cl.³ H01R 13/405
U.S. Cl. 339—278 D 9 Claims

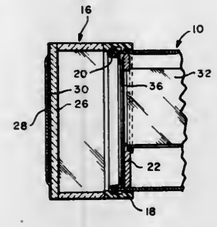


1. A method of making an electrical connector assembly comprising the steps of:
providing a plastic body having a bore therein;
providing a contact retention clip having a resinous coating thereon, said plastic body and resinous coating have a chemical substituent in common;
inserting said clip in said bore; and
heating said coating on said clip to cause any cracks which may exist in said plastic body to become sealed by the coating.

4,241,977
AMUSEMENT DEVICE

Clifford Wood, Bob Hill Rd., Pound Ridge, N.Y. 10576

Filed Jul. 20, 1979, Ser. No. 59,208
Int. Cl.³ G02B 23/00
U.S. Cl. 350—4.1 10 Claims

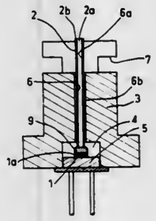


1. An amusement device including in combination a tube having a longitudinally extending side wall, a front wall at one end of the tube, a back wall at the other end of the tube, and an observation opening in the back wall for looking lengthwise into the tube, the front wall being substantially opaque over the area of the front wall that can be observed by looking through said opening in the back wall, reflecting surfaces within the tube and in angular relation to one another in planes normal to the direction of sight between said opening in the back wall and a partition located in the tube and spaced from the back and front walls of the tube and adjacent to the forward ends of the reflectors between the back and front walls, at least a portion of the tube between the front wall and said partition being made of light transmitting material and comprising a window near the front wall and in position to serve as a window to admit light from outside the tube in directions to illuminate the inside surface of the front wall as a target.

4,241,978
COUPLING DEVICE FOR CONNECTING A LIGHT SOURCE TO AN OPTICAL FIBER

Jean-Claude Dubois, and Gerard Mourgues, both of Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,914
Claims priority, application France, Oct. 7, 1977, 77 30240
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.20 9 Claims

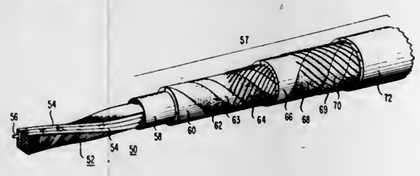


1. A coupling device for connecting a light source to a bundle of optical fibers, the light source having a light-emitting surface which emits light substantially in accordance with Lambert's law and which is mounted on a holder, said coupling device comprising:
a coupling rod which is formed by a part of an optical fiber having a circularly cylindrical core and cladding, the refractive index of the cladding being smaller than the refractive index of the core, said coupling rod forming an optical connection between the light source and the bundle of optical fibers to be connected to the device by having a first end facing the light source and having a second end facing the bundle of fibers; wherein
the largest dimension of the source is at most equal to half the diameter of the core of the coupling rod; and
the source and the coupling rod are secured in a flexible, elastic support which maintains a distance between the light-emissive surface of the source and the first end of the coupling rod which is at most equal to one third of the diameter of the core of the coupling rod.

4,241,979
OPTICAL COMMUNICATION CABLE WITH MEANS FOR CONTROLLING COUPLING BETWEEN CABLE JACKET AND STRENGTH MEMBERS

Paul F. Gagen, Duluth, and Manuel R. Santana, Doraville, both of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 18, 1979, Ser. No. 4,342
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.23 18 Claims

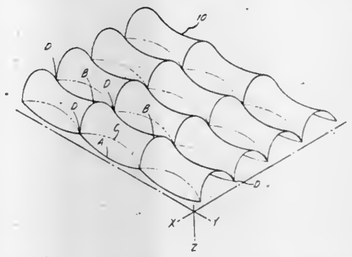


14. An optical communication cable (50) having a longitudinal axis comprising:
a core (52) comprising at least one light transmitting optical fiber (56);
an inner tubular jacket (60) for loosely containing the core;
a first reinforcement bedding layer (62);
a first layer (64) of reinforcing strength members helically wrapped about the first reinforcement bedding layer to form an intimate surface interface;
a first outer jacket (66) made of plastic extrudant and coupled with the first layer of strength members;
a second reinforcement bedding layer (68);
a second layer (70) of reinforcing strength members helically wrapped about the second reinforcement bedding layer to form an intimate surface interface;
a second outer jacket (72) made of plastic extrudant and coupled with the second layer of strength members;
where the first and second layers of strength members are helically wrapped in opposite directions with predetermined lays such that under a tensile load each layer produces a substantially equal but oppositely directed torque with respect to the axis of the cable;
and where the bedding layers are each made of a material which is capable of registering the strength members as they are helically wrapped about the bedding layers to hold the strength members in regular intervals around the cable and which is substantially impervious to plastic extrudant and intimately interfaces with the strength members to form predetermined strength member surfaces (27) inaccessible to the outer-jacket plastic extrudant during cable manufacture, whereupon helically wrapping of each layer of strength members onto its associated bedding layer during cable manufacture, the associated bedding layer registers the associated strength members and renders their predetermined strength member surfaces sufficiently inaccessible to the outer-jacket plastic extrudant to prevent strength member encapsulation by plastic extrudant of the strength member lengths containing the predetermined strength member surfaces.

4,241,980
BEAM EMISSION CONTROL MEANS

Agis I. Mihalakis, deceased, late of San Luis Obispo County, Calif., and by Barbara L. Friend, legal representative, Cody, Wyo., assignors to William C. McGeehon, Canoga Park, Calif.

Filed May 24, 1978, Ser. No. 908,988
Int. Cl.³ G03B 21/60
U.S. Cl. 350—129 26 Claims

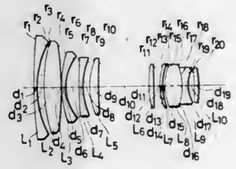


1. Apparatus having an improved gain characteristic for effecting control of beams emitted therefrom as a function of beams incident thereupon, comprising a plurality of similar units disposed in substantially contiguous relation, each unit including an emitting surface which is convex in a plane defined by first and second axes and concave in planes perpendicular thereto.

4,241,981
COMPACT WIDE ANGLE ZOOM LENS

Sadao Okudaira, Ranzanmachi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1979, Ser. No. 12,092
Claims priority, application Japan, Mar. 10, 1978, 53/27382
Int. Cl.³ G01B 15/16
U.S. Cl. 350—184 2 Claims



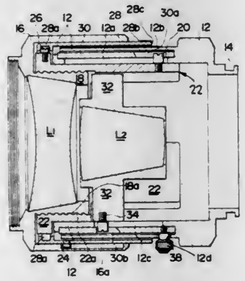
1. A compact wide angle zoom lens, comprising in order from the object side; a divergent front lens group and a convergent rear lens group, the overall focal length being variable by mechanical movement of the front and rear lens groups; said divergent front lens group being composed, in order from the object side, of a first lens being a negative meniscus lens convex toward the object side, a second lens being a double convex positive lens, a third lens being a negative meniscus lens convex toward the object side, a fourth lens being a negative lens and a fifth lens being a positive lens; said convergent rear lens group being composed of a sixth lens being a positive lens, a seventh lens being a positive meniscus lens convex toward the object, an eighth lens being a double convex positive lens, a ninth lens being a double concave negative lens, the eighth and ninth lenses being cemented to each other, and a tenth lens being positive lens, wherein the overall lens system composed of ten lens elements is grouped into nine lens components, the lens system satisfying the following conditions:

Resultant Focal Length
F = 24.7~48.5

Lens		Radius of Curvature		Lens Thickness - Lens Space		Refractive Index		Abbe No.
L_1	r_1	279.684	d_1	1.50	n_1	1.88300	ν_1	40.8
	r_2	43.521	d_2	3.22				
L_2	r_3	90.739	d_3	7.30	n_2	1.62004	ν_2	36.3
	r_4	−99.547	d_4	0.10				
L_3	r_5	45.490	d_5	1.40	n_3	1.88300	ν_3	40.8
	r_6	18.175	d_6	5.93				
L_4	r_7	−1067.750	d_7	1.50	n_4	1.64000	ν_4	60.1
	r_8	28.948	d_8	2.66				
L_5	r_9	−26.732	d_9	3.91	n_5	1.69895	ν_5	30.1
	r_{10}	221.127	d_{10}	21.51~1.06				
L_6	r_{11}	46.089	d_{11}	2.46	n_6	1.67000	ν_6	57.4
	r_{12}	−162.341	d_{12}	2.40				
L_7	r_{13}	27.215	d_{13}	1.78	n_7	1.68250	ν_7	44.7
	r_{14}	39.045	d_{14}	0.10				
L_8	r_{15}	20.554	d_{15}	8.28	n_8	1.59551	ν_8	39.2
	r_{16}	−23.131	d_{16}	0.0				
L_9	r_{17}	−23.131	d_{17}	2.51	n_9	1.84666	ν_9	23.9
	r_{18}	17.116	d_{18}	2.30				
L_{10}	r_{19}	−193.791	d_{19}	2.29	n_{10}	1.71736	ν_{10}	29.5
	r_{20}	−22.084						

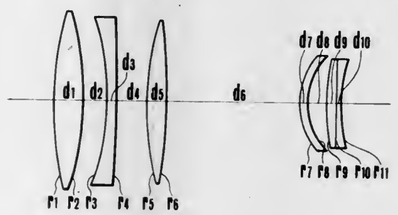
focal length, front group $f_F = -33.039$ focal length, second lens $f_2 = 77.700$

4,241,982
ZOOM LENS BARREL CAPABLE OF DIFFERENT DIRECTIONAL OPERATIONS
Kyozo Uesugi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Oct. 12, 1979, Ser. No. 84,130
Claims priority, application Japan, Oct. 27, 1978, 53/132800
Int. Cl.³ G02B *15/16, 7/10*
U.S. Cl. 350—187 **11 Claims**



1. A lens barrel for a zoom lens system which includes at least first and second lens groups and wherein zooming is effected by the movement of said first and second lens groups with a given spatial relationship therebetween, said lens barrel comprising:
a stationary barrel;
a first operable member supporting said first lens group and being mounted on said stationary barrel for at least axial movement relative thereto so as to effect corresponding movement of said first lens group;
an axially movable follower;
means interconnecting said first operable member and said follower with one another such that movement of said first operable member or said follower effects corresponding movement of the other;
an intermediate member mounted for rotation about the optical axis of said lens system;
means comprising a first slot in one of said intermediate member and said follower and a first pin on the other of said intermediate member and said follower engaged with said first slot for interconnecting said follower and said intermediate member together, said first slot having a configuration which causes said intermediate member to rotate in response to axial movement of said follower and which causes said follower to axially move in response to rotation of said intermediate member;
a second operable member mounted on said intermediate member for rotation therewith;
a lens holder for supporting said second lens group; and
means comprising a second slot in one of said lens holder and said intermediate member and a second pin on the other of said lens holder and said intermediate member engaged with said second slot for interconnecting said intermediate member with said lens support, said second slot having a configuration which causes said second lens group to move in response to rotation of said intermediate member with said given spatial relationship with respect to said first lens group.

4,241,983
TELEPHOTO LENS
Nozomu Kitagishi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 28, 1979, Ser. No. 70,488
Claims priority, application Japan, Sep. 8, 1978, 53-111070
Int. Cl.³ G02B *9/60*
U.S. Cl. 350—216 **8 Claims**



1. A telephoto lens comprising:
a front lens group comprising a positive lens, a negative lens and positive lens arranged in the written order from the object side, and having a positve refracting power, and
a rear lens group arranged with a space from the front group, said positive lens being made of an anomalous dispersion optical material, and said negative lens being made of lanthanum glass,
said telephoto lens satisfying the following conditions:

$$0.9 < \frac{\phi_1}{\phi_3} < 1.2 \quad (1)$$

$$\frac{1.8}{F} < |\phi_2| < \frac{2.4}{F} \ (\phi_2 < 0) \quad (2)$$

$$\frac{1.8}{F} < \phi_3 < \frac{2.2}{F} \quad (3)$$

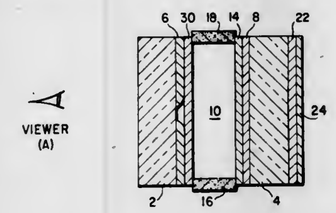
$$1.05 < \left|\frac{r_1}{r_2}\right| < 1.26 \ (r_2 < 0) \quad (4)$$

-continued

$$0.35 < \left|\frac{r_5}{r_6}\right| < 0.47 \ (r_6 < 0) \quad (5)$$

wherein F is the focal length of the whole system, ϕi is the refracting power of the i-th lens from the object side, and ri is the curvature radius of the i-th lens surface of the lens from the object side.

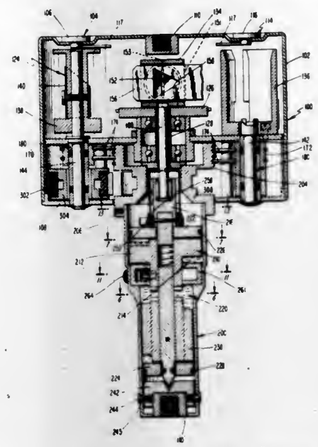
4,241,984
SIMPLIFIED FIELD EFFECT, TWISTED NEMATIC LIQUID CRYSTAL DISPLAY CONSTRUCTION
Marshall Leibowitz, Ridgefield, Conn., assignor to Timex Corporation, Waterbury, Conn.
Filed Jun. 4, 1979, Ser. No. 45,576
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—337 **21 Claims**



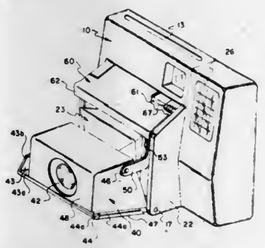
1. In a liquid crystal display of the field effect, twisted nematic type, the improvement for simplifying the display construction comprising:
an untreated substrate and associated electrode layer having an untreated polarizer layer which inherently exhibits liquid crystal alignment-promoting characteristics positioned thereon in contact with the liquid crystal so that said polarizer layer serves the dual function of polarizing and liquid crystal alignment means in the display.

4,241,985
PANORAMIC CAMERA
Ronald P. Globus, 140 Fifth Ave., New York, N.Y. 10011; Richard D. Globus, 874 Broadway, New York, N.Y. 10003, and Stephen E. Globus, 899 Broadway, New York, N.Y. 10003
Filed Nov. 27, 1978, Ser. No. 963,739
Int. Cl.³ G03B *37/02, 17/02*
U.S. Cl. 354—99 **32 Claims**

1. A panoramic camera, comprising:
a main camera portion;
a handle which is rotatably connected to the main camera portion; and
drive means for selectively rotating the main camera portion with respect to the handle including a ribbon spring and first and second spring spools, the ribbon spring being reversely wound on the first spring spool, said first spring spool being axially aligned with the handle and said second spring spool orbiting about said first spring spool during said rotation of the main camera portion with respect to the handle.

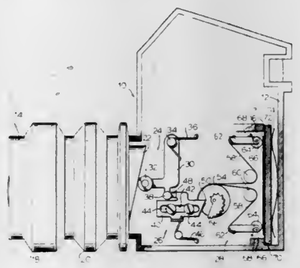


4,241,986
FOLDING CAMERA
Kenneth W. Thomson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 10, 1979, Ser. No. 65,471
Int. Cl.³ G03B *17/04*
U.S. Cl. 354—193 **22 Claims**



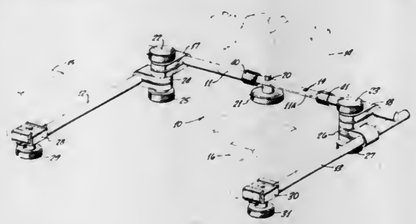
17. A folding camera comprising:
a housing for supporting photographic film for a photographic exposure;
lens supporting means hingedly supported to the housing and moveable between a storage position wherein the camera is folded and an exposure position wherein the camera is erected for making the exposure;
a cover hingedly supported to the housing for covering a portion of the lens supporting means when the latter is in its storage position and when the cover is in its home position;
linkage means cooperating with the cover for supporting the lens supporting means in the exposure position, said linkage means interconnecting the lens support means and the cover such that lifting of the cover when the lens supporting means is either in its storage position or in its exposure position moves the lens supporting means in both instances to an intermediate position where gravity in cooperation with the orientation of the camera relative to gravity determines whether the lens supporting means will be moved to its storage position or to its exposure position in response to return movement of the door towards its home position.

4,241,987
APPARATUS FOR OPTIMIZING CAMERA IMAGE SURFACE TO IMAGE RECEIVING SURFACE
Norman N. Goldberg, Madison, Wis., assignor to Ziff-Davis Publishing Company, New York, N.Y.
Filed Dec. 26, 1979, Ser. No. 106,658
Int. Cl.³ G03B *3/00, 17/00*
U.S. Cl. 354—195 **28 Claims**



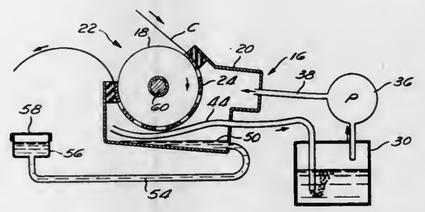
1. In a camera having a lens assembly (14) including focus setting and aperture setting adjustment mechanisms (18, 20) and creating an image surface, and having an image receiving surface (16), apparatus for optimizing the image surface to the image receiving surface (16) comprising:
- a detecting device (24) responsive to the settings of the focus setting and aperture setting adjustment mechanisms (18, 20) for instantaneously detecting the position of said settings;
- a linkage (26) connected to the detecting device (24); and
- an image surface adjustment mechanism (28) operated by the linkage (26) to vary the position of the image receiving surface (16) relative to the lens assembly (14) to move the image receiving surface (16) to a best fit relationship with the image surface.

4,241,988
CAMERA SUPPORT BRACKET
George D. Lepp, 3015 Grinnel Pl., Davis, Calif. 95616
Filed May 1, 1979, Ser. No. 35,273
Int. Cl.³ G03B *17/00;* **F16M** *11/12*
U.S. Cl. 354—293 **7 Claims**



1. The photographic equipment mounting bracket comprising;
- first, second and third rod members,
- first clamp means associated with said first and second rod members,
- second clamp means associated with said first and third rod members,
- said clamp means arranged to permit linear positioning adjustment along the respective rod members relative to each other and to permit angular positioning of said second and third rod members relative to said first rod member.

4,241,989
DIAZO DEVELOPING APPARATUS
Richard W. Jackson, Barrington, and Terry G. Seelenbinder, Elk Grove Village, both of Ill., assignors to AM International, Inc., Los Angeles, Calif.
Filed Jan. 15, 1979, Ser. No. 3,202
Int. Cl.³ G03D *7/00*
U.S. Cl. 354—299 **8 Claims**

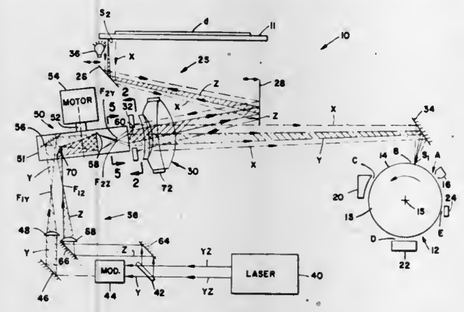


1. Apparatus for developing diazo copy sheets comprising:
- walls defining a developing chamber for containing gaseous ammonia; said chamber being provided with an opening at one side;
- transport means in proximity to said opening generally providing a closure for the same, and active to move a copy sheet into and out of developing contact with the gaseous ammonia with the sensitive surface of the copy sheet directed towards the interior of said chamber and the supporting layer of the copy sheet in contact with the transport means;
- sealing means between the surface of said transport means and the margins of said opening for substantially confining the gaseous content within the chamber and maintaining sustantially the pressure conditions within the chamber under circumstances of the relative sliding movement between the surface of said transport means and the margins of said opening to provide a substantially sealed development chamber; and
- means for supplying ammonia gas to the chamber consisting essentially of:
  - a. a sealed reservoir for containing a liquid ammonia solution filling the container up to a level within a predetermined normal liquid level range,
  - b. a supply conduit leading from the upper portion of said reservoir above the normal liquid level range to said development chamber,
  - c. a pump in said supply conduit for moving the gas in said upper portion towards the development chamber, and
  - d. a return duct leading from the development chamber to a point in the reservoir beneath the normal liquid level range.

4,241,990
MULTI-PURPOSE OPTICAL DATA PROCESSOR
Tibor Fisli, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 5, 1979, Ser. No. 17,783
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—11 **21 Claims**

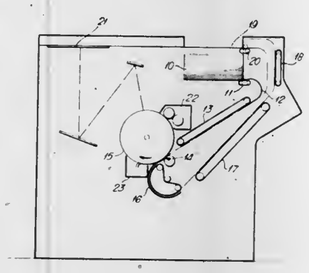
1. In a multi-purpose optical data processor for selectively performing light/lens xerographic copying and at least one laser scanning function, said optical data processor including
- a transparent platen for supporting a subject in position to be scanned;
- a xerographic processor including a photoreceptor which advances during operation in a cross scan direction through an exposure station; and
- scan optics interposed between said platen and said exposure station for scanning said platen in said cross scan direction, said scan optics being elongated in an orthogonal line scanning direction to extend widthwise of said platen:

the improvement comprising
- a selectively energizeable light source for illuminating said platen during light/lens copying;
- a selectively energizeable laser for supplying a laser beam during laser scanning;
- a beam scanning mechanism optically aligned with said laser for cyclically sweeping said laser beam through a predetermined scan angle in said line scanning direction; and



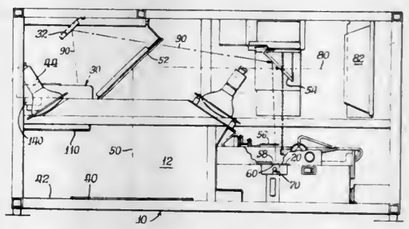
shared imaging optics including a half lens, said imaging optics being interposed between said scan optics and said exposure station for imaging said subject onto said photoreceptor in accordance with a line-by-line scanning pattern during light/lens copying and being optically aligned with said beam scanning mechanism for imaging said laser beam onto at least one of said platen and said photoreceptor in accordance with a raster scanning pattern during laser scanning.

4,241,991
PHOTOCOPYING MACHINE
Ian G. Brown, Milton Keynes, England, assignor to Xerox Corporation, Stamford, Conn.
Filed May 21, 1979, Ser. No. 41,036
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—26 **1 Claim**



1. A copy machine having an original document exposure platen, a transfer station where images are transferred to copy sheets and a copy sheet feeding system, said sheet feeding system comprising:
- an open, operator-accessible, combination buffer storage and a copy sheet discharge tray of unitary stationary configuration located adjacent the original document exposure platen,
- a copy sheet supply tray,
- sheet feeding means for feeding sheets from said supply tray to the transfer station,
- second sheet feeding means for feeding sheets from the transfer station to said combination buffer and discharge tray; and,
- third sheet feeding means for feeding sheets from said combination buffer and discharge tray to the transfer station.

4,241,992
RECORDED IMAGE DETECTION SYSTEM FOR UPDATABLE MICROFILM
John R. Flint, Barrington, and Heinz Hertel, Mount Prospect, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Oct. 4, 1979, Ser. No. 81,972
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—41 **44 Claims**

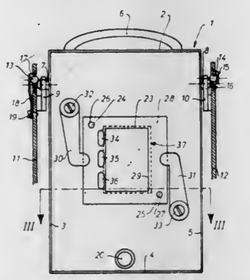


1. An indicator mark generator and detector assembly for use with a photo-recorder for recording the image of a document selectively at one of a plurality of individual frames on a photo-recording medium upon a RECORD command, the generator-detector assembly operating selectively to cause the recording of an erasable indicator mark at a predetermined indicator mark field on said photo-recording medium signifying the recording of an image on said frame, and further operating to detect the presence or absence of an indicator mark in or from an image of said indicator mark field formed by cooperating means for projecting the image recorded at said indicator mark field along an optical path, said generator and detector assembly comprising:
- sensor means interposed in said optical path responsive to the image of said indicator mark for exhibiting a first output when said indicator mark is present and a second output when said indicator mark is absent;
- control means responsive to a selected one of said first and second outputs for preventing said recorder from recording said document image if said sensor means indicates the presence of said indicator mark;
- means for defining an indicator mark-generating light beam and for forming a machine-readable and photo-recordable image in said light beam; and
- means directing said indicator mark-generating light beam to said indicator mark field, said indicator mark field being positioned so that said recorder records said indicator mark thereon.

4,241,993
MOUNT FOR ORIGINALS IN PHOTOGRAPHIC DEVICES
Emile A. H. Guillaume, Ballaigues, Switzerland, assignor to Zelacolor Systems Establishment, Vaduz, Liechtenstein
Filed Apr. 2, 1979, Ser. No. 26,403
Claims priority, application Switzerland, Apr. 7, 1978, 3750/78
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **11 Claims**

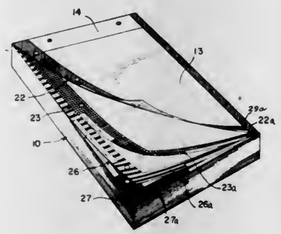
1. A mounting device for originals to be reproduced in photographic equipment, comprising:
- a first and a second frame; said frames being superimposed; each said frame having an exposure window, and said exposure windows being superimposed when said frames are superimposed; said superimposed frames being adapted to clamp between them the edge portions of an original to be exposed in said exposure windows;

a support for said frame;
fixing means for holding said frames to said support;
said first frame having opposite lateral sides; said fixing means comprising said first frame having a respective pin at each lateral side; each said pin having at least a segment thereof of circular cross-section;
said fixing means further comprising, on said support, a respective bearing part being provided for each said pin; each said bearing part including a generally V-shaped slot in said support, and each said pin segment being received in a respective said generally V-shaped slot therefor;



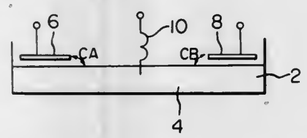
said fixing means further comprising spring means connected with said pins for firstly biasing said pins into the narrower ends of said generally V-shaped slots therefor and for secondly biasing said pins in a direction parallel to the axes of said pins;
an abutment on one said bearing part for opposing the second bias of said pins by said spring means, thereby for positioning said pins in a direction parallel to the axes of said pins.

4,241,994
VISUALLY DESCRIPTIVE INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL SET
Le Roy J. Ryan, Jr., 1212 N. Lake Shore Dr., Chicago, Ill. 60610
Continuation of Ser. No. 483,634, Jun. 27, 1974, abandoned. This application Mar. 31, 1978, Ser. No. 892,104
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—77 **5 Claims**



1. A method of making a preliminary reproduced visually descriptive information transmission, storage, and retrieval set which comprises placing in an image reproducing area of a copy machine, one of a plurality of overlay sheets having an image area centrally located on each sheet and a coding having a pattern, color, and saturation between the image area and at least one edge of said sheet, wherein the coding differs in at least one of pattern, color, and saturation on each sheet, placing a sheet of paper having printed indicia centrally located thereon in superposed position with said overlay sheet so that said printed indicia on said paper sheet appears within said image area of said overlay sheet, operating said copy machine with white copy paper sheets having a coding in color along at least one edge thereof to make a first reproduced paper sheet comprising the coding of said overlay sheet on said copy sheet located thereon between the image area and at least one edge of said sheet, and the printed indicia of said paper located within said image area, removing the overlay sheet and replacing it with another of the plurality of overlay sheets with different coding and repeating operation of the machine to obtain a next reproduced paper sheet having differing coding than said first reproduced sheet, and joining said reproduced sheets in a set.

4,241,995
APPARATUS FOR MEASURING AMOUNT OF DISPLACEMENT
Akio Takahama, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Dec. 22, 1978, Ser. No. 972,079
Claims priority, application Japan, Dec. 28, 1977, 52/159450
Int. Cl.³ G01C *3/08*; H01G *5/00*; H03H *7/20*; H01G *5/16*
U.S. Cl. 356—5 **7 Claims**

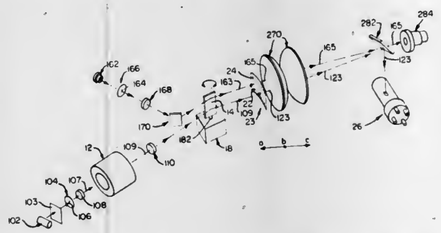


1. Apparatus for measuring the amount of relative displacement between elements comprising:
fixed electrode means;
movable electrode means displaceable with respect to said fixed electrode means, said fixed electrode means and said movable electrode means being in mutually facing disposition;
a power source for generating an AC signal of a determined frequency;
phase-shifting means comprising a resistor and said mutually facing electrodes, said phase-shifting means being adapted to apply said AC signal to said mutually facing electrode means through said resistor and to generate an output signal the phase of which is shifted in response to the amount of relative displacement of said mutually facing electrode means; and
phase difference measuring means for measuring the phase difference between said output signal of said phase-shifting means and said AC signal and generating a signal corresponding to the amount of relative displacement of said mutually facing electrode means;
said fixed electrode comprising a first electrode and a second electrode which are provided in such positions that the distances therefrom to said movable electrode change in opposite directions.

4,241,996
APPARATUS FOR MEASURING THE QUALITY OF OPTICAL EQUIPMENT
Sidney Weiser, Silver Spring, Md., assignor to Exotech, Incorporated, Gaithersburg, Md.
Continuation-in-part of Ser. No. 747,739, Dec. 6, 1976, abandoned. This application Sep. 5, 1978, Ser. No. 939,490
Int. Cl.³ G01B *9/00*
U.S. Cl. 356—124.5 **13 Claims**

1. In a system for determining the quality of optical equipment, apparatus comprising:
(a) an elongated, opaque reticle having a data pattern comprising at least one bar pattern of discrete spatial frequency, positioned longitudinally thereon, each discrete one of said patterns having optical transmission characteristics that vary periodically along its length according to a predetermined function;

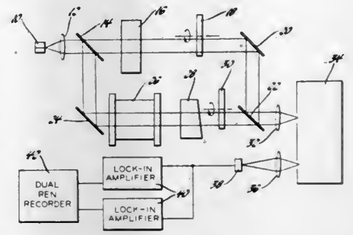
(b) a mirror, said reticle being mounted stationary with respect to the mirror;
(c) source means for projecting light through optical equipment whose quality is to be determined to produce a spread function, and means for projecting the spread function response to said optical equipment onto said mirror to be reflected therefrom;
(d) means for moving said mirror to cause the spread function response reflected therefrom to sweep said data pattern so that the light transmitted through the data pattern is modulated by the interaction of said data pattern with the spread function response as the mirror moves;
(e) means for converting the intensity of the transmitted, modulated light from said source means into an electrical data signal, said data signal being indicative of the quality of the optical equipment;
(f) a clock pattern on said sheet member for each said data pattern, each clock pattern having a discrete spatial frequency which is a fixed multiple of the spatial frequency of a uniquely associated data pattern, said clock pattern having optical transmission characteristics that vary periodically along its length according to a predetermined function;



(g) a second slit image source means for projecting a second slit image from said second source onto said mirror so that said second slit image is reflected from said mirror onto said clock pattern, said means for moving said mirror causing said reflected second slit image to sweep said clock pattern so that the light transmitted through the clock pattern is modulated by the interaction of said clock pattern with the second slit image as the mirror moves;
(h) means for converting the intensity of the transmitted, modulated light from said second slit image into an electrical clock signal; and
(i) means for using said clock signal to sample said data signal at predetermined intervals.

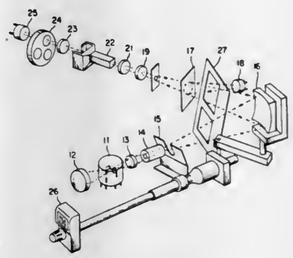
4,241,997
LASER SPECTROMETER WITH FREQUENCY CALIBRATION
Andrew R. Chraplyvy, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 11, 1978, Ser. No. 968,352
Int. Cl.³ G01J *3/34*
U.S. Cl. 356—309 **1 Claim**

1. A laser spectrometer with frequency calibration comprising
a tunable diode laser emitting a beam of radiant energy comprising a plurality of frequencies corresponding to a plurality of laser cavity modes,
a beam splitter in the beam to produce first and second beam paths,
an etalon in the first beam path for generating frequency markers for spectrometer calibration,
a sample cell in the second beam path for containing a sample gas,
means for chopping the first and second beam paths at first and second frequencies, respectively,
a monochromator,
means for combining the radiant energy from the two paths into a single beam and passing it through the monochromator to isolate the frequency corresponding to a single laser cavity mode,
a single detector responsive to the single beam passed from the monochromator for generating an electrical signal analog of the single beam energy,
lock-in amplifiers tuned to the first and second frequencies



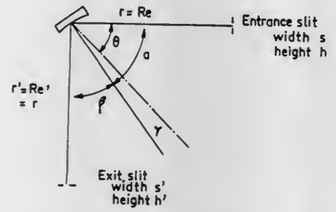
and responsive to the electrical signal for producing first and second simultaneous output signals corresponding to the radiant energy spectra arising from the etalon and the sample gas absorption, respectively, and
recording means responsive to the two output signals for simultaneously displaying the sample absorption spectra and the etalon fringe spectra.

4,241,998
SPECTROPHOTOMETER
Rudolf Farkas, Geneva; Michel Moulin, Lausanne, and Georges Revillet, Onex, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Jan. 18, 1979, Ser. No. 4,427
Claims priority, application Switzerland, Jan. 20, 1978, 621/78; Nov. 16, 1978, 11782/78
Int. Cl.³ G01J *3/42*
U.S. Cl. 356—319 **9 Claims**



1. A spectrophotometer comprising:
(a) a flash tube,
(b) a stabilizing optical device for deriving from each flash from the flash tube a light beam having at the outlet of said device a spatial distribution which is substantially the same for every flash,
(c) a grating monochromator for dispersing the light delivered by the stabilizing device and for delivering a beam of filtered light,
(d) an optical element for driving the filtered beam to produce two beams, the first of which travels through a sample for analysis and the second of which reaches a detector which delivers a reference signal corresponding to the intensity of the second beam, and
(e) a second detector placed to receive the beam emerging from the sample.

4,241,999
MONOCHROMATORS
Michel Pouey, Viroflay, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France
Continuation of Ser. No. 713,200, Aug. 10, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,592
The portion of the term of this patent subsequent to Aug. 10, 1993, has been disclaimed.
Int. Cl.³ G01J *3/18*
U.S. Cl. 356—331 **12 Claims**



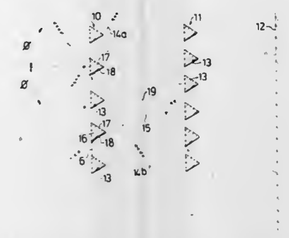
1. The method of making a monochromator using a concave, reflecting holographically formed diffraction grating, which comprises the steps of:

(a) determining the physical parameters of the monochromator by using a concave classical reflective diffraction grating having straight, parallel lines which are equidistantly spaced to provide a line density n, a height L_0 and a width W_0, the monochromator having fixed entrance and exit slits spaced from the grating to provide a predetermined magnification and a predetermined angle 2θ between the incident and diffracted beams, whereby the odd terms of the aberration wavefront is minimized, the grating being mounted for rotation only with respect to said slits whereby to scan a spectral range of interest, said physical parameters being the distances of said entrance and exit slits with respect to the intersection of their optical axes at the center of the reflective surface of said grating, and said physical parameters being selected to provide a defect of focus which balances second order aberration terms excepting astigmatism whereby the partial derivative $\partial F_1/\partial w$ is equal to zero, F_1 being the optical path associated with said classical grating and w and l being Cartesian coordinates with respect to the center of said grating extending respectively perpendicular and parallel to said grating lines;

(b) holographically forming a grating by locating two point sources of monochromatic light of wavelength λ_0 in a plane containing the axis of the coordinate w and passing through the center of and normal to a holographic blank having the concavity of said classical grating, such that said point sources are located by four position parameters which are the respective distances r_C and r_D of said point sources from said center of the holographic blank and the angle η and δ which lines from such point sources to said center respectively make with a line passing through such center and normal to said holographic blank; said four position parameters being established by four simultaneous equations the first of which defines the number n of grating lines holographically formed, the second of which defines astigmatic correction effected by the hologram provided by said point sources, the third of which defines coma correction effected by the hologram provided by said point sources, and the fourth of which defines the focussing condition in said plane effected by the hologram provided by said point sources; and

(c) substituting the holographically formed grating for said classical grating.

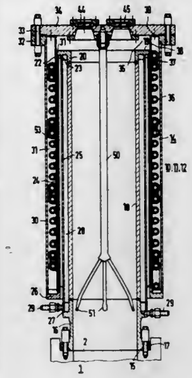
4,242,000
ARRANGEMENT AT SCREENS INTENDED TO GIVE RISE TO A MOIRE PATTERN
Lars A. Bergkvist, Gottne, 890 42 Mellansel, Sweden
Filed Aug. 29, 1978, Ser. No. 937,785
Claims priority, application Sweden, Sep. 9, 1977, 7710139
Int. Cl.³ G01B *11/14, 11/00, 9/02;* G02B *5/18*
U.S. Cl. 356—374 **3 Claims**



1. An arrangement of screens and screen structure intended to give rise to a moire pattern, where at least two screens are used overlapping each other, one being a front screen and the other a rear screen, and where each screen includes a number of opaque parallel longitudinal elongate objects which are separated by transparent interspaces, characterized in that: each of the longitudinal objects has a cross-section configuration providing means whereby light, incident from behind the screens, seen from the observer, viewing their front side is not reflected on said longitudinal objects in such a way, that the observer is subject to said reflected light, when the observer is within an angle sector (2ϕ) relative to the arrangement, within which sector the arrangement is intended to be used, where said cross-section (**20**) is inside defining lines (**21, 22, 24, 25**), which are constituted of two rear straight defining lines (**21, 22**) intersecting each other, seen from the observer, behind the line (**23**), which is the greatest width of the cross-section in the plane of the screens perpendicular to the longitudinal direction of the longitudinal objects, and of two forward straght lines (**24, 25**) intersecting each other, seen from the observer, in front of said line (**23**), where the rear respective lines (**21, 22**) run through the respective end points of said line of greatest width (**23**), forming an acute angle with said line or greatest width (**23**) corresponding to 90° minus half the angle (2ϕ) constituting said angle sector (2ϕ), and where the forward respective lines (**24, 25**) also run through the respective end points of said line of greatest width (**23**) and are tangent to the rear portion of the cross-section (**20**) of the respective adjacent longitudinal object.

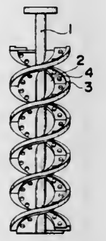
4,242,001
WORM EXTRUDER ASSEMBLY
Manfred Meintker, Erlangen; Anwer Puthawala, Buckenhof; Hans-Peter Schabert, Erlangen, and Erich Strickroth, Buckenhof, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany
Filed Aug. 30, 1978, Ser. No. 938,015
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740490
Int. Cl.² B01F *15/06;* G21F *9/02, 9/16*
U.S. Cl. 366—75 **9 Claims**

1. Worm extruder assembly comprising an extruder worm, a steam dome formed as a cylindrical tube disposed transversely to the worm axis, said tube communicating at one end thereof with said extruder worm and being free and open at the other end thereof, a condenser surrounding said cylindrical tube, and steam outlet means extending from said steam dome to said condenser, said steam outlet means defining an annular gap



connecting said condenser to said cylindrical tube at said free and open end of said tube.

4,242,002
AGITATOR MEANS FOR TOWER TYPE ABRASION MILLS
Shigekatsu Kawabata, 7-3, 1-chome, Bunkyo-ku, Tokyo, Japan
Filed May 7, 1979, Ser. No. 36,638
Claims priority, application Japan, May 22, 1978, 53-68950[U]
Int. Cl.³ B01F *7/24*
U.S. Cl. 366—343 **6 Claims**



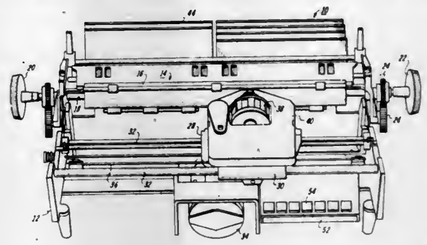
1. Agitator means, for tower type abrasion mills, comprising a continuous helical blade assembly, said helical blade assembly being composed of:

(i) a center shaft,

(ii) an inner helical blade of fixed pitch secured on the periphery of said center shaft

(iii) a segmental outer helical blade of the same pitch as said inner helical blade, said outer helical blade being composed of a plurality of outer blade segments placed end to end, said outer blade segments being secured removably on said inner helical blade, said segmental outer helical blade having an inner circumferential periphery spaced radially from and coaxial with said center shaft, said segmental outer helical blade having its external diameter greater than the external diameter of said inner helical blade, said segmental outer helical blade having its external circumferential periphery coaxial with said center shaft, each of said outer blade segments including a radially inner portion and a radially outer portion, said radially outer portion being relatively axially thicker than said radially inner portion, each of said outer blade segments having the same angular extent.

4,242,003
MULTI-PASS MATRIX PRINTING
Robert A. Ragen, Hayward, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 16, 1978, Ser. No. 952,040
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **18 Claims**



1. In a printer including a record material movable past a printing station, and a print assembly capable of printing a line of characters in dot matrix format upon relative movement of said print assembly and said record material in a first direction, an apparatus for printing said line of characters comprising:

first means for effecting relative movement between said print assembly and said record material in said first direction at a first predetermined speed;

second means responsive to said relative movement in said first direction at said first predetermined speed for activating said print assembly to print during said relative movement a first predetermined number of dots of the dot matrix array defining each character in said line;

third means responsive to the printing of said first predetermined number of dots for effecting relative movement between said print assembly and said record material a predetermined amount in a second direction perpendicular to said first direction, and for effecting relative movement between said print assembly and said record material in a third direction opposite said first direction;

fourth means responsive to said relative movement in said second and third directions for effecting relative movement between said print assembly and said record material in said first direction at a second predetermined speed different than said first predetermined speed; and

fifth means responsive to said relative movement in said first direction at said second predetermined speed for activating said print assembly to print during said relative movement a second predetermined number of dots of the dot matrix array defining each character in said line.

4,242,004
DOT MATRIX PRINTHEAD DRIVER
Robert Adler, Northfield, Ill., assignor to Extel Corporation, Northbrook, Ill.
Filed Mar. 21, 1979, Ser. No. 22,412
Int. Cl.³ B41J *3/10*
U.S. Cl. 400—124 **4 Claims**

1. A dot matrix printhead driver comprising:

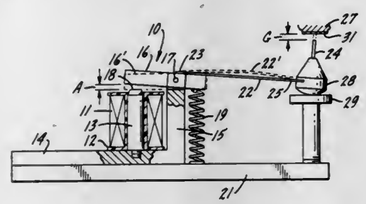
an electromagnet including a coil, circuit means for applying an energizing voltage to the coil, and a rigid clapper-type armature pivotally movable from a normal position to an actuated position in response to energization of the coil;

a print impact element, movable in a print impact movement from a rest position spaced from a platen to a terminal impact position engaging a record sheet of given thickness on the platen;

a cantilever leaf spring having one end affixed to the armature, the opposite free end of the leaf spring engaging the print impact element for moving the print impact element from its rest position toward its terminal impact position in

response to movement of the armature to its actuated position;

and inertial load means, aligned with and including the mass of the impact element, sufficient to maintain the impact element essentially in its rest position during a substantial portion of the movement of the armature to actuated position, so that acceleration of the print impact element during its print impact movement is governed by the



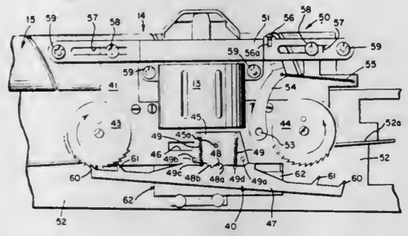
force/travel characteristic of the spring, the spring characteristic being selected so that the accelerating force passes through zero at an intermediate impact position spaced from the terminal impact position by at least one additional record sheet thickness and is negative between the intermediate and terminal impact positions, the major portion of the print impact movement of the impact element occurring after the armature reaches its actuated position.

4,242,005

INKED RIBBON ADVANCE AND REVERSE MECHANISM INCLUDING A PAWL HAVING DIFFERENT SIZE TEETH

Nicholas Kondur, Jr., Riverton, Wyo., assignor to C. Itoh Electronics, Inc., Los Angeles, Calif.

Filed Jun. 2, 1978, Ser. No. 912,090
Int. Cl.³ B41J *33/40*
U.S. Cl. 400—220.1 **3 Claims**



1. An improved pawl for use in combination with an inked ribbon advance and reverse mechanism which includes:

a. a first ribbon spool from which an inked ribbon is unwound;

b. a first ratchet wheel having teeth disposed in a particular direction which is axially aligned with the first ribbon spool and which is rigidly coupled thereto so that the first ribbon spool and the first ratchet wheel rotate together;

c. a second ribbon spool onto which the inked ribbon is wound;

d. a second ratchet wheel having teeth disposed in the opposite direction of the teeth of the first ratchet wheel which is axially aligned with the second ribbon spool and which is rigidly coupled thereto so that the second ribbon spool and the second ratchet wheel rotate together;

e. mounting means for mounting said improved pawl so that said improved pawl may mechanically engage the teeth of one of the two ratchet wheels, said improved pawl comprising;

a. an elongated member having a pair of ends, each end having a plurality of teeth which are disposed along the surface of said elongated member and which are aligned so that the teeth mechanically engage the teeth of one of the two ratchet wheels, the teeth of said elongated member being arranged in a graduated series so that said teeth of said elongated member increase in height from each end to the center of said elongated member; and

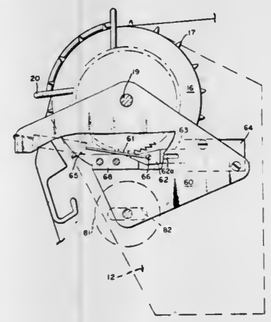
b. resilient coupling means for resiliently coupling said improved pawl to said mounting means.

4,242,006

ADJUSTABLE MEDIA ADVANCEMENT MECHANISM

Nicholas Kondur, Jr., Riverton, Wyo., assignor to C. Itoh Electronics, Inc., Los Angeles, Calif.

Filed Jun. 2, 1978, Ser. No. 912,089
Int. Cl.³ B41J *19/76*
U.S. Cl. 400—568 **2 Claims**



1. Adjusting mechanism for use in combination with a media advancement mechanism of a printer to adjust the line position on a print media wherein the media advancement mechanism of the printer includes:

a. a frame having a first sidewall and a second sidewall;

b. a print head which is mechanically coupled to the frame;

c. a platen which is separately coupled to the frame so that the print media may pass between the print head and the platen;

d. a shaft which is rotatively coupled between the first and second sidewalls of the frame;

e. supporting means for supporting the print media which are rotatively coupled to the shaft and the rotational axis of which is parallel to the platen;

f. a ratchet wheel which has teeth and which is axially aligned with and mechanically coupled to the supporting means so that the ratchet wheel provides rotational motion thereto in order to move the print media incrementally in response to an electrical signal from the printer;

g. a solenoid which has an armature, the solenoid being rigidly coupled to said adjusting mechanism;

h. a pawl mechanically coupled to the armature of the solenoid and disposed so that the pawl can mechanically engage one of the teeth of the ratchet wheel in order to impart rotational motion thereto; and

i. a spring resiliently coupling the pawl to said adjusting mechanism, said adjusting mechanism comprising:

a. a plate member pivotally coupled to the shaft adjacent to the first sidewall of the frame wherein the solenoid is mounted on said plate member and the pawl is resiliently coupled to said plate member by the spring; and

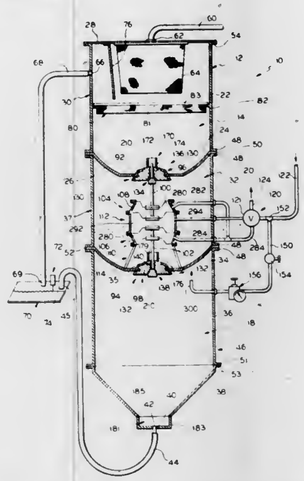
b. restraining means for restraining said plate member from its pivotal motion.

4,242,007

METHOD AND APPARATUS FOR DISPENSING WELDING FLUX

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321, and John C. Colley, Schererville, Ind., assignors to Ralph Ogden, Munster, Ind., a part interest

Filed Apr. 30, 1979, Ser. No. 34,655
Int. Cl.³ B65G *53/36, 53/40*
U.S. Cl. 406—109 **6 Claims**



3. A fluid cell for effecting linear movement of an actuator member to be so moved, said cell comprising:

diaphragm means anchored centrally thereof to the said actuator member to be actuated thereby,

and housing means in which said diaphragm means is mounted,

said diaphragm means defining rim portions anchored to said housing means in fluid tight sealing relation thereabout,

static seal means for effecting a fluid tight seal between said actuator member and said housing means,

said diaphragm means comprising:

a pair of diaphragms in spaced apart relation,

with one of the diaphragms comprising said static seal means,

and the other diaphragm being of larger area than said one diaphragm,

said diaphragms and said housing means defining one fluid pressure actuation chamber on one side of said other diaphragm,

enclosure means on the other side of said other diaphragm for defining a second fluid pressure actuation chamber,

and means for alternately actuating and venting said chambers in oppositely acting relation for effecting linear movement of the actuator member, including conduit means for each said fluid pressure actuation chamber having connection to the space of same.

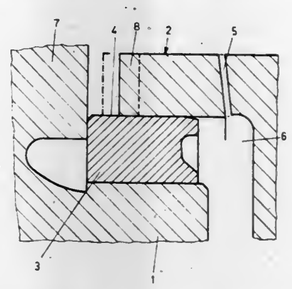
4,242,008

RIGID COUPLING

Felix Bernasconi, Zollikerberg, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Continuation of Ser. No. 679,017, Apr. 21, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,687
Claims priority, application Switzerland, Jul. 4, 1975, 8728/75
Int. Cl.³ B25G *3/00*
U.S. Cl. 403—13 **6 Claims**

1. In a rigid coupling between adjoining shaft ends of the two rotor components of two machines, and wherein the end faces of said shaft ends are ultimately forced into frictional engagement to transmit bending, torsion and axial forces which arise in the coupling the improvement wherein for coupling and simultaneously centering said shaft ends, the shaft end of one of said machines is provided with an axially projecting boss, the shaft end of the other machine is provided with an axially extending recess for receiving said boss, and wherein a centering ring having a slightly frusto-conical centering surface is disposed between said boss and recess, the centering between said boss and recess being effected in a progressive manner by axial movement of said shaft ends toward each other accompanied by sliding frictional engagement between the frusto-conical surface of said ring and the adjoining surface on said boss or recess, the engagement between said ring and adjoining boss or recess serving also to transmit shear forces which arise in the coupling, the internal surface of said centering ring being secured to the surface of said boss and the slightly frusto-conical centering surface being formed on the external surface thereof and engaging the surface within said recess, the surface within the recess being cylindrical and the slightly frusto-conical centering surface being adjacent said cylindrical surface.

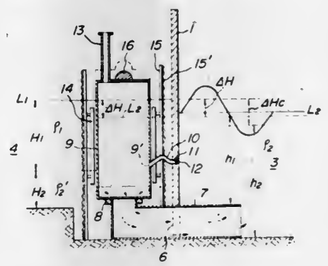


4,242,009

APPARATUS FOR AUTOMATICALLY AND SELECTIVELY DISCHARGING SALINE WATER

Isao Minami, Kyoto, Japan, assignor to Michio Okamoto, Kyoto, Japan

Filed Mar. 9, 1979, Ser. No. 19,170
Claims priority, application Japan, Jul. 11, 1978, 53/83519
Int. Cl.³ E02B *7/50*
U.S. Cl. 405—93 **8 Claims**



1. An apparatus for automatically and selectively discharging saline water through a tide-preventing floodgate structure located between the ocean and a body of fresh water, said apparatus comprising:

a partition wall provided in said structure to separate fresh water upstream of said structure from sea water downstream of said structure,

a drain pipe in a lower part of said wall connecting upstream and downstream sides of said wall for discharging saline water from a lower portion of said body of water into the ocean,

means defining an upwardly open distal end mouth at one end of said drain pipe,

a hollow float positioned above said distal end mouth of the drain pipe for opening and closing said mouth, said float having an air duct at its top and an opening in a lower portion of said float,

means defining a communication path extending through a submerged portion of the partition wall between upstream and downstream sides of the structure,

a flexible communication pipe connecting said opening in said hollow float with said communication path, and

at least one guide member adjacent the hollow float for preventing large lateral displacement of the hollow float and guiding ascending or descending movements of the hollow float,

whereby said hollow float automatically ascends or descends so as to open or close said end mouth of the drain pipe when a level difference between upstream fresh water and downstream sea water is larger or smaller than a level difference limit for discharging saline water in the lower portion of said body on the upstream side of the structure or preventing sea water from the downstream side of the structure from flowing to the upstream side of the structure.

4,242,010

METHOD AND MEANS FOR PROTECTING A SEA BOTTOM SURFACE AND AN INSTALLATION ON SAME

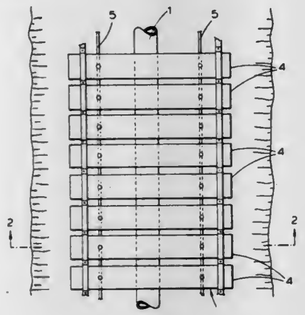
Trygve Gjerde, Jar, and Ronald Seim, Myrvoll, both of Norway, assignors to Ingenior F. Selmer AS; A/S Hoyer-Ellefsen and Ingenior Thor Furuholmen A/S, all of Oslo, Norway

Filed Aug. 14, 1978, Ser. No. 933,357

Claims priority, application Norway, Aug. 19, 1977, 772898; May 3, 1978, 781557

Int. Cl.³ F16L *57/00*

U.S. Cl. 405—157 **10 Claims**



1. Means for protecting a selected area of a sea bottom surface by positioning a protective covering thereon from and by use of a surface laying vessel, comprising a supply of primary wire means on said vessel and initially extending with one of its ends down to the sea bottom and anchored thereto, a supply of concrete plate elements on said vessel, secondary means for flexibly connecting together a group of said plates one after the other and thereby forming a series of flexible elongated mat-like units each including a certain number of said plate elements, means for attaching said mat-like units one after the other to said primary wire means synchronously with the moving and feeding of said primary wire means from the supply, the thereby formed continuous mat-like protective body being adapted to be lowered to the sea bottom surface and positioned thereon while simultaneously moving the vessel at suitable speed.

4,242,011

METHOD AND APPARATUS FOR FORMING INTEGRATED DECK SUB-STRUCTURE ASSEMBLY INCLUDING ARCH-VESSEL PASSAGE MEANS

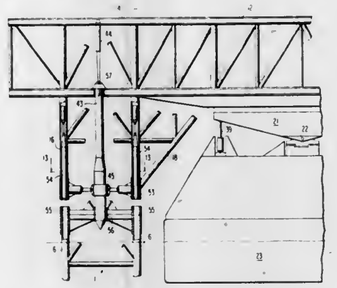
Demir I. Karsan; Graham J. Blight, both of Houston, Tex., and Larry E. Farmer, Claygate, England, assignors to Brown & Root, Inc., Houston, Tex.

Filed Mar. 28, 1979, Ser. No. 24,682

Claims priority, application United Kingdom, Apr. 3, 1978, 13000/78

Int. Cl.³ E02D *25/00*

U.S. Cl. 405—204 **5 Claims**



1. A method of erecting an offshore structure comprising:

transportable substructure means connected with a submerged surface and including

a slotted upper end defining a vessel passageway;

said method being characterized by:

providing integrated deck means operable

to be supported on vessel means for transportation to the vicinity of said substructure means, with said vessel means moving into said passageway so as to position said integrated deck means generally above said substructure means and in alignment therewith;

causing said vessel means to lower said integrated deck means onto the top of said substructure means and form said offshore structure; and

providing in said offshore structure, comprising said interconnected substructure means and integrated deck means, with

lateral force transmitting means

carried by one of said substructure means

and said integrated deck means,

defining lateral force transmitting, arch-like means extending transversely from opposite sides of said vessel passageway, generally across at least side portions of said vessel passageway to an intermediate portion of one of said jacket means and integrated deck means, and

at least partially extending across said vessel means while said integrated deck means is supported thereon and said vessel means is in said passageway;

said lateral force transmitting means extending laterally beyond side portions of said vessel means, with outer portions thereof being disengaged therefrom when said integrated deck means is supported thereon, and said vessel means is disposed in said passageway.

4,242,012

METHOD FOR CONSTRUCTING A MULTISEASON ICE PLATFORM

Michael E. Utt, Placentia, Calif., assignor to Union Oil Company of California, Brea, Calif.

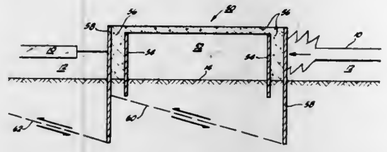
Filed Mar. 14, 1979, Ser. No. 20,614

Int. Cl.² E02B *3/00*; E02D *29/02*; F25C *1/02*

U.S. Cl. 405—217 **15 Claims**

1. A method for constructing an ice platform at a cold offshore location having a sheet of ice floating on a water body overlying a marine bottom, said method comprising the steps of:

(a) accumulating ice on the top surface of a selected portion of said ice sheet to thereby form an ice mass on said preselected portion, said ice being accumulated at least until the weight of said ice mass deforms said ice sheet and said selected portion of said ice sheet thereby becomes grounded on said marine bottom to form a grounded ice body comprised of said ice mass and said selected portion;



(b) driving a first rigid wall element through the ice around the perimeter of said ice body and a preselected distance into said marine bottom; and

(c) installing insulating material between said wall element and said ice body, and over the top surface of said ice body to thereby form an insulation jacket which substantially prohibits the melting of said ice body during the warmer seasons of the year.

4,242,013

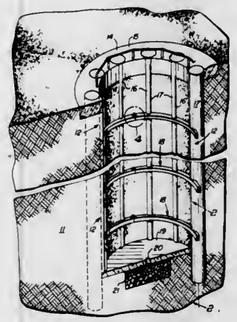
METHOD FOR FORMING A HOLE IN THE EARTH

James P. Watts, 6930 Pinchot Ave., Scottsdale, Ariz. 85251

Filed Jun. 4, 1979, Ser. No. 45,248

Int. Cl.³ E02D *17/04, 29/02*

U.S. Cl. 405—272 **3 Claims**



1. An improved method of forming a hole in the earth, for preventing the side walls of the hole from collapsing inwardly during and after excavation of the hole and specially adapted for use in loose soils, said method comprising:

(a) drilling individual column holes in an essentially circular arrangement,

(b) filling said holes with concrete to the desired level so that columns are formed,

(c) supporting said columns with structural members defining a plurality of discrete planes positioned along the length of said columns, said structural members in each of said planes being generally concentric with the circle formed by said columns and in reaction to said inward compressive forces, being compressed between at least two columns, and

(d) excavating earth from within the perimeter of said columns.

4,242,014

PIVOT JOINT FOR UNDERGROUND MINING INSTALLATIONS

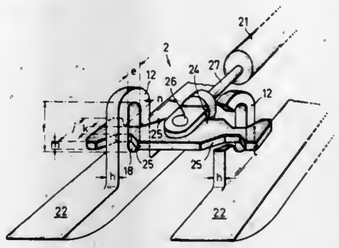
Lubomir Plevak, Lunen-Horstmar, and Jurgen Dodt, Menden, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,796

Claims priority, application Fed. Rep. of Germany, Feb. 30, 1978, 2803907

Int. Cl.³ E21D *23/08*

U.S. Cl. 405—300 **4 Claims**



1. A releasable joint for pivotally connecting the piston rod of an advance ram to a floor sill of a mine roof support unit in an underground mining installation, the pivot joint comprising first and second connection members, the first connection member being connected to said piston rod and having a width which is greater than its thickness and a reduced portion that reduces its width to a core width, the second connection member being connected to said floor sill and being formed with a slot into which is inserted the reduced portion of the first connection member, the width of the slot being greater than the thickness and the core width of the first connection member, and the length of the slot being greater than the width of the first connection member, the thickness of the second connection member being smaller than the core width of the first connection member, and the width of the first connection member extending transversely of the length of the slot when said connection members are in the connection position.

4,242,015

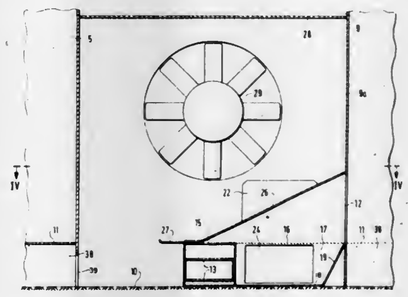
APPARATUS FOR CONVEYING GRANULAR MATERIAL

Sven J. Persson, Surbrunnsgatan 4, 532 00 Skara, Sweden

Filed Jan. 8, 1979, Ser. No. 1,723

Int. Cl.³ B65G *53/20, 53/44*

U.S. Cl. 406—82 **7 Claims**



1. Apparatus for the removal of granular material from containers of a storage plant, there being at least two containers or rows of containers separated by a space and each of said containers having a discharge port in a side wall thereof facing said space, the lower edges of said discharge ports being on a level with each other, said apparatus comprising

a conveyor arranged in said space in the middle between said containers or rows of containers, said conveyor having a material carrying member substantially on a level with or slightly below the lower edges of said discharge ports,

a tubular housing enclosing said conveyor having an upper, horizontal wall provided with inlet ports corresponding to the discharge ports of the containers and an outlet orifice for discharged material at the discharge end of the conveyor,

sheet members arranged to bridge the gaps between the lower edges of said discharge ports and the adjacent edges of said upper, horizontal wall of said tubular housing, each of said sheet members having substantially the same width as the corresponding discharge port and forming a roof of a chamber having the same height as said housing, said chamber being arranged to be connected to the pressure side of a fan,

each of said sheets being provided with a large number of slits shaped so as to provide upper orifices which are substantially vertical and face away from the discharge port, whereby the current of air discharged from said chamber through said orifices will tend to move the material emerging from the discharge port towards the corresponding inlet port of said housing.

4,242,016

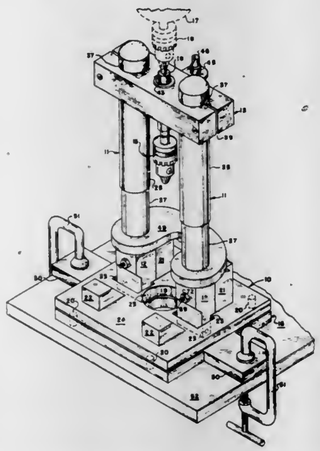
APPARATUS FOR GUIDING A HAND-HELD ELECTRIC DRILL

Bernard L. Faris, R.F.D. 1, Box 166, Glen Allen, Va. 23060

Filed Jan. 3, 1979, Ser. No. 727

Int. Cl.³ B23B *49/00*

U.S. Cl. 408—14 **7 Claims**



1. An apparatus adapted for use with a hand-held electric drill comprising:

a. a base member having a central aperture, a flat underside having downwardly directed protuberances symmetrically spaced about said aperture, and an upper surface having spaced paired abutment means,

b. two parallel columns, having bottoms which are in pivotal engagement with said base member at sites diametrically spaced about said central aperture, each column being comprised of an upper cylindrical tube, a lower cylindrical tube which engages said upper tube in telescoping manner, and a coil spring confined within said engaged tubes and adapted to generate a resistive force when the upper tube is downly urged upon the lower tube,

c. a carriage in slideably adjustable engagement with said upper tubes, having a spindle centered between said columns and parallel thereto, the lower portion of said spindle supporting an adjustable chuck and the upper portion of said spindle being shaped to be gripped by an adjustable chuck, and

d. anchoring means having a flat upper surface and openings in said surface adapted to receive in close-fitting engagement the protuberances of said base member, a mating aperture positioned and dimensioned such that, when said anchoring means is engaged with said base member, the central appertures of both components are in substantially congruent relationship, and attachment means whereby said anchoring means may be adjustably fastened to an underlying workpiece.

4,242,017

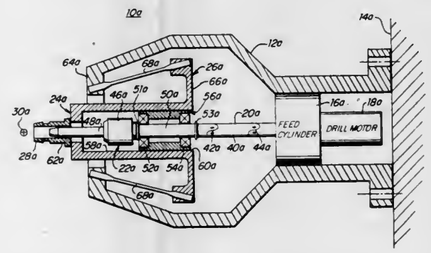
PASSIVE MATING SYSTEM

Thomas L. De Fazio, Watertown, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 3, 1979, Ser. No. 63,184

Int. Cl.³ B23B *45/4*

U.S. Cl. 408—111 **13 Claims**



1. A passive mating system for aligning and engaging a tool device with a workpiece, comprising:

a remote center compliance device;

means for supporting said remote center compliance device;

guide means carried by said remote center compliance device for movably supporting said tool device, said remote center compliance device having a remote center proximate the end of said guide means; and

means for providing relative motion between the tool device and said guide means to advance and retract said tool device.

4,242,018

BORING TOOL

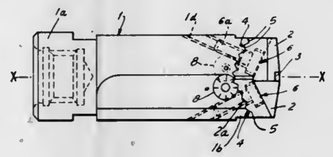
Horst Schürfeld, Bielefeld, Fed. Rep. of Germany, assignor to Gildemeister-Devlieg System-Werkzeuge GmbH, Bielefeld, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,519

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811965

Int. Cl.³ B23B *51/00*

U.S. Cl. 408—182 **9 Claims**



1. A boring tool, comprising a rotary boring bar having a head, said head having a front face and means delimiting a recess in said front face, said delimiting means including a plurality of mutually inclined internal surfaces flaring frontwardly and outwardly from the axis of said bar and having

teeth extending transversely of said axis; a plurality of bit carriers each having a surface which is adjacent to one of said internal surfaces in said recess and is provided with teeth mating with the teeth of the respective internal surface, said carriers having elongated slots extending in substantial parallelism with the teeth of the respective internal surfaces; and securing elements extending through said slots and having threaded portions mating with tapped bores provided therefor in said bar, said elements being arranged to urge said carriers against the respective internal surfaces.

4,242,019

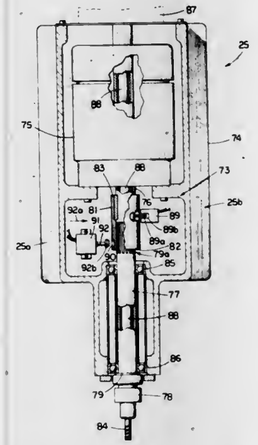
MILLING MACHINE

Gerald V. Roch, 8041 Fishback Rd., Indianapolis, Ind. 46268

Filed Feb. 23, 1978, Ser. No. 880,640

Int. Cl.³ B23C *5/26, 1/06*

U.S. Cl. 409—185 **22 Claims**



1. A milling machine comprising:

(a) a C-shaped frame having a base portion and an overhanging upper portion;

(b) a tool support member suspended from said overhanging upper portion and movable in a vertical direction;

(c) a saddle member supported by said base portion, positioned beneath said tool support member and movable in a transverse direction;

(d) a work table positioned atop said saddle member and movable in a longitudinal direction;

(e) a tool drive unit supported by and movable with said tool support member and including a drive motor having an output shaft extending therefrom and a rotatable tool spindle non-rotatably connected to said output shaft;

(f) a first plurality of recirculating anti-friction bearing ways having a common plane of vertical travel, said common plane being substantially coincident with the axis of rotation of said tool spindle, said ways being spaced about said tool support member and positioned between said C-shaped frame and said tool support member;

(g) each of said first plurality of bearing ways having a circulating track portion and an outer race portion;

(h) a second plurality of bearing ways located between said saddle member and said C-shaped frame;

(i) a third plurality of bearing ways located between said work table and said saddle member;

(j) a separate ball lead screw and DC motor combination associated with each of the three directions of movement and suitably arranged to control movement in each of the three directions; and

(k) said output shaft extends in a vertical direction and said tool spindle is hollow and coaxial with said output shaft.

4,242,020

MILLING TOOL, ESPECIALLY GANG CUTTER

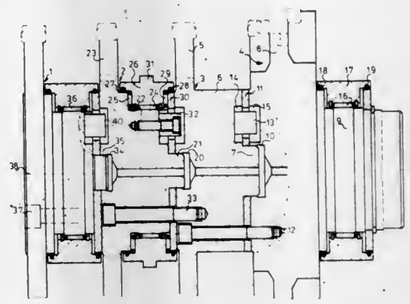
Karlheinz Schmid, Neckartenzlingen, Fed. Rep. of Germany, assignor to Gebrueder Heller, Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,065

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836395

Int. Cl.³ B23L *1/00;* B23B *5/18;* B26D *1/12*

U.S. Cl. 409—234 **9 Claims**



1. A gang cutter for crankshaft milling machines, comprising a plurality of partial units having a common rotational axis, each partial unit comprising a disk cutter, centrally arranged spacer means, and means securing adjacent units to each other so that the units are arranged in a row and centered relative to said common rotational axis, adjustment disk means operatively interposed between adjacent units, and wherein certain of said spacer means comprise bearing means for operatively supporting said gang cutter in said crankshaft milling machine.

4,242,021

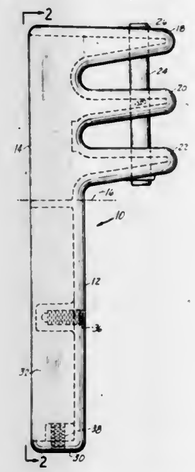
REMOVABLY MOUNTED TRUCK BINDING POST

Glenn L. Sloane, 8825 Colbath, Panorama City, Calif. 91402

Filed Dec. 27, 1978, Ser. No. 973,604

Int. Cl.³ B60P *7/08;* B61D *45/00;* B65D *61/00*

U.S. Cl. 410—96 **8 Claims**

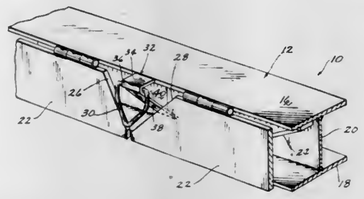


1. A binding post for trucks comprising;

a shaft having a shank and mast, said shank having an external regularly shaped surface that is insertable into a socket at one end and mounts the mast at the other end;

a plurality of pads extending outward from the mast portion of said shaft;
a tie pin passing through the ends of said pads to form at least one shackle; and
said shaft being a molded integral structure with a parting line below said mast, which mounts said pads, whereby the molded shank can have various molded lengths and shapes, with the same mast.

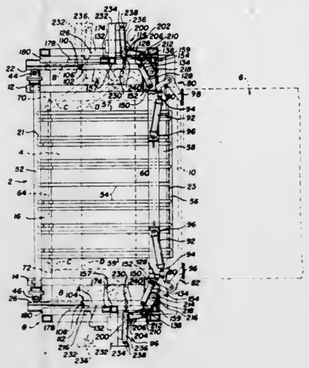
4,242,022
MOUNTING D-RINGS ON TRUCK TRAILERS
Ronald G. Fredrickson, 604 W. 11th, Mitchell, S. Dak. 57301
Filed Apr. 23, 1979, Ser. No. 32,148
Int. Cl.³ B60P *7/00*
U.S. Cl. 410—107 **9 Claims**



1. In combination,
a truck trailer comprising a wheeled frame means including at least a pair of laterally spaced apart and longitudinally extending outer side frame members; each of said frame members comprising an I-beam having horizontally disposed upper and lower flanges and a vertically disposed web extending therebetween, each of said upper flanges on said I-beams having an outer edge; and a deck means extending between the upper flanges on said I-beams,
a plurality of side extension members having inner and outer edge portions, and rearward and forward ends, said side extension members being hingedly secured at their inner edge portions to the outer edges of said upper flanges on said I-beams in adjacent relation, the adjacent rearward and forward ends of adjacent side extension members including at least outer portions thereof disposed in closely spaced relation,
said extension members being movable from a substantially vertically disposed folded position to a substantially horizontally disposed extension position,
a plurality of longitudinally spaced load restraining supports secured to each of said I-beams between at least some of the adjacent side extension members,
a load restraining ring means pivotally mounted on each of said supports and being pivotally movable from a substantially vertically disposed hanging position outwardly of said I-beam to an operative position whereby said ring means may be extended upwardly and inwardly from the outer edge of the upper flange of said I-beam,
at least one of the adjacent rearward and forward ends of adjacent side extension members including a cut-away portion formed therein to accommodate pivotal movement of said load restraining ring means between said hanging and operative positions.

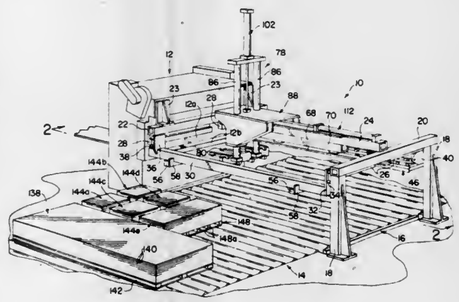
4,242,023
SHEET POSITIONER
Leif Mohrsen, Surrey, Canada, assignor to Durad Machine Company, Ltd., New Westminster, Canada
Filed Apr. 16, 1979, Ser. No. 30,317
Int. Cl.³ B65G *65/02*
U.S. Cl. 414—36 **19 Claims**

1. An apparatus for loading panels into a hot press having a plurality of vertically spaced-apart openings for receiving the panels, the apparatus comprising:
a frame for locating near the openings of the press;
a tray carriage mounted on the frame for horizontal reciprocation towards and away from the press, the tray carriage comprising a plurlity of vertically spaced-apart horizontal trays for receiving the panels to be loaded into the press, each said tray having two sides, being aligned with one of the openings of the press and being movable into and out of the press with the reciprocation of the tray carriage; and



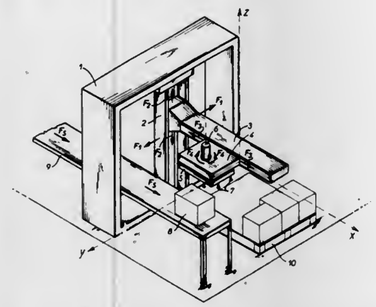
alignment means for vertically aligning front and back edges of the panels, and squaring the panels, before the panels are loaded into the press, the alignment means being mounted on the frame for movement towards and away from the press when the tray carriage is stationary and being engageable with one of said edges of the panels so the alignment means moves the panels along the trays to vertically align the edges thereof.

4,242,024
APPARATUS FOR PALLETIZING SHEET MATERIAL
John R. Buta, Salem; John H. Gehring, McDonald, and Thomas J. Drotleff, Salem, all of Ohio, assignors to Paxson Machine Company, Salem, Ohio
Filed Sep. 29, 1978, Ser. No. 946,741
Int. Cl.³ B65G *57/10*
U.S. Cl. 414—43 **22 Claims**



1. Apparatus for supporting a stack of sheets received from a source in a direction of discharge and transferring the stack to support means therefor comprising: a frame means including a vertically fixed horizontal frame portion overlying said support means in said direction and elevated with respect to said support means, fork lift means, means supporting said fork lift means on said frame portion for horizontal displacement between first and second positions in said direction and for vertical displacement between elevated and lowered positions relative to said support means, said fork lift means in said elevated and first positions being positioned to receive sheet material from said source, and means to displace said fork lift means between said first and second positions and between said elevated and lowered positions.

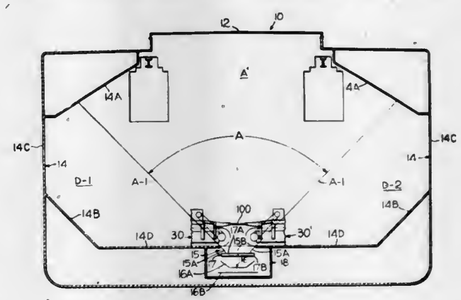
4,242,025
PALETTIZING-DEPALETTIZING APPARATUS
Jacques G. A. Thibault, 35, rue Robert Legeay, 94000 Creteil, France
Filed Jul. 6, 1978, Ser. No. 922,418
Claims priority, application France, Jul. 8, 1977, 77 21226
Int. Cl.³ B65G *57/04*
U.S. Cl. 414—70 **4 Claims**



1. Apparatus for palettising or depalettising articles of parallelepipedic shape at the place or from the place corresponding to their position on the palette, said apparatus being of the crane hoist type and comprising in combination:
(a) a support having generally horizontal upper and lower surfaces;
(b) at least one vertically extending hoist pillar having upper and lower ends assembled on said support in horizontally slideable relationship with said upper and lower surfaces of said support;
(c) a hoist arm extending horizontally from said pillar in vertically slideable relationship therewith in a direction normal to the direction of movement of said pillar;
(d) a carriage extending from one side of said hoist arm in horizontally slideable relationship with said hoist arm;
(e) an article gripping head mounted on said carriage;
(f) means facilitating and ensuring rotation of said head with respect to said carriage; and
(g) means for effecting automation in operation of said apparatus.

4,242,026
SELF-UNLOADING SHIP WITH SUSPENDED RECLAIM SCRAPER
Warren R. Vaughan, Markham, and Matthieu Suykens, Plainfield, both of Canada, assignors to Allis-Chalmers Canada, Limited, Lachine, Canada
Filed Sep. 5, 1978, Ser. No. 939,781
Int. Cl.³ B63B *27/20*
U.S. Cl. 414—145 **7 Claims**

1. In combination, a bulk cargo ship having a bulk cargo receiving region, said bulk cargo receiving region being separated into adjacent holds by a bulkhead extending transverse of the longitudinal axis of said holds, said bulkhead having an aperture through the upper portion of said bulkhead, a material handling system for continuous unloading of bulk cargo from said holds comprising an unloading conveyor positioned in underlying relation to said holds and adapted to move in a direction lengthwise of said holds, discharge passage means at the bottom of said holds through which bulk material may discharge onto said unloading conveyor, said material handling system further comprising means for reclaiming bulk material from said holds including a reclaim scraper comprising movable bulk material transfer means adapted to engage the bulk material and to transfer the bulk material to said discharge passage means, said reclaim scraper having a longitudinal dimension and a transverse dimension, with said longitudinal dimension being substantially greater than said transverse dimension, said longitudinal dimension being greater than the dimension of said aperture in said bulkhead, said transverse dimension being less than the dimension of said aperture in said bulkhead, said scraper when in normal operation being positioned with the longitudinal dimension thereof lying substantially transverse of the longitudinal axis of the plurality of holds and substantially parallel to the plane of said bulkhead, means for driving said movable bulk material transfer means to effect the transfer of said bulk material, track means mounted contiguous the upper end of said holds and extending longitudinally of said holds and through said aperture in said bulkhead, a trolley movable along said track means



lengthwise of said holds, a suspension head carried by said trolley, cable hoist means interconnecting said suspension head and said reclaim scraper and operable to lower said reclaim scraper into reclaiming relation to bulk material in the hold and for raising said reclaim scraper, said suspension head being mounted for rotation in a horizontal plane through a predetermined angle about a vertical axis while supporting said reclaim scraper, whereby to orient said reclaim scraper with the longitudinal dimension of said reclaim scraper substantially parallel to the longitudinal axis of the plurality of holds and thus properly positioned for passage through said aperture in said bulkhead, means supported by said trolley for rotating said suspension head through said predetermined angle, and means for moving said trolley along said track, whereby to move said reclaim scraper lengthwise of said hold in reclaiming relation to bulk material along the length of said hold, and whereby to move said reclaim scraper through said aperture in said bulkhead from one hold to an adjacent hold.

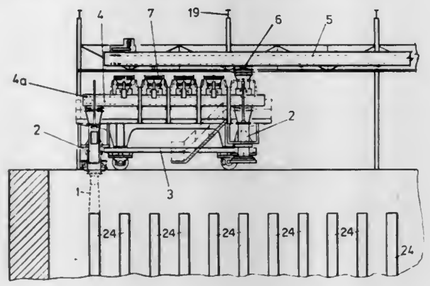
4,242,027
APPARATUS FOR CHARGING COKE OVEN FURNACES OF A COKE OVEN BATTERY
Josef Stratmann, Recklinghausen, and Willi Brinkmann, Herne, both of Fed. Rep. of Germany, assignors to Firma Carl Still, Recklinghausen, Fed. Rep. of Germany
Filed Feb. 1, 1979, Ser. No. 8,270
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804825
Int. Cl.³ C10B *31/04*
U.S. Cl. 414—148 **9 Claims**

1. In combination, an improved coke oven charging device, for supplying coal to a plurality of charging chutes extending through a roof to each coke oven chamber of a battery of coke oven chambers successively arranged along a longitudinal horizontal axis of the battery, of the type having a circulator conveyor horizontally disposed in a spaced location above the roof and a coal charging car movable along the roof with

means for transfering coal between the circulator conveyor and the charging chutes, the improvement wherein

the circulator conveyor comprises an endless conveyor having a plurality of longitudinally and transversely spaced discharge openings, and

the coal charging car comprises a housing, a transfer conveyor mounted to said housing along at least a part of the



length thereof along the longitudinal axis of the battery, said housing having a plurality of coal transfer opening connections selectively connectable to said circulator conveyor discharge openings for receiving coal therefrom and for delivering the coal to said transfer conveyor and at least one filling connection with one end connected to said transfer conveyor and a second end connectable to a selected charging chute.

4,242,028

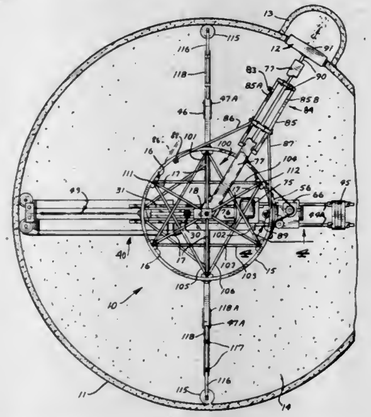
RING TYPE SILO UNLOADER

Frederick E. Van Dusen, Hopkins, Minn., assignor to Van Dusen & Co., Inc., Plymouth, Minn.

Continuation of Ser. No. 815,649, Jul. 14, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,198

Int. Cl.³ B65G *65/38*

U.S. Cl. 414—320 **29 Claims**



1. A silo unloader for use in an upright wall silo comprising an annular ring track means mounted within said silo, a silage gathering and discharge device, track engaging means to guide such silage gathering and discharge device for rotation relative to said track means while in engagement with silage in the silo, means to restrain said ring track means from rotation within said silo, and drive means to drive said silage gathering and discharge device rotationally around said track means, comprising power means mounted on said silage gathering and discharge device, an endless flexible member surrounding the outer surface of said ring track means, said power means including a rotationally driven member for engaging said endless flexible member, said rotationally driven member being positioned on the outside of said ring track means and driving said silage gathering and discharge device and said driven member around said ring track means.

4,242,029

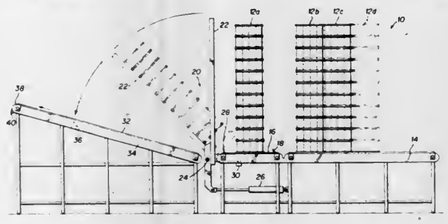
POULTRY COOP HANDLING SYSTEM

Harry J. Musgrave, P.O. Box 214, Nashville, Ark. 71852

Filed Jan. 31, 1977, Ser. No. 763,797

Int. Cl.³ B65B *21/02*

U.S. Cl. 414—413 **9 Claims**



1. An apparatus for automatically handling poultry coops, each of which has a topside coop door and contains live birds, to empty the birds therefrom, comprising:

an input conveyor system for receiving poultry coops in a tier arrangement and transporting the tier of coops along a defined path;

a lay down unit for receiving the tier of coops from said conveyor in an upright disposition and forwardly tilting the tier into an inclined disposition;

an inclined conveyor for receiving the tier of coops from said coop lay down unit in the inclined disposition in which each coop lays on its side, and for conveying each coop to the end of the conveyor where it falls over the end and is tilted further forward;

a saddle for catching each coop as it falls over the end of the conveyor and holding it in the forwardly tilted orientation such that the topside coop door freely opens to discharge the birds therefrom;

means for ejecting an empty coop from said saddle;

a conveyor for receiving an empty coop after it is ejected from the saddle, the conveyor being adapted to receive an empty coop in an upside down orientation and effect closure of the coop door by contacting the coop door as the coop is being received; and

a coop inverter for receiving a coop from said conveyor and turning the coop over to be topside up.

4,242,030

SELF-LOADING CAR-TOP CARRIER FOR WHEELCHAIRS OR SIMILAR SIZED LOADS

Clyde H. Clement, 8439 N. 13th Pl., Phoenix, Ariz. 85020

Filed Aug. 24, 1978, Ser. No. 936,235

Int. Cl.³ B60R *9/00*

U.S. Cl. 414—462 **1 Claim**

1. A self-loading, weather protected carrier for raising or lowering an object to and from the top of a motor vehicle and for transporting said object on said motor vehicle, said carrier comprising

(a) a horizontally disposed base adapted to be mounted on the roof of a motor vehicle and having transverse guide means affixed thereto,

(b) a carriage extendably carried by said transverse guide means and movable at a vehicle top level between a load-/unload position and a travel position,

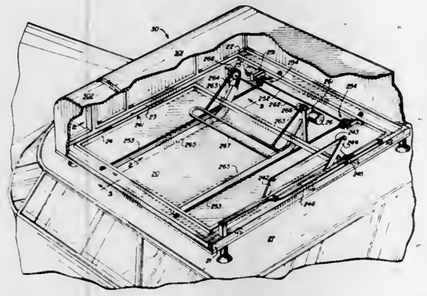
(c) a generally L-shaped tilt frame, pivotally mounted on said carriage and rotatable between a generally upright position for loading and unloading said object and a generally horizontal position for storing said object on said motor vehicle,

(d) linkage means, attached to said tilt frame and responsive to said carriage being extended into said load/unload position to rotate said tilt frame to said upright loading position, said linkage means including

(i) a thrust rod having one end pivotally attached to said tilt frame,

(ii) an upstanding tilt/thrust rail affixed to said base and having at least one inclined section,

(iii) a drive arm having a first end pivotally fastened to the other end of said thrust rod and a second end pivotally connected to said carriage, and



(iv) means, attached to said drive arm and contacting said tilt/thrust rail, for traveling along said rail and displacing said drive arm in response to the horizontal extension of said carriage into said load/unload position,

(e) attachment means for engaging said object,

(f) hoist means mounted on said tilt frame for

(i) suspending said engaging means from said carriage assembly so that said engaging means may receive at least a portion of said object, and

(ii) raising and lowering said engaging means and said object, and

(g) means for extending said carriage.

4,242,031

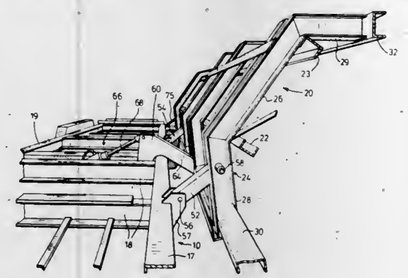
SIDE LOADING AND UNLOADING TRAILER

Donald E. McMullen, 10 Elvins Gardens, Belleville, Ontario, K8P 2T3, Canada

Filed Oct. 16, 1978, Ser. No. 951,924

Int. Cl.³ B60P *1/00*

U.S. Cl. 414—470 **7 Claims**



1. A side loading and unloading trailer comprising, in combination, an elongated trailer having a longitudinal frame and at least one transverse axle secured to said frame rotatably mounting vehicle wheels for transport of said trailer, said trailer frame including at least two longitudinal spaced-apart frame members and a plurality of cross frame members interconnecting the longitudinal frame members and rigidly secured thereto, an elongated load-supporting bed normally positioned on said frame, at least two spaced-apart links each pivotally mounted at one end on one side of said trailer frame and pivotally mounted at the other end to the corresponding side of said load supporting bed, an actuating member comprising a bent lever pivotally mounted at one end to form a fulcrum on one side of said trailer frame and pivotally mounted at the opposite end on the corresponding side of said load supporting bed, said pivotal linkages and said actuating mechanism mounted on the same side of said trailer frame and load supporting bed, and a piston-cylinder assembly pivotally mounted at one end on said trailer frame and pivotally mounted at the other end intermediate the ends of the bent lever whereby extension of the piston from the cylinder pivots the load supporting bed about the said links laterally outwardly from the side of said trailer frame and retraction of the piston into the cylinder pivots the load supporting bed about the links laterally inwardly onto the trailer frame.

4,242,032

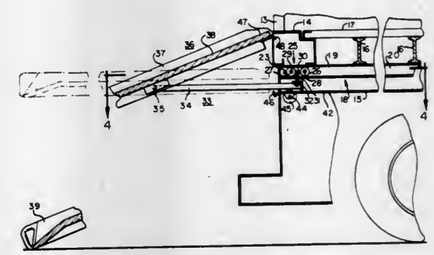
RAMP AND RAMP CARRIER FOR TRUCKS AND THE LIKE

Paul L. Whiteman, Morgantown, and Vernon E. Orr, Elverson, both of Pa., assignors to Morgan Trailer Manufacturing Co., Inc., Morgantown, Pa.

Filed Jun. 21, 1979, Ser. No. 50,702

Int. Cl.³ B60P *1/00*

U.S. Cl. 414—537 **9 Claims**



1. A ramp and ramp carrier for trucks and the like having a truck frame and a truck body thereon comprising

spaced longitudinally extending body frame rails,

transverse cross members carried on the upper extremities of said body frame rails,

a fixedly mounted track member centrally disposed between said body frame rails,

a trolley member movable along said track member,

a ramp carriage member movable between said body frame rails at its front end and carried by said trolley member and having rearwardly extending frame portions, and

a walk ramp movable between said body frame rails to positions for storage and for use and to which said rearwardly extending frame portions are hingedly connected intermediate the ends of the walk ramp.

4,242,033

MACHINE AND METHOD FOR VERTICAL TRANSPORTATION OF CONTAINERS

Stephen H. Aidlin, West Hempstead, and Michael Tartakowsky, Rego Park, both of N.Y., assignors to Aidlin Automation, Inc., Brooklyn, N.Y.

Filed Apr. 2, 1979, Ser. No. 25,891

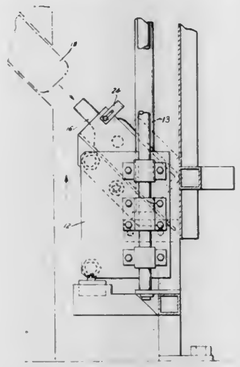
Int. Cl.³ B65G *47/28, 47/52*

U.S. Cl. 414—662 **14 Claims**

1. A machine including a frame formed with a substantially vertically disposed wall, for cyclically receiving a plurality of containers from an unloading station, each container having a longitudinal axis, and for transporting them to a discharge

station, said discharge station being spaced apart from, and above said unloading station by a predetermined distance, comprising in combination:

a platform connected to said frame, being operable in a first position thereof below said unloading station for accepting said containers, so that the longitudinal axis of each container subtends a predetermined angle with the horizontal, said platform being movable thereafter to a second position spaced substantially vertically above said first



position for unloading said containers to said discharge station, said platform being movable thereafter to return to said first position,

guard means for restraining each of said containers from tumbling against said wall and impacting thereon when being received by said platform,

control means connected to said platform for controlling the operation thereof, and

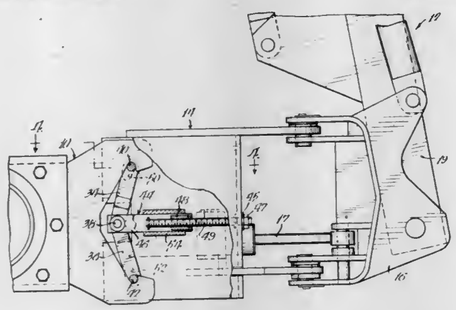
drive means for moving said platform from said first position to said second position and vice versa.

4,242,034

QUICK-RELEASE COUPLING

Floyd A. Schmitz, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Nov. 16, 1978, Ser. No. 961,105
Int. Cl.³ E02F *3/81*
U.S. Cl. 414—686 **9 Claims**



1. A quick-release coupling between a vehicle and a material handling unit supported on the vehicle, comprising:

a rigid support frame carried by said vehicle and having a pair of opposed recesses the centers of which are spaced apart by a first distance,

linkage means connected to said material handling unit, said linkage means including first and second links pivotally interconnected at one end,

first means associated with the opposite end of said first link which is receivable in one of said recesses, and second means associated with the opposite end of said second link which is receivable in the other of said recesses, the sum of the length of said first link, as measured between said first means and the pivotal connection joining said links, and the length of said second link, as measured between said second means and said pivotal connection, being greater than said first distance,

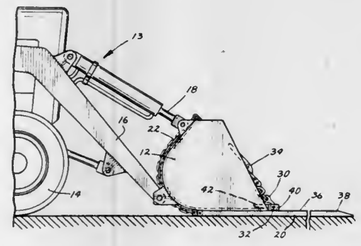
means, secured to said unit and operably associated with said first and second links, for moving said links between a first clearance position in which at least one of said first and second means is outside said recesses, and a second engaged position in which said first means and said second means are received in the respective recesses to releasably secure said material handling unit to said vehicle.

4,242,035

APPARATUS FOR CONVERTING A LOADER BUCKET TO A PALLET LOADER

Robert L. Hornstein, R.R. 1, Clinton, Minn. 56225

Filed Apr. 16, 1979, Ser. No. 30,000
Int. Cl.³ B66F *9/12*
U.S. Cl. 414—724 **5 Claims**



1. Apparatus for converting a loader bucket into a pallet loader, said bucket having an elongated flat digging blade portion integral with an upwardly extending curved scoop portion, said apparatus including: at least one tine harness, said harness including:

A. an elongated tine, said tine being flat at least from a rearward portion to an intermediate portion thereof;

B. a flexible elongated fastening member attached to a rearward portion of said tine;

C. means for fixedly positioning an intermediate portion of said tine with respect to a leading edge of said bucket digging blade portion;

D. a fastening device, said device being adapted to move from an elongated open position to a shortened closed position;

E. means for attaching said device to a portion of said fastening member spaced from said rearward portion of said tine and means for attaching said fastening device to said intermediate portion of said tine when said tine is positioned under said flat digging blade portion of said bucket, said fastening member is extended over said scoop portion of said bucket, said intermediate portion of said tine is fixedly positioned with respect to the leading edge of said bucket, and said fastening device is open; and

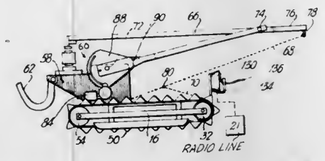
F. said fastening device being operable from said open to said closed position to firmly clamp said tine from said intermediate portion to said rearward portion to the underside of said flat digging blade portion.

4,242,036

REMOTELY OPERATED PLACEMENT EQUIPMENT

William F. Slaght, Ste-Foy, Canada, assignor to Her Majesty the Queen in right of Canada, Ontario, Canada

Filed Sep. 2, 1977, Ser. No. 833,293
Claims priority, application Canada, Sep. 15, 1976, 261234
Int. Cl.³ B60P *3/28*
U.S. Cl. 414—737 **22 Claims**



1. A remotely operated track vehicle comprising:

a lightweight frame having a deck portion and first and second track guiding portions;

a drive drum located at one end of each said track guiding portions;

first and second electric motors connected each to one of said drive drums;

first and second track means each encircling and operatively associated with one of said drive drums and one of said track guiding portions; and

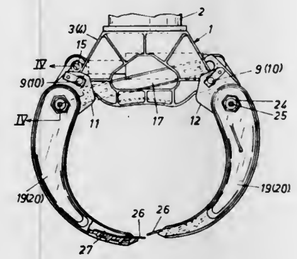
an obstacle hook pivotally mounted on said deck portion, said obstacle hook being oriented forward of the vehicle and located above the ground so that the bottom portion of said obstacle hook will ride up onto the surface of an obstacle in a camming action, said pivot point being above the level of said track means and a camming surface extending downwardly at an acute angle from said pivot point toward said track means to permit the track means to engage the obstacle to move said vehicle over the obstacle as said vehicle is moved forward.

4,242,037

GRIPPING TOOL, PARTICULARLY FOR HANDLING TIMBER

Börje N. V. Baumgarten, Hassela, Sweden, assignor to Hiab-Foco AB, Sweden

Filed May 31, 1979, Ser. No. 44,194
Claims priority, application Sweden, Jun. 27, 1978, 7807249
Int. Cl.³ B66C *3/16*
U.S. Cl. 414—739 **4 Claims**



1. An improved gripping tool, particularly intended to be fitted on the jib of a crane, said gripping tool comprising gripping jaws which are arranged to pivot towards and away from one another relative to a gripping tool support member, the improvement comprising

two tubular shafts, connecting rods by means of which said gripping jaws are removably secured in pairs to said two tubular shafts,

coaxial shaft journals provided on said gripping tool support member, said gripping jaws arranged so as to pivot jointly in opposite directions about said coaxial shaft journals,

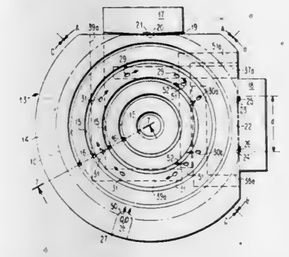
a laterally directed hub sleeve on each one of said gripping jaws, said hub sleeves having a non-round cross-sectional shape and arranged for insertion into a correspondingly shaped end of the associated tubular shaft.

4,242,038

WAFER ORIENTING APPARATUS

Hugo A. E. Santini, and David P. Wick, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,166
Int. Cl.³ B65G *51/02, 47/24*
U.S. Cl. 414—755 **14 Claims**



1. Apparatus for orienting a substantially flat wafer or the like having a flat registration edge, said apparatus comprising:

means providing a flat surface for supporting the wafer and providing a series of directional fluid jet ports,

means extending upwardly from said flat surface and providing two registration surfaces,

sense means associated with each of said registration surfaces,

means for advancing the wafer toward contact with said registration surfaces, and

means controlled by the conditioning of said sense means for controlling selective supply of fluid to said jet ports, including means for rotating the wafer one way until a particular one of said sense means associated with a predetermined one of said registration surfaces is activated, then rotating the wafer the opposite way until sense means in both registration surfaces are concurrently activated for causing wafer motion to be terminated, thereby to prevent overshoot and insure precision registration of the wafer flat registration edge adjacent said predetermined registration surface without contamination and with minimal physical contact defined solely by contact with said sense means.

4,242,039

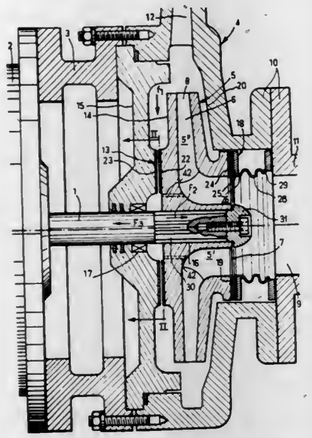
PUMP IMPELLER SEALS WITH SPIRAL GROOVES

Jean-Claude Villard, Echirolles, and Gilbert Berthereau, Eybens, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 15, 1978, Ser. No. 962,032
Claims priority, application France, Nov. 22, 1977, 77 35036
Int. Cl.³ F04D *29/16*
U.S. Cl. 415—112 **9 Claims**

1. A pump comprising a housing having an axial inlet and a peripheral outlet, an axial drive shaft rotatable in the housing, a paddle wheel impeller on the drive shaft having a plurality of outwardly extending passageways for the receipt of liquid from said inlet and the discharge of liquid to said outlet upon rotation of the drive shaft and impeller, and a hydrodynamic seal on each axial side of the impeller, each seal comprising a pair of confronting discs disposed peripendicular to the axis of the pump, one disc of each pair being fixed against rotation

relative to the housing and the other disc of each pair being mounted for rotation on the impeller, one of said discs of each pair having spiral grooves thereon, and a bellows fixed to the



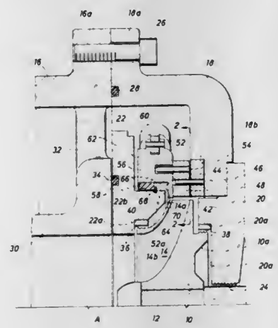
housing and surrounding said inlet, one of said fixed discs being carried by said bellows, said impeller being mounted on said drive shaft for limited axial sliding movement relative to the drive shaft.

4,242,040

THRUST ADJUSTING MEANS FOR NOZZLE CLAMP RING

Judson S. Swearingen, Los Angeles, Calif., assignor to Rotoflow Corporation, Los Angeles, Calif.

Filed Mar. 21, 1979, Ser. No. 22,417
Int. Cl.³ F01O *11/00*
U.S. Cl. 415—113 **12 Claims**



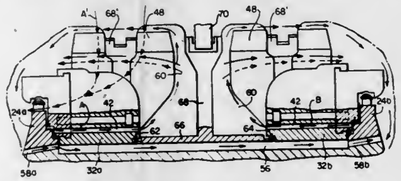
1. A rotary fluid handling apparatus comprising:
first and second coaxial bodies mounted for relative axial movement therebetween and having respective opposed radially facing annular surfaces;
seal means disposed between and sealing between said annular surfaces, and comprising a first annular sealing member;
said apparatus defining a first pressure zone communicating with one axial side of said seal means;
first stop means on said first body engageable with said first sealing member to permit the force exerted on said first sealing member by the pressure of said first zone to be transmitted to said first body;
second stop means on said second body engageable with said first sealing member to permit the force exerted on said first sealing member by the pressure of said first zone to be transmitted to said second body and to retain said first sealing member against force-transmitting engagement with said first stop means, said second stop means being releasable to permit force-transmitting engagement between said first sealing member and said first stop means.

4,242,041

ROTOR COOLING FOR DOUBLE AXIAL FLOW TURBINES

George J. Silvestri, Jr., Upper Chichester, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 806,404, Jun. 14, 1977, Pat. No. 4,150,917.
This application Jan. 15, 1979, Ser. No. 3,458
Int. Cl.³ F01D *25/00, 11/00*
U.S. Cl. 415—115 **4 Claims**



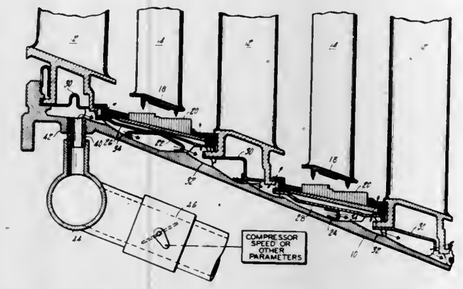
1. An elastic fluid turbine apparatus comprising:
a first and a second motive fluid expansion stage, said first and second stages respectively including first and second stationary structures, said first and second stationary structures respectively having first and second annular nozzle chamber structures, said stages being arranged in axially opposed parallel flow relation with each other;
a rotor structure having first and second disc portions respectively disposed adjacent said first and second stationary structures, said first and second disc portions each having an annular row of blades circumferentially disposed thereon and cooperatively associated with the respective first and second nozzle chamber structures, said disc portions each having an axially upstream side adjacent said associated nozzle chamber structure and an axially downstream side remotely disposed relative to said associated nozzle chamber structure, said rotor also having a reduced diameter portion extending axially between said disc portions;
said stationary structures, being annular in shape, are disposed in closely spaced encompassing relation with said reduced diameter rotor portion and jointly therewith define a cooling leakage space;
said first and second disc portions each having at least one aperture therein for pumping a portion of the once expanded motive fluid through both of said discs and the connecting cooling space;
first sealing means for minimizing leakage of motive fluid between said cooperating nozzle chamber structures and discs;
second sealing means for minimizing motive fluid leakage from said first sealing means into said cooling space; and
means for guiding said motive fluid leakage from said first sealing means to the downstream side of said first and second disc portions, said guiding means including a plurality of openings axially extending through said nozzle chamber structures from adjacent the upstream side of the disc portions to between said stationary structures.

4,242,042

TEMPERATURE CONTROL OF ENGINE CASE FOR CLEARANCE CONTROL

Frederick M. Schwarz, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 16, 1978, Ser. No. 906,394
Int. Cl.³ F01D *11/08*
U.S. Cl. 415—116 **7 Claims**



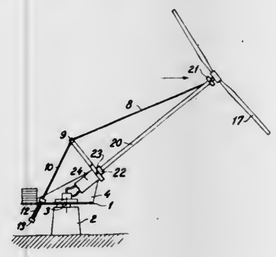
1. For a gas turbine engine having a plurality of axially spaced rotors and a case surrounding said axially spaced rotors, a corresponding number of outer air seals between said rotors and said case, means supporting said outer air seals concentrically spaced from said case and defining therewith a double wall construction having an annular passage surrounding said rotors which wall construction includes openings for allowing core air to leak into said annular passage and extending from an upstream to a downstream position relative to the engine's gas path, means external of said case supplying cool air at an upstream position into said annular passage for flowing into the downstream end to the gas path for regulating the leakage of air from said gas path into said annular passage, control means for regulating the flow of said cool air for controlling the temperature in said annular passage for effectuating contraction and expansion of said case, and means interconnecting said outer air seal and said case for positioning said outer air seal relative to the rotors with the contraction and expansion of said case.

4,242,043

WINDMILL

Peder U. Poulsen, Strandvejen 666, DK-2930 Klampenborg, Denmark

Filed Jul. 20, 1978, Ser. No. 926,566
Claims priority, application Denmark, Jul. 22, 1977, 3341/77
Int. Cl.³ F03D *7/04*
U.S. Cl. 416—11 **7 Claims**



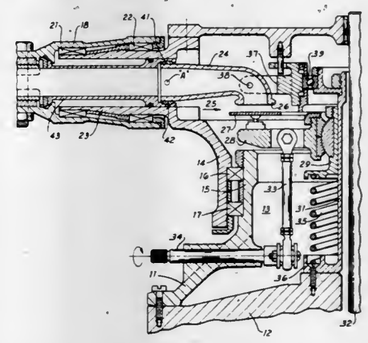
1. A windmill comprising:
an inclined shaft;
a set of propellers attached to an upper free end of said shaft,
a first bearing rotatably supporting a lower end portion of said shaft,
a pedestal supporting said first bearing,
a second bearing rotatably supporting an upper portion of said shaft, said second bearing having a non-rotating portion surrounding said shaft,
a staying device spaced from and positioned above said shaft, said staying device extending between said pedestal and said non-rotating portion of said second bearing and affecting the shaft with a moment which is oppositely directed and substantially corresponds to the bending moment created by the weight of the shaft and the propellers on the shaft at its other end, said shaft being inclined with respect to the wind direction so that the resultant of the wind impact on the propellers is substantially a tensile force in the direction of the shaft.

4,242,044

COMPENSATING STRUCTURE FOR CIRCULATION CONTROL ROTOR PNEUMATIC VALVE

George A. McCoubrey, Westfield, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 11, 1979, Ser. No. 56,590
Int. Cl.³ B64C *27/18*
U.S. Cl. 416—20 A **10 Claims**



1. In a system for ventilated helicopter rotor blades, a rotor assembly for controlling the air flow into the blades comprising,
a stationarily mounted rotor mast,
a rotor hub rotatably mounted on said rotor mast, said rotor mast and hub forming a plenum for maintaining air fed thereinto,
a plurality of rotor blades attached to said rotor hub,
a plurality of air ducts carried one each by each said rotor blade, each duct having a downwardly extending nozzle section extending into said plenum,
means for regulating flow of air into each downwardly extending nozzle section, and
means for restricting movement of said downwardly extending nozzle section when said air duct is deflected by deflection of said rotor blades.

4,242,045

TRAP SEAL FOR OPEN CIRCUIT LIQUID COOLED TURBINES

Clayton M. Grondahl, Clifton Park, and Malcolm R. Germain, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,539
Int. Cl.³ F01D *5/18*
U.S. Cl. 416—92 **13 Claims**

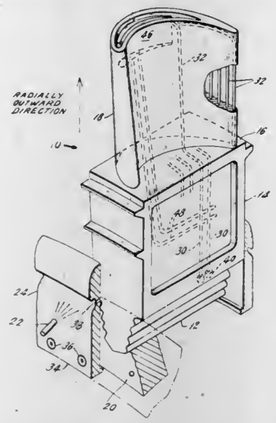
1. An improved cooling system for a gas turbine of the type including a turbine disc mounted on a shaft rotatably supported in a casing, a plurality of turbine buckets extending radially outward of said disc, each of said buckets including a root portion mounted in said disc, a shank portion extending radially outward from said root portion to a platform portion and

an airfoil extending radially outward from said platform portion, said cooling system comprising:

(a) a plurality of cooling channels formed in the airfoil of each of said buckets for distributing coolant through said airfoils;

(b) means for supplying liquid coolant to each of said cooling channels, said means including a plurality of trap seals, each of said trap seals comprising:

(1) an annular recess formed in said bucket; and



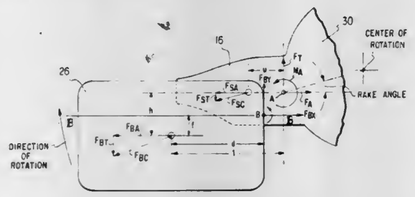
(2) a cylindrical insert located in said recess, said cylindrical insert having a plurality of axial grooves formed along the outer periphery thereof and a central recess formed in one end thereof, said axial groove and said central recess cooperating with said annular recess to define a plurality of S-shaped trap seals which permit the passage of liquid coolant but prohibit the passage of gaseous coolant.

4,242,046

FAN SPIDER WITH RAKE ANGLE

Joseph V. Matucheski; Clifford S. L. Yee; Michael T. Spellman; Donald J. Hartley, all of Indianapolis, and William D. Barton, Plainfield, all of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Filed Jun. 15, 1978, Ser. No. 915,790
Int. Cl.³ F04D *29/38*
U.S. Cl. 416—132 A **6 Claims**



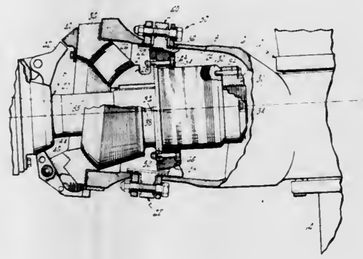
1. A spider construction for a sheet metal fan for use in combination with an internal combustion engine to cool an associated radiator, said spider construction comprising a central spider having a center of rotation and a plurality of like spider arms extending outwardly therefrom, each of said spider arms carrying a separately formed fan blade rigidly mounted thereon; each of said spider arms having a generally radial fan blade mounting line axis, a root section normal to said mounting line axis and disposed adjacent said central spider, and said mounting line axis being canted forward in the intended direction of rotation with respect to a radial line from said center of rotation through the center of said root section and intersecting said radial line at said root section center; and each fan blade having a center of mass angularly displaced in trailing relation to said radial line with the net bending moment at said root section about an axis passing through the center of said root section and parallel to an axis of rotation through said spider center of rotation being less than in like spider constructions wherein said spider arms extend substantially radially.

4,242,047

ADJUSTABLE BEARING CENTERING MEANS FOR HELICOPTER ROTOR ELASTOMERIC BEARINGS

Donald L. Ferris, Newtown, and Peter C. Ogle, Woodbridge, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 2, 1979, Ser. No. 35,365
Int. Cl.³ B64C *27/38*
U.S. Cl. 416—134 A **4 Claims**



1. A helicopter rotor having a hub member rotatable about an axis of rotation and at least one hub arm extending radially therefrom for rotation therewith and said hub arm having a substantially radially extending cylindrical bore therewithin,

(A) a blade member extending substantially radially from said hub member and including a spindle at its radial inner end extending into said hub arm bore,

(B) elastomeric bearing means connecting said spindle to said hub arm so as to support said blade from said hub arm and so that blade centrifugal force generated during rotor rotation will impart compressive loading on said elastomeric bearing means,

(C) said elastomeric bearing means including a cylindrical elastomeric bearing joined to said spindle at its radial inner end and a spherical elastomeric bearing having a static apex and being joined to said hub arm at its radial outer end,

(D) connecting means joining said cylindrical and said spherical elastomeric bearings so that said bearings join said spindle to said hub arm so that the elastomeric bearings operate in series,

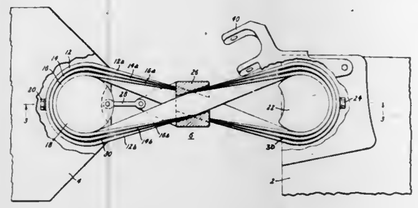
(E) means for centering said elastomeric bearing means within said hub arm bore comprising a centering ring connected to said elastomeric bearing connecting means and having at least two spherical surfaces at the outer periphery thereof coincident with said spherical elastomeric bearing static apex, centering socket means positioned within and connected to said hub arm bore and including at least two spherical bearing portions coincident with said spherical elastomeric bearing static apex and adapt to matingly engage the centering ring spherical surface so as to center said spherical elastomeric bearing about its static apex when said rotor is in static mode.

4,242,048

SEMI-ARTICULATED FLEXSTRAP

Francis H. McArdle, Norristown, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1977, Ser. No. 838,391
Int. Cl.³ B64C *27/38*
U.S. Cl. 416—134 A **20 Claims**



1. A rotor for an aircraft which comprises:

a blade;

a hub;

a first strap adapted to be connected to said hub and to said blade; and

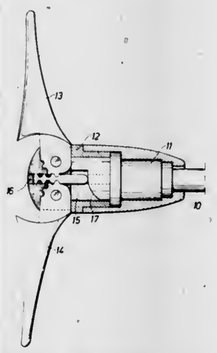
a second strap adapted to be connected to said hub and to said blade, said second member overlapping said first member at a crossover point located between said blade and said hub so as to permit relative movement between said first and second members; and wherein said first and second straps at said crossover point are each twisted approximately ninety degrees with respect to an end thereof.

4,242,049

FOLDABLE PROPELLER

Hans Forsling, Örebro, and Anders Lindecrantz, Svarta, both of Sweden, assignors to Hasselfors Stainless AB, Svarta, Sweden

Filed Feb. 6, 1979, Ser. No. 10,142
Claims priority, application Sweden, Feb. 6, 1978, 7801345
Int. Cl.³ B63H *1/24*
U.S. Cl. 416—142 **1 Claim**



1. A foldable propeller, comprising:

(a) a propeller shaft adapted to be drivingly rotated about its axis in one direction for forward propulsion, and in the opposite direction for reverse propulsion;

(b) a cam element co-rotatably secured to said shaft, and having a cam surface extending between abutments;

(c) a carrier element carried on said cam element, said elements being rotatable with respect to each other by a limited amount;

(d) a pair of propeller blades pivoted on said carrier element for movement between (1) a working position in which they project radially outwardly therefrom, and (2) a rest position in which they are directed rearwardly in line with said shaft, said blades being movable to said working position during rotating of said shaft in said one direction in response to centrifugal force and their pitch;

(e) a plunger means slidable axially in said carrier element and having a rack portion meshing with gear sectors on said propeller blades, and a cam follower portion for engaging said cam surface; and

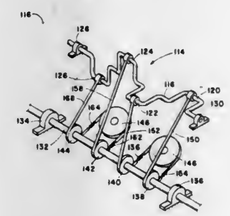
(f) said cam surface extending in a circumferential direction and having a degree of inclination varying in the axial direction from a relatively steep slope, where said cam follower portion is disengaged during shaft rotation in said one direction, to a zero or negative slope where said cam follower portion is engaged at the end of its travel during shaft rotation in said opposite direction.

4,242,050

WINDMILL POWER GENERATOR

Richard M. Oakes, Box C, Bernice, Okla. 74331

Filed Feb. 14, 1980, Ser. No. 121,428
Int. Cl.³ F03D *11/02*
U.S. Cl. 416—170 R **12 Claims**



1. A windmill powered generator comprising:

a frame;

a rotary wind operated member;

a crankshaft operably connected to the wind operated member for rotation therewith, a crank arm connected to the crankshaft, the outer end thereof being offset from the rotational axis of the crankshaft;

an elongated rotary power drive shaft spaced from the crankshaft, a frictional hub member connected to the drive shaft for rotation therewith; and

an elongated flexible line having a first end operably connected to the outer end of the crank arm, said flexible line being passed around one side of the frictional hub member and including means for yieldably securing the second end of the flexible line;

whereby travel of the crank arm end away from the drive shaft increases the frictional force between the flexible line and the drive shaft to cause rotation of the drive shaft and whereby travel of the crank arm toward the drive shaft decreases the frictional force between the flexible line and the drive shaft allowing the drive shaft and associated frictional hub to slip with respect to the flexible line.

4,242,051

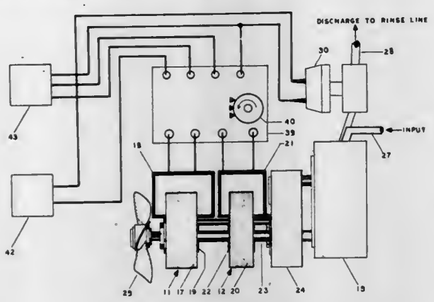
FEED CONTROL SYSTEM FOR PUMPING FLUIDS TO DISHWASHERS AND THE LIKE

William L. Mason, Garden Grove, and William K. Russell, Costa Mesa, both of Calif., assignors to Knight Equipment Corp., Costa Mesa, Calif.

Filed Feb. 22, 1979, Ser. No. 14,041
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—38 **20 Claims**

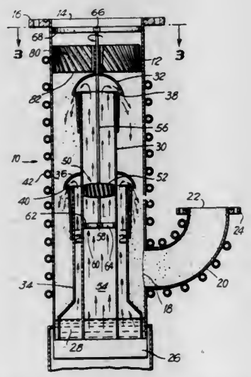
1. A feed control system for pumping a fluid having a non-linear shear rate, comprising:

(a) a peristaltic pump;
(b) a constant torque, A.C. powered shaded pole motor for driving the pump;
(c) a variable speed, D.C. powered shaded pole motor connected to the A.C. motor, and acting as an electromagnetic brake on the A.C. motor; and,



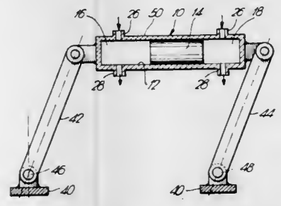
(d) an A.C. to D.C. rectifier for supplying D.C. power to the variable speed motor; the peristaltic pump being driven by the A.C. motor, whereby a decrease in viscosity of the fluid casuses a decrease in rotational force to the constant torque motor and a counterbalancing increase in braking power of the variable speed motor, thereby linearizing the flow of fluid to the peristaltic pump.

4,242,052
DIFFUSION PUMP
Tadeusz J. Marchaj, Long Island City, N.Y., assignor to Preload Technology, Inc., Garden City, N.Y.
Continuation-in-part of Ser. No. 890,222, Mar. 27, 1978, which is a continuation of Ser. No. 622,501, Oct. 15, 1975, abandoned.
This application May 18, 1978, Ser. No. 907,358
Int. Cl.[3] F04F *9/00*
U.S. Cl. 417—154 **9 Claims**



1. A vacuum diffusion pump adapted to prevent backstreaming of motive vapor molecules into the space to be evacuated, comprising:
(a) a cylindrical pump body having an inlet port in an upper part thereof and an outlet port in a lower part thereof;
(b) boiler means housed within the bottom of said pump body for vaporizing a motive fluid;
(c) at least one, substantially cylindrical vapor chimney positioned within said pump body, communicating at its lower end with said boiler and discharging vaporized motive fluid from the boiler into said pump body, said pump body and chimney defining an annular zone therebetween;
(d) cooling means associated with said cylindrical pump body for condensing said motive fluid vapors;
(e) a fan rotor rotatably positioned adjacent said inlet port, said fan rotor including vanes positioned to impel motive fluid and evacuated vapors downwardly into said cylindrical pump body;
(f) a cap for said chimney fixedly connected to the lower part of said fan rotor and rotatably positioned above said chimney, said cap and chimney top defining an effluent part therebetween and said cap deflecting motive fluid vapors downwardly within the annular zone defined by said chimney and pump body; and
(g) means for rotating said fan rotor and cap.

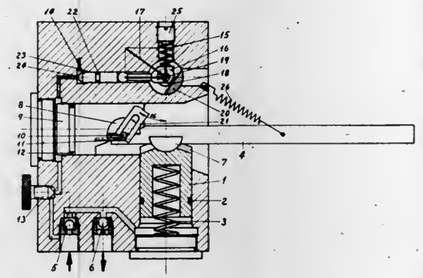
4,242,053
FREE PISTON FLUID ENERGY TRANSFER DEVICE
Charles A. Mulvenna, Kingston, Ontario, Canada
Filed Dec. 28, 1977, Ser. No. 865,317
Claims priority, application Canada, Dec. 22, 1977, 293772
Int. Cl.[3] F04B *19/02*
U.S. Cl. 417—211 **52 Claims**



1. A fluid energy transfer device, comprising:
at least one body means having at least one expansible fluid chamber and fluid inlet and outlet passages for delivering fluid to and from said chamber;
first rotary means rotatably mounted to said body means at a first pivot axis for rotating said body means about a first fixed axis, the first pivot axis being located at a distance remote from said first fixed axis;
second rotary means rotatably mounting said body means at a second pivot axis for rotating said body means about a second fixed axis, the second pivot axis being located at a distance remote from said second fixed axis, which distance is equal to said distances between the first fixed axis and the first pivot axis, said second fixed axis being spaced from and parallel to said first fixed axis, and
said first and second rotary means being effective to maintain said body means in a fixed attitude with respect to a fixed frame of reference
said chamber and passages being arranged in said body means such that as said body means rotates about said fixed axes fluid flows inwardly and outwardly to and from said chamber via said inlet and outlet passages.

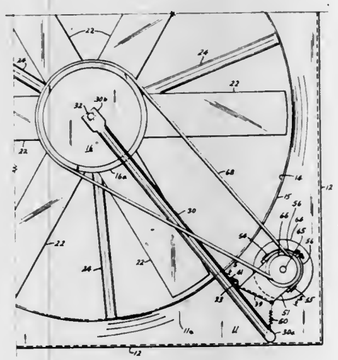
4,242,054
HYDRAULIC UNIT
Kurt Christiansen, Schnabelweg 15, Wilen-Wollerau, Switzerland
Filed Jul. 17, 1978, Ser. No. 925,522
Int. Cl.[3] F04B *49/08*
U.S. Cl. 417—218 **11 Claims**

1. A hydraulic control device for maintaining the product of the operation pressure and the displacement of a displacement pump constant, comprising
servo piston means for controlling the displacement of the pump, and
a pilot system for controlling movement of said servo piston means, said pilot system comprising
sensing piston means for sensing the operating pressure of the pump, said sensing piston means being movable along a sensing piston axis in response to the operating pressure,
pilot piston means operatively coupled to said sensing piston means and hydraulically coupled to said servo piston means for controlling the application of fluid pressure to said servo piston means,
force exerting means for supplying force along a force axis, said force axis being nonlinear with said sensing piston axis, and



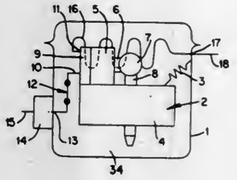
a movable bearing acted on by forces generated by said sensing piston means and said force exerting means at the intersection of said sensing piston axis and said force axis, said bearing being coupled mechanically to said servo piston means by a coupling lever to move said bearing as a function of the position of said servo piston means.

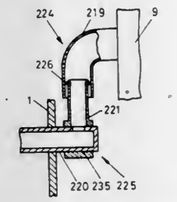
4,242,055
ATTIC FANS AND APPARATUS FOR SUPPORTING THE DRIVE MOTORS OF ATTIC FANS
John V. Felter, Austin, Tex.
Filed Aug. 17, 1978, Ser. No. 934,510
Int. Cl.[3] F04B *35/04*
U.S. Cl. 417—362 **5 Claims**



1. Attic fan, comprising a housing having a plate having a circular opening therethrough, a blade shaft concentric of said opening supporting plural circularly spaced radially disposed air impeller blades for rotation within said opening, pulley means associated with said blade shaft which when rotated rotates said blades, an electric drive motor supported by a motor support shaft disposed transverse to said plate and having sheave means carried on its drive shaft, drive belt means engaged about said sheave means and said pulley means whereby said pulley means is rotated when said motor is operated, means biasing said motor in a direction away from said blade shaft to maintain said drive belt means in tightened condition about said sheave means and said pulley means, said blade shaft being supported beneath said blades by a plurality of circularly spaced lower radial arms depending between said housing and said blade shaft, said blade shaft being supported above said blades by an upper radial arm depending between said housing and said blade shaft, said drive belt means being a V-belt, said sheave means having belt groove means thereabout with which said V-belt is engaged, said pulley means including a cylindrical outer surface against which said V-belt is drivingly engaged, said air impeller blades being affixed at their inner ends between spaced upper and lower circular plates rotatably supported at their centers by said blade shaft, said cylindrical outer surface of said pulley means comprising an upstanding cylindrical flange depending from the outer periphery of said upper circular plate and being unitary therewith, said motor support shaft being fixed to said housing at its lower end and being fixed to said upper radial arm at its upper end.

4,242,056
ENCAPSULATED REFRIGERATOR
Jan Dyhr, Sonderborg, and Ole J. Nissen, Augustenborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Division of Ser. No. 849,308, Nov. 7, 1977, Pat. No. 4,160,625.
This application Mar. 22, 1979, Ser. No. 22,985
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1976, 2650937
Int. Cl.[3] F04B *17/00, 35/00;* **F16L** *39/04*
U.S. Cl. 417—363 **6 Claims**





1. An encapsulated refrigerator assembly, comprising, a capsule, an integrated motor and compressor unit resiliently mounted in said capsule with said motor unit having a generally vertically extending axis, a compressor inlet port, an inlet port in said capsule in circumferential alignment with said compressor port but axially and radially offset therefrom relative to said motor axis, pipe fittings for said ports having their free ends in axially offset relation to each other, a connecting pipe between said fittings, upper and lower articulated joint means between said pipe and said fittings, one of said articulated joint means having engaging journal and bearing sections with each said journal section having a hole which provides fluid communication between the interiors of said journal and bearing sections, the other of said articulated joint means forming a telescopic joint to allow telescopic action to compensate for axial variations in the spacings of said fittings and to allow relative axial vibrational movement between said compression unit and said capsule.

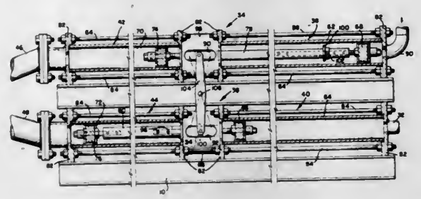
4,242,057
TANDEM LONG STROKE RECIPROCATING MUD PUMP ASSEMBLY

Emil A. Bender, 6625 Kane Way, Bakersfield, Calif. 93309

Continuation-in-part of Ser. No. 12,729, Feb. 16, 1979, abandoned. This application Sep. 24, 1979, Ser. No. 78,185

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—404 **13 Claims**



1. A tandem reciprocating piston pump assembly having at least a pair of motor-pump combinations, each of said motors comprising a first cylinder, a first source of fluid under pressure, a first piston reciprocable in said cylinder, and means for introducing said first fluid to one side only of said first piston; each of said pair of driven pumps comprising a second cylinder, a second piston reciprocable in said second cylinder, a second source of fluid under pressure, and means for introducing said second fluid to one side only of said second piston; said assembly further comprising a pair of piston rods, arranged common to and interconnecting the pistons of each motor-pump combination, trip means on said piston rods, and control means actuated by said trip means for alternately introducing said first fluid under pressure to said motors, said first and second means for introducing said first and second fluids to one side of said first and second cylinders, respectively, comprising first and second conduiting connected to said motor and pump cylinders, respectively, on ends thereof opposite the mounting of the respective pistons on their common piston rods, said two motor-pump combinations being arranged essentially parallel one another and for opposed pumping action in that one motor-pump assembly is in a pumping mode while the other is in a charging mode, with said second fluid entering the second cylinder thereof, said trip means comprising a pair of collars, one to each piston, and shifting lever means connected to said control means and alternately shifted by said collars to thus reverse said introduction of said fluid to said motors.

4,242,058
DOSAGE PUMP

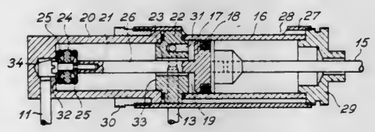
Miloslav Zakora, Hillerod, Denmark, assignor to A/S N. Foss Electric, Hillerød, Denmark

Filed Mar. 23, 1979, Ser. No. 23,289

Claims priority, application Denmark, Mar. 28, 1978, 1363/78

Int. Cl.³ F04B *23/00*

U.S. Cl. 414—437 **4 Claims**



1. A dosage pump comprising:

a housing including a cylinder,

said housing containing a valve chamber communicating with said cylinder and having spaced first and second valve seats defining valve openings;

a piston sealingly engaging with the inner surface of the cylinder and movable between a first position in which the piston defines a first volume in said housing, and a second position in which the piston defines a second greater volume in the housing;

a valve member connected to said piston and arranged within said valve chamber so as to engage with said first and second valve seats in the first and second positions of the piston, respectively;

inlet and outlet passages communicating through said valve chamber and valve openings with said first and second volumes in the housing;

means arranged on said piston and adapted to interrupt in at least one of said first and second positions of the said piston, the communication established between said inlet and outlet passages by said first and second volumes, said means on said piston including a valve member for sealingly engaging with said valve seat in said first position of the piston.

4,242,059
FUEL PUMPING APPARATUS

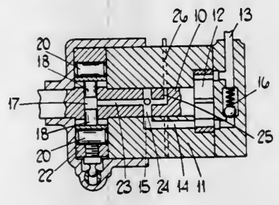
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 787,352, Apr. 14, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,168

Claims priority, application United Kingdom, Apr. 20, 1976, 15898/76

Int. Cl.³ F04B *19/22;* **F09B** *29/00*

U.S. Cl. 417—462 **1 Claim**



1. A fuel pumping apparatus for supplying fuel to a compression ignition engine and of the kind comprising a housing, a rotary distributor member located within the housing, a transverse bore formed in the distributor member, a pair of plungers in the bore, a cam ring surrounding the distributor member, a plurality of pairs of diametrically disposed cam lobes formed on the internal periphery of the cam ring for imparting inward movement to the plungers as the distributor member rotates, inlet port means in the distributor member and housing and through which fuel can be supplied to the pump chamber defined by the plungers and the bore, stop means to limit the outward movement of the plungers as fuel is supplied to the pump chamber, outlet port means in the distributor member and housing and through which fuel displaced from the pump chamber flows during inward movement of the plungers, said outlet port means including an outlet which in use, is connected to a fuel injection nozzle of the associated engine, and a further pair of diametrically opposed bores formed in the distributor member and communicating with said pumping chamber, said further bores and said bore being disposed in the same radial plane, a further pair of plungers housed in the further bores respectively, said further pair of plungers and said bores being of smaller diameter than the first mentioned pair of plungers and said bore, said further pair of plungers being positioned so that during rotation of the distributor member they will be moved inwardly by a pair of said cam lobes slightly before the first mentioned pair of plungers, the inward movement of the further pair of plungers and said first mentioned pair of plungers taking place during the time when fuel can flow through said outlet port means.

4,242,060
FOOT PUMPS

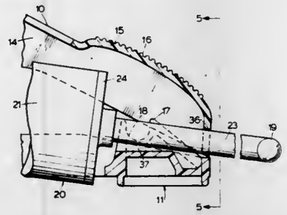
Ernest J. Price, Solihull, England, assignor to E. J. Price (Developments) Limited, Birmingham, United Kingdom

Filed May 12, 1978, Ser. No. 905,559

Claims priority, application United Kingdom, May 13, 1977, 20096/77

Int. Cl.³ F04B *19/02*

U.S. Cl. 417—464 **5 Claims**



1. In a foot pump of the kind comprising a base member, an operating member pivotally connected to the base member and while in use can be depressed by the user's foot from a raised position, a piston-and-cylinder assembly connected between the operating member and the base member and operative to compress or expel air when the operating member is depressed, and return spring means incorporated in the piston-and-cylinder assembly and operative in normal use to be loaded by depression of the operating member from its raised position and to urge the operating member towards its raised position, the invention comprising a first connection pivotally connecting said cylinder to the operating member and a second releasable connection pivotally connecting said piston rod to the base member, the arrangement being such that when said second connection is released from the base member the operating member can be depressed from its raised position to enable the pump to assume a storage position without causing the loading of the return spring means that occurs in normal use, catch means carried by one of said members and being so disposed as to detachably engage the piston rod automatically when the pump is moved to its storage position to retain said rod in said storage position, said catch means being also disposed on said one member that it is unable to engage the piston rod when the piston-and-cylinder assembly is connected to the base member by said second releasable connecting means.

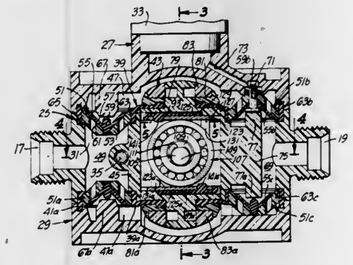
4,242,061
DOUBLE DIAPHRAGM PUMP

E. Dale Hartley, 2700 Jalmia Dr., Los Angeles, Calif. 90046

Filed Sep. 28, 1978, Ser. No. 946,770

Int. Cl.³ F04B *23/06, 39/00;* **F16H** *21/14*

U.S. Cl. 417—536 **19 Claims**



1. An apparatus comprising:

a reciprocable member having first and second spaced apart drive surfaces;

means for mounting said reciprocable member for reciprocating movement along a path;

a rotatable drive member for driving said reciprocable member in both directions along said path;

means for mounting said drive member for rotation about a rotational axis;

said drive member having a peripheral surface between said first and second drive surfaces, said peripheral surface extending circumferentially of said rotational axis;

first and second wear members between said peripheral surface and said first and second drive surfaces, respectively, each of said wear members being engageable with said peripheral surface;

first means for mounting the first wear member on said reciprocable member for at least limited movement toward and away from the rotational axis;

second means for mounting the second wear member on the reciprocable member for at least limited movement toward and away from the rotational axis;

first support means between said first drive surface and said first wear member to at least partially support the first wear member; and

second support means between said second drive surface and said second wear member to at least partially support the second wear member whereby rotation of said drive member causes the peripheral surface to bear against the first wear member to drive the reciprocable member in a first direction along the path and to bear against the second wear member to drive the reciprocable member in a second direction along the path.

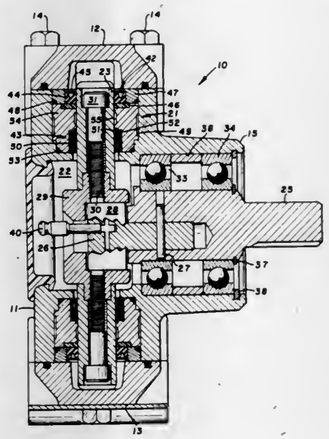
4,242,062
DUAL PISTON PUMP WITH PRESSURE SEAL LUBRICATION FEATURE

Ramon Pareja, Edina, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 6, 1979, Ser. No. 64,129

Int. Cl.³ F04B *1/02, 21/00*

U.S. Cl. 417—536 **2 Claims**



1. A piston-type pump comprising:

(a) a housing defining a closed loop and having an endless passageway formed therein, said closed loop surrounding an inner crankcase, an inlet communicating with said endless passageway, an outlet spaced from said inlet and also communicating with said endless passageway, a pair of open-end cylinders lying mutually in spaced relation between said inlet and said outlet, each communicating with said endless passageway and with said inner crankcase, said cylinders being substantially diametrically opposed, cylindrical sleeve means having an inner end and

an outer end and disposed in each of said cylinders and a plunger reciprocably positioned in each of said sleeves;

(b) a drive shaft journaled for rotation within said housing, an eccentric crank portion along said drive shaft, self-aligning drive bearing means on said crank portion, connecting rods coupling said eccentric crank portion to each of said plungers;

(c) each said cylindrical sleeve means having a pressure seal assembly adjacent said outer end thereof and a vacuum seal assembly adjacent said inner end thereof and an annular groove formed along the periphery of said cylindrical sleeve generally mid-way between said seal assemblies and a bore formed through the wall of said cylindrical sleeve coupling said annular groove to the inlet chamber of said pump body;

(d) each said pressure seal assembly comprising a generally "U"-shaped cup held bewteen inner and outer annular retaining discs wherein the inner peripheral edge surface of said inner retaining disc is disposed in running contact with said plunger surface, and wherein said inner annular disc consists of polytetrafluoroethylene;

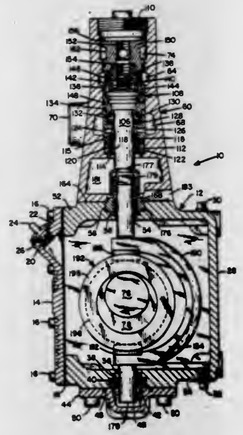
(e) each said vacuum seal assembly comprising an inner guide sleeve adjacent the inner end of said cylindrical sleeve means, and an adjacent vacuum sleeve of polytetrafluoroethylene disposed outwardly of said inner guide sleeve and resilient means biasing said vacuum sleeve against the outer surface of said plunger.

4,242,063

HIGH PRESSURE MULTI-CYLINDER PUMP

Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Division of Ser. No. 856,341, Dec. 1, 1977, Pat. No. 4,184,817.
This application Jun. 13, 1979, Ser. No. 48,021
Int. Cl.³ F04B *21/02, 39/10*
U.S. Cl. 417—571 **4 Claims**



1. In a fluid pumping apparatus of the type including a camshaft journaled for rotation in an oil containing crankcase, a head block having at least one piston chamber formed therein affixed to said crankcase, a piston member disposed in said piston chamber, means coupling said camshaft to said piston for imparting reciprocating motion thereto, and a unitary inlet/outlet valve disposed in said piston chamber between a low pressure fluid inlet port and a high pressure fluid outlet port, the improvement comprising:

(a) first sealing means disposed in said head block adjacent to said unitary inlet/outlet valve and concentrically surrounding a first portion of said piston during its entire travel, said first sealing means including;

(1) a first cylindrical collar member abutting said unitary inlet/outlet valve having an axial bore therethrough of a diameter greater than the diameter of said first portion of said pistons; a counterbore of a diameter greater than said axial bore formed in one end thereof extending inwardly a predetermined distance and a cylindrical flange integrally formed at the other end thereof having a diameter greater than that of said counterbore to thereby form a shoulder;

(2) a second cylindrical collar member having an axial bore therethrough of a diameter to provide a sliding fit with respect to said first portion of said piston, a counterbore formed in one end thereof and extending inwardly for a distance greater than the length of said first cylindrical collar member and of a diameter slightly greater than the diameter of said first cylindrical collar member such that said first collar member will fit within said counterbore formed in said one end of said second collar member with said one end of said second collar member abutting said shoulder, a first counterbore formed in the other end of said second cylindrical collar and extending inwardly for a predetermined distance and of a diameter greater than that of said axial bore and a second counterbore formed in said other end of said second cylindrical collar and extending inwardly for a distance less than said predetermined distance of said first counterbore formed in said other end of said second cylindrical collar;

(3) a first flexible cylindrical, U-cup seal member disposed in said counterbore of said first cylindrical collar;

(4) a first U-cup seal support ring disposed in said first counterbore formed in said one end of said second cylindrical collar and abutting said first U-cup seal member;

(5) a second flexible, cylindrical U-cup seal member disposed in said first counterbore formed in said other end of said second cylindrical collar; and

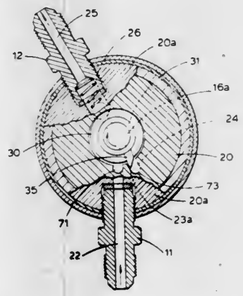
(6) a second U-cup seal support ring disposed in said second counterbore formed in said other end of said second cylindrical collar member and abutting said second U-cup seal member.

4,242,064

ROTARY FLUID PUMP WITH ECCENTRICALLY MOVING PUMPING SLEEVE

Philip B. Uncles, Bradford-on-Avon, England, assignor to Moulton Developments Limited, Bradford-on-Avon, England

Filed Jan. 26, 1979, Ser. No. 6,771
Claims priority, application United Kingdom, Jan. 26, 1978, 03203/78
Int. Cl.³ F04C *2/00*
U.S. Cl. 418—66 **7 Claims**



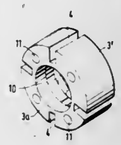
1. A rotary hydraulic pump for delivering small volumes of liquid at a high pressure comprising: a housing defining a generally cylindrical pump chamber between axial end walls, said chamber being bounded radially by a cylindrical wall, two closely adjacent longitudinal recesses defined in said wall constituting inlet and outlet ducts of the chamber, a shaft passing axially through said end walls, offset means on the part of the shaft which is located within the chamber defining a crank, said outlet duct having planar parallel walls and an arcuate base tangentially joined to said planar walls, said inlet duct having an arcuate wall, said outlet duct arcuate base being essentially equal in size to said inlet duct so that said outlet duct is larger than said inlet duct, a cylindrical pumping sleeve surrounding the crank, means slidably connecting said sleeve to said crank so that said sleeve rotates with said crank but can slide therearound, said crank being mounted off the longitudinal centerline of said chamber so that said sleeve moves eccentrically within the chamber as said crank rotates so that the external cylindrical surface of the pumping sleeve cooperates with the cylindrical surface of the radial wall of the chamber to define a crescent-shaped clearance between said surfaces which rotates around the chamber as said crank rotates so that liquid introduced through the inlet duct into said chamber is impelled around said chamber towards the outlet duct, a tooth for preventing said sleeve from rotating as said sleeve moves eccentrically within said chamber, said tooth being connected at one end thereof to said sleeve and extending radially outward therefrom, said tooth extending into said outlet duct and having a planar wall making line contact with one of said outlet duct planar walls to inhibit rotation of said sleeve, said tooth bring sized to essentially completely close said outlet duct when said crank rotates said tooth into said outlet duct, said tooth having a planar top which is slanted toward said crank and away from said inlet duct to force fluid out of said outlet duct.

4,242,065

SLIDING VANE COMPRESSOR WITH END FACE INSERTS OR ROTOR

Yutaka Ishizuka, Higashimatsuyama, and Shinichi Kobayashi, Kawagoe, both of Japan, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 961,147
Claims priority, application Japan, Nov. 19, 1977, 52/155917[U]
Int. Cl.³ F04C *29/00, 29/02*
U.S. Cl. 418—91 **10 Claims**





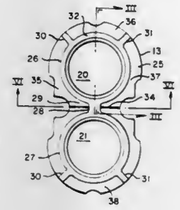
1. In a sliding vane compressor of the type having a housing and a rotor journalled for rotation in a chamber of the housing so that the axial endfaces of the rotor are juxtaposed with slight clearance relative to the cooperating housing surfaces, a combination comprising means bounding a plurality of recess in each axial end face of the rotor; and an insert received in each of said recesses and being of a material having a relatively low coefficient of friction and having a coefficient of thermal expansion which is higher than that of the material of the rotor so that, upon reaching a predetermined temperature, said inserts expand and extend across the respective clearance into contact with said housing surfaces to prevent direct contact between the same and said axial endfaces of the rotor, said inserts having outer faces exposed at said axial end faces and being flush with the same at temperatures below said predetermined temperature.

4,242,066

ROTARY PUMPS AND MOTORS AND THRUST PLATES THEREFOR

Robert F. Hodgson, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Aug. 24, 1978, Ser. No. 936,205
Int. Cl.³ F04C *2/18*
U.S. Cl. 418—132 **22 Claims**



9. A pressure plate for corresponding ends of a pair of cooperating gears in a rotary gear pump or motor comprising a metal body in the general form of a pair of joined rings arranged as a figure 8, having a front face adapted to abut the gear ends and a rear face spaced from and generally parallel to the front face, a pair of openings through the rings to receive gear shafts, a pair of at least half annular grooves in the rear face spaced from and surrounding each of said openings at least on one side, a groove in the rear face connecting said annular grooves at their closest points, at lease one groove in the rear face extending radially from each at least half annular groove to the periphery of the body generally opposite the groove connecting the annular grooves defining at least two substantially identical areas on opposite sides of the body, a generally U-shaped elastomer gasket having the contour of the combined grooves on the rear face of the body and fitting into said grooves with the opening of the U-shaped gasket opening downwardly in the groove and, resilient means acting on said gasket normally to urge it partially out of said grooves into sealing contact with the case and fluid delivery means extending across said plate transversly to said groove connecting said annular grooves and intersecting the same whereby high pressure fluid passes along said fluid delivery means to said groove intermediate the top and bottom of the U-shaped gasket, down between the U-shaped gasket and groove and through beneath said gasket into the interior thereof the pressurize the gasket to the maximum pressure of the pump and said gasket acts as a check valve between the groove and fluid delivery means.

4,242,067

HYDRAULIC SCREW MACHINE WITH BALANCE PLUNGER

Lars H. Segerström, Skärholmen, Sweden, assignor to Imo-Industri Aktiebolag, Stockholm, Sweden

Filed Sep. 12, 1978, Ser. No. 941,645
Claims priority, application Sweden, Sep. 15, 1977, 7710357
Int. Cl.³ F03C *2/08;* **F04C** *2/16, 15/00*
U.S. Cl. 418—203 **4 Claims**

1. A hydraulic screw machine comprising:

a housing having a fluid inlet adjacent one end thereof and a fluid outlet adjacent the opposite end thereof;

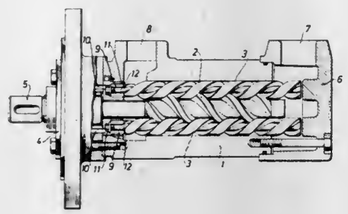
a driving screw disposed within said housing between said inlet end and said outlet end and journalled for rotation at one end of said housing;

at least one impeller screw intermeshing with said driving screw within said housing and journalled for rotation at the same end of said housing as said driving screw is journalled; and

a balance plunger on the journalled end of said impeller screw for balancing the axial pressure forces acting on said impeller screw, the diameter of said balance plunger being greater than the root diameter of said impeller screw,

the thread of said impeller screw extending with full depth

all the way to said balance plunger, and the length of said plunger being less than the axial width of the thread groove in said driving screw so that said plunger can pass



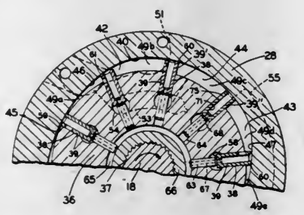
through said thread groove when said impeller screw is inserted into said housing from the end opposite the end at which said screws are journalled during assembly of the machine.

4,242,068

VANE PUMP WITH BYPASS FOR LEAKAGE OF FLUID WHEN BOTTOM OF VANE IS CONNECTED TO UNDERVANE SUCTION PORT

Edwin L. Shaw, Delaware, Ohio, assignor to Abex Corporation, New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,631
Int. Cl.³ F04C *2/356*
U.S. Cl. 418—269 **2 Claims**



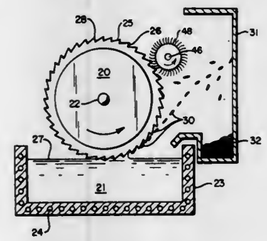
1. In a vane pump having: a rotor member; a stator member; a cam surface on one of the members; a plurality of vane slots formed in the other member; a vane in each slot for movement relative thereto and having a leading face, a trailing face, an inner end, an outer end, a first sealing lip on said outer end adjacent the leading face, a second sealing lip on said outer end adjacent the trailing face; a first bore connecting said inner end and said outer end, said bore having a fluid restrictor therein which causes a pressure drop when fluid flows through the restrictor as the vane moves inwardly of the slot; said rotor and stator members cooperating with a pair of port plates to provide a suction ramp, a transfer zone, a pressure ramp and sealing zone; said vanes sequentially traversing said suction ramp, transfer zone, pressure ramp and sealing zone; a main suction port and a pressure port in said port plates; an undervane suction port communicating with the main suction port for admitting fluid to the vane slots below the inner ends of the vanes therein; said undervane suction port extending beyond said suction ramp in the direction of rotor rotation to an angular position at which a vane whose slot is in communication with said undervane suction port is part way across said transfer zone; the improvement comprising a fluid passage in said vane which connects said first bore with the trailing face upstream of said restrictor to provide an unrestricted path for high pressure fluid from the pressure port which leaks across the first sealing lip when said vane leading face is exposed to high pressure fluid as it traverses said pressure ramp during the time the inner end of said vane is connected to said undervane port and thus prevents the leakage fluid from flowing through the restrictor in the first bore and creating a pressure differential across said restrictor and between said inner and outer ends of said vane.

4,242,069

APPARATUS FOR PRODUCING FLAKE

Robert E. Maringer, Worthington, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Division of Ser. No. 826,798, Aug. 22, 1977, Pat. No. 4,154,284. This application Jan. 24, 1979, Ser. No. 6,017
Int. Cl.³ B01J *2/02*
U.S. Cl. 425—8 **6 Claims**



1. An apparatus for the production of flake particles from the surface of molten material which is at a temperature within 25% of its equilibrium melting point in degrees K, said molten material having a viscosity of 0.001 to 1 poise and a surface tension of 10 to 2,500 degrees per centimeter at said temperature, which apparatus comprises:

(a) means for supporting said molten material surface;

(b) a heat extracting disk member having an angularly tapered edge with a plurality of serrations on said tapered edge:

(c) means for rotating said disk member about its axis of rotation;

(d) means for raising and lowering said disk member relative to said molten material; and

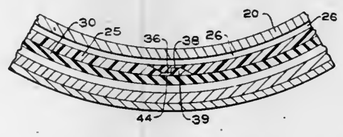
(e) a first edge face on each serration leading in said rotation and angled for contact against the surface of said material, a second edge face on each serration trailing in said rotation and extended between the first edge face of one serration and the first edge face of an adjacent serration, angle for avoiding contact against the surface of said material.

4,242,070

SHAPE OF CUT FOR SEMICURE BUTYL RUBBER BAG

Richard F. Garver, and Srbo M. Stevanovich, both of Akron, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 28, 1980, Ser. No. 125,422
Int. Cl.³ B29C *1/00*; B29D *29/00*
U.S. Cl. 425—28 B **6 Claims**



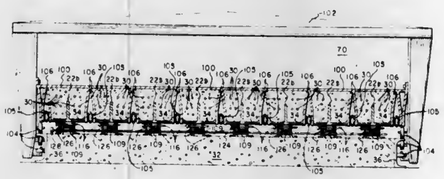
1. A cylindrical expandable vulcanized sleeve for use as a bladder in a curing process having a pair of annular end portions and a circumferentially extending cylindrical expandable body between said end portions, said expandable body having an outer surface and an inner surface with a medium circumferentially extending centerline therebetween, a longitudinally extending splice extending lengthwise from one end portion to the other end portion of said cylindrical body, said splice having a pair of spaced inclined surfaces interconnected by a recessed shoulder.

4,242,071

CONCRETE RAILROAD TIE CASTING AND HANDLING SYSTEM

Frederick M. Stinton, Woodbridge, Canada, assignor to Martin Concrete Engineering Company, Fort Worth, Tex.

Division of Ser. No. 928,697, Jul. 27, 1978. This application Aug. 14, 1978, Ser. No. 933,283
Int. Cl.³ B28B *23/06*
U.S. Cl. 425—111 **6 Claims**



1. A system for slip-forming concrete cross ties, comprising:

an elongated casting bed,

a plurality of casting frames arranged side by side and end to end on the casting bed each casting frame supporting a casting plate above the casting bed,

a continuous casting machine movable along the bed while the casting plates remain stationary, the machine having means for forming a casting chamber above each casting plate, each casting plate having upper surfaces of a variable height above the casting bed in the direction of movement of the casting machine, the upper surface conforming to the shape of a top surface of a cross tie formed in inverted orientation thereon, each casting plate having outer edges each of which is disposed in a generally vertical plane along the entire length of the casting plate, said means making a fluid seal at points of sliding engagement with each casting plate as the machine moves along the bed,

said means comprising a horizontal pressure plate attached to the casting machine rearward of a source of fluidized concrete, and downwardly extending legs affixed to the pressure plate, each leg having an upper sloping portion and a lower generally vertical portion, the lower vertical portions slidably and sealably engaging corresponding outer edges of the variable height surfaces of the casting plates.

3. A machine for slip-forming concrete products of irregular geometry, the concrete products being formed on casting plates arranged side by side and end to end on a generally horizontal casting bed, each vertical edge lying in a vertical plane along the entire length of its respective casting plate, the machine comprising:

a generally horizontal pressure plate held at a predetermined height above the casting bed,

a plurality of legs extending downward from the pressure plate to form a casting chamber above each casting plate, the legs having lower generally vertical portions of sufficient dimension to slidably and sealably engage the generally vertical edges as they rise and fall in relation to the machine as it moves down the length of the bed, and

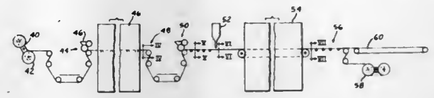
means for resiliently urging the legs against the respective vertical edges of the casting plates.

4,242,072

APPARATUS FOR MANUFACTURING PAD MEMBERS

James H. Enicks, Box 247, Meadownbrook La., Blawenburg, N.J. 08504

Division of Ser. No. 813,447, Jul. 7, 1977, Pat. No. 4,173,814. This application Jun. 28, 1979, Ser. No. 53,289
Int. Cl.³ B29D *27/04*
U.S. Cl. 425—130 **15 Claims**



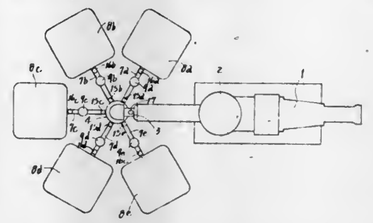
1. An apparatus for use in making an elastomeric material having at least a portion of the thickness thereof foamed and another portion of the thickness unfoamed and comprising: an elongated support web adapted for continuous longitudinal movement, a first station operable for depositing a layer of heat fusable elastomeric material free of blowing agent on said support web, a second station for heating said first layer, a third station operable for depositing a second layer of the same elastomeric material in flowable form but containing a blowing agent on said first layer, a fourth station operable for depositing a ribbon of fusable plastic material on said second layer in at least one selected lateral region thereof, a fifth station for heating the superposed layers and the said ribbon to fuse and bond said layers and ribbon, and means downstream from said fifth station for separating the fused material from said support web.

4,242,073

INJECTION MOLDING APPARATUS AND MOLDING METHOD WITH USE OF THE APPARATUS

Shiro Tsuchiya; Itsuo Imakita, and Toshiaki Okumura, all of Kawaramachi, Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Filed May 4, 1978, Ser. No. 902,847
Claims priority, application Japan, May 13, 1977, 52/55659
Int. Cl.³ B29F *1/06*
U.S. Cl. 425—149 **9 Claims**



1. An injection molding apparatus comprising a resin plasticizing machine having an outlet nozzle, a branch portion connected to the outlet nozzle and having a plurality of outlet ports adapted to communicate with the outlet nozzle, a plurality of molds arranged around the branch portion, an extension nozzle for maintaining each of the outlet ports in communication with each of the molds, means for closing the extension nozzle, and means for injecting the plasticizing resin to the mold, characterized in that (a) there is a resin plasticizing injection machine having an injection nozzle connected to the branch portion, (b) the injection nozzle is provided with a main shutoff valve at its forward end, (c) the extension nozzle is provided with a second shutoff valve at its foward end, (d) pressure control means is provided on the extension nozzle at a position between the closing means and the second shutoff valve, and (e) said closing means is located between said main shutoff valve and said pressure control means.

4,242,074

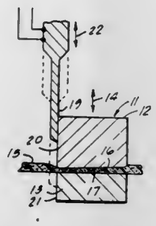
APPARATUS FOR HEAT-TRIMMING FOAM MATERIAL

Connie Lake, Tinley Park, Ill., assignor to Creative Industries, Inc., Bridgeview, Ill.

Continuation of Ser. No. 595,530, Jul. 14, 1975, abandoned. This application Dec. 6, 1976, Ser. No. 747,953

Int. Cl.³ B29C *17/00, 17/14*

U.S. Cl. 425—292 **7 Claims**



1. An apparatus for heat-trimming thermoplastic foam materials by melting the portion of the thermoplastic foam to be trimmed comprising,

two opposed non-heated, heat conducting metallic die parts made from a metal of high heat-conductivity and forming a trim guide for the foam material, and limiting the trimming action by absorbing the heat of melting of the foam material along the aligned edges of said die parts, as trimmed, and means carrying said absorbed heat away from said die parts,

pressure means moving at least one die part relative to the other to open said die parts and receive the foam material to be trimmed therebetween, and operable to exert sufficient pressure on the foam material to compress the foam material along the edge to be trimmed,

a source of heat at a temperature at least high enough to melt or vaporize at least a portion of the exposed foam material, and trim the exposed material along the die parts by melting at least a portion of the material up to the edges of the die parts,

means applying the source of heat along the exposed edge of the foam material to melt or vaporize the edge of the foam material along the two die parts, said die parts having sufficient heat-conductivity to stop melting of the exposed material by absorbing the heat of melting of the foam material as pressurizing the foam material and provide a clean edge of the trimmed material without flash.

4,242,075

EXTRUSION DIES FOR EXTRUDING HONEYCOMB STRUCTURAL BODIES

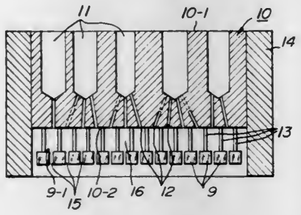
Noboru Higuchi, Nagoya, and Shoji Futamura, Kawasaki, both of Japan, assignors to NGK Insulators, Ltd. and Institute of Technology Precision Electrical Discharge Works, both of, Japan

Filed Apr. 26, 1978, Ser. No. 900,168

Claims priority, application Japan, May 4, 1977, 52/51791

Int. Cl.³ A01J *21/00*

U.S. Cl. 425—462 **3 Claims**



1. In extrusion dies for extruding honeycomb structural bodies which comprise a plurality of cell blocks having a cross sectional shape conforming to cells of the honeycomb structural body, a spoke supporter, and spokes, one end of each of said spokes being fixed to a respective cell block and the other end thereof being integrally secured to the spoke supporter, said cell blocks forming discharge slits conforming to the cross sectional shape of the honeycomb structural body, the improvement comprising, said spoke supporter is provided with a plurality of feed inlets extending from one end surface of the spoke supporter toward the spokes, each inlet having a terminus within said spoke supporter, a plurality of channels having a smaller diameter than said inlets extending from each said terminus to the end surface of the spoke supporter to which the spokes are secured.

4,242,076

PROCESS OF COMBUSTION

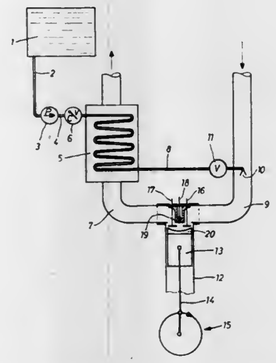
Ernst Rawyler-Ehrat, Kometsträsschen 40, Schaffhausen, Switzerland

Filed Dec. 28, 1978, Ser. No. 973,842

Claims priority, application Switzerland, Jan. 3, 1978, 45784/78

Int. Cl.³ F23J *7/00*

U.S. Cl. 431—4 **8 Claims**



1. An improved combustion process comprising the steps of:

(a) introducing a catalyst for promoting dissociation of water vapor into H_2 and O_2 into a combustion chamber;

(b) adding water vapor to a fresh air and hydrocarbon mixture;

(c) directing the fresh air and hydrocarbon mixture having water vapor added thereto into the combustion chamber having the catalyst for promoting dissociation of water vapor into H_2 and O_2 so that the catalyst will convert water vapor into H_2 and O_2; and

(d) burning the fresh air and hydrocarbon mixture in the enriched atmosphere of H_2 and O_2.

4,242,077

FLUID BED FURNACE AND FUEL SUPPLY SYSTEM FOR USE THEREIN

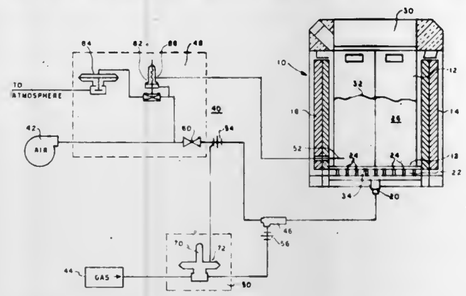
Charles E. Hyre, Chesterton, Ind., assignor to Fennell Corporation, Harvey, Ill.

Filed Nov. 6, 1978, Ser. No. 958,138

Int. Cl.³ F23D *19/02;* **F23Q** *3/00*

U.S. Cl. 431—19 **12 Claims**

1. A fuel supply system for use in a fluid bed furnace or the like of the type including a fluid bed containing a quantity of inert, particulate material which fluidizes in response to sufficient gas flow therethrough and a burner for burning a supplied fuel and providing the fluid bed with a gas mixture flow at an elevated temperature for heating and fluidizing the fluid bed, said fuel supply system comprising: a source of air; a source of gas fuel; mixing means coupled to the furnace burner for mixing the air and gas fuel together for providing the burner with a fuel mixture; flow rate control means for providing said air and gas fuel to said mixing means in desired proportions; and fluid bed level detecting means for sensing the level of the inert fluidizable material within the fluid bed and coupled to said flow rate control means for varying the flow rates of the gas fuel and air provided to said mixing means in relation to the level of the fluidizable material within the fluid bed.



4,242,078

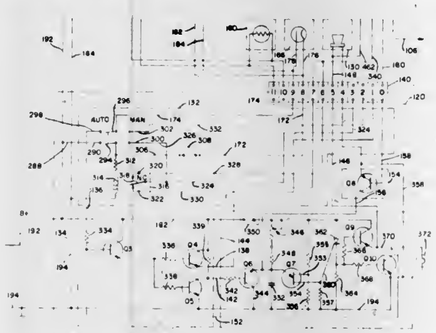
CENTRALIZED AUTOMATIC PILOT/PILOTLESS IGNITION CONTROL SYSTEM

Hollis E. Nelson, 138 Kilmer Ave., Campbell, Calif. 95008, and Donald G. Seely, 416 Tryon St., Burlington, N.C. 27215

Continuation-in-part of Ser. No. 693,375, Jun. 7, 1976, abandoned. This application Feb. 17, 1978, Ser. No. 878,785

Int. Cl.³ F23Q *9/08, 7/12;* **H02J** *7/00*

U.S. Cl. 431—45 **23 Claims**



1. A centralized automatic pilot/pilotless ignition control system for controlling a combustible fuel burning appliance from a location remote from said appliance, said appliance being equipped with a main fuel supply valve connected to a source of fuel, a main burner connected through said main fuel supply valve to said source of fuel, a pilot burner for said main burner, said pilot burner being connected through a pilot valve to said source of fuel, and an electrically energized fuel igniter operatively associated with said pilot burner, said control system comprising:

temperature sensing means for regulating the operation of said appliance, said temperature sensing means being operative to call for an ignition and maintenance of a flame at said main burner;

first circuit means remote from said appliance and responsive to said temperature sensing means to activate said pilot valve to permit a flow of fuel to said pilot burner;

second circuit means remote from said appliance and responsive to said temperature sensing means to start an automatic ignition cycle for producing a flame at said pilot burner, said second circuit means including means to activate said electrically energized fuel igniter;

alarm timing means remote from said appliance and responsive to the start of said ignition cycle to produce an alarm if no pilot flame occurs within a predetermined time;

pilot generator means responsive to a pilot flame to reset said alarm timing means;

third circuit means remote from said appliance and responsive to said pilot generator to open said main fuel supply burner upon occurrence of a pilot flame, whereby a main burner flame is produced;

manual control circuit means operable when said first and second circuit means are disabled to permit manual operation of said pilot valve and said electrically energized igniter; and

switch means for enabling said manual control circuit means and disabling said first and second circuit means.

4,242,079

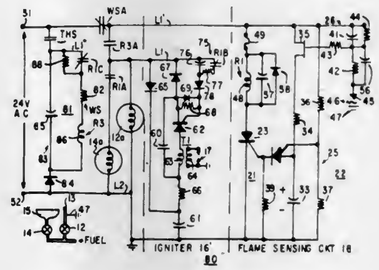
FUEL IGNITION CONTROL SYSTEM

Russell B. Matthews, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Division of Ser. No. 790,408, Apr. 25, 1977, Pat. No. 4,178,149. This application Dec. 7, 1978, Ser. No. 967,261

Int. Cl.³ F23Q *9/14*

U.S. Cl. 431—46 **12 Claims**



1. In a fuel ignition control system including valve means operable to supply fuel to a burner for ignition to establish a flame, a control arrangement comprising activate means including first switching means operable when enabled to prepare an energizing path for said valve means, and circuit means including energy storage means for causing current to flow over a circuit path including said first switching means and first normally closed contacts, for enabling said first switching means, and flame sensing means including second switching means operable to open said first contacts and to close second contacts to complete said energizing path to energize said valve means, said activate means further including resistance means connected in parallel with said first contacts to provide a holding path for said first switching means when said second switching means operates to open said first contacts.

4,242,080

SAFETY DEVICE FOR GAS BURNERS

Tohru Tabei, Zama, Japan, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 11, 1978, Ser. No. 932,827

Int. Cl.³ F23Q *9/08*

U.S. Cl. 431—54 **5 Claims**

1. A safety device adapted for use with a gas combustion apparatus having a pilot which is proven by a thermocouple, comprising,

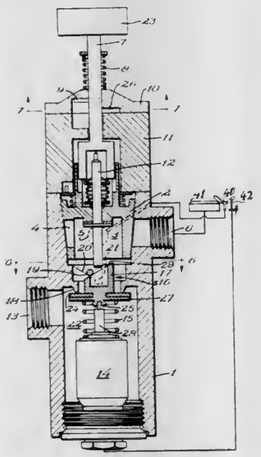
a valve body having an inlet opening adapted to be connected to a source of gas under pressure, outlet opening adapted to be connected to a main burner of the combus-

tion apparatus, and a second outlet opening adapted to be connected to a pilot,

safety valve means connected between said inlet opening and said outlet openings to shut off gas flow when in an inoperative position and held in an operative position by an electromagnetic device energized by a pilot heated thermocouple,

main valve means connected in series with said safety valve means,

manual means movable in an axial and rotative direction connected to said main valve means axially from said inoperative position to said operative position and for rotating said main valve means from an off to on position,



first means connected to said manual means for preventing said manual means from rotating said main valve means to said on position unless said manual means is in said operative position, and

first pin means dropping in a groove in line with said safety valve means in said body when said safety valve means is in said operative position for preventing axial movement of said manual means to said operative position and thus said manual means is not in a position for rotative movement of said main valve means from said off position to said on position.

4,242,081

OIL BURNER PRIMARY CONTROL FOR INTERRUPTED IGNITION SYSTEM

Donald E. Donnelly, Edwardsville, Ill., and William B. Feero, St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 5, 1979, Ser. No. 17,584
Int. Cl.³ F23N *5/08*
U.S. Cl. 431—71 **12 Claims**

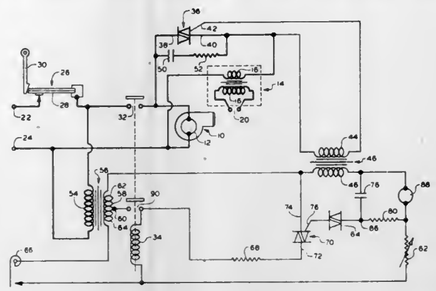
1. In a control system for enabling energizing of an electrically operable device under a first condition and deenergizing thereof under a second condition,

first circuit means including a triac for controlling energizing of said device by an alternating current power source;

second circuit means responsive to said first condition for generating a plurality of pulses at a frequency substantially greater than that of said alternating current power source and responsive to said second condition for preventing generating of said pulses; and

a coupling transformer having a primary winding in said second circuit means and a secondary winding in said first circuit means responsive to said pulses for controlling conduction of said triac,

at least one of said pulses occurring early in each half of the sine wave of an alternating current from said power



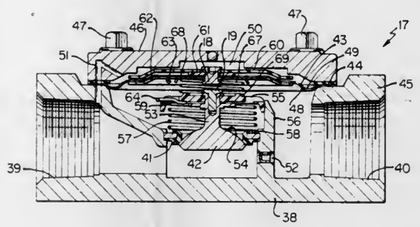
source appearing at said triac so that said triac is conductive during essentially all of said sine wave.

4,242,082

FLUID FLOW SENSING SWITCH DEVICE

Charles D. Branson, and Roy C. Demi, both of Greensburg, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 23, 1978, Ser. No. 936,112
Int. Cl.³ H01H *35/34, 35/40;* F23N *5/06*
U.S. Cl. 431—72 **26 Claims**



1. In a fluid flow sensing switch device having a housing means provided with a fluid flow passage therethrough defined by an inlet and an outlet separated by a valve seat controlled by a movable valve member that is operated by the pressure differential between said inlet and said outlet, said device having an electrical switch construction operatively associated with said valve member and having contact means thereof actuated by said pressure differential, the improvement wherein said contact means of said switch construction are disposed in said fluid flow passage so as to be exposed to fluid flow therethrough and have a part thereof carried by said valve member.

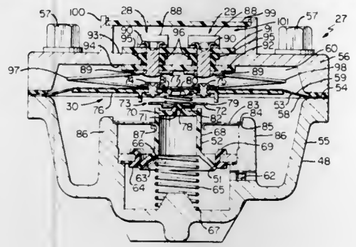
4,242,083

FLUID FLOW SENSING SWITCH DEVICE

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 23, 1978, Ser. No. 936,113
Int. Cl.³ H01H *35/34, 35/40;* F23N *5/06*
U.S. Cl. 431—72 **39 Claims**

1. In a fluid flow sensing switch device having a housing means provided with a fluid flow passage therethrough defined by an inlet and an outlet separated by a valve seat controlled by a movable valve member that is operated by the pressure differential between said inlet and said outlet acting on a flexible diaphragm carried by said housing means, said device having an electrical switch construction operatively associated with said valve member and having contact means thereof disposed in said fluid flow passage so as to be exposed to fluid flow therethrough and being actuated by said pressure differential acting on said flexible diaphragm, the improvement wherein said contact means comprises a pair of spaced apart contacts carried by said flexible diaphragm and a bridging



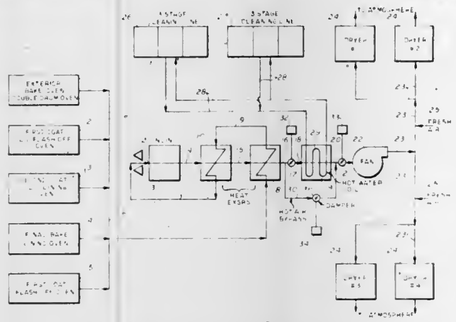
contact member carried by said valve member and being adapted to make contact with said pair of contacts and thereby bridge said pair of contacts to close said switch construction.

4,242,084

AIR POLLUTION CONTROL AND HEAT RECOVERY SYSTEM FOR INDUSTRIAL OVENS

Aziz A. Jamaluddin, 1912 Nursery Rd., Woodlands, Tex. 77380

Filed Jun. 15, 1979, Ser. No. 48,980
Int. Cl.³ F27D *17/00;* F26B *19/00*
U.S. Cl. 432—1 **9 Claims**



7. A method of operating a system of paint baking and coating ovens and air pollution control and heat recovery apparatus associated therewith comprising

collecting effluent gases containing combustible constituents at a concentration of about 25% LEL from a plurality of processing ovens,

preheating said collected gases to a predetermined elevated temperature,

burning said combustible constituents of said preheated gases in a fume incinerator having a plurality of flames,

conducting the combustion effluent from said incinerator in heat exchange with said collected gasses to preheat the same,

conducting said combustion effluent in heat exchange with circulating water to produce high pressure, high temperature water and circulating said heated water to storage,

circulating said combustion effluent from said water heat exchange by means of a high temperature insulated fan to a forced circulation hot air dryer, and

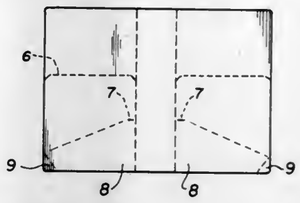
mixing said combustion effluent with fresh air prior to circulating the same into said dryer.

4,242,085

MULTI-PURPOSE ORTHODONTIC BRACKET

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Filed Nov. 13, 1978, Ser. No. 959,671
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—14 **64 Claims**



1. A multi-purpose orthodontic bracket comprising:

a rear portion adapted to be mounted to a surface of a tooth, a front portion, and an intermediate portion interconnecting said front and rear portions;

means forming first and second arch wire receiving openings in at least a surface of at least one of said front and rear portions, said first arch wire receiving opening being larger than the second arch wire receiving opening;

means defining an arch wire contact surface over a minor portion of the width of the bracket and in communication with said second arch wire receiving opening;

support means on at least one of said front and rear portions for at least partially defining said larger first arch wire receiving opening, said support means including at least a plurality of support areas distributed along at least a major portion of the width of the bracket for receiving an arch wire thereon; and

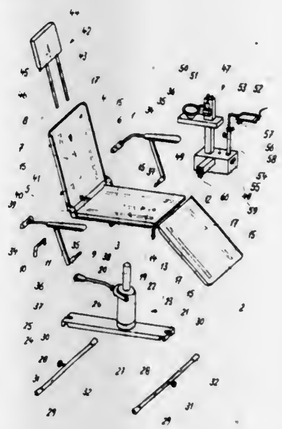
means defining a retaining pin receiving slot in said bracket extending substantially perpendicularly to the arch wire receiving openings.

4,242,086

TRANSPORTABLE TREATMENT RECLINER

Siegfried Jörg, Geishügel 9, 8631 Ahorn, Fed. Rep. of Germany

Filed Oct. 11, 1978, Ser. No. 950,602
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1977, 2747321
Int. Cl.³ A61G *15/00*
U.S. Cl. 433—33 **20 Claims**



1. A transportable treatment recliner continuously adjustable in height and from a seating to a lying position, and rotary

about a vertical axis, for medical, particularly dental or surgical care, comprising a recliner upper portion; a plurality of recliner attachment elements including arms and head rest and medical treatment equipment which are connected to the recliner by manually releasable clamp and plug connections which may be completely disassembled from said recliner manually and without tools, and accommodated in a transport container in a space-saving manner; releasable clamp and plug connections for fastening said attachment elements to said recliner upper portion; said recliner upper portion further comprising three hinged parts fixable at any angle relative to each other and capable of being folded into a flat package upon release of said clamp and plug connections, said three hinged parts comprising a foot part, a seating part hingedly connected to said foot part and a back part hingedly connected to said seating part; said recliner being accessible from all sides.

4,242,087

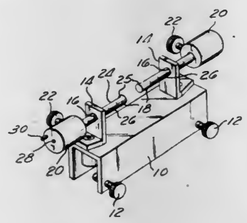
ARTICULATOR YOKE ASSEMBLY

Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324

Filed Nov. 30, 1978, Ser. No. 964,979

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—54 **14 Claims**



10. A mounting device for a dental articulator, comprising:

a yoke-like bracket adapted to be removeably mounted on the rear vertical portion of a lower frame of said articulator to assist in mounting dental casts to the articulator;

a pair of uprights attached to said bracket with axially aligned holes therein;

a pair of hinge axis extension pins inserted into said holes in said uprights;

a pair of adapters mounted for slidable, lateral adjustment on said extension pins, each of said adapters having means on its outer end for cooperating with tips of a dental facebow.

4,242,088

REGULATING DEVICE FOR PRESSURE FLUID ACTUATED APPARATUS

Björn Ekman, Upplands Väsby, Sweden, assignor to Dental AB, Upplands Väsby, Sweden

Filed Oct. 19, 1977, Ser. No. 843,557

Claims priority, application Sweden, Dec. 13, 1976, 7613985

Int. Cl.³ F16K *31/62*

U.S. Cl. 433—101 **5 Claims**

1. A regulating device for pressurized fluid actuated apparatus comprising

a valve for the pressurized fluid supply,

said valve including a valve housing and a movable flow control valve element,

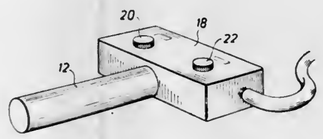
a foot controlled operating device connected to move said movable valve element of the valve,

said operating device comprising an axially elongated roller body and a base structure,

said valve housing being rigidly connected to said base structure,

the outer cylindrical surface of said roller body being suitable and intended for resting on the floor and for rolling thereon when pushed by the foot of the operator,

said roller body having a shaft coaxial with the rolling axis of said roller body and rotatably journalled in said base structure and operable for carrying said base structure and said valve housing for translational movement with said roller as said roller is rolled,



said base structure having a dimension transverse to said rolling axis that exceeds the greatest transverse dimension of the roller body so as to limit rotational movement of said base structure about a horizontal axis when said roller body is rolled on the floor to thereby provide for relative rotational movement between said roller body and said base structure,

and said shaft comprising a transmission means connected between said roller body and said valve element and arranged for transferring relative rotational movement between said roller body and said base structure to a movement of said valve element.

4,242,089

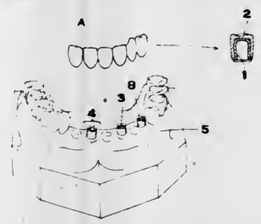
DENTAL PROSTHESIS

Hideki Sasaki, 53, 3-chome, Kuramotomoto-machi, Tokushima-shi, Tokushima-ken, Japan

Continuation of Ser. No. 839,477, Oct. 4, 1977, abandoned. This application Sep. 13, 1979, Ser. No. 75,540

Int. Cl.³ A61C *13/22*

U.S. Cl. 433—189 **2 Claims**



1. An artificial tooth arrangement comprising in combination:

(a) a denture plate (**6**) having a magnet (**3**) embedded therein,

(b) a root cap (**7**) which is adapted to be imbedded in a tooth root (**B**), and

(c) a palladium-cobalt alloy attached to the upper surface of the root cap (**7**).

4,242,090

PROCESS FOR THE CONTINUOUS DYEING OF TEXTILE WEBS OF CELLULOSE FIBERS WITH REACTIVE DYES

Hans-Ulrich von der Eltz, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, am Main Fed. Rep. of Germany

Filed Mar. 27, 1979, Ser. No. 24,206

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1978, 2813400

Int. Cl.³ D06P *3/82, 3/60*

U.S. Cl. 8—532 **4 Claims**

1. In a process for the continuous dyeing of a web of textile material made of cellulose fibers and of a mixture of cellulose fibers with synthetic fibers using reactive dyestuffs, by applying to the web of fibrous material an aqueous solution of at least one reactive dyestuff to which has been added, as fixation agents, a mixture of a liquid alkali water glass having a density of from 37° to 60° Bé and an alkali hydroxide solution having a density of from 30° to 45° Bé, introducing the treated material into a dwelling chamber where it is subjected in a cuttled-up or opened-out condition to a high humidity heating, removing it continuously from the dwelling chamber and then terminating dyestuff fixation by a brief steaming or by a brief immersion into a hot sodium sili ate solution, the improvement of which comprises: heating the textile material in the dwelling chamber after application of the liquor containing the reactive dyestuff and the mixture of fixation agents, and leaving it to stand there at a temperature of from 81° to 95° C. for a period of from 5 to 180 seconds.

4,242,091

PROCESS FOR THE CONTINUOUS DYEING OF TEXTILE WEBS PRE-HEATED WITH INFRA-RED OR MICRO-WAVES

Erich Feess, Hofheim am Taunus; Walter Birke, and Joachim Steinbach, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 862,664, Dec. 21, 1977, abandoned. This application Dec. 14, 1979, Ser. No. 103,869

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658863; Mar. 25, 1977, 2713166

Int. Cl.³ D06P *5/20, 3/60, 3/14*

U.S. Cl. 8—444 **7 Claims**

1. In a process for a continuous dyeing with a reactive or an acid dyestuff, wool or mixtures containing such fibers, as a textile web, or with a reactive or a sulfur dyestuff in reduced form, cellulose or mixtures containing such fibers, as a textile web, said textile web first having been impregnated with an aqueous liquor or printed with an aqueous printing paste containing said dyestuff, the improvement comprising preheating the textile web to temperatures from 97° to 104° C. by means of infrared waves or microwaves while maintaining a residual moisture content corresponding to at least the water retention content (at normal humidity) of said fibers during said preheating, and subsequently, while said fibers are at about said residual moisture content, in order to fix said dyestuff, treating said textile web with steam for 10 to 300 seconds without applying additional pressure.

4,242,092

METHOD OF SUBLIMATIC PRINTING ON SHEET STRUCTURES

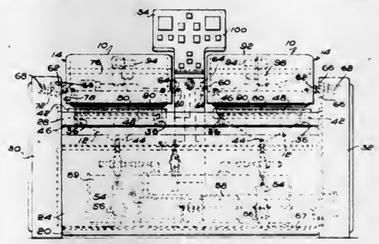
Richard D. Glover, Gedham Mills, Ossett, Yorkshire, England

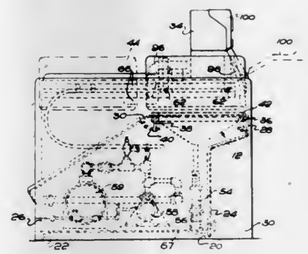
Continuation of Ser. No. 708,979, Jul. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 633,338, Nov. 19, 1975, abandoned, which is a continuation of Ser. No. 422,046, Dec. 5, 1973, abandoned, which is a continuation of Ser. No. 197,057, Nov. 9, 1971, abandoned. This application Dec. 20, 1978, Ser. No. 971,441

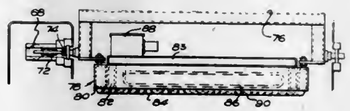
Claims priority, application United Kingdom, Nov. 12, 1970, 53851/70; Dec. 24, 1970, 61314/70

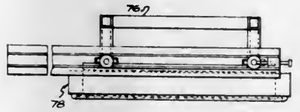
Int. Cl.³ D06P *1/16, 3/54, 5/20*

U.S. Cl. 8—472 **10 Claims**









1. A method of printing an air-permeable sheet structure which includes placing an air-permeable printing foil carrying on one side thereof sublimatic dyestuff in face-to-face relationship and in close proximity with the air-permeable sheet structure with the side of the printing foil carrying the dyestuff facing the air-permeable sheet structure, heating the printing foil for a period depending upon the sheet structure thickness to vaporize the dyestuff and applying a gas or vapor pressure differential during said period between the sides of the sheet structure so as to creat a flow of air from a space above the foil, and through both the foil and the sheet structure, and so as to cause the dyestuff vapor to flow into the sheet structure, said sheet structure being composed of a material to which the dyestuff has an affinity so that the dyestuff deposits on the sheet structure in the same pattern in which it appeared on the foil.

4,242,093

DOUBLE-FACE DYEING AND PRINTING OF POLYESTER FABRICS WITH DISPERSE DYES

Pietro Gasperini, Seveso, and Francesco Brunetti, Chieri, both of Italy, assignors to Aziende Colori Nazionali Affini Acna S.p.A., Milan, Italy

Filed Jun. 7, 1979, Ser. No. 46,430

Claims priority, application Italy, Jun. 8, 1978, 24321 A/78

Int. Cl.³ D06P *3/00, 3/80, 5/00*

U.S. Cl. 8—456 **2 Claims**

1. A process for the dyeing and printing of polyester textile fabrics to achieve differently shaded color effects on one or both faces of the fabric, comprising:

(a) contacting at room temperature a polyester textile fabric, undyed or previously dyed in light pastel shades, with a slightly acidic aqueous emulsion of a paraffin wax;

(b) drying the treated fabric from step (a);

(c) printing at room temperature one or both faces of the fabric with a paste comprising disperse dyes, a thickener, an organic acid and water;

(d) affixing said dyes to the textile fabric surface by thermosoling at 180°–220° C.; and

(e) alkaline-reducing washing said textile fabric at 70°–150° C.

4,242,094

DYEING PREPARATIONS AND THEIR USE FOR PREPARING DEVELOPING DYES

Erich Feess, Hofheim, and Willy Gronen, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 845,675, Oct. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 777,633, Mar. 15, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,222

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1976, 2611188

Int. Cl.³ D06P *3/22, 3/44, 3/50, 3/68*

U.S. Cl. 8—666 **1 Claim**

1. A prepared composition adapted to simplify and make more efficient the production of developing dyes, consisting of:

(1) a first preparation being a Normal formulation of a finely dispersed diazotizable free primary aromatic amine, the average particle size of said amine being at most 0.002 mm, and

(2) a second preparation being a Normal formulation of a coupling component, the amounts of said first and second preparations being chosen so as to provide therein the molar equivalent amounts of the said amine and coupling component, said amine and coupling components being in a molar ratio of 2:1, 1:1 or 1:2 to one another.

4,242,095

YARN LUBRICANTS

Bobby C. Carver, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,582

Int. Cl.³ D06M *00/00*

U.S. Cl. 8—115.6 **10 Claims**

1. Fiber lubricant composition comprising butyl stearate, ethoxylated-propoxylated alcohol having a SUS viscosity of 1,000 to 20,000 at 100° F. and prepared from a blend of ethylene oxide and propylene oxide reacted with an alcohol having 1 to 16 carbon atoms and effective amounts of emulsifying agents and antistatic agents.

4,242,096

IMMUNOASSAY FOR ANTIGENS

Robert J. Oliveira, Maplewood, and Spencer F. Silver, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 14, 1977, Ser. No. 851,491

Int. Cl.² G01N *33/16*

U.S. Cl. 23—230 B **15 Claims**

1. A method for the immunochemical determination of at least one antigen in a liquid sample comprising:

contacting said liquid sample simultaneously with (a) a predetermined quantity of an antibody specific for said antigen being determined; and (b) a composite comprising a piezoelectric oscillator having immobilized thereon in biologically active configuration said antigen or mixture containing said antigen, said composite having a premeasured frequency;

allowing the immunochemical reaction to proceed;

removing the oscillator from said liquid sample; and

measuring the change in frequency of said piezoelectric oscillator.

10. An immunological diagnostic kit for use in a competitive binding assay for the immunochemical determination of at least one antigen in a liquid sample comprising:

a composite comprising a piezoelectric oscillator having immobilized thereon in biologically active configuration an antigen or mixture containing the antigen being determined, said composite having a premeasured frequency; and

a predetermined quantity of antibody specific for said antigen being determined.

4,242,097

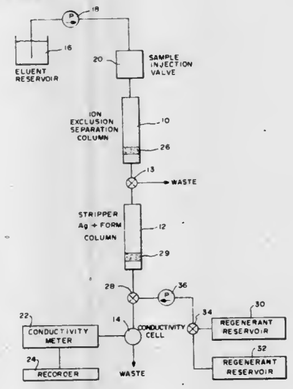
METHOD AND APPARATUS FOR QUANTITATIVE ANALYSIS OF WEAKLY IONIZED ANIONS OR CATIONS

William E. Rich, Jr., Mountain View; Edward L. Johnson, Milpitas, and Thomas O. Sidebottom, Palo Alto, all of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.

Filed Mar. 5, 1979, Ser. No. 17,576

Int. Cl.³ G01N *31/04, 31/08*

U.S. Cl. 23—230 R **25 Claims**



1. The method of chromatographic separation and quantitative analysis of a plurality of different weak anions of weakly dissociated acids or of salts of weakly dissociated acids, said method comprising

(a) directing a sample comprising a plurality of different weak anions of weakly dissociated acids or of salts of weakly dissociated acids, in an eluent solution through a chromatographic resin bed, said eluent comprising a strong acid substantially more dissociated than the acids of the weak anions, said strong acid being present at a concentration to substantially suppress ionization of said weak anions, said chromatographic resin being in a form to substantially resolve said weak anions,

(b) directing the effluent containing said resolved weak anions and said strong acid from step (a) through a stripper column including a cation exchange resin in a form to remove the strong acid anion but not to disturb the resolution of the weak anions from the sample solution, and

(c) directing the effluent from step (b) containing said resolved weak anions through a conductivity cell having associated readout means.

4,242,098

TRANSPORT OF AQUEOUS COAL SLURRIES

David B. Braun, Ridgefield, Conn.; Stephen Drap, Pawling; Henry E. Fritz, Ossining, both of N.Y., and Arthur K. Ingberman, Bridgewater, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,807

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **13 Claims**

1. In an aqueous coal slurry composition comprising water and coal, the improvement of having present therein up to about 10 weight percent based on the total weight of the composition of a water-soluble polymer from the group consisting of hydroxyethyl cellulose, the quaternary nitrogen-substituted cellulose ethers, xanthan gum, hydroxypropyl guar gum and carboxymethyl hydroxypropyl guar gum.

4,242,099

FUEL ADDITIVE FOR DIESEL FUELS

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 9, 1979, Ser. No. 10,523

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—53 **8 Claims**

1. As a new composition of matter, an anti-wear compression ignition fuel for use in diesel engines comprising (1) a monohydroxy alkanol having from 1 to 5 carbon atoms, (2) an ignition accelerator, and (3) a wear inhibiting amount of a hydrocarbyl succinic acid or anhydride having from 12 to 30 carbon atoms.

4,242,100

MOTOR FUEL COMPOSITION

Donnie G. Parker, Bartlett, and James D. Milligan, Memphis, both of Tenn., assignors to Tri-Pak, Inc., Memphis, Tenn.

Filed Oct. 15, 1979, Ser. No. 84,568

Int. Cl.³ C10L *1/18, 1/20*

U.S. Cl. 44—53 **6 Claims**

1. A fuel composition comprising about 50 to about 70 parts by weight of methanol, about 10 to about 30 parts by weight of at least one alkyl-substituted benzene having from 7 to 10 carbon atoms, about 0 to about 30 parts by weight of normal heptane, and about 2 to about 10 parts by weight of a chlorinated benzene.

4,242,101

FUELS FOR GASOLINE ENGINES

Hans-Henning Vogel, Frankenthal; Knut Oppenlaender, Ludwigshafen, and Klaus Starke, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,478

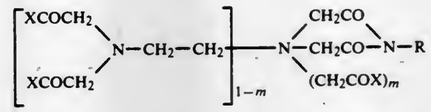
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2828038

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—58 **10 Claims**

1. An additive for gasoline fuels which comprises a combination of

(a) imides or amide-imides, or mixtures of imides and amide-imides, obtained from nitrilotriacetic acid and/or from ethylenediaminetetraacetic acid and amines or amine mixtures of 7 to 18 carbon atoms, of the formula I

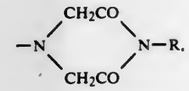


I

where the radicals X are identical or different radicals —HN—R, or adjacent radicals X are a radical



which completes a ring



m is 0 or 1 and R is an unbranched or branched aliphatic radical of 7 to 18 carbon atoms, as valve and carburetor cleaners, and (b) mixtures of highly hydrogenated petroleum distillates, in the boiling range of the kerosine fraction, and highly refined solvent raffinates with viscosities of from 50 to 500 mm^2/s at 40° C., the weight ratio of constituents (a) and (b) being from 20:80 to 80:20.

4,242,102

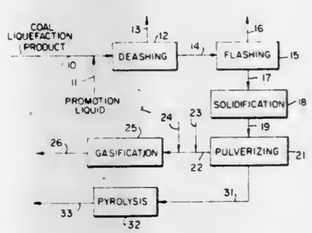
PRODUCTION OF GASIFIED PRODUCTS FROM ASH CONTAINING BITUMEN PRODUCED IN COAL LIQUEFACTION

George J. Snell, Fords, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Dec. 15, 1978, Ser. No. 969,725

Int. Cl.³ C10J *3/46*

U.S. Cl. 48—197 R **7 Claims**



1. In a process for the liquefaction of coal wherein an essentially ash free liquid coal fraction is separated from an ash containing heavy bitumen fraction, the improvement comprising:

subjecting said ash containing bitumen fraction to vacuum flashing to provide a residual product having a softening point of no less than 350° F. and no greater than 550° F.;

solidifying said residual product;

pulverizing the solidified residual product to a particle size such that 100 percent passes through a 100 mesh screen; and

employing said pulverized solidified residual product, without prior coking thereof as feed to an entrained bed gasifi-

cation process by entrainment in a gasification gas to produce gaseous product therefrom.

Reconsideration and allowance of this application are requested.

4,242,103

CYCLIC TWO STEP PROCESS FOR PRODUCTION OF METHANE FROM CARBON MONOXIDE

Jule A. Rabo, Armonk; Louis F. Elek, Peekskill, both of N.Y., and James N. Francis, Houston, Tex., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 889,558, Mar. 23, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,319

Int. Cl.³ C10K *3/04*

U.S. Cl. 48—197 R **62 Claims**

1. A cyclic two step process for the production of methane from carbon monoxide-containing gas streams comprising:

(a) passing a carbon monoxide-containing gas stream over a catalyst present in a metal state and capable of catalyzing the disproportionation of carbon monoxide at a pressure of from about 1 to about 100 atmos and a temperature of from about 100° C. to about 350° C., said carbon monoxide thereby being decomposed to form carbon dioxide and an active surface carbon that is deposited on said catalyst, which is taken from the group consisting of nickel, cobalt, ruthenium, rhenium, and alloys thereof, said gas stream being passed over the catalyst for a time sufficient to deposit a surface layer of said active surface carbon on the catalyst essentially without the subsequent formation of inactive coke thereon;

(b) contacting said layer of active surface carbon deposited on said catalyst present in a metal state with steam or a steam-containing gas stream at a pressure of from about 1 to about 100 atmos and a temperature of from about 100° C. to about 400° C., thereby converting said active surface carbon to methane and carbon dioxide, said methane being at least about 50% of the stoichiometric amount, the carbon thus recovered in the form of methane being at least about 12.5% of the carbon in said carbon monoxide decomposed upon contact with said disproportionation catalyst;

(c) passing additional carbon monoxide-containing gas over said catalyst from step (b) and repeating said steps (a) and (b) on a cyclic basis said catalyst being maintained substantially in its metal state during said repeated steps (a) and (b),

whereby relatively pure methane can conveniently be produced from carbon monoxide-containing gas streams on a cyclic two step basis without the necessity for the prior concentration of said carbon monoxide and/or the separation therefrom from inert gases that may be present in said gas streams or for converting the catalyst from one form to another between said cycles.

4,242,104

CYCLIC PROCESS FOR PRODUCING METHANE WITH CATALYST REGENERATION

Albert C. Frost, Congers, N.Y., and Alan P. Risch, New Fairfield, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,472

Int. Cl.³ C10K *3/04*

U.S. Cl. 48—197 R **24 Claims**

1. In a cyclic process for the production of methane from carbon monoxide-containing gas streams in which a carbon monoxide-containing gas stream is passed over a catalyst present in a metal state and capable of catalyzing the disproportionation of carbon monoxide at a pressure of from about 1 to about 100 atmos and a temperature of from about 100° C. to about 350° C., with said carbon monoxide thereby being decomposed to form carbon dioxide and an active surface carbon that is deposited on said catalyst, and with said gas stream being passed over the catalyst for a time sufficient to deposit a surface layer of said active surface carbon on the catalyst essentially without the subsequent formation of inactive coke thereon, and in which said layer of active surface carbon deposited on said catalyst present in a metal state is contacted with steam or a steam-containing gas stream at a pressure of from about 1 to about 100 atmos and a temperature of from about 100° C. to about 400° C., thereby converting said active surface carbon to methane and carbon dioxide, with said methane being at least about 50% of the stoichiometric amount, with the carbon thus recovered in the form of methane being at least about 12.5% of the carbon in said carbon monoxide decomposed upon contact with said disproportionation catalyst and in which additional carbon monoxide-containing gas is passed over said catalyst and said steps are repeated on a two step cyclic basis, a process for the periodic regeneration of the catalyst employed in said cyclic process comprising:

(a) withdrawing said catalyst from use in said cyclic methanation process, on a periodic basis, upon reduction of the efficiency of the catalyst as a result of the deposition of inactive carbon thereon over the course of repeated use in said cyclic process;

(b) contacting said catalyst having inactive carbon deposited thereon with a CO_2-rich gas at a temperature in excess of about 500° F. but less than the degradation temperature of said catalyst, thereby converting said inactive carbon to CO, said regeneration reaction being endothermic and resulting in a decrease in the temperature of the gaseous regeneration effluent and the catalyst; and

(c) withdrawing said gaseous regeneration effluent from contact with said catalyst, whereby the inactive carbon deposited on said catalyst is effectively removed therefrom, the endothermic regeneration reaction eliminating the temperature control problems inherent in conventional burn off operations, the oxidation of the catalyst from its metal state being minimized and the long term stability of the catalyst being enhanced as the bulk thereof is not switched between the oxide form and the active metal form as the result of each said periodic regeneration of the catalyst.

4,242,105

PROCESS FOR PRODUCING METHANE FROM GAS STREAMS CONTAINING CARBON MONOXIDE AND HYDROGEN

Albert C. Frost, Congers, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,473

Int. Cl.³ C10K *3/04*

U.S. Cl. 48—197 R **17 Claims**

1. A cyclic process for the production of methane from carbon monoxide-containing gas streams also containing appreciable quantities of hydrogen therein, said processs comprising:

(a) contacting a carbon monoxide and hydrogen-containing gas stream with air in a partial oxidation reaction zone, said air being employed in an amount such that, at the reaction temperature and pressure employed, the total partial pressure of hydrogen and oxygen in the reaction mixture is within the limits for non-explosive reaction of homogeneous mixtures of hydrogen and oxygen at said reaction conditions, thereby resulting in the selective oxidation of said hydrogen in preference to the carbon monoxide content of the reaction mixture;

(b) passing the resulting carbon monoxide-containing gas stream having hydrogen removed therefrom to a dehydration zone for the removal of water vapor therefrom;

(c) passing the carbon monoxide-containing gas stream removed from said dehydration zone over a catalyst present in a metal state and capable of catalyzing the disproportionation of carbon monoxide at a pressure of from about 1 to about 100 atmos and a temperature of from about 100° C. to about 350° C., said carbon monoxide thereby being decomposed to form carbon dioxide and an active surface carbon that is deposited on said catalyst, which is taken from the group consisting of nickel, cobalt, ruthenium, thenium, and alloys thereof, said gas being passed over the catalyst for a time sufficient to deposit a surface layer of active surface carbon on the catalyst essentially without the subsequent formation of inactive coke thereon, the prior partial oxidation reaction and dehydration step serving to minimize methanation formation during said active surface carbon deposition;

(d) contacting said layer of active surface carbon deposited on said catalyst present in a metal state with steam or a steam-containing gas stream at a pressure of from about 1 to about 100 atmos and a temperature of from about 100° C. to about 400° C., thereby converting said active surface carbon to methane and carbon dioxide, said methane being at least about 50% of the stoichiometric amount, the carbon thus recovered in the form of methane being at least about 12.5% of the carbon in said carbon monoxide decomposed upon contact with said disproportionation catalyst; and

(e) passing additional carbon monoxide-containing gas, pretreated as in steps (a) and (b) above over said catalyst from step (d) and repeating said steps (c) and (d) on a two step cyclic basis,

whereby relatively pure methane can conveniently be produced from CO-containing gas streams on a cyclic two-step basis without the necessity for the prior concentration of said carbon monoxide and/or the separation thereof from inert gases or for converting the catalyst from one form to another between said cycles, the selective removal of hydrogen from the feed gas enhancing the active carbon deposition reaction and the overall efficiency of the methanation reaction.

4,242,106

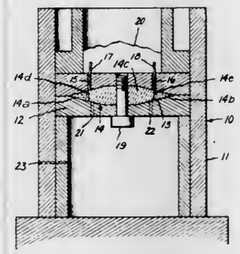
COMPOSITE OF POLYCRYSTALLINE DIAMOND AND/OR CUBIC BORON NITRIDE BODY/SILICON CARBIDE SUBSTRATE

Charles R. Morelock, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1979, Ser. No. 639

Int. Cl.³ B24D *3/04, 3/10*

U.S. Cl. 51—307 **8 Claims**



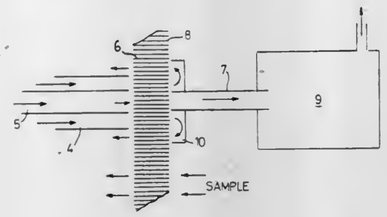
1. A process for producing an integrally bonded composite of a polycrystalline diamond and/or cubic boron nitride body component and a supporting silicon carbide substrate component, which consists essentially of providing a crystal containing carbonaceous mass composed of at least a substantially uniform mixture of crystals selected from the group consisting of diamond, cubic boron nitride, and combinations thereof, and a carbonaceous material wherein none of the surfaces of said crystals are exposed significantly and wherein at least a substantial amount of said crystals are enveloped and separated from each other by at least a coherent continuous coating of said carbonaceous material on said crystals, said carbonaceous material being selected from the group consisting of elemental non-diamond carbon, an organic material, and mixtures thereof, providing a supporting silicon carbide substrate consisting essentially of a hot-pressed or sintered polycrystalline silicon carbide body wherein the silicon carbide grains are bonded directly to each other and which ranges in density from about 30% to about 100% of the theoretical density of silicon carbide, providing a mold with a cavity of desired size and shape and means for introducing fluid silicon into said cavity and means for maintaining a partial vacuum in said cavity, filling said cavity with a preform consisting essentially of said crystal-containing carbonaceous mass in contact with said supporting silicon carbide substrate forming an interface therewith and confining said preform therein, said preform being the form desired of said composite, said organic material decomposing at a temperature below 1400° C. to elemental non-diamond carbon and gaseous product of decomposition, said organic material being present in an amount sufficient on decomposition to produce on the crystal surfaces it coats at least a coherent continuous coating of elemental non-diamond carbon, and at least sufficient elemental non-diamond carbon to maintain said preform, associating said confined preform in said mold cavity with a mass of solid silicon via said means for introducing fluid silicon into said mold cavity, providing the resulting associated structure with a partial vacuum wherein the residual gases have no significant deleterious effect on said associated structure, heating said associated structure in said partial vacuum to a temperature above 1400° C. at which said silicon is fluid and which does not have a significantly deleterious effect on said crystals, introducing said fluid silicon to said confined preform via said means for introducing fluid silicon into said cavity, and infiltrating said fluid silicon into said preform at least through said crystal-containing carbonaceous mass and at least into contact with the contacting surface of said substrate filling the pores through said interface so that it is at least substantially pore-free, said partial vacuum being at least sufficient to remove gas from said preform which blocks said infiltrating fluid silicon, said infiltrating silicon reacting with non-diamond elemental carbon forming silicon carbide, cooling the resulting composite in an atmosphere which has no significant deleterious effect on it, recovering the resulting integrally bonded composite of polycrystalline diamond and/or cubic boron nitride body component and supporting substrate component, said polycrystalline body component being substantially pore-free wherein the diamond and/or cubic boron nitride crystals ranging from about 1% by volume up to about but less than 80% by volume of the total volume of said polycrystalline body are bonded together by a bonding medium comprised of silicon carbide and elemental silicon.

4. A self-supporting composite consisting essentially of a polycrystalline diamond and/or cubic boron nitride body component integrally bonded to a supporting silicon carbide substrate, said polycrystalline body component being comprised of crystals selected from the group consisting of diamond, cubic boron nitride and mixtures thereof adherently bonded together by a bonding medium consisting essentially of silicon carbide and elemental silicon wherein the volume of said silicon carbide and said silicon each is at least about 1% by volume of said polycrystalline body component, said crystals ranging in size from submicron up to about 2000 microns, the volume of said crystals ranging from about 1% by volume to about but less than 80% by volume of said polycrystalline body component, said bonding medium being present in an amount ranging up to about 99% by volume of said polycrystalline body component, said bonding medium being distributed at least substantially uniformly throughout said polycrystalline body component, the portion of said bonding medium in contact with the surface of said crystals being silicon carbide, said polycrystalline body component being at least substantially pore-free, said silicon carbide substrate consisting essentially of a hot-pressed or sintered polycrystalline silicon carbide body wherein the silicon carbide grains are bonded directly to each other and which ranges in density from about 30% to about 100% of the theoretical density of silicon carbide, said bonding medium extending into contact with said silicon carbide substrate.

4,242,107
APPARATUS FOR THE SEPARATION OF A CONSTITUENT FROM AN ATMOSPHERE

Anthony Jenkins, Analytical Instruments Limited, London Rd., Pampisford, Cambridge, England

Continuation of Ser. No. 800,054, May 24, 1977, abandoned.
This application Aug. 7, 1978, Ser. No. 931,402
Claims priority, application United Kingdom, May 25, 1976, 21551/76
Int. Cl.³ B01D 53/08
U.S. Cl. 55—18 6 Claims



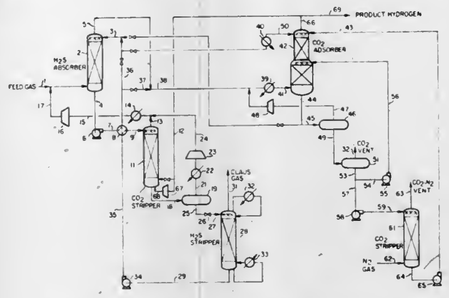
1. A method of continuously detecting a component of interest from a multi-component gaseous sample which comprises rotating a disc having a matrix of channels extending between the opposite faces thereof about its axis normal to said faces to move the channels through at least first and second regions, drawing a sample flow through the channels moving across the first region to trap the component of interest, arranging carrier gas flow means at the second region close to but spaced from the opposite faces of the disc to provide clearances for the rotary movement of the disc therebetween, subjecting the channels to a flow of carrier gas and heat at the second region to expel the component of interest, channeling said expelled flow of carrier gas and component of interest to a detector means for detecting the component of interest in the carrier gas flow while simultaneously allowing a portion of the flow at the second region to escape outwardly through the clearances to create a gaseous barrier against ingress of atmosphere into the second region, the flow of sample through the first region being greater than the flow of carrier gas through the second region whereby to obtain a concentration gain of the component of interest in the carrier gas flow from the second region.

2. An apparatus for effecting the continuous detection of a component of interest from a multi-component gaseous sample comprising: a detector means; and a separation means, operatively connected to said detector means, for continuously separating said component of interest from said multi-component gaseous sample, said separation means including a rotatable disc having a matrix of channels between the opposite faces of the disc, each channel constituting a trap for releasably retaining the component of interest, means for rotating the disc about its axis normal to said faces to move the channels through at least first and second regions, means at the first region to draw a flow of sample through the channels moving across the first region to trap the component of interest, means at the second region to draw a flow of carrier gas through the channels moving across the second region and into said detector means and means for heating the channels to release the component of interest, with the flow means at the second region being close to but spaced from the opposite faces of the disc to provide clearances for the rotary movement of the disc therebetween and to enable a portion of the carrier flow to escape outwardly through said clearances whereby to provide a gaseous barrier against ingress of atmosphere into the second region.

4,242,108
HYDROGEN SULFIDE CONCENTRATOR FOR ACID GAS REMOVAL SYSTEMS

David M. Nicholas, New Tripoli, and William P. Hegarty, Wescosville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 7, 1979, Ser. No. 91,882
Int. Cl.³ B01D 19/00
U.S. Cl. 55—40 11 Claims



1. A method of removing hydrogen sulfide from a contaminated gas mixture comprising hydrogen sulfide, carbon dioxide, and a gas selected from the group consisting of hydrogen, methane, and a mixture of hydrogen and carbon monoxide, which method comprises:

(a) contacting said contaminated gas mixture with a liquid absorbent in a first liquid-gas contacting zone to absorb said hydrogen sulfide and form a hydrogen sulfide rich liquid absorbent and an overhead gas, and thereby absorbing a portion of said carbon dioxide,

(b) removing carbon dioxide from said overhead gas leaving said first contacting zone in a carbon dioxide absorber to form a product gas,

(c) heating said hydrogen sulfide rich liquid absorbent leaving said first contacting zone to form a heated hydrogen sulfide rich liquid absorbent,

(d) stripping carbon dioxide from said heated hydrogen sulfide rich liquid absorbent with a stripping gas in a second liquid-gas contacting zone to form a carbon dioxide rich gas and an effluent hydrogen sulfide rich liquid absorbent stream containing stripping gas,

(e) cooling, compressing, and recycling said carbon dioxide rich gas to said first contacting zone,

(f) separating stripping gas from said hydrogen sulfide rich liquid absorbent stream leaving said second contacting zone in a first liquid-gas separating zone to form a separated stripping gas and a stripped hydrogen sulfide rich liquid absorbent, and admixing said separated stripping gas with said carbon dioxide rich gas leaving said second contacting zone,

(g) separating hydrogen sulfide from said stripped hydrogen sulfide rich liquid absorbent leaving said first separation zone in a second liquid-gas separation zone to form hydrogen sulfide gas and purified liquid adsorbent, and

(h) recycling said purified liquid absorbent from said second liquid-gas separation zone to said first liquid-gas contacting zone with from 0 to 100 percent of said purified liquid adsorbent being recycled passing first through said carbon dioxide absorber.

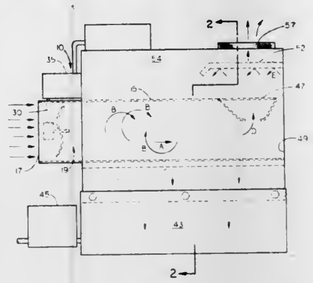
4,242,109
AIR CLEANER AND HUMIDIFIER

John W. Edwards, 8220 Doe Ave., Visalia, Calif. 93277

Filed Jun. 29, 1979, Ser. No. 53,355
Int. Cl.³ B01D 47/08
U.S. Cl. 55—230 7 Claims

1. Apparatus for cleaning particulate laden air and humidifying the same comprising a housing, means defining a tubular

chamber extending longitudinally of said housing, a fan disposed at one end of the chamber, motor means, including a rotating shaft for driving said fan, said fan mounted on said shaft and disposed at one end of said chamber for pulling particulate laden air into said chamber, and for moving said air in a vortical flow pattern through said chamber, means disposed on such shaft forward of said fan and at the center of the vortex generated thereby for injecting water vapor into said vortical flow for wetting the particulate in said air flow thereby causing the particulate to be forced outwardly and against the walls of the chamber, means defining a longitudinal

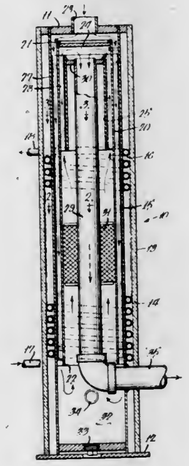


slot in the bottom of said chamber to permit moisture laden particulate scrubbed from the air flow to be gravitationally dispersed from said chamber, means defining a vertically disposed discharge funnel near the end of the chamber remote from said fan for permitting discharge of air from said chamber, means for deflecting the flow of said discharged air to further decelerate the same, thereby causing additional particulate matter and moisture to be removed therefrom, a collector defined at the base of said housing for collecting excess moisture and particulate, an outlet means formed in said housing for permitting the discharge of cleansed and humidified air therefrom.

4,242,110
COMPRESSED GAS DRYING APPARATUS

William M. Hynes, Mountain Home, Ark., assignor to Miller Fluid Power Corporation, Bensenville, Ill.

Filed Jul. 26, 1979, Ser. No. 61,652
Int. Cl.³ B01D 50/00
U.S. Cl. 55—269 2 Claims

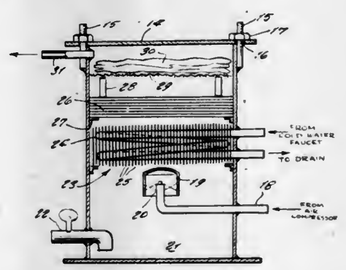


1. A compressed air drying apparatus comprising a vertically arranged cylindrical vessel having a top and a bottom, an exterior casing forming the outer cylindrical surface of the vessel, an interior cylindrical casing spaced inwardly from the outer casing with both of said casings extending from top to bottom of the vessel, refrigeration coils in the space between the casings and in heat transfer relationship with the outer surface of the inner casing, a first cylindrical wall interiorly spaced from the inner casing and concentric therewith with the upper end of said first wall being spaced downwardly from the top of the vessel and with the lower end of said first wall being spaced upwardly from the bottom of said vessel, an inlet at the top of said vessel and opening into the interior thereof above the upper end of the first wall, a closure over the upper end of the first wall to deflect air entering through the inlet into the space between the inner casing and the first wall, a second cylindrical wall mounted within and spaced from the first cylindrical wall, said second wall being relatively short and having its upper end near but spaced downwardly from said closure, a multi-surface heat exchanger in the vessel having a first portion in the space between the inner casing and the first cylindrical wall and a second portion in the space between the first cylindrical wall and the second cylindrical wall, a discharge pipe within but spaced from the second cylindrical wall and having its upper open end near the top of the second cylindrical wall, the exterior surface of said pipe being sealed to the interior of the second wall, said pipe extending downwardly through the vessel to a point below the lower end of said first wall, a demister in the vessel below the lower end of the second wall and mounted to fill the space between the exterior surface of the pipe and the interior surface of the first wall, a sump at the bottom of the vessel and means connected to the lower portion of the pipe for conducting dried air outwardly of the vessel whereby compressed air entering the vessel through the inlet is deflected by said closure for passage downwardly in the space between the inner casing and the first wall and through the first portion of the heat exchanger to the lower end of said first wall thence upwardly in the space between the pipe and the first wall through the demister into the space between the first and second walls where it passes through the second portion of the heat exchanger and thereafter downwardly through said pipe to the exterior of the vessel.

4,242,111
COMPRESSED AIR DRYER

Andrew Arends; Gary W. Arends, and George Spector, all c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Mar. 16, 1979, Ser. No. 21,017
Int. Cl.³ B01D 50/00
U.S. Cl. 55—269 1 Claim



1. A compressed air dryer, comprising in combination, a canister having a removable cover closing an open upper end thereof, an inlet pipe having an upturned portion positioned in a lower end of said cannister, an outlet pipe positioned near an upper end of said canister, and means inside said canister for dehumidifying air moving through said pipes, said means including an inverted splatter cup mounted over said upturned portion of said inlet pipe, said cup including a side wall encompasing and extending below said portion, coiled finned cooling

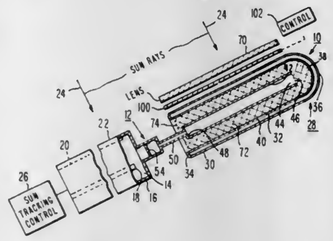
tubes mounted above said cup for cooling the air and condensing the moisture in the air, a screen filter mounted above said tubes, spacers mounted on said filter, wire mesh supported by said spacers above said screen filter and a cloth remnant on said mesh, said outlet pipe being located above said mesh and remnant.

4,242,112

SOLAR POWERED DEHUMIDIFIER APPARATUS

Robert W. Jebens, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,528
Int. Cl.³ B01D *53/28*
U.S. Cl. 55—269 **5 Claims**



1. A solar energy operated dehumidifier apparatus comprising:
a housing containing a volume of air to be dried,
a thermally insulated conduit means in fluid communication with said volume of air and the ambient atmosphere,
said conduit means including light transmitting wall means for transmitting incident solar energy within a conduit formed by said conduit means,
a solar energy absorbing desiccant in said conduit receptive to said transmitted solar energy for converting said solar energy to heat and thereby drying said desiccant, said desiccant being positioned so that air passing between said volume and the ambient engages said desiccant, and
valve means including means for connecting said valve means between said conduit means and a volume to be dried, said valve means being normally closed and responsive to pressure differentials which may exist between said volume to be dried and the ambient atmosphere for passing air from said volume when heated by said solar energy and at a pressure greater than ambient pressure through said desiccant to the ambient atmosphere and from the ambient atmosphere back to the volume when the volume is cooled and at a pressure lower than ambient pressure in the absence of said incident solar energy.

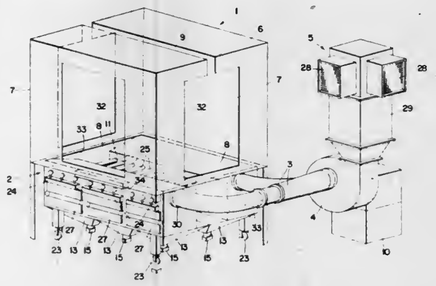
4,242,113

POWDER SPRAY BOOTH

Gunter J. Lissy, Amherst, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Nov. 20, 1978, Ser. No. 962,507
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—302 **14 Claims**

1. A powder spray booth and powder recovery/static filter unit configuration comprising:
booth means providing a controlled area in which to powder coat substrates, defined generally by a ceiling, side and end walls, and a floor;
a powder collection chamber in close proximity to the booth;
means for removing collected powder from the bottom of said powder collection chamber,
a clean air chamber sealed from the booth and from the powder collection chamber, said clean air chamber being provided with an opening from the powder collection chamber into said clean air chamber;
static filter means located within said powder collection chamber and operative to effectively prevent powder from entering said clean air chamber;
blower means operative to create a negative pressure in said clean air chamber; and



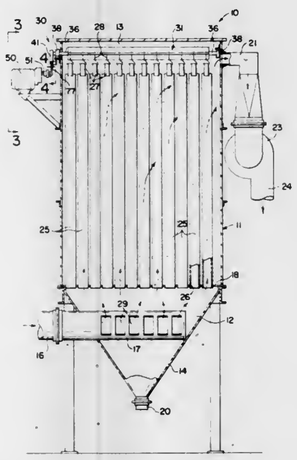
means for preventing a fire within said powder collection chamber from causing an explosion, said explosion prevention means including a substantially unrestricted flow path leading directly from said powder collection chamber into said booth operative to effectively vent any fire created pressure build-up within said powder collection chamber into said booth without the occurrence of an explosion.

4,242,114

DUST COLLECTOR

James S. Deacon, North Olmsted, Ohio, assignor to McLaughlin, Inc., Middletown, Ohio

Filed Jul. 11, 1979, Ser. No. 56,783
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—304 **4 Claims**



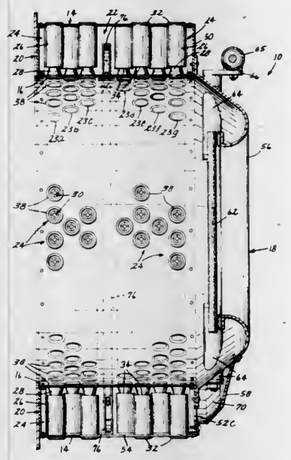
1. In a bag shaker mechanism for a dust collector system of the type that uses a plurality of filter bags that receive particle-laden air through openings at their lower ends and which are supported at the top by said bag shaker mechanism which is adapted to periodically shake the bags to dislodge and remove accumulated dust, said bag shaker mechanism comprising bag support means, eccentric means operatively associated with said bag support means and a rotary drive motor with a shaft operatively connected to drive said eccentric means to produce a sinusoidal shaking of said filter bags, the improvement wherein said eccentric means comprises:
a hub having means at one end by which said hub is secured to said motor shaft, and having a bore at its other end with its axis offset from the axis of said shaft;
a crank arm member with a cylindrical main body at one end adapted to be received in said bore of said hub and with a crank pin on the other end thereof with its axis offset from the axis of said main body; and
means on said cylindrical main body and said bore for releasably securing said cylindrical main body in said bore coaxially therewith selectively in any one of a plurality of positions of different angular relationship to permit selective adjustment of the throw of said eccentric means and thus to select a desired amplitude of shaking motion imparted to said filter bags.

4,242,115

AIR CLEANER ASSEMBLY

Donald M. Harold, Prior Lake, and Gregory A. Ufken, Apple Valley, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Feb. 5, 1979, Ser. No. 9,404
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—347 **26 Claims**



1. An air cleaner assembly comprising:
a plurality of interconnected wall members;
a scavenging air chamber defined between said wall members;
a plurality of centrifugal separators supported in said scavenging air chamber;
each of said centrifugal separators including a first tubular member having an inlet end for admitting air and an outlet end in fluid communication with said scavenging air chamber, means for swirling air passing through said first tubular member to force solid materials carried by said air against the inner wall surface of said tubular member, and a second tubular member having an inlet end disposed adjacent said outlet end of said first tubular member and an outlet end exterior of said scavenging air chamber;
a scavenging air outlet port formed through one of said wall members and adapted to be coupled to a negative pressure source for drawing scavenged air and solid materials intermixed therewith from said scavenging air chamber; and
at least one discrete conduit disposed within said scavenging air chamber, said at least one conduit having an interior defined by enclosing wall means, the interior of said at least one conduit being sealed from said scavenging air chamber except for an inlet opening to said at least one conduit and an exhaust opening from said at least one conduit, said exhaust opening being adjacent said scavenging air outlet port and said inlet opening being located in said scavenging air chamber at a distance further from said scavenging air outlet port than said exhaust opening whereby negative pressure applied through said scavenging air outlet port is staged to enhance the separating efficiency of the assembly.

20. An air cleaner assembly comprising:
a housing including a first cylindrical wall member having a first diameter, a second cylindrical wall member having a second diameter less than said first diameter, said second cylindrical wall member being supported within said first cylindrical wall member, and a pair of opposing cover wall members attached to said first and second cylindrical wall members;
a generally ring-shaped scavenging air chamber defined between said wall members;
a plurality of centrifugal separators supported in said cylindrical chamber, each of said separators having a longitudinal dimension extending generally radially between said first and second cylindrical wall members, said separators being aligned in a plurality of rows;
each of said centrifugal separators including a first tubular member having an inlet end for admitting air and an outlet end in fluid communication with said scavenging air chamber, means to swirl air passing through said first tubular member to force solid materials carried by said air against the inner wall surface of said tubular member, and a second tubular member having an inlet end disposed adjacent said outlet end of said first tubular member and an outlet end exterior of said scavenging air chamber, said inlet end of said first tubular member being disposed at said first cylindrical wall member and said outlet end of said second tubular member being disposed at said second wall member;
a scavenging air outlet port formed through said first cylindrical wall member and being adapted to be coupled to a negative pressure source for drawing scavenging air and solid materials intermixed therewith from said scavenging air chamber;
a pair of discrete conduits disposed between a single pair of adjacent rows of centrifugal separators, each conduit having an interior defined by enclosing wall means, the interior of each conduit being sealed from said scavenging air chamber except for an inlet opening to each conduit and an exhaust opening from each conduit, each exhaust opening being located adjacent said scavenging air outlet port and each inlet opening being located in said scavenging air chamber at a distance further from said scavenging air outlet port than said exhaust openings whereby negative air pressure applied through said scavenging air outlet port is staged to enhance the separating efficiency of the assembly, each of said conduits having a generally curved shape conforming to the shape of said scavenging air chamber, a space being formed between the second ends of said conduits, and at least a portion of said space being disposed approximately 180° from said scavenging air outlet port.

4,242,116

MAGNETIC VALVE, ESPECIALLY THREE-WAY VALVE AS A SWITCHING DEVICE FOR MULTI-TEMPERATURE COOLING APPARATUS WITH ONLY ONE REFRIGERATION MACHINE

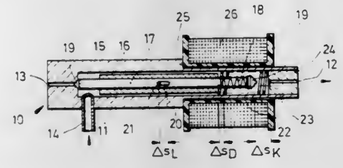
Matthias Aschberger, and Dieter Link, both of Giengen, Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 16, 1978, Ser. No. 906,632

Claims priority, application Fed. Rep. of Germany, May 24, 1977, 2723365

Int. Cl.³ F25B *5/00*

U.S. Cl. 62—199 **14 Claims**



1. Magnetic valve, especially three-way valve as a switching device for multi-temperature cooling apparatus operated with only one refrigeration machine, comprising:

(a) a tubular valve housing

(b) an axial bore hole in said tubular valve housing

(c) an inlet in said tubular housing for the introduction of fluid to said axial bore hole

(d) an opening at each end of the tubular valve housing for the discharge of fluid from said axial bore hole

(e) a single rod-like plunger axially movable in the bore hole of said tubular valve housing

(f) a sealing member at each end of the single rod-like plunger with axial movement of the plunger in one direction causing closing of one said opening at one end of the tubular valve housing by the sealing member at the end of the plunger, and with axial movement of the plunger in the opposite direction causing opening of said closed opening and closing of the other opening at the opposite end of the housing by the other sealing member at the opposite end of the plunger

(g) a coil of an electromagnet mounted on the tubular valve housing

(h) an armature axially movable in the housing which when activated by energizing said coil of the electromagnet engages and moves said plunger and attached sealing members against a restoring force and

(i) a spring in said housing in engagement with said plunger-sealing members to provide said restoring force.

4,242,117

METHOD OF PRODUCING OPTICAL FIBERS FOR TELECOMMUNICATIONS

Henricus M. J. M. van Ass, Hillegom, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

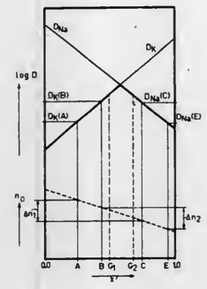
Filed Dec. 26, 1978, Ser. No. 973,277

Claims priority, application Netherlands, Jan. 6, 1978, 7800157

Int. Cl.³ G02B *5/14;* C03C *25/02*

U.S. Cl. 65—3 A **4 Claims**

1. A method of producing a glass fiber containing an alkali metal oxide and having a graded refractive index profile, said method being of the type wherein a core glass, having an initial composition containing a first type of alkali metal ions, and a cladding glass, having an initial composition containing a second type of different alkali metal ions, are contacted and heated to cause diffusion of the two types of alkali metal ions therein, thereby resulting in an alkali metal ion exchange between the core glass and the cladding glass, CHARACTERIZED IN THAT in the initial core glass composition prior to diffusion part of the first type of alkali metal ions are equimolarly replaced by alkali metal ions of the second type in an



amount such that after diffusion a fiber having a substantially parabolic refractive index profile is obtained.

4,242,118

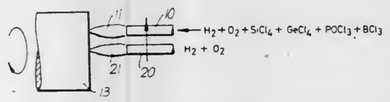
OPTICAL FIBER MANUFACTURE

John Irven, Stansted, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,914

Int. Cl.³ C03C *25/02*

U.S. Cl. 65—3 A **16 Claims**



1. A method of manufacturing an optical fiber solid rod preform comprising the steps of:

forming a localized deposit upon the end face of a rod by a vapor reaction deposition process;

scanning the position of the localized deposit over the end face of said rod by means of relative movement; and

progressively changing the reaction at the same time so as to cause the deposit building up on the end face to have a radially graded refractive index profile.

4,242,119

AGENT FOR COMBATING SEA-WATER ALGAE

Dagmar Berrer, Riehen, Switzerland; Joachim Lorenz, Bensheim, and Reinhardt Grade, Zwingenberg-Rodau, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,138

Claims priority, application Switzerland, Feb. 3, 1978, 1212/78

Int. Cl.³ A01N *43/70;* C09D *5/14*

U.S. Cl. 71—67 **5 Claims**

1. A method of combatting sea-water algae which consists essentially of

adding an effective amount of a triazine selected from the group consisting of 2-methylthio-4-cyclopropylamino-6-(α,β-dimethylpropylamino)-s-triazine (I); 2-methylthio-4-cyclopropylamino-6-tert-butylamino-s-triazine (II); and 2-methylthio-4-ethylamino-6-(α,β-dimethylpropylamino)-s-triazine (III) to sea-water in a sea-water cooling system or to a composition or material to be exposed to sea-water.

4,242,120

METHOD FOR STIMULATING FRUCTIFICATION AND FRUIT GROWTH OF CULTIVATED PLANTS AND GIBBERELLIN-BASED PREPARATION FOR REALIZING SAME

Mikhail K. Manankov, Krymskaya, U.S.S.R., assignor to Simferopolsky Gosudarstvenny Universitet imeni M.V., Yaltinskaya, U.S.S.R.

Filed Dec. 20, 1978, Ser. No. 971,630

Claims priority, application U.S.S.R., Feb. 23, 1978, 2595951

Int. Cl.³ A01N *43/08*

U.S. Cl. 71—89 **6 Claims**

1. A method for stimulating the fruitification and fruit growth of cultivated plants, comprising locally applying an effective amount of a preparation containing gibberellin and low molecular weight carbohydrate to individual parts of plants adjacent to reproductive organs during the period of active fruit formation.

4,242,121

METHOD OF ANTAGONIZING HERBICIDES ON SOYABEAN AND COTTON

Alan F. Hawkins, Woodley; Terence Lewis, Bracknell, and Ian Jones, Camberley, all of England, assignors to Imperial Chemical Industries Limited, London, England

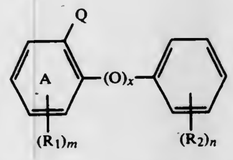
Continuation-in-part of Ser. No. 784,638, Apr. 4, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 967,880

Claims priority, application United Kingdom, Apr. 8, 1976, 14355/76

Int. Cl.² A01N *9/22, 9/24*

U.S. Cl. 71—93 **6 Claims**

1. A method of protecting a legume or cotton crop in a locus from herbicidal damage, said method consisting essentially of applying to the locus prior to the emergence of the crop, either successively (in either order) or together, (a) a herbicide which is capable of being taken up by a plant from the soil and which is capable of being translocated to a main herbicidal site of action within the foliage of the plant and which operates by interfering with photosynthesis in said plant, and (b) an effective amount of an antidotally active compound of general formula (I):



(I)

wherein each of R_1 and R_2, which may be the same or different, is hydrogen, halogen, C_{1-3} alkoxy, C_{1-4} alkyl, trihalomethyl or hydroxy, Q is carboxy or a salt or ester thereof, x is 1, m is 1 or 2 and n is 1 or 2.

4,242,122

HERBICIDAL META-BIFUNCTIONAL BENZENES

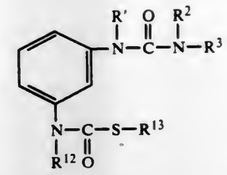
Philip C. Hamm, Glendale, and John F. Olin, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 549,128, Feb. 11, 1975, Pat. No. 4,013,450, which is a division of Ser. No. 77,677, Oct. 2, 1970, Pat. No. 3,867,426. This application Nov. 24, 1976, Ser. No. 744,849

Int. Cl.³ A01N *37/100;* C07C *155/08*

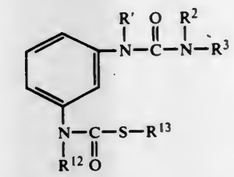
U.S. Cl. 71—100 **13 Claims**

1. A meta-bifunctional substituted benzene having the formula



wherein R' is selected from the group consisting of hydrogen and alkyl having a maximum of 8 carbon atoms; R^2 is alkyl having a maximum of 12 carbon atoms; R^3 is selected from the group consisting of hydrogen and alkyl having a maximum of 12 carbon atoms; R^{12} is selected from the group consisting of hydrogen, alkyl having a maximum of 6 carbon atoms; and R^{13} is selected from the group consisting of alkyl having a maximum of 8 carbon atoms.

11. A herbicidal method which comprises applying to plants a herbicidal effective amount of a meta-bifunctional substituted benzene of the formula



wherein R' is selected from the group consisting of hydrogen, alkyl having a maximum of 8 carbon atoms; R^2 is alkyl having a maximum of 12 carbon atoms; R^3 is selected from the group consisting of hydrogen and alkyl having a maximum of 12 carbon atoms; R^{12} is selected from the group consisting of hydrogen, alkyl having a maximum of 6 carbon atoms; and R^{13} is selected from the group consisting of alkyl having a maximum of 8 carbon atoms.

4,242,123

HERBICIDAL COMPOSITION AND METHOD OF USE

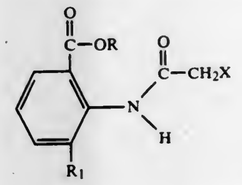
John P. Chupp, Kirkwood, and Jimmy W. Worley, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 30, 1978, Ser. No. 965,354

Int. Cl.³ A01N *37/44*

U.S. Cl. 71—111 **5 Claims**

1. A herbicidal composition comprising an inert adjuvant and an effective amount of a compound of the formula



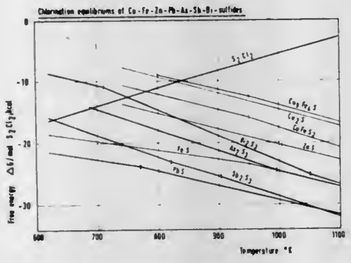
wherein X is chlorine and R and R_1 are independently C_{1-5} alkyl.

4,242,124

PROCESS FOR THE SELECTIVE REMOVAL OF IMPURITIES PRESENT IN SULFIDIC COMPLEX ORES, MIXED ORES OR CONCENTRATES

Simo A. I. Mäkipirtti, Nakkila, Finland, assignor to Outokumpu Oy, Outokumpu, Finland

Filed Jun. 21, 1979, Ser. No. 50,689
Claims priority, application Finland, Jun. 26, 1978, 782034
Int. Cl.³ C22B *1/08, 1/10*
U.S. Cl. 75—6 **7 Claims**



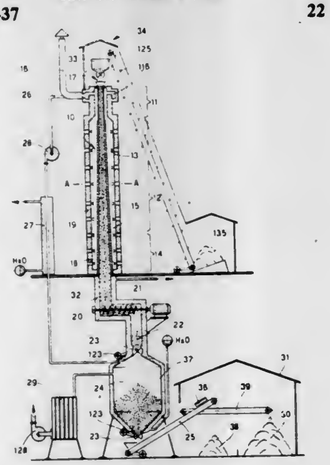
1. A process for the selective removal of impurities selected from the group comprising arsenic, selenium, bismuth, tellurium, and antimony, present in a raw material selected from sulfidic complex and mixed ores and concentrates containing copper, cobalt, nickel and iron as main metals, by decomposing and rearranging, at an elevated tmperature and a high partial pressure of elemental sulfur, minerals present in the raw material, in order to form new impurity compounds which pass into the gas phase, comprising subjecting the raw material to a gas atmosphere which, in addition to sulfur, contains a sulfur halide in order to halogenate the impurity compounds which have passed into the gas phase, and form stable halides which no longer affect the vaporization equilibrium.

4,242,125

CARBOTHERMIC PROCESS FOR PRODUCING SPONGE IRON AND THE IMPROVED VERTICAL RETORT SYSTEM USED IN SAID PROCESS

Franco Colautti, Ragosa di Povoletto, Italy, assignor to Kinglor Metor S.p.A., Buttrio, Italy

Filed Nov. 17, 1978, Ser. No. 961,689
Claims priority, application Italy, Nov. 22, 1977, 83525 A/77
Int. Cl.³ C21B *13/02*
U.S. Cl. 75—37 **22 Claims**



1. A carbothermic process for reducing iron ore in an externally heated vertical retort which includes a reduction zone; means above the reduction zone for receiving a reaction mixture of coal and ore and a cooling zone below the reduction zone including means to withdraw sponge iron, excess coal and ashes from the vertical retort, comprising the steps of first pre-heating a reaction mixture of coal and ore, with a substantially constant thermal charge, said pre-heating being carried out with a constant speed of descent of the mixture within a first zone of said retort, said pre-heating of the mixture being carried out with the combustion gases generated by the carbothermic process; a second and progressive heating of said reaction mixture in a second zone of said retort following said pre-heating, said second and progressive heating being by means of external burners to initiate the reaction and first reduction of said mixture, the speed of descent of said mixture being controlled to become progressively slower and the thermal charge being substantially constant; a third and constant heating of said mixture in a third zone of said retort following said progressive heating, said constant heating being by means of external burners to maintain the heat in said third zone so as to complete the reduction process, the speed of descent of said mixture in said third zone being substantially the same as the speed of descent in the second zone, and the thermal charge being substantially constant; maintaining the outside temperature of said second and third zones of said retort substantially constant in at least part of the second zone and in the third zone while maintaining the outside temperature of said retort at the second zone higher than the outside temperature of said retort at the third zone; withdrawing the sponge iron from said cooling zone in order that the momentary speed of descent of said mixture within said retort is constant at every point in any one single horizontal section, and withdrawing the at least partially cooled sponge iron from the retort together with excess coal.

4,242,126

PROCESS FOR THE TREATMENT OF IRON MELTS AND FOR INCREASING THE SCRAP PORTION IN THE CONVERTER

Alfred Freissmuth, Trostberg, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,734
Int. Cl.³ C21C *7/00*
U.S. Cl. 75—51 **14 Claims**

1. In a process for the treatment of iron melts and for increasing the scrap iron portion in a converter by blowing in an oxygen-containing treatment gas with the addition of calcium carbide, the improvement which comprises blowing in calcium carbide with a gas selected from the group consisting of oxygen and oxygen-containing gases on top or into the iron melt.

4,242,127

PROCESS FOR TREATING HYDROXIDE SLUDGE RESIDUES CONTAINING NONFERROUS METALS

Wolfgang Müller, Mannheim-Rheinau, and Lothar Witzke, Brühl, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt Ag, Essen, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 77,138
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841271
Int. Cl.³ C22B *15/08, 19/22, 23/04*
U.S. Cl. 75—99 **9 Claims**

1. A method for treating hydroxide sludge residues containing nonferrous metals selected from the group consisting of chromium, copper, zinc and nickel, and recovering the nonferrous metals by the separation of the individual nonferrous metals from one another comprising the following consecutive steps:

(a) concentrating the residue to an aqueous suspension with 15 to 20 weight percent of solids, treating this suspension with ca. 96% sulfuric acid at pH values equal to or less than 2 and temperatures of 10° to 70° C. for 0.5 to 2 hours, and separating the acid-insoluble residue obtained;

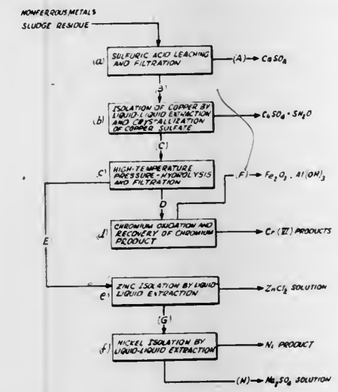
(b) isolating the copper from this solution by liquid extraction and further processing the copper-free solution by

(c) precipitating the aluminum-III, iron-III, chrominum-III, and calcium portions as the hydrated oxides or basic sulfates by treating the copper-free solution at pH values of 0.8 to 3, temperatures of 150° to 260° C., under a pressure of 6 to 48 bars for 1 to 3 hours and rapidly cooling the reaction mixture, and then subsequently neutralizing the resultant suspension with conventional neutralizing agents to produce

(c_1) an insoluble hydrolysate and

(c_2) a neutralized solution,

(d) mixing an alkali hydroxide and/or alkali carbonate with



insoluble hydrolysate (c_1) in at least stoichiometric amounts, based on the chromium content of the hydrolysate sludge, drying the mixture at temperatures less than 200° C. and roasting the dry mass with the addition of air at temperatures from 400° to 800° C. or with the addition of oxygen at 200° to 400° C. during 0.5 to 3 hours and subsequently adding the hot roasted material to water, leaching out the water-insoluble residue and then isolating the alkali chromate formed by filtration;

(e) isolating the zinc by liquid-liquid-extraction from the neutralized solution (c_2);

(f) isolating the nickel from the remaining solution by liquid-liquid extraction;

and processing the individual nonferrous metal fractions to isolate the metals obtained in process steps (b), (d), (e), and (f) by conventional procedures.

4,242,128

REMOVAL OF DISSOLVED COPPER FROM AQUEOUS SOLUTION ALSO CONTAINING DISSOLVED COBALT OR MANGANESE

Walter Partenheimer, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 15, 1979, Ser. No. 3,366
Int. Cl.³ C22B *15/12*
U.S. Cl. 75—109 **1 Claim**

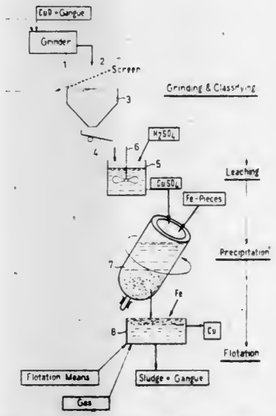
1. The method of decreasing the concentration of dissolved copper in an aqueous solution obtained from the aqueous extraction of a residue from the production of a phthalic acid product by the liquid phase oxidation of a xylene with air in the presence of cobaltous ion or mixtures of cobaltous and manganous ions in the presence or absence of reaction solvent wherein said residue remains after recovery of the phthalic acid product and, if used, separation of reaction solvent; wherein said extract solution contains mainly dissolved cobalt or cobalt and manganese together with a small fraction thereof of the contaminant metals copper, iron, nickel and chromium as their phthalates; and wherein the concentration of dissolved copper is at or above 800 weight parts per million weight parts of cobalt; which copper decreasing method comprises adjusting the pH of such solution to a pH between 5.8 and 6.5, contacting such pH adjusted solution with particulates of iron in an amount thereof of five weight parts for each 140 weight parts of solution for at least 30 minutes but less than 120 minutes and thereafter separating the solution from the iron particulates.

4,242,129

METHOD OF RECOVERING METALS

Hans Kellerwessel, Aachen, Fed. Rep. of Germany, and Ernst Kausel, Lima, Peru, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Continuation of Ser. No. 759,138, Jan. 13, 1977, abandoned. This application May 26, 1978, Ser. No. 909,964
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1976, 2602849
Int. Cl.³ C22B *3/00, 3/02*
U.S. Cl. 75—109 **2 Claims**



1. The method of recovering copper from low grade copper oxide sources which comprises grinding solid copper oxide source material to a size larger than is suitable for flotation, continuously feeding the ground copper source material through an oscillating reaction vessel, adding an aqueous sulphuric acid leaching solution to the ground copper source material in the reaction vessel, commingling the sulphuric acid leaching solution and the ground copper source material in the reaction vessel with iron grinding bodies effective to precipitate copper from the leaching reaction of the sulphuric acid leaching solution on the ground source material, maintaining the reaction vessel filled to about 60 percent of its capacity with the iron grinding bodies, oscillating the reaction vessel to further grind the copper source material with the iron grinding bodies, to intimately admix the sulphuric acid leaching solution with the copper source material and the iron grinding bodies and to precipitate copper from the sulphuric acid leaching solution, transferring the leaching solution and leached solids from the reaction vessel to a settling tank, retaining the iron grinding bodies in the reaction vessel, settling the solids from the leaching solution in the settling tank, recirculating leaching solution from the settling tank back to the reaction vessel, depositing the settled solids from the settling tank in a flotation cell, and floating off the copper content of the solids as a foam to recover the copper as metallic copper cement.

4,242,130

HIGH-SPEED STEEL

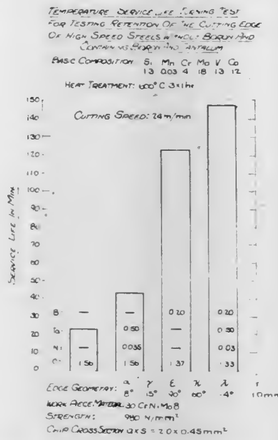
Helmut Brandis, Krefeld; Hans H. Weigand, Tönisvorst, and Wolfgang Spyra, Krefeld, all of Fed. Rep. of Germany, assignors to Thyssen Edelstahlwerke AG, Krefeld, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,686

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758330

Int. Cl.³ C22C *38/22*

U.S. Cl. 75—126 C **2 Claims**



1. Highly wear-resistant, corrosion-resistant steel with high thermal resistance and tempering stability for cold and hot working tools as well as for parts subject to wear, consisting of:

0.7	to	1.7%	C
0.01	to	0.08%	N
0.02	to	1.5%	B
0.01	to	1.5%	Si
0.01	to	1.0%	Mn
5.0	to	15.0%	Co
3.0	to	7.0%	Cr
13.0	to	20.0%	Mo
0	to	10.0%	W
0	to	5.0%	V
0.02	to	2.0%	Nb and/or Ta
Remainder			Fe

4,242,131

COPPER BASE ALLOY CONTAINING MANGANF AND IRON

Eugene Shapiro, Hamden; John M. Vitek, Cheshire, and Warren F. Smith, Jr., Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 11, 1979, Ser. No. 74,513

Int. Cl.³ C22C *9/04*

U.S. Cl. 75—157.5 **8 Claims**

1. A copper base alloy having improved stress relaxation resistance consisting essentially of: about 15.0 to 31% zinc; about 1.0 to 5.0% aluminum; about 0.1 to less than 1.0% iron; about 1.1 to 8% manganese; and the balance essentially copper.

4,242,132

COPPER BASE ALLOY CONTAINING MANGANESE AND NICKLE

Eugene Shapiro, Hamden; John M. Vitek, Cheshire, and Warren F. Smith, Jr., Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 11, 1979, Ser. No. 74,520

Int. Cl.³ C22C *9/04*

U.S. Cl. 75—157.5 **8 Claims**

1. A copper base alloy having improved stress relaxation resistance consisting essentially of: about 15.0 to 31% zinc; about 1.0 to 5.0% aluminum; about 0.1 to less than 1.0% nickel; about 1.1 to 8% manganese; and the balance essentially copper.

4,242,133

COPPER BASE ALLOY CONTAINING MANGANESE

Eugene Shapiro, Hamden; John M. Vitek, Cheshire, and Warren F. Smith, Jr., Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 11, 1979, Ser. No. 74,536

Int. Cl.³ C22C *9/04*

U.S. Cl. 75—157.5 **10 Claims**

1. A copper base alloy having improved stress relaxation resistance consisting essentially of: about 15.0 to 31% zinc; about 2.5 to 4% aluminum; about 1.1 to 8% manganese and the balance essentially copper the copper content being less than 80% copper.

4,242,134

CADMIUM-FREE SILVER BASED BRAZING ALLOY

Thomas L. D'Silva, Beaverton, Oreg., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 25, 1979, Ser. No. 52,058

Int. Cl.³ C22C *5/00*

U.S. Cl. 75—173 C **3 Claims**

1. A quaternary brazing alloy consisting essentially in percent by weight of 5 to 15 germanium, 8 to 18 zinc, of 5 to 39 copper and the balance silver.

4,242,135

ELECTRICAL CONTACT MATERIALS OF INTERNALLY OXIDIZED AG-SN-BI ALLOY

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Japan

Filed Jul. 30, 1979, Ser. No. 61,846

Claims priority, application Japan, Aug. 11, 1978, 53-097363

Int. Cl.³ B32B *15/00*; C22C *5/10*

U.S. Cl. 75—173 A **2 Claims**

1. An electrical contact material made from a silver alloy comprising 3–15 weight % of Sn, 0.01–1.0 weight % of Bi, and 0.5–8.5 weight % of Cu, said silver alloy having been internally oxidized.

4,242,136

PROCESS FOR PRODUCING METALLIC ZIRCONIUM

Hiroshi Ishizuka, 19-2 Ebara 6-chrome, Shinagawa-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 808,165, Jun. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 547,170, Feb. 5, 1975, abandoned. This application Apr. 10, 1979, Ser. No. 28,841

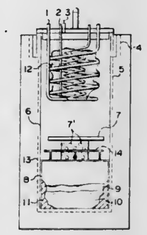
Int. Cl.³ C22B *25/00*

U.S. Cl. 75—84.5 **1 Claim**

1. A process for producing metallic zirconium by reacting zirconium tetrachloride vapor with molten magnesium contained in a reducing crucible which process comprises:

(1) Introducing zirconium tetrachloride vapor through a guide pipe means extending above and towards molten magnesium contained in a reducing crucible, said crucible being enclosed in a retort which is separately provided from a storage tank for the zirconium tetrachloride vapor, said vapor being introduced onto the middle surface of the magnesium with a differential pressure of 0.1 to 0.2 kg/cm² between said retort and said storage tank, said reducing crucible being cooled from the outside in the course of the reaction thus caused between the zirconium tetrachloride with magnesium in the middle surface of the magnesium in a zone away from the crucible wall so as not to raise the temperature of said crucible wall and thereby eliminating the alloy formation of the zirconium product with the crucible wall material, to result in a preferred zirconium sponge layer deposit disposed at the bottom of said crucible, which contains the magnesium, with little adhesion of the sponge to the wall of the crucible, said sponge layer being covered by a layer of magnesium chloride by-product;

(2) freezing the by-product;



(3) cutting the crucible which contains zirconium sponge and the entire solid magnesium chloride by-product substantially horizontally and at a level such that substantially all of the zirconium sponge is separated from the by-product and thus contains only a small amount of said by-product;

(4) collecting a plurality of cut crucibles obtained by such reaction operations;

(5) placing said plurality of crucibles, which contain the zirconium sponge, together in a stack in a vacuum distilling device;

(6) heating said plurality of crucibles to remove any remaining by-product at a temperature high enough to evaporate said by-product; and

(7) recovering the purified zirconium sponge.

4,242,138

FLAMEPROOFED REGENERATED CELLULOSE AND METHOD

Claudine Mauric, Basel, and Rainer Wolf, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

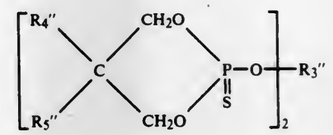
Continuation of Ser. No. 708,378, Jul. 26, 1976. This application Apr. 5, 1979, Ser. No. 27,488

Claims priority, application Switzerland, Jul. 31, 1975, 10003/75; Nov. 19, 1975, 14992/75

Int. Cl.³ C09K *3/28*; C09D *5/18*

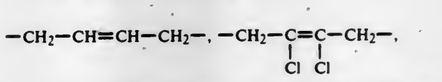
U.S. Cl. 106—18.18 **8 Claims**

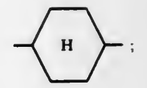
1. Flameproofed regenerated cellulose containing, as a flameproofing agent, an effective amount of a compound of formula,



wherein

R_3'' is straight or branched chain C_3–C_5 alkylene; or a divalent radical selected from





with the proviso that when R_3'' is straight or branched chain C_3–C_5 alkylene, it is other than alkyl-substituted methylene; and

each of R_4'' and R_5'' is, independently, methyl; ethyl; $-CH_2Cl$; or $-CH_2Br$; with the provisos that: (a) when R_4'' is $-CH_2Br$, R_5'' is other than $-CH_2Cl$; and (b) when R_5'' is CH_2Br, R_4'' is other than $-CH_2Cl$.

4,242,137

IMAGE TRANSFER COMPOSITION

Maurice A. Minuto, 15 Heminway Dr., Dix Hills, N.Y. 11746

Filed Aug. 30, 1979, Ser. No. 71,310

Int. Cl.³ C08L *1/26*; C09K *3/00*

U.S. Cl. 106—14.5 **12 Claims**

1. An image transfer composition suitable as image transfer medium for reproducing printed matter which has been imprinted on the surface of putty-like substances, said composition comprising from about 300 to about 400 parts by weight water; from about 1 to about 10 parts by weight of a thixotropic agent selected from the group consisting of hydroxyethyl cellulose and carboxymethyl cellulose; and from the about 80 to about 120 parts by weight of a water soluble glycol selected from the group consisting of ethylene glycol, propylene glycol and butylene glycol.

4,242,139

WATER SOLUBLE BENZOXANTHENE DYESTUFFS FOR FLUORESCENT INKS

Helmut Tröster, Königstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

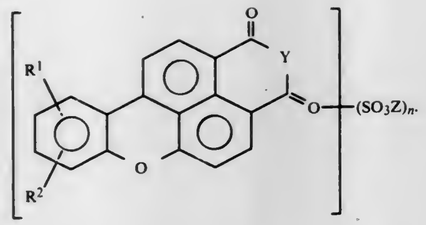
Filed Feb. 1, 1979, Ser. No. 8,484

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804530

Int. Cl.³ C09D *11/00*

U.S. Cl. 106—22 **30 Claims**

1. A fluorescent ink consisting of a liquid containing dissolved therein an effective amount of a dyestuff of the formula



wherein Y is oxygen or a group of the formula



in which R is hydrogen, unsubstituted or substituted alkyl of 1 to 5 carbon atoms, unsubstituted or substituted cyclohexyl, unsubstituted or substituted phenyl, unsubstituted or substituted alkoxy of 1 to 5 carbon atoms, alkanoyloxy of 1 to 5 carbon atoms, benzoyloxy, alkylamino of 2 to 5 carbon atoms, alkanoylamino of 1 to 5 carbon atoms or benzoylamino,

R^1 and R^2 which are the same or different, are hydrogen, halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,

n is a number of 1 to 3,

Z is an alkali metal or an ammonium cation of the formula

wherein R^3, R^4 and R^5 which are the same or different, are hydrogen, unsubstituted or substituted alkyl of 1 to 5 carbon atoms or R^4 and R^5 together with the nitrogen atom stand for piperidine, morpholine or piperazine.

4,242,140

ACTIVATION OF CLAYS BY COMPACTION

George R. Alther, Ferndale, Mich., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Nov. 28, 1979, Ser. No. 98,101
Int. Cl.[3] C04B *33/13*
U.S. Cl. 106—72 18 Claims

1. A method of upgrading a crude smectite clay comprising first adding to said smectite clay 1–10% by weight of an activator substance in a soluble form containing a cation selected from the group consisting of Na, Li, K, Cs, NH_4, Zn, Ni, Cu, Co and Fe, said smectite clay having a maximum moisture content of about 20% by weight, thoroughly mixing said activator substance with said clay, and then compacting said clay into a compacted mass having an apparent density of from about 60–94% of the apparent density of the clay before it is ground, whereby the viscosity characteristics and the fluid loss characteristics of said treated clay are substantially improved over the crude clay.

4,242,141

RAPID-SETTING DRY PACKING MIX FOR ELIMINATING BORE HOLE TROUBLES AND METHOD OF MANUFACTURE THEREOF

Viktor F. Rogov, ulitsa Garibaldi, 30, korpus 2, kv. 70, Moscow; Nikolai K. Lipatov, ulitsa Mekhanizatorov, 1, kv. 4, Apatity Murmanskoi oblasti; Ruben A. Tatevosian, ulitsa Gorkogo 4, kv. 60; Mikhail Y. Titov, ulitsa Kominterna, 34/6, kv. 83, both of Moscow; Lev A. Tereschenko, ulitsa Gurdina, 5, kv. 34, Leningrad, and Arian M. Yakovlev, Grazhdansky prospekt, 15, kv. 210, Leningrad, all of U.S.S.R.

Filed Jul. 5, 1979, Ser. No. 55,061
Int. Cl.[3] C04B *7/35*
U.S. Cl. 106—89 7 Claims

1. A rapid-setting dry packing mix for eliminating bore hole troubles prepared on the basis of a powder gypsum-cement binder comprising:

from 40 to 50% by weight of powder cement;

from 50 to 60% by weight of powder binder selected from the group consisting of gypsum and alabaster; and

from 0.01 to 3.0% by weight of powder barium hexaferrite having a particle size commensurate with the particles of the binder.

4,242,142

METHOD FOR TREATING GRANULATED BLAST FURNACE SLAG

Kenneth H. Gee, and John W. Kreiger, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Del.

Continuation-in-part of Ser. No. 931,803, Aug. 7, 1977, abandoned. This application Jun. 27, 1979, Ser. No. 52,896
Int. Cl.[3] C04B *7/02*
U.S. Cl. 106—97 19 Claims

1. A method for preparing a water slurry of granulated blast furnace slag containing about 5 to 15 weight percent solids which have a particle size of 0.635 centimeter×0, for use in producing portland blast furnace slag cement and as a cementitious extender in producing concrete products comprising:

(a) screening the water slurry to separate and remove substantially all foreign matter from the water slurry,

(b) charging the water slurry into a classifier wherein the particles are separated into a coarse fraction and a fine fraction,

(c) partially dewatering the coarse fraction in a dewatering device and collecting the fine fraction in a tank,

(d) discharging the coarse fraction from the dewatering device to storage wherein a second portion of water is allowed to drain naturally from the coarse fraction,

(e) thermally drying the coarse fraction to remove substantially all the remaining moisture therefrom,

(f) mixing the coarse fraction with raw materials suitable for producing portland blast furnace slag cement,

(g) comminuting the mixture of step (f) to specified size, and

(h) adding the fine fraction as an extender to cementitious materials in the manufacture of concrete products.

4,242,143

PROCESS FOR IMPROVING THE PROPERTIES OF BITUMINOUS PRODUCTS AND AN IMPROVED CAST ASPHALT

Germain Hagenbach, Vernaison, and Paul Maldonado, St Symphorien D'Ozon, both of France, assignors to Elf Union, Paris, France

Filed Oct. 4, 1978, Ser. No. 948,545
Claims priority, application France, Oct. 5, 1977, 77 29953
Int. Cl.[3] C08L *91/06, 95/00*
U.S. Cl. 106—272 8 Claims

1. In a cast asphalt composition comprising sand, gravel, fillers and bitumens in proportions such that the product can be cast while hot without compacting, the improvement which comprises using as said bitumen a mixture comprising a bitumen having a penetrability of from about 10 to 300 and a soluble amount of from about 5 to 20% by weight based on the weight of the bitumen of a polyolefin wax.

4,242,144

BITUMINOUS MIXED COMPOSITION AND FILLER FOR SAME CONTAINING NON-HYGROSCOPIC CRYSTAL WATER-CONTAINING SUBSTANCES

Klaus Bergmann, Heiligenhaus; Friedrich Schmitz, Wülfrath; Gottfried Kilian, Mettmann, and Heinz Reppel, Wülfrath, all of Fed. Rep. of Germany, assignors to Rheinische Kalksteinwerke GmbH, Wülfrath, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,634
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815285; Jul. 12, 1978, 2830612
Int. Cl.[3] C08L *95/00;* C09D *3/24*
U.S. Cl. 106—281 R 12 Claims

1. In a hot processed bituminous mixed composition particularly for use in road construction, the improvement comprising:

said composition containing as additives non-hygroscopic crystal water-containing substances capable of releasing their crystal water partly or completely at the mixing temperature.

4,242,145

PROCESS FOR THE SIMULTANEOUS PRODUCTION OF FRUCTOSE AND GLUCONIC ACID FROM GLUCOSE-FRUCTOSE MIXTURES

Hans-Rudolf Müller; Werner Kündig, both of Schaffhausen, and Alfred Hedinger, Thayngen, all of Switzerland, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,634
Claims priority, application Switzerland, Feb. 20, 1978, 1809/78
Int. Cl.[3] C13K *3/00, 11/00;* C07C *59/105*
U.S. Cl. 127—46 R 7 Claims

1. In a process for the simultaneous production of fructose, a salt thereof or a mixture thereof, and of gluconic acid, a salt thereof or a mixture thereof, from a glucose-fructose mixture, by selectively oxidizing the glucose, the improvement which comprises selectively oxidizing the glucose, at a pH of about 8–10, with oxygen, activated by a noble metal catalyst; and terminating the oxidizing step upon the formation of 1 equivalent, per mole of glucose employed, of the total amount of carboxylic acid and carboxylate ion produced during the oxidizing step.

4,242,146

METHOD FOR TREATING OIL-CONTAMINATED DRILL CUTTINGS

John Kelly, Jr., Arlington, Tex., assignor to Mobil Oil Corporation, New York City, N.Y.

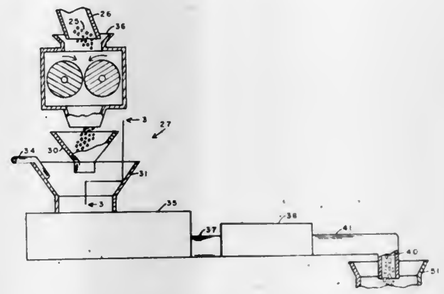
Filed Jan. 8, 1979, Ser. No. 1,564
Int. Cl.[3] B08B *7/04*
U.S. Cl. 134—7 8 Claims

1. A method of treating oil-contaminated drill cuttings from a well drilling operation in which a drilling fluid is circulated to remove drill cuttings from the well being drilled, said method comprising:

separating said cuttings from said drilling fluid;

mixing a solid, oil absorbent material with said separated cuttings to absorb free oil from the cuttings into said oil absorbent material;

compacting said cuttings and said oil absorbent material after mixing; and



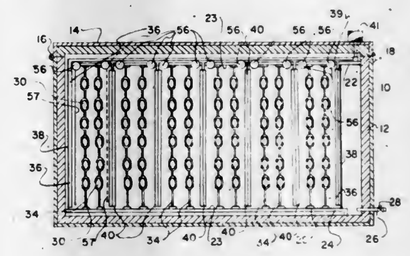
disposing of said cuttings and said solid, oil absorbent material after they are compacted.

4,242,147

DEVICE FOR CONVERTING WASTE NUCLEAR ENERGY TO ELECTRICITY

Vincent D. DeToia, 3478 Kingsland Ave., Bronx, N.Y. 10469

Filed Nov. 15, 1978, Ser. No. 961,078
Int. Cl.[2] G21H *1/12*
U.S. Cl. 136—253 7 Claims



1. A device for converting radiation of nuclear waste material to electricity, comprising a shielded casing; a frame in said casing; a plurality of hollow first containers, each housing a volume of radioactive waste materials in fluid or powder form, with said first containers mounted on said frame, said first containers further comprising closeable inlet means for replenishing said waste materials in said first containers,

light-emitting materials in at least one or more transparent second containers and at least partially surrounding each of said first containers and receiving radiation therefrom, thereby producing light; a plurality of photocells mounted on said frame in spaced relation thereto and receiving said light; current collecting means connected to said photocells for collecting electricity therefrom; and means for evacuating said casing, so as to provide a fluid-free interior space between said photocells and said light-emitting materials.

4,242,148

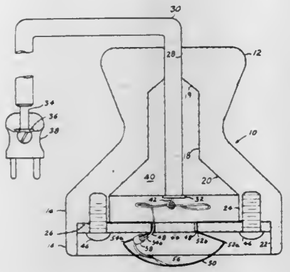
THERMOCOUPLE SURFACE PROBE

Patrick A. Remmert, Denville, N.J., assignor to Thermo Electric Co., Inc., Saddle Brook, N.J.

Filed Aug. 3, 1979, Ser. No. 63,384
Int. Cl.[3] H01L *35/28*
U.S. Cl. 136—221 10 Claims

1. A thermocouple surface probe, comprising:

a body including a handle portion and a depending peripheral skirt defining a recessed bottom portion;
spring means mounted to said body in the recessed bottom portion;
a thermocouple junction mounted to said spring means;
a pair of thermocouple wires extending from said juntion; and



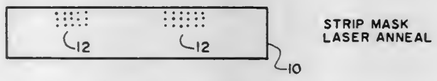
a connector connected to said thermocouple wires, whereby the peripheral skirt controls the compression of the spring means and blocks circulating air from reaching the junction when the probe is placed on a surface for measuring the temperature thereof.

4,242,149

METHOD OF MAKING PHOTODETECTORS USING ION IMPLANTATION AND LASER ANNEALING

Gerard J. King, Alexandria, and Aubrey J. Dunn, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 31, 1979, Ser. No. 62,593
Int. Cl.³ H01L *21/26, 21/268;* B23K *26/00*
U.S. Cl. 148—1.5 **5 Claims**



1. A method of making at least one semiconductor photodetector including the steps of:
preparing a binary compound semiconductor substrate;
ion bombarding a side of said substrate in at least one predetermined area to implant ions to a predetermined depth; and
locally laser heating at least said predetermined area to said predetermined depth, whereby ion bombardment damage is healed, and whereby the implanted ions combine with at least one element of said compound to form a photodetector compound.

4,242,150

METHOD OF PRODUCING REINFORCING BARS WITH CORROSION RESISTANT COATING

Herris M. Maxwell, 2204 Riding Ridge Rd., Columbia, S.C. 29204

Filed May 25, 1979, Ser. No. 42,443
Int. Cl.³ B21B *9/00*
U.S. Cl. 148—6.3 **9 Claims**

1. A method of applying a protective metal coating to a metal billet to produce a bar having corrosive resistant characteristics, such method comprising the steps of:
(a) plating the entire exterior surface of a ferrous billet with a layer of non-ferrous protective metal;
(b) covering the entire exterior surface of said plated ferrous billet with an adherent layer of a refractory material;
(c) heating said plated and covered ferrous billet in a normal atmosphere furnace to an elevated temperature at which said billet is malleable and at which significant oxidation of said non-ferrous protective metal would normally occur, said oxidation being substantially reduced by the presence of said layer of refractory material; and
(d) hot rolling said malleable ferrous billet to reduce the thickness thereof, whereby said ferrous bar is formed with a final coating including an exterior layer of said non-ferrous protective metal.

4,242,151

CHROMIZING OF STEELS BY GASEOUS METHOD

Robert Leveque, Firminy, France, assignor to Creusot-Loire, Paris, France

Filed Oct. 24, 1979, Ser. No. 87,954
Claims priority, application France, Oct. 25, 1978, 78 30308
Int. Cl.³ C23C *11/04, 11/16*
U.S. Cl. 148—6.35 **3 Claims**

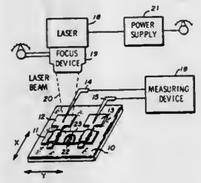
1. Improvement in the methods of chromizing steels, steels to a depth greater than 40 microns, usable for steels with a carbon content of at least 0.2%, comprising the combination of three successive treatments, the first of these three treatments consisting of an ionic nitriding of a surface layer between 100 and 350 microns thick, this ionic nitriding being carried out in an atmosphere constituted by a mixture of nitrogen and hydrogen, at a temperature of between 450° C. and 650° C., for between 5 and 40 hours, so as to obtain between 1.5% and 2.5% of nitrogen in the nitrided layer, the second of these three treatments consisting of a chormizing by gaseous method forming chromium carbides, lasting between 5 and 30 hours, and realized at temperatures of between 850° C. and 1,100° C., the third of these three treatments being a thermal treatment comprising an oil quenching of the chromized piece followed by a tempering at a temperature of between 600° C. and 650° C., lasting between 30 minutes and 10 hours, depending on the size of the piece to be treated.

4,242,152

METHOD FOR ADJUSTING THE FOCUS AND POWER OF A TRIMMING LASER

Richard H. Stone, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 14, 1979, Ser. No. 38,600
Int. Cl.² B23K *26/00*
U.S. Cl. 148—9.5 **12 Claims**



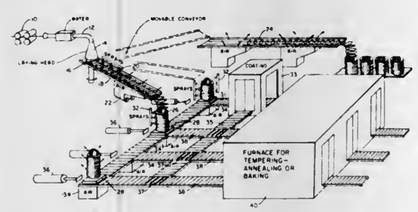
1. A process for trimming a deposited film on a substrate, using a laser to vaporize film material to produce a kerf therein, said process comprising the steps:
applying a laser beam to said film to vaporize a portion thereof for controlling the characteristics of said film, whereby at least a portion of said vaporized material redeposits on the surface of said film in the vicinity of said kerf;
illuminating said redeposited material;
viewing said redeposited material at an angle so that said illumination produces light fringes; and
adjusting said laser to produce a predetermined light fringe configuration.

4,242,153

METHODS FOR HOT ROLLING AND TREATING ROD

Vito J. Vitelli, Shrewsbury; Asjed A. Jalil, Holden, and Norman A. Wilson, Shrewsbury, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Oct. 16, 1978, Ser. No. 951,379
Int. Cl.³ C21D *7/14*
U.S. Cl. 148—12 B **4 Claims**



1. A process comprising the steps of
(a) hot rolling low to medium carbon content steel rod in the conventional manner;
(b) as the rod exits from the final finishing stand of the mill with its austenite grains in the freshly recrystallized state and rapidly growing by merger of smaller grains under conditions of substantial excess heat above A_3, cooling the rod rapidly to about or slightly below A_3;
(c) terminating the rapid cooling close enough to A_3 to avoid any substantial transformation of the steel under rapid cooling conditions;
(d) coiling the rod into rings and depositing them onto a slowly moving conveyor so that the offset of the rings is between about 2 mm to 10 mm, and retarding the cooling thereof to obtain a maximum precipitation of free ferrite as well as a maximum development of coarse pearlite;
(e) continuing the retarded cooling until a major part of the rod is cooled to about 600° C. and transformation takes place to a substantial degree;
(f) gathering the rings and depositing them onto a mandrel mounted on a movable pallet while reducing the temperature of the remainder of the rod to around 600° C. to complete transformation;
(g) placing the rod (on the pallet) in an annealing furnace and bringing the rod temperature up to just below A_1 (usually around 667° C.); and
(h) holding the rod at the subcritical temperature until the structural grain size coarsens, and the carbides of the coarse pearlite therein start to form clusters.

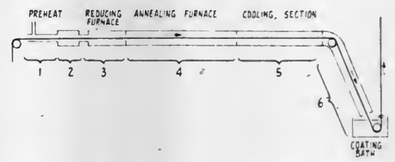
4,242,154

PREHEAT AND CLEANING SYSTEM

James T. Pilling, Upland, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

Continuation of Ser. No. 930,420, Aug. 2, 1978, abandoned, which is a division of Ser. No. 863,226, Dec. 22, 1977, abandoned. This application Oct. 3, 1979, Ser. No. 81,531
Int. Cl.³ C21D *1/48*
U.S. Cl. 148—16.7 **5 Claims**

1. A process for continuously annealing metal strip comprising,
(a) introducing strip to be annealed into a single elongated tubular preheat zone and passing it therethrough as said strip contacts hot combustion gases flowing in a direction opposite to the direction of flow of said strip,
(b) passing said strip into a separate closed direct flame contact furnace wherein combustion gases are generated for direct flame contact on the surface of said strip within said furnace to thereby continue the preheating and cleaning thereof to effectively remove surface contaminants therefrom,
(c) thereafter subjecting said strip to a series of consecutive steps comprising:



(i) subjecting said strip to a reducing area within an atmosphere of hydrogen containing protective gases;
(ii) annealing said strip; and
(iii) cooling said strip;
(d) permitting said protective gases and said combustion gases to flow in a single direction countercurrent to the direction of travel of said strip through said furnace and then through said zone and exhausting said gases from the strip entry end of said preheat zone.

4,242,155

METHOD OF FORMING AN INSULATING FILM ON A GRAIN-ORIENTED SILICON STEEL SHEET

Nobuyuki Morito; Toshitomo Sugiyama; Yasuo Yokoyama, all of Kobe, and Toshio Ichida, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Apr. 23, 1979, Ser. No. 32,650
Claims priority, application Japan, Apr. 28, 1978, 53/51038
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—113 **1 Claim**

1. A method of forming a highly adhesive and uniform insulating film on a grain-oriented silicon steel sheet, without deteriorating the iron loss of the steel sheet, wherein a cold rolled silicon steel sheet having a final gauge is subjected to a decarburization annealing to form a silica-containing subscale on the surface, coated with an annealing separator consisting mainly of magnesia on the subscale and subjected to a final annealing to form an insulating film, an improvement comprising using a magnesia series annealing separator containing 0.1–10% by weight, calculated as strontium, of at least one strontium compound selected from the group consisting of $SrSO_4$, $Sr(OH)_2.8H_2O$, $SrCO_3$, and $Sr(NO_3)_2$, and 0.5–5% by weight, calculated as titanium, of a titanium compound.

4,242,156

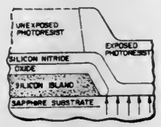
METHOD OF FABRICATING AN SOS ISLAND EDGE PASSIVATION STRUCTURE

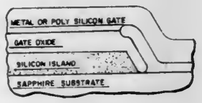
John L. Peel, Sandy, Utah, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 15, 1979, Ser. No. 85,148
Int. Cl.³ H01L *21/86, 21/20*
U.S. Cl. 148—175 **2 Claims**

1. A method of fabricating a silicon-on-sapphire semiconductor structure comprising the steps of:
forming a silicon island on a sapphire substrate;
growing a first oxide layer over the major surface of said silicon island, including a top portion and a side portion;
depositing a nitride layer entirely over said oxide layer;
etching a portion of said nitride layer and said oxide layer

over part of said top portion of said silicon island spaced apart from the edge between said top portion and said side





portion to the bare silicon surface of said silicon island; and

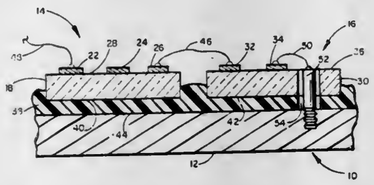
growing a second oxide layer on said bare silicon surface.

4,242,157

METHOD OF ASSEMBLY OF MICROWAVE INTEGRATED CIRCUITS HAVING A STRUCTURALLY CONTINUOUS GROUND PLANE

Richard W. Geble, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 855,132, Nov. 28, 1977, Pat. No. 4,184,133.
This application Apr. 20, 1979, Ser. No. 31,815
Int. Cl.³ G01R *31/26*
U.S. Cl. 156—64 **6 Claims**



1. A method of forming a microwave integrated circuit assembly, comprising:

(a) providing a substrate of dielectric material, said substrate having an upper surface and a lower surface;

(b) disposing components for microwave integrated circuitry on said upper surface of said substrate;

(c) providing carrier means for supporting said substrate;

(d) interposing a layer of a curable adhesive material between said substrate and said carrier wherein said layer of adhesive material is in contact with said lower surface of said substrate and the opposing surface of said carrier;

(e) maintaining said curable adhesive material in a tacky condition thereby permitting removal of said substrate from said carrier with moderate force;

(f) testing said microwave integrated circuitry for satisfactory operation;

(g) removing said substrate from said carrier when said testing step indicates unsatisfactory operation;

(h) replacing the removed substrate;

(i) repeating said testing step; and

(j) curing said adhesive material to hardness to attach said substrate to said carrier after said testing step indicates satisfactory operation.

4,242,158

ADHESIVE DISPERSING ANVIL AND METHOD OF USING

Elvin G. Olson, Olympia, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 6, 1979, Ser. No. 73,174
Int. Cl.³ B21J *15/02, 15/10;* **B32B** *3/12, 7/08*
U.S. Cl. 156—92 **1 Claim**



1. A method of joining an insert to a honeycomb cored panel with the insert to be formed on one end, and to be adhesive bonded on the other end, the steps comprising: placing an adhesive on a surface of a honeycomb panel near a hole through the panel, introducing an insert into the hole with a large flat base for the insert contacting the adhesive, blowing compressed air through an anvil with the air coming out the working end of the anvil, and squeezing the insert between a forming die and the anvil for joining the insert to the panel while blowing adhesive off the surface of the insert contacted by the anvil.

4,242,159

PROCESS FOR THE PRODUCTION OF COMPOSITE MEMBRANES

Albrecht Klimmek; Wolfram Krieger, both of Frankfurt am Main, and Roland Reiner, Eschborn, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 14,952
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808222
Int. Cl.² B32B *31/12;* **B01D** *39/16*
U.S. Cl. 156—155 **13 Claims**

1. In a process for the production of a composite membrane consisting of a porous supporting membrane and a thin separating membrane, the improvement characterized by the steps of producing a separating membrane on the surface of a carrier film consisting essentially of at least one soluble polymer, placing the carrier film having the separating membrane thereon with its separating membrane side on a porous supporting membrane such that the separating membrane is between the supporting membrane and the carrier film, and then dissolving the carrier film.

4,242,160

METHOD OF WINDING A WIND TURBINE BLADE USING A FILAMENT REINFORCED MANDREL

Warren H. Pinter, East Hartland, and Dale E. Smith, Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 2, 1979, Ser. No. 9,706
Int. Cl.³ B65H *81/00;* **F03D** *1/06*
U.S. Cl. 156—175 **6 Claims**



1. A method of fabricating a large wind turbine blade spar on a winding mechanism comprising:

rotatably mounting a hollow one-piece cantilever removabie mandrel on said winding mechanism, said mandrel comprising a filament-reinforced resin matrix inner tubular shell having a base end and a tip end, said inner shell tapering in diameter from said base end to said tip end and comprising first and second filament-reinforced resin matrix hollow, tapered half-cylinders bonded together; a filament-reinforced resin matrix outer shell bonded to the outer surface of said inner shell, said inner and outer shells forming a tapered mandrel wall of nonuniform thickness; and fitting means on said base end and on said tip end rotatably mounting said mandrel on said winding mechanism;

winding filaments on said mandrel to form said spar; and

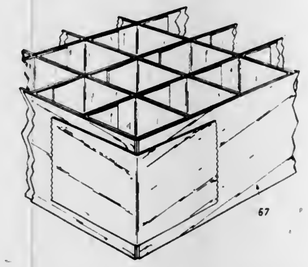
removing said mandrel from said winding mechanism and said spar.

4,242,161

METHOD AND A MACHINE FOR PRODUCING CELLULAR LATTICEWORK

Bengt H. Hulten, Hedemora; Hans T. Skarfelt, Habo, and Uno L. Gjertz, Astorp, all of Sweden, assignors to Munksjo Aktiebolag, Jonkoping, Sweden

Filed Feb. 27, 1978, Ser. No. 881,431
Claims priority, application Sweden, Feb. 28, 1977, 7702153
Int. Cl.³ B31D *3/04;* **A01G** *9/10;* **B32B** *3/12*
U.S. Cl. 156—197 **15 Claims**



1. An improved method of producing a cellular latticework structure composed of cells of parallelepipedon shape the walls of which extend in parallel with the sides of the latticework and composed of e.g. paper, pasteboard, cardboard, corrugated cardboard or the like, which is coated with plastics on one side, the improvement comprising the steps of

applying on a web of e.g. paper treated as indicated above, four longitudinally extending, equidistantly spaced folding lines,

folding said folding lines while advancing said web, thus forming said web into a sleeve of square cross-sectional configuration with the marginal portions of said web overlapping,

bonding said marginal edge portions of said web together and thereafter flattening said sleeve, the latter being formed successively, and cutting said sleeve transversely into shorter pieces, called bits,

positioning a number of said bits in such a manner that one bit overlaps the adjacent one halfway as seen in the transverse direction, and bonding said bits together to form a flat element,

securing said flat elements thus formed to one another in such superposed positions that said flat elements are successively displaced by one cell width in their longitudinal direction and form a pack with flat sides, and bonding to each one of said two flat sides of the pack of flat elements thus formed, a thicker sheet covering the external faces of said pack entirely, and thereafter

cutting said pack of flat elements into pieces having the desired height of the cells, said pieces of desired height, after extension thereof, forming said cellular latticework structure.

7. A machine for producing a cellular latticework structure composed of cells having a parallelepipedon shape and the walls of which are positioned in parallel with the sides of said latticework structure, said cells composed of e.g. paper, pasteboard, cardboard, corrugated cardboard, or the like coated with plastics on one side, the improvement comprising

means to apply equidistantly spaced, lengthwise folding lines on a web of e.g. paper coated on one side with plastics,

folding means designed to fold said web while advancing the web successively, so as to form said web into a sleeve having a square cross-sectional configuration with the marginal portions of said web placed in overlapping position,

securing means designed to bond together said marginal portions of said web,

compressing means to flatten out said successively formed sleeve,

cutting means to cut said flattened sleeve transversely into shorter pieces, called bits,

a first glue-applicating means for application of glue on one face of each such bit,

conveying and gripping means designed to move said bits to a position wherein one bit overlaps the adjacent bit halfway as seen in the transverse direction, the said applied glue being positioned between said bits,

a second glue-applicating means for application of lengthwise strings of glue on one side of flat elements, said elements formed by interconnecting a number of bits,

means to stack said flat elements in such superposed positions that said flat elements are successively displaced over a distance corresponding to the width of one such cell in their longitudinal direction, a first sheet likewise provided with strings of glue extending along the entire pack of said elements thus formed, said flat elements being stacked onto said sheet in their superposed, successively displaced positions, and means to a advance and deposit a second similar sheet on the top of said pack of flat elements thus formed, and

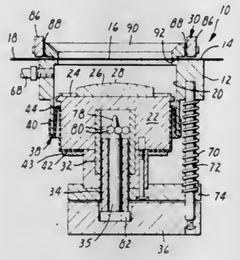
means to cut said pack of flat elements into pieces having the desired height of said cells, said pieces of desired height forming said cellular latticework structure after extension thereof.

4,242,162

TAPE APPLYING DEVICE AND METHOD

Albert J. Ronning, North Oaks; William H. Edwards, Vadnais Heights, and Dee L. Johnson, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 8, 1979, Ser. No. 37,240
Int. Cl.³ B29C *17/04, 17/00;* B32B *31/00*
U.S. Cl. 156—212 **8 Claims**



5. A method for applying pressure-sensitive adhesive coated tape smoothly over a first major surface of a lens blank, said method comprising the steps of

providing a tape support member having a tape support surface and having an opening generally centrally through the tape support member, and a lens blank support member within the central opening having a lens blank support surface adapted to support the lens blank with the first major surface of the lens blank adjacent the tape support surface;

positioning the lens blank on the lens blank support surface with the first major surface of the lens blank adjacent and spaced from the tape support surface;

positioning a portion of the tape on the tape support surface over the opening;

clamping the portion of the tape to the tape support surface; and

moving the support members relative to each other to move the support surfaces toward each other so that the first major surface of the lens blank will contact the clamped tape portion and cause the tape to be smoothly applied to the first major surface of the lens blank, said moving step including the steps of:

lowering the air pressure in the opening between the lens blank support member and the clamped tape portion so that atmospheric air pressure acting on the lens blank support member and the tape portion will provide a force to cause the relative movement which force decreases as the tape is applied; and

biasing the support surfaces away from each other with a force that together with the force applied by tension in the portion of the tape about equals the force exerted by the atmospheric air pressure when the tape is fully applied to stop relative movement of the support surfaces.

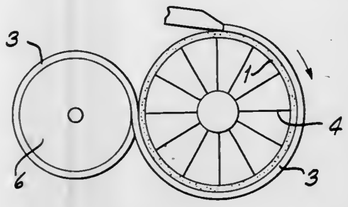
4,242,163

PROCESS FOR MANUFACTURING MAGNESIUM CARBONATE BOARD

Shiro Nakajima, and Toshiro Miyata, both of Aichi, Japan, assignors to Nippon Hardboard Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 811,280, Jun. 29, 1977, abandoned. This application Nov. 22, 1978, Ser. No. 962,918
Claims priority, application Japan, Jun. 30, 1976, 51/078024
Int. Cl.³ B29J *5/04*
U.S. Cl. 156—242 **1 Claim**

1. A method of fabricating magnesium carbonate board or plate-like body which comprises forming an aqueous suspension comprising neutral magnesium carbonate admixed with fibrous material and active magnesia, casting the resulting formed aqueous suspension onto a porous permeable carrier to form a layer of solids thereon comprising said neutral magnesium carbonate, fibrous material and active magnesia, the amount of aqueous suspension cast onto said carrier being such as to deposit on said carrier an amount of solids comprising said neutral magnesium carbonate, active magnesia and fibrous material up to about 1500 grams of solids per square meter of said carrier onto which said suspension has been cast, the water



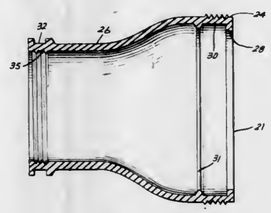
content of said layer being controlled to a value in the range 30–50% by weight of said layer, laminating or building up a number of said layers comprising magnesium carbonate, active magnesia and fibrous material and pressing and heat curing the resulting laminated layers at a temperature less than about 100° C. and in an atmosphere having a relative humidity greater than 80% to form said magnesium carbonate board of plate-like body having a relatively high specific gravity in the range 0.78–1.15.

4,242,164

GASKET FOR SEALING A PIPE IN A PORTHOLE

Harry W. Skinner, 4609 St. Joe Ct. Rd., Fort Wayne, Ind. 46815

Filed Oct. 13, 1978, Ser. No. 951,189
Int. Cl.³ F16J *15/02*
U.S. Cl. 156—304.1 **4 Claims**



1. The method of making a sleeve-shaped gasket of elastomeric material comprising the steps of

(a) forming a gasket of elastomeric material to a shape having a sleeve-like body with a reflexly turned flange on the end thereof which encircles at least a portion of said body with a first annular coaxial rib on the inner surface of said flange adjacent the end thereof, and with a second annular coaxial rib on the inner surface of said body adjacent the end opposite said flange, and

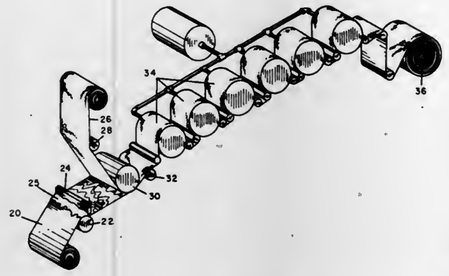
(b) turning said gasket inside out thereby to relocate said flange as a tubular coaxial extension of said sleeve-like body and further to position said first rib on the inside of said flange and the second rib on the outside of said body of the extended body and flange.

4,242,165

INSULATING MATERIAL AND PROCESS FOR MANUFACTURING SAME

Julius Shaw, 259 Field St., New Bedford, Mass. 02740

Filed Apr. 23, 1979, Ser. No. 32,286
Int. Cl.³ C09J *7/00*
U.S. Cl. 156—313 **2 Claims**



1. A process for producing an insulating laminate for use in electrical apparatuses able to withstand temperatures of up to 600° F. that does not use asbestos comprising the steps of:

providing a rolled web of aluminum foil having a thickness of between 0.0007 in. and 0.001 in.;

passing said web over a resilient roller;

providing a knife above said resilient roller disposed approximately 3.5 mils above said foil web;

providing a volume of latex acrylic adhesive upon said web in front on said knife adapted so that a portion of said adhesive can pass under said knife to said foil web;

passing said foil web under a marriage roller and above an idler roller;

providing a non-woven glass fiber paper-like web having a thickness of between 0.015 in. and 0.070 in. above said foil web;

passing said glass fiber paper-like web under an expander roller above said foil web, then under said marriage roller and over said idler roller so that said adhesive is forced from said foil web into the interstices of the glass fiber paper-like web sheet;

passing said laminate over at least six cans heated in the range of 225° F. to 240° F.; and thereby

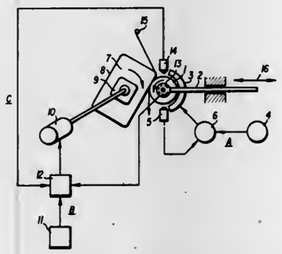
curing said adhesive to provide a permanent bond between said foil web and said glass fiber paper-like web.

4,242,166

THERMAL STAMPING APPARATUS

Hiroshi Izumihara, Gose, Japan, assignor to Taihei Industries Co., Ltd., Osaka, Japan

Filed Nov. 23, 1979, Ser. No. 96,878
Claims priority, application Japan, Dec. 18, 1978, 53-156715
Int. Cl.³ G05G *15/00*
U.S. Cl. 156—351 **3 Claims**



1. A thermal stamping device for transferring a film from its carrier to the surface of an object to which said film is to be adhered, said device comprising:

a heat transfer roll for pressing said film and its carrier toward said surface as said transfer roll rolls over said surface;

a heater for heating said transfer roll;

a temperature control means for controlling said heater;

drive means for rotatably supporting said object adjacent said transfer roll, said drive means including speed control means for controlling the stamping speed at which said transfer roll traverses said surface; and,

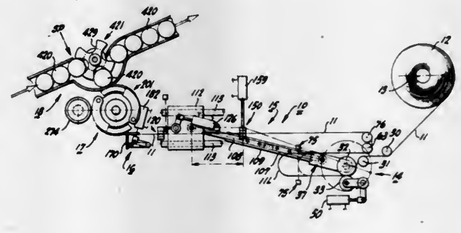
speed modifying means for controlling said speed control means to vary said stamping speed in accordance with variations in the surface temperature of said transfer roll.

4,242,167

LABELING MACHINE

Wolfgang Hoffmann, Modesto, Calif., assignor to B & H Manufacturing Company, Inc., Ceres, Calif.

Filed Oct. 26, 1978, Ser. No. 954,865
Int. Cl.³ B65C *9/04*
U.S. Cl. 156—357 **22 Claims**



1. Apparatus for severing segments of sheet or film like material from a continuous length of the same and for applying such severed segments to articles, said apparatus comprising:

(a) a pre-feed including a continuously operating drive roller and a pinch roller, said rollers being parallel and one of them being mounted for movement into and out of engagement with the other roller for pulling such material from a roll of the same when they are in engagement and for terminating such pulling when they are disengaged

(b) storage means for storing in loose condition a quantity of such material as delivered by said pre-feed

(c) a reciprocating feed having a feed stroke and a return stroke and operable during each feed stroke to grip, withdraw from such storage means and feed forwardly a predetermined length of such material

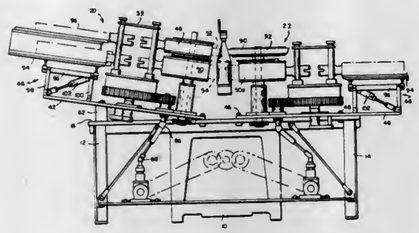
(d) a severing means operable to sever segments of material of predetermined length as fed to it by said reciprocating feed during each forward stroke thereof

(e) transfer means operable to pick up each severed segment and transfer it to an application station

(f) an article feed operable to supply articles in succession to said application station, said article feed and transfer means being operable to apply a segment to each such article and

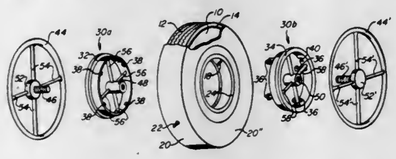
(g) control means acting to engage and disengage said rollers, said control means including a scanner which senses when the quantity of material in storage reaches a predetermined length, said control means including in addition to the scanner mechanical means actuated by the scanner to disengage the rollers when such condition is sensed and to re-engage the rollers thereafter when the length of stored material has diminished.

4,242,168
LABELING MACHINE
Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Cleveland, Ohio
Filed Apr. 27, 1979, Ser. No. 33,880
Int. Cl.³ B65C *3/14*
U.S. Cl. 156—357 **6 Claims**



1. In a labeling machine wherein a conveyor moves containers of the kind having vertical and inclined surfaces in upright positions along a predetermined path, a support adjacent said path, a shaft mounted on the support with its axis perpendicular thereto for rotation about its axis, transfer drums fixed to the shaft for rotation therewith and located thereon in positions such that their peripheral surfaces confront the vertical and inclined neck surface portions of containers resting on the conveyor, elastic pads positioned at spaced intervals peripherally of the drums for receiving labels from pickers and pressing them into engagement with the containers, clamp fingers on the drums, one associated with each pad, for receiving the labels from the pickers and releasing them as they are pressed into engagement with the containers, means mounting the support for tilting about an axis parallel to said path to position the axis of the shaft at an inclination to the vertical axis of the containers on the conveyor, means mounting the support for rectilinear movement at right angles to the conveyor to permit adjustment of the proximity of the pads to the path of movement for containers of different diameter and means for maintaining a driving connection with the shaft regardless of the position of the support.

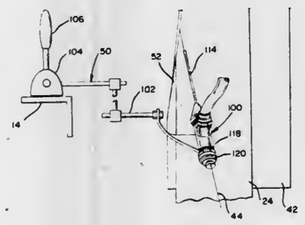
4,242,169
TIRE RETREADING APPARATUS
William M. DeHaven, Asheboro, N.C., assignor to Harrelson Rubber Company, Asheboro, N.C.
Filed Oct. 11, 1979, Ser. No. 83,746
Int. Cl.³ B29H *17/36*
U.S. Cl. 156—394 **11 Claims**



1. In a tire retreading apparatus for use in forming an assembly including a tire-mounting rim; a tire mounted upon said rim; a replacement tread strip upon said tire; a flexible envelope having a central portion overlying said tread strip, and first and second marginal edge portions respectively overlying and adapted to be maintained in sealed engagement with respective first and second opposite sidewalls of said tire; and first and second annular envelope-sealing members adapted to be releasably secured in axially aligned relationship with same rim and in closely overlying relationship to respective ones of said first and second marginal edge portions of said envelope; the improvement comprising:

first and second releasable connecting means independently connecting respective ones of said first and second annular members to and in axial alignment with said rim for independent axial movement of each of said members, in response to rotation thereof about its central axis, toward and away from respective first and second ones of said marginal edge portions of said envelope; said first and second connecting means including first and second shaft-like threaded members carried by and projecting axially from respective ones of said first and second annular members, and mating threaded means carried by and extending coaxially of said rim for mating threaded engagement with said first and second threaded members.

4,242,170
PAPER WIRING TRANSPORT APPARATUS AND PROCESS
Duane E. Harrington, P.O. Box 31480, San Francisco, Calif. 94131, and Merritt A. Robinson, Marin, Calif., assignors to Duane E. Harrington, San Francisco, Calif.
Filed Jun. 30, 1978, Ser. No. 920,711
Int. Cl.³ B65H *45/00*
U.S. Cl. 156—438 **11 Claims**



1. Apparatus for improved continuous attachment of a wire to a paper comprising:

a. an elongated support structure, having a first end and a second end;

b. means for rotatably supporting a supply of paper at said first end of said support structure;

c. means for rotatably supporting a supply of wire at said first end of said support structure;

d. a fabrication station located generally between said first end and said second end of said support structure, said station including a substantially flat bed across which the paper is transported, said bed having means for overlapping one edge of the paper over the wire, said means comprising a wave guide mounted on said bed and engageable with one edge of the paper;

e. guide means for guiding wire from the wire supply to said fabrication station;

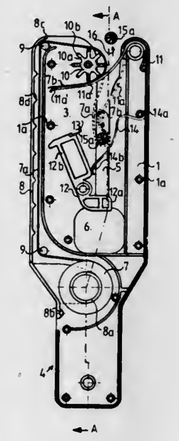
f. guide means for guiding paper from the paper supply to said fabrication station, said guide means including a paper alignment guide located at said fabrication station, said alignment guide engageable with an edge of the paper opposite the edge engageable with said wave guide;

g. means for applying adhesive to the wire at said fabrication station, said means including a discharge element through which wire is directed at said paper in the location of said wave guide;

h. means for coupling the wire to the paper at said fabrication station, said means including a curved member at the end of the bed with a surface curvature over which the wire and paper are transported in tension, wherein the overlapping is set by action of said surface curvature;

i. transport means at said second end engaging the coupled wire and paper for transporting the wire and paper across the fabrication station.

4,242,171
SEALING DEVICE FOR SECURING OR SEALING BAGS OR SACKS OF FLEXIBLE MATERIAL
Johann Kauer, Bern, Switzerland, and Heinz H. Weick, 94, Rue de la Servette, 1202 Geneva, Switzerland, assignors to Heinz Hermann Weick, Geneve, Switzerland
Filed Aug. 9, 1978, Ser. No. 932,368
Claims priority, application Switzerland, Aug. 19, 1977, 10237/77
Int. Cl.³ B65B *13/02*
U.S. Cl. 156—485 **16 Claims**



1. A device for securing with an adhesive tape a twisted neck portion of a bag or sack of flexible material, the device comprising:

(a) an elongated housing,

(b) a mounting carried by the housing and being arranged for supporting a roll of adhesive tape,

(c) walls forming part of the housing and defining a slit having an open end and a closed end and which extends generally longitudinally of the housing, the walls also defining an exit opening at the inner end of the slit, the exit opening being located to permit removal of the neck portion after application of the tape thereto,

(d) a tape guide member carried by the housing on one side of the slit,

(e) a tape severing means carried by the housing for movement relative thereto and located in the region of the inner end of the slit,

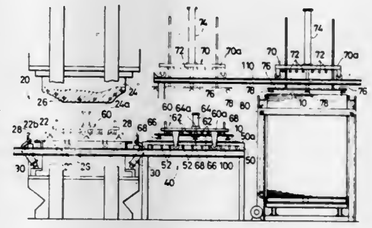
(f) a tape cutter provided by the tape severing means,

(g) a spring biassing means carried by the housing and engaging the tape severing means, and mounted to spring bias the tape cutter away from the slit except when an actuating arm of the tape severing means is engaged by the neck portion,

(h) a spring loaded arm carried by the housing and located on the opposite side of the slit to the tape guide member, the said arm in a normal position thereof extending across the slit and being adjacent to the tape guide member, the said arm being located to maintain an adhesive contact with a free end portion of a tape passing round the tape guide member, and

(i) the housing having an elongated U-shaped portion defining the slit and an elongated extension portion below the exit opening of the slit, said extension portion extending substantially in the longitudinal direction of the slit and forming a handle for the device.

4,242,172
METHOD OF PRESS-FORMING CORRUGATED PAPERBOARD INTO CURVED BOARD AND APPARATUS FOR SAME
Toshihiko Fujii, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Sep. 12, 1978, Ser. No. 941,741
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—499 **4 Claims**



1. An apparatus for press-forming a planer board of corrugated paperboard into an at least partly curved board, the corrugated paperboard being of the type utilizing a thermoplastic resin as the adhesive to bond paper liners to a corrugated paper medium, the apparatus comprising:

a hot-press fitted with a heatable and stationary female die and a heatable and vertically movable male die above said stationary female die;

a table standing beside said hot-press, the top of said table being wide enough to support thereon said planer board substantially horizontally;

a pair of rails extending horizontally alongside said hot-press and said table;

a wheeled carrier which can move on said rails in either direction and has board-holding means for taking up said planer board from the top of said table, holding said planer board during movement of said carrier on said rails and laying said planer board on said stationary female die;

at least one electric heater attached to said carrier in such an arrangement that said planer board held by said carrier is spaced downwards from said electric heater and can be preheated by said electric heater to such an extent that said thermoplastic resin in said planer board softens before said planer board is placed on said stationary female die;

another pair of rails extending horizontally at an altitude greater than the height of said table from a space above said table in a direction opposite to said hot-press;

a rack which supports a stack of said planer boards and is located beneath said another pair of rails and at a distance from said table;

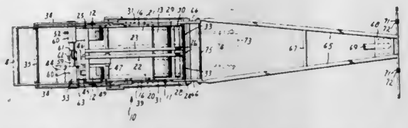
another wheeled carrier which can move on said another pair of rails in either direction and has board-holding means for taking up said planer board from said rack, holding said planer board while said another carrier moves on said another pair of rails and laying said planer board on said table;

and at least one electric heater attached to said another carrier in such an arrangement that said planer board held by said another carrier is spaced downwards from said heater of said another carrier and can be heated by said heater of said another carrier.

4,242,173
PAVEMENT-MARKING TAPE APPLICATION APPARATUS

Heinrich F. Stenemann, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 27, 1979, Ser. No. 79,241
Int. Cl.³ E04B *2/00*; E04F *13/00*; B44C *7/00, 7/04*
U.S. Cl. 156—523 **8 Claims**



7. Apparatus for applying tape to a paved surface to form markings on the surface, said apparatus comprising a frame supported for movement along the paved surface by wheel means including at least one roller, and mounted on the frame:

tape support means for rotatably supporting at least two rolls of tape side-by-side;

tape guide means positioned above a leading edge of the roller;

tape advance means for advancing tape that extends from the rolls of tape over the tape guide means into position for the roller to press the tape against the paved surface; and

cutting means for cutting the tape while it extends under tension from the tape guide means to the roller, the cutting means comprising two arms mounted one on each of the two sides of the frame, a knife blade extending between the forward ends of the arms and across the lengths of tape that extend from the tape guide means to the roller; and actuating means for pulling one of the arms ahead of the other, whereby the knife blade may be tilted toward one of the lengths of tape prior to movement through the lengths of tape so as to cut one length prior to cutting the other length.

4,242,174
SHEET BINDING SYSTEM

Donald L. Snellman, 2807 W. Galer, Seattle, Wash. 98199; Barry J. Lewis, 31511 41st Ave. S.W., Federal Way, Wash. 98003; Arthur G. Saunders, 19827 Maple Valley Hwy., Maple Valley, Wash. 98038, and Wesley W. Hester, 1007 144th Pl. S.E., Bellevue, Wash. 98007

Filed Nov. 17, 1978, Ser. No. 961,565
Int. Cl.³ B32B *31/00*; B65H *37/00*; B05C *1/00*
U.S. Cl. 156—563 **9 Claims**

1. Adhesive binding apparatus for edge binding multiple sets of sheet material held in a stack of multiple trays comprising:

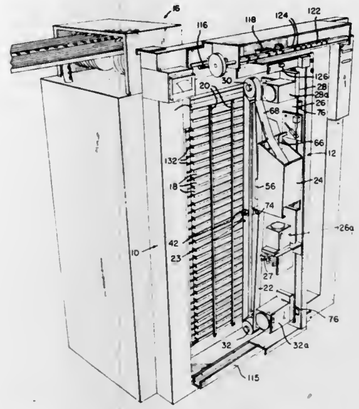
adhesive application means including a movable adhesive transfer belt having a frontside facing the multiple trays and aligned edges of the multiple sets of sheet material to be bound and a backside, the transfer belt movable between a retracted position out of contact with the edges of the multiple sets of sheet material and an adhesive application position for transfer of adhesive on the belt onto the edges of the sets of the sheet material,

an adhesive dispenser for depositing adhesive on the transfer belt,

means mounting the belt for transfer between the retracted and the adhesive application positions,

a belt aligning bar, and

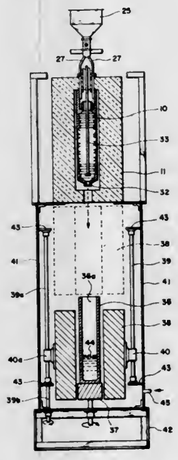
means connected to the belt aligning bar which, when the belt is moved from the retracted position to the adhesive application position, contact the front surface of the trays holding the sets of sheet material to align the belt aligning bar and the frontside run of the belt so that they are parallel to the front surface of the trays and to a plane extending through the edges of each of the multiple sets of sheet material to be bound.



4,242,175
SILICON REFINING PROCESS

Allen D. Zumbrunnen, 419 Sherman Ave., Salt Lake City, Utah 84115

Filed Dec. 26, 1978, Ser. No. 973,134
Int. Cl.³ C30B *11/02*
U.S. Cl. 156—616 R **8 Claims**

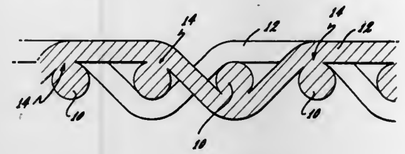


1. A silicon refining process, comprising continuously flowing molten, impure silicon downwardly through a reaction chamber as a thin film; contacting said film with an impurity-reactive gas or gases as the molten metal flows through the reaction chamber; discharging the thus treated molten metal from the bottom of the reaction chamber directly into a columnar crucible; subjecting the molten metal in the crucible to directional solidification; extracting the resulting solid silion billet from the crucible; and separating relatively pure and relatively impure portions of said silicon billet one from another.

4,242,176
METHOD OF FOAMING PERFORATE SHEET MATERIAL FROM WIRE MESH

Frank J. Riel, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation of Ser. No. 908,810, May 24, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,254
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/00*
U.S. Cl. 156—630 **4 Claims**



1. Method of manufacture of porous material for utilizing as a face sheet attenuation structure comprising:

selecting a sheet of stainless steel wire mesh material with overlapping perpendicular fibers defining the openings therethrough;

degreasing said sheet of wire mesh material;

suspending said sheet of wire mesh material within an oven;

elevating the temperature of said oven and maintaining said oven at said elevated temperature for a sufficient length of time to diffusion bond overlapping portions of said fibers;

allowing said oven to return to room temperature;

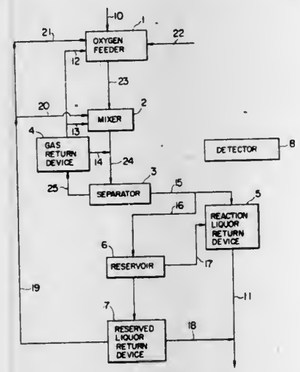
removing said wire mesh material from said oven; and

chem-milling said wire mesh material to increase the cross-sectional size of said openings by reduction of the cross-sectional size of said perpendicular fibers.

4,242,177
METHOD FOR OXIDIZING MALODOROUS SULFUR COMPOUNDS IN KRAFT COOKING LIQUOR

Masayuki Suzuki; Nobuo Onuma; Fumihiko Ishizuka; Shinichi Hara, all of Hachinohe; Akira Osawa, Ichikawa, and Akira Fukuzawa, Yokohama, all of Japan, assignors to Mitsubishi Paper Mills, Ltd. and Mitsubishi Heavy Industries, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 774,952, Mar. 7, 1977, abandoned. This application Aug. 9, 1978, Ser. No. 932,198
Claims priority, application Japan, Apr. 7, 1976, 51-38917
Int. Cl.³ D21C *3/02, 11/04, 11/08*
U.S. Cl. 162—17 **14 Claims**

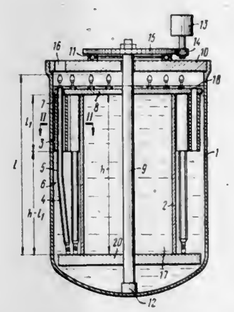


1. A method for removing malodorous substances formed in kraft pulp cooking process by oxidizing at a high temperature and high pressure the cooking liquor in the end stage of cooking, which method is characterized by introducing oxygen or an oxygen-containing gas into said liquor at one or more points of a liquor circulating system of a digester to allow the oxygen to react with the liquor, separating the unreacted oxygen or the unreacted oxygen-containing gas from the reaction liquor and recycling it to the reaction zone, while returning the oxygen-separated reaction liquor to said circulating system or directly to the digester, or temporarily storing a part or whole of the oxygen-separated reaction liquor in a reservoir and thereafter returning it to the circulating system, or to the digester wherein the oxygen introduction rate is controlled proportionally to the remaining sodium sulfide concentration of the cooking liquor and the oxidation reaction time is limited to avoid excessive oxidation of organic substances dissolved in the cooking liquor and to minimize the pH decrease of the cooking liquor.

4,242,178
DRUM FOR STORAGE OF NUCLEAR REACTOR FUEL ASSEMBLIES

Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29; Alexandr F. Shapkin, ulitsa Zvezdinka, 3, kv. 64; Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46; Tsolak G. Shkhian, naberezhnaya Zhdanova, 6, kv. 16, and Vitold A. Sumatokhin, ulitsa Strazh Revoljutsii, 28, kv. 21, all of Gorky, U.S.S.R.

Filed Jan. 6, 1978, Ser. No. 867,536
Int. Cl.² G21C *19/20*; G21F *5/00*
U.S. Cl. 176—30 **4 Claims**



1. A drum for storage of elongated, spent, nuclear reactor fuel assemblies having portions bent along their length a total lateral distance Z, comprising:

a housing;

a cylinder positioned vertically in said housing and having a top end face and a bottom end face;

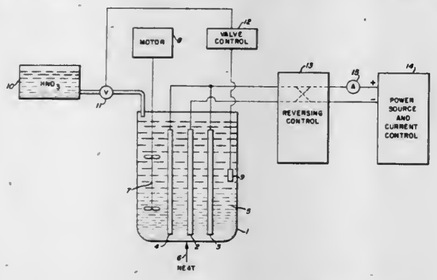
holder means for holding said fuel assemblies in a position substantially along the vertical direction of said cylinder, said holder means connected with said cylinder;

wherein said holder means comprises a plurality of walls defining enclosures extending substantially along the vertical direction of said cylinder for accommodating said fuel assemblies, said enclosures each having an inner diameter greater than the outer diameter of a fuel assembly and less than the sum of the outer diameter of said fuel assembly and the distance Z and said enclosures further each having a longitudinal portion which is at least partly open for accommodating the bent portion of one of said assemblies.

4,242,179
METHOD OF FABRICATING CADMIUM ELECTRODES

David H. Fritts, Dayton; John F. Leonard, Xenia, and Thirumalai G. Palanisamy, Fairborn, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1979, Ser. No. 61,558
Int. Cl.³ C25D 9/08; C25B 1/16
U.S. Cl. 204—2.1 5 Claims



1. An improved method for impregnating a sintered porous nickel plaque having a porosity of about 70 to 90% to form a cadmium battery electrode which comprises the steps:
a. positioning the said plaque in a $Cd(NO_3)_2$ solution in spaced apart relationship between cadmium counter electrodes;
b. heating the said solution to a temperature between 80° C. and 100° C.;
c. maintaining the said solution at a pH of 2.5 to 4.5 by the periodic addition of HNO_3;
d. diffusing the HNO_3 throughout the solution, and minimizing temperature gradients throughout the solution by continuous mixing of the solution;
e. maintaining a current flow in the solution between the plaque and the said counter electrodes to provide a current density of approximately 0.2 amperes per square inch of plaque area;
f. reversing the said current flow periodically;
g. removing the said plaque from the solution;
h. washing the plaque in substantially pure water; and
i. drying the plaque.

4,242,180
AMMONIA FREE PALLADIUM ELECTROPLATING BATH USING AMINOACETIC ACID

Klaus-Dieter Heppner, and Hans-Joachim Schuster, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 863,044, Dec. 21, 1977, Pat. No. 4,144,141. This application Jan. 12, 1979, Ser. No. 2,965
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657925
Int. Cl.³ C25D 3/52
U.S. Cl. 204—43 N 6 Claims

1. An aqueous ammonia-free bath for galvanic deposition of metal selected from the group consisting of palladium and palladium alloys wherein said palladium is present in the form of a diglycinate palladium II complex in which aminoacetic acid is the complexing agent said bath being further characterized by containing
(A) from about 1 to 50 grams per liter of dissolved palladium,
(B) from and including 0 to 50 grams per liter of at least one other metal selected from the group consisting of silver, nickel and cobalt,
(C) from about 1 to 150 grams per liter of total added aminoacetic acid, and
(D) sufficient dissolved alkali metal hydroxide to produce a bath pH ranging from about 7 to 12.

4,242,181
COPPER PLATING PROCESS FOR PRINTED CIRCUIT BOARDS

Thomas P. Malak, Garfield Heights, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

Filed Nov. 9, 1979, Ser. No. 93,081
Int. Cl.³ C25D 3/38
U.S. Cl. 204—52 R 4 Claims

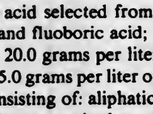
4. The method of improving the grain refinement of an electroplating bath composed of 70–150 g/l of $CuSO_4.5H_2O$ and 175–300 g/l H_2SO_4 comprising adding thereto between 0.1 and 1.0 g/l of the extract of regular coffee.

4,242,182
BRIGHT TIN ELECTROPLATING BATH

Francine Popescu, 32, rue E. Dolet, 94100 Saint Maur, France

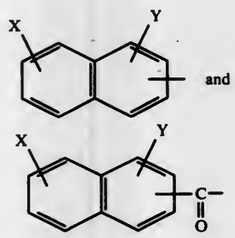
Filed Jul. 21, 1978, Ser. No. 926,891
Int. Cl.³ C25D 3/30
U.S. Cl. 204—54 R 13 Claims

1. An acidic aqueous tin electroplating bath comprising:
(a) stannous tin ions;
(b) at least one acid selected from the group consisting of sulfuric acid and fluoboric acid;
(c) about 1.0 to 20.0 grams per liter of a dispersing agent;
(d) about 0.1 to 5.0 grams per liter of a member selected from the group consisting of: aliphatic nonsaturated acids having 3 to 6 carbon atoms in the molecule, aliphatic esters of said nonsaturated acids, and amides of said nonsaturated acids; and
(e) about 0.2 to 0.7 grams per liter of a brightener dispersed in the said bath and defined by the general formula:



I.

wherein:
(A) R_1 is a member selected from the group consisting of:

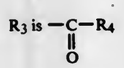


II.

and

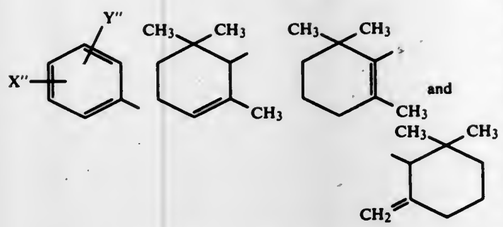
III.

wherein X is a member selected from the group consisting of a hydrogen atom; a halogen atom; and a substituent selected from the hydroxy, alkoxy, and alkyl groups; and Y is a member selected from the group consisting of a hydrogen atom; a halogen atom; and a substituent selected from the hydroxy, alkoxy, and alkyl groups; and
(B) R_2 is a member selected from the group consisting of hydrogen and alkyl; and
(C) R_3 is



(C)

when R_1 is II., and R_3 is a member selected from the group consisting of:



and

when R_1 is III., X″ being hydrogen, halogen, hydroxy, alkoxy, alkyl, sulfoxy, carboxy, amino, amido, or together with Y″ a methylenedioxy group, and Y″ being hydrogen, halogen, hydroxy, alkoxy, alkyl, sulfoxy, carboxy, amino, amido, or together with X″ a methylenedioxy group;
(D) R_4 is a member selected from the group consisting of alkyl, phenyl, hydroxyphenyl, alkoxyphenyl, dialkoxyphenyl, alkylphenyl, pyridyl, alkylpyridyl, and hydroxypyridyl.

4,242,183
HIGHLY ACTIVE SILVER CATHODE, PREPARATION OF SAME AND USE TO MAKE 2,3,5-TRICHLOROPYRIDINE

Demetrios Kyriacou, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 13, 1979, Ser. No. 29,600
Int. Cl.³ C25B 3/04, 11/04; C25D 3/46; C07D 211/72
U.S. Cl. 204—73 R 13 Claims

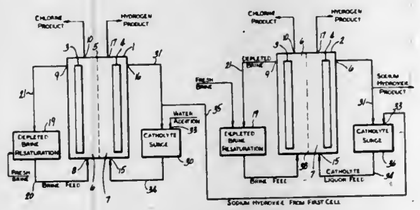
1. An electrode comprising a shaped electrical conductor in intimate contact with a water and hydroxyl ion-containing immobilized, metastable layer of aggregated silver microcrystals formed by electrolytic reduction of colloidal, hydrous silver oxide particles in the presence of water and hydroxyl ions.

13. The process for preparing 2,3,5-trichloropyridine which comprises electrolytically reducing 2,3,5,6-tetrachloropyridine at an electrode as defined in claim 1, said catholyte including an organic solvent for said tetrachloropyridine.

4,242,184
MEMBRANE CELL CHLOR-ALKALI PROCESS HAVING IMPROVED OVERALL EFFICIENCY

James M. Ford, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 28, 1979, Ser. No. 24,749
Int. Cl.³ C25B 1/16, 13/08
U.S. Cl. 204—98 14 Claims

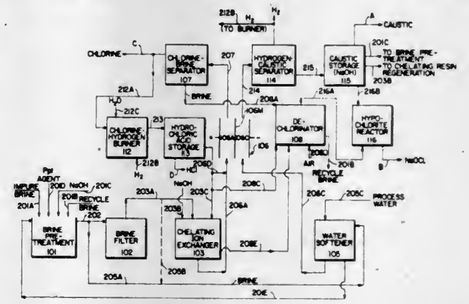


1. A process for the preparation of an alkali metal hydroxide from an alkali metal halide in at least two electrolytic cells having a first electrolytic cell and a last electrolytic cell physically arranged in series with respect to the flow of alkali metal hydroxide whereby the concentration of alkali metal hydroxide in said first cell is progressively increased toward a desired final concentration in said last cell, and employing in each electrolytic cell a permselective membrane, said permselective membrane employed in said last electrolytic cell corresponds to the concentration of alkali metal hydroxide produced in the catholyte chamber of said last electrolytic cell and being selected from the group consisting of single amine modified perfluorosulfonic acid film and a single unmodified perfluorosulfonic acid film, and said permselective membrane employed in said first electrolytic cell is a membrane different from that employed in said last electrolytic cell and is selected from the group consisting of sulfonic acid substituted perfluorocarbon polymers, primary amine modified perfluorocarbon polymers, di- or polyamine modified perfluorocarbon polymers, single perfluorosulfonic acid membranes prepared by laminating two perfluorosulfonic acid films of different equivalent weight, carboxylic acid substituted polymers, acrylic acid styrene copolymer crosslinked with divinyl benzene polymers, carboxylic acid membranes prepared by copolymerizing divinyl benzene with an anhydride, ester or acid chloride of acrylic acid and its derivatives in a solvent or solution, sulfostyrenated fluorinated ethylene propylene membranes and mixtures thereof.

4,242,185
PROCESS AND APPARATUS FOR CONTROLLING IMPURITIES AND POLLUTION FROM MEMBRANE CHLOR-ALKALI CELLS

Wayne A. McRae, Zurich, Switzerland, assignor to Ionics Inc., Watertown, Mass.

Filed Sep. 4, 1979, Ser. No. 72,543
Int. Cl.³ C25B 1/34, 9/00
U.S. Cl. 204—98 10 Claims



1. A process wherein a substantially saturated aqueous alkali metal chloride brine, containing minor amounts of non-monovalent metallic cations, is electrolyzed in a multiplicity of membrane chlor-alkali cells having anode compartments containing anodes, said anodes capable of generating chlorine containing minor amounts of oxygen from aqueous chloride solution and a pH in the range of from about 0.5 to about 5, cathode compartments containing cathodes and substantially fluid impermeable, cation permselective perfluorocarbon membranes separating said anode compartments from said cathode compartments and wherein at least part of the gaseous chlorine effluent from said anode compartments is burned with a substantially chemically equivalent amount of the gaseous hydrogen effluent from said cathode compartments and thereafter absorbed in water to produce hydrochloric acid, which process comprises:
(a) as a first brine purification step, mixing said brine with at least one compound selected from the group consisting of phosphoric acid, alkali carbonates, alkali bicarbonates, alkali phosphates, alkali acid phosphates and mixtures thereof, adding a first portion of the alkali metal hydroxide liquid effluent from said cathode compartments to produce a pH of at least about 10 thereby precipitating a substantial portion of said non-monovalent cations, removing said precipitate and recovering the thus pretreated brine;

(b) as a subsequent brine purification step, contacting substantially all of the recovered brine of step (a) having a pH of at least about 9 with a chelating cation exchanger in the monovalent cation form thereby maintaining the concentration of any non-monovalent metallic cation in the brine effluent at a concentration of not more than about 2 parts per million;

(c) thereafter flowing said purified brine into said anode compartments and adding thereto a first portion of said hydrochloric acid so controlled as to maintain the pH of the liquid immediately effluent from said anode compartments in the range of from about 2 to about 4;

(d) maintaining the liquid effluent from said cathode compartments at a concentration of at least about 8 percent by weight of alkali metal hydroxide and at a temperature of at least about 70° C.;

(e) substantially regenerating said chelating exchanger with a second portion of said hydrochloric acid solution and thereafter contacting said exchanger with a second portion of the alkali metal hydroxide liquid effluent from said cathode compartment to substantially convert said exchanger to the alkali metal form;

(f) adjusting the pH of substantially all the liquid effluent from said anode compartments to a value less than or equal to about 2 by adding a third portion of such hydrochloric acid solution thereby substantially converting any hypochlorite therein to chlorine, thereafter removing and recovering dissolved chlorine in said liquid effluent to produce a low chlorine liquid effluent, and;

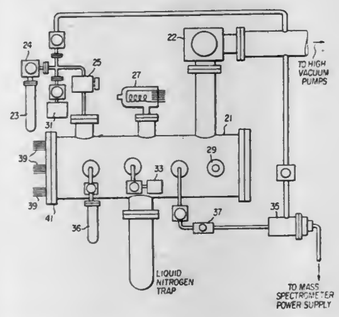
(g) substantially resaturating at least part of the resulting low chlorine liquid effluent of step (f) with alkali metal chloride and returning it to said first brine purification step.

4,242,186

LOW PRESSURE TRITIATION OF MOLECULES

Thomas F. Moran; James C. Powers, and Mark O. Lively, III, all of Atlanta, Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Mar. 27, 1979, Ser. No. 24,192
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—157.1 H **47 Claims**



1. A method for tritiating molecules, comprising:

depositing molecules of a substance to be tritiated on a supporting substrate in an evacuated vacuum chamber near, but not in the path of an electron beam which traverses said chamber;

admitting tritium gas into said chamber; and

subjecting said tritium to said electron beam thereby generating vibrationally excited tritium gas molecules and ions which collide and react with the deposited substance thus incorporating tritium atoms in said substance.

4,242,187

PREPARATION OF ALKANES SUBSTITUTED BY CHLORINE ATOMS AND/OR SULFOCHLORIDE GROUPS

Helmut Schlecht, Ludwigshafen; Volkmar Weberndoerfer, Mannheim, and Rudi Widder, Leimen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 31, 1979, Ser. No. 8,156
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1978, 2805441
Int. Cl.[3] B01J *1/10*
U.S. Cl. 204—162 SH **18 Claims**

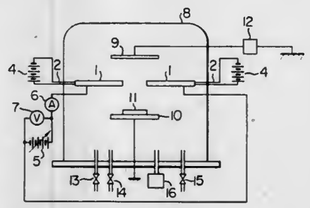
1. A process for the preparation of alkanes of more than 5 carbon atoms, which are substituted by chlorine atoms and/or sulfochloride groups, the number of substituents in the alkane molecule corresponding to the molar ratio of the starting materials, by the method of preparation of such compounds by reaction of alkanes with chlorine, or with chlorine and sulfur dioxide, by passing the alkanes, at a throughput from 0.1 to 30 kilograms per hour per liter of reaction space, and chlorine or chlorine and sulfur dioxide at a throughput of from 0.1 to 20 kilograms per hour per liter of reaction space, upward through a reaction chamber of which the lengthwise axis forms an angle of from 1.5 to 70° with the horizontal, the velocity of the gas layer being from 2 to 30 meters per second and the residence time of the gas layer in the reaction chamber being from 2 to 60 seconds, wherein, in the first part of the reaction chamber, which accounts for from 10 to 50 per cent of the total length of the lengthwise axis of the reaction chamber, the reaction mixture is irradiated with light principally of wavelengths of from 500 to 700 nanometers, and in the remaining part of the reaction chamber the reaction mixture is irradiated with light principally of wavelengths of from 200 to 500 nanometers.

4,242,188

METHOD FOR CONTROLLING PLASMA CHEMICAL REACTIONS

Masahiro Niinomi, Yokohama, and Kenji Yanagihara, Atsugi, both of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,193
Claims priority, application Japan, Mar. 23, 1978, 53/33226
Int. Cl.[3] C22D *7/08*; C05D *7/00*; B01J *1/12*; B05D *1/00*
U.S. Cl. 204—164 **14 Claims**



1. A method for conducting a plasma chemical reaction involving at least one gaseous reactant, comprising:

generating a plasma of said at least one gaseous reactant under a given set of gas pressure, input power, and gas flow rate plasma conditions;

continuously monitoring at least one plasma constant with at least one probe formed from a metal of small thermionic electron emission characteristics, said probe being heated indirectly to a predetermined temperature by infrared rays or an electric heating means; and

controlling said plasma conditions so that the measured values of the plasma constants always coincide with the values of plasma constants previously obtained by said

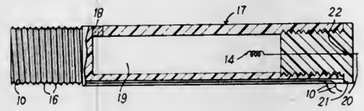
probe necessary for effecting the intended chemical reaction.

4,242,189

APPARATUS FOR MEASURING THE CONCENTRATIONS OF IONS

John V. Dobson, Hartlepool, England, assignor to National Research Development Corporation, London, England

Filed Jul. 12, 1974, Ser. No. 488,244
Int. Cl.[3] G01N *27/46*
U.S. Cl. 204—195 R **18 Claims**



1. Apparatus for use in measuring the concentration of a particular ion in a liquid, comprising:

an ion selective electrode which includes a metal capable of forming a hydride,

supply means for supplying hydrogen to the metal, the supply means being constructed to supply hydrogen, when the ion selective electrode is in contact with an electrolyte the ion concentration of which is to be measured, by electrolysis of the said electrolyte,

monitoring means for determining the concentration of hydrogen in the metal by monitoring a hydrogen concentration-related property of the metal and for providing an output signal dependent on the said concentration of hydrogen, and

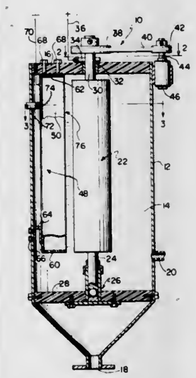
control means for automatically controlling the times at which electrolysis is carried out by the supply means at least partially in accordance with the output signal of the monitoring means to maintain, when the ion sensitive electrode is in the said electrolyte, the said concentration of hydrogen in the metal within a predetermined range such that the electrode potential remains constant when measured in a solution having a constant concentration of the said particular ion.

4,242,190

ROTARY ELECTRODIC TREATER WITH JET ACTION CLEANING

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed May 29, 1979, Ser. No. 42,774
Int. Cl.[3] C02C *5/12*; C02B *1/82*; C25B *9/04*
U.S. Cl. 204—212 **5 Claims**



1. A device for electrically treating liquids comprising:

a treating chamber;

an electrically conductive inlet nozzle within the chamber for supplying liquid thereto for treatment;

an electrode within said chamber,

said electrode and said nozzle being connected across a source of electrical potential whereby to oppositely charge the same, p1 said nozzle being directed toward said electrode and positioned in relatively close proximity thereto so as to force the incoming liquid against said electrode in a jet action; and

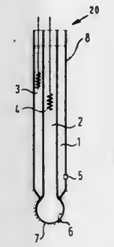
means for effecting relative rotation between the nozzle and said electrode so as to progressively expose different portions of the surface of said electrode to the jet action of said nozzle.

4,242,191

ION SELECTIVE SENSOR AND METHOD OF MAKING SUCH SENSOR

Johannes G. Schindler, Marburg, and Wilfried Schal, Bad Homburg, both of Fed. Rep. of Germany, assignors to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,234
Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820475
Int. Cl.[3] G01N *27/30*
U.S. Cl. 204—195 M **14 Claims**



1. In an ion-selective sensor for use in a medium to be analyzed, including a first electrode having a housing with a chamber therein, said chamber bein terminated at one end by an ion-conducting layer of glass and a second electrode unit, the improvement comprising an ion-selective membrane for determining the selectivity of said electrode unit disposed upon said ion-conducting layer of glass.

12. A method of manufacturing an ion-selective sensor as described in claim 1, comprising the steps of:

(a) dissolving an organic polymer together with ion-active substances in a suitable solvent;

(b) applying said polymer to said ion-conducting layer of glass; and

(c) allowing said polymer to dry.

4,242,192

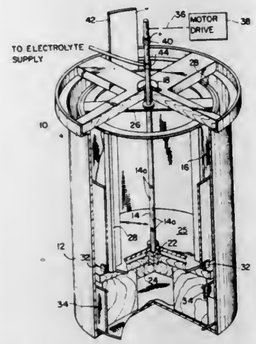
ELECTROLYTIC STRIPPING CELL

Beverly W. Dunning, Jr., Adelphi, and D. Harry Chambers, Catonsville, both of Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 6, 1979, Ser. No. 72,956
Int. Cl.[3] C25C *1/20, 7/00, 7/02*
U.S. Cl. 204—213 **12 Claims**

1. An electrolytic stripping cell for recovering silver and other metals from bulky, low density scrap containing such metals, said cell comprising: a rotatable perforated basket for receiving charge of said scrap and constituting one electrode of said cell; a metallic cylinder surrounding said basket and spaced therefrom, said cylinder constituting the other electrode; a housing in which said basket and said cylinder are

contained; means for supplying an electrolyte to said cell; and means for rotating said basket to provide agitation of the electrolyte within the cell, said means for supplying an electrolyte



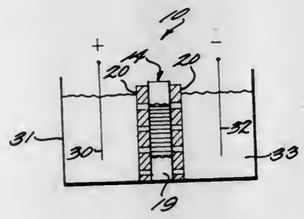
to said cell including a hollow shaft disposed centrally of the cell and having a plurality of openings along the length thereof through which said electrolyte passes.

4,242,193

LAYERED MEMBRANE AND PROCESSES UTILIZING SAME

Karl Moeglich, Dunedin, Fla., assignor to Innova, Inc., Clearwater, Fla.

Filed Nov. 6, 1978, Ser. No. 957,876
Int. Cl.[2] C25B *13/02*
U.S. Cl. 204—296 **30 Claims**



1. A membrane assembly for electrochemical processes comprising a plurality of layers of substantially void-free capillary material, each layer being thin enough so that it retards the passage of water therethrough, and thick enough so that it allows passage of ions and radicals therethrough, the capillary material having a positive angle of wetting; and

means for forming said capillary material into directed capillary channels allowing passage of anions and cations therethrough, and means for preventing crossflow of water and ions between said capillary channels.

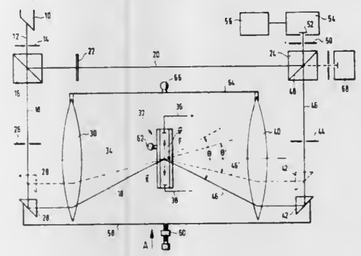
4,242,194

APPARATUS FOR SPECTROSCOPIC MEASUREMENT OF THE VELOCITY OF PARTICLES IN A FLUID

Rudolf Steiner, Muhltalerstr. 9, D-4000 Dusseldorf, and Raimund Kaufmann, Florastr. 14, D-4005 Meerbusch-Buderich, both of Fed. Rep. of Germany

Filed Nov. 28, 1979, Ser. No. 98,371
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852978
Int. Cl.[3] G01N *27/26, 27/28, 33/16*
U.S. Cl. 204—299 R **36 Claims**

1. In apparatus for measuring the velocity in a predetermined direction of particles in a fluid by evaluation of an output signal created by heterodyning of a reference beam of electromagnetic radiation with a scattered beam formed from radiation scattered at a selected one of a plurality of scattering angles by said particles in said fluid, said apparatus comprising a measuring cell, a source of electromagnetic radiation, means for splitting said electromagnetic radiation into a measuring beam and a reference beam and for guiding said measuring beam to impinge upon said measuring cell at a predetermined incident angle, whereby said measuring beam is scattered by said particles at a plurality of scattering angles measured relative to said incident angle, movable selector means for picking up said scattered radiation at each of said selected scattering angles and creating scattered beams corresponding thereto, and means for mixing a first and second beam impinging at a



predetermined location upon said mixing means thereby creating a heterodyne signal, the improvement comprising

means for automatically controlling the direction of propagation of said reference beam and said scattered beams so that said reference beam and said selected one of said scattered beams impinge upon said predetermined location in said mixing means independently of the position of said movable selector means, whereby said mixing means mixes said reference beam with said selected scattering beam thereby creating said output signal without external adjustment of said direction of propagation of said reference beam.

4,242,195

EXTRACTION OF TAR SANDS OR OIL SHALE WITH ORGANIC SULFOXIDES OR SULFONES

Leslie R. Rudnick, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,950
Int. Cl.[3] C10G *1/100*
U.S. Cl. 208—11 LE **7 Claims**

1. A process for recovering organic matter from tar sands or oil shale comprising:

(A) mixing tar sand or oil shale with an extraction solvent comprising a sulfoxide of the formula:

$$R-\overset{\overset{O}{\|}}{S}-R_1 \quad ;$$

a sulfone of the formula

$$R-SO_2-R_1$$

or a mixture thereof; in which R and R_1 are the same or different and are aliphatic radicals containing 3 to 10 carbon atoms, cycloaliphatic radicals containing 5 to 10 carbon atoms or aromatic radicals containing 6 to 10 carbon atoms; and

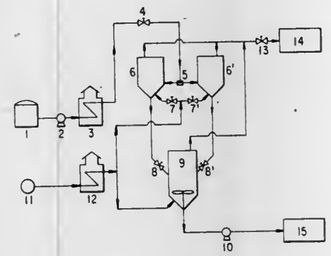
(B) separating said solvent containing dissolved organic matter from the sand or shale residue insoluble therein.

4,242,196

MASS PRODUCTION SYSTEM OF HIGHLY AROMATIC PETROLEUM PITCH

Takaaki Aiba, Iwaki; Ryoichi Takahashi, Tokyo; Takuji Hosoi, Kawashaki, and Tutomu Konno, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo; Sumikin Coke Co., Ltd, Wakayama and Sumitomo Metal Industries, Ltd., Osaka, all of, Japan

Continuation-in-part of Ser. No. 850,046, Dec. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 732,297, Oct. 14, 1976, abandoned. This application Oct. 27, 1978, Ser. No. 955,219
Int. Cl.[3] C10G *9/14*
U.S. Cl. 208—40 **3 Claims**



1. In a pitch production by thermal cracking including the steps of rapidly preheating a liquefied petroleum residuum to a temperature of 450°–520° C. by passing the same through a tubular heater for 0.5–15 minutes, feeding said preheated residuum through a feed flow line into a reaction vessel and thermally cracking the same by introducing an inert gas heated to a temperature of 400°–2,000° C. through a heating furnace into said reaction vessel for a direct contact with the residuum for 0.5–10 hours; the improvement comprising: feeding said preheated residuum through a plurality of parallel feed flow lines into a plurality of reaction vessels, the ratio of the number of feeding flow lines feeding said preheated residuum from said tubular heater into said reaction vessels to the total number of said reaction vessels being adjusted to be coincident with the ratio of the charging time (θC) required for charging a reaction vessel with a feeding flow of said preheated residuum to the total time (θT) required for carrying out one batch of thermal cracking in a reaction vessel where the ratio $\theta T/\theta C$ is adjusted to be greater than 1, thereby realizing steady and continuous operations in said tubular heater and said heating furnace.

4,242,197

METHOD OF AND APPARATUS FOR CLASSIFYING REFUSE

Peter Voelskow, Bad Kreuznach; Horst Rothert, Berlin, and Gustav Schlotterer, Düsseldorf, all of Fed. Rep. of Germany, assignors to Fritz-Aurel Goergen, Cologny, Switzerland

Filed Feb. 24, 1976, Ser. No. 661,028
Claims priority, application Switzerland, Feb. 27, 1975, 2471/75; Fed. Rep. of Germany, Oct. 8, 1975, 2544964
Int. Cl.[3] B07B *15/00*
U.S. Cl. 209—3 **13 Claims**

1. A method of treating refuse having light and heavy fractions, said method comprising the steps of:

introducing a stream of said refuse in raw and uncomminuted condition at a predetermined velocity in a predetermined generally horizontal direction into a substantially closed chamber so that the refuse stream drops in said chamber along a path;

circulating a current of air in a closed circuit and generally horizontally opposite said direction through said chamber;

directing said current generally perpendicular to said path in said chamber;

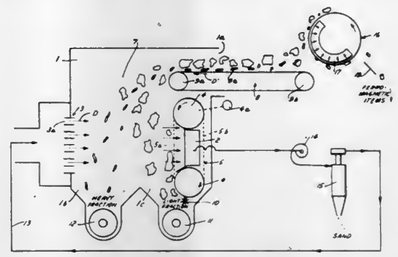
passing said current after passage through said path through a continuous sieve surface extending perpendicular to said current in said chamber, whereby a portion of said light fraction adheres to said surface;

continuously displacing said surface across said circuit and stripping from said surface said portion adhering thereto;

collecting the remainder of said light fraction in said chamber at a location relatively close to said sieve surface and said heavy fraction in said chamber at a location relatively far from said sieve surface;

withdrawing a minor portion of the air in said closed circuit; and

filtering said portion and releasing it to the atmosphere.



4,242,198

REDUCTION OF MAGNESIUM AND OTHER CATIONS IN PHOSPHORIC ACID

Richard N. Hill, Lakeland, Fla., assignor to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 868,358, Jan. 10, 1978, abandoned. This application Mar. 12, 1979, Ser. No. 19,976
Int. Cl.[3] B01D *15/04*
U.S. Cl. 423—321 R **12 Claims**

1. The method of removing Mg from crude wet-process phosphoric acid by passing the acid through a strong acid ion exchange resin bed characterized in that

(a) the phosphoric acid feed analyzes about 20 to 35% P_2O_5 and about 0.18 to 0.65 Mg as MgO, and is preclarified with sodium carbonate and a polyacrylamide flocculant to remove substantially all suspended organic and inorganic materials;

(b) a coating of a filter aid is added to inlet side of the resin bed prior to passage of the feed through the bed, to provide a filter cake for the collection of solids;

(c) the bed is back-washed to a point just below the layer of filter cake and solids, thereby disturbing the solids on top of the layer of filter aid as well as disturbing the filter aid;

(d) the solids on top of the layer of filter aid are removed; and

(e) the resin bed is back-washed at a rate sufficient to rearrange the resin beads so as to minimize short-circuiting during the next cycle.

4,242,199

AERATOR APPARATUS

Richard B. Kelley, Rockford, Ill., assignor to Richards of Rockford, Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 968,439, Dec. 11, 1978, abandoned. This application May 18, 1979, Ser. No. 40,460
Int. Cl.[3] B01F *3/04, 13/02*; C02F *7/00*
U.S. Cl. 210—758 **13 Claims**

1. A method for aerating and circulating a body of water having bottom regions including the steps of:

(1) drawing a flow of water from the bottom regions of said body of water;

(2) directing said flow of water through a conduit into a mixing chamber;

(3) injecting a pressurized oxidizing gas into said mixing

chamber from at least two divergent angles for contact with said flow of water, said oxidizing gas being injected through ports spaced circumferentially about said mixing chamber;

(4) causing turbulence in said flow of water with said injection of pressurized oxidizing gas, said turbulence increasing the displacement of pollutant gases in said water with said oxidizing gas; and,

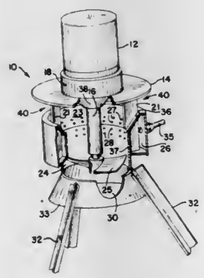
(5) directing the flow of said aerated water into said body of water on a substantially horizontal course, adjacent the water surface, whereby said water is efficiently aerated and circulated from the bottom regions of said body of water to the upper regions of said body of water in a continuous flow.

3. An apparatus for the circulation and mixing of water, said apparatus being placeable in an operative position in a parent body of water having lower regions comprising:

an axial flow impeller means for drawing water substantially beneath the water surface and from the lower regions of said parent body of water for maximum efficiency in the circulation of said water;

an impeller conduit for conducting the flow of water during rotation of said impeller means from an impeller inlet to an impeller outlet;

said impeller means being mounted within said impeller conduit;



means for rotating said impeller means and drawing said water through said apparatus;

intake means in communication with said impeller inlet for directing water drawn by said impeller means into said impeller conduit means;

a discharge area in communication with said impeller outlet for directing a maximum water flow from said impeller conduit into the surrounding parent body of water, said discharge area having directing means to restrict cavitation in said water flow and direct said water outward in a substantially horizontal flow underneath the surface of said parent body of water; and,

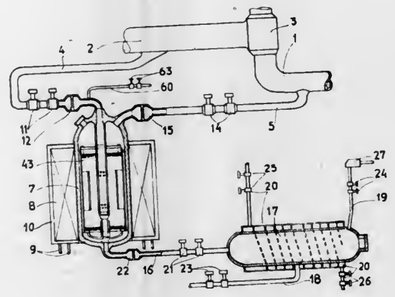
an enclosed chamber disposed generally circumferentially about said discharge area and having a common wall with said discharge area and said impeller conduit, said common wall having an axial portion and a portion diverging outwardly forming an inverted cone portion above said axial portion, ports being formed on each of said axial portion and said inverted cone portion for increased turbulence and mixing of said cleansing agent with said water, said enclosed chamber being pressurizable with a cleansing agent, said cleansing agent being injectable under pressure into said discharge area through each of said ports, causing turbulence and increased mixing of said water.

4,242,200

FILTERS FOR PURIFYING FLUIDS CONTAINING FERROMAGNETIC PARTICLES

Michel Dubourg, Le Mesnil Saint Denis, France, assignor to Framatome, Courbevoie, France

Filed Oct. 2, 1979, Ser. No. 81,092
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—222 **7 Claims**



1. A filter for purifying a fluid containing ferromagnetic particles, said filter comprising:

a cylindrical envelope having an inlet for connection to an inlet pipe for the fluid to be purified and an outlet for connection to an outlet pipe for the purified fluid;

ferromagnetic beads within said envelope and between which the fluid will, in use, pass;

a coil surrounding said cylindrical envelope and for connection to electric current supply means to produce a magnetic fluid for magnetising said beads so that said beads will, in use, retain ferromagnetic particles conveyed by the fluid;

an unclogging circuit communicating with the interior of said envelope;

a cylindrical basket for supporting said beads, arranged within said envelope and coaxial with said envelope, said basket being provided with perforations allowing the interior of said basket containing said steel beads to communicate with the space between said envelope and said basket and into which said outlet opens, said perforations being provided in zones of the side wall of said basket and at the ends of said basket;

deflectors, arranged within said basket and having solid walls spaced inwardly of said side wall of said basket, and extending over a certain length in the axial direction, in that zone of said basket in which said beads are located; and

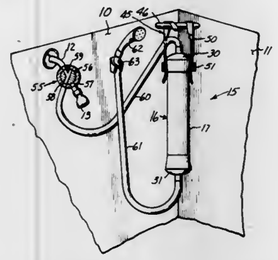
a central tube which is connected at one end to said inlet and is closed at its other end, and which is directed along the axis of said filter and arranged in the bed of beads in a central part of said basket, said tube having radially directed lateral perforations for placing the interior of said tube in communication with the interior of said basket in the zones of said tube which are located radially opposite said deflectors, said deflectors being arranged opposite said perforated zones of said side wall of said basket, which zones are located radially opposite said perforations in said central tube, in order to prevent fluid from passing directly, along a solely radial path, from said central tube to said space between said basket and said envelope.

4,242,201

BY-PASS WATER SOFTENER SYSTEM AND INSTALLATION

James B. Stephens, La Crescenta, and Charles G. Miller, Pasadena, both of Calif., assignors to TDV Co., Temple City, Calif.

Filed Jun. 14, 1979, Ser. No. 48,453
Int. Cl.³ C02B *1/16*
U.S. Cl. 210—240 **22 Claims**



1. A by-pass water softener system comprising:

a water softener comprising an elongated tube having a first and a second end, for holding a change of ion exchange resin, a first and a second retention means adjacent said respective first and second ends, said retention means having perforations for passage of water which are sized to retain said resin in said tube, a first and a second end cap sealingly and structurally attached to the tube so as to close said respective first and second ends, each of said end caps having a port passing therethrough, and first and second hose attachment means at respective first and second ports;

suspension means attachable to said water softener;

a diverter valve having an inlet port, a first and a second outlet port, and selector means for directing water from said inlet port to a selected one of said outlet ports, said inlet port being connectible to a water supply, said first outlet port being connectible to a first water distributor;

a first flexible hose connected to said second outlet port and to said first hose attachment means; and

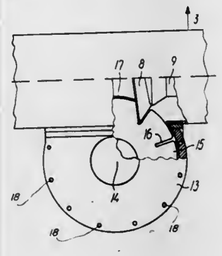
a second flexible hose connected at one of its ends to said second hose attachment means, its other said end being unattached to fixed structure so it is free for spatial movement relative to said tube.

4,242,202

APPARATUS FOR TAKING UP OIL FROM A WATER SURFACE

Knut G. Carlsson, Vadum, Denmark, assignor to A/S De Smithske, Nørresundby, Denmark

Filed Jul. 12, 1979, Ser. No. 57,032
Claims priority, application Sweden, Aug. 14, 1978, 7808596
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.3 **4 Claims**



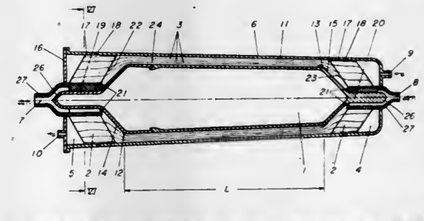
1. Apparatus for taking up oil from a water surface, incorporating a floating body comprising a suction funnel, the upper edge of which is vertically adjustable by variation of the buoyancy of the body, and a pumping device for removing the skimmed oil from the lower region of the funnel, said pumping device consisting of a conveyor screw having a driven shaft and extending from the lower region of the suction funnel towards a discharge aperture with a hose connector, the conveyor screw intermediate the funnel and the discharge aperture cooperating with a restrainer and scraper disc, the main plane of which is at least almost coincident with the axis of the conveyor screw, the periphery of the disc being spaced only slightly from the shaft of the screw and having notches matching with the thread of the screw.

4,242,203

HOLLOW FIBRE APPARATUS

Charles Amicel, Carrieres sur Seine; Bernard Biot, Craponne; Yves Butruille, Ferrol-Attilly, and Christian Ollivier, Vienne, all of France, assignors to Sodip SA, Meyzieu, France

Filed Dec. 27, 1977, Ser. No. 865,100
Claims priority, application France, Dec. 24, 1976, 76 39695
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.1 **13 Claims**



11. A hollow fiber apparatus for the fractionation of a fluid, comprising an elongated mandrel, longitudinally spaced sealing elements located about two end sections of the mandrel and defining longitudinally spaced inner and outer sides, the inner side of each sealing element being inclined in relation to the longitudinal axis of the mandrel, a plurality of semipermeable hollow fibers arranged about the mandrel and passing seallingly through the longitudinally spaced sealing elements so that open ends of the hollow fibers are exposed at the longitudinally spaced outer sides of the sealing elements, a housing comprising an elongated section enclosing the hollow fibers with the sealing elements sealing against the inside wall of the elongated sections of the housing, whereby a fluid flow chamber comprising the hollow fibers is defined between the longitudinally spaced inner sides of the sealing elements and the outer surface of the mandrel, the housing additionally comprising end sections enclosing the outer sides of the longitudinally spaced sealing elements, each sealing element comprising a ribbon wound around the mandrel, the hollow fibers being secured between spirals of the ribbon by means of a sealing agent;

the mandrel in the chamber having a cross-section greater near the inner wall of each sealing element than at the place where is situated the adjacent sealing element, the cross-section of the mandrel increasing progressively in each of the two so defined regions, whereby a fluid distribution enclosure and a fluid collection enclosure communicating with the open ends of the hollow fibers are defined between the longitudinally spaced outer surfaces of the sealing elements and end sections of the housing, a first fluid inlet leading into the fluid distribution enclosure and a first fluid outlet leading from the fluid collection enclosure, whereby a fluid may be passed through the inside of the hollow fibers, a second fluid inlet leading into the fluid flow chamber and a second fluid outlet leading from such chamber, each of said second fluid inlet and second fluid outlet communicating with the fluid flow chamber via a conduit leading through an end section of the housing and through a sealing element and opening into the fluid flow

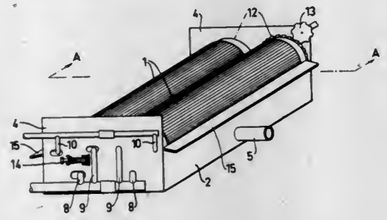
chamber adjacent an inner side of a sealing element where the cross-section of the mandrel progressively increases, whereby a fluid may be passed through the fluid chamber about the outer surfaces of the hollow fibers and the mandrel.

4,242,204

APPARATUS FOR SEPARATION OF MATERIAL SUSPENDED IN LIQUIDS

Åke Stigebrandt, Lillbräckegatan 15, Uddevalla, Sweden (S-451 00)

Filed Apr. 3, 1979, Ser. No. 26,797
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—326 **8 Claims**



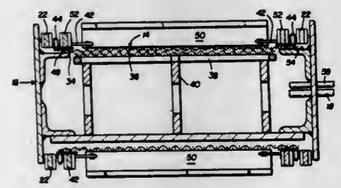
1. Apparatus for separation of material suspended in liquids including a vessel into which the suspension to be treated is fed, and further including a horizontal rotary filter drum arranged in the vessel with the lower portion of said filter drum immersed in the suspension, said filter drum together with another drum forming a pair of cooperating, counter-rotating drums said drums forming a nip and the direction of rotation of said drums being such that any sludge coating on said filter drum is mechanically compressed, said filter drum being rotatably mounted on two stationary end carrier means which seal against the drum envelope surface, a stationary shield arrangement mounted on said carrier means within said filter drum, said shield arrangement sealing against the drum envelope surface and dividing the interior volume defined by the drum envelope surface and the end carrier means into sections, and means for connecting at least one of said sections to a vacuum source for reducing the air pressure in that section.

4,242,205

TRAVELING BELT FILTER

Gene Hirs, 6865 Meadow Lake Dr., Birmingham, Mich. 48010

Continuation-in-part of Ser. No. 9,725, Feb. 6, 1979, which is a continuation-in-part of Ser. No. 952,030, Oct. 16, 1978, abandoned. This application Jun. 11, 1979, Ser. No. 47,396
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—400 **8 Claims**



1. In a filtering apparatus of the type wherein contaminated liquid is supplied to a tank and caused by differential pressure to flow through a submerged perforate filter means into the inlet in the top wall of a submerged filter box, the filter means including an endless loop perforate filter belt which circumscribes the filter box, means for removing filtrate liquid from the filter box, and wherein a power driven conveyor selectively advances the normally stationary filter means in response to a build-up of dirt thereon to bring clean filter means into registry with a filter box inlet, the improvement which comprises:

the power-driven conveyor comprising a first pair of chains located adjacent the respective longitudinally extending edges of the filter belt and spaced laterally outwardly therefrom, and belt-attaching means securing the filter belt to said first pair of chains for advancing the filter belt therewith;

a second pair of chains located laterally inwardly from said first pair of chains engaging the upper surface of the longitudinally extending edges of the filter means to hold said edges downwardly against the upper surface of the filter box to provide a substantially liquid tight seal between said filter means and said filter box and to prevent liquid from by-passing the filter means as it enters the filter box inlet;

and driving means for selectively advancing said second pair of chains in unison with said first pair of chains and the filter belt means.

8. In a filtering apparatus of the type wherein contaminated liquid is supplied to a tank and caused by differential pressure to flow through a submerged perforate filter means into the inlet in the top wall of a submerged filter box, the filter means including an endless loop perforate filter belt which circumscribes the filter box, means for removing filtrate liquid from the filter box, and wherein a power driven conveyor selectively advances the normally stationary filter means in response to a build-up of dirt thereon to bring clean filter means into registry with a filter box inlet, the improvement which comprises:

the power-driven conveyor comprising a first pair of chains formed in a closed loop located adjacent the respective longitudinally extending edges of the filter belt and spaced laterally outwardly therefrom, and belt-attaching means securing the filter belt to said first pair of chains for advancing the filter belt therewith;

a closed loop longitudinally extending sealing means connected to said power driven conveyor for movement with said filter belt, said sealing means engaging the longitudinal edges of said filter belt to urge said edges into sealing engagement with the top wall of the filter box;

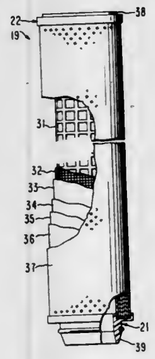
and said filter belt being formed of non-metallic fabric material.

4,242,206

FILTER DEHYDRATOR

John C. Estabrooke, Campbell, Calif., assignor to Velcon Filters, Inc., San Jose, Calif.

Filed Oct. 26, 1978, Ser. No. 955,016
Int. Cl.² B01D *27/04*
U.S. Cl. 210—489 **5 Claims**



1. A filter dehydrator comprising:

an element having an inlet for fluid to be filtered and an outlet for filtered fluid,

a confined passageway establishing communication between said inlet and said outlet,

a mass of water absorptive cellulosic fibers comprising a water-insoluble cross-linked carboxymethyl cellulose fiber medium disposed within said passage permitting the passage of hydrocarbon fluids therethrough while swelling upon the presence of free water to block the flow of fluid between said inlet and said outlet, and

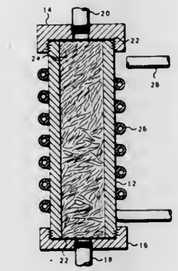
a fiberglass medium filter means disposed within said passage upstream of said water absorptive mass for removing substantially all solid particles that would block the active surface of said mass and for dispersing water droplets in the hydrocarbon fluid.

4,242,207

FILTER AND FLUID ANALYSIS SYSTEM

Gregory A. Ford, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 25, 1979, Ser. No. 6,955
Int. Cl.³ B01D *39/06*
U.S. Cl. 210—500.1 **20 Claims**



1. A regenerable filter for use in removing low molecular weight polymers from a fluid stream comprising a receptacle having an inlet and an outlet, a filter bed lying between said inlet and said outlet wherein said filter bed comprises particles of synthetic polymer selected from polytetrafluoroethylene and polyarylene sulfide which at the temperature employed in the filter does not melt or react with or dissolve in the fluid sample.

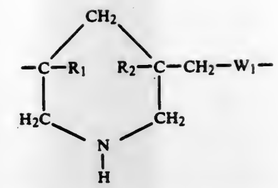
4,242,208

SEMIPERMEABLE COMPOSITE MEMBRANE AND PROCESS FOR PREPARATION THEREOF

Takeyuki Kawaguchi; Yutaka Taketani; Hiroyoshi Minematsu; Noriaki Sasaki; Yuzuru Hayashi, and Shigeyoshi Hara, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 16, 1979, Ser. No. 39,559
Claims priority, application Japan, May 22, 1978, 53-59881
Int. Cl.³ B01D *39/00, 13/00;* B05D *5/00;* C08C *19/22*
U.S. Cl. 210—500.2 **42 Claims**

1. A semipermeable composite membrane comprising a microporous substrate and a thin semipermeable film of a polymeric material deposited on one side of the substrate, said thin semipermeable film being prepared by interfacial cross-linking of a polymer containing a recurring unit of the formula



(I)

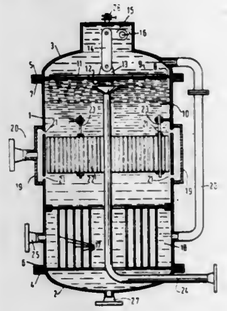
wherein each of R_1 and R_2 represents a hydrogen atom or a methyl group, and W_1 represents a direct bonding or a sulfonyl group (—SO_2—), with a polyfunctional compound containing at least two functional groups selected from acid halide, sulfonyl halide, isocyanate, N-haloformyl, haloformate and acid anhydride groups.

4,242,209

APPARATUS FOR SEPARATING MIXTURES OF LIQUIDS OF DIFFERENT SPECIFIC GRAVITIES, ETC.

Alfonsus A. Geurtsen, Deventer, Netherlands, assignor to Machinefabriek Geurtsen Deventer B.V., Deventer, Netherlands

Filed Apr. 18, 1979, Ser. No. 31,292
Claims priority, application Netherlands, May 9, 1978, 7804982
Int. Cl.³ B01D *21/10*
U.S. Cl. 210—519 **9 Claims**



1. Shipboard apparatus for separating a mixture of immiscible liquids having different specific gravities while avoiding turbulences due to ship motion, comprising, in combination:

a vessel defining a vertically extending settling chamber;

means disposed between the upper and lower regions of said chamber for introducing the mixture of immiscible liquids quiescently into an intermediate region of said chamber whereby the lighter liquid tends to rise in said chamber while the heavier liquid tends to settle in said chamber;

first outlet means having an inlet communicating with the upper region of said chamber for withdrawing said lighter liquid;

second outlet means having an inlet communicating with the lower region of said chamber for withdrawing said heavier liquid; and

flow restriction means substantially filling the cross section of said chamber at said intermediate region between said upper and lower regions of said chamber and presenting vertical passages directly communicating said upper and lower regions for restricting liquid surging between said regions whereby to maintain quiescent conditions in such regions;

said means for introducing the mixture comprising an annular chamber surrounding said intermediate region and having two sets of circumferentially spaced openings for uniformly introducing the mixture of immiscible liquids around said settling chamber, one set of openings being

disposed immediately above said flow restriction means and the other set of openings being disposed immediately below said flow restriction means.

4,242,210

PROCESS OF PREPARING A FINISHING COMPOSITION CONTAINING AZIRIDINE RADICALS USED FOR REDUCING THE SHRINKAGE AND FELTING OF WOOD

Friedrich Reinert, Wachenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,849

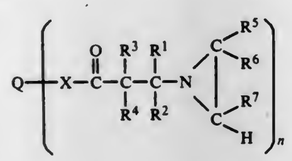
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824469

Int. Cl.³ D06M *13/48, 15/52;* D08G *65/00*

U.S. Cl. 252—8.8 **5 Claims**

1. A process for preparing a finishing agent for reducing the shrinkage and felting of wool which comprises:

dissolving (a) a compound of the formula I



I

where R^1 to R^7 are hydrogen or low molecular weight alkyl, Q is the radical of an n-hydric alcohol or phenol, n is 2 or 3 and X is a polyether chain of butoxy and/or propoxy units, with or without ethoxy units, which chain has an atomic ratio C:O of not less than 2.67:1 and a molecular weight of from 150 to 1,500 if n=2 and from 150 to 3,000 if n=3, and

(b) from 2 to 20 percent by weight, based on said compound I, of an adduct of an alcohol of 8 to 18 carbon atoms with from 5 to 80 moles of ethylene oxide in sufficient dilute aqueous acid to give an optically clear solution, and thereafter adding aqueous ammonia solution to the solution to bring the pH of the solution to from 5 to 10.

4,242,211

LUBRICANT FOR METAL WORKING

Torao Nagura, Yokohama, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1979, Ser. No. 10,168

Claims priority, application Japan, Feb. 7, 1978, 53/11952; Feb. 7, 1978, 53/11953

Int. Cl.³ C10M *1/10*

U.S. Cl. 252—25 **19 Claims**

1. A water soluble paste for metal working consisting essentially of polyethylene oxide and water.

4,242,212

MANNICH ADDITIVES MODIFIED BY DITERTIARY ALKYL PHENOL

Joseph B. Hanson, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 9, 1979, Ser. No. 28,567

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 R **8 Claims**

1. A composition comprising the Mannich reaction product of a ditertiary alkylphenol, formaldehyde or a formaldehyde-yielding compound, a polyamine, and a substantially hydrocarbon compound having at least one active or acidic hydrogen comprising a para-mono-alkylphenol or an oxidized olefinic polymer, wherein the reaction product is formed a a temperature of about 30° C. to 300° C.

4,242,213

DIELECTRIC CERAMIC COMPOSITIONS BASED ON MAGNESIUM, CALCIUM AND RARE EARTH METAL TITANATES

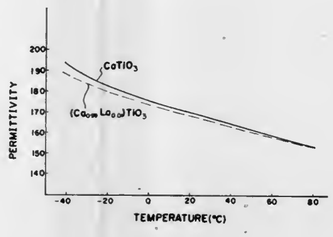
Hiroshi Tamura, and Masayoshi Katsube, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Apr. 19, 1979, Ser. No. 31,436

Claims priority, application Japan, Apr. 19, 1978, 53/46875

Int. Cl.³ H01B *3/12*

U.S. Cl. 106—73.3 **1 Claim**



1. A dielectric ceramic composition for microwave applications consisting essentially of a mixture represented by the general formula:

$$(1-x)MgTiO_3-x(Ca_{1-y}Me_y)TiO_3$$

wherein Me is at least one rare earth element selected from the group consisting of Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu, and wherein x and y are molar fractions of respective components with values within the following respective ranges: $0.03 \leqq x \leqq 0.15$, $0.001 \leqq y \leqq 0.06$.

4,242,214

ANTIFREEZE COMPOSITION CONTAINING A CORROSION INHIBITOR COMBINATION

Clifford L. Lambert, Jr., Georgetown, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 909,735, May 25, 1978, abandoned. This application Oct. 17, 1979, Ser. No. 85,835

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—75 **10 Claims**

1. A corrosion inhibited antifreeze composition consisting essentially of a water soluble liquid alcohol freezing point depressant and an inhibitor combination consisting essentially of the following components wherein the concentration ranges of the inhibitor components are weight percent of said composition:

about 0.5 to 2.5 percent tetraborate ion,
about 0.5 to 2.5 percent benzoate ion,
about 0.05 to 1.0 percent metaborate ion,
about 0.02 to 0.8 percent metasilicate ion and
about 0.05 to 0.6 percent tolyltriazole.

5. A corrosion inhibited antifreeze composition consisting essentially of a water soluble liquid alcohol freezing point depressant and an inhibitor combination consisting essentially of the following components wherein the concentration ranges of the inhibitor components are weight percent of said composition:

about 0.5 to 2.5 percent tetraborate ion,
about 0.5 to 2.5 percent benzoate ion,
about 0.05 to 1.0 percent metaborate ion,
about 0.02 to 0.8 percent metasilicate ion and
about 0.05 to 0.6 percent benzotriazole.

4,242,215

SUBSTANTIALLY ENVIRONMENTAL-POLLUTION-FREE LAUNDRY DETERGENT COMPOSITION

Jacob K. Smid, and Johan G. Aalbers, both of Bodegraven, Netherlands, assignors to Chem-y, Fabriek Van Chemische Produkten B.V., Bodegraven, Netherlands

Continuation of Ser. No. 368,361, Jun. 8, 1973, abandoned. This application Oct. 31, 1978, Ser. No. 956,424

Claims priority, application United Kingdom, Jun. 13, 1972, 27618/72

Int. Cl.³ C11D *3/60*

U.S. Cl. 252—100 **9 Claims**

1. A substantially environmental-pollution-free detergent composition consisting essentially of about 10–15% by weight of at least one surfactant, about 30–70% by weight of at least one builder, about 15 to 35% by weight of perborate, about 0.5 to 2% by weight of cellulose derivative, and a member selected from the group consisting of (a) acidic substances acceptable in detergent compositions and having a pK value of at least 2, and (b) compounds which in aqueous solutions of said compositions form said substance in situ, said member being present in a sufficient amount such that a 0.5% aqueous solution of said composition has an initial pH of 5.0–8.5, measured at room temperature, said detergent composition containing no more than 5% phosphate.

4,242,216

STABILIZED DICHLORODIMETHYL HYDANTOIN

Denny E. Daugherty, West Chester; Edwin R. Loder, and Gary L. Young, both of Cincinnati, all of Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

Filed Sep. 27, 1979, Ser. No. 79,430

Int. Cl.³ C11D *7/56, 7/54*

U.S. Cl. 252—103 **3 Claims**

1. A dry alkaline powdered dishmachine detergent consisting essentially of:

0–50% Sodium carbonate
0–50% Sodium tripolyphosphate
0–90% Sodium chloride or sodium sulfate
0–15% Sodium metasilicate, anhydrous
0–30% Sodium hydroxide
0–5% Wetting agent
0.1–90% 1,3-dichloro-5,5-dimethylhydantoin

with the proviso that the composition contains at least 10% of one or more alkaline compounds selected from the group consisting of sodium carbonate, tripolyphosphate, metasilicate, or hydroxide; the said hydantoin derivative consisting of pratices in the −10+100 mesh range, U.S. screen, compacted at a pressure in the range of about 1000 to 200,000 psi, whereby chlorine loss on storage for 90 days is not more than about 2%.

4,242,217

COMPOSITION SUITABLE FOR USE IN CLEANING PANES OF GLASS

Lothar Westermann, Cologne, and Horst-Dieter Wasel-Nielen, Hürth, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,324

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806344

Int. Cl.³ C11D *3/065, 3/075*

U.S. Cl. 252—135 **7 Claims**

1. Composition suitable for use in cleaning panes of glass, consisting of a substantially homogeneous surfactant and binder containing blend, in the form of a hardened moulding, the blend containing:

(a) at least one water-soluble alkali metal phosphate;
(b) at least one anion-active surfactant or non-ionic surfactant or both;
(c) an alkali metal silicate, with or without water admixed therewith;
(d) a product obtained by reacting P_4O_{10} with n-butanol and ethylene glycol in a molar ratio equal to about 1:2:2;
(e) the composition being with or without a complex former or a solvent or both.

4,242,218

PHENOL-FREE PHOTORESIST STRIPPER

John E. Vander Mey, Stirling, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

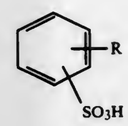
Continuation-in-part of Ser. No. 689,718, May 24, 1976, abandoned, which is a continuation of Ser. No. 601,574, Aug. 1, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 740,154

Int. Cl.² C23G *5/02;* G03C *11/12*

U.S. Cl. 252—143 **22 Claims**

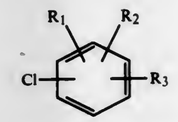
1. A stripping solution for removing polymeric organic substances from an inorganic substrate, said solution being essentially free of phenol compounds and comprising:

30–80 weight percent of an aryl sulfonic acid having the formula



wherein R is hydrogen or an alkyl group containing 1 to 14 carbon atoms or mixtures thereof, and

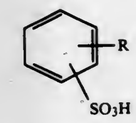
20–70 weight percent of a solvent which includes a chlorinated aryl compound of the formula



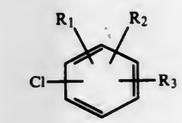
wherein R_1, R_2 and R_3 are each independently H, Cl or alkyl, and R_1, R_2 and R_3 together have 0–5 carbons.

19. A stripping solution for removing polymeric organic substances from an inorganic substrate, said solution being essentially free of phenol compounds and comprising:

30–80 weight percent of a mixture or aryl sulfonic acids of the formula



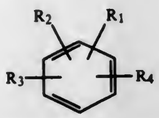
wherein R is hydrogen or an alkyl group containing 1 to 14 carbon atoms, said mixture of aryl sulfonic acids including dodecylbenzene sulfonic acid and toluene sulfonic acid, in admixture with 20–70 weight percent of a solvent which is chlorinated aryl compound of the formula



where R_1, R_2 and R_3 are each independently H, Cl or alkyl, and R_1, R_2 and R_3 together have 0–5 carbons;

an isoparaffinic hydrocarbon having an average molecular

weight between 150 and 210 and a boiling point between 160° and 220° C.;
an alkylaryl compound of the formula



where R_1 is an alkyl group, R_2, R_3 and R_4 are independently hydrogen or an alkyl group and R_1, R_2, and R_3 and R_4 together contain 1–14 carbon atoms; or mixtures thereof;
said composition including 10–60 weight percent of at least one of said chlorinated aryl compounds and 10–60 weight percent of at least one of said alkylaryl compounds.

4,242,219

NOVEL ENZYME PARTICLES AND THEIR PREPARATION

Pieter K. Bogerman, Naaldwijk; Petrus J. Eygermans, Wateringen, and Antoon G. van Velzen, The Hague, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Jun. 26, 1978, Ser. No. 919,082
Claims priority, application United Kingdom, Jul. 20, 1977, 30556/77
Int. Cl.³ A61K *37/48*; C11D *3/386*; C12N *9/96, 9/98*
U.S. Cl. 252—174.12 **33 Claims**

1. A process for the preparation of enzyme-containing particles which do not, or substantially do not, dust when subjected to external mechanical pressure comprising homogeneously mixing an amount of an enzyme in dry or substantially dry form sufficient to give the desired enzyme activity in the particles when formed, about 20% to about 60% of a hydrophilic organic cohesive compatible with the enzyme selected from the group consisting of starch derivatives, cellulose derivatives, arabic gum, karaya gum and tragacanth, about 10% to about 60% of a building agent suitable for use in enzyme compositions selected from the group consisting of water-soluble carbohydrates of 5 to 12 carbon atoms, up to 70% of which may be replaced by a starch hydrolysate of about 20 to about 70 DE, and an amount of a moisture regulating agent selected from the group consisting of polyols having 2 to 6 carbon atoms and 2 to 4 hydroxy groups attached to different carbon atoms sufficient to maintain a moisture content in the particles formed of from 5% to 15% at ordinary temperatures and ordinary relative humidities and sufficient water to give a moisture content in the particles formed of from 5% to 15%, mechanically dividing the mixture obtained into particles of the desired size, and coating the particles to prevent loss of moisture with about 0.5 to about 5% of a water repellent agent selected from the group consisting of paraffin oil, linseed oil, earth wax, cocoa fat, candelilla wax, carnauba wax, paraffin wax and beeswax, ceresine wax and lanolin and mixtures thereof.

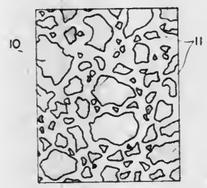
29. An enzyme-containing composition comprising an enzyme in dry or substantially dry form, about 20% to about 60% of a hydrophilic organic cohesive compatible with the enzyme selected from the group consisting of starch and cellulose derivatives, arabic gum, karaya gum and tragacanth, about 10% to about 60% of a building agent suitable for use in enzyme compositions, and an amount of a moisture regulating agent selected from the group consisting of polyols having 2 to 6 carbon atoms and 2 to 4 hydroxy groups attached to different carbon atoms sufficient to maintain a moisture content in the particles formed of from 5% to 15% at ordinary temperatures and ordinary relative humidities and a small amount of water.

4,242,220

WASTE DISPOSAL METHOD USING MICROWAVES

Gentaku Sato, No. 33, Ichigaya Sanai-cho, Shinjuku-ku, Tokyo, Japan (162)

Filed Jul. 31, 1978, Ser. No. 929,808
Int. Cl.² G21F *9/08*
U.S. Cl. 252—301.1 W **8 Claims**



1. A method of manufacturing a safe article from a water-containing waste having poisonous substances, comprising the steps of:
(a) removing a major portion of water contained in the waste,
(b) stirring the waste during the subsequent steps except for the last step,
(c) drying the waste to a residual water content of about 12–13% by weight, without igniting flammable material contained in the waste,
(d) microwave heating the waste to further reduce the residual water content to 0.1–5% by weight so that the waste becomes powdery,
(e) cooling the waste powder to room temperature,
(f) contacting the waste powder with a thermoplastic resin,
(g) microwave heating the mixture of the waste powder and the thermoplastic resin at a rate which enables the resin to melt and encapsulate the waste powder particles, and
(h) molding the resin encapsulated particles into an article having a desired shape.

4,242,221

CERAMIC-LIKE SCINTILLATORS

Dominic A. Cusano; Fred F. Holub, both of Schenectady, and Svante Prochazka, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,085
Int. Cl.³ C04B *35/50*
U.S. Cl. 252—301.4 H **27 Claims**



1. A process for producing optically translucent scintillation detectors, said detector comprising phosphor material selected from the group consisting of BaFCl:Eu, LaOBr:Tb, CsI:Tl, $CaWO_4$, and $CdWO_4$; said process comprising the step of:
pressing the phosphor material at a substantially high pressure and at an elevated temperature which is below the melting point of the phosphor and for a time sufficient to allow compaction whereby an optically translucent body is formed.

4,242,222

RADIOENZYMATIC ASSAY OF CATECHOLAMINES

Garland A. Johnson, Charleston Township, Kalamazoo County, and Jacob D. Peuler, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 681,999, Apr. 30, 1976, abandoned. This application Oct. 12, 1978, Ser. No. 950,863
Int. Cl.² G01J *1/00*
U.S. Cl. 252—301.17 **3 Claims**

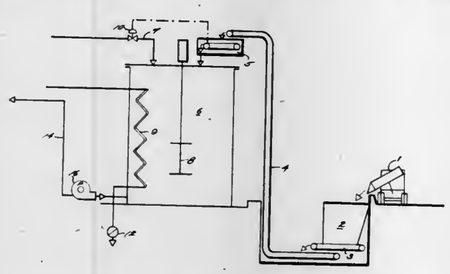
1. A composition which comprises a liquid scintillation vial and contents; said contents comprising an organic layer and an aqueous layer, said organic layer or component thereof substantially immiscible with the aqueous layer, the organic layer comprising an organic liquid scintillation medium and vanillin, said vanillin bearing a tritium label in the methoxy position, the aqueous layer comprising water in admixture with an acid of sufficient strength to protonate the amine function of a catecholamine.

4,242,223

PROCESS FOR RECEIVING, STORING AND HANDLING ALUMINUM HYDROXIDE WET HYDRATE

Hans Christner, Frankfurt; Wolfgang Roebke, Bruhl; Hermann Ramelow, Kelkheim, and Ewald Dittrich, Grossekrotzenburg, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,692
Int. Cl.³ C09D *1/00*; B01J *13/00*
U.S. Cl. 252—313 R **14 Claims**



1. A process of forming a suspension of aluminum hydroxide wet hydrate stable for a period of at least 48 hours consisting essentially of adding a measured amount of aluminum hydroxide wet hydrate to a container and adding to the aluminum hydroxide wet hydrate an amount of aqueous sodium hydroxide sufficient to form a suspension stable against sedimentation with said measured amount of aluminum hydroxide wet hydrate.

5. A suspension made by the process of claim 2 which suspension has been stable for at least 48 hours and still has good meterability.

6. A process for receiving, storing and handling aluminum hydroxide wet hydrate consisting essentially of dumping the aluminum hydroxide wet hydrate into a container, passing the aluminum hydroxide wet hydrate from the container to a conveyor, conveying the aluminum hydroxide wet hydrate to means for measuring the amount of aluminum hydroxide wet hydrate, adding the measured amount of aluminum hydroxide wet hydrate to a container, mixing the aluminum hydroxide wet hydrate in the container with the amount of aqueous sodium hydroxide needed to produce a stable suspension of the aluminum hydroxide wet hydrate and producing a pumpable and meterable suspension of the aluminum hyroxide wet hydrate in said container by heating the aluminum hydroxide wet hydrate-aqueous sodium hyroxide mixture in the container to a temperature between 20° and 100° C. and stirring said mixture.

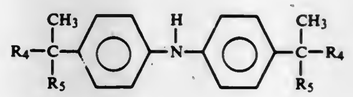
4,242,224

COLOR STABILIZATION OF AMINE ANTIOXIDANT AND ANTIOZONANT EMULSIONS

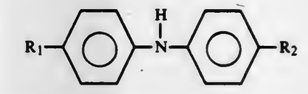
Paul R. Dean, II, Cuyahoga Falls, and Joseph A. Kuczkowski, Munroe Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 944,686, Sep. 22, 1978, abandoned. This application Aug. 17, 1979, Ser. No. 67,593
Int. Cl.³ C09K *15/26*
U.S. Cl. 252—402 **7 Claims**

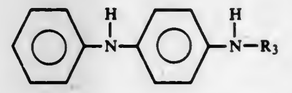
1. A color-stabilized composition comprising a combination of:
1. an amine age resister comprising an antioxidant or antiozonant selected from the group consisting of:
a. p-styrenated diphenylamines having the formula:



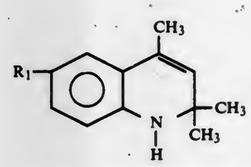
wherein R_4 is selected from phenyl and p-tolyl radicals, and R_5 is selected from H, and methyl;
b. alkylated diphenylamine derivatives having the formula:



wherein R_1 and R_2 are alkyl radicals (2–12C);
c. N-phenyl, N'-alkyl-p-phenylenediamines having the following formula:



wherein R_3 is an alkyl radical (2–8C); and
d. dihydroquinolines having the formula



wherein R_1 is an alkyl radical having 2 to 12 carbon atoms (2–12C):
with:
2. a reducing agent which is also a hydrogen donor selected from the group consisting of:
a. dialkylhydroxylamines (2–12C), and
b. mercaptans selected from the group consisting of alkyl, phenyl, and aralkyl mercaptans,
3. at a ratio of from 0.1 to 5 parts by weight reducing agent per 100 parts by weight amine age resister.

4,242,225

METHOD AND APPARATUS FOR PRODUCING ACTIVE COKE

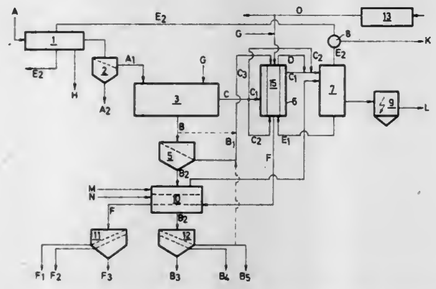
Erhard Wolfrum, Neue Aue 6, 5160 Düren (Rheinland), Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,774

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808995

Int. Cl.³ B01J *37/08*; C10B *31/10, 49/04*

U.S. Cl. 252—411 R **10 Claims**



1. A method of producing active coke by thermal treatment of coal-base feed material, comprising coking the feed material in a hearth-type furnace, feeding at least a portion of the resulting coke of the desired grain size into an activation reactor, passing at least a portion of the waste gas from the hearth-type furnace into the activation reactor as an activation gas, and passing the hot waste gas from the activation reactor into a waste-heat boiler.

4,242,226

FILTER MATERIAL AND A METHOD OF MANUFACTURING AND USING THE SAME

Matti J. Siren, Casa Maria Helena, Via Monte Cucco, 6596 Gordola, Switzerland

Filed Feb. 21, 1979, Ser. No. 13,442

Claims priority, application Sweden, Feb. 21, 1978, 7802006; Feb. 21, 1978, 7802007

Int. Cl.³ C01B *31/08*

U.S. Cl. 252—422 **30 Claims**

1. A filter material for filtering gaseous or liquid media, comprising a product in the form of a matrix of activated carbon having uniformly dispersed therein at least one metal selected from the group consisting of Ca, Mg, Ba, Al, Cu and the transition metals, said product formed by chemical reaction between cations of at least one metal from said group of metals and anionic groups chemically bound to a substance consisting essentially of a polyhexose derivative followed by pyrolysis and activation of said product.

4,242,227

CHROMATOGRAPHIC COLUMN PACKING HAVING A BONDED ORGANOSILOXANE COATING

Terry J. Nestrick, and Rudolph H. Stehl, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 31, 1979, Ser. No. 62,380

Int. Cl.³ B01J *31/02, 49/00*

U.S. Cl. 252—428 **19 Claims**

1. In a process for making a chromatographic column packing by chemically bonding a siloxane polymer coating to the surface of a siliceous solid, the improvement which comprises the combination of steps:

(a) reacting by contacting an acid-activated siliceous surface with $SiCl_4$, thereby causing substantial chlorosilylation of said surface,

(b) reacting by contacting the chlorosilylated surface with water vapor until essentially all of the chlorosilyl groups have been hydrolyzed to hydroxysilyl groups,

(c) reacting by contacting the hydrolyzed surface with excess dichlorosilane of the formula $RR'SiCl_2$ wherein R and R' each represent a methyl, ethyl, or vinyl radical for a time sufficient to react at least the major proportion of the hydroxysilyl groups to form corresponding disubstituted chlorosilyl groups,

(d) reacting by contacting the reacted product of (c) with water vapor until essentially all of the disubstituted chlorosilyl groups have been hydrolyzed to corresponding disubstituted hydroxysilyl groups,

(e) reacting by contacting the hydrolyzed product of (d) with $SiCl_4$ for a time sufficient to react substantially all of said disubstituted hydroxysilyl groups to form silyloxy chlorosilyl groups, and

(f) reacting by contacting the chlorosilylated product of (e) with a molar excess over said silyloxy chlorosilyl groups of a siloxane polymer polyol in the liquid state, said polyol having a molecular weight of at least about 230 and having a molecular structure consisting essentially of repeating units of the formula



thereby reacting essentially all of said silyloxy chlorosilyl groups with said polyol to form pendant polyol residues having at least one terminal hydroxyl group per residue.

4,242,228

CATALYSTS FOR CONVERSION OF CONJUGATED DIOLEFINS TO DIACYLOXY OLEFINS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 827,631, Aug. 25, 1977, Pat. No. 4,180,676. This application Jan. 31, 1979, Ser. No. 8,150

Int. Cl.² B01J *31/02, 31/04, 27/08, 27/06*

U.S. Cl. 252—429 R **20 Claims**

1. The composition consisting essentially of catalytically effective ratios to convert conjugated dienes to diacyloxy olefins of (A) a uranium compound, (B) an alkali metal ion, (C) a halide which is chloride, bromide, or iodide, and at least one of (D) a dihalobutene and (E) carboxylic acid media; wherein said (C) halide is supplied from the group consisting of said (A) uranium compound, an alkali metal compound supplying said (B) alkali metal ion, and alkaline earth metal halides.

4,242,229

SOLID CATALYST COMPONENTS FOR POLYMERIZATION OF α-OLEFINS

Masaki Fujii; Shiro Goto, and Hideo Sakurai, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,675

Claims priority, application Japan, Apr. 6, 1978, 53/40544

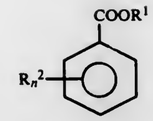
Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **11 Claims**

1. A solid catalyst component for forming, in combination with an organoaluminum compound, a catalyst for polymerization of α-olefins, which solid catalyst component is a product of contact of materials consisting essentially of:

(1) a, magnesium halide

(2) a benzoate ester, of the formula



wherein, R^1 denotes a saturated hydrocarbon residue having 1 to 8 carbon atoms; R^2 is selected from the group consisting of hydrogen, a saturated hydrocarbon residue having 1 to 6 carbon atoms, an R^3O group, wherein R^3 is a saturated hydrocarbon residue having 1 to 6 carbon atoms, nitro group, and a halogen and n is 1 or 2, and

(3) a titanium halogen compound, and satisfies the conditions:

(A) that the titanium content in the solid catalyst component is such that the content of titanium atoms in % by weight on the basis of the weight of the solid component is in the range of 0.5 to 3.5% by weight, and

(B) that in the infrared absorption spectrum of the solid catalyst component, the highest absorption peak among the absorption peaks appearing in the wave-number region of 1560 cm^{-1} to 1710 cm^{-1} appears in the wave-number region of 1665 cm^{-1} to 1710 cm^{-1}.

4,242,230

CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF α-OLEFINS AND A METHOD OF USING THE SAME

Hiroshi Ueno, Namekawa; Masafumi Imai; Naomi Inaba, both of Ooi; Makoto Yoda, Kawagoe, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,081

Claims priority, application Japan, Apr. 12, 1978, 53-42147

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **21 Claims**

1. A supported titanium catalyst adaptable for use in stereoregular polymerization of α-olefins, produced by a process comprising:

cogrinding, in combination, a magnesium halide, a tetravalent titanium halide, and a carboxylic acid ester to obtain a titanium-containing solid product;

treating said titanium-containing solid product by contacting at a temperature in the range of from about 40° C. to about 200° C. for about 0.5 to about 20 hours with a compound selected from one of a hydrocarbon which can be present in an amount of from 5 to 50 times the weight of the titanium-containing solid, an organo halogen compound which can be one of a halogen substituted aliphatic, alicyclic and aromatic hydrocarbons having from 1 to 20 carbon atoms and can be present in an amount of from 0.5 to 50 times the weight of the titanium-containing solid, and mixtures thereof; and

recovering the resulting treated solid product as said supported titanium catalyst.

4,242,231

CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF α-OLEFINS AND A METHOD OF USING THE SAME

Hiroshi Ueno, Namekawa; Masafumi Imai; Naomi Inaba, both of Ooi; Makoto Yoda, Kawagoi, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,083

Claims priority, application Japan, Apr. 12, 1978, 53-42148

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **12 Claims**

1. A supported titanium catalyst adaptable for use in stereoregular polymerization of α-olefins, produced by a process comprising:

cogrinding, in combination, a magnesium halide, a tetravalent titanium halide in the amount of from about 0.1 to about 10% by weight as supported titanium metal in the resulting titanium-containing solid product, from about 0.1 to about 10 mols per 1 gram atom of supported titanium metal of an ester of a saturated or unsaturated aliphatic, alicyclic and aromatic mono- or polycarboxylic acid and an aliphatic, alicyclic and araliphatic mono- or polyols and an organo halogen compound in a proportion of 1 to 100% by weight to the magnesium halide, said organo halogen compound being one of mono- and polyhalo-substituted aliphatic or alicyclic hydrocarbons having from 1 to 20 carbon atoms; and

recovering the resulting titanium solid product as said supported titanium catalyst, wherein the intensity of the X-ray diffraction peak at 14.8° is dull and the intensity of the 30.2° peak is reduced compared to the characteristic X-ray diffraction lines of normal magnesium halide.

4,242,232

CATALYST AND ITS PREPARATION AND USE FOR THE SOLUTION POLYMERIZATION OF CONJUGATED DIENES

Gerd Sylvester, Leverkusen; Josef Witte, and Günter Marwede, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 3, 1979, Ser. No. 54,632

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830080

Int. Cl.³ C08F *4/12*

U.S. Cl. 252—429 C **13 Claims**

1. A catalyst comprising

(A) a reaction mixture formed by reacting a rare earth carboxylate, $M(RCO_2)_3$, with an aluminum trialkyl, AlR^1_3,

(B) an aluminum trialkyl, AlR^2_3, and/or an alkylaluminumhydride and

(C) a Lewis acid selected from the group consisting of an organometallic halide whose metal is of main group 3a and 4a of the Periodic System and a halide of an element of main group 3a, 4a and 5a of the Periodic System,

wherein

M denotes a trivalent rare earth element with an atomic number of 57 to 71,

R denotes a saturated or unsaturated, straight chain or branched chain aliphatic hydrocarbon group having 1 to 20 C-atoms which may be substituted one or more times with cycloalkyl having 5 to 7 C-atoms and/or phenyl, the carboxyl group being attached to a primary, secondary or tertiary C-atom; a cycloalkyl group having 5 to 7 ring carbon atoms, which may be substituted one or more times with alkyl groups having from 1 to 5 C-atoms; or an aromatic group having from 6 to 10 ring carbon atoms, which may be substituted one or more times with alkyl groups hav 1 to 5 C-atoms, and

R^1 and R^2 are identical or different, straight chain or branched chain alkyl groups having from 1 to 10 C-atoms.

4,242,233

METHOD FOR PREPARING ALUMINOSILICATES, THEIR USE AS CATALYST SUPPORTS AND CATALYSTS, AND METHOD FOR PRODUCING CATALYSTS THEREFROM

William J. Ball, Capel; Keith W. Palmer, Weybridge, and David G. Stewart, Epsom, all of England, assignors to The British Petroleum Company Limited, London, England

Filed Dec. 11, 1978, Ser. No. 968,401

Claims priority, application United Kingdom, Dec. 23, 1977, 53645/77

Int. Cl.[3] C01B *33/28;* B01J *29/06*

U.S. Cl. 252—431 N 9 Claims

1. A method for preparing a crystalline aluminosilicate which method comprises mixing a source of silica, a source of alumina, a source of alkali metal, water and at least one mono-alkanolamine selected from the group consisting of mono-ethanolamine and mono-propanolamine, said source of silica to said source of alumina being in the range of from 10:1 to 150:1 based on the equivalent moles of silica and alumina in the respective sources, and maintaining the mixture at a temperature in the range of from about 80° to 210° C. and a pressure in the range from about 70 to 400 psig for a time greater than four hours.

7. A method as defined in claim 1 wherein the aluminosilicate obtained is impregnated with a compound of one or more metals selected from the group consisting of copper, silver, zinc, gallium, indium, thallium, lead, antimony, bismuth, iron, cobalt, nickel, ruthenium, rhodium, palladium, iridium, and platinum.

4,242,234

CATALYST FOR CONVERSION OF HYDROGEN AND CARBON MONOXIDE INTO C_1–C_4 RANGE HYDROCARBONS

Warren G. Schlinger, Pasadena, and William L. Slater, LaHabra, both of Calif., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 865,764, Dec. 29, 1977. This application Jan. 26, 1979, Ser. No. 6,835

Int. Cl.[3] B01J *23/78, 27/04*

U.S. Cl. 252—439 2 Claims

1. An ebullient bed catalyst for producing from the product gas from the partial oxidation of hydrocarbon and/or carbonaceous materials light hydrocarbon gases containing an increased yield of C_1 to C_4 range saturated hydrocarbons essentially comprising: iron oxide selected from the group consisting of mill scale, magnetite, and mixtures thereof ground to an average particle size in the range of from about 350 to 800 microns, magnetically separated from extraneous matter, treated with an aqueous solution of potassium carbonate in an amount sufficient to deposit upon said ground iron oxide about 2–10 pounds potassium carbonate per 1000 pounds of iron oxide, dried, chemically reduced with hydrogen at a temperature in the range of about 650°–800° F. and a pressure in the range of about 100 to 1000 psig until evolution of water ceases, and then sulfided at an elevated temperature in the range of about 200°–900° F. with a sulfur-containing compound capable of sulfiding said catalyst such that said reduced iron catalyst contains from about 0.01 to about 1.0 weight percent sulfur.

4,242,235

SUPPORTS FOR SILVER CATALYSTS UTILIZED IN THE PRODUCTION OF ETHYLENE OXIDE

Jean-Marie Cognion, Saint Genis Laval, and Jacques Kervennal, Lyons, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Oct. 23, 1978, Ser. No. 953,940

Claims priority, application France, Dec. 22, 1977, 77 38744

Int. Cl.[3] B01J *21/12, 21/04, 23/50*

U.S. Cl. 252—455 R 13 Claims

1. A process for the preparation of a supported silver catalyst suitable for the production of ethylene oxide comprising:

(a) impregnating a porous refractory support material comprising:

(1) a specific surface area of less than about 10 m^2/g,

(2) a total porosity volume of between about 0.1 and 0.6 cm^3/g, and

(3) a substantially bimodal porosity distribution in which:

(a) the smaller pores have a mean diameter of about 1–5μ,

(b) the smaller pores constitute about 35–65% of the pore volume, and

(c) the larger pores have a mean diameter of about 60–200μ,

with a liquid containing a compound or complex of silver,

(b) drying the impregnated support, and

(c) thermally treating the dried support to liberate the silver from the compound or complex deposited on the support.

3. The process of claim 1 wherein the support is selected from alumin or silica-alumina.

4,242,236

65-130 ANGSTROM MEAN RADIUS SILICA-ALUMINA CATALYST SUPPORT

Donald W. Blakely, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 29, 1979, Ser. No. 25,222

Int. Cl.[3] B01J *21/12*

U.S. Cl. 252—455 R 1 Claim

1. A catalyst support comprised of alumina and silica having a mean pore radius ranging from about 65 to about 130 Angstroms; a total pore volume from about 0.75 to about 1.3 ml/g; and a total surface area ranging from about 150 to 300 m^2/g.

4,242,237

HYDROCARBON CRACKING CATALYST AND PROCESS UTILIZING THE SAME

Elroy M. Gladrow, and William E. Winter, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 31, 1979, Ser. No. 44,360

Int. Cl.[3] B01J *29/08, 29/18*

U.S. Cl. 252—455 Z 11 Claims

1. A catalyst comprising:

(a) an ultrastable Y-type crystalline aluminosilicate zeolite having less than about 1 weight percent rare earth metals, calculated as the elemental metal, based on the zeolite;

(b) a small pore crystalline aluminosilicate zeolite selected from the group consisting of erionite, mordenite, zeolite A, chabazite and offretite; and

(c) a catalytic inorganic oxide matrix.

4,242,238

SYNTHESIS OF PEPTIDES

Robert L. Colescott, Bourbonnais; Emil Kaiser, Chicago, and Charles D. Bossinger, Olympia Fields, all of Ill., assignors to Armour and Company, Phoenix, Ariz.

Filed Feb. 13, 1976, Ser. No. 657,753

Int. Cl.[3] C08L *37/00;* C07C *103/52;* A61K *37/00*

U.S. Cl. 260—8 6 Claims

1. A resin peptide having the structure:



where Ⓡ is divinylbenzene crosslinked polystyrene resin and Bz is benzyl, p-methoxylbenzyl, p-chlorobenzyl, p-nitrobenzyl or benzhydryl.

4,242,239

BONDABLE AGAR DENTAL IMPRESSION MATERIAL

Henry A. Kessler, Succasunna, and Richard A. McEvoy, Lincoln Park, both of N.J., assignors to Warner-Lambert, Morris Plains, N.J.

Filed Jun. 11, 1979, Ser. No. 47,432

Int. Cl.[3] C08L *5/12*

U.S. Cl. 260—9 4 Claims

1. In an improved agar-agar dental impression material, the improvement comprises the inclusion of a small amount of a poly(ethylene oxide) polymer having a molecular weight of about 100,000 to about 5,000,000.

4,242,240

COMPOSITIONS INTENDED FOR THE FLAMEPROOFING OF PLASTICS

Jacqueline Cerny, and Gilbert Vivant, both of Lyons, France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 690,842, May 28, 1976, abandoned. This application Mar. 23, 1978, Ser. No. 889,337

Claims priority, application France, Mar. 19, 1976, 76 08607

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.[2] C08L *1/10*

U.S. Cl. 260—14 3 Claims

1. Compositions intended for the flameproofing of plastics, which do not evolve toxic products during the processing of these plastics, characterized in that they contain:

(a) from 50 to 95% by weight of red phosphorus in the form of a powder having a mean particle size of less than 200μ;

(b) from 5 to 50% by weight of a thermoplastic phenol-formaldehyde polycondensate of molecular weight between 120 and 1,500, wherein the molar ratio of formaldehyde to phenol is between 0.7 and 0.9 and in which the particles of red phosphorus are coated with the polycondensate.

4,242,241

METHOD FOR MAKING A SLURRY CONTAINING PARTICULATE MATTER AND FIBERS FOR A PREFORMED INSULATION PRODUCT

Murray Rosen; Alan R. Koenig, both of St. Petersburg, and John D. Copham, Seminole, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 847,165, Oct. 31, 1977, Pat. No. 4,168,919. This application Jan. 29, 1979, Ser. No. 7,101

Int. Cl.[3] C08L *1/00, 3/00*

U.S. Cl. 260—17.2 3 Claims

1. A method of making a preformed insulation product from a slurry containing particulate matter, binder and fibers comprising making a liquid binder, putting chopped strands of fibers into said liquid binder, agitating said liquid binder to separate at least some of said strands into individual fibers, forcing said liquid binder and fibers under pressure through a hollow tubular member against an inwardly closing helical vane to form a conically expanding spray of binder and fibers, breaking up any remaining strands of fibers into individual fibers, forming a falling curtain of separated particulate matter and directing said conically expanding spray of binder and fibers against said falling curtain of separated particulate matter to form a uniform slurry of particles, binder and fibers, putting said slurry into molds and heating said molds to a temperature and for a sufficient period of time to make a preformed insulation product.

4,242,242

HIGHLY ABSORBENT FIBERS OF RAYON WITH SULFONIC ACID POLYMER INCORPORATED

Thomas C. Allen, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Jun. 10, 1977, Ser. No. 805,361

Int. Cl.[3] C08L *1/02*

U.S. Cl. 260—17.4 CL 29 Claims

1. A highly absorbent cellulosic fiber containing in a physical admixture with cellulose at least about 2% by weight based on the weight of the cellulose of a homopolymer consisting essentially of polymerized 2-acrylamido-2-methylpropane sulfonic acid monomers or the partial or complete alkali metal or ammonium salts thereof.

4,242,243

HIGH SOLIDS AMBIENT TEMPERATURE CURING COATINGS OF ACRYLIC-FATTY ACID DRYING OIL RESINS

Joseph A. Antonelli, Riverton, N.J.; Renee J. Kelly, Media, and Joseph E. McLaughlin, Philadelphia, both of Pa., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Jul. 18, 1979, Ser. No. 58,662

Int. Cl.[3] C08L *25/14, 33/12*

U.S. Cl. 260—23 AR 29 Claims

1. A high solids coating composition comprising a polymer having a backbone of polymerized monomers selected from the group consisting of an alkyl methacrylate, an alkyl acrylate, styrene or mixtures thereof and polymerized hydroxyl containing monomers selected from the group consisting of a hydroxy alkyl acrylate, a hydroxy alkyl methacrylate of mixtures thereof, wherein the active hydrogen of at least one pendant hydroxyl group of the backbone is replaced by



where R is the residual of a drying oil fatty acid and wherein the polymer has a glass transition temperature of at least 20° C.

4,242,244

RESINS FOR PRINTING INKS

Alberto Malatesta, Brussels, Belgium, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 19, 1979, Ser. No. 22,080

Claims priority, application United Kingdom, Mar. 22, 1978, 11407/78; Oct. 24, 1978, 41740/78

Int. Cl.[3] C08F *279/02;* C09D *3/733, 11/10*

U.S. Cl. 260—23.7 C 20 Claims

1. A carboxyl modified metal-free petroleum resin comprising a resin obtained by thermal polymerisation of a feed containing cyclopentadiene and/or methylcyclopentadiene and/or the dimers or codimers thereof having been reacted electrophilically with a saturated or ethylenically unsaturated C_7 or higher fatt, cid, said modified resin having an acid number less than 20, containing from 1 wt.% to 5 wt.% of oxygen and having a softening point of from 120° C. to 200° C.

4,242,245

RUBBERY POLYMER SEALANT COMPOSITIONS

George M. Allison, III, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 6, 1979, Ser. No. 27,686

Int. Cl.[3] C08K *3/10*

U.S. Cl. 260—27 BB 15 Claims

1. A sealant composition comprising:

100 parts by weight of a rubbery polymer ingredient that does not contain any oxygenated functional groups,
25–200 parts by weight of modifying resin that is compatiable with said rubbery polymer,
25 to 300 parts by weight of a plasticizer,
100–2000 parts by weight of barium sulfate, and
1–20 parts by weight of a compound containing at least two acidic hydrogens that are attached to oxygen atoms wherein said compound is selected from the group consisting of substituted phenols, glycols and polyols.

4,242,246

PROCESS FOR THE PREPARATION OF BITUMINOUS COMPOSITIONS MAKING USE OF A MOTHER SOLUTION CONTAINING POLYMERS AND SULFUR

Paul Maldonado, St. Symphorien d'Ozon; Henri Dayre, Vienne, and Germain Hagenbach, Vernaison, all of France, assignors to Elf Union, Paris, France

Filed Jun. 13, 1979, Ser. No. 48,035
Claims priority, application France, Jun. 21, 1978, 78 18534
Int. Cl.³ C08L *91/00*
U.S. Cl. 260—28.5 AS **12 Claims**

1. A process for the preparation of a fluid bitumen-polymer composition which comprises: contacting, at a temperature of from 130° C. to 230° C., 85 to 95% by weight of a bitumen having a penetration of from 20 to 220 and 5 to 15% by weight of a second composition prepared by mixing a polystyrene-polydiene disequenced, multisequenced or statistical copolymer with a coal tar oil or a petroleum fraction having a distilling range at atmospheric pressure of about 100° to 350° C. and sulfur not chemically bonded and stirring the mixture of bitumen and said second composition for at least fifteen minutes.

4,242,247

PROCESS FOR WATER-IN-OIL EMULSIONS OF WATER-SOLUBLE POLYMERS

Joseph J. Pellon, New Canaan, Conn., and Paul D. Savoy, Meterie, La., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 946,686, Sep. 28, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 69,673
Int. Cl.³ C08K *3/30*
U.S. Cl. 260—29.6 WQ **10 Claims**

1. A process for preparing a water-soluble polymer or copolymer of nonionic or anionic character which comprises preparing an aqueous solution of at least one water-soluble monomer, said aqueous solution containing dissolved therein from about 2 weight percent up to the solubility limit in water of a water-soluble, oil-insoluble added salt selected from the group consisting of sodium sulfate, sodium chloride, ammonium chloride, ammonium sulfate and sodium acetate, emulsifying the resulting monomer solution in a water-insoluble hydrocarbon oil to form a water-in-oil emulsion, and polymerizing said monomer in the dispersed phase to form the desired polymer.

4,242,248

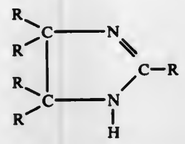
STORAGE-STABLE BAKING LACQUERS PREPARED FROM POLYISOCYANATES BLOCKED WITH CYCLIC AMIDINES

Rainer Gras, Herne; Johann Obendorf, Dorsten, and Elmar Wolf, Herne, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Herne, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,625
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744782
Int. Cl.³ C08G *18/10*
U.S. Cl. 260—31.2 N **7 Claims**

1. Baking lacquers which are a blend of hydroxy-group-containing polymers, blocked polyisocyanates and organic solvents, which comprise:

a. 40 to 70 wt.% hydroxyl-group-containing polymers with hydroxyl numbers between 40 and 240 and polyisocyanates blocked with cyclic amidines of the formula:



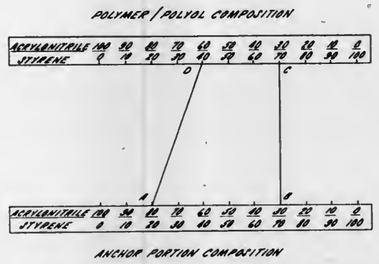
wherein R are equal or different substituents selected from the group consisting of hydrogen, alkyl-, cycloalkyl-, aralkyl- and aryl radicals whereby the components are used in such amounts that 0.8 to 1.2 NCO-group equivalents are applied for each hydroxyl group equivalent,
b. 0–2 wt.% cross-linking catalyst,
c. 30–60 wt.% of an organic solvent or solvent mixture whereby the percentages of polymer, catalyst and solvent add up to 100, as well as in addition:
d. 0–65 wt.% of pigments or fillers or mixtures thereof,
e. 0–5 wt.% colorants and, optionally
f. 0.1–3 wt.% flowing agents, gloss improvers, antioxidants or heat stabilizers or mixtures thereof.

4,242,249

POLYMER/POLYOLS VIA NON-AQUEOUS DISPERSION STABILIZERS

Russell Van Cleve; George H. Armstrong, and Donald W. Simroth, all of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 752,818, Dec. 20, 1976, abandoned. This application Apr. 3, 1979, Ser. No. 26,576
Int. Cl.³ C08K *5/06*; C08G *18/14, 18/63*; C07C *121/32*
U.S. Cl. 260—33.2 R **39 Claims**



1. A process for producing a fluid, stable polymer/polyol composition which comprises:

adding a preformed stabilizer, which is a graft or addition copolymer comprising (a) an anchor portion consisting essentially of a polymer or an ethylenically unsaturated monomer of a mixture of such monomers chemically bonded to (b) a solvatable portion consisting of a propylene oxide polymer having a number average molecular weight of at least about 800, said performed stabilizer having a viscosity in excess of 40,000 centipoises at 25° C., to a normally liquid polypropylene oxide polyol having a number average molecular weight of at least about 400 and a hydroxyl number of from about 20 to about 280, said preformed stabilizer being present in the polyol in an amount sufficient to stabilize a polymer particle dispersed therein against phase separation, in order to provide a homogeneous mixture of said preformed stabilizer and said polyol, and subsequently

polymerizing a reaction mixture comprising (I) said homogeneous mixture of preformed stabilizer and polyol, (II) from about 10 to about 40 weight percent of an ethylenically unsaturated monomer or a mixture of such monomers, said weight percent being based on the total weight of the monomer or monomer mixture and the polyol in said homogeneous mixture, and (III) a free radical catalyst.

4,242,250

ORGANOPOLYSILOXANE RESINS FORMED WITH CATALYSTS OF FORMIC ACID AND HYDROCARBYL SUBSTITUTED AMMONIUM HYDROXIDE

Donald W. Gagnon, Sylvania, and James J. Tillman, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 25, 1979, Ser. No. 51,488
Int. Cl.³ C08K *5/05*
U.S. Cl. 260—33.4 SB **32 Claims**

1. In a process for preparing an organopolysiloxane by hydrolyzing a trialkoxysilane in aqueous solution containing at least the stoichiometric amount of water required for said hydrolysis, condensing the hydrolyzed silane to an organopolysiloxane, and then cross-linking the oganopolysiloxane; the improvements comprising catalyzing at least some of said condensation by formic acid present in said solution at a strength greater than 700 ppm, and catalyzing cross-linking of said organopolysiloxane by a hydrocarbyl substituted ammonium hydroxide, said hydrocarbyl substituent being selected from alkyl, isoalkyl, and cycloalkyl up to about six carbon atoms, and from alkenyl, isoalkenyl, and cycloalkenyl up to about six carbon atoms.

4,242,251

COMPOSITION COMPRISING A THERMOPLASTIC RESIN AND MINERAL FILLER PARTICLES COATED WITH AN ETHYLENICALLY UNSATURATED ORGANIC ACID, THE ETHYLENIC DOUBLE BONDS OF WHICH REMAIN SUBSTANTIALLY UNREACTED; PRODUCT RESULTING FROM CAUSING SAID TO REACT

Itsuho Aishima, Fujisawa; Junji Seki, Tokyo; Koichi Matsumoto, Kurashiki; Yonemasa Furusawa, Amagasaki; Ryogo Tsukisaka, Takarazuka, and Yuhachi Takahashi, Amagasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka and Shiraishi Central Laboratories Co., Ltd., Hyogo, both of, Japan

Continuation-in-part of Ser. No. 923,885, Jul. 12, 1978, abandoned, which is a continuation of Ser. No. 867,260, Jan. 5, 1978, abandoned, which is a continuation of Ser. No. 581,460, May 28, 1975, abandoned. This application Jul. 26, 1979, Ser. No. 61,095
Claims priority, application Japan, May 28, 1974, 49-59377
Int. Cl.³ C08J *3/20*; C08K *3/34, 9/04*; C09C *1/40, 3/08*
U.S. Cl. 260—37 N **23 Claims**

1. A composition comprising a thermoplastic resin and an activated mineral filler, said mineral filler consisting of particles of at least one aluminosilicate-type mineral containing alkali metal ions as cations in its crystal structure, the surfaces of said particles being covered monomolecularly with at least one ethylenically unsaturated organic acid selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, sorbic acid, maleic acid and itaconic acid, said unsaturated organic acid being bonded to the metal ions on the surfaces of said particles while retaining a substantial portion of the ethylenic double bonds unreacted.

18. A process for producing a compounded composition, which is characterized by mixing the activated mineral filler defined in claim 1 with a thermoplastic resin and heating the resulting mixture to react.

21. A process for producing a composition of claim 1 which comprises reacting particles of at least one aluminosilicate-type mineral containing alkali metal ions as cations in its crystal structure with at least one ethylenically unsaturated organic acid selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, sorbic acid, maleic acid and itaconic acid in the presence of an inhibitor, to prepare an activated mineral filler which has strong bonds between the unsaturated organic acid and the metal ions on the surface of said mineral paticles while retaining a substantial portion of the ethylenic double bonds unreacted, at a temperature of 50° to 200° C., and mixing said activated mineral filler with a thermoplastic resin.

4,242,252

PREPARATION OF ORGANOPOLYSILOXANE RESINS WITH WEAK ORGANIC BASES

Charles W. Newing, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 26, 1979, Ser. No. 23,928
Int. Cl.³ C08K *5/05*
U.S. Cl. 260—33.4 SB **20 Claims**

1. In a process for preparing an organopolysiloxane by hydrolyzing a hydrolyzable silane in an aqueous solution containing at least the stoichiometric amount of water required for said hydrolysis and having an acid pH, and then condensing the hydrolyzed silane to the organopolysiloxane, the improvements comprising incorporating in said aqueous solution after hydrolysis of said silane and prior to complete condensation and polymerization of the organopolysiloxane to a solid state, a stabilizing amount against gelation of a weak organic base having an ionization constant in water no greater than about 1×10^{-7} at 25° C. to at least partially neutralize the acid of said water and provide improved stability to said organopolysiloxane against gelation.

19. A composition adapted for shaping into a desired form comprising a solution containing an organic solvent-soluble siloxane partial condensation product resulting from the process of claim 1, the amount of said siloxane condensation product not exceeding 90 weight percent of said solution, said condensation product being still soluble in ethanol after about two months at room temperature.

4,242,253

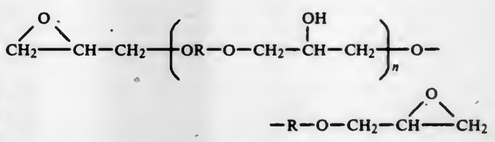
LOW GLOSS POWDER COATING COMPOSITIONS

Michael D. Yallourakis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 4, 1979, Ser. No. 45,414
Int. Cl.³ C08K *3/26*
U.S. Cl. 260—40 TN **10 Claims**

1. A thermosetting powder coating composition consisting essentially of finely-divided particles at least 90 percent by weight of which have a maximum particle size not exceeding 100 microns; wherein the particles comprise a blend of about

(a) 14–64% by weight of a polyester or a blend of polyesters of polyol and an aromatic polycarboxylic acid having a number of average molecular weight of about 1,000–10,000 determined by gel permeation chromatography;
(b) 5–18% by weight of an epoxy resin of the formula



where n is a positive integer and R is an aromatic radical;
(c) 0.1–3% by weight of triglycidyl isocyanurate;
(d) 30–55% by weight of calcium carbonate pigment and
(e) 0.9–10% by weight of finely divided polypropylene particles.

4,242,254

GLASS REINFORCEMENTS AND FIRE RETARDANT GLASS-RESIN COMPOSITES THEREFROM

Visvaldis Abolins, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 100,441, Dec. 21, 1970, abandoned. This application Sep. 28, 1976, Ser. No. 727,349

Int. Cl.³ C08K *7/10, 9/04, 9/06*

U.S. Cl. 260—40 R **44 Claims**

1. As a new composition of matter, a molding powder comprising particles of resin having dispersed therein a reinforcement comprising filamentous glass in which the filaments of said glass are uniformly coated with a non-burning or self-extinguishing polymerized sizing composition that consists essentially of a thermoplastic or thermosetting resin, a silane or chrome coupling agent and a flame retardant additive, said flame retardant additive being present in an amount that is sufficient to render the composition non-burning or self-extinguishing.

4,242,255

FIRE RETARDANT CURABLE ETHYLENICALLY UNSATURATED COMPOSITIONS

Klaas Yntema, Dieren, and Cornelis D. W. Klos, Bennekom, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jun. 4, 1979, Ser. No. 45,548

Claims priority, application Netherlands, Jun. 26, 1978, 7806831

Int. Cl.³ C08K *5/56*

U.S. Cl. 260—45.75 P **14 Claims**

1. A composition comprising a curable, ethylenically unsaturated compound containing ester linkages and an effective fire retardant amount of an organic iron compound selected from the group consisting of N,N'-ethylene bis(salicylidene iminato) Fe II, its oxidation product, and mixtures thereof.

4,242,256

SYNTHESIS OF PEPTIDE ANALOGUES

Robert Sharpe, 64 Cleveland Rd., Ealing, London W13, and Michael Szelke, 10 North Dr., Ruislip, Middlesex, both of England

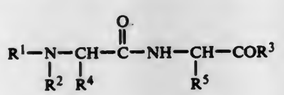
Continuation of Ser. No. 886,789, Mar. 15, 1978, abandoned, which is a continuation-in-part of Ser. No. 780,436, Mar. 23, 1977, abandoned. This application Jun. 29, 1979, Ser. No. 53,519

Claims priority, application United Kingdom, Mar. 15, 1977, 13192/76

Int. Cl.³ C07C *103/52;* **C07D** *207/24;* **C07C** *147/02, 101/30*

U.S. Cl. 260—112.5 R **19 Claims**

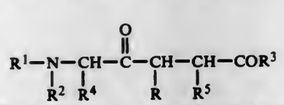
1. A method for isosterically replacing the nitrogen atom of the linking amide group of a dipeptide of the formula:



by a trivalent group

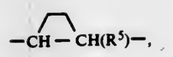


to thereby obtain a dipeptide analogue of the formula (I):

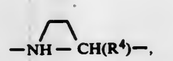


(I)

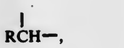
wherein R is hydrogen, or a monofunctional organic group, or a bond to the group —CH(R^5)— forming a cyclic group



NR^1R^2 is an amino group, or an imino group or derivative thereof, bonded to the group —CH(R^4)— forming a cyclic group

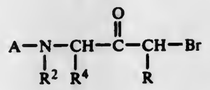


COR^3 is a carboxyl group or a derivative thereof, R^4 and R^5 are the same or different side chain residues of an α-amino aicd, or R^4 is a divalent group bonded to the group R^1R^2N—, or R^5 is a divalent organic group bonded to the group



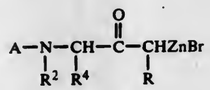
which comprises:

reacting a ketone of the formula (II):



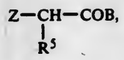
(II)

wherein A is an amine-protecting group, with zinc, to obtain a compound of formula (III):



(III)

reacting the compound of formula (III) with a compound of the formula



wherein Z is a group capable of acting as a leaving group in a nucleophilic substitution reaction, and B is a carboxy-protecting group to obtain a compound of the formula $ANR^2—CHR^4—COCHRCHR^5—COB$;

removing the amine- and carboxy-protecting groups if necessary, thereby obtaining a compound of the formula (I).

4,242,257

PROCESS FOR OBTAINING A NEW GLUCOSE TOLERANCE FACTOR

Fernando Silio, Breton de los Herreros, 59 1° D, Madrid, Spain

Filed Jul. 3, 1979, Ser. No. 54,535

Claims priority, application Spain, Jul. 26, 1978, 472.034

Int. Cl.³ C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **7 Claims**

1. A process for obtaining a glucose tolerance factor, wherein a cobaltous salt in water is neutralized by adding an alkali, nicotinamide is added on neutralization of the cobaltous salt, the formed complex of cobalt and nicotinamide in a ratio of 1:2 is after acidification to a pH of between 4.5 and 6.5 reacted with reduced glutathione and said glucose tolerance factor is obtained.

4,242,258

WATER-SOLUBLE DYESTUFFS, PROCESSES FOR THEIR MANUFACTURE, THEIR USE AS FIBER-REACTIVE DYESTUFFS FOR DYEING AND PRINTING FIBER MATERIALS AND THE FIBER MATERIALS DYED WITH THESE DYESTUFFS

Walter Noll, Bad Soden am Taunus; Fritz Meininger, and Ernst Hoyer, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

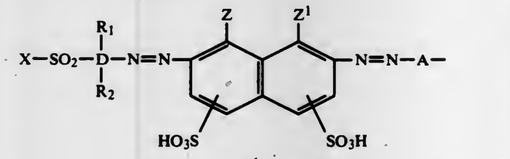
Filed Feb. 21, 1979, Ser. No. 13,308

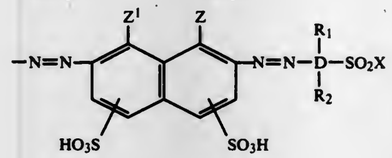
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 2807260

Int. Cl.³ C09B *31/30, 33/00, 35/00*

U.S. Cl. 260—152 **2 Claims**

2. A water-soluble dyestuff which, in the form of the free acid, has the formula





in which

D is a benzene or naphthalene nucleus;

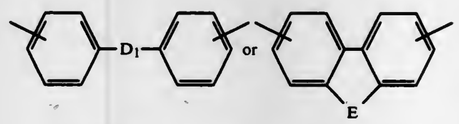
R_1 is in the ortho-position relative to the azo group and is hydrogen, halogen, lower alkyl, lower alkoxy, carboxy or sulfo;

R_2 is hydrogen, halogen, lower alkyl, lower alkoxy or sulfo,

R_1 and R_2 being identical or different from one another;

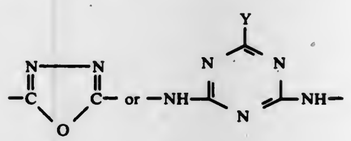
X is β-thiosulfatoethyl, β-chloroethyl, β-sulfatoethyl or vinyl;

A is



in which the benzene nuclei may be substituted by one or more members of the group consisting of lower alkyl, lower alkoxy, sulfo, carboxy, nitro and chlorine;

D_1 is a direct covalent bond or a bridge member of the formula —CH_2—, —CH_2CH_2—, —CH=CH—, —NH—, —SO_2—, —CONH—, —NHCO—,



in which Y is Cl, F or Br;

E is —O—, —S—, —NH— or —SO_2—;

Z is —$(OH)_{n-1}$ or —$(NH_2)_{2-n}$;

Z^1 is —$(OH)_{2-n}$ or —$(NH_2)_{n-1}$; and n is the number 1 or 2.

4,242,259

ANTHRAQUINONE-AZO REACTIVE DYESTUFFS

Wolfgang Harms, Leverkusen; Klaus von Oertzen, Cologne, and Klaus Wunderlich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

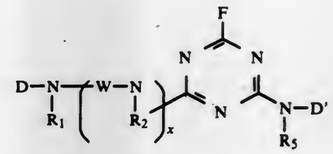
Filed Mar. 20, 1979, Ser. No. 22,294

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812634

Int. Cl.³ C09B *29/22*

U.S. Cl. 260—153 **7 Claims**

1. Dyestuffs of the formula



wherein

D=optionally substituted anthraquinonyl,

W=a bridge member,

R_1-R_3=H or optionally substituted C_1-C_4-alkyl,

x=0 or 1 and

D'=the radical of an azo dyestuff.

4,242,260

2-HYDROXY-3-CARBONYLANILINONAPHTH-1-YL DISAZO DERIVATIVES AND 1-PHENYL-3-METHYL-5-HYDROXYPYRAZOL-4-YL DISAZO DERIVATIVES OF 1,4-BIS(4-AMINOSTYRYL) BENZENE

Masaomi Sasaki, Kawasaki; Kiyoshi Sakai, Tokyo; Mitsuru Hashimoto, Hino; Masafumi Ohta, and Akio Kozima, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

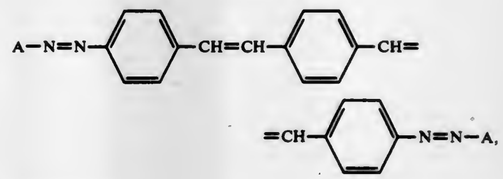
Division of Ser. No. 898,130, Apr. 20, 1978. This application Nov. 20, 1978, Ser. No. 961,963

Claims priority, application Japan, Apr. 27, 1977, 52-48859; Apr. 27, 1977, 52-48860

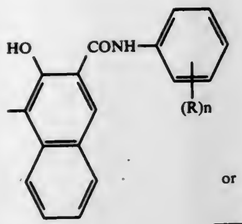
Int. Cl.³ C07C *107/04;* **C09B** *35/24;* **G03C** *5/54, 1/76*

U.S. Cl. 260—160 **28 Claims**

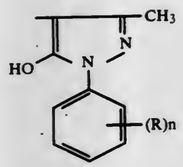
1. A disazo compound having the formula



wherein A is



or



and wherein R is alkyl, alkoxy, nitro, dialkylamino or halogen, n is 0 or an integer of 1, 2 or 3, and R may be either the same or different when n is 2 or 3.

4,242,261

PRODUCTION OF METHYLENE-CYCLOAMINES

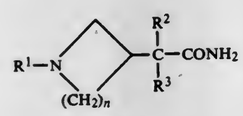
Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Jul. 19, 1979, Ser. No. 59,092

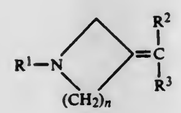
Int. Cl.[3] C07D *205/06, 211/70, 207/20, 223/04*

U.S. Cl. 260—239 A **15 Claims**

1. A process for preparing methylene-cycloamine derivatives which comprises the steps of (1) reacting a substituted acetamide compound with bromine and alkali metal alkoxide to produce a carbamate intermediate, wherein said substituted acetamide starting material corresponds to the formula:



wherein R^1 is selected from lower-alkyl, phenyl-lower-alkyl and cycloalkyl radicals, R^2 and R^3 are selected from phenyl and lower-alkylphenyl radicals, and n is an integer between 1 and 4; and (2) heating said carbamate intermediate in an acidic medium to yield a methylene-cycloamine product corresponding to the formula:



wherein R^1, R^2, R^3 and n are as previously defined.

4,242,262

9-NITROMETHYLDEOXYCLAVULANIC ACID DERIVATIVES PREPARATION AND COMPOSITIONS

Irene Stirling, Reigate, England, assignor to Beecham Group Limited, England

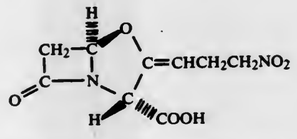
Filed Nov. 20, 1978, Ser. No. 962,329

Claims priority, application United Kingdom, Nov. 29, 1977, 49730/77

Int. Cl.[3] C07D *498/04;* **A61K** *31/42*

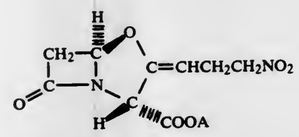
U.S. Cl. 260—245.3 **6 Claims**

1. A compound selected from the group consisting of 9-nitromethyldeoxyclavulanic acid of the formula:



and the pharmaceutically acceptable salts thereof.

5. An ester of 9-nitromethyldeoxyclavulanic acid of the formula:



wherein A is alykl of 1 to 6 carbon atoms, methoxymethyl, acetoxymethyl, acetoxyethyl, phthalidyl, ethoxycarbonyloxymethyl, α-ethoxycarbonyloxyethyl, benzyl, nitrobenzyl, chlorobenzyl, methoxybenzyl or bromobenzyl.

4,242,263

COMPOSITION OF A POLYPHENYLENE ETHER, A BLOCK COPOLYMER OF A VINYL AROMATIC COMPOUND AND A CONJUGATED DIENE AND A POLYOLEFIN

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 67,358, Aug. 17, 1979, which is a division of Ser. No. 839,106, Oct. 3, 1977, Pat. No. 4,166,055. This application Oct. 30, 1979, Ser. No. 89,469

Int. Cl.[3] C08K *5/49, 53/00*

U.S. Cl. 260—306 R **19 Claims**

1. A thermoplastic composition, having high impact strength, comprising

(a) a polyphenylene ether resin or a composition comprising a polyphenylene ether resin and a styrene homopolymer or random copolymer resin and

(b) a synergistic, impact strength-improving combination comprising (i) a mixture of an elastomeric block copolymer of a vinyl aromatic compound (A) and $(A)^1$ and a conjugated diene (B), of the A-B-A^1 type, the center block B being of higher molecular weight than that of the combined terminal blocks A and A^1 and a hydrogenated derivative thereof and (ii) a polyolefin resin, component (b) being present in an amount of from about 5 to about 30% by weight of the total resinous components of the composition.

17. A composition as defined in claim 1 including up to about 25% by weight of a plasticizer.

18. A composition as defined in claim 17 wherein said plasticizer is triphenyl phosphate.

4,242,264

TRICYCLIC IMIDYL DERIVATIVES

Hans Zweifel, Basel; Walter Schilling, Himmelried; Angelo Storni, Rheinfelden, and Daniel Belius, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

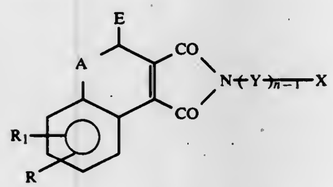
Filed Feb. 6, 1979, Ser. No. 9,985

Claims priority, application Switzerland, Feb. 8, 1978, 1400/78

Int. Cl.[3] C07D *209/90, 209/94*

U.S. Cl. 260—326 C **4 Claims**

1. A compound of formula I



(I)

in which n is the number 2, R and R_1 independently of one another are hydrogen, halogen, alkyl having 1 to 4 carbon atoms or methoxy, A is $-CH_2-$, E is hydrogen, Y is alkylene having 1 to 30 carbon atoms, alkylene which can contain one or more S or O atoms, cycloalkylene having 5 or 6 carbon atoms, dicyclohexylmethane radical, arylene having 6 to 10 carbon atoms, aralkylene having 7 or 8 carbon atoms or alkylarylene having 7 or 8 carbon atoms; or said alkylene, cycloalkylene, dicyclohexylmethane radical, arylene, aralkylene or alkylarylene groups substituted by alkyl of 1 to 4 carbon atoms, by alkoxy of 1 to 4 carbon atoms, by nitro or by halogen, and X is —OCO-alkenyl having 2 to 4 carbon atoms in the alkenyl moiety.

4,242,265

INDOLYLALKYL ESTERS OF MERCAPTOALKANOIC ACIDS

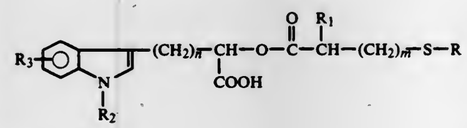
Peter C. Wade, Pennington, and Miguel A. Ondetti, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 815,472, Jul. 14, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 2,430

Int. Cl.[3] A61K *31/405;* **C07D** *209/12*

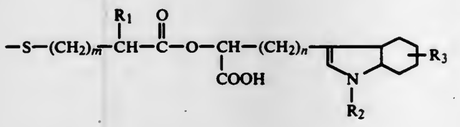
U.S. Cl. 260—326.12 R **17 Claims**

1. A compound of the formula



wherein

R is hydrogen, lower alkanoyl, benzoyl or



R_1 is hydrogen, lower alkyl or phenyl-lower alkyl;

R_2 is hydrogen or lower alkyl;

R_3 is hydrogen, halogen, hydroxy, nitro, lower alkoxy or lower alkylthio;

m and n each is 0, 1, 2 or 3 and pharmaceutically acceptable basic salts thereof.

4,242,266

1-BENZOTHIEPIN-4-CARBOXYLIC ACID DERIVATIVES

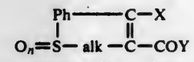
Melvin H. Rosen, Madison, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 763,192, Jan. 27, 1977, Pat. No. 4,166,126, which is a continuation of Ser. No. 585,147, Jun. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,524, Sep. 26, 1974, abandoned. This application Aug. 29, 1978, Ser. No. 937,633

Int. Cl.[3] C07D *409/04, 337/08*

U.S. Cl. 260—326.34 **2 Claims**

1. A 2,3-dihydro-1-benzothiepin-4-carboxylic acid ester, anhydride or halide of the formula



wherein Y is lower alkoxy, alkanoyloxy or halogeno, Ph is 4-chloro-1,2-phenylene, alk is ethylene, X is hydroxy, lower alkanoyloxy, pyrrolidino or piperidino and n is the integer one.

4,242,267

PROCESS FOR PREPARING 5-ALKYL-7-(S-ALKYL-SULFONIMIDOYL)-XANTHONE-2-CARBOXYLIC ACIDS

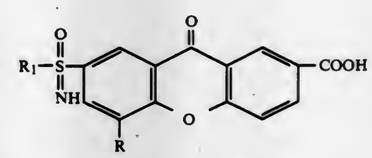
Alan C. Barnes, Cirencester, and Peter D. Kennewell, Swindon, both of England, assignors to Roussel Uclaf, Paris, France

Filed Feb. 4, 1980, Ser. No. 118,523

Int. Cl.[3] C07D *311/86*

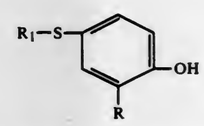
U.S. Cl. 260—335 **5 Claims**

1. A process for the preparation of a compound of the formula



I

wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 9 carbon atoms and R_1 is alkyl of 1 to 5 carbon atoms comprising reacting a phenol of the formula

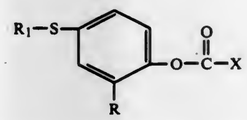


II

wherein R and R_1 have the above definitions with an acyl halide or anhydride of the formula

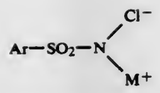
Hal—COX or $(XCO)_2O$

wherein Hal is selected from the group consisting of chlorine and bromine and X is selected from the group consisting of alkyl of 1 to 3 carbon atoms and phenyl to obtain a compound of the formula

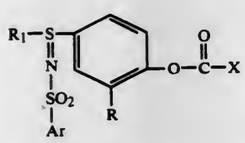


III

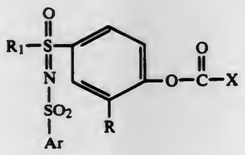
reacting the latter with a compound of the formula



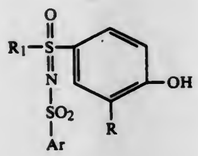
wherein Ar is an optionally substituted aryl and M is an alkali metal to obtain a compound of the formula

IV 

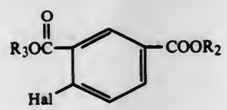
oxidizing the latter to obtain a compound of the formula

V 

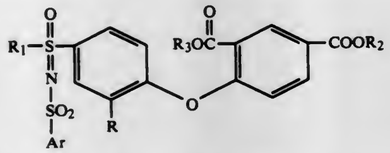
subjecting the latter to hydrolysis to obtain a compound of the formula

VI 

reacting the latter in the presence of a weak base and metallic copper or copper oxide with an isophthalate of the formula

VII 

wherein R_2 and R_3 are individual ester groups and Hal is chlorine, bromine or iodine to obtain a compound of the formula

VIII 

and cyclizing the latter in the presence of a strong acid followed by hydrolysis to obtain the corresponding compound of claim 1.

4,242,268

BICYCLIC LACTONES

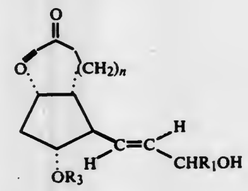
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 654,109, Feb. 2, 1976, abandoned. This application Nov. 23, 1979, Ser. No. 96,645

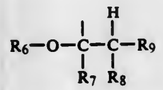
Int. Cl.³ C07D *307/77*

U.S. Cl. 260—343.3 P **2 Claims**

1. A compound of the formula



wherein n is one or 2; R_1 is hydrogen, methyl, or ethyl; and R_3 is a blocking group which is tetrahydropyranyl, tetrahydrofuranyl, or a group of the formula



wherein R_6 is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_7 and R_8 are the same or different, being hydrogen, alkyl of one to 4 carbon atoms, inclusive, phenyl or phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, or, when R_7 and R_8 are taken together, $-(CH_2)a-$ or $-(CH_2)b-O-(CH_2)c-$ wherein a is 3, 4, or 5, b is one, 2, or 3, and c is one, 2, or 3 with the proviso that b plus c is 2, 3, or 4, and wherein R_9 is hydrogen or phenyl.

4,242,269

2-OXABICYCLOOCTANE DERIVATIVES, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

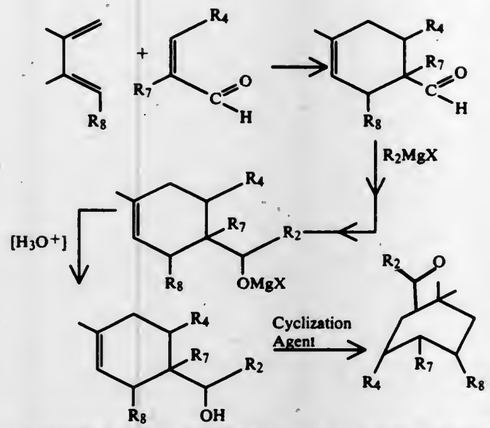
Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 48,752, Jun. 15, 1979, which is a division of Ser. No. 12,695, Feb. 16, 1979, Pat. No. 4,195,100, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Nov. 16, 1979, Ser. No. 95,147

Int. Cl.³ C07D *309/04*

U.S. Cl. 260—345.1 **1 Claim**

1. A process for preparing oxabicyclooctanes comprising the steps of (i) reacting an alpha-beta unsaturated aldehyde with a conjugated 1,3-diene whereby a cyclohexene carboxaldehyde is formed: (ii) reacting the cyclohexene carboxaldehyde with an alkyl or alkenyl Grignard reagent; (iii) reacting the thus formed cyclohexenyl carbinol organometallic salt with water in the presence of a protonic acid to form the cyclohexenyl carbinol; (iv) cyclizing the resulting cyclohexenyl carbinol to form the oxabicyclooctane in the presence of a cyclizing agent, said cyclization reaction taking place at a temperature in the range of from 25° C. up to 150° C. in the presence of a protonic acid or a Lewis acid, and in the presence of an organic solvent miscible therewith, according to the reaction sequence:



wherein R_2 is C_2–C_5 alkyl; R_4 is hydrogen, methyl or ethyl, R_7 is hydrogen or methyl; and R_8 is hydrogen or methyl with the proviso that when R_4 is methyl or ethyl, R_7 and R_8 are not both hydrogen and that at least one of R_7 and R_8 is methyl; X is chloro, bromo or iodo.

4,242,270

PROCESS FOR SEPARATING LIPIDS FROM ENDOTOXINS

Gerard Ayme, Lyon, and Ladislas Szabo, Verrieres-le-Buisson, both of France, assignors to Institut Merieux, Lyons, France

Filed May 30, 1978, Ser. No. 910,895

Claims priority, application France, May 31, 1977, 77 16473

Int. Cl.³ C11B *1/10*; C09F *5/10*

U.S. Cl. 260—412.8 **11 Claims**

1. A process for separating the lipid fractions constituting a bacterial endotoxin such as Bordetella Pertussis endotoxin, comprising

(a) under mild conditions, hydrolyzing the endotoxin with an organic acid at a pH of from 2 to 4 to produce a mixture of a supernatant and a residue;

(b) separating the supernatant from the residue and lyophilizing the residue to yield a product denoted as product A;

(c) extracting product A with 1:1 toluene/methanol mixture which results in a supernatant containing an extract denoted as product X and an insoluble residue denoted as product B; and

(d) then extracting product X with a solvent different from the solvent mixture used in step (c) which results in a supernatant and an insoluble residue, wherein said residue is denoted as product X_2 and wherein the supernatant of step (d) contains an extract denoted as product X_1.

4,242,271

PROCESS FOR PREPARING ALUMINUM ALKOXIDES

Willis W. Weber, South Salem; Richard F. Hill, Cold Spring, both of N.Y., and Thomas J. Weeks, Jr., Columbus, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,640

Int. Cl.³ C07F *5/06*

U.S. Cl. 260—448 AD **4 Claims**

1. Process for preparing an aluminum alkoxide which comprises

(a) providing a reactor containing in the liquid phase a monohydric alcohol containing from 1 to 10 carbon atoms, at a temperature of from 15° C. to 231° C.;

(b) introducing impure metallic aluminum from an air environment into the lower portion of said reactor and below the surface level of the alcohol therein by passing said impure aluminum downwardly through a feed column of said alcohol in the liquid phase at a temperature of not greater than 40° C. whereby any entrained air entering said feed column is returned to the atmosphere in the form of bubbles, said downward passage of the aluminum through said alcohol being sufficiently rapid that reaction between the aluminum and the alcohol is not initiated;

(c) conveying the impure aluminum upward through the alcohol in the reactor while reacting the aluminum value thereof with the said alcohol thereby forming hydrogen as a reaction by-product, colloidal particles of the impurity constituent of the impure aluminum, and a residue of sludge comprising the bulk of the said impurity constituent;

(d) conveying the sludge residue out of said reactor upwardly through a conduit containing alcohol at a temperature of not more than 40° C. at its egress end, said conduit communicating with the reactor through an orifice connection located below the surface of the liquid in the reactor; and

(e) introducing impure aluminum into a stoichimetric excess of alcohol in said reactor and removing hydrogen and product aluminum alkoxide from said reactor at rates which provide self-regulation of the rate of production of the aluminum alkoxide product.

4,242,272

SUBSTITUTED PHENETHYLDICHLOROSILANES AND METHOD FOR PRODUCING SAME

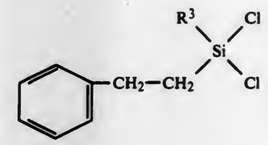
Isao Koga, Yokohamashi; Yohji Terui, Chibashi; Masuhito Ohgushi, and Tohru Kitahara, both of Minamatashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 15, 1978, Ser. No. 915,654

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—489 **3 Claims**

1. A substituted phenethyldichlorosilane having the general formula



wherein R^3 is an alkyl group having 3–20 carbon atoms or phenethyl group.

4,242,273

4-(MONOALKYLAMINO)BENZOIC ACID AMIDES AND IMIDATES

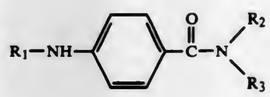
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 836,949, Sep. 27, 1977, Pat. No. 4,136,256. This application Oct. 12, 1978, Ser. No. 950,899

Int. Cl.³ C07C *143/52, 101/42, 97/10, 103/22*

U.S. Cl. 260—453 RW **10 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 is n-hexadecyl, R_2 is hydrogen and R_3 is selected from the group consisting of $-SO_2C_6H_5$, $-SO_2C_6H_4CH_3$, $-SO_2CH_3$, $-CH_2CHOHCH_2OH$, $-CH_2CO_2H$, $-CH_2CH_2SO_3H$, benzoyl, —NH—CO—CH_3 and allyl.

4,242,274
PROCESS FOR THE PREPARATION OF 2,2-DIPHENYL-4-(DIMETHYLAMINO)-PENTANE NITRILE

John J. Taylor, St. Peters, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Jun. 18, 1979, Ser. No. 49,412
Int. Cl.³ C07C *97/10, 121/78*
U.S. Cl. 260—465 E 8 Claims

1. A process for the preparation of 2,2-diphenyl-4-(dimethylamino)-pentane nitrile comprising the steps of:

preparing a charge mixture comprising diphenylacetonitrile, 1-(dimethylamino)-2-halopropane, a base, water, a water-immiscible organic solvent, and a quaternary salt selected from the group consisting of tetrabutylammonium halides, tetrabutylammonium hydrogen sulfate, cetyltrimethyl ammonium halides, methyltrialkyl (C_8–C_{10}) ammonium halides and benzyltriphenylphosphonium halides; and

heating said mixture under an inert atmosphere to effect formation of 2,2-diphenyl-4-(dimethylamino)-pentane nitrile by reaction of diphenylacetonitrile, 1-(dimethylamino)-2-halopropane and base.

4,242,275
PROCESS FOR THE PREPARATION OF ISOMER-FREE TOLUENE-4-SULFONIC ACID

Otto Arndt, Hofheim am Taunus, and Bernhard Mees, Ehlhalten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 950,582, Oct. 12, 1978, abandoned, which is a continuation of Ser. No. 769,037, May 11, 1977, abandoned. This application Dec. 5, 1979, Ser. No. 100,462
Int. Cl.³ C07C *143/24*
U.S. Cl. 260—505 E 25 Claims

1. A process for the preparation of toluene-4-sulfonic acid, which comprises heating toluene with sulfuric acid of at least 85% by weight strength to a temperature of up to 140° C.; crystallizing toluene-4-sulfonic acid formed in the form of its hydrate, said crystallizing being effected by cooling the reaction mixture if the heating is effected at a temperature of more than 110° C.; isolating said hydrate; washing it free of isomers with aqueous sulfuric acid; combining the mother liquor separated from said hydrate with the aqueous sulfuric acid used in said washing; heating these at a temperature of from 120° to 160° C. for a time sufficient to form additional toluene-4-sulfonic acid; cooling the combination of mother liquor and aqueous sulfuric acid to crystallize the toluene-4-sulfonic acid in the form of its hydrate; and isolating the hydrate.

4,242,276
PROCESS FOR THE MANUFACTURE OF β-ISOBUTYRYLAMINOCROTONIC ACID AMIDE

Bernd Schilling, Munich, Fed. Rep. of Germany, assignor to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,778
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853887
Int. Cl.³ C07C *97/16*
U.S. Cl. 564—159 8 Claims

1. A process for the manufacture of β-isobutyrylaminocrotonic acid amide by reacting β-aminocrotonic acid amide with an isobutyryl compound as acylating agent in approximately stoichiometric amounts, in the presence of a solvent and with heating, characterized in that dimethylketene is used as the acylating agent and the reaction is carried out in the range of from room temperature to 70° C. with applicaton of external heat.

4,242,277
NITROSATION PROCESS

Morihisa Tanaka; Kazuhiko Konno; Norio Sasaki, and Kunio Uchimura, all of Ami, Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo, Japan

Filed May 30, 1979, Ser. No. 43,905
Claims priority, application Japan, Jun. 5, 1978, 53/67447
Int. Cl.³ C07C *131/00, 87/60*
U.S. Cl. 260—396 11 Claims

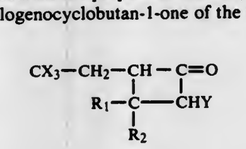
1. In the process for the preparation of benzoquinone oxime compounds by subjecting a phenolic compound to nitrosation reaction conditions of nitrite ion in an aqueous system, the improvement which comprises: conducting said nitrosation reaction in the presence of an acid stronger than nitrous acid, an organic acid having a pKa of 2 to 5 and water, the quantities of the organic acid and water being up to 5 times by mole and up to 10 times by weight respectively the quantity of the compound to be nitrosated.

4,242,278
PROCESS FOR THE PREPARATION OF 2-(2',2',2'-TRIHALOGENOETHYL)-4-HALOGENOCYCLOBUTAN-1-ONES

Pierre Martin, Rheinfelden; Hans Greuter, Eiken; Eginhard Steiner, Füllinsdorf, and Daniel Bellus, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 891,412, Mar. 29, 1978, abandoned. This application Oct. 3, 1978, Ser. No. 948,126
Claims priority, application Switzerland, Mar. 31, 1977, 4071/77; Nov. 24, 1977, 14404/77; Feb. 23, 1978, 1974/78; Sep. 25, 1978, 9992/78
Int. Cl.³ C07C *45/45, 49/105, 49/115*
U.S. Cl. 568—341 21 Claims

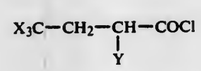
1. A process for the preparation of a 2-(2'-2'-2'-tri-halogenoethyl)-4-halogenocyclobutan-1-one of the formula I



(I)

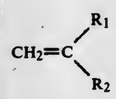
in which one of the radicals R_1 and R_2 is methyl and the other is hydrogen or methyl, R_1 and R_2 together are an alkylene group having 2 to 4 carbon atoms, and X and Y are each chlorine or bromine,

which comprises reacting, at a temperature of from about 0°–200° C., a 2,4,4,4-tetrahalogenobutyric acid chloride of the formula II



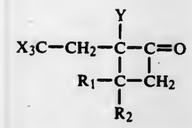
(II)

in which X and Y are as defined under formula I, in the presence of an organic base with an olefin of the formula III



(III)

in which R_1 and R_2 are as defined under formula I, said base and said olefin being, respectively, present in at least equimolar amounts relative to said acid chloride, to give a 2-(2',2',2-trihalogenoethyl)-2-halogenocyclobutan-1-one of the formula IV



(IV)

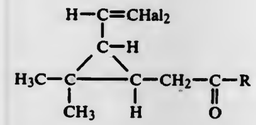
in which R_1, R_2, X and Y are defined under formula I, and then rearranging the latter, in the presence of about 0.1 to 15%, by weight of said butane-1-one, of an acid, base or quaternary ammonium halide catalyst, into a 2-(2',2',2'-trihalogenoethyl)-4-halogenocyclobutan-1-one of the formula I; said rearrangement being conducted at a temperature of from about 60°–150° C. when in a melt system and at a temperature of 0°–150° C. when in an inert organic solvent system.

4,242,279
2-(2,2-DIHALOVINYL)-3,3-DIMETHYLCYCLOPROPYLACETONE PYRETHROID INTERMEDIATES

Pieter A. Verbrugge, and Petrus A. Kramer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 32,847, Apr. 24, 1979. This application Sep. 24, 1979, Ser. No. 78,275
Claims priority, application United Kingdom, Aug. 17, 1978, 33763/78
Int. Cl.³ C07C *49/23*
U.S. Cl. 568—303 4 Claims

1. A compound of the formula:



wherein R represents an alkyl group containing from 1 to 4 carbon atoms and Hal_2 two halogen atoms having an atomic number of from 9 to 35.

4,242,280
PROCESS FOR THE PREPARATION OF HALOGENO-MERCURI-ALDEHYDES AND -KETONES

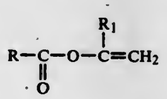
Serge L. Lecolier, Janville sur Juine; Thierry A. Malfroot, Saint Germain les Corbeil; Marc D. Piteau, Itteville, and Jean-Pierre G. Senet, Melun, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 11, 1978, Ser. No. 968,281
Claims priority, application France, Dec. 23, 1977, 77 39004
Int. Cl.³ C07C *47/14, 47/52*
U.S. Cl. 260—431 13 Claims

1. A one step process for the synthesis of a halogeno-mercuri-aldehyde or -ketone, of formula



in which R_1 is H or methyl, X is Cl or Br which comprises reacting an alkenyl ester of a carboxylic acid with mercuric chloride or bromide in the presence of water, said alkenyl ester of said carboxylic acid having the formula

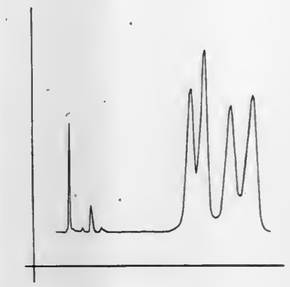


in which R_1 is as defined hereinabove, R is H or an alkyl of 1 to 12 carbon atoms or phenyl, said reaction being carried out in the presence of an acid acceptor, at a temperature between −10° C. and +60° C. and isolating said halogeno-mercuri-aldehyde or ketone from the reaction mixture.

4,242,281
PROCESS FOR PREPARING 6-HYDROXY-2,6-DIMETHYLHEPTANAL AND INTERMEDIATES THEREOF

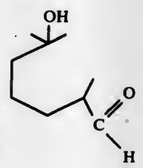
Mark A. Sprecker, Sea Bright; Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

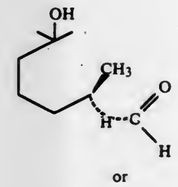
Division of Ser. No. 52,355, Jun. 27, 1979, abandoned, which is a division of Ser. No. 961,685, Nov. 17, 1978, abandoned. This application Oct. 26, 1979, Ser. No. 88,519
Int. Cl.³ C07C *47/19*
U.S. Cl. 568—458 1 Claim



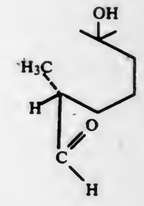
GC PROFILE , EXAMPLE I

1. A process for preparing 6-hydroxy-2,6-dimethylheptanal defined by one of the structures:





or



comprising the steps of (1) forming an emulsion of 2,6-dimethyl-5-heptenal with water using an emulsifying agent which is an alkali metal salt of a long chain fatty acid; (2) reacting sodium sulfite with the 2,6-dimethyl-5-heptenal in the presence

of boric acid while it is in the emulsion whereby a sulfite-aldehyde addition salt of 2,6-dimethyl-5-heptenal is formed, the reaction taking place at a temperature of between 10° C. and 50° C., the mole ratio of sodium sulfite:2,6-dimethyl-5-heptenal varying between 1:1 up to 10:1; the concentration of sodium sulfite in the reaction mass being from 0.1 molar up to 3.0 molar and the concentration of 2,6-dimethyl-5-heptenal being from 0.5 molar up to 2.0 molar; and (3) hydrolyzing the resulting sulfite-aldehyde addition salt of 2,6-dimethyl-5-heptenal with hydrochloric acid using from 10% up to 50% hydrochloric acid, the mole ratio of HCl:sulfite addition salt of 2,6-dimethyl-6-hydroxy-heptanal being 0.5:1 up to 1.5:1 with the reaction temperature for the hydrolysis reaction varying from 0° C. up to 50° C.

4,242,282

PREPARATION OF GLYOXAL

Hans Diem, Mannheim; Christian Dudeck, Limburgerhof; Gunter Lehmann, Ludwigshafen; Guenther Matthias, and Norbert Petri, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,331

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803318

Int. Cl.³ C07C *45/29*

U.S. Cl. 568—471 **14 Claims**

1. A process for the continuous preparation of glyoxal by oxidizing ethylene glycol in the presence of a catalyst consisting essentially of silver in crystalline form at an elevated temperature, wherein the oxidation is carried out in the presence of said crystalline silver, the crystals having particle sizes of from 0.1 to 2.5 millimeters, and of a gas inert under the reaction conditions, in a ratio of at least 4.4 moles of said inert gas per mole of oxygen, with a residence time of at most 0.05 second, at from 720° to 980° K.

4,242,283

PROCESS FOR CONTINUOUSLY PRODUCING OXYGEN-CONTAINING COMPOUNDS

Josef Hibbel; Gunther Kessen, and Josef Meis, all of Oberhausen, Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 953,226

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747302

Int. Cl.³ C07C *45/50, 27/20*

U.S. Cl. 568—451 **9 Claims**

1. In a process for continuously producing an aldehyde or alcohol by the oxo process by contacting an olefin, carbon monoxide and hydrogen at a pressure of 5 to 1000 bar and at a temperature of 50° to 200° C. in the presence of a Group VIII metal or a compound thereof as catalyst wherein the reaction product so formed comprising unreacted olefin, carbon monoxide and hydrogen is passed to a high pressure gas separator the improvement wherein olefin which has not been reacted in the reactor is reacted in the high pressure gas separator under oxo process conditions comprising a pressure of 5 to 1000 bars and a temperature of 50° C. to 200° C. to form an aldehyde or alcohol.

4,242,284

PROCESS FOR RECOVERY OF RHODIUM VALUES AND TRIPHENYLPHOSPHINE FROM RHODIUM CATALYZED HYDROFORMYLATION MEDIUM

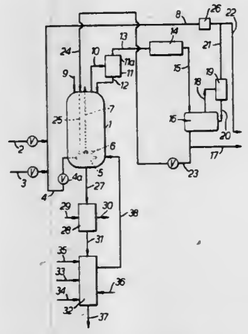
Norman Harris, and Thomas F. Shevels, both of Stockton-on-Tees, England, assignors to Davy International (Oil & Chemicals) Limited, London, England

Filed Jul. 26, 1979, Ser. No. 60,754

Claims priority, application United Kingdom, Jul. 27, 1978, 31366/78

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **9 Claims**



1. In a process for hydroformylating an α-olefinic compound containing from 2 to about 20 carbon atoms by reaction with carbon monoxide and hydrogen to produce an aldehydic compound or a mixture of aldehydic compounds having one more carbon atom than the α-olefinic compound which comprises:

reacting the α-olefinic compound in a hydroformylation zone with carbon monoxide and hydrogen at a temperature of up to about 160° C. and at a total pressure of up to about 50 kg/cm² absolute in a liquid reaction medium which contains aldehydic product or products, polymeric aldehyde condensation products and a soluble rhodium complex catalyst comprising rhodium in a complex combination with carbon monoxide and a triphenylphosphine and in the presence of excess triphenylphosphine;

the improvement which comprises:

contacting constituents of the liquid reaction medium with a liquid extractant phase comprising at least about 60% by weight phosphoric acid;

separating an organic phase now depleted in rhodium and triphenylphosphine from extractant phase;

recovering rhodium values and triphenylphosphine from separated extractant phase; and

recycling at least one of recovered rhodium values and recovered triphenylphosphine to the hydroformylation zone.

4,242,285

NOVEL 2,6-DINITROPHENYL SELENIUM COMPOUNDS AND THEIR USE AS EPOXIDATION CATALYSTS

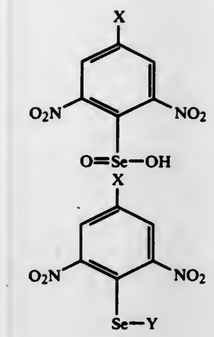
James M. Renga, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 16, 1979, Ser. No. 21,272

Int. Cl.³ C07C *163/00*; C07D *301/12*; B01J *27/02*

U.S. Cl. 260—348.31 **11 Claims**

1. A 2,6-dinitrophenyl selenium compound corresponding to the formula I or II



I

II

wherein in each of the above formulas, X is selected from the group consisting of hydrogen, trifluoromethyl, trichloromethyl, nitro, chloro and bromo moieties; and in Formula II, Y is bromine or chlorine.

4. A process for preparing epoxides from olefins comprising admixing an olefin bearing at least one alkyl, aryl or oxyalkyl substituent in an α-position to an olefinic carbon with hydrogen peroxide in a liquid reaction medium in the presence of an effective amount of an epoxidation catalyst prepared by introducing at least one of the compounds described in claim 1 to the reaction medium.

4,242,286

PROCESS FOR PREPARING BENZOTRIFLUORIDE AND ITS DERIVATIVES

Yohnosuke Ohsaka, Takatsuki, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 22, 1979, Ser. No. 22,782

Claims priority, application Japan, Mar. 30, 1978, 53-37681

Int. Cl.³ C07C *25/14*

U.S. Cl. 570—145 **7 Claims**

1. A process for preparing benzotrifluoride or its derivative by contacting benzotrichloride or its derivative corresponding thereto with hydrogen fluoride in a gaseous phase, characterized in that the contact is carried out in the presence of aluminum fluoride.

4,242,287

SILICONE-CONTAINING ELASTOMER AND PROCESS FOR THE PREPARATION THEREOF

Dwight L. Allen, Akron, Ohio, assignor to Akron Catheter, Inc., Chippewa Lake, Ohio

Filed Nov. 22, 1978, Ser. No. 963,085

Int. Cl.³ C08K *5/54, 3/22*; C08L *7/02*; C08K *3/34*

U.S. Cl. 260—746 **2 Claims**

1. A novel homogenous silicone-containing stable elastomeric composition of matter comprising:

a natural rubber latex; and

from about 20 to about 85 parts by weight, based upon the weight of the rubber in said latex, of a masterbatch consisting of

a dimethylpolysiloxane compound having a viscosity average molecular weight of about 7,000 and a viscosity of about 100 centistokes, said compound being present in an amount of more than 10 to about 50 parts by weight, based upon the weight of the rubber in said latex, and being substantially free from phasing;

from about 5 to 15 parts by weight of titanium dioxide, based upon the weight of the rubber in said latex; and,

from about 5 to 20 parts by weight of clay, based upon the weight of the rubber in said latex.

4,242,288

HALOGENATED TRIPHOSPHATES

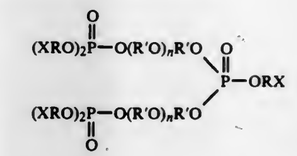
Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 18, 1979, Ser. No. 49,999

Int. Cl.³ C07F *9/09*; C08K *5/52*

U.S. Cl. 260—929 **10 Claims**

1. A flame retardant composition containing as its major ingredient a compound of the formula:



wherein R represents an alkylene radical of from 2 to about 10 carbon atoms and the halosubstituted derivatives thereof, R' represents an alkylene radical of from 2 to 3 carbon atoms, X represents a halogen of chlorine or bromine and n represents an integer of from 1 to 5.

4,242,289

APPARATUS FOR THE REMOVAL OF GASES, ESPECIALLY AIR, IN FLUIDS

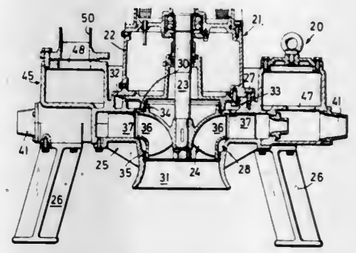
Albert Blum, Scheiderhohe, 5204 Lohmar (Rhld.) 1, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 737,399, Nov. 1, 1976, Pat. No. 4,155,959. This application May 15, 1979, Ser. No. 39,138

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1975, 2548754

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—93 **26 Claims**



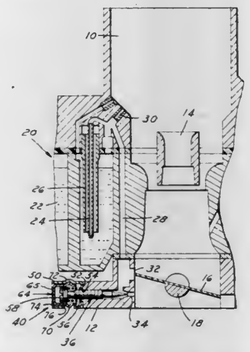
1. An aerator device comprising a submersible unitized electric motor-pump assembly, said assembly including a first housing within which is an electric motor and a shaft projecting outwardly therefrom carrying a pump impeller, a second housing having a liquid chamber in which is located said pump impeller, means in said second housing for defining a first opening through which said pump impeller is insertable into said liquid chamber, means in said second housing for defining a second opening in general axial alignment with said first opening through which liquid is drawn into said liquid chamber, means for removably securing together said first and second housings, a first plurality of nozzles for directing liquid discharged from said liquid chamber in generally radially outwardly directed streams, and means for aerating said streams prior to the discharge thereof into a body of water within which said device is adapted to be submerged.

4,242,290

CARBURETOR IDLE MIXTURE SCREW ENCLOSURE ASSEMBLY

Steven K. Handelsman, and Albert A. Pruchno, both of Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 30, 1979, Ser. No. 62,089
Int. Cl.³ F02M *3/08*
U.S. Cl. 261—41 D **1 Claim**



1. An assembly for enclosing the engine idle speed mixture flow adjusting screw of a carburetor to prevent adjustment of the screw so long as the assembly is in place, comprising, in combination, a carburetor body portion having an opening into an engine idle speed mixture flow channel, a needle valve type screw adjustably mounted for movement into and out of the opening to vary mixture flow through the channel, a cup-shaped base member mounted on the carburetor body portion adjacent the opening and extending outwardly therefrom to surround a portion of the screw, and a cap resiliently and nestingly engagable with the outer open end of the base member to complete enclosure of the screw and prevent access thereto for adjustment of the screw so long as the cap and base member are engaged, the cup-shaped member comprising a tubular member closed at one end, the one end containing an aperture accommodating movement therethrough of the screw, a tab projecting from the one end for engagement with the carburetor body portion to prevent relative rotation therebetween, spring means surrounding the needle valve screw between a head on the screw and the base of the tubular member against the carburetor body portion to yieldably hold the assembly in position against the carburetor body portion, the tubular member having a raised bead extending circumferentially around a portion of the member, the cap having a tubular cup-shape with the open end facing the open end of the base member and having a closed cover end and a number of axially extending circumferentially spaced slots in the cap tubular portion constituting resilient fingers, a raised circumferentially extending bead on each of the fingers adapted to mate with the bead on the base member when the base member and cap are nested to form a spring-like locking engagement therebetween completely covering the screw, and an opening through the bead on the base member through which protrudes a portion of the bead on the cap when the cap and base member are nested to permit dissembly of the cap from the base.

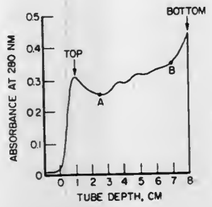
4,242,291

COLLAGEN RECONSTITUTION

Kenneth E. Hughes, Gahanna, and Dale P. DeVore, Worthington, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed May 9, 1979, Ser. No. 37,551
Int. Cl.³ C07G *7/00*; B29D *11/00*
U.S. Cl. 264—1 **7 Claims**

1. A method for production of a homogeneous gel matrix of unique collagen fibrils by the old method of precipitation from a solution comprising solubilized collagen molecules wherein



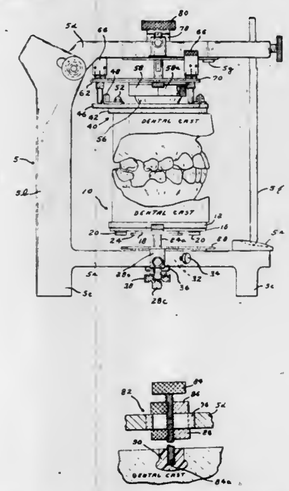
the improvement comprises carrying out the old method under gravitational force of less than one gravity.

4,242,292

METHOD FOR EMBEDDING THREADED APERTURED BUTTON IN BASE OF DENTAL CAST

Roger W. Mercer, 1340 Arlington Dr., Fairborn, Ohio 45324, and Louis E. Hay, 847 Woodhill Rd., Dayton, Ohio 45431

Division of Ser. No. 788,236, Apr. 18, 1977. This application Apr. 9, 1979, Ser. No. 28,536
Int. Cl.³ B29C *5/00*; B29D *3/00*
U.S. Cl. 264—16 **5 Claims**



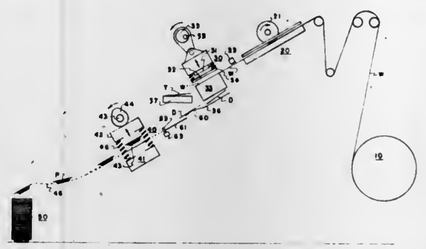
1. A method of forming a threaded aperture in the base of a hardened dental cast for use in the fabrication of a dental prosthesis, said forming method comprising the steps:
(a) forming a cavity of suitable depth and diameter in the base of said dental cast, said cavity to be substantially perpendicular to the occlusal plane of said dental cast;
(b) filling said cavity to a suitable depth with a fluid cold setting material;
(c) forming a notch in at least one external thread of an elongated threaded member and inserting said member into said fluid cold setting material before it sets; and,
(d) allowing said cold setting material to set around said elongated member and removing said member to form said threaded aperture.

4,242,293

PAPER PLATE FORMING METHOD AND APPARATUS

Daniel J. Dowd, Williamsport, Pa., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 2, 1979, Ser. No. 81,263
Int. Cl.³ B29C *17/00, 3/00*; B28B *9/28*
U.S. Cl. 264—40.7 **7 Claims**



1. A method of three dimensionally forming articles from paper web drawn from a reeled supply wherein a single ply of such web is cyclically advanced into registered cut position relative to a reciprocating cutting die for production of register cut, article blanks, such blanks being advanced into a heated reciprocating die press for three dimensional shaping into said articles, the improvement comprising the steps of:
A. Driving said cutting die at a reciprocation cycle rate that is at least twice greater than said die press cycle rate;
B. Holding cut article blanks produced within a single cycle interim of said die press in a position clear of said die press; and,
C. Simultaneously releasing said held article blanks for simultaneous loading and forming by said die press within a single cycle thereof.

4,242,294

METHOD FOR ENCAPSULATING A MOLDED CERAMIC MEMBER

Werner Hüther, Karlsfeld; Klaus Schweitzer, Niederpöcking, and Axel Rossmann, Karlsfeld, all of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,730
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737208
Int. Cl.³ C04B *33/34, 37/00*
U.S. Cl. 264—62 **11 Claims**

1. In a method for encapsulating a molded member of silicon ceramic material for high-temperature isostatic pressing (HIP); the improvement comprising applying a generally porous coating of a member selected from the group consisting of glass and ceramic material on said molded member; and sintering said coating under a vacuum so as to form a pressure-tight capsule encompassing said molded member.

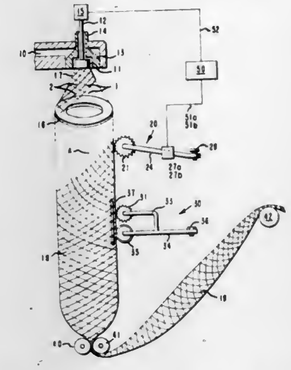
4,242,295

PROCESS FOR MANUFACTURING FLAT PLASTIC NET

Thomas Urquhart, Cobourg, Canada, assignor to Du Pont Canada Inc., Montreal, Canada

Filed Apr. 2, 1979, Ser. No. 26,206
Claims priority, application Canada, Oct. 4, 1978, 312717
Int. Cl.³ B29C *17/14*
U.S. Cl. 264—146 **7 Claims**

1. A process for manufacturing flat net from tubular plastic net, comprising the steps of
(a) extruding plastic material through coaxial circular counter-rotating die members so as to form, about an axis of extrusion, a tubular net structure comprising a plurality of crossing strands;
(b) controlling the angular displacement of successive substantially longitudinally-aligned junctions of the crossed strands about the axis of extrusion and relative to a fixed plane passing through the axis of extrusion at a pre-determined value, to minimize said angular displacement;
(c) cutting successive longitudinally-aligned junctions longitudinally and within each junction, along at least one line of successively longitudinally-aligned junctions, such that the tubular net is adapted to be opened into flat net; and
(d) advancing the net under tension during the extrusion and cutting steps.

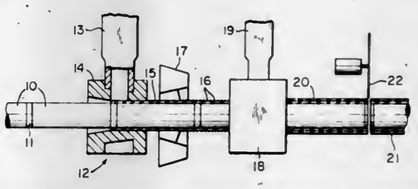


4,242,296

METHOD FOR MAKING CURVED HOSE

Charles E. Bricker, Centerville, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 27, 1979, Ser. No. 70,205
Int. Cl.³ B29C *25/00*
U.S. Cl. 264—149 **17 Claims**



11. A method for producing curved hose which comprises, sequentially, the steps of:
a. providing a plurality of rigid, deformable mandrels;
b. arranging said mandrels in end-to-end fashion with a plastic spacing member between each of said mandrels;
c. extruding a first layer of an elastomeric material around said mandrels and said spacing members;
d. applying a reinforcing member around first elastomeric layer;
e. applying a second layer of an elastomeric material around said reinforcing member and said first layer;
f. cutting through said elastomeric material layers and said reinforcing member and said spacing member to provide a plurality of individual hose assemblies on said mandrels;
g. deforming said hose assembly and said mandrel to a preselected curvilinear configuration;
h. at least partially vulcanizing said hose assembly on said mandrel;
i. deforming the resulting partially vulcanized hose and said mandrel to a desired configuration of lesser curvature than said preselected curvilinear configuration;
j. separating said mandrel and said partially vulcanized hose;
k. allowing said partially vulcanized hose to return to said preselected curvilinear configuration;
l. completing the vulcanization of said hose; and,

m. returning said mandrel to said step (b).

4,242,297

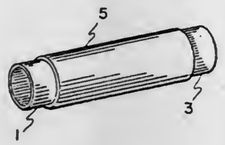
WINDING CORE FOR HEAT SHRINKABLE FILM MATERIAL

Raymond B. Dacey, Simpsonville, and Frederick D. Stringer, Greenville, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 899,205, Apr. 24, 1978, abandoned, which is a division of Ser. No. 749,945, Dec. 13, 1976, Pat. No. 4,114,756. This application Dec. 31, 1979, Ser. No. 108,879

Int. Cl.³ B29C *25/00;* **B29D** *7/20, 7/22*

U.S. Cl. 264—230 **1 Claim**



1. A process for minimizing distortions in a roll of heat shrinkable film suitable for use on automated packaging machinery, said roll generally comprising a core having a transverse direction parallel to an axis of rotation with said film wound in its longitudinal direction about the rotational axis of said core, said film otherwise tending to shrink in the transverse direction in the edge areas thereof and thus elongate longitudinally in said edge areas thereof during storage, said process comprising:

providing a generally cylindrical core having areas of reduced diameter at the terminal portions thereof, and

winding said film about said core, said areas of reduced diameter subtending said edge areas of said film where said film would otherwise tend to elongate, thereby forming said roll of film,

and storing said roll for a time at an elevated temperature, said time and said temperature being of sufficient magnitude for shrinkage of said film to occur about said core in said areas of reduced diameter.

4,242,298

POLYSACCHARIDE ESTER MEMBRANE CLEARING PROCESS

William A. Gurske, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 9, 1979, Ser. No. 55,585

Int. Cl.³ B29B *11/22*

U.S. Cl. 264—233 **16 Claims**

1. A method of clearing a polysaccharide ester membrane comprising rinsing the membrane with a clearing solvent comprised of two components and drying the rinsed membrane, wherein the first component of said clearing solvent is selected from a group consisting of alcohols, ketones, ethers, esters, and mixtures and wherein said second component is selected from a group consisting of methyl acetoacetate, ethyl acetoacetate, acetol, 2-ethyoxyethanol, and 2-ethoxyethyl acetate, said first component having a boiling point less than said second component.

4,242,299

APPARATUS AND METHOD FOR REMOVING CORE MARK MATERIAL FROM MOLDED CONCRETE BLOCKS

Roderick D. Adams, 1207 Welcome Cir., Durham, N.C. 27705

Filed Jul. 10, 1979, Ser. No. 56,354

Int. Cl.³ B29C *17/08, 17/12*

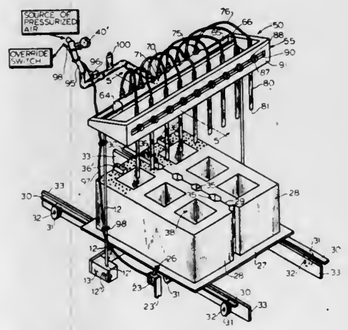
U.S. Cl. 264—504 **12 Claims**

1. In the repetitive formation of concrete block machine molded of a semi-wet mixture of aggregate and cement utilizing a selected number of core bars to form with each core bar plural spaced-apart vertical core holes centered on a core bar line extending the length of the block, a method for removing excess core mark material left on the block's top surface along each such line and adjacent the core holes associated therewith after the block has been ejected from the molding machine and before the block has been cured to avoid such excess core mark material remaining on the surface of the block and in the case of core holes being along a split line from falling into and hardening in such split line core holes, said method comprising:

(a) receiving each freshly molded block from the molding machine as each is successively ejected therefrom and depositing the block at a first station on a uniform size pallet board and positioned so as to orient each line of excess core material on the top surface of each successive block in a specific relation to the pallet board and repeating such positioning from block to block in a substantially uniform repetitive orientation;

(b) conveying each said pallet board and each said molded block positioned thereon through a second station and along a predetermined path and length of travel which repeats itself from pallet board to pallet board;

(c) bringing a selected portion of each said pallet board in continuous physical contact with the actuating portion of a normally open pressure actuated electrical switch fixedly stationed in the path of said pallet board travel



through said second station to cause said switch to be closed for the time interval corresponding to said length of travel and to be open when not in such physical contact with a said pallet board;

(d) passing each said block and pallet board while traveling through said second station and while said switch is closed below an air supply system associated with said machine and having:

(i) an electrically actuated valve operatively associated with said switch and having an air inlet connected to a source of pressurized air and an air outlet for discharging such pressurized air while said switch is closed during travel of each said pallet through said second station; and

(ii) for each said line of core mark material at least one positionable conduit communicating at one end to the said valve discharge outlet and having at an opposite end an air discharge port; and

(e) while each said block and pallet board passes through said second station locating and fixing each said positionable conduit such that the air discharge port associated therewith is at an appropriate elevation, lateral position and angularly directed with respect to a selected said line of excess core material so as to continuously direct pressurized air from each respective said air discharge port toward a selected line of core mark material on the top surface of said block during the course of the block's travel through said second station while said switch is closed and said valve is open in a manner such that substantially all excess core material is blown clear of the top surface of said block and prevented from falling and hardening in any of such core holes associated with a split line.

4,242,300

METHOD FOR PROCESSING PARISONS

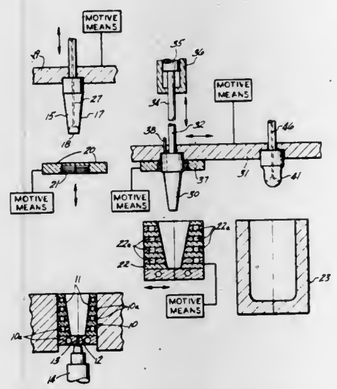
Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation-in-part of Ser. No. 911,359, Jun. 1, 1978, which is a continuation-in-part of Ser. No. 641,638, Dec. 17, 1975, abandoned, which is a division of Ser. No. 479,287, Jun. 14, 1974, Pat. No. 3,970,419, which is a continuation-in-part of Ser. No. 473,580, May 24, 1974, Pat. No. 3,966,378. This application Dec. 12, 1978, Ser. No. 968,681

The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—520 **13 Claims**



1. In a method for temperature conditioning an organic plastic parison for the operation of multi-axial orientation such as by stretching and expanding, the improvement which comprises: providing said parison at an elevated temperature above that required for orientation of said plastic; retaining and cooling said parison in a first mold assembly which includes a first mold, a mold cavity, a neck mold and a core, wherein said first mold and first core are maintained at temperatures below that required for orientation, but said first mold is maintained at a lower temperature than said core to assure rapid removal of heat from said parison; separating said core from said parison while retaining and cooling said parison in said first mold wherein separation of said parison and said core is effected by applying positive fluid pressure inside said parison while said separation of the core is taking place and thereby facilitating removal of the core from the parison and avoiding the formation of a vacuum inside the parison during said separation; separating said parison and said first mold from each other after a substantial change in the heat content of said parison will have taken place, wherein the heat content of said parison is altered by means of heat exchange with said core and mold to result substantially in the heat content of the parison having an average temperature suited for orientation, wherein said altering is effected at temperature gradients adapted for rapid heat flow and with an unequal distribution of temperature resulting across the walls of the parison; and locating the parison in an environment capable of influencing the cross-sectional temperature distribution in the walls of said parison, with said locating facilitated by said neck mold, wherein the temperature of the outside surface of said parison is lower than the temperature of its inside surface at the time said parison is located in said environment, and equalizing the temperature distribution of the parison in said environment without substantially altering the heat content of said parison to attain a temperature substantially corresponding to the orientation temperature.

4,242,301

AUTOMATED REACTION HOUSING FOR USE IN QUANTITATIVE ANALYSIS

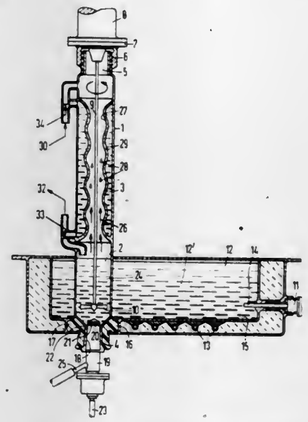
Guido Heyneman, Knokke; Christiaan Vandenbossche, Zwijnaarde, both of Belgium, and Roland Thieme, Maximiliansau, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich

Filed Jan. 18, 1979, Ser. No. 4,370

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804287

Int. Cl.³ G01N *1/10*

U.S. Cl. 422—68 **3 Claims**



1. A reaction housing for an automatically operating quantitative analysis device comprising, in combination,

a reaction chamber having an outlet at a bottom portion thereof and an inlet at a top portion thereof, said outlet including a mouth located at a given plane;

a hollow column connected to said chamber at said top portion thereof, said column being surrounded by a cooling jacket having a heat-exchange fluid flowing therein;

a thermostatically controllable heating bath means at least partially surrounding said reaction chamber for heating a reaction mixture in said chamber; and

an automatically controllable valve means positioned in said outlet of said reaction chamber, said valve means including a cap having sealing edges normally positioned in said given plane to completely seal said outlet mouth, said valve means extending below said bath means for completely draining fluids within said reaction chamber.

4,242,302

METHOD OF MAKING A CATALYTIC COMBUSTION TYPE GAS DETECTOR

Kenzo Kitamura, Tokyo; Hideaki Ebitani, Omiya, and Masahiro Asakura, Urawa, all of Japan, assignors to Kabushiki Kaisha Shibaura Denshi Seisakusho, Urawa, Japan

Filed Aug. 23, 1978, Ser. No. 936,032

Claims priority, application Japan, Sep. 2, 1977, 52/105434

Int. Cl.³ G01N *27/16*

U.S. Cl. 422—94 **6 Claims**

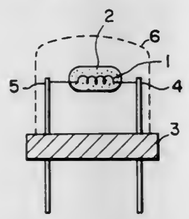
4. A gas detector which comprises:

(a) a wire coil of a metal which is difficult to become oxidized at elevated temperatures;

(b) a pair of electric terminal conductors connected to said wire coil;

(c) a mixture of a first powder and a second powder coated and sintered onto said wire coil; said first powder consist-

ing of an oxide selected from the group consisting of TiO_2, ZrO_2, Y_2O_3, HfO_2, CeO_2, La_2O_3, NiO and Cr_2O_3, and said second powder consisting of an oxide selected from the group consisting of ZnO, SnO_2 and In_2O_3; said second powder being in an amount of less than 40% by weight, based on the total weight of the mixture;



(d) a stem-base for supporting rigidly thereon said terminal conductors; and

(e) an encapsulating envelope enclosing said coated wire coil into an operating unit.

4,242,303

GAS DETECTING ELEMENT

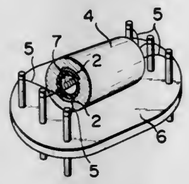
Takashi Takahashi, Toyko; Masaki Katsura, Mitaka; Tadao Kaneda, Yokohama; Hideaki Hiraki, and Masayuki Shiratori, both of Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 25, 1979, Ser. No. 33,251

Claims priority, application Japan, May 2, 1978, 53-52361; May 2, 1978, 53-52365; May 2, 1978, 53-52371; Aug. 31, 1978, 53-105565

Int. Cl.³ G01N *27/12*

U.S. Cl. 422—98 **3 Claims**



1. A gas detecting element comprising a hollow cylindrical insulative body, a pair of electrodes provided on the outer circumference of said insulative body and a gas sensitive material layer covering up the outer periphery of said insulative body and said electrodes, wherein the gas sensitive material layer comprises:

an N-type metal oxide semiconductor;

0.005 to 8% by weight, based on the metal oxide, of at least one noble metal catalyst selected from the group consisting of platinum (Pt), palladium (Pd) and rhodium (Rh); and

phosphorus in an amount of 1.5 to 30 times in mol ratio as much as that of the noble metal or 0.05 to 30 times in mol ratio as much as that of palladium where palladium alone is used as the noble metal catalyst.

4,242,304

CONTACT LENS DISINFECTOR WITH TEMPERATURE INDICATOR

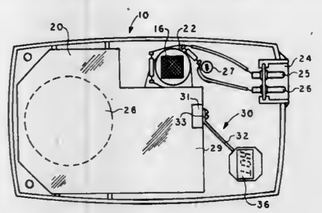
Francis E. Ryder, Arab, Ala., assignor to Ryder International Corporation, Arab, Ala.

Filed Jun. 22, 1979, Ser. No. 51,123

Int. Cl.³ G01D *11/26;* A01L *2/100;* G01K *5/62*

U.S. Cl. 422—119 **3 Claims**

1. A disinfector unit for contact lenses comprising, a housing, heating means arranged for heating the contact lenses to a desired temperature and indicating means for providing a visual message for impression to the user that the unit is in a selected temperature condition, said indicating means comprising a generally opaque viewing window including a plurality of longitudinal and transverse transparent portions arranged to define a series of segmented characters providing a visual, word message, a plate having an upper surface including an opaque background corresponding to the opaque portions of said viewing window and a series of longitudinal and transverse portions of a selected color which correspond in size, shape and arrangement to the transparent portions of said viewing window, means mounting said plate below said viewing window for slidable movement in a diagonal direction with



respect to said window and the transparent portions thereof, and temperature responsive actuator means operatively coupled with said plate for movement of said plate between a first and a second position in response to the changes of temperature of said unit, such that when said plate is moved to said first position, said longitudinal and transverse colored portions on said plate align with the corresponding longitudinal and transverse transparent portions of said window, thereby providing a visual word message display to the user, with movement of said plate diagonally to said second position producing total misalignment of said longitudinal and transverse colored portions with respect to said transparent portions, such that only the opaque portion of said plate is aligned with said transparent portion, thereby totally obliterating said work message.

4,242,305

APPARATUS FOR CONTROLLING EMISSIONS OF HYDROGEN SULFIDE FROM A SYSTEM UTILIZING GEOTHERMAL STEAM

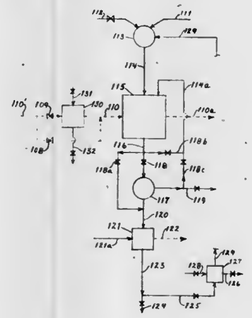
Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, New Rochelle, N.Y.

Division of Ser. No. 712,170, Aug. 6, 1976, Pat. No. 4,123,506.

This application Aug. 18, 1978, Ser. No. 934,846

Int. Cl.³ B01J *10/00;* C01B *17/16, 31/20*

U.S. Cl. 422—129 **22 Claims**



1. Apparatus for utilizing a flow of geothermal steam at superatmospheric pressure containing noncondensable gases together with hydrogen sulfide as impurities therein, and for producing therefrom discharges of liquid water and of noncondensable gases that are substantially free of hydrogen sulfide, which apparatus comprises:

(a) reactant supply means for providing an aqueous liquid phase containing reactant dispersed therein having the capability of undergoing reaction with hydrogen sulfide at the temperature of and in the presence of said flow of geothermal steam to form a solid metal sulfide reaction product suspended in said flow of liquid; and liquid flow means, including conduits, connected from said reactant supply means for providing a flow of said aqueous liquid phase;

(b) extractor means having steam and liquid phase inlets and outlets and means for passing said flow of geothermal steam at superatmospheric pressure in contact with said flow of aqueous liquid phase and effecting said reaction with hydrogen sulfide therein, the liquid phase inlet being connected to said liquid flow means and the steam inlet being connected to receive said flow of geothermal steam from a geothermal source;

(c) separator means connected in said extractor means for separating and recovering from said contact the resulting flow of steam at superatmospheric pressure containing noncondensable gases but depleted in hydrogen sulfide and the resulting flow of aqueous liquid ane metal sulfide reaction product;

(d) delivery means, including conduits, connected to said separator means for delivering said recovered flow of steam at superatmospheric pressure for said utilizing;

(e) steam utilization means including condenser means connected to said delivery means for receiving and utilizing recovered steam and for condensing liquid water therefrom;

(f) liquid discharge means connected to said condenser means for discharging therefrom liquid water condensate substantially free of hydrogen sulfide; and

(g) gas discharge means connected to said condenser means for discharging therefrom noncondensable gases substantially free of hydrogen sulfide.

4,242,306

PROCESS AND APPARATUS FOR THE PRODUCTION OF A FOAMABLE MIXTURE FROM AT LEAST TWO FLUID, FOAM FORMING REACTANTS AND AGGREGATES

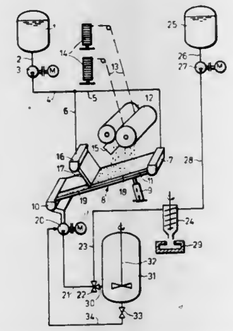
Karl D. Kreuer, and Klaus Schulte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,683

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828506

Int. Cl.³ B01J *19/18;* C08G *18/14, 9/00*

U.S. Cl. 422—133 **7 Claims**



1. An apparatus for mixing foam forming reactants comprising:

(A) storage containers for foam producing reactants,

(B) metering pump means,

(C) mixing head means for mixing said reactants,

(D) first conduit means leading from one of said storage containers via said metering pump means to said mixing head means to convey reactants thereto,

(E) moving film forming means having surface means thereon and film applicator means for applying a film of liquid reactant to said surface means,

(F) second conduit means connected to another of said storage containers and communicating with said applicator means for supplying a reactant thereto,

(G) aggregate feed means associated with said surface means for applying an aggregate material to said surface means,

(H) collecting means located at one end of said surface means for collecting liquid-aggregate mixture, and

(I) third conduit means including metering pump means for conveying said mixture to said mixing head.

4,242,307

DEVICE FOR PRODUCING POLYCRYSTALLINE SILICON

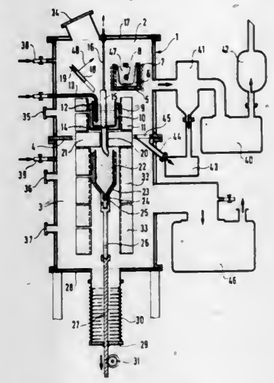
Jacques Fally, Orsay, France, assignor to Societe Anonyme Dite: Compagnie Generale d'Electricite, Paris, France

Filed Jun. 13, 1979, Ser. No. 48,116

Claims priority, application France, Jul. 11, 1978, 78 20660

Int. Cl.³ B01J *8/04;* B01D *9/00;* C01B *33/02;* C30B *11/02*

U.S. Cl. 422—194 **9 Claims**



1. A device for producing polycrystalline silicon by purifying silicon which contains impurities and solidifying a liquid molten mass of purified silicon by subjecting the liquid mass to a vertical temperature gradient, said device comprising:

a chamber,

a first crucible within said chamber for containing a mixture of carbon and silica,

means for heating said first crucible, and

means for tilting said crucible about a horizontal axle,

a second crucible positioned within said chamber below said first crucible and positioned to receive the liquid bath of molten silicon which contains impurities upon tilting of said first crucible about said horizontal axle,

said second crucible having a drainage orifice within a lower part thereof,

movable means for stopping said drainage orifice,

a pipe passing through the wall of said chamber and leading to the inside of said second crucible,

means for connecting said pipe to a source of gas for bubbling through the molten silicon,

means for heating said second crucible to maintain the temperature of said bath above the melting point of silicon,

a vertical receptacle disposed beneath said second crucible and positioned relative to said orifice so as to receive the

purified liquid silicon flowing from said orifice when said orifice is not stopped,

a heating sleeve surrounding said receptacle and means for maintaining the temperatures at the top and bottom of said sleeve respectively higher and lower than the melting point of silicon,

means for vertically moving said receptacle along the axis of said sleeve, and

pumping means for pumping the gases out of said chamber.

4,242,308

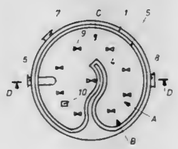
CONTROLLABLE REACTION MEDIUM SINGLE REACTOR FOR PHOSPHORIC ACID PRODUCTION

Neculai Popovici, B-dul 1 Mai nr. 42-52; Mihail Dochia, B-dul 1 Mai nr. 164, both of Bucuresti; Mihai Dumitrescu, Str. Grindului nr. 2; Iosif Spirea, Str. Brebeni, Bloc 3, both of Ploiesti, and Iacob Samoll, Sos. Oltenitei nr. 81, Bucuresti, all of Romania

Continuation-in-part of Ser. No. 894,452, Apr. 7, 1978, abandoned. This application Nov. 6, 1978, Ser. No. 957,949

Int. Cl.[2] B01F *7/16;* B01J *1/20, 8/10*

U.S. Cl. 422—195 **3 Claims**



1. In apparatus for the continuous production of phosphoric acid from phosphate-containing rock and sulfuric acid, consisting of a reaction tank with a vertical wall, a planar horizontal bottom and cover, and a rigid vertical baffle dividing the reaction tank into two distinct zones, a plurality of agitators to induce circulation and flow of the reaction mixture from one side of the baffle to the other, wherein the improvement comprises the following features:

(a) the reaction tank has a cylindrical side wall;

(b) the vertical baffle is S-shaped with one end smoothly merging into the cylindrical side wall of the reaction tank and the other end freely projecting into the tank;

(c) the S-shaped baffle extends the full height of the reaction tank and divides the reaction tank into two distinct zones;

(d) a first reaction zone on one side of the baffle, having a smaller area and capacity, which initially receives the reactants;

(e) a second, so-called reaction completion zone on the opposite side of the S-shaped baffle with greater capacity, wherefrom a recirculating slurry and reaction product are withdrawn, the approximate ratio between the capacities of said first and second reaction zones respectively being about 1:2; and wherein

(f) the S-shape of the baffle forces the reaction mixture to travel around the tip of the baffle.

4,242,309

APPARATUS FOR OZONIZING UNSATURATED COMPOUNDS

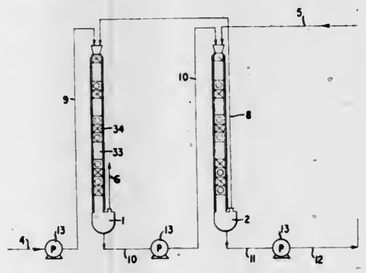
Franz-Josef Carduck, Haan; Axel Dräger, Düsseldorf; Gunter Effey, Monheim; Suresh Majmudar, Haan, and Martin Witthaus, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Division of Ser. No. 966,946, Dec. 6, 1978, Pat. No. 4,185,025, and a continuation-in-part of Ser. No. 888,528, Mar. 21, 1978, abandoned. This application May 30, 1979, Ser. No. 43,619

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754366

Int. Cl.[3] B01J *1/00;* C10G *34/00*

U.S. Cl. 422—189 **9 Claims**



1. Apparatus for the continuous ozonization of higher molecular weight olefinically unsaturated organic compounds in the presence of water, wherein a reactor system is provided having at least two reactors which are connected in a counterflow arrangement with respect to each other but through each of which individually the charge mixture to be ozonized and the ozonic gas pass in parallel flow, the individual reactors having static mixing components of such a type and arrangement that an intimate mixture of reactants, water and reaction product is ensured, which mixture is intensified with an increasing degree of ozonization.

4,242,310

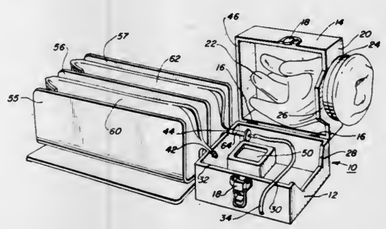
STERILE CONNECTION APPARATUS

Richard Greff, Ingleside; Ludwig Wolf, Jr., Crystal Lake; John Munsch, Libertyville, and Layton C. Kinney, Chicago, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 13, 1978, Ser. No. 959,610

Int. Cl.[3] A61L *2/00*

U.S. Cl. 422—300 **2 Claims**



1. Sterile connection apparatus for enabling the connection of a first tube to a second tube, which comprises:

a housing including a base portion having a top edge and a cover portion having a bottom edge, said portions being adapted for interfitting with each other along their edges to provide a substantially closed interior volume;

said housing including means for receiving and holding said first tube and means for receiving and holding said second tube;

said receiving means comprising grooves in the edge of the base portion or the cover portion for receiving and holding said tubes with the portions of the tubes to be sterilized extending inside the housing and other portions of the tubes being outside the housing;

means carried by said housing, located within said housing and operable from outside said housing for enabling manipulation of one of said tube portions inside the housing with respect to the other tube portion inside the housing; and

means for sterilizing said inside tube portions within the substantially closed interior volume.

4,242,311

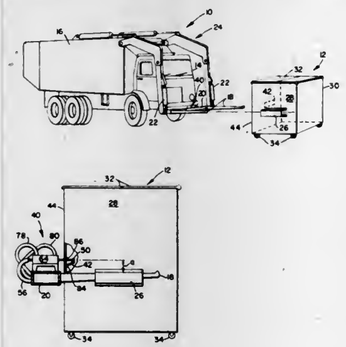
GARBAGE AND TRASH CONTAINER SELECT SPRAY SYSTEM

Ralph E. Middaugh, 144 Holiday Dr., Martinez, Ga. 30907

Filed Mar. 8, 1979, Ser. No. 18,498

Int. Cl.[3] B08B *3/10;* A61L *2/18, 11/00;* B08B *9/00*

U.S. Cl. 422—302 **6 Claims**



1. A select spray system in combination with a front loading, waste transporting vehicle for spraying a treating material into a waste receiving container, the container being structured to be lifted by and to empty its contents into the cooperating waste transporting vehicle, the spray system comprising:

a spray nozzle assembly for dispensing the treating material into the container, from a supply reservoir carried on the vehicle, said spray nozzle assembly being carried on a front cross bar which extends between a pair of spaced, forwardly extending dumping forks on the vehicle, said spray nozzle assembly being selectively controllable from within the vehicle;

a spray access door in an end wall of the container for affording access to an interior portion of the container, said spray access door being adjacent said spray nozzle assembly when said dumping forks are cooperatively engaging pickup sleeves carried on opposed side walls of the container;

means for selectively inserting a portion of said spray nozzle assembly through said spray access door to spray the treating material into the interior of the container when the container is cooperatively engaged with the vehicle; and

means for retracting said portion of said spray nozzle assembly away from the container after spraying is completed whereby the treating material may be sprayed into the container after any waste in the container has been transferred to the vehicle and while the container is still cooperatively engaged with the vehicle.

4,242,312

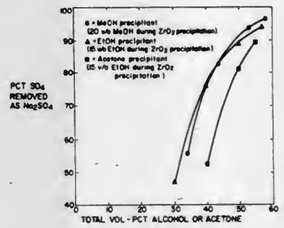
REMOVAL OF SODIUM SULFATE FROM A SULFATE-CONTAINING SODIUM CHLORIDE SOLUTION IN A PROCESS FOR SEPARATING ZIRCONIUM AND HAFNIUM

Ronald A. Guidotti, Butte, Mont., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 7, 1979, Ser. No. 64,608

Int. Cl.[3] C01G *23/00;* C01D *15/06*

U.S. Cl. 423—73 **10 Claims**



1. A process for separating zirconium and hafnium comprising (1) extracting an aqueous sulfuric acid solution containing zirconium and hafnium ions with an organic extracting solution to produce a zirconium-loaded organic solution; (2) contacting the zirconium-loaded organic solution with an aqueous sodium chloride solution to produce a zirconium-loaded aqueous solution; (3) adding a first amount of a water-miscible organic precipitant selected from the group consisting of an alcohol having from 1 to 3 carbon atoms or a ketone having 2 or 3 carbon atoms to the zirconium-loaded aqueous solution, said amount being less than the amount of said precipitant required to produce sodium sulfate crystal formation, (4) contacting the zirconium-loaded aqueous solution with a zirconium-precipitating base to form a zirconium precipitate; (5) passing the resulting treatment mixture to a separation stage from which there is obtained the zirconium precipitate and a sodium sulfate-containing sodium chloride solution; (6) adding a second amount of the water-miscible organic precipitant to the sodium sulfate-containing sodium chloride solution, the total amount of said precipitant being sufficient to provide a concentration of said organic precipitant ranging from about 26 up to about 60 volume percent, whereby sodium sulfate crystals are formed; (7) separating said sodium sulfate crystals from the sodium sulfate-containing sodium chloride solution; and (8) removing said organic precipitant prior to recycling the resulting aqueous sodium chloride solution to strip zirconium.

4,242,313

PROCESSES FOR THE RECOVERY OF ALUMINA FROM FLY ASH AND PRODUCTION OF CEMENT CONSTITUENTS

Arpad E. Torma, Socorro, N. Mex., assignor to Extraction Research & Development, Inc., Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 38,929, May 14, 1979, abandoned. This application Mar. 21, 1980, Ser. No. 132,666

Int. Cl.[3] C01F *7/26*

U.S. Cl. 423—112 **1 Claim**

1. A process for extracting alumina and cement constituents from fly ash which comprises;

a. subjecting the fly ash to magnetic separation by known methods yielding an iron-bearing magnetic fraction and a nonmagnetic fraction, and

b. dry mixing the nonmagnetic fraction with a calcining agent, CaO, wherein the ratio of CaO to SiO_2 by weight is between 1.4 and 2.0, and said dry mixing yielding a dry mixture, and

c. pelletizing the dry mixture by adding a sufficient amount

of water and forming pellets which are approximately spherical, and

d. drying and calcining the pellets by subjecting the pellets to a temperature of between 900° C. and 1200° C. for between five and thirty hours and yielding calcined fly ash, and

e. acid treating the calcined fly ash, resulting in diluted slurry, and

f. selectively increasing the pH of the diluted slurry to 2.0 by the addition of lime, and

g. subjecting the diluted slurry to a filtration yielding solids and a pregnant solution, and

h. selectively subjecting the pregnant solution to a purification step using an organic solvent, yielding scrub solution and purified pregnant solution, and

i. subjecting the purified pregnant solution to evaporation, removing water and seeding the purified pregnant solution with aluminum sulfate crystals, yielding aluminum sulfate suspension, and

j. subjecting the aluminum sulfate suspension to a liquid-solid separation which yields a mother liquor and hydrated crystalline aluminum sulfate, and

k. calcining the crystalline aluminum sulfate at approximately 1000° C. which drives off the sulfur oxides and water of hydration and yields alumina.

4,242,314

PROCESS FOR SEPARATION AND RECOVERY OF COBALT BY STRIPPING

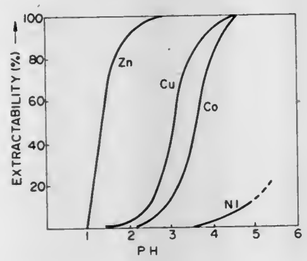
Kazuhiko Motoba, 1-4-7 Miyata-cho, and Eiji Itoh, 1-4-15 Miyata-cho, both of Hitachi-shi, Ibaragi-ken, Japan

Filed Jul. 19, 1979, Ser. No. 58,771

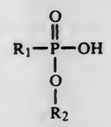
Claims priority, application Japan, Nov. 9, 1978, 53/138115; Nov. 9, 1978, 53/138116

Int. Cl.³ C01G *51/00*

U.S. Cl. 423—139 **4 Claims**



1. In a process for separating and recovering cobalt from an aqueous solution containing cobalt by bringing said aqueous solution into contact with an organic solvent containing a monoalkyl ester of alkylphosphonic acid represented by the formula:



wherein R_1 and R_2 may be the same or different from each other and represent an alkyl group having 8 to 10 carbon atoms to extract and separate cobalt in said aqueous solution into said organic solvent and then further bringing the resultant organic solvent containing cobalt into contact with an aqueous mineral acid solution to effect the stripping of cobalt, the improvement comprising controlling the pH of said aqueous mineral acid solution in the range of from 1.5 to 3.5 during the contact of said organic solvent with said aqueous mineral acid solution.

4,242,315

HYDRIDES OF THE FORMULA AB_nH_m

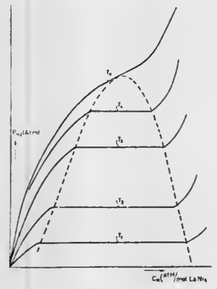
Hugo A. C. M. Bruning; Johannes H. N. van Vucht; Frans F. Westendorp, and Hinne Zijlstra, all of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 673,220, Apr. 2, 1976, abandoned, which is a continuation of Ser. No. 247,454, Apr. 25, 1972, abandoned, which is a continuation of Ser. No. 867,811, Oct. 20, 1969, abandoned. This application Apr. 10, 1978, Ser. No. 895,000

Claims priority, application Netherlands, Jan. 24, 1969, 6901276; Apr. 23, 1969, 6906305

Int. Cl.³ C01B *6/24*

U.S. Cl. 423—252 **4 Claims**



1. A hydride of the gross formula AB_nH_m and capable of reversible dissociation into metal plus hydrogen gas, wherein A is an element selected from the group consisting of calcium, the rare earths, and combinations of one of said elements with Th, Zr, and Hf, B is an element selected from the group consisting of Ni and Co, and combinations of said element with one of the elements Fe and Cu, n has a value lying between about 3 and about 8.5 and m has a value exceeding 0 and up to about 7.

4,242,316

SULFAMIC ACID AS A CATALYST FOR THE POLYMERIZATION OF CHLOROCYCLOPHOSPHAZENES

David P. Sinclair, Winfield, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 29, 1979, Ser. No. 53,351

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **12 Claims**

1. A process for polymerization of chlorophosphazenes to produce a $(Cl_2PN)_m$ polymer product having a controlled molecular weight and molecular weight range with controlled polydispersity in which m is 20 to 50,000 which process comprises polymerizing dichlorophosphazenes of the formula $(Cl_2PN)_n$ in which n is 3 to 7 and wherein the (Cl_2PN) moiety is present in a concentration of at least one mole per liter in the presence of between about 0.1 mmole to about 50 mmoles of a sulfamic acid compound per mole of (Cl_2PN) moiety, said sulfamic acid compound being selected from the group consisting of sulfamic acid, sulfamic acid salts and nitrogen-substituted derivatives of sulfamic acid which are N-alkyl, N-dialkyl, N-alkyl and N-aryl, N-aryl and N-diaryl, wherein the alkyl moiety is 1 to 12 carbon atoms and the aryl moiety is selected from the group consisting of phenyl, naphthyl, anthracenyl, phenanthrenyl, benzothienyl and fluorenyl moieties.

4,242,317

AMMONIA SYNTHESIS PROCESS

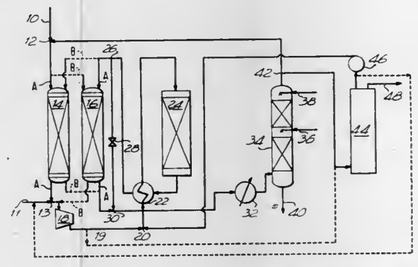
Alwyn Pinto, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 24, 1978, Ser. No. 936,402

Claims priority, application United Kingdom, Aug. 26, 1977, 35933/77; Oct. 28, 1977, 44995/77

Int. Cl.³ C01C *1/02*

U.S. Cl. 423—359 **7 Claims**



1. An ammonia synthesis process which comprises the steps

(a) passing a mixture of nitrogen and hydrogen over an ammonia synthesis catalyst whereby to effect incomplete reaction to ammonia;

(b) cooling the reacted gas mixture;

(c) contacting the cooled gas mixture with water whereby to produce an aqueous solution of ammonia and a stream of unreacted gas containing water vapour;

(d) drying said unreacted gas by passing it through a charge of regenerable solid absorbent until said charge is loaded with water and switching the unreacted gas flow to a fresh or regenerated charge;

(e) recycling dried unreacted gas to the synthesis catalyst;

(f) maintaining circulation of gas through preceding steps (a) to (e) by means of a compressor;

(g) adding fresh synthesis gas to the circulating gas; the process being further characterized by

(i) adding said fresh synthesis gas between step (b) and step (d), whereby to remove any water vapour from it;

(ii) operating said compressor in step (f) downstream of said drying step (d) and upstream of said synthesis catalyst;

(iii) regenerating said water-loaded charge with hot ammonia-containing synthesis gas after step (a) but before step (c) whereby to displace water from it and provide the regenerated charge required in step (d); and

(iv) separating the displaced water from the gas, along with the ammonia contained therein, by cooling the gas in said step (b) and contacting the cooled gas with water in step (c).

4,242,318

PROCESS FOR THE PREPARATION OF AQUEOUS SUSPENSIONS CONTAINING AT LEAST 65% BY WEIGHT OF CALCIUM CARBONATE

Jacques Brahm, Grimbergen, and Jean-Pierre De Rath, Brussels, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Jul. 10, 1978, Ser. No. 923,195

Claims priority, application Luxembourg, Jul. 11, 1977, 77723

Int. Cl.³ C01F *5/24, 11/18*

U.S. Cl. 423—430 **19 Claims**

1. A process for the preparation of an aqueous suspension of calcium carbonate comprising:

(a) crystallizing calcium carbonate by carbonating in a dilute aqueous medium a source of calcium ions with a source of carbonate ions in the presence of a water-soluble polyelectrolyte to obtain a dilute aqueous suspension of calcium carbonate;

(b) separating a wet concentrate of calcium carbonate from the dilute aqueous suspension of calcium carbonate by essentially mechanical separating means to obtain directly a wet concentrate of calcium carbonate containing at least 65% by weight calcium carbonate; and

(c) fluidizing and homogenizing said wet concentrate in the presence of a dispersing agent to obtain an aqueous suspension of calcium carbonate containing at least 65% by weight calcium carbonate.

4,242,319

PROCESS FOR PRODUCTION OF CYANOGEN CHLORIDE

Georg Buchreiter; Peter Kniep; Kurt Scheinost, all of Trostberg, and Heinz-Rudiger Vollbrecht, Stein, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,022

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838016

Int. Cl.³ C01B *21/088*

U.S. Cl. 423—383 **9 Claims**

1. Process for the reaction of hydrocyanic acid with chlorine to produce cyanogen chloride and hydrochloric acid characterized by carrying out said reaction in a non-aqueous inorganic solvent reaction medium at a temperature within the range of from 0° C. to the boiling point of said solvent and at a pressure of from about 1 to 6 bars.

4,242,320

REDUCTION OF FERRIC CHLORIDE

John A. Clarke, Avonmouth, England, assignor to Mineral Process Licensing Corporation, The Hague, Netherlands

Filed May 10, 1979, Ser. No. 37,683

Claims priority, application United Kingdom, May 16, 1978, 19989/78

Int. Cl.³ C01G *94/10*

U.S. Cl. 423—493 **11 Claims**

1. In a method for the reduction of ferric chloride in the presence of a reducing agent to produce ferrous chloride, the improvement which comprises using a reducing agent selected from the group consisting of gaseous sulphur and gaseous sulphur chlorides in which the atomic ratio of sulphur to chlorine is more than 1:1, and performing the reduction at a temperature of between about 120° C. and 650° C.

4,242,321

PROCESS FOR SEPARATING SO_2 FROM A CURRENT OF GAS CONTAINING THE SAME, AND PLANT FOR CARRYING OUT SUCH PROCESS

Volker Fattinger, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 838,708, Oct. 3, 1977, abandoned. This application Feb. 15, 1979, Ser. No. 12,262

Claims priority, application Switzerland, Jul. 21, 1977, 9063/77

Int. Cl.³ C01B *17/82*

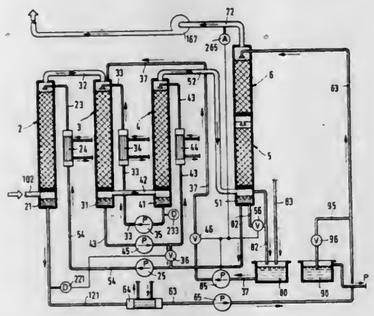
U.S. Cl. 423—523 **27 Claims**

1. In the production of sulfuric acid by the nitrogen oxide process conducted in a system of gas-liquid contact columns, in which process the SO_2-containing gas initially flows through a denitration zone, thereafter through a SO_2-processing zone consisting essentially of at least one packed tower, and subsequently through a nitrogen oxide absorption zone, in the course of which flow it is brought into contact in said SO_2-processing zone with dilute acid having a H_2SO_4 concentration of less than 70% by weight which acid is circulated through the last-mentioned zone, said gas flow from said SO_2-processing zone while in the absorption zone having the nitrogen oxides released into the gas flow in the denitration zone absorbed by sulfuric acid, and nitrose-containing acid having a H_2SO_4 concentration of 70 to 80% by weight is drawn off from

the absorption zone and fed into the denitration zone, the improvement which comprises

(a) measuring the content of NO in the current of gas at a point in the absorption zone or simultaneously at points both in the absorption zone and downstream thereof, and

(b) introducing a nitrogen-oxygen compound selected from the group consisting of NO, NO_2, N_2O_3, nitrose-containing sulfuric acid and nitric acid into the liquid phase of the dilute acid cycle of at least one packed tower of the SO_2-processing zone when a specific NO-content limit value of



the NO-content set to comply with the existing NO emission standard is exceeded or when the slope reflecting the rate of increase of the NO-content in the current of gas, passing through said NO control point or points defined in (a) exceeds a limit value set for said slope, while in either case said NO-content is still below said standard, said nitrogen-oxygen compound being introduced in an amount sufficient to decrease the NO-content below said first specific limit value or to decrease said slope below said slope limit value.

4,242,322

METHODS AND MATERIALS FOR DETECTING ANTIGENS AND ANTIBODIES

Sean P. O'Neill, Bethesda, Md., assignor to Electro-Nucleonics Laboratories, Inc., Bethesda, Md.

Filed Jun. 7, 1978, Ser. No. 913,508

Int. Cl.[2] G01N *33/16;* A61K *43/00, 39/00*

U.S. Cl. 424—1 **15 Claims**

1. A method for detecting the presence of antigen or antibody particles in serum which comprises

1. incubating the serum containing the antigen or antibody particles to be detected with a bifunctional immunoadsorbent characterized by the presence of a first site containing bound antibody which is complementary to the antigen particle to be detected, and a second site containing bound antigen which is complementary to the antibody particle to be detected, whereby the antigen or antibody particles present in the serum conjugates with its complementary antibody or antigen on the immunoadsorbent,

2. incubating the resulting product with labeled antigen or antibody, and

3. determining the extent to which the labeled antigen or antibody becomes bound to the said product.

4,242,323

PLAQUE INHIBITING ORAL COMPOSITION

David G. Vlock, 2 E. 65th St., New York, N.Y. 10021

Filed Aug. 22, 1979, Ser. No. 68,825

Int. Cl.[3] A61K *7/26, 9/68*

U.S. Cl. 424—58 **1 Claim**

1. In the art of inhibiting plaque accumulation on teeth by means of oral hygeine compositions containing effective plaque inhibiting amounts of either of (a) cocoa powder or (b) a flavorant selected from the group consisting of peppermint oil, spearmint oil, cinnamon oil, and mixtures thereof,

the improvement which comprises the step of employing effective plaque inhibiting amounts of a combination of (a) and (b) in oral hygeine compositions characterized by improved plaque inhibition or at least reduction in plaque formation as contrasted to the degree of plaque accumulation obtained from separate employment of either of (a) or (b).

4,242,324

HEPATITIS B ANTIGEN

William J. McAleer, Ambler, and Edward H. Wasmuth, Telford, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 845,016, Oct. 25, 1977, Pat. No. 4,186,193, which is a division of Ser. No. 768,236, Feb. 14, 1977, abandoned, which is a division of Ser. No. 587,507, Jun. 16, 1975, Pat. No. 4,024,243. This application Apr. 4, 1979, Ser. No. 27,184

Int. Cl.[3] A61K *39/29*

U.S. Cl. 424—89 **6 Claims**

1. A complex formed by the association of positively charged sodium ions and negatively charged hepatitis B surface antigen, the complex being substantially free of other cations.

4,242,325

PHOSPHOROTRIAMIDES AS UREASE INHIBITORS

Allan V. Bayless, and Ozra E. Millner, Jr., both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 6, 1979, Ser. No. 55,459

Int. Cl.[3] A61K *31/66*

U.S. Cl. 424—210 **1 Claim**

1. A method for controlling the enzymatic decomposition of urea to ammonia and carbonic acid due to the action of the enzyme urease thereon which consists in exposing said enzyme to an amount of a compound of the formula

$$RNHP(NH_2)_2$$
(with O double-bonded to P)

wherein R is hydrogen, phenyl, 4-nitrophenyl, 4-aminophenyl, 4-cyanophenyl or 3-trifluoromethylphenyl sufficient to inhibit said enzymatic decomposition.

4,242,326

ANTI-TUMOR SUBSTANCE AND PROCESS FOR PREPARING THE SAME

Yutaka Sugawara, Omiya; Akihiro Yamamoto, Higashiyamato; Mitsuaki Handa, Kamifukuoka; Hiroko Usami, Tokyo, and Haruki Ogawa, Chofu, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 783,270, Mar. 31, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,744

Claims priority, application Japan, Jun. 29, 1978, 53/78039

Int. Cl.[3] A61K *35/74*

U.S. Cl. 424—116 **7 Claims**

1. A substance having the following properties:

(a) appearance: from white to grayish white powder

(b) solubility: insoluble in water

(c) elemental analysis: C, 42.97%, H, 5.64%; N, 7.31%

(d) ultraviolet absorption spectrum: as shown in FIG. 1

(e) infrared absorption spectrum: as shown in FIG. 2

(f) chemical composition: rhamnose, 33.3%; hexosamine, 12.7%; protein, 16.7%; total lipid, 0.2%, RNA, none; DNA, none.

4,242,327

ANTIBIOTIC SF-2052 SUBSTANCE AND PRODUCTION AND USE THEREOF

Kazunori Ohba; Takashi Shomura, both of Yokohama; Michio Kojima; Shoji Omoto, both of Tokyo; Takashi Tsuruoka, Kawasaki, and Shigeharu Inoue, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Oct. 31, 1979, Ser. No. 89,924

Claims priority, application Japan, Nov. 6, 1978, 53-135921

Int. Cl.[3] A61K *35/00*

U.S. Cl. 424—116 **6 Claims**

1. A substance, SF-2052 substance or a pharmaceutically acceptable acid addition salt thereof; the SF-2052 substance being a water-soluble basic compound having antibacterial activity, and the SF-2052 substance hydrochloride being in the form of a colorless and amorphous powder which is substantially stable under neutral to acidic pH conditions but instable under alkaline pH conditions, which shows no definite melting point but discolors into brown gradually at or near 170° C. and is decomposed at 209°–210° C. with foaming, which shows positive reaction with ninhydrin, Lemieux reagent and Greig-Leiback's reagent but negative reaction with Sakaguchi's reagent and silver nitrate and which is readily soluble in water, soluble in methanol and insoluble in ethyl acetate, chloroform, benzene and ethylether;

the SF-2052 substance hydrochloride being further characterized by:

(a) exhibiting an elemental analysis: C 35.69%, H 7.04%, N 11.80%,

(b) having no characteristic absorption peak at 220 nm to 370 nm in ultraviolet absorption spectrum in aqueous solution,

(c) having an infrared absorption spectrum in potassium bromide pellet corresponding to that shown in FIG. 1 of the attached drawings,

(d) having a hydrogen nuclear magnetic resonance absorption spectrum in deutero-water substantially corresponding to that shown in FIG. 2 of the attached drawings,

(e) having a carbon nuclear magnetic resonance absorption spectrum in deutero-water substantially corresponding to that shown in FIG. 3 of the attached drawings,

(f) having a specific optical rotation $[\alpha]_D^{25} = +87°$ (c=1, water) in aqueous solution, and

(g) giving a single spot as Rf=0.46 in a cellulose thin layer chromatography with n-propanol-pyridine-acetic acid-water (15:10:3:12) as the developing solvent and at Rf=0.09 in a paper chromatography with n-butanol-acetic acid-water (2:1:1) as the developing solvent according to the ascending method.

4,242,328

PROCESS AND COMPOSITIONS

Stanley L. Hem, West Lafayette, and Joe L. White, Lafayette, both of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation of Ser. No. 845,198, Oct. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 566,254, Apr. 9, 1975, Pat. No. 4,059,681, which is a continuation-in-part of Ser. No. 360,043, May 14, 1973, abandoned. This application Sep. 4, 1979, Ser. No. 72,206

The portion of the term of this patent subsequent to Oct. 7, 1992, has been disclaimed.

Int. Cl.[3] C01B *31/24;* A01N *11/00;* A61K *33/10;* C01F *7/02*

U.S. Cl. 424—157 **8 Claims**

1. A process for preparing a dried amorphous therapeutic antacid aluminum hydroxide gel which comprises contacting an amorphous aqueous aluminum hydroxide gel with an inert organic solvent, of sufficient solubility in water to maintain a single phase when contacted in a 1:1 volume ratio with the aqueous gel, to replace water in the gel, removing the inert organic solvent; drying the amorphous aluminum hydroxide gel to an acid reactant stable amorphous powder that is no less than about 40 weight percent aluminum oxide with said powder having an initial pH-stat t_{50} value with a range of about 6 to 20 minutes and retaining a pH-stat t_{50} time within said range for a period of at least 24 months beyond the date of drying.

4,242,329

BRADYKININ-INHIBITING TRIPEPTIDE DERIVATIVES

Karl G. Claeson, Lidingö; Leif R. Simonsson, Hisings-Backa, and Salo Arielly, Kungsbacka, all of Sweden, assignors to AB Kabi, Stockholm, Sweden

Filed Jul. 17, 1979, Ser. No. 58,333

Claims priority, application Sweden, Jul. 18, 1978, 7807937

Int. Cl.[3] A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 **24 Claims**

1. Tripeptide derivatives of the formula

H-D-X-Phe-Arg-Y

in which

X is selected from the group consisting of Pro and Phe

Y is selected from the group consisting of O—R_1 and NH—R_2 in which

R_1 is selected from the group consisting of straight, branched and cyclic alkyl group with 1–12 C atoms, and

R_2 is selected from the group consisting of H, straight, branched and cyclic alkyl group with 1–12 C atoms, and physiologically acceptable salts thereof.

4,242,330

DERIVATIVE OF ASPIRIN

Anwar A. Hussain, Lexington, Ky.; James E. Truelove, Downington, Pa., and Harry B. Kostenbauder, Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed May 30, 1979, Ser. No. 43,814

Int. Cl.[3] A61K *31/70;* C07H *13/02*

U.S. Cl. 424—180 **12 Claims**

1. The compound 1-O-(2'-acetoxy)benzoyl-α-D-2-deoxy-glucopyranose.

2. A method for inducing an analgesic, antipyretic, antirheumatic or anti-inflammatory response in a warm-blooded animal which comprises orally administering thereto an effective amount of 1-O-(2'-acetoxy)benzoyl-α-D-2-deoxy-glucopyranose.

4,242,331

AMINOGLYCOSIDES AND METHOD OF USE

Jean-Claude Gasc, Bondy, and Claude Rettien, Montreuil, both of France, assignors to Roussel Uclaf, Paris, France

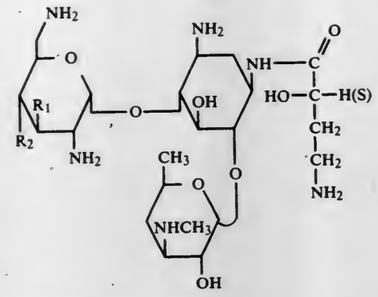
Filed Aug. 17, 1979, Ser. No. 67,316

Claims priority, application France, Sep. 6, 1978, 78 25604

Int. Cl.[3] A61K *31/71;* C07H *15/22*

U.S. Cl. 424—180 **13 Claims**

1. A compound selected from the group consisting of desoxystreptamines of the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen and hydroxyl with at least one of them being hydrogen and their non-toxic, pharmaceutically acceptable acid addition salts.

10. A method of treating bacterial infections in warm-blooded animals comprising administering to warm-blooded animals a bactericidally effective amount of at least one compound of claim 1.

4,242,332

4,5-METHANO-BUFADIENOLIDE-RHAMNOSIDES, THEIR PREPARATION, AND DRUGS CONTAINING THESE COMPOUNDS

Hans P. Albrecht; Gerda von Philipsborn, both of Weinheim; Hans U. Siebeneick, Ludwigshafen, and Manfred Raschack, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

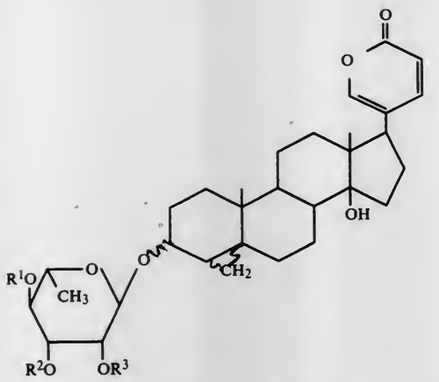
Filed Sep. 6, 1979, Ser. No. 73,107

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841074

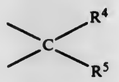
Int. Cl.³ A61K *31/705;* **C07J** *19/00*

U.S. Cl. 424—182 **8 Claims**

1. A 4,5-Methano-bufadienolide-rhamnoside of the formula I



where R^1 is hydrogen or alkyl of 1 to 4 carbon atoms or acyl of 1 to 4 carbon atoms, and R^2 and R^3 are identical or different and each is hydrogen or alkyl of 1 to 4 carbon atoms or acyl of 1 to 4 carbon atoms, or both together are



where R^4 and R^5 are identical or different and each is hydrogen, alkyl or alkoxy of 1 or 2 carbon atoms.

8. The method of treating cardiac insufficiency in a patient suffering therefrom which consists essentially of administering either orally or intravenously to the patient a pharmaceutically acceptable composition containing an effective amount of a compound of claim 1.

4,242,333

NEMATOCIDAL UNSUBSTITUTED PHENYL ESTERS OF O-ALKYL-S-ALKYL-THIOPHOSPHORIC ACID

Denis Varsanyi, Arlesheim, and Gert Handschin, Reinach, both of Switzerland, assignors to Vseoyuznii Na'uchno-Isledova Telskii Gustitut Khimichesti Institute, U.S.S.R.

Continuation of Ser. No. 746,689, Dec. 2, 1976, abandoned, which is a continuation of Ser. No. 652.865, Jan. 27, 1976, abandoned, which is a division of Ser. No. 445,011, Feb. 22, 1974, abandoned, which is a continuation of Ser. No. 273,075, Jul. 19, 1972, abandoned. This application Mar. 22, 1978, Ser. No. 888,942

Claims priority, application Switzerland, Jul. 23, 1971, 10883/71

Int. Cl.³ A01N *57/00*

U.S. Cl. 424—225 **2 Claims**

1. A nematocidal composition comprising a nematocidally effective amount of O-ethyl-S-n-propyl-O-phenylthiophosphate in admixture with a diluent.

4,242,334

CORTICOID 17-(ALKYL CARBONATES) AND PROCESSES FOR THEIR PREPARATION

Ulrich Stache, Hofheim am Taunus; Werner Fritsch, Bad Soden am Taunus, and Hans G. Alpermann, Königstein all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

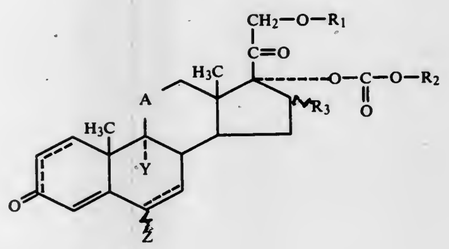
Filed Aug. 2, 1978, Ser. No. 930,194

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735110

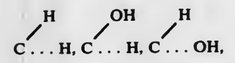
Int. Cl.³ A61K *31/56;* **C07J** *7/00*

U.S. Cl. 424—243 **22 Claims**

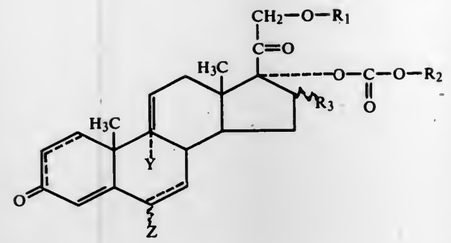
1. A compound selected from the group consisting of compounds of the formula



wherein A is



or C═O, and compounds of the formula



wherein

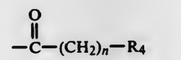
Y is hydrogen, fluorine, or chlorine;

Z is hydrogen, chlorine, fluorine, or methyl;

R_3 is hydrogen, fluorine, α-methyl, monofluoromethyl, or difluoromethyl;

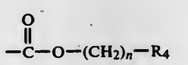
R_2 is alkyl having 1 to 8 carbon atoms; and

R_1 is acyl of the formula



wherein R_4 is hydrogen, alkyl having 1 to 10 carbon atoms, or cycloalkyl having 3 to 8 carbon atoms and n is a number from 0 to 4, or

R_1 is carbonyloxyalkyl of the formula



wherein n is 0 or 1 and R_4 is as earlier defined except that R_4 is other than hydrogen when n is 0, or R_1 is



wherein R_5 is alkyl having 1 to 4 carbon atoms, phenyl, methylphenyl, ethylphenyl, fluorophenyl, bromophenyl, or chlorophenyl.

14. The method of treating inflammatory dermatosis in a human or animal suffering therefrom which method comprises locally or topically administering an effective amount of a compound as in claim 1.

4,242,335

NOVEL 17α-ARYL-STEROIDS

Geneviéve Azadian, Paris; Daniel Philibert, La Varenne Saint-Hilaire, and André Pierdet, Noisy-le-Sec, all of France, assignors to Roussel Uclaf, Paris, France

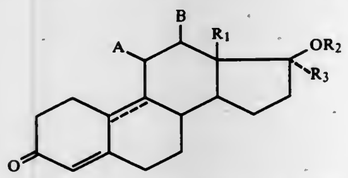
Filed Oct. 27, 1978, Ser. No. 955,403

Claims priority, application France, Nov. 8, 1977, 77 33557

Int. Cl.³ C07J *1/00*

U.S. Cl. 424—243 **32 Claims**

1. A compound of the formula



wherein R_1 is alkyl of 1 to 3 carbon atoms, R_2 is selected from the group consisting of hydrogen, alkyl of 1 to 12 carbon atoms and acyl of an organic carboxylic acid of 1 to 18 carbon atoms, R_3 is selected from the group consisting of phenyl and naphthyl optionally substituted with at least one substituent selected from the group consisting of —OH, halogen, alkoxy and alkyl of 1 to 4 carbon atoms and $—CF_3$, the dotted line in the B ring indicating an optional double bond in the 9(10) position, and A and B are hydrogen and when there is a double bond in the 9(10) position, A and B form a double bond in the 11(12) position or B is hydrogen and A is an 11β-hydroxy.

21. A method of inducing progestomimetic activity in warm-blooded animals without androgenic activity comprising administering to warm-blooded animals a progestomimetically effective amount of at least one compound of claim 1.

4,242,336

ANTIBACTERIAL AND ANTIFUNGAL COMPOSITION

Masayasu Hasegawa, Kyoto; Hideo Nishikawa, Ibaraki, and Kayoko Yoshida, Takatsuki, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 18, 1979, Ser. No. 58,446

Claims priority, application Japan, Jul. 31, 1978, 53-93878; Aug. 2, 1978, 53-94785

Int. Cl.³ A01N *43/02, 43/40, 43/88, 55/02*

U.S. Cl. 424—246 **2 Claims**

1. An antibacterial and antifungal composition comprising a mixture of:

(A) at least one member selected from the group consisting of dehydroacetic acid, and its alkali metal salts, wherein said member is contained within said composition in an amount from 60%–95% by weight, based on the total weight of the composition, and

(B) tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione in a synergistically effective amount of 0.5% to 40% by weight based on the weight of the total composition.

4,242,337

METHOD FOR TREATMENT OF DIARRHEAL DISEASE CONDITIONS OR SYMPTONS IN MAMMALS

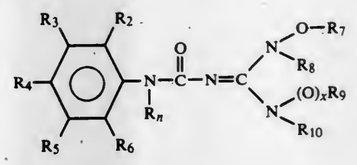
George H. Douglas, Malvern; William L. Studt, Harleysville, and Stuart A. Dodson, Lansdale, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 934,780, Aug. 18, 1978, which is a division of Ser. No. 811,092, Jun. 17, 1977, Pat. No. 4,115,647, which is a division of Ser. No. 671,763, Mar. 30, 1976, Pat. No. 4,058,557. This application Jan. 8, 1979, Ser. No. 1,638

Int. Cl.² A61K *31/535, 31/445, 31/42, 31/17*

U.S. Cl. 424—248.54 **17 Claims**

1. The method of treatment of diarrhea in a mammal comprising administering thereto between 0.1 mg/kg. and 150 mg/kg. of an effective dose of a compound of the formula:



where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are: hydrogen, halo, loweralkyl, haloloweralkyl, nitro, amino, acylamino, hydroxy, aralkyloxy or loweralkoxy,

R_n is hydrogen or loweralkyl;

R_7, R_8, R_9 and R_{10} may be the same or different and are: hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl or aralkyl;

x is 0–1;

the sum total of carbon atoms present in R_7, R_8, R_9 and R_{10} together is less than twelve; and

the non-toxic acid addition salts thereof.

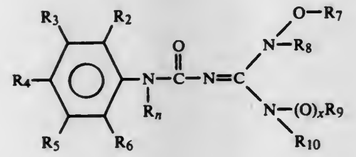
4,242,338

METHOD FOR TREATMENT OF GASTROINTESTINAL SECRETORY AND ULCEROGENIC DISEASE CONDITIONS OR SYMPTOMS IN MAMMALS

George H. Douglas, Malvern; William L. Studt, Harleysville, and Stuart A. Dodson, Lansdale, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 934,780, Aug. 18, 1978, which is a division of Ser. No. 811,092, Jun. 17, 1977, Pat. No. 4,115,647, which is a division of Ser. No. 671,763, Mar. 30, 1976, Pat. No. 4,058,557.
This application Jan. 8, 1979, Ser. No. 1,668
Int. Cl.[2] A61K *51/535, 31/42*
U.S. Cl. 424—248.54 **8 Claims**

1. The method for the treatment of gastrointestinal hypersecretion and ulceration in a mammal comprising administering thereto between 0.1 mg/kg. and 150 mg/kg. of an effective dose of a compound of the formula:



where:
R_2, R_3, R_4, R_5 and R_6 may be the same or different and are:
hydrogen,
halo,
loweralkyl,
halologeralkyl,
nitro,
amino,
acylamino,
hydroxy,
aralkyloxy or
loweralkoxy;
R_n is hydrogen or loweralkyl;
R_7 and R_8 together and R_9 and R_{10} together with the N and O may form a ring selected from the group consisting of isooxazolidine and isooxazine;
x is 0–1; and
R_9 and R_{10}, when x is 0, may be the same or different and are:
hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl or
aralkyl;
the sum total of carbon atoms present in R_7, R_8, R_9 and R_{10} together is less than twelve; and
the non-toxic acid addition salts thereof.

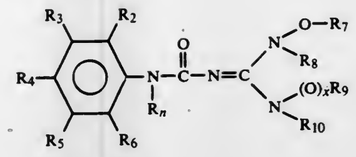
4,242,339

METHOD FOR TREATMENT OF GASTROINTESTINAL SPASMODIC DISEASE CONDITIONS OR SYMPTOMS IN MAMMALS

George H. Douglas, Malvern; William L. Studt, Harleysville, and Stuart A. Dodson, Lansdale, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 934,780, Aug. 18, 1978, which is a division of Ser. No. 811,092, Jun. 17, 1977, Pat. No. 4,115,647, which is a division of Ser. No. 671,763, Mar. 30, 1976, Pat. No. 4,058,557.
This application Jan. 8, 1979, Ser. No. 1,636
Int. Cl.[2] A61K *31/535, 31/445, 31/42, 31/17*
U.S. Cl. 424—248.54 **5 Claims**

1. The method for the treatment of gastrointestinal spasms in a mammal comprising administering thereto between 0.1 mg/kg. and 150 mg/kg. of an effective dose of a compound of the formula:



where:
R_2, R_3, R_4, R_5 and R_6 may be the same or different and are:
hydrogen,
halo,
loweralkyl,
halologeralkyl,
nitro,
amino,
acylamino,
hydroxy,
aralkyloxy or
loweralkoxy;
R_n is hydrogen or loweralkyl;
R_7, R_8, R_9 and R_{10} may be the same or different and are:
hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl or
aralkyl;
x is 0–1;
the sum total of carbon atoms present in R_7, R_8, R_9 and R_{10} together is less than twelve; and
the non-toxic acid addition salts thereof.

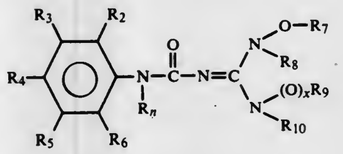
4,242,340

METHOD FOR THE TREATMENT OF DIARRHEAL DISEASE CONDITIONS AND SYMPTOMS IN MAMMALS

George H. Douglas, Malvern; William L. Studt, Harleysville, and Stuart A. Dodson, Lansdale, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 934,780, Aug. 18, 1978, which is a division of Ser. No. 811,092, Jun. 17, 1977, Pat. No. 4,115,647, which is a division of Ser. No. 671,763, Mar. 30, 1976, Pat. No. 4,058,557.
This application Jan. 8, 1979, Ser. No. 1,639
Int. Cl.[2] A61K *31/535, 31/42*
U.S. Cl. 424—248.54 **9 Claims**

1. The method of treatment of diarrhea in a mammal comprising administering thereto between 0.1 mg/kg. and 150 mg/kg. of an effective dose of a compound of the formula:



where:
R_2, R_3, R_4, R_5 and R_6 may be the same or different and are:
hydrogen,
halo,
loweralkyl,
halologeralkyl,
nitro,
amino,
acylamino,
hydroxy,
aralkyloxy or
loweralkoxy;

R_n is hydrogen or loweralkyl;
R_7 and R_8 together and R_9 and R_{10} together with the N and O may form a ring selected from the group consisting of isooxazolidine and isooxazine;
x is 0–1; and
R_9 and R_{10}, when x is 0, may be the same or different and are:
hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl or
aralkyl;
the sum total of carbon atoms present in R_7, R_8, R_9 and R_{10} together is less than twelve; and
the non-toxic acid addition salts thereof.

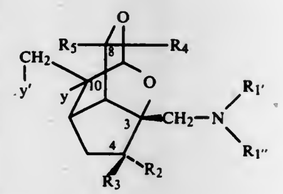
4,242,341

2,9-DIOXATRICYCLO [4,3,1,0^{3,7}] DECANE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

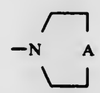
Peter W. Thies, Hanover; Akiji Asai, Wennigsen, and Samuell David, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Division of Ser. No. 904,742, May 11, 1978, which is a division of Ser. No. 770,055, Feb. 18, 1977, Pat. No. 4,163,055. This application Sep. 14, 1979, Ser. No. 75,706
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, P2607106
Int. Cl.[3] A61K *31/495, 31/535;* **C07D** *405/06, 413/06*
U.S. Cl. 424—248.55 **10 Claims**

1. A compound selected from the group of 2,9-dioxatricyclo [4,3,1,0^{3,7}] decanes of formula I



wherein R_1, and $R_{1''}$ together with the nitrogen atom to which they are bound form a cyclic amino group selected from the group consisting of indolinyl and groups of the formula



wherein A represents oxygen or a group >N-A' wherein A' represents an alkyl group containing 1 to 4 carbon atoms which is unsubstituted or substituted in ω-position by a substituent which is selected from the group consisting of hydroxy, acyloxy, carbamyloxy, pyridyl, or a phenyl or benzhydryl group, the phenyl rings of which are unsubstituted or substituted by halogen;
one of R_2 and R_3 is hydrogen and the other represents hydroxy, an acyloxy group Z—COO— wherein Z is alkyl or alkenyl, containing 1 to 4 carbon atoms, or phenyl, or a carbamyloxy group Z—NHCOO— wherein Z is alkyl or alkenyl, containing 1 to 4 carbon atoms or phenyl, or R_2 and R_3 jointly represent oxygen;
one of R_4 and R_5 is hydrogen and the other represents an alkoxy group containing 1 to 6 carbon atoms, or an aralkyloxy group containing 7 to 9 carbon atoms;
and y and y' each represent hydrogen or jointly form a bond;
and pharmaceutically acceptable acid addition salts thereof.
6. A pharmaceutical composition comprising an inert carrier material and a sedatively or saporifically effective amount of a compound as defined in claim 1.

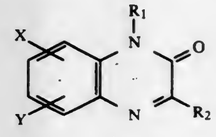
4,242,342

QUINOXALINONES USEFUL FOR TREATING ATOPIC ECZEMA AND URTICARIA

Charles M. Hall, and Herbert G. Johnson, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 940,815, Sep. 11, 1978, Pat. No. 4,181,724.
This application May 31, 1979, Ser. No. 44,031
Int. Cl.[3] A61K *31/495*
U.S. Cl. 424—250 **1 Claim**

1. A method for treating atopic eczema or urticaria in a mammal in need of said treatment which comprises administering to said mammal an effective amount of a compound of the formula



wherein
X and Y are the same or different and are hydrogen, fluoro, chloro, bromo, nitro, trifluoromethyl, alkyl of one to four carbon atoms, inclusive, alkoxy of one to four carbon atoms, inclusive, or cyano;
R_1 is hydrogen, methyl or ethyl,
R_2 is hydrogen, alkyl of one to six carbon atoms, inclusive, phenyl, benzyl,
CH_2Z wherein Z is fluoro, chloro or bromo,
CO_2M, CH_2CO_2M, $CH_2CH_2CO_2$ M or CHR_3CO_2M wherein M is hydrogen, alkyl of one to four carbon atoms, inclusive, or a physiologically acceptable metal or amine cation and R_3 is alkyl of one to three carbon atoms, inclusive, with the proviso that M is not hydrogen when R_2 is CH_2CO_2M or CHR_3CO_2M; in association with a pharmaceutical carrier.

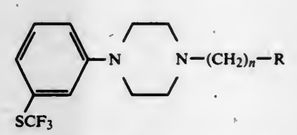
4,242,343

PHENYLPIPERAZINE DERIVATIVES

Henry Najer, Paris, and Philippe Manoury, Le Plessis-Robinson, both of France, assignors to Synthelabo, Paris, France

Filed Jun. 15, 1979, Ser. No. 48,814
Claims priority, application France, Jun. 20, 1978, 78 18351
Int. Cl.[3] A61K *31/495;* **C07D** *405/06, 295/08*
U.S. Cl. 424—250 **5 Claims**

1. Phenylpiperazine derivatives corresponding to the formula (I)



in which n is 1,2 or 3 and R represents the tetrahydrofuryl-2 radical, or the radical CH_2-SH, or a radical CH_2-S-alkyl, or a radical CH_2-O-alkyl or a radical CH_2-S-CO-alkyl, the alkyls having from 1 to 8 carbon atoms,
and also their addition salts with pharmaceutically acceptable acids.

5. A pharmaceutical composition which contains a compound as specified in claim 1 in an effective tranquilizing dosage.

4,242,344

PIPERAZINYL-IMIDAZO[1,2-A]PYRAZINES

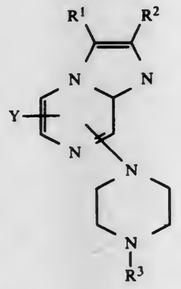
William C. Lumma, Pennsburg, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 4,970, Jan. 22, 1979. This application Sep. 7, 1979, Ser. No. 73,574

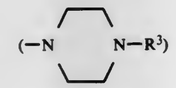
Int. Cl.³ A61K *31/495;* **C07D** *401/14, 403/14*

U.S. Cl. 424—251 **9 Claims**

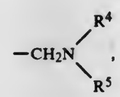
1. A compound of the structural formula:



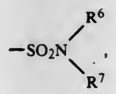
or a pharmaceutically acceptable salt thereof, wherein:
the piperazinyl group



and Y are at positions 5, 6 or 8;
R^1 and R^2 independently ar
(a) hydrogen;
(b) lower alkyl;
(c) lower cycloalkyl;
(d) lower alkylthio;
(e) halo;
(f) $—CF_3$;
(g) $CF_3S—$;
(h) $C_6H_5—$;
(i) phenyl-substituted by halogen;
(j) phenyl-substituted by C_{1-3} alkyl;
(k) phenyl-substituted by C_{1-3} alkoxy;
(l)

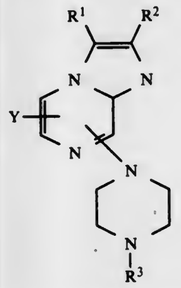


wherein R^4 is hydrogen or C_{1-6} alkyl; R^5 is C_{1-6} alkyl; or R^4 and R^5 taken together form with the nitrogen atom to which they are attached, a piperidino group;
(m)

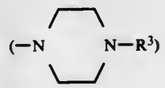


wherein R^6 and R^7 are independently hydrogen, C_{1-3} alkyl, or phenyl; or
R^1 and R^2 joined together form $—CH_2CH_2CH_2—$ or $—CH_2CH_2CH_2CH_2—$;
R^3 is
(a) hydrogen;
(b) lower alkyl;
(c) lower(cycloalkyl-alkyl);
(d) lower cycloalkyl; or
(e) lower alkanoyl;
Y is
(a) hydrogen;
(b) halo;
(c) $—C≡N$;
(d) $—CF_3$;
(e) lower alkyl
(f) lower alkoxy; or
(g) —COOH.

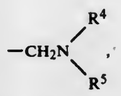
7. A method of decreasing appetite, which comprises the administration to a mammalian species in need of such treatment an effective amount of a compound of formula:



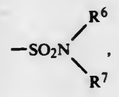
or a pharmaceutically acceptable salt thereof, wherein:
the piperazinyl group



and Y are at positins 5, 6 or 8;
R^1 and R^2 independently are
(a) hydrogen;
(b) lower alkyl;
(c) lower cycloalkyl;
(d) lower alkylthio;
(e) halo;
(f) $—CF_3$;
(g) $CF_3S—$;
(h) $C_6H_5—$;
(i) phenyl-substituted by halogen;
(j) phenyl-substituted by C_{1-3} alkyl;
(k) phenyl-substituted by C_{1-3} alkoxy;
(l)



wherein R^4 is hydrogen or C_{1-6} alkyl; R^5 is C_{1-6} alkyl; or R^4 and R^5 taken together form with the nitrogen atom to which they are attached, a piperidino group;
(m)



wherein R^6 and R^7 are independently hydrogen, C_{1-3} alkyl, or phenyl; or

R^1 and R^2 joined together form $—CH_2CH_2CH_2—$ or $—CH_2CH_2CH_2CH_2—$;
R^3 is
(a) hydrogen;
(b) lower alkyl;
(c) lower(cycloalkyl-alkyl);
(d) lower cycloalkyl; or
(e) lower alkanoyl;
Y is
(a) hydrogen;
(b) halo;
(c) $—C≡N$;
(d) $—CF_3$;
(e) lower alkyl;
(f) lower alkoxy; or
(g) —COOH.

4,242,345

7-(OXOALKYL)-1,3-DIALKYL XANTHINES, AND MEDICAMENTS CONTAINING THEM

Gunther Brenner, Erkrath-Unterbach; Joachim Goring; Eskendar Ali Khan; Oskar Rohte, and Manfred Tauscher, all of Gronau, Fed. Rep. of Germany, assignors to Johann A. Wulfing, Fed. Rep. of Germany

Continuation of Ser. No. 753,931, Dec. 23, 1976, abandoned, which is a continuation of Ser. No. 542,449, Jan. 20, 1975, abandoned. This application Sep. 19, 1978, Ser. No. 943,815

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1974, 2402908

Int. Cl.³ C07D *473/06*

U.S. Cl. 424—253 **29 Claims**

1. 7-(3-Oxobutyl)-1,3-di-n-butyl xanthine.

4,242,346

BIS-2N-ALKYLENE TETRAHYDROISOQUINOLINE COMPOUNDS

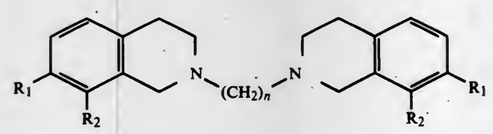
Robert M. DeMarinis, Ardmore, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Dec. 19, 1979, Ser. No. 105,359

Int. Cl.³ A61K *31/47;* **C07D** *401/06*

U.S. Cl. 424—258 **12 Claims**

1. A chemical compound of the formula:



in which:
R_1 is chloro or sulfamyl; R_2 is chloro and, provided that R_1 is sulfamyl, R_2 is also hydrogen, and n is a positive integer from 1 to 8, or a pharmaceutically acceptable acid addition salt thereof.

8. A pharmaceutical composition in dosage unit form for inhibiting phenylethanolamine N-methyltransferase comprising a pharmaceutical carrier and a chemical compound as defined in claim 1.

4,242,347

HYPOTENSIVE INDOLYLALKYLPIPERIDYL GUANIDINES AND ISOUREAS

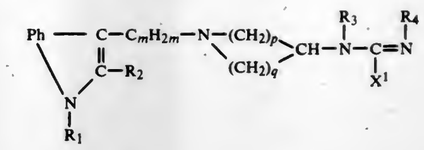
Charles F. Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 556,600, Mar. 10, 1975, abandoned. This application Jun. 18, 1979, Ser. No. 50,003

Int. Cl.³ A61K *31/445;* **C07D** *401/06, 491/056*

U.S. Cl. 424—267 **3 Claims**

1. A compound of the formula



wherein Ph is unsubstituted 1,2-phenylene or 1,2-phenylene substituted by one member selected from lower alkyl, hydroxy, mercapto, lower alkoxy, lower alkylenedioxy having 1 or 2 carbon atoms, benzyloxy, lower alkylmercapto, halogeno, trifluoromethyl, nitro and amino; each of R_1, R_2, R_3 and R_4 is hydrogen or lower alkyl; X' is O-lower alkyl, S-lower alkyl, NH_2 or NH-lower-alkyl; m is an integer from 1 to 7; each of p and q is an integer from 1 to 3, but $(p+q)=4$; or a therapeutically acceptable acid addition salt thereof.

2. A hypotensive pharmaceutical composition comprising a pharmacologically effective amount of a compound claimed in claim 1, together with a pharmaceutical excipient.

3. A method for reducing the blood pressure in mammals, which comprises administering to them enterally or parenterally an effective amount of a composition claimed in claim 2.

4,242,348

NOVEL BASIC SUBSTITUTED-ALKYLIDENAMINO-OXYLALKYL-CARBOXYLIC-ACID ESTERS

Jan van Dijk, and Johannes M. A. Zwagemakers, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Continuation of Ser. No. 801,030, May 27, 1977, abandoned, which is a division of Ser. No. 509,807, Sep. 27, 1974, Pat. No. 4,044,023, which is a division of Ser. No. 151,793, Jun. 10, 1971, Pat. No. 3,853,955. This application Dec. 26, 1978, Ser. No. 972,845

Claims priority, application Netherlands, Jun. 11, 1970, 7008493; Mar. 2, 1971, 7102715

Int. Cl.³ C07D *221/04, 211/40*

U.S. Cl. 424—267 **10 Claims**

1. A compound selected from the group consisting of [[(4-chloro-α-methylbenzylidene) amino]-oxy-] acetic acid (2-pentamethylene-imino-ethyl)ester, [[(4-chloro-α-methylbenzylidene)-amino]-oxy] -acetic acid [2-(3, 4-benzopiperidyl) (ethyl] ester, [[-4-chloro-α-methylbenzylidene) amino]-oxy]-acetic acid (N-ethyl-piperidyl-4)ester, [[(4-chloro-α-methylbenzylidene) amino]-oxy]-acetic acid (4-N-dimethylpiperidyl-4) ester, [[(4-chloro-α-methyl-enzylidene) amino]-oxy] - acetic acid (piperidyl-3-ester, [[(4-chloro-α-methylbenzylidene) amino] -oxy]-acetic acid-(2-pyrrolidyl-ethyl) ester and [[(4-chloro-α-methylbenzylidene) mino]-oxy] -acetic acid) N ethyl-piperidyl-3 ester and salts thereof with pharmaceutically acceptable acids.

4,242,349

OREXIGENIC USE OF PYRROLO[2,1-b][3]BENZAZEPINES

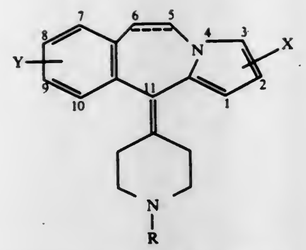
David C. Remy, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 1, 1979, Ser. No. 80,813

Int. Cl.³ A61K *31/445*

U.S. Cl. 424—267 **5 Claims**

1. A method of stimulating appetite comprising administering to a patient in need of such treatment an effective appetite stimulating amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein the dotted line represents saturation or unsaturation; X and Y are independently hydrogen halogen, lower alkyl, or lower alkoxy; and R is lower alkyl.

4,242,350

ANTISECRETORY THIADIAZOLE DERIVATIVES, PROCESSES FOR THEIR MANUFACTURE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Tobias O. Yellin, Wallingford, Pa., and Derrick M. Mant, Bramhall, England, assignors to Imperial Chemical Industries Limited, London, England and ICI Americas Inc., Wilmington, Del.

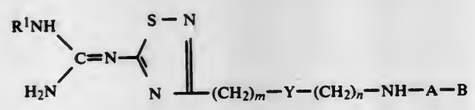
Filed May 7, 1979, Ser. No. 36,360

Claims priority, application United Kingdom, May 24, 1978, 21737/78

Int. Cl.³ A61K *31/425;* **C07D** *285/08*

U.S. Cl. 424—270 **20 Claims**

1. A thiadiazole derivative of the following formula I:



wherein

Y is an oxygen or sulphur atom, a direct bond or a methylene or sulphinyl radical;

m is 0 to 4;

n is 1 to 4;

provided that when Y is a sulphur or oxygen atom or a sulphinyl radical m is 1 to 4, and when Y is an oxygen atom or a sulphinyl radical, n is 2 to 4;

R^1 is a hydrogen atom or an alkyl radical of 1 to 10 carbon atoms;

A is a 3,4-dioxocyclobuten-1,2-diyl radical or a radical of the formula C=Z in which Z is an oxygen or sulphur atom or Z is a radical of the formula NCN, NNO_2, $CHNO_2$, $NCONH_2$, $C(CN)_2$, $NCOR^2$, NCO_2R^2, NSO_2R^2, or NR^3 in which R^2 is an alkyl radical of 1 to 6 carbon atoms or an aryl radical of 6 to 12 carbon atoms and R^3 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms; and

B is an alkoxy or alkylthio radical of 1 to 6 carbon atoms or a radical of the formula NR^4R^5 in which R^4 and R^5, which may be the same or different, are hydrogen atoms, alkyl radicals of 1 to 10 carbon atoms, alkenyl or alkynyl radicals of 3 to 6 carbon atoms in which the double or triple bond respectively is separated from the nitrogen atom of NR^4R^5 by at least one carbon atom, (primary hydroxy)alkyl or (primary amino)alkyl radicals of 2 to 6 carbon atoms or cycloalkyl radicals of 3 to 6 carbon atoms, or R^4 and R^5 are joined to form, together with the nitrogen atom to which they are attached, a 5- or 6-membered saturated ring which optionally contains an additional oxygen atom or NH radical; and the pharmaceutically-acceptable acid-addition salts thereof.

10. A pharmaceutical composition for inhibiting acid secretion comprising an effective amount of the thiadiazole derivative as claimed in claim **1**, **2**, **3**, **4**, **5**, **6**, **7** or **8** in association with a non-toxic pharmaceutically-acceptable diluent or carrier.

4,242,351

ANTISECRETORY OXADIAZOLES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

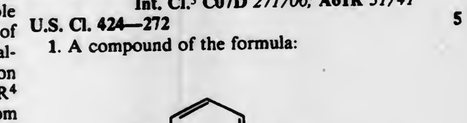
Tobias O. Yellin, Wallingford, Pa., and Derrick M. Mant, Bramhall, England, assignors to Imperial Chemical Industries Limited, London, England and ICI Americas Inc., Wilmington, Del.

Filed May 7, 1979, Ser. No. 36,361

Int. Cl.³ C07D *271/06;* **A61K** *31/42*

U.S. Cl. 424—272 **9 Claims**

1. An oxadiazole derivative of the following formula I:



wherein

Y is an oxygen or sulphur atom, a direct bond or a methylene radical;

m is 0 to 4;

n is 1 to 4;

provided that when Y is a sulphur or oxygen atom m is 1 to 4, and when Y is an oxygen atom n is 2 to 4;

A is a 3,4-dioxocyclobuten-1,2-diyl radical or a radical of the formula C=Z in which Z is an oxygen or sulphur atom or Z is a radical of the formula NCN, NNO_2, $CHNO_2$, $NCONH_2$, $C(CN)_2$, $NCOR^1$, NCO_2R^1, NSO_2R^1 or NR^2 in which R^1 is an alkyl radical of 1 to 6 carbon atoms or an aryl radical of 6 to 12 carbon atoms and R^2 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms; and

B is an alkoxy or alkylthio radical of 1 to 6 carbon atoms or a radical of the formula NHR^3 in which R^3 is a hydrogen atom or an alkyl radical of 1 to 10 carbon atoms;

and the pharmaceutically-acceptable acid-addition salts thereof.

7. A pharmaceutical composition to inhibit gastric acid secretion comprising an oxadiazole derivative as claimed in claim **1**, **2**, **3**, **4**, **5** or **6** in association with a non-toxic pharmaceutically-acceptable diluent or carrier.

9. A method of inhibiting gastric acid secretion in a living animal comprising administering to the animal a therapeutically effective amount of the pharmaceutical composition of claim **7**.

4,242,352

3-AMINO-5-BENZYL-1,2,4-OXADIAZOLES AND ANTI-HYPERTENSIVE COMPOSITIONS THEREOF

Michael J. Dimsdale, Villebon sur Yvette, France, assignor to Synthelabo, Paris, France

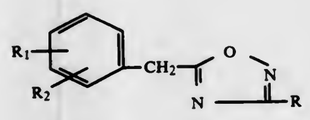
Division of Ser. No. 922,527, Jul. 7, 1978. This application Apr. 27, 1979, Ser. No. 34,197

Claims priority, application France, Jul. 12, 1977, 77 21447; Jun. 8, 1978, 78 17114

Int. Cl.³ C07D *271/06;* **A61K** *31/41*

U.S. Cl. 424—272 **5 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are each independently a halogen atom or alkyl of 1 to 4 carbon atoms, and R is NR_3R_4 in which R_3 and R_4 are each independently a hydrogen atom or alkyl of 1 to 4 carbon atoms or a pharmaceutically acceptable acid addition salt thereof.

5. A pharmaceutical preparation in dosage unit form which comprises an anti-hypertensively effective amount of a compound according to claim **1** and a pharmaceutically acceptable carrier.

4,242,353

ANALGESIC POTENTIATION

Joseph F. Gardocki, Doylestown, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

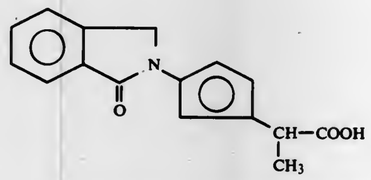
Filed Dec. 18, 1978, Ser. No. 970,511

Int. Cl.² A61K *31/40, 31/19*

U.S. Cl. 424—274 **8 Claims**

5. A method for producing analgesia which comprises orally administering to a subject suffering from pain

(1) as primary antinociceptive agent from about 0.17 to 2.5 mg/kg of body weight of a 4-(1,3-dihydro-1-oxo-2H-isoindol-2-yl)-α-methylbenzeneacetic acid compound, said compound being selected from (a) 4-(1,3-dihydro-1-oxo-2H-isoindol-2-yl)-α-methylbenzeneacetic acid represented by the formula



and (b) the non-toxic therapeutically acceptable salts thereof, and

(2) as potentiating agent from about 2.2 to 7.5 mg/kg of body weight of acetaminophen.

4,242,354

2-(2-THENOLYTHIO)-PROPIONYLGLYCINE: METHOD FOR ITS PREPARATION AND PHARMACEUTICAL FORMULATIONS CONTAINING SAID COMPOUND

Franco Bolasco, Rome, Italy, assignor to Mediolanum Farmaceutici s.r.l., Milan, Italy

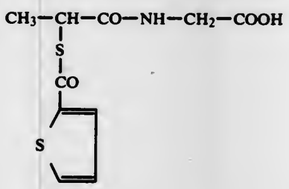
Filed Apr. 4, 1979, Ser. No. 26,933

Claims priority, application Italy, Apr. 11, 1978, 22175 A/78; Feb. 12, 1979, 20111 A/79

Int. Cl.² A01N *9/00;* **C07D** *333/24*

U.S. Cl. 424—275 **5 Claims**

1. 2-(2-thenoylthio)-propionylglycine as a new compound, characterized by the structural formula (I)



(I)

as well as its pharmacologically acceptable salts.

4,242,355

NOVEL 3-(AMINOETHYL)-PHENOLS

Lucien Nedelec, Le Raincy; Daniel Frechet, Paris, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

Filed Sep. 17, 1979, Ser. No. 76,486

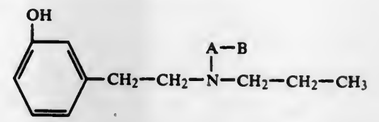
Claims priority, application France, Sep. 22, 1978, 78 27190

The portion of the term of this patent subsequent to Dec. 19, 1995, has been disclaimed.

Int. Cl.³ A61K *31/38, 31/135;* **C07D** *333/16;* **C07C** *87/29*

U.S. Cl. 424—275 **17 Claims**

1. A compound selected from the group consisting of 3-(aminoethyl)-phenols of the formula



wherein A is a simple bond or alkylene of 1 to 6 carbon atoms and B is selected from the group consisting of phenyl, and thienyl with the proviso that B is not phenyl when A is ethylene and their non-toxic, pharmaceutically acceptable acid addition salts.

4,242,356

ANTIBACTERIAL AND ANTIFUNGAL COMPOSITION

Masayasu Hasegawa, Kyoto; Hideo Nishikawa, Ibaraki, and Yasuo Kotani, Hirakata, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 18, 1979, Ser. No. 58,448

Claims priority, application Japan, Dec. 26, 1978, 53-161816; Dec. 26, 1978, 53-161817; Dec. 26, 1978, 53-161818; Dec. 26, 1978, 53-161819; Dec. 26, 1978, 53-161820; Dec. 26, 1978, 53-161821; Dec. 26, 1978, 53-161822

Int. Cl.³ A01N *31/08, 37/34, 43/02, 43/36*

U.S. Cl. 424—279 **2 Claims**

1. An antibacterial and antifungal composition comprising a mixture of:

(A) at least one member selected from the group consisting of dehydroacetic acid, and its alkali metal salts, wherein said member is contained within said composition in an amount 60–95% by weight, based on the total weight of the composition, and

(B) tetrachloroisophthalonitrile in a synergistically effective amount of from 1% to 40% by weight based on the total weight of the composition.

4,242,357

CARBOXYLIC ACID ESTERS FOR COMBATING PESTS

Rainer A. Fuchs, Wuppertal; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

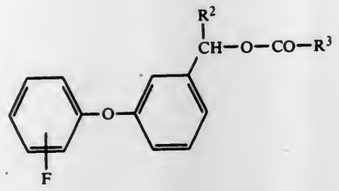
Filed Mar. 31, 1977, Ser. No. 783,503

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615435; May 14, 1976, 2621433

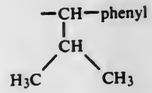
Int. Cl.² A01N *9/20;* **C07C** *69/76, 121/66;* **C07D** *317/60*

U.S. Cl. 424—282 **7 Claims**

1. A 3-phenoxybenzyl alcohol carboxylic acid ester of the formula



in which
R^2 represents hydrogen cyano or ethynyl and
R^3 represents the



wherein the phenyl ring can optionally carry one or more substituents selected independently from halogen, alkyl, alkylthio and alkoxy with in each case 1 to 4 carbon atoms, nitro and methylenedioxy.

6. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

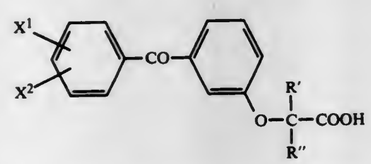
4,242,358

METHOD OF TREATMENT OF ALGIAE

Bernard Majoie, Dijon, France, assignor to Societe de Recherches Industrielles (Sori), Paris, France

Filed Jan. 24, 1979, Ser. No. 6,105
Int. Cl.³ A61K *31/19*; C07C *127/15*
U.S. Cl. 424—317 **15 Claims**

1. A method of treatment of algiae which comprises administering to a patient in need of such a treatment an effective antalgic amount of a compound selected from the group consisting of
(i) m-benzoyl-phenoxyalkylcarboxylic acids of the formula



(I)

wherein X^1 and X^2 are the same or different and are each H, CH_3, OCH_3, F, Cl, Br or CF_3, and R′ and R″ are the same or different and are each H or CH_3; and,
(ii) non-toxic metallic salts thereof.

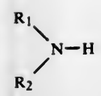
4,242,359

SPERMICIDAL AGENTS

George W. Cooper, New York, N.Y., and Ronald J. Young, Stamford, Conn., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 783,622, Apr. 1, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,332
Int. Cl.³ A61K *31/13*
U.S. Cl. 424—325 **11 Claims**

1. A method for killing mammalian spermatozoa, which comprises contacting spermatozoa with a spermicidally effective amount of an amphipathic organic amine of the formula (I)



(I)

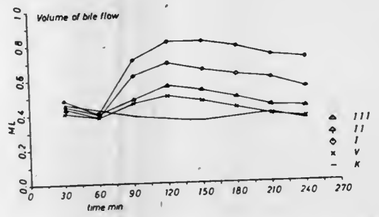
wherein R_1 represents hydrogen, and R_2 represents an alkyl-, cycloalkyl- or cycloalkylalkyl-group containing 3 to 7 carbon atoms.

4,242,360

CHOLERETIC PHARMACEUTICAL COMPOSITIONS AND METHOD OF TREATMENT

Mathias Pailer, Vienna, Austria, and Roland Wagner, Bergisch-Gladbach, Fed. Rep. of Germany, assignors to Rowa Limited, Cork, Ireland

Filed Dec. 20, 1978, Ser. No. 971,403
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757641
Int. Cl.³ A61K *31/045*
U.S. Cl. 424—343 **3 Claims**



1. A method for increasing choleresis in animals which comprises administering to an animal in need of such treatment a choleretically effective amount of cis-3,3,5-trimethylcyclohexanol.

4,242,361

PREPARATION OF SAUERKRAUT

Charles Christ, Connerre; Jean-Michel Lebeault, Villiers, and Claude Noel, Compriegne, all of France, assignors to Marc-Roger Hirsch, Paris, France

Filed Aug. 17, 1977, Ser. No. 825,487
Claims priority, application France, Oct. 14, 1976, 76 30874; May 31, 1977, 77 16465
Int. Cl.³ A23B *7/10*
U.S. Cl. 426—49 **5 Claims**

1. In a process for fermenting cabbage to produce sauerkraut, comprising the steps of placing salt and the cabbage in a container and closing the upper end of said container with an airtight cover, fermenting said cabbage in an active fermentation phase wherein carbon dioxide is evolved, a neutral fermentation phase and a final acidifying fermentation phase, the improvement comprising the steps of:
removing a controlled amount of sauerkraut juice from the bottom of said container during said acidifying phase;
maintaining said removed juice at a predetermined temperature;
analyzing the removed juice and controlling the pH;
re-introducing said removed juice into said container through an aperture provided in said cover; and
evenly distributing the re-introduced juice over the top surface of the cabbage in the container by passing said juice through a porous membrane or a sieve-like plate provided with holes disposed above the top surface of said cabbage.

4,242,362

PROCESS FOR MANUFACTURING CHEESE

Charles O. Grigsby, and David R. Grigsby, both of 751 N. Jackson, Rte. 107, Pittsfield, Ill. 62363

Filed Jul. 27, 1978, Ser. No. 928,386
Int. Cl.³ A23C *19/02*
U.S. Cl. 426—40 **24 Claims**

1. In the process of manufacturing cheese having eyes formed therein including the steps of clarifying milk to remove sediment, standardizing the clarified milk to a uniform fat content in the range of about 2.5 to about 3.5 percent, setting the milk with a suitable composition of innoculants and coagulants to form a curd, cutting the curd, cooking the cut curd at a temperature of about 100° to about 135° F. until it acquires the desired characteristics, separating the curd from the whey, hooping the curd to shape it into the desired form, alternatively pressing and turning the curd to remove holes or cavities formed therein, salting the curd in a salt brine solution for about 2 to 4 days at a temperature of about 50° to about 60° F., and curing the curd for about 60 days to about 6 months to produce cheese having eyes formed therein, wherein the improvement comprises carrying out said pressing of the curd for about 2 to 4 hours at a temperature of about 80° to 130° F., said salting of the curd being carried out in a super saturated salt brine solution in excess of about 85% salinity reading for about 30 minutes to about 4 hours at a temperature of about 80° to about 130° F., said curing of the curd being effected by aging the cheese for about 6 to about 24 hours, and thereafter force drying the cheese using high velocity air at a temperature of about 90° to about 300° F. for about 1 to about 60 minutes.

4,242,363

UREA-BASED FEED SUPPLEMENT

Bueno Lionel, Aussonne, France, assignor to Institut National de la Recherche Agronomique (INRA), Paris, France

Filed Oct. 26, 1978, Ser. No. 954,774
Claims priority, application France, Oct. 27, 1977, 77 32842
Int. Cl.³ A23K *1/22*
U.S. Cl. 426—69 **3 Claims**

1. A feedstuff supplement for admixture with a feedstuff for herbivorous animals comprising urea or a derivative thereof as a source of nutritive nitrogen and approximately 5 to 100 milligrams of orotic acid per gram of non-protein nitrogen in said urea or derivative.

4,242,364

DRY POWDERED NON-DAIRY FOOD COMPOSITION CONTAINING LIQUID FAT

Bruce D. Buddemeyer; William A. Neville; James S. Taylor, and Richard G. Bourne, all of Kansas City, Mo., assignors to R.G.B. Laboratories, Inc., Kansas City, Mo.

Filed Dec. 19, 1978, Ser. No. 970,938
Int. Cl.³ A23C *11/02*
U.S. Cl. 426—98 **17 Claims**

1. A dried, solid, liquid fat-containing coffee whitener or liquid dairy product replacement food particle, comprising:
a particle of fat having a diameter of no more than about 3 microns, said fat being flowable at about room temperature; and
an encapsulating matrix around said fat particle including at least one emulsifier and a carbohydrate material with a D.E. ranging from 10 to 70 selected from the group consisting of corn syrup, wheat syrup, sorghum syrup, the maltodextrins of the aforementioned syrups, and mixtures thereof,
a plurality of said food particles having stability such that:
A. a 25% by volume dispersion thereof in water, when stored at 40° F. for 72 hours, exhibits no more than about 20% fat-water phase separation;
B. a quantity of said particles sufficient to provide a total of about 0.36 grams of fat, when dispersed in 50 mls. of black coffee at 175° F., gives a relative reflectance of at least 50%, using an Agtron Model M-500A reflectometer standardized in the red spectral mode, 640 m.u., with a 00 calibration disc for zero and a 44 calibration disc for 100% relative reflectance;
C. three grams of said food particles added to 150 mls. of 175° F. black coffee in a container having a 5 cm. diameter, followed by gentle stirring and allowing the mixture to stand for two minutes, exhibits no more than about 10 oil droplets on the surface of the mixture; and
D. taking the mixture derived from test (C) hereof, and allowing the same to stand for an additional 3 minutes, the mixture exhibits essentially no precipitation or flocculation, and no more than a moderate amount of feathering.

4,242,365

PROCESS FOR PRODUCING FRIED BANANA SLICES

Masayuki Numata, Fujisawa, and Kenji Sugano, Tokyo, both of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 924,012, Jul. 11, 1978, abandoned. This application Sep. 12, 1979, Ser. No. 74,622
Claims priority, application Japan, Jul. 11, 1977, 52-81934
Int. Cl.³ A23L *1/212*
U.S. Cl. 426—438 **2 Claims**

1. A process for producing a dried banana product, which comprises;
frying slices of about 1 to 5 mmm thickness of fully ripe raw banana flesh in an edible oil as rapidly as possible, but within 20 minutes after slicing, without a prior treatment with a browning inhibitor, while substantially maintaining a pressure of about 30 to about 60 Torr and a frying temperature of about 75° to about 85° C. to dehydrate the slices;
separating the banana slices from the frying oil while still maintaining a reduced pressure of about 30 to about 60 Torr;
removing the excess frying oil adhering to the banana slices while still maintaining a pressure of about 30 to about 60 Torr; and
thereafter releasing the reduced pressure to return the pressure to atmospheric pressure.

4,242,366

EMULSIFIER SYSTEM AND CAKE MIX CONTAINING SAME

Jay E. Morgan, Eden Prairie; Anthony J. DelVecchio, Minneapolis; Betty L. Brooking, Golden Valley, and David M. Laverty, Plymouth, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Oct. 24, 1978, Ser. No. 954,145
Int. Cl.³ A21D *2/16, 10/00*
U.S. Cl. 426—554 **13 Claims**

1. A blend of commercial food grade emulsifiers suitable for use in a dry prepared mix, said blend comprising an admixture of three separate functional emulsifying components consisting essentially of 45–68% propylene glycol monoester, 20–39% alpha monoglyceride and 9–22% glyceryl lacto ester.

4,242,367

MILK SHAKE AND SOFT SERVE FROZEN DESSERT STABILIZER

Robert S. Igoe, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

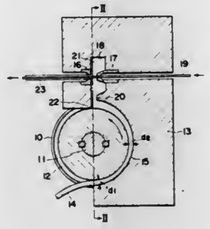
Filed Jan. 26, 1979, Ser. No. 6,611
Int. Cl.³ A23L *1/04*; A23G *9/00*
U.S. Cl. 426—573 **2 Claims**

1. A stabilizer blend of gums for use in milk shakes and soft serve frozen milk desserts which consists essentially of by weight:
Guar gum: 53–68%
Xanthan gum: 20–35%
Carrageenan: 9–13%
Locust Bean gum: 0–5%

4,242,368
METHOD FOR THE MANUFACTURE OF A COMPOSITE METAL WIRE

Masahiro Nagai, and Yasuhiko Miyake, both of Hitachi, Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Apr. 25, 1978, Ser. No. 899,968
Claims priority, application Japan, Apr. 30, 1977, 52/50076
Int. Cl.[2] C23C *17/00*
U.S. Cl. 427—11 **8 Claims**



1. A method of manufacturing a composite metal wire including a metal core wire surrounded by a coating metal of a material different from said metal core wire, said method comprising:
providing a rotary wheel having therein a peripheral groove;
providing a fixed shoe block having a fitting surface cooperating with a circumferential portion of said groove to define therewith a narrow passageway having an inlet end and an outlet end, a fixed stopper portion fitting in said groove to entirely close said passageway and to define said outlet end thereof, and a covering chamber communicating with said outlet end of said passageway and having a nipple for guiding a metal core wire and a die for defining the outer cross-section of a composite metal wire;
feeding coating metal into said inlet end of said passageway, while rotating said rotary wheel in a direction toward said outlet end of said passageway;
subjecting said coating metal within said passageway to plastic deformation due to oppositely directed frictional forces including a greater friction force from the surfaces of said wheel defining said groove and a lesser friction force from said fitting surface of said fixed shoe block;
positively carrying said coating metal through said passageway by said greater friction force and causing said coating metal to collide with said fixed stopper portion, thereby imparting an extrusion pressure to said coating metal;
passing a metal core wire into said nipple and through said covering chamber; and
due to said extrusion pressure, passing said coating metal into said chamber, thus filling said chamber with said coating metal, covering said metal core wire with said coating metal to form a bond therebetween, and extruding through said die said metal core wire covered with said coating metal as a composite metal wire.

4,242,369
PLATING OF SUBSTRATES BY JET PRINTING

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Jun. 7, 1977, Ser. No. 804,469
Int. Cl.[2] B05D *3/14*
U.S. Cl. 427—47 **13 Claims**

1. A process for the plating of substrates by the jet printing of a metal or alloy which comprises continuously imprinting minute uniform droplets of a jet printing ink containing at least one soluble salt of at least one plate metal which is more nobel than said basis metal, said jet printing ink exhibiting a viscosity at 68° F. of between about 1.5 and 16 cps., said ink having a pH of between 0.5 and 9.5 and a specific resistivity of less than 10,000 ohm cm., onto a substrate, said droplets emitting from at least one ink jet electromagnetically energized to emit said droplets of ink at a rate of 8 to 150 kilohertz.

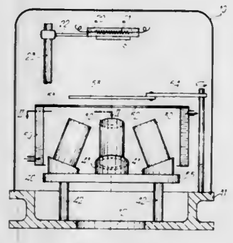
9. The process for plating onto the surface of a basis metal which comprises printing said basis metal first with a jet printing ink containing a soluble metal salt of a metal more noble than said basis metal, said basis metal having an activated surface; subsequently jet printing said basis metal having said activated surface thereon with a jet printing ink containing:
(1) metal ions in substantially the same concentration as in said first jet printing ink and in addition thereto,
(2) ions of an auxiliary plate metal not present in said first jet printing ink.

13. The process for plating onto the surface of an aluminum basis metal which comprises jet printing said aluminum basis metal with an activating jet printing ink containing a soluble salt of a metal more noble than aluminum and being essentially free of active copper ions; subsequently jet printing said aluminum having said activating surface thereon with a second jet printing ink containing:
(1) a soluble stannate in substantially the same concentration as in said activating jet printing ink and in addition thereto,
(2) ions of copper;
to obtain a plate containing tin and copper.

4,242,370
METHOD OF MANUFACTURING THIN FILM ELECTROLUMINESCENT DEVICES

Mohamed I. Abdalla, 39, Rue de l'Amiral Mouchez, Paris, France (75013), and Jacques A. Thomas, 22, Avenue Victor Hugo, Bagneux, France (92220)

Filed Apr. 6, 1979, Ser. No. 27,597
Claims priority, application France, Mar. 17, 1978, 78 07807
Int. Cl.[3] B44D *1/18, 1/16*
U.S. Cl. 427—66 **2 Claims**



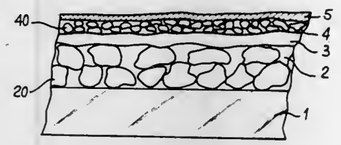
1. A method of manufacturing a zinc sulfide thin film electroluminescent sandwich device activated by copper metal and by manganese metal comprising:
placing a glass substrate in a bell jar at a top portion thereof;
said glass substrate having an electrically conducting coating;
placing an electrical heater over said substrate in said bell jar;
placing first, second, third and fourth ovens holding elemental zinc, sulpher, manganese and copper respectively in said bell jar below said substrate and at a lower portion of said bell jar;
each said first, second, third and fourth ovens being provided with apertures at each top portion to direct vapors from each oven to said substrate above;
each said oven being provided with heating means to raise the temperature to vaporization of the elements therein and with cooling means to lower the temperature and thereby permit separate evaporation of the elements in the bell jar for deposition on said substrate under evacuation;
a plate supporting said four ovens sysmeterically about a central axis which is perpendicular to the center of the substrate;

evacuating means to evacuate the bell jar and its contents under pumping vacuum down to 5×10^{-6} torr;
heating said substrate by means of said heater to a temperature of approximately 400° C.;
heating said oven containing zinc to about 550° C.;
heating said oven containing sulphur from about 100° C.; to 200° C.;
heating said oven contain-ng manganese to about 970° C.;
heating said oven containing copper to about 1010° C. for about ⅔ of the heating time and then up to about 1080° C. for the remaining time;
the foregoing heating steps being conducted simultaneously for a time of about 20 minutes under the aforesaid vacuum pumping;
stopping all vaporization except that from the sulphur to provide a sulphur rich atmosphere in said bell jar and oven to permit recrystallization of the zinc sulfide film deposited on said substrate; and
maintaining the substrate in the sulphur rich atmospher for about 60 minutes after which the coated substrate is removed for attachment of a counter-electrode.

4,242,371
HIGH-LUMINANCE COLOR SCREEN FOR CATHODE-RAY TUBES AND THE METHOD FOR MANUFACTURING THE SAME

Jean-Pierre Galves, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 808,831, Jun. 22, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,171
Claims priority, application France, Jun. 25, 1976, 76 19460
Int. Cl.[2] B05D *1/36, 3/02;* H01J *29/18*
U.S. Cl. 427—68 **3 Claims**

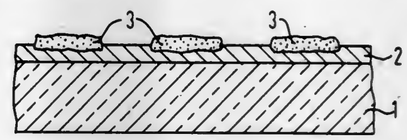


1. A method of producing luminescent screens for cathode ray tubes having two layers of phosphors separated by a layer of inert material that does not emit light under the impact of electrons comprising the steps of:
(a) depositing on a transparent glass support member, a first layer of phosphor crystals;
(b) depositing on said first phosphor layer a temporary layer of organic material;
(c) depositing on said temporary organic layer a layer of inert material;
(d) depositing on said inert layer a second layer of phosphor crystals; and then
(e) heating in vacuum said screen to burn off said temporary organic layer; and
(f) depositing a conductive thin layer on said second phosphor.

4,242,372
PROCESS FOR PRODUCING CONDUCTIVE/NON-CONDUCTIVE ADHESION LAYERS FOR LUMINESCENT MATERIALS ON FLAT/UNI-DIRECTIONALLY BENT SUBSTRATES FOR IMAGE DISPLAY DEVICES

Manfred Kobale, Faistenhaar, and Rolf Wengert, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,840
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804494
Int. Cl.[3] H01J *9/227*
U.S. Cl. 427—68 **12 Claims**

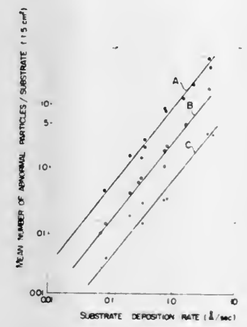


1. A process of producing adhering luminescent layers on flat or uni-directionally bent screen substrates of a color picture screen and image display screen, comprising:
coating a surface of said screen substrate with an adhesive liquid layer comprised of an alcoholic solution of oxygen-rich organic materials selected from the group consisting of silicon salts of relatively low molecular weight carboxylic acids, tin salts of relatively low molecular weight carboxylic acids and mixtures thereof;
at least partially drying said adhesive layer at a maximum temperature of about 150° C;
applying a layer of luminescent material onto said partially dried layer; and
tempering both of said layers at a maximum temperature of about 500° C.

4,242,373
METHOD FOR VAPOR DEPOSITING A CERIUM OXIDE FILM

Kiyoshi Watanabe; Kazuo Sunahara, and Tsutomu Fujita, all of Mobara, Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 768,755, Feb. 15, 1977, abandoned. This application May 30, 1978, Ser. No. 910,344
Claims priority, application Japan, Feb. 20, 1976, 51/17080; Feb. 20, 1976, 51/17081; Fed. Rep. of Germany, Feb. 17, 1977, 2706896; France, Feb. 18, 1977, 77 04857; Netherlands, Feb. 18, 1977, 7701757; United Kingdom, Feb. 18, 1977, 6971/77
Int. Cl.[3] B05D *1/00;* H01J *31/26*
U.S. Cl. 427—74 **5 Claims**



1. A method for vapor depositing a thin film of cerium oxide on a substrate comprising the steps of:

loading commercially available particulate or sintered cerium oxide including particles of 3μ or less in a vapor deposition boat; and

heating said cerium oxide under a predetermined vacuum to cause the cerium oxide to disperse for forming said thin film on said substrate with the deposition rate of the cerium oxide being set between 0.01 Å/sec and 0.6 Å/sec.

4,242,374

PROCESS FOR THIN FILM DEPOSITION OF METAL AND MIXED METAL CHALCOGENIDES DISPLAYING SEMI-CONDUCTOR PROPERTIES

Joseph L. Sansregret, Fords, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 19, 1979, Ser. No. 31,421
Int. Cl.³ H01L *31/18*
U.S. Cl. 427—76 **20 Claims**

1. A method for producing metal or mixed metal chalcogenide films comprising:

providing a substrate for depositing said film thereupon;

heating said substrate to a temperature between about 400° C. and 500° C.;

providing a solution of at least one salt of a metal selected from the group consisting of iron copper, nickel, cobalt, cadmium, zinc, molybdenum, or mixtures thereof in a mixture of water and a water soluble hydrocarbon;

atomizing said solution;

contacting said heated substrate with said atomized solution in an oxygen containing ambient to form an adherent film comprising an oxide of said metal or metals;

annealing said oxide film at a temperature from about 300° C. to about 400° C. in the presence of a gaseous chalcogen comprising sulfur, selenium, tellurium, or a mixture thereof, capable of undergoing an ion exchange with said oxide film, for a period sufficient to form an adherent film of a chalcogenide compound of said metal or metals.

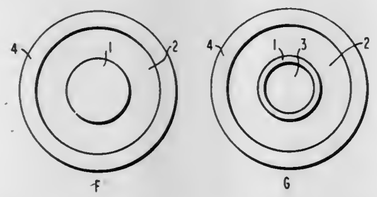
4,242,375

PROCESS FOR PRODUCING OPTICAL TRANSMISSION FIBER

Satoshi Shiraishi; Kunio Fujiwara, and Shiro Kurosaki, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 648,997, Jan. 14, 1976, Pat. No. 4,161,505, which is a division of Ser. No. 419,011, Nov. 26, 1973, abandoned, Ser. No. 648,998, Jan. 14, 1976, which is a continuation of Ser. No. 419,011, , and Ser. No. 826,572, Aug. 22, 1977, Pat. No. 4,165,152, which is a division of Ser. No. 648,998, , Pat. No. 4,082,420. This application Aug. 3, 1978, Ser. No. 930,841

Claims priority, application Japan, Nov. 25, 1972, 47/118345; Nov. 25, 1972, 47/118346
Int. Cl.³ B05D *5/06*
U.S. Cl. 427—163 **32 Claims**



1. A process for producing an optical transmission fiber comprising feeding highly pure halides, hydrides or organic compounds of Si and B using a carrier gas, and oxidizing said halides, hydrides or organic compounds to form doped fused silica containing B_2O_3 and depositing said doped fused silica containing B_2O_3 as a layer on a rod or pipe of pure fused silica and then depositing a fused silica or water-repellent glass layer on said doped fused silica layer containing B_2O_3 and melting and spinning said rod or pipe having said layers deposited thereon into a fiber.

4,242,376

METHOD FOR METAL PLATING OF POWDER BY SUBSTITUTION

Yoshio Kawasumi, Urawa, and Mitsuo Takahashi, Tokyo, both of Japan, assignors to Nihon Kogyo Kabushika Kaisha, Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,434
Claims priority, application Japan, Oct. 18, 1978, 53-127322
Int. Cl.³ B44D *1/22*
U.S. Cl. 427—216 **8 Claims**

1. A method for plating a powder with a metal by substitution, which comprises adding a crystalline powder of a metal chloride hydrate, wherein the metal of said metal chloride hydrate is a metal having a negative standard electrode potential, after and/or during mixing a powder to be plated and a reducing metal powder, and after the initiation of the reaction, adding water and/or hydrochloric acid.

4,242,377

FABRIC CONDITIONING

Karl H. Roberts, Flemington; Marvin Liebowitz, Edison, and Henry P. Furgal, Bernardsville, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 109,691, Jan. 25, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,303
Int. Cl.² B05D *3/12*
U.S. Cl. 427—242 **28 Claims**

1. A method of conditioning fabrics which comprises applying to a fabric a pressurized composition consisting essentially of

(1) from about 0.5 to 15% by weight of a surface active conditioning agent selected from the group consisting of higher fatty acid soaps, cationic, amphoteric, nonionic and anionic compounds,

(2) from about 0.5 to 15% by weight of a foaming agent selected from the group consisting of anionic and nonionic detergents,

(3) from 10 to 79% by weight of normally gaseous propellant selected from the group consisting of aliphatic and cycloaliphatic hydrocarbons, chloro-fluorocarbons and fluorocarbons, and the balance water, said composition forming a firm, self-sustaining lather, sufficiently firm to be self sustaining for a period of about 5 minutes spreading of the lather over the surfaces of the fabric being effected by tumbling said fabric in a laundry dryer.

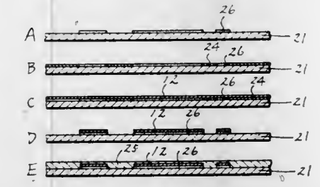
4,242,378

METHOD OF MAKING A DECORATED FILM WITH A METAL LAYER IN THE FORM OF A GIVEN PATTERN

Yoshiaki Arai, Kyoto, Japan, assignor to Reiko Co., Ltd., Kyoto, Japan

Filed Mar. 29, 1979, Ser. No. 25,054
Int. Cl.³ B05D *1/36, 3/00, 5/00; B44C 1/22*
U.S. Cl. 427—264 **1 Claim**

1. In a method of making a decorated film with a metal layer in the form of a given pattern and comprising the steps of depositing a metal layer on at least one surface of a water-resistant base sheet by vacuum plating technique and removing a preselected area of said metal layer from said base sheet, the improvement comprising: printing a patterned water-insoluble colored coating composition on said surface; printing a patterned water-soluble resin on the resultant printed surface in such a manner that the printed pattern of said water-soluble resin is jig-saw matched with the printed pattern of said water-insoluble colored coating composition; depositing said metal layer on the entire resultant double-printed surface; and immersing the resultant metal-coated material in water to dissolve said water-soluble resin and concurrently remove the metal deposited on said water-soluble resin.



4,242,379

ACID INHIBITOR TREATMENT OF SUBSTRATE PRIOR TO AUTODEPOSITION

Wilbur S. Hall, Plymouth Meeting, and Harry M. Leister, Ambler, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation of Ser. No. 917,634, Jun. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 755,919, Dec. 30, 1976, abandoned. This application Jul. 10, 1979, Ser. No. 55,974
Int. Cl.³ A23F *3/34*
U.S. Cl. 427—327 **10 Claims**

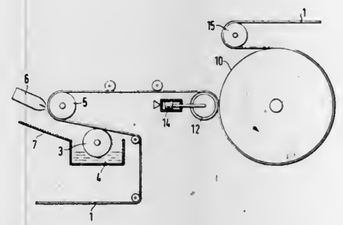
1. In a coating process wherein an autodeposited coating is formed on a worked or roughened metal surface by contacting said surface with an autodepositing composition comprising an acidic aqueous solution containing dissolved fluoride and ferric ions and having resin solids dispersed therein and wherein the coatings formed from said composition tend to contain defects, the improvement comprising treating said metal surface with an anodic acid inhibitor in an amount sufficient to passivate the anodic sites in the worked or roughened areas of said metal surface, said inhibitor not forming a detectable coating on said surface, prior to contacting said surface with said acidic coating composition.

4,242,380

IMPROVEMENTS IN AND RELATING TO TREATMENT OF NON-WOVEN FABRIC IN ORDER TO IMPROVE THE PROPERTIES THEREOF

Jean-Francois Courtoy, 49, rue des Charretiers, Wiltz, Luxembourg

Filed Jun. 6, 1979, Ser. No. 46,186
Int. Cl.³ B05D *3/02, 3/12, 1/28;* B32B *27/00*
U.S. Cl. 427—366 **4 Claims**



1. A process for the impregnation of non-woven fabric with a plastisol comprising the steps of:

selecting the viscosity of a liquid plastisol so that it has a Newtonian viscosity in the range of 6 to 15 poise;

maintaining the selected plastisol in liquid form at a temperature in the range of 5° to 50° C.;

coating a moving web of non-woven fabric with the liquid plastisol;

heating a rotating cylinder such that it has a surface temperature in the range of between 130° and 180° C.;

urging the plastisol coated non-woven fabric web against the heated cylinder by means of a resilient pressure roll having a diameter which is smaller than the diameter of the heated cylinder to cause the plastisol to impregnate the fabric;

maintaining the plastisol impregnated non-woven fabric web in contact with the heated surface of the cylinder downstream of the pressure roll in the direction of web travel for a sufficient time to cause the plastisol to gel to the surface of the web disposed away from the cylinder; and

removing the coated web from the cylinder for further processing prior to fusing of the plastisol.

4,242,381

METHOD OF PROVIDING A POLYCARBONATE ARTICLE WITH A UNIFORM AND DURABLE SILICA FILLED ORGANOPOLYSILOXANE COATING

John C. Goossens, Mt. Vernon, Ind., and Daniel R. Olson, Clifton Park, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 18, 1979, Ser. No. 31,127
Int. Cl.³ A23F *3/00;* B32B *27/36*
U.S. Cl. 427—387 **28 Claims**

1. A method for producing a polycarbonate article having improved mar, abrasion, scratch and chemical solvent resistance and possessing enhanced ultraviolet light stability comprising:

(i) applying onto a polycarbonate substrate a primer emulsion composition consisting essentially of a thermosettable acrylic polymer, (b) at least one ultraviolet light screening compound selected from the class consisting of benzylidene malonates and cyanoacrylates, (c) from about 20 to about 40 weight percent of a hydroxy ether or alkanol containing from 1 to 4 carbon atoms, and (d) water;

(ii) evaporating off a substantial portion of said water and hydroxy ether or alkanol from said primer emulsion composition thereby forming a layer of comprised of said thermosettable acrylic polymer and at least one of said ultraviolet light screening compounds;

(iii) applying heat to said layer at a temperature and for a period of time effective to cure said thermosettable acrylic polymer;

(iv) applying onto said cured primer layer a top coat composition containing a colloidal silica filled further curable organopolysiloxane comprising a dispersion of colloidal silica in a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $R^6Si(OH)_3$ wherein R^6 is an alkyl radical containing 1 to 3 carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidoxypropyl radical and the gamma-methacryloxypropyl radical, at least 70 weight percent of said silanol being $CH_3Si(OH)_3$, said composition containing sufficient acid to provide a pH in the range of 3.0 to 6.0;

(v) evaporating off a substantial portion of the volatile solvents from said top coat composition thereby forming a layer comprised of a colloidal silica filled partial condensate of said silanol; and,

(vi) thermally curing said colloidal silica filled partial condensate of said silanol.

4,242,382

PRODUCTION OF MODIFIED CONJUGATE FIBRE PRODUCTS

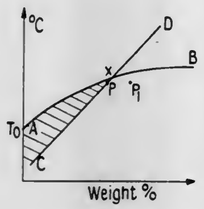
Vincent S. Ellis, and Kazimierz W. Mieszkis, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 607,947, Aug. 26, 1975, abandoned, which is a division of Ser. No. 351,612, Apr. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 297,392, Oct. 13, 1972, abandoned. This application May 26, 1978, Ser. No. 909,820

Claims priority, application United Kingdom, May 12, 1973, 11803/73

Int. Cl.[2] B05D *3/02*

U.S. Cl. 427—379 **6 Claims**



1. A method of modifying a conjugate fibre product containing a plurality of melt spun conjugate fibres each composed of at least two fibre-forming polymer components arranged in distinct zones across the cross-section of the fibre and substantially continuous along the length thereof, one of the components having a melting temperature significantly lower than the melting temperature of the other component and being located so as to form at least a peripheral surface of the fibre, said method comprising:

(a) applying a predetermined amount of particles of average size less than one micron substantially uniformly to a conjugate fibre product composed of said fibres by treating the product in a liquid in which the particles are dispersed:

(b) removing excess liquid and drying the product so as to leave the product in a dry, open, substantially tensionless condition; and

(c) heating the product in said condition at a non-sticking temperature for 2 to 40 minutes so as to cause substantially the whole of said particles to penetrate and become virtually completely adsorbed into the lower melting component, the non-sticking temperature lying within the Area AXCA of FIG. 2, but above the temperature To and at least 1° C. below the curve AB, to product a clean, non stuck, modified, conjugate fibre product.

4,242,383

METHOD OF PROVIDING A POLYCARBONATE ARTICLE WITH A UNIFORM AND DURABLE ORGANOPOLYSILOXANE COATING

John C. Goossens, Mt. Vernon, Ind., and Daniel R. Olson, Clifton Park, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 18, 1979, Ser. No. 31,130

Int. Cl.[3] A23F *3/00;* **B32B** *27/36*

U.S. Cl. 427—387 **28 Claims**

1. A method for producing a polycarbonate article having improved mar, abrasion, scratch and chemical solvent resistance and possessing enhanced ultraviolet light stability comprising:

(i) applying onto a polycarbonate substrate a primer emulsion composition consisting essentially of (a) a thermosettable acrylic polymer, (b) at least one ultraviolet light screening compound selected from the class consisting of benzylidene malonates and cyanoacrylates, (c) from about 20 to about 40 weight percent of a hydroxy ether or an alkanol containing from 1 to 4 carbon atoms and (d) water;

(ii) evaporating off a substantial portion of said hydroxy ether or alkanol from said primer emulsion composition thereby forming a layer comprised of said thermosettable acrylic polymer and at least one of said ultraviolet light screening compounds;

(iii) applying heat to said layer at a temperature and for a period of time effective to cure said thermosettable acrylic polymer;

(iv) applying onto said cured primer layer a further-curable organopolysiloxane top coat composition containing the partial hydrolysis and condensation product of an alkyltrialkoxy silane;

(v) evaporating off a substantial portion of the volatile solvents from said top coat composition thereby forming a layer comprised of the partial hydrolysis and condensation product of said alkyltrialkoxy silane; and,

(vi) thermally curing said partial hydrolysis and condensation product of said alkyltrialkoxy silane.

4,242,384

SPRAY COATING OF ACRYLIC RESIN COMPRISING POLYMERIC MICROPARTICLES

Malcolm S. Andrew, Hazlemere, and Alan J. Backhouse, South Ascot, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 7, 1978, Ser. No. 922,847

Claims priority, application United Kingdom, May 17, 1978, 20096/78

Int. Cl.[2] B05D *1/02*

U.S. Cl. 427—421 **10 Claims**

1. A process for the production of a surface coating upon a substrate which comprises (i) applying by spray to the substrate surface a composition comprising (A) a film-forming acrylic resin which is derived from one or more alkyl esters of acrylic acid or methacrylic acid, (B) a volatile organic liquid diluent in which the polymer (A) is carried, and (C) a pigment, other than a metallic flake pigment, which is dispersed in the combination of the film-forming resin (A) and the diluent (B), and (ii) subsequently evaporating the volatile diluent to form a polymer film upon the surface, characterised in that the composition applied to the substrate further comprises (D) microparticles having a diameter of from 0.01 to 10 microns composed of a polymer which has a glass-liquid transition temperature greater than 0° C., and which are insoluble in and stably dispersed in the combination of the resin (A) and the diluent (B), the microparticles being obtained by (a) polymerisation of monomer in an inert liquid in which the resulting polymer is insoluble and under conditions such that the polymer is obtained in a state of stable dispersion and (b) subsequent polymerisation, in the same inert liquid and in the presence of the particles formed in stage (a), of ethylenically unsaturated monomer giving rise to a second acrylic polymer or copolymer which is compatible with the acrylic resin (A) and is soluble in the combination of the resin (A) and the diluent (B), and the microparticles (D) being present in an amount of at least 3% of the aggregate weight of the resin (A) and the microparticles.

4,242,385

ENDLESS BANDS

Keith F. Hutcheon, Beeston, and Laurence A. Cordingley, Lenton, both of England, assignors to TI Raleigh Industries Limited, Nottingham, England

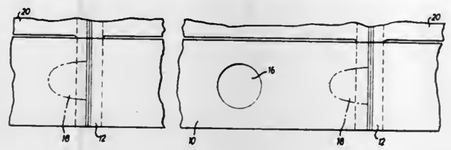
Filed Oct. 7, 1977, Ser. No. 840,364

Claims priority, application United Kingdom, Oct. 9, 1976, 42074/76

Int. Cl.[3] B60R *13/00;* **B32B** *27/14*

U.S. Cl. 428—31 **6 Claims**

1. An endless rim tape band for a bicycle wheel comprising two superimposed strips of flexible plastics material each having a length substantially equal to half the circumference of the wheel and wherein the length of each of said strips is substantially greater than the width of said strips, said strips welded to



each other at respective ends of the strips along a weld line transverse to the length of the strips, and means defining a hole in at least one of the strips for accommodating a valve associated with the bicycle wheel.

4,242,386

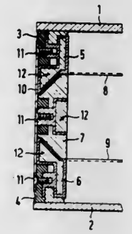
MULTIPLE GLAZING UNITS

Tilman L. Weinlich, Samerberg, Fed. Rep. of Germany, assignor to Christel Konrad, Samerberg, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,390

Int. Cl.[3] B05D *5/00;* **B32B** *17/10*

U.S. Cl. 428—34 **26 Claims**



1. A method of stretching at least one film located between two panes of a glazing unit comprising the steps of:

(a) providing at least two frame portions to form a full frame;

(b) providing the frame portions with mutually confronting profiled surfaces;

(c) securing a film to one of the frame portions;

(d) assembling the individual frame portions to form the full frame, and

(e) pressing-together the frame portions to stretch the film by the coaction of the confronting profiled surface of the second frame portion against the confronting profiled surface of the one frame portion.

7. A multiple glazing unit comprising

(a) at least two panes;

(b) a frame having at least two frame portions;

(c) mutually confronting profiled surfaces on the frame portions, and

(d) at least one film which is secured to one of said frame portions so as to extend between and be substantially parallel to the panes, and said film stretched between the frame portions upon the pulling action of the confronting profiled surfaces on the film when assembling and pressing together the frame portions.

4,242,387

WRAPAROUND DEVICE

George G. Ward, 2 Coventry La., Lincolnshire, Ill. 60015

Filed Nov. 24, 1978, Ser. No. 963,449

Int. Cl.[3] B32B *3/30, 1/02, 1/08*

U.S. Cl. 428—35 **12 Claims**

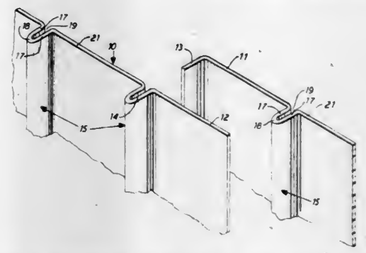
9. A wraparound device to be manipulated into tubular form and adapted to be placed in encircling relation about a member, and comprising:

a lightweight thin self-sustaining plastic panel of a material which has a substantially common thickness of about 0.020 to 0.040 inch through the extent of the panel and is resiliently flexible across its plane so that the panel can be bent into tubular form;

said panel having opposite margins which are adapted to be brought together in the tubular form of the panel;

means along said opposite margins for securing the panel from a substantially flat condition into tubular form;

said panel having at predetermned spaced intervals and extending entirely thereacross between and parallel to said margins a plurality of ribs comprising indentations projecting from the face of the panel which is at the inside in the tubular form and said ribs having walls defining



grooves of substantial depth which open from the face of the panel which is at the outside of the tubular form, and the grooves extending throughout the length of the ribs and having open ends at opposite edges of said panel and which edges extend between and normal to said margins;

and the ribs serving as resilient expansion hinges by spreading open and affording resilient flexibility in direction across said ribs and between said margins, so that the ribbed panel is at least partially expansile in direction across said ribs and between said margins throughout the extent of the panel in the tubular form, whereby to be adaptable for a range of variable diametrical dimensions in members wrapped by the device, even though the material of the panel is of itself resistant to yielding in its plane.

4,242,388

SEALING CEMENT USEFUL FOR PRODUCING LIQUID CRYSTAL DISPLAY CELLS

Meinolph Kaufmann, Fislisbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Nov. 30, 1978, Ser. No. 965,046

Claims priority, application Switzerland, Dec. 20, 1977, 15734/77

Int. Cl.[3] C09K *3/34*

U.S. Cl. 428—35 **9 Claims**

1. A method of bonding together the mutually aligned glass plates of a liquid crystal display cell, which comprises

applying a gasket-shaped layer of a sealing cement between said glass plates,

joining said plates, and

curing said layer of sealing cement, thereby producing a layer of uniform thickness which determines the separation of said glass plates;

wherein said sealing cement comprises a particulate filler of variably sized particles in a quantity sufficient to closely pack said filler particles when said glass plates are mutually aligned and bonded together;

wherein the shortest distance between parallel tangential planes of each particle is substantially the same for a substantial majority of said particles and the shortest distance between parallel tangential planes for the remainder of said particles is less than said shortest distance between parallel tangential planes of said substantial majority of particles, whereby the spacing between said glass plates

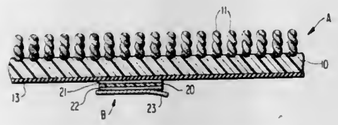
being bonded is determined by said shortest distance of said substantial majority of particles.

4,242,389

CARPET WEB HAVING PATTERNED ADHESIVE SEGMENTS ON THE BACKING THEREOF AND METHOD OF MANUFACTURE OF THE SAME

Charles I. Howell, Rocky Face, Ga., assignor to World Carpets, Inc., Dalton, Ga.

Filed Apr. 10, 1979, Ser. No. 28,753
Int. Cl.³ B32B *3/02, 33/00*
U.S. Cl. 428—40 **29 Claims**



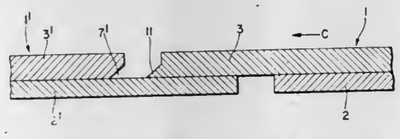
1. A flexible carpet web having a plurality of spaced apart pressure sensitive adhesive segments disposed in a patterned relationship on the backing thereof, the spacing between said centers of said adhesive segments being a function of the area of said adhesive segments, in relation to the area and weight of said carpet web, and said adhesive segments being spaced and configured for providing substantially uniform tensile adhesiveness longitudinally and transversely throughout said carpet web.

4,242,390

FLOOR TILE

Jozsef Nemeth, Kungälv, Sweden, assignor to AB Wicanders Korkfabriker, Alvengen, Sweden

Filed Mar. 22, 1978, Ser. No. 889,028
Claims priority, application Sweden, Mar. 3, 1977, 7703660
Int. Cl.³ B32B *7/04;* E04C *1/30*
U.S. Cl. 428—47 **26 Claims**



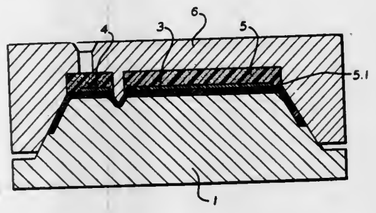
1. A tile for forming a floor wall or the like comprising a generally planar rectilinear member including a carrier layer and a superimposed surface layer; each of said layers having two pairs of mutually parallel side edges, one of said pairs comprising two adjacent side edges; and the other of said pairs comprising the other two side edges; the edges of the carrier layer in one of said pairs being formed with a groove and the corresponding edges of said surface being formed with a vertically square end; the edges of the carrier layer of the other of said pairs being formed with a tongue, the corresponding edge of said surface being formed with a vertically square end; the bottom surface of said groove and tongue being planar and parallel with the lower surface of said rectilinear member, the upper surface of said groove and tongue being slanted with respect to the bottom surface thereof to form an acute angle; the extent of said tongue being less than the depth of said groove, and the angle of the groove being less than the angle of the tongue, whereby the tongue of one tile and the groove of another tile are cooperable to permit penetration of the tongue into the groove to an extent less than the depth thereof, with the square ends of the surface abutting each other to provide a smooth extended surface and said tongue and groove providing a space therebetween for receipt of adhesive, said tongue and groove and abutting floor surface preventing escape of adhesive therefrom.

4,242,391

NOISE BARRIER PAD AND THE METHOD FOR THE PRODUCTION OF SAME

Hans Reinhardt, Hirschberg; Manfred Schmahl, Worms, and Armin Tritsch, Weinheim, all of Fed. Rep. of Germany, assignors to Carl Freudenberg, Weinhein, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,095
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727299
Int. Cl.³ B32B *5/20, 27/06;* B29D *27/04*
U.S. Cl. 428—76 **2 Claims**



1. A process for producing a noise barrier pad for industrial vehicles, comprising forming a shaped tread layer by reacting a mixture for a polyurethane foam having a density of about 600–1100 kg/m³ in a hollow mold having separable upper and lower parts and which is shaped so as to form the tread layer; removing the upper mold part; placing a blank of noise barrier material comprising a heavy spar layer on a portion of the bottom side of the tread layer; placing over the lower mold part a second upper mold part so as to define with the lower mold part, tread layer and spar layer a cavity; and filling the cavity with a reaction mixture to form therein a bottom layer of polyurethane foam having a density of about 150–600 kg/m³, the bottom layer in conjunction with the tread layer encapsulating the spar sheet and thereby fixing it in position.

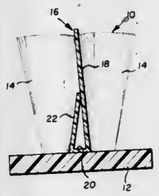
2. A noise barrier pad produced by the method of claim 1.

4,242,392

SOFT BARRIER FIN WEATHERSTRIP AND METHOD OF MANUFACTURE

Charles Yackiw, Fairport, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Oct. 18, 1979, Ser. No. 85,980
Int. Cl.³ D04H *11/00;* E06B *7/22*
U.S. Cl. 428—85 **14 Claims**



5. In a soft barrier fin weatherstrip having a base strip; a pair of longitudinally extending spaced parallel rows of pile attached to said base strip; and a soft barrier fin of air pervious material secured on edge to said base strip between said rows of pile; the improvement comprising coating or impregnating said fin with a waxy material which fills the openings or interstices in said air pervious material so that in use said coated fin maintains its up-right position and effectively resists air and moisture infiltration while retaining its softness.

4,242,393

CARPET TILES

Willem H. L. Leupen, Picton, Australia, assignor to Heuga Australia Production Pty. Ltd., North Sydney, Australia

Filed Feb. 7, 1979, Ser. No. 10,193
Int. Cl.³ E04D *1/00*
U.S. Cl. 428—95 **6 Claims**

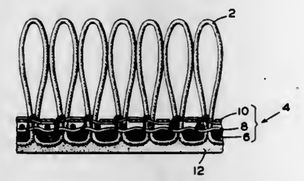
1. A carpet or carpet tile comprising a carpet, a secondary backing sheet and a layer of a backing composition which comprises an admixture with bitumen of a limestone-type filler comprising particles all of wich are less than 1 mm, 10% to 50% by weight of which are between 1 mm and 77μ and 90% to 50% of which are less than 77μ, the combination of filler and bitumen having a ball and ring softening point of 373 K to 403 K and a penetration of 5 to 25 points.

4,242,394

REINFORCED PRIMARY BACKING FOR TUFTED PILE FABRICS

Ronald J. Leib, and Moses Sparks, Jr., both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Jul. 9, 1979, Ser. No. 55,893
Int. Cl.³ D04H *11/00, 11/08*
U.S. Cl. 428—95 **10 Claims**



6. A tufted pile fabric comprising: (a) a reinforced primary backing comprising a non-woven fibrous capping layer, a reinforcing material layer, and a woven backing layer, said non-woven fibrous capping layer being positioned adjacent one side of said reinforcing material layer and said woven backing layer being positioned adjacent the other side of said reinforcing material layer, said non-woven fibrous capping layer being needled into and extending through said reinforcing material layer and continuing into and through said reinforcing material layer to the outside surface of said backing layer; and, (b) yarn tufted through said reinforced primary backing to define a tufted face yarn supported by and extending above said reinforced primary backing.

4,242,395

THERMOPLASTIC COMPOSITIONS AND AUTOMOTIVE CARPETING BACKED THEREWITH

Joseph L. Zuckerman, Livingston, and John W. Bzik, North Haledon, both of N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,693
Int. Cl.² D03D *27/00;* D04H *11/00*
U.S. Cl. 428—96 **4 Claims**

1. A tufted automotive carpet comprising a base fabric stitched with erect loops of yarn to form tufts on the top side of the base fabric and a thermoplastic backing composition on the bottom side of said base fabric, said composition comprising by weight:

(a) About 5–25 percent of an ethylene containing polymer selected from the group consisting of polyethylene and ethylene/mono-unsaturated ester copolymer,

(b) About 1–10 percent of a non-vulcanized elastomeric resin,

(c) About 60–90 percent of an inert mineral filler, and

(d) About 1–15 percent of a plasticizer.

4,242,396

FILMS OF THERMOPLASTICS MATERIALS HAVING ROUGHENED SURFACES

John R. Wilson, Knebworth, and Terence I. Worbey, Hitchin, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 19, 1977, Ser. No. 862,297
Claims priority, application United Kingdom, Oct. 20, 1977, 43707/77
Int. Cl.² B32B *3/30, 5/22*
U.S. Cl. 428—141 **23 Claims**

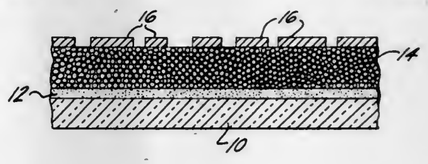
1. A thermoplastics film suitable for use as a drafting material, which comprises a self-supporting film of a thermoplastics material, at least one surface of said film being roughened by filler particles included in the thermoplastics material adjacent the surface, said filler particles having a nominal particle size in the range 4 to 15 μm, and a matt layer adherent to but not masking the roughened surface comprising a binding resin and secondary filler particles having a nominal particle size in the range 1 to 15 μm in an amount in the range 10 to 100% by weight based upon the weight of the binding resin, said matt layer having a coat weight in the range 0.05 to 2.0 g/m².

4,242,397

FLEXIBLE SHEET-TYPE COVERING MATERIAL

George R. Ferment, Randolph, N.J., and Douglas C. Woerner, Northampton, Pa., assignors to GAF Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,605
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—141 **3 Claims**



1. Decorative, flexible, sheet-type covering material comprising a flexible, porous mat having adhered to at least one face thereof a layer between about 2 and about 50 mils thick of mechanically frothed and crushed, heat cured, flexible, foamed thermoplastic vinyl polymer wherein:

(a) the surface of the crushed layer has a height variation of less than about 1 mil; and

(b) the openings in the porous mat average between about 1 and about 20 mils in the smallest linear dimension with at least about 50% of such openings having smallest linear dimensions between about 2 and about 10 mils; said covering material also including a layer of foamed plastic material adhered to the layer of crushed thermoplastic and a decorative pattern applied to the surface of the foamed plastic layer.

4,242,398

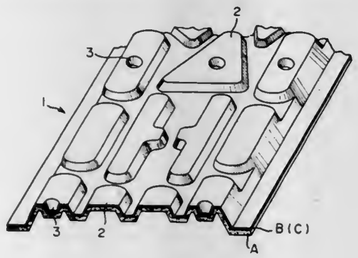
FIBROUS SHAPED ARTICLE HAVING NON-LEVEL SURFACE

Yasuhiko Segawa, and Noritsugu Saiki, both of Iwakuni, Japan, assignors to Teijin Limited, Japan

Filed Jun. 25, 1979, Ser. No. 51,742
Claims priority, application Japan, Jan. 16, 1979, 54-2163; Jan. 16, 1979, 54-2164
Int. Cl.³ B32B *3/26, 5/02, 5/22*
U.S. Cl. 428—172 **30 Claims**

1. A fibrous shaped article having a surface with raised and depressed portions, said fibrous article consisting of a unitary laminated structure resulting from the compression molding under heat of (A) a heat compression-moldable nonwoven

fibrous web and (B) a nonwoven fibrous sheet, said fibrous sheet (B) being laminated to at least one surface of said fibrous web (A); said fibrous web (A) having a compression stress, at 10% compression at the temperature of said compression molding, of at least 0.5 g/cm^2; said nonwoven fibrous sheet (B) consisting of a continuous unitary reticulated sheet structure of an assembly of many fibers of a thermoplastic polymer, said constituent fibers having both an initial modulus of not more than 5 g/denier and an elongation of at least 20%, at the temperature of said compression molding and being interconnected in a spaced-apart relationship, and said nonwoven fibrous sheet (B) having a plastic deformation ratio, at 30% elongation at the temperature of said compression molding, of at least 50% and an elongation stress, at 30% elongation at the



temperature of said compression molding, of not more than 0.15 kg/cm; and said web (A) and said sheet (B) satisfying the following relation:

$$S \leqq 0.03T$$

in which T is the compression stress (g/cm^2) of said web (A) at 10% compression at the temperature of said compression molding, and S is the elongation stress (kg/cm) of said sheet (B) at 30% elongation at the temperature of said compression molding and said fibrous shaped article having an air permeability of more than 2 ml.cm^{-2}.sec^{-1}, a sound absorption ratio of more than 3% at 100–500 Hz, more than 3% at 500–2000 Hz and more than 30% at more than 2000 Hz, a flexural strength of more than 0.03 kg.cm^{-1}, and a modulus of elasticity of more than 0.04 kg.cm^{-2}.

4,242,399

CORRUGATED PAPERBOARD FOR TRIM BOARD AND METHOD OF PRODUCING THE SAME

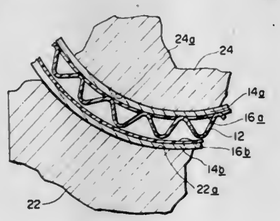
Toshihiko Fujii, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 6, 1978, Ser. No. 912,964

Claims priority, application Japan, Jun. 9, 1977, 52-68587

Int. Cl.[2] **B32B** *3/28, 3/00*

U.S. Cl. 428—186 **11 Claims**



1. A press-formable corrugated paperboard substrate which is to be press-formed to form a shaped board substrate of a trim board, comprising:

a corrugated medium of paper having first and second groups of crests, said first group of crests being defined on one face of said medium and said second group of crests being defined on the other face of said medium;

a first liner of paper placed on said first group of crests;

a first layer of thermoplastic resin disposed between said first liner and said first group of crests to achieve tight bonding therebetween;

a second liner of paper placed on said second group of crests; and

a second layer of thermoplastic resin disposed between said second liner and said second group of crests to achieve bonding therebetween, the total bonding force provided between said second liner and said second group of crests being less than that between said first liner and said first group of crests, resulting in that upon being subjected to press-forming under heating, relative displacement between said second liner and each of said second group of crests occurs while that between said first liner and each of said first group of crest portions is prevented.

4,242,400

MAGNETICALLY STRUCTURED MATERIALS

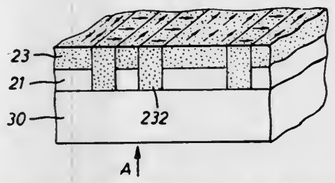
Andrew L. Smith, London, and Paul E. Claes, Hayes, both of England, assignors to E M I Limited, Hayes, England

Filed Oct. 4, 1978, Ser. No. 948,497

Claims priority, application United Kingdom, Oct. 15, 1977, 42970/77

Int. Cl.[3] **B32B** *3/00*

U.S. Cl. 428—201 **20 Claims**



1. A method of producing a member having a magnetically and (as hereinbefore described) visibly detectable structure including,

providing on a support a first layer of a first material held dispersed in a first binder which has been dried but is still softenable without damage,

providing a supply of a coating liquid of a second, magnetisable, material, visibly distinct from the first material and dispersed in a second binder and a solvent therefor, which solvent also comprises a partial solvent for the first binder,

applying the coating liquid over the first layer to form a second layer,

subjecting the two layers, in selected spaced regions thereof, to a magnetic field having a field gradient across the layers sufficient to cause magnetisable particles of the second material to enter the body of the first layer and mix with the first material, freed from the hold of the first binder by said partial solvent to impart to said first layer a magnetically and visibly detectable structure,

causing or permitting the dispersion to dry to hold the first and second materials in their respective positions.

4,242,401

SCREEN-PRINTING MASK

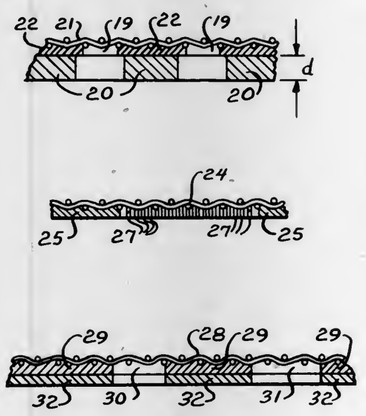
Minoru Mitani; Kiyoharu Hashimoto; Kenjiro Ninomiya; Toshikiyo Miyazaki; Otokuma Hashimoto, and Hideki Mori, all of Fuchu, Japan, assignors to Mitani Electronics Industry Corp., Tokyo, Japan

Filed Nov. 2, 1978, Ser. No. 957,187

Claims priority, application Japan, Jan. 24, 1978, 53-5831; Jan. 24, 1978, 53-5832; Jan. 24, 1978, 53-5833; Jan. 24, 1978, 53-6344[U]; Jan. 24, 1978, 53-6346[U]; Jan. 24, 1978, 53-6349[U]; May 23, 1978, 53-68576[U]

Int. Cl.[3] **B05C** *17/06;* **B41F** *15/34;* **B41L** *13/12;* **B41N** *1/24*

U.S. Cl. 428—201 **3 Claims**



1. A screen-printing mask to be used for printing on a previously-printed projection comprising a pattern screen and a spacer emulsion layer provided on at least a part of the bottom side of said pattern screen, excluding the circumferential edge portion of the pattern to be printed, said spacer emulsion layer having a thickness corresponding to the height of the previously-printed projection on which the pattern will be printed.

4,242,402

LIFT-OFF TAPE AND PROCESS

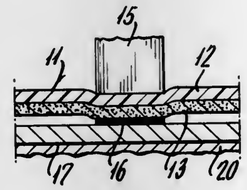
Ralf Korpman, Bridgewater, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 820,677, Aug. 1, 1977, Pat. No. 4,166,706.

This application Apr. 2, 1979, Ser. No. 25,965

Int. Cl.[3] **B41J** *31/05;* **B32B** *27/32, 7/02*

U.S. Cl. 428—212 **6 Claims**



1. A typewriter lift-off tape for removing typed ink impressions comprising a non-adhesive backing layer and a normally non-tacky elastic adhesive layer on one major surface of the backing layer, said backing layer being relatively inextensible and said adhesive layer being relatively extensible; wherein in said tape, the adhesive layer

(1) comprises an adhesive composition consisting essentially of

(a) thermoplastic and elastomeric A-B block copolymers in which

(i) the A-blocks are thermoplastic being derived from styrene or styrene homologs, possess a number average molecular weight of at least about 6,000, and constitute about 5 to about 50 percent by weight of the block copolymer, and

(ii) the B-blocks are elastomeric being derived from conjugated dienes or lower alkenes and possess a number average molecular weight in the range of about 45,000 to 180,000, and

(b) normally solid resins adapted to associate principally with the thermoplastic A-blocks of said copolymers, said resins being employed in an amount of from about 40 to about 90 parts by weight per 100 parts by weight of the block copolymer; and

(2) exhibits a plastic state at low elongations and an elastic state at high elongations, and has the property of being converted from a normally non-tacky and plastic state to a tacky and elastic state when struck by a typewriter key.

5. A tacky adhesive film or a film having a tacky adhesive portion, said film obtained by applying substantial mechanical stress in whole or in part to a non-tacky adhesive film having a composition consisting essentially of

(a) thermoplastic and elastomeric A-B block copolymers in which (i) the A-blocks are thermoplastic being derived from styrene or styrene homologs, possess a number average molecular weight of at least about 6,000, and constitute about 5 to about 50 percent by weight of the block copolymer, and (ii) the B-blocks are elastomeric being derived from conjugated dienes or lower alkenes and possess a number average or molecular weight in the range of about 45,000 to 180,000, and

(b) normally solid resins adapted to associate principally with the thermoplastic A-block of said copolymers, said resins being employed in an amount of from about 20 to about 120 parts per 100 parts by weight of the block copolymer.

6. An adhesive tape comprising a non-adhesive backing layer and a tacky adhesive layer on one major surface of the backing layer, said tape prepared by

(1) extruding to a film, a composition consisting essentially of

(a) thermoplastic and elastomeric A-B block copolymers in which (i) the A-blocks are thermoplastic being derived from styrene or styrene homologs, possess a number of average molecular weight of at least about 6,000 and constitute about 5 to about 50 percent by weight of the block copolymer and (ii) the B-blocks are elastomeric being derived from conjugated diene or lower alkene and possess a number average molecular weight in the range of about 45,000 to 180,000, and

(b) normally solid resins adapted to associate principally with the thermoplastic A-blocks of said copolymer, and resins being employed in an amount of from about 20 to 120 parts by weight per 100 parts by weight of the block copolymer;

(2) stretching said film to convert it from a normally non-tacky and plastic state to a tacky and elastic state;

(3) allowing the tacky stretched film to relax; and

(4) laminating said film to the backing layer.

4,242,403

AUTOMOTIVE GLAZING UNITS AND METHOD OF PRODUCING THE SAME

Paul T. Mattimoe, Toledo; Theodore J. Motter, Genoa, and Stephen P. Bartus, Jr., Toledo, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

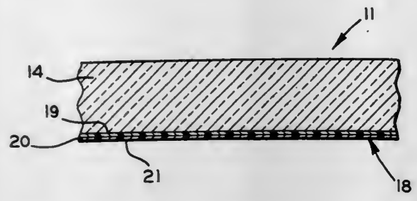
Filed Aug. 2, 1976, Ser. No. 710,424

Int. Cl.[3] **B32B** *7/02, 17/10*

U.S. Cl. 428—213 **1 Claim**

1. In a clear transparent temperature stable glazing structure consisting essentially of a transparent substrate with a protec-

tive shield thereover carrying a coating of silica reinforced organopolysiloxane; a sheet of float glass not appreciably more than 0.100" in thickness providing said substrate; and said protective shield over said substrate comprising a layer of a relatively soft and extensible plastic in a thickness between approximately 0.015" and 0.030" and having one surface



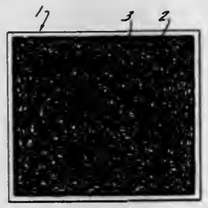
bonded to a surface of said substrate, a carrying sheet in the form of a layer of indentation resistant polyester plastic in a thickness between approximately 0.0005" and 0.014" and having one surface bonded to the opposite surface of said soft and extensible plastic layer, and an abrasion resistant coating of a fully cured silica reinforced methyl siloxane compound on and tightly adherent to the opposite surface of said carrying sheet.

4,242,404

HIGH-STRENGTH GLASS FIBER MAT PARTICULARLY USEFUL FOR ROOFING PRODUCTS

Alfredo A. Bondoc, Middlesex; V. Robert Canfield, Martinsville, and B. Randall Ziegler, Freehold, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed May 16, 1979, Ser. No. 39,577
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—220 **8 Claims**



1. A high-strength glass fiber mat useful for roofing products which is formed from bundles of glass fibers by the wet-laid process, said fibers having a length of about 1¾ to 3 inches and a diameter of about 8 to 20 microns, comprising:

(a) a plurality of individual glass fibers comprising about 20% to 60% by weight of the fibrous material in said mat,

(b) a plurality of extended glass fiber elements comprised of longitudinally connected fibers said elements there having a length which is greater than the length of the fibers in said element, and a diameter which is non-uniform, being greater in the mid-portion thereof than at its ends, said elements comprising about 40% to 80% by weight of the fibrous mateial in said mat,

both said individual fibers and said extended fiber elements being substantially randomly oriented and uniformly dispersed throughout said material, and,

(c) a binder substance to hold said fibrous material together.

4,242,405

VISCOSE RAYON AND METHOD OF MAKING SAME

Gregory C. Bockno, Media, Pa., assignor to Avtex Fibers Inc., Valley Forge, Pa.

Continuation-in-part of Ser. No. 795,059, May 9, 1977, abandoned, which is a continuation of Ser. No. 664,773, Mar. 8, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,680
Int. Cl.² D01F *2/06*; D02G *3/00*
U.S. Cl. 428—224 **12 Claims**



1. A regenerated cellulose fiber having a wet tenacity about 2.0 to 3.5 grams per denier, a conditioned tenacity of about 3.7 to 5.3 grams per denier, a wet extensibility between about 13% and 25%, a conditioned extensibility between 15% and 22%, and having a wet modulus between 5.5 and 14.0 and being further characterized in having a multilobular, skin core cross-section wherein the core is surrounded by a continuous uninterrupted skin, having a smooth periphery and having been formed by the method comprising preparing a modifier-free viscose containing from about 5% to 9% cellulose, from about 5% to 9% caustic soda and from 30% to 42% carbon disulfide based upon the weight of cellulose, ripening the viscose to a sodium chloride salt index of 12 to 18 and a spinning ball fall of between 65 and 110 seconds, extruding the ripened viscose into an aqueous spinning bath containing from about 5% to 8% sulfuric acid, from about 3% to 6% zinc sulfate and from about 9% to 15% sodium sulfate, maintained at a temperature between 30 degrees centigrade and 48 degrees centigrade, withdrawing the filaments through an aqueous stretch bath maintained at a temperature between 80 degrees centigrade and 98 degrees centigrade, and controlling residence time in the spin bath so as to allow stretching the filaments in the stretch bath from about 85% to 150%.

4,242,406

FIBER REINFORCED COMPOSITE STRUCTURAL LAMINATE COMPOSED OF TWO LAYERS TIED TO ONE ANOTHER BY EMBEDDED FIBERS BRIDGING BOTH LAYERS

Larbi El Bouhnini, Hanover Park; Thomas J. Fitzpatrick, Libertyville, both of Ill.; Donald M. Harwick, Pittsburgh, Pa.; Robert M. Hoffman, Palos Heights, and Wayne M. Knoll, Wheaton, both of Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa. and United States Gypsum Company, Chicago, Ill.

Filed Apr. 30, 1979, Ser. No. 34,695
Int. Cl.³ B28B *1/32*; B29C *5/02*; B32B *13/02, 13/12, 13/14*; E04C *2/26*
U.S. Cl. 428—236 **10 Claims**

1. A structural laminate comprising:

(a) a plastic surface finish coat bonded to

(b) a reinforcing layer of an organic resin selected from polyester resins and epoxy resins containing reinforcing fibers, adhered to

(c) a bonding layer of organic resin coated glass fibers which are bonded to the reinforcing layer and which protrude therefrom, said glass fibers being present in an amount sufficient to provide a surface density of 0.25 to 0.65 ounces per square foot of reinforcing layer surface area, said protruding glass fibers being coated with an amount of the organic resin sufficient to promote adhesion of the fibers to one another at their intersections, but insufficient to encapsulate the fibers so as to prevent the gypsum layer

(d) from intimately surrounding and engaging a substantial portion of the individual protruding coated fibers, said coated glass fibers being engaged and surrounded by

(d) a gypsum layer reinforced with glass fibers which functions as the structural base, and said structural laminate is characterized by having a bond strength between the gypsum layer and the plastic layer with which it interfaces of at least about 150 psi as determined by ASTM C297-68.

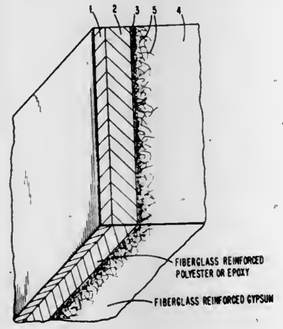
6. A process for making a structural laminate comprising:

(a) applying a curable plastic finish coat containing a catalyst therefor to the surface of a mold;

(b) partially curing said curable plastic finish coat;

(c) applying a reinforcing layer of organic resin containing reinforcing fibers to said partially cured plastic finish coat by spraying said organic resin and reinforcing fibers onto said plastic finish coat;

(d) densifying said reinforcing layer to remove entrapped air;



(e) while said reinforcing layer is tacky, applying a bonding layer of chopped glass fibers by dry spraying said glass fibers onto said reinforcing layer in such a manner that said glass fibers protrude from said reinforcing layer;

(f) applying a light mist organic resin coating by spraying a limited amount of catalyzed resin over the surface of the protruding glass fibers;

(g) allowing the organic resin coating on the protruding glass fibers and the organic resin of the reinforcing layer to cure to at least the gel state;

(h) applying a neat coat of plaster containing no glass fibers by spraying the plaster onto the protruding glass fibers;

(i) applying a layer of glass reinforced plaster onto the protruding fibers by simultaneously spraying the plaster and operating a glass chopper to supply a stream of chopped glass fibers into the wet plaster; and

(j) drying the plaster to form a hard gypsum structural base.

4,242,407

PROCESS FOR THE MANUFACTURE OF ARTICLES OF WATER-HARDENING MATERIAL

Jan M. J. M. Bijen, Munstergeleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

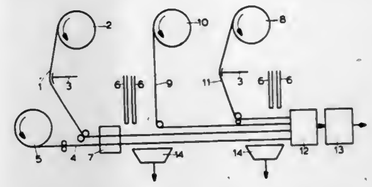
Filed Dec. 19, 1978, Ser. No. 971,065
Claims priority, application Netherlands, Dec. 30, 1977, 7714571
Int. Cl.² B32B *7/00, 3/18*; B28B *11/16*; B29H *9/02*
U.S. Cl. 428—247 **25 Claims**

1. A shaped article comprised of at least one layer of a water-hardening material reinforced with at least five fibrillated organic films which have been enlarged in a direction approximately lateral to the direction of fibrillation so as to form networks, each having a plurality of meshes, wherein the number of networks in said layer and the average number of meshes in said networks with a minimum of two per square centimeter are such that the average number of meshes per cubic centimeter of said layer is greater than 100.

5. In a process for the manufacture of shaped articles from water-hardening materials reinforced with a plurality of networks of fibrillated organic films, the improvement comprising the steps of:

forming continuous lengths of networks from fibrillated organic films, each containing a plurality of meshes;

simultaneously advancing a plurality of said networks into



contact with a water-hardening material so as to form at least one composite layer of said networks impregnated with said water-hardening material; and shaping said at least one layer into the desired configuration for said shaped article, and allowing it to set;

wherein the average number of meshes within said network, with a minimum of two per square centimeter, and the number of networks within said at least one layer are such that the average number of meshes per cubic centimeter of said shaped article is at least 100.

4,242,408

EASILY DISPOSABLE NON-WOVEN PRODUCTS HAVING HIGH WET STRENGTH AT ACID PH AND LOW WET STRENGTH AT BASE PH

Syamalarao Evani, and William A. Foster, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 820,952, Aug. 1, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 52,053
Int. Cl.³ A61F *13/18, 13/20*; B32B *25/02*
U.S. Cl. 428—290 **9 Claims**

1. A non-woven flexible web having enhanced wet strength and easy disposability, said web comprising a mat of non-woven fibers impregnated with the acid form of a terpolymer formed by the reaction of an unsaturated monomer controlling the hydrophobicity of the terpolymer an unsaturated carboxylic acid and an alkyl capped polyoxyethylene moiety having an ethylenically unsaturated terminal group and at least about 10 oxyethylene units, the monomers having been reacted in a ratio that said polymer is insoluble below pH 6 and soluble at higher pH values.

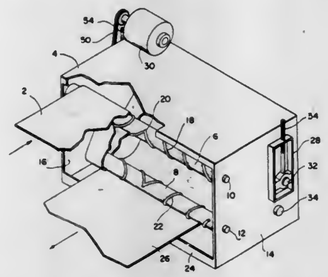
5. A method for treating a non-woven flexible web to enhance its wet strength and disposability wherein said web (1) while in a swollen state is impregnated with an ammonium hydroxide solution or dispersion of a linear terpolymer formed by the reaction of an unsaturated monomer controlling the hydrophobicity of the terpolymer, an ethylenically unsaturated carboxylic acid, and an alkyl capped polyoxyethylene moiety having an ethylenically unsaturated terminal group and at least about 10 oxyethylene units, the monomers being in a ratio that said polymer is water insoluble below pH 6 and soluble above pH 6, (2) is dried and (3) said polymer is converted to its acid form.

4,242,409

PROCESS FOR CRIMPING A NON-WOVEN MAT AND FOAM STRUCTURE PRODUCED THEREWITH

Lawrence J. Parker, Converse, Tex., assignor to Shelter Insulation, Inc., San Antonio, Tex.

Filed Dec. 1, 1978, Ser. No. 965,420
Int. Cl.³ B29J *1/02;* B32B *3/26*
U.S. Cl. 428—297 **20 Claims**



1. A method of disrupting the fiber structure and at least doubling the thickness of a non-woven fibrous mat comprising

passing said non-woven fibrous mat under tension over a first rotating roll having extending radially outwardly therefrom and helically therearound at least one rib formed in a chevron pattern, wherein the portions of the rib extending away from the point of the chevron are curved continuously over substantially the entire width of the mat, and

passing said mat over a second rotating roll having extending radially outward therefrom and helically therearound at least one rib formed in a chevron pattern disposed on said second roll, wherein the portions of the rib extending away from the point of the chevron are curved continuously over substantially the entire width of the mat, and

wherein both of said first and second rolls are disposed with the portion of the chevron pattern defining an angle less than 180° toward the mat portion coming into contact with said first or second roll.

4,242,410

PROCESS FOR THE PRODUCTION OF FOAM PLASTICS BASED ON POLYISOCYANATES HAVING A LIGHT AND YELLOWING RESISTANT TOP LAYER AND RESULTANT PRODUCT

Eberhard König, Kronberg; Manfred Schönfelder, Leverkusen, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,567
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806215
Int. Cl.³ B32B *5/18;* B29D *27/04*
U.S. Cl. 428—315 **13 Claims**

1. A process for the production of molded polyisocyanate-based foam products having a compact, light- and yellowing-resistant polyurethane-based top layer comprising the steps of:

A. coating a mold with a liquid coating agent, containing a binder, which reacts to form a light- and yellowing-resistant top layer and

B. introducing a foamable reaction mixture into said mold, wherein said binder comprises:

(i) at least one isocyanate prepolymer having at least two exclusively aliphatically and/or cycloaliphatically bound isocyanate groups and

(ii) a hardener mixture prepared by heating primary polyamines, which have aliphatically and/or cycloaliphatically-bound amino groups with ketones either in the presence of water or with subsequent addition of water and which hardener mixture comprises water and primary polyamines, at least partly in ketimine-blocked form, which have aliphatically and/or cycloaliphatically bound amino groups.

13. The product of claim 1.

4,242,411

HIGH CRIMP, HIGH STRENGTH, HOLLOW RAYON FIBERS

Eugene Costa, Jr., Goshen, and Madhu P. Godsay, Monroe, both of N.Y., assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 908,982, May 25, 1978, Pat. No. 4,182,735. This application Mar. 26, 1979, Ser. No. 23,705
Int. Cl.² D02G *3/00*
U.S. Cl. 428—369 **2 Claims**



1. High crimped, high strength, hollow rayon fibers resistant to collapse after drying and washing cycles and having at least about 20 crimps to the inch, a conditioned tenacity of greater than about 3 grams per denier, a wet tenacity greater than about 1.5 grams per denier, and having at least about 90 percent of its fibers hollow.

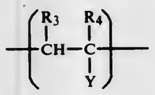
4,242,412

COATED MATERIALS AND PRODUCTION THEREOF

Masaaki Funaki, Toyonaka; Motoaki Yoshida, Kawanishi; Yoshinori Shimauchi, Kirenishi; Akira Fujioka, Osaka, and Kazuo Sakiyama, Ibaraki, all of Japan, assignors to Simitomo Chemical Company, Limited, Osaka, Japan

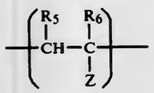
Filed Sep. 18, 1978, Ser. No. 943,813
Claims priority, application Japan, Sep. 27, 1977, 52-116536
Int. Cl.³ B32B *27/36;* B05D *3/02;* B32B *17/10, 23/08*
U.S. Cl. 428—412 **14 Claims**

1. A formed material of plastics or glass coated with an undermost film (3), a resin film (1) and a melamine resin film (2), said undermost film (3) being formed on the surface of said formed material by using a polymer (A) having a unit of the formula (II),

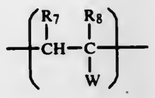


(II)

wherein R_3 and R_4 are independently a hydrogen atom or a lower alkyl or carboxyl group, and Y is a carboxyl or amino group-containing side chain, or a polymer (B) having both units of the formulae (III) and (IV),

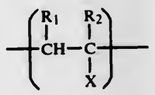


wherein R_5 and R_6 are independently a hydrogen atom or a lower alkyl or carboxyl group, and z is a hydroxyl group-containing side chain, and



(IV)

wherein R_7 and R_8 are independently a hydrogen atom or a lower alkyl or a carboxyl group, and W is a side chain having a carboxyl, amino, substituted amino, epoxy or tetrahydrofuryl group, said resin film (1) being formed on the surface of said undermost film (3) by using (a) a mixture of methoylolmelamine in which all or a part of the methylol groups are alkyletherified, and a polyhydric alcohol having a molecular weight of 1,500 or less which may contain an ethylene oxide or propylene oxide chain, or a pre-condensate thereof, (b) a mixture of a monomer having a unit of the formula (I),



(I)

wherein R_1 and R_2 are independently a hydrogen atom or a lower alkyl, carboxyl or amino group and X is a hydroxyl group-containing side chain, or a homopolymer or copolymer thereof, and a crosslinking agent, or (c) a mixture of (a) and (b), and said melamine resin film (2) being formed on said resin film (1) by using (d) a mixture of methylolmelamine in which all or a part of the methylol groups are alkyletherified, and a polyhydric alcohol having a molecular weight of 100 to 2,000 and an ethylene oxide chain, or a pre-condensate thereof, and (e) a surface active agent.

4,242,413

VAPOR PLATING METHOD FOR PLASTICS

Shunji Iwahashi, Toyonaka; Masahiro Yamasaki, Ibaraki, and Masakazu Sagou, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 22, 1977, Ser. No. 790,061
Claims priority, application Japan, Apr. 22, 1976, 51-46260
Int. Cl.² B05D *1/36, 7/04;* C23C *13/02;* G02B *1/10*
U.S. Cl. 428—412 **5 Claims**

1. A process for vapor plating the surface of a plastic substrate with a metal, said plastic substrate being made of a material selected from the group consisting of polymethyl methacrylate, polycarbonate, acrylonitrilebutadiene-styrene terpolymer, polyacetal, methyl methacrylate-styrene copolymer and polystyrene comprising; coating said surface with a coating composition to form a coating film on said surface for making said surface smooth and improving the adhesion between said substrate and said metal, and vapor plating the coated surface with the metal, said coating composition comprising the following components dissolved in a solvent:

(A)

a product obtained by partial hydrolysis of a mixture of a compound of the formula: $R_nSi(OR')_{4-n}$ wherein n is an integer of 1 to 3, R is a hydrocarbon group having 1 to 6 carbon atoms and R is an alkyl group having 1 to 4 carbon atoms, and a tetraalkoxysilane, or

(ii) a mixture of each partial hydrolysis product of said $R_nSi(OR')_{4-n}$ compound and the partial hydrolysis product of said tetraalkoxysilane, or

(iii) a mixture of said partial hydrolysis product (i) and said mixture of each partial hydrolysis products (ii),

the amount of the partial hydrolysis product of said tetraalkoxysilane, calculated as SiO_2, being 5 to 100 parts by weight to 100 parts by weight of the partial hydrolysis product of said $R_nSi(OR')_{4-n}$ compound, calculated as $R_nSiO_{(4-n)/2}$, wherein n and R are each as defined above; and

(B)

(i) a copolymer of at least one of alkyl acrylates and alkyl methacrylates with at least one of hydroxyalkyl acrylates and hydroxyalkyl methacrylates, and

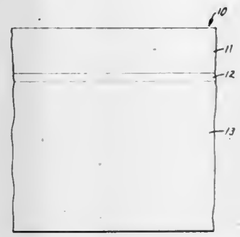
(ii) etherified methylolmelamine, the amounts of said copolymer (i) and said etherified methylolmelamine (ii) being 5 to 200 parts by weight and 0 to 150 parts by weight, respectively, based on 100 parts by weight of the partial hydrolysis product of said $R_nSi(OR')_{4-n}$ compound, calculated as $R_nSiO_{(4-n)/2}$, wherein n and R are each as defined above.

4,242,414

WEATHER-RESISTANT TRANSPARENT COMPOSITE FILM

Eugene L. McKenzie, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 860,340, Dec. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 568,474, Apr. 16, 1975, Pat. No. 4,064,314. This application Nov. 13, 1978, Ser. No. 959,721
Int. Cl.³ B32B *27/30, 27/06*
U.S. Cl. 428—412 **7 Claims**



1. A transparent composite film useful as an inexpensive, non-brittle, impact-resistant, durable, outdoor-facing transparent panel comprising

(a) a continuous transparent high-tensile-strength polycarbonate support film;

(b) a continuous transparent weather-resistant oriented polymethylmethacrylate film; and

(c) a transparent adhesive layer disposed between said support and weather-resistant films to laminate the films together.

4,242,415

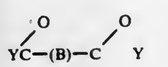
IN-MOLD COATING COMPOSITIONS CONTAINING FUNCTIONAL GROUP TERMINATED LIQUID POLYMERS

Joseph Feltzin; Thomas J. Galvin, and Erich Kuehn, all of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 913,825, Jun. 8, 1978, abandoned. This application Dec. 26, 1978, Ser. No. 972,912
Int. Cl.³ C08L *75/00*
U.S. Cl. 428—412 **12 Claims**

1. A coating composition comprising:

2-15% by weight of an amine-terminated liquid polymer containing an average from about 1.7 to about 3 amine groups per molecule, said groups being primary, secondary or a mixture thereof, and said polymer having the formula:



wherein Y is selected from a univalent radical obtained by removing hydrogen from an amine group of an aliphatic, alicyclic, aromatic or a heterocyclic amine containing from 2–20 carbon atoms and at least two amine groups, at least two of said amine groups being primary, secondary or mixtures of primary and secondary amines, and B is a polymeric backbone comprising carbon-carbon linkages, and

20–50% by weight of a vinyl ester urethane resin having the following general formula: C—I—(D—N)$_t$. D—I—C, wherein C is a carbamyl-linked radical derived from a hydroxy-terminated ester of acrylic or methacrylic acid, D is a radical derived from polyalkoxylated bisphenol A type compounds, I is a radical derived from a polyisocyanate, N is a radical derived from an unsaturated aliphatic dicarboxylic acid or an anhydride thereof, and t is an integer equal to 1–5; and

30–60% by weight of co-polymerizable ethylenically unsaturated monomers.

4,242,416

ORGANOTHIOL-CONTAINING SILOXANE RESINS AS ADHESION PROMOTERS FOR SILOXANE RESINS

Ronald H. Baney, Midland, and Len A. Harris, Rhodes, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 913,423, Jun. 7, 1978, Pat. No. 4,177,175, which is a continuation-in-part of Ser. No. 863,968, Dec. 23, 1977, abandoned. This application Apr. 25, 1979, Ser. No. 32,989
Int. Cl.^{3} C08J *3/02*; C08L *83/04*
U.S. Cl. 428—412 **20 Claims**

1. An article comprising a solid substrate coated with a pigment-free coating composition which is a composition comprising a mixture of (A) a dispersion of colloidal silica in lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$ or a dispersion of colloidal silica in ether esters of ethylene or propylene glycol-water solution, of the partial condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 inclusive carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidoxypropyl radical, the gamma-methacryloxypropyl radical and the phenyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition containing sufficient acid to provide a pH in the range of 2.5 to 6.0, having added thereto sufficient (B) to give 1–5 weight percent of the solids of (B) based on the weight of the total solids of (A) and (B) in the composition wherein (B) is an aqueous composition comprising a dispersion of colloidal silica in lower aliphatic alcohol-water solution of a partial condensate of a silanol of the formula $R'Si(OH)_3$ or a dispersion of colloidal silica in ether esters of ethylene or propylene glycol-water solution of a partial condensate of a silanol of the formula $R'Si(OH)_3$ in which R' is selected from HSR''— and $(HS)_2R''$— wherein R'' is selected from a group consisting of a divalent or trivalent aliphatic hydrocarbon radical having 1–6 carbon atoms and phenylene, the colloidal silica in (B) being present in the amount of 34 to 50 weight percent and the amount of $R'Si(OH)_3$ present in (B) being 50 to 66 weight percent both being based on the total weight of solids contained in (B), said composition (B) containing 10 to 50 weight percent solids, said composition (B) containing sufficient acid to provide a pH in the range of 2.8 to 5.2 until it is added to composition (A).

4,242,417

LITHOGRAPHIC SUBSTRATES

Jen-chi Huang, Yonkers, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 937,222, Aug. 28, 1978. This application Aug. 24, 1979, Ser. No. 69,482
Int. Cl.^{3} G03C *1/94*; B41N *3/02, 3/04*; C25F *3/04*
U.S. Cl. 428—457 **17 Claims**

1. An aluminum sheet provided with at least one surface suitable for lithography by a method which comprises the steps of:

(a) mechanically graining said surface; and,

(b) immersing said aluminum sheet in a saturated aqueous solution of an aluminum salt of a mineral acid.

4,242,418

LAMINATE

Keishi Kitagawa, Fujimiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 766,823, Feb. 8, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 23,919
Claims priority, application Japan, Feb. 10, 1976, 51/13796
Int. Cl.^{3} B32B *23/08, 27/08*
U.S. Cl. 428—507 **13 Claims**

1. A polyolefin-paper laminate comprising (a) a base paper (b) a polymeric component consisting of a copolymer of (1) about 5 to about 95 weight percent of at least one diene monomer which is a conjugated or non-conjugated diene selected from the group consisting of an aliphatic unsaturated hydrocarbon represented by the formula (I):

$$C_nH_{2n-2} \quad (I)$$

wherein n is an integer of 4 to 20 and (2) about 5 to about 95 weight percent of at least one styrene compound selected from the group consisting of styrene and styrene substituted by at least one of methyl, ethyl, isopropyl, butyl, hexyl, cyclohexyl, decyl, benzyl, chloro, chloromethyl ethoxymethyl, methoxy, bromo, carboxy or methoxy carbonyl incorporated into or coated on said base paper, and (c) an extrusion coated polyolefin layer thereon.

8. A polyolefin-paper comprising (a) a base paper, (b) a polymeric component consisting of a copolymer of (1) about 5 to about 95 weight percent of at least one diene monomer which is a conjugated or non-conjugated diene selected from the group consisting of an aliphatic unsaturated hydrocarbon represented by the formula (I):

$$C_nH_{2n-2} \quad (I)$$

wherein n is an integer of 4 to 20, (2) about 5 to about 95 weight percent of at least one styrene compound selected from the group consisting of styrene and styrene substituted by at least one of methyl, ethyl, isopropyl, butyl, hexyl, cyclohexyl, decyl, benzyl, chloro, chloromethyl ethoxymethyl, methoxy, bromo, carboxy or methoxy carbonyl, and (3) about 0.1 to about 20 weight percent of a monomer copolymerizable therewith and represented by the formula (III)

$$R_1—CH=\underset{\displaystyle COOH}{\overset{\displaystyle |}{C}}—R_2 \quad (III)$$

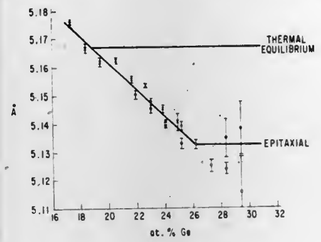
wherein R_1 and R_2, which may be the same or different, each is a hydrogen atom, an alkyl group, or an aryl group and (c) an extrusion coated polyolefin layer thereon.

4,242,419

EPITAXIAL GROWTH OF SUPERCONDUCTORS SUCH AS NB_3GE SUPERCONDUCTORS

Aly H. Dayem, Colts Neck, N.J.; Theodore H. Geballe, Woodside, Calif.; Chandra K. N. Patel, Summit, and Ping K. Tien, Chatham Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1977, Ser. No. 865,510
Int. Cl.^{2} H01B *1/02*
U.S. Cl. 428—661 **6 Claims**



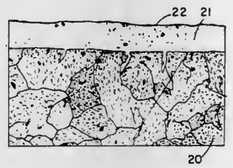
1. A superconducting body comprising a substrate; and a composition having a phase and a stoichiometric composition, said composition having a lattice constant, characterized in that said composition is epitaxially grown on a substrate having a lattice constant matching that of said composition within plus or minus 0.04 Angstroms; said composition is selected from the group consisting of Nb_3Ge, Nb_3Al, Nb_3Si and mixtures thereof. NbN and $Nb_xV_{1-x}C$, x between 0 and 1; said substrate being selected from the group consisting of Nb_xIr, Nb_xRh, Nb_3Pt, Ti_3Au and SiC.

4,242,420

SELECTIVE CHROMIZING IN A MOLTEN LEAD MEDIUM

John J. Rausch, Rte. 2, Box 177, Antioch, Ill. 60002, and Ray J. Van Thyne, 10148 S. Cook Ave., Oak Lawn, Ill. 60453, assignors to John J. Rausch; Ray J. Van Thyne and Material Sciences Corporation, all of Mt. Prospect, Ill.

Division of Ser. No. 840,368, Oct. 7, 1977, Pat. No. 4,168,333. This application Jul. 6, 1979, Ser. No. 55,686
Int. Cl.^{3} C23C *9/00*
U.S. Cl. 428—667 **2 Claims**



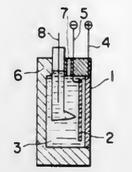
1. A surface-diffused part comprising a ferrous-based substrate and a zone at the surface of said substrate containing 12 to 45% chromium by weight, said zone having an outer surface which is substantially smooth and is free of gross porosity, said part being made by the process of providing a ferrous-based substrate and contacting said substrate with a molten alloy bath consisting essentially of lead and chromium as a surface-diffusing element, lead being the only transfer agent in said bath, said bath containing less than 0.85% chromium by bath weight of said lead, and diffusing said chromium into said substrate.

4,242,421

ELECTRODE CATALYST

Tetsuichi Kudo, and Hidehito Obayashi, both of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 19, 1979, Ser. No. 49,874
Claims priority, application Japan, Jun. 19, 1978, 53-73201
Int. Cl.^{3} H01M *8/08*
U.S. Cl. 429—13 **10 Claims**



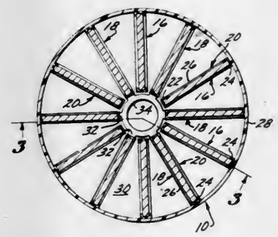
1. In a fuel cell containing an acidic electrolyte and methanol as the fuel and having fuel and air electrodes, the improvement wherein said fuel electrode comprises an electrode catalyst for the fuel cell formed of at least one boride of molybdenum, whereby said boride of molybdenum acts as a catalyst to the electrolytic oxidation reaction of said methanol in said acidic electrolyte.

4,242,422

BATTERY CONFIGURATION

Kau U. Lu, 6221 Foxshield Dr., Huntington Beach, Calif. 92647

Filed Jul. 13, 1979, Ser. No. 57,304
Int. Cl.^{3} H01M *10/12*
U.S. Cl. 429—94 **4 Claims**



1. A lead-acid storage battery cell comprising a plurality of upright, flat anode and cathode plates arranged in equally spaced alternation in an upright completely cylindrical casing containing electrolyte throughout, said anodes and cathodes being disposed therewithin in radial alignment in a circle and all of said anode plates are coupled together in parallel and all of said cathode plates are likewise coupled together in parallel.

4,242,423

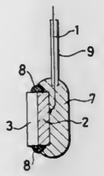
OPTICAL-CHARGING TYPE HALF-CELL, AND PHOTOCHEMICAL BATTERY USING THE SAME

Hiroshi Hada, Ootsu, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 22, 1979, Ser. No. 41,469
Claims priority, application Japan, May 26, 1978, 53-62939
Int. Cl.^{3} H01M *6/30, 6/36*
U.S. Cl. 429—111 **13 Claims**

1. An optical-charging/rechargeable type half cell comprising: a metal electrode with a lead wire, and a thin plate of photoactive-semiconductor material in contact with said metal electrode, an auxiliary metal electrode in contact with said thin plate and said metal electrode, said metal electrode and thin plate being immersed in a liquid electrolyte containing metal ions from which metal is deposited on the surface of said pho-

toactive-semiconductor material by reduction of metal ions upon exposure to said photoactive-semiconductor material to



light, said auxiliary electrode being selected from metals having an iomization potential equal to or greater than that of said metal ions in said electrolyte.

4,242,424

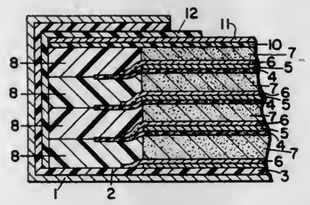
FLAT BATTERY

Sheldon A. Buckler, Lincoln; Fredric S. Cohen, Waltham, and David P. Kennedy, Cambridge, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 763,058, Jan. 27, 1977. This application Apr. 7, 1978, Ser. No. 894,369

Int. Cl.³ H01M *4/36, 6/12*

U.S. Cl. 429—152 **15 Claims**



1. A thin flat laminar battery, comprising a series of cells each including a cathode slurry layer and an anode slurry layer on opposite sides of a separator, in which the anode slurry layers comprise about 80 to 85 parts by weight of zinc powder, about 10 to 12 parts by weight of water, from about 1 to about 2 parts by weight of zinc chloride, from about 2 to about 4 parts by weight of ammonium chloride, and from about 1 to about 3 parts by weight of mercury.

4,242,425

NOVEL LITHIUM HALIDE BATTERY STRUCTURE

Matthew O'Boyle, Timonium; Bernard Icore, Randallstown, both of Md., and Marilyn J. Harney, Painesville, Ohio, assignors to Catalyst Research Corporation, Baltimore, Md.

Filed Feb. 21, 1980, Ser. No. 123,381

Int. Cl.³ H01M *2/26*

U.S. Cl. 429—181 **3 Claims**

1. A lithium halide battery comprising:

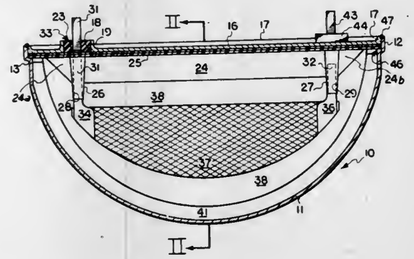
a. metal envelope having a top portion with an opening therethrough hermetically bonded thereto, said envelope including a peripheral flange forming a seat around the perimeter of the envelope;

b. a support means having its peripheral edge positioned on said seat and including a depending flange, said support means including first and second spaced apart post supports integrally formed with said flange, said first post support having an opening extending therethrough for alignment and communication with said opening in the top portion;

c. first and second posts engagingly positioned in the respective first and second post supports, said first post extending through said openings in said first post support and top portion, each of said posts extending beyond their respective post support;

d. an anode current collector connected to and extending between the first and second posts;

e. a pair of lithium anodes positioned on opposite sides of said support means flange and current collector and bonded together so as to sandwich therebetween said support means flange, posts and current collector;



f. a pair of depolarizer pellets molded to fit between said lithium anode and envelope and positioned in coextensive contact therewith; and

g. means for sealingly positioning said first post within the opening and electrically insulating said first post from the top portion.

4,242,426

PROCESS FOR ELECTROLYTE STRUCTURE WITH STRONTIUM TITANATE MATRIX FOR MOLTEN CARBONATE FUEL CELLS

Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 5, 1979, Ser. No. 90,880

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—193 **3 Claims**

1. A process for producing an electrolyte structure for a molten carbonate fuel cell which comprises admixing from about 55% by weight to about 75% by weight of strontium titanate powder with from about 25% by weight to about 45% by weight of electrolyte based on the total weight of the mixture, and hot pressing the resulting mixture at a temperature ranging from about 480° C. to about 490° C. under a pressure of at least about 1000 psi, said strontium titanate being composed of crystallites which are at least significantly spherical and which have an average size ranging from about 0.1 micron to about 1 micron, said strontium titanate being selected from the group consisting of stoichiometric strontium titanate, strontium-rich titanate and mixtures thereof, said electrolyte being selected from the group consisting of a ternary lithium-potassium-sodium carbonates composition, a binary lithium-potassium carbonates composition, a binary lithium-sodium carbonates composition, a binary sodium-potassium carbonates composition and mixtures thereof, said electrolyte structure being at least substantially pore-free when said electrolyte is in molten form.

2. A process for producing an electrolyte structure for a molten carbonate fuel cell, said electrolyte structure consisting essentially of electrolyte and strontium titanate supporting matrix, which comprises providing strontium titanate powder wherein the crystallites are at least significantly spherical and have an average size ranging from about 0.1 micron to about 1 micron, forming said strontium titanate powder into a supporting matrix blank wherein the pore volume is interconnecting and comprised of capillary-sized interstices between compacted crystallites and is at least substantially uniformly distributed and ranges from about 50% by volume to about 70% by volume of said blank, placing said strontium titanate blank on a surface of a supporting substrate, depositing solid electrolyte on the face of said strontium titanate blank in an amount sufficient when molten to fill the pore volume of said blank, said strontium titanate being selected from the group consisting of stoichiometric strontium titanate, strontium-rich titanate and mixtures thereof, said electrolyte being an alkali carbonate composition selected from the group consisting of a ternary lithium-potassium-sodium carbonates composition, a binary lithium-potassium carbonates composition, a binary lithium-sodium carbonates composition, a binary sodium-potassium carbonates composition and mixtures thereof, heating the resulting assembly to a temperature at least about 10° K. above the liquidus temperature of said electrolyte but at which it does not significantly vaporize whereupon the resulting molten electrolyte impregnates the blank advancing throughout the blank filling the pore volume therein so that the resulting electrolyte structure is at least substantially pore free when the electrolyte is in molten form, said heating being carried out in an atmosphere containing sufficient carbon dioxide to maintain the stability of said molten electrolyte, said substrate being chemically non-interactive with said molten electrolyte, said supporting substrate surface being shaped to allow residual gases to escape advancing molten electrolyte.

4,242,427

METHOD FOR IMPROVING WETTABILITY OF HIGH TEMPERATURE CELL SEPARATORS

Gerhard Sterr, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie, Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,219

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851085

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—247 **6 Claims**

1. Method for improving the wettability of separators in electrochemical high temperature cells with molten electrolyte in which the separator consists of a temperature stable raw material, wherein

the surface of the separator is exposed at elevated temperature to the influence of boron trifluoride (BF_3) or a substance which yields BF_3.

4,242,428

ADDITIVE SYSTEM OF COLOR PHOTOGRAPHY BASED ON IRIDESCENT PIGMENTS

Chester Davis, 1685 Atson La., Cincinnati, Ohio 45205

Division of Ser. No. 738,449, Nov. 3, 1976, Pat. No. 4,184,872, which is a continuation-in-part of Ser. No. 549,707, Feb. 13, 1975, Pat. No. 4,010,293, and Ser. No. 549,706, Feb. 13, 1975, Pat. No. 4,065,158. This application Oct. 21, 1977, Ser. No. 844,373

Int. Cl.³ G03C *1/76*

U.S. Cl. 430—9 **14 Claims**

8. An intensely colored, image layer comprising a composition which is a mixture of

particles of an iridescent pigment which displays an interference-reinforced reflection color, the particles of said pigment individually comprising an essentially transparent micaceous substrate having thereon at least one overcoating of an essentially transparent material having a refractive index greater than about 2.0

and finely divided silver particles,

said mixture dispersed in a binder.

4,242,429

METHOD OF STABILIZING ORGANIC SUBSTRATE MATERIALS AGAINST LIGHT

Hiroshi Hara, Asaka, and Yoshiaki Suzuki, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

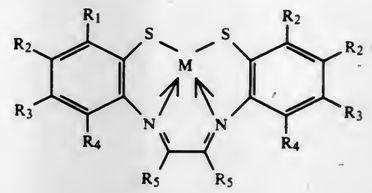
Filed Oct. 30, 1978, Ser. No. 955,840

Claims priority, application Japan, Nov. 1, 1977, 52-132274

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—17 **12 Claims**

7. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or an adjacent layer contains a compound of the formula (I) in an amount sufficient to stabilize said color photographic material to light:



(I)

wherein M represents a metal atom selected from the group consisting of Cu, Co, Ni, Pd and Pt atoms; R_1 R_2, R_3 and R_4 may be the same or different and represent a hydrogen atom, a cyano group, a halogen atom, an alkyl group, an aryl group, a cycloalkyl group or a heterocyclic group which may be substituted or unsubstituted and which may be attached to the carbon atom in the benzene ring directly or through a divalent connecting group; or each of R_1 and R_2, and R_3, or R_3 and R_4 may combine to form the atomic group necessary to complete a 6-membered ring and R_5 represents a hydrogen atom or a methyl group.

4,242,430

METHOD FOR STABILIZING ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES AGAINST LIGHT

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

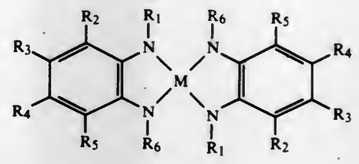
Filed Nov. 14, 1978, Ser. No. 960,548

Claims priority, application Japan, Nov. 22, 1977, 52-140321

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—17 **14 Claims**

6. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or adjacent layer contains a compound of the formula (I) in an amount sufficient to stabilize said color photographic material against the action of light while not adversely affecting color hue as well as color purity of the color photographic material



(I)

wherein M represents a Cu, Co, Ni, Pd or Pt atom; R_1 and R_6 are the same or different, and represent a hydrogen atom or an alkyl group, an aryl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkylsulfonyl group, or an arylsulfonyl group; R_2, R_3, R_4 and R_5 which may be the same or different represent a hydrogen atom, a halogen atom,

a cyano group, or an alkyl group, an aryl group, a cycloalkyl group or a heterocyclic group bonded to a carbon atom on the benzene rings either directly or through a divalent linking group, or R_2 and R_3, R_3 and R_4 or R_4 and R_5 may combine to form the non-metallic atomic groupings necessary to form a 6-membered ring.

4,242,431

METHOD FOR STABILIZING ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES TO LIGHT AND A PHOTOGRAPHIC MATERIAL SO STABILIZED

Hiroshi Hara, Asaki; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

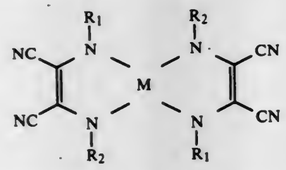
Filed Dec. 14, 1978, Ser. No. 969,518

Claims priority, application Japan, Dec. 14, 1977, 52-15034

Int. Cl.³ G03C *1/40, 1/84, 7/00, 1/10*

U.S. Cl. 430—17 **13 Claims**

6. A color photographic material comprising at least one layer containing a photographic dye image, said dye of said dye image having an absorption maximum in the wavelength range between about 300 nm and about 800 nm, wherein said layer or an adjacent layer thereto contains at least one compound represented by the formula I



(I)

wherein M represents Ni, Pd or Pt; R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkylsulfonyl group, an arylsulfonyl group or a carbamoyl group, stabilizing said dye to the action of light.

4,242,432

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY HAVING PHOTOSENSITIVE MULTI-LAYERS

Akira Kato; Akira Itoh, and Tohru Uchida, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 630,412, Nov. 10, 1975, Pat. No. 4,070,185. This application Aug. 1, 1977, Ser. No. 821,297

Claims priority, application Japan, Nov. 22, 1974, 49/135295

The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.

Int. Cl.² G03G *5/08*

U.S. Cl. 430—57 **4 Claims**

1. A photosensitive article for electrophotography having a conductive substrate and a coating of photosensitive material comprising photoconductive powder in a binder, said coating comprising at least two superimposed photosensitive layers wherein each layer contains photoconductive powder in a binder, the particle size of said photoconductive powder in the layer adjacent to the substrate being smaller than 0.5 microns and the particle size of the photoconductive powder in the superimposed outer layer being in the range of 0.5 microns to 3 microns.

4,242,433

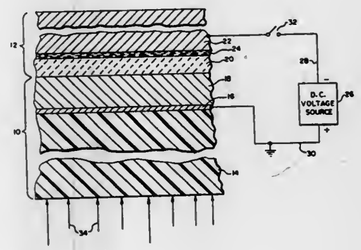
HIGH SPEED ELECTROPHOTOGRAPHIC MEDIUM

Manfred R. Kuehnle, Lexington, and Arno K. Hagenlocher, Framingham, both of Mass., assignors to Coulter Systems Corp., Bedford, Mass.

Division of Ser. No. 796,054, May 12, 1977, Pat. No. 4,155,640. This application Nov. 16, 1977, Ser. No. 851,822

Int. Cl.² G03G *5/04*

U.S. Cl. 430—67 **11 Claims**



1. An electrographic medium adapted to be imaged by a particular type of radiant energy to achieve at least a latent electric charge image of a pattern of said radiant energy, said medium comprising:

A. a modulating structure consisting of:

i. a substrate that is transparent to said radiant energy,

ii. an ohmic layer of a thin film material deposited onto a surface of said substrate in a thickness to be transparent to said radiant energy, and

iii. a thin film photoconductive layer of a wholly inorganic, microcrystalline, uniformly ordered and vertically oriented crystallite, dense material having a dark resistivity of at least about 10^{12} ohm centimeters, a ratio of dark to light resistivity of at least about 10^4, a thickness of a degree to enable the transmission of said radiant energy with less than about 30% absorption of white light, said crystalline layer being bonded to the surface of said ohmic layer opposite the substrate,

B. a storage structure consisting of

i. a layer of dielectric material that is highly insulating electrically, intimately and permanently bonded to the surface of the photoconductive layer opposite the ohmic layer,

ii. an electrode overlying the dielectric layer on the surface opposite the photoconductive layer, and

iii. an interfacing, intimately connecting conductive film between the electrode and the dielectric layer, said film being of a nature to enable ready separation of the electrode from the dielectric layer,

C. means for extending a connection from each of said ohmic layer and electrode to a relatively low voltage d.c. source and

D. said electrophotographic medium adapted to have said pattern projected against the bottom of the substrate, through the substrate and ohmic layer and into said photoconductive layer whereby selectivity to release charge carriers for modulated movement through said photoconductive layer to effect the synthesization of said projected pattern onto the surface of the photoconductive layer opposite the ohmic layer and thence by induction through and onto the surface of said dielectric layer.

4,242,434

TONER COMPOSITION FOR MULTIPLE COPY ELECTROSTATIC PHOTOGRAPHY

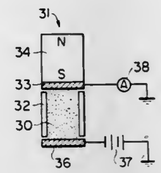
Koji Hirakura; Itsuo Ikeda; Wasaburo Ohta, and Zenjiro Okuno, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 742,732, Nov. 17, 1976, abandoned. This application Jun. 21, 1978, Ser. No. 917,708

Claims priority, application Japan, Nov. 26, 1975, 50/141364

Int. Cl.³ G03G *9/14, 15/09*

U.S. Cl. 430—122 **20 Claims**



1. In a method of controlling the operation of an electrostatic apparatus to produce a large number of copies from an electrostatic image in a multiple copy process, the electrostatic apparatus being of the type comprising a photoconductive member, imaging means for radiating a light image onto the photoconductive member, developing means including a magnetic brush for applying a dry toner substance onto the surface of the photoconductive member and forming a toner image thereon, and means for transferring the toner image onto the paper to thereby reproduce a copy of the image, the method comprising utilizing a toner substance comprising a magnetic carrier composition, providing an effective conductivity of between 10^{-15} and 10^{-5} ohms^{-1} cm^{-1} for the magnetic carrier composition, each particle of the composition comprising a ferromagnetic material and a resin and having a diameter between 20 and 200 microns , and determining the effective conductivity by testing means separate from the electrostatic apparatus such that the effective conductivity is measured while the composition is free of absorbed water vapor and other gases encountered under operating conditions with the electrostatic apparatus, said effective conductivity being determined by disposing said magnetic carrier composition in a cell in which an electrode is disposed at the top thereof, retaining said magnetic carrier composition in said cell by a magnet disposed above said electrode thereby substantially simulating said magnetic brush, and measuring the electric current passing through said magnetic carrier composition in said cell utilizing said electrode and another electrode at the bottom of said cell and a power source, whereby said measurement is utilized to determine said effective conductivity of said magnetic carrier composition.

4,242,435

PHOTOGRAPHIC DYE DIFFUSION TRANSFER PROCESS

Walter Püschel, Leverkusen; Hans Vetter, Cologne, and Paul Marx, Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

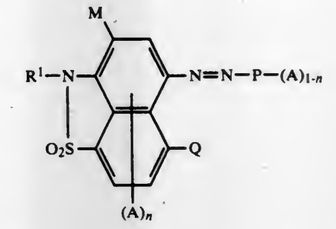
Filed Feb. 9, 1979, Ser. No. 10,512

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806196

Int. Cl.³ G03C *5/54, 7/00, 1/40, 1/10*

U.S. Cl. 430—242 **2 Claims**

1. In a photographic dye diffusion transfer process for the production of coloured images, in which a photographic material comprising at least one photosensitive silver halide emulsion layer and, associated therewith, a non-diffusible dye-providing compound is exposed imagewise, developed under alkaline conditions with a silver halide developer, a diffusible dye being released imagewise from the non-diffusible dye-providing compound under the alkaline development conditions of the developer and being transferred to an image-receiving layer and thereafter neutralizing the alkaline condition thereby terminating development and diffusion of the dye, the improvement according to which the non-diffusible dye-providing compound is a compound corresponding to the following formula:



I

in which

A represents an oxidizable organic carrier radical attached to the remainder of the formula optionally through a connecting link X and containing a diffusion-preventing radical, of which carrier radical either in its oxidized form or in its non-oxidized form at least a part thereof is split off together with the diffusion-preventing radical under the alkaline photographic development conditions, accompanied by the imagewise release of a diffusible azo dye,

n=0 or 1,

P represents a monocyclic carbocyclic aromatic or heterocyclic aromatic radical,

M represents hydrogen, halogen, alkyl sulfonyl, aryl sulfonyl, or sulphamoyl,

Q represents acylamino, the acyl radical being derived from aliphatic or aromatic carboxylic or sulphonic acids,

R^1 represents hydrogen or a hydrolysable radical corresponding to one of the formulae —CO—R^2 or —CO—OR^2, and

R^2 represents alkyl containing from 1 to 18 carbon atoms or phenyl.

4,242,436

PHOTOGRAPHIC MATERIAL FOR CONTINUOUS TONE REPRODUCTION

Ludovicus M. Mertens, Antwerp, and Leon L. Vermeulen, Herenthout, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Nov. 7, 1978, Ser. No. 958,386

Claims priority, application United Kingdom, Dec. 15, 1977, 52264/77

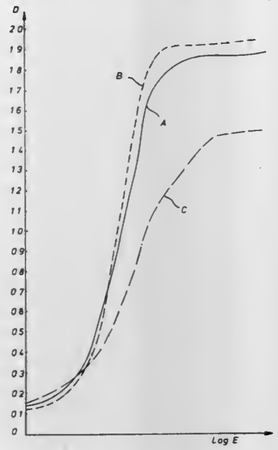
Int. Cl.² G03C *5/54, 1/48*

U.S. Cl. 430—248 **5 Claims**

1. A process for producing an image in an image-receiving layer by a silver complex diffusion transfer process in which a photographic material comprising at least one water-permeable layer and including a water-permeable hydrophilic colloid silver halide emulsion layer in which the silver halide comprises a mixture of silver chloride and at least one of silver iodide and silver bromide, at least 90 mole % based on the total molar weight of the silver halide being silver chloride, and the ratio by weight of hydrophilic colloid to silver halide expressed as silver nitrate is between about 3:1 and about 10:1 is exposed to light, and contacted with an aqueous alkaline liquid and a silver complexing agent while in contact with said image-receiving material, wherein at least one of said photographic material layers contains a mixture of developing agents comprising an o-dihydroxybenzene and a 3-pyrazolidinone, the molar amount of the o-dihydroxybenzene in said mixture being larger than the molar amount of the 3-pyrazolidinone.

2. A process according to claim 1, wherein the silver complex diffusion transfer process is carried out with an alkaline

aqueous processing liquid containing thiosulphate ions in admixture with iodide ions and an organic heterocyclic mercapto



compound cooperating with the iodide ions in the producing of an image with brown or sepia tone.

4,242,437

PHOTOSENSITIZED POLYAMIC ACIDS CURABLE BY EXPOSURE TO ACTINIC RADIATION

Robert R. Rohloff, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 11, 1979, Ser. No. 38,061

Int. Cl.[3] G03C *1/68*

U.S. Cl. 430—270 **2 Claims**

1. A light sensitive article comprising a film of polyamic acid containing at least one photoinitiator therein capable of aiding in the cure of said polyamic acid upon exposure thereof to actinic radiation.

4,242,438

PHOTOMASK MATERIAL

Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 8, 1975, Ser. No. 611,115

Claims priority, application Japan, Sep. 6, 1974, 49/102795

Int. Cl.[2] G03C *1/74*

U.S. Cl. 430—278 **16 Claims**

1. A photomask material which comprises an transparent support which is a plate or film of glass, natural or synthetic mineral, or synthetic resin, having thereon a transparent electroconductive layer comprised of gold, platinum, palladium, tin (IV) oxide or indium (III) oxide and having a thickness ranging from about 0.005 to 0.06μ and a surface electric resistivity of about 10^6 ohm square or less, said electroconductive layer having thereon a transparent porous aluminum oxide layer formed by anodic oxidation, said aluminum oxide layer having a thickness of from about 1.5 to 30μ and containing over the entire layer a uniform distribution of fine pores ranging in size from 200 to 1000 A with a light-sensitive silver halide incorporated therein.

4,242,439

DISPERSION IMAGING UTILIZING PLURAL LAYERS OF DIFFERENT METAL COMPONENTS

Masatsugu Izu, Birmingham, and Vincent D. Cannella, Detroit, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 827,470, Aug. 25, 1977. This application Sep. 27, 1979, Ser. No. 79,377

Int. Cl.[3] G03C *5/24, 5/04*

U.S. Cl. 430—346 **14 Claims**

1. The method of producing an image by a dry process with a minimum of applied energy, which method comprises the step of providing a dry process high sensitivity imaging film comprising, a substrate, and a solid, high optical density and substantially opaque film of a dispersion imaging material deposited on said substrate and including a pluraltiy of separate layers of different and substantially mutually insoluble metal components having relatively high melting points and relatively low melting point eutectics and interfaces between said layers having relatively low melting points, said film of dispersion imaging material, upon application of energy in an amount above a certain critical value sufficient to increase the absorbed energy in the film material above a certain critical temperature value related to the relatively low melting points of the interfaces, changing to a substantially fluid state in which the surface tension of the film material acts to cause the substantially opaque film, where subject to said energy, to disperse and change to a discontinuous film comprising openings and deformed material which are frozen in place following said application of energy and through which openings light can pass for decreasing the optical density thereat, and the step of applying to said substantially opaque film of dispersion imaging material energy in an amount above said certain critical value sufficient to increase the absorbed energy in the film material above said certain critical temperature value related to the relatively low melting points of the interfaces to disperse and change the substantially opaque film, where subjected to said applied energy, to a discontinuous film comprising openings and deformed material which are frozen in place following said application of energy and through which openings light can pass for decreasing the optical density thereat.

4,242,440

THERMOCHROMIC POLYACETYLENES USED IN LASER BEAM RECORDING METHOD

Kwok C. Yee, Randolph; Anthony F. Preziosi, Ledgewood; Gordhanbhai N. Patel; Ronald R. Chance, both of Morris Plains; Granville G. Miller, Morristown, and Ray H. Baughman, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 839,678, Oct. 5, 1977. This application Apr. 30, 1979, Ser. No. 34,111

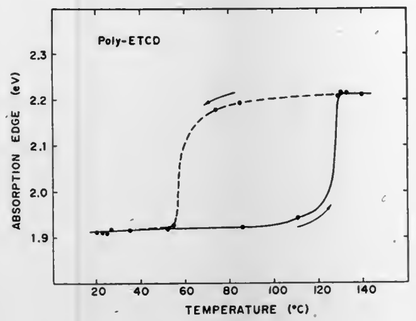
Int. Cl.[3] G03C *5/04*

U.S. Cl. 430—346 **2 Claims**

1. In a process for laser beam recording of images which are storable and erasable comprising the steps of

(a) generating a laser beam; and

(b) exposing to said beam a thermochromic layer on a substrate, thereby forming an image by the resulting heating of the thermochromic layer above its thermochromic transition temperature, the improvement which comprises forming said layer from at least one thermochromic polyacetylene, formed by polymerizing an acetylenic compound containing at least one —C≡C—C≡C— group, wherein the thermochromic polyacetylene possesses a hysteresis transition temperature which is at least about 5° C. below its thermochromic transition temperature and maintaining said layer after exposure between the thermochromic transition temperature and hysteresis transition temperature to store the image or cooling said layer



below the hysteresis transition temperature to erase the image.

4,242,441

COLOR IMAGE FORMING PROCESS

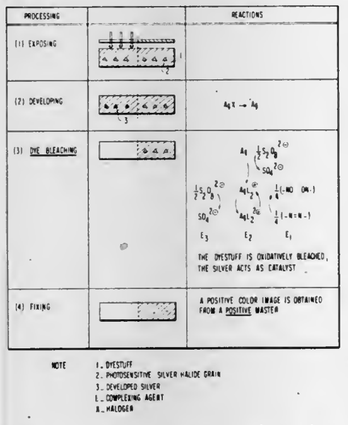
Shigeru Nakamura, and Isao Shimamura, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 840,459, Oct. 7, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 16,694

Claims priority, application Japan, Oct. 12, 1976, 51-122577

Int. Cl.[3] G03C *7/00*

U.S. Cl. 430—390 **12 Claims**



1. A posi-posi process for forming positive color images which comprises processing an image-wise exposed and developed photographic element having silver image-wise distributed therein in the presence of a heterocyclic compound containing at least one nitrogen atom in the heterocyclic nucleus thereof, which exhibits an oxidation reduction potential of Ag(I)/Ag(II) in the range of about 1.9 volts to about 1.1 volts, a peroxo acid or a salt thereof, and a dye, to oxidatively bleach the dye at a pH of 2 to 7 at the areas where silver is present due to the catalytic effect of said silver on the oxidation of said dye, whereby said positive color images are formed.

4,242,442

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Yoshio Idota, and Minoru Yamada, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 19, 1979, Ser. No. 86,623

Claims priority, application Japan, Oct. 19, 1978, 53-128883

Int. Cl.[3] G03C *5/32*

U.S. Cl. 430—393 **25 Claims**

1. A method which comprises processing an imagewise exposed and color developed silver halide color photographic material with a solution containing a ferric ion complex, a bromate and a water-soluble chloride.

4,242,443

PHOTOGRAPHIC FILM UNIT WITH INTEGRAL STRUCTURE

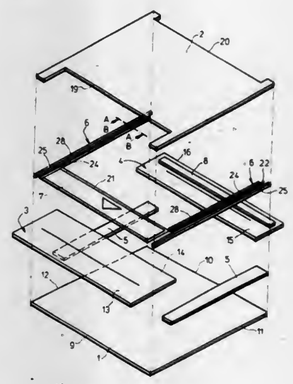
Hermann Lührig, Leverkusen; Guido Kovacic, Unkel, and Horst-Peter Müller, Cologne, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,192

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843476

Int. Cl.[3] G03C *1/48*

U.S. Cl. 430—496 **15 Claims**



1. A photographic film unit having an integral structure with a front and a rear end and a picture sheet and a covering sheet which are joined to each other by means of an interposed mask, wherein a container for photographic developer material is located at the front end of the picture unit and a trap for collecting excess developer material is located at the rear end of the picture unit the mask having elongate flap members which initially project out of the contour of the picture unit and are then folded back on to the covering sheet and are rigidly joined with it, the flap members covering the container and the trap, characterised in that the film unit has lateral connections between picture sheet and covering sheet disposed between the trap and the container and spacer strips with air guiding channels are disposed in the lateral connections.

4,242,444

PROCESS FOR THE PREPARATION OF LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Teiji Habu; Masao Ishihara; Sadatugu Terada; Eiichi Sakamoto, and Hiroshi Yamada, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,102
Claims priority, application Japan, Jul. 4, 1977, 52-79647
Int. Cl.³ G03C *1/78, 1/02, 1/38*
U.S. Cl. 430—510 **12 Claims**

1. A process for the preparation of a photographic element comprising a support and a photographic layer thereon, said photographic layer containing a silver halide layer, said process comprising applying to said element a coating solution which contains a compound represented by the following formula (I) or (II):

$$C_{3n}F_{(6n)-1}—Y—A—B \quad (I)$$

$$C_{3n}F_{(6n)-1}—Y—A—X—A—Y—C_{3n}F_{(6n)-1} \quad (II)$$

wherein A represents a simple bond or a divalent group; Y represents oxygen or sulfur, or

$$—N(R_1)—A'—;$$

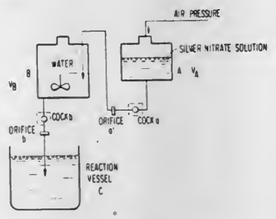
B represents a monovalent hydrophilic group; X represents a divalent hydrophilic group; n represents an integer of 1 to 4; R_1 represents hydrogen, a lower alkyl group; and A′ represents a simple bond or an alkylene group.

4,242,445

METHOD FOR PREPARING LIGHT-SENSITIVE SILVER HALIDE GRAINS

Mitsuo Saito, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 9, 1979, Ser. No. 2,134
Claims priority, application Japan, Feb. 2, 1978, 53-10681
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—569 **13 Claims**



1. A method of preparing light-sensitive silver halide grains by the simultaneous addition of two or more aqueous solutions of inorganic salts in the presence of a protective colloid to form a reaction mixture which comprises providing nuclei of silver halide grains at the initial stage of grain formation and growing said grains while increasing the concentrations of said aqueous solutions of said inorganic salts without increasing the concentrations of said inorganic salts in said reaction mixture such that fresh nuclei of crystal grains are hardly produced during the period of grain growth.

4,242,446

METHOD FOR DETERMINING A SUBSTANCE IN A BIOLOGICAL FLUID AND REAGENT COMBINATION FOR USE IN THE METHOD

Mathew M. Madappally, Cooper City, Fla., and Giovanni Bucolo, Cupertino, Calif., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jul. 26, 1978, Ser. No. 927,973
Int. Cl.³ C12Q *1/52, 1/34, 1/40, 1/32*
U.S. Cl. 435—15 **21 Claims**

1. In a method for determining a substance present in a biological fluid by reacting a compound produced in the course of the determination in an enzymatic oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide catalyzed by a dehydrogenase enzyme to produce reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the content of the substance in the fluid, said fluid also containing an endogenous material which or a derivative of which produced during the determination likewise reacts in an enzymatic oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide catalyzed by said dehydrogenase to produce reduced beta-nicotinamide adenine dinucleotide, thereby interfering with the determination, the improvement for obviating the interference caused by the endogenous material which comprises:

reacting said endogenous material or derivative thereof present in said fluid in an enzymatic oxidation-reduction reaction with beta-nicotinamide adenine dinucleotide catalyzed by said enzyme dehydrogenase to subtantially consume the endogenous material or derivative by conversion thereof to an oxidation product of the reaction with the production of reduced beta-nicotinamide adenine dinucleotide,

reacting the resulting reduced beta-nicotinamide adenine dinucleotide in said fluid with pyruvate in the presence of lactate dehydrogenase to return the reduced beta-nicotinamide adenine dinucleotide to its oxidized form with the reduction of pyruvate to lactate,

thereafter inhibiting the lactate dehydrogenase enzymatic activity in said fluid,

and thereafter producing in said fluid a quantity of said compound produced in the course of the determination for said reaction thereof and production of reduced beta-nicotinamide adenine dinucleotide proportionally to the content of said substance.

4. A method for determining alpha-amylase present in a biological fluid also containing endogenous glucose, which comprises the steps of:

(1) enzymatically hydrolyzing water-soluble starch with the alpha-amylase present in said fluid to produce oligosaccharides including maltose,

(2)(a) concurrently consuming the glucose present in said fluid by reacting the glucose present in said fluid with adenosine triphosphate in the presence of hexokinase to convert the glucose to glucose-6-phosphate, and reacting the glucose-6-phosphate with beta-nicotinamide adenine dinucleotide in the presence of glucose-6-phosphate dehydrogenase to convert the glucose-6-phosphate to 6-phosphogluconate with the production of reduced beta-nicotinamide adenine dinucleotide, and

(b) reacting the reduced beta-nicotinamide adenine dinucleotide in said fluid with pyruvate in the presence of lactate dehydrogenase to return the beta-nicotinamide adenine dinucleotide to its oxidized form and produce lactate,

(3) thereafter inhibiting the lactate dehydrogenase enzymatic activity in said fluid, and

(4) thereafter continuing said hydrolysis with the amphaamylase present in said fluid, enzymatically hydrolyzing the maltose produced in the presence of alpha-glucosidase to produce glucose, reacting the glucose thus produced with adenosine triphosphate in the presence of hexokinase to produce glucose-6-phosphate, and reacting the glucose-6-phosphate thus produced with beta-nicotinamide adenine dinucleotide in the presence of glucose-6-phosphate dehydrogenase to produce reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the alpha-amylase activity.

11. A method for determining triglycerides present in a biological fluid also contacting endogenous glycerol, which comprises the steps of:

(1)(a) consuming the glycerol present in said fluid by reacting the glycerol with beta-nicotinamide adenine dinucleotide in the presence of glycerol dehydrogenase to convert the glycerol to dihydroxyacetone with the production of reduced beta-nicotinamide adenine dinucleotide, and

(b) reacting the reduced beta-nicotinamide adenine dinucleotide in said fluid with pyruvate in the presence of lactate dehydrogenase to return the beta-nicotinamide adenine dinucleotide to its oxidized form and produce lactate,

(2) thereafter inhibiting the lactate dehydrogenase enzymatic activity in said fluid, and

(3) thereafter enzymatically hydrolyzing the triglycerides in said fluid with lipase to produce glycerol, and reacting the glycerol thus produced with beta-nicotinamide adenine dinucleotide in the presence of glycerol dehydrogenase to produce reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the triglyceride content of said fluid.

14. A method for determining triglycerides present in a biological fluid also containing endogenous glycerol, which comprises the steps of:

(1)(a) consuming the glycerol present in said fluid by reacting the glycerol with adenosine triphosphate in the presence of glycerokinase to convert the glycerol to glycerol phosphate, reacting the glycerol phosphate with beta-nicotinamide adenine dinucleotide in the presence of glycerophosphate dehydrogenase to convert the glycerol phosphate to dihydroxyacetone phosphate with the production of reduced beta-nicotinamide adenine dinucleotide, and

(b) reacting the reduced beta-nicotinamide adenine dinucleotide in said fluid with pyruvate in the presence of lactate dehydrogenase to return the beta-nicotinamide adenine dinucleotide to its oxidized form and produce lactate,

(2) thereafter inhibiting the lactate dehydrogenase enzymatic activity in said fluid, and

(3) thereafter enzymatically hydrolyzing the triglycerides in said fluid with lipase to produce glycerol, reacting the glycerol thus produced with adenosine triphosphate in the presence of glycerokinase to produce glycerol phosphate, and reacting the glycerol phosphate thus produced with beta-nicotinamide adenine dinucleotide in the presence of glycerophosphate dehydrogenase to produce reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the triglyceride content of said fluid.

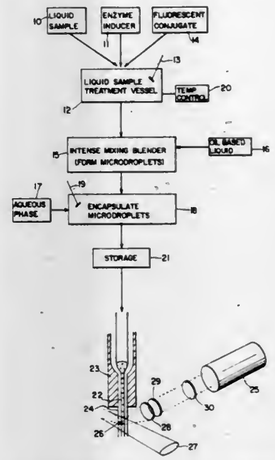
19. A two-reagent assay system for determining alpha-amylase present in a biological fluid also containing endogenous glucose, which system includes a first reagent comprising water-soluble starch, adenosine triphosphate, hexokinase, beta-nicotinamide adenine dinucleotide, glucose-6-phosphate dehydrogenase, a water-soluble salt of pyruvic acid, and lactate dehydrogenase, said first reagent to be admixed with said fluid initially for hydrolysis of starch and conversion of glucose present to 6-phosphogluconate in a product containing the beta-nicotinamide adenine dinucleotide in its oxidized form, and a second reagent comprising a water-soluble salt of oxamic acid and alpha-glucosidase, said second reagent to be admixed with said product for inhibiting the enzymatic activity of said lactate dehydrogenase and then producing reduced beta-nicotinamide adenine dinucleotide in an amount proportional to the alpha-amylase activity.

4,242,447

RAPID DETECTION OF BACTERIA

Eugene Findl, Amityville, and Leonard D. Kurtz, Woodmere, both of N.Y., assignors to BioResearch, Farmingdale, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,622
Int. Cl.³ C12Q *1/06*
U.S. Cl. 435—39 **15 Claims**



1. A method of rapidly detecting and quantifying bacteria present in a liquid sample comprising the steps of:

admixing with a liquid sample to be tested for the presence of bacteria an enzyme-producing agent which induces the production of an enzyme in said bacteria, said enzyme being capable of reacting with a fluorescent conjugate ingested by said bacteria to release the fluorescent portion thereof, to induce production of said enzyme in an amount sufficient to effect release of said fluorescent portion;

admixing said liquid sample and a fluorescent conjugate capable of being ingested by said bacteria for reaction with said enzyme to release the fluorescent portion of said fluorescent conjugate;

forming microdroplets of said liquid sample encapsulated by a oil base liquid membrane in a liquid carrier, in which said encapsulated microdroplet are substantially insoluble, each of said encapsulated microdroplets retaining the fluorescent matter released from said fluorescent conjugate;

forming said liquid carrier into a stream such that the encapsulated microdroplets align themselves therein; and

moving said stream relative to a detector for detecting the fluorescent matter in the encapsulated microdroplets to detect the presence of said bacteria in the liquid sample, detecting fluorescent matter in said microdroplets, measuring the total fluorescence and determining the bacterial content in said liquid sample.

4,242,448

REGENERATION OF SCRUBBER EFFLUENT CONTAINING SULFATE RADICALS

Robert S. Brown, III, 9726 Cedar Dr., Shawnee Mission, Kans. 66207

Filed Apr. 12, 1979, Ser. No. 29,272
Int. Cl.³ C12P *39/00, 3/00;* **C10G** *32/00*
U.S. Cl. 435—42 **9 Claims**

1. A process for scrubbing sulfur dioxide from stack gas of fossil fuel burning including the steps of:

(a) passing said stack gas through a scrubber vessel;

(b) injecting a solution into said scrubber vessel contemporaneously with said stack gas; said solution having chemical reactants therein; said chemical reactants substantially

reacting with said sulfur dioxide and forming inorganic, non-gaseous, and reducible sulfur containing compounds therewith; said reducible sulfur containing compounds being ejected from said scrubber in a liquid effluent thereby removing said sulfur dioxide from said stack gas;
(c) treating said reducible sulfur containing compounds with a sulfur reducing microorganism, whereby hydrogen sulfide is produced in said effluent and said chemical reactants are regenerated;
(d) treating said effluent having said hydrogen sulfide therein with a sulfur oxidizing microorganism whereby said hydrogen sulfide is converted to a non-noxious and non-gaseous sulfur containing compound; and
(e) returning said regenerated chemical reactants to said scrubber vessel for reuse therein.

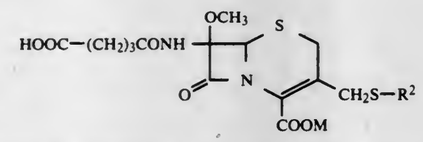
4,242,449

7-METHOXY CEPHALOSPORINS AND PROCESS OF PRODUCING THEM

Takashi Osono, Tokyo; Yoshihiko Oka, Kawagoe; Shunichi Watanabe, Omiya; Takeshi Saito, Tokyo; Hiroshi Gushima, Ageo; Keisuke Murakami, Wako; Isao Takahashi, Tokyo; Hiroshi Yamaguchi, Omiya; Toshio Sasaki, Tokyo; Kiyoshi Susaki; Shuichi Takamura, both of Ageo, and Toshiaki Miyoshi, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 754,007, Dec. 27, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,786
Int. Cl.[3] C12P *35/08*
U.S. Cl. 435—48 **17 Claims**

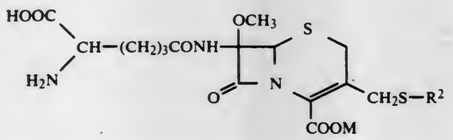
1. A process of producing 7-(4-carboxybutyramido)-7-methoxycephalosporin derivatives represented by the formula



wherein R^2 represents a nitrogen-containing heterocyclic group selected from the group consisting of 5-carboxymethylthio-1,3,4-thiodiazol-2,yl,1-methyl-1H-tetrazol-5-yl,5-methyl-1,3,4-thiadiazol-2-yl, and 1,3,4-thiadiazol-2-yl, and M represents a hydrogen atom or organic or inorganic residue selected from the group consisting of alkali metals, alkaline earth metals, heavy metals, and bases forming quaternary salts or amine salts which comprises cultivating a 7-methoxycephalosporin antibiotic producing microorganism belonging to the genus Streptomyces in a culture medium containing nutrients with the addition of a heterocylic thiol represented by the formula

R^2SH

wherein R^2 has the same meaning as above, or a salt of the heterocyclic thiol, or further a compound capable of being converted into said heterocyclic thiol during cultivation to produce 7-methoxycephalosporin derivatives represented by the formula



wherein R^2 and M have the same meaning as above, and then contacting the compound with the mycelium of the D-amino acid oxidizing enzyme producing microorganism *Trigonopsis variables*, the cell-free extract of said mycelium or the activated mycelium of said microorganisms under aerobic conditions.

4,242,450

METHOD OF HYDROLYZING SUGAR, PROTEIN OR THE LIKE AND APPARATUS THEREFOR

Yoshihiko Honda, Hidaka; Masanobu Koutake, Kodaira; Hidege Kanazawa, Kiyose; Taisuke Iwasaki, Hino; Shozo Ohba, Sayama; Honoh Hashiba, Tokorozawa, and Gosei Kawanishi, Ichikawa, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Filed Aug. 10, 1979, Ser. No. 65,439
Claims priority, application Japan, Sep. 6, 1978, 53-109260
Int. Cl.[3] C12M *1/40*; C12P *1/00*
U.S. Cl. 435—69 **14 Claims**

1. A method of hydrolyzing an enzyme hydrolyzable substrate which comprises jet-dispersing through an orifice and a net a constant-temperature aqueous solution containing a substrate hydrolyzable with enzyme and making the same react in contact with a rotating immobilized enzyme under the hydrolyzable conditions.

4,242,451

METHOD OF TREATMENT OF FLOCCULATED HOMOGENATE OF MICROBIAL CELLS CONTAINING GLUCOSE ISOMERASE

Irving Ehrenthal, University City; Kenneth K. Shieh, St. Louis County; Barrett L. Scallet, Clayton, and Jagdish Rajpara, St. Louis, all of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Continuation-in-part of Ser. No. 859,294, Dec. 12, 1977, abandoned. This application Oct. 25, 1979, Ser. No. 88,013
Int. Cl.[3] C12P *19/24*; C12N *11/14*
U.S. Cl. 435—94 **21 Claims**

1. A method of immobilizing glucose isomerase cell material obtained from whole microbial cells of an organism of the genus Actinoplanes containing glucose isomerase comprising the steps of
a. disrupting a portion of whole microbial cells of the genus Actinoplanes containing glucose isomerase,
b. flocculating said disrupted glucose isomerase cell material,
c. adding a water absorbing smectite filler to said flocculated glucose isomerase cell material, and
d. forming the mixture of glucose isomerase cell material and the water absorbing smectite filler into discrete particles.

4,242,452

PROCESS FOR PREPARING N-CARBAMOYL-D-THIENYLGLYCINES

Hideaki Yamada, Kyoto; Satomi Takahashi, Kobe, and Koji Yoneda, Amagasaki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 9, 1979, Ser. No. 18,876
Claims priority, application Japan, Mar. 15, 1978, 53/30062
The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.
Int. Cl.[3] C12P *17/00*
U.S. Cl. 435—117 **11 Claims**

1. A process for preparing N-carbamoyl-D-(2-thienyl or 3-thienyl)glycine which comprises subjecting 5-(2-thienyl or 3-thienyl)hydantoin to the action of an enzyme which is in the form of a cultured broth containing microorganisms or the separated cells of said microorganisms in an aqueous medium, said enzyme being capable of hydrolyzing 5-(2-thienyl or 3-thienyl)hydantoin so as to substantially produce only D-form of N-carbamoyl(2-thienyl or 3-thienyl)glycine, and recovering N-carbamoyl-D-(2-thienyl or 3-thienyl)glycine from the medium.

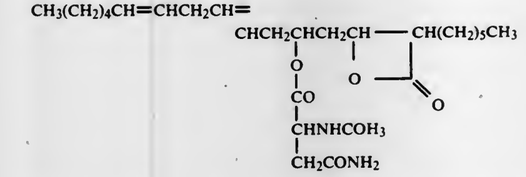
4,242,453

CULTIVATING STREPTOMYCES TO PRODUCE AN ESTERASE INHIBITOR

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Tomio Takeuchi, Tokyo; Masa Hamada, Hoya, and Masaaki Ishizuka, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Division of Ser. No. 873,350, Jan. 30, 1978, Pat. No. 4,189,438.
This application May 14, 1979, Ser. No. 39,094
Claims priority, application Japan, Feb. 8, 1977, 52/12119
Int. Cl.[3] C12P *17/02*
U.S. Cl. 435—123 **4 Claims**

1. The process for the production of the compound having the formula



denominated esterastin, which comprises cultivating an esterastin-producing strain of *Streptomyces lavendulae* having the identifying characteristics of A.T.C.C. 31336 under submerged aerobic conditions in a nutrient medium containing assimilable carbon and nitrogen sources for a period of time sufficient to produce a substantial amount of esterastin in the culture medium and recovering esterastin from said medium.

4,242,454

FERMENTATION PROCESS

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed May 29, 1979, Ser. No. 43,190
Int. Cl.[3] C12P *7/14*
U.S. Cl. 435—162 **11 Claims**

1. A process for the production of ethanol by continuous fermentation which comprises carrying out fermentation upon an aqueous solution of fermentable sugar in a series of fermentation vessels in which the ethanol content of the fermentation medium is progressively increased in each fermentation vessel as the fermentable sugar is consumed therein, the fermentation employing at least two different strains of ethanol-producing yeast,one of which provides a high rate of ethanol production in a fermentation medium containing a relatively low concentration of ethanol and a relatively high concentration of sugar and the other of which provides a high rate of ethanol production in a fermentation medium containing a relatively high concentration of ethanol and a relatively low concentration of fermentable sugar.

4,242,455

PROCESS FOR THE ACID HYDROLYSIS OF CARBOHYDRATE POLYMERS AND THE CONTINUOUS FERMENTATION OF THE SUGARS OBTAINED THEREFROM TO PROVIDE ETHANOL

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 52,038
Int. Cl.[3] C12P *7/14*
U.S. Cl. 435—162 **18 Claims**

1. A process for the acid hydrolysis of carbohydrate polymer and the continuous fermentation of the fermentable sugars therefrom to provide ethanol which comprises:
(a) substantially uniformly mixing a pressurized acidified aqueous slurry of carbohydrate polymer particles with relatively high pressure stream;
(b) passing the acidified carbohydrate polymer slurry through a conduit under substantially steady state temperature and pressure for a period sufficient to convert at least about 60% by weight of the carbohydrate polymer to fermentable sugar but without appreciable conversion of carbohydrate polymer to non-fermentable products;
(c) reducing the pressure of the hydrolyzed carbohydrate polymer slurry to a level at which undesirable reactions of the fermentable sugar present in solution therein cannot readily occur; and,
(d) continuously fermenting the fermentable sugar, previously adjusted to a pH suitable for carrying out fermentation, with or without partial hydrolysate therein having been previously further saccharified, in a series of fermentation vessels in which the ethanol content of the fermentation medium is progressively increased in each fermentation vessel as the fermentable sugar is consumed therein, the fermentation employing at least two different strains of ethanol-producing yeast, one of which provides a high rate of ethanol production in a fermentation medium containing a relatively low concentration of ethanol and a relatively high concentration of sugar and the other of which provides a high rate of ethanol production in a fermentation medium containing a relatively high concentration of ethanol and a relatively low concentration of fermentable sugar.

4,242,456

RADIOENZYMATIC ASSAY OF CATECHOLAMINES

Garland A. Johnson, Charleston Township, Kalamazoo County, and Jacob D. Peuler, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 681,999, Apr. 30, 1976, abandoned. This application Oct. 12, 1978, Ser. No. 950,862
Int. Cl.[2] C12N *9/10*
U.S. Cl. 435—193 **4 Claims**

1. A method for increasing the intrinsic affinity of catechol-O-methyl transferase for compounds having the catechol nucleus which comprises incubating with catechol-O-methyl transferase a magnesium cation of oxidation number +2, glutathione, a mammalian system selected from the group consisting of the supernatant of deproteinized tissue homogenate, blood serum or plasma, and biological fluid, the methyl donor S-adenosyl-L-methionine (^3H) methyl and an enzyme activity increasing effective amount of ethylene glycol bis(aminoethylether)-N,N'tetraacetic acid, wherein the the transferase, magnesium, glutathione and methyl donor are present in quantities which permit substantially all the catechol nuclei to be O-methylated.

4,242,457

AUTOMATED VIRUS HARVESTING

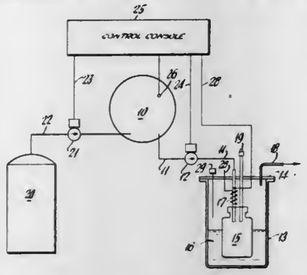
William J. McAleer, Ambler, and William M. Hurni, North Wales, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 802,846, Jun. 2, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,494
Int. Cl.[3] C12N *7/00*
U.S. Cl. 435—235 **6 Claims**

1. In an apparatus for replicating a virus in cells growing on a surface in a viral growth tank wherein a plurality of viral harvests is removed from the viral growth tank with the cells remaining in the tank, and wherein fresh growth media is fed to the viral growth tank following each harvest except the last, the improvement comprising means for automatically removing substantially all of the viral harvest fluid from the viral growth tank at each of a predetermined plurality of times and automatically passing the fluid to a storage vessel maintained at about the temperature of liquid nitrogen and wherein at least part of the means for passing viral harvest fluid to the storage

vessel is provided with means to prevent freezing of harvest fluid.

5. A method of automatically harvesting a virus comprising growing a virus in cells growing on a surface in the presence of a growth medium in a viral growth propagator until the cell



growth cycle is completed, automatically discharging the growth medium at predetermined times when viral titer is at a maximum, and automatically collecting the viral growth medium at about the temperature of liquid nitrogen and wherein the collecting is performed under conditions which preclude premature freezing of viral growth medium.

4,242,458

BIOSYNTHESIS OF PROTEIN BY FERMENTATION OF METHANOL OBTAINED FROM THE GASIFICATION OF COAL OR RESIDUAL OIL

Edward T. Child, Tarrytown, and Robert M. Suggitt, Wappingers Falls, both of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Oct. 25, 1978, Ser. No. 954,712
Int. Cl.[2] C12N *1/32, 1/36;* C12R *1/78*
U.S. Cl. 435—247 **6 Claims**

1. A process for the production of single cell protein which comprises the steps of:

(a) subjecting a carbonaceous fuel comprising a liquid hydrocarbon fuel of petroleum distillates or residua, naphtha, gas oil, residual fuel, reduced crude fuel oil, whole crude, coal tar oil, shale oil, coal liquefaction products and mixtures thereof, or solid fuels of petroleum coke, coal coke, anthracite, bituminous coal, lignite, or gaseous fuels of natural gas, to partial oxidation with an oxygen-containing material to produce a product gas containing carbon monoxide and hydrogen,

(b) passing a portion of the product gas from (a) also containing steam, into contact with a shift conversion catalyst for the production of a gas composed primarily of hydrogen,

(c) passing the remaining portion of the product gas from (a) to an acid gas scrubber to produce a purified stream of hydrogen and carbon monoxide,

(d) passing the purified stream of hydrogen and carbon monoxide from (c) into contact with a methanol synthesis catalyst for the production of methanol,

(e) subjecting air to rectification to produce a gas consisting essentially of oxygen and a separate gas consisting primarily of nitrogen,

(f) introducing a portion of the gas stream consisting essentially of oxygen from step (e) into the partial oxidation zone as supplemental oxygen therefor in step (a),

(g) introducing the gas consisting primarily of nitrogen from step (e) and the gas rich in hydrogen recovered from step (b) into an ammonia synthesis reactor to produce a gas rich in ammonia,

(h) introducing the methanol product in step (d), the ammonia product of step (g), and a portion of the gas stream of oxygen from step (e), together with a nutrient solution and an initial charge of Hansanula polymorpha DL 1 yeast, into a fermenter for the production of single cell protein with the formation of by-product gases containing oxygen and CO_2,

(i) passing the gases containing oxygen and CO_2 from step (h) to said partial oxidation step (a), to act as primary oxygen for the partial oxidation step (a) and as a temperature moderator therefor,

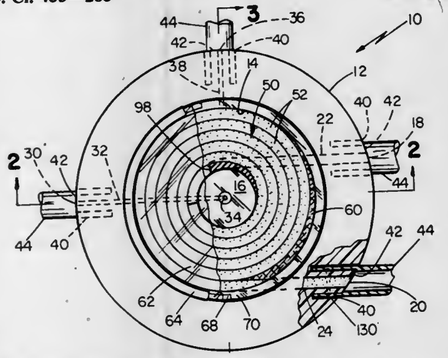
(j) recovering from the fermenter in step (h), single cell protein as a product of the process.

4,242,459

CELL CULTURE DEVICE

William L. Chick, 32 Willow Rd., Wellesley, Mass. 02181; Pierre M. Galletti, 36 Taber Ave.; Peter D. Richardson, 60 Sargent Ave., both of Providence, R.I. 02906, and Georg Panol, 165 Shenandoah Rd., Warwick, R.I. 02886

Filed Nov. 2, 1978, Ser. No. 957,303
Int. Cl.[3] A01N *1/02*
U.S. Cl. 435—283 **20 Claims**



1. A cell culture device comprising,

a body having a generally circular fluid tight cavity therein, said body having an inlet and an outlet and

a semi-permeable tube wrapped about itself to form coils in said cavity, said coils forming a flat spiral about a central axis,

the interior of said tube providing a fluid flow path for communicating with a biological fluid source,

said flat spiral coils positioned in said cavity between a bottom wall and a cover plate to form a cell culture compartment therebetween.

said tube being tightly wound in said flat spiral such that adjacent coils thereof touch each other to substantially eliminate dead space between said coils,

the ends of said tube extending through said inlet and said outlet, and

said cavity being shaped to entirely surround said coils and being just wide enough and high enough to accommodate said tightly wound coils, to further reduce dead space.

4,242,460

CELL CULTURE DEVICE

William L. Chick, 32 Willow Rd., Wellesley, Mass. 02181; Pierre M. Galletti, 36 Taber Ave.; Peter D. Richardson, 60 Sargent Ave., both of Providence, R.I. 02906, and Georg Panol, 165 Shenandoah Rd., Warwick, R.I. 02886

Filed Dec. 26, 1978, Ser. No. 972,961
Int. Cl.[3] C12M *3/00*
U.S. Cl. 435—284 **18 Claims**

1. A cell culture device comprising,

a housing,

a stationary spool mounted within and wholly surrounded by said housing,

said housing and spool defining a fluid tight cavity therebetween,

said housing having a port communicating with said cavity for introduction of cells into said cavity,

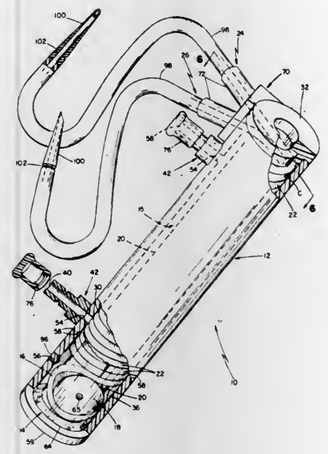
said housing having inlet and outlet means,

a semipermeable tube wrapped about said spool along the longitudinal axis thereof to form coils in said cavity,

the ends of said tube extending through said inlet and outlet means,

the interior of said tube defining a fluid flow path for communicating with a fluid source, and

the walls of said housing, spool, and tube defining an enclosed cell culture compartment,



said tube being of a material capable of permitting transport, from said compartment to fluid flowing along said path, of products produced by said cells, and transport from said fluid to said compartment of nutrients for said cells, while maintaining immunological separation between said fluid and said cells.

4,242,461

RADIAL REACTOR FOR ENZYME-CATALYZED REACTIONS

Francesco Bartoli; Franco Morisi, both of Rome, and Delio Zaccardelli, Monterotondo, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Sep. 12, 1978, Ser. No. 941,682
Claims priority, application Italy, Oct. 13, 1977, 28553 A/77
Int. Cl.[3] C12M *1/40*
U.S. Cl. 435—288 **9 Claims**

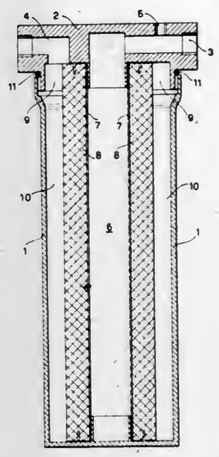
1. A radial reactor for performing enzyme-catalyzed reactions with a solution comprising:

a cylindrically shaped body for receiving the solution to be treated,

a catalytic bed within said body which is cylindrical and coaxial therewith and wherein said bed is composed of fibers having enzymes occluded therein for treating the solution, the fibers being helically coiled about a core at a pitch from 0.001 mm to 10 centimeters for effecting the treatment of the solution as it flows therethrough,

a pair of cylindrical chambers within said body and coaxial therewith, wherein one of said chambers is within said catalytic bed and the other of said chambers is about said catalytic bed, and wherein one of said chambers is adapted to receive and to distribute the solution through said catalytic bed radially of said body and the other of said chambers is adapted to collect the reaction product after the solution has flowed through said catalytic bed radially of said body, and

a cover fastened to said body having an inlet channel open to said distribution chamber for conveying the solution to be treated thereto, a vent open to said inlet channel adapted to discharge the solution within the said inlet channel when said reactor is stopped, and an outlet channel open



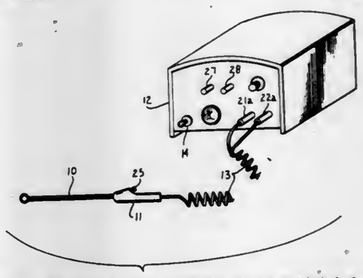
to said collection chamber for discharging the reaction product of the treated solution from said reactor.

4,242,462

ELECTRICALLY POWERED SELF-HEATING INOCULATING LOOP

Richard E. Thomas, 190 Windsor Ct., Athens, Ga. 30606

Filed Mar. 16, 1979, Ser. No. 20,999
Int. Cl.[3] C12M *1/26*
U.S. Cl. 435—292 **5 Claims**



1. An electrically powered inoculating loop which is heated to sterilization temperature by passing an electrical current, introduced from a source of electrical power, through the inoculating loop, comprising:

(a) an inoculating loop made of material suitable for heating to sterilization temperature by passing an electrical current through said loop;

(b) a means for introducing an electrical current from said source of electrical power to said inoculating loop; and

(c) a first temperature control circuit breaker means responsive to the temperature of the inoculating loop for discontinuing the electrical current from said source of electrical power to said inoculating loop when the temperature of said inoculating loop reaches sterilization temperature.

4,242,463

COLOR STABLE INTEGRAL SKIN FOAM

John L. Sanok, Wyandotte, and Albert F. Reilly, Howell, both of Mich., assignors to Sheller-Globe Corporation, Toledo, Ohio

Filed Dec. 19, 1979, Ser. No. 105,379
Int. Cl.³ C08G *18/14, 18/24, 18/75*
U.S. Cl. 521—51 **34 Claims**

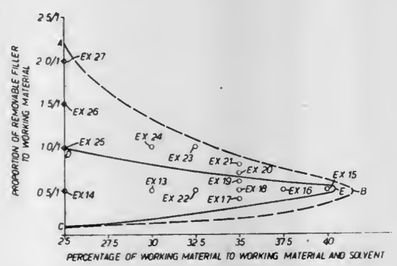
1. A color stable integral skin polyurethane foam prepared by reacting a composition comprising:
(a) a polyol,
(b) an isocyanate selected from the group consisting of aliphatic or cyclo-aliphatic isocyanates,
(c) a crosslinker, and
(d) a catalyst comprising stannous octoate and dimethyltin dilaurate.

4,242,464

PRODUCTION OF POROUS MATERIALS

David L. Boutle, Malden, England, assignor to Poryair Limited, Norfolk, England

Continuation of Ser. No. 201,295, Nov. 23, 1971, Pat. No. 4,157,424. This application May 23, 1979, Ser. No. 41,761
Claims priority, application United Kingdom, Aug. 13, 1964, 33047/64
The portion of the term of this patent subsequent to Jun. 5, 1996, has been disclaimed.
Int. Cl.³ B29D *27/04*
U.S. Cl. 521—61 **13 Claims**



10. A method of making a microporous polymeric plastics material which comprises
(a) forming a mixture of spreadable consistency comprising a solution of elastomeric polyurethane in water-miscible organic solvent, the said solution having evenly distributed through its microscopic particles of water-soluble inorganic salt,
(b) shaping the mixture into a layer by spreading said mixture on a temporary support,
(c) solidifying said polyurethane by the action of aqueous non-solvent therefor, which is miscible with the organic solvent, the leaching out said microscopic particles of the salt to leave the elastomeric polyurethane in a microporous solid form, as a layer about 10 to 20 thousandths of an inch thick, the weight ratio of salt to polyurethane being up to about 6:1,
said process including the step of stripping the solidified layer from said support.

4,242,465

FIRE RESISTANT FOAM INSULATION

Peter J. Canterino, Towaco, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,901
Int. Cl.³ C08J *9/04*
U.S. Cl. 521—88 **4 Claims**

1. Cross-linked, flame retarded poly(p-methylstyrene) foam insulation, said poly(p-methylstyrene) containing at least 90% para isomer, and containing an effective amount of a flame-retardant material.

4,242,466

POLYURETHANES AND THEIR PREPARATION

Curtis L. Schilling, Jr., Croton-On-Hudson, and C. Scott Eschbach, Stormville, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 891,044, Mar. 28, 1978, Pat. No. 4,150,048. This application Jan. 16, 1979, Ser. No. 3,818
Int. Cl.³ C12P *13/16*
U.S. Cl. 521—112 **6 Claims**

1. A method for producing a polyurethane foam by reacting and foaming a mixture comprising (a) an active hydrogen organic composition convertible by reaction with a polyisocyanate to a polyurethane product; (b) an organic polyisocyanate, (c) a catalyst for the reaction of (a) and (b) to produce the polyurethane, (d) a blowing agent and (e) a foam stabilizer comprising a nonhydrolyzable polysiloxane-organic ether block copolymer having a degree of polymerization of at least 15 and containing at least one divalent ether block bonded to silicon of at least two polysiloxane blocks, any valences of silicon not bonded to oxygen of a ≡SiOSi≡ linkage or to said divalent ether block being bonded to a monovalent hydrocarbon group, said divalent ether block or blocks having the formula:



wherein R is a monovalent hydrocarbon group, R′ is hydrogen or a monovalent hydrocarbon group, and m is an integer of 0 or greater and wherein R and R′ may be the same or different throughout the same ether block or block copolymer molecule and the $-CH_2CH(R')_2O-$ units may be the same or different through the same ether block.

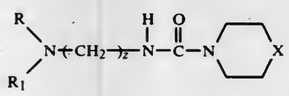
4,242,467

UREA DERIVATIVES AND USE AS POLYURETHANE CATALYSTS

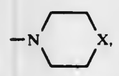
Robert L. Zimmerman, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Jun. 12, 1979, Ser. No. 47,847
Int. Cl.³ C08G *18/20, 18/14;* C07D *295/10, 413/12*
U.S. Cl. 521—129 **9 Claims**

1. A method for producing a polyurethane which comprises reacting an organic polyisocyanate with an organic polyester polyol or polyether polyol in the presence of a catalytic amount of a compound falling within the following structural formula:



where R and R_1 when taken individually are lower alkyl or when taken together represent



z is an integer of 2-6 and X is O or N—R_2 where R_2 is lower alkyl.

4,242,468

USE OF MONOHYDROXYLATED POLYBUTADIENE AS A REACTIVE PLASTICIZER IN POLYURETHANES

Michael Baack; Artur Bartkowiak, and Juergen Neuroth, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Revertex Limited, United Kingdom

Filed Aug. 23, 1979, Ser. No. 69,237
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2836986
Int. Cl.³ C08G *18/62*
U.S. Cl. 521—170 **8 Claims**

1. A process for the preparation of a polyurethane, comprising the step of reacting, under polyurethane-forming conditions,
(A) at least one polyisocyanate,
(B) at least one polyol selected from the group consisting of polyesters, polyethers, polythioethers, polyacetals, polycarbonates, polyesteramides, polyalkylene diols, and diols of polyalkadienes of which the alkadiene moiety has the formula C_nH_{2n-4} wherein n is an integer selected from 3 and above 4, and
(C) a monohydroxy-terminated polybutadiene having a molecular weight of 500 to 100,000 as an internal plasticiser for the polyurethane.

4,242,469

CONTROLLING GRAFTED ELASTOMERS IN BLENDS WITH RESINOUS COPOLYMERS

Joseph M. Schmitt, Ridgefield, and Richard J. Quinn, Bethel, both of Conn., assignors to CY/RO Industries, Stamford, Conn.

Filed Sep. 18, 1978, Ser. No. 943,606
Int. Cl.³ C08L *51/04, 53/02*
U.S. Cl. 525—71 **22 Claims**

1. A molding composition characterized by exhibiting superior optical properties, low taste-transfer and low odor comprising:
(a) a major proportion of a resinous polymeric phase; and
(b) a minor proportion of a grafted rubbery phase, said rubbery phase being prepared from a rubber and one or more monomers which are grafted thereon and are compatible with said resinous phase, said grafting being performed in a plurality of different rubber-to-monomer ratio rubbery phases within said rubbery phase, the overall ratio of rubber to monomer in said rubbery phase being from about 1:1 to 6:1, and wherein each later grafting stage is performed in the presence of the products of the previous grafting stages by adding thereto additional rubber and one or more monomers.

4,242,470

POLYAMIDE/BLOCK COPOLYMER BLENDS

William P. Gergen, and Sol Davison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 19, 1979, Ser. No. 21,518
Int. Cl.³ C08L *53/02*
U.S. Cl. 525—92 **19 Claims**

1. A composition consisting essentially of the admixture obtained by intimately mixing 100 parts by weight of a polyamide with between about 1 and about 40 parts by weight of a block copolymer wherein said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B and wherein said polyamide is selected from the group consisting of nylon 6 and nylon 6/6.

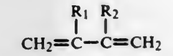
4,242,471

SELECTIVELY CYCLIZED BLOCK COPOLYMERS

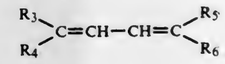
Joginder Lal, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 27, 1979, Ser. No. 69,963
Int. Cl.³ C08F *8/48*
U.S. Cl. 525—333 **16 Claims**

1. A cyclized block copolymer having a number average molecular weight of from about 10,000 to about 300,000 comprised of at least two different blocks, at least one of which blocks is a cyclizable block derived from a conjugated diene monomer of the general structure



wherein,
R_1 is selected from a hydrocarbyl group containing one to twelve carbon atoms, R_2 is selected from hydrogen or a hydrocarbyl group containing one to twelve carbon atoms; and at least one of which blocks is a non-cyclizable block derived from at least one member selected from the following classes of compounds:
(a) polymers of conjugated diene monomers of the general structure



wherein:
R_3, R_4 and R_5 are the same or different and are selected from hydrogen or a hydrocarbyl group containing one to twelve carbon atoms; R_6 is selected from hydrogen, a hydrocarbyl group containing one to twelve carbon atoms or a cyano group,
(b) polymers of α-methylstyrene, styrene, alkyl or aryl substituted styrenes or halogen substituted styrenes,
(c) polymethacrylonitrile, polycaprolactam, polycaprolactone or polydimethylsiloxane,
said cyclized blocks constituting about 5-95 weight percent of cyclized block copolymer and said non-cyclized blocks constituting about 95-5 weight percent of cyclized block copolymer.

4,242,472

VULCANIZABLE RUBBER COMPOSITION IMPROVED IN SULFUR BLOOMING WITH METAL ALKYLXANTHATE

Takashi Hoshino, Kodaira; Setsuko Imaizumi, Tokyo, and Seisuke Tomita, Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 8, 1979, Ser. No. 10,349
Claims priority, application Japan, Feb. 17, 1978, 53-16430
Int. Cl.³ C08F *8/34;* C08C *19/00*
U.S. Cl. 525—343 **6 Claims**

1. A vulcanizable rubber composition improved in sulfur blooming characterized by adding from 0.1 to 10% by weight, based on the weight of sulfur contained in said composition, of alkylxanthate to a rubber composition obtained by compounding sulfur as a vulcanizing agent in the amount of 0.5 to 10 parts by weight in relation to 100 parts by weight of rubber which may be any of natural rubber, synthetic rubber and the mixtures thereof, so as to coagulatingly keep a supersaturated sulfur within said vulcanizable rubber composition.

4,242,473

FLAME RETARDED POLY(BUTYLENE TEREPHTHALATE) COMPOSITION

Richard C. Nametz, Manchester, and Robert J. Nulph, Ypsilanti, both of Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

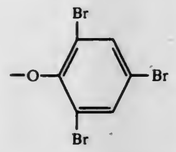
Continuation-in-part of Ser. No. 877,157, Feb. 13, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 74,363

Int. Cl.³ C08G *65/48*

U.S. Cl. 525—397 **5 Claims**

1. A flame retarded poly(butylene terphthalate) composition comprised of poly(butylene terphthalate) and from about 5 to about 35 percent by weight of a branched polymer having a hydroxyl number of from 2.8 to about 30 of the structural formula t,0260

wherein each repeating unit set out within the brackets of the structural formula is attached in an ortho or para configuration to its adjacent phenyl and phenoxy moiety; and wherein E is an end group of the formula



Y is a side chain of the same structure and configuration as said repeating unit; the substituents Br, E and Y on each phenyl ring are attached only to the ortho or para positions relative the hydroxyl group in the structural formula and the oxygen atom in the repeating unit; each t, p and q are independently the integer 0 or 1, provided that the sum of t plus p plus q equals 2, and provided that from about 10 to about 80 percent of the repeating units have the side chain and end unit —Y—E attached thereto; and m is an integer such that the total molecular weight of the polymer ranges from 2000 to 20,000.

4,242,474

PRODUCTION OF A BLOCK COPOLYMER CONTAINING HYDROPHILIC AND HYDROPHOBIC BLOCKS

Isao Shinohara; Teruo Okano, and Masahisa Ikemi, all of Tokyo, Japan, assignors to Terumo Corporation, Tokyo, Japan

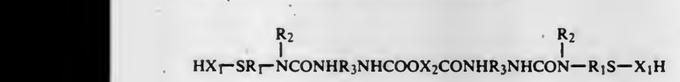
Filed Sep. 24, 1979, Ser. No. 78,209

Claims priority, application Japan, Oct. 4, 1978, 53-122308

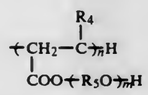
Int. Cl.³ C08L *75/08, 71/07;* C08F *783/06*

U.S. Cl. 525—404 **30 Claims**

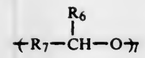
1. A block copolymer having hydrophilic and hydrophobic blocks expressed by the general formula:



where R_1 is a divalent hydrocarbon group; R_2 is hydrogen atom or methyl group; R_3 is a divalent hydrocarbon-based group; X_1 is a polymeric acrylic acid derivative represented by the formula:



R_4 is hydrogen atom or an alkyl group having 1 to 4 carbon atoms; m is an integer of 1 to 10; R_5 is an alkylene group having 2 to 10 carbon atoms when m is 1 or an alkylene group having 2 or 3 carbon atoms when m is 2 to 10; n is an integer of 10 to 500; X_2 is a polyalkylene oxide represented by the formula:



R_6 is hydrogen atom or an alkyl group having 1 to 4 carbon atoms; R_7 is an alkylene group having 1 to 3 carbon atoms; and l is an integer of 10 to 1,100.

4,242,475

PROCESS FOR PRODUCING NOVEL CURABLE RESIN CAPABLE OF BEING CURED BY THE EXPOSURE TO HEAT OR RADIATION AND CURABLE COATING COMPOSITION CONTAINING SAID CURABLE RESIN

Shozo Tsuchiya, Tokyo, and Hideo Hayashi, Yokohama, both of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Jan. 15, 1979, Ser. No. 3,150

Claims priority, application Japan, Jan. 23, 1978, 53-5277

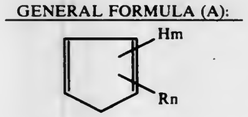
Int. Cl.³ C08F *283/00;* C08G *63/38*

U.S. Cl. 525—534 **19 Claims**

1. A process for producing a curable resin which comprises the steps of:

(i) polymerizing a five-member cyclic compound (A) having an unsaturated conjugated double bond and represented by the general formula (A) given below;

GENERAL FORMULA (A):



wherein R is an organic residue having from 1 to 3 carbon atoms; m and n are integers and are in the relation of $m+n=6$

or Diels-Alder addition product thereof (A) with at least one phenolic compound (B) selected from the group consisting of monohydric and polyhydric phenols and alkyl substituents thereof to obtain a resin (I) having at least one phenolic hydroxyl group and an average molecular weight of from 300 to 2000;

(ii) hydrogenating said resin (I) to convert the aromatic ring of the phenolic compound unit into the cyclohexane structure thereby to obtain a resin (II); and

(iii) esterifying said resin (II) with an α,β-unsaturated carboxylic acid (C).

4,242,476

POLYMER/POLYOL COMPOSITIONS CONTAINING VINYLIDENE CHLORIDE

Naresh R. Shah, Nitro; Edgar G. Shook, South Charleston, and Russell Van Cleve, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 17, 1978, Ser. No. 961,715

Int. Cl.³ C08F *2/06*

U.S. Cl. 526—71 **10 Claims**

1. A continuous process for producing a polymer/polyol composition which comprises continuously polymerizing a reaction mixture formed by mixing a stream containing a polyol having a molecular weight of at least 1000 and a free radical catalyst, said stream being maintained at a temperature of 100° C. or higher, and a minor amount of a monomer stream consisting essentially of (a) from 45 to 5 weight percent of vinylidene chloride and (b) from 55 to 95 weight percent another ethylenically unsaturated monomer or monomers selected from the group consisting of acrylonitrile, methacrylonitrile, methyl methacrylate, styrene, and α-methylstyrene, of which at least 20 weight percent is acrylonitrile, and continuously stripping the desired product to remove unreacted monomers.

4,242,477

ASCORBATE SHORT-STOPS

Ahti A. Koski, Brigden, and Melvin J. G. Davidson, Sarnia, both of Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Dec. 5, 1979, Ser. No. 100,298

Claims priority, application Canada, Aug. 1, 1979, 332982

Int. Cl.³ C08F *2/42*

U.S. Cl. 526—84 **7 Claims**

1. An improved process for short-stopping the polymerization of butadiene and styrene in an emulsion, free-radical polymerization process conducted at from about 40° to about 60° C. using potassium or ammonium persulphate as polymerization initiator, characterized in that the short-stop is ascorbic acid or the sodium or potassium salts thereof, the quantity of ascorbic acid or salt thereof added as short-stop being from about 0.1 to about 0.75 parts by weight per 100 parts by weight of butadiene plus styrene charged to the polymerization system.

4,242,478

LOW BENZENE BUTADIENE POLYMERIZATION

Evalds Lasis, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Apr. 12, 1979, Ser. No. 29,545

Claims priority, application Canada, May 8, 1978, 302852

Int. Cl.³ C08F *4/60, 2/06*

U.S. Cl. 526—93 **4 Claims**

1. A process for the polymerization of butadiene-1,3 to produce a cis-1,4-polybutadiene having a cis-1,4 content of at least about 90% using a catalyst system comprising a cobalt salt of an organic carboxylic acid, an aluminum alkyl halide and water, characterized in that the polymerization is in the presence of (a) a diluent which comprises per 100 parts by weight, (i) from 100 to about 80 parts by weight of cyclohexane and from 0 to about 20 parts by weight of benzene or butene-1, or (ii) from about 92.5 to about 60 parts by weight of cyclohexane, from about 2.5 to about 15 parts by weight of benzene and from about 5 to about 25 parts by weight of butene-1, and (b) a modifier selected from about 0.05 to about 0.15 parts by weight of butadiene-1,2 per 100 parts by weight of butadiene-1,3 or from about 0.2 to about 1 parts by weight of 1,5-cyclooctadiene per 100 parts by weight of butadiene-1,3, the cobalt salt is one of cobalt (II) octanoate or cobalt (II) naphthenate and the aluminum alkyl halide is diethyl aluminum chloride, the molar ratio of the cobalt salt to the aluminum alkyl halide is from 1:5 to 1:500, the amount of cobalt salt is from about 0.01 to about 0.5 millimoles per 100 g of butadiene-1,3 and the amount of water is from about 0.2 to about 0.9 millimoles per millimole of aluminum alkyl halide.

4,242,479

PROCESS FOR PRODUCING AN IMPROVED ETHYLENIC POLYMER

Yoshihisa Yokota; Teruo Hosokawa, both of Yokohama, and Kiichiro Sakashita, Kawasaki, all of Japan, assignors to Showa Yuka Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1977, Ser. No. 863,560

Claims priority, application Japan, Dec. 23, 1976, 51/154218; Nov. 28, 1977, 52/141487; Dec. 13, 1977, 52/148780

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—124 **68 Claims**

1. A process for polymerizing ethylene or copolymerizing ethylene with an δ-olefin in the presence of a catalyst comprising:

(A) a solid catalyst ingredient obtained by contacting

(1) a solid reaction product prepared by reacting:

(a) a reaction product of (i) an aluminum trihalide and (ii) at least one organic compound represented by general formulae (I), (II), (III) or (IV)

$$Si(OR^1)_aR^2{}_b \quad (I)$$

$$R^3(R^4{}_2SiO)_dSiR^5{}_3 \quad (II)$$

$$(R^6{}_2SiO)_e \quad (III)$$

$$R^7—O—R^8 \quad (IV)$$

wherein R^1, R^2, and R^6 are the same or different and represent a hydrocarbon radical having at most 20 carbon atoms selected from the group consisting of alkyl radicals, alkenyl radicals, cycloalkyl radicals, cycloalkenyl radicals, aryl radicals and aralkyl radicals and derivatives of these hydrocarbon radicals substituted with at most 3 halogen atoms or alkoxy radicals having at most 20 carbon atoms, wherein R^2 further represents a hydrogen atom or a halogen atom, R^3, R^4 and R^5 are the same or different and represent the above-defined hydrocarbon radicals for R^1, R^2 or R^6, the substituted derivatives for R^1, R^2, or R^6, or a halogen atom, R^7 and R^8 are the same or different and represent a hydrocarbon radical having at most 10 carbon atoms selected from the group consisting of alkyl radicals, aryl radicals and aralkyl radicals, $a+b$ is 4 with the proviso that a is not 0, d is an integer of from 1 to 1000 and e is an integer of from 2 to 1000; and

(b) a magnesium alcoholate represented by general formula (V)

$$Mg(OR^9)_2 \quad (V)$$

wherein R^9 represents a hydrocarbon radical having at most 8 carbon atoms selected from the group consisting of alkyl radicals, cycloalkyl radicals, aryl radicals and aralkyl radicals, and washing with an inert organic solvent; with

(2) a tetravalent titanium compound containing at least one halogen atom, represented by general formula (VI)

$$TiX^1{}_f(OR^{10})_g \quad (VI)$$

wherein X^1 represents a chlorine, bromine or iodine atom, R^{10} represents a hydrocarbon radical having at most 12 carbon atoms selected from the group consisting of alkyl radicals, alkenyl radicals, cycloalkyl radicals, aryl radicals and aralkyl radicals, $f+g$ is 4 where g is 0 or 1; and

(B) an organoaluminum compound; where the amount of said aluminum trihalide (i) is from 0.25 to 4 moles per mole of said organic compound (ii), the amounts of said aluminum trihalide (i) and said organic compound (ii) are from 0.1 to 10 moles per mole of said magnesium alcoholate, respectively, and the amount of said tetravalent titanium compound (2) is from 0.1 to 200 moles per magnesium atom in said solid reaction product (1).

4,242,480

CATALYST AND PROCESS OF POLYMERIZATION OF ALPHA MONOOLEFINS

M. Bruce Welch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 13, 1977, Ser. No. 860,263

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—125 **38 Claims**

1. A process for the polymerization of at least one alpha-monoolefin monomer which comprises polymerizing said at least one alpha-monoolefin monomer under polymerization conditions employing a catalyst system which comprises (A) a milled admixture of effective ratios of a tetravalent titanium halide, magnesium or manganous chloride, a first Lewis base, and a non-aromatic unsaturated hydrocarbon aliphatic or alicyclic compound, (B) a trihydrocarbyl aluminum compound, optionally with a second Lewis base, and optionally including (C) a dihydrocarbyl aluminum halide, employing catalytically effective ratios of B:A, and of C, where employed, wherein said titanium halide is represented by $TiX_{4-n}R'_n$ wherein X is a halogen and is bromine, chlorine, or iodine, R' is an alkyl, cycloalkyl, aryl, aryloxy, alkoxy, or combination radical of 2 to 8 carbon atoms, and n is zero or an integer of 1, 2, or 3.

4,242,481

ALUMINUM OLIGOMERS AS POLYMERIZATION CATALYSTS

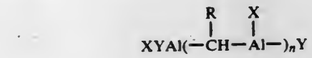
Loyd W. Fannin, Dickinson, Tex., assignor to Texas Alkyls, Inc., Deer Park, Tex.

Division of Ser. No. 774,005, Mar. 3, 1977, Pat. No. 4,170,603. This application May 7, 1979, Ser. No. 36,278

Int. Cl.³ C08F 4/14

U.S. Cl. 526—165 **1 Claim**

1. In a process for polymerization of a mono- or di-olefin in the presence of a multi-component Ziegler type catalyst having an organoaluminum compound as one component, the improvement comprising utilizing as the organoaluminum compound, a compound having the formula



in which X is a halogen, Y is an alkyl group having from 1 to 10 carbon atoms, or a phenyl group, R is an alkyl group having from 2 to 9 carbon atoms, and n is an integer from 1 to 20, provided that when Y is methyl, R is a straight chain alkyl group having from 2 to 9 carbon atoms in the primary chain.

4,242,482

PEROXYGEN COMPOUND-METAL MERCAPTIDE REDOX CATALYST SYSTEM FOR VINYL HALIDE POLYMERIZATION

Norman G. Gaylord, New Providence; Meshulam Nagler, Irvington, and Marvin M. Fein, Westfield, all of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Dec. 21, 1979, Ser. No. 106,331

Int. Cl.³ C08F 4/40, 4/32, 4/34, 4/58

U.S. Cl. 526—192 **15 Claims**

1. A process for the preparation of polymers and copolymers of a vinyl halide, which consists in polymerization in bulk or suspension, in the presence of a redox catalyst system consisting of a peroxygen compound selected from the class consisting of peroxyesters and diacyl peroxides, and a reducing agent selected from the class consisting of stannous and antimony (III) mercaptides.

4,242,483

OXYGEN PERMEABLE HARD AND SEMI-HARD CONTACT LENS COMPOSITIONS, METHODS AND ARTICLES OF MANUFACTURE

Nick N. Novicky, 250 Old Oak Dr., Buffalo Grove, Ill. 60090

Filed Aug. 13, 1979, Ser. No. 66,054

Int. Cl.³ C08F 220/28

U.S. Cl. 526—263 **7 Claims**

1. An oxygen permeable, hard or semi-hard, machinable, dimensionally stable, wettable, contact lens material of high transparency consisting essentially of a polymer formed by free radical polymerization from about 10% to about 60% by weight of at least one silicon-containing monomer selected from the class consisting of bis(pentamethyldisiloxanyl) bis(-trimethylsiloxy)methylsiloxanylmethacryloxypropylsilane, bis[bis(trimethylsiloxy)methylsiloxanyl]pentamethyldisiloxanylmethacryloxy-propylsilane, and tris[bis(trimethylsiloxy)-methylsiloxanyl]methacryloxypropylsilane and mixtures thereof, and from about 40% to about 90% by weight of at least one monomer selected from the class consisting of polymerizable esters of acrylic or methacrylic acids and mixtures thereof, and from polymerizable itaconate esters and mixtures thereof.

4,242,484

VINYLIDENE CHLORIDE COPOLYMER AS A MATERIAL FOR PRODUCTION OF PACKAGING ARTICLES

Akira Suzuki, Shibukawa; Akira Ishida, Harahigashi, and Masao Oya, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd. and Kanto Denka Kogyo Co., Ltd., both of Tokyo, Japan

Filed Apr. 4, 1979, Ser. No. 27,057

Claims priority, application Japan, Apr. 8, 1978, 53-41476

Int. Cl.³ C08F 214/06, 214/08

U.S. Cl. 526—273 **1 Claim**

1. A molding composition for the production of packaging articles, which is usable in a direct blow molding process, said composition containing a vinylidene chloride copolymer prepared by suspension polymerization and comprising as constituent monomeric units

(1) 70 to 90% by weight of vinylidene chloride,

(2) 0.5 to 10% by weight of glycidyl methacrylate,

(3) 0.05 to 3% by weight of methyl methacrylate, and the balance

(4) 5 to 25% by weight of vinyl chloride.

4,242,485

UV LIGHT RESISTANT P-METHYLSTYRENE/METHYL METHACRYLATE COPOLYMER

Aristotle G. Prapas, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,976

Int. Cl.³ C08F 212/12, 220/14

U.S. Cl. 526—329.2 **3 Claims**

1. UV light resistant solid, linear copolymers of p-methylstyrene or a methylstyrene mixture containing at least about 95 weight percent p-methylstyrene and less than 0.1 weight percent o-methylstyrene with the balance being m-methylstyrene and methyl methacrylate containing between about 20 weight percent and about 50 weight percent methyl methacrylate.

4,242,486

PROCESS FOR PREPARING ORGANOPOLYSILOXANE RESINS CONTAINING SI-BONDED VINYL GROUPS

Peter August, Seevetal, and Willi Primas, Simbach, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 39,014

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823118

Int. Cl.³ C08G 77/06

U.S. Cl. 528—14 **4 Claims**

1. A process for preparing organopolysiloxane resins containing Si-bonded vinyl groups which comprises heating to a temperature of from about 85° to 95° C., a mixture containing (A) an organopolysiloxane having at least 0.1 percent by weight of Si-bonded hydroxyl groups and containing units selected from the group consisting of R $SiO_{3/2}$, R_2SiO, $R_3SiO_{1/2}$, $SiO_{4/2}$ and $O_{3/2}$ Si CH_2CH_2 $SiO_{3/2}$ units, in which at least 50 mol percent of the units of the organopolysiloxane are monoorganosiloxane units of the formula $RSiO_{3/2}$, in which R represents SiC-bonded hydrocarbon radicals, (B) an organosiloxane having from 2 to 10 silicon atoms per molecule, in which substantially all the silicon valences which are not satisfied by silicon oxygen atoms, are satisfied by SiC-bonded hydrocarbon radicals, and at least two such hydrocarbon radicals are present for each silicon atom with at least one of the siloxanes (A) and (B) having an average of at least one Si-bonded vinyl group and (C) an acid activated bleaching clay, wherein water released during the heating step by the condensation of Si-bonded hydroxyl groups is retained in the reactive mixture, and thereafter separating the organopolysiloxane resins from the bleaching clay.

4,242,487

PROCESS FOR PRODUCING HEAT-RESISTANT SEMI-INORGANIC COMPOUNDS

Seishi Yajima; Kiyohito Okamura; Toetsu Shishido, and Yoshio Hasegawa, all of Oharai, Japan, assignors to The Foundation: The Research Institute for Special Inorganic Materials, Asahi, Japan

Filed May 1, 1979, Ser. No. 34,885

Claims priority, application Japan, May 9, 1978, 53-54036

Int. Cl.² C08G 77/04

U.S. Cl. 528—25 **3 Claims**

1. A process for producing a heat-resistant semi-inorganic compound, which comprises reacting an organoborosiloxane compound with at least one organic compound selected from the group consisting of an aliphatic polyhydric alcohol, an aromatic alcohol, a phenol and an aromatic carboxylic acid at a temperature of 250° to 450° C. in an atmosphere inert to the reaction.

4,242,488

MODIFIED POLYURETHANE ADHESIVE COMPOSITIONS CONTAINING A CARBAMATE ESTER ADDITIVE USEFUL IN LAMINATING SUBSTRATES

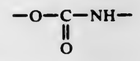
Henry Stanley, Cedar Grove, and Dilip K. Ray-Chaudhuri, Bridgewater, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 9, 1979, Ser. No. 37,476

Int. Cl.³ C08L 75/04

U.S. Cl. 428—423.1 **10 Claims**

1. A modified polyurethane adhesive composition comprising an isocyanate-terminated prepolymer or a fully reacted polyurethane and at least an effective amount of a monomeric carbamate ester which contains at least one linkage of the formula



and which is compatible and not reactive with said prepolymer or fully reacted polyurethane.

4,242,489

PROCESS FOR PREPARING POLYURETHANES

Kurt Findeisen; Kuno Wagner, and Walter Uerdingen, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 656,909, Feb. 10, 1976, Pat. No. 4,173,567. This application Jun. 11, 1979, Ser. No. 47,517

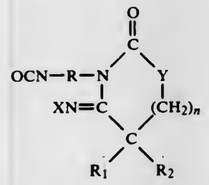
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1975, 2507682

Int. Cl.³ C08G 18/77, 18/14, 18/78

U.S. Cl. 528—73 **4 Claims**

1. A process for the production of polyurethanes or of polyurethane lacquers comprising

reacting a compound containing at least two isocyanate-reactive hydrogen atoms with an organic diisocyanate of the formula



(I)

in which

R represents a substituted or unsubstituted aliphatic hydrocarbon group having 2 to 12 carbon atoms, a substituted or unsubstituted cycloaliphatic hydrocarbon group having 4 to 15 carbon atoms, a substituted or unsubstituted aromatic hydrocarbon group having 6 to 15 carbon atoms or a substituted or unsubstituted araliphatic hydrocarbon group having 7 to 15 carbon atoms, said hydrocarbon group having at most three substituents selected from the group consisting of halogen, C_1-C_4—alkyl, methoxy, nitro and C_1-C_4-carbalkoxy groups, represents —O— or —N(R_3)—, where R_3 represents hydrogen, an aliphatic hydrocarbon group having 1 to 4 carbon atoms, a cycloaliphatic hydrocarbon group having 5 to 6 carbon atoms, a phenyl group or —CO—NH—R—NCO,

n=0 or 1,

R_1 and R_2 are the same or different and represent hydrogen, a substituted or unsubstituted aliphatic hydrocarbon group having 1 to 17 carbon atoms, a substituted or unsubstituted cycloaliphatic hydrocarbon group having 4 to 15 carbon atoms, a substituted or unsubstituted aromatic hydrocarbon group having 6 to 15 carbon atoms or a substituted or unsubstituted araliphatic hydrocarbon group having 7 to 15 carbon atoms, said hydrocarbon group having at most three substituents selected from the group consisting of halogen, C_1-C_4-alkyl, methoxy, nitro and C_1-C_4-carbalkoxy groups or R_1 or R_2 together with the ring carbon atom form a cycloaliphatic ring having 4 to 15 carbon atoms, and represents —CO—NH—R—NCO.

4,242,490

THERMOSET POLYURETHANE PREPARED FROM A POLYPROPYLENE ETHER TRIOL OBTAINED USING A DOUBLE METAL CYANIDE COMPLEX CATALYST, ETHYLENE GLYCOL AND TOLYLENE DIISOCYANATE

Roy J. Emerson, Tallmadge; Hubert J. Fabris; Robert J. Herold, both of Akron, all of Ohio, and Joe S. Duncan, Leesburg, Fla., assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Jul. 20, 1979, Ser. No. 59,342

Int. Cl.³ C08G 18/48

U.S. Cl. 528—77 **5 Claims**

1. A thermoset, segmented and elastomeric polypropylene ether urethane consisting essentially of the reaction product of tolylene diisocyanate, ethylene glycol and a polypropylene ether triol having an average molecular weight of from 7,000 to 14,000, the weight ratio of tolylene diisocyanate plus ethylene glycol to the polypropylene ether triol being from about 0.4:1 to 1.0 to 1, the equivalent ratio of the tolylene diisocyanate to the ethylene glycol plus the polypropylene ether triol being from about 1:0.90 to 1:1.05, the temperature retraction TR-10 of the polypropylene ether urethane being less than about −35° C. and the Goodyear-Healy rebound of the polypropylene ether urethane being greater than about 55%, the polypropylene ether triol having been made by the reaction of propylene oxide with a low molecular weight triol using a polymerization catalyst of the double metal cyanide complex class.

4,242,491

POLYPHOSPHAZENE POLYMERS CONTAINING SUBSTITUENTS OF ACRYLATE FUNCTIONALITY

William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 8, 1978, Ser. No. 941,102

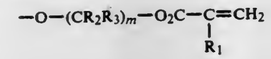
Int. Cl.³ C08G 83/00

U.S. Cl. 528—168 **16 Claims**

1. A polyphosphazene polymer comprised of units represented by the formulas:



wherein X is



in which R_1 is selected from a group consisting of hydrogen and $-CH_3$; and R_2 and R_3 are independently selected for each carbon atom from a group consisting of hydrogen and alkyl radicals containing from 1 to 6 carbon atoms; and wherein X is independently selected for each polymer unit, X′ is the same as X or is selected from a group consisting of substituted and unsubstituted alkoxy, aryloxy, amino and mercapto radicals, or mixtures thereof; $2 \leqq m \leqq 20$, and $w+y+z \geqq 20$.

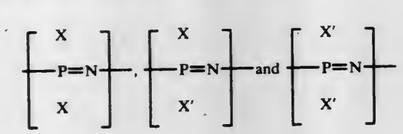
4,242,492

POLYPHOSPHAZENE POLYMERS CONTAINING SUBSTITUTED OR UNSUBSTITUTED NITROPHENOXY SUBSTITUENTS

William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 8, 1978, Ser. No. 941,119
Int. Cl.³ C08G *83/00*
U.S. Cl. 528—168 **8 Claims**

1. A method of preparing polyphosphazene polymers consisting of units represented by the formulas:



wherein X is selected from the group consisting of substituted and unsubstituted mono, di, and tri nitro phenoxy groups or mixtures thereof and wherein X′ is the same as X or is selected from the group consisting of substituted and unsubstituted alkoxy, alkenyloxy, aryloxy, alkenylaryloxy, amino and mercapto groups; said method comprising reacting a poly(dichlorophosphazene) polymer having the formula $-(NPCl_2)_n-$, wherein n is from 20 to 50,000, with a substituted or unsubstituted mono, di, or tri nitrophenol or a mixture consisting of a substituted or unsubstituted mono, di or tri nitrophenol and a substituted aliphatic or aromatic alcohol, an amino compound or a mercaptan compound in the presence of a tertiary amine.

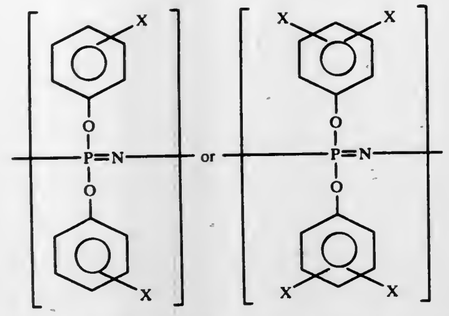
4,242,493

METHOD OF PREPARING SUBSTANTIALLY PURE POLYHALOPHENOXYPHOSPHAZENE HOMOPOLYMERS AND COPOLYMERS

Tai C. Cheng, Akron, and John R. Schreffler, Clinton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 19, 1979, Ser. No. 31,579
Int. Cl.³ C08G *79/02, 79/04, 79/14*
U.S. Cl. 528—168 **12 Claims**

1. A method of preparing a substantially pure polyhalophenoxyphosphazene homopolymer which is free of phenoxy groups and which contains from 20 to 50,000 units represented by either of the formulas:



wherein X is fluorine, chlorine, bromine or iodine; said method comprising the steps of:

(a) preparing a substantially pure sodium salt of a halogen-substituted phenol by reacting said halogen-substituted phenol with sodium hydride;

(b) reacting said sodium salt with a poly(dichlorophosphazene) of the formula $(NPCl_2)_n$, wherein n is from 20 to 50,000 to form a mixture of said polyhalophenoxyphosphazene homopolymer and sodium chloride; and

(c) separating the sodium chloride from said mixture thereby producing a substantially pure polyhalophenoxyphosphazene homopolymer.

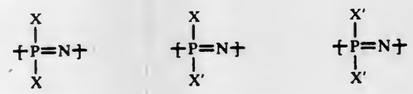
4,242,494

POLYPHOSPHAZENE POLYMERS CONTAINING ALKENYL SUBSTITUENTS

William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 20, 1979, Ser. No. 68,036
Int. Cl.³ C08G *83/00*
U.S. Cl. 528—168 **14 Claims**

1. A polyphosphazene polymer containing units represented by the formulas:



wherein X is $-CH=CCl-R$ in which R is independetly selected for each unit from the group consisting of hydrogen and substituted and unsubstituted alkyl, aryl and heterocyclic radicals and wherein X′ is the same as X or is selected from the group consisting of chloro radicals and substituted and unsubstituted alkoxy, aryloxy, amino, mercapto radicals and mixtures thereof, said polymer containing 20 to 30,000 of said units.

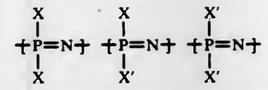
4,242,495

POLYPHOSPHAZENE POLYMERS CONTAINING OXAZOLE AND THIAZOLE SUBSTITUENTS

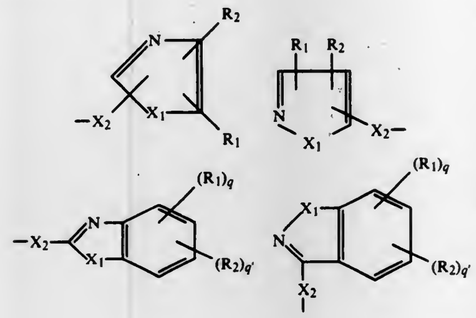
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 4, 1979, Ser. No. 71,650
Int. Cl.³ C08G *83/00*
U.S. Cl. 528—168 **20 Claims**

1. A polyphosphazene polymer containing units represented by the formulas:



wherein X is the same or a mixture of different radicals represented by:



wherein X_1 is selected from the group consisting of —O— and —S—; X_2 is selected from the group consisting of —O—, —S—, —NH—, and —N(R)— where R is a lower alkyl radical; R_1 and R_2 are independently selected from a group consisting of hydrogen, chloro, bromo, cyano, nitro, alkylmercapto, dialkylamino, and substituted and unsubstituted alkyl, aryl, alkoxy and aryloxy radicals; the sum of $(q+q')$ is an integer from 0 to 4; X′ can be the same as X or can be selected from a group consisting of halogen and substituted and unsubstituted alkoxy, aryloxy, amino and mercapto radicals and mixtures thereof.

4,242,496

LIQUID CRYSTAL COPOLYESTERS CONTAINING PHENYLHYDROQUINONE

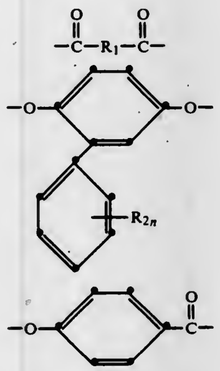
Winston J. Jackson, Jr., Kingsport; Gary G. Gebeau, Johnson City, and Herbert F. Kuhfuss, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 903,369, May 5, 1978, abandoned. This application Dec. 21, 1978, Ser. No. 971,987
Int. Cl.³ C08G *63/60*
U.S. Cl. 528—190 **5 Claims**

1. A copolyester having a fiber-forming molecular weight consisting essentially of the following divalent radicals:

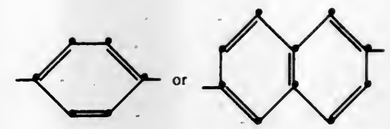
(A)

(B)

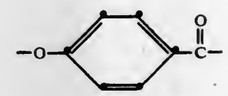


(C) $NC-CFY(OCF_2CFY)_mO(CF_2)_pO(CFYCF_2O)_n-CFY-CN$

wherein R_1 is



or mixtures thereof, R_2 is hydrogen, chlorine, bromine or a monovalent alkyl radical having one to four carbon atoms, n is 1, 2 or 3, and the range of



is from 25 to 80 mole percent, based on the total moles of radical (A) and radical (C) combined.

4,242,497

PRODUCTION OF AMINO-SILICATE COMPOUNDS, CONDENSATION RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 955,327, Oct. 27, 1978, Pat. No. 4,185,147, Continuation-in-part of Ser. No. 786,617, Apr. 4, 1977, Pat. No. 4,169,930, which is a division of Ser. No. 652,338, Jan. 26, 1976, Pat. No. 4,033,935, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Jan. 10, 1980, Ser. No. 110,925
Int. Cl.³ C08G *2/00;* C08J *9/14*
U.S. Cl. 528—232 **22 Claims**

1. An amino silicate compound obtained by reacting a mixture of components:

A. 0.5 to 2 mols of an oxidated silicon compound selected from the group consisting of hydrated silica, alkali metal silicates, natural silicates containing free silicic acid groups and

B. 1 mol of an amino compound selected from the group consisting of urea, melamine, thiourea, dicyandiamide, alkyl-substituted ureas, alkyl-substituted thioureas, aniline and mixtures thereof.

4,242,498

PROCESS FOR THE PREPARATION OF FLUORINE CONTAINING CROSSLINKED ELASTOMERIC POLYTRIAZINE AND PRODUCT SO PRODUCED

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Robert W. Rosser, San Jose, Calif., and Roger A. Korus, Moscow, Id.

Filed Apr. 9, 1979, Ser. No. 28,300
Int. Cl.³ C08G *63/44*
U.S. Cl. 528—362 **8 Claims**

1. A process for preparing a crosslinked elastomeric polytriazine, which comprises:

(a) forming a polyimidoylamidine by the reaction of anhydrous ammonia under reflux conditions with a dinitrile compound selected from the group consisting of perfluoroalkyl dinitriles having the formula $NC-(CF_2)_p-CN$, wherein p ranges from 2 to 18, and the dinitriles of oligomeric and polymeric compounds having the formula

$NC-CFY(OCF_2CFY)_mO(CF_2)_pO(CFYCF_2O)_n-CFY-CN$

wherein Y is fluorine or trifluoromethyl, p ranges from 1 to 18 and m+n ranges from 2 to 7;

(b) forming a linear polytriazine by treating the polyimidoylamidine with a ring-closing reagent selected

from the group consisting of the acyl halides and anhydrides of the perfluorinated lower aliphatic acids containing up to about 12 carbons, and of the oligomeric and polymeric acids having the formula

$$R_f O(CFYCF_2O)_yCFYCOOH$$

wherein R_f is a perfluorinated lower alkyl group containing up to about 3 carbons, Y is fluorine or a trifluoromethyl group, and y is an integer within the range of 0 to about 50;

(c) extending the linear polytriazine chain by treatment with anhydrous ammonia under reflux conditions to form additional imidoylamidine linkages; and

(d) heating the extended polymer at a temperature within the range of about 100° to 200° C. for a period of up to 4 days to cyclize the imidoylamidine linkage and crosslink the polymeric chain.

4,242,499

COLORED POLYMERS COMPRISING POLY(ORGANOPHOSPHAZENES) WITH CHROMOPHORES AS SUBSTITUENT GROUPS

Harry R. Allcock, State College, Pa.; Karen M. Kosydar, Stanford, Calif., and Sarah D. Wright, Hershey, Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

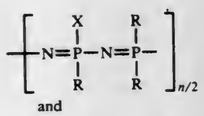
Continuation-in-part of Ser. No. 944,572, Sep. 21, 1978, abandoned, which is a continuation of Ser. No. 796,073, May 12, 1977, abandoned. This application Jul. 27, 1979, Ser. No. 61,410

Int. Cl.[3] C08G *79/02*; C07C *46/00, 57/00*

U.S. Cl. 528—399 **18 Claims**

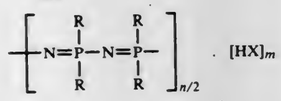
1. A compound selected from the group consisting of those represented by the formulas:

Formula I



and

Formula II



wherein X is a chromophoric group, R is an organo substituent, n is an integer from 250 to 20,000 and m is an integer no larger than n/2; including further compounds wherein the ratio of X to R is from 1:1 to 1:15,000.

4,242,500

PROCESS FOR THE REMOVAL OF FREE ACRYLATE MONOMER FROM POLYACRYLATE COMPOSITIONS BY THE ADDITION OF ALKANOLAMINES

John M. Franceschini, Lower Plenty, Australia, assignor to Fabcote Manufacturing Proprietary Limited, Boxhill, Australia

Filed May 24, 1979, Ser. No. 41,947

Int. Cl.[3] C08F *6/00, 6/16, 6/28*

U.S. Cl. 528—492 **12 Claims**

1. A process of lowering the free acrylate monomer content of a polymerized acrylate polymer composition comprising adding to the polymer composition an alkyl substituted or unsubstituted alkanolamine or alkanediolamine containing 2 to 8 carbon atoms, in an amount sufficient to neutralize a major amount of the free monomer.

4,242,501

PURIFICATION OF PNEUMOCOCCAL CAPSULAR POLYSACCHARIDES

Francis J. Cano, Spring Valley; Joseph S. C. Kuo, Orangeburg, both of N.Y., and Merle V. Querry, River Vale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 8, 1979, Ser. No. 64,663

Int. Cl.[3] C07H *3/00*; C08B *37/00*

U.S. Cl. 536—1 **85 Claims**

1. A process for purification of effectively immunogenic Type 1 pneumococcal capsular polysaccharide from a clarified fermentation lysate by a process comprising

(a) fractionally precipitating from 0.25 to 0.5 volumes of alcohol, the lysate being a a pH of about 6.7 and having a final sodium acetate concentration of about 4% and being at a temperature of 2°–6° C., and removing contaminants so precipitated and,

(b) precipitating Type 1 polysaccharide with from about 0.5 to about 1.0 volume of alcohol at a pH of about 6.7, and

(c) collecting and redissolving such precipitate, and

(d) repeating step a at about 0.15 to 0.35 volumes of alcohol, and

(e) repeating step b and at 0.5 to 1.0 volumes of alcohol and then repeating step c, and

(f) fractionally precipitating the redissolved precipitate of (e) with cetavlon at a temperature of from 21°–25° C. and a pH of 7.4±0.1, and a cetavlon concentration of 1.5 to 5.0 volumes percent, and based on a 10% cetavlon solution, and

(g) removing the precipitated polysaccharide and redissolving the polysaccharide in about 0.25 M NaCl while chilled, and

(h) reprecipitating the polysaccharide at a pH of about 6.7 with about 4% sodium acetate and about 1 volume of alcohol, and redissolving in pyrogen-free water, and

(i) repeating step (h) 2 times, and

(j) purifying the polysaccharide solution of (i) with activated charcoal at a pH of 6.1 and a sodium chloride concentration of 0.15 M by adding activated charcoal in suspension to concentration of from 3% to 7% based on a 20% activated charcoal suspension and the solution standing chilled for about 30 minutes and filtering out said activated charcoal, and

(k) diafiltering the solution against distilled water, and

(l) freezing and lyophilizing the resultant product.

4,242,502

ENHANCEMENT OF CHOLESTEROL COMBINING PROPERTIES OF SAPONINS

Manuel R. Malinow, Portland; Phyllis A. McLaughlin, Cornelius, both of Oreg.; George O. Kohler, El Cerrito, and Arvin L. Livingston, Martinez, both of Calif., assignors to United States of America, Washington, D.C.

Continuation of Ser. No. 865,985, Dec. 30, 1977, abandoned. This application Apr. 20, 1979, Ser. No. 31,970

Int. Cl.[2] C07G *3/00*; C07J *17/00*

U.S. Cl. 536—5 **15 Claims**

1. A method of subjecting saponins to acid hydrolysis under mild conditions to enhance their cholesterol-combining properties comprising:

(a) dissolving the saponins in an aqueous alcoholic solvent;

(b) adjusting the acidity of the saponins solution obtained in step (a) to about from 1.2 to 2.0 N;

(c) heating the aqueous alcoholic solution obtained in step (b) until refluxing of the solvent begins and thereafter maintaining the solution at gentle reflux for about from 20 to 60 minutes whereby modified saponins having enhanced cholesterol-combining properties are produced; and

(d) recovering the modified saponins obtained in step (c).

15. The modified saponins produced by the method of claim 1.

4,242,503

PROCESS FOR O-DEMETHYLATING FORTIMICINS

Paul A. Lartey, Waukegan, and David J. Grampovnik, North Chicago, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,237

Int. Cl.[3] C07H *15/22*

U.S. Cl. 536—17 R **9 Claims**

1. A process for O-demethylating a fortimicin comprising the steps of reacting the fortimicin to be O-demethylated with a compound selected from the group consisting of hydriodic acid and trimethylsilyliodide, said reaction being commenced at room temperature and the temperature being gradually raised to a temperature of from 50° to 70° C. over a period of from 30 minutes to four hours, and thereafter maintaining said reaction mixture at said higher temperature for a period of from 12 to 24 hours until hydrolysis of the 3-O-methyl substituent is completed and thereafter removing said O-demethylated fortimicin from the reaction mixture.

4,242,504

3″-ACYLATED MACROLIDE ANTIBIOTICS

Hideo Sakakibara, Mishima; Osamu Okegawa, Shizuoka; Toshiyuki Watanabe, Shizuoka; Tatsuro Fujiwara, Shizuoka; Susumu Watanabe, Shizuoka; Satoshi Omura, Tokyo, and Tetsuo Matsuda, Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

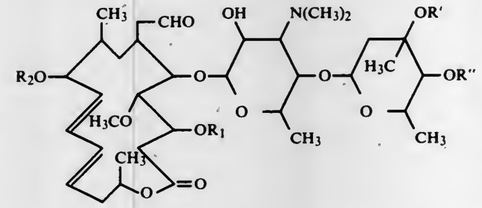
Filed May 10, 1979, Ser. No. 37,859

Claims priority, application Japan, May 10, 1978, 53-55876; Apr. 12, 1979, 54-44590

Int. Cl.[3] C07H *17/08*

U.S. Cl. 536—17 R **15 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or C_{2-3} alkanoyl, R_2 is hydrogen or C_{2-4} alkanoyl, at least one of R_1 and R_2 being hydrogen, and one of R′ and R″ is R_3 and the other is R_4, in which R_3 is C_{2-6} alkanoyl and R_4 is C_{2-5} alkanoyl, or a pharmaceutically acceptable salt thereof.

4,242,505

S-ADENOSYL-L-METHIONINE COMPOSITIONS AND PRODUCTION THEREOF

Toshihisa Kawahara, and Goro Motoki, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Japan

Filed Jul. 28, 1978, Ser. No. 929,294

Claims priority, application Japan, Aug. 3, 1977, 52-92552; Oct. 12, 1977, 52-121535; Dec. 30, 1977, 52-158856; May 25, 1978, 53-61597

Int. Cl.[3] C07H *19/16*

U.S. Cl. 536—26 **8 Claims**

1. An S-adenosyl-L-methionine composition stabilized against decomposition of S-adenosyl-L-methionine comprising S-adenosyl-L-methionine, a sulfuric acid equivalent, and a nucleoside sulfate.

4,242,506

CROSS-LINKING OF CELLULOSE SULFATE ESTERS WITH TETRAVALENT METAL IONS

Richard G. Schweiger, 1324 Rimrock Dr., San Jose, Calif. 95120

Filed Jul. 5, 1979, Ser. No. 54,683

Int. Cl.[3] C08B *5/14*

U.S. Cl. 536—59 **28 Claims**

1. A method of forming a cross-linked cellulose sulfate ester, said method comprising:

reacting a cellulose sulfate ester in an aqueous medium with a substantially water-soluble salt of a tetravalent metal, and

said reaction being carried out at a pH level that is as high or higher than the threshold pH level at which the cellulose sulfate ester is cross-linked by the tetravalent metal ion of said substantially water-soluble salt.

4,242,507

SULFONIC ACID ESTERS

Masumi Itoh, Takatsuki, and Jiyoji Notani, Kawanishi, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 662,033, Feb. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 465,125, Apr. 29, 1974, abandoned. This application Feb. 23, 1978, Ser. No. 880,436

Int. Cl.[3] C07D *249/18, 253/08*

U.S. Cl. 542—427 **57 Claims**

1. A sulfonic acid ester of the formula:

$$R_1'—SO_2—OR_2'$$

wherein R_1' is a member selected from the group consisting of alkyl having 1 to 6 carbon atoms, oxo substituted bicycloalkylalkyl having 7 to 10 carbon atoms in the bicycloalkyl moiety and having 1 to 6 carbon atoms in the alkyl moiety, phenylalkyl having 1 to 6 carbon atoms in the alkyl moiety, phenylalkenyl having 2 to 6 carbon atoms in the alkenyl moiety, phenyl, 2,4,6-trimethylphenyl, alkylphenyl having one alkyl having 1 to 6 carbon atoms in the alkyl group thereof, phenyl having 1 to 3 substituent(s) selected from the group consisting of alkenyl having 2 to 6 carbon atoms, halogen, and nitro, and β-pyridyl, and $R_2'O—$ is a member selected from the group consisting of benzotriazolyloxy, benzotriazolyloxy having one substituent selected from the group consisting of nitro, halogen and alkenyl having 2 to 6 carbon atoms, and oxo substituted dihydrobenzotriazinyloxy, with the proviso that when R_1' is phenyl having one alkyl, $R_2'O—$ is not benzotriazolyloxy.

4,242,508

CERTAIN THIACYCLIC PGI COMPOUNDS

Carmelo Gandolfi, Milan; Carlo Passarotti, Gallarate; Alessandro Andreoni, Cologno Monzese; Angelo Fumagalli, Monza; Franco Faustini, Milan; Roberto Ceserani, Milan, and Maria M. Usardi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

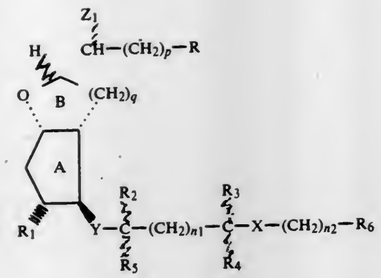
Division of Ser. No. 920,166, Jun. 29, 1978, which is a division of Ser. No. 859,703, Dec. 12, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 29,921

Claims priority, application Italy, Dec. 31, 1976, 31401 A/76; Jan. 14, 1977, 19283 A/77; Mar. 14, 1977, 21171 A/77; Mar. 21, 1977, 21412 A/77; Mar. 31, 1977, 21863 A/77

Int. Cl.[3] C07D *333/24*; A61K *31/38*

U.S. Cl. 542—430 **20 Claims**

1. A compound of formula (I)



wherein

R is a member selected from the group consisting of

(a) $-COOR_c$ wherein R_c is hydrogen, C_1–C_{12} alkylor C_2–C_{12} alkenyl; or

(b)



wherein each of the R′ groups, which are the same or different, is C_1–C_6 alkyl or phenyl;

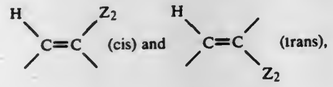
Z_1 is hydrogen or halogen;

p is zero or an integer of 1 to 7;

q is 1;

R_1 is hydrogen, hydroxy, C_1–C_6 alkoxy, benzyloxy, C_2–C_{12} alkanoyloxy or benzoyloxy;

Y is a member selected from the group consisting of $-CH_2-CH_2-$, $-C\equiv C-$,



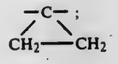
wherein Z_2 is hydrogen or halogen;

one of R_2 and R_5 is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl or phenyl, α-naphthylor β-naphthyl, and the other is hydroxy, C_1–C_6 alkoxy, benzyloxy, or R_2 and R_5, taken together, form an oxo group;

each of R_3 and R_4, which are the same or different, may be hydrogen, C_1–C_6 alkyl or fluorine or R_3 and R_4, taken together, with the carbon atom to which they are linked, form the radical



or the radical



each of n_1 and n_2, which are the same or different, is zero or an integer of 1 to 6;

X is a member selected from the group consisting of —O—, —S— and $-(CH_2)_m-$, wherein m is zero or 1;

R_6 is tetrahydro thienyl or a heterobicyclic ring selected from the group consisting of thiabicyclooctyl and thiabicyclo-nonyl, and the pharmaceutically or veterinarily acceptable salts thereof.

11. A pharmaceutical or veterinary composition, suitable for use as a hypotensive agent, said composition comprising a therapeutically effective amount of a compound as claimed in any of claims **1** to **10**, and a pharmaceutically and/or veterinarily acceptable carrier and/or diluent.

4,242,509

PROCESS FOR PRODUCING 7-AMINO-7-ALKOXYCEPHALOSPORINS

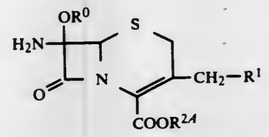
William H. W. Lunn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 853,063, Nov. 21, 1977, abandoned, which is a continuation of Ser. No. 298,165, Oct. 16, 1972, abandoned. This application Apr. 13, 1979, Ser. No. 29,792

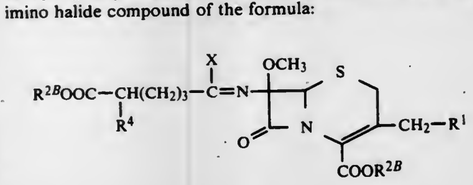
Int. Cl.³ C07D *501/18*

U.S. Cl. 544—21 **6 Claims**

1. The process for preparing a compound of the formula:



wherein R^0 represents primary loweralkyl of C_1–C_4 or methyl-d_3; R^1 represents acetoxy, carbamoyloxy, α-methoxy-p-hydroxycinnamoyloxy, propionyloxy, benzoyloxy, methoxy, methylthio, 1-methyl-1,2,3,4-tetrazol-5-ylthio, or 5-methyl-1,3,4-thiadiazol-2-ylthio; R^{2A} represents hydrogen or R^2; and R^2 represents alkyl of C_1–C_6, 2,2,2-trichloroethyl, 2-iodoethyl, tert-alkenyl of C_5–C_7, tert-alkynyl of C_5–C_7, benzyl, ar-nitrobenzyl, tetrahydropyranyl, succinimidomethyl, phthalimidomethyl, ar-methoxybenzyl, ar, ar-dimethoxybenzyl, cyanomethyl, nitrophenyl, dinitrophenyl, 2,4,6-trinitrophenyl, bis(p-methoxyphenyl)methyl, triphenylmethyl, diphenylmethyl, benzyloxymethyl, loweralkanoyloxymethyl of C_3–C_6, or phenacyl; which process comprises reacting an imino halide compound of the formula:



wherein X represents bromide or chloride; R^1 is as defined above; R^{2B} represents R^2 as defined above, loweralkanoyl of C_2–C_4 or radical of the formula:



wherein each R^3 independently represents loweralkyl of C_1–C_4 or halo selected from the group consisting of bromo, chloro, fluoro, and iodo subject to the limitation that at least one R^3 represents loweralkyl as defined; and R^4 represents an acylamido group wherein the acyl is

alkanoyl of C_1–C_4,

benzoyl,

naphthoyl,

alkoxycarbonyl of C_2–C_5,

cycloalkoxycarbonyl of C_6–C_7,

benzyloxycarbonyl,

naphthyloxycarbonyl,

one of the above groups substituted with from one to three groups, each selected from the group consisting of halo, nitro, loweralkoxy of C_1–C_4, cyano, and in the instance of

benzoyl, naphthoyl, benzyloxy, and naphthyloxy, by loweralkyl of C_1–C_4, or

phthaloyl;

with an alcohol of the formula R°—OH under essentially non-aqueous conditions.

4,242,510

CEPHALOSPORIN COMPOUNDS AND PROCESSES FOR THE PREPARATION THEREOF

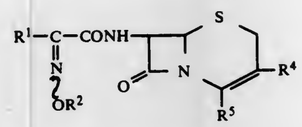
Takao Takaya, Sakai; Takashi Masugi, Kitamachi; Takashi Ogino, Kobe, and Kiyoshi Tsuji, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 863,923, Dec. 23, 1977, abandoned. This application Jun. 19, 1978, Ser. No. 916,858 Claims priority, application Japan, Dec. 27, 1976, 51-160698

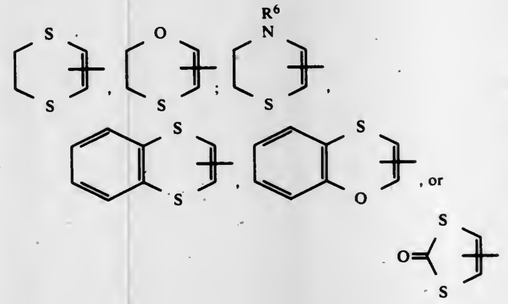
Int. Cl.³ C07D *501/56*

U.S. Cl. 544—27 **21 Claims**

1. A compound of the formula:



wherein R^1 is a group of the formula:



wherein

R^6 is hydrogen or lower alkanoyl,

R^2 is hydrogen, lower alkyl or lower alkenyl,

R^4 is a 5-membered heterocyclic-thiomethyl having carbon and nitrogen or carbon, nitrogen and a single sulfur atom in the heterocyclic ring, which may be substituted with one lower alkyl, wherein the heterocyclic group is attached by way of ring carbon to thiomethyl,

R^5 is carboxy or its ester, and a non-toxic pharmaceutically acceptable salt thereof.

4,242,511

PRODUCTION OF AMINE SALTS OF ACID O,S-DIALKYLTHIOPHOSPHORIC ACID

Jürgen Grosse, Hürth, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

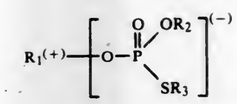
Filed Sep. 4, 1979, Ser. No. 72,084

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838933

Int. Cl.³ C07D *295/00;* **C07F** *9/165, 9/65*

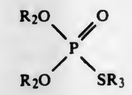
U.S. Cl. 544—110 **7 Claims**

1. In the process for making amine salts of acid O,S-dialkylthiophosphoric acid esters of the general formula (I)



(I)

in which R_1 stands for the C_1–C_{18} ammonium ion of a substituted or unsubstituted primary or secondary aliphatic, cycloaliphatic or aromatic amine or of a heterocyclic nitrogen base, and R_2 and R_3 each stand for an alkyl group having 1 to 4 carbon atoms, by subjecting an O,O,S-trialkyl-thiophosphate to partial dealkylation and forming the salt of the dealkylated product by treatment with an amine corresponding to the ammonium ion R_1, the improvement which comprises: mixing an O,O,S-trialkylthiophosphate of the general formula (II)



(II)

in which R_2 and R_3 have the meanings given above, with water and an amine corresponding to the ammonium ion R_1, employing 2 Mols of amine and 1 to 12 Mols of water per mol of phosphate, reacting the resulting mixture, with agitation, over a period of about 3 to 8 hours at a temperature within the range about 0° to 120° C., and separat-ing the amine salt of the general formula (I) from the reaction mixture.

4,242,512

NOVEL THIOAMIDE DERIVATIVES CONTAINING A PYRIDAZINE GROUP

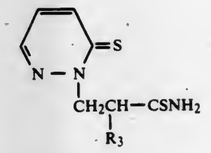
Masahiro Takaya; Toshihiro Yamada, both of Shiga, and Tomokazu Yuizono, Kyoto, all of Japan, assignors to Morishita Pharmaceutical Co., Ltd., Japan

Continuation-in-part of Ser. No. 872,367, Jan. 26, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 63,869

Int. Cl.³ C07D *237/08, 237/14, 237/18;* **A61K** *31/50*

U.S. Cl. 544—239 **7 Claims**

1. A thioamide having the formula



wherein R_3 is hydrogen or methyl.

4. 3-(3-oxo-2-pyridazinyl) thiopropionamide.

5. 3-(3-oxo-6-phenyl-2-pyridazinyl) thiopropionamide.

6. N-methyl-3-(3-oxo-2-pyridazinyl) thiopropionamide.

7. N-methyl-3-methyl-3-(3-oxo-2-pyridazinyl) thiopropionamide.

4,242,513

LACTONE COMPOUNDS CONTAINING A HETEROCYCLIC RADICAL

Troy E. Hoover; Sheldon Farber, and William J. Becker, all of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Mar. 5, 1979, Ser. No. 17,765

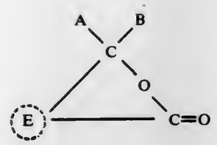
Int. Cl.³ C07D *491/048*

U.S. Cl. 544—345 **21 Claims**

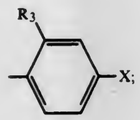
1. A material selected from the group consisting of

(a) a compound represented by the formula:

(I)



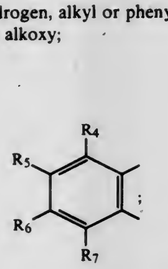
wherein A is:



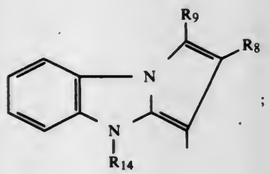
X is:

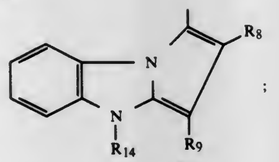


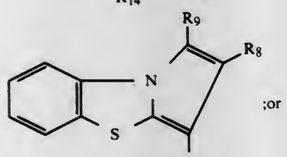
or morpholino;
R_1 and R_2 are: hydrogen, alkyl or phenyl;
R_3 is: hydrogen or alkoxy;
E is:



R_4, R_5, R_6 and R_7 are: hydrogen, halogen, or dialkylamino;
B is:
Y;

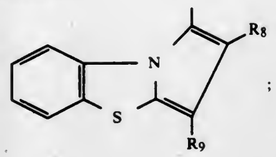




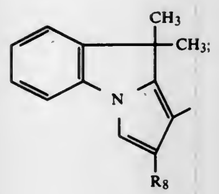


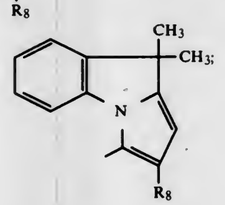
;or

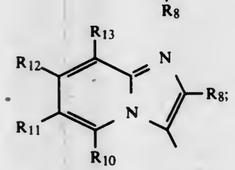
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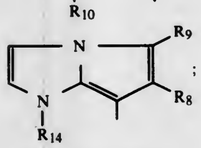


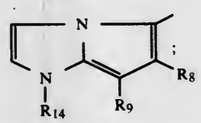
Y is:

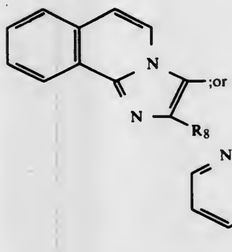


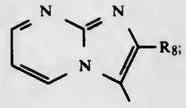




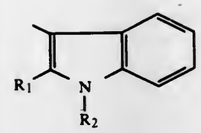




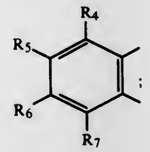




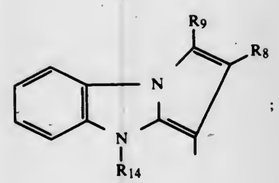
R_8 is phenyl, phenyl which is substituted by metoxy or dimethyl/amino, naphthyl or alkyl;
R_9 is hydrogen, alkyl or phenyl;
R_{10}, R_{11}, R_{12} and R_{13} are hydrogen, alkyl or nitro; and
R_{14} is hydrogen or alkyl;
(b) a compound represented by the formula (I) wherein A is:

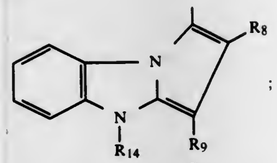


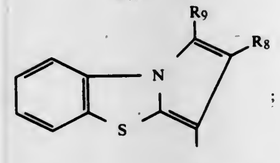
E is:

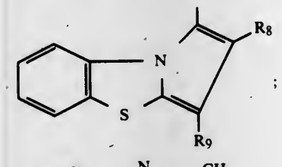


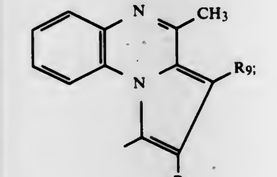
B is:
Y;

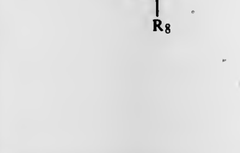




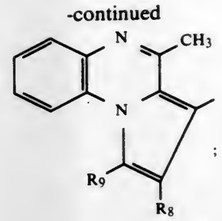


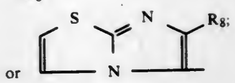




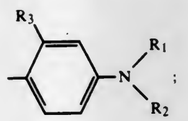


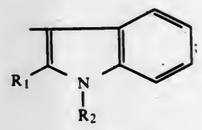
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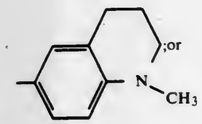


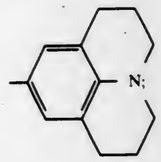


and
R_1 through R_{14} and Y are as previously defined;
(c) a compound represented by the formula (I) wherein A is:

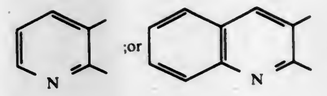




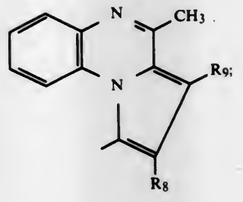




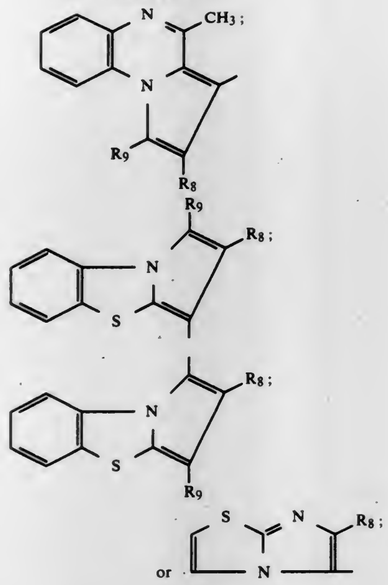
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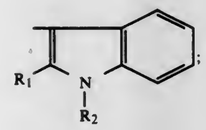
B is:
Y;



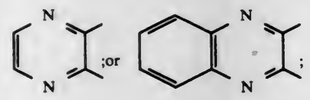
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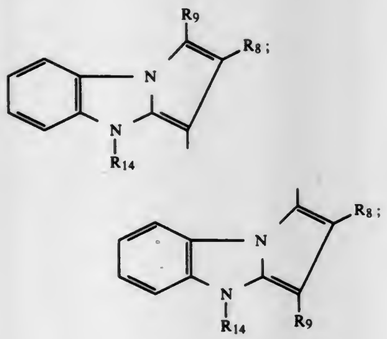
and
R_1 through R_{14} and Y are as previously defined;
(d) a compound represented by the formula (I) wherein A is:



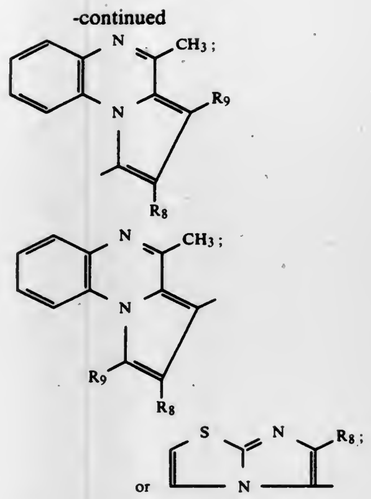
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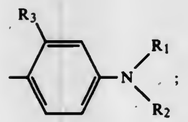
B is:
Y;



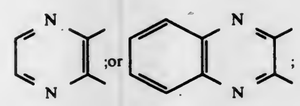
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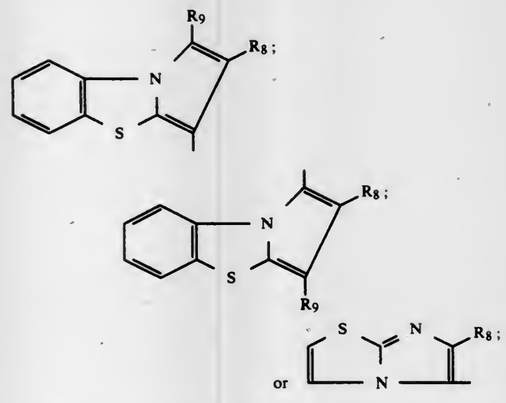
R_1 through R_{14} and Y are as previously defined;
(e) a compound represented by the fiormula (I) wherein A is:



E is:



B is:
Y;



and
R_1 through R_{14} and Y are as previously defined.

4,242,514

METHOD FOR THE INTRODUCTION OF A METHYL GROUP INTO THE 7 POSITION OF THE MORPHINAN NUCLEUS

David L. Leland, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 17, 1979, Ser. No. 85,775
Int. Cl.³ C07D *221/28, 489/02*
U.S. Cl. 546—74 **17 Claims**

1. A method for the introduction of a methyl group into the 7-position of the morphinan nucleus which method comprises reacting, in an inert solvent under an inert atmosphere, thebaine with lithium dimethyl cuprate for a time sufficient to form 3,6-dimethoxy-7β,17-dimethyl-4-hydroxy-5,6,8,14-tetrahydromorphinane.

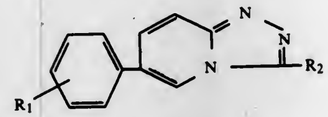
4,242,515

SUBSTITUTED 3-ALKYL-6-PHENYL-1,2,4-TRIAZOLO-[4,3-a]PYRIDINES

Ronald I. Trust, Monsey, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 28, 1979, Ser. No. 24,849
Int. Cl.³ C07D *471/04;* A61K *31/41*
U.S. Cl. 546—119 **7 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 is hydrogen, alkyl (C_1–C_4), alkoxy (C_1–C_4), fluoro, chloro, bromo, trifluoromethyl, cyano, carboxy, alkoxycarbonyl (C_2–C_5), carboxamido, nitro, amino, acetylamino, monoalkylamino (C_1–C_4) or dialkylamino wherein each alkyl group has up to 4 carbon atoms and R_2 is alkyl (C_1–C_3); and the pharmacologically acceptable acid-addition salts thereof.

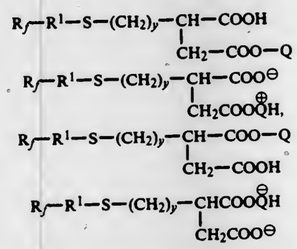
4,242,516

FLUORINATED AMPHOTERIC SURFACTANTS

Karl F. Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 538,432, Jan. 3, 1975, Pat. No. 4,069,244.
This application Jan. 12, 1978, Ser. No. 868,772
Int. Cl.² C07D *295/14, 207/04;* C07C *101/04*
U.S. Cl. 546—248 **10 Claims**

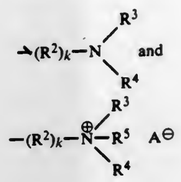
1. A compound of the formula



I,

II

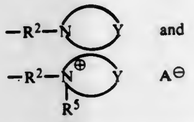
wherein
R_f is straight or branched chain perfluoroalkyl of 1 to 18 carbon atoms or said perfluoroalkyl substituted by heptafluoroisopropoxy on the terminal carbon atom;
R′ is branched or straight chain alkylene of 1 to 12 carbon atoms,
y is 1, zero;
Q is a nitrogen containing group selected from
(1) an aliphatic amino group selected from



(1a)

(1b)

wherein
R^2 is a linear or branched alkylene of 2 to 12 carbon atoms, or
k is 1;
R^3 and R^4 are independently of each other linear or branched alkyl groups of 1 to 20 carbon atoms or phenyl groups;
R^5 is hydrogen, benzyl, an alkyl group or hydroxyalkyl group, wherein said alkyl group contains 1 to 18 carbon atoms;
$A^\ominus$ is an anion which forms an ammonium salt of the formula $NH_4^\oplus A^\ominus$;
(2) cyclic amino groups selected from



(2a)

wherein Y is a diradical of the formulae

$-(CH_2)_4-$

or

$-(CH_2)_5-$ or $-(CH_2)_2-O-(CH_2)_2$

wherein R^2, R^5 and A are as defined above.

4,242,517

PROCESS FOR PREPARING 4-METHYL-5[(2-AMINOETHYL)THIOMETHYL)]-IMIDAZOLE

Toni Dockner, Meckenheim; Anton Frank, Ludwigshafen; Uwe Kempe, Heidelberg; Matthias Wetzler, and Helmut Karn, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 3,966, Jan. 16, 1979, abandoned. This application Aug. 8, 1979, Ser. No. 64,909
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825547
Int. Cl.² C07D *233/64*
U.S. Cl. 548—342 **1 Claim**

1. A process for the preparation of [4-methyl-1-hydroxymethylimidazole as claimed in claim 3 and reaction of the resulting compound with cysteamine in boiling concentrated aqueous hydrochloric acid to give] 4-methyl-5[(2-aminoethyl)-thiomethyl]-imidazole dihydrochloride which comprises: reacting 4-methyl-1-hydroxymethylimidazole with cysteamine in boiling concentrated aqueous hydrochloric acid.

4,242,518

THIOPHENE COMPOUNDS AND THEIR MANUFACTURE

Phillip Rossy, Ludwigshafen, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

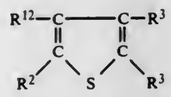
Division of Ser. No. 942,655, Sep. 15, 1978, which is a continuation of Ser. No. 784,571, Aug. 4, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 31,593

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615885; Jan. 3, 1977, 2700215; Jan. 3, 1977, 2700262

Int. Cl.³ C07D *333/00;* A61K *31/38;* A23L *2/26*

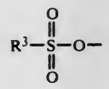
U.S. Cl. 549—61 **1 Claim**

1. Thiophene compounds of the formula



Ia

where R^{12} is



R^2 is —CN the individual radical R^3 may be identical or different and each is an an aliphatic, cycloaliphatic, araliphatic or aromatic radical, and R^3 may also be hydrogen.

4,242,519

NOVEL α-THIO-ALKANOIC ACID DERIVATIVES

Genichi Tsuchihashi, Tama; Katsuyuki Ogura, and Shuichi Mitamura, both of Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Japan

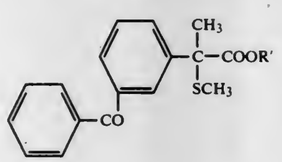
Continuation of Ser. No. 843,343, Oct. 18, 1977, abandoned. This application Mar. 13, 1979, Ser. No. 20,231

Claims priority, application Japan, Oct. 18, 1976, 51-123903; Oct. 18, 1976, 51-123904; Dec. 27, 1976, 51-156358; Dec. 27, 1976, 51-156360

Int. Cl.³ C07C *149/40, 151/00;* A61K *31/235, 31/19*

U.S. Cl. 560—15 **1 Claim**

1. Alpha-methylthio-α-(m-benzoylphenyl)propionic acid and its esters of the formula



wherein R′ represents H or C_1–C_4 alkyl.

4,242,520

PROMOTED METHOD FOR PRODUCING CARBAMATES

David Moy, Ridgewood, N.J., assignor to Halcon Research & Development Corporation, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,105

Int. Cl.³ C07C *125/063, 125/07*

U.S. Cl. 560—24 **12 Claims**

1. A process for producing carbamates from a reactant consisting essentially of an aromatic primary or secondary amine of the formula:

(i) RNH_2,

(ii) RNH(R′), or

(iii) $R(NH_2)_m$

wherein R and R′ are independently selected from the group consisting of aryl and alkaryl and wherein "m" is an integer of from 1 to 5, said aromatic amine being free of substitution by OH—, >C=O or sulfonic acid groups, said process comprising contacting said aromatic amine reactant in a reaction zone under substantially anhydrous conditions with (1) a source of carbon monoxide, (2) an organic compound which contains at least one hydroxyl group per molecule and which comprises a member selected from the group consisting of monohydric and polyhydric compounds of the formula $Z(OH)_n$, wherein "n" is an integer of at least one and "Z" is an aromatic, aliphatic, cycloaliphatic or araliphatic group or a substituted derivative or any of the foregoing groups wherein the substituent comprises members selected from the group consisting of sulfoxide, amide, sulfone and carboxylic ester groups, and (3) a member selected from the group consisting of elemental sulfur, elemental selenium, elemental tellurium, sulfur compounds, selenium compounds and tellurium compounds, in the presence of a catalyst for the reaction, said catalyst consisting essentially of either an organic base or an inorganic base selected from the group consisting of nonhalide compounds and complexes of at least one metal selected from the group consisting of lithium, beryllium, sodium, magnesium, potassium, calcium, rubidium, iron, chromium, nickel, molybdenum, tungsten, aluminum, gallium, indium, thallium, copper, titanium, vanadium, cesium, manganese, strontium, barium, cobalt, rhenium and platinum, or mixtures thereof, and in the presence of at least one disulfide of the formula:

$$R^1\text{-}S\text{-}S\text{-}R^2$$

wherein R^1 and R^2 are independently selected from the group consisting of alkyl, aryl, alkaryl, aralkyl, cycloalkyl, alkenyl, alkynyl, heterocyclic, halogenated derivatives of the foregoing groups, and derivatives of the foregoing groups in which one or more carbon atom is replaced by an oxygen atom, to form the carbamate corresponding to said aromatic amine reactant and said hydroxyl-containing organic compound.

4,242,521

CYCLOPROPANECARBOXYLATE PESTICIDES

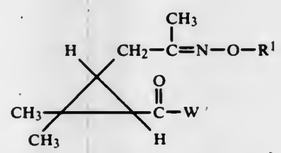
James E. Powell, Ripon, Calif., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 50,735, Jun. 21, 1979. This application Jan. 25, 1980, Ser. No. 115,465

Int. Cl.³ A01N *37/08, 37/50;* C07C *119/00*

U.S. Cl. 560—35 **4 Claims**

1. A compound of the formula



wherein R^1 is an alkyl group containing from 1 to 10carbon atoms optionally substituted by one or more halogen atoms; a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms; a cycloalkyl group containing from 3 to 7 ring carbon atoms; an alkenyl group containing from 2 to 4 carbon atoms optionally substituted by one or more halogen atoms or alkynyl group containing from 2 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optiionally ring-substituted by one or more halogen atoms; W is a chlorine or bromine atom or —OR in which R is a hydrogen atom, a salt-forming cation or an alkyl group containing from 1 to 20 carbon atoms.

4,242,522

O-(N-ALLYL-2,6-DICHLOROANILINO)PHENYLACETIC ACID DERIVATIVE AND A PROCESS FOR PREPARING THE SAME

Genichi Tsuchihashi, Tama; Katsuyuki Ogura, Sagamihara; Ryozo Sakoda, Funabashi; Isao Hashiba, Funabashi, and Shuichi Fukushima, Funabashi, all of Japan, assignors to Nissan Chemical Industries, Ltd. and Sagami Chemical Research Center, both of Tokyo, Japan

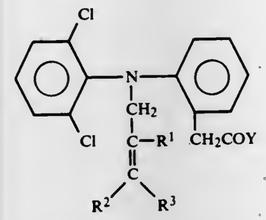
Filed Sep. 17, 1979, Ser. No. 75,909

Claims priority, application Japan, Sep. 27, 1978, 53/118026

Int. Cl.³ C07C *101/453, 83/10, 103/28*

U.S. Cl. 560—47 **14 Claims**

1. An o-(N-allyl-2,6-dichloroanilino)phenylacetic acid derivative represented by the formula:



wherein R^1, R^2 and R^3, which may be the same or different, individually represent a hydrogen atom, a halogen atom or an alkyl group; Y represents a hydroxyl group, an alkoxyl group, a $—OM^1$ group in which M^1 is an alkali metal atom, a $—OM_{\frac{1}{2}}^2$ group in which M^2 is an alkaline earth metal atom, an amino group having the formula $—NR^5R^6$ in which R^5 and R^6, which may be the same or different, individually represent a hydrogen atom or an alkyl group, or a hydroxylamino group.

4,242,523

PROCESS FOR THE PREPARATION OF PARA-NITROSO-DIPHENYL-HYDROXYLAMINES

Paul K. Battey, Ormskirk, England; Manfred Bergfeld, Erlenbach, Fed. Rep. of Germany, and Peter Hope, Liverpool, England, assignors to Akzona Incorporated, Asheville, N.C.

Filed Aug. 20, 1979, Ser. No. 67,784

Claims priority, application United Kingdom, Aug. 18, 1978, 33790/78

Int. Cl.³ C07C *79/46, 85/24, 101/72*

U.S. Cl. 560—48 **9 Claims**

1. In a process for the preparation of para-nitroso-diphenyl-hydroxylamines wherein one member selected from the group consisting of nitrosobenzene, ortho-substituted nitrosobenzenes, meta-substituted nitrosobenzenes, ortho-meta-disubstituted nitrosobenzenes, and para-substituted nitrosobenzenes, is reacted with one member selected from the group consisting of nitrosobenzenes, ortho-substituted nitrosobenzenes, meta-subsituted nitrosobenzenes, and ortho-meta-disubstituted nitrosobenzenes in the presence of an acid catalyst, the improvement comprising utilizing as the acid catalyst a Lewis acid, in an amount equal to or greater than 0.5 mol of acid per mol of nitroso reactants, and performing the reaction at a temperature from about −20° C. to about 60° C.

4,242,524

PROCESS FOR THE PREPARATION OF 2-(4′-NITROPHENYL)-PROPIONIC ACID

Carlo Venturello, Turin; Rino D'Aloisio, Novara, and Aldo Belli, Intra, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 894,346, Apr. 7, 1978. This application Apr. 20, 1979, Ser. No. 31,916

Claims priority, application Italy, Feb. 9, 1978, 20095 A/78

Int. Cl.³ C07C *51/15*

U.S. Cl. 562—423 **6 Claims**

1. Process for the preparation of 2-(4′-nitrophenyl)-propionic acid (I) by the carboxylation of para-nitroethylbenzene in a solvent, under substantially atmospheric pressure, and at a temperature of between about 20° and 50° C., in the presence of an alkaline phenate selected from the group consisting of potassium and sodium to form the corresponding potassium or sodium salt of the acid, characterized in that the reaction is conducted in dimethylsulphoxide.

4,242,525

PROCESS FOR PRODUCING SALTS OF PYRUVIC ACID

Tadamitsu Kiyoura, Kamakura, Japan, assignor to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,695

Claims priority, application Japan, Apr. 17, 1978, 53-44267; Aug. 31, 1978, 53-105619; Jan. 19, 1979, 54-3992

Int. Cl.³ C07C *59/19*

U.S. Cl. 562—577 **22 Claims**

1. A process for producing a salt of pyruvic acid by the oxidation of a salt of lactic acid which comprises oxidizing at a temperature of from room temperature to 100° C. a 2–30 weight 0/0 concentration of said salt of lactic acid with an oxygen-containing gas in a water-containing solvent in the presence of a catalyst comprising (a) at least one component selected from the group consisting of platinum and palladium and (b) a component selected from the group consisting of lead, tin, tellurium, indium, bismuth, and oxides, hydroxides, nitrates, sulfates, halides, carbonates, acetates and propionates of these elements, whereby forming the salt of pyruvic acid.

4,242,526

PROCESS FOR THE DIRECT SEPARATION OF ISOBUTYLENE FROM MIXTURES OF HYDROCARBONS

János Laky; Rezsö Csikós, both of Veszprém; Lajos Peterfy, Balatonkenese; Lajos Szvetelszky, Répcelak, and István Pallay, Budapest, all of Hungary, assignors to Magyar Ásványolaj és Földgáz Kisérleti Intézét, Veszprém, Hungary

Continuation of Ser. No. 729,784, Oct. 5, 1976, abandoned. This application Mar. 8, 1978, Ser. No. 884,607

Int. Cl.² C07C *41/06, 41/10*

U.S. Cl. 568—697 **1 Claim**

1. A process for producing methyl tertiary butyl ether from a mixture of C_4 hydrocarbons containing isobutylene and butadiene, comprising the steps of selectively reacting the isobutylene with a greater than stoichiometric amount of methanol, at a temperature of 50 to 120 degrees C., in a homogeneous liquid phase and in the presence of a catalytic amount of sulfuric acid, said sulfuric acid being present in an amount less than 20% by weight based on the weight of the reaction mixture, said homogeneous liquid phase being maintained throughout the reaction, whereby a reaction mixture containing methyl tertiary butyl ether is produced and undesired polymerization of the budadiene is avoided; cooling the reaction mixture then adding to it reaction mixture which has been washed free of methanol or separated unreacted C_4 fraction which is isobutylene-free whereby an upper phase containing hydrocarbons and methyl tertiary butyl ether and a part of the methanol and a lower phase containing methanol and 10 to 50% sulfuric acid is formed; and recirculating the lower phase as a catalyst to said step of selectively reacting the isobutylene with methanol.

4,242,527

PROCESS FOR PURIFYING CRUDE DIPHENOLS

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 755,982, Dec. 30, 1976, abandoned. This application May 23, 1979, Ser. No. 41,642

Claims priority, application France, Dec. 28, 1977, 77 39515; Japan, Dec. 28, 1977, 52-157557; Fed. Rep. of Germany, Dec. 29, 1977, 2758565; Netherlands, Dec. 29, 1977, 7714564

Int. Cl.³ C07C *37/72*

U.S. Cl. 568—724 **10 Claims**

1. A process for purifying crude diphenols to recover the p,p'-diphenol isomer which comprises (a) dispersing the crude diphenol in a system of water and a monohydroxylic alcoholic or phenolic co-solvent or mixtures of co-solvents so that the p,p'-diphenol and the more soluble impurities are dissolved in the system at a temperature that is at or near the boiling point of water or at or near the boiling point of the water/co-solvent system; (b) removing the less soluble impurities from the system; and (c) cooling the system to achieve the separation of the purified p,p'-diphenol.

4,242,528

PROCESS FOR PREPARING ISOPROPENYL PHENOL

Nobukatu Kato, Tokai; Tsutomu Takase, Nagoya; Yoshio Morimoto, Tokai; Teruo Yuasa, and Minoru Hattori, both of Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Aug. 1, 1979, Ser. No. 62,811

Claims priority, application Japan, Aug. 15, 1978, 53-98721

Int. Cl.³ C07C *39/06*

U.S. Cl. 568—781 **12 Claims**

1. A process for producing isopropenyl phenol by the thermal decomposition of oligomers of isopropenyl phenol, which comprises continuously feeding said oligomers into an inert organic reaction medium, said inert organic reaction medium consisting of a high boiling inert organic solvent which has a melting or softening point of not more than 150° C. and a lower vapor pressure than the vapor pressure of the resulting isopropenyl phenol after thermal decomposition temperature of said oligomers of isopropenyl phenol, heating said reaction medium to a temperature of 150° to 250° C., at a pressure of 10 to 100 mmHg, at such a rate that the concentration of said oligomers in the reaction medium is maintained at not more than 30% by weight, thereby thermally decomposing said oligomers in said reaction medium; and distilling off the resulting isopropenyl phenol continuously out of the reaction system and recovering it.

4,242,529

HYDROGENOLYSIS OF 2,5-NORBORNADIENE SATURATED ENDO-ENDO HEXACYCLIC DIMER

Abraham Schneider, Overbrook Hills, and Harry K. Myers, Jr., Aston, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Sep. 15, 1978, Ser. No. 942,860

Int. Cl.² C09C *13/28*

U.S. Cl. 585—353 **9 Claims**

1. Process for the liquid phase hydrogenolysis of a saturated endo-endo dihydronorbornadiene hexacyclic dimer comprising:

(a) contacting a dimer having the following structure,



with a catalytic amount of a Group VIII metal and in the presence of hydrogen;

(b) having the contacting occur, in the absence of a solvent, at a temperature in the range between from about 50° C. to about 350° C.; and

(c) continuing the contacting until the cyclopropane ring of the dimer is opened.

4,242,530

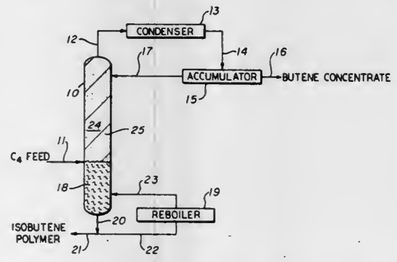
PROCESS FOR SEPARATING ISOBUTENE FROM C_4 STREAMS

Lawrence A. Smith, Jr., Houston, Tex., assignor to Chemical Research & Licensing Company, Houston, Tex.

Filed Jul. 27, 1978, Ser. No. 928,397

Int. Cl.³ C07C *2/04, 7/177*

U.S. Cl. 585—510 **14 Claims**



1. A method of separating isoolefins from a mixture containing isoolefins and normal olefins comprising:

(a) feeding a mixture containing an isoolefin and the corresponding normal olefin to a distillation column reactor into a feed zone;

(b) concurrently in said distillation column reactor:

(1) contacting said mixture with a fixed bed acidic cation exchange resin, thereby catalytically reacting the isoolefin with itself to form a dimer, and

(2) fractionating the resulting mixture of dimer and normal olefin in said fixed bed acidic cation exchange resin,

(c) withdrawing the dimer from the distillation column at a point below said feed zone, and

(d) withdrawing the normal olefin from the distillation column at a point above the acidic cation exchange resin.

4,242,531

OLEFIN DIMERIZATION

Cecil O. Carter, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1978, Ser. No. 933,345

Int. Cl.³ C07C *3/10, 3/18, 3/21*

U.S. Cl. 585—512 **17 Claims**

1. In a process for dimerizing an olefin which comprises:

introducing said olefin into a continuous closed path reaction zone,

reacting said olefin in the presence of a catalyst selective to dimerization and such conditions to result in the dimerization of the olefin,

flashing the reaction mixture in a flashing zone to thereby form a flashed vapor and resultant liquid,

recovering the product dimer from the flashed vapor of the flashing zone the improvement comprising carrying out said flashing in the shell side of a heat exchanger which is located in said continuous closed path reaction zone thereby removing part of the thermal heat of the dimerization.

4,242,532

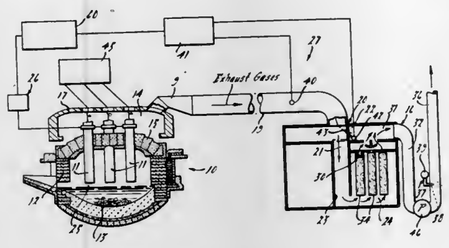
METHOD OF CONTROLLING EXHAUST GAS EMISSIONS FROM AN ELECTRIC ARC FURNACE

John D. Squibbs, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1979, Ser. No. 106,204

Int. Cl.³ H05B *7/144*; F27D *17/00*

U.S. Cl. 13—34 **8 Claims**



1. A method for controlling exhaust gases from a direct arc electric furnace having (A) an electrode suspension control system effective to raise and lower furnace electrodes in relation to a metal charge within the furnace thereby to regulate the arc gap between said electrodes and said metal, (B) an exhaust conditioning system effective to collect gases generated by operation of said furnace and deliver said gases to a treatment station for removal of air pollutants from said gases, and (C) bypass means effective for diverting said gases away from said treatment station when the temperature of said gases exceeds a predetermined temperature, said method comprising:

(1) at a sensing location in said exhaust conditioning system positioned upstream from the entrance to said treating station, continuously sensing the temperature of said gases and generating a control signal having a strength directly proportional to the temperature sensed,

(2) dividing said continuous control signal into three categories based on the strength of said continuous control signal, said three categories including (a) a first category comprising strength levels below a first actuation level, (b) a second category comprising strength levels at and above said first actuation level, but below a second actuation level, and (c) a third category comprising strength levels at or above said second actuation level, said second actuation level indicating a measurably higher gas temperature at said sensing location than the gas temperature at said sensing location at said first actuation level,

(3) directing said gases in said exhaust conditioning system into said treatment station when said control signal is in said first category or said second category,

(4) actuating said electrode suspension control system to alter the arc gap to regulate the current to said metal when said control signal is in said second category, and

(5) actuating said bypass means whereby said gases are diverted away from said treatment station when said control signal is in said third category.

4,242,533

TEST STATION APPARATUS

Norris E. Cott, 216 Trinity Dr., McMurray, Pa. 15317

Continuation-in-part of Ser. No. 788,285, Apr. 18, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 940,816

Int. Cl.³ H02G *9/02, 3/08*; H05K *5/00*

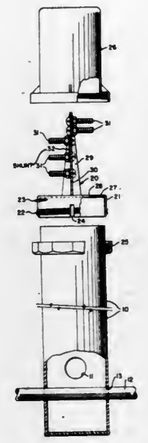
U.S. Cl. 174—38 **33 Claims**

33. A test station apparatus to monitor electrical currents and potentials in test leads coupled with piping, cables and the like, said apparatus including the combination of:

a collar including a side wall having threads on the surface thereof and slotted openings at spaced peripheral locations, said collar including an end wall having an opening to pass test leads through the collar,

a nut member having a threaded surface for mating engagement with the threads on said collar,

a support member engaging said collar for attachment thereto by said nut member,



means including a terminal block extending from said end wall to traverse across the opening in the end wall of said collar such that opposed face surfaces of the terminal block overlie segments of the opening,

terminals carried by said terminal block for coupling to test leads when extending through either segment of the opening, and

cover means to enclose said terminals.

4,242,534

SUPERCONDUCTOR STRUCTURE AND METHOD FOR MANUFACTURING SAME

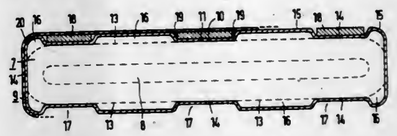
Helmut Marsing, Neunkirchen a. Br., Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,426

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1978, 2809573

Int. Cl.³ H01B *7/34*

U.S. Cl. 174—15 S **14 Claims**



1. A conductor structure comprising:

(a) at least one inner ribbon shaped superconductor which is stabilized with normally conducting material, said superconductor extending in the longitudinal direction of said structure;

(b) a jacket which consists of a reinforcement material with a mechanical strength higher than the normally conducting stabilizing material, formed by a metal sheet which is bent around said superconductor with the longitudinal edges of said metal sheet abutting and joined to each other so as to completely and immovably enclose said superconductor;

(c) said sheet preprofiled so that it contains first strip like zones which extend in the longitudinal direction of the conductor and make direct contact with the superconduc-

tor and second strip like zones extending between the first zones and spaced from the surface of the superconductor, the space between said second zones and said superconductor forming channels in the interior of said structure for conducting a cooling medium in the longitudinal direction of the conductor, said first and second zones also forming channel like depressions in the outside jacket; and

(d) filler strips of a thickness such that their outer flat sides, together with the outer parts of the jacket form at least approximately a smooth outer surface of the superconductor structure, disposed in and essentially filling said depressions in the outside of said jacket to form an approximately smooth outside surface for the conductor structure.

4. A method for manufacturing a superconductor structure comprising:

(a) shaping an initially smooth metal sheet with a predetermined width, in a non-cutting forming operation, into a preprofiled metal sheet with longitudinally extending channel like depressions;

(b) subsequently, placing said preprofiled metal sheet around a longitudinally extending ribbon shaped superconductor and closing said sheet to form a jacket, so as to form within said jacket longitudinally extending inner and outer channels extending parallel to said longitudinally extending conductors; and

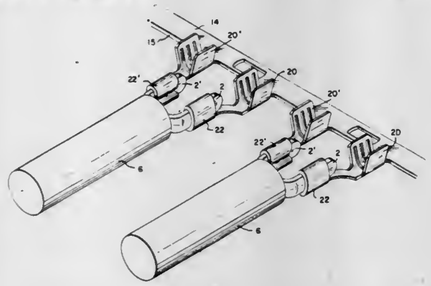
(c) finally, filling the outer channel like depressions of the jacket with filler strips.

4,242,535

CONNECTION OF WIRES TO COMPONENTS HAVING TWO PRONGS

George R. Defibaugh, Camp Hill; Suel G. Shannon, Harrisburg, and Robert C. Swengel, Jr., York, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 27, 1979, Ser. No. 79,649
Int. Cl.³ H01R *4/18*
U.S. Cl. 174—88 R **10 Claims**



1. Stamped and formed connecting means for making electrical connections of wires to electrical components of the type having first and second spaced-apart terminal prongs extending therefrom, said connecting means comprising:

a continuous carrier strip,

a plurality of sets of crimpable splicing devices integral with said carrier strip, each of said sets comprising first and second splicing devices which extend from one side edge of said carrier strip in side-by-side spaced-apart relationship,

said first splicing device of each set comprising a wire crimp portion, a prong crimp portion, and a connecting transition portion, said wire crimp portion having a wire crimp web and wire crimp sidewalls, said prong crimp portion having a prong crimp web and prong crimp sidewalls, said wire crimp portion being adjacent to said carrier strip and being integral at one end of said wire crimp web with said one side edge of said carrier strip,

said prong crimp portion of said first splicing device being spaced from said wire crimp portion, said connecting transition portion extending from said wire crimp web to said prong crimp web,

said first and second splicing devices of each set being substantially symmetrical with respect to an axis of symmetry which extends normally of said carrier strip and medially between said first and second splicing devices, whereby,

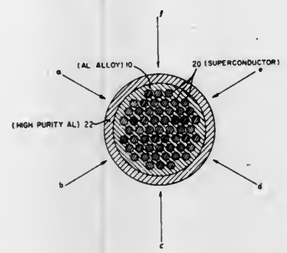
said first and second prong crimp portions of a plurality of said sets can be crimped in a first crimping machine onto said first and second prongs of a like plurality of said components thereby to produce a continuous strip of said components, and thereafter said strip of components can be fed to a second crimping machine at which said wire crimp portions of each set can be crimped onto wires and severed from said carrier strip.

4,242,536

ALUMINUM-STABILIZED MULTIFILAMENTARY SUPERCONDUCTOR

Morris S. Young, Murray Hill, N.J., assignor to Airco, Inc., Montvale, N.J.

Division of Ser. No. 737,868, Nov. 1, 1976, Pat. No. 4,148,129.
This application Jan. 17, 1979, Ser. No. 4,138
Int. Cl.³ H01B *12/00*
U.S. Cl. 174—128 S **1 Claim**



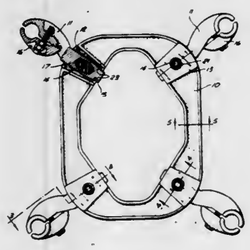
1. A composite superconductor comprising a plurality of superconductive filaments symmetrically dispersed in a matrix of aluminum alloy having substantially the electrical and thermal conductivity and the mechanical properties of an alloy of at least 99.00% Al and 0.05–0.20% Cu, said matrix being in intimate contact with a surrounding stabilizing sheath of aluminum of nominal 99.999% purity.

4,242,537

SPACER DAMPER

David Hearnshaw, Lutterworth, England, assignor to Dulmison (Australia) Pty. Ltd., Australia

Filed May 29, 1979, Ser. No. 43,567
Claims priority, application Australia, Jun. 8, 1978, PD4641
Int. Cl.³ H02G *7/14, 7/12*
U.S. Cl. 174—42 **9 Claims**



1. A spacer damper for transmission line cables comprising:

a substantially planar frame member formed of a rigid one-piece construction and including means defining a plurality of pivotal connection regions, each pivotal connection region having a recessed portion;

a plurality of clamping arms, each having a distal end and a proximal end, each proximal end extending into an associated one of said frame member recessed portions and having a non-circular recess on each of two opposite surfaces thereof;

a plurality of clamping means, each clamping means attached to the distal end of an associated one of said clamping arms for grasping an individual conductor;

a plurality of one-piece resilient energy absorbing elements, each energy absorbing element having in its quiescent condition a substantially uniform thickness and a shape substantially conforming to the shape of the clamping arm proximal end non-circular recesses, said energy absorbing elements located in the recesses on opposite surfaces of associated ones of said clamping arm proximal ends;

a plurality of end caps positioned over said clamping arm proximal ends and said frame member recessed portions, each end cap provided with a recess for engaging one of said energy absorbing elements;

a plurality of locking bolts and nuts, each locking bolt connected to said frame member and extending through an associated one of said frame member recessed portions, through the associated energy absorbing elements and the proximal end of the associated clamping arm to connect such clamping arm to said frame member with that clamping arm lying substantially in the plane of said frame member, and through an associated one of said end caps and having an associated one of said nuts affixed thereon to rigidly secure said end cap to said frame member straddling the associated recessed portion to lockingly hold the associated energy absorbing elements in compression, providing resistance to turning of the associated clamping arm under torsional displacement of said clamping arm and resiliently pivotally connecting the associated clamping arm to said frame member for resilient hinged part rotation relative to said frame member while substantially preventing longitudinal displacement therebetween

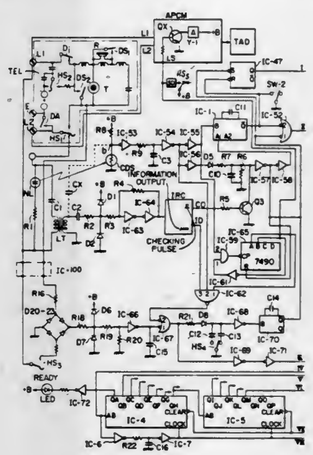
an ordinary telephone network and said plurality of base stations, the improvement wherein said control unit comprises a telephone exchange control unit provided with a telephone exchange connector including a speech path switch and a radio channel control unit including a radio channel control system and wherein said radio channel control unit and said telephone exchange control unit includes first and second sequence controllers, respectively, having independent functions, said first sequence controller being responsive to the intensities of signal received by said base stations indicated on said control channel, said signal being transmitted from a transmitting mobile station, and designating an idle speech channel in the base station having received the maximum signal intensity from said mobile station, said second sequence controller being responsive to a speech channel signal received from said mobile station to connect said mobile station signal to a telephone network through a switch controlled by said second sequence controller, whereby information is exchanged among respective base stations through the speech channels and the control channel.

4,242,539

TELEPHONE INFORMATION DISPLAYING DEVICE

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 794,625, May 6, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,511
Claims priority, application Japan, May 8, 1976, 51-52435
Int. Cl.³ H04M *15/06*
U.S. Cl. 179—5.5 **12 Claims**

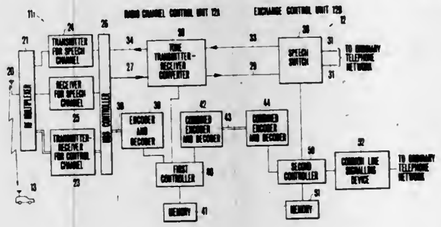


4,242,538

RADIO CHANNEL CONTROL SYSTEMS OF MOBILE RADIO TELEPHONE SYSTEMS

Sadao Ito, Yokohama; Noriaki Yoshikawa, Yokosuka, and Mitsuru Komura, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Continuation of Ser. No. 801,022, May 26, 1977, abandoned. This application Mar. 7, 1979, Ser. No. 18,368
Claims priority, application Japan, Jun. 28, 1976, 51-76196; Jun. 28, 1976, 51-76197
Int. Cl.³ H04Q *7/00*
U.S. Cl. 179—2 EB **10 Claims**



1. In a mobile radio telephone system for connecting mobile stations to a telephone network of the type wherein the service area of the system is divided into a plurality of radio zones, one of a plurality of base stations is installed in respective radio areas, each of the base stations is connected to said mobile stations through a common control channel frequency and a plurality of speech channels, a control unit connected between

7. A display device for displaying a coded signal, comprising:

display means for displaying a telephone number represented by coded signals;

first circuit means operatively associated with said display means (NL, CDS, IC-53, IC-54, IC-1, IC-47, IC-49) for clearing a telephone number displayed on said display means, in response to the arrival of a calling signal or a pulse similar to said calling signal;

second circuit means operatively associated with said display means (LT, IRC, Q3) for receiving and shaping a coded signal representative of the telephone number of a calling party when the hand-set of a telephone set provided with said display device rests on the hook switch of said telephone set, and after checking whether or not said coded signal is correct, applying said coded signal to said display means;

third circuit means operatively associated with said display

means (IC-100, D20–23, IC-66, etc.) for coding a telephone number (of Subscriber-B) which is dialed by a called party (Subscriber-A) into a coded signal, and applying said coded signal to said display means by switching said second circuit means in association with the hook switch of said telephone set; and

means (IC-70) for generating a start pulse in response to a minimum pause which is provided for shifting said coded signal of said calling party or subscriber (Subscriber-B).

4,242,540

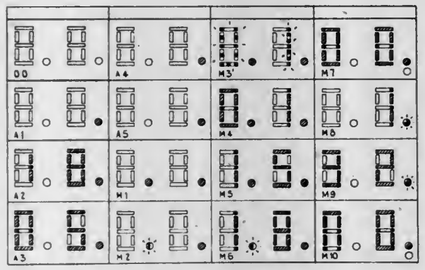
AUTOMATIC TELEPHONE ANSWERING DEVICE INCLUDING A DISPLAY FOR DISPLAYING INDICATIONS OF THE VARIOUS OPERATING MODES OF THE DEVICE

Aldo Franchi, Saronno, and Giuseppe Allerino, Milan, both of Italy, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,436

Int. Cl.³ H04M *1/64*

U.S. Cl. 179—6 R **18 Claims**



1. An automatic telephonic answering device effective to operate according to multiple modes having a keyboard assembly including a multiplicity of keys movable between raised and lowered positions to select desired operating modes of said plurality of operating modes of said automatic telephonic answering device said multiplicity of keys being coupled to a corresponding multiplicity of electrical contacts comprising in combination a display unit of the seven segment element and decimal point type, said seven segment elements and decimal points being individually energizable and de-energizable for the energizing and de-energizing of respective seven segment elements and decimal points, drive circuit means effective to be actuated by said multiplicity of electrical contacts of said keys to cause predetermined ones of said seven segment elements and decimal points to visually indicate, by predetermined combinations of said seven segment elements and decimal points, the selected operating mode of said answering device and reversible electronic counter means effective to trigger said seven segment elements and decimal points to provide a visual indication of the count of the calls received by said automatic answering device.

4,242,541

COMPOSITE TYPE ACOUSTIC TRANSDUCER

Otaro Ando, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1978, Ser. No. 970,150

Claims priority, application Japan, Dec. 22, 1977, 52/153565; Jan. 5, 1978, 53/24; Jan. 5, 1978, 53/25; Nov. 7, 1978, 53/136942

Int. Cl.³ H04R *23/02*

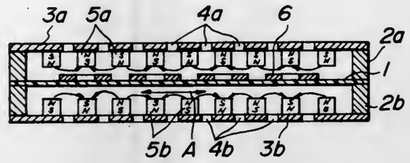
U.S. Cl. 179—110 A **18 Claims**

1. A composite type acoustic transducer of a flat drive type acoustic transducer and of a piezoelectric type acoustic transducer comprising:

a diaphragm including a membrane made of high molecular piezoelectric material, an electrode layer applied on one surface of the membrane and a coil-like conductor applied on the other surface of the membrane;

means for supporting the diaphragm along its edge;

means for forming a magnetic field extending in parallel with the diaphragm and cooperating electromagnetically with the coil-like conductor;



means for supplying an audio signal current through said coil-like conductor; and

means for applying a voltage related to an audio signal to be reproduced across the electrode layer and the coil-like conductor.

4,242,542

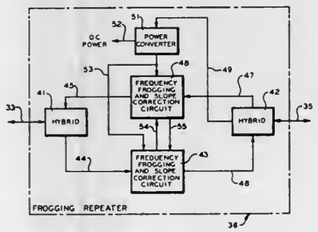
FROGGING SIGNAL REPEATER FOR A TRANSMISSION LINE COMMUNICATIONS SYSTEM

Mahlon D. Kimbrough, Hurst, Tex., assignor to Reliance Telecommunication Electronics Company, Bedford, Tex.

Filed Dec. 4, 1978, Ser. No. 966,100

Int. Cl.³ H04H *1/08*; H04B *3/36, 3/32*

U.S. Cl. 179—170 R **23 Claims**



1. A communication system for transmitting information in both directions over a transmission line including a communication means connected to each end of the transmission line and a frogging repeater means connected to the transmission line intermediate the two communication means, each communication means transmitting at least two information carrier signals, one of said carrier signals being at a first predetermined frequency higher than a second predetermined frequency of another one of said carrier signals, and receiving at least two information carrier signals, one of said carrier signals being at a third predetermined frequency higher than a fourth predetermined frequency of another one of said carrier signals, the frogging repeater means comprising:

means responsive to at least the second frequency signal transmitted by one of the communication means for generating a first coordination reference signal representing the length of the transmission line between the repeater means and the one communication means; and

means responsive to the first and second frequency signals transmitted by the other communication means, a reference signal at a predetermined frequency and said first coordination reference signal for generating the third and fourth frequency signals respectively to the one communication means each at a magnitude whereby the one communication means receives the third and fourth frequency signals at a predetermined magnitude.

4,242,543

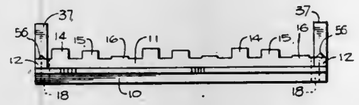
MULTIPLE CANTILEVER SPRING CONTACT HOOK SWITCH

William F. Wernet, Nashville; William J. Adams, Franklin, and Steve W. Haskins, Laverne, all of Tenn., assignors to Northern Telecom, Inc., Ottawa, Canada

Filed Aug. 14, 1979, Ser. No. 66,408

Int. Cl.³ H01H *1/28*

U.S. Cl. 200—1 A **16 Claims**



1. A multiple cantilever spring contact switch comprising:

a base and a top, each having a planar web, the webs spaced apart to define a contact enclosure;

a rim along one edge of each of said base and top, said rims in opposition;

clamping surfaces at said rims;

cantilever spring contact members clamped at one end between said clamping surfaces, said clamping surfaces inclined relative to each other whereby said contact members extend at different inclinations across said enclosure, electrically isolated from each other, said spring contact members and said base and top forming a switch assembly;

contact positions at free ends of said contact members, one of said contact members extended at said free end beyond said enclosure for actuation thereof;

means for connecting an electrical conductor to each contact member; and

a pivotal member pivotally mounted on said switch assembly, said pivotal member including a projecting member having an edge positioned in actuating-relationship to said free ends of said extended contact members, and localized means on said pivotal member for contact with an operating member whereby movement of said operating member pivots said pivotal member to actuate said contact members, actuation of said extended contact members changing contact conditions between said contact members.

4,242,544

MULTIPLE-SWITCH ARRANGEMENT

Hans E. Schweitzer, Wettingen, Switzerland, assignor to H. E. Schweitzer AG, Wettingen, Switzerland

Filed Jan. 11, 1978, Ser. No. 868,688

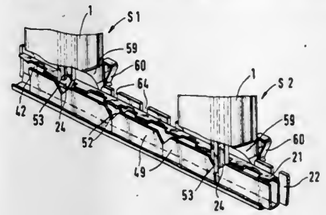
Claims priority, application Switzerland, Jan. 12, 1977, 327/77

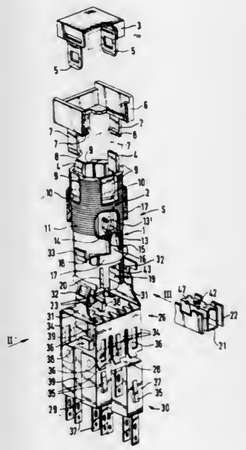
Int. Cl.³ H01H *9/26*

U.S. Cl. 200—5 E **30 Claims**

1. A multiple-switch arrangement, comprising a plurality of discrete mechanical switches each including a housing incorporating the mechanical parts of the respective switch and having first and second end portions, at least one switching element incorporating the electrical parts of the respective switch, and means for separably coupling said switching element directly to the first end portion of the housing, including rapid-release connecting means on said switching element and on said first end portion of said housing and engageable with one another with snap action; and an elongated receptacle extending substantially transversely of said housings an confined between said first end portions of the latter and the respective switching elements, said switches being held in predetermined positions relative to one another on the receptacle exclusively by the confining action of said connecting means.

18. The arrangement of claim 1, wherein said receptacle includes movable means for blocking simultaneous actuation of switching elements of several switches, each of said switches further including a mobile motion transmitting member in line with said receptacle and said receptacle having openings in register with said motion transmitting members so that a given





motion transmitting member which is caused to penetrate into said receptacle displaces said blocking means whereby the thus displaced blocking means prevent penetration of another motion transmitting member into said receptacle prior to withdrawal of said given motion transmitting member.

4,242,545

MECHANICAL SWITCH

Hans E. Schweitzer, Wettingen, Switzerland, assignor to H. E. Schweitzer AG, Wettingen, Switzerland

Filed Jan. 11, 1978, Ser. No. 868,689

Claims priority, application Switzerland, Jan. 12, 1977, 326/77

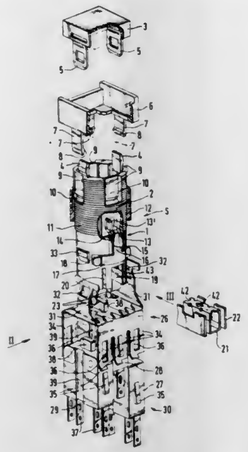
Int. Cl.³ H01H *9/20, 13/50*

U.S. Cl. 200—5 R **21 Claims**

1. In a mechanical switch, particularly in a latching or momentary switch, the combination of an elongated housing including a tubular front end portion having external threads and a plurality of external grooves extending lengthwise of said housing; a frame adjacent to said front end portion and having arms extending lengthwise of said housing and into said grooves; and a nut meshing with said end portion and movable on the latter frontwardly toward a mounting position in which it surrounds said arms and presses the same into said grooves to affix said frame to said housing, and rearwardly toward a releasing position in which said arms are exposed and said frame is separable from said housing.

6. The combination of claim 1, wherein said housing includes a second end portion and further comprising an adapter, means for separably coupling said adapter to said second end portion,

a plurality of discrete switching elements, and means for separably coupling said switching elements to said adapter.



14. The combination of claim 12, further comprising a control rail extending through said channel and being movable transversely of said housing.

4,242,546

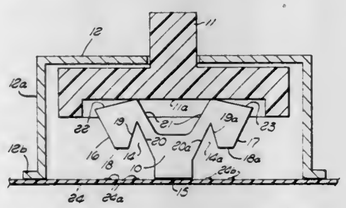
ELECTRICAL PUSH-BUTTON SWITCH

Oscar Alonso, Westminster, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 957,892

Int. Cl.³ H01H *1/12, 13/52, 15/00*

U.S. Cl. 200—16 A **8 Claims**



1. A push-button switch for use with printed-conductor electronic circuit boards, comprising:

two pairs of spatially separated but generally parallel printed conductors on said circuit board;

a resilient conductive elastomer member having a portion in contact with said circuit board between said two pairs of conductors, said member being shaped, when unstressed, to have a pair of cantilevered upwardly and outwardly, oppositely extending wing portions each positioned over a corresponding pair of said conductors in spaced relationship so as not to produce contact therewith;

and push button means mounted over and separate from said member and movable relative to said wing portions, said push button means applying a compressive force to said wing portions to deflect said wing portions downwardly into contact with said corresponding pairs of conductors.

4,242,547

PERIODICAL SWITCHING DEVICE CAPABLE OF ADJUSTING THE OPERATION TIME

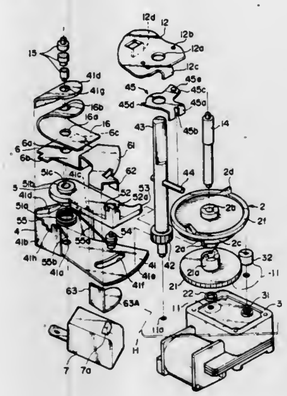
Kazuo Hashimoto, Iida, Japan, assignor to Iida Sankyo Kabushiki Kaisha, Iida, Japan

Filed Aug. 1, 1978, Ser. No. 930,094

Claims priority, application Japan, Aug. 8, 1977, 52-94104; Nov. 26, 1977, 52-141137

Int. Cl.³ H01H *7/00*

U.S. Cl. 200—38 R **15 Claims**



1. A periodical switching device capable of adjusting operation time, comprising;

a switching means for opening and closing an electric circuit;

a cam member which periodically operates being interlocked to a source of driving;

a swinging member for contacting a cam surface of said cam member;

an operation member which rides on and engages said swinging member and disengages from said swinging member according to swinging motion of said swinging member thereby to operate said switching means;

an operation-time adjusting means which adjusts the swinging member relative to said cam surface; and

a mounting member which holds relative positions of said swinging member and said operation-time adjusting means, said swinging member and said operation member, and said operation member and said switching means;

wherein the operation time of said switching means is set by the adjusting means adjusting the position of said swinging member relative to said cam member.

4,242,548

LIMIT SWITCH

Haruo Atsumi, Otsu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 20, 1979, Ser. No. 22,301

Claims priority, application Japan, Mar. 31, 1978, 53-38700

Int. Cl.³ H01H *3/16*

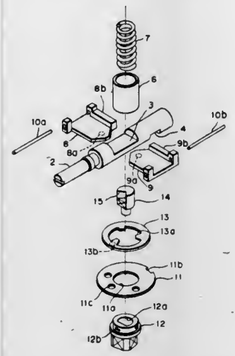
U.S. Cl. 200—47 **5 Claims**

1. A limit switch including a switch component and an acutator for driving said switch component, said actuator comprising:

a casing;

a shaft rotatable about its axis mounted within said casing, said shaft having a lever engaging portion;

a pair of levers pivotably supported under said shaft said levers being in a direction perpendicular to the axis of said rotating shaft, each lever having a free end extending from its pivot point, the free end of each lever opposing the free end of the other lever, the free ends of said levers being selectively engageable with the lever engaging portion of said shaft such that rotation of said shaft in a first direction causes said shaft engaging portion to press the free end of one of said levers, if engaged therewith, causing its pivotal movement and rotation of said shaft in a second direction causes said shaft engaging portion to press on the free end of the other of said levers, if engaged therewith, causing its pivotal movement; and,



a vertically reciprocal driving plunger having an upper surface which is selectively engageable with a selected one of or both of said levers to control engagement of a selected one of or both of said levers with said lever engaging portion of said shaft, said plunger being vertically moved by the pivotal movement of a lever engaged with said upper surface caused by rotation of said shaft for driving said switch component.

4,242,549

ELECTRICAL GAS-BLAST CIRCUIT BREAKER AND METHOD OF MANUFACTURE

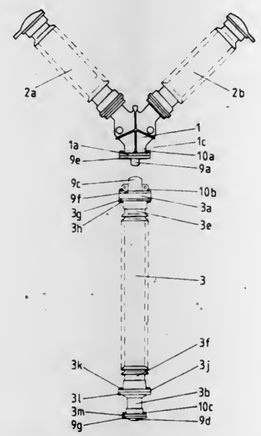
Georg Köppl, Birr; Helmut Nowack, Fislisbach, and Violi Carmelo, Untersiggenthal, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 24, 1979, Ser. No. 6,125

Claims priority, application Switzerland, Jan. 26, 1978, 839/78

Int. Cl.³ H01H *33/00*

U.S. Cl. 200—144 R **18 Claims**



15. A method of assembling a housing assembly for an electrical gas blast circuit breaker, comprising the steps of:

filling a first compartment housing a first switch assembly with a pressurized quenching gas;

filling a second compartment housing a second switch assembly with the pressurized quenching gas;

releasably sealing each of the compartments;

joining the first and second compartments together; and

automatically communicating the first and second compartments when the first and second compartments are joined together.

4,242,550

CIRCUIT INTERRUPTER OF THE TYPE PRODUCING A PUFF OF ARC EXTINGUISHING GAS UPON OCCURRENCE OF AN ARC

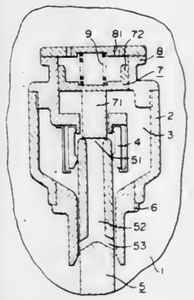
Masami Kii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1978, Ser. No. 919,452

Claims priority, application Japan, Jun. 27, 1977, 52/76734; Aug. 30, 1977, 52/104474

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 R **8 Claims**



1. A circuit interrupter which comprises:

a pair of interengaged contacts being relatively movable into a spaced apart position in a fluid for arc extinction;

an arc space formed by the separation of the contacts;

a chamber connected to the arc space to store the fluid for arc extinction pressurized in the arc space;

an outlet for discharging the fluid in the chamber through the arc space out of the chamber after separation of the contacts for a specific distance; and

means for precompressing the fluid for arc extinction in the chamber dependent upon movement of the contacts in a direction for separation thereof.

4,242,551

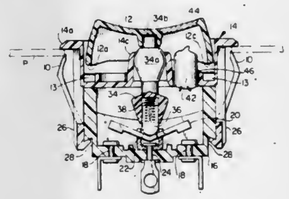
ENVIRONMENTALLY SEALED ROCKER SWITCH

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 945,520, Sep. 25, 1978, abandoned. This application May 17, 1979, Ser. No. 39,859

Int. Cl.³ H01H *9/04, 9/16*

U.S. Cl. 200—302 **10 Claims**



1. An electric switch housing for protecting the fixed contacts and movable contact bridging member from environ-

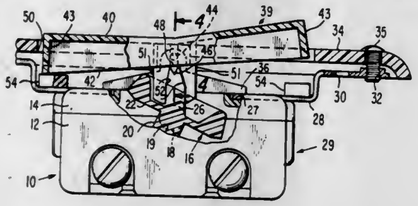
mental conditions external to the switch, said housing comprising an upwardly open dielectric base for said contacts and bridging member, a dielectric cover bracket secured to said base for isolating the contents of the base from the environment, said cover bracket having a recessed portion and a generally cylindrical upstanding boss defined centrally of said recessed portion, an actuator snugly received in a central opening of said boss and having a shoulder portion engaging an inturned lip on said boss, an inner end of the actuator adapted to engage the movable contact bridging member and an upper end of said actuator projecting above the lip of said boss, said cover bracket having a raised peripherally extending wall portion, said wall portion having aligned openings therein, which openings are also aligned with a diameter of the upper portion of said cylindrical boss, and a rocker with laterally projecting tabs pivotally received in said aligned openings and having a center portion for receiving said upwardly projecting end of said actuator.

4,242,552

MOUNTING MEANS FOR INTERCHANGEABLE SWITCH HANDLES

Julius F. Tibolla, Yardley, Pa., assignor to GTE Sylvania Wiring Devices, Inc., Trenton, N.J.

Filed Jan. 8, 1979, Ser. No. 1,496
Int. Cl.³ H01H *3/20, 3/00*
U.S. Cl. 200—339 **9 Claims**



1. In an electrical switch-and-coverplate structure of the type that includes a switch having a housing assembly and an actuator movably supported thereby, and a cover plate removably attached to said assembly and having an opening providing access to the actuator and the housing assembly and having opposite side edges, an improved handle and mounting means therefor comprising:

(a) a switch handle adapted to be disposed within said opening, said handle having opposite sides in close proximity to the respective side edges of the cover plate opening;

(b) means on the housing assembly and handle respectively, providing a separable snap type pivotal connection therebetween for rockably connecting the handle to the housing assembly in position to move the actuator responsive to rocking of the handle by a user, said means being adapted to effect the snap connection of the housing assembly to the handle in response to movement of the handle in a direction rearwardly toward the assembly both with and without the cover plate attached, and the snap disconnection thereof responsive to exertion of a pulling force in the opposite direction with the cover plate removed; and

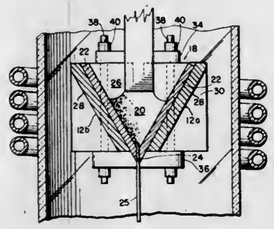
(c) means separate from the first named means and mounted upon the handle at the respective, opposite sides thereof laterally outwardly from the first named means, said second means providing forwardly facing abutments disposed in confronting relation to the opposite side edges of the cover plate opening whereby said side edges constitute surfaces engageable by the abutments to prevent separation of the housing assembly and handle and consequent removability of the handle through the cover plate opening whenever the cover plate is attached to the housing assembly, said second named means leading the first named means in the sense of said movement of the handle in the rearward direction, said second named means arriving at a final position in which the side edges of the cover plate opening are engageable by said abutments of the second named means, prior to relative movement of the first named means on the handle assembly and handle at a final position in which they provide said pivotal connection between the handle assembly and handle.

4,242,553

APPARATUS FOR USE IN THE PRODUCTION OF RIBBON-SHAPED CRYSTALS FROM A SILICON MELT

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Samuel Berkman, Florham Park, and Harold E. Temple, Trenton, both of N.J.

Filed Aug. 31, 1978, Ser. No. 938,299
Int. Cl.³ H05B *6/30;* C30B *15/16*
U.S. Cl. 219—10.49 R **4 Claims**



1. In an apparatus for use in the pulling of ribbon-shaped crystals downwardly through a die set defined between a pair of quartz plates disposed in downwardly converging planes for forming an elongated, V-shaped crucible containing an electrical conductive melt, means for coupling induction heating energy to the melt comprising:

A. susceptor supporting said crucible including a pair of susceptor halves having a pair of side plates disposed in mutually spaced opposed relation, each of said side plates being substantially planar in shape and formed of an electrically conductive material, said pair of plates being downwardly inclined toward each other and having an electrically insulative air-gap defined therebetween throughout the length thereof for electrically isolating the side plates, each from the other, and a pair of end plates integrally related with each side plate and disposed in a pair of planes normally related to the plane of the side plate, each end plate being characterized by a plurality of slots extended across one face thereof, whereby the effective thickness thereof is reduced; and

B. means for effecting an induction heating of the electrical conductive melt comprising an R-F coil concentrically related to the susceptor and electrically coupled with the melt, said R-F coil being characterized by an operational frequency such that the thickness of the side plates and the effective thickness of the end plates is less than two skin depths for the operational frequency.

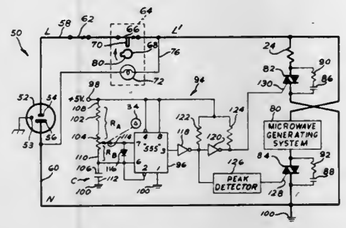
4,242,554

EFFECTIVE TIME RATIO BROWNING IN A MICROWAVE OVEN EMPLOYING HIGH THERMAL MASS BROWNING UNIT

Bohdan Hurko, and Thomas R. Payne, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 31, 1978, Ser. No. 911,615
Int. Cl.³ H05B *6/68, 6/72*
U.S. Cl. 219—10.55 B **9 Claims**

1. In a cooking oven having a cooking cavity, an electrical resistance food browning system positioned within the cavity so as to brown by radiant energy the surface of food being cooked therein, a microwave energy generating system supplying the cooking cavity, and a means for establishing the overall duration of a cooking operation, the oven adapted for operation from an electric power source insufficient to supply both the food browning system and the microwave energy generating system simultaneously, and the food browning system having a relatively high thermal mass such that its heat up rate is within the approximate range of 13° F./second to 26° F./second when drawing substantially all of the power available from the electric power source, a time ratio control system comprising:



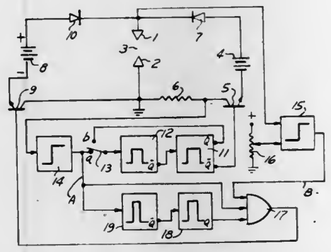
power control means responsive to said means for establishing the overall time duration of a cooking operation for alternately energizing said microwave energy generating system and said electrical resistance food browning system, each cooking operation having a plurality of energization intervals of said microwave energy generating system and a plurality of effective browning intervals during which said electrical resistance food browning system is energized, and each effective browning interval having at least a predetermined minimum duration of at least thirty seconds selected to allow said browning system time to reach at least a minimum effective temperature.

4,242,555

PROCESS AND APPARATUS FOR ELIMINATING SHORT CIRCUITS IN ELECTRICAL DISCHARGE MACHINING

Roger Delpretti, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Feb. 16, 1978, Ser. No. 878,567
Claims priority, application Switzerland, Feb. 23, 1977, 2251/77
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 M **7 Claims**



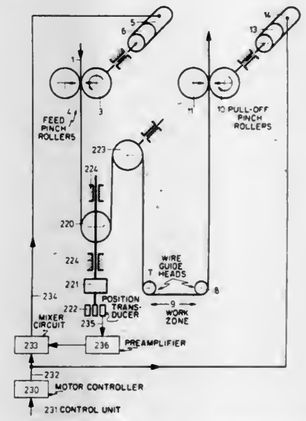
1. In a process for machining an electrode workpiece by an electrode tool wherein consecutive voltage pulses are applied across said electrodes for causing current pulses of a predetermined intensity to flow thereacross, comprising monitoring the machining conditions in the machining gap between the electrodes and increasing the current pulse intensity when such monitoring indicates the presence of a short circuit bridging the gap, the improvement comprising increasing the intensity level of said current pulse after a first predetermined time interval delay from the beginning of said current pulse, interrupting the increased intensity level of said current pulse after a second predetermined time interval delay following said first time interval delay, monitoring the machining conditions during said second time interval delay and reestablishing current pulses of normal intensity as soon as such monitoring indicates the disappearance of said short circuit.

4,242,556

GUIDING AND STRESSING AN ELONGATED, STRETCHED, RENEWABLE ELECTRODE IN ELECTRO-EROSIVE MACHINING

Werner Ullmann, Locarno; Bernd Schumacher, Losone; Herbert Ruh, and Beat Kilcher, both of Ascona, all of Switzerland, assignors to A.G. für Industrielle Elektronik AGIE, Losone b. Locarno, Switzerland

Continuation of Ser. No. 731,783, Oct. 12, 1976, abandoned.
This application Apr. 13, 1978, Ser. No. 896,141
Claims priority, application Switzerland, Nov. 10, 1975, 14514/75
Int. Cl.³ B23P *1/12*
U.S. Cl. 219—69 W **6 Claims**



1. In combination with an electrical discharge machine an apparatus for pulling a wire with a predetermined speed and tension through a work zone, comprising

wire feeding means which feed the wire at a controlled rate into a wire path from one end of the path, including a pair of feed pinch roller means, of which at least one is driven;

wire take-up means which take up the wire at the other end of the wire path at a controlled, substantially constant rate which is higher than the feeding rate of said feed pinch roller means, including a pair of take-up pinch roller means, of which at least one is driven,

the wire path being a low-friction path and including the work zone along a segment thereof in which the wire is utilized to perform electrical discharge machining function;

static wire stressing means located between said feeding means and the work zone, said stressing means determining substantially the entire tension of the wire in the work zone and comprising a fixed, upper pulley and a movable lower pulley located between said feeding pinch roller means and the working zone, whereby tension in the wire will have the tendency to pull the lower pulley towards the upper fixed pulley, the wire being looped about both of said pulleys, and a tension force applying means connected to said movable lower pulley acting in a direction counter the direction of pull exerted by said wire on the movable pulley to provide a predetermined tensioning

force for the wire to thereby determine substantially the entire tension of the wire in the working zone,

the position of said movable pulley changing with respect to said fixed, upper pulley upon change in elongation of said wire between the feed pinch roller means and the take-up pinch roller means;

means measuring the deflection of said movable pulley upon changes in elongation of the wire and providing a wire path length signal;

and feed control means which receive the wire path length signal and control the feeding rate of said feeding pinch roller means to null said deflection and thus maintain a time-averaged constant length of wire between said feed pinch roller means and said take-up pinch roller means.

4,242,557

APPARATUS FOR ELECTRICAL DISCHARGE MACHINING OF CYLINDRICAL WORK

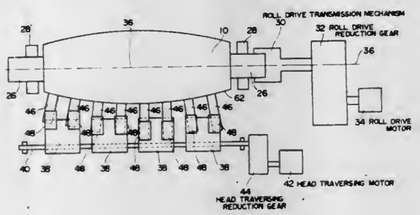
Kunihiko Sato, Owari-Asahi; Tetsuro Urata, Nagoya; Mitsugi Kawano; Terumasa Jinba, both of Fukuyama; Yukio Kato, Kasugai, and Takeo Uebayashi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 27, 1978, Ser. No. 946,405

Claims priority, application Japan, Sep. 30, 1977, 52/116615

Int. Cl.³ B23P *1/20*

U.S. Cl. 219—69 E **7 Claims**



1. An apparatus for electric discharge machining of a work in roll form of a type wherein at least one electrode is moved along the axis of rotation of the rotating work and discharges are caused across a working gap defined by a gap between the electrode and an outer surface of the work in roll form to thereby give a satin finish of a desired worked roll surface roughness to the outer surface of the work, said apparatus comprising:

a plurality of electrode heads divided and arranged at predetermined spaces along the axis of rotation of the work in roll form;

at least one rectangular electrode retractably and adjustably mounted on each of said plurality of electrode heads, each said electrode having a flat discharge surface;

electrode gap adjusting means provided on each of said electrode heads for continuously biasing said at least one rectangular electrode against and into contact with said outer surface of said work in roll form in correspondence to said desired worked roll surface roughness; and

electrode traversing means for traversely feeding each said electrode head a predetermined distance along the axis of rotation of said work;

wherein each said electrode head has a guide slot formed therein, said at least one rectangular electrode being received in said guide slot, said electrode gap adjusting means including spring means disposed in said guide slot for supporting said at least one rectangular electrode, and clamping means for securing said at least one rectangular electrode to said electrode head in such a position that said at least one rectangular electrode is biased by said spring means and projected against and into contact with said outer surface of said work by said spring means.

4,242,558

DEVICE FOR BREAKING OFF THE WIRE-LIKE OR STRIP-LIKE ELECTRODE IN AN ELECTRO-EROSION MACHINE

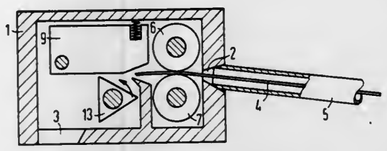
Karl Kunze, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,176

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755740

Int. Cl.³ B23P *1/00*

U.S. Cl. 219—69 W **7 Claims**



1. A device for breaking off a wire-like or strip-like electrode for an electro-erosion machine wherein the electrode is supplied from a feed side of the device and at a delivery side of the device is deposited behind a workpiece being processed by the electro-erosion machine, comprising: feed roller means having drive rollers at the delivery side for advancing the electrode; an anvil following the feed roller means; a rotatable bit means having a grooving edge and which is adjacent a surface of the anvil; said feed roller means inserting the electrode into a gap between the surface of the anvil and the rotatable means; the rotating bit means grooving the electrode on the anvil surface; the anvil being deflectable and means being provided for biasing a surface of the anvil towards the bit means to cooperate with the bit means for said grooving so as to prevent cutting completely through the grooved electrode at the groove by the bit means; and a peripheral speed of the grooving edge being greater than a peripheral speed of the drive rollers of the feed roller means so as to cause a grooved piece of the electrode to be torn off at the grooves and jump away.

4,242,559

METHOD AND APPARATUS FOR THE ELECTRO-EROSIVE MACHINING OF WORKPIECES WITH AUTOMATIC THREADING OF THE ELECTRODE

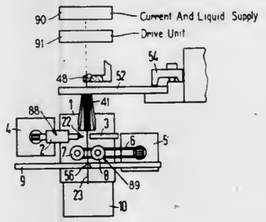
Hans Roemer, and Klaus-Peter Steil, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,220

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755777

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 W **21 Claims**



1. A method for the electro-erosive treatment of workpieces with wire-like and strip-like electrodes wherein the path of relative movements between the workpiece and the electrode is controlled by means of an electronic control system, and wherein the wire-like or strip-like electrode is guided by guide means on a feed side of the workpiece and fed by a clamp and feed device means into a starting bore of a contour which is to be provided in the workpiece, and wherein the electrode is thrust through the starting bore by the clamp and feed device means until the electrode is brought into an active connection with a drive means at a delivery side of the workpiece by use of a gripper means, comprising the steps of: stopping the drive means when an end point of a contour is reached and clamping the electrode only on the feed side by actuating the clamp and feed device means to clamp the electrode at a clamping point on the feed side of the workpiece only; grooving the electrode with a grooving device comprising an anvil surface and cooperating grooving edge between the clamping point and the workpiece; starting the drive means and during forwards movement of the electrode the electrode is broken off by pulling at the groove and simultaneously stretched to become stiffer; positioning a starting bore for a next contour to be eroded by means of the electronic control system; threading the end of the electrode into the new starting bore and advancing it beyond the workpiece to a distance which has been established prior to the processing by use of the clamp and feed device means; gripping the end of the electrode with the gripper means and supplying it to the drive means; and when the end of the electrode has been gripped by the drive means a processing of the workpiece in the new contour is continued.

4,242,560

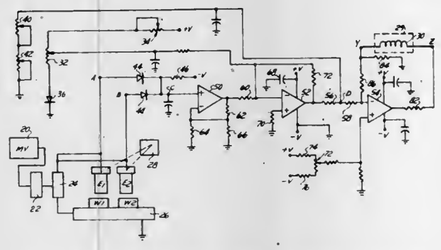
SERVO FEED SYSTEM FOR AN ELECTRICAL DISCHARGE MACHINING APPARATUS

Oliver A. Bell, Jr., Statesville; Randall C. Gilleland, Troutman, and Davey J. Chance, Concord, all of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,630

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 G **7 Claims**



1. In an electrical discharge machining apparatus for machining an electrically conductive workpiece by an electrode across a dielectric coolant filled gap, a servo feed circuit for controlling the movement of said electrode comprising:

a motive means for moving the electrode upwardly and downwardly during machining;

an electrically energized element of the inductive type for controlling the operation of said motive means and its direction of movement;

a sensing circuit connected to the gap for providing an output signal representative of gap voltage level;

an amplifier for amplifying and clipping the gap voltage signal to provide a modified signal;

a reference voltage source;

a summing amplifier for summing the reference voltage signal and the modified gap voltage signal; and

a power amplifier receiving its input from the summing amplifier to its input terminal and having its output terminal operably connected to one terminal of said electrically energized element and having its input terminal operably connected to the other terminal of said electrically energized element for providing current feedback through said electrically energized element.

4,242,561

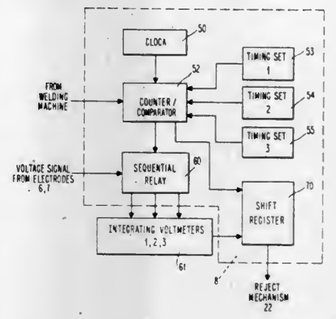
ELECTRIC SEAM WELD MONITORING APPARATUS AND METHOD

George Long, Philadelphia, Pa., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Feb. 7, 1979, Ser. No. 10,029

Int. Cl.³ B23K *11/00*

U.S. Cl. 219—109 **5 Claims**



1. A method for monitoring an electric welding process for welding a series of parts of the type wherein the welding current is applied to the part to be welded by welding electrodes as a series of pulses, comprising the steps of:

integrating the voltage across the welding electrodes over the length of each pulse;

comparing the value thus obtained to predetermined maximum and minimum limits;

producing an alarm signal when said value does not fall between said limits;

using said alarm signal to trigger a reject means for removing the part from the series of parts; and

controlling the time during which the voltage across the electrodes is compared to said predetermined limits in accordance with the position of the part with respect to the welding electrodes, wherein

a blanking pulse generator directs the voltage across the electrodes to a plurality of integrating voltmeters, wherein each said integrating voltmeter is adapted to generate an alarm signal if said voltage does not fall within the predetermined limits, and wherein said blanking pulse generator directs the voltage to the particular integrating voltmeter corresponding to the stage in the welding process at which the voltage across the electrodes is measured.

4,242,562

PLASMA ARC TORCH HEAD

Viktor N. Karinsky, Odintsovo, bulvar Novoselovoi, 10, kv. 43, Moskovskaya oblast; Ivan A. Kuznetsov, Yarzevskaya ulitsa, 31, korpus 5, kv. 8, Moscow, and Viktor I. Kutsyn, Ruzsky raion, poselok Dorokhovo, Zheleznodorozhny proezd, 17, Moskovskaya oblast, all of U.S.S.R.

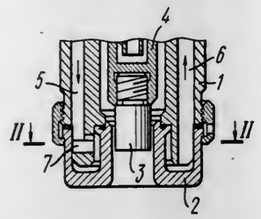
Filed Aug. 2, 1978, Ser. No. 930,216

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 P **7 Claims**

1. A plasma arc torch head comprising a hollow tubular body through the interior of which passes a flow of plasma-forming gas and wherein are coaxially arranged an electrode holder and an electrode having its free end surrounded by a cooled nozzle formed with double walls connected at the end thereof by means of a solid bridging member and forming the end face of the torch head, with the body of the torch head being formed with coolant inlet and exhaust ducts which are oriented so as to enable the flow of the incoming coolant to be directed normally to the cooled portions of the nozzle surface subject to maximum heating in the process of generation of a

plasma jet, said inlet and exhaust ducts being alternatively disposed in an annular ring about said electrode holder and electrode, with radially directed passages situated adjacent the solid bridging member for communicating each inlet duct to an adjacent exhaust duct, and wherein electromagnetic coils are mounted concentrically externally of the nozzle to thereby enable control of the plasma jet at the outlet of the torch, said



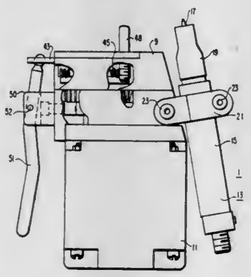
electromagnetic coils being enclosed in a protective housing flush-mounted with the nozzle in the area of the end face thereof, with a ring-shaped plug being fitted between the protective housing and the tubular body of the torch head, said coolant inlet ducts extending over the entire length of the electromagnetic coils and normally to said bridging member between the two walls of the nozzle.

4,242,563

AUTOMATIC PLUG WELDING APPARATUS

Raymond H. Glatthorn, St. Petersburg, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1978, Ser. No. 917,837
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—125.11 **3 Claims**



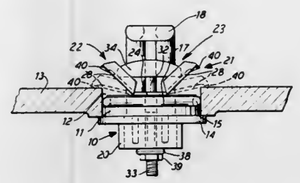
1. Welding apparatus for welding a tapered plug, which can be driven into holding engagement with a cylindrical opening, to the juncture of said opening and plug, said apparatus comprising a spindle detachably connectable and axially alignable with a plug; drive means detachably connected to said spindle in such a manner that the drive means rotates itself about said spindle; said spindle having a circumferential groove and said drive means having a plate slidably disposed therein and biased to engage the groove in the spindle to retain the spindle in the drive means and having means for sliding the plate out of engagement with the groove so that the drive means can be removed from the spindle; and welding means attached to said drive means for producing a weld circumscribing the juncture of said plug and said cylindrical opening.

4,242,564

FROST PLUG IMMERSION HEATER AND IMPROVED CLAMPING STRUCTURE

Willard E. Kendall, Nashville, Tenn., assignor to Budd Canada Inc., Kitchener, Canada

Filed Nov. 1, 1978, Ser. No. 956,639
Int. Cl.³ H05B *3/02;* **F02N** *17/06*
U.S. Cl. 219—208 **3 Claims**



1. A frost plug immersion heater for liquid cooled engines and comprising a substantially cylindrical body having inner and outer ends, said body being of a size to closely fit into a frost plug hole of an engine block wall and having a lateral flange on its outer end engageable with the engine block wall to limit the movement of the body into the hole, a sealing gasket around the peripheral surface of said body for sealing the gap between the body and the surface of the frost plug hole, an electrical heater element extending from said inner end of said body and having means at the outer end of said body for operative connection to a source of electrical energy, and clamping structure for securing said heater in a frost plug hole in an engine block wall, said clamping structure comprising:

an elongate clamp element having a base engageable against said inner end of said body and a pair of integral arms extending in splayed relation in alignment with each other bendably from opposite sides of said base, with the free ends of said arms initially spaced apart no greater than the diameter of said body but the overall length of said element including said base and said arms being substantially greater than the diameter of said body;

a substantially T-shaped bolt having a central shank extending through aligned clearance holes in said base and said body, so that a threaded outer end portion of said shank extends from the outer end of said body, and an elongate cross arm head rigid on the inner end of said shank engaging at its opposite ends with inwardly facing diagonal surfaces of said arms;

said cross arm head having a thickened crown area of maximum mass providing a maximum strength portion aligned with said shank, the top of said cross arm tapering with diminished mass toward each opposite end to provide truss-like reinforcement for the cross arm head when force is applied through said central shank; a nut threaded on said threaded outer end portion of said shank and thrustingly opposing said outer end of said body;

and a sealing ring between said nut and said body for sealing the outer end of the hole in said body;

said base being substantially flat and engaging a substantially flat area on said inner end of said body about said clearance hole in said body;

said arms being intergrally attached to said base along bend lines enabling the arms to bend towards said inner end of said body and toward the block wall by thrusting action of said cross arm head against said arms, and being of substantially rigid channel-shape and substantially narrower than said base and having longitudinally extending spaced side flanges which project generally inwardly;

said cross arm head being of generally elongate solid bar shape fitting between said flanges in the channels of said arms;

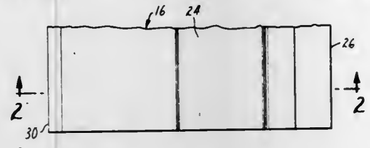
whereby said body with said clamp element and said bolt assembled therewith can be inserted straight into said frost plug hole until said lateral flange on the outer end of said body engages an outer side of the engine block wall about said frost plug hole, and then by tightening said nut said cross arm head is drawn toward said inner end of said body and causes said arms to be bent toward said inner end of said body and thereby into engagement with an inner side of said block wall about said frost plug opening to clampingly secure said body in said frost plug opening.

4,242,565

THERMAL PRINT HEAD

David J. Schoon, Marine, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 5, 1979, Ser. No. 45,821
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—216 **11 Claims**



1. A thermal print head including:

a plurality of spaced-apart electrical conductors each having a terminated end portion, each of said end portions having a surface area;

an electrically and thermally insulating support structure carrying said electrical conductors, said support structure having a surface portion adjacent each of said surface areas of the electrical conductors;

a common electrical conductor having a portion for each of said surface areas of the electrical conductors that is spaced from and essentially parallel to said surface areas of the electrical conductors; and

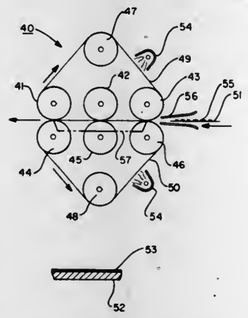
resistive heating material extending between and in electrical contact with said common electrical conductor and each of said surface areas of the electrical conductors whereby the application of an electrical voltage between any one of said plurality of electrical conductors and said common conductor causes electric current and most of the resulting thermal energy to flow between said surface area of said one of said plurality of electrical conductors and said portion of said common conductor in a direction essentially perpendicular to said surface area and via said resistive material extending therebetween.

4,242,566

HEAT-PRESSURE FUSING DEVICE

Albert W. Scribner, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 21, 1980, Ser. No. 132,458
Int. Cl.³ H05B *1/00;* **G03G** *15/20*
U.S. Cl. 219—216 **18 Claims**



1. A fusing apparatus for applying heat and pressure to a copy sheet to fix a developed toner image thereon, comprising:

a pair of first and second oppositely driven pressure fixing feed rollers, each of the outer surfaces of the rollers comprising a layer of a thermal insulating material;

first and second idler rollers;

A first flexible endless belt disposed about said first idler roller and said first pressure feed roller, and a second flexible endless belt disposed about said second idler roller and said second pressure feed roller, at least one of the belts having an outer surface formed of a thermal conductive material, wherein there is defined an area of contact between the outer surfaces of the first and second belts located between said first and second pressure feed rollers for passing the copy sheet between the two belts under pressure, and

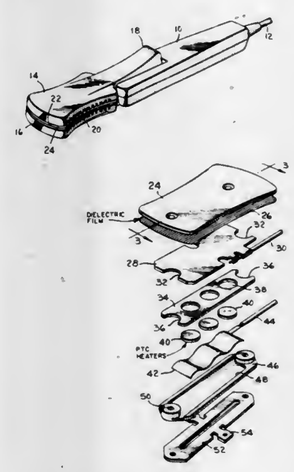
heating means spaced relative to the belt whose outer surface comprises the thermal conductive material for heating the outer surface thereof, whereby when an unfused copy sheet is passed through the area of contact between said two belts it is subject to sufficient heat and pressure to fuse a developed toner image thereon.

4,242,567

ELECTRICALLY HEATED HAIR STRAIGHTENER AND PTC HEATER ASSEMBLY THEREFOR

Robert A. Carter, Asheboro, N.C., assignor to General Electric Company, New York, N.Y.

Filed Jun. 5, 1978, Ser. No. 912,370
Int. Cl.³ A45D *1/02;* **H05B** *3/12;* **H01C** *1/148*
U.S. Cl. 219—225 **4 Claims**



1. A heated hair straightener including a handle having power supply means for connection to an electric source, a pair of facing clamp housings pivoted on said handle for a cooperative scissors action therebetween, the housings each having a coverplate facing the coverplate of the other housing for abutment and clamping of hair therebetween and a heater component subassembly in at least one housing for heating the coverplate thereof, said heater component subassembly comprising a sandwich arrangement of

the coverplate of said housing,

a metallic heater plate forming a first electrode connected to one side of said power supply means,

said heater plate overlying said coverplate and comprising a flat elongated plate covering a substantial portion of said coverplate,

a thin dielectric film between said heater plate and said coverplate for insulating said heater plate therefrom,

PTC heater means comprising multiple spaced pellets each having opposed terminal means and aligned on said heater

plate with one of the terminal means of each pellet in electrical contact therewith,

a second electrode formed as a corrugated spring plate having one side covering and electrically contacting the other terminal means of each pellet, said spring plate being connected to the other side of said power supply means,

an electrically insulating locator panel substantially coextensive with said heater plate and provided with cutouts surrounding and locating said pellets between said heater plate and spring plate,

an electrical insulator member abutting the other side of said spring plate,

means aligning said PTC heater means, electrodes, and member in fixed assembled relation to one another, and means fastening together the parts comprising said heater component subassembly with said electrodes compressed against the terminal means of said pellets, and means adjacent said member securing said heater component subassembly in said housing.

4,242,568

APPARATUS FOR THE SELECTIVE PRODUCTION OF HOT WATER AND STEAM

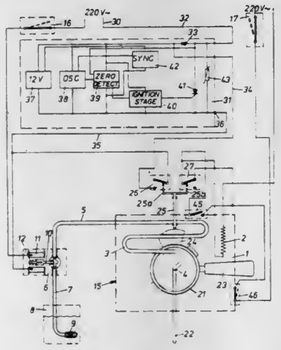
Max Wunderlin, and Peter Gurtner, both of Jona, Switzerland, assignors to Turmix AG, Jona, Switzerland

Filed Apr. 6, 1979, Ser. No. 27,751

Claims priority, application Switzerland, Apr. 10, 1978, 3810/78

Int. Cl.³ H05B *1/00*; F24H *1/10*

U.S. Cl. 219—296 **7 Claims**



1. An apparatus comprising a constantly operating electric heater and reciprocating water feed pump for intermittently supplying said heater with a volume of water through a liquid conduit for the selective production of hot water and steam, said pump being actuatable by an electromechanical driving means, the latter and said heater being operatively connected with an electric current supply for operation of said pump at a first rate of pumping frequency and said heater at a first level of temperature for the production of hot water at a first operation condition, control means connected with said electric current supply for establishing a second rate of pumping frequency at said pump less than said first rate and a second level of temperature at said heater greater than said first level for the production of steam at a second operating condition, with the pump having the same discharge volume per stroke of the pump at the first and the second operating condition, said means including switching means for switching between said operating conditions, and means for actuating said switching means for switching between said first and second operating conditions.

4,242,569

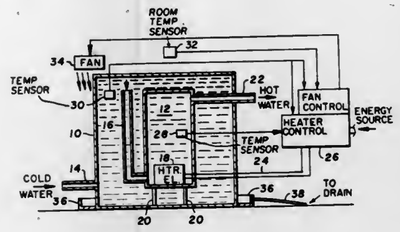
MULTIPLE TANK ELECTRIC WATER HEATER

William M. Kayser, 6408-81st Ave. N., Minneapolis, Minn. 55445

Filed Apr. 24, 1978, Ser. No. 899,472

Int. Cl.³ H05B *1/02*; F24H *1/20*

U.S. Cl. 219—314 **6 Claims**



1. A hot water heater comprising:

a first tank for holding water and having a first inlet;

a second innermost tank within the first tank for holding water and having a second inlet for receiving water from the first tank and having a hot water outlet for supplying hot water from within the second innermost tank to a point of utilization outside of the hot water heater;

heating means located within the second innermost tank for heating the water within the second innermost tank;

first temperature sensing means for sensing temperature of the water within the first tank;

second temperature sensing means for sensing temperature of the water within the second tank;

fan means for directing ambient room air against an outer wall of the first tank;

third temperature sensing means for sensing ambient temperature of the room air outside of the first tank;

control means for controlling the heating means as a function of the temperature differential between the temperatures sensed by the first and second temperature sensing means, and for controlling the operation of the fan means as a function of the differential between the temperatures sensed by the first and third temperature sensing means; and

means for collecting and disposing of water condensed on the outer wall of the first tank.

4,242,570

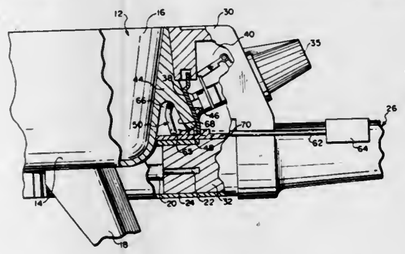
ELECTRIC SKILLET HAVING REMOVABLY ATTACHABLE HANDLE

Robert H. Clark, Columbia, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 8, 1978, Ser. No. 935,583

Int. Cl.³ A47B *95/02*

U.S. Cl. 219—441 **9 Claims**



1. A skillet or the like cooking vessel including a pan into which foods to be cooked are placed, an insulative handle for lifting said pan, said pan and said handle including complementarily engageable means for joining said handle to said pan, said locking arrangement including in combination;

a bracket provided on said pan and a torsion spring mounted on said handle, said torsion spring being movable to a first, locked position whereby a first end thereof engages said bracket subsequent to joining said handle and said pan, and the opposite end of said torsion spring is simultaneously moved to a position whereby said spring is twisted to urge said first end thereof into forcible engagement with said bracket, thereby securing said handle to said pan, said spring being moveable to a second, released position whereby said spring is in a relaxed condition with said first end of said spring being disengaged from said bracket to unlock said pan and handle, thereby permitting disjoinder of said handle and said pan and wherein said complementarily engageable means of said pan and insulative handle includes a sleeve provided on said pan adjacent said bracket portion and a first end of said handle, dimensioned for receipt in said sleeve, respectively.

4,242,571

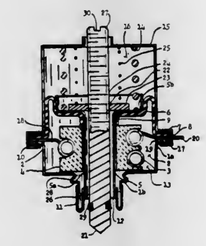
ELECTRO-THERMAL LINEAR PULL ACTUATOR

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Filed Jan. 29, 1979, Ser. No. 7,048

Int. Cl.³ H05B *3/80*

U.S. Cl. 219—513 **9 Claims**



1. An electro-thermal pull type actuator comprising:

a housing shell including a first flange and also a first open mouth end closed and secured by a first large size rolling membrane centrally receiving an integrally secured axially movable piston and tube assembly of which a first piston is abutting said membrane externally thereto while said tube extending inwardly enters said shell internally to proceed centrally therethrough toward a second shell end wherein it is secured permanently to said shell by a second small size rolling membrane thereby insuring sealed shell proper inside of which an electrical heating element is disposed centrally over said tube with electrical leads to the outside sealed and also a working fluid housed therein subject to vaporization by said heating element for the development of a end thrust against said large membrane with said first piston attached thereto to result in said axial movement of said piston and tube assembly, when said heating element is electrically energized, the direction of movement being upward due to large membrane surface, a biasing force means external to said large size membrane to counter said end thrust and to maintain said piston in a first normally down position, when said heating element is not energized electrically,

a shell cap with a recessed cavity over said biasing force means and a second flange thereof covering said first flange of said shell so as to secure said first membrane by the edges sealed, means for sealing said first membrane to said centrally passing tube of said piston and tube assembly, including sealing said second membrane, a pull rod assembly including a second piston thereof inside said cavity of said cap abutting said first piston and maintained therein by a spring of said biasing force means while said rod passing inside said tube of said piston and tube assembly protrudes said second shell end, normally exerting a down force when said actuator is secured to a work piece until an opposing force of said end thrust inside said shell moves said piston from a first normally down position to a second upward position thereby urging both pistons to move from a first to a second positions against said biasing force means with subsequent withdrawal of said protruding rod end comprising a pull type actuator means for remote actuation of various mechanisms.

4,242,572

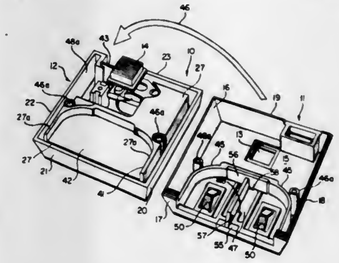
CONTACT LENS DISINFECTOR UNIT

Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Jun. 22, 1979, Ser. No. 51,104

Int. Cl.³ H05B *3/06*; A61L *2/00*

U.S. Cl. 219—521 **7 Claims**



1. A unit for disinfecting contact lenses contained within a relatively flat lens case comprising: a housing having a lateral opening in one side thereof, a heating block disposed within said housing and including a horizontal support surface and a vertical wall surface, said heating block and said housing cooperating to define a lens case receiving compartment, with said lateral opening in said housing leading to said compartment and permitting the sliding insertion of a lens case into said compartment for disposition on said heater block support surface with said vertical wall surface providing a stop for said case as well as an end wall for said compartment, and ejector means slidably mounted to said housing and operable from the exterior of said housing for pushing a lens case outwardly of said compartment through said housing opening.

4,242,573

WATER IMMERSIBLE HEATER

Neville S. Batliwalla, Foster City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 24, 1979, Ser. No. 6,188

Int. Cl.³ H05B *3/34*

U.S. Cl. 219—528 **8 Claims**

1. A flexible, electrically conductive, temperature self-limiting heater suitable for immersion in water comprising:

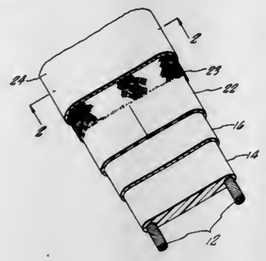
(a) two spaced apart metallic electrodes;

(b) an electrically conductive polymeric composition interconnecting the electrodes;

(c) an electrically insulating prejacket around the polymeric composition;

(d) a flexible, corrosion resistant, electrically non-conductive, water impermeable barrier around the insulating prejacket, the barrier comprising an inner sheet of polyes-

ter film, a flat strip of aluminum, and an outer sheet of polyester film;



(e) an electrically conductive grounding braid around the barrier; and

(f) an electrically insulating polymeric outer jacket.

4,242,574

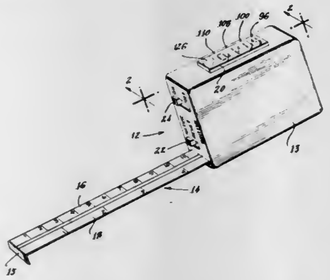
DIGITAL DISPLAY TAPE MEASURE WITH PHOTOELECTRIC SENSING OF TAPE DISPLACEMENT

Walter W. Grant, Box 245, Pierson Dr. R.D. 1, Shelburne, Vt. 05482

Filed Feb. 2, 1978, Ser. No. 874,473

Int. Cl.³ G06M *3/14*; G01B *3/12*

U.S. Cl. 235—92 DN **10 Claims**



1. A tape measure device for providing a digital readout corresponding to the actual cumulative extension of a tape, said tape measure device comprising:

a housing,

a flexible tape having an end thereof with two measuring scales extending along the length of said tape from said end in English units and metric units, respectively, with respective legible numbers printed on the tape along the respective scales for indicating the length along said tape from said end in English and metric units,

means for winding said tape into a coil in said housing when the tape is retracted into the housing,

two sets of optically sensed encoded markings extending along the tape, each set of markings corresponding to a respective one of said scales,

a light source in said housing for illuminating said sets of encoded markings on said tape as it is being extended from or retracted into said housing,

light detector means in said housing and adjacent said tape for detecting an illuminated set of markings as they pass the light detector means during extension or retraction of said tape,

manually operable control means for selectively shifting said light detector means for detecting one or the other of said set of markings,

electronic logic means responsive to the detected markings for providing an electronic count proportion to actual, net longitudinal extension of said tape from said housing, and

a digital display for providing a display in response to said electronic count corresponding to the actual net extension of said tape from said housing,

thereby providing a display of actual net extension of said tape from said housing in English or metric units.

4,242,575

GASOLINE PUMP DIGITAL PRICE ENCODER

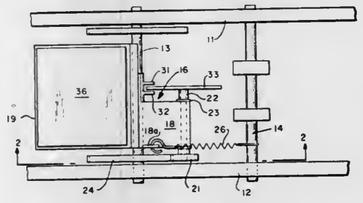
John A. Callahan, Houston, and Allan S. Ottenstein, Spring, both of Tex., assignors to RF Products Corp., Houston, Tex.

Division of Ser. No. 724,172, Sep. 17, 1976, Pat. No. 4,100,400.

This application Feb. 7, 1978, Ser. No. 875,761

Int. Cl.³ G06M *1/272*; B67D *5/22*

U.S. Cl. 235—92 FL **3 Claims**



1. A self-contained digital encoder removably mounted in a gasoline pump having a mechanical price computer with an analog output display for indicating the cost of gasoline delivered to the pump, comprising: a base removably mounted on the mechanical computer of the pump, pulse generating means mounted on the base and coupled to the mechanical computer for delivering pulses at a predetermined rate realtive to the flow of gasoline through the pump, pulse divider means mounted on the base for receiving the pulses from the pulse generating means and delivering a predetermined number of output pulses for each unit of gasoline delivered, and means responsive to the application of operating power to the encoder for resetting the pulse divider means to an initial level when the mechanical computer is reset at the outset of each delivery of gasoline, said base, said pulse generating means, said pulse divider means and said means for resetting the pulse divider means forming an integral unit which is readily mounted on and removed from the pump as a unit.

4,242,576

ELECTRONIC IDENTIFICATION DEVICE

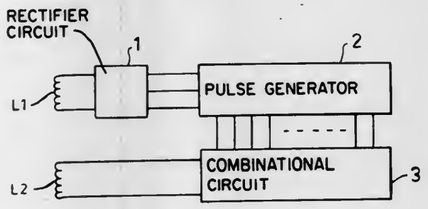
Sten T. Lundgren, Akarp, Sweden, assignor to ID-Select Bo Thelin Och Co., Sweden

Filed Dec. 5, 1977, Ser. No. 857,428

Claims priority, application Sweden, Dec. 14, 1976, 7614043

Int. Cl.² G06K *7/00*; H04Q *1/30*; G06K *7/04*

U.S. Cl. 235—435 **9 Claims**



1. An identification device for generating a train of pulses, each of said pulses having a respective first or second polarity according to a code identifying said device, responsive to a single input signal applied thereto, said input signal having a predetermined duration, said device comprising:

(A) a pulse generating circuit having a trigger input and two outputs and being capable of generating a train of pulses responsive to a single trigger signal applied to said trigger input, each of the pulses in said train of pulses being applied to one of said outputs, the particular one of said outputs to which each respective one of said pulses is applied being determined by said code;

(B) a rectifier circuit for both supplying power to said device and for applying said trigger signal to said trigger input responsive to said single input signal, said rectifier circuit comprising

(1) a first diode coupled in series with a first capacitor, said first capacitor being coupled to said trigger input;

(2) a second diode coupled in series with a second capacitor, said second capacitor having a considerably greater capacitance than said first capacitor and being coupled to a power supply input of said pulse generator circuit; and

(3) a first inductive means inductively receiving said input signal and applying said input signal to said first and second capacitors whereby said first capacitor serves as a trigger signal source and said second capacitor serves as a power source; and

(C) inductive means coupled to said two outputs of said pulse generator circuit for inductively transferring said pulses to a detector circuit.

4,242,577

CIRCUIT BREAKER HAVING INSULATION BARRIER

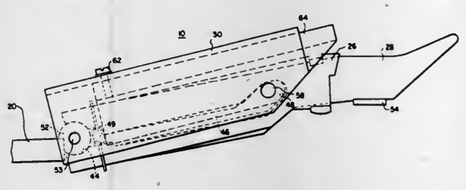
Alfred E. Maier, and Louis N. Ricci, both of Chippewa Township, Beaver County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1976, Ser. No. 755,765

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.³ H01H *73/00*

U.S. Cl. 200—153 G **5 Claims**



1. A circuit breaker comprising:

a plurality of stationary contacts;

a plurality of movable contacts operable between open and closed positions with respect to said stationary contacts;

means for effecting movement of said movable contacts between said open and closed positions, said movement effecting means comprising a toggle means including a pair of aligned first link elements spaced apart from each other and each having a slot therein, and

means for electrically insulating said movable contacts from said movement effecting means, comprising:

at least three electrically insulating contact holders secured to, and holding said movable contacts;

a cross arm extending to, and attached to, said contact holders, said first link elements being disposed intermediate said contact holders with said cross arm being disposed within said first link element slots; and

an insulating barrier disposed intermediate said contact holders and said movement effecting means, said insulating barrier having a pair of openings therein;

said first link elements extending through said insulating barrier openings and operationally engaging said cross arm.

4,242,578

OPTO-ELECTRONIC ANTENNA SYSTEM

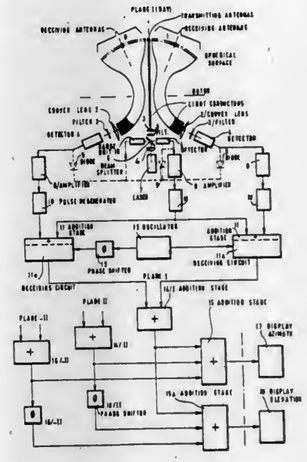
Hans E. Britz, Ludwig-Quidde-Str. 23, 6000 Frankfurt am Main 56, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 651,809, Jan. 23, 1976, Pat. No. 4,099,879. This application Aug. 24, 1976, Ser. No. 717,388

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1975, 2537723

Int. Cl.² H04B *9/00*

U.S. Cl. 455—611 **12 Claims**



1. An antenna comprising a plurality of lens elements arranged over a spherical surface, said lens elements being combined in an axial direction adjacent one another to form a spherical-shaped narrow strip, said strip being arranged so as to transmit and receive electromagnetic radiation.

4,242,579

APPARATUS FOR THE POINTWISE SCANNING OF AN INFORMATION SURFACE

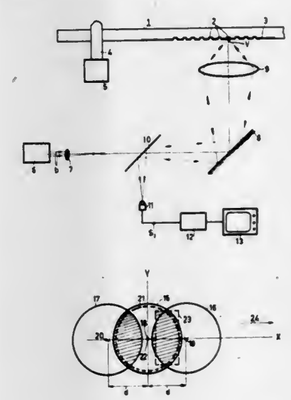
Gijsbertus Bouwhuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,230

Claims priority, application Netherlands, May 11, 1978, 7805069

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **3 Claims**



1. Improved apparatus for scanning an information surface with a beam of radiation, the beam and information surface

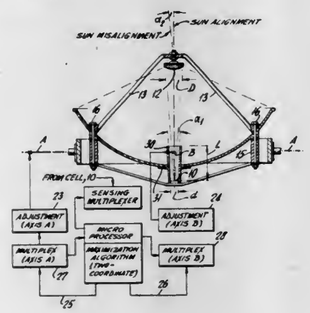
moving relative to each other, in a device for reading a record carrier with an optically readable information structure, which apparatus comprises a radiation source, an illumination objective system for focussing the scanning beam emitted by the radiation source to a scanning spot on the information structure, an observation objective system for concentrating radiation coming from the information surface on the plane of a radiation-sensitive detection system, the improvement being characterized in that the observation objective system is disposed asymmetrically relative to a zero-order subbeam of the radiation coming from the information surface, the asymmetry being in the direction of one of the higher order subbeams and that the detection system is constituted by a radiation detector whose dimension in the scanning direction is small relative to the period of the radiation intensity pattern.

4,242,580

SOLAR-RADIATION COLLECTION APPARATUS

Roy Kaplow, Newton, and Robert I. Frank, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 11, 1979, Ser. No. 47,077
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **25 Claims**



1. In solar-radiation collection apparatus, wherein frame structure includes a gimbal-suspension for a radiation-collection optical system and an associated radiation-responsive cell, and wherein the optical system comprises a primary concave mirror with a central aperture and a secondary convex mirror, with the optical focal point behind the aperture and with the cell positioned at the focal point, the improvement wherein a tubular shroud surrounds the cell and the space between the cell and the aperture region of the primary mirror.

4,242,581

LASER ENERGY MONITOR

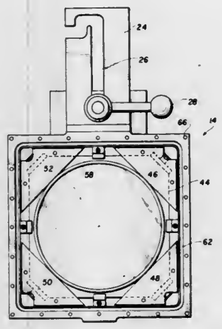
Thomas G. Crow, Longwood, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 1, 1979, Ser. No. 16,703
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **10 Claims**

1. A sensor head assembly for monitoring the optical energy in a laser beam, comprising, in combination:

optical energy scatter means located in the path of said laser beam and in a plane substantially normal thereto, said scatter means having substantially uniformly distributed scattering sites for scattering a relatively small portion of the incident energy in said laser beam while introducing substantially no distortion thereto;

a plurality of photodetector elements selectively located around the periphery of said scattering means to sense integrated scattered energy from said scattering sites to offset spatial variations of energy in said laser beam and generate respective electrical signals in accordance with the energy sensed thereby; wherein said scatter means comprises a scatter plate having front and rear planar faces located in said plane normal to said laser beam, said scatter plate including anti-reflective surfaces and a peripheral edge around which is located said plurality of photodetector elements; and



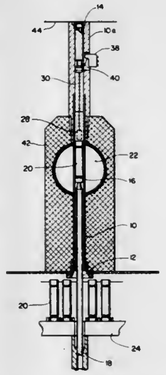
output means coupled to said plurality of photodetector elements for providing a composite output signal representative of the energy contained in the cross section of said output beam.

4,242,582

MEANS FOR EXPELLING SAMPLE CARRIERS FROM A RADIATION MEASURING APPARATUS

Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 6, 1979, Ser. No. 55,254
Int. Cl.³ G01T *1/00*
U.S. Cl. 250—328 **11 Claims**



1. An improved radiation measuring apparatus of the type having a sample carrier for containing the sample of material to be measured, a substantially vertical guiding member for the sample carrier having a sample measuring chamber, and an elevating means for moving the sample carrier in the guiding member to the measuring chamber, the improvement comprising:

a weighted member supported in the guiding member, so positioned and having sufficient mass that its gravitational force causes any sample carrier to be expelled from the measuring chamber as the elevating means descends in a direction away from the measuring chamber; and

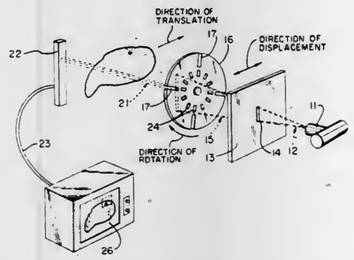
a supporting member inside the guiding member supporting the weighted member therein when the weighted member is in its lowered positon, and collapsible inside the guiding member to remain therein as the sample carrier is elevated by the elevating means toward the measuring chamber.

4,242,583

X-RAY IMAGING VARIABLE RESOLUTION

Martin Annis, Newton, and Edwin Frederick, Concord, both of Mass., assignors to American Science and Engineering, Inc., Cambridge, Mass.

Continuation of Ser. No. 782,972, Mar. 30, 1977, abandoned.
This application Apr. 26, 1978, Ser. No. 900,380
Int. Cl.² G03B *41/16*
U.S. Cl. 250—358 R **10 Claims**



1. Radiant energy imaging apparatus for imaging an object as said object is traversed relative to said imaging apparatus comprising:

sources of at least first and second pencil beams of penetrating radiant energy,

at least first and second radiant energy detecting means in fixed relationship to said sources and extending perpendicular to a path of relative motion described by said object, for providing at least first and second detected output signals respectively representative of the intensity of said radiant energy upon said first and second detecting means,

means for scanning with said first and second pencil beams along said first and second radiant energy detecting means respectively to provide first and second image signals respectively representative of the radiant energy response of the object in a region traversed by said first and second pencil beams along first and second paths respectively to said first and second detecting means, and

means for cumulatively combining said first and second image signals so that the portions of the signals combined represent the radiant energy response of corresponding portions of the object in said region to provide a combined image signal having enhanced contrast density relative to that of either of said first and second image signals.

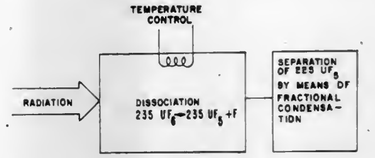
4,242,584

METHOD FOR SEPARATING ISOTOPES WHICH ARE IN THE FORM OF MOLECULES

Gunther Krieg, and Wolfgang Obert, both of Karlsruhe, Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 22, 1976, Ser. No. 698,499
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1975, 2528953
Int. Cl.² B01D *59/00*
U.S. Cl. 250—423 P **6 Claims**

1. In a method for separating isotopes of an element where the isotopes are in the form of molecules and where the isotopes participate in the vibrations of the molecules, which method includes exciting such molecules by means of radiation and then separating the molecules of at least one isotope from the molecules of at least one other isotope, the improvement comprising selecting isotopes in which a shift of the band edges in their absorption spectra is present due to the isotopy effect, and exciting the isotopes with radiation from a source whose spectrum extends across the region between the band edges of



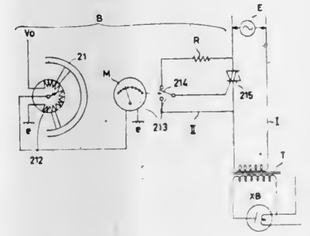
the one isotope and the other isotope, said exciting being a simultaneous excitation of a plurality of absorption lines.

4,242,585

DENTAL PANORAMIC RADIOGRAPHIC APPARATUS CAPABLE OF CONCURRENTLY TAKING NORMAL PICTURE OF TEMPOROMANDIBULAR JOINT

Hiroyoshi Yamano, Kawasaki, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 23, 1979, Ser. No. 14,751
Claims priority, application Japan, Feb. 23, 1978, 53/20642
Int. Cl.³ G03B *41/16*
U.S. Cl. 250—439 P **3 Claims**



1. A dental panormaic radiographic apparatus capable of concurrently taking an X-ray picture of a tooth and jaw region and of a temporomandibular joint of a patient comprising a rotatable arm, an X-ray source provided on one end of said arm, an X-ray film provided on another end of said arm opposing said X-ray source and moving in synchronism about a patient's head with said X-ray source when said arm rotates with a constant distance being maintained between said X-ray source and film, said apparatus being characterized in that said apparatus comprises a means for fixing and holding a head of a patient in a position for photographing said tooth and jaw regions and a position above or below the position for photographing said tooth and jaw regions for photographing said temporomandibular joint and a means for starting and stopping the irradiation of an X-ray beam from said X-ray source in any of a plurality of positions as said arm rotates, said starting and stopping means comprising a means for sensing rotational position of said arm which generates a voltage which varies with the rotational position of said arm and a switching element which interrupts and connects a power source to said X-ray source in response to said varied voltage.

4,242,586

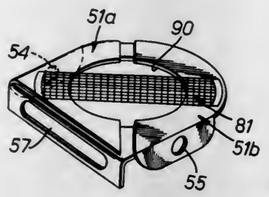
SPECIMEN HOLDER FOR ELECTRON MICROSCOPY AND ELECTRON DIFFRACTION

Charles E. Warble, Glen Waverley, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Aug. 2, 1979, Ser. No. 63,307
Claims priority, application Australia, Aug. 8, 1978, PD5407
Int. Cl.³ G01N *23/00*; G21K *5/08*
U.S. Cl. 250—443 **16 Claims**

1. A specimen holder arranged in use to be supported on

three sides in an electron instrument by the arms of a manipulator mechanism, the holder comprising a base structure with an aperture therein, the base structure having three projecting flanges which are disposed along respective sides of the base structure and are arranged to be secured to the arms of a manipulator mechanism so that the holder can be tilted by the



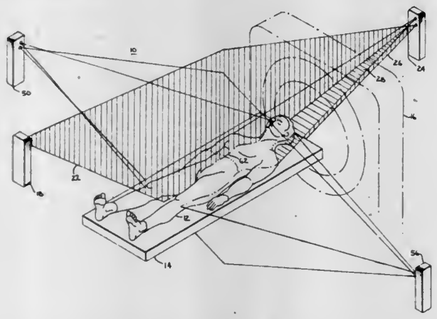
manipulator, characterised in that the base structure comprises a first component of thin sheet material secured in superimposition to a pair of mutually spaced but co-planar sub-components of thin sheet material electrically isolated from said first component, the sub-components respectively integrally carrying two of said flanges and the sub-components and their flanges being electrically conductive.

4,242,587

PATIENT POSITIONING DEVICE COMPRISING LIGHT PLANES CORRESPONDING TO FIRST, SECOND AND THIRD INTERSECTING REFERENCE PLANES

Charles Lescrenier, 660 Crescent Ct., Wauwatosa, Wis. 53213

Filed Jun. 7, 1979, Ser. No. 46,436
Int. Cl.[2] G01N *21/00*; H05G *1/62*
U.S. Cl. 250—491 **12 Claims**



1. A device for orienting a body along first, second, and third intersecting reference planes, said device comprising:

first light source means for establishing a first plane of light lying in said first reference plane and appliable to the body to be oriented;

second light source means establishing second and third planes of light intersecting at a predetermined angle and applicable to the body, said second plane of light being coplanar with said first light plane, said third plane of light lying in said second reference plane;

a third light source means establishing fourth and fifth planes of light intersecting at a predetermined angle and appliable to the body, said third light source means lying to one side of said first and second light planes and intersecting said light planes at a predetermined angle, said fourth light plane being coplanar with said third light plane and said fifth light plane lying in said third reference plane; and

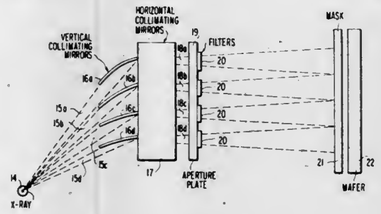
a fourth light source for establishing sixth and seventh light planes intersecting at a predetermined angle and appliable to the body, said fourth light source lying to the opposite side of said first and second light planes from said third light source means and establishing said sixth and seventh light planes so that they intersect said first and second light planes at a predetermined angle, said sixth light plane being coplanar with said third and fourth light planes and said seventh light plane being coplanar with said fifth light plane.

4,242,588

X-RAY LITHOGRAPHY SYSTEM HAVING COLLIMATING OPTICS

John K. Silk, Wellesley; Allen S. Krieger, Lexington, and Eugene W. C. Huang, Lynnfield, all of Mass., assignors to American Science and Engineering, Inc., Cambridge, Mass.

Filed Aug. 13, 1979, Ser. No. 66,140
Int. Cl.[3] G21K *5/00*
U.S. Cl. 250—492 A **13 Claims**



1. In an X-ray lithography system for the production of microelectronic circuits, of the type comprising a wafer that is covered with a photosensitive material, and a mask disposed adjacent said wafer and having detailed circuit patterns thereon which are irradiated onto said wafer by soft X-rays thereby to replicate said mask patterns, the improvement wherein said soft X-rays are produced in said system by X-ray illumination means operative to produce a beam of substantially collimated X-rays at said mask, said illumination means comprising an X-ray source spaced from said mask and operative to produce a plurality of input beams of X-rays, means for collimating said input X-ray beams, said collimating means comprising an array of grazing incidence mirrors located between said source and said mask and positioned relative to said input beams at sufficiently small grazing angles to cause the X-rays in each input beam to be totally externally reflected by said mirrors, whereby said array of grazing incidence mirrors produces a plurality of output X-ray beams which are spaced from one another at the output of said collimating means and which are projected in substantially parallel relation to one another from the output of said collimating means toward said mask, each of said output beams exhibiting a small divergence operative to cause the gap between said output beams to decrease with increasing distance from said collimating means and operative to cause said output beams to merge into a single, comparatively large cross-sectional area, composite beam of X-rays at a plane spaced from said collimating means, said mask being positioned substantially in said plane for illumination by said composite beam of X-rays.

4,242,589

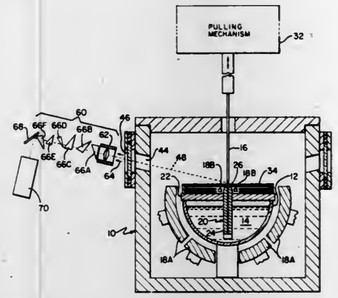
APPARATUS FOR MONITORING CRYSTAL GROWTH

Emanual M. Sachs, Watertown, Mass., assignor to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Jan. 15, 1979, Ser. No. 3,278
Int. Cl.[3] G01N *2/26*
U.S. Cl. 250—577 **24 Claims**

1. A system for monitoring the growth of a crystalline body of selected material from a growth pool of melt so that said body has a selected cross-sectional shape for some preselected distance along its length, said growth pool being characterized by a meniscus which joins said body at said growth pool to form a solid/liquid/vapor junction, said system comprising, in combination:

optical means for forming an image of at least the entire width of said junction and the portions of said body and meniscus above and below said junction, and for sufficiently enlarging said image in the height dimension of the image generally perpendicular to the observed direction of said junction relative to the width dimension of the image generally perpendicular to the height dimension so that the resolution of the height dimension of the image



can be enhanced while simultaneously viewing the entire width of said junction and portions of said body and meniscus above and below said junction; and

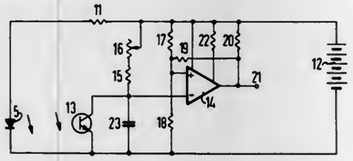
video display means comprising means for generating an analog video signal representative of said image, means for digitizing said analog video signal so as to produce a digitized video signal for displaying said image, wherein said means for digitizing said analog video signal enhances the contrast of said image on said display means.

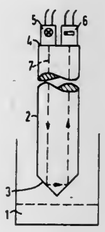
4,242,590

LIQUID LEVEL DETECTOR WITH HYSTERESIS MEANS

Wolfgang von Tlück, Olching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 16, 1977, Ser. No. 851,938
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2717089
Int. Cl.[3] G01F *23/00*
U.S. Cl. 250—577 **6 Claims**





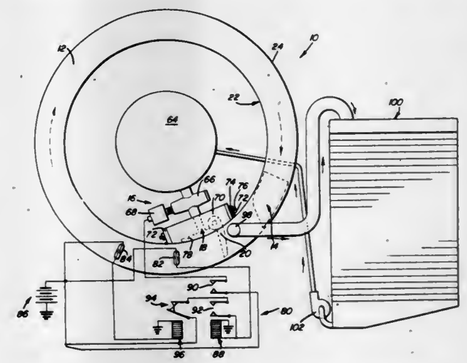
1. An indicating device for showing the level of fluids in fluid containers, comprising: a single transparent rod terminating in a sensing end which is immersed in the fluid when the container is filled, the sensing end of which dipping in the fluid being formed such that a beam of light running in the transparent rod undergoes total reflection at the sensing end when the sensing end is not in contact with the fluid; at an end surface of the rod opposite the sensing end a photoelectric device is disposed comprising a light source and a light receiver both on the same end surface; the photoelectric device being connected with an electrical circuit means having switching means for actuating a warning device when a change occurs in the reflection behavior of the sensing end of the rod due to a fluid level change beyond a given level; and said circuit means comprising hysteresis means connected to the switching means for maintaining the switching means in a switched over condition despite a predetermined amount of occasional contact between the sensing end and the fluid due to slopping of the fluid but releasing the switched over condition when the fluid level changes by more than said predetermined amount at said given level.

4,242,591

ORBITALLY ROTATING PISTON ENGINE

Ronald W. Harville, 3103 D. Ave., National City, Calif. 92050

Filed Nov. 17, 1978, Ser. No. 961,887
Int. Cl.[3] H02P *9/04*
U.S. Cl. 290—1 R **14 Claims**



1. An orbitally rotating free piston engine comprising:

a stationary piston chamber configured in a hollow annulus;

a piston disposed within said chamber and capable of orbitally traversing said chamber;

valving means for closing off said chamber when not in contact with said piston and opening said chamber when contacted by said piston, said valving means including a shutter valve which extends across said hollow annulus, said shutter valve being pivotally connected to the chamber wall, and a recess disposed in the chamber wall proximate the shutter valve for receiving the shutter valve when said piston contacts said shutter valve forcing the shutter valve to pivot away from its position across said hollow annulus;

energy transfer means for causing a reaction against said valving means for imparting motion to said piston; and

power removal means for removing usable energy from said engine.

4,242,592

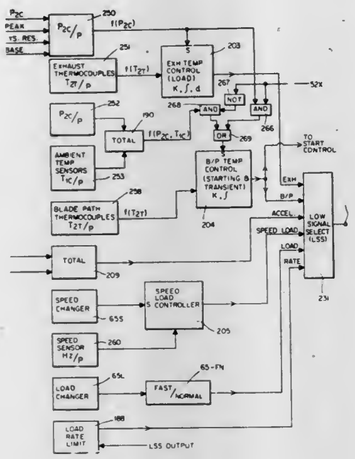
GAS TURBINE POWER PLANT CONTROL APPARATUS INCLUDING AN AMBIENT TEMPERATURE RESPONSIVE CONTROL SYSTEM

Robert A. Yannone, Aldan, and James J. Shields, Philadelphia, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 601,578, Aug. 1, 1975, abandoned, which is a division of Ser. No. 371,628, Sep. 20, 1973, abandoned. This application Oct. 11, 1977, Ser. No. 843,005

Int. Cl.[2] F02C 9/04

U.S. Cl. 290—40 R 23 Claims



1. A gas turbine electric power plant comprising:

a. a gas turbine having a compressor, and combustion and turbine elements;

b. a generator coupled to and driven by said gas turbine, and a generator breaker for coupling the generator to a power system;

c. a fuel system for supplying fuel to said gas turbine combustion element;

d. means for operating said fuel system under control, to provide a controlled flow of fuel to said combustion element;

e. a control system having a plurality of control paths each of which produces a respective control path signal, said plurality including a backup temperature control path which is adapted to generate a control signal which is a function of turbine ambient temperature at least part of the turbine operating time, said control system having means for selecting one of said signals produced by said control paths on a predetermined basis, said selecting means selecting the lowest of said signals;

f. means for operatively connecting said selected signal to said operating means;

g. means for producing a signal representative of ambient temperature, said temperature path containing a function generator, said ambient temperature signal being coupled to said function generator during a predetermined turbine operating period to generate a setpoint signal for said function generator during said turbine operating period;

h. means for coupling the temperature signal to said function generator such that said setpoint signal is a function of ambient temperature during said turbine operating period which is before generator breaker closing; and

i. means for generating said setpoint signal as a function of selected load level after generator breaker closing.

4,242,593

DEVICE FOR CONVERTING SEA WAVE ENERGY INTO ELECTRICAL ENERGY

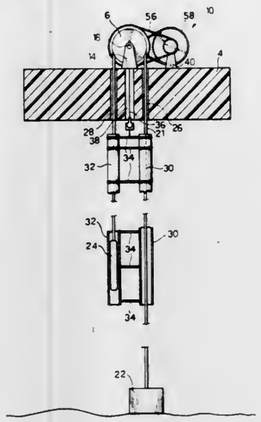
Carlo A. Quilico, and Paolo M. Troya, both of Turin, Italy, assignors to FIAT Societa per Azioni, Turin, Italy

Filed Nov. 9, 1978, Ser. No. 959,272

Claims priority, application Italy, Nov. 21, 1977, 69620 A/77

Int. Cl.[3] F03B 13/12

U.S. Cl. 290—53 12 Claims



1. A device for converting sea wave energy into electrical energy comprising a floating platform, a shaft rotatably supported on said platform, a pulley mounted on said shaft for rotation therewith, a cable extending over said pulley, means for anchoring one end of said cable to the sea bed during use of the device, a counterweight secured to the opposite end of said cable, two hollow cylinders secured to and extending downwardly from said platform with their axes perpendicular to said platform in which said cable is guided on opposite sides of said pulley with said counterweight being movably disposed within one of said hollow cylinders, and electrical generator means mounted on said platform and operatively connected to said shaft to be driven thereby.

4,242,594

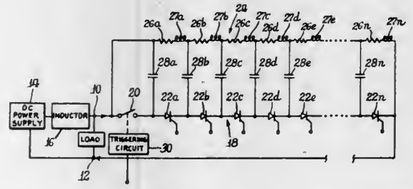
SWITCH ARRANGEMENT

Torkil H. Jensen, Del Mar, Calif., assignor to General Atomic Company, San Diego, Calif.

Continuation-in-part of Ser. No. 933,640, Aug. 14, 1978, abandoned. This application Mar. 16, 1979, Ser. No. 20,963

Int. Cl.[3] H02H 7/22; H03K 17/72

U.S. Cl. 307—98 7 Claims



1. A switch arrangement for interrupting a direct current of high amperage and voltage, comprising a pair of terminals, a current interrupting means connected by one end to one of said terminals, a plurality of thyristors serially connected in the forward direction between the other end of said current interrupting means and said other terminal, whereby when the current interrupting means is in a conductive state the direct current flows through said plurality of thyristors, a plurality of sets of a resistor series connected with a nonlinear element, said nonlinear element having a characteristic such that it impedes current flow when the voltage thereacross or the time integral of the voltage is small and more freely allows current flow through it when the voltage or time integral of the voltage is large, means for serially connecting said sets between said terminals, said resistor-nonlinear element sets being associated with respective thyristors, and a plurality of capacitors being coupled between respective associated resistor-nonlinear element sets and thyristors.

4,242,595

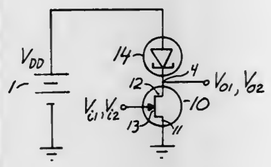
TUNNEL DIODE LOAD FOR ULTRA-FAST LOW POWER SWITCHING CIRCUITS

Kurt Lehovec, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Jul. 27, 1978, Ser. No. 928,543

Int. Cl.[3] H03K 19/094, 3/315, 3/42; H01L 29/80

U.S. Cl. 307—205 13 Claims



1. A switching circuit comprising a field effect transistor, means for applying at least two input voltages to the gate of said field effect transistor, whereby source-to-drain resistance of said transistor is low for a first of said input voltages, and high for a second of said input voltages, the drain of said field effect transistor electrically connected through a tunnel diode load to a power supply voltage which biases said tunnel diode in the forward direction, said power supply voltage chosen such that the current flowing through said tunnel diode is substantially less than the peak current of said tunnel diode and only moderately larger than the valley current of said tunnel diode when said first input voltage is applied, said first input voltage being sufficiently large and said second input voltage being sufficiently small so that the current-voltage characteristic of said field effect transistor for each of said field and second input voltages intersects the current-voltage load line of said tunnel diode only once, the output terminal of said switching circuit being the node between said field effect transistor and said tunnel diode.

4,242,596

INTEGRATED INJECTION LOGIC CIRCUITS

Kenneth R. Whight, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

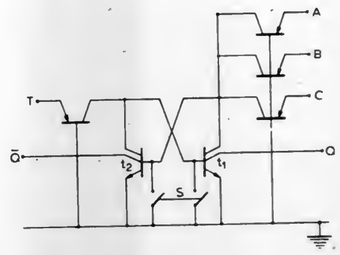
Filed Jul. 10, 1978, Ser. No. 922,964

Claims priority, application United Kingdom, Jul. 14, 1977, 29615/77

Int. Cl.[3] H03K 19/091

U.S. Cl. 307—211 13 Claims

1. An integrated injection logic circuit comprising at least one threshold logic gate having a plurality of weighted logic inputs and a weighted fixed input determining the threshold, said gate comprising first and second transistors connected as a bistable with the collector zone of the first transistor connected to the base zone of the second transistor and the collector zone of the second transistor connected to the base zone of the first transistor, at least one of said first and second transistors having a further collector zone provided with a conductive, output connection, a plurality of current injector structures being present for determining the bias currents supplied to the first and second transistors, the state of said bistable being determined in accordance with the difference in magnitude of total bias current supplied to the first transistor and total bias current supplied to the second transistor, said plurality of current injector structures comprising injector structures associated



with the logic inputs and at least one injector structure associated with a fixed input.

4,242,597

GUNN EFFECT SHIFT REGISTER

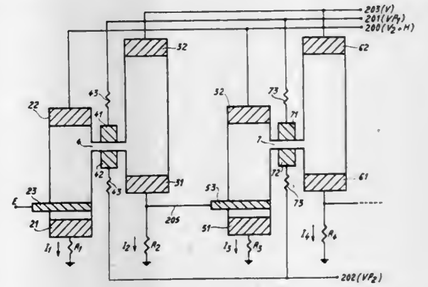
Maurice Gloanec, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 2, 1978, Ser. No. 956,976

Claims priority, application France, Nov. 4, 1977, 77 33238

Int. Cl.[3] H01L 27/26; G11C 19/28

U.S. Cl. 307—221 B 3 Claims



1. A dynamic memory register of the type utilizing the traveling of Gunn domains in a semiconductor material, comprising:

a substrate of semi-insulating material;

a layer of semiconductor material disposed on said substrate and having a differential mobility of charge carriers;

said semiconductor material being organized in a succession of register elements from 1 to n, with n being an integer greater than 1, together constituting an n-bit shift register;

each of said elements comprising a first and a second band connected by a bridge of the same semiconductor material;

said first band being organized in a Gunn-effect triode with a first starting electrode, a gate and a first finishing electrode, a distance L separating the first gate and the first finishing electrode;

said second band being substantially parallel to said first band, having a second starting electrode and a second finishing electrode and being connected to said first band by said bridge at a distance L_1 from said first gate and at a distance L_2 from said second finishing electrode, the lengths L, L_1 and L_2 satisfying the relationship

$$L_1 + L_2 > L$$

said gate of each register element forming the input terminal of said register element;

said second starting electrode of each register element being connected to said gate of the following register element; and said second starting electrode of the nth register element being the output terminal of said n-bit shift register.

4,242,598

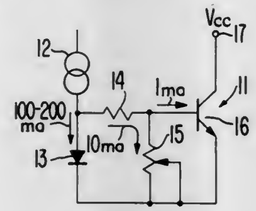
TEMPERATURE COMPENSATING TRANSISTOR BIAS DEVICE

Joseph H. Johnson, and Lee B. Max, both of Sunnyvale, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 337,783, Mar. 5, 1973, abandoned. This application Oct. 2, 1974, Ser. No. 511,882

Int. Cl.³ H03F *3/04*

U.S. Cl. 307—310 **18 Claims**



1. In a semiconductive device for providing a temperature compensated bias output to be applied across the base-to-emitter junction of a transistor to be biased:

a semiconductive body having first and second abutting regions therein of different conductivity type material to define a p-n diode junction therebetween;

first and second electrode means for making electrical connection to said first and second regions, respectively, of said semiconductive body;

injector, reference, and supplier terminal means for making electrical connections to electrical circuitry, means electrically connecting said injector terminal means and said first electrode means, means electrically interconnecting said reference terminal means and said second electrode means;

resistor means having a positive temperature coefficient of resistance of sufficient magnitude to compensate for an increasing temperature coefficient of h_{FE} of the transistor to be biased, means for electrically connecting said resistor means between said supplier terminal means and said injector terminal means; and

means for mounting said semiconductive body and said resistor means in heat exchanging relation with the transistor to be biased to provide a temperature compensated bias potential across said supplier and reference terminal means as an output to be applied in circuit with the base-to-emitter junction of the transistor to be biased.

4,242,599

CHARGE TRANSFER IMAGE SENSOR WITH ANTIBLOOMING AND EXPOSURE CONTROL

Nobuo Suzuki, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

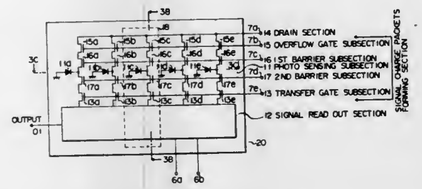
Filed Jan. 29, 1979, Ser. No. 7,173

Claims priority, application Japan, Feb. 22, 1978, 53-18542

Int. Cl.³ H03K *3/42;* **G11C** *19/28;* **H01L** *29/78, 27/14*

U.S. Cl. 307—311 **9 Claims**

1. A charge transfer image sensor which comprises a signal-readout section for receiving a group of signal charge packets and sending forth an image signal; an overflow drain section; and a signal charge packet-forming section which is disposed between the signal-readout section and overflow drain section, includes a plurality of unit signal charge packet-forming regions and supplies a group of unit signal charge packets to the signal-readout section, and wherein the unit signal charge packet-forming section includes a photosensing region for producing a charge corresponding to the intensity of an incoming light, a first barrier gate electrode and overflow gate electrode arranged in series between the photosensing region and overflow drain section, and a second barrier gate electrode and signal charge packet transfer gate electrode provided in series between the photosensing region and an input of the signal-readout section; the signal charge packet transfer gate electrode is impressed with a voltage having a first or second level; the overflow gate electrode is impressed with a voltage having a third or fourth level; the first and second barrier gate electrodes are each impressed with a constant voltage so as to form potential barriers of equal height at the semiconductor regions under the respective barrier gate electrodes; and the overflow drain section is supplied with a voltage having a sixth level.



4,242,600

DIGITAL CCD ARRANGEMENT

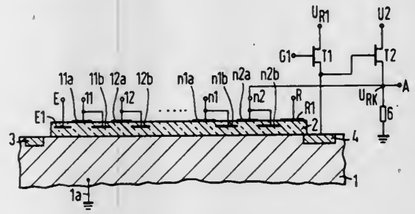
Kurt Hoffmann, Taufkirchen, and Manfred Mauthe, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1978, Ser. No. 897,939

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2721039

Int. Cl.³ G11C *19/28;* **H01L** *29/78*

U.S. Cl. 307—221 D **6 Claims**



1. A digital charged coupled device (CCD) circuit arrangement comprising a semiconductor substrate of one conductivity type, a layer of insulating material on one surface of said substrate, a plurality of shift electrodes separated from said substrate by said insulating layer; one group of said electrodes lying in one plane and separated from said substrate by a relatively thick portion of said layer of insulating material, a second group of said electrodes lying in a lower plane and separated from said substrate by a relatively thin portion of said layer of insulating material, one electrode on said one plane and, an adjacent one electrode on said lower plane being electrically connected to form a pair, the remaining shift electrodes being similarly paired, a first pulse train voltage source connected seriatim to every other one of said pairs, a second pulse train voltage source displaced in phase relative to said first pulse train voltage source and connected seriatim to the remaining pairs of said shift electrodes, said substrate having an input end diffused zone of the opposite conductivity type to said substrate, an input electrode in said insulating layer in said lower plane ahead of the first of said shift electrode pairs, said substrate having a ground terminal, an output end diffusion zone of said opposite conductivity type on said substrate, an output end electrode lying in said one plane and constantly connected to a first reference voltage source, a field effect transistor having its drain connected to said first reference voltage source and its source connected to said output end diffused zone and its gate connected to a pulse train voltage source which is in phase with but having less pulse width than said first pulse train voltage source, a second field effect transistor having its drain connected to said second pulse train voltage source and its gate connected to said source of said first transistor, an output terminal, an impedance element connected through a circuit node between the source of said second field effect transistor and ground, said circuit node being connected to the last of said electrode pairs and to said output terminal.

4,242,601

CIRCUIT ARRANGEMENT FOR FREQUENCY DIVISION

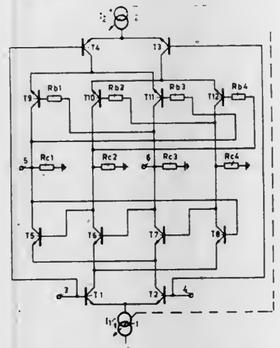
Wolfdietrich G. Kasperkovitz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,680

Claims priority, application Netherlands, Nov. 9, 1977, 7712314

Int. Cl.³ H03K *23/00, 27/00*

U.S. Cl. 307—225 R **12 Claims**



1. A circuit for frequency division comprising, first and second input terminals, first and second transistors having emitter electrodes connected in common, first and second groups of transistors with each group comprising n transistors, n being at least two, each of said transistors having a collector, a base and an emitter, means connecting the emitter electrodes of the transistors of the first and second groups to the collector electrodes of the first and the second transistor respectively, to form a first cyclic electrical sequence of transistors with said sequence alternating between said first and second groups so that each transistor of one group is followed in said sequence by a transistor of the other group, means coupling the base electrodes of the transistors of the first cyclic sequence to the collector electrodes thereof so that the base electrode of any arbitrary transistor of the first cyclic sequence is always coupled to the collector electrode of the (n−1) transistor of said first sequence after said arbitrary transistor, means coupling each collector electrode of the transistors of said first and second groups via a load to a point of reference voltage, third and fourth transistors having emitter electrodes connected in common, third and fourth groups of transistors with each group comprising the same number of n transistors as are present in the first and second groups of transistors, each of said transistors having a collector, a base and an emitter, means connecting the emitter electrodes of the transistors of the third and the fourth groups to the collector electrodes of the third and the fourth transistor respectively, to form a second cyclic electrical sequence of transistors with said second sequence alternating between said third and fourth groups so that each transistor of one group is followed in said sequence by a transistor of the other group, means coupling the base electrodes of the transistors of the third and fourth groups to the collector electrodes thereof so that the base electrode of any arbitrary transistor of the second cyclic electrical sequence is always coupled to the collector electrode of the nth transistor of said second sequence after said arbitrary transistor, means connecting the collector of a transistor of the third group to the collector of a transistor of the first group and the collector of every next transistor of the third and the fourth group in the second sequence to the collector of the next transistor of the first and the second group in the first sequence, and wherein said first, second, third and fourth transistors each have a control electrode, and means coupling said control electrodes to said first and second input terminals so that said first and second transistors and said third and fourth transistors are turned on alternately by an input signal applied to said input terminals and with the first and fourth transistors simultaneously conductive and the second and third transistors simultaneously conductive.

4,242,602

PHASE COMPARATOR CIRCUIT WITH GATED ISOLATION CIRCUIT

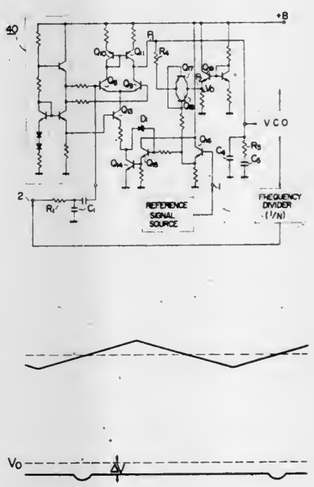
Isao Nakagawa, and Keiichi Mizutani, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 6, 1978, Ser. No. 967,051

Claims priority, application Japan, Dec. 7, 1977, 52/146054

Int. Cl.³ H03L *7/06*

U.S. Cl. 307—232 **3 Claims**



1. A phase comparator circuit suited for use in a phase locked loop and for an integrated circuit implementation comprising:

a reference signal source for supplying a reference signal composed of pulse signals;

means for converting a signal to be phase-compared with said reference signal to a signal of waveform having a ramp portion;

means for receiving said reference signal and an output signal of said converting means to produce a current indicative of the voltage of said ramp portion of said output signal of said converting means during a period in which each pulse of the pulse signals of said reference signal is being applied;

an output circuit including a load resistor for converting said current output to a voltage;

a reference D.C. voltage node; and

gate means connected between said load resistor and said

reference D.C. voltage node and operative to conduct only when said reference pulse signal is being applied and to isolate said load resistor from said reference D.C. voltage node during the remaining period to thus maintain said output voltage substantially constant during said remaining period.

4,242,603

DYNAMIC STORAGE ELEMENT

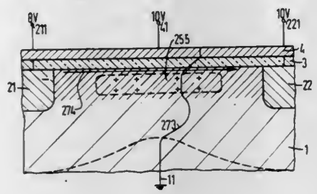
Guenther Meusburger, Munich; Karl Knauer, Starnberg, and Jenoe Tihanyi, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,013

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2726014

Int. Cl.³ H01L *27/04*

U.S. Cl. 307—238 **2 Claims**



1. A process for operating a storage element which comprises a semiconductor substrate doped with a dopant of a first conductivity type, a substrate terminal connected to a reference potential, an insulating layer carried on said substrate, first and second doped zones with a substrate region therebetween at the surface of the substrate, the zones doped opposite to the substrate and the region doped with the first conductivity dopant and to a greater degree than the substrate, the first zone constituting a bit line, the second zone constituting a reference line, and a metal word line carried on the insulating layer over the highly doped region, comprising the steps of:

applying a constant first potential to the reference line with respect to the reference potential at the substrate terminal;

applying a second potential differing less than the first potential from the reference potential at the substrate terminal to the word line to introduce a charge into the doped region for writing;

altering the potential on the bit line and the word line in such a manner as to increase the potential differences with respect to the reference potential of the substrate terminal; and

altering the potential on the bit line to increase the potential difference with respect to the reference potential at the substrate terminal, while maintaining the potential constant on the word line to write a "1".

4,242,604

MOS INPUT CIRCUIT WITH SELECTABLE STABILIZED TRIP VOLTAGE

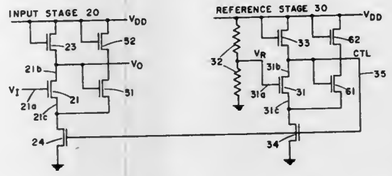
Frederick J. Smith, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 10, 1978, Ser. No. 932,516

Int. Cl.³ H03K *17/687, 17/14, 19/092, 3/356*

U.S. Cl. 307—251 **10 Claims**

1. An integrated buffer circuit having a selectable stabilized trip voltage; said circuit comprising an input stage and a reference stage; each of said stages including a field effect input transistor, first resistive means coupling a drain of said input transistor to a bias source for providing a resistance there between that is substantially constant, and second resistive means coupling a source of said input transistor to another bias source for providing a resistance there between that is variable in response to control signals applied thereto; means for biasing said reference stage in the linear region at said trip voltage; and



means for coupling signals generated by said reference stage to all of said second resistive means as said control signals.

4,242,605

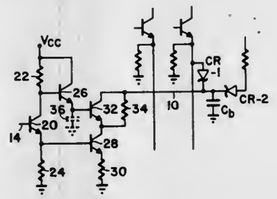
TRANSIENT ARRAY DRIVE FOR BIPOLAR ROM/PROM

Walter C. Seelbach, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 22, 1978, Ser. No. 908,311

Int. Cl.³ H03K *3/01, 3/26, 17/56*

U.S. Cl. 307—270 **5 Claims**



1. A driving circuit for a digital line, the line having a capacitance to ground which is charged upon receipt by said driving circuit of a line signal having a first potential, the combination comprising:

limiting means coupled between said capacitance and ground for limiting discharge current of said capacitance, said capacitance discharging upon receipt by said driving circuit of a line signal having a second potential;

transistor means coupled across said limiting means for momentarily shorting said limiting means to shorten discharge time, said transistor means including charge storage means which is charged in response to said line signal of said first potential; and

series switching means coupled between ground and said limiting means for providing a discharge path for said capacitance in response to said line signal having said second potential.

4,242,606

MAGNETIC FINAL CONTROL ELEMENT FOR A REGULATOR APPARATUS

Wolfgang Nonnenmann, Pforzheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,496

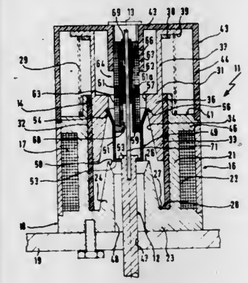
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809975

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—12 **12 Claims**

1. A magnetic final control element for a regulator apparatus for use in an electronically regulated fuel injection system for motor vehicles, in which the regulatory value is determined by means of the axial stroke of a rod-like control member connected with an armature of an electromagnet disposed in a housing, the armature being movable against the restoring

force of a helical spring means, the exciter current of said magnet being the output value of a regulator which as a guidance value receives a set-point signal characteristic of the regulatory value and as an input value to be compared therewith receives an output signal of a displacement transducer which is proportional to the stroke of said rod-like control member, said displacement transducer further comprising a rod-like means which is displaceably coupled with the armature and further including a pick-up means associated with said housing and arranged to extend substantially along the axis of a transducer core, said transducer further having an output signal proportional to its stroke and influenced by the position thereof, and further wherein said electromagnet comprises an armature magnet having an attracting force proportional to



said exciter current, said current eminating from an exciter coil which is wound onto the outer jacket of a substantially cylindrical-cup-shaped core, further wherein said control member together with said displacement transducer comprising said pick-up means and said transducer core and said restoring spring means are disposed coaxially with respect to the longitudinal axis of said electromagnet, whereby said restoring spring means is supported with a minimum initial stressing between a support surface integrated into said armature and a further support surface, said pick-up means being disposed in proximity to said armature and remote from said core, said pick-up means having an end portion secured on the inner side of a cover plate firmly connected with said core and said transducer rod-like means is embodied as an element affixed to said control member.

4,242,607

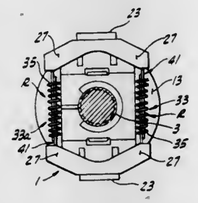
CENTRIFUGAL ACTUATOR FOR MOTOR STARTING SWITCH

Eugene F. Hildebrandt, Ferguson, and William D. Crow, St. Louis, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 26, 1979, Ser. No. 14,844

Int. Cl.³ H01H *35/10*

U.S. Cl. 310—68 E **6 Claims**



1. In an electric motor having a starting winding, a starting switch for energizing and deenergizing the starting winding, a rotor shaft, and a centrifugal actuator for actuation of said starting switch, said centrifugal actuator being rotatable with said rotor shaft, said centrifugal actuator having a pair of movable members disposed on opposite sides of said rotor shaft centrifugally responsive to the rotational speed of the shaft for moving outwardly from a starting position to a run position upon rotation of said rotor shaft at a predetermined operational speed, means for resiliently biasing said movable members toward their starting position, said movable members being movable from their run to their starting positions upon said shaft slowing down from said predetermined speed, said centrifugal actuator being adapted to be operatively interconnected to said starting switch so as to effect opening and closing thereof as said centrifugal actuator moves between its starting and its run position, wherein the improvement comprises: said centrifugal actuator biasing means including a pair of compression coil springs, a pair of linkages, one for each of said springs, each said linkage interconnecting a respective said spring between said movable members, each of said linkages comprising a first element engageable with one end of its respective compression coil spring and with the movable member opposite said one end of said compression spring and a second element engageable with the other end of said compression coil spring and with the other movable member so that movement of said movable members from their starting to their run positions causes said first and second elements to move relative to one another and causes said spring to be resiliently compressed.

4,242,608

MOTOR USING HALL EFFECT ELEMENTS

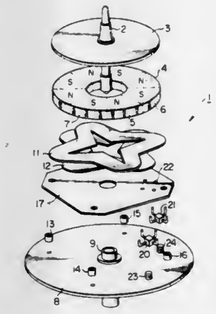
Yasuhiro Ishigaki, and Toshio Sugiyama, both of Toyokawa, Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 24, 1978, Ser. No. 927,393

Claims priority, application Japan, Jul. 25, 1977, 52/88412

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 R **10 Claims**



1. A motor using Hall effect elements, comprising:

a disk-shaped multi-pole magnet coupled to a rotary shaft and circumferentially divided into a plurality of magnetic poles each magnetized in the direction of thickness thereof in an opposite polarity to its adjacent magnetic poles;

a yoke plate for rotatably supporting said rotary shaft, said yoke plate being disposed to face said multi-pole magnet to define an air gap therebetween;

a pair of drive coils disposed within said air gap and angularly displaced from each other by an electrical angle of 90°, said pair of drive coils linking to a magnetic flux of said multi-pole magnet;

a pair of Hall effect elements spaced from said yoke plate and disposed within said air gap, said pair of Hall effect elements linking to the magnetic flux of said multi-pole magnet;

said pair of Hall effect elements being angularly displaced from each other by an electrical angle of 90° for developing output voltages thereacross in the polarities determined by the polarities of the magnetic poles of said multi-pole magnet;

means for supplying said output voltages of said pair of Hall effect elements to said pair of drive coils, respectively; and

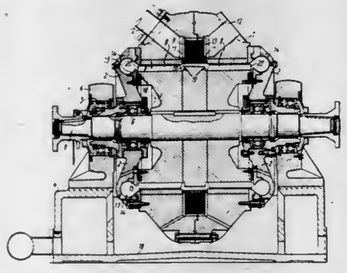
a pair of pole pieces disposed to face said pair of Hall effect elements, respectively, and magnetically coupled to said yoke plate for adjusting magnetic flux densities of said multi-pole magnet applied to said pair of Hall effect elements.

4,242,609

WATER-COOLED ELECTROMAGNETIC BRAKE

Nikolai A. Burenkov, ulitsa Molostovykh, 2, korpus 2, kv. 54; Mikhail G. Derevyanchenko, ulitsa Saratovskaya, 3, korpus 2, kv. 126; Rikhard A. Ioganson, Kutuzovsky prospekt, 4, kv. 6; Alexandr V. Kuprianov, Chuxin tupik, 5, kv. 73; Mark B. Perchenok, ulitsa Chasovaya, 27/12, kv. 16; Evgeny V. Chegodaev, ulitsa Novgorodskaya, 34, kv. 317, and Valentin I. Chulin, ulitsa Novo-Petrovskaya, 18, kv. 49, all of Moscow, U.S.S.R.

Filed Dec. 4, 1978, Ser. No. 966,062
Int. Cl.³ H02K *49/02*
U.S. Cl. 310—105 **1 Claim**



1. A water-cooled electromagnetic brake comprising an annular stator defining a central enclosure, stator end covers, a rotor rotatably mounted in said enclosure, peripheral pole teeth on said rotor and defining a gap between an inner surface of said stator and outer edges of said pole teeth, an excitation winding in said stator, a perforated ring supporting said excitation winding, said ring having an inner surface adjacent said outer edges of said pole teeth, toroid-shaped collectors for cooling liquid in said stator covers, said collectors having openings adjacent the periphery of said rotor for the introduction of cooling liquid fed from said gap to said collectors, ports in the lower portion of said collectors for the removal of cooling liquid, means for circulating liquid around said excitation winding, through said perforated ring, along said gap and into said collectors, said pole teeth defining recesses adjacent said ring for inhibiting reverse flow of the liquid, said pole teeth further having projections extending into said openings of said collectors, said collectors having an inner edge adjacent said opening defining a liquid deflecting baffle and labyrinth seal means between said rotor and said stator adjacent each said baffle.

4,242,610

WEDGE-SHAPED PERMANENT MAGNET ROTOR ASSEMBLY

Frederick B. McCarty, San Pedro, and Alexander Silver, Tarzana, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 26, 1978, Ser. No. 973,346
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156 **6 Claims**

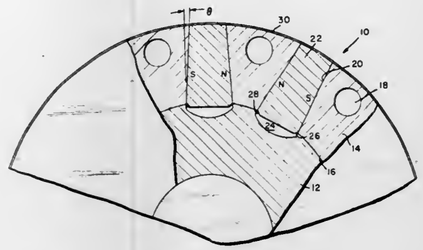
1. In an electrical machine having a rotor and a stator, said rotor comprising:

a cylindrical hub;

a plurality of inwardly converging wedge-shaped support members located around and affixed to the periphery of said hub;

a plurality of wedge-shaped permanent magnets with radially extending outwardly converging sides disposed between said support members;

said sides of said magnets forming an angle within the range of 2 to 9 degrees with a plane parallel to a central radius



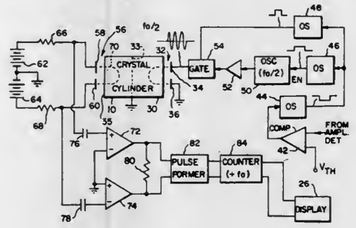
through said magnet such that the magnets are locked in place after said rotor ceases to rotate and the magnets will not fracture due to excessive compressive forces applied to the sides of said magnets.

4,242,611

METHODS AND APPARATUS FOR PROVIDING ULTRA-STABLE FREQUENCY STANDARDS AND CLOCKS

David H. Douglass, Rochester, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed May 23, 1977, Ser. No. 799,800
Int. Cl.³ H01L *41/00*
U.S. Cl. 310—344 **40 Claims**



1. The method of generating signals for use in frequency standards and clocks of high stability, said method comprising the steps of supporting a body consisting of a single crystal non-piezoelectric material having a mass of the order of kilograms for free vibration as a mechanical resonator at a frequency at which said body is resonant, exciting resonant, non-piezoelectric vibration of said body, and deriving said signals in response to said vibration.

4,242,612

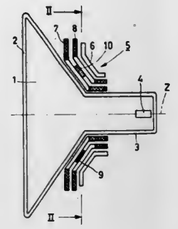
DEFLECTION UNIT FOR COLOR TELEVISION DISPLAY TUBES

Werner A. L. Heijnemans; Joris A. M. Nieuwendijk, and Nicolaas G. Vink, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,663
Claims priority, application Netherlands, Feb. 6, 1978, 7801316
Int. Cl.³ H01F *3/00*
U.S. Cl. 313—421 **5 Claims**

1. A deflection unit for a color television display tube having a neck portion, a display screen and a funnel central portion therebetween, said deflection unit comprising a core, a pair of vertical deflection coils, and a pair of horizontal deflection

coils, said pair of vertical deflection coils having a winding distribution for producing, when the deflection unit is mounted on said display tube, a pin cushion-shaped vertical deflection field at the neck side of the unit and a homogeneous vertical



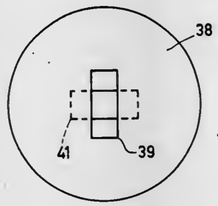
deflection field at the screen side of the deflection unit, said deflection unit further comprising flux altering means which, in combination with said pair of vertical deflection coils, produce a sharp barrel-shaped vertical deflection field at the central portion of the unit for correcting astigmatism distortion.

4,242,613

CRT CONTROL GRID HAVING ORTHOGONAL OPENINGS ON OPPOSITE SIDES

Jörg Brambring, and Robert F. L. M. van der Ven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,435
Claims priority, application Netherlands, Nov. 24, 1977, 7712943
Int. Cl.³ H01J *29/02, 29/56*
U.S. Cl. 313—447 **8 Claims**



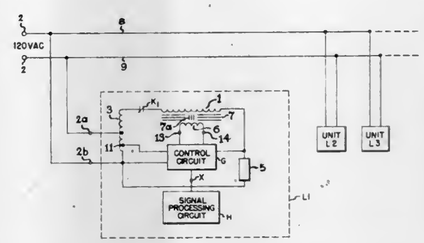
1. A cathode-ray tube comprising, in an evacuated envelope, a target and an electron gun for generating an electron beam directed onto said target, said electron gun including a cathode centered about a first axis, a first electrode disposed adjacent said cathode and spaced therefrom along said first axis, said first electrode having first aperture centered about said first axis, and a second electrode spaced along said first axis from said first electrode and having a second aperture centered about said first axis, said first electrode having, on the side of said first electrode adjacent said cathode, an elongated opening communicating with said first aperture so that said first electrode and said cathode from a non-rotationally symmetrical multipole electron lens which is mainly a first quadrupole lens and on the side of said first electrode adjacent said second electrode a second elongated opening communicating with said first aperture, the longitudinal axis of said second opening being perpendicular to the longitudinal axis of said first opening so that said first electrode and said second electrode form a non-rotationally symmetrical multipole electron lens which is mainly a second quadrupole lens rotated 90° with respect to said first quadrupole lens.

4,242,614

LIGHTING CONTROL SYSTEM

Dimitrios Vatis, East Flat Rock, and Charlie B. Turner, Hendersonville, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,077
Int. Cl.³ H05B *41/39*
U.S. Cl. 315—153 **11 Claims**



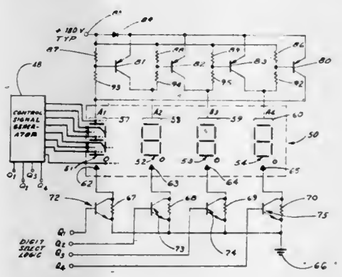
1. Lighting control system comprising, in combination, a plurality of gaseous discharge lamp loads connected in parallel, voltage supply means for said lamp loads, a plurality of variable impedance ballast means connected between said voltage supply means and each said lamp load, a plurality of control means respectively connected to said plurality of variable impedance ballast means for controlling the light level of said lamp loads, signal means for transmitting information signals, and a plurality of signal processing means arranged to receive information signals from said signal means and connected respectively to said plurality of control means for operating each said control means in response to the received information signals, said ballast means comprising a pair of inductively coupled coils, one of said coils arranged in series with said lamp load, the other of said coils connected to said control means for control of the current in said one coil.

4,242,615

GAS DISCHARGE TUBE DRIVER AND LEVEL SHIFTER CIRCUIT

Alvin F. Kanda, Scottsdale, Ariz., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 811,025, Jun. 29, 1977, abandoned.
This application Feb. 14, 1979, Ser. No. 12,173
Int. Cl.³ H05B *41/16*; G09G *3/10*
U.S. Cl. 315—169.1 **12 Claims**



1. In a gas discharge display apparatus including a plurality of cells connected for multiplex operation, each cell having an anode and at least two cathodes, the combination comprising:

a current-limiting device connected in series circuit relation with each of said cells to one of said at least two cathodes;

anode driver means coupled in circuit relation with each of said anodes;

means for sequentially shunting each of said current-limiting devices; and

means responsive to the shunting of a current-limiting device for energizing the anode driver means of another cell to vary the potential on the anode of said another cell.

4,242,616

PHOTOGRAPHIC FLASH APPARATUS

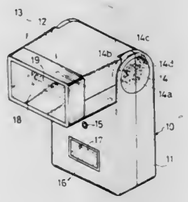
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Corporation, Tokyo, Japan, a part interest

Filed May 3, 1978, Ser. No. 902,755

Claims priority, application Japan, May 14, 1977, 52/61829[U]

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—241 P **14 Claims**



1. A photographic flash apparatus comprising:

a flash housing consisting of a first casing having a first flashing member, wherein said first flashing member includes at least one first flash tube;

a second casing pivotably arranged with respect to said first casing and having a second flashing member, wherein said second flashing member includes at least one second flash tube; and

a flash control circuit for controlling the flashing of said first and second flashing members, wherein said flash control circuit includes an electric charge storing circuit having a main storage capacitor for supplying electrical energy to said first and second flashing members, a trigger pulse generating circuit for triggering said at least one first and at least one second flash tubes of said first and second flashing members, respectively, a flash tube circuit for generating a light flash and being connected to said at least one first flash tube and said at least one second flash tube, and a switching circuit for actuating said flash tube circuit, wherein said flash tube circuit includes flash light quantity control means for controlling the quantity of the light flash of said first and second flashing members so that the light flash quantity of said first flash tube is always less than the light flash quantity of said second flash tube, and flash timing control means responsive to the resultant total light flash quantity of said at least one first and at least one second flash tubes attaining a predetermined value for stopping flash of the at least one first flash tube and at least one second flash tube such that flash durations of the at least one first and at least one second flash tubes become approximately the same.

4,242,617

ELECTRIC VEHICLE HAVING DYNAMIC BRAKING AND REGENERATION

Marvin D. Jennings, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 764,776, Feb. 2, 1977, abandoned. This application Sep. 21, 1978, Ser. No. 946,251

Int. Cl.³ H02K *7/10*

U.S. Cl. 318—13 **9 Claims**

1. A regenerative drive electric control system for use on an electric vehicle having ground engaging means including a traction wheel carried by an axle driven through a final drive gear, the improvement comprising;

an electric motor having an output shaft, said electric motor operating at a constant speed when energized;

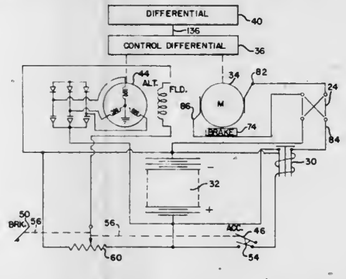
a motor brake for selectively preventing the rotation of said output shaft of said electric motor;

a mechanical brake for stopping said vehicle;

a battery source of electrical energy for supplying current to said electric motor;

an alternator having a variable resistance field and an input shaft, the input shaft torque load being directly increased with an increase in said variable resistance field, said alternator electrically connected to said battery to provide electrical energy to charge said battery;

an electrical current circuit including an on-off electrical switch, a vehicle direction selector having forward, neutral and reverse positions, a motor solenoid to control the passage of electrical current between said battery and said electric motor, a switch for activating said motor solenoid and a variable resistor for controlling said field of said alternator;



a control differential gearbox coupled to said motor, said alternator and said final drive gear for distributing a drive output of said electric motor, said drive including a zero output of said electric motor when said motor brake is engaged, to said alternator and to said final drive gear of said electric vehicle;

an accelerator pedal having a linkage for closing said electrical current circuit switch for activating said motor solenoid and for progressively adjusting said variable resistor to increase said field of said alternator whereby the resistance to motion of said alternator due to said increase in said field of said alternator results in an increased torque load to said control differential gearbox resulting in vehicle motion;

a brake pedal having a linkage for progressively increasing said field of said alternator through adjustment of said variable resistor and progressively applying said brake of said electric motor whereby regeneration of said battery by said alternator occurs when said brake of said electric motor is energized to prevent electric motor rotation and said vehicle is in motion.

4,242,618

SPEED CONTROLLER FOR ROTARY MACHINE

Hiroshi Minakuchi, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 20, 1978, Ser. No. 870,982

Claims priority, application Japan, Jan. 25, 1977, 52-7479

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—314 **5 Claims**

1. A speed controller for a rotary machine comprising:

a speed detector for generating a first signal corresponding to the rotating speed of said rotary machine;

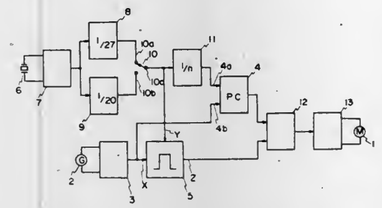
a reference frequency generator for generating a second signal having a controllable frequency;

a divider coupled to the output of said reference frequency

generator for developing a reference phase signal by dividing said output signal from said reference frequency generator;

a phase comparator for receiving said first signal from said speed detector and said reference phase signal from said divider and developing a comparison signal related to the phase difference therebetween;

synchronous pull-in circuit means, having a first control input coupled to said speed detector and a second control



input coupled to said reference frequency generator for developing a pull-in signal having a repetition period related to said first signal and an astable period related to said second signal;

a mixer for mixing said comparison signal from said phase comparator and said pull-in signal from said synchronous pull-in circuit means; and

a means coupled to said mixer for driving said rotary machine responsive to the output of said mixer.

4,242,619

DIGITAL SERVO CONTROL CIRCUIT

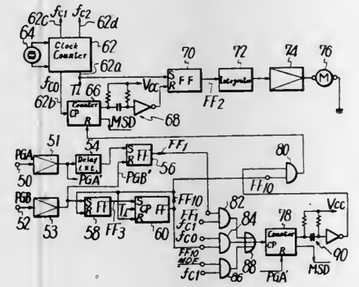
Tadahiko Nakamura, and Kenji Nakano, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,756

Claims priority, application Japan, Jan. 27, 1978, 53/74046

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—314 **25 Claims**



1. A servo control apparatus for controlling the rotation of a rotary member comprising:

drive means for rotating said rotary member;

means for generating first angular position signals related to a first angular position of said rotary member;

means for generating reference signals related to a second angular position of said rotary member;

at least some of said first angular position signals and said reference signals cyclically occurring in spaced pairs;

clock signal generating means for generating at least one clock signal comprised of repeated cycles having a predetermined frequency;

counter means for counting said cycles of said clock signal occurring in a time interval related to the time interval between said spaced pairs to produce a stored value therein;

means for clocking said counter means from said stored value to a predetermined value;

means for generating at least one pulse-width-modulated pulse having a width related to a time at which said counter means reaches said predetermined value; and

means for controlling said drive means in response to said pulse-width modulated pulse.

4,242,620

AUTOMATIC WELDING LINE TRACING METHOD AND APPARATUS

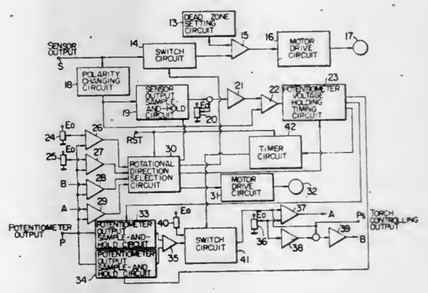
Osamu Fujiwara, Funabashi; Takeshi Araya, Shimoinayoshi, and Tsugio Udagawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Seiko Ltd., both of, Japan

Filed Jun. 22, 1978, Ser. No. 918,276

Claims priority, application Japan, Jun. 24, 1977, 52/74325

Int. Cl.³ G05B *19/33*

U.S. Cl. 318—576 **1 Claim**



1. An automatic welding line tracing apparatus comprising:

a non-contact-type sensor for tracing a welding line;

a first moving base with a drive motor disposed to reciprocate said non-contact-type sensor in a direction normal to said groove of said plates at a predetermined height from upper surfaces of said plates;

a second moving base with a drive motor disposed to correct to a desired value the height of said non-contact-type sensor from said plates at each of two ends of said groove over said surfaces;

a position detector operatively associated with said non-contact-type sensor to detect the position thereof; and

a control unit whereby when said non-contact-type sensor is moved in said direction normal to said groove, a voltage representing a central position of said groove is generated through said position detector in response to variation in an output of said sensor wherein said control unit comprises a rotational direction selection circuit (**30**) disposed to receive signals applied through variable resistors (**24,25**) and comparators (**26, 27**) disposed to determine upper and lower limits to a oscillating amplitude of said sensor and signals applied from comparators (**28, 29**) disposed to determine an oscillating amplitude of said sensor for a trace operation to thereby determine a direction of oscillation of said sensor, a sample-and-hold circuit (**19**) responsive to a timing pulse output of said rotational direction selection circuit (**30**) to sample and hold the output of said sensor to produce voltages E_1 and E_2 respectively corresponding to the ends of said groove, a comparator (**22**) disposed to compare the output of said sensor with $E_1-\delta$ and $E_2-\delta$, respectively, a circuit (**23**) whereby when the output of said sensor agrees with said $E_1-\delta$ and $E_2-\delta$, respectively, a timing pulse for sampling and holding a potentiometer output P corresponding to a position of said sensor is generated, circuits (**33, 34**) each responsive to said timing pulse to sample and hold said potentiometer output P corresponding to a sensor

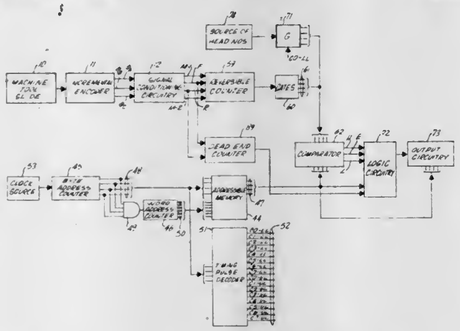
position, an amplifier circuit (35) disposed to increase by ½ times an output of said circuits (33,34), respectively, a switch circuit (41) whereby when there is the generation of no sample-and-hold pulse for sampling and holding said potentiometer output corresponding to a sensor position, a timer circuit (42) is actuated in response to an output of said timing pulse generating circuit (23) to block the output of said amplifier circuit (35) for a predetermined time to thereby receive a separately established output of a reference voltage generating circuit (40), setting means (36) disposed to set the range of said sensor oscillating to a desired value in accordance with the output of said amplifier circuit (35), a circuit whereby a difference between an output of said switching circuit (41) and an output of said setting means (36) is applied as a reference voltage to said comparators (28, 29), respectively, to compare the same with said potentiometer output P to provide a proper oscillating amplitude and a circuit (16) whereby when said sensor is over said plates, a switch circuit (14) is brought into operation in response to a timing pulse signal from said rotational direction selection circuit (30) and the output of said sensor is compared with an output voltage value of a dead zone setting circuit (13) by a comparator (15) to thereby correct the height of said sensor.

4,242,621

PROGRAMMABLE LIMIT SWITCH FOR A MOVABLE MEMBER, PARTICULARLY A MACHINE TOOL SLIDE

Carl P. Spaulding, 1530 Mirasol Dr., San Marino, Calif. 91108

Filed Mar. 27, 1978, Ser. No. 889,934
Int. Cl.³ G05B *19/29*
U.S. Cl. 318—601 25 Claims



1. A programmable limit switch for a movable member comprising:

means for generating a first digital signal representative of the position of the movable member;

a plurality of actuatable output switches;

means for storing a plurality of second digital signals each representative of a plurality of positions between an upper limit and a lower limit;

means for relating each second signal to one of the output switches;

means for comparing the first signal with the upper and lower limit of each of the plurality of second signals; and

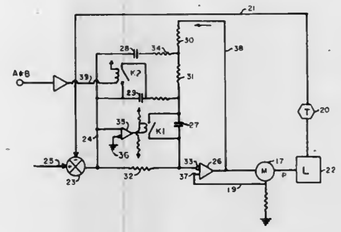
means responsive to the comparing means and the relating means for actuating the output switch related to one of the plurality of second signals, when the position represented by the first signal is between the upper and lower limits of such one of the plurality of second signals.

4,242,622

STABILIZED NON-LINEAR SERVOMECHANISM

Francis H. Shepard, Jr., Summit, N.J., assignor to R & I Patent Corporation, Morristown, N.J.

Filed May 14, 1979, Ser. No. 38,653
Int. Cl.³ G05B *6/02*
U.S. Cl. 318—616 11 Claims



1. In a stabilized non-linear servomechanism arrangement, comprising:

a comparator for generating, at an output terminal thereof, an error signal corresponding to the difference between a first signal indicative of a desired position and a second signal indicative of the actual position of a movable element;

an operational amplifier having input and output terminals and a limited output voltage range for amplifying said error signal;

a motor coupled to said amplifier output terminal and driven by said amplifier, and a movable element driven by said motor;

transducer means coupled to said movable element for generating said second signals;

a negative feedback circuit interconnected between said operational amplifier output and input terminals and having a transfer function F(s) therebetween, where s is the Laplace transform parameter,

the output position to electrical input signal transfer function of said motor and any associated electrical and mechanical elements being G(s),

the improvement wherein said feedback circuit has a characteristic such that the ratio F(s)/G(s) is substantially independent of s, said feedback circuit introducing to the input of said amplifier a drive signal corresponding to the derivative of said error signal and causing the time duration of said drive signal to be extended when the output of said amplifier reaches a limit of the voltage range thereof.

4,242,623

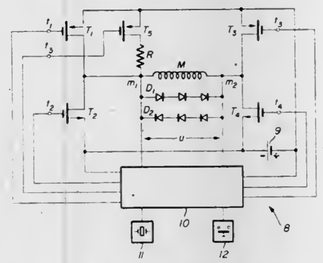
MINIATURE ELECTRIC STEPPING MOTOR

Claude Oudet, and Yves Guerin, both of Besancon, France, assignors to Portescap, La Chaux-de-Fonds, Switzerland

Filed May 10, 1979, Ser. No. 38,293
Claims priority, application Switzerland, May 12, 1978, 5175/78
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 6 Claims

1. A miniature electric stepping motor comprising a magnetized rotor, a stationary magnetic circuit having spaced polar parts defining an air gap, an electric excitation coil coupled to the stationary magnetic circuit, and a control device connected to the said excitation coil, means for mounting the magnetized rotor for rotation in said air gap so that its poles cooperate with the polar parts of the stationary magnetic circuit, the magnetization of the rotor and the form of the polar parts being such that the rotor has at least one stable, equilibrium position located so as to precede, with respect to a first direction of rotation, the position in which the torque due to a constant current through the coil would attain its maximum, the control device comprising means for applying to the excitation coil,

starting from each stable equilibrium position of the rotor, a control impulse having a first polarity, and having an amplitude and a width such that the rotor rotates in the said first direction of rotation until it reaches the next stable equilibrium position, and means for applying to the excitation coil, upon an external control, starting from each stable equilibrium position, first a pre-impulse of said first polarity and having an amplitude and a width such that the rotor rotates in the first direction of



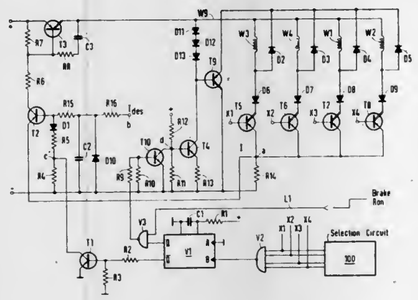
rotation but cannot reach the next stable equilibrium position in this direction of rotation, and subsequently a control impulse in the reverse direction, having a polarity opposite to the said first polarity and an amplitude and width such that the rotor, after having reversed its direction of rotation, moves in the reverse direction of rotation until it reaches the stable equilibrium position following that at which the said pre-impulse has been applied.

4,242,624

DIRECT CURRENT STEPPER MOTOR WITH A PERMANENT MAGNET ROTOR AND ELECTRONIC COMMUTATION DEVICE

Karl Schalk, Nuremberg, and Georg Kögler, Schwabach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,767
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742932
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 9 Claims



1. In a direct current stepper motor with a permanent magnet rotor and electronic commutating device, in which the individual winding circuits are addressed successively via a selector circuit and the current flowing in the winding circuits is regulated to a constant value by means of a current regulator, the improvement comprising:

(a) means to enable an additional braking moment during each positioning including means to take off the negative and/or positive EMF voltage and short said voltage comprising:

i. a coupling diode associated with each winding circuit, all coupling diodes being interconnected to a terminal; and

ii. a power transistor having a control input, said power transistor coupling said terminal to the power supply through its emitter collector path; and

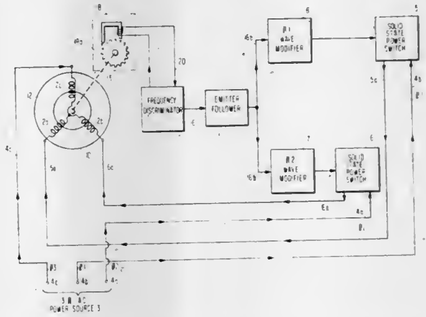
(b) a time delay stage having its output coupled to said control input of said transistor.

4,242,625

ENERGY ECONOMIZER FOR POLYPHASE INDUCTION MOTORS

Rhey W. Hedges, Ft. Lauderdale, Fla., assignor to Louis W. Parker, Fort Lauderdale, Fla.

Filed May 4, 1979, Ser. No. 35,974
Int. Cl.³ H02P *7/36*
U.S. Cl. 318—729 20 Claims



1. An energy economizing AC power control system operative to reduce the iron and copper losses in a conventional three phase AC induction motor by varying the form and magnitude of input voltage coupled thereto, comprising a conventional three phase AC induction motor having three stator windings and a rotor adapted to be coupled to a load, a three conductor three phase sine wave power source for energizing said stator windings to effect rotation of said rotor, and a conditionally closed loop positive feedback control means that becomes operative to control the energization of said stator windings from said power source by reference to a particular speed caused to be energy-efficient by properties inherent to induction motors during a limited range of motor speeds near the full speed of said motor, said closed loop positive feedback control means comprising: motor load detecting means coupled to said rotor and operative to produce a frequency modulated signal related to the load on said motor, frequency discriminator means coupled to said load detecting means for producing a DC control voltage which varies in magnitude in inverse relation to the speed of said motor, emitter-follower means coupled to the output of said frequency discriminator means to render said frequency discriminator means insensitive to variations of subsequent circuit means while coupling said DC control voltage to said subsequent circuit means, a plurality of voltage coupling means coupled to the output of said emitter-follower means for providing a plurality of DC control voltage outputs which are isolated from each other, two wave modifier means responsive respectively to said DC control voltage outputs and including associated switching means disposed between two conductors of said three phase power source and two of said three stator windings, the third stator winding being directly connected to the third conductor of said power source, said wave modifier means being operative to apply full sine waves of voltage from said power source to their associated stator windings during rotational start-up and speed build-up of said motor and, as said motor reaches said particular speed, then being operative to substantially maintain said particular speed by varying the

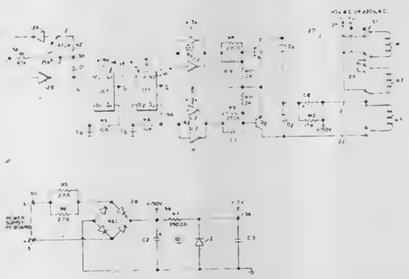
electrical angle of each cycle of said power source which is actually coupled to said two stator windings, and therefore to said third stator winding, thereby providing varying fractions of each sine wave of voltage from said power source to all three of said stator windings in accordance with the energy requirements imposed on said motor by the rotor load at any given moment and in accordance with the inherent electromechanical properties of said motor, whereby said closed loop positive feedback control means functions to substantially reduce the iron and copper losses of said conventional motor by causing the average current supplied from said power source to said stator windings to be supplied primarily as a function of the load on and properties inherent to said motor as the load of said motor varies between zero and maximum rated load.

4,242,626

AC MOTOR DRIVE

Thomas A. O. Gross, Lincoln, Mass., assignor to Jet Spray Cooler, Inc., Waltham, Mass.

Filed Aug. 15, 1978, Ser. No. 933,716
Int. Cl.³ H02P 7/42
U.S. Cl. 318—772 **11 Claims**



1. A motor drive circuit for driving the windings of an AC motor comprising;

clock means,

first and second semiconductor switch means each having at least a control electrode and first and second output electrodes,

means responsive to said clock means for generating cyclic signals for controlling the control electrodes respectively, of the semiconductor switch means,

load impedance means,

DC source means including means coupling to one side of the load impedance means and means coupling to the windings,

first and second unilateral conducting means coupling respectively, from the first output electrode of the first and second semiconductor switch means to the other side of the load impedance means.

and means coupling the semiconductor switch means to the motor windings.

4,242,627

BATTERY CHARGER

Edmund Kisiel, 7104 Thorncliffe Blvd., Parma, Ohio 44134

Filed Dec. 5, 1977, Ser. No. 857,101
Int. Cl.³ H02J 7/10
U.S. Cl. 320—21 **22 Claims**

1. A battery charging circuit comprising:

a source of rectified AC current;

terminals for connecting a battery to be charged in the circuit;

switching means actuable for transmitting current from said source to the battery in response to electrical pulses;

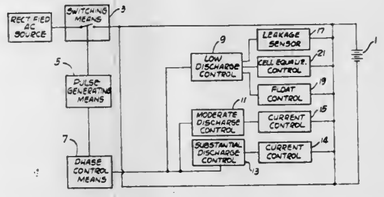
a control circuit for controlling the actuation of said switching means to control the amount of current transmitted by said switching means, said control circuit including:

pulse generating means actuable for generating pulses for actuating said switching means;

phase control means responsive to control signals for controlling the actuation of said pulse generating means to control the actuating of said switching means relative to said rectified AC current;

substantial discharge control means for transmitting control signals to said phase control means when the battery is substantially discharged to effect a charging current to the battery;

moderate discharge control means for transmitting control signals to said phase control means when the battery is moderately discharged to effect a charging current to the battery;



low discharge control means for transmitting control signals to said phase control means when the battery is slightly discharged to effect a charging current to the battery; and means for synchronizing said low, moderate and substantial discharge control means with the AC current;

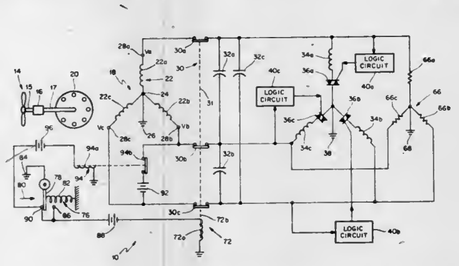
said low discharge control means, said moderate discharge control means and said substantial discharge control means being connected for actuation seriatim for controlling the charging of the battery, respectively, according to the voltage on the battery; the respective discharge control means including means for charging the battery in a continuous manner during the transition between the actuation of one of said discharge control means and the actuation of another of said control means for transmitting control signals to said phase control means.

4,242,628

WIND ENERGY CONVERSION SYSTEM

Narendra Mohan, and Mahmoud Riaz, both of Minneapolis, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed May 30, 1978, Ser. No. 910,204
Int. Cl.³ F03D 9/00; H02P 9/04
U.S. Cl. 322—35 **15 Claims**



1. A wind energy conversion system comprising a variable-speed wind turbine, an induction generator including a stator and a squirrel-cage rotor, said rotor being coupled to said turbine so as to rotate in accordance with the speed of said turbine, capacitor means connected to said stator for supplying excitation current to said generator, means for varying the amount of excitation current supplied by said capacitor means

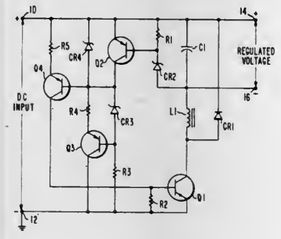
in accordance with the difference between the output voltage from said stator and a reference voltage, and an electrically isolated resistive load means of fixed resistive value connected to said stator and capacitor means, said resistive load means constituting a fixed resistance for heating purposes only which is substantially independent of the voltage generated by said generator and also substantially independent of the changes in frequency resulting from a relatively wide range of turbine speed changes caused by widely changing wind velocities.

4,242,629

DC SWITCHING VOLTAGE REGULATOR WITH EXTENDED INPUT VOLTAGE CAPABILITY

Kenneth C. Shuey, Cridersville, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,553
Int. Cl.³ G05F 1/56
U.S. Cl. 323—17 **4 Claims**



1. A direct current, high voltage, switching voltage regulator comprising: input terminals for receiving a DC voltage input that may vary over a range; output terminals for providing to a load a regulated DC voltage that remains substantially constant despite variation of said DC voltage input over said range; one of said output terminals being directly connected with the higher voltage one of said input terminals; first transistor means connected across said input terminals for initiating current flow through an energy storage inductor upon occurrence of an input voltage level of predetermined magnitude; said inductor being connected so voltage developed by its current is impressed upon said output terminals; second transistor means for terminating conduction of said first transistor means upon the voltage at said output terminals reaching a predetermined regulation voltage level; and third transistor means for acting as a current source that maintains said first transistor means in operation at low power dissipation over said input voltage range.

4,242,630

FERRORESONANT VOLTAGE REGULATOR INCORPORATING AUXILIARY WINDING FOR LARGE CURRENT MAGNITUDES OF SHORT DURATION

Bronislaw T. Szpakowski, Kanata, and Bruno DeGregorio, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

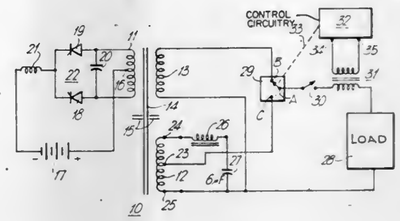
Filed Jul. 14, 1978, Ser. No. 924,636
Int. Cl.³ H02P 1/04
U.S. Cl. 323—60 **11 Claims**

1. A voltage regulator for an alternating current (AC) load, said voltage regulator comprising:

a ferroresonant transformer having a primary winding for connection to a source of AC power, a secondary winding for selective connection to said AC load, an auxiliary winding for selective connection to said AC load whereby said auxiliary winding is closely coupled to said primary winding, and a capacitance means connected across a winding other than said primary or auxiliary windings;

a switch means for selectively connecting said auxiliary winding to said AC load for providing power to said load when said switch means is in a first state, and said switch means selectively connecting said secondary winding to said AC load for providing power to said load when said switch means is in a second state;

said switch means being responsive to the state of said load such that when said load is unenergized, and for a predetermined time period after said load is energized, said switch means is in its first state, and after said predetermined time period and for as long as said load remains continuously energized, said switch means is in its second state.

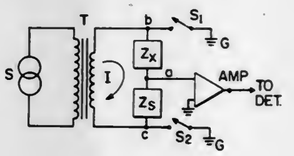


4,242,631

FRONT-END CIRCUIT APPARATUS FOR IMPEDANCE MEASUREMENTS AND THE LIKE

Henry P. Hall, Concord, Mass., assignor to GenRad, Inc., Concord, Mass.

Filed Jun. 1, 1978, Ser. No. 911,367
Int. Cl.³ G01R 27/02, 27/00
U.S. Cl. 324—62 **10 Claims**



1. Front-end circuit apparatus for impedance measuring circuits and the like having, in combination, input ac coupling transformer means; unknown and standard impedance means sharing a common terminal of series-connection therebetween and with their other terminals connected to the transformer means; a pair of grounded switching means, one connected to each of the said other terminals of the respective unknown and standard impedance means; means for selectively switching each of the pair of switching means correspondingly to ground said other terminals; and isolating amplifier means having its input connected to the said common terminal and its output adapted for connection to detector means.

4,242,632

METHOD AND APPARATUS FOR TESTING AXIAL-LEAD COMPONENTS

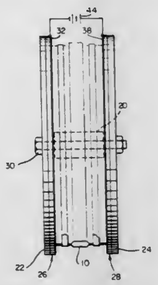
Robert A. Irvin, Sudbury, Mass., assignor to Semicon, Inc., Burlington, Mass.

Filed Sep. 11, 1978, Ser. No. 940,966
Int. Cl.³ G01R 31/02, 31/26
U.S. Cl. 324—73 R **5 Claims**

1. Apparatus for the simultaneous testing of a plurality of electrical components, each of which has first and second axial leads, said apparatus comprising

a. first and second electrode assemblies having first and second spaced electrodes with substantially parallel, oppositely facing electrode surfaces, respectively;

b. means rendering at least the first electrode resilient;
c. means for positioning the components between the electrode surfaces;
d. means for urging said first electrode into contact with the ends of said first leads and said second electrode into contact with the ends of said second leads;



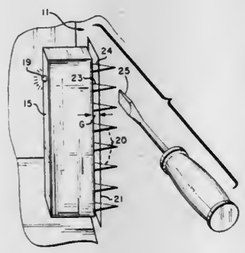
e. at least one of said electrodes being sufficiently thin that a failed component drawing excessive current therethrough will cause disintegration of said one electrode at the contact between said one electrode and a lead of said failed component, thereby disconnecting said failed component from said electrode.

4,242,633

INTEGRATED CIRCUIT LIGHT EMITTING ELECTRONIC MALFUNCTION CHECKING SYSTEM

Pierre L. Tissot, 863 Via de la Paz, Pacific Palisades, Calif. 90272

Filed Apr. 20, 1979, Ser. No. 31,948
Int. Cl.³ G01R *15/12*
U.S. Cl. 324—73 R **3 Claims**



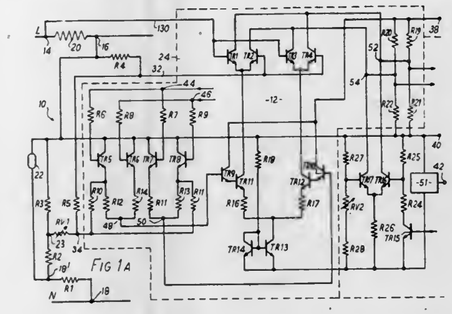
1. A serviceman's electronic malfunction checking system for an electronic chassis supporting a plurality of chips each containing micro-circuitry and connecting pins, in rows extending from one end of the chip to the other end, each of said plurality of chips further including:
(a) a normally de-energized light emitting diode visible from the exterior of the chip when energized;
(b) an amplifier circuit built into said chip and connected to said micro-circuitry in said chip, said amplifier circuit being biased to provide sufficient current to energize said light emitting diode only when connected thereto and only so long as said micro-circuitry is functioning normally; and
(c) specially selected first and second ones of said connecting pins respectively connecting to the output of said amplifier circuit and to said light emitting diode so that short circuiting of said first and second pins connects said light emitting diode to said amplifier circuit for energization thereby provided said sufficient current is present, whereby a serviceman can readily check for malfunctioning chips without having to remove the chip from said chassis by simply short circuiting said first and second connecting pins with a conducting probe and observing whether or not said light emitting diode is energized.

4,242,634

ELECTRONIC MULTIPLYING CIRCUITS

Eric Metcalf, Ropley, England, assignor to Enertec, Montrouge, France

Filed Apr. 13, 1979, Ser. No. 29,808
Claims priority, application United Kingdom, May 6, 1978, 18129/78
Int. Cl.³ G01R *21/06*
U.S. Cl. 324—142 **11 Claims**



1. An electronic multiplying circuit for multiplying together a first input signal and a second input signal, the multiplying circuit comprising:
a multiplier having a first input for receiving the first input signal, a second input, and an output;
an emitter-coupled pair of transistors, the collector of at least one of said transistors being coupled to the second input of the multiplier; and
a semiconductor switching circuit having an input for receiving the second input signal and first and second outputs coupled to the respective basis of said transistors, said switching circuit being operable to switch between first and second states in which the input of the switching circuit is alternately coupled to the respective bases of said transistors;
whereby, in operation, the magnitude of the signal applied by said emitter-coupled pair of transistors to the second input of the multiplier varies in dependence upon the second signal, and an output signal which varies in dependence upon the product of the first and second signals is produced at the output of the multiplier, the sense of the respective variations reversing with changes of the switching circuit between its first and second states.

4,242,635

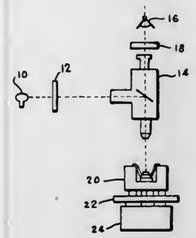
APPARATUS AND METHOD FOR INTEGRATED CIRCUIT TEST ANALYSIS

Daniel J. Burns, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 26, 1979, Ser. No. 6,839
Int. Cl.³ G01R *31/22*
U.S. Cl. 324—158 R **2 Claims**

1. A method of testing an electrical circuit by observing birefringent changes in a layer of liquid crystals produced by electric fields in the liquid crystal which are induced by electric fields in the circuit during the operation of the circuit, said method comprising the steps of:
applying a layer of liquid crystals over said circuit with all of the liquid crystal molecules oriented in substantially the same direction,

placing a transparent coverplate over said layer of liquid crystals by depositing an electrically conductive, optically transparent layer upon the lower surface of the coverplate, and
forming an electrical contact from the lower surface to the upper surface of the coverplate,
directing a beam of light through said layer with an optical system adapted to make said birefringent changes visible,
energizing said circuit to produce said birefringent changes by sequencing the circuit through a number of logic states, pausing the logical sequencing at one or more selected states,



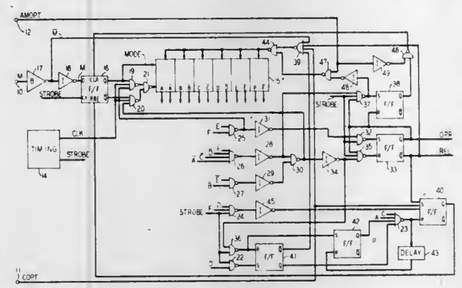
adjusting the duty cycle of the selected state or states to substantially 50% while the duty cycle of all other states is substantially lower,
recording the birefringent changes with said optical system,
adjusting the RMS electric fields appearing in the liquid crystal layer above selected conductor stripes by applying control signals to the electrical circuit with predetermined timing pauses therein to hold a selected state, and
observing said birefringent changes with said optical system, whereby the selected state birefringent changes may be observed or recorded.

4,242,636

DIGITAL OPERATE/RELEASE TIMER

John L. Gilmer, Falls Church, Va., and Joseph F. Rizzo, Lodi, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 24, 1978, Ser. No. 954,179
Int. Cl.³ H03K *5/20*; H04G *1/36*; H04K *1/17*
U.S. Cl. 328—63 **9 Claims**



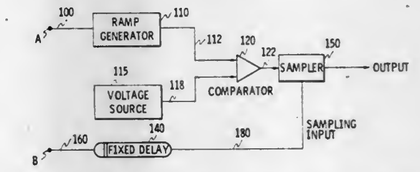
1. A timing circuit (the FIGURE) of the type employed to generate time delayed output pulse signals (OPR and REL) including an integrator (counter **15**) responsive to the presence (high state) of an input pulse signal (M at **10**) to integrate in a first sense, for example, a positive sense (count up), and to the absence (low state) of the input pulse signal (M at **10**) to integrate in a second sense, for example, a negative sense (count down), for generating an output change of state (OPR high and REL low) upon the integrator output (A-F) reaching a predetermined threshold value (for example a count of 48), CHARACTERIZED BY,
first means (**14, 16–24, 33, 40** etc.) responsive to the integrator (counter **15**) output (A, C, D, F) reaching a first prescribed value (for example a count of 13) in response to the presence of an input pulse signal (high state M at **10**) for controlling (via **16, 19, 21, 40**) the integrator (counter **15**) to integrate in the first sense (count up) from the first prescribed value toward the predetermined threshold value for a prescribed interval (for example a count of 40) regardless of the presence (high state) or absence (low state) of the input pulse signal (M at **10**).

4,242,637

APPARATUS FOR DETECTING SIGNAL PRECEDENCE

Keith M. Ferguson, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 3, 1978, Ser. No. 957,386
Int. Cl.³ H03K *5/26*
U.S. Cl. 328—110 **6 Claims**



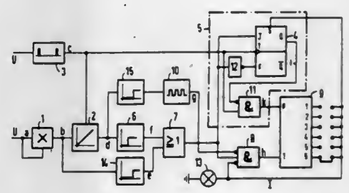
1. A method for determining the first to occur between first and second input signals at first and second points respectively, said method comprising the steps of:
providing a ramp signal which varies in a preselected manner in response to said first input signal;
providing a control signal in response to said second input signal and a preselected time delay;
determining the relative values of said ramp signal and a reference signal in response to said control signal; and
providing an indication of the first to occur between said first and second input signals in response to the relative values of said ramp signal and said reference signal.

4,242,638

CIRCUIT FOR MONITORING THE SQUARE OF THE RMS VALUE OF A PERIODIC SIGNAL

Helmut Glaser, Forchheim, and Ludwig Schick, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 24,513
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815089
Int. Cl.³ G01R *19/02, 21/06*; G06G *7/16*
U.S. Cl. 328—144 **8 Claims**



1. A circuit arrangement having a squarer and an integrator coupled thereto for monitoring the square of the RMS value of a periodic input signal coupled to said squarer comprising:
timing means supplying synchronizing pulses at intervals

separated by one period of the periodic input signal for resetting the integrator;

a first limit detector, coupled to the integrator, for generating a pulse when its limit is exceeded by the output signal of the integrator;

a counter, whose input is coupled to the limit detector via a first conjunctive logic element, for delivering, upon reaching a preset count, a continuous signal to an indicator for activating it and to the first conjunctive element; and

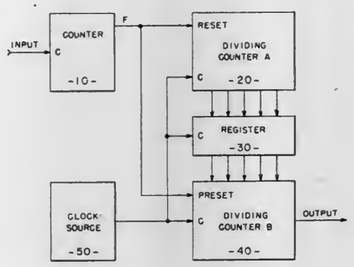
a gate circuit for feeding reset pulses to the reset input of the counter at the rate of the synchronizing pulses and for blocking delivery of the reset pulses so long as the first limit indicator delivers a pulse at every periodic time interval or when the preset count is reached in the counter.

4,242,639

DIGITAL PHASE LOCK CIRCUIT

James G. Boone, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 5, 1978, Ser. No. 939,762
Int. Cl.[2] H03B 3/04; H03K 5/18
U.S. Cl. 328—155 **6 Claims**



1. A phase lock circuit comprising:

means for providing an indication signal upon the occurrence of a predetermined number of transitions in an input signal;

means for providing a periodic signal;

first means for dividing the number of periodic signals occurring between successive indication signals by the number of predetermined transitions in the input signal to provide a quotient output signal;

second means for dividing the predetermined number of periodic signals by said quotient output signal to provide a periodic output signal having a frequency and phase corresponding to said input signal; and

a holding register means interposed between said first and said second means for holding the quotient output signal from said first means for use by said second means, said holding register means adapted to reset upon receipt of said indication signal.

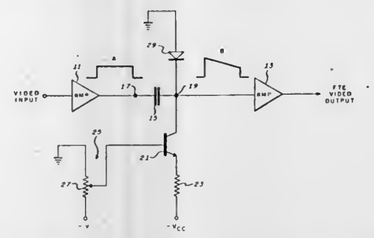
4,242,640

CURRENT DISCHARGE FAST TIME CONSTANT AMPLIFIER

Donald E. Bean, Ruckersville, Va., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,445
Int. Cl.[2] H03K 3/02, 4/02
U.S. Cl. 328—187 **4 Claims**

1. A fast time constant video amplifier circuit comprising a low output impedance amplifier input means coupled to receive video pulses, a high input impedance amplifier output means for providing video output pulses to external circuits, a series capacitor having first and second terminals coupled between said input and output means respectively, a constant current source connected between said second terminal and a reference voltage, diode means for clamping said second terminal to ground potential at the termination of a video pulse, and



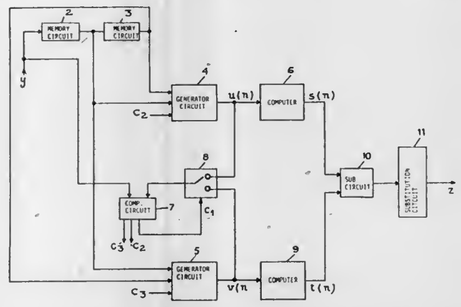
means to adjust the level of current flowing through said source.

4,242,641

METHODS AND APPARATUS FOR DEMODULATING A DIFFERENTIALLY PHASE-MODULATED SIGNAL

Jean P. Houdard, Orsay, France, assignor to Le Materiel Telephonique, Boulogne-Billancourt, France

Filed Apr. 4, 1979, Ser. No. 27,055
Claims priority, application France, Apr. 6, 1978, 78 10190
Int. Cl.[3] H03D 3/04
U.S. Cl. 329—126 **16 Claims**



11. Apparatus for demodulating a differentially phase-modulated digital input signal y comprising a series of digital samples $y_f(n)$, $y_k(n)$, $y_l(n)$, representative of sinusoidal signals priorly sampled at frequency F and encoded, for example, as signals x_j, s_k, and x_l of frequency f, said samples following each other in time upon each change of the initial phase of the analogue signal x representing the signal y before sampling and encoding, said apparatus demodulating said input signal y to produce an output signal z representing the digital data corresponding to the transmitted message, characterized by:

first (2; FIG. 1) and second (3) memory circuits connected to the source of the incoming digital signal y for memorizing the last two digital samples thereof received by said apparatus;

a first generator circuit (4) connected to the output of said first and second memory circuits for generating a series u(n) of digital samples of the series $x_k(n)$ from the samples stored in said first and second memories;

a first computing circuit (6) connected to the output of said first generator circuit for generating the series s(n) of the phases of the X_k sinusoidal signal digital samples of initial phase ϕ_k, from said series u(n);

a second generator circuit (5) connected to the output of said first and second memory circuits for generating a series V(n) of digital samples of the series $y_f(n)$ from the samples stored in said memories;

a second computing circuit (9) connected to the output of said second generator circuit for generating the series t(n) of the phases of the X_f sinusoidal signal digital samples of initial phase ϕ_f from said series v(n);

a comparison circuit (7) connected to said source of the incoming digital signal and to the outputs of said first and second generator circuits for comparing each digital sample of the input signal y with the digital sample of the same order number of one of said series u(n) and v(n);

a first switching circuit (8), connected to and controlled by an output from said comparison circuit, for switching on input to said comparison circuit between the output of said first generator circuit and said second generator circuit, depending upon the results of said comparison,

a subtracting circuit (10), connected to the outputs of said first and second computing circuits, for generating the phase difference between each term of the series of phases generated by said first computing circuit and the term having the same order number in the series of phases generated by said second computing circuit; and

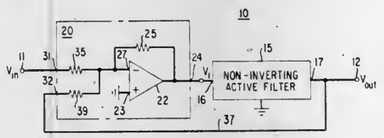
a substitution circuit connected to the output of said subtracting circuit and having stored therein a pre-determined law of correspondence for substituting for each phase difference generated by said subtracting circuit a group of bits in the output signal Z selected to represent this phase difference in accordance with said predetermined law.

4,242,642

POLE QUALITY FACTOR (Q) ENHANCEMENT TECHNIQUE FOR NOTCH FILTERS

Kenneth R. Laker, Staten Island, N.Y., and Jimmy Tow, Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1979, Ser. No. 37,299
Int. Cl.[3] H03F 1/34
U.S. Cl. 330—109 **15 Claims**



1. An enhanced pole quality factor Q notch filter section circuit comprising

input and output terminals,

a biquadratic notch filter section having an input and an output, the output of the biquadratic notch filter section being connected to the output terminal, and

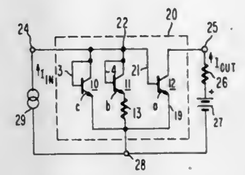
an enhancement amplifier having first and second inputs and an output, the first input of the amplifier being connected to the input terminal and the second input of the amplifier being connected to the output of the biquadratic notch filter section, the output of the enhancement amplifier being connected with the input of the biquadratic notch filter section for providing at the input of the biquadratic notch filter section negative feedback in pass and stop bands of frequencies and positive feedback in a transition range between the pass and stop bands of frequencies.

4,242,643

VARIABLE GAIN CURRENT AMPLIFIER

Arthur J. Leidich, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,366
Int. Cl.[3] H03G 3/30
U.S. Cl. 330—278 **12 Claims**



1. A current amplifier having input-current-dependent gain and comprising:

a current-to-voltage converter responsive to applied signal current for generating a control potential, the converter manifesting first, second and third signal current-to-voltage transfer functions for relatively low, intermediate and relatively high input signal current amplitude ranges respectively; and

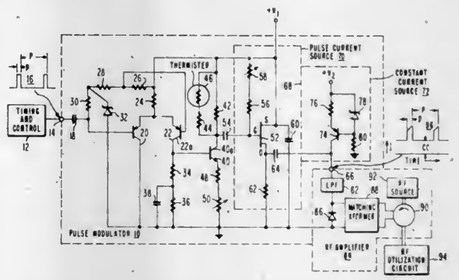
a voltage-to-current converter responsive to the control potential for providing an output current, which voltage-to-current converter exhibits output current related to signal current by first and second substantially constant factors respectively for the relatively low and relatively high amplitude ranges, and is variably related to signal current in the intermediate amplitude range.

4,242,644

PULSE MODULATOR FOR OPERATING A DEVICE IN THE AVALANCHE MODE

John O. Schroeder, Hamilton Township, Mercer County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,390
Int. Cl.[3] H03F 3/10, 3/60
U.S. Cl. 330—297 **8 Claims**

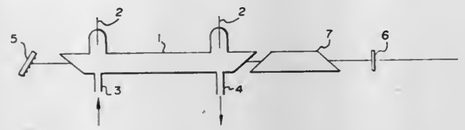


1. A pulse modulator for applying power to a device for causing it to operate in its avalanche mode of operation with a desired power output, said device having a voltage breakdown threshold, comprising in combination:

a constant current source coupled to said device for providing thereto a current which causes said device to operate just at its voltage breakdown threshold; and

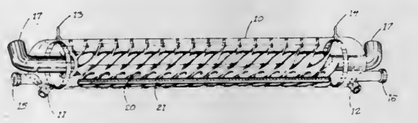
a source of pulse current also coupled to said device for producing periodic current pulses each of which, when added to said constant current, provides sufficient total current to provide the desired power output from said device.

4,242,645
GAS LASER SYSTEMS
Klaus J. Siemsen, Ottawa, and John Reid, Hamilton, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada
Filed Mar. 22, 1977, Ser. No. 780,062
Int. Cl.³ H01S 3/223
U.S. Cl. 331—94.5 G **4 Claims**



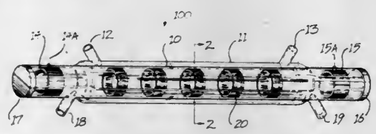
1. A gas laser system comprising:
- a resonant laser cavity;
- a discharge tube located within the laser cavity, said discharge tube containing a lasing gas selected from the group consisting of CO_2, an isotope of CO_2, N_2O, or an isotope of N_2O;
- pumping means within the discharge tube for energizing some of the molecules of the lasing gas to at least the 00°2 energy level; and
- a hot gas absorber cell located within the laser cavity, said hot gas absorber cell containing a gas identical to the lasing gas for absorbing the regular laser lines in emitted laser radiation allowing the lasing gas to lase in sequence laser lines.

4,242,646
SPIRAL FLOW CONVECTIVE LASER
John A. Macken, P.O. Box 696, Santa Rosa, Calif. 95402
Filed May 12, 1978, Ser. No. 905,186
Int. Cl.³ H01S 3/02, 3/045
U.S. Cl. 331—94.5 D **8 Claims**



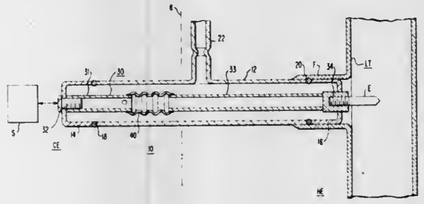
1. In a gas laser including means for supplying a lasing gas and means for producing an electrical discharge through said gas, the improvement comprising spiral fin assembly means for directing said gas in a spiral path, said spiral fin assembly means including at least one aperture in each fin through which said electrical discharge passes.

4,242,647
STABILIZED VORTEX CONVECTIVE LASER
John A. Macken, 4039 Shadow Hill Dr., Santa Rosa, Calif. 95404
Filed Oct. 27, 1978, Ser. No. 955,491
Int. Cl.³ H01S 3/03
U.S. Cl. 331—94.5 D **7 Claims**



1. In a convective gas laser including gas discharge tube means for supplying a lasing gas and means for producing an electrical discharge through said gas, the improvement comprising;
- at least one fin ring disposed in said tube concentrically about the longitudinal axis of said tube and to the flow of said gas,
- said fin ring including at least two adjacent groups of upstanding fins which project into the interior of said tube,
- adjacent ones of said groups of upstanding fins oriented relative to each other and to said ring thereby to each produce a circumferential deflection angle to said laser gas as it flows through said tube.

4,242,648
HIGH POWER ELECTRODE AND FEEDTHROUGH ASSEMBLY FOR HIGH TEMPERATURE LASERS
Chi-sheng Liu, Monroeville; Donald W. Feldman, Pittsburgh; Roy K. Williams, Murrysville Borough, and Lelland A. Weaver, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 29, 1978, Ser. No. 974,579
Int. Cl.³ H01S 3/02
U.S. Cl. 331—94.5 D **7 Claims**

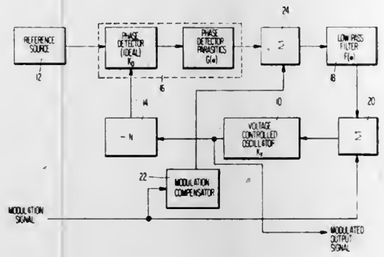


1. In a high temperature laser, a feed-through assembly comprising:
- an open-ended elongated tubular quartz envelope,
- a first and second molybdenum assembly sealed to either end of said quartz envelope to seal off the enclosed volume of said quartz envelope, said first molybdenum assembly including an electrical contact means for connection to an electrical excitation source, said second molybdenum assembly including an electrode adapter means and
- a tubular electrical conductor means positioned within said quartz envelope and connected between said electrical contact means of said first molybdenum assembly and said electrode adapter means of said second molybdenum assembly.

4,242,649
METHOD AND APPARATUS FOR MODULATING A PHASE LOCKED LOOP
Clyde Washburn, Jr., Fairport, N.Y., assignor to Harris Corporation, Melbourne, Fla.
Filed Jul. 13, 1979, Ser. No. 57,281
Int. Cl.³ H03C 3/08, 3/09
U.S. Cl. 332—18 **9 Claims**

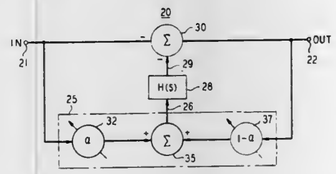
1. A method of modulating a phase-locked loop to provide linear frequency modulation over an extended frequency range, said loop having a voltage controlled oscillator, a phase detector for comparing an output signal of the voltage controlled oscillator with a reference signal and for producing an output signal related to the difference in a component of the two compared signals, and a low-pass filter for processing the output signal of the phase detector and applying the processed signal as a control input signal to the voltage controlled oscillator to control the frequency of an output signal from said oscillator, said method comprising the steps of:
- providing a modulation signal;
- summing the modulation signal with the control input signal

to thereby directly apply the modulation signal to the voltage controlled oscillator as an input signal;
- providing a summing junction in the phase-locked loop at a point located between the output terminal of the phase detector and the output terminal of the low-pass filter;



- preshaping the modulation signal to compensate for the transfer function of ideal and any non-ideal loop circuitry located between the output terminal of the voltage controlled oscillator and the summing junction; and
- applying the preshaped modulation signal to the summing junction to thereby add said preshaped modulation signal to the loop signal present at said summing junction.

4,242,650
ACTIVE VARIABLE EQUALIZER
Robert R. Cordell, Tinton Falls, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 13, 1978, Ser. No. 959,451
Int. Cl.³ H04B 3/14
U.S. Cl. 333—28 R **6 Claims**

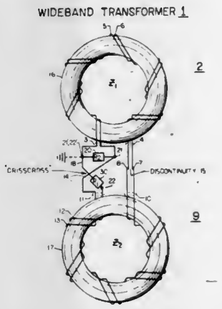


1. An active variable equalizer having an input terminal for receiving an input signal, an output terminal upon which an output signal is generated, and a transfer function between the input and output terminals, the equalizer being characterized by
- a circuit interconnected with the input and output terminals for variably combining the input and output signals into an intermediate signal equal to a weighted sum of the input and output signals, wherein the intermediate signal is a sum of first and second components, the first component being a portion of the input signal, the second component being a portion of the output signal and wherein the portion of the input signal is proportional to a fraction less than unity and the portion of the output signal is proportional to a remainder of unity less the fraction,
- a frequency dependent circuit having a transfer function proportional to H(s) and responsive to the intermediate signal for producing a frequency dependent additive feedforward signal and a negative feedback signal,
- means for combining the input signal with the additive feedback signal and with the negative feedback signal into the output signal generated on the output terminal, and
- the equalizer transfer function is proportional to an expression

$$\frac{1 + xF(s)}{x + F(s)},$$

wherein x is a ratio of the fraction to the remainder, F(s)=H(s)+1, and H(s) is independent of x.

4,242,651
WIDEBAND TRANSFORMER APPARATUS
Suhash C. Dutta Roy, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed Jun. 11, 1979, Ser. No. 47,295
Int. Cl.³ H03H 7/38; H01P 5/08
U.S. Cl. 333—32 **10 Claims**

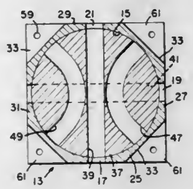


1. Electrical energy transfer apparatus comprising transmission line means having a first port and a second port, said transmission line means comprising a plurality of transmission lines respectively having different characteristic impedances, said transmission lines being connected together so that there is at least one partially reflecting characteristic impedance discontinuity formed by said transmission lines being connected together, each said discontinuity being located in said transmission line means between said first port and said second port; and
- input circuit means and output circuit means, one of said circuit means having a total resistive impedance R_2 and being connected across said first port, the other said circuit means having total resistive impedance R_1 in series connection with said second port, with said series being connected across said first port,
- said apparatus having values of R_1 and R_2 and of said characteristic impedances such that electrical energy from said input circuit passes into both said first and second ports and is reflected and transmitted at each said discontinuity in said transmission line means so that substantially all of said energy is delivered only to said output circuit.

4,242,652
FOUR PORT WAVEGUIDE SWITCH
Tsuneo Shishido, Rancho Palos Verdes; Philip A. Eyermann, Lawndale; William L. Vick, Yorba Linda, and Herman W. Cramm, Rolling Hills Estates, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Jul. 10, 1978, Ser. No. 922,895
Int. Cl.² H01P 1/10
U.S. Cl. 333—106 **5 Claims**

1. A four part waveguide switch comprising: a housing having a rotor-accepting cavity and first, second, third and fourth ports disposed therein;
- a rotor disposed in said cavity and having first and second channels therein defining first and second orthogonal radio frequency propagation paths respectively between said first and third ports and between said second and fourth ports when said rotor is in its first rotor position,

said rotor also including third and fourth oppositely curved channels defining third and fourth curved radio frequency propagation paths respectively between said first and second ports and between said third and fourth ports when said rotor is in its second rotor position, said third and fourth curved paths also defining fifth and sixth



radio frequency propagation paths respectively between said first and fourth ports and between said second and third ports when said rotor is in its third rotor position; and

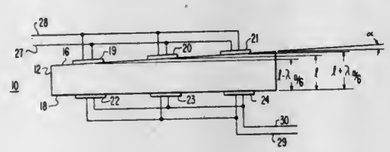
rotating means operatively coupled to said rotor for selectively moving said rotor to any of its three positions.

4,242,653

TRIPLE TRANSIT SUPPRESSION FOR BULK ACOUSTIC DELAY LINES

Robert A. Moore, Arnold, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 8, 1979, Ser. No. 37,070
Int. Cl.[2] H03H *9/30;* H01L *41/10*
U.S. Cl. 333—141 **2 Claims**



1. Electroacoustic apparatus for delaying signals and for providing wideband triple transit suppression about a predetermined center frequency comprising:

a substrate having an upper and lower surface, said substrate comprised of material suitable for propagating bulk acoustic waves,

a first transducer mounted on said upper surface for generating bulk acoustic waves toward said lower surface,

a second transducer mounted on said lower surface and positioned for receiving bulk acoustic waves from said first transducer and having a first acoustical path length from said first transducer to said second transducer,

a third transducer mounted on said upper surface for generating bulk acoustic waves toward said lower surface,

a fourth transducer mounted on said lower surface and positioned for receiving bulk acoustic waves from said third transducer and having a second acoustical path length from said third transducer to said fourth transducer;

a fifth transducer mounted on said upper surface for generating bulk acoustic waves toward said lower surface,

a sixth transducer mounted on said lower surface and positioned for receiving bulk acoustic waves from said fifth transducer and having a third acoustical path length from said fifth transducer to said sixth transducer,

said second acoustical path length being less than said first acoustical path length by one sixth wavelength of said predetermined center frequency, and

said third acoustic path length being greater than said first acoustical path length by one sixth wavelength of said predetermined center frequency,

means for coupling an input signal to said first, third and fifth transducer and

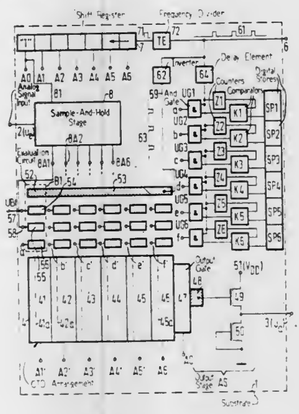
means for coupling an output signal from said second, fourth, and sixth transducer.

4,242,654

CTD TRANSVERSAL FILTER WITH PARALLEL INPUTS

Karl Knauer, Kirchseeon, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,726
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842630
Int. Cl.[3] H03H *15/02, 17/06, 17/284;* G11C *19/28*
U.S. Cl. 333—165 **8 Claims**



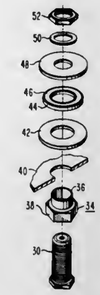
1. A charge transfer device (CTD) transversal filter, comprising: a CTD arrangement having stages constructed on a doped semiconductor substrate, the CTD having parallel inputs and evaluation circuits; the evaluation circuits each including a zone doped oppositely to the substrate, a first and second input gate, and a transfer gate; one of said first and second input gates being supplied with an input signal, the other of said first and second input gates being supplied with a constant D.C. voltage, the oppositely doped zone being supplied with a first clock voltage, and the transfer gate being supplied with a second clock voltage; the CTD arrangement also having an output stage at which a filtered output signal is tapped; comparators whose first inputs are connected to counter signals generated by counters supplied with a third clock voltage, whose second inputs are connected to digital signals generated by digital stores, and outputs of the comparators being connected to gate circuit means for blocking the evaluation circuits with respect to one of the supplied clock voltages in dependence upon a comparison between said counter signals and said digital signals; each of the stages of the CTD arrangement having its transfer electrode connected to a respective output of a respective stage of a shift register means for circulating an individual item of logic information therein in dependence upon a fourth clock voltage; and the shift register means creating at the output of the shift register stage containing this item of logic information, a first output voltage for transferring charge between the transfer electrode with which it is connected and an adjacent transfer electrode, the shift register means providing output voltages through the other shift register stage outputs for the storage of charge beneath those transfer electrodes to which they are connected which are not participating in said transfer of charge.

4,242,655

RF CONNECTOR ASSEMBLY WITH LOW FREQUENCY ISOLATION

David J. Carlson, and John P. Yu, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,781
Int. Cl.[3] H01R *17/10*
U.S. Cl. 333—183 **7 Claims**



7. An RF connector assembly adapted for use with a utilization device, said assembly having an inner conductor, and, an outer electrical conductor defined by a tube-like housing, said housing being coaxial with said inner conductor, and being threaded along the axial direction, said assembly being adapted for mounting on a wall of said utilization device through a hole in said wall; said assembly comprising:

an insulating bushing having a sleeve member fitted over at last a portion of said tube-like housing; said bushing having a surface disposed perpendicularly with respect to said axial direction adapted for bearing upon one side of said wall, said member being adapted for passing through said hole;

a ceramic capacitor formed in the shape of a washer and having conductive material on first and second major flat surfaces thereof, said washer shaped capacitor having a center hole with a diameter sufficient to fit said capacitor over said housing and said sleeve member, said conductive material on said first flat surface of said capacitor being adapted for electrical contact with the other side of said wall;

a conductive washer having a center hole sufficient for fitting over said housing, said conductive washer being brought into electrical contact with said conductive coating on said second flat surface of said capacitor;

a lock washer having a center hole sufficient for fitting over said housing, said lock washer bearing against said conductive washer;

a nut threaded onto said housing and bearing upon said lock washer, said nut adapted for securing said assembly to said wall when tightened.

4,242,656

CURRENT PUMPED VOLTAGE DIVIDED ABSORBOR

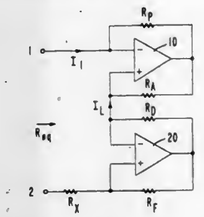
Robert L. Forward, Oxnard, and Dale M. Sipma, Sherman Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 8, 1979, Ser. No. 46,746
Int. Cl.[3] H03H *11/46, 11/54*
U.S. Cl. 333—213 **4 Claims**

1. A circuit arrangement having first and second terminals comprising, in combination:

a first differential-input operational amplifier having a negative feedback resistor R_D and a positive feedback resistor R_A connected between the output and inputs thereof, said first operational amplifier being disposed so that the inverting input thereof is connected to said first terminal;

a second differential-input operational amplifier having a negative feedback resistor R_D and a positive feedback resistor R_F connected between the output and inputs thereof, said second operational amplifier being disposed so that the inverting input thereof is connected directly to



the non-inverting input of said first operational amplifier; and

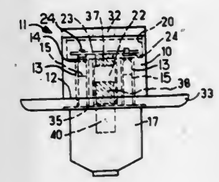
means for connecting the non-inverting input of said second operational amplifier to said second terminal.

4,242,657

ELECTRIC CONNECTOR

Gustave Chaillot, 8 rue Alsace Lorraine, 92 Boulogne sur Seine, France

Filed Nov. 17, 1978, Ser. No. 961,727
Claims priority, application France, Aug. 2, 1978, 78 22791
Int. Cl.[3] H01H *9/00;* H01R *11/30, 33/30*
U.S. Cl. 335—207 **6 Claims**



1. An improved electric connector of the type including

a female tapping socket having at least one jack,

a male plug assembly for coupling to said tapping socket and having a plug element electrically engageable with said jack,

a movable member having a contact element located thereon, said movable member being movably mounted in said tapping socket for movement between an operative position wherein said contact element is in electrical contact with said jack and an inoperative position wherein said contact element is spaced from said jack and thereby not in electrical contact therewith,

terminal means located on said tapping socket for receiving electrical power,

means for electrically connecting said terminal means to said contact element,

magnetic actuating means for magnetically moving said movable member to said operative position upon the coupling of said plug assembly to said tapping socket and for magnetically holding said movable member in said operative position while said plug assembly and said tapping socket remain coupled,

magnetic biasing means located in said tapping socket for magnetically moving said movable member to said inoperative position upon the uncoupling of said male plug assembly from said tapping socket,

said movable member including magnetic material therein for attraction by said magnetic actuating means and said magnetic biasing means,

wherein said improvement comprises said magnetic material being substantially non-remanent for preventing said mag-

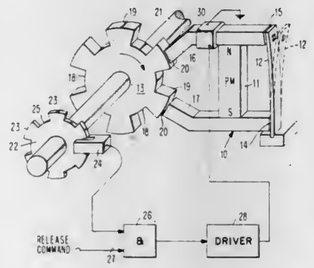
netic material from being magnetized or becoming magnetized by prolonged magnetic influence from either said actuating means or said biasing means and thus being or becoming capable of moving said movable member to said operative position by magnetic attraction to any unmagnetized magnetic material in the vicinity of said tapping socket.

4,242,658

MAGNETIC ACTUATOR USING MODULATED FLUX

Edward F. Helinski, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,297
Int. Cl.³ H01F 7/18
U.S. Cl. 335—237 **11 Claims**



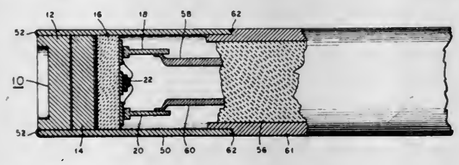
1. Magnetic actuator apparatus comprising, in combination:
magnetic core means having a pair of pole pieces;
means for producing unidirectional magnetic flux in said core structure at said pole pieces cyclically varying between high and low flux densities;
actuator means of magnetically permeable material attracted across said pole pieces in a captured position by said varying flux and being biased toward a released position; and
means selectively operable when said varying flux is less than said high density for further reducing said magnetic flux to a level permitting release of said actuator means.

4,242,659

THIN FILM RESISTANCE THERMOMETER DETECTOR PROBE ASSEMBLY

Ronald D. Baxter, and Paul J. Freud, both of Furlong, Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 15, 1979, Ser. No. 84,942
Int. Cl.³ H01C 7/00; G01K 3/00
U.S. Cl. 338—28 **7 Claims**



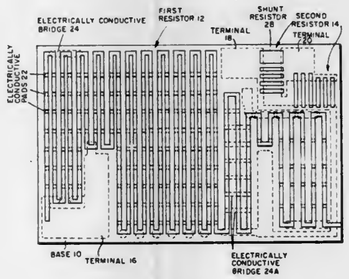
1. A resistance thermometer detector probe comprising:
a cylindrical sleeve;
insulator means for carrying leads through said sleeve;
a header mounted in the end of said sleeve, said header including
a first button of thermally conductive material;
a second button of a soft metal having a high thermal conductivity and a high diffusivity;
a third button of insulating material;
means for joining said buttons so that said second button is sandwiched between the first and third buttons with good thermal contact therebetween;
thick film deposits on the exposed surface of said third button, one of said deposits being in the center region of the surface and two other deposits being located in flanking relationship to the center region;
a thin film resistance thermometer chip affixed to said center region;
connectors for providing connection of said leads with the respective flanking regions; and
means for electrically connecting said resistance thermometer between said flanking regions.

4,242,660

THICK FILM RESISTORS

Theodore F. Cocca, Everett, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 8, 1979, Ser. No. 37,201
Int. Cl.³ H01C 10/00
U.S. Cl. 338—195 **4 Claims**



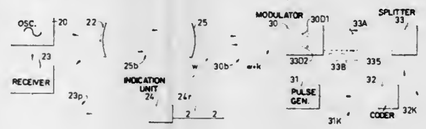
1. A thick film resistor disposed on a substrate between a first and a second terminal, such resistor comprising:
(a) a plurality of similarly shaped electrically conductive pads disposed on the substrate at equal distances between the first and the second terminal; and
(b) a thick film resistor in the shape of a strip on the substrate interconnecting the first and the second terminals, such resistor overlying each one of the plurality of similarly shaped electrically conductive pads.

4,242,661

DEVICE FOR REGISTRATION OF OBJECTS

Bengt T. Henoch, Skarholmen, and Eilert Berglind, Bandhagen, both of Sweden, assignors to Stifelsen Institutet for Mikrovagsteknik Vid Tekniska Hogskolan i Stockholm, Stockholm, Sweden

Filed Mar. 16, 1976, Ser. No. 667,306
Claims priority, application Sweden, Mar. 27, 1975, 7503620; Jan. 12, 1976, 7600204
Int. Cl.³ G08G 1/00; G01S 13/74; H03C 3/00
U.S. Cl. 340—23 **31 Claims**



1. A device for registration of a first type of objects, here called registration objects, which move relative to a second type of objects, here called registration places, which registration objects, for example, may be vehicles, and the registration places may be places along a road section passed by the vehicles, which device comprises a plurality of recording units

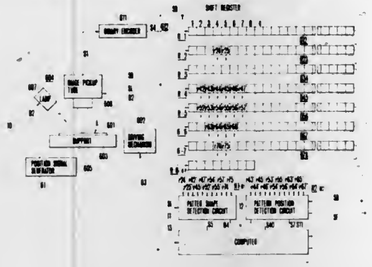
attached one in each registration place or on each registration object, and a plurality of registration transceivers attached one on each registration object or in each registration place, and each recording unit comprising an emitter (20), a receiver (23) and an indication unit (24), and each registration transceiver comprising (a) a frequency converter for converting a first signal received from said emitter to a second signal without adding new energy to the signal, which second signal is frequency shifted by a certain amount relative to the first signal, (b) a coding device to provide said second signal with a code individual for the registration transceiver and (c) an emitter device for emitting said second coded signal, said receiver of the recording unit being adapted to receive said second signal, and its indication unit being adapted to indicate said code, characterized in that said frequency converter comprises a modulator, which modulates the first signal in such a manner, that at least one sideband frequency component is formed, and that the coding device is adapted to provide the frequency component with said code individual for the registration transceiver, preferably by starting and stopping said modulator in accordance with a pattern constituting said code.

4,242,662

METHOD AND APPARATUS FOR PATTERN EXAMINATION

Bunjiro Tsujiyama, Musashino; Kunio Saito, and Kenji Kurihara, both of Tokorozawa, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Mar. 30, 1979, Ser. No. 25,447
Claims priority, application Japan, Oct. 16, 1978, 53-127654
Int. Cl.³ G06K 9/32
U.S. Cl. 340—146.3 H **8 Claims**



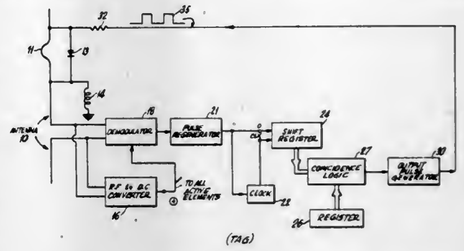
1. A method of examining a pattern comprising the steps of:
(a) detecting a pattern to be examined in accordance with regions of the pattern corresponding to picture elements on scanning lines of a sensor to produce binary video signals respctively from said regions;
(b) memorizing as parallel information the binary video signals in P shift registers having each Q memory elements, said P shift registers being connected in series via delay circuits each consisting of N-Q memory elements, where N is the number of picture elements on one scanning line, $Q<N$ and $P<N$;
(c) fetching said parallel information for logically processing the same so as to generate examination outputs pertaining to the shape and position of the pattern to be examined, said examination output pertaining to the position of the pattern to be examined including examination outputs concerning vertical and horizontal edges of the pattern; and
(d) judging the existence of a horizontal edge when defective pattern position data on the basis of detection of vertical edges is obtained from successive scanning lines of less than a predetermined number.

4,242,663

ELECTRONIC IDENTIFICATION SYSTEM

Leo Slobodin, Holmdel, N.J., assignor to Lockheed Electronics Corporation, Plainfield, N.J.

Filed Feb. 1, 1979, Ser. No. 8,798
Int. Cl.³ H04Q 9/00; G01S 9/56
U.S. Cl. 340—152 T **13 Claims**



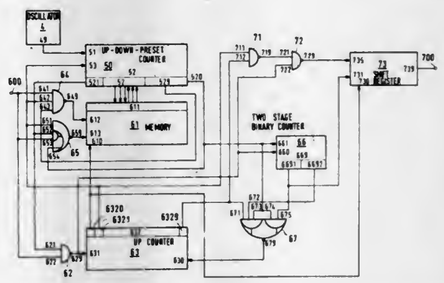
1. In combination in electronic identification apparatus, transceiver means including means for emitting a carrier modulated with a digital word, means for recovering a reflected signal of like frequency, and means for processing said recovered like frequency signal to determine the incidence of a tag-signalling amplitude variation therein, and at least one tag circuit means, said tag circuit means including an antenna, register means for storing a tag encoding, demodulator means connected to said antenna for recovering said modulated digital word, controlled means for selectively varying the electrical length of said antenna comprising selectively conductive means connected in parallel with a section of said antenna, and means connected to said demodulator means and said register means responsive to a match between the incoming demodulated digital word and the encoding contents of said register means for signalling said control means to vary said antenna electrical length comprising means for turning on said selectively conductive means responsive to the output of said match responsive means.

4,242,664

REMOTE CONTROL ARRANGEMENT

Guenter Lindstedt, and Wilfried W. Gehrig, both of Freiburg, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Aug. 11, 1978, Ser. No. 933,014
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737467
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—168 S **4 Claims**



1. In a remote control system of the type including a transmitter capable of transmitting a digital control command signal comprising a predetermined number of pulses, each indicative of a binary one or a binary zero, with a binary one manifesting a separation from a successive pulse of a fixed period 2T, with

a binary zero manifesting a separation from a successive pulse of a fixed period T, said control signal always of a given pattern as starting with a start pulse X, a first command pulse C always following said X pulse by the period T with a fixed number of information pulses indicative of binary ones and zeroes, as determined by said fixed period separation, following said first command pulse, with a terminating end pulse Y spaced from said last information pulse by the period 3T, whereby a complete control command signal is always of the form X,C, I_1, I_2 . . . I_NY, where:

I_1=first binary bit (zero or one)

I_2=second binary bit (zero or one)

I_N=last binary bit (zero or one)

wherein:

if I_1 is a zero, it is separated from I_2 by T, and if I_1 is a one, it is separated from I_2 by 2T,

the combination therewith of receiving apparatus for detecting said command signal as transmitted, comprising:

an oscillator circuit for providing a continuous train of pulses, each separated by a substantially smaller period than said fixed period T, with said pulse train at a given random frequency with respect to said command signal,

an up-down counting means responsive to said continuous train of pulses for counting said pulses in an up direction in a first mode and a down direction in a second mode,

first logic means coupled to said counter and responsive to said start pulse X for causing said up counter to commence counting said train of pulses in said first mode,

memory means coupled to said up-down counter and operative to store said count upon receipt of a control signal,

second logic means coupled to said memory means and responsive to said first command pulse C to provide said control signal to cause said memory to store said count indicative of a given number of pulses emanating from said oscillator during the period T as separating said X pulse from said first command pulse C, said logic means including means for coupling said control signal to said up-down counter to cause said counter to commence counting in said second mode,

zero detecting means coupled to said up-down counter and operative to decode an all zero state indicative of said counter counting down said period T, said detecting means including means for transferring said count as stored in said memory to said up-down counter to again cause said counter to count down from said stored count,

binary counting means coupled to said zero detecting means and responsive to said input signal to provide an output indicative of the number of all zero states manifested by said up-down counter between successive pulses of said command signal, whereby a count of one manifests the receipt of a binary zero indicative of a T pulse separation, a count of two manifests the receipt of a binary one indicative of a 2T pulse separation and a count of three manifests receipt of a terminating pulse indicative of a 3T separation,

register means coupled to said binary counting means and responsive to said input signal for storing values indicative of binary ones and zeroes as determined by said T or 2T separation, with said data as stored indicative of said information bits of said digital command signal.

4,242,665

TWO-WIRE TRANSMITTER

David J. Mate, San Diego, Calif., assignor to Action Instruments Company, Inc., San Diego, Calif.

Filed Sep. 15, 1978, Ser. No. 942,638

Int. Cl.³ G08C *19/04;* G01R *27/00*

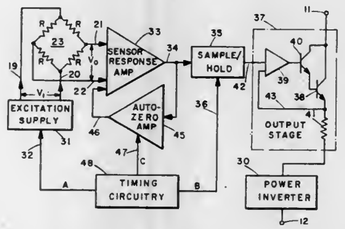
U.S. Cl. 340—870.38 **10 Claims**

1. A two-wire transmitter for tramsitting information via a pair of wires having an external power supply connected thereto, said transmitter comprising;

means for receiving a predetermined amount of power via said pair of wires from said external power supply;

means for storing a portion of said received power during spaced apart first time intervals;

means for exciting an external sensor with said stored power during second tie intervals that are substantially shorter than said first time intervals and are spaced between respective ones of said first time intervals;



means for sampling and holding the excitation output of said sensor in synchronization with said excitation thereof; and

variable resistance means for insertion in series with said pairs of wires and responsive to said held excitation output from said sensor to allow a current representative thereof to flow through said pairs of wires.

4,242,666

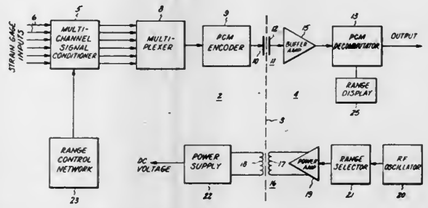
RANGE SELECTABLE CONTACTLESS DATA ACQUISITION SYSTEM FOR ROTATING MACHINERY

John M. Reschovsky, Schenectady, and Gerald P. Hunt, Cohoes, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 23, 1979, Ser. No. 41,725

Int. Cl.³ G08C *19/16, 15/06*

U.S. Cl. 340—870.28 **8 Claims**



1. In combination with apparatus having a stationary member and a rotational member or rotor adapted to rotate at high speed within said stationary member, a multichannel data acquisition system for acquiring physical measurement data on parts of said rotational member comprising:

a data collection-transmission portion mounted on and rotatable with said rotational member, said data collection-transmission portion including means to provide a composite digital data signal containing said physical measurement data;

a stationary data reception portion adapted to receive said composite digital data signal, said data reception portion having means for generating an RF signal;

means for inductively coupling said RF signal from said stationary portion to said data collection-transmission portion to provide operating power to said data collection-transmission portion; and,

means for capacitively coupling said composite digital data signal from said data collection-transmission portion to said stationary portion.

4,242,667

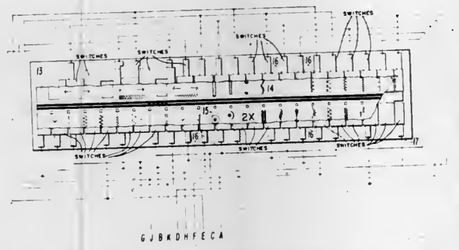
HIGH DENSITY PROXIMITY SWITCH ARRANGEMENT

Barney D. Hunts, Mountain Lakes, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 31, 1978, Ser. No. 938,626

Int. Cl.³ G06F *3/02;* D05B *3/00*

U.S. Cl. 340—365 R **2 Claims**



1. A control panel for an appliance having a multiplicity of operating capabilities, functions and conditions, said control panel comprising:

means for presenting to an operator of said appliance indicia representative of said operating capabilities, functions and conditions of said appliance;

a plurality of switch devices which are interconnected in several groups and arranged with respect to said presenting means so as to have a switch device from a different switch group on each side of each indicium of said indicia, with adjacent indicia sharing a switch device, thereby to provide a unique pair of switch groups for each indicium of said indicia;

means for determining the actuation of any pair of said switch groups; and,

means for decoding the specific operating capability, function and condition selected by actuation of said any pair of said switch groups.

4,242,668

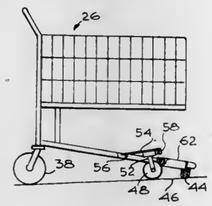
CART THEFT PREVENTION SYSTEM

Walter Herzog, 20338 Bryant St., Canoga Park, Calif. 91306

Filed Apr. 30, 1979, Ser. No. 28,042

Int. Cl.³ G08B *1/08;* B60R *25/08;* B62D *39/00*

U.S. Cl. 340—539 **14 Claims**



1. An improved cart theft prevention system, said system comprising, in combination:

a. signal sending means; and

b. at least one cart having a signal receiving means secured thereto which is adapted to receive a signal from said sending means while at a distance therefrom, said cart comprising, in combination:

i. a frame adapted to support and contain a load,

ii. a sub-frame adjacent said frame and bearing spaced cart-supporting wheels,

iii. pivot means pivotally securing one end of said sub-frame to said frame, and

iiii. latch means spaced from said pivot means, secured to said frame and sub-frame and releasably securing said sub-frame to said frame.

c. said signal receiving means on said cart connected to said latch means and responsive to a signal from said signal sending means, said signal controlling movement of said latch means so as to enable movement of the sub-frame and the wheels on said sub-frame into a cart-immobilizing position.

4,242,669

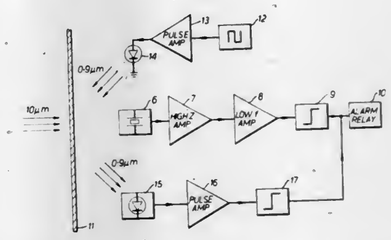
PASSIVE INFRARED INTRUDER DETECTION SYSTEM

David W. Crick, West Molesey, England, assignor to B. A. Security Systems Limited, West Molesey, England

Filed May 4, 1979, Ser. No. 35,844

Int. Cl.³ G08B *13/18, 29/00*

U.S. Cl. 340—567 **9 Claims**



1. Radiation detection apparatus, comprising

(a) first detector means (6–9) for detecting radiation of a first wavelength emitted by a radiation source;

(b) indicating means (10) connected with said first detector means and operable when the detected radiation exceeds a first level; and

(c) reflection-responsive means operable when an obturating element (11) is positioned between the radiation source and said first detector means, said second indicating means including

(1) transmitter means (14) adjacent said first detector means for transmitting a signal of a second wavelength in the general direction of the radiation source; and

(2) second detector means (15–17) adjacent said first detector means for detecting the signal of second wavelength when reflected from said obturating element (11) for operating an indicating means when the level of the reflected signal received by said second detector means exceeds a second level.

4,242,670

PHOTOSENSITIVE ALARM SYSTEMS

William V. Smith, 1617 Duke St., Memphis, Tenn. 38112

Filed Mar. 2, 1979, Ser. No. 17,148

Int. Cl.³ G08B *13/08, 13/18*

U.S. Cl. 340—568 **22 Claims**

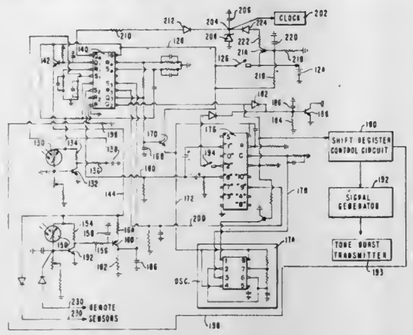
1. A photosensitive alarm system for detecting unauthorized intrusions into a protected area normally unexposed to ambient light, comprising:

a photosensitive trigger circuit operable upon exposure of the protected area to ambient light for generating a trigger signal;

a gate circuit coupled to said photosensitive trigger circuit for producing a control signal in response to the said trigger signal;

a warning circuit coupled to said gate circuit for producing

an alarm signal in response to said control signal to indicate detection of an intrusion into the protected area; and



a photosensitive arming circuit operable in the absence of ambient light in the protected area for enabling said gate circuit to respond to said trigger signal.

4,242,671

TRANSPONDERS

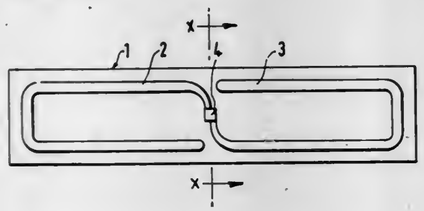
Graham S. Plows, Science Park, Milton Rd., Cambridge, CB4, 4BN, England

Filed Dec. 8, 1978, Ser. No. 967,569

Claims priority, application United Kingdom, Dec. 9, 1977, 51445/77

Int. Cl.³ G08B *13/24*

U.S. Cl. 340—572 **3 Claims**



1. A passive transponder tag comprising

a flexible substrate;

at least one antenna disposed on said substrate for the reception and retransmission of electromagnetic wave energy;

a member including a body of piezoelectric material disposed on said substrate and connected to said antenna and adapted to convert received electromagnetic energy into an acoustic surface wave and to convert the acoustic wave into electromagnetic energy for retransmission by said antenna; and

means defining a recess between said member and said substrate for permitting a surface of the piezoelectric material to remain free for the propagation and sustaining of the acoustic surface wave.

4,242,672

PATIENT MONITORING SYSTEM AND SWITCH

Robert L. Gault, 140 Gilman St., Garden City, Mich. 48135

Filed Nov. 9, 1977, Ser. No. 849,809

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—573 **9 Claims**

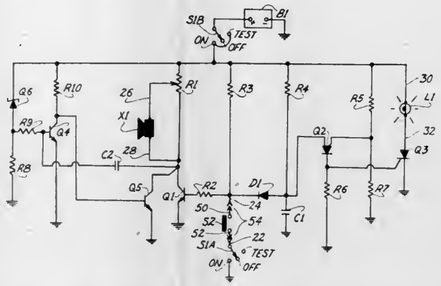
1. Patient monitoring apparatus for signaling patient egress from an object of patient occupancy, such as a bed, chair, or the like, comprising:

switch means associated with said object selectively operable to a first state when said object is occupied and to a second state when said object is unoccupied;

an audible alarm for providing an audible alarm signal;

a visual alarm for providing a visual alarm signal; and

circuit means operatively coupling said switch means and said audible alarm and visual alarm effective to cause said audible alarm to give said audible alarm signal when said switch means is in its second state and to not give said audible alarm signal when said switch means is in its first



state, and including time delay circuit means effective to cause said visual alarm signal to be given in predetermined time delayed relationship to the operation of said switch means to its second state from its first state only if said switch means is continuously maintained in its second state for the duration of the predetermined time delay, said circuit means being further effective to cause said visual alarm to continue giving said visual alarm signal independent of subsequent operation of said switch means back to its first state.

4,242,673

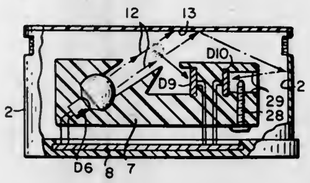
OPTICAL PARTICLE DETECTOR

Glenn F. Cooper, Hingham, Mass., assignor to American District Telegraph Company, Jersey City, N.J.

Filed Mar. 13, 1978, Ser. No. 885,369

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—630 **5 Claims**



1. An optical particle detector comprising:

means including wall means forming a chamber;

means for directing light on a path through the chamber;

a first photovoltaic cell optically disposed to respond primarily to background light scattered from the wall means and from the path by particles in the path to produce a first signal proportional to particle scattered light and background light;

a second photovoltaic cell disposed outside the through path and optically disposed to view substantially entirely background light to which the first cell is exposed and which is scattered from the wall means around and outside the through light path to produce a second electrical signal across the second cell proportional to background light; and

circuit means connecting the two cells with the anode of each cell coupled to the cathode of the other cell so as to produce an output signal substantially only proportional to particle scattered light and substantially independent of background light scattered from outside the through light path.

4,242,674

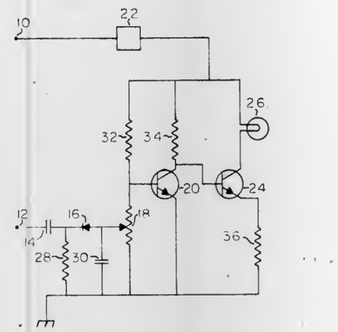
ALTERNATOR FAILURE WARNING INDICATOR

Edward W. Wheeler, R.F.D. #2, Elizabethton, Tenn. 37643

Filed Jan. 8, 1979, Ser. No. 1,919

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—635 **1 Claim**



1. In an aircraft equipped with an electrical system comprising an alternator with solid state diode rectifiers producing direct current as the principal component of the total current output when operating normally, the improvement comprising a warning indicator selected from the group consisting of those giving visible and audible signals, said indicator giving a tangible warning to an aircrew member of said aircraft when the alternating current component of said total current reaches a predetermined level symptomatic of incipient failure of some component of said alternator or said solid state rectifiers, said indicator comprising means conducting current from said electrical system to switching means responsive to a preselected level of the alternating current from said electrical system comprising, in the positive side of said switching means, an integrated circuit which will accept an input ranging from 12 to 24 nominal volts and have an output of 12 nominal volts, in the negative side a blocking capacitator, a diode rectifier and a variable resistance controlling the voltage to the base of an NPN transistor, the collector of said transistor directly connected to the base of a second NPN transistor such that when said first transistor is conducting said second transistor is non conducting and vice versa such that when said first transistor is non-conducting said second transistor is conducting current in series with said warning indicator and activating said indicator, the level of said alternating current which will activate said indicator being controlled by a pre-selected level of said variable resistance.

4,242,675

DISPLAY AND KEYBOARD SCANNING FOR ELECTRONIC CALCULATION OR THE LIKE

Gary W. Boone, and Michael J. Cochran, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 420,999, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 163,565, Jul. 19, 1971, abandoned. This application Dec. 2, 1977, Ser. No. 856,932

Int. Cl.² G06F *3/14*

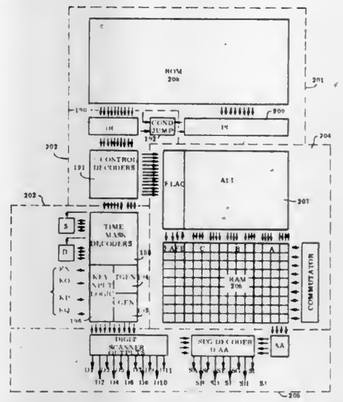
U.S. Cl. 340—711 **27 Claims**

1. A calculator system comprising:

(a) a plurality of key switches for entering information into said calculator system, the switches being connected in an array of rows and columns;

(b) a plurality of display elements arranged in sequence to represent multiple digits or characters, the display element having first input terminals coupled to receive coded display outputs of the calculator system;

(c) means for generating keyboard/display timing signals for simultaneously energizing individual columns in the switch array and second input terminals of the display elements; and



(d) programmed scanner means provided in the calculator system responsive to inputs from rows of key switches in correlation with the keyboard/display timing signals for entering information into the calculator system.

4,242,676

INTERACTIVE DEVICE FOR DATA INPUT INTO AN INSTRUMENT OF SMALL DIMENSIONS

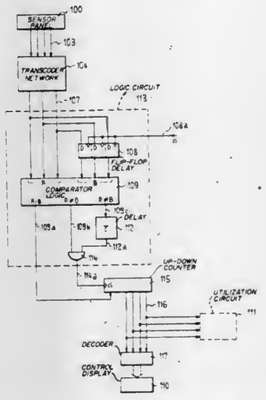
Christian Piguet, and Jean-Felix Perotto, both of Neuchatel, Switzerland, assignors to Centre Electronique Horloger SA, Neuchatel, Switzerland

Filed Dec. 13, 1978, Ser. No. 968,917

Claims priority, application Switzerland, Dec. 29, 1977, 16178/77; Jul. 17, 1978, 7690/78

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—711 **22 Claims**



1. An interactive device for the input of data into an instrument of small dimensions, comprising: at least one manually actuated sensor having a plurality of N electrodes placed side by side, said N electrodes defining a number greater than N of possible positions of a finger on the sensor; a control display unit for displaying the data to be entered into said instrument to permit inspection of said data; a transcoder coupling said sen-

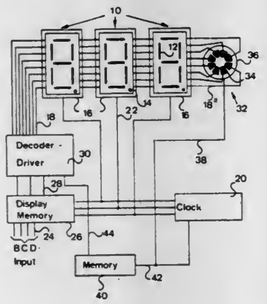
sor to said control display unit for delivering output signals to said control display unit, each discrete output signal of said transcoder corresponding to one of said possible positions of the finger on said sensor; and electronic means coupled to said control display unit for processing said data; said control display unit being responsive to output signals of said transcoder produced by the movement and position of the finger on said sensor to cause the search and selection, respectively, of one symbol to be entered into said instrument from an alphabet of greater than N symbols.

4,242,677

MONITORING DEVICE AND METHOD FOR A MULTIPLEXED SEGMENTAL DISPLAY

Eberhard Jonath, Volketswil, Switzerland, assignor to Mettler Instrumente AG, Greifensee-Zurich, Switzerland

Filed May 24, 1979, Ser. No. 42,249
Int. Cl.³ G09F *9/32*
U.S. Cl. 340—715 **8 Claims**



1. In a display having a plurality of display units each having a multiplicity of display segments having a common electrode, each of said display segments further having an individual electrode, said display means further having first connecting means for connecting corresponding ones of said individual electrodes in said display units to each other thereby forming electrode sets, energizing means having a plurality of energizing lines each connected to one of said electrode sets for energizing said electrode sets in accordance with the symbol to be displayed under control of read-out signals, and multiplexer means connected to said common electrodes and said energizing means for energizing said common electrodes in a predetermined sequence and for applying corresponding read-out signals to said energizing means:

a monitoring system comprising

a monitoring unit having a plurality of monitoring segments having a common electrode, each of said monitoring segments further having an individual electrode;

second connecting means for connecting each of said individual electrodes of said monitoring segments to one of said electrode sets, thereby forming a plurality of extended electrode sets;

means in said multiplexer means for extending said predetermined sequence to include said common electrode of said monitoring unit thereby creating an extended sequence; and

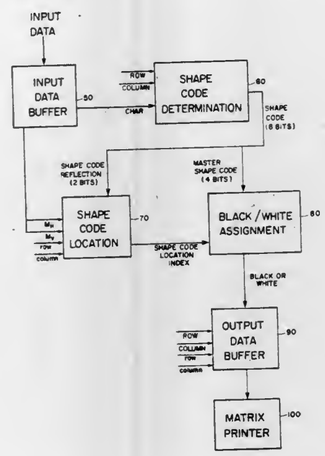
additional means connected to said energizing means for applying a test signal energizing all of said extended electrode sets to said extended electrode sets during energization of said common electrode of said monitoring unit, thereby energizing all of said monitoring segments only if all of said individual electrodes forming said electrode sets are in operative condition.

4,242,678

VARIABLE SIZE CHARACTER GENERATION USING NEIGHBORHOOD-DERIVED SHAPES

Daniel W. Somerville, Hingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jul. 17, 1978, Ser. No. 925,024
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—728 **20 Claims**



1. A method for producing expanded versions of matrix defined characters of constant point density comprising the steps of:

a. defining each character through a basic character matrix wherein each element consists of either "black" or "white";

b. assigning a shape and corresponding code to each element of the basic character matrix on the basis of a predetermined identification of said shape with the pattern of blacks and whites in a neighborhood of the basic character matrix centering on said element;

c. producing a quantized representation of said shape in response to said code, having a matrix pattern of black and white elements;

d. coordinating said quantized representation with an expansion matrix subdivided in accordance with desired horizontal and vertical expansion factors;

e. forming an expanded point array with elements matching the subdivisions of said expansion matrix such that each element of the expanded point array is assigned a black if and only if the center of the corresponding expansion matrix subdivision coincides with a black element of said quantized representation; and

f. combining the expanded point arrays in a matrix defined by the ordering of elements of said basic character matrix.

4,242,679

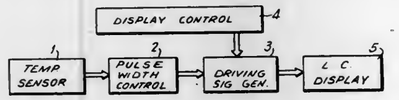
LIQUID CRYSTAL DISPLAY MECHANISM

Shinji Morozumi; Yoshio Yamazaki; Tatsushi Asakawa, and Yasunori Nakazaki, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sep. 13, 1978, Ser. No. 941,881
Claims priority, application Japan, Sep. 13, 1977, 52/110763
Int. Cl.³ G02F *1/13*
U.S. Cl. 340—765 **14 Claims**

1. A liquid crystal display driving circuit comprising in combination a plurality of liquid crystal display cells having electrodes defining a plurality of display digits, said driving circuit including drive means for applying first drive signals and second drive signals to liquid crystal display cells for selectively effecting an effective voltage across said sensing

means for detecting a change in condition, and in response thereto, for producing a sensing signal representative of the change in said condition, pulse width control means coupled to said sensing means for receiving said sensing signal and in response thereto applying a control signal having a pulse width representative of the change in condition sensed by said sensing means to said driving means, said driving means in response to said control signal being adapted to vary the pulse width of



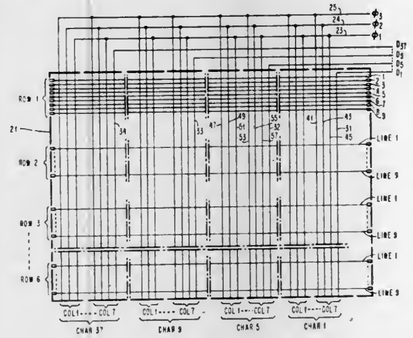
at least said first driving signal to an extent determined by the pulse width of said control signal applied thereto, each of said driving means, electronic sensing means and pulse width control means being comprised of a plurality of integrated circuit elements, the characteristics of said integrated circuit elements of said electronic sensing means being utilized to detect the change in condition and in response thereto produce said sensing signal.

4,242,680

MULTIPLE DATA LINE SHIFT GAS PANEL ASSEMBLY

John R. Beidl, Red Hook; Tony N. Criscimagna, and James C. Greeson, Jr., both of Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1978, Ser. No. 881,450
Int. Cl.³ G09F *9/313*
U.S. Cl. 340—771 **15 Claims**



1. A system for selective manipulation of information for display in a gaseous discharge display device comprising in combination

a gaseous discharge device adapted for operation in a shifting mode,

a multi-phase drive source for driving said panel,

first and second sealed glass plates filled with an ionizable gas,

each of said glass plates having an array of conductors formed thereon,

the conductors on one of said arrays on said first plate being disposed substantially orthogonal to the conductors on the other of said arrays on said second plate, the respective intersections of said orthogonally disposed conductors defining gaseous discharge sites,

the number of conductors on said first plate comprising an integer which is a multiple of the number of phases in said multi-phase drive source,

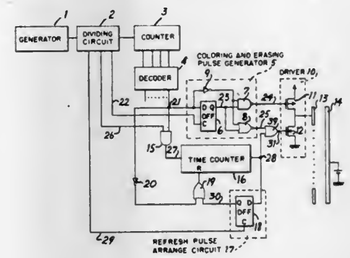
multiple data entry means associated with said first plate, said multiple data entry means including means for simultaneously entering data into different pre-determined positions on said display device, and means for decreasing the update time of said panel by simultaneously operating said multiple data input means.

4,242,681

DRIVING SYSTEM FOR DISPLAY

Junichi Tabata, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Aug. 11, 1978, Ser. No. 933,087
Claims priority, application Japan, Aug. 16, 1977, 52-98123
Int. Cl.³ G09F *9/32*
U.S. Cl. 340—785 **2 Claims**



1. In a driving system for an electrochromic display including a display information signal generator, a coloring and erasing pulse generator and electrochromic display means for displaying information in response to the coloring and erasing pulses, the improvement comprising: a memory time counter circuit for generating a count during a time interval controlled by the display information signal and for generating an output signal after a predetermined period of time, and having a reset terminal; a driver circuit connected to receive the output pulses from said coloring and erasing pulse generator and the output signal from said memory time counter circuit, and connected to apply an output signal to drive said electrochromic display means; refresh pulse generating means connected between the output of said memory time counter circuit and the reset terminal of said memory time counter circuit for resetting said memory time counter each time said memory time counter develops an output signal; and means for applying the display information signal to reset said memory time counter when said display information signal changes.

4,242,682

MOVING TARGET INDICATION RADAR

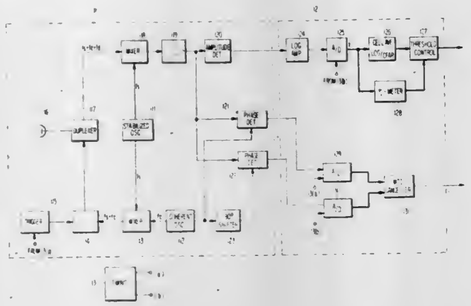
Toshimitsu Musha, Machida; Matsuo Sekine, Tokyo; Takeru Irabu, Tokyo, and Eichi Kiuchi, Tokyo, all of Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,614
Claims priority, application Japan, Aug. 31, 1978, 53-107048
Int. Cl.³ G01S *7/30, 13/52*
U.S. Cl. 343—7 A **10 Claims**

1. A moving target indication radar comprising:

a transmitting means for transmitting a microwave pulse of a predetermined width at a predetermined repetition period into space through an antenna rotating at a constant speed;

a receiving means for receiving pulse returns from stationary and moving objects lying in the space scanned by said antenna, said pulse returns being received for every unit azimuth region corresponding to one microwave pulse in the form of a chain of radar data respectively for unit range regions related to the width of said microwave pulse, said pulse returns including a Weibull clutter having the probability density function $P_\eta(x)$ for its envelope given by



$$P_\eta(x) = \frac{\eta}{\sigma}\left(\frac{x}{\sigma}\right)^{\eta-1}\exp\left[-\left(\frac{x}{\sigma}\right)^{\eta}\right]$$

where σ and η are parameters dependent on the envelope distribution of said pulse returns;

digitized logarithm means for providing a digitized value of the logarithm of the envelope of said pulse returns;

means responsive to the digitized value of the logarithm of the envelope for providing a signal representative of an average of the pulse returns from a predetermined number of adjacent ones of said unit range regions, and for subtracting said average signal from an incoming digitized pulse return corresponding substantially to the middle one of said unit range regions;

means responsive to the output of the averaging-subtracting means for providing a signal representative of an anti-logarithm of the input thereto;

parameter means responsive to the digitized pulse returns for developing a signal representative of said parameter η; and

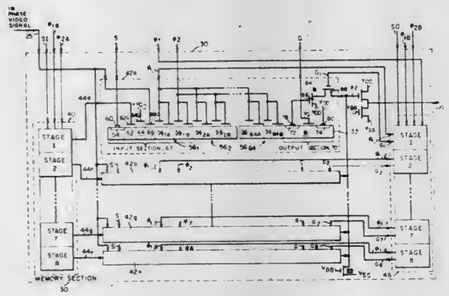
a threshold detection means, having a threshold which is variable in response to said η representing signal, and passing those components of said anti-logarithm output having amplitudes higher than said threshold value; whereby the output of said variable threshold means constitutes a radar video signal virtually free from said Weibull clutter.

4,242,683

SIGNAL PROCESSOR

Arthur M. Cappon, Boston; John D. Collins, Burlington, and Jay P. Sage, Newton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 26, 1977, Ser. No. 800,838
Int. Cl.³ G01S *13/52*; H03K *23/08*
U.S. Cl. 343—7.7 **8 Claims**



1. In a radar system wherein a series of video signals are produced in response to a series of transmitted pulses, a signal processor comprising:

(a) a plurality of charge transfer devices, each one having a signal input terminal;

(b) means, including an input bus connected directly to the signal input terminal of each one of the plurality of charge transfer devices, for coupling each one of the series of video signals simultaneously to the signal input terminal of each one of the plurality of charge transfer devices;

(c) means, including an input shift register having a plurality of serially coupled stages, each one of such stages being connected directly to a corresponding one of the charge transfer devices, for enabling a sequence of range cell samples of each one of the video signals in the series thereof to be stored in corresponding ones of the charge transfer devices, each one of the charge transfer devices storing a set of samples corresponding to radar returns from objects at a corresponding range; and

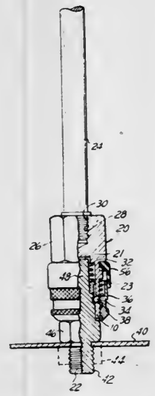
(d) means, including an output shift register having a plurality of serially coupled stages, each one of such stages being coupled to a corresponding one of the charge transfer devices, for enabling the sets of samples stored in the charge transfer devices to be sequentially read from such devices.

4,242,684

QUICK DISCONNECT ANTENNA MOUNT

William D. Wolverton, 10320 Henderson Rd., Otisville, Mich. 48463

Filed Jul. 13, 1979, Ser. No. 57,273
Int. Cl.³ H01Q *1/32*
U.S. Cl. 343—715 **15 Claims**



1. A quick disconnect mounting device for a vehicle-mounted antenna, comprising:

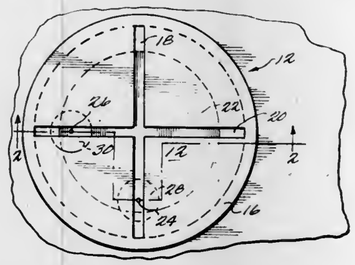
a male member and a female member, engagable one with the other, said male member operable to be fixed on a portion of the vehicle, said male member including a lower threaded end portion and an upper end portion operable to be seated in a central opening in one end of the female member, said female member having a threaded opening in its other end for receiving a like threaded end of the antenna, said central opening including a ball detent latch means and a slip ring mounted on and cooperable with said latch means; a first spring biasing means mounted intermediate said male and female member, a second spring biasing means mounted between said slip ring upper end and said female member, said latch means operable to lock the upper end portion of said male member on applied downward pressure and the slip ring operable against the force of said second biasing means for unlocking said upper end portion responsive to the upward pull of the snap ring, said first biasing means operable to separate said members with a strong force of separation.

4,242,685

SLOTTED CAVITY ANTENNA

Gary G. Sanford, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Apr. 27, 1979, Ser. No. 34,135
Int. Cl.³ H01Q *13/18*
U.S. Cl. 343—770 **37 Claims**



1. A crossed slot antenna comprising:

a resonant cavity having plural intersecting radiating slots formed in one wall thereof,

an electrically conductive plate disposed within said cavity and substantially spaced from all internal cavity walls thereby lengthening the effective electrical resonant dimensions of the cavity for a given physical size of cavity, and

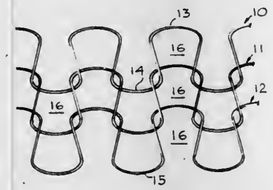
r.f. feed means electrically connected to at least one point on said plate, substantially removed from its midpoint, for feeding r.f. signals to/from each of said plural slots via said plate with predetermined respectively corresponding relative phase relationships.

4,242,686

THREE-DIMENSIONALLY CURVED, KNIT WIRE ELECTROMAGNETIC WAVE REFLECTOR

William L. MacTurk, Upland, Calif., assignor to General Dynamics Corporation, Pomona Division, Pomona, Calif.

Continuation-in-part of Ser. No. 647,015, Jan. 7, 1976, abandoned, which is a division of Ser. No. 591,794, Jun. 30, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 899,690
Int. Cl.² H01Q *15/16, 1/40*
U.S. Cl. 343—912 **8 Claims**



1. An electromagnetic wave reflecting structure comprising:

(a) an electromagnetic wave member comprising first and second superimposed electrical conductors, each consisting of a plurality of non-closed loops interconnected in a knit stretchable in any direction as a finished knit, said first conductor being formed into a smoothly continuous and three-dimensional curved layer of predetermined shape, said second conductor being superimposed upon said first conductor, one of said conductors being stretched substantially 50% relative to the other so that the loops of said second conductor substantially overlie the open spaces between the loops of said first conductor, thereby to provide a conducting and reflecting member having an effective aperture size averaging substantially less than the aperture size of each conductor;

(b) a coating disposed about each of said conductors and consisting of a thermo-setting resin to make said conductors substantially impervious to corrosive substances in the ambient environment, said reflecting member being displaced from but no more that 3 mils away from the outer surface of the combined structure; and

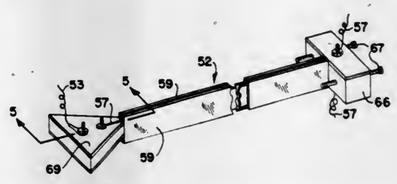
(c) support means on the back surface of said wave reflecting member to maintain said member rigidly in its predetermined shape.

4,242,687

HEATED DEFLECTION ELECTRODE ASSEMBLY FOR A JET DROP RECORDER

Surinder K. Bahl, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jul. 6, 1979, Ser. No. 55,412
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—75 **9 Claims**



1. A deflection electrode assembly for use in a jet drop recording head having means for generating a plurality of drop streams in two parallel rows, each stream consisting of a series of liquid recording drops, means for selectively charging said drops, a pair of opposed catchers for catching the drops, and a source of drop deflecting potential comprising:

a substantially electrically conductive deflection electrode means,

support means for supporting said deflection electrode means in a position parallel to said rows of drops and extending therebetween along a line midway between said catchers,

means for connecting said electrode means to said source of drop deflecting potential, and

means for heating said deflection electrode means to a temperature greater than the ambient temperature in said jet drop recording head, said heating means comprising,

a pair of substantially electrically conductive wires which generate heat when electric current is passed thereto, running parallel to and spaced apart from the upper and lower edges of said deflection electrode, said wires electrically insulated from said deflection electrode, and two sheets of thermally conductive but electrically nonconductive material which sandwich said wires and said deflection electrode.

4,242,688

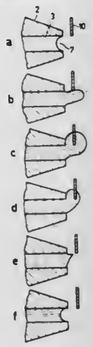
INK JET PRINTER

Michael Döring, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 23, 1979, Ser. No. 87,619
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846844
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**

1. An ink jet printer, comprising at least one nozzle which is

connected, via a pressure chamber, to an ink supply duct, said pressure chamber comprising a wall which can be moved, by means of an electrodemechanical converter, in order to realize droplet-like ejection of ink from the nozzle, characterized in that the converter (9) is adapted to vibrate continuously during



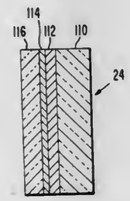
operation, a brake electrode (10) being arranged just in front of the nozzle aperture (7), it being possible to apply a voltage to said brake electrode as desired, the arrangement being such that when the voltage is switched off, a droplet is ejected, whilst when the voltage is switched on, the emerging droplet is intercepted, braked and withdrawn into the nozzle (2).

4,242,689

ABLATIVE OPTICAL RECORDING MEDIUM

Allen Bloom, East Windsor, and Robert A. Bartolini, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,271
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **7 Claims**



1. In an ablative optical recording medium which comprises a light reflecting material coated with a light absorbing material, the improvement which comprises employing as the light absorbing layer a layer of di-indeno[1,2,3-cd:1′,2′,3′-lm]perylene.

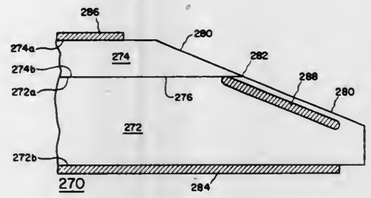
4,242,690

HIGH BREAKDOWN VOLTAGE SEMICONDUCTOR DEVICE

Victor A. K. Temple, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 6, 1978, Ser. No. 913,026
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 **17 Claims**

1. In a semiconductor device containing at least one p-n junction including a first region of semiconductor material of a selected conductivity type having top and bottom surfaces, a second region of semiconductor material of conductivity type opposite that of said first region and having upper and lower surfaces, the lower surface of said second region being coextensive and contiguous with the top surface of said first region, a p-n junction located between said first and second regions, said first and second regions including a common edge side surface, a portion of said common edge side surface being beveled so as to pass through the entire thickness of said second region and a portion of the thickness of said first region, said beveled surface being oriented at a small acute angle with respect to the plane of said p-n junction, and a junction termination located at the intersection of said p-n junction with said beveled surface, the improvement comprising:



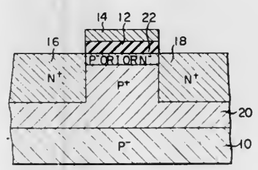
a junction extension region of semiconductor material of the same conductivity type of said second region, said junction extension region having a greater length than thickness, said junction extension region having a length less than the length of said beveled surface and being located in the proximity of said beveled surface and oriented approximately parallel thereto, a substantial portion of said junction extension region being located within said first region and oriented generally parallel to the plane of said junction termination.

4,242,691

MOS SEMICONDUCTOR DEVICE

Norihiko Kotani, and Satoru Kawazu, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1978, Ser. No. 943,812
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 **9 Claims**



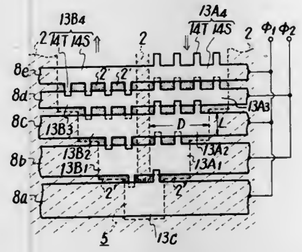
1. An MOS semiconductor device comprising a semiconductor substrate of a first type conductivity having a low impurity concentration and including a main face, a first semiconductor layer of the first type conductivity disposed on said main face of said semiconductor substrate and having a high impurity concentration, a second semiconductor layer of a predetermined type conductivity disposed on the surface of said first semiconductor layer, the material of said second semiconductor layer being a material from the group consisting of a lightly doped semiconductive material and an intrinsic semiconductive material, at least a portion of said second semiconductor layer constituting a channel region of said semiconductor device, a pair of source and drain regions disposed on opposite lateral sides of said channel region and sandwiching said channel region therebetween, each of said source and drain regions having a second type conductivity and a high impurity concentration, an oxide film on said channel region, and a gate electrode disposed on said oxide film, whereby even where the channel region is thin and the distance between the source and drain regions is short, punch-through c. n be prevented.

4,242,692

CHARGE TRANSFER DEVICE WHICH HAS A PAIR OF STRAIGHT PORTIONS JOINED BY A DIRECTION CHANGING PORTION

Yoshiaki Hagiwara, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 31, 1979, Ser. No. 44,224
Claims priority, application Japan, Jun. 2, 1978, 53/66561; Apr. 6, 1979, 54/13283
Int. Cl.³ H01L *29/78;* **G11C** *19/28*
U.S. Cl. 357—24 **15 Claims**



1. An electrical charge transfer device comprising, a semiconductor substrate having a plurality of aligned charge transfer regions and storage regions, a direction changing portion located between two of said charge transfer regions to change the charge transfer direction and wherein the charge transfer direction in at least one of said two charge transfer regions is toward said direction changing portion, a plurality of electrodes associated with said storage, transfer and direction changing regions, means for applying potentials to said electrodes, a channel stopper region having a different conductivity than said charge transfer and storage regions, defining the borders of said transfer and storage regions provided commonly to said plurality of charge transfer and storage regions and having a shape such that asymmetrical potential wells are formed in the respective charge transfer regions in the charge transfer direction, said asymmetrical potential wells and said applied potentials being effective to cause charge transfers to said storage regions each of said storage regions having length dimensions in the charge transfer direction and width dimensions in the direction transverse to the charge transfer direction and wherein the lengths of said storage regions become progressively longer and the widths become progressively shorter as said storage regions become closer spaced to said direction changing portion.

4,242,693

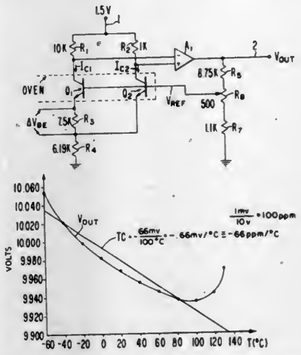
COMPENSATION OF V_{BE} NON-LINEARITIES OVER TEMPERATURE BY USING HIGH BASE SHEET RESISTIVITY DEVICES

Joseph Biran, Sunnyvale, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Dec. 26, 1978, Ser. No. 972,742
Int. Cl.³ H01L *23/56*
U.S. Cl. 357—28 **14 Claims**

1. A transistor comprising:

a collector, an emitter, and a high resistivity base, the transistor having a base-emitter voltage V_{BE} given by the equation $V_{BE} \simeq V_{GO} + (kT/q) \ln (I_c/D)$, where V_{GO} is the gap voltage of silicon at 0° K., k is Boltzman's constant, T is temperature of the base-eitter junction, q is the charge on an electron, I_c is collector current and D is a temperature-independent constant, and wherein the doping concentration of said base is determined such that the second partial derivative of V_{BE} with respect to temperature with I_c held constant is approximately zero, thereby providing a linear



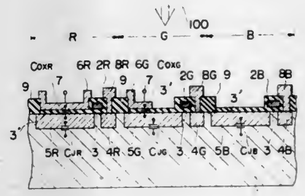
relation between the base-emitter voltage and temperature.

4,242,694

SOLID-STATE COLOR IMAGING DEVICE

Norio Koike, Tokyo, and Masaharu Kubo, Hachioji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 12, 1977, Ser. No. 832,676
Claims priority, application Japan, Sep. 13, 1976, 51-108785
Int. Cl.³ H01L *27/14, 31/00, 29/78;* **H04N** *9/07*
U.S. Cl. 357—30 **22 Claims**



1. A solid-state color imaging device comprising a semiconductor body of a first conductivity type having a major surface portion and three sets of photoelectric elements corresponding to a first, a second, and a third primary color of light, wherein said first color of light is long wavelength light, said second color of light is middle wavelength light, and said third color of light is short wavelength light, respectively, disposed in said major surface portion such that each of said sets corresponding to a respective color component is separated by an optical filter, a respective photoelectric element being comprised of:

(a) a field-effect transistor having a source region and a drain region of a second conducitvity type opposite to said first conductivity type, a gate insulating film provided so as to cover a region lying between said source region and said drain region, and a gate electrode provided on said gate insulating film, one of said source region and said drain region constituting with said substrate a photodiode;

(b) a transparent insulating film which is provided so as to cover said photodiode; and

(c) a transparent electrode provided on the transparent insulating films of two sets of said photoelectric elements of said three sets wherein the transparent electrode of the photoelectric element for said first light covers over its respective photodiode, the transparent electrode of the photoelectric element for said second light covers a part of its respective photodiode, and the photoelectric ele-

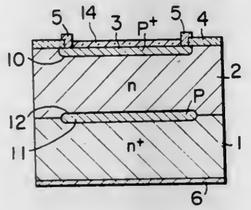
ment for said third light is not covered by transparent electrode, permitting at least part of the incident light to permeate therethrough, being held at a predetermined voltage, and forming an electrostatic capacitance together with said body.

4,242,695

LOW DARK CURRENT PHOTO-SEMICONDUCTOR DEVICE

Hirobumi Ouchi, and Toji Mukai, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 26, 1979, Ser. No. 6,913
Claims priority, application Japan, Jan. 27, 1978, 53-8671
Int. Cl.³ H01L *27/14, 29/48*
U.S. Cl. 357—30 **20 Claims**



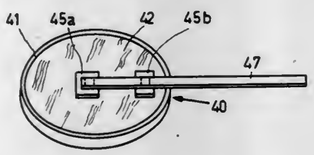
1. A photodiode consisting essentially of:
(a) a first semiconductor region of one conductivity type having a first predetermined impurity concentration;
(b) a second semiconductor region of said one conductivity type on said first region having a second predetermined impurity concentration lower than said first predetermined impurity concentration;
(c) a third semiconductor region of an opposite conductivity type on and adjoining said second region, said third and second regions forming a photodetecting pn junction therebetween; and
(d) a fourth semiconductor region of said opposite conductivity type buried between said first and second regions, said fourth and second regions forming an additional pn junction therebetween.

4,242,696

METHOD OF FORMING A CONTACT ON THE SURFACE OF A SEMICONDUCTOR BODY BY SERIGRAPHY AND BODY OBTAINED BY MEANS OF THIS METHOD

Daniel Diguet; Gerard A. David, and Pierre Aubril, all of Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 967,940
Claims priority, application France, Dec. 13, 1977, 77 37517
Int. Cl.² H01L *27/14*
U.S. Cl. 357—30 **10 Claims**



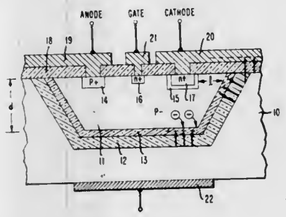
1. A method of forming a contact configuration for soldering a metal connection on a region of a surface of a semiconductor body having a zone of a given conductivity type which adjoins said surface at said region, said method comprising the provision by serigraphy on at least a part of said region of a conductive paste which, in a vitrifiable phase, comprises at least a metal which is finely divided and a doping element which gives the same conductivity type, said plate then being vitrified thermally such that said dopant migrates in at least a surface part of said region, characterized in that after providing the conductive paste with the doping element in a first deposition and after at least partly drying said first deposition, a second deposition with a conductive past containing, in a vitrifiable phase, at least a principal metal and being substantially free from said doping element is carried out at least at a restricted part of said region comprising the location where said connection is to be soldered, at least a part of the second deposition bearing on a part of the first deposition, the assembly of the two depositions forming said contact configuration and the vitrification being then carried out.

4,242,697

DIELECTRICALLY ISOLATED HIGH VOLTAGE SEMICONDUCTOR DEVICES

Joseph E. Berthold, Stirling; Adrian R. Hartman, New Providence, and Peter W. Shackle, Bridgewater, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 14, 1979, Ser. No. 20,217
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—49 **17 Claims**



1. An integrated circuit including a high voltage semiconductor device comprising a polycrystalline semiconductor substrate (10), a region of single crystalline semiconductor (11) the bulk of which has a first conductivity type formed at a major surface of said substrate, and a localized region (e.g., 15,) formed at the surface of said single crystalline region, characterized in that said device further comprises a semi-insulating layer (13) between said substrate and single crystalline region, said semi-insulating layer having trapping states capable of taking on charge from said single crystalline region and thereby shield said localized surface region from the potential of the substrate when a bias is supplied thereto.

4,242,698

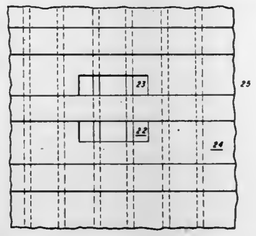
MAXIMUM DENSITY INTERCONNECTIONS FOR LARGE SCALE INTEGRATED CIRCUITS

Prabhakar B. Ghate, Dallas; Arthur M. Wilson, Richardson, and Clyde R. Fuller, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 2, 1977, Ser. No. 847,956
Int. Cl.³ H01L *23/48*
U.S. Cl. 357—71 **8 Claims**

1. A semiconductor device, including a double level metal interconnect system having a surface insulator on the semiconductor; and an inter-level insulator between metal levels, wherein the device surface insulator embodies a via etch stop layer, the first level metal is an adherent metal of a high conductivity and not appreciably attacked by aluminum etchants; the inter-level insulator is silicon dioxide; the apertures in the inter-level insulator have longitudinal and transverse dimensions which exceed the width of the first and second level

metal leads by at least 10% of the space between adjacent leads, the second level interconnect is aluminum, and the spacing between leads is substantially the same at all locations on the device.

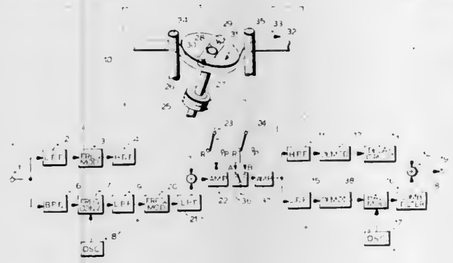


4,242,699

RECORDING AND REPRODUCING APPARATUS FOR COLOR VIDEO SIGNALS

Masaaki Kobayashi, Kawanishi, and Kiyoji Fujisawa, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 14, 1977, Ser. No. 842,334
Claims priority, application Japan, Oct. 19, 1976, 51-125758; Apr. 22, 1977, 52-47156
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—4 **3 Claims**



1. A recording and reproducing apparatus for color video signals comprising:
a band pass filter, having an input for receiving a NTSC color video signal, having a frequency pass band for separating the chroma signal from a received NTSC color video signal;
a first oscillator for producing a first carrier signal having a frequency f_a which is within the bandwidth of said chroma signal and which may be expressed by the equation

$$f_a = f_s - n/4 f_H,$$

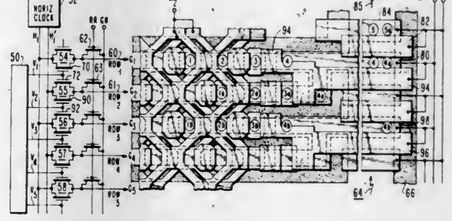
where n is a predetermined odd integer, f_s is the center frequency of said chroma signal, and f_H is the line frequency of said received NTSC color video signal;
a frequency converter coupled to said band pass filter and said first oscillator for producing a frequency converted chroma signal having a carrier frequency equal to the algebraic sum of f_s and f_a which is nearest zero, whereby the upper and lower sidebands of said chroma signal are interleaved in said frequency converted chroma signal by folding of said chroma signal at zero frequency;
a frequency modulator coupled to said frequency converter for frequency modulating said frequency converted chroma signal;
a recording-reproducing means coupled to said frequency modulator for recording and reproducing said frequency modulated chroma signal;
a demodulator coupled to said recording-reproducing apparatus for demodulating said reproduced frequency modulated chroma signal;
a second oscillator for producing a second carrier signal having a frequency f_a;
a balanced-modulator coupled to said demodulator and said second oscillator for modulating said second carrier signal with said demodulated chroma signal, whereby said demodulated chroma signal is frequency converted to an interleaved chroma signal having a band centered about a frequency f_s; and
a comb filter coupled to said balanced-modulator, having a frequency response to pass frequencies near $f_s \pm Kf_H$ and to substantially block frequencies near $f_s \pm (K+\frac{1}{2})f_H$, where K is an arbituary integer including zero, for filtering said interleaved chroma signal and obtaining a chroma signal substantially equal to the original chroma signal.

4,242,700

LINE TRANSFER CCD IMAGERS

Paul K. Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,073
Int. Cl.³ H04N *9/07, 3/15;* H01L *29/78*
U.S. Cl. 358—44 **32 Claims**

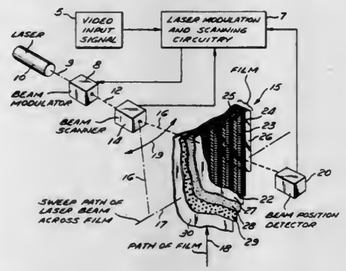


1. In combination:
a charge transfer imager of the line transfer type comprising an array of charge transfer locations arranged in a plurality n of rows numbered 1, 2, 3 . . . n;
means for applying clock voltages to the array for reading out substantially one field of the array comprising means for concurrently applying clock voltages to a first pair j and j+1 of adjacent rows of the array for serially reading out the locations in these rows in interleaved fashion, and for repeating this process for each succeeding pair j and j+1 of adjacent rows, one pair at a time, until substantially one complete field has been read out of the array, where j is an odd integer having the consecutive odd values 1, 3, 5 and so on, respectively, for succeeding pairs of adjacent rows in the array; and
means for applying clock voltages to the array for reading out a second field of the array comprising means for concurrently applying clock voltages to a pair j+1 and j+2 of adjacent rows of the array for serially reading out the locations in these rows in interleaved fashion, and for repeating this process for each succeeding pair j+1, j+2 of adjacent rows of the array until the second complete field of the array has been read out, where (j+1) has the successive even values 2, 4, 6 and so on, for succeeding pairs of adjacent rows in the array.

4,242,701
COLOR HARDCOPY FROM ELECTRONIC INFORMATION

Leon A. Levinson, Agoura, and John K. Cool, Thousand Oaks, both of Calif., assignors to Ixion, Inc., Westlake Village, Calif.

Filed Sep. 10, 1979, Ser. No. 73,933
Int. Cl.³ H04N *1/46, 9/491*
U.S. Cl. 358—75 **17 Claims**



1. An apparatus for producing a color image from electronic video input signals containing the additive primary colors red, green and blue comprising:

a laser for producing a monochromatic laser beam;

a photographic medium comprising a transparent film having on one side a repeating pattern of color areas composed of said additive primary colors red, green and blue and an unexposed light sensitive layer on the reverse side;

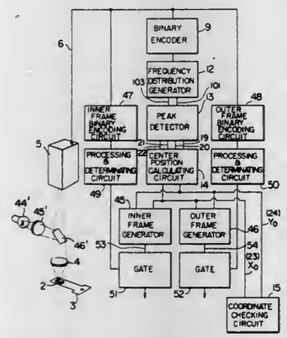
means for scanning said laser beam across successive lines of said light sensitive layer from said reverse side; and

means for modulating the intensity of said beam during scanning to alter the grey scale of said light sensitive layer opposite each of said areas in accordance with the intensity of said electronic signal for each of said primary color areas to produce said color image.

4,242,702
APPARATUS FOR AUTOMATICALLY CHECKING EXTERNAL APPEARANCE OF OBJECT

Asahiro Kuni, Tokyo; Nobuyuki Akiyama, and Yoshimasa Oshima, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 30, 1977, Ser. No. 856,097
Claims priority, application Japan, Dec. 1, 1976, 51/143329; Dec. 27, 1976, 51/156504
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—106 **23 Claims**



1. An apparatus for automatically checking the position of an object having a surface area of a predetermined size and a contour of the surface area, comprising:

(a) an optical system which illuminates said object to produce an optical image having different bright and dark portions between said surface area of said object and said contour thereof;

(b) an image pick-up device which scans said optical image in two-dimensional directions to produce a picture signal;

(c) binary encoder circuit means which receives said picture signal from said image pick-up device, which thresholds said picture signal by a predetermined value to convert the same into a binary signal having two logical levels respectively corresponding to the bright and dark portions of said optical image, and which samples said binary signal with a predetermined time interval to convert the same into a binary picture element signal;

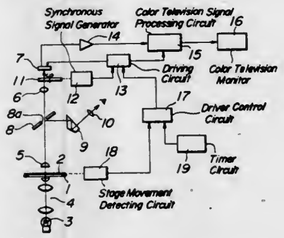
(d) coordinate determining means which receives said binary picture element signal from said binary encoder circuit means, comprising means for counting said binary picture element signal in said two-dimensional directions with respect to one of said two logical levels to determine frequency distributions of the binary picture element signal in said two-dimensional directions with respect to said one logical level, and means for searching characteristic portions in said frequency distributions to extract coordinates of said contour of said object from said characteristic portions; and

(e) first check means for checking whether or not said coordinates determined by said coordinate determining means are within an allowable tolerance range preselected for a two-dimensional coordinate area scanned and imaged by said image pick-up device.

4,242,703
PROJECTION APPARATUS FOR OPTICAL SYSTEMS

Kosaku Tsuboshima; Shuichi Takayama; Yoshio Nakajima, all of Hachioji; Teruo Iwasawa, Mitaka, and Masafumi Yamazaki, Okaya, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1979, Ser. No. 87,231
Claims priority, application Japan, Nov. 2, 1978, 53/134426
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—150 **13 Claims**



1. A projection apparatus for optical systems, which is adapted to project an image of a sample disposed on a movable stage onto a television monitor screen and display thereon, and which comprises

an image sensor composed of a charge transfer element including photosensitive elements aligned with a picture element and operative to receive the image of the sample to be projected;

a driving circuit for scanning said image sensor;

a television monitor for displaying a video signal obtained from said image sensor when it is scanned by said driving circuit;

a memory device for storing the television signal;

a stage movement detecting circuit for detecting the movement of said stage;

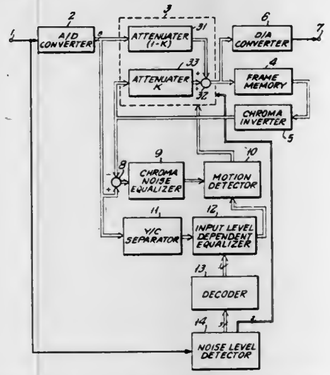
a timer circuit for generating a signal everytime a given time elapses; and

a driver control circuit which, when said stage is moving, becomes operative to operate said driving circuit on the basis of the output from said stage movement detecting circuit so as to scan said image sensor everytime said stage moves for a given distance and which, when said stage is stationary, becomes operative to operate said driving circuit on the basis of the signal from said timer circuit so as to scan said image sensor everytime a given time elapses, thereby normally displaying the image of said sample on said television monitor.

4,242,704
NOISE REDUCTION SYSTEM FOR COLOR TELEVISION SIGNAL

Yutaka Ito; Kazuo Yajima; Yoshiteru Iwanaga; Hiroshi Takahashi, and Masao Inaba, all of Tokyo, Japan, assignors to Tokyo Broadcasting System Inc. and Nippon Electric Co., Ltd., both of Tokyo, Japan

Filed Mar. 8, 1979, Ser. No. 18,474
Claims priority, application Japan, Mar. 8, 1978, 53-26857; Mar. 8, 1978, 53-26858
Int. Cl.³ H04N *5/21, 9/535*
U.S. Cl. 358—167 **6 Claims**



1. A noise reduction system for reducing noise contained in an incoming television video signal, said system comprising, summing means having first and second input terminals for adding first and second signals respectively applied thereto to produce a sum signal;

means for coupling a first controllable fractional amplitude portion of the arriving video signal to the first input terminal of said summing means;

delay means, connected to receive said sum signal from said summing means, for delaying said sum signal for a period substantially equal to the period of one television frame;

coupling means, including means for coupling a second controllable fractional amplitude portion of the delayed signal from said delay means to the second input terminal of said summing means; means for producing a differential signal representing the difference between the incoming video signal and the delayed video signal; comparator means for comparing said differential signal with a reference signal;

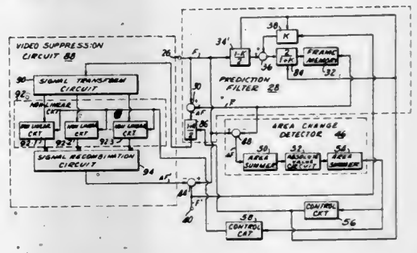
first control means for controlling said reference signal in response to said incoming video signal; and

second control means for controlling said first fractional amplitude portion and said second fractional amplitude portion in response to the output of said comparator means, the sum of said first and second fractional amplitude portions being a constant; whereby said summing means combines a fractional amplitude portion of each incoming television frame with a fractional amplitude portion of the sum of portions of preceding delayed frames to obtain an averaged noise-reduced video signal of an amplitude equivalent to that of the incoming video signal.

4,242,705
NOISE REDUCTION SYSTEM FOR VIDEO SIGNALS

Norio Ebihara, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,174
Claims priority, application Japan, Sep. 21, 1978, 53/116349; Nov. 15, 1978, 53/140673
Int. Cl.³ H04N *5/21*
U.S. Cl. 358—167 **28 Claims**



1. A noise reduction system for reducing noise in a video signal which consists of a plurality of successive frames occurring at frame intervals, comprising:

means for storing at least one frame of said video signal for an integral multiple of said frame intervals;

means for mixing corresponding elements of a new frame of said video signal with said video signal stored in said means for storing to produce a frame difference signal;

means for transforming said frame difference signal into a plurality of video signal components;

means for respectively controlling the plurality of video signal components whereby a predetermined characteristic of at least one of said plurality of video signal components is modified;

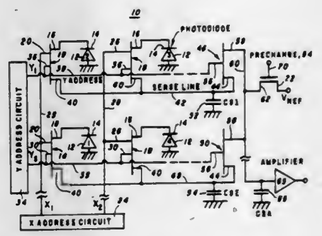
means for recombining said plurality of video signal components including said at least one modified component into a corrected frame difference signal; and

means for combining said corrected frame difference signal with said new frame of said video signal to obtain a noise-reduced video signal.

4,242,706
VISIBLE LIGHT AND NEAR INFRARED IMAGING DEVICE

Kent McCormack, Richardson; James E. Robinson, Dallas; William M. Knight, Jr., Plano, and Dana Dudley, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 13, 1978, Ser. No. 960,496
Int. Cl.² H04N *3/14*
U.S. Cl. 358—213 **11 Claims**



1. An imaging device comprising:

an addressing means; an array of optoelectronic semiconductor elements selectively connected to the addressing means; a multiplexer connected to the array of optoelec-

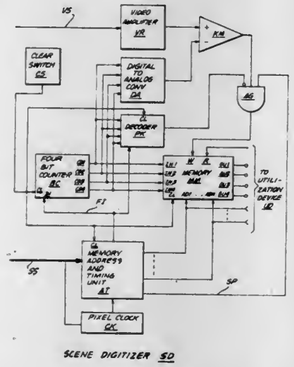
tronic semiconductor elements; a precharge means including a time controlled switch connected to the multiplexer; and an amplifier connected to the multiplexer, said array of optoelectronic semiconductor elements having its elements arranged for exposure to light emanating from a scene in the field of view for converting the light into electrical signals representative of the impinging light, and said precharge means, addressing means and multiplexer for alternately charging the elements of the array of optoelectronic semiconductor elements to a preselected voltage and connecting the electrical signals of the elements of the array of optoelectric semiconductor elements representing the intensity of light impinging thereon to the amplifier, said amplifier for amplifying the outputs of the array of optoelectronic semiconductor elements to a working level for processing into video signals for display.

4,242,707

DIGITAL SCENE STORAGE

Karoly Budai, Dix Hills, N.Y., assignor to Chyron Corporation, Plainview, N.Y.

Filed Aug. 23, 1978, Ser. No. 936,021
Int. Cl.³ H04N *1/38*
U.S. Cl. 358—280 **2 Claims**



SCENE DIGITIZER 50

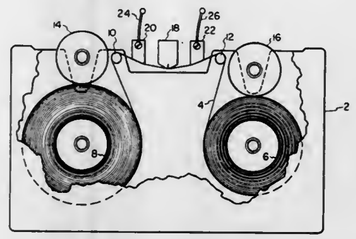
1. Apparatus for storing the representation of a scene comprising: scanning means for repetitively raster scanning and emitting a first analog signal whose amplitude represents the light intensity reflected from each pixel of the scene; memory means having a plurality of storage locations, each of said storage locations being assigned to a particular pixel of the scene, and having a plurality of data inputs and a write control input; signal amplitude generating means comprising a scan by scan incremented counter means having outputs connected to said data inputs and a digital to analog converter means connected to the outputs of said counter means for generating a second analog signal representing a light intensity; and analog signal comparator having first and second inputs for receiving the first and second analog signals respectively and an output means connected to said write control input means for emitting a signal thereto for recording in the associated storage location a representation of the amplitude of the second analog signal only when the amplitude of the first analog signal has a particular relationship with the amplitude of the second analog signal.

4,242,708

TAPE RECORDING APPARATUS USING CAPACITIVE DETECTORS AS TAPE POSITION SENSORS

James A. Dreiling, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 30, 1979, Ser. No. 7,801
Int. Cl.³ G11B *15/06, 23/30*
U.S. Cl. 360—74.5 **10 Claims**



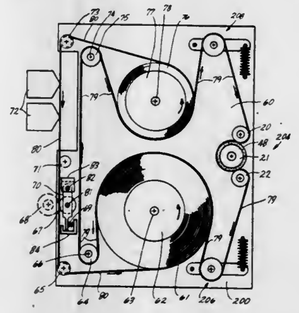
1. A position detector for tape recorder/reproducer apparatus comprising:
a non-conductive record tape, having a front side and reverse side, adapted to be driven from one storage spool to another;
a conductive member secured to said reverse side of said tape at a predetermined longitudinal position thereof;
capacitive electrode means positioned to engage said front side of said tape along the path of movement from said one spool to the other; and
capacitive detection means connected to detect the passage of said conductive member past said electrode means.

4,242,709

STRIP MEDIA DRIVE SYSTEM

Klaus F. Stricker, 447-1 Fairview Ave., Arcadia, Calif. 91006

Filed Jan. 29, 1979, Ser. No. 7,361
Int. Cl.³ G11B *15/32, 15/43, 23/04*
U.S. Cl. 360—96.4 **55 Claims**



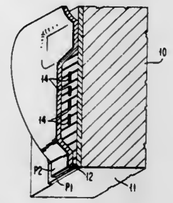
1. A strip media drive system comprising a pair of rotatable strip media packs for reeling the strip media therebetween, an endless belt coupling the rotation of the media packs together and a belt tensioner, the belt tensioner comprising at least first and second rotatable rollers, the first roller comprising a hard outer periphery and the second roller comprising a viscoelastic outer periphery, the first and second rollers being forced together on opposite sides of the endless belt to thereby deform the viscoelastic outer periphery so that as the belt is drawn between the rollers, rolling friction caused by the deformation creates a higher tension in the portion of the belt leaving the tensioner than in the portion entering the tensioner.

4,242,710

THIN FILM HEAD HAVING NEGATIVE MAGNETOSTRICTION

Robert D. Hempstead, Morgan Hill, and James B. Money, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,274
Int. Cl.³ G11B *5/12, 5/30*
U.S. Cl. 360—113 **5 Claims**



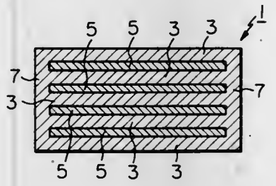
1. A thin film magnetic head assembly consisting:
first and second magnetic pole pieces formed as unitary thin film layers said first pole piece being deposited directly on a substrate
insulating material disposed between and separating said pole pieces; planar conductive coils in a substantially planar array disposed within said insulating material;
said pole pieces being formed from a magnetic material characterized by negative magnetostriction.

4,242,711

MULTILAYER MAGNETIC HEAD CORE

Takeo Sata; Masayuki Takamura; Tomoo Yamagishi; Toshiharu Hoshi, and Kenzaburo Iijima, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 7, 1978, Ser. No. 894,607
Claims priority, application Japan, Apr. 13, 1977, 52-42436
Int. Cl.³ G11B *5/16, 5/14*
U.S. Cl. 360—126 **3 Claims**



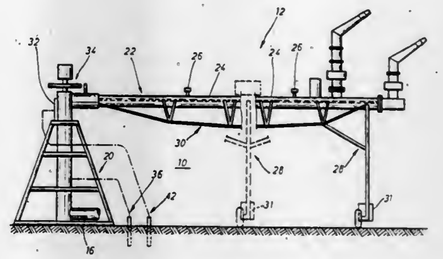
1. A multilayer magnetic head core comprising a plurality of adjacent parallel layers, each layer having a given area of each major surface thereof and comprising an insulating material selected from the group consisting of alumina, magnesia and silica glass; and a unitary sintered mass comprising a low ductility metallic high permeability magnetic alloy material surrounding said layers and forming a plurality of mechanically and electrically interconnected magnetic layers contiguous with corresponding areas of said layers, said mass having a predetermined cross-sectional area in a plane parallel to the major surface of said layers.

4,242,712

OVER-POWER SAFETY DEVICE FOR MOTOR DRIVEN SYSTEM

Joseph D. Doll, Gering, Nebr., assignor to Lockwood Corporation, Gering, Nebr.

Continuation of Ser. No. 789,890, Apr. 22, 1977, Pat. No. 4,138,705. This application Oct. 12, 1978, Ser. No. 950,837
The portion of the term of this patent subsequent to Feb. 6, 1996, has been disclaimed.
Int. Cl.² H02H *9/04*
U.S. Cl. 361—42 **1 Claim**



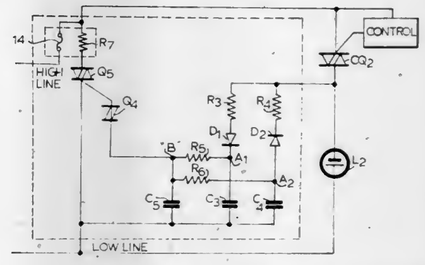
1. A safety device for detecting a fault condition on a chassis of a motor driven system and for interrupting operation of the system upon the occurrence of said condition, said system having means responsive to a control signal for selectively deenergizing the system, said safety device comprising:
a. a first connection to earth ground;
b. a second connection to earth ground spaced from said first connection;
c. a connector between said first connection and said chassis of said system; and
d. a signal generator connected to said second connection and to said chassis for generating the control signal when the voltage between the chassis and the second connection exceeds a selected value.

4,242,713

TRIAC OUTPUT ASYMMETRY DETECTOR

Raymond H. Lewis, Jr., 717 N. "K" St., Lake Worth, Fla. 33460; Edward W. Goodrich, 222 Caribbean Rd., Palm Beach, Fla. 33480, and Dale W. Kline, 3851 Buttercup Cir., Palm Beach Gardens, Fla. 33410

Filed Oct. 25, 1979, Ser. No. 84,924
Int. Cl.³ H02H *3/26*
U.S. Cl. 361—86 **6 Claims**



1. A protective circuit for an AC driven load having a semiconductor load control element coupled to an AC Power source, said protective circuit comprising:
means for detecting an asymmetrical control element output voltage of either polarity coupled to the output of-said load control element, said detecting means including voltage summing point means for summing the positive and

negative voltage half wave outputs from the output of said load control element; and

means responsive to a positive or negative voltage build up above a predetermined amount on said summing point means for providing an indication that the control element output voltage to the load is asymmetrical; and

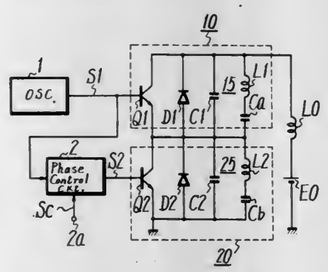
means coupled to said detecting means, responsive to a detected asymmetrical voltage of either polarity for providing an indication that the control element output voltage to the load is asymmetrical.

4,242,714

CURRENT CONTROL CIRCUIT

Susumu Yoshida; Yoshio Ishigaki, both of Tokyo, and Tamiji Nagai, Kawasaki, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,868
Claims priority, application Japan, Mar. 27, 1978, 53-35001
Int. Cl.³ H01J *29/70*
U.S. Cl. 361—152 **9 Claims**



1. A current control circuit comprising:

first and second switching means;

a first resonant circuit connected in parallel with said first switching means and including a first coil and a first capacitor;

a second resonant circuit connected in parallel with said second switching means and including a second coil and a second capacitor;

a first charging capacitor connected in series with said first coil;

a second charging capacitor connected in series with said second coil;

means for connecting said first and second resonant circuits in series with each other with respect to a power supply;

means for applying first and second switching signals of the same frequency to said first and second switching means, respectively; and

means for varying the phase relation of said first and second switching signals, so as to control the voltages across the first and second charging capacitors, and, accordingly, to control the current flowing through said first and second coils.

4,242,715

SELF-DEFENSE APPARATUS

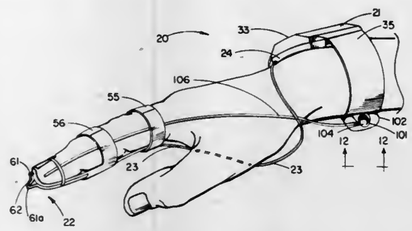
Gerald Laird, Indianapolis, Ind., assignor to Ultradyne, Inc., Norristown, Pa.

Filed Aug. 10, 1978, Ser. No. 932,539
Int. Cl.³ F41B *15/04*
U.S. Cl. 361—232 **10 Claims**

1. A self-defense apparatus to be worn by the user which comprises:

a self-contained, high-voltage-producing module securable to a hand of the user; and

a finger probe device electrically coupled to said high-voltage-producing module and suitably arranged to be worn on a finger of said hand, said finger probe device including a pair of electrically conductive prongs and a layer of electrical insulating material disposed between said finger and said pair of prongs, said prongs being designed and



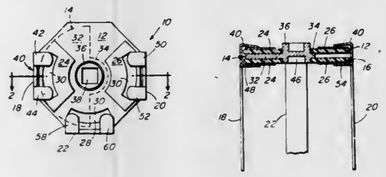
arranged into a pointed configuration and outwardly protruding from said layer a distance sufficient to enable said prongs to penetrate at least one layer of clothing.

4,242,716

DIFFERENTIAL DISC CAPACITOR

John E. Johanson, and Norman E. Johanson, both of Boonton, N.J., assignors to Johanson Manufacturing Corporation, Boonton, N.J.

Filed Mar. 26, 1979, Ser. No. 23,560
Int. Cl.³ H01G *5/06*
U.S. Cl. 361—299 **22 Claims**



1. A tunable differential disc capacitor, comprising:

(a) a pair of outer dielectric discs comprising respective central openings and outwardly facing first surfaces;

(b) an electrically conductive rotor element interposed between said discs in face-to-face relation therewith;

(c) plural electrically conductive portions disposed on each of said dielectric disc first surfaces, said conductive portions of one of said dielectric discs being in substantial spaced parallel registration with said conductive portions of the other of said dielectric discs, so as to provide paired conductive portions;

(d) spring clamp means for retaining said outer dielectric discs in mutually substantially fixed relation and in face-to-face stacked relation with respect to said rotor element;

(e) said rotor comprising a flat segmental rotor plate portion and means constraining said rotor to coaxial rotative movement with respect to said dielectric discs;

(f) said spring clamp means comprising first and second spring clamp electrode members that each comprise a base portion and a clamp finger portion, said base portions of said first and second said electrode members being electrically and mechanically connected with, respectively, first and second said conductive portions of one of said dielectric discs, said clamp finger portions of said first and second said electrode members being electrically and mechanically connected with, respectively, first and second said conductive portions of the other of said dielectric discs, said first and second conductive portions of said one dielectric disc being in substantial registry with said first and second conductive portions of said other dielectric disc

(g) said spring clamp means further comprising a third electrically conductive spring clamp electrode member that includes a base portion that is electrically and mechanically connected with a third said conductive portion of said one dielectric disc, said third electrically conductive spring clamp electrode member further comprising spring contact means connected to said base portion and electrically contacting a central portion of said rotor element at the region of said central opening of said one dielectric disc, said third spring clamp electrode member also comprising clamp finger portions electrically and mechanically connected with a third said conductive portion of said other dielectric disc, said respective third conductive portions of said dielectric discs being in substantial registry with each other;

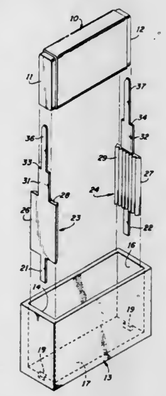
(h) said rotor element comprising a central post portion integrally formed with said segmental rotor plate portion, said central post portion comprising a first axially outwardly-extending portion rotatively journaled in said opening of said one dielectric disc and a second outwardly-extending portion rotatively journaled in said opening of said other dielectric disc, said spring contact means electrically contacting said first axially outwardly-extending portion of said central post portion.

4,242,717

BOXED METALLIZED FILM CAPACITOR

John F. Saban, Downers Grove, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,151
Int. Cl.³ H01G *1/02, 1/14*
U.S. Cl. 361—308 **1 Claim**



1. A capacitor assembly, comprising

a box having one open side and a pair of spaced holes formed in the bottom of the box in proximity to the juncture of the bottom and a pair of opposed side walls;

a pair of terminals mounted within said box, said terminals having leg sections extending into said holes to position the terminals along said opposed side walls and wide sections facing each other and integral with the leg sections to form shoulders abutting the bottom of the box, said wide sections having protuberances projecting from facing surfaces, said wide sections being joined to intermediate wide sections that extend beyond the open side of the box to act as standoffs which are joined at shoulders to narrower lead sections which may be joined to external circuitry; and

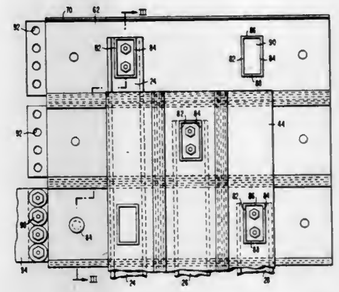
a capacitor blank having terminal pads of a deformable metal, said capacitor mounted in said box with the faces of the terminal pads abutting the said wide sections and deformed in accordance with the configuration of said protuberances.

4,242,718

CONTROL CENTER WITH INTERFITTING DIELECTRIC BARRIERS FOR BUS BARS

Sadiq A. Shariff, Palos Park; John R. Wilson, Darien; Brij M. Bharteey, Bolingbrook, and Neal E. Rowe, Oak Forest, al of Ill., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 14, 1979, Ser. No. 11,985
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—341 **6 Claims**



1. A control center for distributing electric power from a power supply source to power consuming devices, comprising:

a plurality of cabinets having a plurality of vertically spaced compartments in each cabinet;

a set of a plurality of vertical, horizontally spaced, bus bars in each cabinet;

a set of a plurality of horizontal, vertically-spaced, bus bars in each cabinet and electrically connected to corresponding vertical bus bars;

a dielectric barrier on each side of at least one of the sets of horizontal and vertical bus bars and the barrier on each side comprising a number of barrier sections disposed along the length of the bus bars and in surface-to-surface contact therewith;

the barrier sections being sheet-like members having opposite side, edge, and end surfaces;

first cooperating interfitting means including first tonque and groove members extending from facing side surfaces of each barrier and between the bus bars of each set of bus bars; and

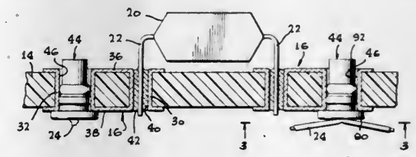
second cooperating interfitting means including second tongue and groove members along the abutting end portions of the adjacent barrier sections.

4,242,719

SOLDER-WELD P.C. BOARD APPARATUS

Larry R. Conley, Fountain Valley, Calif., assignor to Interconnection Technology, Inc., Costa Mesa, Calif.

Filed Jun. 1, 1979, Ser. No. 44,404
Int. Cl.³ H05K *1/18*
U.S. Cl. 361—400 **7 Claims**



1. A solderable and weldable circuit board apparatus comprising:

a base board having a multiplicity of holes therein;

a layer of solderable material disposed on said base board and forming a plurality of separate connection regions, the layer in each of said regions plating a plurality of holes and an area on said base board which connects the holes;

a plurality of pins of weldable material, each lying in a selected one of said holes and in press-fit contact with the layer of solderable material on the walls of the hole, each pin having an electrode-engageable end to enable the welding of a wire thereto;

each of said connection regions having at least one hole which holds one of said pins and at least one other hole which is devoid of a pin to enable a lead to be soldered therein;

a circuit component having a plurality of leads disposed in holes of different selected connection regions;

a quantity of solder lying in each of said holes which holds a lead and solderably holding the lead to the layer of solderable material at the walls of the hole; and

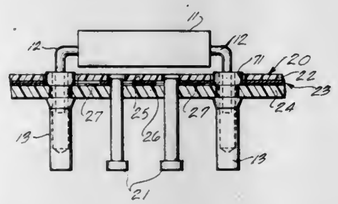
a wire welded to a plurality of said pins which are disposed in holes of different connection regions.

4,242,720

INTEGRATED CIRCUIT MOUNTING BOARD HAVING INTERNAL TERMINATION RESISTORS

Donn Moore, 4950 Marmol Dr., Woodland Hills, Calif. 91364

Filed Sep. 9, 1977, Ser. No. 831,895
Int. Cl.³ H05K *1/04*
U.S. Cl. 361—402 **29 Claims**



1. A logic card for mounting of integrated circuit devices thereto and for selective interconnection of mounted integrated circuit devices, the card comprising

(1) a laminate which includes a relatively highly conducting layer,

(2) a plurality of conductors carried by the laminate at each of a plurality of integrated circuit device mounting stations defined on one of two opposite sides of the laminate, the conductors comprising a first group of termination conductors and a second group of mounting conductors at each station,

(a) the mounting conductors at each station being effectively exposed on the opposite sides of the laminate and disposed out of contact with the conductive layer, the mounting conductors at each station being disposed to define substantially the boundary of the station and disposed in a selected pattern corresponding to the arrangement and relative spacing of a corresponding plurality of conductive leads from an integrated circuit device of specified external configuration, whereby an integrated circuit device of appropriate configuration can be mounted to the card at the station by connection of the leads thereof to the station's mounting conductors adjacent the one side of the laminate,

(b) the termination conductors at each station being disposed inwardly of the station's mounting conductors relative to the center of the station and effectively exposed at least on the other side of the laminate,

(3) a plurality of separate means at each station each defining a transmission line termination device, the number of said separate means at each station being equal to the number of termination conductors at the station, each said separate means being carried by the laminate as a part thereof within the boundary of the corresponding station, and means conductively connecting each of said separate means at each station to the laminate conductive layer and to a respective one of the termination conductors, whereby an integrated circuit device mounted at one station adjacent the one side of the laminate can be connected to receive a signal from another device similarly mounted at another station by a conductor disposed adjacent the opposite side of the laminate and connected

(a) between selected ones of the second group conductors at each of the two stations and

(b) to any one of the first group conductors at the one station, and

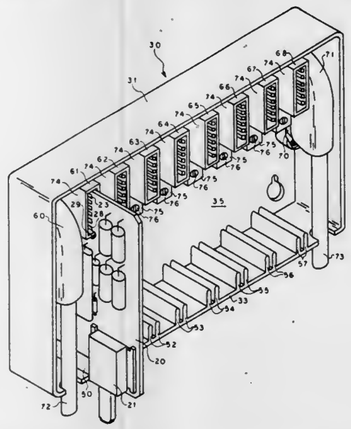
(4) connection means conductively connected to the laminate conductive layer and accessible to the exterior of the laminate at a selected location on the card adapting the card for application of a selected potential to the laminate conductive layer.

4,242,721

ELECTRICAL CONNECTOR ASSEMBLY FOR INTERCONNECTING REMOTE SIGNAL STATIONS TO CENTRAL SIGNAL PROCESSING SYSTEMS

Ronald F. Krolak, North Riverside; Jay Perna, Naperville, and Frederick J. Radloff, Northlake, all of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 20, 1977, Ser. No. 843,923
Int. Cl.³ H05K *7/14*
U.S. Cl. 361—415 **38 Claims**



1. An electrical connector assembly for selectively receiving a plurality of impedance networks and for selectively interconnecting a plurality of remote signal stations having predetermined signal characteristics to a central signal processing system, comprising:

housing means including plural sidewalls and a bottom wall for defining a receiving cavity;

first multiple contact means within said cavity including a first plurality of contacts adapted for connection to the central signal processing system;

second multiple contact means within said cavity including a second plurality of contacts correspondingly associated with said first plurality of contacts and adapted for connection to the remote signal stations;

a plurality of intermediate multiple contact means within said cavity, each said intermediate multiple contact means including a third plurality of contacts correspondingly associated with said first and second plurality of contacts and adapted for selective and independent connection to an impedance network;

circuit means within said cavity for interconnecting corresponding contacts of said first, second and third plurality of contacts and for interconnecting correspondingly associated remote signal stations to the central signal processing system as each said third plurality of contacts is coupled to an impedance network;

support means within said cavity for supporting the impedance networks within said housing means; and

one of said sidewalls being associated with said second multiple contact means and said housing including a partition wall spaced from said one sidewall with said support means being associated with said partition wall.

4,242,722

CAPACITOR CONTAINING ANTHRANILATE ELECTROLYTE

Sidney D. Ross, Williamstown; Manuel Finkelstein, North Adams, and Franz S. Dunkl, Williamstown, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 21, 1979, Ser. No. 22,553
Int. Cl.³ H01G *9/02*
U.S. Cl. 361—433 **2 Claims**

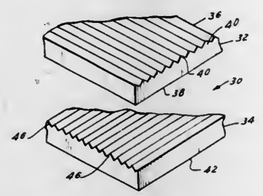
1. An electrolytic capacitor comprising a formed anode electrode, a cathode electrode, interleaved spacers therebetween, and as liquid electrolyte in contact therewith, 4.1 to 15.7 wt% of ammonium anthranilate dissolved in a polar organic solvent selected from the group consisting of ethylene glycol and ethylene glycol mixed with butyrolactone, methyl carbitol, N,N-dimethylformamide, 3-ethyl-2-oxazolidone, 3-methoxypropionitrile, dimethylsulfoxide, said electrolyte containing 1 to 10 wt% water and having a room-temperature resistivity of 254 to 584 Ω-cm.

4,242,723

LOW LEVEL WORK AREA LIGHTING SYSTEM

William C. Fabbri, Billerica, and Paul T. Metcalf, II, Methuen, both of Mass., assignors to Keene Corporation, New York, N.Y.

Filed May 14, 1979, Ser. No. 38,642
Int. Cl.³ A61G *13/00*
U.S. Cl. 362—33 **6 Claims**



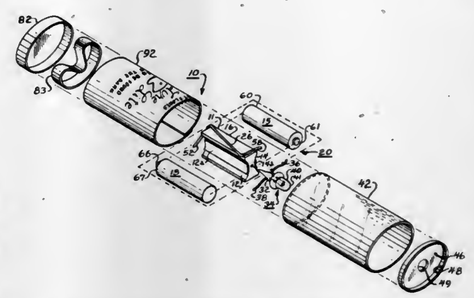
1. A work area lighting system comprising: a housing positioned above a work area, said housing having an open-bottom end; a linear light source mounted within said housing; a refractor for providing substantially uniform light distribution over the work area in the direction parallel to said light source as well as the direction transverse to the light source, said refractor comprising a pair of overlying plate members mounted to said housing closing said open bottom end, said refractor including first and second refractor plate members each substantially co-extensive in length with said light source; said first plate member having a light incident surface comprising a plurality of spaced prisms extending parallel to said linear light source; and said second plate member having a light incident surface comprising a plurality of spaced prisms extending perpendicular to said linear light source.

4,242,724

DISPOSABLE FLOATING FLASHLIGHT

Wilfred S. Stone, 204-6 S. 13th Ave., St. Charles, Ill. 60174

Filed Apr. 27, 1979, Ser. No. 34,066
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—158 **12 Claims**



1. A floating electric flashlight including

a sealed water-resistant casing defining a flotation chamber and including an air chamber portion at each end of said casing having substantially equal volumes of air confined therein for maintaining and balancing the flotation of said flashlight in a predetermined orientation when placed in water,

electrical energy producing storage means for providing a source of electrical energy and an electrically energizable light bulb carried within said casing,

said storage means and said light bulb coupled into an electrical circuit for connecting the electrical energy from said storage means to said light bulb for effecting the illumination thereof, and

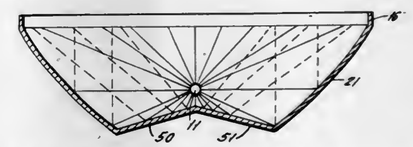
normally open switch means carried entirely within said casing, and coupled into said electrical circuit and operable into a closed position upon flexing said casing for coupling the electrical energy from said storage means to said light bulb thereby effecting the illumination thereof.

4,242,725

LIGHT REFLECTOR STRUCTURE

William L. Douma, West Paterson, and Ward E. Brigham, Rutherford, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

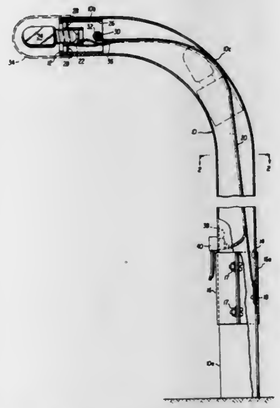
Filed Dec. 1, 1977, Ser. No. 856,279
Int. Cl.³ H02B *1/20*
U.S. Cl. 362—341 **8 Claims**



1. A reflector for producing a uniform distribution of radiation over a given area comprising: a lamp elongated along a straight line and a modified parabolic reflector extending substantially coextensively with said lamp; said lamp being supported generally parallel to and within a relatively short distance of the focal line of said reflector; said reflector defining a parabolic surface except in the central surface region of said reflector, and said central surface region of said reflector being uniformly and symmetrically distorted inwardly toward said lamp and away from said parabolic surface defined by the undistorted regions of said reflector, for modifying the intensity distribution of radiation reflected by said reflector from one having increased intensity toward the laterally central

regions of said reflector to one having a more even lateral intensity distribution.

4,242,726
ELEVATED LIGHT SYSTEM
Rufus P. Steadman, Rte. 2, Box 249, Middleton, Tenn. 38052
Filed May 10, 1979, Ser. No. 37,976
Int. Cl.³ F21V *19/02*
U.S. Cl. 362—418 **14 Claims**

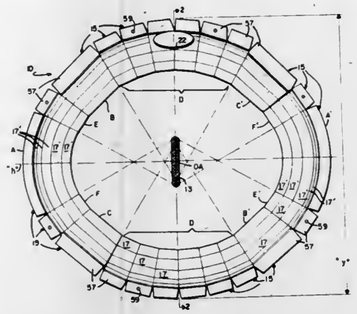


1. In a composite assembly of an elevated and stabilized standard, as a tower or pole structure to carry a light or other signal fixture for street and highway lighting; the provision of a carriage carrying the fixture and associated with the standard for movement substantially along the length thereof between a lower accessible position permitting repair, replacement or other servicing of the fixture and an upper position with the fixture in operative location; and elongate actuating means with permissive lateral flexing connected to the carriage and extending from the upper position thereof along the standard in at least partially laterally confined association therewith to a lower accessible position for service personnel to manipulate the same for lowering and raising the carriage with the included fixture.

4,242,727
LUMINAIRE REFLECTOR
Hendrik A. J. deVos, and Elzear R. Labouliere, both of Swansea, Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Mar. 29, 1979, Ser. No. 25,257
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—346 **16 Claims**

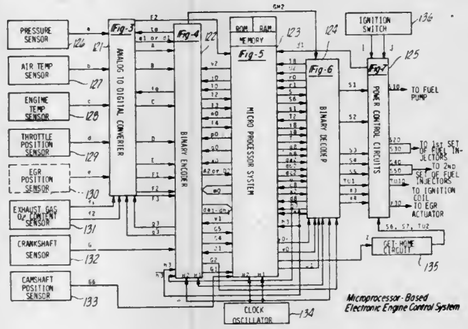
1. A concave reflector for being positioned within a luminaire having an elongated light source therein and adapted for illuminating a subject field located an established distance therefrom, said reflector comprising:

a plurality of adjoining segment members defining a forward opening for said reflector and adapted for substantially surrounding said elongated light source, each of said segment members including a plurality of reflective facets thereon, said facets arranged to reflect light from said elongated light source through said forward opening of said reflector and produce a substantially rectangular, controlled pattern of light on said subject field, each of said segment members arranged such that the facets thereof reflect light primarily onto only a preselected



portion of said rectangular pattern of light on said subject field.

4,242,728
INPUT/OUTPUT ELECTRONIC FOR MICROPROCESSOR-BASED ENGINE CONTROL SYSTEM
Thomas W. Hartford, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Feb. 27, 1978, Ser. No. 881,323
Int. Cl.³ F02D *21/04*; F02M *25/06*; G06F *7/70*
U.S. Cl. 364—431 **10 Claims**



1. A microprocessor-based electronic engine control system responsive to one or more engine-operating parameters for generating one or more control commands for operating such engine functions as fuel injection, ignition timing, and proportional EGR control, said system including an engine having an intake system, an exhaust system, conduit means for operatively connecting said exhaust system to said intake system for recirculating exhaust gases back to said intake system to modify the air-fuel ratios existing therein, an EGR valve disposed at least partially within said conduit means and responsive to an EGR control signal for selectively increasing and decreasing the quantity of exhaust gases recirculated back to said intake system, said electronic engine control system further including a microprocessor, memory means operatively associated with said microprocessor, means for sensing the actual relative position of said EGR valve and generating a digital word indicative thereof, the improvement comprising memory means storing data representative of a look-up table of modifier values which are a function of at least EGR valve positions stored in said memory means and addressable by said digital word, program storage means implemented by said microprocessor and responsive to sensed engine-operating parameters for calculating a desired EGR valve position and generating a computer-calculated EGR command indicative thereof, means responsive to said EGR command for generating a count indicative thereof and counter means for initially storing said count and decrementing same to produce an EGR pulse-width output signal in response thereto for selectively re-positioning said EGR valve.

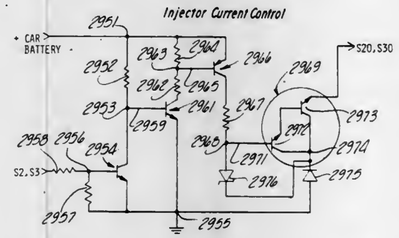
2. In a microprocessor-based engine control system including a microprocessor means, memory means for storing a program for implementing at least one control law, said microprocessor being responsive to one or more engine operating parameters for normally generating fuel injection commands, the improvement comprising:

means for detecting a failure in said system and for generating a signal indicative thereof;

means responsive to said failure indicative signal for generating a series of limp home fuel control pulses sufficient to enable the vehicle to travel a short distance for repairs;

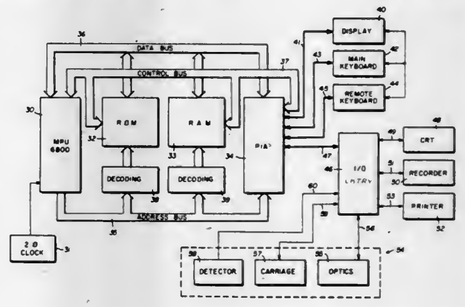
said means for generating said series of "limp home" fuel control pulses includes one-shot multivibrator means responsive to the generation of each of said engine position pulses for generating a corresponding "limp home" fuel control pulse, RC circuit means operatively coupled to said one-shot multivibrator means for determining the pulse duration of said "limp home" fuel control pulses, and pulse transmission gating means coupled to the output of said one-shot multivibrator means for receiving said "limp home" fuel control pulses whose generation is triggered by the generation of said engine position pulses, said transmission pulse gating means normally preventing said fuel injection means from receiving said "limp home" fuel control pulses but being responsive to the presence of said "fail" signal for passing said "limp home" fuel control pulses to said fuel injection means and enabling said "limp home" pulses to control the injection of fuel into said engine in spite of a failure in some portion of said microprocessor-based engine control system which might affect the reliability of said normally-generated fuel injection commands.

4,242,729
SWITCHING CONTROL OF SOLENOID CURRENT IN FUEL INJECTION SYSTEMS
Robert E. Weber, Newport News, and Patrick D. Harper, Seaford, both of Va., assignors to The Bendix Corporation, Southfield, Mich.
Filed Feb. 27, 1978, Ser. No. 881,324
Int. Cl.³ G05B *11/26*; F02M *51/00*; H03K *3/281*
U.S. Cl. 364—431 **1 Claim**



1. A control system for controlling the application of electrical energy from a source to a fuel injector means for an internal combustion engine including at least one solenoid-operated valve, each of said at least one solenoid-operated valve including a solenoid which is responsive to the supply of current thereto for producing relatively fast-acting valve openings and closings for precision control of the quantity of fuel injected by said solenoid-operated valve, and an electronic engine control system for generating a fuel control pulse indicative of a computed value of fuel to be injected into said engine, said control system comprising means connected between the electrical energy and the solenoid for switchably controlling the flow of current in said solenoid to minimize power consumption in response to the fuel control pulse, and a free-wheeling diode means connected in series with said switching means, said diode means and said switching means connected across the solenoid for maintaining current flow in said solenoid during the switching operation through said switching means.

4,242,730
SINGLE SCAN MICROPROCESSOR-CONTROLLED DENSITOMETER
Tipton Golias; Gene A. Butts, and Robert A. Swift, all of Beaumont, Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.
Filed Mar. 9, 1979, Ser. No. 19,041
Int. Cl.³ G06F *15/42*
U.S. Cl. 364—416 **30 Claims**



1. A method of graphically displaying optical density patterns of a sample of blood or the like for subsequent evaluation comprising the steps of:

optically scanning a sample a single time to generate a time-varying analog waveform which is a function of the optical density of the scanned sample;

converting the generated analog waveform into a set of digital signals;

storing the set of digital signals in memory as raw sample data;

retrieving said stored raw sample data to reproduce said time-varying analog waveform and displaying a normalized version of said analog waveform on a CRT device for visual operator inspection without rescanning said sample;

editing the visually displayed normalized analog waveform to selectively modify portions thereof; and

recording a graphical trace of said edited normalized analog waveform on a fixed medium for subsequent evaluation.

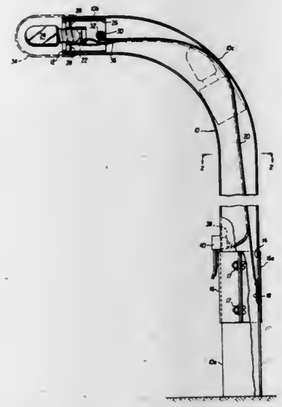
4,242,731
NAVIGATIONAL INFORMATION INDICATOR FOR SUPPLYING A VEHICLE DRIVER WITH MAKE-TURN INSTRUCTIONS
Masanori Mizote, Yokosuka; Kiyoshi Yamaki, Yokohama, and Takashi Oka, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Japan
Filed Jan. 24, 1979, Ser. No. 6,113
Claims priority, application Japan, Jan. 25, 1978, 53-6826
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—436 **9 Claims**

1. A navigational information indicator for supplying a vehicle driver with make-turn instructions, comprising:

(a) first means for producing a first signal indicative of the distance travelled by said vehicle from a starting point when the vehicle is driven from said starting point toward an objective point, and a second signal indicative of the distance remaining to said starting point when the vehicle

regions of said reflector to one having a more even lateral intensity distribution.

4,242,726
ELEVATED LIGHT SYSTEM
Rufus P. Steadman, Rte. 2, Box 249, Middleton, Tenn. 38052
Filed May 10, 1979, Ser. No. 37,976
Int. Cl.³ F21V *19/02*
U.S. Cl. 362—418 **14 Claims**

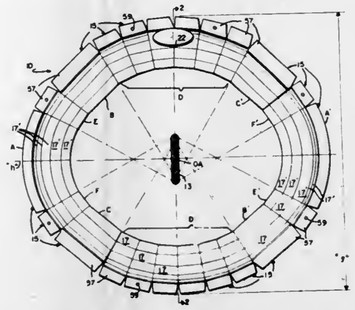


1. In a composite assembly of an elevated and stabilized standard, as a tower or pole structure to carry a light or other signal fixture for street and highway lighting; the provision of a carriage carrying the fixture and associated with the standard for movement substantially along the length thereof between a lower accessible position permitting repair, replacement or other servicing of the fixture and an upper position with the fixture in operative location; and elongate actuating means with permissive lateral flexing connected to the carriage and extending from the upper position thereof along the standard in at least partially laterally confined association therewith to a lower accessible position for service personnel to manipulate the same for lowering and raising the carriage with the included fixture.

4,242,727
LUMINAIRE REFLECTOR
Hendrik A. J. deVos, and Elzear R. Labouliere, both of Swansea, Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Mar. 29, 1979, Ser. No. 25,257
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—346 **16 Claims**

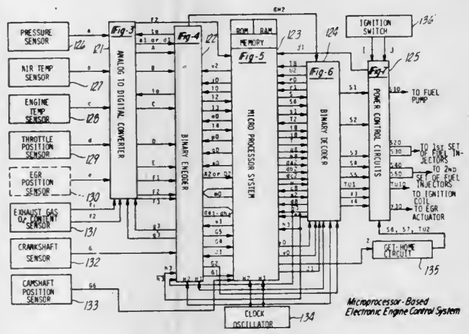
1. A concave reflector for being positioned within a luminaire having an elongated light source therein and adapted for illuminating a subject field located an established distance therefrom, said reflector comprising:

a plurality of adjoining segment members defining a forward opening for said reflector and adapted for substantially surrounding said elongated light source, each of said segment members including a plurality of reflective facets thereon, said facets arranged to reflect light from said elongated light source through said forward opening of said reflector and produce a substantially rectangular, controlled pattern of light on said subject field, each of said segment members arranged such that the facets thereof reflect light primarily onto only a preselected



portion of said rectangular pattern of light on said subject field.

4,242,728
INPUT/OUTPUT ELECTRONIC FOR MICROPROCESSOR-BASED ENGINE CONTROL SYSTEM
Thomas W. Hartford, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Feb. 27, 1978, Ser. No. 881,323
Int. Cl.³ F02D *21/04*; F02M *25/06*; G06F *7/70*
U.S. Cl. 364—431 **10 Claims**



1. A microprocessor-based electronic engine control system responsive to one or more engine-operating parameters for generating one or more control commands for operating such engine functions as fuel injection, ignition timing, and proportional EGR control, said system including an engine having an intake system, an exhaust system, conduit means for operatively connecting said exhaust system to said intake system for recirculating exhaust gases back to said intake system to modify the air-fuel ratios existing therein, an EGR valve disposed at least partially within said conduit means and responsive to an EGR control signal for selectively increasing and decreasing the quantity of exhaust gases recirculated back to said intake system, said electronic engine control system further including a microprocessor, memory means operatively associated with said microprocessor, means for sensing the actual relative position of said EGR valve and generating a digital word indicative thereof, the improvement comprising memory means storing data representative of a look-up table of modifier values which are a function of at least EGR valve positions stored in said memory means and addressable by said digital word, program storage means implemented by said microprocessor and responsive to sensed engine-operating parameters for calculating a desired EGR valve position and generating a computer-calculated EGR command indicative thereof, means responsive to said EGR command for generating a count indicative thereof and counter means for initially storing said count and decrementing same to produce an EGR pulse-width output signal in response thereto for selectively re-positioning said EGR valve.

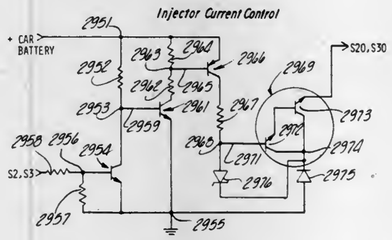
2. In a microprocessor-based engine control system including a microprocessor means, memory means for storing a program for implementing at least one control law, said microprocessor being responsive to one or more engine operating parameters for normally generating fuel injection commands, the improvement comprising:

means for detecting a failure in said system and for generating a signal indicative thereof;

means responsive to said failure indicative signal for generating a series of limp home fuel control pulses sufficient to enable the vehicle to travel a short distance for repairs;

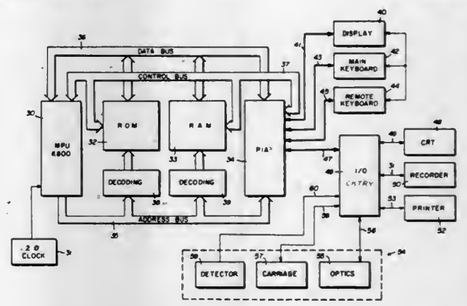
said means for generating said series of "limp home" fuel control pulses includes one-shot multivibrator means responsive to the generation of each of said engine position pulses for generating a corresponding "limp home" fuel control pulse, RC circuit means operatively coupled to said one-shot multivibrator means for determining the pulse duration of said "limp home" fuel control pulses, and pulse transmission gating means coupled to the output of said one-shot multivibrator means for receiving said "limp home" fuel control pulses whose generation is triggered by the generation of said engine position pulses, said transmission pulse gating means normally preventing said fuel injection means from receiving said "limp home" fuel control pulses but being responsive to the presence of said "fail" signal for passing said "limp home" fuel control pulses to said fuel injection means and enabling said "limp home" pulses to control the injection of fuel into said engine in spite of a failure in some portion of said microprocessor-based engine control system which might affect the reliability of said normally-generated fuel injection commands.

4,242,729
SWITCHING CONTROL OF SOLENOID CURRENT IN FUEL INJECTION SYSTEMS
Robert E. Weber, Newport News, and Patrick D. Harper, Seaford, both of Va., assignors to The Bendix Corporation, Southfield, Mich.
Filed Feb. 27, 1978, Ser. No. 881,324
Int. Cl.³ G05B *11/26*; F02M *51/00*; H03K *3/281*
U.S. Cl. 364—431 **1 Claim**



1. A control system for controlling the application of electrical energy from a source to a fuel injector means for an internal combustion engine including at least one solenoid-operated valve, each of said at least one solenoid-operated valve including a solenoid which is responsive to the supply of current thereto for producing relatively fast-acting valve openings and closings for precision control of the quantity of fuel injected by said solenoid-operated valve, and an electronic engine control system for generating a fuel control pulse indicative of a computed value of fuel to be injected into said engine, said control system comprising means connected between the electrical energy and the solenoid for switchably controlling the flow of current in said solenoid to minimize power consumption in response to the fuel control pulse, and a free-wheeling diode means connected in series with said switching means, said diode means and said switching means connected across the solenoid for maintaining current flow in said solenoid during the switching operation through said switching means.

4,242,730
SINGLE SCAN MICROPROCESSOR-CONTROLLED DENSITOMETER
Tipton Golias; Gene A. Butts, and Robert A. Swift, all of Beaumont, Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.
Filed Mar. 9, 1979, Ser. No. 19,041
Int. Cl.³ G06F *15/42*
U.S. Cl. 364—416 **30 Claims**



1. A method of graphically displaying optical density patterns of a sample of blood or the like for subsequent evaluation comprising the steps of:

optically scanning a sample a single time to generate a time-varying analog waveform which is a function of the optical density of the scanned sample;

converting the generated analog waveform into a set of digital signals;

storing the set of digital signals in memory as raw sample data;

retrieving said stored raw sample data to reproduce said time-varying analog waveform and displaying a normalized version of said analog waveform on a CRT device for visual operator inspection without rescanning said sample;

editing the visually displayed normalized analog waveform to selectively modify portions thereof; and

recording a graphical trace of said edited normalized analog waveform on a fixed medium for subsequent evaluation.

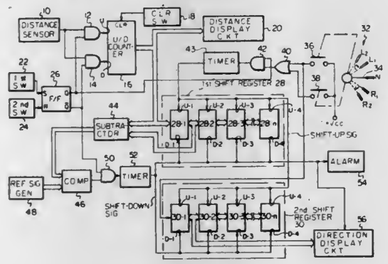
4,242,731
NAVIGATIONAL INFORMATION INDICATOR FOR SUPPLYING A VEHICLE DRIVER WITH MAKE-TURN INSTRUCTIONS
Masanori Mizote, Yokosuka; Kiyoshi Yamaki, Yokohama, and Takashi Oka, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Japan
Filed Jan. 24, 1979, Ser. No. 6,113
Claims priority, application Japan, Jan. 25, 1978, 53-6826
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—436 **9 Claims**

1. A navigational information indicator for supplying a vehicle driver with make-turn instructions, comprising:

(a) first means for producing a first signal indicative of the distance travelled by said vehicle from a starting point when the vehicle is driven from said starting point toward an objective point, and a second signal indicative of the distance remaining to said starting point when the vehicle

is driven back from said objective point toward said starting point;

(b) second means for producing a third signal indicative of the direction of each turn of said vehicle, said second means comprising a turn signal switch including a pivotable lever, said lever being manually pivotable selectively in clockwise and counterclockwise directions from a neutral position to respectively assume first and second positions for producing right and left turn signals, said lever being further pivotable by manual force selectively in said clockwise and counterclockwise directions beyond said first and second positions to respectively assume third and fourth positions, and switching means operated by said lever to (1) produce a first turn signal indicative of a right turn, as said third signal, when said lever assumes said third position, and (2) produce a second turn signal indicative of a left turn, as said third signal, when said lever assumes said fourth position, said lever automatically returning to said first and second positions respectively from said third and fourth positions when the manual force is removed;



(c) third means for sequentially storing information indicated by said first signal during turning;

(d) fourth means for sequentially storing information indicated by said third signal during turning;

(e) fifth means for controlling the storing function of said third and fourth means, said fifth means including said switching means which produces one of said turn signals when said lever of said turn signal switch assumes either one of said third and fourth positions;

(f) sixth means responsive to information read out from said third means in the reverse sequence with respect to which it was stored and to said second signal indicative of the remaining distance, said sixth means producing a fourth signal which triggers said fourth means to read out a piece of information from said fourth means in the reverse sequence with respect to which it was stored when the remaining distance has a predetermined relationship with respect to a distance indicated by said read out information; and

(g) seventh means for visually displaying a navigational sign in accordance with the information read out from said fourth means.

4,242,732

COMMUTATING NARROWBAND FILTER

Kenneth J. Campbell, Solana Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

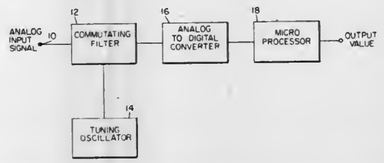
Filed Feb. 5, 1979, Ser. No. 9,206
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—485 **5 Claims**

4. A narrowband filter having a digital output, comprising:

a commutating filter means which includes a plurality of RC networks to which an input analog signal to be filtered is commutated at a commutation frequency, having a first input for receiving the input signal, a second input, and an output for providing a series of discrete voltages taken sequentially from the RC networks;

a variable frequency means connected to the second input of the commutating filter for selecting the commutation frequency;

an analog to digital conversion means having an input connected to the output of the commutating filter and having an output for converting said series of discrete voltages into a series of digital words; and



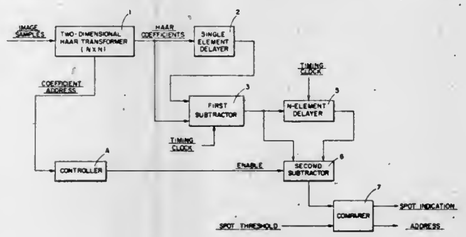
a processing means having an input connected to the output of the conversion means and having an output for processing the digital words by use of a Discrete Fourier Transform to compute the spectral content of the input signal at the selected commutation frequency, and for providing a digital representation of the spectral content of the input signal in a frequency band centered on the commutation frequency.

4,242,733

IMAGE SPOT DETECTOR USING HAAR COEFFICIENTS

Bruce C. Deal, Santa Ana, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Aug. 27, 1979, Ser. No. 69,882
Int. Cl.³ H04N *7/12*; G06F *15/332*
U.S. Cl. 364—515 **2 Claims**



1. A machine for processing successive n×n arrays of digital data, which data represents two-dimensional images, for the purpose of detecting image spots comprising:

(a) two-dimensional Haar transformer means for Haar transforming the digital data in two dimensions into successive n×n arrays of transform coefficients,

(b) single element delayer means for delaying, by one transform coefficient, the sequence of Haar transform coefficients output by said two-dimensional Haar transformer means,

(c) first subtractor means for forming the difference between each transform coefficient output by two-dimensional Haar transformer means and each delayed transform coefficient output by said single element delayer means,

(d) n-element delayer means for delaying the difference output by first subtractor means,

(e) second subtractor means for forming the difference between each difference output by first subtractor means and each delayed difference output by n-element delayer means,

(f) controller means for receiving the coefficient addresses output by two-dimensional Haar transformer means and outputting an enabling signal to second subtractor means for those double differences that are sensitive to spots, said second subtractor means outputting a double difference only when enabled by controller means, and

(g) comparer means containing a preselected threshold for comparing the output of said second subtractor means to the threshold and outputting a spot indication and its address whenever the absolute magnitude of the output of second subtractor means exceeds the threshold.

4,242,734

IMAGE CORNER DETECTOR USING HAAR COEFFICIENTS

Bruce C. Deal, Santa Ana, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Aug. 27, 1979, Ser. No. 69,883
Int. Cl.³ H04N *7/12*; G06F *15/332*
U.S. Cl. 364—515 **3 Claims**



1. A machine for processing successive n×n arrays of digital data, which data represents two-dimensional images, for the purpose of detecting image corners comprising:

(a) two-dimensional Haar transformer means for Haar transforming the digital data in two dimensions into successive n×n arrays of transform coefficients,

(b) comparator and thresholder means having a preselected threshold set therein,

(c) a read-only memory containing a list of transform coefficients that are sensitive to corners, the output of said read-only memory being fed to said comparator and thresholder means,

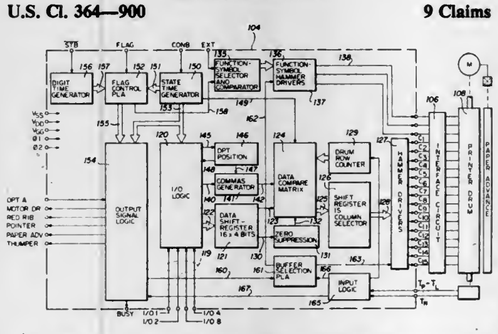
(d) said comparator and thresholder means comparing the preselected threshold with the absolute magnitude of each of the transform coefficients that are sensitive to corners, and outputting an indication of a corner together with the transform coefficient and its address whenever the absolute magnitude of the transform coefficient exceeds said preselected threshold.

4,242,735

CALCULATOR-PRINTER INTERFACE WITH NUMERICAL STRING SEGMENTATION

Joe F. Sexton, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 680,834, Apr. 28, 1976, abandoned, which is a continuation of Ser. No. 429,336, Dec. 28, 1973, abandoned. This application Nov. 20, 1978, Ser. No. 962,420
Int. Cl.³ G06F *3/12*
U.S. Cl. 364—900 **9 Claims**



1. In a printer control system for controlling the printing of a set of numerals and a decimal point in response to a sequence of multibit data words including a decimal point position word indicating the position of a decimal point followed by a plurality of numeral words indicating respective numerals of the set of numerals, the combination comprising:

(a) an input means for receiving the sequence of data words;

(b) a first clock pulse generating means for generating a first series of clock pulses at a first predetermined rate;

(c) a shift register connected to said first clock pulse generator having a plurality of sections equal in number to the number of bits in the multibit data words, each section including a predetermined number of sequentially connected elements, said predetermined number being at least as great as the number of data words in the sequence of data words, said shift register for storing data words in a set of corresponding elements in each of said plurality of sections and for shifting said stored data words along said sequence of elements at said first predetermined rate of said first series clock pulses; and

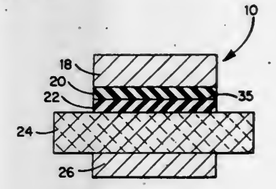
(d) a logic gate means, connected to said input means and said shift register, for entering numeral words received by said input means into said shift register one at a time in the order in which they are received and for entering a data word indicative of a decimal point into said shift register in a position within the sequence of numeral words indicated by the decimal point position word.

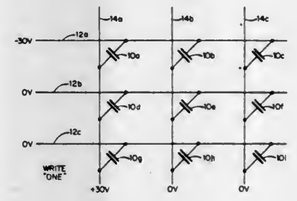
4,242,736

CAPACITOR MEMORY AND METHODS FOR READING, WRITING, AND FABRICATING CAPACITOR MEMORIES

Jack I. Raffel, and John A. Yassaitis, both of Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 737,165, Oct. 29, 1976, abandoned. This application Feb. 1, 1979, Ser. No. 8,551
Int. Cl.³ G11C *7/00, 11/24*
U.S. Cl. 365—191 **34 Claims**





1. The process of writing in a capacitor memory array, the array comprising a plurality of isolated capacitor cells, each cell including at least a first conductive layer, a first dielectric insulating layer, a second dielectric insulating layer, a doped semiconductor layer, and a second conductive layer, the first conductive layers of said cells being grouped and interconnected into a plurality of word lines and the second conductive layers of said cells being grouped and interconnected into a plurality of bit lines, one each of said bit and word lines uniquely identifying a capacitor cell, and each cell having two capacitor states, the process including the steps of

applying to at least one selected cell of said memory array a

first potential (a) having a polarity to drive a portion of the substrate of said cell into depletion, (b) having a sufficient magnitude to effect avalanche breakdown in said depletion portion of the substrate of said cell, and (c) having sufficient magnitude and duration to change the state of said cell and simultaneously

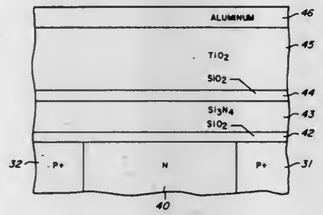
applying to unselected cells of said memory array at least a second potential having a magnitude and duration insufficient to change a state of said unselected cells.

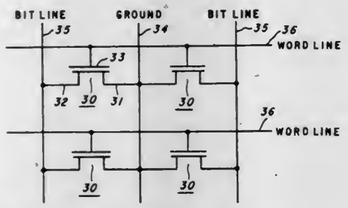
4,242,737

NON-VOLATILE SEMICONDUCTOR MEMORY ELEMENTS

Robert T. Bate, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 27, 1978, Ser. No. 963,855
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—184 **11 Claims**





7. A memory element comprising:

a semiconductor body;

a first layer of silicon dioxide upon said body, said first layer having a thickness less than 150 A;

a layer of silicon nitride upon said silicon dioxide layer, said silicon nitride layer having a thickness less than 750 A;

a second layer of silicon dioxide upon said nitride layer, said second layer having a thickness less than 125 A;

an insulating layer upon said second silicon dioxide layer; and

a conducting layer upon said insulating layer.

4,242,738

LOOK AHEAD HIGH SPEED CIRCUITRY

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 81,040
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **13 Claims**

1. The combination comprising:

first and second power terminals for the application thereto of first and second voltages, respectively;

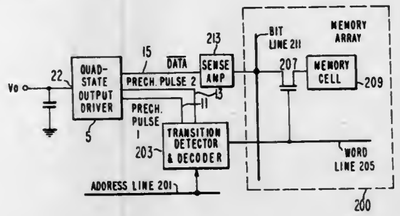
an output point;

first and second transistors, each transistor having a conduction path and a control electrode,

means connecting the conduction path of said first transistor between said first power terminal and said output point;

means connecting the conduction path of said second transistor between said output point and said second power terminal;

a first means coupled to the control electrodes of said first and second transistors for, selectively, turning either one of them on and the other one off and for, selectively, turning them both off; and



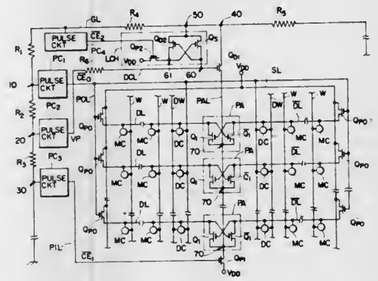
second means coupled to the control electrodes of said first and second transistors for, selectively, turning them both on and charging said output point to a level intermediate the voltages applied to said first and second power terminals.

4,242,739

MEMORY SYSTEM WITH A STABILIZED SENSE AMPLIFIER

Ryoichi Hori, Hinodemachi, and Kiyoo Itoh, Higashi-kurume, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 2, 1979, Ser. No. 26,188
Claims priority, application Japan, Mar. 31, 1978, 53-36774
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 **14 Claims**



1. A memory system comprising:

(a) a plurality of data lines to which a plurality of memory cells are connected;

(b) detection means connected to said plurality of data lines for detecting voltages' thereof, said detection means including a latch node, wherein the operation of said detection means depends on a voltage level of said latch node such that when said latch node voltage level is in first and second ranges of voltage, said detection means is disabled and enabled, respectively;

(c) first precharge means connected to said latch node for charging said latch node to a first voltage which is within said first range of voltage;

(d) first discharge means connected to said latch node for discharging said latch node in order to shift the voltage thereof from said first voltage to a second voltage within said second range of voltage, said first discharge means discharging when a signal applied to a control electrode thereof has a level above a predetermined threshold value;

(e) means for generating a first pulse signal having first and second levels; and

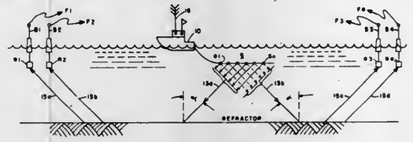
(f) transformation means connected to said generating means and said control electrode of said first discharge means for transforming said first pulse signal into a second pulse signal which has levels lower and higher than said threshold value when said first pulse signal has said first and second levels, respectively.

4,242,740

SEISMIC REFRACTION EXPLORATION

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 9, 1978, Ser. No. 868,100
Int. Cl.³ G01V *1/13, 1/38*
U.S. Cl. 367—15 **9 Claims**



1. A method of marine seismic refraction exploration comprising the steps of:

(a) estimating the maximum and minimum of emergent angles for refracted acoustic energy that will travel from subsurface layers to a surface to be traversed by a line of exploration,

(b) determining the angular difference between said minimum and said maximum emergent angles,

(c) providing an elongated array of spaced seismic sources for movement along said line of exploration and having a length such as to produce a lobe of seismic energy whose points representing half power response subtend with respect to the vertex of said lobe an angle approximate to the value of said angular difference,

(d) generating with said array said lobe of seismic energy,

(e) rotating said lobe of seismic energy to a position so that points defining said half power response fall respectively on said minimum and said maximum emergent angles,

(f) continuing to generate said lobe of seismic energy,

(g) detecting at the surface acoustic energy emerging from the subsurface layers, and

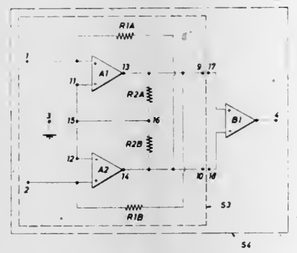
(h) recording said detected energy as a function of time.

4,242,741

FLOATING SHUNT SEISMIC AMPLIFIER

John F. Parrish, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 19, 1979, Ser. No. 4,644
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—21 **22 Claims**



1. A floating shunt amplifier comprising:

two operational amplifiers, each amplifier having positive and negative polarity inputs and an output;

two feedback loops electrically connected to said operational amplifiers, a first feedback loop connecting the output of a first operational amplifier to the positive polarity input of the second operational amplifier, the second feedback loop connecting the output of the second operational amplifier to the positive polarity input of the first operational amplifier, each of said feedback loops including an impedance serially disposed therein; and,

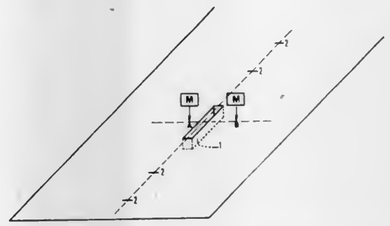
means connected to said negative polarity inputs of said operational amplifiers for maintaining said negative polarity inputs at the common mode input potential of said floating shunt amplifier.

4,242,742

PROCESS FOR ELIMINATING LONGITUDINAL WAVE COMPONENTS IN SEISMIC EXPLORATION

Robert J. Garotta, Chatenay Malabry, France, assignor to Compagnie Generale de Geophysique, France

Filed Mar. 9, 1979, Ser. No. 19,034
Claims priority, application France, Mar. 22, 1978, 78 08310
Int. Cl.³ G01V *1/00, 1/28*
U.S. Cl. 367—75 **4 Claims**



1. A method of seismic exploration, including the steps of

applying to the surface of the soil a plurality of vertical impacts at points separated by a vertical trench cut in the soil,

recording the vibrations propagating in the soil subsequent to and as a result of each impact, and

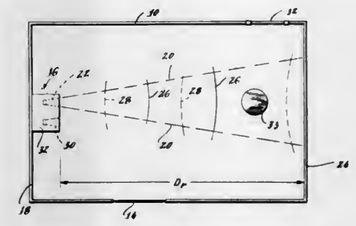
subtracting recordings resulting from impacts on one side of the trench from recordings resulting from impacts at corresponding locations on the other side of the trench, in order to eliminate the effect of longitudinal waves created by the impacts.

4,242,743

INTRUSION DETECTION METHOD AND APPARATUS

Robert J. Salem, Danbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,236
Int. Cl.³ G08B *13/16*
U.S. Cl. 367—93 **14 Claims**



1. An improved method for detecting the presence of an intruding object or certain other environmental changes in a protected area, the method comprising the steps of:

(a) projecting a reference pulse of acoustical energy from a source into an area towards a reflective surface therein,

(b) establishing a reference parameter (T_r) having a magnitude proportional to the interval of time elapsed between

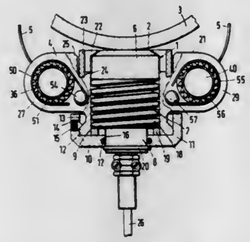
projection of said reference pulse and reflection of said reference pulse to a receiver,
(c) projecting a similar pulse of acoustical energy from the source towards the reflective surface,
(d) establishing an elapsed time parameter (T_e) having a magnitude proportional to the interval of time elapsed between projection of said similar pulse and reflection of said similar pulse to the receiver,
(e) comparing the magnitude of the elapsed time parameter (T_e) with the magnitude of the reference parameter (T_r) and sensing for a variation (ΔT) therebetween, and
(f) generating an alarm in response to a variation (ΔT).

4,242,744

FIXING OF SONIC TRANSDUCER TO A CONTAINER

Werner Rottmar, Loerrach, Fed. Rep. of Germany, assignor to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,558
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743394
Int. Cl.³ G01H *1/00*
U.S. Cl. 367—173 **12 Claims**



1. A device for fixing a sonic or ultrasonic transducer to a container, comprising a holder adapted to be applied to the outside of the container and having an internal recess which is open towards the container and in which said transducer is arranged axially displaceable, a first spring mounted in said recess so as to urge said transducer outward towards the container, and a clamping strip extending around the periphery of said container and connected to said holder by connecting members at both sides of said transducer for clamping the holder to the container and for maintaining the transducer in contact with the container, at least one of said connecting members including a tensioning device for tightening said clamping strip, said tensioning device including a second spring for determining the clamping force of said clamping strip without affecting the contact pressure of the transducer with respect to the container.

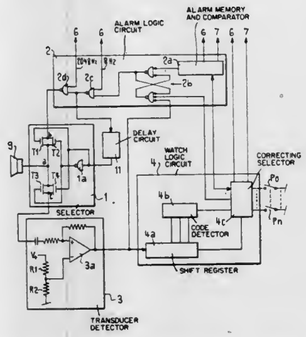
4,242,745

ELECTRONIC TIMEPIECE WITH ELECTROACOUSTIC TRANSDUCER

Claude Mutrux, Marin, Switzerland, assignor to Ebauches Electroniques SA, Marin, Switzerland

Filed Dec. 13, 1978, Ser. No. 968,919
Claims priority, application Switzerland, Dec. 23, 1977, 15935/77
Int. Cl.³ G04B *23/02, 17/00;* G04C *21/16*
U.S. Cl. 368—73 **6 Claims**

1. An electronic timepiece having an alarm means and including a time base source supplying signals to a display control circuit for controlling a display, comprising:
an electroacoustic transducer capable of emitting acoustic signals of audible frequencies in response to electrical audio frequency output signals and of producing electrical audio frequency input signals in response to received acoustic signals of audible frequencies; and
a watch and transducer control logic network coupled to said time base pulse source, said display control circuit, and said electroacoustic transducer, said control logic network including first means coupled to said time base pulse source for generating said electrical audio frequency output signals;
said control logic network including second means responsive to said electrical audio frequency input signals produced by said transducer for effecting a change in a predetermined operative condition of the timepiece;
said control logic network further including selector means normally operatively connecting said electroacoustic



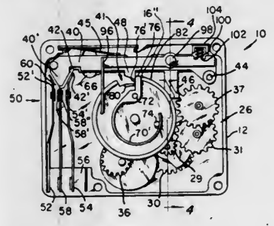
transducer to said second means whereby said transducer normally functions as a receiver of said acoustic signals of audible frequencies, said selector means further being responsive to activation of said alarm means for alternatively operatively connecting said transducer, alternately to said first means thereby causing said transducer to emit an acoustic alarm signal in response to said electrical audio frequency output signals, and to said second means thereby causing said transducer to receive said acoustic signals, thus permitting at least one operative condition of the timepiece to be controlled by an acoustic signal of audio frequency.

4,242,746

TIMING MECHANISM WITH TWO SEPARATE PROGRAMS OPERATING SEPARATE SWITCH ACTUATORS AND HAVING AN ALARM SYSTEM

Maurice E. Schuder, Indianapolis, and Richard W. Stafford, Clayton, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Oct. 2, 1978, Ser. No. 947,594
Int. Cl.³ G04F *8/00;* G04C *21/16;* H01H *43/10*
U.S. Cl. 368—109 **6 Claims**



1. A timing mechanism having power drive means rotating first and second cam means and a double pole switch means opening and closing to a rotation of said cam means comprising:
(a) coupling means coupling said power drive means to said cam means,

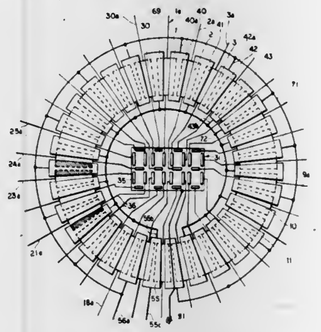
(b) first and second spring blades disposed in substantially parallel relation and having lengths which are substantially equal, first and second electrical contacts one each carried on each of said blades respectively near distal ends thereof and facing each other, a third spring blade disposed between said first and second spring blades and in substantial parallel relation therewith, said third spring blade having a length shorter than the lengths of said first and second spring blades so as to provide a gap between same at said distal ends, and third and fourth electrical contacts carried on opposed surfaces of said third spring blade in operational position with said first and second electrical contacts, and
(c) first and second actuator arms pivotly mounted at ends thereof to be pivoted in response to said cam means, a distal end of one of said actuator arms entering said gap and engaging said first and second spring blades to open said first and second electrical contacts from said third and fourth electrical contacts, a distal end of the other of said actuator arms entering said gap and engaging one of said first and second spring blades to open one of said first and second electrical contacts from one of said third and fourth electrical contacts.

4,242,747

ANALOG-DIGITAL CHRONOMETRIC DISPLAY

Kurt Fahrenschon, Kelkheim, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,572
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732877
Int. Cl.³ G04B *19/34*
U.S. Cl. 368—242 **9 Claims**



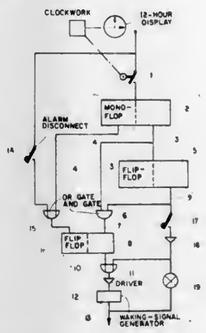
1. A chronometric indicator comprising:
an array of generally angularly equispaced electrodes each having a respective electrode connection;
an array of generally angularly equispaced analog display segments each having a respective segment connection and each having one half overlapping one respective electrode and another half overlapping another respective electrode; and
means connected to said connections and operable in a first phase to energize two of said segment connections and one of said electrode connections to indicate the hour by activating two of said halves, and in a second phase to energize a single one of said segment connections and a single one of said electrode connections to indicate the minute by activating one of said halves.

4,242,748

ELECTRIC ALARM CLOCK

Erich Scheer, St. Georgen,, Fed. Rep. of Germany, assignor to Kundo - Kieninger & Obergfell, St. Georgen, Fed. Rep. of Germany

Filed Mar. 22, 1978, Ser. No. 888,962
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713221
Int. Cl.³ G04B *23/00*
U.S. Cl. 368—244 **8 Claims**



1. A waking-signal control system for an electric alarm clock having a clockwork driving a 12-hour time display and having an alarm-signal contact settable over a 12-hour range, said system comprising in combination:
a waking-signal generator energizable to produce a waking signal;
a first circuit connected to and responsive to said contact for producing a signal at a time determined by the setting of said contact in each of two 12-hour cycles within a 24-hour period representing a day;
a timing multivibrator connected to said first circuit and responsive to the signal produced thereby for triggering between alternate states to output an operating signal in one of said states;
a second circuit connected to said multivibrator and responsive to said operating signal and connected to said signal generator for energizing same in response to only one of the signals triggered in said first circuit by said contact in each of the 12-hour cycles of the day; and
a manually actuatable switching device connected to the output of said multivibrator and a signal device connected in circuit with said switching device for indicating the 12-hour cycle over which said signal generator is to respond to said contact.

4,242,749

OPERATING SYSTEM FOR A DATA TRANSMISSION SYSTEM

Fumihiko Takezoe, Hachioji, Japan, assignor to Fuji Electric Co., Ltd., Japan

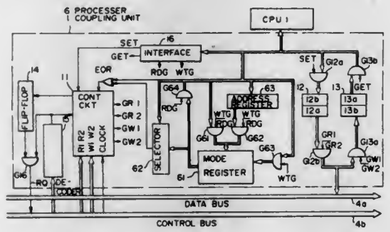
Filed Dec. 8, 1978, Ser. No. 967,634
Claims priority, application Japan, Dec. 30, 1977, 52-158454; Dec. 30, 1977, 52-158455
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—85 **8 Claims**

1. A system for selectively controlling the transmission of data selectively between plural central processing units and plural terminal units, said system comprising
at least two ports selectively connected to said processing and terminal units, each said port being directly connected to at least one of said processing and terminal units,
at least one common bus comprising a data highway for interconnecting said ports, and at least one other common bus within each said port for connection within said port

with the respective processing and terminal unit(s) connected to each said port,

mode set means in plural selected ports for receiving, storing and outputting mode set information representing the mode of operation in which each of a first selected group of said terminal units is to be operated,

means in at least one of said processing units for supplying said mode set information to said mode set means, and for supplying mode assignment information corresponding to said mode set information for a respective one of said



terminal units of said first group when said processing unit provides an instruction to said respective terminal unit, said instruction involving a data transfer involving said terminal unit,

collating means in a selected plurality of said ports for selectively comparing said mode set information with said mode assignment information for said respective terminal unit corresponding to said instruction for allowing the transmission of data corresponding to said instruction only if said mode set and mode assignment information of said respective terminal unit coincide.

4,242,750

PROCESS FOR TESTING A DATA TRANSMISSION SYSTEM EMPLOYING A TEST LOOP

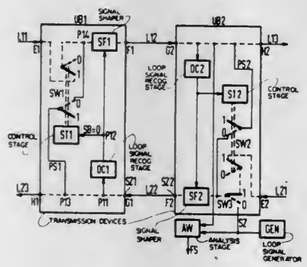
Herbert Finck, Wolfratshausen, and Konrad Reisinger, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,653

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 2746337

Int. Cl.³ H04L *17/00*

U.S. Cl. 371—22 **8 Claims**



1. In a process for testing a data transmission system by which data are transmitted via two transmission links and via first and second transmission devices, and in which a test loop is closed in response to a loop signal and a transmission section is tested, the improvement comprising the steps of:

transmitting a multi-bit loop signal from the second transmission device to the first transmission device; inverting at least one bit of the multi-bit loop signal at the first transmission device to form a modified loop signal; and transmitting the modified loop signal to the second transmission device.

4,242,751

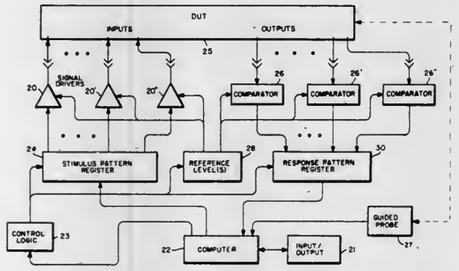
AUTOMATIC FAULT-PROBING METHOD AND APPARATUS FOR CHECKING ELECTRICAL CIRCUITS AND THE LIKE

Lutz P. Henckels, Park Ridge; Rene M. Haas, Bloomingdale, both of N.J., and Alan Levin, III, Acton, Mass., assignors to GenRad, Inc., Concord, Mass.

Continuation of Ser. No. 660,824, Feb. 24, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,430

Int. Cl.³ G01R *31/28*

U.S. Cl. 371—26 **12 Claims**



1. A method for using an interactive computer system for testing circuit units with the aid of a guided probe comprising connecting a circuit unit under test into the system; subjecting the circuit unit under test to a set of tests; upon detecting a failure, predicting the most likely internal failing nodes of the circuit unit; indicating to an operator successive predicted internal failing nodes to be probed, in order to expedite failure diagnosis; probing the predicted internal failing nodes; and in the event none of the predicted internal failing nodes turns out to be a failing node, indicating successive nodes to be probed by back-tracking from an external output node of the circuit under test.

4,242,752

CIRCUIT ARRANGEMENT FOR CODING OR DECODING OF BINARY DATA

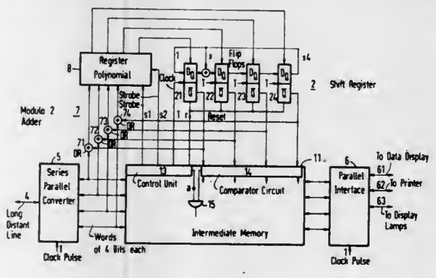
Hans Herkert, Hohenschaeftlarn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,010

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759106

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—37 **5 Claims**



1. Apparatus for receiving and checking incoming digital data comprising, a series parallel converter receiving on a long distant line incoming serial information and converting it to a plurality of equal bit length words which are supplied in parallel to a plurality of word lines, an intermediate memory connected to said plurality of word lines, a modulo-2 adder which receives first inputs from said plurality of word lines, a polynomial register which receives a plurality of outputs from said modulo-2 adder and dividing such inputs by a generator polynomial, a partial decoder receiving a plurality of outputs from said register and supplying a plurality of outputs to said intermediate memory and to second inputs of said modulo-2 adder, a comparator means in said intermediate memory receiving outputs from said partial decoder and detecting whether the information content in said incoming digital data is valid, and output means connected to said intermediate memory and receiving the output data if said incoming data is valid.

4,242,753

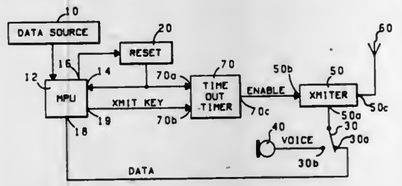
RADIO TRANSMITTER TIME OUT TIMER

Arman V. Dolikian, Palatine, and Thomas A. Freeburg, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1978, Ser. No. 882,519

Int. Cl.³ H04B *1/04;* H04L *27/04*

U.S. Cl. 375—70 **3 Claims**



1. A disable control circuit for a radio transmitter, said transmitter being both actuated and disabled by suitable actuation and disable control signals, comprising

input means, for input of transmitter actuation control signals;

detection means for detecting the average duty cycle, over a period of time, of repeating transmitter actuation control signals, and for producing a disable signal in response to said average duty cycle exceeding a predetermined limit;

disable means, coupled to the detection means and the transmitter, for disabling the transmitter in response to said disable signal.

4,242,754

CLOCK RECOVERY SYSTEM FOR DATA RECEIVER

Bernard M. H. DePouilly, Paris, and Edouard M. J. A. I. Issenmann, Versailles, both of France, assignors to Le Material Telephonique, Boulogne-Billacourt, France

Filed Nov. 24, 1978, Ser. No. 963,326

Claims priority, application France, Nov. 30, 1977, 77 36062

Int. Cl.³ H04L *7/02*

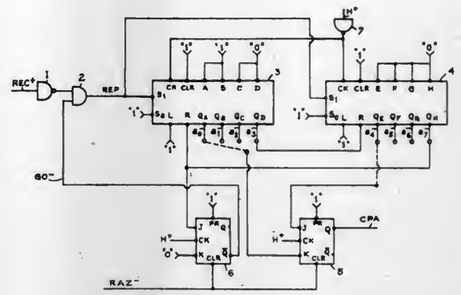
U.S. Cl. 375—110 **3 Claims**

1. A clock recovery system for a data receiver fed over a data transmission link with data in the form of binary pulse trains transmitted at a fixed clock frequency, said system comprising:

a ring counter triggering circuit which has the first of its two inputs connected to the data transmission link thereby to receive the binary pulse trains transmitted over said data transmission link;

a ring counter which has an input connected to the output of the ring counter triggering circuit to receive said binary pulse trains and which has one selected output connected to the second input of the ring counter triggering circuit, this output being selected in function of the length of the longest pulse to be considered as interference;

a JK flip-flop which has its inputs J and K connected to two chosen outputs of the ring counter and the output of which produces the recovered clock signal, the outputs being chosen in function of the position of the rising edges



and the length of the pulses desired for the recovered clock.

4,242,755

CIRCUIT ARRANGEMENT FOR DECODING DIGITAL SIGNALS

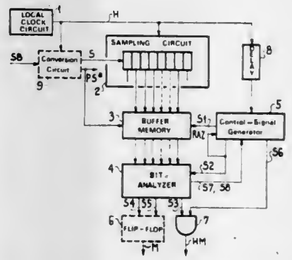
Pierre Gauzan, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation-in-part of Ser. No. 869,236, Jan. 13, 1978, abandoned. This application Sep. 18, 1979, Ser. No. 76,562

Claims priority, application France, Jan. 14, 1977, 77 01067

Int. Cl.³ H04L *7/00*

U.S. Cl. 375—114 **12 Claims**



1. A demodulator for binary message signals with bits distinguished by a characteristic phasing of two voltage levels, comprising:

local timing means for establishing a train of clock pulses with a cycle T1;

signal-generating means controlled by said clock pulses to establish a decoding interval T normally equaling n clock cycles T1 where n is an integer equal to at least 3;

sampling means connected to receive incoming message signals with bits whose length T' approximately equals said decoding interval T and to derive a plurality of samples from each of said bits;

bit-analyzing means connected to said sampling means for receiving therefrom at least some of the samples of an incoming message bit during each decoding interval in response to a transfer command from said signal-generating means, said bit-analyzing means being programmed to distinguish between predetermined acceptable configurations of bit samples and nonacceptable configurations differing therefrom and to discriminate among centered and off-centered acceptable configurations, with emission of a validating signal in the presence of any acceptable configuration and of a recalibration command in the presence of an off-centered configuration, said signal-generating means being responsive to said recalibrating command

for altering the next decoding interval by one clock cycle T1 to re-establish a normal time position between said decoding interval and the following message bits; and

circuit means connected to said bit-analyzing means for receiving said validating signal therefrom and controlled by said signal-generating means for emitting a synchronizing pulse, in the presence of said validating signal, at a predetermined time in each decoding interval.

4,242,756

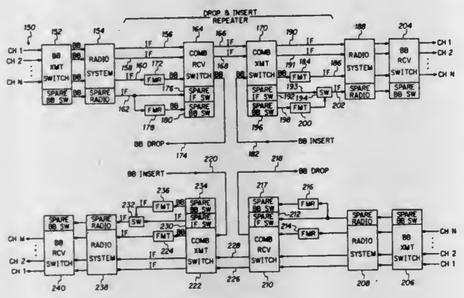
MULTILINE SWITCHING PROTECTION APPARATUS

Charles E. Huffman, Plano; Robert J. McGuire, and Herbert E. Welch, both of Richardson, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 21, 1979, Ser. No. 41,276

Int. Cl.³ H04B *1/60*

U.S. Cl. 455—8 **7 Claims**



1. The method of improving reliability in a drop and insert repeater portion of a multiline switch system having a single spare transmission frequency channel comprising, the steps of:

passing all signals to be retransmitted through normal use repeat frequency receive and transmit switches without signal frequency conversion;

signal frequency downconverting signals to be dropped prior to the drop frequency receive switch;

passing all signals to be dropped, after signal downconversion, through normal use drop frequency signal receive switches;

signal frequency upconverting signals to be inserted subsequent to any insert frequency normal use insert transmit switches;

dividing the received spare channel into two signal paths comprising retransmit and downconverted drop frequency signals;

passing the spare retransmit and spare drop frequency signals through separate spare repeat frequency and drop frequency receive switches;

periodically checking signals received at the normal receive switches for quality and switching to the spare repeat or spare drop frequency receive switch upon detection of a faulty signal received at a given normal receive switch in accordance with the type switch previously receiving the faulty signal;

passing insert frequency signals through insert frequency normal use switches in the transmit switch;

upconverting signals received from a spare insert frequency transmit switch;

selecting between the outputs of the spare signal upconverter with the output of the spare repeat frequency transmit switch; and

switching to the spare repeat or insert frequency transmit switch upon command when a fault occurs in a normal transmit channel.

DESIGN PATENTS

GRANTED DEC. 30, 1980

ERRATA

For CLASS	See PATENT NO.
D26–106	257,704
D15–007	257,739
D21–004	257,745

DESIGNS

DECEMBER 30, 1980

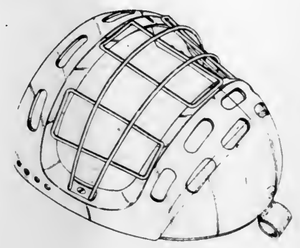
257,696
JACKET
Paula J. Sweet, 320 Sunset Ave., Venice, Calif. 90291
Filed Sep. 5, 1978, Ser. No. 939,906
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—187



257,697
CHILD'S PLAY GARMENT
Donald A. Angrisano, 340 Hoyt St., and Anthony F. Mecca, 753 Seventh St., both of Buffalo, N.Y. 14213
Filed Dec. 12, 1977, Ser. No. 859,983
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—209



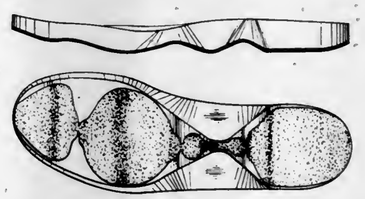
257,698
ICE HOCKEY MASK
Leif H. Skottheim, Malung, Sweden, assignor to Jofa Aktiebolag, Malung, Sweden
Filed Nov. 9, 1978, Ser. No. 958,993
Claims priority, application Sweden, May 10, 1978, 78-1248
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—231



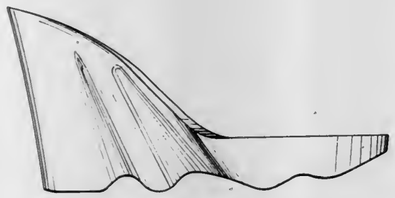
257,699
SHOE SOLE
Joseph P. Famolare, Jr., Putney, Vt., assignor to Famolare, Inc.
Filed Feb. 16, 1979, Ser. No. 12,654
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



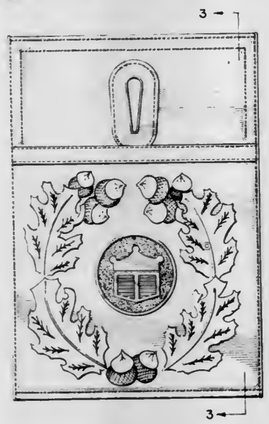
257,700
SHOE SOLE
Joseph P. Famolare, Jr., Putney, Vt., assignor to Famolare, Inc.
Filed Feb. 21, 1979, Ser. No. 13,732
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



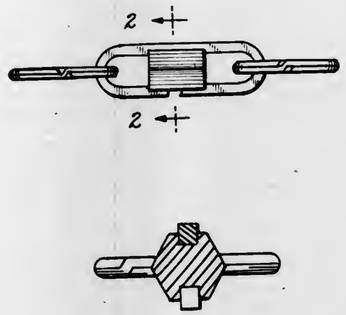
257,701
SHOE SOLE
Joseph P. Famolare, Jr., Putney, Vt., assignor to Famolare, Inc.
Filed Feb. 23, 1979, Ser. No. 14,345
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



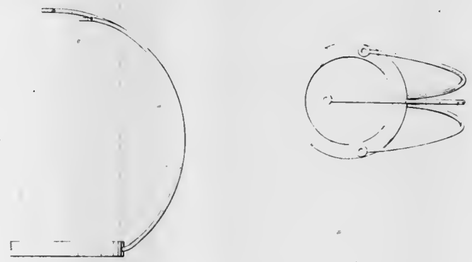
257,702
AUTO UTILITY POUCH
Dwight N. Wooters, La Grange, Ga., assignor to Rubbermaid Specialty Products Inc., La Grange, Ga.
Filed Mar. 2, 1978, Ser. No. 882,964
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—40



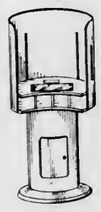
257,703
SLIDE KEY HOLDER
Youree Tyson, P.O. Box 491, Eunice, La. 70535
Filed Jun. 11, 1976, Ser. No. 695,561
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



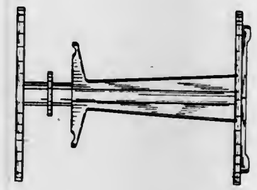
257,704
STAND FOR LIGHT FIXTURE OR SIMILAR ARTICLE
Saad Z. M. Gabr, 81 Old Dover Rd., Canterbury, Kent, England
Filed Nov. 10, 1977, Ser. No. 850,308
Claims priority, application United Kingdom, Jun. 13, 1977, 980404; Jun. 13, 1977, 980405; Jun. 13, 1977, 980406; Jun. 13, 1977, 980407
Term of patent 14 years
Int. Cl. D26—*05;* D6—*06*
U.S. Cl. D26—106



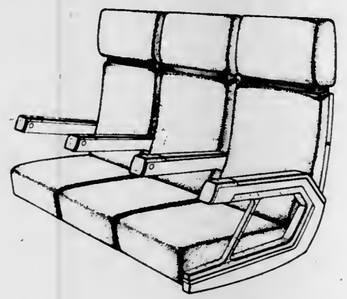
257,705
TELEPHONE KIOSK
Sam Framer, Lauderhill, Fla., assignor to Colorcraft Corporation, Durham, N.C.
Filed Dec. 20, 1978, Ser. No. 971,382
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D6—25



257,706
COMBINED TABLE AND MULTIPLE HOOK SUPPORT
Arno J. Liebman, 1819 Shore Dr., South, Apt. No. 218, South Pasadena, Fla. 33707
Filed Jul. 26, 1978, Ser. No. 928,842
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



257,707
AIRCRAFT SEAT
Ralph G. Marrujo, Winston-Salem, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Mar. 17, 1978, Ser. No. 887,974
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



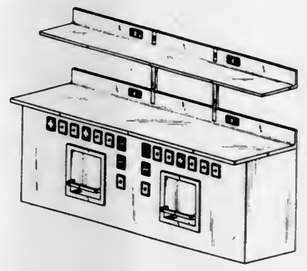
257,708
ARM-CHAIR
Franco Cassina, Milan, Italy, assignor to Cassina S.p.A., Milan, Italy
Filed Mar. 22, 1978, Ser. No. 889,124
Claims priority, application Italy, Sep. 23, 1977, 22327 B/77
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



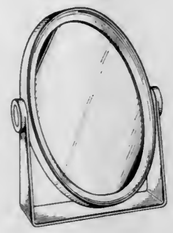
257,709
DISPLAY RACK
Lawrence A. Lewis, 285 Sunset Ave., Englewood, N.J. 07631
Filed Feb. 23, 1979, Ser. No. 14,628
Term of patent 14 years
Int. Cl. D20—*02;* D8—*08*
U.S. Cl. D6—114



257,710
COMBINED WORK TABLE AND SHELF UNIT PRIMARILY FOR USE BY A PEDIATRICIAN
Donald S. Basler, Minerva Park; Shirley P. Myer, and Wallop Tienprasid, both of Columbus, all of Ohio, assignors to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 18, 1978, Ser. No. 970,285
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



257,711
MIRROR ARRANGEMENT
William G. Willitts, 30 Rich St., Greenbrae, Calif. 94904
Filed Apr. 13, 1978, Ser. No. 895,915
Term of patent 7 years
Int. Cl. D6—*07*; D28—*03*
U.S. Cl. D6—234

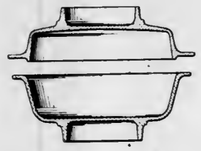


257,712
KITCHEN APPLIANCE COVER
Joe Ann Levine, 9908 Catalina, Overland Park, Kans. 66207; Roberta L. Saper, 9321 Alhambra, Prairie Village, Kans. 66208, and Beverly R. Lewis, 1909 W. 68 St., Mission Hills, Kans. 66208
Filed Jul. 10, 1978, Ser. No. 923,040
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—269

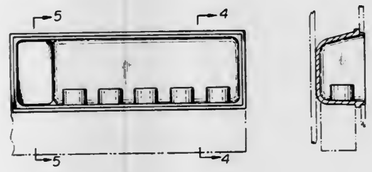


257,713
CASSEROLE FOR A MICROWAVE OVEN
Irving S. Korach, 17135 Gunther St., Granada Hills, Calif. 91344
Filed Feb. 13, 1978, Ser. No. 877,412
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—17

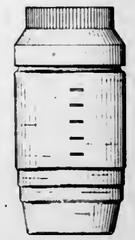




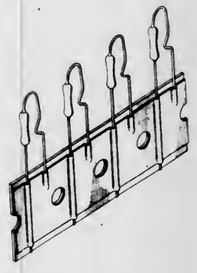
257,714
COMBINED HANDLE AND PUSH-BUTTON HOUSING FOR ELECTRICALLY ENCODED PUSH-BUTTON LOCK
Karl H. Heuser, Ruppichteroth-Winterscheid, Fed. Rep. of Germany, assignor to Huwil-Werke GmbH, Ruppichteroth, Fed. Rep. of Germany
Filed Jun. 1, 1978, Ser. No. 911,356
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 277
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



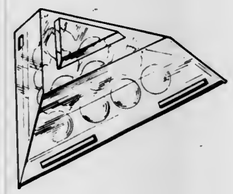
257,715
COMBINED JAR AND CLOSURE
Floyd E. Pettengill, Lancaster, Ohio, assignor to General Foods Corporation, White Plains, N.Y.
Filed Feb. 21, 1978, Ser. No. 879,659
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—387



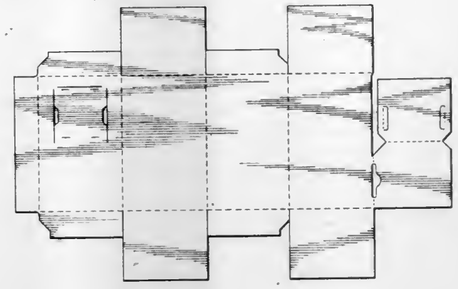
257,716
ELECTRONIC COMPONENT PACKAGE
Sho Masujima, Tokyo, Japan, assignor to TDK Electronics Company, Limited, Tokyo, Japan
Filed Sep. 13, 1977, Ser. No. 832,912
Claims priority, application Japan, Jul. 30, 1977, 52-30310
Term of patent 14 years
Int. Cl. D9—*05*; D13—*99*
U.S. Cl. D9—345



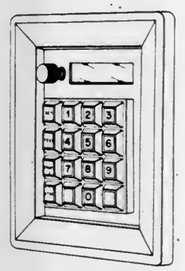
257,717
PACKAGING FOR BILLIARD BALLS
Terry M. Haber, 3197-B Airport Loop Dr., Costa Mesa, Calif. 92626
Filed Nov. 14, 1977, Ser. No. 851,473
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—431



257,718
METERED PACKAGE BLANK
Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.
Filed Jul. 17, 1978, Ser. No. 925,400
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—432



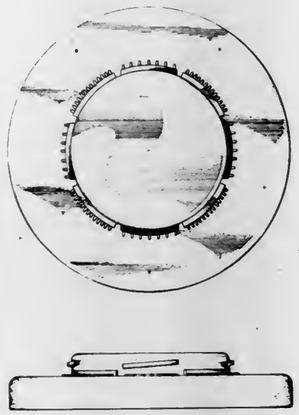
257,719
FACE PLATE FOR A FLUID FLOW METER
Junghans Irion, Edison, N.J., assignor to Siemens Corporation, Iselin, N.J.
Filed May 11, 1979, Ser. No. 37,656
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



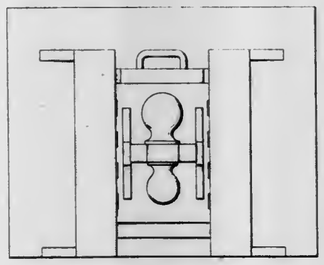
257,720
BARRICADE
Harold D. Rockman, 107 Second St., Fenton, Mich. 48430
Filed Apr. 3, 1978, Ser. No. 893,121
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



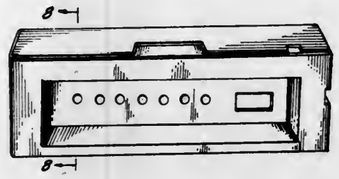
257,721
DOLLY PLATE FOR A REFUSE CONTAINER
Dale T. Maza, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Mar. 7, 1978, Ser. No. 884,379
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—31



257,722
TRAILER HITCH
William A. Vanpool, 2300 Jewel La., Redding, Calif. 96001, assignor to William Arthur Vanpool, Redding, Calif.
Continuation-in-part of Ser. No. 952,611, Oct. 18, 1978, abandoned. This application Feb. 8, 1979, Ser. No. 10,251
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



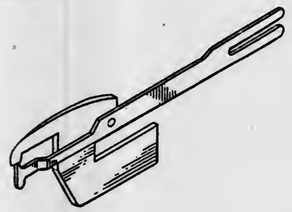
257,723
COVER PLATE FOR A CONTROL PANEL CIRCUIT BOARD
Roy Stockdale, Huntington, N.Y., assignor to Napco Security Systems, Inc., Copiague, N.Y.
Filed Aug. 4, 1978, Ser. No. 931,109
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—40



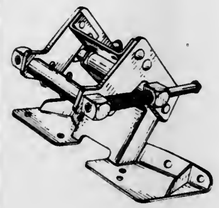
257,724
PORTABLE RADIO
Peter H. J. van de Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 14, 1977, Ser. No. 851,607
Claims priority, application United Kingdom, May 18, 1977, 980117/77
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



257,725
GATED HOOK FOR TUFTING MACHINES
Gary L. Ingram, Ooltewah, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.
Filed Sep. 5, 1978, Ser. No. 939,411
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—78



257,726
HEAD GEAR MOUNT FOR NIGHT VISION GOGGLES
Brian D. McCarthy, Oxted, England, assignor to MS Instruments Ltd.
Filed Sep. 29, 1977, Ser. No. 837,760
Claims priority, application United Kingdom, Aug. 17, 1977, 981184/77
Term of patent 3½ years
Int. Cl. D16—*05*
U.S. Cl. D16—50



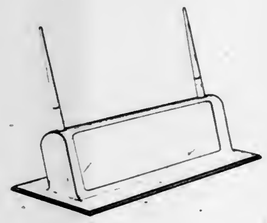
257,727
ELECTRIC GUITAR
Thomas E. Kimble, Covington, Ky., assignor to Baldwin Piano and Organ Company, Cincinnati, Ohio
Filed May 16, 1978, Ser. No. 906,157
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



257,728
TYPEWRITER
Barry S. Herstein, Spring Valley, N.Y., and Robert Salmon, Secaucus, N.J., assignors to Buddy L Corporation, New York, N.Y.
Filed Jan. 15, 1979, Ser. No. 3,253
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1



257,729
COMBINED DESK SET, DISPLAY CHAMBER AND NAMEPLATE
Wayne S. Brough, 5228 Brockwood Ave., Long Beach, Calif. 90808
Filed Aug. 30, 1978, Ser. No. 938,117
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



257,730
PROP FOR FLAT FILES
Cheston L. Eshelman, 621 NE. 30 Ter., Miami, Fla. 33137
Filed Nov. 23, 1977, Ser. No. 854,367
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—86



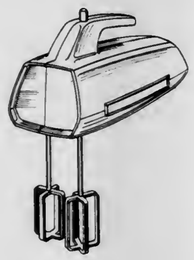
257,731
FLYING TOY
Naomi Zack, and Thomas W. Mahon, both of 1722 N. Serrano Ave., Hollywood, Calif. 90027
Filed Dec. 7, 1978, Ser. No. 967,210
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88



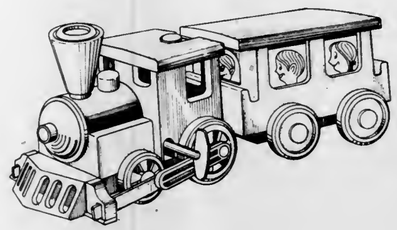
257,732
TOY COFFEE MAKER
Ronald R. Klawitter, Gasconade County, Mo., assignor to Steven Manufacturing Company
Filed Apr. 17, 1978, Ser. No. 896,778
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



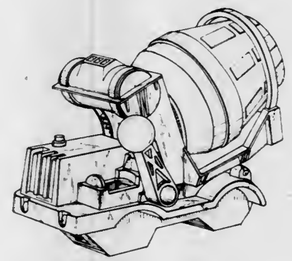
257,733
TOY MIXER
Ronald R. Klawitter, Gasconade County, Mo., assignor to Steven Manufacturing Company
Filed Apr. 17, 1978, Ser. No. 896,785
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



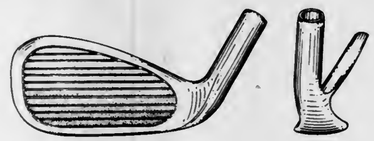
257,734
TOY TRAIN
Herbert Rosenberg, Hong Kong, Hong Kong, assignor to Arco Industries Ltd., Hong Kong, Hong Kong
Filed Sep. 7, 1977, Ser. No. 831,357
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—129



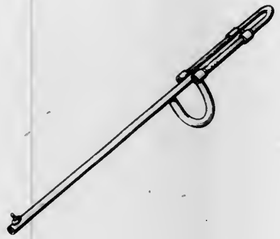
257,735
TOY CEMENT MIXER TRUCK BODY
Jack L. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 10, 1978, Ser. No. 876,849
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—138



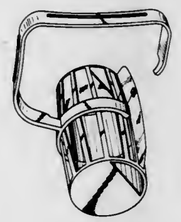
257,736
GOLF CLUB HEAD
Herbert W. Lyon, Escondido, Calif.; Edmond S. Abrain, Warren, R.I.; John W. Jepson, Marion, Mass.; Charles D. Rambo, and Arthur F. Santy, both of Escondido, Calif., assignors to Acushnet Company
Filed Feb. 1, 1979, Ser. No. 8,530
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—220



257,737
PROJECTOR FOR ELONGATED PROJECTILES
Fred Brunty, 140 Village Green, Princeton, W. Va. 24740, and William J. Hall, 723 Windy La., Rocky Mount, Va. 24151
Filed Jan. 6, 1978, Ser. No. 867,525
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—3



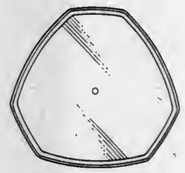
257,738
HOLDER FOR WATER SOLUBLE MATERIAL
Rainer Manthei, Weichering, Fed. Rep. of Germany, assignor to Globol-Werk GmbH, Neuburg, Fed. Rep. of Germany
Filed Oct. 19, 1978, Ser. No. 952,835
Claims priority, application Fed. Rep. of Germany, May 22, 1978, 350
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



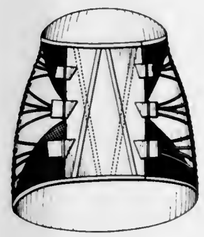
257,739
GREASE PUMP
Graham J. Luker, Penshurst, Australia, assignor to Macnaught Pty. Limited, Turrella, Australia
Filed Jan. 18, 1978, Ser. No. 870,581
Claims priority, application Australia, Jul. 21, 1977, 72347
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



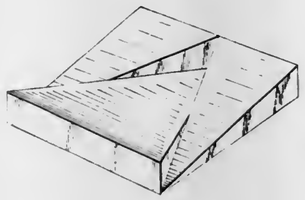
257,740
SPRAYER NOZZLE
Theodore J. Humphrey, II, Miami Lakes, and Walter H. Wesner, Plantation, both of Fla., assignors to The AFA Corporation, Miami Lakes, Fla.
Filed Apr. 13, 1978, Ser. No. 895,902
Term of patent 7 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



257,741
LOWER BACK SUPPORT
Marguerite R. Williams, Trumbull, Conn., assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Jun. 27, 1977, Ser. No. 810,048
Term of patent 14 years
Int. Cl. D24—*03;* D2—*01*
U.S. Cl. D24—64



257,742
DECORATOR MODULE
Willfried Gerlach, 2050 Bridletowne Cr., Toronto, Ontario, Canada
Filed Jan. 20, 1978, Ser. No. 871,027
Claims priority, application Canada, Aug. 18, 1977, 18-08-77-1; Aug. 18, 1977, 18-08-77-2
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



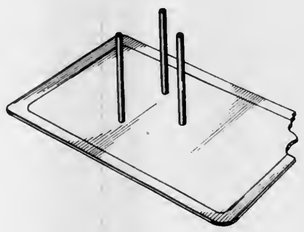
257,743
ARC LAMP
John A. Tedesco, San Francisco, Calif., assignor to The Phoebus Company, Inc.
Filed Jul. 24, 1978, Ser. No. 927,024
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—104



257,744
SHAVING CUTTER
Dirk J. van Hemmen, and Jochem J. De Vries, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 639,861, Dec. 11, 1975, abandoned.
This application Jan. 16, 1978, Ser. No. 869,937
Claims priority, application Benelux, Jun. 13, 1975, 50354-00
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—47



257,745
RING TOSS GAME TARGET
Adolph Abraham, 1357 Barry Ave., Chicago, Ill. 60657
Filed Jun. 22, 1978, Ser. No. 918,170
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—4



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See—*
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A. H. Robins Company, Inc.: *See—*
Cale, Albert D., Jr., 4,242,261, Cl. 260-239.00A.
A.S. Daly Nominees Pty. Ltd.: *See—*
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A/S Hoyer-Ellefsen: *See—*
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AB Kabi: *See—*
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AB Volvo Penta: *See—*
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AB Wicanders Korkfabriker: *See—*
Nemeth, Jozsef, 4,242,390, Cl. 428-47.000.
Abbott Laboratories: *See—*
Lartey, Paul A.; and Grampovnik, David J., 4,242,503, Cl. 536-17.00R.
Abdalla, Mohamed I.; and Thomas, Jacques A. Method of manufacturing thin film electroluminescent devices. 4,242,370, Cl. 427-66.000.
Abex Corporation: *See—*
Shaw, Edwin L., 4,242,068, Cl. 418-269.000.
Abolins, Visvaldis, to General Electric Company. Glass reinforcements and fire retardant glass-resin composites therefrom. 4,242,254, Cl. 260-40.00R.
Abramova, Zinaida A.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Morozov, Jury E.; Ivanov, Vladimir A.; and Abramova, Zinaida A., 4,241,779, Cl. 164-207.000.
Ackeret, Peter, to Licinvest AG. Picture viewer. 4,241,528, Cl. 40-513.000.
Ackroyd, Rand H., to Watts Regulator Company. Backflow preventer. 4,241,752, Cl. 137-107.000.
Acme Visible Records, Inc.: *See—*
Grubb, Frederick H., Jr., 4,241,964, Cl. 312-305.000.
Action Instruments Company, Inc.: *See—*
Mate, David J., 4,242,665, Cl. 340-870.380.
Adamovske Strojirny, Narodni Podnik: *See—*
Cerny, Arnost; and Janecek, Jaroslav, 4,241,619, Cl. 74-440.000.
Adams, Roderick D. Apparatus and method for removing core mark material from molded concrete blocks. 4,242,299, Cl. 264-504.000.
Adams, William J.: *See—*
Wernet, William F.; Adams, William J.; and Haskins, Steve W., 4,242,543, Cl. 200-1.00A.
Adler, Robert, to Extel Corporation. Dot matrix printhead driver. 4,242,004, Cl. 400-124.000.
AGA Aktiebolag: *See—*
Berndtsson, Christer, 4,241,732, Cl. 128-204.240.
Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Pouey, Michel, 4,241,999, Cl. 356-331.000.
AGFA-Gevaert, A.G.: *See—*
Luhrig, Hermann; Kovacic, Guido; and Muller, Horst-Peter, 4,242,443, Cl. 430-496.000.
Puschel, Walter; Vetter, Hans; and Marx, Paul, 4,242,435, Cl. 430-242.000.
AGFA-GEVAERT N.V.: *See—*
Mertens, Ludovicus M.; and Vermeulen, Leon L., 4,242,436, Cl. 430-248.000.
Agrow Plow Pty. Limited: *See—*
Ryan, John W., 4,241,615, Cl. 74-61.000.
Aiba, Takaaki; Takahashi, Ryoichi; Hosoi, Takuji; and Konno, Tutomu, to Kureha Kagaku Kogyo Kabushiki Kaisha; Sumikin Coke Co., Ltd; and Sumitomo Metal Industries, Ltd. Mass production system of highly aromatic petroleum pitch. 4,242,196, Cl. 208-40.000.
Aidlin Automation, Inc.: *See—*
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Air Products and Chemicals, Inc.: *See—*
Nicholas, David M.; and Hegarty, William P., 4,242,108, Cl. 55-40.000.
Airco, Inc.: *See—*
Young, Morris S., 4,242,536, Cl. 174-128.00S.
Aishima, Itsuho; Seki, Junji; Matsumoto, Koichi; Furusawa, Yonemasa; Tsukisaka, Ryogo; and Takahashi, Yuhachi, to Asahi Kasei Kogyo Kabushiki Kaisha; and Shiraishi Central Laboratories Co., Ltd. Composition comprising a thermoplastic resin and mineral filler particles coated with an ethylenically unsaturated organic acid, the ethylenic double bonds of which remain substantially unreacted; product resulting from causing said to react. 4,242,251, Cl. 260-37.00N.
Aisin Seiki Kabushiki Kaisha: *See—*
Ban, Hiroshi; Kobayashi, Tadamasa; and Kuno, Syozo, 4,241,820, Cl. 192-89.00B.
Mori, Keizi, 4,241,948, Cl. 296-216.000.
Okuyama, Teiji, 4,241,894, Cl. 248-576.000.
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A.G. fur Industrielle Elektronik AGIE: *See—*
Ullmann, Werner; Schumacher, Bernd; Ruh, Herbert; and Kilcher, Beat, 4,242,556, Cl. 219-69.00W.
Akzona Incorporated: *See—*
Allen, Thomas C., 4,242,242, Cl. 260-17.4CL.
Battey, Paul K.; Bergfeld, Manfred; and Hope, Peter, 4,242,523, Cl. 560-48.000.
Brandeau, Edward P., 4,241,498, Cl. 29-861.000.
Yntema, Klaas; and Klos, Cornelis D. W., 4,242,255, Cl. 260-45.75P.
Alberghini, Alfred C., to Sewell Plastics, Inc. Base-cup for assuring vertical alignment of semi-hemispherically bottomed bottles. 4,241,839, Cl. 215-100.00R.
Albrecht, Hans P.; von Philipsborn, Gerda; Siebeneick, Hans U.; and Raschack, Manfred, to BASF Aktiengesellschaft. 4,5-Methanobufadienolide-rhamnosides, their preparation, and drugs containing these compounds. 4,242,332, Cl. 424-182.000.
Albright, Jay D.: *See—*
Trust, Ronald I.; and Albright, Jay D., 4,242,515, Cl. 546-119.000.
Alexy, Fred H., to AMG Industries, Inc. Thermal insulation end panel assembly for a paper machine dryer cylinder and stud clamp therefor. 4,241,518, Cl. 34-110.000.
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Allen, Dwight L., to Akron Catheter, Inc. Silicone-containing elastomer and process for the preparation thereof. 4,242,287, Cl. 260-746.000.
Allen, John W., Jr., to Creaghan, James P., a part interest: Impact tool for dislodging stuck drill bits. 4,241,797, Cl. 175-237.000.
Allen, Thomas C., to Akzona Incorporated. Highly absorbent fibers of rayon with sulfonic acid polymer incorporated. 4,242,242, Cl. 260-17.4CL.
Allerino, Giuseppe: *See—*
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Allied Chemical Corporation: *See—*
Vander Mey, John E., 4,242,218, Cl. 252-143.000.
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,242,440, Cl. 430-346.000.
Allis-Chalmers Canada, Limited: *See—*
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Allis-Chalmers Corporation: *See—*
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Allison, George M., III, to Phillips Petroleum Company. Rubbery polymer sealant compositions. 4,242,245, Cl. 260-27.0BB.
Allstar Fasteners, Inc.: *See—*
Burchell, Stanley C., 4,241,468, Cl. 10-169.000.
Alonso, Oscar, to International Telephone and Telegraph Corporation. Electrical push-button switch. 4,242,546, Cl. 200-16.00A.
Alpermann, Hans G.: *See—*
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Alther, George R., to International Minerals & Chemical Corp. Activation of clays by compaction. 4,242,140, Cl. 106-72.000.

Aluminium Suisse S.A.: *See—*
Dolveck, Gilbert, 4,241,844, Cl. 220-67.000.

Aluminum Company of America: *See—*
Willis, Wilburn C., 4,241,840, Cl. 215-220.000.

ALZA Corporation: *See—*
Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., 4,241,733, Cl. 128-275.000.

AM International, Inc.: *See—*
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Amada Company, Limited: *See—*
Moriya, Kikuo, 4,241,630, Cl. 83-409.000.

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American Cyanamid Company: *See—*
Cano, Francis J.; Kuo, Joseph S. C.; and Querry, Merle V., 4,242,501, Cl. 536-1.000.
Pellon, Joseph J.; and Savoy, Paul D., 4,242,247, Cl. 260-29.6WQ.
Shepherd, Robert G., 4,242,273, Cl. 260-453.0RW.
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American District Telegraph Company: *See—*
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American Hardware & Paint Co., Inc.: *See—*
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American Safety Razor Company: *See—*
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American Science and Engineering, Inc.: *See—*
Annis, Martin; and Frederick, Edwin, 4,242,583, Cl. 250-358.00R.
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AMG Industries, Inc.: *See—*
Alexy, Fred H., 4,241,518, Cl. 34-110.000.

Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, to Sodip SA. Hollow fibre apparatus. 4,242,203, Cl. 210-321.100.

AMP Incorporated: *See—*
Defibaugh, George R.; Shannon, Suel G.; and Swengel, Robert C., Jr., 4,242,535, Cl. 174-88.00R.
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Walker, Robert; and Lane, Joseph A., 4,241,843, Cl. 220-5.00A.

Anaconda Company, The: *See—*
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Anderson, Lloyd E.: *See—*
Bell, Dwain C.; and Anderson, Lloyd E., 4,241,930, Cl. 280-47.290.

Anderson, Weston A., to Varian Associates, Inc. Ultrasonic imaging system utilizing dynamic and pseudo-dynamic focusing. 4,241,610, Cl. 73-626.000.

Ando, Otaro, to Olympus Optical Co., Ltd. Composite type acoustic transducer. 4,242,541, Cl. 179-110.00A.

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Andrew, Malcolm S.; and Backhouse, Alan J., to Imperial Chemical Industries Limited. Spray coating of acrylic resin comprising polymeric microparticles. 4,242,384, Cl. 427-421.000.

Andrew S. McCreath & Son, Inc.: *See—*
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Andrews Paper & Chemical Co., Inc.: *See—*
Muller, Peter, 4,241,690, Cl. 118-63.000.

Andrulitis, William B.; Miles, Steven G.; and Kurth, William T. Method of fabricating solar cell modules. 4,241,493, Cl. 29-572.000.

Anheuser-Busch, Incorporated: *See—*
Ehrenthal Irving; Shieh, Kenneth K.; Scallet, Barrett L.; and Rajpara, Jagdish, 4,242,451, Cl. 435-94.000.

Annis, Martin; and Frederick, Edwin, to American Science and Engineering, Inc. X-ray imaging variable resolution. 4,242,583, Cl. 250-358.00R.

Antal, Sandor; Bartha, Zoltan; Gorgenyi, Peter; Meitzen, Nandor; and Arvai, Mihaly, to Taurus Gumiipari Vallalat. Rubber hose with spiral fiber reinforcing core. 4,241,763, Cl. 138-127.000.

Antonelli, Joseph A.; Kelly, Renee J.; and McLaughlin, Joseph E., to Du Pont de Nemours, E. I., and Company. High solids ambient temperature curing coatings of acrylic-fatty acid drying oil resins. 4,242,243, Cl. 260-23.0AR.

Aoshiro, Hisatake, to Machida Endoscope Co., Ltd. Endoscope with gas-tight cap permitting pressurization. 4,241,729, Cl. 128-4.000.

Aoyagi, Takaaki: *See—*
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Arai, Yoshiaki, to Reiko Co., Ltd. Method of making a decorated film with a metal layer in the form of a given pattern. 4,242,378, Cl. 427-264.000.

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Arends, Gary W.: *See—*
Arends, Andrew; Arends, Gary W.; and Spector, George, 4,242,111, Cl. 55-269.000.

Arendt, Ronald H., to General Electric Company. Process for electrolyte structure with strontium titanate matrix for molten carbonate fuel cells. 4,242,426, Cl. 429-193.000.

Arielly, Salo: *See—*
Claeson, Karl G.; Simonsson, Leif R.; and Arielly, Salo, 4,242,329, Cl. 424-177.000.

Armco Inc.: *See—*
Brennan, John R., 4,241,788, Cl. 166-105.500.

Armistead, Hubert P. Storage rack for record albums. 4,241,955, Cl. 312-12.000.

Armour and Company: *See—*
Colescott, Robert L.; Kaiser, Emil; and Bossinger, Charles D., 4,242,238, Cl. 260-8.000.

Armstrong Cork Company: *See—*
Leib, Ronald J.; and Sparks, Moses, Jr., 4,242,394, Cl. 428-95.000.

Armstrong, George H.: *See—*
Van Cleve, Russell; Armstrong, George H.; and Simroth, Donald W., 4,242,249, Cl. 260-33.20R.

Arndt, Otto; and Mees, Bernhard, to Hoechst Aktiengesellschaft. Process for the preparation of isomer-free toluene-4-sulfonic acid. 4,242,275, Cl. 260-505.00E.

Arvai, Mihaly: *See—*
Antal, Sandor; Bartha, Zoltan; Gorgenyi, Peter; Meitzen, Nandor; and Arvai, Mihaly, 4,241,763, Cl. 138-127.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Aishima, Itsuho; Seki, Junji; Matsumoto, Koichi; Furusawa, Yonemasa; Tsukisaka, Ryogo; and Takahashi, Yuhachi, 4,242,251, Cl. 260-37.00N.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Okudaira, Sadao, 4,241,981, Cl. 350-184.000.

Asai, Akiji: *See—*
Thies, Peter W.; Asai, Akiji; and David, Samuell, 4,242,341, Cl. 424-248.550.

Asakawa, Tatsushi: *See—*
Morozumi, Shinji; Yamazaki, Yoshio; Asakawa, Tatsushi; and Nakazaki, Yasunori, 4,242,679, Cl. 340-765.000.

Asakura, Masahiro: *See—*
Kitamura, Kenzo; Ebitani, Hideaki; and Asakura, Masahiro, 4,242,302, Cl. 422-94.000.

Asao, Kosakai: *See—*
Chikanobu, Kimijima; Asao, Kosakai; Tutomu, Shioya; and Tomotaka, Tatsumi, 4,241,512, Cl. 33-438.000.

Aschberger, Matthias; and Link, Dieter, to Bosch-Siemens Hausgerate GmbH. Magnetic valve, especially three-way valve as a switching device for multi-temperature cooling apparatus with only one refrigeration machine. 4,242,116, Cl. 62-199.000.

ASEA Aktiebolag: *See—*
Marcusson, Lage; and Polheimer, Lars, 4,241,666, Cl. 105-59.000.

Ateliers des Charmilles S.A.: *See—*
Delpretti, Roger, 4,242,555, Cl. 219-69.00M.

Atsumi, Haruo, to Omron Tateisi Electronics Co. Limit switch. 4,242,548, Cl. 200-47.000.

Attaway, Julian J.: *See—*
Hall, James H., III; and Attaway, Julian J., 4,241,549, Cl. 52-60.000.

Aubril, Pierre: *See—*
Diguet, Daniel; David, Gerard A.; and Aubril, Pierre, 4,242,696, Cl. 357-30.000.

Audette, DeVere J., deceased: *See—*
Middleton, Donald E.; and Audette, DeVere J., deceased, 4,241,808, Cl. 182-155.000.

Audette, Marguerite, executrix: *See—*
Middleton, Donald E.; and Audette, DeVere J., deceased, 4,241,808, Cl. 182-155.000.

Augunas, Algis G., to General Motors Corporation. Winding prevention mechanism for seat belt retractor. 4,241,887, Cl. 242-107.700.

August, Peter; and Primas, Willi, to Wacker-Chemie GmbH. Process for preparing organopolysiloxane resins containing Si-bonded vinyl groups. 4,242,486, Cl. 528-14.000.

August Ruggeberg, Firma: *See—*
Strojny, Werner, 4,241,624, Cl. 76-83.000.

Aurora Products Canada Limited: *See—*
Vandenbrink, Anthonie, 4,241,875, Cl. 238-10.00F.

Austin, Michael J.: *See—*
Carruthers, John A.; and Austin, Michael J., 4,241,936, Cl. 280-507.000.

Autographic Business Forms, Inc.: *See—*
Dingman, Arthur E., 4,241,655, Cl. 101-79.000.

Automated Building Components, Inc.: *See—*
Castillo, Adolfo; Kushner, Ben; and Seipos, Andrew G., 4,241,651, Cl. 100-35.000.

Avtex Fibers Inc.: *See—*
Bockno, Gregory C., 4,242,405, Cl. 428-224.000.

Awano, Takeshi: *See—*
Maekawa, Naozane; and Awano, Takeshi, 4,241,886, Cl. 242-107.200.

Ayer, George E., to Bunker Ramo Corporation. Panel mount for electrical connector. 4,241,972, Cl. 339-126.00R.

Ayme, Gerard; and Szabo, Ladislas, to Institut Merieux. Process for separating lipids from endotoxins. 4,242,270, Cl. 260-412.800.

Azadian, Genevieve; Philibert, Daniel; and Pierdet, Andre, to Roussel Uclaf. Novel 17α-aryl-steroids. 4,242,335, Cl. 424-243.000.

Aziende Colori Nazionali Affini Acna S.p.A.: *See—*
Gasperini, Pietro; and Brunetti, Francesco, 4,242,093, Cl. 8-456.000.

B. A. Security Systems Limited: *See—*
Crick, David W., 4,242,669, Cl. 340-567.000.

B. F. Goodrich Company, The: *See—*
Garver, Richard F.; and Stevanovich, Srbo M., 4,242,070, Cl. 425-28.00B.

B & H Manufacturing Company, Inc.: *See—*
Hoffmann, Wolfgang, 4,242,167, Cl. 156-357.000.

Baack, Michael; Bartkowiak, Artur; and Neuroth, Juergen, to Revertex Limited. Use of monohydroxylated polybutadiene as a reactive plasticizer in polyurethanes. 4,242,468, Cl. 521-170.000.

Babcock, Bryce W.; Reynolds, Mark P.; and Saluja, Kulbir, to Federal-Mogul Corporation. Clutch pressure plate noise reduction. 4,241,819, Cl. 192-70.270.

Bachelis, Leonid V.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Morozov, Jury E.; Ivanov, Vladimir A.; and Abramova, Zinaida A., 4,241,779, Cl. 164-207.000.

Bachman, Gilbert, to Dittler Brothers, Inc. Secure contest card. 4,241,942, Cl. 283-6.000.

Backhouse, Alan J.: *See—*
Andrew, Malcolm S.; and Backhouse, Alan J., 4,242,384, Cl. 427-421.000.

Badger Meter, Inc.: *See—*
Bradham, Allen C., III, 4,241,613, Cl. 73-861.710.

Baer, Martin A., to Illinois Tool Works Inc. Method and apparatus for producing drill screws. 4,241,639, Cl. 85-47.000.

Bahl, Surinder K., to Mead Corporation, The. Heated deflection electrode assembly for a jet drop recorder. 4,242,687, Cl. 346-75.000.

Baikoff, Eugene M. A. Comminuting machine. 4,241,882, Cl. 241-236.000.

Baldauf, Dale, to Paul Revere Corporation. Auxiliary drive system with neutral. 4,241,577, Cl. 60-420.000.

Ball Corporation: *See—*
McDowell, Jerry T., 4,241,629, Cl. 83-343.000.
Sanford, Gary G., 4,242,685, Cl. 343-770.000.

Ball, William J.; Palmer, Keith W.; and Stewart, David G., to British Petroleum Company Limited, The. Method for preparing aluminosilicates, their use as catalyst supports and catalysts, and method for producing catalysts therefrom. 4,242,233, Cl. 252-431.00N.

Bally Manufacturing Corporation: *See—*
Hooker, Donald E., 4,241,920, Cl. 273-143.00R.

Ban, Hiroshi; Kobayashi, Tadamasa; and Kuno, Syozo, to Aisin Seiki Kabushiki Kaisha. Clutch assembly. 4,241,820, Cl. 192-89.00B.

Baney, Ronald H.; and Harris, Len A., to Dow Corning Corporation. Organothiol-containing siloxane resins as adhesion promoters for siloxane resins. 4,242,416, Cl. 428-412.000.

Bardsley, Harold B., to Spencer Wright Industries, Inc. Modular gauge parts assembly for cut/loop tufting machines. 4,241,675, Cl. 112-79.00A.

Barmag Barmer Maschinenfabric AG: *See—*
Turk, Herbert; and Schiminski, Herbert, 4,241,574, Cl. 57-200.000.

Barmag Barmer Maschinenfabrik AG: *See—*
Turk, Herbert; and Schiminski, Herbert, 4,241,571, Cl. 57-58.890.

Barnes, Alan C.; and Kennewell, Peter D., to Roussel Uclaf. Process for preparing 5-alkyl-7-(S-alkyl-sulfonimidoyl)-xanthone-2-carboxylic acids. 4,242,267, Cl. 260-335.000.

Barnett, Eugene J., to White Consolidated Industries, Inc. Range body cooling system. 4,241,718, Cl. 126-21.00R.

Barnett, Harry. Box sealing device. 4,241,862, Cl. 227-155.000.

Barrera, Roberto G.: *See—*
Longenecker, John G., 4,241,648, Cl. 99-349.000.

Bartha, Zoltan: *See—*
Antal, Sandor; Bartha, Zoltan; Gorgenyi, Peter; Meitzen, Nandor; and Arvai, Mihaly, 4,241,763, Cl. 138-127.000.

Bartkowiak, Artur: *See—*
Baack, Michael; Bartkowiak, Artur; and Neuroth, Juergen, 4,242,468, Cl. 521-170.000.

Bartoli, Francesco; Morisi, Franco; and Zaccardelli, Delio, to Snamprogetti S.p.A. Radial reactor for enzyme-catalyzed reactions. 4,242,461, Cl. 435-288.000.

Bartolini, Alfred: *See—*
Bloom, Allen; and Bartolini, Alfred, 4,242,689, Cl. 346-135.100.

Barton, William D.: *See—*
Matucheski, Joseph V.; Yee, Clifford S. L.; Spellman, Michael T.; Hartley, Donald J.; and Barton, William D., 4,242,046, Cl. 416-132.00A.

Bartus, Stephen P., Jr.: *See—*
Mattimoe, Paul T.; Motter, Theodore J.; and Bartus, Stephen P., Jr., 4,242,403, Cl. 428-213.000.

BASF Aktiengesellschaft: *See—*
Albrecht, Hans P.; von Philipsborn, Gerda; Siebeneick, Hans U.; and Raschack, Manfred, 4,242,332, Cl. 424-182.000.
Diem, Hans; Dudeck, Christian; Lehmann, Gunter; Matthias, Guenther; and Petri, Norbert, 4,242,282, Cl. 568-471.000.
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,242,517, Cl. 548-342.000.
Reinert, Friedrich, 4,242,210, Cl. 252-8.800.
Rossy, Phillip; and Hoffmann, Werner, 4,242,518, Cl. 549-61.000.
Schlecht, Helmut; Weberndoerfer, Volkmar; and Widder, Rudi, 4,242,187, Cl. 204-162.0SH.
Vogel, Hans-Henning; Oppenlaender, Knut; and Starke, Klaus, 4,242,101, Cl. 44-58.000.

Bate, Robert T., to Texas Instruments Incorporated. Non-volatile semiconductor memory elements. 4,242,737, Cl. 365-184.000.

Batjukov, Vladimir I.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Shkhian, Tsolak G.; and Sumatokhin, Vitold A. Drum for storage of nuclear reactor fuel assemblies. 4,242,178, Cl. 176-30.000.

Batliwalla, Neville S., to Raychem Corporation. Water immersible heater. 4,242,573, Cl. 219-528.000.

Battelle Development Corporation: *See—*
Hughes, Kenneth E.; and DeVore, Dale P., 4,242,291, Cl. 264-1.000.
Maringer, Robert E., 4,242,069, Cl. 425-8.000.

Battelle-Institut e.V.: *See—*
Klimmek, Albrecht; Krieger, Wolfram; and Reiner, Roland, 4,242,159, Cl. 156-155.000.

Battey, Paul K.; Bergfeld, Manfred; and Hope, Peter, to Akzona Incorporated. Process for the preparation of para-nitroso-diphenylhydroxylamines. 4,242,523, Cl. 560-48.000.

Bauer, Werner R., to Robertshaw Controls Company. Methods of making a reversing valve construction and a valve member therefor. 4,241,486, Cl. 29-157.10R.

Baughman, Ray H.: *See—*
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,242,440, Cl. 430-346.000.

Bauman, Glenn R.: *See—*
Bodycomb, Frederick M., Jr.; and Bauman, Glenn R., 4,241,505, Cl. 30-390.000.

Baumgarten, Borje N. V., to Hiab-Foco AB. Gripping tool, particularly for handling timber. 4,242,037, Cl. 414-739.000.

Baur, Max, to Licinvest AG. Picture viewer. 4,241,529, Cl. 40-513.000.

Baxter, Ronald D.; and Freud, Paul J., to Leeds & Northrup Company. Thin film resistance thermometer detector probe assembly. 4,242,659, Cl. 338-28.000.

Baxter Travenol Laboratories, Inc.: *See—*
Greff, Richard; Wolf, Ludwig, Jr.; Munsch, John; and Kinney, Layton C., 4,242,310, Cl. 422-300.000.

Bayer Aktiengesellschaft: *See—*
Findeisen, Kurt; Wagner, Kuno; and Uerdingen, Walter, 4,242,489, Cl. 528-73.000.
Fuchs, Rainer A.; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,242,357, Cl. 424-282.000.
Harms, Wolfgang; von Oertzen, Klaus; and Wunderlich, Klaus, 4,242,259, Cl. 260-153.000.
Konig, Eberhard; Schonfelder, Manfred; and Pedain, Josef, 4,242,410, Cl. 428-315.000.
Sylvester, Gerd; Witte, Josef; and Marwede, Gunter, 4,242,232, Cl. 252-429.00C.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Gratza, Peter; and Estel, Heinz, 4,241,933, Cl. 280-301.000.
Matyl, Franz; Klecker, Johann; and Sanguino-Alvarez, Guillermo, 4,241,593, Cl. 64-14.000.

Bayless, Allan V.; and Millner, Ozra E., Jr., to Morton-Norwich Products, Inc. Phosphorotriamides as urease inhibitors. 4,242,325, Cl. 424-210.000.

BBC Brown Boveri & Company Limited: *See—*
Bernasconi, Felix, 4,242,008, Cl. 403-13.000.
Kaufmann, Meinolph, 4,242,388, Cl. 428-35.000.
Koppl, Georg; Nowack, Helmut; and Carmelo, Violi, 4,242,549, Cl. 200-144.00R.
Moller, Wolfgang; and Schwarz, Hans, 4,241,958, Cl. 308-160.000.

Bean, Donald E., to Sperry Corporation. Current discharge fast time constant amplifier. 4,242,640, Cl. 328-187.000.

Beauchamp, Ronald A., to Boise Cascade Corporation. Composite container including a perforated label layer, and method and apparatus for forming the same. 4,241,834, Cl. 206-611.000.

Becker, James L. Display curtain. 4,241,527, Cl. 40-124.200.

Becker, William J.: *See—*
Hoover, Troy E.; Farber, Sheldon; and Becker, William J., 4,242,513, Cl. 544-345.000.

Beckers, Dieter: *See—*
Eisermann, Eckehard; and Beckers, Dieter, 4,241,905, Cl. 266-236.000.

Beckman Instruments, Inc.: *See—*
Gurske, William A., 4,242,298, Cl. 264-233.000.
Kampf, Richard S., 4,242,582, Cl. 250-328.000.
Kanda, Alvin F., 4,242,615, Cl. 315-169.100.

Beecham Group Limited: *See—*
Stirling, Irene, 4,242,262, Cl. 260-245.300.

Behrenz, Wolfgang: *See—*
Fuchs, Rainer A.; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,242,357, Cl. 424-282.000.

Beidl, John R.; Criscimagna, Tony N.; and Greeson, James C., Jr., to International Business Machines Corporation. Multiple data line shift gas panel assembly. 4,242,680, Cl. 340-771.000.

Beisler, Alfons, to Velva AG. Two needle sewing machine. 4,241,677, Cl. 112-167.000.

Bell, Dwain C.; and Anderson, Lloyd E. Two-wheeled dolly. 4,241,930, Cl. 280-47.290.

Bell & Howell Company: *See—*
Flint, John R.; and Hertel, Heinz, 4,241,992, Cl. 355-41.000.

Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., to Colt Industries Operating Corp. Servo feed system for an electrical discharge machining apparatus. 4,242,560, Cl. 219-69.00G.

Bell Telephone Laboratories, Incorporated: *See—*
Berthold, Joseph E.; Hartman, Adrian R.; and Shackle, Peter W., 4,242,697, Cl. 357-49.000.
Cordell, Robert R., 4,242,650, Cl. 333-28.00R.
Dayem, Aly H.; Geballe, Theodore H.; Patel, Chandra K. N.; and Tien, Ping K., 4,242,419, Cl. 428-661.000.
Gagen, Paul F.; and Santana, Manuel R., 4,241,979, Cl. 350-96.230.
Gilmer, John L.; and Rizzo, Joseph F., 4,242,636, Cl. 328-63.000.
Laker, Kenneth R.; and Tow, Jimmy, 4,242,642, Cl. 330-109.000.

Belli, Aldo: *See—*
Venturello, Carlo; D'Aloisio, Rino; and Belli, Aldo, 4,242,524, Cl. 562-423.000.

Bellus, Daniel: *See—*
Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, 4,242,278, Cl. 568-341.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,242,264, Cl. 260-326.00C.

Bender, Emil A. Tandem long stroke reciprocating mud pump assembly. 4,242,057, Cl. 417-404.000.

Bendix Corporation, The: *See—*
Collins, Gordon T., 4,241,967, Cl. 339-59.00M.
Erwin, Louis R.; and Woodruff, Frank, 4,241,753, Cl. 137-116.300.
Han, Benjamin C. P.; and Weldy, Floyd P., 4,241,603, Cl. 73-129.000.
Hartford, Thomas W., 4,242,728, Cl. 364-431.000.
Peterson, William A., Jr.; and Marchak, Roman O., 4,241,710, Cl. 123-440.000.
Van De Sompele, Norman C., 4,241,813, Cl. 188-77.00R.
Weber, Robert E.; and Harper, Patrick D., 4,242,729, Cl. 364-431.000.

Bendix Westinghouse Limited: *See—*
Taig, Alistair G., 4,241,643, Cl. 91-446.000.

Benin, Joshua, to Du Pont de Nemours, E. I., and Company. Manually operated bobbin chuck. 4,241,883, Cl. 242-46.400.

Bennett, Clifford D.; and Odenthal, Charles, to C. R. Bard, Inc. Exhalation valve assembly. 4,241,756, Cl. 137-496.000.

Bennett, Robert A.; and Van Brocklin, Owen, to Bennett, Robert A. Liquid dispenser. 4,241,854, Cl. 222-207.000.

Benton, Stephen L.: *See—*
Lancia, Frederick N.; Wolfe, William A.; Dearth, Leonard F.; Benton, Stephen L.; Homan, H. Richard; and Bruce, Arthur P., 4,241,847, Cl. 221-12.000.

Bergfeld, Manfred: *See—*
Battey, Paul K.; Bergfeld, Manfred; and Hope, Peter, 4,242,523, Cl. 560-48.000.

Bergkvist, Lars A. Arrangement at screens intended to give rise to a moire pattern. 4,242,000, Cl. 356-374.000.

Berglind, Eilert: *See—*
Henoch, Bengt T.; and Berglind, Eilert, 4,242,661, Cl. 340-23.000.

Bergman, Jack N.; and Ostrofsky, Bernard, to Standard Oil Company (Indiana). Tube internal measuring instrument. 4,241,609, Cl. 73-623.000.

Bergman, Ola, to Siemens Aktiengesellschaft. Method and circuit arrangement for switching signals having different transmission speeds within a program-controlled data exchange system. 4,241,802, Cl. 178-3.000.

Bergmann, Klaus; Schmitz, Friedrich; Kilian, Gottfried; and Reppel, Heinz, to Rheinische Kalksteinwerke GmbH. Bituminous mixed composition and filler for same containing non-hygroscopic crystal water-containing substances. 4,242,144, Cl. 106-281.00R.

Bergwerksverband GmbH: *See—*
Rohde, Wolfgang, 4,241,513, Cl. 34-10.000.

Berkman, Samuel: *See—*
United States of America, National Aeronautics and Space Administration; Berkman, Samuel; and Temple, Harold E., 4,242,553, Cl. 219-10.49R.

Bernasconi, Felix, to BBC Brown Boveri & Company Limited. Rigid coupling. 4,242,008, Cl. 403-13.000.

Berndtsson, Christer, to AGA Aktiebolag. Arrangement in respirators using a fluidistor to determine volume of air passed to a patient and pressure sensor to correct volume reading in terms of actual pressure. 4,241,732, Cl. 128-204.240.

Berrer, Dagmar; Lorenz, Joachim; and Grade, Reinhardt, to Ciba-Geigy Corporation. Agent for combating sea-water algae. 4,242,119, Cl. 71-67.000.

Berthereau, Gilbert: *See—*
Villard, Jean-Claude; and Berthereau, Gilbert, 4,242,039, Cl. 415-112.000.

Berthold, Joseph E.; Hartman, Adrian R.; and Shackle, Peter W., to Bell Telephone Laboratories, Incorporated. Dielectrically isolated high voltage semiconductor devices. 4,242,697, Cl. 357-49.000.

Bethlehem Steel Corporation: *See—*
Gee, Kenneth H.; and Kreiger, John W., 4,242,142, Cl. 106-97.000.

Bharteey, Brij M.: *See—*
Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., 4,242,718, Cl. 361-341.000.

Bijen, Jan M. J. M., to Stamicarbon, B.V. Process for the manufacture of articles of water-hardening material. 4,242,407, Cl. 428-247.000.

Billeter, Henry R., to Sloan Valve Company. Slow closing faucet. 4,241,759, Cl. 137-636.400.

Billington, Charles J. Conveyor assembly support structure and high strength tubular beam therefor. 4,241,826, Cl. 198-825.000.

Biondetti, Mario, to Escher Wyss Limited. Deflection compensating roll. 4,241,482, Cl. 29-116.0AD.

BioResearch: *See—*
Findl, Eugene; and Kurtz, Leonard D., 4,242,447, Cl. 435-39.000.

Biot, Bernard: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,242,203, Cl. 210-321.100.

Biran, Joseph, to Fairchild Camera & Instrument Corporation. Compensation of V_{BE} non-linearities over temperature by using high base sheet resistivity devices. 4,242,693, Cl. 357-28.000.

Birke, Walter: *See—*
Feess, Erich; Birke, Walter; and Steinbach, Joachim, 4,242,091, Cl. 8-444.000.

Black & Decker Inc.: *See—*
Sindelar, William F.; and Hetmanski, James R., 4,241,628, Cl. 81-9.510.

Blake, William S.: *See—*
Pauls, James D.; Hammett, Roy; and Blake, William S., 4,241,853, Cl. 222-207.000.

Blakely, Donald W., to Chevron Research Company. 65-130 Angstrom mean radius silica-alumina catalyst support. 4,242,236, Cl. 252-455.00R.

Blaskowski, Henry J., to Combustion Engineering, Inc. Coal feed system for a fluidized bed boiler. 4,241,670, Cl. 110-104.00R.

Blight, Graham J.: *See—*
Karsan, Demir I.; Blight, Graham J.; and Farmer, Larry E., 4,242,011, Cl. 405-204.000.

Bliss, Russell F. Cushioning for container. 4,241,832, Cl. 206-523.000.

Bloom, Allen; and Bartolini, Alfred, to RCA Corporation. Ablative optical recording medium. 4,242,689, Cl. 346-135.100.

Blount, David H. Production of amino-silicate compounds, condensation resinous products. 4,242,497, Cl. 528-232.000.

Blum, Albert. Apparatus for the removal of gases, especially air, in fluids. 4,242,289, Cl. 261-93.000.

Bobard, Charles E.; Delaunay, Just M.; and Darcy, Raymond M., to Etablissements Bobard Jeune. Grape gathering machine. 4,241,569, Cl. 56-330.000.

Bockno, Gregory C., to Avtex Fibers Inc. Viscose rayon and method of making same. 4,242,405, Cl. 428-224.000.

Bodycomb, Frederick M., Jr.; and Bauman, Glenn R., to Johns-Manville Corporation. Dust shroud for portable circular saw. 4,241,505, Cl. 30-390.000.

Boeddeker, David R.: *See—*
Wenger, Jerry A.; Clausen, Herman A.; Boeddeker, David R.; and Urch, Harvey M., 4,241,777, Cl. 160-135.000.

Boeing Company, The: *See—*
Chace, Richard A., 4,241,581, Cl. 60-538.000.
Cordner, Obrey, 4,241,508, Cl. 33-169.00B.
McArdle, Francis H., 4,242,048, Cl. 416-134.00A.
Olson, Elvin G., 4,242,158, Cl. 156-92.000.
Pearson, Raymond E., 4,241,890, Cl. 244-137.00R.

Bogerman, Pieter K.; Eygermans, Petrus J.; and van Velzen, Antoon G., to Gist-Brocades N.V. Novel enzyme particles and their preparation. 4,242,219, Cl. 252-174.120.

Boise Cascade Corporation: *See—*
Beauchamp, Ronald A., 4,241,834, Cl. 206-611.000.

Bolasco, Franco, to Mediolanum Farmaceutici S.r.L. 2-(2-Thenolythio)-propionylglycine: method for its preparation and pharmaceutical formulations containing said compound. 4,242,354, Cl. 424-275.000.

Boller, Peter K., to Consumers Glass Company Ltd. Severable connecting means. 4,241,841, Cl. 215-252.000.

Bondoc, Alfredo A.; Canfield, V. Robert; and Ziegler, B. Randall, to GAF Corporation. High-strength glass fiber mat particularly useful for roofing products. 4,242,404, Cl. 428-220.000.

Boone Box Co.: *See—*
Morris, Ivan B., 4,241,892, Cl. 248-346.000.

Boone, Gary W.; and Cochran, Michael J., to Texas Instruments Incorporated. Display and keyboard scanning for electronic calculation or the like. 4,242,675, Cl. 340-711.000.

Boone, James G., to NCR Corporation. Digital phase lock circuit. 4,242,639, Cl. 328-155.000.

Borg-Warner Corporation: *See—*
Smirl, Richard L., 4,241,618, Cl. 74-863.000.
Wiese, Winfred J., 4,241,927, Cl. 277-87.000.

Borgren, Peter M., to Hydrodynamic Energy Systems Corporation. Apparatus for producing electrical energy from multidirectional water wave action. 4,241,579, Cl. 60-504.000.

Borsig GmbH: *See—*
Eiermann, Dankwart, 4,241,758, Cl. 137-512.150.

Bosch-Siemens Hausgerate GmbH: *See—*
Aschberger, Matthias; and Link, Dieter, 4,242,116, Cl. 62-199.000.
Dienemann, Wolfgang; and Reichert, Rudolf, 4,241,587, Cl. 62-80.000.

Bossinger, Charles D.: *See—*
Colescott, Robert L.; Kaiser, Emil; and Bossinger, Charles D., 4,242,238, Cl. 260-8.000.

Bottelsen, Robert A.: *See—*
Wu, Samuel C.; Holick, Stephen A.; and Bottelsen, Robert A., 4,241,821, Cl. 194-4.00C.

Bourdelle, Peter A.; and Schiff, Norman, to Johnson & Johnson. Compact sheath package for medical instruments. 4,241,828, Cl. 206-306.000.

Bourne, Richard G.: *See—*
Buddemeyer, Bruce D.; Neville, William A.; Taylor, James S.; and Bourne, Richard G., 4,242,364, Cl. 426-98.000.

Boutle, David L., to Poryair Limited. Production of porous materials. 4,242,464, Cl. 521-61.000.

Bouwhuis, Gijsbertus, to U.S. Philips Corporation. Apparatus for the pointwise scanning of an information surface. 4,242,579, Cl. 250-201.000.

Bove', Louis J. Rainwater ducting system. 4,241,547, Cl. 52-11.000.

Bowen, Glen L.: *See—*
Karaba, Albert M.; Kauffman, Brian C.; and Bowen, Glen L., 4,241,705, Cl. 123-78.00B.

Bradford, Randol W.; and Carmichael, Michael H., to Freeport Minerals Company. Sulfur mine bleedwater reuse system. 4,241,953, Cl. 299-4.000.

Bradham, Allen C., III, to Badger Meter, Inc. Mass rate flow meter. 4,241,613, Cl. 73-861.710.

Brahm, Jacques; and De Rath, Jean-Pierre, to Solvay & Cie. Process for the preparation of aqueous suspensions containing at least 65% by weight of calcium carbonate. 4,242,318, Cl. 423-430.000.

Braines, George E.: *See—*
Daly, Andrew S.; May, Peter R.; and Braines, George E., 4,241,845, Cl. 220-203.000.

Brambring, Jorg; and van der Ven, Robert F. L. M., to U.S. Philips Corporation. CRT Control grid having orthogonal openings on opposite sides. 4,242,613, Cl. 313-447.000.

Brammall, Inc.: *See—*
Van Gompel, James, 4,241,595, Cl. 70-347.000.

Brandeau, Edward P., to Akzona Incorporated. Device and method for terminating a flat cable. 4,241,498, Cl. 29-861.000.

Brandis, Helmut; Weigand, Hans H.; and Spyra, Wolfgang, to Thyssen Edelstahlwerke AG. High-speed steel. 4,242,130, Cl. 75-126.00C.

Branson, Charles D.; and Demi, Roy C., to Robertshaw Controls Company. Fluid flow sensing switch device. 4,242,082, Cl. 431-72.000.

Braun AG: *See—*
Fahrenschon, Kurt, 4,242,747, Cl. 368-242.000.

Braun, David B.; Drap, Stephen; Fritz, Henry E.; and Ingberman, Arthur K., to Union Carbide Corporation. Transport of aqueous coal slurries. 4,242,098, Cl. 44-51.000.

Bredemus, Leonard N. Door latching mechanism. 4,241,888, Cl. 292-165.000.

Breitmeyer, Alexander M.: *See—*
Koutsky, Louis J.; and Breitmeyer, Alexander M., 4,241,893, Cl. 248-425.000.

Breitweg, Werner: *See—*
Deininger, Horst; and Breitweg, Werner, 4,241,804, Cl. 180-79.100.

Brennan, John R., to Armco Inc. Multiple cup downwell gas separator. 4,241,788, Cl. 166-105.500.

Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, to Wulfing, Johann A. 7-(Oxoalkyl)-1,3-dialkyl xanthines, and medicaments containing them. 4,242,345, Cl. 424-253.000.

Brent, Rachael E. Stringed musical instruments of guitar type. 4,241,637, Cl. 84-1.160.

Bricker, Charles E., to Dayco Corporation. Method for making curved hose. 4,242,296, Cl. 264-149.000.

Bridgestone Tire Company Limited: *See—*
Hoshino, Takashi; Imaizumi, Setsuko; and Tomita, Seisuke, 4,242,472, Cl. 525-343.000.

Brigham, Ward E.: *See—*
Douma, William L.; and Brigham, Ward E., 4,242,725, Cl. 362-341.000.

Brinkmann, Willi: *See—*
Stratmann, Josef; and Brinkmann, Willi, 4,242,027, Cl. 414-148.000.

British Petroleum Company Limited, The: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,242,233, Cl. 252-431.00N.

Britz, Hans E. Opto-electronic antenna system. 4,242,578, Cl. 455-611.000.

Broadway, William W.: *See—*
Sternenberg, James E.; and Broadway, William W., 4,241,895, Cl. 251-173.000.

Bron, Dan. Flow regulator. 4,241,757, Cl. 137-501.000.

Brooking, Betty L.: *See—*
Morgan, Jay E.; DelVecchio, Anthony J.; Brooking, Betty L.; and Laverty, David M., 4,242,366, Cl. 426-554.000.

Brouwer, Gerald A., to Lear Siegler, Inc., Rapistan Division. Pivoted gimbel bearing for rollers. 4,241,825, Cl. 198-782.000.

Brown, Ian G., to Xerox Corporation. Photocopying machine. 4,241,991, Cl. 355-26.000.

Brown, Joseph W. Bellows type incentive spirometer. 4,241,740, Cl. 128-728.000.

Brown, Robert S., III. Regeneration of scrubber effluent containing sulfate radicals. 4,242,448, Cl. 435-42.000.

Brown & Root, Inc.: *See—*
Karsan, Demir I.; Blight, Graham J.; and Farmer, Larry E., 4,242,011, Cl. 405-204.000.

Brown, Trevor J., to General Motors Corporation. Wheel cover retention arrangement. 4,241,954, Cl. 301-37.00R.

Bruce, Arthur P.: *See—*
Lancia, Frederick N.; Wolfe, William A.; Dearth, Leonard F.; Benton, Stephen L.; Homan, H. Richard; and Bruce, Arthur P., 4,241,847, Cl. 221-12.000.

Brunetti, Francesco: *See—*
Gasperini, Pietro; and Brunetti, Francesco, 4,242,093, Cl. 8-456.000.

Bruning, Hugo A. C. M.; van Vucht, Johannes H. N.; Westendorp, Frans F.; and Zijlstra, Hinne, to U.S. Philips Corporation. Hydrides of the formula AB_nH_m. 4,242,315, Cl. 423-252.000.

Buchreiter, Georg; Kniep, Peter; Scheinost, Kurt; and Vollbrecht, Heinz-Rudiger, to SKW Trostberg Aktiengesellschaft. Process for production of cyanogen chloride. 4,242,319, Cl. 423-383.000.

Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., to Polaroid Corporation. Flat battery. 4,242,424, Cl. 429-152.000.

Buckner, Walter E., to Lucky Manufacturing Co., Inc. Brake mechanism for a gondola car loader. 4,241,811, Cl. 188-43.000.

Buckwalter, Nevin. Fluid jet device. 4,241,464, Cl. 239-251.000.

Bucolo, Giovanni: *See—*
Madappally, Mathew M.; and Bucolo, Giovanni, 4,242,446, Cl. 435-15.000.

Budai, Karoly, to Chyron Corporation. Digital scene storage. 4,242,707, Cl. 358-280.000.

Budd Canada Inc.: *See—*
Kendall, Willard E., 4,242,564, Cl. 219-208.000.

Buddemeyer, Bruce D.; Neville, William A.; Taylor, James S.; and Bourne, Richard G., to R.G.B. Laboratories, Inc. Dry powdered non-dairy food composition containing liquid fat. 4,242,364, Cl. 426-98.000.

Buehner, Joseph F. Anti-jackknife device for tractor-trailer combination. 4,241,934, Cl. 280-432.000.

Buhrer, Erwin. Method and apparatus for the removal of sand bales containing castings from molding boxes of poured foundry molds. 4,241,778, Cl. 164-131.000.

Bullen, Ronald S. Well tree saver. 4,241,786, Cl. 166-77.000.

Bunker Ramo Corporation: *See—*
Ayer, George E., 4,241,972, Cl. 339-126.00R.
Krolak, Ronald F.; Perna, Jay; and Radloff, Frederick J., 4,242,721, Cl. 361-415.000.

Burchell, Stanley C., to Allstar Fasteners, Inc. Adjustable shank slot dial. 4,241,468, Cl. 10-169.000.

Burenkov, Nikolai A.; Derevyanchenko, Mikhail G.; Ioganson, Rikhard A.; Kuprianov, Alexandr V.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I. Water-cooled electromagnetic brake. 4,242,609, Cl. 310-105.000.

Burgdorf, Jochen; Lupertz, Hans-Henning; and Kast, Helmut, to ITT Industries, Inc. Brake shoe for a spot-type disc brake. 4,241,812, Cl. 188-73.100.

Burns, Daniel J., to United States of America, Air Force. Apparatus and method for integrated circuit test analysis. 4,242,635, Cl. 324-158.00R.

Bursk, William M., to Pease Company. Door light assembly. 4,241,556, Cl. 52-455.000.

Bushnell, Donald D. Elastic apparatus for resisting and assisting a person performing exercises. 4,241,914, Cl. 272-136.000.

Bussell, Ray V.: *See—*
Voege, Clayton B., 4,241,896, Cl. 251-206.000.

Buta, John R.; Gehring, John H.; and Drotleff, Thomas J., to Paxson Machine Company. Apparatus for palletizing sheet material. 4,242,024, Cl. 414-43.000.

Butruille, Yves: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,242,203, Cl. 210-321.100.

Butts, Gene A.: *See—*
Golias, Tipton; Butts, Gene A.; and Swift, Robert A., 4,242,730, Cl. 364-416.000.

Bzik, John W.: *See—*
Zuckerman, Joseph L.; and Bzik, John W., 4,242,395, Cl. 428-96.000.

C. Itoh Electronics, Inc.: *See—*
Kondur, Nicholas, Jr., 4,242,005, Cl. 400-220.100.
Kondur, Nicholas, Jr., 4,242,006, Cl. 400-568.000.

C. R. Bard, Inc.: *See—*
Bennett, Clifford D.; and Odenthal, Charles, 4,241,756, Cl. 137-496.000.
Elson, Edward E., 4,241,739, Cl. 128-725.000.

C.V.P. Systems, Inc.: *See—*
Gidewall, Kenneth L.; and Proce, James R., 4,241,558, Cl. 53-79.000.

Cabados, Rick H.; and Hansen, Robert E. Spill proof bong. 4,241,741, Cl. 131-173.000.

Cable, Harold E., to Weld Tooling Corporation. Formable drive rails. 4,241,664, Cl. 104-118.000.

Cale, Albert D., Jr., to A. H. Robins Company, Inc. Production of methylene-cycloamines. 4,242,261, Cl. 260-239.00A.

Callahan, John A.; and Ottenstein, Allan S., to RF Products Corp. Gasoline pump digital price encoder. 4,242,575, Cl. 235-92.0FL.

Campbell, Kenneth J., to United States of America, Navy. Commutating narrowband filter. 4,242,732, Cl. 364-485.000.

Canada, Her Majesty the Queen in right of: *See—*
Slaght, William F., 4,242,036, Cl. 414-737.000.

Canada Wire and Cable Limited: *See—*
Halasz, Joseph; and Ito, Rokuzo, 4,241,573, Cl. 57-127.700.

Canadian Patents and Development Limited: *See—*
Siemsen, Klaus J.; and Reid, John, 4,242,645, Cl. 331-94.50G.

Canfield, V. Robert: *See—*
Bondoc, Alfredo A.; Canfield, V. Robert; and Ziegler, B. Randall, 4,242,404, Cl. 428-220.000.

Cannella, Vincent D.: *See—*
Izu, Masatsugu; and Cannella, Vincent D., 4,242,439, Cl. 430-346.000.

Cano, Francis J.; Kuo, Joseph S. C.; and Querry, Merle V., to American Cyanamid Company. Purification of pneumococcal capsular polysaccharides. 4,242,501, Cl. 536-1.000.

Canon Kabushiki Kaisha: *See—*
Kitagishi, Nozomu, 4,241,983, Cl. 350-216.000.
Canron Corporation: *See—*
Lund, Raymond R.; and Ho, Hung C., 4,241,663, Cl. 104-16.000.
Canterino, Peter J., to Mobil Oil Corporation. Fire resistant foam insulation. 4,242,465, Cl. 521-88.000.
Cappon, Arthur M.; Collins, John D.; and Sage, Jay P., to Raytheon Company. Signal processor. 4,242,683, Cl. 343-7.700.
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Apparatus for ozonizing unsaturated compounds. 4,242,309, Cl. 422-189.000.
Carl Hurth Maschinen-und Zahnradfabrik: *See—*
Leiber, Wolfgang; and Ruesch, Hans J., 4,241,817, Cl. 192-12.00C.
Carl Still, Firma: *See—*
Stratmann, Josef; and Brinkmann, Willi, 4,242,027, Cl. 414-148.000.
Carlingswitch, Inc.: *See—*
Sorenson, Richard W., 4,242,551, Cl. 200-302.000.
Carlson, David J.; and Yu, John P., to RCA Corporation. RF Connector assembly with low frequency isolation. 4,242,655, Cl. 333-183.000.
Carlsson, Knut G., to A/S De Smithske. Apparatus for taking up oil from a water surface. 4,242,202, Cl. 210-242.300.
Carmelo, Violi: *See—*
Koppl, Georg; Nowack, Helmut; and Carmelo, Violi, 4,242,549, Cl. 200-144.00R.
Carmichael, Michael H.: *See—*
Bradford, Randol W.; and Carmichael, Michael H., 4,241,953, Cl. 299-4.000.
Carolan, Donald L., to Deere & Company. Lawn mower safety shield. 4,241,567, Cl. 56-17.400.
Carpenter, Rodney W., to Clayton & Lambert Manufacturing Company. Anti-pollution rotary-sweep grain drier. 4,241,517, Cl. 34-79.000.
Carroll, Wilfred J. Supply container mounting. 4,241,668, Cl. 108-26.000.
Carruthers, John A.; and Austin, Michael J., to Carruthers, John Abbott. Trailer couplings. 4,241,936, Cl. 280-507.000.
Carruthers, John Abbott: *See—*
Carruthers, John A.; and Austin, Michael J., 4,241,936, Cl. 280-507.000.
Carson, Charles: *See—*
Corbin, Lawrence W.; and Carson, Charles, 4,241,625, Cl. 76-107.00A.
Carter, Cecil O., to Phillips Petroleum Company. Olefin dimerization. 4,242,531, Cl. 585-512.000.
Carter, Robert A., to General Electric Company. Electrically heated hair straightener and PTC heater assembly therefor. 4,242,567, Cl. 219-225.000.
Carter, Sidney T., to A-T-O Inc. Labeling machine. 4,242,168, Cl. 156-357.000.
Caruel, Jacques E. J.; Stora, Guy D.; and Schmitt, Gilles M.-J. B., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Combustion chamber of gas turbine engines. 4,241,586, Cl. 60-738.000.
Carver, Bobby C., to Eastman Kodak Company. Yarn lubricants. 4,242,095, Cl. 8-115.600.
Castillo, Adolfo; Kushner, Ben; and Seipos, Andrew G., to Automated Building Components, Inc. Assembly machine and method for embedding connector plates in structural members. 4,241,651, Cl. 100-35.000.
Catalyst Research Corporation: *See—*
O'Boyle, Matthew; Icore, Bernard; and Harney, Marilyn J., 4,242,425, Cl. 429-181.000.
Caterpillar Tractor Co.: *See—*
Meisel, Thomas C., Jr., 4,241,956, Cl. 305-35.0EB.
CCL Systems, Limited: *See—*
Edwards, Hugh J. W., 4,241,490, Cl. 29-459.000.
Celotex Corporation, The: *See—*
Rosen, Murray; Koenig, Alan R.; and Copham, John D., 4,242,241, Cl. 260-17.200.
Centre Electronique Horloger SA: *See—*
Piguet, Christian; and Perotto, Jean-Felix, 4,242,676, Cl. 340-711.000.
Cerny, Arnost; and Janecek, Jaroslav, to Adamovske Strojirny, Narodni Podnik. Device for taking up the clearance of gear transmissions. 4,241,619, Cl. 74-440.000.
Cerny, Jacqueline; and Vivant, Gilbert, to Rhone-Poulenc Industries. Compositions intended for the flameproofing of plastics. 4,242,240, Cl. 260-14.000.
Ceron, Jose D. Record album opener. 4,241,504, Cl. 30-292.000.
Ceserani, Roberto: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,242,508, Cl. 542-430.000.
Chace, Richard A., to Boeing Company, The. Synchronizer for hydraulic actuators. 4,241,581, Cl. 60-538.000.
Chaillot, Gustave. Electric connector. 4,242,657, Cl. 335-207.000.
Chamberlain Manufacturing Corporation: *See—*
Depperman, Warren B., 4,241,540, Cl. 49-199.000.
Chambers, D. Harry: *See—*
Dunning, Beverly W., Jr.; and Chambers, D. Harry, 4,242,192, Cl. 204-213.000.
Chambers, George: *See—*
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Champion International Corporation: *See—*
Faller, Rudolph A., 4,241,863, Cl. 229-27.000.
Chance, Calvin L., Jr., to Vibration and Noise Engineering Corporation. High pressure gas vent noise control apparatus and method. 4,241,805, Cl. 181-232.000.
Chance, Davey J.: *See—*
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,242,560, Cl. 219-69.00G.
Chance, Ronald R.: *See—*
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,242,440, Cl. 430-346.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
De Fazio, Thomas L., 4,242,017, Cl. 408-111.000.
Chegodaev, Evgeny V.: *See—*
Burenkov, Nikolai A.; Derevyanchenko, Mikhail G.; Ioganson, Rikhard A.; Kuprianov, Alexandr V.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I., 4,242,609, Cl. 310-105.000.
Chem-y, Fabriek Van Chemische Produkten B.V.: *See—*
Smid, Jacob K.; and Aalbers, Johan G., 4,242,215, Cl. 252-100.000.
Chemed Corporation: *See—*
Daugherty, Denny E.; Loder, Edwin R.; and Young, Gary L., 4,242,216, Cl. 252-103.000.
Chemical Research & Licensing Company: *See—*
Smith, Lawrence A., Jr., 4,242,530, Cl. 585-510.000.
Chemische Werke Huls AG: *See—*
Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, 4,242,248, Cl. 260-31.20N.
Cheng, Tai C.; and Schreffler, John R., to Firestone Tire & Rubber Company, The. Method of preparing substantially pure polyhalophenoxyphosphazene homopolymers and copolymers. 4,242,493, Cl. 528-168.000.
Chernack, Milton P.: *See—*
Schnabel, Peter W.; Chernack, Milton P.; Wilkes, Lawrence T.; and Perry, Gordon R., 4,241,743, Cl. 132-88.700.
Chernov, Merrill S. Ileostomy and colostomy plug. 4,241,735, Cl. 128-344.000.
Chevron Research Company: *See—*
Blakely, Donald W., 4,242,236, Cl. 252-455.00R.
Chick, William L.; Galletti, Pierre M.; Richardson, Peter D.; and Panol, Georg. Cell culture device. 4,242,459, Cl. 435-283.000.
Chick, William L.; Galletti, Pierre M.; Richardson, Peter D.; and Panol, Georg. Cell culture device. 4,242,460, Cl. 435-284.000.
Chikanobu, Kimijima; Asao, Kosakai; Tutomu, Shioya; and Tomotaka, Tatsumi, to Max Co. Ltd. Drawing apparatus. 4,241,512, Cl. 33-438.000.
Child, Edward T.; and Suggitt, Robert M., to Texaco Development Corporation. Biosynthesis of protein by fermentation of methanol obtained from the gasification of coal or residual oil. 4,242,458, Cl. 435-247.000.
Chisso Corporation: *See—*
Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; and Kitahara, Tohru, 4,242,272, Cl. 556-489.000.
Chouinard, Raymond J.: *See—*
Gould, Wayne P.; and Chouinard, Raymond J., 4,241,614, Cl. 74-15.630.
Chraplyvy, Andrew R., to General Motors Corporation. Laser spectrometer with frequency calibration. 4,241,997, Cl. 356-309.000.
Christ, Charles; Lebeault, Jean-Michel; and Noel, Claude, to Hirsch, Marc-Roger. Preparation of sauerkraut. 4,242,361, Cl. 426-49.000.
Christenson, Thomas; and Johansson, Francis J. Wallet theft guard. 4,241,476, Cl. 24-3.00R.
Christiansen, Kurt. Hydraulic unit. 4,242,054, Cl. 417-218.000.
Christner, Hans; Roebke, Wolfgang; Ramelow, Hermann; and Dittrich, Ewald, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for receiving, storing and handling aluminum hydroxide wet hydrate. 4,242,223, Cl. 252-313.00R.
Chrysler Corporation: *See—*
Graham, Kenneth A., 4,241,484, Cl. 29-156.40R.
Peck, Clifton S., 4,241,957, Cl. 308-36.400.
Chugai Denki Kogyo Kabushiki-Kaisha: *See—*
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Chugai Seiyaku Kabushiki Kaisha: *See—*
Sugawara, Yutaka; Yamamoto, Akihiro; Handa, Mitsuaki; Usami, Hiroko; and Ogawa, Haruki, 4,242,326, Cl. 424-116.000.
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Chupp, John P.; and Worley, Jimmy W., to Monsanto Company. Herbicidal composition and method of use. 4,242,123, Cl. 71-111.000.
Chyron Corporation: *See—*
Budai, Karoly, 4,242,707, Cl. 358-280.000.
Ciba-Geigy Corporation: *See—*
Berrer, Dagmar; Lorenz, Joachim; and Grade, Reinhardt, 4,242,119, Cl. 71-67.000.
Fattinger, Volker, 4,242,321, Cl. 423-523.000.
Huebner, Charles F., 4,242,347, Cl. 424-267.000.
Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, 4,242,278, Cl. 568-341.000.
Mueller, Karl F., 4,242,516, Cl. 546-248.000.
Rosen, Melvin H., 4,242,266, Cl. 260-326.340.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,242,264, Cl. 260-326.00C.

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Quarenghi, Rodolfo, 4,241,564, Cl. 53-575.000.
Claes, Paul E.: *See—*
Smith, Andrew L.; and Claes, Paul E., 4,242,400, Cl. 428-201.000.
Claeson, Karl G.; Simonsson, Leif R.; and Arielly, Salo, to AB Kabi. Bradykinin-inhibiting tripeptide derivatives. 4,242,329, Cl. 424-177.000.
Clarey, Donald H., to Dow Chemical Company, The. Apparatus and method for the determination of tenter width variance in a carpet or textile drying oven. 4,241,507, Cl. 33-125.00R.
Clark, Norman E., to Garlock Inc. Expansion joint. 4,241,944, Cl. 285-229.000.
Clark, Robert H., to McGraw-Edison Company. Electric skillet having removably attachable handle. 4,242,570, Cl. 219-441.000.
Clarke, John A., to Mineral Process Licensing Corporation. Reduction of ferric chloride. 4,242,320, Cl. 423-493.000.
Clarke, Peter A.: *See—*
Molins, Desmond W.; Clarke, Peter A.; and Luddington, Eric A., 4,241,822, Cl. 198-406.000.
Clausen, Herman A.: *See—*
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Clayton & Lambert Manufacturing Company: *See—*
Carpenter, Rodney W., 4,241,517, Cl. 34-79.000.
Clement, Clyde H. Self-loading car-top carrier for wheelchairs or similar sized loads. 4,242,030, Cl. 414-462.000.
Clewett, Merle E., to Union Iron Works, Inc. Chain drag kit for conveyor. 4,241,823, Cl. 198-727.000.
Cobb, Richard H. Method and apparatus for simultaneous distribution of poultry feed. 4,241,700, Cl. 119-52.0AF.
Cocca, Theodore F., to Raytheon Company. Thick film resistors. 4,242,660, Cl. 338-195.000.
Cochran, Michael J.: *See—*
Boone, Gary W.; and Cochran, Michael J., 4,242,675, Cl. 340-711.000.
Cognion, Jean-Marie; and Kervennal, Jacques, to Produits Chimiques Ugine Kuhlmann. Supports for silver catalysts utilized in the production of ethylene oxide. 4,242,235, Cl. 252-455.00R.
Cohen, Fredric S.: *See—*
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,242,424, Cl. 429-152.000.
Cohen, Murray. Golf tee. 4,241,917, Cl. 273-33.000.
Colautti, Franco, to Kinglor Metor S.p.A. Carbothermic process for producing sponge iron and the improved vertical retort system used in said process. 4,242,125, Cl. 75-37.000.
Cole, Duane S. Ski vise. 4,241,906, Cl. 269-43.000.
Colescott, Robert L.; Kaiser, Emil; and Bossinger, Charles D., to Armour and Company. Synthesis of peptides. 4,242,238, Cl. 260-8.000.
Colgate-Palmolive Company: *See—*
Roberts, Karl H.; Leibowitz, Marvin; and Furgal, Henry P., 4,242,377, Cl. 427-242.000.
Colley, John C.: *See—*
Ogden, Ralph; and Colley, John C., 4,242,007, Cl. 406-109.000.
Collins, Gordon T., to Bendix Corporation, The. Electrical connector assembly sealing grommet. 4,241,967, Cl. 339-59.00M.
Collins, John D.: *See—*
Cappon, Arthur M.; Collins, John D.; and Sage, Jay P., 4,242,683, Cl. 343-7.700.
Colt Industries Operating Corp.: *See—*
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,242,560, Cl. 219-69.00G.
Combustion Engineering, Inc.: *See—*
Blaskowski, Henry J., 4,241,670, Cl. 110-104.00R.
Smith, Donald A.; and Smirlock, Martin E., 4,241,673, Cl. 110-347.000.
Comello, Corrado: *See—*
Foscarini, Anthony; Foscarini, John; and Comello, Corrado, 4,241,543, Cl. 50-742.000.
Commercial Shearing, Inc.: *See—*
Hodgson, Robert F., 4,242,066, Cl. 418-132.000.
Commissariat a l'Energie Atomique: *See—*
Federspiel, Jean, 4,241,815, Cl. 188-282.000.
Commonwealth Scientific and Industrial Research Organization: *See—*
Warble, Charles E., 4,242,586, Cl. 250-443.000.
Compagnie Generale de Geophysique: *See—*
Garotta, Robert J., 4,242,742, Cl. 367-75.000.
Compagnie Neerlandaise de l'Azote: *See—*
Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., 4,241,692, Cl. 118-303.000.
Conley, Larry R., to Interconnection Technology, Inc. Solder-weld P.C. board apparatus. 4,242,719, Cl. 361-400.000.
Consortium fur Elektrochemische Industrie GmbH: *See—*
Schilling, Bernd, 4,242,276, Cl. 564-159.000.
Consumers Glass Company Ltd.: *See—*
Boller, Peter K., 4,241,841, Cl. 215-252.000.
Continental Scale Corporation: *See—*
Kushmuk, Walter P., 4,241,801, Cl. 177-211.000.
Conway, Charles S. Liquid cargo tank construction. 4,241,683, Cl. 114-74.00R.
Cool, John K.: *See—*
Levinson, Leon A.; and Cool, John K., 4,242,701, Cl. 358-75.000.
Cooper, George W.; and Young, Ronald J., to Cornell Research Foundation, Inc. Spermicidal agents. 4,242,359, Cl. 424-325.000.
Cooper, Glenn F., to American District Telegraph Company. Optical particle detector. 4,242,673, Cl. 340-630.000.
Cooper, James J., Jr., to International Telephone and Telegraph Corporation. Cast bus bar connector having hollow cross-sectional area. 4,241,975, Cl. 339-242.000.
Coors Container Company: *See—*
Wu, Samuel C.; Holick, Stephen A.; and Bottelsen, Robert A., 4,241,821, Cl. 194-4.00C.
Copham, John D.: *See—*
Rosen, Murray; Koenig, Alan R.; and Copham, John D., 4,242,241, Cl. 260-17.200.
Corbin, Lawrence W.; and Carson, Charles, to Fort Wayne Wire Die, Inc. Method of making a wire drawing die. 4,241,625, Cl. 76-107.00A.
Cordell, Robert R., to Bell Telephone Laboratories, Incorporated. Active variable equalizer. 4,242,650, Cl. 333-28.00R.
Cordingley, Laurence A.: *See—*
Hutcheon, Keith F.; and Cordingley, Laurence A., 4,242,385, Cl. 428-31.000.
Cordner, Obrey, to Boeing Company, The. Clearance indicator - blind measurement. 4,241,508, Cl. 33-169.00B.
Cormier, Raymond G.; and Lutz, Leo O., to Nashua Corporation. Metering roll with fixed slider strips. 4,241,694, Cl. 118-647.000.
Cornell Research Foundation, Inc.: *See—*
Cooper, George W.; and Young, Ronald J., 4,242,359, Cl. 424-325.000.
Corris, Derek A.: *See—*
Larsson, Ake L.; Gronwold, Gunther E.; and Corris, Derek A., 4,241,534, Cl. 46-206.000.
Cosgrove, James F.: *See—*
McCain, William B.; Cosgrove, James F.; Vente, John; and Flavin, Thomas R., 4,241,907, Cl. 270-54.000.
Costa, Eugene, Jr.; and Godsay, Madhu P., to International Paper Company. High crimp, high strength, hollow rayon fibers. 4,242,411, Cl. 428-369.000.
Cott, Norris E. Test station apparatus. 4,242,533, Cl. 174-38.000.
Coulter Electronics, Inc.: *See—*
Madappally, Mathew M.; and Bucolo, Giovanni, 4,242,446, Cl. 435-15.000.
Coulter Systems Corp.: *See—*
Kuehnle, Manfred R.; and Hagenlocher, Arno K., 4,242,433, Cl. 430-67.000.
Courtoy, Jean-Francois. Treatment of non-woven fabric in order to improve the properties thereof. 4,242,380, Cl. 427-366.000.
Cousins, Rebecca A. Universal racket rack. 4,241,836, Cl. 211-14.000.
Cramm, Herman W.: *See—*
Shishido, Tsuneo; Eyermann, Philip A.; Vick, William L.; and Cramm, Herman W., 4,242,652, Cl. 333-106.000.
Cratin, John R., Jr., to Standard Oil Company (Indiana). Furnace fuel optimizer. 4,241,869, Cl. 236-15.0BR.
Creaghan, James P.: *See—*
Allen, John W., Jr., 4,241,797, Cl. 175-237.000.
Creative Industries, Inc.: *See—*
Lake, Connie, 4,242,074, Cl. 425-292.000.
Cremer, Kurt H. L., to Sack & Kiesselbach Maschinenfabrik GmbH. Method for producing a cross-slotted heading die. 4,241,598, Cl. 72-354.000.
Creusot-Loire: *See—*
Leveque, Robert, 4,242,151, Cl. 148-6.350.
Crick, David W., to B. A. Security Systems Limited. Passive infrared intruder detection system. 4,242,669, Cl. 340-567.000.
Criscimagna, Tony N.: *See—*
Beidl, John R.; Criscimagna, Tony N.; and Greeson, James C., Jr., 4,242,680, Cl. 340-771.000.
Crow, Thomas G., to United States of America, Army. Laser energy monitor. 4,242,581, Cl. 250-227.000.
Crow, William D.: *See—*
Hildebrandt, Eugene F.; and Crow, William D., 4,242,607, Cl. 310-68.00E.
Crown Cork & Seal Company, Inc.: *See—*
Long, George, 4,242,561, Cl. 219-109.000.
Crutchfield, Melvin R. Rotary internal combustion engine. 4,241,713, Cl. 123-202.000.
Csikos, Rezso: *See—*
Laky, Janos; Csikos, Rezso; Peterfy, Lajos; Szvetelszky, Lajos; and Pallay, Istvan, 4,242,526, Cl. 568-697.000.
Curry, Paul F., to Jem Corporation. Ski board with improved foot treads. 4,241,929, Cl. 280-12.00H.
Cusano, Dominic A.; Holub, Fred F.; and Prochazka, Svante, to General Electric Company. Ceramic-like scintillators. 4,242,221, Cl. 252-301.40H.
CY/RO Industries: *See—*
Schmitt, Joseph M.; and Quinn, Richard J., 4,242,469, Cl. 525-71.000.
Dacey, Raymond B.; and Stringer, Frederick D., to W. R. Grace & Co. Winding core for heat shrinkable film material. 4,242,297, Cl. 264-230.000.
Daikin Kogyo Co., Ltd.: *See—*
Ohsaka, Yohnosuke, 4,242,286, Cl. 570-145.000.
Daimler-Benz Aktiengesellschaft: *See—*
Huber, Guntram; Klie, Wolfgang; Fischer, Wolfgang; Riechers, Daniel; and Hutai, Hubert, 4,241,945, Cl. 293-120.000.
Mayr, Bertold; and Roser, Siegfried, 4,241,707, Cl. 123-90.550.
D'Aloisio, Rino: *See—*
Venturello, Carlo; D'Aloisio, Rino; and Belli, Aldo, 4,242,524, Cl. 562-423.000.
Daly, Andrew S.; May, Peter R.; and Braines, George E., to A.S. Daly Nominees Pty. Ltd. Radiator caps. 4,241,845, Cl. 220-203.000.

D'Amato, Michael J.; and Jaconette, Frank C., to Harvey Hubbell, Incorporated. Locking plug. 4,241,969, Cl. 339-88.00R.

Danfoss A/S: *See—*
Dyhr, Jan; and Nissen, Ole J., 4,242,056, Cl. 417-363.000.

Danner, Edward L.: *See—*
Eggen, Hans C.; Halajian, Eugene M.; Danner, Edward L.; and Rogers, Darrell O., 4,241,937, Cl. 280-777.000.

Darcy, Raymond M.: *See—*
Bobard, Charles E.; Delaunay, Just M.; and Darcy, Raymond M., 4,241,569, Cl. 56-330.000.

Dart Industries Inc.: *See—*
Gaylord, Norman G.; Nagler, Meshulam; and Fein, Marvin M., 4,242,482, Cl. 526-192.000.
Spoeth, Carl R., Jr., 4,241,946, Cl. 294-31.00R.

Daswick, Alexander C. Shoe sole structure. 4,241,523, Cl. 36-30.00R.

Daugherty, Denny E.; Loder, Edwin R.; and Young, Gary L., to Chemed Corporation. Stabilized dichlorodimethyl hydantoin. 4,242,216, Cl. 252-103.000.

Dauvergne, Jean L. R., to Societe Anonyme Francaise du Ferodo. Assisted braking device. 4,241,582, Cl. 60-550.000.

David, Gerard A.: *See—*
Diguet, Daniel; David, Gerard A.; and Aubril, Pierre, 4,242,696, Cl. 357-30.000.

David, Samuell: *See—*
Thies, Peter W.; Asai, Akiji; and David, Samuell, 4,242,341, Cl. 424-248.550.

Davidson, Melvin J. G.: *See—*
Koski, Ahti A.; and Davidson, Melvin J. G., 4,242,477, Cl. 526-84.000.

Davies, David R.; and Richardson, Edwin A., to Shell Oil Company. Method for diverting a gaseous sand-consolidating fluid. 4,241,791, Cl. 166-292.000.

Davis, Chester. Additive system of color photography based on iridescent pigments. 4,242,428, Cl. 430-9.000.

Davis, Dan B. Tiller steering lock. 4,241,684, Cl. 114-144.00R.

Davison, Sol: *See—*
Gergen, William P.; and Davison, Sol, 4,242,470, Cl. 525-92.000.

Davy International (Oil & Chemicals) Limited: *See—*
Harris, Norman; and Shevels, Thomas F., 4,242,284, Cl. 568-454.000.

Dayco Corporation: *See—*
Bricker, Charles E., 4,242,296, Cl. 264-149.000.
Herr, Leroy E., 4,241,647, Cl. 98-121.00A.

Dayem, Aly H.; Geballe, Theodore H.; Patel, Chandra K. N.; and Tien, Ping K., to Bell Telephone Laboratories, Incorporated. Epitaxial growth of superconductors such as Nb_3Ge superconductors. 4,242,419, Cl. 428-661.000.

Dayre, Henri: *See—*
Maldonado, Paul; Dayre, Henri; and Hagenbach, Germain, 4,242,246, Cl. 260-28.5AS.

Deacon, James S., to McLaughlin, Inc. Dust collector. 4,242,114, Cl. 55-304.000.

Deal, Bruce C., to Northrop Corporation. Image spot detector using Haar coefficients. 4,242,733, Cl. 364-515.000.

Deal, Bruce C., to Northrop Corporation. Image corner detector using Haar coefficients. 4,242,734, Cl. 364-515.000.

Dean, Paul R., II; and Kuczkowski, Joseph A., to Goodyear Tire & Rubber Company, The. Color stabilization of amine antioxidant and antiozonant emulsions. 4,242,224, Cl. 252-402.000.

Dearth, Leonard F.: *See—*
Lancia, Frederick N.; Wolfe, William A.; Dearth, Leonard F.; Benton, Stephen L.; Homan, H. Richard; and Bruce, Arthur P., 4,241,847, Cl. 221-12.000.

Deere & Company: *See—*
Carolan, Donald L., 4,241,567, Cl. 56-17.400.

Dees, Raymond K.; Van Laanen, Peter J.; and Ream, Gregory L., to Unirad Corporation. Ultrasonic scanner. 4,241,608, Cl. 73-606.000.

De Fazio, Thomas L., to Charles Stark Draper Laboratory, Inc., The. Passive mating system. 4,242,017, Cl. 408-111.000.

Defibaugh, George R.; Shannon, Suel G.; and Swengel, Robert C., Jr., to AMP Incorporated. Connection of wires to components having two prongs. 4,242,535, Cl. 174-88.00R.

DeGregorio, Bruno: *See—*
Szpakowski, Bronislaw T.; and DeGregorio, Bruno, 4,242,630, Cl. 323-60.000.

DeHaven, William M., to Harrelson Rubber Company. Tire retreading apparatus. 4,242,169, Cl. 156-394.000.

Deimel, Gerhard; and Schmidt, Paul, to Jagenberg Werke AG. Apparatus for folding and closing the tops of folding cartons. 4,241,560, Cl. 53-373.000.

Deininger, Horst; and Breitweg, Werner, to Zahnradfabrik Friedrichshafen AG. Servo steering system for motor vehicles. 4,241,804, Cl. 180-79.100.

Delaunay, Just M.: *See—*
Bobard, Charles E.; Delaunay, Just M.; and Darcy, Raymond M., 4,241,569, Cl. 56-330.000.

Delpretti, Roger, to Ateliers des Charmilles S.A. Process and apparatus for eliminating short circuits in electrical discharge machining. 4,242,555, Cl. 219-69.00M.

De Luca, Charles G. Trimmer blade. 4,241,633, Cl. 83-676.000.

DelVecchio, Anthony J.: *See—*
Morgan, Jay E.; DelVecchio, Anthony J.; Brooking, Betty L.; and Laverty, David M., 4,242,366, Cl. 426-554.000.

DeMarinis, Robert M., to SmithKline Corporation. Bis-2N-alkylene tetrahydroisoquinoline compounds. 4,242,346, Cl. 424-258.000.

Demi, Roy C., to Robertshaw Controls Company. Fluid flow sensing switch device. 4,242,083, Cl. 431-72.000.

Demi, Roy C.: *See—*
Branson, Charles D.; and Demi, Roy C., 4,242,082, Cl. 431-72.000.

Dennison Manufacturing Company: *See—*
Somerville, Daniel W., 4,242,678, Cl. 340-728.000.

Dental AB: *See—*
Ekman, Bjorn, 4,242,088, Cl. 433-101.000.

DePouilly, Bernard M. H.; and Issenmann, Edouard M. J. A. I., to Le Material Telephonique. Clock recovery system for data receiver. 4,242,754, Cl. 375-110.000.

Depperman, Warren B., to Chamberlain Manufacturing Corporation. Folding screw and rail assembly for a garage door opener. 4,241,540, Cl. 49-199.000.

De Rath, Jean-Pierre: *See—*
Brahm, Jacques; and De Rath, Jean-Pierre, 4,242,318, Cl. 423-430.000.

Derevyanchenko, Mikhail G.: *See—*
Burenkov, Nikolai A.; Derevyanchenko, Mikhail G.; Ioganson, Rikhard A.; Kuprianov, Alexandr V.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I., 4,242,609, Cl. 310-105.000.

DeToia, Vincent D. Device for converting waste nuclear energy to electricity. 4,242,147, Cl. 136-253.000.

Detweiler, Charles A., to Schmelzer Corporation. Fuel control system. 4,241,711, Cl. 123-559.000.

Deuterium Corporation: *See—*
Spevack, Jerome S., 4,242,305, Cl. 422-129.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Christner, Hans; Roebke, Wolfgang; Ramelow, Hermann; and Dittrich, Ewald, 4,242,223, Cl. 252-313.00R.

DeVore, Dale P.: *See—*
Hughes, Kenneth E.; and DeVore, Dale P., 4,242,291, Cl. 264-1.000.

deVos, Hendrik A. J.; and Labouliere, Elzear R., to GTE Products Corporation. Luminaire reflector. 4,242,727, Cl. 362-346.000.

Dickens, Luther I.; and Nanny, William C., to Radva Plastics Corporation. Composite panel structure and method of manufacture. 4,241,555, Cl. 52-454.000.

Dickinson, Norman L. Pollutant-free low temperature combustion process having carbonaceous fuel suspended in alkaline aqueous solution. 4,241,722, Cl. 126-263.000.

Didier Engineering GmbH: *See—*
Rohde, Wolfgang, 4,241,513, Cl. 34-10.000.

Didier-Werke AG: *See—*
Eschner, Axel; and Pohlmann, Erich, 4,241,781, Cl. 165-1.000.

Diehl GmbH & Co.: *See—*
Rudenauer, Werner; and Siewert, Ralf, 4,241,662, Cl. 102-210.000.

Diem, Hans; Dudeck, Christian; Lehmann, Gunter; Matthias, Guenther; and Petri, Norbert, to BASF Aktiengesellschaft. Preparation of glyoxal. 4,242,282, Cl. 568-471.000.

Dienemann, Wolfgang; and Reichert, Rudolf, to Bosch-Siemens Hausgerate GmbH. Refrigerating apparatus, especially refrigerator or freezer. 4,241,587, Cl. 62-80.000.

Di Gesu', Giovanni, to Indesit Industria Elettrodomestici Italiana S.p.A. Packing system. 4,241,830, Cl. 206-422.000.

Diguet, Daniel; David, Gerard A.; and Aubril, Pierre, to U.S. Philips Corporation. Method of forming a contact on the surface of a semiconductor body by serigraphy and body obtained by means of this method. 4,242,696, Cl. 357-30.000.

Dilo, Richard. Needle felt machine with a guiding apparatus for the needle beam. 4,241,479, Cl. 28-107.000.

Dimsdale, Michael J., to Synthelabo. 3-Amino-5-benzyl-1,2,4-oxadiazoles and anti-hypertensive compositions thereof. 4,242,352, Cl. 424-272.000.

Dingman, Arthur E., to Autographic Business Forms, Inc. Printer with indexed orientation of print head relative to web movement. 4,241,655, Cl. 101-79.000.

Dingwall, Andrew G. F., to RCA Corporation. Look ahead high speed circuitry. 4,242,738, Cl. 365-189.000.

Dionex Corporation: *See—*
Rich, William E., Jr.; Johnson, Edward L.; and Sidebottom, Thomas O., 4,242,097, Cl. 23-230.00R.

Dittler Brothers, Inc.: *See—*
Bachman, Gilbert, 4,241,942, Cl. 283-6.000.

Dittrich, Ewald: *See—*
Christner, Hans; Roebke, Wolfgang; Ramelow, Hermann; and Dittrich, Ewald, 4,242,223, Cl. 252-313.00R.

Dobson, John V., to National Research Development Corporation. Apparatus for measuring the concentrations of ions. 4,242,189, Cl. 204-195.00R.

Dochia, Mihail: *See—*
Popovici, Neculai; Dochia, Mihail; Dumitrescu, Mihai; Spirea, Iosif; and Samoil, Iacob, 4,242,308, Cl. 422-195.000.

Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, to BASF Aktiengesellschaft. Process for preparing 4-methyl-5[(2-aminoethyl)thiomethyl)]-imidazole. 4,242,517, Cl. 548-342.000.

Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG: *See—*
Schindler, Johannes G.; and Schal, Wilfried, 4,242,191, Cl. 204-195.00M.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Schellmann, Klaus; and Schulze, Heinz, 4,241,709, Cl. 123-407.000.

Dodson, Stuart A.: *See—*
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,337, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,338, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,339, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,340, Cl. 424-248.540.

Dodt, Jurgen: *See—*
Plevak, Lubomir; and Dodt, Jurgen, 4,242,014, Cl. 405-300.000.

Doebel, David H. Concave helix solar concentrator. 4,241,726, Cl. 126-438.000.

Dolikian, Arman V.; and Freeburg, Thomas A., to Motorola, Inc. Radio transmitter time out timer. 4,242,753, Cl. 375-70.000.

Doll, Joseph D., to Lockwood Corporation. Over-power safety device for motor driven system. 4,242,712, Cl. 361-42.000.

Dolveck, Gilbert, to Aluminium Suisse S.A. Aerosol dispensing and similar metal cans, and process for the production thereof. 4,241,844, Cl. 220-67.000.

Domtar Inc.: *See—*
Doutre, Joseph A. M., 4,241,474, Cl. 19-26.000.

Donaldson Company, Inc.: *See—*
Harold, Donald M.; and Ufken, Gregory A., 4,242,115, Cl. 55-347.000.

Donnelly, Donald E.; and Feero, William B., to Emerson Electric Co. Oil burner primary control for interrupted ignition system. 4,242,081, Cl. 431-71.000.

Donovan, William F., to United States of America, Army. Projectile. 4,241,660, Cl. 102-56.00R.

Doring, Michael, to U.S. Philips Corporation. Ink jet printer. 4,242,688, Cl. 346-75.000.

Dossett, Richard A.: *See—*
Grimm, Bernard J.; and Dossett, Richard A., 4,241,589, Cl. 62-265.000.

Douglas, George H.; Studt, William L.; and Dodson, Stuart A., to William H. Rorer, Inc. Method for treatment of diarrheal disease conditions or symptons in mammals. 4,242,337, Cl. 424-248.540.

Douglas, George H.; Studt, William L.; and Dodson, Stuart A., to William H. Rorer, Inc. Method for treatment of gastrointestinal secretory and ulcerogenic disease conditions or symptoms in mammals. 4,242,338, Cl. 424-248.540.

Douglas, George H.; Studt, William L.; and Dodson, Stuart A., to William H. Rorer, Inc. Method for treatment of gastrointestinal spasmodic disease conditions or symptoms in mammals. 4,242,339, Cl. 424-248.540.

Douglas, George H.; Studt, William L.; and Dodson, Stuart A., to William H. Rorer, Inc. Method for the treatment of diarrheal disease conditions and symptoms in mammals. 4,242,340, Cl. 424-248.540.

Douglass, David H., to University of Rochester, The. Methods and apparatus for providing ultra-stable frequency standards and clocks. 4,242,611, Cl. 310-344.000.

Douma, William L.; and Brigham, Ward E., to Sun Chemical Corporation. Light reflector structure. 4,242,725, Cl. 362-341.000.

Doutre, Joseph A. M., to Domtar Inc. Mobile flax decorticator. 4,241,474, Cl. 19-26.000.

Dow Chemical Company, The: *See—*
Clarey, Donald H., 4,241,507, Cl. 33-125.00R.
Evani, Syamalarao; and Foster, William A., 4,242,408, Cl. 428-290.000.
Kyriacou, Demetrios, 4,242,183, Cl. 204-73.00R.
Nestrick, Terry J.; and Stehl, Rudolph H., 4,242,227, Cl. 252-428.000.
Renga, James M., 4,242,285, Cl. 260-348.310.

Dow Corning Corporation: *See—*
Baney, Ronald H.; and Harris, Len A., 4,242,416, Cl. 428-412.000.

Dow, Julian: *See—*
Specht, Donald F.; and Dow, Julian, 4,241,611, Cl. 73-626.000.

Dowd, Daniel J., to Westvaco Corporation. Paper plate forming method and apparatus. 4,242,293, Cl. 264-40.700.

Dracon Industries: *See—*
Gregson, Donald L., 4,241,496, Cl. 29-751.000.

Drager, Axel: *See—*
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,242,309, Cl. 422-189.000.

Dragerwerk Aktiengesellschaft: *See—*
McBride, William S., 4,241,485, Cl. 29-157.00R.

Drap, Stephen: *See—*
Braun, David B.; Drap, Stephen; Fritz, Henry E.; and Ingberman, Arthur K., 4,242,098, Cl. 44-51.000.

Dreiling, James A., to Honeywell Inc. Tape recording apparatus using capacitive detectors as tape position sensors. 4,242,708, Cl. 360-74.500.

Drotleff, Thomas J.: *See—*
Buta, John R.; Gehring, John H.; and Drotleff, Thomas J., 4,242,024, Cl. 414-43.000.

D'Silva, Thomas L., to GTE Products Corporation. Cadmium-free silver based brazing alloy. 4,242,134, Cl. 75-173.00C.

Du Pont Canada Inc.: *See—*
Urquhart, Thomas, 4,242,295, Cl. 264-146.000.

DuBois, Edmund H.; Erlandson, Robert K.; and Miller, Allan F., to Outboard Marine Corporation. Throttle control for a marine propulsion device. 4,241,687, Cl. 440-63.000.

Du Bois, Edward F., to Singer Company, The. P.C. Board lead trimming method. 4,241,497, Cl. 29-839.000.

Dubois, Jean-Claude; and Mourgues, Gerard, to U.S. Philips Corporation. Coupling device for connecting a light source to an optical fiber. 4,241,978, Cl. 350-96.200.

Dubourg, Michel, to Framatome. Filters for purifying fluids containing ferromagnetic particles. 4,242,200, Cl. 210-222.000.

Dudeck, Christian: *See—*
Diem, Hans; Dudeck, Christian; Lehmann, Gunter; Matthias, Guenther; and Petri, Norbert, 4,242,282, Cl. 568-471.000.

Dudley, Dana: *See—*
McCormack, Kent; Robinson, James E.; Knight, William M., Jr.; and Dudley, Dana, 4,242,706, Cl. 358-213.000.

Dufresne, Armand F. Multi-symbol message communicator for a speechless, handicapped person. 4,241,521, Cl. 434-112.000.

Dugas, Madeleine L.: *See—*
Wolf, Robert H.; and Dugas, Madeleine L., 4,241,867, Cl. 235-85.00R.

Dulmison (Australia) Pty. Ltd.: *See—*
Hearnshaw, David, 4,242,537, Cl. 174-42.000.

Dumitrescu, Mihai: *See—*
Popovici, Neculai; Dochia, Mihail; Dumitrescu, Mihai; Spirea, Iosif; and Samoil, Iacob, 4,242,308, Cl. 422-195.000.

Dumont, Claude: *See—*
Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, 4,242,355, Cl. 424-275.000.

Duncan, Joe S.: *See—*
Emerson, Roy J.; Fabris, Hubert J.; Herold, Robert J.; and Duncan, Joe S., 4,242,490, Cl. 528-77.000.

Dunkl, Franz S.: *See—*
Ross, Sidney D.; Finkelstein, Manuel; and Dunkl, Franz S., 4,242,722, Cl. 361-433.000.

Dunlop Limited: *See—*
Jackson, William L., 4,241,775, Cl. 152-330.0RF.
Stewart, Charles G., 4,241,776, Cl. 152-381.400.

Dunn, Aubrey J.: *See—*
King, Gerard J.; and Dunn, Aubrey J., 4,242,149, Cl. 148-1.500.

Dunning, Beverly W., Jr.; and Chambers, D. Harry, to United States of America, Interior. Electrolytic stripping cell. 4,242,192, Cl. 204-213.000.

Duphar International Research B.V.: *See—*
van Dijk, Jan; and Zwagemakers, Johannes M. A., 4,242,348, Cl. 424-267.000.

Du Pont de Nemours, E. I., and Company: *See—*
Antonelli, Joseph A.; Kelly, Renee J.; and McLaughlin, Joseph E., 4,242,243, Cl. 260-23.0AR.
Benin, Joshua, 4,241,883, Cl. 242-46.400.
Yallourakis, Michael D., 4,242,253, Cl. 260-40.0TN.

Durad Machine Company, Ltd.: *See—*
Mohrsen, Leif, 4,242,023, Cl. 414-36.000.

Dutta Roy, Suhash C., to Iowa State University Research Foundation, Inc. Wideband transformer apparatus. 4,242,651, Cl. 333-32.000.

Dyhr, Jan; and Nissen, Ole J., to Danfoss A/S. Encapsulated refrigerator. 4,242,056, Cl. 417-363.000.

E. J. Price (Developments) Limited: *See—*
Price, Ernest J., 4,242,060, Cl. 417-464.000.

E M I Limited: *See—*
Smith, Andrew L.; and Claes, Paul E., 4,242,400, Cl. 428-201.000.

E. R. Squibb & Sons, Inc.: *See—*
Wade, Peter C.; and Ondetti, Miguel A., 4,242,265, Cl. 260-326.12R.

Eames, Thomas R. Mountable cassette or cartridge holder. 4,241,859, Cl. 224-312.000.

Eastern Fusecoat Incorporated: *See—*
Voitas, Edward J., 4,241,483, Cl. 29-149.5PM.

Eastman Kodak Company: *See—*
Carver, Bobby C., 4,242,095, Cl. 8-115.600.
Jackson, Winston J., Jr.; Gebeau, Gary G.; and Kuhfuss, Herbert F., 4,242,496, Cl. 528-190.000.
Thomson, Kenneth W., 4,241,986, Cl. 354-193.000.

Eaton Corporation: *See—*
Keene, Derek K., deceased, 4,241,578, Cl. 60-478.000.

Ebauches Electroniques SA: *See—*
Mutrux, Claude, 4,242,745, Cl. 368-73.000.

Eberle, William J., to General Battery Corporation. Apparatus for forming battery straps and intercell connections. 4,241,780, Cl. 164-333.000.

Ebert, Michael: *See—*
Miller, William, 4,241,761, Cl. 137-883.000.

Ebihara, Norio, to Sony Corporation. Noise reduction system for video signals. 4,242,705, Cl. 358-167.000.

Ebitani, Hideaki: *See—*
Kitamura, Kenzo; Ebitani, Hideaki; and Asakura, Masahiro, 4,242,302, Cl. 422-94.000.

Edinger, Egon; and Przybylski, Zdzislaw, to Siemens Aktiengesellschaft. Method and apparatus for separating twisted wires. 4,241,570, Cl. 57-1.0UN.

Edmondson, Harold L. Cutter device. 4,241,502, Cl. 30-241.000.

Edwards, Hugh J. W., to CCL Systems, Limited, Method of applying metal sleeve to concrete reinforcing bar, metal sleeve and swaged connection. 4,241,490, Cl. 29-459.000.

Edwards, John W. Air cleaner and humidifier. 4,242,109, Cl. 55-230.000.

Edwards, Thomas C., to Rovac Corporation, The. Air conditioning system employing dual cycle. 4,241,591, Cl. 62-402.000.

Edwards, William H.: *See—*
Ronning, Albert J.; Edwards, William H.; and Johnson, Dee L., 4,242,162, Cl. 156-212.000.

Effey, Gunter: *See—*
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,242,309, Cl. 422-189.000.

Eggen, Hans C.; Halajian, Eugene M.; Danner, Edward L.; and Rogers, Darrell O., to General Motors Corporation. Steering column support. 4,241,937, Cl. 280-777.000.

Ehrenthal Irving; Shieh, Kenneth K.; Scallet, Barrett L.; and Rajpara, Jagdish, to Anheuser-Busch, Incorporated. Method of treatment of flocculated homogenate of microbial cells containing glucose isomerase. 4,242,451, Cl. 435-94.000.

Eiermann, Dankwart, to Borsig GmbH; and Wankel GmbH. Pressure valve, especially for rotary piston compressors. 4,241,758, Cl. 137-512.150.

Eisermann, Eckehard; and Beckers, Dieter, to Martin & Pagenstecher GmbH. Head or slide plate for a molten-metal slide gate. 4,241,905, Cl. 266-236.000.

Ekman, Bjorn, to Dental AB. Regulating device for pressure fluid actuated apparatus. 4,242,088, Cl. 433-101.000.

El Bouhnini, Larbi; Fitzpatrick, Thomas J.; Harwick, Donald M.; Hoffman, Robert M.; and Knoll, Wayne M., to PPG Industries, Inc.; and United States Gypsum Company. Fiber reinforced composite structural laminate composed of two layers tied to one another by embedded fibers bridging both layers. 4,242,406, Cl. 428-236.000.

Electro-Nucleonics Laboratories, Inc.: *See—*
O'Neill, Sean P., 4,242,322, Cl. 424-1.000.

Elek, Louis F.: *See—*
Rabo, Jule A.; Elek, Louis F.; and Francis, James N., 4,242,103, Cl. 48-197.00R.

Elf Union: *See—*
Hagenbach, Germain; and Maldonado, Paul, 4,242,143, Cl. 106-272.000.
Maldonado, Paul; Dayre, Henri; and Hagenbach, Germain, 4,242,246, Cl. 260-28.5AS.

Eli Lilly and Company: *See—*
Lunn, William H. W., 4,242,509, Cl. 544-21.000.

Elias, Alfonso G. Polishing apparatus. 4,241,471, Cl. 15-250.00R.

Elliott, Denvier D., Jr. Golf training aid. 4,241,922, Cl. 273-189.00A.

Ellis, Vincent S.; and Mieszkis, Kazimierz W., to Imperial Chemical Industries Limited. Production of modified conjugate fibre products. 4,242,382, Cl. 427-379.000.

Elrick, Donald E.; and Gilbert, Harry, to Hercules Incorporated. Composite propellant with surface having improved strain capacity. 4,241,661, Cl. 102-103.000.

Elson, Edward E., to C. R. Bard, Inc. Volume calculator for incentive spirometer. 4,241,739, Cl. 128-725.000.

Emerson Electric Co.: *See—*
Donnelly, Donald E.; and Feero, William B., 4,242,081, Cl. 431-71.000.
Hildebrandt, Eugene F.; and Crow, William D., 4,242,607, Cl. 310-68.00E.

Emerson, Roy J.; Fabris, Hubert J.; Herold, Robert J.; and Duncan, Joe S., to General Tire & Rubber Company, The. Thermoset polyurethane prepared from a polypropylene ether triol obtained using a double metal cyanide complex catalyst, ethylene glycol and tolylene diisocyanate. 4,242,490, Cl. 528-77.000.

Emhart Industries, Inc.: *See—*
Schuder, Maurice E.; and Stafford, Richard W., 4,242,746, Cl. 368-109.000.

Emon, Barbara D.: *See—*
Emon, Donald E.; and Emon, Barbara D., 4,241,725, Cl. 126-428.000.

Emon, Donald E.; and Emon, Barbara D. Solar energy collector. 4,241,725, Cl. 126-428.000.

Endress u. Hauser GmbH u. Co.: *See—*
Rottmar, Werner, 4,242,744, Cl. 367-173.000.

Energy Conversion Devices, Inc.: *See—*
Izu, Masatsugu; and Cannella, Vincent D., 4,242,439, Cl. 430-346.000.

Enertec: *See—*
Metcalf, Eric, 4,242,634, Cl. 324-142.000.

Enicks, James H. Apparatus for manufacturing pad members. 4,242,072, Cl. 425-130.000.

Envirotech Corporation: *See—*
Hendriks, Henry L.; and Hinds, Avery, 4,241,605, Cl. 73-861.940.

Erlandson, Robert K.: *See—*
DuBois, Edmund H.; Erlandson, Robert K.; and Miller, Allan F., 4,241,687, Cl. 440-63.000.

Erwin, Louis R.; and Woodruff, Frank, to Bendix Corporation, The. Control valve for use with variable displacement piston pump. 4,241,753, Cl. 137-116.300.

Eschbach, C. Scott: *See—*
Schilling, Curtis L., Jr.; and Eschbach, C. Scott, 4,242,466, Cl. 521-112.000.

Escher Wyss Limited: *See—*
Biondetti, Mario, 4,241,482, Cl. 29-116.0AD.

Eschner, Axel; and Pohlmann, Erich, to Didier-Werke AG; and Kulmbacher Klimagerate-Werk GmbH & Co. KG. Regenerative heater and process for the operation thereof. 4,241,781, Cl. 165-1.000.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,241,488, Cl. 29-407.000.

Estabrooke, John C., to Velcon Filters, Inc. Filter dehydrator. 4,242,206, Cl. 210-489.000.

Estel, Heinz: *See—*
Gratza, Peter; and Estel, Heinz, 4,241,933, Cl. 280-301.000.

Etablissements Bobard Jeune: *See—*
Bobard, Charles E.; Delaunay, Just M.; and Darcy, Raymond M., 4,241,569, Cl. 56-330.000.

Ethyl Corporation: *See—*
Malec, Robert E., 4,242,099, Cl. 44-53.000.

Evani, Syamalarao; and Foster, William A., to Dow Chemical Company, The. Easily disposable non-woven products having high wet strength at acid pH and low wet strength at base pH. 4,242,408, Cl. 428-290.000.

Evans, Walter R.: *See—*
Miller, Harry C.; and Evans, Walter R., 4,241,594, Cl. 70-38.00A.

Exotech, Incorporated: *See—*
Weiser, Sidney, 4,241,996, Cl. 356-124.500.

Extel Corporation: *See—*
Adler, Robert, 4,242,004, Cl. 400-124.000.

Extraction Research & Development, Inc.: *See—*
Torma, Arpad E., 4,242,313, Cl. 423-112.000.

Exxon Research & Engineering Co.: *See—*
Gladrow, Elroy M.; and Winter, William E., 4,242,237, Cl. 252-455.00Z.
Malatesta, Alberto, 4,242,244, Cl. 260-23.70C.
Sansregret, Joseph L., 4,242,374, Cl. 427-76.000.

Eyermann, Philip A.: *See—*
Shishido, Tsuneo; Eyermann, Philip A.; Vick, William L.; and Cramm, Herman W., 4,242,652, Cl. 333-106.000.

Eygermans, Petrus J.: *See—*
Bogerman, Pieter K.; Eygermans, Petrus J.; and van Velzen, Antoon G., 4,242,219, Cl. 252-174.120.

Fabbri, William C.; and Metcalf, Paul T., II, to Keene Corporation. Low level work area lighting system. 4,242,723, Cl. 362-33.000.

Fabcote Manufacturing Proprietary Limited: *See—*
Franceschini, John M., 4,242,500, Cl. 528-492.000.

Fabris, Hubert J.: *See—*
Emerson, Roy J.; Fabris, Hubert J.; Herold, Robert J.; and Duncan, Joe S., 4,242,490, Cl. 528-77.000.

Facet Enterprises, Inc.: *See—*
Miller, Donald L., 4,241,818, Cl. 192-55.000.

Fadeev, Alexandr I.: *See—*
Batjukov, Vladimir I.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Shkhian, Tsolak G.; and Sumatokhin, Vitold A., 4,242,178, Cl. 176-30.000.

Fagundes, John L.; and Taylor, Clyde L. Bank out module builder with unloading mechanism. 4,241,653, Cl. 100-100.000.

Fahrenschon, Kurt, to Braun AG. Analog-digital chronometric display. 4,242,747, Cl. 368-242.000.

Fairchild Camera & Instrument Corporation: *See—*
Biran, Joseph, 4,242,693, Cl. 357-28.000.

Faller, Rudolph A., to Champion International Corporation. Container with multiple compartments. 4,241,863, Cl. 229-27.000.

Fally, Jacques, to Societe Anonyme Dite: Compagnie Generale d'Electricite. Device for producing polycrystalline silicon. 4,242,307, Cl. 422-194.000.

Fancy, Vincent S. Worm trap. 4,241,532, Cl. 43-112.000.

Fannin, Loyd W., to Texas Alkyls, Inc. Aluminum oligomers as polymerization catalysts. 4,242,481, Cl. 526-165.000.

Farber, Sheldon: *See—*
Hoover, Troy E.; Farber, Sheldon; and Becker, William J., 4,242,513, Cl. 544-345.000.

Faris, Bernard L. Apparatus for guiding a hand-held electric drill. 4,242,016, Cl. 408-14.000.

Farkas, Rudolf; Moulin, Michel; and Revillet, Georges, to Hoffmann-La Roche Inc. Spectrophotometer. 4,241,998, Cl. 356-319.000.

Farmer, Larry E.: *See—*
Karsan, Demir I.; Blight, Graham J.; and Farmer, Larry E., 4,242,011, Cl. 405-204.000.

Farmitalia Carlo Erba S.p.A.: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,242,508, Cl. 542-430.000.

Farr, Glyn P. R., to Girling Limited. Fluid-pressure operated servomotor assemblies for vehicle braking systems. 4,241,583, Cl. 60-555.000.

Fattinger, Volker, to Ciba-Geigy Corporation. Process for separating SO_2 from a current of gas containing the same, and plant for carrying out such process. 4,242,321, Cl. 423-523.000.

Faustini, Franco: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,242,508, Cl. 542-430.000.

Federal-Mogul Corporation: *See—*
Babcock, Bryce W.; Reynolds, Mark P.; and Saluja, Kulbir, 4,241,819, Cl. 192-70.270.

Federspiel, Jean, to Commissariat a l'Energie Atomique. Variable-throttle valve. 4,241,815, Cl. 188-282.000.

Feero, William B.: *See—*
Donnelly, Donald E.; and Feero, William B., 4,242,081, Cl. 431-71.000.

Feess, Erich; Birke, Walter; and Steinbach, Joachim, to Hoechst Aktiengesellschaft. Process for the continuous dyeing of textile webs pre-heated with infra-red or micro-waves. 4,242,091, Cl. 8-444.000.

Feess, Erich; and Gronen, Willy, to Hoechst Aktiengesellschaft. Dyeing preparations and their use for preparing developing dyes. 4,242,094, Cl. 8-666.000.

Fein, Marvin M.: *See—*
Gaylord, Norman G.; Nagler, Meshulam; and Fein, Marvin M., 4,242,482, Cl. 526-192.000.

Feldman, Donald W.: *See—*
Liu, Chi-sheng; Feldman, Donald W.; Williams, Roy K.; and Weaver, Lelland A., 4,242,648, Cl. 331-94.50D.

Felter, John V. Attic fans and apparatus for supporting the drive motors of attic fans. 4,242,055, Cl. 417-362.000.

Feltzin, Joseph; Galvin, Thomas J.; and Kuehn, Erich, to ICI Americas Inc. In-mold coating compositions containing functional group terminated liquid polymers. 4,242,415, Cl. 428-412.000.

Fennell Corporation: *See—*
Hyre, Charles E., 4,242,077, Cl. 431-19.000.

Ferguson, Keith M., to Hewlett-Packard Company. Apparatus for detecting signal precedence. 4,242,637, Cl. 328-110.000.

Ferment, George R.; and Woerner, Douglas C., to GAF Corporation. Flexible sheet-type covering material. 4,242,397, Cl. 428-141.000.

Ferrell, Robert A., to KCL Corporation. Reclosable shipping sack and method. 4,241,865, Cl. 229-62.000.

Ferris, Donald L.; and Ogle, Peter C., to United Technologies Corporation. Adjustable bearing centering means for helicopter rotor elastomeric bearings. 4,242,047, Cl. 416-134.00A.

FIAT Societa per Azioni: *See—*
Quilico, Carlo A.; and Troya, Paolo M., 4,242,593, Cl. 290-53.000.

Finck, Herbert; and Reisinger, Konrad, to Siemens Aktiengesellschaft. Process for testing a data transmission system employing a test loop. 4,242,750, Cl. 371-22.000.

Findeisen, Kurt; Wagner, Kuno; and Uerdingen, Walter, to Bayer Aktiengesellschaft. Process for preparing polyurethanes. 4,242,489, Cl. 528-73.000.

Findl, Eugene; and Kurtz, Leonard D., to BioResearch. Rapid detection of bacteria. 4,242,447, Cl. 435-39.000.

Finike Italiana Marposs, S.p.A.: *See—*
Possati, Mario, 4,241,509, Cl. 33-174.0PA.

Finkelstein, Manuel: *See—*
Ross, Sidney D.; Finkelstein, Manuel; and Dunkl, Franz S., 4,242,722, Cl. 361-433.000.

Firestone Tire & Rubber Company, The: *See—*
Allcock, Harry R.; Kosydar, Karen M.; and Wright, Sarah D., 4,242,499, Cl. 528-399.000.
Cheng, Tai C.; and Schreffler, John R., 4,242,493, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,242,491, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,242,492, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,242,494, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,242,495, Cl. 528-168.000.

Fischer, Hermann, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Sheet transfer apparatus for rotary printing machines having serially arranged printing stations. 4,241,659, Cl. 101-231.000.

Fischer, Wolfgang: *See—*
Huber, Guntram; Klie, Wolfgang; Fischer, Wolfgang; Riechers, Daniel; and Hutai, Hubert, 4,241,945, Cl. 293-120.000.

Fisher, Howard M.; and Nagati, Rashed N., to Pennsylvania Engineering Corporation. System for vessel exchange. 4,241,902, Cl. 266-44.000.

Fisli, Tibor, to Xerox Corporation. Multi-purpose optical data processor. 4,241,990, Cl. 355-11.000.

Fitzpatrick, Thomas J.: *See—*
El Bouhnini, Larbi; Fitzpatrick, Thomas J.; Harwick, Donald M.; Hoffman, Robert M.; and Knoll, Wayne M., 4,242,406, Cl. 428-236.000.

Flavin, Thomas R.: *See—*
McCain, William B.; Cosgrove, James F.; Vente, John; and Flavin, Thomas R., 4,241,907, Cl. 270-54.000.

Fleetwood, Ansley R.: *See—*
Murphy, Jimmy; and Fleetwood, Ansley R., 4,241,588, Cl. 62-238.00E.

Fleischer, Harry N. Scissor-type surgical stapler. 4,241,861, Cl. 227-135.000.

Flint, John R.; and Hertel, Heinz, to Bell & Howell Company. Recorded image detection system for updatable microfilm. 4,241,992, Cl. 355-41.000.

FMC Corporation: *See—*
Sternenberg, James E.; and Broadway, William W., 4,241,895, Cl. 251-173.000.

Focke & Co.: *See—*
Focke, Heinz, 4,241,827, Cl. 206-248.000.

Focke, Heinz, to Focke & Co. Packet having spacer members. 4,241,827, Cl. 206-248.000.

Foltyn, Jan; Henzl, Jindrich; Rotrekl, Otto; and Kuda, Vladimir, to Vyzkumny a vyvojovy ustav Zavodu vaseobecneho strojirenstvi. Sand roller control mechanism for looms. 4,241,764, Cl. 139-1.00R.

Ford, Gregory A., to Phillips Petroleum Company. Filter and fluid analysis system. 4,242,207, Cl. 210-500.100.

Ford, James M., to Olin Corporation. Membrane cell chlor-alkali process having improved overall efficiency. 4,242,184, Cl. 204-98.000.

Ford Motor Company: *See—*
Handelsman, Steven K.; and Pruchno, Albert A., 4,242,290, Cl. 261-41.00D.
Kitzner, Ernest W., 4,241,580, Cl. 60-522.000.
Squibbs, John D., 4,242,532, Cl. 13-34.000.

Foreman, Ronald. Baseball bat with modified internal air pressure. 4,241,919, Cl. 273-72.00A.

Forsling, Hans; and Lindecrantz, Anders, to Hasselfors Stainless AB. Foldable propeller. 4,242,049, Cl. 416-142.000.

Fort Wayne Wire Die, Inc.: *See—*
Corbin, Lawrence W.; and Carson, Charles, 4,241,625, Cl. 76-107.00A.

Forward, Robert L.; and Sipma, Dale M., to Hughes Aircraft Company. Current pumped voltage divided absorber. 4,242,656, Cl. 333-213.000.

Foscarini, Anthony; Foscarini, John; and Comello, Corrado. Method of installing manhole safety steps and plugs therefor. 4,241,543, Cl. 50-742.000.

Foscarini, John: *See—*
Foscarini, Anthony; Foscarini, John; and Comello, Corrado, 4,241,543, Cl. 50-742.000.

Foster Wheeler Energy Corporation: *See—*
Gorzegno, Walter P., 4,241,585, Cl. 60-646.000.

Foster, William A.: *See—*
Evani, Syamalarao; and Foster, William A., 4,242,408, Cl. 428-290.000.

Foundation: The Research Institute for Special Inorganic Materials, The: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,242,487, Cl. 528-25.000.

Four Star Corporation: *See—*
Ingram, Charles E., 4,241,860, Cl. 224-316.000.

Framatome: *See—*
Dubourg, Michel, 4,242,200, Cl. 210-222.000.

Franceschini, John M., to Fabcote Manufacturing Proprietary Limited. Process for the removal of free acrylate monomer from polyacrylate compositions by the addition of alkanolamines. 4,242,500, Cl. 528-492.000.

Franchi, Aldo; and Allerino, Giuseppe, to International Standard Electric Corporation. Automatic telephone answering device including a display for displaying indications of the various operating modes of the device. 4,242,540, Cl. 179-6.00R.

Francis, James N.: *See—*
Rabo, Jule A.; Elek, Louis F.; and Francis, James N., 4,242,103, Cl. 48-197.00R.

Frank, Anton: *See—*
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,242,517, Cl. 548-342.000.

Frank, Robert I.: *See—*
Kaplow, Roy; and Frank, Robert I., 4,242,580, Cl. 250-203.00R.

Frankenberg, Alfred A., to Robertshaw Controls Company. Pneumatically operated thermostat construction and method of making the same. 4,241,872, Cl. 236-87.000.

Franzen, Gert E. A. Shuttle drive arrangement. 4,241,765, Cl. 139-142.000.

Fratelli Borletti S.p.A.: *See—*
Maggia, Giorgio, 4,241,607, Cl. 73-490.000.

Frechet, Daniel: *See—*
Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, 4,242,355, Cl. 424-275.000.

Frederick, Edwin: *See—*
Annis, Martin; and Frederick, Edwin, 4,242,583, Cl. 250-358.00R.

Fredrickson, Ronald G. Mounting D-rings on truck trailers. 4,242,022, Cl. 410-107.000.

Freeburg, Thomas A.: *See—*
Dolikian, Arman V.; and Freeburg, Thomas A., 4,242,753, Cl. 375-70.000.

Freedom, John; and Freedom, Thomas. Paper clip. 4,241,477, Cl. 24-67.00R.

Freedom, Thomas: *See—*
Freedom, John; and Freedom, Thomas, 4,241,477, Cl. 24-67.00R.

Freeport Minerals Company: *See—*
Bradford, Randol W.; and Carmichael, Michael H., 4,241,953, Cl. 299-4.000.

Freissmuth, Alfred, to SKW Trostberg Aktiengesellschaft. Process for the treatment of iron melts and for increasing the scrap portion in the converter. 4,242,126, Cl. 75-51.000.

Freud, Paul J.: *See—*
Baxter, Ronald D.; and Freud, Paul J., 4,242,659, Cl. 338-28.000.

Freudenberg, Carl: *See—*
Reinhardt, Hans; Schmahl, Manfred; and Tritsch, Armin, 4,242,391, Cl. 428-76.000.

Friedman, Leonard: *See—*
Pringle, William L., 4,241,600, Cl. 72-411.000.

Friend, Barbara L., legal representative: *See—*
Mihalakis, Agis I., deceased; and Friend, Barbara L., legal representative, 4,241,980, Cl. 350-129.000.

Frigano, Michael J. Method and apparatus for determining and recording boat compass deviation. 4,241,511, Cl. 33-272.000.

Frister, Manfred, to Robert Bosch GmbH. Apparatus for long-term lubrication of bearing elements. 4,241,959, Cl. 308-187.000.

Fritsch, Werner: *See—*
Stache, Ulrich; Fritsch, Werner; and Alpermann, Hans G., 4,242,334, Cl. 424-243.000.

Fritts, David H.; Leonard, John F.; and Palanisamy, Thirumalai G., to United States of America, Air Force. Method of fabricating cadmium electrodes. 4,242,179, Cl. 204-2.100.

Fritz-Aurel Goergen: *See—*
Voelskow, Peter; Rothert, Horst; and Schlotterer, Gustav, 4,242,197, Cl. 209-3.000.

Fritz, Henry E.: *See—*
Braun, David B.; Drap, Stephen; Fritz, Henry E.; and Ingberman, Arthur K., 4,242,098, Cl. 44-51.000.

Friz, Helmut A., to Paliv AG. Laminating device. 4,241,697, Cl. 118-713.000.

Frost, Albert C.; and Risch, Alan P., to Union Carbide Corporation. Cyclic process for producing methane with catalyst regeneration. 4,242,104, Cl. 48-197.00R.

Frost, Albert C., to Union Carbide Corporation. Process for producing methane from gas streams containing carbon monoxide and hydrogen. 4,242,105, Cl. 48-197.00R.

Fuchs, Rainer A.; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Carboxylic acid esters for combating pests. 4,242,357, Cl. 424-282.000.

Fuji Electric Co., Ltd.: *See—*
Takezoe, Fumihiko, 4,242,749, Cl. 370-85.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Kodama, Masayuki, 4,241,621, Cl. 74-700.000.

Fuji Koeki Corporation: *See—*
Takematsu, Yoshiyuki, 4,242,616, Cl. 315-241.00P.

Fuji Photo Film Co., Ltd.: *See—*
Hada, Hiroshi, 4,242,423, Cl. 429-111.000.
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,242,429, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,242,430, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,242,431, Cl. 430-17.000.
Idota, Yoshio; and Yamada, Minoru, 4,242,442, Cl. 430-393.000.
Kitagawa, Keishi, 4,242,418, Cl. 428-507.000.
Nakamura, Shigeru; and Shimamura, Isao, 4,242,441, Cl. 430-390.000.
Saito, Mitsuo, 4,242,445, Cl. 430-569.000.
Sato, Masamichi, 4,242,438, Cl. 430-278.000.

Fujii, Masaki; Goto, Shiro; and Sakurai, Hideo, to Mitsubishi Petrochemical Company, Limited. Solid catalyst components for polymerization of α-olefins. 4,242,229, Cl. 252-429.00B.

Fujii, Toshihiko, to Nissan Motor Company, Limited. Method of press-forming corrugated paperboard into curved board and apparatus for same. 4,242,172, Cl. 156-499.000.

Fujii, Toshihiko, to Nissan Motor Company, Limited. Corrugated paperboard for trim board and method of producing the same. 4,242,399, Cl. 428-186.000.

Fujimori, Hikoichiro, to Takeuchi Press Industries Co., Ltd. Four-color halftone printing process for objects having curved surface. 4,241,657, Cl. 101-211.000.

Fujimoto, Hideaki: *See—*
Nagano, Masashi; and Fujimoto, Hideaki, 4,241,617, Cl. 474-82.000.

Fujioka, Akira: *See—*
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,242,412, Cl. 428-412.000.

Fujisawa, Kiyoji: *See—*
Kobayashi, Masaaki; and Fujisawa, Kiyoji, 4,242,699, Cl. 358-4.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Itoh, Masumi; and Notani, Jiyoji, 4,242,507, Cl. 542-427.000.
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, 4,242,510, Cl. 544-27.000.

Fujita, Tsutomu: *See—*
Watanabe, Kiyoshi; Sunahara, Kazuo; and Fujita, Tsutomu, 4,242,373, Cl. 427-74.000.

Fujiwara, Kunio: *See—*
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, 4,242,375, Cl. 427-163.000.

Fujiwara, Osamu; Araya, Takeshi; and Udagawa, Tsugio, to Hitachi, Ltd.; and Hitachi Seiko Ltd. Automatic welding line tracing method and apparatus. 4,242,620, Cl. 318-576.000.

Fujiwara, Tatsuro: *See—*
Sakakibara, Hideo; Okegawa, Osamu; Watanabe, Toshiyuki; Fujiwara, Tatsuro; Watanabe, Susumu; Omura, Satoshi; and Matsuda, Tetsuo, 4,242,504, Cl. 536-17.00R.

Fukunaga, Yukio, to Nissan Motor Company, Limited. Electrical connector with floating connection adjustor. 4,241,968, Cl. 339-64.00M.

Fukushima, Shuichi: *See—*
Tsuchihashi, Genichi; Ogura, Katsuyuki; Sakoda, Ryozo; Hashiba, Isao; and Fukushima, Shuichi, 4,242,522, Cl. 560-47.000.

Fukuzawa, Akira: *See—*
Suzuki, Masayuki; Onuma, Nobuo; Ishizuka, Fumihiko; Hara, Shinichi; Osawa, Akira; and Fukuzawa, Akira, 4,242,177, Cl. 162-17.000.

Fuller, Clyde R.: *See—*
Ghate, Prabhakar B.; Wilson, Arthur M.; and Fuller, Clyde R., 4,242,698, Cl. 357-71.000.

Fumagalli, Angelo: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,242,508, Cl. 542-430.000.

Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, to Simitomo Chemical Company, Limited. Coated materials and production thereof. 4,242,412, Cl. 428-412.000.

Furgal, Henry P.: *See—*
Roberts, Karl H.; Leibowitz, Marvin; and Furgal, Henry P., 4,242,377, Cl. 427-242.000.

Furusawa, Yonemasa: *See—*
Aishima, Itsuho; Seki, Junji; Matsumoto, Koichi; Furusawa, Yonemasa; Tsukisaka, Ryogo; and Takahashi, Yuhachi, 4,242,251, Cl. 260-37.00N.

Furuse, Akio; and Honma, Yoshihiro, to Kabushiki Kaisha Cosmo Keiki. Pressure setting device. 4,241,750, Cl. 137-101.190.

Futamura, Shoji: *See—*
Higuchi, Noboru; and Futamura, Shoji, 4,242,075, Cl. 425-462.000.

GAF Corporation: *See—*
Bondoc, Alfredo A.; Canfield, V. Robert; and Ziegler, B. Randall, 4,242,404, Cl. 428-220.000.
Ferment, George R.; and Woerner, Douglas C., 4,242,397, Cl. 428-141.000.

Gagen, Paul F.; and Santana, Manuel R., to Bell Telephone Laboratories, Incorporated. Optical communication cable with means for controlling coupling between cable jacket and strength members. 4,241,979, Cl. 350-96.230.

Gagnon, Donald W.; and Tillman, James J., to Owens-Illinois, Inc. Organopolysiloxane resins formed with catalysts of formic acid and hydrocarbyl substituted ammonium hydroxide. 4,242,250, Cl. 260-33.4SB.

Galletti, Pierre M.: *See—*
Chick, William L.; Galletti, Pierre M.; Richardson, Peter D.; and Panol, Georg, 4,242,459, Cl. 435-283.000.
Chick, William L.; Galletti, Pierre M.; Richardson, Peter D.; and Panol, Georg, 4,242,460, Cl. 435-284.000.

Galves, Jean-Pierre, to Thomson-CSF. High-luminance color screen for cathode-ray tubes and the method for manufacturing the same. 4,242,371, Cl. 427-68.000.

Galvin, Thomas J.: *See—*
Feltzin, Joseph; Galvin, Thomas J.; and Kuehn, Erich, 4,242,415, Cl. 428-412.000.

Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., to Farmitalia Carlo Erba S.p.A. Certain thiacyclic PGI compounds. 4,242,508, Cl. 542-430.000.

Gardocki, Joseph F., to McNeilab, Inc. Analgesic potentiation. 4,242,353, Cl. 424-274.000.

Garlock Inc.: *See—*
Clark, Norman E., 4,241,944, Cl. 285-229.000.

Garotta, Robert J., to Compagnie Generale de Geophysique. Process for eliminating longitudinal wave components in seismic exploration. 4,242,742, Cl. 367-75.000.

Garrett Corporation, The: *See—*
McCarty, Frederick B.; and Silver, Alexander, 4,242,610, Cl. 310-156.000.

Garver, Richard F.; and Stevanovich, Srbo M., to B. F. Goodrich Company, The. Shape of cut for semicure butyl rubber bag. 4,242,070, Cl. 425-28.00B.

Gasc, Jean-Claude; and Rettien, Claude, to Roussel Uclaf. Aminoglycosides and method of use. 4,242,331, Cl. 424-180.000.

Gasperini, Pietro; and Brunetti, Francesco, to Aziende Colori Nazionali Affini Acna S.p.A. Double-face dyeing and printing of polyester fabrics with disperse dyes. 4,242,093, Cl. 8-456.000.

Gault, Robert L. Patient monitoring system and switch. 4,242,672, Cl. 340-573.000.

Gauzan, Pierre, to Thomson-CSF. Circuit arrangement for decoding digital signals. 4,242,755, Cl. 375-114.000.

Gaylord, Norman G.; Nagler, Meshulam; and Fein, Marvin M., to Dart Industries Inc. Peroxygen compound-metal mercaptide redox catalyst system for vinyl halide polymerization. 4,242,482, Cl. 526-192.000.

Geballe, Theodore H.: *See—*
Dayem, Aly H.; Geballe, Theodore H.; Patel, Chandra K. N.; and Tien, Ping K., 4,242,419, Cl. 428-661.000.

Gebeau, Gary G.: *See—*
Jackson, Winston J., Jr.; Gebeau, Gary G.; and Kuhfuss, Herbert F., 4,242,496, Cl. 528-190.000.

Gebrueder Heller, Maschinenfabrik GmbH: *See—*
Schmid, Karlheinz, 4,242,020, Cl. 409-234.000.

Gee, Kenneth H.; and Kreiger, John W., to Bethlehem Steel Corporation. Method for treating granulated blast furnace slag. 4,242,142, Cl. 106-97.000.

Gehle, Richard W., to Rockwell International Corporation. Method of assembly of microwave integrated circuits having a structurally continuous ground plane. 4,242,157, Cl. 156-64.000.

Gehrig, Wilfried W.: *See—*
Lindstedt, Guenter; and Gehrig, Wilfried W., 4,242,664, Cl. 340-168.00S.

Gehring, John H.: *See—*
Buta, John R.; Gehring, John H.; and Drotleff, Thomas J., 4,242,024, Cl. 414-43.000.

General Atomic Company: *See—*
Jensen, Torkil H., 4,242,594, Cl. 307-98.000.

General Battery Corporation: *See—*
Eberle, William J., 4,241,780, Cl. 164-333.000.

General Dynamics Corporation, Pomona Division: *See—*
MacTurk, William L., 4,242,686, Cl. 343-912.000.

General Electric Company: *See—*
Abolins, Visvaldis, 4,242,254, Cl. 260-40.00R.
Arendt, Ronald H., 4,242,426, Cl. 429-193.000.
Carter, Robert A., 4,242,567, Cl. 219-225.000.
Cusano, Dominic A.; Holub, Fred F.; and Prochazka, Svante, 4,242,221, Cl. 252-301.40H.
Goossens, John C.; and Olson, Daniel R., 4,242,381, Cl. 427-387.000.
Goossens, John C.; and Olson, Daniel R., 4,242,383, Cl. 427-387.000.
Grimm, Bernard J.; and Dossett, Richard A., 4,241,589, Cl. 62-265.000.
Grondahl, Clayton M.; and Germain, Malcolm R., 4,242,045, Cl. 416-92.000.
Hurko, Bohdan; and Payne, Thomas R., 4,242,554, Cl. 219-10.55B.
Lee, Gim F., Jr., 4,242,263, Cl. 260-306.00R.

Mark, Victor; and Hedges, Charles V., 4,242,527, Cl. 568-724.000.
Morelock, Charles R., 4,242,106, Cl. 51-307.000.
Reschovsky, John M.; and Hunt, Gerald P., 4,242,666, Cl. 340-870.280.
Salem, Robert J., 4,242,743, Cl. 367-93.000.
Temple, Victor A. K., 4,242,690, Cl. 357-13.000.
Vatis, Dimitrios; and Turner, Charlie B., 4,242,614, Cl. 315-153.000.
Woods, Lee O., 4,241,494, Cl. 29-619.000.

General Motors Corporation: *See—*
Augunas, Algis G., 4,241,887, Cl. 242-107.700.
Brown, Trevor J., 4,241,954, Cl. 301-37.00R.
Chraplyvy, Andrew R., 4,241,997, Cl. 356-309.000.
Eggen, Hans C.; Halajian, Eugene M.; Danner, Edward L.; and Rogers, Darrell O., 4,241,937, Cl. 280-777.000.
Halterman, Francis J., Jr., 4,241,794, Cl. 172-804.000.
Knape, Richard S.; and Moreau, Richard A., 4,241,714, Cl. 123-499.000.
Leonard, Robert D., Jr.; and Nestor, Charles R., 4,241,971, Cl. 339-116.00C.
Patel, Chimanbhai M.; and Magyar, Joseph J., 4,241,938, Cl. 280-803.000.
Pedersen, George H., 4,241,876, Cl. 239-265.270.
Peeples, Denny L., 4,241,642, Cl. 91-391.00R.
Podolan, Edward G.; and Przybysz, Francis C., 4,241,542, Cl. 49-352.000.

General Tire & Rubber Company, The: *See—*
Emerson, Roy J.; Fabris, Hubert J.; Herold, Robert J.; and Duncan, Joe S., 4,242,490, Cl. 528-77.000.

GenRad, Inc.: *See—*
Hall, Henry P., 4,242,631, Cl. 324-62.000.
Henckels, Lutz P.; Haas, Rene M.; and Levin, Alan, III, 4,242,751, Cl. 371-26.000.

Georg, Werner; Merten, Gerhard; and Langenberg, Helmut,. to Gewerkschaft Eisenhutte Westfalia. Conveyors for use in mineral mining installations. 4,241,824, Cl. 198-745.000.

Georgia Tech Research Institute: *See—*
Moran, Thomas F.; Powers, James C.; and Lively, Mark O., III, 4,242,186, Cl. 204-157.10H.

Geosource Inc.: *See—*
Lockett, James F., 4,241,835, Cl. 209-582.000.

Gergen, William P.; and Davison, Sol, to Shell Oil Company. Polyamide/block copolymer blends. 4,242,470, Cl. 525-92.000.

Germain, Malcolm R.: *See—*
Grondahl, Clayton M.; and Germain, Malcolm R., 4,242,045, Cl. 416-92.000.

Gertz, David C. Gas turbine engine. 4,241,576, Cl. 60-39.340.

Geurtsen, Alfonsus A., to Machinefabriek Geurtsen Deventer B.V. Apparatus for separating mixtures of liquids of different specific gravities, etc. 4,242,209, Cl. 210-519.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Georg, Werner; Merten, Gerhard; and Langenberg, Helmut, 4,241,824, Cl. 198-745.000.
Plevak, Lubomir; and Dodt, Jurgen, 4,242,014, Cl. 405-300.000.

Ghate, Prabhakar B.; Wilson, Arthur M.; and Fuller, Clyde R., to Texas Instruments Incorporated. Maximum density interconnections for large scale integrated circuits. 4,242,698, Cl. 357-71.000.

Giambalvo, Joseph. Shelf and bracket arrangement. 4,241,669, Cl. 108-152.000.

Gidewall, Kenneth L.; and Proce, James R., to C.V.P. Systems, Inc. Packaging machine. 4,241,558, Cl. 53-79.000.

Giesbert, Frank; and Kuhnert, Roland, to Heraeus Christ GmbH. Method of gently controlling braking of a centrifuge, and braking system. 4,241,866, Cl. 233-24.000.

Gilbert, Harry: *See—*
Elrick, Donald E.; and Gilbert, Harry, 4,241,661, Cl. 102-103.000.

Gildemeister-Devlieg System-Werkzeuge GmbH: *See—*
Schurfeld, Horst, 4,242,018, Cl. 408-182.000.

Gilleland, Randall C.: *See—*
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,242,560, Cl. 219-69.00G.

Gilmer, John L.; and Rizzo, Joseph F., to Bell Telephone Laboratories, Incorporated. Digital operate/release timer. 4,242,636, Cl. 328-63.000.

Gilson, Richard D.; Thurston, Marlin O.; Olson, Karl W.; and Ventola, Ronald W., to Ohio State University Research Foundation, The. Flight simulator with spaced visuals. 4,241,519, Cl. 434-43.000.

Ginsburgh, Irwin, to Standard Oil Company (Indiana). Surface and subsurface hydrocarbon recovery. 4,241,952, Cl. 299-2.000.

Girling Limited: *See—*
Farr, Glyn P. R., 4,241,583, Cl. 60-555.000.

Gist-Brocades N.V.: *See—*
Bogerman, Pieter K.; Eygermans, Petrus J.; and van Velzen, Antoon G., 4,242,219, Cl. 252-174.120.

Gjerde, Trygve; and Seim, Ronald, to Ingenior F. Selmer AS; A/S Hoyer-Ellefsen; and Ingenior Thor Furuholmen A/S. Method and means for protecting a sea bottom surface and an installation on same. 4,242,010, Cl. 405-157.000.

Gjertz, Uno L.: *See—*
Hulten, Bengt H.; Skarfelt, Hans T.; and Gjertz, Uno L., 4,242,161, Cl. 156-197.000.

Gladrow, Elroy M.; and Winter, William E., to Exxon Research & Engineering Co. Hydrocarbon cracking catalyst and process utilizing the same. 4,242,237, Cl. 252-455.00Z.

Glaser, Helmut; and Schick, Ludwig, to Siemens Aktiengesellschaft. Circuit for monitoring the square of the RMS value of a periodic signal. 4,242,638, Cl. 328-144.000.

Glatthorn, Raymond H., to Westinghouse Electric Corp. Automatic plug welding apparatus. 4,242,563, Cl. 219-125.110.

Gloanec, Maurice, to Thomson-CSF. Gunn effect shift register. 4,242,597, Cl. 307-221.00B.

Globus, Richard D.: *See—*
Globus, Ronald P.; Globus, Richard D.; and Globus, Stephen E., 4,241,985, Cl. 354-99.000.

Globus, Ronald P.; Globus, Richard D.; and Globus, Stephen E. Panoramic camera. 4,241,985, Cl. 354-99.000.

Globus, Stephen E.: *See—*
Globus, Ronald P.; Globus, Richard D.; and Globus, Stephen E., 4,241,985, Cl. 354-99.000.

Glover, Richard D. Method of sublimatic printing on sheet structures. 4,242,092, Cl. 8-472.000.

Godsay, Madhu P.: *See—*
Costa, Eugene, Jr.; and Godsay, Madhu P., 4,242,411, Cl. 428-369.000.

Goethals, Rafael A. J.: *See—*
Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., 4,241,692, Cl. 118-303.000.

Going, Walter S., III, to Hughes Tool Company. Protected cutter mounting for drill bits. 4,241,799, Cl. 175-361.000.

Golata, John H.; and Kinstler, John R., to Motor Wheel Corporation. Wheel disc manufacturing. 4,241,597, Cl. 72-327.000.

Goldberg, Norman N., to Ziff-Davis Publishing Company. Apparatus for optimizing camera image surface to image receiving surface. 4,241,987, Cl. 354-195.000.

Golias, Tipton; Butts, Gene A.; and Swift, Robert A., to Helena Laboratories Corporation. Single scan microprocessor-controlled densitometer. 4,242,730, Cl. 364-416.000.

Gomez, Jose J., to Thomas & Betts Corporation. Connector with ejector-retainer means. 4,241,966, Cl. 339-45.00M.

Goodrich, Edward W.: *See—*
Lewis, Raymond H., Jr.; Goodrich, Edward W.; and Kline, Dale W., 4,242,713, Cl. 361-86.000.

Goodyear Tire & Rubber Company, The: *See—*
Dean, Paul R., II; and Kuczkowski, Joseph A., 4,242,224, Cl. 252-402.000.
Lal, Joginder, 4,242,471, Cl. 525-333.000.

Goossens, John C.; and Olson, Daniel R., to General Electric Company. Method of providing a polycarbonate article with a uniform and durable silica filled organopolysiloxane coating. 4,242,381, Cl. 427-387.000.

Goossens, John C.; and Olson, Daniel R., to General Electric Company. Method of providing a polycarbonate article with a uniform and durable organopolysiloxane coating. 4,242,383, Cl. 427-387.000.

Gorgenyi, Peter: *See—*
Antal, Sandor; Bartha, Zoltan; Gorgenyi, Peter; Meitzen, Nandor; and Arvai, Mihaly, 4,241,763, Cl. 138-127.000.

Goring, Joachim: *See—*
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,242,345, Cl. 424-253.000.

Gorzegno, Walter P., to Foster Wheeler Energy Corporation. Method of operating a vapor generating system having integral separators and a constant pressure furnace circuitry. 4,241,585, Cl. 60-646.000.

Goto, Shiro: *See—*
Fujii, Masaki; Goto, Shiro; and Sakurai, Hideo, 4,242,229, Cl. 252-429.00B.

Gould, Wayne P.; and Chouinard, Raymond J. Power take-off. 4,241,614, Cl. 74-15.630.

Grade, Reinhardt: *See—*
Berrer, Dagmar; Lorenz, Joachim; and Grade, Reinhardt, 4,242,119, Cl. 71-67.000.

Graham, Kenneth A., to Chrysler Corporation. Method for assembling a fuel pump and motor. 4,241,484, Cl. 29-156.40R.

Grampovnik, David J.: *See—*
Lartey, Paul A.; and Grampovnik, David J., 4,242,503, Cl. 536-17.00R.

Grant, Walter W. Digital display tape measure with photoelectric sensing of tape displacement. 4,242,574, Cl. 235-92.0DN.

Graphic Calculator Company: *See—*
Wolf, Robert H.; and Dugas, Madeleine L., 4,241,867, Cl. 235-85.00R.

Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, to Chemische Werke Huls AG. Storage-stable baking lacquers prepared from polyisocyanates blocked with cyclic amidines. 4,242,248, Cl. 260-31.20N.

Gratza, Peter; and Estel, Heinz, to Bayerische Motoren Werke Aktiengesellschaft. Side support for motorcycle. 4,241,933, Cl. 280-301.000.

Green, Sidney J.; Shipman, Floyd H.; and Van Kempen, Carl J. H. B., to Terra Tek, Inc. Active drill stabilizer assembly. 4,241,796, Cl. 175-24.000.

Greeson, James C., Jr.: *See—*
Beidl, John R.; Criscimagna, Tony N.; and Greeson, James C., Jr., 4,242,680, Cl. 340-771.000.

Greff, Richard; Wolf, Ludwig, Jr.; Munsch, John; and Kinney, Layton C., to Baxter Travenol Laboratories, Inc. Sterile connection apparatus. 4,242,310, Cl. 422-300.000.

Gregson, Donald L., to Dracon Industries. Blade storage and selectable force impact termination tool. 4,241,496, Cl. 29-751.000.

Greuter, Hans: *See—*
Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, 4,242,278, Cl. 568-341.000.

Grigsby, Charles O.; and Grigsby, David R. Process for manufacturing cheese. 4,242,362, Cl. 426-40.000.

Grigsby, David R.: *See—*
Grigsby, Charles O.; and Grigsby, David R., 4,242,362, Cl. 426-40.000.
Grimm, Bernard J.; and Dossett, Richard A., to General Electric Company. Household refrigerator air flow control assembly. 4,241,589, Cl. 62-265.000.
Grondahl, Clayton M.; and Germain, Malcolm R., to General Electric Company. Trap seal for open circuit liquid cooled turbines. 4,242,045, Cl. 416-92.000.
Gronen, Willy: *See—*
Feess, Erich; and Gronen, Willy, 4,242,094, Cl. 8-666.000.
Gronwold, Gunther E.: *See—*
Larsson, Ake L.; Gronwold, Gunther E.; and Corris, Derek A., 4,241,534, Cl. 46-206.000.
Grosch, Gottlieb W. Concrete wall casing with centralizers embedded therein. 4,241,789, Cl. 166-241.000.
Gross, Thomas A. O., to Jet Spray Cooler, Inc. AC Motor drive. 4,242,626, Cl. 318-772.000.
Grosse, Jurgen, to Hoechst Aktiengesellschaft. Production of amine salts of acid O,S-dialkylthiophosphoric acid. 4,242,511, Cl. 544-110.000.
Grubb, Frederick H., Jr., to Acme Visible Records, Inc. Single open frame for the rotor of a rotary storage cabinet. 4,241,964, Cl. 312-305.000.
GTE Products Corporation: *See—*
deVos, Hendrik A. J.; and Labouliere, Elzear R., 4,242,727, Cl. 362-346.000.
D'Silva, Thomas L., 4,242,134, Cl. 75-173.00C.
GTE Sylvania Wiring Devices, Inc.: *See—*
Tibolla, Julius F., 4,242,552, Cl. 200-339.000.
Guerin, Yves: *See—*
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Guidotti, Ronald A., to United States of America, Interior. Removal of sodium sulfate from a sulfate-containing sodium chloride solution in a process for separating zirconium and hafnium. 4,242,312, Cl. 423-73.000.
Guilino, Ernst: *See—*
Lubbers, Dietrich W.; and Guilino, Ernst, 4,241,738, Cl. 128-666.000.
Guillaume, Emile A. H., to Zelacolor Systems Establishment. Mount for originals in photographic devices. 4,241,993, Cl. 355-75.000.
Gurske, William A., to Beckman Instruments, Inc. Polysaccharide ester membrane clearing process. 4,242,298, Cl. 264-233.000.
Gurtner, Peter: *See—*
Wunderlin, Max; and Gurtner, Peter, 4,242,568, Cl. 219-296.000.
Gushima, Hiroshi: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.
Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Link, Heinz; Schupp, Heribert; and Lendla, Heinz, 4,241,762, Cl. 138-105.000.
H. E. Schweitzer AG: *See—*
Schweitzer, Hans E., 4,242,544, Cl. 200-5.00E.
Schweitzer, Hans E., 4,242,545, Cl. 200-5.00R.
Haas, Rene M.: *See—*
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Habegger, Willy: *See—*
Lauber, Ernst, 4,241,803, Cl. 180-8.00R.
Habu, Teiji; Ishihara, Masao; Terada, Sadatugu; Sakamoto, Eiichi; and Yamada, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Process for the preparation of light-sensitive silver halide photographic material. 4,242,444, Cl. 430-510.000.
Hada, Hiroshi, to Fuji Photo Film Co., Ltd. Optical-charging type half-cell, and photochemical battery using the same. 4,242,423, Cl. 429-111.000.
Haga, Hachiro: *See—*
Tsuruta, Mitsuo; and Haga, Hachiro, 4,241,646, Cl. 98-115.0SB.
Hagenbach, Germain; and Maldonado, Paul, to Elf Union. Process for improving the properties of bituminous products and an improved cast asphalt. 4,242,143, Cl. 106-272.000.
Hagenbach, Germain: *See—*
Maldonado, Paul; Dayre, Henri; and Hagenbach, Germain, 4,242,246, Cl. 260-28.5AS.
Hagenlocher, Arno K.: *See—*
Kuehnle, Manfred R.; and Hagenlocher, Arno K., 4,242,433, Cl. 430-67.000.
Hagiwara, Yoshiaki, to Sony Corporation. Charge transfer device which has a pair of straight portions joined by a direction changing portion. 4,242,692, Cl. 357-24.000.
Halajian, Eugene M.: *See—*
Eggen, Hans C.; Halajian, Eugene M.; Danner, Edward L.; and Rogers, Darrell O., 4,241,937, Cl. 280-777.000.
Halasa, Adel F.: *See—*
Hergenrother, William L.; and Halasa, Adel F., 4,242,491, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,242,492, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,242,494, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,242,495, Cl. 528-168.000.
Halasz, Joseph; and Ito, Rokuzo, to Canada Wire and Cable Limited. Reel clamp for a cradle assembly. 4,241,573, Cl. 57-127.700.
Halcon Research & Development Corporation: *See—*
Moy, David, 4,242,520, Cl. 560-24.000.
Hall, Charles M.; and Johnson, Herbert G., to Upjohn Company, The. Quinoxalinones useful for treating atopic eczema and urticaria. 4,242,342, Cl. 424-250.000.
Hall, Frederick M. Opener device for sealed cans. 4,241,626, Cl. 81-3.46R.
Hall, Henry P., to GenRad, Inc. Front-end circuit apparatus for impedance measurements and the like. 4,242,631, Cl. 324-62.000.
Hall, James H., III; and Attaway, Julian J., to MM Systems Corporation. Conjoint facia, flashing and water dam. 4,241,549, Cl. 52-60.000.
Hall, Kenneth F.: *See—*
Hinch, Peter G.; Hall, Kenneth F.; and Chambers, George, 4,241,680, Cl. 112-275.000.
Hall, Wilbur S.; and Leister, Harry M., to Amchem Products, Inc. Acid inhibitor treatment of substrate prior to autodeposition. 4,242,379, Cl. 427-327.000.
Halterman, Francis J., Jr., to General Motors Corporation. Angle dozer assembly. 4,241,794, Cl. 172-804.000.
Hamada, Masa: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; and Ishizuka, Masaaki, 4,242,453, Cl. 435-123.000.
Hamaguchi, Yasunori: *See—*
Nemoto, Akira; and Hamaguchi, Yasunori, 4,241,928, Cl. 277-212.0FB.
Hamm, Philip C.; and Olin, John F., to Monsanto Company. Herbicidal meta-bifunctional benzenes. 4,242,122, Cl. 71-100.000.
Hammann, Ingeborg: *See—*
Fuchs, Rainer A.; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,242,357, Cl. 424-282.000.
Hammett, Roy: *See—*
Pauls, James D.; Hammett, Roy; and Blake, William S., 4,241,853, Cl. 222-207.000.
Hampton, Joseph. Skate blade sharpener. 4,241,544, Cl. 51-33.00R.
Han, Benjamin C. P.; and Weldy, Floyd P., to Bendix Corporation, The. Aircraft brake thermal sensor. 4,241,603, Cl. 73-129.000.
Han, Chang D.; and Morrow, Vance, to Seismograph Service Corporation. Rheometer. 4,241,602, Cl. 73-56.000.
Handa, Mitsuaki: *See—*
Sugawara, Yutaka; Yamamoto, Akihiro; Handa, Mitsuaki; Usami, Hiroko; and Ogawa, Haruki, 4,242,326, Cl. 424-116.000.
Handelsman, Steven K.; and Pruchno, Albert A., to Ford Motor Company. Carburetor idle mixture screw enclosure assembly. 4,242,290, Cl. 261-41.00D.
Handschin, Gert: *See—*
Varsanyi, Denis; and Handschin, Gert, 4,242,333, Cl. 424-225.000.
Hansen, Robert E.: *See—*
Cabados, Rick H.; and Hansen, Robert E., 4,241,741, Cl. 131-173.000.
Hanson, Joseph B., to Standard Oil Company (Indiana). Mannich additives modified by ditertiary alkyl phenol. 4,242,212, Cl. 252-51.50R.
Hara, Hiroshi; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method of stabilizing organic substrate materials against light. 4,242,429, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method for stabilizing organic substrate materials including photographic dye images against light. 4,242,430, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method for stabilizing organic substrate materials including photographic dye images to light and a photographic material so stabilized. 4,242,431, Cl. 430-17.000.
Hara, Shigeyoshi: *See—*
Kawaguchi, Takeyuki; Taketani, Yutaka; Minematsu, Hiroyoshi; Sasaki, Noriaki; Hayashi, Yuzuru; and Hara, Shigeyoshi, 4,242,208, Cl. 210-500.200.
Hara, Shinichi: *See—*
Suzuki, Masayuki; Onuma, Nobuo; Ishizuka, Fumihiko; Hara, Shinichi; Osawa, Akira; and Fukuzawa, Akira, 4,242,177, Cl. 162-17.000.
Hard, Robert A., to Occidental Research Corporation. Recovery of magnesia from oil shale. 4,241,951, Cl. 299-2.000.
Hardesty, Edwin C., to Western Electric Company, Inc. Multi-outlet adapter for modular telephone cords. 4,241,974, Cl. 339-154.00A.
Hardy, Charles T., to Republic Packaging Company. Means for containing electrostatic sensitive electronic components. 4,241,829, Cl. 206-328.000.
Harms, Wolfgang; von Oertzen, Klaus; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Anthraquinone-azo reactive dyestuffs. 4,242,259, Cl. 260-153.000.
Harney, Marilyn J.: *See—*
O'Boyle, Matthew; Icore, Bernard; and Harney, Marilyn J., 4,242,425, Cl. 429-181.000.
Harold, Donald M.; and Ufken, Gregory A., to Donaldson Company, Inc. Air cleaner assembly. 4,242,115, Cl. 55-347.000.
Harper, Patrick D.: *See—*
Weber, Robert E.; and Harper, Patrick D., 4,242,729, Cl. 364-431.000.
Harrelson Rubber Company: *See—*
DeHaven, William M., 4,242,169, Cl. 156-394.000.
Harrer, Paul H., to Allis-Chalmers Corporation. Air cut-off pad for an air planter with seed discharge feature. 4,241,849, Cl. 221-266.000.

Harrington, Duane E.; and Robinson, Merritt A., to Harrington, Duane E. Paper wiring transport apparatus and process. 4,242,170, Cl. 156-438.000.
Harris Corporation: *See—*
Washburn, Clyde, Jr., 4,242,649, Cl. 332-18.000.
Harris, Len A.: *See—*
Baney, Ronald H.; and Harris, Len A., 4,242,416, Cl. 428-412.000.
Harris, Norman; and Shevels, Thomas F., to Davy International (Oil & Chemicals) Limited. Process for recovery of rhodium values and triphenylphosphine from rhodium catalyzed hydroformylation medium. 4,242,284, Cl. 568-454.000.
Harshaw Chemical Company, The: *See—*
Malak, Thomas P., 4,242,181, Cl. 204-52.00R.
Hartford, Thomas W., to Bendix Corporation, The. Input/output electronic for microprocessor-based engine control system. 4,242,728, Cl. 364-431.000.
Hartley, Donald J.: *See—*
Matucheski, Joseph V.; Yee, Clifford S. L.; Spellman, Michael T.; Hartley, Donald J.; and Barton, William D., 4,242,046, Cl. 416-132.00A.
Hartley, E. Dale. Double diaphragm pump. 4,242,061, Cl. 417-536.000.
Hartman, Adrian R.: *See—*
Berthold, Joseph E.; Hartman, Adrian R.; and Shackle, Peter W., 4,242,697, Cl. 357-49.000.
Hartmann, William F., to Rothschild, Gerald W. Wheelchair steering apparatus. 4,241,932, Cl. 280-265.000.
Hartvig, Ole K. Sign post. 4,241,530, Cl. 40-607.000.
Harvey Hubbell, Incorporated: *See—*
D'Amato, Michael J.; and Jaconette, Frank C., 4,241,969, Cl. 339-88.00R.
Harville, Ronald W. Orbitally rotating piston engine. 4,242,591, Cl. 290-1.00R.
Harwick, Donald M.: *See—*
El Bouhnini, Larbi; Fitzpatrick, Thomas J.; Harwick, Donald M.; Hoffman, Robert M.; and Knoll, Wayne M., 4,242,406, Cl. 428-236.000.
Hasegawa, Masayasu; Nishikawa, Hideo; and Yoshida, Kayoko, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Antibacterial and antifungal composition. 4,242,336, Cl. 424-246.000.
Hasegawa, Masayasu; Nishikawa, Hideo; and Kotani, Yasuo, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Antibacterial and antifungal composition. 4,242,356, Cl. 424-279.000.
Hasegawa, Yoshio: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,242,487, Cl. 528-25.000.
Hashiba, Honoh: *See—*
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Hashiba, Isao: *See—*
Tsuchihashi, Genichi; Ogura, Katsuyuki; Sakoda, Ryozo; Hashiba, Isao; and Fukushima, Shuichi, 4,242,522, Cl. 560-47.000.
Hashimoto Corporation Kabushiki Kaisha: *See—*
Hashimoto, Kazuo, 4,242,539, Cl. 179-5.500.
Hashimoto, Kazuo, to Hashimoto Corporation Kabushiki Kaisha. Telephone information displaying device. 4,242,539, Cl. 179-5.500.
Hashimoto, Kazuo, to Iida Sankyo Kabushiki Kaisha. Periodical switching device capable of adjusting the operation time. 4,242,547, Cl. 200-38.00R.
Hashimoto, Kiyoharu: *See—*
Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Toshikiyo; Hashimoto, Otokuma; and Mori, Hideki, 4,242,401, Cl. 428-201.000.
Hashimoto, Mitsuru: *See—*
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Hashimoto, Otokuma: *See—*
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Haskins, Steve W.: *See—*
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Hasselfors Stainless AB: *See—*
Forsling, Hans; and Lindecrantz, Anders, 4,242,049, Cl. 416-142.000.
Hastings, Donald R., to Nordson Corporation. Electrostatic spray gun. 4,241,880, Cl. 239-691.000.
Hattori, Minoru: *See—*
Kato, Nobukatu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, 4,242,528, Cl. 568-781.000.
Hauni-Werke Korber & Co. KG: *See—*
Wochnowski, Waldemar; and Hohm, Reinhard, 4,241,515, Cl. 34-28.000.
Hawkins, Alan F.; Lewis, Terence; and Jones, Ian, to Imperial Chemical Industries Limited. Method of antagonizing herbicides on soybean and cotton. 4,242,121, Cl. 71-93.000.
Haworth Mfg., Inc.: *See—*
Wilson, Harold R.; and Tillmann, Ditmar K., 4,241,965, Cl. 339-4.000.
Hay, Louis E.: *See—*
Mercer, Roger W.; and Hay, Louis E., 4,242,292, Cl. 264-16.000.
Hayashi, Hideo: *See—*
Tsuchiya, Shozo; and Hayashi, Hideo, 4,242,475, Cl. 525-534.000.
Hayashi, Yuzuru: *See—*
Kawaguchi, Takeyuki; Taketani, Yutaka; Minematsu, Hiroyoshi; Sasaki, Noriaki; Hayashi, Yuzuru; and Hara, Shigeyoshi, 4,242,208, Cl. 210-500.200.
Hayes, Calvin L. Height-adjustable hoist. 4,241,838, Cl. 212-255.000.
Healy, Donald H. Automobile tire riding vehicle. 4,241,931, Cl. 280-205.000.
Hearnshaw, David, to Dulmison (Australia) Pty. Ltd. Spacer damper. 4,242,537, Cl. 174-42.000.
Hedberg, Arthur S., to Wells Manufacturing Company. Process for manufacture of valve seat. 4,241,492, Cl. 29-527.600.
Hedger, John H. Reciprocating engine with improved main bearing. 4,241,640, Cl. 91-186.000.
Hedges, Charles V.: *See—*
Mark, Victor; and Hedges, Charles V., 4,242,527, Cl. 568-724.000.
Hedges, Rhey W., to Parker, Louis W. Energy economizer for polyphase induction motors. 4,242,625, Cl. 318-729.000.
Hedinger, Alfred: *See—*
Muller, Hans-Rudolf; Kundig, Werner; and Hedinger, Alfred, 4,242,145, Cl. 127-46.00R.
Hegarty, William P.: *See—*
Nicholas, David M.; and Hegarty, William P., 4,242,108, Cl. 55-40.000.
Heijnemans, Werner A. L.; Nieuwendijk, Joris A. M.; and Vink, Nicolaas G., to U.S. Philips Corporation. Deflection unit for color television display tubes. 4,242,612, Cl. 313-421.000.
Hein, Lehmann Aktiengesellschaft: *See—*
Laddach, Hans; and Oertel, Werner, 4,241,767, Cl. 139-443.000.
Heinzer, Hans: *See—*
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Helena Laboratories Corporation: *See—*
Golias, Tipton; Butts, Gene A.; and Swift, Robert A., 4,242,730, Cl. 364-416.000.
Helfet, Arthur J. Knee support. 4,241,730, Cl. 128-80.00C.
Helinski, Edward F., to International Business Machines Corporation. Magnetic actuator using modulated flux. 4,242,658, Cl. 335-237.000.
Hellman, Erik R., to AB Asea-Atom. Apparatus for heat treating elongated sheets. 4,241,903, Cl. 266-109.000.
Hem, Stanley L.; and White, Joe L., to Purdue Research Foundation. Process and compositions. 4,242,328, Cl. 424-157.000.
Hempstead, Robert D.; and Money, James B., to International Business Machines Corporation. Thin film head having negative magnetostriction. 4,242,710, Cl. 360-113.000.
Henckels, Lutz P.; Haas, Rene M.; and Levin, Alan, III, to GenRad, Inc. Automatic fault-probing method and apparatus for checking electrical circuits and the like. 4,242,751, Cl. 371-26.000.
Hendriks, Henry L.; and Hinds, Avery, to Envirotech Corporation. Flowmeter with magnetic coupling. 4,241,605, Cl. 73-861.940.
Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See—*
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,242,309, Cl. 422-189.000.
Henoch, Bengt T.; and Berglind, Eilert, to Stifelsen Institutet for Mikrovagsteknik Vid Tekniska Hogskolan i Stockholm. Device for registration of objects. 4,242,661, Cl. 340-23.000.
Hentschel, Georg, to SKF Industrial Trading & Development Co. B.V. Slide bushing formed of flat slip steel band with antifriction coating. 4,241,960, Cl. 308-237.00R.
Henzl, Jindrich: *See—*
Foltyn, Jan; Henzl, Jindrich; Rotrekl, Otto; and Kuda, Vladimir, 4,241,764, Cl. 139-1.00R.
Heppner, Klaus-Dieter; and Schuster, Hans-Joachim, to Siemens Aktiengesellschaft. Ammonia free palladium electroplating bath using aminoacetic acid. 4,242,180, Cl. 204-43.00N.
Heraeus Christ GmbH: *See—*
Giesbert, Frank; and Kuhnert, Roland, 4,241,866, Cl. 233-24.000.
Hercules Incorporated: *See—*
Elrick, Donald E.; and Gilbert, Harry, 4,241,661, Cl. 102-103.000.
Hergenrother, Rudolf C. Nighttime wind direction and speed indicator. 4,241,604, Cl. 73-189.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing substituents of acrylate functionality. 4,242,491, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing substituted or unsubstituted nitrophenoxy substituents. 4,242,492, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing alkenyl substituents. 4,242,494, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing oxazole and thiazole substituents. 4,242,495, Cl. 528-168.000.
Herkert, Hans, to Siemens Aktiengesellschaft. Circuit arrangement for coding or decoding of binary data. 4,242,752, Cl. 371-37.000.
Herold, Robert J.: *See—*
Emerson, Roy J.; Fabris, Hubert J.; Herold, Robert J.; and Duncan, Joe S., 4,242,490, Cl. 528-77.000.
Herr, Leroy E., to Dayco Corporation. Air damper valve. 4,241,647, Cl. 98-121.00A.
Hertel, Heinz: *See—*
Flint, John R.; and Hertel, Heinz, 4,241,992, Cl. 355-41.000.
Herzig, John. Mortar trough. 4,241,470, Cl. 15-235.400.
Herzog, Walter. Cart theft prevention system. 4,242,668, Cl. 340-539.000.

Hester, Wesley W.: *See—*
Snellman, Donald L.; Lewis, Barry J.; Saunders, Arthur G.; and Hester, Wesley W., 4,242,174, Cl. 156-563.000.

Hetmanski, James R.: *See—*
Sindelar, William F.; and Hetmanski, James R., 4,241,628, Cl. 81-9.510.

Heuga Australia Production Pty. Ltd.: *See—*
Leupen, Willem H. L., 4,242,393, Cl. 428-95.000.

Hewlett-Packard Company: *See—*
Ferguson, Keith M., 4,242,637, Cl. 328-110.000.

Heyneman, Guido; Vandenbossche, Christiaan; and Thieme, Roland, to Siemens Aktiengesellschaft. Automated reaction housing for use in quantitative analysis. 4,242,301, Cl. 422-68.000.

Hiab-Foco AB: *See—*
Baumgarten, Borje N. V., 4,242,037, Cl. 414-739.000.

Hibbel, Josef; Kessen, Gunther; and Meis, Josef, to Ruhrchemie Aktiengesellschaft. Process for continuously producing oxygen-containing compounds. 4,242,283, Cl. 568-451.000.

Higa, Teikichi: *See—*
Wilger, John F.; Nakano, Gregory S.; Uyetake, Tadao; Orillo, Stephen, Jr.; and Higa, Teikichi, 4,241,623, Cl. 74-765.000.

Higuchi, Noboru; and Futamura, Shoji, to NGK Insulators, Ltd.; and Institute of Technology Precision Electrical Discharge Works. Extrusion dies for extruding honeycomb structural bodies. 4,242,075, Cl. 425-462.000.

Hildebrandt, Eugene F.; and Crow, William D., to Emerson Electric Co. Centrifugal actuator for motor starting switch. 4,242,607, Cl. 310-68.00E.

Hilding, Arthur W. Ashtray to control burning rate of cigarette. 4,241,742, Cl. 131-235.00R.

Hill, Richard F.: *See—*
Weber, Willis W.; Hill, Richard F.; and Weeks, Thomas J., Jr., 4,242,271, Cl. 260-448.0AD.

Hill, Richard N., to W. R. Grace & Co. Reduction of magnesium and other cations in phosphoric acid. 4,242,198, Cl. 423-321.00R.

Hinch, Peter G.; Hall, Kenneth F.; and Chambers, George, to Newroyd Limited. Device for stopping a needle at a predetermined position. 4,241,680, Cl. 112-275.000.

Hinds, Avery: *See—*
Hendriks, Henry L.; and Hinds, Avery, 4,241,605, Cl. 73-861.940.

Hiraki, Hideaki: *See—*
Takahashi, Takashi; Katsura, Masaki; Kaneda, Tadao; Hiraki, Hideaki; and Shiratori, Masayuki, 4,242,303, Cl. 422-98.000.

Hirakura, Koji; Ikeda, Itsuo; Ohta, Wasaburo; and Okuno, Zenjiro, to Ricoh Company, Ltd. Toner composition for multiple copy electrostatic photography. 4,242,434, Cl. 430-122.000.

Hirs, Gene. Traveling belt filter. 4,242,205, Cl. 210-400.000.

Hirsch, Marc-Roger: *See—*
Christ, Charles; Lebeault, Jean-Michel; and Noel, Claude, 4,242,361, Cl. 426-49.000.

Hitachi Cable, Ltd.: *See—*
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Hitachi, Ltd.: *See—*
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Hori, Ryoichi; and Itoh, Kiyoo, 4,242,739, Cl. 365-203.000.
Ishigaki, Yasuhiro; and Sugiyama, Toshio, 4,242,608, Cl. 310-68.00R.
Koike, Norio; and Kubo, Masaharu, 4,242,694, Cl. 357-30.000.
Kudo, Tetsuichi; and Obayashi, Hidehito, 4,242,421, Cl. 429-13.000.
Kuni, Asahiro; Akiyama, Nobuyuki; and Oshima, Yoshimasa, 4,242,702, Cl. 358-106.000.
Nakagawa, Isao; and Mizutani, Keiichi, 4,242,602, Cl. 307-232.000.
Ouchi, Hirobumi; and Mukai, Toji, 4,242,695, Cl. 357-30.000.
Watanabe, Kiyoshi; Sunahara, Kazuo; and Fujita, Tsutomu, 4,242,373, Cl. 427-74.000.

Hitachi Seiko Ltd.: *See—*
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Hitachi Shipbuilding & Engineering Co., Ltd.: *See—*
Tsuchiya, Shiro; Imakita, Itsuo; and Okumura, Toshiaki, 4,242,073, Cl. 425-149.000.

Ho, Hung C.: *See—*
Lund, Raymond R.; and Ho, Hung C., 4,241,663, Cl. 104-16.000.

Hodgson, Robert F., to Commercial Shearing, Inc. Rotary pumps and motors and thrust plates therefor. 4,242,066, Cl. 418-132.000.

Hoechst Aktiengesellschaft: *See—*
Arndt, Otto; and Mees, Bernhard, 4,242,275, Cl. 260-505.00E.
Feess, Erich; Birke, Walter; and Steinbach, Joachim, 4,242,091, Cl. 8-444.000.
Feess, Erich; and Gronen, Willy, 4,242,094, Cl. 8-666.000.
Grosse, Jurgen, 4,242,511, Cl. 544-110.000.
Noll, Walter; Meininger, Fritz; and Hoyer, Ernst, 4,242,258, Cl. 260-152.000.
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von der Eltz, Hans-Ulrich, 4,242,090, Cl. 8-532.000.
Westermann, Lothar; and Wasel-Nielen, Horst-Dieter, 4,242,217, Cl. 252-135.000.

Hoffman, Robert M.: *See—*
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Hoffmann, Kurt; and Mauthe, Manfred, to Siemens Aktiengesellschaft. Digital CCD arrangement. 4,242,600, Cl. 307-221.00D.

Hoffmann-La Roche Inc.: *See—*
Farkas, Rudolf; Moulin, Michel; and Revillet, Georges, 4,241,998, Cl. 356-319.000.

Hoffmann, Werner: *See—*
Rossy, Phillip; and Hoffmann, Werner, 4,242,518, Cl. 549-61.000.

Hoffmann, Wolfgang, to B & H Manufacturing Company, Inc. Labeling machine. 4,242,167, Cl. 156-357.000.

Hohm, Reinhard: *See—*
Wochnowski, Waldemar; and Hohm, Reinhard, 4,241,515, Cl. 34-28.000.

Holick, Stephen A.: *See—*
Wu, Samuel C.; Holick, Stephen A.; and Bottelsen, Robert A., 4,241,821, Cl. 194-4.00C.

Holland Company: *See—*
Wulff, Cal W., 4,241,667, Cl. 105-199.00C.

Holly, Gordon L. Body warmer. 4,241,721, Cl. 126-204.000.

Holub, Fred F.: *See—*
Cusano, Dominic A.; Holub, Fred F.; and Prochazka, Svante, 4,242,221, Cl. 252-301.40H.

Homan, H. Richard: *See—*
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Homeyer, Bernhard: *See—*
Fuchs, Rainer A.; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,242,357, Cl. 424-282.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Nagatsuma, Nobuyoshi; Kaiho, Shigeo; Nagamine, Takashi; Sese, Sousuke; and Kishino, Kunio, 4,241,596, Cl. 72-91.000.
Shimada, Shinichi; and Makino, Takenori, 4,241,706, Cl. 123-90.300.

Honda, Yoshihiko; Koutake, Masanobu; Kanazawa, Hidege; Iwasaki, Taisuke; Ohba, Shozo; Hashiba, Honoh; and Kawanishi, Gosei, to Snow Brand Milk Products Co., Ltd. Method of hydrolyzing sugar, protein or the like and apparatus therefor. 4,242,450, Cl. 435-69.000.

Honeywell Inc.: *See—*
Dreiling, James A., 4,242,708, Cl. 360-74.500.
Tabei, Tohru, 4,242,080, Cl. 431-54.000.

Honma, Yoshihiro: *See—*
Furuse, Akio; and Honma, Yoshihiro, 4,241,750, Cl. 137-101.190.

Hooker, Donald E., to Bally Manufacturing Corporation. Amusement apparatus. 4,241,920, Cl. 273-143.00R.

Hoover, Troy E.; Farber, Sheldon; and Becker, William J., to Appleton Papers Inc. Lactone compounds containing a heterocyclic radical. 4,242,513, Cl. 544-345.000.

Hope, Peter: *See—*
Battey, Paul K.; Bergfeld, Manfred; and Hope, Peter, 4,242,523, Cl. 560-48.000.

Hopfe, Harold H.; Mosher, Robert H.; and Sedgeley, Lawrence R., to Monsanto Company. Doctor blade holder. 4,241,691, Cl. 118-126.000.

Hopp, Harold P. Method of installing captive type spark plug gasket with low profile locking tabs. 4,241,491, Cl. 29-511.000.

Hori, Ryoichi; and Itoh, Kiyoo, to Hitachi, Ltd. Memory system with a stabilized sense amplifier. 4,242,739, Cl. 365-203.000.

Hornstein, Robert L. Apparatus for converting a loader bucket to a pallet loader. 4,242,035, Cl. 414-724.000.

Hoshi, Toshiharu: *See—*
Sata, Tekeo; Takamura, Masayuki; Yamagishi, Tomoo; Hoshi, Toshiharu; and Iijima, Kenzaburo, 4,242,711, Cl. 360-126.000.

Hoshino, Takashi; Imaizumi, Setsuko; and Tomita, Seisuke, to Bridgestone Tire Company Limited. Vulcanizable rubber composition improved in sulfur blooming with metal alkylxanthate. 4,242,472, Cl. 525-343.000.

Hosoi, Takuji: *See—*
Aiba, Takaaki; Takahashi, Ryoichi; Hosoi, Takuji; and Konno, Tutomu, 4,242,196, Cl. 208-40.000.

Hosokawa, Teruo: *See—*
Yokota, Yoshihisa; Hosokawa, Teruo; and Sakashita, Kiichiro, 4,242,479, Cl. 526-124.000.

Houdard, Jean P., to Le Materiel Telephonique. Methods and apparatus for demodulating a differentially phase-modulated signal. 4,242,641, Cl. 329-126.000.

Howell, Charles I., to World Carpets, Inc. Carpet web having patterned adhesive segments on the backing thereof and method of manufacture of the same. 4,242,389, Cl. 428-40.000.

Hoyer, Ernst: *See—*
Noll, Walter; Meininger, Fritz; and Hoyer, Ernst, 4,242,258, Cl. 260-152.000.

Huang, Eugene W. C.: *See—*
Silk, John K.; Krieger, Allen S.; and Huang, Eugene W. C., 4,242,588, Cl. 250-492.00A.

Huang, Jen-chi, to Polychrome Corporation. Lithographic substrates. 4,242,417, Cl. 428-457.000.

Huber, Guntram; Klie, Wolfgang; Fischer, Wolfgang; Riechers, Daniel; and Hutai, Hubert, to Daimler-Benz Aktiengesellschaft. Motor vehicle bumper. 4,241,945, Cl. 293-120.000.

Hubrecht, Gerard; and Mechain, Gerard, to Quiri. Self-locking shock absorber with volume compensation. 4,241,816, Cl. 188-298.000.

Huebner, Charles F., to Ciba-Geigy Corporation. Hypotensive indolylalkylpiperidyl guanidines and isoureas. 4,242,347, Cl. 424-267.000.

Huffman, Charles E.; McGuire, Robert J.; and Welch, Herbert E., to Rockwell International Corporation. Multiline switching protection apparatus. 4,242,756, Cl. 455-8.000.

Hughes Aircraft Company: *See—*
Forward, Robert L.; and Sipma, Dale M., 4,242,656, Cl. 333-213.000.
Shishido, Tsuneo; Eyermann, Philip A.; Vick, William L.; and Cramm, Herman W., 4,242,652, Cl. 333-106.000.

Hughes, Kenneth E.; and DeVore, Dale P., to Battelle Development Corporation. Collagen reconstitution. 4,242,291, Cl. 264-1.000.

Hughes, Nathaniel, to Hughes Sciences Group, Inc. Stable vortex generating device. 4,241,877, Cl. 239-405.000.

Hughes Sciences Group, Inc.: *See—*
Hughes, Nathaniel, 4,241,877, Cl. 239-405.000.

Hughes Tool Company: *See—*
Going, Walter S., III, 4,241,799, Cl. 175-361.000.

Hull, John R., to Iowa State University Research Foundation, Inc. Method and means of preventing heat convection in a solar pond. 4,241,724, Cl. 126-415.000.

Hulten, Bengt H.; Skarfelt, Hans T.; and Gjertz, Uno L., to Munksjo Aktiebolag. Method and a machine for producing cellular latticework. 4,242,161, Cl. 156-197.000.

Hunt, Gerald P.: *See—*
Reschovsky, John M.; and Hunt, Gerald P., 4,242,666, Cl. 340-870.280.

Hunts, Barney D., to Singer Company, The. High density proximity switch arrangement. 4,242,667, Cl. 340-365.00R.

Hurko, Bohdan; and Payne, Thomas R., to General Electric Company. Effective time ratio browning in a microwave oven employing high thermal mass browning unit. 4,242,554, Cl. 219-10.55B.

Hurni, William M.: *See—*
McAleer, William J.; and Hurni, William M., 4,242,457, Cl. 435-235.000.

Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., to University of Kentucky Research Foundation, The. Derivative of aspirin. 4,242,330, Cl. 424-180.000.

Hutai, Hubert: *See—*
Huber, Guntram; Klie, Wolfgang; Fischer, Wolfgang; Riechers, Daniel; and Hutai, Hubert, 4,241,945, Cl. 293-120.000.

Hutcheon, Keith F.; and Cordingley, Laurence A., to TI Raleigh Industries Limited. Endless bands. 4,242,385, Cl. 428-31.000.

Huther, Werner; Schweitzer, Klaus; and Rossmann, Axel, to Motoren- und Turbinen-Union Munchen GmbH. Method for encapsulating a molded ceramic member. 4,242,294, Cl. 264-62.000.

Huzii, Norihito, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for detecting toner concentration. 4,241,696, Cl. 118-691.000.

Hydrodynamic Energy Systems Corporation: *See—*
Borgren, Peter M., 4,241,579, Cl. 60-504.000.

Hynes, William M., to Miller Fluid Power Corporation. Compressed gas drying apparatus. 4,242,110, Cl. 55-269.000.

Hyre, Charles E., to Fennell Corporation. Fluid bed furnace and fuel supply system for use therein. 4,242,077, Cl. 431-19.000.

I & I Sling Company, Inc.: *See—*
St. Germain, Dennis, 4,241,575, Cl. 59-93.000.

Iannarone, Ronald C., to Singer Company, The. Carrying handle for a sewing machine. 4,241,472, Cl. 16-115.000.

Ibaraki, Howard, to Orion Industries, Inc. Adjustable oil funnel. 4,241,851, Cl. 222-83.500.

Ichida, Toshio: *See—*
Morito, Nobuyuki; Sugiyama, Toshitomo; Yokoyama, Yasuo; and Ichida, Toshio, 4,242,155, Cl. 148-113.000.

ICI Americas Inc.: *See—*
Feltzin, Joseph; Galvin, Thomas J.; and Kuehn, Erich, 4,242,415, Cl. 428-412.000.
Yellin, Tobias O.; and Mant, Derrick M., 4,242,350, Cl. 424-270.000.
Yellin, Tobias O.; and Mant, Derrick M., 4,242,351, Cl. 424-272.000.

Icore, Bernard: *See—*
O'Boyle, Matthew; Icore, Bernard; and Harney, Marilyn J., 4,242,425, Cl. 429-181.000.

ID-Select Bo Thelin Och Co.: *See—*
Lundgren, Sten T., 4,242,576, Cl. 235-435.000.

Idota, Yoshio; and Yamada, Minoru, to Fuji Photo Film Co., Ltd. Method for processing silver halide color photographic material. 4,242,442, Cl. 430-393.000.

Igoe, Robert S., to Merck & Co., Inc. Milk shake and soft serve frozen dessert stabilizer. 4,242,367, Cl. 426-573.000.

Iida, Akio: *See—*
Takeuchi, Sadatoshi; Iida, Akio; Miyake, Kimio; and Sakae, Mitsuhisa, 4,241,702, Cl. 123-41.700.

Iida Sankyo Kabushiki Kaisha: *See—*
Hashimoto, Kazuo, 4,242,547, Cl. 200-38.00R.

Iijima, Kenzaburo: *See—*
Sata, Tekeo; Takamura, Masayuki; Yamagishi, Tomoo; Hoshi, Toshiharu; and Iijima, Kenzaburo, 4,242,711, Cl. 360-126.000.

Ikeda, Itsuo: *See—*
Hirakura, Koji; Ikeda, Itsuo; Ohta, Wasaburo; and Okuno, Zenjiro, 4,242,434, Cl. 430-122.000.

Ikemi, Masahisa: *See—*
Shinohara, Isao; Okano, Teruo; and Ikemi, Masahisa, 4,242,474, Cl. 525-404.000.

Ilk, Emil. Holding device for cup-shaped glassware articles in a glass processing machine. 4,241,546, Cl. 51-227.00R.

Illinois Tool Works Inc.: *See—*
Baer, Martin A., 4,241,639, Cl. 85-47.000.

Imai, Masafumi: *See—*
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,242,230, Cl. 252-429.00B.
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naoti; Yoda, Makoto; and Wada, Shozo, 4,242,231, Cl. 252-429.00B.

Imaizumi, Setsuko: *See—*
Hoshino, Takashi; Imaizumi, Setsuko; and Tomita, Seisuke, 4,242,472, Cl. 525-343.000.

Imakita, Itsuo: *See—*
Tsuchiya, Shiro; Imakita, Itsuo; and Okumura, Toshiaki, 4,242,073, Cl. 425-149.000.

Imo-Industri Aktiebolag: *See—*
Segerstrom, Lars H., 4,242,067, Cl. 418-203.000.

Imperial Chemical Industries Limited: *See—*
Andrew, Malcolm S.; and Backhouse, Alan J., 4,242,384, Cl. 427-421.000.
Ellis, Vincent S.; and Mieszkis, Kazimierz W., 4,242,382, Cl. 427-379.000.
Hawkins, Alan F.; Lewis, Terence; and Jones, Ian, 4,242,121, Cl. 71-93.000.
Pinto, Alwyn, 4,242,317, Cl. 423-359.000.
Wilson, John R.; and Worbey, Terence I., 4,242,396, Cl. 428-141.000.
Yellin, Tobias O.; and Mant, Derrick M., 4,242,350, Cl. 424-270.000.
Yellin, Tobias O.; and Mant, Derrick M., 4,242,351, Cl. 424-272.000.

Inaba, Masao: *See—*
Ito, Yutaka; Yajima, Kazuo; Iwanaga, Yoshiteru; Takahashi, Hiroshi; and Inaba, Masao, 4,242,704, Cl. 358-167.000.

Inaba, Naomi: *See—*
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,242,230, Cl. 252-429.00B.

Inaba, Naoti: *See—*
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naoti; Yoda, Makoto; and Wada, Shozo, 4,242,231, Cl. 252-429.00B.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Di Gesu', Giovanni, 4,241,830, Cl. 206-422.000.

Infantino, Dick S., to Kool Foam Products, Inc. Decorative skirting panel system. 4,241,554, Cl. 52-314.000.

Ingberman, Arthur K.: *See—*
Braun, David B.; Drap, Stephen; Fritz, Henry E.; and Ingberman, Arthur K., 4,242,098, Cl. 44-51.000.

Ingenior F. Selmer AS: *See—*
Gjerde, Trygve; and Seim, Ronald, 4,242,010, Cl. 405-157.000.

Ingenior Thor Furuholmen A/S: *See—*
Gjerde, Trygve; and Seim, Ronald, 4,242,010, Cl. 405-157.000.

Ingram, Charles E., to Four Star Corporation. Article carrier stanchion. 4,241,860, Cl. 224-316.000.

Innova, Inc.: *See—*
Moeglich, Karl, 4,242,193, Cl. 204-296.000.

Inoue, Shigeharu: *See—*
Ohba, Kazunori; Shomura, Takashi; Kojima, Michio; Omoto, Shoji; Tsuruoka, Takashi; and Inoue, Shigeharu, 4,242,327, Cl. 424-116.000.

Input Business Machines, Inc.: *See—*
Murphy, Gary J.; and Norris, George F., 4,241,909, Cl. 271-182.000.

Institut Merieux: *See—*
Ayme, Gerard; and Szabo, Ladislas, 4,242,270, Cl. 260-412.800.

Institut National de la Recherche Agronomique (INRA): *See—*
Lionel, Bueno, 4,242,363, Cl. 426-69.000.

Institute of Technology Precision Electrical Discharge Works: *See—*
Higuchi, Noboru; and Futamura, Shoji, 4,242,075, Cl. 425-462.000.

Interconnection Technology, Inc.: *See—*
Conley, Larry R., 4,242,719, Cl. 361-400.000.

International Business Machines Corporation: *See—*
Beidl, John R.; Criscimagna, Tony N.; and Greeson, James C., Jr., 4,242,680, Cl. 340-771.000.
Helinski, Edward F., 4,242,658, Cl. 335-237.000.
Hempstead, Robert D.; and Money, James B., 4,242,710, Cl. 360-113.000.
Santini, Hugo A. E.; and Wick, David P., 4,242,038, Cl. 414-755.000.

International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,242,269, Cl. 260-345.100.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,242,281, Cl. 568-458.000.

International Harvester Company: *See—*
Jennings, Marvin D., 4,242,617, Cl. 318-13.000.

International Minerals & Chemical Corp.: *See—*
Alther, George R., 4,242,140, Cl. 106-72.000.

International Paper Company: *See—*
Costa, Eugene, Jr.; and Godsay, Madhu P., 4,242,411, Cl. 428-369.000.

International Standard Electric Corporation: *See—*
Franchi, Aldo; and Allerino, Giuseppe, 4,242,540, Cl. 179-6.00R.
Irven, John, 4,242,118, Cl. 65-3.00A.

International Telephone and Telegraph Corporation: *See—*
Alonso, Oscar, 4,242,546, Cl. 200-16.00A.
Cooper, James J., Jr., 4,241,975, Cl. 339-242.000.
Oliver, Leland W.; Moore, John R.; Willcox, Peter S.; von Harz, James L.; and Trivison, Robert J., 4,241,976, Cl. 339-278.00D.

Invicta Plastics Limited: *See—*
Meirovitz, Mordecai, 4,241,923, Cl. 273-265.000.

Ioganson, Rikhard A.: *See—*
Burenkov, Nikolai A.; Derevyanchenko, Mikhail G.; Ioganson, Rikhard A.; Kuprianov, Alexandr V.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I., 4,242,609, Cl. 310-105.000.

Ionics Inc.: *See—*
McRae, Wayne A., 4,242,185, Cl. 204-98.000.

Iowa State University Research Foundation, Inc.: *See—*
Dutta Roy, Suhash C., 4,242,651, Cl. 333-32.000.
Hull, John R., 4,241,724, Cl. 126-415.000.

Irabu, Takeru: *See—*
Musha, Toshimitsu; Sekine, Matsuo; Irabu, Takeru; and Kiuchi, Eichi, 4,242,682, Cl. 343-7.00A..

Irven, John, to International Standard Electric Corporation. Optical fiber manufacture. 4,242,118, Cl. 65-3.00A.

Irvin, Robert A., to Semicon, Inc. Method and apparatus for testing axial-lead components. 4,242,632, Cl. 324-73.00R.

Ishida, Akira: *See—*
Suzuki, Akira; Ishida, Akira; and Oya, Masao, 4,242,484, Cl. 526-273.000.

Ishida, Yasuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of an internal combustion engine. 4,241,704, Cl. 123-432.000.

Ishigaki, Yasuhiro; and Sugiyama, Toshio, to Hitachi, Ltd. Motor using Hall effect elements. 4,242,608, Cl. 310-68.00R.

Ishigaki, Yoshio: *See—*
Yoshida, Susumu; Ishigaki, Yoshio; and Nagai, Tamiji, 4,242,714, Cl. 361-152.000.

Ishihara, Masao: *See—*
Habu, Teiji; Ishihara, Masao; Terada, Sadatugu; Sakamoto, Eiichi; and Yamada, Hiroshi, 4,242,444, Cl. 430-510.000.

Ishizuka, Fumihiko: *See—*
Suzuki, Masayuki; Onuma, Nobuo; Ishizuka, Fumihiko; Hara, Shinichi; Osawa, Akira; and Fukuzawa, Akira, 4,242,177, Cl. 162-17.000.

Ishizuka, Hiroshi. Process for producing metallic zirconium. 4,242,136, Cl. 75-84.500.

Ishizuka, Masaaki: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; and Ishizuka, Masaaki, 4,242,453, Cl. 435-123.000.

Ishizuka, Yutaka; and Kobayashi, Shinichi, to Robert Bosch GmbH. Sliding vane compressor with end face inserts or rotor. 4,242,065, Cl. 418-91.000.

Issenmann, Edouard M. J. A. I.: *See—*
DePouilly, Bernard M. H.; and Issenmann, Edouard M. J. A. I., 4,242,754, Cl. 375-110.000.

Iten, Clemens A., to American Safety Razor Company. Razor with adjustable blade positioning. 4,241,500, Cl. 30-40.000.

ITI Ltd.: *See—*
Mougin, Georges L., 4,241,685, Cl. 114-264.000.

Ito, Hiroshi: *See—*
Kubo, Seitoku; Kuramochi, Kojiro; and Ito, Hiroshi, 4,241,622, Cl. 74-740.000.

Ito, Rokuzo: *See—*
Halasz, Joseph; and Ito, Rokuzo, 4,241,573, Cl. 57-127.700.

Ito, Sadao; Yoshikawa, Noriaki; and Komura, Mitsuru, to Nippon Telegraph and Telephone Public Corporation. Radio channel control systems of mobile radio telephone systems. 4,242,538, Cl. 179-2.0EB.

Ito, Yutaka; Yajima, Kazuo; Iwanaga, Yoshiteru; Takahashi, Hiroshi; and Inaba, Masao, to Tokyo Broadcasting System Inc.; and Nippon Electric Co., Ltd. Noise reduction system for color television signal. 4,242,704, Cl. 358-167.000.

Itoh, Akira: *See—*
Kato, Akira; Itoh, Akira; and Uchida, Tohru, 4,242,432, Cl. 430-57.000.

Itoh, Eiji: *See—*
Motoba, Kazuhiko; and Itoh, Eiji, 4,242,314, Cl. 423-139.000.

Itoh, Kiyoo: *See—*
Hori, Ryoichi; and Itoh, Kiyoo, 4,242,739, Cl. 365-203.000.

Itoh, Masumi; and Notani, Jiyoji, to Fujisawa Pharmaceutical Co., Ltd. Sulfonic acid esters. 4,242,507, Cl. 542-427.000.

ITT Industries, Inc.: *See—*
Burgdorf, Jochen; Lupertz, Hans-Henning; and Kast, Helmut, 4,241,812, Cl. 188-73.100.
Lindstedt, Guenter; and Gehrig, Wilfried W., 4,242,664, Cl. 340-168.00S.
Williamson, Roger J., 4,241,612, Cl. 73-861.220.

Ivanov, Vladimir A.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Morozov, Jury E.; Ivanov, Vladimir A.; and Abramova, Zinaida A., 4,241,779, Cl. 164-207.000.

Iwahashi, Shunji; Yamasaki, Masahiro; and Sagou, Masakazu, to Sumitomo Chemical Company, Limited. Vapor plating method for plastics. 4,242,413, Cl. 428-412.000.

Iwamoto, Tsutomu: *See—*
Kobayashi, Shigeru; Namiki, Takemasa; and Iwamoto, Tsutomu, 4,241,689, Cl. 118-50.000.

Iwanaga, Yoshiteru: *See—*
Ito, Yutaka; Yajima, Kazuo; Iwanaga, Yoshiteru; Takahashi, Hiroshi; and Inaba, Masao, 4,242,704, Cl. 358-167.000.

Iwasaki, Taisuke: *See—*
Honda, Yoshihiko; Koutake, Masanobu; Kanazawa, Hidege; Iwasaki, Taisuke; Ohba, Shozo; Hashiba, Honoh; and Kawanishi, Gosei, 4,242,450, Cl. 435-69.000.

Iwasawa, Teruo: *See—*
Tsuboshima, Kosaku; Takayama, Shuichi; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,242,703, Cl. 358-150.000.

Ixion, Inc.: *See—*
Levinson, Leon A.; and Cool, John K., 4,242,701, Cl. 358-75.000.

Izu, Masatsugu; and Cannella, Vincent D., to Energy Conversion Devices, Inc. Dispersion imaging utilizing plural layers of different metal components. 4,242,439, Cl. 430-346.000.

Izumihara, Hiroshi, to Taihei Industries Co., Ltd. Thermal stamping apparatus. 4,242,166, Cl. 156-351.000.

J. I. Case Company: *See—*
Jaecks, Bruce K., 4,241,584, Cl. 60-580.000.
Schmitz, Floyd A., 4,242,034, Cl. 414-686.000.

J. P. Stevens & Co., Inc.: *See—*
Zuckerman, Joseph L.; and Bzik, John W., 4,242,395, Cl. 428-96.000.

Jablonski, Raymond C. Teaching aid. 4,241,522, Cl. 434-405.000.

Jackson, Richard W.; and Seelenbinder, Terry G., to AM International, Inc. Diazo developing apparatus. 4,241,989, Cl. 354-299.000.

Jackson, William L., to Dunlop Limited. Tires. 4,241,775, Cl. 152-330.0RF.

Jackson, Winston J., Jr.; Gebeau, Gary G.; and Kuhfuss, Herbert F., to Eastman Kodak Company. Liquid crystal copolyesters containing phenylhydroquinone. 4,242,496, Cl. 528-190.000.

Jaconette, Frank C.: *See—*
D'Amato, Michael J.; and Jaconette, Frank C., 4,241,969, Cl. 339-88.00R.

Jaecks, Bruce K., to J. I. Case Company. Variable biased hydraulic engine speed control. 4,241,584, Cl. 60-580.000.

Jagenberg Werke AG: *See—*
Deimel, Gerhard; and Schmidt, Paul, 4,241,560, Cl. 53-373.000.
Klapp, Hartmut, 4,241,559, Cl. 53-244.000.

Jalil, Asjed A.: *See—*
Vitelli, Vito J.; Jalil, Asjed A.; and Wilson, Norman A., 4,242,153, Cl. 148-12.00B.

Jamaluddin, Aziz A. Air pollution control and heat recovery system for industrial ovens. 4,242,084, Cl. 432-1.000.

James D. Pauls and J. Claybrook Lewis and Associates, Limited: *See—*
Pauls, James D.; Hammett, Roy; and Blake, William S., 4,241,853, Cl. 222-207.000.

Janecek, Jaroslav: *See—*
Cerny, Arnost; and Janecek, Jaroslav, 4,241,619, Cl. 74-440.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Niinomi, Masahiro; and Yanagihara, Kenji, 4,242,188, Cl. 204-164.000.

Javeri, Rupin J., to Motorola, Inc. Ignition spark timing circuit with switchable hysteresis. 4,241,708, Cl. 123-418.000.

Jean Walterscheid GmbH: *See—*
Vollmer, Jurgen; and Muller, Norbert, 4,241,935, Cl. 280-461.00A.

Jebens, Robert W., to RCA Corporation. Solar powered dehumidifier apparatus. 4,242,112, Cl. 55-269.000.

Jem Corporation: *See—*
Curry, Paul F., 4,241,929, Cl. 280-12.00H.

Jenkins, Anthony. Apparatus for the separation of a constituent from an atmosphere. 4,242,107, Cl. 55-18.000.

Jennings Compound Bow, Inc.: *See—*
Jennings, Thomas P., 4,241,715, Cl. 124-24.00R.

Jennings, Marvin D., to International Harvester Company. Electric vehicle having dynamic braking and regeneration. 4,242,617, Cl. 318-13.000.

Jennings, Thomas P., to Jennings Compound Bow, Inc. Compound bow with adjustable eccentric wheel. 4,241,715, Cl. 124-24.00R.

Jensen Building Products, Inc.: *See—*
Jensen, Keith A., 4,241,557, Cl. 52-696.000.

Jensen, Keith A., to Jensen Building Products, Inc. Construction member and plate therefor. 4,241,557, Cl. 52-696.000.

Jensen, Torkil H., to General Atomic Company. Switch arrangement. 4,242,594, Cl. 307-98.000.

Jet Spray Cooler, Inc.: *See—*
Gross, Thomas A. O., 4,242,626, Cl. 318-772.000.

Jinba, Terumasa: *See—*
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, 4,242,557, Cl. 219-69.00E.

Johanson, John E.; and Johanson, Norman E., to Johanson Manufacturing Corporation. Differential disc capacitor. 4,242,716, Cl. 361-299.000.

Johanson Manufacturing Corporation: *See—*
Johanson, John E.; and Johanson, Norman E., 4,242,716, Cl. 361-299.000.

Johanson, Norman E.: *See—*
Johanson, John E.; and Johanson, Norman E., 4,242,716, Cl. 361-299.000.

Johansson, Francis J.: *See—*
Christenson, Thomas; and Johansson, Francis J., 4,241,476, Cl. 24-3.00R.

John, Raymond; Apfelbaum, Jerome G.; and Moore, Robert L. Apparatus for preparing food. 4,241,650, Cl. 99-372.000.

Johns-Manville Corporation: *See—*
Bodycomb, Frederick M., Jr.; and Bauman, Glenn R., 4,241,505, Cl. 30-390.000.

Johnson Controls, Inc.: *See—*
Matthews, Russell B., 4,242,079, Cl. 431-46.000.

Johnson, Dee L.: *See—*
Ronning, Albert J.; Edwards, William H.; and Johnson, Dee L., 4,242,162, Cl. 156-212.000.

Johnson, Edward L.: *See—*
Rich, William E., Jr.; Johnson, Edward L.; and Sidebottom, Thomas O., 4,242,097, Cl. 23-230.00R.

Johnson, Garland A.; and Peuler, Jacob D., to Upjohn Company, The. Radioenzymatic assay of catecholamines. 4,242,222, Cl. 252-301.170.

Johnson, Garland A.; and Peuler, Jacob D., to Upjohn Company, The. Radioenzymatic assay of catecholamines. 4,242,456, Cl. 435-193.000.

Johnson, Herbert G.: *See—*
Hall, Charles M.; and Johnson, Herbert G., 4,242,342, Cl. 424-250.000.

Johnson & Johnson: *See—*
Bourdelle, Peter A.; and Schiff, Norman, 4,241,828, Cl. 206-306.000.
Korpman, Ralf, 4,242,402, Cl. 428-212.000.

Johnson, Joseph H.; and Max, Lee B., to Varian Associates, Inc. Temperature compensating transistor bias device. 4,242,598, Cl. 307-310.000.

Johnson, Ralph E., to Singer Company, The. Inertial thread snubbing device for a sewing machine. 4,241,679, Cl. 112-255.000.

Johnson, Steven R.: *See—*
Anderson, Gordon H.; and Johnson, Steven R., 4,241,545, Cl. 51-163.200.

Jolly, William R.; and Kohn, James G., to Piedmont Industries, Inc. Extensible length sleeve. 4,241,461, Cl. 2-269.000.

Jonath, Eberhard, to Mettler Instrumente AG. Monitoring device and method for a multiplexed segmental display. 4,242,677, Cl. 340-715.000.

Jones, Ian: *See—*
Hawkins, Alan F.; Lewis, Terence; and Jones, Ian, 4,242,121, Cl. 71-93.000.

Jones, Kenneth W., to Reed Tool Company. Drilling bits for plastic formations. 4,241,798, Cl. 175-329.000.

Jordan, Nathaniel, Sr. Cleaning system for tanks. 4,241,744, Cl. 134-168.00R.

Jorg, Siegfried. Transportable treatment recliner. 4,242,086, Cl. 433-33.000.

Josephson, Louis, to American Hardware & Paint Co., Inc. Seal for sides of pivoted blade structures. 4,241,539, Cl. 49-91.000.

Joyner, Taylor B.; Lepie, Albert H.; and Stanifer, Charles D., to United States of America, Navy. Air-curtain incinerator for energetic materials. 4,241,671, Cl. 110-188.000.

Kabushiki Kaisha Cosmo Keiki: *See—*
Furuse, Akio; and Honma, Yoshihiro, 4,241,750, Cl. 137-101.190.

Kabushiki Kaisha Daini Seikosha: *See—*
Tabata, Junichi, 4,242,681, Cl. 340-785.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Seo, Osamu, 4,241,632, Cl. 83-560.000.
Takeuchi, Sadatoshi; Iida, Akio; Miyake, Kimio; and Sakae, Mitsuhisa, 4,241,702, Cl. 123-41.700.

Kabushiki Kaisha Morita Seisakusho: *See—*
Yamano, Hiroyoshi, 4,242,585, Cl. 250-439.00P.

Kabushiki Kaisha Shibaura Denshi Seisakusho: *See—*
Kitamura, Kenzo; Ebitani, Hideaki; and Asakura, Masahiro, 4,242,302, Cl. 422-94.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Morozumi, Shinji; Yamazaki, Yoshio; Asakawa, Tatsushi; and Nakazaki, Yasunori, 4,242,679, Cl. 340-765.000.

Kabushiki Kaisha Tsukuda Hobby: *See—*
Tsukuda, Mitsuo, 4,241,535, Cl. 46-250.000.

Kabushiki Kaisha Yamashina Seikosho: *See—*
Shimizu, Mituo; and Miyake, Hidenori, 4,241,638, Cl. 85-46.000.

Kaiho, Shigeo: *See—*
Nagatsuma, Nobuyoshi; Kaiho, Shigeo; Nagamine, Takashi; Sese, Sousuke; and Kishino, Kunio, 4,241,596, Cl. 72-91.000.

Kaijirushi Hamono Center: *See—*
Sugiyama, Makoto, 4,241,503, Cl. 30-268.000.

Kaiser, Emil: *See—*
Colescott, Robert L.; Kaiser, Emil; and Bossinger, Charles D., 4,242,238, Cl. 260-8.000.

Kaiser, Karl: *See—*
Scholz, Manfred; and Kaiser, Karl, 4,241,514, Cl. 34-17.000.

Kaiser Steel Corporation: *See—*
Pilling, James T., 4,242,154, Cl. 148-16.700.

Kali-Chemie Pharma GmbH: *See—*
Thies, Peter W.; Asai, Akiji; and David, Samuell, 4,242,341, Cl. 424-248.550.

Kampf, Richard S., to Beckman Instruments, Inc. Means for expelling sample carriers from a radiation measuring apparatus. 4,242,582, Cl. 250-328.000.

Kanazawa, Hidege: *See—*
Honda, Yoshihiko; Koutake, Masanobu; Kanazawa, Hidege; Iwasaki, Taisuke; Ohba, Shozo; Hashiba, Honoh; and Kawanishi, Gosei, 4,242,450, Cl. 435-69.000.

Kanda, Alvin F., to Beckman Instruments, Inc. Gas discharge tube driver and level shifter circuit. 4,242,615, Cl. 315-169.100.

Kandel, Eduard I.; and Peresedov, Vyacheslav V. Device for putting clips on blood vessels. 4,241,734, Cl. 128-325.000.

Kaneda, Tadao: *See—*
Takahashi, Takashi; Katsura, Masaki; Kaneda, Tadao; Hiraki, Hideaki; and Shiratori, Masayuki, 4,242,303, Cl. 422-98.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, 4,242,452, Cl. 435-117.000.

Kaneko, Kazumasa, to Yasui Sangyo Co., Ltd. Lifting jack with locking device. 4,241,899, Cl. 254-8.00B.

Kanto Denka Kogyo Co., Ltd.: *See—*
Suzuki, Akira; Ishida, Akira; and Oya, Masao, 4,242,484, Cl. 526-273.000.

Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. Solar-radiation collection apparatus. 4,242,580, Cl. 250-203.00R.

Karaba, Albert M.; Kauffman, Brian C.; and Bowen, Glen L., to Teledyne Industries, Inc. Variable compression ratio piston. 4,241,705, Cl. 123-78.00B.

Karinsky, Viktor N.; Kuznetsov, Ivan A.; and Kutsyn, Viktor I. Plasma arc torch head. 4,242,562, Cl. 219-121.00P.

Karn, Helmut: *See—*
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,242,517, Cl. 548-342.000.

Karsan, Demir I.; Blight, Graham J.; and Farmer, Larry E., to Brown & Root, Inc. Method and apparatus for forming integrated deck sub-structure assembly including arch-vessel passage means. 4,242,011, Cl. 405-204.000.

Kasperkovitz, Wolfdietrich G., to U.S. Philips Corporation. Circuit arrangement for frequency division. 4,242,601, Cl. 307-225.00R.

Kast, Helmut: *See—*
Burgdorf, Jochen; Lupertz, Hans-Henning; and Kast, Helmut, 4,241,812, Cl. 188-73.100.

Kato, Akira; Itoh, Akira; and Uchida, Tohru, to Konishiroku Photo Industry Co., Ltd. Photosensitive material for electrophotography having photosensitive multi-layers. 4,242,432, Cl. 430-57.000.

Kato, Nobukatu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, to Mitsui Toatsu Chemicals, Incorporated. Process for preparing isopropenyl phenol. 4,242,528, Cl. 568-781.000.

Kato, Yukio: *See—*
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, 4,242,557, Cl. 219-69.00E.

Katsube, Masayoshi: *See—*
Tamura, Hiroshi; and Katsube, Masayoshi, 4,242,213, Cl. 106-73.300.

Katsura, Masaki: *See—*
Takahashi, Takashi; Katsura, Masaki; Kaneda, Tadao; Hiraki, Hideaki; and Shiratori, Masayuki, 4,242,303, Cl. 422-98.000.

Kauer, Johann; and Weick, Heinz H., to Weick, Heinz Hermann. Sealing device for securing or sealing bags or sacks of flexible material. 4,242,171, Cl. 156-485.000.

Kauffman, Brian C.: *See—*
Karaba, Albert M.; Kauffman, Brian C.; and Bowen, Glen L., 4,241,705, Cl. 123-78.00B.

Kaufmann, Meinolph, to BBC Brown Boveri & Company Limited. Sealing cement useful for producing liquid crystal display cells. 4,242,388, Cl. 428-35.000.

Kaufmann, Raimund: *See—*
Steiner, Rudolf; and Kaufmann, Raimund, 4,242,194, Cl. 204-299.00R.

Kaupert, Guenther. Method and apparatus for the forming of a series of troughs into a metal foil strip. 4,241,599, Cl. 72-356.000.

Kausel, Ernst: *See—*
Kellerwessel, Hans; and Kausel, Ernst, 4,242,129, Cl. 75-109.000.

Kawabata, Shigekatsu. Agitator means for tower type abrasion mills. 4,242,002, Cl. 366-343.000.

Kawaguchi, Takeyuki; Taketani, Yutaka; Minematsu, Hiroyoshi; Sasaki, Noriaki; Hayashi, Yuzuru; and Hara, Shigeyoshi, to Teijin Limited. Semipermeable composite membrane and process for preparation thereof. 4,242,208, Cl. 210-500.200.

Kawahara, Toshihisa; and Motoki, Goro, to Yamasa Shoyu Kabushiki Kaisha. S-Adenosyl-L-methionine compositions and production thereof. 4,242,505, Cl. 536-26.000.

Kawanishi, Gosei: *See—*
Honda, Yoshihiko; Koutake, Masanobu; Kanazawa, Hidege; Iwasaki, Taisuke; Ohba, Shozo; Hashiba, Honoh; and Kawanishi, Gosei, 4,242,450, Cl. 435-69.000.

Kawano, Mitsugi: *See—*
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, 4,242,557, Cl. 219-69.00E.

Kawasaki Steel Corporation: *See—*
Morito, Nobuyuki; Sugiyama, Toshitomo; Yokoyama, Yasuo; and Ichida, Toshio, 4,242,155, Cl. 148-113.000.

Kawasumi, Yoshio; and Takahashi, Mitsuo, to Nihon Kogyo Kabushiki Kaisha. Method for metal plating of powder by substitution. 4,242,376, Cl. 427-216.000.

Kawazu, Satoru: *See—*
Kotani, Norihiko; and Kawazu, Satoru, 4,242,691, Cl. 357-23.000.

Kayser, William M. Multiple tank electric water heater. 4,242,569, Cl. 219-314.000.

KCL Corporation: *See—*
Ferrell, Robert A., 4,241,865, Cl. 229-62.000.

Keene Corporation: *See—*
Fabbri, William C.; and Metcalf, Paul T., II, 4,242,723, Cl. 362-33.000.

Keene, Derek K., deceased (by Keene, Judith H., executrix), to Eaton Corporation. Fluid storage tank for an industrial vehicle. 4,241,578, Cl. 60-478.000.

Keene, Judith H., executrix: *See—*
Keene, Derek K., deceased, 4,241,578, Cl. 60-478.000.

Keller, Charles; and Maria, Paul. Infant bottle air removal means. 4,241,768, Cl. 141-8.000.

Kellerwessel, Hans; and Kausel, Ernst, to Klockner-Humboldt-Wedag AG. Method of recovering metals. 4,242,129, Cl. 75-109.000.

Kelley, Richard B., to Richards of Rockford, Inc. Aerator apparatus. 4,242,199, Cl. 210-758.000.

Kelly, John, Jr., to Mobil Oil Corporation. Method for treating oil-contaminated drill cuttings. 4,242,146, Cl. 134-7.000.

Kelly, Renee J.: *See—*
Antonelli, Joseph A.; Kelly, Renee J.; and McLaughlin, Joseph E., 4,242,243, Cl. 260-23.0AR.

Kelly, Robert C., to Upjohn Company, The. Bicyclic lactones. 4,242,268, Cl. 260-343.30P.

Kempe, Uwe: *See—*
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,242,517, Cl. 548-342.000.

Kendall, Willard E., to Budd Canada Inc. Frost plug immersion heater and improved clamping structure. 4,242,564, Cl. 219-208.000.

Kennedy, David P.: *See—*
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,242,424, Cl. 429-152.000.

Kennewell, Peter D.: *See—*
Barnes, Alan C.; and Kennewell, Peter D., 4,242,267, Cl. 260-335.000.

Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung: *See—*
Krieg, Gunther; and Obert, Wolfgang, 4,242,584, Cl. 250-423.00P.

Kervennal, Jacques: *See—*
Cognion, Jean-Marie; and Kervennal, Jacques, 4,242,235, Cl. 252-455.00R.

Kessen, Gunther: *See—*
Hibbel, Josef; Kessen, Gunther; and Meis, Josef, 4,242,283, Cl. 568-451.000.

Kessler, Henry A.; and McEvoy, Richard A., to Warner-Lambert. Bondable agar dental impression material. 4,242,239, Cl. 260-9.000.

Kessler, Milton. Container end closure system. 4,241,864, Cl. 229-43.000.

Khovaylo, Modest, to Precision Cast Specialties, Inc. Prosthetic implant device. 4,241,463, Cl. 3-1.913.

Kii, Masami, to Mitsubishi Denki Kabushiki Kaisha. Circuit interrupter of the type producing a puff of arc extinguishing gas upon occurrence of an arc. 4,242,550, Cl. 200-148.00R.

Kikkoman Foods, Inc.: *See—*
Yoshioka, Yu, 4,241,855, Cl. 222-479.000.

Kilcher, Beat: *See—*
Ullmann, Werner; Schumacher, Bernd; Ruh, Herbert; and Kilcher, Beat, 4,242,556, Cl. 219-69.00W.

Kilian, Gottfried: *See—*
Bergmann, Klaus; Schmitz, Friedrich; Kilian, Gottfried; and Reppel, Heinz, 4,242,144, Cl. 106-281.00R.

Kimberly-Clark Corporation: *See—*
Laumer, Edward P., 4,241,881, Cl. 241-28.000.

Kimbrough, Mahlon D., to Reliance Telecommunication Electronics Company. Frogging signal repeater for a transmission line communications system. 4,242,542, Cl. 179-170.00R.

Kinchla, Timothy: *See—*
LeBlanc, Edgar J.; Venezia, Lawrence; and Kinchla, Timothy, 4,241,506, Cl. 33-27.00C.

King, Arthur S. Rotary electrodic treater with jet action cleaning. 4,242,190, Cl. 204-212.000.

King, Gerard J.; and Dunn, Aubrey J., to United States of America, Army. Method of making photodetectors using ion implantation and laser annealing. 4,242,149, Cl. 148-1.500.

King, Lloyd H., Sr. Safety valve having a rupturable housing. 4,241,747, Cl. 137-68.00R.

King-Seeley Thermos Co.: *See—*
Anderson, Gordon H.; and Johnson, Steven R., 4,241,545, Cl. 51-163.200.

Kinglor Metor S.p.A.: *See—*
Colautti, Franco, 4,242,125, Cl. 75-37.000.

Kinney, Layton C.: *See—*
Greff, Richard; Wolf, Ludwig, Jr.; Munsch, John; and Kinney, Layton C., 4,242,310, Cl. 422-300.000.

Kinstler, John R.: *See—*
Golata, John H.; and Kinstler, John R., 4,241,597, Cl. 72-327.000.

Kishino, Kunio: *See—*
Nagatsuma, Nobuyoshi; Kaiho, Shigeo; Nagamine, Takashi; Sese, Sousuke; and Kishino, Kunio, 4,241,596, Cl. 72-91.000.

Kisiel, Edmund. Battery charger. 4,242,627, Cl. 320-21.000.

Kitagawa, Keishi, to Fuji Photo Film Co., Ltd. Laminate. 4,242,418, Cl. 428-507.000.

Kitagishi, Nozomu, to Canon Kabushiki Kaisha. Telephoto lens. 4,241,983, Cl. 350-216.000.

Kitahara, Tohru: *See—*
Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; and Kitahara, Tohru, 4,242,272, Cl. 556-489.000.

Kitamura, Kenzo; Ebitani, Hideaki; and Asakura, Masahiro, to Kabushiki Kaisha Shibaura Denshi Seisakusho. Method of making a catalytic combustion type gas detector. 4,242,302, Cl. 422-94.000.

Kitchen, John A. Pulse combustion apparatus. 4,241,720, Cl. 126-110.00C.

Kitchen, John A. Pulse combustion apparatus. 4,241,723, Cl. 126-350.00R.

Kitzner, Ernest W., to Ford Motor Company. Stirling engine. 4,241,580, Cl. 60-522.000.

Kiuchi, Eichi: *See—*
Musha, Toshimitsu; Sekine, Matsuo; Irabu, Takeru; and Kiuchi, Eichi, 4,242,682, Cl. 343-7.00A.

Kiwala, Jacob: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,242,269, Cl. 260-345.100.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,242,281, Cl. 568-458.000.

Kiyoura, Tadamitsu, to Mitsui Toatsu Chemicals, Incorporated. Process for producing salts of pyruvic acid. 4,242,525, Cl. 562-577.000.

Klapp, Hartmut, to Jagenberg Werke AG. Lowering and pivoting rail mechanism for a carton filling machine. 4,241,559, Cl. 53-244.000.

Klecker, Johann: *See—*
Matyl, Franz; Klecker, Johann; and Sanguino-Alvarez, Guillermo, 4,241,593, Cl. 64-14.000.

Kleim, Karl-Heinz, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Articulated railway car connecting passage. 4,241,665, Cl. 105-4.00R.

Klein, John M.; and Wilson, Robert B. Energy impact dissolution and trauma reduction device. 4,241,457, Cl. 2-2.500.

Klem, Stanley J. Dispensing container for butter having follower. 4,241,852, Cl. 222-103.000.

Klie, Wolfgang: *See—*
Huber, Guntram; Klie, Wolfgang; Fischer, Wolfgang; Riechers, Daniel; and Hutai, Hubert, 4,241,945, Cl. 293-120.000.

Klimmek, Albrecht; Krieger, Wolfram; and Reiner, Roland, to Battelle-Institut e.V. Process for the production of composite membranes. 4,242,159, Cl. 156-155.000.

Kline, Dale W.: *See—*
Lewis, Raymond H., Jr.; Goodrich, Edward W.; and Kline, Dale W., 4,242,713, Cl. 361-86.000.

Klockner-Humboldt-Wedag AG: *See—*
Kellerwessel, Hans; and Kausel, Ernst, 4,242,129, Cl. 75-109.000.

Klos, Cornelis D. W.: *See—*
Yntema, Klaas; and Klos, Cornelis D. W., 4,242,255, Cl. 260-45.75P.

Knape, Richard S.; and Moreau, Richard A., to General Motors Corporation. Solenoid valve controlled fuel injection pump. 4,241,714, Cl. 123-499.000.

Knauer, Karl, to Siemens Aktiengesellschaft. CTD Transversal filter with parallel inputs. 4,242,654, Cl. 333-165.000.

Knauer, Karl: *See—*
Meusburger, Guenther; Knauer, Karl; and Tihanyi, Jenoe, 4,242,603, Cl. 307-238.000.

Kniep, Peter: *See—*
Buchreiter, Georg; Kniep, Peter; Scheinost, Kurt; and Vollbrecht, Heinz-Rudiger, 4,242,319, Cl. 423-383.000.

Knight Equipment Corp.: *See—*
Mason, William L.; and Russell, William K., 4,242,051, Cl. 417-38.000.

Knight, William M., Jr.: *See—*
McCormack, Kent; Robinson, James E.; Knight, William M., Jr.; and Dudley, Dana, 4,242,706, Cl. 358-213.000.

Knoll, Wayne M.: *See—*
El Bouhnini, Larbi; Fitzpatrick, Thomas J.; Harwick, Donald M.; Hoffman, Robert M.; and Knoll, Wayne M., 4,242,406, Cl. 428-236.000.

Knox, Edward L. Lightweight, portable shelter for backpackers. 4,241,745, Cl. 135-1.00R.

Kobale, Manfred; and Wengert, Rolf, to Siemens Aktiengesellschaft. Process for producing conductive/non-conductive adhesion layers for luminescent materials on flat/uni-directionally bent substrates for image display devices. 4,242,372, Cl. 427-68.000.

Kobayashi, Masaaki; and Fujisawa, Kiyoji, to Matsushita Electric Industrial Co., Ltd. Recording and reproducing apparatus for color video signals. 4,242,699, Cl. 358-4.000.

Kobayashi, Shigeru; Namiki, Takemasa; and Iwamoto, Tsutomu, to Konishiroku Photo Industry Co., Ltd. Coating apparatus. 4,241,689, Cl. 118-50.000.

Kobayashi, Shinichi: *See—*
Ishizuka, Yutaka; and Kobayashi, Shinichi, 4,242,065, Cl. 418-91.000.

Kobayashi, Tadamasa: *See—*
Ban, Hiroshi; Kobayashi, Tadamasa; and Kuno, Syozo, 4,241,820, Cl. 192-89.00B.

Kodama, Masayuki, to Fuji Jukogyo Kabushiki Kaisha. Transmission apparatus for motor vehicle. 4,241,621, Cl. 74-700.000.

Koenig, Alan R.: *See—*
Rosen, Murray; Koenig, Alan R.; and Copham, John D., 4,242,241, Cl. 260-17.200.

Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; and Kitahara, Tohru, to Chisso Corporation. Substituted phenethyldichlorosilanes and method for producing same. 4,242,272, Cl. 556-489.000.

Kogler, Georg: *See—*
Schalk, Karl; and Kogler, Georg, 4,242,624, Cl. 318-696.000.

Kohler, George O.: *See—*
Malinow, Manuel R.; McLaughlin, Phyllis A.; Kohler, George O.; and Livingston, Arvin L., 4,242,502, Cl. 536-5.000.

Kohn, James G.: *See—*
Jolly, William R.; and Kohn, James G., 4,241,461, Cl. 2-269.000.

Koike, Norio; and Kubo, Masaharu, to Hitachi, Ltd. Solid-state color imaging device. 4,242,694, Cl. 357-30.000.

Kojima, Michio: *See—*
Ohba, Kazunori; Shomura, Takashi; Kojima, Michio; Omoto, Shoji; Tsuruoka, Takashi; and Inoue, Shigeharu, 4,242,327, Cl. 424-116.000.

Koller, Hans. Apparatus and process for treating pulverized granular material with a fluid stream. 4,241,516, Cl. 34-57.00E.

Komura, Mitsuru: *See—*
Ito, Sadao; Yoshikawa, Noriaki; and Komura, Mitsuru, 4,242,538, Cl. 179-2.0EB.

Kondur, Nicholas, Jr., to C. Itoh Electronics, Inc. Inked ribbon advance and reverse mechanism including a pawl having different size teeth. 4,242,005, Cl. 400-220.100.

Kondur, Nicholas, Jr., to C. Itoh Electronics, Inc. Adjustable media advancement mechanism. 4,242,006, Cl. 400-568.000.

Konig, Eberhard; Schonfelder, Manfred; and Pedain, Josef, to Bayer Aktiengesellschaft. Process for the production of foam plastics based on polyisocyanates having a light and yellowing resistant top layer and resultant product. 4,242,410, Cl. 428-315.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Habu, Teiji; Ishihara, Masao; Terada, Sadatugu; Sakamoto, Eiichi; and Yamada, Hiroshi, 4,242,444, Cl. 430-510.000.
Kato, Akira; Itoh, Akira; and Uchida, Tohru, 4,242,432, Cl. 430-57.000.
Kobayashi, Shigeru; Namiki, Takemasa; and Iwamoto, Tsutomu, 4,241,689, Cl. 118-50.000.

Konno, Kazuhiko: *See—*
Tanaka, Morihisa; Konno, Kazuhiko; Sasaki, Norio; and Uchimura, Kunio, 4,242,277, Cl. 260-396.000.

Konno, Tutomu: *See—*
Aiba, Takaaki; Takahashi, Ryoichi; Hosoi, Takuji; and Konno, Tutomu, 4,242,196, Cl. 208-40.000.

Konrad, Christel: *See—*
Weinlich, Tilman L., 4,242,386, Cl. 428-34.000.

Konstandt, Felix, to Rubin, Milton K. Solutions of polyethylenimine or a hydrophilic derivative thereof and a hydrophilic acrylic polymer and watercraft coated below the waterline therewith. 4,241,682, Cl. 114-67.00R.

Kool Foam Products, Inc.: *See—*
Infantino, Dick S., 4,241,554, Cl. 52-314.000.

Koppl, Georg; Nowack, Helmut; and Carmelo, Violi, to BBC Brown Boveri & Company Limited. Electrical gas-blast circuit breaker and method of manufacture. 4,242,549, Cl. 200-144.00R.

Korhonen, Kaarlo. Off conveyor-line meat-handling apparatus. 4,241,473, Cl. 17-24.000.

Korpman, Ralf, to Johnson & Johnson. Lift-off tape and process. 4,242,402, Cl. 428-212.000.

Korus, Roger A.: *See—*
United States of America, National Aeronautics and Space Administration; Rosser, Robert W.; and Korus, Roger A., 4,242,498, Cl. 528-362.000.

Koski, Ahti A.; and Davidson, Melvin J. G., to Polysar Limited. Ascorbate short-stops. 4,242,477, Cl. 526-84.000.

Kossek, Gunther: *See—*
Pichl, Heinz; and Kossek, Gunther, 4,241,620, Cl. 74-573.00R.

Kostenbauder, Harry B.: *See—*
Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., 4,242,330, Cl. 424-180.000.

Kosydar, Karen M.: *See—*
Allcock, Harry R.; Kosydar, Karen M.; and Wright, Sarah D., 4,242,499, Cl. 528-399.000.

Kotani, Norihiko; and Kawazu, Satoru, to Mitsubishi Denki Kabushiki Kaisha. MOS Semiconductor device. 4,242,691, Cl. 357-23.000.

Kotani, Yasuo: *See—*
Hasegawa, Masayasu; Nishikawa, Hideo; and Kotani, Yasuo, 4,242,356, Cl. 424-279.000.

Koutake, Masanobu: *See—*
Honda, Yoshihiko; Koutake, Masanobu; Kanazawa, Hidege; Iwasaki, Taisuke; Ohba, Shozo; Hashiba, Honoh; and Kawanishi, Gosei, 4,242,450, Cl. 435-69.000.

Koutsky, Louis J.; and Breitmeyer, Alexander M., to Sears Manufacturing Co. Adjustable seat assembly. 4,241,893, Cl. 248-425.000.

Kovacic, Guido: *See—*
Luhrig, Hermann; Kovacic, Guido; and Muller, Horst-Peter, 4,242,443, Cl. 430-496.000.

Kozima, Akio: *See—*
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Kozima, Akio, 4,242,260, Cl. 260-160.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Meintker, Manfred; Puthawala, Anwer; Schabert, Hans-Peter; and Strickroth, Erich, 4,242,001, Cl. 366-75.000.

Kramer, Petrus A.: *See—*
Verbrugge, Pieter A.; and Kramer, Petrus A., 4,242,279, Cl. 568-303.000.

Kratzer, Donald K. Tractor drawn ground sweeper. 4,241,792, Cl. 171-63.000.

Kraver, Richard A. Disposable unitary spline installation tool. 4,241,487, Cl. 29-278.000.

Kreiger, John W.: *See—*
Gee, Kenneth H.; and Kreiger, John W., 4,242,142, Cl. 106-97.000.

Kreuer, Karl D.; and Schulte, Klaus, to Leverkusen Aktiengesellschaft. Process and apparatus for the production of a foamable mixture from at least two fluid, foam forming reactants and aggregates. 4,242,306, Cl. 422-133.000.

Krieg, Gunther; and Obert, Wolfgang, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung. Method for separating isotopes which are in the form of molecules. 4,242,584, Cl. 250-423.00P.

Krieger, Allen S.: *See—*
Silk, John K.; Krieger, Allen S.; and Huang, Eugene W. C., 4,242,588, Cl. 250-492.00A.

Krieger, Wolfram: *See—*
Klimmek, Albrecht; Krieger, Wolfram; and Reiner, Roland, 4,242,159, Cl. 156-155.000.

Krolak, Ronald F.; Perna, Jay; and Radloff, Frederick J., to Bunker Ramo Corporation. Electrical connector assembly for interconnecting remote signal stations to central signal processing systems. 4,242,721, Cl. 361-415.000.

Kubo, Masaharu: *See—*
Koike, Norio; and Kubo, Masaharu, 4,242,694, Cl. 357-30.000.

Kubo, Seitoku; Kuramochi, Kojiro; and Ito, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission with overdrive. 4,241,622, Cl. 74-740.000.

Kuczkowski, Joseph A.: *See—*
Dean, Paul R., II; and Kuczkowski, Joseph A., 4,242,224, Cl. 252-402.000.

Kuda, Vladimir: *See—*
Foltyn, Jan; Henzl, Jindrich; Rotrekl, Otto; and Kuda, Vladimir, 4,241,764, Cl. 139-1.00R.

Kudo, Tetsuichi; and Obayashi, Hidehito, to Hitachi, Ltd. Electrode catalyst. 4,242,421, Cl. 429-13.000.

Kuehn, Erich: *See—*
Feltzin, Joseph; Galvin, Thomas J.; and Kuehn, Erich, 4,242,415, Cl. 428-412.000.

Kuehnle, Manfred R.; and Hagenlocher, Arno K., to Coulter Systems Corp. High speed electrophotographic medium. 4,242,433, Cl. 430-67.000.

Kuhfuss, Herbert F.: *See—*
Jackson, Winston J., Jr.; Gebeau, Gary G.; and Kuhfuss, Herbert F., 4,242,496, Cl. 528-190.000.

Kuhnert, Roland: *See—*
Giesbert, Frank; and Kuhnert, Roland, 4,241,866, Cl. 233-24.000.

Kulmbacher Klimagerate-Werk GmbH & Co. KG: *See—*
Eschner, Axel; and Pohlmann, Erich, 4,241,781, Cl. 165-1.000.

Kundig, Werner: *See—*
Muller, Hans-Rudolf; Kundig, Werner; and Hedinger, Alfred, 4,242,145, Cl. 127-46.00R.

Kundo - Kieninger & Obergfell: *See—*
Scheer, Erich, 4,242,748, Cl. 368-244.000.

Kuni, Asahiro; Akiyama, Nobuyuki; and Oshima, Yoshimasa, to Hitachi, Ltd. Apparatus for automatically checking external appearance of object. 4,242,702, Cl. 358-106.000.

Kuno, Syozo: *See—*
Ban, Hiroshi; Kobayashi, Tadamasa; and Kuno, Syozo, 4,241,820, Cl. 192-89.00B.

Kunze, Karl, to Siemens Aktiengesellschaft. Device for breaking off the wire-like or strip-like electrode in an electro-erosion machine. 4,242,558, Cl. 219-69.00W.

Kuo, Joseph S. C.: *See—*
Cano, Francis J.; Kuo, Joseph S. C.; and Querry, Merle V., 4,242,501, Cl. 536-1.000.

Kuprianov, Alexandr V.: *See—*
Burenkov, Nikolai A.; Derevyanchenko, Mikhail G.; Ioganson, Rikhard A.; Kuprianov, Alexandr V.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I., 4,242,609, Cl. 310-105.000.

Kuramochi, Kojiro: *See—*
Kubo, Seitoku; Kuramochi, Kojiro; and Ito, Hiroshi, 4,241,622, Cl. 74-740.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Aiba, Takaaki; Takahashi, Ryoichi; Hosoi, Takuji; and Konno, Tutomu, 4,242,196, Cl. 208-40.000.

Kurihara, Kenji: *See—*
Tsujiyama, Bunjiro; Saito, Kunio; and Kurihara, Kenji, 4,242,662, Cl. 340-146.30H.

Kurisu, Kenichiro: *See—*
Tagawa, Hiroshi; and Kurisu, Kenichiro, 4,241,462, Cl. 2-406.000.

Kurosaki, Shiro: *See—*
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, 4,242,375, Cl. 427-163.000.

Kurth, William T.: *See—*
Andrulitis, William B.; Miles, Steven G.; and Kurth, William T., 4,241,493, Cl. 29-572.000.

Kurtz, Leonard D.: *See—*
Findl, Eugene; and Kurtz, Leonard D., 4,242,447, Cl. 435-39.000.

Kusaka, Satoshi; and Shino, Kuninori, to Sony Corporation. Tone arm assembly. 4,241,926, Cl. 274-23.00R.

Kushmuk, Walter P., to Continental Scale Corporation. Apparatus to measure elongation due to bending under load. 4,241,801, Cl. 177-211.000.

Kushner, Ben: *See—*
Castillo, Adolfo; Kushner, Ben; and Seipos, Andrew G., 4,241,651, Cl. 100-35.000.

Kutsyn, Viktor I.: *See—*
Karinsky, Viktor N.; Kuznetsov, Ivan A.; and Kutsyn, Viktor I., 4,242,562, Cl. 219-121.00P.

Kuznetsov, Ivan A.: *See—*
Karinsky, Viktor N.; Kuznetsov, Ivan A.; and Kutsyn, Viktor I., 4,242,562, Cl. 219-121.00P.

Kyriacou, Demetrios, to Dow Chemical Company, The. Highly active silver cathode, preparation of same and use to make 2,3,5-trichloropyridine. 4,242,183, Cl. 204-73.00R.

Labouliere, Elzear R.: *See—*
deVos, Hendrik A. J.; and Labouliere, Elzear R., 4,242,727, Cl. 362-346.000.

Laddach, Hans; and Oertel, Werner, to Hein, Lehmann Aktiengesellschaft. Method and device for feeding weft wires. 4,241,767, Cl. 139-443.000.

Lahr, Helmut. Device for automatically watering plant containers. 4,241,538, Cl. 47-79.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Villard, Jean-Claude; and Berthereau, Gilbert, 4,242,039, Cl. 415-112.000.

Laird, Gerald, to Ultradyne, Inc. Self-defense apparatus. 4,242,715, Cl. 361-232.000.

Lajoie, Bernard: *See—*
Lajoie, Marcel; and Lajoie, Bernard, 4,241,551, Cl. 52-90.000.

Lajoie, Marcel; and Lajoie, Bernard. Building structure. 4,241,551, Cl. 52-90.000.

Lake, Connie, to Creative Industries, Inc. Apparatus for heat-trimming foam material. 4,242,074, Cl. 425-292.000.

Laker, Kenneth R.; and Tow, Jimmy, to Bell Telephone Laboratories, Incorporated. Pole quality factor (Q) enhancement technique for notch filters. 4,242,642, Cl. 330-109.000.

Laky, Janos; Csikos, Rezso; Peterfy, Lajos; Szvetelszky, Lajos; and Pallay, Istvan, to Magyar Asvanyolaj es Foldgaz Kiserleti Intezet. Process for the direct separation of isobutylene from mixtures of hydrocarbons. 4,242,526, Cl. 568-697.000.

Lal, Joginder, to Goodyear Tire & Rubber Company, The. Selectively cyclized block copolymers. 4,242,471, Cl. 525-333.000.

Lambert, Clifford L., Jr., to Texaco Development Corporation. Antifreeze composition containing a corrosion inhibitor combination. 4,242,214, Cl. 252-75.000.

Lancia, Frederick N.; Wolfe, William A.; Dearth, Leonard F.; Benton, Stephen L.; Homan, H. Richard; and Bruce, Arthur P. Ice cream cone automatic vending machine. 4,241,847, Cl. 221-12.000.

Landry, Ernest A., Jr. Hand powered high impact tool. 4,241,795, Cl. 173-90.000.

Lane, Joseph A.: *See—*
Walker, Robert; and Lane, Joseph A., 4,241,843, Cl. 220-5.00A.

Lang, Douglas C.: *See—*
Peterson, Wesley R.; and Lang, Douglas C., 4,241,961, Cl. 312-22.000.

Langenberg, Helmut: *See—*
Georg, Werner; Merten, Gerhard; and Langenberg, Helmut, 4,241,824, Cl. 198-745.000.

Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., to ALZA Corporation. Patient-care apparatus with device for dispensing antipathogenic agent. 4,241,733, Cl. 128-275.000.

Larsson, Ake L.; Gronwold, Gunther E.; and Corris, Derek A., to Mattel, Inc. Toy vehicle with spring drive mechanism. 4,241,534, Cl. 46-206.000.

Lartey, Paul A.; and Grampovnik, David J., to Abbott Laboratories. Process for O-demethylating fortimicins. 4,242,503, Cl. 536-17.00R.

Lasis, Evalds, to Polysar Limited. Low benzene butadiene polymerization. 4,242,478, Cl. 526-93.000.

Lauber, Ernst, to Habegger, Willy. Wheel-support assembly for rolling and stepping vehicles, especially cranes, excavating machinery and the like. 4,241,803, Cl. 180-8.00R.

Laumer, Edward P., to Kimberly-Clark Corporation. Fiber separation from pulp sheet stacks. 4,241,881, Cl. 241-28.000.

Laverty, David M.: *See—*
Morgan, Jay E.; DelVecchio, Anthony J.; Brooking, Betty L.; and Laverty, David M., 4,242,366, Cl. 426-554.000.

Lawroski, George. Carrier accessory for vans. 4,241,858, Cl. 224-42.03A.

Le Material Telephonique: *See—*
DePouilly, Bernard M. H.; and Issenmann, Edouard M. J. A. I., 4,242,754, Cl. 375-110.000.

Le Materiel Telephonique: *See—*
Houdard, Jean P., 4,242,641, Cl. 329-126.000.

Lear Siegler, Inc.: *See—*
Pareja, Ramon, 4,242,062, Cl. 417-536.000.
Pareja, Ramon, 4,242,063, Cl. 417-571.000.

Lear Siegler, Inc., Rapistan Division: *See—*
Brouwer, Gerald A., 4,241,825, Cl. 198-782.000.

Lebeault, Jean-Michel: *See—*
Christ, Charles; Lebeault, Jean-Michel; and Noel, Claude, 4,242,361, Cl. 426-49.000.

LeBlanc, Edgar J.; Venezia, Lawrence; and Kinchla, Timothy. Skater's device. 4,241,506, Cl. 33-27.00C.

Le Chatelier, Jacques, to Societe Alsacienne de Constructions Mechaniques de Mulhouse. Rotors of freed-fiber spinning devices. 4,241,572, Cl. 57-58.890.

Lecolier, Serge L.; Malfroot, Thierry A.; Piteau, Marc D.; and Senet, Jean-Pierre G., to Societe Nationale des Poudres et Explosifs. Process for the preparation of halogeno-mercuri-aldehydes and -ketones. 4,242,280, Cl. 260-431.000.

le Comte, Adolf. Ventilator. 4,241,645, Cl. 98-37.000.

Lee, Conrad E., to Pako Corporation. Stripping roller with protective sleeve. 4,241,911, Cl. 271-314.000.

Lee, Gim F., Jr., to General Electric Company. Composition of a polyphenylene ether, a block copolymer of a vinyl aromatic compound and a conjugated diene and a polyolefin. 4,242,263, Cl. 260-306.00R.

Lee, Robert L. Articulator yoke assembly. 4,242,087, Cl. 433-54.000.

Leeds & Northrup Company: *See—*
Baxter, Ronald D.; and Freud, Paul J., 4,242,659, Cl. 338-28.000.
Morse, Richard H., 4,241,701, Cl. 122-460.000.

Leeper, Harold: *See—*
Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., 4,241,733, Cl. 128-275.000.

Lehmann, Gunter: *See—*
Diem, Hans; Dudeck, Christian; Lehmann, Gunter; Matthias, Guenther; and Petri, Norbert, 4,242,282, Cl. 568-471.000.

Lehovec, Kurt, to University of Southern California. Tunnel diode load for ultra-fast low power switching circuits. 4,242,595, Cl. 307-205.000.

Leib, Ronald J.; and Sparks, Moses, Jr., to Armstrong Cork Company. Reinforced primary backing for tufted pile fabrics. 4,242,394, Cl. 428-95.000.

Leiber, Wolfgang; and Ruesch, Hans J., to Carl Hurth Maschinen-und Zahnradfabrik. Drive mechanism for machines, having in particular a great moment of inertia. 4,241,817, Cl. 192-12.00C.

Leibowitz, Marshall, to Timex Corporation. Simplified field effect, twisted nematic liquid crystal display construction. 4,241,984, Cl. 350-337.000.

Leibowitz, Marvin: *See—*
Roberts, Karl H.; Leibowitz, Marvin; and Furgal, Henry P., 4,242,377, Cl. 427-242.000.

Leidich, Arthur J., to RCA Corporation. Variable gain current amplifier. 4,242,643, Cl. 330-278.000.

Leister, Harry M.: *See—*
Hall, Wilbur S.; and Leister, Harry M., 4,242,379, Cl. 427-327.000.

Leland, David L., to Miles Laboratories, Inc. Method for the introduction of a methyl group into the 7 position of the morphinan nucleus. 4,242,514, Cl. 546-74.000.

Lendla, Heinz: *See—*
Link, Heinz; Schupp, Heribert; and Lendla, Heinz, 4,241,762, Cl. 138-105.000.

Lenz, Rudiger: *See—*
Schwellinger, Ulrich; and Lenz, Rudiger, 4,241,889, Cl. 244-3.150.

Leonard, John F.: *See—*
Fritts, David H.; Leonard, John F.; and Palanisamy, Thirumalai G., 4,242,179, Cl. 204-2.100.

Leonard, Robert D., Jr.; and Nestor, Charles R., to General Motors Corporation. Pigtail assembly. 4,241,971, Cl. 339-116.00C.

Lepie, Albert H.: *See—*
Joyner, Taylor B.; Lepie, Albert H.; and Stanifer, Charles D., 4,241,671, Cl. 110-188.000.

Lepp, George D. Camera support bracket. 4,241,988, Cl. 354-293.000.

Lescrenier, Charles. Patient positioning device comprising light planes corresponding to first, second and third intersecting reference planes. 4,242,587, Cl. 250-491.000.

Lesesne, Mary. Bunting for attachment to a seat. 4,241,458, Cl. 2-69.500.

Leupen, Willem H. L., to Heuga Australia Production Pty. Ltd. Carpet tiles. 4,242,393, Cl. 428-95.000.

Leveque, Robert, to Creusot-Loire. Chromizing of steels by gaseous method. 4,242,151, Cl. 148-6.350.

Leverkusen Aktiengesellschaft: *See—*
Kreuer, Karl D.; and Schulte, Klaus, 4,242,306, Cl. 422-133.000.

Levin, Alan, III: *See—*
Henckels, Lutz P.; Haas, Rene M.; and Levin, Alan, III, 4,242,751, Cl. 371-26.000.

Levinson, Leon A.; and Cool, John K., to Ixion, Inc. Color hardcopy from electronic information. 4,242,701, Cl. 358-75.000.

Lewis, Barry J.: *See—*
Snellman, Donald L.; Lewis, Barry J.; Saunders, Arthur G.; and Hester, Wesley W., 4,242,174, Cl. 156-563.000.

Lewis, Raymond H., Jr.; Goodrich, Edward W.; and Kline, Dale W. Triac output asymmetry detector. 4,242,713, Cl. 361-86.000.

Lewis, Terence: *See—*
Hawkins, Alan F.; Lewis, Terence; and Jones, Ian, 4,242,121, Cl. 71-93.000.

Libbey-Owens-Ford Company: *See—*
Mattimoe, Paul T.; Motter, Theodore J.; and Bartus, Stephen P., Jr., 4,242,403, Cl. 428-213.000.

Licinvest AG: *See—*
Ackeret, Peter, 4,241,528, Cl. 40-513.000.
Baur, Max, 4,241,529, Cl. 40-513.000.

Lin-Liaw, Jiing. Devices for promoting compression ratio of fuel mixture in engines. 4,241,703, Cl. 123-48.00R.

Lindecrantz, Anders: *See—*
Forsling, Hans; and Lindecrantz, Anders, 4,242,049, Cl. 416-142.000.

Lindstedt, Guenter; and Gehrig, Wilfried W., to ITT Industries, Inc. Remote control arrangement. 4,242,664, Cl. 340-168.00S.

Link, Dieter: *See—*
Aschberger, Matthias; and Link, Dieter, 4,242,116, Cl. 62-199.000.

Link, Heinz; Schupp, Heribert; and Lendla, Heinz, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Composite underground fluid conduit of concrete and steel sections. 4,241,762, Cl. 138-105.000.

Lionel, Bueno, to Institut National de la Recherche Agronomique (INRA). Urea-based feed supplement. 4,242,363, Cl. 426-69.000.

Lipatov, Nikolai K.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; Titov, Mikhail Y.; Tereschenko, Lev A.; and Yakovlev, Arian M., 4,242,141, Cl. 106-89.000.

Lissy, Gunter J., to Nordson Corporation. Powder spray booth. 4,242,113, Cl. 55-302.000.

Liu, Chi-sheng; Feldman, Donald W.; Williams, Roy K.; and Weaver, Lelland A., to Westinghouse Electric Corp. High power electrode and feedthrough assembly for high temperature lasers. 4,242,648, Cl. 331-94.50D.

Lively, Mark O., III: *See—*
Moran, Thomas F.; Powers, James C.; and Lively, Mark O., III, 4,242,186, Cl. 204-157.10H.

Livingston, Arvin L.: *See—*
Malinow, Manuel R.; McLaughlin, Phyllis A.; Kohler, George O.; and Livingston, Arvin L., 4,242,502, Cl. 536-5.000.

Locatelli, Gianbattista. Handle particularly for wire baskets. 4,241,831, Cl. 206-506.000.

Lockett, James F., to Geosource Inc. Sorting apparatus. 4,241,835, Cl. 209-582.000.

Lockheed Electronics Corporation: *See—*
Slobodin, Leo, 4,242,663, Cl. 340-152.00T.

Lockwood Corporation: *See—*
Doll, Joseph D., 4,242,712, Cl. 361-42.000.

Loder, Edwin R.: *See—*
Daugherty, Denny E.; Loder, Edwin R.; and Young, Gary L., 4,242,216, Cl. 252-103.000.

Long, Christopher. Electronic musical instrument. 4,241,636, Cl. 84-1.010.

Long, George, to Crown Cork & Seal Company, Inc. Electric seam weld monitoring apparatus and method. 4,242,561, Cl. 219-109.000.

Longenecker, John G., to Barrera, Roberto G. Apparatus for shaping and precooking of tortillas. 4,241,648, Cl. 99-349.000.

Lorenz, Joachim: *See—*
Berrer, Dagmar; Lorenz, Joachim; and Grade, Reinhardt, 4,242,119, Cl. 71-67.000.

Lu, Kau U. Battery configuration. 4,242,422, Cl. 429-94.000.

Lubbers, Dietrich W.; and Guilino, Ernst, to Max Planck Gesellschaft zur Forderung der Wissenschaften. Spectral photometer for medical use in determining skin coloration. 4,241,738, Cl. 128-666.000.

Lucas Industries Limited: *See—*
Mowbray, Dorian F., 4,242,059, Cl. 417-462.000.

Lucky Manufacturing Co., Inc.: *See—*
Buckner, Walter E., 4,241,811, Cl. 188-43.000.

Luddington, Eric A.: *See—*
Molins, Desmond W.; Clarke, Peter A.; and Luddington, Eric A., 4,241,822, Cl. 198-406.000.

Luebcke, Dean E. Paramedic kit. 4,241,833, Cl. 206-570.000.

Luhrig, Hermann; Kovacic, Guido; and Muller, Horst-Peter, to AGFA-Gevaert, A.G. Photographic film unit with integral structure. 4,242,443, Cl. 430-496.000.

Lumma, William C., to Merck & Co., Inc. Piperazinyl-imidazo[1,2-a]pyrazines. 4,242,344, Cl. 424-251.000.

Lummus Company, The: *See—*
Snell, George J., 4,242,102, Cl. 48-197.00R.

Lumoprint Zindler KG (GmbH & Co.): *See—*
Salger, Werner, 4,241,695, Cl. 118-658.000.

Lund, Raymond R.; and Ho, Hung C., to Canron Corporation. Tie plate handling means for rail changing machine. 4,241,663, Cl. 104-16.000.

Lundgren, Sten T., to ID-Select Bo Thelin Och Co. Electronic identification device. 4,242,576, Cl. 235-435.000.

Lunn, William H. W., to Eli Lilly and Company. Process for producing 7-amino-7-alkoxycephalosporins. 4,242,509, Cl. 544-21.000.

Lupertz, Hans-Henning: *See—*
Burgdorf, Jochen; Lupertz, Hans-Henning; and Kast, Helmut, 4,241,812, Cl. 188-73.100.

Lutz, Leo O.: *See—*
Cormier, Raymond G.; and Lutz, Leo O., 4,241,694, Cl. 118-647.000.

Lynch, George. Powered device for controlling the rotation of a reel. 4,241,884, Cl. 242-54.00R.

Machida Endoscope Co., Ltd.: *See—*
Aoshiro, Hisatake, 4,241,729, Cl. 128-4.000.

Machinefabriek Geurtsen Deventer B.V.: *See—*
Geurtsen, Alfonsus A., 4,242,209, Cl. 210-519.000.

Macken, John A. Spiral flow convective laser. 4,242,646, Cl. 331-94.50D.

Macken, John A. Stabilized vortex convective laser. 4,242,647, Cl. 331-94.50D.

MacStep Co., Inc.: *See—*
McKenna, Phillip; and Penarowski, Arthur, 4,241,807, Cl. 182-121.000.

MacTurk, William L., to General Dynamics Corporation, Pomona Division. Three-dimensionally curved, knit wire electromagnetic wave reflector. 4,242,686, Cl. 343-912.000.

Madappally, Mathew M.; and Bucolo, Giovanni, to Coulter Electronics, Inc. Method for determining a substance in a biological fluid and reagent combination for use in the method. 4,242,446, Cl. 435-15.000.

Maekawa, Naozane; and Awano, Takeshi, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Retractor device for seat belt mechanism. 4,241,886, Cl. 242-107.200.

Maezawa Kasei Kogyo Kabushiki Kaisha: *See—*
Maezawa, Keiji, 4,241,897, Cl. 251-229.000.

Maezawa, Keiji, to Maezawa Kasei Kogyo Kabushiki Kaisha. Butterfly valve. 4,241,897, Cl. 251-229.000.

Maggia, Giorgio, to Fratelli Borletti S.p.A. Tachometer device controlled by an electric motor. 4,241,607, Cl. 73-490.000.

Magnie, Robert L. Recovery of crude oil utilizing hydrogen. 4,241,790, Cl. 166-260.000.

Magyar Asvanyolaj es Foldgaz Kiserleti Intezet: *See—*
Laky, Janos; Csikos, Rezso; Peterfy, Lajos; Szvetelszky, Lajos; and Pallay, Istvan, 4,242,526, Cl. 568-697.000.

Magyar, Joseph J.: *See—*
Patel, Chimanbhai M.; and Magyar, Joseph J., 4,241,938, Cl. 280-803.000.

Maier, Alfred E.; and Ricci, Louis N., to Westinghouse Electric Corp. Circuit breaker having insulation barrier. 4,242,577, Cl. 200-153.00G.

Majmudar, Suresh: *See—*
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,242,309, Cl. 422-189.000.

Majoie, Bernard, to Societe de Recherches Industrielles (Sori). Method of treatment of algiae. 4,242,358, Cl. 424-317.000.

Makino, Takenori: *See—*
Shimada, Shinichi; and Makino, Takenori, 4,241,706, Cl. 123-90.300.

Makipirtti, Simo A. I., to Outokumpu Oy. Process for the selective removal of impurities present in sulfidic complex ores, mixed ores or concentrates. 4,242,124, Cl. 75-6.000.

Malak, Thomas P., to Harshaw Chemical Company, The. Copper plating process for printed circuit boards. 4,242,181, Cl. 204-52.00R.

Malatesta, Alberto, to Exxon Research & Engineering Co. Resins for printing inks. 4,242,244, Cl. 260-23.70C.

Maldonado, Paul; Dayre, Henri; and Hagenbach, Germain, to Elf Union. Process for the preparation of bituminous compositions making use of a mother solution containing polymers and sulfur. 4,242,246, Cl. 260-28.5AS.

Maldonado, Paul: *See—*
Hagenbach, Germain; and Maldonado, Paul, 4,242,143, Cl. 106-272.000.

Malec, Robert E., to Ethyl Corporation. Fuel additive for diesel fuels. 4,242,099, Cl. 44-53.000.

Malfroot, Thierry A.: *See—*
Lecolier, Serge L.; Malfroot, Thierry A.; Piteau, Marc D.; and Senet, Jean-Pierre G., 4,242,280, Cl. 260-431.000.

Malinovitz, Raphael, to Parking Control Systems. Parking card. 4,241,943, Cl. 283-13.000.

Malinow, Manuel R.; McLaughlin, Phyllis A.; Kohler, George O.; and Livingston, Arvin L., to United States of America, America. Enhancement of cholesterol combining properties of saponins. 4,242,502, Cl. 536-5.000.

Mallinckrodt, Inc.: *See—*
Taylor, John J., 4,242,274, Cl. 260-465.00E.

Manankov, Mikhail K., to Simferopolsky Gosudarstvenny Universitet imeni M.V. Method for stimulating fructification and fruit growth of cultivated plants and gibberellin-based preparation for realizing same. 4,242,120, Cl. 71-89.000.

Mann, Donald B. Swing-away bulldozer teeth assembly. 4,241,525, Cl. 37-117.500.

Manning, Harry F., to Textron Inc. Method of removing fastening elements from woven tape. 4,241,489, Cl. 29-408.000.

Manoury, Philippe: *See—*
Najer, Henry; and Manoury, Philippe, 4,242,343, Cl. 424-250.000.

Mansolill, Kathryn R.: *See—*
Mansolill, Ralph A.; and Mansolill, Kathryn R., 4,241,688, Cl. 440-26.000.

Mansolill, Ralph A.; and Mansolill, Kathryn R. Exercising device for water use. 4,241,688, Cl. 440-26.000.

Mansukhani, Ishwar R., to Whittaker Corporation. Plating of substrates by jet printing. 4,242,369, Cl. 427-47.000.

Mant, Derrick M.: *See—*
Yellin, Tobias O.; and Mant, Derrick M., 4,242,350, Cl. 424-270.000.
Yellin, Tobias O.; and Mant, Derrick M., 4,242,351, Cl. 424-272.000.

Marchaj, Tadeusz J., to Preload Technology, Inc. Diffusion pump. 4,242,052, Cl. 417-154.000.

Marchak, Roman O.: *See—*
Peterson, William A., Jr.; and Marchak, Roman O., 4,241,710, Cl. 123-440.000.

Marcus, Joel A. Jacket clamping device for a paper stuffing machine. 4,241,908, Cl. 270-55.000.

Marcus, Konrad H., to Prince Corporation. Remote transmitter and housing. 4,241,870, Cl. 296-37.700.

Marcusson, Lage; and Polheimer, Lars, to ASEA Aktiebolag. Railway car electric traction motor air cooling system. 4,241,666, Cl. 105-59.000.

Maria, Paul: *See—*
Keller, Charles; and Maria, Paul, 4,241,768, Cl. 141-8.000.

Mariani, Maurice. Oscillating flight control device for a ball projecting machine. 4,241,717, Cl. 124-83.000.

Maringer, Robert E., to Battelle Development Corporation. Apparatus for producing flake. 4,242,069, Cl. 425-8.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Process for purifying crude diphenols. 4,242,527, Cl. 568-724.000.

Mars Incorporated: *See—*
Nelson, Richard L.; and Nelson, Walter P., 4,241,649, Cl. 99-354.000.

Marsing, Helmut, to Siemens Aktiengesellschaft. Superconductor structure and method for manufacturing same. 4,242,534, Cl. 174-15.00S.

Martin Concrete Engineering Company: *See—*
Stinton, Frederick M., 4,242,071, Cl. 425-111.000.

Martin & Pagenstecher GmbH: *See—*
Eisermann, Eckehard; and Beckers, Dieter, 4,241,905, Cl. 266-236.000.

Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, to Ciba-Geigy Corporation. Process for the preparation of 2-(2',2',2'-trihalogenoethyl)-4-halogenocyclobutan-1-ones. 4,242,278, Cl. 568-341.000.

Martineau, Tom N., to Stoelting, Inc. Auger flight for comestible freezer. 4,241,590, Cl. 62-343.000.

Marulic, Walter J., to Pullman Incorporated. Partition wall joint. 4,241,552, Cl. 52-282.000.

Marwede, Gunter: *See—*
Sylvester, Gerd; Witte, Josef; and Marwede, Gunter, 4,242,232, Cl. 252-429.00C.

Marx, Paul: *See—*
Puschel, Walter; Vetter, Hans; and Marx, Paul, 4,242,435, Cl. 430-242.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Fischer, Hermann, 4,241,659, Cl. 101-231.000.
Kleim, Karl-Heinz, 4,241,665, Cl. 105-4.00R.

Masclet, Jean, to Messier-Hispano-Bugatti. Mechanical-hydraulic damper for a load subject to shocks and vibrations. 4,241,814, Cl. 188-266.000.

Mason, William L.; and Russell, William K., to Knight Equipment Corp. Feed control system for pumping fluids to dishwashers and the like. 4,242,051, Cl. 417-38.000.

Massachusetts Institute of Technology: *See—*
Kaplow, Roy; and Frank, Robert I., 4,242,580, Cl. 250-203.00R.
Raffel, Jack I.; and Yasaitis, John A., 4,242,736, Cl. 365-191.000.

Massino, Chester F. Lighter and softer recreational balls. 4,241,918, Cl. 273-65.00E.

Mastrigt, Max V., to W. C. Dillon & Co., Inc. Tensiometer capable of being attached to a cable under tension. 4,241,616, Cl. 73-144.000.

Masugi, Takashi: *See—*
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, 4,242,510, Cl. 544-27.000.

Mate, David J., to Action Instruments Company, Inc. Two-wire transmitter. 4,242,665, Cl. 340-870.380.

Material Sciences Corporation: *See—*
Rausch, John J.; and Van Thyne, Ray J., 4,242,420, Cl. 428-667.000.

Mathews, Bernard C. Flail blade mount for mowers. 4,241,568, Cl. 56-294.000.

Matsuda, Tetsuo: *See—*
Sakakibara, Hideo; Okegawa, Osamu; Watanabe, Toshiyuki; Fujiwara, Tatsuro; Watanabe, Susumu; Omura, Satoshi; and Matsuda, Tetsuo, 4,242,504, Cl. 536-17.00R.

Matsumoto, Hiromitsu, to Yamaha Hatsukoki Kabushiki Kaisha. Induction system for an internal combustion engine. 4,241,712, Cl. 123-432.000.

Matsumoto, Koichi: *See—*
Aishima, Itsuho; Seki, Junji; Matsumoto, Koichi; Furusawa, Yonemasa; Tsukisaka, Ryogo; and Takahashi, Yuhachi, 4,242,251, Cl. 260-37.00N.

Matsuo, Masaharu. Sheet delivering apparatus. 4,241,910, Cl. 271-202.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kobayashi, Masaaki; and Fujisawa, Kiyoji, 4,242,699, Cl. 358-4.000.
Minakuchi, Hiroshi, 4,242,618, Cl. 318-314.000.

Mattel, Inc.: *See—*
Larsson, Ake L.; Gronwold, Gunther E.; and Corris, Derek A., 4,241,534, Cl. 46-206.800.

Matthews, Russell B., to Johnson Controls, Inc. Fuel ignition control system. 4,242,079, Cl. 431-46.000.

Matthias, Guenther: *See—*
Diem, Hans; Dudeck, Christian; Lehmann, Gunter; Matthias, Guenther; and Petri, Norbert, 4,242,282, Cl. 568-471.000.

Mattimoe, Paul T.; Motter, Theodore J.; and Bartus, Stephen P., Jr., to Libbey-Owens-Ford Company. Automotive glazing units and method of producing the same. 4,242,403, Cl. 428-213.000.

Matucheski, Joseph V.; Yee, Clifford S. L.; Spellman, Michael T.; Hartley, Donald J.; and Barton, William D., to Wallace Murray Corporation. Fan spider with rake angle. 4,242,046, Cl. 416-132.00A.

Matyl, Franz; Klecker, Johann; and Sanguino-Alvarez, Guillermo, to Bayerische Motoren Werke Aktiengesellschaft. Elastic shaft coupling. 4,241,593, Cl. 64-14.000.

Mauric, Claudine; and Wolf, Rainer, to Sandoz Ltd. Flameproofed regenerated cellulose and method. 4,242,138, Cl. 106-18.180.

Mauthe, Manfred: *See—*
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Max Co. Ltd.: *See—*
Chikanobu, Kimijima; Asao, Kosakai; Tutomu, Shioya; and Tomotaka, Tatsumi, 4,241,512, Cl. 33-438.000.

Max, Lee B.: *See—*
Johnson, Joseph H.; and Max, Lee B., 4,242,598, Cl. 307-310.000.

Max Planck Gesellschaft zur Forderung der Wissenschaften: *See—*
Lubbers, Dietrich W.; and Guilino, Ernst, 4,241,738, Cl. 128-666.000.

Maxwell, Herris M. Method of producing reinforcing bars with corrosion resistant coating. 4,242,150, Cl. 148-6.300.

May, Peter R.: *See—*
Daly, Andrew S.; May, Peter R.; and Braines, George E., 4,241,845, Cl. 220-203.000.

Mayer, Thomas A.; and Sickles, James E., to PPG Industries, Inc. Coaxial cable terminal connector especially suitable for high-voltage, low-current electrostatic uses and method of making same. 4,241,973, Cl. 339-143.00R.

Mayr, Bertold; and Roser, Siegfried, to Daimler-Benz Aktiengesellschaft. Activating mechanism for the working medium valves of a reciprocating piston engine with hydraulic play compensating elements. 4,241,707, Cl. 123-90.550.

MCA Discovision, Inc.: *See—*
Vitale, George, 4,241,698, Cl. 118-730.000.

McAleer, William J.; and Wasmuth, Edward H., to Merck & Co., Inc. Hepatitis B antigen. 4,242,324, Cl. 424-89.000.

McAleer, William J.; and Hurni, William M., to Merck & Co., Inc. Automated virus harvesting. 4,242,457, Cl. 435-235.000.

McArdle, Francis H., to Boeing Company, The. Semi-articulated flex-strap. 4,242,048, Cl. 416-134.00A.

McBride, William S., to Dragerwerk Aktiengesellschaft. Method of manufacturing a chemical oxygen generator and a chemical oxygen generator construction. 4,241,485, Cl. 29-157.00R.

McCabe, Francis J., to Prefco Products, Inc. Butterfly smoke/fire damper. 4,241,748, Cl. 137-77.000.

McCain Manufacturing Corporation: *See—*
McCain, William B.; Cosgrove, James F.; Vente, John; and Flavin, Thomas R., 4,241,907, Cl. 270-54.000.

McCain, William B.; Cosgrove, James F.; Vente, John; and Flavin, Thomas R., to McCain Manufacturing Corporation. Signature machine having an adjustable timing control of the extraction means. 4,241,907, Cl. 270-54.000.

McCarty, Frederick B.; and Silver, Alexander, to Garrett Corporation, The. Wedge-shaped permanent magnet rotor assembly. 4,242,610, Cl. 310-156.000.

McCormack, Kent; Robinson, James E.; Knight, William M., Jr.; and Dudley, Dana, to Texas Instruments Incorporated. Visible light and near infrared imaging device. 4,242,706, Cl. 358-213.000.

McCoubrey, George A., to United States of America, Navy. Compensating structure for circulation control rotor pneumatic valve. 4,242,044, Cl. 416-20.00A.

McDonald, Ray S.: *See—*
Rossing, Martin A.; and McDonald, Ray S., 4,241,736, Cl. 128-419.0PG.

McDowell, Jerry T., to Ball Corporation. Apparatus for shearing and separating battery grids. 4,241,629, Cl. 83-343.000.

McEvoy, Richard A.: *See—*
Kessler, Henry A.; and McEvoy, Richard A., 4,242,239, Cl. 260-9.000.

McGeehon, William C.: *See—*
Mihalakis, Agis I., deceased; and Friend, Barbara L., legal representative, 4,241,980, Cl. 350-129.000.

McGraw-Edison Company: *See—*
Clark, Robert H., 4,242,570, Cl. 219-441.000.

McGuire, Robert J.: *See—*
Huffman, Charles E.; McGuire, Robert J.; and Welch, Herbert E., 4,242,756, Cl. 455-8.000.

McKenna, Phillip; and Penarowski, Arthur, to MacStep Co., Inc. Step attachment for ladders. 4,241,807, Cl. 182-121.000.

McKenzie, Eugene L., to Minnesota Mining and Manufacturing Company. Weather-resistant transparent composite film. 4,242,414, Cl. 428-412.000.

McLaughlin, Inc.: *See—*
Deacon, James S., 4,242,114, Cl. 55-304.000.

McLaughlin, Joseph E.: *See—*
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McLaughlin, Phyllis A.: *See—*
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McMullen, Donald E. Side loading and unloading trailer. 4,242,031, Cl. 414-470.000.

McNeilab, Inc.: *See—*
Gardocki, Joseph F., 4,242,353, Cl. 424-274.000.

McRae, Wayne A., to Ionics Inc. Process and apparatus for controlling impurities and pollution from membrane chlor-alkali cells. 4,242,185, Cl. 204-98.000.

Mead Corporation, The: *See—*
Bahl, Surinder K., 4,242,687, Cl. 346-75.000.

Mechain, Gerard: *See—*
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Mediolanum Farmaceutici S.r.L.: *See—*
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Medtronic, Inc.: *See—*
Rossing, Martin A.; and McDonald, Ray S., 4,241,736, Cl. 128-419.0PG.

Mees, Bernhard: *See—*
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Meiji Seika Kaisha, Ltd.: *See—*
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Ohba, Kazunori; Shomura, Takashi; Kojima, Michio; Omoto, Shoji; Tsuruoka, Takashi; and Inoue, Shigeharu, 4,242,327, Cl. 424-116.000.

Meininger, Fritz: *See—*
Noll, Walter; Meininger, Fritz; and Hoyer, Ernst, 4,242,258, Cl. 260-152.000.

Meintker, Manfred; Puthawala, Anwer; Schabert, Hans-Peter; and Strickroth, Erich, to Kraftwerk Union Aktiengesellschaft. Worm extruder assembly. 4,242,001, Cl. 366-75.000.

Meirovitz, Mordecai, to Invicta Plastics Limited. Board game. 4,241,923, Cl. 273-265.000.

Meis, Josef: *See—*
Hibbel, Josef; Kessen, Gunther; and Meis, Josef, 4,242,283, Cl. 568-451.000.

Meisel, Thomas C., Jr., to Caterpillar Tractor Co. Track assembly for crawler-type vehicles. 4,241,956, Cl. 305-35.0EB.

Meitzen, Nandor: *See—*
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Mellinger Manufacturing Co., Inc.: *See—*
Mellinger, Paul B., 4,241,674, Cl. 111-52.000.

Mellinger, Paul B., to Mellinger Manufacturing Co., Inc. Sub-soil planter. 4,241,674, Cl. 111-52.000.

Melnikov, Alexandr V.: *See—*
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Mendyk, Kay S. Safety bed sheet. 4,241,466, Cl. 5-497.000.

Mercer, Jean H. R.: *See—*
Mercer, Lloyd F.; and Mercer, Jean H. R., 4,241,912, Cl. 272-125.000.

Mercer, Lloyd F.; and Mercer, Jean H. R. Isometric vaginal exercise device and method. 4,241,912, Cl. 272-125.000.

Mercer, Roger W.; and Hay, Louis E. Method for embedding threaded apertured button in base of dental cast. 4,242,292, Cl. 264-16.000.

Merck & Co., Inc.: *See—*
Igoe, Robert S., 4,242,367, Cl. 426-573.000.
Lumma, William C., 4,242,344, Cl. 424-251.000.
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McAleer, William J.; and Hurni, William M., 4,242,457, Cl. 435-235.000.
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Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Muller, Hans-Rudolf; Kundig, Werner; and Hedinger, Alfred, 4,242,145, Cl. 127-46.00R.

Merten, Gerhard: *See—*
Georg, Werner; Merten, Gerhard; and Langenberg, Helmut, 4,241,824, Cl. 198-745.000.

Mertens, Ludovicus M.; and Vermeulen, Leon L., to AGFA-GEVAERT N.V. Photographic material for continuous tone reproduction. 4,242,436, Cl. 430-248.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Schwellinger, Ulrich; and Lenz, Rudiger, 4,241,889, Cl. 244-3.150.

Messier-Hispano-Bugatti: *See—*
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Metcalf, Eric, to Enertec. Electronic multiplying circuits. 4,242,634, Cl. 324-142.000.

Metcalf, Paul T., II: *See—*
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Mettler Instrumente AG: *See—*
Jonath, Eberhard, 4,242,677, Cl. 340-715.000.

Metzger, Arthur C. Noise attenuation panel. 4,241,806, Cl. 181-284.000.

Meusburger, Guenther; Knauer, Karl; and Tihanyi, Jenoe, to Siemens Aktiengesellschaft. Dynamic storage element. 4,242,603, Cl. 307-238.000.

Meyer, Alfons. Method and apparatus for automatic filling of bags. 4,241,562, Cl. 53-438.000.

Middaugh, Ralph E. Garbage and trash container select spray system. 4,242,311, Cl. 422-302.000.

Middleton, Donald E.; and Audette, DeVere J., deceased (by Audette, Marguerite, executrix). Portable and collapsible A-frame prop type scaffold. 4,241,808, Cl. 182-155.000.

Mieszkis, Kazimierz W.: *See—*
Ellis, Vincent S.; and Mieszkis, Kazimierz W., 4,242,382, Cl. 427-379.000.

Mihalakis, Agis I., deceased; and by Friend, Barbara L., legal representative, to McGeehon, William C. Beam emission control means. 4,241,980, Cl. 350-129.000.

Miles Laboratories, Inc.: *See—*
Leland, David L., 4,242,514, Cl. 546-74.000.

Miles, Steven G.: *See—*
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Miller, Allan F.: *See—*
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Miller, Charles G.: *See—*
Stephens, James B.; and Miller, Charles G., 4,242,201, Cl. 210-240.000.

Miller, David R. Bingo card holder. 4,241,921, Cl. 273-148.00A.

Miller, Donald L., to Facet Enterprises, Inc. Lightweight electromagnetic clutch with shock absorber. 4,241,818, Cl. 192-55.000.

Miller Fluid Power Corporation: *See—*
Hynes, William M., 4,242,110, Cl. 55-269.000.

Miller, Franklyn D.: *See—*
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Muller, Werner C.; and Miller, Franklyn D., 4,242,455, Cl. 435-162.000.

Miller, Granville G.: *See—*
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Miller, Harry C.; and Evans, Walter R., to Sargent & Greenleaf, Inc. Slide cover type changeable key plug padlock. 4,241,594, Cl. 70-38.00A.

Miller, Robert G., to White Consolidated Industries, Inc. Waste remover for carding machine. 4,241,475, Cl. 19-98.000.

Miller, William, to Ebert, Michael, a part interest. Manifold valve assembly. 4,241,761, Cl. 137-883.000.

Milligan, James D.: *See—*
Parker, Donnie G.; and Milligan, James D., 4,242,100, Cl. 44-53.000.

Millner, Ozra E., Jr.: *See—*
Bayless, Allan V.; and Millner, Ozra E., Jr., 4,242,325, Cl. 424-210.000.

Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Speed controller for rotary machine. 4,242,618, Cl. 318-314.000.

Minami, Isao, to Okamoto, Michio. Apparatus for automatically and selectively discharging saline water. 4,242,009, Cl. 405-93.000.

Minematsu, Hiroyoshi: *See—*
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Mineral Process Licensing Corporation: *See—*
Clarke, John A., 4,242,320, Cl. 423-493.000.

Minnesota Mining and Manufacturing Company: *See—*
McKenzie, Eugene L., 4,242,414, Cl. 428-412.000.
Oliveira, Robert J.; and Silver, Spencer F., 4,242,096, Cl. 23-230.00B.
Rohloff, Robert R., 4,242,437, Cl. 430-270.000.
Ronning, Albert J.; Edwards, William H.; and Johnson, Dee L., 4,242,162, Cl. 156-212.000.
Schoon, David J., 4,242,565, Cl. 219-216.000.
Stenemann, Heinrich F., 4,242,173, Cl. 156-523.000.

Minolta Camera Kabushiki Kaisha: *See—*
Uesugi, Kyozo, 4,241,982, Cl. 350-187.000.

Minuto, Maurice A. Image transfer composition. 4,242,137, Cl. 106-14.500.

Mirell, Stuart. Method and apparatus for dispensing radioactive materials. 4,241,728, Cl. 128-1.100.

Mitamura, Shuichi: *See—*
Tsuchihashi, Genichi; Ogura, Katsuyuki; and Mitamura, Shuichi, 4,242,519, Cl. 560-15.000.

Mitani Electronics Industry Corp.: *See—*
Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Toshikiyo; Hashimoto, Otokuma; and Mori, Hideki, 4,242,401, Cl. 428-201.000.

Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Toshikiyo; Hashimoto, Otokuma; and Mori, Hideki, to Mitani Electronics Industry Corp. Screen-printing mask. 4,242,401, Cl. 428-201.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kii, Masami, 4,242,550, Cl. 200-148.00R.
Kotani, Norihiko; and Kawazu, Satoru, 4,242,691, Cl. 357-23.000.
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Mitsubishi Heavy Industries, Ltd.: *See—*
Suzuki, Masayuki; Onuma, Nobuo; Ishizuka, Fumihiko; Hara, Shinichi; Osawa, Akira; and Fukuzawa, Akira, 4,242,177, Cl. 162-17.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsubishi Paper Mills, Ltd.: *See—*
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Mitsubishi Petrochemical Company, Limited: *See—*
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Mitsui Toatsu Chemicals, Incorporated: *See—*
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Kiyoura, Tadamitsu, 4,242,525, Cl. 562-577.000.

Miyake, Hidenori: *See—*
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Miyake, Kimio: *See—*
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Miyake, Yasuhiko: *See—*
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Miyata, Toshiro: *See—*
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Miyoshi, Toshiaki: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.

Mizote, Masanori; Yamaki, Kiyoshi; and Oka, Takashi, to Nissan Motor Company, Limited. Navigational information indicator for supplying a vehicle driver with make-turn instructions. 4,242,731, Cl. 364-436.000.

Mizutani, Keiichi: *See—*
Nakagawa, Isao; and Mizutani, Keiichi, 4,242,602, Cl. 307-232.000.

MM Systems Corporation: *See—*
Hall, James H., III; and Attaway, Julian J., 4,241,549, Cl. 52-60.000.

Mobil Oil Corporation: *See—*
Canterino, Peter J., 4,242,465, Cl. 521-88.000.
Kelly, John, Jr., 4,242,146, Cl. 134-7.000.

Prapas, Aristotle G., 4,242,485, Cl. 526-329.200.
Rudnick, Leslie R., 4,242,195, Cl. 208-11.0LE.
Ruehle, William H., 4,242,740, Cl. 367-15.000.

Mobil Tyco Solar Energy Corporation: *See—*
Sachs, Emanual M., 4,242,589, Cl. 250-577.000.

Moeglich, Karl, to Innova, Inc. Layered membrane and processes utilizing same. 4,242,193, Cl. 204-296.000.

Moen, Alfred M., to Stanadyne, Inc. Pushbutton diverter. 4,241,754, Cl. 137-119.000.

Mohan, Narendra; and Riaz, Mahmoud, to University of Minnesota, The Regents of the. Wind energy conversion system. 4,242,628, Cl. 322-35.000.

Mohrsen, Leif, to Durad Machine Company, Ltd. Sheet positioner. 4,242,023, Cl. 414-36.000.

Molins, Desmond W.; Clarke, Peter A.; and Luddington, Eric A., to Molins Limited. Apparatus for conveying rod-like articles. 4,241,822, Cl. 198-406.000.

Molins Limited: *See—*
Molins, Desmond W.; Clarke, Peter A.; and Luddington, Eric A., 4,241,822, Cl. 198-406.000.

Moller, Wolfgang; and Schwarz, Hans, to BBC Brown Boveri & Company Limited. Axial thrust bearing. 4,241,958, Cl. 308-160.000.

Mon, George, to United States of America, Army. Fluidic valve. 4,241,760, Cl. 137-829.000.

Money, James B.: *See—*
Hempstead, Robert D.; and Money, James B., 4,242,710, Cl. 360-113.000.

Monsanto Company: *See—*
Chupp, John P.; and Worley, Jimmy W., 4,242,123, Cl. 71-111.000.
Hamm, Philip C.; and Olin, John F., 4,242,122, Cl. 71-100.000.
Hopfe, Harold H.; Mosher, Robert H.; and Sedgeley, Lawrence R., 4,241,691, Cl. 118-126.000.

Montedison S.p.A.: *See—*
Venturello, Carlo; D'Aloisio, Rino; and Belli, Aldo, 4,242,524, Cl. 562-423.000.

Mookherjee, Braja D.: *See—*
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,242,281, Cl. 568-458.000.

Moore, Donn. Integrated circuit mounting board having internal termination resistors. 4,242,720, Cl. 361-402.000.

Moore, Jerry E.: *See—*
Yarimie, Chris M.; and Moore, Jerry E., 4,241,465, Cl. 5-452.000.

Moore, John R.: *See—*
Oliver, Leland W.; Moore, John R.; Willcox, Peter S.; von Harz, James L.; and Trivison, Robert J., 4,241,976, Cl. 339-278.00D.

Moore, Robert A., to Westinghouse Electric Corp. Triple transit suppression for bulk acoustic delay lines. 4,242,653, Cl. 333-141.000.

Moore, Robert L.: *See—*
John, Raymond; Apfelbaum, Jerome G.; and Moore, Robert L., 4,241,650, Cl. 99-372.000.

Moran, Thomas F.; Powers, James C.; and Lively, Mark O., III, to Georgia Tech Research Institute. Low pressure tritiation of molecules. 4,242,186, Cl. 204-157.10H.

Moreau, Richard A.: *See—*
Knape, Richard S.; and Moreau, Richard A., 4,241,714, Cl. 123-499.000.

Morelock, Charles R., to General Electric Company. Composite of polycrystalline diamond and/or cubic boron nitride body/silicon carbide substrate. 4,242,106, Cl. 51-307.000.

Morgan Construction Company: *See—*
Vitelli, Vito J.; Jalil, Asjed A.; and Wilson, Norman A., 4,242,153, Cl. 148-12.00B.

Morgan, Jay E.; DelVecchio, Anthony J.; Brooking, Betty L.; and Laverty, David M., to Pillsbury Company, The. Emulsifier system and cake mix containing same. 4,242,366, Cl. 426-554.000.

Morgan Trailer Manufacturing Co., Inc.: *See—*
Whiteman, Paul L.; and Orr, Vernon E., 4,242,032, Cl. 414-537.000.

Mori, Hideki: *See—*
Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Toshikiyo; Hashimoto, Otokuma; and Mori, Hideki, 4,242,401, Cl. 428-201.000.

Mori, Keizi, to Aisin Seiki Kabushiki Kaisha. Device for locating guide rail for slidable vehicle roof panel. 4,241,948, Cl. 296-216.000.

Morimoto, Yoshio: *See—*
Kato, Nobukatu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, 4,242,528, Cl. 568-781.000.

Morishita Pharmaceutical Co., Ltd.: *See—*
Takaya, Masahiro; Yamada, Toshihiro; and Yuizono, Tomokazu, 4,242,512, Cl. 544-239.000.

Morisi, Franco: *See—*
Bartoli, Francesco; Morisi, Franco; and Zaccardelli, Delio, 4,242,461, Cl. 435-288.000.

Morito, Nobuyuki; Sugiyama, Toshitomo; Yokoyama, Yasuo; and Ichida, Toshio, to Kawasaki Steel Corporation. Method of forming an insulating film on a grain-oriented silicon steel sheet. 4,242,155, Cl. 148-113.000.

Moriya, Kikuo, to Amada Company, Limited. Vising and feeding apparatus for cutting machines. 4,241,630, Cl. 83-409.000.

Morozov, Jury E.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Morozov, Jury E.; Ivanov, Vladimir A.; and Abramova, Zinaida A., 4,241,779, Cl. 164-207.000.

Morozumi, Shinji; Yamazaki, Yoshio; Asakawa, Tatsushi; and Nakazaki, Yasunori, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal display mechanism. 4,242,679, Cl. 340-765.000.

Morris, Ivan B., to Boone Box Co. Appliance skidboard and method of making. 4,241,892, Cl. 248-346.000.

Morrow, Vance: *See—*
Han, Chang D.; and Morrow, Vance, 4,241,602, Cl. 73-56.000.

Morse, Richard H., to Leeds & Northrup Company. Method and apparatus for controlling steam temperature at a boiler outlet. 4,241,701, Cl. 122-460.000.

Morton-Norwich Products, Inc.: *See—*
Bayless, Allan V.; and Millner, Ozra E., Jr., 4,242,325, Cl. 424-210.000.

Mosher, Robert H.: *See—*
Hopfe, Harold H.; Mosher, Robert H.; and Sedgeley, Lawrence R., 4,241,691, Cl. 118-126.000.

Motoba, Kazuhiko; and Itoh, Eiji. Process for separation and recovery of cobalt by stripping. 4,242,314, Cl. 423-139.000.

Motoki, Goro: *See—*
Kawahara, Toshihisa; and Motoki, Goro, 4,242,505, Cl. 536-26.000.

Motonami, Masanao: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,241,939, Cl. 280-804.000.
Suzuki, Ichiro; Ogawa, Hisashi; and Motonami, Masanao, 4,241,940, Cl. 280-804.000.

Motor Wheel Corporation: *See—*
Golata, John H.; and Kinstler, John R., 4,241,597, Cl. 72-327.000.

Motoren- und Turbinen-Union Munchen GmbH: *See—*
Huther, Werner; Schweitzer, Klaus; and Rossmann, Axel, 4,242,294, Cl. 264-62.000.

Motorola, Inc.: *See—*
Dolikian, Arman V.; and Freeburg, Thomas A., 4,242,753, Cl. 375-70.000.
Javeri, Rupin J., 4,241,708, Cl. 123-418.000.
Seelbach, Walter C., 4,242,605, Cl. 307-270.000.

Motter, Theodore J.: *See—*
Mattimoe, Paul T.; Motter, Theodore J.; and Bartus, Stephen P., Jr., 4,242,403, Cl. 428-213.000.

Mougin, Georges L., to ITI Ltd. Self-stabilizing floating tower. 4,241,685, Cl. 114-264.000.

Moulin, Michel: *See—*
Farkas, Rudolf; Moulin, Michel; and Revillet, Georges, 4,241,998, Cl. 356-319.000.

Moulton Developments Limited: *See—*
Uncles, Philip B., 4,242,064, Cl. 418-66.000.

Mourgues, Gerard: *See—*
Dubois, Jean-Claude; and Mourgues, Gerard, 4,241,978, Cl. 350-96.200.

Mowbray, Dorian F., to Lucas Industries Limited. Fuel pumping apparatus. 4,242,059, Cl. 417-462.000.

Moy, David, to Halcon Research & Development Corporation. Promoted method for producing carbamates. 4,242,520, Cl. 560-24.000.

Mueller, Karl F., to Ciba-Geigy Corporation. Fluorinated amphoteric surfactants. 4,242,516, Cl. 546-248.000.

Mueller, Otto, to Staeubli Ltd. Method and apparatus for connecting the harness cords and the heddles of a harness. 4,241,481, Cl. 28-299.000.

Mukai, Toji: *See—*
Ouchi, Hirobumi; and Mukai, Toji, 4,242,695, Cl. 357-30.000.

Muller, Hans-Rudolf; Kundig, Werner; and Hedinger, Alfred, to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the simultaneous production of fructose and gluconic acid from glucose-fructose mixtures. 4,242,145, Cl. 127-46.00R.

Muller, Horst-Peter: *See—*
Luhrig, Hermann; Kovacic, Guido; and Muller, Horst-Peter, 4,242,443, Cl. 430-496.000.

Muller, Norbert: *See—*
Vollmer, Jurgen; and Muller, Norbert, 4,241,935, Cl. 280-461.00A.

Muller, Peter, to Andrews Paper & Chemical Co., Inc. Apparatus for coating moving webs. 4,241,690, Cl. 118-63.000.

Muller, Werner; and Heinzer, Hans, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for producing and filling tubular bags. 4,241,563, Cl. 53-511.000.

Muller, Werner C.; and Miller, Franklyn D., to National Distillers and Chemical Corp. Fermentation process. 4,242,454, Cl. 435-162.000.

Muller, Werner C.; and Miller, Franklyn D., to National Distillers and Chemical Corp. Process for the acid hydrolysis of carbohydrate polymers and the continuous fermentation of the sugars obtained therefrom to provide ethanol. 4,242,455, Cl. 435-162.000.

Muller, Wolfgang; and Witzke, Lothar, to Th. Goldschmidt Ag. Process for treating hydroxide sludge residues containing nonferrous metals. 4,242,127, Cl. 75-99.000.

Mulvenna, Charles A. Free piston fluid energy transfer device. 4,242,053, Cl. 417-211.000.

Munksjo Aktiebolag: *See—*
Hulten, Bengt H.; Skarfelt, Hans T.; and Gjertz, Uno L., 4,242,161, Cl. 156-197.000.

Munsch, John: *See—*
Greff, Richard; Wolf, Ludwig, Jr.; Munsch, John; and Kinney, Layton C., 4,242,310, Cl. 422-300.000.

Murakami, Keisuke: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.

Murata Manufacturing Co., Ltd.: *See—*
Tamura, Hiroshi; and Katsube, Masayoshi, 4,242,213, Cl. 106-73.300.

Murphy, Gary J.; and Norris, George F., to Input Business Machines, Inc. Document stacking apparatus. 4,241,909, Cl. 271-182.000.

Murphy, Jimmy; and Fleetwood, Ansley R. Energy conserving water heating system. 4,241,588, Cl. 62-238.00E.

Murphy, William. Garbage can cover retainer. 4,241,846, Cl. 220-318.000.

Musgrave, Harry J. Poultry coop handling system. 4,242,029, Cl. 414-413.000.

Musha, Toshimitsu; Sekine, Matsuo; Irabu, Takeru; and Kiuchi, Eichi, to Nippon Electric Co., Ltd. Moving target indication radar. 4,242,682, Cl. 343-7.00A.

Mutrux, Claude, to Ebauches Electroniques SA. Electronic timepiece with electroacoustic transducer. 4,242,745, Cl. 368-73.000.

Myers, Harry K., Jr.: *See—*
Schneider, Abraham; and Myers, Harry K., Jr., 4,242,529, Cl. 585-353.000.

Nagai, Masahiro; and Miyake, Yasuhiko, to Hitachi Cable, Ltd. Method for the manufacture of a composite metal wire. 4,242,368, Cl. 427-11.000.

Nagai, Tamiji: *See—*
Yoshida, Susumu; Ishigaki, Yoshio; and Nagai, Tamiji, 4,242,714, Cl. 361-152.000.

Nagamine, Takashi: *See—*
Nagatsuma, Nobuyoshi; Kaiho, Shigeo; Nagamine, Takashi; Sese, Sousuke; and Kishino, Kunio, 4,241,596, Cl. 72-91.000.

Nagano, Masashi; and Fujimoto, Hideaki, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,241,617, Cl. 474-82.000.

Nagashima, Sachio; and Wake, Makoto, to Nippon Steel Corporation. Molten-metal treating vessel. 4,241,904, Cl. 266-209.000.

Nagati, Rashed N.: *See—*
Fisher, Howard M.; and Nagati, Rashed N., 4,241,902, Cl. 266-44.000.

Nagatsuma, Nobuyoshi; Kaiho, Shigeo; Nagamine, Takashi; Sese, Sousuke; and Kishino, Kunio, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for roll-forming seamless annular products. 4,241,596, Cl. 72-91.000.

Nagler, Meshulam: *See—*
Gaylord, Norman G.; Nagler, Meshulam; and Fein, Marvin M., 4,242,482, Cl. 526-192.000.

Nagura, Torao, to Mitsubishi Jukogyo Kabushiki Kaisha. Lubricant for metal working. 4,242,211, Cl. 252-25.000.

Najer, Henry; and Manoury, Philippe, to Synthelabo. Phenylpiperazine derivatives. 4,242,343, Cl. 424-250.000.

Nakagawa, Isao; and Mizutani, Keiichi, to Hitachi, Ltd. Phase comparator circuit with gated isolation circuit. 4,242,602, Cl. 307-232.000.

Nakajima, Shiro; and Miyata, Toshiro, to Nippon Hardboard Co., Ltd. Process for manufacturing magnesium carbonate board. 4,242,163, Cl. 156-242.000.

Nakajima, Yoshio: *See—*
Tsuboshima, Kosaku; Takayama, Shuichi; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,242,703, Cl. 358-150.000.

Nakamura, Kotaro: *See—*
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,242,430, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,242,431, Cl. 430-17.000.

Nakamura, Shigeru; and Shimamura, Isao, to Fuji Photo Film Co., Ltd. Color image forming process. 4,242,441, Cl. 430-390.000.

Nakamura, Tadahiko; and Nakano, Kenji, to Sony Corporation. Digital servo control circuit. 4,242,619, Cl. 318-314.000.

Nakano, Gregory S.: *See—*
Wilger, John F.; Nakano, Gregory S.; Uyetake, Tadao; Orillo, Stephen, Jr.; and Higa, Teikichi, 4,241,623, Cl. 74-765.000.

Nakano, Kenji: *See—*
Nakamura, Tadahiko; and Nakano, Kenji, 4,242,619, Cl. 318-314.000.

Nakazaki, Yasunori: *See—*
Morozumi, Shinji; Yamazaki, Yoshio; Asakawa, Tatsushi; and Nakazaki, Yasunori, 4,242,679, Cl. 340-765.000.

Nametz, Richard C.; and Nulph, Robert J., to Velsicol Chemical Corporation. Flame retarded poly(butylene terephthalate) composition. 4,242,473, Cl. 525-397.000.

Namiki, Takemasa: *See—*
Kobayashi, Shigeru; Namiki, Takemasa; and Iwamoto, Tsutomu, 4,241,689, Cl. 118-50.000.

Nanny, William C.: *See—*
Dickens, Luther I.; and Nanny, William C., 4,241,555, Cl. 52-454.000.

Nashua Corporation: *See—*
Cormier, Raymond G.; and Lutz, Leo O., 4,241,694, Cl. 118-647.000.

National Distillers and Chemical Corp.: *See—*
Muller, Werner C.; and Miller, Franklyn D., 4,242,454, Cl. 435-162.000.
Muller, Werner C.; and Miller, Franklyn D., 4,242,455, Cl. 435-162.000.

National Research Development Corporation: *See—*
Dobson, John V., 4,242,189, Cl. 204-195.00R.

National Semiconductor Corporation: *See—*
Smith, Frederick J., 4,242,604, Cl. 307-251.000.
Stone, Richard H., 4,242,152, Cl. 148-9.500.

National Starch and Chemical Corporation: *See—*
Stanley, Henry; and Ray-Chaudhuri, Dilip K., 4,242,488, Cl. 428-423.100.

Natural Energy of Oklahoma, Inc.: *See—*
Zwayer, Don L.; and Sadler, Martin D., 4,241,913, Cl. 272-130.000.

NCR Corporation: *See—*
Boone, James G., 4,242,639, Cl. 328-155.000.

Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, to Roussel Uclaf. Novel 3-(aminoethyl)-phenols. 4,242,355, Cl. 424-275.000.

Nelson, Alfred O.; and Nelson, Betty Jo. Mouse trap. 4,241,531, Cl. 43-69.000.

Nelson, Betty Jo: *See—*
Nelson, Alfred O.; and Nelson, Betty Jo, 4,241,531, Cl. 43-69.000.

Nelson, Eric W.: *See—*
Van Klompenburg, Marlo G.; Peterson, Jeffery A.; and Nelson, Eric W., 4,241,541, Cl. 49-249.000.

Nelson, Hollis E.; and Seely, Donald G. Centralized automatic pilot/pilotless ignition control system. 4,242,078, Cl. 431-45.000.

Nelson, Richard L.; and Nelson, Walter P., to Mars Incorporated. Apparatus for making filled food product. 4,241,649, Cl. 99-354.000.

Nelson, Walter P.: *See—*
Nelson, Richard L.; and Nelson, Walter P., 4,241,649, Cl. 99-354.000.

Nemeth, Jozsef, to AB Wicanders Korkfabriker. Floor tile. 4,242,390, Cl. 428-47.000.

Nemoto, Akira; and Hamaguchi, Yasunori. Boot seal. 4,241,928, Cl. 277-212.0FB.

Nestor, Charles R.: *See—*
Leonard, Robert D., Jr.; and Nestor, Charles R., 4,241,971, Cl. 339-116.00C.

Nestrick, Terry J.; and Stehl, Rudolph H., to Dow Chemical Company, The. Chromatographic column packing having a bonded organosiloxane coating. 4,242,227, Cl. 252-428.000.

Neuroth, Juergen: *See—*
Baack, Michael; Bartkowiak, Artur; and Neuroth, Juergen, 4,242,468, Cl. 521-170.000.

Neville, William A.: *See—*
Buddemeyer, Bruce D.; Neville, William A.; Taylor, James S.; and Bourne, Richard G., 4,242,364, Cl. 426-98.000.

New World Manufacturing, Inc.: *See—*
Yarimie, Chris M.; and Moore, Jerry E., 4,241,465, Cl. 5-452.000.

Newell, Alfred T., Jr.: *See—*
Newell, Alfred T., III; and Newell, Alfred T., Jr., 4,241,871, Cl. 236-49.000.

Newell, Alfred T., III; and Newell, Alfred T., Jr. Apparatus and method for ventilation of animal enclosures. 4,241,871, Cl. 236-49.000.

Newing, Charles W., to Owens-Illinois, Inc. Preparation of organopolysiloxane resins with weak organic bases. 4,242,252, Cl. 260-33.4SB.

Newlon, Charles E., to United States of America, Energy. Device for absorbing mechanical shock. 4,241,810, Cl. 188-1.00C.

Newroyd Limited: *See—*
Hinch, Peter G.; Hall, Kenneth F.; and Chambers, George, 4,241,680, Cl. 112-275.000.

Newsome, Reginald W. Aerial toy glider. 4,241,533, Cl. 46-74.00D.

NGK Insulators, Ltd.: *See—*
Higuchi, Noboru; and Futamura, Shoji, 4,242,075, Cl. 425-462.000.

Nicholas, David M.; and Hegarty, William P., to Air Products and Chemicals, Inc. Hydrogen sulfide concentrator for acid gas removal systems. 4,242,108, Cl. 55-40.000.

Nieuwendijk, Joris A. M.: *See—*
Heijnemans, Werner A. L.; Nieuwendijk, Joris A. M.; and Vink, Nicolaas G., 4,242,612, Cl. 313-421.000.

Nihon Kogyo Kabushika Kaisha: *See—*
Kawasumi, Yoshio; and Takahashi, Mitsuo, 4,242,376, Cl. 427-216.000.

Niinomi, Masahiro; and Yanagihara, Kenji, to Japan Synthetic Rubber Co., Ltd. Method for controlling plasma chemical reactions. 4,242,188, Cl. 204-164.000.

Ninomiya, Kenjiro: *See—*
Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Toshikiyo; Hashimoto, Otokuma; and Mori, Hideki, 4,242,401, Cl. 428-201.000.

Nippon Electric Co., Ltd.: *See—*
Ito, Yutaka; Yajima, Kazuo; Iwanaga, Yoshiteru; Takahashi, Hiroshi; and Inaba, Masao, 4,242,704, Cl. 358-167.000.
Musha, Toshimitsu; Sekine, Matsuo; Irabu, Takeru; and Kiuchi, Eichi, 4,242,682, Cl. 343-7.00A.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Sata, Tekeo; Takamura, Masayuki; Yamagishi, Tomoo; Hoshi, Toshiharu; and Iijima, Kenzaburo, 4,242,711, Cl. 360-126.000.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Masayasu; Nishikawa, Hideo; and Yoshida, Kayoko, 4,242,336, Cl. 424-246.000.
Hasegawa, Masayasu; Nishikawa, Hideo; and Kotani, Yasuo, 4,242,356, Cl. 424-279.000.

Nippon Hardboard Co., Ltd.: *See—*
Nakajima, Shiro; and Miyata, Toshiro, 4,242,163, Cl. 156-242.000.

Nippon Kogaku K.K.: *See—*
Takahama, Akio, 4,241,995, Cl. 356-5.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, 4,242,557, Cl. 219-69.00E.

Nippon Oil Company, Limited: *See—*
Tsuchiya, Shozo; and Hayashi, Hideo, 4,242,475, Cl. 525-534.000.

Nippon Steel Corporation: *See—*
Nagashima, Sachio; and Wake, Makoto, 4,241,904, Cl. 266-209.000.

Nippon Telegraph and Telephone Public Corporation: *See—*
Ito, Sadao; Yoshikawa, Noriaki; and Komura, Mitsuru, 4,242,538, Cl. 179-2.0EB.
Tsujiyama, Bunjiro; Saito, Kunio; and Kurihara, Kenji, 4,242,662, Cl. 340-146.30H.

Nippon Zeon Co., Ltd.: *See—*
Suzuki, Akira; Ishida, Akira; and Oya, Masao, 4,242,484, Cl. 526-273.000.

Nishikawa, Hideo: *See—*
Hasegawa, Masayasu; Nishikawa, Hideo; and Yoshida, Kayoko, 4,242,336, Cl. 424-246.000.
Hasegawa, Masayasu; Nishikawa, Hideo; and Kotani, Yasuo, 4,242,356, Cl. 424-279.000.

Nishiki Co., Ltd.: *See—*
Tagawa, Hiroshi; and Kurisu, Kenichiro, 4,241,462, Cl. 2-406.000.

Nissan Chemical Industries, Ltd.: *See—*
Tsuchihashi, Genichi; Ogura, Katsuyuki; Sakoda, Ryozo; Hashiba, Isao; and Fukushima, Shuichi, 4,242,522, Cl. 560-47.000.

Nissan Motor Company, Limited: *See—*
Fujii, Toshihiko, 4,242,172, Cl. 156-499.000.
Fujii, Toshihiko, 4,242,399, Cl. 428-186.000.
Fukunaga, Yukio, 4,241,968, Cl. 339-64.00M.
Mizote, Masanori; Yamaki, Kiyoshi; and Oka, Takashi, 4,242,731, Cl. 364-436.000.
Tsuruta, Mitsuo; and Haga, Hachiro, 4,241,646, Cl. 98-115.0SB.
Ushiro, Masayuki; and Shimazaki, Haruo, 4,241,766, Cl. 139-435.000.

Nissen, Ole J.: *See—*
Dyhr, Jan; and Nissen, Ole J., 4,242,056, Cl. 417-363.000.

Noble, David; and Noble, Donald. Adjustable exercise apparatus. 4,241,915, Cl. 272-144.000.

Noble, Donald: *See—*
Noble, David; and Noble, Donald, 4,241,915, Cl. 272-144.000.

Noel, Claude: *See—*
Christ, Charles; Lebeault, Jean-Michel; and Noel, Claude, 4,242,361, Cl. 426-49.000.

Noll, Walter; Meininger, Fritz; and Hoyer, Ernst, to Hoechst Aktiengesellschaft. Water-soluble dyestuffs, processes for their manufacture, their use as fiber-reactive dyestuffs for dyeing and printing fiber materials and the fiber materials dyed with these dyestuffs. 4,242,258, Cl. 260-152.000.

Nonnenmann, Wolfgang, to Robert Bosch GmbH. Magnetic final control element for a regulator apparatus. 4,242,606, Cl. 310-12.000.

Nonoyama, Takao; and Sato, Kunihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vacuum transmitting valve. 4,241,751, Cl. 137-103.000.

Nordson Corporation: *See—*
Hastings, Donald R., 4,241,880, Cl. 239-691.000.
Lissy, Gunter J., 4,242,113, Cl. 55-302.000.

Norris, George F.: *See—*
Murphy, Gary J.; and Norris, George F., 4,241,909, Cl. 271-182.000.

Northern Telecom, Inc.: *See—*
Wernet, William F.; Adams, William J.; and Haskins, Steve W., 4,242,543, Cl. 200-1.00A.

Northern Telecom Limited: *See—*
Szpakowski, Bronislaw T.; and DeGregorio, Bruno, 4,242,630, Cl. 323-60.000.

Northrop Corporation: *See—*
Deal, Bruce C., 4,242,733, Cl. 364-515.000.
Deal, Bruce C., 4,242,734, Cl. 364-515.000.

Norton, Thomas K. Color calculator. 4,241,520, Cl. 434-102.000.

Notani, Jiyoji: *See—*
Itoh, Masumi; and Notani, Jiyoji, 4,242,507, Cl. 542-427.000.

Novicky, Nick N. Oxygen permeable hard and semi-hard contact lens compositions, methods and articles of manufacture. 4,242,483, Cl. 526-263.000.

Nowack, Helmut: *See—*
Koppl, Georg; Nowack, Helmut; and Carmelo, Violi, 4,242,549, Cl. 200-144.00R.

Noxell Corporation: *See—*
Schnabel, Peter W.; Chernack, Milton P.; Wilkes, Lawrence T.; and Perry, Gordon R., 4,241,743, Cl. 132-88.700.

NSK-Warner K.K.: *See—*
Yamamoto, Kazuo, 4,241,941, Cl. 280-804.000.

Nulph, Robert J.: *See—*
Nametz, Richard C.; and Nulph, Robert J., 4,242,473, Cl. 525-397.000.

Numata, Masayuki; and Sugano, Kenji, to Meiji Seika Kaisha, Ltd. Process for producing fried banana slices. 4,242,365, Cl. 426-438.000.

Nurk, Siegfried, to SIPRA Patententwicklungs- und Beteiligungsgesellschaft mbH. Apparatus for shrinking of textile webs. 4,241,478, Cl. 26-18.500.

Oakes, Richard M. Windmill power generator. 4,242,050, Cl. 416-170.00R.

Obayashi, Hidehito: *See—*
Kudo, Tetsuichi; and Obayashi, Hidehito, 4,242,421, Cl. 429-13.000.

Obendorf, Johann: *See—*
Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, 4,242,248, Cl. 260-31.20N.

Obert, Wolfgang: *See—*
Krieg, Gunther; and Obert, Wolfgang, 4,242,584, Cl. 250-423.00P.

O'Boyle, Matthew; Icore, Bernard; and Harney, Marilyn J., to Catalyst Research Corporation. Novel lithium halide battery structure. 4,242,425, Cl. 429-181.000.

Occidental Research Corporation: *See—*
Hard, Robert A., 4,241,951, Cl. 299-2.000.

O'Connor, Joseph M.; and Pasternak, Stephen F., to Peerless of America, Inc. Heat exchangers and method of making same. 4,241,785, Cl. 165-172.000.

Odenthal, Charles: *See—*
Bennett, Clifford D.; and Odenthal, Charles, 4,241,756, Cl. 137-496.000.

Oertel, Werner: *See—*
Laddach, Hans; and Oertel, Werner, 4,241,767, Cl. 139-443.000.

Ogawa, Haruki: *See—*
Sugawara, Yutaka; Yamamoto, Akihiro; Handa, Mitsuaki; Usami, Hiroko; and Ogawa, Haruki, 4,242,326, Cl. 424-116.000.

Ogawa, Hisashi: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,241,939, Cl. 280-804.000.
Suzuki, Ichiro; Ogawa, Hisashi; and Motonami, Masanao, 4,241,940, Cl. 280-804.000.

Ogden, Ralph; and Colley, John C., to Ogden, Ralph, a part interest. Method and apparatus for dispensing welding flux. 4,242,007, Cl. 406-109.000.

Ogino, Takashi: *See—*
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, 4,242,510, Cl. 544-27.000.

Ogle, Peter C.: *See—*
Ferris, Donald L.; and Ogle, Peter C., 4,242,047, Cl. 416-134.00A.

Ogura, Katsuyuki: *See—*
Tsuchihashi, Genichi; Ogura, Katsuyuki; and Mitamura, Shuichi, 4,242,519, Cl. 560-15.000.
Tsuchihashi, Genichi; Ogura, Katsuyuki; Sakoda, Ryozo; Hashiba, Isao; and Fukushima, Shuichi, 4,242,522, Cl. 560-47.000.

Ohba, Kazunori; Shomura, Takashi; Kojima, Michio; Omoto, Shoji; Tsuruoka, Takashi; and Inoue, Shigeharu, to Meiji Seika Kaisha, Ltd. Antibiotic SF-2052 substance and production and use thereof. 4,242,327, Cl. 424-116.000.

Ohba, Shozo: *See—*
Honda, Yoshihiko; Koutake, Masanobu; Kanazawa, Hidege; Iwasaki, Taisuke; Ohba, Shozo; Hashiba, Honoh; and Kawanishi, Gosei, 4,242,450, Cl. 435-69.000.

Ohgushi, Masuhito: *See—*
Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; and Kitahara, Tohru, 4,242,272, Cl. 556-489.000.

Ohio State University Research Foundation, The: *See—*
Gilson, Richard D.; Thurston, Marlin O.; Olson, Karl W.; and Ventola, Ronald W., 4,241,519, Cl. 434-43.000.

Ohsaka, Yohnosuke, to Daikin Kogyo Co., Ltd. Process for preparing benzotrifluoride and its derivatives. 4,242,286, Cl. 570-145.000.

Ohta, Masafumi: *See—*
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Kozima, Akio, 4,242,260, Cl. 260-160.000.

Ohta, Wasaburo: *See—*
Hirakura, Koji; Ikeda, Itsuo; Ohta, Wasaburo; and Okuno, Zenjiro, 4,242,434, Cl. 430-122.000.

Oka, Takashi: *See—*
Mizote, Masanori; Yamaki, Kiyoshi; and Oka, Takashi, 4,242,731, Cl. 364-436.000.

Oka, Yoshihiko: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.

Okamoto, Michio: *See—*
Minami, Isao, 4,242,009, Cl. 405-93.000.

Okamura, Kiyohito: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,242,487, Cl. 528-25.000.

Okano, Teruo: *See—*
Shinohara, Isao; Okano, Teruo; and Ikemi, Masahisa, 4,242,474, Cl. 525-404.000.

Okegawa, Osamu: *See—*
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Okuda, Genzaburo. Quick acting hydraulic lifting jack. 4,241,900, Cl. 254-8.00B.

Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Compact wide angle zoom lens. 4,241,981, Cl. 350-184.000.

Okumura, Toshiaki: *See—*
Tsuchiya, Shiro; Imakita, Itsuo; and Okumura, Toshiaki, 4,242,073, Cl. 425-149.000.

Okuno, Zenjiro: *See—*
Hirakura, Koji; Ikeda, Itsuo; Ohta, Wasaburo; and Okuno, Zenjiro, 4,242,434, Cl. 430-122.000.

Okuyama, Teiji, to Aisin Seiki Kabushiki Kaisha. Seat suspension apparatus. 4,241,894, Cl. 248-576.000.

Olin Corporation: *See—*
Ford, James M., 4,242,184, Cl. 204-98.000.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., 4,242,131, Cl. 75-157.500.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., 4,242,132, Cl. 75-157.500.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., 4,242,133, Cl. 75-157.500.

Olin, John F.: *See—*
Hamm, Philip C.; and Olin, John F., 4,242,122, Cl. 71-100.000.

Oliveira, Robert J.; and Silver, Spencer F., to Minnesota Mining and Manufacturing Company. Immunoassay for antigens. 4,242,096, Cl. 23-230.00B.

Oliver, Leland W.; Moore, John R.; Willcox, Peter S.; von Harz, James L.; and Trivison, Robert J., to International Telephone and Telegraph Corporation. Contact retention clip and method of inserting same in an insulator. 4,241,976, Cl. 339-278.00D.

Ollivier, Christian: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,242,203, Cl. 210-321.100.

Olson, Daniel R.: *See—*
Goossens, John C.; and Olson, Daniel R., 4,242,381, Cl. 427-387.000.
Goossens, John C.; and Olson, Daniel R., 4,242,383, Cl. 427-387.000.

Olson, Elvin G., to Boeing Company, The. Adhesive dispersing anvil and method of using. 4,242,158, Cl. 156-92.000.

Olson, Karl W.: *See—*
Gilson, Richard D.; Thurston, Marlin O.; Olson, Karl W.; and Ventola, Ronald W., 4,241,519, Cl. 434-43.000.

Olympus Optical Co., Ltd.: *See—*
Ando, Otaro, 4,242,541, Cl. 179-110.00A.
Tsuboshima, Kosaku; Takayama, Shuichi; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,242,703, Cl. 358-150.000.

Omoto, Shoji: *See—*
Ohba, Kazunori; Shomura, Takashi; Kojima, Michio; Omoto, Shoji; Tsuruoka, Takashi; and Inoue, Shigeharu, 4,242,327, Cl. 424-116.000.

Omron Tateisi Electronics Co.: *See—*
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Omura. Satoshi: *See—*
Sakakibara, Hideo; Okegawa, Osamu; Watanabe, Toshiyuki; Fujiwara, Tatsuro; Watanabe, Susumu; Omura, Satoshi; and Matsuda, Tetsuo, 4,242,504, Cl. 536-17.00R.

Ondetti, Miguel A.: *See—*
Wade, Peter C.; and Ondetti, Miguel A., 4,242,265, Cl. 260-326.12R.

O'Neill, Sean P., to Electro-Nucleonics Laboratories, Inc. Methods and materials for detecting antigens and antibodies. 4,242,322, Cl. 424-1.000.

Onuma, Nobuo: *See—*
Suzuki, Masayuki; Onuma, Nobuo; Ishizuka, Fumihiko; Hara, Shinichi; Osawa, Akira; and Fukuzawa, Akira, 4,242,177, Cl. 162-17.000.

Oppenlaender, Knut: *See—*
Vogel, Hans-Henning; Oppenlaender, Knut; and Starke, Klaus, 4,242,101, Cl. 44-58.000.

Orchard, Paul D. Cow-restraining device. 4,241,699, Cl. 119-14.030.

Orillo, Stephen, Jr.: *See—*
Wilger, John F.; Nakano, Gregory S.; Uyetake, Tadao; Orillo, Stephen, Jr.; and Higa, Teikichi, 4,241,623, Cl. 74-765.000.

Orion Industries, Inc.: *See—*
Ibaraki, Howard, 4,241,851, Cl. 222-83.500.

Orr, Vernon E.: *See—*
Whiteman, Paul L.; and Orr, Vernon E., 4,242,032, Cl. 414-537.000.

Osawa, Akira: *See—*
Suzuki, Masayuki; Onuma, Nobuo; Ishizuka, Fumihiko; Hara, Shinichi; Osawa, Akira; and Fukuzawa, Akira, 4,242,177, Cl. 162-17.000.

Oshima, Yoshimasa: *See—*
Kuni, Asahiro; Akiyama, Nobuyuki; and Oshima, Yoshimasa, 4,242,702, Cl. 358-106.000.

Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, to Yamanouchi Pharmaceutical Co., Ltd. 7-Methoxy cephalosporins and process of producing them. 4,242,449, Cl. 435-48.000.

Ostergren, William F., to Sperry Corporation. Drive system for a manure spreader. 4,241,879, Cl. 239-677.000.

Ostrofsky, Bernard: *See—*
Bergman, Jack N.; and Ostrofsky, Bernard, 4,241,609, Cl. 73-623.000.

Ottenstein, Allan S.: *See—*
Callahan, John A.; and Ottenstein, Allan S., 4,242,575, Cl. 235-92.0FL.

Otterson, Lewis L., to Weatherchem Corporation. Child-resistant fluid top. 4,241,856, Cl. 222-539.000.

Ouchi, Hirobumi; and Mukai, Toji, to Hitachi, Ltd. Low dark current photo-semiconductor device. 4,242,695, Cl. 357-30.000.

Oudet, Claude; and Guerin, Yves, to Portescap. Miniature electric stepping motor. 4,242,623, Cl. 318-696.000.

Outboard Marine Corporation: *See—*
DuBois, Edmund H.; Erlandson, Robert K.; and Miller, Allan F., 4,241,687, Cl. 440-63.000.

Outokumpu Oy: *See—*
Makipirtti, Simo A. I., 4,242,124, Cl. 75-6.000.

Owens-Illinois, Inc.: *See—*
Gagnon, Donald W.; and Tillman, James J., 4,242,250, Cl. 260-33.4SB.
Newing, Charles W., 4,242,252, Cl. 260-33.4SB.
Snow, Thomas G., 4,241,627, Cl. 81-3.46R.

Oya, Masao: *See—*
Suzuki, Akira; Ishida, Akira; and Oya, Masao, 4,242,484, Cl. 526-273.000.

Pailer, Mathias; and Wagner, Roland, to Rowa Limited. Choleretic pharmaceutical compositions and method of treatment. 4,242,360, Cl. 424-343.000.

Pako Corporation: *See—*
Lee, Conrad E., 4,241,911, Cl. 271-314.000.

Palanisamy, Thirumalai G.: *See—*
Fritts, David H.; Leonard, John F.; and Palanisamy, Thirumalai G., 4,242,179, Cl. 204-2.100.

Paliv AG: *See—*
Friz, Helmut A., 4,241,697, Cl. 118-713.000.

Pallay, Istvan: *See—*
Laky, Janos; Csikos, Rezso; Peterfy, Lajos; Szvetelszky, Lajos; and Pallay, Istvan, 4,242,526, Cl. 568-697.000.

Palm, Robert J. No-tie sports goals. 4,241,916, Cl. 273-1.50R.

Palmer, Keith W.: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,242,233, Cl. 252-431.00N.

Pannell, Otis R. Method and system for two-queen operation and requeening of honey bee colonies. 4,241,467, Cl. 6-1.000.

Panol, Georg: *See—*
Chick, William L.; Galletti, Pierre M.; Richardson, Peter D.; and Panol, Georg, 4,242,459, Cl. 435-283.000.
Chick, William L.; Galletti, Pierre M.; Richardson, Peter D.; and Panol, Georg, 4,242,460, Cl. 435-284.000.

Pareja, Ramon, to Lear Siegler, Inc. Dual piston pump with pressure seal lubrication feature. 4,242,062, Cl. 417-536.000.

Pareja, Ramon, to Lear Siegler, Inc. High pressure multi-cylinder pump. 4,242,063, Cl. 417-571.000.

Parker, Donnie G.; and Milligan, James D., to Tri-Pak, Inc. Motor fuel composition. 4,242,100, Cl. 44-53.000.

Parker, Lawrence J., to Shelter Insulation, Inc. Process for crimping a non-woven mat and foam structure produced therewith. 4,242,409, Cl. 428-297.000.

Parker, Louis W.: *See—*
Hedges, Rhey W., 4,242,625, Cl. 318-729.000.

Parker, Michael S. Rockable furniture. 4,241,949, Cl. 297-3.000.

Parking Control Systems: *See—*
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Parrish, John F., to Shell Oil Company. Floating shunt seismic amplifier. 4,242,741, Cl. 367-21.000.

Parsons, Ralph L., Jr. Boom mower mounting frame for over center transport. 4,241,565, Cl. 56-10.700.

Parsons; Ronald; and Slattery, Ian, to Spencer Wright Industries, Inc. Tufting machine looper with clip. 4,241,676, Cl. 112-79.00A.

Partenheimer, Walter, to Standard Oil Company (Indiana). Removal of dissolved copper from aqueous solution also containing dissolved cobalt or manganese. 4,242,128, Cl. 75-109.000.

Passarotti, Carlo: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,242,508, Cl. 542-430.000.

Pasternak, Stephen F.: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 4,241,785, Cl. 165-172.000.

Patel, Chandra K. N.: *See—*
Dayem, Aly H.; Geballe, Theodore H.; Patel, Chandra K. N.; and Tien, Ping K., 4,242,419, Cl. 428-661.000.

Patel, Chimanbhai M.; and Magyar, Joseph J., to General Motors Corporation. Winding prevention belt retractor for passive shoulder belt system. 4,241,938, Cl. 280-803.000.

Patel, Gordhanbhai N.: *See—*
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,242,440, Cl. 430-346.000.

Paul Revere Corporation: *See—*
Baldauf, Dale, 4,241,577, Cl. 60-420.000.

Pauley, James H. Universal arm support. 4,241,731, Cl. 128-94.000.

Pauliukonis, Richard S. Electro-thermal linear pull actuator. 4,242,571, Cl. 219-513.000.

Pauls, James D.; Hammett, Roy; and Blake, William S., to James D. Pauls and J. Claybrook Lewis and Associates, Limited. Dispenser for either continuous or intermittent discharge. 4,241,853, Cl. 222-207.000.

Paxson Machine Company: *See—*
Buta, John R.; Gehring, John H.; and Drotleff, Thomas J., 4,242,024, Cl. 414-43.000.

Payne, Thomas R.: *See—*
Hurko, Bohdan; and Payne, Thomas R., 4,242,554, Cl. 219-10.55B.

Pearson, Raymond E., to Boeing Company, The. Aerial delivery system. 4,241,890, Cl. 244-137.00R.

Pease Company: *See—*
Bursk, William M., 4,241,556, Cl. 52-455.000.

Peck, Clifton S., to Chrysler Corporation. Wheel bearing slinger ring. 4,241,957, Cl. 308-36.400.

Pedain, Josef: *See—*
Konig, Eberhard; Schonfelder, Manfred; and Pedain, Josef, 4,242,410, Cl. 428-315.000.

Pedersen, George H., to General Motors Corporation. Variable area exhaust nozzle. 4,241,876, Cl. 239-265.270.

Peel, John L., to Rockwell International Corporation. Method of fabricating an SOS island edge passivation structure. 4,242,156, Cl. 148-175.000.

Peeples, Denny L., to General Motors Corporation. Hydraulic ratio changing booster with self-venting chamber. 4,241,642, Cl. 91-391.00R.

Peerless of America, Inc.: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 4,241,785, Cl. 165-172.000.

Pell, Terrell G. Golf tube separator insert. 4,241,774, Cl. 150-1.50R.

Pellon, Joseph J.; and Savoy, Paul D., to American Cyanamid Company. Process for water-in-oil emulsions of water-soluble polymers. 4,242,247, Cl. 260-29.6WQ.

Penarowski, Arthur: *See—*
McKenna, Phillip; and Penarowski, Arthur, 4,241,807, Cl. 182-121.000.

Pennington, Fred A., Jr.: *See—*
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Pennington, Fred A., Sr.; Pennington, Fred A., Jr.; and Porr, John W., Jr., to Andrew S. McCreath & Son, Inc. Pre-set automatically operable means for measuring the plasticity of test specimens including apparatus for indicating and recording the results thereof. 4,241,601, Cl. 73-17.00R.

Pennsylvania Engineering Corporation: *See—*
Fisher, Howard M.; and Nagati, Rashed N., 4,241,902, Cl. 266-44.000.

Perazzo, Luis R. C. Sheet of polishing fibers comprising fibrous layers bonded with particles of thermoplastic material. 4,241,469, Cl. 15-209.00C.

Perchenok, Mark B.: *See—*
Burenkov, Nikolai A.; Derevyanchenko, Mikhail G.; Ioganson, Rikhard A.; Kuprianov, Alexandr V.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I., 4,242,609, Cl. 310-105.000.

Peresedov, Vyacheslav V.: *See—*
Kandel, Eduard I.; and Peresedov, Vyacheslav V., 4,241,734, Cl. 128-325.000.

Perethian, Charles; and Vetter, Craig W., to Vetter Corporation. Saddle bag. 4,241,857, Cl. 224-32.00A.

Perkins, Jean K. Fluid temperature mixing indicator. 4,241,868, Cl. 236-12.00A.

Perna, Jay: *See—*
Krolak, Ronald F.; Perna, Jay; and Radloff, Frederick J., 4,242,721, Cl. 361-415.000.

Perotto, Jean-Felix: *See—*
Piguet, Christian; and Perotto, Jean-Felix, 4,242,676, Cl. 340-711.000.

Perrone, Michael A. Foot care instrument. 4,241,499, Cl. 30-27.000.

Perry, Gordon R.: *See—*
Schnabel, Peter W.; Chernack, Milton P.; Wilkes, Lawrence T.; and Perry, Gordon R., 4,241,743, Cl. 132-88.700.

Personnat, Patrice. Combination hand-tool. 4,241,773, Cl. 145-63.000.

Persson, Sven J. Apparatus for conveying granular material. 4,242,015, Cl. 406-82.000.

Peterfy, Lajos: *See—*
Laky, Janos; Csikos, Rezso; Peterfy, Lajos; Szvetelszky, Lajos; and Pallay, Istvan, 4,242,526, Cl. 568-697.000.

Peterson, Jeffery A.: *See—*
Van Klompenburg, Marlo G.; Peterson, Jeffery A.; and Nelson, Eric W., 4,241,541, Cl. 49-249.000.

Peterson, Wesley R.; and Lang, Douglas C., to Singer Company, The. Two level sewing machine cabinet. 4,241,961, Cl. 312-22.000.

Peterson, William A., Jr.; and Marchak, Roman O., to Bendix Corporation, The. Closed loop system. 4,241,710, Cl. 123-440.000.

Petri, Norbert: *See—*
Diem, Hans; Dudeck, Christian; Lehmann, Gunter; Matthias, Guenther; and Petri, Norbert, 4,242,282, Cl. 568-471.000.

Petursson, Sigurdur G. Pressure compensating valve. 4,241,749, Cl. 137-100.000.

Peuler, Jacob D.: *See—*
Johnson, Garland A.; and Peuler, Jacob D., 4,242,222, Cl. 252-301.170.
Johnson, Garland A.; and Peuler, Jacob D., 4,242,456, Cl. 435-193.000.

Philibert, Daniel: *See—*
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Phillips Petroleum Company: *See—*
Allison, George M., III, 4,242,245, Cl. 260-27.0BB.
Carter, Cecil O., 4,242,531, Cl. 585-512.000.
Ford, Gregory A., 4,242,207, Cl. 210-500.100.
Stapp, Paul R., 4,242,228, Cl. 252-429.00R.
Welch, M. Bruce, 4,242,480, Cl. 526-125.000.
Young, Jerry W., 4,241,848, Cl. 221-222.000.

Pichl, Heinz; and Kossek, Gunther, to AB Volvo Penta. Balance wheel. 4,241,620, Cl. 74-573.00R.

Piedmont Industries, Inc.: *See—*
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Pierdet, Andre: *See—*
Azadian, Genevieve; Philibert, Daniel; and Pierdet, Andre, 4,242,335, Cl. 424-243.000.

Piguet, Christian; and Perotto, Jean-Felix, to Centre Electronique Horloger SA. Interactive device for data input into an instrument of small dimensions. 4,242,676, Cl. 340-711.000.

Pilling, James T., to Kaiser Steel Corporation. Preheat and cleaning system. 4,242,154, Cl. 148-16.700.

Pillsbury Company, The: *See—*
Morgan, Jay E.; DelVecchio, Anthony J.; Brooking, Betty L.; and Laverty, David M., 4,242,366, Cl. 426-554.000.

Pinter, Warren H.; and Smith, Dale E., to United Technologies Corporation. Method of winding a wind turbine blade using a filament reinforced mandrel. 4,242,160, Cl. 156-175.000.

Pinto, Alwyn, to Imperial Chemical Industries Limited. Ammonia synthesis process. 4,242,317, Cl. 423-359.000.

Piteau, Marc D.: *See—*
Lecolier, Serge L.; Malfroot, Thierry A.; Piteau, Marc D.; and Senet, Jean-Pierre G., 4,242,280, Cl. 260-431.000.

Pitney Bowes Inc.: *See—*
Scribner, Albert W., 4,242,566, Cl. 219-216.000.

Plevak, Lubomir; and Dodt, Jurgen, to Gewerkschaft Eisenhutte Westfalia. Pivot joint for underground mining installations. 4,242,014, Cl. 405-300.000.

Plows, Graham S. Transponders. 4,242,671, Cl. 340-572.000.

Podolan, Edward G.; and Przybysz, Francis C., to General Motors Corporation. Vehicle door window assembly. 4,241,542, Cl. 49-352.000.

Pohlmann, Erich: *See—*
Eschner, Axel; and Pohlmann, Erich, 4,241,781, Cl. 165-1.000.

Polaroid Corporation: *See—*
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,242,424, Cl. 429-152.000.

Polheimer, Lars: *See—*
Marcusson, Lage; and Polheimer, Lars, 4,241,666, Cl. 105-59.000.

Polychrome Corporation: *See—*
Huang, Jen-chi, 4,242,417, Cl. 428-457.000.

Polysar Limited: *See—*
Koski, Ahti A.; and Davidson, Melvin J. G., 4,242,477, Cl. 526-84.000.
Lasis, Evalds, 4,242,478, Cl. 526-93.000.

Popescu, Francine. Bright tin electroplating bath. 4,242,182, Cl. 204-54.00R.

Popovici, Neculai; Dochia, Mihail; Dumitrescu, Mihai; Spirea, Iosif; and Samoil, Iacob. Controllable reaction medium single reactor for phosphoric acid production. 4,242,308, Cl. 422-195.000.

Poritz, Nathan. Perpetual calendar. 4,241,526, Cl. 40-110.000.

Porr, John W., Jr.: *See—*
Pennington, Fred A., Sr.; Pennington, Fred A., Jr.; and Porr, John W., Jr., 4,241,601, Cl. 73-17.00R.

Porter, Robert E. Tubular work feeder for sewing machine. 4,241,681, Cl. 112-322.000.

Portescap: *See—*
Oudet, Claude; and Guerin, Yves, 4,242,623, Cl. 318-696.000.

Poryair Limited: *See—*
Boutle, David L., 4,242,464, Cl. 521-61.000.

Possati, Mario, to Finike Italiana Marposs, S.p.A. Modular electronic apparatus for processing a plurality of measurement signals. 4,241,509, Cl. 33-174.0PA.

Pouey, Michel, to Agence Nationale de Valorisation de la Recherche (ANVAR). Monochromators. 4,241,999, Cl. 356-331.000.

Poulsen, Peder U. Windmill. 4,242,043, Cl. 416-11.000.

Powell, James E., to Shell Oil Company. Cyclopropanecarboxylate pesticides. 4,242,521, Cl. 560-35.000.

Powers, James C.: *See—*
Moran, Thomas F.; Powers, James C.; and Lively, Mark O., III, 4,242,186, Cl. 204-157.10H.

PPG Industries, Inc.: *See—*
El Bouhnini, Larbi; Fitzpatrick, Thomas J.; Harwick, Donald M.; Hoffman, Robert M.; and Knoll, Wayne M., 4,242,406, Cl. 428-236.000.
Mayer, Thomas A.; and Sickles, James E., 4,241,973, Cl. 339-143.00R.

Prapas, Aristotle G., to Mobil Oil Corporation. UV Light resistant p-methylstyrene/methyl methacrylate copolymer. 4,242,485, Cl. 526-329.200.

Precision Cast Specialties, Inc.: *See—*
Khovaylo, Modest, 4,241,463, Cl. 3-1.913.

Prefco Products, Inc.: *See—*
McCabe, Francis J., 4,241,748, Cl. 137-77.000.

Preload Technology, Inc.: *See—*
Marchaj, Tadeusz J., 4,242,052, Cl. 417-154.000.

Preziosi, Anthony F.: *See—*
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,242,440, Cl. 430-346.000.

Price, Ernest H. Downhole separator for wells. 4,241,787, Cl. 166-105.000.

Price, Ernest J., to E. J. Price (Developments) Limited. Foot pumps. 4,242,060, Cl. 417-464.000.

Primas, Willi: *See—*
August, Peter; and Primas, Willi, 4,242,486, Cl. 528-14.000.

Prince Corporation: *See—*
Marcus, Konrad H., 4,241,870, Cl. 296-37.700.

Pringle, William L., to Friedman, Leonard. Brake shoe assembly, apparatus and method for making same. 4,241,600, Cl. 72-411.000.

Proce, James R.: *See—*
Gidewall, Kenneth L.; and Proce, James R., 4,241,558, Cl. 53-79.000.

Prochazka, Svante: *See—*
Cusano, Dominic A.; Holub, Fred F.; and Prochazka, Svante, 4,242,221, Cl. 252-301.40H.

Produits Chimiques Ugine Kuhlmann: *See—*
Cognion, Jean-Marie; and Kervennal, Jacques, 4,242,235, Cl. 252-455.00R.

Pruchno, Albert A.: *See—*
Handelsman, Steven K.; and Pruchno, Albert A., 4,242,290, Cl. 261-41.00D.

Przybylski, Zdzislaw: *See—*
Edinger, Egon; and Przybylski, Zdzislaw, 4,241,570, Cl. 57-1.0UN.

Przybysz, Francis C.: *See—*
Podolan, Edward G.; and Przybysz, Francis C., 4,241,542, Cl. 49-352.000.

Pullman Incorporated: *See—*
Marulic, Walter J., 4,241,552, Cl. 52-282.000.

Purdue Research Foundation: *See—*
Hem, Stanley L.; and White, Joe L., 4,242,328, Cl. 424-157.000.

Puschel, Walter; Vetter, Hans; and Marx, Paul, to AGFA-Gevaert, A.G. Photographic dye diffusion transfer process. 4,242,435, Cl. 430-242.000.

Puthawala, Anwer: *See—*
Meintker, Manfred; Puthawala, Anwer; Schabert, Hans-Peter; and Strickroth, Erich, 4,242,001, Cl. 366-75.000.

Quarenghi, Rodolfo, to Cir - S.p.A. - Divisione Sasib. Cigarette packing machines. 4,241,564, Cl. 53-575.000.

Quayle, Stephen R. Vest for photographers. 4,241,459, Cl. 2-102.000.

Querry, Merle V.: *See—*
Cano, Francis J.; Kuo, Joseph S. C.; and Querry, Merle V., 4,242,501, Cl. 536-1.000.

Quilico, Carlo A.; and Troya, Paolo M., to FIAT Societa per Azioni. Device for converting sea wave energy into electrical energy. 4,242,593, Cl. 290-53.000.

Quinn, Richard J.: *See—*
Schmitt, Joseph M.; and Quinn, Richard J., 4,242,469, Cl. 525-71.000.

Quiri: *See—*
Hubrecht, Gerard; and Mechain, Gerard, 4,241,816, Cl. 188-298.000.

R.G.B. Laboratories, Inc.: *See—*
Buddemeyer, Bruce D.; Neville, William A.; Taylor, James S.; and Bourne, Richard G., 4,242,364, Cl. 426-98.000.

R & I Patent Corporation: *See—*
Shepard, Francis H., Jr., 4,242,622, Cl. 318-616.000.

Rabo, Jule A.; Elek, Louis F.; and Francis, James N., to Union Carbide Corporation. Cyclic two step process for production of methane from carbon monoxide. 4,242,103, Cl. 48-197.00R.

Radecki, Ronald P. Aid for hanging pictures. 4,241,510, Cl. 33-180.00R.

Radloff, Frederick J.: *See—*
Krolak, Ronald F.; Perna, Jay; and Radloff, Frederick J., 4,242,721, Cl. 361-415.000.

Radva Plastics Corporation: *See—*
Dickens, Luther I.; and Nanny, William C., 4,241,555, Cl. 52-454.000.

Raffel, Jack I.; and Yasaitis, John A., to Massachusetts Institute of Technology. Capacitor memory and methods for reading, writing, and fabricating capacitor memories. 4,242,736, Cl. 365-191.000.

Ragen, Robert A., to Xerox Corporation. Multi-pass matrix printing. 4,242,003, Cl. 400-124.000.

Rajpara, Jagdish: *See—*
Ehrenthal Irving; Shieh, Kenneth K.; Scallet, Barrett L.; and Rajpara, Jagdish, 4,242,451, Cl. 435-94.000.

Ramelow, Hermann: *See—*
Christner, Hans; Roebke, Wolfgang; Ramelow, Hermann; and Dittrich, Ewald, 4,242,223, Cl. 252-313.00R.

Raschack, Manfred: *See—*
Albrecht, Hans P.; von Philipsborn, Gerda; Siebeneick, Hans U.; and Raschack, Manfred, 4,242,332, Cl. 424-182.000.

Rausch, John J.; and Van Thyne, Ray J., to Rausch, John J.; Van Thyne, Ray J.; and Material Sciences Corporation. Selective chromizing in a molten lead medium. 4,242,420, Cl. 428-667.000.

Rawyler-Ehrat, Ernst. Process of combustion. 4,242,076, Cl. 431-4.000.

Ray-Chaudhuri, Dilip K.: *See—*
Stanley, Henry; and Ray-Chaudhuri, Dilip K., 4,242,488, Cl. 428-423.100.

Raychem Corporation: *See—*
Batliwalla, Neville S., 4,242,573, Cl. 219-528.000.

Raytheon Company: *See—*
Cappon, Arthur M.; Collins, John D.; and Sage, Jay P., 4,242,683, Cl. 343-7.700.
Cocca, Theodore F., 4,242,660, Cl. 338-195.000.

RCA Corporation: *See—*
Bloom, Allen; and Bartolini, Alfred, 4,242,689, Cl. 346-135.100.
Carlson, David J.; and Yu, John P., 4,242,655, Cl. 333-183.000.
Dingwall, Andrew G. F., 4,242,738, Cl. 365-189.000.
Jebens, Robert W., 4,242,112, Cl. 55-269.000.
Leidich, Arthur J., 4,242,643, Cl. 330-278.000.
Schroeder, John O., 4,242,644, Cl. 330-297.000.
Weimer, Paul K., 4,242,700, Cl. 358-44.000.

Ream, Gregory L.: *See—*
Dees, Raymond K.; Van Laanen, Peter J.; and Ream, Gregory L., 4,241,608, Cl. 73-606.000.

Recordex Limited: *See—*
Ryan, Keith, 4,241,962, Cl. 312-183.000.

Reed Tool Company: *See—*
Jones, Kenneth W., 4,241,798, Cl. 175-329.000.

Reichert, Rudolf: *See—*
Dienemann, Wolfgang; and Reichert, Rudolf, 4,241,587, Cl. 62-80.000.

Reicherts, James E.; and Veschuroff, William C., to United States Gypsum Company. Mobile home ceiling construction and method for making. 4,241,553, Cl. 52-309.500.

Reid, John: *See—*
Siemsen, Klaus J.; and Reid, John, 4,242,645, Cl. 331-94.50G.

Reiko Co., Ltd.: *See—*
Arai, Yoshiaki, 4,242,378, Cl. 427-264.000.

Reilly, Albert F.: *See—*
Sanok, John L.; and Reilly, Albert F., 4,242,463, Cl. 521-51.000.

Reinardy, Peter: *See—*
Wiedenfeld, Helmut; and Reinardy, Peter, 4,241,480, Cl. 28-213.000.

Reiner, Roland: *See—*
Klimmek, Albrecht; Krieger, Wolfram; and Reiner, Roland, 4,242,159, Cl. 156-155.000.

Reinert, Friedrich, to BASF Aktiengesellschaft. Process of preparing a finishing composition containing aziridine radicals used for reducing the shrinkage and felting of wood. 4,242,210, Cl. 252-8.800.

Reinert, Gerald H. Pilot assembly for hydraulic pumps. 4,241,641, Cl. 91-189.00A.

Reinhardt, Hans; Schmahl, Manfred; and Tritsch, Armin, to Freudenberg, Carl. Noise barrier pad and the method for the production of same. 4,242,391, Cl. 428-76.000.

Reisinger, Konrad: *See—*
Finck, Herbert; and Reisinger, Konrad, 4,242,750, Cl. 371-22.000.

Reliance Telecommunication Electronics Company: *See—*
Kimbrough, Mahlon D., 4,242,542, Cl. 179-170.00R.

Remmert, Patrick A., to Thermo Electric Co., Inc. Thermocouple surface probe. 4,242,148, Cl. 136-221.000.

Remy, David C., to Merck & Co., Inc. Orexigenic use of pyrrolo[2,1-b][3]benzazepines. 4,242,349, Cl. 424-267.000.

Renga, James M., to Dow Chemical Company, The. Novel 2,6-dinitrophenyl selenium compounds and their use as epoxidation catalysts. 4,242,285, Cl. 260-348.310.

Reppel, Heinz: *See—*
Bergmann, Klaus; Schmitz, Friedrich; Kilian, Gottfried; and Reppel, Heinz, 4,242,144, Cl. 106-281.00R.

Republic Packaging Company: *See—*
Hardy, Charles T., 4,241,829, Cl. 206-328.000.

Reschovsky, John M.; and Hunt, Gerald P., to General Electric Company. Range selectable contactless data acquisition system for rotating machinery. 4,242,666, Cl. 340-870.280.

Rettien, Claude: *See—*
Gasc, Jean-Claude; and Rettien, Claude, 4,242,331, Cl. 424-180.000.

Revertex Limited: *See—*
Baack, Michael; Bartkowiak, Artur; and Neuroth, Juergen, 4,242,468, Cl. 521-170.000.

Revillet, Georges: *See—*
Farkas, Rudolf; Moulin, Michel; and Revillet, Georges, 4,241,998, Cl. 356-319.000.

Reynolds, Mark P.: *See—*
Babcock, Bryce W.; Reynolds, Mark P.; and Saluja, Kulbir, 4,241,819, Cl. 192-70.270.

RF Products Corp.: *See—*
Callahan, John A.; and Ottenstein, Allan S., 4,242,575, Cl. 235-92.0FL.

Rheinische Kalksteinwerke GmbH: *See—*
Bergmann, Klaus; Schmitz, Friedrich; Kilian, Gottfried; and Reppel, Heinz, 4,242,144, Cl. 106-281.00R.

Rhodes, Arthur J.; and Rhodes, William J. Bearing assembly for an automatic shaping device. 4,241,771, Cl. 144-145.00A.

Rhodes, William J.: *See—*
Rhodes, Arthur J.; and Rhodes, William J., 4,241,771, Cl. 144-145.00A.

Rhone-Poulenc Industries: *See—*
Cerny, Jacqueline; and Vivant, Gilbert, 4,242,240, Cl. 260-14.000.

Riaz, Mahmoud: *See—*
Mohan, Narendra; and Riaz, Mahmoud, 4,242,628, Cl. 322-35.000.

Ricci, Louis N.: *See—*
Maier, Alfred E.; and Ricci, Louis N., 4,242,577, Cl. 200-153.00G.

Ricciardi, Mario J., to A. B. Dick Company. Duplicating machine with duplexing capability. 4,241,658, Cl. 101-217.000.

Rich, William E., Jr.; Johnson, Edward L.; and Sidebottom, Thomas O., to Dionex Corporation. Method and apparatus for quantitative analysis of weakly ionized anions or cations. 4,242,097, Cl. 23-230.00R.

Richards of Rockford, Inc.: *See—*
Kelley, Richard B., 4,242,199, Cl. 210-758.000.

Richardson, Edwin A.: *See—*
Davies, David R.; and Richardson, Edwin A., 4,241,791, Cl. 166-292.000.

Richardson, Peter D.: *See—*
Chick, William L.; Galletti, Pierre M.; Richardson, Peter D.; and Panol, Georg, 4,242,459, Cl. 435-283.000.
Chick, William L.; Galletti, Pierre M.; Richardson, Peter D.; and Panol, Georg, 4,242,460, Cl. 435-284.000.

Ricoh Company, Ltd.: *See—*
Hirakura, Koji; Ikeda, Itsuo; Ohta, Wasaburo; and Okuno, Zenjiro, 4,242,434, Cl. 430-122.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Kozima, Akio, 4,242,260, Cl. 260-160.000.

Rider, Clarence N., Jr.; and Rudy, William J., Jr., to AMP Incorporated. Electrical connector having improved receptacle terminal. 4,241,970, Cl. 339-99.00R.

Riechers, Daniel: *See—*
Huber, Guntram; Klie, Wolfgang; Fischer, Wolfgang; Riechers, Daniel; and Hutai, Hubert, 4,241,945, Cl. 293-120.000.

Riel, Frank J., to Rohr Industries, Inc. Method of foaming perforate sheet material from wire mesh. 4,242,176, Cl. 156-630.000.

Risch, Alan P.: *See*—
Frost, Albert C.; and Risch, Alan P., 4,242,104, Cl. 48-197.00R.

Rizzo, Joseph F.: *See*—
Gilmer, John L.; and Rizzo, Joseph F., 4,242,636, Cl. 328-63.000.

Robert Bosch GmbH: *See*—
Frister, Manfred, 4,241,959, Cl. 308-187.000.
Ishizuka, Yutaka; and Kobayashi, Shinichi, 4,242,065, Cl. 418-91.000.
Nonnenmann, Wolfgang, 4,242,606, Cl. 310-12.000.

Roberts, Karl H.; Leibowitz, Marvin; and Furgal, Henry P., to Colgate-Palmolive Company. Fabric conditioning. 4,242,377, Cl. 427-242.000.

Robertshaw Controls Company: *See*—
Bauer, Werner R., 4,241,486, Cl. 29-157.10R.
Branson, Charles D.; and Demi, Roy C., 4,242,082, Cl. 431-72.000.
Demi, Roy C., 4,242,083, Cl. 431-72.000.
Frankenberg, Alfred A., 4,241,872, Cl. 236-87.000.

Robertson, Joseph D., to Anaconda Company, The. Fueling unit apparatus. 4,241,770, Cl. 141-198.000.

Robinson, Gene P. Reversible toilet paper holder. 4,241,885, Cl. 242-55.200.

Robinson, James E.: *See*—
McCormack, Kent; Robinson, James E.; Knight, William M., Jr.; and Dudley, Dana, 4,242,706, Cl. 358-213.000.

Robinson, Merritt A.: *See*—
Harrington, Duane E.; and Robinson, Merritt A., 4,242,170, Cl. 156-438.000.

Roch, Gerald V. Milling machine. 4,242,019, Cl. 409-185.000.

Rockwell International Corporation: *See*—
Eshghy, Siavash, 4,241,488, Cl. 29-407.000.
Gehle, Richard W., 4,242,157, Cl. 156-64.000.
Huffman, Charles E.; McGuire, Robert J.; and Welch, Herbert E., 4,242,756, Cl. 455-8.000.
Peel, John L., 4,242,156, Cl. 148-175.000.
Smith, William A., 4,241,783, Cl. 165-48.00R.

Roebke, Wolfgang: *See*—
Christner, Hans; Roebke, Wolfgang; Ramelow, Hermann; and Dittrich, Ewald, 4,242,223, Cl. 252-313.00R.

Roemer, Hans; and Steil, Klaus-Peter, to Siemens Aktiengesellschaft. Method and apparatus for the electro-erosive machining of workpieces with automatic threading of the electrode. 4,242,559, Cl. 219-69.00W.

Rogers, Darrell O.: *See*—
Eggen, Hans C.; Halajian, Eugene M.; Danner, Edward L.; and Rogers, Darrell O., 4,241,937, Cl. 280-777.000.

Rogov, Viktor F.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; Titov, Mikhail Y.; Tereschenko, Lev A.; and Yakovlev, Arian M. Rapid-setting dry packing mix for eliminating bore hole troubles and method of manufacture thereof. 4,242,141, Cl. 106-89.000.

Rohde, Wolfgang, to Bergwerksverband GmbH; and Didier Engineering GmbH. Process and apparatus for drying and preheating of coking coal in a single flight stream tube. 4,241,513, Cl. 34-10.000.

Rohloff, Robert R., to Minnesota Mining and Manufacturing Company. Photosensitized polyamic acids curable by exposure to actinic radiation. 4,242,437, Cl. 430-270.000.

Rohr Industries, Inc.: *See*—
Riel, Frank J., 4,242,176, Cl. 156-630.000.

Rohte, Oskar: *See*—
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,242,345, Cl. 424-253.000.

Ronning, Albert J.; Edwards, William H.; and Johnson, Dee L., to Minnesota Mining and Manufacturing Company. Tape applying device and method. 4,242,162, Cl. 156-212.000.

Rosen, Melvin H., to Ciba-Geigy Corporation. 1-Benzothiepin-4-carboxylic acid derivatives. 4,242,266, Cl. 260-326.340.

Rosen, Murray; Koenig, Alan R.; and Copham, John D., to Celotex Corporation, The. Method for making a slurry containing particulate matter and fibers for a preformed insulation product. 4,242,241, Cl. 260-17.200.

Roser, Siegfried: *See*—
Mayr, Bertold; and Roser, Siegfried, 4,241,707, Cl. 123-90.550.

Ross, Sidney D.; Finkelstein, Manuel; and Dunkl, Franz S., to Sprague Electric Company. Capacitor containing anthranilate electrolyte. 4,242,722, Cl. 361-433.000.

Rosser, Robert W.: *See*—
United States of America, National Aeronautics and Space Administration; Rosser, Robert W.; and Korus, Roger A., 4,242,498, Cl. 528-362.000.

Rossing, Martin A.; and McDonald, Ray S., to Medtronic, Inc. Reset means for programmable digital cardiac pacemaker. 4,241,736, Cl. 128-419.0PG.

Rossmann, Axel: *See*—
Huther, Werner; Schweitzer, Klaus; and Rossmann, Axel, 4,242,294, Cl. 264-62.000.

Rossy, Phillip; and Hoffmann, Werner, to BASF Aktiengesellschaft. Thiophene compounds and their manufacture. 4,242,518, Cl. 549-61.000.

Rothe, Bruce. Collapsible building structure. 4,241,746, Cl. 135-4.00R.

Rothert, Horst: *See*—
Voelskow, Peter; Rothert, Horst; and Schlotterer, Gustav, 4,242,197, Cl. 209-3.000.

Rothschild, Gerald W.: *See*—
Hartmann, William F., 4,241,932, Cl. 280-265.000.

Rotoflow Corporation: *See*—
Swearingen, Judson S., 4,242,040, Cl. 415-113.000.

Rotrekl, Otto: *See*—
Foltyn, Jan; Henzl, Jindrich; Rotrekl, Otto; and Kuda, Vladimir, 4,241,764, Cl. 139-1.00R.

Rottmar, Werner, to Endress u. Hauser GmbH u. Co. Fixing of sonic transducer to a container. 4,242,744, Cl. 367-173.000.

Roussel Uclaf: *See*—
Azadian, Genevieve; Philibert, Daniel; and Pierdet, Andre, 4,242,335, Cl. 424-243.000.
Barnes, Alan C.; and Kennewell, Peter D., 4,242,267, Cl. 260-335.000.
Gasc, Jean-Claude; and Rettien, Claude, 4,242,331, Cl. 424-180.000.
Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, 4,242,355, Cl. 424-275.000.

Rovac Corporation, The: *See*—
Edwards, Thomas C., 4,241,591, Cl. 62-402.000.

Rowa Limited: *See*—
Pailer, Mathias; and Wagner, Roland, 4,242,360, Cl. 424-343.000.

Rowe, Lacy A. Gutter hanger. 4,241,548, Cl. 52-11.000.

Rowe, Neal E.: *See*—
Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., 4,242,718, Cl. 361-341.000.

Rubin, Milton K.: *See*—
Konstandt, Felix, 4,241,682, Cl. 114-67.00R.

Rudenauer, Werner; and Siewert, Ralf, to Diehl GmbH & Co. Electrical projectile detonator. 4,241,662, Cl. 102-210.000.

Rudnick, Leslie R., to Mobil Oil Corporation. Extraction of tar sands or oil shale with organic sulfoxides or sulfones. 4,242,195, Cl. 208-11.0LE.

Rudolph, Dale C., to Unirad Corporation. Overhead arm assembly. 4,241,891, Cl. 248-123.100.

Rudy, William J., Jr.: *See*—
Rider, Clarence N., Jr., and Rudy, William J., Jr., 4,241,970, Cl. 339-99.00R.

Ruehle, William H., to Mobil Oil Corporation. Seismic refraction exploration. 4,242,740, Cl. 367-15.000.

Ruesch, Hans J.: *See*—
Leiber, Wolfgang; and Ruesch, Hans J., 4,241,817, Cl. 192-12.00C.

Ruh, Herbert: *See*—
Ullmann, Werner; Schumacher, Bernd; Ruh, Herbert; and Kilcher, Beat, 4,242,556, Cl. 219-69.00W.

Ruhrchemie Aktiengesellschaft: *See*—
Hibbel, Josef; Kessen, Gunther; and Meis, Josef, 4,242,283, Cl. 568-451.000.

Russell, William K.: *See*—
Mason, William L.; and Russell, William K., 4,242,051, Cl. 417-38.000.

Ryan, John W., to Agrow Plow Pty. Limited. Vibrating device. 4,241,615, Cl. 74-61.000.

Ryan, Keith, to Recordex Limited. Storage apparatus for records and the like. 4,241,962, Cl. 312-183.000.

Ryan, Le Roy J., Jr. Visually descriptive information transmission, storage, and retrieval set. 4,241,994, Cl. 355-77.000.

Ryder, Francis E., to Ryder International Corporation. Contact lens disinfector with temperature indicator. 4,242,304, Cl. 422-119.000.

Ryder, Francis E.: *See*—
Thomas, Michael D.; and Ryder, Francis E., 4,242,572, Cl. 219-521.000.

Ryder International Corporation: *See*—
Ryder, Francis E., 4,242,304, Cl. 422-119.000.
Thomas, Michael D.; and Ryder, Francis E., 4,242,572, Cl. 219-521.000.

Saban, John F., to Western Electric Company, Inc. Boxed metallized film capacitor. 4,242,717, Cl. 361-308.000.

Sachs, Emanual M., to Mobil Tyco Solar Energy Corporation. Apparatus for monitoring crystal growth. 4,242,589, Cl. 250-577.000.

Sack & Kiesselbach Maschinenfabrik GmbH: *See*—
Cremer, Kurt H. L., 4,241,598, Cl. 72-354.000.

Sadler, Martin D.: *See*—
Zwayer, Don L.; and Sadler, Martin D., 4,241,913, Cl. 272-130.000.

Sagami Chemical Research Center: *See*—
Tsuchihashi, Genichi; Ogura, Katsuyuki; and Mitamura, Shuichi, 4,242,519, Cl. 560-15.000.
Tsuchihashi, Genichi; Ogura, Katsuyuki; Sakoda, Ryozo; Hashiba, Isao; and Fukushima, Shuichi, 4,242,522, Cl. 560-47.000.

Sage, Jay P.: *See*—
Cappon, Arthur M.; Collins, John D.; and Sage, Jay P., 4,242,683, Cl. 343-7.700.

Sagou, Masakazu: *See*—
Iwahashi, Shunji; Yamasaki, Masahiro; and Sagou, Masakazu, 4,242,413, Cl. 428-412.000.

Saiki, Noritsugu: *See*—
Segawa, Yasuhiko; and Saiki, Noritsugu, 4,242,398, Cl. 428-172.000.

Saint-Firmin, Annette R. Embryogenesis in vitro, induction of qualitative and quantitative changes in metabolites produced by plants and products thereof. 4,241,536, Cl. 47-58.000.

St. Germain, Dennis, to I & I Sling Company, Inc. Chain saddle assembly. 4,241,575, Cl. 59-93.000.

Saito, Kunio: *See*—
Tsujiyama, Bunjiro; Saito, Kunio; and Kurihara, Kenji, 4,242,662, Cl. 340-146.30H.

Saito, Mitsuo, to Fuji Photo Film Co., Ltd. Method for preparing light-sensitive silver halide grains. 4,242,445, Cl. 430-569.000.

Saito, Takeshi: *See*—
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.

Sakae, Mitsuhisa: *See*—
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Sakai, Kiyoshi: *See*—
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Sakakibara, Hideo; Okegawa, Osamu; Watanabe, Toshiyuki; Fujiwara, Tatsuro; Watanabe, Susumu; Omura, Satoshi; and Matsuda, Tetsuo, to Toyo Jozo Kabushiki Kaisha. 3''-Acylated macrolide antibiotics. 4,242,504, Cl. 536-17.00R.

Sakamoto, Eiichi: *See*—
Habu, Teiji; Ishihara, Masao; Terada, Sadatugu; Sakamoto, Eiichi; and Yamada, Hiroshi, 4,242,444, Cl. 430-510.000.

Sakashita, Kiichiro: *See*—
Yokota, Yoshihisa; Hosokawa, Teruo; and Sakashita, Kiichiro, 4,242,479, Cl. 526-124.000.

Sakiyama, Kazuo: *See*—
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,242,412, Cl. 428-412.000.

Sakoda, Ryozo: *See*—
Tsuchihashi, Genichi; Ogura, Katsuyuki; Sakoda, Ryozo; Hashiba, Isao; and Fukushima, Shuichi, 4,242,522, Cl. 560-47.000.

Sakurai, Hideo: *See*—
Fujii, Masaki; Goto, Shiro; and Sakurai, Hideo, 4,242,229, Cl. 252-429.00B.

Salem, Robert J., to General Electric Company. Intrusion detection method and apparatus. 4,242,743, Cl. 367-93.000.

Salger, Werner, to Lumoprint Zindler KG (GmbH & Co.). Electrostatic developing apparatus including powder propelling means. 4,241,695, Cl. 118-658.000.

Saluja, Kulbir: *See*—
Babcock, Bryce W.; Reynolds, Mark P.; and Saluja, Kulbir, 4,241,819, Cl. 192-70.270.

Salvarezza, Robert M. Rope ladder with molded hard elastomer steps and a method for assembly of the same. 4,241,809, Cl. 182-199.000.

Salvatore, Costanzo. Machine for punching, nibbling, rounding off and cutting any kind of sheets or plates, and for similar operations. 4,241,631, Cl. 83-411.00R.

Samoil, Iacob: *See*—
Popovici, Neculai; Dochia, Mihail; Dumitrescu, Mihai; Spirea, Iosif; and Samoil, Iacob, 4,242,308, Cl. 422-195.000.

Sandoz Ltd.: *See*—
Mauric, Claudine; and Wolf, Rainer, 4,242,138, Cl. 106-18.180.

Sanford, Gary G., to Ball Corporation. Slotted cavity antenna. 4,242,685, Cl. 343-770.000.

Sanguino-Alvarez, Guillermo: *See*—
Matyl, Franz; Klecker, Johann; and Sanguino-Alvarez, Guillermo, 4,241,593, Cl. 64-14.000.

Sanok, John L.; and Reilly, Albert F., to Sheller-Globe Corporation. Color stable integral skin foam. 4,242,463, Cl. 521-51.000.

Sansregret, Joseph L., to Exxon Research & Engineering Co. Process for thin film deposition of metal and mixed metal chalcogenides displaying semi-conductor properties. 4,242,374, Cl. 427-76.000.

Santana, Manuel R.: *See*—
Gagen, Paul F.; and Santana, Manuel R., 4,241,979, Cl. 350-96.230.

Santini, Hugo A. E.; and Wick, David P., to International Business Machines Corporation. Wafer orienting apparatus. 4,242,038, Cl. 414-755.000.

Sargent & Greenleaf, Inc.: *See*—
Miller, Harry C.; and Evans, Walter R., 4,241,594, Cl. 70-38.00A.

Sasaki, Hideki. Dental prosthesis. 4,242,089, Cl. 433-189.000.

Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Kozima, Akio, to Ricoh Company, Ltd. 2-Hydroxy-3-carbonylanilinonaphth-1-yl disazo derivatives and 1-phenyl-3-methyl-5-hydroxypyrazol-4-yl disazo derivatives of 1,4-bis(4-aminostyryl) benzene. 4,242,260, Cl. 260-160.000.

Sasaki, Noriaki: *See*—
Kawaguchi, Takeyuki; Taketani, Yutaka; Minematsu, Hiroyoshi; Sasaki, Noriaki; Hayashi, Yuzuru; and Hara, Shigeyoshi, 4,242,208, Cl. 210-500.200.

Sasaki, Norio: *See*—
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Sasaki, Toshio: *See*—
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.

Sata, Tekeo; Takamura, Masayuki; Yamagishi, Tomoo; Hoshi, Toshiharu; and Iijima, Kenzaburo, to Nippon Gakki Seizo Kabushiki Kaisha. Multilayer magnetic head core. 4,242,711, Cl. 360-126.000.

Sato, Gentaku. Waste disposal method using microwaves. 4,242,220, Cl. 252-301.10W.

Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Kokan Kabushiki Kaisha. Apparatus for electrical discharge machining of cylindrical work. 4,242,557, Cl. 219-69.00E.

Sato, Kunihiko: *See*—
Nonoyama, Takao; and Sato, Kunihiko, 4,241,751, Cl. 137-103.000.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Photomask material. 4,242,438, Cl. 430-278.000.

Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Temperature responsive valve device. 4,241,873, Cl. 236-87.000.

Saunders, Arthur G.: *See*—
Snellman, Donald L.; Lewis, Barry J.; Saunders, Arthur G.; and Hester, Wesley W., 4,242,174, Cl. 156-563.000.

Savoy, Paul D.: *See*—
Pellon, Joseph J.; and Savoy, Paul D., 4,242,247, Cl. 260-29.6WQ.

Scallet, Barrett L.: *See*—
Ehrenthal Irving; Shieh, Kenneth K.; Scallet, Barrett L.; and Rajpara, Jagdish, 4,242,451, Cl. 435-94.000.

Schabert, Hans-Peter: *See*—
Meintker, Manfred; Puthawala, Anwer; Schabert, Hans-Peter; and Strickroth, Erich, 4,242,001, Cl. 366-75.000.

Schal, Wilfried: *See*—
Schindler, Johannes G.; and Schal, Wilfried, 4,242,191, Cl. 204-195.00M.

Schalk, Karl; and Kogler, Georg, to Siemens Aktiengesellschaft. Direct current stepper motor with a permanent magnet rotor and electronic commutation device. 4,242,624, Cl. 318-696.000.

Scheer, Erich, to Kundo - Kieninger & Obergfell. Electric alarm clock. 4,242,748, Cl. 368-244.000.

Scheinost, Kurt: *See*—
Buchreiter, Georg; Kniep, Peter; Scheinost, Kurt; and Vollbrecht, Heinz-Rudiger, 4,242,319, Cl. 423-383.000.

Schellmann, Klaus; and Schulze, Heinz, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Device for adjusting the ignition time in internal combustion engines. 4,241,709, Cl. 123-407.000.

Scherer, Fred F. Sawbuck. 4,241,772, Cl. 269-289.00R.

Schertler, Siegfried, to Vat Aktiengesellschaft fuer Vakuum-Apparate Technik. Pneumatic actuator. 4,241,644, Cl. 91-447.000.

Schick, Ludwig: *See*—
Glaser, Helmut; and Schick, Ludwig, 4,242,638, Cl. 328-144.000.

Schiff, Norman: *See*—
Bourdelle, Peter A.; and Schiff, Norman, 4,241,828, Cl. 206-306.000.

Schilling, Bernd, to Consortium fur Elektrochemische Industrie GmbH. Process for the manufacture of β-isobutyrylaminocrotonic acid amide. 4,242,276, Cl. 564-159.000.

Schilling, Curtis L., Jr.; and Eschbach, C. Scott, to Union Carbide Corporation. Polyurethanes and their preparation. 4,242,466, Cl. 521-112.000.

Schilling, Walter: *See*—
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,242,264, Cl. 260-326.00C.

Schiminski, Herbert: *See*—
Turk, Herbert; and Schiminski, Herbert, 4,241,571, Cl. 57-58.890.
Turk, Herbert; and Schiminski, Herbert, 4,241,574, Cl. 57-200.000.

Schindler, Johannes G.; and Schal, Wilfried, to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG. Ion selective sensor and method of making such sensor. 4,242,191, Cl. 204-195.00M.

Schlecht, Helmut; Weberndoerfer, Volkmar; and Widder, Rudi, to BASF Aktiengesellschaft. Preparation of alkanes substituted by chlorine atoms and/or sulfochloride groups. 4,242,187, Cl. 204-162.0SH.

Schlegel Corporation: *See*—
Yackiw, Charles, 4,242,392, Cl. 428-85.000.

Schlinger, Warren G.; and Slater, William L., to Texaco Inc. Catalyst for conversion of hydrogen and carbon monoxide into C_1–C_4 range hydrocarbons. 4,242,234, Cl. 252-439.000.

Schlotterer, Gustav: *See*—
Voelskow, Peter; Rothert, Horst; and Schlotterer, Gustav, 4,242,197, Cl. 209-3.000.

Schlumberger Technology Corporation: *See*—
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Schmahl, Manfred: *See*—
Reinhardt, Hans; Schmahl, Manfred; and Tritsch, Armin, 4,242,391, Cl. 428-76.000.

Schmelzer Corporation: *See*—
Detweiler, Charles A., 4,241,711, Cl. 123-559.000.

Schmid, Karlheinz, to Gebrueder Heller, Maschinenfabrik GmbH. Milling tool, especially gang cutter. 4,242,020, Cl. 409-234.000.

Schmidt, Jakob E. Brassiere having simulated nipples and attachable-detachable nipple simulators. 4,241,737, Cl. 128-425.000.

Schmidt, Paul: *See*—
Deimel, Gerhard; and Schmidt, Paul, 4,241,560, Cl. 53-373.000.

Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,242,269, Cl. 260-345.100.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,242,281, Cl. 568-458.000.

Schmitt, Gilles M.-J. B.: *See*—
Caruel, Jacques E. J.; Stora, Guy D.; and Schmitt, Gilles M.-J. B., 4,241,586, Cl. 60-738.000.

Schmitt, Joseph M.; and Quinn, Richard J., to CY/RO Industries. Controlling grafted elastomers in blends with resinous copolymers. 4,242,469, Cl. 525-71.000.

Schmitz, Floyd A., to J. I. Case Company. Quick-release coupling. 4,242,034, Cl. 414-686.000.

Schmitz, Friedrich: *See*—
Bergmann, Klaus; Schmitz, Friedrich; Kilian, Gottfried; and Reppel, Heinz, 4,242,144, Cl. 106-281.00R.

Schnabel, Peter W.; Chernack, Milton P.; Wilkes, Lawrence T.; and Perry, Gordon R., to Noxell Corporation. Adjustable wiper container and applicator assembly for cosmetics and the like. 4,241,743, Cl. 132-88.700.

Schneider, Abraham; and Myers, Harry K., Jr., to Sun Oil Company of Pennsylvania. Hydrogenolysis of 2,5-norbornadiene saturated endo-endo hexacyclic dimer. 4,242,529, Cl. 585-353.000.
Schoenfelder, James L. Heat storage system adapted for incongruently melting heat storage materials and congruently melting heat storage materials. 4,241,782, Cl. 165-10.000.
Scholz, Manfred; and Kaiser, Karl, to Hoechst Aktiengesellschaft. Process and apparatus for drying chlorinated polymers. 4,241,514, Cl. 34-17.000.
Schonfelder, Manfred: *See*—
Konig, Eberhard; Schonfelder, Manfred; and Pedain, Josef, 4,242,410, Cl. 428-315.000.
Schoon, David J., to Minnesota Mining and Manufacturing Company. Thermal print head. 4,242,565, Cl. 219-216.000.
Schossow, George W. Heat exchanger. 4,241,874, Cl. 237-55.000.
Schreffler, John R.: *See*—
Cheng, Tai C.; and Schreffler, John R., 4,242,493, Cl. 528-168.000.
Schroder, Georg. Vehicle with transformable loading area. 4,241,947, Cl. 296-10.000.
Schroeder, John O., to RCA Corporation. Pulse modulator for operating a device in the avalanche mode. 4,242,644, Cl. 330-297.000.
Schuder, Maurice E.; and Stafford, Richard W., to Emhart Industries, Inc. Timing mechanism with two separate programs operating separate switch actuators and having an alarm system. 4,242,746, Cl. 368-109.000.
Schulte, Klaus: *See*—
Kreuer, Karl D.; and Schulte, Klaus, 4,242,306, Cl. 422-133.000.
Schulze, Heinz: *See*—
Schellmann, Klaus; and Schulze, Heinz, 4,241,709, Cl. 123-407.000.
Schumacher, Bernd: *See*—
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Schupp, Heribert: *See*—
Link, Heinz; Schupp, Heribert; and Lendla, Heinz, 4,241,762, Cl. 138-105.000.
Schurfeld, Horst, to Gildemeister-Devlieg System-Werkzeuge GmbH. Boring tool. 4,242,018, Cl. 408-182.000.
Schuster, Hans-Joachim: *See*—
Heppner, Klaus-Dieter; and Schuster, Hans-Joachim, 4,242,180, Cl. 204-43.00N.
Schwarz, Frederick M., to United Technologies Corporation. Temperature control of engine case for clearance control. 4,242,042, Cl. 415-116.000.
Schwarz, Hans: *See*—
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Schweiger, Richard G. Cross-linking of cellulose sulfate esters with tetravalent metal ions. 4,242,506, Cl. 536-59.000.
Schweitzer, Hans E., to H. E. Schweitzer AG. Multiple-switch arrangement. 4,242,544, Cl. 200-5.00E.
Schweitzer, Hans E., to H. E. Schweitzer AG. Mechanical switch. 4,242,545, Cl. 200-5.00R.
Schweitzer, Klaus: *See*—
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Schwellinger, Ulrich; and Lenz, Rudiger, to Messerschmitt-Bolkow-Blohm GmbH. Method for increasing the hit probability of jammed missiles and device for carrying out the method. 4,241,889, Cl. 244-3.150.
Scribner, Albert W., to Pitney Bowes Inc. Heat-pressure fusing device. 4,242,566, Cl. 219-216.000.
Sears Manufacturing Co.: *See*—
Koutsky, Louis J.; and Breitmeyer, Alexander M., 4,241,893, Cl. 248-425.000.
Sedgeley, Lawrence R.: *See*—
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Seelbach, Walter C., to Motorola, Inc. Transient array drive for bipolar ROM/PROM. 4,242,605, Cl. 307-270.000.
Seelenbinder, Terry G.: *See*—
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Seely, Donald G.: *See*—
Nelson, Hollis E.; and Seely, Donald G., 4,242,078, Cl. 431-45.000.
Segawa, Yasuhiko; and Saiki, Noritsugu, to Teijin Limited. Fibrous shaped article having non-level surface. 4,242,398, Cl. 428-172.000.
Segerstrom, Lars H., to Imo-Industri Aktiebolag. Hydraulic screw machine with balance plunger. 4,242,067, Cl. 418-203.000.
Segrest, Steven F., to United States of America, Navy. Purge valve for diver's mask. 4,241,898, Cl. 251-321.000.
Seidel, Charles. Method and apparatus for utilizing void spaces in cabinets and the like. 4,241,963, Cl. 312-228.000.
Seim, Ronald: *See*—
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Seipos, Andrew G.: *See*—
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Seismograph Service Corporation: *See*—
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Seki, Junji: *See*—
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Sekine, Matsuo: *See*—
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Irvin, Robert A., 4,242,632, Cl. 324-73.00R.
Senet, Jean-Pierre G.: *See*—
Lecolier, Serge L.; Malfroot, Thierry A.; Piteau, Marc D.; and Senet, Jean-Pierre G., 4,242,280, Cl. 260-431.000.
Seo, Osamu, to Kabushiki Kaisha Komatsu Seisakusho. Blanking machine for blanking holes in sheet of metal. 4,241,632, Cl. 83-560.000.
Sese, Sousuke: *See*—
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Sewell Plastics, Inc.: *See*—
Alberghini, Alfred C., 4,241,839, Cl. 215-100.00R.
Sexton, Joe F., to Texas Instruments Incorporated. Calculator-printer interface with numerical string segmentation. 4,242,735, Cl. 364-900.000.
Shackle, Peter W.: *See*—
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Shah, Naresh R.; Shook, Edgar G.; and Van Cleve, Russell, to Union Carbide Corporation. Polymer/polyol compositions containing vinylidene chloride. 4,242,476, Cl. 526-71.000.
Shannon, Suel G.: *See*—
Defibaugh, George R.; Shannon, Suel G.; and Swengel, Robert C., Jr., 4,242,535, Cl. 174-88.00R.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., to Olin Corporation. Copper base alloy containing manganese and iron. 4,242,131, Cl. 75-157.500.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., to Olin Corporation. Copper base alloy containing manganese and nickle. 4,242,132, Cl. 75-157.500.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., to Olin Corporation. Copper base alloy containing manganese. 4,242,133, Cl. 75-157.500.
Shapkin, Alexandr F.: *See*—
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Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., to Westinghouse Electric Corp. Control center with interfitting dielectric barriers for bus bars. 4,242,718, Cl. 361-341.000.
Sharpe, Robert; and Szelke, Michael. Synthesis of peptide analogues. 4,242,256, Cl. 260-112.50R.
Shaw, Edwin L., to Abex Corporation. Vane pump with bypass for leakage of fluid when bottom of vane is connected to undervane suction port. 4,242,068, Cl. 418-269.000.
Shaw, Julius. Insulating material and process for manufacturing same. 4,242,165, Cl. 156-313.000.
Shell Oil Company: *See*—
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Gergen, William P.; and Davison, Sol, 4,242,470, Cl. 525-92.000.
Parrish, John F., 4,242,741, Cl. 367-21.000.
Powell, James E., 4,242,521, Cl. 560-35.000.
Verbrugge, Pieter A.; and Kramer, Petrus A., 4,242,279, Cl. 568-303.000.
Sheller-Globe Corporation: *See*—
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Shelter Insulation, Inc.: *See*—
Parker, Lawrence J., 4,242,409, Cl. 428-297.000.
Shepard, Francis H., Jr., to R & I Patent Corporation. Stabilized nonlinear servomechanism. 4,242,622, Cl. 318-616.000.
Shepherd, Robert G., to American Cyanamid Company. 4-(Monoalkylamino)benzoic acid amides and imidates. 4,242,273, Cl. 260-453.0RW.
Shevels, Thomas F.: *See*—
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Shibata, Akira, to Chugai Denki Kogyo Kabushiki-Kaisha. Electrical contact materials of internally oxidized Ag-Sn-Bi alloy. 4,242,135, Cl. 75-173.00A.
Shieh, Kenneth K.: *See*—
Ehrenthal Irving; Shieh, Kenneth K.; Scallet, Barrett L.; and Rajpara, Jagdish, 4,242,451, Cl. 435-94.000.
Shields, James J.: *See*—
Yannone, Robert A.; and Shields, James J., 4,242,592, Cl. 290-40.00R.
Shimada, Shinichi; and Makino, Takenori, to Honda Giken Kogyo Kabushiki Kaisha. Valve rotator assembly. 4,241,706, Cl. 123-90.300.
Shimamura, Isao: *See*—
Nakamura, Shigeru; and Shimamura, Isao, 4,242,441, Cl. 430-390.000.
Shimano Industrial Company Limited: *See*—
Nagano, Masashi; and Fujimoto, Hideaki, 4,241,617, Cl. 474-82.000.
Shimauchi, Yoshinori: *See*—
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Shimizu, Mituo; and Miyake, Hidenori, to Kabushiki Kaisha Yamashina Seikosho. Self-extruding fastener. 4,241,638, Cl. 85-46.000.
Shino, Kuninori: *See*—
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Shinohara, Isao; Okano, Teruo; and Ikemi, Masahisa, to Terumo Corporation. Production of a block copolymer containing hydrophilic and hydrophobic blocks. 4,242,474, Cl. 525-404.000.

Shipman, Floyd H.: *See*—
Green, Sidney J.; Shipman, Floyd H.; and Van Kempen, Carl J. H. B., 4,241,796, Cl. 175-24.000.
Shiraishi Central Laboratories Co., Ltd.: *See*—
Aishima, Itsuho; Seki, Junji; Matsumoto, Koichi; Furusawa, Yonemasa; Tsukisaka, Ryogo; and Takahashi, Yuhachi, 4,242,251, Cl. 260-37.00N.
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, to Sumitomo Electric Industries, Ltd. Process for producing optical transmission fiber. 4,242,375, Cl. 427-163.000.
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Shircliffe, Donald F., to VBM Corporation. Vehicle lift assembly and control system therefor. 4,241,901, Cl. 254-89.00H.
Shishido, Toetsu: *See*—
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Shishido, Tsuneo; Eyermann, Philip A.; Vick, William L.; and Cramm, Herman W., to Hughes Aircraft Company. Four port waveguide switch. 4,242,652, Cl. 333-106.000.
Shkhian, Tsolak G.: *See*—
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Shotwell, Allen M. Paint guide. 4,241,693, Cl. 118-504.000.
Showa Yuka Kabushiki Kaisha: *See*—
Yokota, Yoshihisa; Hosokawa, Teruo; and Sakashita, Kiichiro, 4,242,479, Cl. 526-124.000.
Shuey, Kenneth C., to Westinghouse Electric Corp. DC Switching voltage regulator with extended input voltage capability. 4,242,629, Cl. 323-17.000.
Sickles, James E.: *See*—
Mayer, Thomas A.; and Sickles, James E., 4,241,973, Cl. 339-143.00R.
Sidebottom, Thomas O.: *See*—
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Siebeneick, Hans U.: *See*—
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Bergman, Ola, 4,241,802, Cl. 178-3.000.
Edinger, Egon; and Przybylski, Zdzislaw, 4,241,570, Cl. 57-1.0UN.
Finck, Herbert; and Reisinger, Konrad, 4,242,750, Cl. 371-22.000.
Glaser, Helmut; and Schick, Ludwig, 4,242,638, Cl. 328-144.000.
Heppner, Klaus-Dieter; and Schuster, Hans-Joachim, 4,242,180, Cl. 204-43.00N.
Herkert, Hans, 4,242,752, Cl. 371-37.000.
Heyneman, Guido; Vandenbossche, Christiaan; and Thieme, Roland, 4,242,301, Cl. 422-68.000.
Hoffmann, Kurt; and Mauthe, Manfred, 4,242,600, Cl. 307-221.00D.
Knauer, Karl, 4,242,654, Cl. 333-165.000.
Kobale, Manfred; and Wengert, Rolf, 4,242,372, Cl. 427-68.000.
Kunze, Karl, 4,242,558, Cl. 219-69.00W.
Marsing, Helmut, 4,242,534, Cl. 174-15.00S.
Meusburger, Guenther; Knauer, Karl; and Tihanyi, Jenoe, 4,242,603, Cl. 307-238.000.
Roemer, Hans; and Steil, Klaus-Peter, 4,242,559, Cl. 219-69.00W.
Schalk, Karl; and Kogler, Georg, 4,242,624, Cl. 318-696.000.
von Tluck, Wolfgang, 4,242,590, Cl. 250-577.000.
Siemsen, Klaus J.; and Reid, John, to Canadian Patents and Development Limited. Gas laser systems. 4,242,645, Cl. 331-94.50G.
Siewert, Ralf: *See*—
Rudenauer, Werner; and Siewert, Ralf, 4,241,662, Cl. 102-210.000.
SIG Schweizerische Industrie-Gesellschaft: *See*—
Muller, Werner; and Heinzer, Hans, 4,241,563, Cl. 53-511.000.
Silio, Fernando. Process for obtaining a new glucose tolerance factor. 4,242,257, Cl. 260-112.50R.
Silk, John K.; Krieger, Allen S.; and Huang, Eugene W. C., to American Science and Engineering, Inc. X-ray lithography system having collimating optics. 4,242,588, Cl. 250-492.00A.
Silver, Alexander: *See*—
McCarty, Frederick B.; and Silver, Alexander, 4,242,610, Cl. 310-156.000.
Silver, Spencer F.: *See*—
Oliveira, Robert J.; and Silver, Spencer F., 4,242,096, Cl. 23-230.00B.
Silvestri, George J., Jr., to Westinghouse Electric Corp. Rotor cooling for double axial flow turbines. 4,242,041, Cl. 415-115.000.
Simferopolsky Gosudarstvenny Universitet imeni M.V.: *See*—
Manankov, Mikhail K., 4,242,120, Cl. 71-89.000.
Simitomo Chemical Company, Limited: *See*—
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,242,412, Cl. 428-412.000.
Simonsson, Leif R.: *See*—
Claeson, Karl G.; Simonsson, Leif R.; and Arielly, Salo, 4,242,329, Cl. 424-177.000.
Simpson, Douglass E. Folding chair. 4,241,950, Cl. 297-18.000.
Simroth, Donald W.: *See*—
Van Cleve, Russell; Armstrong, George H.; and Simroth, Donald W., 4,242,249, Cl. 260-33.20R.
Sinclair, David P., to Standard Oil Company (Indiana). Sulfamic acid as a catalyst for the polymerization of chlorocyclophosphazenes. 4,242,316, Cl. 423-300.000.
Sindelar, William F.; and Hetmanski, James R., to Black & Decker Inc. Wire stripping machine and method therefor. 4,241,628, Cl. 81-9.510.
Singer Company, The: *See*—
Du Bois, Edward F., 4,241,497, Cl. 29-839.000.
Hunts, Barney D., 4,242,667, Cl. 340-365.00R.
Iannarone, Ronald C., 4,241,472, Cl. 16-115.000.
Johnson, Ralph E., 4,241,679, Cl. 112-255.000.
Peterson, Wesley R.; and Lang, Douglas C., 4,241,961, Cl. 312-22.000.
Tullman, Edward J., 4,241,678, Cl. 112-225.000.
Sink, Jeffrey A. Athletic shoe with flexible sole. 4,241,524, Cl. 36-102.000.
Sipma, Dale M.: *See*—
Forward, Robert L.; and Sipma, Dale M., 4,242,656, Cl. 333-213.000.
SIPRA Patententwicklungs- und Beteiligungsgesellschaft mbH: *See*—
Nurk, Siegfried, 4,241,478, Cl. 26-18.500.
Siren, Matti J. Filter material and a method of manufacturing and using the same. 4,242,226, Cl. 252-422.000.
Skarfelt, Hans T.: *See*—
Hulten, Bengt H.; Skarfelt, Hans T.; and Gjertz, Uno L., 4,242,161, Cl. 156-197.000.
SKF Industrial Trading & Development Co. B.V.: *See*—
Hentschel, Georg, 4,241,960, Cl. 308-237.00R.
Skinner, Harry W. Gasket for sealing a pipe in a porthole. 4,242,164, Cl. 156-304.100.
SKW Trostberg Aktiengesellschaft: *See*—
Buchreiter, Georg; Kniep, Peter; Scheinost, Kurt; and Vollbrecht, Heinz-Rudiger, 4,242,319, Cl. 423-383.000.
Freissmuth, Alfred, 4,242,126, Cl. 75-51.000.
Slaght, William F., to Canada, Her Majesty the Queen in right of. Remotely operated placement equipment. 4,242,036, Cl. 414-737.000.
Slater, William L.: *See*—
Schlinger, Warren G.; and Slater, William L., 4,242,234, Cl. 252-439.000.
Slattery, Ian: *See*—
Parsons, Ronald; and Slattery, Ian, 4,241,676, Cl. 112-79.00A.
Sloan Valve Company: *See*—
Billeter, Henry R., 4,241,759, Cl. 137-636.400.
Sloane, Glenn L. Removably mounted truck binding post. 4,242,021, Cl. 410-96.000.
Slobodin, Leo, to Lockheed Electronics Corporation. Electronic identification system. 4,242,663, Cl. 340-152.00T.
Smedlund, Kurt H. Device for obtaining coordinated movements of operative members incorporated in a machine or a plant. 4,241,652, Cl. 100-49.000.
Smid, Jacob K.; and Aalbers, Johan G., to Chem-y, Fabriek Van Chemische Produkten B.V. Substantially environmental-pollution-free laundry detergent composition. 4,242,215, Cl. 252-100.000.
Smirl, Richard L., to Borg-Warner Corporation. Variable pulley transmission. 4,241,618, Cl. 74-863.000.
Smirlock, Martin E.: *See*—
Smith, Donald A.; and Smirlock, Martin E., 4,241,673, Cl. 110-347.000.
Smith, Andrew L.; and Claes, Paul E., to E M I Limited. Magnetically structured materials. 4,242,400, Cl. 428-201.000.
Smith, Dale E.: *See*—
Pinter, Warren H.; and Smith, Dale E., 4,242,160, Cl. 156-175.000.
Smith, Donald A.; and Smirlock, Martin E., to Combustion Engineering, Inc. Direct ignition of pulverized coal. 4,241,673, Cl. 110-347.000.
Smith, Frederick J., to National Semiconductor Corporation. MOS Input circuit with selectable stabilized trip voltage. 4,242,604, Cl. 307-251.000.
Smith, Gary R., to Smith R. P. M. Corporation. Self-cleaning nozzle for lithographic printing dampeners. 4,241,656, Cl. 101-148.000.
Smith Kline Instruments, Inc.: *See*—
Specht, Donald F.; and Dow, Julian, 4,241,611, Cl. 73-626.000.
Smith, Lawrence A., Jr., to Chemical Research & Licensing Company. Process for separating isobutene from C_4 streams. 4,242,530, Cl. 585-510.000.
Smith R. P. M. Corporation: *See*—
Smith, Gary R., 4,241,656, Cl. 101-148.000.
Smith, Warren F., Jr.: *See*—
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., 4,242,131, Cl. 75-157.500.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., 4,242,132, Cl. 75-157.500.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., 4,242,133, Cl. 75-157.500.
Smith, William A., to Rockwell International Corporation. Heating and cooling system. 4,241,783, Cl. 165-48.00R.
Smith, William V. Photosensitive alarm systems. 4,242,670, Cl. 340-568.000.
SmithKline Corporation: *See*—
DeMarinis, Robert M., 4,242,346, Cl. 424-258.000.
Snamprogetti S.p.A.: *See*—
Bartoli, Francesco; Morisi, Franco; and Zaccardelli, Delio, 4,242,461, Cl. 435-288.000.

Snell, George J., to Lummus Company, The. Production of gasified products from ash containing bitumen produced in coal liquefaction. 4,242,102, Cl. 48-197.00R.

Snellman, Donald L.; Lewis, Barry J.; Saunders, Arthur G.; and Hester, Wesley W. Sheet binding system. 4,242,174, Cl. 156-563.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Honda, Yoshihiko; Koutake, Masanobu; Kanazawa, Hidege; Iwasaki, Taisuke; Ohba, Shozo; Hashiba, Honoh; and Kawanishi, Gosei, 4,242,450, Cl. 435-69.000.

Snow, Thomas G., to Owens-Illinois, Inc. Hand tool for opening ampuls. 4,241,627, Cl. 81-3.46R.

Snyder, Wesley L. Anti-surge liquid transporting apparatus. 4,241,755, Cl. 137-899.000.

Societe Alsacienne de Constructions Mechaniques de Mulhouse: *See—*
Le Chatelier, Jacques, 4,241,572, Cl. 57-58.890.

Societe Anonyme Dite: Compagnie Generale d'Electricite: *See—*
Fally, Jacques, 4,242,307, Cl. 422-194.000.

Societe Anonyme Francaise du Ferodo: *See—*
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Societe de Recherches Industrielles (Sori): *See—*
Majoie, Bernard, 4,242,358, Cl. 424-317.000.

Societe Nationale des Poudres et Explosifs: *See—*
Lecolier, Serge L.; Malfroot, Thierry A.; Piteau, Marc D.; and Senet, Jean-Pierre G., 4,242,280, Cl. 260-431.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
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Sodip SA: *See—*
Amicel, Charles; Biot, Bernard; Butruille, Yves; and Ollivier, Christian, 4,242,203, Cl. 210-321.100.

Solvay & Cie.: *See—*
Brahm, Jacques; and De Rath, Jean-Pierre, 4,242,318, Cl. 423-430.000.

Somerville, Daniel W., to Dennison Manufacturing Company. Variable size character generation using neighborhood-derived shapes. 4,242,678, Cl. 340-728.000.

Sony Corporation: *See—*
Ebihara, Norio, 4,242,705, Cl. 358-167.000.
Hagiwara, Yoshiaki, 4,242,692, Cl. 357-24.000.
Kusaka, Satoshi; and Shino, Kuninori, 4,241,926, Cl. 274-23.00R.
Nakamura, Tadahiko; and Nakano, Kenji, 4,242,619, Cl. 318-314.000.
Yoshida, Susumu; Ishigaki, Yoshio; and Nagai, Tamiji, 4,242,714, Cl. 361-152.000.

Sorenson, Richard W., to Carlingswitch, Inc. Environmentally sealed rocker switch. 4,242,551, Cl. 200-302.000.

Sparks, Moses, Jr.: *See—*
Leib, Ronald J.; and Sparks, Moses, Jr., 4,242,394, Cl. 428-95.000.

Spaulding, Carl P. Programmable limit switch for a movable member, particularly a machine tool slide. 4,242,621, Cl. 318-601.000.

Specht, Donald F.; and Dow, Julian, to Smith Kline Instruments, Inc. Ultrasonic diagnostic transducer assembly and system. 4,241,611, Cl. 73-626.000.

Spector, George: *See—*
Arends, Andrew; Arends, Gary W.; and Spector, George, 4,242,111, Cl. 55-269.000.

Speer, Eugene M. Personal protective device. 4,241,850, Cl. 222-39.000.

Spellman, Michael T.: *See—*
Matucheski, Joseph V.; Yee, Clifford S. L.; Spellman, Michael T.; Hartley, Donald J.; and Barton, William D., 4,242,046, Cl. 416-132.00A.

Spencer Wright Industries, Inc.: *See—*
Bardsley, Harold B., 4,241,675, Cl. 112-79.00A.
Parsons, Ronald; and Slattery, Ian, 4,241,676, Cl. 112-79.00A.

Sperry Corporation: *See—*
Bean, Donald E., 4,242,640, Cl. 328-187.000.
Ostergren, William F., 4,241,879, Cl. 239-677.000.
Webster, E. Graham, 4,241,566, Cl. 56-14.600.

Spevack, Jerome S., to Deuterium Corporation. Apparatus for controlling emissions of hydrogen sulfide from a system utilizing geothermal steam. 4,242,305, Cl. 422-129.000.

Spirea, Iosif: *See—*
Popovici, Neculai; Dochia, Mihail; Dumitrescu, Mihai; Spirea, Iosif; and Samoil, Iacob, 4,242,308, Cl. 422-195.000.

Spoeth, Carl R., Jr., to Dart Industries Inc. Detachable handle assembly. 4,241,946, Cl. 294-31.00R.

Sprague Electric Company: *See—*
Ross, Sidney D.; Finkelstein, Manuel; and Dunkl, Franz S., 4,242,722, Cl. 361-433.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. 2-Oxabicyclooctane derivatives, processes for preparing same and organoleptic uses thereof. 4,242,269, Cl. 260-345.100.

Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Process for preparing 6-hydroxy-2,6-dimethylheptanal and intermediates thereof. 4,242,281, Cl. 568-458.000.

Spyra, Wolfgang: *See—*
Brandis, Helmut; Weigand, Hans H.; and Spyra, Wolfgang, 4,242,130, Cl. 75-126.00C.

Squibbs, John D., to Ford Motor Company. Method of controlling exhaust gas emissions from an electric arc furnace. 4,242,532, Cl. 13-34.000.

Stache, Ulrich; Fritsch, Werner; and Alpermann, Hans G., to Hoechst Aktiengesellschaft. Corticoid 17-(alkyl carbonates) and processes for their preparation. 4,242,334, Cl. 424-243.000.

Staeubli Ltd.: *See—*
Mueller, Otto, 4,241,481, Cl. 28-299.000.

Stafford, Richard W.: *See—*
Schuder, Maurice E.; and Stafford, Richard W., 4,242,746, Cl. 368-109.000.

Stamicarbon, B.V.: *See—*
Bijen, Jan M. J. M., 4,242,407, Cl. 428-247.000.

Stanadyne, Inc.: *See—*
Moen, Alfred M., 4,241,754, Cl. 137-119.000.

Standard Oil Company (Indiana): *See—*
Bergman, Jack N.; and Ostrofsky, Bernard, 4,241,609, Cl. 73-623.000.
Cratin, John R., Jr., 4,241,869, Cl. 236-15.0BR.
Ginsburgh, Irwin, 4,241,952, Cl. 299-2.000.
Hanson, Joseph B., 4,242,212, Cl. 252-51.50R.
Partenheimer, Walter, 4,242,128, Cl. 75-109.000.
Sinclair, David P., 4,242,316, Cl. 423-300.000.

Stanifer, Charles D.: *See—*
Joyner, Taylor B.; Lepie, Albert H.; and Stanifer, Charles D., 4,241,671, Cl. 110-188.000.

Stanley, Henry; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Modified polyurethane adhesive compositions containing a carbamate ester additive useful in laminating substrates. 4,242,488, Cl. 428-423.100.

Stanley Works, The: *See—*
Ambler, E. Curtis, 4,241,634, Cl. 83-763.000.

Stapp, Paul R., to Phillips Petroleum Company. Catalysts for conversion of conjugated diolefins to diacyloxy olefins. 4,242,228, Cl. 252-429.00R.

Starke, Klaus: *See—*
Vogel, Hans-Henning; Oppenlaender, Knut; and Starke, Klaus, 4,242,101, Cl. 44-58.000.

Stauffer Chemical Company: *See—*
Weil, Edward D., 4,242,288, Cl. 260-929.000.

Steadman, Rufus P. Elevated light system. 4,242,726, Cl. 362-418.000.

Stehl, Rudolph H.: *See—*
Nestrick, Terry J.; and Stehl, Rudolph H., 4,242,227, Cl. 252-428.000.

Steil, Klaus-Peter: *See—*
Roemer, Hans; and Steil, Klaus-Peter, 4,242,559, Cl. 219-69.00W.

Steinbach, Joachim: *See—*
Feess, Erich; Birke, Walter; and Steinbach, Joachim, 4,242,091, Cl. 8-444.000.

Steiner, Eginhard: *See—*
Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, 4,242,278, Cl. 568-341.000.

Steiner, Rudolf; and Kaufmann, Raimund. Apparatus for spectroscopic measurement of the velocity of particles in a fluid. 4,242,194, Cl. 204-299.00R.

Stendel, Wilhelm: *See—*
Fuchs, Rainer A.; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,242,357, Cl. 424-282.000.

Stenemann, Heinrich F., to Minnesota Mining and Manufacturing Company. Pavement-marking tape application apparatus. 4,242,173, Cl. 156-523.000.

Stenuick Freres S.A.: *See—*
Stenuick, Pierre, 4,241,800, Cl. 175-400.000.

Stenuick, Pierre, to Stenuick Freres S.A. Cutting tool for a pneumatic hammer. 4,241,800, Cl. 175-400.000.

Stephens, James B.; and Miller, Charles G., to TDV Co. By-pass water softener system and installation. 4,242,201, Cl. 210-240.000.

Sternenberg, James E.; and Broadway, William W., to FMC Corporation. Annular resilient metal valve seat. 4,241,895, Cl. 251-173.000.

Sterr, Gerhard, to Varta Batterie, Aktiengesellschaft. Method for improving wettability of high temperature cell separators. 4,242,427, Cl. 429-247.000.

Stevanovich, Srbo M.: *See—*
Garver, Richard F.; and Stevanovich, Srbo M., 4,242,070, Cl. 425-28.00B.

Stewart, Charles G., to Dunlop Limited. Tire and wheel assemblies. 4,241,776, Cl. 152-381.400.

Stewart, David G.: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,242,233, Cl. 252-431.00N.

Stifelsen Institutet for Mikrovagsteknik Vid Tekniska Hogskolan i Stockholm: *See—*
Henoch, Bengt T.; and Berglind, Eilert, 4,242,661, Cl. 340-23.000.

Stigebrandt, Ake. Apparatus for separation of material suspended in liquids. 4,242,204, Cl. 210-326.000.

Stinton, Frederick M., to Martin Concrete Engineering Company. Concrete railroad tie casting and handling system. 4,242,071, Cl. 425-111.000.

Stirling, Irene, to Beecham Group Limited. 9-Nitromethyldeoxyclavulanic acid derivatives preparation and compositions. 4,242,262, Cl. 260-245.300.

Stoelting, Inc.: *See—*
Martineau, Tom N., 4,241,590, Cl. 62-343.000.

Stone, Richard H., to National Semiconductor Corporation. Method for adjusting the focus and power of a trimming laser. 4,242,152, Cl. 148-9.500.

Stone, Wilfred S. Disposable floating flashlight. 4,242,724, Cl. 362-158.000.

Stora, Guy D.: *See—*
Caruel, Jacques E. J.; Stora, Guy D.; and Schmitt, Gilles M.-J. B., 4,241,586, Cl. 60-738.000.

Storni, Angelo: *See—*
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,242,264, Cl. 260-326.00C.

Stratmann, Josef; and Brinkmann, Willi, to Carl Still, Firma. Apparatus for charging coke oven furnaces of a coke oven battery. 4,242,027, Cl. 414-148.000.

Stricker, Klaus F. Strip media drive system. 4,242,709, Cl. 360-96.400.

Strickroth, Erich: *See—*
Meintker, Manfred; Puthawala, Anwer; Schabert, Hans-Peter; and Strickroth, Erich, 4,242,001, Cl. 366-75.000.

Stringer, Frederick D.: *See—*
Dacey, Raymond B.; and Stringer, Frederick D., 4,242,297, Cl. 264-230.000.

Strojny, Werner, to August Ruggeberg, Firma. Edge sharpener. 4,241,624, Cl. 76-83.000.

Studt, William L.: *See—*
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,337, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,338, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,339, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,340, Cl. 424-248.540.

Sugano, Kenji: *See—*
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Sugawara, Yutaka; Yamamoto, Akihiro; Handa, Mitsuaki; Usami, Hiroko; and Ogawa, Haruki, to Chugai Seiyaku Kabushiki Kaisha. Anti-tumor substance and process for preparing the same. 4,242,326, Cl. 424-116.000.

Suggitt, Robert M.: *See—*
Child, Edward T.; and Suggitt, Robert M., 4,242,458, Cl. 435-247.000.

Sugimoto, Tadahiro. Hydraulic system for controlling saw-frame cutting feed speed in a sawing machine. 4,241,635, Cl. 83-800.000.

Sugiyama, Makoto, to Kaijirushi Hamono Center. Pair of scissors. 4,241,503, Cl. 30-268.000.

Sugiyama, Toshio: *See—*
Ishigaki, Yasuhiro; and Sugiyama, Toshio, 4,242,608, Cl. 310-68.00R.

Sugiyama, Toshitomo: *See—*
Morito, Nobuyuki; Sugiyama, Toshitomo; Yokoyama, Yasuo; and Ichida, Toshio, 4,242,155, Cl. 148-113.000.

Sumatokhin, Vitold A.: *See—*
Batjukov, Vladimir I.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Shkhian, Tsolak G.; and Sumatokhin, Vitold A., 4,242,178, Cl. 176-30.000.

Sumikin Coke Co., Ltd: *See—*
Aiba, Takaaki; Takahashi, Ryoichi; Hosoi, Takuji; and Konno, Tutomu, 4,242,196, Cl. 208-40.000.

Sumitomo Chemical Company, Limited: *See—*
Iwahashi, Shunji; Yamasaki, Masahiro; and Sagou, Masakazu, 4,242,413, Cl. 428-412.000.

Sumitomo Electric Industries, Ltd.: *See—*
Shiraishi, Satoshi; Fujiwara, Kunio; and Kurosaki, Shiro, 4,242,375, Cl. 427-163.000.

Sumitomo Metal Industries, Ltd.: *See—*
Aiba, Takaaki; Takahashi, Ryoichi; Hosoi, Takuji; and Konno, Tutomu, 4,242,196, Cl. 208-40.000.

Sumner, John S. Domical structure composed of symmetric, curved triangular faces. 4,241,550, Cl. 52-81.000.

Sun Chemical Corporation: *See—*
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Sun Oil Company of Pennsylvania: *See—*
Schneider, Abraham; and Myers, Harry K., Jr., 4,242,529, Cl. 585-353.000.

Sunahara, Kazuo: *See—*
Watanabe, Kiyoshi; Sunahara, Kazuo; and Fujita, Tsutomu, 4,242,373, Cl. 427-74.000.

Suominen, Heikki S. Bag support and dispensing apparatus. 4,241,561, Cl. 53-390.000.

Susaki, Kiyoshi: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.

Suverkrop, Don. Convertible articulated crane. 4,241,837, Cl. 212-177.000.

Suykens, Matthieu: *See—*
Vaughan, Warren R.; and Suykens, Matthieu, 4,242,026, Cl. 414-145.000.

Suzuki, Akira; Ishida, Akira; and Oya, Masao, to Nippon Zeon Co., Ltd.; and Kanto Denka Kogyo Co., Ltd. Vinylidene chloride copolymer as a material for production of packaging articles. 4,242,484, Cl. 526-273.000.

Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,241,939, Cl. 280-804.000.

Suzuki, Ichiro; Ogawa, Hisashi; and Motonami, Masanao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seatbelt system. 4,241,940, Cl. 280-804.000.

Suzuki, Masayuki; Onuma, Nobuo; Ishizuka, Fumihiko; Hara, Shinichi; Osawa, Akira; and Fukuzawa, Akira, to Mitsubishi Paper Mills, Ltd.; and Mitsubishi Heavy Industries, Ltd. Method for oxidizing malodorous sulfur compounds in kraft cooking liquor. 4,242,177, Cl. 162-17.000.

Suzuki, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Charge transfer image sensor with antiblooming and exposure control. 4,242,599, Cl. 307-311.000.

Suzuki, Yoshiaki: *See—*
Hara, Hiroshi; and Suzuki, Yoshiaki, 4,242,429, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,242,430, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,242,431, Cl. 430-17.000.

Swearingen, Judson S., to Rotoflow Corporation. Thrust adjusting means for nozzle clamp ring. 4,242,040, Cl. 415-113.000.

Swengel, Robert C., Jr.: *See—*
Defibaugh, George R.; Shannon, Suel G.; and Swengel, Robert C., Jr., 4,242,535, Cl. 174-88.00R.

Swift, Robert A.: *See—*
Golias, Tipton; Butts, Gene A.; and Swift, Robert A., 4,242,730, Cl. 364-416.000.

Sylvester, Gerd; Witte, Josef; and Marwede, Gunter, to Bayer Aktiengesellschaft. Catalyst and its preparation and use for the solution polymerization of conjugated dienes. 4,242,232, Cl. 252-429.00C.

Synthelabo: *See—*
Dimsdale, Michael J., 4,242,352, Cl. 424-272.000.
Najer, Henry; and Manoury, Philippe, 4,242,343, Cl. 424-250.000.

Szabo, Ladislas: *See—*
Ayme, Gerard; and Szabo, Ladislas, 4,242,270, Cl. 260-412.800.

Szelke, Michael: *See—*
Sharpe, Robert; and Szelke, Michael, 4,242,256, Cl. 260-112.50R.

Szpakowski, Bronislaw T.; and DeGregorio, Bruno, to Northern Telecom Limited. Ferroresonant voltage regulator incorporating auxiliary winding for large current magnitudes of short duration. 4,242,630, Cl. 323-60.000.

Szvetelszky, Lajos: *See—*
Laky, Janos; Csikos, Rezso; Peterfy, Lajos; Szvetelszky, Lajos; and Pallay, Istvan, 4,242,526, Cl. 568-697.000.

Tabata, Junichi, to Kabushiki Kaisha Daini Seikosha. Driving system for display. 4,242,681, Cl. 340-785.000.

Tabei, Tohru, to Honeywell Inc. Safety device for gas burners. 4,242,080, Cl. 431-54.000.

Tacchi, Victorio. Arrangements for the transfer of heat from an upper level to a lower level. 4,241,784, Cl. 165-105.000.

Tagawa, Hiroshi; and Kurisu, Kenichiro, to Nishiki Co., Ltd. Diaper cover type garment. 4,241,462, Cl. 2-406.000.

Taig, Alistair G., to Bendix Westinghouse Limited. Power assisted actuating arrangements. 4,241,643, Cl. 91-446.000.

Taihei Industries Co., Ltd.: *See—*
Izumihara, Hiroshi, 4,242,166, Cl. 156-351.000.

Takahama, Akio, to Nippon Kogaku K.K. Apparatus for measuring amount of displacement. 4,241,995, Cl. 356-5.000.

Takahashi, Hiroshi: *See—*
Ito, Yutaka; Yajima, Kazuo; Iwanaga, Yoshiteru; Takahashi, Hiroshi; and Inaba, Masao, 4,242,704, Cl. 358-167.000.

Takahashi, Isao: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.

Takahashi, Mitsuo: *See—*
Kawasumi, Yoshio; and Takahashi, Mitsuo, 4,242,376, Cl. 427-216.000.

Takahashi, Ryoichi: *See—*
Aiba, Takaaki; Takahashi, Ryoichi; Hosoi, Takuji; and Konno, Tutomu, 4,242,196, Cl. 208-40.000.

Takahashi, Satomi: *See—*
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, 4,242,452, Cl. 435-117.000.

Takahashi, Takashi; Katsura, Masaki; Kaneda, Tadao; Hiraki, Hideaki; and Shiratori, Masayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas detecting element. 4,242,303, Cl. 422-98.000.

Takahashi, Yuhachi: *See—*
Aishima, Itsuho; Seki, Junji; Matsumoto, Koichi; Furusawa, Yonemasa; Tsukisaka, Ryogo; and Takahashi, Yuhachi, 4,242,251, Cl. 260-37.00N.

Takamura, Masayuki: *See—*
Sata, Tekeo; Takamura, Masayuki; Yamagishi, Tomoo; Hoshi, Toshiharu; and Iijima, Kenzaburo, 4,242,711, Cl. 360-126.000.

Takamura, Shuichi: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.

Takase, Tsutomu: *See—*
Kato, Nobukatu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, 4,242,528, Cl. 568-781.000.

Takaya, Masahiro; Yamada, Toshihiro; and Yuizono, Tomokazu, to Morishita Pharmaceutical Co., Ltd. Novel thioamide derivatives containing a pyridazine group. 4,242,512, Cl. 544-239.000.

Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, to Fujisawa Pharmaceutical Co., Ltd. Cephalosporin compounds and processes for the preparation thereof. 4,242,510, Cl. 544-27.000.

Takayama, Shuichi: *See—*
Tsuboshima, Kosaku; Takayama, Shuichi; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,242,703, Cl. 358-150.000.

Takematsu, Yoshiyuki, to Fuji Koeki Corporation, a part interest. Photographic flash apparatus. 4,242,616, Cl. 315-241.00P.

Taketani, Yutaka: *See—*
Kawaguchi, Takeyuki; Taketani, Yutaka; Minematsu, Hiroyoshi; Sasaki, Noriaki; Hayashi, Yuzuru; and Hara, Shigeyoshi, 4,242,208, Cl. 210-500.200.

Takeuchi Press Industries Co., Ltd.: *See—*
Fujimori, Hikoichiro, 4,241,657, Cl. 101-211.000.

Takeuchi, Sadatoshi; Iida, Akio; Miyake, Kimio; and Sakae, Mitsuhisa, to Kabushiki Kaisha Komatsu Seisakusho. Noise-proof and air-cooled enclosure for an engine. 4,241,702, Cl. 123-41.700.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; and Ishizuka, Masaaki, 4,242,453, Cl. 435-123.000.

Takezoe, Fumihiko, to Fuji Electric Co., Ltd. Operating system for a data transmission system. 4,242,749, Cl. 370-85.000.

Tamura, Hiroshi; and Katsube, Masayoshi, to Murata Manufacturing Co., Ltd. Dielectric ceramic compositions based on magnesium, calcium and rare earth metal titanates. 4,242,213, Cl. 106-73.300.

Tanaka, Morihisa; Konno, Kazuhiko; Sasaki, Norio; and Uchimura, Kunio, to Mitsubishi Petrochemical Company, Limited. Nitrosation process. 4,242,277, Cl. 260-396.000.

Tapphorn, Ralph M., to Schlumberger Technology Corporation. Cryostat for borehole sonde employing semiconductor detector. 4,241,592, Cl. 62-514.00R.

Tartakowsky, Michael: *See—*
Aidlin, Stephen H.; and Tartakowsky, Michael, 4,242,033, Cl. 414-662.000.

Tatevosian, Ruben A.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; Titov, Mikhail Y.; Tereschenko, Lev A.; and Yakovlev, Arian M., 4,242,141, Cl. 106-89.000.

Taurus Gumiipari Vallalat: *See—*
Antal, Sandor; Bartha, Zoltan; Gorgenyi, Peter; Meitzen, Nandor; and Arvai, Mihaly, 4,241,763, Cl. 138-127.000.

Tauscher, Manfred: *See—*
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,242,345, Cl. 424-253.000.

Taylor, Clyde L.: *See—*
Fagundes, John L.; and Taylor, Clyde L., 4,241,653, Cl. 100-100.000.

Taylor, James S.: *See—*
Buddemeyer, Bruce D.; Neville, William A.; Taylor, James S.; and Bourne, Richard G., 4,242,364, Cl. 426-98.000.

Taylor, John J., to Mallinckrodt, Inc. Process for the preparation of 2,2-diphenyl-4-(dimethylamino)-pentane nitrile. 4,242,274, Cl. 260-465.00E.

TDV Co.: *See—*
Stephens, James B.; and Miller, Charles G., 4,242,201, Cl. 210-240.000.

Teijin Limited: *See—*
Kawaguchi, Takeyuki; Taketani, Yutaka; Minematsu, Hiroyoshi; Sasaki, Noriaki; Hayashi, Yuzuru; and Hara, Shigeyoshi, 4,242,208, Cl. 210-500.200.
Segawa, Yasuhiko; and Saiki, Noritsugu, 4,242,398, Cl. 428-172.000.

Teledyne Industries, Inc.: *See—*
Karaba, Albert M.; Kauffman, Brian C.; and Bowen, Glen L., 4,241,705, Cl. 123-78.00B.

Temple, Harold E.: *See—*
United States of America, National Aeronautics and Space Administration; Berkman, Samuel; and Temple, Harold E., 4,242,553, Cl. 219-10.49R.

Temple, Victor A. K., to General Electric Company. High breakdown voltage semiconductor device. 4,242,690, Cl. 357-13.000.

Terada, Sadatugu: *See—*
Habu, Teiji; Ishihara, Masao; Terada, Sadatugu; Sakamoto, Eiichi; and Yamada, Hiroshi, 4,242,444, Cl. 430-510.000.

Tereschenko, Lev A.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; Titov, Mikhail Y.; Tereschenko, Lev A.; and Yakovlev, Arian M., 4,242,141, Cl. 106-89.000.

Terra Tek, Inc.: *See—*
Green, Sidney J.; Shipman, Floyd H.; and Van Kempen, Carl J. H. B., 4,241,796, Cl. 175-24.000.

Terui, Yohji: *See—*
Koga, Isao; Terui, Yohji; Ohgushi, Masuhito; and Kitahara, Tohru, 4,242,272, Cl. 556-489.000.

Terumo Corporation: *See—*
Shinohara, Isao; Okano, Teruo; and Ikemi, Masahisa, 4,242,474, Cl. 525-404.000.

Texaco Development Corporation: *See—*
Child, Edward T.; and Suggitt, Robert M., 4,242,458, Cl. 435-247.000.
Lambert, Clifford L., Jr., 4,242,214, Cl. 252-75.000.
Zimmerman, Robert L., 4,242,467, Cl. 521-129.000.

Texaco Inc.: *See—*
Schlinger, Warren G.; and Slater, William L., 4,242,234, Cl. 252-439.000.

Texas Alkyls, Inc.: *See—*
Fannin, Loyd W., 4,242,481, Cl. 526-165.000.

Texas Instruments Incorporated: *See—*
Bate, Robert T., 4,242,737, Cl. 365-184.000.
Boone, Gary W.; and Cochran, Michael J., 4,242,675, Cl. 340-711.000.
Ghate, Prabhakar B.; Wilson, Arthur M.; and Fuller, Clyde R., 4,242,698, Cl. 357-71.000.
McCormack, Kent; Robinson, James E.; Knight, William M., Jr.; and Dudley, Dana, 4,242,706, Cl. 358-213.000.
Sexton, Joe F., 4,242,735, Cl. 364-900.000.

Textron Inc.: *See—*
Manning, Harry F., 4,241,489, Cl. 29-408.000.

Th. Goldschmidt Ag: *See—*
Muller, Wolfgang; and Witzke, Lothar, 4,242,127, Cl. 75-99.000.

Thermo Electric Co., Inc.: *See—*
Remmert, Patrick A., 4,242,148, Cl. 136-221.000.

Thibault, Jacques G. A. Palettizing-depalettizing apparatus. 4,242,025, Cl. 414-70.000.

Thieme, Roland: *See—*
Heyneman, Guido; Vandenbossche, Christiaan; and Thieme, Roland, 4,242,301, Cl. 422-68.000.

Thies, Peter W.; Asai, Akiji; and David, Samuell, to Kali-Chemie Pharma GmbH. 2,9-Dioxatricyclo [4,3,1,03,7] decane derivatives and pharmaceutical compositions. 4,242,341, Cl. 424-248.550.

Thomas & Betts Corporation: *See—*
Gomez, Jose J., 4,241,966, Cl. 339-45.00M.

Thomas, Jacques A.: *See—*
Abdalla, Mohamed I.; and Thomas, Jacques A., 4,242,370, Cl. 427-66.000.

Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Contact lens disinfector unit. 4,242,572, Cl. 219-521.000.

Thomas, Richard E. Electrically powered self-heating inoculating loop. 4,242,462, Cl. 435-292.000.

Thomson-CSF: *See—*
Galves, Jean-Pierre, 4,242,371, Cl. 427-68.000.
Gauzan, Pierre, 4,242,755, Cl. 375-114.000.
Gloanec, Maurice, 4,242,597, Cl. 307-221.00B.

Thomson, Kenneth W., to Eastman Kodak Company. Folding camera. 4,241,986, Cl. 354-193.000.

Thurston, Marlin O.: *See—*
Gilson, Richard D.; Thurston, Marlin O.; Olson, Karl W.; and Ventola, Ronald W., 4,241,519, Cl. 434-43.000.

Thyssen Edelstahlwerke AG: *See—*
Brandis, Helmut; Weigand, Hans H.; and Spyra, Wolfgang, 4,242,130, Cl. 75-126.00C.

TI Raleigh Industries Limited: *See—*
Hutcheon, Keith F.; and Cordingley, Laurence A., 4,242,385, Cl. 428-31.000.

Tibolla, Julius F., to GTE Sylvania Wiring Devices, Inc. Mounting means for interchangeable switch handles. 4,242,552, Cl. 200-339.000.

Tien, Ping K.: *See—*
Dayem, Aly H.; Geballe, Theodore H.; Patel, Chandra K. N.; and Tien, Ping K., 4,242,419, Cl. 428-661.000.

Tihanyi, Jenoe: *See—*
Meusburger, Guenther; Knauer, Karl; and Tihanyi, Jenoe, 4,242,603, Cl. 307-238.000.

Tillman, James J.: *See—*
Gagnon, Donald W.; and Tillman, James J., 4,242,250, Cl. 260-33.4SB.

Tillmann, Ditmar K.: *See—*
Wilson, Harold R.; and Tillmann, Ditmar K., 4,241,965, Cl. 339-4.000.

Timex Corporation: *See—*
Leibowitz, Marshall, 4,241,984, Cl. 350-337.000.

Tissot, Pierre L. Integrated circuit light emitting electronic malfunction checking system. 4,242,633, Cl. 324-73.00R.

Titov, Mikhail Y.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; Titov, Mikhail Y.; Tereschenko, Lev A.; and Yakovlev, Arian M., 4,242,141, Cl. 106-89.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,242,230, Cl. 252-429.00B.
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naoti; Yoda, Makoto; and Wada, Shozo, 4,242,231, Cl. 252-429.00B.

Toeppen, Thurston H. Tamper indicating construction for plastic closures. 4,241,842, Cl. 215-252.000.

Tokyo Broadcasting System Inc.: *See—*
Ito, Yutaka; Yajima, Kazuo; Iwanaga, Yoshiteru; Takahashi, Hiroshi; and Inaba, Masao, 4,242,704, Cl. 358-167.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Huzii, Norihito, 4,241,696, Cl. 118-691.000.
Suzuki, Nobuo, 4,242,599, Cl. 307-311.000.
Takahashi, Takashi; Katsura, Masaki; Kaneda, Tadao; Hiraki, Hideaki; and Shiratori, Masayuki, 4,242,303, Cl. 422-98.000.

Tolbert, Love J. Pull-on action slacks. 4,241,460, Cl. 2-234.000.

Tomita, Seisuke: *See—*
Hoshino, Takashi; Imaizumi, Setsuko; and Tomita, Seisuke, 4,242,472, Cl. 525-343.000.

Tomotaka, Tatsumi: *See—*
Chikanobu, Kimijima; Asao, Kosakai; Tutomu, Shioya; and Tomotaka, Tatsumi, 4,241,512, Cl. 33-438.000.

Tomy Kogyo Co., Inc.: *See—*
Watanabe, Hiroyuki, 4,241,925, Cl. 273-316.000.

Torma, Arpad E., to Extraction Research & Development, Inc. Processes for the recovery of alumina from fly ash and production of cement constituents. 4,242,313, Cl. 423-112.000.

Toti, Andrew J. Structural assembly, method of forming same, and elongated panel structure resulting therefrom. 4,241,727, Cl. 126-446.000.

Tow, Jimmy: *See—*
Laker, Kenneth R.; and Tow, Jimmy, 4,242,642, Cl. 330-109.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Sakakibara, Hideo; Okegawa, Osamu; Watanabe, Toshiyuki; Fujiwara, Tatsuro; Watanabe, Susumu; Omura, Satoshi; and Matsuda, Tetsuo, 4,242,504, Cl. 536-17.00R.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ishida, Yasuhiko, 4,241,704, Cl. 123-432.000.
Kubo, Seitoku; Kuramochi, Kojiro; and Ito, Hiroshi, 4,241,622, Cl. 74-740.000.
Nonoyama, Takao; and Sato, Kunihiko, 4,241,751, Cl. 137-103.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,241,939, Cl. 280-804.000.
Suzuki, Ichiro; Ogawa, Hisashi; and Motonami, Masanao, 4,241,940, Cl. 280-804.000.

Trenkle, Robert W.: *See—*
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,242,281, Cl. 568-458.000.

Tri-Pak, Inc.: *See—*
Parker, Donnie G.; and Milligan, James D., 4,242,100, Cl. 44-53.000.

Tritsch, Armin: *See—*
Reinhardt, Hans; Schmahl, Manfred; and Tritsch, Armin, 4,242,391, Cl. 428-76.000.

Trivison, Robert J.: *See—*
Oliver, Leland W.; Moore, John R.; Willcox, Peter S.; von Harz, James L.; and Trivison, Robert J., 4,241,976, Cl. 339-278.00D.

Troster, Helmut, to Hoechst Aktiengesellschaft. Water soluble benzoxanthene dyestuffs for fluorescent inks. 4,242,139, Cl. 106-22.000.

Troya, Paolo M.: *See—*
Quilico, Carlo A.; and Troya, Paolo M., 4,242,593, Cl. 290-53.000.

Truelove, James E.: *See—*
Hussain, Anwar A.; Truelove, James E.; and Kostenbauder, Harry B., 4,242,330, Cl. 424-180.000.

Trust, Ronald I.; and Albright, Jay D., to American Cyanamid Company. Substituted 3-alkyl-6-phenyl-1,2,4-triazolo-[4,3-a]pyridines. 4,242,515, Cl. 546-119.000.

Truth Incorporated: *See—*
Van Klompenburg, Marlo G.; Peterson, Jeffery A.; and Nelson, Eric W., 4,241,541, Cl. 49-249.000.

Tsuboshima, Kosaku; Takayama, Shuichi; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, to Olympus Optical Co., Ltd. Projection apparatus for optical systems. 4,242,703, Cl. 358-150.000.

Tsuchihashi, Genichi; Ogura, Katsuyuki; and Mitamura, Shuichi, to Sagami Chemical Research Center. Novel α-thio-alkanoic acid derivatives. 4,242,519, Cl. 560-15.000.

Tsuchihashi, Genichi; Ogura, Katsuyuki; Sakoda, Ryozo; Hashiba, Isao; and Fukushima, Shuichi, to Nissan Chemical Industries, Ltd.; and Sagami Chemical Research Center. O-(N-Allyl-2,6-dichloroanilino)-phenylacetic acid derivative and a process for preparing the same. 4,242,522, Cl. 560-47.000.

Tsuchiya, Shiro; Imakita, Itsuo; and Okumura, Toshiaki, to Hitachi Shipbuilding & Engineering Co., Ltd. Injection molding apparatus and molding method with use of the apparatus. 4,242,073, Cl. 425-149.000.

Tsuchiya, Shozo; and Hayashi, Hideo, to Nippon Oil Company, Limited. Process for producing novel curable resin capable of being cured by the exposure to heat or radiation and curable coating composition containing said curable resin. 4,242,475, Cl. 525-534.000.

Tsui, Kwok W., to Arco Industries Ltd. Automatic toy gun for ping pong balls. 4,241,716, Cl. 124-27.000.

Tsuji, Kiyoshi: *See—*
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, 4,242,510, Cl. 544-27.000.

Tsujiyama, Bunjiro; Saito, Kunio; and Kurihara, Kenji, to Nippon Telegraph and Telephone Public Corporation. Method and apparatus for pattern examination. 4,242,662, Cl. 340-146.30H.

Tsukisaka, Ryogo: *See—*
Aishima, Itsuho; Seki, Junji; Matsumoto, Koichi; Furusawa, Yonemasa; Tsukisaka, Ryogo; and Takahashi, Yuhachi, 4,242,251, Cl. 260-37.00N.

Tsukuda, Mitsuo, to Kabushiki Kaisha Tsukuda Hobby. Submersible toy. 4,241,535, Cl. 46-250.000.

Tsuruoka, Takashi: *See—*
Ohba, Kazunori; Shomura, Takashi; Kojima, Michio; Omoto, Shoji; Tsuruoka, Takashi; and Inoue, Shigeharu, 4,242,327, Cl. 424-116.000.

Tsuruta, Mitsuo; and Haga, Hachiro, to Nissan Motor Company, Limited. Painting booth on conveyor line. 4,241,646, Cl. 98-115.0SB.

Tullman, Edward J., to Singer Company, The. Device for automatically threading a sewing machine. 4,241,678, Cl. 112-225.000.

Turk, Herbert; and Schiminski, Herbert, to Barmag Barmer Maschinenfabrik AG. Apparatus for open-end or round-about spinning of a thread. 4,241,571, Cl. 57-58.890.

Turk, Herbert; and Schiminski, Herbert, to Barmag Barmer Maschinenfabric AG. Spinning process and apparatus. 4,241,574, Cl. 57-200.000.

Turmix AG: *See—*
Wunderlin, Max; and Gurtner, Peter, 4,242,568, Cl. 219-296.000.

Turner, Charlie B.: *See—*
Vatis, Dimitrios; and Turner, Charlie B., 4,242,614, Cl. 315-153.000.

Tutomu, Shioya: *See—*
Chikanobu, Kimijima; Asao, Kosakai; Tutomu, Shioya; and Tomotaka, Tatsumi, 4,241,512, Cl. 33-438.000.

Tuttle, Kenneth L., to United States of America, Energy. Method of regulating the amount of underfire air for combustion of wood fuels in spreader-stroke boilers. 4,241,672, Cl. 110-346.000.

Uchida, Tohru: *See—*
Kato, Akira; Itoh, Akira; and Uchida, Tohru, 4,242,432, Cl. 430-57.000.

Uchimura, Kunio: *See—*
Tanaka, Morihisa; Konno, Kazuhiko; Sasaki, Norio; and Uchimura, Kunio, 4,242,277, Cl. 260-396.000.

Udagawa, Tsugio: *See—*
Fujiwara, Osamu; Araya, Takeshi; and Udagawa, Tsugio, 4,242,620, Cl. 318-576.000.

Uebayashi, Takeo: *See—*
Sato, Kunihiko; Urata, Tetsuro; Kawano, Mitsugi; Jinba, Terumasa; Kato, Yukio; and Uebayashi, Takeo, 4,242,557, Cl. 219-69.00E.

Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for use in the polymerization of α-olefins and a method of using the same. 4,242,230, Cl. 252-429.00B.

Ueno, Hiroshi; Imai, Masafumi; Inaba, Naoti; Yoda, Makoto; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for use in the polymerization of α-olefins and a method of using the same. 4,242,231, Cl. 252-429.00B.

Uerdingen, Walter: *See—*
Findeisen, Kurt; Wagner, Kuno; and Uerdingen, Walter, 4,242,489, Cl. 528-73.000.

Uesugi, Kyozo, to Minolta Camera Kabushiki Kaisha. Zoom lens barrel capable of different directional operations. 4,241,982, Cl. 350-187.000.

Ufken, Gregory A.: *See—*
Harold, Donald M.; and Ufken, Gregory A., 4,242,115, Cl. 55-347.000.

Ullmann, Werner; Schumacher, Bernd; Ruh, Herbert; and Kilcher, Beat, to A.G. fur Industrielle Elektronik AGIE. Guiding and stressing an elongated, stretched, renewable electrode in electro-erosive machining. 4,242,556, Cl. 219-69.00W.

Ultradyne, Inc.: *See—*
Laird, Gerald, 4,242,715, Cl. 361-232.000.

Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; and Ishizuka, Masaaki, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Cultivating streptomyces to produce an esterase inhibitor. 4,242,453, Cl. 435-123.000.

Uncles, Philip B., to Moulton Developments Limited. Rotary fluid pump with eccentrically moving pumping sleeve. 4,242,064, Cl. 418-66.000.

Underwood, Gene E., to 3U Partners. Nozzle and process. 4,241,878, Cl. 239-591.000.

Union Carbide Corporation: *See—*
Braun, David B.; Drap, Stephen; Fritz, Henry E.; and Ingberman, Arthur K., 4,242,098, Cl. 44-51.000.
Frost, Albert C.; and Risch, Alan P., 4,242,104, Cl. 48-197.00R.
Frost, Albert C., 4,242,105, Cl. 48-197.00R.
Rabo, Jule A.; Elek, Louis F.; and Francis, James N., 4,242,103, Cl. 48-197.00R.
Schilling, Curtis L., Jr.; and Eschbach, C. Scott, 4,242,466, Cl. 521-112.000.
Shah, Naresh R.; Shook, Edgar G.; and Van Cleve, Russell, 4,242,476, Cl. 526-71.000.
Van Cleve, Russell; Armstrong, George H.; and Simroth, Donald W., 4,242,249, Cl. 260-33.20R.
Weber, Willis W.; Hill, Richard F.; and Weeks, Thomas J., Jr., 4,242,271, Cl. 260-448.0AD.

Union Iron Works, Inc.: *See—*
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United States Gypsum Company: *See—*
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United States of America
Air Force: *See—*
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Fritts, David H.; Leonard, John F.; and Palanisamy, Thirumalai G., 4,242,179, Cl. 204-2.100.
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Donovan, William F., 4,241,660, Cl. 102-56.00R.
King, Gerard J.; and Dunn, Aubrey J., 4,242,149, Cl. 148-1.500.
Mon, George, 4,241,760, Cl. 137-829.000.
Energy: *See—*
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Tuttle, Kenneth L., 4,241,672, Cl. 110-346.000.
Interior: *See—*
Dunning, Beverly W., Jr.; and Chambers, D. Harry, 4,242,192, Cl. 204-213.000.
Guidotti, Ronald A., 4,242,312, Cl. 423-73.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:

Berkman, Samuel; and Temple, Harold E. Apparatus for use in the production of ribbon-shaped crystals from a silicon melt. 4,242,553, Cl. 219-10.49R.
Rosser, Robert W.; and Korus, Roger A. Process for the preparation of fluorine containing crosslinked elastomeric polytriazine and product so produced. 4,242,498, Cl. 528-362.000.

Navy: *See—*
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Joyner, Taylor B.; Lepie, Albert H.; and Stanifer, Charles D., 4,241,671, Cl. 110-188.000.
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Wilger, John F.; Nakano, Gregory S.; Uyetake, Tadao; Orillo, Stephen, Jr.; and Higa, Teikichi, 4,241,623, Cl. 74-765.000.

U.S. Philips Corporation: *See—*
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Brambring, Jorg; and van der Ven, Robert F. L. M., 4,242,613, Cl. 313-447.000.
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Heijnemans, Werner A. L.; Nieuwendijk, Joris A. M.; and Vink, Nicolaas G., 4,242,612, Cl. 313-421.000.
Kasperkovitz, Wolfdietrich G., 4,242,601, Cl. 307-225.00R.
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Whight, Kenneth R., 4,242,596, Cl. 307-211.000.

United Technologies Corporation: *See—*
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University of Kentucky Research Foundation, The: *See—*
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University of Minnesota, The Regents of the: *See—*
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Johnson, Garland A.; and Peuler, Jacob D., 4,242,222, Cl. 252-301.170.
Johnson, Garland A.; and Peuler, Jacob D., 4,242,456, Cl. 435-193.000.
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Urata, Tetsuro: *See—*
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Usami, Hiroko: *See—*
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Ushiro, Masayuki; and Shimazaki, Haruo, to Nissan Motor Company, Limited. Selective weft inserting apparatus in shuttleless weaving loom. 4,241,766, Cl. 139-435.000.

Utt, Michael E., to Union Oil Company of California. Method for constructing a multiseason ice platform. 4,242,012, Cl. 405-217.000.

Uyetake, Tadao: *See—*
Wilger, John F.; Nakano, Gregory S.; Uyetake, Tadao; Orillo, Stephen, Jr.; and Higa, Teikichi, 4,241,623, Cl. 74-765.000.

Valyi, Emery I. Method for processing parisons. 4,242,300, Cl. 264-520.000.

Van Dusen & Co., Inc.: *See—*
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van Ass, Henricus M. J. M., to U.S. Philips Corporation. Method of producing optical fibers for telecommunications. 4,242,117, Cl. 65-3.00A.

Van Brocklin, Owen: *See—*
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Van Cleve, Russell; Armstrong, George H.; and Simroth, Donald W., to Union Carbide Corporation. Polymer/polyols via non-aqueous dispersion stabilizers. 4,242,249, Cl. 260-33.20R.

Van Cleve, Russell: *See—*
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Vandenbossche, Christiaan: *See—*
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Vandenbrink, Anthonie, to Aurora Products Canada Limited. Flexible track. 4,241,875, Cl. 238-10.00F.

Vandenhoeck, Jean-Paul. Particulate level measuring method and apparatus. 4,241,606, Cl. 73-290.00R.

van der Lely, Cornelis. Fly-wheel. 4,241,654, Cl. 100-189.000.

Vander Mey, John E., to Allied Chemical Corporation. Phenol-free photoresist stripper. 4,242,218, Cl. 252-143.000.

van der Ven, Robert F. L. M.: *See—*
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Van De Sompele, Norman C., to Bendix Corporation, The. Band brake parking lever. 4,241,813, Cl. 188-77.00R.

van Dijk, Jan; and Zwagemakers, Johannes M. A., to Duphar International Research B.V. Novel basic substituted-alkylidenamino-oxylalkyl-carboxylic-acid esters. 4,242,348, Cl. 424-267.000.

Van Dusen, Frederick E., to Van Dusen & Co., Inc. Ring type silo unloader. 4,242,028, Cl. 414-320.000.

Van Gompel, James, to Brammall, Inc. Roto lock. 4,241,595, Cl. 70-347.000.

Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., to Compagnie Neerlandaise de l'Azote. Coating drum. 4,241,692, Cl. 118-303.000.

Van Kempen, Carl J. H. B.: *See—*
Green, Sidney J.; Shipman, Floyd H.; and Van Kempen, Carl J. H. B., 4,241,796, Cl. 175-24.000.

Van Klompenburg, Marlo G.; Peterson, Jeffery A.; and Nelson, Eric W., to Truth Incorporated. Dual arm operator for a casement-type window. 4,241,541, Cl. 49-249.000.

Van Laanen, Peter J.: *See—*
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Van Thyne, Ray J.: *See—*
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van Velzen, Antoon G.: *See—*
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van Vucht, Johannes H. N.: *See—*
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Varsanyi, Denis; and Handschin, Gert, to Vseoyuznii Na'uchno-Isledova Telskii Gustitut Khimichesti Institute. Nematocidal unsubstituted phenyl esters of O-alkyl-S-alkyl-thiophosphoric acid. 4,242,333, Cl. 424-225.000.

Varta Batterie, Aktiengesellschaft: *See—*
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Schertler, Siegfried, 4,241,644, Cl. 91-447.000.

Vatis, Dimitrios; and Turner, Charlie B., to General Electric Company. Lighting control system. 4,242,614, Cl. 315-153.000.

Vaughan, Warren R.; and Suykens, Matthieu, to Allis-Chalmers Canada, Limited. Self-unloading ship with suspended reclaim scraper. 4,242,026, Cl. 414-145.000.

VBM Corporation: *See—*
Shircliffe, Donald F., 4,241,901, Cl. 254-89.00H.

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Velsicol Chemical Corporation: *See—*
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Velva AG: *See—*
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Venezia, Lawrence: *See—*
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Vente, John: *See—*
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Venturello, Carlo; D'Aloisio, Rino; and Belli, Aldo, to Montedison S.p.A. Process for the preparation of 2-(4'-nitrophenyl)-propionic acid. 4,242,524, Cl. 562-423.000.

Verbrugge, Pieter A.; and Kramer, Petrus A., to Shell Oil Company. 2-(2,2-Dihalovinyl)-3,3-dimethylcyclopropylacetone pyrethroid intermediates. 4,242,279, Cl. 568-303.000.

Vermeulen, Leon L.: *See—*
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Veschuroff, William C.: *See—*
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Vick, William L.: *See—*
Shishido, Tsuneo; Eyermann, Philip A.; Vick, William L.; and Cramm, Herman W., 4,242,652, Cl. 333-106.000.

Vickery, Joseph K. Heater stove apparatus. 4,241,719, Cl. 126-66.000.

Villard, Jean-Claude; and Berthereau, Gilbert, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Pump impeller seals with spiral grooves. 4,242,039, Cl. 415-112.000.

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Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., 4,242,132, Cl. 75-157.500.
Shapiro, Eugene; Vitek, John M.; and Smith, Warren F., Jr., 4,242,133, Cl. 75-157.500.

Vitelli, Vito J.; Jalil, Asjed A.; and Wilson, Norman A., to Morgan Construction Company. Methods for hot rolling and treating rod. 4,242,153, Cl. 148-12.00B.

Vivant, Gilbert: *See—*
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Vlock, David G. Plaque inhibiting oral composition. 4,242,323, Cl. 424-58.000.

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Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,242,269, Cl. 260-345.100.
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Voege, Clayton B., to Bussell, Ray V. Method of making calibrated gas metering orifice and product thereof. 4,241,896, Cl. 251-206.000.

Voelskow, Peter; Rothert, Horst; and Schlotterer, Gustav, to Fritz-Aurel Goergen. Method of and apparatus for classifying refuse. 4,242,197, Cl. 209-3.000.

Vogel, Hans-Henning; Oppenlaender, Knut; and Starke, Klaus, to BASF Aktiengesellschaft. Fuels for gasoline engines. 4,242,101, Cl. 44-58.000.

Voitas, Edward J., to Eastern Fusecoat Incorporated. Method of making drill, bushings, pump seals and similar articles. 4,241,483, Cl. 29-149.5PM.

Vollbrecht, Heinz-Rudiger: *See—*
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Vollmer, Jurgen; and Muller, Norbert, to Jean Walterscheid GmbH. Coupling hook structure for tractor hitch system. 4,241,935, Cl. 280-461.00A.

von der Eltz, Hans-Ulrich, to Hoechst Aktiengesellschaft. Process for the continuous dyeing of textile webs of cellulose fibers with reactive dyes. 4,242,090, Cl. 8-532.000.

von Harz, James L.: *See—*
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Vseoyuznii Na'uchno-Isledova Telskii Gustitut Khimichesti Institute: *See—*
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Ueno, Hiroshi; Imai, Masafumi; Inaba, Naoti; Yoda, Makoto; and Wada, Shozo, 4,242,231, Cl. 252-429.00B.

Wade, Peter C.; and Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Indolylalkyl esters of mercaptoalkanoic acids. 4,242,265, Cl. 260-326.12R.

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Wagner, Roland: *See—*
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Wakeem, Dale. Method and apparatus for disassembling wooden pallets. 4,241,495, Cl. 29-700.000.

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Wankel GmbH: *See—*
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Warble, Charles E., to Commonwealth Scientific and Industrial Research Organization. Specimen holder for electron microscopy and electron diffraction. 4,242,586, Cl. 250-443.000.

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Washburn, Clyde, Jr., to Harris Corporation. Method and apparatus for modulating a phase locked loop. 4,242,649, Cl. 332-18.000.

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Watanabe, Hiroyuki, to Tomy Kogyo Co., Inc. Toy having projectile movable in both coordinates of a plane. 4,241,925, Cl. 273-316.000.

Watanabe, Kiyoshi; Sunahara, Kazuo; and Fujita, Tsutomu, to Hitachi, Ltd. Method for vapor depositing a cerium oxide film. 4,242,373, Cl. 427-74.000.

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Watkins, Murrell G. Rotary hoe scratcher. 4,241,793, Cl. 172-551.000.

Watts, James P. Method for forming a hole in the earth. 4,242,013, Cl. 405-272.000.

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Weber, Robert E.; and Harper, Patrick D., to Bendix Corporation, The. Switching control of solenoid current in fuel injection systems. 4,242,729, Cl. 364-431.000.

Weber, Willis W.; Hill, Richard F.; and Weeks, Thomas J., Jr., to Union Carbide Corporation. Process for preparing aluminum alkoxides. 4,242,271, Cl. 260-448.0AD.

Weberndoerfer, Volkmar: *See—*
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Weil, Edward D., to Stauffer Chemical Company. Halogenated triphosphates. 4,242,288, Cl. 260-929.000.

Weimer, Paul K., to RCA Corporation. Line transfer CCD imagers. 4,242,700, Cl. 358-44.000.

Weinlich, Tilman L., to Konrad, Christel. Multiple glazing units. 4,242,386, Cl. 428-34.000.

Weiser, Sidney, to Exotech, Incorporated. Apparatus for measuring the quality of optical equipment. 4,241,996, Cl. 356-124.500.

Welch, Herbert E.: *See—*
Huffman, Charles E.; McGuire, Robert J.; and Welch, Herbert E., 4,242,756, Cl. 455-8.000.

Welch, M. Bruce, to Phillips Petroleum Company. Catalyst and process of polymerization of alpha monoolefins. 4,242,480, Cl. 526-125.000.
Weld Tooling Corporation: *See—*
Cable, Harold E., 4,241,664, Cl. 104-118.000.
Weldy, Floyd P.: *See—*
Han, Benjamin C. P.; and Weldy, Floyd P., 4,241,603, Cl. 73-129.000.
Wells Manufacturing Company: *See—*
Hedberg, Arthur S., 4,241,492, Cl. 29-527.600.
Wenger Corporation: *See—*
Wenger, Jerry A.; Clausen, Herman A.; Boeddeker, David R.; and Urch, Harvey M., 4,241,777, Cl. 160-135.000.
Wenger, Jerry A.; Clausen, Herman A.; Boeddeker, David R.; and Urch, Harvey M., to Wenger Corporation. Portable shell. 4,241,777, Cl. 160-135.000.
Wengert, Rolf: *See—*
Kobale, Manfred; and Wengert, Rolf, 4,242,372, Cl. 427-68.000.
Wernet, William F.; Adams, William J.; and Haskins, Steve W., to Northern Telecom, Inc. Multiple cantilever spring contact hook switch. 4,242,543, Cl. 200-1.00A.
Westendorp, Frans F.: *See—*
Bruning, Hugo A. C. M.; van Vucht, Johannes H. N.; Westendorp, Frans F.; and Zijlstra, Hinne, 4,242,315, Cl. 423-252.000.
Westermann, Lothar; and Wasel-Nielen, Horst-Dieter, to Hoechst Aktiengesellschaft. Composition suitable for use in cleaning panes of glass. 4,242,217, Cl. 252-135.000.
Western Electric Company, Inc.: *See—*
Hardesty, Edwin C., 4,241,974, Cl. 339-154.00A.
Saban, John F., 4,242,717, Cl. 361-308.000.
Westinghouse Electric Corp.: *See—*
Glatthorn, Raymond H., 4,242,563, Cl. 219-125.110.
Liu, Chi-sheng; Feldman, Donald W.; Williams, Roy K.; and Weaver, Lelland A., 4,242,648, Cl. 331-94.50D.
Maier, Alfred E.; and Ricci, Louis N., 4,242,577, Cl. 200-153.00G.
Moore, Robert A., 4,242,653, Cl. 333-141.000.
Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., 4,242,718, Cl. 361-341.000.
Shuey, Kenneth C., 4,242,629, Cl. 323-17.000.
Silvestri, George J., Jr., 4,242,041, Cl. 415-115.000.
Yannone, Robert A.; and Shields, James J., 4,242,592, Cl. 290-40.00R.
Westlake, Edward B., Jr. One-piece plastic safety razor. 4,241,501, Cl. 30-59.000.
Westphalen, Wilhelm. Floating passenger automotive vehicle as touring and water-sports mobile. 4,241,686, Cl. 440-59.000.
Westvaco Corporation: *See—*
Dowd, Daniel J., 4,242,293, Cl. 264-40.700.
Wetzler, Matthias: *See—*
Dockner, Toni; Frank, Anton; Kempe, Uwe; Wetzler, Matthias; and Karn, Helmut, 4,242,517, Cl. 548-342.000.
Wheeler, Edward W. Alternator failure warning indicator. 4,242,674, Cl. 340-635.000.
Whight, Kenneth R., to U.S. Philips Corporation. Integrated injection logic circuits. 4,242,596, Cl. 307-211.000.
White Consolidated Industries, Inc.: *See—*
Barnett, Eugene J., 4,241,718, Cl. 126-21.00R.
Miller, Robert G., 4,241,475, Cl. 19-98.000.
White, Joe L.: *See—*
Hem, Stanley L.; and White, Joe L., 4,242,328, Cl. 424-157.000.
Whiteman, Paul L.; and Orr, Vernon E., to Morgan Trailer Manufacturing Co., Inc. Ramp and ramp carrier for trucks and the like. 4,242,032, Cl. 414-537.000.
Whittaker Corporation: *See—*
Mansukhani, Ishwar R., 4,242,369, Cl. 427-47.000.
Wick, David P.: *See—*
Santini, Hugo A. E.; and Wick, David P., 4,242,038, Cl. 414-755.000.
Widder, Rudi: *See—*
Schlecht, Helmut; Weberndoerfer, Volkmar; and Widder, Rudi, 4,242,187, Cl. 204-162.0SH.
Wiedenfeld, Helmut; and Reinardy, Peter, to W. Schlafhorst & Co. Comb section pair of an expansion comb. 4,241,480, Cl. 28-213.000.
Wiese, Winfred J., to Borg-Warner Corporation. Mechanical seal. 4,241,927, Cl. 277-87.000.
Wiesner, Dale E. Vibrating conveyor for use with packaging apparatus. 4,241,769, Cl. 141-83.000.
Wilger, John F.; Nakano, Gregory S.; Uyetake, Tadao; Orillo, Stephen, Jr.; and Higa, Teikichi, to United States of America, Navy. Vertical drive mechanism for a cutting apparatus. 4,241,623, Cl. 74-765.000.
Wilkes, Lawrence T.: *See—*
Schnabel, Peter W.; Chernack, Milton P.; Wilkes, Lawrence T.; and Perry, Gordon R., 4,241,743, Cl. 132-88.700.
Willcox, Peter S.: *See—*
Oliver, Leland W.; Moore, John R.; Willcox, Peter S.; von Harz, James L.; and Trivison, Robert J., 4,241,976, Cl. 339-278.00D.
William H. Rorer, Inc.: *See—*
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,337, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,338, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,339, Cl. 424-248.540.
Douglas, George H.; Studt, William L.; and Dodson, Stuart A., 4,242,340, Cl. 424-248.540.
Williams, Roy K.: *See—*
Liu, Chi-sheng; Feldman, Donald W.; Williams, Roy K.; and Weaver, Lelland A., 4,242,648, Cl. 331-94.50D.
Williamson, Roger J., to ITT Industries, Inc. Flowmeter. 4,241,612, Cl. 73-861.220.
Willis, Wilburn C., to Aluminum Company of America. Safety closure assembly with a sheet metal overcap. 4,241,840, Cl. 215-220.000.
Wilson, Arthur M.: *See—*
Ghate, Prabhakar B.; Wilson, Arthur M.; and Fuller, Clyde R., 4,242,698, Cl. 357-71.000.
Wilson, Harold R.; and Tillmann, Ditmar K., to Haworth Mfg., Inc. Electrical connector for power panel system. 4,241,965, Cl. 339-4.000.
Wilson, John R.; and Worbey, Terence I., to Imperial Chemical Industries Limited. Films of thermoplastics materials having roughened surfaces. 4,242,396, Cl. 428-141.000.
Wilson, John R.: *See—*
Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., 4,242,718, Cl. 361-341.000.
Wilson, Norman A.: *See—*
Vitelli, Vito J.; Jalil, Asjed A.; and Wilson, Norman A., 4,242,153, Cl. 148-12.00B.
Wilson, Robert B.: *See—*
Klein, John M.; and Wilson, Robert B., 4,241,457, Cl. 2-2.500.
Winter, William E.: *See—*
Gladrow, Elroy M.; and Winter, William E., 4,242,237, Cl. 252-455.00Z.
Witte, Josef: *See—*
Sylvester, Gerd; Witte, Josef; and Marwede, Gunter, 4,242,232, Cl. 252-429.00C.
Witthaus, Martin: *See—*
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,242,309, Cl. 422-189.000.
Witzke, Lothar: *See—*
Muller, Wolfgang; and Witzke, Lothar, 4,242,127, Cl. 75-99.000.
Wochnowski, Waldemar; and Hohm, Reinhard, to Hauni-Werke Korber & Co. KG. Method and apparatus for conditioning tobacco. 4,241,515, Cl. 34-28.000.
Woerner, Douglas C.: *See—*
Ferment, George R.; and Woerner, Douglas C., 4,242,397, Cl. 428-141.000.
Wolf, Elmar: *See—*
Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, 4,242,248, Cl. 260-31.20N.
Wolf, Ludwig, Jr.: *See—*
Greff, Richard; Wolf, Ludwig, Jr.; Munsch, John; and Kinney, Layton C., 4,242,310, Cl. 422-300.000.
Wolf, Rainer: *See—*
Mauric, Claudine; and Wolf, Rainer, 4,242,138, Cl. 106-18.180.
Wolf, Robert H.; and Dugas, Madeleine L., to Graphic Calculator Company. Slide rule. 4,241,867, Cl. 235-85.00R.
Wolfe, William A.: *See—*
Lancia, Frederick N.; Wolfe, William A.; Dearth, Leonard F.; Benton, Stephen L.; Homan, H. Richard; and Bruce, Arthur P., 4,241,847, Cl. 221-12.000.
Wolfrum, Erhard. Method and apparatus for producing active coke. 4,242,225, Cl. 252-411.00R.
Wolverton, William D. Quick disconnect antenna mount. 4,242,684, Cl. 343-715.000.
Wong, Patrick S.: *See—*
Langston, Jimmy B.; Leeper, Harold; and Wong, Patrick S., 4,241,733, Cl. 128-275.000.
Wood, Clifford. Amusement device. 4,241,977, Cl. 350-4.100.
Wood, Louis L., to W. R. Grace & Co. Plant growth media utilizing polyurethane hydrogel. 4,241,537, Cl. 47-77.000.
Woodruff, Frank: *See—*
Erwin, Louis R.; and Woodruff, Frank, 4,241,753, Cl. 137-116.300.
Woods, Lee O., to General Electric Company. Method of assembling an electrical device. 4,241,494, Cl. 29-619.000.
Worbey, Terence I.: *See—*
Wilson, John R.; and Worbey, Terence I., 4,242,396, Cl. 428-141.000.
World Carpets, Inc.: *See—*
Howell, Charles I., 4,242,389, Cl. 428-40.000.
Worley, Jimmy W.: *See—*
Chupp, John P.; and Worley, Jimmy W., 4,242,123, Cl. 71-111.000.
Wright, Sarah D.: *See—*
Allcock, Harry R.; Kosydar, Karen M.; and Wright, Sarah D., 4,242,499, Cl. 528-399.000.
Wu, Samuel C.; Holick, Stephen A.; and Bottelsen, Robert A., to Coors Container Company. Container return apparatus. 4,241,821, Cl. 194-4.00C.
Wulff, Cal W., to Holland Company. Grounded railway center plate liner. 4,241,667, Cl. 105-199.00C.
Wulfing, Johann A.: *See—*
Brenner, Gunther; Goring, Joachim; Ali Khan, Eskendar; Rohte, Oskar; and Tauscher, Manfred, 4,242,345, Cl. 424-253.000.
Wunderlich, Klaus: *See—*
Harms, Wolfgang; von Oertzen, Klaus; and Wunderlich, Klaus, 4,242,259, Cl. 260-153.000.
Wunderlin, Max; and Gurtner, Peter, to Turmix AG. Apparatus for the selective production of hot water and steam. 4,242,568, Cl. 219-296.000.
Xerox Corporation: *See—*
Brown, Ian G., 4,241,991, Cl. 355-26.000.
Fisli, Tibor, 4,241,990, Cl. 355-11.000.

Ragen, Robert A., 4,242,003, Cl. 400-124.000.
Yackiw, Charles, to Schlegel Corporation. Soft barrier fin weatherstrip and method of manufacture. 4,242,392, Cl. 428-85.000.
Yajima, Kazuo: *See—*
Ito, Yutaka; Yajima, Kazuo; Iwanaga, Yoshiteru; Takahashi, Hiroshi; and Inaba, Masao, 4,242,704, Cl. 358-167.000.
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, to Foundation: The Research Institute for Special Inorganic Materials, The. Process for producing heat-resistant semi-inorganic compounds. 4,242,487, Cl. 528-25.000.
Yakovlev, Arian M.: *See—*
Rogov, Viktor F.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; Titov, Mikhail Y.; Tereschenko, Lev A.; and Yakovlev, Arian M., 4,242,141, Cl. 106-89.000.
Yallourakis, Michael D., to Du Pont de Nemours, E. I., and Company. Low gloss powder coating compositions. 4,242,253, Cl. 260-40.0TN.
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for preparing N-carbamoyl-D-thienylglycines. 4,242,452, Cl. 435-117.000.
Yamada, Hiroshi: *See—*
Habu, Teiji; Ishihara, Masao; Terada, Sadatugu; Sakamoto, Eiichi; and Yamada, Hiroshi, 4,242,444, Cl. 430-510.000.
Yamada, Minoru: *See—*
Idota, Yoshio; and Yamada, Minoru, 4,242,442, Cl. 430-393.000.
Yamada, Toshihiro: *See—*
Takaya, Masahiro; Yamada, Toshihiro; and Yuizono, Tomokazu, 4,242,512, Cl. 544-239.000.
Yamagishi, Tomoo: *See—*
Sata, Tekeo; Takamura, Masayuki; Yamagishi, Tomoo; Hoshi, Toshiharu; and Iijima, Kenzaburo, 4,242,711, Cl. 360-126.000.
Yamaguchi, Hiroshi: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.
Yamaha Hatsukoki Kabushiki Kaisha: *See—*
Matsumoto, Hiromitsu, 4,241,712, Cl. 123-432.000.
Yamaki, Kiyoshi: *See—*
Mizote, Masanori; Yamaki, Kiyoshi; and Oka, Takashi, 4,242,731, Cl. 364-436.000.
Yamamoto, Akihiro: *See—*
Sugawara, Yutaka; Yamamoto, Akihiro; Handa, Mitsuaki; Usami, Hiroko; and Ogawa, Haruki, 4,242,326, Cl. 424-116.000.
Yamamoto, Kazuo, to NSK-Warner K.K. Passive safety seat belt system. 4,241,941, Cl. 280-804.000.
Yamano, Hiroyoshi, to Kabushiki Kaisha Morita Seisakusho. Dental panoramic radiographic apparatus capable of concurrently taking normal picture of temporomandibular joint. 4,242,585, Cl. 250-439.00P.
Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Osono, Takashi; Oka, Yoshihiko; Watanabe, Shunichi; Saito, Takeshi; Gushima, Hiroshi; Murakami, Keisuke; Takahashi, Isao; Yamaguchi, Hiroshi; Sasaki, Toshio; Susaki, Kiyoshi; Takamura, Shuichi; and Miyoshi, Toshiaki, 4,242,449, Cl. 435-48.000.
Yamasa Shoyu Kabushiki Kaisha: *See—*
Kawahara, Toshihisa; and Motoki, Goro, 4,242,505, Cl. 536-26.000.
Yamasaki, Masahiro: *See—*
Iwahashi, Shunji; Yamasaki, Masahiro; and Sagou, Masakazu, 4,242,413, Cl. 428-412.000.
Yamazaki, Masafumi: *See—*
Tsuboshima, Kosaku; Takayama, Shuichi; Nakajima, Yoshio; Iwasawa, Teruo; and Yamazaki, Masafumi, 4,242,703, Cl. 358-150.000.
Yamazaki, Yoshio: *See—*
Morozumi, Shinji; Yamazaki, Yoshio; Asakawa, Tatsushi; and Nakazaki, Yasunori, 4,242,679, Cl. 340-765.000.
Yanagihara, Kenji: *See—*
Niinomi, Masahiro; and Yanagihara, Kenji, 4,242,188, Cl. 204-164.000.
Yannone, Robert A.; and Shields, James J., to Westinghouse Electric Corp. Gas turbine power plant control apparatus including an ambient temperature responsive control system. 4,242,592, Cl. 290-40.00R.
Yarimie, Chris M.; and Moore, Jerry E., to New World Manufacturing, Inc. Waveless waterbed mattress. 4,241,465, Cl. 5-452.000.
Yasaitis, John A.: *See—*
Raffel, Jack I.; and Yasaitis, John A., 4,242,736, Cl. 365-191.000.
Yasui Sangyo Co., Ltd.: *See—*
Kaneko, Kazumasa, 4,241,899, Cl. 254-8.00B.
Yee, Clifford S. L.: *See—*
Matucheski, Joseph V.; Yee, Clifford S. L.; Spellman, Michael T.; Hartley, Donald J.; and Barton, William D., 4,242,046, Cl. 416-132.00A.
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., to Allied Chemical Corporation. Thermochromic polyacetylenes used in laser beam recording method. 4,242,440, Cl. 430-346.000.
Yellin, Tobias O.; and Mant, Derrick M., to Imperial Chemical Industries Limited; and ICI Americas Inc. Antisecretory thiadiazole derivatives, processes for their manufacture and pharmaceutical compositions containing them. 4,242,350, Cl. 424-270.000.
Yellin, Tobias O.; and Mant, Derrick M., to Imperial Chemical Industries Limited; and ICI Americas Inc. Antisecretory oxadiazoles and pharmaceutical compositions containing them. 4,242,351, Cl. 424-272.000.
Yntema, Klaas; and Klos, Cornelis D. W., to Akzona Incorporated. Fire retardant curable ethylenically unsaturated compositions. 4,242,255, Cl. 260-45.75P.
Yoda, Makoto: *See—*
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,242,230, Cl. 252-429.00B.
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naoti; Yoda, Makoto; and Wada, Shozo, 4,242,231, Cl. 252-429.00B.
Yokota, Yoshihisa; Hosokawa, Teruo; and Sakashita, Kiichiro, to Showa Yuka Kabushiki Kaisha. Process for producing an improved ethylenic polymer. 4,242,479, Cl. 526-124.000.
Yokoyama, Yasuo: *See—*
Morito, Nobuyuki; Sugiyama, Toshitomo; Yokoyama, Yasuo; and Ichida, Toshio, 4,242,155, Cl. 148-113.000.
Yoneda, Koji: *See—*
Yamada, Hideaki; Takahashi, Satomi; and Yoneda, Koji, 4,242,452, Cl. 435-117.000.
Yoshida, Kayoko: *See—*
Hasegawa, Masayasu; Nishikawa, Hideo; and Yoshida, Kayoko, 4,242,336, Cl. 424-246.000.
Yoshida, Motoaki: *See—*
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,242,412, Cl. 428-412.000.
Yoshida, Susumu; Ishigaki, Yoshio; and Nagai, Tamiji, to Sony Corporation. Current control circuit. 4,242,714, Cl. 361-152.000.
Yoshikawa, Noriaki: *See—*
Ito, Sadao; Yoshikawa, Noriaki; and Komura, Mitsuru, 4,242,538, Cl. 179-2.0EB.
Yoshioka, Yu, to Kikkoman Foods, Inc. Flow controlling pouring spout. 4,241,855, Cl. 222-479.000.
Young, Gary L.: *See—*
Daugherty, Denny E.; Loder, Edwin R.; and Young, Gary L., 4,242,216, Cl. 252-103.000.
Young, Jerry W., to Phillips Petroleum Company. Container processing apparatus. 4,241,848, Cl. 221-222.000.
Young, Morris S., to Airco, Inc. Aluminum-stabilized multifilamentary superconductor. 4,242,536, Cl. 174-128.00S.
Young, Ronald J.: *See—*
Cooper, George W.; and Young, Ronald J., 4,242,359, Cl. 424-325.000.
Yu, John P.: *See—*
Carlson, David J.; and Yu, John P., 4,242,655, Cl. 333-183.000.
Yuasa, Teruo: *See—*
Kato, Nobukatu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, 4,242,528, Cl. 568-781.000.
Yuizono, Tomokazu: *See—*
Takaya, Masahiro; Yamada, Toshihiro; and Yuizono, Tomokazu, 4,242,512, Cl. 544-239.000.
Zaccardelli, Delio: *See—*
Bartoli, Francesco; Morisi, Franco; and Zaccardelli, Delio, 4,242,461, Cl. 435-288.000.
Zahnradfabrik Friedrichshafen AG: *See—*
Deininger, Horst; and Breitweg, Werner, 4,241,804, Cl. 180-79.100.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; and Ishizuka, Masaaki, 4,242,453, Cl. 435-123.000.
Zakora, Miloslav, to A/S N. Foss Electric. Dosage pump. 4,242,058, Cl. 414-437.000.
Zelacolor Systems Establishment: *See—*
Guillaume, Emile A. H., 4,241,993, Cl. 355-75.000.
Ziegler, B. Randall: *See—*
Bondoc, Alfredo A.; Canfield, V. Robert; and Ziegler, B. Randall, 4,242,404, Cl. 428-220.000.
Ziff-Davis Publishing Company: *See—*
Goldberg, Norman N., 4,241,987, Cl. 354-195.000.
Zijlstra, Hinne: *See—*
Bruning, Hugo A. C. M.; van Vucht, Johannes H. N.; Westendorp, Frans F.; and Zijlstra, Hinne, 4,242,315, Cl. 423-252.000.
Zimmerman, Robert L., to Texaco Development Corporation. Urea derivatives and use as polyurethane catalysts. 4,242,467, Cl. 521-129.000.
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Morozov, Jury E.; Ivanov, Vladimir A.; and Abramova, Zinaida A. Apparatus for manufacturing foundry cores. 4,241,779, Cl. 164-207.000.
Zuckerman, Joseph L.; and Bzik, John W., to J. P. Stevens & Co., Inc. Thermoplastic compositions and automotive carpeting backed therewith. 4,242,395, Cl. 428-96.000.
Zumbrunnen, Allen D. Silicon refining process. 4,242,175, Cl. 156-616.00R.
Zwagemakers, Johannes M. A.: *See—*
van Dijk, Jan; and Zwagemakers, Johannes M. A., 4,242,348, Cl. 424-267.000.
Zwayer, Don L.; and Sadler, Martin D., to Natural Energy of Oklahoma, Inc. Rapid thrust exercise machine. 4,241,913, Cl. 272-130.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, to Ciba-Geigy Corporation. Tricyclic imidyl derivatives. 4,242,264, Cl. 260-326.00C.
3U Partners: *See—*
Underwood, Gene E., 4,241,878, Cl. 239-591.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF DECEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Angstadt, Howard P.; Tinkler, Jack D.; Norton, Richard V.; and Bushick, Ronald D., to Sun Ventures, Inc. Ammoxidation process. Re. 30,464, Cl. 260-465.00C.

Bogar, Jean Armstrong, executrix: *See—*
Bogar, William H., deceased; and Irwin, Howard D., Re. 30,461, Cl. 308-137.000.

Bogar, William H., deceased (by Bogar, Jean Armstrong, executrix); and Irwin, Howard D., to Du Pont de Nemours, E. I., and Company. Resilient center bearing assembly. Re. 30,461, Cl. 308-137.000.

Brunswick Corporation: *See—*
House, Robert W.; King, Rolland D.; Roller, Robert F.; and Williams, David A., Re. 30,467, Cl. 364-411.000.

Bushick, Ronald D.: *See—*
Angstadt, Howard P.; Tinkler, Jack D.; Norton, Richard V.; and Bushick, Ronald D., Re. 30,464, Cl. 260-465.00C.

Dolby Laboratories, Inc.: *See—*
Dolby, Ray M.; and Spencer, Paul A., Re. 30,468, Cl. 455-72.000.

Dolby, Ray M.; and Spencer, Paul A., to Dolby Laboratories, Inc. Signal compressors and expanders. Re. 30,468, Cl. 455-72.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bogar, William H., deceased; and Irwin, Howard D., Re. 30,461, Cl. 308-137.000.

House, Robert W.; King, Rolland D.; Roller, Robert F.; and Williams, David A., to Brunswick Corporation. Bowling scorer utilizing semiconductor elements. Re. 30,467, Cl. 364-411.000.

Ikegami, Hidetsugu. Method and device for generating a magnetic field of a potential with electric current components distributed according to a derivative of the potential. Re. 30,466, Cl. 335-213.000.

Irwin, Howard D.: *See—*
Bogar, William H., deceased; and Irwin, Howard D., Re. 30,461, Cl. 308-137.000.

King, Rolland D.: *See—*
House, Robert W.; King, Rolland D.; Roller, Robert F.; and Williams, David A., Re. 30,467, Cl. 364-411.000.

Miller, David R.; and Wolfe, Jack E., deceased (by Wolfe, Edith B., executrix), to Prismo Universal Corporation. Traffic paint method and composition. Re. 30,463, Cl. 260-22.0CQ.

Norton, Richard V.: *See—*
Angstadt, Howard P.; Tinkler, Jack D.; Norton, Richard V.; and Bushick, Ronald D., Re. 30,464, Cl. 260-465.00C.

Pohl, Leo. Lift assembly for van or the like. Re. 30,462, Cl. 414-545.000.

Prismo Universal Corporation: *See—*
Miller, David R.; and Wolfe, Jack E., deceased, Re. 30,463, Cl. 260-22.0CQ.

Roller, Robert F.: *See—*
House, Robert W.; King, Rolland D.; Roller, Robert F.; and Williams, David A., Re. 30,467, Cl. 364-411.000.

Schoerner, Roger J., to Southwire Company. Aluminum alloy wire. Re. 30,465, Cl. 428-606.000.

Southwire Company: *See—*
Schoerner, Roger J., Re. 30,465, Cl. 428-606.000.

Spencer, Paul A.: *See—*
Dolby, Ray M.; and Spencer, Paul A., Re. 30,468, Cl. 455-72.000.

Sun Ventures, Inc.: *See—*
Angstadt, Howard P.; Tinkler, Jack D.; Norton, Richard V.; and Bushick, Ronald D., Re. 30,464, Cl. 260-465.00C.

Tinkler, Jack D.: *See—*
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Williams, David A.: *See—*
House, Robert W.; King, Rolland D.; Roller, Robert F.; and Williams, David A., Re. 30,467, Cl. 364-411.000.

Wolfe, Edith B., executrix: *See—*
Miller, David R.; and Wolfe, Jack E., deceased, Re. 30,463, Cl. 260-22.0CQ.

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Miller, David R.; and Wolfe, Jack E., deceased, Re. 30,463, Cl. 260-22.0CQ.

LIST OF DESIGN PATENTEES

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Basler, Donald S.; Myer, Shirley P.; and Tienprasid, Wallop, 257,710, Cl. D6-179.000.

Abraham, Adolph. Ring toss game target. 257,745, 12-30-80, Cl. D21-4.000.

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Acushnet Company: *See—*
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AFA Corporation, The: *See—*
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Angrisano, Donald A.; and Mecca, Anthony F. Child's play garment. 257,697, 12-30-80, Cl. D2-209.000.

Arco Industries Ltd.: *See—*
Rosenberg, Herbert, 257,734, Cl. D21-129.000.

Baldwin Piano and Organ Company: *See—*
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Basler, Donald S.; Myer, Shirley P.; and Tienprasid, Wallop, to Abbott Laboratories. Combined work table and shelf unit primarily for use by a pediatrician. 257,710, 12-30-80, Cl. D6-179.000.

Breneman, Jack L., to Quaker Oats Company, The. Toy cement mixer truck body. 257,735, 12-30-80, Cl. D21-138.000.

Brough, Wayne S. Combined desk set, display chamber and nameplate. 257,729, 12-30-80, Cl. D19-77.000.

Brunty, Fred; and Hall, William J. Projector for elongated projectiles. 257,737, 12-30-80, Cl. D22-3.000.

Buddy L Corporation: *See—*
Herstein, Barry S.; and Salmon, Robert, 257,728, Cl. D18-1.000.

Cassina, Franco, to Cassina S.p.A. Arm-chair. 257,708, 12-30-80, Cl. D6-71.000.

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Champion International Corporation: *See—*
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Colorcraft Corporation: *See—*
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De Vries, Jochem J.: *See—*
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Dutcher, Daniel P., to Champion International Corporation. Metered package blank. 257,718, 12-30-80, Cl. D9-432.000.

Eshelman, Cheston L. Prop for flat files. 257,730, 12-30-80, Cl. D19-86.000.

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Famolare, Joseph P., Jr., 257,700, Cl. D2-319.000.
Famolare, Joseph P., Jr., 257,701, Cl. D2-322.000.

Famolare, Joseph P., Jr., to Famolare, Inc. Shoe sole. 257,699, 12-30-80, Cl. D2-319.000.

Famolare, Joseph P., Jr., to Famolare, Inc. Shoe sole. 257,700, 12-30-80, Cl. D2-319.000.

Famolare, Joseph P., Jr., to Famolare, Inc. Shoe sole. 257,701, 12-30-80, Cl. D2-322.000.

Framer, Sam, to Colorcraft Corporation. Telephone kiosk. 257,705, 12-30-80, Cl. D6-25.000.

Gabr, Saad Z. M. Stand for light fixture or similar article. 257,704, 12-30-80, Cl. D26-106.000.

General Foods Corporation: *See—*
Pettengill, Floyd E., 257,715, Cl. D9-387.000.

Gerlach, Willfried. Decorator module. 257,742, 12-30-80, Cl. D25-80.000.

Globol-Werk GmbH: *See—*
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Haber, Terry M. Packaging for billiard balls. 257,717, 12-30-80, Cl. D9-431.000.

Hall, William J.: *See—*
Brunty, Fred; and Hall, William J., 257,737, Cl. D22-3.000.

Herstein, Barry S.; and Salmon, Robert, to Buddy L Corporation. Typewriter. 257,728, 12-30-80, Cl. D18-1.000.

Heuser, Karl H., to Huwil-Werke GmbH. Combined handle and push-button housing for electrically encoded push-button lock. 257,714, 12-30-80, Cl. D8-331.000.

Humphrey, Theodore J., II; and Wesner, Walter H., to AFA Corporation, The. Sprayer nozzle. 257,740, 12-30-80, Cl. D23-35.000.

Huwil-Werke GmbH: *See—*
Heuser, Karl H., 257,714, Cl. D8-331.000.

Ingram, Gary L., to Spencer Wright Industries, Inc. Gated hook for tufting machines. 257,725, 12-30-80, Cl. D15-78.000.

Irion, Junghans, to Siemens Corporation. Face plate for a fluid flow meter. 257,719, 12-30-80, Cl. D10-96.000.

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Jofa Aktiebolag: *See—*
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Kimble, Thomas E., to Baldwin Piano and Organ Company. Electric guitar. 257,727, 12-30-80, Cl. D17-14.000.

Klawitter, Ronald R., to Steven Manufacturing Company. Toy coffee maker. 257,732, 12-30-80, Cl. D21-122.000.

Klawitter, Ronald R., to Steven Manufacturing Company. Toy mixer. 257,733, 12-30-80, Cl. D21-122.000.

Korach, Irving S. Casserole for a microwave oven. 257,713, 12-30-80, Cl. D7-17.000.

Levine, Joe Ann; Saper, Roberta L.; and Lewis, Beverly R. Kitchen appliance cover. 257,712, 12-30-80, Cl. D6-269.000.

Lewis, Beverly R.: *See—*
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Liebman, Arno J. Combined table and multiple hook support. 257,706, 12-30-80, Cl. D6-27.000.

Luker, Graham J., to Macnaught Pty. Limited. Grease pump. 257,739, 12-30-80, Cl. D15-7.000.

Lyon, Herbert W.; Abrain, Edmond S.; Jepson, John W.; Rambo, Charles D.; and Santy, Arthur F., to Acushnet Company. Golf club head. 257,736, 12-30-80, Cl. D21-220.000.

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Manthei, Rainer, to Globol-Werk GmbH. Holder for water soluble material. 257,738, 12-30-80, Cl. D23-3.000.

Marrujo, Ralph G., to Fairchild Industries, Inc. Aircraft seat. 257,707, 12-30-80, Cl. D6-48.000.

Masujima, Sho, to TDK Electronics Company, Limited. Electronic component package. 257,716, 12-30-80, Cl. D9-345.000.

Maza, Dale T.; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Dolly plate for a refuse container. 257,721, 12-30-80, Cl. D12-31.000.

McCarthy, Brian D., to MS Instruments Ltd. Head gear mount for night vision goggles. 257,726, 12-30-80, Cl. D16-50.000.

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Pettengill, Floyd E., to General Foods Corporation. Combined jar and closure. 257,715, 12-30-80, Cl. D9-387.000.

Phoebus Company, Inc., The: *See—*
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Quaker Oats Company, The: *See—*
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Rambo, Charles D.: *See—*
Lyon, Herbert W.; Abrain, Edmond S.; Jepson, John W.; Rambo, Charles D.; and Santy, Arthur F., 257,736, Cl. D21-220.000.

Rockman, Harold D. Barricade. 257,720, 12-30-80, Cl. D10-109.000.

Rosenberg, Herbert, to Arco Industries Ltd. Toy train. 257,734, 12-30-80, Cl. D21-129.000.

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Rubbermaid Specialty Products Inc.: *See—*
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Salmon, Robert: *See—*
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Santy, Arthur F.: *See—*
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Siemens Corporation: *See—*
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Spencer Wright Industries, Inc.: *See—*
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Steven Manufacturing Company: *See—*
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Klawitter, Ronald R., 257,733, Cl. D21-122.000.

Stockdale, Roy, to Napco Security Systems, Inc. Cover plate for a control panel circuit board. 257,723, 12-30-80, Cl. D13-40.000.

Surgical Appliance Industries, Inc.: *See—*
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TDK Electronics Company, Limited: *See—*
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Tedesco, John A., to Phoebus Company, Inc., The. Arc lamp. 257,743, 12-30-80, Cl. D26-104.000.

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Maza, Dale T.; and Tomblin, Glen E., 257,721, Cl. D12-31.000.

Tyson, Youree. Slide key holder. 257,703, 12-30-80, Cl. D3-61.000.

U.S. Philips Corporation: *See—*
van de Ven, Peter H. J., 257,724, Cl. D14-70.000.
van Hemmen, Dirk J.; and De Vries, Jochem J., 257,744, Cl. D28-47.000.

van de Ven, Peter H. J., to U.S. Philips Corporation. Portable radio. 257,724, 12-30-80, Cl. D14-70.000.

van Hemmen, Dirk J.; and De Vries, Jochem J., to U.S. Philips Corporation. Shaving cutter. 257,744, 12-30-80, Cl. D28-47.000.

Vanpool, William A., to Vanpool, William Arthur. Trailer hitch. 257,722, 12-30-80, Cl. D12-162.000.

Vanpool, William Arthur: *See—*
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Wesner, Walter H.: *See—*
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Williams, Marguerite R., to Surgical Appliance Industries, Inc. Lower back support. 257,741, 12-30-80, Cl. D24-64.000.

Willitts, William G. Mirror arrangement. 257,711, 12-30-80, Cl. D6-234.000.

Wooters, Dwight N., to Rubbermaid Specialty Products Inc. Auto utility pouch. 257,702, 12-30-80, Cl. D3-40.000.

Zack, Naomi; and Mahon, Thomas W. Flying toy. 257,731, 12-30-80, Cl. D21-88.000.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 30, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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90 4,241,795

CLASS 174

15 S 4,242,534
38 4,242,533
42 4,242,537
88 R 4,242,535
128 S 4,242,536

CLASS 175

24 4,241,796
237 4,241,797
329 4,241,798
361 4,241,799
400 4,241,800

CLASS 176

30 4,242,178

CLASS 177

211 4,241,801

CLASS 178

3 4,241,802

CLASS 179

2 EB 4,242,538
5.5 4,242,539
6 R 4,242,540
110 A 4,242,541
170 R 4,242,542

CLASS 180

8 R 4,241,803
79.1 4,241,804

CLASS 181

232 4,241,805
284 4,241,806

CLASS 182

121 4,241,807
155 4,241,808
199 4,241,809

CLASS 188

1 C 4,241,810
43 4,241,811
73.1 4,241,812
77 R 4,241,813
266 4,241,814
282 4,241,815
298 4,241,816

CLASS 192

12 C 4,241,817
55 4,241,818
70.27 4,241,819
89 B 4,241,820

CLASS 194

4 C 4,241,821

CLASS 198

406 4,241,822
727 4,241,823
745 4,241,824
782 4,241,825
825 4,241,826

CLASS 200

1 A 4,242,543
5 E 4,242,544
5 R 4,242,545
16 A 4,242,546
38 R 4,242,547
47 4,242,548
144 R 4,242,549
148 R 4,242,550
153 G 4,242,577
302 4,242,551
339 4,242,552

CLASS 204

2.1 4,242,179
43 N 4,242,180
52 R 4,242,181
54 R 4,242,182
73 R 4,242,183
98 4,242,184
4,242,185
157.1 H 4,242,186
162 SH 4,242,187
164 4,242,188
195 M 4,242,191
195 R 4,242,189
212 4,242,190
213 4,242,192
296 4,242,193
299 R 4,242,194

CLASS 206

248 4,241,827
306 4,241,828
328 4,241,829
422 4,241,830
506 4,241,831
523 4,241,832
570 4,241,833
611 4,241,834

CLASS 208

11 LE 4,242,195
40 4,242,196

CLASS 209

3 4,242,197
582 4,241,835

CLASS 210

222 4,242,200
240 4,242,201
242.3 4,242,202
321.1 4,242,203
326 4,242,204
400 4,242,205
489 4,242,206
500.1 4,242,207
500.2 4,242,208
519 4,242,209
758 4,242,199

CLASS 211

14 4,241,836

CLASS 212

177 4,241,837
255 4,241,838

CLASS 215

100 R 4,241,839
220 4,241,840
252 4,241,841
4,241,842

CLASS 219

10.49 R 4,242,553
10.55 B 4,242,554
69 E 4,242,557
69 G 4,242,560
69 M 4,242,555
69 W 4,242,556
4,242,558
4,242,559
109 4,242,561
121 P 4,242,562
125.11 4,242,563
208 4,242,564
216 4,242,565
4,242,566
225 4,242,567
296 4,242,568
314 4,242,569
441 4,242,570
513 4,242,571
521 4,242,572
528 4,242,573

CLASS 220

5 A 4,241,843
67 4,241,844
203 4,241,845
318 4,241,846

CLASS 221

12 4,241,847
222 4,241,848
266 4,241,849

CLASS 222

39 4,241,850
83.5 4,241,851
103 4,241,852
207 4,241,853
4,241,854
479 4,241,855
539 4,241,856

CLASS 224

32 A 4,241,857
42.03 A 4,241,858
312 4,241,859
316 4,241,860

CLASS 227

135 4,241,861
155 4,241,862

CLASS 229

27 4,241,863
43 4,241,864
62 4,241,865

CLASS 233

24 4,241,866

CLASS 235

85 R 4,241,867
92 DN 4,242,574
92 FL 4,242,575
435 4,242,576

CLASS 236

12 A 4,241,868
15 BR 4,241,869
49 4,241,871
87 4,241,872
4,241,873

CLASS 237

55 4,241,874

CLASS 238

10 F 4,241,875

CLASS 239

251 4,241,464
265.27 4,241,876
405 4,241,877
591 4,241,878
677 4,241,879
691 4,241,880

CLASS 241

28 4,241,881
236 4,241,882

CLASS 242

46.4 4,241,883
54 R 4,241,884
55.2 4,241,885
107.2 4,241,886
107.7 4,241,887

CLASS 244

3.15 4,241,889
137 R 4,241,890

CLASS 248

123.1 4,241,891
346 4,241,892
425 4,241,893
576 4,241,894

CLASS 250

201 4,242,579
203 R 4,242,580
227 4,242,581
328 4,242,582
358 R 4,242,583
423 P 4,242,584
439 P 4,242,585
443 4,242,586
491 4,242,587
492 A 4,242,588
577 4,242,589
4,242,590

CLASS 251

173 4,241,895
206 4,241,896
229 4,241,897
321 4,241,898

CLASS 252

8.8 4,242,210
25 4,242,211
51.5 R 4,242,212
75 4,242,214
100 4,242,215
103 4,242,216
135 4,242,217
143 4,242,218
174.12 4,242,219
301.1 W 4,242,220
301.17 4,242,222
301.4 H 4,242,221
313 R 4,242,223
402 4,242,224
411 R 4,242,225
422 4,242,226
428 4,242,227
429 B 4,242,229
4,242,230
4,242,231
429 C 4,242,232
429 R 4,242,228
431 N 4,242,233
439 4,242,234
455 R 4,242,235
4,242,236
455 Z 4,242,237

CLASS 254

8 B 4,241,899
4,241,900
89 H 4,241,901

CLASS 260

8 4,242,238
9 4,242,239
14 4,242,240
17.2 4,242,241
17.4 CL 4,242,242
22 CQ Re.30,463
23 AR 4,242,243
23.7 C 4,242,244
27 BB 4,242,245
28.5 AS 4,242,246
29.6 WQ 4,242,247
31.2 N 4,242,248
33.2 R 4,242,249
33.4 SB 4,242,250
4,242,252
37 N 4,242,251
40 R 4,242,254
40 TN 4,242,253
45.75 P 4,242,255
112.5 R 4,242,256
4,242,257
152 4,242,258
153 4,242,259
160 4,242,260
239 A 4,242,261
245.3 4,242,262
306 R 4,242,263
326 C 4,242,264
326.12 R 4,242,265
326.34 4,242,266
335 4,242,267
343.3 P 4,242,268
345.1 4,242,269
348.31 4,242,285
396 4,242,277
412.8 4,242,270
431 4,242,280
448 AD 4,242,271
453 RW 4,242,273
465 C Re.30,464
465 E 4,242,274
505 E 4,242,275
746 4,242,287
929 4,242,288

CLASS 261

41 D 4,242,290
93 4,242,289

CLASS 264

1 4,242,291
16 4,242,292
40.7 4,242,293
62 4,242,294
146 4,242,295
149 4,242,296
230 4,242,297
233 4,242,298
504 4,242,299
520 4,242,300

CLASS 266

44 4,241,902
109 4,241,903
209 4,241,904
236 4,241,905

CLASS 269

43 4,241,906
289 R 4,241,772

CLASS 270

54 4,241,907
55 4,241,908

CLASS 271

182 4,241,909
202 4,241,910
314 4,241,911

CLASS 272

125 4,241,912
130 4,241,913
136 4,241,914
144 4,241,915

CLASS 273

1.5 R 4,241,916
33 4,241,917
65 E 4,241,918
72 A 4,241,919
143 R 4,241,920
148 A 4,241,921
189 A 4,241,922
265 4,241,923
277 4,241,924
316 4,241,925

CLASS 274

23 R 4,241,926

CLASS 277

87 4,241,927
212 FB 4,241,928

CLASS 280

12 H 4,241,929
47.29 4,241,930
205 4,241,931
265 4,241,932
301 4,241,933
432 4,241,934
461 A 4,241,935
507 4,241,936
777 4,241,937
803 4,241,938
804 4,241,939
4,241,940
4,241,941

CLASS 283

6 4,241,942
13 4,241,943

CLASS 285

229 4,241,944

CLASS 290

1 R 4,242,591
40 R 4,242,592
53 4,242,593

CLASS 292

165 4,241,888

CLASS 293

120 4,241,945

CLASS 294

31 R 4,241,946

CLASS 296

10 4,241,947
37.7 4,241,870
216 4,241,948

CLASS 297

3 4,241,949
18 4,241,950

CLASS 299

2 4,241,951
4,241,952
4 4,241,953

CLASS 301

37 R 4,241,954

CLASS 305

35 EB 4,241,956

CLASS 307

98 4,242,594
205 4,242,595
211 4,242,596
221 B 4,242,597
221 D 4,242,600
225 R 4,242,601
232 4,242,602
238 4,242,603
251 4,242,604
270 4,242,605
310 4,242,598
311 4,242,599

CLASS 308

36.4 4,241,957
137 Re.30,461
160 4,241,958
187 4,241,959
237 R 4,241,960

CLASS 310

12 4,242,606
68 E 4,242,607
68 R 4,242,608
105 4,242,609
156 4,242,610
344 4,242,611

CLASS 312

12 4,241,955
22 4,241,961
183 4,241,962
228 4,241,963
305 4,241,964

CLASS 313

421 4,242,612
447 4,242,613

CLASS 315

153 4,242,614
169.1 4,242,615
241 P 4,242,616

CLASS 318

13 4,242,617
314 4,242,618
4,242,619
576 4,242,620
601 4,242,621
616 4,242,622
696 4,242,623
4,242,624
729 4,242,625
772 4,242,626

CLASS 320

21 4,242,627

CLASS 322

35 4,242,628

CLASS 323

17 4,242,629
60 4,242,630

CLASS 324

62 4,242,631
73 R 4,242,632
4,242,633
142 4,242,634
158 R 4,242,635

CLASS 328

63 4,242,636
110 4,242,637
144 4,242,638
155 4,242,639
187 4,242,640

CLASS 329

126 4,242,641

CLASS 330

109 4,242,642
278 4,242,643
297 4,242,644

CLASS 331

94.5 D 4,242,646
4,242,647
4,242,648
94.5 G 4,242,645

CLASS 332

18 4,242,649

CLASS 333

28 R 4,242,650
32 4,242,651
106 4,242,652
141 4,242,653
165 4,242,654
183 4,242,655
213 4,242,656

CLASS 335

207 4,242,657
213 Re.30,466
237 4,242,658

CLASS 338

28 4,242,659
195 4,242,660

CLASS 339

4 4,241,965
45 M 4,241,966
59 M 4,241,967
64 M 4,241,968
88 R 4,241,969
99 R 4,241,970
116 C 4,241,971
126 R 4,241,972
143 R 4,241,973
154 A 4,241,974
242 4,241,975
278 D 4,241,976

CLASS 340

23 4,242,661
146.3 H 4,242,662
152 T 4,242,663
168 S 4,242,664
365 R 4,242,667
539 4,242,668
567 4,242,669
568 4,242,670
572 4,242,671
573 4,242,672

630 4,242,673
635 4,242,674
711 4,242,675
4,242,676
715 4,242,677
728 4,242,678
765 4,242,679
771 4,242,680
785 4,242,681
870.28 4,242,666
870.38 4,242,665

CLASS 343

7 A 4,242,682
7.7 4,242,683
715 4,242,684
770 4,242,685
912 4,242,686

CLASS 346

75 4,242,687
4,242,688
135.1 4,242,689

CLASS 350

4.1 4,241,977
96.20 4,241,978
96.23 4,241,979
129 4,241,980
184 4,241 981
187 4,241,982
216 4,241,983
337 4,241,984

CLASS 354

99 4,241,985
193 4,241,986
195 4,241,987
293 4,241,988
299 4,241,989

CLASS 355

11 4,241,990
26 4,241,991
41 4,241,992
75 4,241,993
77 4,241,994

CLASS 356

5 4,241,995
124.5 4,241,996
309 4,241,997
319 4,241,998
331 4,241,999
374 4,242,000

CLASS 357

13 4,242,690
23 4,242,691
24 4,242,692
28 4,242,693
30 4,242,694
4,242,695
4,242,696
49 4,242,697
71 4,242,698

CLASS 358

4 4,242,699
44 4,242,700
75 4,242,701
106 4,242,702
150 4,242,703
167 4,242,704
4,242,705
213 4,242,706
280 4,242,707

CLASS 360

74.5 4,242,708
96.4 4,242,709
113 4,242,710
126 4,242,711

CLASS 361

42 4,242,712
86 4,242,713
152 4,242,714
232 4,242,715
299 4,242,716
308 4,242,717
341 4,242,718
400 4,242,719
402 4,242,720
415 4,242,721
433 4,242,722

CLASS 362

33 4,242,723
158 4,242,724
341 4,242,725
346 4,242,727
418 4,242,726

CLASS 364

411 Re.30,467
416 4,242,730
431 4,242,728
4,242,729
436 4,242,731
485 4,242,732
515 4,242,733
4,242,734
900 4,242,735

CLASS 365

184 4,242,737
189 4,242,738
191 4,242,736
203 4,242,739

CLASS 366

75 4,242,001
343 4,242,002

CLASS 367

15 4,242,740
21 4,242,741
75 4,242,742
93 4,242,743
173 4,242,744

CLASS 368

73 4,242,745
109 4,242,746
242 4,242,747
244 4,242,748

CLASS 370

85 4,242,749

CLASS 371

22 4,242,750
26 4,242,751
37 4,242,752

CLASS 375

70 4,242,753
110 4,242,754
114 4,242,755

CLASS 400

124 4,242,003
4,242,004
220.1 4,242,005
568 4,242,006

CLASS 403

13 4,242,008

CLASS 405

93 4,242,009
157 4,242,010
204 4,242,011
217 4,242,012
272 4,242,013
300 4,242,014

CLASS 406

82 4,242,015
109 4,242,007

CLASS 408

14 4,242,016
111 4,242,017
182 4,242,018

CLASS 409

185 4,242,019
234 4,242,020

CLASS 410

96 4,242,021
107 4,242,022

CLASS 414

36 4,242,023
43 4,242,024
70 4,242,025
145 4,242,026
148 4,242,027
320 4,242,028
413 4,242,029
437 4,242,058
462 4,242,030
470 4,242,031
537 4,242,032
545 Re.30,462
662 4,242,033
686 4,242,034
724 4,242,035
737 4,242,036
739 4,242,037
755 4,242,038

CLASS 415

112 4,242,039
113 4,242,040
115 4,242,041
116 4,242,042

CLASS 416

11 4,242,043
20 A 4,242,044
92 4,242,045
132 A 4,242,046
134 A 4,242,047
4,242,048
142 4,242,049
170 R 4,242,050

CLASS 417

38 4,242,051
154 4,242,052
211 4,242,053
218 4,242,054
362 4,242,055
363 4,242,056
404 4,242,057
462 4,242,059
464 4,242,060
536 4,242,061
4,242,062
571 4,242,063

CLASS 418

66 4,242,064
91 4,242,065
132 4,242,066
203 4,242,067
269 4,242,068

CLASS 422

68 4,242,301
94 4,242,302
98 4,242,303
119 4,242,304
129 4,242,305
133 4,242,306
189 4,242,309
194 4,242,307
195 4,242,308
300 4,242,310
302 4,242,311

CLASS 423

73 4,242,312
112 4,242,313
139 4,242,314
252 4,242,315
300 4,242,316
321 R 4,242,198
359 4,242,317
383 4,242,319
430 4,242,318
493 4,242,320
523 4,242,321

CLASS 424

1 4,242,322
58 4,242,323
89 4,242,324
116 4,242,326
4,242,327
157 4,242,328
177 4,242,329
180 4,242,330
4,242,331
182 4,242,332
210 4,242,325
225 4,242,333
243 4,242,334
4,242,335
246 4,242,336
248.54 4,242,337
4,242,338
4,242,339
4,242,340
248.55 4,242,341
250 4,242,342
4,242,343
251 4,242,344
253 4,242,345
258 4,242,346
267 4,242,347
4,242,348
4,242,349
270 4,242,350
272 4,242,351
4,242,352
274 4,242,353
275 4,242,354
4,242,355
279 4,242,356
282 4,242,357
317 4,242,358
325 4,242,359
343 4,242,360

CLASS 425

8 4,242,069
28 B 4,242,070
111 4,242,071
130 4,242,072
149 4,242,073
292 4,242,074
462 4,242,075

CLASS 426

40 4,242,362
49 4,242,361
69 4,242,363
98 4,242,364
438 4,242,365
554 4,242,366
573 4,242,367

CLASS 427

11 4,242,368
47 4,242,369
66 4,242,370
68 4,242,371
4,242,372
74 4,242,373
76 4,242,374
163 4,242,375
216 4,242,376
242 4,242,377
264 4,242,378
327 4,242,379
366 4,242,380
379 4,242,382
387 4,242,381
4,242,383
421 4,242,384

CLASS 428

31 4,242,385
34 4,242,386
35 4,242,387
4,242,388
40 4,242,389
47 4,242,390
76 4,242,391
85 4,242,392
95 4,242,393
4,242,394
96 4,242,395
141 4,242,396
4,242,397
172 4,242,398
186 4,242,399
201 4,242,400
4,242,401
212 4,242,402
213 4,242,403
220 4,242,404
224 4,242,405
236 4,242,406
247 4,242,407
290 4,242,408
297 4,242,409
315 4,242,410
369 4,242,411
412 4,242,412
4,242,413
4,242,414
4,242,415
4,242,416
423.1 4,242,488
457 4,242,417
507 4,242,418
606 Re.30,465
661 4,242,419
667 4,242,420

CLASS 429

13 4,242,421
94 4,242,422
111 4,242,423
152 4,242,424
181 4,242,425
193 4,242,426
247 4,242,427

CLASS 430

9 4,242,428
17 4,242,429
4,242,430
4,242,431
57 4,242,432
67 4,242,433
122 4,242,434
242 4,242,435
248 4,242,436
270 4,242,437
278 4,242,438
346 4,242,439
4,242,440
390 4,242,441
393 4,242,442
496 4,242,443
510 4,242,444
569 4,242,445

CLASS 431

4 4,242,076
19 4,242,077
45 4,242,078
46 4,242,079
54 4,242,080
71 4,242,081
72 4,242,082
4,242,083

CLASS 432

1 4,242,084

CLASS 433

14 4,242,085
33 4,242,086
54 4,242,087
101 4,242,088
189 4,242,089

CLASS 434

43 4,241,519
102 4,241,520
112 4,241,521
405 4,241,522

CLASS 435

15 4,242,446
39 4,242,447
42 4,242,448
48 4,242,449
69 4,242,450
94 4,242,451
117 4,242,452
123 4,242,453
162 4,242,454
4,242,455
193 4,242,456
235 4,242,457
247 4,242,458
283 4,242,459
284 4,242,460
288 4,242,461
292 4,242,462

CLASS 440

26 4,241,688
59 4,241,686
63 4,241,687

CLASS 455

8 4,242,756
72 Re.30,468
611 4,242,578

CLASS 474

82 4,241,617

CLASS 521

51 4,242,463
61 4,242,464
88 4,242,465
112 4,242,466
129 4,242,467
170 4,242,468

CLASS 525

71 4,242,469
92 4,242,470
333 4,242,471
343 4,242,472
397 4,242,473
404 4,242,474
534 4,242,475

CLASS 526

71 4,242,476
84 4,242,477
93 4,242,478
124 4,242,479
125 4,242,480
165 4,242,481
192 4,242,482
263 4,242,483
273 4,242,484
329.2 4,242,485

CLASS 528

14 4,242,486
25 4,242,487
73 4,242,489
77 4,242,490
168 4,242,491
4,242,492
4,242,493
4,242,494
4,242,495
190 4,242,496
232 4,242,497
362 4,242,498
399 4,242,499
492 4,242,500

CLASS 536

1 4,242,501
5 4,242,502
17 R 4,242,503
4,242,504
26 4,242,505
59 4,242,506

CLASS 542

427 4,242,507
430 4,242,508

CLASS 544

21 4,242,509
27 4,242,510
110 4,242,511
239 4,242,512
345 4,242,513

CLASS 546

74 4,242,514
119 4,242,515
248 4,242,516

CLASS 548

342 4,242,517

CLASS 549

61 4,242,518

CLASS 556

489 4,242,272

CLASS 560

15 4,242,519
24 4,242,520
35 4,242,521
47 4,242,522
48 4,242,523

CLASS 562

423 4,242,524
577 4,242,525

CLASS 564

159 4,242,276

CLASS 568

303 4,242,279
341 4,242,278
451 4,242,283
454 4,242,284
458 4,242,281
471 4,242,282
697 4,242,526
724 4,242,527
781 4,242,528

CLASS 570

145 4,242,286

CLASS 585

353 4,242,529
510 4,242,530
512 4,242,531

CLASSIFICATION OF DESIGNS

D2— 187 257,696
209 257,697
231 257,698
319 257,699
257,700
322 257,701
D3— 40 257,702
61 257,703
D6— 25 257,705
27 257,706
48 257,707
71 257,708
114 257,709
179 257,710
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